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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

"

VOLUME LIX.

APRIL 5 TO JUNE 28, INCLUSIVE.

1892.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1892.

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ERRATA.

472,149, page 41, in heading, residence of inventor, for "Itaska" read *Itasca.*

472,324, page 93, in heading, names of assignees, for "himself, George W. Williamson, and William C. Williamson" read *George W. Williamson, William C. Williamson, and John D. Williamson.*

472,620, page 194, in heading, after residence of inventor, insert *assignor of one-half to Freeman D. Somerby, Philadelphia, Pa.*

472,714, page 218, in heading, name of assignee, for "Patrick Burron" read *Paterick Burron.*

472,962, page 289, in heading, after residence of inventor, insert *assignor to the Oneida Community, Limited, Kenwood, N. Y.*

473,043, page 329, in heading, residence of inventor, for "New Haven, Conn." read *Meriden, Conn.*

473,379, page 438, in heading, names of assignees, for "James and Marshall Upfill" read *James Marshall Upfill.*

473,885, page 617, seventh claim, line 5, after the word "said," for "chamber" read *receptacle.*

474,034, page 684, first claim, line 9, for "initial" read *final.*

474,558, page 857, in heading, assignment, for "assignor" read *assignor of one-half.*

474,570, page 861, in heading, name of inventor, for "Emil Aze" read *Emile Aze.*

474,611, page 872, fourth claim, line 3, strike out the compound word "quarter-elliptic," and in fifth claim, lines 1–2, make same correction.

475,609, page 1211, in heading, name of inventor, for "Benjamin Richords" read *Benjamin Richards.*

476,150, page 1395, in heading, name of assignee, for "the New York Condensed Milk Company, New York, N. Y." read *the New York Condensed Milk Company, a Corporation of the State of New Jersey.*

476,413, page 1495, first claim, lines 4–5, for "alpha-hydroxynaphthionic" read *alpha-hydroxynaphthoic.* Second claim, seventh line from bottom of page, for the word "cooling" read *the addition of ice or icy water.* Same claim, fifth line from bottom, for the words "is precipitated" read *it is precipitated from its solutions in dilute mineral acids.*

476,414, page 1495, second claim, sixth line from bottom, for the word "cooling" read *the addition of ice.*

476,446, page 1504, in heading, name of inventor, for "John G. Bothwell" read *John G. Brothwell.*

476,522, page 1525, strike out all after number—title, drawing, and claim—and insert CANCELED.

476,644, page 1562, second claim, line 4, for "bind" read *bend.*

476,713, page 1581, in heading, name of inventor, for "John R. Wiggington" read *John R. Wigginton.*

476,996, page 1689, in heading, name of one of assignees, for "G. G. Calmer" read *G. G. Calmes.*

477,869, page 2001, second claim, line 3, strike out the words "positive and negative" and insert the same words before "devices," line 4, same claim.

477,952, page 2026, in heading, for "Woodson T. Harris" read *George L. Moore and Woodson T. Harris.*

11,251, (reissue,) page 2062, second claim, line 3, for reference-letter "G'" read G^2.

20,924, (trade-mark,) page 154, strike out all after number—title, drawing, and claim—and insert CANCELED.

21,625, (design,) page 1910, in heading, name of assignee, for "English & Messick" read *English & Mersick.*

259,550, (disclaimer,) page 1112, in heading, name of inventor, for "Martin H. Kenega" read *Martin H. Kenaga.*

Commisioner's Decisions, page 1261, first column, lines 14–15 from bottom of the page, for "(26 O. G., 358)" read (37 *O. G.*, 1002.)

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

APRIL–JUNE, 1892.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 1. TUESDAY, APRIL 5, 1892. PRICE—$5 per year.

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Notice.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 5, 1892.

Beginning with the present issue and continuing hereafter, the OFFICIAL GAZETTE will contain illustrations of Design Patents issued and Trade-Marks registered.

W. E. SIMONDS,
Commissioner.

Changes in Classification.

(ORDER No. 746.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 29, 1892.

A new sub-class is hereby established in Division IV, Class 104, Railways, as follows:

112. Pleasure-railways.

W. E. SIMONDS,
Commissioner.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

Issue of April 5, 1892.

Patents	495	No. 472,020 to No. 472,514, inclusive.
Designs	10	No. 21,443 to No. 21,452, inclusive.
Trade-Marks	34	No. 20,920 to No. 20,953, inclusive.
Labels	None.	
Reissue	1	No. 11,231.
Total issue	540	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	....	Nevada	....	....
Arizona Territory	....	....	New Hampshire	3	....
Arkansas	3	....	New Jersey	21	....
California	12	....	New York	86	11
Colorado	2	....	North Carolina	....	....
Connecticut	13	....	North Dakota	1	....
Delaware	1	....	Ohio	31	3
District of Columbia	2	....	Oklahoma Territ'y	....	....
Florida	2	1	Oregon	2	....
Georgia	2	....	Pennsylvania	45	3
Idaho	1	....	Rhode Island	4	....
Illinois	48	5	South Carolina	2	....
Indian Territory	....	....	South Dakota	....	....
Indiana	12	2	Tennessee	2	1
Iowa	11	1	Texas	8	....
Kansas	5	....	Utah Territory	....	....
Kentucky	6	1	Vermont	....	....
Louisiana	2	....	Virginia	1	....
Maine	6	....	Washington	6	....
Maryland	6	....	West Virginia	....	....
Massachusetts	43	1	Wisconsin	8	....
Michigan	27	1	Wyoming	....	....
Minnesota	7	....	U. S. Army	1	....
Mississippi	....	....	U. S. Navy	1	....
Missouri	10	1			
Montana	....	....	Total to citizens of the United States	459	31
Nebraska	7	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Mexico	1	....
Austria-Hungary	....	....	Netherlands	....	....
Belgium	....	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	New Zealand	....	....
Canada	7	....	Norway	....	....
Chile, Republic of	....	....	Portugal	1	....
Colombia	....	....	Russia	....	....
Cuba	....	....	Scotland	....	....
Ecuador	....	....	South Australia	1	....
England	18	2	Spain	1	....
France	3	....	Sweden	1	....
Germany	11	1	Venezuela	....	....
Honduras	....	....	Victoria	1	....
Ireland	1	....			
Italy	....	....	Total to citizens of foreign countries	46	3
Japan	....	....			

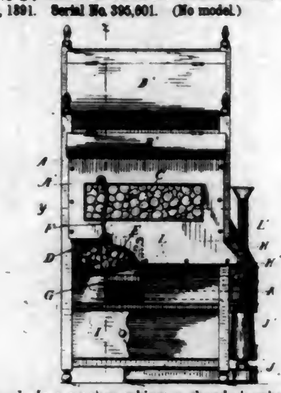
CONDITION OF THE WORK in the Examining Divisions at the Close of Business March 29, 1892.

Room No.	Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.	Arrears in months
209	XIV	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Feb. 19	Mar. 29	56	Between 1–2.
105	XI	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Feb. 6	Mar. 26	200	
240	VII	Harvesters, Games and Toys	Feb. 8	Mar. 22	230	
30	XII	Mechanical Engineering, Store-Service, etc.	Feb. 18	Mar. 21	166	
249	VIII	Furniture, Toilet, Umbrellas and Canes, etc.	Feb. 8	Mar. 20	253	
39	XXXI	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Feb. 2	Mar. 17	145	
217	V	Fine Arts, Stationery, Book-Binding, Music, etc.	Feb. 11	Mar. 16	106	
221	XXIII	Instruments of Precision, Acoustics, Optics, etc.	Feb. 1	Mar. 15	205	
25	XXX	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Feb. 1	Mar. 12	199	
91	XVI	Telegraphy, Telephony, Electric Lighting and Signaling.	Jan. 11	Mar. 21	272	
93	XXI	Textiles, etc	Jan. 5	Mar. 18	199	
111	XXXII	Advertising, Baggage, Packing and Storing Vessels, etc.	Jan. 23	Mar. 17	286	
122	XXIV	Sewing-Machines and Apparel	Jan. 5	Mar. 17	152	
106	II	Farm Stock, Products, etc.	Jan. 4	Mar. 13	236	
251	XIII	Metal-Working, Arms and Projectiles, etc.	Jan. 9	Mar. 12	241	
149	III	Metallurgy, Metal Founding, Forging. Rolling, Coating, Annealing and Tempering, etc.	Jan. 6	Mar. 12	253	
153	XX	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Jan. 28	Mar. 11	153	Between 2–3.
102	XIX	Stoves and Furnaces	Jan. 5	Mar. 4	432	
215	XVII	Paper-Manufactures and Printing	Jan. 27	Mar. 2	196	
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109	XXII	Fire-Arms, Navigation, Signals, etc	Jan. 16	Feb. 26	194	
32	IV	Civil Engineering, etc.	Dec. 31	Feb. 24	407	
85	X	Carriages and Wagons and Railway-Cars	Jan. 9	Feb. 23	515	
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248	XVIII	Steam-Engineering, etc	Jan. 5	Jan. 23	289	
243	XXV	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Dec. 26	Mar. 14	217	
155	VI	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Dec. 3	Mar. 11	294	Between 3–4.
123	XXIX	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Nov. 5	Mar. 9	420	
87	XXVI	Electricity, Generation, Distribution, etc.	Nov. 12	Feb. 19	392	Between 4–5.
35	XXVIII	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Nov. 21	Feb. 14	343	
211	XV	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Oct. 8	Feb. 19	278	Between 5 6.
		Total number of applications awaiting action			8,226	
		Designs	Mar. 26	Mar. 28	15	Under 1.
		Trade-Marks	Mar. 24	Mar. 22	15	

PATENTS

GRANTED APRIL 5, 1892.

472,020. **CRACKER-CABINET.** FRANK C. ACKER, Ionia, Mich. Filed June 6, 1891. Serial No. 395,601. (No model.)



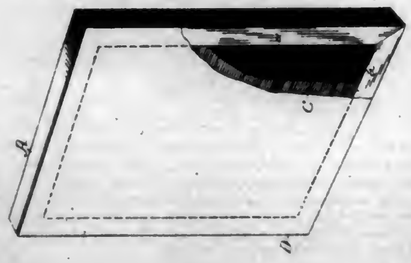
Claim.—1. In a cracker-cabinet, a closed chamber having a perforated and vertically-movable bottom, a heater beneath the same, an adjacent chamber into which the crackers are discharged, and mechanism for removing said crackers from the latter chamber, substantially as described.

2. In a cracker-cabinet, a storage-chamber having an opening in one side and a grated bottom hinged at one side thereof and beneath said opening, straps attached to the movable side of said bottom, having parallel transverse slats attached, and a roll upon which said straps are wound, said roll having a crank and a ratchet-wheel and pawl, substantially as described.

3. In a cracker-cabinet, a closed chamber having a perforated and vertically-movable bottom, a heater beneath the same, an adjacent chamber having a semi-cylindrical bottom and a discharge-opening in the same, and a quadrantal valve closing said opening, substantially as described.

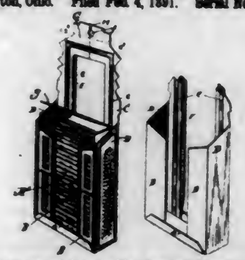
4. In a cracker-cabinet, a storage-chamber having a grated bottom pivoted at one side and vertically movable at the other, a heater beneath the same, a chamber into which the crackers are discharged as said bottom rises, said chamber having a semi-cylindrical pocket provided with a segmental valve and a discharge-spout and also having a laterally-prolonged floor, a lateral opening, and a scoop adapted to close said opening and to be removed therefrom, substantially as described.

472,021. **STRETCHER FOR THE PAPER OR CANVAS OF PICTURES.** JOHN H. ANDERSON, Chicago, Ill. Filed Mar. 28, 1891. Serial No. 386,801. (No model.)



Claim.—A rectangular stretcher-frame A, consisting of four strips suitably connected and having the inner edges of its back provided with a rabbet *a*, and a picture canvas or paper secured over the front of said frame, in combination with a board B of such proportions as to correspond in surface dimensions to the area inclosed by the side walls of the said rabbets in which it is seated and secured, and a paper backing D, pasted over the back of said frame, so as to cover over said board C, as set forth.

472,022. **COMBINED MATCH-BOX AND HOLDER.** EDWARD C. BACHERT, Canton, Ohio. Filed Feb. 4, 1891. Serial No. 380,115. (No model.)



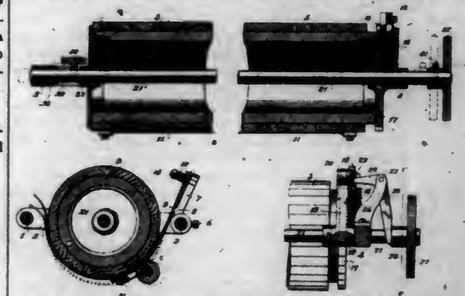
Claim.—1. In a match-box holder formed from the blank A, the combination of the front sides B, separated by an oblong opening A', the sides D, provided with the vertical grooves E, the backs C, the flanges *a'*, and the tray *g*, substantially as described.

2. The combination of the front sides B, the vertically-grooved sides D, the backs C, and the flanges *a'*, formed from a single blank, substantially as described.

3. The combination of the front sides B, separated by an oblong opening A', the sides D, having grooves E, provided with lips K', the backs C, and the flanges *a'*, substantially as described.

4. The combination of the front sides B, the backs C, and the sides D, having vertical grooves E, provided with stops J, substantially as described.

472,028. **TYPE-WRITING MACHINE.** WALTER J. BARRON, Brooklyn, N. Y. Filed June 6, 1891. Serial No. 395,360. (No model.)



Claim.—1. In a type-writing machine, the combination, with a platen and its holding means, of a finger-piece having a sliding movement toward and away from the end of said platen, and a lifter between said holding means and said finger-piece, whereby the movement of the latter endwise of the platen may be transmitted to release the platen-holding means to enable the platen to be freely rotated.

2. In a type-writing machine, the combination, with a platen having a ratchet-wheel and a platen check or dog, of a finger-piece having

a sliding movement axially of said platen, and a lever between said dog or check and the said finger-piece for removing said dog or check from the ratchet-wheel by the sliding movement of the finger-piece.

3. In a type-writing machine, the combination of a platen having a ratchet-wheel, a pivoted arm or lever having a platen check or dog, a bent lever, and a finger-piece connected to said bent lever and having a sliding movement axially of said platen.

4. In a type-writing machine, the combination of a platen having a ratchet-wheel, a pivoted arm or lever having a platen check or dog, a line-space lever having a driving-pawl coupled to said pivoted arm or lever, a finger-piece having a movement axially of said platen, and a lever between said finger-piece and said platen-check arm or lever and said driving-pawl, whereby the movement of the finger-piece may operate to remove the platen-check and the driving-pawl from the ratchet-wheel.

5. In a type-writing machine, the combination, with a platen having a ratchet-wheel, of a pivoted arm or lever having a platen check or dog, a bent lever, one arm of which is adapted to actuate said platen-check arm or lever, and a sliding finger-piece for operating upon the other arm of said bent lever.

6. In a type-writing machine, the combination, with a platen having a ratchet-wheel, of a pivoted arm or lever having a platen check or dog, a line-space lever having a driving-pawl coupled to said platen-check arm or lever, a bent lever, one arm of which is adapted to move said platen-check lever and said driving-pawl, and a sliding finger-piece for operating upon the other arm of the bent lever.

7. In a type-writing machine, the combination, with a platen having a ratchet-wheel and a platen-axle, of a pivoted arm or lever having a platen check or dog, a finger-piece on said platen-axle and having a movement toward and away from said platen, and a lever connection between said platen-check arm or lever and said finger-piece for transmitting the movement of the latter to the platen-check arm or lever to remove the platen-check from engagement with the ratchet-wheel.

8. In a type-writing machine, the combination, with a platen having a ratchet-wheel, of a pivoted arm or lever having a platen check or dog, a line-space lever having a driving-pawl coupled to the platen-check arm or lever, a finger-piece mounted on said platen-axle and having a movement toward and away from the platen, and a lever connection between said finger-piece and said platen-check arm or lever, whereby the endwise movement of the finger-piece may be transmitted to release the platen-check and the driving-pawl and enable the finger-piece, the platen-axle, and the platen to be rotated.

9. In a type-writing machine, the combination, with a platen having a ratchet-wheel and a platen-axle, of a pivoted arm or lever having a platen check or dog, a finger-piece mounted to slide on said platen-axle and also to turn it and its attached platen, and a lever connection between said sliding finger-piece and said platen-check arm or lever.

10. In a type-writing machine, the combination, with a platen having a ratchet-wheel and a platen-axle, a pivoted arm or lever having a spring-actuated platen check or dog, a finger-piece adapted to slide endwise of the platen-axle, and an intermediate bent lever having one of its arms connected to the platen-check lever and its other arm connected to the finger-piece.

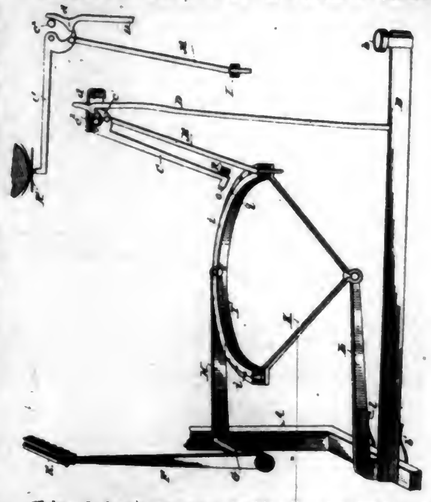
11. In a type-writing machine, the combination, with the end bars of a paper-carriage, of a platen having a sleeve at one end and arranged between said end bars, a platen-axle passing through said platen and through said sleeve and mounted in said end bars and prolonged to extend beyond one of said end bars, and a screw passing through a hole in said sleeve and engaging with said axle, whereby the platen may be rotated by turning said axle and may be readily detached by removing said screw and pulling out the platen-axle.

12. In a type-writing machine, the combination, with the end bars of a paper-carriage, of a platen having a sleeve at one end provided with an elongated slot, a platen-axle passing through said platen and through said sleeve and mounted in said end bars and prolonged to extend beyond one of said end bars, a screw passing through said elongated slot and engaging with the platen-axle, whereby the platen may be rotated by turning said platen-axle and may be readily detached therefrom and whereby the platen-axle may be moved endwise without rotating the platen, means for holding or checking the platen, and means, substantially as described, for releasing said holding or checking means upon an endwise movement of the platen-axle.

13. In a type-writing machine, the combination of the carriage side bar and the platen, an arm or bracket having a fulcrum, and a lever having a spring at one end above said fulcrum and supporting below said fulcrum one end of a feed-roller.

14. In a type-writing machine, the combination of the carriage side bar and the platen, an arm or bracket having a fulcrum and a screw or bolt, a spiral spring on said screw or bolt, and a lever bearing against said spring at its upper end above said fulcrum and supporting below said fulcrum one end of a feed-roller.

472,024. TYPE-WRITING MACHINE. GEORGE M. BEERDOWER, Washington, D. C. Filed Apr. 13, 1891. Serial No. 388,779. (No model.)



Claim.—1. In a type-writing machine, the combination, with a type-bar pivotally supported in the bearing-yoke and provided with an outwardly-projecting finger, of a pitman-rod provided with an inwardly-extending shoulder adapted to engage the finger, a pin or stud arranged in the yoke and adapted to engage the upper end of the pitman, and the key-lever rigidly connected with the lower end of the pitman, substantially as shown and described.

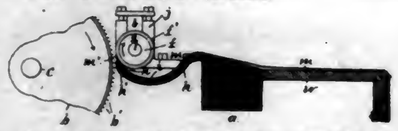
2. In a type-writing machine, the combination, with the bearing yoke or clip, of the type-bar pivotally supported therein, said bar being provided with an outwardly-projecting upwardly-curved finger, a pitman-rod passing up through the bearing-yoke and provided with an inwardly-projecting beveled shoulder near its upper end, the pin arranged in the bearing-yoke, and the key-lever rigidly connected to the lower end of the pitman, substantially as shown and described.

3. In a type-writing machine, the combination, with the rack-bar, dog, and rock-shaft, of the arm secured to said shaft, the annular frame pivoted to the said arm, the lever supporting said frame, the type-bar, the pitman and key-lever, and the rod connecting the frame and type-bar, substantially as shown and described.

4. In a type-writing machine, the combination, with the annular frame suitably supported and having a series of perforations, of the type-bars, the rods connected with the type-bars and provided with reduced lower ends which rest in the perforations, the pitman-rods and key-levers, the rock-shaft and dog, and intermediate connecting devices between the frame and rock-shaft, substantially as shown and described.

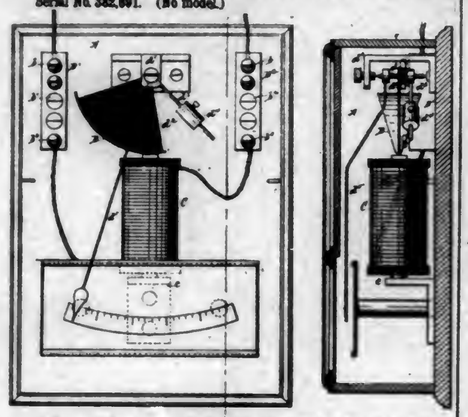
5. In a type-writing machine, the combination, with the rock-shaft and dog, of the arm connected with the rock-shaft, the annular frame perforated as described, the supporting-yoke and lever, the type-bar, the pitman and key-lever, and the rod connecting the type-bar and frame, substantially as shown and described.

472,025. MACHINE FOR OPENING FUR-DAGS. EDWARD BEESLEY, Sr., ELLIS BEESLEY, Jr., and EDWARD BEESLEY, Jr., Newark, N. J., assignors to Thomas Stone and George M. Stone, same place. Filed Nov. 19, 1891. Serial No. 412,442. (No model.)



Claim.—A machine for cleaning fur-dags, comprising a card-roll, a feeding-roll in close proximity thereto, a supporting-plate *h*, having its end *h'* projected between the feed and card rolls, and the elastic grasping-plate *m*, laid over the plate *h* and having its edge *m'* projected between the feed and card rolls beyond the edge *h'* of the supporting-plate, the said rolls having their adjacent surfaces rotated in opposite directions and the dags being fed between the feed-roll and the grasping-plate, substantially as herein set forth.

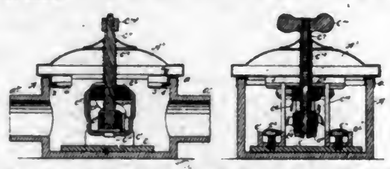
472,026. GALVANOMETER. SIGMUND BERGMANN and GEORGE A. SCOTT, New York, N. Y., assignors, by mesne assignments, to the Interior Conduit and Insulation Company, same place. Filed Feb. 25, 1891. Serial No. 382,891. (No model.)



Claim.—1. In an electrical meter, the combination of a magnet, a metal strip longitudinally curved and gradually widened from one end to the other and supported adjacent to the pole of said magnet, and a weight or its equivalent for moving the strip in the reverse direction to that in which it would be moved by the magnet, substantially as specified.

2. In an electrical meter, the combination of a magnet C, a metal strip D, longitudinally curved and widened gradually from one end toward the other, a segmental piece of non-magnetic material d^3, supporting said strip adjacent to the pole of the magnet, a shaft *d*, to which the said segmental piece is fastened, an arm d^2, and a weight d^4, substantially as specified.

472,027. SWITCH AND SWITCH-BOX. SIGMUND BERGMANN, New York, N. Y., assignor, by mesne assignments, to the Interior Conduit and Insulation Company, same place. Filed Mar. 13, 1891. Serial No. 384,883. (No model.)



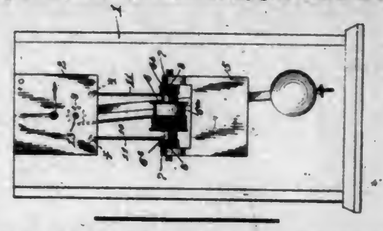
Claim.—1. In a conduit system, the combination of a cylinder or receptacle for a switch, a base-piece removably fitted in said cylinder or receptacle, a switch made complete in one structure secured to the base-piece and removable therewith from the cylinder or receptacle, a cap-piece for holding said switch and base in place, and a spring surrounding a rotary part of the switch and serving to press said cap-piece outward and bearing inward on said switch, substantially as specified.

2. In a conduit system, the combination of a cylinder or receptacle for a switch and provided with opposite segmental flanges, a switch made complete in one structure which is removable therefrom, a cap-piece for holding said switch in place and provided with segmental flanges adapted to pass between the segmental flanges of said cylinder or receptacle and upon the rotation of the cap-piece to be engaged with the last-mentioned segmental flanges, and a spring serving to force on said cap-piece outwardly and bearing inwardly on said switch, substantially as specified.

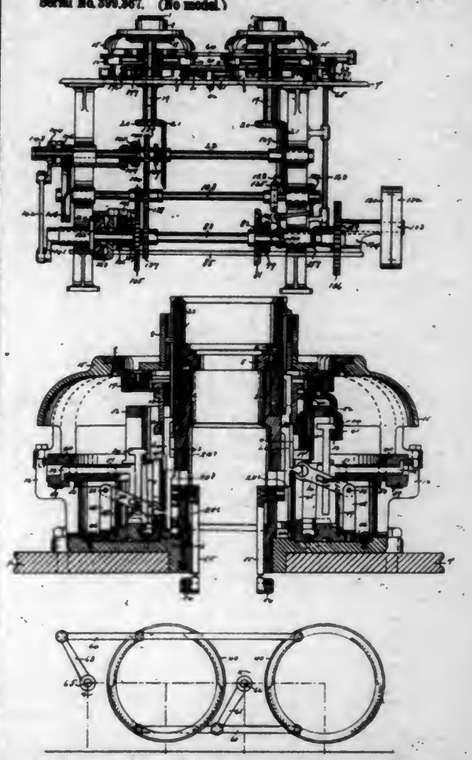
472,028. DEVICE FOR OPERATING CLOCKS. CHARLES M. BURTON and JOHN C. GOULD, New Haven, Conn. Filed June 1, 1891. Serial No. 394,719. (No model.)

Claim.—1. The combination, with a freely-suspended weight having a drum with two diameters mounted therein, of a driving-drum having a hub for the attachment of a key, a cord extending from the driving drum to the greater diameter of the winding-drum, and other cords whose upper ends are attached to fixed parts and whose lower ends wind in the opposite direction on the lesser diameter of the winding-drum.

2. A suspended weight provided with ears 7, a driving-drum having greater and lesser diameters adapted to receive cords, and cone-bearings which pass through the ears and engage the ends of the drum.



472,029. CIRCULAR-KNITTING MACHINE. ALEXANDER T. CATHCART and WILLIAM L. CATHCART, Gwynedd, Pa. Filed July 13, 1891. Serial No. 399,367. (No model.)



Claim.—1. The combination, with the needle-cylinder having the ring or flange 4 on the interior thereof and socketed for the pin 2, of the supporting-cylinder extending up within the needle-cylinder, the pin 2, and the adjusting screw-threaded ring 5, fitted to a screw-threaded portion of the interior of the supporting-cylinder and engaging with ring 4, substantially as described.

2. The combination, with the cam-cylinder and the guard-band 13, of lifters for the said band, which are carried by the said cam-cylinder and may be engaged with said band and disengaged therefrom, substantially as described.

3. The combination, with the cam-cylinder and the guard-band 13, of lifters for the said band, which are carried by the said cam-cylinder and may be engaged with said band and disengaged therefrom, and catches engaging with the lifters, substantially as described.

4. The combination, with a series of jacks, of a guard-band having a lower flaring base and surrounding the upper ends of the jacks when in its depressed normal position, and devices for lifting the said band to release the jacks, substantially as described.

5. The combination, with a series of jacks, of a movable guard-band for holding the jacks in position, and a movable ejecting-ring for pressing outwardly the jacks, substantially as described.

6. The combination, with a series of jacks having inclined or cam surfaces thereon, of a movable ejecting-ring for acting against such surfaces to press the jacks outward into inoperative position, substantially as described.

7. A jack having the space 247 for engagement with the butt or heel of a needle, the inclined or cam surface 248, and the guiding-extension 246, having the inclined end 245, substantially as described.

8. The combination, with the needles, the guard-band, the ejecting-ring, and the annular guide 44, of the jacks, each having a space 247 for engagement with the butt or heel of a needle, an incline 248 for engagement with the ejecting-ring, and the extension having the inclined end for co-operation with the guide 44, substantially as described.

9. The combination, with the needles, the needle-operating cams, and the jacks for moving the needles vertically out of position for being operated by the said cams and returning them to such position again, of slides in operative connection with the said jacks, and elevating and depressing cams moving with the needle-operating cams for acting upon the said slides when the latter are placed in range therewith to move the same and the jacks and thereby to throw the needles either out of or into operation, as required, substantially as described.

10. The combination, with the needles, the needle-operating cams, and the jacks for moving the needles vertically out of position for being operated by the said cams and returning them to such position again, of vertical slides, levers in operative connection with the said slides and with the jacks, and elevating and depressing cams moving with the needle-operating cams for acting upon the said slides when the latter are placed in range therewith to move the same and through the levers the jacks and thereby to throw the needles either out of operation or into operation, as required, substantially as described.

11. The combination, with the needles, the needle-operating cams, and the jacks for moving the needles vertically out of position for being operated by the said cams and returning them to such position again, of slides in operative connection with the said jacks, elevating and depressing cams moving with the needle-operating cams for acting upon the said slides when the latter are placed in range therewith to move the same and the jacks and thereby to throw the needles either out of operation or into operation, as required, shifter-slides controlling the lateral position of the slides which are in operative connection with the jacks, and indicating-cams for determining the positions of the shifter-slides, substantially as described.

12. The combination, with the needles, the needle-operating cams, and the jacks for moving the needles vertically out of position for being operated by the said cams and returning them to such position again, of vertical slides, levers in operative connection with the said slides and the jacks, elevating and depressing cams moving the needle-operating cams for acting upon the said slides when the latter are placed in range therewith to move the same and through the levers the jacks and thereby to throw the needles either out of operation or into operation, as required, shifter-slides controlling the lateral position of the vertical slides, and indicating-cams for determining the positions of the shifter-slides, substantially as described.

13. The combination, with the knitting-cams, the needles, and the jacks, of oppositely-acting fashioning-cams and movable connections of the said jacks adapted to be placed in position for being engaged by the desired fashioning-cam to shift the jacks and needles, substantially as described.

14. The combination, with the knitting-cams, the needles, and the jacks, of slides in operative connection with the said jacks, fashioning-cams acting upon said slides to change the position of the jacks and move the needles out of or into operative relations with the knitting-cams, as required in narrowing and widening, and indicating devices for determining the position of said slides and their engagement by the fashioning-cams and thereby determining the operation of the needles, substantially as described.

15. The combination, with the knitting-cams, the needles, and the jacks, of slides in operative connection with the said jacks, fashioning-cams acting upon said slides to change the position of the jacks and move the needles out of or into operative relations with the knitting-cams as required in narrowing and widening, shifter-slides engaging the slides first mentioned, and the indicating-cams acting upon the shifter-slides to determine the engagement of the other slides by the fashioning-cams, substantially as described.

16. The combination, with the knitting-cams, the needles, and the jacks, of slides in operative connection with the said jacks, fashioning-cams acting upon said slides to change the position of the jacks and to move the needles out of or into operative relations with the knitting-cams as required in narrowing and widening, the said fashioning-cams preceding in action the knitting-cams, and indicating devices for determining the position of the said slides and their engagement by the fashioning-cams and thereby determining the operation of the needles, substantially as described.

17. The combination, with two or more pairs of indicating-cams pertaining to a corresponding number of knitting-heads, of rods connecting together the corresponding cams of the respective pairs, two crank-arms in connection with such rods, shafts on which said crank-arms are mounted, and devices whereby the said shafts are respectively given a step-by-stop movement of rotation first in one direction and then in the other, substantially as described.

18. The combination, with an indicating-cam, of actuating devices therefor comprising two rotating shafts, a bevel gear-wheel fast on one of the said shafts, two bevel gear-wheels loose on the other of said shafts, a clutch member mounted to turn with the latter shaft, means for causing said clutch member to engage alternately with the two loose bevel gear-wheels, means for rotating that one of the said shafts which serves as the driver, and a connection between the indicating-cam and the driven shaft, substantially as described.

19. The combination, with an indicating-cam, of actuating devices therefor comprising two rotatory shafts, a bevel gear-wheel fast on one of said shafts, two bevel gear-wheels loose on the other of said shafts, a clutch member mounted to turn with the latter shaft, means for causing said clutch member to engage alternately with the two loose bevel gear-wheels, means for connecting that one of the said shafts which is the driven shaft with the indicating-cam, a ratchet-wheel connected with the other of the said shafts, a pawl, means for actuating the said pawl, and a loose masked ratchet-wheel for determining the engagement of the pawl with the ratchet-wheel first mentioned and determining the courses at which impulses shall be given to the indicating-cam, substantially as described.

20. The combination, with an indicating-cam, of actuating devices therefor comprising two rotatory shafts, reversing-gearing interposed between said shafts, whereby one of the said shafts may be driven from the other thereof in either direction, as required, a connection between the indicating-cam and that one of the said shafts which is the driven shaft, a ratchet-wheel in connection with that one of the said shafts which is the driver-shaft, a pawl, means for actuating the said pawl, and a loose masked ratchet-wheel for determining the engagement of the pawl with the ratchet-wheel first mentioned and determining the courses at which impulses shall be given to the indicating-cam, the said masked ratchet-wheel having at one point two shallow notches side by side and at another point two deep notches side by side, substantially as described.

21. The combination, with an indicating-cam, of actuating devices therefor comprising two rotatory shafts, a bevel gear-wheel fast on one of the said shafts, two bevel gear-wheels loose on the other of the said shafts and engaging the bevel gear-wheel on the first-mentioned shaft, a sliding clutch member mounted on the latter shaft to turn therewith, a pattern-cam, connections intermediate the said pattern-cam and the sliding clutch member through which said cam operates to move the said sliding clutch member upon the shaft and cause it to engage alternately with the two loose bevel gear-wheels, means for connecting that one of the said shafts which is the driven shaft with the indicating-cam, a ratchet-wheel connected with the other of said shafts, a pawl, means for actuating the said pawl, and a loose masked ratchet-wheel for determining the engagement of the pawl with the ratchet-wheel first mentioned and determining the courses at which impulses shall be given to the indicating-cam, substantially as described.

22. The combination, with an indicating-cam, of actuating devices therefor comprising two rotatory shafts, reversing-gearing interposed between said shafts, whereby one of the said shafts may be driven from the other thereof in either direction, a pattern-cam and connections controlling the action of the said reversing-gearing, means for connecting that one of the said shafts which is the driven shaft with the indicating-cam, a shaft which operates during reciprocating knitting, and operative connections of the said shaft intermediate the shaft and the pattern-cam and also intermediate the shaft and that one of the two shafts aforesaid which acts as the driver, the said connections embracing a clutch member for connecting the same with and disconnecting the same from the said shaft which operates during reciprocating knitting, substantially as described.

23. The combination, with an indicating-cam, of actuating devices therefor comprising two rotatory shafts, reversing-gearing interposed between said shafts, whereby one of the said shafts may be driven from the other thereof in either direction, a pattern-cam and connections controlling the action of the said reversing-gearing, means for connecting that one of the said shafts which is the driven shaft with the indicating-cam, a shaft which operates during reciprocating knitting, operative connections of the said shaft intermediate the shaft and the pattern-cam and also intermediate the shaft and that one of the two shafts aforesaid which acts as the driver, the said connections embracing a clutch member for connecting the same with and disconnecting the same from the said shaft which operates during reciprocating knitting, a controlling-shaft, and connections from said shaft to said clutch member, whereby the latter is actuated, all substantially as described.

24. The combination, with the change-shaft, of a gear-wheel fast thereon, a loose gear-wheel in engagement therewith, a driving ratchet-wheel and reversed ratchet-wheel connected with the latter gear-wheel, a loose pawl-crank engaging the driving-ratchet and having an axially-projecting lug, a retaining-hook carried by said pawl-crank and engaging the reversed ratchet, a tripping-rod for the retaining-hook, pattern devices for controlling the position of the tripping-rod, a spring acting upon the pawl-crank to retract the same, a rotating shaft, a double crank mounted on said shaft to rotate therewith and to slide axially thereon and having an axially-projecting lug to engage the lug on the pawl-crank, and a stationary cam with which pins on the double crank engage, substantially as described.

25. The combination, with the cam-cylinder, of a shaft geared thereto, a gear-wheel loose on said shaft, an arm or segment loose on said shaft, a clutch member mounted on the shaft to turn therewith, a cam in direct engagement with the said clutch member for moving the same longitudinally on the shaft to engage it with either the loose gear-wheel or the loose arm or segment, a rotatory shaft, gearing for driving the said loose gear-wheel from said shaft, and means connected with the said shaft for imparting a rotatory reciprocating movement to said loose arm or segment, substantially as described.

26. The combination, with the cam-cylinder, of a shaft geared thereto, a gear-wheel loose on said shaft, an arm or segment loose on said shaft, a clutch member mounted on the shaft to turn therewith, a cam in direct engagement with the said clutch member for moving the same longitudinally on the shaft to engage it with either the loose gear-wheel or the loose arm or segment, a change-shaft on which the said cam is mounted, a rotary shaft, gearing for driving the said loose gear-wheel from said rotary shaft, means connected with the said rotary shaft for imparting a rotary reciprocating movement to the said loose arm or segment, and devices through which a movement of partial rotation is communicated intermittingly to the change-shaft, substantially as described.

27. The combination, with the cam-cylinder, of a shaft geared thereto, a gear-wheel loose on said shaft, a segment loose on said shaft, a clutch member mounted on the shaft to turn therewith, a cam in direct engagement with the said clutch member for moving the same longitudinally on the shaft to engage it with either the loose gear-wheel or the loose segment, gearing for driving the said loose gear-wheel from said rotary shaft, a cam connected with said rotary shaft, and a rack-bar operated through said cam and in engagement with the segment for reciprocating the latter, substantially as described.

28. The combination, with a rotatory crank having a projecting part or lug, of a second rotatory crank having a projection or lug movable thereon and adapted for engagement with the projection or lug of the crank first mentioned, and a pattern-controlled slide which by its position controls the engagement of the projections or lugs with each other and the time of the rotation of the two cranks in unison, substantially as described.

29. The combination, with the rotatory double crank 161, of the crank 164, carrying a spring-pressed lug or block, and the cam-slide 167, having portions 169, substantially as described.

30. The combination, with a rotatory crank having a projecting part or lug, of a second rotatory crank having a projection or lug movable thereon and adapted for engagement with the projection or lug of the crank first mentioned, a pattern-controlled slide which by its position determines the engagement of the projections or lugs with each other and the time of the rotation of the two cranks in unison, a shaft with which one of the said cranks is operatively connected, cams on the said shaft, shafts operated by the said cams, a take-up, a device connected with one of the said shafts for rendering the said take-up operative and inoperative as that shaft is rocked, and devices controlling a splicing-thread actuated by the other of said shafts, substantially as described.

31. The combination, with the rotatory double crank 161, of the crank 164, carrying a spring-pressed lug or block, the cam-slide 167, having portions 169, a shaft with which crank 164 is in operative connection, cams on the said shaft, arms acted upon by the said cams, shafts on which said arms are respectively mounted, a take-up spring, an arm on one of the last-mentioned shafts serving to compress and release the said spring as that shaft is rocked, and devices controlling a splicing-thread actuated by the other of said shafts, substantially as described.

32. The combination, with a rotatory crank having a projecting part or lug, of a second rotatory crank having a projection or lug movable thereon and adapted for engagement with the projection or lug of the crank first mentioned, devices operating to control the engagement of the projections or lugs with each other and thereby to cause the two cranks to move in unison and to terminate such movement, a shaft with which one of said shafts is in operative connection, and thread-supply devices operated from the said shaft, substantially as described.

33. The combination, with the rotatory double crank 161, of the crank 164, carrying a spring-pressed lug or block, devices operating to control the engagement of the said spring-pressed lug or block with the lugs of the double crank and thereby to cause the crank 164 to be moved by the double crank and terminate such movement, a shaft with which crank 164 is in operative connection, and thread-supply devices operated from said shaft, substantially as described.

34. The combination, with a take-up spring, of an arm for compressing and rendering inactive the said spring, a shaft by which said arm is carried, and devices whereby said shaft is rocked, substantially as described.

35. The combination, with the double guide 190 and the guide 213, of an inserting-lever constructed to engage with the end portion of a thickening-thread extending from the guide 190 and to place it in contact with a main thread, and means for moving said lever to cause it to bear the thickening-thread engaged thereby over toward and against the main thread as the latter proceeds to the guide 213 from the said guide 190 and afterward withdraw and leave the thickening-thread engaged with the main thread, substantially as described.

36. The combination, with the double guide 190 and the guide 213, of a spring-pressed inserting-lever 209, constructed to engage with the end portion of a thickening-thread extending from the guide 190 and to place it in contact with a main thread, and a cam acting in opposition to the spring, the lever being operated to cause it to bear the thickening-thread engaged thereby over toward and against the main thread as the latter proceeds from the guide 190 to the guide 213 and afterward withdraw and leave the thickening-thread engaged with the main thread, substantially as described.

37. The combination, with knitting devices embracing a series of knitting-needles, of thread-guides for a thread passing to said needles, a movable arm constructed to engage between said guides with a thread passing through said guides, means for moving said arm, a pad against which the thread may be borne by the said arm and thereby held clamped, and a cutter interposed between the said pad and the needles, substantially as described.

38. The combination, with a take-up, an arm for controlling the action of the take-up, a rock-shaft carrying the said arm, a parting-bar having a movable member adapted to engage with the thickening-thread, a second rock-shaft carrying said parting-bar, means for swinging the said movable member laterally as the said second shaft is rocked, and a cutter against which the thickening-thread is carried by the movement of the parting-bar and its shaft, of actuating devices for said rock-shafts, substantially as described.

39. The combination, with a take-up, an arm for controlling the action of the take-up, a rock-shaft carrying the said arm, a parting-bar having a movable member adapted to engage with the thickening-thread, a second rock-shaft carrying said parting-bar, means for swinging the said movable member laterally as the second shaft is rocked, a rotatory shaft, a cutter and cam carried thereby, and an inserting-lever acted upon by the said cam, of an operating-shaft, gearing for connecting the latter with the said rotatory shaft, cams on said operating-shaft acting upon arms on the rock-shafts, and devices for communicating to said operating-shaft movements of rotation at intervals, substantially as described.

40. The combination, with a movable shield 203 for holding the main thread to its place when the thickening-thread is drawn over to be cut, and an arm 204 for parting the thickening-thread from the main thread and placing the former in position to be cut, of means for vertically reciprocating, when required, the movable shield and arm and also for moving the arm laterally away from the shield, and a cutter against which the thickening-thread is carried by the vertical movement of the shield and arm, substantially as described.

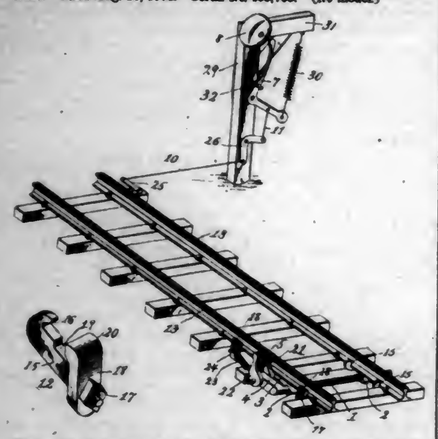
41. The combination, with a movable shield 203 for holding the main thread to its place when the thickening-thread is drawn over to be cut, and an arm for parting the thickening-thread from the main thread and holding the former in position for being cut, of devices for moving vertically, when required, the shield and arm and also for moving the arm laterally away from the shield, a cutter against which the thickening-thread is carried by the vertical movement of the shield and arm, and a pad adjacent to the cutter against which the thickening-thread is pressed by the arm, substantially as described.

42. The combination, with the shaft 183 and means for rocking the same, of the parting-bar carried by the said shaft composed of the fixed section and the spring-pressed pivoted section and the fixed cam 205, substantially as described.

43. The combination, with the shaft 183 and means for rocking the same, of the parting-bar carried by the said shaft composed of the fixed section and the spring-pressed pivoted section, the fixed cam 205, and the rotatory cutter, substantially as described.

44. The combination, with the shaft 183 and means for rocking the same, of the parting-bar carried by the said shaft, composed of the fixed section and the spring-pressed pivoted section, the fixed cam 205, the rotary cutter, and the pad 214, substantially as described.

472,080. ALARM-BELL TRIP. JOHN A. CHAMBERLAIN, Kennard, Nebr. Filed Aug. 26, 1891. Serial No. 403,733. (No model.)

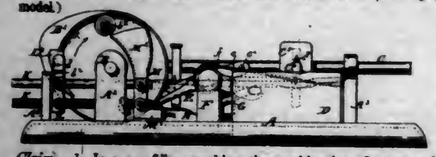


Claim.—1. In an alarm-signal for railways, the rock-shaft and the plates in which it is mounted, combined with the clamp for attaching the plates to the under side of the rails, comprising the bolt, having one end threaded and provided at its other end with a shoulder adapted to engage the lower flange of the rail and having intermediate to its ends a recess, a plate having its upper end provided with a shoulder to engage a rail, and a nut arranged on the threaded end of the bolt, substantially as and for the purpose described.

2. In an alarm-signal for railways, the combination of a gong, a rock-shaft provided at one end with an arm 4, having a shoulder, a lever-arm arranged on the other end of the shaft, means for ringing the gong and connected with the lever-arm, bearing-plates arranged on the lower faces of the rails and having the rock-shaft journaled in them and provided at their ends with shoulders, a tripping-dog having one end bifurcated and pivoted to the arm 4 and arranged to rest against the shoulder thereof, and a spring for holding the dog against the shoulder, substantially as described.

3. In an alarm-signal, the combination of the rock-shaft carrying the tripping devices to be actuated by the wheels of a passing train, the plates 3 in which the rock-shaft is mounted, and the clamps for attaching the plates to the under side of the rails, substantially as described.

472,081. SAW FILING AND SETTING MACHINE. EMIL CHRISTMANN, Portland, Oreg. Filed Jan. 15, 1892. Serial No. 418,174. (No model.)



Claim.—1. In a saw-filing machine, the combination of a cam and its shaft, a reciprocating shaft C and connecting-rod uniting it to the cam, file-clamps adjustably secured to the shaft C, one of said clamps being a lever C^4, a weight adjustably secured upon said lever, and means for lifting the lever C^4, and a guide D, substantially as described.

2. The combination of a cam and its shaft, a reciprocating shaft C and connecting-rod uniting it to the cam, file-clamps adjustably secured to the shaft C, one of said clamps being a lever C^4, and a pivoted lever E, having one end in contact with the cam and the opposite in contact with the under side of the lever C^4, substantially as described.

3. The combination of a cam and its shaft, a reciprocating shaft C and connecting-rod uniting it to the cam, file-clamps adjustably secured to the shaft C, one of said clamps having a lever C^4, a pivoted lever E, having one end in contact with the under side of the lever C^4, and a spring *f*, having one end in engagement with said lever C^4, substantially as described.

4. The combination of a cam and its shaft, a reciprocating shaft C and connecting-rod uniting it to the cam, a pivoted lever having a hook on the under side thereof, a lever G in engagement with said hook, and a pawl upon said lever G, substantially as described.

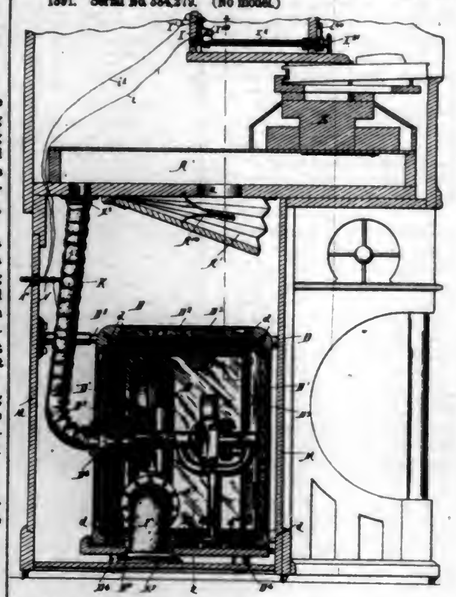
5. The combination of a cam and its shaft, a reciprocating shaft C and connecting-rod uniting it to the cam, and file-clamps adjustably secured to the shaft C, each clamp being grooved and having a pivoted latch in the groove and a screw bearing against its lower half, substantially as described.

6. The combination of a cam and its shaft and a roller b^3 on said cam with a horizontally-reciprocating carriage having a funnel M^3 clamped thereon at one end, a clamp L at the opposite end, and a finger L^2, pivoted to the clamp L, substantially as described.

7. The combination of a cam and its shaft and a roller b^3 on said cam, a reciprocating carriage having a funnel M^3 at one end, a clamp L at the opposite end, and a finger L^2, pivoted to the clamp L, with a connecting-rod H, a plate P, adjustably secured to its support, a pair of jaws pivoted to the plate P, a pivoted lever R to close said jaws and a saw-set lever T pivoted between said jaws, and a link uniting the levers R and T, substantially as described.

8. In combination with a saw-filing machine, a circularly-traveling roller b^3 mounted thereon, and a reciprocating carriage having a funnel-shaped guide at one end and a pivoted finger at the other end operated by said roller, whereby four distinct reciprocating motions are given to said carriage, substantially as described.

472,082. ORGAN. MELVILLE CLARK, Chicago, Ill. Filed Mar. 9, 1891. Serial No. 384,379. (No model.)



Claim.—1. In a cabinet-organ, in combination with operating mechanism, a case other than and forming no part of the organ cabinet-case inclosing such mechanism to muffle the sound of its motion, substantially as set forth.

2. In a cabinet-organ, in combination with operating mechanism, a case inclosing such mechanism located within and independent of the organ cabinet-case to muffle the sound of such mechanism, substantially as set forth.

3. In a cabinet-organ, in combination with operating mechanism, a case other than and forming no part of the organ cabinet-case inclosing such operating mechanism to muffle the sound of its motion, such operating mechanism and muffling-case being located within the organ cabinet-case, and elastic supports and stays interposed between such muffling-case and the walls of the organ cabinet-case to cut off sonorous vibration, substantially as set forth.

4. In a cabinet-organ, in combination with mechanism which operates it, a case inclosing such mechanism other than and forming no part of the organ cabinet-case and having its sides seated in non-sonorous cushions interposed between said sides and the corner frame-work of said case, whereby the sonorous vibration of the mechanism-inclosing case is absorbed, substantially as set forth.

5. In combination with a vacuum-chamber of an organ, an exhaust-fan communicating with such chamber to exhaust the air therefrom, said chamber having a yielding supplement normally distended and communicating freely with it and exteriorly exposed to atmospheric pressure, whereby the tension of air in the vacuum-chamber is automatically regulated, substantially as set forth.

6. In a cabinet-organ, in combination with a vacuum-chamber, an exhaust-fan communicating with such chamber to exhaust the air therefrom, a motor which operates the fan, and a case other than and forming no part of the organ-case inclosing the fan and motor to muffle the sound of their motion, substantially as set forth.

7. In a cabinet-organ, in combination with a vacuum-chamber, an exhaust-fan communicating with such chamber to exhaust the air therefrom, a motor which operates such fan, such fan and motor being located within the organ cabinet-case, and a case inclosing such fan and motor within and independent of the organ cabinet-case to muffle the sound of their motion, substantially as set forth.

8. In a cabinet-organ, in combination with a vacuum-chamber and an exhaust-fan communicating with such chamber to exhaust air therefrom, a case inclosing such fan and chamber to muffle the sound of their motion, such fan-motor and muffling-case being located within the organ cabinet-case, and rubber supports and stays interposed between such muffling-case and the walls of the organ cabinet-case to cut off sonorous vibration, substantially as set forth.

9. In a cabinet-organ, in combination with the vacuum-chamber and an exhaust-fan communicating with such chamber to exhaust the air therefrom, a case inclosing such fan, such case having its sides seated in non-sonorous cushions interposed between said sides and the corner frame-work, whereby sonorous vibration of the case is absorbed, substantially as set forth.

10. In combination with a vacuum-chamber and an exhaust-fan communicating with such chamber to exhaust the air therefrom, such fan being located within the organ cabinet-case, a pipe of felt or other non-sonorous substance leading from the discharge-mouth of the fan to the exterior of the organ-case, substantially as set forth.

11. In combination with the vacuum-chamber and an exhaust-fan communicating with such chamber to exhaust the air therefrom, such fan being located within the organ cabinet-case, the duct from the discharge-mouth of the fan, leading down through the bottom of the organ cabinet-case, whereby the air-blast from the fan is dispersed horizontally at the floor under the organ, substantially as set forth.

12. In combination with the motor-standard, the fan-case rigid therewith, the motor-shaft having bearings in the motor-standard and extended into the fan-case, and the fan on said shaft within said case, substantially as set forth.

13. In a musical instrument, the longitudinally-collapsible duct K, composed of flexible tube, combined with the rings K', secured to its inner wall at short intervals in its length to resist transverse collapse and permit longitudinal collapse between consecutive rings, substantially as set forth.

14. In a musical instrument, the longitudinally-collapsible duct K, composed of flexible tube, combined with the wire rings K', having on them the wooden blocks K^{10}, whereby they are secured to the inner wall of the tubing, substantially as set forth.

472,083. PROCESS OF ENAMELING SHEET-METAL ARTICLES. HUBERT CLAUS, Thale, Germany. Filed Nov. 13, 1891. Serial No. 411,796. (No specimens.)

Claim.—1. The process herein described of enameling sheet-metal articles, which process consists in applying to such articles an enamel containing a metallic salt or salts, and in sprinkling over said enamel, before firing and while it is moist, bicarbonate of soda, and then burning, substantially as described.

2. The process herein described of enameling sheet-metal articles, which process consists in applying to said articles an enamel containing sulphate of copper or of cobalt and in then sprinkling upon said enamel, before firing and while it is moist, carbonate of soda, and then burning, substantially as described.

3. The process herein described of enameling metallic articles which process consists in first applying a glaze to said articles, in thereupon applying an enamel containing a metallic salt, and in thereupon, before firing and while said enamel is still moist, sprinkling it with bicarbonate of soda, and then burning, substantially as and for the purpose specified.

472,084. FASTENING RAILWAY-RAILS TO METAL SLEEPERS. JOHN CONLEY, Denver, Colo. Filed Mar. 9, 1891. Serial No. 384,331 (No model.)



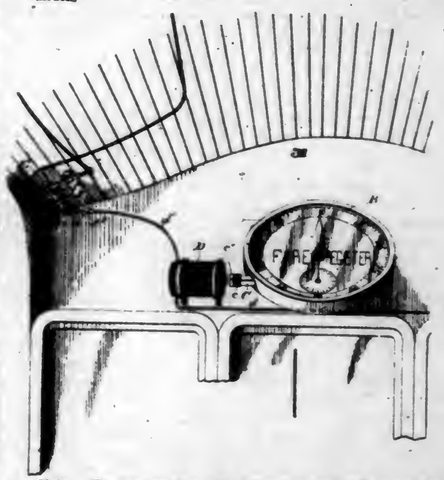
Claim.—1. In combination with a railway-rail and metal sleeper, a rod or bar of flexible material, having hooks at its respective ends and formed or bent between the same to cause said hooks to approach each other by means of the flexibility of said bent portion of the rod or bar, substantially as described.

2. In combination, a railway-rail, a sleeper having a lug or hook engaging the outer flange of the rail, an opening opposite the same partially covered by the opposite flange of said rail, a bar having hooks at its respective ends engaging the inner flange of the rail and the end of the sleeper, and a bent middle portion, substantially as described.

3. In combination with a railway-rail and metal sleeper, a bar or rod having hooks at its respective ends engaging the flange of said rail and the end of the sleeper and having its middle portion adapted to flexibly contract in the direction of a line drawn between said hooks, substantially as described.

4. A fastening for securing railway-rails to sleepers, consisting of a bar or rod having hooks at its respective ends adapted to engage the flange of the rail and the sleeper and having its middle portion coiled or bent or otherwise rendered contractile in the direction of a line drawn between said hooks, substantially as described.

472,085. FARE-REGISTER. CALVIN B. CUSHMAN and HORACE G. CANFIELD, Akron, Ohio. Filed Oct. 2, 1891. Serial No. 407,467. (No model.)



Claim.—The combination, with a fare-register, of the operating-lever provided with an enlarged insulated head having a metallic facing, an electro-magnet located in a line with said lever, the positive wire of the helix terminating in a flattened contact end, a supplemental conducting-wire provided with a flattened contact end directly over the helix-wire, a non-conducting spring-cushion normally pressing said supplemental wire out of circuit with the helix-wire, and a sliding bolt or rod adapted to work against and away from said conducting-wire over its contact end to close and break the circuit when desired, substantially as set forth.

472,086. PILLOW-SHAM HOLDER. GEORGE H. DAVIS, Washington, D. C. Filed Oct. 29, 1891. Serial No. 410,201. (No model.)



Claim.—1. In a pillow-sham holder, the combination, with a suitable flap, of two brackets, each of which is constructed of wire bent to form a foot and from said foot bent at an angle of ninety degrees to the face thereof to form an extended portion and bent at an angle of ninety degrees to the said extended portion in a plane at right angles to the plane of the last-named bend and then formed into a helix to constitute a bearing for a portion of the said flap, substantially as described.

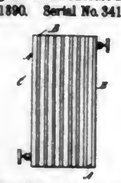
2. In a pillow-sham holder, the combination, with a flap having a suitable engaging-lug, of wire brackets having their projecting por-

tions formed into horizontal coils or bearings and the extreme inner end of one of the coils of wire being arranged to form a lug which engages with the lug of the flap when the latter is moved toward the coil.

3. In a pillow-sham holder, the combination, with brackets, one of which has a suitable lug, of an adjustable flap consisting of two sections, each of which is formed of a single piece of wire and coupled together, as shown, the ends of the base-wires of each section being extended through said brackets and acting as journals, the remaining ends being twisted around the base-wires and one of the ends so twisted being made to project so as to form a lug, all substantially as described.

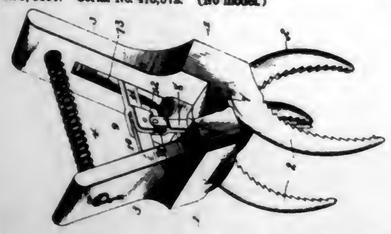
4. In a pillow-sham holder, the combination, with brackets provided with bearings, one of said brackets having a suitable lug, of an adjustable flap journaled in said bearings and having a lug formed at one end by slightly projecting one of the ends of the wire, and a coil-spring arranged to bear on the outside of one of said brackets to cause an automatic locking of said lugs, substantially as described.

472,087. THERMO-ELECTRIC ELEMENT. EDWARD N. DICKERSON, New York, N. Y., assignor to the Thermo Electric Company, of West Virginia. Filed Feb. 27, 1890. Serial No. 341,943. (No model.)



Claim.—In a thermo-electric element, a series of parallel plates of different metals held firmly in contact with each other and adapted to be heated at one end, substantially as described.

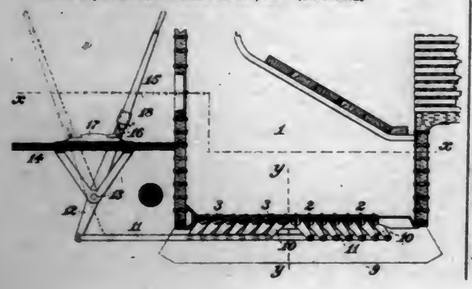
472,088. MOLE-TRAP. HERBERT DURSTON, Cartinville, Ill. Filed Dec. 3, 1891. Serial No. 413,872. (No model.)



Claim.—1. In a trap, the combination of the sections 1, hinged together and provided at their front ends with jaws arranged in pairs, a spring connecting the rear ends of the sections 1, the brace composed of sections pivoted to the sections 1 and hinged together and provided in their adjacent ends with curved notches, and a pivotally-mounted trigger provided at its inner end with a roller arranged to engage the notches, substantially as described.

2. In a trap, the combination of the sections 1, hinged together and provided at their ends with jaws, and a spring, a toggle-jointed brace for holding the sections separated, and a trigger depending between the jaws and arranged to engage the brace to spring the trap, substantially as described.

472,089. FIRE-GRATE. MATTHIAS N. FORNEY, New York, N. Y. Filed Sept. 12, 1890. Serial No. 364,739. (No model.)



Claim.—1. A fire-grate composed of a series of movable bars adapted to open or close the spaces between them, in combination with mechanism for moving the bars separately or in groups less in number than the entire series, substantially as set forth.

2. A fire-grate section composed of a central and lateral bars with interposed air-admission passages and end journals, the central bar projecting above and below the upper and lower planes of the lateral bars, substantially as set forth.

3. A fire-grate section composed of a central and lateral bars with interposed air-admission passages and end journals, the central bar projecting above and below the upper and lower planes of the lateral bars, and the upper faces of the bars being curved concentrically with the end journals of the section, substantially as set forth.

4. A fire-grate section composed of a central and lateral bars with interposed air-admission passages and end journals, the central bar projecting above and below the upper and lower planes of the lateral bars, and the outside faces of the lateral bars being curved concentrically with the end journals, substantially as set forth.

5. The combination, in a fire-grate, of a series of journaled sections, each having a central bar projecting above and below its lateral bars, said sections being set in position to admit of the overlapping contact of the central bars of adjacent sections when turned upon the axes of their journals, substantially as set forth.

6. The combination, in a fire-grate, of a series of journaled sections, each having a central bar projecting above and below its lateral bars, connecting-bars coupled to said sections, and pivoted levers coupled to the connecting-bars and adapted by their angular traverse to turn the sections from their normal position into one in which their central bars are in overlapping contact, and vice versa, substantially as set forth.

7. In a fire-grate, the combination of a series of journaled sections, each having a central bar projecting above and below its lateral bars, connecting-bars to which said sections are coupled in groups of two or more, and pivoted levers coupled to the connecting-bars, substantially as set forth.

8. In a fire-grate, the combination of a series of journaled sections, each having a central bar projecting above and below its lateral bars, connecting-bars coupled to said sections, pivoted levers coupled to the connecting-bars, fixed segments each having a pair of notches or shoulders, and dogs pivoted to the levers and adapted to engage said notches, substantially as set forth.

472,040. ATTACHMENT FOR SUSPENDERS. BENJAMIN O. FOSTER, Chicago, Ill. Filed Apr. 6, 1891. Serial No. 387,742. (No model.)



Claim.—The connection for the back of suspenders, consisting of a metal loop having a straight attaching cross-bar and an inwardly-inclined arm at each end of the cross-bar, holding the cross-bar when attached against end slide, each arm having a receiving-eye, a semi-circular metal loop having a curved bar entered into and carried by the eyes of the companion loop and sliding endwise in said eyes, and a straight attaching cross-bar held when attached against end slide by the curved bar for connecting the shoulder-straps to the suspender-ends and allowing the connection to equalize without cutting and tearing, substantially as set forth.

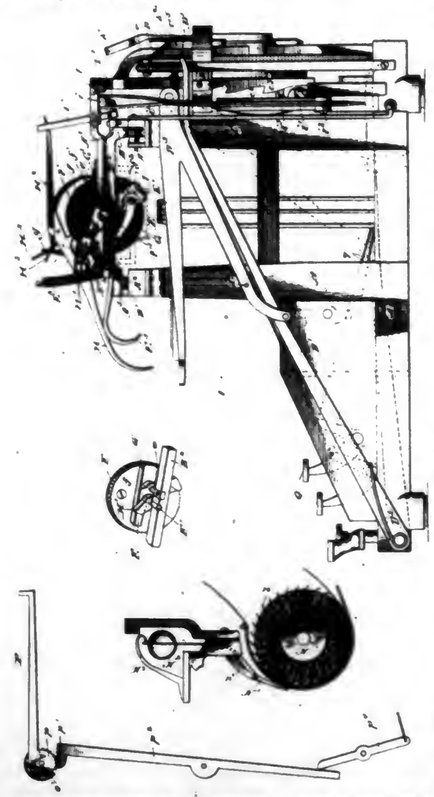
472,041. BOTTLE-STOPPER. REGINALD LE N. FOSTER, Bradford, near Manchester, and JOHN S. CROWLEY, Paignton, England. Filed Oct. 1, 1891. Serial No. 407,490. (No model.) Patented in England Oct. 17, 1890, No. 16,513.



Claim.—A bottle-stopper consisting of the stopper portion *a*, provided with a recess, a perforated washer placed on said stopper portion and provided with lateral projections, and a button *b*, provided with a shank *b'*, adapted to pass through the washer and secured in the recess, substantially as described.

472,042. TYPE-WRITING MACHINE. JAMES F. FRANEY, Dodge City, Kans. Filed Oct. 9, 1890. Serial No. 367,592. (No model.)

Claim.—1. In a type-writer, the combination, with the carriage mounted on ways to move laterally, the supplemental frame supported by and pivoted in said carriage, the platen mounted in bearings in the supplemental frame slightly forward of its pivotal point, but within a distance less than the radius of the platen, and the paper-guide mounted on said supplemental frame, of the paper-feed lever carried by the supplemental frame and the locking-lever connected to the supplemental frame and working in a bearing in and engaging the carriage-frame to hold the supplemental frame stationary while the platen is rotated, substantially as described.



2. In a type-writer, the combination, with the carriage-frame mounted on ways to move laterally, of the supplemental frame pivoted in said carriage-frame at a fixed point and having a rearward extension, the finger-piece pivotally connected to said rearward extension and working in a bearing in the carriage-frame to swing the supplemental frame on its axis, the rotary platen journaled in the supplemental frame forward of its pivotal center, and the paper-feed lever carried by the supplemental frame for rotating the platen, substantially as described.

3. In a type-writer, the combination, with the carriage mounted on ways to move laterally, a supplemental frame pivoted in said carriage, the platen mounted in bearings in said supplemental frame forward of its pivotal point, and the paper-feed lever pivoted on a link carried by said bearing and engaging the platen to rotate the same forward, of a spring-pressed block mounted on the supplemental frame and engaging the platen, a finger-piece connected to said block for disengaging the same, and a link controlled by said finger-piece and engaging the paper-feed lever for throwing the same out of operative position when the spring-pressed block is disengaged, substantially as described.

4. In a type-writer, the combination, with the carriage mounted on ways to move laterally, the supplemental frame carried by and pivoted in said carriage and having the upward extension at the front with the stops at top and bottom, and the platen mounted in bearings in the supplemental frame, of the paper-feed lever pivotally connected to said supplemental frame and engaging the platen to rotate the same forward and having its forward end projecting between the stops on the upward extension, substantially as described.

5. In a type-writer, the combination, with the carriage mounted on ways to move laterally, the supplemental frame carried by and pivoted in said carriage and having the upward extension at the front with the stops at top and bottom, and a platen mounted in bearings in the supplemental frame, of the paper-feed lever pivotally connected to said supplemental frame and engaging the platen to rotate the same forward and having its forward end projecting between the stops on the upward extension, and the adjustable stop for limiting the movement of said lever, substantially as described.

6. In a type-writer, the combination, with the carriage mounted on ways to move laterally, the platen, and the paper-feed lever having a rearward extension, of the spring-support mounted on the carriage, the upward projection thereon engaging the rearward extension of the paper-feed lever, and a rod independent of the carriage engaging said support and adapted to be moved by the operator to depress the support and feed the paper forward, substantially as described.

7. In a type-writer, the combination, with the carriage mounted on ways to travel laterally, the platen, and the paper-feed lever having a rearward extension, of a bifurcated spring-support mounted on the carriage, the upward projection on one of the arms of said support engaging the rearward extension of the paper-feed lever, and the upwardly-extending rods engaging the other arm of said support and adapted to be moved by the operator to depress the support and feed the paper, substantially as described.

8. In a type-writer, the combination, with the carriage, the platen adapted to be turned up to expose the printing-point, and the paper-feed lever having the pivoted rearwardly-extending end, of a hook or extension adapted to engage said rearwardly-extending end to feed the paper, whereby the platen may be turned up while the rearwardly-extending end of the paper-feed lever and hook or projection are in engagement, substantially as described.

9. In a type-writer, the combination, with the main frame, the carriage having the platen thereon, and the paper-feed lever having the rearwardly-extending end, of the lever D', pivoted beneath on the main frame, the spring-support i^3, adapted to be depressed by the movement of said rod and having the upwardly-extending rod thereon, the spring-support mounted on the carriage, adapted to engage said upwardly-extending rod, and the upward extension on said last-mentioned spring-support engaging the rear end of the paper-feed lever, substantially as described.

10. In a type-writer, the combination, with the movable paper-carriage, of a returning mechanism therefor, consisting of the lever pivoted at the front of the machine, having a flexible connection controlling the carriage at the rear end, and the pivoted angle-lever, one arm of which forms the finger-piece and the other arm of which engages the lever first mentioned, substantially as described.

11. In a type-writer, the combination, with the movable paper-carriage, of the lever D', pivoted at the front of the machine, controlling the return movement of the carriage, and the angle-lever D^3, pivoted at the rear of the machine and having the forwardly-exteeding arms, one engaging the lever D' and the other forming the finger-piece, substantially as described.

12. In a type-writer, the combination, with the movable paper-carriage, paper-feed lever, and support having the projection engaging said paper-feed lever, of the support i^3 and rod i^7, adapted to engage the support on the paper-carriage, and the lever D', controlling the return movement of the carriage and engaging said support i^3, whereby the carriage is returned and the paper fed simultaneously, substantially as described.

13. In a type-writer, the combination, with the movable paper-carriage, paper feed lever, the support i^3, and means, substantially as described, for connecting said support and paper-feed lever, of the lever D', controlling the return movement of the carriage and engaging the support i^3, and the angle-lever D^3, pivoted at the rear of the machine, substantially as described.

14. In a type-writer, the combination, with the movable paper-carriage, of the wheel pivoted in rear of the machine and controlling the movement of the carriage, the spring connected to said wheel at one end, the drum surrounding said spring and connected to its opposite end, and the handle connected to said drum for adjusting the tension of the spring, substantially as described.

15. In a type-writer, the combination, with the movable paper-carriage, of the wheel pivoted in rear of the machine and controlling the movement of the carriage, the spring connected to said wheel at one end, the drum surrounding the spring, connected to its opposite end, the series of radial projections d' on the drum, the handle removably connected to one of said projections, and the series of adjusting-stops for said handle, whereby the tension of the spring may be regulated, substantially as described.

16. The combination, with the paper-carriage, of a type-writer and platen having the toothed wheel, the paper-feed lever for moving the platen, the upright E^3 and stops h h, between which the paper-

feed lever works, and the bar A^9 of the adjustable stop, mounted on said bar for limiting the extent of movement of the paper-feed lever, substantially as described.

17. In a type-writer, the combination, with the carriage, platen, and paper-feed lever, of the adjustable stop for limiting the movement of the paper-feed lever, consisting of the perforated metallic piece A^3 and the springs A^4, and the notched bar A^5, on which said stop works, substantially as described.

18. In a type-writer, the combination, with the movable paper-carriage, of the ink-ribbon-carriage support secured thereto, the ink-ribbon carriage sliding on said support, the wheel and crank-pin for reciprocating said carriage from front to rear, and means, substantially as described, for rotating said wheel, as set forth.

19. In a type-writer, the combination, with the movable carriage, the ink-ribbon-carriage support below the same, the ink-ribbon carriage mounted on said support, the wheel, crank-pin, and connecting-link for reciprocating said carriage, of the movable arm, the spring passing around said wheel and connected to the arm, and the pawl on the type-writer frame for depressing said arm, substantially as described.

20. An ink-ribbon-carriage-moving mechanism for type-writers, consisting of the rotary wheel, the movable arm, the spiral spring surrounding said wheel and connected to the arm, and means, substantially as described, for moving said arm to stretch the spring, substantially as described.

21. An ink-ribbon-carriage-moving mechanism for type-writers, consisting of the rotary wheel, the pivoted arm, the spring connected at both ends to said arm and passing around the wheel, and the pawl with which said arm engages to stretch the spring and rotate the wheel, substantially as described.

22. In a type-writer, the combination, with the paper-carriage, ink-ribbon-carriage support thereon and reciprocating ink-ribbon carriages on said support, the ink-ribbon spools held by the carriages, and the toothed wheel forming one of the flanges of said spool, of the elongated cam m^2, pivoted on the type-writer frame and engaging said toothed wheel to move the ink-ribbon longitudinally, substantially as described.

23. The combination, with a type-writer, of the movable ink-ribbon carriage having the extended spring-arms with bearings in the ends thereof, and the ink-ribbon and co-operating journals, whereby the same may be removed by spreading the arms apart, substantially as described.

24. In a type-writer, the combination, with the movable paper-carriage, drive-wheel, and bell, of the bell-hammer pivoted on the shaft of the drive-wheel and lying above the center thereof, and two stops L^2 L^2, one on each side of said hammer, for throwing it over its center of gravity in each direction alternately as the wheel is oscillated, substantially as described.

25. A sheet-indicator for type-writers, consisting of a series of flexible arms adapted to be compressed by a sheet of paper in its passage through the machine, the bell, and an arm for throwing said bell into operation, lying in the path of the flexible arms when not compressed by the sheet of paper, substantially as described.

26. In a type-writer, the combination, with the platen, of the arm for operating the sheet-indicating bell, and the flexible arm adapted to engage said bell-operating arm when extended and to be compressed by the paper in its passage around the platen, substantially as described.

27. In a type-writer, the combination, with the platen, of the series of flexible arms mounted thereon, the arm pivoted on the paper-carriage and lying in the path of said flexible arms when extended, and the bell, substantially as described.

28. In a type-writer, the combination, with the platen and key-levers, of the type-arm having the gear-segment at the inner end, the pivoted levers having the gear-segments in mesh therewith, and a connection between the lower ends of said pivoted levers and the key-levers, substantially as described.

29. In a type-writer, the combination, with the platen and key-levers, of the type-arm having a gear-segment at the inner end, the centrally-pivoted lever having the gear-segment at the upper end in mesh therewith, the pivoted levers engaging the lower end of the type-arm-operating lever, and a connection between the same and the key-lever, substantially as described.

30. In a type-writer, the combination, with the platen and key-levers, of the type-arms having the gear-segments at the inner end, the pivoted type-arm-operating lever having the gear-segments meshing therewith, and the bell-crank levers engaging the lower end of said type-arm-operating-levers, operated by the key-levers in substantially the manner described.

31. In a type-writer, the combination, with the platen and key-levers, of the type-arms having the gear-segments at the inner ends, with the type-arm-operating levers having the gear-segments meshing therewith, the series of bell-cranks engaging the lower ends of a corresponding series of type-arm-operating levers, all of said bell-cranks being mounted on a common pivot, and connections between said bell-cranks and the key-levers, substantially as described.

32. In a type-writer, the combination, with the type-arms, of the hanger-rail having the series of slots for the reception of said arm, the division-walls between said slots being bifurcated, substantially as described.

33. In a type-writer, the combination, with the type-arms, of the hanger-rail having a series of slots for the reception of said type-arms, the division-walls between said slots being extended forward and bifurcated, whereby the lateral wear of the said walls may be compensated for by spreading the two sides of the same apart, substantially as described.

34. In a type-writer, the combination, with the type-arms having the circular inner ends, of the adjustable aligner mounted on the hanger-rails and engaging said circular ends, substantially as described.

35. In a type-writer, the combination, with the type-arms having the circular inner ends with the V-shaped peripheries, as described, of the aligners mounted on the hanger-rails, having the bifurcated ends engaging said circular portions of the type-arms, as set forth.

36. In a foot-treadle attachment for returning the carriage of type-writers, the combination, with the horizontally-movable foot-piece, of the independent pivoted lever engaging therewith and adapted to be connected with the type-writer carriage, substantially as described.

37. In a foot-treadle attachment for returning the carriage of type-writers, the combination, with the horizontally-movable foot-piece, of the independent pivoted lever having the extended arms adapted to be connected with the carriage, and the segment co-operating with the foot-piece to move the lever on its center, substantially as described.

38. A foot-treadle for type-writers, consisting of the base, a lever pivoted thereon, having the gear-segment, and the frame constituting the foot-rests sliding on said base, having the rack-bar engaging said gear-segment, and connections between said lever and the type-writer-platen-operating mechanism, substantially as described.

39. The combination, with a type-writer having a printing mechanism and key-levers adapted to be depressed by the operator's fingers, of a series of magnets for completing the depression of the key-levers after the initial movement has been given by the operator, substantially as described.

40. The combination, with a type writer having a printing mechanism and key-levers adapted to be depressed by the operator's fingers, of a motor for completing the depression of said key-levers and magnets for connecting the motor and key-levers, substantially as described.

41. The combination, with a type-writer having a printing mechanism and key-levers adapted to be depressed by the operator's fingers, of a constantly-moving motor for completing the depression of the key-levers and magnets for connecting the motor and key-levers, substantially as described.

42. The combination, with a type-writer having a printing mechanism and key-levers adapted to be depressed by the operator's fingers, of a motor engaging the said key-levers when partially depressed for completing their movement and a stop for releasing said levers when at the lower extreme of their movement, substantially as described.

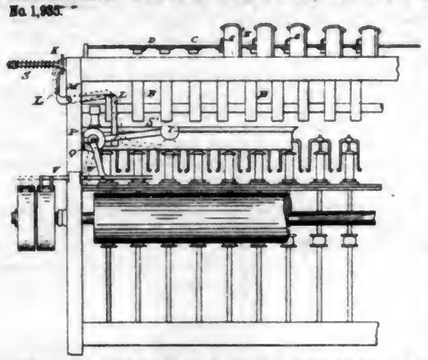
43. The combination, with a type-writer having a printing mechanism and key-levers adapted to be depressed by the operator's fingers, of a motor for said key-levers, a series of magnets connecting the key-levers and motor, and stops for arresting the downward movement of the key-levers, whereby the connection with the motor-magnets is broken, substantially as described.

44. The combination, with a type-writer having a printing mechanism and key-levers adapted to be depressed by the operator's fingers, of a constantly-reciprocating motor beneath the key-levers, magnets mounted on said motor, a plate through which said magnets project, and armatures for co-operation with the magnets secured to the key-levers, substantially as described.

45. In a type-writer, the combination, with the platen and paper-guide at the rear of the same, of the spring-wire paper-guide in front of the platen, connected rigidly to the rear paper-guide at each end and having the central depending portion extending into proximity to the rear guide at the center, said central depending portion being adapted to be depressed to facilitate the insertion of the paper, substantially as described.

46. In a type-writer, the combination, with the carriage mounted on ways to move laterally, the supplemental frame having the end pieces pivotally connected to the ends of the carriage, and the platen journaled to rotate in fixed bearings in said supplemental frame, of the paper-guide at the rear of the platen connected rigidly to and moving with the supplemental frame, and the spring-wire guide at the front of the platen, connected to the rear guide at each end and having the depending portion extending into proximity to the rear guide at the center, said depending portion being adapted to be depressed to facilitate the entrance of the paper, substantially as described.

472,043. **AUTOMATIC STOP MECHANISM FOR DRAWING-FRAMES, &c.** JOHN W. GAUNT, Bramley, England. Filed May 16, 1891. Serial No. 393,055. (No model.) Patented in England Feb. 3, 1891, No. 1,935.



Claim.—The combination of the lever L, adjustable block N on one arm of said lever, disk Q, belt fork-bar V, lever U, arm S', projecting from disk Q, weight T on said arm, tongue R, engaging block N, the detector-wires, and mechanism intermediate the detector-wires and lever L, whereby the latter is actuated from the former on the breaking of a thread, substantially as set forth.

472,044. **BARB FOR WIRE FENCES.** HUGH GEARTY, Springfield, Ill. Filed Dec. 26, 1891. Serial No. 416,119. (No model.)



Claim.—The combination, with the fence-wire B, of the barb A, composed of parts a and a', which fit into each other and are secured by a rivet d and having a groove a^3 in the periphery of the central hole, through which passes the wire B, and the bent wire C, woven into wire B, all arranged to allow barb A to revolve freely on the wire B, substantially as and for the purposes set forth.

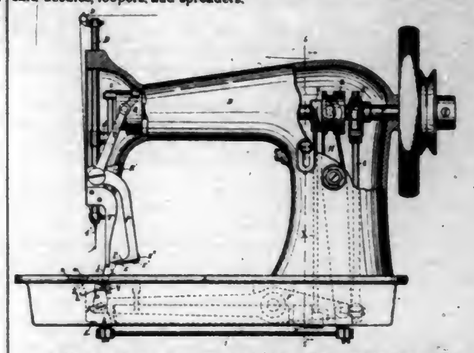
472,045. **SINK CONNECTION.** FRANKLIN GOSS, New London, Conn. Filed June 8, 1891. Serial No. 395,490. (No model.)



Claim.—The combination, with a sink or bowl, of a conical waste-cup projecting downwardly from the lower face of said sink and provided with a notched flange at the lower extremity of said cup, a pipe-coupling section having an annular flange, the external diameter of which is the same as the internal diameter of the bottom of said conical cup, the pendent lugs projecting downwardly from the lower face of said flange, the screw-thread below said lugs, and the clamping-nut, substantially as and for the purpose described.

472,046. **OVEREDGE SEWING-MACHINE.** JAMES G. GREENE, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed Oct. 28, 1891. Serial No. 410,062. (No model.)

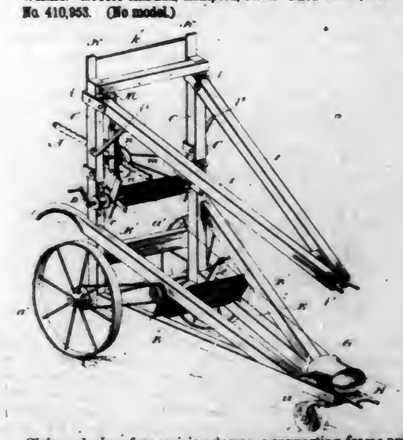
Claim.—1. An overseaming stitch-forming mechanism consisting of an eye-pointed needle arranged above the work-plate of the machine, an eye-pointed needle arranged beneath the work-plate of the machine, a thread-carrying looper arranged above the work-plate of the machine and provided with a loop-spreader, and a thread-carrying looper arranged beneath the work-plate of the machine and also provided with a loop-spreader, combined with mechanism for operating said needles, loopers, and spreaders.



2. In an overseaming sewing-machine, the combination, with a vertically-reciprocating puncturing eye-pointed needle arranged above the work-plate of the machine, of a horizontally-reciprocating thread-carrying looper and co-operating spreader beneath said work-plate and arranged to enter the loops of upper-needle thread, a vertically-reciprocating eye-pointed needle also placed below said work-plate and arranged to enter the loops of lower-looper thread, a horizontally-reciprocating thread-carrying looper and co-operating spreader placed above said work-plate and arranged to enter the loops of lower-needle thread, and mechanism for successively operating said upper needle, lower looper and spreader, lower needle, and upper looper and spreader in the order named.

3. In an overseaming sewing-machine, the combination, with the driving-shaft C, provided with the crank c, the eccentric E, and the cams G and Q, of the needle-bar D, connected with said crank and carrying the eye-pointed puncturing-needle d', the rod e, the lever F, to the rear end of which said rod is connected and which is provided at its forward end with the lower eye-pointed needle f, the lever H, the rocker K, the lower looper and spreader carried by said rocker, the pitman I, connecting said rocker with said lever H, the lever P, the upper looper and spreader carried by said looper, and suitable operating devices for said spreaders.

472,047. **DEVICE FOR SPOOLING AND STRETCHING FENCE-WIRES.** AUGUST HANKEL, Hampton, Nebr. Filed Nov. 5, 1891. Serial No. 410,953. (No model.)



Claim.—1. In a fence-wiring device, a supporting-frame provided at its front end with a guide and near its rear portion with a reel, an intermediate inclined support E, having pivoted thereto an oscillating bar e, the free end of said bar extending above the support, and a link connecting said bar with a toothed wheel, substantially as shown, and for the purpose set forth.

2. In combination with a supporting-frame, the base-board B thereof having a forwardly-projecting forked plate H, converging bars

I I, carrying at their forward ends a similarly-constructed forked plate, the rear ends of said bars being pivotally connected to the vertical bars on the main frame, arms i^3, carried by the vertical bars C and adapted to maintain the converging bars I in an inclined position, and a wire-stretcher carried by the frame, substantially as shown, and for the purpose set forth.

3. In a wire-reel, the combination of a base carrying uprights C C, bars K K, adjustably connected to said uprights, and brackets rigidly connected to the bars K K, said brackets supporting a wire-stretching device, substantially as shown, and for the purpose set forth.

4. In a reel-carrying device, the combination of a base mounted on wheels, vertical uprights C C, converging bars I I, pivoted thereto, a vertically-adjustable frame carrying a wire-stretcher, and forks connected to the forward ends of the bars I and base of the frame, substantially as set forth.

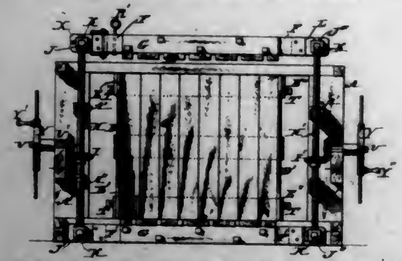
5. In a fence-wiring device mounted upon supporting-wheels, the combination of a main frame having uprights and means for bracing the same against a post, a frame vertically adjustable upon the uprights and carrying converging brackets, between which is pivotally secured a lever, and a wire-stretching device supported and operated by said lever, substantially as shown, and for the purpose set forth.

472,048. FIREMAN'S RESPIRATOR. THEODORE O. HELMIG, Cadillac, Mich., assignor of one-fourth to Dennis Roach, same place. Filed June 4, 1891. Serial No. 395,066. (No model.)



Claim.—The herein-described protector, comprising a hood open at its lower end and provided with means for closing the opening, the air-tube communicating with the hood and adapted to depend therefrom to a point near the floor, and the wire sponge-support consisting of the shank 9, terminating at its upper ends in curved clamping spring-arms 10 for embracing the sponge and at its lower end in the clasp 11, the latter embracing the upper end of the tube, substantially as specified.

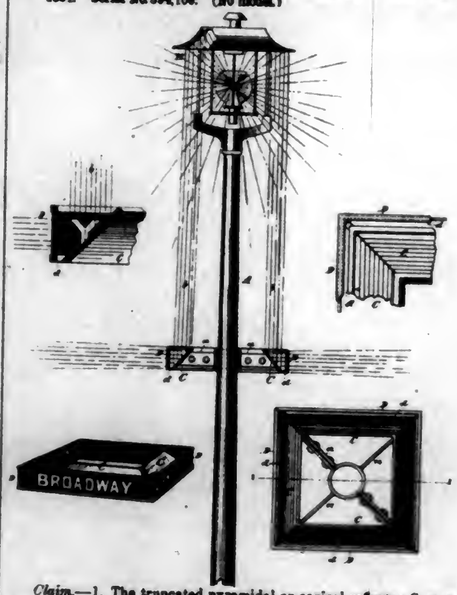
472,049. BALING-PRESS. WILLIAM HEMINGWAY, Philadelphia, Pa. Filed June 30, 1891. Serial No. 398,333. (No model.)



Claim.—1. In a baling-press, the combination of frame A, box C D D', the ends of which are provided with upper and lower slots E E' E'' E''' and the sides of which are detachably attached in place, rods H H', each provided with a right and left screw-thread, substantially as shown, and cog-wheel I I', whereby they are revolved, longitudinal beams F F', provided with upper and lower compressors B B', secured to them, respectively, and formed of slightly-separated transverse slats, and blocks J J' J'' J''', engaging by female screw-threads over the male screw-threads of rods H H', and to which blocks the beams F F' are secured, the beam F being so secured at one end by a detachable connection X that by the freeing of this connection it can be swung clear of the block J at that point, whereby when the operation of baling is over and the bale removed, as described, the sides can be replaced, the compressor B raised above the plane of the frame of the machine, and the beam F detached from its connection with block J, and the beam F and compressor B can be swung to one side to permit the refilling of the box, all operating substantially as above described.

2. In a baling-press, the combination of a frame A, box C D D', the sides of which are detachably attached in place, rods H H', each provided with a right and left screw-thread, substantially as shown, and cog-wheels I I', by which they are revolved, longitudinal beams F F', provided with upper and lower compressors B B', secured to them, respectively, and formed of slightly-separated transverse slats, and blocks J J' J'' J''', to which said beams are secured by ears L L L X, setting around trunnions K, said ear X being hinged at X'' between the trunnion and its point of junction with the beam F, thus making a flap of its forward part, which is secured to the neighboring ear by a key forming a detachable connection, by the freeing of which connection ear X can be swung on its hinge clear of its block J, by which means, after the bale is complete, beam F when it and compressor B are raised above the level of the top of the frame can be swung to one side, all operating substantially as described.

472,050. STREET-SIGN. MAURICE HOFHEIMER, New York, N. Y., assignor of one-half to Charles M. Becker, same place. Filed May 26, 1891. Serial No. 394,109. (No model.)

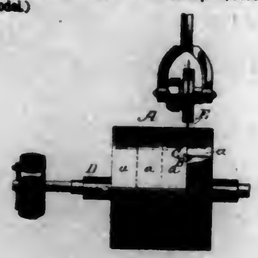


Claim.—1. The truncated pyramidal or conical reflector C, combined with the prismatic or cylindrical sign-board D, the greater diameter of said reflector being placed near the lower part of the inner side of said sign-board, substantially as herein shown and described.

2. The combination of the post A, carrying the light B, with the inclined reflector C and upright sign-board D, the greater diameter of said reflector being placed near the lower end of the inner side of said sign-board and with the bracket a, substantially as herein shown and described.

3. The combination of the post A and its lamp B, with the upper reflector E and lower inclined reflector C, and substantially upright sign-board D, substantially as and for the purpose specified.

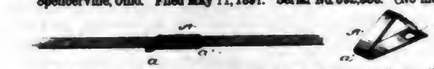
472,051. SPOOL FOR CARRYING AND APPLYING GOLD-LEAF. GEORGE P. HOGAN, Chicago, Ill. Filed Sept. 4, 1891. Serial No. 404,718. (No model.)



Claim.—1. As an article of manufacture, a spool consisting of a number of sections of a given diameter placed side by side and having a web of paper wound thereon with gold-leaf applied to one side thereof and held by and between the successive layers of said web wound upon said spool.

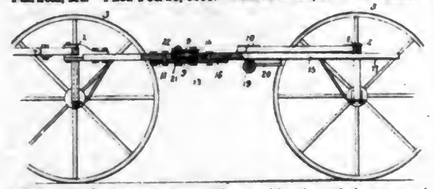
2. The combination, with a spool consisting of a number of sections of a given diameter placed side by side, a web of paper wound on said spool, and gold-leaf applied to one side thereof and held by and between the successive layers of said web as thus wound, of a suitable cutter, as set forth.

472,052. LEATHER-SPLICING DEVICE. NATHAN B. HOLDSWORTH, Spencerville, Ohio. Filed May 11, 1891. Serial No. 392,338. (No model.)



Claim.—As an improved article of manufacture, a leather-splicing device formed of a tapering metallic blank struck up into an approximately V-shaped form, the tapering end being bent inwardly at an angle to the body and the broad end provided with an aperture opposing said inturned end, said aperture being straight at its outer edge and curved at its rear edge, whereby said inturned end is guided therein, substantially as and for the purpose set forth.

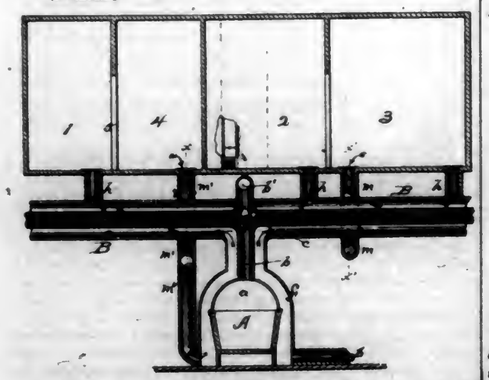
472,053. WAGON RUNNING GEAR. CLARENCE E. HOLLEY, Fort Fairfield, Me. Filed Feb. 28, 1891. Serial No. 383,216. (No model.)



Claim.—1. In a running-gear, the combination of the rear axle, the hounds secured to the axle, the lower plates connecting the front end of the hounds and provided with depending ears, the upper plate, the reach-section secured in the hounds and the axle, the extension-reach provided on its lower face with a metal wear-plate, and the cam-roller journaled in said ears and provided with a handle and arranged to engage directly the extension-reach, substantially as described.

2. In a running-gear, the combination of the front axle, the front hound, the plates secured to the upper and lower faces of the hounds and provided with longitudinal ribs arranged on the inner faces of the plates and having curved grooves forming a socket, the reach and the coupling-pin swiveled in the said socket and provided with an annular groove and having formed integral with it a recessed plate secured to the reach, and a bolt passing through openings of the plates and engaging the groove of the bolt, substantially as described.

472,054. HEATING AND VENTILATING APPARATUS. CHARLES D. HOWARD, Syracuse, N. Y. Filed Oct. 19, 1891. Serial No. 408,107. (No model.)



Claim.—1. In a heating apparatus, the combination, with the heating-pipes connected to a heater, of the hot-air pipes opening upward into the rooms of a building out of the top of the air-chamber in said heating-pipes and cold-air conduits opening downward from said rooms and entering the heating-pipes below the plane of the lower ends of said hot-air pipes.

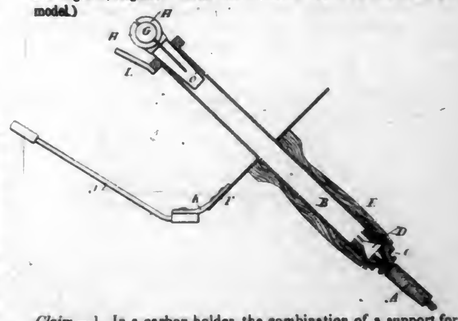
2. The combination, with the smoke-pipe and the air-pipe inclosing it and separated therefrom, of hot-air conduits opening outward from the air-chamber between said pipes and leading upward into the apartment to be heated and cold-air conduits leading downward from said apartment and opening into the chamber between said pipes below the plane of the connection of said hot-air conduits thereto.

3. An apartment to be heated, a cold-air conduit leading downward therefrom and having two branches, one leading into an air-chamber surrounding the smoke-pipe of a heater and the other leading to the heater and provided with deflecting-dampers, a heater, a smoke-pipe leading therefrom, and a pipe inclosing the smoke-pipe and detached therefrom and leading from said heater to said apartment.

4. In a double-pipe heating apparatus consisting of a heater, a smoke-pipe leading therefrom, and an air-pipe inclosing said smoke-pipe, the combination therewith of a series of hot-air conduits opening upward from the air-pipe into the apartments and cold-air conduits leading downward therefrom and connected and opening into said air-pipe at points below the plane of connection of the hot-air conduits therewith.

5. In a double-pipe heating apparatus consisting of a heater, a smoke-pipe leading therefrom, and an air-pipe inclosing said smoke-pipe and connected to the air-heating chamber around the heater and leading by branches into the apartments to be heated, the combination therewith of cold-air conduits leading from the apartments and opening into said air-pipe from below.

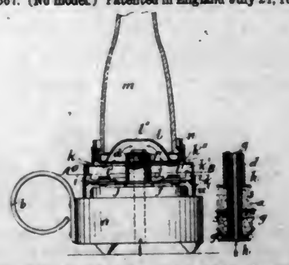
472,055. CARBON-HOLDER. HENRY HOWARD, Halesowen, near Birmingham, England. Filed Oct. 21, 1891. Serial No. 409,432. (No model.)



Claim.—1. In a carbon-holder, the combination of a support for the carbon, a screen of colored glass carried by the support, and an opaque bar interposed between the carbon and the screen.

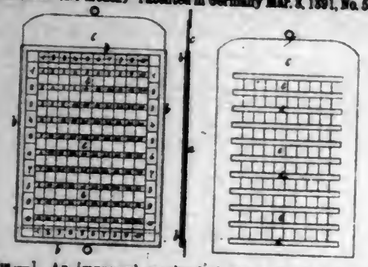
2. In a carbon-holder, the combination of a tube, a cap screwing onto one end of the tube, a split clip embracing the carbon and forced into the other end of the tube, and a cone within the cap and adapted when the cap is screwed on to force the wires of the conductor into close contact with the tube.

472,056. LAMP FOR BURNING MINERAL OILS. ANDREW HOWAT, Manchester, England, assignor to the Deflector Safety Lamp and Miner's Appliance Company, Limited, same place. Filed May 19, 1891. Serial No. 393,367. (No model.) Patented in England July 21, 1890, No. 11,348.



Claim.—In a hand or table lamp, the combination, with a central-draft wick-tube, of a flame-regulator consisting of a plate or disk with a screw-threaded boss fitting upon the outside of the threaded wick-tube, said disk serving to connect the upper to the lower portion of the lamp-body, substantially as herein set forth.

472,057. MEANS FOR INSTRUCTION IN ARITHMETIC. PAUL KALISCH, Jotsch, near Goissen, Germany. Filed Nov. 27, 1891. Serial No. 413,288. (No model.) Patented in Germany Mar. 8, 1891, No. 58,541.



Claim.—1. An improved mechanical means for instruction in arithmetic, consisting of a table divided into fields, which contain the characters or figures of three tabular-reckoning systems, in combination with a grate *c*, sliding in the frame *b*, and with a curtain *h*, having within a slot or recess two slides *m* and *n*, which, being shifted simultaneously or separately, disclose subsequently or jointly the figures or characters which appear under the slot of the curtain.

2. An improved mechanical means for instruction in arithmetic, consisting of the combination, with a sliding curtain *h* and a double slide *m n*, secured thereto, of a table of fractions containing ten transverse rows subdivided, as described, and another table of fractions secured to the curtain, said table containing horizontal subdivided lines, as described, to determine the position of the slides *m* and *n* by means of fingers *p* and *q*, secured to said slides and extending over said table of fractions, substantially as described.

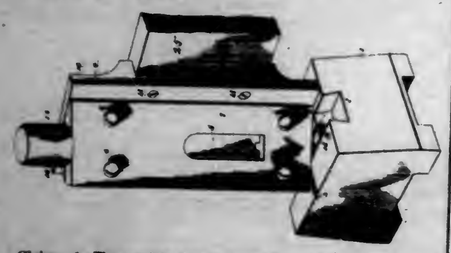
3. The combination, with the double slide *m n*, as described, of an auxiliary slide *r* to cover distinct parts of the figures or characters contained on the reckoning-table, as described.

472,058. FIRE-GRATE. OREN A. KYSER, Lisbon, Ill. Filed Nov. 5, 1891. Serial No. 410,900. (No model.)



Claim.—In a fire-grate for stoves and furnaces, the combination, with the grate-frame, the rock-shafts C C, journaled therein, said shafts being T-shaped in cross-section and provided at regularly-spaced intervals with notches, as described, of a series of bars adapted to be fitted within said notches in the rock-shafts and having their ends secured to the frame of the grate, a series of bars provided with recesses to receive the T-shaped shafts adapted to be fitted over the rock-shafts between the notches therein, and to move between the first-named bars when the said shafts are actuated, and lever mechanism for actuating the rock-shafts, substantially as described.

472,059. DEVICE FOR JOINING INTERSECTING WIRES. GEO. M. LAMB and HIRAM R. LAMB, Hillsdale, Mich. Filed Aug. 6, 1891. Serial No. 401,923. (No model.)



Claim.—1. The combination, with the base having a die located in its upper face and comprising portions of threads, of a plunger mounted for reciprocation above the said die and diagonally disposed thereto, substantially as specified.

2. The combination, with the base having a die located in its upper face and comprising portions of threads, of a standard located above the anvil and having a way or recess formed therein and communicating with the die between the threads thereof and diagonally disposed with relation to the threads, and a plunger mounted in the way, substantially as specified.

3. The combination, with the base having a die located in its upper face and comprising portions of threads, of a standard located above the anvil and said standard being provided with a vertical way or recess communicating with the die between the threads and diagonally disposed with relation to the same, and an opening formed in the side of the standard and communicating with the way, and a plunger mounted in the way, substantially as specified.

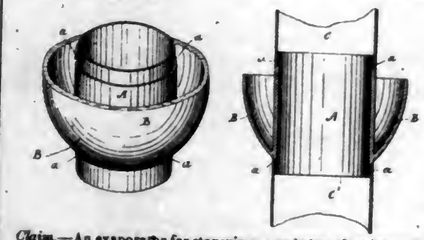
4. The combination, with the base or anvil having a die located in its upper face and comprising portions of threads and provided with intersecting wire-strand-receiving grooves crossing the die at its center, of the standard located above the anvil and in its under side provided with a transverse groove agreeing with that of the lower die, and a plunger mounted for reciprocation in the standard and communicating with the die between the threads thereof, diagonally disposed with relation thereto, substantially as specified.

5. The combination, with the anvil having the dovetailed recess in its upper face and the transverse groove and the dovetailed die having portions of a thread formed therein located in the recess, of a standard having laterally-disposed securing-plates and triangular in cross-section and provided upon its outer face with a recess and a plate covering the recess of the face of the standard and provided with an oblong opening, and a plunger mounted in the recess and provided with a curved lower end diagonally disposed to and located between the threads of the die, substantially as specified.

6. In a machine of the class described, the combination, with the base, the die, and the recessed standard located over the base, of a face-plate secured to the standard and over the recess and provided with an oblong opening, the lower inner edge of which is chamfered at opposite sides of its center, forming a guide, and a plunger mounted for reciprocation in the recess of the standard, substantially as specified.

7. The combination, with the base having a die located in its upper face and comprising portions of threads and provided with intersecting wire-strand-receiving grooves, of a plunger mounted for reciprocation above the said die and between the threads and diagonally with relation to the intersecting grooves, substantially as specified.

472,060. EVAPORATOR ATTACHMENT FOR STOVEPIPES. HOSEA W. LIBBEY, Boston, Mass. Filed July 15, 1890. Serial No. 358,859. (No model.)



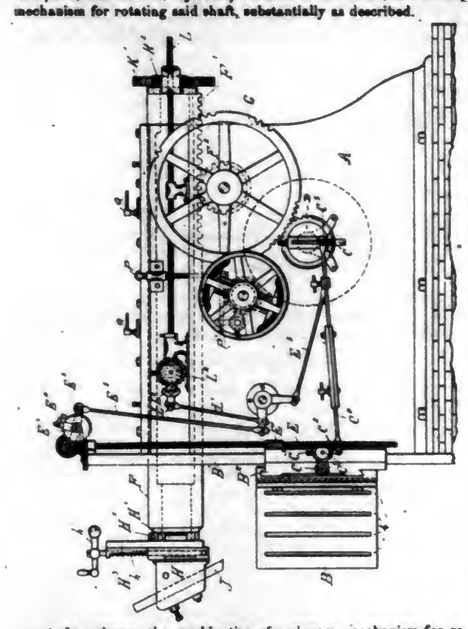
Claim.—An evaporator for stovepipes, consisting of an integral casting comprising a central cylindrical portion and a flaring trough around it, the interior of the cylindrical portion being of the same diameter throughout and having its top and bottom recessed on the outside for the reception of the ends of the stovepipe, and the trough being open at its top and having its lower portion near the recess at the bottom of the cylindrical portion, substantially as described.

472,061. REVERSIBLE UNIVERSAL SHAPER. MATTHEW MORTON, Romeo, Mich. Filed Feb. 16, 1891. Serial No. 381,562. (No model.)

Claim.—1. In a shaper, the combination of the plunger provided with a head for receiving a tool-holder, actuating mechanism for reciprocating said plunger with a slow motion in one direction and a quick return in the opposite direction, and means for changing the direction of motion of the main driving-pulley, whereby the relative direction of said high and low speed is reversed, substantially as described.

2. In a shaper, the combination of a plunger, actuating mechanism for reciprocating said plunger, a tool-holder supported by said plunger and adapted to rotate thereon, and a shaft extending lengthwise through said plunger and adapted to impart a rotating feed to said tool-holder on said plunger, substantially as described.

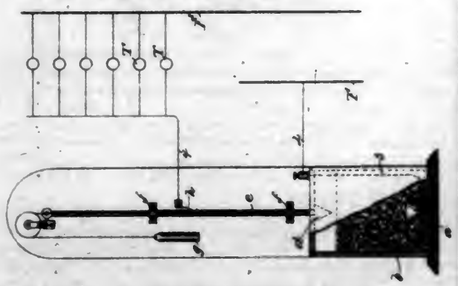
3. In a shaper, the combination of a plunger, mechanism for reciprocating said plunger, a shaft mounted in said plunger and extending lengthwise through the same, face-plate R, mounted on said plunger, tool-head R^1, mounted on the end of said shaft and adapted to be rotated thereby, lugs R^2, attached to said head and embracing said face-plate, tool-head H, adjustably mounted in said head, and feeding mechanism for rotating said shaft, substantially as described.



4. In a shaper, the combination of a plunger, mechanism for reciprocating said plunger with a slow motion in one direction and a quick return in the opposite direction, tool-holder H, mounted on the plunger and adapted to a drawing cut, means for changing the motion of the main driving-pulley, whereby the relative direction of said high and low speed is reversed, vertical bed-plate B', and work-supporting table B, having vertical and horizontal adjustment on the face-plate B', whereby the strain on said table due to the drawing cut of the tool is in the direction of the bed-plate, substantially as described.

5. In a shaper, the combination of a work-table having two independent feeds, one horizontal and one vertical, and a tool-holder having a rotatable feed on the plunger, with means for operating two or more of said independent feeds simultaneously, substantially as described.

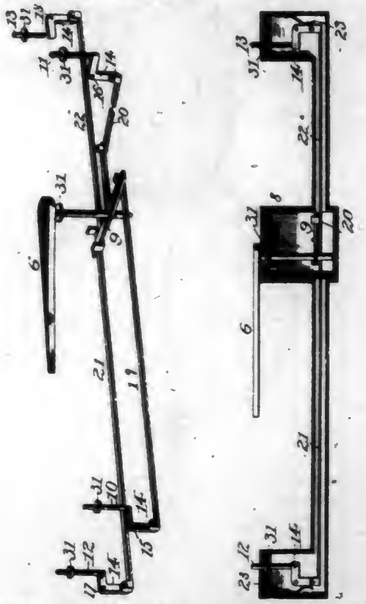
472,062. RHEOSTAT. JAMES R. MASURY, Providence, R. I., assignor of one-half to Lawrence J. McCarty, Boston, Mass. Filed June 29, 1891. Serial No. 397,826. (No model.)



Claim.—1. A current-regulator composed of a reservoir of conducting-liquid combined with an electrode supported therein having a tapering recessed surface, and a co-operating movable electrode having a tapering exterior surface slightly smaller at the base than the recessed surface of the first-mentioned electrode, whereby said electrodes make contact only at the apexes of said surfaces and when in contact have a thin film of conducting-liquid of large extent between them, substantially as and for the purpose described.

2. The current-regulator comprising electrodes, one movable with relation to the other, and a reservoir containing a conducting-liquid in which said electrodes are immersed, said liquid consisting of a solution of common salt and sal-ammoniac in water, containing pulverized carbon in suspension in substantially the proportions specified.

472,068. AUTOMATIC RAILWAY-SWITCH. GROSER S. MAXWELL and JAMES CLARK, Jr., Louisville, Ky. Filed Aug. 13, 1891. Serial No. 402,546. (No model.)



Claim.—1. The combination, in automatic railway-switches, of a switch-tongue secured to a vertical shaft which is journaled in a fixture upon the road-bed and provided with a T-shaped lever, one or more vertically-movable trippers mounted upon an engine to hang near the track, one or more plungers located in the path of the said trippers and each upon an elbow-lever pivoted to a fixture of the road-bed, and connecting-rods between the vertical arms of the said levers and the arms of the said T-shaped lever, each connection being adapted to move the T-shaped lever but one way, substantially as described.

2. The combination, in automatic railway-switches, of a switch-tongue fixed upon a vertical shaft which is journaled in a fixture upon the road-bed and provided with a T-shaped lever, plungers projecting into the path of a tripper upon an engine and mounted on elbow-levers which are pivoted to fixtures, the said elbow-levers, and the arms of the T-shaped lever, the said connecting-rods having at one end of each a free connection with the adjacent lever, whereby the rod when moved in one direction will communicate a positive motion to the T-shaped lever, but in the return motion it leaves the T-shaped lever, and a spring for producing said return movement, substantially as described.

3. The combination, in railway-switches, of a plunger fitted for vertical movement upon the road-bed, connections between the plunger and a switch-tongue, a tripper journaled at one end upon an axle of an engine and provided with a forwardly-depending arm, and a friction-roller thereon in line to engage the said plunger, and further provided with an arm extending up through the engine-floor and having a treadle on it, and a spring for elevating the tripper to keep the roller normally out of the line of engagement with the plunger, substantially as described.

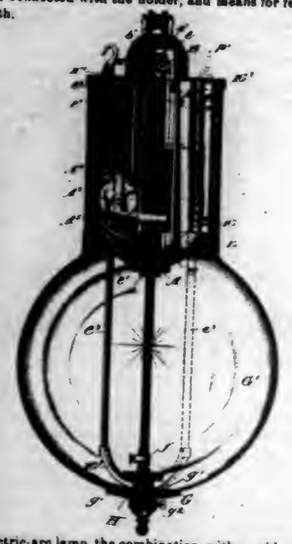
472,064. ELECTRIC-ARC LAMP. JOHN A. MOSHER, Chicago, Ill., assignor to The Mosher Arc Lamp Company, Abilene, Kans. Filed June 30, 1891. Serial No. 396,980. (No model.)

Claim.—1. In an electric-arc lamp, the combination, with the guide-tube and the carbon-holder arranged to move in the tube, of the movable frame carrying feed mechanism and a chain or cord attached to and supporting the holder and the other end attached to the movable frame and passed over a pulley on the tube, as set forth.

2. In an electric-arc lamp, the combination, with the guide-tube, of the carbon-holder movable within the tube, the pulley carried by the tube, means for feeding the tube, a chain or cord attached to the

holder, and a movable frame supported by said chain or cord, as set forth.

3. In an electric-arc lamp, the combination, with a guide-tube and the carbon-holder movable therein, of the chain passed over a pulley on the tube and connected with the holder, and means for feeding the tube, as set forth.



4. In an electric-arc lamp, the combination, with a guide-tube and a carbon-holder movable therein, of the movable frame, the train of gears on said movable frame, and connections, substantially as specified.

5. In an electric-arc lamp, the combination, with the guide-tube and the carbon-holder movable therein, of the movable frame, the train of gears thereon for feeding the tube, the connection between the said frame and the carbon-holder, and the rack on the said tube, as set forth.

6. In an electric-arc lamp, the combination, with the guide-tube and the carbon-holder movable therein, of the movable frame connected with the tube, the walking-beam on the movable frame, and the connections, substantially as described, between the frame and holder and between the walking-beam and tube, as set forth.

7. In an electric-arc lamp, a carbon-holder having a spring for holding the carbon and an offset for the bearing of one end of the spring, said spring being coiled around the shaft, with one end arranged to bear upon the carbon and the other in said offset, as set forth.

8. In an electric-arc lamp, the combination, with the guide-tube and the carbon-holder therein, of the rack on the tube, the train of gears for actuating the same, the movable frame on which the train of gears is mounted, and the frame to which the movable frame is pivoted, as set forth.

9. In an electric-arc lamp, the combination, with the disk E and the magnets, of the castings secured to the bottoms of the magnets and secured to and electrically insulated from the disk, the frame C, the movable frame and the feed mechanism carried thereby, and the walking-beam on the said frame carrying the magnet-cores, as set forth.

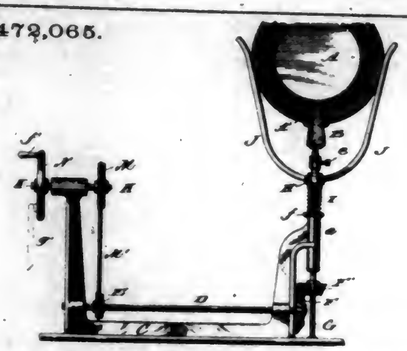
10. In an electric-arc lamp, the combination, with the disk, the magnets supported thereon, and the frame C, with its walking-beam, of the magnet-cores carried by said walking-beam, the guide-tube, the train of gears, the movable frame, the chain passed over a pulley on the tube and connected with the carbon-holder, and the stop on the frame C, as and for the purpose specified.

472,065. CLEANER FOR BARREL-BUSHINGS. EMIL T. MUELLER, La Crosse, Wis. Filed Nov. 9, 1891. Serial No. 411,268. (No model.)

Claim.—1. The combination, with a rotary wire brush, of means for revolving said brush and spring-supported arms for holding a keg and having the brush-operating shaft passed through the hub of said arms, substantially as specified.

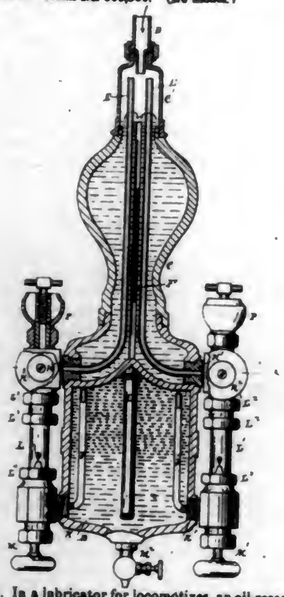


472,065.



2. The combination, with a rotary wire brush and means for revolving the same, of a hub sleeved on the shaft of the said brush and carrying keg-supporting arms, as set forth.

472,066. LUBRICATOR. ELIJAH MCCOY, Detroit, Mich. Filed July 31, 1890. Serial No. 360,539. (No model.)

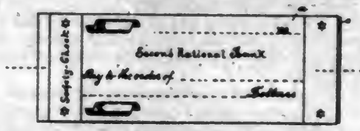


Claim.—1. In a lubricator for locomotives, an oil-reservoir, a condenser, a separating-diaphragm, upper sight-feed arms engaged with said chamber above said diaphragm, equalizing-pipes located in said chamber, engaged with said sight-feed arms above and independent of said diaphragm, a pipe leading from said chamber into said reservoir, a steam-pipe leading from the steam-dome of the locomotive into the top of the condensing-chamber, and an independent overflow-pipe leading from the condensing-chamber into the boiler of the locomotive, substantially as described.

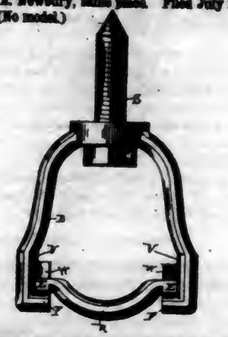
2. In a lubricator, an oil-reservoir, a communicating condensing-chamber, an upper sight-feed arm, a tallow-pipe communicating with said arm, said arm provided with a sight-feed chamber h, an atomizing-chamber h', separated from the chamber h by a perforated diaphragm h^2, forming a valve-seat, an equalizing-pipe communicating with said atomizing-chamber, a passage from said atomizing-chamber into the tallow-pipe, and a shut-off and sediment-removing valve constructed to seat in said valve-seat and with a needle-point to penetrate and control said passage, substantially as described.

472,067. CHECK-BOOK. DAVID A. MCDEVITT, Newark, N. J. Filed Aug. 27, 1891. Serial No. 403,804. (No model.)

Claim.—In a check-book, the combination of a series of thin and thick duplicate check-blanks arranged alternately above each other, of a perforated line arranged on each of the thick blanks and near its binding edge, and a full carbon-paper to be placed between said thin and thick blanks when about to be used, and adapted to produce a negative impression on the upper thin and a positive impression on the lower thick blank, substantially as described, and for the purpose set forth.

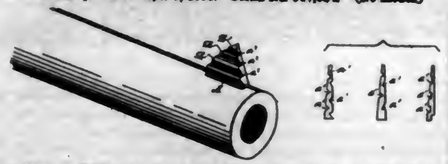


472,068. PIPE-HANGER. ALONZO NEWBURY, Oxmoskie, N. Y., assignor to Emma A. Newbury, same place. Filed July 24, 1891. Serial No. 400,611. (No model.)



Claim.—A pipe-hanger comprising an inverted-U-shaped body provided at its lower ends with vertical portions and with inwardly-extending feet and having integral webs rising from the feet and extending along a part of the vertical portion, a supporting-screw, and a removable member having a depressed curved body and provided with horizontally-extending recessed ends to engage the webs, the removable member being greater in length than the distance between the webs and of a size to enter between the vertical portions at a point above the webs, substantially as described.

472,069. FRONT SIGHT IN SMALL-ARMS. EDWARD O. C. ORD, U. S. Army. Filed Apr. 3, 1891. Serial No. 387,894. (No model.)



Claim.—1. The above-described front sight for fire-arms, the side or sides of which have notches, channels, or grooves a' formed upon the same, substantially as described.

2. The gun-sight A, having side grooves or channels formed by globes or projecting strips or pieces, substantially in the manner and for the purposes set forth.

3. The gun-sight A, of generally triangular shape, having side channels or grooves a' formed in the manner and for the purposes set forth.

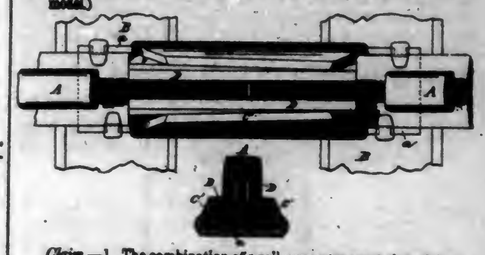
472,070. AUTOMATIC LEVELING SHIP'S BERTH. DANA PARKS, Boston, Mass., assignor of four-fifths to Mark Stone, Charles H. Scofield, Harry Goldberg, and Brainard A. Andrews, same place. Filed July 21, 1891. Serial No. 400,237. (No model.)



Claim.—1. In combination with the oscillating berth pivoted in the direction of its longitudinal axis, a fixed arm projecting from the stud or journal on which the berth swings, and springs extending from the arm to the berth on opposite sides of the said arm.

2. In combination with the pivoted berth, studs or journals upon which the berth may oscillate, an arm projecting from one of the studs and provided at its lower end with a block working in a curved slot in one end of the berth, and springs connected at one end with the arm and at their opposite ends with the berth.

472,071. SUPPORTER FOR RAILROAD-RAILS. ELISHA G. PATTERSON, Titusville, Pa. Filed Oct. 13, 1891. Serial No. 408,603. (No model.)



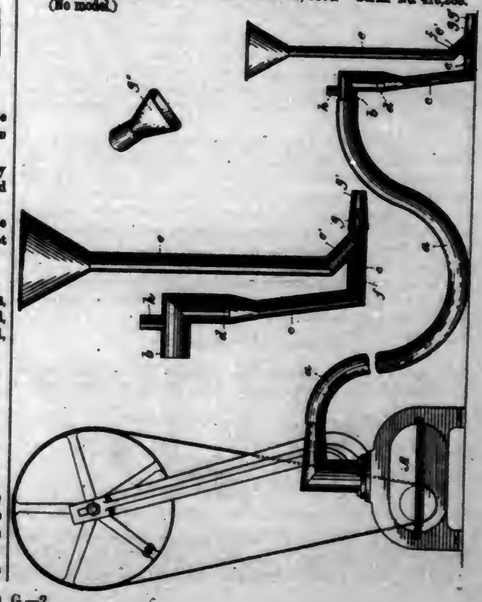
Claim.—1. The combination of a rail-supporter consisting of a supporting-floor, with its side or sides made in truss form and vertically or vertically and longitudinally inclining inward toward the rail and over its base and secured thereto by wedge-plates driven longitudinally to a bearing upon the base and under the head of the rail and against the inner face of the side of the supporter, and two abutments placed on the road-bed and so arranged that the ends of the supporter shall rest upon the abutments, substantially as and for the purposes described.

2. A rail-supporter consisting of a supporting-floor, with its side or sides curved or bent over the rail base and vertically or vertically and longitudinally inclined toward the rail and secured thereto by wedge-plates driven longitudinally to a bearing upon the base and under the head of the rail and against the inner face of the side of the supporter, substantially as and for the purposes described.

3. A rail-supporter consisting of a supporting-floor, with its side or sides vertically or vertically and longitudinally inclining inward over the base of the rail, with spring-pressure toward the medial line, induced by wedge-plates inserted between the side of the supporter and the rail or rails so as to receive and retain the lateral spring bearing of the supporter and communicate such spring-pressure to the base and head of the rail or rails, substantially as and for the purposes described.

4. A wedge-plate in one or more pieces bearing upon the base and under the head of the rail and with its outer face bearing against the inner face of the vertically or vertically and longitudinally inwardly inclined side of a rail-supporter, such outer face being formed longitudinally concave, substantially as and for the purposes described.

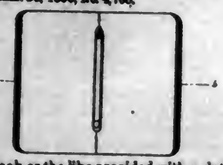
472,072. METHOD OF TAMPING RAILWAY-TIES. ELISHA G. PATTERSON, Titusville, Pa. Filed Dec. 28, 1891. Serial No. 416,282. (No model.)



Claim.—1. The method herein described of conveying ballasting material to and depositing and compacting it within a cavity or cavities under the bearers of said road-rails, consisting in forcing it into such cavity or cavities by means of an air-blast, substantially in the manner herein set forth.

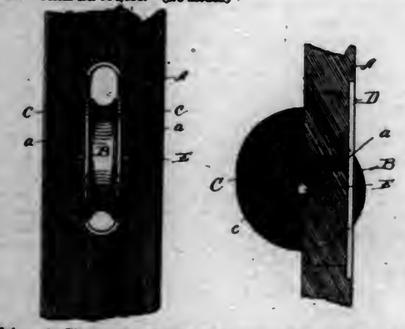
2. The method hereinbefore described of surfacing the rails of railroads when depressed in use, which consists in raising the bearing to the desired level and temporarily supporting it in the desired position and then injecting into the cavity thus formed under or within the bearing the necessary amount of ballasting material by means of air-pressure applied, substantially in the manner described.

472,073. NOTE-BOOK OR THE LIKE. WILLIAM PENMAN, London, England. Filed July 13, 1891. Serial No. 399,941. (No model.) Patented in England Mar. 26, 1890, No. 4,765.



Claim.—A note-book or the like provided with a slot cut out from the center of the several leaves, so as to form a cavity within which a pen or pencil may lie and which cannot be removed unless the book is opened.

472,074. SASH-PULLEY. FRANCIS V. PHILLIPS, Chicago, Ill., assignor to the Chicago Sash Pulley Company, same place. Filed Dec. 23, 1889. Serial No. 334,053. (No model.)



Claim.—1. The combination of the window-stile, the pulley, the shell, the front flange upon the shell, and a stop extending laterally beyond the side of the shell and adapted to be moved with respect to the shell after the latter has been inserted in the stile, said stile being suitably cut away for the admission of said projection, substantially as set forth.

2. The combination, with the window-stile having aperture *a*, of a sash-pulley, a shell therefor, and a stop extending beyond the side of the shell and adapted to be moved with respect to the shell after the latter has been inserted in the stile, substantially as set forth.

3. The combination of the pulley and shell, the former having an axis projecting beyond the shell and the latter having vertical slots to allow the pulley to change position after insertion in the stile, substantially as set forth.

4. The combination, with a sash-cord guide, of a stop extending laterally beyond the side of the shell and movable with respect to the same, substantially as set forth.

472,075. VEHICLE-BRAKE. MORGAN POTTER, Fishkill on the Hudson, N. Y. Filed Dec. 12, 1891. Serial No. 414,891. (No model.)



Claim.—1. In a brake for vehicles, the combination, with the shell journaled upon the shaft and having an interior spring, of exterior lugs, a projection upon the shaft, and a regulating-screw arranged to bear against said projection, substantially as and for the purposes set forth.

2. In a brake for vehicles, the combination of the spring-actuated shell and the shoe covering the open face thereof, said shoe being secured in place by bolts passing through it and through the shell, substantially as and for the purposes set forth.

3. In a brake for vehicles, the combination of the shell and the shoe mounted thereon, the shoe being provided with lugs upon its back and the ends of the shell being notched to receive said lugs, substantially as set forth.

4. The combination of the shell provided with bolt-holes and interior stays, as explained, the shoe removably secured upon said shell and bearing against the stays, substantially as and for the purposes set forth.

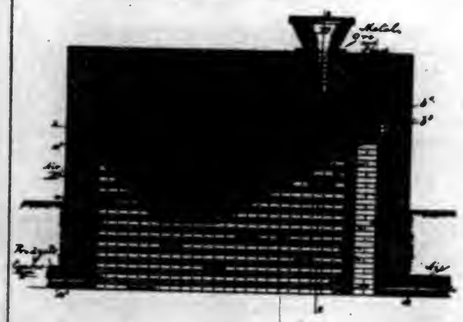
5. In combination with the shell, the movable brake-shoe mounted thereon and provided upon its working face with ribs inclined from its central line toward its sides and top, substantially as shown and described.

6. The combination of the shell and the shoe covering its face, the shell being provided with a draining-orifice through its back and near its lower end, substantially as shown and described.

7. The combination, with the brake-shaft provided with grooves and slots, as explained, of the plate mounted upon the brake-bar and provided with ribs, and the securing-bolts, substantially as and for the purposes set forth.

8. The combination, with the brake-shaft adjustably mounted upon the brake-bar, of the side lip arranged to bear against said bar, substantially as and for the purpose explained.

472,076. REGENERATIVE METALLURGICAL FURNACE. HENRY G. REW, Chicago, Ill. Filed Mar. 18, 1889. Serial No. 303,911. (No model.)

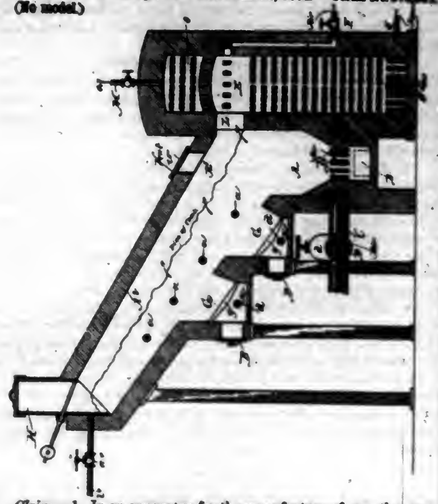


Claim.—1. The combination of the regenerators A C, having the air-inlets *a e* and the outlets a^3 c^3 for products of combustion, and the melting-chamber B, provided with a gas-supply pipe adapted to supply natural gas or carbonic oxide and hydrogen gas, (or both mixed,) the three chambers being connected by the valved flues a' d b^3 b^4, the valves of said flues b^3 b^4 being located one at each corner of the furnace, whereby the burning gases are directed diagonally and alternately in different directions across and over the center of the melting-chamber, and the communication of the air-inlet flues with the melting-chamber being above or near the inlet of the gas-pipe, substantially as and for the purpose described.

2. The combination of the stationary melting-chamber B, having the chimney G and the flues E *e e*, adapted to admit air to the base of the molten metal, with the regenerators A C, having air-inlets *e a* and gas-exits c^3 a^3, and the valved flues b^3 b^4, the valves of said latter flues being located one at each corner of the furnace, whereby the burning gases are directed diagonally and alternately in different directions across and over the center of the melting-chamber and whereby iron may be melted and converted into steel and the heat thereby generated may be stored in regenerators, substantially as and in the manner described.

3. The combination of the regenerators A C, having the inlets *a e* for air and the outlets a^3 c^3 for products of combustion, with the melting-chamber B, having the valved inlets a' d for heated air, inlets *b b* for gas, the air-inlets being above the gas-inlets, inlets E *e e* for charging air, inlets D D for metal or ore, and flues and valved flues b^3 b^4 for products of combustion, the valves for said flues being located one at each corner of the furnace, whereby the burning gases are directed diagonally and alternately in different directions across and over the center of the melting-chamber, and all combined substantially as and for the purpose described.

472,077. APPARATUS FOR THE MANUFACTURE OF GAS. HENRY G. REW, Chicago, Ill. Filed Jan. 21, 1891. Serial No. 378,691. (No model.)



Claim.—1. In an apparatus for the manufacture of gas, the combination of a main combustion-chamber provided with air-supplying ports and an ash-discharging door, an inclined coking-chamber at or near its upper part, said chamber having located in its inclined bottom wall a distinct combustion-chamber provided with an air-inlet and with an outlet adapted for the removal of ashes, the space immediately beneath the upper wall above the normal position of the charge of coal of said coking-chamber being normally in free communication with the upper part of the first-named combustion-chamber, whereby coal can be coked, its gases passed over the fuel in the main combustion-chamber, and its ashes separately removed without passing through said main combustion-chamber, substantially as set forth.

2. In an apparatus for the manufacture of gas, the combination of the main combustion-chamber, the inclined coking-chamber communicating therewith, said chambers each having distinct air-supplying ports and separate openings or doors for the removal of ashes, and a regenerator-chamber provided with a conduit, whereby it communicates with said main combustion-chamber, the upper parts of the several chambers being normally in free communication, substantially as set forth.

3. In an apparatus for the manufacture of gas, the combination of a main combustion-chamber, provided with air-supplying ports and an ash-discharging door, an inclined coking-chamber at or near its upper part in open communication therewith, said chamber having in its inclined bottom wall a distinct combustion-chamber provided with an air-inlet, the upper part of said coking-chamber being normally in free communication with the upper part of the first-named combustion-chamber, whereby coal can be raised to incandescence and coked and its gases passed over the fuel in the coking and main combustion-chambers, substantially as set forth.

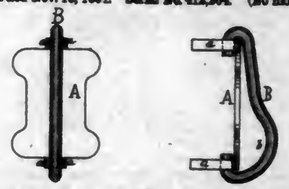
4. The combination of a gas-generating chamber provided with means for supplying air, steam, and coke thereto, a regenerator in communication therewith having a perforated arch near the level of the top of the chamber first named, the air-supply ports being below said arch and a chamber above said arch filled with loose material, like open brick-work, and an oil-pipe to supply oil to said chamber, whereby heat radiated from the arch will constantly heat the loose material and whereby the heat from the latter will vaporize the oil when admitted thereto, substantially as shown and described.

5. The combination of a gas-generator provided with means for supplying air, steam, and coke thereto, of two gas-holders communicating therewith through a pipe having two branches, one for each holder, each branch pipe having a valve, an exhauster, a washer, said exhauster communicating with said pipe, a pipe whereby said exhauster communicates with the washer, a pipe whereby the washer communicates with the generator, a discharge-pipe communicating with each of said branch pipes and opening into the external air, and a valve for said discharge-pipe, all as set forth, whereby gases can be washed and sent to either holder or discharged elsewhere, substantially as specified.

6. The combination of a gas-generating apparatus, a gas-washer, an exhauster, suitable connecting-pipes by which the said apparatus and devices communicate, two gas-holders, a pipe having two branches through which the exhauster can communicate with the holders, valves, one in each of said branches, a lever or equivalent device connecting the valves, whereby either may be closed simultaneously with the opening of the other, and a valved pipe connected to the branches between said valves and adapted to discharge into the open air, substantially as shown and described.

7. In combination, a gas-generating apparatus, a gas-holder connected by a communicating pipe with said apparatus, said pipe having a valve and having a branch provided with a valve, said branch being adapted to discharge outside said holder, a gas-burner on the pipe leading to the holder and between it and the valve in said branch pipe, and a gas-burner on the pipe leading from the generator, situated between said generator and the branch pipe, said latter burner extending to near the burner first named, whereby the character of the gas being produced can be ascertained and the gas either conveyed to the holder or discharged elsewhere, substantially as shown and described.

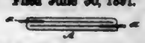
472,078. SHOE-LACE FASTENER. ELMER H. ROBERTS, Meriden, Conn. Filed Nov. 18, 1891. Serial No. 412,264. (No model.)



Claim.—1. As an improved article of manufacture, a lace-fastener consisting of a base-plate and a swinging bail formed of wire and having its ends bent inwardly, opposing each other and engaging the base-plate at its rear side, said base-plate and bail forming conjunctively a receiving-eye terminating at one end in a tapering slot, substantially as and for the purpose set forth.

2. As an improved article of manufacture, a lace-fastener consisting of a base-plate provided at each end with a pair of inwardly-struck securing prongs, and a swinging wire bail having its ends bent inwardly, opposing each other, and seated behind the base-plate between the respective pairs of prongs, the bail being bent to form a receiving-eye between the same and the base-plate, said eye terminating at one end in a tapering slot, substantially as and for the purpose set forth.

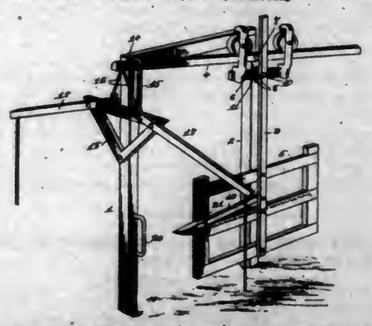
472,079. COMBINED BLOTTER AND RULER. DAVID C. H. ROSS, Cedar Rapids, Iowa. Filed June 30, 1891. Serial No. 397,965. (No model.)



Claim.—1. A blotter having one or more of its edges made thinner than the body of the blotter, whereby the said edge is offset so as not to touch the paper beneath, and hardened, as by saturation in shellac, glue, or the like, whereby it is adapted to serve as a ruler.

2. The described blotter A, doubly folded longitudinally, with the edges projecting beyond the fold *x* short distance and secured to said fold and hardened by saturation in shellac, glue, or equivalent hardening substance.

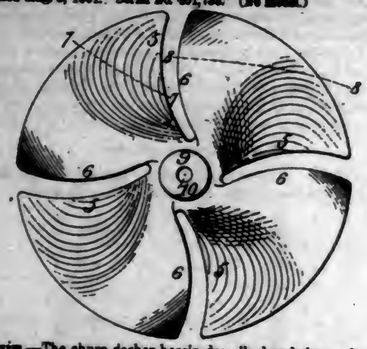
472,080. GATE. JEFFERSON C. SHANNON, Round Rock, Tex. Filed Oct. 6, 1891. Serial No. 407,923. (No model.)



Claim.—The combination of a main frame, a track-bar pivoted intermediate its ends on the frame, a hanger having rollers and mounted on the track-bar, a gate, a central vertical bar secured to the gate and pivoted to the hanger and suspending the gate therefrom, a triangular

frame secured to the main frame and arranged at one end thereof, operating-levers mounted on the triangular frame and connected with one end of the track-bar, a horizontal guide-rod secured to the gate, and a keeper secured to the main frame and engaged by the guide-rod, substantially as described.

472,081. CHURN-DASHER. ISAAC F. STERLING, TEXARKANA, TEX. Filed Aug. 5, 1891. Serial No. 401,732. (No model.)



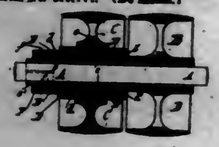
Claim.—The churn-dasher herein described and shown, having a central hub and a series of radial blades whose circumferential edges are substantially in a plane at right angles to the axis of revolution, each blade having two edges, which are substantially radial, one of the said radial edges 5 being concave and the other edge 6 being convex, the upper face of the edge 5 being concave and its lower face convex, while the upper face of the opposite edge 6 is convex and its lower face concave, the concavities of both faces inclining toward the center, whereby when the dasher is forced in either direction through the cream it is thereby caused to rotate and to draw the cream toward the center.

472,082. ATTACHMENT FOR PLOW-COLTERS. WILLIAM J. BROWN, St. Louis, Mo., assignor to the Southwestern Supply Company, same place. Filed Nov. 16, 1891. Serial No. 412,046. (No model.)



Claim.—An improved attachment for plow-coltors, comprising a vertically-elongated bar having its body portion provided with a longitudinal slot and at its lower end with an integral U-shaped extension, having a longitudinal slot in its lower end or arm, the said bar being designed to extend vertically against one side of a plow-beam and the head to extend away from said side of the beam, while the lower arm of the head or extension projects laterally beneath the beam and beyond the upper bar, a second elongated bar having a longitudinal slot in its body portion and an externally-screw-threaded integral bolt projecting at right angles from the bar, the second-named bar being designed to extend vertically against the opposite side of the plow-beam and the bolt to extend laterally beneath said beam and through the first-named bar, a bolt extending through the slots of the bars and designed to rest upon the upper side of the plow-beam, a fork for the colter having an open head or slide to receive the lower arm of the extension, and a bolt passed vertically through the fork-head and through the slot in the lower arm of the extension, substantially as set forth.

472,083. LOOSE PULLEY. ARTUS STERRY, Cincinnati, Ohio. Filed Jan. 30, 1892. Serial No. 419,777. (No model.)



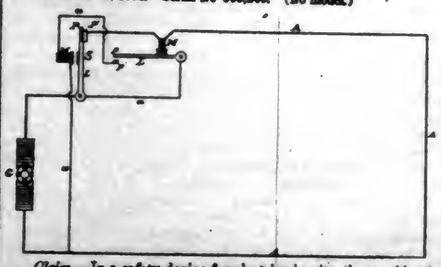
Claim.—1. The pulley-body, the removable hub, means to connect and disconnect the hub and body, a sleeve adapted to be secured upon the shaft to furnish a journal for the loose pulley and hold it against the fixed pulley, combined and arranged substantially as shown and described.

2. The combination, substantially as hereinbefore set forth, of the pulley-body, the removable hub having cone-shaped axial bore, a journal-sleeve adapted to slide upon the shaft and cone-shaped to exteriorly fit the bore of the pulley-hub and furnish a bearing for the pulley, and set-screws to secure the hub to the pulley and to adjust and hold the cone-shaped journal in position.

3. The combination, substantially as specified, of the loose pulley having its hub-bore cone-shaped, the cone-shaped sleeve E to fit said bore and extend through it and having its outer end reduced and longitudinally slotted to form clamping-jaws, the collar F, adapted to fit over said reduced and slotted end and counterbored to pass over the base of the cone-journal, the screw tapped through said collar to clamp the journal upon the shaft, and a tight pulley having its hub counterbored to receive the reduced projecting end of the cone-journal.

4. The combination of the loose-pulley body B, the hub D, having anti-friction lining *d*, extending out flush with the ends of the hub and its bore cone-shaped, the cone-sleeve journal E, having reduced end *d'*, the collar F to fit over the said reduced end and counterbored to receive the base of the cone-journal, and the screw to secure the journal to the shaft and secure its adjustment thereon and confine the loose pulley against the hub of the fixed pulley, the inner edge of said collar and adjacent edge of the fixed pulley bearing against the lining *d*, substantially as shown and described.

472,084. SAFETY CUT-OUT. MANSFIELD TRUM, Louisville, Ky. Filed June 5, 1891. Serial No. 395,969. (No model.)



Claim.—In a safety device for electric circuits, the combination, with the main circuit, of a branch circuit, an electro-mechanical device therein, electric contacts in the main circuit adapted to be operated by said electro-mechanical device, contacts in the branch circuit, and an electro-mechanical device in the main circuit and adapted to control the latter contacts, substantially as set forth.

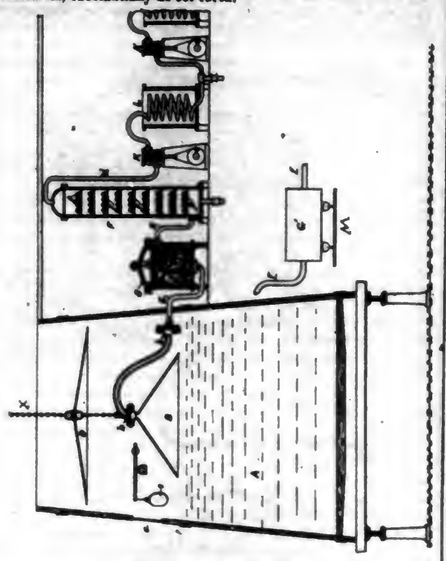
472,085. METHOD OF AND APPLIANCE FOR THE COLLECTION AND UTILIZATION OF CARBONIC-ACID GAS AND OTHER PRODUCTS GIVEN OFF DURING THE PROCESS OF FERMENTATION. CHARLES R. C. TICHBORNE, ALFRED H. DARLEY, MARMADUKE F. PURCELL, and SAMUEL GEOGHEGAN, Dublin, Ireland, assignors to the Brewers and Distillers CO, Company, Limited, Westminster, England. Filed Feb. 4, 1891. Serial No. 380,263. (No model.)

Claim.—1. An improved process consisting in collecting gaseous products of fermentation from an open fermentation-vat having a diaphragm, by means of which atmospheric air is excluded from the gases during their withdrawal, treating the said gaseous products with an easily oxidizable substance, removing germs or yeast from the said gaseous products by filtration and by heat, separating alcoholic or ethereal odorous vapors by washing with sulpheric acid, and finally compressing, step by step, the purified carbonic-acid gas to liquefaction.

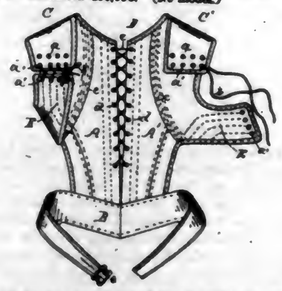
2. The process of purifying gaseous products of fermentation, which consists in removing therefrom yeast or vital germs by filtration through cotton wool, condensing and further purifying the gas by admixture of antiseptic substances when the gas is in a liquid or solid condition, substantially as set forth.

3. The process of purifying gaseous products of fermentation, which consists in separating therefrom alcoholic or ethereal odorous vapors by washing with sulpheric acid to form sulpho-vinic acid.

4. In the apparatus for the collection of gaseous substances arising from fermentation, the combination, with the fermenting tun or vat A, of the chain X, the inverted funnel or bell B, adapted to be suspended close to the surface of the fermenting liquors by means of said adjustable chain, the protecting diaphragm D, suspended in the upper part of the tun A by the chain X and adapted to prevent the admixture of the atmospheric air with the gases of fermentation during their withdrawal, substantially as set forth.

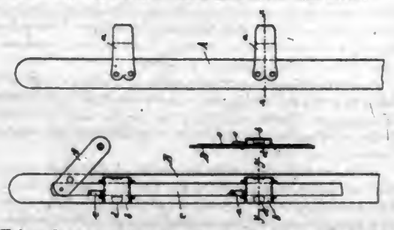


472,086. SHOULDER-BRACE. JANE TOWN, Delavan, Wis. Filed Sept. 26, 1891. Serial No. 406,950. (No model.)



Claim.—A shoulder-brace consisting of two like back-pieces united by lacings and having a belt secured to the lower ends thereof, bridging the opening between them and also having broad shoulder-bands secured thereto, said shoulder-bands being provided with adjustable fastenings in their front portions, as and for the purpose set forth.

472,087. CORSET-FASTENING. CARL R. VIEHOFER, Berlin, Germany. Filed Dec. 10, 1890. Serial No. 374,234. (No model.)



Claim.—In a corset-fastening, the steel bar A, provided with the spring-catches *a a*, in combination with steel bar B, provided with locks *b b* for reception of said spring-catches, having projections *d d*, with inclined side toward the spring-catches and vertical rear side for retaining same, with sliding bar *c*, provided with projections *e e*, having inclined surfaces and adapted on opening the fastening to engage under the hooks *a a*, said steel B having further a bolt-operating lever *f* pivoted thereto, substantially as described.

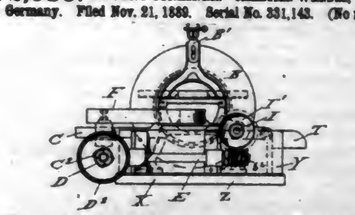
472,088. FASTENER FOR THE MEETING-RAILS OF SASHES. LEWIS C. WALKER, Indianapolis, Ind. Filed Dec. 31, 1891. Serial No. 416,735. (No model.)



Claim.—1. A sash-fastener comprising a casing 7, having a tapering bolt 8 seated therein, a spring coiled around such bolt, forcing the same outward by its tension, a removable key 9, having a flange 10, an opening in the upper part of the casing to allow the insertion and operation of such key, such opening having an enlargement, whereby when the key is turned and engages in such opening the bolt is retained within its casing, substantially as shown and described.

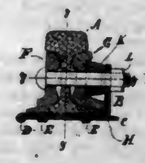
2. A sash-fastener comprising a lock having a tapered bolt seated therein, a removable key, an opening in the upper part of the lock to allow the insertion of the key, such opening having an enlargement at one end for engaging with a flange formed on such key, whereby the bolt is retained within the casing, such lock fitting into the top of the meeting-rail of the lower sash, in combination with a metal plate let into the side rail of the upper sash and provided with a central groove and a series of tapering sockets, substantially as shown and described.

472,089. ROTARY STRAINER. CHRISTIAN WANDEL, Reutlingen, Germany. Filed Nov. 21, 1889. Serial No. 331,143. (No model.)



Claim.—A strainer for freeing paper-pulp from the knots and impurities contained therein, consisting of the combination of a supporting-frame, a revolving shaft journaled upon said frame, two eccentrics and a bevel-wheel mounted upon said shaft, another shaft also journaled upon said frame at right angles to said shaft, a bevel-wheel and a worm carried by said last-named shaft, the bevel-wheel being engaged and driven by said first-named bevel-wheel, a third shaft also journaled in said frame parallel to said first-named shaft and at right angles to said second-named shaft, a gear-wheel on either end of said third-named shaft, one of which is engaged by the said worm, a perforated hollow cylinder revolving within a chamber in said frame, a gear-wheel carried by the said cylinder and engaged and driven by one of the wheels on said third-named shaft, levers pivoted to said frame, upon which levers said cylinder is mounted, and said lever extending to and oscillated by said eccentrics, and inlets and outlets for said cylinder, all substantially as and for the purpose set forth.

472,090. RAIL-FASTENING. GEORGE A. WEBER, New York, N. Y. Filed July 10, 1891. Serial No. 399,103. (No model.)



Claim.—1. The combination of the rail A, fish-plates F G, and chair B, provided with ribs E E, substantially as described.

2. The combination of the rail A, fish-plates F G, chair B, provided with ribs E E, and bead D, substantially as described.

3. The combination of the chair B, fish-plates F G, and channel K, substantially as described.

472,091. MANUFACTURE OF BLUE DYE. ARTHUR WEINBERG, Frankfort-on-the-Main, Germany, assignor to Leopold Cassella & Co., same place. Filed Sept. 24, 1891. Serial No. 406,714. (Specimens.)

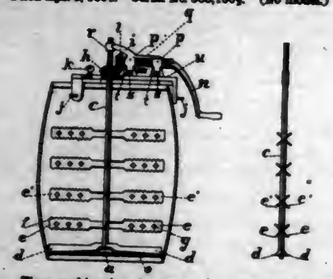
Claim.—1. The process of preparing blue-dies, which consists in heating a mixture of monoalkylated ortho-toluidine with metoxybenzaldehyde in presence of a condensing agent, such as hydrogen chloride, treating the thus-obtained product with strong sulphuric acid until the aqueous solution of a sample is no longer precipitated by acetate of sodium, and oxidizing the leuco sulpho-acids by means of an alkali bichromate, or of peroxides, such as lead peroxide, substantially as described.

2. The new blue coloring-matter having the constitution:

$$C_6H_3\text{——}COH\text{—}(C_6H_4OH_2.NHAlk)_2$$
$$(SO_3H)_2 \qquad OH,$$

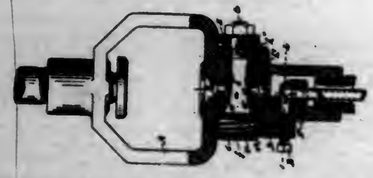
which is a dark-blue powder easily soluble in water, difficultly soluble in spirit, the blue aqueous solution not altered by addition of carbonate of soda, but if this solution is strongly acidulated the color turns into yellow, and reducing agents transform the color into a leuco compound.

472,092. MIXING-MACHINE. WILLIAM B. WHEELER, Madison, Wis. Filed Apr. 8, 1891. Serial No. 388,160. (No model.)



Claim.—The combination, in a paint-mixing machine, of a vertical shaft *c*, journaled at top and bottom ends and carrying at lower end two double-edged concave scrapers *d*, as described, and for the purposes set forth.

472,093. PLUG-COCK. MORRIS G. WILDER, Philadelphia, Pa. Filed Apr. 14, 1890. Serial No. 347,865. (No model.)



Claim.—1. A sheet-metal plug threaded externally and grooved or flattened at the end, combined with a lever having a threaded hole into which said plug may be screwed and tongue or flap adapted to be bent down upon the projecting end of the plug, so as to engage, lock, and securely hold the plug fast to the lever.

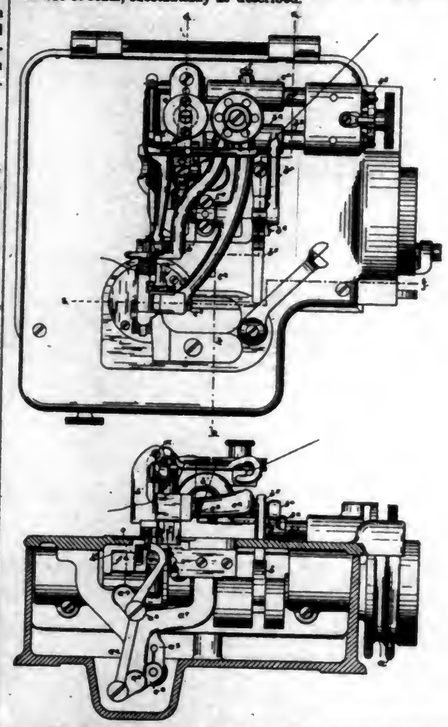
2. In a plug-cock, and in combination with a sheet-metal plug, and the body of the cock, and as a device for rotating said cock without wrenching or straining it, a lever or operating-piece fitted to and supported by the body of the cock, substantially as described.

472,094. SEWING-MACHINE. CHARLES H. WILLCOX, New York, N. Y., and STOCKTON BOSTON, Providence, R. I., assignors to the Willcox & Gibbs Sewing Machine Company, New York, N. Y. Filed July 23, 1887. Serial No. 245,073. (Model.)

Claim.—1. The combination, with the needle, the looper, the feed mechanism, and the trimming mechanism, of the main shaft extending sidewise across the machine beneath the bed-plate, eccentrics carried by said shaft for operating the trimmer, needle, looper, and feed, and the needle-carrying and shear-carrying arms or levers extending in directions from the rear to the front of the machine, substantially as described.

2. The combination, with the needle and its operating mechanism, of a looper having an upper jaw provided with a hook and a lower jaw, said looper being arranged to oscillate in a path around the edge of the cloth-plate, and means for actuating said looper to carry a loop of the needle-thread around the cloth-plate, substantially as described.

3. The combination, with the needle and operating mechanism, of the looper made with two jaws, the upper one of which is provided with a hook and the lower one with a groove inclined to the plane in which the needle reciprocates, so as to hold the loop diagonally to the line of seam, substantially as described.



4. The looper with two jaws, one of which is hooked, said looper being provided with a shank or tail, in combination with two rock-shaft arms connected one with the extremity of the tail and the other at an intermediate point, whereby the looper is moved in an arc around the edge of the cloth-plate, and in combination, also, with a needle and its actuating mechanism, substantially as described.

5. The combination of the double-jawed looper moving in a single plane and a needle moving in a line oblique to the plane of the looper's movement and intersecting the same, whereby the looper is when beneath the cloth on one side of the needle and when above the cloth on the other side thereof, substantially as described.

6. The combination, with the needle, of the double-jawed looper having a shank or tail and mounted upon two rock-shaft arms, and a globular eccentric and connections therefrom to the lower rock-shaft arms, all substantially as described, whereby the looper is actuated by a revolving shaft at right angles to the plane in which the looper moves.

7. The combination, with the needle, of a presser-foot on a movable support and a shear-blade also having a movable support, and means—such as a screw—for adjusting the support of the presser-foot and of the shear-blade simultaneously in a direction transverse to the line of cutting, substantially as described.

8. The combination, with the needle, of the presser-arm or lever, a shaft with which said arm is pivotally connected, an upper shear-blade and its arm also pivoted on a shaft, and means—such as a screw—for simultaneously adjusting said shafts transversely to the line of seam, substantially as described.

9. The combination, with the needle, of a movable upper shear-blade adjustable transversely to the line of cutting, a lower shear-blade, a carriage therefor movable independently of the upper blade, and a spring tending to force the said carriage in the direction to press the lower against the upper blade, substantially as described.

10. The combination, with the needle and with an upper shear-blade adjustable transversely to the line of cutting, of a lower shear-blade, a carriage therefor, also adjustable transversely to the line of cutting, a spring for moving said carriage, and a set-screw, substantially as described.

11. The combination, with the presser-foot and its supporting-arm and the stitch-forming mechanism, including a looper moving in a path whose end overlies the presser-foot, of a lever for lifting the presser-arm and holding it while lifted, and a tripping-cam carried by a rotating shaft of said machine, said lever having an arm which extends into the path of movement of said cam when the presser-foot is raised, whereby the presser-foot may be tripped when the machine is started and contact of the looper therewith prevented, substantially as described.

12. The combination, with the needle, shearing mechanism, and presser-foot, of the shield consisting of a plate attached to the presser-foot and projecting therefrom on the side away from the shears, substantially as described.

13. The combination, with the upper shear-blade and the presser-foot having a recess on its under side, of a lower shear-blade adapted to enter said recess, so that its upper edge can clamp the cloth between it and the bottom of the recess during the cutting operation, substantially as described.

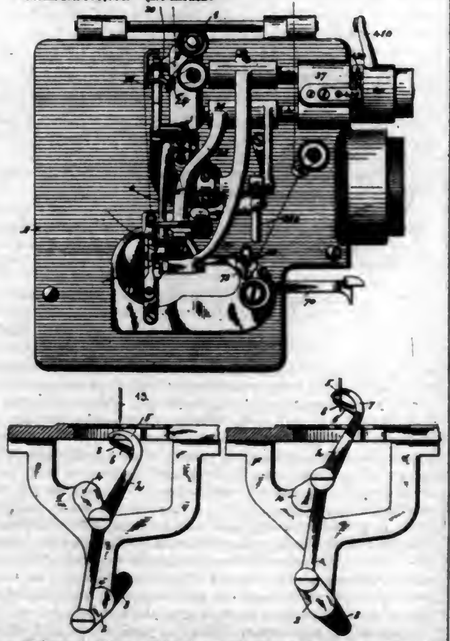
14. The combination, with the needle, of the presser foot hinged to its supporting-arm at a point in front of the needle, substantially as described.

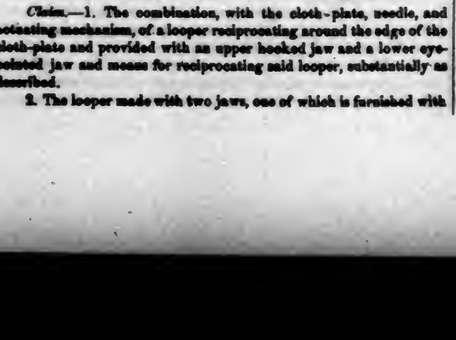
15. The combination, with the needle, of a presser-foot hinged to its support at a point in front of the needle, so that it can tilt in either direction, and a spring tending to hold the foot horizontal while permitting it to tilt, substantially as described.

16. The combination, with the presser-arm or lever, of the foot hinged thereto so as to rock in either direction, and the spring attached to the foot at one end and at the other bearing on a part of the supporting arm or lever above the hinge, substantially as described.

17. The combination, with the upper movable shear-blade vertically adjustable and the lower co-operating blade lying adjacent to an opening in the cloth-plate, of a clearer movable with said upper blade to push the trimmed-off portions of the fabric through said opening, said clearer having a horizontal projection, forming a stop to determine the position of said upper blade, substantially as described.

472,095. SEWING-MACHINE. CHARLES H. WILLCOX, New York, N. Y., and STOCKTON BOSTON, Providence, R. I., assignors to the Willcox & Gibbs Sewing Machine Company, New York, N. Y. Filed May 24, 1890. Serial No. 353,091. (No model.)





Claim.—1. The combination, with the cloth-plate, needle, and actuating mechanism, of a looper reciprocating around the edge of the cloth-plate and provided with an upper hooked jaw and a lower eye-pointed jaw and means for reciprocating said looper, substantially as described.

2. The looper made with two jaws, one of which is furnished with a hook and the other with an eye, in combination with a reciprocating needle and operating mechanism for moving the looper in a plane oblique to the plane of movement of said needle, substantially as described.

3. The combination, with the needle for the upper thread, the take-up therefor, and the looper having a hooked upper jaw and a lower pointed jaw furnished with an eye for a lower thread, said parts co-operating to form an overlock-stitch, of a second take-up for drawing up the lower thread and setting the stitch, substantially as described.

4. The combination, with the stitch-forming mechanism, of take-up mechanism comprising an oscillating take-up arm, means for moving the same independently of the needle, and stationary thread-pins on opposite sides of the path of movement of said arm and intermediate between the ends of said path, which pins catch the thread when the needle enters the cloth, so that the needle completes the drawing up of the stitch, substantially as described.

5. The combination of the reciprocating needle, the reciprocating take-up movable independently thereof and consisting of an arm slotted at its outer end, a take-up post embraced by the slot in said arm, and thread-pins on opposite sides of said post and near the end of the path of movement of said arm, substantially as described.

6. The combination of the needle, the reciprocating take-up, actuating mechanism moving the latter away from the needle as it descends, thread pins or guides for holding the thread, said pins or guides being placed near the end of the take-up's movement, and a take-up post provided with a detent in the rear of said thread-pins, substantially as described.

7. The combination of the reciprocating needle, the co-operating looper having an eye-pointed member and operating in conjunction with said needle to make an overedge lock-stitch, a take-up for the looper-thread, and a take-up for the needle-thread, the latter take-up comprising an arm oscillating independently of the needle, and thread-pins on opposite sides of the arm and intermediate between the ends of its path of movement, so that the arm draws on the thread during the latter portion only of its backward movement, substantially as described.

8. The combination, with devices for forming overedge stitches, of the two feed-bars with their feed-surfaces, one of which acts in front of the needle and the other in rear thereof, and actuating mechanism for moving the former more rapidly than the latter, substantially as described.

9. The combination of the feed-rocker and the two feed-bars respectively attached to said feed-rocker at different distances from the center of oscillation thereof, substantially as described.

10. The combination of the feed-rocker and means for adjusting the same to oscillate through a longer or shorter arc, and the two feed-bars respectively connected with said feed-rocker at different distances from its center of oscillation, substantially as described.

11. In combination with the stitch-forming devices, the upper and lower shear-blades and their supports, said supports being free to move toward and away from the needle while the machine is in operation, and means—such as specified—for adjusting both blades with their supports while the sewing proceeds, substantially as described.

12. The combination of the presser-foot adjustable with reference to the needle, the shearing mechanism also adjustable with reference to the needle, and the adjusting-nut controlling the positions of both said parts, said nut having an operating-arm adapted for connection with a treadle, whereby said parts can be adjusted simultaneously while the machine is in operation, substantially as described.

13. The combination of the shearing mechanism, the presser-foot, laterally-adjustable supports for the presser-foot and shear-blades, the adjusting-nut, and its stop-pins for determining the limits of variation, the said nut being arranged to adjust the position of said supports, substantially as described.

14. The combination, with the movable shear-blade and its support, of a shoe interposed between the two and supporting the blade both beneath and above its cutting-edge, substantially as described.

15. In combination with the shear-blade, the shoe having a toe or projection against which the end of the blade is set, substantially as described.

16. In combination with the blade, the shoe movable within said blade and having a deflecting-face extending away from the plane of movement of the blade, so as to deflect the cut-off strip, substantially as described.

17. The combination, with the reciprocating needle and looper, of the stationary needle-shield consisting of a plate or piece attached to the bed of the machine beneath the cloth-plate and having a slot in the path of the needle and controlling the position thereof with respect to the looper, substantially as described.

18. The cuff-guide hinged on an adjusting-eccentric, so that it can be swung on said eccentric into and out of position and adjusted with reference to the line of seam by turning said eccentric, substantially as described.

19. A sewing-machine presser-foot provided with a notch in the rear edge of the surface which bears upon the work, said notch being in the line in which the stitches are formed and constituting a thread-cutter, substantially as described.

472,096. SEWING-MACHINE NEEDLE. CHARLES H. WILLCOX, New York, N. Y., and STOCKTON BORTON, Providence, R. I., assignors to the Willcox & Gibbs Sewing Machine Company, New York, N. Y. Filed May 27, 1890. Serial No. 353,241. (No model.)

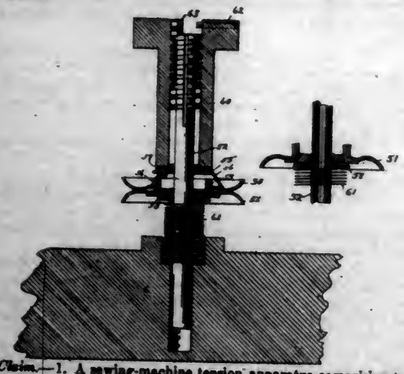


Claim.—1. A sewing-machine needle having on one side of its blade a long thread-groove and being recessed or cut away above the eye on the side having said long thread-groove, substantially as described.

2. A sewing-machine needle having on one side of its blade a long thread-groove leading to the eye and on the other a groove above the eye terminating in a recess for entrance of the looper between the needle and thread, and a short groove leading from the eye into the point, forming a passage for the thread between the needle and goods, substantially as described.

A sewing-machine needle having on one side a long thread-groove leading to the eye and a recess or depression in the blade above the eye, and on the opposite side a short groove leading from the eye toward the point, substantially as described.

472,097. TENSION APPARATUS FOR SEWING-MACHINES. CHARLES H. WILLCOX, New York, N. Y., and STOCKTON BORTON, Providence, R. I., assignors to the Willcox & Gibbs Sewing Machine Company, New York, N. Y. Original application filed May 24, 1890, Serial No. 353,091. Divided and this application filed July 6, 1891. Serial No. 398,584. (No model.)



Claim.—1. A sewing-machine tension apparatus comprising two tension-washers mounted face to face on their tension pin or stud so as to rotate independently thereon and having small bearing-surfaces on the sides opposite the faces in contact, a spring pressing said tension-washers together with light pressure, and means for holding the washers against the pressure of the spring, said parts being all constructed, proportioned, and combined in the manner set forth, so that the drawing of the thread through the tension causes said washers to revolve, substantially as described.

2. The combination of a rotatable tension-washer having a barrel or hub, a second rotatable washer having a raised central portion which surrounds said barrel or hub and of sufficiently greater diameter to form an annular thread-space between them, a spring which presses said washers together while permitting them to rotate when the thread is drawn between them, and a stop for holding the washers against the pressure of the spring, substantially as described.

3. The combination of a rotatable tension-washer having a barrel or hub, a second independently-rotatable washer having a raised central portion which surrounds said barrel or hub and of sufficiently greater diameter to form a thread-space between it and said barrel or hub, said central portion being provided with openings for the escape of lint, a spring for holding the friction-surfaces of said washers together with light pressure, and means for supporting the washers in opposition to the action of the spring, substantially as described.

4. The combination of a rotatable tension-washer provided with a hub or barrel, a second washer having a raised central portion which surrounds said barrel or hub, forming an annular thread-space between them, the adjacent faces of the washers being rounded or convex from the inner to the outer edges, thereby forming a small friction-surface at a distance from the center of the washers, a spring for pressing the washers together, and means for holding the washers against the action of the spring, substantially as described.

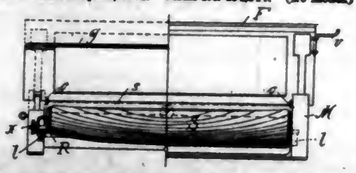
472,098. MINER'S SAFETY-LAMP. LEWIS H. WILLIAMS, Aberdare, England. Filed July 6, 1891. Serial No. 398,543. (No model.)



Claim.—1. The combination, in a miner's safety-lamp, of a step-top—such as *b*—having orifices—such as *a*—for admission of air, a hollow ring—such as *d*—into which the orifices *a* open, tubular pillars *f* for conducting the air from the ring *d* to a ring—such as *h*—with annular space *g*, from which by apertures *i*, guarded by a gauze shield *k*, the air is admitted to the burner at a level below that of the flame, substantially as hereinbefore described.

2. In a miner's safety-lamp, the combination, with a step-top *b*, having orifices *a* for the admission of air, of a hollow ring *d*, into which said orifices *a* open, the said ring *d* having orifices *l* in the upper portion thereof for carrying off superfluous air, tubular pillars *f* for conducting the air from the ring *d* to a ring *h*, with annular space *g*, from which by apertures *i*, guarded by a gauze shield *k*, the air is admitted to the burner at a level below that of the flame, substantially as hereinbefore described.

472,099. TRACING APPARATUS. ALFRED WYBE, Münster, Germany. Filed Sept. 2, 1891. Serial No. 404,517. (No model.)



Claim.—1. In a tracing apparatus, the combination, with a frame adapted to hold the sheet of drawing to be traced, of a mirror adapted to cast the reflected light against the drawing, said mirror being unconnected with and adapted to be adjusted independently of said frame to vary the angle of reflection, as specified.

2. In a tracing apparatus, the combination, with a frame F, adapted to hold the sheet of drawing to be traced, of a second frame R, separate from the first and provided with a mirror, said frame R adapted to be adjusted independently of the frame F to vary the angle of reflection, as specified.

3. In a tracing apparatus, the combination, with a main frame, of a frame F for holding the sheet of drawing to be traced, said frame F being adapted to be adjusted with respect to the main frame, and a frame R, provided with a mirror, said frame R being supported by the main frame separate from the frame F and adapted to be adjusted independently of the same to vary the angle of reflection, as specified.

4. In a tracing apparatus, the combination, with the main frame, of the frame F, the racks to the upper ends of which the front end of the frame F is hinged, spring-pawls engaging said racks and adapted to be simultaneously operated to release the same, and the frame R, supported by said main frame and provided with a mirror, said frame being adapted to be adjusted upon said main frame, for the purpose specified.

5. In a tracing apparatus, the combination, with the main frame, of the frame F, the racks to the upper ends of which the front end of frame F is hinged, posts supporting the opposite end of said frame and engaging recesses in the latter, and a frame R, supported by the main frame and provided with a mirror, said frame R being adapted to be adjusted upon the main frame, for the purpose specified.

6. A tracing apparatus consisting of a frame F, vertically adjustable and having a sheet of glass *g*, in combination with a curved mirror S, adapted to swivel about two axes standing at right angles to each other, as and for the purpose set forth.

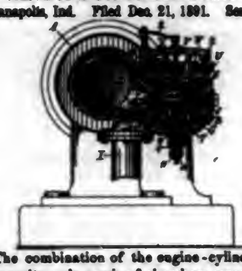
7. The combination of a tracing apparatus having a reflecting-mirror adapted to swivel about its axis in such a manner as to cast the reflected light combined with the direct light against the drawing to

be traced, and means for mounting both sheets of paper drawing and tracing on the frame of the apparatus, as and for the purpose set forth.

8. The combination, with a tracing apparatus having a reflecting-mirror, of spring-clasps for mounting the drawings on said apparatus, consisting of an upper part *b* and a lower part *a*, of which *b* is joggled near the middle and both having lugs for jointly carrying a pin *t*, and a double-blade spring *f'*, inserted between said parts *a* and *b* on the side where they stand apart, said blade-spring being held by the pin *t* and adapted to unite the parts *a*, *b*, and *f'*, as and for the purpose set forth.

9. As an article of manufacture, a spring-clasp consisting of an upper part *b*, joggled near the middle, and a lower part *a*, both *b* and *a* having side lugs *c* and being held together by a pin *t*, in combination with a double-blade spring *f'*, inserted between the parts *a* and *b* where the same stand apart from each other in such a manner that the same is also held by the pin *t* and its bearing ends rest against the inner sides of the parts *a* and *b*, as set forth.

472,100. VALVE-GEAR FOR STEAM-ENGINES. BENEDICT BERTHMANN, Indianapolis, Ind. Filed Dec. 21, 1891. Serial No. 415,719. (No model.)



Claim.—1. The combination of the engine-cylinder, the steam-chest having at opposite ends a pair of chambers separate from each other but communicating, respectively, with the induction-ports of the steam-cylinder and with the steam-space of the steam-chest, said communication with the steam-chest being through circular openings, the hollow cylindrical casings fitted in said openings and projecting into said chambers, the walls of each of said casings being provided with peripheral openings which communicate with the steam-space of the steam-chest and other peripheral openings which communicate with said chamber, the open cylindrical valve mounted in said casing so as to slide longitudinally therein and arranged to close the openings into said chambers, the pair of annular cam-surfaces arranged concentric with said valves, the yokes attached to the stems of the valves and resting upon said cams, and means for imparting an oscillating movement to said yokes over said cams, all arranged to co-operate substantially as and for the purpose set forth.

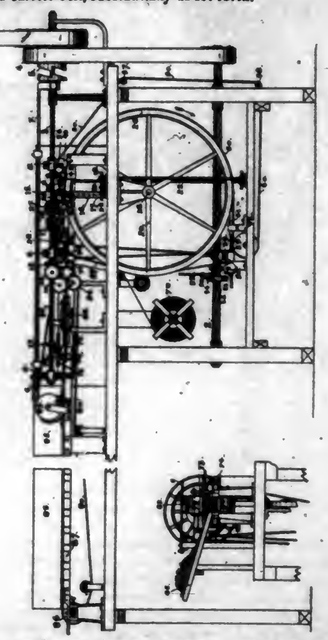
2. The combination, with the engine-cylinder, the steam-chest, and the chambers therein, which communicate with the cylinder-ports, of the exhaust-chamber arranged in the lower part of the steam-chest and communicating with said steam-chambers through circular openings, the cylindrical valves seated in said openings and having stems which project through the bottom of the steam-chest, the sliding bar mounted in a bearing beneath the steam-chest so as to slide longitudinally thereof, the cams secured to said bar and arranged to engage said valve-stems, and means for imparting a reciprocating movement to the bar, all arranged to co-operate substantially as and for the purpose set forth.

472,101. CIGARETTE-MACHINE. HENRY BOHLS, San Francisco, Cal., assignor to the Bohls Cigarette Machine Company, Lynchburg, Va. Filed Oct. 16, 1888. Renewed Aug. 30, 1889. Again renewed Apr. 21, 1890. Serial No. 348,915. (No model.)

Claim.—1. In a continuous-cigarette machine, a guide or mouth piece comprising two parts, an inner and an outer one, the outer part being trough-shaped and having upwardly-projecting and converging sides and the inner part corresponding in shape and fitting between said sides, converging slits, and an under space being left between the two parts for the passage of the wrapper between them, the inner part having a guideway along which the continuous filler is adapted to pass onto the paper wrapper, substantially as set forth.

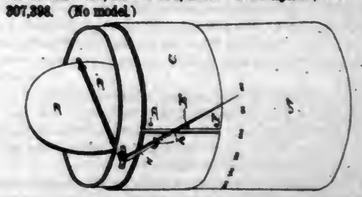
2. In a continuous-cigarette machine, a guide or mouth piece comprising two parts, an inner and an outer one, the outer part having a troughed portion and upwardly projecting and converging sides and the inner part corresponding in shape and fitting between said sides and in the troughed portion, converging slits, and an under space being left between the two parts for the passage of the wrapper, the inner part having a guideway along which the continuous filler is adapted to pass onto the paper wrapper, substantially as set forth.

3. In a continuous-cigarette machine, a guide or mouth piece comprising two parts, an inner and an outer one, the outer part being trough-shaped and having upwardly projecting and converging sides and a channel and the inner part corresponding in shape, so as to fit between said sides, converging slits, and an under space being left between the two parts of the guide or mouth piece for the passage of the wrapper between them, the inner part having a guideway along which the continuous filler is adapted to pass onto the paper wrapper, combined with a carrier-belt, substantially as set forth.



4. In a continuous-cigarette machine, a guide or mouth piece comprising two parts, an inner and an outer one, the outer part being trough-shaped and having upwardly projecting and converging sides and the inner part corresponding in shape, so as to fit between said sides, converging slits, and an under space being left between the two parts of the guide or mouth piece for the passage of the wrapper between them, the inner part having a guideway along which the continuous filler is adapted to pass onto the paper wrapper, combined with a folding-guide 40, having lips as described, substantially as set forth.

472,102. AUTOMATIC DAMPER. JOHN M. BRADBURY and ALANSON B. GRISWOLD, Bunker Hill, Kans. Filed Apr. 16, 1889. Serial No. 307,398. (No model.)

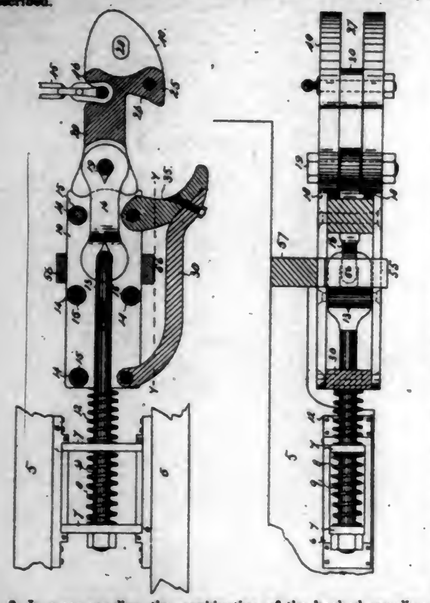


Claim.—The combination, with a pipe and a damper and its pivot-rod held in the walls of the pipe, of a bimetallic strip surrounding the pipe with one end attached thereto and the remaining portion free, a pointer loosely guided and pivoted in a loop on the free end of said strip and connected at one end eccentrically with an extended end of the damper pivot-rod, and an index on the pipe, substantially as shown and described.

472,103. CAR-COUPLING. FRADOM R. BROWN, Denver, Colo., assignor to the Globe Manufacturing Company, same place. Filed July 1, 1891. Serial No. 398,182. (No model.)

Claim.—1. The combination, with a draw-head secured to the car and provided with a longitudinal opening therethrough, of a hooked coupling-head engaging the outer extremity of the draw-head and laterally movable exteriorly thereon, and a longitudinally-yielding con-

section between the car and the coupling-head, said connecting means passing through the longitudinal opening in the draw-head and attached to the coupling-head outside of the draw-head, substantially as described.



2. In a car-coupling, the combination of the hooked coupling-head, the draw-head provided with a longitudinal opening therethrough from end to end and intermediately located between the coupling-head and the car, a longitudinally-yielding connection attached to the car at one extremity, passing through the longitudinal opening in the draw-head, and attached to the coupling-head at the opposite extremity, said connection with the coupling-head being formed outside of the draw-head, whereby the coupling-head has a lateral movement thereon, and a guard-buffer secured to the draw-head and located in the rear of the coupling-head when the cars are coupled, substantially as described.

3. In a car-coupling, the combination of the yielding draw-bolt connected with the car, the hooked coupling-head connected with the bolt by a link 16, and the draw-head lying intermediately between the coupling-head and the car and through which the connection between the car and the coupling-head passes, substantially as described.

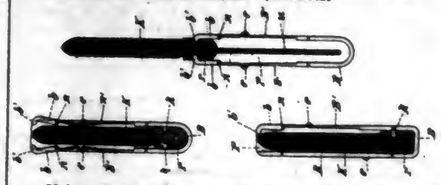
4. In a car-coupler, the combination, with the movable followers separated by the spring, of the draw-bolt passing through the followers and the spring, the draw-head, the coupling-head, and the link, which is movably connected at one extremity with the draw-bolt and at the other extremity with the coupling-head, and a spring located between the front follower and the draw-head, whereby the latter is held in suitable functional relation with the coupling-head, substantially as described.

5. In a car-coupling, the combination of the yielding draw-bolt, the hooked coupling-head, and the link connecting the bolt and head, the draw-head suitably held in operative relation with the coupling-head, and suitable means for uncoupling the hooked heads by a lateral thrust, substantially as described.

6. In a car-coupling, the combination of the hooked coupling-head normally yieldingly connected with the car in such a manner as to permit both longitudinal and lateral movement, and a locking-bar connected with the car at one extremity and adapted to engage the coupling-head at the opposite extremity, whereby the coupling head is rigidly secured in place at will, said head being recessed both longitudinally and vertically for engagement with the ordinary link or locomotive coupling-bar, substantially as described.

7. In a car-coupling, the combination of the draw-head provided with a longitudinal opening therethrough from end to end and suitably supported upon the car so as to have no lateral movement, a hooked coupling-head engaging the outer extremity of the draw-head, and a longitudinally-yielding connection between the car and the coupling-head, said connecting means passing through the longitudinal opening in the draw-head and attached to the coupling-head outside of the draw-head, whereby the coupling-head has a lateral movement thereon, substantially as described.

472,104. POCKET-KNIFE. BRUNO VON BÜLZINGSLÖWEN, New York, N. Y., assignor of one-half to MAX Rodding, same place. Filed Dec. 29, 1891. Serial No. 416,473. (No model.)



Claim.—1. A handle for pocket-knives, consisting of a U-shaped frame-strap, covering-plates fastened to the frame-strap, and links with inwardly-bent jaws pivoted to the covering-plates and pressing against the shanks of the frame-strap, in combination with a knife-blade or any other blade having lateral notches to be engaged by the inwardly-bent jaws of the aforesaid links, substantially as set forth.

2. In a pocket-knife, the combination of a hollow handle the covering or side plates of which are provided with guide-grooves, with links provided with inwardly-extending jaws pivoted to the covering-plates and pressing against the shanks of the cut-off metallic U-shaped frame-strap of the handle, and a blade having pins which slide in the guide-grooves of the covering-plates and being provided with lateral notches to be engaged by the inwardly-bent jaws of the aforesaid links, substantially as set forth.

3. A handle for pocket-knives, consisting of U-shaped metallic frame-straps having one shank cut off, an intermediate plate placed between the said frame-straps, covering-plates having guide-grooves and being fastened to the frame-straps so that the intermediate plate is inclosed in the handle, and links with inwardly-bent jaws pivoted to the covering-plates and the intermediate plate and pressing against the cut-off shanks of the frame-straps, in combination with knife or other blades having pins which slide in the guide-grooves of the covering-plates and notches to be engaged by the inwardly-bent jaws of the aforesaid links, substantially as set forth.

472,105. COMBINED COLLECTION AND DELIVERY LETTER-BOX. WILLIAM BERARD, Port Jefferson, Ohio. Filed Apr. 14, 1891. Serial No. 388,858. (No model.)



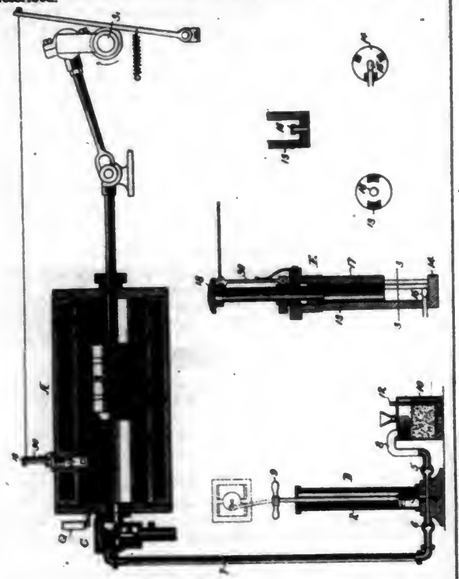
Claim.—1. A mail-box comprising a horizontal paper-receiving compartment, two vertical mail-receiving compartments below the paper-compartment, the several compartments being separate and independent of each other and each having a slip-opening which is closed by a flap and a door, and a door for the removal of the deposited mail-matter, substantially as described.

2. The combination, with a mail-box, of a separate and independent chute secured to the box and inclining inwardly and downwardly and having its top and sides projected beyond the exposed side of the box to form a housing, and a flap weighted at its lower edge and adapted to overlap the end of the lower side of the said chute and be limited in its movement thereby and pivoted at its ends to the sides of the chute and constructed to open inward, substantially as shown and described.

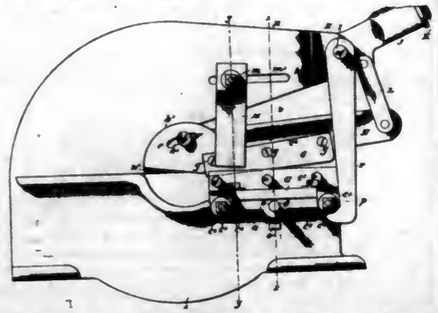
472,106. GAS-ENGINE. JOHN CRAMER, Sterling, Ill. Filed Jan. 2, 1891. Serial No. 376,473. (No model.)

Claim.—1. The combination, with a gas-engine and its ignitor and charging means, of a hand-pump and carburetor for charging the combustion-chamber while the engine is stationary and a hand-operated ignitor consisting of a hammer and anvil, substantially as described.

2. The combination of a gas-engine and an auxiliary ignitor provided with a hammer and anvil, substantially as and for the purpose described.



472,107. METAL-SHEARS. CHARLES J. COLLINS, Cincinnati, Ohio, assignor to J. M. Robinson & Co., same place. Filed Aug. 7, 1891. Serial No. 401,997. (No model.)

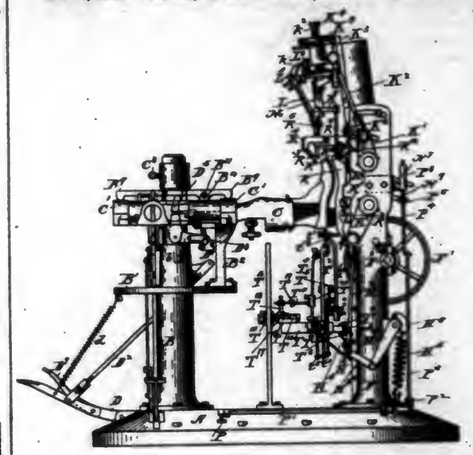


Claim.—1. In a metal-shearing machine, the combination, with the base-block and the stationary shear thereon, of the head-block provided with a recessed portion having at its inner terminal a semicircular bearing-recess, a swinging shear provided with an enlarged semicircular end that is designed to fit and work within said semicircular recess, and a segmental slot adapted to work over the pivot-bolt eccentrically located in said recess, substantially as set forth.

2. In a metal-shearing machine, the combination, with the base and head-block and the stationary and swinging shear therein, of the swinging strengthening and retaining hook pivoted to the outer or forward end of said head-block and provided with a squared end or shoulder engaging beneath the extreme outer end of the bed of said base-block, substantially as set forth.

3. The combination, with the base-block and the stationary shear thereon, of the head-block having a semicircular bearing recess, a swinging shear provided with an enlarged circular end adapted to fit and work within said semicircular recess and with a segmental slot adapted to work over the pivot-bolt eccentrically located in said recess, and the strengthening and retaining hook pivoted to the outer end of said head-block and provided with a squared engaging-shoulder that is adapted to engage the bed of said base-block directly beneath the stationary shear-holder and shear thereon, substantially as set forth.

472,108. SHOE-TREEING MACHINE. GEORGE W. COPELAND, Malden, and JOSEPH R. CRISP, Somerville, Mass.; said Crisp assignor to said Copeland. Filed Aug. 3, 1891. Serial No. 401,598. (No model.)



Claim.—1. In a treeing-machine, the combination of a swiveling turret-head having socket-pieces C, with a clamping-lever B^3, and mechanism, substantially as described, for automatically operating the same and locking the foot, substantially as and for the purposes set forth.

2. In a shoe-treeing machine, the combination of an inclined foot-piece R^3, adapted to be moved by the toe of the shoe as it is being placed in position to be mechanically treed, with mechanism, substantially as described, for connecting said foot-piece to the swinging rand-guide pieces R, whereby said guide-pieces are automatically adjusted and held, as described, substantially as and for the purposes set forth.

3. In a treeing-machine, the combination of swinging rand-guide pieces R, with the inclined foot-piece R^3, attached to the arm R^4, standard R^5, its arm R^6, hooked rod R^7 R^8, segment ratchet-arm R^9 R^{10}, and holding-lever pawl R^{11}, operating substantially as and for the purposes set forth.

4. In a treeing-machine, the combination of the rand-rubbing tools T' and mechanism, substantially as described, for giving the same vertical and yielding horizontal rubbing motions with an automatically-adjustable rand-guide, substantially as and for the purposes set forth.

5. In a treeing-machine, the combination of the heel-treeing tool, consisting of the rigid standards f^6 f^7, mounted upon the vertically-reciprocating and horizontally-sliding tool-holder T, a sliding rubbing-belt T^4, provided with rubbing-tools, one end of said belt being fixed to the top of the standard f^6 and the other end to the yielding quill f^8, which slides on the standard f^7 when the tool-holder T is reciprocated, substantially as described, and for the purpose set forth.

6. In combination with a treeing-machine, the toe treeing or finishing strap M' M^2, and means, substantially as described, to cause it to first form and finish the end and then the front of the toe of an upper presented upon a tree to its action, substantially as shown and described.

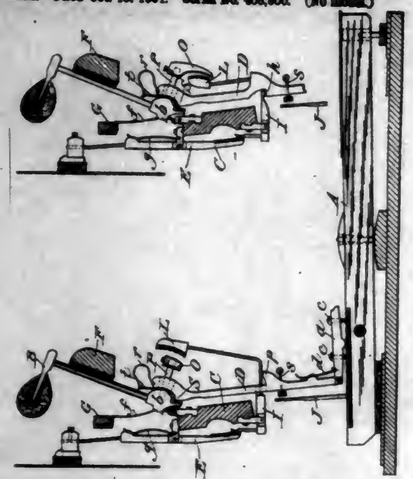
7. In a treeing-machine, the combination of the toe-treeing tool M, tool-head K^2, on screw pivot-bolt K^4, on which the tool-head is adapted to swivel, and mechanism for swiveling the same, as described, and for the purpose set forth.

8. In a treeing-machine provided with suitable treeing mechanism, the combination of foot-lever mechanism, substantially as described, connected to the foot-piece P and suitable connecting mechanism to the heel-piece p^{14}, whereby the presence of a shoe is required upon the toe before the rubbing-tools before the machine can be set in motion by depressing the foot-piece P, substantially as shown and described.

9. In a treeing-machine, the vamp-line tools T^5 T^6, and means, substantially as described, for giving them adjustable angular motion, substantially as described, and for the purpose set forth.

10. In a shoe-treeing machine, a turret carrying a series of trees or lasts for holding shoes, mechanism for revolving the trees to bring them consecutively to the rubbing and blast mechanisms, and automatic rubbing mechanism, in combination with mechanism, substantially as described, for delivering a blast of cold air on all sides of the shoe, whereby a shoe may be first treed and dressed, then rubbed, next dried, and then finished and removed from the tree, these steps being performed consecutively, substantially as set forth.

472,109. PIANO-ACTION. AUGUSTUS DE FOE DERICK, Wakefield, Mass. Filed Oct. 13, 1891. Serial No. 408,800. (No model.)



Claim.—1. In a piano-action, the combination of the key, a sliding or endwise-moving jack pivotally connected therewith at its lower end, and a jack-spring fixed at its lower end on the key and bearing at its free upper end on the jack, substantially as described.

2. In a piano-action, the combination of the key, an adjustable rocker thereon, a sliding or endwise-moving jack pivotally connected thereto, and a jack-spring fixed upon the rocker and bearing at its free end on the front side of the jack, substantially as described.

3. In a piano-action, the combination of the key, an adjustable rocker thereon, an endwise-moving jack pivotally connected at its lower end with the rocker, a jack-spring fixed upon the rocker and bearing at its free end upon the front side of the jack, and a jack-trip carried by the key and co-operating with an adjustable stop on the jack, substantially as described.

4. In a piano-action, the combination of the key, the hammer, an endwise-moving jack having an extension at its upper end in front of the hammer-butt and being pivotally connected with the key at its lower end and free at its upper end, a pivoted damper-actuating lever, and a connection between the latter and the jack, substantially as described.

5. In a piano-action, the combination of the key, an endwise-moving jack, a hammer, and a pivoted hammer-check actuated by the jack, substantially as described.

6. In a piano-action, the combination of the key, an endwise-moving jack, a hammer having a buffer projecting from its butt, and a pivoted hammer-check actuated by the jack, substantially as described.

7. In a piano-action, the combination of the key, an endwise-moving jack pivotally connected with and supported by the key, a pivoted damper-actuating lever, a hammer-check carried by the lever, and a connection between the jack and the lever, substantially as described.

8. In a piano-action, the combination of a sliding or endwise-moving jack, a pivoted hammer-check, and a connection between them, whereby the check is operated by the jack, substantially as described.

9. In a piano-action, the combination of the key, the hammer, an endwise-moving jack, and a spring reacting between the hammer and the jack to prevent the hammer from falling while the jack is returning to place.

10. In a piano-action, the combination of the hammer having a shouldered butt, an endwise-moving jack having a shoulder at its upper end, an extension of the jack in front of the hammer-butt, and a guide projection from the hammer-butt acting on the extension, substantially as described.

11. In a piano-action, the combination of the hammer having the shouldered butt, an endwise-moving jack having a shoulder and an extension in front of the butt, and a spring connection between the hammer-butt and the extension, substantially as as described.

12. In a piano-action, the combination of a pivoted hammer, a sliding or endwise-moving jack, and a repeating-spring connection between the hammer and the jack, arranged and operating as and for the purpose described.

13. In a piano-action, the combination of the hammer, a projection from the hammer-butt carrying a buffer, and a hammer-check pivoted to the action-rail and actuated by the jack, substantially as described.

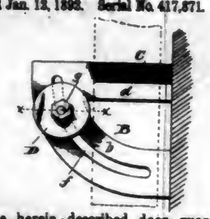
14. In a piano-action, the combination of a pivoted hammer, a sliding or endwise-moving jack, a repeating-spring carried by the jack, and a flexible connection between the spring and the hammer, arranged and operating substantially as described.

15. In a piano-action, the combination of the hammer, a jack for operating the same, and a repeating-spring connection between the jack and the hammer-butt for preventing the hammer from falling while the jack is being restored to place and facilitating repetition of the stroke, substantially as described.

16. In a piano-action, the combination of the hammer, the sliding or endwise-moving jack, and a guide for the jack projecting from the hammer-butt to support the upper end of the jack and to prevent a sidewise movement of the same, substantially as described.

17. In a piano-action, the combination of the hammer having a shouldered butt, a sliding or endwise moving jack having a shoulder near its upper end, a hammer-check operated by the jack, and a buffer carried by a projection from the hammer-butt, said projection acting as a guide for the upper end of the jack, substantially as described.

472,110. DOOR-GUARD. ALBERT W. BOKERSON, Schenectady, N. Y. Filed Jan. 12, 1892. Serial No. 417,871. (No model.)



Claim.—The herein-described door-guard, consisting of the bracket comprising a horizontal portion, the main portion *b* of which is upon the arc of a circle, provided with a curved slot and having one end bent at right angles thereto and perforated to form a vertical part and the other portion thereof split, one part whereof, as *d*, being bent at right angles thereto and perforated and the other part of greater length to form the inclined brace-arm C, and the roller having a pintle passed through the roller and at one end receiving a nut and the other end passed through the slot in the bracket, and a washer upon the pintle upon one side of the curved portion of said bracket and a nut and set-nut upon the pintle upon the other side, all substantially as described, and for the purpose specified.

472,111. NUT-LOCK. ROBERT C. ELLIOTT, Prairie Creek, Ind. Filed Apr. 23, 1891. Serial No. 390,120. (No model.)



Claim.—The combination, with the longitudinally-grooved bolt and the nut, of the internally-feathered ring seated in an annular groove in said nut and having its feather seated in the longitudinal groove of the bolt, the exterior of the ring being ratcheted, as described, and the spring-actuated pawl carried by the nut and adapted to engage the ring and hold the nut on its bolt or to be disengaged to release it, substantially as specified.

472,112. HILLSIDE-PLOW. DAVID B. ENGLISH, Guernoville, Cal. Filed July 21, 1891. Serial No. 400,195. (No model.)

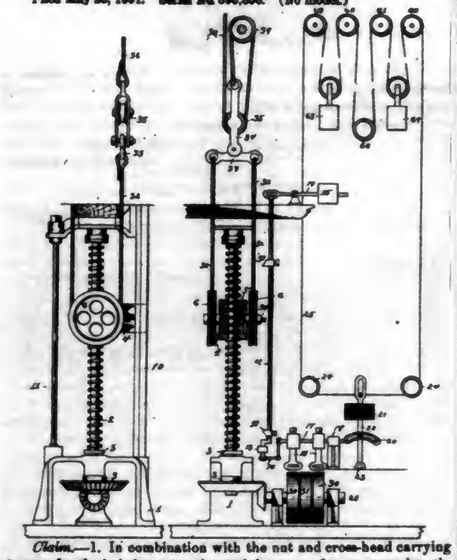


Claim.—1. In a hillside-plow, the combination of a plow-beam, a standard, a landside, the plowshare pivoted to the front of the landside and being spoon-shaped and having its sides extending rearward from the central portion, the mold-board connected with the plowshare, the rear hinge connecting the mold-board and the landside and provided with perforated lugs, the bifurcated stem swiveled in the standard, the hook adapted to engage the perforated lugs and provided with perforations and secured in the bifurcation of the stem, and the clip-plates adjustably secured to the opposite sides of the standard and adapted to engage the plowshare, substantially as described.

2. In a plow, the combination of the landside provided with a longitudinal slot and an intersecting transverse slot, the landside-plates secured to the landside and provided with transverse slots registering with the transverse slot of the landside, a pintle secured in the longitudinal slot, and the rear hinge for the mold-board, provided with a perforation to receive the pintle arranged in the transverse slots, substantially as described.

3. In a hillside-plow, the combination of a plow-beam, a standard, a landside, the plowshare pivoted to the front of the landside, the mold-board connected with the plowshare, the rear hinge connecting the mold-board and the landside, means for adjustably connecting the mold-board, and the clip-plates adjustably secured to the opposite sides of the standard and adapted to engage the plowshare, substantially as described.

472,113. ELEVATOR. CHARLES W. FOWLER, Baltimore, Md. Filed May 22, 1891. Serial No. 393,853. (No model.)



Claim.—1. In combination with the nut and cross-head carrying sheaves for the hoisting-rope, the upright screw free to move lengthwise, so that its weight opposes that of the elevator-car, substantially as described.

2. The combination, with the traveling nut and cross-head, of the lifting-screw journaled at its upper end in a suitable bearing, a screw-plug closing the chamber in which the screw is journaled and provided with an oil-passage, and an anti-friction disk or less between the screw and plug, substantially as described.

3. The combination of the upright screw journaled at its upper end in a chamber, a plug closing the top of said chamber and provided with an oil-passage, a lens or anti-friction disk between said plug and screw, and a receiver or cup carried by the screw and extending outside of the bearing above the level of the top of the screw, substantially as described.

4. The combination, with the screw, of the cross-head and nut, both made in halves, and joined in the plane of the axis of said screw, the nut being clamped between the two parts of the cross-head, substantially as described.

5. The combination of the screw, the cross-head carrying the nut, and the channeled support and guide-bar, the cross-head being provided with shoes which slide in said guide-bar, substantially as described.

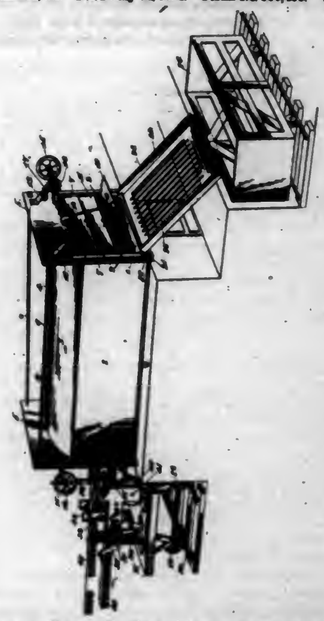
472,114. BOX. HENRY GASS, Mobile, Ala. Filed Nov. 20, 1891. Serial No. 412,468. (No model.)

Claim.—1. As a new article of manufacture, a box or receptacle consisting of the following elements: a body composed of a rigid bottom piece and rigidly upwardly-extending arms, said arms being curved on their inner edges, a strip secured to the bottom of the body, extending upwardly and over the material between the arms and down on the other side, and an inclosing band movable upon the arms and over the strip, so as to hold the material in place.



2. As a new article of manufacture, a box or receptacle consisting of the following elements: a body composed of a rigid bottom piece and rigidly upwardly-extending arms, said arms being curved on their inner edges, a strip secured to the bottom of the body, extending upwardly and over the material between the arms and down on the other side, an inclosing band movable upon the arms and over the strip, so as to hold the material in place, and a lid or cover bent into U shape and fitting over and enveloping the whole, said lid being pivotally mounted on the bottom piece, substantially as set forth and described.

472,115. COKE-OVEN. WILLIAM T. GATES and GEORGE H. SHARP, Fairchance, Pa. Filed July 14, 1891. Serial No. 399,493. (No model.)



Claim.—1. The combination, with an oven open at one end, of a plunger terminating at one end in a transverse head provided at its rear side with rearwardly-disposed wings arranged parallel to each other and at opposite sides of the plunger, and means for reciprocating the plunger, substantially as specified.

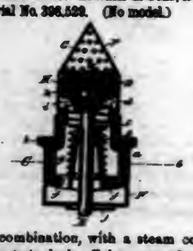
2. The combination, with the oven provided with upper and lower doors, of a gear system located at one end of the oven, an upper and a lower plunger adapted to be operated by the gear system, and means for throwing the gear into operative connection with either one of the plungers, substantially as specified.

3. The combination, with the coke-oven having the upper and lower doors at its ends, the truck, the opposite frames mounted on the truck, the shaft 30, having the crank and journaled in the frames, the gear on the shaft, the shaft 35, the large gear thereon engaging the pinion, the small pinion mounted on the shaft 35, the shaft 38, having the large gear engaging the pinion and the small pinion, the shaft 41, having the large gear engaging the pinion of the shaft 38, the opposite standards 44, located near one of the side frames, the rollers journaled between the standards and frame, the loose gears mounted on

the shafts 38 and 41, and the pivoted levers for shifting the same, of the toothed plungers 45 and 46, located upon the rollers and engaged each by one of the loose gears, each of said plungers terminating at its front end in a head, substantially as specified.

4. The combination, with the oven provided at its ends with upper and lower openings, hinged doors for the same, and means for opening them, of a gear system located at one end of the oven, an upper and a lower plunger adapted to be operated by the gear system, and means for throwing the gear into operative connection with either one of the plungers, substantially as specified.

472,116. STEAM-TRAP. EDWARD R. GOLD, New York, N. Y. Filed July 6, 1891. Serial No. 398,529. (No model.)



Claim.—1. The combination, with a steam coupling-head, of a trap-valve applied thereto to drain off the water of condensation therefrom and an open-ended tubular shield applied to the head to inclose the projecting portion of the trap and protect it from injury, whereby a blow is received by said shield and transmitted to the head without straining the trap.

2. The combination, with a steam coupling-head having an opening at its lower side through a threaded boss *m*, of a trap-valve applied to said opening to drain off the water of condensation therethrough and projecting beyond the spring, and an open-ended tubular shield inclosing the projecting portion of the trap to protect it from injury and screwed onto said threaded boss.

3. The combination, with a steam coupling-head, of a trap-valve applied thereto to drain off the water of condensation therefrom, said valve having a strainer within the coupling-head arranged in the steam-passage, whereby the current of steam shall impinge upon said strainer and circulate through the perforations thereof, thereby tending to keep them clear of obstructions.

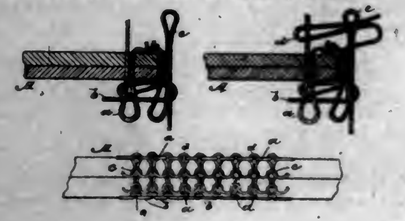
4. A dynamic steam-trap consisting of a shell formed with a seat, a valve over said seat, a spring tending to press up and open said valve, and a tubular chamber extending above the seat and closely surrounding said valve, whereby escaping steam flows downwardly within said chamber, and thereby tends to carry the valve down and seat it.

5. A dynamic steam-trap consisting of a shell formed with a seat at its upper end, a valve over said seat, having a stem descending through said shell, a spring tending to press up and open said valve, and a tubular chamber extending above the seat and closely surrounding said valve and provided with a strainer, whereby the steam entering through said strainer and flowing downwardly around the valve within said chamber tends to carry the valve down and close it.

6. A dynamic steam-trap consisting of a shell formed with a seat at its upper end, a valve over said seat, having a stem descending through said shell, a spring tending to press up and open said valve, and a tubular chamber and strainer adapted to inclose said valve and fitted to said shell around its seat.

7. A dynamic steam-trap consisting of a shell formed with a seat at its upper end, a valve over said seat, having a stem descending through said shell, a spring tending to press up and open said valve, and a strainer for said valve, consisting of two screens *p* and *q*, substantially as and for the purpose set forth.

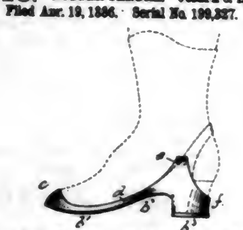
472,117. OVERSEAM FOR FABRICS. JAMES G. GREENE, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed Aug. 11, 1891. Serial No. 402,371. (No model.)



Claim.—1. The combination, with a fabric or fabrics, of an overseam consisting of a sewing-thread successively passing through said fabric or fabrics near the edge or edges thereof, and three looping-threads, one of which is interlooped with loops of the said sewing-thread formed on the under side of the work, another of which is interlooped with loops of the said sewing-thread formed on the upper side of the work, and the third of which is interlooped with the other two looping-threads only.

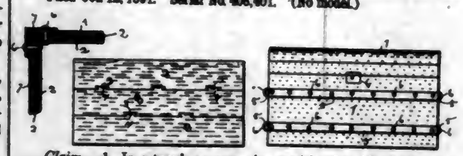
2. The combination, with a fabric or fabrics, of an overseam consisting of a sewing-thread successively penetrating the said fabric or fabrics near the edge or edges thereof and formed into loops on both sides of the fabric, the said loops being extended from the points of the penetration to the fabric edge or edges, and three looping-threads interlooped with the said sewing-thread and with each other along the edge of the fabric.

472,118. RUBBER SANDAL. JOSEPH C. HAMMOND, Jr., Rockville, Conn. Filed Aug. 19, 1886. Serial No. 190,327. (No model.)



Claim.—As an improved article of manufacture, an overshoe or sandal having a toe-socket, a heel-socket, and narrow side parts, with a single attaching-strap of elastic material secured to the body of the overshoe over the breast of the heel-socket, extended backward over the counter, and adapted in securing the sandal on a shoe to embrace the back part of the ankle of the wearer, all substantially as described.

472,119. TRUNK OR CASE. SAMUEL HERMANN, Cincinnati, Ohio. Filed Oct. 12, 1891. Serial No. 408,401. (No model.)



Claim.—1. In a trunk or case, the combination of a body made in separate sections of veneer joined at their contiguous edges by interlocking joints, an aluminum cover, and rivets passing through the said parts and connecting them together, substantially as set forth.

2. In a trunk or case, the combination of a body made of separate sections of veneer joined at their contiguous edges by interlocking joints, an aluminum cover, angle-irons embracing the corners, and rivets securing all of the said parts together, substantially as set forth.

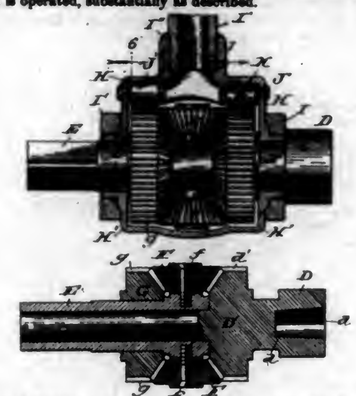
3. In a trunk or case, the combination of a body made of separate sections of veneer joined at their contiguous edges by interlocking joints, an aluminum cover, strengthening-strips on the exterior of the body, angle-irons embracing the corners exterior to the said strips, and rivets passed through all of the said parts, by which they are connected together, substantially as set forth.

472,120. RATCHET-DRILL. CRAFTS W. HIGGINS, Chicago, Ill., assignor to the Schuttler Manufacturing Company, same place. Filed July 21, 1891. Serial No. 400,241. (No model.)

Claim.—1. In a drill, the combination of a drill-spindle carrying a beveled gear provided with ratchet-teeth on its periphery, a sleeve carrying beveled gears engaging with the gear on the spindle, a beveled gear loosely mounted upon such sleeve and engaging with the beveled gears attached thereto, means for preventing the rotation of the sleeve, an operating-handle, and pivoted pawls engaging as the handle is moved in one direction or the other with one or the other of the ratchet-gears, whereby the drill is continuously rotated in the same direction, substantially as described.

2. In a drill, the combination of a spindle carrying a ratchet-gear, a sleeve mounted on such spindle and having a squared end, gears mounted upon such sleeve and engaging with the ratchet-gear on the spindle, ratchet-gear loosely mounted upon such sleeve and engaging with the gears fastened to the sleeve, and means for engaging with the squared end of the sleeve to prevent the sleeve from revolving, substantially as described.

3. In a drill, the combination of a drill-spindle carrying a beveled ratchet-gear, a sleeve mounted on such spindle having a squared end and provided with beveled gears F, meshing with the ratchet-gear on the spindle, a beveled ratchet-gear loosely mounted on the spindle, an operating-handle, pawls connected thereto and engaging with the teeth on the ratchet-gears, and a rigid socket for engaging with the squared end of the sleeve and preventing the same from rotating when the drill is operated, substantially as described.



4. A drill-frame provided with a laterally and longitudinally adjustable carriage, whereby the drill supported by such carriage may be adjusted to any desired position, substantially as described.

5. A drill-frame comprising arms to hold the frame in place, a bar adjustable on such arms, and a drill-carriage adjustable on such bar, substantially as described.

6. In a drill, a cover for the operative parts, formed in two parts fitting together, as shown, and held in position by rings fitting over flanges on such parts, substantially as described.

7. The combination of a drill-spindle carrying a beveled ratchet-gear, a sleeve having a squared end fitting over such spindle and carrying beveled gears F, meshing with the ratchet-gears on the spindle, a ratchet-gear loosely mounted on the sleeve and engaging with the beveled gears thereon, and a frame provided with a socket to receive and hold the squared end of the sleeve to prevent such sleeve from revolving when the drill is operated, substantially as described.

8. A drill-frame comprising arms for holding the frame in place, provided with two or more holes, a bar attached to such arms by means of bolts passing through such bar and the holes in the arms, and a drill-carriage engaging with and sliding upon such bar, whereby the bar may be adjusted in one direction or the other upon the arms and the carriage adjusted back and forth upon the bar, substantially as described.

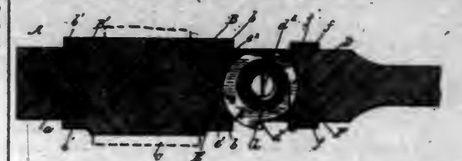
9. The combination of a drill-spindle carrying a beveled ratchet-gear, a sleeve having a squared end mounted on such spindle and carrying beveled gears meshing with such ratchet-gear, a beveled ratchet-gear loosely mounted on such spindle and engaging with the beveled gears, a two-part case inclosing these gears and journaled upon the spindle and sleeve, pawls pivoted in such case and engaging with the teeth on the ratchet-gears, and a handle secured to such case, whereby the case may be moved back and forth upon the spindle and sleeve to operate the drill by the engagement of the pawls with the ratchet-teeth, substantially as described.

472,121. MANUFACTURE OF YELLOW DYES. MEINHARD HOFFMANN, Mainkur, near Frankfort-on-the-Main, assignor to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed July 27, 1891. Serial No. 400,868. (Specimens.) Patented in France Feb. 16, 1891, No. 182,063.

Claim.—The yellow dye-stuff herein described, derived from tetrazo naphthaline beta-disulpho-acid and phenols, which is easily soluble in water, difficultly soluble in spirit, dissolving with a brilliant violet shade in strong sulphuric acid, from which, on diluting with some water, the free acid of the dye-stuff separates in the form of a dark-green precipitate, which, by further addition of water, is dissolved with a yellow shade.

472,122. AUTOMATIC BEARING-BOX ADJUSTER. HARVEY L. HOPKINS, Chicago, Ill., assignor to the Harvey L. Hopkins Company, same place. Filed Apr. 25, 1891. Serial No. 390,363. (No model.)

Claim.—1. In a connecting-rod, the brasses or part boxes embracing the wrist or crank-pin, in combination with a cam arranged within the fork or slot of the connecting-rod and with its axis at right angles to the axis of the crank-pin, and an actuating-spring operating to turn the cam in a direction to press the inner brass constantly toward the crank-pin, substantially as described.



2. In a connecting-rod, the brasses or part boxes embracing the wrist or crank-pin, in combination with a cam arranged within the fork or slot of said rod, a circular seat or joint between the inner brass and said cam, the axis of which joint is at right angles to the crank-pin, and an actuating-spring arranged to turn the cam in a direction to press the inner brass forward against the crank-pin, whereby slight lateral oscillation of the box-bearings is permitted, substantially as described.

3. In a connecting-rod, the brasses B B', embracing the wrist or crank pin, in combination with the bearing-block E, arranged behind the inner brass and provided with a circular seat or recess *e* at right angles to the wrist, the circular cam D, with its axis at right angles to the crank-pin and provided with a cam projection *d*, seated in the recess of the bearing-block, and the actuating-spring G, substantially as described.

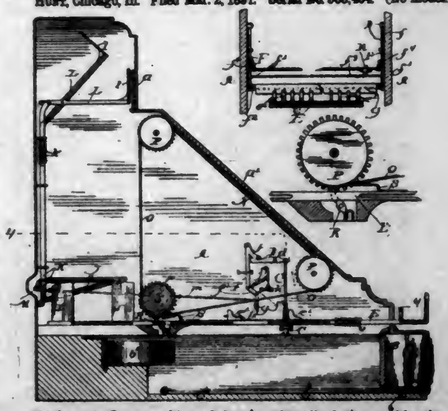
4. In a connecting-rod, the part boxes B B', in combination with the bearing-block E, the cam D, arranged with its axis at right angles to the crank-pin and seated on the bearing-block, the seat-block F at the bottom of the slot or fork and provided with a circular recess for the cam, and the actuating-spring H, substantially as described.

5. In a connecting-rod, the part boxes B B', in combination with a cam, an actuating-spring arranged to turn the cam to press the inner box forward into contact with the crank-pin, and a set-screw H, mounted in the head of the connecting-rod and adapted to be turned against the cam to secure it when turned back out of working position, substantially as described.

6. In a connecting-rod, the inner brass B, in combination with the cam D, actuating-spring G, set-screw H, and jam-nut A, substantially as described.

7. In a connecting-rod, the inner brass B, in combination with the bearing-block E, of less width than the brass and provided with a circular recess *e* in its front face, the cam D, provided with an eccentric projection *d*, adapted to be seated in the said recess of the bearing-block and having the same curve as said recess, and the actuating-spring G, substantially as described.

472,123. CASH REGISTER AND INDICATOR. FERDINAND S. HUFF, Chicago, Ill. Filed Mar. 2, 1891. Serial No. 383,464. (No model.)



Claim.—1. In a machine of the class described, the combination, with a plate N, having a number of series of numbers arranged in arithmetical progressions marked thereon, of a series of ribbons having openings adapted to expose one or more of the numbers and provided with means whereby said ribbons may be advanced automatically by the operation of the machine, substantially as described.

2. In a machine of the class described, the combination, with the plate N, having the figures marked thereon, of the metal ribbons O,

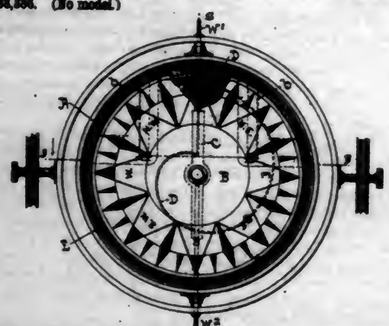
having openings *a*, the pulleys P, and the keys E, provided with suitable devices for advancing the metal ribbons, substantially as described.

3. In a machine of the class described, the combination of the sliding keys E, carrying the blocks I, the oscillating levers J, the vertical reciprocating rods K, pivoted thereto, the pivoted arms L, connected with the rods K at one end and bearing the tablets *l* at the other, substantially as described.

4. In a machine of the class described, the combination of the drawer B, the bolt C, the lever F, suitably connected with said bolt, and having the swinging plate *g* thereon, adapted to swing freely in one direction, but to carry the lever with it in the other direction, and a key E, adapted to engage with said plate, substantially as described.

5. In a machine of the class described, the combination of the keys E, having the blocks *d* and I, the spring-bolt C, the lever F, suitably connected therewith and adapted to engage with the projections *d'*, the arms J, the plate or bar M, the connecting-rods *m*, the rods K, and tablets operated thereby, substantially as described.

472,124. ELECTRIC RECORDING DEVICE FOR COMPASSES. CHARLES L. JARDEN, New York, N. Y. Filed Apr. 14, 1891. Serial No. 388,896. (No model.)

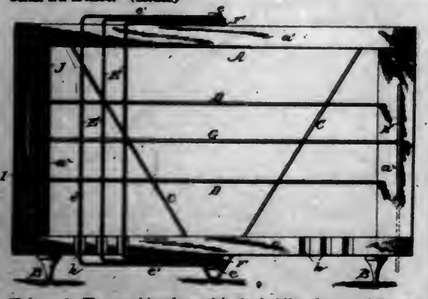


Claim.—1. In a recording device, the combination of a conductor, a recording-arm arranged to revolve above said conductor and curved, as described, to bring successive parts thereof over the conductor in its said revolutions, means for feeding a strip of paper between the two, and electrical connections, substantially as described.

2. In a recording device, the combination of a spirally-curved recording-arm, an insulating-plate containing a radial slot, a conductor arranged beneath the slot, electrical connections, and means for feeding a strip of paper across the slot, substantially as described.

3. In a recording-compass, the combination of a recording-arm participating in the movements of the needle, an insulating-plate provided with a radial slot, a conductor arranged beneath said slot, electrical connections, and means for feeding a strip across the slot, substantially as described.

472,125. BOOK OR SHEET-MUSIC HOLDER AND LEAF-TURNER. JAMES A. JAMESON, Russellville, Ark. Filed Sept. 30, 1891. Serial No. 407,283. (Model.)

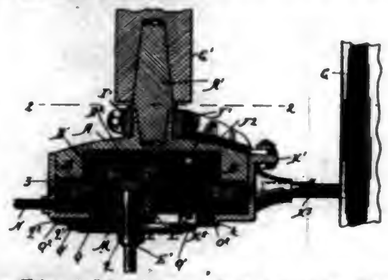


Claim.—1. The combination, with the holding-frame, of the several leaf-turners of bail shape, all pivoted upon the same supports, which are at the opposite ends of the frame, the said leaf-turners being of successively larger size from the innermost to the outermost and each extending below the bottom frame-piece, substantially as set forth.

2. The combination of the holding-frame A, having the wide bottom cross-piece, which serves as a rest for the music, the leaf-turners consisting of the balls E, pivoted upon the pivots *e e* and projecting outward, respectively, from the top and the bottom frame-pieces, whereby the legs *d* of the balls E are outside the frames, substantially as set forth.

3. A book and music holder consisting of the rectangular frame A, having the wide bottom cross-piece *a*, notched, as at *k*, the balls E, pivoted to the frame and adapted to enter the notches in the cross-piece *a*, the bar G, pivoted to one side of the frame upon an elongated staple H, and the elongated hook I upon the side of the frame opposite to the staple, substantially as set forth.

472,126. ECCENTRIC COUPLING AND TOOL AND WORK HOLDER. ANDREW JOHNSON, Chicago, Ill. Filed Apr. 14, 1891. Serial No. 388,898. (No model.)



Claim.—1. In combination with the base having a channel extending across it, bound by two cheeks whose proximate faces are parallel, a trammel located in such channel and extending across it from one of the parallel sides to the other, and guided by said parallel sides, such trammel having a channel extending through it from end to end transverse to the channel in the base, and a trammel-block sliding in said trammel in the channel and guided by its parallel sides, substantially as set forth.

2. In combination with the circular base having two parallel cheeks bounding a channel across it, and the trammel located in such channel and extending between its opposite parallel sides and guided thereby as it moves longitudinally in the channel, such trammel having a channel with two parallel sides whose direction is transverse to that of the parallel sides of the channel in the base, such trammel having its outer boundary conforming substantially to the arc of the circumference of the base, whose chord is a line connecting the corresponding ends of the opposite cheeks, substantially as set forth.

3. In combination with a cylindrical case, two pairs of segmental cheeks secured within the case to the cylindrical wall thereof, the individuals of each pair having their straight faces parallel and in planes transverse to the like faces of the other pair, said pairs of cheeks being at different longitudinal positions along the axis of the case, whereby the channel which each pair forms is not limited in length by the other pair, substantially as set forth.

4. The base adapted to be secured at its center in a bearing or to a revolving shaft and having an opening or channel with two opposite parallel sides, a trammel located in such opening or channel and extending between such parallel sides and guided thereby when sliding in such opening or channel, such trammel having an opening or channel with two opposite parallel sides whose direction is transverse to that of the parallel sides of the opening or channel in the base, and a trammel-block sliding in said opening or channel in the trammel and guided by the parallel sides thereof and protruding from the trammel and base and adapted at such protruding part to be journaled and rotated in a bearing, combined with the case K, fixed with respect to the bearing of the base, and the two trammels L L, located and guided therein transversely to each other, and a second trammel-block extending through and adapted to slide in and be controlled by the trammels L L and having a bearing for the protruding end of the first trammel-block, and the screws which control the position of said trammels L L in the case, substantially as set forth.

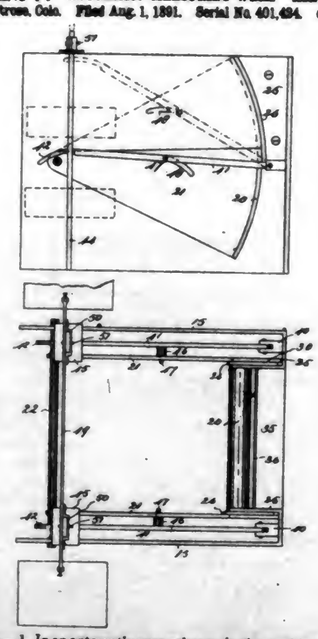
5. The base adapted to be secured at its center in a bearing or to a revolving shaft and having an opening or channel with two opposite parallel sides, a trammel located in such opening or channel and extending between such parallel sides and guided thereby when sliding in such opening or channel, such trammel having an opening or channel with two opposite parallel sides whose direction is transverse to that of the parallel sides of the opening or channel in the base, and a trammel-block sliding in said opening or channel in the trammel and guided by the parallel sides thereof and protruding from the trammel and base and adapted at such protruding part to be journaled and rotated in a bearing, combined with the case K, and the spider or frame I J, journaled on the spindle of the base and extended outside of its periphery and secured to and supporting the case, the trammels L L and a second trammel-block controlled thereby, and the screws which control the trammels, all substantially as and for the purpose set forth.

6. In combination with the base having an opening or channel which has two opposite parallel sides, a trammel located in such opening or channel and extending between such parallel sides and guided thereby in such channel or opening, such trammel having an opening or channel with two parallel sides whose direction is transverse to that of the parallel sides of the opening or channel in the base, and a trammel-block sliding in said opening or channel in the trammel and guided by its parallel sides, and anti-friction rollers interposed between the base and the trammel, substantially as set forth.

7. In combination with the base having an opening or channel which has two opposite parallel sides, a trammel located in such opening or channel and extending between such parallel sides and guided thereby in said channel or opening, such trammel having an opening or channel with two parallel sides whose direction is transverse to that of the parallel sides of the opening of the channel in the base, and a trammel-block sliding in said opening or channel in the trammel and guided by its parallel sides, and anti-friction rollers interposed between the trammel and trammel-block, substantially as set forth.

8. In combination with the base having an opening or channel which has two opposite parallel sides, a trammel located in such opening or channel and extending between such parallel sides and guided thereby in said channel or opening, such trammel having an opening or channel with two parallel sides whose direction is transverse to that of the parallel sides of the opening or channel in the base, and a trammel-block sliding in said opening or channel in the trammel and guided by its parallel sides, and anti-friction rollers interposed between the base and the trammel and between the trammel and the trammel-block, substantially as set forth.

472,127. AUTOMATIC MEASURING-WEIR. ARMAN JOHNSON, Montrose, Colo. Filed Aug. 1, 1891. Serial No. 401,434. (No model.)



Claim.—1. In an automatic measuring-weir, the combination, with a suitable casing, of an axially-movable gate mounted upon the casing, movable arms pivoted on the casing and provided with pins or projections engaging slots formed in the sides of the gate, floats secured to standards connected with the movable arms, whereby said arms are actuated, and the gate controlled by the fluctuation of the water in the supply source, substantially as described.

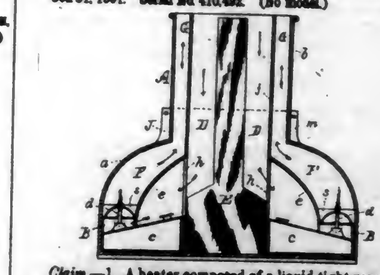
2. In a measuring-weir, the combination, with a casing located in proximity to the water-supply and communicating therewith, of an axially-movable gate located within the casing, movable arms pivoted on the casing and provided with projections engaging slots formed in the sides of the gate, and floats connected with and actuating the movable arms, whereby the gate is controlled by the fluctuations of the water in the supply source, substantially as described.

3. In a measuring-weir, the combination, with a casing located in proximity to the supply source and communicating therewith, of a gate consisting of a curved plate provided with arms pivoted within the casing, flanges surrounding the opening in the casing and provided with a resilient packing engaging the curved plate, and floats connected with the gate and controlling the same according to the fluctuation of the water in the supply source, substantially as described.

4. In a measuring-weir, the combination, with a casing communicating with the supply source and provided with an outlet surrounded by flanges having a protruding resilient packing and shaped to correspond with the engaging part of the gate, of a gate consisting of a curved plate provided with arms 21, pivoted within the casing, another set of arms 41, pivoted to the outlet side of the casing, provided with shouldered pins engaging curved slots formed in arms 21, arms 41 being provided with curved free extremities, upright movable arms provided with openings for the reception of the curved extremities of arms 41, which extend therethrough, guides, and a suitable connection for the upright arms and floats connected with said arms, whereby the gate is controlled by the fluctuation of the water in the supply source, substantially as described.

5. In an automatic measuring-weir, the combination, with a suitable casing, of an axially-movable gate mounted upon the casing, a movable arm pivoted on the casing, said arm and the side of the gate being connected by a projection formed on or attached to one and moving in a slot or groove formed in the other, and floats connected with and actuating the movable arms, whereby the gate is controlled by the fluctuation of the water in the supply source, substantially as described.

472,128. WATER-HEATER. HARRON B. JOYCE, Boston, Mass. Filed Oct. 31, 1891. Serial No. 410,492. (No model.)



Claim.—1. A heater composed of a liquid-tight vessel open at the top and a removable lamp provided with a deflector and back plate, which, conjointly with the external walls of the heater, create a downward air-feed passage, a combustion-chamber, and an upward smoke-flue, said lamp having its wick tube or tubes outside of the said deflector to form a combustion-chamber between the latter and the outer side wall of the vessel, substantially as explained.

2. In combination with a liquid-tight vessel provided with an enlarged bell-shaped base and an open flue portion, a series of removable lamps adapted to fit within said bell-shaped base, each lamp being furnished with a deflector and a back plate to form, conjointly with the external shell of said vessel, smoke and air passages, and a weight which is interposed between the lamps to hold them in position, substantially as described and stated.

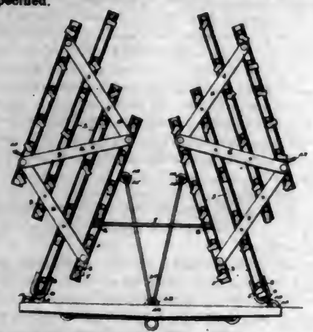
3. In combination with one or more removable lamps, each consisting of an oil-reservoir, a wick-tube, a deflector, and the apraised back plate, the inclosing water-tight vessel provided with an upright flue portion and a lower bell-shaped space, and a weight within said vessel to lock the lamps in position, substantially as set forth and described.

4. The combination, with a liquid-tight vessel A, provided with an enlarged lower part as a lamp-space, the upper flue portion, and a casting J, with its end protector-plates *m*, of a series of removable lamps interiorly of said vessel, and each composed of an oil-reservoir, a wick-tube, a deflector, and the upright back plate, all operating substantially as set forth and explained.

472,129. HARROW. CHARLES H. KADING, Tripoli, Iowa. Filed July 23, 1891. Serial No. 400,493. (No model.)

Claim.—1. The combination, with the tubular harrow-bar having diametrically and vertically opposite perforations, the upper ones of which are key-hole shaped, of the bayonet-shaped teeth passed through the perforations and having a head of key-hole shape laterally bent and loosely fitting the key-hole-shaped perforations, substantially as specified.

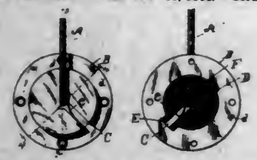
2. The combination, with the opposite harrow-sections, the swivled bracket loosely mounted in the inner bars and in front of the center of each section, and the transverse connecting-bar pivoted to the ends of the swiveled brackets, of the draft-bar having a central and end eyes, rods connecting the central eye with the transverse bar, and links connecting the outer ends of the draft-bar with the forwardly-extended ends of intermediate harrow-bars of each section, substantially as specified.



3. The combination, with the opposite harrow-sections, the swivled brackets mounted near the front ends of the inner bars of the sections, and the cross-bar pivoted in the brackets and serving to connect the two sections, of a transverse draft-bar located in front of the sections, links connecting the ends of the same removably with eyes and the front ends of the outer bars of the sections, and links removably connecting the central eye of the draft-bar with clevises located at the forward extended ends of bars adjacent to the inner bar of each section, substantially as specified.

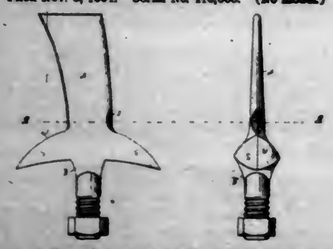
4. The harrow-bar having key-hole-shaped perforations, combined with the teeth passed through the perforations and having a key-hole-shaped head laterally bent and loosely fitting the key-hole-shaped perforations, as set forth.

472,130. DETACHABLE RAIL AND EAR THEREFOR. LEWIS N. LOSE, Kalamazoo, Mich. Filed Dec. 28, 1891. Serial No. 416,294 (No model.)



Claim.—The combination of the ears having the annular flanges or rims, the chambered portions, the openings in the annular walls of said chambered portions in connection with the passage-ways terminating semicircularly at the center of the ear through which the ends of the bail pass in attaching and detaching, stop-springs in said passage-ways, and a bail having the angled ends terminating in the heads in such a manner as to form hooks, said angled ends having a bearing in the semicircular terminus of the passage-ways in said ears, substantially as set forth.

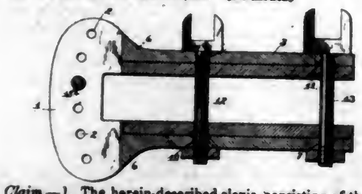
472,131. THRASHING-MACHINE TOOTH. ZEBEDEE MACOMBER, Bedford, assignor to the Union Manufacturing Company, Battle Creek, Mich. Filed Nov. 3, 1891. Serial No. 410,805. (No model.)



Claim.—1. A thrashing-tooth provided at that point where the tooth joins its shank with the integral fins projecting in opposite directions from each other, the upper edge of said fins curving or slanting downward to the cylinder or concave to which they are attached, said fins also being rounded or beveled on each side backward from their upper edge, and the tooth above said edge having the beveled cut-away portion, substantially as set forth.

2. A thrashing-tooth provided with an integral fin on its front side, the upper edge of said fin being curved downward from the tooth at its point of contact with the cylinder or concave and rounded or beveled backward on each side from its upper edge, said tooth just above the upper edge of said fin having the beveled cut-away portion, substantially as set forth.

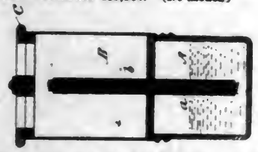
472,132. CLEVIS. RICHARD A. MARSHALL, Russellville, Ky. Filed Jan. 23, 1892. Serial No. 419,052. (No model.)



Claim.—1. The herein-described clevis, consisting of the opposite U-shaped sections, each of which is provided at its front end with a beveled and perforated jaw and at its rear end with terminals, those of one section embracing those of the other, locking-bolts passed through the two sections, and a draft-bolt passed through the perforations of the jaws, substantially as specified.

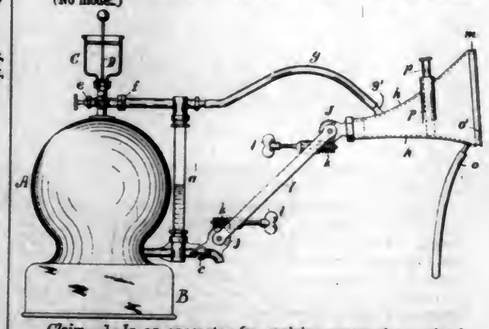
2. The herein-described clevis, the same consisting of the opposite U-shaped sections, each having a front beveled perforated jaw and rearwardly-disposed terminals, those of the left section being embraced by those of the right, the terminals of the left section being provided at their inner ends with the recesses 15 and at their outer sides with the shoulders 14 and those terminals of the right section being provided at their inner sides with the shoulders 4, fitting in the recesses 15, and at their inner edges with recesses 6, receiving the lugs 14, the pin 15ª, having the reduced ends 16 removably mounted in the perforations of the jaws, and the locking-bolts 12 and 13, mounted in front of the rear perforations formed in the terminals, substantially as specified.

472,133. VAPORIZER. CURTIS W. MERRILL, Malden, Mass. Filed Nov. 27, 1891. Serial No. 413,187. (No model.)



Claim.—In combination, the liquid-holding vessel A, the vaporizing-chamber B, provided with a valved opening, a tube *b*, connecting the vessel A and chamber B, and capillary material *a*, packed in said tube, as set forth.

472,134. FACIAL HYGIENIC STEAMING APPARATUS. MAUDE MEYERS, New York, N. Y. Filed Nov. 16, 1891. Serial No. 412,041. (No model.)

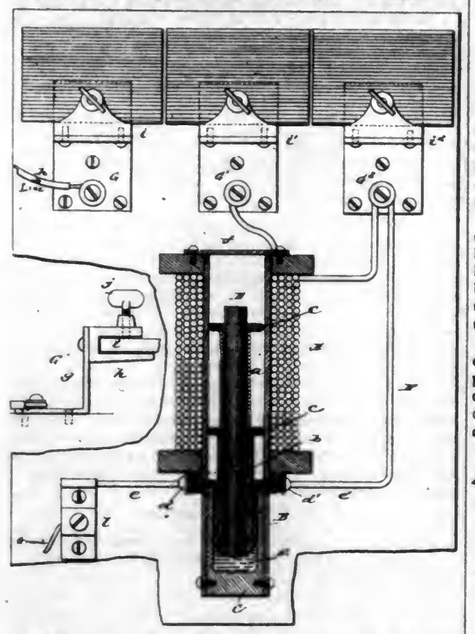


Claim.—1. In an apparatus for applying vapors, the carrier *h*, provided with steam-pipe *g* and drip-pipe *o* and having the hood N attached to its outer end, and the holder *p*, inserted removably between the drip-pipe and steam-pipe, as set forth.

2. In an apparatus for applying vapors, the combination, with a flexible hood and a carrier having a steam-pipe attached thereto, of a holder having perforated walls and a door and fitted removably into the carrier, as set forth.

3. An apparatus for applying vapors, consisting in the steam-generator A, having an adjustable arm pivoted thereto, with the carrier *h* upon the end of the arm, the steam-pipe *g*, connected with the generator and carrier, the holder fitted removably into the carrier, and the flexible hood N, attached to the carrier, substantially as herein set forth.

472,185. LIGHTNING-ARRESTER. EDWARD G. MILLER, Wilkinsburg, Pa. Filed Aug. 27, 1890. Serial No. 363,163. (No model.)



Claim.—1. In a lightning-arrester for dynamo-circuits, the combination, with the plates i i' i^2 and clamps G G' G², of the helix A, connected to the plates G' G², the armature D, the core B, provided with the mercury-changer, and the plate G², connected with the ground throughout, substantially as specified.

2. In a lightning arrester for dynamo-circuits, the combination, with the helix A, provided with the tubular core B, of the body of mercury E, contained in the lower part of the tubular core, the contact-screws *d d'*, the armature D, provided with the insulated covering *b*, and the cap *f*, covering the opening of the helix, substantially as specified.

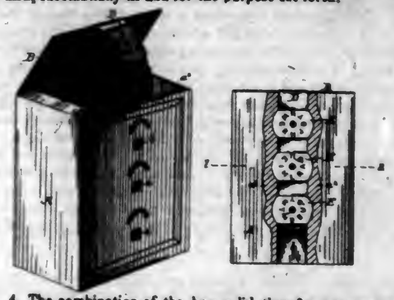
3. In a lightning-arrester for dynamo-circuits, the combination of the carbon blocks i i' i^2, the clamps G G' G², the helix A, connected with the clamps G' G², the tubular core B, reduced in diameter at its lower end and containing the body of mercury E, the contact-screws *d d'*, entering the tubular core B, the ground-wires *e e'*, connected with the clamp G and screws *d d'*, and the armature D, furnished with the insulating-covering *b*, and the guiding-collars *c*, substantially as specified.

472,186. COMBINATION-LOCK PACKING-BOX AND SAVINGS-BANK. JOHN B. MORRIS, Philadelphia, Pa. Filed June 10, 1891. Serial No. 395,751. (No model.)

Claim.—1. The combination, in a box used as a savings-bank having a body portion and a lid, a tongue on either the body or the lid, and a groove in the opposite portion adapted to receive the tongue with locking-disks for locking the tongue in the groove, substantially as and for the purpose described.

2. The combination, in a box used as a savings-bank having a body portion and a lid, a tongue on either the body or the lid, having one or more disks swiveled thereon, and an undercut groove in the opposite portion adapted to receive the tongue, substantially as and for the purpose described.

3. In a money-box, the body portion, the lid, a tongue on said lid, one or more disks on said tongue, said tongue and disk being adapted to a slot in the side of the box, with an opening in the box opposite the disk, substantially as and for the purpose set forth.

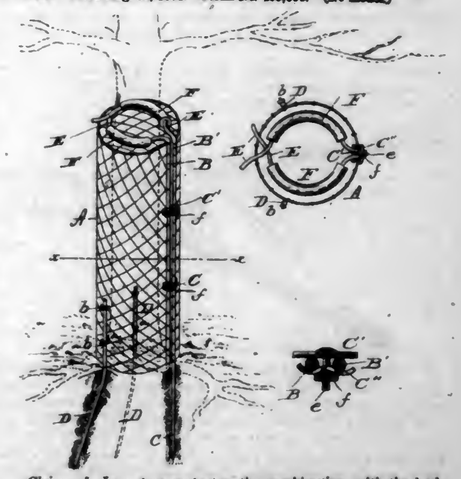


4. The combination of the box, a lid therefor, a tongue on said lid having one or more disks swiveled thereon and said disks being eccentric in form, the disks and tongue adapted to a slideway in the box, with openings in the front portion of the box, whereby the disks may be manipulated so that the lid can be opened, substantially as described.

5. The combination of the box, the lid, the tongue extending from said lid, one or more eccentric disks on the tongue, said disks having letters marked thereon, an opening in the box in front of the row of letters of each disk, through which the disk can be turned, with a backing-plate and undercut filling-pieces forming a slideway for the tongue, whereby when the disks are turned into the undercut portion the tongue will be locked in the box, substantially as described.

6. The combination of the pasteboard box cut, substantially as described, to form a lid, a filling-block a^2, having undercut edges, pasteboard lining-piece a', forming with the side of the box an undercut way, a tongue secured to the lid, disks pivoted to the tongue, said disks being eccentric in form and having letters marked thereon, with openings in the box, substantially as described.

472,187. TREE-PROTECTOR. WILLIAM W. MCCALLIP, Columbus, Ohio. Filed Aug. 19, 1891. Serial No. 403,099. (No model.)



Claim.—1. In a tree-protector, the combination, with the body portion constructed to surround and protect the trunk of a tree, of a vertically-extending rod having a horizontally-extending trunk-embracing arm, the said rod being rotatable in its socket, whereby the arm may be adjusted independently of the body portion to adapt the protector to trees of different diameters, substantially as shown and described.

2. In a tree-protector, the body portion A, constructed to surround and protect the trunk of a tree, provided with vertically-extending rods B B', rotatable in their sockets and each having a horizontally-extending trunk-embracing arm E, one of said rods being prolonged so as to be secured in the ground, substantially as shown and described.

3. In a tree-protector, the body portion A, provided with vertically-extending rods B B', each having a horizontally-extending trunk-

embracing arm E and rotatable in their sockets, and means for locking said rods from rotation, substantially as shown and described.

4. A tree-protector comprising a body portion formed from a sheet A, constructed to surround and protect the trunk of a tree, rods B B', rotatably clinched in the meeting edges of said body portion and each having a trunk-embracing arm E, and means for locking said rods from rotation and at the same time securing the meeting edges of the body portion together, substantially as shown and described.

5. A tree-protector comprising the body portion formed from a sheet A, constructed to surround and protect the trunk of a tree, rods B B', rotatably clinched in the meeting edges of the sheet and each having a trunk-embracing arm E, and means for locking said rods from rotation and securing the edges of the sheet together, consisting of the plate C, plate C', bent or formed to retain the rods, substantially as shown and described, and means for clamping said plates together.

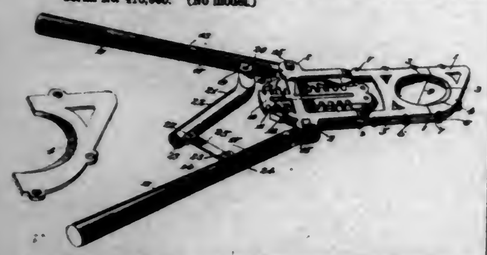
472,138. LOADING-BARROW FOR BRICK-MACHINES. EDWARD NEW, Hamilton, Canada. Filed July 13, 1891. Serial No. 399,910. (No model.) Patented in Canada May 5, 1891, No. 36,543.



Claim.—1. In a loading-barrow for brick-machines, the combination of the barrow D, the small roller-wheels *e*, attached to the barrow-legs, and the roller-wheels I, placed near the center of the barrow on each side thereof, the longitudinal pieces H and N, and the hinged leaves or folding boards J, substantially as described and set forth.

2. In a loading-barrow and turn-table for brick-machines, the barrow D, provided with the roller-wheels *e* and I, the longitudinal pieces H and N, and the hinged leaves J in position, as described, in combination with a turn-table having stop-hook P and provided with a raised track *a*, having rubber stop a^2, and an inner and upper track *a'*, provided with a metal flange to act as guards for the said wheels I, substantially as described and set forth.

472,139. DEHORNER. WILLIAM H. NEWTON, Decatur, Ill., assignor of one-half to Albert M. McGee, same place. Filed Nov. 2, 1891. Serial No. 410,665. (No model.)

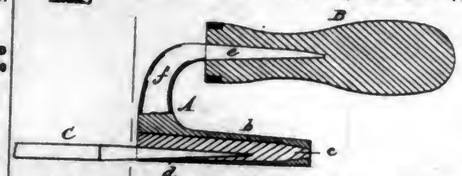


Claim.—1. In a dehorner, the combination, with the casing, the opposite walls of which are provided with openings, one of the same being beveled to form a curved cutting-edge, of opposite segmental levers fulcrumed at the inner corners of the casing and having their segmental portions provided with teeth, a blade mounted for sliding in the casing and terminating at its outer end in a cutting-edge, a rack-bar secured at its front end to the rear end of the blade and having opposite toothed edges and an intermediate longitudinal slot, said rack-bar having its teeth engaged by those of the levers, and a guide-pin passing through the walls of the casing and the slot of the rack-bar and serving as a guide for the same, substantially as specified.

2. In a dehorner, the combination, with the casing having the cutting-opening, the sliding knife, and the rack-bar, of the opposite levers fulcrumed at the inner corners of the casing, said levers terminating at their forward ends in toothed sectors engaging the rack-bar and in rear of the same in handles, an intermediate lever fulcrumed at its forward end near the inner end of one of the levers, and a link pivotally connected to the opposite lever, to which the intermediate lever is pivoted and to said intermediate lever between the ends thereof, substantially as specified.

3. In a dehorner, the combination, with the casing having the beveled opening and the opposite pairs of bearing-lugs, the sliding knife mounted for movement in the casing, the longitudinally-slotted oppositely-toothed bar connected to the rear end of the knife, and the guide-pin located in the casing and passing through the slot of the bar, of the angular levers 13 and 14, pivoted in the bearing-ears of the casing and terminating at their outer ends in sockets, handles removably mounted in the sockets, the intermediate lever 21, pivoted at its forward end to the lever 13 and at its rear end terminating in a socket adapted to receive the removable handle 18 of the lever 14, and the link 25, pivotally connected to an intermediate portion of the lever 21 and to the rear of the lever 14, substantially as specified.

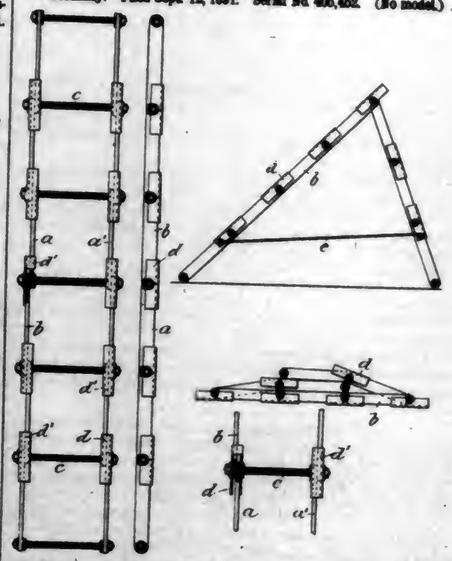
472,140. HANDLE FOR FILES OR OTHER TOOLS. JOHN W. PAYLER, Detroit, Mich. Filed Dec. 2, 1890. Serial No. 373,347. (No model.)



Claim.—1. A handle or carrier for files and other tools or articles, consisting of a tubular socket *b*, having a flattened bottom, a handled shank A *f e*, projecting from the socket and extending over and approximately parallel with the socket, a plug or filling of any suitable semi-elastic substance *c* within the socket *b*, having a longitudinal groove or recess in its lower flattened side, between and within which and the bottom of orifice in socket *b* the tang or shank *d* of the file, tool, or article C, as ordinarily formed and constructed, may be driven, all substantially as shown and described.

2. A handle or carrier for files and other tools or articles, consisting of a tubular socket *b*, having a flattened bottom, a shank A *f e*, projecting from the socket and having a suitably-formed handle part, a plug or filling of any suitable substance *c* within the socket *b*, having a groove or recess therein, within and between which and the base of the socket *b* the tang or shank *d* of the file, tool, or article C may be driven, all substantially as shown and described.

472,141. LADDER. ERNST L. RIPP, Schönau, near Chemnitz, Germany. Filed Sept. 12, 1891. Serial No. 405,452. (No model.)

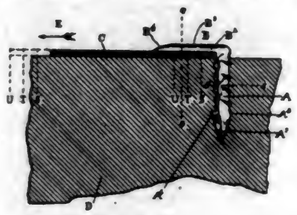


Claim.—1. A flexible or folding ladder comprising a series of links disposed in pairs, rungs pivotally connecting the respective extremities of the links of each successive pair, and caps centrally pivoted to the respective extremities of said rungs and adapted to embrace the adjacent extremital portions of the corresponding links of each successive pair of links, substantially as and for the purposes set forth.

2. A flexible ladder comprising a series of links disposed in pairs, rungs pivotally connecting the respective extremities of the links of each successive pair, and channeled caps centrally pivoted to the respective extremities of said rungs on opposite sides of the links and adapted to embrace the adjacent extremital portions of the corresponding links of each successive pair of links, substantially as and for the purposes set forth.

3. The combination, in a flexible ladder, of a series of links disposed in pairs, rungs pivotally connecting the respective extremities of the links of each successive pair, channeled caps centrally pivoted to the respective extremities of said rungs and adapted to embrace the adjacent extremital portions of the corresponding links of each successive pair of links, and hooked irons adapted to engage certain of said caps, substantially as and for the purposes set forth.

472,142. HOOP-FASTENER. WILLIAM F. ROBERTSON, Cincinnati, Ohio. Filed Mar. 23, 1891. Serial No. 386,090. (No model.)



Claim.—1. In a hoop-fastener, the combination, with the arm or head B, of the leg A, triangular in cross-section and provided on its front vertical center with the edge or ridge A^7 and the enlargement or shoulder A^3 and on its rear side with the barb or shoulder A^4, said barbs or shoulders A^5 and A^6 being larger than the remainder of the leg and adapted to hold the same in the wood and prevent it from being easily withdrawn, substantially as described.

2. In a hoop-fastener, the combination of the head B, having the leg A united thereto and shaped triangular in cross-section, its free end terminating in the conical-shaped portion A' and provided at its front with the series or rows of barbs A^5, extending from the front edge A^7 back on each of the two front faces of the leg and reaching short of the edges A^3 thereof, substantially as and for the purposes specified.

3. The hoop-fastener having an arm and a leg, the free end portion of the leg being provided with a conical or tapering extremity, and a barb or shoulder A^4, located at the back side or heel of the junction of the said tapering extremity with the main portion of the leg, substantially as and for the purposes specified.

4. The hoop-fastener consisting of the arm and leg united thereto at right angles, the latter being of triangular shape, its free end terminating in the conical-shaped portion A' and provided at front with the series or rows of barbs A^5 lying at each side of and at the front ridge A^7 of the leg and inclined upward and backward from the said ridge A^7, substantially as and for the purposes specified.

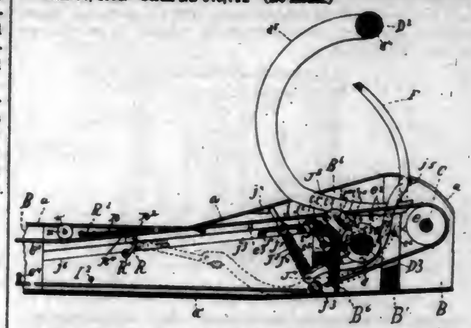
5. The hoop-fastener having an arm and a leg, the latter of triangular shape in cross-section and provided in front with the barbs A^5, extending from the front edge A^7 back on each of the two front faces of the leg and inclined upward from the said ridge A^7 and provided at its rear with the horizontal rows of barbs A^5, substantially as and for the purposes specified.

6. The hoop-fastener having an arm and a leg, the latter of a triangular shape in cross-section and provided in front with the barbs A^5 and at rear with the rows of barbs A^5, and the horizontal shoulder or barb A^6 just above the conical or pointed portion A' of the leg and projecting out beyond the barbs A^5, substantially as and for the purposes specified.

7. The hoop-fastener having an arm and a leg, the latter of a triangular shape in cross-section and its sides formed with the re-entering curves A^8, the front faces of the leg provided with the series of barbs A^5, reaching short of the edges A^3, and the rear side with the horizontal rows of barbs A^5, and the rear shoulder A^6 below, prominent beyond the barbs A^5 and at the upper end of the terminal pointed portion of the leg, the front portion of the leg having the swell A^2, substantially opposite to the shoulder A^6, substantially as and for the purposes specified.

8. The hoop-fastener the leg of which is triangular in cross-section and having an enlarged terminal pointed portion A', of which the front faces A^8 A^8 correspond in general to the front faces A^3 A^3 of the main portion of the leg and having the rear faces A^8 A^8, the upper end of the ridge between them terminating in the shoulder or barb A^6, substantially as and for the purposes specified.

472,143. GRAIN-BINDER. GEORGE SCHUBERT, Walnut, Tex. Filed Jan. 30, 1891. Serial No. 379,744. (No model.)



Claim.—1. In a grain-binder, the combination, with the compressor F, constructed and arranged about as shown and described, of the rod J^9, the lever *j*, the track j^3, the block j^5, and the lug c^6 on a chain *c'*, all arranged as shown, and for the purpose described.

2. In a grain-binder, the combination, with the compressor constructed and arranged about as shown and described, of the rod J^9, the lever *j*, provided with anti-friction rollers j^7 and j^8, the track j^3, as described, the block j^5, and the lug c^6 on chain *c'*, all as shown, and for the purpose described.

3. In a grain-binder, the combination, with a compressor constructed about as shown and provided with a block J', of a rod J^9, extending therethrough, and a spring J^4, a block j^5, and a spring j^6, secured to the frame of the machine, with its free end extending to and pressing against the rear of the compressor, as shown, and for the purpose described.

4. In a grain-binder, the combination, with a compressor arranged and constructed about as shown, carrying a block J', of the rod J^9, extending therethrough and provided with an anti-friction roller J^{10} in connection with lever *j*, the track j^3, and the lug c^6 on chain *c'*, all as and for the purpose described.

5. In a grain-binder, the combination of the discharging-bar I, provided with one or more prongs at its free end and provided with a lever I^2 in connection with a track i^3, and a lug c^4 on the chain *c'*, all as shown, and for the purpose described.

6. In a grain-binder, the combination of the discharging-bar I, constructed as shown, provided with one or more prongs on its free end and provided with a lever I^2, provided with anti-friction rollers in connection with a track i^3, and a lug c^4 on the chain *c'*, all as shown, and for the purpose described.

7. In a grain-binder, the combination, with the platform provided with an upper and a lower floor, of the tracks j^3 and i^3, arranged therein between the two floors, the levers *j'* and I^2, provided with anti-friction rollers to operate in said tracks, a chain *c'*, provided with lugs c^4 and c^6 in connection with a compressor, and a discharging-rod I, constructed about as shown, and for the purpose described.

8. In a grain-binder, the combination, with a platform provided with an upper and a lower floor, of the track j^3, located therein between the two floors, a compressor provided with a rod J^9 in connection with the lever *j*, a chain *c'* and lug c^6, all operated in between the two floors, as shown, and for the purpose described.

9. In a grain-binder, the combination, with a platform provided with an upper and a lower floor, of the track i^3, located therein between the two floors, a discharging-bar I, the lever I^2, the chain *c'*, and the lug c^4, all as shown, and for the purpose described.

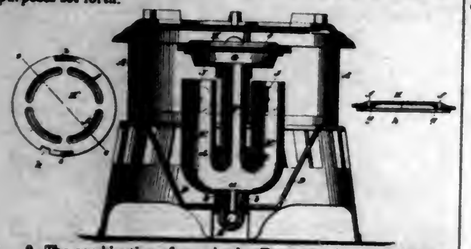
10. In a grain-binder, the combination, with a lever i^6, provided with a rod i^9, of a disk i^8, provided with a pin i^{10} and notches i^7, a lever i^5, provided with a spring-pawl i^4, a chain *c'*, operated in the platform and provided with a lug c^5, a cog-wheel b^4, having a blank b^5, and a pinion b' on shaft C, operated by a clutch b^3, as and for the purpose described.

11. In a grain-binder, the combination, with a pinion b', loose on shaft C and operated by a clutch b^3, of a cog-wheel b^4 on shaft *d*, provided with cogs b^2 and a blank b^5, a spring b^7 to engage with the cogs b^2 in connection with a shaft C, operated alternately in opposite directions, a lug c^5 on the chain *c'*, a lever i^5, pivoted on the shaft *d* and provided with a spring-pawl i^4, a notched disk i^8, secured on the shaft *d*, provided with a stud i^{10}, and a lever i^6, pivoted in the platform and provided with a rod i^9, substantially as shown and described.

472,144. GAS-STOVE. JAMES L. SHARP, New Rochelle, N. Y. Filed May 20, 1891. Serial No. 394,470. (No model.)

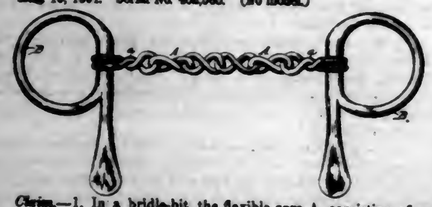
Claim.—1. The combination of one air-pipe E or more, having

hub *b* and socket *d*, with the gas-pipe B and mixing-tube F, said air-pipe being open at the upper end and arranged wholly on one side of said mixing-tube F and communicating with the lower end thereof, and with the burner G and burner-plate H, substantially as and for the purposes set forth.



2. The combination of one air-pipe E or more, having hub *b* and socket *d*, with the gas-pipe B and mixing-tube F, said air-pipe being open at the upper end and arranged wholly on one side of said mixing-tube F and communicating with the lower end thereof, and with the burner G and burner-plate H, and with one or more dampers J in said pipe or pipes, substantially as and for the purposes set forth.

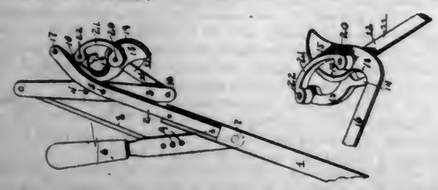
472,145. BRIDLE-BIT. HORACE S. SQUIER, Newark, N. J. Filed Aug. 13, 1891. Serial No. 402,585. (No model.)



Claim.—1. In a bridle-bit, the flexible core A, consisting of one or more links, the cheek-pieces B B, and the U-shaped wire end pieces *a a*, looped through the end links of the core A, both ends of the end piece *a* being twisted together and bent in opposite directions around the beam of the adjacent cheek-piece B, all substantially as and for the purpose specified.

2. In a linked bridle-bit, the flexible inner core A, provided with a covering of elastic material, the cheek-pieces B B, and the U-shaped wire end pieces *a a*, looped through the end links of the core A and twisted to form an eye thereon and bent around the beam of the adjacent cheek-piece B in opposite directions, substantially as shown and described.

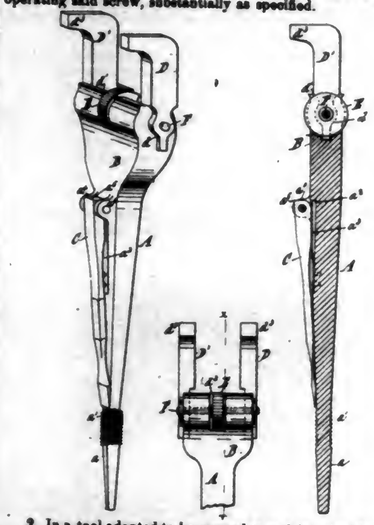
472,146. COMBINED CATTLE-DEHORNER AND PLANT-PRUNER. EDWIN B. STAUBER, Stoddard, Nebr. Filed May 7, 1891. Serial No. 391,960. (No model.)



Claim.—In an implement of the class described, the combination, with the shank 12, terminating at its outer end in a hook 13 and having at its rear side the hook 14, of the shank 16, terminating in the compoundly-curved knife pivoted to the shank 12, the guard 21, connected to the pivot of the knife and to the outer end of the hook, the handle 1, the straps 2, bolted to the handle and at their outer ends embracing and pivoted, as at 17, to the shank 16 of the knife, the perforated lever 3, pivoted, as at 5, between the straps and at one end, as at 10, to the shank 12, the handle-lever 6, pivoted, as at 7, to the handle 1, and the pitman or connecting-rod 8, connecting the handle-lever 6 with the free end of the lever 3, substantially as specified.

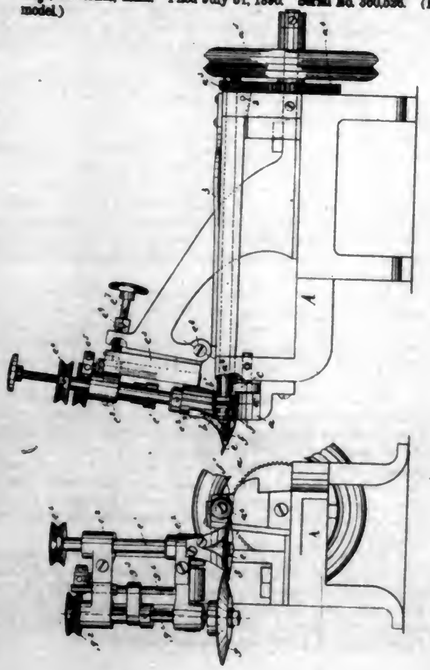
472,147. COMBINATION-TOOL. JEREMIAH F. SULLIVAN, Brooklyn, N. Y. Filed Mar. 12, 1890. Serial No. 343,797. (No model.)

Claim.—1. In a tool adapted to be secured to and detached from a handle, the combination, with a shank provided with a head having guideways extending transversely to the direction of the length of the shank, of jaws arranged to slide in said guideways, said jaws having projections, as d^3, near their upper ends, a right and left hand screw for moving said jaws toward and from each other, and a hand-wheel for operating said screw, substantially as specified.



2. In a tool adapted to be secured to and detached from a handle, the combination, with a shank provided with a head having guideways extending transversely to the direction of the length of the shank, of jaws arranged to slide in said guideways, said jaws having projections, as d^3, near their upper ends, a right and left hand screw for moving said jaws toward and from each other, a hand-wheel for operating said screw, and a screw-driver pivoted upon said shank and adapted to be swung into a position to be grasped by said jaws, substantially as specified.

472,148. LEATHER-SKIVING MACHINE. ANDREW J. TEWKSBURY, Haverhill, Mass. Filed July 31, 1890. Serial No. 360,536. (No model.)



Claim.—1. In a leather-skiving machine, a bed, a feed-roll, and its rotatable shaft constituting the feeding mechanism, combined with the presser-rolls *b b'* and rotary knife, substantially as described.

2. In a leather-skiving machine, the stationary bed and serrated feed-roll and its rotatable shaft constituting the feeding mechanism, combined with the presser-roll beside the feed-roll, lip *f''*, and rotary knife, substantially as described.

3. In a leather-skiving machine, the combination of a bed over which the material passes, a feed-roll above the bed, its rotatable shaft, a pivoted spring-pressed frame supporting said shaft, and a rotary knife, substantially as described.

4. In a leather-skiving machine, the combination of a bed, a yielding feed-roll, a yielding presser-roll *b'*, and rotary knife, substantially as described.

5. In a leather-skiving machine, the combination of a bed, a yielding feed-roll, yielding presser *b*, lip *f'*, and rotary knife, substantially as described.

6. In a leather-skiving machine, the combination, with a feeding device, of two presser-rolls loosely mounted on a shaft, a gage, as *c*, a lip, as *f'*, and a rotary knife, substantially as described.

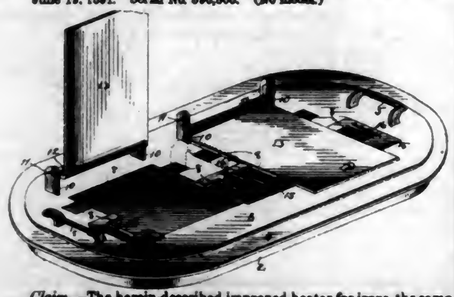
7. In a leather-skiving machine, a feeding device, combined with a knife, its rotatable shaft, a grinder and its rotatable shaft, a block, as c^4, serving as bearings for said shaft, and a supporting-block, as c^5, in which said block c^4 is vertically adjustable, substantially as described.

8. In a leather-skiving machine, a feeding device, combined with a knife, its rotatable shaft, a grinder and its rotatable shaft, a block, as c^4, serving as bearings for said shaft, a supporting-block c^5, in which said block c^4 is vertically adjustable, a pivot for the block c^5, and means to move it on its pivot, substantially as described.

9. In a leather skiving machine, a feeding device, combined with a knife, its rotatable shaft, a grinder and its rotatable shaft, a block, as c^4, serving as bearings for said shaft, a supporting-block, as c^5, in which said block c^4 is vertically adjustable, and a screw-rod on which said block c^5 is mounted and upon which it is laterally movable, substantially as described.

10. In a leather-skiving machine, the following instrumentalities, viz: feeding devices, and a rotary cutter, the rotary shaft *g'*, reduced in diameter at its lower end to leave a shoulder, a grinding-disk, and an oil-retaining cup mounted on said reduced portion of the shaft, said cup abutting against said shoulder and held between it and the grinding-disk, substantially as described.

472,149. SAD-IRON HEATER. SUE THOMASON, Itasca, Tex. Filed June 19, 1891. Serial No. 396,903. (No model.)



Claim.—The herein-described improved heater for irons, the same consisting of an elliptical iron-receiver adapted to fit within a stove-opening, the upper edge of which is provided with a surrounding flange adapted to rest upon the edge of the opening and thus support the receiver depending below said opening, a pair of openings formed in the top of the receiver, each of said openings being provided at opposite edges with iron handle-receiving pairs of notches, a pin extending from the top of the receiver opposite one of the notches of each pair, a slotted U-shaped plate mounted for movement upon each of the pins and having its opposite branches lying at opposite sides of the adjacent notch, and hinged doors located over each of the openings in the receiver and between each opposite pair of notches, substantially as specified.

472,150. JOURNAL-BEARING. HERMAN A. TODD and ALFRED H. ANDERSON, Shelton, Wash. Filed Aug. 8, 1891. Serial No. 402,128. (No model.)

Claim.—1. The combination, with a journal-box having the legs *f*, of the journal-bearing A, having side lugs for engaging said legs *f* and having projecting from its upper side the cross-bar *i* and separated legs *b*, having straight vertical outer walls, and a bearing-key B, seated upon said bearing, with its upper flat surface in contact with the inner top wall of the box, said bearing-key having the openings *c*, adapted to receive the said lugs of the journal-bearing A, substantially as herein described.



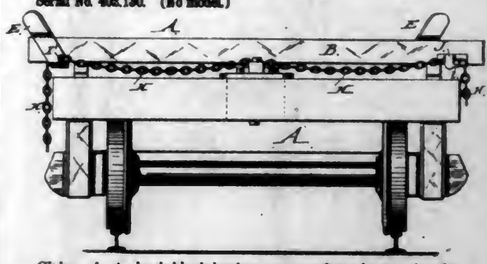
2. The journal-bearing A, having spaced lugs rising from its upper surface and provided with straight vertical outer walls, in combination with the longitudinally and vertically movable journal-bearing key having openings with straight vertical outer walls adapted to receive said lugs and prevent displacement of the bearing, substantially as herein described.

472,151. CENTER-PLATE FOR LOGGING-CARS. HERMAN A. TODD and ALFRED H. ANDERSON, Shelton, Wash. Filed Aug. 8, 1891. Serial No. 402,129. (No model.)



Claim.—The combination of an upper center-plate having a centrally-disposed concave seat and outwardly-extending flanges, a lower center-plate having a convex portion to fit the seat of the upper plate and having outwardly-extending flanges terminating short of the outer ends of the flanges of the lower plate, and lugs or keepers rigidly secured to the flanges of the lower plate and having hooked upper ends overlapping the flanges of the upper plate and securing both plates, substantially as herein described.

472,152. CHOCK-BLOCK FOR LOGGING-CARS. HERMAN A. TODD and ALFRED H. ANDERSON, Shelton, Wash. Filed Aug. 8, 1891. Serial No. 402,130. (No model.)



Claim.—1. A chock-block having a recess adapted to receive the piece to which it is fitted, the end walls of the recess having straight and inclined walls, whereby the block may be moved from an inclined to a vertical position, and vice versa, substantially as herein described.

2. A chock-block recessed to receive the piece to which it is fitted and having lips with oppositely-arranged straight and inclined edges, said recess having a straight upper wall and a lower wall having a straight portion and a portion inclined thereto, substantially as herein described.

3. The combination, with a bunk or beam, of a chock-block having lips provided with straight and inclined edges, said block adapted to be moved from an inclined to a vertical position, and vice versa, and a spring interposed between the adjoining faces of the bunk or beam and chock-block for automatically disconnecting the block from the beam, substantially as herein described.

4. The combination, with a bunk or beam, of a chock-block having a recess whose end walls are inclined to the major axis of the block, whereby the block is held by frictional contact with the beam, substantially as herein described.

5. The combination, with a bunk or beam, of a chock-block having a recess in one side provided with inclined top and bottom walls, and lips on said blocks fitting over the bunk or beam and each provided with edges inclined with relation to each other and the edges of one lip being oppositely located to those of the other, whereby the block may be moved from an inclined to a vertical position, substantially as herein described.

6. The combination, with a bunk or beam, of a chock-block adapted to be fitted to said bunk or beam and having retaining-lips with straight and inclined edges for holding the block to the beam in

one position, and a spring interposed between the block and bunk or beam for automatically disconnecting the block and throwing it laterally from the beam when the position of the block is changed from an inclined to a vertical position, substantially as herein described.

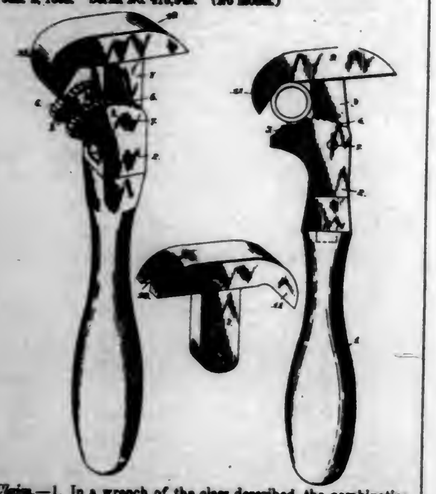
7. The combination, with a chock-block, of a chain connected at one end with the block and having its opposite free end secured at a point to and remote from the block, and a clutch adapted to engage the links of the free end of the chain to secure the same, substantially as herein described.

8. The combination of a bunk or beam, a chock-block having a groove in its face, a chain having one of its links adapted to be fitted in said groove, and a clutch adapted to engage the links of the opposite end of the chain, substantially as herein described.

9. The combination of a bunk or beam, a chock-block adapted to be fitted thereto and to be rocked from one position to another, a chain having its link at one end adapted to fit a groove in the face of the chock-block, and a clutch at the opposite end of the bunk or beam having a slotted head to receive the links of the free end of the chain, substantially as herein described.

10. The combination, with a bunk or beam, a chock-block, and a chain connected therewith, of a clutch secured to the bunk or beam, having a slotted head to receive the links of the free end of the chain and having its floor extended to form a fulcrum for the release of the links, substantially as herein described.

472,153. PIPE AND ROD WRENCH. JOHN J. TOBEY, Washington, Ind., assignor of one-half to Nathan B. Russell, same place. Filed Jan. 2, 1892. Serial No. 416,942. (No model.)



Claim.—1. In a wrench of the class described, the combination, with the handle terminating at its upper end in a pair of jaws extended to one side of the handle and having curved toothed edges, of a tenon eccentrically pivoted between the jaws and terminating at its upper end in a head which is provided at one side of the tenon with a beak eccentric with the curved jaws, substantially as specified.

2. In a wrench of the class described, the combination, with the handle terminating at its upper end in a head transversely bifurcated to form a pair of jaws disposed to one side of the handle and having their upper edges curved and provided with a shallow recess and at each side thereof with teeth, of a tenon located between the jaws, a pin pivoting the tenon eccentrically with relation to the curved edges of the jaws, and a head integrally formed with the tenon located at the upper end of the same and terminating opposite the jaws in a beak 11, eccentrically disposed with relation to the curved edges of the jaws, substantially as specified.

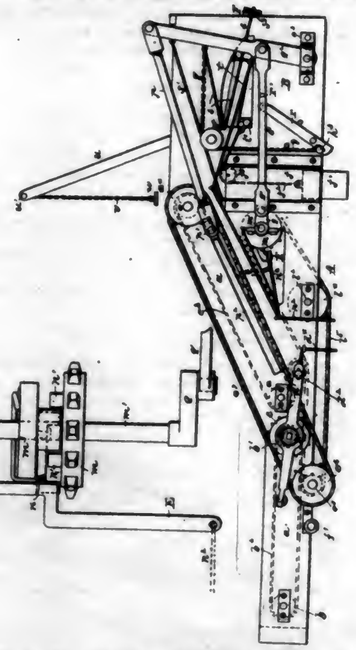
472,154. BUGGY-TOP. JAMES T. WATKINS and WILLIAM C. BAYLESS, Mossy Creek, Tenn. Filed Apr. 15, 1891. Serial No. 389,072. (No model.)



Claim.—1. In a device of the character described, the combination, with the top and the seat, of the front standard pivoted at its lower end to the seat, rising straight upwardly therefrom, bending forwardly and connected at its upper end to the front bow of the top, other standards pivoted to the first and connected at their upper ends to the top, and a joint in the front standard, and a lock therefor, as and for the purpose set forth.

2. In a device of the character described, the combination, with the top and the seat, of the braces of the top placed on the inside of the standards, the front standard pivoted at its lower end to the seat, rising straight upwardly therefrom, bending forwardly and connected at its upper end to the front bow of the top and having in said front standard a joint in the curved portion thereof, the second standard pivoted to the first at a point below said joint and connected at its upper end to another bow of the top, and a rear standard pivoted to said front standard near its lower end and connected at its upper end to the rear bow of the top, the lower ends of both the two rearmost standards having short bends or shanks, as and for the purpose set forth.

472,155. BUNDLE CARRIER AND SHOCKER. ROBERT WOODS, Minto, N. D., assignor of one-half to James Garbutt and Alfred Field, same place. Filed Mar. 11, 1891. Serial No. 384,637. (No model.)



Claim.—1. The combination, with suitable conveyers and a box or receptacle, of a bar suspended immediately beyond the upper end of the conveyers for directing bundles of grain into said box or receptacle and causing them to stand upright therein, substantially as set forth.

2. The combination, with suitable conveyers and a receptacle, of a bar suspended immediately beyond the upper end of the conveyers for directing bundles of grain therein in an upright position, and means for automatically compressing said bundles of grain into a shock, substantially as set forth.

3. The combination, with suitable conveyers and a receptacle, of a bar suspended immediately beyond the upper end of the conveyers for directing bundles of grain into said receptacle in an upright position, means for automatically compressing said bundles of grain, and means for automatically releasing the shock thus formed, substantially as set forth.

4. The combination, with suitable conveyers and a receptacle, of a bar suspended immediately beyond the upper end of the conveyers for directing bundles of grain into the receptacle in an upright position, means for automatically compressing it into a shock, devices for automatically releasing said shock, and means for automatically resetting said releasing or discharging mechanism, substantially as set forth.

5. In a grain carrier and shocker, the combination, with a box or receptacle, of a pivoted bottom therein, latch for maintaining said bottom locked when closed, a pivoted arm a flexible connection between said arm and pivoted bottom, a crank-shaft, a pitman connecting said crank-shaft with the pivoted arm, and a pin on the pitman to engage said latch to release the pivoted bottom, substantially as set forth.

6. In a bundle carrier and shocker, the combination, with a box or receptacle, of a bottom pivoted therein, latches for normally locking said bottom closed, a pivoted arm, a crank-shaft, a pitman connecting the crank-shaft and pivoted arm, a pin carried by the pitman to engage the latch to release the pivoted bottom, a loose wheel on the crank-shaft, means for communicating motion to said wheel, and means for causing said wheel to rotate with the crank-shaft, substantially as set forth.

7. In a bundle carrier and shocker, the combination, with a box or receptacle, of a pivoted bottom therein, latches for locking said bottom normally closed, a pivoted arm, a crank-shaft, a pitman connecting said pivoted arm and crank-shaft, a pin carried by said pitman to engage the latch to release the pivoted bottom, a wheel loosely mounted on the crank-shaft, a disk carried by the crank-shaft, a dog carried by said disk and adapted to engage said wheel, means for transmitting motion to said wheel, and a tripping-lever for maintaining said dog normally out of contact with the wheel, substantially as set forth.

8. In a bundle carrier and shocker, the combination, with a box or receptacle, of a crank-shaft, a pivoted arm, a pitman connecting said pivoted arm and crank-shaft, a cross-bar constructed to slide in the frame of the machine, a rod connecting the pivoted arm and cross-bar, and a strap located in the box or receptacle and connected at its ends to said cross-bar, substantially as set forth.

9. In a bundle carrier and shocker, the combination, with a box or receptacle, of a crank-shaft, a pivoted arm, a pitman connecting the pivoted arm and crank-shaft, a cross-bar, an arm or rod connecting said cross-bar with the pivoted arm, a strap in the box or receptacle, said strap being connected to the cross-bar and adapted to force the bundles of grain in the forward end of the box or receptacle, and a cord connecting the rear portion of said strap with the pivoted arm, substantially as set forth.

10. In a bundle carrier and shocker, the combination, with a receptacle and a tail-board, of a pivoted bottom, latches for locking said bottom normally closed, a crank-shaft, means connected with said crank-shaft for releasing the latches, a wheel loosely mounted on said crank-shaft, means for conveying motion to said wheel, a dog adapted to engage said wheel, a trip-lever for maintaining said dog normally out of contact with the wheel, and a flexible connection between the tripping-lever and the box or receptacle and terminating in line with the support of the tail-board, substantially as set forth.

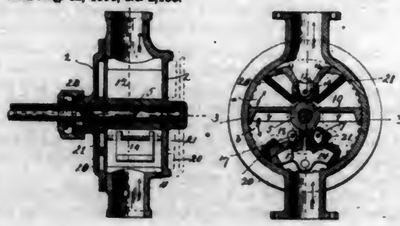
11. In a bundle carrier and shocker, the combination, with a box, of a pivoted bottom therein, said bottom comprising a plate pivoted to the box, and a series of fingers connected together and pivotally supported between their ends by said plate, substantially as set forth.

12. The combination, with a box or receptacle, of a tail-board having a pivotal and sliding connection in the box or receptacle and means attached to the tail-board for automatically returning it to its normal position, substantially as set forth.

13. In a bundle carrier and shocker, the combination, with a frame comprising a box or receptacle and forward extensions therefrom, of two endless belts, one adapted to rotate periodically and the other continuously, and a bar suspended over the entrance of said box or receptacle and adapted to be engaged by the grain from the continuously-operating endless belt and be caused to be deposited into the box or receptacle in an upright position, substantially as set forth.

14. In a bundle carrier and shocker, the combination, with a box or receptacle, of a strap located therein and encircling the space inclosed by the walls of the frame, means for operating said strap to force the grain in the forward part of the box, and guides located above said strap for guiding the sheaves within the strap, substantially as set forth.

472,156. PUMP. AXEL F. ABRAHAMSON, Madrid, Spain. Filed Dec. 12, 1890. Serial No. 374,452. (No model.) Patented in Switzerland Aug. 12, 1890, No. 2,133.



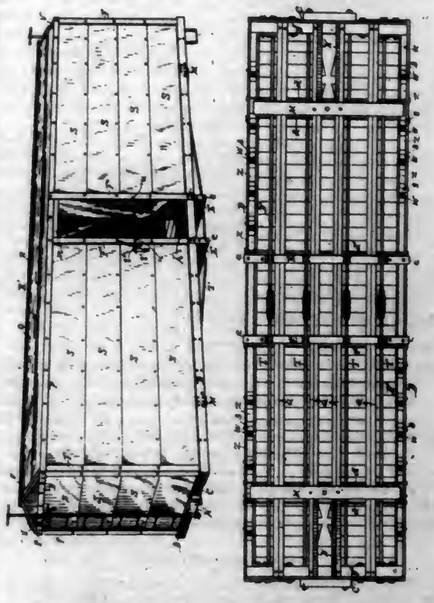
Claim.—In an oscillating pump, the combination of the cylindrical casing composed of a rim and heads with supply and delivery pipes, said heads being provided with passages 20 and 21, the alternately-arranged partitions and wing dividing said casing into a series of chambers and said wings constituting an imperforate piston, the supply and delivery valves connected with said partitions, substantially as described.

472,157. CAN-SCREW AND FAUCET. HENRY P. BARTLETT, Springfield, Mo. Filed Apr. 3, 1891. Serial No. 387,567. (No model.)



Claim.—In an oil-can, the combination, with the top, of a spout thereon communicating with the interior of the can, a fill and vent opening on the top, and a drip-trough surrounding the spout and partly surrounding the fill and vent opening to catch the drip from the same, substantially as described.

472,158. FREIGHT-CAR. JOHN M. BURTON, Wichita, Kans. Filed Dec. 16, 1890. Serial No. 374,852. (No model.)



Claim.—1. A railway-car provided with side sills, consisting of the pairs of parallel metal bars D D', with wooden end sills provided with the metal side plate-bars C and C', having their end portions bent at right angles with their body portion and riveted or bolted to said sill-bars for connecting them with the end sills, substantially as described and shown.

2. A railway-car provided with stringers or intermediate sills, consisting individually of two parts of channel-iron united by placing their plain surfaces together in such manner as to present the appearance of I-beams, and terminating with laterally-extending portions and with

parallel portions extending beyond the lateral extensions, by means of which they are secured in position, substantially as set forth.

3. In a railway-car, the combination, with the intermediate sills *a a*, consisting of two parts of channel-iron, of the draw-bar plates N, secured between the parts of and depending from said sills, substantially as set forth.

4. The combination, with the side sill-bars D D′ and posts 2, of the post-sockets provided with side supports and tie-rod bearings and arranged between said sill-bars, and of the floor-supporting blocks arranged between said sill-bars and supported by said socket-supports, substantially as set forth.

5. The combination, with the side sill-bars D D′ and the plate-bars P P′, of the supporting-blocks arranged between said bars and supported between the side posts of the car, substantially as and for the purpose set forth.

6. The combination, with the side sill-bars D D′, of the transom-bars fixed to the inner bars thereof, the blocks G, fixed between said transom-bar connections and the outer bars thereof, wherein the space between said sill-bars is filled, and a support is provided for the floor securing-block, substantially as set forth.

7. In the railway-car described, the combination, with the side sill-bars and the intermediate sills, of the cross truss-beams E E, secured to said side sills and surmounted by the brace-blocks E′, fitted between said sills, substantially as set forth.

8. A railway-car provided with a series of roof-supporting trusses, consisting of the respective pairs of oppositely-inclined bars of horizontal tie-rods crossing the car below each pair of said truss-bars, and of a hanger bar or arm depending from the junction of each pair of said truss-bars for connecting and supporting the center portion of the tie-rods, substantially as set forth.

9. A railway-car provided with a series of roof-supporting trusses, consisting of the two inclined bars *a′*, terminating at their outer end with downturned perforated plate-bearing at their inner end with depending arms, and of the cross-rods screw-threaded at their ends and arranged through the perforated terminals of said truss-bars and the car-plates, and centrally connecting the depending arms of said truss-bars, and held into position by means of nuts turned thereon, substantially as set forth.

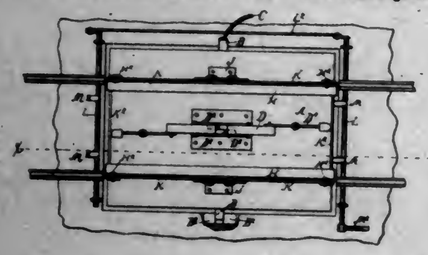
10. The combination, with the side walls of the car, of the bars F‴ and K, arranged clamping the car-sheathing metal adjacent the side doorway between them and fixed to the outer bars of the car-plate and sill, as shown, and the bar F‴, likewise fixed to the inner bars of the said plate and sill and supporting the inner sheathing of the car adjacent the doorway where the door slides back, whereby a recess is provided between the inner and outer sheathing of the car to admit the door entering therein, substantially as set forth.

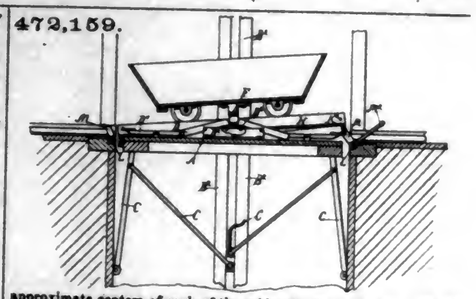
11. A railway-car provided with double sill-bars and double plate-bars, the outer and inner bars thereof being respectively connected adjacent the doorways at the side where the doors slide back by means of vertical metal bars for respectively supporting the outer and inner sheathing, thereby providing a recess between said sheathing-walls for the admission of the doors when sliding open, substantially as set forth.

12. A railway-car provided with sliding side doors, consisting of a sheet or plate of steel or like metal provided at its upper edge with a longitudinal hooked portion, and with an inverted corresponding hooked portion secured to the car upon which the door hangs and is adapted to slide, substantially as set forth.

472,159. ATTACHMENT FOR MINING-CARS. JOHN W. CAFFY, Youngstown, Iowa. Filed Nov. 7, 1891. Serial No. 411,233. (No model.)

Claim.—1. In an automatic car-holding and car-moving attachment for mining-cages, the combination of a track on the floor of the said cage, adapted to be elevated at either end portion, composed of two parallel angle-irons adapted to serve as rails, having the side of each end portion bent outward and backward, and the base of each end portion bent downwardly, flat metal bars pivoted between the sides of the angle-irons and the outwardly and rearwardly bent portion of each end thereof and hinged to a plate fixed to the cage at the



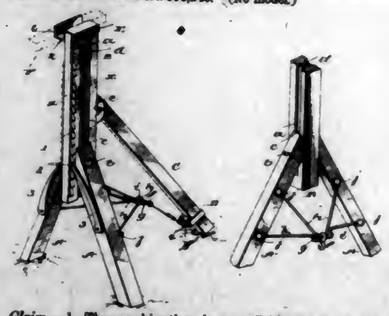


approximate centers of each of the said rails, the said plates, and flat metal bars fixed between the downwardly-bent portions of the ends of the rails, constructed and applied substantially as set forth.

2. An improved automatic car-holding attachment for moving cages, &c., comprising two angle-plates secured to the approximate center of the floor of the cage, two bars pivoted between the corners of the said plates near their forward ends, each of which bars has a projection extending from its under and outer corners beneath the end of the mating one, thereby leaving an angular opening between the top portion of the said meeting ends, levers with treadles on their outer ends pivoted to a projection from the floor of the cage and to the outer ends of the said bars, and a projection fixed to the under side of a mining-car, adapted to enter the said opening between the ends of the bars and press them downward by gravity when run onto the said cage, substantially as set forth.

3. An improved automatic car-holding and car-moving attachment for mining-cages, comprising a cage of common form, two parallel angle-irons adapted to serve as rails, having the side of each end portion bent outward and backward and the base of each end portion bent downwardly, flat metal bars pivoted between the sides of the angle-irons and the outwardly and rearwardly bent portion of each end thereof and hinged to a plate fixed to the cage at the approximate center of each of the said rails, the said plates, means for engaging either of the flat metal bars at the ends of the track and retaining it elevated when the cage is lowered, two angle-plates secured to the approximate center of the floor of the cage, two bars pivoted between the corners of the said plates near their forward ends, each of which bars has a projection extending from its under and outer corners beneath the end of the mating one, levers with treadles on their outer ends pivoted to projections from the floor of the cage and to the outer ends of the said bars, a projection fixed to the under side of a mining-car, adapted to be inserted between the ends of the said bars and be engaged thereby, and means for automatically engaging the under side of the cage and preventing its accidental descent after it has reached the level of the ground, constructed and combined substantially in the manner set forth, for the purposes stated.

472,160. SCAFFOLD. HENSON L. CLARK, Russiaville, Ind. Filed Apr. 24, 1891. Serial No. 390,246. (No model.)



Claim.—1. The combination, in a scaffold, of a horse embodying the supporting-legs, a vertical standard for supporting the trestle-back and having a vertical slot, together with a transverse bolt passing through said slot and connecting the legs, substantially as set forth.

2. The combination, with the supporting-standard having the vertical slot and recessed adjacent thereto, of the legs having inward-extending portions bearing in said recesses and a transverse bolt connecting the legs, substantially as set forth.

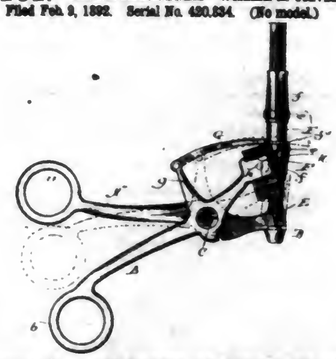
3. The combination, with the supporting-standard having the vertical slot and recessed adjacent to the same, of vertical strips secured

in the bottom of the recesses and legs having inward-extending guide portions bearing against said strips, together with a connecting-bolt, substantially as set forth.

4. The combination, with the supporting-legs and relatively-adjustable standard, of a pivoted brace connected to the latter and a movable clip embracing the same and provided with means for holding the brace in position, substantially as set forth.

5. The combination of the legs A A, the standard B, vertically adjustable thereon, the horizontally-arranged casting or plate E, having the relatively-reversed sockets, one of which embraces the top of the standard A and the other of which receives one of the stringers of the scaffold, and said stringers mounted therein, substantially as shown and described.

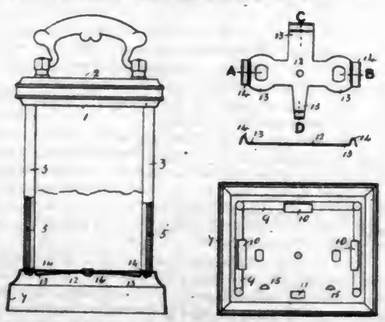
472,161. PENCIL-SHARPENER. WILLIAM K. CULVER, Chicago, Ill. Filed Feb. 9, 1892. Serial No. 420,834. (No model.)



Claim.—1. In a pencil-sharpener and in combination with a suitable sharpening device, a rotatable pencil-holder suitably geared to the sharpening device, whereby the operation of the latter automatically rotates the pencil.

2. The combination, with the members A B, one of which is provided with a knife and the other with a rotatably-mounted holder F, bearing the ratchet-teeth *f*, of the spring G, attached to the knife-bearing member and having a hooked end adapted to engage with said ratchet-teeth, substantially as described.

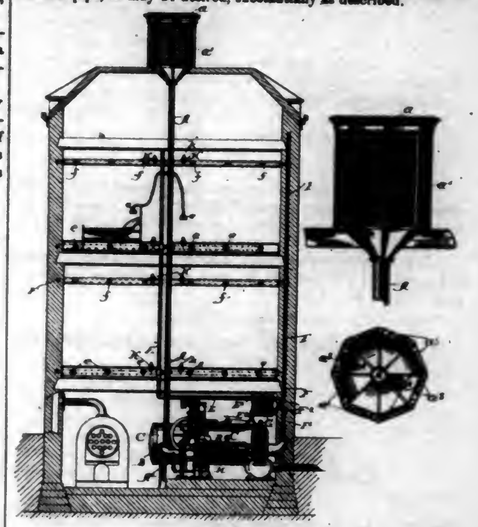
472,162. CLOCK-CASE. EDWARD DAVIES, Gravelly Hill, near Birmingham, England. Filed June 30, 1891. Serial No. 397,970. (No model.) Patented in England June 5, 1891, No. 9,546.



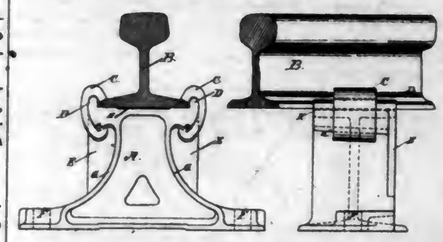
Claim.—In a clock-case having panels of glass or other loose plates, the combination, with the base of such cases, having slot-holes beneath such panels or plates, of a spring pressure-plate or pad which is secured thereto, which passes into such slots, substantially in the manner described and shown, and for the purposes specified.

472,163. SYSTEM OF VENTILATION. JAMES F. DUFFY, Chicago, Ill. Filed Aug. 20, 1891. Serial No. 404,057. (No model.)

Claim.—In a system of ventilation, the combination of a fresh-air-supply pipe provided with means for heating or cooling the air, as may be desired, an exhaust-pipe, two series of pipes leading to openings in the upper and lower portions, respectively, of the apartments to be ventilated, and suitable connections between said two series of pipes and the fresh-air and exhaust pipes, whereby either of said series of pipes may be connected with either the fresh-air pipe or the exhaust-pipe, as may be desired, substantially as described.



472,164. STREET-RAILWAY TRACK. JOHN A. DUGGAN, Quincy, Mass. Filed Oct. 3, 1890. Serial No. 367,194. (No model.)



Claim.—1. The combination of the chair A, provided with flanges D, projecting above the upper surface of the chair to prevent the lateral motion of the rail placed thereon, the rail B placed within the flanges D, and the clamp C, having its extremities turned down parallel, or substantially so, with its main portion, so that its bearing is upon its extreme ends, substantially as and for the purpose above described.

2. The combination of the chair A, provided with side pieces *a*, made of a greater interior than exterior width and having thereon flanges D, the rail B, and the clamp C, having its extremities turned down parallel, or substantially so, with its main portion, so that its bearing is upon its extreme ends, substantially as and for the purpose above described.

3. The chair A, having a center web and provided with side ribs G, the side pieces *a*, and flanges D, substantially as and for the purpose above described.

4. The chair A, provided with side pieces *a*, and flanges D, projecting above the upper surface of the chair and having thereon the space H, in combination with the rail B, substantially as and for the purpose above described.

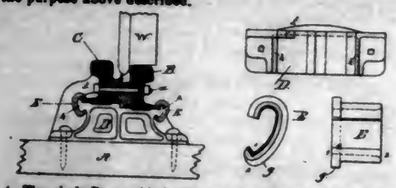
472,165. FASTENING AND SEATING OF GUARD-RAILS, &c., FOR STREET-RAILWAYS. JOHN A. DUGGAN, Quincy, Mass. Filed July 15, 1891. Serial No. 399,630. (No model.)

Claim.—1. The combination of the main rail B, the guard-rail C, both seated on the chair D, and the clamps E, bearing upon the upper and outer surface of the rail-flange, substantially as and for the purpose above described.

2. The combination of the main rail B, guard-rail C, filling-block *b*, rails B and C being seated on the chair D, and clamps E, bearing upon the upper surface of the rail-flanges, substantially as and for the purpose above described.

3. In a railway-chair, the combination of the chair D, provided

with the ear-shaped clamps E E, with the brace *f*, substantially as and for the purpose above described.



4. The chair D, provided with ear-shaped clamps E and the side pieces A and made with two seats of different heights, respectively, for the main rail C and the guard-rail B, substantially as and for the purpose above described.

5. A clamp for the purpose of securing a rail to a chair on which it is seated and provided with the rib *g*, substantially as and for the purpose above described.

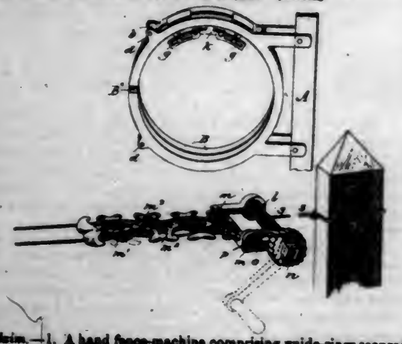
472,166. CHAIN-LINK. JOHN W. GARLAND, Pittsburg, Pa. Filed Jan. 19, 1891. Serial No. 378,297. (No model.)



Claim.—1. As an improved article of manufacture, a chain-link composed of a single bar or rod of metal bent at or about its center to form a cross-bar, loops projecting in reverse directions forming the body of the link, and eyes on the free ends of the loops, which are secured to the centrally-disposed cross-bar, as set forth.

2. As an improved article of manufacture, the chain-link composed of a single piece of metal bent so as to form a centrally-arranged cross-bar and reversely-bent end portions formed into loops whose free ends embrace the said cross-bar at opposite sides of the link, substantially as described.

472,167. HAND FENCE-MACHINE. MORRIS HAYS, Monmouth, Ill. Filed Mar. 30, 1891. Serial No. 387,062. (Model.)



Claim.—1. A hand fence-machine comprising guide-rings secured in pairs to a suitable support and a wire-twister for each pair of guide-rings, adapted to travel circumferentially around and between and in a plane parallel to the planes of the same.

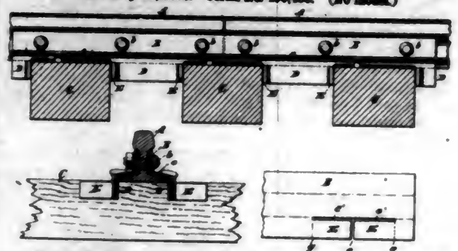
2. A tension device for hand fence-machines, having lateral projections from each side of the body at one end thereof, said projections being rounded and grooved alternately on their opposite faces to form elliptical cross-sections in line with the fence-wires and at the other end thereof having means for securing a stay-wire.

3. In a wire-twister for hand fence-machines, a pair of wire-guides independently adjustable upon arms extending at right angles to the body of said twister and having their adjacent ends hooked for the reception of the wires, substantially as described.

4. In a hand fence-machine, the combination, with a pair of guide-rings B B, of a wire-twister consisting of the segment *c*, flanged at *d* and d^2, wire-carrier *k*, arms *f*, and the adjustable wire-guides secured to the ends of said arms, substantially as described.

5. A tension device consisting of the body portion carrying the two rows of lugs m^2, rounded and grooved alternately on their opposite faces to form elliptical cross-sections in line with the fence-wires, and forks m m, spindle *l*, ratchet-wheel *n*, ratchet *o*, secured to one of the forks by the pin *p*, and a crank for turning the spindle, substantially as described.

472,168. RAIL-HOLDING SPLICE. FRANK G. JOHNSON, New York, N. Y. Filed July 23, 1891. Serial No. 400,402. (No model.)



Claim.—In railroad splice-plates, the wings E E, in combination with the downward-projecting tie-engaging lips or bifurcations D D, whereby broad contact-surfaces instead of narrow cutting-edges are provided between the splice-plates and ties to prevent the splices from cutting into the ties by the longitudinal strain and vibrating of the rails, substantially in the manner and for the purposes set forth.

472,169. TOLL-COLLECTING APPARATUS FOR TELEPHONES. JESSE J. KATO and THOMAS H. RHODES, Los Angeles, Cal. Filed Mar. 28, 1890. Serial No. 345,735. (No model.)



Claim.—1. In combination with a telephone, a toll-collecting apparatus comprising a coin-receiver, a normally-closed local electric circuit, means for breaking said circuit by the deposit of a coin, a second normally-closed local electric circuit, clock mechanism, and connections for breaking said second circuit by winding the clock, and means whereby said clock mechanism is adapted to simultaneously close both of said circuits at a predetermined point in its movement, substantially as described.

2. In combination with the telephone, the toll-collecting apparatus comprising a balance-lever, a clock-movement for resetting said balance-lever when tipped, and normally-closed double-circuit connections through the toll-collecting apparatus adapted to be opened, the one by the deposit of a coin and the other by the winding of the clock mechanism, substantially as described.

3. In combination with the telephone, the toll-box, the contact-springs, the balance-lever for holding said springs normally in contact, and the double-circuit connections adapted to establish electric connection with the telephone through said toll-box in either of two positions of the springs through the same when in contact and through the dial-plate of the clock-movement when the springs are separated, substantially as described.

4. In combination with the telephone, the toll-collecting apparatus comprising a suitable casing, a coin-receptacle in said casing, an inclined chute for receiving the coin, a balance-lever, an electric circuit through said casing adapted to be broken by the tipping of said lever, a clock-movement, and a second electric circuit adapted to be broken by winding said clock-movement, whereby the local circuits through the toll-collecting apparatus can only be broken by depositing a coin and winding the clock, substantially as described.

5. In combination with the toll-collecting apparatus, the clock-movement, the dial-plate on the main shaft thereof, the electric circuit adapted to be established through said dial-plate, the fan connecting with the gearing of said clock-work, the stop-plate for arresting the movement of said fan, and the lever for releasing said stop-plate when the clock is wound, substantially as described.

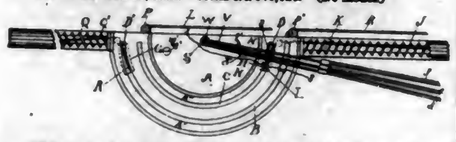
6. In combination with the telephone, the toll-collecting apparatus comprising a balance-lever, an electric circuit adapted to be broken by the tipping of said balance, a clock-movement for resetting the balance, a stop for arresting the movement of the clock-work, mechanism for releasing said stop by winding the clock-work, and mechanism adapted to be actuated by the movement of the clock mechanism, so as to restore the balance-lever to its normal position at a predetermined point in the movement of the clock-work, substantially as described.

7. In combination with an ordinary telephone outfit, a toll-collecting apparatus comprising a balance-lever, electric connections between the telephone and said apparatus, adapted to be broken by the tipping of said lever, a clock-movement for restoring said lever to its normal position, additional circuit connections with said telephone through the toll-collecting apparatus for establishing an electric circuit therethrough when the balance-lever is tipped, and mechanism for breaking said circuit connections by winding the clock-work, substantially as described.

8. In combination with a telephone, a toll-collecting apparatus in electric connection therewith, coin-controlled devices for breaking the electric circuit through said connections, clock mechanism for resetting said coin-controlled devices, circuit connections normally closed by said clock-work, and means for breaking said circuit connections by winding the clock, substantially as described.

9. In combination with a telephone, a toll-collecting apparatus connected therewith, double circuits connecting said telephone through said collecting apparatus, coin-controlled devices for breaking one of said circuits, and clock mechanism for breaking the other circuit, substantially as described.

472,170. MUSIC-LEAF TURNER. EDWIN G. GILLESPIE, Artesia, Cal. Filed Jan. 30, 1891. Serial No. 379,628. (No model.)



Claim.—1. In a music-leaf turner, the combination of the base, the standard secured to the base, the leaf-holders journaled to the standard, the carrier-block provided with a sliding carrier-pin and arranged to describe the arc of a circle of which the standard is the center, means for bringing such carrier-pin into successive engagement with such leaf-holders, and means for actuating such carrier-block and carrier-pin to cause them successively to describe the arc of a circle.

2. In a music-leaf turner, the combination of the base, the channel-boxes secured to such base and provided with the semicircular tubular channels, the carrier-blocks arranged to slide in such channels, the slots in the top and bottom of such channels, the sliding carrier-pins loosely inserted through such carrier-blocks and projecting upward and downward through such slots, the standard, suitable leaf-holders journaled to such standard and provided with the tongues and stops adapted to respectively receive and engage such carrier-pins successively, means for successively forcing such pins into contact with such tongues, and means for actuating such carrier-blocks and carrier-pins to cause successive partial rotation of the leaf-holders.

3. In a leaf-turner, the combination of the base and the channel-box provided with a tubular channel and the slots, a carrier-block arranged to slide in such channel and provided with a carrier-pin, the cord passing through such block and attached to the head of the carrier-pin, suitable means for actuating such cord to cause such pin and block to slide along such channel, and suitable means to return such block to its normal position.

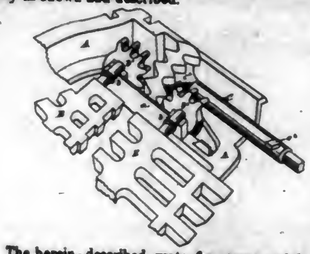
4. In a music-leaf turner, the combination of the vertically and laterally movable carrier-pin, the leaf-holders provided, respectively, with the pin-intercepting tongues arranged in series one above the other in the vertical path of the pin and also provided with the pin-intercepting stops arranged one above the other in the horizontal path of the pin, and suitable means for operating the pin vertically and horizontally, as and for the purpose set forth.

5. In a music-leaf turner, the combination of the base and the channel-box provided with a tubular channel and the slots, the carrier-block arranged to slide in such channel and provided with a carrier-pin, the cord attached to the head of such carrier-pin and passing through such carrier-block and out of one end of such channel, the cord attached to the rear of the carrier-block and passing out of the other end of the channel, and means for actuating such cords to cause such carrier-block and carrier-pin to slide along such channel.

6. In a music-leaf turner, the combination of a series of rectangular leaf-holding frames, each journaled to partially revolve and provided adjacent its rear edge with a slot extending from the top of the holder to a point near the bottom thereof and a leaf-clamp near its front edge, and means for partially rotating such leaf-holders.

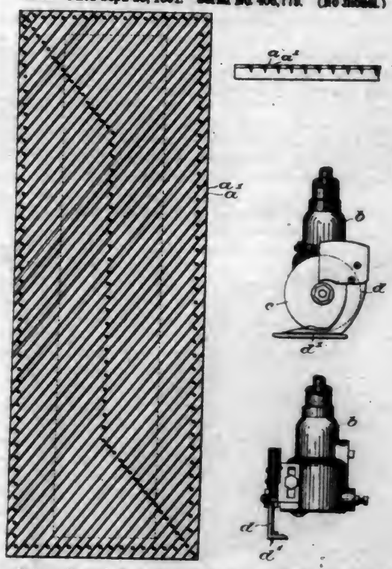
472,171. GRATE. JOHN W. GREENE, Louisville, Ky. Filed Mar. 23, 1891. Serial No. 386,065. (No model.)

Claim.—1. A grate for stoves and fire-places, comprising the grate B, cast in two sections, having journals *b* at both ends of each section, toothed segments fastened on the journals of both sections at one end and having their teeth facing each other, and a rocking shaft C, having a segment of a wheel provided with laterally-projecting teeth on the opposite sides thereof extending between said segments and adapted to engage the teeth thereof to partially rotate said grate-sections, substantially as shown and described.



2. The herein-described grate for stoves and fire-places, comprising the grate B, cast in two sections having journals *b* at both ends of each section, toothed segments fastened on the journals of both sections at one end and having their teeth facing each other, a rocker-shaft C, having a segment of a wheel projecting inward from one of its sides and formed with laterally-projecting teeth on each side, said teeth extending between said segments and adapted to engage the teeth thereof to partially rotate said grate-segments, and means for locking said shaft, as described.

472,172. CLOTH-CUTTING MACHINE. PATRICK HOWE, Boston, Mass. Filed Sept. 26, 1891. Serial No. 406,779. (No model.)



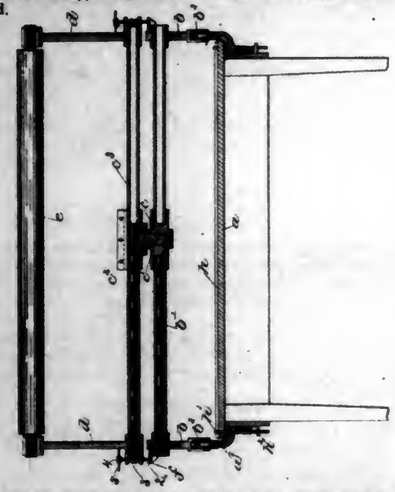
Claim.—In a cloth-cutting machine, a table the surface of which is provided with parallel grooves, combined with a movable knife or cutter carrying head provided with a shoe having a guide-rib upon its under side to enter one of said grooves and thereby guide the head, substantially as and for the purposes specified.

472,173. CLOTH-LAYING MACHINE. PATRICK HOWE, Boston, Mass. Filed Nov. 2, 1891. Serial No. 410,613. (No model.)

Claim.—1. In a cloth-laying machine, a table and track thereon, combined with a truck or carriage consisting of end supports, rolls carried thereby for the truck, rods or bars *b'*, extended inwardly from each end support, a pivot-block *c* between the adjacent ends of and connecting said rods or bars, a roller-supporting frame pivoted to said block and comprising uprights *d*, rods or bars d^2, extended inwardly therefrom, a pivot-block d^3, intermediate and connecting the adjacent ends of said rods or bars d^2, a spring-controlled rotatable locking-pin

to hold said frame in position, and means to retain said pin in inoperative position, substantially as described.

2. In a cloth-laying machine, a table and track thereon, combined with a carriage having thereon an extension *f*, made with a convexed upper surface and having a hole through it, and a roller-supporting frame pivoted to said carriage and having a spring-pressed pin 2, adapted to engage the said extension *f* and to enter the hole therein to lock the roll-supporting frame in fixed position, substantially as described.



3. In a cloth-laying machine, a table, a rail or track at each side thereof and supported beyond its edge, a truck or carriage movable on said rails or tracks, a roller-supporting frame pivoted thereon, and a retaining device at one end of said table, comprising a transverse rod *k*, spring-actuated hooks *k'* for the ends of said rod and located within said rails or tracks, and supporting-brackets for the hooks at each side of the table, the track having an unobstructed path from one to the other end of the table, substantially as described.

472,174. POCKET-BOOK. LOUIS HUMMEL, New York, N. Y. Filed Jan. 11, 1892. Serial No. 417,615. (No model.)

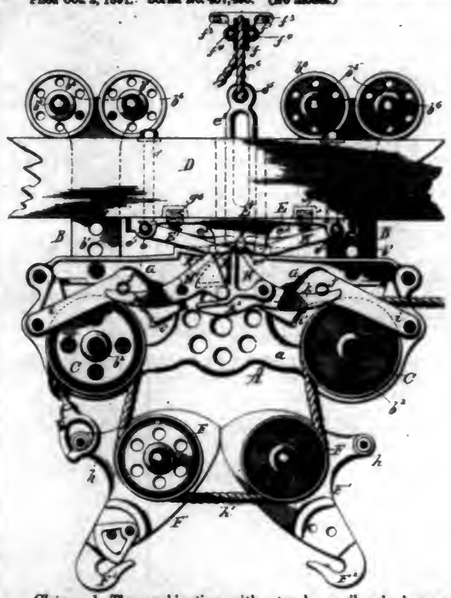


Claim.—1. In a pocket-book, the combination, with a coin-pocket, of a frame formed of two U-shaped hinged pieces and connected with the edges of said pocket, a U-shaped piece mounted to swing on the pivots of the said frame, catches for locking the side pieces of the frame to said U-shaped piece, and a flap connected with said U-shaped piece, substantially as set forth.

2. In a pocket-book, the combination, with two or more pockets, of a metal frame composed of two hinged U-shaped pieces, the edges of which are attached to the edges of one of the pockets, a U-shaped piece mounted to swing on the pivots of said frame, two catches on said U-shaped piece, adapted to engage the side pieces of the frame, and a flap secured to said U-shaped piece, which flap can be swung over the pockets adjacent to the one provided with the frame, substantially as set forth.

3. In a pocket-book frame, the combination, with two U-shaped side pieces pivoted to each other, of a U-shaped piece mounted on the pivots of the side pieces to swing between said side pieces and two catches on opposite sides of said U-shaped pieces to engage the edges of the side pieces of the frame, substantially as set forth.

472,175. HAY-CARRIER. WILLIAM LOUDEN, Fairfield, Iowa. Filed Oct. 2, 1891. Serial No. 407,495. (No model.)



Claim.—1. The combination, with a track or rail and a hay-carrier adapted to run thereon, of a plate secured to the under side of said rail or track, a latch hinged to said plate, an arm projecting from said latch and having a bifurcated end, a bar passing loosely through the rail or track and loosely connected with the bifurcated end of the arm of the latch, and means for operating said bar, substantially as set forth.

2. The combination, with a rail or track and a hay-carrier adapted to run thereon, of two latches projecting in opposite directions, shoulders or stops on the frame of the carrier and disposed in opposite directions and adapted to be engaged by the latches, and a slide-bar passing loosely through a hole in the rail or track for operating said latches, substantially as set forth.

3. The combination, with a rail and a carrier adapted to run thereon, of two latches hinged to the under side of said rail, an arm projecting from each latch toward each other, and a sliding bar passing through the rail and loosely connected to the arms of the latches, whereby both latches may be operated simultaneously, and fixed stops on the carrier to be engaged by said latches, substantially as set forth.

4. The combination, with a rail and a carrier adapted to run thereon, of two independently-hinged latches on the under side of said rail, arms projecting from said latches, a slide-bar passing through the rail and loosely connected with said arms, whereby both latches may be operated simultaneously, and means whereby either of said latches is capable of being operated independently of the other, and stops on the carrier-frame with which said latches are adapted to engage, substantially as set forth.

5. The combination, with a rail and a carrier adapted to run thereon, of latches hinged to the under side of said rail, stops on the carrier-frame adapted to be engaged by said latches, prongs projecting from said latches, a vertically-movable yoke carried by the carrier-frame, said yoke being adapted when moved upwardly to engage the prongs of one of the latches and release said latch from engagement with the carrier-frame, substantially as set forth.

6. The combination, with a track or rail and a hay-carrier adapted to run thereon, of latches hinged on the under side of said track or rail, stops on the carrier-frame with which said latches engage, a yoke embracing the carrier-frame and adapted to have a vertical movement when struck by the load and adapted to engage one or the other of said latches, loops secured to the carrier-frame for guiding said yoke, and lugs projecting from the carrier-frame for guiding the lower portion of said yoke, substantially as set forth.

7. The combination, with a rail and a hay-carrier adapted to run thereon, of latches on the under side of said rail, two corresponding

sets of stops on the carrier-frame, one stop of one set being adapted to be engaged by one of said latches, while the other latch is in engagement with the other stop of the corresponding set, and means for automatically releasing one latch when the load of hay shall have been raised to the carrier, substantially as set forth.

8. The combination, with a rail or track and a carrier adapted to run thereon, of a plate secured to the under side of the rail or track and having an opening in its center, a hollow projection in line with this opening, arms projecting from the latches into said hollow projection, stops on the carrier-frame with which the latches engage, and a bar passing loosely through the rail and into the hollow projection and connected with the arms projecting from the latches, substantially as set forth.

9. The combination, with a carrier provided with hoisting-pulleys, of brakes pivoted to the carrier in proximity to the pulleys, and a pair of levers pivoted to the carrier, their inner ends having a loose pivotal connection with each other and their outer ends adapted to operate in connection with the brakes to raise them, substantially as set forth.

10. In a hay-carrier, the combination, with a frame and two pulleys mounted therein for the accommodation of the hoisting-rope, of two brake-clevises hinged in opposite directions, two levers, each adapted to engage one of the clevises, and means for operating said levers to raise both clevises simultaneously, substantially as set forth.

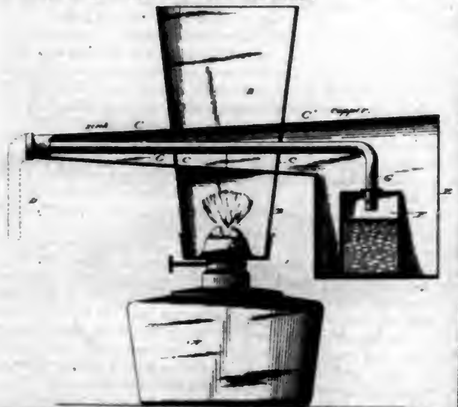
11. In a hay-carrier, the combination, with a frame and two pulleys mounted therein for the accommodation of the hoisting-rope, of two brake-clevises mounted in said frame and adapted to embrace said pulleys, two levers pivoted in the frame and each adapted to engage one of the clevises, said levers being connected together in such manner that when one is operated they will both be operated to raise the clevises to release the brakes, substantially as set forth.

12. In a hay-carrier, the combination, with a frame and two pulleys mounted therein for the accommodation of the hoisting-rope, of two brake-clevises mounted in said frame and adapted to embrace said pulleys, pins projecting from said clevises, two levers pivoted in the frame and having forks to engage said pins, and means for operating said levers simultaneously, substantially as set forth.

13. The combination, with a rail, of a projection on the under side thereof, a hay-carrier having pulleys mounted therein for the accommodation of the hoisting-rope, brake-clevises adapted to embrace said pulleys, levers mounted in the frame and adapted to engage said clevises, said levers being adapted to be engaged and operated by the projection on the under side of the rail, substantially as set forth.

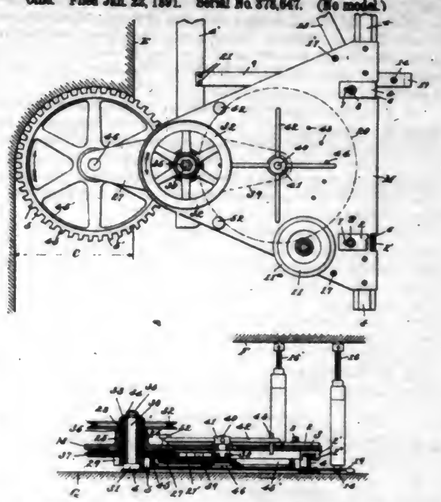
14. The combination, with a rail, of a projection on the under side thereof, a hay-carrier having pulleys mounted therein for the accommodation of the hoisting-rope, clevises adapted to embrace said pulleys, brake-shoes carried by said clevises, and levers mounted in the frame and adapted to engage said clevises, and said levers being loosely connected together at their upper ends and adapted to be engaged and operated simultaneously by the projection on the rail, substantially as set forth.

472,176. INHALER. CYRUS D. MCGRATH, Anthony, Ohio. Filed Dec. 19, 1891. Serial No. 415,602. (No model.)



Claim.—The inhaler described, composed of the lamp, cap, or hood over the same, cone passing transversely through said cap or hood and terminating at one extremity in a small mouth-piece and at the other in an open recess to receive a vessel with said vessel having pipe extending from the interior thereof through the cone and terminating at the outer end thereof, substantially as shown, for the purposes specified.

472,177. MINING-MACHINE. CHARLES O. PALMER, Cleveland, Ohio. Filed Jan. 22, 1891. Serial No. 378,647. (No model.)



Claim.—1. In a mining-machine, the combination, with a track having a back rail and a shorter forward rail, of the frame having three frame-supports arranged in a triangular form, two of said supports bearing on the back rail and a single support bearing on the forward rail, a cutter-carrying arm supported on the frame at the place of said single frame-support and adapted to be swung around said single support, and a cutter-wheel revolubly mounted on said arm beyond said single frame-support, whereby said cutter may be swung under and from under said frame around the ends of said forward rail, substantially as described.

2. In a mining-machine, the combination, with the track having a rail flanged at the top thereof, of the mining-machine frame bearing on said flanged rail, the adjustable clamps engaging in notches in the frame and adapted to engage under the rail-flange, and means holding said clamps in place, substantially as described.

3. In a mining-machine, the combination, with the track having a flange-topped rail, of the machine-frame having the shoes 3 with depending flanges 3' fitting on either side of the rail-top, and the adjustable clamps 2, constructed substantially as shown, for sliding adjustment on the frame to engage and disengage the same from the rail-flange, substantially as described.

4. In a mining-machine, the combination, with the track having the flanged back rail and the flat-topped front rail, of the machine-frame furnished for sliding engagement with the back rail and carrying the swinging cutter-carrying arm, and the stud located concentrically with the axis of said arm and having its lower end forming the bearing for the machine on the front rail, substantially as described.

5. In a mining-machine, the combination, with the machine-frame having the bearing for the carrier-arm, of the cutter-carrier 27, supported by a tubular journal in said bearing and having the down-set projecting arm carrying the cutter-wheel and lying within said wheel, substantially as described, the tubular shaft 26, having a pinion meshing with the teeth of the cutter-wheel and provided with means for revolving the pinion, and a central stud through said pinion-shaft and constituting a bearing for supporting the machine, substantially as described.

6. In a mining-machine, the combination, with a track having a back rail and a shorter forward rail, of the triangular frame having bearings on one side in sliding engagement with the back rail and having a bearing at the point opposite said side and resting on the front rail, and a cutter carried on an arm constructed and arranged, substantially as described, to turn about said single bearing, whereby the cutter may be swung around the end of said shorter rail, substantially as described.

7. In a mining-machine, the combination, with a mining-machine frame having at one side thereof a single support, of a cutter-carrying arm, substantially as described, supported to swing around said frame-support, and a cutter revolubly supported on said arm beyond said frame-support, and means revolving the cutter and swinging said arm, substantially as described.

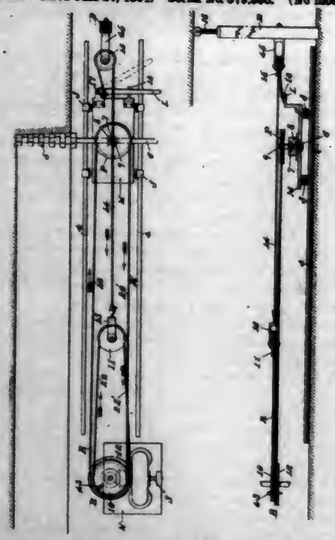
8. In a mining-machine, the combination, with a machine-frame provided with track-bearings at the rearward side thereof and provided with a single support at the forward side thereof, of the cutter-

carrying arm journaled at one end thereof to the machine-frame at the place of said single frame-support and having its projecting end below the plane of said frame, and the cutter revolubly supported on the under side of said arm beyond said single support and below the plane of the machine-frame, whereby said cutter may be swung around said single support under and from under the machine-frame, substantially as described.

9. In a mining-machine, the combination, with the machine-frame having a bearing for the journal of the cutter-carrying arm, of the cutter-carrying arm journaled in said bearing and located below the plane of the machine-frame, the pinion below said arm and eccentric with the axis of the swinging movement of the arm, and the revoluble cutter carried on the extended end of said arm and meshing with said pinion, all substantially as shown and described.

10. In a mining-machine, the combination, with a track having a back rail and a shorter forward rail, of the frame supported on the track for longitudinal movement thereon and having a single support bearing on the forward rail, a cutter-carrying arm supported on the frame at the place of said single frame-support and adapted to be swung around said single support, and a cutter revolubly mounted on said arm beyond said single frame-support and extending downwardly below the plane of the upper side of said forward rail, whereby said cutter may be swung around the ends of said forward rail and the mineral undercut at the level of the floor, substantially as described.

472,178. DRIVING MECHANISM. CHARLES O. PALMER, Cleveland, Ohio. Filed Jan. 27, 1891. Serial No. 379,333. (No model.)



Claim.—1. In a rope-driving system for movable machines, the combination, with the machine-driving pulley carried on the machine and with a series of terminal and intermediate pulleys, substantially as described, comprising a differential, of the driving belt or rope reeled to form a driving-circuit and a feed-circuit, the system being organized and furnished, substantially as described, for shortening the feed-circuit simultaneously and correspondingly with the lengthening of the driving-circuit, substantially as described.

2. In a rope-driving system for movable machines, the combination, with the machine-driving pulley carried on the machine and with a pair of differential wheels, of the intermediate wheel connected for feeding forward the machine, and a driving belt or rope reeled over the machine-driving pulley, the differential wheels, and the intermediate wheel to form a driving-circuit and a feed-circuit, whereby the machine is actuated through one of said circuits and is fed forward by the other of said circuits, substantially as described.

3. In a driving system, the combination, with a driving-pulley and a movable machine having a driven pulley thereon, of the intermediate pulley 11, a fulcrum-wheel, and draft-line connected substantially as described for feeding the machine, and a driving-belt reeled to form two circuits, including the driving, driven, and intermediate pulleys, one of said pulleys constituting a differential element.

4. In a rope-driving system for movable machines, the combination, with the machine-driving pulley carried on the machine and with a differential element comprising two separate wheels and means for connecting and disconnecting said wheels, of the intermediate wheel connected for feeding forward the machine, and a driving belt or rope reeled over the machine-driving pulley, the differential wheel, and the intermediate wheel to form a driving-circuit and a feed-circuit, whereby on disconnecting the differential wheels the machine may be actuated for feeding forward the same and on locking together the differential wheels the machine may be both actuated and fed forward, substantially as described.

5. In a rope-driving system for movable machines, the combination, with the machine-driving pulley carried on the machine, and with the differential wheels 10 and 12 and means for connecting and disconnecting said wheels, of the intermediate wheel 11, the terminal wheel 15, the draft-line connecting said intermediate wheel with the machine over the terminal wheel, and a driving belt or rope reeled over the said machine-driving pulley, the differential wheel, and the intermediate wheel to form a driving-circuit and a feed-circuit, substantially as described.

6. In a driving system for movable machines, the combination, with the machine-driving pulley carried on the machine, the driving-wheel, the intermediate wheel, the terminal wheel, and a driving belt or rope reeled over the machine-driving wheel and the intermediate wheel to form driving and feed circuits, substantially as described, of the take-up movably supported on the machine and adapted to be locked and unlocked from its working position, and the draft-line extending from the intermediate pulley over the terminal pulley and connecting with the movable machine through said take-up thereon, substantially as described.

7. In a rope-driving system for operating movable machines, the combination, with four pulleys arranged in two pairs, of the driving-belt reeled to form two circuits carried by said four pulleys, two of said pulleys being connected for different peripheral velocities, whereby one circuit is shortened and the other lengthened.

472,179. PLOW ATTACHMENT. SAMUEL F. SAVITS, Plimpton, Ohio. Filed Sept. 16, 1891. Serial No. 405,908. (No model.)

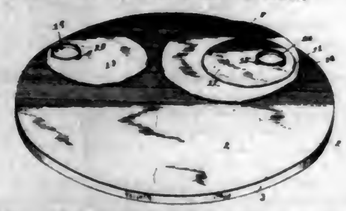


Claim.—1. In a plow attachment, the combination, with the beam, of attaching means, a shaft journaled in the same, a rotary cutter on one end of the shaft, a gathering-foot forming a stationary abutment for the cutter, and a ground-wheel secured on the other end of said shaft for rotating the cutter, substantially as described.

2. In a plow attachment, the combination, with the beam, of two downwardly-extending supporting-plates on the same, an inclined gathering-foot on one of the supporting-plates, a shaft journaled in the supporting-plates, a rotary cutter on the shaft between the plates and adjacent to the inclined foot, and a ground-wheel on the outer end of said shaft for rotating the cutter, substantially as described.

3. In a plow, the combination, with the beam, plates secured thereon, supporting-plates adjustably secured to said plates, a shaft journaled in the supporting-plates, a rotary knife on the shaft, a ground-wheel on the shaft, rotating the knife, an inclined foot forming the stationary abutment for the knives, and a yielding cleaner on the beam, engaging the wheel, substantially as described.

472,180. SAP-BUCKET COVER. JOSEPH L. SHIGLEY, Hart, Mich. Filed Oct. 22, 1891. Serial No. 409,523. (No model.)



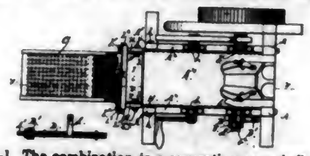
Claim.—1. The herein-described sap-bucket cover, the same being provided with an eccentric opening having an interlocking annular flange and a disk having an annular flange interlocking therewith and mounted over the opening and provided with an eccentric opening, substantially as specified.

2. The herein-described cover for sap-buckets, provided with an eccentric opening having an annular flange, a disk swiveled on the flange and covering the opening and provided with an eccentric opening, and a second disk swiveled on the second opening and having an eccentric opening, substantially as specified.

3. The herein-described sap-bucket cover, provided with two eccentric openings arranged side by side, disks swiveled on said openings and provided with eccentric openings, and a disk having an eccentric opening swiveled on one of said disks, substantially as specified.

4. The herein-described elliptical sap-bucket cover, having the surrounding depending flange and provided with two eccentric openings arranged side by side, which openings have their edges struck up to form flanges, circular disks having depending flanges interlocking with and swiveled upon the flanges first mentioned, each of said disks having eccentric openings provided with flanges, and a third disk having depending flanges interlocking with and swiveled upon the flange of one of said disks and having an eccentric opening, substantially as specified.

472,181. SEPARATING CORN-SHELLER. MICHAEL G. SHINDLE, Mountville, Pa. Filed Dec. 10, 1889. Serial No. 333,944. (No model.)



Claim.—1. The combination, in a separating corn-sheller having the shelling mechanism arranged in the upper portion of its frame-work, two corner-posts at the front and rear ends of said frame-work, a screen shaker below the shelling mechanism and extended rearward between and beyond said rear end posts, a rock-shaft journaled below and adapted to support the forward end of said shaker, and mechanism provided to oscillate said shaft to reciprocate the shaker, with the rearwardly-projecting horizontal bars H, having their forward ends rigidly secured to the rear end posts, near the tops thereof, and said bars adapted to pivotally support the rear end of the shaker and to hold the retaining-box in position, of the yoke L, having its cross-beam *l* above and its arms *l'* extended downward outside of the rear ends of said bars, the lower ends of said arms *l'* pivoted to the body of the shaker, and a series of holes *l²* through each of said arms near their upper ends, whereby said yoke by means of the bolt L^3 is pivoted to the rear ends of the bars H, substantially as described, and for the purpose set forth.

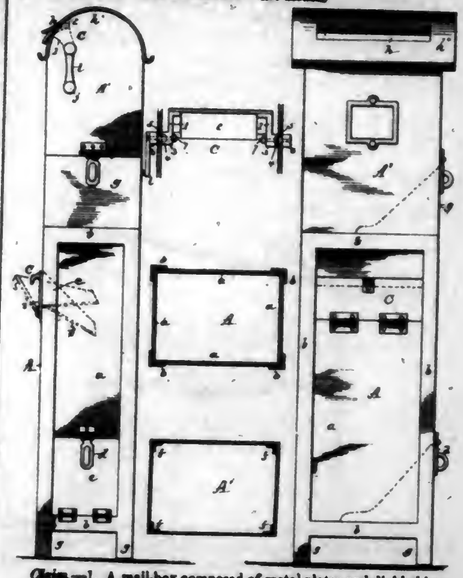
2. The combination, in a separating corn-sheller having a shaker C arranged as described, the horizontal bars H, having their forward ends secured to the rear end posts of the frame-work of the sheller, and the arms *l'* of the yoke L, having their upper ends pivoted to the rear ends of said bars and their lower ends pivoted to the body of the shaker, with said bars H, as described, of the retaining-box I, having its top *i* above and across the body of the shaker and its sides *i'* extended downward to near the side walls thereof and the front edges of said top and sides against the rear end of the sheller, and the straps J, having their lower ends secured to the sides *i'* of said box and their upper ends provided with a series of holes *j*, through which by means of the bolts and nuts j^3 said box is adjustably secured in position, substantially as described, and for the purpose set forth.

3. The combination, in a separating corn-sheller such as hereinbefore described and having a shaker C arranged as described, with the retaining-box I, having its top *i* and its two depending sides *i'* so arranged against the rear end of the sheller as to form a tunnel or covered way over the shaker and the bolt J' passed through the sides near the top of the box to hold said box in place, of the check-apron K, having its upper edge secured to said bolt to suspend said apron across the body of said box and shaker, substantially as described, and for the purpose set forth.

4. The combination, in a separating corn-sheller having the shaker C arranged as shown, and a cap or casing A^4 to cover the shelling mechanism, with said casing and shaker, of the fender or shield G, of metal sheeting, having the upper edge secured to the inner faces of the front and side walls of said casing and the lower edge extended over the front and side walls into the body of the shaker to near the bottom thereof, substantially as described, and for the purpose set forth.

5. The combination, in a separating corn-sheller having a shaker C, as described, means provided to pivotally support the rear end of said shaker, and the yoke E, having the central and downwardly-projecting jaw *e* for pivoting or jointing, said yoke placed underneath and rigidly secured to the forward end of the shaker, with a yoke E, as described, of the rock-shaft D, journaled in bearings secured to the front end posts, as shown, and having at its center the vertical leg or arm *d*, having its extremity pivoted to the jaw *e*, as shown, to support the forward end of the shaker, and mechanism provided to oscillate or rock said shaft and to reciprocate said shaker, substantially as described, and for the purpose set forth.

472,182. LETTER-BOX. WILLIAM W. SPEER, Pittsburg, Pa. Filed Oct. 14, 1891. Serial No. 408,687. (No model.)

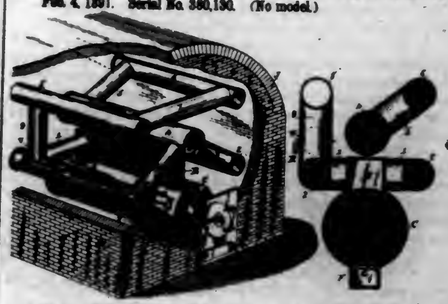


Claim.—1. A mail-box composed of metal plates and divided into compartments, and angle-irons securing said plates together, the angle-irons securing the upper plates being located inside and those connecting the lower plates being located outside and extended at their lower ends to form legs, substantially as set forth.

2. A mail-box composed of metal plates having angle-irons secured to its side and bottom edges and a door hinged to one of the angle-irons, at the lower edge, substantially as set forth.

3. A mail-box composed of a series of steel plates and a series of angle-irons for securing said plates together at their corners, said angle-irons extending below the bottom of the box to produce legs or supports, substantially as set forth.

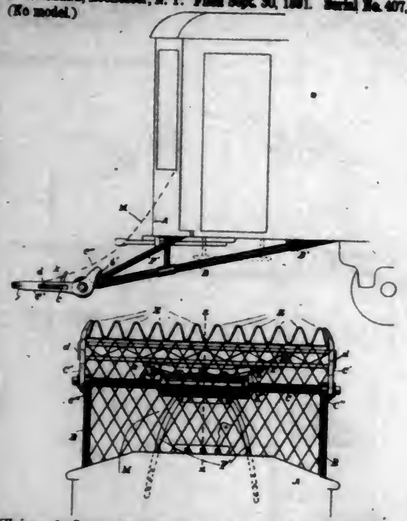
472,188. FURNACE. FERDINAND F. THEDENS, Lyons, Iowa. Filed Feb. 4, 1891. Serial No. 380,130. (No model.)



Claim.—The herein-described furnace, the same comprising the fire-pot C, an elongated rectangular dome or box B, mounted thereon and communicating throughout its length therewith, pipes 1, leading from the rear end and opposite sides of the box or dome, opposite horizontal pipes 2, extending parallel to the box or dome B and communicating at their rear ends with the pipe 1, the main flue 4, located above the box or dome B and larger than the pipes 2, inclined inwardly-disposed pipes 3, leading from the front ends of the pipes 2 to the front end of the main flue 4, the pipes 6 and 8, above the pipes 2, the pipe 8, leading to the chimney, the transverse pipe 7, connecting

the front ends of the pipes 6 and 8, the inclined pipe 5, leading from the rear end of the main flue 4 to the rear end of the pipe 6, the short vertical pipe 9, connecting the rear ends of the pipes 2 and 8, and the valve V, located in the short vertical pipe 9, substantially as specified.

472,184. SAFETY ATTACHMENT FOR STREET-CARS. PHILIP S. TOWNSEND, Rochester, N. Y. Filed Sept. 30, 1891. Serial No. 407,294. (No model.)



Claim.—1. In a safety attachment for cars, the combination, with a receptacle carried on the car, of a pivoted frame at the front thereof, a spring for raising it, and a catch for retaining the frame depressed against the tension of the spring, substantially as described.

2. The combination, with the receptacle carried on the car, of a pivoted frame at the front thereof, having a series of elastic fingers or projections, a spring for raising said frame, and a catch for retaining the frame depressed against the tension of the spring, substantially as described.

3. The combination, with the receptacle carried on the car, of a pivoted frame at the front thereof having a movable portion, a spring for raising the frame, and a catch for retaining the frame in a depressed position against the tension of the spring, arranged to be released by the movable part of the frame, substantially as described.

4. The combination, with the frame-work on the car, the shaft journaled therein, the frame connected thereto, having the movable portion of the spring supported on the car, connected to the shaft for rotating it in a direction to raise the frame from the ground, the catch on the car engaging the shaft and released by the movable portion of the frame when actuated, substantially as described.

5. The combination, with the frame-work on the car, the shaft journaled therein, the slotted plates secured to the shaft, and the cross-bar movable therein, of the casing secured to the car, the spring therein secured to the shaft, the catch on the casing engaging the shaft adapted to be operated by the movement of the cross-bar, substantially as described.

6. The combination, with the frame-work on the car, the shaft journaled therein, having the notched collar and the frame secured to the shaft having the movable portion, of the rigid casing, the springs secured thereto, and the collar on the shaft, the spring-catch on the casing co-operating with the collar and arranged to be actuated by the movable portion of the frame on the shaft, substantially as described.

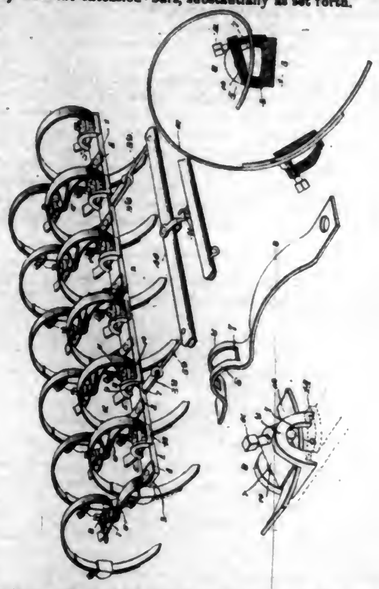
7. The combination, with the lifting-frame pivoted in advance of the car-body, the spring for raising it, and the catch for retaining it in depressed position, of the net secured to the frame and car, substantially as described.

8. In a safety attachment for cars, a projecting and normally-stationary frame having a series of separate elastic grasping-fingers or projections arranged thereon a short distance apart, substantially as described.

9. In a safety attachment for cars, a vertically-movable pivoted frame, having secured to its front side a strip of spring metal bent into fingers or projections, substantially as described.

472,185. SPRING-TOOTH HARROW. FREDERICK VAN PATTEN, Auburn, N. Y. Filed Jan. 8, 1890. Serial No. 336,336. (No model.)

Claim.—1. In a spring-tooth harrow, the combination, with a frame-bar, of extension-bars secured at right angles thereto, and the spring-teeth secured to said extension-bars and to the frame-bar alternately with the extension-bars, substantially as set forth.

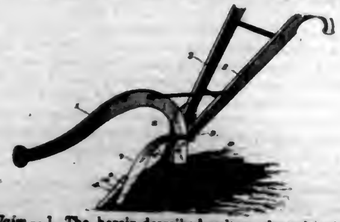


2. In a spring-tooth harrow, the combination of a frame-bar, the tooth-seats and extension-bars secured to said frame-bar alternately with each other, and the spring-teeth secured to said tooth-seats and extension-bars, substantially as set forth.

3. A spring-tooth holder consisting of a plate having a longitudinal slot, said plate being curved upwardly in the direction of its width to form ears or bails at the sides of said slot, in combination with a pin or bolt inserted under the said bails above said slot, a cam-plate mounted pivotally upon said pin or bolt, and a set-screw extending through said cam-plate and bearing against the upper side of the tooth-holder, substantially as and for the purpose set forth.

4. In a harrow employing a series of equal-sized extension-bars which are secured to the main frame-bar, the attachment of one set of harrow-teeth to the outer end of said extension-bars and another set directly to the main frame-bar intermediately between each extension-bar, both sets of teeth being of the same size, so as to cause the harrow-teeth to arrange themselves in two alternate rows, as set forth.

472,186. COLTER FOR PLOWS. AUGUST A. YACKER, Roberts, Ill. Filed Aug. 4, 1891. Serial No. 401,653. (No model.)

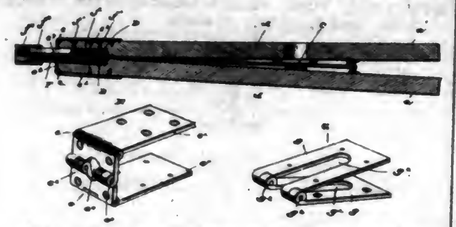


Claim.—1. The herein-described colter, adapted to be attached to the landside of a plow, the same consisting of a metal plate having a rearward and outward curvature and at its front terminating in a cutting-edge, substantially as specified.

2. The combination, with the plowshare, of a colter secured to the landside thereof, extending vertically, rearwardly, and outwardly therefrom and terminating at the front in a cutting-edge, substantially as specified.

472,187. BLACKSMITH'S AND HAND BELLOWS. SILAS H. BRAUD, Chicago, Ill. Filed Nov. 27, 1891. Serial No. 413,228. (No model.)

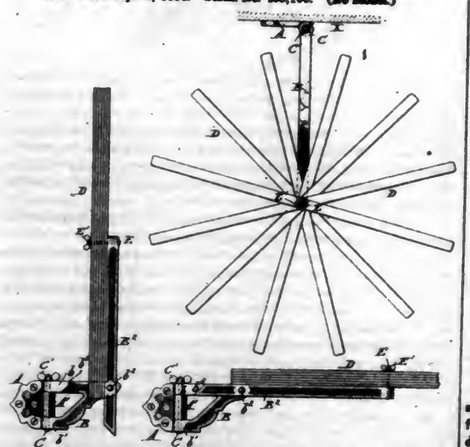
Claim.—1. In a bellows, the combination of the opposite bellows-plates provided with rounded recesses in their outer meeting ends, a metallic hinge joining the meeting ends of said plates and provided with an opening communicating with said recesses, and a discharge-pipe secured in said opening of the hinge and said recesses, substantially as set forth.



2. In a bellows, the combination of the opposite bellows-plates provided with opposing semicircular recesses at their outer meeting ends, a triple-jointed U-shaped hinge capping the outer ends of said plates and provided with a circular recess registering with the opening formed by said semicircular recesses, and a discharge-pipe located within said opening and recesses and provided with an inwardly-extending tongue secured within one of said semicircular recesses, substantially as set forth.

3. In a bellows, the combination of the opposite bellows-plates, a triple-jointed U-shaped hinge capping the outer ends of said plates and provided with a circular recess, and a discharge-pipe located within said recess, substantially as set forth.

472,188. CLOTHES-DRIER. ROBERT H. BURDEN, Kansas City, Mo. Filed Sept. 9, 1891. Serial No. 405,163. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a bracket adapted to be secured to the wall of a building or other object, the swinging arm secured thereto, and the centrally-pivoted radial arms secured to the outer end of the swinging arm.

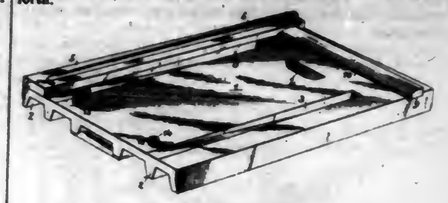
2. The combination, substantially as hereinbefore set forth, of the bracket, the swinging arm secured thereto, the radial arms pivoted to the outer end of the swinging arm, and tightening-nuts for holding the swinging arm and the radial arms in their adjusted positions.

3. The combination, substantially as hereinbefore set forth, of the bracket, the swinging arm secured thereto and which is made in two parts, hinged together by a horizontal pivot, and the centrally-pivoted radial arms secured to the outer end of the swinging arm.

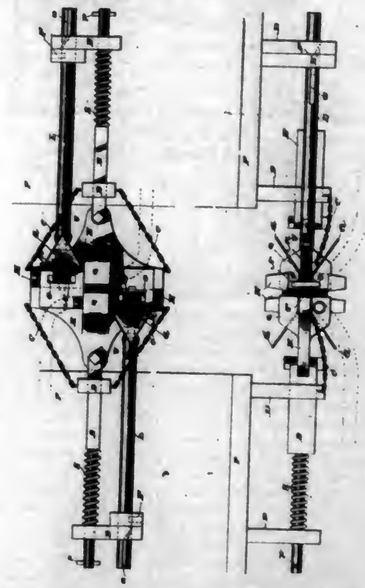
472,189. DIE FOR ROOFING-TILES. JOHN E. DONALDSON, Montezuma, Ind. Filed Feb. 11, 1891. Serial No. 381,050. (No model.)

Claim.—1. The combination of the base-plate 1, having transverse groove 9, with the flange 10, seated removably in said groove and having the lug 11, and the laterally adjustable and detachable flange 5, extending over the said lug and standing on the face of the base-plate, substantially as set forth.

2. In a device of the class described, the combination of the upper and lower die-plates having threaded perforations, smooth perforated bushings detachably engaging the perforations of said lower die-plate, and punches having threaded shanks removably engaging the perforations of the upper die-plate and adapted to pass through the tile and into the smooth bore of said bushings, substantially as set forth.



472,190. AIR-BRAKE COUPLING. WILLIAM A. HARRIS and BENJAMIN S. H. HARRIS, Spartanburg, S. C., assignors of one-third to Whiteford S. Thompson, same place. Filed July 2, 1891. Serial No. 398,283. (No model.)



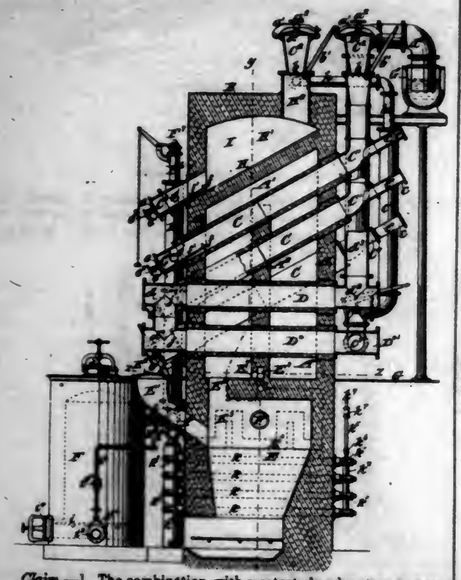
Claim.—1. In an air-brake coupling, the combination, with the spring-actuated bar B, moving in hangers D, depending from the platform, the head H, pivoted to the forward end of said bar, coupling devices Q at the center of said head, and guides G at one side thereof, having openings O, of the button N, mounted in a transverse slot T in the head at the other side of said coupling devices, and means, substantially as described, for automatically throwing said button into and out of engagement with the openings in the guides of a companion head, as set forth.

2. In an air-brake coupling, the combination, with the spring-actuated bar B, moving in hangers D, depending from the platform, the head H, pivoted to the forward end of said bar, coupling devices Q at the center of said head, and guides G at one side thereof, having slotted openings O, of the button N, mounted in a transverse slot T in the head at the other side of said coupling devices, a shank M, journaled in the head and keyed in said button, a locking-bar L, connected by universal joint U to said shank, and means, substantially as described, for automatically turning said bar a quarter-revolution when the cars are brought together or separated, as set forth.

3. In an air-brake coupling, the combination, with the spring-actuated bar B, the head H, pivoted to the forward end of said bar, coupling devices Q at the center of said head, and guides G at one side thereof, having slotted openings O, of the end piece E at the other side of the head, the button N, mounted in a transverse slot T in the head between said end piece and coupling devices, a shank M, journaled in the head and keyed in said button, a locking-bar L, connected by universal joint U with said shank and provided with a groove Z, extend-

ing obliquely around one-quarter of its circumference, and a stationary pin F, engaging said groove, as and for the purpose hereinbefore set forth.

472,191. APPARATUS FOR MANUFACTURING GAS. CHARLES W. ISSELL, New York, N. Y. Filed Feb. 21, 1890. Serial No. 341,211. (No model.)



Claim.—1. The combination, with a retort chamber, two or more coal-gas-generating retorts arranged in said chamber, and a furnace for heating said chamber, of a water-gas generator which is situated outside of and separate from said chamber and furnace and the outlet of which is provided with separate communications with the several retorts first mentioned, a heating-retort arranged in said chamber and having a single outlet, and pipes communicating with the several retorts first mentioned and with said heating-retort, all substantially as herein described, whereby the water-gas generated in said generator is caused to pass through the several retorts first mentioned and the said gas and that generated in the several retorts first mentioned are caused to pass through the said heating-retort and to be delivered therefrom at its single outlet, as herein set forth.

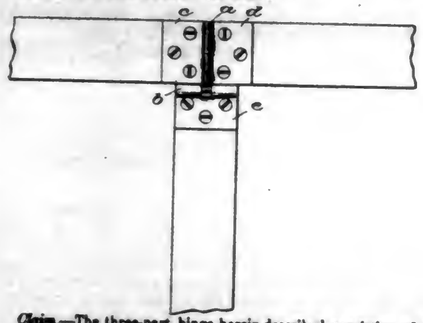
2. The combination of a heating-chamber and a series of coal-gas retorts therein and a furnace for heating said chamber and retorts, of a water-gas generator which is situated outside of said chamber and furnace, a generator for generating gas or vapor from liquid hydrocarbon, having its heating-surfaces within the walls of said furnace, and communications, substantially as herein described, between both of said generators and said retorts, whereby the two gases or the gas and vapor generated in said two generators are conducted together to said retorts to be therein mixed and combined, as herein set forth.

3. The combination of a heating-chamber and a series of coal-gas retorts therein and a furnace for heating said chamber and retorts, of a water-gas generator which is situated outside of said chamber and furnace, a generator for generating gas or vapor from oil or liquid hydrocarbon, having its heating-surface within the walls of said furnace, communications, substantially as herein described, between both of said generators and retorts for causing the two kinds of gas or the gas and vapor generated in said generators to pass together into and through the coal-gas retorts, and a finishing-retort arranged within said heating-chamber in communication with the before-mentioned retorts and heated by said furnace, all substantially as herein specified, whereby coal-gas, water-gas, and oil-gas may be all generated simultaneously and afterward heated together to be incorporated into a homogeneous fixed gas, as herein set forth.

4. The combination, in a gas-retort bench, of a series of retorts set in the walls of the said bench and an arch constructed in the said walls below the crown of the bench, with a space between said arch and crown to constitute, with the walls of the bench, an additional retort, and a furnace in the bench for heating all of said retorts, substantially as herein described.

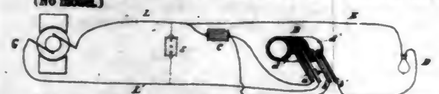
5. The combination, in a gas-retort bench, of a series of inclined retorts situated in the walls of said bench, an arch having an inclination corresponding with said retorts, constructed within said walls below the crown of the bench, with a space between said arch and crown to constitute in the walls of the bench an additional retort, and a furnace in the bench for heating all of said retorts, substantially as herein described.

472,192. HINGE. FRANCIS W. LORING, Boston, Mass. Filed Dec. 9, 1891. Serial No. 414,455. (No model.)



Claim.—The three-part hinge herein described, consisting of the pintle *a* and leaves *c d*, freely revoluble thereon, and the pintle *b* and leaf *e* freely revoluble thereon, said leaf *e* thereby having movements on different axes, substantially as described.

472,193. SYSTEM OF ELECTRICAL DISTRIBUTION. WILLIAM MARSHALL, New York, N. Y. Filed Feb. 23, 1891. Serial No. 383,283. (No model.)



Claim.—1. In a system of electrical distribution, a direct-current generator and a translating device in the circuit of the said generator, a condenser in a branch of the said circuit, and an automatic circuit-changing device having connections both to the branch or condenser circuit and to the main circuit containing the translating device, the said connections being such that the circuit is alternately set for charging the condenser and for discharging the same through the said translating device, as and for the purpose set forth.

2. In a system of electrical distribution, a direct-current generator and one or more translating devices in circuit therewith, a condenser or condensers in a branch of the said circuit, an automatic circuit-changing device having connections both to the branch or condenser circuit and to the main circuit, the said connections being such that the circuit is alternately set for charging the condenser or condensers and for discharging the same through the translating device or devices, and an adjustable resistance for regulating the amount of current through the condenser or condensers, as and for the purpose set forth.

3. In a system of electrical distribution, a direct-current generator, a main line connecting the said generator to a distant station, one or more condensers at the said distant station, translating devices at or near the said distant station, and automatic circuit-changing apparatus located between the said condenser or condensers and the said translating devices, whereby the current enters the condensing apparatus as a direct current and is discharged by means of circuit-changing devices into the working circuits, as and for the purpose set forth.

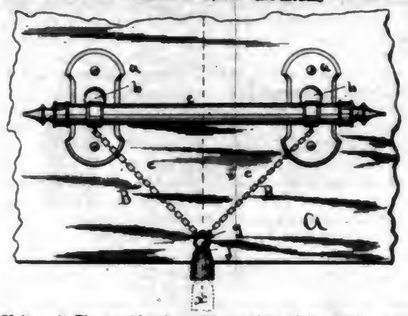
472,194. KNIFE CLEANING AND FLOURING DEVICE. JAMES H. MITCHELL, Philadelphia, Pa. Filed Dec. 31, 1891. Serial No. 416,641. (No model.)



Claim.—1. In a device of the character herein specified, the combination, with a reciprocable cutter-head bearing a cutting-knife, of a flour-box located beneath said knife and having a longitudinal slot in its bottom provided with lips projecting toward each other at the sides of said slot, substantially as shown and described.

2. In a device of the character herein specified, a flour-box movably mounted upon a cutter-head, said box having a slot in its bottom and being provided with lips projecting toward each other at the sides of the slot, in combination with a cutting-knife fixed to the cutter-head and adapted to pass between said lips, substantially as shown and described.

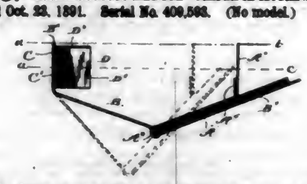
472,195. CASKET-HANDLE. JOHN MCCARTHY, Syracuse, N. Y. Filed Feb. 11, 1892. Serial No. 421,102. (No model.)



Claim.—1. The combination, with a casket, of the handles hinged thereto, auxiliary supports attached at their upper ends to said handles, and at their lower ends having a limited sliding connection with the side of the casket, as set forth.

2. The combination, with a casket, of the handles hinged thereto, a bearing secured to said casket, and flexible auxiliary supports provided with a stop upon their lower ends and connected to the handle-bar, and passing through and adapted to traverse said bearing when the handle is raised or lowered.

472,196. STEREOSCOPIC ALBUM. JASPER H. MCGREW, Chicago, Ill. Filed Oct. 23, 1891. Serial No. 409,593. (No model.)



Claim.—1. A stereoscopic album consisting of leaves A, composed of sections A^3 and A^4, and equal covers B' and B, the latter being hinged transversely to form a folding section B^3, a lens or lenses located in said section B^3, and pictures located upon said section A^4 upon the sides of the latter toward the said cover B, substantially as shown and described.

2. A stereoscopic album consisting of leaves A, composed of sections A^3 and A^4, and covers B' and B, the latter having a folding section B^3, a lens or lenses located in said section B^3, pictures located upon said section A^4 upon the sides of the latter toward the said cover B, and printed matter being placed upon the sides of the sections A^3 toward the cover B, substantially as shown and described.

3. A stereoscopic album consisting of leaves A, composed of sections A^3 and A^4, and covers B' and B, the latter having a folding section B^3 away from the back A^3 a distance equal to the distance between the back A^3 and the section A^4, substantially as shown and described.

4. A stereoscopic album consisting of leaves A, composed of sections A^3 and A^4, and covers B' and B, the latter having a folding section B^3 away from the back A^3 a distance equal to the distance between the back A^3 and the section A^4, and having one or more openings C, containing a lens C', and a picture or pictures upon said sections A^4 on the side of the latter toward said section B^3, substantially as shown and described.

5. A stereoscopic album consisting of leaves A, composed of sections A^3 and A^4, and covers B' and B, the latter having a folding section B^3 away from the back A^3 a distance equal to the distance between the back A^3 and the section A^4, and having one or more openings C, containing a lens C', and a picture or pictures upon said sections A^4 on the side of the latter toward said section B^3, and printed matter upon the side of the sections A^3 toward the cover B, substantially as shown and described.

6. In a stereoscopic album having leaves A and suitably-supported lenses C, arranged to be directed toward said leaves, a picture-support applied to the face of one of said leaves toward said lenses and adapted to receive the lower edge of a sheet or card bearing a picture, substantially as shown and described.

7. In a stereoscopic album having leaves A and a cover B, bearing a folding section containing lenses adapted to be directed toward said leaves, a folding partition applied between said lenses to the face of said section B^3 which is directed toward said leaves, substantially as shown and described.

8. In a stereoscopic album having leaves A and a cover B, bearing a folding section containing lenses adapted to be directed toward said leaves, of two folding sections D', applied between said lenses to the face of said section B^3 which is directed toward said leaves, substantially as shown and described.

9. In a stereoscopic album having leaves A and a cover B, bearing a folding section containing lenses adapted to be directed toward said leaves, folding sections D' and flaps D^3, applied between said lenses to the face of said section B^3 which is directed toward said leaves, substantially as shown and described.

472,197. STAY FOR BOOTS OR SHOES. WILLIAM A. HENLY, Lynn, Mass. Filed Apr. 28, 1890. Serial No. 349,609. (No model.)



Claim.—The herein-described stay, it consisting of sole-leather or its described equivalent provided with a deep slit or groove sufficient to receive between the side walls of the groove and protect and conceal the stitches used to attach the stay to an article having a seam to be covered.

472,198. GAS-BURNER FOR HEATING PURPOSES. PETER H. NELSON, Chicago, Ill., assignor to the S. H. Sinclair Company, same place. Filed Apr. 23, 1891. Serial No. 390,096. (No model.)



Claim.—1. A burner comprising a unitary relatively-long body portion provided with two longitudinal spaces or recesses constituting an upper gas and air chamber and a lower air-chamber, a plurality of apertures or passages out of alignment and extending from the upper chamber to the top of the body, other apertures or passages extending from the lower chamber to the sides of the body, continuous pressure-chambers on each side, in which said last-mentioned apertures or passages terminate, and contracted longitudinal slots extending from said pressure-chambers upward to the sides of the portion of the body containing the gas and air outlet apertures, substantially as described.

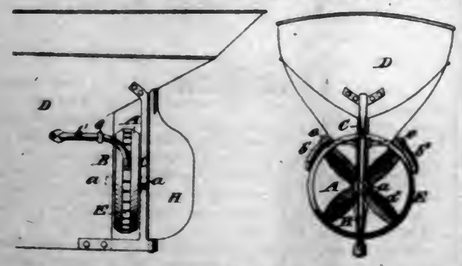
2. A burner comprising a single relatively-long body portion provided with two longitudinal recesses constituting an upper gas and air chamber and a lower air-chamber, a plurality of apertures or passages extending from the upper chamber to the top of the body and out of alignment, other apertures or passages extending from the lower cham-

ber to the sides of the body, lateral ledges or shoulders on the body proper at the upper ends of these latter passages, and a single strip secured on each of said ledges, arranged to form contracted longitudinal slots between their inner edges and the body, said strips being cut away or rabbeted at their lower inner edges to form continuous pressure-chambers intermediate, between, and connecting the air-passages and said slots, substantially as described.

3. In a burner for heating purposes, the combination, with a gas-chamber and an air-chamber integral in one head and arranged one above the other with a connecting-passage between them and suitable connections to said chambers, of a burner having gas and air chambers, one above the other, integral in one body, and provided with suitable gas and air outlet passages, two pipes arranged one above the other, having their ends secured to the head and the burner, respectively, and connecting the chambers of said parts in pairs, and a supporting-bracket engaging said pipes and adapted to be connected with the machine-frame, substantially as described.

4. In a burner for heating purposes, the combination, with two superposed chambers integral in one head and communicating with each other by a suitable passage, said chambers being connected with suitable supply-pipes and the body portion of the burner proper having similarly-arranged non-communicating chambers provided with air and gas outlets, of two superposed pipes connecting in pairs the chambers of the head with those of the burner proper, said pipes having their ends secured to the head and the body, respectively, and a bracket adapted to be connected with the machine-frame and having an enlarged part or housing with parallel apertures through which said pipes extend, and means for securing said pipes to said bracket, substantially as described.

472,199. MEANS FOR PROPELLING VESSELS. SAMUEL SEABURY, U. S. Navy. Filed July 7, 1891. Serial No. 398,889. (No model.)



Claim.—1. The combination, in a navigable vessel, of a screw-propeller, a shaft therefor and bucket-wheel affixed thereto, a force-pump, and a jet-pipe for delivering water from the pump to the buckets of said wheel below the load water-line of the vessel, substantially as herein set forth.

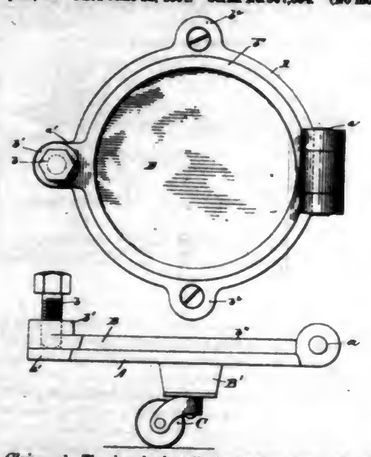
2. The combination, in a navigable vessel, of a screw-propeller, a shaft therefor and a bucket-wheel affixed thereto, a force-pump, two delivery-pipes for delivering water in opposite directions to the buckets of said wheel below the load water-line of the vessel, and a valve for directing water from the pump to one or other of said pipes, substantially as herein set forth.

3. The combination, in a navigable vessel, of a screw-propeller, a shaft therefor and a bucket-wheel affixed thereto, a frame containing the bearings for said shaft, a substantially vertical shaft for said frame, a portion of which shaft is hollow, a force-pump and a jet-pipe connected with said pump and said shaft for delivering water from said pump to said bucket-wheel through the hollow portion of said shaft, and means of turning said shaft, frame, and propeller, substantially as and for the purpose herein set forth.

4. The combination, in a navigable vessel, of two screw-propellers of opposite pitch and shafts therefor and bucket-wheels affixed thereto, a frame and a substantially vertical shaft therefor, a part of which shaft is hollow to constitute a water-conduit, the said frame containing bearings on the opposite sides of said shaft for the two propeller-shafts, and the water-conduit in said shaft having opposite outlets toward said bucket-wheels, a force-pump, a pipe connecting said pump with the water-conduit in said shaft, and means of turning said shaft on its axis, all substantially as and for the purpose herein set forth.

5. The combination, in a navigable vessel, of a screw-propeller, a rim surrounding and secured to the blades of said propeller, a series of buckets on the exterior of said rim, supplemental rims inclosing the sides of said buckets and uniting with the edges of the first-mentioned rim in acute angles, a force-pump on board of said vessel, and a jet-pipe for delivering water from said pump to said buckets below the load water-line of the vessel, substantially as herein described.

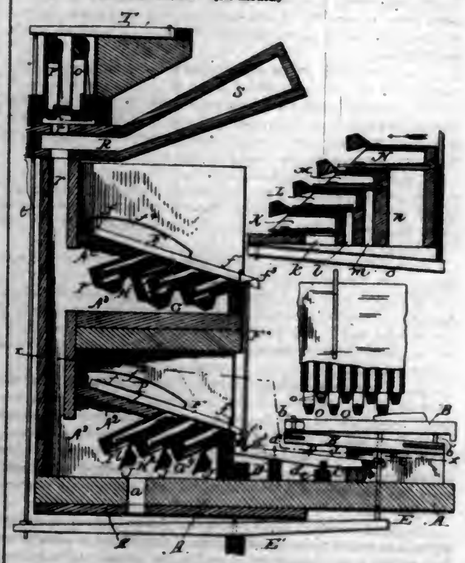
472,200. FURNITURE ATTACHMENT. CARL SEILER, Philadelphia, Pa. Filed June 22, 1891. Serial No. 397,094. (No model.)



Claim.—1. The herein-described adjusting device for furniture-feet, consisting of two plates set horizontally, the upper one of which receives the leg of the piece of furniture upon its flat upper surface, said plates being hinged together on one side and provided with projecting ears upon the other, through one of which a screw is threaded to bear upon the other and effect the adjustment of the plates, as set forth.

2. An adjusting device for furniture-feet, consisting of two plates hinged together on one side, the top plate having a seat or recess for the reception of the foot and provided with a projection having a threaded bore and a screw threaded into said bore and said lower plate having an ear or projection against which said screw bears, as set forth.

472,201. REED-ORGAN. JOHN W. TRAINER, Fort Wayne, Ind., assignor to the Fort Wayne Organ Company, same place. Filed Oct. 2, 1891. Serial No. 407,635. (No model.)



Claim.—1. A reed-board having the open ends of the reed-cells beveled, in combination with valves applied thereto to close the beveled open ends, and a mute to close the openings below the cells through which the air and sound-waves pass, substantially as described.

2. A reed-board having the open ends of the reed-cells beveled, in combination with valves applied to close the beveled open ends, and a mute engaging with the lower surface of the reed-board to close the openings below the cells through which the air and sound-waves pass, substantially as set forth.

3. The combination of two or more reed-boards, the closed ends of the reed-cells of the upper board projecting beyond the closed ends of the reed-cells of the lower board, the reeds of the upper board being of a longer scale than the reeds of the lower board, whereby there is provided an increased width of step, and mutes for closing the openings below the cells, the open ends of the cells of adjacent boards being in a common plane and thereby adapted to be closed by a single valve, substantially as described.

4. The combination of two or more reed-boards, the closed ends of the reed-cells of the upper board projecting beyond the closed ends of the reed-cells of the board below, a series of valves each of which closes a reed-cell of the upper board and the adjacent reed-cell of the lower board, and mutes for closing the openings through which the air and sound-waves pass after leaving the reeds, substantially as described.

5. The combination of two or more reed-boards, each having the open ends of the reed-cells beveled, the lower longer wall of the upper board being arranged on a line with the upper shorter wall of the lower board, and the open ends of all of the reed-cells arranged in a plane to receive the valve, substantially as set forth.

6. In a reed-organ, the combination, with an air-chamber, of a reed-board projecting through one wall of the air-chamber and having the open ends of its reed-cells beveled, in combination with a series of valves overlapping the reed-cells and the wall of the air-chamber, substantially as set forth.

7. In a reed-organ, the combination, with an air-chamber, of a series of reed-boards projecting through one wall of the air-chamber, a series of valves overlapping the open ends of the reed-cells and the wall of the air-chamber, and a mute within the air-chamber to close the openings below the cells through which the air and sound-waves pass, substantially as set forth.

8. In a reed-organ, the combination, with an air-chamber, of a series of reed-boards projecting through one wall of the air-chamber, the reed-boards being of different widths, whereby there is provided a series of steps, mutes within the air-chamber engaging with the steps, and a series of valves to close the open ends of the cells, substantially as set forth.

9. In a reed-organ, an air-chamber having converging walls, in combination with a series of reed-boards projecting through one of the walls, valves to close the open ends of the reed-cells, and a mute to close the openings through which the air and sound-waves pass, substantially as set forth.

10. In a reed-organ, an air-chamber having converging walls, in combination with a series of reed-boards of different widths projecting through one of the walls, the wider reed-board projecting into a part of the air-chamber which is wider than that into which the narrower reed-board projects, and valves and mutes applied to the reed-board, substantially as set forth.

11. In a reed-organ, the combination, with an air-chamber, of a series of reed-boards projecting through one wall of the air-chamber and having the open ends of the reed-cells beveled, in combination with valves overlapping the beveled ends of the cells and the wall of the air-chamber, substantially as set forth.

12. The combination, with the levers D, provided with the fulcrumed pivots, of the fulcrum-rail having a longitudinal dovetail-shaped recess to receive the pivots, substantially as set forth.

13. The combination, with the levers provided with laterally-movable fulcrums, of guiding-pins on opposite sides of the fulcrum and engaging with the levers, substantially as described.

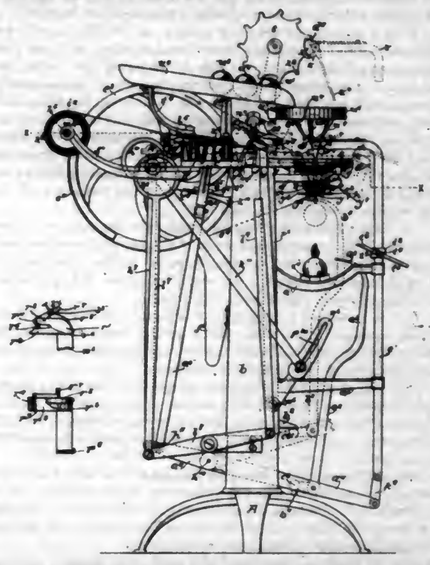
14. The combination, with the levers D and their laterally-movable fulcrum, of the stop-bars provided with pins engaging with the levers, the keys, and the thrust-pins connecting the levers with the keys, substantially as described.

15. The combination, with the series of reed-boards arranged one above the other, of an air-passage connecting all the reed-boards of both series with the exhaust-chamber, and a qualifying tube or chamber interposed between the series of reed-chambers and provided at one side with openings to receive the sound-waves from both series of reeds, substantially as set forth.

16. The combination, with a qualifying-chamber, which is substantially V-shaped in cross-section, of a series of reeds above the qualifying-chamber, a series of reeds below the qualifying-chamber, and a narrow passage through one side of the chamber adapted for the passage of an air-current from a series of reeds, substantially as described.

17. A qualifying-chamber, a portion of which is V-shaped in cross-section and another portion of which is arranged at an angle to both opposing sides of the V-shaped portion, substantially as described.

472,202. WRAPPING-MACHINE. SETH D. TRIPP, Lynn, Mass. Filed July 1, 1891. Serial No. 398,126. (No model.)



Claim.—1. In a machine for wrapping oranges and the like, a combined folder and twister comprising a series of contracting and expanding arms supported by a revolving ring, combined with a holder for engaging the wrapper next the article while the edges are yet held by the said folder and twister and holding it while said folder and twister rotates, substantially as described.

2. In a machine for wrapping oranges and the like, a contracting and expanding rotatable folder and twister, combined with a holder for engaging the wrapper next the article while the edges are yet held by the folder or twister, thereby holding the article against rotation while the twister operates, and a support for said holder, movable toward and from the folder and twister while the latter is operating to thereby insure twisting the gathered-in portion of the wrapper from a point next the article to the extreme edges of the wrapper, substantially as described.

3. In a machine for wrapping oranges and the like, a contracting and expanding rotatable folder and twister, combined with a holder for engaging the wrapper next the article while the edges are yet held by the folder and twister and for folding it while the said folder and twister rotates, substantially as described.

4. In a machine for wrapping oranges and the like, a combined folder and twister for folding the wrapper about the article and twisting its edges, combined with a holder for engaging the wrapper next the article while the edges are yet held by the folder and twister, and a support for the holder, movable toward and from the folder and twister, whereby the wrapped article may be removed from its engagement with the said folder and twister, substantially as described.

5. In a machine for wrapping oranges and the like, a combined folder and twister comprising a series of automatically-movable arms having nipping devices at their ends for engaging and holding the gathered-in edges of the wrapper, and a rotatable ring to which said arms are connected, over which the wrapper is placed, and down through which it is carried by the orange as the latter descends, substantially as described.

6. In a machine for wrapping oranges and the like, a combined folder and twister consisting of a series of automatically-movable arms borne by an intermittently-rotatable ring, combined with a holder for engaging the wrapper next the article while the edges are yet held by the folder and twister, and thereby holding the article against rotation while the ring revolves, substantially as described.

7. In a machine for wrapping oranges and the like, a combined folder and twister consisting of a series of automatically-movable arms borne by an intermittently-rotatable ring, combined with a holder for engaging the wrapper next the article while the edges are yet held by the folder and twister, and thereby holding the article against rotation while the ring revolves, and a support for the holder, movable toward and from the folder and twister, whereby the wrapped article may be removed from its engagement with said arms, substantially as described.

8. In a machine for wrapping oranges and the like, a combined folder and twister comprising a series of automatically-movable arms having nipping devices at their ends for engaging and holding the gath-

ered-in edges of the wrapper, a rotatable ring to which said arms are connected, over which the wrapper is placed, and down through which it is carried by the orange as the latter descends, combined with a holder for engaging the gathered-in portion of the wrapper next the article while the edges are yet held by the nipping devices of the folder and twister and means for moving the holder away from the folder and twister while the latter is rotating, substantially as described.

9. In a machine for wrapping oranges and the like, a combined folder and twister comprising a series of automatically-movable arms having nipping devices at their ends for engaging and holding the gathered-in edges of the wrapper and another series of automatically-movable arms arranged alternately with relation to the first-named series, combined with a rotatable ring to which all of said arms are connected, over which the wrapper is placed, and down through which it is carried with the orange as the latter descends, and a holder for engaging the wrapper next the article while the edges are held by the nipping devices to thereby hold the article against rotation while the ring revolves, substantially as described.

10. In a machine for wrapping oranges and the like, a combined folder and twister comprising a series of automatically-movable arms formed at their lower ends to present nipping devices, combined with a forked holder for engaging the wrapper between the articles and the nipping devices, substantially as described.

11. In a machine for wrapping oranges and the like, a folder and twister, combined with a holder and a feeding device for feeding the articles one at a time and means for forcing them down through the folder and twister, substantially as described.

12. In a machine for wrapping oranges and the like, a feeding device consisting of a feed-trough, a feed-wheel, a pawl for rotating said feed-wheel intermittently, a pawl-carrier, and a pendant borne by said pawl-carrier for assisting the progress of the article, substantially as described.

13. In a machine for wrapping oranges and the like, a combined folding and twisting device and a centering device located above it, combined with a feeding-trough, a feeding device for feeding the articles one by one, and a plunger for forcing the article down through the centering device, substantially as described.

14. In a machine for wrapping oranges and the like, wrapping devices, combined with a centering device consisting of a series of automatically-movable arms, a ring to which they are attached, broken out to provide a passage at one side of it, a feeding device for feeding the articles one at a time, and a plunger for forcing the article down through the centering device, substantially as described.

15. In a machine for wrapping oranges and the like, a folder and twister, combined with a feed-trough, toothed feeding-wheel, vertically-movable rod for moving said feed-wheel step by step, a centering device in line with the folder and twister, and means operated by said vertically-movable rod for forcing the article down through the centering device and combined folder and twister, substantially as described.

16. In a machine for wrapping oranges and the like, a contracting and expanding rotatable folding and twisting device, a centering device located above it, and a plunger for forcing the orange down through the centering device, combined with a paper-feeding mechanism for feeding forward a strip of paper while the orange is held by the centering device and a paper-cutter for cutting off the strip, substantially as described.

17. In a machine for wrapping oranges and the like, a combined folder and twister comprising two pairs of automatically-movable arms and a wing on the end of each arm, arranged to form a square, as shown, one pair of said wings being arranged obliquely with relation to the other pair, substantially as described.

18. In a machine for wrapping oranges and the like, wrapping devices, combined with a paper-feeding mechanism and adjustable cutting-off mechanism consisting of two blades movable one with relation to the other and U-shaped springs secured to the under blade and adapted to direct the paper over said blade, substantially as described.

19. In a machine for wrapping oranges and the like, wrapping devices, combined with nipping devices to engage the end of a strip of paper, a pivoted support therefor, whereby the paper is fed in the arc of a circle, means for reciprocating said support, and a paper-cutter adjustable in the arc of a circle of which the pivot of the support for the nipping devices is the center, substantially as described.

20. In a machine for wrapping oranges and the like, wrapping devices, combined with reciprocating nipping devices to engage the end of a strip of paper and feed it forward and means for adjusting said nipping devices to vary their range of motion, an adjustable paper-cutter comprising two blades, and an actuating-rod for it, connected with the movable blade by a universal joint, substantially as described.

21. In a machine for wrapping oranges and the like, wrapping devices, combined with a shaft to support a roll of paper, two collars on said shaft to hold the roll of paper centrally with relation to the shaft, and connecting means between said collars, whereby one will automatically move the other in the opposite direction, substantially as described.

22. In a machine for wrapping oranges and the like, wrapping devices, combined with paper-feeding mechanism, a paper-guide consisting of two stationary plates P P, the former presenting an impression-surface and the latter supporting the paper and having an opening through it, a printing device adapted to impress the paper through said opening in the plate P, and cutting-off mechanism for severing the strip to thereby form separate printed wrappers, which are wrapped about the articles by the aforesaid wrapping devices, substantially as described.

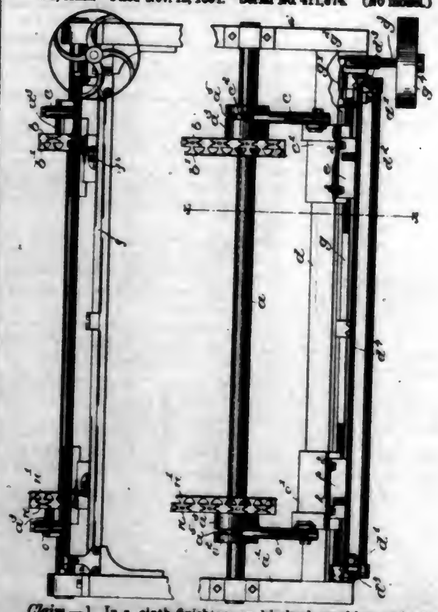
23. In a machine for wrapping oranges and the like, wrapping devices, combined with a paper-guide consisting of two plates P P, the former presenting an impression-surface and the latter supporting the paper and having an opening through it for the type-plate, and a paper-printing device consisting of an inking-pad and an invertible type-carrying plate to receive the ink and thereafter print the paper, substantially as described.

24. In a machine for wrapping oranges and the like, wrapping devices, combined with a paper-guide consisting of the plates P P and a paper-printing device consisting of an adjustable inking-pad, a type-carrying plate, a toothed sector for inverting said plate, and an adjustable rack, and means for keeping the sector in mesh with the rack, substantially as described.

25. In a machine for wrapping oranges and the like, wrapping devices and a paper-guide, combined with a vertically-sliding printing device, a guide f^6 f^7 therefor, and spring for holding the printing device in contact with said guide, substantially as described.

26. In a machine for wrapping oranges and the like, wrapping devices, combined with a reciprocating paper-feeding device, consisting of a nipping device, a foot, as a^4, for opening it to receive the paper, and shears for cutting off the paper, to which said foot is attached, and means for adjusting said shears, and thereby adjusting the foot, substantially as described.

472,208. CLOTH-GUIDING MACHINE. JOHN R. WINDLE, Worcester, Mass. Filed Nov. 12, 1891. Serial No. 411,674. (No model.)



Claim.—1. In a cloth-finishing or kindred machine, a feeding-chain and a carrier which is movable transversely to the line of feed, combined with mechanism to move said carrier transversely and devices controlled by the cloth which determine when said carrier shall move and in which direction, substantially as described.

2. In a cloth-finishing or kindred machine, a feeding-chain, a carrier which is movable transversely to the line of feed, and mechanism to move said carrier, combined with an intermediate connection controlled by the cloth between said mechanism and carrier, substantially as described.

3. In a cloth-finishing or kindred machine, two feeding-chains, independent carriers for said chains movable transversely to the line of feed, and mechanism to move said carriers independently, combined with intermediate connections controlled by the cloth between said mechanism and each carrier, substantially as described.

4. In a cloth-finishing or kindred machine, two feeding-chains, independent supports therefor, power-driven operating mechanism comprising a reciprocating bar, and independent connections between said bar and chains to move one or both of them with the bar transversely to the line of feed, substantially as described.

5. In a cloth-finishing or kindred machine, two feeding-chains, independent carriers therefor movable separately and transversely to the line of feed, and a power-driven mechanism to move the carriers, combined with connections intermediate said mechanism and each carrier, controlled by and partially supporting the cloth, substantially as described.

6. In a cloth-finishing or kindred machine, a cloth-feeding chain and a transversely-movable block with which said chain is connected, combined with a power-driven operating mechanism and two feelers controlled by the cloth carried by said block intermediate it and the power-driven operating mechanism and adapted to automatically engage and disengage the said power-driven operating mechanism when the cloth contacts with both or only one of the feelers, substantially as described.

7. In a cloth-finishing or kindred machine, two cloth-feeding chains and blocks with which they are connected, combined with a power-driven operating mechanism and two feelers controlled by the cloth and carried by each block intermediate it and the operating mechanism and adapted to automatically engage and disengage the said power-driven mechanism when the cloth contacts with both or only one of said feelers, respectively, substantially as described.

8. In a cloth-finishing or kindred machine, two feeding-chains, blocks with which they are connected, a cloth-supporting plate on each block, and a presser, combined with power-driven mechanism for moving said blocks and two feelers carried by each block and controlled by the cloth, which control the connection of the blocks with the power-driven mechanism, substantially as described.

9. In a cloth-finishing or kindred machine, two cloth-feeding chains and blocks to which they are connected, combined with two feelers carried by each block and controlled by the cloth, and two oppositely-extended pawls also carried by each block, with which the pair of feelers are connected, and a reciprocating rack with which the said pawls co-operate and by which the blocks are moved, substantially as described.

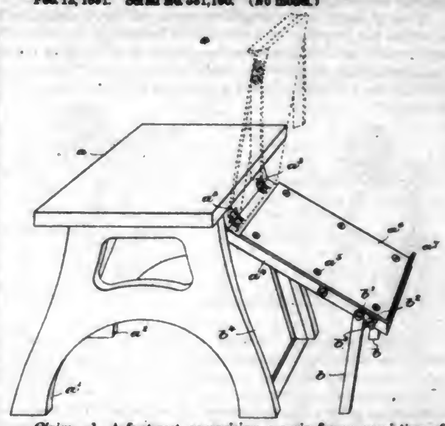
472,204. CARPET-STRETCHER. WELLINGTON A. ARNOLD and EDWIN M. BABCOCK, Moravia, N. Y. Filed Mar. 21, 1891. Serial No. 385,897. (No model.)



Claim.—1. A carpet-stretcher consisting of a head-block provided with teeth in its lower face and with a central vertical opening, a tube therein scarfed off on both sides at the bottom, a plunger in the tube, provided with a stop-collar, a head, and a retracting-spring between said head and collar, a tack-conduit tube inserted diagonally through the head-block and opening into the plunger-tube adjacent to its lower end, a frame having upturned ends inserted in a recess in the front lower edge of the head-block, bevel-headed bolts mounted horizontally in the ends of said frame and adapted to slide therein in opposite directions and normally meeting each other through the scarf-openings in the sides of the plunger-tube, springs operating to hold said bolts in meeting contact, and an operating-handle secured to the head-block, in combination, as set forth.

2. In a combined carpet stretcher and tacker, the combination, with a toothed head-block having a lateral recess in the face thereof, of a perforated frame contained in the said recess and having vertical arms, and blocks having inclined adjoining facing sliding on the horizontal portion of the said frame on each side of the perforation therein, springs interposed between the said blocks and the vertical arm of the frame, a vertical tube within the said block registering with the perforation in the frame and having a double-scarfed lower end normally entirely closed by the faces of the said blocks, a plunger adapted to be reciprocated within the said vertical tube, and an inclined tack-supplying tube connected with the said vertical tube, substantially as described.

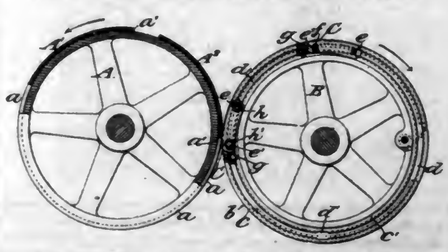
472,205. FOOT-REST. EUGENE L. BUFFUM, Brooklyn, N. Y. Filed Feb. 12, 1891. Serial No. 381,160. (No model.)



Claim.—1. A foot-rest comprising a main frame consisting of a top and sides, a mirror secured between the sides, a foot-supporting frame pivoted at or near the top and over the mirror and adapted to be swung upwardly above the mirror to expose it and to be closed down between the sides to cover the mirror, and legs attached to the foot-supporting frame to hold it in an intermediate position to serve as a foot-rest, substantially as and for the purpose set forth.

2. In a foot-rest, the combination, with a main supporting-frame, consisting of a top a and sides a' a^6, and a mirror secured to the said frame between its sides, of a foot-supporting frame and mirror-cover pivotally attached to the main frame near its top, and legs b, pivoted to the sides of the foot-supporting frame near its outer end, the foot-supporting frame resting between the sides and covering the mirror when in inoperative position, substantially as described.

472,206. PRINTING-MACHINE. CALVERT B. COTTRELL, Westerly, R. I. Filed Oct. 24, 1891. Serial No. 409,717. (No model.)



Claim.—1. The combination, with the impression-cylinder and form-carrier of a printing-machine, each having continuous bearers, of bearing-pieces on the one arranged at intervals on the line of its own continuous bearers and adjustable toward and from the continuous bearers of the other, substantially as herein set forth.

2. In a printing-machine, the combination, with the impression-cylinder and form-carrier, of a bearer on the one and bearing-pieces on the other adjustable in the direction of the length or profile of the face of the latter, substantially as and for the purpose herein set forth.

3. In a printing-machine, the combination, with the impression-cylinder and form-carrier, of bearers on the one and bearing-pieces on the other, which are adjustable both outwardly from and in the direction of the length of the face of the latter, substantially as herein set forth.

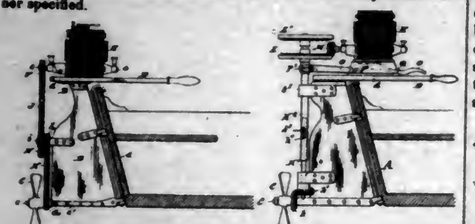
4. In a printing-machine, the combination, with the impression-cylinder and form-carrier, the latter having continuous bearers, of bearing-pieces on the other, which are adjustable in the direction of its circumference, substantially as herein set forth.

472,207. APPARATUS FOR PROPELLING VESSELS. FRANK G. CURTIS, New York, N. Y. Filed Oct. 24, 1890. Renewed Dec. 1, 1891. Serial No. 413,664. (No model.)

Claim.—1. As an apparatus for propelling vessels, the combination, with the rudder and tiller, of the propeller or screw carried by the rudder, an electric motor mounted upon the tiller, and means for

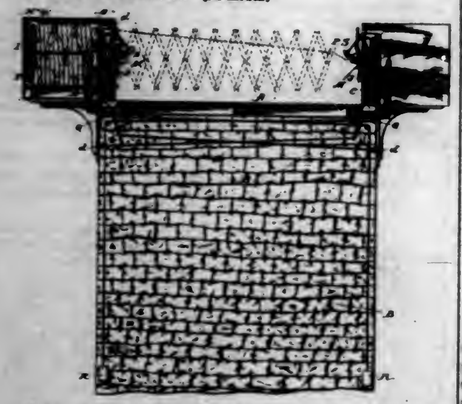
imparting motion from the motor-shaft to the propeller, arranged and operating substantially in the manner specified.

2. As an apparatus for propelling vessels, the combination, with the rudder and propeller or screw carried thereby, of the tiller and electric motor mounted thereon and turning therewith, and sprocket-wheels and chains or pulleys and bands adapted to convey rotary motion from the motor-shaft to the propeller, substantially in the manner specified.



3. The combination, with the rudder B, propeller C, carried thereby and having sprocket-wheel or pulley G on its hub, and with the tiller D and electric motor E mounted thereon and provided with the sprocket-wheel or pulley F on its shaft, of the intermediate sprocket-wheels or pulleys H and A, carried by the rudder, and chains or bands J and K, all arranged to operate in reducing the speed of the propeller below that of the motor, substantially in the manner described.

472,208. BRIDGE-GATE. CHARLES DIETZ, Chicago, Ill. Filed Oct. 4, 1890. Serial No. 367,067. (No model.)



Claim.—1. In a bridge-gate, the combination, with the bridge and the carrier attached thereto, of the gate located at one side of the abutment, the knob suspended therefrom in the path of movement of the carrier, and the releasing-finger located at the opposite side of the abutment in the path of movement of the carrier, substantially as described.

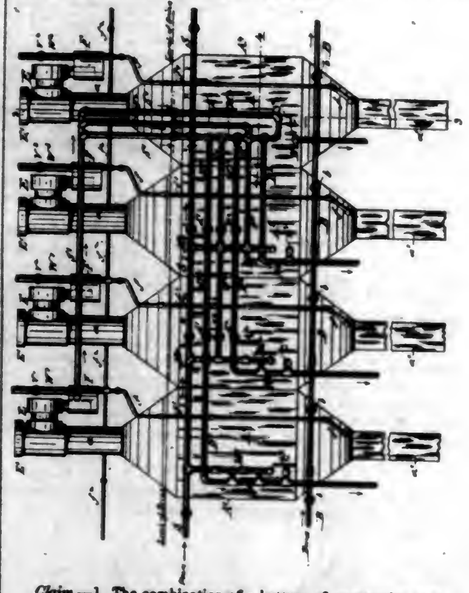
2. In a bridge-gate, the combination, with the bridge and the carrier attached thereto, of the gate located at one side of the abutment, the knob suspended therefrom in the path of movement of the carrier, the releasing-finger located at the opposite side of the abutment, also in the path of movement of the carrier, and the catch opposing said finger, substantially as described.

3. In a bridge-gate, the combination, with the bridge and the carrier attached thereto, provided with a notch of different diameters along its length, of the gate located at one side of the abutment, the knob provided with an enlarged head of less diameter than the widest portion of the notch in the carrier and suspended from the gate in the path of movement of the carrier, the releasing-finger provided with an inclined working face arranged to enter the notch in the carrier below the knob, and the catch located above said finger and adapted to be elevated by the carrier, substantially as described.

4. In a bridge-gate, the combination, with the bridge, the carrier attached thereto, the gate located at one side of the abutment, and the knob suspended therefrom in the path of movement of the carrier, of the releasing-finger located at the opposite side of the abutment, also in the path of travel of the carrier, the catch opposing said finger, a trip for elevating said catch operated by the bridge, a weighted cable attached to the gate, and a button thereon arranged to be struck by the bridge, so as to retract the gate, substantially as described.

5. In a bridge-gate, the combination, with a draw-bridge, the carrier attached to the corners thereof, but out of line with each other, the gates located at opposite sides of the abutment, and a knob suspended from each gate in the path of movement of the respective carriers, of the releasing-fingers located at the opposite sides of the abutment, also in the path of travel of the respective carriers, a catch opposing each finger, a trip located at each side of the abutment and connected with so as to elevate the respective catches when operated by the bridge, a weighted cable attached to each of said gates and extending across the face of the abutment, and a button on each of said cables at opposite sides of the abutment arranged to be struck by the bridge, so as to retract the respective gates, substantially as described.

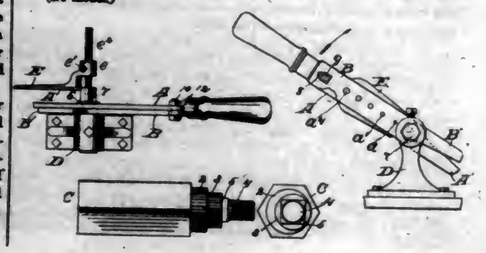
472,209. VACUUM-PAN. JOHN R. FARNHAM, Brooklyn, N. Y. Filed May 23, 1891. Serial No. 393,834. (No model.)



Claim.—1. The combination of a battery of evaporating-pans, a brine-supply pipe for said pans, heating-coil sections arranged in said pans, a steam-supply pipe connecting the uppermost coil-sections of the different pans, a discharge-pipe for the uppermost coil-sections, manifolds in front of the pans, vapor-pipes connecting the upper ends of the pans with said manifolds, discharge-pipes for the lower coil-sections, and outlet-manifolds for the discharging-pipes for conducting off the surplus steam, vapors, and water of condensation, substantially as set forth.

2. The combination, with an evaporating-pan, of an inner casing, a series of U-tubes arranged within the casing, said tubes being connected at their ingoing ends with a manifold and at their other ends with longitudinal pipes, additional longitudinal pipes running parallel with the first longitudinal pipes, and manifolds communicating with the outgoing ends of the second longitudinal pipes of the coil-sections, substantially as described.

472,210. TOOL FOR CUTTING SHEET METAL AND WIRE. WILLIAM H. FLINN, Nashua, N. H. Filed June 29, 1891. Serial No. 397,330. (No model.)

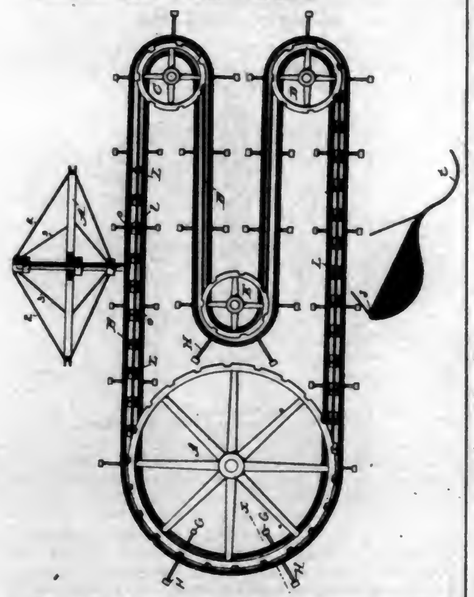


Claim.—1. The herein-described combined shears and wire-cutter, consisting, essentially, of two blades or bars having shear-like extremities and provided with holes for the reception of wire, and an eccentric-bearing for one of the said bars, substantially as described.

2. A stud, bearings 2 and 3, one being eccentric with relation to the other, combined with two levers or blades having shear-like extremities and mounted, respectively, upon the said bearings 2 and 3, rotation of the levers in unison causing the shear-like extremities to open and close, substantially as described.

3. The bearing-stud having bearings 2 3, one eccentric with relation to the other, the levers A B, mounted thereon, each provided with a series of holes and with shear-like extremities, and a bolt 10, held in one of the said blades and extended loosely through the other, combined with a gage and means to support it, to operate substantially as described.

472,211. CABLE ROUNDABOUT. JOSEPH F. FRALINGER, Atlantic City, N. J., assignor of one-half to Louis A. Haines, same place. Filed Oct. 17, 1891. Serial No. 408,081. (No model.)



Claim.—1. In combination with the elevated track carrying the trucks and suspended seats, an endless cable connected to the trucks, and a large wheel, as A, and smaller wheels, as C and D, combined with an interior wheel E, said wheels supporting the cable, substantially as described.

2. In combination, the supporting-posts having beams and braces carrying the stringers and tracks, trucks arranged to run thereon with casters carrying the wheels arranged upon the tracks, the said trucks being connected by a swivel-arm to a cable, the cable, and the horizontally-arranged driving-wheels, all substantially as described.

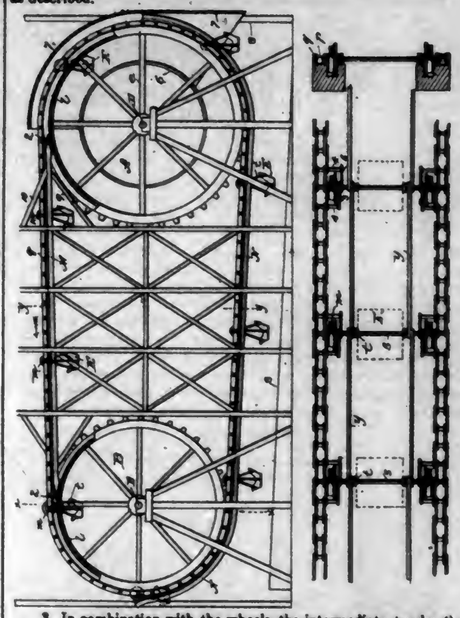
3. The trucks, combined with swivel-arms connecting them to the cable, the cable and the driving-wheel, the track, and the bars connecting the trucks by means of the arms L passing through eyes in the ends of the bars, substantially as described.

4. The trucks, combined with swivel-arms connecting them to the cable, the cable, the driving-wheels, and the bars connecting the trucks, substantially as described.

472,212. ROUNDABOUT. JOSEPH F. FRALINGER, Atlantic City, N. J., assignor of one-half to Louis A. Haines, same place. Filed Oct. 17, 1891. Serial No. 408,082. (No model.)

Claim.—1. In combination, the vertical wheels with the intermediate tracks, the endless chain, and the trucks which the wheels and the track are adapted to carry, and seats or cars suspended from said trucks, all substantially as described.

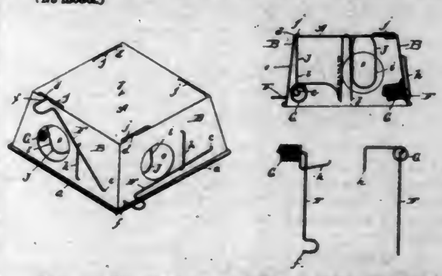
2. The wheels A and B, one of greater diameter than the other, mounted upon bearings in the same horizontal plane, the inclined tracks above and below between said wheels, the wheels and the track being fitted to carry trucks and a connecting-chain, and cars or seats suspended from said trucks or chains and arranged to run upon the tracks and the wheels, the parts being combined and operating substantially as described.



3. In combination with the wheels, the intermediate tracks, the trucks, the cars, and the endless chain, the covered way or tunnel, substantially as described.

4. In combination, a sprocket, the chain carrying the cars or seats, and the safety-bars, substantially as described.

472,218. ANIMAL-TRAP. JOHN C. GOULD, Chicago, Ill., assignor to Susan I. Gould, same place. Filed May 26, 1891. Serial No. 394,095. (No model.)



Claim.—1. The animal-trap consisting of a hollow case having a single bait-holder at the center and a plurality of entrance-openings in its vertical walls and also provided with a trip and a trigger device at each opening, substantially as set forth.

2. The animal-trap consisting of a hollow case having an entrance-opening in its vertical wall, a bait-holder, a spring-depressed trip-arm moving across the entrance-opening and adapted to be set above the opening, and a swinging trigger device suspended between the opening and the bait and adapted when moved to release the trip-arm from its set position, substantially as specified.

3. In an animal-trap, a hollow case having an opening in its vertical wall, a trip-arm pivoted in the wall, a spring connected to said arm and adapted to depress the same forcibly, a bait-holder in front of the entrance-opening, and a lever or trigger placed between the opening and the bait and having a horizontal portion adapted to dislodge the trip-arm from its set position, substantially as set forth.

4. In an animal-trap, a swinging spring-depressed arm adapted to rest when set upon the upper corner of the trap, in combination with a swinging trigger device located between the entrance-opening and the bait and having a portion adapted when the trigger is moved by the animal to dislodge the trip-arm, substantially as specified.

472,214. SOLE. GEORGE P. HALL, Newark, N. J., assignor of two-thirds to John W. Baker, South Orange, N. J., and Charles Gosling, New York, N. Y. Filed Nov. 4, 1891. Serial No. 410,817. (No model.)

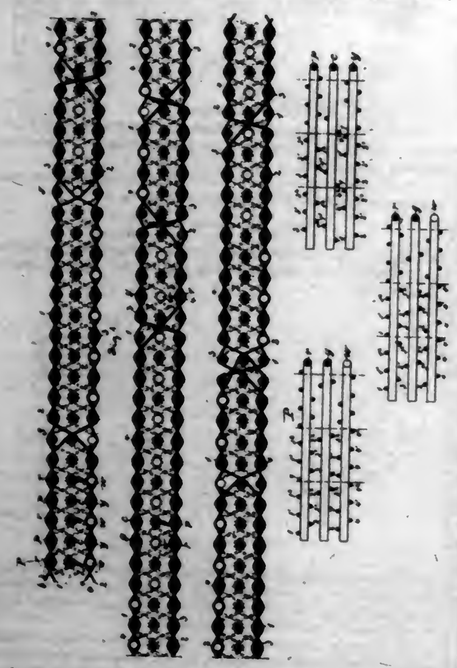


Claim.—1. The herein-described sole, having corrugations or depressions on its under side, and a plate having a hooked end secured thereto, in combination with a staple-shaped holding-plate adapted to be secured to the bottom of a shoe, whereby said sole can be detachably secured thereto, for the purposes set forth.

2. The herein-described sole, having corrugations or depressions on its under side, and a plate *c*, provided on its free end with a spring-plate *c'*, having a depression therein, in combination with a staple or holding-plate adapted to be secured to the bottom of a shoe, whereby said sole can be detachably secured thereto, for the purposes set forth.

3. The herein-described sole, having corrugations or depressions on its under side, and a plate *c*, provided on its free end with an upwardly-turned portion c^3, and a spring-plate *c'*, provided with a depression c^4, and a finger-piece c^5, in combination with a staple or holding-plate adapted to be secured to the bottom of a shoe, whereby said sole can be detachably secured thereto, for the purposes set forth.

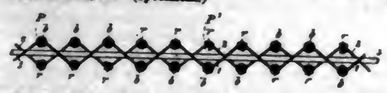
472,215. INGRAIN CARPET FABRIC. GEORGE H. HARVEY, Philadelphia, Pa. Filed Nov. 28, 1890. Serial No. 372,339. (Specimens.)



Claim.—1. The herein-described woven carpet fabric, having back, face, and center wefts with warps in four divisions, comprising sets of threads containing a plurality of threads in each set, and all the threads of the sets comprising two of said divisions interwoven with said face and back wefts and certain of the threads of the sets comprising the other two of said divisions interwoven with said face and back wefts and the other threads of the last-mentioned two sets looped around the center-wefts, as shown, and for the purposes set forth.

2. The herein-described woven fabric, having back, face, and center wefts with warps in four divisions, whereof two and portions of the other two are interwoven with said face and back wefts to form webs and the remaining portions of said two divisions looped around the center wefts to tie the same to the webs and the threads comprising the two subdivided divisions of warps twilled throughout the fabric, as shown, and for the purposes set forth.

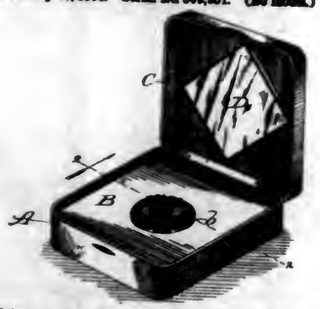
472,216. WOVEN FABRIC AND METHOD OF WEAVING THE SAME. GEORGE H. HARVEY, Philadelphia, Pa. Filed Nov. 28, 1890. Serial No. 372,340. (Specimens.)



Claim.—1. The herein-described woven fabric, comprising figuring chenille weft-threads passing from face to face of the fabric to constitute the required pattern and form a cut pile or full chenille surface throughout both the face and back of the fabric and spun warp-threads in three sets, two of said sets passing from face to face of the fabric and tying said weft-threads and the other one of said sets lying along the middle of the fabric and directing the weft-threads.

2. The method of producing the herein-described woven fabric, which consists in employing two sets of wefts and warps in three sets, two for binding the wefts and one for controlling the figure effect, introducing said wefts singly, and operating the binding-warps once for every two shots of weft and certain of the figure-controlling warps once for every shot of weft, for the purposes set forth.

472,217. TOILET POWDER-BOX. WARREN HILL, Chicago, Ill. Filed July 18, 1891. Serial No. 399,951. (No model.)

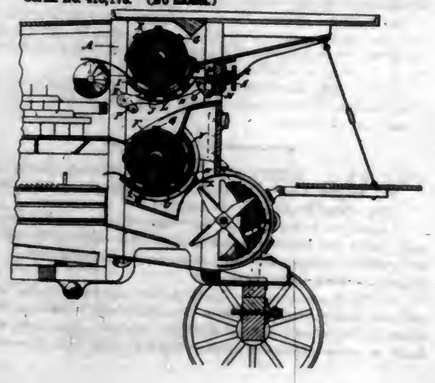


Claim.—1. A toilet powder-box provided with a stationary horizontal partition separating the box into upper and lower chambers, one for powder and the other for a chamois-pad, the partition having an opening and the edges around the opening being notched and turned down, whereby they are made smooth and rounded for the escape of powder, substantially as described.

2. A toilet powder-box provided with a stationary horizontal partition having a central opening, the edges around the opening being notched and turned down to come in contact with the bottom of the box, space for powder under the partition, space for a chamois pad above the partition, and openings between the downwardly-projecting arms for the escape of powder, substantially as described.

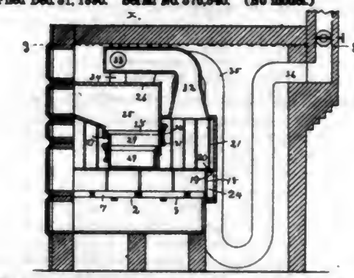
3. A toilet powder-box provided with a horizontal partition, space for powder under the partition, space for a chamois pad above the partition, an opening in the partition having its edges notched and turned down to permit the escape of powder, and a hinged cover having a mirror on its inner side, substantially as described.

472,218. CLOVER-HULLING MACHINE. JOHN H. KAILOR, Columbus, Ind., assignor to Reeves & Co., same place. Filed Oct. 29, 1891. Serial No. 410,173. (No model.)



Claim.—In a clover-huller, the combination, with the main frame or casing, the stemming or hulling cylinder, the open concave grating arranged beneath said cylinder, and the toothed frame arranged beneath said grating, of the rock-shaft mounted in bearings in said casing and having a pair of arms which are pivoted to opposite ends of said toothed frame so as to support one edge thereof, the pair of links pivoted, respectively, to the opposite sides of the casing at one end and at the other end pivoted to the ends of said toothed frame, and means for adjustably securing the rock-shaft in position, whereby the teeth of the toothed frame are vertically adjusted simultaneously and equally relatively to the cylinder, as set forth.

472,219. HOT-AIR FURNACE. MARTIN KOEHLER, Toledo, Ohio. Filed Dec. 31, 1890. Serial No. 376,340. (No model.)



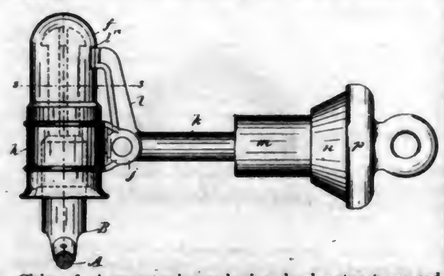
Claim.—1. The combination, with a combustion-chamber, of a forwardly-extending conduit connected with the rear end of said chamber, the laterally-projecting conduits connected with the forward end of said conduit upon opposite sides of the same, and the continuous serpentine-shaped conduits arranged upon the opposite sides of the furnace and connecting the laterally-projecting conduits with the smoke-flue.

2. In a furnace, the combination, with a combustion-chamber, of an insertible lining arranged therein, adapted to rest upon the base of the same, said lining having an outwardly-projecting flange at its upper end adapted to form an air-space between the outer casing and the combustion-chamber, each lining being composed of a series of plates having integral overlapping flanges.

3. In a furnace, the combination, with a combustion-chamber, of a removable lining composed of an upper and a lower section, the lower section having an outwardly-projecting flange near its upper end upon which the upper section rests, each section being composed of a series of plates having integral overlapping flanges.

4. The combination, with the combustion-chamber, of the hopper arranged in the forward portion of the same, a conduit connected to the rear end of said chamber and extending forward above the said hopper, the laterally-projecting conduit, and the continuous serpentine-shaped conduits arranged on each side of the furnace and connecting the lateral conduits with the smoke-flue.

472,220. HANGER FOR ELECTRIC WIRES. HENRY H. LUCOMB, Boston, Mass. Filed July 20, 1891. Serial No. 400,016. (No model.)



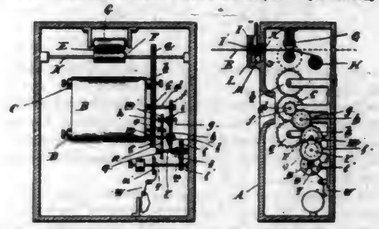
Claim.—1. A support or hanger having a head, a stem to one end of which the head is pivoted, and an arm serving as a stop for the head and also to transmit a part of the strain on the head when in use to adjacent parts of the stem, substantially as described.

2. A support or hanger having a head provided with a casing of non-conducting material and carrying a wire-engaging device, a stem to which the said head is pivotally connected, and an arm serving as a stop for the head and also to transmit a part of the strain on the head when in use to adjacent parts of the stem, substantially as described.

3. A support or hanger having a head provided with a casing of non-conducting material and carrying a wire-engaging device, a clamp or holder, a stem to which the head is joined by pivotal connections between the clamp or holder and the stem, and an arm serving as a stop for the head and also to transmit a part of the strain on the head when in use to adjacent parts of the stem, substantially as described.

4. A support or hanger having a head provided with a casing of non-conducting material and carrying a wire-engaging device, a stem to which the said head is pivotally connected, and an arm serving as a stop for the head and also to transmit a part of the strain on the head when in use to adjacent parts of the stem, substantially as described, and an insulated attaching device for connecting it with a wire or cable, substantially as described.

472,221. STATION-INDICATOR. JOSEPH M. NELSON, Coleman, Mich. Filed Apr. 6, 1891. Serial No. 387,897. (No model.)



Claim.—1. In a station-indicator, the combination, with the casing, of the rollers journaled therein and the station-indicating ribbon thereon, a cord extending through said indicators and adapted to actuate the same, spring-rollers to which the ends of said cord are secured, and the clamping device to hold the cord in its adjusted position, substantially as described.

2. In a station-indicator, the combination, with the casing, of the rolls, the station-indicating ribbon thereon, a cord passing through the indicators, secured at its ends to spring-rollers, means for actuating the station-indicating rollers by said cord, spring-rollers to which the ends of said cord are secured, a clamp for holding said cord in its adjusted position, and the alarm mechanism adapted to be operated upon the movement of said cord in either direction, substantially as described.

3. In a station-indicator, the combination, with an operating-cord extending from end to end of the train and means for actuating the indicating-ribbons, of spring-rolls at each end of said cord adapted to take up the slack and the clamp for holding said cord in its adjusted position, substantially as described.

4. In a station-indicator, the combination, with the actuating-ribbon, of friction-rollers between which said ribbon passes, the indicating-ribbon, rolls over which said ribbon passes, a train of gear-wheels actuated by the friction-rollers for moving the indicating-ribbon, and a clamp for the actuating-ribbon, substantially as described.

5. In a station-indicator, the combination, with the casing and indicating-ribbon and an actuating-ribbon for the same, of a train of gear-wheels actuated by the actuating-ribbon for moving the indicating-ribbon in opposite directions, two parallel trains of gears actuated by said other gears, a shaft, a gear loosely mounted thereon, a spring on the shaft connected with said loosely-mounted gear, an indicating-alarm, and pawls and ratchets for striking the alarm upon the movement of the indicator in either direction, substantially as described.

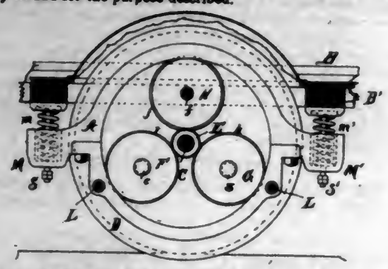
6. In a station-indicator, the combination, with the casing, of an indicating-ribbon mounted on suitable rolls journaled therein, an actuating-ribbon passing entirely through the casing, a spring-actuated roll for moving the actuating-ribbon in one direction, friction-rolls between which the actuating-ribbon passes, a train of gear-wheels rotated by the friction-rolls for moving the indicating-ribbon, a spring-pressed roll below the actuating-ribbon, and a cam-lever for bearing on the actuating-ribbon above the spring-pressed roll, substantially as described.

472,222. POWER-TRANSMITTER. FRANCIS C. OSBORN, Detroit, Mich., assignor of three-fourths to George Maitland, Joseph A. Marsh, Raisemond A. Parker, and Charles F. Burton. Filed Nov. 14, 1891. Serial No. 411,851. (No model.)

Claim.—1. A driving mechanism for vehicles, consisting of a ring fixed with respect to the truck and provided with supports to receive the vehicle-body, a running wheel and axle concentric to said ring, a driving-sleeve concentric to the axle, and pinions loosely mounted upon journals supported upon said running wheel, the said pinions being tangent to the interior surface of the ring and externally tangent to the sleeve.

2. A driving mechanism for vehicles, consisting of a frame-work

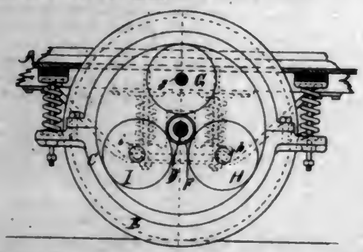
supporting a vertical ring, a running wheel and axle concentric to said ring, a driving-sleeve concentric to said axle, and flanged friction-wheels loosely mounted on journals projecting from said wheel and having a frictional engagement between said ring and said sleeve, substantially as and for the purpose described.



3. A car-truck frame consisting of vertical rings held together by cross-bars, in combination with a car-body resting upon said rings, running wheels concentric to said rings, and friction or transmitting wheels journaled to said running wheels and tangent to the interior surface of said ring and externally tangent to a swift-moving wheel concentric to the axle of said running wheel, substantially as and for the purpose described.

4. The combination of the ring A, the friction-wheels on the running wheel D, the axle C and fast-running wheel E, car-body B and supporting-springs *m m'*, and stirrup-rods S S', substantially as and for the purpose described.

472,223. POWER-TRANSMITTER. FRANCIS C. OSBORN, Detroit, Mich., assignor of three-fourths to George Maitland, Joseph A. Marsh, Raimond A. Parker, and Charles F. Burton. Filed Nov. 14, 1891. Serial No. 411,802. (No model.)



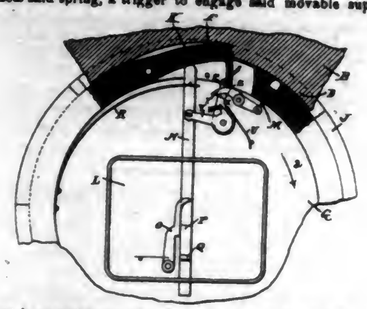
Claim.—1. A means for changing the speed from a driving to the driven wheel, consisting of a wheel fixed upon an axle, a sleeve loose upon the same axle, a ring concentric to the axle and fixed upon the frame supporting the axle, and pinions mounted on the said fixed wheel and engaging with both the sleeve and the ring and being tangent to the inner surface of the ring and externally tangent to the said sleeve.

2. A means for changing the speed from a driving to a driven wheel, consisting of a wheel fixed upon an axle, a sleeve loose upon the same axle, a ring concentric to the axle and fixed upon the frame supporting the axle, and pinions mounted upon the said fixed wheel having hubs of different diameters from the pinions, the said pinions engaging with the said sleeve and the said hubs engaging with the said ring and being tangent to the said ring on its inner circumference, substantially as and for the purpose described.

3. A means for changing the speed from a driving to a driven wheel, consisting of an axle, a wheel mounted thereon, a sleeve concentric to said axle, a ring concentric to said axle and fixed with respect thereto, and pinions mounted upon said wheel and engaging with both the sleeve and the ring and being tangent to said ring on its inner circumference and to said sleeve on its outer circumference, substantially as and for the purpose specified.

472,224. TIME-LOCK ATTACHMENT. FRANKLIN H. PECK, Des Moines, Iowa, assignor to the Mosler Bank Safe Company, Cincinnati, Ohio. Filed Dec. 14, 1891. Serial No. 414,921. (No model.)

Claim.—1. In a time-lock attachment, substantially as set forth, with a safe-door, a latch therefor arranged to fall to unlatched position by gravity, a spring to force the latch to latched position, and a time-lock arranged to retract the spring and again to permit it to act at proper times, respectively, of a movable support arranged to normally engage below said latch and support it in latched position, a connection between said movable support and time-lock to cause the support to be moved to inactive position when the time-lock retracts said spring, a trigger to engage said movable support and



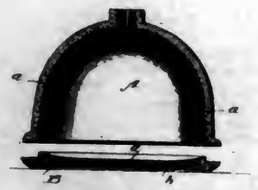
prevent it returning to active position when said spring is permitted to act, and a plunger engaging said trigger and projecting from the door in position to be actuated by the door-jamb to release the trigger in the act of closing the door.

2. In a time-lock attachment, the combination, substantially as set forth, with a safe-door, a latch therefor arranged to fall to unlatched position by gravity, a spring to force the latch to latched position, and a time-lock arranged to retract the spring and again to permit it to act at proper times, respectively, of a rigid movable support disposed below said latch, and connections between said movable support and time-lock, whereby when said spring is retracted the movable support is moved to inactive position.

3. In a time-lock attachment, the combination, substantially as set forth, of a safe having a circular door-seat and a jamb-thread and a notch in the jamb-thread, a door fitting said door-seat and having a thread to fit said jamb-thread, a pawl pivoted in said door and adapted to engage said notch when the door is screwed home, a spring to force said pawl into the notch, a time-lock arranged to retract said spring and to permit it to act at proper times, respectively, a movable rigid support under said pawl, and connections between said movable support and time-lock to cause the support to move to inactive position when the spring shall have been retracted.

4. In a time-lock attachment, the combination, substantially as set forth, of a safe having a circular door-seat and a threaded jamb provided with a notch, a door fitting said seat and having a thread to engage said threaded jamb, a pawl pivoted to the door and adapted to engage said notch when the door is home, a spring to force the pawl into the notch, a time-lock arranged to retract the spring and to permit it to act at proper times, respectively, a movable rigid support under the pawl, connections between said support and time-lock to move the support into inactive position when said spring is retracted, a trigger to hold the support in inactive position, and a plunger connected with said trigger and arranged to engage the initial end of said jamb-thread as the door is screwed to place and thereby release said trigger.

472,225. MANUFACTURING HOLLOW RUBBER ARTICLES. EDWARD L. PERRY, Paterson, N. J. Filed Apr. 22, 1891. Serial No. 389,895. (No model.)



Claim.—1. An oil-can consisting of a rubber body provided with an oil and acid proof coating and a separately-formed shouldered rubber bottom having an independent acid and oil proof coating, said body and bottom being united with the said coatings in contact with each other, substantially as specified.

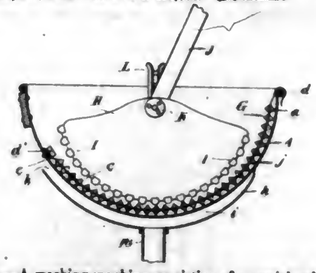
2. The herein-described method of forming hollow rubber receptacles, which consists in first forming the body and bottom separately, coating the interior of the body and the upper face of the bottom with an acid and oil proof material, and then applying heat and pressure to homogeneously unite the body and bottom and bringing said coatings in contact with each other, as set forth.

472,226. HYDROCARBON-BURNER. MILES E. RAY, Toledo, Ohio, assignor of one-half to Edward L. Ford, same place. Filed Oct. 19, 1891. Serial No. 409,163. (No model.)



Claim.—In a hydrocarbon-burner, a shell comprising a bottom and sides, an adjustable deflecting-plate supported above the same, a vaporizing-pipe within the shell, a horizontal burner-pipe connected with the vaporizing-pipe, formed with jet-orifices, and openings in the shell coincident with the jet-orifices of an area to admit air both above and below the burner-pipe.

472,227. WASHING-MACHINE. JAMES D. REED, Eagle, Mich. Filed Sept. 5, 1891. Serial No. 404,808. (No model.)



Claim.—A washing-machine consisting of a semicircular metallic tub, a rubbing-surface within the tub, consisting of slats having diagonal kerfs therein, metallic connecting strips *c*, with which said slats slidingly engage, hooks formed at the ends of the strips, extensions at the opposite ends of the strips, and binding-cleats engaging said extensions, substantially as described.

472,228. RAIL-JOINT. CYRUS ROBERTS, Three Rivers, Mich. Filed July 1, 1891. Serial No. 398,195. (No model.)



Claim.—1. In a rail-joint, the combination, with the rail, of a spring fish-plate curved outwardly at its ends and formed with a convex outer face, the width of the plate being greater than the width of the web of the rail, securing-bolts passing through the rails and plates, and nuts on the bolts, having grooved inner faces corresponding to the contour of the outer face of the fish-plate, substantially as described.

2. In a rail-joint, the combination, with the rails, of two fish-plates having a curved outer face and bearing only against the head and foot of the rails, a packing interposed between the fish-plates and rails, and bolts for securing the fish-plates in place, having nuts formed with their inner faces curved inwardly to correspond with the curvature of the fish-plates and locked into contact with the face of the same, substantially as described.

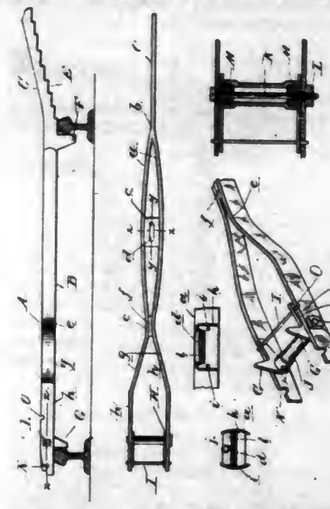
3. In a rail-joint, the combination, with the rails, of two curved fish-plates of spring metal secured into contact with the rails at their upper and lower edges and a packing interposed between said edges and the rails, substantially as described.

472,229. TRACK GAGE AND LEVEL. CYRUS ROBERTS, Three Rivers, Mich. Filed Dec. 28, 1891. Serial No. 416,344. (No model.)

Claim.—1. In a track gage and level, the combination of a bar having a straight-edge and gage-pins projecting therefrom, one of said pins being removable, substantially as described.

2. In a track gage and level, the combination, with the bar having a straight-edge, of an extension at one end, having a series of ledges on different levels, a removable gage-pin on the straight-edge at the opposite end of the bar for one rail, and a complementary pin for the other rail, substantially as described.

3. In a combined track-gage and level, the combination, with the bar having a straight-edge, of an extension at one end, having a series of ledges on different levels, a gage-pin on the straight-edge adjacent to the extension, and a gage-pin for the opposite end pivoted to the bar and adapted to be turned to project below the straight-edge or to clear the same, substantially as described.



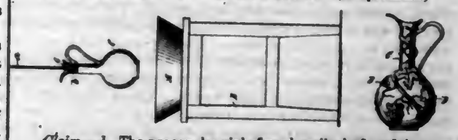
4. In a combined track gage and level, the bar composed of two strips separated centrally to form a middle trussed section, a bifurcated portion at one end, and gage-pins projecting below a straight-edge formed on said bar, substantially as described.

5. In a combined track gage and level, the combination of two concavo-convex strips separated centrally to form a middle trussed section, a bifurcated end portion, and gage-pins on a straight-edge, substantially as described.

6. In a combined track gage and level, the bar having the straight-edge, the gage-pins, and the stepped extension of the bifurcated end portion, the cross-bar I, the gage-pins G, the extensions H on said pins, the hub J, to which they are secured, the elastic washers M, and notches N, substantially as described.

7. In a combined track gage and level, the combination, with the bars A, of a support for the level, consisting of a plate having vertical portions *k* and a horizontal cup-shaped portion *l*, said vertical portion having concave edges adapted to fit between the bars A, and rivets for securing said plates in position, substantially as described.

472,230. PROCESS OF DECORATING GLASS. JOHN H. SCHARLING, Newark, N. J., assignor to the Wymbie Manufacturing Company, same place. Filed July 1, 1891. Serial No. 398,158. (No specimens.)



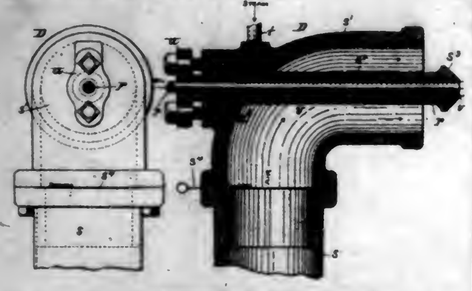
Claim.—1. The process hereinbefore described of applying metal to articles having non-conducting surfaces, which consists in repeatedly pouring a solution of metallic salts over the article until the latter is completely covered, slowly turning or moving the article during such process, and finally subjecting said article to the action of an electro-plating-bath.

2. A glass or other article of a round or irregular shape, having applied directly on its surface a thin film or envelope of deposited metal, producing a bright inner surface on the article, and a second deposit of thicker metal applied to the first deposit, certain portions of said metals being cut away, as described.

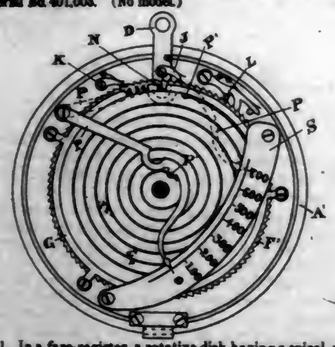
472,231. HYDROCARBON-BURNER. GEORGE H. SCOTT, Worcester, Mass. Filed Mar. 13, 1890. Serial No. 344,331. (No model.)

Claim.—In a hydrocarbon-burner, the air-supply pipe *e*, having the head *e'* at or about right angles thereto and open at the end, said head in turn having an internal central pipe or nozzle *e²* projecting

horizontally toward said open end, in combination with the oil-pipe *r*, extending longitudinally through the internal pipe s^3, leaving an annular chamber around said pipe *r*, packing *u'*, fitted around pipe *r* against a shoulder on head *s'*, stuffing-box *u*, also fitted over pipe *r* against said packing, means for fastening said stuffing-box to the head, and steam-pipe *f*, extending transversely into the head and connecting with the annular space around pipe *r* in front of its packing, substantially as and for the purpose set forth.



472,282. FARE-REGISTER. WILLIAM I. SILVEY, Lima, assignor to the Dayton Manufacturing Company, Dayton, Ohio. Filed July 28, 1891. Serial No. 401,008. (No model.)



Claim.—1. In a fare-register, a rotative disk having a spiral, a segmental scale, a pointer pivoted at one side of and operated by the spiral to move over the scale in the arc of a circle, and mechanism for preventing backward rotation of the disk.

2. In a fare-register, the combination, with a rotative disk having a spiral on one of its faces and automatic mechanism for preventing backward rotation of the disk, of a scale and a pivoted pointer operated by the spiral to move over the scale, the pointer being pivoted eccentrically to the disk.

3. In a fare-register, a rotative disk having a spiral groove cut in one of its faces, automatic mechanism for preventing backward rotation of the disk, a scale, and a pivoted pointer having a projection engaging the said groove, whereby to cause the pointer to move over the scale.

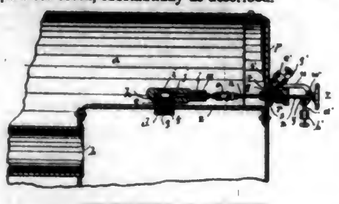
4. In a fare-register, the combination, with a rotative disk having ratchet-teeth in its periphery and a spiral on its face and pawls for preventing backward rotation of the disk, of a pointer pivotally attached to the case and actuated by the spiral to traverse the same in a direction eccentric to the center of rotation of the disk, the axes of the pointer and of the disk being on a line parallel with each other, but at right angles to the face of the disk.

5. In a fare-register, the combination, with a case therefor, of a center post attached thereto, a disk rotative thereon and having a spiral on its face, a pointer actuated by the spiral, a scale, a bell-gong secured to the center post beneath the said disk, mechanism pivotally secured on the said post for rotating the disk and the pointer, and a bell-hammer actuated by the disk.

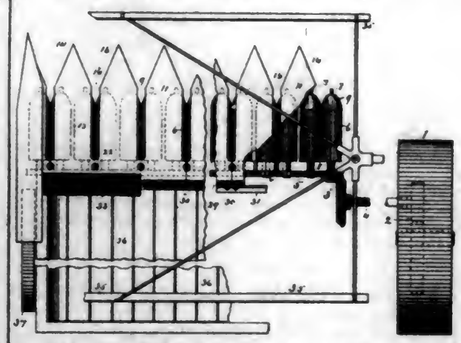
6. In a fare-register, a ratchet-wheel having a spiral on its face, a scale, a pivoted pointer actuated by the spiral, a gong, a gong-hammer, and mechanism for rotating the ratchet-wheel, whereby to actuate the said pointer and the gong-hammer.

472,283. VALVE FOR SAFETY-PLUGS FOR STEAM-BOILERS. LEONARD BLISS, West Bay City, assignor of two-thirds to John H. Davis and William Barnett, Bay City, and Alfred Forrest, West Bay City, Mich. Filed Sept. 25, 1891. Serial No. 406,831. (No model.)

Claim.—The combination, with the steam-boiler, a bushing passed through the crown-sheet and provided with a central opening closed by a plug of fusible metal, a valve-casing secured to the inner end of the said bushing and carrying a valve, as described, and a stem passed through the back head of the boiler and provided on its outer end with a handle for operating the valve, of a packing-box surrounding the rod and secured to the boiler and provided on one side with projecting ear-pieces, a lever pivoted between the ear-pieces and with its outer end turned toward the valve-stem and provided with arms reaching over opposite sides of the stem, and a padlock having its staple passed through transverse openings in the outer ends of the said arms, for the purpose set forth, substantially as described.



472,284. FLAX-PULLER. JOHN M. SMITH, Minneapolis, Minn., assignor of one-half to Patrick H. Gunckel, same place. Filed Jan. 28, 1891. Serial No. 379,375. (No model.)



Claim.—1. In a flax-puller, a series of oppositely-rotating rollers co-operating in alternate pairs as pullers, and guards intermediate the pairs of pullers

2. In a flax-puller, a series of oppositely-rotating rollers co-operating in alternate pairs as pullers, and intermediate guards providing bearings for the front ends of the pullers.

3. A flax-pulling mechanism comprising a series of rollers co-operating in pairs, a series of guards intervening the pairs of rollers, and means for rotating in opposite direction each roller of a pair.

4. In a flax-puller, a series of co-operating rollers and a series of independent guards providing bearings for the forward ends of the rollers and adapted to be separately detached.

5. In a flax-puller, a series of rollers co-operating in pairs, guards providing bearings for the front ends of adjacent rollers of adjacent pairs, boxes for their rear ends, a support therefor, and connections between such support and guard adapted to permit the separate removal of each guard, together with the rollers it carries and their bearings.

6. In a flax-puller, the combination, with pulling-rollers, of independent separately-detachable guards, each of which provides bearings for the forward ends of two rollers.

7. In a flax-puller, a series of co-operating rollers and intermediate guards, and a carrying-roller in their rear, for the purpose set forth.

8. In a flax-puller, a series of rollers co-operating in pairs, and independent guards intermediate the pairs of rollers, providing bearings for adjacent rollers of adjacent pairs.

9. A flax-pulling roller comprising a cylindrical body, a rounded head thereon of greater diameter than the body, and a yielding sleeve on the body having its exterior flush with the head, substantially as set forth.

10. The combination, with a series of rollers co-operating in pairs, of inclined guards intervening the pairs and serving to provide bearings, whereby the rollers may be held at a suitable inclination, for the purpose set forth.

11. A pulling-roller comprising a cylindrical body having an enlarged head, and a sleeve adapted to be slid on the body to the head and secured.

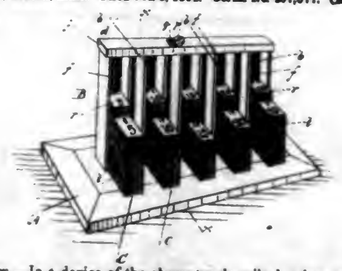
12. A series of rollers co-operating in pairs as pullers, independent guards intermediate the pairs and serving to support the roller-journals, and a frame to which all of the guards are connected to support the rollers in a common plane.

13. A series of pairs of pulling-rollers, guards providing bearings for their forward ends, a frame to which all the guards are attached, and means for separately removing each guard, together with the two adjacent rollers of the adjacent pairs, substantially as set forth.

14. A series of pairs of pulling-rollers, guards separating the pairs and serving to support their bearings, a horizontal frame to which the guards are attached, devices connected to the rollers for rotating them, and a driving mechanism therefor provided at one side of said frame.

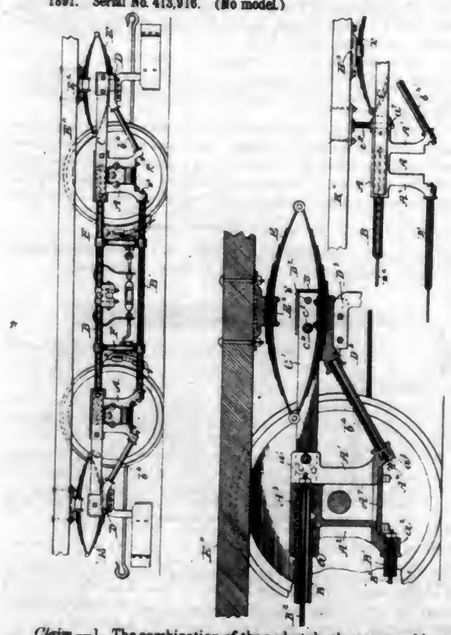
15. Flax-pulling devices comprising a series of rollers co-operating in pairs, bearings therefor, and guards for supporting them, the same being adapted to be connected to the frame of a harvesting-machine in the place of a cutter-bar, substantially as set forth.

472,285. LOCK-STUB FOR SALE-CHECKS. ALBERT N. SOUTHWICK, Boston, Mass. Filed Oct. 6, 1891. Serial No. 407,877. (No model.)



Claim.—In a device of the character described, a base provided with a socket, narrow partitions attached to said base, having intervening spaces, wires fitting loosely into the sockets of the base and between the partitions, blocks fixed to the upper ends of each wire and adapted to fit into grooves of the partitions, and a hinged cover adapted to be locked over the wires and blocks, substantially as described.

472,286. CAR-TRUCK. JOHN TAYLOR, Troy, N. Y. Filed Dec. 3, 1891. Serial No. 413,916. (No model.)



Claim.—1. The combination of the pedestals, the upper and lower side beams intermediate and connecting the same, the parallel side bars connected to the pedestals and serving as a continuation of the upper side beams, and the end bars, substantially as described.

2. The combination of the pedestals, the pair of intermediate upper and lower connecting-beams and the flat bars connected to the pedestals and extending in line with the upper beam, the castings connected to the extremities of said bars, and the end bars connecting the same, substantially as specified.

3. The combination of the pedestals, the intermediate tubular beams connecting the same, the flat bars secured to the pedestals and projecting therefrom, and the end bars connected to the extremities of said flat bars, substantially as set forth.

4. The combination of the pedestals, the intermediate upper and lower tubular beams connecting the same, the parallel flat bars connected to the pedestals, projecting in line with the upper beam, the end bars, and the braces between said pedestals and flat bars, substantially as set forth.

5. The combination of the pedestals, the beams connecting the same, parallel side bars connected to the pedestals, projecting in line with the upper beam and the end bars, and the braces between the pedestals and extremities of said side bars, substantially as described.

6. The combination of the pedestals, the intermediate connecting-beams, and the flat bars connected to the pedestals, projecting in line with the upper beam, the castings connected to the extremities of said bars and the end bars connecting the same, and the braces between said pedestals and casting, substantially as specified.

7. The combination of the socketed pedestals, the side beams between the pedestals, secured in the sockets thereof, the parallel flat bars secured to said pedestals, and the end bars, substantially as set forth.

8. The combination of the socketed pedestals, the side beams between the pedestals, secured in the sockets thereof, the parallel flat bars secured to said pedestals and the end bars, and the inclined braces between the extremities of said parallel bars and the pedestals, substantially as described.

9. The combination of the pedestals, the upper and lower side beams between and connected to said pedestals, the braces connecting said beams, the bars connected to the pedestals and projecting therefrom, the braces upholding the ends of said bars, and the end bars, substantially as specified.

10. The combination of the socketed pedestals, the side beams between the pedestals, secured in the sockets thereof, the parallel flat bars connected to and projecting from said pedestals, the castings connecting the extremities of said parallel bars, and the end bars connected to said castings, substantially as set forth.

11. The combination of the pedestals, the intermediate upper and lower tubular beams connecting the same, the parallel flat bars connected to and projecting from the pedestals in line with the upper beam, the castings connected to the extremities of said bars, the end bars, and the inclined braces, substantially as described.

12. The herein-described pedestal, having a pair of legs, a horizontal socket above one leg and a horizontal socket at its lower extremity, and a chamber above the other leg and an inclined socket at its bottom, substantially as described.

13. A corner-casting for a car-truck, having upstanding lipped flanges adapted to embrace the side bars, a depression for attachment of the hanger, an interior seat for the spring, and an inclined socket at its lower end, substantially as specified.

14. The combination, with the pedestals and side beams connecting the same, of the castings suspended centrally from the beam, having recesses in their ends, and the parallel transverse motor-suspending bars having their extremities fitted in said recesses, arranged vertically edgewise, and the securing-bolts uniting said beams to the castings, substantially as and for the purpose described.

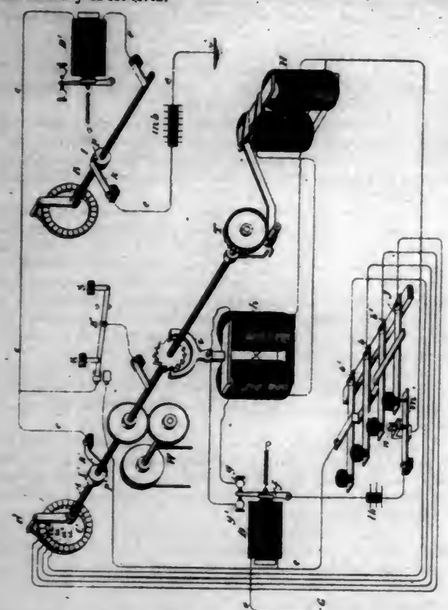
15. The combination of the socketed pedestals, the intermediate tubular beams and tie-rods uniting the pedestals, the parallel bars attached thereto, the castings connecting the ends of said bars, the end bars, the inclined braces between said castings and pedestals, the vertical braces connecting the tubular beams, and the transverse stays, substantially as specified.

16. The combination of the pedestals, the intermediate connections, the bars attached thereto, the castings secured to the ends of said bars, having inwardly-projecting sockets, and the end bars fitted in said sockets, substantially as set forth.

17. The combination of the socketed pedestals, the intermediate tubular side beams and tie-rods connecting the same, the flat bars connected thereto, the castings secured to the extremities of said bars, having inwardly-extending sockets, the tubular end bars fitted in said sockets, and the tie-rods passing through said bars and castings, substantially as set forth.

472,287. UNISON APPARATUS FOR PRINTING-TELEGRAPHS. HENRY VAN HOEVENBERGH, New York, N. Y. Filed July 20, 1891. Serial No. 400,003. (No model.)

Claim.—1. In a printing-telegraph, the combination, with a main-line circuit, of a step-by-step transmitter organized to drop or intermit one of a series of breaks or impulses and a receiving-instrument organized to supply the break or impulse omitted by the transmitter, substantially as set forth.

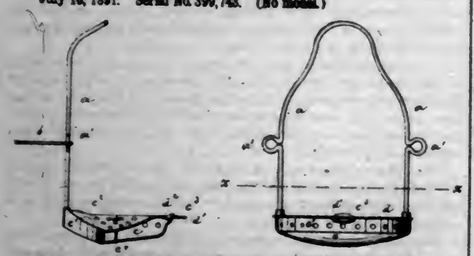


2. In a printing-telegraph, the combination, with a main-line circuit, of a step-by-step transmitter organized to drop or intermit one of a series of impulses or breaks, a receiving-instrument organized to supply the break or impulse omitted by the transmitter, and means, substantially such as described, for rotating the receiving-instrument independently of the transmitter, substantially as set forth.

3. The combination, with the main circuit *e e*, of the key J, locking-segment a^3, electrically connected therewith, trailer *d*, break-wheel I, contact-spring *k*, and electro-magnet *h*, substantially as set forth.

4. The hereinbefore-described method of effecting the unison of the transmitting and receiving parts of a printing-telegraph, which consists in first locking the transmitting-shaft at a predetermined point in its revolution, then advancing the type-wheel shaft of the receiving-instrument until the type-wheel has been brought to the corresponding point, and finally releasing the transmitting-shaft by the action of said type-wheel shaft, substantially as set forth.

472,288. INHALER. JOHN M. VAN ORDEN, New York, N. Y. Filed July 16, 1891. Serial No. 399,743. (No model.)



Claim.—1. In an inhaling or analogous device, the combination of pan *c*, having forwardly-projecting lip c^2, with a lid *d*, having a semi-annular slot, a tip d', and an inner partly-detached lip d^2, adapted to engage lip c^2, substantially as specified.

2. In an inhaling or analogous device, the combination of pan *c*, having forwardly-projecting lugs c^4, stop c^4, and a forwardly-projecting lip c^2, with a lid having a semi-annular slot, a tip d', and an inner partly-detached lip d^2, adapted to engage lip c^2, substantially as specified.

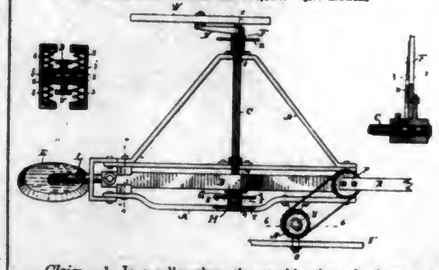
472,289. WINDOW. OSCAR WAGNER, Dayton, Ohio, assignor of one-half to Christian Reusch, same place. Filed July 22, 1891. Serial No. 400,290. (No model.)



Claim.—1. The closing-bars D D, each provided with rear and front grooves with connecting-orifices and tongues on their inner faces, in combination with the window-frame, grooved sash, cord, and weight, substantially as described.

2. The supporting-frame comprising the hinged bar E and slats E', hinged to said bar, substantially as and for the purpose set forth.

472,240. SULKY-PLOW. JOEL R. WARREN, Kalamazoo, Mich. Filed Feb. 24, 1891. Serial No. 382,537. (No model.)



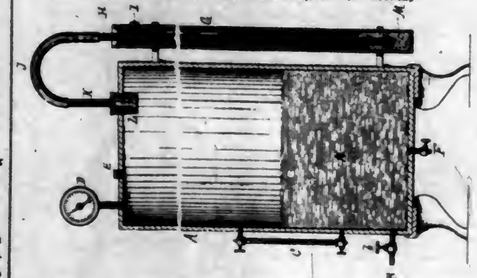
Claim.—1. In a sulky-plow, the combination of a frame, a plow-beam having the transverse opening, the land-wheel shaft passing through said opening, an eccentric therein and on said shaft, and the lever attached to said eccentric for raising and lowering the plow-beam, substantially as set forth.

2. The combination of a plow and its frame, and the caster-wheel pressed like a dish and serving the double purpose of caster-wheel and landside, substantially as set forth.

3. In a sulky-plow, the combination of the frame, the cases at rear end of said frame, the sliding blocks and cushioning-springs in said cases, and the plow-beam pivoted to said sliding blocks, substantially as set forth.

4. In a sulky-plow, the combination of a plow-frame, a land-wheel and caster-wheel therefor, a tongue pivoted to the frame, a furrow-wheel pivotally attached to the frame at a point obliquely rearward from the tongue, and the sprocket-wheels and chain connecting the swinging tongue and pivoted furrow-wheel, substantially as set forth.

472,241. PRESSURE-REGULATOR. WILLIAM WEBB, Cleveland, Ohio. Filed Oct. 24, 1891. Serial No. 409,691. (No model.)



Claim.—In a device of the character described, the combination of a tight vessel having inlet and outlet, a vertical pipe G, open at its upper end and having its lower end closed, a pipe H, having its lower end immersed in any suitable liquid contained in the said pipe G, a flexible pipe J, connecting the upper end of pipe H with the outlet-pipe K, which latter communicates with the interior of the vessel A.

and means for securing said pipe H vertically and adjustably within the pipe G, the parts being constructed, arranged, and operating substantially in the manner and for the purposes set forth.

472,242. NUT-LOCK. VERDI R. WHITELOCK, Mortimer, Ohio. Filed Aug. 10, 1891. Serial No. 402,193. (No model.)



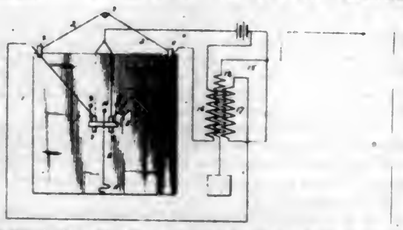
Claim.—1. In a nut-lock, the combination of a bolt, a plate adjacent to the fish-plate on one side of the rail and countersunk for the head of such bolt, a grooved plate adjacent to the other side of such rail and supporting the nut for such bolt, a key fitting such groove and bearing against one side of the nut, and means whereby said plates are retained in a stationary position relative to the fish-plates, substantially as and for the purpose set forth.

2. In a nut-lock, the combination of a bolt, a plate adjacent to the fish-plate on one side of the rail and countersunk for the head of such bolt, a second plate having an angular groove therein and adjacent to the fish-plate on the other side of such rail, a flanged key fitting such angular groove and bearing against one side of the nut, and means whereby said plates are retained in a stationary position relative to the fish-plates, substantially as and for the purpose set forth.

3. In a nut-lock, the combination of a bolt, a plate adjacent to the fish-plate on one side of the rail and countersunk for the head of such bolt, a second plate having an angular groove therein and adjacent to the fish-plate on the other side of such rail, a flanged key fitting such angular groove and bearing against one side of the nut, said key having an extension at one end thereof and an opening in its opposite end and a pin passing through the said opening, and means whereby said plates are retained in a stationary position relative to the fish-plates, substantially as and for the purpose set forth.

4. In a nut-lock, the combination of a bolt, a countersunk plate for the head of such bolt, a second plate adjacent to the nut on the other end of the bolt and having an angular groove therein, each of said plates provided with one or more projections on their inner faces, and a key with an angular flange and a projecting ledge resting against one side of the nut, said key having an extension at one end and an opening through its other end, and a pin passing through said opening, substantially as and for the purpose set forth.

472,243. TELEPHONE-TRANSMITTER. EDWARD G. ACHESON, Pittsburg, Pa. Filed June 29, 1887. Serial No. 242,883. (No model.)



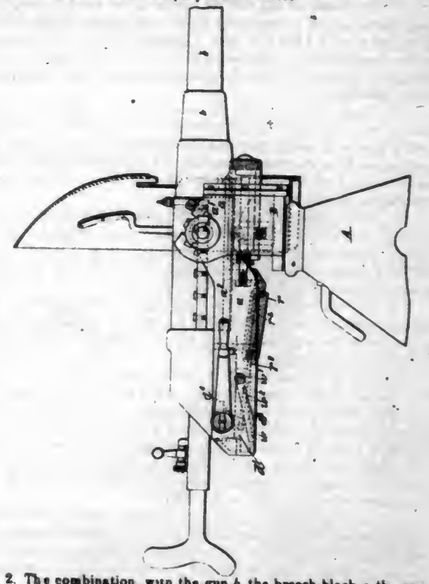
Claim.—1. In a telephone, the combination of a plate, blocks of conducting material secured on each side of said plate, bars of conducting material resting thereon, rings of rubber surrounding each bar, and a thread or cord connected to said rings and securing said bars in position upon the blocks, substantially as described.

2. In a telephone, the combination of a suspended plate free to move bodily, blocks of conducting material secured to each side of said plate, a bar of conducting material resting by gravity on each set of blocks, and an elastic adjusting-cord passing over said bar, substantially as described.

3. The combination, with a plate, of blocks of conducting material secured on each side of the plate, a bar of conducting material resting on each set of blocks, and a thread or cord connecting said bars, the said thread being at right angles to the plate, substantially as described.

472,244. GUN. FRANCIS E. D. ACLAND and CARL HOLMSTRÖM, London, England. Filed Mar. 25, 1891. Serial No. 386,408. (No model.)

Claim.—1. The combination, with the gun *b* and the breech-block *c*, of a shaft *d*, supported in bearings in the body of the gun in rear of the breech-cavity, a crank arm or lever *e*, fixed on the shaft *d*, pins or projections e' on the arm or lever *e*, straight grooves *f* and circular grooves f' for the projections e' to work in, the latter grooves being so formed in the breech-block as to be concentric with the axis *d* when the breech is closed and passing at their upper ends into straight grooves approximately parallel with the axis of the gun, so that when the breech-block is closed the pins e' can be moved to rest in the angle formed by the curved and straight portions of the said grooves f', all substantially as and for the purposes set forth.



2. The combination, with the gun *b*, the breech-block *c*, the arm or lever *e* for operating the breech-block, and pins or projections e' on the said arm or lever adapted to bear in a curved groove f', formed in the breech-block when the breech is closed, of a cylindrical boss formed around the axis of the lever *e*, and a bearing-surface *g*, formed in the rear end of the gun and fitting closely to the said boss, as and for the purpose specified.

3. In a quick-firing gun, the firing mechanism comprising, in combination with each other, the firing-pin *h*, the firing-hammer *i*, the spring *k*, the trigger *l*, the lever *e*, having a pin or projection e^4 at its extremity, and the two sears *j j'*, one of which is fixed on the trigger-pivot and the other of which can turn on, but independently of, the trigger-pivot, and is formed with a projecting finger j^{10}, adapted to engage with the projection e^4, all substantially as and for the purpose described.

4. The combination, with the gun *b* and the breech-block *c*, of an extractor *m*, formed in two similar parts, which are arranged symmetrically with respect to the breech of the gun and which are each provided with a hook or projection m^3, adapted to engage with notches c^3 on the breech-block *c*, as and for the purpose specified.

5. The combination, with the breech-block *c*, of projections c^6, formed thereon, and an extractor *m*, formed in two similar parts, each of which has a tail-piece m' and a hook or projection m^3, the said tail-piece being acted upon by the projection c^6 when the breech-block descends, and the projection m^3, when the extractor is thrown back, entering notches c^3 in the breech-block to lock the same in the loading position, the said two similar parts of the extractor being independent of each other, substantially as described, for the purpose specified.

6. The combination, with the breech-block *c*, of the extractor *m*, having inclines m^4 formed at its lower extremities and arranged in combination with spring friction-pistons m^2, which engage with the said inclines m^4 when the breech is open, substantially as set forth, for the purpose specified.

7. The combination of the firing-hammer *i*, mounted on a pivot i', the trigger *l*, a sear *j*, mounted loosely on the trigger-pivot and having a projecting finger j^{10}, a sear j', fixed on the trigger-pivot, both sears being adapted to engage with a firing-hammer, and a crank-lever *z*, centered on a shaft *d* in the breech and having a pin or projection e^4 at its extremity for engaging with the finger j^{10} when the lever is raised, substantially as and for the purpose specified.

8. The combination of the sliding breech-block *c*, the firing-pin *h*, the firing-hammer *i*, the sear *j*, mounted loosely on the trigger-pivot and the sear *j'* fixed thereon, the spring *k* for operating the said sears, the trigger *l*, and the extractor *m*, consisting of two similar and symmetrically-arranged independent parts, all as set forth.

9. The combination, with the gun *b*, which moves to and fro in a frame or cradle *a*, of a hand-lever *p*, having a boss *p'* mounted to turn in a bearing p^3 in the cradle *a* and which is coupled to the breech-block-actuating crank-shaft *d* when the gun is in the firing position, substantially as set forth.

10. The combination, with the cradle *a*, the gun *b*, mounted to slide therein, and the crank-shaft *d*, that operates the breech-block, of a hand-lever *p*, having its boss *p'* fitted in a socket p^3 in the said cradle, a spring-catch *q*, the head d' of the crank-shaft *d*, and a groove d^3, formed in the said head, all substantially as and for the purpose above described.

11. The combination, with the cradle *a*, the gun mounted to slide therein, and crank-shaft *d*, that operates the breech-block, of a hand-lever *p*, having its boss *p'* fitted in a socket p^3 in the cradle *a*, a spring-catch *q*, the head d' of the crank-shaft *d*, a groove d^3, formed in the said head, and an inclined surface d^4, formed on the said head, substantially as and for the purpose described.

12. The combination of the breech crank-shaft *d*, the hand-lever *p*, which engages with the said crank-shaft when the gun is in the firing position, the pivoted quill p^2, notch p^5, spring p^6, and the projection a^3 on the cradle, with which the quill p^2 is actuated to engage, all substantially as set forth.

13. The combination, with the crank-shaft *d*, short arm d^2 thereon, and a projection or cam d^5, formed on the said arm, of the spring-pawl *w*, pivoted to the gear-cradle *a* and adapted to engage with the arm d^2, as and for the purpose set forth.

14. The combination, with the cradle *a* and gun *b*, mounted to slide therein, of the recess b^6, formed in the gun, a roller *v*, adapted to engage with the said recess when the gun is run out, a block *s*, carrying the said roller, and another block *s'* beneath the block *s*, the said block *s'* having a tapered arc-shaped projection s^3, the cross-head B, in which is formed a groove adapted to engage with the projection s^3, and a spring or springs between the blocks *s s'* to force the same apart, all substantially as set forth.

15. The combination of the breech-block *c*, the inclined ribs *c'*, formed thereon, the said ribs having their rearward faces slightly undercut, the inclined grooves in the breech of the gun, in which the ribs of the breech-block fit, the said grooves having a cross-section corresponding to that of the ribs, substantially as described.

16. The combination of the block *c*, the pivot-pins j^3 i' for the sears and firing-hammer, respectively, mounted therein, an arm j^3, mounted on the pin j^3 and projecting over the end of the pin i', thereby retaining the said pin in position, as set forth.

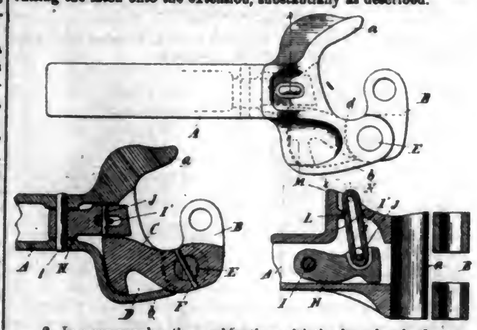
17. The combination of the breech-block *c*, the notched or grooved pivot-pin j^3, the sear *j*, loosely mounted on the said pivot-pin; the link j^3, pivoted to the said sear and having a heel or tail piece engaging with the said notch or groove in the pivot-pin to retain the said pivot-pin in position, but which heel or tail piece can be turned out of engagement with the said notch or groove to permit of the withdrawal of the pivot-pin j^3, substantially as described.

18. The combination, with the pivot-pins j^3 i', of an arm j^3, mounted on the pivot-pin j^3 and which projects normally over the end of the pivot-pin i' to retain the said pin i' in position, but which can be turned to allow of the withdrawal of the pin i', substantially as described.

19. The combination, with a quick-firing gun *b*, mounted to slide in a trunnioned cradle *a*, carried by a cross-head B, of a breech-block *c*, formed with straight and curved grooves *f f'*, a lever *e*, mounted on a shaft *d'* in the body of the gun and adapted to actuate the breech-block and having projections *e'* working in the said grooves *f f'*, a hand-lever *p*, mounted in the cradle *a* and provided with a spring-catch *q*, a notch d^3 in the head of the shaft *d*, constructed and arranged to engage with the said spring-catch, a brake apparatus comprising a roller *v*, mounted in the upper one *s* of two bearing-blocks *s s'*, which have between them a spring or springs *u*, the lower of which blocks bears upon the cross-head B in order to check the tilting of the gun after it is fired, and a recess b^6, formed in the body of the gun and which receives the roller *v* when the gun is run out to the firing position, substantially as described, and illustrated in the drawings.

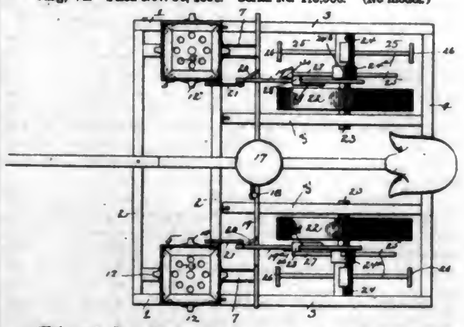
472,245. CAR-COUPLING. ALFRED J. ALLEN, Ernest, Canada, assignor to Charles A. Gould, New York, N. Y. Filed Sept. 5, 1891. Serial No. 404,817. (No model.)

Claim.—1. In a car-coupler, the combination, with the draw-head, of a vertically-swinging latch in the draw-head, having an inclined bearing on its under face, a pivoted coupling-hook on the draw-head, a reduced right-angled extension on the inner end of the hook, arranged to support the latch when in an opened position and to engage the inclined bearing when the coupler is to be uncoupled, and means for raising the latch onto the extension, substantially as described.



2. In a car-coupler, the combination, with the draw-head, of a vertically-swinging latch, a pivoted coupling-hook, and a lateral extension on the hook supporting the latch when the coupling-hook is thrown open, substantially as described.

472,246. CHECK-ROW CORN-PLANTER. JAMES R. AYERS, Petersburg, Va. Filed Nov. 30, 1891. Serial No. 413,586. (No model.)



Claim.—1. In a check-row corn-planter, the combination, with the driving-wheel and axle and the seed feeding and dropping devices, of the intermittently-rotating markers carried by the axle and means, substantially as described, whereby the markers are released by the movement of the seed-dropping devices.

2. In a check-row corn-planter, the combination, with the driving-wheels and axle, of the collar on said axle, the radial marking-arms, the adjustable collar or hub, the short radial arms secured thereto, the horizontal bar, the plate adapted to engage with said short arms pivoted thereto, the transverse bar and pivoted connecting-link, and the operating-lever, substantially as described.

3. In a check-row corn-planter, an adjusting device which by its adjustment determines the position of the marker each time the dropping mechanism is actuated as to insure the markers pressing the ground at points to correspond with the dropping of the corn, substantially as described.

4. In a check-row corn-planter, the combination of dropping devices with the intermittent rotating marker and means for releasing the marker at the instant the corn is dropped.

472,247. BOOK-HOLDER. HENRY H. BAKER, Jr., Buffalo, N. Y., assignor of one-half to Harvey D. Blakeslee, same place. Filed June 22, 1891. Serial No. 397,043. (No model.)



Claim.—1. A book-holder consisting of a clamp for attaching the holder to the book, a slide arranged upon said clamp and capable of moving lengthwise thereon, and a clasp mounted upon said slide and moving therewith, whereby the clasp clears the edge of the book upon drawing the slide outwardly on the attaching-clamp while bearing upon the leaves of the book upon moving the slide inwardly, substantially as set forth.

2. A book-holder consisting of a clamp for attaching the holder to the book, a slide guided upon said clamp and provided with a standard, a spring-clasp pivoted to said standard and having a thumb-piece, and a projection arranged on said standard underneath the thumb-piece of the spring-clasp, substantially as set forth.

3. A book-holder consisting of an attaching-clamp provided with a transverse slot and a slide passing through said slot, lateral lips arranged on the clamp and overlapping the slide, and a clasp attached to said slide, substantially as set forth.

4. A book-holder consisting of an attaching-clamp, a slide guided upon said clamp, and a clasp attached to said slide and provided with a transverse rod which bears upon the leaves of the book, substantially as set forth.

5. A book-holder consisting of an attaching-clamp, a slide guided upon said clamp, and a clasp attached to said slide and provided with a transverse rod having its ends turned downward and bearing upon the leaves of the book, substantially as set forth.

6. A book-holder consisting of an attaching-clamp composed of a double strip of sheet metal having lateral lips and a raised head having transverse slots, a slide passing through said slots and under said lips and having a stop which strikes said lips, and a spring-clasp attached to said slide, substantially as set forth.

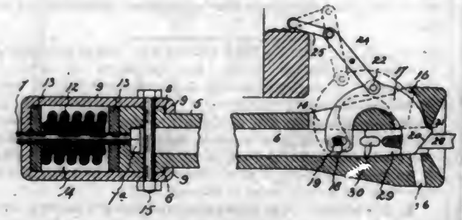
472,248. LABEL-HOLDER. HENRY F. BENTE, St. Louis, Mo. Filed Dec. 8, 1891. Serial No. 414,362. (No model.)



Claim.—1. The herein-described device for securing cards to boxes, especially cigar-boxes, consisting of a blank 4, having a tapering end 5 and the opposite end provided with a point 8, and an intermediate portion 9, upon which the tapering end 5 is folded, substantially as set forth.

2. The herein-described device for securing cards to boxes, especially cigar-boxes, comprising a portion 6, a portion 9, bent at an obtuse angle relative to said portion and having its tapering terminal portion 5 bent upon itself, thus constituting an elastic clasp, and between said portions 5 and 9 a card is adapted to be interposed, substantially as set forth.

472,249. CAR-COUPLING. FRANCIS R. BROWN, Denver, Colo., assignor, by mesne assignments, to the Globe Manufacturing Company, same place. Filed Nov. 25, 1891. Serial No. 413,128. (No model.)



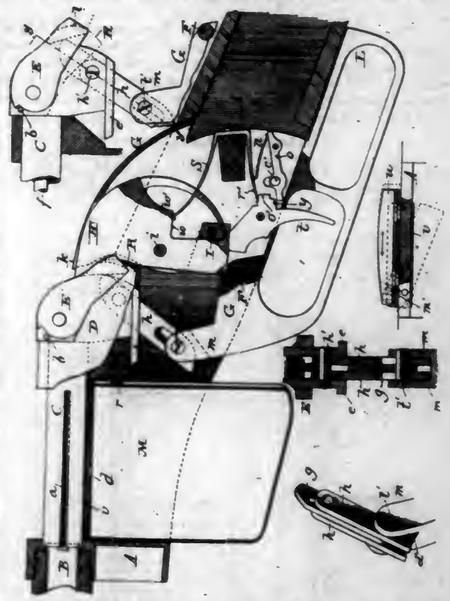
Claim.—In a car-coupler, the combination, with the draw-head provided with the top recess, of the curved or semicircular coupling-arm located in said recess and pivoted through its rear extremity, its forward extremity being beveled and lying in the path of the link, and means for lifting the coupling-arm, consisting of a link pivoted to the arm at one extremity and to a crank at the opposite extremity, said crank-arm being connected with a movable rod extending to the outside of the car, substantially as described.

472,250. STAIR-CARPET BUTTON. ADDISON A. CARDWELL, Clarenceville, N. Y. Filed Jan. 19, 1891. Serial No. 378,197. (No model.)



Claim.—As an article of manufacture, an ornament for stair-carpets, consisting of an ornamental knob or medallion provided with an elastic clamp-hook formed with two bearings for pinching the carpet against the back of the knob or medallion at two separate places, substantially in the manner and for the purpose described.

472,251. MAGAZINE BREECH-LOADING GUN. ALBERT A. CLIVE, Ilion, N. Y. Filed May 6, 1891. Serial No. 391,782. (No model.)



Claim.—1. The combination, in a gun, of the reciprocating breech-bolt provided with the hinged locking-brace E, arranged to engage with the shoulders R of the receiver, and the rocking frame G, having its arm *m* connected to the bolt by means of the slotted links *g* and A, the said parts being constructed and arranged to operate substantially as and for the purpose set forth.

2. In combination with the rocking frame G, the hammer H, pivoted therein and having its lower arm arranged to come in contact with the fixed pin or projection I as the frame is rocked to open the breech, whereby the hammer is automatically forced to the cocked position in the act of opening the breech.

3. In combination with the rocking frame G, having the hammer H pivoted therein, the trigger provided with the shoulder *y*, arranged to lock against the wall of the frame or similar stop, while its nose is engaged with hammer, whereby the hammer is held secure when at full cock and the breech is open.

4. In combination with the hammer, the trigger provided with the shoulder *o'* and the spring-actuated locking-lever arranged to engage therewith, said lever being provided with one or more lateral projections working through slots in the side of the frame and arranged to strike against the walls of the receiver as the breech is closed, whereby the trigger is automatically locked when the breech is opened and automatically released as the breech is closed.

5. In combination with the receiver having an opening in its lower wall for cartridges to be fed up through, the pivoted cut-off plate *v*, connected to the reciprocating slide *u*, substantially as shown, whereby the movement of the slide is caused to operate or move the cut-off plate, substantially as and for the purpose set forth.

6. In combination with the slotted frame or receiver, the spring-bolt *r*, provided with the inclined or beveled faced projection *n'*, and the detachable magazine or box M, provided with a notch in its rear edge, substantially as and for the purpose set forth.

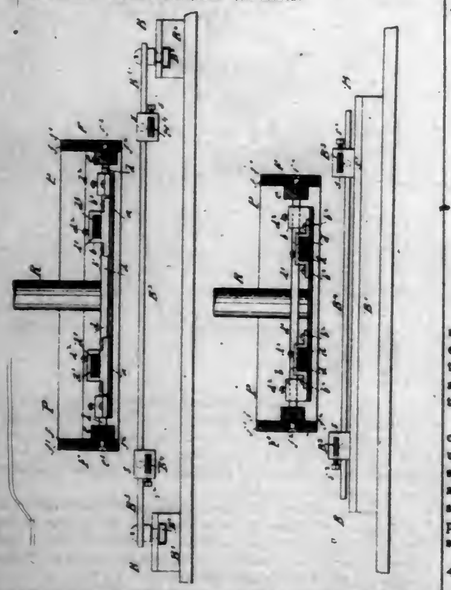
7. In combination with the reciprocating breech-bolt provided with a hinged locking-brace arranged to engage against shoulders on the receiver, the rocking frame provided with the nose or beak *k*, arranged to ride over the rear end of the brace and force it into the locked position as the breech is closed.

472,252. METHOD OF PACKING DECORATIVE FILMS. WALTER H. COE, Providence, R. I. Filed Jan. 6, 1892. Serial No. 417,203. (No specimens.)



Claim.—The herein-described method of packing decorative films, consisting in cutting or forming the films into ribbons, applying these ribbons to protecting-strips having a slightly-adhesive surface, and winding the said ribbons and strips on spools of the same width as the ribbons, constructed to press the film down on the part to be gilded as the film is unwound therefrom, as described.

472,253. CREASING AND FOLDING MACHINE. JOSEPH CORBETT, New York, N. Y., assignor to Thomas F. Shaw, same place. Filed June 27, 1891. Serial No. 397,684. (No model.)



Claim.—1. The combination, in a creasing or creasing and folding machine, of a box formed of longitudinal and transverse bars connected at right angles with each other, with a plunger composed of a central plate or web, longitudinal and transverse extension-rods guided on said web, an interior frame supported on said rods, and an exterior extension-frame supported on the interior frame, substantially as set forth.

2. The combination, in a creasing or creasing and folding machine, of a box formed of stationary guide-bars, longitudinal bars guided in ways of the stationary bars, and transverse bars supported in sleeves of the longitudinal bars, with a plunger composed of a central plate or web, longitudinal and transverse extension-rods guided on said web, an interior frame supported by said rods, and an exterior extension-frame supported on the interior frame, substantially as set forth.

3. A plunger for creasing or creasing and folding machines, composed of a central plate or web, extension-rods guided on said web, an interior frame supported on said rods, and an extension-frame supported by the interior frame, substantially as set forth.

4. A plunger for creasing or creasing and folding machines, composed of a central plate or web, longitudinal and transverse extension-rods guided on said web, an interior frame supported on said rods, and an exterior extension-frame supported on the interior frame, substantially as set forth.

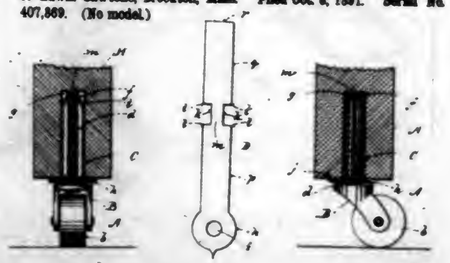
5. A plunger for a creasing or creasing and folding machine, composed of a central plate or web, an interior frame provided with extension-rods guided on said plate, means for clamping said extension-rods to said plate, and an exterior frame the sides of which are formed of two plates which are adjustable on the interior frame, substantially as set forth.

6. A plunger for creasing or creasing and folding machines, composed of a central plate or web provided with keepers, an inner frame provided with longitudinal and transverse extension-rods attached to the side bars of the inner frame, means for securing said extension-rods to said keepers, and an exterior frame formed of inner and outer plates which are connected to the side bars of the inner frame, the inner plates being provided with inclined bottom flanges which slide along the beveled bottom edges of the outer plates, substantially as set forth.

7. A box for creasing or creasing and folding machines, composed of stationary parallel bars, longitudinal bars guided in ways of the stationary bars, and transverse bars guided in sleeves on the longitudinal bars, substantially as set forth.

8. A box for creasing or creasing and folding machines, composed of stationary parallel bars having guideways, longitudinal bars having slide-pieces guided in said ways, sleeves on the longitudinal bars, transverse bars guided in the sleeves on the longitudinal bars, and means for clamping the longitudinal bars to the stationary bars and the transverse bars to the sleeves of the longitudinal bars, substantially as set forth.

472,254. CASTER. HERBERT C. DRAKE, North Raynham, assignor to Edwin Sawtelle, Brockton, Mass. Filed Oct. 6, 1891. Serial No. 407,869. (No model.)



Claim.—1. A metallic caster-socket comprising a hollow approximately cone-shaped body slotted longitudinally and having the upper ends of the sections thus formed connected by a vertically-curved strip to form a bearing for the caster-spindle, the corners of said sections adjacent said strip being bent inward to engage a shoulder or projection on said spindle, substantially as and for the purpose set forth.

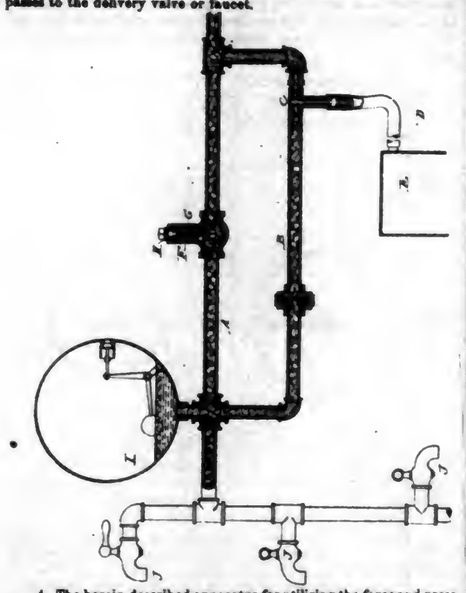
2. A metallic caster-socket comprising a hollow approximately cone-shaped body slotted longitudinally, forming members having their upper ends connected by a curved strip to serve as a step for the caster-spindle, and a foot on the opposite end of one member of greater diameter than said socket and provided with a central spindle-opening, said foot projecting horizontally across the mouth of the socket and past the adjacent end of the companion member, substantially as described.

472,255. TEMPERATURE-REGULATOR. LUCIEN F. EASTON, La Crosse, Wis. Filed Mar. 16, 1891. Serial No. 385,146. (No model.)

Claim.—1. In combination with the water-service pipe or main of a building and with a delivery valve or faucet applied thereto, an aspirator communicating with said pipe at a point between the street-main and the delivery valve or faucet, and a close tank or chamber communicating with the aspirator, substantially as set forth, whereby the aspirator is caused to draw air from the tank whenever water is drawn from the delivery valve or faucet.

2. In combination with the water-service pipe of a building, a reducing-valve introduced into said pipe and closing against the pressure therein, a branch or by-pass leaving the service-pipe on one side of the reducing-valve and rejoining it on the opposite side thereof, an aspirator in said branch pipe, a close tank or receiver in communication with the aspirator, and a delivery valve or faucet connected with the service-pipe at a point beyond the reducing-valve.

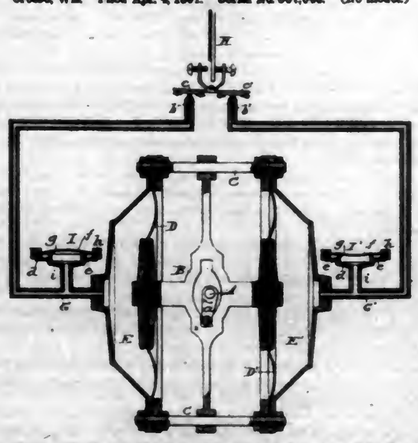
3. In combination with the water-service pipe of a building and with an aspirator located in said pipe, a delivery valve or faucet applied to the pipe and an air-receiver connected with the pipe at a point between the aspirator and the valve or faucet and serving to receive from the water the air drawn in through the aspirator before the water passes to the delivery valve or faucet.



4. The herein-described apparatus for utilizing the force and pressure of service-water in the act of drawing water for other purposes, consisting of pipe A, provided with reducing-valve F, branch pipe B, aspirator C, located in said pipe, air-receiver I, connected with said pipe and serving to receive air drawn in by the aspirator, and delivery valve or faucet J, applied to the service-pipe, substantially as and for the purpose set forth.

5. The herein-described apparatus for utilizing the movement of water in service mains and pipes, consisting of a service-pipe, a delivery valve or faucet applied thereto, an aspirator located in the pipe between the inlet and the delivery-valve, a close tank communicating with the aspirator, and an air-receiver communicating with the pipe at a point between the aspirator and the delivery-valve, all substantially as described and shown.

472,256. TEMPERATURE-REGULATOR. LUCIEN F. EASTON, La Crosse, Wis. Filed Apr. 4, 1891. Serial No. 387,643. (No model.)



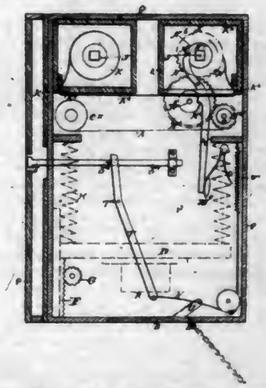
Claim.—1. In combination with a valve, damper, or like device, a shaft, a connection between the shaft and the valve-door or damper, means tending to rotate said shaft in one direction, a yoke or frame adapted to be moved laterally by the shaft-actuating mechanism, two air vessels or chambers located upon opposite sides of the shaft and having their movable walls or diaphragms connected with the yoke or frame, pipes extending from said vessels or chambers to the room or apartment the temperature of which is to be regulated or controlled, valves applied to said pipes, a thermostat adapted to actuate said valves alternately, and a check-valve for each of the chambers or their pipes, all combined and arranged for operation substantially in the manner shown and described.

2. In combination with a valve, damper, or like device, the regulating apparatus herein described, consisting of a shaft provided with a crank *a* and with means tending to rotate said shaft in one direction, an open yoke or frame B, embracing the crank portion of the shaft, vessels or chambers E E', provided with diaphragms D D', which latter are connected with the yoke or frame B, pipes G G', extending from the vessels E E' to the room the temperature of which is to be regulated, where they are provided with nozzles *b b'*, valves *c c'*, adapted to cover and uncover the nozzles, a thermostat H, adapted to actuate the valves *c c'*, valves I I', applied to the pipes G G' at a point between their ends, and a connection between the shaft and the valve, damper, or like device.

3. In a temperature-regulator substantially such as shown and described, the check-valve I, comprising a body *d*, a raised rim or flange *g* at a distance from the edge of the body, one or more openings *e* between the edge of the body and the rim or flange, a flexible diaphragm *f*, applied to the upper face of the body, a clamping band or ring *h*, adapted to hold the diaphragm or disk in place, and a pipe *i* communicating with the space within the rim or flange *g*.

4. In a temperature-regulator substantially such as shown and described, the check-valve I, comprising a body *d*, provided with a raised rim or seat *g* at a distance from the edge of the body and provided, also, with openings *e* to the space without the seat *g*, a flexible diaphragm *f*, fastened at its edges to the body and tending to close upon the seat *g*, and a pipe *i*, communicating with the space within the rim or seat *g*.

472,257. PHOTOGRAPHIC CAMERA. BENJAMIN J. EDWARDS, London, England, assignor to the Eastman Company, Rochester, N. Y. Filed June 26, 1890. Serial No. 356,326. (No model.) Patented in England July 16, 1889, No. 11,416.



Claim.—1. In a camera, the combination, with the film holding and feeding devices and a stop for arresting their movement after a predetermined amount of film has been fed, of an exposing-shutter and a catch for retaining it in set position, said catch being connected to the stop, whereby when the shutter is released and an exposure made the film-feeding devices will be released also, substantially as described.

2. The combination, with the film-feeding devices movable in one direction only, of an exposing-shutter, a catch for retaining it in set position, and connections between the film-winding and the shutter-setting devices, whereby the shutter will first be set and the setting and winding devices disconnected by the continued movement of the latter, substantially as described.

3. The combination, with the film-feeding devices movable in one direction only and a stop for arresting said devices after a predetermined movement, of an exposing-shutter, a catch for retaining it in set position, and connections between the film-winding and shutter-setting devices, whereby the shutter will first be set and the setting and winding devices disconnected by the continued movement of the latter, substantially as described.

4. The combination, with the film-roller, the operating-handle connected thereto, and a stop for arresting the movement of said roller, of an exposing-shutter and a catch for retaining it when set, said

catch and stop being connected for simultaneous operation, whereby when the shutter is released the film-roller is unlocked, substantially as described.

5. The combination, with the film-feeding devices and the mutilated gear connected therewith, of the spring-actuated exposing-shutter, the catch for retaining it, and the gear for setting the shutter meshing with the mutilated gear, substantially as described.

6. The combination, with the film-feeding devices and the mutilated gear connected therewith, of the spring-actuated shutter, the setting-gear having the disk provided with the notch and meshing with the mutilated gear, and the catch for co-operating with said disk and having a portion also engaging the film-feeding devices and arresting the same, substantially as described.

7. The combination, with the film-feeding devices and the mutilated gear connected therewith, of the spring-actuated roller blind-shutter, the gear at one end, actuated from the mutilated gear, the disk having the notch, and the catch co-operating with said disk and adapted to engage the film-feeding devices for arresting the same, substantially as described.

8. The combination, with the film-feeding devices, of the spring-actuated shutter, a catch for retaining it, connections between the shutter and feeding devices for causing the simultaneous feeding of the film and setting of the shutter, and another shutter and connections between it and the catch for causing the simultaneous opening of the second shutter and the release of the catch, substantially as described.

472,258. SURGICAL NEEDLE AND HOLDER. FREDERICK RISSNER, New York, N. Y. Filed Aug. 29, 1891. Serial No. 404,090. (No model.)



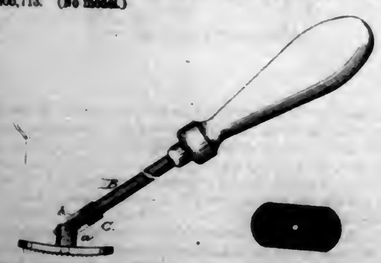
Claim.—1. A surgical needle having an eye near its point and a perforated shoulder and guide on its shank, substantially as shown and described.

2. In combination, a needle, a shoulder-piece secured thereon, and a shaft perforated to receive the shank of said needle, substantially as shown and described.

3. In combination, a needle, a perforated guide-piece secured thereon, and a shaft or holder having a head perforated at different angles to the axis of said shaft, with holes adapted to receive the shank of said needle, substantially as shown and described.

4. In combination, a hollow shaft perforated to receive a needle, and a rod fitting loosely within said shaft and furnished with a screw-thread engaging with a screw-thread in said shaft and adapted to bear upon said needle, substantially as shown and described.

472,259. SHOE FLOAT OR RASP. ALBERT D. GOODELL and HENRY E. GOODELL, Shelburne Falls, Mass. Filed Sept. 14, 1891. Serial No. 405,713. (No model.)

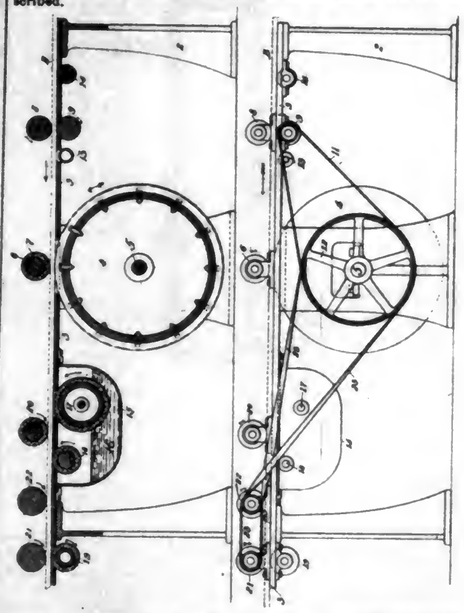


Claim.—1. In a shoe-float, the combination, with a rasp longitudinally curved on its face and having secured thereto a bifurcated clip, of the handle of said rasp, having a shank provided with a screw-threaded end and a tongue pivoted to said clip, and the screw-threaded collar on the handle for adjusting the rasp at any desired angle, substantially as set forth.

2. The combination, with the rasp, as described, adjustably pivoted to the shank of the handle, of the collar or nut adjustably secured to said shank and adapted for the adjustment of said rasp at any desired angle, as and for the purpose set forth.

472,260. MACHINE FOR GRAINING WOOD. WILLIAM W. GIBBS, Baldwin, Pa. Filed Nov. 26, 1890. Serial No. 372,738. (No model.)

Claim.—1. In a machine for graining wood, an indenting-roller composed of individual types having sharp edges adapted to indent the article to be grained, said types being set in a form with their edges substantially parallel and having intervals corresponding with the pattern to be produced, substantially as and for the purposes described.



2. In a machine for graining wood, an indenting-roller composed of a series of flat or plate types having cutting-edges arranged in substantially parallel lines and having intervals corresponding with the pattern to be produced, the space between the types being filled with a matrix of plastic material which maintains the relation of the types and binds the same together, substantially as and for the purposes described.

3. In a machine for graining wood, &c., an indenting-cylinder having types disposed so as to produce on the wood a pattern, said types having sharp edges and being set in a bed of plastic material, such as glue, with their edges substantially parallel and secured to the cylinder by bolts, substantially as and for the purposes described.

4. In a machine for graining wood, an indenting-roller situate beneath the path of the article to be grained, and a filler-coating device also situate on the under side of the article and on the delivery side of the roller, substantially as and for the purposes described.

5. In a machine for graining wood, the combination, with the indenting mechanism, of a filler-containing vessel situate on the delivery side of the indenting mechanism on the under side of the article to be treated, and a roller adapted to revolve in the vessel and to bear on the article to apply filler to the latter, substantially as and for the purposes described.

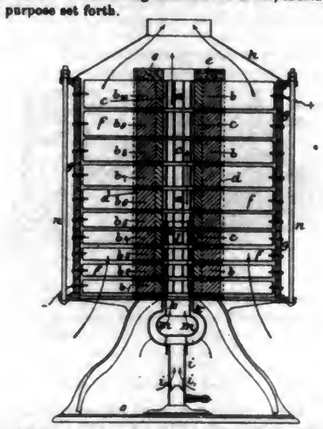
6. In a machine for graining wood, &c., the combination, with the indenting mechanism, of a brush adapted to bear on the article before its indentation, and a blast-pipe, substantially as and for the purposes described.

7. In a machine for graining wood, &c., an indenting-surface composed of individual types having projections adapted to indent the wood, and a supporting roller or frame to which said types are keyed, substantially as and for the purposes described.

8. In a machine for graining wood, &c., an indenting-roller composed of types disposed so as to produce on the wood a pattern, adapted to indent the article to be grained, said types being set in a plastic matrix and held thereby and having lateral projections or indentations adapted to hold the plastic matrix, substantially as and for the purposes described.

472,261. THERMO-ELECTRIC BATTERY. ROBERT J. GÖLSNER, Berlin, Germany. Filed June 18, 1891. Serial No. 396,782. (No model.)

Claim.—1. In a thermo-electric battery, the combination, with a source of heat, of elements having different internal resistances, said elements being arranged in a graduated series, the elements of less internal resistance being arranged at a distance from the source of heat so that the resistance of each element is substantially proportional to the temperature to which it is subjected, and all the said elements of different internal resistances being connected in series, substantially as and for the purpose set forth.

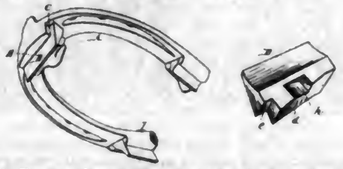


2. In a thermo-electric battery, the combination, with a source of heat, of elements of different sizes, said elements being arranged in a graduated series, the larger elements, which have less internal resistance, being arranged at a distance from the said source of heat so that the resistance of each element is substantially proportional to the temperature to which it is subjected, and all the said elements of different sizes being connected in series, substantially as and for the purpose set forth.

3. In a thermo-electric battery, the combination, with a central source of heat, of elements arranged in rows around the said source of heat, the said rows being arranged in a graduated series, the elements in the rows which are more remote from the source of heat being of less internal resistance, substantially in proportion to the lower temperature to which they are subjected, and the said rows of elements having different resistances being connected in series, substantially as and for the purpose set forth.

4. A thermo-electric element consisting of a negative electrode of fusible metal, a positive electrode of refractory metal, and an intermediate metallic contact-piece having its opposite ends secured to the said electrodes, said contact-piece being adapted to be heated only at that end of it to which the said positive electrode is connected and proportioned so that a considerable difference in the temperature of its ends is constantly maintained, substantially as and for the purpose set forth.

472,262. HORSESHOE. CHARLES HAMMELMANN, Buffalo, N. Y. Filed Sept. 28, 1891. Serial No. 406,995. (No model.)



Claim.—1. The combination, with the body of a horseshoe provided with a tapering groove having an inclined and sloping bottom, of a tapering calk arranged in said groove and having an inclined edge which bears against the inclined bottom of the groove, substantially as set forth.

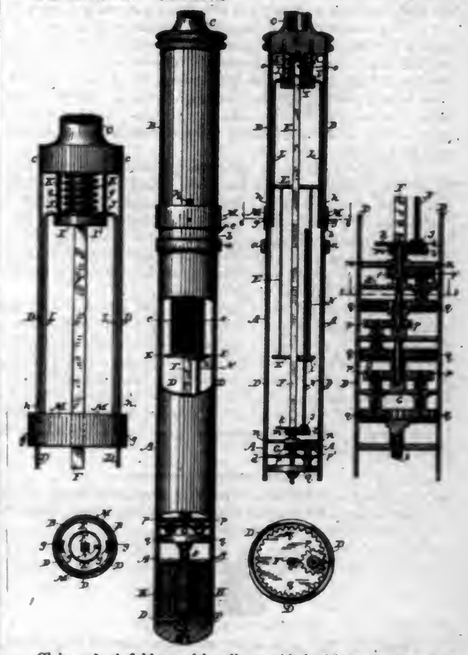
2. The combination, with the body of a horseshoe provided with a tapering dovetail groove having an inclined bottom, of a tapering dovetail calk arranged in said groove and having an inclined edge bearing against the inclined bottom of said groove, substantially as set forth.

3. The combination, with the body of a horseshoe provided with a groove having an inclined or sloping bottom, of a calk arranged in said groove and having an inclined edge which bears against the inclined bottom of the groove, and a set-screw bearing against the calk, substantially as set forth.

4. The combination, with the body of a horseshoe provided with a tapering groove having an inclined or sloping bottom, of a tapering calk arranged in said groove and having an inclined edge which bears against the inclined bottom of the groove and in its side a recess having an inclined bearing-face, and a set-screw bearing against the inclined face of the recess, substantially as set forth.

5. The combination, with the body of the horseshoe having a groove provided with a sloping bottom and near the front end of said groove with an incline, of a calk having a sloping edge bearing against the corresponding bottom of the groove and at its front end a raised face or shoulder bearing against the incline of the body, substantially as set forth.

472,268. REEL. EDGAR J. HILL, Troy, Pa. Filed July 2, 1891. Serial No. 398,237. (No model.)



Claim.—1. A fishing-rod handle provided with an aperture *b*, in combination with a reel entirely inclosed within said handle, consisting of a winding-spool carried by a rotatable shaft, a coiled spring H for effecting the automatic reeling of the line on said winding-spool, and multiplying gearing intermediate between said spring and said rotatable shaft, which acts to wind said spring when said shaft is rotated in one direction by the unreeling of the line and which acts to rotate said shaft in the opposite direction to reel the line when said spring is released, substantially as set forth.

2. A winding-spool carried by a rotatable shaft and a plate or disk I, carried by said shaft, in combination with mechanism for automatically rotating said shaft in one direction, and a bearing-disk J, independent of the winding-spool shaft, which normally bears against said plate or disk I and prevents the automatic rotation of said shaft, substantially as set forth.

3. A reel for fishing-lines, consisting of a winding-spool carried by a rotatable shaft, said shaft carrying a plate or disk I, a line secured to said winding-spool, and mechanism for automatically rotating said shaft in one direction to reel the line, in combination with a bearing-disk J, which normally bears against said plate or disk I and prevents the automatic rotation of said shaft, and means for moving said disk J out of contact with said disk I, whereby the automatic reeling of the line is controlled, substantially as set forth.

4. In a reel for fishing-lines, a rotatable shaft F, carrying a winding-spool E, mechanism for automatically rotating said shaft in one direction, a plate or disk I, secured to said shaft E, and a bearing-disk J, which normally bears against said plate or disk I and prevents the automatic rotation of said shaft, all of said parts being inclosed within the handle of a fishing-rod, in combination with means exterior to said handle for moving said disk J out of contact with said disk I, substantially as set forth.

5. The casing A B, constituting the handle of a fishing-rod, the rotatable shaft F, journaled within said casing and carrying the winding-spool E, mechanism for automatically rotating said shaft in one

direction, a plate or disk I, secured to said shaft, and a bearing-disk J, which normally bears against said plate or disk I and prevents the automatic rotation of said shaft, in combination with legs L, secured to said disk J, having outwardly-extending lugs *g*, and a ring or band M, exterior to and sliding upon said casing A B and secured to said lugs *g*, whereby said bearing-disk J may be moved out of contact with said plate or disk I, substantially as set forth.

6. The rotatable shaft F and the winding-spool E, rotating with said shaft and capable of a longitudinal movement thereon, in combination with means controlled by the rotation of said shaft for moving said spool gradually toward one end of said shaft when the shaft is rotated in one direction and toward the other end of said shaft when the shaft is rotated in the opposite direction, substantially as set forth.

7. The rotatable shaft F, the spool E, rotating with said shaft and capable of a longitudinal movement thereon, and the threaded sleeve *i* on said spool, in combination with the threaded shaft N, extending through and co-operating with said sleeve *i*, the pinion *l*, rigidly secured to said shaft N, and the stationary pinion *m*, with which said pinion *l* meshes, whereby when said shaft is rotated in either direction the spool E is moved longitudinally thereon continuously in one direction, substantially as set forth.

8. The fishing-rod handle having the aperture *b* therein, the winding-spool E, rotatably mounted within said handle, and the line *c*, carried by said winding-spool and extending through said aperture *b*, in combination with mechanism, substantially as described, which, when said spool is rotated in either direction to wind or unwind the line, operates to move said spool longitudinally and continuously in one direction, whereby the several portions of the length of said spool are successively brought opposite to said aperture *b*.

9. A rotary shaft F and a spool E, rotating with said shaft and capable of a longitudinal movement thereon, in combination with a threaded shaft N, working in a threaded sleeve *i* on said spool and revolving with said spool about said shaft F, a pinion *l*, rigidly secured to said threaded shaft N, and a centrally-apertured stationary pinion *m*, surrounding said shaft F and meshing with said pinion *l*, whereby when said shaft F is rotated in either direction the pinion *l* and shaft N are caused to rotate, thus moving the spool longitudinally upon its shaft, substantially as set forth.

472,264. **PORTFOLIO.** HERMAN M. HOELSCHER, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Feb. 15, 1892. Serial No. 421,536. (No model.)



Claim.—1. The combination, with upper and lower covers and their clamping-boards, of a screw-fastening for the latter, consisting of the hollow stud, threaded interiorly and secured in the lower board, and a hollow button having an axial screw adapted to enter and engage the stud and also having room outside the screw for the entrance therein of the stud, the upper board setting down over the stud, and the button bearing down upon its upper surface, substantially as specified.

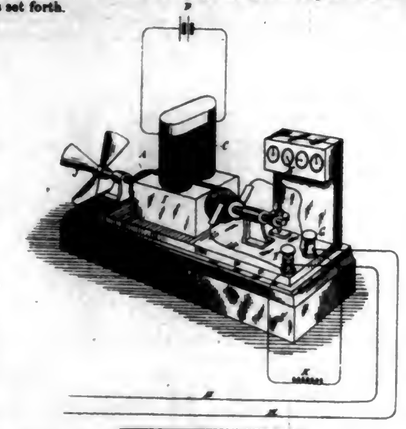
2. The combination, in a portfolio, with clamping-boards, of screw-fastenings consisting of the hollow stud threaded interiorly and secured in one of the boards, and a recessed button adapted to set over the stud and provided with an axial screw extending below the bottom of the button and entering the hollow of the stud and bearing upon the other board, substantially as specified.

3. The combination, in a portfolio, with the clamping-boards, of the fastening herein described, consisting of a hollow stud C, having a head *c*, a threaded interior and a plain exterior, and a covering-button recessed to set over the stud and provided with an axial screw in said recess adapted to enter the hollow of the stud, said button being also located above and bearing upon the upper board, and the stud passing through both clamping-boards, substantially as specified.

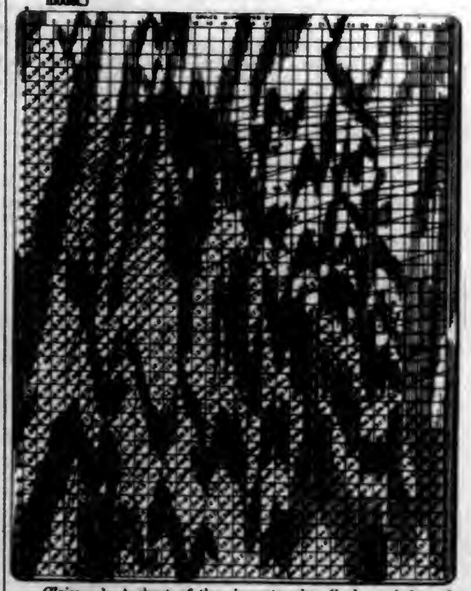
472,265. **ELECTRICAL METER.** JOHN F. KELLY, New York, N. Y. Filed Aug. 18, 1891. Serial No. 402,980. (No model.)

Claim.—1. A coulomb meter consisting in the combination, with a motor having a constant field, of a shunt or path of low resistance around the terminals of the motor, whereby the difference of potential at the terminals will be determined by the shunt, a load consisting of such a device as a fan, and means for indicating or registering the revolutions of the shaft.

2. The combination, with a circuit in which the quantity of electricity passing in a given time is to be measured, of an electro-magnetic motor having a constant field and connected in or with the said circuit, a shunt of low resistance around the motor, a fan or like device driven by the shaft, and a registering train in gear with the shaft, as set forth.



472,266. **BUILDER'S CHART.** FREDERICK H. KINDL and CHARLES V. CHILDS, Pittsburg, Pa. Filed Nov. 12, 1891. Serial No. 411,703. (No model.)



Claim.—1. A chart of the character described, consisting of a transparent plate having marked thereon intersecting parallel lines representing span and floor-space and curved lines intersecting the parallel lines and representing the dimensions of the beams to be used, substantially as and for the purposes described.

2. A chart of the character described, consisting of a transparent plate having marked thereon intersecting parallel lines dividing the chart into equal divisions on a known scale and representing the dimensions forming the bases of calculation and curved lines intersecting said divisions and indicating the results of the calculations.

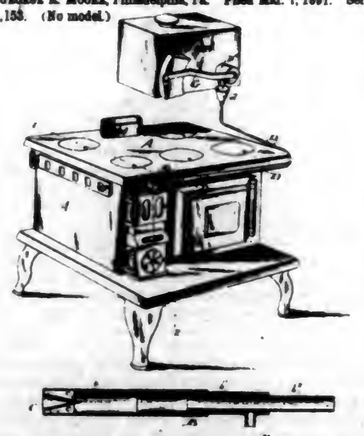
472,267. **PROCESS OF DYEING.** ERNST MICHAELIS and CARL HENNING, Cottbus, Prussia, Germany. Filed June 5, 1891. Serial No. 395,261. (No model.) Patented in Germany Oct. 22, 1890, No. 58,124; in England Oct. 29, 1890, No. 17,336; in Austria-Hungary Oct. 31, 1890, No. 7,061 and No. 30,196; in Belgium Nov. 8, 1890, No. 92,642; in France Nov. 10, 1890, No. 208,392, and in Italy May 30, 1891, XXV, 29,806, and LVIII, 325.

Claim.—1. The process of dyeing textile material, which consists in first immersing the material in a bath consisting of an acid solution formed by treating zinc with sodium bisulphite mixed with caustic soda and indigo, and then immersing the material in oxygenated water to oxidise the indigo, substantially as set forth.

2. The process of dyeing textile material, which consists in first immersing the material in a bath consisting of an acid solution formed by treating zinc with sodium bisulphite mixed with caustic soda and indigo, and then immersing the material in oxygenated water to which a percentage of ammonia has been added, substantially as and for the purpose set forth.

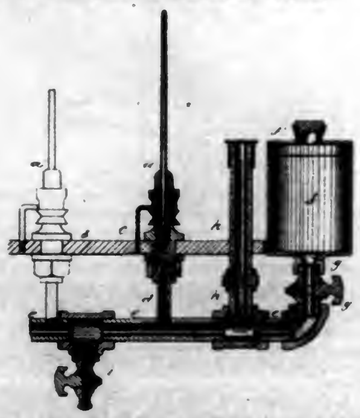
3. The process of dyeing textile material, which consists in immersing the textile material in separate quantities in a bath consisting of an acid solution formed by treating zinc with sodium bisulphite mixed with caustic soda and indigo, adding to the bath from time to time additional amounts of the said acid solution as additional quantities of textile material are immersed therein, so that the bath may have a uniform alkaline reaction, and immersing each quantity of textile material as it comes from the bath in oxygenated water, whereby the indigo is oxidized, substantially as set forth.

472,268. **OIL-BURNER ATTACHMENT FOR STOVES OR HEATERS.** GEORGE E. MOORE, Philadelphia, Pa. Filed Mar. 7, 1891. Serial No. 384,153. (No model.)



Claim.—The combination of a stove, range, or heater, an oil-burner provided with evaporating-pipe *b*, air-pipe b^3, oil-conveying pipe D, tank E, and valve F, substantially as and for the purpose herein shown.

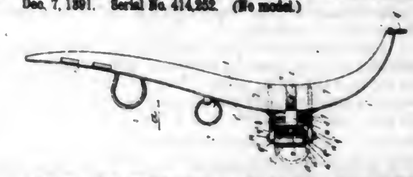
472,269. **SPINDLE-LUBRICATOR.** ELBERT R. PARKER, Vernon, Conn. Filed July 16, 1890. Serial No. 358,988. (No model.)



Claim.—1. In combination with a series of spindle-bearings, an oil-reservoir, an oil-supply pipe leading therefrom and having tubular connections with the several spindle-bearings, and the sight-glass located on the supply-pipe and rising to a height above the level of the spindle-bearings, all substantially as described.

2. In combination with a spindle-rail, a plural number of spindles with appertenant spindle-bearings, an oil-reservoir located above the level of the rail and supplied with a strainer, the oil-supply pipe leading from the oil-reservoir and extending below the level of the spindle-bearings and the oil-supply pipe, the sight-glass rising from the oil-supply tube and projecting above the level of the spindle-bearings, the stop-cock in the oil supply tube, and the blow-off cock, all substantially as described.

472,270. **HAME.** FRANK X. PERRY, Worcester, Mass. Filed Dec. 7, 1891. Serial No. 414,252. (No model.)

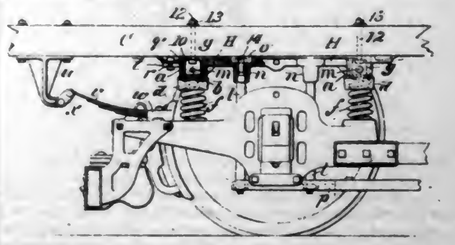


Claim.—1. The combination, with the hame of a harness, of means for attaching the tug thereto, consisting of a bow-shaped metal plate rigidly attached to the hame and having a groove in its outer edge and a swivel ring or loop supported and held in said groove and adapted to have a pivotal motion on said plate, and a bolt secured in the outwardly-bent arms of said loop and adapted to extend through the eye in the end of the tug, substantially as set forth.

2. The combination, with the hame of a harness, of means for attaching the tug thereto, consisting of the bow-shaped metal plate 6, rigidly secured to the hame by bolts 7 or otherwise and having a groove 8 in its outer edge, and the swivel ring or loop 9, supported in said groove and adapted to have a pivotal motion on said plate and retained thereon by a hooked-shaped arm 10, secured to the hame, and a bolt 14, secured in the outwardly-bent arms 9' of the loop 9 and adapted to extend through the eye in the end of the tug, substantially as set forth.

3. In a harness, the combination, with the hame, a bow-shaped metal plate rigidly secured thereto, having a groove in its outer edge, a swivel ring or loop supported and held in said groove and adapted to have a pivotal motion on said plate, and a bolt secured in the outwardly-bent arms of said swivel ring or loop, of the tug having an eye in the end thereof, through which extends said bolt, and a protective metal plate extending upon the inner side of the tug next to the hame and secured to the tug for the purpose stated, substantially as set forth.

472,271. **TRUCK FOR RAILWAY-CARS.** LOUIS PFIRSHT, Boston, and SUMNER A. BEMIS, Springfield, Mass. Filed Nov. 26, 1891. Serial No. 413,457. (No model.)



Claim.—1. The combination, with a beam or sill of the car-body, of a sill-bearing plate, one of said parts having a socket and the other a boss or projection to fit the socket, the said sill-bearing plate being horizontally spring-supported by and above the truck, substantially as described.

2. The combination, with a beam or sill of the car-body, of a sill-bearing plate, one of said parts having a socket and the other a boss or projection to fit the socket, and a bolt passed transversely through the walls of said socket and through the said boss, the said sill-bearing plate being supported by and above the truck and connected thereto, substantially as described.

3. The combination, with the sill of the car-body, having projections downwardly extended from its under side, which consist of inverted-cup-formed castings, with bolts engaging and passed upwardly through their top walls and through the sill, of a sill-bearing plate supported on the truck and having the socketed bosses extending below its thickness and having the sockets which are therein open to the upper side of the said plate, substantially as described.

4. The combination, with the sill of the car-body, having the downwardly-extended projections, of the truck-frame having the vertical supporting-springs, and the sill-bearing plate having the socketed bosses extending below its thickness and having the sockets which are therein open to the upper side of said plate and said bosses having at their lower portions the seats for said springs, substantially as described.

5. The combination, with a car-body having the downwardly-extended projections, of the truck and the sill-bearing plate spring-supported above the truck and having sockets for the reception of said pending sill projections, and said plate also provided with the socket *g*, sunk within its upper side, and the transverse tie-bar *t* and the bolt that unites the same with the sill-plate, having its head set in said socket *g*, substantially as described.

6. The combination, with the sills of the car-body, having the downwardly-extended bosses, of sill-bearing plates spring-supported above the truck and having the sockets for the reception of the said bosses, and a cross-tie bar for uniting the sill-bearing plates at the opposite sides of the truck, substantially as described.

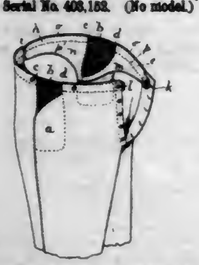
472,272. GLOVE-FASTENING. PIERRE A. RAYMOND, Grenoble, France. Filed Mar. 16, 1891. Serial No. 385,222. (No model.) Patented in France Dec. 22, 1890, No. 210,349, and in England Feb. 4, 1891, No. 2,070.



Claim.—1. In a clasp or fastening, the combination, with the superior member of the clasp, having a round-headed button or stud, of the inferior member of said clasp, provided with a retaining-spring H of flat material, having an equilateral triangular aperture to receive the said button, whereby the latter impinges on the said spring at three equidistant points when it is forced through the spring.

2. In a clasp or fastening, the combination, with the inferior member of said clasp, provided with a retaining-spring of flat material, having an equilateral triangular aperture, of the superior member of the clasp, comprising the washer, the closed hollow bulbous flanged button A, and the hollow retaining-shank D, closed at the end where it is expanded into the hollow of the button and having a flange at its other end engaging said washer.

472,273. TROUSERS. GEORGE J. RUPPERSBURG, Philadelphia, Pa. Filed Aug. 20, 1891. Serial No. 403,183. (No model.)

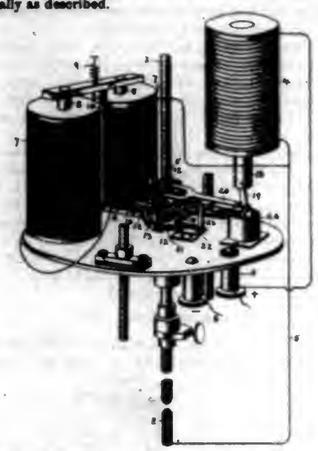


Claim.—The combination, in a pair of trousers having a divided waistband, of an elastic web, a divided inside belt having ends secured to the opposite edges of the upper portion of said web, a pocket supported by said web, and substantially triangular curtains secured to said belt and to said web below the line of the belt, the belt being secured to the inside of the waistband of the trousers, substantially as shown and described.

472,274. ELECTRIC-ARC LAMP. SAMUEL W. ROSEMORE, Brooklyn, N. Y. Filed July 27, 1891. Serial No. 400,806. (No model.)

Claim.—1. The combination, in an arc lamp, of a movable carbon or carbon-carrying rod, a shunt-coil, a clutch ring or plate controlled thereby, a series coil, and a separate feeding device controlled thereby, one of said devices acting as a check on the other, substantially as described.

2. The combination, in an arc lamp, of carbons, means for holding the same apart when the lamp is out of use, a shunt-coil and armature therefor, the latter being connected to said means in such manner as to cause the movable carbon to advance when the armature is attracted, a retractor for the armature acting against the shunt-coil, a series coil, an armature therefor, and means operated thereby for holding the carbon when the armature of the series coil is attracted, substantially as described.

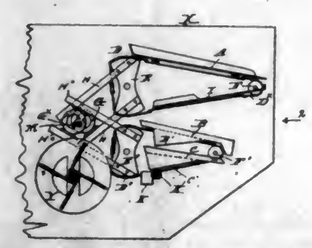


3. The combination, in an arc lamp, of carbons, a clutch for holding the same apart when the lamp is out of use, a shunt-coil and armature therefor, the latter being connected to said clutch in such manner as to cause the movable carbon to advance when the armature is attracted, a retractor for the armature, acting against the shunt-coil, a series coil, an armature therefor, and a clutch operated thereby for holding the carbon when the armature of the series coil is attracted, substantially as described.

4. The combination, in an arc lamp, of a movable carbon, feeding mechanism therefor, and a shunt-coil to control said mechanism, said coil being connected to a contact upon the carbon-rod or carbon, whereby the shunt-circuit is interrupted when the carbon or carbon-rod passes said contact, substantially as described.

5. The combination, in an arc lamp, of a shunt-coil whose armature has a suitable retractor and is connected to a feeding device and when the lamp is out of use is retracted to hold the carbons apart, a feeding device, a series coil whose armature is connected to said feeding device and which is normally retracted to allow the carbon to approach, whereby a current passing through the lamp attracts the shunt-coil armature to approach the carbons and close the circuit through the carbons, substantially as described.

472,275. SHAKING SIEVE FOR WINNOWERS. ERIK G. H. SALENIUS, Stockholm, Sweden. Filed Sept. 26, 1889. Renewed Nov. 10, 1891. Serial No. 411,445. (No model.) Patented in Norway Nov. 17, 1888, No. 1,222; in England Nov. 21, 1888, No. 16,962, and in Austria-Hungary Mar. 17, 1889, No. 43,364 and No. 9,431.



Claim.—1. The combination, with a pulley F, a rocker E, provided with branches or arms H, and the connected chains D and D^x on said rocker and pulley, said chains forming a support for the inclined screen, of the said screen, the eccentric G, and its shaft M, said eccentric being embraced by the arms H, and all operating substantially as set forth.

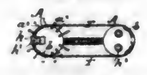
2. The combination, with the smaller bearing-pulley, the larger rocking pulley, the connected chains on said pulleys, and the eccentric-embracing arms projecting from said rocking pulley, of the screens mounted on said endless chain, the operating-eccentric embraced by said arms, and the shaft of said eccentric, all arranged and operating substantially as set forth.

472,276. SASH-HOLDER. FRED SHEALY, Jr., Bucyrus, Ohio. Filed Dec. 4, 1891. Serial No. 413,974. (No model.)



Claim.—The combination of a vertical wire secured to the window-frame at each end and flexible between said ends, the sash provided in its edge with a vertical groove to receive said wire, a plate bridging said groove, and pins securing said plate to the sash and staggered to form a slipping-grip device, through which the wire passes, the plate serving to hold said pins rigid and confine the wire between them, as set forth.

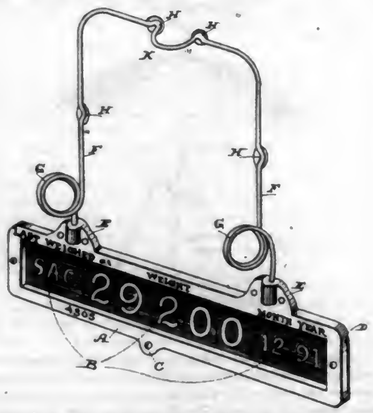
472,277. METHOD OF AND MEANS FOR BUILDING AND ANCHORING BRIDGE-PIERS. FREDERICK E. SICKELS, Kansas City, Mo. Filed Sept. 1, 1891. Serial No. 404,417. (No model.)



Claim.—1. An anchorage for bridge-piers, which consists of rods placed within wells extended both under and within the pier and concrete packed around the rods and bars in said wells, substantially as described.

2. In combination with bridge-piers consisting of cylinders A, having concrete filling, anchoring-rods placed within wells extended both within and under the piers, and concrete packed around said rods, with the tie T encircling the cylinders A and having engagement with the anchoring-rods, substantially as described.

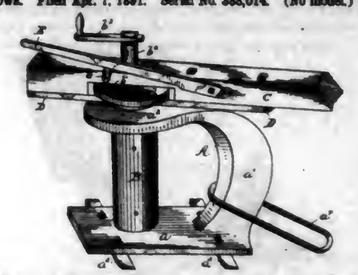
472,278. LABEL-HOLDER. HENRY J. SMALL, Sacramento, Cal. Filed Nov. 27, 1891. Serial No. 413,234. (No model.)



Claim.—1. A device for securing letters and figures upon cars, consisting of the rectangular open frame with guides or channels adapted to receive plates having letters and figures marked upon them and having depressed portions for receiving similar portions of the plates and locking the letters in place, and upwardly-projecting lugs formed upon the upper edge of the frame, having sockets, into which the ends of the spring-clamp F are inserted, said clamp being held against the side of the car by its own elasticity and confining the card in place, substantially as herein described.

2. A device for securing letters and figures upon cars, consisting of the rectangular open frame secured to the car, having grooves or channels within which letters or figures may be inserted and held in place, upwardly-projecting lugs upon the top of this frame with sockets formed in them, an elastic wire holding-clip having the ends inserted into the sockets, lugs H, formed by bending said wire inwardly, and corresponding depressions on the car-body, into which said lugs fit, and a curved segment K, serving as a handle by which the clip may be lifted from its place, substantially as herein described.

472,279. GRUBBING-MACHINE. JOHN STARRY, Fairview, assignor to A. W. Hay, J. R. Soper, and H. F. Keeler, all of Jones County, Iowa. Filed Apr. 7, 1891. Serial No. 388,014. (No model.)



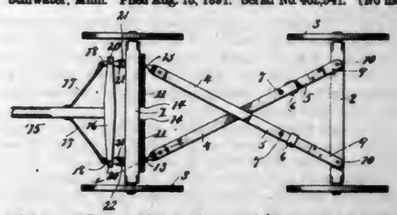
Claim.—1. In a stump-extractor, the combination, with the base, of the supporting-standard and horizontal arm, the winding-drum arranged to turn in the base and arm, said drum having a laterally-projecting apertured flange, a sweep having a recess in its under side, and a locking-lever with a depending lug attached thereto, substantially as and for the purpose described.

2. In a stump-extractor, the combination, with the winding-drum arranged as described, said drum having a laterally-projecting apertured flange near its upper end, of the sweep having a recess in its under side adapted to receive the said flange, an apertured plate secured to the under side of the sweep and beneath the apertured flange, and the locking-lever pivoted to one side of the sweep and provided with a depending lug adapted to engage the aperture of the flange and lock the sweep and drum rigid with each other, substantially as shown and described.

3. The combination, with the connecting-block slotted at one end and carrying a pulley at said slotted end and provided with a cleat intermediate its ends, of the rope passing through the slotted end around the cleat, substantially as and for the purpose described.

4. The combination, with the attaching-block G, formed of a single piece having a recess *g* intermediate its ends and a transverse angular groove g^2 adjacent to one of its ends, of the series of pins or prongs g', arranged in the recess, and a rope I, attached to the end of block opposite the groove, said rope being adapted to encircle the stump and be inserted in the angular groove, substantially as shown and described.

472,280. VEHICLE RUNNING-GEAR. THOMAS SUTHERLAND, Stillwater, Minn. Filed Aug. 13, 1891. Serial No. 402,541. (No model.)



Claim.—1. The combination, in a running-gear, of the supporting-guides 11, secured to the rear side of the front axle, one above the plane of the other, the reaches 4, arranged to cross each other and having in their rear ends the clips 9 and at their forward ends the bearing-heads 13, adapted to reciprocate within the guides, substantially as set forth.

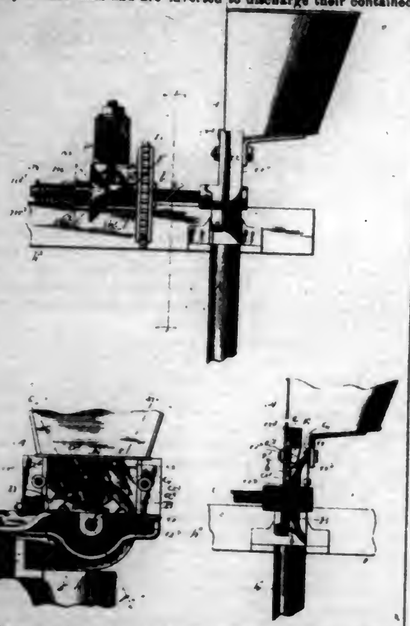
2. The combination, with the front and rear axles, of the reaches, having the rear end clips 9 and formed with the cylindrical heads 13 on their forward ends, the guides 11, secured to the rear face of the front axle and adapted to receive the cylindrical heads 13, substantially as set forth.

472,281. CORN-PLANTER. JOHN C. TOWNCLIFF, Galesburg, Ill. Filed Jan. 28, 1892. Serial No. 419,501. (No model.)

Claim.—1. In a corn-planter, in combination, substantially as hereinbefore described, a seed-box and a seed cup-disk having a circular series of seed-cups formed of grooves in its periphery and side, as *b*, revoluble in a vertical plane in the seed-box in contact with one of the flat sides thereof, which side serves as one side of the complete seed-cups and to retain the seed therein until they pass a cut-off successionally and are inverted to discharge the seed.

2. In a corn-planter, in combination, substantially as hereinbefore described, a seed-box and a seed-cup disk substantially a truncated cone in form or having a periphery inclined to its axis of rotation, and

a circular series of seed-cups formed of grooves, such as *b*, in its periphery and side, journaled to revolve in a vertical plane in contact with one side of the seed-box, substantially as described, and which side serves as one side of the completed seed-cup, whereby said seed-cups will pass successionally beneath a cut-off which is in contact with the periphery of said disk and are inverted to discharge their contained seed.



3. In a corn-planter, in combination, substantially as hereinbefore described, a seed-box with a transparent side, a seed-measuring disk located within the seed-box and having seed-cups in its periphery and side, journaled to revolve in a vertical plane in contact with said transparent side of the seed-box, which side serves as a side for the seed-cups and to render them, together with the cut-off, visible to the operator.

4. In a corn-planter, in combination, substantially as hereinbefore described, a seed-box, a seed-cup disk having seed-cups formed of grooves in said disk, substantially as described, journaled to revolve in a vertical plane in contact with one side of the seed-box, and a yielding spring feed-finger located substantially as described with reference to the seed-cup disk.

5. In a corn-planter, in combination, substantially as hereinbefore described, a seed-box, a seed-cup disk having seed-cups formed of grooves in said disk, substantially as described, journaled to revolve in a vertical plane in contact with one side of the seed-box, and a yielding spring feed-finger located with reference to the seed-cup disk and substantially as described and having a pendent flange e^3, for the purpose described.

6. In a corn-planter, in combination, substantially as hereinbefore described, a seed-box, a seed-cup disk having seed-cups formed of grooves in said disk, substantially as described, journaled to revolve in a vertical plane in contact with a transparent side of the seed-box, and a spring feed-finger located with reference to the seed-cup disk substantially as described.

7. In a corn-planter, in combination, substantially as hereinbefore described, a seed-box, a seed-cup disk having seed-cups formed of grooves in said disk, substantially as described, journaled to revolve in a vertical plane in a laterally-contracted lower part of the seed-box and in contact with one side thereof, and an overhanging flange G, for the purpose described.

8. In a corn-planter, in combination, substantially as described, with a seed-cup disk journaled to rotate in a vertical plane with a shaft to which it is fixed and which carries a sprocket-wheel revolubly mounted thereon and provided with one part of a coupling and which is revolved by gear connection with one of the planter-wheels, and a truncated cone-shaped cam-wheel, also provided with one part of a coupling mounted on and to rotate with said shaft and to slide lengthwise thereof and adapted to be operated by one of the frame-bars of the rear frame of the planter, acting as a shipping-lever on its conical periphery to slide it out of coupling with said sprocket-wheel and by a spring to slide it into coupling with said sprocket-wheel, for the purposes specified.

9. In combination with the front and rear frames of a planter hinged to flex in a vertical plane, a shaft having seed-cup disks fixed thereto, a sprocket-wheel revoluble thereon, and a sliding truncated cone-shaped cam mounted thereon, said revoluble sprocket-wheel geared with one of the planter-wheels to revolve therewith, the rear frame-bars hinged at their forward ends to the forward frame in front of said shaft, whereby one of said rear frame-bars acts as a shipping-lever when the forward frame is raised to slide said cam out of gear with the loose pulley L, and a spring for sliding the cam-wheel in an opposite direction.

10. In combination in a corn-planter, as hereinbefore described, a shaft C, with seed-cup disks fixed thereto, a sprocket-wheel L, revoluble on the shaft C, geared to rotate with the wheel J and provided with a clutch-box, a sliding truncated cone-shaped cam-wheel M, also provided with a clutch-box, a rear frame having side bars *i* hinged to the forward frame in front of the shaft C, whereby one of them is adapted to act as a shifting-lever to slide the cam-wheel clutch-box out of engagement with the clutch-box of the sprocket-wheel L when the rear frame is tilted to raise the forward frame.

11. In combination in a corn-planter, substantially as hereinbefore described, a shaft C, with seed-cup disks fixed thereto, a loose sprocket-wheel, and a sliding truncated cone-shaped cam mounted thereon, the sprocket-wheel geared to rotate with the wheel J, a rear frame having side bars hinged at their front ends to the forward frame in front of the shaft C, whereby one of said side bars acts as a shipping-lever to slide the cam-wheel out of coupling with the loose sprocket-wheel when the rear frame is tilted to raise the forward frame.

12. In combination in a corn-planter, as hereinbefore described, a shaft C, with seed-cup disks fixed thereto, a sprocket-wheel L, revoluble on the shaft C, geared to rotate with a wheel J and provided with a clutch-box, a sliding cone-shaped cam-wheel M, provided with a clutch-box, a rear frame having side bars *i* hinged to the forward frame in front of the shaft C, whereby one of them is adapted to act as a shifting-lever when the front frame is raised to slide the cam-wheel out of coupling with the loose sprocket-wheel, and a spring N, adapted to return the cam-wheel into coupling with said sprocket-wheel when the rear frame is tilted to lower the forward frame for planting.

472,282. UMBRELLA-HOLDER FOR BICYCLES. FRANCIS J. WERNETH, Baltimore, Md. Filed June 11, 1891. Serial No. 396,860. (No model.)

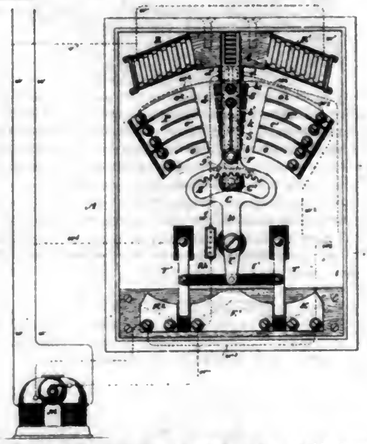


Claim.—An umbrella-holder for bicycles, comprising a jointed rod the end of one of the sections of which is provided with an open-side collar and a set-screw and the other end is provided with a bifurcated head and a set-screw, and the other section is provided at one end with a radially-corrugated segmental head pivotally secured within the bifurcated head of the first-mentioned section, and the opposite end of the second-mentioned section is provided with a hinged clamp, which is adapted to be rotated thereon with the end of the section as an axis and to be firmly secured thereto in its adjusted positions, substantially as described.

472,283. SWITCH-BOX FOR ELECTRIC MOTORS. PARVIN WRIGHT, Denver, Colo., assignor of one-half to Joseph W. Kinsey, same place. Filed Jan. 31, 1891. Serial No. 379,829. (No model.)

Claim.—1. An electric motor having its field-magnets located directly in circuit with a source of electrical energy and its armature in a derived circuit thereto, in combination with a pole-changing switch for reversing the direction of the current through the armature, and a second normally-open independent circuit operatively connected to the armature with circuit connections, whereby the first-named circuit may be broken and the second closed, and vice versa, substantially as described.

2. An electric motor provided with a polar switch adapted to reverse the direction of the energizing-circuit through its armature, in combination with a rheostat for varying the current-supply, a normally-open independent circuit connected also to the armature, and circuit connections whereby the current-flow to the armature may be either interrupted or reversed at will and the armature connected to or disconnected from the second or independent circuit, substantially as described.



3. An electric motor having its armature connected in derived circuit with its field-magnets, a second independent normally-open circuit for the armature, a pole-changing switch having its pole-changing parts operatively connected with the armature and a source of electrical energy, and means for varying the current-supply to the armature, with movable circuit connections for the direct and independent circuits carried by the movable part of the switch, the second or independent circuit being closed when the armature is disconnected from the current-mains, and vice versa, substantially as described.

4. An electric motor having its field-magnets and armature located in derived circuits, the field-magnet circuit being permanently closed through a source of electrical energy and the armature provided with a pole-switch and an independent normally-open circuit, in combination with an adjustable rheostat and additional circuit connections carried by the switch, whereby the current may be passed through the armature in alternate directions or interrupted at pleasure and the independent circuit connected thereto, substantially as described.

5. An electric motor having its field-magnets and armature inclined in independent or derived circuits, a polar switch connected through the armature-circuit with the current-mains, and an independent armature-circuit including an adjustable resistance and independent circuit making and breaking contacts carried by the switch, the circuit connections being always closed through either one or the other of the armature-circuits, substantially as described.

6. A switch for electric motors or analogous high-tension-current devices, consisting of sets of fixed contact-plates arranged side by side and corresponding sets of movable contact-plates arranged side by side and bridging the first-named plates, in combination with a spring-actuated arm carrying said movable plates, substantially as described.

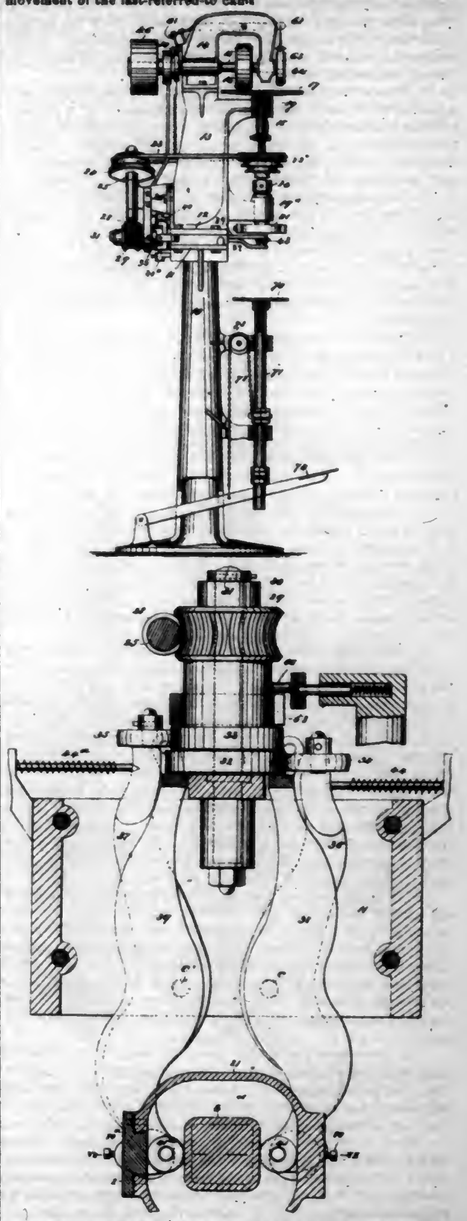
7. An electric motor having its field-magnets and armature in independent or derived circuits, in combination with a switch and a second or independent armature-circuit including a variable resistance, said switch having connections for changing the current through the two armature-circuits at will, substantially as described.

472,284. CAN-HEADING MACHINE. BENJAMIN ADRIANCE, Brooklyn, N. Y., assignor to the Merserean Manufacturing Company, same place. Filed July 11, 1890. Serial No. 358,397. (No model.)

Claim.—1. The combination, with a chuck and a means for revolving the same, of a forming-roller, pivotally-mounted roller-supports, and revoluble cams which bear upon the roller-supports.

2. The combination, with a chuck and a means for revolving the same, of a forming-roller and a locking-roller, levers which support the rollers, a means for guiding the rollers when in their working positions, and revoluble cams arranged in connection with the levers and timed to move the levers alternately, whereby the rollers are alternately thrown into and out of their working positions.

3. The combination, with a chuck and a means for revolving the same, of a pattern-cam carried thereby, a forming-roller, a locking-roller, roller-supports which are controlled by the pattern-cam, cams for automatically moving said rollers into operative position, and a mechanism for automatically stopping the parts at each complete movement of the last-referred-to cams



4. The combination, with a pattern-cam-carrying chuck and a means for revolving the same, of pivotally-mounted arms or levers, connections between such levers and the pattern-cam, a forming-roller and a locking-roller, roller-supports carried by the levers, and cams which act upon the roller-supports to move them into operative position.

5. The combination, with a pattern-cam-carrying chuck and a means for revolving the same, of pivotally-mounted arms or levers, connections between such levers and the pattern-cam, a forming-roller and a locking-roller, supports for said rollers, that are pivotally con-

nected to the before-named levers, and cams which act upon the roller-supports.

6. The combination, with a pattern-cam-carrying chuck and a means for revolving the same, of revoluble cams 32 and 33, a forming-roller and a locking-roller, swinging supports on which the forming and locking rollers are mounted, and connecting mechanisms whereby the pattern-cam and the cams 32 and 33 impart movements to the forming and locking rollers.

7. The combination, with a chuck and chuck-head formed with a guiding-groove and a means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, and other levers that are guided by the chuck-head groove and to which the roller-carrying levers are pivoted.

8. The combination, with a chuck and chuck-head formed with a guiding-groove and a means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers that are guided by the chuck-head groove and to which the roller-carrying levers are pivoted, and a means for stopping the machine at each revolution of the roller-controlling cams.

9. The combination, with a chuck and a chuck-head formed with a guiding-groove and a means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers to which the roller-carrying levers are pivoted, and a means for automatically stopping the machine at each revolution of the roller-controlling cams.

10. The combination, with a chuck and a chuck-head formed with a guiding-groove and a means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers to which the roller-carrying levers are pivoted, a driving-shaft, a driving-pulley mounted thereon, a clutch arranged in connection with the shaft and pulley, a clutch-operating attachment, a friction-disk carried by the driving-shaft, a strap arranged in connection therewith, a lever to which the strap is connected, a spring connected to the lever, and a connection between the lever and the clutch-operating attachment.

11. The combination, with a chuck and a chuck-head formed with a guiding-groove and a means for driving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers to which the roller-carrying levers are pivoted, a driving-shaft, a driving-pulley mounted thereon, a clutch arranged in connection with the shaft and pulley, a latch, a friction-disk, a strap arranged in connection with the friction-disk, a lever to which one end of the strap is connected, a foot carried by the lever and arranged to rest on the latch, a spring connected to the strap-lever, a rod connected to the latch, a foot carried by the rod, a stop on which said foot rests, a projection arranged to revolve with the cams and to bear upon the rod-foot, and a spring-pressed pin controlled by the starting-lever and arranged to engage the rod-foot.

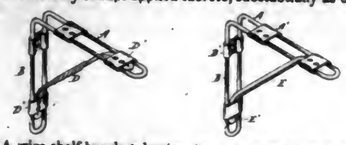
12. In a can-heading machine, the combination, with a chuck and a chuck-head formed with a guiding-groove and a means for driving the parts, of a pair of revoluble cams that are driven from the chuck-shaft, levers which carry rollers that bear upon the cams, springs arranged in connection with the levers, forming and locking rollers carried by the levers, guiding-levers to which the first-named levers are pivotally connected, and anti-friction rollers carried by the guiding-levers and arranged to ride in the guiding-groove of the chuck-head.

13. The combination, with a chuck and a means for revolving the same, of a forming-roller and a locking-roller arranged in conjunction with the chuck, independent levers on which the rollers are carried, said levers being mounted to move in horizontal planes, and cams arranged in connection with the levers

14. In a can-heading machine, the combination, with a chuck-head formed with a guiding-groove, a chuck carried by the central section of the chuck-head, and a means for revolving the parts, of guiding-levers formed with bifurcated rear ends, pivot-pins carried by the arms of bifurcated lever ends, bearings in which the pins rest, anti-friction rollers carried by the forward ends of the levers and arranged to enter the guiding-groove of the chuck-head, feeding-cams and a means for revolving the same, levers that are pivotally connected to the guiding-levers, anti-friction rollers carried by the last-referred-to levers, such rollers being arranged to bear upon the cams, springs arranged in connection with the last-referred-to levers, a forming-roller carried by one of the levers, and a locking-roller carried by the other lever.

472,285. WIRE SHELF-BRACKET. HENRY L. BRADLEY, New Haven, Conn. Filed Sept. 15, 1890. Serial No. 364,980. (No model.)

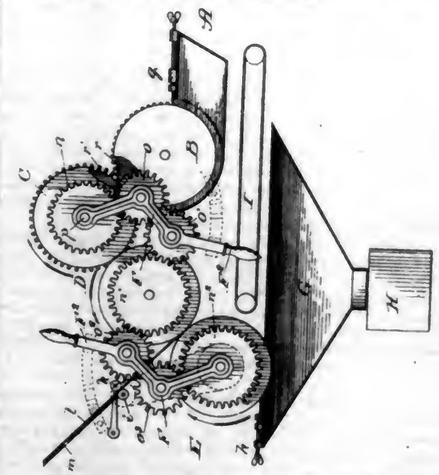
Claim.—1. A wire shelf-bracket having its two arms or members composed of two or more strands of wire connected together by clamps and arranged to secure a wide bearing in the planes in which they are utilized and a brace extending diagonally between the arms and secured at its ends by clamps applied thereto, substantially as described.



2. A wire shelf-bracket having its two arms or members composed of two or more strands of wire connected together by perforated sheet-metal clamps and arranged to secure a wide bearing in the planes in which they are utilized and a brace extending diagonally between the said members of the bracket and secured thereto by perforated sheet-metal clamps, substantially as described.

3. A wire shelf-bracket having its two arms or members composed of two or more strands of wire connected together by perforated sheet-metal clamps and arranged to secure a wide bearing in the planes in which they are utilized and a twisted diagonal brace extending between the arms, substantially as described.

472,286. APPARATUS FOR APPLYING VARNISH. JOHN J. CLAUSS, Chicago, Ill., assignor to Franklin Rudolph, same place. Filed Sept. 3, 1891. Serial No. 405,106. (No model.)



Claim.—1. In an apparatus for coating metal and other surfaces with varnish and the like, a plurality of rolls rotating in feeding contact with each other, so that each supplies the coating material to its neighbor roll, and speed-varying gearing on the said rollers, gearing them together to rotate at successively-diminishing surface speed, substantially as described.

2. In an apparatus for coating metal and other surfaces with varnish and the like, the combination of the vat for containing the coating material, a roll B, located in the coating-vat and provided at one end with a gear r, and a roll C, rotating in contact with the roll B and provided at one end with a gear r', meshing with and having more teeth than the gear r and provided at its opposite end with a gear n, a roll D, rotating in contact with the roll C and provided at one end with a gear n', having more teeth than the gear n, from which it is driven, and a roll E, having a gear n^2, similar to the gear n', from which it is driven, substantially as and for the purpose set forth.

3. An apparatus for coating metal and other surfaces with varnish and the like, comprising, in combination, a vat for containing the coating material, a roll B, located in the coating-bath and provided at one end with a gear r, a roll C, rotating in contact with the roll B and provided at one end with a gear r', meshing with and having fewer teeth than the gear r and provided at its opposite end with a gear n, a roll D, rotating in contact with the roll C and provided at one end with a gear n', having more teeth than the gear n, a roll E, having a gear n^2, similar to the gear n', intermeshing gears o and o' on an adjustable frame F and connecting the gears n' and n', and an adjustable frame F', carrying intermeshing gears o^3 and o^3, connecting the gears n' and n^2, the whole being constructed and arranged to operate substantially as described.

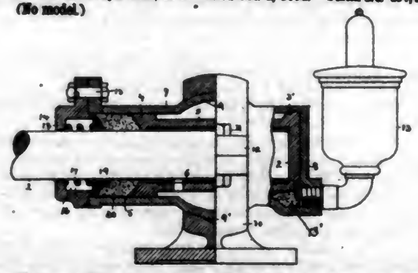
472,287. BUFFING-WHEEL. WILLIAM W. CROCKER, Lynn, Mass., assignor, by mesne assignments, to the Electric Boot and Shoe Finishing Company, of Maine. Filed Sept. 26, 1890. Serial No. 366,211. (No model.)



Claim.—1. A medium for polishing parts of boots or shoes, consisting of a wheel c, capable of rapid rotation, provided upon its periphery with a hollow inflatable air-tight cushion a, covered with a non-abrasive material, as set forth.

2. A medium for polishing parts of boots or shoes, consisting of a wheel capable of rapid rotation, provided upon its periphery with a hollow inflatable air-tight cushion, and means, substantially as described, for inflating it to varying degrees of firmness or solidity and covered with a non-abrasive material, as set forth.

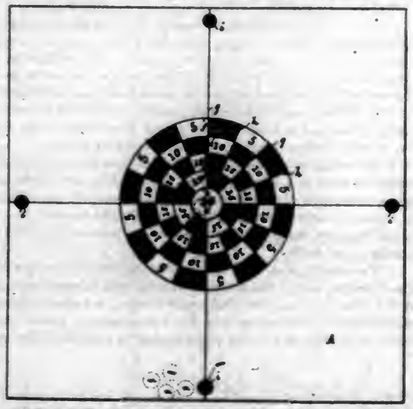
472,288. DUST-PROOF BEARING FOR SHAFTS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 1, 1891. Serial No. 407,458. (No model.)



Claim.—1. The combination, with a shaft, of a terminal bearing closed over the end of the shaft and having a journal or bearing box with a closed end over the end of the bearing and a dust-tight joint around the shaft at the opposite end of the bearing, substantially as described.

2. The combination, with a shaft, of a bearing closed over the end of the shaft, a bearing-box surrounding the same, packing material at the open ends of said bearing and box, a cap inclosing said material, and a spring between the cap and material, substantially as described.

472,289. GAME APPARATUS. JOSEPH A. ESO, Newark, N. J. Filed Nov. 17, 1891. Serial No. 412,121. (No model.)



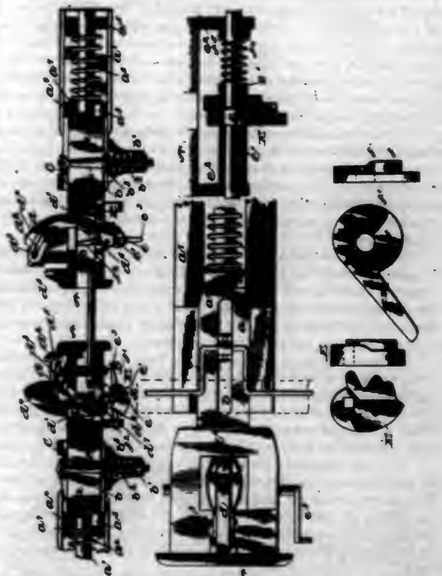
Claim.—1. In a game-board, the combination, with the playing buttons or men, of a central field, a series of concentric circles surrounding said central field and adapted to form annular rings, a series of radial lines dividing said rings in equal segmental portions, numbers arranged alternately on said segmental portions, decreasing in value from the center, and a number arranged on the central field, substantially as described and set forth.

2. In a game-board, the combination, with the playing buttons or men, of a central field, a series of concentric circles surrounding said central field and adapted to form annular rings, a series of radial lines dividing said rings in equal segmental portions, numbers arranged alternately on said segmental portions, decreasing in value from the center, a number arranged on the central field, and points arranged opposite each other and outside of said annular rings, said points being adapted to form the homes for the men or checkers, substantially as described and set forth.

3. In a game-board, the combination, with a central field, of a series of annular rings surrounding said central field, a series of lines extending radially from the first and second inner ring, respectively, to the outermost ring, said lines dividing said rings into segmental fields, numbers arranged alternately on said fields, and men or checkers to be played and counted, substantially as described.

4. In a game-board, the combination, with a central field, of a series of annular rings surrounding said central field, a series of lines extending radially from the first and second inner rings, respectively, said lines dividing said rings into equal segmental fields, numbers arranged alternately on said fields, men or checkers, and points arranged opposite each other and outside of said annular rings, said points adapted to form the homes for the said men or checkers, substantially as described and set forth.

472,290. CAR-COUPLING. HIRAM A. FRANTZ, Tamaqua, assignor of one-half to Amandus Frantz, Lehigh County, Pa. Filed Nov. 10, 1891. Serial No. 412,417. (No model.)



Claim.—1. The combination, with the car-frame having a depending bracket, of a draw-head having a slot therein, a rod projected through said bracket and slot, a coil-spring bearing on said bracket and against said draw-head, and the ball loosely connected to said rod, substantially as set forth.

2. The combination, with the car-frame having a depending bracket and two cross-pieces, one of which has an elongated slot and the other a circular opening, of the draw-head having a circular portion projected through said elongated slot and circular opening, a coil-spring encircling said reduced portion and bearing against said cross-pieces, a rod projecting through said bracket and a slot in the draw-head, a coil-spring supporting said draw-head, and the ball pivotally connected to said rod and designed to bear down on said draw-head, substantially as set forth.

3. The herein-described improved car-coupling, comprising the draw-head, the lever pivotally connected thereto, the coupling-pin loosely secured to said lever, the rotary shaft having a cam engaging the inner end of said lever, and the spring-pressed arm engaging said cam and designed to be engaged by the coupling-link, substantially as set forth.

4. The herein-described improved car-coupling, comprising the draw-head, the lever pivoted therein and having an inner toothed end, the coupling-pin loosely connected to said lever, the rotary shaft, the cam secured thereon having teeth corresponding to those of said lever, the arm having its hub mounted on said shaft and engaging said cam, and the spring connected to said hub, said arm being designed to be engaged by the coupling-link, substantially as set forth.

5. The herein-described improved car-coupling, comprising the draw-head having slots in its upper and lower portions, and guide-plate, the lever pivoted in said draw-head and projected between said guide-plates and having an inner toothed end, the rotary shaft, the cam having teeth engaging those of said lever and having a shoulder in one of its side faces, the operating-arm having its hub on said shaft provided with a tooth engaging said shoulder, the collar on said shaft, and the coil-spring connected to said collar and to said hub, substantially as set forth.

472,291. TOY BOAT. GEORGE A. GOODSON, Minneapolis, Minn. Filed Apr. 6, 1891. Serial No. 388,063. (No model.)



Claim.—1. The combination, with a movable body, of a pair of detents carried thereby, one of which is mounted to slide from and toward the other, a spring connecting the sliding detent with the body, and a connection from the sliding detent extending to the exterior of the body, the relative arrangement of the parts being such that the detents may be made to engage in succession with the floor or other support traversed thereby to shift the base of resistance of the spring from one detent to the other, whereby the spring may be made to impel the body, substantially as described.

2. The combination, with a movable body, of a pair of pivoted detents carried thereby, one of which is mounted to slide from and toward the other, a spring connecting the sliding detent with said body, a connection from the sliding detent to the exterior of the body for moving said detent and setting the spring, and stops for limiting the movement of the detents in one direction, substantially as and for the purpose set forth.

3. The combination, with a movable body, of a sliding pivoted detent and a non-sliding pivoted detent, both carried by the said body, a spring connecting the sliding detent with the body, and a flexible connection passing from the sliding detent over a suitable guide and thence to the exterior of the body for operating the detents and spring to propel the body, substantially as described.

4. The combination, with a movable body, of a sliding pivoted detent and a non-sliding pivoted detent, both carried by the said body, a spring connecting the sliding detent with the body, a flexible connection passing from the sliding detent over a guide on the body and thence through an eye on the non-sliding detent to the exterior of the body, whereby the body may be both propelled and retracted at will.

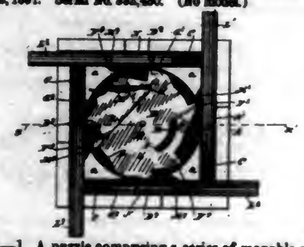
5. A toy comprising the boat-like body, the sliding seat, and sliding detent moving parallel with each other in reverse order, the flexible connection from the seat to the detent over a suitable guide, the non-sliding pivoted detent on the boat, the flexible connection from the seat to the exterior of the boat, and the spring connecting the sliding detent with the boat-body, substantially as and for the purpose set forth.

6. The combination, with the boat-like body, of the sliding pivoted detent, the non-sliding pivoted detent, the spring connecting the sliding detent with the boat-body, and the flexible connection passing first forward from the sliding detent over a guide, then back through an eye on the non-sliding detent, and thence through a vertical slot at the rear of the boat, whereby the line of strain may be shifted to different levels to propel or retract the boat at will.

7. The combination, with the boat-body A, provided with the slot *a*, the sliding seat E, the slide G', carrying the pivoted detent G, the pivoted non-sliding detent H, provided with the eye *h*, the guide P, the cam Q, the spring K, and the flexible connections L L', arranged and operating substantially as described.

8. The combination, with a movable body provided with a non-sliding detent, of a detent-carrying slide mounted on the body, a pivoted detent on the slide engageable with the floor, a spring connecting said slide to the body, adapted to be set by the movement of the slide to impel the body against the sliding detent as a base of resistance, a cam on the body adapted to trip the said detent, and a flexible connection extending from the sliding detent to the exterior of the body for moving the sliding detent and setting the spring against the resistance of the non-sliding detent.

472,292. PUZZLE. GEORGE A. GOODSON, Minneapolis, Minn. Filed May 12, 1891. Serial No. 392,490. (No model.)



Claim.—1. A puzzle comprising a series of movable plungers and a movable body having working and blocking surfaces engageable with said plungers, the relative arrangement of the parts being such that when the plungers are moved in the proper order the movable body will be moved one step at a time to permit all the plungers to come to a final desired position, but if in any other order the body will be moved more than one step and cause the blocking-surfaces to intercept one or more of the plungers, substantially as described.

2. A puzzle comprising a supporting-box, a series of movable plungers normally projecting from the box and of a length to lie wholly within the box when in their innermost positions, and a blocking device within the box adapted to intercept one or more of the plungers when manipulated in any other than a predetermined order to prevent the same from being pushed to their innermost position.

3. The combination, with the supporting-box, of plungers normally projecting from the box and movable wholly within the same only when manipulated in a predetermined order, and an open frame for receiving the box only when the plungers are wholly within the same.

4. The combination, with a supporting-box, of plungers under spring-tension and normally projecting therefrom and movable to lie wholly within the same only when manipulated in a definite order, and an open frame having holes registrable with said plungers, whereby the box can neither be inserted in nor taken from the frame until the plungers have been properly manipulated.

5. The combination, with the supporting-box, of the pivotally-mounted disk and the movable plungers under spring-tension therein, the said disk being provided with working and blocking surfaces, and the said plungers with projections for engaging therewith, substantially as and for the purpose set forth.

6. The combination, with the box, of the pivotally-mounted disk and the sliding plungers therein, the elastic cords attached to the movable parts and to the box for placing the movable parts under spring tension, the said plungers being provided with projections and the said disk having working teeth, blocking-teeth, and deceiving-teeth engageable by said projections, substantially as and for the purpose set forth.

472,293. GOVERNOR. FREDERICK HART, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Filed May 29, 1891. Serial No. 394,545. (No model.)

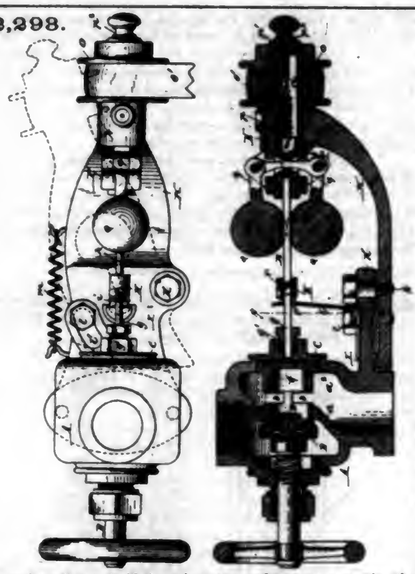
Claim.—1. The combination, with the valve-casing and the governor-valve arranged therein and provided with a stem, of a bracket pivoted to the valve-casing, a governor-spindle and pulley mounted on said bracket and held normally in line with the valve-stem by the governor-belt, and means whereby the bracket and spindle are moved out of the normal position when the pressure of the belt is removed, whereby the spindle is automatically placed at an angle to the valve-stem, thereby closing the valve, substantially as set forth.

2. The combination, with the valve-casing and the governor-valve arranged therein, of a bracket pivoted on one side to the valve-casing, a spring connecting the other side of the bracket with the valve-casing, a governor-spindle and pulley mounted on the bracket, and bolt and slot whereby the pivotal movement of the bracket is limited, substantially as set forth.

3. The combination, with the valve-casing, the governor-valve arranged therein, and a valve-stem provided with a step-sleeve, of a bracket pivoted on one side of the valve-casing, a spring connecting the other side of the bracket with the valve-casing, a governor-spindle and pulley mounted on the bracket, a spring attached to the valve-

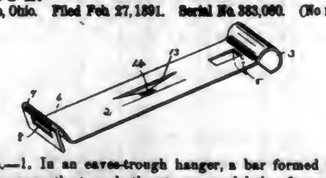


472,298.



casing and tending to hold the valve open, and a stem connecting the governor-spindle with the step-sleeve, substantially as set forth.

472,294. EAVES-TROUGH HANGER. GEORGE W. HEARTLEY, Toledo, Ohio. Filed Feb. 27, 1891. Serial No. 383,060. (No model.)

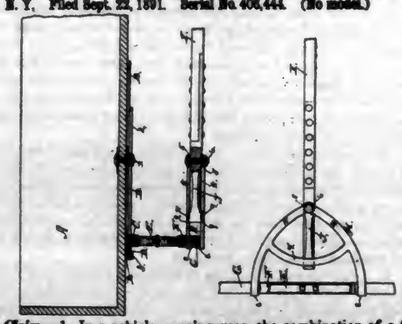


Claim.—1. In an eaves-trough hanger, a bar formed with end portions to secure the trough thereto, one end being formed with a return-bend, one of the portions of the bend having an opening, the opposite portion having a truss.

2. In an eaves-trough hanger, a bar formed with a central opening, a portion of integral metal struck up from the same and inclined from the body of the bar, and a hanger having grooves to receive the metal of the bar and engage therewith.

3. In an eaves-trough hanger, a hanger formed with an end portion having grooves formed in the edge thereof, in combination with a bar having fastening devices to engage the trough, and an opening to permit the hanger to pass therein to allow the metal of the bar to enter the grooves, and a truss-bar to contact with the end of the bar.

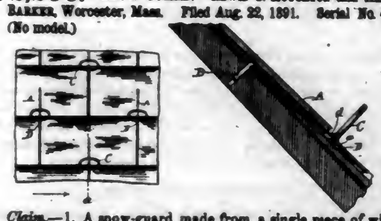
472,295. WAGON RUNNING-GEAR. JOHN M. HOLLER, Albany, N. Y. Filed Sept. 22, 1891. Serial No. 406,444. (No model.)



Claim.—1. In a vehicle running-gear, the combination of a forward axle having a rearwardly-extending bracket secured thereto, said bracket having a circular pivot-hole formed near its rearmost extremity and also having an arc that is formed concentrically to said pivot-hole, a reach having no direct connection with said forward axle, but having a head on its foremost end, which is fitted to engage with said arc, as herein described, said head having a pivot-hole which corresponds to the pivot-hole of said bracket, and an immovable pivot fitted to engage in the pivot-holes of said bracket and reach-head, said arc, pivot-holes, and pivot being all arranged rearwardly in respect to the aftermost side of said forward axle, as and for the purpose herein specified.

2. The combination of a wagon-body provided with a metallic circle secured to its under side and having a pivot-hole centralized in said circle, a segment corresponding to said circle and secured to the spring-bar of the forward axle, said segment having a pivot-hole corresponding to the pivot-hole of the wagon-body, a forward axle provided with a rearwardly-extended bracket having a pivot-hole near its rearmost extremity arranged to correspond to the pivot-hole in the wagon-body and having an arc which is concentric to said pivot-holes, a reach provided with a metallic head which is fitted to engage with said arc, said head also having a pivot-hole that corresponds to the pivot-hole of said bracket, and a pivot fitted to engage in said pivot-holes, as and for the purpose herein specified.

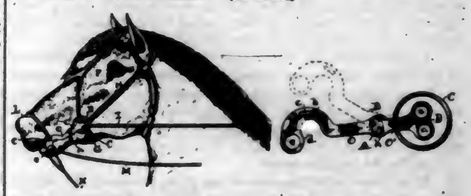
472,296. SNOW-GUARD. LEWIS T. HOUGHTON and ALBERT A. BARKER, Worcester, Mass. Filed Aug. 22, 1891. Serial No. 403,490. (No model.)



Claim.—1. A snow-guard made from a single piece of wire and comprising the following elements, viz: the shank A, the drive end B, projecting substantially at right angles from one end of said shank, the snow-stop C, projecting in an opposite direction to said drive end from the other end of the shank, and the brace or support D, formed by extending the wire from the base or terminus of said snow-stop and making the same of the proper shape to bear at one or more points against the roof when the guard is applied thereto, substantially as and for the purpose set forth.

2. A snow-guard consisting of a single piece of wire and comprising a shank A, adapted at one end to be attached to the roof of a building, and a snow-stop C, consisting of a coil integral with said shank and projecting at right angles, or nearly so, from its other end, said snow-stop being provided with a brace integral therewith and adapted to serve as a support to prevent said snow-stop from being beat from its proper position, as set forth.

472,297. CURB-BIT. LEEO J. JUNKER, Baltimore, Md. Filed Sept. 14, 1891. Serial No. 405,637. (No model.)

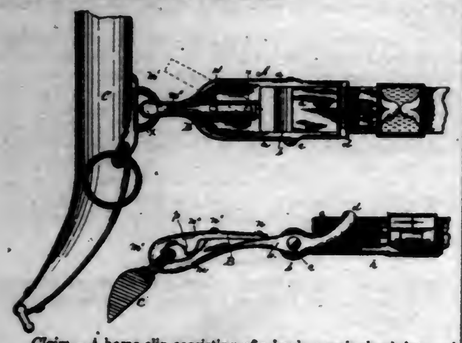


Claim.—1. The combination, in a bridle, of a mouth-bar, cheek-pieces mounted at their middles thereon, rings mounted at one side on the mouth-bar and free to turn thereon, a curb-strap attached at its ends to the upper ends of the cheek-pieces and arranged to extend under the horse's lower jaw and passing between the latter and the bit-rings, a curb-strap attached at its ends to the lower ends of the cheek-pieces and arranged to extend over the horse's nose, an over-draw attached to the upper ends of the cheek-pieces, and head-stall and driving-lines connected with the bit-rings.

2. The combination, in a bridle, of a mouth-bar, cheek-pieces mounted at their middles on the ends of the same, and each comprising two parts jointed together by the mouth-bar passing through them, the lower section free to move outward, turning on the mouth-bar, but limited in its backward movement by a shoulder on the upper section, a curb-strap attached at its ends to the upper ends of said cheek-pieces and arranged to extend under the horse's lower jaw, a curb-strap attached at its ends to the lower ends of the cheek-pieces and

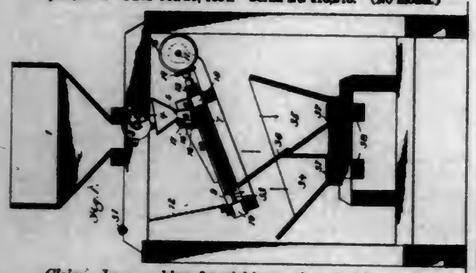
arranged to extend over the horse's nose, an overdraw attached to the upper ends of the check-pieces, and driving-lines connected with the bit.

472,298. CLIP. RICHARD W. JOHNS, Syracuse, N. Y. Filed Aug. 3, 1891. Serial No. 401,460. (No model.)



Claim.—A hame-clip consisting of a hook, a main shank integral therewith and broadened rearwardly and concaved, as shown, and a loose shank mounted upon the main shank and adapted to engage with the end of said hook and close it, and means to detachably secure it in such engagement, in combination with arms extending rearwardly from the main shank and connected by a transverse tack-loop bar, and a roller mounted transversely between said arms.

472,299. BEAN PICKER AND SORTER. EDGAR KNAPP, Middleport, N. Y. Filed Oct. 29, 1891. Serial No. 410,215. (No model.)



Claim.—In a machine for picking and sorting beans, the combination of an inclined platform comprising rubber rolls arranged to operate in pairs, a supply-hopper having rotating feed devices, and an intermediate distributing-hopper having an automatic swinging feed-regulating gate or stop device arranged at the side thereof and mediately of each pair of picking-rolls, substantially as described.

2. In a machine for picking and sorting beans, the combination of an inclined platform comprising rubber rolls arranged to operate in pairs, a supply-hopper having rotating feed devices, and an intermediate distributing-hopper having bottom side discharges, and a gravity-acting feed regulating or stop device arranged to guard such openings mediately of each pair of picking-rolls, substantially as described, for the purpose stated.

3. A device for picking and sorting beans, consisting of a supply-hopper having a series of duplex feed-wheels, a distributing-hopper having bottom troughs coincident with the feed-channels of the duplex wheels and opening at the side of said hopper, an automatic swinging gate or stop arranged to guard each hopper-opening, and an inclined platform comprising rubber rolls, arranged in pairs mediately with each swinging gate or stop for operation in the way described.

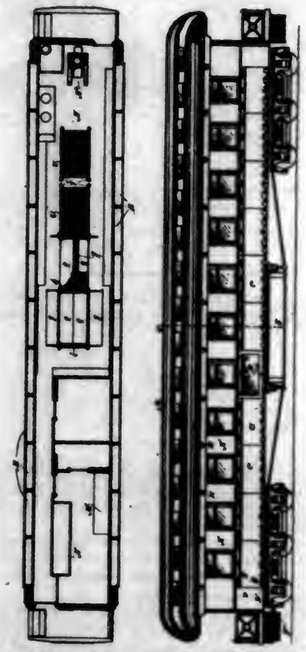
4. A device for picking and sorting beans, consisting of an inclined platform comprising rubber rolls arranged in pairs in a frame, and a distributing-hopper carried by said frame, having transverse bottom troughs open at the side mediately with each pair of rolls, and a gravity-acting gate or stop for guarding each hopper-opening, arranged in close proximity to the upper ends of said rolls for operation in the way described.

5. A platform or surface for picking beans, comprising a frame, rubber rolls arranged therein in pairs, having unbroken surfaces transversely in horizontal planes on a downward longitudinal inclination and revolved in oppositely-inward directions, fixed and adjustable boxes for said rolls, and a wedge device between each pair of adjustable boxes, in combination with suitable distributing-conduits for each pair of rolls, substantially as described, for the purpose specified.

6. In a bean picker and sorter, the combination of a distributing-hopper having a downwardly-inclined bottom open at the side thereof, and a gravity gate or stop device formed of two leaves for guarding said opening with a platform of rubber rolls arranged in pairs mediately with said gate or stop arranged to incline downward from said hopper-gate for operation in the way described.

7. In a feeder for bean-pickers, a hopper having its bottom formed of transverse parallel troughs or gutters, open at one end, inclining downward to said opening, and extending beyond the walls thereof, in combination with a gravity gate or stop device hung so as to have a swinging movement over and outward from said trough-extensions for operation in the way described.

472,300. EXHIBITION-CAR. MONDULA LEAK, San Francisco, Cal., assignor to the Leak Advertising Company, same place. Filed July 13, 1891. Serial No. 399,379. (No model.)



Claim.—1. In a railway-car, a series of recesses or spaces formed upon the exterior sides of the car, glazed doors or covers by which these chambers are closed, and exterior shutters fitted over the glazed doors so as to close the exhibition-spaces and form a series of channels along the car-body, substantially as herein described.

2. A railway-car having the recesses or chambers formed along its sides with the hinged glazed doors or covers, sockets made in the hinge-plates and also attached below the chambers, panels forming the covers to close said chambers from the outside, having lugs at the upper ends adapted to extend into the sockets in the hinges and the lugs at the lower edges to fit the sockets at the bottom, together with the eccentric locking devices whereby the shutters are secured in place, substantially as herein described.

3. A railway-car having the chambers or recesses formed upon the outside for exhibition purposes, openings extending through the walls of the cars at intervals with removable stoppers H, incandescent electric-lighting globes with the supporting-cylinders J fitting the openings in the car sides when the stoppers are removed, and the flexible conducting-wires connecting with the light-globes through said cylinders, substantially as herein described.

4. A railway-car having the cylindrical openings made through the sides, incandescent electric-light globes with supporting cylinders fitting the openings in the car, whereby the globes may be projected upon the exterior of the car, flexible conducting-wires connecting with the light-globes, and elastic clamps or supports within the car, whereby the cylinders and light-globes may be supported when not in use, substantially as herein described.

5. A railway-car for exhibition purposes having a folding bed adapted to turn up against the wall or to be turned down into a horizontal position, a desk-bracket support and holding-spring whereby the desk may be opened out to project from the bottom of the bed when the latter is folded up or folded against the bottom of the bed when not in use, substantially as herein described.

6. In an exhibition-car, the folding and unfolding bed, in combination with a table having the front and ends adapted to slide within the sides of the bed-frame when closed up, and spring-catches or supports adapted to rest upon the edge of the bed-frame when the table is to be used, substantially as herein described.

7. In an exhibition-car having an upper central portion or arch, short permanent hangers depending from said arch, the removable cross-bars supported upon the sides of the arch, the vertical posts Y, having their lower ends seated in the floor of the car and their upper ends fitting sockets in the lower ends of the permanent hangers, the bed-frames occupying the center of the car between the posts Y and having sockets slidable upon said posts, and means for raising and lowering the frames, substantially as herein described.

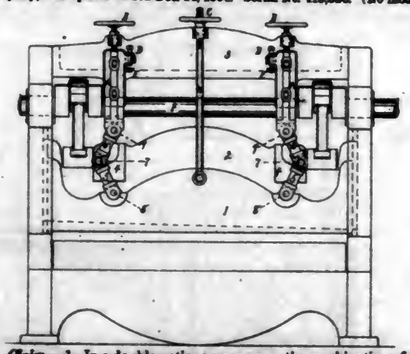
8. In an exhibition-car having a centrally-disposed arch, the permanent hangers, the vertical posts detachably connected therewith, the bed-frames arranged in the center of the car one above the other and slidable upon the vertical posts, and suspending-chains connected with the lowermost bed-frame at each end, whereby a pull upon the chains raises the said lower bed-frame, which in turn raises successively the bed-frames above it, substantially as herein described.

9. The suspended beds and bed-frames with guiding-sockets at their corners, panels and supports in the upper part of the car upon which these beds may be disposed when not in use, standards having the upper ends adapted to fit sockets in the lower ends of the hangers and the lower ends provided with locking-lugs which engage with slotted openings in the floor of the car, so that the standards form a continuation of the hangers in the upper part of the car, whereby the beds may be lowered and the sockets at their corners follow and fit over the standards, substantially as herein described.

10. A car having the removable standards for the guidance and support of beds, transverse supports *f*, extending between each pair of these standards, tables *e*, supported upon the transverse supports, seats *g*, and reversible swinging seat-supports A, substantially as herein described.

11. In a car, the convertible tables and seats consisting of the parts *e* and *g*, the supports *f*, having the vertical slots *f'*, and the swinging seat-supports A, substantially as herein described.

472,301. PRESSURE-PLATE. EDWARD P. LEWIS, Waterbury, Conn., assignor to the Waterbury Farrel Foundry and Machine Company, same place. Filed Dec. 14, 1891. Serial No. 415,230. (No model.)

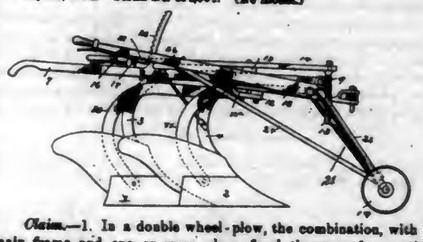


Claim.—1. In a double-action power-press, the combination of the pressure-plate, a vertical reciprocatory slide or main gate carrying one shear-blade, a driving-shaft substantially such as described to impart reciprocating movement to the blade-slide or main gate, a vertically-adjustable slide A on the frame, a toggle or toggles, one link of which is hinged to the pressure-plate, the other link hinged to said vertically-adjustable slide A, and mechanism substantially such as described between the links and the main gate, whereby on a downward movement of the main gate said links are forced into line to bring the pressure-plate to its gripping position in advance of the main gate and retain said links in line during the operation of shearing and then on an upward movement of said main gate to turn said links out of line to withdraw the pressure-plate, substantially as described.

2. In a double-action power-press, the combination of the pressure-plate, a main gate carrying a shear-blade, mechanism substantially such as shown to impart reciprocating movement to the main gate, a vertically-adjustable slide A on the frame, a toggle or toggles, one link of which is hinged to the pressure-plate, the other link hinged to said vertically-adjustable slide A, a screw-rod B, extending through a nut in the frame and attached to the slide A, whereby the slide A may be raised or lowered to set the pressure-plate according to the thickness of the metal to be held, and a gage for the purpose specified, consisting of one part D, attached to slide A, and another part E, attached to frame, the two parts making contact when the slide A is so adjusted that the pressure-plate in its gripping position makes contact with the bed-plate.

3. In a double-action power-press, the combination of a pressure-plate, a vertically-movable slide or main gate, mechanism substantially such as shown to impart reciprocating movement to the main gate, a vertically-adjustable slide A on the frame, a toggle or toggles, one link of which is hinged to the pressure-plate, the other link hinged to said vertically-adjustable slide A, and a rod H, attached at one end to the pressure-plate, the other end threaded and entering a hand-nut supported by the frame, whereby the pressure-plate may be elevated and the said toggle-links turned out of line to disengage them from the controlling-cams.

472,302. PLOW. JONATHAN H. LINEBARGER, Clarion, Iowa. Filed Sept. 3, 1891. Serial No. 404,591. (No model.)



Claim.—1. In a double wheel-plow, the combination, with the main frame and one or more plows fixed thereto, of two wheels mounted on adjustable axes, and levers for independently raising or lowering the axes, so as to vary the depth of cut or raise the plow out of action.

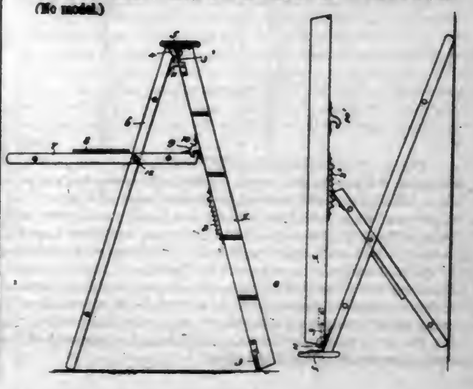
2. In a plow, the combination, with the main frame and one or more plows fixed thereto, of wheels mounted upon independent vertically-adjustable axes, levers for independently adjusting the axes, each lever being within reach of the operator while plowing, and means for locking either wheel in any desired position of adjustment.

3. In a plow, the combination, with the main frame and plows fixed thereto, of draw-bars pivotally connected to the plows in or near the line of cutting, a lever for shifting the draw-bars laterally, so as to change the line of draft, and means for locking the lever in any desired position of adjustment.

4. The combination, with a wheel-plow, of plow-beams 3 4 to which the plows are rigidly connected, and draw-beams pivotally connected to the plows near the line of cutting.

5. The combination, with a wheel-plow having the plows rigidly secured to the main frame, of draw-beams pivotally connected to the plows and a loose connection between the draw-bar and beams, so as to permit of vertical play between draw-bar and draw-beams.

472,303. COMBINED STEP-LADDER AND IRONING-BOARD HOLDER. WILLIAM H. LESH, York, Pa., assignor to George H. Becker and Henry Brubaker, same place. Filed July 30, 1891. Serial No. 401,156. (No model.)



Claim.—1. A step-ladder comprising a ladder and bracing-frame detachably connected by a pivotal joint, the top board of the ladder being attached to the bracing-frame and forming a bearing-surface for the side bars of the ladder to prevent undue spreading, whereby the ladder may be used alone or combined with the bracing-frame, as desired.

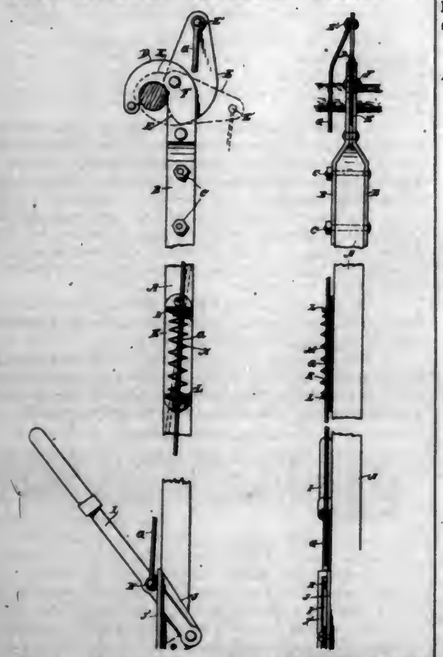
2. A step-ladder comprising a ladder and bracing-frame, hooks 4, attached to one of these parts, and eyes 3 3', attached to the other, adapted to form a pivotal connection at the angle of junction, and a top board 5, secured to the bracing-frame and so placed as to form a bearing-surface for the top of the ladder to prevent undue spreading, whereby the steps may be used alone or combined with the bracing-frame, as desired.

3. In a step-ladder, the combination of the ladder, with a detachable bracing-frame connected together by a hook-joint, a supporting-frame for a pail hinged to the latter, and a hook connection between the side bars of the ladder and the inner end of the pail-frame, whereby the ladder may be readily disconnected from the bracing-frame for independent service.

4. In a step-ladder, the combination of the ladder and separable bracing-frame hinged together, pivoted pail-frame mounted on the latter, hooks 10 for preventing the pail from tilting when in service, and thumb-screw 12 for maintaining a stiff pivotal connection between the pail-frame and the bracing-frame.

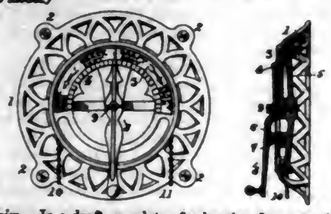
5. In a step-ladder, the combination of the ladder and separable bracing-frame pivotally connected therewith, the former being provided with connecting devices at either end, so as to be reversible end for end with relation to the bracing-frame, pivoted frame, as 7, mounted on the bracing-frame, and racks 2, mounted on the ladder, adapted to lock the pivoted frame when adjusted, for the purpose set forth.

472,304. PRUNING IMPLEMENT. CHARLES I. MANN, Colma Station, Cal. Filed Jan. 5, 1892. Serial No. 417,094. (No model.)



Claim.—In a tree-pruning device, a handle, the plates bolted to its upper end, having their upper portions converging toward each other and separated to form a narrow channel between them, and said upper ends being curved into the form of hooks parallel with each other, a blade fulcrumed in said channel having the convex edge, the sweep of which fills the interior of the hook, a lever-arm or extension of the blade adapted to swing rearwardly from the hook, a lever I, fulcrumed to the lower end of the pole and swinging to the front of the pole, a wire G, connecting the lever of the knife with the lever I, and a guide K, through which the wire passes diagonally to the pole, and the returning-spring M within the guide and connected with the wire, substantially as herein described.

472,305. DRAFT-REGULATOR FOR HEATING-FURNACES. RUDOLPH A. MAY, Akron, Ohio. Filed Dec. 1, 1891. Serial No. 413,637. (No model.)



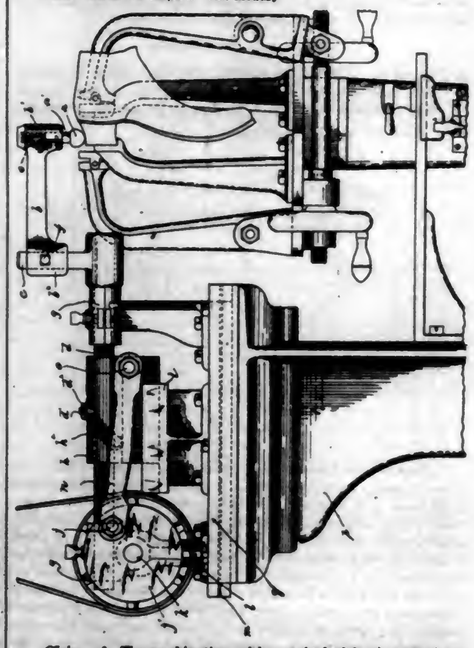
Claim.—In a draft-regulator for heating furnaces, the combination of the case having a notched segment, the flanged pulley journaled on its inner face and having a spring-socket, of the lever mounted and arranged to rock on said pulley-pivot and engage said notches and rotate said pulley and a spring interposed between the said pulley and lever to cause said lever to engage said notches, substantially as shown and described.

472,306. SAP-SPOUT. FRANK O. MITCHELL, Middletown, Conn. Filed Dec. 14, 1891. Serial No. 414,964. (No model.)



Claim.—The herein-described sap-spout, made from cast metal and consisting of the body A, with the screw-threaded shank B, and having an open groove continued through both the body and the shank, substantially as described.

472,307. HEEL-BURNISHING MACHINE. FRANK MOLLOY, Haverhill, Mass., assignor of eleven-twentieths to Adriance S. Dinsmore and Winfield S. Peters, same place. Filed Mar. 3, 1891. Renewed Feb. 23, 1892. Serial No. 422,367. (No model.)



Claim.—1. The combination, with a rock-shaft having a tool-carrying arm, of a burnishing-tool, a sleeve surrounding said rock-shaft and provided with a spiral slot which receives a stud or roll projecting from the rock-shaft, a guide independent of the rock-shaft, in which said sleeve is fitted to reciprocate in a direction parallel with the rock-shaft,

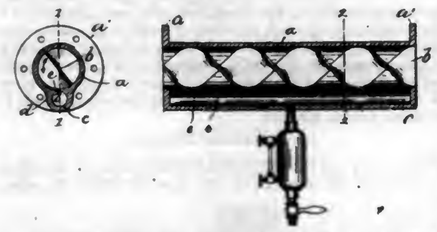
and means for reciprocating said sleeve and thereby causing the rock-shaft to rock or oscillate through its engagement with the spiral slot, the reciprocating movement of the sleeve being shorter than the length of the slot, whereby the slot is kept in continuous engagement with the stud and caused to oscillate the rock-shaft, as set forth.

2. The combination of a jack to hold a boot or shoe, a slide or bed movable on a fixed support toward and from said jack, a rock-shaft mounted in bearings on said slide and provided with an arm carrying a burnishing-tool, a sleeve surrounding the shaft and provided with a spiral slot receiving a stud affixed to the rock-shaft, a guide affixed to said slide or bed and engaged with said sleeve, whereby the sleeve is permitted to move endwise on the rock-shaft without rotating, a driving-shaft mounted in bearings on the slide or bed, connections between the driving-shaft and the sliding sleeve, whereby the latter is reciprocated and caused to oscillate the tool, and means, substantially as described, for slowly reciprocating the slide or bed and the rock-shaft and oscillating tool carried thereby, as set forth.

3. The combination of the slide or bed, the rock-shaft mounted in bearings on the said slide and provided with an arm having a burnishing-tool, a driving-shaft mounted in bearings affixed to said slide, means for imparting a rocking motion from said driving-shaft to the rock-shaft and thereby oscillating the tool carried thereby, a loose gear or disk mounted on a support on the slide or bed, connections between said gear and the driving-shaft, whereby the gear or disk is slowly rotated, and a pitman connected at one end with a wrist-pin on said gear or disk and at the other end with a fixed support, whereby the rotation of the gear or disk is caused to slowly reciprocate the slide or bed and the rock-shaft and oscillating tool carried thereby, as set forth.

4. The combination of the slide or bed, the tool-carrying rock-shaft, and the driving-shaft supported thereby, means, substantially as described, for imparting motion to the rock-shaft from the driving-shaft, a worm-gear mounted on a support on the slide or bed, a wrist-pin adjustably mounted on said gear, a pitman connecting said wrist-pin with a fixed support, a shaft having a worm mounted in bearings on the slide or bed and engaged with said worm-gear, and connections, substantially as described, between the worm and driving-shaft, whereby the worm is rotated, as set forth.

472,308. STEAM-SEPARATOR. CHARLES D. MOSHER, New York, N. Y. Filed July 13, 1891. Serial No. 399,263. (No model.)



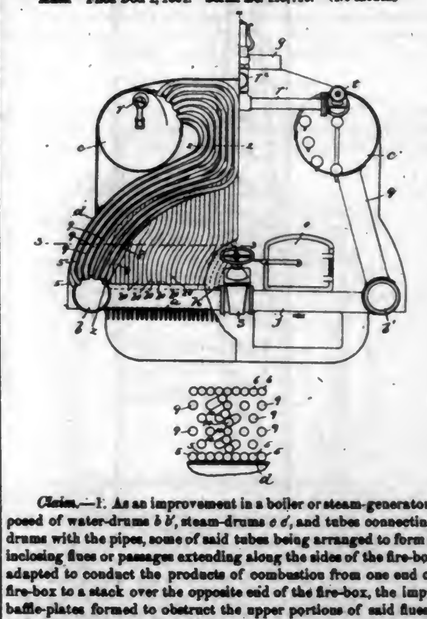
Claim.—1. The improved steam-separator hereinbefore described, comprising in its construction a section of a steam pipe or conduit provided at its ends with means for attachment to other sections of the conduit and having a longitudinal helical diaphragm or partition formed to impart a gyrating movement to steam passing through said section, and thereby throw the entrained water carried by said steam outwardly by centrifugal action against the wall of the section, and a longitudinal outlet at its lower portion for the escape of the entrained water, and a closed receptacle for the escaping water below said outlet, as set forth.

2. In a steam-separator, the casing constituting a section of a steam pipe or conduit, formed at its ends for attachment to other sections and provided at its lower portion with a closed water-receptacle and above said receptacle with a longitudinal outlet formed between two lips or flanges, one overlapping the other, combined with a helical diaphragm or partition extending longitudinally through said section and subdividing the latter into two helical flues, each of which communicates with said outlet, as set forth.

3. In a steam-separator, the combination of a casing constituting a section of a steam pipe or conduit, having at its ends means for attachment to other sections, a helical partition or diaphragm extending through said section, and a closed receptacle for entrained water extending lengthwise of said section along the lower side thereof, the interior surface of the section having a spiral or scroll form in cross-section, the overlapping edges of said surface being at the lower portion of the section and separated by an outlet extending lengthwise of the section for the escape of the entrained water, as set forth.

4. The improved steam-separator hereinbefore described, comprising in its construction a section of a steam pipe or conduit provided at its ends with means for attachment to other sections, a longitudinal helical partition in the steam-passage of said section, and a closed receptacle for the entrained water located below the steam-passage and separated therefrom by a partition having one or more openings formed to permit the passage of entrained water from the steam-passage to the water-receptacle, said partition being formed to prevent the steam from breaking up and carrying onward the water that enters the said receptacle, as set forth.

472,309. STEAM-GENERATOR. CHARLES D. MOSHER, Amesbury, Mass. Filed Dec. 1, 1891. Serial No. 413,719. (No model.)



Claim.—1. As an improvement in a boiler or steam-generator composed of water-drums *b b'*, steam-drums *c c'*, and tubes connecting said drums with the pipes, some of said tubes being arranged to form walls, inclosing flues or passages extending along the sides of the fire-box and adapted to conduct the products of combustion from one end of the fire-box to a stack over the opposite end of the fire-box, the improved baffle-plates formed to obstruct the upper portions of said flues, said baffle-plates being composed of tubes formed and arranged to constitute walls extending across the upper portions of said flues, the lower portions of said tubes being separated to permit the free passage of the products of combustion below said baffle-plates, as set forth.

2. A boiler comprising in its construction two water-drums, two steam-drums located above the water-drums, pipes connecting the water-drums, return-pipes connecting the water and steam drums, tubes connecting the water-drums with the steam-drums, each water-drum being connected with the corresponding steam-drum by an independent series of tubes, and means for shutting off the communication between the two water-drums, whereby the boiler may be divided and treated as two independent boilers, as set forth.

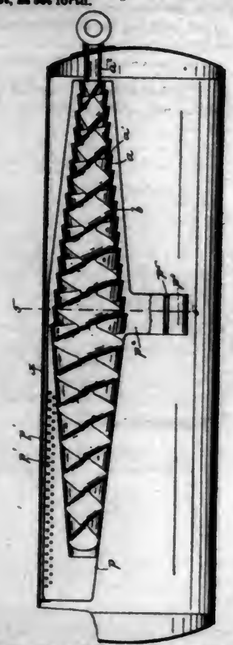
3. A boiler comprising in its construction two water-drums, two steam-drums located above the water-drums, return-pipes connecting the water and steam drums, pipes connecting the water-drums, valves in said pipes, whereby communication between the two water-drums may be shut off, tubes connecting the water-drums with the steam-drums, and steam-pipes to conduct steam from the steam-drums, each of said steam-pipes having a valve whereby it may be shut off, the valve in the water-drum-connecting pipes and in the steam-pipes enabling either side of the boiler to be entirely cut off from communication both with the other side of the boiler and with the engine, as set forth.

472,310. STEAM-SEPARATOR. CHARLES D. MOSHER, Amesbury, Mass. Filed Jan. 4, 1892. Serial No. 416,976. (No model.)

Claim.—1. A steam-separator comprising in its construction a steam conduit or passage having a helical slot formed with overlapping edges, and a helical diaphragm or partition extending through said conduit and subdividing it into two parts, said diaphragm being formed to give a gyrating movement to the steam passing through the conduit, while the helical slot in said conduit furnishes an outlet for the entrained water thrown outwardly by the centrifugal action of the gyrating steam, as set forth.

2. A steam-separator comprising in its construction a steam con-

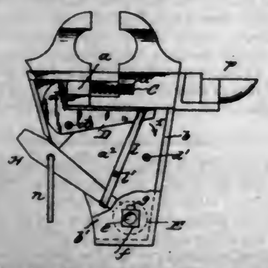
duit or passage having a helical slot formed with overlapping edges, a helical diaphragm or partition extending through said conduit and subdividing it into two parts, said diaphragm being formed to give a gyrating movement to steam passing through the conduit, while the helical slot in said conduit furnishes an outlet for the entrained water thrown outwardly by the centrifugal action of the gyrating steam, and a casing or water-receptacle surrounding said conduit and provided with a suitable outlet, as set forth.



3. A steam-separator comprising in its construction a conduit which is enlarged at its central portion and contracted from said central portion toward its ends, and a correspondingly enlarged and contracted helical diaphragm in said conduit adapted to impart a gyrating motion to steam passing therethrough, the enlargement of the conduit causing an expansion of the volume of the steam and facilitating the deposition of the entrained water on the walls of the conduit, as set forth.

4. A boiler or other receptacle and a casing located in the upper portion of the boiler and provided in its upper portion with steam-inlets, and at its lower portion with a downwardly-extending outlet having a trap and a valve covering the mouth of said trap, said valve being arranged to permit the escape of water from the trap into the boiler and to prevent the entrance of water from the boiler into the trap, combined with a steam-separator in said casing and a steam-outlet connected with said separator, as set forth.

472,811. VISE. JOHN W. MCINTYRE, Philadelphia, Pa. Filed Aug. 26, 1891. Serial No. 403,671. (No model.)



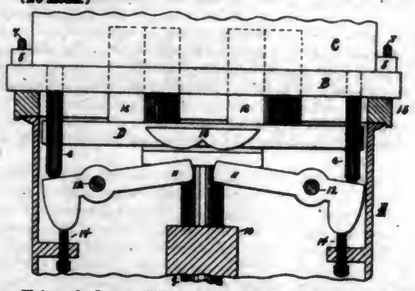
Claim.—1. In a vise, the combination of two-part or sectional frame B, having a fixed jaw A', a movable jaw, an actuating-lever D, and retracting-spring C for jaw A, a shaft E, mounted in said frame B and having right and left threaded ends, nuts on said ends, a lever H, engaging with shaft E, and a link connection between levers H and D, substantially as and for the purpose set forth.

2. A vise composed of a fixed jaw, a movable jaw having a retracting-spring, an actuating-lever for said movable jaw, a right and left screw-threaded clamping or locking device in engagement with said movable jaw, and actuating mechanism between said clamping device and said lever, substantially as set forth.

3. In a vise, the sectional or two-part frame B, having shaft E, with right and left threaded ends e e', a fixed nut f on one of said ends, and an adjusting-nut h on the other end, substantially as and for the purpose set forth.

4. In a vise, the combination of the jaws A A', spring C between said jaws, lever D, shaft E, having oppositely-threaded ends, lever H, engaging with said shaft and having a treadle mechanism m, and mechanism interposed between levers D and E, substantially as set forth.

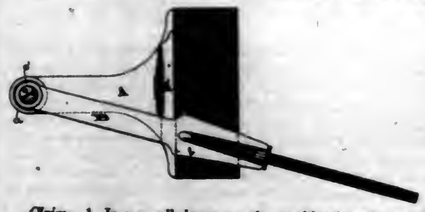
472,812. MOLDING-MACHINE. PATRICK O'CONNOR and JOHN P. MCNAMARA, New Haven, Conn., assignors to the James Reynolds Manufacturing Company, same place. Filed Oct. 27, 1891. Serial No. 410,054. (No model.)



Claim.—1. In a molding-machine having a suitable frame and mold-support, the combination of the levers 11, lifting-pins 6 resting thereon, and the pattern carrier or slide having a part for acting upon said levers, all operating together to force up the lifting-pins for raising the flask a short distance through the downward movement of the pattern-carrier, substantially as described, and for the purpose specified.

2. In a molding-machine having a suitable frame and mold-support, the combination of the levers, loose pins resting thereon, the pattern-carrier having a part for acting upon said levers, and the stop-screws, all operating together to force up the lifting-pins for raising the flask through the downward movement of the pattern-carrier, while the stop-screws limit the descent of one end of said levers when said pattern-carrier is lifted from said levers, substantially as described, and for the purpose specified.

472,818. SLATE-PENCIL SHARPENER. GEORGE H. RUTSCHMAN, Philadelphia, Pa. Filed Feb. 23, 1892. Serial No. 422,392. (No model.)



Claim.—1. In a pencil-sharpener, the combination of an oscillating arm, an abrading-surface, and the receiver D, having therein the opening d, carried by said arm and disposed at the angle shown relatively to the abrading-surface, substantially as and for the purpose specified.

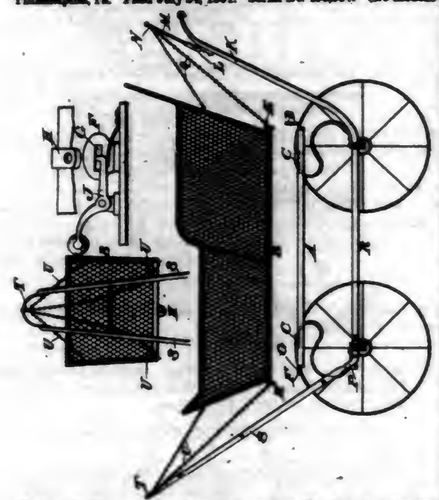
2. In a pencil-sharpener, the combination of the oscillating yielding arm B, an abrading-surface, and the receiver D, having therein the opening d, carried by said arm and disposed at the angle shown relatively to the abrading-surface, substantially as and for the purpose specified.

3. In a pencil-sharpener, the combination of the base A, provided with the rib A' and abrading-surface A^2, an oscillating arm supported on said base and limited in its movements by the stops a^3 a^4, and a receiver carried by the arm and adapted to bring the pencil into contact with the abrading-surface, substantially as and for the purpose specified.

4. In a pencil-sharpener, the combination of the base A, provided

with the rib A' and the abrading-surface A^2, the arm B, pivoted on the boss a, through the medium of the screw c and washer c', and limited in its movements by the stops a^3 a^4, and the receiver D, having therein the opening d, sustained on the head b of the arm and disposed at the angle shown relatively to the abrading-surface, substantially as and for the purpose specified.

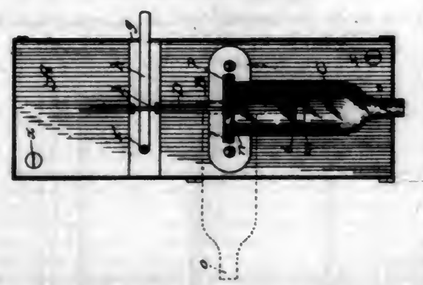
472,814. COMBINED CARRIAGE AND CRADLE. JOSEF SCHLOSS, Philadelphia, Pa. Filed July 24, 1891. Serial No. 400,587. (No model.)



Claim.—1. In a combined carriage and cradle, the combination of a sill with lugs on its opposite sides, an eye on its rear end, and an ear with opening in its front end, a body with a tongue on its rear end and a depending eye secured to its front end, and a catch secured to the sill and having a nose adapted to enter said depending eye, substantially as and for the purpose set forth.

2. In a combined carriage and cradle, sockets secured to the handle, sockets secured to the swinging gear, standards removably fitted in said sockets and each having a hook at top, a body with means for securing it at front and rear ends to the running-gear, and chains connectible with said hooks and said body for swinging it above the running-gear, said parts being combined substantially as described.

472,815. TOILET-SOAP FIXTURE. GEORGE A. SCHMIDT, Chicago, Ill. Filed Nov. 2, 1891. Serial No. 410,963. (No model.)



Claim.—1. In a toilet-soap fixture, the combination of a holder B, formed with a ring p, a soap-jelly receptacle C, having a neck o and containing a piston-stopper m and seated in the ring, and a plunger-rod supported to work against the stopper to produce discharge of the contents of the receptacle, substantially as and for the purpose set forth.

2. A toilet-soap fixture comprising, in combination with a case A, a seat B, a flask C for soap-jelly, removably supported on the seat and containing a piston-stopper m, a slotted plunger-rod D, having a rack i in its slot and confined in guides k to reciprocate with relation to the said stopper, and a spring-controlled lever A, engaging the rack to operate the plunger-rod and having its play limited by the said guides, substantially as and for the purpose set forth.

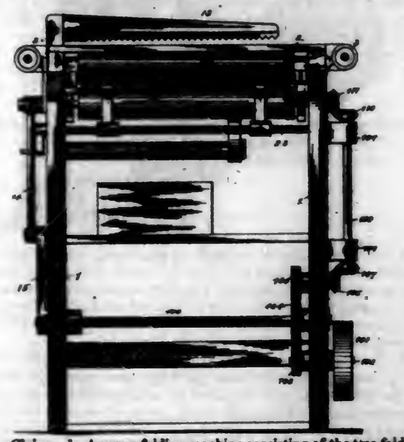
472,816. RECEPTACLE FOR FEEDING GRAIN TO LIVE STOCK. CHARLES A. SMITH, Toledo, Ohio, assignor of one-half to George Wurtz, same place. Filed Oct. 31, 1891. Serial No. 410,427. (No model.)



Claim.—1. In a feed-receptacle, a bottom portion formed with projections having an incline toward the bottom, whereby there are plane communicating surfaces formed upon the bottom.

2. As an article of manufacture, a receptacle for feed formed with inclosing sides and a bottom part having hemispherical projections, whereby there are plane communicating surfaces formed upon the same.

472,817. PAPER-FOLDING MACHINE. JOHN H. STONEMETZ, Millbury, Mass., assignor to the Stonemetz Printers' Machinery Company, same place. Filed June 20, 1891. Serial No. 397,054. (No model.)



Claim.—1. A paper-folding machine consisting of the two folding-rollers, a knife mounted to reciprocate back and forth between said rollers and adapted on the downward stroke to draw a sheet of paper between said rollers, gearing between said knife and rollers arranged so that the knife will be reciprocated at an accelerated speed relatively to the surface speed of the rollers, whereby the sheet is started between said rollers and is also severed on the line carried by the knife, and means for carrying off said sheet before the knife comes back between said rollers, substantially as described.

2. A paper-folding machine consisting of the folding-rollers 18, 19, and 20, the reciprocating knife 13 working between the rollers 18 and 20, gearing between said knife and rollers arranged so that the knife will be reciprocated at an accelerated speed relatively to the surface speed of the rollers, and the tucker 21, adapted to start the sheets between the rollers 18 and 19, substantially as described.

472,818. PRINTING-PRESS. JOHN H. STONEMETZ, Millbury, Mass., assignor to the Stonemetz Printers' Machinery Company, same place. Filed July 11, 1891. Serial No. 399,133. (No model.)

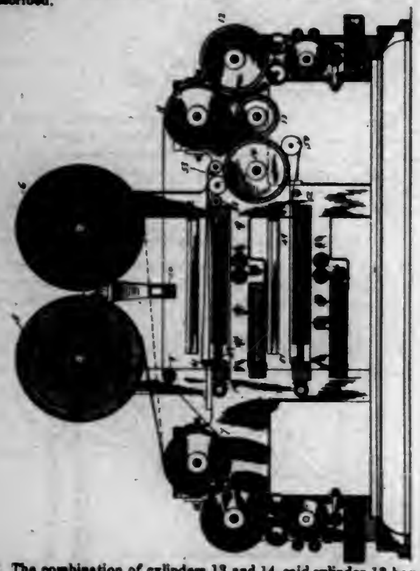
Claim.—1. The cylinder 14, having a set of impaling-pins, a removing device adapted to throw the sheet off said impaling-pins, the fixed pinion 26, the gear 31, carried by said cylinder, and connections between said gear and said removing device, substantially as described.

2. In a printing-press, the cylinder 14, having the impaling-pins 44, the bar 39, arranged to force the sheets from said pins, the fixed pinion 26, and the gear 31, carried by cylinder 14, meshing with said pinion, and connections between said bar 39 and gear 31, substantially as described.

3. In a printing-press, the combination of the cylinder 14, having the impaling-pins 44, the bar 39, arranged to throw or force the sheets from the said pins, the fixed pinion 26, and the gear 31, carried by cylinder 14, meshing with said pinion, studs carried by said gear 31, and lever 36, against which said studs are adapted to strike, said lever 36 being connected to bar 39, substantially as described.

4. In a printing-press, the cylinder 14, having the impaling-pins

44, the removing-bar 39, the adjustable springs 41 for drawing the same in, the fixed pinion 26, the gear 31, carried by cylinder 14, meshing therewith, studs carried by said gear, the lever 36, and link 40, connected to bar 39 and arranged to throw the same out, substantially as described.



5. The combination of cylinders 13 and 14, said cylinder 13 having one member of a sheet-covering device and the cylinder 14 the other member, the said cylinder 14 having the pins 44 and automatically-operating means for throwing the sheets from the pins 44 and the pins 62, and the strippers adapted to strip the sheets from pins 62, substantially as described.

6. The combination of the cylinders 13 and 14, said cylinders each having a member of a sheet-covering device, said cylinder 14 having the pins 62 and the pins 44, means for automatically throwing the sheets from the pins 44, so that these sheets will be directed in one pathway and the strippers adapted to remove the sheets carried by pins 62, so that these sheets will be sent into a different pathway from the sheets carried by pins 44, in combination with devices, such as traveling tapes, forming said double pathway, substantially as described.

7. The combination of cylinders 13 and 14, said cylinders each having a member of a sheet-covering device, the cylinder 13 provided with means so that the same will act as a collecting-cylinder, the cylinder 14 having the pins 44, to which the collected sheets are delivered from cylinder 13, means operating at every second revolution of cylinder 14 to remove the collected sheets from said pins 44 and direct the same to one pathway, the strippers acting to take the collected sheets from pins 44 at the revolutions of cylinder 14 when the automatic removing mechanism does not operate, and to direct the sheets to a second pathway, whereby the collected sheets are alternately directed in different pathways, in combination with devices such as traveling tapes, forming said double pathway, substantially as described.

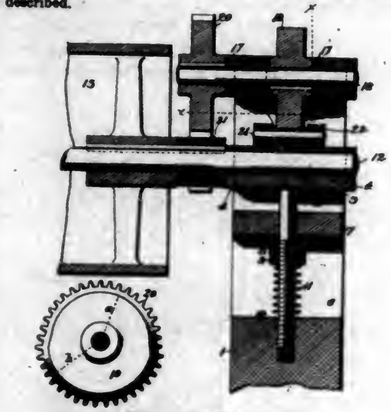
472,819. CYLINDER PRINTING-PRESS. JOHN H. STONEBRIDGE, Millbury, Mass., assignor to the Stonebridge Printers' Machinery Company, same place. Filed July 15, 1891. Serial No. 399,623. (No model.)

Claim.—1. In a cylinder-press, the combination of the impression-cylinder mounted vertically movable in the frame, the vertically-adjustable cap mounted on the frame, the cam adapted to force the cylinder against the bed mounted in said cap, and gearing for driving said cam, substantially as described.

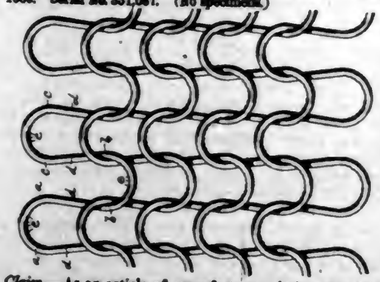
2. In a cylinder-press, the combination of the frame, the box 3, mounted vertically adjustable in the frame, the impression-cylinder carried by said box, a cam-bearing on said box and gearing for driving said cam, and means for moving the cylinder from the bed, substantially as described.

3. In a cylinder-press, the combination of the frame, the box 3, mounted vertically adjustable in the frame, said box having the depending stem, the spring on the same, and the nut for regulating the tension of the same, the impression-cylinder carried by the said box, a cam-bearing on said box, and gearing between said cam and cylinder, substantially as described.

4. The combination of box 3, having the rollers on the top of the same, said box carrying the shaft of the impression-cylinder and being vertically movable in the frame, an adjustable spring acting to lift said box, a cam mounted in an adjustable cap and bearing on said rollers, and the pinion 21 and the gear 30 for driving said cam, substantially as described.

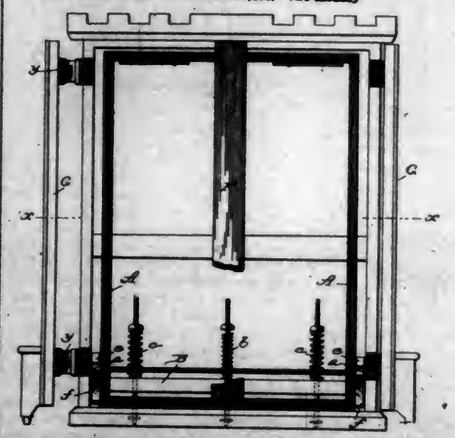


472,820. KNIT RATTAN FABRIC. EDWARD L. TAFT, Gardner, Mass., assignor of one-half to Henry M. Rich, same place. Filed Nov. 21, 1889. Serial No. 331,067. (No specimens.)



Claim.—As an article of manufacture, a knit rattan fabric composed of strands formed into a series of interlocking loops, said strands being indented in alternate sections and upon opposite sides, said indented sections corresponding with the bent portions of said loops, substantially as described.

472,821. FOLDING BED. WILLIAM P. TRACY, Grand Rapids, Mich. Filed Dec. 23, 1890. Serial No. 375,470. (No model.)



Claim.—1. In combination with a suitable cabinet, a folding bed pivoted directly to the sides of the cabinet, cams secured to the sides of the bed and extending upwardly from the pivots, the levers *c*, pivoted to the sides of the cabinet with their free ends bearing on the cams, and a cross-bar connected to the levers by links and springs arranged to act successively bearing on the cross-bar, substantially as described.

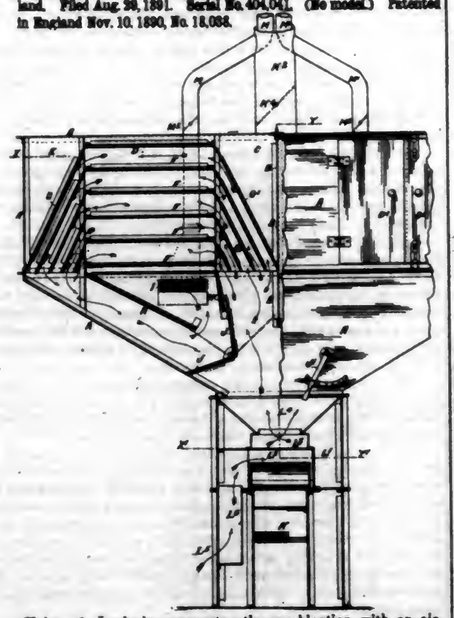
2. In combination with the case, the folding bed, the doors for closing the front of the case, and the arms *y*, hinged at one end upon the outer front edge of the side wall of the case and at the other end to the door near the center of the inner face, substantially as described.

3. In combination with a suitable cabinet, a folding bed pivoted to the sides of the cabinet, a cross-bar, connections between said cross-bar and the bed, a series of rods extending from the bottom of the cabinet, and springs carried upon said rods and bearing on said cross-bar, said springs being arranged to act successively, substantially as described.

472,822. COMPOSITION FOR RETARDING THE SOLIDIFICATION OF CALCINED GYPSUM. EDWARD WATSON, Grand Rapids, Mich. Filed Apr. 22, 1891. Serial No. 390,073. (No specimens.)

Claim.—The herein-described compound for plaster, consisting, essentially, of calcined gypsum, with the addition thereto, as a means of retarding its solidification, of substantially the proportions stated of the substance known to renderers of fats as "tank-water," substantially as and for the purpose specified.

472,823. DRYING APPARATUS. RICHARD WHITE, London, England. Filed Aug. 20, 1891. Serial No. 404,041. (No model.) Patented in England Nov. 10, 1890, No. 18,038.

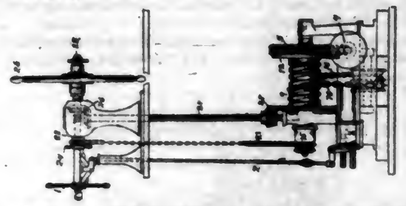


Claim.—1. In drying apparatus, the combination, with an air-heating apparatus, of a centrally-divided casing A, each half being subdivided into separate passages leading to separated trays and separated passages leading from the trays, together with directing-valves J at the junctions of the respective passages leading to and from the trays at each side of the central division, the exits I below the trays, and the pipes M, leading therefrom to a chimney, whereby the heated air passes to and from each of the drying-trays separately, as set forth.

2. In a drying apparatus, the combination, with the casing having passage-ways for directing the heated air, of removable trays having corrugated bottoms, perforated metal sides, and secondary trays of wire-gauze for receiving the articles to be dried and fitting within the removable trays, substantially as specified.

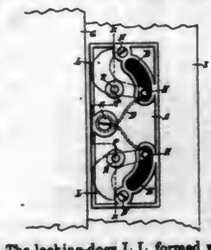
3. The combination, with the air-heating furnace, of a case above the same having shelves and removable trays, chambers at the ends of the shelves, and inclined divisions extending downwardly from the ends of the shelves, an inclined division-plate below the bottom shelf, and an escape-flue above such division-plate and below the lower shelf, and a damper pivoted at the junction of the passages, so as to open and close the respective passages and change the direction of the circulating hot air on the material to be dried, substantially as specified.

472,824. STEERING APPARATUS. JOHN D. WILLIAMSON, Jr., Philadelphia, Pa., assignor to himself, George W. Williamson, and William C. Williamson, same place. Filed Sept. 15, 1890. Serial No. 364,967. (No model.)



Claim.—In a steering apparatus for ships, in combination with a power-driven wheel and a steering-drum separately connected by a coupling between them and mounted upon a shaft 6, a rod 13, keyed at one end to said drum within a bore in said shaft, a screw-threaded nut 15, a fixed threaded bolt 17, said rod 13 being secured to said nut at its outer end by a nut and collar and said nut 15 being mounted on said bolt 17 to rotate thereon, and a sleeve or pulley 22, mounted on a fixed center, so as to rotate thereon and connected by an endless belt or chain to said nut 15, whereby upon the rotation of said sleeve the power-driven wheel and the steering-drum are either connected or disconnected, as may be desired, for the purposes set forth.

472,825. SASH-FASTENER. CHARLES ALPEMAN and DUNCAN C. C. MACDONALD, London, Canada, assignors of one-third to James Grant, same place. Filed Feb. 18, 1892. Serial No. 422,047. (No model.)



Claim.—The locking-dogs L L, formed with the trunnions T, the operating-handles H, and curved serrated faces F, in combination with the case C, standard S, the cover A, formed with the elongated slots B, and the spring D, substantially as shown and described, and for the purpose specified.

472,826. AUTOMATIC TELEGRAPH. FRANK ANDERSON, Peekskill, N. Y.; Annie L. Anderson, administratrix, and Gilbert H. Anderson and Homer Anderson, administrators, of said Frank Anderson, deceased. Filed Mar. 3, 1890. Serial No. 343,181. (No model.)

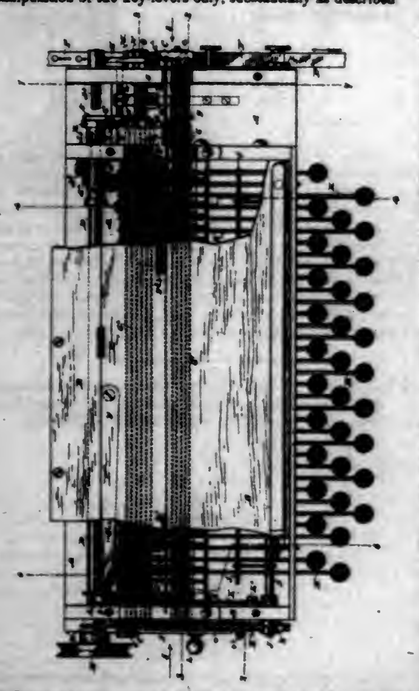
Claim.—1. A perforating-machine having perforating devices, key-levers, and fillet-feeding mechanism, in combination with a rotary driving-shaft carrying a driving-pulley rigidly secured to it and having a loose driving-belt, which normally slides over the pulley, and mechanical connections between the key-levers and it, whereby the shaft is allowed to rotate one revolution only for each depression of a key and the fillet is perforated and fed forward, substantially as described.

2. In a perforator, a pulley fixedly secured to a rotary shaft and having a loose sliding driving-belt continuously driven by a source of extraneous power, in combination with perforating mechanism, fillet-feeding devices, and key-levers having mechanical connections between them and the rotary shaft, and additional mechanical connections between the perforating and fillet-feeding devices, whereby the extraneous power is utilized to impel the mechanisms as the key-levers are depressed, substantially as described.

3. In a perforator, a series of selecting-bars, a series of punches, one for each selecting-bar, a series of key-levers, a second set of selecting-bars, paper-feeding devices controlled by the second set of selecting-bars, a rotary shaft carrying a pulley fixedly or rigidly secured to it and carrying a loose sliding belt continuously driven by an extraneous source of power, and mechanical connections between the shaft and the two sets of selecting-bars and key-levers, whereby the extraneous power is utilized to perforate and feed the fillet and the key-levers are made to control its application, substantially as described.

4. In a perforator, a rotary propelling-shaft carrying a pulley fixedly or rigidly secured to it under stress of a sliding belt impelled by

a source of extraneous power, which constantly tends to set said shaft in motion, with detent or holding mechanism for controlling its rotation, in combination with key-levers, perforating and fillet-feeding mechanism, and mechanical connections between the shaft, the key-levers, and the perforating and fillet-feeding mechanism, whereby the fillet is perforated and fed through the agency of the extraneous power applied to the shaft and the application of such power is regulated by the manipulation of the key-levers only, substantially as described



5. In a perforator, a rotary shaft carrying a fixed pulley, on which slides a loose belt driven by an extraneous source of power, said shaft having detent or holding devices for regulating its rotation, and cam mechanism, in combination with fillet perforating and feeding mechanism, and key-levers having mechanical connections with the aforesaid parts, whereby the fillet is perforated and fed forward through the agency of the extraneous power and the application thereof regulated solely by the operation of the key-levers, substantially as described.

6. In a perforator, a series of key-levers, a series of punches, and a series of selecting-bars, one for each punch, said selecting-bars having pivoted extensions adapted to slide through a pivoted lever into the path of the punches, and mechanical connections between the pivoted lever and a power-impelled shaft, whereby the fillet is perforated by extraneous power and the punches are selected by the keys, substantially as described.

7. In a perforator, a series of key-levers having mechanical connections with a series of selecting-bars, a series of punches, a series of short bars pivotally secured to the ends of the selecting-bars and located in the path of the punches, mechanical connections between the ends of the selecting-bars and a rotary shaft for giving to said selecting-bars a vertical motion as the shaft rotates, and additional mechanical connections in the nature of locking and releasing devices between the key-levers and the rotary shaft, whereby the paper or fillet is caused to be perforated by extraneous power and the application thereof is regulated solely by the manipulation of the keys, substantially as described.

8. In a perforator, a series of key-levers, a series of punches, a series of selecting-bars having pivoted extensions, a pivoted lever through which the pivoted extensions are adapted to slide into the path of the punches, and a rotary shaft bearing cams having mechanical connections with the free end of the pivoted lever, and mechanical connections in the nature of locking and releasing devices between the key-levers and the rotary shaft, substantially as described.

9. In a perforator, a series of key-levers mechanically connected to a series of selecting-bars, a series of punches, one for each selecting-bar, a series of pivotal extensions for said selecting-bars, each adapted to slide into the path of one punch, and a pivoted lever through which said extensions slide, said lever having mechanical connection with all of the punches as it rises, in combination with a rotary shaft having cams and connections with the pivoted lever, and additional mechanical connections in the nature of locking and releasing devices, whereby the punches are selected by the keys and propelled in both directions by a source of extraneous power, substantially as described.

10. In a perforator or analogous mechanism, a power-impelled shaft carrying a cam, a vibrating paper-feeding segment, a tension-roller adapted to bear against the fillet between it and the aforesaid segment, and mechanical connections between the segment, the tension-roller, and the cam for causing them to release or retain the fillet in accordance with the demands of the operator, substantially as described.

11. In a perforator or analogous device wherein paper or equivalent material is to be fed forward at varying rates, the combination of the following elements: a power-impelled shaft, a vibrating feeding-segment or impelling device, a tension-roller, mechanical connections between the segment, the tension-roller, and shaft for causing them to grip and propel or release at will the material to be fed, a series of key-levers, mechanical connections between said key-levers and the rotary shaft in the nature of locking and releasing devices, and connections between said key-levers, the segment, and the tension-roller for causing the material to be periodically fed and in such lengths as the operator may wish, substantially as described.

12. In a perforator or analogous device, a power-impelled shaft, a feeding or propelling segment, a two-armed lever carried by a shaft which carries, also, the feeding-segment, a tension-roller, cam mechanism on the first-named shaft, mechanical connections in the nature of locking and releasing devices between said key-levers and the power-impelled shaft, a series of key-levers, a series of selecting-bars, a series of push-pins controlled by said selecting-bars, and mechanical connections between the cam mechanism and the two-armed lever, whereby the paper or fillet is gripped and fed or released at will through the agency of power and the regulation of such feed effected by the key-levers.

13. A feeding device for paper, fabric, or analogous material, consisting of a series of limiting push-pins, a vibrating feeding-segment, a tension-roller, selecting-bars, key-levers, a rotary shaft, a cam or cams, and connections, as described, whereby variable feed is imparted to said paper or fabric, substantially as described.

14. A perforating-machine having the perforating and feeding devices actuated by cams placed upon a power-impelled shaft, the means for imparting intermittent motion to said shaft, consisting of an affixed driving-pulley, over which slides a continuously-running belt tending to rotate said pulley, a ratchet or detent also affixed to the shaft, and a pawl engaging with said detent to prevent the rotation of the shaft except when it is tripped through its mechanical connection with the keys, substantially as described.

15. In a perforator, a rotary cam-shaft carrying a fixed pulley, over which slides a continuously-running belt driven by extraneous power tending to rotate it, and a detent or stop device which limits the rotation to one revolution, substantially as described.

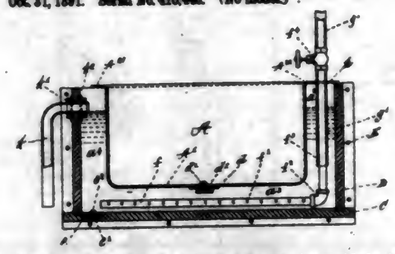
16. In a perforator, a series of key-levers, a series of punches, a series of selecting-bars, one for each punch, said selecting-bars having at one end pivoted extensions capable of vibration independently of said bars, said extensions adapted to slide through a pivoted lever into the path of said punches, said pivoted lever being mechanically connected with cams on a power-impelled shaft, mechanical connections in the nature of locking and releasing devices between the key-levers and the power-impelled shaft, whereby while the keys select the punches the punching is performed by extraneous power, substantially as described.

17. In a perforator, a series of key-levers mechanically connected to a series of selecting-bars, a series of punches, one for each selecting-bar, a series of pivoted extensions for said selecting-bars, each adapted to slide into the path of one punch, and a pivoted lever through which said extensions slide, said lever having mechanical connection with all of the punches as it rises, in combination with a rotary shaft having cams and connections with the said pivoted lever, whereby the punches are selected by the keys and propelled in both directions by an extraneous source of power, substantially as described.

18. In a perforator, in combination with perforating-punches, a power-impelled shaft carrying a cam, a vibrating paper-feeding segment, a pressure-roller adapted to bear against said segment and clasp the fillet between, and mechanical connections between the segment, the pressure-roller, and the cam for causing them to release or retain the fillet in accordance with the demands of the operator, substantially as described.

19. In a perforator, in combination with perforating-punches, a variable paper-feeding device consisting of a vibrating segment which is adapted to move through a varying number of degrees, and a pressure or contact roller adapted to automatically press against said segment while the latter is moving in one direction and to cease contact during the return of the segment, thereby causing the paper between the roller and segment to be clasped and fed while the segment moves in one direction only, substantially as described.

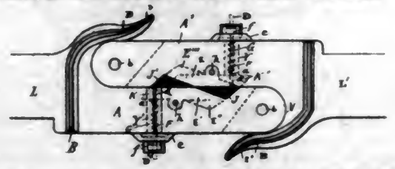
472,827. DYE-TUB. CHARLES L. ADGER, Paterson, N. J. Filed Oct. 31, 1891. Serial No. 410,446. (No model.)



Claim.—1. In a dye-tub, an inner copper tank provided with projecting flanges on its upper edges, a conical valve suitably secured in a brass conical valve-seat centrally located and properly secured in the bottom of the inner copper tank, in combination with an outer tub or tank of any suitable material, which is larger than the inner tank, the inner tank resting inside of the outer tank and being supported by means of the projecting flanges on its upper edges, which rest loosely upon the upper edges of the outside tank, so that the inner tank may be removed or replaced at pleasure, the outer tub being provided in the bottom, at one end thereof, with a conical valve-seat and valve, the latter having a ring or other suitable device for its withdrawal and being provided, also, with an outlet-tube or overflow-pipe located in the end near its upper edge, both of said tubs in combination with the perforated steam-pipe f, elbow f^2, and vertical steam-pipe f^3, valve f^4, and water-supply pipe g', with its regulating-valve g, all located and constructed substantially as shown and described, and for the purposes specified.

2. The combination of the outer tub, inner tub A, outlet-pipe k, perforated steam-pipe f, elbow f^2, vertical steam-pipe f^3, and its valve f^4, the water-supply pipe g', with its valve g, the inner tub provided with a conical valve-seat d and conical valve d', centrally located in the bottom thereof and provided with a suitable ring d^3 or other device for removing it when necessary, the bottom and corners of the inner tub as well as the upper edges being rounded and the outer tub being provided in the bottom, at one end thereof, with a conical valve-seat c and valve c', having a ring or suitable device for its withdrawal when necessary, all constructed and operating substantially as and for the purposes described.

472,828. CAR-COUPLING. THOMAS J. BAYLOR and JAMES BAYLOR, Canton, Ill. Filed Oct. 2, 1890. Serial No. 366,911. (No model.)

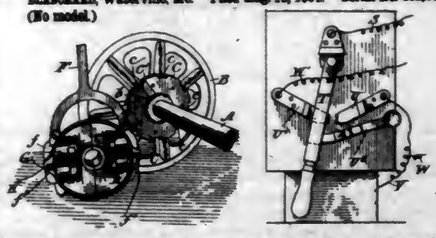


Claim.—1. The combination of two draw-heads, each comprising two jaws, each of which has in its inner side a cavity or recess, one end of which forms a shoulder elliptical in shape, and a dog secured in each of the said recesses or cavities in said jaws with one end of the respective dogs elliptical in form and adapted to engage with the shoulders having the corresponding elliptical form upon the corresponding jaws of the opposite draw-heads when the two draw-heads are coupled, with the rod G, attached to the dog and carried backward through the longitudinal opening Y, and a suitable perforation through the outer face of the draw-bar, the hand-hold D, pivoted at its base to the rod G, the spring F, with the draw-bars provided with the hooks B to form the pocket V and having the ears v with the transverse opening m, and the pin b, depending through the perforations and with the raised portion C, all substantially as described and set forth.

2. The combination of two draw-heads, each comprising two jaws, each of which has in its inner side a cavity or recess, one end of which forms a shoulder elliptical in shape, and a dog secured in each of the said recesses or cavities in said jaws, with one end of the respective dogs elliptical in form and adapted to engage with the shoulders having the corresponding elliptical form upon the corresponding jaws of the opposite draw-heads when the two draw-heads are coupled, with the rod G, attached to the dog and carried backward through the longitudinal opening Y, and a suitable perforation through the outer face of the draw-bars and suitable operating means, all substantially as described and set forth.

3. In a car-coupling, the draw-bar A, provided with the hook B to form the pocket V and having the ears v with the transverse opening m and the pin b, depending through perforations in the said ears, and being further provided with the recess k, the lever E, pivoted as at h, carried in the opening K, the rod G, attached to the lever E and carried backward through the circular longitudinal opening Y, and a suitable perforation through the outer face of the draw-bar, the hand-hold D, pivoted at its base to the rod G, the spiral spring F, the raised portion C, all in combination, as described and set forth.

472,829. ELECTRIC WHEEL-LOCKING DEVICE. GEORGE W. BLANCHARD, Waterville, Me. Filed Aug. 10, 1891. Serial No. 402,261. (No model.)



Claim.—1. In combination with a rotating wheel, a disk turning therewith, dogs or locking devices engaging the said disk, and electrically-actuated means for drawing them into such engagement, for the purpose set forth.

2. A rotating shaft or axle and a notched disk carried thereby, in combination with dogs arranged to enter the notches of the said disk, and electrically-actuated means for governing such engagement, for the purpose set forth.

3. A rotating axle and wheel and a notched disk turning therewith, in combination with a relatively-fixed frame, a set of dogs pivoted in the said frame in position to enter the said notches, electro-magnets in the said frame for actuating the said dogs, and the conductors and circuit-closing devices of an electric circuit of which the said electro-magnets form a part, substantially as set forth.

4. In combination with a wheel and a disk turning therewith, dogs engaging the said disk, electro-magnets actuating said dogs, the generator and conductors of an electric circuit through said magnets, a bar arranged to automatically close the said circuit when released, and a movable catch for supporting said bar out of such engagement until such release, substantially as set forth.

5. In combination with a rotating wheel and locking devices therefor, an electro-magnet for actuating the said locking devices and the electric generating and conducting devices of its circuit, an automatic circuit-closing bar, devices for normally holding it out of contact, and a hand-operated circuit-closing device for the said circuit, substantially as set forth.

6. In combination with an electric car-wheel and locking devices therefor, an electro-magnet for actuating the said locking devices and the generator and conductors of its circuit for operating the said locking devices, a circuit-closing bar for said circuit provided with an armature, and an electro-magnet in the main circuit of the car arranged to withdraw the said bar from contact until the main current is broken or weakened, substantially as set forth.

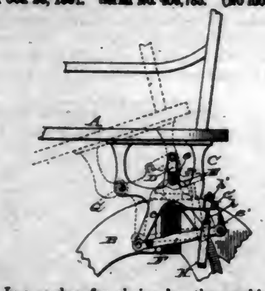
7. In combination with an electric car-wheel and locking devices therefor, an electro-magnet for actuating the said locking devices and the conductors and electric generator of its circuit for actuating the said locking devices, a movable bar for automatically closing the said circuit, an electro-magnet in the main circuit which normally holds the said bar out of circuit-closing contact, a catch for supporting the said bar, an electro-magnet for withdrawing the said catch therefrom, and a switch-lever and conductors and contact-plates whereby the last-mentioned electro-magnet may be introduced into the main circuit or left out of it at will, substantially as set forth.

8. In combination with an electric car-wheel and a secondary electric circuit and wheel-locking devices and their actuating-magnet operated by said circuit, an automatic circuit-closer, an electro-magnet in the main circuit operating to hold the said circuit-closer open, supplemental devices, including a catch and electrically-energized means for withdrawing the same for this latter purpose, and a switch-lever and connections for making these latter devices effective or ineffective at will, substantially as set forth.

9. In combination with an electric car-wheel, locking devices therefor, and a magnet for actuating the said locking devices, the

generator-conductors and automatic circuit-closing bar, a secondary circuit controlling these locking devices, a catch which holds said bar out of circuit-closing contact, an electro-magnet operating to withdraw the said catch, and a switch-lever and conductors for introducing this magnet into the main circuit at will or eliminating it therefrom, substantially as set forth.

472,330. ROCKER. WILLIAM M. ROBBINS, Port Washington, Wis. Filed Oct. 26, 1891. Serial No. 409,783. (No model.)



Claim.—1. In a rocker for chairs, &c., the combination of depending hangers, links suspending said hangers from a relatively fixed support, and vertically-movable connections between said hangers and support, substantially as and for the purposes set forth.

2. In a rocker, the combination, with a suitable base, of hangers attached to the rocking part, links suspending said hangers from said base, and links connecting said hangers below said suspending-links with said base, substantially as and for the purposes set forth.

3. In a rocker, the combination, with a suitable base, of hangers formed with downwardly-projecting arms, which are connected with said base by links, and links suspending said hangers from the base above the link connection of said arms, substantially as and for the purposes set forth.

4. In a rocker, the combination, with a suitable base, of a cross-piece swiveled at the center in said base and forked at the ends, hangers attached to the rocking part and suspended by links from the upper forked arms of the said cross-piece and connected below by links with the other forked arms of said cross-piece, substantially as and for the purposes set forth.

5. In a rocker, the combination, with a suitable base, of hangers suspended therefrom by links, and having below said links vertically-movable connections with said base, and a stop arranged to limit the movement of said hangers, substantially as and for the purposes set forth.

6. In a rocker, the combination, with a suitable base, of hangers suspended therefrom by links and connected below said links with said base, and an adjustable stop arranged to limit the movement of said hangers at the desired points, substantially as and for the purposes set forth.

7. In a rocker, the combination, with a suitable base, of hangers attached to and depending from the rocking part, links suspending said hangers from said base, links connecting said hangers with said base below its suspending connections, a loop through which one of the last-mentioned links passes, adjustably secured to the adjacent hanger, so as to limit its rocking movement at the desired points, substantially as and for the purposes set forth.

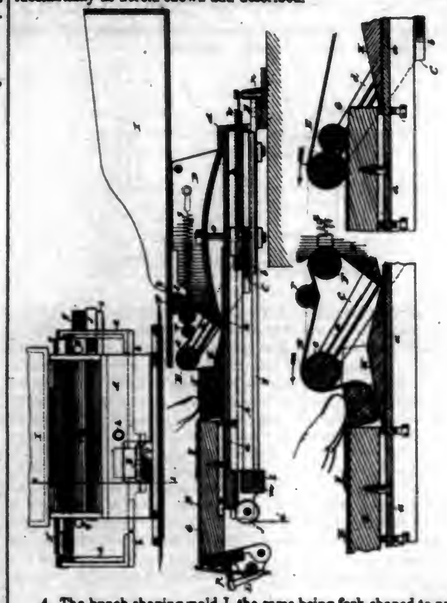
8. In a rocker, the combination, with a suitable base and swinging part, of hangers attached to said swinging part and suspended from said base, with which they have vertically-shifting connections below, substantially as and for the purposes set forth

472,331. GEAR-BUNCHING MACHINE. NICHOLAS H. BORSFELDT, Brooklyn, N. Y. Filed Apr. 13, 1891. Serial No. 388,659. (No model.)

Claim.—1. The combination of the frame A, forming the table *a* and having the socketed cross-bar *m*, and the convex block *n*, with the rail B, having gudgeon *l*, which is adapted to fit the socket in the cross-bar *m*, the other end of the rail resting on the convex block *n*, with the sliding carriage C, guided on said rail, said sliding carriage holding the roller *c* above said table *a*, and with the apron E and rolling-board G, all arranged to permit the tilting of the rail B and the roller *c*, substantially as herein shown and described.

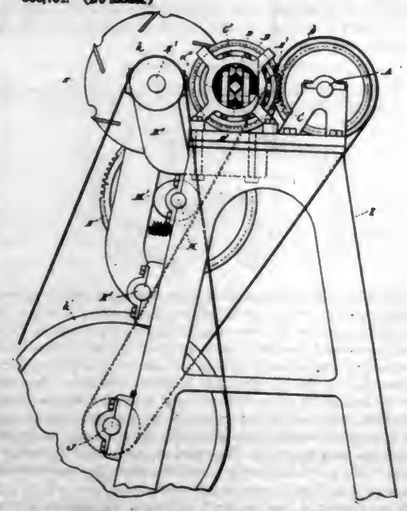
2. The bunch-shaping mold J for measuring the filler, the same being fork-shaped to form a mold-cavity open at the top and bottom and at one end, said cavity approximating the shape of the bunch and provided with a handle *w* at the closed end, substantially as herein shown and described.

3. The bunch-shaping mold J, made fork-shaped, with a cavity open at top and bottom and open at one end, the upper edges of the tines constituting the fork being curved to conform to the shape of the bunch to be produced, their lower edges being substantially straight, substantially as herein shown and described.



4. The bunch-shaping mold J, the same being fork-shaped to produce a mold-cavity open at top and bottom and at one end and provided with a handle *w* at the closed end and with the lower stop *x*, substantially as herein shown and described.

472,332. ROD AND BROOM-HANDLE TURNING MACHINE. SAMUEL H. BRITTON, Muskegon, Mich. Filed Mar. 28, 1891. Serial No. 386,731. (No model.)



Claim.—1. The rod and broom-handle machine comprising the driving-gear, the roughing rotary cylinder or cutter, the feed-guide, the rotary-roller case, the rollers therein, the bevel-gear for operating said rollers, the high-motioned rotary finishing cutter-cylinder, its rotary feed-case, feed-rollers, and the bevel-gear for driving said rollers, said finishing-cylinder being carried by a short shaft hung in a yoke or bracket carried by a shaft parallel with the main and counter shafts, a cam-shaft, and a cam carried thereby and adapted to engage said yoke or bracket to reciprocate said cylinder, and means for automatically throwing said cam into operation, substantially as specified.

2. In a rod and broom-handle machine, the feed mechanism for the cutters, comprising the cases or boxes journaled on the supporting-frame and having rotary rollers therein, an annular gear on said cases, the driving-gear therefor, the roller-driving gear-wheels in said cases and projecting therefrom at right angles, the stationary beveled toothed circular racks engaged by said wheels, gear on the shafts of said wheels in engagement with gear on the rollers, and the feed-guides, substantially as specified.

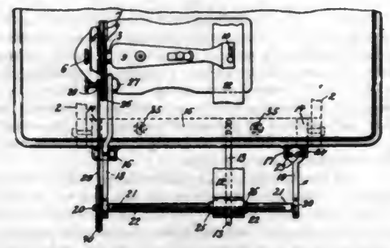
3. In a machine for the purpose described, the main driving-shaft A, carrying gear for actuating the feed mechanism, a counter-shaft driven by said main shaft and driving the cutting mechanism, and a cam-shaft M, driven by said main shaft and carrying a cam M', arranged to intermittently reciprocate one of the cutters, substantially as specified.

4. The combination, with the finishing and tapering cylinder hung on a short shaft hung on a yoke or bracket carried by a shaft K', parallel with the main and counter shafts, of a cam-shaft and a cam carried thereby and adapted to engage said yoke or bracket to reciprocate said cylinder, and means for automatically throwing said cam into operation, substantially as specified.

5. The combination, with the feed mechanism for the finishing and tapering cylinder, of a cam-shaft and a cam carried thereby arranged to intermittently reciprocate said cylinder, said shaft having a gear-wheel and a clutch-section loose thereon and a clutch-section having a sliding fast connection therewith, a pivoted angle-lever connected to the latter section, said lever being actuated to operate said cam by the stick or handle passing through said feed-rollers, substantially as specified.

6. The combination, with the feed-rollers, the finishing and tapering cylinder, and the pivoted angle-lever carrying a wedge or cam over said cylinder in position to be engaged by the stick passing through said feed, of the cam-shaft carrying a cam adapted to reciprocate said cylinder, the loose gear-wheel and clutch-section on said shaft, and the clutch-section having a spline-and-groove connection with said shaft and connected with said angle-lever, substantially as specified.

472,333. SEWING-MACHINE. ELISABETH CALM, New York, N. Y. Filed June 27, 1891. Serial No. 397,713. (No model.)



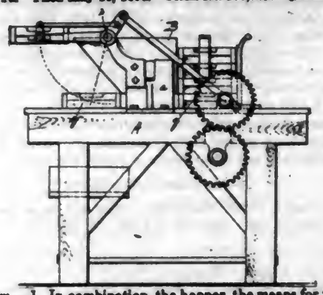
Claim.—1. In combination with a sewing-machine, a frame attached thereto containing bracket 18, shaft 27, supporting-pulleys 26 and 28, the former pulley operated by the sewing-machine mechanism, a clutching device provided with a suitable handle for consolidating said pulleys, and appliances for converting the revolving motion of pulley 28 into revolving motion of a roller for receiving the fabric for the purpose of enabling the operator to cause intermittent motion of the winding mechanism during continuous motion of the sewing mechanism, substantially as set forth.

2. In combination with a sewing-machine mechanism containing a pulley for propelling the main shaft operating the needle-bar, a clutching device for alternately connecting and disconnecting such pulley and such shaft, a roller for receiving the fabric, and mechanism for revolving the roller, propelled by the sewing-machine mechanism and constructed in two sections connected by a clutch with suitable handle for the purpose of enabling the operator to cause intermittent motion of the winding mechanism independent of the movements of the needle-bar, substantially as set forth.

3. In combination with a sewing-machine, a roller for receiving the fabric and mechanism for revolving the roller, propelled by the sewing-machine mechanism and constructed in two sections connected by a clutch with suitable handle for the purpose of enabling the operator to cause intermittent motion of the winding mechanism during continuous motion of the sewing mechanism, substantially as set forth.

4. In combination with a sewing-machine, a mechanism for winding the fabric, constructed in two sections united by a clutch with suitable handle, one of said sections containing a roller for receiving the fabric, and means for temporarily adjusting the other section in frictional contact with the mechanism operating the needle-bar, substantially as and for the purposes set forth.

472,334. BRICK-MOLD SANDER. GEORGE CARNELL, Philadelphia, Pa. Filed May 19, 1891. Serial No. 393,369. (No model.)



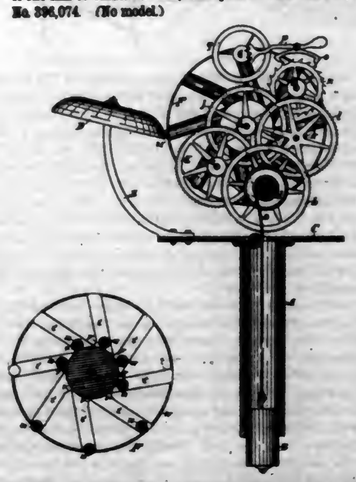
Claim.—1. In combination, the hopper, the means for forcing the molds beneath the same, the swiveled plates for engaging the molds, the vertically-movable supports carrying said plates, and means for turning said plates while elevated for dumping the boxes, substantially as described.

2. In combination, the hopper, the means for moving the mold-boxes under the hopper, the levers for raising the boxes, the supports swiveled in the ends of the levers, the plates *m* for engaging the boxes pivoted to the swiveled supports, and means for operating the levers and the swiveled supports, substantially as described.

3. In combination, the hopper, the mold-boxes having recesses in their sides, the means for moving the mold-boxes under the same, the swiveled plates adapted to the recesses in the molds, the elevating-supports for the plates, with operating means for said supports, and means for turning the plates to dump the molds, substantially as described.

4. In combination, the hopper, means for moving the boxes under the same, the mold-boxes, the elevating-levers, with means for raising and lowering them, and the pivoted gravity-plates at the ends of the levers for engaging the boxes, substantially as described.

472,335. FOG-SIGNAL. WALTER R. CLOSE, Bangor, Me., assignor of one-half to Charles R. Hill, same place. Filed June 13, 1891. Serial No. 396,074. (No model.)



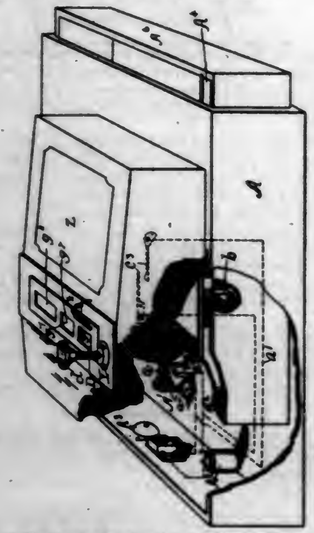
Claim.—1. An improved fog-signal consisting of the combination of a drum with winding mechanism provided with gear attached to a clock mechanism having an extending shaft, a wheel mounted upon said shaft and having hollow tangential spokes provided with inclosed balls, said wheel having openings in its rim to allow the partial projection of said balls, a gong mounted near the periphery of said wheel in such manner as to be adapted to be struck by the said balls upon the revolving of the wheel, and a hollow post with platform supporting said mechanism, and a weight traveling in said post, attached by cord or

other means to said drum, for the purpose described, substantially as shown.

2. An improved fog-signal consisting of the combination of a wheel having hollow tangential spokes provided with a pocket or incline at their connection with the hub, for the purpose described, said spokes containing loose balls adapted to project in certain positions partially through the openings in the rim, and a gong located in position to be struck by the projection of said balls upon the revolving of said wheel with a clock-movement having a projecting shaft attached to said wheel and adapted to convert motion to the latter, for the purpose described, and substantially as shown and set forth.

3. A revolving wheel turned by clock-movement or other suitable mechanism, said wheel having hollow inclined radial spokes projecting tangent to the hub and containing balls adapted to roll therein and in certain positions project partially through holes in the rim, for the purpose described, and substantially as shown and set forth.

472,336. CASH-RECORDER. CHARLIE H. COLBY, Owosso, Mich. Filed Apr. 27, 1891. Serial No. 390,705. (No model.)



Claim.—1. In a cash-recorder, a money-drawer, a bolt for locking said draw, a rotatable disk provided with a cam-slot, engaging with said bolt, means for rotating said disk, consisting of a key, a lever, and a plunger connecting said lever with said disk, a battery within the case of said recorder, provided with a circuit having an alarm-bell, and a circuit-closer operated by said plunger, substantially as described.

2. In a cash-recorder, two independent rolls adapted to feed forward two independent strips of paper, a rotating disk, a plunger for rotating said disk in one direction, a money-drawer adapted to operate said disk in the opposite direction, and means connecting said disk with said rolls, whereby one is operated when the disk is rotated in one direction and the other when it is rotated in the opposite direction, substantially as described.

3. In a cash-recorder, independent slips of paper for receiving records of sales, one adapted to be retained in the machine as a permanent record and the other projected from the machine for the customer, independent rolls for feeding each of said strips, provided with a ratchet-wheel, levers provided with dogs engaging said ratchet-wheels for operating said rolls, a rotatable disk, means for rotating said disk in either direction, and connecting-levers pivoted to the opposite sides of said disk at one end and to the ratchet-levers operating said feeding-rolls at the other end, whereby one of said rolls is operated when the said disk is revolved in one direction and the other roll when the said disk is operated in the opposite direction, substantially as described.

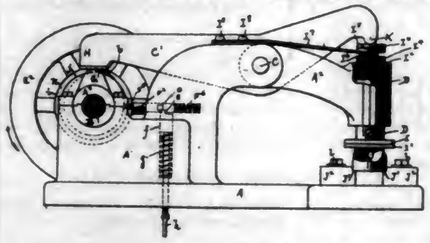
4. In a cash-recorder, two independent rolls adapted to feed forward independent strips of paper, a rotating disk, a plunger for rotating said disk in one direction, a money-drawer adapted to operate said disk in the opposite direction, and means connecting said disk with said rolls, consisting of connecting-rods pivoted to the opposite sides of said disk, and levers fulcrumed on the shaft of said rolls, pivoted to said connecting-rods and carrying pawls adapted to engage with ratchet-wheels on said rolls, the said ratchet-wheels being of different diameters, whereby said rolls are adapted to feed different amounts of record-paper, substantially as described.

5. In a cash-recorder, independent record-sheets, one provided with a pressure-roll adapted to direct its sheet into the machine and the other provided with a deflecting-plate adapted to project its record-sheet outside the machine, a key operated from the exterior of said machine and adapted to operate the roll feeding the record retained within the machine, and a money-drawer adapted to rotate the roll feeding the sheet projected from the machine, substantially as described.

6. In a cash-recorder, a money-drawer provided with a lock, in combination with a key operated from the exterior of said recorder for unlocking said drawer, a battery having a double circuit, each circuit provided with a circuit-closer, and a bell adapted to be rung by either circuit, one of said circuits closed by said plunger and the other by said drawer, substantially as described.

7. In a cash-recorder, two independent rolls adapted to feed forward independent strips of paper, one of said rolls being adapted to direct one of said strips of paper forward within the machine and the other of said rolls being adapted to project its record from the machine, a key adapted to operate the roll for feeding the sheet within the machine a sufficient distance for receiving a new record, and a money-drawer adapted to operate the other roll a sufficient distance to provide a card for a customer, substantially as described.

472,337. DIE-PRESS. JAMES D. COLONY and WILLIAM H. ALBER, Brookfield, Mass. Filed Dec. 24, 1891. Serial No. 416,096. (No model.)



Claim.—1. The combination, with a stationary die provided with a cutting-edge, of a reciprocating sliding plunger, a follower-plate carried by said sliding plunger, a rocking lever having one end operatively connected with said plunger, a rotating cam actuating the opposite end of said rocking lever, springs by which the motion of said plunger and said rocking lever as actuated by said rotating cam is reversed, and means of adjustment between said plunger and said rocking lever, whereby the downward movement of said follower-plate is limited, substantially as described.

2. The combination, with a sliding plunger and a bed supporting a die, of the die parallel bars resting on said bed and provided with shoulders upon which said die rests and upon which it is capable of lateral adjustment, said bars being provided with slots at right angles to said shoulders to receive attaching-bolts, and attaching-bolts by which said bars are attached to the bed, substantially as described.

3. The combination of a stationary die, a reciprocating plunger acting conjointly with said die, a rocking lever operatively connected with said plunger, a rotating shaft, and a cam carried on said shaft by which said rocking lever is actuated, said cam having a sliding motion on said shaft by which it is moved into engagement with said rocking lever, substantially as described.

4. The combination, with a stationary die and a plunger acting conjointly with said die, of a rocking lever operatively connected with said plunger, a rotating shaft, a cam carried on said shaft, provided with a wing by which said lever is actuated and having a cam-groove, and a pin held in the frame-work of the machine and engaging said cam-groove to slide the cam longitudinally on said shaft, substantially as described.

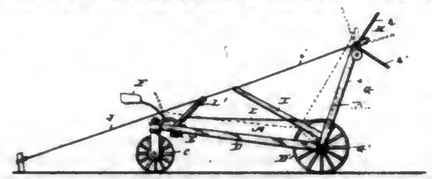
5. The combination, with a stationary die and a reciprocating plunger acting conjointly with said die, of an actuating-cam operatively connected with said plunger and provided with a cam-groove, a sliding pin held in the frame-work and arranged to engage said cam-groove, and a cam acting on said pin to push it out of engagement with said cam-groove, substantially as described.

6. The combination, with a reciprocating plunger, of a cam F, capable of a rotating and sliding motion, provided with a wing G', by which said plunger is actuated, and with a cam-groove F', cam *b*, sliding pin F⁵, and a retaining-latch arranged to engage said pin, substantially as described.

7. The combination, with a reciprocating plunger, of an actuating-cam operatively connected with said plunger, a rotating shaft carrying said cam and having a spline connection therewith, and connected actuating mechanism by which said cam is moved longitudinally on said shaft, substantially as described.

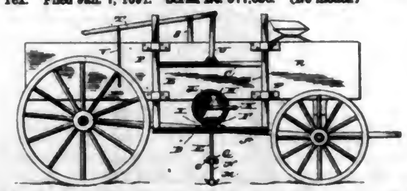
8. The combination, with a reciprocating plunger, of a cam operatively connected with said plunger, a rotating shaft carrying said cam and having a spline connection therewith, said cam having a groove F', a sliding pin held in the frame-work, a spring applied to force said pin into the cam-groove, and a retaining-latch by which said pin is held against the tension of said spring, substantially as described.

472,338. HAY-STACKING MACHINE. SHERMAN COPCANNON, Lenexa, Kans. Filed Dec. 28, 1891. Serial No. 416,301. (No model.)



Claim.—The hay rake and stacker comprising the supporting frame or vehicle, the rake-carrying frame G, having its side bars *e e* hinged to the axle of said vehicle, the rake-head hinged to the forward ends of said side bars and carrying two series of teeth at right angles to each other, the arm or lever I, secured at its lower end to the rear portion of the frame G and connected by rods *i* with the forward end thereof, an arm or lever K', secured to the central portion of the axle, a rod or link connecting said arm and the rake-head, an operating-lever having a connection with said link, and an operating rope or cable connected to the lever I, substantially as specified.

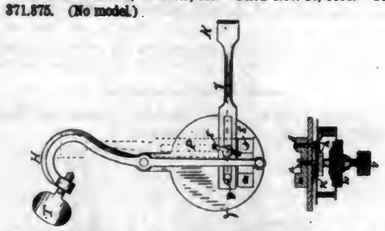
472,339. POST-HOLE AUGER. HENRY M. CRYER, Goldthwaite, Tex. Filed Jan. 7, 1891. Serial No. 377,020. (No model.)



Claim.—1. The combination, with a wagon having brackets secured to one side thereof, of a vertically-sliding frame moving within said brackets and carrying an earth-auger and gearing for actuating said auger, substantially as described.

2. The combination, with a wagon having brackets secured to one side thereof, of a vertically-sliding frame moving within and detachable from said brackets and carrying an earth-auger, the shaft of which is pivotally jointed, gearing for actuating said auger mounted within said frame, and a lever for raising or lowering the frame, substantially as shown and described.

472,340. COMBINED BURGLAR-ALARM AND DOOR-FASTENER. CHARLES K. DONNELL, Webster, Me. Filed Nov. 17, 1890. Serial No. 371,875. (No model.)



Claim.—In a burglar-alarm attached to a door-knob shank, the combination of an alarm mounted upon a base-plate, a releasing-detent which is pressed through a hole in the base-plate by a spring, and a clamping-piece for the shank, which rests upon the top of the detent and keeps it in action while the shank is at rest, all as set forth.

472,341. VEHICLE-TIRE. FRANK DOUGLAS, Chicago, Ill. Filed Oct. 12, 1891. Serial No. 408,590. (No model.)

Claim.—1. In inflatable vehicle-tires, an inner tube and an outer tube having its outer edges detached from the inner tube to permit of attachment to the wheel-rim, in combination with a wheel-rim provided with a flexible bridge against which the inner tube rests, substantially as described.



2. In inflatable vehicle-tires, an inner tube and an outer tube having its outer edges detached from the inner tube to permit of attachment to the wheel-rim, in combination with a wheel-rim provided with a flexible bridge formed by extending one of the layers composing the outer tube across the wheel-rim and against which the inner tube rests, substantially as described.

3. In inflatable vehicle-tires, an inner tube and an outer tube having its outer edges detached from the inner tube to permit of attachment to the wheel-rim, in combination with a wheel-rim of a curve greater than the curve of the inner tube at the point of contact therewith, provided with grooves or channels in which the edges of the outer tube rest and are clamped, substantially as described.

4. In inflatable vehicle-tires, a valve for inflating and deflating the tube, consisting of a tube opening into the inflatable tube, a shell arranged in such tube and turned in at the outer end, a compressible and expandible valve-seat arranged within the shell against its inturned outer end, a valve that may be drawn against or receded from the seat to prevent or permit the egress of air, a pin for holding said valve from turning while permitting it to be drawn or receded from the valve-seat, and a nut for holding the valve securely against the seat, substantially as described.

472,342. HOSE-COUPLING. EDWARD DRAUDT and ALBERT DRAUDT, Cleveland, Ohio. Filed Nov. 4, 1891. Serial No. 410,887. (No model.)



Claim.—1. A hose-coupling comprising a male part and a female part, the latter being adapted to receive the former, the female part having internal shoulders and the male part having external shoulders, with a spring mounted thereon between the said external shoulders, the body of the spring protruding in its normal condition at the periphery of the male part, the construction of parts being such that during the act of coupling said spring is compressed and maintained in such compressed condition by the female part of the coupling until the interval between the aforesaid external shoulders of the male part registers with the interval between the aforesaid shoulders of the female part, substantially as set forth.

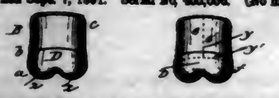
2. A hose-coupling comprising a male and a female part, the latter being adapted to receive the former, the male part having shoulders externally and the female part having internal shoulders, the male part having a spring mounted thereon between its said external shoulders, the ends of said spring terminating in outwardly-projecting members, and the spring in its normal condition protruding at the periphery of the male part, the female part being adapted during the act of coupling to compress and maintain said spring in its compressed condition until the interval between the aforesaid external shoulders of the male part have registered with the interval between the aforesaid internal shoulders of the female part, the female part being slotted to receive and accommodate the outwardly-projecting members of the spring, substantially as set forth.

472,343. CUFF-HOLDER. HOYES B. BOULSTON, Oxford, assignor of one-half to Eugene Smith, Elmira, N. Y. Filed Dec. 5, 1890. Serial No. 373,667. (No model.)



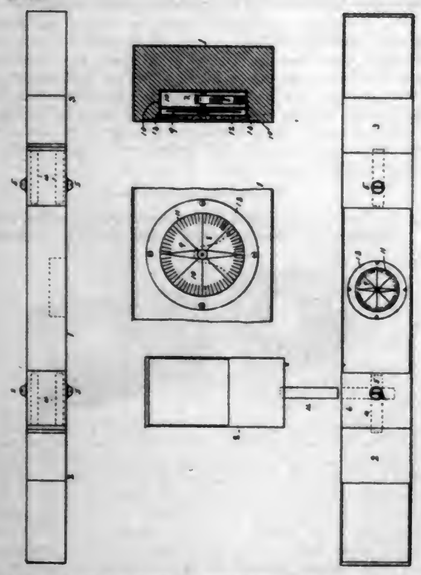
Claim.—The cuff-holder described, formed from a single metallic strip bent upon itself to form upper and lower members, the upper members having an angular bend and terminating in a toothed gripping end, the lower member having an opening with a toothed edge to receive the gripping end of the upper member, substantially as described.

472,844. METAL TOOTH-CROWN. GEORGE EVANS, New York, N. Y. Filed Sept. 7, 1891. Serial No. 405,056. (No model.)



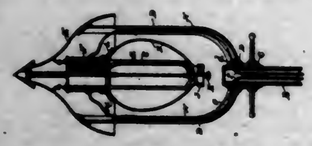
Claim.—A metallic tooth-crown furnished with a non-fusible lining, which covers the grinding or occluding third and is confined to the said third and the immediately adjoining parts of the middle third, to prevent fusion of the exposed parts of the crown in the process of soldering or filling with solder, substantially as specified.

472,845. LEVEL ATTACHMENT. JOHN J. PINHART and JOHN J. NIMMS, Hopkins, Minn. Filed Nov. 4, 1890. Serial No. 370,272. (No model.)



Claim.—In an instrument for determining levels, angles, &c., the combination, with a straight body having a graduated pendulum-level device embedded therein, of one or more detachable end pieces provided with means for connecting them to the body either in line therewith or at right angles thereto, substantially as set forth.

472,846. SYSTEM OF ARC LIGHTING. HORATIO A. FOSTER, New York, N. Y. Filed Jan. 29, 1891. Serial No. 379,562. (No model.)



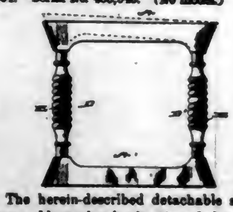
Claim.—1. In an arc lamp, the metallic lamp-mechanism box insulated from the current-carrying parts of the lamp and provided with a flange for the upper edge of the lamp-globe, the yoke, the negative-carbon holder insulated from the lamp-box walls, a globe inclosing the yoke and holder, and a globe-support J, secured to the yoke by suitable means, and lamp-terminals suitably insulated and inclosed in metallic casings, substantially as set forth.

2. In combination, in an arc lamp, the lamp-operating mechanism, an inclosing metallic box insulated therefrom and hermetically sealed on its exposed sides, the insulated lamp-terminals introduced into the box through snugly-fitting orifices and cemented thereto, metallic casings around the portions of the said lamp-terminals external to the said box, the yoke secured to the lamp-box and bearing the negative carbon holder, said holder being completely insulated from the lamp-box, the main-circuit connection from the holder to the lamp mechanism, the globe held in position between a flange on the lamp-box and an insulating globe-support J, and insulated means, as K, for securing the support in place, substantially as set forth.

3. A hollow lamp-post for arc lamps, containing insulating and suitably-protected conductors, surmounted by a lamp-supporting frame carrying the hood E, and having tubular or semi-tubular side rods D for protecting the lamp-terminals, substantially as set forth.

4. In combination, a hollow conducting lamp-post surmounted by a lamp-supporting frame and hood, a lamp held therein having its operating mechanism inclosed in and insulated from a conducting-box hermetically sealed on its exposed portions, the yoke secured to the lamp-box and bearing the negative-carbon holder, insulated from the lamp-box, the main-circuit connection from the said holder to the operating mechanism, the globe held in position between a flange on the lamp-box, and an insulating globe-support secured to the yoke by an insulated screw, the insulated and protected lamp terminals leaving the box through snugly-fitting orifices and cemented therein, leading down the side rods of the supporting-frame to the head of the lamp-post and there connected with insulated and protected post-conductors by means of insulated and protected joints, a hermetically-closed box on or near the post, containing a double-break cut-out switch operated by an insulated handle extending through the box-wall, the said post-conductors being led to the switch through moisture-proof junctions, and the insulated and protected mains led up inside the post and introduced into the switch-box through similar junctions, substantially as set forth.

472,847. SHELF-SUPPORT. FRANK GIBB, Bridgeton, Me. Filed Sept. 16, 1891. Serial No. 405,843. (No model.)



Claim.—1. The herein-described detachable shelf-support, consisting of an upper and lower bar having threaded sockets in each end, and adjusting-rods having threaded ends engaging and adjustable in said threaded sockets.

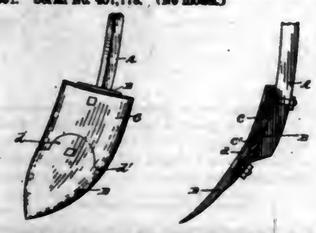
2. The herein-described detachable shelf-support, consisting of an upper and lower bar having an opening in each end, threaded sockets fitting in said openings, and rods having their ends threaded and engaging said threaded sockets for adjusting the upper and lower bars.

3. A detachable and adjustable shelf-support consisting of an upper and lower supporting-bar and rods having their ends adjustable in said bars for adjusting the bars, for the purpose described.

4. A detachable and adjustable shelf-support consisting of an upper and lower supporting-bar and rods engaging the ends of said bars to adjust them, for the purpose described.

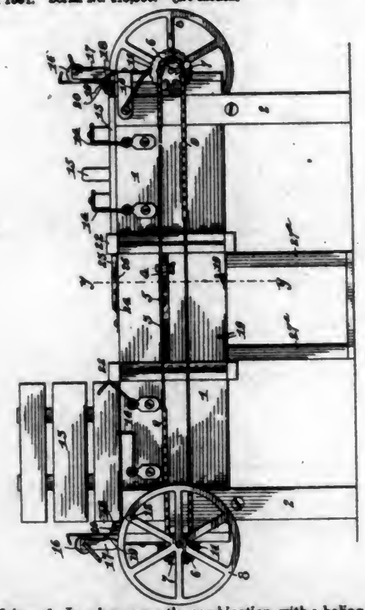
5. A detachable and adjustable shelf-support consisting of an upper and lower bar having a threaded socket in each end and bars having threaded ends engaging said sockets and having grasping portions to permit easy turning of said rods, for the purpose described.

472,848. PLOW. JAMES I. HATFIELD, Irwinton, Ga. Filed Oct. 5, 1891. Serial No. 407,778. (No model.)



Claim.—In a plow, the combination of the plow-stock A, a separate splice-piece B, a plow-body C, fitting upon said splice-piece and secured therewith to the plow-stock by a bolt passing through the body, splice-piece, and stock, said plow-body having a central recess in its lower edge and said splice-piece extending below said recess, and a point-piece having a projection fitting the recess in the body and having a bolt passing through said projection and uniting the point to the splice-piece, as set forth.

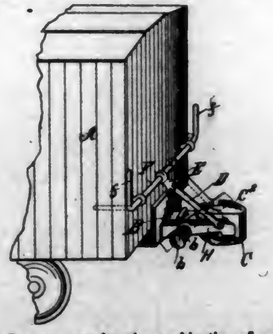
472,849. HAY-PRESS. JOHN A. HAYES, Rogers, Ark. Filed Nov. 30, 1891. Serial No. 413,569. (No model.)



Claim.—1. In a hay-press, the combination, with a baling-box, of a double-headed plunger contained therein, a cover pivoted above the center of the stroke of the said plunger and adapted to be thrown on either side of its pivotal point by the motion thereof, and means for imparting a reciprocating motion to the said plunger, substantially as described.

2. In a hay-press, the combination, with a baling-box, of a double-headed plunger contained therein, a transverse shaft located above the center of the stroke of the said plunger, a cover for the said baling-box and straps encircling the said shaft and secured to the said cover, the under surface of the said straps bearing upon the said plunger, whereby upon a motion of the said plunger the cover will be thrown upon the opposite side of shaft, and means for imparting a reciprocating motion to the said plunger, substantially as described.

472,850. CAR-COUPLING. SAMUEL P. HEATH, Saginaw, Mich. Filed July 20, 1891. Serial No. 400,060. (No model.)



Claim.—1. In a car-coupler, the combination of a draw-bar, a draw-head pivoted to the end of said draw-bar and adapted to swing out of engagement with a corresponding head on the opposite car, and a lever pivoted at its central portion to the side of said draw-bar and adapted to swing alongside of the same and against the back of said draw-head, substantially as and for the purpose described.

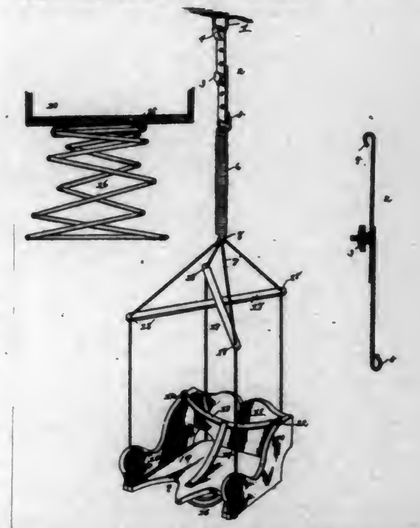
2. In a car-coupler, the combination of a draw-bar, a draw-head pivoted to the end of said draw-bar and adapted to swing out of engagement with a corresponding head on the opposite car, and a spring-lever pivoted at its central portion to the side of said draw-bar and adapted to swing alongside of the same and against the back of said draw-head, substantially as described.

3. In a car-coupler, the combination of a draw-bar, a draw-head pivoted to the end of said draw-bar and adapted to swing out of engagement with the corresponding head on the opposite car, a lever pivoted at its central portion to the side of said draw-bar and adapted to swing alongside the same and against the back of said draw-head, and a spring on the pivoted bolt of said draw-bar, substantially as and for the purposes described.

4. In a car-coupler, the combination of a draw-bar, a draw-head pivoted to the end of said draw-bar and adapted to swing out of engagement with a corresponding head on the opposite car, a lever pivoted at its central portion to the side of said draw-bar and adapted to swing alongside of the same and against the back of said draw-head, and means for swinging said lever from the side of the car, substantially as described.

5. In a car-coupler, the combination of a draw-bar, a draw-head pivoted to the end of said draw-bar and adapted to swing out of engagement with a corresponding head on the opposite car, a lever pivoted at its central portion to the side of said draw-bar and adapted to swing alongside of the same and against the back of said draw-head, a rock-shaft on the end of the car provided with an arm, and a connecting-rod between the said arm and the lever, substantially as and for the purposes described.

472,851. BABY-JUMPER. JOHN HIGHAM, Oakland, Cal. Filed May 27, 1891. Serial No. 394,237. (No model.)



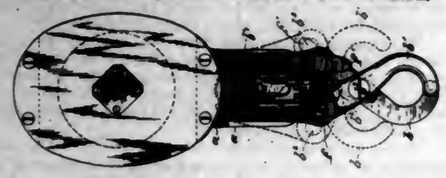
Claim.—1. A baby-jumper consisting of a jumper-seat, a coiled suspension-spring, cords connecting the seat and spring, and the suspension device composed of opposite sections overlapping each other perforated, and a connecting adjusting-screw passed through the perforations, said hanger terminating at its upper end in a hook, substantially as specified.

2. The combination, with the jumper-seat, the suspension-spring, and the adjustable hanger, of the coiled conical spring secured to the under side of the seat, substantially as specified.

472,852. COMPOUND FOR INSULATING, ELECTRIC WIRES. LOUIS HILL, Waterbury, Conn. Filed July 11, 1891. Serial No. 399,295. (No specimens.)

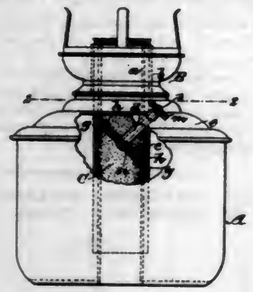
Claim.—A compound for insulating wire, consisting of pittinite pitch, candle-tar, coal-tar, asphalt pitch, and rosin, substantially as set forth.

472,358. FALL-HOOK. FREDERICK S. HILTON, South Framingham, Mass. Filed May 16, 1891. Serial No. 393,040. (No model.)



Claim.—The combination of a support *a* with a pair of mousing-hooks *b b'* and a spring *d*, the shanks of the hooks *b b'* being crossed and loosely pinned together at b^3 and each shank being jointed at b^4, intermediate the pin at b^3 and support *a*, springs *d* being mounted between the hooks *b b'*, intermediate joints b^4, and support *a* and loosely pinned to support *a*, all substantially as shown and described.

472,354. LAMP-WICK RAISER. HARRY H. HITWELL, Long Island City, N. Y. Filed Nov. 7, 1891. Serial No. 411,183. (No model.)





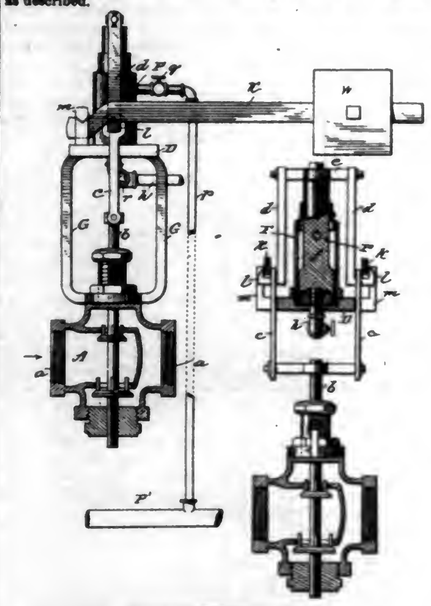
Claim.—1. A lamp-wick raiser comprising a bracket-plate, spaced star-wheels mounted to rotate on the bracket-plate in the same plane, a shaft journaled in the bracket-plate at a right angle thereto and carrying a star-wheel intermediate of and meshing with the spaced star-wheels, and means for revolving the shaft, substantially as described.

2. A lamp-wick raiser comprising an inclined bracket-plate held in the lamp-body and having a central sleeve projected at a right angle thereto, spaced star-wheels rotatably supported on the bracket-plate in the same plane and engaging a tubular wick in the lamp-body, a shaft revoluble in the sleeve of the bracket-frame, a star-wheel at the lower end of the shaft, meshing with the spaced wheels, and means for revolving the shaft, substantially as described.

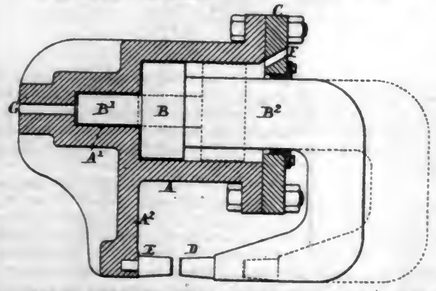
3. The combination, with a lamp-body and a burner therein having a tubular wick, of a bracket-plate having a central sleeve and held at an incline in the lamp-body, two spaced star-wheels rotatably supported on the bracket-plate and engaging the tubular wick, and a shaft revoluble in the sleeve of the bracket-plate, provided at its upper end with a thumb-wheel and at its lower end with a star-wheel located between and meshing with the spaced wheels, substantially as described.

472,355. SPEED-REGULATOR. ROSS J. HOFFMAN, Binghamton, N. Y. Filed June 8, 1891. Serial No. 395,566. (No model.)

Claim.—In combination with the throttle-valve and its casing, the pressure-cylinder and piston above the same, the yoke connection between the piston and the valve-stem extending upon each side of the cylinder and having on each side the laterally-projecting bearings *l l*, the plate D, into which the cylinder is screwed, having thereon the bearings *m*, the lever K, engaging the bearings *m* to pivot thereon and engaging the bearings *l* to press the same downward, with the yokes, piston, and valve, and the adjustable weight on the lever, substantially as described.



472,356. PORTABLE PUNCHING AND RIVETING MACHINE. ALBERT C. A. HOLZAPFEL, London, England. Filed Feb. 23, 1892. Serial No. 422,549. (No model.)



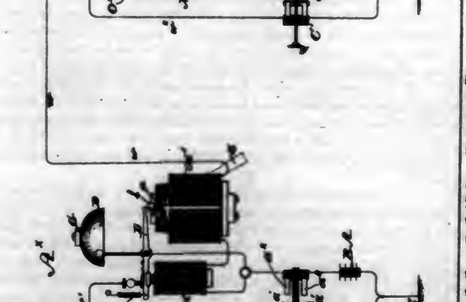
Claim.—1. In a machine for punching and riveting, the combination of a cylinder A, having a projecting arm A^3, carrying an abutment-piece, and a piston B, subjected to fluid-pressure and having an elbow-shaped extension B^3, extending laterally to the same distance as the arm of the cylinder and carrying the punching or riveting tool, substantially as described.

2. In a machine for punching and riveting, the combination of a cylinder A, having a projecting arm A^3, carrying an abutment-piece, a piston B, subjected to fluid-pressure, a cylindrical extension B' on the said piston fitting into a cylindrical recess A' on the cylinder A and also subjected to fluid-pressure, and an elbow-shaped extension B^3 on the said piston extending laterally to the same distance as the arm of the cylinder and carrying the punching or riveting tool, substantially as described.

472,357. PORTABLE PUNCHING AND RIVETING MACHINE. ALBERT C. A. HOLZAPFEL, London, England. Filed Feb. 23, 1892. Serial No. 422,550. (No model.)

Claim.—1. In a machine for punching and riveting, the combination of a cylinder A, having a projecting arm A^3, carrying an abutment-piece, and a longitudinal slot A^1, and a piston B, subjected to fluid-pressure and having an arm H, projecting laterally therefrom through the slot of the cylinder to the same distance as the arm of the cylinder and carrying the punching or riveting tool, substantially as described.

2. In a machine for punching and riveting, the combination of a slotted cylinder A, having an arm A^3, carrying an abutment-piece, a piston B, subjected to fluid-pressure, a cylindrical extension B' on the said piston fitting into a cylindrical recess A' on the cylinder A and also subjected to fluid-pressure, and an arm H, projecting laterally from the piston through the slot of the cylinder to the same distance as the arm of the cylinder and carrying the punching or riveting tool, substantially as described.



472,358. DEVICE FOR DISPENSING BEER OR OTHER LIQUIDS. MARTIN ITJEN, Jacksonville, Fla. Filed July 25, 1891. Serial No. 400,720. (No model.)

Claim.—In an apparatus for weighing beer, &c., the combination, with the fixed support A and a scale-beam B, arranged alongside the same, of the bracket D and a fulcrum-piece *c*, connecting the latter with such scale-beam, the shank of said bracket being adapted to slide in said support, as shown and described, for the purpose specified.

472,359. ELECTRIC INDICATOR FOR RAILROAD-BLOCKS. ROBERT W. JACCARD, Philadelphia, Pa. Filed Apr. 6, 1891. Serial No. 387,847. (No model.)

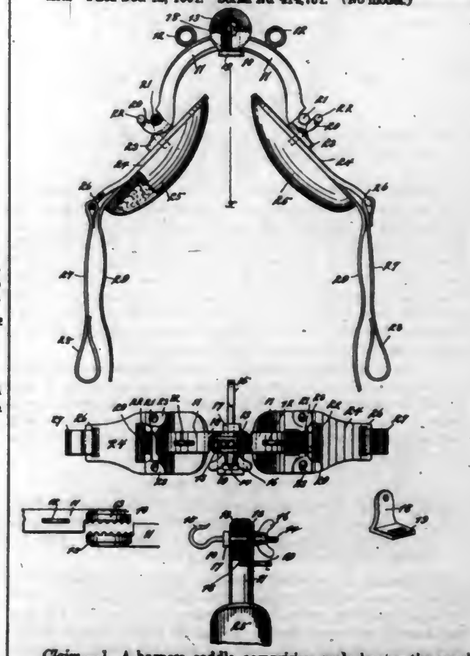
Claim.—1. In a system of electrical indicators for railroad-blocks, the combination of signals, neutral and polarized magnets having armatures for actuating the signals, the armatures of the neutral magnets controlling the armatures of the polar magnets, and the electrical connections, substantially as described.

2. In an electrical signal for railroads, the combination of an audible and a visual signal, a main-line battery with a neutral electro-magnet, and a polar electro-magnet, the former magnet having mechanical connection with the audible signal and the latter with the visual signal, the armature of the neutral magnet controlling the armatures of the polar magnet, substantially as described.

3. In an electrical signal-indicator for railroads of the block type, the combination of two sets of visual signals and two sets of audible signals located at independent stations, two polar electro-magnets with two neutral electro-magnets at said stations, the former magnets having connection with the visual signals and the latter magnets adapted to control each, and an audible signal with push-buttons at each station, whereby audible and visual signals are actuated and released, the armatures of the said neutral magnets controlling the armatures of said polar magnets, substantially as described.

4. In an electrical signal of the block type embodying visual and audible signals, the combination of a neutral electro-magnetic trembler-bell and a polar electro-magnet at each end of the block, with a main-line battery and a switch for each apparatus, the polar magnets controlling each visual signal, and the armatures of the neutral magnetic bells controlling the armatures of the polar magnets, substantially as described.

472,360. HARNESS-SADDLE. JAMES A. JAMISON, Russellville, Ark. Filed Dec. 12, 1891. Serial No. 414,781. (No model.)



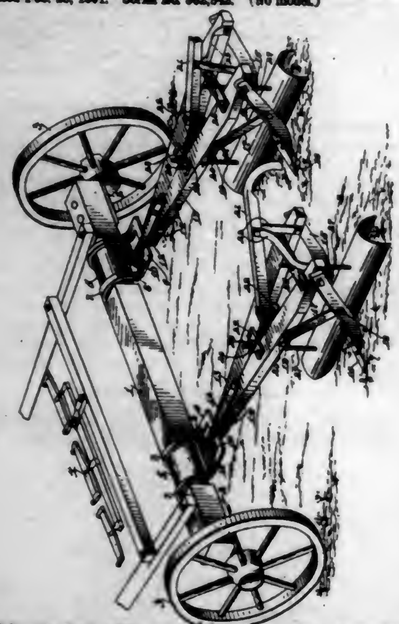
Claim.—1. A harness-saddle comprising pads having the usual girths and leg-straps, keepers secured to the outer plates of the pads, a two-part center yoke having its lower end hooked to the keepers and its upper end terminating in clamping-pieces having interlocking teeth, and a fastening-bolt to secure the clamping-pieces together, substantially as described.

2. In a harness-saddle, the combination, with the center yoke comprising two members, a check-hook provided with a bolt securing said members together at the center, of an angle-plate held between the members by said bolt and having its lower portion terminating in a loop, substantially as described.

3. A harness-saddle consisting in the raised yoke 10, formed of the two members 11, having their inner faces at their upper ends toothed and having hooked lower ends 20, provided with cross-pieces 22, the plate 18 between the upper ends of members 11 and having a rearward-projecting back-strap loop, the check-hook having a bolt extending through said toothed ends and plate 18, and the pad-plates

having keepers engaging the hooked ends of the yoke, substantially as set forth.

472,861. CULTIVATOR. EDWARD H. JENKINS, Kalamazoo, Mich. Filed Feb. 26, 1891. Serial No. 382,542. (No model.)



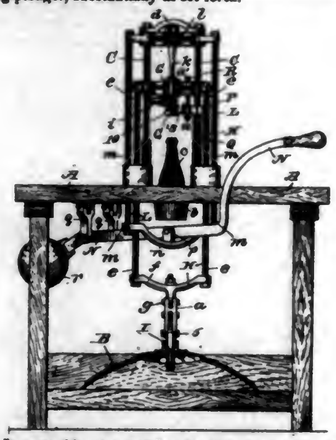
Claim.—1. In a cultivator of the class described, the combination, with the axle terminating at its ends in bearings, having wheels, and between its ends reduced to form cylindrical portions, of U-shaped bails terminating in eyes loosely mounted in each of the cylindrical portions, a pair of diverging cultivator-beams secured together and located in rear of each bail, a cross-bar connecting the terminals of each bail, grooved rollers mounted between the cross-bars and the ends of the bails, and pairs of rigid straps bolted to the front ends of the diverging beams and having bearing-openings receiving the ends of the axles of the rollers, substantially as specified.

2. The combination, with a pair of cultivator-beams terminating in standards and perforated cross-bars connecting said beams, of rods loosely mounted for vertical reciprocation in the perforations, terminating at their upper ends in nuts threaded thereon, whereby said rods are vertically adjustable, and a feeder connected at its ends to the lower ends of the rods, substantially as specified.

472,862. MACHINE FOR BOTTLING AERATED LIQUIDS. FREDERIC J. JOHNSTON, Cambridge, and HERMAN F. HALLETT, Boston, assignors to the American Soda Fountain Company, Boston, Mass. Filed Jan. 8, 1892. Serial No. 417,233. (No model.)

Claim.—1. In a machine for bottling liquids, the combination, with the sliding frames of the corking-plunger and filling-head and the hand-lever and treadle by which they are respectively operated, of a stop-bolt interposed between the cross-bars of the corking-plunger and the filling-head, a yielding support for said stop-bolt placed beneath the filling-head cross-bar and adapted to slide upon a vertical rod or standard, a spring for holding said sliding support up to the filling-head cross-bar when the latter is drawn down, and a locking device adapted to be operated by the stop-bolt when forced down by pressure applied thereto for clamping said sliding support rigidly to its standard, substantially as and for the purpose set forth.

2. In a machine for bottling liquids, the combination, with the sliding frames of the corking-plunger and filling-head and the hand-lever and treadle by which they are respectively operated, of a block adapted to slide upon a vertical rod or standard, a stop-bolt rising from said block and interposed between the filling-head cross-bar through which it passes, and the cross-bar of the corking-plunger to regulate the descent of the said corking-plunger with relation to the filling-head, a spring for supporting said sliding block and holding it up to the filling-head cross-bar when the filling-head is upon the neck of the bottle, and a locking device operated by the stop-bolt for clamping the sliding block rigidly to its standard and thereby holding the said stop-bolt immovably in position to intercept the cross-bar of the corking-plunger, substantially as set forth.



3. In a machine for bottling liquids, the combination, with the sliding frames of the corking-plunger and filling-head and the hand-lever and treadle by which they are respectively operated, of a block adapted to slide on a vertical rod or standard, a stop bolt or pin rising from said block and interposed between the filling-head cross-bar and the cross-bar of the corking-plunger, a spring for supporting said block and holding it up to the filling-head cross-bar when the filling-head is upon the neck of the bottle, a locking device operated by the stop-bolt for clamping the block rigidly to its standard, and an adjusting-screw projecting from the upper side of the stop-supporting block and adapted to regulate the distance between the said block and the filling-head cross-bar when the filling-head is in contact with the adjusting-screw, substantially as described.

4. In a machine for bottling liquids, the combination, with the sliding frames H L of the corking-plunger and filling-head and the hand-lever and treadle by which they are respectively operated, of a yielding block or support P, sliding upon the vertical rod or standard C and provided with the regulating-screw *s*, the supporting-spring Q, encircling the rod C beneath the block P and adapted to hold said block up to the filling-head cross-bar when the filling-head is down upon the mouth of the bottle, the stop-bolt R, seated in the block P and extending up through an aperture in the filling-head cross-bar G into a position to intercept the cross-bar *l* of the corking-plunger, said bolt R having a tapering shoulder or incline 15, and the locking-cam *d'*, pivoted within a recess in the block P and having one side in contact with the rod C and the opposite side provided with a projection 12, bearing against the tapering shoulder or incline 15 of the bolt R, all constructed to operate substantially in the manner and for the purpose set forth.

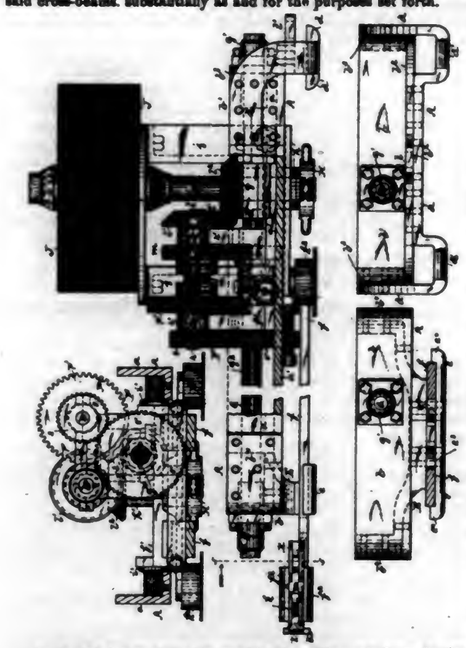
472,863. MINING-MACHINE. ADAM KEIL, McKeesport, and ANTON R. WESTERDAHL, Pittsburg, assignors to Samuel S. Brown, Pittsburg, Pa. Filed Aug. 4, 1891. Serial No. 401,894. (No model.)

Claim.—1. In a mining-machine, the combination of a main frame supported above the floor at the rear and forward ends, the forward end being supported on a central shoe having guideways therein, and a sliding frame having a carriage supported on the main frame and provided with a sprocket-wheel depending below the main frame, the sliding frame having forwardly-extending bars moving in the guides of said shoe and supporting a cross-frame below the main frame, and a cutter-chain driven by the sprocket and passing around the cross-frame, substantially as and for the purposes set forth.

2. In a mining-machine, the combination of a main frame, a sliding frame moving therein and having a vertical sprocket-shaft mounted therein, and a motor mounted on the sliding frame and having a vertical armature-shaft in line with said vertical sprocket-shaft and engaging directly therewith, substantially as and for the purposes set forth.

3. In a mining-machine, the combination of a main frame having its side portions formed of angle-beams forming tracks and having guideways in a depending transverse bar at its forward end, and a sliding frame having a carriage provided with flanged wheels traveling on the horizontal flanges of said angle-beams and having their flanges traveling along the inner faces thereof and provided with bars supported at their rear ends by the carriage and extending forward from the carriage and moving in the guideways at the forward end of the stationary frame and supporting the cutting mechanism at the forward end, substantially as and for the purposes set forth.

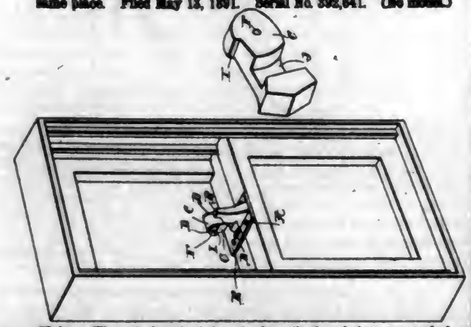
4. In a mining-machine, the combination of the main frame having its side portions formed of angle-beams, and the depending cross-frame E, having arms resting upon and secured to the horizontal flanges of the angle-beams, and vertical bars secured to the vertical portions of said cross-beams, substantially as and for the purposes set forth.



5. In a mining-machine, the combination of the main frame having its side portions formed of angle-beams, and the depending cross-frame E, having arms resting upon and secured to the horizontal flanges of the angle-beams, and vertical bars secured to the vertical portion of said cross-beams, and the shoe *c*, depending from said cross-frame E and having guideways formed therein for the longitudinally-extending bars of the sliding frame, substantially as and for the purposes set forth.

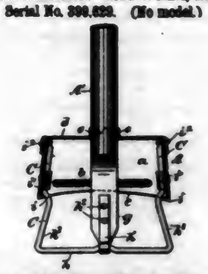
6. In a mining-machine, the combination, with the main frame having a grooved screw-bar mounted therein, of a sliding frame having a nut engaging with the screw-bar, a vertical shaft mounted in said sliding frame, the horizontal shaft *l*, connected by beveled gearing with the vertical shaft, the horizontal shaft *r* at one side of said shaft *l*, and the pinions and gear-wheel *p p' s d'*, said gear-wheel *d'* sliding on and connected to the screw-bar by a feather, substantially as and for the purposes set forth.

472,864. FASTENER FOR THE MEETING-RAILS OF SASHES. JOHN W. KLAPPERICH, Chicago, Ill., assignor of one-half to J. H. Thomas, same place. Filed May 13, 1891. Serial No. 392,641. (No model.)



Claim.—The window-lock herein described and shown, consisting of the cam C, with its upper end pivoted between the standards D D and having its free broadened end provided on one side with the transverse groove J and having its inner edge extended to reach across to the meeting-rail of the other sash when said cam is in a vertical position, the base-plate E, having the standards D D erected thereon, and the base-plate A, carrying the vertical standard B, adapted and shaped at its upper end, substantially as shown, to fit into the groove J, provided in the cam when the same shall be thrown upward and inward in a locked position, substantially as set forth.

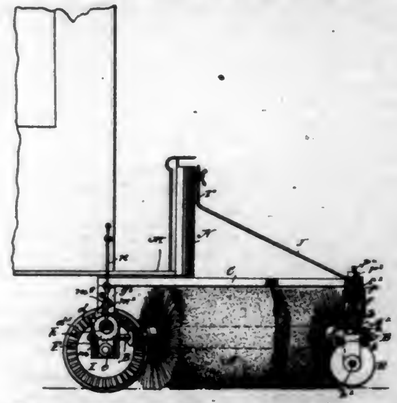
472,865. BROOM-HEAD. JOHN O. KING, Altamont, Kans. Filed July 15, 1891. Serial No. 399,629. (No model.)



Claim.—1. The combination, with a head-box and a handle flattened on the end portion that penetrates the head-box, of a stay-loop secured by its ends to the end walls of the head-box and connected at its center to the flat end portion of the handle, substantially as described.

2. The combination, with a head-box having flat parallel side walls and a top wall that has a serrated collar formed integrally at its center, and a handle having a flattened end portion inserted in the head-box and attached to the serrated collar, of a stay-loop affixed by its ends to the end walls of the head-box and near its center to the end of the handle by a clip-band, and broom-splints inserted in the head-box and therein retained by rows of stitching, substantially as described.

472,866. STREET-SWEEPER. MARY S. KJELLSTRÖM, New York, N. Y. Filed Aug. 29, 1891. Serial No. 404,067. (No model.)



Claim.—1. A road-sweeper comprising a triangular frame, two brushes mounted below the converging sides of the frame, an axle between the rear ends of the brushes, track-wheels mounted on the axle and from which the brushes are driven, and a ground-wheel journaled in the forward end of the frame, substantially as described.

2. A road-sweeper comprising a triangular frame, two brushes mounted below the converging sides of the frame and provided with pinions on the rear ends of their shafts, an axle between the rear ends of the brushes, track-wheels on the axle and provided with bevel gear-wheels meshing with the pinions of the brush-shafts, and a ground-wheel journaled in the forward end of the frame, substantially as described.

3. A road-sweeper comprising a triangular frame, two converging brushes mounted below the frame, an axle between the rear ends of the brushes, track-wheels on the axle, gearing between the track-wheels and brush-shafts, springs interposed between the frame and the boxes of the rear ends of the brushes, and a ground-wheel mounted in the forward part of the frame, substantially as described.

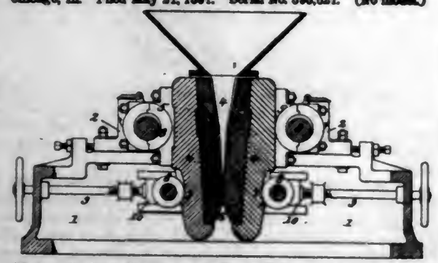
4. In a road-sweeper, the combination, with a frame and brushes mounted below the frame, of springs interposed between the frame and the boxes of the rear ends of the brush-shafts, and means for compress-

ing the springs to lower the frame, substantially as and for the purpose set forth.

5. In a road-sweeper, the combination, with a frame and brushes mounted below the frame, of springs interposed between the frame and the boxes of the rear ends of the brush-shafts, shafts mounted in the boxes, chains having one end secured to the shafts and the other end connected with the frame, and means for operating said shafts, substantially as described.

6. In a road-sweeper, the combination, with a frame and brushes mounted below the same, of cups on the boxes of the brush-shafts, cases secured to the frame and sliding in the cups, springs in the cups and cases, shafts mounted in the boxes, chains secured to cases and to the shafts, jointed keeper-bars on the ends of the shafts, and pawl-and-ratchet mechanism for said shafts, substantially as herein shown and described.

472,367. CRUSHING AND GRINDING MILL. GEORGE S. KNAPP, Chicago, Ill. Filed May 21, 1891. Serial No. 393,621. (No model.)



Claim.—1. A crushing and grinding mill for ores, &c., comprising, in combination, a pair of converging crushing-jaws 4, held together at their lower ends by guides or rollers 8, and their upper ends attached to eccentric driving-shafts 3, that are geared together so as to have a differential rotation, for the purpose set forth.

2. A crushing and grinding mill for ores, &c., comprising, in combination, a pair of converging crushing-jaws 4, held together at their lower ends by guides or rollers 8 and their upper ends attached to eccentric driving-shafts 3, that are connected together by a pair of spur-gears 11, having different diameters, for the purpose set forth.

3. A crushing and grinding mill for ores, &c., comprising, in combination, a pair of converging crushing-jaws 4, having the lower portion of their face and back curved, as described, the rollers 8 for holding the lower ends of the jaws together, and the eccentric driving-shafts 3, connected to and operating the upper ends of the jaws, for the purpose set forth.

4. A crushing and grinding mill for ores, &c., comprising, in combination, a pair of converging crushing-jaws 4, having the lower portion of their face and back curved, as described, the rollers 8, made adjustable to and from each other and adapted to hold the lower ends of the jaws together, and the eccentric driving-shafts 3, connected to and operating the upper ends of the jaws, for the purpose set forth.

472,368. BOTTLE-WASHING MACHINE. LEMUEL A. KOPLIN, Akron, Ohio. Filed Mar. 14, 1891. Serial No. 385,022. (No model.)



Claim.—1. In a bottle-washing machine, the combination, with a base or support having a fixed arm, of a casing supported on said base and adapted to slide back and forth thereon, said casing being provided with an upwardly-extending arm, a shaft journaled in the fixed arm of the base or support and the arm of the movable casing, a brush carried by said shaft, and a spring-coiled shaft journaled in the movable casing and geared to the base, whereby the spring on said shaft is put under tension when the casing is moved in its guides, substantially as described.

2. The combination, with a base or support provided with slots or ways, of a movable casing supported in said ways and provided with an arm, a shaft journaled above the base in a fixed arm thereon and in the arm of the movable casing, a brush secured to the end of the shaft, an elastic cushion or pad carried by the movable casing, a coiled spring, and a shaft journaled in the casing and connected to the spring, substantially as shown and described, for the purpose specified.

3. A bottle-washing machine comprising the base, a fixed supporting-arm attached to said base, a casing supported in suitable ways in the base, an upwardly-extending arm secured to said casing and provided at its outer end with a sleeve, a shaft journaled in the fixed support and the arm of the casing, a brush attached to one end of the shaft, an elastic cushion connected with the arm of the casing and arranged concentrically around the shaft, a fixed rack on the base, and a spring geared to the rack and attached to the casing, substantially as described.

4. In a bottle-washing machine, the combination, with a base, of a rotatable shaft journaled above the base, a brush carried by said shaft, a casing supported in suitable ways in the base and adapted to move longitudinally therein under pressure, a sliding connection intermediate of the casing and the rotatable shaft, a transverse shaft journaled in said casing and having a gear-wheel secured on one end, which meshes with the teeth of a fixed rack, and a spring within the casing and having one end connected with the shaft therein and the other connected with the wall of the casing, substantially as shown and described, for the purpose specified.

472,369. FACING COMPOUND. CHARLES F. LAWTON, Rochester, N. Y. Filed Sept. 3, 1891. Serial No. 404,589. (No specimens.)

Claim.—1. The improvement in the process of manufacturing facing compounds, which consists of the following steps, to wit: first, forming a soda silicate; second, mixing therewith calcareous marl and sulphur; third, adding an inert substance to give color or body or both, and, fourth, heating the compound after it is applied, all substantially as described.

2. The improvement in the process of manufacturing facing compounds, consisting in rendering an alkaline soluble silicate paste insoluble by the production of thiosulphuric acid and alkaline sulphides in immediate presence of and contact with the soluble silicate.

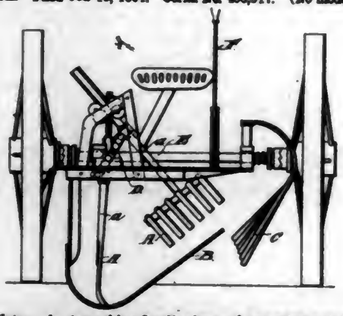
3. The improvement in the process of manufacturing facing compounds, consisting in producing thiosulphates and sulphides in a hardened mixture of a soluble silicate, sulphur, carbonate of lime, and inert matter by moderate heating.

4. The herein-described composition of matter, composed of water, soda silicate, calcareous marl, and sulphur.

5. The herein-described method of facing bricks, &c., which consists in making a soluble silicate paste, applying the paste to the face of the brick, then adding to the paste broken stone, &c., and subsequently rendering the paste insoluble by the application of heat.

6. The herein-described composition of matter, consisting of water, soda silicate, calcareous marl, sulphur, and an inert substance, all combined in substantially the proportions stated.

472,370. POTATO-HARVESTER. FRANCIS W. LEE, Woodend, Victoria. Filed Oct. 10, 1891. Serial No. 408,317. (No model.)



Claim.—1. A machine for digging and screening potatoes, having a pair of forks which are turned approximately a quarter of a revolution—that is, through an angle of about ninety degrees—at or near the end of each movement or stroke and which serve to carry the earth and potatoes elevated by the machine up a series of bars or rods, said forks being automatically turned, as just described, so that they can pass each other while the one is on its up and the other on its down stroke, substantially as and for the purposes herein described and explained, and as illustrated in the accompanying drawings.

2. In a machine for digging and screening potatoes, the combination, with a fork formed on or secured to the lower end of a shank or bar, of a pair of guide-rollers mounted in fixed bearings and arranged to work against each side of said shank or bar, the latter being provided with projecting webs or feathers turned or twisted through an angle of about ninety degrees and being, moreover, mounted upon or connected to a crank, the whole being constructed and arranged

substantially as and for the purposes herein described and explained, and as illustrated in the accompanying drawings.

3. In a machine for digging and screening potatoes, the combination, with a pair of forks provided with means (such, for instance, as the projecting webs or feathers *a*, working between fixed rollers *a'*) for automatically turning said forks through an angle of about ninety degrees at each stroke or upward and downward movement, of a two-throw crank upon which said forks can be supported, substantially as and for the purposes herein described and explained, and as illustrated in the accompanying drawings.

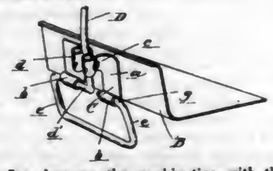
4. In a machine for digging and screening potatoes, the combination, with a two-throw crank connected to and operating a pair of forks, the latter being provided with means whereby they can be automatically turned approximately a quarter of a revolution—that is, through an angle of about ninety degrees—at each stroke or upward and downward movement, of an axle fitted with land-wheels and connected to said two-throw crank by bevel or other gearing, substantially as and for the purposes herein described and explained, and as illustrated in my drawings.

5. In a machine for digging and screening potatoes, the combination, with a fork provided with means whereby it can be automatically turned for approximately a quarter of a revolution—that is, through an angle of about ninety degrees—at each stroke or upward and downward movement, of a series of curved rods or bars arranged beneath said fork, together with a slightly-inclined plowshare in front of said bars, the whole being constructed and arranged substantially as and for the purposes herein described and explained, and as illustrated in my drawings.

6. In a machine for digging and screening potatoes, the combination, with a series of curved bars preferably arranged transversely to the machine and a series of inclined bars extending down from some fixed part of the framing of the machine to a point slightly below the upper ends of the said first-mentioned curved bars, a space being left between the two sets, of a pair of forks adapted to reciprocate vertically and to revolve intermittingly about their axes and operating to transfer the potatoes from one set of curved bars to the other, substantially as and for the purposes described.

7. In a machine for digging and screening potatoes, the combination, with a fork fitted with means whereby it can be moved up and down and be turned round approximately a quarter of a revolution—that is, through an angle of about ninety degrees—at each stroke, of a series of curved bars, together with a slightly-inclined plowshare *b'*, secured upon a frame and connected with a hand-lever, whereby said frame can be raised or lowered or be adjusted into any desired position, substantially as and for the purposes herein described and explained, and as illustrated in the accompanying drawings.

472,371. DUST-PAN. JOHN LEES, Jr., Adrian, Mich., assignor of one-half to Ernest T. Ludecke, same place. Filed Jan. 4, 1892. Serial No. 416,968. (No model.)

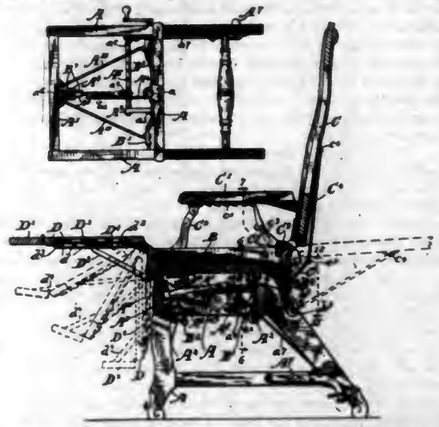


Claim.—1. In a dust-pan, the combination, with the back of a bracket secured thereon having horizontal eyes formed in its lower edge and formed at its center into two loops constituting a spring-pocket between, of a handle having a right-angle extension on its lower end passing through one of the eyes on the bracket and bent down across and up to and through the other eye of the bracket, substantially as described.

2. In a dust-pan, the combination, with the back, of a bracket consisting of two side members extending down to a point slightly below the bottom of the pan and bent to form horizontal eyes, and a connecting-bar between the two side members, bent out into two corresponding loops to form a pocket between the bracket, being attached directly to the back of the pan, and a handle having its lower end formed with a rectangular frame, the upper bar of which is passed through the eyes of the bracket, and the handle portion arranged in alignment with the pocket in the bracket, substantially as described.

472,372. SURGICAL CHAIR. CHARLES H. LEONARD, Indianapolis, Ind., assignor to the Drake & Wood Company, same place. Filed Mar. 10, 1891. Serial No. 384,464. (No model.)

Claim.—1. In a surgical chair, the combination of the base, the seat mounted on said base and supported thereon by a bearing located midway between the sides thereof, which bearing is formed to permit said seat to tilt in either direction and one part of which is secured to said base and the other part of which is secured to said seat, a cross-bar formed curved or downwardly extended in its center, journaled at its ends in suitable bearings secured to the sides of the seat and arranged in line with said central bearing, and a rod journaled in suitable bearings in the base and extending in and engaging with said central portion of the cross-bar, whereby the seat may be secured and operated, substantially as set forth.



2. In a surgical chair, the combination of the base or stool, a socket secured on the rear cross-bar of said base or stool midway between the sides thereof, the seat mounted on said base, a ball-bearing secured to the under side thereof and arranged to rest in the socket on the base, a bar formed with a downwardly-extending or curved center journaled at its ends in suitable bearings secured to each side of said seat in line with said ball-bearing, a bearing secured to the base-frame and engaging with the upper edge of said curved bar, which slides thereunder, a screw-rod rigidly mounted in suitable bearings in said base and engaging with said downwardly curved or extended portion of said bar, whereby said seat in afforded a rigid support and at the same time may be tilted in either direction, a rack-bar depending from the front edge of said seat, and a pawl mounted on the base, adapted to engage therewith, substantially as set forth.

3. In a surgical chair, the combination of the base, a seat supported by suitable bearings on said base, the rear central bearing of which is a ball-and-socket joint or bearing, and the front central bearing of which is a rack-bar journaled in an appropriate housing secured to said seat and depending therefrom to engage with a suitable retaining-catch on the base, the journals of said rack-bar being substantially in line with said rear bearing, and an additional rear support and operating device consisting of a bar secured at its ends to the sides of the seat-frame by a hinge or pivotal connection arranged substantially in line with said ball-and-socket bearing, which bar has a downwardly-depending portion connected with a screw-rod appropriately mounted in the base-frame, whereby said seat is secured in or operated to the desired transverse adjustment, substantially as shown and described.

4. In a surgical chair, the combination of the base the front rail of which is formed elevated in its center to form a rest for the seat-frame when in a horizontal position, a socket secured to the rear rail of said base-frame substantially midway thereof, said seat-frame mounted on said base and provided with a ball-bearing which rests in said socket of the base frame, a rack-bar depending from the front portion of said seat-frame, to which it is hinged on journals in line with the other supports, a sliding pawl suitably mounted on said base and arranged to engage with said rack-bar, a curved bar B', journaled at its ends in suitable bearings on the sides of said seat-frame, which bearings are arranged in line with the central rear ball-and-socket bearing, and a screw-shaft journaled in suitable bearings on the base-frame and connected with said curved bar, substantially as set forth.

5. In a surgical chair, the combination of the base, the seat mounted thereon, provided with a support for a brace, the back hinged to the rear edge of said seat, and a jointed brace, one end of which is connected with said back and the other end of which is connected with said seat, the joint thereof forming a shoulder in said brace at that point where, when the back is inclined to a horizontal or a substantially horizontal position, it will rest upon said support on the seat, substantially as set forth.

6. In a surgical chair, the combination of the base, the seat

mounted thereon and provided with the casting B^3, having hook-shaped rests b^4 and b^5, the back hinged to the rear edge of said seat, and the brace C^4, the upper end of which is secured to said back and the lower end of which is secured in a vertical slot in said casting, a joint formed in said brace and having a shoulder which will rest in one of the rests b^4 or b^5 when said back is turned down, substantially as described, and for the purposes specified.

7. In a surgical chair, the combination of the base, the seat mounted thereon, the back hinged to the rear edge of said seat, the brace C^4, connected to said back at one end and by a hinge connection to the casting C^3 at the lower end, said casting C^3 being formed to embrace the casting B^3, secured to the rear edge of the chair and formed with projecting points c^4 on its lower ends, which are mounted in the slot b^3 in said casting, and rests formed in said casting, wherein the straight or horizontal portion c^5 of said brace C^4 is adapted to rest when the back is turned down, substantially as described, and for the purposes specified.

8. In a surgical chair, the combination of the base, the seat mounted thereon, and a foot-rest hinged to the upper corner of the front edge of said seat and formed in two parts D and D′, hinged together, the rock-shaft D^3, carrying the notched wing d on one side, mounted in bearings in the part D, and the catch-bar D^2, hinged to the lower corner of the front edge of said seat and formed with a portion arranged to engage the notches of said wing d, substantially as set forth.

9. In a surgical chair, the combination of the base, the seat mounted thereon, the foot-rest formed of the two parts D and D′, hinged together and hinged to the upper corner of the front edge of said seat, the rock-shaft D^3, journaled in suitable bearings in said part D, extending longitudinally thereof and provided with the notched wing d on one side, the catch-bar D^2, hinged to the lower corner of the front edge of said seat and arranged to engage the notches of said wing as it drops to the proper position by its own gravity, and the levers D^4, pivoted to the sides of the frame of the part D and connected to the front end of said catch-bar at one end and to links d^5 at the other end, said links d^5 being in turn connected to the part D′ of the foot-rest, substantially as described, and for the purposes specified.

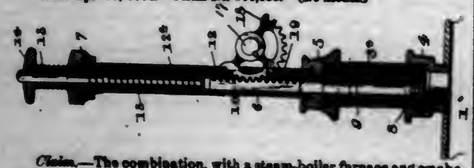
10. In a surgical chair, the combination of the base, the seat, the foot-rest hinged to the upper corner of the front of said seat, the rock-shaft D^3, provided with the notched wing d on one side and with the stop d^7, arranged to limit the movement of said shaft in one direction, the rod d^6, connected with said rock-shaft and leading to a position convenient to reach, whereby said shaft may be operated in the direction to disengage said notches from the catch-bar, and said catch-bar D^2, hinged to the lower corner of the front edge of said seat and arranged to engage said notches, substantially as set forth.

11. The combination, with a surgical chair, of a stirrup-iron extending out from its front edge, a stirrup adjustably secured to its outer end to swing thereon or be adjusted longitudinally thereof, and a leg-rest also mounted on said stirrup-iron between the chair and said stirrup and secured thereto to be adjusted longitudinally or vertically or to swing thereon, substantially as set forth.

12. In a surgical chair, the combination of the base, the seat mounted on said base, the foot-rest secured to the front of said seat, a bar projecting from the front of said chair, and a leg-rest mounted to be vertically adjusted on said bar and also to be adjusted longitudinally thereof, substantially as set forth.

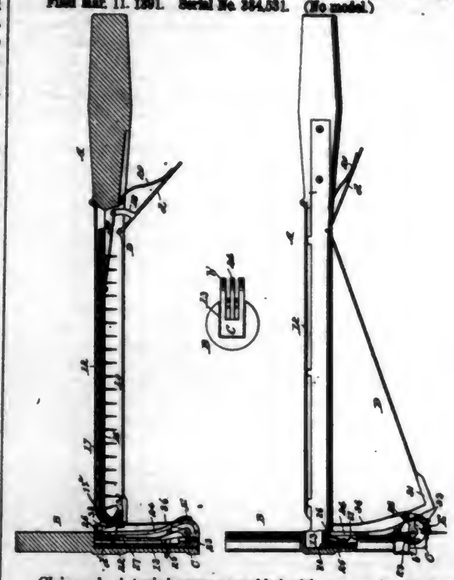
13. In a surgical chair, the combination of the base, the seat mounted on said base, the foot-rest secured to the front of said seat, a bar projecting out from the front of said chair, and a leg-rest mounted to swing and be adjusted vertically and longitudinally on said bar, substantially as set forth.

472,873. REGULATOR FOR STEAM-FURNACES. JOHN LEVEY, Lindsay, Canada, assignor of one-half to George H. Martin, same place. Filed Apr. 29, 1891. Serial No. 390,955. (No model.)



Claim.—The combination, with a steam-boiler furnace and smoke-stack, of the cylinder connected and communicating with the boiler, a piston and piston-rod, a casing or tube having a vertical slot connected with said cylinder, a rack-bar and rod connected with said piston-rod, an adjustable nut in the upper end of said tube, a coiled spring intermediate of said rack-bar and nut, a damper located in said smoke-stack and secured to a damper-shaft journaled in said stack, and a cogged segment secured to said shaft and meshing with the rack-bar in the tube or casing, substantially as described.

472,874. MAGAZINE TACK-HAMMER. ANDREW T. LEWIS, East Portland, assignor to himself, and Fremont O. Downing, Portland, Oreg. Filed Mar. 11, 1891. Serial No. 384,831. (No model.)



Claim.—1. A tack-hammer provided with a magazine, tack-supports and tack-feed racks within the magazine, and a mechanism, substantially as described, for reciprocating one of the racks, as and for the purpose set forth.

2. In a tack-hammer, the combination, with a handle provided with a magazine and a chambered head, of tack-receiving racks located in the magazine, one of which is capable of longitudinal movement, both of the racks being curved downward to the chamber in the head, as and for the purpose set forth.

3. In a tack-hammer, the combination, with a handle provided with a magazine and a head provided with a chamber communicating with a magazine, of tack-receiving racks located in the magazine and curved downward at one end in direction of the hammer-head chamber, spring-cushions located at the sides of the racks, and a lever connected with one of the racks, whereby the said rack is given a longitudinal movement, as and for the purpose specified.

4. In a tack-hammer, the combination, with a handle provided with a magazine, a head having a chamber therein communicating with the magazine and a follower-block located within the head-chamber and having a limited downward movement, a guide-arm attached to one edge of the follower, and spring-arms attached to the handle at each side of the guide-arm, of tack-receiving racks located within the magazine of the handle, both capable of side movement and having their ends curved downward, one of said racks being provided with a spring-section at its curved end, springs bearing against the edges of the racks, and a lever connected with one of the racks and adapted to impart thereto end movement, as and for the purpose specified.

5. In a tack-hammer, the combination, with a handle provided with a magazine, a head having a chamber therein communicating with the magazine, a follower-block located in the chamber of the head, having a limited downward movement, a guide-arm attached to the edge of the follower facing the handle, spring-arms projected downward from the handle in front of the guide-arm, and a trip-arm having a pivotal connection with the follower at its lower end and located within the follower, of tack-receiving racks located in the magazine of the handle, both racks being capable of side movement and having one end curved downward and one capable of a longitudinal movement, one of said racks having a spring-section at its curved end, springs bearing against the sides of the racks, a spring-pressed lever, a connection between the lever and one of the racks, whereby the said rack is moved lengthwise, and a dog connected with the lever, adapted for engagement with the trip-arm and also with the lowermost tack located in the rack, as and for the purpose specified.

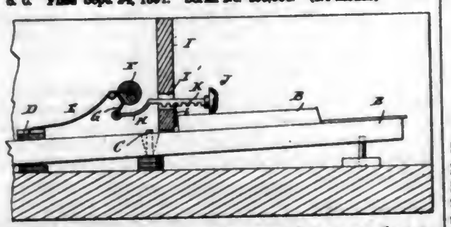
6. In a tack-hammer, the combination, with a handle provided with a magazine, a head having a chamber therein communicating with the magazine, a follower-block located in the chamber of the head, having a limited downward movement, a guide-arm attached to the edge of the follower facing the handle, spring-arms projected downward from the handle in front of the guide-arm, and a trip-arm having a pivotal connection with the follower at its lower end and located within the follower, of tack-receiving racks located in the magazine of the handle, both racks being capable of side movement and having one end curved downward and one capable of a longitudinal movement, springs bearing against the sides of the racks, a spring-pressed lever, a connection between the lever and one of the racks, whereby the said rack is moved lengthwise, a dog connected with the lever, adapted for engagement with the trip-arm and also with the lowermost tack located in the rack, and spring retaining-arms pivoted to the lower portion of the follower, the said arms being adapted upon the downward movement of the follower to extend beneath it a slight distance from its lower surface, as and for the purpose set forth.

472,875. BUTTON. RUDOLPH LEHMANN, New York, N. Y. Filed May 22, 1891. Serial No. 393,740. (No model.)



Claim.—The button herein described, comprising the front and back seamed together, the back being of sheet metal and having depressed or struck-down portions extending entirely across said back, forming a channel or channels for attachment purposes, substantially as set forth.

472,876. TOUCH-REGULATOR. FERDINAND G. LEISTE, Florence, S. C. Filed Sept. 24, 1891. Serial No. 406,661. (No model.)



Claim.—1. In a touch-regulator for musical instruments, the combination of a shaft journaled in the frame of the instrument, springs secured to the shaft and having their free ends resting upon the keys in rear of their pivots, and an adjusting-rod pivotally connected with the shaft and projecting through an opening in the front board of the keyboard, substantially as described.

2. In a touch-regulator for musical instruments, the combination, with the frame having the front board of the keyboard apertured and provided with a plate secured thereto in proximity to the said opening and the keys, of the shaft F, journaled in the frame and provided with the arm G, the springs E, secured to the shaft and having their free ends resting upon the keys, and the rod H, pivoted to the arm G and provided with the knob J and teeth K, substantially as herein shown and described.

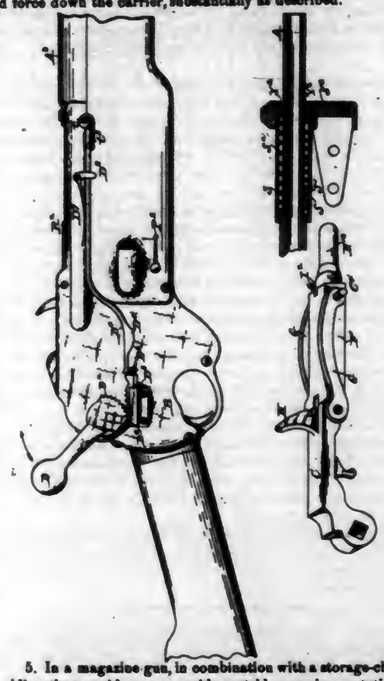
472,877. RECOIL-OPERATED MAGAZINE-GUN. RAFAEL MALLÉN, Mexico, Mexico. Filed Apr. 13, 1891. Serial No. 388,644. (No model.)

Claim.—1. In a magazine fire-arm, a locking-brace provided with a hammer and secured on a shaft in the stock so as to turn with said shaft, in combination with an operating-lever, also secured to said shaft, and a sliding breech-piece provided with arms pivoted to and connecting the said brace and breech-piece, whereby when the said brace and arms are forced down by said lever the sliding piece is forced back to uncover the firing-chamber, substantially as described.

2. In a magazine fire-arm, the combination, with a pivoted locking-brace, of a sliding breech-piece connected to said brace, an operating-lever connected to the brace, said brace provided with a hammer and a catch to engage the trigger, the trigger provided with a catch to engage the catch on the hammer, and springs for operating the said breech-piece and trigger, substantially as described.

3. In a magazine-gun, in combination with a guard-plate and standards rising from said plate, a cartridge-carrier composed of a cartridge-holder and a movable support, a stationary yoke rising from the guard-plate in which the said support is carried, and a carrier-lever pivoted between said standards and operating in said yoke to force up the cartridge-support, substantially as described.

4. In a magazine-gun, in combination with a pivoted locking-brace and operating-lever, a cartridge-carrier, and carrier-lever, the said locking-brace provided with a hammer adapted to trip the carrier-lever and force down the carrier, substantially as described.



5. In a magazine-gun, in combination with a storage-chamber for holding the cartridges, a movable cartridge-carrier, a stationary support for said carrier, a lever pivoted in uprights rising from the guard-plate for raising said carrier, and a regulator pivoted to a projection from said plate and operated by the said lever for separating the cartridges on the carrier from those in the said chamber and holding the latter in place, substantially as described.

6. The combination, with the guard-plate, of a cartridge-carrier supported on said plate, a lever for operating said carrier pivoted on standards rising from said plate, a regulator pivoted to a projection from the plate and operated by the said lever to separate and hold the cartridges, and a spring secured to said plate and bearing on the regulator to force it down after the same has been raised and disengaged from the lever, substantially as described.

7. In a magazine-gun, in combination with a breech-operating lever mounted on a shaft in the stock of the gun, a locking-brace secured so as to turn with said shaft and carrying a hammer, a sliding breech-block having link connections with said brace, and a spring, one end of which is secured to the stock and the other end free and bearing against the under side of said locking-brace to hold the latter normally up and which free end is provided with an anti-friction roller, substantially as described.

8. In a magazine-gun, the combination of a sliding breech-piece, a sliding firing-pin carried in the center of said breech-piece, a locking-brace pivoted to said piece and provided with a hammer, and a spring for operating said brace and driving it against said firing-pin, substantially as described.

9. The combination, with a spring-actuated recoil-barrel, of an operating breech-lever mounted on a shaft in the stock and provided with a toothed segment, a sliding rack, a sliding rod connecting said barrel and rack, the casing provided with a slot in which the connection of said rod and barrel moves, a roller in the stock under the free end of the rod, a projection on said rod to ride on said roller, and a spring secured to the barrel-casing and pressing upon said rod, substantially as and for the purpose described.

10. In a fire-arm, in combination with a stock, a barrel and barrel-casing, said casing provided with a separate tubular bearing for the barrel and in which said barrel is adapted to freely slide, and a spring within the barrel-casing and in contact with the barrel and its casing, whereby the barrel and spring are carried freely forward by the action of the ball in the discharge of the piece and then carried backward by the recoil of the spring against the barrel-casing, substantially as described.

11. In combination with the casing of a gun, a barrel, a metal tubular anti-friction bearing for said barrel and in which said barrel

slides, and a spring surrounding said barrel, said casing provided with a shoulder against which the spring is pressed by the barrel as it is carried forward by the discharge of the ball and said barrel provided with a shoulder against which the spring is compressed and the barrel carried backward by the recoil of the spring, substantially as described.

12. The combination, with the stock, of the sliding breech-piece, the pivoted locking-brace, a bolt x^6, passing through a slot in the stock, with one end bearing against a shoulder in the said breech-piece, and a spring x', secured to the stock back of said brace and pressing against the head of bolt x^6, whereby a constant pressure of the said brace against the breech-piece is maintained, substantially as described.

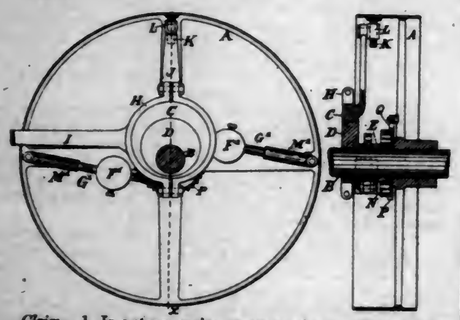
13. The sliding breech-block provided with a central channel in which the firing-pin is placed and in which it moves, in combination with a cork disk near one end of the breech-block, acting as a gas-check and dividing the breech-piece in two cylindrical parts at that end, said firing-pin also provided with a slot, and a pin extending through said slot to hold the cylindrical portion in place and restrict the movement of the firing-pin, substantially as described.

14. The sliding sight-plate provided with an aperture for the entrance therethrough of the hammer and also with a slot at one end to hold the hammer after the gun is fired, in combination with the hammer, the lever P, and the locking-brace for forcing the plate back automatically, substantially as described.

15. In a magazine-gun, the combination, with the barrel, of the sliding breech-piece F, provided with the tubular head, the pivoted locking-brace C, the arms G, connecting the brace and breech-piece, and an operating-lever whereby when the breech-piece is forced forward its said tubular head will be carried into the barrel, substantially as and for the purpose set forth.

16. In a magazine-gun, the cartridge composed of hard powder and ball screwed together and provided at one end with the fulminate, whereby the gun may be used and fired without an extractor, substantially as described.

472,878. GOVERNOR FOR STEAM-ENGINES. RICHARD G. MANIFOLD, San Francisco, Cal. Filed July 23, 1891. Serial No. 400,424. (No model.)



Claim.—1. In a steam-engine governor, the combination of the eccentric-disk D, connected to or formed integral with the shell E, and the weighted rods G' and G², pivoted to the shell E and supported at their outer ends near the governor-casing, the whole being arranged so as to adjust the main eccentric C across the axis of the engine-shaft B and thus operate a cut-off engine-valve for the purpose of regulation, in the manner substantially as and for the purpose specified.

2. In a steam-engine governor, the shell E, having formed thereon the eccentric-bearing D, the eccentric C, mounted on the bearing D, the rods or links G' and G², pivoted to the shell E and supported movably at their outer ends by connection with the main governor-casing, and the weights F' and F², adjustable upon the rods G' G², the whole being arranged so that the movement of the weights will cause a partial rotation of the bearing D and thus adjust the main eccentric C so as to produce the required cut-off motion for the engine-valve, substantially in the manner and for the purposes herein set forth and described.

3. In a steam-engine governor, the links or rods G' and G², connected to a partially-rotating sleeve E, provided with weights F' and F² and supported in the sleeves or bearings M' M² so as to move forward or backward, as the centrifugal force of the weights may determine, and thus determine the position of the sleeve E and main eccentric C, substantially in the manner and for the purposes set forth.

4. In a steam-engine governor, the combination of the eccentric-bearing D, the sleeve E, the rods G' and G², pivoted to said sleeve and carrying the weights F' and F², the coiled spring N, and its inclosing barrel or case P, to which the spring is connected, it being also connected to the sleeve E, substantially as described.

5. In a steam-engine governor, the coil-spring N, and the barrel or casing P, inclosing the same and provided with a serrated pawl-rack on the periphery, so that the tension of the spring can be regulated by the pawl Q and the position of the weights F' and F² and the speed of the engine be controlled accordingly.

6. In a steam-engine governor, the eccentric-bearing D, sleeve E, rods or links G' G², and weights F' F², in combination with the coil-spring N and the adjustable barrel or case P, the whole arranged and operating substantially as specified.

7. In a steam-engine governor, the combination of the eccentric-bearing D, connected to or formed integral with shell E, the weighted rods G' and G², pivoted to shell E and supported at their outer ends near the governor-casing, and the pivoted hollow arms M' and M², which receive loosely the outer ends of the rods G' and G², substantially as described.

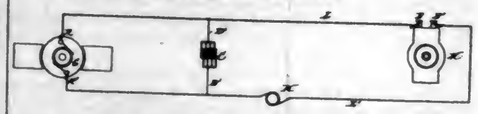
8. In a steam-engine governor, the combination of the casing A, engine-shaft B, eccentric-disk D, formed integral with sleeve E, the main eccentric C, mounted on the disk D and provided with an arm J, connected at its outer end to the shell or bearing L, which slides on the stud K, secured to the rim of the casing A and the rods G' and G², arranged to adjust the main eccentric C across the axis of the engine-shaft, together with the eccentric-strap H and rod I, substantially as described.

9. In a steam-engine governor, the combination of the sleeve E, the encircling casing P, the coiled spring N, connected at one end to the shell E and at the other end to the casing P, the weight-carrying arms pivoted at their inner ends to the shell E and supported movably at their outer ends near the governor-casing, together with the eccentric-disk, main eccentric, eccentric-strap, and eccentric-rod, substantially as described.

10. In a governor, the combination, with the engine-shaft and governor-wheel, of an eccentric having an outwardly-extending arm provided at its end with a sleeve which is engaged by a pin on the governor-wheel, substantially as described.

11. In a governor, the combination of the engine-shaft, the eccentric-disk, main eccentric thereon having an outwardly-extending arm provided with a sleeve engaging a pin on the rim of the governor-wheel, and the eccentric strap and rod, all arranged so that the main eccentric may be adjusted across the axis of the engine-shaft, substantially as specified.

472,879. PRODUCTION AND DISTRIBUTION OF ELECTRICITY. WILLIAM MARSHALL, New York, N. Y. Filed Nov. 23, 1889. Renewed Sept. 3, 1891. Serial No. 404,604. (No model.)



Claim.—1. The method of distributing electrical energy from an electric source, which consists in alternately charging an electrical condenser from the said electric source and throwing into the line beyond the condenser the currents of both the condenser and the electric source, these acts being performed with such rapidity as to make the effects in the line appear continuous, as set forth.

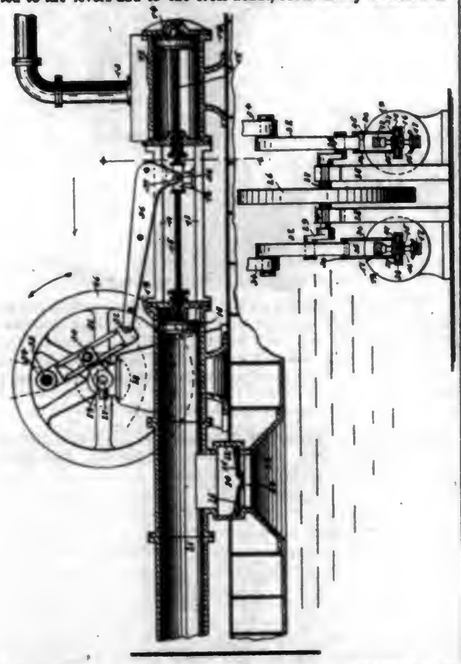
2. The combination, with an electric source, of an electrical condenser and one or more translating devices, the said condenser and the said translating device or the said condenser and one or more of the said translating devices being arranged in multiple, and a continuously-operating circuit-changer between the condenser and the translating device or devices, as and for the purpose set forth.

472,880. APPARATUS FOR PISTON PROPULSION. ERWIN J. MEISTER, New York, N. Y. Filed Nov. 19, 1891. Serial No. 412,406. (No model.)

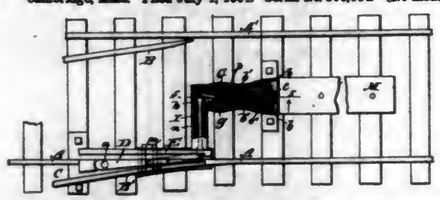
Claim.—1. In an apparatus of the character described, the stroke-regulating mechanism comprising a double crank-shaft, slotted levers pivoted above the cranks, sliding boxes pivoted to the cranks and adapted to slide in the levers, and operative connections between the free ends of the levers and the piston-rods of the engines, substantially as described.

2. The combination, with the pair of engines having alternating pistons, of a common crank-shaft for the engines, the shaft having oppositely-arranged cranks thereon, slotted levers pivoted above the cranks and having sliding boxes therein, which form the crank-bearings, and link connections between the levers and the engine piston-rods, substantially as described.

3. The combination, with the engines having alternating pistons and having sliding cross-heads connected with the piston-rods, of a common crank-shaft for the engines, levers pivoted above the cranks of the shafts and provided with longitudinal slots, bearing-boxes for the cranks, said boxes being held to slide in the levers, and links pivoted to the levers and to the cross-heads, substantially as described.



472,881. TRAMWAY-SWITCH. GEORGE A. MCMENIMEN, East Cambridge, Mass. Filed July 1, 1891. Serial No. 398,114. (No model.)



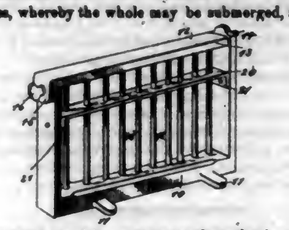
Claim.—1. In a tramway-switch, the vertically-sliding standard having an operating-shoe on its lower end, a handle-bar J' pivoted to the upper end of the standard and provided with a laterally-projecting hook adapted to engage a pin and hold the standard elevated, substantially as set forth.

2. In a tramway-switch, the combination of the bed-plate C, formed with guard-rail E, and rail-section B', the tongue D, pivoted at its wider end, the sliding block *m*, mounted transversely on the bed-plate below the tongue, a longitudinal lever *i*, pivoted between its ends below the bed-plate, and a pivot extending from one end of the said lever up through the sliding block into the tongue between the ends thereof, with mechanism operated from the car and connected with the outer end of the lever *i*, substantially as set forth.

3. A switch and operating mechanism, comprising the bed-plate having the swinging tongue pivoted at its wide end thereon, a transverse sliding block under the bed-plate and connected to the tongue, a lever *i*, pivoted between its ends and at one end pivoted to said block, the bed-plate G, having a contracted throat, the swinging rail *e*, the vertical crank-shaft *g*, forming the axis of the rail *e*, and the link *n*, connected to the crank-arm of shaft *g* and to the adjacent end of the lever *i*, substantially as set forth.

472,882. MILK-TESTER. RALPH MESSENGER, Unadilla, N. Y. Filed Oct. 5, 1891. Serial No. 407,732. (No model.)

Claim.—1. A tester comprising a frame open at its top, a series of test-tubes mounted removably in the frame, and a cover for the frame, the under side of which forms a water-tight closure for the open ends of the tubes, whereby the whole may be submerged, substantially as set forth.

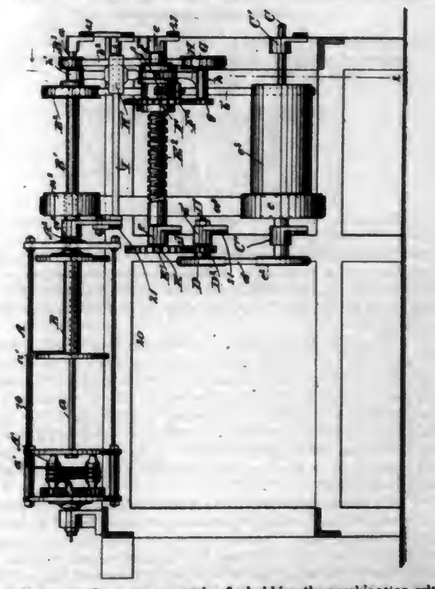


2. A tester comprising an open-top frame having a packing in its bottom, a series of test-tubes resting on the packing, and a cover for the frame having a packing extending along its under side and forming a water-tight closure for the open ends of the tubes when the lid is closed, substantially as set forth.

3. In a tester, the vertical rectangular frame open at its sides and top, sockets in the upper face of its bottom bar, and a cover-bar 12, engaging the upper ends of the end bars and having a packing along its under face, substantially as set forth.

4. In a tester, the open rectangular frame 10, having sockets in the upper face of its bottom bar, and a transverse aperture in the upper end of one of its end bars, the top bar 12, having a reduced end 14 entering said aperture and having a depending flange 15 at its opposite end overlapping the upper end of the other end bar, a locking-screw extending through the flange into engagement with the said end bar, and a packing-groove along the under face of the said top bar, substantially as set forth.

472,883. TRAVERSE-MOTION FOR BOBBINS IN WINDING-MACHINES. JUDSON A. MURPHY, New Orleans, La. Filed May 21, 1891. Serial No. 393,544. (No model.)



Claim.—1. In a traverse-motion for bobbins, the combination, with the flier and bobbin-spindle, of a rotary feed-screw having a fixed speed relatively to the flier and a nut thereon having a fixed speed relatively to the bobbin-spindle, and connections between the bobbin-spindle and nut, whereby the changing relations of the bobbin-spindle and flier will result in a difference in speed between the screw and nut, substantially as described.

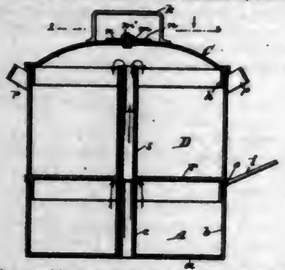
2. The combination, with the flier, the bobbin, and the drive-shaft to which the two are belted, of a feed-screw parallel with the bobbin-spindle, driven from the drive-shaft and having right and left threads, a rotary reciprocating nut traveling on the feed-screw and connected with the bobbin-spindle to slide it, and gearing connecting the said nut with the bobbin-spindle to rotate it therefrom, substantially as set forth.

3. The combination, with the flier, the bobbin-spindle, the feed-screw having right and left threads, and mechanism for rotating them,

of a rotary reciprocating nut having a fork engaging the threads of the screw, a reciprocating standard or yoke connected with the nut and bobbin-spindle, and a shaft carried by the yoke and geared to the nut and to the bobbin-spindle, substantially as set forth.

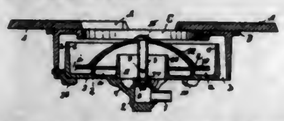
4. An improvement in traverse-movements for twisting-machines, consisting of a screw and nut, in combination with a flier and bobbin-spindle, but separate therefrom, a yoke connecting the nut and bobbin-spindle, gearing for rotating the screw, and gearing for rotating the nut from the bobbin-spindle, and removable pulleys on said screw and nut-operating gearing, whereby pulleys of different sizes may be interchanged therefor, substantially as set forth.

472,884. COMPOUND COOKER. CHARLES MCCONALOGUE, Red Jacket, Mich. Filed Mar. 19, 1891. Serial No. 385,633. (No model.)



Claim.—The combination, with a pan having a vertical central imperforate tube affording an aperture in the pan-bottom, of a steamer-chamber having a central imperforate tube and a removable cover, a space being formed between the adjacent ends of the two tubes, substantially as described.

472,885. GAS-BURNER. BRADFORD MCGREGOR, Covington, Ky., assignor of one-third to Wood & Boyd, Cincinnati, Ohio. Filed Oct. 10, 1891. Serial No. 408,301. (No model.)



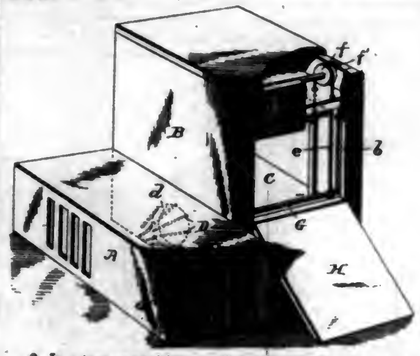
Claim.—1. A gas-burner consisting of a bracket 2, having air-inlet orifices 11 and a vertical gas-tube 5, a bottom plate 3, having an annular vertical flange *c* and an annular ring 10, the top plate 12, arranged over the ring and terminating at its periphery in juxtaposition to the vertical flange, and the annular air-space *b*, extending round the vertical flange for the flow of air to the upper edge thereof, substantially as described.

2. A gas-burner consisting of a bracket 2, having air-inlet orifices 11, a gas-inlet tube 1, and a vertical gas-tube 5, a bottom plate 3, having the outer vertical flange *c* and the inner vertical ring 10, the arched top plate 12, arranged over the inner ring and having a laterally-projecting peripheral flange 13 terminating in proximity to the outer flange and separated from the bottom plate to provide a passage for the flow of gas and air, and the annular air-space *b*, extending round the outer flange for the flow of air to the upper edge thereof, substantially as described.

3. A gas-burner consisting of a bracket 2, having air-inlet orifices 11, gas-inlet 1, and a vertical gas-tube 5, a bottom plate 3, having the annular vertical flange *c*, the annular ring 10, and upwardly-projecting ledges *d* between the ring and the flange, the arched top plate 12, supported by the ledges and having a lateral peripheral flange 13 terminating in proximity to the vertical flange and separated from the bottom plate to provide a passage for the flow of gas and air, and the annular air-space *b*, extending round the vertical flange for the flow of air to the upper edge thereof, substantially as described.

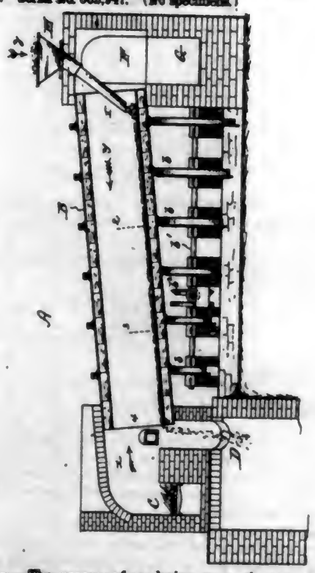
472,886. ANIMAL-TRAP. CHARLES M. MCLEOD and JOHN T. GARRETT, Cooper, Tex. Filed Dec. 2, 1891. Serial No. 413,936. (No model.)

Claim.—1. The herein shown and described trap, composed of well B, having openings *b* in diametrically-opposite sides, inclined treads H, leading to openings *b*, cage C, adapted to travel in the well B, plates G, constructed to slide in ways and connected with the said cage to counterbalance the same and slide across the said openings *b* to close the same, and a compartment contiguous to the well and having communication therewith through guarded opening *d* and having openings in the side opposite the said opening *d*, substantially as described.



2. In a trap comprising a well having ingress-openings *b* in diametrically-opposite sides, the combination, with a cage constructed to move vertically in the said well, of plates G, mounted in ways and constructed to slide past and cover the said openings *b* and having connection with the cage to counterbalance the same, substantially as set forth.

472,887. METHOD OF TREATING AND CONCENTRATING PYRITIFEROUS ORES. JAMES W. NEILL, Leadville, Colo. Filed Feb. 26, 1891. Serial No. 383,947. (No specimens.)

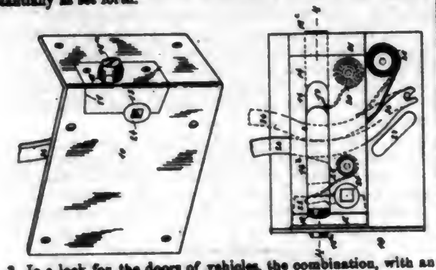


Claim.—The process of rendering magnetic non-magnetic ores of the class specified, which consists in subjecting successive portions of the ore successively to the action of the products of combustion increasing in temperature and then withdrawing the ore from the action of the heat before the particles have lost their angularity.

472,888. COACH-DOOR LATCH. JAMES M. ORR, New York, N. Y. Filed Oct. 3, 1891. Serial No. 408,121. (No model.)

Claim.—1. A carriage-door lock comprising a main angular face-plate having an opening at the juncture of its two sections, an auxiliary face-plate having a back plate carrying the bolt and readily removable and insertible through said opening, and a vertically-removable lever passed loosely through an opening in the bolt and separably fulcrumed at its lower end, substantially as set forth.

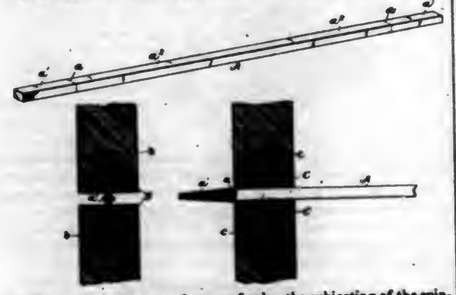
2. A mortise carriage-lock the bolt of which has a transverse recess or opening, a fulcrum-point below the bolt, and a vertically-removable and insertible lever passed loosely through said recess or opening to operate the bolt and loosely engaged at its lower end with its fulcrum to be readily removed by drawing it upward and adapted to be readily engaged with its fulcrum by passing it downward through the recess or opening in the bolt until its lower end engages said fulcrum, substantially as set forth.



3. In a lock for the doors of vehicles, the combination, with an angular plate adapted for attachment to the door and provided at the junction of its members with an opening, of a lock inserted in the opening of the plate and removably connected with the plate, the said lock comprising a bolt having a conical outer end, a sleeve carrying a finger having a bearing against the bolt, and a lever engaging with the bolt, the said lever and sleeve being adapted to operate the bolt, the lower end of the lever being separately fulcrumed to permit it to be readily removed and inserted by sliding it vertically up or down through the lock, as the case may be, as and for the purpose specified.

4. In a lock for the doors of vehicles, the combination, with a plate essentially L-shaped in cross-section and adapted for attachment to the door, provided with an opening at the junction of its members, a vertical undercut rib or bridge 31, a pivot-stud, and a guide 27 in front of the stud, of a lock inserted in the opening of the plate and removably attached to the latter, said lock comprising an auxiliary face-plate, having a back plate provided with a tongue at its inner end to pass under the rib or bridge, a spring-pressed bolt, a sleeve having a bore to receive a spindle and provided with a spring-pressed finger engaging with the bolt, and a lever passed down through a transverse recess or opening in the bolt and having an open slot in its lower end to embrace said pivot-stud, the sleeve and the lever being adapted to throw the bolt inward, whereby by first removing knob-spindle and the said lever vertically out of the lock the auxiliary face-plate and lock mechanism carried thereby may be removed after the manner of a mortise-lock without removing the main face-plate, as and for the purpose specified.

472,889. MANUFACTURE OF AXLES. WOLCOTT J. PARMELEE, Wilkes-Barré, Pa. Filed Aug. 7, 1891. Serial No. 402,010. (No model.)



Claim.—1. In the manufacture of axles, the subjecting of the spindle end of the axle-blank, while heated, to a forging heat and to reverse edgewise pressures between dies that swell the same previously to rolling the spindle end, thereby compensating for the action of the rolls in the subsequent operation, substantially as set forth.

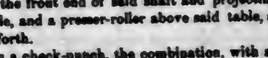
2. In the manufacture of axles, the herein-described process, consisting in subjecting the spindle end of the axle, while heated, to a forging heat, to reverse edgewise pressures between dies that swell the blank at places, rolling the spindle end, and subjecting the square faces of the blank back of the spindle or arm to successive blows between the dies of a hammer or drop, substantially as set forth.

3. The herein-described process for the manufacture of axles, the same consisting in subjecting the spindle end of the axle, while heated, to a forging heat, to reverse edgewise pressures between dies that swell the same, then rolling the spindle end, then subjecting the square faces of the blank back of the spindle or arm to successive blows between the dies of a hammer or drop, and jetting continuous streams of water upon both the dies and the axle-blank while undergoing this step, forming a flash-collar thereon, and finally removing the flash from the collar, all the operations being performed at the same original heat, substantially as set forth.

4. In the manufacture of axles, the method of freeing the axle-blank from scales, consisting in subjecting the blank adjacent to and at the point where the collar is to be formed to repeated blows from a hammer or drop, substantially as set forth.

5. In the manufacture of axles, the method of compensating for the action of the rolls in forming the spindle, consisting in subjecting the axle-blank before the spindle is rolled to the action of dies to cause the blank to swell at the point where the drawing action of the rolls has a tendency to leave flat places in the blank, substantially as set forth.

472,890. POCKET-KNIFE. ASCOT PAHLS, Brooklyn, N. Y. Filed Mar. 3, 1892. Serial No. 423,650. (No model.)

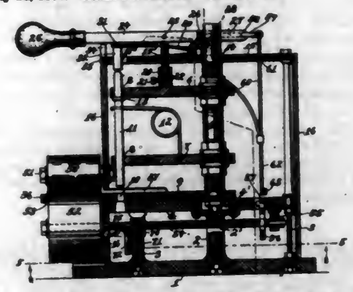


Claim.—1. A scale for pocket-knives, which is formed from a plastic substance and provided with sheet-metal bolsters embedded in the plastic substance and embracing the ends and portions of the sides of the scale, substantially as described.

2. A scale for pocket-knives, which is formed from a plastic substance and provided with sheet-metal bolsters embedded in the plastic substance and provided with burrs *c c* for retaining them in position, substantially as described.

3. A scale for pocket-knives, which is formed from a plastic substance and provided with sheet-metal bolsters embedded in the plastic substance and provided with inwardly-bent edges *d d* for retaining them in position, substantially as described.

472,891. CHECK-PUNCH. SAMUEL W. PEEK, Hartwell, Ga. Filed July 21, 1891. Serial No. 400,204. (No model.)



Claim.—1. In a check-punch, the combination, with an oscillating standard, a die-plate and segments carried thereby, spring-actuated punches mounted in the segments, and a plate mounted on the casing and having a stud, beneath which the punches move, of a post rising from the upper segment and passing through a slot in the top plate, a lever pivoted to this post and having a bifurcated rear end standing astride the standard, the front end of the lever passing over said plate, eyes in the rearwardly-projecting arms of the lever, a semicircular frame which said eyes loosely engage, and spacing mechanism, substantially as described, operated by the movement of said frame, as and for the purpose set forth.

2. In a check-punch, the combination, with an oscillating standard, a die-plate and segments carried thereby, spring-actuated punches mounted in the segments, and a plate mounted on the casing and having a stud, beneath which the punches move, of a post rising from the upper segment and passing through a slot in the top plate, a lever pivoted to this post and having a bifurcated rear end standing astride the standard, the front end of the lever passing over said plate, eyes in the rearwardly-projecting arms of the lever, a semicircular frame loosely engaging said eyes, moving vertically through the top plate of the casing, and connected with a vertical rod, a ratchet-wheel mounted on a shaft and turned intermittently by the movements of said rod, a roller on the front end of said shaft and projecting through the machine-table, and a presser-roller above said table, as and for the purpose set forth.

3. In a check-punch, the combination, with an oscillating standard located within a casing, segments carried thereby, a series of spring-actuated punches adapted to move vertically through said segments, a die-plate also carried by the standard and having a die beneath each punch, a post rising from the upper segment and projecting through a slot in the top plate of the casing, and an operating-lever pivoted to the upper end of this post and having its rear end bifurcated and standing astride said standard, of a spring-actuated plate beneath the lever.

having a depending stud passing through an opening in the top plate and beneath which the punches move, and a guide-plate adjacent the lever, carrying designating characters, as and for the purpose set forth.

4. In a check-punch, the combination, with an oscillating standard, a die-plate and segments carried thereby, spring-actuated punches mounted in the segments, and a spring-actuated plate pivoted to the casing and having a depending stud, beneath which the punches move, of a post rising from the upper segment and passing through a slot in the top plate, a lever pivoted to this post and having a bifurcated rear end standing astride the standard, the front end of the lever passing over said plate, a guide-plate adjacent the lever, having designating characters, eyes in the rearwardly-projecting arms of the lever, a semicircular frame which said eyes loosely engage, and spacing mechanism, substantially as described, operated by the movement of said frame, as and for the purpose set forth.

5. In a check-punch, the combination, with the punches, the die-plate, the post supported by and forward of the central standard of the machine, and the punch-operating lever pivoted between its ends to said post and having a bifurcated rear end standing astride said standard and provided with eyes, of a semicircular frame loosely engaging said eyes, moving vertically through the top plate of the casing, and connected with a vertical rod, a ratchet-wheel mounted on a shaft and turned intermittently by the movements of said rod, a roller on the front end of said shaft and projecting through the machine-table, and a presser-roller above said table, as and for the purpose set forth.

6. In a check-punch, the combination, with the punches, the operating mechanism therefor, a semicircular frame moved vertically by said mechanism, and the vertical rod moved by said frame, of a bar pivoted at one end to said rod and at the other end to an ear in the framework, a weighted pawl pivoted to said bar, a ratchet-wheel mounted on a shaft and engaged by said pawl, a retaining-pawl, a roller on the front end of said shaft and projecting through the machine-table, and a presser-roller above said table, as and for the purpose set forth.

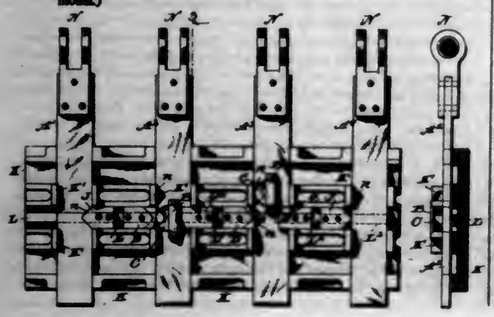
7. In a check-punch, the combination, with the base, a step and other supports rising therefrom, a table sustained thereby, the surrounding casing having a slot above said table, a shelf on the projecting front end of the table partially closing said slot, a spring-pressed feed-roller projecting through said shelf in front of the casing, means for automatically operating said feed-roller, and a presser-roller connected to said casing and normally contacting with the under feed-roller, of an oscillating standard journaled in said step, two parallel segments and a die-plate carried by the standard and oscillating within the casing above said table, the die-plate sliding upon the table and being of equal thickness with the projecting shelf, and the punch-operating mechanism, substantially as set forth.

472,892. TANG-END JAW. HENRY S. PYRE, Philadelphia, assignor of one-half to the National Switch and Signal Company, Easton, Pa. Filed Aug. 3, 1891. Serial No. 401,518. (No model.)



Claim.—The herein-described tang-end jaw, consisting of the jaw proper A and shank A', and the tang D, united to the shank by a slot-and-tenon connection and a rivet passing through the slotted end of the one and the tenon of the other, both the slotted end and the exposed edges of the tenon filling the slot being screw-threaded to receive the coupling-sleeve E, as shown and set forth.

472,893. INTERLOCKING SWITCH AND SIGNAL MECHANISM. GUSTAVUS H. PYRE, Easton, Pa., assignor to the National Switch and Signal Company, same place. Filed Dec. 10, 1891. Serial No. 414,604. (No model.)



Claim.—1. The combination, with the tappets and locking-dogs, of dog-operating rollers mounted on said tappets and capable both of rotation and of bodily to-and-fro movement in the line of the dogs, substantially as and for the purposes hereinbefore set forth.

2. The combination of the supporting-frame, the tappets, the locking-dogs, dog-operating rollers mounted on said tappets and capable of both rotation and bodily to-and-fro movement in the line of the dogs, and ears K' on the frame, between which the rollers are received when out of line with the dogs, substantially as and for the purposes hereinbefore set forth.

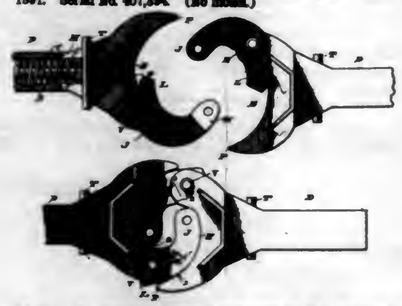
3. In an interlocking switch and signal mechanism, the combination of a notched tappet, a roller mounted on said tappet and capable both of rotation and bodily to-and-fro transverse movement thereon, and a dog D, having a nose *m* to engage the notched tappet and an extension *m'* to operate the roller, substantially as and for the purpose hereinbefore set forth.

472,894. VAPOR-BURNER. CHARLES A. POPE, Cleveland, Ohio. Filed Nov. 20, 1890. Serial No. 372,069. (No model.)



Claim.—The combination, with a vapor-burner, of a secondary or supplemental oil-reservoir consisting of an enlarged section, a sleeve projecting upwardly from the latter, this sleeve having a well formed therein for the reception of oil and a suitable wick, a perforated chimney, an annular air-space formed around the sleeve, and openings communicating therewith formed in the periphery of the enlarged section, substantially as set forth.

472,895. CAR-COUPLING. THOMAS L. RIVERS, Newark, N. J., assignor of one-third to Jonas Thieleman, same place. Filed Oct. 6, 1891. Serial No. 407,894. (No model.)



Claim.—In a car-coupling, the combination of a draw-head provided with a longitudinal opening and having horizontal slots in its sides, a pivoted jaw provided at its inner end with a lug, a spring-actuated catch arranged in the longitudinal opening of the draw-head and having its outer end beveled and adapted to engage the jaw, and a transverse pin passing through the catch and arranged in said slots, substantially as described.

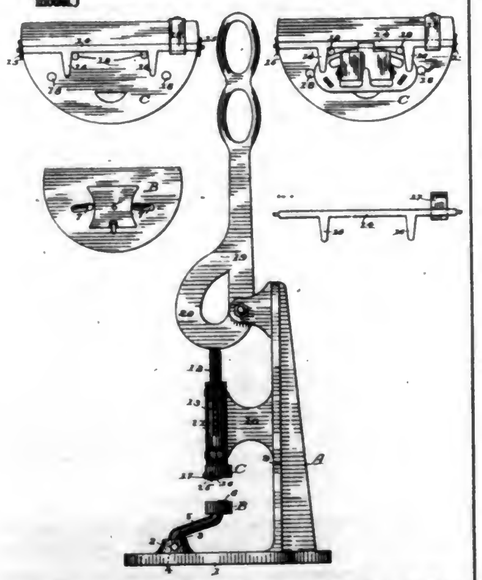
472,896. HEEL-PLATE AND ICE-CREEPER. WILLIAM ROSENFIELD, Manistee, Mich. Filed Dec. 29, 1891. Serial No. 416,436. (No model.)



Claim.—1. The combined heel-plate and ice-creeper herein described, consisting of a base-plate having a rear connecting-bar formed with openings to receive the calks of the creeper and a front piece or bar formed with a spring-tongue and having attaching-prongs 7, and an ice-creeper journaled in the plate and formed with calks to engage a surface and adapted to turn back and rest with the calks in the openings of the rear connecting-bar of the base-plate and to be held by the spring-tongue thereof.

2. The combined heel-plate and ice-creeper herein described, consisting of a base-plate A, having side taps 8 9 secured thereto, a rear connecting-piece formed with tapering sockets and a front connecting-bar having a spring-tongue and having attaching-prongs 7, and an ice-creeper journaled between the base-plate and the side taps to ride on the end of the spring-tongue and formed with calks and adapted to be turned on its bearings to horizontal position front or back, substantially as and for the purpose specified.

472,897. HEEL-PLATE-ATTACHING MACHINE. WILLIAM ROSENFIELD, Manistee, Mich. Filed Jan. 11, 1892. Serial No. 417,677. (No model.)



Claim.—1. The combination of the standard A, formed with an arm 10, having a vertical sleeve on its outer end, a reciprocative bar in the sleeve, a die on the lower end of the sleeve, a spring-actuated plate-holding bar journaled across the face of the said die, formed with fingers, a lever fulcrumed at the upper end of the standard to push the lever down, and a lower die B, as and for the purpose specified.

2. The combination of the standard A, formed with an arm 10, having a vertical sleeve on its outer end, a reciprocative bar in the sleeve, a lever to operate the bar, a die on the lower end of the bar, a plate-holding bar journaled across the die, formed with fingers, a spring to hold the plate-holder down on the face of the die, an arm 5, extending from the base of the standard, and a die on the end of the arm, substantially as described.

472,898. WAVE-POWER MOTOR. ALFRED ROBINSON, Warrior, Idaho. Filed July 3, 1891. Serial No. 398,330. (No model.)

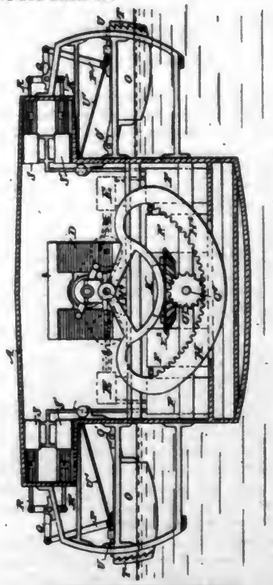
Claim.—1. In a wave-motor, the combination, with a vessel adapted to rock and air-compressors arranged as shown, of the horizontal shafts H^4 H^5, the vertical rocking segments H and H', mounted thereon and having teeth projecting upward and downward, respectively, as shown, the horizontal rock-shafts G^2 and G^4, gears G^3 and G^5, and pinions I and I', mounted thereon, the bevel-gears I^2 and I^3, meshing with said pinions, and weighted arms adapted to swing with said vessel, as shown and described.

2. In a wave-power motor, the combination, with a vessel floating in the water and anchor-chains connected with the ends of the said vessel, of driving-shafts mounted to turn within the said vessel and adapted to be actuated by swinging weights receiving their motion when the vessel rocks, substantially as shown and described.

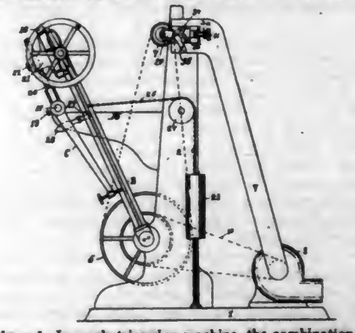
3. In a wave-power motor, the combination, with a vessel adapted to float in the water and anchored at its ends to be free to rock sidewise, of weighted arms mounted to swing within the said vessel and main shafts adapted to be turned by the rocking motion of the said weights, the said shafts being connected with air-compressors located in the vessel, substantially as shown and described.

4. In a wave-power motor, the combination, with a vessel adapted to float in the water and anchored at its ends to be free to rock sidewise, of weighted arms mounted to swing within the said vessel, main shafts adapted to be turned by the rocking motion of the said weights, the said shafts being connected with air-compressors located in the vessel, and cables leading from the dynamos in the said vessel through the anchors and then to the shore, substantially as shown and described.

5. In a wave-power motor, the combination, with a vessel containing the motor adapted to drive dynamo-machines located in the said vessel, of chains connected with the ends of the said vessel, weights hung on said chains and anchored at the bottom of the sea, and cables leading from the dynamo-machines in the said vessel through the said weights to extend to the shore along the bottom of the sea, substantially as shown and described.



472,899. SOLE-TRIMMING MACHINE. SIMON ROSS, Cincinnati, Ohio. Filed Nov. 18, 1891. Serial No. 412,290. (No model.)



Claim.—1. In a sole-trimming machine, the combination, with a jack-frame carrying the stock and pattern clamped in proximity to each other, of a rotary cutter-head and a guide mounted in close juxtaposition to said cutter-head and provided with a peripheral groove to receive the pattern, substantially as specified.

2. In a sole-trimming machine, the combination, with a jack-frame carrying the stock and pattern clamped in proximity to each other, of a rotary cutter-head, a guide mounted in close juxtaposition to said cutter-head and provided with a peripheral groove to receive the pattern, and an adjustable slide in which said guide is supported, substantially as specified.

3. In a sole-trimming machine, the combination of the grooved guide D, journaled upon the adjustable slide 29, and the adjusting-lever 33 for moving said guide to or from the clamping-head, substantially as specified.

4. In combination with the rotary cutter-head A, the revoluble grooved guide D, the sleeve 28, in which said guide is journaled, the

slide 29, that supports said sleeve, and the guide-box 30, mounted upon a shaft 36 and adapted to be adjusted to or from the plane of the cutter-head, substantially as specified.

5. In a sole-trimming machine, the combination, with the rotary cutter-head A and the peripherally-grooved guide D, mounted in close juxtaposition to each other, of an oscillatory frame having the shaft G F journaled therein, and the heads E E', mounted on said shafts and adapted to clamp the pattern and stock in proximity to each other and hold them in line with said guide and cutter-head, substantially as described.

6. In combination with the rotary cutter-head A and the grooved guide D, held in juxtaposition thereto, the shafts G F, journaled in an oscillatory frame, and the clamping-heads E E', mounted on said shafts in close proximity to the cutter-head and laterally adjustable on said shaft, whereby the stock and pattern held by said clamps can be respectively aligned to the cutter-head and guide, substantially as specified.

7. In combination with a rotary cutter-head, the clamping-heads E E', the spacing-blank R, the pattern P, the clamping-shaft G, and the revoluble shaft F for clamping the stock and presenting the same to the action of the cutter, substantially as specified.

8. In combination with a rotary cutter, the clamping-heads E E', the former journaled upon a revoluble shaft and the latter upon the gudgeon-shaft G, which shaft is secured in the split box I, substantially as specified.

9. In combination with the continuously-revolving cutter-head A and a peripherally-grooved guide D, mounted close to said cutter-head, an oscillatory jack-frame provided with clamping-heads E E' to hold the stock, the pattern P, clamped with the stock in position to be engaged by the peripherally-grooved guide, and the revoluble shaft K for turning the stock and pattern together at variable speed at the will of the operator, substantially as specified.

10. In combination with the main frame and a continuously-revolving cutter-head A and peripherally-grooved guide D, mounted on said frame in juxtaposition to each other, the jack-frame B, swiveled upon said main frame, the weight 23 for automatically holding the jack-frame forward, the shafts G F, journaled in said jack-frame, the clamping-heads E E', mounted on said shafts and adapted to clamp the stock and pattern in proximity to each other and in line with the cutter-head and guide, and mechanism for oscillating the jack-frame and revolving the stock and pattern at the required speed at the will of the operator, substantially as specified.

11. In combination with a rotary cutter-head, the swiveling jack-frame B, the fence C, mounted upon the table 16, the adjustable guide 18, and mechanism for adjusting said fence radially on its shaft 17, substantially as specified.

12. In combination with a rotary cutter-head, the jack-frame B and the fence C, provided with the vertically-adjustable guide 18 upon the top and radially adjusted upon its center 17, substantially as specified.

13. In combination with the rotary cutter-head A, the adjustable guide D, provided with a groove in its periphery and journaled upon a stud-shaft at one side of the cutter-head and held in close proximity to the plane of the cutter, substantially as specified.

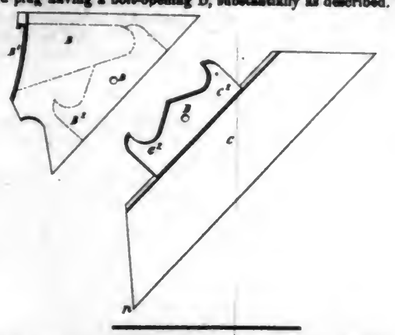
14. In combination with the cutter-head A, grooved guide D, clamping-heads E E', and pattern P, the revoluble shaft F, on which one of said clamping-heads is mounted, the externally-screw-threaded sleeve K, in which said shaft is journaled, and the internally-screw-threaded boxing M, in which the sleeve K is adjustably supported, whereby the clamping-heads and pattern can be adjusted to bring said pattern in alignment with the groove in the periphery of the guide, substantially as described.

15. In combination with the rotary cutter-head A, the peripherally-grooved guide D, the clamps E E', and the pattern-plate P, the slide 29, in which said guide D is journaled, and the screw 31, adapted to adjust said slide to carry the guide forward or back, substantially as described.

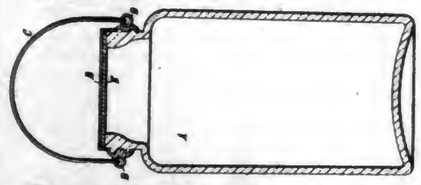
472,400. PLOWSHARE. WILLIAM R. RUSSELL, Adelaide, South Australia, assignor of one-half to Ernest Ryston Harrold, same place, and William Heathcrey, Petersburg, South Australia. Filed Feb. 18, 1891. Serial No. 381,845. (No model.) Patented in Victoria Aug. 15, 1890, No. 7,997; in New South Wales Aug. 18, 1890, No. 2,430; in Queensland Aug. 19, 1890, No. 1,100; in New Zealand Aug. 28, 1890, No. 4,565; in England Sept. 15, 1890, No. 14,530; in France Oct. 23, 1890, No. 208,077; in Germany Oct. 23, 1890, No. 56,397; in Belgium Oct. 25, 1890, No. 92,476; in Cape of Good Hope Nov. 22, 1890; in South Australia Dec. 4, 1890, No. 1,799; in Canada Feb. 17, 1891, No. 36,639, and in Argentine Republic July 30, 1891, No. 1,084.

Claim.—1. In a plow, the combination, with a plow-foot having an approximately straight outer face and central or nearly-central recess, of a reversible share-blade having a projection or plug O^3, provided with duplicate recesses to receive the foot, substantially as described.

2. In a plow, the combination, with a plow-standard *c*, having a foot A', of a reversible share having a plug or projection O^3, provided with duplicate recesses adapted to fit the plow-foot interchangeably, said plug having a bolt-opening D, substantially as described.

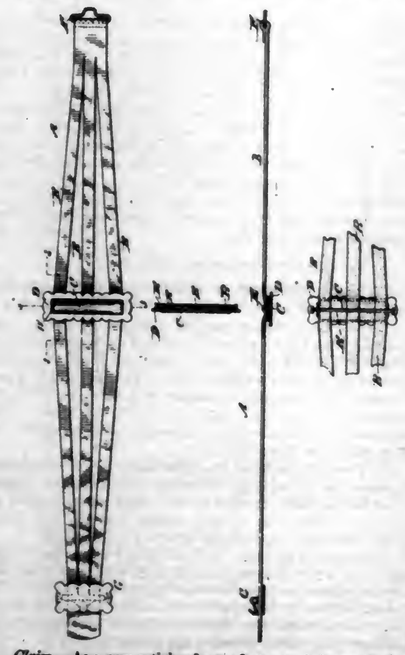


472,401. FRUIT-JAR. DAN RYLANDS, Barnsley, England. Filed Dec. 11, 1890. Serial No. 374,373. (No model.)



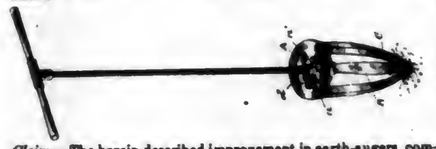
Claim.—The combination of a jar having the internal surface of its neck formed with a recess to constitute a pouring-spout A' with a screw-cover B, screwing on the neck of the jar and provided with an attached handle C, substantially as described.

472,402. BELT. CHARLES SCHERER, Brooklyn, assignor to Scheuer & Brother, New York, N. Y. Filed Dec. 19, 1891. Serial No. 415,640. (No model.)



Claim.—As a new article of manufacture, a belt provided with a band having longitudinal cuts therein extending the length of the band, except the end portions thereof, whereby narrow strips are formed, said strips being spread apart at their central portion and secured to a transverse shield, the ends of the band being provided with fastenings, substantially as described.

472,403. EARTH-AUGER. CHARLES A. SCOTT and JAMES C. GARDINER, Davey, Nebr. Filed Aug. 21, 1890. Serial No. 362,625. (No model.)



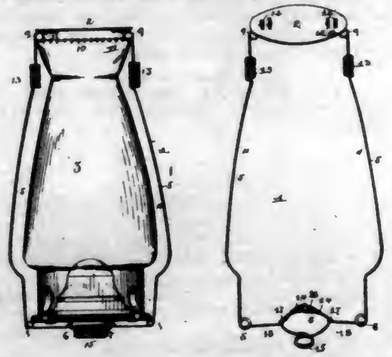
Claim.—The herein-described improvement in earth-augers, comprising a circular head to which a handle is attached, said head having on its under side six pairs of parallel depending flanges adapted to receive three cutting-blades and the same number of earth-retaining blades, each blade being adjustable laterally on the head, the earth-retaining blades being of less length than the cutting-blades and similarly curved, so as to project toward a common center, one set above the other, so that the points of the retaining-blades will lie within the cutting-blades, substantially as set forth.

472,404. BRICK-KILN. WILLIAM SEBOOMER, Hamworthy, Poole, England. Filed Oct. 9, 1891. Serial No. 408,948. (No model.) Patented in England Jan. 6, 1891, No. 238.



Claim.—The combination, with the nearly-parallel arches connected at the ends to form a continuous arch, the arch being also adapted to be divided into chambers, of a hot-air flue extending centrally between and above the arches, branch damper-controlled flues extending from the main flue and above the several chambers of the arches, and vertical openings extending through the roof of the arches and intersecting the ends of the branch flues, the vertical openings having removable covers adapted to fit in their lower ends and close the entrance to the arches, substantially as described.

472,405. LAMP-CHIMNEY ATTACHMENT. JOHN SHOEMAKER, Putneyville, Pa. Filed Apr. 15, 1891. Serial No. 389,069. (No model.)

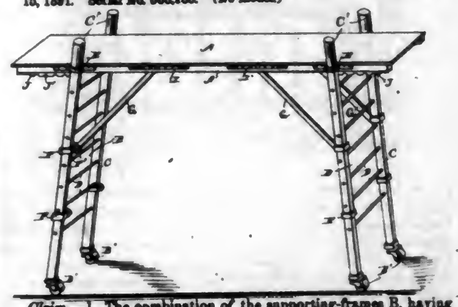


Claim.—1. A lamp-shield comprising the plate and the wire frame supporting the plate and consisting of the sides and the clamp connecting the lower ends of the sides and having curved jaws and provided with a coiled spring connecting the jaws, substantially as described.

2. A lamp-shield comprising the plate provided with a series of sockets and the wire supporting-frame having its sides provided at their upper ends with hooks to engage the sockets, substantially as described.

3. A lamp-shield comprising the plate arranged at the top of the chimney and the wire frame supporting the plate and composed of sides conforming to the configuration of the chimney and having their upper ends secured to the plate, coils 9, formed in the frame to engage the flutes in the top of the chimney, the springs 13, and the wire clamp at the bottom of the frame to engage a lamp-burner, substantially as described.

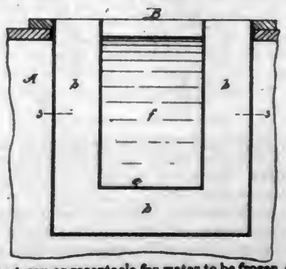
472,406. SCAFFOLD. ISAIAH SMITH, Nashville, Tenn. Filed Apr. 15, 1891. Serial No. 388,963. (No model.)



Claim.—1. The combination of the supporting-frames B, having the rounded upper ends C, the platform having the racks I and the bearing-straps E at its ends, the adjustable braces G, hinged at their lower ends to the supporting-frames and having at their upper ends the transverse rods H, substantially as set forth.

2. The combination of the supporting-frames consisting of the side pieces having the rollers B' at their lower ends and formed with the rounded upper ends and the connecting-rounds D, the series of stirrups F, secured on the side pieces of the supporting frames, the adjustable braces removably pivoted at their lower ends in the stirrups and having at their upper ends the transverse rods H, and the platform A, having the bearing-straps E, the racks I, and the end racks J, substantially as set forth.

472,407. CAN FOR THE MANUFACTURE OF ICE. ALBERT SMITH, New York, N. Y. Filed Dec. 14, 1891. Serial No. 414,959. (No model.)



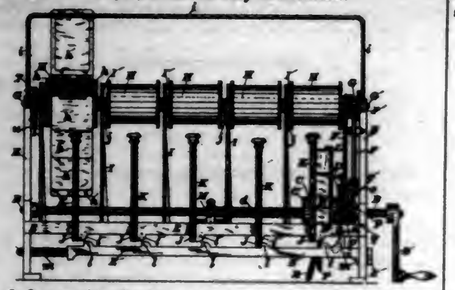
Claim.—1. A can or receptacle for water to be frozen, constructed externally with an air chamber or chambers on or throughout its bottom and two of its opposite sides or ends, and with its other two opposing sides left uncovered or exposed, substantially as and for the purpose set forth.

2. A can or receptacle for water to be frozen, constructed externally with an air chamber or chambers on or throughout its bottom and two of its opposite sides or ends, with its other opposing sides left uncovered or exposed and provided with a central vertical partition between the ends having exterior air chambers or spaces, essentially as and for the purposes specified.

472,408. GAME APPARATUS AND SAMPLE-EXHIBITOR. FRANK H. SMITH, Chicago, Ill., assignor to the Ideal Toy Company, same place. Filed Oct. 15, 1891. Serial No. 408,769. (No model.)

Claim.—1. In a machine for the purpose hereinbefore stated, the shaft B, collar C, fixed to said shaft, said collar slotted at *e*, hub D', a single-acting cam D and cog-wheel *c*, secured together and loosely mounted upon said shaft, said hub having a slot *c'*, said slot registering with a slot *e* of collar C, said slots together capable of receiving a coin by which said collar and said hub are connected, said connection causing said cam D to revolve in unison with shaft B, said cam operating elbow-lever F in one direction, said elbow-lever having one end of cord F' secured thereto, a pulley G, which said cord passes around

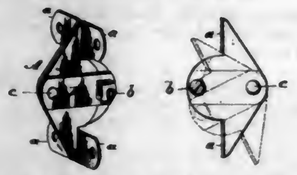
and contacts with, a spring G'', to which the other end of said cord is attached, shaft G', upon which pulley G is mounted, and drums H upon said shaft, and cords h', attached to said drums, and operated in the manner and for the purpose substantially as described.



2. In a machine for the purpose hereinbefore described, in combination with the cog-wheel c, mounted loosely upon shaft B, a cog-wheel n', geared to cog-wheel c, said cog-wheel n' a multiple of cog-wheel c, and single-acting cams n and p, secured to cog-wheel n', cam n serving to impart a longitudinal motion to slide E once for every engagement with cam n of cog-wheel n', said cam p imparting a vibratory motion to levers q once for every engagement with said cam, for the purpose substantially as set forth.

3. In a machine for the purpose described, a shaft B, having loosely mounted thereon a cog-wheel c, said cog-wheel geared to cog-wheel n', said cog-wheel n' a multiple of cog-wheel c, cog-wheel n' having single-acting cams p and n attached thereto, cam p of cog-wheel n' operating arm p of bent lever q, the end of lever q operating between collar C and hub D', cam n of cog-wheel n' operating slide E, said slide operating rods J, and said rods operating levers I from contact with drums H, substantially in the manner set forth.

472,409. MIRROR-HINGE. WENDELL P. TARBELL, Milford, N. H. Filed Feb. 4, 1892. Serial No. 420,268. (No model.)



Claim.—1. As a new article of manufacture, a hinge comprising leaves and a plate B, pivotally connected to each other, said plate being adjustably connected at its opposite end to one of the leaves, substantially as set forth.

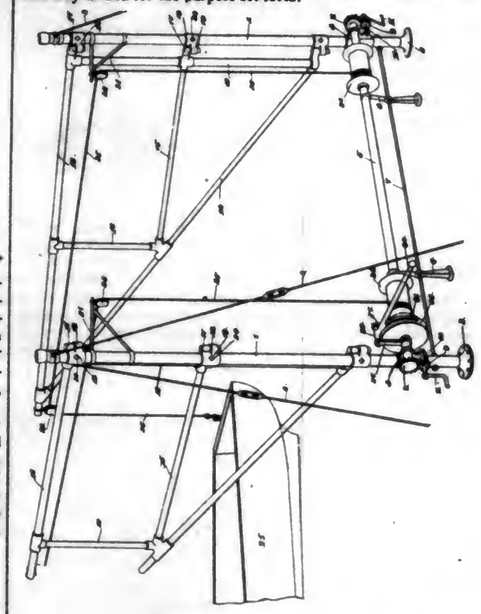
2. The combination, in a hinge, of a leaf A, having an aperture through which passes an adjusting device, a leaf A', of less width, pivoted thereto by a rivet which connects the parts permanently to each other and to a plate B, ears or projections formed on the leaves A and A', the ears on the leaf A being adapted to strike against the edges of the plate B to limit the movement of said leaf with respect to the other leaf, for the purpose set forth.

3. In a hinge for the purpose set forth, leaves A and A', pivotally connected to each other and provided beyond said pivot-point with a set-screw for regulating the frictional contact of the leaves with each other, and means for limiting the pivotal movement of one of the leaves with respect to the other, for the purpose set forth.

4. In a hinge, the combination of the leaves A and A', having ears a a, and a plate B, connected to the leaves at their pivot-point, the opposite end of said plate being secured to one of the leaves, substantially as shown, so as to provide frictional contact between the plate and adjacent leaf.

472,410. BOAT-LOWERING APPARATUS. JOHN H. TERROP, Evansville, Ind. Filed June 4, 1890. Serial No. 354,206. (No model.)

Claim.—In a boat-lowering apparatus, the combination of the davits arranged in pairs, each davit comprising an upright permanently attached to the deck of the vessel and a horizontally-swinging crane hinged to the upright and of a length adapting it to swing by the opposite upright, the shaft journaled to the uprights, the supplemental bearings for said shafts, guide-pulleys on the uprights and the cranes, the drums and the friction-disk on the shaft between the upright and supplemental bearings, the arms journaled upon the latter adjacent to the friction-disk, the rock-bar journaled between the outer ends of the arms and having a handle and a brake-shoe, and the ropes wound on the drums and passed over the guide-pulleys to the boat, one rope being connected to the bow and the other rope to the stern of the boat, substantially as and for the purpose set forth.

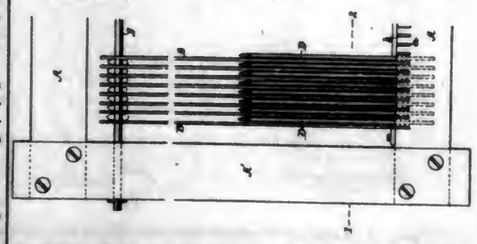


472,411. PNEUMATIC TIRE. GEORGE W. TOMEY, Westborough, and MURRAY V. LIVINGSTON, Newton, Mass. Filed July 28, 1891. Serial No. 400,949. (No model.)



Claim.—A cushion-tire consisting of a single piece of elastic material formed with an annular internal base portion B', annular air-chamber b, auxiliary side chambers B at opposite sides of the base portion, and a pair of independent laterally-movable curved flaps or wings b', having their adjacent edges separated by the annular division-slot b^2 for the purpose of springing such flaps or wings around opposite sides of a wheel-rim A, substantially as described.

472,412. HEDDLE FOR CROSS-WEAVING LOOMS. HENRY TOPHAM, Philadelphia, Pa. Filed Sept. 28, 1891. Serial No. 406,963. (No model.)



Claim.—1. The combination, in a heddle for cross-weaving looms, of the frame, the upright needles, and the upright bars located between said needles, said bars being loosely confined at one end, whereby lateral pressure of a warp-thread shedded between a bar and an adjoining needle causes said bar to yield laterally and prevents confinement of the warp-thread between the bar and needle, substantially as specified.

2. The combination, in a heddle for cross-weaving looms, of the frame, the upright needles, and the upright bars located between said needles, said bars being unconfined laterally at one end, whereby lateral pressure of a warp-thread shedded between a bar and an adjoining needle causes said bar to yield laterally and prevents confinement of the thread between the bar and needle, substantially as specified.

3. The combination, in a heddle for cross-weaving looms, of the frame, the upright bars, and the interposed needles, said bars being grooved or slotted at one end and said heddle-frame having a transverse rod adapted to the grooves in the bars, so that while the latter are prevented from moving in the line of the warp they are loosely confined at one end and can yield in a direction transversely to the warp, substantially as specified.

4. The combination, in a heddle for cross-weaving looms, of the frame, the upright bars loosely confined at one end, and the interposed needles, arranged in a zigzag or staggered line, substantially as specified.

5. The combination, in a heddle for cross-weaving looms, of the frame, the upright bars unconfined laterally at one end, and the interposed needles arranged in a zigzag or staggered line, substantially as specified.

6. The combination, in a heddle for cross-weaving looms, of the frame having a slotted bar and cross-rod, the upright needles, a retaining-bar secured to the slotted frame of the heddle, and the upright bars adapted at one end to the slotted bar of the heddle-frame and having at the opposite end slots for the reception of the cross-rod of said frame, each of said upright bars also having in the front near one end a notch for the reception of the retaining-bar which is secured to the slotted frame of the heddle, substantially as specified.

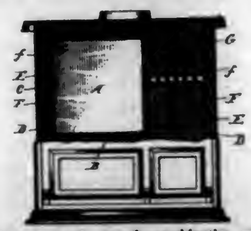
472,413. NUT-LOCK. HOWARD R. WALLIS, Muncy, Pa. Filed Sept. 30, 1891. Serial No. 407,344. (No model.)



Claim.—1. A nut-lock consisting of a plate or washer having abrupt shoulders formed on its upper and lower sides, the shoulders on the upper side being arranged in a line at right angles to the line of shoulders on the under side, for the purpose set forth.

2. A nut-lock consisting of a plate or washer having abrupt shoulders formed by inclined and vertical walls, said shoulders being arranged in pairs on both sides of the washer, the pair on one side being located in a line at right angles to the line of the shoulders on the other side, for the purpose set forth.

472,414. NON-CONDUCTING LINING FOR STOVES OR HEATERS. CHARLES F. WALTHER, Buffalo, N. Y., assignor to Sherman S. Jewett & Co., same place. Filed Jan. 26, 1891. Serial No. 379,110. (No model.)



Claim.—1. In a stove or heater, the combination, with the wall of a flue, of a sheet of non-friable non-conducting lining material E, placed against the flue-wall, and a separable metallic holder or rack secured to the flue-wall against the face of the lining, substantially as set forth.

2. In a stove or heater, the combination, with the wall of a flue, of the non-conducting lining material E, placed against the flue-wall, and the separable cast-metal plate bolted against the face of the lining, substantially as set forth.

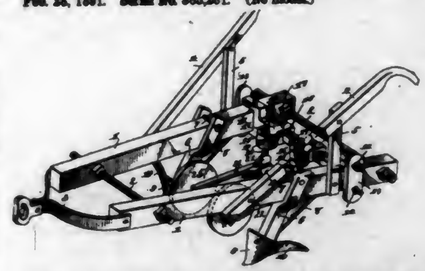
472,415. CAR-WHEEL. WILFRED WARD, Buda, Ill. Filed Dec. 24, 1891. Serial No. 416,063. (No model.)

Claim.—1. In a wheel, the combination of a rim, a hub, and spokes having their inner ends cast in the hub and their outer ends alternately secured near the inner and outer edges of the rim, the spokes being provided with nearly a quarter-twist extending throughout their length, substantially as described.

2. In a wheel, the combination of a rim provided on its inner face with annular flanges arranged adjacent to the inner and outer edges, a hub, and spokes provided throughout their length with nearly a quarter-twist and having their inner ends cast in the hub and arranged at an angle to the same and to one another, said spokes having their outer ends secured to the flanges of the rim, substantially as described.



472,416. CULTIVATOR. ATWOOD R. WILDER, Homer, La. Filed Feb. 26, 1891. Serial No. 383,231. (No model.)



Claim.—1. The combination, with the opposite beams, the depending standards, and the shovels, of the arms 11, bifurcated at their ends to embrace the beams, the plates connected to the bifurcations, the nuts threaded on the ends of the bifurcations, the brackets having transverse and vertical bores, the former receiving the arms, set-screws mounted in both bores, the depending standards terminating in rectangular heads, and the bifurcated arms 22, pivoted to the heads, provided with bearing-pins, and rotatable fenders mounted on the pins, substantially as specified.

2. In a cultivator, the combination, with the beams and the standards provided with shovels, of the arms 11, adjustable longitudinally along the beams, the brackets 15, adjustable on the arms laterally of the beams, the standards 20, rotatably mounted in the brackets and adjustable, as described, and the arms 22, pivoted to the standards 20 and carrying the fenders 25, substantially as specified.

472,417. COIN-CONTROLLED APPARATUS FOR GRAMOPHONES. EDWARD L. WILSON, New York, N. Y. Filed Dec. 3, 1891. Serial No. 413,871. (No model.)

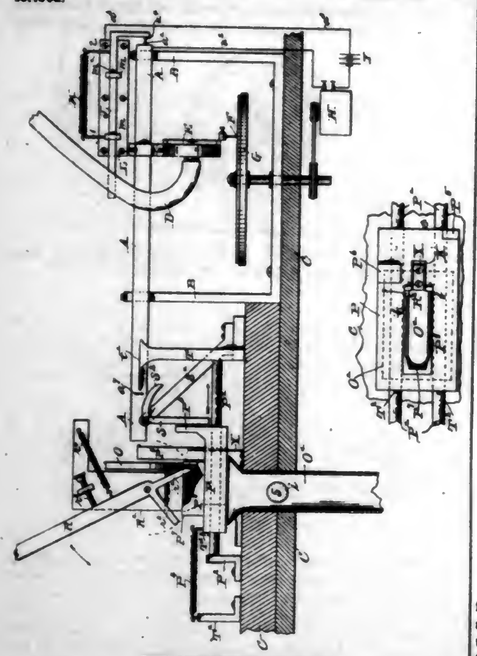
Claim.—1. A gramophone-reproducer, in combination with a sliding and lifting bar on which said reproducer is mounted, a lever to lift said bar, a spring-controlled longitudinal reciprocating carriage having arms to operate said lifting-lever, a coin attachment to hold a coin, and a spring-controlled lever to operate against the coin to move the said carriage forward, substantially as described.

2. In a coin-controlled apparatus for gramophones, a bar mounted on a suitable support and having a vertical and horizontal movement in said support, in combination with a gramophone-reproducer connected to said bar, a lever for giving said bar the vertical movement, a lever-operated slide for giving said bar a horizontal movement, and an upright support onto which said bar is lifted by said slide and moved thereby a certain distance horizontally after being lifted and then dropped by gravity to permit the stylus to fall upon the disk, substantially as described.

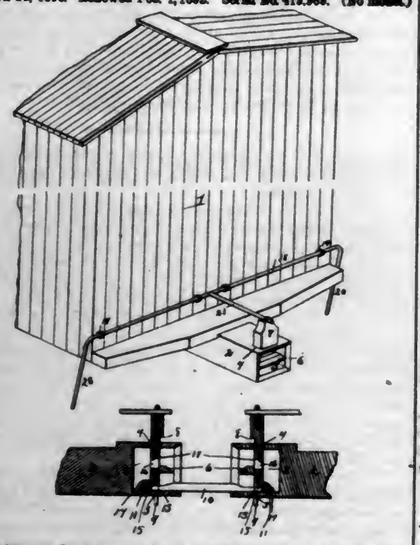
3. In a coin-controlled apparatus for gramophones, a coin-chute, in combination with a longitudinally-moving carriage beneath said chute to first receive the coin, a receptacle beneath the carriage to finally receive the coin, said carriage having supports for the coin, and a wall having a slot against which said coin rests, a spring-actuated lever to force said coin against the said end of the carriage and force the carriage along a certain distance, and a spring-bar to come in contact with the coin through the slot and throw it into the said receptacle, substantially as described.

4. The combination, with an electric motor and circuit, of a longitudinally-reciprocating bar carrying the gramophone-reproducer and provided with a contact-point, a spring-actuated reciprocating bar carrying the opposite contact-point and connecting with the motor, and a longitudinally-reciprocating carriage and lever for carrying for-

ward the said reproducer-bar, the latter being carried back by said motor, and a spring for retracting said carriage, substantially as described.



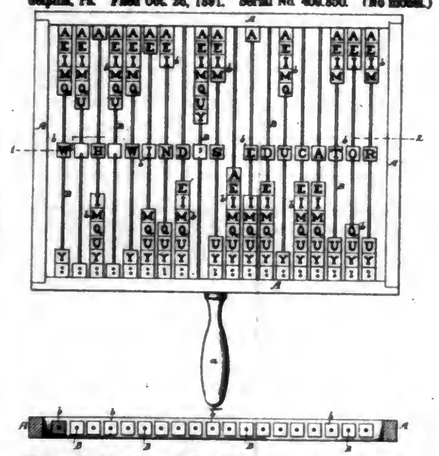
472,418. CAR-COUPLING. JOHN H. WILSON, Carmi, Ill. Filed Dec. 26, 1890. Renewed Feb. 1, 1892. Serial No. 419,969. (No model.)



Claim.—1. In a car-coupler, the combination of the draw-head formed at its top with the transverse slot 4 and having the openings 5 5 formed in its bottom, the sliding coupling-bar 7, formed at its lower end with the guide-pins 9 9 and formed between said guide-pins with the forward inclined surface 13 and the rear rear recess 14, forming the inclined locking-tongue 15, and the coupling-link 10, formed with the pointed end heads 11, having the inclined inner ends 12, substantially as set forth.

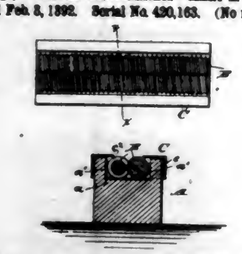
2. The combination, in a car-coupler, of the draw-head formed with the upper transverse slot 4 and the bottom openings 5 5 and having the beveled division-bar 6 and the sliding coupling-bar 7 formed with the central opening 16 and the inclined surface 17 and formed at its lower end with the guide-pins 9 9, the forward inclined surface 13, the rear recess 14, and the inclined locking-tongue 15, and the coupling-link 10, formed with the pointed end heads having the inclined inner ends, substantially as set forth.

472,419. EDUCATIONAL APPLIANCE. WILLIAM H. WIND, Philadelphia, Pa. Filed Oct. 28, 1891. Serial No. 409,850. (No model.)



Claim.—The within-described educational device, consisting of a frame having a series of guide-rods with blocks mounted on said rods and free both to slide and to turn thereon, each block having letters upon four of its sides and each series of blocks carrying the letters of the entire alphabet, each of the guide-rods being of a length equal to twice the space occupied by the series of blocks, so that any desired block of the series can be moved into a central position on its rod, substantially as specified.

472,420. PENCIL-SHARPENER. MARY E. WOOD, Philadelphia, Pa. Filed Feb. 8, 1892. Serial No. 420,163. (No model.)



Claim.—1. As a new article of manufacture, a pencil-sharpener comprising a recessed body and threaded cutters in the said recess, said cutters contacting with the side walls of the recess and intermeshing with each other throughout their entire length, as set forth.

2. As a new article of manufacture, a pencil-sharpener consisting of a block formed with a recess, two round-threaded cutters removably fitted in said recess and in mesh with each other, and a removable cap fitting said block and formed with a longitudinal opening for exposing the cutters, substantially as described.

472,421. APPARATUS FOR DISINTEGRATING, MIXING, AND OTHER PURPOSES. JAMES A. YOUNG, Boston, Mass., assignor, by direct and mesne assignments, to the Young Coloring Company, same place. Filed Dec. 27, 1890. Serial No. 375,964. (No model.)

Claim.—1. The combination, with the vessel-body and the stand-pipe therein, of the bottom removably connected to the body and the injector-nozzle carried by and adjustable in said bottom, substantially as and for the purposes hereinbefore set forth.

2. The combination of the vessel-body, the stand-pipe, the nozzle, the crown-plate arranged within the vessel above the stand-pipe and below the vessel's top, so as to leave between the periphery of the plate and the walls of the vessel an annular steam-passage, wire-gauze for

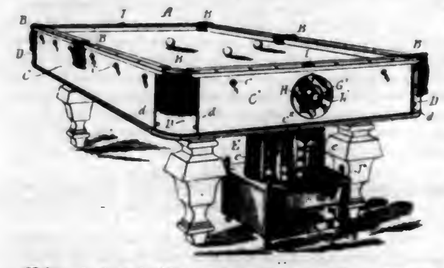
said passage, and the steam-outlet in the vessel above the crown-plate, under the arrangement and for operation as hereinbefore set forth.



472,422. METALLURGICAL PROCESS. José R. ALDUCARAY, Porto, Portugal. Filed June 20, 1890. Serial No. 356,133. (No specimens.) Patented in Spain Mar. 4, 1889, No. 9,293; in Portugal Sept. 3, 1889, No. 1,397; in France Oct. 24, 1889, No. 201,521, and in Belgium Feb. 3, 1890, No. 89,455.

Claim.—The herein-described metallurgical process for reducing, melting, and refining ores containing several metals—such as arsenic, antimony, bismuth, silver, chromium, cobalt, nickel, copper, tin, iron, manganese, molybdenum, gold, platinum, lead, titanium, uranium, and tungsten—in one operation, which consists in triturating the ore, mixing the same substantially in the proportions stated with the salts and alkalies—such as quicklime, slag, fluor-spar, common salt, sulphate of soda, caustic soda, black-ash, and carbonate of soda—successively subjecting the charge to increasing temperatures, thereby successively reducing and melting the various metals, and separately drawing off the reduced metals, substantially as described.

472,423. POOL-TABLE. FRANCIS R. AUGUSTIN and WILLIAM F. AUGUSTIN, Chicago, Ill. Filed Jan. 14, 1891. Serial No. 377,699. (No model.)



Claim.—1. A pool-table provided with pockets having openings therein and a suitable track beneath the pockets, said track having a suitable opening therein, in combination with a movable receptacle permanently located beneath said track-opening and having a plurality of compartments therein for the reception of the several pool-balls, and mechanism for rotating said receptacle to bring any desired one of said compartments beneath the opening in the track, substantially as specified.

2. A pool-table provided with suitable pockets, and a track located beneath the pockets to which the balls pass from the several pockets, a revoluble receptacle beneath said track, and means for rotating the same, an opening in said track to permit the balls to pass from the track to said receptacle, said receptacle being provided with a removable bottom, substantially as and for the purpose specified.

3. A pool-table provided with suitable pockets around its edge, said pockets having openings therein through which the balls may pass, a track located around the outside of the table beneath the pockets, a revoluble receptacle for the balls located permanently beneath the track, an opening in said track to permit the balls to pass from said track to said receptacle, and a curved chute located beneath the opening in the pockets to direct the course of a ball on the track, and also sufficiently above the track to permit a ball to pass over said track beneath said chute, substantially as described.

4. A pool-table provided with suitable pockets and having a track to receive the balls from the pockets, a revoluble receptacle having a plurality of compartments therein and located beneath the track, means for permitting the balls to pass directly from the table to said tracks and from said tracks to said receptacle, and a drawer removably located in said receptacle, said drawer being triangular in plan view, substantially as described.

5. The combination, with a pool-table, a receptacle for the pool-balls, and a track connecting the table with the receptacle, whereby the balls may pass from the table to said receptacle, of a triangular-shaped drawer removably secured in said receptacle, said drawer being provided with a removable bottom, substantially as and for the purpose described.

6. A pool-table provided with a track to receive the balls, a suitable hole or opening in said track, a movable receptacle located permanently beneath said openings and provided with a plurality of compartments for receiving the pool-balls, means for rotating said receptacle to bring any desired compartment beneath the opening in the track, a dial and indicator, and mechanism for pointing out upon said dial which compartment of the receptacle has been brought beneath the said opening in the track, substantially as and for the purpose specified.

7. A pool-table provided with one or more tracks to receive the balls, a discharge-aperture in said track or tracks, a suitable receptacle for the pool-balls rotatably secured beneath the discharge-aperture in the tracks, said receptacle being provided with a plurality of compartments suitably numbered, one or more dials also provided with numbers corresponding with the numbers on the compartments, of the receptacle, one or more indicators, and means for rotating said receptacle and simultaneously operating said indicators to designate upon the dial or dials the particular compartment of the receptacle that is beneath the discharge-aperture in the track, substantially as described.

8. A pool-table comprising a plurality of pockets having openings at their lower ends through which the pool-balls may pass, one or more tracks located beneath said pockets, a cylindrical receptacle communicating with said tracks and provided with a plurality of compartments for the pool-balls, a dial provided with divisions equal to the number of the compartments in said receptacle, an indicator on said receptacle, a shaft extending through the table from end to end and provided with suitable gearing connecting said shaft with said indicator and with said receptacle, substantially as and for the purpose specified.

9. The combination, with a pool-table, a cylindrical revoluble receptacle provided with suitable compartments for the pool-balls, and means for conveying the said balls directly to the receptacle, of a removable drawer triangular in shape located in the lower portion of said receptacle, and a passage-way or conduit between said compartment and said drawer, said passage-way or conduit being circular in its upper portion and triangular at its lower portion, whereby the balls will be directed from the several compartments of the receptacle to the triangular-shaped drawer, substantially as described.

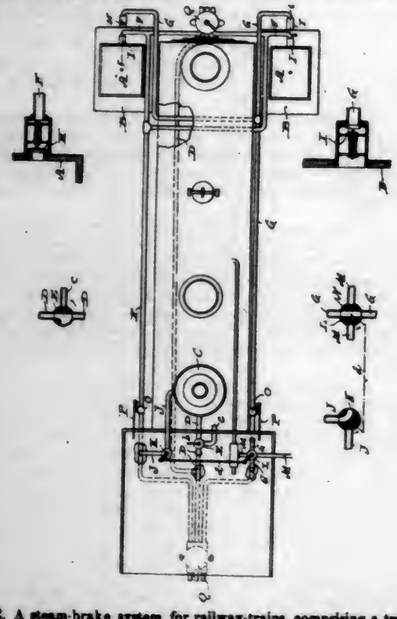
10. The combination, with a pool-table, a cylindrical receptacle, and means for conveying the balls from the table to the receptacle, of a removable bottom in said receptacle, and a removable triangular-shaped drawer, also located in said receptacle beneath the said removable bottom and having a two-part movable bottom, and a chute or passage between said removable bottom of the receptacle and the drawer, substantially as specified.

11. The combination, with a pool-table, of a revoluble receptacle having a plurality of compartments therein and being permanently located beneath the table, means for conveying the pool-balls to the receptacle, a drawer removably located in said receptacle and adapted to receive all the balls from the several compartments of said receptacle, a signaling device, and suitable mechanism connecting said signaling device with said removable drawer, whereby said signaling device may be actuated upon the removal of said drawer from said receptacle, substantially as and for the purpose specified.

472,424. BRAKE AND HEATING SYSTEM FOR RAILWAY-CARS. EDWIN D. BABBS, Milwaukee, and ARTHUR L. WAITE, Baraboo, assignors of one-fifth to Manning H. Case, Milwaukee, Wis.; Annie L. Waite adminis-

trairix of said Arthur L. Waite, deceased. Filed Aug 12, 1891. Serial No. 402,422. (No model.)

Claim.—1. A steam-brake system for railway-trains, comprising a train-pipe and steam-circulating pipes arranged to take steam from the locomotive, reservoirs in circuit with the circulating-pipes at intervals of the train, brake-cylinders in connection with the train-pipe and reservoirs, but having outlets to the atmosphere, and valves of such construction and arrangement as to normally cut off the reservoirs from the brake-cylinders under a certain pressure of steam in said train-pipe, while being at the same time open to said brake-cylinders and their atmosphere-outlets, but which automatically close said atmosphere-outlets and open communication between said reservoirs and brake-cylinders on a decrease of the pressure in the aforesaid train-pipe, substantially as set forth.



2. A steam-brake system for railway-trains, comprising a train-pipe having a valve-controlled connection with the steam-dome of the locomotive, circulating-pipes leading from the locomotive steam-chests back to the locomotive-cylinders and having a valve-controlled communication with the train-pipe, reservoirs in circuit with the steam-circulating pipes at intervals of the train, brake-cylinders in connection with train-pipe and reservoirs, but having outlets to the atmosphere, and valves of such construction and arrangement as to normally cut off the reservoirs from the brake-cylinders under a certain pressure of steam in said train-pipe while being at the same time open to said brake-cylinders and their atmosphere-outlets, but which automatically close said atmosphere-outlets and open communication between said reservoirs and brake-cylinders on a decrease of pressure in the aforesaid train-pipe, substantially as set forth.

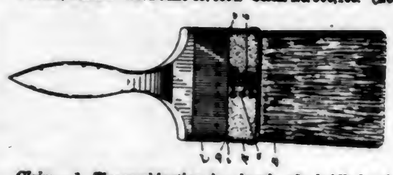
3. A steam-brake system for railway-trains, comprising a train-pipe having a valve-controlled connection with the steam-dome of the locomotive, valve-controlled circulating-pipes leading from the locomotive steam-chests back to the locomotive-cylinders and having a valve-controlled communication with the train-pipe, a valve connection between the steam-dome and one of the steam-circulating pipes and a like connection between the other of these steam-circulating pipes and the injector overflow-pipe of the locomotive, reservoirs in circuit with circulating-pipes at intervals of the train, brake-cylinders in connection with the train-pipe and reservoirs, but having outlets to the atmosphere, and valves of such construction and arrangement as to normally cut off the reservoirs from the brake-cylinders under a certain pressure of steam in said train-pipe while being at the same time open to the latter cylinders and their atmosphere-outlets, but which automatically close said atmosphere-outlets and open communication between said reservoirs and brake-cylinders on a decrease of pressure in the aforesaid train-pipe, substantially as set forth.

4. A combined steam-brake and heating system for railway-trains, comprising a train-pipe and circulating-pipes arranged to take steam from the locomotive, reservoirs in circuit with the steam-circulating pipes at intervals of the train, radiators in the train-coaches connected to the reservoirs, brake-cylinders in connection with the train-pipe and reservoirs, but having outlets to the atmosphere, and valves of such construction and arrangement as to normally cut off the reservoirs from the brake-cylinders under a certain pressure of steam in said train-pipe while being at the same time open to said brake-cylinders and their atmosphere-outlets, but which automatically close said atmosphere-outlets and open communication between said reservoirs and brake-cylinders on a decrease of pressure in the aforesaid train-pipe, substantially as set forth.

5. A steam-brake system for railway-trains, comprising a train-pipe and circulating-pipes in coupled sections arranged to take steam from the locomotive and joined at intervals to valves, each of which latter consists of a casing provided with a series of passages on opposite sides of a central line, a turning-plug having passages designed to come in and out of register with the casing-passages on a straight line and to stand on a quarter-turn, so as to cut off the train-pipe passage therein without interference with the adjacent pipe-passages, a port leading from each steam-circulating-pipe passage in the turning-plug to register with the train-pipe when said plug is in its latter position, and a one-way valve controlling the port, reservoirs in circuit with the circulating-pipes at intervals of the train, brake-cylinders in connection with said train-pipe and reservoirs, but having outlets to the atmosphere, and valves of such construction and arrangement as to normally cut off the reservoirs from the brake-cylinder under a certain pressure of steam in said train-pipe while being at the same time open to said brake-cylinders and their atmosphere-outlets, but which automatically close said atmosphere-outlets and open communication between said reservoirs and brake-cylinders on a decrease of pressure in the aforesaid train-pipe, substantially as set forth.

6. A steam-brake system for railway-trains, comprising a train-pipe and circulating-pipes arranged to take steam from the locomotive, reservoirs in circuit with the steam-circulating pipes at intervals of the train, brake-cylinders at corresponding intervals with the reservoirs, valve-casings connected to the train-pipe, reservoirs, and brake-cylinders, a slide-valve loosely arranged in each casing and provided with a single and a triple aperture arranged one below the other, the former aperture being normally in line with the atmosphere-outlet of the adjacent brake-cylinder, a compressed spring in opposition to the top of the slide-valve, a stem depending from said valve, and a piston carried on the rod to oppose a seat in said casing, against which it is normally held by a certain pressure in the train-pipe, substantially as set forth.

472,425. BRIDLE FOR PAINT-BRUSHES. CHARLES BOSCHE, Jr. Toronto, Canada. Filed June 13, 1891. Serial No. 396,102. (No model.)



Claim.—1. The combination, in a brush, of a bridle-band having perforations therein, a plate permanently secured to the head of the brush, and pins *e*, projecting from said plate and adapted to enter the perforations in the bridle-band, and said bridle-band constructed and arranged to move freely on said pins, substantially as described.

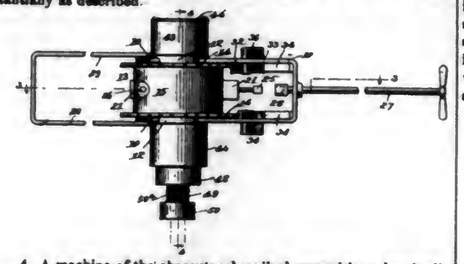
2. In a brush, the combination, with the head C, a plate D, secured thereto and having pins projecting therefrom, of a bridle-band lapping over said plate D and having two sets of perforations therein, one set constructed to be used for lacing the bridle-band to the bristles of the brush and the other set adapted to engage with the pins on the plate D, thereby forming an adjustable pivotal connection, the whole being constructed and arranged to allow the band to move freely on said pins, substantially as described.

472,426. PIPE CUTTER AND THREADER. GEORGE W. BOWMAN and JOHN C. GODFREY, Red Cliff, Colo. Filed Sept. 15, 1891. Serial No. 405,779. (No model.)

Claim.—1. A machine of the character described, comprising a separable hollow hub, a locking-key to hold the parts of the hub together, a slide-block mounted on the key and having a cutter thereon, and a ratchet mechanism for turning the hub, substantially as described.

2. A machine of the character described, comprising a separable hollow hub, the parts having registering dovetail recesses therein, a locking-key shaped to fit the recesses, a slide-block mounted on the locking-key and provided with a cutter, a screw for adjusting the slide-block, and a ratchet mechanism for turning the hub, substantially as described.

3. A machine of the character described, comprising a hollow separable hub, a locking-key extending transversely through the hub and adapted to hold the parts of the hub together, a slide-block carrying a cutter and held to move on the locking-key, a frame pivoted on the hub and having a ratchet connection therewith, and a handle for the frame, said handle being also arranged to adjust the slide-block, substantially as described.

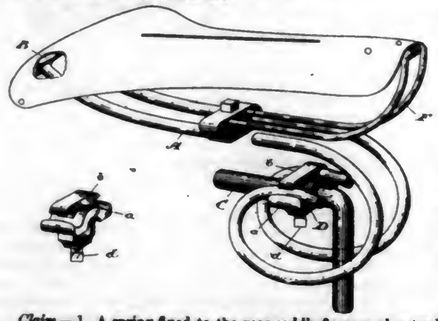


4. A machine of the character described, comprising a longitudinally-separable hub having transverse dovetail recesses therein and having oppositely-arranged ratchet-wheels secured to its ends, a locking-key arranged to hold the parts of the hub together, a slide-block mounted on the key and carrying a cutter, a screw extending through one end of the key and adapted to adjust the slide-block, a frame pivoted on the ends of the hub and having a ratchet connection therewith, and a handle journaled in the frame, said handle having a socket at its inner end to fit the slide-block screw, substantially as described.

5. A machine of the character described, comprising a revoluble hub having an angular bore therein, a threader having a reduced central portion to fit the bore of the hub and having a longitudinal bore therein, a die carried at one end of the threader, and a feed-sleeve having a thread to fit a thread in the opposite end of the threader, substantially as described.

6. The combination, with a removable hub having an angular bore, of a threader having a reduced central portion shaped to fit the bore of the hub, the threader having also a longitudinal bore therein, a cutting-die held in one end of the threader, and a series of sleeves arranged in the opposite ends of the threader, said sleeves having means for attachment to a pipe, one sleeve having a thread adapted to turn in the threader and the remaining sleeves being threaded one into the other, substantially as described.

472,427. SADDLE FOR BICYCLES. WILLIAM S. BROOKS, Toronto, Canada. Filed Dec. 3, 1891. Serial No. 413,896. (No model.) Patented in Canada Nov. 26, 1891, No. 37,856.

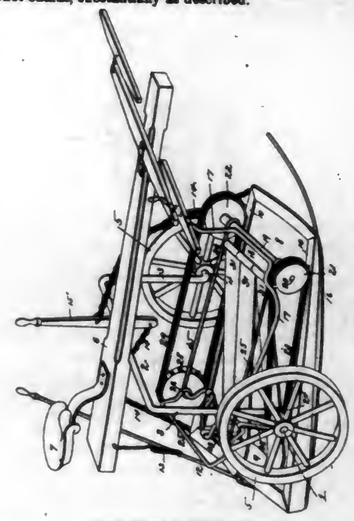


Claim.—1. A spring fixed to the rear saddle-frame and extending downwardly and horizontally to a point in front of the L-shaped saddle-post, thence curved downwardly below the horizontal portion of the saddle-post, thence curved upwardly through a curved seat on the clamp on the L-shaped saddle-post, in combination with an adjusting-clamp on the main spring, an upwardly-curved secondary spring flexibly connected to the front end of the saddle at one end and having its other end set horizontally into the adjusting-clamp in the main spring A, substantially as and for the purpose specified.

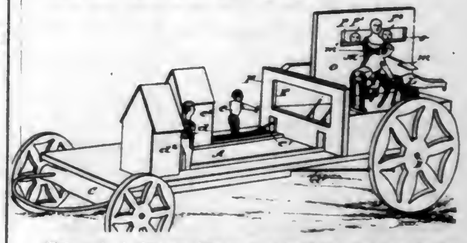
2. In a saddle for a bicycle or tricycle, a saddle-piece *a*, shaped to rest upon the top of saddle-post C and having a curved bearing to receive the curved end of the spring A, in combination with the clamp-piece *b*, resting on the top of the spring A, and set-screw *d*, arranged substantially as and for the purpose specified.

472,428. POTATO-BUG GATHERER. GUSTAVE CARLSON, Sparta, assignor of one-half to Charles H. Cornell, Valentine, Nebr. Filed May 11, 1891. Serial No. 392,345. (No model.)

Claim.— In an insect-collector, the combination, with the axle, the wheels, and the beam, of the curved hopper connected with said beam by means of a pivoted lever and having inwardly-turned edges, the arm connected with the axle and beam and having a loop carrying a sleeve, the yoke connected with said sleeve, the transverse rod secured to said yoke and provided with pivoted beating-arms, the shaft having cranks connected with said beating-arms, the shaft passing through said sleeve provided with sprocket-wheels, the sprocket-wheels on the cranked shaft and one of the driving-wheels, and two sprocket-chains, substantially as described.



472,429. FIGURE TOY. ROBERT A. CHAPMAN, Glymont, Md. Filed June 3, 1891. Serial No. 394,9604. (No model.)



Claim.—1. An improved toy comprising the main frame, the box or frame thereon, the figures *d* and *e*, movable toward and from said box, the figure G, the figure L, the figure M, having its arms provided with means for striking the figure L, the main shaft, and connections between such shaft and the figures *d*, *e*, G, and M, substantially as set forth.

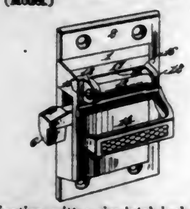
2. A toy comprising a main frame, a box or frame mounted thereon, box-like inclosures in front of the said first-named box and separated therefrom, figures operating alternately and movable in their rearward movements into their box-like inclosures and forward to the box, a figure or figures operating in the box and movable into position to face one of the alternately-operating figures as it approaches the box, and operating devices, substantially as set forth.

3. In a toy, substantially as described, the combination of the main frame, the box or frame mounted thereon, the figures *d e*, movable alternately on the main frame toward and from the box, devices for operating such figures, and the figure or figures G, movably supported in the box, and devices connected with the figure G and arranged to be engaged by one of the figures *d e*, whereby the movement of the said figure may operate the figure G, all substantially as and for the purpose set forth.

4. In a toy, the combination of the main frame, the main shaft having cranks, the figure L, the figure M, having its arms provided with means for striking the figure L, the oulooking figures, and slide-rods connected with the figures M and the oulooking figures and arranged for operation by the cranks of the main shaft, all substantially as and for the purposes set forth.

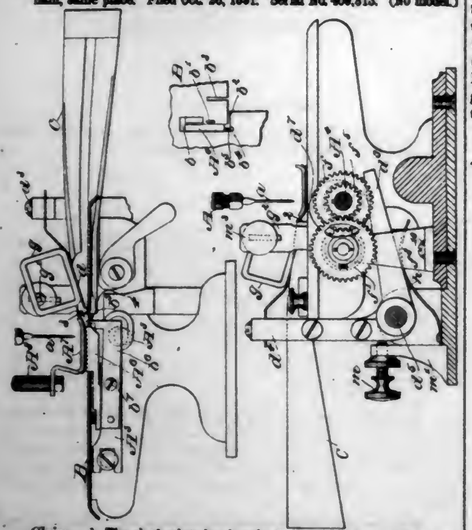
5. In a toy, the combination of the main shaft having cranks I J, the figure M, the onlooking figures arranged in pairs, a slide-rod arranged for engagement by the crank I and connected with the figure M and one pair of the onlooking figures, and a slide-rod connected with the other pair of said figures and arranged for engagement by the crank J, all substantially as and for the purposes set forth.

472,430. LATCH. JOHN K. CLARK, Buffalo, N. Y., assignor, by mesne assignments, to Mary K. Clark, same place. Filed Nov. 25, 1891. Serial No. 413,104. (Model.)



Claim.—The combination, with a rim-latch lock-casing having an interior slide or bolt and an orifice in its front wall, and a latch-dog pivoted intermediate its extremities within the casing to swing in a vertical plane, of a drop-handle pivotally connected with the face-plate of the latch-casing, and an arm extending through the orifice in the latch-casing and bearing against the tail-piece of the latch-dog to lift the latter when the drop-handle is operated, substantially as described.

472,431. RUFFLING MECHANISM FOR SEWING-MACHINES. ORANGE M. CHAMBERLAIN, Boston, Mass., assignor to Wheelock & Brigham, same place. Filed Oct. 26, 1891. Serial No. 409,813. (No model.)

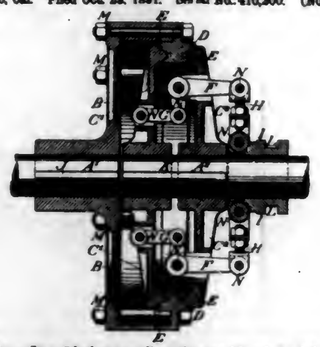


Claim.—1. The cloth-plate having the feed-opening, a needle-opening, and a band-slot substantially at right angles to the direction of the feed of the material, and a feeding device combined with a ruffler-blade and devices to move it to engage the material lying on the cloth-plate and ruffle or lay the same in plaits combined with a band-folding guide, the upper part of which is located above the cloth-plate, while the under side and end thereof are located below the cloth-plate near said band-slot, whereby the lower part of the band may be led up through the said slot between the free or actuating end of the ruffling-blade and the feeding device, as and for the purposes set forth.

2. The cloth-plate provided with a feed-opening, a needle-hole, and a band-slot near the feeding-opening, a presser-foot, a ruffler-blade to act on the strip to be ruffled, said strip lying on the cloth-plate, means to move the ruffler-blade, a feeding device having an upright, a pin and yoke to act in lifting the ruffler-blade from the strip during the return stroke of the said blade, and a folding-guide to direct, fold, and deliver a band, substantially as described.

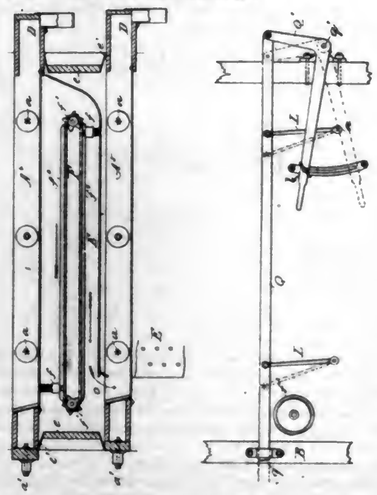
3. The cloth-plate provided with a feed-opening, a needle-hole, and a band-slot near the feeding-opening, a presser-foot, a ruffler-blade to act on the strip to be ruffled, said strip lying on the cloth-plate, means to move the ruffler-blade, a feeding device, an auxiliary feeding device carried by and moving in unison with the feeding device and having a feeding-point engaging the under half of the band at the end of the band-slot between the end of the feeding device and the front of the ruffler-blade, and a folding-guide to direct, fold, and deliver a band to the stitch-forming mechanism without friction or strain thereon due to the action of the ruffler-blade during its operation, substantially as described.

472,432. FRICTION-COUPLING. HENRY P. CHRISTIE, San Francisco, Cal. Filed Oct. 22, 1891. Serial No. 410,200. (No model.)



Claim.—In a friction-coupling, the combination of the two shafts A′ and A², the fixed wheel B, keyed on the shaft A′, said fixed wheel having a peripheral flange, a double-grooved ring D, secured to this flange by means of bolts M, the adjustable flanges or wheels C′ C², which slide upon the other shaft, said wheels having the angular ledges E E, the mechanism for operating the sliding flanges C′ C², consisting of the toggles or bell-crank levers F F, links G for connecting the bell-cranks F to the wheel C′, adjustable strut H, and fulcrum-collar I, having groove L, all arranged to operate substantially in the manner and for the purpose specified.

472,433. MACHINE FOR CLASSIFYING OR SIZING ORES AND LIKE MATERIALS. THOMAS CLARKSON, London, England. Filed June 18, 1891. Serial No. 396,786. (No model.)

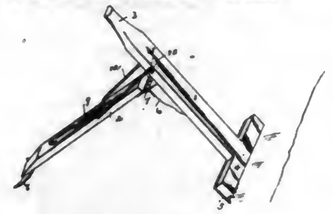


Claim.—1. In a classifying-machine, the combination, with horizontally-superposed vibratory screens and their transverse carrying-rods *a*, of the adjustable suspending-links L, the sliding side bars Q, the bell-crank lever Q′, and means for regulating the angularity of said links L and the direction of motion of the screens, substantially as and for the purposes set forth.

2. The combination, with a pair of horizontally-superposed screens, of an intervening catch-apron E, having a perforated end and an aperture O, and the endless bands or chains F F, carrying brushes *f f*, all substantially as shown, for the purposes specified.

3. In a classifying-machine, the combination of the upright frame B, having the horizontal slots *b*, the transverse rods *a*, extending at their ends through the slots and adapted to reciprocate horizontally therein, the suspension-links L, having their lower ends attached directly to the projecting ends of the transverse rods and adjustable at their upper ends in the arcs of circles, and adjusting devices connected with the upper ends of the links, substantially as and for the purpose described.

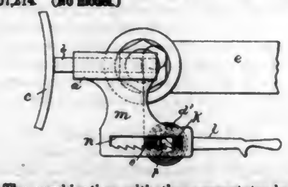
472,434. CARPET-STRETCHER. LUCINDA COFFMAN, Monroe City, Mo. Filed Apr. 15, 1891. Serial No. 389,047. (No model.)



Claim.—1. In a carpet-stretcher, the combination, with the lever member and the shorter fulcrum member, the two being hinged together between the ends of the former, of the rack-bar mounted on the fulcrum member and having a series of downwardly-disposed teeth, and a rack-bar engaging ball pivoted to the sides of the lever member and of such length as to terminate short of the teeth of the rack-bar when the two members are closed or folded and adapted to be sprung over the first tooth thereof when in such position, substantially as specified.

2. The combination, with the lever member 1 and the fulcrum member 2, hinged to the lever member between the ends of the latter, each terminating at their free ends in claws, of the rack-bar having a series of downwardly-disposed teeth, the upper one of which is provided with a curved upper face or shoulder, and the U-shaped ball, the terminals of which are pivoted to the opposite edges of the member 1 and of a length to extend above the end of the lever and to terminate upon the curved shoulder of the upper tooth of the rack-bar when the two members are closed and adapted to be sprung over said tooth when in this position, substantially as specified.

472,435. BRUSH-HOLDER. JOHN R. COFFMAN, Detroit, Mich., assignor of one-half to O. A. Benton, same place. Filed Sept. 30, 1891. Serial No. 407,214. (No model.)



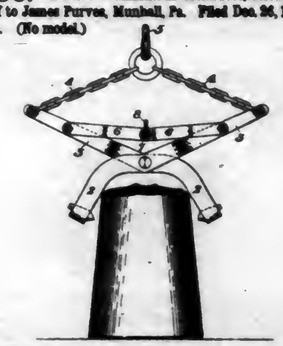
Claim.—1. The combination, with the commutator-brush fixed movably in a slideway to be pressed against the commutator and the spring pressing the brush therein, of a holder for said spring also fixed movably in a slideway toward the commutator, and means to adjust said holder and maintain substantial uniformity of pressure of the brush on the commutator by the spring, as set forth.

2. The combination, with the commutator and the brush, of the socket or box-holder for the brush, open at the back for receiving the brush and wherein the brush is adapted to slide to and from the commutator, a spring adapted to press the brush against the commutator, a holder for the spring, and the slotted and notched housings confining the spring-holder, said holder having the pawl ends and being adjustable along the confining-slots, substantially as described.

3. The combination, with the commutator and the brush, of the socket or box-holder for the brush, open at the back for receiving the brush and wherein the brush is adapted to slide to and from the commutator, a spring adapted to press the brush against the commutator, a holder for the spring, a lever attachment to the holder, and the slotted and notched housings confining the spring-holder, said holder having the pawl ends and being adjustable along the confining-slots, substantially as described.

4. The combination, with the commutator and the brush, of the socket or box-holder for the brush, open at the back for receiving the brush and wherein the brush is adapted to slide to and from the commutator, a spring adapted to press the brush against the commutator, a holder for the spring, a lever attachment to the holder, and the ring for connecting the spring and lever, substantially as described.

472,436. TONGS. WILLIAM A. CORNELIUS, Pittsburg, assignor of one-half to James Purves, Munhall, Pa. Filed Dec. 26, 1890. Serial No. 375,816. (No model.)



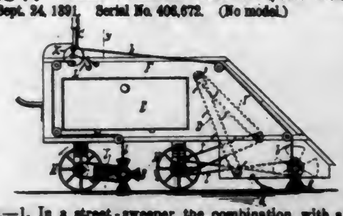
Claim.—1. The combination, with pivoted tong-levers, of automatic locking means connected therewith, said means being constructed and arranged to positively lock the levers in open position when they are lowered into contact with a stationary object, substantially as and for the purposes described.

2. The combination, with the pivoted tong-levers, of toggle-arms connecting them, and a stop constructed and arranged to positively and automatically lock the levers in open position when they are lowered into contact with a stationary object, substantially as and for the purposes described.

3. The combination, with the pivoted tong-levers, of toggle-arms connecting them, and a pivoted stop constructed and arranged to automatically lock the levers in open position when they are lowered into contact with a stationary object, substantially as and for the purposes described.

4. In tongs, the combination, with the pivoted tong-levers, of jointed locking-arms connecting them, means for suspending the tongs, and a trigger having a jointed end and having a projection adapted to engage the burden, substantially as and for the purposes described.

472,437. STREET-SWEEPER. JOHN DAHL, New York, N. Y. Filed Sept. 24, 1891. Serial No. 406,672. (No model.)



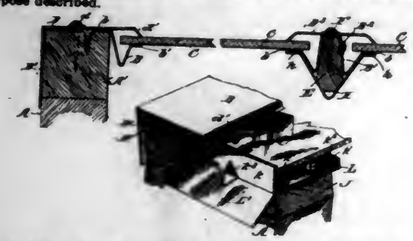
Claim.—1. In a street-sweeper, the combination, with a vertically-movable rear brush A, a front gutter-brush B, and an elevator D, of a rotary disk K, having a lever C, and a pair of cables *b*, both eccentrically secured to the disk and connected, respectively, with the rear brush and the gutter-brush for simultaneously raising and lowering the two brushes, substantially as described.

2. In a street-sweeper, the combination, with a vertically-movable rear brush A, a front gutter-brush B, and an elevator D, of a rotary ratchet-disk K, having a lever C, a pair of cables *b*, both eccentrically secured to the disk and connected, respectively, with the rear brush and the gutter-brush for simultaneously raising and lowering the two brushes, and a pawl for locking the ratchet-disk, substantially as described.

472,438. WATER-TIGHT SKYLIGHT. ALBERT DAMER, Hagerstown, Md. Filed Mar. 4, 1891. Serial No. 383,800. (No model.)

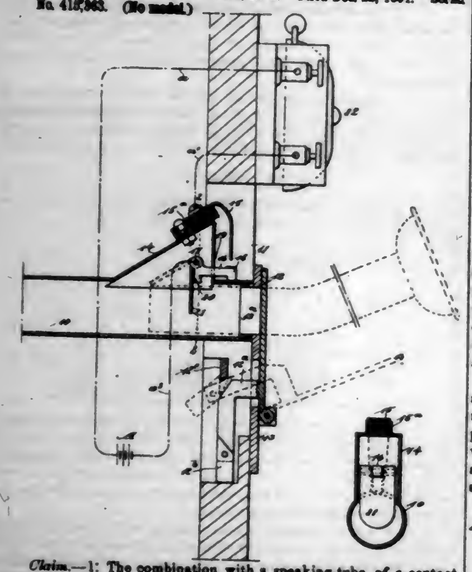
Claim.—1. In a water-tight skylight, the combination, with the end timbers A′, the troughs B, arranged on the inner faces thereof, formed with oppositely-projecting flanges *b b′*, the flanges *b* forming the support for the trough B on the timbers A′, and the glass section C, supported on the flanges *b′*, of the cap-plates D, held on the timbers A′ on the flanges *b* and having clamp portions adapted to project over the troughs B and clamp the glass on the flanges *b′*, and means for securing the plates D on the timbers A′, all arranged substantially as shown, and for the purposes described.

2. The combination, with the main supporting-frame A, the timbers A', the trough B, the glass C, arranged as shown, of the cap-plates D, adapted to be secured to the upper face of the timbers A', said cap-plates formed with clamp portions adapted to engage the glass C and with a downwardly-extending flange D', adapted to overlap the outer edge of the timbers A' and projected over the joint between such timbers and the frame-timbers A, all arranged substantially as and for the purpose described.



3. The combination, with the glass sections C C, of the bar E, the double trough-section B' B', formed with a central portion supported on the top of the bar E and with oppositely-projecting side flanges *b*, forming supports for the glass sections, the cap-plates D², secured to the upper face of the bar and adapted to hold the trough-section B' B' in place and formed with oppositely-extending clamp portions arranged to clamp the adjacent ends of the glass sections on the flanges *b b*, and the angled braces H, fitted over the lower ends of the bar E and secured at their upper ends to the flanges *b*, as and for the purpose described.

472,439. ANNUNCIATOR. WILLIAM C. DILLMAN, Brooklyn, assignor to Owen Walsh, New York, N. Y. Filed Dec. 22, 1891. Serial No. 416,363. (No model.)



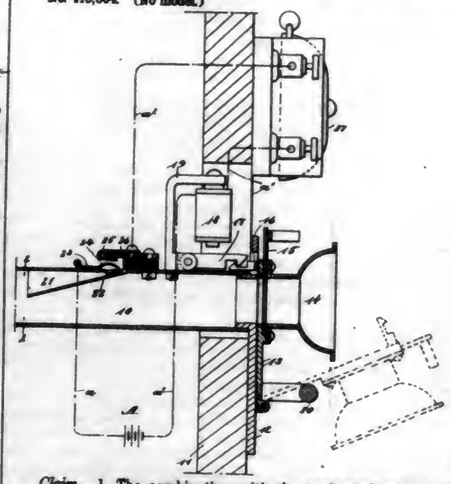
Claim.—1. The combination, with a speaking-tube, of a contact supported above the tube and forming one terminal of an electric-bell circuit, a swinging contact forming the other terminal of the bell-circuit and arranged beneath the upper contact and adapted to strike the same, and a fan connected with the swinging contact and extending into the bore of the tube, substantially as described.

2. The combination, with the speaking-tube, of an upper contact fixed above the tube and forming one terminal of an electric-bell circuit, a contact-arm forming the other terminal of the circuit and held to swing against the upper contact, and a fan held to swing in the bore of the tube, said fan being adapted to swing freely in one direction and to raise the contact-arm when swung in the opposite direction, substantially as described.

3. The combination, with the speaking-tube, of a swinging contact-arm supported above the tube and forming one terminal of an electric-bell circuit, a depending stud produced on the arm near its pivoted end, a swinging fan mounted in the tube and arranged to swing against the stud, and a contact mounted in the path of the swinging contact and forming the other terminal of the bell-circuit, substantially as described.

4. The combination, with the speaking-tube, of a chamber produced on the upper part of the tube, a swinging contact-arm mounted in the chamber and held to swing in a slot of the chamber-wall, a fan pivoted in the chamber and extending into the bore of the tube, said fan being adapted to operate the swinging contact-arm, and a contact forming the other terminal of the bell-circuit, said contact being mounted in the chamber and extending into the path of the swinging contact, substantially as described.

472,440. ANNUNCIATOR. WILLIAM C. DILLMAN, Brooklyn, assignor to Owen Walsh, New York, N. Y. Filed Dec. 22, 1891. Serial No. 415,864. (No model.)

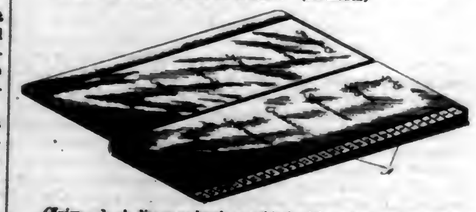


Claim.—1. The combination, with the perforated tube and the air-chute mounted within the tube and terminating beneath the perforation, of a swinging contact mounted above the perforation and forming one terminal of a circuit which includes a bell, and a fixed contact forming the other terminal and arranged in the path of the swinging contact, substantially as described.

2. The combination, with the perforated tube, of a tapering chute fixed within the tube and having its smaller end arranged beneath the perforation, a swinging contact-arm having its free end held above the perforation, said contact-arm forming one terminal of an electric circuit which includes a bell, and a fixed contact forming the other terminal and arranged in the path of the swinging contact, substantially as described.

3. The combination, with the perforated tube and the air-chute arranged to divert air through the perforation, of a swinging contact mounted upon the tube and having a cup-shaped free end to cover the perforation, said contact forming one terminal of an electric circuit which includes a bell, and a fixed contact forming the other terminal and arranged in the path of the swinging contact, substantially as described.

472,441. INDEXED BOOK. EDWIN T. DOUGLASS, Brooklyn, N. Y. Filed Oct. 16, 1888. Serial No. 288,217. (No model.)



Claim.—1. A diary or book provided with a single visible index bearing the lesser denomination of time and having repeated designations of the greater denomination of time within the book corresponding with each said lesser and visible denomination.

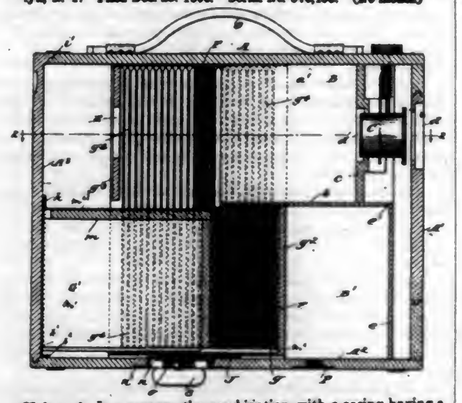
2. A memorandum-book provided with a single day-index visible when the book is closed and repeated month designations within the book, arranged in independent and complete series for each day-indication.

3. A book in which the month designations are invisible when the book is closed, having a single visible consecutive-number index corresponding to the days of the month, each number referring to pages or groups thereof within the book, subdivided by calendar-month designations representing a complete year for each said page or group.

4. A book provided with a single marginal index bearing numbers corresponding to the days of the month, consecutively placed on the exposed portions of successive leaves or groups thereof, and the names of calendar months, each designating a space for memoranda arranged within said leaf or groups in independent series, pertaining to each single index-number.

5. A book provided with a single marginal reference-index comprising substantially thirty-one numbers referring, respectively, to separate pages or groups of pages, and subdivisions of each said page or group into spaces for memoranda designated by the names of the twelve calendar months, for the purpose set forth.

472,442. MAGAZINE-CAMERA. ARNOLD L'EPLATTENIER, Brooklyn, N. Y. Filed Dec. 29, 1890. Serial No. 376,153. (No model.)



Claim.—1. In a camera, the combination, with a casing having a shelf projecting from its rear wall, of a plate-holding box having its front wall extending about half the height of the box from the bottom upward and its rear wall extending about half the height of the box from the top downward, substantially as described.

2. In a camera, the combination, with a casing, of a plate-holding box having its front wall extending about half the height of the box from the bottom upward and its rear wall extending about half the height of the box from the top downward and provided with a groove in the top surface of its bottom, and a shelf secured to the rear wall of the casing and having its lower portion fitting in the groove of the plate-holding box, substantially as described.

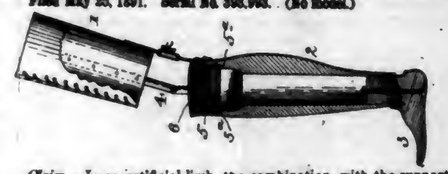
3. In a camera, the combination, with a casing having an exposure-chamber of less width than the casing and a dark-chamber below the exposure-chamber, of a plate-holding box having its front wall extending about half the height of the box from the bottom upward, said box being adapted to slide in the casing with its side walls in the space between the sides of the casing and the sides of the exposure-chamber, and a shelf secured to the rear wall of the casing and projecting into the plate-holding box, substantially as herein shown and described.

4. In a camera, the combination, with a casing having an exposure-chamber of less width than the casing and a dark-chamber below the exposure-chamber, of a plate-holding box having its front wall extending about one-half the height of the box and provided with a rack on its bottom, a ratchet-wheel in the bottom of the casing and engaging the rack of the plate-holding box, a shelf secured to the rear wall of the casing and projecting into the plate-holding box, and means for operating the ratchet-wheel, substantially as herein shown and described.

5. The combination, with a drawer in a camera-box, of a rack on the lower side of the drawer, a toothed wheel on the box lower wall, which engages the rack, a revoluble gear-hub having teeth, a pawl, a detent-spring, and a thumb-piece on the gear-hub, substantially as set forth.

6. The combination, with a removable door that seals the rear end of a camera-box, of a bracket-shelf comprised of a horizontal platform, a central upright support secured thereto, a forward transverse supporting-piece that is secured to the front edge of the vertical support and also to the platform, and a tongue-plate which engages rabbeted strips on the side of the door, substantially as set forth.

472,448. ARTIFICIAL LEG. CHARLES H. ERVIN, Princeton, Ind. Filed May 25, 1891. Serial No. 393,963. (No model.)



Claim.—In an artificial limb, the combination, with the supporting-piece having a shouldered recess or cavity therein, of a removable and replaceable socket located in said recess, consisting of a molded hard-rubber ring or band the inner surface of which conforms to the shape or contour of the stump with which it is to be used, substantially as described.

472,444. ELECTRIC MINING PICK AND DRILL. JOHN FISH, South Bend, Ind., assignor of one-half to George M. Fish and Manning Fish, Joliet, Ill. Filed Apr. 29, 1891. Serial No. 391,002. (No model.)



Claim.—1. The combination, with an electric motor, of a drilling device and supporting-frame therefor hung upon the extended armature-shaft of the motor, and devices connecting the shaft and drill for operating the drill, substantially as and for the purpose described.

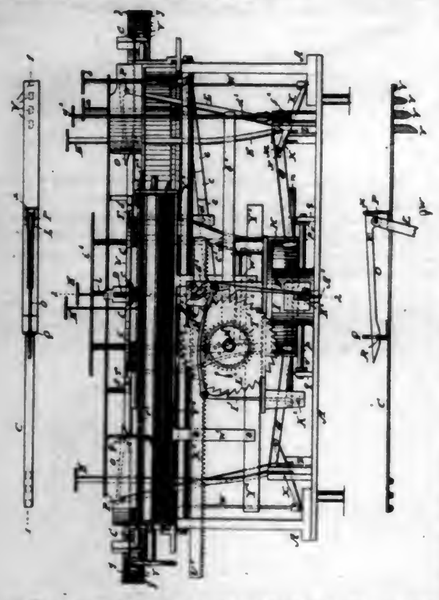
2. The combination, with the extended armature-shaft in an electric motor, of a drive-pulley fixed rigidly thereon, a supporting-arm loosely hung thereon and bearing at its outer end a drilling device and operating-pulley, and an endless belt extending from the driving-pulley to the operating-pulley at the outer end for working the drill, substantially as shown and described.

3. The combination, with a swinging arm for carrying drilling devices, of a forked frame swiveled to the outer end of said arm, a rocking frame fulcrumed on the outer ends of the forked frame and having bearings for a reciprocating drill-rod, a drive-pulley journaled on the fulcrum-shaft of said rocking frame and provided with lateral projections, and an anvil or collar and hammer-block arranged on the drill-rod with springs and operated upon by the projections of the pulley, substantially as shown and described.

4. The combination of the swinging arm H, the frame I, swiveled thereto and provided with a pin *d*, carrying operating-pulley C, with laterally-projecting lugs, the rocking frame J, fulcrumed upon the pin *d* and carrying reciprocating drilling devices operated upon by the lugs of pulley C, substantially as shown and described.

472,445. TYPE-WRITING MACHINE. CORNELIUS FLECKENSTEIN, New York, N. Y., assignor to Franz X. Wagner, same place. Filed Jan. 3, 1891. Serial No. 376,632. (No model.)

Claim.—1. The combination, with a key and a movable type-bar, of mechanism, substantially as described, for conveying motion from the key to the type-bar and a lock for preventing retrograde motion of the bar, said lock being located at and made to act on the outer end of the bar, substantially as described.



2. The combination, with a key and a longitudinally-movable type-bar, of a series of types arranged along the bar in the direction of its motion, mechanism, substantially as described, for conveying motion from the key to the type-bar, and a series of locks for said bar, said locks being arranged to hold the bar in the respective positions required for printing by the various types on said bar, substantially as described.

3. The combination, with a key and a movable type-bar, of mechanism, substantially as described, for conveying motion from the key to the type-bar, and a lock for said bar, said lock consisting of a series of lugs or stops on the bar, and a detent or pawl for engaging said stops, and mechanism, substantially as described, for conveying motion from the key to the detent, substantially as described.

4. The combination, with a key and a type-bar constructed of elastic material, of mechanism, substantially as described, for conveying motion from the key to the type-bar, a hammer for pressing the type-bar against its elasticity, and a link and mechanism, substantially as described, for conveying motion from the key to the hammer, said link being made to act on the hammer between its pivot or support and its striking end, substantially as described.

5. The combination, with a key and a type-bar constructed of elastic material, of mechanism, substantially as described, for conveying motion from the key to the type-bar, a hammer for pressing the type-bar against its elasticity, and a link and mechanism, substantially as described, for conveying motion from the key to the hammer, said link being made to act on the hammer between its pivot or support and its striking end and being capable of a certain amount of play or motion independent of the hammer, so as to allow the type-bar to reach the printing position before the hammer is actuated by said link, substantially as described.

6. The combination, with a key and a type-bar constructed of elastic material and provided with two or more types, of mechanism, substantially as described, for conveying motion from the key to the type-bar, a hammer for pressing the type-bar against its elasticity, and a link and mechanism, substantially as described, for conveying motion from the key to the hammer, said link being made to act on the hammer between its pivot or support and its striking end, substantially as described.

7. The combination, with a key and a movable type-bar, of mechanism, substantially as described, for conveying motion from the key to the type-bar, a lock for said bar, and a restoring-spring operating on said key, said lock being located at and made to act on the outer end of the bar, substantially as described.

8. The combination, with a key and a type-bar carrying two or more types, of a link or connection for conveying motion from the key to the type-bar and one or more shifts for throwing said link out of action, substantially as described.

9. The combination, with a key provided with a connecting-link, of a type-bar carrying two or more types and provided with a connecting eye or shoulder engaged by the link and one or more shifts for throwing said link out of action, substantially as described.

10. The combination, with a key and a type-bar, of a link or connection for conveying motion from the key to the type-bar and a returning shoulder on the type-bar detachably engaged by said link, substantially as described.

11. The combination, with a key and a type-bar, of mechanism, substantially as described, for conveying motion from the key to the type-bar and a lock for said type-bar, consisting of a series of lugs or stops on the bar and a detent for said lugs or stops, said lugs or stops being of various lengths, so as to be engaged sooner or later by the detent as the type-bar has to travel a less or greater distance, substantially as described.

12. The combination, with a key, a type-bar carrying a series of type and a link or connection, substantially as described, for conveying motion from the key to the type-bar, of a series of shifts for disengaging the link at various times and an arm or shoulder, as A, for conveying motion from one shift to another, substantially as described.

13. The combination, with a key, a type-bar carrying a series of types, and mechanism, substantially as described, for conveying motion from the key to the type-bar, of a shift or shifts for disconnecting the key and the type-bar and a key or keys for moving said shift or shifts, substantially as described.

14. The combination, with a key, a type-bar carrying a series of types, and mechanism, substantially as described, for conveying motion from the key to the type-bar, of a lock made to act on the outer end of the type-bar, a shift or shifts for regulating the movement of the type-bar, and a key or keys for moving said shift or shifts, substantially as described.

15. The combination, with a key, a type-bar, and mechanism, substantially as described, for conveying motion from the key to the type-bar, of a lock made to act on the outer end of the type-bar and a stop for arresting the return movement of said bar, substantially as described.

16. The combination, with a key, a type-bar, and mechanism, substantially as described, for conveying motion from the key to the type-bar, of a hammer made to act on the type-bar and a universal bar actuated by the key, substantially as described, and connected to the hammer between its pivot or support and its striking end, substantially as described.

17. The combination, with a key, a type-bar, a lever, as G, and mechanism, substantially as described, for conveying motion from the lever to the type-bar, of a hammer made to act on the type-bar and a universal bar actuated by said lever, and a link extending from the universal bar and made to engage the hammer between its pivot or support and its striking end, substantially as described.

18. The combination, substantially as described, with a type-bar and a hammer, of a series of keys and a universal bar which co-operates with the keys and which is connected to the hammer between its pivot or support and its striking end, and means, substantially as described, connected to the type-bar to move the latter, substantially as described.

19. The combination, with the type-bars, of a series of type-bar-actuating keys, a hammer made to act on the bars, and a universal bar made to actuate the hammer, said universal bar being connected to the keys so as to properly co-operate with and to be moved equally by said keys and being made to act on the hammer between its pivot or support and its striking end, substantially as described.

20. The combination, with the type-bars, of a series of type-bar-actuating keys, a hammer made to act on the bars, a universal bar provided with a link made to act on the hammer between its pivot or support and its striking end, and a series of levers lying across the universal bar and connected to the keys in position to be moved equally by said keys, substantially as described.

21. The combination, with the type-bars, of a series of type-bar-actuating keys, a hammer made to act on the bars, a universal bar provided with a link made to act on the hammer between its pivot or support and its striking end, and a series of radiating levers lying across the universal bar and connected to the keys in position to be moved equally by said keys, substantially as described.

22. The combination, with a key and a type-bar, of a stop for arresting the return movement of the bar, an eye and a returning shoulder on said bar, and a link connected to the key and made to engage said eye and shoulder, so as to form a positive connection between the key and type-bar, said eye and shoulder being situated underneath the type-bar, so that the link can be readily lifted out of engagement, substantially as described.

23. The combination, with a key and type-bar, of a link made to actuate the type-bar, a bell-crank lever connected to the key and to the link for actuating the latter, and a detent for said type-bar, said detent being connected to the bell-crank lever, so that said bell-crank lever and detent move simultaneously, substantially as described.

24. The combination, with a key and a type-bar, of a link for actuating the bar, a detent for said bar, and a bell-crank lever joined to the key, said link and detent being joined to the bell-crank lever, so that a positive connection is formed between the key, the link, and the detent, and that the detent moves simultaneously with the key, substantially as described.

25. The combination, substantially as described, with a type-bar having several types, of means, substantially as described, for moving said type-bar various distances, lugs or shoulders secured to said type-bar, and a detent for engaging said lugs, said detent being arranged to be unaffected by the degree of movement of the type-bar, so as to move at all times the same distance, substantially as described.

26. The combination, with a key and a type-bar, of a link made to slide parallel with the bar for actuating the bar, and intermediate mechanism, substantially as described, for conveying motion from the key to the link, substantially as described.

27. The combination, with the type-bar, of a key, an oscillatory bell-crank lever actuated by the key, a link slid lengthwise by the bell-crank lever, pivotally connected thereto at one end, and having its opposite end portion detachably engaged with the type-bar, devices for disengaging the link from the type-bar as it is slid lengthwise by the bell-crank lever, and a spring for returning the parts to normal position, substantially as described.

28. The combination, with a type-bar, a key, and mechanism, substantially as described, for conveying motion from the key to the type-bar, of a paper-carrier, an escapement for the paper-carrier, and mechanism, substantially as described, for conveying motion from the key to the escapement, said escapement consisting of a toothed wheel engaged by oppositely-located detents supported by independently-pivoted arms or supports linked to one another near their free ends, substantially as described.

29. The combination, with a spacing-key, a paper-carrier, and a universal bar, of mechanism, substantially as described, for conveying motion from the spacing-key to the universal bar, and an escapement for the paper-carrier, said escapement being connected to the universal bar and composed of a toothed wheel, and detents located at opposite points of the wheels and supported by independently-pivoted arms linked to each other near their free ends, substantially as described.

30. The combination, with a key, of an escapement-wheel and arms or pawls, one of which is provided with a slot-and-pin guide, mechanism, substantially as described, for conveying motion from the key to one of the pawls, the clutch mechanism on the shaft of the escapement-wheel, and a gear made to engage the carriage-rack, substantially as described.

31. The combination, with the carriage and rack, of an escapement-wheel having an actuating-spring, the gear and clutch mechanism on the shaft of said wheel, pawls or arms made to engage the escapement-wheel, a pin-and-slot guide for one of said pawls, and means, substantially as described, for alternately bringing said pawls into and releasing said pawls from engagement with the escapement-wheel, substantially as described.

32. The combination, with the carriage and rack, of an escapement-wheel having an actuating-spring, the gear and clutch mechanism on the shaft thereof, independently-pivoted pawls or arms made to engage the escapement-wheel, a link made to connect the pawls, and mechanism, substantially as described, for throwing said pawls into and out of engagement with the escapement-wheel, substantially as described.

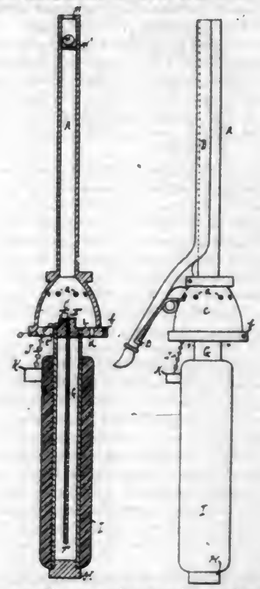
33. The combination, with the carriage and rack, of an escapement-wheel having an actuating-spring, the gear and clutch mechanism on the shaft of said wheel, a releasing-rim on said shaft, a key for actuating said releasing-rim, independently-pivoted pawls or arms made to engage the escapement-wheel, and mechanism, substantially as described, for actuating said pawls, substantially as described.

34. The combination, with a key, a type-bar, and a platen, of mechanism, substantially as described, for conveying motion from the key to the type-bar, and mechanism, substantially as described, for conveying motion from the key to the platen, and an actuating-spring, as N', for driving the platen, said spring being made to return the key to the starting-point, substantially as described.

35. The combination, with a paper carrier or platen, a key, and a type-bar made to pass over the paper-carrier, of mechanism, substantially as described, for conveying motion from the key to the type-bar, a hammer made to press from above down upon the type-bar, and a link and mechanism, substantially as described, for conveying motion from the key to the hammer, said link being made to act on the hammer between its pivot or support and its striking end, substantially as described.

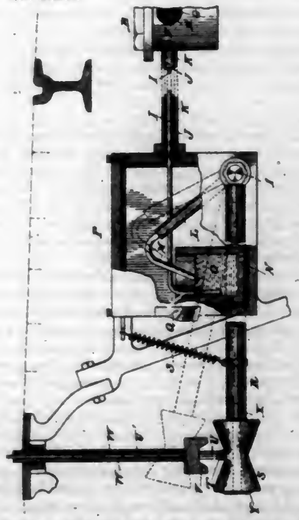
36. The combination, with a horizontally-sliding type-bar, of a vertically-reciprocating hammer made to act on said type-bar, mechanism, substantially as described, for actuating the type-bar, and a link and mechanism, substantially as described, for actuating the hammer, said link being made to act on the hammer between its pivot or support and its striking end, substantially as described.

472,446. CURLING-TONGS. Eugene Fontaine, Auburndale, Ohio, assignor to the Union Novelty Company, same place. Filed June 26, 1891. Serial No. 397,623. (No model.)



Claim.—A curling-tongs having a lamp in its handle, a combustion-chamber at the upper end of the handle, a hair-curling tube extending from the combustion-chamber, air-holes opening into the combustion-chamber both above and below the burner, a valve-seat located in the hair-curling tube, and a valve which closes the valve-seat when the instrument is inverted, substantially as described.

472,447. INCLOSED SUPPLY SYSTEM FOR ELECTRIC RAILWAYS. John C. Fitz, Denver, Colo. Filed Dec. 26, 1890. Serial No. 375,917. (No model.)



Claim.—1. In combination with the main conductor, the feeder-wires extending therefrom at intervals along the line of said conductor,

normally-open local-circuit connections correspondingly arranged along the line of said conductor, adapted when closed to take current through mercury in contact with said feeder-wires, and mechanism actuated by a moving car for making contact between said circuit connections and the mercury in contact with said feeder-wires, so as to automatically close the local circuits, substantially as described.

2. The combination, with the main conductor having distributing-points arranged at intervals along the line thereof, of contact-chambers containing mercury correspondingly arranged along the line of said conductor, feeders connecting said distributing-points with the mercury in said chambers, normally-open local-circuit connections at said distributing-points adapted when closed to take current from the main conductor through the mercury in said contact-chambers, and mechanism adapted to be actuated by a moving car, so as to automatically close said local circuits through the motor on the car by making contact with the mercury in said contact-chambers, substantially as described.

3. In an electric railway, the combination, with the main conductor having a series of distributing-points arranged along the line thereof, of junction-boxes containing mercury at said distributing-points, normally-open local-circuit connections correspondingly arranged along the line of said conductor, including contact-chambers containing mercury in contact with conductors connecting with the mercury in said junction-boxes, and mechanism actuated by the car for closing the local-circuit connections through the motor on the car by making contact between said circuit connections and the mercury in said contact-chambers, substantially as described.

4. A system of electric distribution comprising a main conductor having distributing-points arranged at suitable distances apart throughout its length, normally-open local-circuit connections, including mercury, correspondingly arranged along the line of said conductor, branch conductors or feeders leading from said distributing-points to the mercury of said connections, and means for making contact with the mercury, so as to close the local circuits, substantially as described.

5. In an electric railway, an electric conductor composed of insulated sections having their adjacent end portions secured in close proximity with a sealed box or junction-chamber containing mercury, into which the free ends of the conductor-sections are dipped or immersed so as to establish electric connection through the mercury, substantially as described.

6. In an electric railway, an electric conductor composed of insulated sections having their adjacent end portions detachably secured in close proximity within a sealed box or junction-chamber containing mercury, into which the free ends of the conductor-sections are dipped or immersed so as to establish electric connection through the mercury, substantially as described.

7. In combination with the main conductor composed of sections having their adjacent end portions dipped in mercury contained within a sealed vessel or junction-box, the feeder-wire extending from adjacent local-circuit connections into said box, and having its free end dipped in the mercury therein, substantially as and for the purpose set forth.

8. In combination with the main conductor composed of sections having their adjacent end portions dipped in mercury contained within a sealed vessel or junction-box, the removable feeder-wire connecting the mercury in said chamber with mercury contained in a second sealed chamber, of a normally-open local circuit, substantially as described.

9. In combination with the sectional conductor and the junction-chamber having the crucible of mercury therein, the contact-chamber provided with a similar mercury-containing crucible, the feeder-wire connecting the mercury in said crucibles, connections normally out of contact with the mercury in said contact-chamber for conveying current therefrom to the car-motor, and means for closing the electric circuit from the main conductor through the mercury in said crucibles by making contact between said connections and the mercury in said contact-chamber, substantially as described.

10. In combination with the sectional conductor and the junction-chamber having the crucible of mercury therein, the contact-chamber provided with a similar mercury-containing crucible, the feeder-wire connecting the mercury in said crucibles, connections normally out of contact with the mercury in said contact-chamber for conveying current therefrom to the car-motor, and appliances for automatically closing the electric circuit through the mercury in said crucibles by the action of the car, substantially as described.

11. The combination, with the main conductor having a series of distributing-points along the line thereof, of hermetically-sealed junction-boxes at said distributing-points, normally-open local circuits along the line of the railway connected with said distributing-points by feeder-wires leading from said junction-boxes to similarly-sealed contact-chambers, and mechanism, substantially as described, for closing the local circuits through the motor on the car by the mechanical action of the car, substantially as described.

12. In combination with the contact bar or skate and its supporting-plates, the insulating-bar concaved or grooved on the lower side thereof and supported above the skate out of contact therewith, so as to provide a dry surface adjacent to said skate and also form a roof or cover therefor, substantially as described.

13. In combination with the main sectional supply-conductor having the junction-chambers arranged at suitable distances apart along the line thereof, the contact-chambers similarly arranged along the line of the railway, feeder-wires connecting crucibles of mercury placed in said chambers and pivoted tubular arms inclosing wires having contact-points held normally out of contact with the mercury in the contact-chambers and projecting therefrom beneath the slot in the conduit in position to be actuated by the depending plow or skate carried by the car, so as to close the local circuits through the wire in the said arms by causing the same to make contact with the mercury in the contact-chambers.

14. In combination with the main conductor, the contact-chamber containing a crucible of mercury, the feeder-wire leading from the main conductor into the mercury in said crucible, the pivoted arm carrying the insulated wire, having its free end held normally out of contact with the mercury in the contact-chamber by yielding spring-pressure, and the contact-wheel supported on said pivoted arm beneath the slot in the conduit in a position to be depressed by the action of a depending skate or plow carried by the car, so as to make contact between the wire of the contact-supporting arm and the mercury in the contact-chamber.

15. In combination with the sealed contact-chamber, the pivoted contact-supporting arm, the insulated wire extending through the same to a position immediately above a crucible of mercury in said contact-chamber, and a spring adapted to hold the said arm in an elevated position with the wire thereof out of contact with the mercury in the contact-chamber.

16. In combination with the pivoted spring-actuated contact-supporting arm, the cushioned stop adapted to limit the upward movement of said arm, substantially as described.

17. In combination with the pivoted insulating supporting-arm carrying the insulated contact-wire, the contact-wheel, and the spring at the end of the supporting-arm adapted to convey current from the metallic connections or axis of said supporting-arm to the contact-plow through the metal contact-wheel, substantially as described.

18. In combination with the contact bar or skate, the insulating-bar attached thereto, the steel plates secured to said insulating-bar, and the insulated wire inclosed between said plates, having its lower end projecting beneath the insulating-bar and attached to the skate, said insulating-bar being adapted to provide insulation between said steel plates and said contact bar or skate, substantially as described.

472,448. DRAFT-EQUALIZER. JOSEPH W. GAMBLE, Des Moines, Iowa, assignor of one-half to James T. R. Greer, same place. Filed Oct. 22, 1891. Serial No. 409,510. (No model.)



Claim.—1. In a draft-equalizer, the combination of a tongue having a longitudinal slot, a hinged bracket-bar having one end arranged in the slot and pivotally connected to the tongue, a main whiffletree pivotally mounted on the outer end of the hinged bracket-bar, a lever fulcromed in the slot, the draft-bars connected to the lever and the main whiffletree, and the doubletrees mounted on the ends of the main whiffletree and carrying singletrees, substantially as described.

2. In a draft-equalizer, the combination of the tongue provided at its rear end with a recess, and a clevis provided with a squared projection having perforations arranged at right angles and pivoted in the recess of the tongue and adapted to be turned therein, substantially as and for the purpose described.

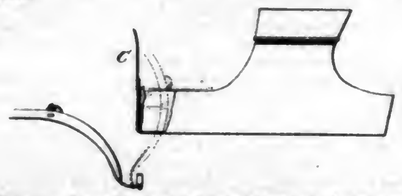
472,449. DEVICE FOR WAVING OR CRIMPING HAIR. EUGÈNE GAUDIN, Paris, France. Filed Nov. 27, 1891. Serial No. 413,351. (No model.) Patented in France Feb. 26, 1891, No. 211,731; in Belgium Aug. 10, 1891, No. 95,964, and in England Aug. 11, 1891, No. 13,569.



Claim.—1. A device for use in crimping hair, comprising, in combination, the shield or protector and the two combs pivoted thereto and adapted to be lifted for the purpose of laying the strand of hair across the shield or protector, substantially as described.

2. The combination of the elongated trough-shaped shield, the two combs pivoted thereto, one on each side thereof, and a thumb-piece for lifting said combs, substantially as described.

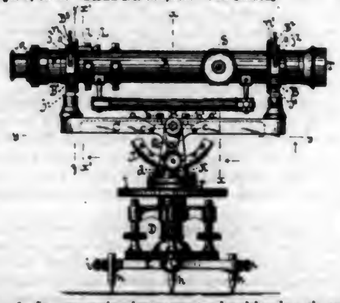
472,450. DASH-BOARD. CHARLES W. GOODING and BAYARD CROSIAR, Wilmington, Del. Filed Dec. 10, 1891. Serial No. 414,619. (No model.)



Claim.—1. In combination with a dash-board, the foot therefor, having a section B connected thereto by a rule-joint, a pivoted lock D, carried by one of the sections and adapted to engage with the other section, so as to hold the parts rigidly against movement, and pivoted means for preventing movement of the lock, substantially as set forth.

2. In a dash-board for vehicles, the combination of a section B, to which the dash-board is rigidly secured, a foot A, adapted to be rigidly secured to the body of a vehicle, the parts being connected to each other by a rule-joint, a lock D, pivoted to the foot and adapted to be swung in engagement with the section which carries the dash-board, and a catch for holding the lock in a fixed position when in engagement with the section B, for the purpose set forth.

472,451. SURVEYING-INSTRUMENT. HANS E. GRABAU, New York, N. Y., assignor of one-half to Edward G. Soltmann, same place. Filed Apr. 4, 1891. Serial No. 387,629. (No model.)



Claim.—1. In a surveying-instrument, a level-bar loosely mounted upon the horizontal spindle and attached thereto by adjustable set-screws engaging with a part or parts of said spindle, combined with the telescope A, leveling-head D, and the vertical spindle F, all substantially as and for the purpose set forth.

2. A surveying-instrument having its leveling-head provided with a standard G, a horizontal spindle having bearings therein, a level-bar mounted on said spindle and adjustably secured thereto by the fingers *a a'* and set-screws *b b'*, a segment secured to the spindle, and a clamp engaging said segment, substantially as described.

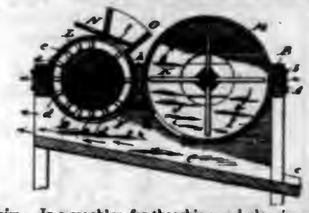
3. In a surveying instrument, a telescope having a housing *l* secured at right angles to one of its collars, a bolt I_1, passing through said housing and guided therein, clips B^3 B^4, provided with plates *n n'*, respectively located on the inner sides of the same and containing sockets *m* for the entrance of the bolts, and screws *o*, entering from the outer sides of the clips and passing through slots *p* for adjustably securing the plates *n n'* to the clips, substantially as and for the purpose set forth.

4. In a telescope, an eye-piece constrained to a rectilinear motion, combined with a rotary driver provided with an oblique cam groove or slot, and a stationary pin engaging the groove or slot, substantially as described.

5. In a telescope, an eye-piece provided with a splice engaging with a socket to prevent the eye-piece from turning, a rotatable sleeve engaging the eye-piece and provided with a cam groove or slot engaged by a pin, and a dust-shade secured to said sleeve, substantially as described.

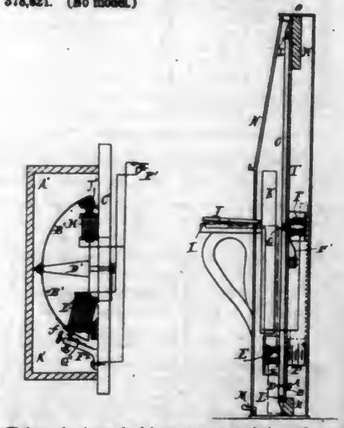
6. In a telescope, an objective provided with a slot *w* and a rack P, shorter than the slot and located at one end of the same, and a pinion turned from the exterior by a suitable head and adapted to engage with the rack when the objective is pushed inward to make the final adjustment, substantially as described.

472,452. PEA OR BEAN THRASHER. WILLIAM H. GRAYSON, Carter, Tex. Filed Aug. 7, 1891. Serial No. 401,990. (No model.)



Claim.—In a machine for thrashing and cleaning peas and beans, the combination, with the main frame A, having a removable top and an inclined bottom containing the thrashing concave and cylinder, of the fan-chamber and fan, the air-chamber H, having an aperture A intermediate of the fan-chamber and concave, and means, substantially as described, for rotating said cylinder and fan.

472,453. MUSICAL INSTRUMENT. CHARLES E. GUERRE and GASTON E. MARTIN, Rouen, France. Filed Jan. 21, 1891. Serial No. 378,621. (No model.)



Claim.—1. A musical instrument consisting of a casing, a sonorous body mounted in the casing, an electrical device for vibrating the sonorous body, and an electrically-operated damper arranged to operate in alternation with the vibrating device, substantially as shown and described.

2. A musical instrument consisting of a casing having a keyboard, a sonorous body mounted to vibrate in the casing, an electrical device connected with the keyboard for vibrating the sonorous body, and an electrically-operated damper arranged to operate in alternation with the vibrating device, substantially as shown and described.

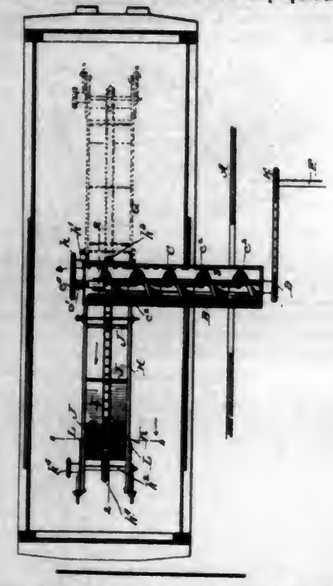
3. A musical instrument consisting of a casing having a keyboard, a sonorous body mounted to vibrate in the casing, an electric battery, vibrating and damping electro-magnets in the circuit of the battery, and electrical connections between the keyboard, the electro-magnets, and the sonorous body, substantially as shown and described.

4. In a musical instrument, the combination, with a casing provided with a sounding-board and a keyboard, each having electrical contacts, and a sonorous body mounted to vibrate on the sounding-board and having electrical contacts, of an electric battery, vibrating and damping electro-magnets in the circuit of the battery, and electrical connections between the keyboard, the electro-magnets, and the sonorous body, substantially as shown and described.

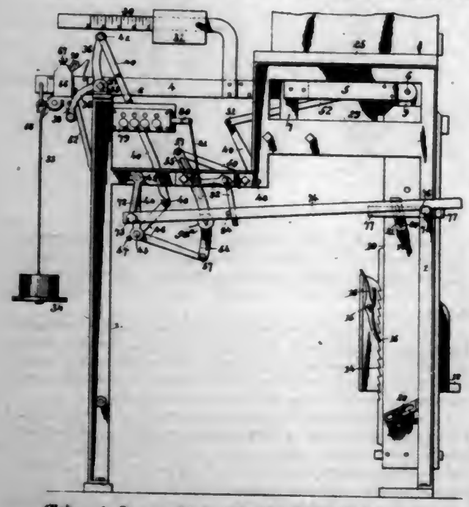
472,454. GRAIN-CONVEYER. HENRY M. HASTINGS, Cooksville, Ill. Filed Sept. 9, 1891. Serial No. 405,230. (No model.)

Claim.—In a grain-conveying device of the kind described, the combination, with the conveyer-trough B, the spiral conveyer C, having its shaft extended beyond the delivery end of the trough B and

provided with a gear d^4, of the reversible elevator-chute H, having shafts h' and h^2 mounted in its opposite ends, provided with sprockets h^3 and h^4, the endless carrier I, having flights J operated thereby, said chute having openings K in its opposite ends, a slide L for alternately closing one of such openings, the portable jack L', and the bracket J, all arranged substantially in the manner and for the purpose described.



472,455. WEIGHING AND BAGGING MACHINE. HALE K. HAWK, Bucyrus, Ohio. Filed Sept. 5, 1891. Serial No. 404,849. (No model.)



Claim.—1. In a machine of the class described, the combination, with the frame-work, the scale-beam fulcrumed thereon, the frame-support loosely suspended from the front end of the beam, a spout located above the frame, and a cut-off located under the spout, of a reciprocating rod, connections between the same and cut-off, whereby the latter may be opened by a movement of the rod, devices for engaging the rod when the same is thus moved, a trip mounted on the frame for tripping said devices and releasing the rod when the frame descends, and means for retracting the rod and closing the cut-off when said rod is thus released, substantially as specified.

2. In a machine of the class described, the combination, with the frame-work, the scale-beam fulcrumed thereon, and the loosely-suspended frame, of a register secured to the frame-work, a lever extending from the register and adapted to operate the same when depressed, a spout located above the suspended frame, a cut-off therein, a reciprocating rod located at one side of the frame-work, connections between the same and cut-off, whereby a forward movement of the rod causes an opening of the cut-off, a pin located on the frame-work for engaging a notch in the rod, a trip located on the suspended frame and adapted to disengage the rod from the pin when said frame is lowered, a pin extending from the rod, a bell-cranked lever pivoted to the frame-work and extending into the path of the pin, and connections between said bell-crank lever and the lever of the register, substantially as specified.

3. In a machine of the class described, the combination, with the frame-work, the fulcrumed scale-beam, the spout, and the cut-off, of a reciprocating bar for operating the cut-off, a pin extending therefrom, a register, a lever for operating the same, and devices connected with the lever and adapted to be struck by the pin on the rod at each reciprocation of the latter, substantially as specified.

4. In a machine of the class described, the combination, with the frame-work, of the scale-beam fulcrumed therein, the platform-carrying frame loosely hung upon one end of the beam, and an inverted-L-shaped poise-beam carrying an adjustable poise mounted upon the scale-beam near the opposite end thereof, substantially as specified.

5. In a machine of the class described, the combination, with the frame-work, the scale-beam fulcrumed therein, and a rotary cut-off pivoted above the front end of said beam, of a rock-shaft journaled in the frame-work and having depending rock-arms connected by a rod, a central rock-arm extending from the rod, a crank-arm also mounted on the shaft, a reciprocating rod connected with the crank-arm and adapted to operate the rock-shaft, an intermediate rock-shaft located between the first-mentioned rock-shaft and the cut-off, upper and lower rock-arms extending therefrom, straps loosely connecting the upper rock-arm with the cut-off, and a connecting device between the lower rock-arm and that of the rock-arm upon the rock-arm-connecting rod, substantially as specified.

6. In a machine of the class described, the combination, with the frame-work, the scale-beam fulcrumed therein, and a rotary cut-off pivoted above the front end of said beam, of a rock-shaft journaled in the frame-work and having depending rock-arms connected by a rod, a central rock-arm extending from the rod, a crank-arm also mounted on the shaft, a reciprocating rod connected with the crank-arm and adapted to operate the rock-shaft, an intermediate rock-shaft located between the first-mentioned rock-shaft and the cut-off, upper and lower rock-arms extending therefrom, straps loosely connecting the upper rock-arm with the cut-off, and an adjustable connecting device between the lower rock-arm and that of the rock-arm upon the rock-arm-connecting rod, substantially as specified.

7. In a machine of the class described, the combination, with the frame-work, the fulcrumed scale-beam, the rock-shaft having the inner and outer depending rock-arms, a rod for operating the shaft, connected to the outer rock-arm or crank, and a rod connecting the inner rock-arms, of a spout, a pivoted cut-off or valve, and weighted connections between the valve and the rock-arm-connecting rod, substantially as specified.

8. In a machine of the class described, the combination, with the frame-work, the fulcrumed scale-beam, the spout, the rotary cut-off pivoted thereto, and means for opening said cut-off, of a bell-cranked ball pivoted upon the frame-work, connections between the same and the cut-off, whereby a movement of the ball is communicated to the cut-off, a gravity-latch pivoted to the frame-work and having a shoulder below which said bell-cranked ball is depressed by the weight of the scale-beam, and a trip carried by the beam and adapted to strike and throw off said latch by a rising of the beam, whereby the cut-off is closed proportionate to the elevation of the scale-beam, substantially as specified.

9. In a machine of the class described, the combination, with the frame-work, the fulcrumed scale-beam, the spout, the pivoted rotary cut-off, and means for opening the cut-off, of a bell-cranked ball pivoted upon the frame-work and extending under and in the path of the scale-beam and adapted to be depressed by the latter, an adjustable bracket depending from the frame-work, a gravity-latch pivoted at its lower end in the lower end of the adjustable bracket and having its upper end slotted and provided with a wheel and below the same with a shoulder, connections between the bell-cranked ball and cut-off, whereby a rocking of the ball will be communicated to the cut-off, an adjustable saddle or sleeve mounted on the scale-beam and provided with a lug, a trip slotted to receive the lug and arranged in the path of the wheel of the latch, and a screw for adjusting the trip upon the lever, substantially as specified.

10. In a machine of the class described, the combination, with the frame-work, the fulcrumed scale-beam, the spout, the pivoted rotary cut-off located thereunder, the bell-cranked ball mounted upon the frame-work and extending under and in the path of the weighted end of the beam, a latch for engaging the bell-crank ball when depressed by the beam, and a trip carried by the beam for disengaging the latch when said beam is elevated, of a rock-shaft journaled in the frame-work below the ball and terminating at one end in a crank-arm, a rod for operating the crank-arm and rock-shaft, rock-arms depending from the rock-shaft, a rod loosely journaled in the ends of the rock-arms, a bell-crank lever fixed upon the rod, a bifurcated rod connecting the bell-crank lever with the branches of the bell-crank ball, a forward rock-shaft, a pair of upper and lower bell-cranks thereon, an adjustable connection carrying a weight connecting the lower bell-crank of the pair with the lower branch of the bell-crank of the rock-arm-connecting rod, and straps pivotally connecting the upper bell-crank of the pair with the pivoted cut-off at one side of the pivot of the latter, substantially as specified.

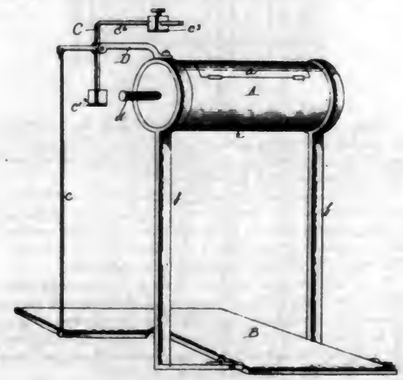
11. In a machine of the class described, the combination, with the frame-work, the fulcrumed scale-beam, the pivoted rotary cut-off, the spout above the same, the bell-cranked ball mounted on the frame-work and extending under and in the path of the weighted end of the beam, a gravity-latch for engaging the bell-crank ball when depressed by the beam, and a trip carried by the beam and adapted to disengage the latch from the ball when the beam is elevated, of a rear rock-shaft journaled in the frame-work below the ball and terminating at one end in a crank-arm, a rod connected to and adapted to operate the crank-arm and rock-shaft, a pair of rock-arms depending from the rock-shaft, a rod loosely journaled therein, a bell-crank lever fixed upon the rod, a bifurcated or Y-shaped rod connecting the upper branch of the bell-crank lever with the forward branches of the bell-crank ball, a forward rock-shaft, a pair of upper and lower bell-crank arms thereon, a connection connecting the lower bell-crank of the pair with the lower branches of the bell-crank of the rock-arm-connecting rod, and straps pivotally connecting the upper bell-crank of the pair eccentrically with the pivoted cut-off, substantially as specified.

12. In a machine of the class described, the combination, with the frame-work, the fulcrumed scale-beam terminating at its front end in a bail, a platform-carrying frame supported by the bail, a slotted L-shaped trip located upon the frame, and a screw for adjusting the same, of a spout, a rotary cut-off pivoted thereto above the frame, a reciprocating rod for opening the cut-off and provided with a notch for engaging a pin upon the frame-work when thus reciprocated, an L-shaped lever or trip pivoted upon the frame-work and having one end extending under the rod and the other under the trip of the frame, substantially as specified.

13. In a machine of the class described, the combination, with the frame-work comprising vertical standards, the fulcrumed scale-beam terminating at the front end in a bail, and a frame depending from the bail, of an L-shaped adjustable guide having a slot and a screw adjustably connecting the same to the side of the frame, whereby it is adapted to ride against the face of a standard of the frame-work during the vertical reciprocations of the frame, substantially as specified.

14. In a machine of the class described, the combination, with the frame-work, the scale-beam fulcrumed thereon, and the loosely-suspended frame, of a register secured to the frame-work, a lever extending from the register and adapted to operate the same when depressed, a spout located above the suspended frame, a cut-off therein, a reciprocating rod located at one side of the frame-work, connections between the same and cut-off, whereby a forward movement of the rod causes an opening of the cut-off, a pin located on the frame-work for engaging a notch in the rod, and a trip located on the suspended frame and adapted to disengage the rod from the pin when said frame is lowered, substantially as described.

472,456. DEVICE FOR APPLYING INSECTICIDES. MARY A. HAWLEY, Dixon, Ill. Filed Dec. 14, 1891. Serial No. 414,938. (No model.)



Claim.—The automatic powder-sifting device hereinbefore described, consisting of a powder-receptacle having a perforated bottom, a reciprocating agitator therein, a pivoted striker for engaging one end of the agitator-rod, means for operating the rod in a reverse direction, a treadle, and a connecting means between the treadle and striker, all combined substantially as shown and described.

472,457. FOLDING UMBRELLA OR PARASOL. CHARLES E. HAYES and HARVEY L. MILLAY, Springview, Nebr. Filed Apr. 27, 1891. Serial No. 390,706. (No model.)



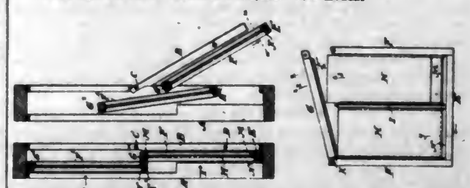
Claim.—1. In a knockdown or folding umbrella, the combination, with the jointed ribs *h* and *h'*, provided with interlocking parts, of a link *k*, connecting the parts to each other, the lower section of the joint having an extension to which the spreader is pivotally secured, the upper section being recessed for said extension, the interlocking joint presenting a flat upper surface substantially on a line with the ribs, which are brought on a line with each other when the parts of the joint are interlocked, for the purpose set forth.

2. In a folding umbrella or parasol, the combination of the runner B, having a cup or upwardly-projecting flange *g*, carried thereby, a top notch of less diameter than the ring of the runner, jointed ribs the upper sections of which are attached to the top notch, and spreaders connected to the ribs and to the runners B, the parts being organized so that when the umbrella is folded the top notch and runner will be adjacent to each other.

3. The combination, in a knockdown umbrella or parasol, of a runner B, having a cup *g* on its upper end, the notched ring of said runner being of greater diameter than the cup, and a top notch of less diameter than the notched ring of the runner, said top notch being adapted to lie within the cup carried by the runner when the umbrella is knocked down, together with jointed ribs connected to spreaders, substantially as shown, and for the purpose set forth.

4. In a knockdown umbrella, constructed substantially as shown and provided with folding ribs, fixtures *i* and *l*, attached thereto, the fixture *l* having an extended portion *l'* and a recess or undercut portion adjacent to and extending beyond one of the pivots of the link, and the fixture *i* having an extended portion which enters a recess in the fixture *l*, both fixtures having straight edges which lie against each other when the joint is broken and which will be on a line when the parts of the fixture are interlocked, the adjacent ends of the fixtures being bifurcated for the reception of the link *k*, substantially as set forth.

472,458. WINDOW-SASH. HERMON A. HOWE, Middletown, Conn. Filed Apr. 30, 1891. Serial No. 391,153. (No model.)



Claim.—A window-sash composed of the side rails F F and end rails E G, one of said end rails being hinged at one end to a side rail and having its other end detachably secured to the other side rail, so that said end rail can be swung open or shut on its hinge without becoming detached from the sash, said hinge-supporting side rail and the hinged end rail having their meeting or hinged ends rounded, so as to permit of a ready swing of the end rail, and the lower end rail being beveled on the outside from the bottom of the glass downward to avoid the formation of a groove or hollow, substantially as described.

472,459. ORANGE-CLIPPER. THOMAS B. LANGFORD, Fort Meade, Fla. Filed Dec. 26, 1890. Serial No. 376,419. (No model.)

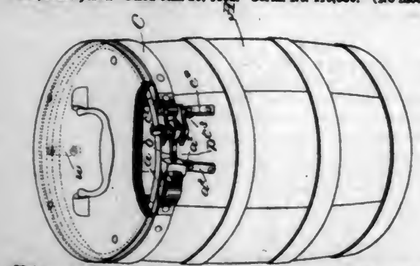
Claim.—1. In a fruit-gatherer, a pair of shears having their cutting-blades turned upward at an angle to the plane of movement of the handle-bars, and having a receptacle for catching the fruit seated upon the upper side of the shears within the angle, substantially as described.

2. In a fruit-gatherer, a pair of shears having their cutting-blades turned upward at an angle to the plane of movement of the handle-

bars, in combination with a fruit-receptacle seated upon the upper side of the shears, said receptacle having an open top and a lateral opening adjacent to the cutting-blades and having a longitudinal adjustment along the shears, whereby it is adapted to receive fruits of different bulk, substantially as described.



472,460. AIR-TIGHT VESSEL. GEORGE A. LAWRENCE, Salem, Mass., assignor of three-tenths to Clarence S. Clark and Harry D. Treadwell, same place. Filed Jan. 29, 1892. Serial No. 419,639. (No model.)



Claim.—1. The vessel A and cover therefor, combined with the hoop or band C, the block *a*, secured to one end, and the block *c*, secured to the other end of said hoop or band, and eccentric *c'*, supported by said block *c*, and the part *b*, connected with the block *a* at one end and with the eccentric *c'* at the opposite end, substantially as described.

2. The vessel A and cover therefor, combined with the hoop or band C, the block *a*, secured to one end, and the block *c*, secured to the other end of said hoop or band, the eccentric *c'*, mounted in the block *c*, and the eyebolt on said eccentric *c'*, having its screw-threaded end projected through a hole in the block *a*, and the nut *b'*, turned on said screw-threaded portion, by means of which the parts are adjusted, substantially as described.

3. The vessel A and cover therefor, combined with the hoop or band C, the block *a*, secured to one end thereof, and the block *c*, secured to the other end thereof, the eccentric *c'*, mounted on the block *c*, and the connecting part *b*, mounted on said eccentric *c'* and loosely connected with the block *a*, lugs or ears on said blocks *a* and *a*, and links a^3 c^4, connected to said lugs or ears and to the vessel, substantially as described.

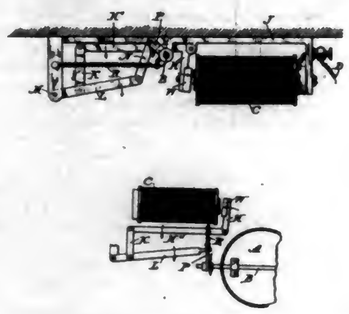
4. The vessel A and cover therefor, combined with the hoop or band C, block *a*, secured to one end thereof, and the block *c*, secured to the other end thereof, the eccentric *c'*, mounted on the block *c*, and the connecting part *b*, mounted on said eccentric *c'* and loosely connected with the block *a*, lugs or ears on said blocks *a* and *c*, and links a^3 c^4, connected to said lugs or ears and to the vessel, and a link connecting the hoop or band to the vessel, substantially as described.

5. The vessel A, having on it the hoop *o*, cut away or recessed, as described, combined with the hoop or band C on said hoop *o* and the tightening device for said hoop or band C, set down in said recess, whereby the draft on the band may be in a direct line through the center of the tightening device, substantially as described.

6. The vessel A, having on it the hoop *o*, cut away or recessed, as described, combined with a hoop or band C on said hoop *o*, and the tightening device comprising the blocks *a* and *c*, and the connecting part *b*, set down in said recess, substantially as and for the purposes set forth.

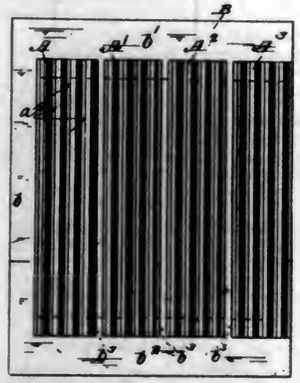
7. The vessel A and clamping hoop or band therefor, comprising the band and the tightening device, combined with a cover for said vessel comprised of a head *n*, metal plate or lining *n'*, and annular rim n^2, having a convexed outer face to enter a concaved recess in the vessel, substantially as and for the purposes set forth.

472,461. ELECTRO-MAGNETIC VALVE-CONTROLLER. OLOF E. LUNDSTROM, Brooklyn, N. Y., assignor, by mesne assignments, to the New York Electrical Device Company, of Virginia. Filed Aug. 6, 1890. Renewed Oct. 14, 1891. Serial No. 408,998. (No model.)



Claim.—The combination, with the spindle of a rotating valve and an arm extending radially therefrom, of a pivoted bent lever having arms of unequal lengths, an armature upon the shorter end of said lever, an electro-magnet attracting said armature, a spring retracting it, a single lever pivoted at one end at a point beyond the long arm of the bent lever to extend thence toward the pivotal axis thereof, a link coupling the long arm of the bent lever with said single lever near to its pivotal axis, and a link connecting the outer end of said single lever with the radial arm of the valve-spindle, all substantially in the manner and for the purpose herein set forth.

472,462. BOTTLE-WRAPPER. HENRY J. MARK, St. Louis, Mo., assignor of one-half to Henry Gans, Jr., same place. Filed June 3, 1891. Serial No. 394,954. (No model.)

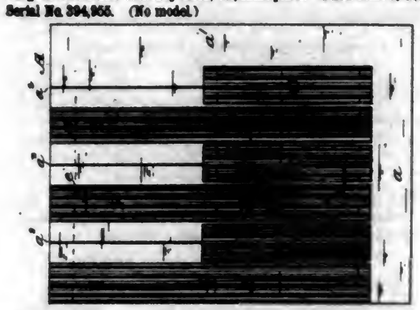


Claim.—1. A bottle-wrapper combining in its construction an inner wooden corrugated part and an outer covering, said covering being held taut upon said corrugated part throughout the width thereof by stitching, substantially as described.

2. A bottle-wrapper combining in its construction an inner wooden corrugated part and an outer covering, the direction of the corrugation being parallel with the grain of the wood and said covering being fastened to and held taut upon said corrugated part throughout the width thereof by stitching, substantially as described.

3. A bottle-wrapper made in sections, as described, each combining in its construction an inner wooden corrugated part and an outer smooth covering, the direction of the corrugation being parallel with the grain of the wood and said corrugation extending vertically in the wrapper and said covering being fastened to and held taut upon said corrugated part, substantially as described.

472,463. BOTTLE-WRAPPER. HENRY J. MARK, St. Louis, Mo., assignor of one-half to Henry Gans, Jr., same place. Filed June 3, 1891. Serial No. 394,955. (No model.)



Claim.—1. The bottle-wrapper having the inner corrugation and the outer sheet fastened together, a portion of said corrugation extending higher than another portion, for the purpose described.

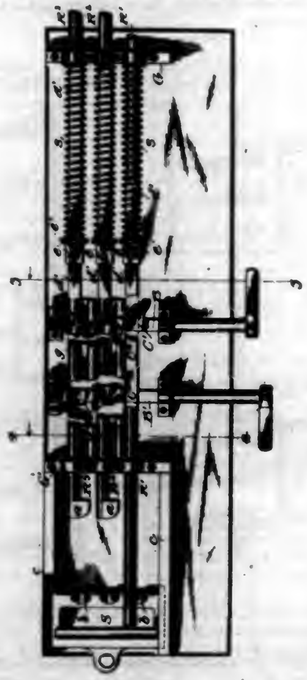
2. The bottle-wrapper having the inner corrugation and the outer sheet fastened together, said corrugation being in sections and one portion of said sections extending higher than another portion thereof, substantially as described.

3. The bottle-wrapper having the inner corrugation and the outer sheet fastened together, a portion of said corrugation extending higher than another portion and said sheet being extended below said corrugation, substantially as described.

4. The bottle-wrapper having the inner corrugation, the outer sheet fastened together, and the ties, said corrugation being in sections and one portion of said sections extending higher than another portion and said sheet being extended below said corrugation, substantially as described.

5. The bottle-wrapper having the inner corrugation and the outer sheet fastened together, said corrugation being in sections, some of which are longer than others, said longer and shorter sections being alternately arranged, substantially as described.

472,464. SWITCH AND SIGNAL OPERATING APPARATUS. GEO. H. PYRE, Easton, Pa., assignor to the National Switch and Signal Company, same place. Filed Dec. 12, 1891. Serial No. 414,871. (No model.)



Claim.—1. In interlocking switch and signal operating apparatus, the combination, with a signal-shifting bar, of two or more signal-rods longitudinally movable for signal-operating purposes and capable also of axial rotary movement, whereby they are caused to engage and to be disengaged from the signal-shifting bar, substantially as and for the purposes hereinbefore set forth.

2. The combination of the signal-shifting bar, the signal-rods capable of both longitudinal movement and rotation, the wings *g* on said bars, and the rock-shaft and cams for operating on said wings, substantially as and for the purposes hereinbefore set forth.

3. The combination of the signal-shifting bar, the signal-rods capable of both longitudinal movement and rotation, the wings on said bars, the rock-shaft and cams for turning the rods in one direction, and the springs tending to turn the shafts in the other direction, substantially as and for the purposes hereinbefore set forth.

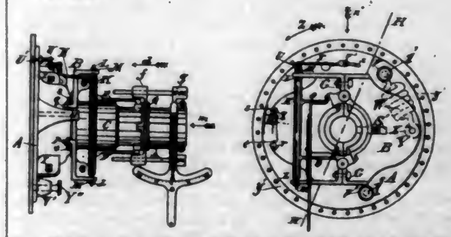
472,465. SELF-LOCKING NUT. JOHN F. PLUMMER, Paris, Me., and HENRY P. CHAPMAN, Ivoryton, Conn. Filed Dec. 14, 1891. Serial No. 415,079. (No model.)



Claim.—1. A self-locking nut having an interior annular groove and the rim formed by said groove permanently upset, the threads in said rim being thereby thrown permanently out of alignment with those on the body of the nut and those on the bolt, substantially as and for the purposes set forth.

2. A self-locking nut having an interior annular groove near one end thereof, the narrow rim thus formed permanently bent inwardly, the point of bending being at the bottom of the groove, the threads in said rim being thereby thrown permanently out of alignment with the threads in the body of the nut, whereby the threads in the nut are caused to bind laterally against the threads in the bolt, substantially as and for the purposes set forth.

472,466. ROTARY TRANSMITTING-DYNAMOMETER. FRANKLIN VAN WINKLE, Paterson, N. J. Filed Nov. 11, 1891. Serial No. 411,551. (No model.)



Claim.—1. In a rotary transmitting-dynamometer, the combination of a plate adapted to be made fast to the shaft and provided with a central hub, the exterior surface of which is spherical, and a loose plate adapted to be mounted upon said spherical hub and capable of changing its angular position relatively to the fast plate around the axis of rotation of the dynamometer and also of assuming positions in different planes inclined to the plane of the fast plate, substantially as shown and described.

2. In a rotary transmitting-dynamometer, the loose plate A, provided with the stop-bracket *u*, in combination with the shaft-plate B, having a gap cut in its periphery within which the end of the stop-bracket *u* is adapted to move, thereby limiting the relative angular movement of the two plates, substantially as shown and described.

3. In a rotary transmitting-dynamometer, in combination with the spring W, the loose plate A, provided with the stop-bracket *u*, the plate B, having a gap cut in its periphery within which the end of the stop-bracket *u* is adapted to move, and the adjusting-screws *s* and *t*, substantially as shown and described.

4. In a rotary transmitting-dynamometer, the combination of the plate A, provided with the stop-bracket *u* and the suspending hubs V and V', with their pins, the spring W, and plate B, provided with the suspending hub X and its pin, and the gap in the periphery of B, bounded by the lugs *q* and *r*, the said several parts being arranged and placed relatively to each other, substantially as and for the purposes set forth and described.

5. In a rotary transmitting-dynamometer, the combination of the plate A, provided with the slot *x*, the plate B, spring W, a scale-plate upon which is indicated the number of horse-powers transmitted from one plate to the other, intermediate mechanism, one end of which intermediate mechanism is adjustably secured in said slot *x* and the other is attached to the pointer-hand of said scale-plate, substantially as shown and described.

6. In a rotary transmitting-dynamometer, the combination of a loose plate A, spring W, indicating device, and intermediate mechanism connecting said indicating device with said plate A, with a fixed or shaft plate having a spherical hub extending toward the loose plate and an elongated hub extending from the opposite side of said shaft-plate, upon which two hubs the loose plate and all the other parts of the dynamometer are mounted, substantially as shown and described.

7. In a rotary transmitting-dynamometer, the combination of the plates A and B, means for offering resistance to the rotation of one of said plates past the other, the connecting-rod T, provided at both ends with the universal ball-and-socket joints U U', one end of said rod being connected to the plate A and the other end being secured to suitable devices, which, with said connecting-rod, constitute a transmitting mechanism, for the purposes set forth.

8. In a rotary transmitting-dynamometer, the combination of the plates A and B, spring W, the connecting-rod T, provided at both ends with the universal ball-and-socket joints U U', one end of said rod being connected to the plate A and the other end being secured to suitable devices, which, with said connecting-rod, constitute a transmitting mechanism, for the purposes set forth.

9. In a rotary transmitting-dynamometer, the combination of the plates A and B, means for offering resistance to the rotation of one of said plates past the other, the rock-shaft K, the sliding collar Q, suitable devices connecting said rock-shaft with said plate A, and suitable devices connecting said rock-shaft with said sliding collar Q, substantially as shown and described.

10. In a rotary transmitting-dynamometer, the combination of the plates A and B, a weighing spring or springs, the rock-shaft K, the sliding collar Q, suitable devices connecting said rock-shaft with said plate A, and suitable devices connecting said rock-shaft with said sliding collar Q, substantially as shown and described.

11. In a rotary transmitting-dynamometer, in combination with the two plates A and B, spring W, the connecting-rod T, arm N, rock-shaft K, arms O O, links P P, and sliding collar Q, substantially as shown and described.

12. In a rotary transmitting-dynamometer, in combination with the plates A and B, the spring W, the connecting-rod T, arm N, rock-shaft K, arms O O, links P P, the sliding collar Q, fixed collar *e*, and their respective encircling rings *f* and *g*, guide-rods *i*, link *k*, pointer-hand *n*, and a suitable scale-plate, substantially as shown and described.

13. As a new article of manufacture, a differential scale-plate adapted for use in connection with a dynamometer and capable of adjustment for different speeds of rotation of the shaft or for different springs or other weighing devices employed in the dynamometer and when so adjusted for any given speed or for any given weighing device the true number of horse-powers being transmitted through the dynamometer will be indicated upon said scale-plate without requiring any computation, substantially as shown and described.

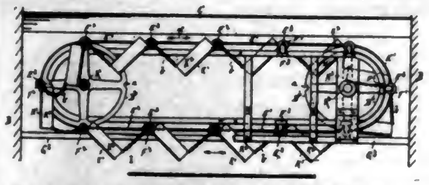
14. In a rotary transmitting-dynamometer, the combination of the plates A and B, spring W, a differential scale-plate and suitable mechanism connecting the latter with the plate A, said scale-plate being so constructed that when suitably adjusted for any given speed or rotation of the shaft, the strength of the spring W being constant, or vice versa, for any given spring and the speed of rotation being constant, the actual number of horse-powers being transmitted through the dynamometer will be indicated upon said scale-plate without requiring any computation and may be read while the dynamometer is in operation, substantially as set forth and described.

15. In a rotary transmitting-dynamometer, the combination of the plates A and B, means for offering resistance to the rotation of one of said plates past the other, the scale-plate *d'* and its pointer-hand *n*, suitable mechanism connecting said pointer-hand with the plate A and the scale-plate *j*, all arranged and constructed substantially as shown and described.

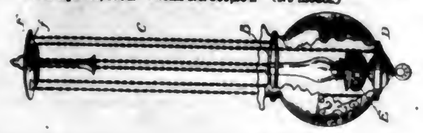
16. In a rotary transmitting-dynamometer, the combination of the plates A and B, spring W, the scale-plate *d'*, and its pointer-hand *n*, suitable mechanism connecting said pointer-hand with the plate A and the scale-plate *j*, all arranged and constructed substantially as shown and described.

472,467. RUNNING-WATER MOTOR. JARED R. BELT, Minneapolis, Minn. Filed Oct. 31, 1890. Serial No. 369,836. (No model.)

Claim.—A running-water motor consisting of two or more shafts A' A^2, having sheaves or pulleys D', D^2, belts passing around said sheaves and connected at intervals by cross-bars E^2, plates K', hinged to said cross-bars, wings K^2, hinged to the ends of said plates and held flexibly in inclined relations to the flow of the water, substantially as and for the purpose set forth.



472,468. LAMP-SUSPENDING DEVICE. GEORGE W. BALDWIN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Apr. 16, 1891. Serial No. 389,264. (No model.)



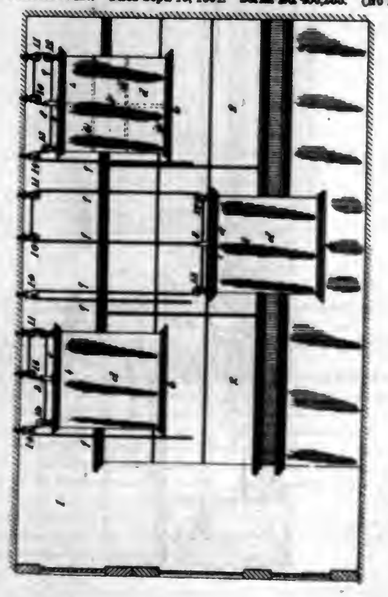
Claim.—1. In combination, a lamp-shade, an internal annular shoulder in said shade, a band within said shade with its ends connected together, said band being of an exterior diameter corresponding substantially to the interior diameter of said shade immediately below said shoulder and a supporting-chain, substantially as described.

2. In combination, a lamp-shade, an internal annular groove in said shade, a band within said groove with its ends connected together, said band being of an exterior diameter corresponding substantially to the interior diameter of said groove and greater than the interior diameter of said shade immediately above said groove and a supporting-chain attached to said band, substantially as described.

3. In combination, a lamp-shade, an internal annular shoulder in said shade, a band within said shade with its ends connected together, said band being of an exterior diameter corresponding substantially to the interior diameter of said shade immediately below said shoulder, a plurality of loops or bends in said band and a plurality of supporting-chains attached to said bends, substantially as described.

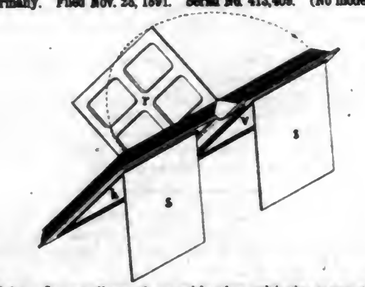
4. In combination, a lamp-shade, an internal annular groove in said shade, a band within said groove of an exterior diameter corresponding substantially to the interior diameter of said groove, means for securing together the ends of said band after it has been placed in said groove, and a supporting-chain attached to said band, substantially as described.

472,469. ADJUSTABLE STORE-SHELF. CHRISTIAN RAUH, St. Genevieve, Mo. Filed Sept. 19, 1891. Serial No. 406,233. (No model.)



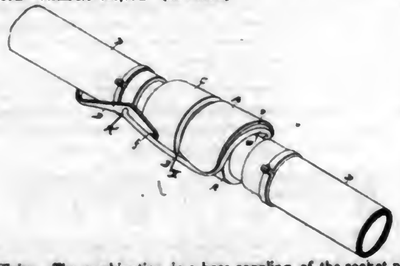
Claim.—In a salesroom or store where increased shelf-room is required for the storage or display of goods, a receptacle containing one or more compartments with one or more shelves in each compartment, having secured thereto an eye in the center of the top and two pulleys in a line with and equidistant from said eye and having a cord fastened to said eye, thence extending upward and over two pulleys fastened to the ceiling, thence downward under the two pulleys in the top of said receptacle, thence upward again over a third pulley in the ceiling, and held in any given position by a clamp or other suitable means, said pulleys in the ceiling corresponding, respectively, in position with the eye and pulleys in the top of said receptacle, which by means of said cord and pulleys is thus adapted to be raised or lowered and held in position at any given height, substantially as described.

472,470. ALBUM. GUSTAV RAUH and JULIUS MÜLLER, Berlin, Germany. Filed Nov. 28, 1891. Serial No. 413,409. (No model.)



Claim.—In an album, the combination, with the covers thereof, of two supports *s s*, permanently connected to said covers and arranged to open and hold the album in an inclined position, substantially as described.

472,471. HOSE-COUPLING. CHARLES CHENEY, Jr., Canton, Ohio, assignor of one-half to William E. King, same place. Filed June 6, 1891. Serial No. 395,394. (No model.)



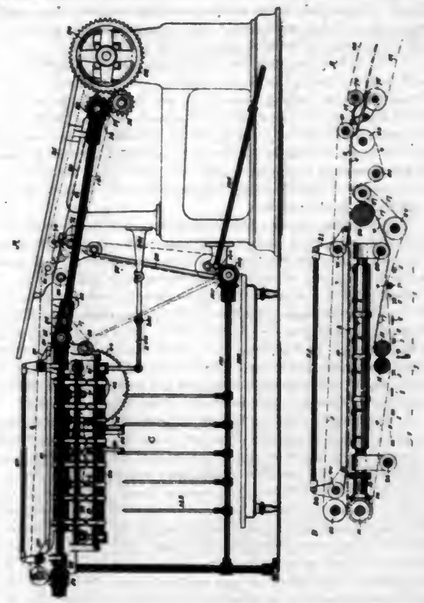
Claim.—The combination, in a hose-coupling, of the socket portion A, having a stem portion *a*, the said socket portion provided on a portion of its periphery with a shoulder *c*, having in its edge a groove which extends from X on one side to *y*, from *y* to *z*, and thence to X on the opposite side, a stem portion C, having a neck to enter the socket, a link-lever D, pivoted to said stem portion, and a link B, pivoted to the said link-lever and having its bight bent at an obtuse angle to conform to the groove in the shoulder *c*, substantially as set forth.

472,472. FOLDING-MACHINE. LUTHER C. CROWELL, Brooklyn, assignor, by direct and mesne assignments, to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Mar. 27, 1885. Serial No. 160,180. (No model.)

Claim.—1. The combination, with the delivery of a printing-machine and the delivery of a folding-machine, of a fly-frame adapted to pile sheets from either, and means, substantially as described, for conveying sheets from the printing-machine to the folder or directly to said fly-frame, substantially as described.

2. The combination, with a pair of folding-rolls and a folding-blade, of sheet-conveying devices arranged to take the folded sheet from the rolls, carry it around the ends of the rolls, and return it in position to be again folded between the rolls by the same blade, substantially as described.

3. In a folding-machine, the combination, with two pairs of folding-rolls and two folding-blades arranged to operate successively upon the sheet, of sheet-conveying devices arranged to take the folded sheet from the first rolls and present it to the second rolls and blade to receive a second fold, and take it from the second rolls and re-present it to the first rolls and blade to receive a third fold, substantially as described.



4. In a folding machine, the combination, with two pairs of folding-rolls and two folding-blades arranged to operate successively upon the sheet, of sheet-conveying devices arranged to take the folded sheet from the first rolls and present it to the second rolls and blade to receive a second fold, and take it from the second rolls, re-present it to the first rolls and blade to receive a third fold, and then deliver it from the machine, substantially as described.

5. In a folding-machine, the combination, with two pairs of folding-rolls and two folding-blades arranged to operate upon the sheet successively, of sheet-conveying devices arranged to take the folded sheet from the first rolls and present it to the second rolls and blade to receive a second fold, and take it from the second rolls and re-present it to the first rolls and blade to receive a third fold, and take it from the first rolls and re-present it to the second rolls and blade to receive a fourth fold, substantially as described.

6. In a folding-machine, the combination, with two pairs of folding-rolls and two folding-blades arranged to operate upon the sheet successively, of sheet-conveying devices arranged to take the folded sheet from the first rolls and present it to the second rolls and blade to receive a second fold, and take it from the second rolls and re-present it to the first rolls and blade to receive a third fold, and take it from the first rolls and re-present it to the second rolls and blade to receive a fourth fold, and then deliver it from the machine, substantially as described.

7. In a folding-machine, the combination, with a pair of folding-rolls and a folding-blade, of sheet-conveying devices arranged to take the folded sheet from the rolls and return it in position to be again folded between the rolls, and sheet-conveying devices arranged to advance another sheet and present it to the rolls in position to be superimposed with the previously-folded sheet, so that the two sheets will be folded together between the rolls, substantially as described.

8. In a folding-machine, the combination, with a pair of folding-rolls and a folding-blade, and means for presenting two sheets of different dimensions to said rolls and blade, so that they will be folded together one within the other, of sheet-conveying devices for taking the folded sheet from the rolls, and stops for arresting the larger sheet while the smaller is allowed to pass forward, substantially as described

9. In a folding-machine, the combination, with a pair of folding-rolls and a folding-blade, and stops for arresting said sheets in differ-

ent positions, and means for presenting two sheets to said rolls and blade, one in advance of the other, so that both will be folded simultaneously, of sheet-conveying devices arranged to convey one of said sheets to other folding mechanism while the other sheet is allowed to pass directly from the machine, substantially as described.

10. In a folding-machine, the combination, with two pairs of folding-rolls and two folding-blades arranged to operate successively upon the sheet, of sheet-conveying devices arranged to take the folded sheet from the first rolls and present it to the second rolls and blade to receive a second fold and take it from the second rolls and re-present it to the first rolls and blade in position to be superimposed with another sheet simultaneously presented to said rolls for the first time, so that the two sheets will be folded together, the first sheet receiving a third fold, substantially as described.

11. In a folding-machine, the combination, with two pairs of folding-rolls and two folding-blades arranged to operate successively upon the sheet, of sheet-conveying devices arranged to take the folded sheet from the first rolls and present it to the second rolls and blade to receive a second fold and take it from the second rolls and re-present it to the first rolls and blade in position to be superimposed with another sheet simultaneously presented to said rolls for the first time, so that the two sheets will be folded together, the first sheet receiving a third fold, and stops arranged to arrest the once-folded sheet in position to receive a second fold from the second rolls and blade while the thrice-folded sheet is allowed to pass forward, substantially as described.

12. In a folding-machine, the combination, with two pairs of folding-rolls and two folding-blades arranged to operate successively upon the sheet, of sheet-conveying devices arranged to take the folded sheet from the first rolls and present it to the second rolls and blade to receive a second fold and take it from the second rolls and re-present it to the first rolls and blade in position to be superimposed with another sheet simultaneously presented to said rolls for the first time, so that the two sheets will be folded together, the first sheet receiving a third fold, and stops arranged to arrest the once-folded sheet in position to receive a second fold from the second rolls and blade, while the thrice-folded sheet is allowed to pass forward between the rolls and blade to a position in advance of the once-folded sheet, to receive a fourth fold, substantially as described.

13. The combination, with the folding-rolls 2 and blade 10, of the bars 83, and sheet-conveying devices arranged to present the sheet to the rolls above said bars in position to be folded and to take the folded sheet from the rolls and re-present it beneath the bars in position to be folded again by said rolls and blade, substantially as described.

14. The combination, with the folding-rolls 2 and blade 10, of the bars 83, and sheet-conveying devices arranged to present the sheet to the rolls above said bars in position to be folded, and to take the folded sheet from the rolls and re-present it beneath the bars in position to be folded again by said rolls and blade, and a switch mechanism for directing the sheet to the rolls beneath the bars or directing it from the machine, substantially as described.

15. The combination, with the folding-rolls 2 and blade 10, of the bars 83 and sheet-conveying devices arranged to present the sheet to the rolls above said bars in position to be folded, and to take the folded sheet from the rolls and re-present it beneath the bars in position to be folded a second time, a switch mechanism for directing the sheet to the rolls beneath the bars or directing it from the machine, and the stops 82 99 on opposite sides of the bars for stopping the sheets, substantially as described.

16. The combination, with folding-rolls 2, folding-blade 10, folding-rolls 11, and folding-blade 9, of center tapes 4, co-operating tapes 17, roller 60, and conductors 57, whereby sheets are a second time conducted to folding-rolls 2 or delivered after leaving the folding-rolls 11, substantially as described.

17. The combination, with folding-rolls 2, folding-blade 10, folding-rolls 11, and folding-blade 9, of the center and margin tapes 4, co-operating tapes 17, roller 60, and conductors 57, substantially as described.

18. The combination, with the folding-rolls 2, blade 10, folding-rolls 11, and blade 9, of tapes for conveying the sheets from the former rolls to the latter, and the stops 47 48, arranged above the latter rolls at different points lengthwise of the rolls and at different distances from the rolls, so that the wider sheet will be arrested and the narrower allowed to pass, substantially as described.

19. A folding-blade constructed in sections, one or all of which are adjustable into or out of operative position, substantially as described.

20. The combination, with the folding-rolls 11, of the folding-blade 9, having two adjustable sections *a e*, and the stops 47, substantially as described.

21. The combination, with a folding-blade, of oscillating arms pivoted on a stationary part of the machine to oscillate in a plane parallel with the blade, and on which the blade is pivotally mounted, so as to be supported and carried thereby, substantially as described.

22. The combination, with oscillating bell-cranks 20 21, of rod 22, connecting one arm of said bell-cranks, and blade 10, pivotally mounted on the other arms of said bell-cranks, substantially as described.

23. The combination, with shafts 40 41, of bell-cranks 20 21, rod 22, connecting one arm of said bell-cranks, blade 10, pivotally mounted on the other arms of said bell-cranks, and means for rocking one of said shafts, substantially as described.

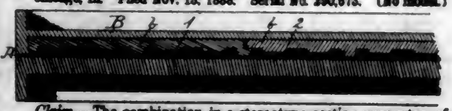
24. The combination, with the primary folding mechanism and its stops 82 99, of the secondary folding mechanism and its removable stop-fingers 47, and sheet-carrying devices, substantially as described, whereby sheets may be once folded by each folding mechanism and be delivered a second time to the primary folding mechanism in proper register to receive a third fold or be delivered with two folds, substantially as described.

25. The combination, with the delivery-tapes and fly of the printing-machine, and the tapes 3 4 of the folding-machine, of the conductors 34, and guide-plate 49, and means for adjusting them to conduct sheets to the fly or folding-machine, substantially as described.

26. The combination of a folding-machine having two deliveries for its folded product, with a printing-machine, its fly-frame, and an auxiliary fly-frame, substantially as described.

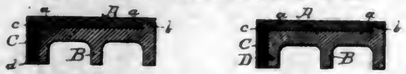
27. The combination, with a cylinder press, its fly 89 and piling-table 100, of a folding-machine having a separate fly 225, arranged to deposit the folded sheets on the same table, and a switch mechanism for directing the sheets from the press either directly to the fly 89 or to the folding-machine, substantially as described.

472,478. STEREOTYPE CASTING APPARATUS. JOHN R. CUMMINGS, New York, N. Y., assignor to The American Press Association, Chicago, Ill. Filed Nov. 13, 1888. Serial No. 290,673. (No model.)



Claim.—The combination, in a stereotype-casting apparatus, of a matrix divided longitudinally into strips and a series of removable casting-sections, which are placed within said casting apparatus opposite said matrix and which are of such width that longitudinal ribs extending toward said matrix cover the contiguous edges of the strips of matrix and secure the same and which have their broad surfaces adjacent to said matrix recessed, so as to admit of the casting being made between them and said matrix.

472,474. STEREOTYPE PLATE AND BASE. JOHN R. CUMMINGS, New York, N. Y., assignor to The American Press Association, Chicago, Ill. Filed Jan. 4, 1889. Serial No. 295,468. (No model.)



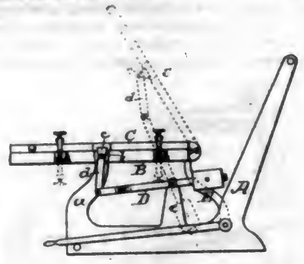
Claim.—1. A stereotype-plate having corresponding longitudinal rabbets in its under surface adjacent and parallel to its longitudinal side edges and the inner walls of which are inversely beveled, in combination with a base having a longitudinal ledge alongside one side thereof, the inner side of which is inversely beveled, a dog placed longitudinally against the opposite side of said base, having a beak *c*, as described, the under surface of which is beveled at an angle corresponding to the bevel of the inner wall of the rabbet in the plate which it opposes, and a flexible strip for connecting said dog to said base, as set forth.

2. A stereotype-plate having corresponding longitudinal rabbets in its under surface adjacent and parallel to its longitudinal side edges, the inner walls of which are inversely beveled, in combination with a base having a longitudinal ledge alongside one side edge thereof, the inner side of which is inversely beveled, a dog having a beak *c*, as described, and a sheet-metal strip or flexible strip for connecting said dog to said base and seated in corresponding angular grooves in longitudinal and transverse register with each other in the meeting surfaces of said dog and base, respectively, as and for the purpose set forth.

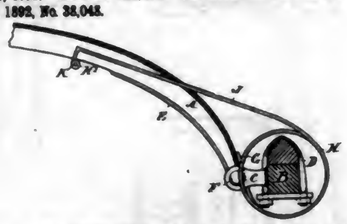
472,475. STEREOTYPER'S CASTING APPARATUS. JOHN R. CUMMINGS, Chicago, Ill., assignor to The American Press Association, same place. Filed Jan. 14, 1890. Serial No. 336,868. (No model.)

Claim.—1. In a stereotype-casting apparatus, the combination, with the box and cover thereof, of the link *d*, pivotally connected to said cover in transverse alignment with the axis of said box, lever D, and weight E, as set forth.

2. In a stereotype-casting apparatus, the combination, with the box, cover thereof, and brackets *c c*, projecting from the side edges thereof, of links *d d*, pivoted to said brackets in transverse alignment with the axis of said box, levers D, and weights E, said links connecting said brackets and levers, as set forth.



472,476. THILL-SUPPORT. ANDREW H. FLETCHER, Kingsville, Canada, assignor of one-half to Edwin Bara Harris, same place. Filed Feb. 20, 1892. Serial No. 422,180. (No model.) Patented in Canada Jan. 2, 1892, No. 38,043.

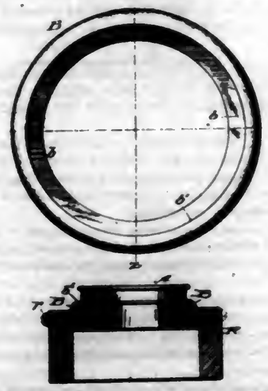


Claim.—1. The combination, with a thill-coupling connecting the thills and axle of a vehicle, of a bent-wire thill-supporting spring having a tongue G, inserted between the thill-coupling and thill-iron, said spring having spiral coils H H' surrounding the vehicle-axle B, and arms J J', connected at their extremities and extending forwardly of the coupling and supporting the thills A, as set forth.

2. The combination, with a thill-coupling connecting the thills and axle of a vehicle, of a bent-wire thill-supporting coiled spring having one end inserted between two members of said coupling, a spiral coil surrounding the vehicle-axle, and the other end of said spring extending in the direction of the thills and bent laterally under the thill to support the thills, as set forth.

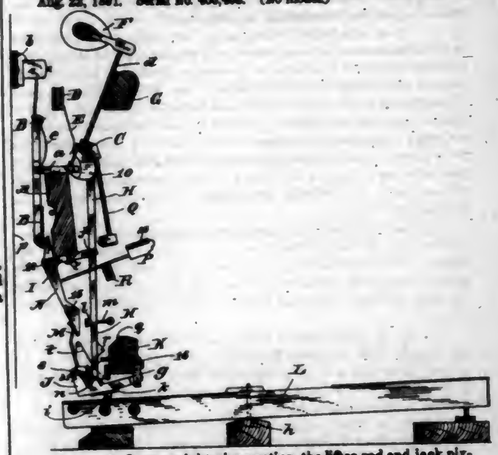
472,477. SPINNING MACHINERY. JOHN F. FOSS, Lowell, Mass. Filed Jan. 9, 1892. Serial No. 417,512. (No model.)

Brief.—The ring A is circular, while the holder B is slightly elliptical and adapted by pressure on its longer axis to be brought to a circular form, when the ring A can be inserted. Upon releasing the holder from the pressure it tends to resume its elliptical form and thus firmly holds the ring.



Claim.—The combination, with the spinning-ring, of the holder formed of a continuous elastic metallic ring having a ring-receiving recess normally elliptical in shape and adapted by compression of the holder in the line of the longer diameter of the ellipse to be brought to the circular form requisite in order to permit the insertion of the spinning-ring, substantially as and for the purposes hereinbefore set forth.

472,478. UPRIGHT-PIANO ACTION. GEORGE M. GUILD, Boston, Mass., assignor, by mesne assignments, to I. A. Guild, same place. Filed Aug. 22, 1891. Serial No. 403,463. (No model.)



Claim.—1. In an upright-piano action, the lifter-rod and jack pivoted to the hammer-heel and provided with the button *l*, in combination with the jack-butt pivoted to the flange of the rail K, the throw-off spoon M, projecting from the jack-butt, and the intermediate lever N, arranged between the throw-off spoon and the button *l*, substantially as set forth.

2. In an upright-piano action, the lifter-rod and jack pivoted to the hammer-heel and provided with the block *r*, in combination with the rail K, having a bevel or incline *q*, and the jack-butt, substantially as described.

3. In an upright-piano action, the back-catch P, secured to the lever N, the latter operated by the jack-butt, in combination with the bumper Q, projecting from the hammer-heel, substantially as described.

4. In an upright-piano action, the combination, with the lifter-rod and jack pivoted to the hammer-heel and operated by the jack-butt, as described, of the lever N, the back-catch P, secured to and projecting from the front side of the lever N, and the bumper Q projecting down from the hammer-heel and adapted to be caught and held by the back-catch P as the lever N is actuated, substantially as described.

5. In an upright-piano action, the combination of the lifter-rod and jack pivoted to the hammer-heel and provided with the button *l*, the jack-butt J, provided with the throw-off spoon M, the lever N, the back-catch P, secured to the lever N, and the bumper Q, projecting from the hammer-heel, said back-catch when actuated by the lever N being brought squarely against the end of the bumper Q, substantially in the manner and for the purpose set forth.

6. In an upright-piano action, the lifter-rod and jack pivoted to the hammer-heel and provided with the button *l*, in combination with the jack-butt J, pivoted to the flange of the rail K, the intermediate lever N, the throw-off spoon M, projecting from the jack-butt and adapted to move the lever N into contact with the button *l*, the rail K, with its bevel or incline *q*, and the block *r*, the latter adapted by contact with the incline *q* to seat the lifter-rod and jack upon the shoulder *n* of the jack-butt, substantially as set forth.

7. In an upright-piano action, the combination, with the lifter-rod and jack pivoted to the hammer-heel and operated by the jack-butt, as described, of the lever N, the back-catch P, secured to and projecting from the front side of the lever N, and the elongated bumper Q, projecting down from the hammer-heel and adapted to be caught and held without slip by the back-catch as the lever N is actuated, substantially as and for the purpose set forth.

8. In an upright-piano action, the jack-butt J, pivoted at its front end to the flange of the rail K and having the seat or shoulder *n* and stop *s*, and the lifter-rod and jack H, pivoted to the hammer-heel and resting at its lower end upon said jack-butt, in combination with the key *b*, provided with the adjusting-screw *i*, the latter adapted to contact with the under side of the jack-butt to lift the same, substantially as described.

9. In an upright-piano action, the combination, with the lifter-rod and jack pivoted to the hammer-heel and the jack-butt J, pivoted to the flange of the rail K, of the spring *f*, secured at one end to the jack-

butt and connected at its opposite end to the lifter-rod and jack, substantially as and for the purpose set forth.

10. In an upright-piano action, the combination, with the lifter-rod and jack and the jack-butt, of the spring *t*, pivoted at one end to the jack-butt, whereby it is free to oscillate thereon as the lifter-rod and jack is thrown off and onto the seat *n*, said spring *t* being provided at its opposite end with a hook engaging a pin on the lifter-rod and jack, all operating substantially as described.

11. In an upright-piano action, the lifter-rod and jack pivoted to the hammer-heel and provided with the button *l*, in combination with the jack-butt J, pivoted to the flange of the rail K and having the seat or shoulder *n*, the intermediate lever N, the throw-off spoon M, projecting up from the jack-butt and adapted to move the lever N into contact with the button *l*, the rail K, with its bevel or incline *q*, the block *r*, adapted by contact with the incline *q* to seat the lifter-rod and jack upon the shoulder *n* of the jack-butt, and the spring *t*, secured at one end to the jack-butt and at the opposite end to the lifter-rod and jack, all operating substantially in the manner and for the purpose set forth.

12. In an upright-piano action, the combination, with the lifter-rod and jack H and the jack-butt J, operating as described, of the flange I, made adjustable upon the rail A and provided with a guide slot or groove *f* for the lifter-rod and jack, whereby the latter can be adjusted to bring it into line with the jack-butt, substantially as described.

13. In an upright-piano action, the combination of the damper and damper-lever, the latter pivoted to the flange *a* of the rail A, the pivoted jack-butt, and an intermediate lever operated by the jack-butt and adapted to actuate the damper-lever on the depression of the key, substantially as set forth.

14. In an upright-piano action, the combination of the damper and damper-lever, the latter pivoted to the flange of the rail A, the intermediate actuating-lever N, and the jack-butt J, with its throw-off spoon M, the latter adapted to contact with the lever N to actuate the damper-lever on the depression of the key, substantially as described.

15. In an upright-piano action, the combination of the rail A, flange *a*, hammer F, hammer-spring E, guide-flange I, with its slot *f*, lifter-rod and jack H, with its adjustable button *l* and block *r*, the rail K with its bevel or incline *q*, the jack-butt J, pivoted to the flange *g* of the rail K and provided with the seat or shoulder *n* and throw-off spoon M, the key L, provided with the adjusting-screw *i*, the lever N, the back-catch P, secured to the lever N, the bumper Q, projecting from the hammer-heel, and the spring *t*, having one end connected with the jack-butt and the other end with the lifter-rod and jack, all constructed and arranged to operate substantially as set forth.

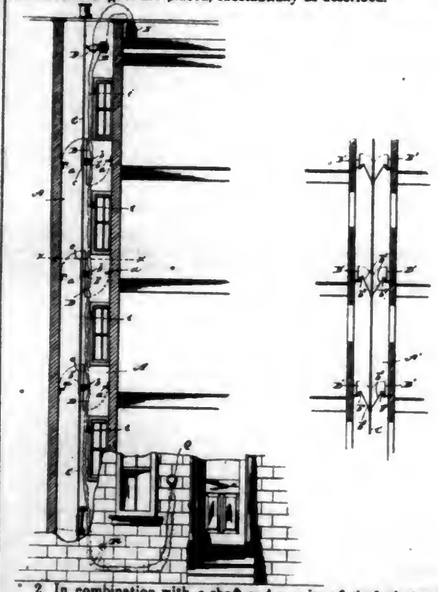
16. An action for upright-pianos, substantially as described, the same consisting of the rail A, flange *a*, hammer F, guide-flange I, with its slot *f*, lifter-rod and jack H, with its adjustable button *l*, and block *r*, the rail K, with its bevel or incline *q*, the jack-butt J, pivoted to the flange *g* of the rail K and provided with the seat or shoulder *n* and throw-off spoon M, the spring *t*, having one end connected with the jack-butt and the other end with the lifter-rod and jack, the key L, provided with the adjusting-screw *i*, the lever N, the bumper Q, projecting from the hammer-heel, the damper *b*, damper-lever B, pivoted to the flange *a* and adapted to be actuated by the lever N, and the damper-spring *c*, all constructed and arranged to operate substantially as described.

17. In an upright-piano action, the combination of the rail A with its flange *a*, the hammer F, hammer-spring E, guide-flange I with its slot *f*, lifter-rod and jack H, with its adjustable button *l* and inclined block *r*, the rail K, with its bevel or incline *q*, the jack-butt J, pivoted to the flange *g* of the rail K and provided with the seat or shoulder *n* and throw-off spoon M, the spring *t*, having one end pivoted to the jack-butt and the other end detachably connected with the lifter-rod and jack, the key L, provided with the adjusting-screw *i*, the lever N, the back-catch P, secured to the lever N, the bumper Q, projecting from the hammer-heel, the damper *b*, damper-lever B, pivoted to the flange *a* and adapted to be actuated by the lever N, and the damper-spring *c*, all constructed and arranged to operate substantially as set forth.

18. In an upright-piano action, the combination of the lifter-rod and jack H, pivoted to the hammer-heel and provided with the adjustable button *l*, the jack-butt J, pivoted to the flange *g* of the rail K and provided with the throw-off spoon M, the lever N, and the key L, with its adjusting-screw *i*, the latter forming a rest for the jack-butt, all operating substantially as set forth.

472,479. FIRE-SHIELD FOR BUILDINGS. AUGUSTUS A. HAGEN, New York, N. Y., assignor, by mesne assignments, of seven-eighths to Fritz Sternberg, Newark, N. J. Filed May 19, 1891. Serial No. 393,314. (No model.)

Claim.—1. The combination of an air-shaft, closing partitions arranged at each floor, a gravitating rod connected to the partitions to positively close them when it falls, a dash-pot, a piston working in this dash-pot and connected to said gravitating rod, a pivoted segmental lever connected to said gravitating rod, a movable lever normally engaging said segmental lever, an electro-magnet to withdraw said movable lever and free the segmental lever, thermostats placed at various points in the air-shaft, and an electric circuit in which the thermostats and electro-magnet are placed, substantially as described.



2. In combination with a shaft and a series of shaft-closing devices therefor, said devices being adapted to extend across the shaft at each floor, of a vertically-movable gravitating rod connecting the closing devices and adapted to hold the same open when in a raised position, a frictional brake mechanism for holding said rod in a raised position, and electrically-controlled means for releasing said brake mechanism, as and for the purpose described.

3. In combination with a series of screens or partitions, the vertically-movable rod to operate the same, the pivoted segment attached to said rod, the pivoted brake-shoe bearing against such segment, the magnet to act on said shoe, and circuit-closing devices to energize said magnet, substantially as described.

4. In combination with the series of screens or partitions, the vertically-movable rod to operate the same by its gravity, the dash-pot to regulate its descent, and the pivoted weighted lever swinging from a vertical or approximately vertical to a horizontal or approximately horizontal position to counterbalance the increased resistance of the dash-pot during the latter portion of the rod's movement, substantially as described.

472,480. ADJUSTABLE ARMATURE FOR ELECTRO-MAGNETS. EMIL HOFMANN, Ballard Vale, Mass., assignor to the Craighead & Kintz Company, same place. Filed Sept. 22, 1891. Serial No. 406,475. (No model.)

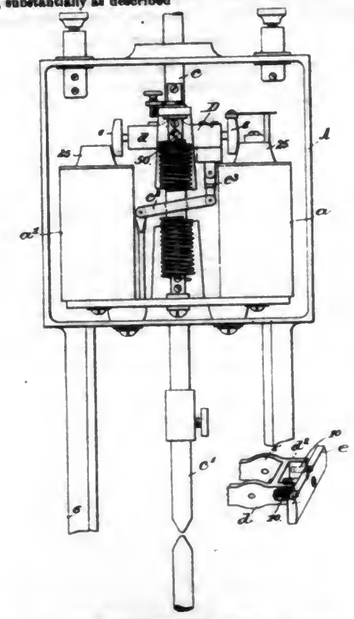
Claim.—1. The combination, with an electro-magnet, of an armature-carrier having recessed side arms, an armature, guide-pins thereon to enter said recessed side arms, and a screw having an annular groove connecting said armature and carrier, and a screw or pin entering said groove, substantially as described.

2. The combination, with an electro-magnet, of an armature-carrier, a screw therein having an annular groove and an armature, and a screw or pin entering said groove, to operate substantially as described.

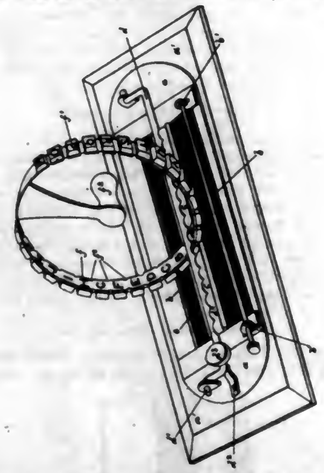
3. The combination, with an electro-magnet, of an armature-carrier having side bars, an armature, a screw adjustably connecting said carrier and armature and to move the same with relation to said carrier, and guide-pins intermediate said side bars and armature, substantially as described.

4. The combination, with an electro-magnet, of an armature-carrier having recessed side bars, an armature, a screw 5 to move the same toward and from said side bars, and the guide-pins 10, connected to said armature and moving in said recessed side bars, substantially as described.

5. The combination, with an electric lamp containing a controlling magnet, of an armature-carrier and an armature, and a screw in said carrier to positively move said armature with relation to its carrier, an annular groove in said screw, and a screw or pin entering in said groove, substantially as described



472,481. TYPE-WRITING MACHINE. JOHN JACKSON, London, England. Filed Dec. 22, 1891. Serial No. 415,944. (No model.)

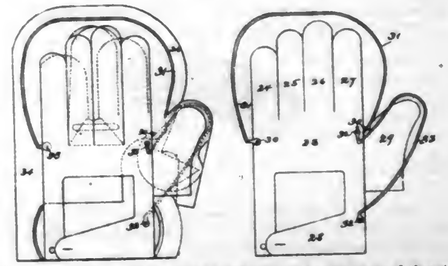


Claim.—1. In a type-writer, the combination of a base-plate, a longitudinally-slotted plate carried by said base-plate and so arranged upon said base-plate that a sheet of paper may be passed between the two, inking-pads arranged upon the surface of said base-plate, a circular printing disk or bar recessed upon its periphery and having letters or symbols formed thereon, and means secured to the base-plate to insure the bringing of the required letter or symbol over the longitudinal slot *c*, as set forth.

2. In a type-writer, the combination of a base-plate, a slotted plate carried by said base-plate and so arranged relative to each other that a sheet of paper may be passed between the two, rollers carried by said base-plate and adapted to protrude through said base-plate to come in contact with the paper placed between said base and slotted plates to feed it along, a notched rod mounted upon the said base-plate, inking-pads located upon the surface of the said base-plate, a circular printing bar or disk having one of its edges serrated to engage the said notched bar and passing beneath the said bar, means for pressing down the said notched bar and circular printing-disk, and means for automatically raising said notched bar, as set forth.

3. In a type-writing machine, the combination of a base-plate, a longitudinally-slotted plate carried by said base-plate and so arranged as to permit the passage of a sheet of paper between them, inking-pads carried by said base-plate, a notched bar mounted upon said base-plate, a pallet for pressing downward the said bar, a spring for raising it, as described, rollers connected by a rod and passing through recesses formed in said base-plate to come in contact with the sheet of paper to feed it along, and a circular printing-disk passing beneath said notched bar and provided in its edge with serrations which engage with said notched bar, substantially as and for the purposes set forth.

472,482. GLOVE FOR BASE-BALL CATCHERS. THEODORE A. KENNEDY, Des Moines, Iowa. Filed May 13, 1889. Serial No. 310,672. (No model.)



Claim.—1. A glove for base-ball players, having secured thereto a fender of approximately U shape extended over the ends and in the plane of the fingers, whereby the sides and ends of said fingers are protected.

2. A glove for base-ball players, having secured thereto a fender of approximately U shape extended over the end and in the plane of the thumb, whereby the sides and end of the thumb are protected.

3. The U-shaped fender 31, in combination with the sockets 30 30.

4. The U-shaped fender 33, in combination with the sockets 32 32, fixed to the glove.

5. A ball-player's glove composed of an open back that is provided with a strap to overlap the back of the wearer's wrist, a fender fixed to the front and side portions of the back to extend forward around the ends of the fingers, a fender fixed to the side of the glove to extend forward around the end of the thumb, cushioning material fixed to the front of the glove, which cushioning material is concaved at the center of its palm portion, and a cover extended over the front of the cushioning material and fixed to the side of the glove.

6. In a ball-catcher's glove, the combination, with a palm extending over the entire inside of the hand and a back fixed thereto, of a fender extending around the forward end portion of the glove and the thumb thereof, as and for the purposes set forth.

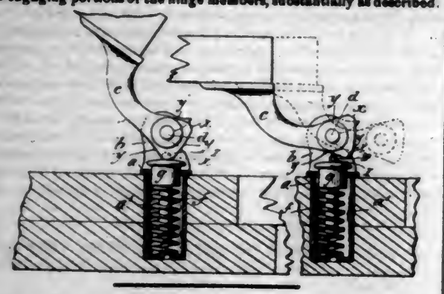
7. In a ball-catcher's glove, the combination, with a padded palm and a back fixed thereto, of a protecting-fender extending around the forward end portion of the glove and an auxiliary fender extending around the thumb of said glove, whereby both the fingers and thumb of the wearer are protected against the impact of a forcibly-thrown ball.

8. In a ball-player's glove, the combination, with a glove-shaped lining, of a fender extended around the outer edges of the finger portion of said lining, a fender extended around the outer edges of the thumb portion of said lining, cushioning material fixed upon the front of said lining, which cushioning material is concaved at its central portion, and a cover extended over and fixed to the front of said lining to inclose and secure the said cushioning material.

472,483. LOCK-HINGE. GEORGE L. LOOMIS, Northampton, Mass., assignor to himself, James H. Loomis, Chester P. Loomis, William R. Stults, and Charles Coffey, Granby, Conn. Filed Sept. 9, 1891. Serial No. 405,175. (No model.)

Claim.—A lock-hinge consisting of two members *c* and *a*, the former having the lateral pivot-forming projections *d d* and the member *a* comprising a socketed casing opened at its outward end and provided with the opposing hook-formed legs *b b*, adapted for the engagement therewith of said projections *d*, the spring disposed in said casing and exerting an outward forcing action in relation to the member

c, and one of the hook-formed lugs having a hole x, located as described and adapted for the passage therethrough and engagement therein of a pin or the like for temporarily maintaining the spring under compression for relieving the bind exerted by the spring between the engaging portions of the hinge members, substantially as described.



472,484. PNEUMATIC TIRE. LUCIUS J. PHELPS, Passaic, N. J. Filed Nov. 14, 1891. Serial No. 411,934. (No model.)



Claim.—1. A pneumatic tire having a cushion of loose yielding material secured in place to prevent bunching and partially filling the air-chamber, substantially as described.

2. A pneumatic tire having a cushion formed of a rope of loose yielding material extending through and partially filling the air-chamber and having its ends united, substantially as described.

472,485. INFLATABLE TUBE. LUCIUS J. PHELPS, Passaic, N. J. Filed Dec. 19, 1891. Serial No. 415,588. (No model.)



Claim.—1. An inflation-tube having a tube formed of a plurality of independent layers of compressed rubber, substantially as described.

2. An inflation-tube having a tube formed of a plurality of independent layers of thin compressed rubber and a tube outside the same formed of a single comparatively thick layer of compressed rubber, substantially as described.

3. An inflation-tube having a tube formed of a plurality of independent layers of thin compressed rubber, a tube outside the same formed of a single comparatively thick layer of compressed rubber, and a tube of expanded rubber outside the latter, substantially as described.

4. An inflation-tube having a tube formed of a plurality of independent layers of thin compressed rubber, a tube outside the same formed of a single comparatively thick layer of compressed rubber, a tube of expanded rubber outside the latter, and a cover outside the expanded tube, substantially as described.

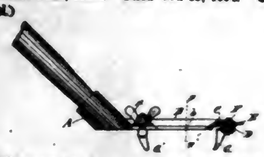
5. An inflation-tube having a tube of compressed rubber and a tube of expanded rubber outside and secured to the same throughout its surface, substantially as described.

6. An inflation-tube having a tube of compressed rubber, a tube of expanded rubber outside and secured to the same throughout its surface, and a cover outside the expanded tube, substantially as described.

7. The method of forming a tube of compressed rubber, which consists in forming a rubber tube of larger diameter than normal and cementing to it an outer tube of expanded rubber, so that the inner tube is compressed by the contraction of the outer tube, substantially as described.

8. The method of forming a tube of compressed rubber, which consists in placing a rubber tube of larger diameter than normal upon a bar, cementing to the tube a sheet of expanded rubber, and withdrawing the bar from the tube, substantially as described.

472,486. COMBINED SCRUBBER AND MOP-HEAD. ELIJAH F. KOWS, Granite Falls, Minn. Filed Oct. 13, 1891. Serial No. 408,571. (No model.)



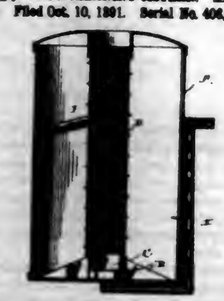
Claim.—The combined scrubber and mop-head, as shown and described, consisting of the T-shaped body B C, having the seat A for the operating-handle located at an angle to the body, the slot *b* in the stem B, the scrubber-clamping plate D, the bolts and nuts F F, the curved projections G, fixed to the plate D, the sliding curved clamp or projection G', working in said slot, and the thumb-nut H for securing the said sliding clamp in whatever position set, substantially as set forth.

472,487. BICYCLE. MARTIN D. SMALLEY, Chicago, Ill. Filed July 6, 1891. Serial No. 398,590. (No model.)



Claim.—A spring-fork for bicycles, &c., comprising, in combination, a main steering forked member 2 3, curved forwardly and having journals at its lower ends, a swinging forked member journaled thereto and having a bent or angle formation, with its straight portions extended up in front of the main fork 3 in an approximately parallel direction thereto and its bent portions extending forwardly and provided at their ends with journals for the steering-wheel, and a U-shaped spring 10, interposed between the upper end of the swinging forked member and the main steering member, as and for the purpose set forth.

472,488. SELF-CLEANING CISTERN. ASHER D. STRONG, Ashtabula, Ohio. Filed Oct. 10, 1891. Serial No. 406,900. (No model.)



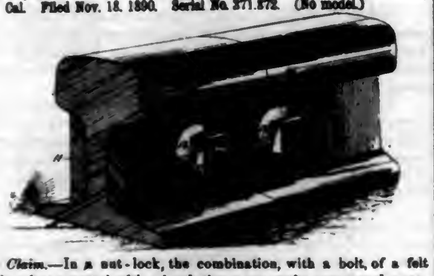
Claim.—1. In a cistern or filter, an inlet-pipe connected therewith to cause the water therein to rotate around a central vertical line, vertical wings resting upon the bottom of the casing and extending radially from its center to form pockets, and an overflow-pipe having its inlet end at the bottom of the casing to convey the sediment from these pockets, the parts combined substantially as specified.

2. In a cistern, a casing, an inlet-pipe connected therewith to cause the water therein to rotate around a central vertical line, vertical wings at the bottom of the casing and extending radially from its center to form pockets, the wings being inclined from their outer to their inner ends to form pockets that increase in depth toward the center of the casing, and an overflow-pipe connected with the said pockets, substantially as described.

3. In a cistern, a casing, an inlet-pipe extending therein substantially tangentially thereto for causing the water to rotate around a central vertical line, an inverted cup at the bottom of this vertical line, vertical wings extending radially from this cup toward the side walls of the casing and resting upon the bottom, and an overflow-pipe connected with the bottom of the casing below the said cup, all combined as and for the purpose described.

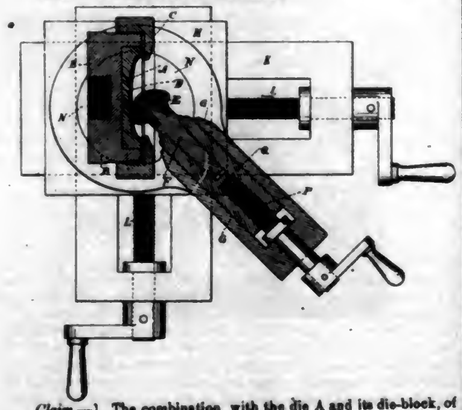
4. In a cistern, a casing, an inlet-pipe connected therewith to cause the water to rotate around a central vertical line, vertical wings extending radially from the center of the bottom of the casing toward the side walls thereof and resting upon the bottom, an inverted cup at the center of the casing and supported upon these wings a short distance above the bottom of the casing, and an overflow-pipe connected with the bottom of the casing below the cup, all combined to operate in the manner described.

472,489. NUT-LOCK. WILLIAM P. SWEETLAND, San Francisco, Cal. Filed Nov. 18, 1890. Serial No. 371,872. (No model.)



Claim.—In a nut-lock, the combination, with a bolt, of a felt washer impregnated with a hardening preservative compound, a metallic washer of less diameter than the felt washer arranged upon said felt washer, and a nut, also of a diameter less than the felt washer, arranged upon the metallic washer, substantially as shown and described.

472,490. ORNAMENTING WATCH-CASES. CHARLES WILHELM, New York, assignor to Frederic Ecanbert, Brooklyn, N. Y. Filed June 15, 1891. Serial No. 396,305. (No model.)



Claim.—1. The combination, with the die A and its die-block, of a clamping-ring for holding the edge of the watch-case lid or similar article while the same is within the die, a pressure-roll of conoidal configuration, having a convex operative surface, and an arbor and stock for supporting the same at an inclination to the axis of the mandrel and die, and means for pressing the roller against the watch-case back or lid, substantially as set forth.

2. The combination, with the die, die-block receiving the die, and a clamping-ring for clamping a watch-case lid or similar article into the die, of a pressure-roll having a rounding conical configuration, an armor-stock and adjusting mechanism and a pivotal connection for the stock, and a slide-rest for the pivotal connection, substantially as set forth.

3. The combination, with the die having an internal ornamented surface corresponding to the surface of the watch-case or similar article to be ornamented, of a washer recessed for the reception of the hinge-piece, and a clamping-ring for securing the parts in position, substantially as set forth.

4. The method herein specified of ornamenting watch-case lids and similar articles, consisting in introducing the lid-blank into the die having an ornamented interior surface to correspond to the ornament to be produced, clamping the lid or similar article at its edges, rotating such die and lid and pressing against the interior of such lid, a conical roll having a rounded surface and revolving upon an axis at an inclination to the axis of rotation of the lid, and moving such roll bodily toward or from the center of the lid, substantially as set forth.

5. The method herein specified of ornamenting watch-case lids and similar articles, consisting in introducing the lid-blank into a die having an ornamented interior surface corresponding to the ornaments to be produced, clamping the lid or similar article at its edges, rotating such lid and die and pressing against the interior of such lid, a conical roller having a rounded surface and revolving upon an axis at an inclination to the axis of rotation of the lid, and rocking such roll by changing the inclination of the axis of rotation to the axis of rotation of the die, substantially as set forth.

6. The method herein specified of ornamenting watch-case lids or similar articles, consisting in introducing the lid-blank into a die ornamented on its interior surface to correspond to the ornaments to be produced, clamping the lid or similar article at its edges, pressing against the interior of such lid, a conical roll having a rounded surface and revolving upon an axis at an inclination to the axis of the lid, rocking such roll by changing the inclination of the axis of rotation to the axis of the die, and moving such roller bodily toward or from the center of the lid and rotating the roll and the lid, substantially as set forth.

472,491. WHIFFLETREE-HOOK. THOMAS ANDRESS, Pittsville, Wis. Filed May 7, 1891. Serial No. 391,857. (No model.)



Claim.—As an improved article of manufacture, a whiffletree-hook having its bent end provided with a dovetail groove and a lug consisting of a collar provided upon its interior with an inwardly-extending dovetail tenon to engage the groove and having upper and lower projections on the outer surface thereof at diametrically-opposite points, said upper projection provided with a rounded edge terminating in a square shoulder, substantially as set forth.

472,492. AUTOMATIC APPARATUS FOR THE SALE OF NEWSPAPERS. ALEXANDER BROS, Seattle, Wash., assignor of one-half to D. E. Durie, same place. Filed June 30, 1891. Serial No. 398,077. (No model.)

Claim.—1. An apparatus for the automatic sale of newspapers, consisting of a case having an inclined bottom, a supporting carrier or back against which the papers rest and rails or ledges upon which the lower edges of the papers are supported, weights by which the carrier is pressed forward, the stop-plates by which the papers are arrested at the front, and the plates N, having the separating-points N' by which all the papers but the front one are arrested, in combination with the rotary oscillating shaft O with cams whereby the plates are actuated in opposite directions and a single paper delivered, while the others are arrested, substantially as herein described.

2. The combination, with the case having a movable back or carrier by which papers are pressed forward and the rails upon which the lower edges of the papers are supported, of the stop-plates M and N, acting in opposition to each other, the oscillating shaft O, and the cams and levers whereby one plate is elevated and the other depressed to deliver a single paper and arrest the remainder, substantially as herein described.

3. The combination of the containing-case having a movable back or carrier by which the papers are pressed forward, the stop-plates acting alternately to check and release the papers, means for elevating one plate and depressing the other to deliver a single paper and arrest the remainder, and mechanism, substantially as described, for adjusting the check-plate for papers of varying thicknesses.

4. The containing-case having the movable back or carrier by which the papers are pressed forward and the rails upon which the lower edges of the papers are supported, the stop-plates M and N, acting alternately to check and release the papers, the oscillating shaft O and the cams and levers whereby one plate is elevated and the other depressed to deliver a single paper and arrest the remainder, and the stop-plate movable by the rotation of the shaft O to open the delivery-passage when a paper is released and to close it after the escape of the paper, substantially as herein described.



5. The case having the inclined bottom and supporting-rails upon which the lower edges of the folded papers rest, a carrier with guides or travelers by which it is moved parallel with the supporting-rails, cords connected with the carrier, passing over direction-pulleys over which the cords pass, and weights suspended from the opposite end of the cords, whereby the carrier is actuated, substantially as herein described.

6. The supporting-rails, carrier, and stop-plates, and the rotary shaft O by which said plates are operated to deliver a single paper at a time, in combination with the escapement-wheel, the lever actuated thereby, and the lever-arm upon the rotary shaft, connected with the escapement-lever, whereby the shaft is rotated in one direction by the action of the escapement, a grooved spiral arm fixed to the shaft, a cord adapted to travel in said groove, and a weight supported from the end of the cord, whereby the shaft is returned after the escapement is released, substantially as herein described.

7. A case containing the papers, a movable carrier, supporting-rails, stop and releasing plates whereby the papers are delivered one at a time, and a rotary shaft, levers, and escapement-wheel by which the mechanism is actuated, in combination with a pawl engaging ratchet-teeth upon the escapement-wheel, a lever by which said pawl is lifted to allow the wheel to turn one tooth, a plate upon the end of the lever, a delivery-tube in line above said plate through which the coin passes and strikes the plate to actuate the lever, and the receptacle into which the coin is delivered from the plate, substantially as herein described.

8. A case containing papers, a movable carrier, supporting-rails, stop and releasing plates whereby the papers are delivered one at a time, a rotary oscillating shaft, levers, and escapement-wheel, a pawl engaging ratchet-teeth upon this wheel, a coin-actuated lever by which the pawl is lifted to allow the wheel to move forward the space between two adjacent teeth, a drum connected with the wheel, a cord, direction-pulley, and weight acting to rotate the wheel, in combination with an indicator actuated by the weight to show when the paper-case is empty, substantially as herein described.

9. A case containing papers, a movable carrier, supporting-rails, stop and releasing plates whereby the papers are delivered one at a time, a rotary oscillating shaft, levers, and escapement-wheel by which the mechanism is actuated, said wheel having one or more teeth within the space traveled by the wheel to actuate the releasing mechanism, a pawl engaging these teeth, a coin-actuated lever by which the pawl is disengaged to allow the wheel to advance one tooth, and a delivery-tube through which coins of less value than the price of the paper are discharged, whereby the pawl is disengaged and the escapement-wheel advanced a single space for each coin until the number of single coins sufficient to pay for a paper have been introduced, substantially as herein described.

10. The containing-case, the movable carrier and the stop-plates moving in opposition to each other to release a single paper and check the rest, a rotary shaft having cams and arms and a mechanism by which the shaft is actuated, and a plate carried by the shaft and movable to open the discharge-aperture when a paper is released and to close it thereafter, substantially as herein described.

472,498. APPARATUS FOR BORING ARTESIAN WELLS. FRANK O. BROWN, Dallas, Tex. Filed Nov. 28, 1891. Serial No. 413,367. (No model.)



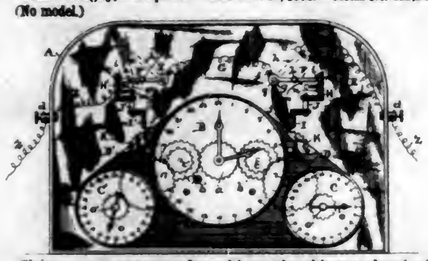
Claim.—1. In combination, a fluted hemispherical mass of corundum for boring Artesian wells, said mass being provided with cutting-edges which extend from the apex to the base, a metallic core embedded within the mass, and means for attaching it to a drill-rod, substantially as described.

2. In combination, a socket the lower portion of which is provided with transverse holes and the upper portion of which is provided with means for securing it to a drill-rod for boring Artesian wells, and a mass of corundum secured to the lower portion of the socket, the sides of the mass being fluted and provided with sharp cutting-edges, substantially as described.

3. In combination, a flat socket provided at its upper portion with a nut and tapped and screw-threaded, a mass of corundum secured to the flat portion below the nut, the sides of which are fluted and provided with sharp cutting-edges, and means for securing it to the lower end of a drill-rod for boring Artesian wells, substantially as described.

4. In combination, a socket provided with a vertical opening, a mass of corundum secured thereto, having one or more perforations leading from the bottom of the vertical opening in the socket to the point of the mass, said mass having its sides fluted and provided with sharp cutting-edges, and a hollow drill-rod with its lower end in the socket and its upper end adapted to receive a rotary motion, and a stream of water, substantially as described.

472,494. AUTOMATIC ELECTRIC-LAMP LIGHTER AND EXTINGUISHER. JOHN H. CAUGHY, Baltimore, Md., assignor of one-half to Frank J. Caughy, same place. Filed Nov. 17, 1891. Serial No. 412,242. (No model.)



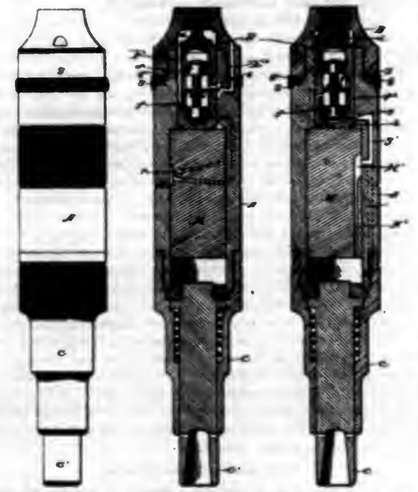
Claim.—1. An apparatus for making or breaking an electric circuit at a predetermined time, comprising a clock provided with an alarm-movement, a spring-actuated switch-arm in the circuit, a pivoted latch to separately engage and hold said switch-arm against the spring action, and means actuated by the alarm-movement for tripping the latch, and thereby disengaging it from the switch-arm and releasing the latter.

2. An apparatus for making or breaking an electric circuit at a predetermined time, comprising a clock provided with an alarm-movement, a spring-actuated switch-arm in the circuit, a pivoted latch to separately engage said switch-arm and hold it against the spring action, and a cog-wheel in gear with the alarm-movement and having a lug projecting from its periphery to trip the latch and thereby disengage it from the switch-arm and release the latter.

3. An apparatus for making or breaking an electric circuit at a predetermined time, comprising a clock provided with an alarm-movement, a pivoted and spring-actuated switch-arm in the circuit, a latch in the form of a bent lever to engage and hold the switch-arm, a similar lever jointed to said latch, and a cog-wheel in gear with the alarm-movement and having a projection or lug to trip said lever, and thereby cause the latch to release the switch-arm.

4. An apparatus for making or breaking an electric circuit at a predetermined time, comprising a clock provided with an alarm-movement, a pivoted and spring-actuated switch-arm in the circuit, a spring-actuated latch having a catch at one end to take over and hold the switch-arm and beveled on its upper side, a knob on the catch projecting through a slot in the case, and a cog-wheel in gear with the alarm-movement and provided with a projection or lug to trip the said latch, and thereby release the switch-arm.

472,495. PNEUMATIC TOOL. DANIEL DRAWBAUGH, Eberly's Mill, Pa. Filed Dec. 7, 1891. Serial No. 414,291. (No model.)



Claim.—1. In a pneumatic tool, the combination, with the casing having the cylinder and valve-chest formed in alignment therein and separate from each other, of the tool-stock, the piston, the valve controlling the ports and passages leading from the valve-chest to the cylinder, and the passages leading to opposite ends of the valve controlled by the piston, substantially as described.

2. In a pneumatic tool, the combination, with the casing having the central longitudinal opening therein and the piston mounted in the lower portion of said opening, of the valve-bushing mounted in the upper end of said opening, separating the valve-chest from the cylinder and having the ports or channels formed in the exterior thereof, the valve carried by said bushing, the tool-stock, and the cap-sections, substantially as described.

3. In a pneumatic tool, the combination, with the casing having the central longitudinal opening of smaller diameter at one end, the tool-stock and cap-section, substantially as described, of the valve-bushing mounted in the smaller end of said longitudinal opening and separating the valve-chest and cylinder, the valve carried by the bushing, the piston mounted in the larger end of said opening, and the ports or passages controlled by the valve for admitting and exhausting pressure to opposite ends of the piston, substantially as described.

4. In a pneumatic tool such as herein described, the combination, with the casing containing the cylinder, the piston, and tool-stock, of the valve-bushing carried by said casing in alignment with the cylinder at one end thereof and having longitudinal channels formed in its exterior communicating with channels leading to opposite ends of the cylinder, and a valve in said bushing controlling the admission and exhaust of pressure to opposite ends of the cylinder, respectively, substantially as described.

5. In a pneumatic tool, the combination, with the casing having the central longitudinal opening of smaller diameter at one end than at the other and the piston mounted in the larger end of said opening, of the valve-bushing mounted in the smaller end of said opening, with the longitudinal passages formed in its exterior, one of said passages opening out at the upper end and constituting a live-pressure passage, another of said passages opening out at the lower end and constituting the passage to the upper end of the cylinder, while an intermediate passage communicates with a passage in the casing leading to the lower end of the cylinder, and a valve controlling said passages, substantially as described.

6. In a pneumatic tool adapted to be held in the operator's hand, the combination, with the casing having the cylinder and valve in alignment with ports and passages, substantially as described, and the piston and valve, of the cap inclosing the end of the casing, having the entrance-port in line with the valve, the point-section, and the tool-stock movably held in said point-section independent of the piston, substantially as described.

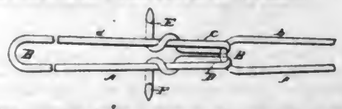
7. In a pneumatic tool, the combination, with the casing having the cylinder and valve-box formed therein, with the ports for conveying pressure and exhaust from opposite ends of the valve-opening into the valve-box at a point slightly removed from the ends of the same, and the ports and passages leading from the valve-box to opposite ends of the cylinder, of the valve mounted in the valve-box for controlling said last-mentioned ports and passages and the piston controlling the passages leading to the ends of the valve-box, substantially as described.

8. In a pneumatic tool, the combination, with the valve and piston, of their inclosing casing having the ports controlled by the piston for operating the valve opening into the valve-box at a point slightly removed from the ends, whereby cushions are formed for the valve at each extreme of its movement, substantially as described.

9. In a pneumatic tool, the combination, with the casing having the independent valve and piston is of the single supply-passage having two ports and the passages leading to each end of the valve formed in the casing, the single passage in the piston for alternately connecting the pressure and each passage leading to the valve and the passage in the piston open to exhaust and alternately communicating with said last-mentioned passages, substantially as described.

10. In a pneumatic tool, the combination, with the casing or cylinder, with air-passages leading from the air-port to each end of the cylinder through the valve-box and from the air-port to the cylinder at an intermediate point and from an intermediate point to opposite ends of the valve-box, said intermediate ports being and formed from the outside, of the valve-box, the valve working therein and controlling the passages leading to the ends of the cylinder, and the piston working in the cylinder and having air-passages for connecting the intermediate ports in the cylinder leading to the valve, the mouths or ports of said passages in the piston being elongated and narrow toward each end, whereby the valve is started and arrested gradually, substantially as described.

472,496. BARBED-WIRE FENCE. JOHN W. GRISWOLD, Troy, N. Y. Filed June 15, 1891. Serial No. 396,260. (No model.)



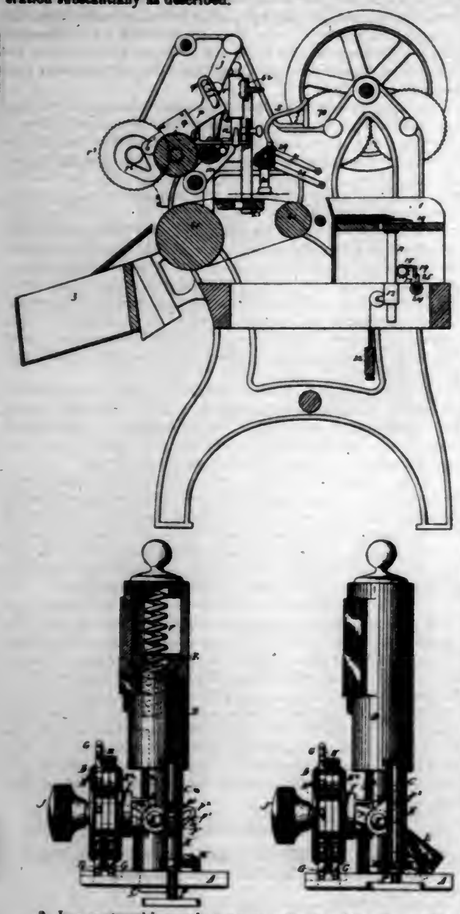
Claim.—A wire fencing composed of a series of enchained links, each link being composed of a length of wire doubled to form a loop or eye B at one extremity of the link and having its ends bent over to form eyes C D, the extremities E F of said wire passing between the strands or parallel parts of the link without crossing one over the other and each end being wrapped or twisted completely around its own standing part and then turned outwardly to form a barb, the eye B of one link engaging with the eyes C D of the next adjacent link.

472,497. POSTMARKING AND STAMP-CANCELING MACHINE. WILLIAM GROTE, Seattle, Wash., assignor of five-sixths to Thomas S. Constantine, New York, N. Y. Filed Jan. 5, 1891. Serial No. 376,732. (No model.)

Claim.—1. In a postmarking and stamp-canceling machine, the combination, with a suitable yielding impressing-stamp and an intermittently-operating endless apron, a rock-shaft mounted in the stamp-shank, having a crank-arm on each end, and a yielding plunger-rod connected to one of said crank-arms, for operation substantially as described.

2. In a postmarking and stamp-canceling machine, the combination, with a suitable yielding impressing-stamp and an intermittently-operating endless apron, a rock-shaft mounted in the stamp-shank, having a crank-arm on each end at about right angles to each other, one of said crank-arms having a slot, and a yielding plunger-rod connected by a pin in the said slot, one of said crank-arms and the plunger-rod hav-

ing a length sufficient to extend below the impressing-surface, for operation substantially as described.



3. In a postmarking and stamp-canceling machine, the combination, with an impressing-stamp, a carrying-box therefor, and a spring upon said stamp, and an intermittently-operating endless apron, a rock-shaft mounted in the stamp-shank, having a crank-arm on each end, a plunger-rod connected to one of said crank-arms, a tube or barrel containing said plunger-rod, and a spring within said barrel upon said plunger-rod, for operation substantially as described.

4. In a postmarking and stamp-canceling device, a stamp having a spring-sustained shank part C, provided with a slotted impressing-head and a vertical side dovetail rib *y*, in combination with the horizontal stud or hub I, having an end recess y^4 for engaging said shank-rib, an armed type-wheel upon said stud or hub, and a screw centrally engaging said stud against said shank-rib, substantially as described.

5. In a postmarking and canceling stamp, a stamping device having a spring-sustained impressing part, the head A whereof has two parallel slots, one of which is of dovetail cross-section, type *u* of corresponding form to said slot seated therein and having inclined holes in their blank ends, in combination with an armed type-wheel arranged to operate within the other slot of said head, whereby the type for the month and the day may be easily and quickly changed in said head.

6. In a postmarking and stamp-canceling machine, the combination, with a suitable yielding impressing-stamp, of a rock-shaft mounted in the stamp-shank, having a crank-arm on each end, a plunger-rod connected to one of said crank-arms, and an intermittently-operating endless apron having an opening registering with said plunger-rod, for operation in the way described.

7. In a postmarking and stamp-canceling machine, a stamping device consisting of a horizontal cross-bar having a series of vertically-yielding impressing-stamps, each containing a horizontal rock-shaft having a crank-arm on each end, and a yielding plunger-rod connected to each one of said crank-arms, intermittently-operating endless aprons corresponding with said stamps and having openings registering with said plunger-rods, letter-supplying compartments registering with said aprons and stamps, an intermittently-operating pneumatic letter-transferring device, and suitable mechanism for operating the stamp-carrying bar in unison with the movements of the aprons and of the said transferring device, for operation substantially as described.

8. In a postmarking and stamp-canceling machine, the combination, with a suitable yielding impressing-stamp and an intermittently-operating endless apron, a horizontal rock-shaft mounted in bearings in the stamp-shank, having a crank-arm carried in relation to said apron to be brought into contact therewith by the descent of the stamp to shunt the latter out of action when descending, in the way and for the purpose described.

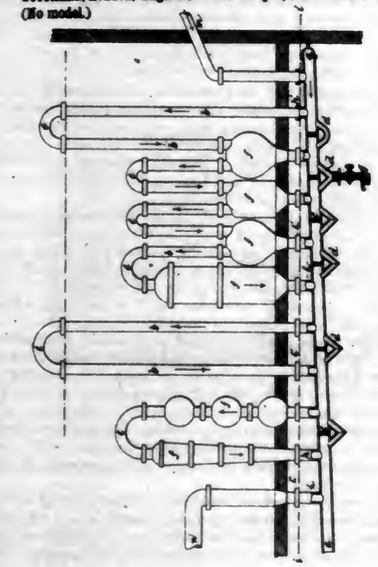
9. In a machine for postmarking mail-matter and canceling the postage-stamps thereon, the combination of intermittently-operating endless aprons, a series of letter-supply compartments, and an intermittently-operated letter-transferring device, with a horizontal cross-bar having vertically-depending impressing-stamps, vertical slides connecting the ends of said bar with the end frames, a rock-shaft having slotted arms connecting said slides, and suitable mechanism for operating said rock-shaft, substantially as described.

10. In a postmarking and stamp-canceling machine, the combination of intermittently-operating endless aprons, a series of letter-supplying compartments, and an intermittently-operated letter-transferring device, with a horizontal cross-bar having vertically-depending impressing-stamps, vertical slides connecting said bar with the end frames, a rock-shaft having slotted arms connecting said slides, a spring-sustained inking-roll, horizontal riders or bearers for guiding the inking-roll under the stamps, and suitable mechanism for operating said inking-roll and the stamp-carrying bar, substantially as described.

11. In a postmarking and stamp-canceling machine, the combination of intermittently-operating endless aprons, a series of letter-supplying compartments, and an intermittently-operated letter-transferring device, with a vertically-operated stamp-carrying bar having vertical end slides and horizontal riders or bearers registering with horizontal riders or bearers having fixed relation to the end frames, a spring-sustained inking-roll adapted to move horizontally under said riders when in registering relation, and mechanism for operating said inking-roll and the said stamp-carrying bar, substantially as described.

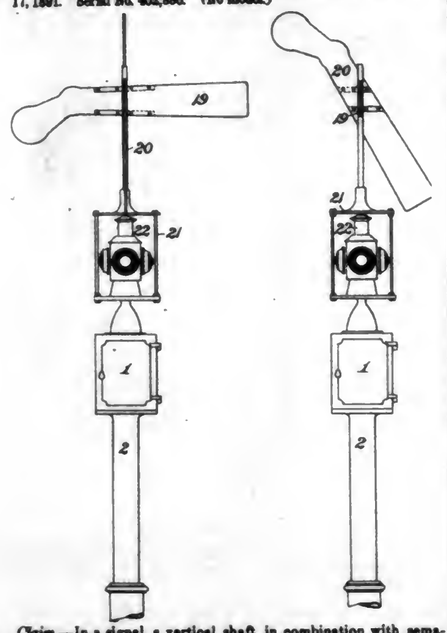
12. In a postmarking and stamp-canceling machine, the combination of intermittently-operating endless aprons and intermittently-operating letter-transferring devices having a circular movement over said aprons, a vertically-reciprocating stamp-carrier, a horizontally-reciprocating inking-roll, coacting fixed and movable rider parts for said roll, and suitable automatically-operated mechanism for conjointly operating them in the way described.

472,498. APPARATUS FOR CONDENSING NITRIC ACID. OSCAR GUTTMANN, London, England. Filed July 9, 1891. Serial No. 398,893. (No model.)



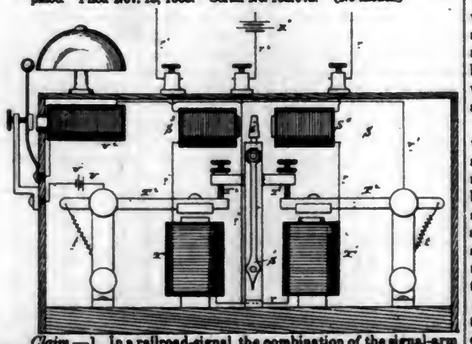
Claim.—The combination of an inclined pipe *a*, subdivided into chambers, with tubes *b*, bulbs *f*, and arc pipe *c*, connecting adjoining chambers on top, and with elbow-pipes *d* connecting adjoining chambers at the bottom, substantially as specified.

472,499. SIGNAL. JAMES T. HAMBAY, Pittsburg, Pa. Filed Aug. 17, 1891. Serial No. 402,880. (No model.)



Claim.—In a signal, a vertical shaft, in combination with semaphore-blades secured thereto at right angles to each other, one of said blades being arranged at right angles to the shaft and the other at an angle less than a right angle thereto, and mechanism for oscillating the shaft, substantially as set forth.

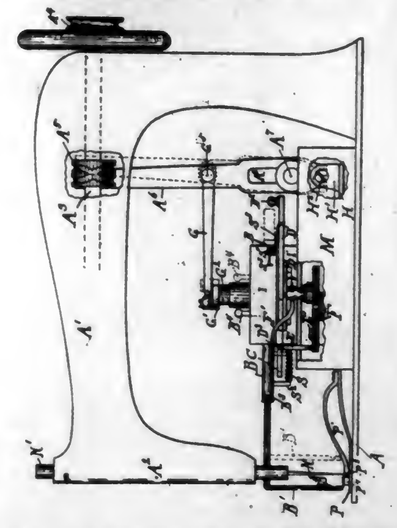
472,500. ELECTRICAL INDICATOR. JOHN W. HENDERSON, Philadelphia, Pa., assignor to the Wharton Railroad Switch Company, same place. Filed Nov. 13, 1885. Serial No. 182,672. (No model.)



Claim.—1. In a railroad-signal, the combination of the signal-arm M, contacts R R', circuits *r r' r*^{4}, battery R^3, and an electric detector S to indicate the position of said arm M and sound an alarm while said arm is passing from one of its extreme positions to the other, the said detector and alarm consisting of electro-magnets S^2 S^4, armature S^5, pointer S', contacts T^6, local circuits U', and alarm U^3, substantially as and for the purpose specified.

2. A detector or indicator for indicating the two extremes or the intermediate position of a moving object, consisting of two electric circuits, each provided with an electro-magnet adapted to attract the armature of a needle or pointer, and also an electro-magnet to attract an armature, the circuit having an alarm located therein and made continuous when both of said armatures are drawn away from their electro-magnets, and a moving object in circuit with the aforesaid mentioned electro-magnets and adapted in its extreme positions to close the circuit through either of said sets of electro-magnets and a battery to provide the current for either of said circuits, substantially as and for the purpose specified.

472,501. SEWING-MACHINE FOR STITCHING BUTTONHOLES. JAMES T. HOBAN, Jersey City, N. J., assignor to the National Machine Company, Troy, N. Y. Filed June 22, 1887. Serial No. 242,100. (No model.) Patented in England June 15, 1887, No. 8,628.



Claim.—1. In a buttonhole sewing-machine, the combination, with the stitch-forming mechanism, of a depending purling-thread carrier, a horizontal carrier supporting-bar movable longitudinally and axially in bearings, bearing-supports, and means for communicating to the bar longitudinal and axial movements, substantially as described.

2. In a buttonhole sewing-machine, the combination, with the stitch-forming mechanism, of the purling-thread carrier, means for oscillating the same from side to side, and further means whereby the path of its traverse may be altered at each end of the buttonhole, substantially as described.

3. The combination, with a buttonhole sewing-machine provided with means for imparting to the cloth-clamp to-and-fro movements and relatively-transverse step-by-step progressive and retrogressive movements, of a purling-thread carrier supported by a rotary slide-bar, a slideway for said slide-bar secured to a carriage movable transversely to the movements of the slide-bar, a carriage-actuating spring, and a carriage-restraining latch, as and for the purposes set forth.

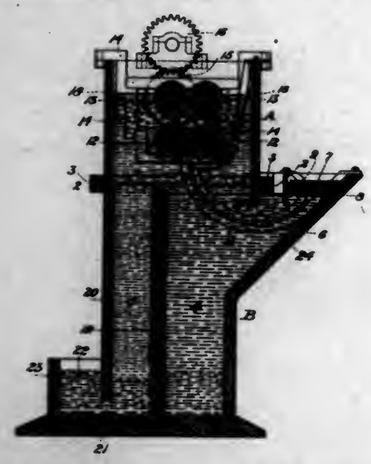
4. The combination, with a buttonhole sewing-machine provided with means for imparting to the cloth-clamp to-and-fro movements and relatively-transverse step-by-step progressive and retrogressive movements, of a purling-thread carrier supported by a rotary slide-bar, a slideway secured to a spring-actuated latch-controlled carriage movable transversely to the movements of the slide-bar, said actuating-spring and restraining-latch, and means, substantially as described, for automatically tripping the restraining-latch and releasing said carriage at the end of said step-by-step progressive movements, as and for the purposes set forth.

5. The combination, with a buttonhole sewing-machine, of a rotary slide-bar provided with a depending purling-thread carrier, and devices for automatically imparting to said bar reciprocatory rotary and slide movements consisting of spring S, tappet B^4, guide J', and rock-shaft G^4, linked to a lever actuated by a switch-cam upon the main shaft of the sewing-machine, substantially as described.

472,502. APPARATUS FOR COATING METAL PLATES. EDWIN R. JONES, Swissvale, Pa. Filed May 9, 1891. Serial No. 392,304. (No model.)

Claim.—1. In a machine for coating plates with tin or other metals or alloys, the combination of a lower section consisting of a base and front, rear, side, and intermediate walls, said rear wall terminating at a point above the base, the latter extending rearwardly from the rear

wall and having a short upwardly-extending flange inclosing a chamber, an upper section having journaled therein a series of squeezing-rolls, and means for directing the plates downwardly into the chamber in the front portion of the lower section and thence upwardly to the squeezing-rolls, substantially as set forth.



2. In a machine for coating plates with tin or other metals or alloys, the combination of a lower section consisting of a base and front, side, rear, and intermediate walls, the front wall being inclined forwardly and upwardly and the rear wall terminating at a point above the base, which latter is extended beyond said rear wall and provided with a short upwardly-extending flange inclosing a chamber, a vertically-depending partition located back of the upper end of the upwardly and forwardly extending wall, forming a flux-pocket, an upper section having journaled therein a series of squeezing-rolls, and guides secured to the frame-work for directing the plates through the flux-pocket, downwardly into the chamber in the front portion of the lower section, and thence upwardly to the squeezing-rolls, substantially as set forth.

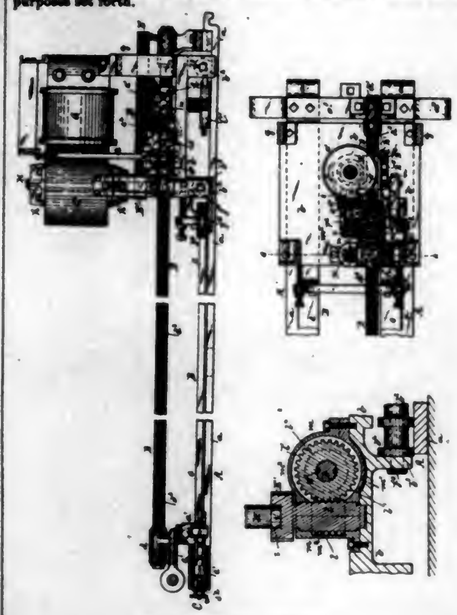
3. In a machine for coating plates with tin or other metals or alloys, the combination of a lower section consisting of a base and front, rear, side, and intermediate walls, the front wall being inclined upwardly and forwardly and the rear wall terminating at a point above the base, which latter is extended beyond the rear wall and provided with a short upwardly-extending flange inclosing a chamber, said lower section being further formed with a depending partition extending across the entire width of the machine, a vertically-depending partition located intermediate the first-named partition and the front inclined wall and forming a flux-pocket, an upper section having journaled therein a series of squeezing-rolls, and means for directing the plates through the flux-pocket, downwardly into the chamber in the front portion of the lower section, and thence upwardly to the squeezing-rolls, substantially as set forth.

472,508. MINING-MACHINE. ADAM KEIL, McKeesport, and ANTON R. WHITEHEAD, Pittsburg, assignors to Samuel S. Brown, Pittsburg, Pa. Filed July 11, 1891. Serial No. 398,123. (No model.)

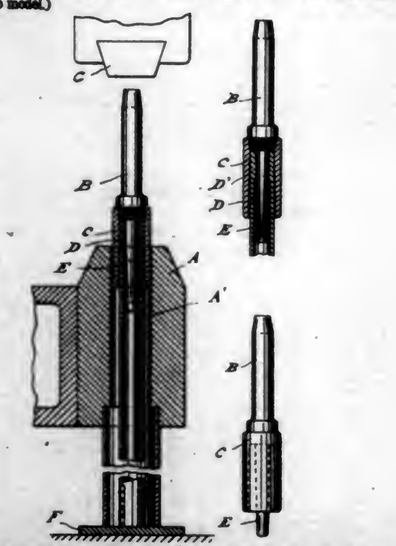
Claim.—1. In a mining-machine, the combination of an electric motor having a vertical armature-shaft provided with an angular base, a pinion mounted in a suitable bearing directly below such armature-shaft, having an angular socket at the upper end with which such armature-shaft engages, and connections from said pinion to the cutting mechanism of the machine, substantially as and for the purposes set forth.

2. In a mining-machine, the combination of a screw-bar D, the box *m*, forming the bearing for the worm-gear *l'*, encircling said screw-bar and forming the bearing for the vertical worm *l* at one side thereof, and a motor having a vertical armature and a shaft engaging directly with the shaft carrying said worm by an angular pin-and-socket connection, substantially as and for the purposes set forth.

3. In a mining-machine, the combination of a bed-frame having a grooved screw-bar mounted thereon, a sliding frame carrying a nut engaged with the screw-bar, a vertical sprocket-shaft mounted in said frame and having a beveled gear, and a shaft carrying a bevel-pinion meshing with the beveled-gear on the sprocket-wheel shaft and carrying a pinion meshing with a pinion encircling the screw-bar and adapted to be engaged therewith to turn the same, substantially as and for the purposes set forth.



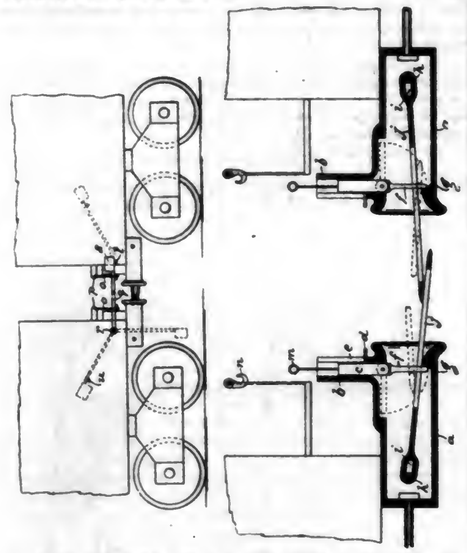
472,504. TOOL FOR UPSETTING ENDS OF METAL TUBES. JOEL KITSELLER, Chicago, Ill. Filed Mar. 26, 1891. Serial No. 386,439. (No model.)



Claim.—An upsetting tool or die for upsetting tubes of metal, constructed with a stem B, an annular wall C, secured to the said stem, and a former-shank E, located within and concentric with the annular wall and attached to the said stem, all integrally united and adapted to move together upon the tube to be upset and fix its exterior and interior dimensions, while conveying to the metal the impact of the upsetting-blow, substantially as described and shown.

472,505. CAR-COUPLING. JOHN H. LANGENHEIDT, Chicago, Ill. Filed Jan. 11, 1892. Serial No. 417,669. (No model.)

Claim.—1. The combination, with draw-heads provided with tubes *b* near their front ends and upper sides and links *j*, with slots *i* for the pin *h*, said links having horizontal slots *k* and sharp and rounded edges *l*, of coupling-bolts adapted to reciprocate in said tube *b* and enter the slots *k*, substantially as specified.



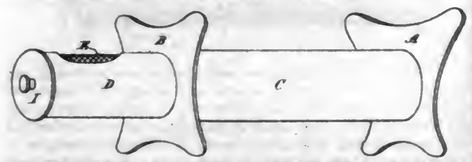
2. The combination, with draw-heads provided with tubes *b*, having slots *e* and pins *h* near their rear ends, and links *j*, with slots *i* for the pins *h*, said links having horizontal slots *k* and sharp and rounded edges *l*, of coupling-bolts adapted to reciprocate and enter said slots *k*, substantially as specified.

3. The combination, with draw-heads having interior shoulders *g* and tube *b* over the same and links *j*, provided with sharp and rounded front ends *l*, slots *k* and *i*, with pin *h* through said slot *i*, secured near the rear ends of the draw-heads, of reciprocating coupling-bolts consisting of an upper part *c* in said tube *b*, carrying a part *f*, hinged thereto at its lower end and adapted to swing freely thereon, and mechanism *m n* to suspend said coupling-bolts, substantially as specified.

4. The combination, with draw-heads provided with slotted tubes *b* on their upper side, shoulders *g* on their inner side directly under said tubes, links *j* with both sharp and rounded front ends *l*, and slots *k* and *i*, of vertically-reciprocating coupling-bolts with pin *d*, levers *o*, fulcrumed at *p*, whereof one end lifts at said pin *d* and the other projects beyond the side of the car, and arm *q* on the side of the car to act on the projecting end of said levers *o*, substantially as specified.

5. The combination, with draw-heads provided each with a permanently-attached link secured near the rear end of said draw-heads and provided at its front part with a horizontal slot *k*, and slotted tube *b* on the front and upper side of the draw-head, provided with coupling-bolt having a pin *d* projecting beyond said slot, of levers *o* on the side of the draw-head, fulcrumed at *p* and having their inner ends projecting under said pin *d* and their outer ends projecting slightly beyond the sides of the car, an arm *q* attached to the side of the car to rotate on a pin *r*, and a pin *t* to carry the free end of said arm, substantially as specified.

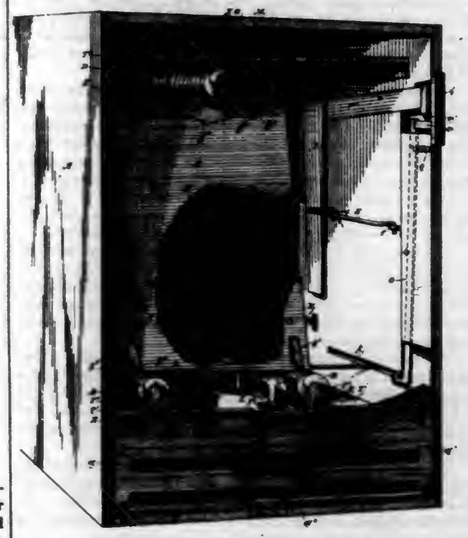
472,506. SPIRIT-LAMP. ADRIAN C. MONFORT, Pawtucket, R. I. Filed May 4, 1891. Serial No. 391,475. (No model.)



Claim.—The combination, in a spirit-lamp, of the heads A B, having their upper edges concaved, as described, with the case C and the sliding tube D, in the manner and for the purposes substantially as set forth.

472,507. COIN-ACTUATED VENDING-MACHINE. ROBERT MORAN, Seattle, Wash. Filed Nov. 11, 1891. Serial No. 411,696. (No model.)

Claim.—1. In a coin-actuated vending-machine, the combination of upper and lower horizontally-disposed revoluble screws, between which the articles to be vended are supported and by which said articles are held in an upright position, and a mechanism depending for its operation upon the deposit of a coin in the machine for revolving said screws, whereby the articles are advanced to their discharge, substantially as herein described.



2. In a coin-actuated vending-machine, the combination of two or more revoluble screws supporting between them the articles to be vended, said articles fitting their edges between the threads of said screws, and a power device depending for its operation on the deposit of a coin in the machine for revolving said screws, whereby the articles are advanced to their discharge, substantially as herein described.

3. In a coin-actuated vending-machine, the combination of separated screws, between the threads of which the articles to be vended are fitted, connections between said screws, whereby they operate in unison, a power device applied to one of said screws, and a controlling mechanism operated by the deposit of a coin in the machine for starting and stopping the power device, substantially as herein described.

4. In a coin-actuated vending-machine, the combination of revoluble screws, between the threads of which the articles to be vended are fitted and supported at opposite sides, a follower-plate fitted to said screws for supporting said articles and accompanying them in their advance, a power device to revolve said screws, and a controlling mechanism operated by the deposit of a coin in the machine for starting and stopping the power device, substantially as herein described.

5. In a coin-actuated vending-machine, the combination of the revoluble screws, between the threads of which the articles to be vended are fitted and supported at opposite sides, and the parallel rests L L beside said screws for supporting the lower edges of the articles, substantially as herein described.

6. In a coin-actuated vending-machine, the combination of the separated lower screws, between the threads of which the articles to be vended are fitted, the upper screw, connections by which said screws are revolved in unison, and the follower-plate behind and supporting the articles to be vended and having its lower edge fitted between the threads of the lower screws and its upper edge fitted to the threads of the upper screw, substantially as herein described.

7. In a coin-actuated vending-machine, the combination of the lower screws, between the threads of which the articles to be vended are fitted, the upper screw, connections for revolving said screws in unison, the follower-plate fitted to said screws above and below and supporting the articles to be vended, a power device applied to one of said screws, and a controlling mechanism operated by the deposit of a coin for starting and stopping the power device, substantially as herein described.

8. In a coin-actuated vending-machine, the combination of a feed-screw, between the threads of which the articles to be vended are fitted, a power device applied to the rear end of said screw for rotating it, a stop on the shaft of the feed-screw and rotatable with said shaft, a pivoted trip-lever having a shoulder engaged by said stop, whereby the movement of the screw is arrested, and a coin-chute adapted to dis-

charge upon the outer end of the lever to release the shoulder thereof from engagement with the stop, substantially as herein described.

9. In a coin-actuated vending-machine, the combination of a feed-screw, between the threads of which the articles to be vended are fitted, a shaft upon which the screw is carried, a hub at the inner end of the shaft, a winding-drum also on said shaft, a cord leading from said drum and having a weight upon its outer end, whereby the shaft is rotated, a stop J, secured to and rotating with the shaft, a pivoted trip-lever having a shoulder in the path of the rotatable stop for arresting the movement of the latter and of the shaft, and a coin-chute adapted to direct a coin upon the outer end of the lever to operate it and release the stop, substantially as herein described.

10. In a coin-actuated vending-machine, the combination of the coin-chute having an entrance-slot, means for automatically closing said slot when the machine is exhausted, consisting of the oscillatory plug in said chute behind the entrance-slot and having a slot made through it, a catch-arm projecting from the side of the plug, a spring engaging the plug to hold the slot out of line with the entrance-slot, whereby the latter is closed, a pivoted lever engaging and tripping said catch-arm, and the follower-plate within the machine having a side arm for operating the lever, substantially as herein described.

11. In a coin-actuated vending-machine, the combination of the feed-screw, into the threads of which the articles to be vended are placed, means for operating the screw, the discharge-slot contiguous to the discharge end of the screw having the receptacle behind it, and the downwardly-swinging plate or shutter over the top of said receptacle, substantially as herein described.

12. In a coin-actuated vending-machine, the combination of the feed-screw and its operative mechanism, the discharge-slot having the receptacle behind it, the automatically-swinging shutter or plate above said receptacle and contiguous to the discharge end of the screw, and the flange with its guard-lip for protecting said shutter or plate, substantially as herein described.

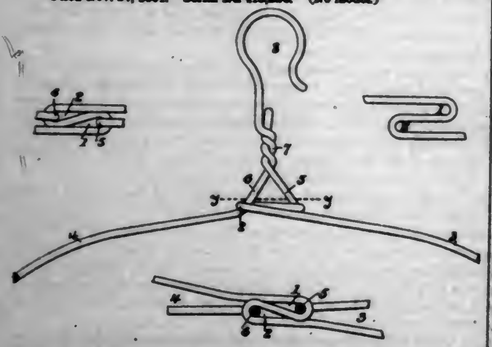
13. In a coin-actuated vending-machine, the combination of the upper and lower horizontally-disposed revolable screws and means for operating the same, and a follower-plate having spring-plates at its opposite ends fitted between the threads of the screws, whereby the plate is moved forward, substantially as herein described.

14. In a coin-actuated vending-machine, the feed-screws thereof, in combination with sprocket-pulleys having the hubs O, with which the inner ends of the screws are removably connected, the brackets Q, in which the inner ends of the wheel-hubs are fitted, and the pointed bearing-pins mounted in said brackets and passing through the sprocket-wheel hubs into the ends of the screws, substantially as herein described.

15. In a coin-actuated vending-machine, the feed-screws having a removable connection at their inner ends, in combination with the removable brackets R at their outer ends, said brackets having the pointed bearings and slotted feet, and the set-screws over which said feet are fitted, substantially as herein described.

16. In a coin-actuated vending-machine, the combination of the feed-screw, the revolving spring-stop connected therewith, the trip-lever having the catch-shoulder with which the stop engages, and the buffer or cushion behind the stop to take up the jar or contact, substantially as herein described.

472,508. COAT-HANGER. WILLIAM C. PERKINS, New Haven, Conn. Filed Nov. 27, 1891. Serial No. 413,296. (No model.)

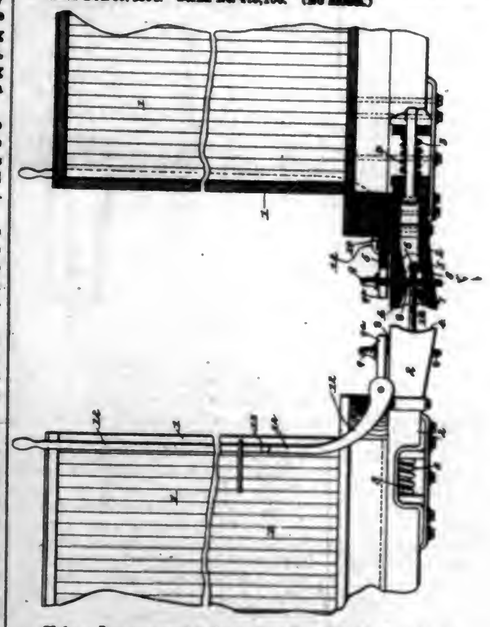


Claim.—1. A garment-hanger made of a single piece of wire, having at its center two retaining loops or beads upon each side thereof, garment-supporting arms having their ends returned and projecting upward through the holding-loops, and a hook or suspending device above the body of the hanger.

2. A garment-hanger having at its center two loops or short beads, having also two oppositely-extended garment-supporting arms, the ends of the wire forming said arms extended upward through and held by means of said loops, and a hook arranged above the body of the hanger, the whole formed of a single piece of wire, substantially as described.

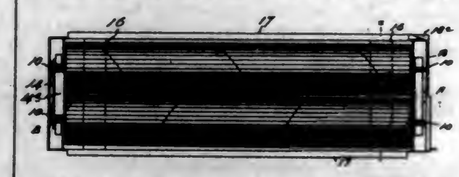
3. In a garment-hanger, the beads 1 and 2, combined with the oppositely-extended arms 3 and 4, each bead clinched upon and holding one of the arm-wires, the hook 8, formed upon one of said wires, and the twisted joint 7 below the hook, the whole formed of a single piece of wire, substantially as described.

472,509. CAR-COUPLING. GEORGE W. POWELL, Pine Hill, Ala. Filed Dec. 15, 1891. Serial No. 415,166. (No model.)



Claim.—In a car-coupler, the combination, with the draw-bar having a flaring mouth, an inclined recess and a shoulder, aligned apertures for the passage of a coupling-pin, and a gravity ball or sphere located in said recess, of the coupling-pin having a head, the transverse rock-shaft provided with a bifurcated arm adapted to engage with the head of said pin, and a pivoted operating-lever connected with said shaft, substantially as described.

472,510. ROLLER-BLOTTER RULER. FORREST M. PRIESTLEY, Denver, Colo. Filed Jan. 6, 1892. Serial No. 417,224. (No model.)



Claim.—1. The combination, with a hollow case or shell, of two rollers covered with blotting material and having their extremities pivoted in the ends of the case, which are provided with vertical slots for the pivots, and springs engaging said pivots and normally holding them in the bottom of the slots, whereby the rollers are permitted to move upward against the top of the shell or case as the latter is pressed downward, substantially as described.

2. The combination, with a hollow shell or case provided with vertically-slotted end plates, of two rollers covered with suitable blotting material and having their extremities provided with pivots engaging the slots in the end plates, and springs engaging the pivots above and normally holding them in the bottom of the slots, the slots in one of the end plates being open at the bottom, the pivots being

retained in position by an adjustable support, permitting the rollers to be removed from the case at pleasure, substantially as described.

3. The combination, with a hollow case provided with end plates, each plate having vertical slots, two of the slots being open at the bottom, of two rollers provided with pivots engaging the slots in the end plates, the pivots being engaged above by springs and normally held in the bottom of two of the slots and in engagement with an adjustable retaining means suitably located with reference to the other two slots, substantially as described.

4. The combination, with a hollow shell or case provided with a longitudinal straight-edge on one or both sides thereof and having end plates, each provided with two vertical slots, of two rollers having pivots located in these slots and springs engaging the pivots and normally holding them at their lowest limit of movement within the slots, substantially as described.

5. The combination of a hollow shell or case provided with vertically-slotted end plates and flanges forming straight-edges at the sides, two rollers having their extremities provided with pivots engaging said slots, springs engaging the pivots and normally holding them at their lowest limit of movement within the slots, and an adjustable pointer slidingly attached to the end of the case and extensible in the direction of movement, substantially as described.

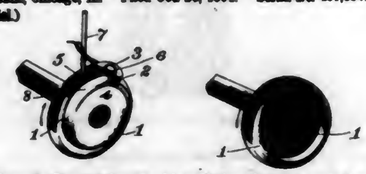
6. The combination, with a frame consisting of end plates suitably connected, of rollers pivoted in the end plates, and adjustable pointers slidingly attached to the end plates and extensible in the direction of the frame's movement, substantially as described.

7. The combination, with a hollow shell or case provided with vertically-slotted end plates, of rollers provided with pivots located in said slots, springs engaging the pivots and normally holding them at their lowest limit of movement within the slots, and brake-strips secured to the inner surface of the case and adapted to engage the rollers as the case is pressed downward, substantially as described.

472,511. WALL-PLASTER. WALTER ROBINSON, Syracuse, N. Y. Filed July 6, 1891. Serial No. 398,597. (No specimens.)

Claim.—Wall-plaster consisting of sand, plaster-of-paris, glue, lime, clay, alum, and starch.

472,512. LOOP-TAKER FOR SEWING-MACHINES. JOHN A. RUSSELL, Chicago, Ill. Filed Oct. 26, 1891. Serial No. 409,857. (No model.)



Claim.—1. In a sewing-machine of the character set forth, the combination, with the loop-taker, of the spreader comprising a body loosely placed within the cavity of the loop-taker and moving in harmony therewith and provided with a split extension having a contracted neck and swelled sides, the branches of said extension being of substantial concentricity, as shown and described.

2. In a sewing-machine of the character described, the combination, with the loop-taker, of an independent and separate loop-spreader moving in harmony therewith and having a split end to admit the needle and a swell or notch to detain the loop, the branches of the said split end being of substantial concentricity, as set forth.

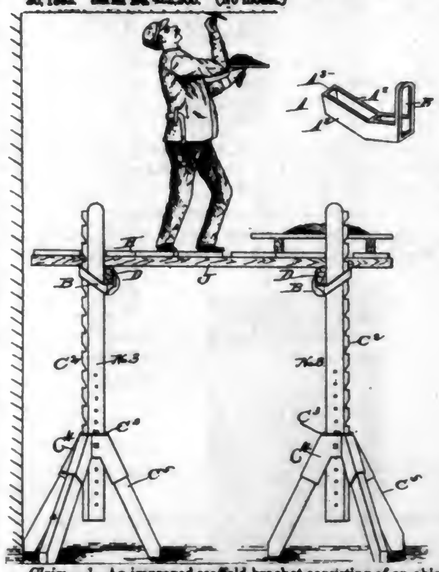
3. In a sewing-machine of the character described, the combination, with the loop-taker, of the independent and separate loop-spreader which has a shoulder fitting within the gate of the loop-taker and the spreader extending from said body and having a split end and swelled sides, the branches of said split end being of substantial concentricity, as set forth.

472,513. JACQUARD CONNECTION FOR LOOMS. JEROME VACHER, Paterson, N. J. Filed June 18, 1891. Serial No. 396,669. (No model.)



Claim.—In a loom, the combination, with the parallel frames h h and the harness-cords a, of a double series of loops and hooks below the frames, which hooks are connected to the said cords and which loops pass through the said frames, a second double series of loops and hooks above the frames, to which hooks are attached the loops of the lower series passing through the frames, thereby forming stops limiting the downward movement of the harness-cords, and a single series of loops and hooks connecting the upper series of loops and hooks with the hooks of a Jacquard mechanism, the whole being arranged so as to permit the ready removal of any of the parts, substantially as described.

472,514. SCAFFOLD. WILLIAM J. SANKEY, Des Moines, Iowa, assignor to S. C. Sweet, same place. Filed Mar. 10, 1890. Renewed Feb. 20, 1892. Serial No. 422,305. (No model.)



Claim.—1. An improved scaffold-bracket consisting of an oblong metal loop composed of parallel sides connected at their outer ends by a cross-piece that is adapted to engage notches in the face of a post and an integral right-angled arm projecting at an angle from the inner ends of said side pieces, and said inner end or cross-piece of said arm serving to connect the inner ends of said side pieces for the purpose of producing a closed loop and complete bracket that is adapted to engage the faces of a four-sided post to admit a four-sided putlog to be placed on and off the bracket by vertical motions and to allow the full width of the face of the putlog to engage the full width of the face of the post and to clamp the putlog to the post, in the manner set forth, for the purposes stated.

2. A scaffold-standard consisting of a metal tripod having tubular legs, wooden legs adapted to support the metal tripod in an elevated position, a notched post adjustably connected with the hub of the metal tripod, and a bracket having a loop adapted to slide on the post and to engage the notches in the post and an integral elbow-shaped right-angled arm adapted to admit a four-sided putlog, in the manner set forth, for the purposes stated.

3. An improved adjustable scaffold consisting of metal tripods having central openings to admit posts and tubular legs to admit interchangeable wooden legs, posts adapted to enter the metal tripods, brackets consisting of loops adapted to slide on the posts and to engage notches in the posts and elbow-shaped or right-angled arms adapted to admit four-sided putlogs and to clamp them to the posts, four-sided putlogs, and floor-boards, to operate in the manner set forth, for the purposes stated.

REISSUES.

11,281. AZO DYE. HANS KUHN, Höchst-on-the-Main, Germany, assignor to the Farbwerks, vormals Meister, Lucius & Brüning, same place. Filed Feb. 26, 1892. Serial No. 422,940. Original No. 458,283, dated Aug. 25, 1891.

Claim.—The azo coloring-matter derived from the herein-described dioxynaphthaline disulphonic acid and diazo bodies, which is a brown powder easily soluble in cold water and diluted acids, freely soluble in hot alcohol of 75° Tralles, insoluble in ether and ligroin, and adapted for dyeing wool in greatly differing shades ranging from bluish-red to deep black, depending upon the use of acids or the latter in combination with metallic mordants, as set forth.

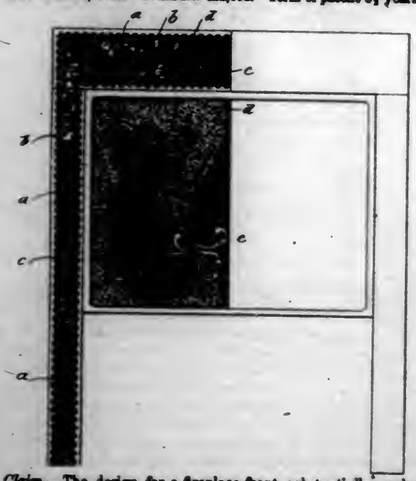
DESIGNS.

21,443. BADGE. WILLIAM P. BOWER, Chicago, Ill. Filed Feb. 23, 1892. Serial No. 422,560. Term of patent 3½ years.



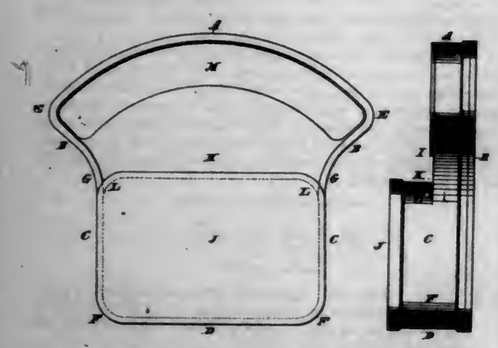
Claim.—The design for the World's Fair badge, herein shown and described, the same consisting of the medal, the ring suspended therefrom, and the globe within said ring.

21,444. FIREPLACE-FRONT. WILLIAM E. FITCH, Louisville, Ky. Filed Feb. 24, 1892. Serial No. 422,692. Term of patent 3½ years.



Claim.—The design for a fireplace-front, substantially as shown and described.

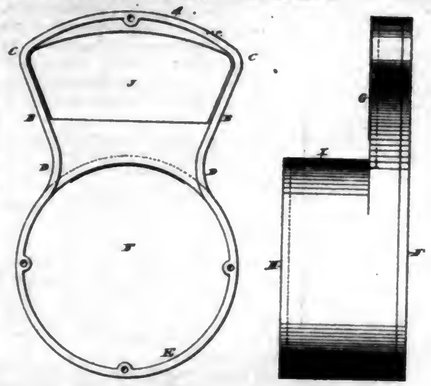
21,445. CASE FOR ELECTRICAL MEASURING-INSTRUMENTS. EDWARD WESTON, Newark, N. J. Filed Jan. 2, 1892. Serial No. 417,410. Term of patent 14 years.



Claim.—The design for the case of an electrical measuring-instrument, substantially as herein shown and described.

21,446. CASE FOR ELECTRICAL MEASURING-INSTRUMENTS. EDWARD WESTON, Newark, N. J. Filed Jan. 2, 1892. Serial No. 417,411. Term of patent 14 years.

Claim.—The design for the case of an electrical measuring-instrument, substantially as herein shown and described.



21,447. RUFFLING OR RUCHING. CHARLES G. HILL, Nottingham, England. Filed Mar. 3, 1892. Serial No. 424,230. Term of patent 3½ years.



Claim.—The design for a ruffling or ruching, substantially as shown and described.

21,448. BUCKLE. LOUIS B. PRAHAR, Brooklyn, N. Y. Filed Mar. 9, 1892. Serial No. 424,344. Term of patent 3½ years.



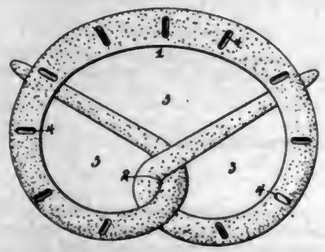
Claim.—The design for a buckle, substantially as herein shown and described.

21,449. BUTTON. ANTHONY A. BRUNSWICK, San Francisco, Cal. Filed Dec. 28, 1891. Serial No. 416,389. Term of patent 3½ years.



Claim.—The design for a button, as herein described and shown.

21,450. BRETZEL. JACOB PFENNIGER, St. Louis, Mo. Filed Feb. 1, 1892. Serial No. 419,902. Term of patent 14 years.



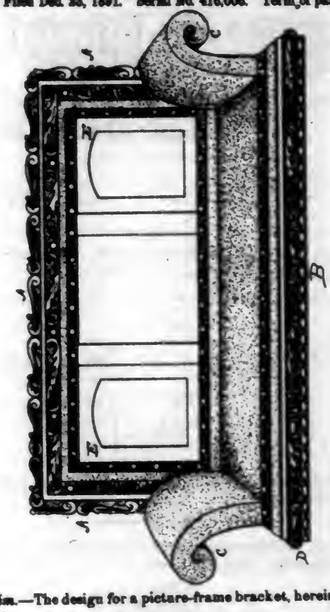
Claim.—The design for a bretzel, substantially as herein described and shown.

21,451. MONUMENT. WILLIAM H. PERRY, Concord, N. H. Filed Mar. 3, 1892. Serial No. 423,674. Term of patent 3½ years.



Claim.—The design for a monument, as herein shown and described.

21,452. PICTURE-FRAME BRACKET. LOUIS WOLFSKY, Chicago, Ill. Filed Dec. 28, 1891. Serial No. 416,006. Term of patent 7 years.



Claim.—The design for a picture-frame bracket, herein shown and described.

TRADE-MARKS

REGISTERED APRIL 5, 1892.

20,920. LEATHER BOOTS AND SHOES. GUTENKUNST, CARPENTER & TELLING, Chicago, Ill. Filed Feb. 12, 1892.



Essential feature.—The symbolic representation of an anchor. Used since January 1, 1890.

20,921. TOILET WASH FOR THE COMPLEXION. FLORA A. JONES, South Bend, Ind. Filed Mar. 7, 1892.



Essential feature.—The words "BLOOM OF ROSES." Used since September 13, 1891.

20,922. GLOVES. ORMEN, UPENDALE & Co., London, England. Filed Mar. 3, 1892.

O.U.C.

Essential feature.—The letters "O. U. C." Used since February 25, 1892.

20,923. HOOKS AND EYES FOR GARMENTS. RICHARDSON & DE LONG BROS., Philadelphia, Pa. Filed Mar. 7, 1892.



Essential feature.—The words "DE LONG." Used since March 1, 1890.

20,924. SALVES, OINTMENTS, OR LINIMENTS, AND COUGH-MIXTURE. FRANKLIN B. SOMERER, Philadelphia, Pa. Filed Feb. 4, 1892.

Frostible

Essential feature.—The word-symbol "FROSTIBLE." Used since February, 1891.

20,925. WOOL DRESS GOODS. THE FIRM OF FRIEDRICH ARNOLD, Greiz, Germany. Filed Mar. 2, 1892.



Essential feature.—The arbitrary representation of a bee. Used since 1876.

20,926. COFFEE. REMENSNYDER & Co., New York, N. Y. Filed Feb. 18, 1892.



Essential feature.—The capital letter "E." Used since December 12, 1890.

20,927. LINIMENT. WALTER R. EVERITT, Buffalo, N. Y. Filed Jan. 27, 1892.



Essential feature.—The portrait of a man with the picture of a horse's head leaning over his shoulder. Used since July, 1890.

20,928. LARD. R. GOBEL & SONS, Peoria, Ill. Filed Mar. 9, 1892.

IVORY

Essential feature.—The word "IVORY." Used since January 1, 1890.

20,929. ALUMINIUM SOLDER FOR DENTAL PLATES AND OTHER USES. CHARLES GERARD and JOSEPH S. LETORD, Kansas City, Mo. Filed Mar. 1, 1892.



Essential feature.—A double-bordered diamond figure, a crucible, the monogram "G L," and the word "ALUMINOID." Used since February 1, 1892.

20,930. POLISH FOR WOOD AND METAL WORK. MARLEY & TURNER, Elmira, N. Y. Filed Jan. 23, 1892.

COLOR-KING

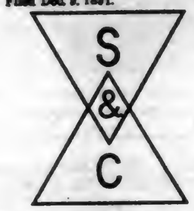
Essential feature.—The word "COLOR-KING." Used since August 17, 1891.

20,931. GLASS BOTTLES, JARS, AND OTHER GLASS RECEPTACLES AND TABLE-WARE. NELSON GLASS COMPANY, Muncie, Ind. Filed Feb. 25, 1892.



Essential feature.—The word "SAFETY." Used since December 1, 1891.

20,932. GROUND-BONE FERTILIZERS. SHARPLES & CARPENTER, Philadelphia, Pa. Filed Dec. 9, 1891.



Essential feature.—A figure composed of two equilateral triangles, one above the other, with their apexes overlapping, so as to form a lozenge-shaped figure, in which appears the character "&" and above it the letter "S" and below it the letter "C." Used since January 5, 1891.

20,933. MEDICAL COMPOSITION FOR REMOVING FUNGUS GROWTHS FROM THE JAWS AND BONES OF ANIMALS AND WARTS FROM PERSONS. GUSTAV R. WRAGE, Berlin, Iowa. Filed Feb. 25, 1892.



Essential feature.—The words "LUMP JAW CURE" in connection with the picture of an animal's skeleton head and jaw. Used since January 1, 1892.

20,934. HAIR-RESTORATIVE CONSISTING OF A NATURAL WHITE OIL. THE WHITE ROCK OIL CO., Toledo, Ohio. Filed Feb. 13, 1892.



NATURES. HAIR RESTORATIVE

Essential feature.—The representation of a derrick and the engine, pulleys, and belts for actuating a pump, with the tank or receptacle for the oil shown at a convenient distance therefrom, and the words "NATURAL WHITE OIL," and also the words "NATURE'S HAIR RESTORATIVE." Used since November 15, 1891.

20,935. LIQUID PAINT. THE HANNA & ABBOTT MANUFACTURING COMPANY, Columbus, Ohio. Filed June 4, 1891.



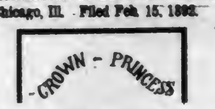
Essential feature.—The representation of a green seal and the words "GREEN SEAL" printed adjacent thereto and on opposite sides thereof. Used since October, 1887.

20,936. LAWN-MOWERS. CHADBORN & COLDWELL MANUFACTURING COMPANY, Newburgh, N. Y. Filed Mar. 9, 1892.



Essential feature.—The word "RIVAL." Used since August 15, 1891.

20,937. PREPARATION TO BEAUTIFY THE COMPLEXION. EDWARD C. CLAY, Chicago, Ill. Filed Feb. 15, 1892.



Essential feature.—The word-symbol "PRINCESS." Used since January 29, 1892.

20,938. CLEANED CURRANTS OR SIMILAR PREPARED FRUITS OR VEGETABLES. CRANDALL & GODLEY, New York, N. Y. Filed Feb. 24, 1892.

PRIDE of ATHENS

Essential feature.—The words "PRIDE OF ATHENS." Used since December, 1891.

20,939. CONFECTIONERY OR CANDIES. E. F. GAVIN & Co., Chicago, Ill. Filed Mar. 11, 1892.



Essential feature.—The words "LA ROSA." Used since January 16, 1892.

20,940. HAIR-TONIC. WILLIAM B. LOGAN, Cincinnati, Ohio. Filed Mar. 11, 1892.



Essential feature.—The word-symbol "FOSO." Used since May 6, 1889.

20,941. NEURALGIC REMEDIES. CHARLES H. SAGAR, Auburn, N. Y. Filed Mar. 5, 1892.

PYRETINE

Essential feature.—The word "PYRETINE." Used since October 1, 1891.

20,942. CANNED VEGETABLES AND FISH. SEEMAN BROTHERS, New York, N. Y. Filed Mar. 10, 1892.

White Rose

Essential feature.—The words "WHITE ROSE." Used since October, 1887.

20,943. PREPARATION OF STARCH FOR LAUNDRY OR FOOD PURPOSES. THE NATIONAL STARCH MANUFACTURING COMPANY, Covington, Ky., New York, N. Y., and Cincinnati, Ohio. Filed Dec. 9, 1891.



Essential feature.—The letter "N." Used since April, 1884.

20,944. COMPOUND OF SUET OR BEEF-FAT AND COTTON-SEED OIL FOR COOKING PURPOSES. ROBERT B. BROWN, New York, N. Y. Filed Mar. 1, 1892.

SUETINE

Essential feature.—The coined word "SUETINE." Used since February 10, 1892.

20,945. BOTTLED WINES AND WHISKIES. CHRISTOPH F. BODE, New York, N. Y. Filed Mar. 7, 1892.



Essential feature.—A monogram formed of two "B's," surrounded by a border of elliptical form, on which are printed the words "BODE BROTHERS, NEW YORK." Used since January 15, 1877.

20,946. HARNESS-SOAP. CAPITOL MANUFACTURING COMPANY, Springfield, Mass. Filed Mar. 11, 1892.



Essential feature.—The words "CAPITOL HARNESS SOAP" in connection with the pictorial representation of the United States Capitol building. Used since February 1, 1892.

20,947. PAPER FOR PRINTING AND LINING STRAWBOARDS USED IN MAKING BOXES. W. H. PARSONS & CO., New York, N. Y. Filed Mar. 9, 1892.



Essential feature.—The representation of an arrow. Used since 1888.

20,948. CIGARS. D. L. TRUJILLO & SONS, Key West, Fla., and New York, N. Y. Filed Feb. 16, 1892.



Essential feature.—The figure of a female representing instruction, sitting on a globe, holding a bunch of unmanufactured Havana tobacco-leaf in her right hand and in her left hand the bunch of Havana tobacco-leaf manufactured into a bundle of cigars, and the words "LA INSTRUCTORA" over her head in a circle. Used since January 1, 1890.

20,949. REMEDY FOR RHEUMATISM. JOHN J. WINSOR, Saginaw, Mich. Filed Feb. 9, 1892.



Essential feature.—The representation of an eagle bearing aloft a man astride the neck of the eagle. Used since December 24, 1891.

20,950. CEMENT. THE BURHAM BRICK, LIME AND CEMENT COMPANY, LIMITED, Burham and London, England. Filed Feb. 27, 1892.



Essential feature.—The device of two oblongs connected by a band, the whole being inclosed within two concentric circles. Used since 1876.

20,951. REMEDY AGAINST BLOOD-POISONING. DAVID A. CLIPPINGER, Chicago, Ill. Filed Jan. 20, 1892.



Essential feature.—The words "ANTI-VIRUS" and the letters "A V." Used since September, 1891.

20,952. ALLOY. FRICTIONLESS METAL COMPANY, Chattanooga, Tenn. Filed Mar. 1, 1892.



Essential feature.—The arbitrary word "FRICTIONLESS." Used since April 1, 1891.

20,953. EDGE TOOLS, CUTLERY, AND INSTRUMENTS AND IMPLEMENTS OF STEEL FOR SURGICAL, TOILET, DOMESTIC, AND OTHER PURPOSES. JACOBY & WINTER, New York, N. Y. Filed Mar. 7, 1892.



Essential feature.—The representation of an anchor and a transverse arrow with a star superimposed upon the shaft or shank of the anchor. Used since November 1, 1891.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

HAYES *v.* HOPKINS.

Decided December 19, 1891.

INTERFERENCE—SUGGESTIONS BY AN EMPLOYÉ.

Where an employer discloses the general idea and plan of his invention to an employé, no suggestion from the latter which does not involve a radical departure therefrom will give him any rights as an inventor. (Citing *Agawam Company* v. *Jordan*, 7 Wall., 583.)

APPEAL from the Board of Examiners-in-Chief.

ELECTRIC CABLE.

Application of H. V. Hayes filed August 16, 1889, No. 321,032. Application of W. J. Hopkins filed July 23, 1889, No. 318,149.

Mr. W. W. Swan for Hayes.

Messrs. Crosby & Gregory for Hopkins.

SIMONDS, *Commissioner:*

This is an appeal from a decision of the Board of Examiners-in-Chief awarding priority of invention to Hopkins upon the following interference issue:

An electric cable comprising several metallic circuits, in each of which the direct and return wires are combined spirally with insulating material common to the two, substantially as described, whereby the distance between the direct and return wires of each circuit is equal to nearly the full diameter of their spirals whatever may be the distance between wires of different circuits.

The question is not as to two independent inventions, but as to which one of these two applicants is *the* inventor.

Both men were employed in the same electric establishment, Hopkins being the subordinate of Hayes. The making of the invention grew out of a conversation had between Hopkins and Hayes on the 13th of April, 1889, and the conclusion arrived at herein is based upon Hopkins's testimony as to what was said and done at that interview, premising that Hopkins was the one who actually constructed the first cable involving the invention in controversy.

In order to understand the significance of a sketch which was made during that interview, it is necessary to refer to a kind of cable then old in the art. Upon this Hopkins said:

Int. 8. Previous to April 13, 1889, how had these cables been made?

Ans. They had been made as described by Mr. Hayes, and as shown in exhibit marked "Hayes Exhibit Old Metallic Circuit Cable." The construction is briefly as follows: Two wires, each of which is surrounded by insulation, are twisted together, and a further slight wrapping of insulation wound about them to hold them together. These two wires thus twisted form a metallic circuit known as a "twisted pair." The desired number of these twisted pairs are then laid up together, wound with an insulating coating inclosed within a lead sheath, the whole of the cable within the sheath and the spaces between the cable and the sheath being saturated and filled with some insulating compound.

Hopkins's account of the interview above referred to is as follows:

Int. 9. Referring now to April 13, 1889, will you please state what occurred the afternoon of that day in relation to the invention here in controversy, stating in detail what was said and done by you and by Mr. Hayes?

Ans. On the afternoon of April 13, 1889, Mr. Richards and myself returned to the laboratory at about three o'clock. As we entered, Mr. Hayes came out of his office with a paper in his hand and immediately began, substantially as follows:

"Mr. Hopkins, I have been thinking over this cable business."

Here he began to draw a sketch, to which reference has frequently been made, and said further:

"Suppose this to represent a metallic circuit, the insulation outside of here" [drawing two vertical parallel lines tangential externally to the conductors, substantially as shown in the sketches he produced on this record] "is of no use, is it?"

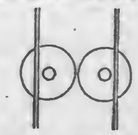
"No," I answered; "I think we may be sure of that."

"Well," said Mr. Hayes, "can you think of any [other] way of making up a cable so as to get rid of it?"

I reflected for a few moments and the idea occurred to me as it is presented in my application. I said: "I can think of no way but this."

Then I proceeded to describe how two wires could be wound about a core of insulation and bound on. As we discussed this arrangement it occurred to me that it would be necessary to place insulation between the two wires about the circumference of the core that the wires might not slip out of position and come nearer together. After I had explained this idea there were some few words more, which I do not recollect, in regard to cables, and Mr. Hayes returned to his office with the remark that he wished I would think this matter over and work it up. During this interview Mr. Richards was present, and was seated at the testing-table which stands against the office-partition.

When Hayes spoke to Hopkins of a "cable" he meant, and Hopkins understood him to mean, a plurality of metallic circuits. The sketch which Hayes showed to Hopkins was in substance this:



This sketch, taken in connection with the old art above described by Hopkins and in connection with the "cable" mentioned by Hayes, conveyed the idea of a plurality of metallic circuits with two wires constituting each circuit twisted about each other and with each wire incased in insulating material, but having the substance of that insulating material removed on what may be termed the "outside" of each wire, these two "outsides" being opposed to each other in position, but leaving the insulating material between the two wires intact and undisturbed. Such a structure as that comes within the spirit of the interference issue, and it also comes within the letter of the interference issue unless that letter requires the joining of the two masses of insulating material. If the letter of the issue does require the joining of the two masses of insulating material, the doing of that thing does not amount of itself to invention. On this point the Supreme Court has said what must commend itself to every intelligent mind that examines the question:

Where the employer has conceived the plan of an invention and is engaged in experiments to perfect it, no suggestions from an employé, not amounting to a new method or arrangement which in itself is a complete invention, is sufficient to deprive the employer of the exclusive property in the perfected improvement. (*Agawam Company* v. *Jordan*, 7 Wall., 583, Supreme Court, 1868.

The decision of the Examiners-in-Chief is reversed and priority is awarded to Hayes.

EX PARTE LORENTZ.

Decided March 28, 1892.

ASSIGNMENT—WHAT DOES NOT AMOUNT TO.

A party who bases his rights as an assignee upon an instrument recorded in the Patent Office before application was made and not specifically identifying the invention will not be permitted to examine the files because such an instrument is not an assignment, but a mere executory agreement.

PETITION of Lorenzo D. Lorentz in the matter of the application for patent on cigarette-machines filed by James N. Wood.

SIMONDS, *Commissioner:*

This is a request by one person to inspect the application for a patent made by another person, (that other person objecting,) as follows:

The undersigned, being the assignee of the entire right, title, and interest in and to a certain invention of James Nelson Wood for improvements in cigarette-machines, for which he has made application for Letters Patent filed during October or November, 1891, hereby requests that Messrs. Whitaker and Prevost, of Washington, D. C., may be permitted to examine the papers in the said application.

Respectfully submitted.

LORENZO D. LORENTZ,
Assignee.

Lorentz bases his request upon an agreement signed by James Nelson Wood before an application for patent was prepared, a substantial part of which agreement is as follows:

Now this indenture witnesseth: That for and in consideration of the sum of one hundred ($100) dollars to us in hand paid by Lorenzo D. Lorentz, the receipt whereof is hereby acknowledged, and other valuable consideration, the parties of the first part do grant unto the said Lorenzo D. Lorentz all the estate, right, title, and interest in said invention, discovery, and improvements in cigarette-machines, and all inventions, discovery, and improvement to or in said cigarette-machine which the said James Nelson Wood now has or may at any time hereafter acquire.

The following is pertinent in this connection:

No assignment of an unpatented invention is required by section 4895 to be recorded, unless it is an assignment on which a patent is to be issued to the assignee; and in such case the invention must be so identified in the assignment, by a reference to a specification or otherwise, that there can be no mistake as to what particular invention is intended. (*Wright* v. *Randel*, 19 Blatchf., 495.)

This language was used with reference to facts which make it exactly applicable to this case. (See, also, *Regan Vapor-Engine Co.* v. *Pacific Gas-Engine Co. et al.*, 58 O. G., 1695.)

Under these decisions Lorentz is not entitled to examine the application in question, and the request is denied.

JENNE *v.* BROWN *v.* BOOTH.

Decided March 16, 1892.

INTERFERENCE—MOTIONS TO DISSOLVE AFTER ADMISSION OF NEW CLAIMS UNDER RULE 109.

When new claims are admitted, either under the original issue or under a new issue, in accordance with the provisions of Rule 109, *Held* that any or all motions provided for in Rule 122 may be brought in connection with the new claims and the issue including the same, even though such motions were brought and the questions raised thereby decided under the interference as originally declared.

APPEAL on motion.

TYPE-WRITER.

Application of William McK. Jenne filed December 16, 1889, No. 333,962. Application of Alexander T. Brown filed November 16, 1889, No. 330,553. Application of Chris. S. Booth filed February 6, 1888, No. 263,143.

Messrs. Dodge & Sons for Jenne.

Mr. W. A. Bartlett for Brown.

Mr. William A. Skinkle and *Mr. J. R. Nottingham* for Booth.

FROTHINGHAM, *Assistant Commissioner:*

This is an appeal taken on behalf of Booth from the decision of the Examiner of Interferences granting the "transmission of Jenne's motion to dissolve to the Primary Examiner."

The facts are as follows:

On August 8, 1890, an interference was declared between certain claims of the above entitled applications, the issue containing two counts. On November 14, 1890, Jenne brought a motion to dissolve on the following grounds:

First. That there is no interference in fact.
Second. That there has been such irregularity in declaring the same as to preclude a proper determination of the question of priority.
Third. That neither Booth nor Brown is entitled to make the claims in issue.

The final determination of said motion resulted in the interference being dissolved as to the first count of the issue so far as Brown was concerned and as to the second count of the issue so far as Booth was concerned.

Thereafter both Booth and Brown brought motions under the provisions of Rule 109 to have certain claims included in the interference. These claims were admitted. Thereupon the interference was redeclared by the Primary Examiner pursuant to the provisions of said rule and thereafter such proceedings were had before the Commissioner as resulted in the Examiner of Interferences being instructed to consider the said interference as a redeclaration of the former interference and to proceed in accordance with Rule 103, as set forth in the provisions of Rule 109. The Examiner of Interferences prepared new notices as required by Rule 108. New preliminary statements were filed by all the parties to the interference and were approved.

On February 3, 1892, a motion was filed on behalf of Jenne to dissolve the interference as redeclared on the following grounds:

First. That there is no interference in fact.
Second. That there has been such irregularity in declaring the interference as will preclude a proper determination of the question of priority.
Third. That various of the claims made by Booth are unpatentable.
Fourth. That neither Booth nor Brown is entitled to make claims in the terms of the issues as declared by the Office.

It appears that the wording of the issue in the interference as redeclared differs somewhat from the wording of the issue of the interference as originally declared.

It is contended on behalf of Booth and Brown that Jenne has no right to bring the present motion, inasmuch as the question raised by the motion is *res adjudicata*. On the other hand, it is contended on behalf of Jenne that, in view of the difference in the wording of the issue of the interference as redeclared from that of the issue of the interference as originally declared, various matters could be proved under the former which could not have been proved under the latter.

It is further contended on behalf of Jenne that in view of the fact that at the time of the original declaration of interference Booth's claims 6, 7, 8, 9, and 12, included under the first count of the present issue, and his (Booth's) claims 10, 11, 13, and 14, which are the only claims of his application included under the second count of the present issue, were not in Booth's application, and in view of the fact that at the time the original declaration of interference was made the present claim 9 of Brown's application, which is the only claim of Brown included under the first count of the present issue, was not embraced in Brown's application, it was impossible for Jenne to have made a motion for dissolution applicable to the said claims of either of the parties above mentioned prior to the redeclaration of the interference, and that consequently he is not now estopped from bringing the present motion. In other words, it is contended that Jenne has never had an opportunity to make a motion for dissolution of the interference based upon any objection that would lie against any of the said claims prior to the time that the present motion was made.

So far as I have been able to ascertain there are no decisions bearing upon the question as to what should be the proper practice in a case like the present. In this connection, however, it is necessary to consider what is passed upon in determining whether or not the claims embraced in a motion brought pursuant to the provisions of Rule 109 shall be admitted.

When an applicant brings a motion under Rule 109 before the Examiner, he virtually asks the Examiner to admit the proposed new claims and to declare a new interference. The only question for consideration at that time is whether or not the said amendment shall be admitted. It is clear that the question of interference in fact cannot properly be argued until the claims shall have been admitted. The same is true of the question of irregularity in declaring the interference. The question of whether or not the moving party has a right to make the claim may be argued and the question of patentability of the claims is incidentally presented. There is, however, no provision of the rules which provides for the dissolution of a contingent or future interference.

Upon such examination of the question as I have been able to give I am of the opinion that it is the safer practice to hold that a motion brought under Rule 109 does not and should not raise the question of the dissolution of the interference to be declared—but not as yet declared—upon the new claims, and that a motion under Rule 122 to dissolve the interference as redeclared for any or all of the grounds therein set forth is proper.

It is contended in the present case on behalf of Booth that the issue of the interference as redeclared is the same as the former issue. I am not prepared to say that it is proper for the Commissioner to consider such a question at the present time; but even assuming that the two issues are substantially the same in terms, yet it is believed to be within the range of possibility that the addition of new claims under such an issue may affect the breadth of the issue to such an extent as to render a dissolution of the interference proper and necessary.

It is further contended on behalf of Booth that the Assistant Commissioner, in his decision of January 9, 1892, held that the present interference was not an interference *de novo*. It is to be observed, however, that the Examiner of Interferences was merely directed in said decision to consider the present interference as a redeclaration of the former interference and to proceed in accordance with Rule 103.

It has been urged that to allow Jenne to bring the present motion would be to delay proceedings. While this may be true, yet it is a fact not to be overlooked that if Booth had not seen fit to bring his motion under Rule 109 there would have been no opportunity for Jenne to file his present motion.

It follows from what is said above that the decision of the Examiner of Interferences should be and is hereby affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Michigan.

PAGE WOVEN WIRE FENCE COMPANY *v.* LAND.

Decided December 16, 1891.

1. INFRINGEMENT—PAGE AND LAMB PATENT—LAND PATENT.

Claim 12 of Letters Patent No. 414,844, granted November 12, 1889, to John Wallace Page and Charles M. Lamb, for a new and useful improvement in wire-fence machines, sustained and *Held* infringed by a machine constructed in accordance with Letters Patent No. 435,042, granted to Abel Land August 26, 1890.

2. PATENTEE PRESUMED TO BE THE FIRST INVENTOR UNTIL THE CONTRARY IS PROVED—BURDEN OF PROOF.

The rule is well settled that complainant's introduction in evidence of his patent in due form is sufficient to show that he is the first and original inventor of his device or improvement, as defined and construed by the courts, unless sufficient evidence to overcome that presumption and to establish the contrary allegation of the answer is exhibited in the record. The burden of proof is on the defendant to show that the patentee was not the original and first inventor.

3. SAME—SUBSEQUENT PATENT TO DEFENDANT.

A patent subsequently granted to the defendant does not overcome this *prima facie* presumption in favor of the prior patentee. (Citing *Goodyear Dental Co.* v. *Gardner*, 4 Fish., 224.)

Messrs. Dyrenforth & Dyrenforth for the complainant.

Mr. Grant Fellows, *Messrs. Salsbury & O'Mealey*, and *Mr. M. F. Chamblin* for the defendant.

JACKSON, *J.:*

The complainant corporation or assignee of the entire right, title, and interest in and to Letters Patent of the United States No. 414,844, granted November 12, 1889, to John W. Page and Charles M. Lamb, for a new and useful improvement in wire-fence machines, brings this suit against the defendant, Abel Land, for infringement thereof.

The bill, which was filed September 13, 1890, contains the averments and allegations usual in such cases, and need not be specially noticed. In his answer the defendant denies knowledge of complainant's title to said Letters Patent, but admits the issuance thereof at the date stated to said Page and Lamb. He denies that said patentees were the original, first, and joint inventors of the patented machine described in said letters, and states that said patentees—

surreptitiously and unjustly obtained said Letters Patent for that which was in fact invented by this defendant and his son, Stephen Land, and who were using reasonable diligence in adopting and perfecting the same, as was well known to said Page and Lamb when they applied for their Letters Patent.

He admits that he had made one or more machines

in accordance with Letters Patent No. 435,042, granted to himself August 26, 1890, and that he intends to use them and others like them for specified business purposes if found suitable, but he denies that his machines infringe complainant's patent. The assignment of said Letters Patent to complainant is fully established, and its title thereto was not questioned at the hearing. The defendant offered no proof in support of his denial that Page and Lamb were not the original, first, and joint inventors of the patented machines covered by and described in said Letters Patent No. 414,844, nor did he make any attempt to establish the claim set up that he and his son were the real inventors thereof. These questions are therefore out of case under the well-settled rule that complainant's introduction in evidence of his patent in due form is sufficient to show that he is the original and first inventor of his device or improvement, as the same may be construed and defined by the courts, unless sufficient evidence to overcome that presumption and to establish the contrary allegation of the answer is exhibited in the record. In other words, the burden of proof is in the defendant to show that the patentee was not the original and first inventor. (*Ransom* v. *Mayor of New York*, 1 Fish., 252; *Green* v. *French*, 21 O. G., 1351; 11 Fed. Rep., 591; *Doubleday* v. *Beatty*, 22 O. G., 859; 11 Fed. Rep., 729; *Union Stone Co.* v. *Allen*, 14 Fed. Rep., 353; *Agawam Co.* v. *Jordan*, 7 Wall., 583; *Seymour* v. *Osborne*, 11 Wall., 538; and *Mitchell* v. *Tilghman*, 19 Wall., 390, 391.)

The Letters Patent subsequently granted to the defendant does not overcome this *prima facie* presumption in favor of the prior patentee. (*Goodyear Dental Co.* v. *Gardner*, 4 Fish., 224, and cases cited.) It is also settled that said Letters Patent to Page and Lamb as joint inventors is *prima facie* evidence that the invention therein described was joint. (*Hotchkiss* v. *Greenwood*, 4 McLean, 456.)

At the hearing counsel for respondent contended that the proof failed to establish the fact that the defendant at the time the bill was filed had made or caused to be made and had used for the manufacture of wire fence one or more machines containing and embodying as a part thereof the inventions and improvements described and claimed in complainant's Letters Patent. Without reviewing the evidence, we think it is clearly shown by the testimony of the witnesses, Harvey and Abbott, that prior to the filing of the bill on September 13, 1890, the defendant had constructed and used the same in the making of wire fencing one or more machines which it is claimed embodied complainant's invention, and which contained substantially the same devices described in Letters Patent No. 435,042, issued to him August 26, 1890. It admits of little or no question, under the proof, that prior to the grant of said Letters Patent No. 435,042 he was constructing machines in accordance therewith which he admits in his answer he intends to employ in making enough fence to test, and if found suitable for the purpose—

to sell territory and machines for the manufacture of wire fence.

Under these circumstances the complainant's bill was not prematurely filed. Even if defendant had not prior thereto actually constructed machines for the manufacture of wire fence embodying the woof winding mechanism covered by complainant's Letters Patent, his intention to try machines embodying said invention and if found suitable for the purpose to sell the same for the manufacture of wire fence would be sufficient to sustain the bill. In such cases courts of equity recognize and enforce a larger and more remedial process than can be obtained in actions at law. This is clearly stated in *Woodworth* v. *Stone*, (3 Story's Rep., 749-750,) where it is said:

The case is not that of an action at law for the breach of a patent, to support which it is indispensable to establish a breach before the suit was brought. But in equity the doctrine is otherwise. A bill will lie for an injunction if the patent-right is admitted or has been established upon well-grounded proof of the apprehended intention of the defendant to follow (infringe) the patent-right. A bill *quia timet* is an ordinary remedial process in equity.

While the bill rests primarily upon the theory of actual prior infringement, still if that was not sustained the court can, under the prayer for general relief, proceed to protect the complainant's right from intended infringement by the exercise of its remedial process in the shape of an injunction if the case warrants such relief.

The remaining and real controverted question in the case is whether the defendant in the machines constructed or intended to be made by him for the manufacture of wire fencing infringes the complainant's patent or embodies any of the devices thereof covered by its claims. A full and detailed description of the Letters Patent sued on is not deemed necessary to the correct determination of this question. The patent in its entire mechanism is exceedingly elaborate and complicated, containing eight sheets of drawings, with thirty-seven figures, ten pages of specification and descriptions, and twenty-one different claims. As stated in the specification, the invention relates to a machine for manufacturing wire fences, and its operation taken as an entirety—

is in the nature of a weaving operation, the wires referred to as constituting the horizontal fence-wires affording the warp in the weaving and those referred to as the vertical or stay wires affording the woof. The warp-wires are fed from spools in desired number and at required distances apart to the take-up mechanism which receives the finished article and is actuated intermittingly to take up lengths thereof and alternates with a woof-wire winding and stringing device which as soon as a finished length of fencing has been taken up is actuated to travel transversely across the warp-wires, stopping at each and winding around it a woof-wire with which it is threaded.

This woof-wire winding and stringing device or mechanism, and its operation is described at length and in great detail, and it is stated that at the forward end thereof there is—

a hollow needle S, Fig 28, of approximately cylindrical shape and open along one side, having formed or provided around it near its center a pinion S', divided by a circumferential central groove S^2, and so supported in its bearings as to permit to it a rotary and also a slight longitudinal reciprocating motion, and the forward end of the needle is threaded with the woof-wire just about long enough to reach across the warp-wires when wound around each, and which we prefer to provide in the form of a coil S^3, Fig. 29.

The operation of this needle when set in motion is first to fall upon or straddle and surround the first warp-wire at the right-hand side of the machine and then to rotate about and reciprocate longitudinally along that wire, thereby winding around it the woof-wire with which it is threaded and forming a knot in the shape of an elongated forward twist, as represented in Fig. 30, which form of knot, as stated in the specification, "is desirable owing to its extreme security."

The woof-winding device rises and shifts automatically from one warp-wire to another and the threaded needle straddles and winds the woof-wire three times around each warp-wire throughout the series, when the device returns automatically to the place of beginning to repeat the operation upon a new section of fence. The needle S at the forward end of the woof-wire winding and stringing mechanism performs two separate and distinct functions or operations. By its rotary action it operates to wind the woof-wire with which it is threaded around each warp-wire, so as to make the tie or knot required for the desired mesh of the fence, and by its slight longitudinal reciprocating motion it operates to make such knot in the shape of an elongated twist, that form of knot being considered by the patentees most desirable for security.

After describing at great length the drawings and devices of their machine, the patentees state that—

the extremely complicated nature of the mechanism constituting our machine as illustrated and of the operations of the various parts has rendered necessary, we think, or at least advisable, the foregoing detailed description. We wish, however, to have it clearly understood that we do not consider our invention to lie in mere details of the construction, many of which may be, as we and others skilled in the art to which our machine relates might readily suggest, altered and simplified and some even entirely omitted. The appended claims are therefore intended to be construed as broadly as the state of the art will permit for a machine involving generally any construction which, when broadly considered, is analogous to ours for its purposes, first, with relation to the warp-wires alone, and this whether or not the latter are coiled; second, with relation to mechanism which will automatically wind and string the woof-wire across the warp-wires; third, with relation to the co-operation of the warp and woof wire weaving mechanisms.

Then follow numerous claims relating to the different devices by which the warp-wires are caused to progress intermittingly, by which the woof-winding mechanism is carried across the series of warp-wires from one to the other, by which the woof-winding mechanism, after having completed the operation, is returned to its starting-point, by which the finished fence as it is constructed is stored upon the reel. These and several others relating to other features of the patent are not involved in the present suit and need not be noticed. The twelfth claim, of which alone infringement is asserted and relied upon at the hearing, relates to the needle device by which, as the woof-wire is carried to each warp-wire of the series in turn, it is wound around or about each warp-wire, thus forming the mesh of the fence. Said twelfth claim is as follows:

In a device for use in the manufacture of wire fence comprising wires crossing each other and secured together where they cross, for winding and stringing a woof-wire upon the warp-wires, a longitudinally-slotted needle S, adapted to hold the woof-wire and supported to rotate in its bearing, substantially as and for the purpose set forth.

It is said on behalf of complainant that this device constitutes the fundamental principle of the patentee's machine, and is the nucleus about which all other mechanisms of the patent are formed and which must be found in all other machines constructing or manufacturing similar fence to render their operation successful.

There is no proof in the record showing this state of the art on the subject of wire-fence-manufacturing machines when complainant's patent was granted. It may, therefore, be assumed in its favor that said patent is of such a pioneer character as to entitle its claims to a broad and liberal construction, such as will sustain the patentee's invention.

The complainant's expert, William S. Bates, after stating that defendant's woof-winding mechanism was substantially the same as that described in the patent sued on, proceeds to give his construction of said twelfth claim and a comparison thereof with the corresponding mechanism in defendant's machine as follows:

The twelfth claim in terms refers to a device for winding and stringing woof-wire upon the warp-wires of a wire fence. The mechanism claimed in the claim is a longitudinally-slotted needle, adapted to hold the woof-wire, and supported to rotate in its bearings, as set forth in the specification and drawings of the patent. This needle is supported that it may be moved across the fence from side to side; it may be stopped opposite each warp-wire, and may there be moved toward the wire, so that the slotted needle straddles the wire, (warp,) bringing the wire into its axis. It is then revolved and winds the woof-wire upon the warp-wire, and it is then raised (automatically) off the warp-wire and moved on to the next one, where the same operation takes place. The slot in the needle enables it to straddle the warp-wire and release it again, so as to wind the woof-wire around it and pass onto the next warp-wire. The needle is supported in the bearing so that it can revolve on the arm, which is pivoted so as to carry the needle toward and from the warp-wire. This arm also travels across the fence to move the needle from one wire to another. The needle itself is composed, essentially, of a pinion by which it is revolved, a slot in the pinion to enable it to straddle the warp-wires, and a bearing to support it, and the eye through which the woof-wire is threaded, so that it is carried by the needle. Other parts of the device are immaterial to the subject of this claim. Turning now to defendant's woof-winding mechanism, I find in it an arm which travels across the fence from side to side, which is adapted to stop opposite each warp-wire. This arm is pivoted so that it can approach and recede from the warp-wire, and it has a pinion mounted in a bearing in it, and corresponding with the pinion of complainant's patent. This pinion in defendant's mechanism is slotted to enable it to straddle the warp-wires; it has a bearing to support it on the arm, and it has a projection with an eye in it through which the woof-wire is threaded. The woof-wire is thus carried by the slotted pinion, and when the pinion straddles the warp-wire and it is revolved the woof-wire is twisted around the warp-wire. When the pinion leaves the warp-wire and moves on to the next, it carries the coil of woof-wire with it and twists it around the next warp-wire, and so on across the fence. This device in defendant's mechanism, therefore, has all the material elements of the complainant's mechanism as defined in the twelfth claim of the patent. Both mechanisms have what is called in the patent "a longitudinally-slotted needle"—that is, they both have a slotted pinion mounted in a bearing so that it can revolve, and provided with a projection and an eye in it through which the woof-wire is threaded. The mode of operation is the same in both of them—that is, they straddle the warp-wire, bring the wire into the axis of the needle or pinion, by virtue of the slot in it, and thus revolve, carrying the coil of woof-wire around the warp-wire, thus twisting it around the warp wire, and then by virtue of the slot leave the warp-wire and pass on to the next one and repeat the operation. The function and mode of operation being the same and the important parts of construction being the same, I consider that the two devices are identical, notwithstanding some slight differences of form which exist.

He then points out as differences of form the fact that the projection which carries the needle in complainant's device is nearly cylindrical or in the form of a slotted sleeve, while in the defendant's arrangement the useless portions of metal are cut away, leaving an arm, which is nearly flat, projecting from the pinion; also, that the pinion in defendant's device is larger in proportion than in complainant's. Again, complainant's needle revolves always in the same direction, while the defendant's revolves alternately in opposite directions, thus changing the direction of the wind of the woof-wire on the warp-wire. This, it is said, is a mere matter of choice, depending upon the gearing of the needle and involving only mere matters of mechanical preference. Again, the needle in complainant's mechanism, as it rotates to wind the woof-wire upon the warp-wire, is also moved longitudinally to a slight extent, so as to cross the coil or tie of the woof-wire, and thereby form the elongated twist-knot already mentioned. In the defendant's mechanism there is no such longitudinal reciprocating motion. This last difference in the two devices is the one mainly relied upon by defendant and his expert to establish non-infringement. This slight longitudinal reciprocating motion of the complainant's needle is not in terms referred to in said twelfth claim and is clearly shown not to be necessary in the manu-

facture of wire fences, but it is described in the specification as desirable, for the reason that it operates to form an elongated twist-knot, which has greater security than the simple crossing of the wires. The positions taken on behalf of defendant are: first, that said longitudinal reciprocating motion of the needle in the woof-winding mechanism of the patent, having been described as one of its functions or operations, should be taken as an essential element of the device or combination covered by the twelfth claim and which the court cannot properly treat as immaterial under the rule laid down in *Union Water Works* v. *Draper* (101 U. S., 232) and *Gage* v. *Herring* (23 O. G., 2119, 107 U. S., 640) that a patentee makes all the elements of a combination material by the restricted form of his claim; second, that the separate elements of which the combination is composed are not included in the monopoly of the patent as held in *Rowell* v. *Lindsay* (31 O. G., 120, 113 U. S., 97) and *Voss* v. *Fisher* (30 O. G., 1096, 113 U. S., 213,) and, third, that the patent being for a combination of several elements and defendant not using one of them—viz., the longitudinal reciprocating motion of the needle or pinion—there is no infringement upon the well-settled doctrine illustrated by the cases of *Vance* v. *Campbell*, (1 Blatchf., 427,) *Dunbar* v. *Myers*, (11 O. G., 35, 94 U. S., 187,) and other authorities.

The decision of the case accordingly turns upon the question whether claim 12 of the patent is to be restricted by descriptive limitations—that is to say, by reading into it as a material element thereof the slight longitudinal reciprocating motion of the needle S, as counsel for defendant contends. If the claim is thus restricted, there is clearly no infringement. If it is not construed to include such longitudinal reciprocating motion of the needle, it is equally clear that there is infringement. As already stated, the claim does not in terms mention this longitudinal motion of the needle, but refers to its rotary action. The object and purpose of the two motions were essentially distinct and different. The rotary motion was intended and operated to wind the woof-wire around the warp-wire to form the mesh of the fence. The longitudinal reciprocating motion was designed and operated to form a knot of such shape as the patentees considered most desirable for security. It was preferential in its character. The mechanism as a woof-winding device for crossing the woof-wire around the warp-wire is in itself complete and operative without the longitudinal motion of the needle. That the patentees did not intend to cover the latter feature and operation of the needle by the twelfth claim is clearly shown by the fourteenth claim, which distinctly and in express language includes such motions of the needle. The fourteeth claim is as follows:

> In a device for use in the manufacture of wire fence comprising wires crossing each other and secured together where they cross for winding and stringing a woof-wire upon the warp-wires, a longitudinally-slotted needle S, adapted to hold the woof-wire and supported to be rotated on its own axis and be reciprocated longitudinally in its bearing, substantially as and for the purpose set forth.

It is perfectly manifest, therefore, that the patentees intended by the fourteenth claim to cover both the rotary and the longitudinal reciprocating motions of the needle S, and that the twelfth claim was intended to cover only the needle's rotary motion. The construction which defendant's counsel contend for will make the twelfth and fourteenth claims identical. In *Tondeur* v. *Stewart* (28 Fed. Rep., 561) it was said by Judge Acheson that a construction which would make two distinct claims of a patent cover not different things, but one and the same thing was a result to be avoided, if possible. *Tondeur* v. *Stewart* presented substantially the same question involved in this case. When a patented device performs two distinct operations and for distinct purposes, no reason is perceived why a claim based thereon may not be made to cover only one of such operations without including the other. The twelfth claim of the patent sued on relates to the slotted needle S, not generally or broadly as described in the specification, but only as it is adapted to hold the woof-wire and supported to rotate in its bearing, substantially as and for the purpose (not purposes) set forth. The purpose of the rotary motion of the needle, as set forth, was only to wind the woof-wire around the warp-wire. That was its main and most important function. That feature the claim was intended to cover. The longitudinal reciprocating motion of the needle effected by or through the circumferential groove S^3 and employed to form a knot of certain preferential shape is carefully omitted from the claim. No good reason appears for reading that feature of the needle's movement into the claim. There is nothing in the specification which may be looked to in ascertaining the true scope of the invention which will warrant the court in so construing the twelfth claim as to make it include by intendment or operation of law the longitudinal reciprocating motion of the needle, and thereby make said claim identical with the fourteenth claim of the patent; nor is there anything disclosed by the record as to the state of the art which should lead the court to so restrict the claim as to thereby protect the infringer, who has embodied the very essence of the patentee's invention. The patent in our opinion is entitled to a more liberal construction, such as was adopted in *Lake Shore and Michigan Southern Ry. Co.* v. *National Car Brake Shoe Co.*, (26 O. G., 915, 110 U. S., 229–238.)

The claims of the patent there sued on (No. 40,156, granted to James Bing October, 1863, for an improvement in car-brakes) were as follows:

> 1. The shoe A and sole B, both being constructed and adapted to each other, substantially as described, so that the sole can have a lateral rocking movement on the shoe, for the purposes specified.
>
> 2. The combination of shoe A, sole B, clevis D, and bolt G, the whole being constructed and arranged substantially as specified.

Only the second claim was sued on. The defendant contended that the element of the lateral rocking motion or movement of the sole B should be read into the claim, as it was described as one of the features of the sole in the specification. It was held both in the lower court (4 Fed. Rep., 219) and in the Supreme Court that this contention on behalf of defendant could not be sustained; that the intent to cover a broader construction was fairly deducible from the specification and nothing appearing to show that the patentee was not entitled to the broader construction. That suit involved almost the direct point under consideration in the present case, and is conclusive against the restricted construction which it is sought to have placed upon the twelfth claim.

The conclusion of the court is that the slight longitudinal reciprocating motion of the needle S is not an element of the twelfth claim and that the device covered by said claim is infringed by the defendant's machine. It follows that complainant is entitled to the relief sought by its bill and that defendant should be enjoined from further infringement, which is accordingly so ordered and adjudged with costs of suit to be taxed against the defendant. The usual reference may be had, if desired, by complainant.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Issue of April 12, 1892.

Patents	455—No	472,515 to No. 472,969, inclusive.
Designs	14—No.	21,453 to No. 21,466, inclusive.
Trade-Marks	24—No.	20,954 to No. 20,977, inclusive.
Labels	None.	
Reissue	1—No.	11,232.
Total issue	494	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire		
Arkansas	3		New Jersey	18	
California	17		New Mexico Territ'y		
Colorado	4		New York	93	7
Connecticut	21		North Carolina	1	
Delaware	1		North Dakota		
District of Columbia	5		Ohio	34	3
Florida			Oregon		
Georgia	2		Pennsylvania	54	1
Idaho	1		Rhode Island	6	
Illinois	44	4	South Carolina	4	
Indian Territory			South Dakota	2	
Indiana	13	1	Tennessee	2	
Iowa	3		Texas	7	
Kansas	8	1	Utah Territory	1	
Kentucky	6	1	Vermont	3	
Louisiana	1		Virginia	2	
Maine	1		Washington	2	
Maryland	5		West Virginia	2	
Massachusetts	29	3	Wisconsin	10	
Michigan	9		Wyoming		
Minnesota	7	1	U. S. Army	1	
Mississippi			U. S. Navy		
Missouri	7				
Montana	2		Total to citizens of the United States	433	22
Nebraska	2				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1		Netherlands		
Barbadoes			Newfoundland		
Belgium			New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	6		Queensland		
Cape Colony			Russia		
Chile, Republic of			Scotland		
Cuba	1		South Africa		
Denmark			South Australia		
Ecuador			Spain		
England	11		Sweden		2
France	1		Switzerland	1	
Germany	12		Victoria	2	
Guatemala			West Australia		
India	1				
Ireland			Total to citizens of foreign countries	36	2
Mexico					

CONDITION OF THE WORK in the Examining Divisions at the Close of Business April 5, 1892.

Room No.	Division No.	Subjects of invention.	Oldest new application awaiting office action. New.	Oldest new application awaiting office action. Amended.	No. of applications awaiting action.	Arrears in months.
105	XI	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Feb. 12	Apr. 2	231	
209	XIV	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Feb. 27	Mar. 30	68	
240	VII	Harvesters, Games and Toys	Feb. 15	Mar. 29	240	
249	VIII	Furniture, Toilet, Umbrellas and Canes, etc	Feb. 15	Mar. 26	231	
30	XII	Mechanical Engineering, Store-Service, etc	Feb. 23	Mar. 25	176	
111	XXXII	Advertising, Baggage, Packing and Storing Vessels, etc.	Feb. 5	Mar. 22	316	Between 1–2.
39	XXXI	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Feb. 8	Mar. 21	157	
25	XXX	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Feb. 8	Mar. 21	194	
217	V	Fine Arts, Stationery, Book-Binding, Music, etc.	Feb. 20	Mar. 16	133	
221	XXIII	Instruments of Precision, Acoustics, Optics, etc.	Feb. 8	Mar. 15	204	
248	XVIII	Steam-Engineering, etc	Jan. 8	Mar. 30	299	
243	XXV	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Jan. 15	Mar. 28	229	
91	XVI	Telegraphy, Telephony, Electric Lighting and Signaling.	Jan. 25	Mar. 24	260	
93	XXI	Textiles, etc	Jan. 15	Mar. 24	186	
106	II	Farm Stock, Products, etc	Jan. 15	Mar. 21	249	
251	XIII	Metal-Working, Arms and Projectiles, etc	Jan. 9	Mar. 19	270	
122	XXIV	Sewing-Machines and Apparel	Jan. 9	Mar. 17	162	
109	XXII	Firearms, Navigation, Signals, etc	Jan. 22	Mar. 16	189	
149	III	Metallurgy, Metal Founding, Forging. Rolling, Coating, Annealing and Tempering, etc.	Jan. 6	Mar. 12	237	Between 2–3.
153	XX	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Feb. 1	Mar. 11	147	
215	XVII	Paper-Manufactures and Printing	Jan. 29	Mar. 11	181	
102	XIX	Stoves and Furnaces	Jan. 6	Mar. 4	458	
32	IV	Civil Engineering, etc	Jan. 14	Mar. 2	430	
223	XXVII	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Jan. 8	Mar. 1	316	
85	X	Carriages and Wagons and Railway-Cars	Jan. 20	Feb. 23	521	
120	IX	Hydraulics, Fire-Extinguishers, etc	Jan. 7	Feb. 17	357	
246	I	Tillage and Fences	Jan. 26	Feb. 10	303	
155	VI	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Dec. 12	Mar. 16	288	Between 3–4.
128	XXIX	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Nov. 17	Mar. 17	413	
87	XXVI	Electricity, Generation, Distribution, etc	Nov. 12	Mar. 3	381	Between 4–5.
35	XXVIII	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Nov. 23	Feb. 14	351	
211	XV	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Oct. 8	Feb. 19	293	Between 5–6.
		Total number of applications awaiting action			8,469	
		Designs	Apr. 2	Apr. 2	18	Under 1.
		Trade-Marks	Mar. 30	Mar. 31	15	

PATENTS

GRANTED APRIL 12, 1892.

472,515. POTATO-MASHER. CHARLES S. APPLE, Bellaire, Ohio. Filed July 29, 1891. Serial No. 401,032. (No model.)



Claim.—1. An improved article of manufacture, consisting of a potato-masher having an enlarged head, and with a beater at its lower end, consisting of an elastic wire bent in the form of a spiral.

2. An improved article of manufacture, consisting of a potato-masher A, having a handle *a*, an enlarged mashing portion *b*, and with a beater *c* at its lower end, consisting of an elastic wire bent in the form of a spiral.

472,516. WIRE-STAPLE MAKING AND DRIVING MACHINE. WILLIS E. ARNOLD, Danville, Ill. Filed July 9, 1891. Serial No. 398,904. (No model.)



Claim.—1. The combination of the head, the driver, the supporting-frame, the lever engaging the head and pivoted on the supporting-frame, the lever pivotally connected with the driver and having its end pivoted to the end of the first-mentioned lever, and suitable operating mechanism.

2. The combination of the supporting-frame, the vertically-adjustable rod mounted thereon, and the levers having a common pivotal connection with the said rod and adapted to operate the head and the driver.

3. The combination of the supporting-frame, the dogs pivoted thereon, the clinching-bar having a beveled upper end and arranged below and between the dogs, and suitable operating mechanism.

4. The combination of the wire-holding frame, the feed-arm pivoted thereon, and the driver arranged adjacent to the wire-holding frame and provided near its upper end with an inclined surface moving over the upper end of the feed-arm to vibrate the same.

5. The combination of the wire-holding frame, the feed-arm pivoted thereon, the knife pivotally mounted on the side of the wire-holding frame, and the driver provided with inclined surfaces adapted to operate the feed-arm and the knife by moving over the upper ends of the same.

6. The combination of a vertically-moving driver, a laterally-swinging feed-arm operated by the driver, and a knife swinging at right angles to the feed-arm and also operated by the driver.

7. The combination of the wire-holding frame, the guide at the lower inner corner of the same, the feed-arm pivoted to the wire-holding frame and having its lower end swinging to and away from the said guide, the knife pivoted to the said frame and vibrating across the guide, and suitable operating mechanism.

8. The combination of the driver, the anvil normally projecting under the lower end of the driver, and the vertically-movable staple-former mounted on the lower end of the driver and adapted to take the wire from the anvil and form the staple.

9. The combination of the driver, the anvil, the lifting-head at the lower end of the driver, and the vertically-movable staple-former mounted on the lifting-head.

10. The combination of the driver, the staple-former on the lower end of the same to form the staple, the lifting-head, and the staple-supporter.

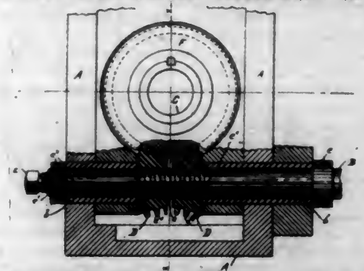
11. The combination of the driver, the face-plate provided with a stop, the lifting-head at the lower end of the driver, the staple-former mounted on the said lifting-head, and the dog mounted within the driver above the staple-former and adapted to engage the upper end of the same and be released therefrom by the stop on the face-plate.

12. The anvil-block consisting of a spring-plate having an enlargement at its lower end, provided with a transverse groove in its edge.

13. The combination of the face-plate, the driver having a recess, and a cam in the lower end of the said recess, and the staple-supporter pivoted in the face-plate and having its upper end playing in the recess in the driver and resting on the cam at the lower end of the said recess.

14. The combination of a driver, a lifting-head at the lower end of the same, a staple-former mounted on the lifting-head, a dog carried by the driver and adapted to engage the upper end of the staple-former, a spring-anvil adapted to hold the wire in the path of the staple-former, and a staple-supporter operated by the driver and adapted to support the staple within the staple-former.

472,517. WORM AND WORM-SHAFT. OSCAR J. BEALS, Providence, R. I., assignor to The Brown & Sharpe Manufacturing Company, same place. Filed July 22, 1891. Serial No. 400,277. (No model.)

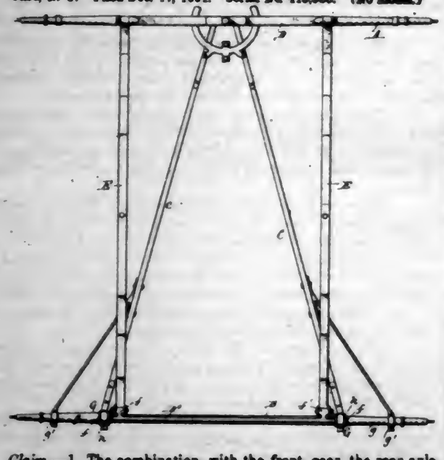


Claim.—1. The combination, with a worm-shaft, of two tapering worms mounted upon said shaft, both said shaft and worms being

provided with screw-threads of the same pitch as the worm-thread, whereby said worms may be adjusted lengthwise of said shaft without changing the relation of the worm-threads thereon, and means for holding said worms in any adjusted position upon said shaft, substantially as described.

2. The combination of a worm-shaft provided with a central recess *d*, tapering at its end, and with slots *d'*, a tapering worm mounted upon said worm-shaft, and a screw-threaded pin D, fitted to enter the recess *d* in said worm-shaft and provided with a tapering end, whereby said tapering worm may be firmly held in position upon said worm-shaft, substantially as described.

472,518. SPRING-VEHICLE. CHRISTOPHER C. BRADLEY, Syracuse, N. Y. Filed Dec. 17, 1891. Serial No. 415,325. (No model.)

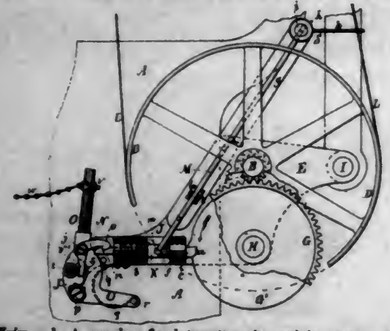


Claim.—1. The combination, with the front gear, the rear axle, and the side springs, of an equalizing-rod supporting the rear ends of the side springs and provided with knuckles having bearing-surfaces which rise from both ends toward the middle, and correspondingly-shaped bearings arranged upon the rear axle, substantially as set forth.

2. The combination, with the front gear, the rear axle, and the side springs, of an equalizing-rod provided at its ends with V-shaped knuckles, correspondingly-shaped bearings secured to the rear axle, and depending lugs formed on the equalizing-rod on the inner sides of its bearings and attached with their lower ends to the rear ends of the side springs, substantially as set forth.

3. The combination, with the front gear and the rear axle having a depressed body and raised arms, of bearings secured to the upper sides of the axle-body, an equalizing-rod arranged over the depressed body and journaled with its ends in said bearings, depending lugs secured to the equalizing-rod, side springs attached with their rear ends to the lugs of the equalizing-rod, and a transverse spring secured to the front gear and attached with its ends to the front ends of the side springs, substantially as set forth.

472,519. GEAR-CUTTING MACHINE. ANGE H. BRAINARD, Hyde Park, Mass. Filed Nov. 26, 1890. Serial No. 372,730. (No model.)



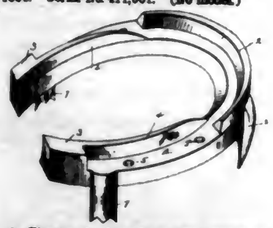
Claim.—1. A gearing for intermittently applying power to the spacing device of an automatic gear-cutting machine, the same consisting of a pulley geared and arranged to drive the change-gear mechanism, and a loose pulley, and means, substantially as described, for intermittently moving the driving-belt from one pulley to the other, said means being composed of a shipper, a support therefor, a shipper-operative lever fulcrumed to said support, a slide-bolt sustained in bearings therein, said bolt provided with an incline for moving the shipper-lever on disengagement of said slide-bolt from disk G', a spring for reseating the slide-bolt in said disk, a lever-latch for retracting said bolt, a lever O, fulcrumed to the support-piece, provided with springs *s q*, and the eccentric for adjusting the lever-latch in relation to the slide-bolt, said lever O connected to the slide of the machine for swinging it on its fulcrum, all substantially as specified.

2. The combination, with the gearing, of slide K, arm *g*, shippers S, lever M, and arm O, with its adjustable chain *w*, lever N, springs *s q*, and eccentric *u*, all substantially as specified.

3. The combination, with the feed-shaft I of a gear-cutting machine, of shaft H, connected therewith by suitable change-gears, disk G', engaged by the slide K, gear G, connected with disk G', pinion F, engaging gear G and carried by pulley C, the pulleys C D, belt L, shipper S, and automatic devices for working slide K, all substantially as specified.

4. The notched disk G', slide-bolt K, with its inclined plane, and spring *e*, lever M, rod *i*, spring *i'*, and shipper-arms *k k*, all substantially as shown, and for the purpose set forth.

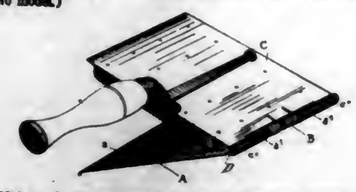
472,520. HORSESHOE. JAMES E. BULL, Tracy City, Tenn. Filed Nov. 12, 1891. Serial No. 411,681. (No model.)



Claim.—1. The herein-described shoe, consisting of the tread portion, the curved toe-calk extending rearwardly to a point near the quarters and at the outer edge of the shoe, the heel-calks, and the flanges extending from said heel-calks along the inner edge of the shoe to points opposite the ends of the toe-calk, substantially as specified.

2. The herein-described shoe, integrally molded and consisting of the tread portion having the toe-flange and curved toe-calk, the opposite malleable serrated keepers, the heel-calks, and the flanges extending along the inner edge of the shoe from the heel-calks to points opposite the toe-calks, substantially as specified.

472,521. CURRY-COMB. GEORGE S. BURNETT and THOMAS SWEENEY, San Francisco, Cal. Filed Oct. 16, 1891. Serial No. 408,945. (No model.)

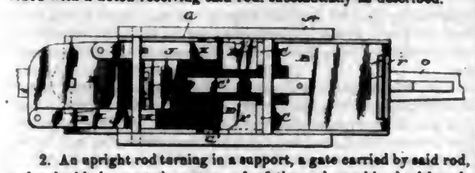


Claim.—1. A curry-comb having a vibrating cleaner, consisting of a slotted plate forming a number of bars or strips, which set between the rows of teeth and are joined together at the ends beyond the teeth, a hinge uniting said plate at one end to the body of the comb, leaving the other end free to vibrate, and a spring applied to the said plate to bring it back into place below the teeth after the outward movement, substantially as hereinbefore described.

2. The combination, with a curry-comb, of the vibrating cleaner A, having slits or intervals of space for the teeth, a hinge uniting the cleaner by one end to the body of the comb, and the spring applied to the plate at the hinge-joint, substantially as described, to operate as set forth.

472,522. GATE. J. R. CARPENTER, Monmouth, Ill. Filed Jan. 11, 1892. Serial No. 417,661. (No model.)

Claim.—1. A hinge-post, a rod pivotally connected thereto, and a gate carried by the rod, combined with a double lever secured to the rod, latches pivotally connected with the arms of said lever, a sliding block adapted alternately to engage said latches and having a transverse rod at its rear end, and an operating-lever having an arm provided with a notch receiving said rod, substantially as described.



2. An upright rod turning in a support, a gate carried by said rod, and a double lever at the upper end of the rod, combined with rods pivoted to the arms of the lever, latches connected by horizontal pivots with said rods, a sliding block having side fingers, and latch-lifters pivoted to said fingers, as and for the purpose set forth.

3. An upright rod turning in a support and carrying a gate, a double lever secured to said rod, and two latches pivotally connected with the arms of the lever and having their free ends beveled, in combination with a sliding block having fingers, latch-lifters pivoted to said fingers and having shoulders and tracks on which the shoulders move, said tracks having inclines, as and for the purpose set forth.

4. A pivoted lever having a forked end, a hinge-post on which said fork slides, and a stop on the post, in combination with an arm rising from the pivot of the lever and fast on the latter, the upper end of the arm being notched, a casing, a block sliding therein and having a transverse rod seated in said notch, a swinging gate, and connections, substantially as described, between said block and gate, as and for the purpose set forth.

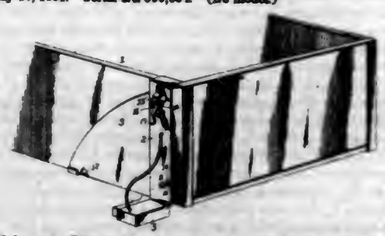
5. A pivoted double lever and a gate connected therewith, in combination with two latches pivotally connected with the arms of said lever and having shoulders, means for alternately pushing said latches, a movable locking-bar having teeth adapted to engage said shoulders when the latches are forward, and means for moving said bar at the instant the push commences, as and for the purpose set forth.

6. A centrally-pivoted double lever and a gate connected therewith, in combination with two latches pivotally connected with the arms of said lever and having shoulders on their upper faces, a vertically-moving locking-bar adapted to engage the shoulder of the latch which is forward, a lifter-block, and means for simultaneously moving said block and turning the lever, as and for the purpose set forth.

7. A centrally-pivoted double lever and a gate connected therewith, in combination with latches pivotally connected with the two arms of said lever and having shoulders in their upper faces, a sliding block having side arms adapted to engage said latches, and also a central finger provided with a lifter-block, a vertically-movable locking-bar adapted to engage the shoulder of the latch which is forward, and a wing hinged to said bar and adapted to be raised by the lifter-block when the latter is driven forward, as and for the purpose set forth.

8. A casing having side tracks with inclines therein, a longitudinally-movable block within said casing having two side and one central finger, latch-lifters pivoted to the side fingers and provided with shoulders traveling on the tracks, and a bevel-faced lifter-block carried by the central finger, in combination with a transverse locking-bar whose ends move in vertical slots in the sides of the casing, two longitudinally-movable latches having shoulders adapted to be engaged by said locking-bar when depressed, a wing hinged to this bar between the latches, a swinging gate, and connections, substantially as described, between the latches and gate, as and for the purpose set forth.

472,523. END-GATE. CHARLES H. CHAIN, Alliance, Ohio. Filed July 17, 1891. Serial No. 399,834. (No model.)



Claim.—1. The combination of a wagon-body, sheet-metal straps 2, secured to the rear end thereof and forming spaces, an end-gate, sheet-metal wings secured to the end-gate and arranged in the spaces formed by the straps 2 and provided with curved slots arranged at the angles, the pintles engaging the slots, and the bolts arranged to engage the wings, whereby the end-gate is locked, substantially as described.

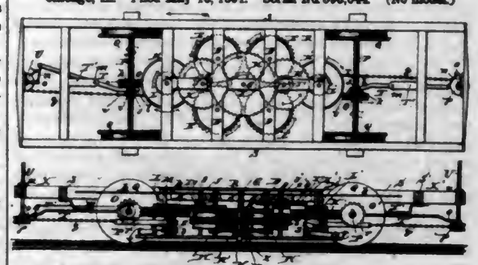
2. The combination of a wagon-body, metal straps 2, secured to the rear end thereof and forming spaces and provided with openings 11 and notches 10, communicating therewith, an end-gate, sheet-metal wings secured to the end-gate and arranged in the spaces formed by the straps 2 and provided with curved slots arranged at the angles, the removable pintles provided with lugs and arranged in the openings of the straps and engaging the curved slots, substantially as described.

3. The combination of a wagon-body provided with straps 2, forming spaces, an end-gate, quadrant-shaped sheet-metal wings provided at their curved edges with openings and having curved slots at their angles, pintles engaging the slots, keepers arranged on the straps, spring-actuated bolts arranged in the keepers and adapted to engage the openings of the wings, the levers and the pivots connecting the levers to the bolts and arranged near one side of the levers, whereby the levers are adapted to hold the bolts out of engagement with the wings, substantially as described.

4. The combination of a wagon-body, sheet-metal straps 2, secured to the rear end thereof and forming spaces, an end-gate, sheet-metal wings secured to the end-gate and arranged in the spaces formed by the straps 2 and provided at their angles with curved slots, and the pintles engaging the slots, substantially as described.

5. The combination of a wagon-body, straps 2, forming spaces, an end-gate, wings provided at their curved edges with openings, keepers arranged on the straps, spring-actuated bolts arranged in the keepers and adapted to engage the openings of the wings, the levers and the pivots connecting the levers to the bolts and arranged near one side of the levers, whereby the levers are adapted to hold the bolts out of engagement with the wings, substantially as described.

472,524. MOTOR FOR PROPELLING CARS. WALTER L. DAVIS, Chicago, Ill. Filed May 16, 1891. Serial No. 393,044. (No model.)



Claim.—1. The combination, in a motor, of a series of power-springs, a center pinion receiving the power of all the springs, a main wheel driven from the power applied to the center pinion, an axle-gear, and a connecting and power-transmitting mechanism between the main wheel and the axle-gear, substantially as and for the purposes specified.

2. The combination, in a motor, of a series of power-springs, a center pinion receiving power from all the springs, a main wheel driven by the power on the center pinion, a power-transmitting gear on opposite sides of the main drive-wheel, a connecting-gear between the main wheel and each power-transmitting gear, and an axle-gear for each power-transmitting gear, substantially as and for the purposes specified.

3. The combination, in a motor, of a series of power-springs, a center pinion receiving power from all of the springs, a main wheel driven from the power applied to the center pinion, power-transmitting gears on opposite sides of the main drive-wheel, a movable gear connecting and disconnecting the main drive-wheel and each power-transmitting gear, and an axle-gear for each power-transmitting gear, substantially as and for the purposes specified.

4. The combination, in a motor, of a series of power-springs, a center pinion receiving power from all of the springs, a main wheel driven from the center pinion by the power applied thereto, power-transmitting gears on opposite sides of the main drive-wheel, a movable gear connecting and disconnecting each power-transmitting gear with the main drive-wheel, and a movable axle-gear connecting and disconnecting the power-transmitting gear with the axle of the car, substantially as and for the purposes specified.

5. The combination, in a motor, of a series of barrels, an arbor for each barrel, a power-spring for each barrel, connected with the barrel and with the arbor, a gear for each barrel, a center pinion meshing with the barrel-gears and receiving power from all of the springs, a main wheel driven from the power applied to the center pinion, and a connecting and power-transmitting mechanism between the main drive-wheel and car-axle, substantially as and for the purposes specified.

6. The combination, in a motor, of a series of barrels, an arbor for each barrel, a power-spring for each barrel, connected with the barrel and with the arbor, a gear on each barrel, a center pinion meshing with the barrel-gears and receiving power from all the springs, a main wheel driven by the power applied to the center pinion, a power-transmitting gear, and a connecting-gear between the main drive-wheel and the power-transmitting gear, substantially as and for the purposes specified.

7. The combination, in a motor, of a series of barrels, an arbor for each barrel, a power-spring in each barrel, connected with the barrel and with the arbor, a center pinion receiving the power, a gear for each barrel, a center pinion meshing with the barrel-gears and receiving the power of all the springs, a main wheel driven by the power applied to the center pinion, a power-transmitting gear on opposite sides of the main drive-wheel, a connecting-gear between the main drive-wheel and each power-transmitting gear, and an axle-gear meshing with the power-transmitting gear, substantially as and for the purposes specified.

8. The combination, in a motor, of a series of barrels, an arbor for each barrel, a spring for each barrel, connected with the barrel and with the barrel-arbor, a gear for each barrel, a center pinion meshing with the barrel-gears and receiving the power of all the springs, a main wheel driven from the power applied to the center pinion, a power-transmitting gear on opposite sides of the main wheel, a movable gear connecting and disconnecting the main wheel with each power-transmitting gear, and a movable gear on each axle connecting and disconnecting the power-transmitting gear with the axle, substantially as and for the purposes specified.

9. The combination, in a motor, of a series of barrels arranged in pairs, an arbor for each barrel, with the arbors of two companion barrels connected to each other, a power-spring for each barrel, connected with the barrel and with the arbor, and a shaft for each pair of barrels, each shaft carrying the companion arbors for winding and releasing the springs of the barrels simultaneously, substantially as specified.

10. The combination, in an arbor, of a series of barrels arranged in pairs, an arbor for each barrel, with the arbors of two companion barrels connected to each other, a power-spring for each barrel, connected with the barrel and with the arbor, a shaft for each pair of barrels, each shaft receiving two companion arbors, a gear for each barrel, arranged on the barrels to lie face to face, a center pinion common to all the barrel-gears and receiving the power from all the springs, and a main wheel driven from the power applied to the center pinion, substantially as and for the purposes specified.

11. The combination, in a motor, of a series of barrels arranged in pairs, an arbor for each barrel, with the companion arbors connected one to the other, a power-spring for each barrel, connected with the barrel and with the arbor, a gear for each barrel, arranged face to face, a center pinion common to all the barrel-gears and receiving the power of all the springs, a main wheel driven from the power applied to the center pinion, and a power connecting and transmitting mechanism between the main drive-wheel and a car-axle, substantially as and for the purposes specified.

12. The combination, in a motor, of a series of barrels arranged in pairs, an arbor for each barrel, with the companion arbors connected one to the other, a power- pring for each barrel, connected with the barrel and with the arbor, a shaft for each pair of barrels receiving the companion arbors, a gear for each barrel arranged to have the gears of companion barrels face to face, a center pinion common to all of the barrel-gears and receiving power from all of the springs, a main wheel driven from the power applied to the center pinion, a power-transmitting gear on opposite sides of the main drive-wheel, a movable gear connecting and disconnecting each power-transmitting gear with the main drive-wheel, and a movable gear connecting and disconnecting each power-transmitting gear with a car-axle, substantially as and for the purposes specified.

13. The combination, in a motor, of a series of barrels arranged in pairs, an arbor for each barrel, with the companion barrels connected one to the other, a spring for each barrel, connected with the barrel and the arbor, a shaft for each pair of barrels receiving the companion arbors, a winding-pinion on each shaft, and a winding-gear common to all the winding-pinions for simultaneously winding all of the power-springs, substantially as specified.

14. The combination, in a motor, of a series of barrels arranged in pairs, an arbor for each barrel, with the companion arbors connected one to the other, a power-spring for each barrel, connected with the barrel and with the arbor, a shaft for each pair of barrels, each shaft carrying the companion arbors, a winding-pinion for each arbor-shaft, a winding-gear common to all of the winding-pinions, a gear on each barrel, arranged to have the companion gears face to face, a center pinion common to all of the barrel-gears and receiving the power of all the springs, a main wheel driven from the power applied to the center pinion, and a shaft carrying the power-pinion and the main wheel and mounted at one end in the hub of the winding-gear, substantially as and for the purposes specified.

15. The combination, in a motor, of a main drive-wheel, a power-transmitting gear on opposite sides of the main drive-wheel, and a movable gear connecting and disconnecting the main drive-wheel with the power-transmitting gear, substantially as and for the purposes specified.

16. The combination, in a motor, of a main drive-wheel, a power-transmitting gear on opposite sides of the main drive-wheel, a movable gear connecting and disconnecting the main drive-wheel and each power-transmitting gear, and a movable gear connecting and disconnecting each power-transmitting gear with a car-axle, substantially as and for the purposes specified.

17. The combination, in a motor, of a main drive-wheel, a power-transmitting gear on opposite sides of the main drive-wheel, a movable gear connecting and disconnecting the main drive-wheel with each power-transmitting gear, a locking means for each power-transmitting gear, and a movable gear connecting and disconnecting the power-transmitting gear with the axle of the car and operating coincident with the locking means for the transmitting-gear, substantially as and for the purposes specified.

18. The combination, in a motor, of a main drive-wheel, a power-transmitting gear on opposite sides of the main drive-wheel, a movable gear between each power-transmitting gear and the main drive-wheel, connecting and disconnecting the main drive-wheel with the power-transmitting gear, and means for moving each connecting-gear and having the actuating one released only from the opposite side of the main drive-wheel to that on which it is located, substantially as and for the purposes specified.

19. The combination, in a motor, of a main drive-wheel, a power-transmitting gear, a connecting-gear between the main drive-wheel and the power-transmitting gear and operated from the opposite platform of the car, a locking means for the power-transmitting gear, and a movable gear on the car-axle operated simultaneously with the movement of the locking means for the power-transmitting gear, substantially as and for the purposes specified.

20. The barrels A, arranged in pairs, arbors B, one for each barrel A, and springs C, one for each barrel A, in combination with the shafts D, one for each pair of barrels A, and each shaft carrying two companion arbors B, substantially as and for the purposes specified.

21. The barrels A, arranged in pairs, arbors B, one for each barrel A, clutches b^3, each connecting two companion arbors B, and springs C, one for each barrel A, in combination with the shafts D, one for each pair of barrels A, and each shaft carrying two companion arbors B, substantially as and for the purposes specified.

22. The barrels A, arranged in pairs, arbors B, one for each barrel A, springs C, one for each barrel A, and shafts D, one for each pair of barrels A, and each shaft carrying two companion arbors B, in combination with the gears E, one for each barrel A, with the gears of the companion barrels arranged face to face, and center pinion F, meshing with all of the gears E, substantially as and for the purposes specified.

23. The barrels A, arranged in pairs, arbors B, one for each barrel A, springs C, one for each barrel A, and shafts D, one for each pair of barrels A, and each shaft D carrying two companion arbors B, in combination with the gears E, one for each barrel A, with the gears for the companion barrels arranged face to face, center pinion F, meshing with all of the gears E, shaft G for the pinion F, and main wheel H, carried by the shaft G, substantially as and for the purposes specified.

24. The barrels A, arranged in pairs, arbors B, one for each barrel A, springs C, one for each barrel A, and shafts D, one for each pair of barrels A, and each shaft carrying two companion arbors B, in combination with the gears E, one for each barrel A, with the gears for the companion barrels arranged face to face, center pinion F, meshing with all of the gears E, shaft G for the pinion F, drive-wheel H, carried by the shaft G, pinion I, meshing with the main drive-wheel H, shaft J for the pinion I, gear K, carried by the shaft J, pinion L, meshing with the gear K, shaft M for the pinion L, and worm-gear N, carried by the shaft M, for transmitting the power of a series of springs to the worm-wheel N, substantially as and for the purposes specified.

25. The barrels A, arranged in pairs, arbors B, one for each barrel A, springs C, one for each barrel A, shafts D, one for each pair of barrels A, and each shaft carrying two companion arbors B, gears E, one for each barrel A, with the gears for companion barrels arranged face to face, center pinion F, meshing with all of the gears E, shaft G for the pinion F, and main drive-wheel H on the shaft G, in combination with the pinion I, shaft J, gear K, with the pinion I and gear K movable on the shaft J, pinion L for the gear K, shaft M of the pinion L, worm-gear N on the shaft M, movable gear O on the car-axle, and car-axle P, substantially as and for the purposes specified.

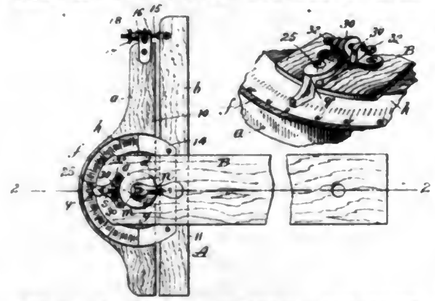
26. The barrels A, arranged in pairs, arbors B, one for each barrel A, springs C, one for each barrel A, shafts D, one for each pair of barrels A, and each shaft carrying two companion arbors B, gears E, one on each barrel A, with the gears for the companion barrels face to face, center pinion F, meshing with all of the gears E, shaft G for the center pinion F, and main drive-wheel H on the shaft G, in combination with the pinion I, shaft J, gear K, with the pinion I and gear K movable on the shaft J, pinion I', shaft J', gear K', with the pinion I' and gear K' movable on the shaft J', pinions L and L', shafts M and M', and worm-gear N and N', movable gears O and O', and car-axles P, substantially as and for the purposes specified.

27. The main drive-wheel H, pinions I and I', shafts J and J', and gears K and K', in combination with the pinions L and L', shafts M and M', worm-gears N and N', L-levers d, slots e, one in each long arm of the L-levers d, pins f, and hubs g, and rods h for connecting and disconnecting the main drive-wheel H and the worm-gears N and N', substantially as and for the purposes specified.

28. A worm-gear and an axle-gear movable on the axle and meshing with the worm-gear, in combination with the lever T, shaft U, connected with the lever T, chain q, wound from the shaft U, brake-band r, and hub or drum s on the worm-gear for connecting and disconnecting the worm-gear and an axle-gear and unlocking and locking the worm-gear, substantially as and for the purposes specified.

29. The winding-wheel V, having the hub v, with a key-hole v', in combination with the pinions W, each meshing with the wheel V, and shafts D, carrying the arbors B for winding the power-springs simultaneously, substantially as and for the purposes specified.

472,525. SQUARE WITH ADJUSTABLE HEADS. EBRA L. DRAPE, Holyoke, Mass. Filed May 18, 1891. Serial No. 393,135. (No model.)



Claim.—1. In a T-square, in combination, a head consisting of an outer bar and an inner bar and a lug rigidly fixed upon the inner bar and extended laterally therefrom upon the outer bar, and the blade overlying both bars, and a stud passed through the blade, the said lug, and the outer bar for constituting a pivotal connection, whereby all the said parts may move relatively to each other about the axis of the stud, and a means for confining said parts in their adjusted relations, substantially as described.

2. In a T-square, a compound head consisting of two bars, the one pivotally connected on the other, whereby it may range parallel therewith or be swung more or less angular thereto, a device for swinging the one bar with relation to the other and confining same, the blade mounted on the one of said bars and adapted to be fixed thereon, and a protractor secured on the other bar and movable as one therewith independently of the bar on which the blade is secured, and an index which is adjustable on the blade laterally with relation to the length of the blade and adapted to register with the protractor, for the purposes set forth.

3. In a square wherein one member is pivotally and angularly mounted on the other, a spindle or post supported on and engaged with the one member and projected through the other, and a cam pivoted on the spindle and adapted to be swung thereon to effect a compression between the said members, in the manner set forth.

4. In a T-square, a head therefor consisting of an outer bar and an inner bar and a lug extending from the inner bar across a portion of the outer bar, and a stud or pivot member engaging with said outer bar and said lug, a protractor secured upon the inner bar and overlying the outer bar concentric with said stud or pivot, a device for effecting the swinging of the one bar relative to the other, and the blade connected on the outer bar of the head, substantially as and for the purposes set forth.

5. In a T-square, a head consisting of two members or bars, an inner and an outer one, arranged substantially as described, a lug secured upon the inner and projected across a portion of the outer bar, the blade, and a pivot or stud passing through the outer bar, the said lug, and the blade, and adjusting and confining devices applied with relation to the said bars of the head for moving the one bar upon the other, for the purposes set forth.

6. In a T-square, the combination, with the outer bar provided with the depression d, the inner bar provided with the lug secured thereon and extended across the portion of the outer bar to lie within said depression below the face of the bar and adapted to have a play between the edges of said depression, the blade, and the pivot and confining-stud passing through same, said lug, and said outer bar, substantially as set forth.

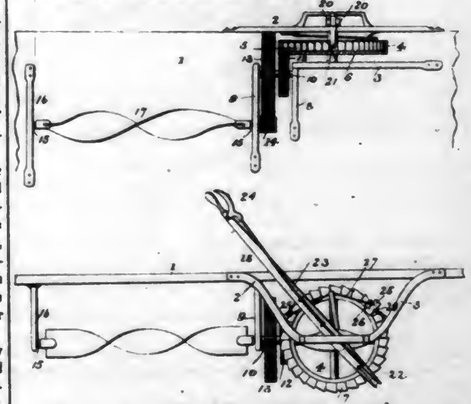
7. In a T-square, the head consisting of an outer bar provided with the depression d and the arc-formed depression f, the inner bar provided with the lug secured thereon and extended across a portion of the outer bar to lie within said depression below the face of the bar and adapted to have a play between the edges of said depression, the protractor comprising the segment of a ring secured upon the inner bar and extended therefrom to lie within the arc-formed depression of the outer bar, the blade and pivot member passing through said lug and the outer member of the head, and a device on the blade adapted to register with the graduations of the protractor, for the purposes set forth.

8. In a swivel-square, the combination, with one member apertured and having a tubular stud l, which is internally threaded and passed therethrough, of the other apertured square member and the screw-spindle m, passed through the latter member and with an engagement into said stud and having the cam-ended lever pivotally mounted thereon, and the clamp-plate o, surrounding said spindle, all arranged for operation substantially as set forth.

9. In a T-square, in combination, the bar a, having the recess d and the arc recess f, the bar b, having the lug g and the protractor h, and the adjusting and confining screw devices between said bars a and b, the blade passed loosely across the bar b and upon the face of bar a, the stud l, passing through bar b, said lug, and the blade, the screw-spindle m and the cam-lever thereon, and the clamp-plate o, and the index laterally adjustable on the blade, all arranged for operation substantially as described.

10. In a T-square, in combination, the head comprising the bars a and b, connected and adapted for movement substantially as described, and the latter having the protractor secured thereupon and projected to overlie and move relative to the bar a, the blade adapted to be fixed upon the bar a and having the adjustable index thereon, the same consisting of the pivoted finger q, the ear-pieces 30 30, and the adjusting-screws, substantially as described.

472,526. BOAT-PROPELLER. EDWARD G. DELOE, Knox, Pa. Filed July 11, 1891. Serial No. 399,130. (No model.)

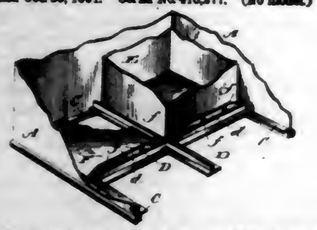


Claim.—1. In a boat, the combination, with the brackets secured thereto, the master-wheel pivoted in said brackets, having cogs upon its under side and ratchet-teeth upon its upper face, the propeller having a pinion, and the gears mounted upon a shaft journaled in said brackets and meshing, respectively, with said pinion and with the master-wheel, of the pivoted lever adapted to engage with said ratchet-teeth, the movable cage connected with the rim of said wheel, having a pivoted pawl adapted to engage with the said ratchet-teeth, a cord or rope connected therewith passing through a loop or eye on the bracket at one side of the master-wheel and secured to said lever, and a spring connecting the cage with the bracket on the opposite side of the master-wheel, substantially as described.

2. In a boat, the combination, with the brackets secured thereto, the master-wheel pivoted in said brackets, having cogs upon its under side and ratchet-teeth upon its upper face and periphery, the propeller having a pinion, and the gears mounted upon a shaft journaled in said brackets and meshing, respectively, with said pinion and with the

master-wheel, of the pivoted lever adapted to engage with the ratchet-teeth on the upper face of said wheel and having its end bifurcated, the two-armed pawl working in said bifurcation and adapted to engage with the peripheral ratchet-teeth of the master-wheel, the hand-lever pivoted to said lever, and the rod connecting said hand-lever with the two-armed pawl, substantially as described.

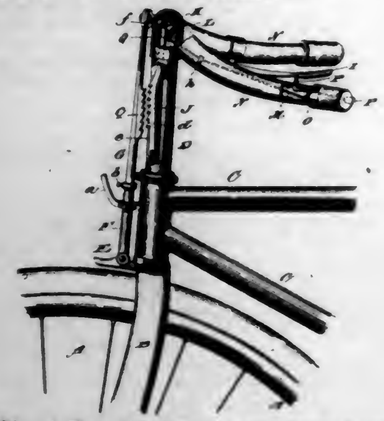
472,527. CULINARY ARTICLE. MARY J. DENISON, Johnsville, Ohio. Filed Oct. 29, 1891. Serial No. 410,277. (No model.)



Claim.—1. An oven consisting of a bottomless outer case with interior supports and removable false bottoms having upwardly-extended perforated flanges in the same horizontal plane, as set forth.

2. An oven consisting of an outer bottomless case, angle-bars secured to the inner walls thereof at the lower edge, T-bars supported thereon, and removable independent false bottoms supported upon the said bars, all in the same horizontal plane, substantially as specified.

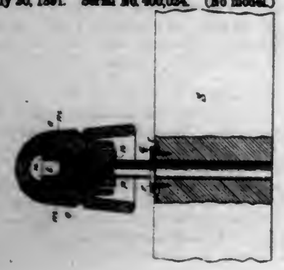
472,528. BICYCLE. WILLIAM H. DE WITT, Wilkes-Barré, Pa. Filed Oct. 14, 1891. Serial No. 408,702. (No model.)



Claim.—1. The combination, with a bicycle-brake, of a toothed bar connected therewith, a pivoted toothed bar within the head and pivotal connections arranged within the head, and handle-bars for operating the same, as set forth.

2. The combination, with a bicycle-brake, of a toothed bar connected therewith, a pivoted toothed arm parallel with said bar and pivoted within the head, pivotal connections for operating the same, and means extending through the handle-bar for operating said means, as set forth.

472,529. INSULATOR-SUPPORT. DENIS DORER, New York, N. Y. Filed July 20, 1891. Serial No. 400,024. (No model.)

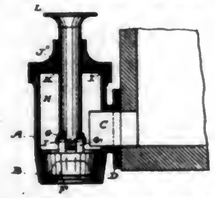


Claim.—1. The combination of a glass insulator, an iron pin for supporting the same, and a wooden thimble screwed thereon for making connection between said insulator and said iron pin.

2. The combination of a glass insulator having a screw-cavity, a pin *p* for supporting said insulator, having upon its upper end a ferrule of wood screwed thereon, whereby rigid connection between the pin and insulator may be formed without bringing the metal of the pin and the glass of the insulator in contact one with the other.

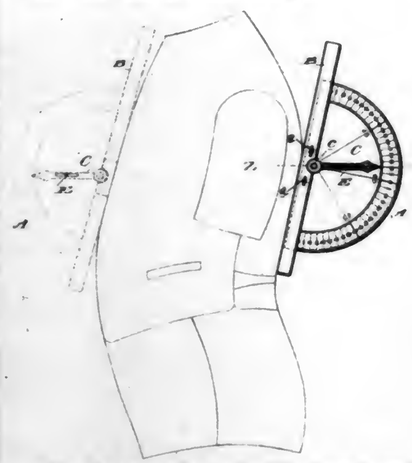
3. The combination of a glass insulator, a metal-supporting pin having a screw-thread upon its upper end, a ferrule of wood or other suitable material within which said pin is screwed, a screw-thread formed upon the exterior of said ferrule, and a cavity within the insulator provided with a female screw within which the iron pin and its ferrule are turned, substantially as described.

472,530. WASTE-WATER GATE FOR WASHING-MACHINES. LORENZO DWIGHT and ARTHUR A. JEPSON, San Francisco, Cal. Filed Aug. 29, 1891. Serial No. 404,142. (No model.)



Claim.—The herein-described waste-gate for washing-machines, consisting of the cylindrical body A, having a water-way with an opening in the side near the inner end, and the flange D for fixing it in place, and provided with a tapering seat around the outlet, the tapered valve F, fitted to said outlet having lugs on its top, the valve-rod H, fitted loosely between said lugs, the cross-pin I, and the screw-cap J×, with an opening for the rod, and the packing to form a water-tight joint around the rod, combined for operation as set forth.

472,531. PROTRACTOR. HENRY R. BEHELMAN, Reading, Pa. Filed Feb. 2, 1892. Serial No. 420,068. (No model.)



Claim.—The herein-described measuring implement, consisting of a ruler having a longitudinal kerf in one edge, a protractor having one side fitted in said kerf, thumb-screws for detachably holding the ruler and protractor together, a pointer pivotally held at the center of the circle from which the protractor is struck, a spirit-level on the pointer, and a pivot-pin held in the protractor to turn therein and fast in the pointer and provided with a washer upon the under side of the protractor, the ruler being cut away opposite the said pivot, substantially as and for the purpose specified.

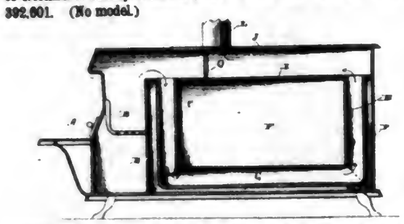
472,532. POWDER-BOX. WILLIAM P. FARRINGTON, New York, N. Y. Filed Aug. 19, 1891. Serial No. 403,089. (No model.)

Claim.—The combination of a box which is open at the bottom

and has a neck *a'*, that is flaring on top, with a flanged strainer inclosed by the neck beneath the flaring section, substantially as specified.

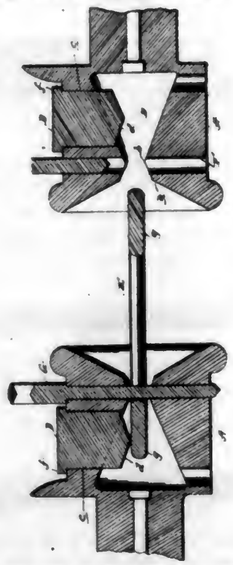


472,533. COOKING-STOVE. ELI C. FROST, Elmira, N. Y., assignor to Norman J. Thompson, same place. Filed May 13, 1891. Serial No. 392,601. (No model.)



Claim.—In a cooking-stove, the three series of pipes or flues which form the front, rear, and bottom of the oven, combined with the fire-pot, the damper, and the stovepipe, each one of the flues or pipes being separated from the others of the same series, substantially as shown and described.

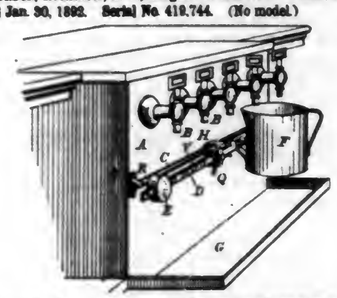
472,534. CAR-COUPLING. REUBEN L. GARLICK, Watertown, S. D. Filed May 11, 1891. Serial No. 392,412. (No model.)



Claim.—1. A draw-head having its mouth flaring and its throat beveled at a less angle, and also having a chamber in rear of the throat formed with inclined walls, in combination with a vertically-movable weight entering said chamber and having its lower end beveled to serve with a coupling-link, substantially as specified.

2. A draw-head having a flaring mouth, and the inner walls of its throat flaring at a less angle and opening rearwardly into a chamber having inclined walls, said draw-head also having a vertical angular aperture in its top and entering the chamber, in combination with a vertically-movable weight having its lower end beveled from a central point forwardly and rearwardly to serve in connection with a coupling-link, substantially as specified.

472,535. APPARATUS FOR WEIGHING LIQUORS. EDWARD Y. GORDON, Rochester, N. Y., assignor to Charles F. Wilkin, same place. Filed Jan. 30, 1892. Serial No. 419,744. (No model.)



Claim.—1. The combination, with a series of two or more delivery-faucets, of a horizontal supporting-rod arranged below the faucets, a block adapted to slide on the supporting-rod without turning thereon, a scale-beam pivoted in the block and provided with a graduation and a movable weight, and a measuring-vessel detachably connected to the beam by a lateral arm, which sustains the vessel outside the rod and beam and in proper relation underneath the faucets, substantially as described.

2. The combination, with a series of two or more delivery-faucets, of a horizontal round supporting-rod arranged below the faucets and attached to the counter or ice-box, a block adapted to slide on the supporting-rod and provided with a projecting arm bearing on the counter, a scale-beam pivoted in the block and provided with a graduation and a movable weight, and a measuring-vessel detachably connected to the beam by a lateral arm, which sustains the vessel outside the rod and beam and in proper relation underneath the faucets, substantially as described.

3. The combination, with a series of two or more delivery-faucets, of the horizontal supporting-rod C, attached to the counter or ice-box underneath the faucets by the socket R and notched socket S, the block H, adapted to slide on the rod without turning thereon, the scale-beam D, pivoted in the block and provided with a graduation and a movable weight, and a measuring-vessel detachably connected to the beam by a lateral arm, which sustains the vessel outside the rod and beam and in proper relation underneath the faucets, substantially as described.

4. The combination, with a series of delivery-faucets, of a longitudinally-adjustable scale-beam provided with a movable weight and a foot or support for a measuring-vessel, and a movable supplementary weight, whereby the empty vessel may be balanced, substantially as described.

5. The combination, with a series of delivery-faucets, of the support A, the rod C, sliding block H, scale-beam D, pivoted to the sliding block and provided with foot Y, and the rod W and balancing-weight X, substantially as described.

472,536. VETERINARY PARTURITION-HOOK. EPHRAIM H. GRAVES, Appleton, Wis. Filed July 29, 1891. Serial No. 401,031. (No model.)



Claim.—1. The combination, with an elongated shank, of a hook hinged to the shank and a sleeve held to slide over the joint of the shank and hook, substantially as shown and described.

2. The combination, with an elongated shank, of a jointed hook hinged to the shank and a sleeve to slide over the joint of the shank and hook, substantially as shown and described.

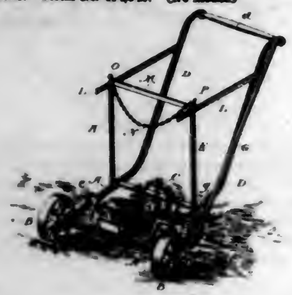
472,537. GRIDIRON. MATTHEW GRIEWOLD and MATTHEW GRIEWOLD, Jr., Erie, Pa. Filed July 27, 1891. Serial No. 400,796. (No model.)

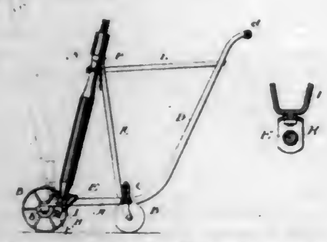


Claim.—1. In a double broiler, the upper grate-bars formed with gutters or made concave on their upper faces and provided with laterally-projecting lips overhanging and in combination with the grooved or concave bars of the lower portion of the broiler, substantially as described.

2. In a double broiler made in disk or circular form, the upper removable portion thereof, composed of bars formed with gutters in their upper faces and also formed with laterally-projecting lips on both sides or edges overhanging and in combination with the grooved bars of the lower portion of the broiler, substantially as and for the purpose specified.

472,538. BIT-TRUCK. WILLIAM A. GROVE, Tionesta, Pa. Filed Dec. 7, 1891. Serial No. 414,349. (No model.)





Claim.—1. In a bit-truck, as a device for elevating and lowering the bit, the crank-shaft E, with the loose collar H upon the crank, and bit-shoe I, attached to the collar by a swivel-joint, substantially as shown and described.

2. In a bit-truck, the crank-shaft E, with ratchet-wheel F attached to one end thereof, in combination with the lever G and pawl *g*, substantially as shown and described.

3. In a bit truck and elevator, the crank-shaft E, with ratchet-wheel F attached to one end thereof, the lever G, with pawl *g*, the pawls *f f*, the loose collar H upon the crank, and bit-shoe I, attached to the collar by a swivel-joint, all mounted on a truck-frame, substantially as shown and described.

4. In a bit truck and elevator, the frame consisting of the struts K K L L, cross-strut M, and chain O for holding the upper end of the bit vertical, or nearly so, substantially as shown and described.

5. The bit-shoe I, attached to the crank E by a swivel-joint and loose collar H, substantially as shown and described.

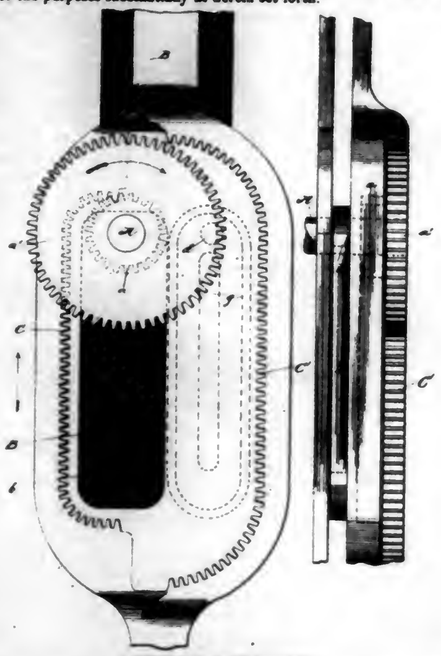
6. In a bit-truck, the device of an elevator attached to and mounted upon the truck for elevating or depressing the bit as required, substantially as shown.

7. A bit truck and elevator consisting of the frame A, mounted upon three wheels, the rear wheel being pivoted as a caster, the arms D D, the crank-shaft E, with ratchet-wheel F attached to one end thereof, lever G, pawls *g* and *f f*, mounted on said frame, struts K K, L L, and M, and chain O, all operating in combination, substantially as shown and described, and for the purposes herein set forth.

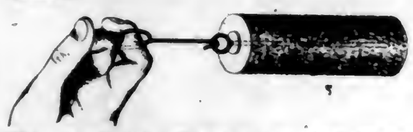
472,539. MECHANICAL MOVEMENT. JOHN W. HILL, Chicago, Ill. Filed June 20, 1891. Serial No. 396,940. (No model.)

Claim.—1. As a new mechanical movement, the combination of two differential driving-pinions revolving in the same direction, with a guided reciprocating yoke provided with two racks curved at their ends and adapted to engage alternately with the two pinions at opposite sides of their axes of revolution, substantially as described.

2. The combination of the differential pinions *a a'*, mounted on the shaft A, the slotted and guided yoke B, and the racks C C', said members being arranged and adapted to co-operate in the manner and for the purposes substantially as herein set forth.

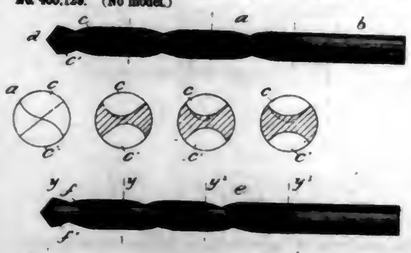


472,540. ABSORBENT FOR FIRE-KINDLERS. BENJAMIN B. JENKINS, Barrie, Canada. Filed May 11, 1891. Serial No. 392,365. (No specimens.)



Claim.—A composition of matter for a fire-kindler, consisting of asbestus, clay, borax, and glue, in substantially the proportions specified.

472,541. BORING-TOOL. MOSES C. JOHNSON, Hartford, assignor to the T. & B. Tool Company, Danbury, Conn. Filed Sept. 8, 1891. Serial No. 405,129. (No model.)

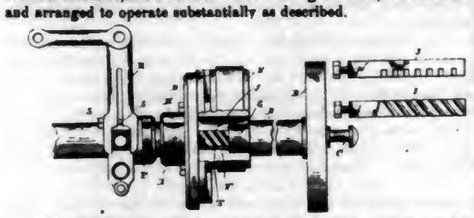


Claim.—As an improved article of manufacture, a drilling-tool having a spirally-grooved body, the groove being of substantially uniform pitch from point to shank and of an area in cross-section at any part between the point and the shank of the groove substantially equal to or more than the cross-sectional area of the groove near the point, all substantially as described.

472,542. REVERSIBLE ECCENTRIC FOR ENGINES. DAN. W. KELLOGG, Auburn, N. Y. Filed May 12, 1891. Serial No. 392,418. (No model.)

Claim.—1. The disk D, provided with a sleeve upon its inner side, the sleeve being provided with an opening through one side and a

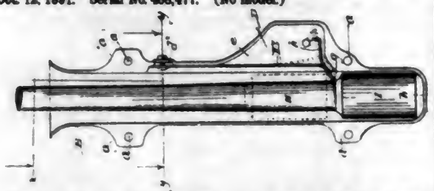
bridge or arch at the outer end of the sleeve, the sliding rack, the toothed eccentric, and a mechanism for moving the rack, all combined and arranged to operate substantially as described.



2. The disk provided with an opening for the passage of the sliding rack, the sliding rack, and a tapering gib, the parts being combined to operate substantially as set forth.

3. The cranked lever R, provided with slots at its lower ends and boxes to fit into slots and on trunnions of sleeve-strap, together with screws which are passed through these slotted ends to take up all lost motion, the clamp to which the lever is applied, and the sliding sleeve placed upon the shaft, the parts being combined to operate substantially as specified.

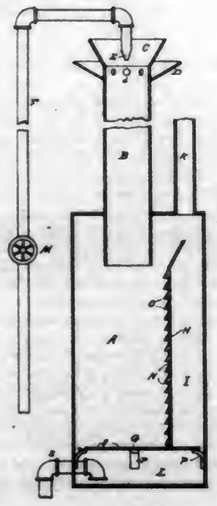
472,543. WHIP-SOCKET. ALEXANDER S. KIRBY, Chicago, Ill. Filed Oct. 12, 1891. Serial No. 408,477. (No model.)



Claim.—1. In a self-locking whip-socket, the combination of a socket provided with a casing having a key-hole with the locking-spring E, secured and operating within the said casing and having a catch or rest *g* and an arm A, with an upturned end for engagement with the key, said spring adapted to act directly and independently on the whip-staff, substantially as and for the purpose set forth.

2. As an improved article of manufacture, a self-locking whip-socket composed of the parts B and C, each having the extensions D, having the mortises *e*, and the locking-spring E, secured at one end to the extensions D and within the mortises *e* and having a beveled concaved catch or rest *g* and an arm A, having its outer end upturned for engagement with the key, said spring adapted to engage directly and independently of any other mechanism with the whip-staff, substantially as set forth.

472,544. DEVICE FOR PRODUCING BLASTS OF AIR FOR VENTILATION, &c. JOHN T. LOWE, Seattle, Wash. Filed Aug. 31, 1891. Serial No. 404,195. (No model.)

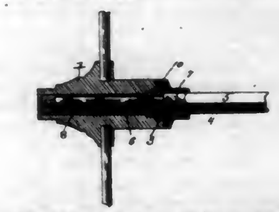


Claim.—1. The herein-described mechanism, consisting of a chamber A, having a pipe entering its upper end, said pipe extending upward therefrom and terminating in a funnel C, a water-pipe with a contracted orifice or nozzle pointing downwardly over the center of the funnel, an outlet near the bottom of the chamber for the escape of the water and one near the top for the escape of the air, a perforated plate supported just above the water-outlet, and a partition-plate H, having the surface toward the center of the chamber rippled and perforated, substantially as described.

2. The herein-described device, consisting of the chamber A, pipe B, extending upwardly therefrom and ending in the funnel C, a water-pipe F, having a contracted orifice or nozzle pointed downwardly over the center of the funnel, a siphon S near the bottom of the chamber for carrying off the water, brackets or lugs P upon the sides of the chamber, perforated plate G, supported on said brackets, and partition-plate H, having the surface toward the center of the chamber rippled and having the holes N and pipe K at the top of the chamber for carrying off the water, substantially as described.

3. The herein-described mechanism, consisting of the chamber A, pipe B, extending upwardly therefrom and terminating in the funnel C, a water-pipe with a contracted orifice or nozzle extending downwardly over the center of the funnel, valve M on said pipe for regulating the flow, a second funnel D just below funnel C, and holes *d* from the same into the pipe, a siphon S for carrying off the water, brackets P, perforated plate G, supported thereon just above the siphon, and partition H, having its side toward the center of the chamber rippled and having holes N and pipe K for carrying off the air, substantially as described.

472,545. VEHICLE-AXLE. WILLIAM J. MILLER, ROBERT S. MCBEAN, and JOHN W. MCBURNEY, Colorado, Tex. Filed July 11, 1891. Serial No. 399,180. (No model.)



Claim.—The combination, with a vehicle-axle comprising a square portion, a spindle screw-threaded at its outer end, and an intermediate collar, of the skein closed at its outer end and provided with interior screw-threads and formed or provided with a collar at its inner end, the wheel-hub closed at its outer end and having its inner end enlarged and provided with interior screw-threads, and the nut adapted to engage with said screw-threads in the hub, substantially as described.

472,546. RADIAL-DRILLING MACHINE. WILLIAM D. MCNAULL, Roncoverte, W. Va. Filed June 27, 1891. Serial No. 397,734. (No model.)

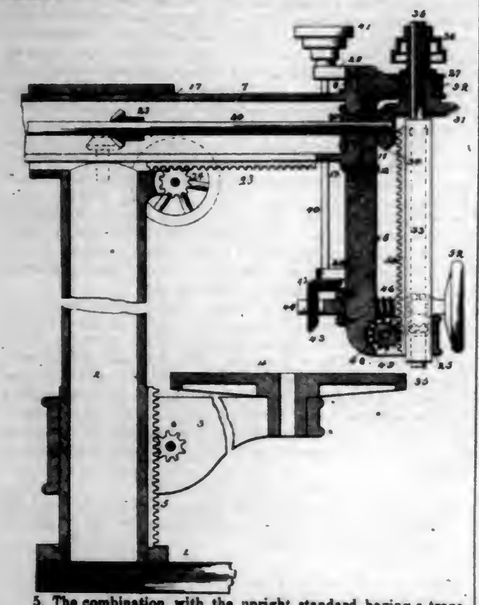
Claim.—1. In a drilling-machine, a vertical standard having a transverse mortise and a driving-shaft carried by said standard, an extensible transverse non-rotatable bracket or arm passing through said mortise, a drill-carrier radially adjustable on said arm, and a driving-shaft carried by the extensible arm and having gears engaging the driving-gear of the main standard and the driving-gear of the drill-spindle in all positions of the bracket or arm, all combined substantially as described.

2. In a drilling-machine, the combination of the vertical standard having a transverse mortise near the top, a driving-shaft, the extensible non-rotatable hollow arm passing through the mortise and having a radially-adjustable drill-carrier at its outer end, the shaft in said arm having gears engaging the drill-driving gears and a gear on the main shaft in all positions of the arm, and a rack on said arm engaging a pinion carried by the main standard, whereby the arm may be extended or withdrawn and the driving-gear maintained in constant engagement, substantially as described.

3. The combination, with the standard having a transverse mortise and a driving-shaft, an extensible non-rotatable arm passing through said mortise, a face-plate at the outer end of said arm, a drill-carrier radially adjustable on said face-plate, a driving-shaft extending through and adjustable with the extensible arm, and gears on said shaft engaging gears on the main driving-shaft and on the drill-carrier, substantially as described.

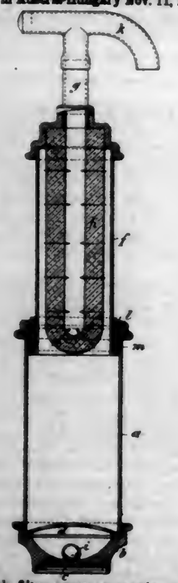
4. The standard and extensible non-rotatable arm having a circular face-plate, the drill-carrier having a circular recess to receive said face-plate, clamping mechanism to retain said drill-carrier in radial adjustment on the arm, and the driving-shafts and gears carried

by the arm and drill-carrier, all in combination substantially as described.



5. The combination, with the upright standard having a transverse mortise, the extensible non-rotatable arm passing through said mortise, the circular face-plate at the end of said arm, the drill-carrier having a recess which receives said face-plate, and clamping-bolts passing through the carrier and through slots in the face-plate, all substantially as described.

472,547. FILTER-PUMP. HERMANN NORDTMEYER, Breslau, Germany. Filed July 14, 1891. Serial No. 399,447. (No model.) Patented in Belgium May 16, 1891, No. 94,663; in Spain June 2, 1891, No. 12,035; in Italy June 30, 1891, XXV, 39,615, and LVIII, 333; in France Aug. 30, 1891, No. 213,087; in Germany Sept. 21, 1891, No. 60,157; in India Oct. 5, 1891, No. 2,439, and in Austria-Hungary Nov. 11, 1891, No. 20,436 and No. 40,275.



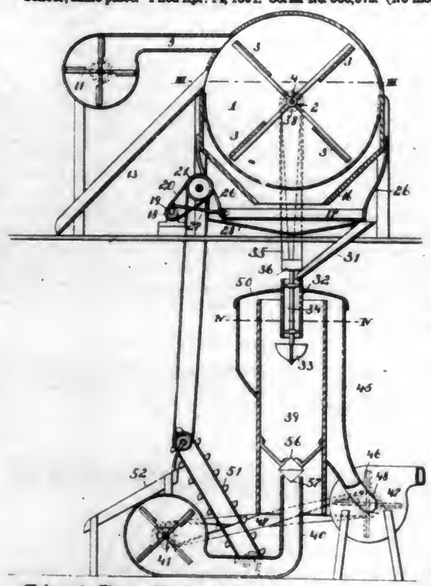
Claim.—1. A portable filter-pump comprising a pump-barrel provided at its lower end with a suction-valve, a piston composed of a piston-head provided with an axial bore, and a cylindrical filter of less diameter than the pump-barrel secured to the piston-head and having an axial chamber in communication with the bore thereof, in combination with a tubular piston-rod seated in said bore, for the purpose set forth.

2. A portable filter-pump comprising a pump-barrel provided at its lower end with a suction-valve, a piston composed of a piston-head provided with an axial bore, a cylinder secured to said head and working fluid-tight in the pump-barrel, and a cylindrical filter contained within and of less diameter than the piston-cylinder, said filter being secured to the piston-head and having an axial chamber in communication with the bore thereof, in combination with a tubular piston-rod connected with the bore of the piston-head, for the purpose set forth.

3. The combination, with the pump-barrel provided at its lower end with a suction-valve, of a piston having an axial bore and working fluid-tight in the barrel, a cylindrical filter of less diameter than the pump-barrel secured to the piston-head and constructed of a porous substance, and with an axial chamber in communication with the bore of the piston-head, and a tubular piston-rod connected with the bore of said piston-head, for the purpose set forth.

4. The combination, with a pump-barrel composed of two sections *a* and *f*, working telescopically and fluid-tight within each other, the section *a* having a suction-valve at its outer end, of a piston-head secured to the outer end of section *f* and having an axial bore, a cylindrical filter of less diameter than section *f* secured to the piston-head, constructed of a porous substance and having an axial chamber in communication with the bore of said piston-head, and a tubular piston-rod connected with the said bore and provided with the tubular cross-handle K, substantially as and for the purpose set forth.

472,548. MACHINE FOR CLEANING CORN-CHAFF OR CELLULOSE. THEODORE J. REED, Leavenworth, Kans., assignor to Louis Scheer, same place. Filed Apr. 14, 1891. Serial No. 388,872. (No model.)



Claim.—1. The combination of a suitable drum having an agitating-reel located therein, a screen in said drum, means for supplying chaff to said drum, a vibrating screen situated beneath said drum, a chute 31 in connection with said screen, a tube 32, into which the chaff is discharged from said chute, a vertical drum 39, into which said tube extends, and a series of rotary radial blades 33 for scattering the chaff as it passes through the tube 32 into the drum 39, substantially as and for the purpose described.

2. The combination of a suitable drum, a reel located therein for agitating corn-chaff, suitable screens in connection with said drum, tube 32, drum 39, having arranged above its upper end a screen into which said tube extends, chute 31 for connecting one of the screens with said tube, series of rotary radial blades for agitating the chaff in said drum 39, a blast-pipe 40 for creating a blast in said drum, and a cone-shaped block 56 for deflecting said blast in said drum, substantially as described, and for the purpose set forth.

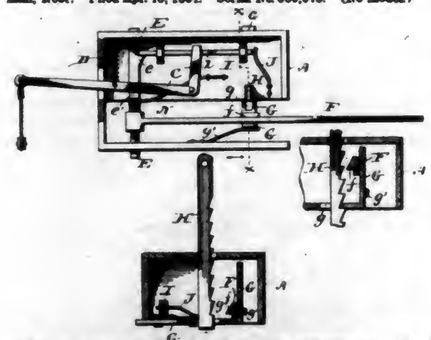
3. The combination of a suitable drum, a reel located therein for agitating chaff, suitable screens in connection with said drum, a drum

39, having arranged above its upper end a screen, and through which a blast is forced, the chute 31 and the tube 32 entering said drum, and a cylinder 45 surrounding said drum for conveying the chaff which is discharged from said drum into said cylinder, and having its upper end formed into a screen arranged above said drum, substantially as and for the purpose described.

4. The combination of a drum 39, means for forcing a blast through the same, means for discharging chaff into said drum, cylinder 45, having the screen 50 at its upper end and surrounding said drum, pipe 46, connecting said drum with an exhaust-fan 47, and a pipe 49 in connection with said exhaust-fan for carrying off the merchantable article of chaff or cellulose after the same is in its finished state.

5. The combination of the drum 1, a reel located therein, means for supplying chaff thereto, screens in connection with said drum, vertical drum 39, means for forcing a blast through the same, cylinder 45, screen 50, located on the upper end of said cylinder, through which dust may be discharged, said cylinder being open at its lower end for the discharge of sand and heavier particles, an elevator 51, means for operating the same, and a discharge-chute 52, into which said elevator discharges, substantially as described, and for the purpose set forth.

472,549. WINDMILL-GOVERNOR. THOMAS L. REGESTER, Tekamah, Nebr. Filed Apr. 15, 1891. Serial No. 389,073. (No model.)

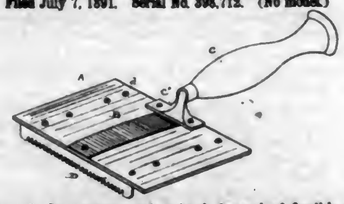


Claim.—1. In a windmill-governor, the combination, with the elbow-lever C, acted on in one direction by a spring and in an opposite direction by the float, and the sliding bar E, to be actuated by the lever C, and the spring N, acting on bar E in opposition to the lever C, of the sliding bar I to engage with and hold bar E against tension of spring N, the lever F, carried by the sliding bar E, and the ratchet-bar H, connected to the pull-cord, substantially as and for the purpose described.

2. In a windmill-governor, the combination, with the elbow-lever C and the sliding bar E to be actuated by lever C, and the spring N, acting on bar E in opposition to the lever C, of the sliding bar I to hold bar E against tension of spring N, the lever F, carried by the bar E, the ratchet-bar H, connected to the pull-cord, and the sliding catch G, to hold bar H when depressed, substantially as and for the purpose described.

3. A windmill-governor comprising a case, an elbow-lever C to be connected to the float in the tank, the spring D, acting on the said lever in opposition to the float, the sliding bar E, having stops *e* and *e'*, the spring N for actuating the bar E, the sliding bar I, having stop *i*, the spring J for moving bar I, the lever F, journaled on the bar E, the angle-catch G, the spring *g'* for catch G, and the ratchet-bar H, passing through the catch G and adapted to be engaged by the lever F and the catch G, substantially as and for the purpose described.

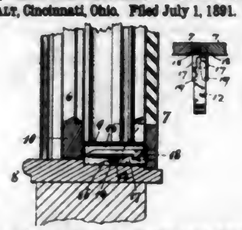
472,550. CURRY-COMB. ALFRED C. RULOFSON, San Francisco, Cal. Filed July 7, 1891. Serial No. 398,712. (No model.)



Claim.—1. In a curry-comb, a back formed of flexible material, having the teeth-plates applied to its face and a handle set at right angles to the teeth-plates, in combination with a flexible strip of metal applied to said back in line with the handle and transversely to the teeth-plates, as set forth.

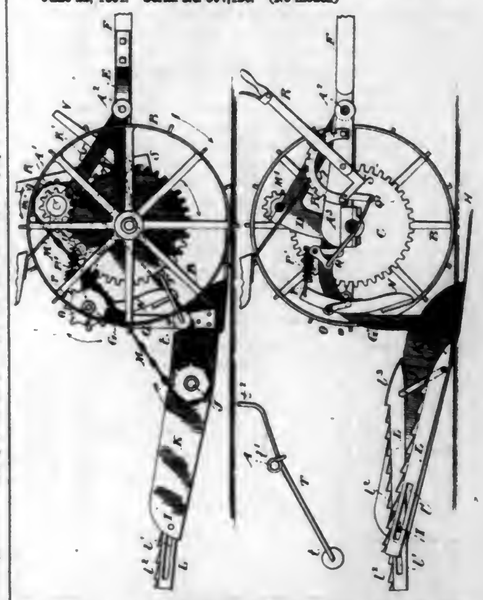
2. In a curry-comb, the combination of a back composed of two thicknesses of flexible material, having teeth-plates on its face and a strip of flexible metal laid unattached between the thicknesses of the back at right angles to the teeth-plates, as set forth.

472,551. SHUTTER-FASTENER. WILLIS W. RUSSELL, Norwood, and JOHN WALT, Cincinnati, Ohio. Filed July 1, 1891. Serial No. 398,119. (No model.)



Claim.—In a shutter-fastener of the kind described, the combination, with two hooks secured to the extreme outer edges of the shutters and beveled in a horizontal and vertical plane, as shown at 19, of a catch not wider than the combined width of the two hooks and having two lugs projecting from its under side, a flanged housing reaching from shutters to sash, the ends of which are closed by portions of these two latter, a pin passing through the sides of said housing, and the lugs on the under side of the catch serving as a pivot for the latter and a support for a coil-spring which encircles it, the two free ends of this latter reaching out some distance, one end impinging against the lower side of the rear end of the catch, the other end resting on the window-sill, all as substantially shown, and for the purposes described.

472,552. POTATO-DIGGER. JOHN H. SAUER, Stacy, Minn. Filed June 22, 1891. Serial No. 397,190. (No model.)



Claim.—1. The combination, with the fingers L, operating as described, of the halm-racks N N, fulcrumed on crank-shaft O and connected by spring and slide-links with the rod O', for the purpose set forth.

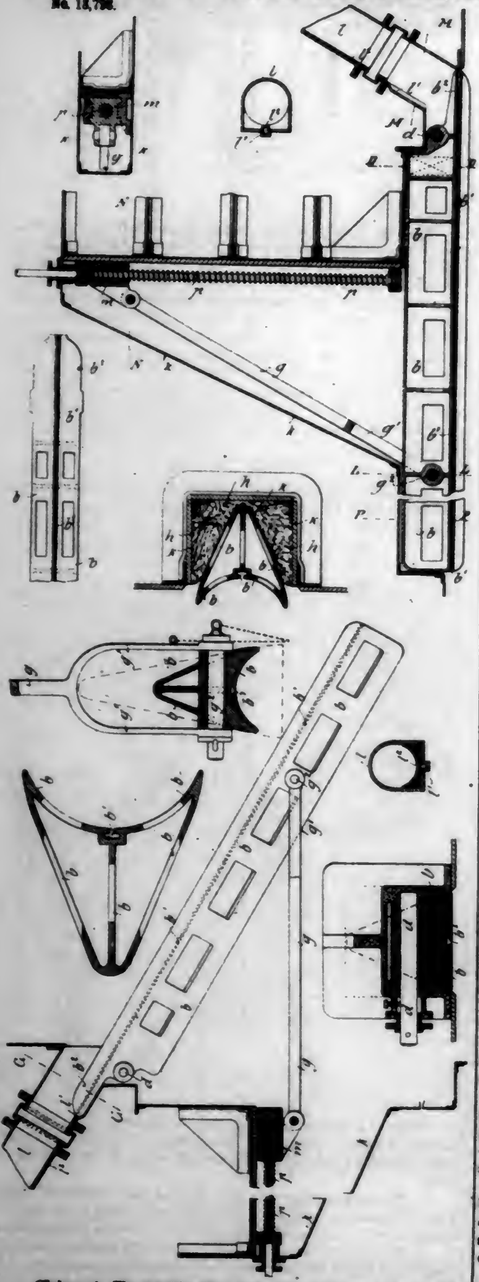
2. The combination, with a bar G and sprocket-chain M, of a tightener T, having a bent end and on it a grooved pulley *t*, the guide *t'*, arranged on the axle, and the sliding loop *t''*, as shown and described.

3. The link Q, pivoted on rod O', the lever R, fulcrumed on axle, the pivoted link Q', and the elbow-lever S, combined and arranged to lift the plow and sifter, as and for the purposes set forth.

4. The combination, with the loose sour-wheel *m'* and fixed clutch-

collar on the shaft A', of the hook-rod U, pivoted to the side D to leave a wedge-space between itself and said side, and the pivoted hand-bar V, working in said wedge-space, as and for the purpose set forth.

472,553. TORPEDO-LAUNCHING APPARATUS. ADOLF SCHIEMEL, Berlin, Germany, assignor to the Berliner Maschinenbau Actien-Gesellschaft, vormals L. Schwartzkopff, same place. Filed Dec. 10, 1890. Serial No. 374,308. (No model.) Patented in Germany Oct. 16, 1890, No. 56,673; in Italy Nov. 6, 1890, No. 23,531, and in England Nov. 20, 1890, No. 18,798.

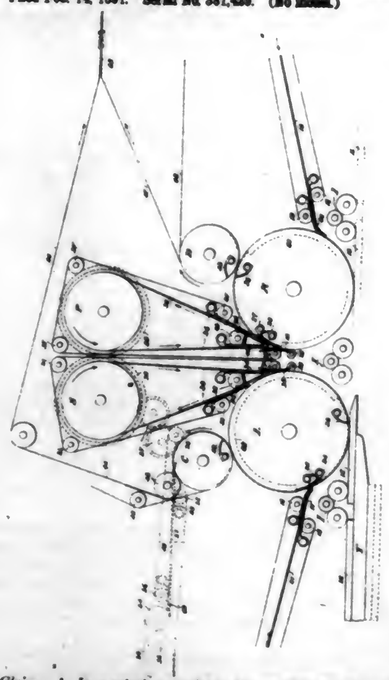


Claim.—1. The combination of launching-tube *l*, arranged inside the ship, with guide-beam *b*, arranged outside the ship at or within the broadside, said guide-beam having its one end connected with tube *l* by removable pivot *d* and its other end secured to movable connecting-rod *g* by removable pivot g^3, said rod *g* being adapted to turn guide-beam *b* outward, for the purpose as described.

2. The combination of launching-tube *l*, arranged inside the ship and having recess l^2, with guide-beam *b*, arranged outside the ship at or within the broadside and having elongation b^3, adapted to close opening of tube *l*, as well as to enter recess l^2, said guide-beam having its one end connected with tube *l* by removable pivot *d* and its other end secured to movable connecting-rod *g* by removable pivot g^3, said rod *g* being adapted to turn guide-beam *b* outward, for the purpose as described.

3. The combination of launching-tube *l*, arranged inside the ship and having groove l^3, with guide-beam *b*, arranged outside the ship at or within the broadside and having groove b', adapted to guide torpedoes from tube *l* into the water, said guide-beam having its one end connected with tube *l* by removable pivot *d* and its other end secured to movable connecting-rod *g* by removable pivot g^3, said rod *g* being adapted to turn guide-beam *b* outward, for the purpose as described.

472,554. PRINTING-MACHINE. WALTER SCOTT, Plainfield, N. J. Filed Feb. 14, 1891. Serial No. 381,429. (No model.)



Claim.—1. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, means at the outer side of each cylinder for feeding the sheets, sheet-reversing appliances for each cylinder, and delivery devices for each cylinder, substantially as described.

2. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, means at the outer side of each cylinder for feeding the sheets, sheet-reversing appliances at the inner side of each cylinder, and delivery devices for each cylinder, substantially as described.

3. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, means at the outer side of each cylinder for feeding the cylinders, reversing appliances for each cylinder, and delivery devices at the outer side of each cylinder, substantially as described.

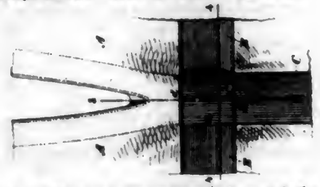
4. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, means at the outer side of each cylinder for feeding the sheets, sheet-reversing appliances at the inner side of each cylinder, and delivery devices at the outer side of each cylinder, substantially as described.

5. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, means at the outer side of each cylinder for feeding the sheets, sheet-reversing appliances at the inner side of each cylinder, and delivery cylinders at the upper and outer side of each cylinder, substantially as described.

6. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, means for feeding sheets to each cylinder, reversing appliances at the inner side of each cylinder, and delivery devices for each cylinder, substantially as described.

7. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, means for feeding sheets to each cylinder, reversing appliances at the inner side of each cylinder, and delivery devices at the outer side of each cylinder, substantially as described.

472,555. UNDERGARMENT. JEREMIAH A. SCRIVEN, New York, N. Y. Filed Sept. 29, 1891. Serial No. 407,165. (No model.)



Claim.—1. An undergarment containing in its crotch the elastic insertion B and the elastic portion *b*, overlapping the same, but having its edges *a a*, which traverse the insertion B, disconnected from said insertion B, the portion *b* being as long as the insertion B is wide, substantially as and for the purpose herein shown and described.

2. An undergarment containing the elastic insertions B and C, meeting and overlapping one another at an angle, the edges *a a* of the overlapping portion *b* of insertion C being disconnected from the overlapped portion and the overlapping portion *b* as long as the overlapped portion is wide, substantially as herein shown and described.

472,556. HANDLE FOR WRENCHES OR OTHER TOOLS. FRANK W. SIMMONS, Blue Mound, Kans. Filed July 9, 1891. Serial No. 398,954. (No model.)



Claim.—1. The combination, with the shank of a tool, of the herein-described handle, the same consisting of a metal shank terminating at its opposite ends in a head and a butt thicker than the shank, said head and butt having oppositely-disposed and inwardly-inclined shoulders, the head having a transverse perforation and a socket at its upper end, through which the shank of the tool passes, the opposite wood sections mounted between the shoulders, and the bolt passing through the head and through a perforation formed in the shank of the tool, substantially as specified.

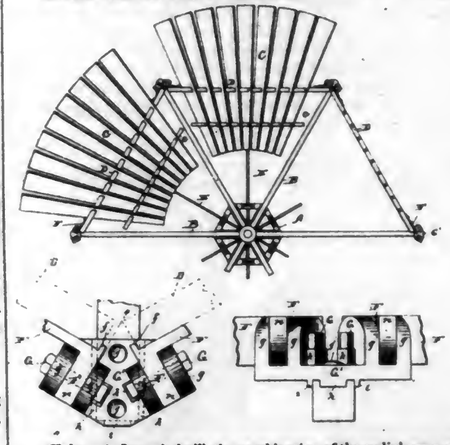
2. The herein-described handle for wrenches and other tools, the same consisting of a central flat shank terminating at one end in a head having a shank-receiving socket and a transverse perforation and upon its under side provided with oppositely and inwardly inclined shoulders and at its lower end terminating in a butt of truncated-cone shape provided upon its upper side with inwardly-inclined shoulders and below the same with a transverse nail-receiving perforation 10, the opposite wood sections 12, terminating in inclined shoulders, fitting between those of the head and butt and embracing the opposite sides of the shank, and the bolt passed through the section and the shank, substantially as specified.

3. The combination, with the shank having the opposite flat sides, at one end the cylindrical head having the shank-receiving socket extending into the shank, transversely perforated and provided at one side with the lateral step having the bearing, said shank at its lower end having the cylindrical butt, which together with the head are upon their inner sides provided with oppositely-inclined shoulders, and the wooden sections terminating in beveled ends fitting the shoulders, of the wrench-stock terminating at its upper end in the fixed jaw 17 and at its lower end in the reduced shank 18, the latter fitting the socket in the head of the handle, the rivet passed through the head and shank, the sliding jaw, and the screw threaded in the jaw and bearing at its lower end in the step of the handle and provided with the milled nut, substantially as specified.

4. The combination, with the handle consisting of the malleable-metal open frame having the head and butt and at one edge provided with opposite lugs extending at opposite sides thereof and at its opposite side provided with the countersunk recess having the malleable lug projecting therefrom, of the opposite handle-sections recessed at their opposite edges, a pair of which receives the said lug, and the cap fitting the recess of the handle-section and secured by the head of the lug, substantially as specified.

5. The combination, with the malleable-metal open frame provided with a head and butt and with the opposite transverse ribs forming a mortise, of the shank located therein, the handle-sections grooved to receive the ribs, and the projections at opposite sides of the sections, substantially as specified.

472,557. WINDMILL. THOMAS SNOW, Batavia, Ill. Filed July 31, 1891. Serial No. 401,275. (No model.)



Claim.—1. In a windmill, the combination of the radial arms, castings G', carried thereby and having recesses extending transverse to the casting and formed between ears *g* thereon, vane-carrying bars D, castings F, supporting the latter and having ears extending transversely to said bars, fitting said recesses and adapted to prevent longitudinal play of the vane-bars and loosening of the parts, and pivot-bolts G, passing through the ears, substantially as set forth.

2. In a windmill, the combination of the radial arms, castings G', carried thereby and having recesses extending transverse to the casting and formed between ears *g*, vane-carrying bars D, castings F, supporting the latter and having ears extending transversely to said bars and fitting said recesses, stops or shoulders *m n*, formed on the castings F and adapted to engage the plate G' to limit the movement of the vane-bars in each direction, shoulders or stops *k*, formed on the plate G' at the side of the ears *g*, and pivot-bolts G, passing through the ears and having their heads locked by the latter stops, substantially as set forth.

472,558. FOLDING BEDSTEAD. WILLIAM D. SNYDER, Chicago, Ill. Filed June 29, 1891. Serial No. 397,781. (No model.)



Claim.—1. In a folding bed, the combination, with the standard, of the bed-frame having cams thereon and supporting-chains passing

over said cams, said chains having one end connected to the standard and the other to the bed-frame, as and for the purpose specified.

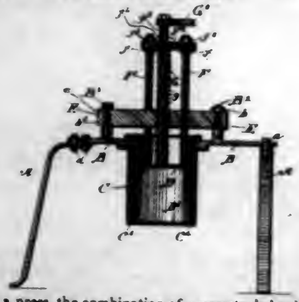
2. In a folding bedstead, and in combination, the standard provided with cam-surfaces *a*, the bed-frame having cams thereon, and chains passing over said cams, having one end connected to the standard and the other to the bed-frame, as and for the purpose specified.

3. In a folding bedstead, and in combination, the standard provided with cam-surfaces *a*, the bed-frame having cams thereon, chains passing over said cams and having one end attached to the standard and the other to the bed-frame, and a weighted pillow-board hinged to the head end of the bed-frame, as and for the purpose specified.

4. In a folding bedstead, and in combination, the standard having eyes E', the bed-frame having cams thereon, and chains having one end permanently attached to the bed-frame and adapted to pass under said cams and their opposite ends provided with hooks E, adapted to the eyes E', of the standard, as and for the purpose specified.

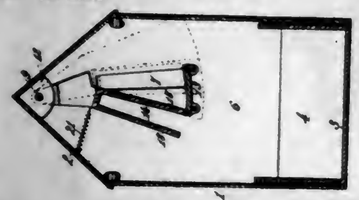
5. In a folding bedstead, and in combination with the standard and bed-frame, the open-ended pockets C', attached to the bed-frame, holes *d'* in the standard opposite to said pockets, and sliding foot-legs C, each provided with a pawl *c* and adapted to slide through the pockets C' and enter said holes *d'* in the standard when the bed-frame is folded, as and for the purpose specified.

472,559. HOUSEHOLD PRESS. JOHN STEUDLE, Chicago, Ill. Filed July 23, 1891. Serial No. 400,988. (No model.)



Claim.—In a press, the combination of a receptacle having a perforated bottom, a frame in which such receptacle is removably held, a pivoted bar extending when closed across the upper open end of such receptacle and when opened away from over the receptacle, a vertical screw-shaft extending through such bar and threads on such shaft intermeshing with threads in the hole in such bar through which it extends, a horizontal disk against which the lower end of the vertical screw-shaft abuts, vertical rods attached to such disk, such rods extending through and movable in holes in the pivoted bar, a connecting-head secured at the upper end of such rods thereto and attaching them together, such connecting-head having a hole therein through which the vertical screw-shaft passes above the screw-threads thereon and in which hole such screw-shaft is rotatable, and a handle by which such screw-shaft can be actuated, substantially as described.

472,560. LETTER-BOX. JOHN B. STONER, New York, N. Y., assignor to Charles B. Hillhouse, same place. Filed June 25, 1891. Serial No. 397,460. (No model.)



Claim.—1. A letter-box having a vertical end wall provided with a letter-receiving slot and a pendulous cover-plate pivoted at its upper extremity and swinging in the arc of a circle parallel with the slotted end of the box, in combination with an interior letter-chute and a letter-supporting shelf, one of which parts is moved by the cover-plate for depositing mail-matter, substantially as described.

2. A letter-box having one vertical wall provided with a letter-receiving slot and a pendulous cover-plate pivoted at its upper extremity and swinging in the arc of a circle parallel with the slotted end of the box, in combination with an interior letter-chute and a letter-supporting shelf, one of which parts is oscillated in the arc of a circle by a connection with the cover-plate for depositing mail-matter, substantially as described.

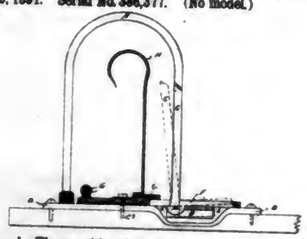
3. A letter-box having one vertical end wall provided with a letter-receiving slot and a pendulous cover-plate pivoted at its upper extremity and swinging in the arc of a circle parallel with the slotted end of the box, in combination with an interior letter-chute and a supporting-shelf provided with a ratchet-faced surface for reducing the superficial contact with the deposited mail-matter, substantially as described.

4. The combination, with a letter-box having one of its walls provided with a letter-receiving slot, of an interior letter-supporting shelf, an oscillatory letter-chute suspended from its upper extremity within the box, and a cover-plate swinging in the arc of a circle parallel with the slotted wall of the box and connected with the chute, substantially as described.

5. The combination, with a letter-box having one of its end walls provided with a vertically-arranged letter-receiving slot, of an interior letter-supporting shelf, a letter-chute having at one end a crank-arm, and a cover-plate connected at its upper end with the crank-arm and swinging in the arc of a circle in unison with the swinging movements of the letter-chute, substantially as described.

6. The combination, with a letter-box having a letter-receiving slot, a cover-plate for the slot, and a letter-chute, of an interior letter-supporting shelf provided with a ratchet-faced surface, substantially as described.

472,561. PAPER-FILE. CHARLES E. STONE, Toronto, Canada. Filed Mar. 26, 1891. Serial No. 386,377. (No model.)



Claim.—1. The combination, in a paper-file composed of the wires A A' and C C', the weight D, to which the wires C C' are secured, the oblong chamber E, located under the base or cover F, in which the weight D is located, and which weight D is pivoted to the lower face of the cover F, and operating as set forth.

2. The combination, in a paper-file, of a guide H, located on a locking-latch G and secured with it to the plate B by a pivot-screw (G^2, the whole arranged and combined and operating substantially as set forth.

472,562. HORSESHOE AND CALK. JOHN B. STONER, New York, N. Y., assignor to Charles B. Hillhouse, same place. Filed June 23, 1891. Serial No. 397,236. (No model.)



Claim.—1. The combination of a horseshoe having its toe portion formed with an inclined rearwardly-extending tongue-piece and recessed to provide oppositely-arranged offsets or shoulders, with a toe-calk resting in the recess bearing at opposite sides against the offsets or shoulders and having an inclined flange bearing against the inclined tongue-piece, and means for securing the toe-calk to the toe portion of the shoe and connecting the flange with the tongue-piece, substantially as described.

2. The combination of a horseshoe having its toe portion formed with an inclined rearwardly-extending tongue-piece, with a toe-calk formed with an inclined flange bearing against the inclined tongue-piece, and means for connecting the tongue-piece and flange, substantially as described.

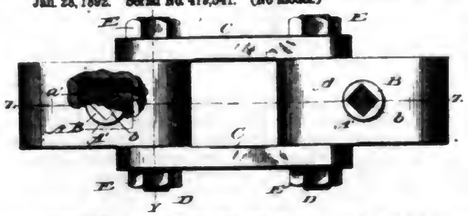
3. The combination of a horseshoe having a rearwardly-extending tongue-piece provided with an inclined lower surface, with a toe-calk having a dowel connection with the shoe and provided with an oblique or inclined flange bearing against the inclined surface of the tongue-piece, and means for connecting the flange to the tongue-piece, substantially as described.

4. The combination of a horseshoe having the rearwardly-projecting tongue-piece and the oppositely-arranged offsets or shoulders, with a toe-calk resting against the offsets or shoulders and having an oblique or inclined flange bearing against the under side of the tongue-

piece, a screw connecting the toe-calk with the toe portion of the shoe, and a screw connecting the oblique or inclined flange with the tongue-piece, substantially as described.

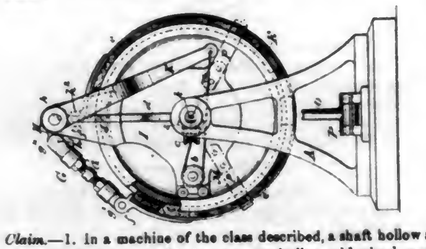
5. The combination of a horseshoe having its heel portions formed with bearing-surfaces 3, which incline in a downward direction from the rear extremity of the heel portions toward the toe portion, with heel-calks 4, provided with dowels 7, and sole-pieces 5, which incline in a direction corresponding to the incline bearing-surfaces of the heel portions of the shoe, and screws 9 for rigidly attaching the heel-calks, substantially as described.

472,563. DRIVE-CHAIN. WILLIAM L. SYKES, Bensinger, Pa. Filed Jan. 28, 1892. Serial No. 419,541. (No model.)



Claim.—In a drive-chain, the combination, with the link having chamber *a'* and transverse passages, openings from the chamber to said passages, and a plug closing the opening into the said chamber, of a bolt in each transverse passage and having a body portion conforming to said passages, with shoulders outside the block and at a slight distance therefrom, with tapered portion and screw-threads at each end beyond the shoulders, the side bars on the tapered portions and bearing against the shoulders, and the nuts on the threaded portions bearing on the side bars, substantially as specified.

472,564. FRICTION DEVICE FOR WINDLASSES. THOMAS SYMONDS, Leominster, Mass. Filed Apr. 18, 1891. Serial No. 389,503. (No model.)



Claim.—1. In a machine of the class described, a shaft hollow at one end, a wheel thereon, a friction-strap encircling said wheel, arms connected to the ends of said strap, a rock-shaft, a lever for rocking said shaft, a pin adapted to enter said hollow shaft, and a flexible connection between said pin and the aforesaid lever, as specified.

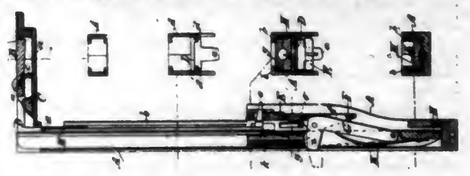
2. In a machine of the class described, a shaft hollow at one end, a pin movable therein, a wheel loose on said shaft, a crank-arm fixed on said shaft, a rock-shaft mounted in said arm, a lever thereon, a bell-crank secured to said rock-shaft, a brake-strap connected to said bell-crank and loosely encircling said wheel, and a rope connecting said pin and said lever, substantially as set forth.

3. In a machine of the class described, a shaft hollow at one end, a pin therein, a wheel loose on said shaft, a crank-arm secured on said shaft, sheaves mounted on said crank-arm, a brake-strap carried by said crank-arm and encircling said wheel, and a flexible connection between said pin and said brake-strap, passing around said sheaves substantially as described.

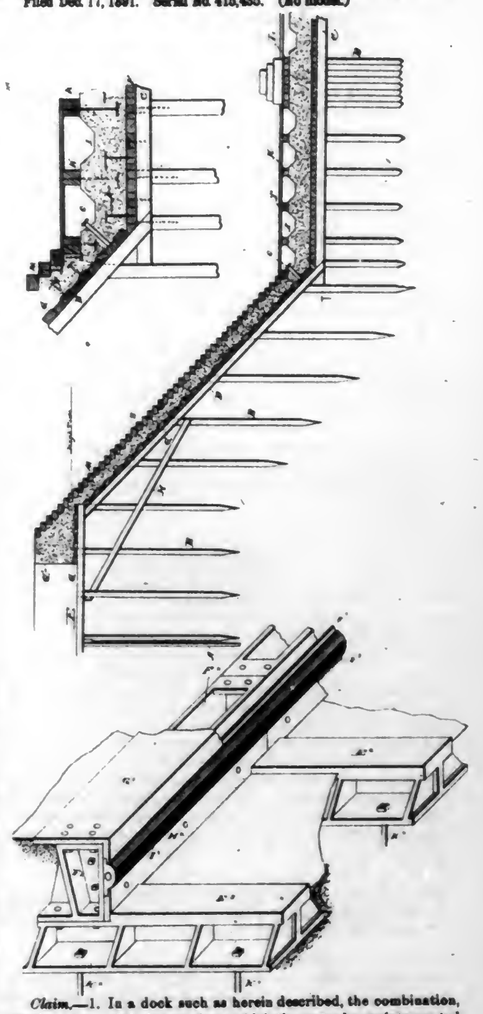
4. In a machine of the class described, a main shaft, a wheel thereon, a crank-arm secured thereto, a rocker-shaft carried at the outer end of said crank-arm, and a beat lever attached to said rocker-shaft, in combination with a bell-crank, also attached to said rocker-shaft, a turn-buckle attached to one end of said bell-crank, and a strap attached at its opposite ends to said turn-buckle and said bell-crank and passing about said wheel, substantially as specified.

472,565. SASH-CORD FASTENER. THEODOR VOLLTER, Washington, D. C. Filed June 2, 1890. Serial No. 353,992. (Model.)

Claim.—The combination of the supporter H, having the sash-cord attached to it and placed in the angle-piece A, with a spring-catch G pivoted to said supporter, and the carrier D, having projection *c* for carrying the loop-pieces E and F, holding said catch G until released, all arranged as shown, and for the purpose specified.



472,566. DRY-DOCK. OHNEMANN VON HEKTA, Washington, D. C. Filed Dec. 17, 1891. Serial No. 415,435. (No model.)



Claim.—1. In a dock such as herein described, the combination, with the structural timber-work, to which the water has uninterrupted access by saturation through the soil, of the overlying concrete filling, forming the water-tight dock-walls and protecting the structural timber-work from the air, substantially as described.

2. In a dock such as herein described, the combination, with the structural timber-work and the wearing timber-work, of the concrete filling or bed between said structural and wearing timber-work, substantially as described.

3. In a dock, the combination, with the concrete filling or bed of the planking or timber-work beneath said concrete filling or bed, whereby pressure is distributed over a large area, substantially as described.

4. In a dock, the combination, with the inclined timber having horizontally-arranged ridges and depressions therein, of the concrete filling overlying said timbering and the altars supported by said concrete, substantially as described.

5. In a dock, the combination, with the inclined timbering formed of alternating thick and thin planks, of the concrete filling overlying said timbering and the altars supported thereon, substantially as described.

6. In a dock, the combination, with the inclined walls, of the altars formed of rectangular timbers independently supported on said inclined wall, whereby the shrinkage is confined to each individual timber, thus preserving the original position of the altars, substantially as described.

7. In a dock, the combination, with the inclined concrete side wall, of the altars formed of rectangular timbers partially embedded in the concrete and each with its forward edge overlapping the rear of the next lower altar, substantially as described.

8. In a dock, the combination, with the concrete filling or bed and timber-work, of the headed bolts embedded in the concrete and connected with the timber-work to hold the same in position, substantially as described.

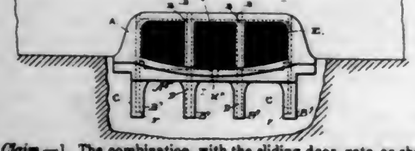
9. In a dock, the combination, with the relatively-thin walls forming the table ends and the metal beams arranged longitudinally in said walls, of the thick concrete piers joining said walls on the outside and the tie-rods embedded in said piers and connected to the beams in the wall, substantially as described.

10. The combination, with the dock, of the metal sill-plates embedded in the concrete at the gates, with their surfaces above the level of the concrete, and the caisson or gate adapted to rest thereon, substantially as described.

11. The combination, with the dock, of the metal sill-plates embedded in the concrete at the gates and the boxes bolted thereto and forming the sill against which the caisson bears, substantially as described.

12. The combination, with the dock having the metal sill-plates embedded at the gates and the boxes bolted thereto to form a sill against which the caisson rests, of the rubber gasket and the plates on the boxes for holding said gasket in place, substantially as described.

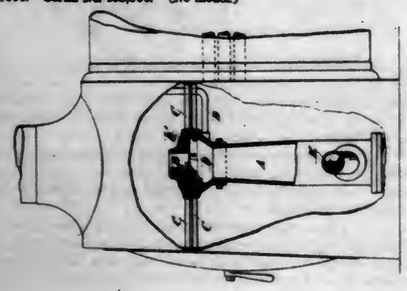
472,567. DOOR FOR CATCH-BASINS OF STREET-SEWERS. GEO. H. WHITE, San Francisco, Cal., administrator of George Washington White, deceased. Filed Feb. 26, 1891. Serial No. 382,915. (No model.)



Claim.—1. The combination, with the sliding door, gate, or shutter, of grating-bars having vertical grooves or guides, and half-round projections on the gate or shutter corresponding with and operating in said guides or grooves, as set forth and specified.

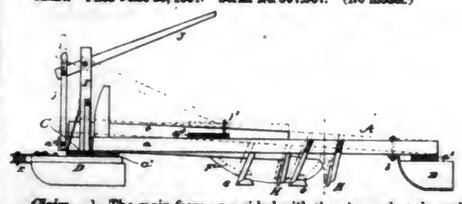
2. The combination of a grating-frame and a vertically-sliding door, gate, or shutter at the entrance of a catch-basin of a sewer, a weighted lever attached to the inner face thereof, provided with a bent arm, a notch in the lower edge of the door through which the end of the weighted arm passes and holds it in a closed position by engaging with the lower member of the gate-frame, in the manner specified.

472,568. SPARK-EXTINGUISHER AND SMOKE-CONSUMER. DAVID ANDERSON and JOHN NAYLOR, Stowell, Victoria. Filed Aug. 13, 1891. Serial No. 402,590. (No model.)



Claim.—Exhaust-nozzle B, having within it lip *b* and annular channel *b'*, in combination with perforated tubes C, screwed into and radiating from it, and preferably with blower-pipe D, all substantially as and for the purposes set forth, and arranged as illustrated in our drawings.

472,569. GRADING-MACHINE. WILLIAM D. ARNETT, Caldwell, Idaho. Filed June 26, 1891. Serial No. 397,507. (No model.)



Claim.—1. The main frame provided with the plows, shovels, and rear runners, in combination with the front sled or runner and the intermediate draft-frame connected with the main frame by horizontal pivots and with the front runner by the vertical pivot or king-bolt.

2. The main frame having the plows and rear runners, in combination with the front sled, the intermediate draft-frame jointed to the sled and main frame, and adjusting devices, substantially as shown, connecting the frame.

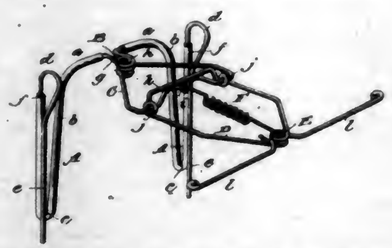
3. In combination, the main frame with plows and the rear runners, the front sled, the intermediate draft-frame jointed to the main frame and sled, substantially as shown, and the intermediate runners to limit the depth of the plows.

472,570. BARROW-WHEEL. CHARLES A. CURRAGE, Pittsburg, Pa. Filed May 13, 1891. Serial No. 392,543. (No model.)



Claim.—In a barrow-wheel, the combination of the outer rim *a*, having the inner annular shoulders a^2 and tongues *b*, the tubular hub *g*, the collars *h*, screwing thereon, and the disks secured to the collars and fitting against said annular shoulders and riveted to the rim through the tongues *b*, substantially as and for the purposes set forth.

472,571. BOOK-LEAF HOLDER. JAMES R. FERGUSON and JOHN FERGUSON, Chester, Conn. Filed Aug. 17, 1891. Serial No. 402,855. (No model.)



Claim.—1. The combination, with the clamp portion, of a portion to which it is hinged and a spring connecting the clamp portion with the hinged portion, as set forth.

2. The combination, with the clamp portion and a portion to which it is hinged, of a spring connecting the clamp portion with the cross-bar of the hinge, said spring being arranged lengthwise of the clamp portion, as set forth.

3. The combination, with the book-holding arms, of a portion swiveled thereto and a clamp hinged to said portion, as set forth.

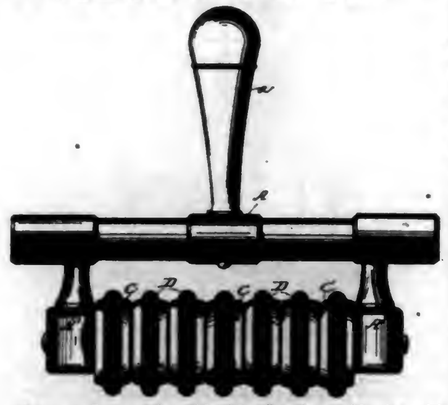
4. The combination, with the book-holding arms, of a portion swiveled thereto and forming a part of the hinge, the clamp hinged to said portion, and a spring connecting said portion and clamp, as set forth.

5. The combination, with the swiveled portion, of the clamp portion formed with coils embracing the cross-bar of the swiveled portion,

and a cross-bar raised above the cross-bar of the swiveled portion, as and for the purposes specified.

6. A device for the purpose specified, consisting of holding-arms, a horizontal portion swiveled thereto, a hinged clamp, and a spring connecting the clamp with the swiveled portion and out of the center on which the part turns, as set forth.

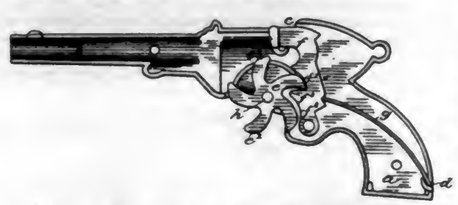
472,572. MUSCLE-ROLLER. WILLIAM R. FORBES, New York, N. Y. Filed Jan. 23, 1891. Serial No. 379,477. (No model.)



Claim.—1. In a muscle and health roller, the combination, with the frame-work A and A', of a flexible and elastic steel and rubber axle B and a series of wooden wheels C C.

2. In a muscle and health roller, a frame-work A and A', a flexible and elastic axle B, a series of wheels C C, and rubber rings in a groove in the rim of each wheel *c c'*, these rings so arranged as to make an interval D between each rubber ring.

472,573. TOY PISTOL. RUSSEL FRISBIE, Cromwell, Conn. Filed Jan. 9, 1892. Serial No. 417,511. (No model.)



Claim.—1. In a toy pistol, in combination with a sectional stock and barrel, the hammer-socket formed between the parts, a rotary trigger pivoted to the stock and having a plural number of radial arms with cam-shaped ends, a mainspring arranged to hold the striking-face of the hammer in contact with the wall of the cap-socket, and a hammer pivoted to and wholly covered within the structure and having a cocking-cam in operative relation to the path of movement of the ends of the trigger-arms, all substantially as described.

2. In a toy pistol, in combination with the inclosing stock, a hammer *f*, pivoted within the socket in the stock and having on the side adjacent to the trigger-arms the cam-sockets *f'* and f^3, the latter having a cock-cam f^3, a mainspring *g*, adapted to hold the hammer normally in the forward position, and a rotary trigger *c*, having a plural number of arms *c'*, each adapted to engage the cam-faces of the sockets *f'* and f^3, all substantially as described.

3. In a toy pistol, in combination with the stock, a hammer *f*, wholly inclosed within the walls of the stock and having in the face of the hammer the sockets *f'* and f^3, having cam-surfaces with which the ends of the trigger-arms are adapted to engage, the surface *f* being arranged in advance of the surface f^3, and the rotary trigger *c*, having radial arms *c'*, all substantially as described.

472,574. RAILWAY-SURFACE STOCK-GUARD. LEVI S. GARDNER, Detroit, Mich. Filed July 2, 1891. Serial No. 398,213. (No model.)

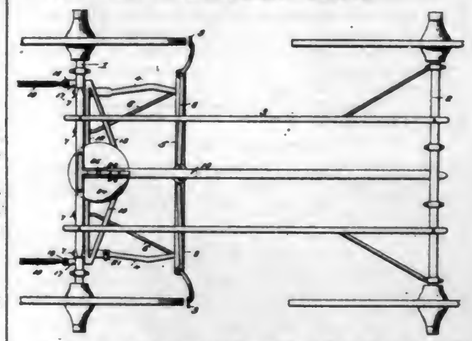
Claim.—1. A railway-surface stock-guard consisting of sheet metal bent into ridges so that the upper corner of one ridge shall overhang the lower part of the adjacent side of the next ridge and having the general shape in cross-section shown and the rods securing the lower portions of said ridges together, substantially as shown and described.



2. A railway-surface stock-guard consisting of a number of strips of sheet metal A B *a b* bent so that their cross-section has the general form shown, a flange A of one of said strips being secured to a flange B of the adjacent strip, and a rod uniting the ridges thus formed, substantially as shown and described.

3. A railway-surface stock-guard consisting of a number of strips of sheet metal A B *a b* bent so that their cross-section shall have the general form shown, a flange A of one of said strips being secured to a flange B of the adjacent strip so that the edge of one of said flanges shall extend beyond the edge of the other of said strips, and a rod passing beneath and uniting the lower portions of the ridges thus formed, substantially as shown and described.

472,575. VEHICLE-BRAKE. WILLIAM H. GRANT, Waltham, Mass. Filed Oct. 31, 1891. Serial No. 410,420. (No model.)



Claim.—1. A vehicle consisting of the front and rear axles, the running-gear mounted thereon, the frame carried by the front axle, the brake-levers pivoted to said frame near their outer ends and carrying the brake-blocks, the longitudinal bar pivoted to the inner ends of the brake-levers, the transverse frame connected to said bar, the links carried by the transverse frame, the rod having its lower end engaging the frame for moving the same, and the shafts connected to said links, substantially as described.

2. A vehicle consisting of the front and rear axle, the running-gear mounted thereon, the frame connected to the front axle, the brake-levers pivoted to said frame and having the brake-blocks, the transverse frame connected to said brake-levers, the flat and cup disks having the central perforation and hub, and the rod passing through said disks and having a crank for operating on said transverse frame, substantially in the manner and for the purpose described.

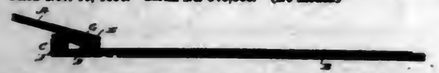
3. A vehicle consisting of a front and rear axle and running-gear, a frame secured to said front axle, brake-levers pivoted to said frame and having brake-blocks at their outer ends, a longitudinal bar having its inner end pivoted to the inner ends of the brake-levers, the rod connected to said bars, the disk and cup, the guide in which the front end of said bar moves, the transverse frame connected to said longitudinal bar, and the shaft movably connected to said frame, substantially as described.

4. A vehicle consisting of the front and rear axle and the running-gear mounted thereon, the frame connected to the front axle, the brake-levers pivoted to said frame and carrying the brake-blocks, the longitudinal bar pivotally connected to the inner ends of the brake-levers, the guide in which the inner end of said bar moves, the transverse frame connected to the longitudinal bar, the stop for limiting the inward movement of said frame, the links connected to the outer ends of said transverse frame and having ears, the shafts connected to said ears, and the guides for said links, substantially as described.

5. A vehicle consisting of the front and rear axle, the wheels, and the running-gear, the frame connected to the front axle, the brake-levers pivoted to said frame and carrying the brake-blocks, the transverse frame connected to said brake-levers and having the plate provided with the slot, the disks mounted on the axle and having a central perforation, and the rod passing through said disks, having the lower end journaled in the arm secured to the under side of the axle

and having the crank engaging the slot of the plate carried by the transverse frame, all arranged and adapted to operate in the manner described.

472,576. MILL-HOLDER. HERMANN H. HOFFMANN, Chicago, Ill. Filed Nov. 10, 1890. Serial No. 370,968. (No model.)



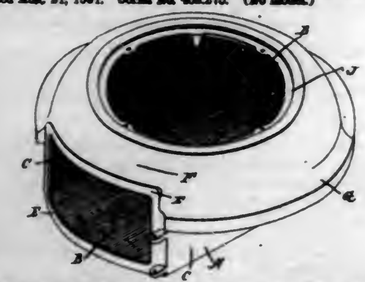
Claim.—1. In a paper-holder, the combination, with the upper and lower stiff covers and the back hinged together, of the fulcruming-strip in the back, arranged between said sections and holding them asunder, and the spring clamping-plate secured thereto, substantially as described.

2. In a paper-holder, the combination, with the upper and lower covers and the back composed of a stiff and a flexible section hinged to said covers, respectively, and to each other, of the fulcrum-strip interposed between said sections near their hinge connection, and a clamping-plate secured to said strip and bearing upon the flexible section, substantially as described.

3. In a paper-holder, the combination, with the upper and lower covers and the back composed of a flexible and a stiff section hinged to said covers, of a fulcruming-strip arranged between said sections of the back and holding them asunder, and a clamping-plate holding said flexible section down against said stiff section, substantially as set forth.

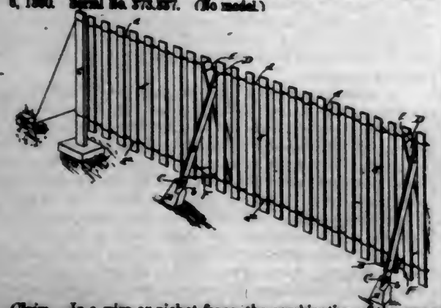
4. In a paper-holder, the combination, with the upper and lower covers and a back having sections flexibly secured to said upper and lower covers, respectively, of a fulcruming-strip arranged between said sections and holding the same asunder, and a clamping-spring bearing upon one of said sections and being bent down toward the other, substantially as set forth.

472,577. ASH-BOX FOR STOVES. LAZARD KAHN and REINHART CHRIST, Hamilton, Ohio, assignors to P. & L. Kahn & Bros., same place. Filed Aug. 21, 1891. Serial No. 402,275. (No model.)



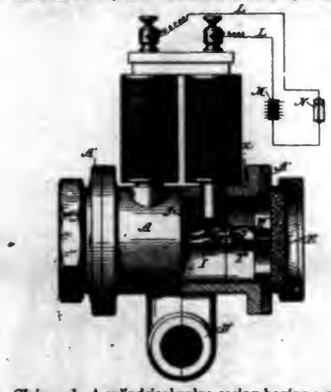
Claim.—In an ash-box for a stove, a box open at its front and top and provided at its upper front portion with a cross-bar integrally formed with the side walls of the box and forming the upper margin of the open front of the box and provided with a skirting integrally formed with the box, extending outwardly and downwardly from the top of the box, and terminating below in a rib exterior to the box, with its extremities joining the side walls of the box at its front below said cross-bar.

472,578. FENCE. WINFIELD S. KLINE, Bolivar, Ohio. Filed Dec. 6, 1890. Serial No. 373,837. (No model.)



Claim.—In a wire or picket fence, the combination of the upper line-wires *d*, secured in the upper angle of the cross-braces B, said braces provided with V-shaped notches at their lower ends and resting on supports in corresponding shoulders and secured thereto by wires, with the cross-wires F attached to the lower fence-wires and braces B, thereby staying the lower portion of the fence, substantially as and for the purpose specified.

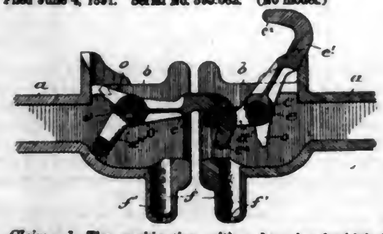
472,579. ELECTRO-MAGNETIC VALVE-CONTROLLER. OLOF R. LUNDBERG, Brooklyn, N. Y., assignor, by mesne assignments, to the New York Electrical Device Company, of Virginia. Filed Aug. 6, 1890. Renewed Oct. 14, 1891. Serial No. 408,697. (No model.)



Claim.—1. A cylindrical valve-casing having a peripheral port, a radial valve governing said port and oscillating upon an axis coinciding with that of the casing, an armature carried by the valve upon the opposite side of its pivotal axis, an electro-magnet mounted externally upon the casing, having its poles extended through the same to attract the armature and move the valve in one direction, and a spring operating to retract the armature and carry the valve in the opposite direction, substantially in the manner and for the purpose herein set forth.

2. The combination, with a cylindrical valve-casing, of a lateral coupling-piece having its nozzles in a right line with each other to admit of being interposed in a straight line of pipe and which communicates separately with peripheral ports in said casing, a radial valve governing one of said ports and oscillating upon an axis coinciding with that of the casing, an electro-magnet mounted upon the casing, with its poles extending inwardly through the same, and a spring-actuated armature carried by the valve to be attracted by the magnet, and thereby move the valve, substantially in the manner and for the purpose herein set forth.

472,580. CAR-COUPLING. ALEXANDER C. MARTIN, Chicago, Ill. Filed June 4, 1891. Serial No. 395,062. (No model.)



Claim.—1. The combination, with a draw-head which is closed at the bottom and open at the front and top, respectively, of an elbow pivoted within said head, having a hook upon one part and a slotted arm or loop upon the other, a pin-socket in the bottom of said head in vertical alignment with the opening in said slotted arm or loop, and a space between said loop and the bottom of said head for the reception of a detachable link, whereby said loop is free to swing in the arc of a circle within the head and to serve as an upper bearing for a detachable pin, substantially as shown and described.

2. The combination, with a draw-head which is closed at the bottom and open at the front and top, respectively, of an elbow pivoted within said head, having a hook upon one part and a slotted arm or loop upon the other, a pin-socket in the bottom of said head in vertical alignment with the opening in said slotted arm or loop, a space between said loop and the bottom of said head for the reception of a detachable link, said loop being free to swing back within the head and normally in position to serve as an upper bearing for a detachable link, and means for tilting said elbow upon its pivot, substantially as shown and described.

3. The combination, with a draw-head, of a pivoted elbow having a hook upon one part and a slotted arm or loop upon the other, a pin-socket in the bottom of the head in alignment with the opening in said loop, said elbow being pivoted sufficiently high in the head to permit the introduction of a link beneath, means for tilting said elbow, and a stop *o*, formed thereon, to intercept the link, substantially as shown and described.

4. A car-coupler consisting of two elbows pivotally secured in opposite draw-heads which are closed at the bottom, each of said elbows having a hook upon the extremity of one arm and a corresponding slot or opening at or near the extremity of the other, said draw-heads being provided, respectively, with a pin-socket in the bottom thereof in alignment with said slot or opening, together with a space beneath said arm for the reception of a link, and means for tilting said elbows upon their pivots, substantially as shown and described.

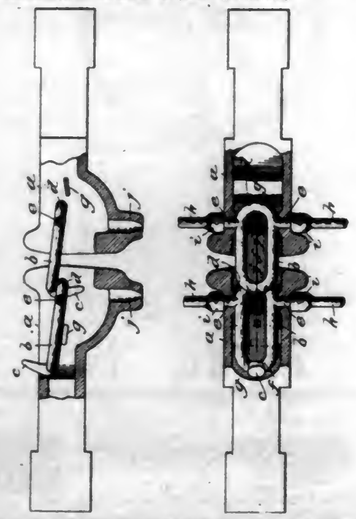
472,581. CAR-COUPLING. ALEXANDER C. MARTIN, Chicago, Ill. Filed June 25, 1891. Serial No. 397,488. (No model.)



Claim.—1. The combination, with a draw-bar head, of the hook *c* and link *A*, mounted upon a common pin, the hook being rigid with the pin and the loop loosely mounted thereon, and means for permitting a limited oscillatory movement of said loop independently of the hook, substantially as shown and described.

2. The combination, with the opposite draw-heads of railway-cars, of a hook and loop mounted upon a common pin in each of said draw-heads, said hook and loop being jointedly connected with each other, whereby a limited movement of the loop is permitted independently of the hook and said loop sustained in a horizontal position when the hook is thrown back, substantially as shown and described.

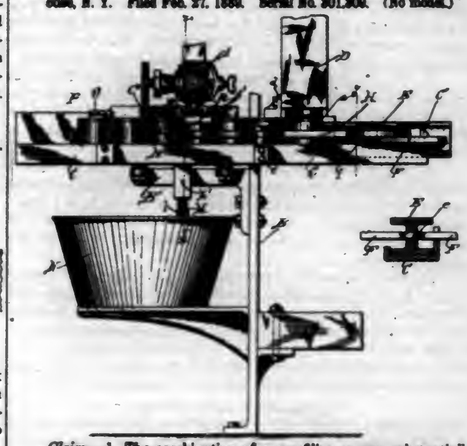
472,582. CAR-COUPLING. ALEXANDER C. MARTIN, Chicago, Ill. Filed June 25, 1891. Serial No. 397,489. (No model.)



Claim.—1. The combination, with a draw-bar, the head of which is closed at the bottom and open at the front and top, respectively, of a coupling device pivotally mounted within said head, said coupling device having a hook *c* formed upon one end and a loop *d* upon the other and arranged to rest normally in a horizontal or nearly horizontal position within the head, the pivotal point being near the end in which the loop is formed, and means for tilting the same upon its pivot, substantially as shown and described.

2. The combination of opposite draw-bars which are open at the front and top, respectively, and closed at the bottom, coupling-pins pivotally mounted within said heads, each having a hook upon one end and a loop upon the other, the pivotal point being nearest to the loop, means for sustaining the same normally in horizontal positions or substantially so within said heads, and means for tilting the same upon their pivots, substantially as shown and described.

472,583. CAN-FILLING MACHINE. GAINE L. MERRELL, Syracuse, N. Y. Filed Feb. 27, 1889. Serial No. 301,309. (No model.)



Claim.—1. The combination of a can-filler, means, substantially as described, for feeding the cans to the filler, a support for the cans when being filled, and a spring connected to said support for allowing the same to yield when the cans are fed into operative position in relation to the filler, substantially as specified.

2. The combination of a can-filler a guideway through which the cans are fed to said filler, a support opposite to the can-filler and movable within said guideway, and a plunger for feeding the cans through the guideway to the filler, substantially as described.

3. The combination of a can-filler, a guideway through which the cans are fed to the filler, said guide being provided with an opening or cut-out, a support movable in said opening, and a spring for forcing said support toward the filler and yielding to allow the cans to feed to the desired position in relation to the filler, and a plunger for feeding the cans through said guideway, substantially as set forth.

4. The combination of a can-filler, a guideway through which the cans are fed, provided with an opening opposite to the can-filler, a can-support guided through said opening and having an inclined forward extremity, a spring for allowing said support to yield to enable the can to feed to the can-filler, and means, substantially as described, for feeding said cans to the said guideway, substantially as and for the purpose described.

5. The combination of a can-filler, a can-guide beneath said filler and having openings opposite to the filler, means, substantially as described, for feeding the cans through said guideway, a can-support guided through said opening in the can-guide, a depending support arranged beneath the can-guide, a sleeve provided on said can-support and guided on said depending support, and a spring for operating the can support, substantially as and for the purpose set forth.

6. The combination of a can-filler, a can-guide beneath said filler and having openings opposite said filler, means, substantially as described, for feeding the cans through the can-guide, the support L, depending from the base of the guideway, the movable supports K, provided with a sleeve K^2, the spring M, mounted on the support L beneath the sleeve K^2, and a nut *l* for compressing the spring, substantially as specified.

7. The combination of a can-filler, a can-guide for conducting the cans to the filler, means, substantially as described, for feeding the cans through said guide, an enlargement in the guideway, arranged beneath the filler, and a guide-rail for preventing the cans from feeding into said enlargement, substantially as and for the purpose described.

8. The combination of a can-filler, a can-guide for conducting the cans to the filler, means, substantially as described, for feeding the cans through said guide, an enlargement in the guideway, arranged beneath the filler, a guide-rail for preventing the cans from feeding into said enlargement, and adjusting-screws for varying the distance of said guide-rail from the opposite portion of said guideway, substantially as and for the purpose set forth.

9. The combination of a can-filler, a can-guide for conducting the

cans to the filler, means, substantially as described, for feeding the cans through the can-guide, and the vertically-arranged plate R, movably secured to said filler, substantially as and for the purpose described.

10. The combination of a can-filler, a can-guide for conducting the cans to the filler, means, substantially as described, for feeding the cans through the can-guide, and the vertically-arranged plate R, hinged to said can-filler for allowing the same to be swung into and out of operative position, substantially as and for the purpose described.

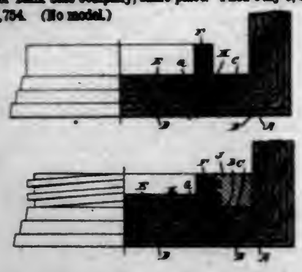
11. The combination of a can-filler, a guideway for the cans, means, substantially as described, for feeding the cans, a lever H, having its end H' provided with a concaved face for engaging the cans, and a connection between said feeding means and lever H, whereby the latter is operatively timed, substantially as and for the purpose described.

12. The combination of a can-filler, a guideway for the cans, a plunger for feeding the cans, the lever F for operating the plunger, the lever H, having a concaved engaging face for retaining the can to be filled, and a connection between said levers H and F, substantially as and for the purpose set forth.

13. The combination of a can-filler, a guideway for the cans, a plunger for feeding the cans, an oscillating lever F, having the rounded portion *f* for engaging the plunger, the pivoted lever H, having a concaved face for engaging the can, and a pin provided on one of said levers and engaging a slot in the other, substantially as and for the purpose specified.

14. The combination of a can-filler, a guideway for the cans, a plunger for feeding the cans, a lever F for operating the plunger, the swinging lever H, having a concaved face for engaging the cans and provided with a slot or cut-out having one extremity substantially concentric with the pivot of the lever F and the other extremity cam-shaped, and a projection on said lever F for engaging said slot or cut-out of the lever H, substantially as and for the purpose set forth.

472,584. SAFE-DOOR. MOSES MOSLER, Cincinnati, Ohio, assignor to the Mosler Bank Safe Company, same place. Filed July 8, 1891. Serial No. 398,754. (No model.)



Claim.—1. In a safe or vault, the combination, substantially as set forth, of a door having a groove presenting itself outwardly around the periphery of the door, and an integrally-formed back-frame forming the exterior margin for the back of the door and provided with an inwardly-projecting flange engaging said groove.

2. In a safe or vault, the combination, substantially as set forth, of a back-frame having an inwardly-projecting flange, a door seated against the flanged face of said frame and having a plate fitting within said flange, and screws K, disposed in the joint between the edges of said flange and last-mentioned plate and engaging half in each of said edges and projecting into the door forward of the flange.

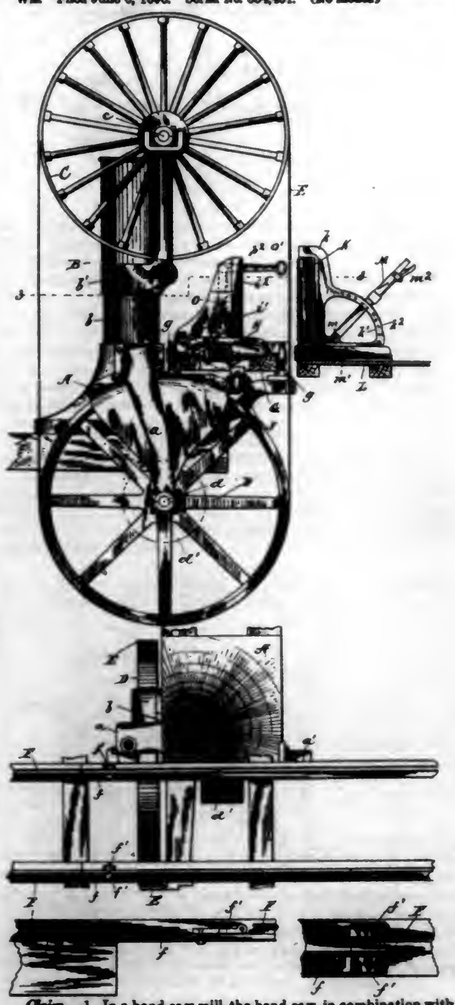
472,585. WIRE FENCE. JOSEPH MCCLINTOCK, Indianapolis, Ind. Filed May 18, 1891. Serial No. 393,173. (No model.)



Claim.—1. The combination, with a tubular fence-post, of the herein-described tightening means, comprising a headed rotatable bolt projected through said post at right angles to the line of wire and formed with an opening for the wire, located at one side of the longitudinal center of the bolt and out of alignment with the opening in the post, through which the wire extends in its passage to the bolt, plane concave washers located on said bolt on opposite sides of the post and having their concave edges in contact therewith, the outer side of one of said washers engaging the bolt-head and constructed to form a lock therewith, and a nut on the extremity of the bolt engaging the outer side of the other washer, all substantially as shown, and for the purposes specified.

2. The combination, with a tubular metallic fence-post, of a series of fence-wires and a corresponding series of bolts projected through said post in a transverse direction to that of the wires and having slots therethrough by which the wires are fastened to the bolts, the slots being at one side of the vertical center of the post and nearest the head of the bolt, for the purposes described, and plane-concave washers interposed between the heads and nuts of the bolt and the post, the washers next the bolt-heads having irregular surfaces to prevent the rotation of the bolts when the heads are in contact with said washers and openings being formed through the sides of the post to admit the wires to the interior of said post, substantially as and for the purpose specified.

472,586. BAND-SAW MILL. DE WITT C. PRESCOTT, Marinette, Wis. Filed June 6, 1890. Serial No. 354,461. (No model.)



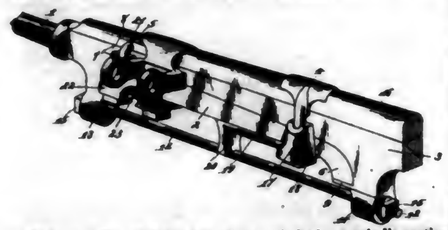
Claim.—1. In a band-saw mill, the band-saw, in combination with the log-carriage tracks arranged within the saw and provided with short independent sections removable from their normal position in the tracks, substantially as and for the purposes specified.

2. In a band-saw mill, the band-saw E, in combination with the carriage-tracks F, arranged within the saw and provided with short hinged sections *f*, substantially as and for the purposes specified.

3. In a band-saw mill, a band-saw E, in combination with the carriage-tracks F, arranged within the saw, a carriage G, mounted on said tracks and extended at its front end considerably beyond the

log or cant support, the setting-lever O, arranged on the said front extension of the carriage and at the rear of the saw, and the upright bearing-roller K and its setting-lever M, arranged a little in front and outside of the saw, substantially as and for the purposes specified.

472,587. AXLE. WASHINGTON M. RANKIN, Little Rock, Ark. Filed Dec. 30, 1891. Serial No. 416,569. (No model.)



Claim.—1. The combination of an axle-body, a spindle-section having an arm extending along the body, a tie-rod arranged beneath and extending longitudinally of and connecting the arm and the body, and a clip clamping the arm to the body and provided with a strut interposed between the body and the tie-rod, substantially as described.

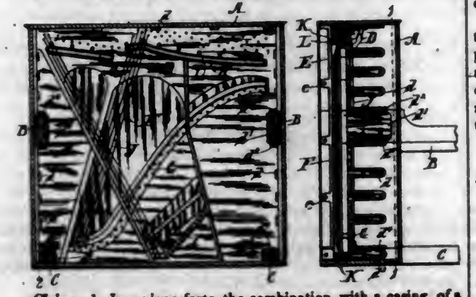
2. The combination of an axle-body having a depending perforated lug, a spindle-section having an arm extending longitudinally of the body and provided with a depending lug, a clip clamping the arm to the body, and a tie-rod extending longitudinally of the body and secured to said lugs, substantially as described.

3. The combination of an axle-body provided near its end with a shoulder 9 triangular in cross-section and forming a recess, said axle-body being provided at its end with a V-shaped recess, a spindle-section having an arm conforming to the axle-body and provided with a shoulder 11, having oppositely-beveled sides and fitting in the recess at the end of the axle-body, said arm having its end 6 provided with a V-shaped recess to receive the shoulder of the axle-body, and means for securing the arm to the axle-body, substantially as described.

4. The combination of an axle-body, a spindle-section having an arm extending longitudinally of the body, a tie-rod connecting the spindle-section and the body, an inner clip having a clip-plate provided with an extension and with a strut arranged at the outer end of the extension and interposed between the arm and the tie-rod, an outer clip having a clip-plate provided with an extension, and an axle-clip having its sides secured to the extension of the outer clip, substantially as described.

5. The axle-body having a perforated lug, the spindle-section having an arm extending along beneath the axle-body and interlocked therewith at the ends and provided with a perforated lug, and a tie-rod connecting the lugs together, substantially as described.

472,588. PIANO-FORTE. WILLIAM ROHLFING, Jr., Milwaukee, Wis. Filed Dec. 12, 1891. Serial No. 414,791. (No model.)



Claim.—1. In a piano-forte, the combination, with a casing, of a frame consisting of outer and inner plates provided with lugs projecting laterally therefrom and adapted to be secured to the casing by screws, substantially as set forth.

2. In a piano-forte, the combination, with the case thereof, of a framing having a series of lugs or projections for attachment to said body, lugs engaging the side, top, and bottom of the side pieces of the keyboard, and lugs engaging the side and top of the supporting base-pieces, substantially as set forth.

3. In a piano-forte, the combination of a frame, a sounding-board, bridges secured thereto and passing through slots in the framing, a set of strings having their opposite ends secured to the portions of two of the bridges projecting from opposite ends of the sounding-board, and another set of strings having their opposite ends secured to the portions of the other bridges projecting from opposite ends of the sounding-board, the parts of the strings which are struck by the hammer allowed to vibrate between the bridges to which they are secured, substantially as set forth.

4. In a piano-forte, the combination of inner and outer framings, a sounding-board interposed therebetween, and blocks at the edges and on opposite sides of the sounding-board to receive screws, substantially as set forth.

472,589. BED-LOUNGE. JOHN RUSSELL, Richmond, Ind. Filed June 17, 1891. Serial No. 396,553. (No model.)



Claim.—1. In a bed-lounge, the combination, with the frame consisting of the parts A and A', hinged together, and the back C, of the mattress consisting of the parts B and B', hinged together and said part B secured to said part A' of the frame, and a spring-supported rod D, located adjacent to said back C and serving to partially support the mattress when the device is converted into a seat and ease the descent of the mattress when the device is being converted into a seat and by the recoil of its spring assist the operator in opening the device out into bed form, substantially as described.

2. In a bed-lounge, the combination, with the frame consisting of the parts A and A', hinged together, of the mattress consisting of the parts B and B', said part B being secured to said part A' of the frame and said part B' hinged to said part B, knobs projecting from said parts of the mattress, and the cord attached at its ends to spring-bolts secured to said part B' and having a double loop adapted to engage said knobs, all arranged and operating substantially as shown and described.

3. The herein-described bed-lounge, comprising a frame consisting of the parts A, A', and C, said parts A and A' being hinged together at their contacting upper edges, a mattress made in two parts hinged together and one of said parts attached to said part A' of the frame, knobs n, projecting from said parts of the mattress, a cord having a double loop attached at its ends to spring-bolts secured to one of the parts of the mattress, and an elastically-supported rod connected to said part C of the frame and having at its lower end a forwardly-projecting foot, all arranged, combined, and operating substantially as shown and described.

4. In a bed-lounge, the combination, with a frame consisting of the parts A A', hinged together, of the mattress consisting of the parts B and B', said part B being secured to said part A' of the frame and said part B' hinged to said part B, and spring-bolts secured to said part B' of the mattress and serving to support the same on the part A of the frame when the device is converted into a bed, substantially as described.

5. In a bed-lounge, the combination, with the frame consisting of the parts A and A', hinged together, of the mattress consisting of the parts B and B', said part B being secured to said part A' of the frame and said part B' hinged to said part B, knobs projecting from said parts of the mattress, spring-bolts secured to said parts B' of the mattress near an edge thereof, and means for engaging said knobs and serving to hold the parts of the mattress together.

472,590. INTERLOCKING BLOCK FOR BUILDING, PAVING, &c. CHARLES R. SIMPSON, Portsmouth, Ohio, assignor of one-half to W. G. Adams, same place. Filed Dec. 2, 1891. Serial No. 413,731. (No model.)

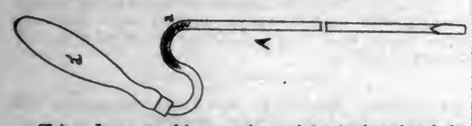


Claim.—1. A paving or building brick consisting of two wedge frusta of parallel sides having the base of one equal to the frustum plane of the other, merged side to side in such relation that the said base and frustum constitute a single rectangular plane as one face of the brick and the opposite base and frustum constitute a rectangular plane extended at corresponding opposite sides as the other face of the brick, while the ends present one half inclined outward and the other half inward in corresponding relations, substantially as set forth.

2. A brick or building-block consisting of two wedge frusta of equal length and width, being successive portions of a given wedge cut

by parallel planes at right angles to the axis and merged side to side, the smaller base of one being a projection of the larger base of the other, substantially as set forth.

472,591. SCREW-DRIVER. JOHN F. STEWARD, Chicago, Ill. Filed Aug. 19, 1891. Serial No. 403,139. (No model.)



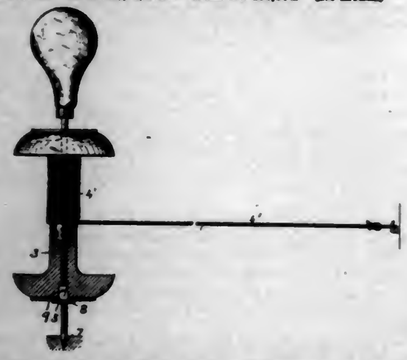
Claim.—In a screw-driver or other tool that is adapted to do its work by rotation, the combination of the blade A, the crank having the diagonal wrist *a'*, and the pad *a*, the latter so near to said crank that the finger and thumb of the hand holding the tool may reach and press upon the same, substantially as described.

472,592. WINDOW-BLIND. HIRAM B. SWARTS, Wooster, Ohio. Filed Sept. 26, 1891. Serial No. 406,573. (No model.)



Claim.—In a blind-frame, the combination, with the stile A, bored to receive the tenons, of the slats fitted thereto, said stile further provided with a longitudinal raised portion along the margin of its inner edge to bear against the outer edges of the slats and secure them rigidly in place to form a series of stationary slats within the blind-frame, substantially as shown and described.

472,593. CHALK-LINE HOLDER. AUGUSTUS TAGRE, San Francisco, Cal. Filed Aug. 3, 1891. Serial No. 402,134. (No model.)



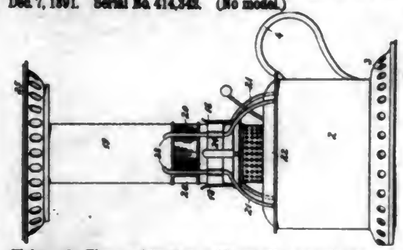
Claim.—1. In a chalk-line holder, the combination of the spool A, held to slide longitudinally upon the spindle to engage and disengage the rectangular shoulder and the spool having metallic plate 4, with rectangular opening therein conforming in its location with the axial bore of the spool, the spindle 3, having rectangular shoulder 9 and pointed end 7, and button 8, as and for the purposes specified.

2. In a chalk-line holder, the combination of a spool held to slide longitudinally upon the spindle to engage and disengage the rectangular shoulder and the spool having a plate at one end thereof, with a rectangular opening therein conforming in its location with the axial bore of the spool, a spindle having a rectangular shoulder to fit the opening in the plate, and a button located upon the spindle near the end thereof most remote from the handle, forming a bearing for the spool when stopped, as and for the purposes set forth.

3. In a chalk-line holder, the combination of the spool A, held to slide longitudinally upon the spindle to engage and disengage the rectangular shoulder and the spool having metallic plate 4, with rectangular opening therein conforming in its location with the axial bore of the spool, the spindle 3, having rectangular shoulder 9, the button 8, located on the spindle near the end thereof most remote from the handle, forming a bearing for the spool when stopped, and the handle 6, as and for the purposes set forth.

4. In a chalk-line holder, the combination of the spool A, held to slide longitudinally upon the spindle to engage and disengage the rectangular shoulder and the spool having a rectangular opening therein conforming with the axial bore of the spool, the spindle 3, having rectangular shoulder 9, the chalk-line 4', and the catch 10, as and for the purposes set forth.

472,594. LAMP-STOVE. CHARLES S. UPTON, New York, N. Y. Filed Dec. 7, 1891. Serial No. 414,342. (No model.)



Claim.—1. The combination, with an oil-reservoir and burner, of a chimney provided with braces or supports which rest upon a base or support formed on the reservoir, the top of the chimney being also provided with a support for vessels or other devices, substantially as shown and described.

2. The combination, with an oil-reservoir and burner, of a chimney provided with removable braces or supports which rest, when the chimney is in position, upon the reservoir, substantially as shown and described.

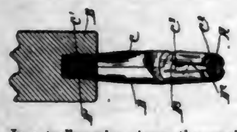
3. The combination, with an oil-reservoir and burner, of a chimney provided at its top with a support for vessels or other devices and braces which rest upon a base or support formed on the oil-reservoir, substantially as shown and described.

472,595. BAKING-PAN. WILLIAM WAGNS, Covington, Ky. Filed Dec. 24, 1891. Serial No. 416,080. (No model.)



Claim.—The combination, with a double bake-pan, of the spit B, having the crank F to hold the roast in position when turned by the aid of the flange G, substantially as shown and described.

472,596. TROLLEY-WIRE CLAMP. MONTRAVILLE M. WOOD, Chicago, Ill. Filed May 14, 1891. Serial No. 392,683. (No model.)



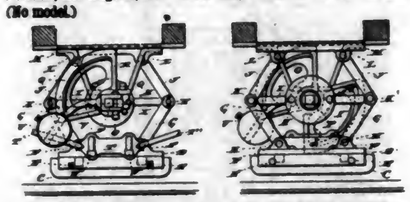
Claim.—1. In a trolley-wire clamp, the combination of two independent clamping portions pivotally supported one upon the other and provided at one extremity with coacting clamping-jaws and at the other with means for securing the clamp to its support and adjusting the jaws with reference to each other.

2. In a trolley-wire clamp, the combination of two independent clamping portions pivotally supported one upon the other and provided at one extremity with coacting clamping-jaws and provided at the other with means for securing the clamp to its support, said means consisting of a tapering connection on the clamp, with a receiving part on the clamp-support whereby the jaws may be permitted to open to a greater or less degree, according to the depth to which the clamp is received into its support.

3. In a support for trolley-wires, the combination of two clamping parts pivotally connected and provided at one end with coacting clamping-jaws and at the other with a tapering screw-thread.

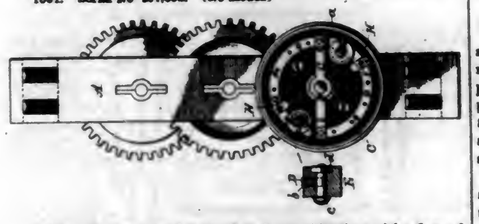
4. In a clamp for trolley-wires, the combination of two clamping parts pivotally connected together with coacting jaws to grasp the trolley-wire between them, said parts provided one with an aperture and the other with a portion to pass through such aperture, so that the parts are pivotally connected without the use of a pivot-pin.

472,597. BRAKE FOR STREET-CARS. FRED W. WOOD and JOHN FOWLER, Los Angeles, Cal. Filed July 24, 1891. Serial No. 400,660. (No model.)



Claim.—The combination, in a track-brake, of the horizontal shaft P, with the wheels O and with the horizontal connecting-arms I and with the upper and lower connecting-links J and G and with the upper plate M and the lower plate D and with the quadrants R and S, together with the lever V and the weight U and with the stay-brace T, whereby a pulling motion at the circumference of the quadrants R and S is converted into a rotary motion of the shaft P and of the wheels O, and through the connecting-arms I and the upper and lower connecting-links J and G the said rotary motion is converted into a downward thrust of the lower plate D, to which is attached the brake-shoe, all substantially as set forth.

472,598. SPEED-CONTROLLER. GARRICK M. ATHERTON, Longton, Kans., assignor of one-half to Franklin A. Du Bois. Filed Oct. 3, 1891. Serial No. 407,632. (No model.)



Claim.—1. In a speed-controller, the combination, with a flanged plate and a shaft, of a cross-bar on one end of said shaft, springs, a bar pivotally connected at one end to the end of said cross-bar, a weight at the end of said pivoted bar, and an adjustable shoe carried by said pivoted bar and adapted to engage the flange of said plate, substantially as set forth.

2. In a speed-controller, the combination, with a flanged plate and a shaft, of a cross-bar on one end of said shaft, springs, curved bars pivoted at each end of said cross-bar and extending in opposite directions, a weight at the free end of each curved bar, and a shoe adjustably secured to each of said curved bars and adapted to engage the flange of the plate when the shaft is rotated, substantially as set forth.

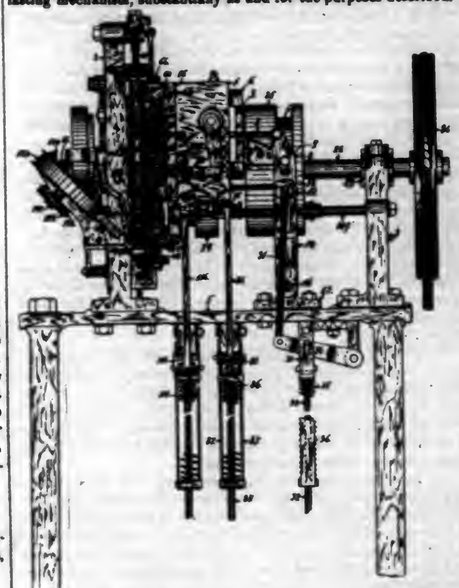
3. In a speed-controller, the combination, with a flanged plate and a shaft, of a cross-bar secured to said shaft, springs, an arm or bar pivoted to said cross-bar, and a weight at the free end of said pivoted arm or bar, said weight consisting of a block having a recess to receive the bar, a screw passing through said block, and a nut in the block in which the screw enters, whereby the block or weight may be clamped to the bar, substantially as set forth.

472,599. LASTING-MACHINE. JOHN T. AVERY, St. Louis, Mo., assignor to the Avery Lasting Machine Company, same place. Filed May 11, 1891. Serial No. 392,406. (No model.)

Claim.—1. In a lasting-machine, the combination, with an independent laterally-movable head-stock carrying the gripping-jaws, of a guide-rest for the last rigidly secured to the head-stock, and means, substantially as described, for moving said head-stock laterally.

2. In a lasting-machine, the combination, with the frame, of guideways thereon, a head-stock slidingly mounted on said ways, means for actuating said head-stock, a guide-rest for the last secured to said head-stock and moving therewith, and lasting mechanism, substantially as and for the purposes described.

3. In a lasting-machine, the combination, with the frame, of guideways thereon, a head-stock slidingly mounted thereon and arranged to move laterally, a cam, suitable intermediate connections between said cam and head-stock for moving said head-stock laterally, and lasting mechanism, substantially as and for the purposes described.



4. In a lasting-machine, the combination, with a cam, of a rock-arm engaging therewith, a horizontal shaft on which said rock-arm is mounted, a slotted arm on the opposite end of the horizontal shaft, a pivoted bar provided with a slot in its lower member, a link on its upper member, a laterally-movable head-piece to which said link is attached, a movable pivoted pin passing through the slots in the lower member of the pivoted bar and rock-arm, and lasting mechanism, substantially as and for the purposes specified.

5. In a lasting-machine, the combination, with the laterally-movable head-stock, link, and pivoted bar provided with a slot in its lower member, of a horizontally-journaled rock-shaft, rock-arms on said shaft which are provided with a slot and roller, respectively, a cam with which the roller on one of the rock-arms engages, a pivot-pin passing through the slots of the rock-arm and pivoted arm, means for adjusting said pivot-pin, and lasting mechanism, substantially as and for the purposes specified.

6. In a lasting-machine, the combination, with the frame, of guideways thereon, a head-stock slidingly mounted on said guideways, means for reciprocating the head-stock laterally, suitable connections for adjustably limiting the throw of said head-stock, and lasting mechanism, substantially as and for the purposes described.

7. In a lasting-machine, the combination, with the frame, of guideways thereon, a laterally-movable head-stock slidingly arranged on said ways, an independently-movable gripper-carrier mounted on the head-stock, and lasting mechanism, substantially as and for the purposes described.

8. In a lasting-machine, the combination, with the frame, of guideways thereon, a laterally-movable head-stock mounted on the ways, an independent movable gripper-carrier mounted on the head-stock, and vertically-reciprocating gripper-jaws mounted in the gripper-carrier, substantially as and for the purposes described.

9. In a lasting-machine, the combination, with the frame, of guideways thereon, a laterally-movable head-stock mounted on said ways, a gripper-carrier mounted on the head-stock, vertically-reciprocating gripper-jaws mounted in the gripper-carrier, and means for actuating the said parts independently of each other, substantially as and for the purposes described.

10. In a lasting-machine, the combination, with the frame, of guideways thereon, a laterally-movable head-stock mounted on said ways, means for limiting the throw of said head-stock, a gripper-carrier pivotally mounted on the head-stock and arranged to move backward and forward, a rotatable and vertically-reciprocating gripper-shaft mounted in the carrier, and suitable means for actuating the said parts, substantially as and for the purposes described.

11. In a lasting-machine, the combination, with the frame, of

guideways thereon, a laterally-movable head-stock on said ways, a guide-rest for the last secured to said head-stock, a gripper-carrier and gripping-jaws pivotally secured to said head-stock, a retaining-finger fixedly mounted on the frame, and means for actuating said parts independently, substantially as and for the purposes described.

12. In a lasting-machine, the combination of a gripper-carrier, a shaft provided with gripping-jaws mounted therein, a collar on said shaft, a sleeve loosely mounted on said shaft, said sleeve being provided with a collar, pivoted levers engaging the collars and adapted to raise and lower the shaft and sleeve, a toggle-joint connection between said levers adapted to separate the same, and means for raising the levers simultaneously, substantially as and for the purposes specified.

13. In a lasting-machine, the combination, with the gripper-carrier and its gripper-shaft, of a sleeve on said shaft, revoluble collars on said shaft and sleeve, pivoted levers engaging said revoluble collars, a toggle-joint connection between said levers, a second lever provided with a downward extension pivoted on one of the aforesaid levers, a block mounted in the downward extension, a rod secured to the toggle and passing through said block, a stirrup pivotally mounted in the gripper-carrier and slidingly secured on said rod, a spring interposed between the base of the stirrup and toggle, and means for actuating said secondary lever, whereby the gripper-shaft and sleeve are raised simultaneously and with different speed, substantially as and for the purposes specified.

14. In a lasting-machine, the combination, with the gripper-carrier and its gripper-shaft, of a sleeve loosely mounted on said shaft, levers engaging said shaft and sleeve, a toggle-joint connection between said levers, a pivoted stirrup, a spring interposed between said stirrup and toggle-joint, and means on one of the levers for controlling the movement of the toggle through the medium of the spring, substantially as and for the purposes specified.

15. In a lasting-machine, the combination, with the laterally-movable head-stock, of a gripper-carrier mounted thereon, a rotatable vertically-reciprocating gripper-shaft mounted in said carrier, jaws on the lower end of said shaft, a sleeve surrounding the upper portion of the jaws and loosely mounted on the shaft, and a toggle-joint connection between said shaft and sleeve, substantially as and for the purposes described.

16. In a lasting-machine, the combination, with the frame, of guideways thereon, a laterally-movable head-stock on said ways, a gripper-carrier pivotally mounted on said head-stock, a gripper-shaft mounted in said carrier, a sleeve on said shaft adapted to encircle the gripping-jaws, a toggle-joint connection between said shaft and sleeve, and means for rotating the shaft, substantially as and for the purposes described.

17. In a lasting-machine, the combination, with the guideways and a laterally-movable head-stock thereon, of a gripper-carrier on the head-stock, gripper-jaws secured to a shaft mounted in the gripper-carrier, a retaining-finger, and a folding-arm adapted to lay the fold for the reception of a tack, substantially as and for the purposes described.

18. In a lasting-machine, the combination, with the guideways and laterally-movable head-stock, of a gripper-carrier, a gripper-shaft mounted therein, means for actuating said parts, a folder-arm adapted to lay the fold, said arm being provided with prongs and spring-lips to retain the fold in its position, a tack-delivering bar arranged to be projected above the folder-arm, means for automatically feeding the tacks to said bar, and a plunger for driving the tacks home, substantially as and for the purposes described.

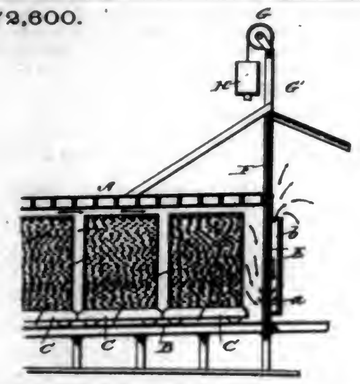
19. In a lasting-machine, the combination, with the guideways and laterally-movable stock secured thereon, of a gripper-carrier on said head-stock, jaws mounted in said gripper-carrier, a folder-arm consisting of two spring-prongs provided with lips arranged to receive the leather and lay the fold, a divided tack-delivering bar composed of spring members, tack-feeding mechanism, a plunger, a tack-pit provided with brushes arranged to brush the tacks into the raceway, and suitable mechanism for actuating said parts correlatively, substantially as and for the purposes specified.

472,600. KILN FOR DRYING LUMBER. ALBERT T. REES, Louisville, Ky. Filed Sept. 24, 1891. Serial No. 406,673. (No model.)

Claim.—1. In a drying-kiln, a vertically-movable door provided with an opening near its bottom and a permanent conduit secured to and movable with the door and communicating with the interior of said drying-kiln, as set forth.

2. The combination, with the kiln and its tracks, of the movable door at one end of the kiln, provided with an opening near its bottom, counterbalance-weights for the door, and a conduit secured on and permanently fixed parallel with the outer face of the door, with its upper end always open, communicating with the said opening and closed at its bottom, as shown and described.

472,600.



472,601. RUBBER BELTING. CHARLES A. CLARK, Bloomfield, N. J., assignor, by mesne assignments, to the Combination Roll and Rubber Company, same place. Filed Mar. 15, 1886. Serial No. 195,471. (No model.)



Claim.—A flat belt composed of a single piece of woven fabric, having a friction-coat of rubber and folded upon itself four or more times, with the edge of the outside ply opposite to the edge of the inside ply, whereby the folds are spiral in cross-section and the belt is of the same thickness throughout, and the whole vulcanized together, substantially as described.

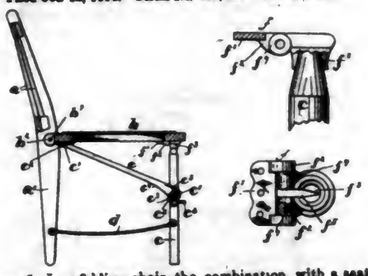
472,602. WATER-ELEVATOR. WILLIAM CLAYPOOL, Conrad, Nebr. Filed Mar. 14, 1891. Serial No. 385,099. (No model.)



Claim.—1. In a water-elevator, a rotatable hub having a series of radiating spokes, the pair of paddles for each spoke, L-shaped brackets or arms secured to the back of each paddle and having aligning eyes at their corners or angles, said eyes being located in front of the spokes, and the single pintle-rod, the rear branches of the brackets or arms embracing and abutting against the opposite sides of the spokes, combined with means for opening and closing the brackets, substantially as specified.

2. The combination of a shaft, a hub having radiating spokes, the wings or paddles hinged in pairs upon the said spokes, and also brackets secured upon said paddles adapted to abut against the sides of the spokes and provided with perforated lugs adapted to overlap each other and to be connected by a pin or bolt, substantially as and for the purpose set forth.

472,603. FOLDING CHAIR. JOHN W. HAMILTON, Springfield, Ohio. Filed Oct. 12, 1891. Serial No. 408,423. (No model.)

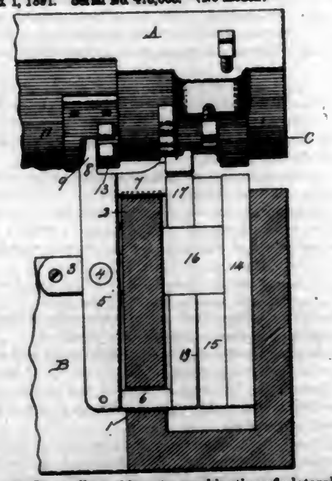


Claim.—1. In a folding chair, the combination, with a seat and the front legs hinged thereto, of a two-part hinge for connecting said legs and seat, one of said parts being provided with inwardly-projecting trunnions and the other being provided with a divided socket-piece having projecting bosses adapted to pass between said trunnions, said socket-piece being adapted to receive the ends of the legs, which when forced into the same expand said socket-piece so as to close the bosses over said trunnions, substantially as specified.

2. The combination, in a chair and with the seat thereof, of a C-shaped connecting-piece secured to said seat and provided with inwardly-projecting trunnions, a divided socket-piece having integrally-formed bosses with lateral openings or pockets adapted to receive said trunnions and a socket arranged in a plane at right angles to said bosses, and a tapered leg adapted to be driven into said socket and expand the same so as to force said bosses over said trunnions, and thus connect the legs and seat, substantially as specified.

3. In a folding chair, in combination with the legs thereof, a stationary C-shaped piece having inwardly-projecting trunnions, a divided socket-piece having a transverse opening or socket with tapered walls, and integrally-formed cup-shaped bosses the openings of which are arranged in a plane at right angles to the plane of said socket, the said chair-leg being tapered at one end and adapted to be driven into said socket, and thus expand the same and force the cup-shaped bosses over said trunnions, substantially as specified.

472,604. NAIL-MACHINE. CHARLES E. HOUGHTON, Northumberland, Pa., assignor of one-half to Horace Rufus Johnson, same place. Filed Dec. 1, 1891. Serial No. 413,660. (No model.)



Claim.—1. In a nail-machine, the combination of a laterally-movable point-cutting bed-die, a lever fulcrumed exterior of and adjacent to the knife-bed and provided with arms projected through the wall of the bed to engage the said die at the respective ends thereof, and a lag on the cutting-jaw of the machine to operate the lever, substantially as described.

2. In a nail-machine, the combination of a laterally-movable point-cutting bed-die, a lever fulcrumed on the bed of the machine exterior to the knife-bed, arms on the ends of the lever, projected through the wall of the knife-bed and engaging the said die, and a lag on the cutting-jaw, having a double cam-slot in the end to engage the end of the lever and move the die outward and inward, substantially as described.

3. In a nail-machine, the combination of a point-cutting bed-die having a lateral play in the die-bed, a lever projected transversely through the side wall of the knife-bed and engaging the said die, and means to connect the lever to some moving part of the machine, substantially as described.

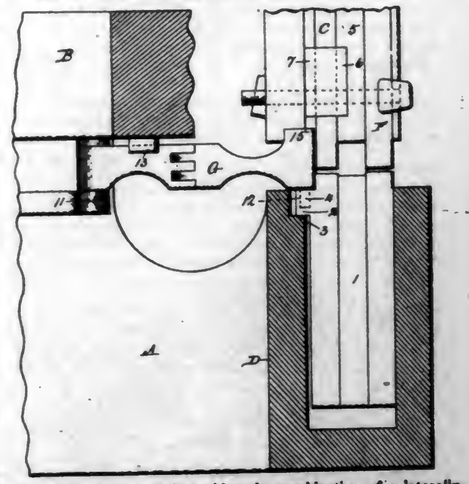
4. In a nail-machine, the combination of the point-cutting bed and moving dies having lateral play in their seats, a lever fulcrumed on the bed of the machine to bear with its end on the outer face of said dies, and a lug on the cutting-jaw to push the lever against the dies, substantially as described.

5. A point-cutting die for a nail-machine, consisting of a body-piece formed with a dovetail groove in its side face, opening out in its end face and extending rearward for a portion of the length of the die-body, and a detachable point-cutting piece arranged in the groove, substantially as described, and for the purpose specified.

6. A point-cutting die for a nail-machine, consisting of a body-piece having a slightly-curved side face in the direction of its length extending from the middle rearward, substantially as and for the purposes specified.

7. A point-cutting die for a nail-machine, consisting of a body-piece having a vertically-arranged chip-escape groove x in its face and a groove in its side face to receive a point-cutting die-piece and a point-cutting die-piece in the side groove, substantially as described.

472,605. NAIL-MACHINE. CHARLES E. HOUGHTON, Northumberland, Pa., assignor of one-half to Horace Rufus Johnson, same place. Filed Dec. 1, 1891. Serial No. 413,716. (No model.)



Claim.—1. In a nail-machine, the combination of a laterally-movable point-cutting bed-die having a laterally-extended lug provided with a hole, a jointed lever fulcrumed on the bed of the machine and arranged parallel to the axis of the cutting-jaw and having its free end formed to engage the hole in the die, and a lug on the cutting-jaw to operate the lever, substantially as described.

2. In a nail-machine, the combination of a laterally-movable point-cutting bed-die having a hole in its end, a jointed lever arranged parallel to the axis of the cutting-jaw and having its outer arm fulcrumed to the bed of the machine and its free end connected to the hole in the said die, and means on the cutting-jaw to operate the lever, substantially as described.

3. In a nail-machine, the combination, with laterally-movable point-cutting bed and moving dies, of a lever arranged parallel to the axis of the cutting-jaw of the machine and having one portion of its free end connected to the said point-cutting bed-die and arranged to bear against the point-cutting moving-die, substantially as and for the purpose specified.

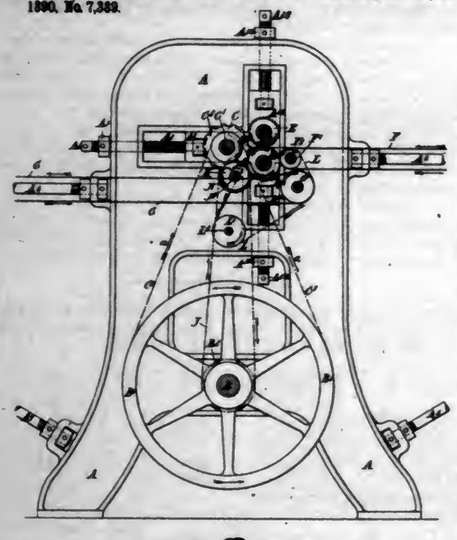
4. In a nail-machine, the combination, with laterally-movable point-cutting dies, of a liner formed with a recess in its side face, and a box-casing to fit the recess in the liner and having a channel wider

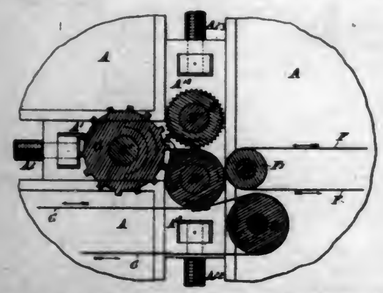
than the point-cutting die in the channel of the box-casing, substantially as described.

5. In a nail-machine, the combination of a laterally-movable point-cutting die, a box-casing on the die, having a recess or channel wider than the die, and a floor to hold the box-casing in position, substantially as and for the purpose specified.

6. In a nail-machine, the combination, with the die-bed of the machine, of a point-cutting die having a lateral play in its seat and a box-casing having a channel to take the die, wider than the die, to set over and hold the die on the bed, substantially as described.

472,606. MACHINE FOR DECORTICATING RHEA, &c. JAMES LONGMORE and WILLIAM L. WATSON, London, England. Filed Oct. 8, 1891. Serial No. 408,197. (No model.) Patented in England May 12, 1890. No. 7,339.





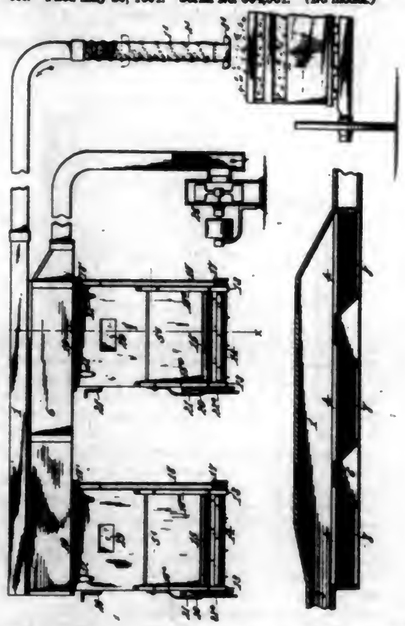
Claim.—1. In a decorticating-machine, the combination, with the beater and smooth feed-roller, of a relatively small brake-bar partially surrounding and taking a bearing on the roll, so as to be centrally supported thereby against the blows of the beater, substantially as described.

2. In a decorticating-machine, the combination, with the beater and the adjustable feed-roller, of a relatively small brake-bar carried by the roller-bearings, whereby it is adjusted in unison therewith, and taking a bearing on the roller, whereby it is supported centrally against the blows of the beater, substantially as described.

3. In a decorticating-machine, the combination, with the beater C, feed-rollers D and E, and a bar, such as H, in contact with the roller D and over which the stems are broken by the beater, of an endless apron, such as G, traveling in contact with the roller D, so as to remove any particles of the stems adhering thereto, substantially as described.

4. The combination and arrangement of parts constituting the complete decorticating-machine, consisting, essentially, of a beater C, a plain or smooth feed-roller D, a serrated or roughened feed-roller E, feed and delivery aprons F and G, and a bar, such as H, supported on the roller D, the whole operating substantially as and for the purpose described.

472,607. APPARATUS FOR ELEVATING, DISTRIBUTING, AND FEEDING SEED-COTTON TO GINS. STEPHEN D. MURRAY, Dallas, Tex., assignor to William Burt, same place, and John H. Deems, St. Louis, Mo. Filed May 29, 1891. Serial No. 394,581. (No model.)



Claim.—1. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with a suction pipe or tube, of a box or casing having side air-passages and a central screened space and a chute or feeder communicating with said space, substantially as described.

2. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with a suction pipe or tube formed in its under side with an opening, of a box or casing having a central space communicating with said pipe or tube and provided with side air-passages having inner screen-walls and a chute or feeder communicating with said central space, substantially as described.

3. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with a suitable opening or supply, of a hanging or movable chute suspended beneath such opening or supply and having in the bottom thereof a set of feed-rollers, substantially as described.

4. In apparatus for elevating and distributing seed-cotton, the combination, with a horizontal supply pipe or tube, of a hanging chute or feeder hinged at one edge to the pipe or tube and having its remaining edges connected to said pipe or tube by flexible material, substantially as described.

5. In apparatus for elevating and distributing seed-cotton, the combination, with a suitable supply device, of a hanging chute or feeder hinged at one edge to the supply device and having its remaining edges connected to said supply device by flexible material and feed-rollers journaled within the lower portion of the chute or feeder, substantially as described.

6. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with the suction pipe or tube 1 and the box or casing 6, of the chute or feeder suspended beneath the casing by a flexible connection, substantially as described.

7. In apparatus for elevating and distributing seed-cotton to gins, the combination, with a swinging chute or feeder, of feed-rollers journaled in the chute or feeder at its lower end portion, and a flexible check-valve located in the chute or feeder above the feed-rollers, substantially as described.

8. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with the chute or feeder, of the valves 25 and 27, located therein at near the top and bottom, respectively, substantially as described.

9. In apparatus for elevating, distributing, and feeding seed-cotton to gins, the combination, with the chute or feeder, of a set of feed-rollers supported at the bottom of said chute or feeder and means for regulating the feed of said rollers, substantially as described.

10. The combination, with the rollers 14, 15, and 16, of the self-adjusting springs for causing frictional contact of the two last-named rollers, substantially as described.

11. The combination, with the feed-rollers 14, 15, and 16, the former having a crank on its shaft and the latter having a notched wheel, of the elbow-lever slotted and working on said crank, the pawl carried by said lever, the shifting hand-lever, and the locking-lever formed with the notches, substantially as described.

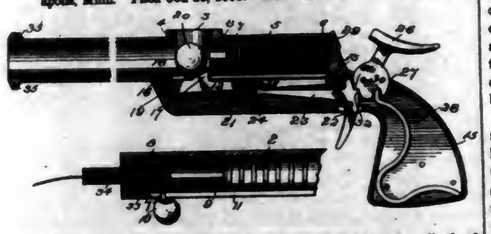
12. The combination, with a suction-pipe, of the box or casing constructed of two or more central spaces and provided with the screened air-passages and a chute or feeder suspended beneath each of said central spaces, substantially as described.

13. The combination, with a suction-pipe, of the box or casing constructed of two or more central spaces and provided with the screened air-passages and a chute or feeder suspended beneath each of said spaces and adapted to be turned or swung to one side, substantially as shown, and for the purposes described.

14. The combination, with the box or casing having the central spaces 5, of a valve or gate 30, adapted to close such space, substantially as described.

15. The combination, with the suspended or hanging feeder, of a pair of compression-rollers arranged in the bottom thereof and adapted to feed the cotton directly therefrom in a compressed sheet or bat, substantially as described.

472,608. TOY MARBLE-SHOOTER. WILLIAM W. RAND, Minneapolis, Minn. Filed Oct. 29, 1891. Serial No. 410,151. (No model.)



Claim.—1. The combination, in a device of the class described, of the barrel provided with the opening 3 and with the longitudinal slot 11, a plunger arranged in said barrel and having a stud projecting through said slot, a coiled spring arranged behind said plunger, a handle for said barrel, a trigger, and a double catch arranged to be operated thereby, one catch adapted to retain the plunger against the tension of the spring and the other a marble or other projectile dropped into said barrel through the opening therein, substantially as described.

2. The combination, in a toy pistol, of a barrel, a stock, and a handle, all formed integrally and hollow, with a plunger arranged in said barrel, a spring arranged behind said plunger in the closed end of the barrel, a stud provided on said plunger and adapted to extend through a longitudinal slot in the barrel, a double catch 12, having projections 16 and 17 arranged to project into the barrel through the slot 18, provided therein, a trigger for operating said catch, and a hammer to be operated at the instant of the movement thereof, substantially as described.

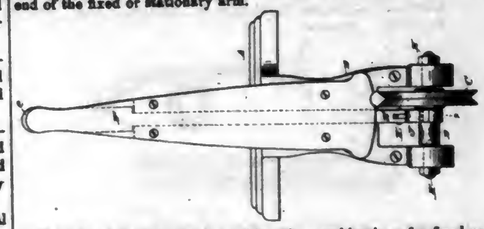
3. The combination, in a toy pistol, of the barrel 2, provided with the opening 3 and a longitudinal slot 11, with a stock and handle therefor, a plunger 8, having the shank 9, the coiled spring arranged back of said plunger and embracing the shank, the catch 12, arranged to operate through the slot 18, provided in the barrel, a spring 21 for said catch, projections 16 and 17 thereon, the bell-crank trigger, the hammer provided with the shoulder 31 to engage a shoulder 32 on said trigger, a spring 28 for operating said hammer, and a cap-cavity on the end or base of the barrel, substantially as described.

4. The combination, in a toy pistol, of the two halves making up the hollow barrel, stock, and handle, the slot 11, provided in the barrel and having the locking-notch 26', and the spring-plunger arranged in the barrel and provided with the stud and knob, said stud adapted to be retained in said notch 26', and said plunger provided with a recess to receive a fire-cracker, substantially as described.

5. The combination, in a toy pistol, with the barrel having the opening 3, of the spring-plunger arranged therein, the hollow stock and handle, the catch 12, provided with the projections 16 and 17, having the inclined forward sides, a spring 21, arranged beneath the catch, and a trigger 22, having the arm 23, provided with the round end or head 24, and said catch provided with a circular journal 25 for said head, substantially as described.

472,609. LEATHER-BEADING MACHINE. ANTON J. SCHMIDT, Philadelphia, Pa., assignor to Edward R. Jordan, same place. Filed Apr. 12, 1888. Serial No. 270,441. (No model.)

Claim.—1. In a leather-beading machine, the combination of a fixed or stationary arm adapted to support the leather, a flat movable blade fitting closely against and guided on said fixed arm, and power mechanism, substantially as shown, to positively, uniformly, and rapidly reciprocate said movable blade longitudinally above the extreme end of the fixed or stationary arm.



2. In a leather-beading machine, the combination of a fixed or stationary arm adapted to support the leather, a flat movable blade fitting closely against and guided on said fixed arm and normally even with the end of said fixed arm, and power mechanism, substantially as shown, to positively, uniformly, and rapidly reciprocate said movable blade longitudinally a short distance beyond the extreme end of the fixed arm, but never below it.

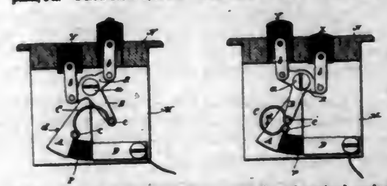
3. In a leather-beading machine, the combination of a fixed or stationary arm to support the leather, a flat movable blade fitting closely against said fixed arm, normally having its end even with the end of the fixed arm, and guided in its movements upon said fixed arm, a rotary shaft, and an eccentric operated by said shaft to impart to the movable blade a positive, uniform, and rapid longitudinal reciprocation a short distance beyond the extreme end of the fixed arm, but never below it.

4. In a leather-beading machine, the combination of a flat stationary blade for supporting the leather, a flat rapidly-reciprocating blade having a short reciprocation and arranged parallel to and against the stationary blade, a rotary shaft, and an eccentric operated by said shaft to impart to the reciprocating blade very rapid, short, and uniform longitudinal reciprocations above the extreme end of the stationary blade.

5. In a leather-beading machine, the combination of the blade F, the reciprocating blade E, having the flat end *e*, the shaft D, having the eccentric *d* and power-wheel C, and a connection between the eccentric and blade E.

6. In a machine for beading leather, the combination of a fixed arm to support the leather, a shaft journaled below said fixed arm, having an eccentric or cam portion, a movable arm fitting closely against said fixed arm at its free end and carried by the eccentric portion of the shaft, and means to rotate said shaft to rapidly, positively, and uniformly reciprocate said movable arm longitudinally a short distance beyond the extreme end of the fixed arm.

472,610. ELECTRIC SWITCH. LOUIS T. STANLEY, Brooklyn, N. Y., assignor to the Cutter Electric and Manufacturing Company, Philadelphia, Pa. Filed Nov. 7, 1890. Serial No. 370,653. (No model.)



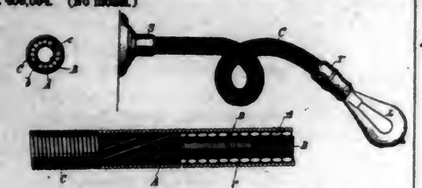
Claim.—1. A mechanical movement for electrical switches and other purposes, consisting in the combination of a pivotal lever or part to be shifted, stops for limiting the movement of the same, an operating part or handle capable of movement independently of the said lever, and a flat resilient strip, one end of which is permanently secured to the pivotal lever eccentrically and the other end to a point on the operating part that is movable across the line joining the fulcrum of the lever and the point thereon to which the said strip is connected.

2. The combination of contact-terminals, a pivotal contact-lever, stops for limiting the movement of the same, a pivoted operating-lever capable of movement independently of the contact-lever, and a flat resilient strip, one end of which is permanently secured to the contact-lever eccentrically and the other to a point on the operating-lever that is movable across the line joining the fulcrum of the contact-lever and the point thereon to which the resilient strip is attached.

3. The combination of the rocking lever B, the push-buttons for turning the same, the contact-lever mounted concentrically with the

rocking lever, and the flat spring having its ends connected with the lever or arm B and the contact-lever A, respectively, as set forth.

472,611. FLEXIBLE SUPPORTING-ARM FOR ELECTRIC LAMPS. LOCRIS T. STANLEY, Brooklyn, N. Y., assignor to the Cutter Electric and Manufacturing Company, Philadelphia, Pa. Filed Oct. 17, 1891. Serial No. 409,094. (No model.)



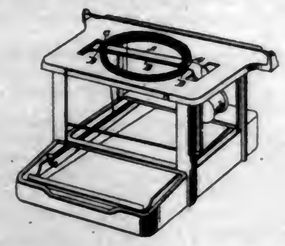
Claim.—1. A flexible supporting-arm consisting of a hollow core formed of spirally-wound strands of ductile wire, in combination with an outer spiral of resilient wire, as set forth.

2. A flexible supporting-arm consisting of a hollow core formed of spirally-wound strands of ductile wire, in combination with an outer spiral of resilient wire distended and having its ends secured to those of the core, as set forth.

3. A flexible supporting-arm consisting of a hollow core formed of spirally-wound strands of ductile wire, in combination with an outer spiral of resilient wire having a shorter pitch than the wires of the core, as set forth.

4. The combination, with a ductile core composed of spirally-wound strands and an outer spiral of resilient wire, of an inner supporting resilient spiral, both inner and outer spirals being distended and secured to the ends of the core, as set forth.

472,612. TYPE-WRITING MACHINE. STEPHEN C. VASALY, St. Paul, Minn. Filed Oct. 3, 1891. Serial No. 408,243. (No model.)

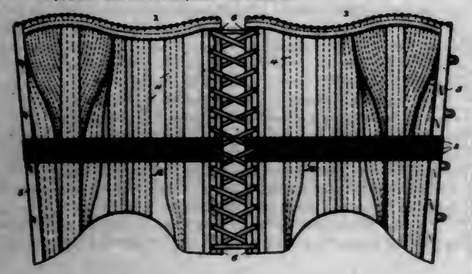


Claim.—1. In a type-writer, the combination, with a ribbon, platen, and printing mechanism, of a relatively short auxiliary ribbon of different color interposed between the ribbon on the machine and the platen, as and for the purpose described.

2. In a type-writer, the combination, with the ribbon, platen, and printing mechanism, of an auxiliary ribbon of different color, having the protecting-strip located on one side thereof interposed between the ribbon on the machine and the platen, as and for the purpose described.

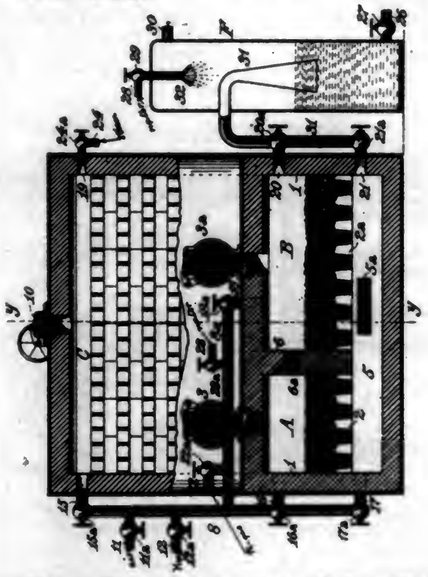
3. As a new article of manufacture, an auxiliary ribbon for type-writers, consisting of a piece of inked ribbon having a protecting-strip of paper or other suitable material on one side thereof and end pieces or clips, substantially as described.

472,613. CORSET. MARY M. BLISS, Pawtucket, R. I. Filed Oct. 26, 1891. Serial No. 409,810. (No model.)



Claim.—The combination, with a corset having boxes extending from top to bottom and the usual front and back stays, of a band the center of which is placed at the waist-line, said band being made from a strip of cloth cut bias and consisting of a series of longitudinal pockets formed by seams, each pocket containing a suitable resilient stay and extending from extreme edge to edge of the section and covering and being attached firmly to the front and back stays at the waist-line.

472,614. PROCESS OF DISTILLING CARBONACEOUS MATERIAL. BENJAMIN BRADWAY, St. Louis, Mo. Filed Mar. 20, 1891. Serial No. 385,752. (No model.)



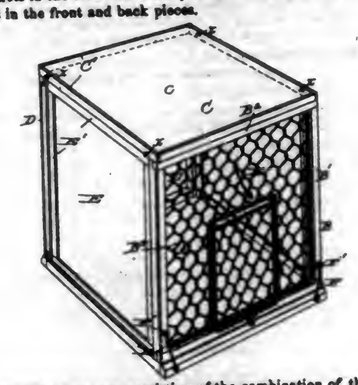
Claim.—1. The improvement in the process of distillation of carbonaceous material, which consists in blasting carbonaceous material with air, heating a charge of carbonaceous material and a body of refractory material to a state of incandescence, supplying a fresh charge of carbonaceous material to the first charge, which has been heated to an incandescent state, forcing a non-oxidizing gas first through the body of incandescent refractory material, then through the combined charge of carbonaceous material, leading off the volatile constituents of the carbonaceous material to a condenser, and cooling and washing the solid remainder of the carbonaceous material by forcing a spray of water through it prior to its withdrawal from the heating-chamber, substantially as set forth.

2. The improvement in the process of distillation of carbonaceous material, which consists in blasting carbonaceous fuel with air, heating a charge of carbonaceous material and a body of refractory material to a state of incandescence, supplying a fresh charge of carbonaceous material to the first charge, which has been heated to an incandescent state, forcing a non-oxidizing gas, together with the evolved gaseous and tarry products of the fresh charge, through the incandescent part of the combined charge, forcing a non-oxidizing gas and steam through the hot refractory material and mingling them with the gaseous and tarry products to decompose the steam and tar for the formation of gas and to form ammonia from hydrogen gas and nitrogen, and passing the resultant products through another body of carbonaceous material, substantially as set forth.

3. The improvement in the process of distillation of carbonaceous material, which consists in heating a body of carbonaceous material by the combustion of fuel with air, said fuel being in close contact to said carbonaceous material, but without the passage of air or the products of combustion through the said carbonaceous material, heating a body of refractory material by the passage of the hot products of combustion through the same and thereafter passing blasts of hydrogen, nitrogen, and steam through the hot refractory material, and thence through the carbonaceous material to evolve the volatile constituents for the formation of coke, tar, gas, aramonia, &c., substantially as set forth.

472,615. COOP. JOHN B. COOPER, Winder, Va. Filed Nov. 16, 1891. Serial No. 412,310. (No model.)

Claim.—1. A knockdown coop consisting of the combination of the bottom piece grooved at front and rear on its upper side, the front and back pieces fitting in said grooves and having dowel-pins entering sockets in the bottom piece, the top piece having dowel-pins entering sockets in the front and back pieces, and side pieces arranged in grooves in the front and back pieces.



2. A knockdown coop consisting of the combination of the bottom piece having grooves at front and rear on its upper side, the front and back pieces arranged in said grooves and having dowel-pins entering corresponding sockets in the bottom piece, the top piece having dowel-pins entering sockets in the front and back pieces, the side pieces arranged in vertical grooves in the front and back pieces, and fastening devices for securing the front and back pieces to the bottom piece.

3. A knockdown coop made in six rectangular parts adapted when set up to form a cubical coop, said parts comprising a bottom piece provided with grooves at front and rear on its upper side, front and back pieces fitting in said grooves and provided with dowel-pins entering sockets in the bottom piece, a top piece provided with dowel-pins entering sockets in the front and back pieces, and side pieces arranged in vertical grooves in the front and back pieces, hooks on the bottom piece engaging with eyes in the front and back pieces, and screws *x* on the top piece, with which the hooks engage when the coop is knocked down and ready for shipping.

4. A knockdown coop made in six rectangular flat parts secured by socket and dowel-pin connections and grooves, the bottom, front, and back pieces being grooved on their inner sides and the top piece having dowel-pins entering sockets in the front and back pieces, screw-eyes on the front and back pieces, hooks on the bottom piece engaging therewith when the coop is set up, the size of the side pieces being such as to fit between the dowel-pins of the top piece when the coop is knocked down, and the screw-eyes being arranged at such a distance apart as to fit within the grooves of the bottom and front pieces.

472,616. JEWELER'S SPRING-SNAP. WILLIAM C. EDER, Montrose, N. J. Filed Jan. 4, 1892. Serial No. 416,918. (No model.)

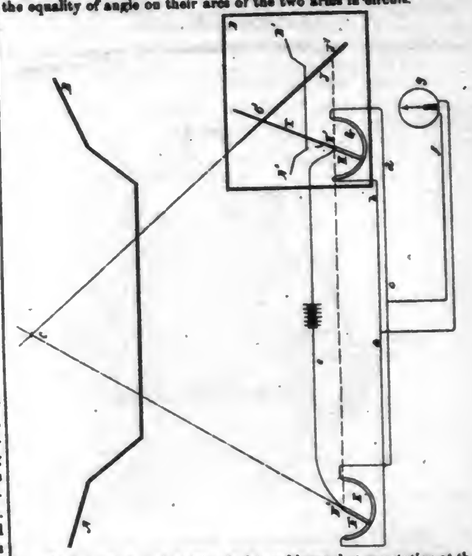


Claim.—The tube *a*, combined with the end plates *b d*, that are placed against the ends of said tube, said end plates carrying wings *f*, that extend along the outer circumference of said tube *a* and are attached thereto, one of the end plates having the catch-opening *e*, substantially as herein shown and described.

472,617. METHOD OF AND APPARATUS FOR FINDING THE POSITION OF DISTANT OBJECTS. BRADLEY A. FISKE, U. S. Navy. Filed Oct. 22, 1890. Serial No. 368,986. (No model.)

Claim.—1. The method of finding the position of a distant object, which consists, first, in directing an alidade-arm F, moving over an arc of conducting material in line with said object; second, placing a pointer or arm I, moving over a similar arc of conducting material and located at a distant station at the same angle as said first arm, and thereby establishing an electrical balance in a circuit including said arms, arcs, a battery, and an indicating device; third, directing a second alidade-arm J at said distant station in line with said object, and, fourth, noting the point of intersection of the lines of direction of said arms I and J on a chart D, representing the area including the position of said distant object on a reduced scale.

2. In a range and position finder, a chart representing the area including said object on a reduced scale and two pivoted arms moving over said chart, one of said arms being capable of mechanical direction or train upon said object, and in combination with the other arm an electrical indicating device, and an alidade-arm arranged to bear upon the said object and located at a distant station, and circuit connections between said arms, the said electrical device operating to indicate the equality of angle on their arcs of the two arms in circuit.



3. In a range and position finder and located at one station at the extremity of a given base-line F' J', an alidade-arm F, moving over an arc E of conducting material and located at a distant station, a chart D, having laid off thereon a base-line H' J', corresponding to the base-line F' J', and pivoted on said base-line H' J' an arm H, moving over an arc G, similar to arc F, the said arcs being connected in Wheatstone-bridge circuit with a battery and an electrical indicating device, an arm or pointer J, and also an alidade or telescope M, the aforesaid parts operating so that when the alidade F is directed upon the object C, making an angle, as C F' J', with the base-line F' J', and the corresponding arm H is placed at the same angle on the arc G, making an angle, as C' H' J', with the base-line H' J', the connecting-circuit will balance and when the telescope M is directed upon the object C the arm J shall make the same angle with the line H' J' as said telescope does with the line F' J'.

4. The combination of the telescope M, carrying the shaft N, provided with the arm J, and the table or chart-surface D, the arc G of conducting material, and the arm H I, making electrical contact with said arc and moving over the chart D.

5. In a range or position finder, the combination of two index-arms I J, pivoted on a plane surface, one of said arms having its inner edge out of line with the pivot-center, and on said arm a movable pointer having its apex disposed in a line drawn longitudinally said arm and passing through said pivot-center.

6. In a range or position finder, the combination of two index-arms I J, pivoted on a plane surface, one of said arms having its inner edge out of line with the pivot-center, and on said arm a movable pointer having its apex disposed in a line drawn longitudinally said arm and passing through said pivot-center, one of said arms being provided with a scale-marking.

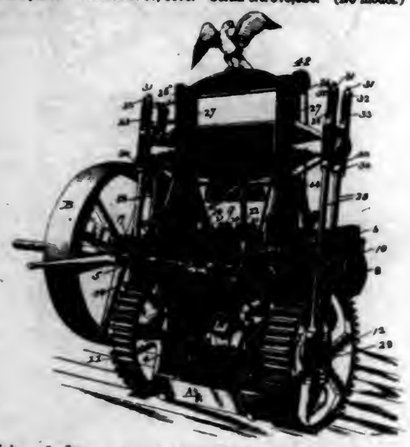
7. In a range or position finder, the combination of two index-arms I J, pivoted on a plane surface, one of said arms having its inner edge out of line with the pivot-center, and on said arm a movable pointer having its apex disposed in a line drawn longitudinally said arm and passing through said pivot-center, each of said arms being provided with a scale-marking.

8. In a range or position finder, the combination of two index-arms I J, pivoted on a plane surface, one of said arms I having its inner edge K coinciding with a line drawn through the pivot-center H' and the other arm J having its inner edge V out of line with the pivot-center J', and on said last-named arm a movable pointer having its apex disposed in a line drawn through said pivot-center J'.

9. In a range or position finder, two pivoted alidade-arms located at a distant station and electrical circuit connections between them, whereby the said arms may be established at the same angle relatively to corresponding base-lines, and in combination with one of said arms and adapted to meet or intersect the same a pivoted pointer or index.

10. In a range or position finder, in combination with a support, such as a tripod, two tables D and K, supported thereby, the vertical shaft N, the telescope or alidade-arm M, supported by said shaft N above said table K, and the radial arm J, also supported by said shaft N and moving over the table D.

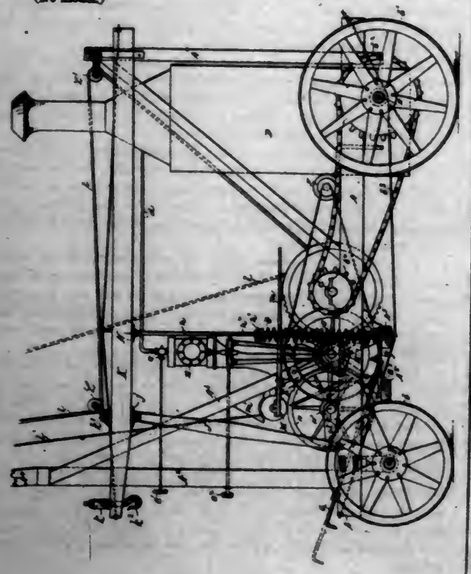
472,618. RE-PRESSING BRICK-MACHINE. JAMES A. FREY and JOHN THOMPSON, Bucyrus, Ohio, assignor to the Frey-Schockler Company, same place. Filed Nov. 29, 1890. Serial No. 373,090. (No model.)



Claim.—1. In a re-press brick-machine, the combination, with a top reciprocating plunger-bar, a table having a compression-chamber therein, and a reciprocating feed-box on the table, of shafts at the respective ends of the table, carrying sheaves, cables connecting the sheaves and the feed-box, sheaves on the ends of said shafts, and cables connecting said latter sheaves to the plunger-bar, substantially as and for the purpose specified.

2. In a re-press brick-machine, the combination, with a table formed with a brick-compression chamber and a vertically-reciprocating bar carrying the top plunger, of a reciprocating feed-box and sheaves and cables connecting the feed-box and plunger-bar, whereby the feed-box is reciprocated by the reciprocations of the plunger-bar, substantially as specified.

472,619. PORTABLE DRILLING APPARATUS. HARVE S. GLENN and COULTER R. GLENN, Butler, Pa. Filed Apr. 13, 1891. Serial No. 388,768. (No model.)



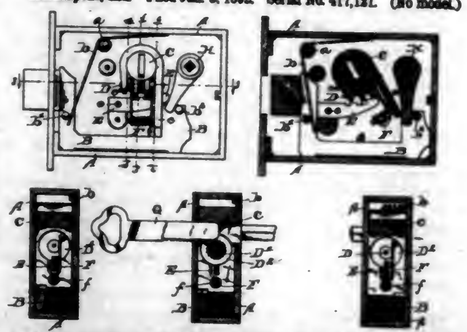
Claim.—1. In a drilling apparatus, the combination, with the frame, of a pair of walking-beams pivotally secured thereto at one end, a cross-piece connected with the free ends of said beams, a hook midway of the cross-piece, and a pair of crank-arms and pitman for operating the beams, substantially as described.

2. In a drilling apparatus, the combination, with a frame, of a walking-beam thereon, an elevating-rod for the beam, the intermediate portion of which is screw-threaded and the lower end passed through the engine-timbers, an adjusting-nut on the screw-threaded portion, and a spring around the rod between the collar and the timber, substantially as described.

3. In a drilling apparatus, the combination, with a frame having a derrick at its front end, of a walking-beam at each side of the frame, two cross-pieces connecting the free ends of the beams, one of which is removable and the other one is provided with a snatch-block, and a drilling and a sand-reel rope, the drilling-rope passing through the snatch-block, and means for operating them, substantially as described.

4. In a portable drilling apparatus, the combination, with the frame, of the operating mechanism, the shaft of the bull-wheel of which passes loosely through the winding-drum and is provided with a sprocket-wheel at each end, sprocket-chains for connecting the said sprocket-wheels with the rear axle, and means for securing the bull-wheel to its shaft and for operating the same to move the apparatus from place to place, substantially as described.

472,620. LATCH AND LOCK COMBINED. GEORGE H. HYDE, Indianapolis, Ind. Filed Jan. 5, 1892. Serial No. 417,121. (No model.)



Claim.—1. The combination, in a lock, of a cylinder containing toothed tumbler-wheels having notched flanges or rims, a tumbler-catch, and a key having correspondingly-toothed edge or edges whereby the wheels may be turned and the parts brought into registry, substantially as set forth.

2. The combination, in a lock, with rotary tumbler-wheels and hubs on said wheels, having flattened sides, of springs adapted to bear on said hubs and arranged to press upon said flattened sides just at the point when the key is withdrawn from the lock, substantially as and for the purposes set forth.

3. In a lock, the combination of a locking-cylinder, rotary tumbler-wheels mounted on a shaft in said cylinder, which wheels are provided with flanges having notches, a tumbler-catch having notches in which the outer portions of said tumbler-wheels may revolve, a key-opening in said cylinder alongside said tumbler-wheels, and a key adapted to rotate said tumbler-wheels, substantially as set forth.

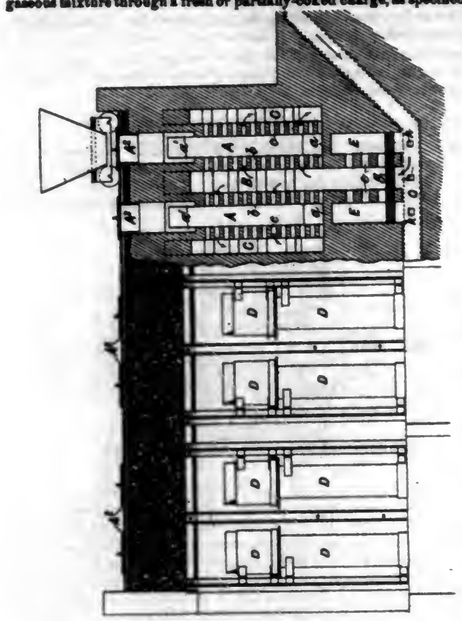
4. The combination, with a lock, of a key consisting of two racks, one of which is toothed for a greater portion of its length than the other, substantially as and for the purposes set forth.

472,621. PROCESS OF MAKING COKE. FREDERICK J. JOBBE, Bedford, England, assignor to the Economic Gas and Coke Company, Limited, London, England. Filed Feb. 13, 1891. Serial No. 382,001. (No model.)

Claim.—1. The improvement in the process of making coke herein referred to, which consists in purifying the mixed gases resulting from the coking operation herein described, reheating said gases by admixture with fresh gas-producer gases, effecting their combustion with air, and causing the gases resulting from such combustion to pass across through a charge of coal to be coked, as specified.

2. In the herein-described process of making coke and obtaining by-products, the improvement which consists in cooling and washing the mixed gases resulting from the coking operation herein referred to, collecting the condensable constituents, passing the cooled and washed gases through a purifier, then mixing them with fresh gas-producer gases generated from coke and with air, and finally passing

the gases resulting from the combustion of the purified and reheated gaseous mixture through a fresh or partially-coked charge, as specified.

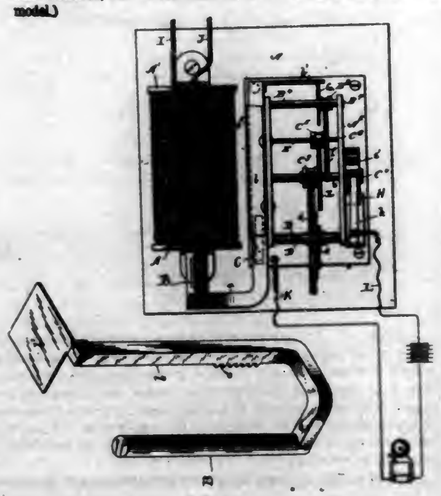


472,622. HINGE. ROBERT LINLEITER, Jersey City, N. J. Filed Jan. 26, 1892. Serial No. 419,301. (No model.)



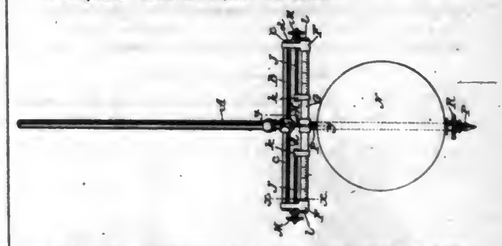
Claim.—A hinge composed of leaf *a*, having an inwardly-turned lower edge a^3 and an elongated slot *a'*, with a leaf *b*, having a projection *b'* to engage the edge a^3 and a pivot *c* to engage the elongated slot, substantially as specified.

472,623. ELECTRIC-LIGHTING SYSTEM. JOHN M. LOCKWOOD, San Francisco, Cal. Filed June 22, 1891. Serial No. 397,145. (No model.)



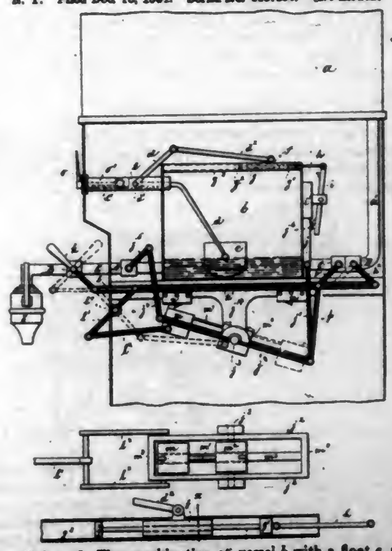
Claim.—The device herein described for indicating and locating disturbances in electric circuits, the same consisting in the combination of a solenoid connected in the main circuit, a bar adapted to move therein, a train of gearing adapted to be automatically wound by the movement of the bar, a rotating disk and brush adapted to be connected in circuit with an alarm or indicator at the source of generation, and a plate at the upper end of the bar, adapted to arrest the movement of the gearing when the signal has been given, substantially as specified.

472,624. COMPENSATION-PENDULUM. ERNST R. MALMBORG, St. Louis, Mo., assignor, by mesne assignments, to the New York Electrical Device Company, of Virginia. Filed Dec. 11, 1889. Renewed Oct. 14, 1891. Serial No. 408,662. (No model.)



Claim.—The combination, in a compensating device for pendulums, of the single compound compensating bar B, the hangers F F, sliding loosely upon the two ends of the bar, the weight-rod G, suspended loosely in said hangers, the single central guide-pin P, projecting from the compensating bar into a central socket in the weight-rod, and the adjusting-screws J J, working through threaded apertures in the hangers and engaging at their inner ends lugs *k k*, secured to the weight-rod, substantially in the manner and for the purpose herein set forth.

472,625. APPARATUS FOR MEASURING AND DRAWING OFF LIQUIDS. WILHELM MUHRBAUER and EDMUND MUHRBAUER, New York, N. Y. Filed Dec. 18, 1891. Serial No. 415,467. (No model.)



Claim.—1. The combination of vessel *b* with a float *c*, a sliding rod connected therewith, a catch *i*, operated by the sliding rod, and a weighted valve-operating lever j^3, connected to the catch, substantially as specified.

2. The combination of vessel *b* with a float *c*, a sliding rod connected therewith, a catch operated by the sliding rod, a valve-operating lever engaged by the catch, and a sliding weight adapted to be reciprocated along the lever, substantially as specified.

3. The combination of vessel *b* with a float, sliding rod, and catch, and with a lever j^3, connected to one outlet-cock, and sliding weights connected to a second outlet-cock, substantially as specified.

4. The combination of two inlet-cocks C D and two outlet-cocks

A B with oscillating lever j^3, connected to the cocks A C, a sliding weight *m*, connected to cock B, and with hand-lever *k* and rods k', k^2 for connecting the cocks B D, substantially as specified.

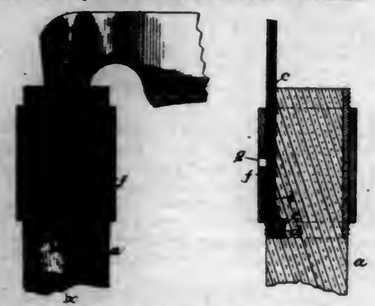
5. The combination of vessel *b* with float *c*, a slide *f*, connected thereto, a reciprocating rod *g*, having heads g' g^2 engaged by the slide, and with a catch *i*, operated by rod *g* and controlling the valve-setting levers, substantially as specified.

6. The combination of vessel *b* with float *c*, a catch *i*, operated thereby, oscillating valve-operating levers j^3, and with the connected weights *m* m^2 and retaining-catches *n* n', substantially as specified.

7. The combination of vessel *b* with float *c*, controlling the discharge-cocks, and with the lever *d*, secured to the float, and a sliding block *e*, to which the lever is pivoted, substantially as specified.

8. The combination of vessel *b* with float *c*, controlling the discharge-cocks, and with the lever *d*, secured to the float, a sliding block *e*, to which the lever is pivoted, and with pointer *o*, bevel-gear o^2 o^3, and rack d' for operating the sliding block, substantially as specified.

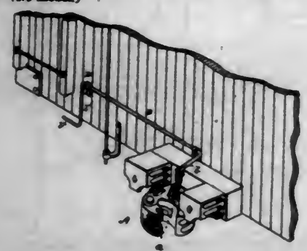
472,626. SCYTHE-SNATH. CLARK C. MYERS, New Richmond, Ohio. Filed Sept. 24, 1891. Serial No. 406,643. (No model.)



Claim.—1. In a snath for scythes, a ferrule and a recess in the circumference of said ferrule conforming to the shape of the scythe-shank, in combination with a sleeve, as set forth.

2. In a snath for scythes, a threaded ferrule, a recess in the circumference of said ferrule conforming to the shape of the scythe-shank, and a bearing-plate in said recess, in combination with a threaded sleeve working over the whole, in the manner and for the purpose described.

472,627. LIFTING DEVICE FOR TWIN-JAW CAR-COUPLINGS. THOMAS L. MCKEEN, New York, N. Y., assignor to the Thurmond Car Coupling Company, of West Virginia. Filed July 13, 1891. Serial No. 399,303. (No model.)



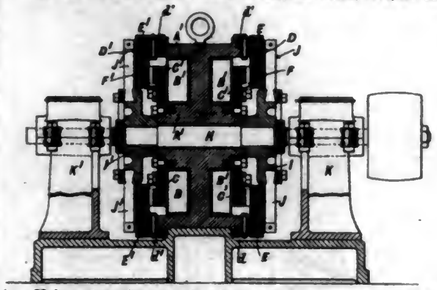
Claim.—1. In a device for lifting the locks of twin-jaw couplers, an adjustable connection between the lifting-bar and a lock, consisting of the combination of an H-shaped link closed at the lower end and having a bolt-hole passing therethrough, a pin connecting the upper end of said link to the lifting-bar, an adjustable eyebolt passing through the said bolt-hole, and a clevis connecting said eyebolt to the lock, substantially as described.

2. In a device for lifting the locks of twin-jaw couplers, the combination, with the lock and lifting-chain, of a lifting-bar having two arms approximately at right angles to each other, the one arm adapted to engage the lifting-chain and the other arm carrying the handle and adapted to be supported by a projection on the car, and a bracket near said second arm, having a shelf or face sloping both to the outer side of the bracket and downward and furnishing a wedge-like support of varying angularity for the said arm, substantially as described.

3. In a device for lifting the locks of twin-jaw couplers, the combination, with the lock *a*, of the clevis E, adjustable eyebolt C, link C, pin *c*, lifting-bar B, having arms *b* and *b'*, and the bracket D, having sloping face *d*, substantially as described.

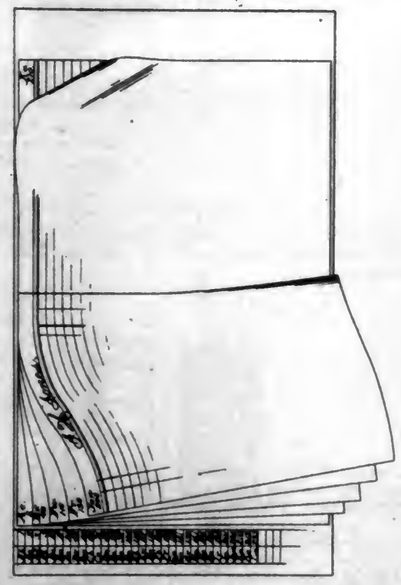
4. In a device for lifting the locks of twin-jaw couplers, the combination, with the lock *a*, of the clevis E, adjustable eyebolt C, link C, having graduations d' d^2 d^3, &c., pin *c*, lifting-bar B, having arms *b* and *b'*, and the bracket D, having sloping face *d*, with vertical graduations thereon, substantially as described.

472,628. DYNAMO-ELECTRIC MACHINE. LAZARUS S. M. PYKE and HARRY T. BARNETT, London, England, assignors to said Pyke and Edward Stephen Harris, same place. Filed Feb. 5, 1892. Serial No. 420,442. (No model.) Patented in England Aug. 9, 1888, No. 11,603.



Claim.—In a dynamo-electric generator, the combination of an annular stationary electro-magnet having its coil inclosed by the magnetizable mass, as described, two concentric circles of laminated polar projections arranged in radial pairs in the same plane and serving as cores for the secondary coils, and sector-shaped laminated magnetic inductors revolving in front of and in proximity to the polar projections, so as to commute the lines of force, the inductors corresponding in breadth to the pitch of the polar projections, as and for the purpose specified.

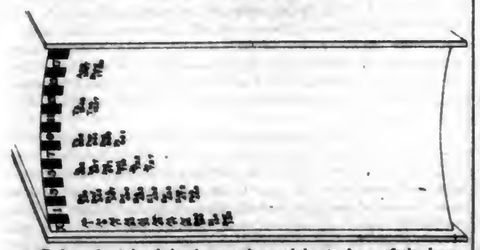
472,629. INDEX. HARVEY A. STEPHENSON, Allegheny, Pa. Filed Aug. 22, 1889. Serial No. 321,594. (No model.)



Claim.—1. An improvement in ledgers, consisting in a pre-indexed ledger whose pages are divided proportionally into alphabetically-arranged divisions and are provided at or near the upper and outer corners of the pages with alphabetically-arranged combinations of two or more initial letters marked on the pages of the proper divisions and figures adjacent thereto indicating the numbers of the pages, said ledger having an exterior index co-operating with the leaf-index, substantially as described.

2. In a book having a marginally-projecting cover, an index applied directly to the marginal projection of the cover, said index having on the cover characters or alphabetically-arranged letters referring to the divisions of the book and having adjacent to said letters or characters numbers indicating the proper pages of the book, substantially as and for the purposes described.

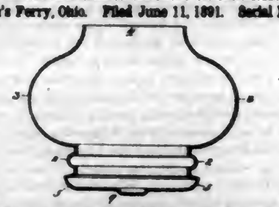
472,630. INDEX. HARVEY A. STEPHENSON, Crafton, Pa. Filed Aug. 4, 1890. Serial No. 360,882. (No model.)



Claim.—1. A book having on the conjoined edges of the leaves colored marks arranged in a substantially horizontal series at or near the top of the book and at or near the level of the page-numbers and adapted to be used in connection with the latter, said marks corresponding in extent to the thickness of conjoined pages comprised in divisions of the book into parts of an equal number of units each, and adjacent figures distinguishing said marks, substantially as and for the purposes described.

2. A book having printed on the conjoined outer edges of the leaves an index consisting of marks, characters, or alphabetically-arranged letters referring to the divisions of the book and adjacent numbers indicating the proper pages of the book, substantially as and for the purposes described.

472,631. MANUFACTURE OF HOLLOW GLASS ARTICLES. CHAS. ULFIG, Martin's Ferry, Ohio. Filed June 11, 1891. Serial No. 395,900. (No model.)



Claim.—1. The process of manufacturing hollow glass articles, which consists in blowing the same with an unfinished top portion, a lower finished portion, and an expanded blow-over below the finished portion, detaching the blow-pipe from the unfinished portion, expanding the same, and removing the blow-over, substantially as and for the purposes described.

2. The process of manufacturing hollow glass articles, which consists in blowing the same with an unfinished top portion, a finished lower portion, and an expanded blow-over below the finished portion, detaching the blow-pipe from the unfinished portion and attaching a rod to the blow-over, expanding the unfinished portion, and removing the blow-over, substantially as and for the purposes described.

472,632. BOOK-MARK. CLARENDON L. WATSON, Attleborough, Mass. Filed Dec. 26, 1891. Serial No. 416,151. (No model.)



Claim.—1. The improved book-mark consisting of the clasp having the elongated portion *a*, the portion *c*, lying contiguous thereto, but of a greater width, and the bead *b*, having a slot *c*, in combination with the flexible marker *m*, inserted through said slot of the clasp, substantially as described.

2. The metallic clasp having the portions *a c*, with a slotted bead *b*, and a cross-bar *d*, in combination with a flexible marker *m*, connected to the clasp by said cross-bar and slots, substantially as shown.

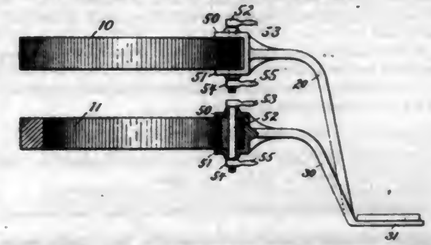
472,633. SHINGLING-BRACKET. EUGENE K. BECKWITH, Niantic, Conn. Filed Sept. 26, 1891. Serial No. 407,015. (No model.)

Claim.—1. A shingling-bracket having a plate or body-section wedge-shaped at one end and with a fork and downwardly-projecting spur at the opposite end, as set forth, said plate having an upwardly-extending section *c* midway of its length and the legs of the fork diverging outwardly from the section *c*, substantially as specified.



2. A shingling-bracket consisting of a plate or body-section *a*, having an upwardly-projecting portion *c* near the middle and a fork below the section *c*, the ends of the legs of which are each provided with a downwardly-projecting spur *b*, and webs *c'*, extending from the section *c* to the legs *d* and connecting the same and bracing the section *c*, substantially as set forth.

472,634. BRACKET FOR ELECTRIC HEATERS. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed June 26, 1891. Serial No. 397,631. (No model.)

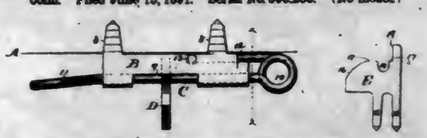


Claim.—1. In an electric-heating apparatus, the combination of a current-converter having two conducting-rings, one of which is provided with a slot, conductive brackets connected with said rings, one of said brackets being provided with a perforated ear engaging one of said rings, and a bolt passing through said ear and engaging said slot.

2. In an electric-heating apparatus, the combination of a current-converter having positive and negative conductive rings provided with slots, adjustable conductive brackets provided with ears engaging said rings, and bolts passing through said ears and engaging said slots.

3. In an electric-heating apparatus, the combination of an electric converter having two conductive rings provided with slots extending therethrough, adjustable conductive brackets provided with ears engaging said rings, and clamping-bolts passing through said ears and through said rings within the slots.

472,635. BLIND-FASTENER. THOMAS CORRIGADEN, New Britain, Conn. Filed June 15, 1891. Serial No. 396,286. (No model.)



Claim.—1. The herein-described blind-fastener, consisting of a catch or keeper having a supporting-face and a spring-arm and connected frame B, having a guiding-support for said arm, and supporting-shoulders at the under face of the side bars of said frame for resting upon the supporting-face of said keeper for sustaining the weight of the blind, substantially as described, and for the purpose specified.

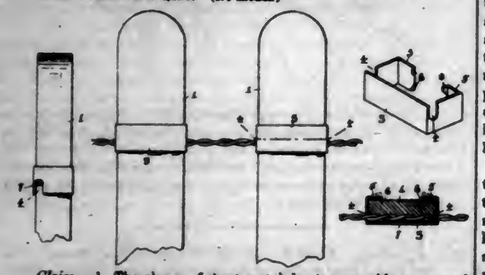
2. The herein-described blind-fastener, consisting of a catch or keeper having a supporting-face, a frame having a guiding-support for a spring-arm and supporting-shoulders at the under face of the side bars of said frame, and a spring-arm having integral spring-coils 10 and shank 12 secured to said frame, substantially as described, and for the purpose specified.

3. The herein-described blind-fastener, consisting of the frame B, bent into a U form in end view and provided with integral fastening-shanks, supporting-shoulders at the under edges of the middle portion of said frame, and the spring-arm secured to said frame with its body portion extended below said supporting-shoulders 9, substantially as described, and for the purpose specified.

4. The combination of a blind-fastener frame having a guiding-support and supporting-shoulders 9 on its under face, the spring-arm

connected to said frame, and a catch or keeper having the incline 16, supporting face 17, keeper-recess 18, and stop-shoulder 19, substantially as described, and for the purpose specified.

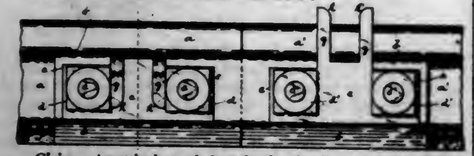
472,686. PICKET FENCE. WILLIAM S. PICKETT, Rochester, N. Y., assignor of one-half to Nellie P. Matthews, same place. Filed Aug. 29, 1891. Serial No. 404,125. (No model.)



Claim.—1. The clamp of sheet metal, having one side connected by two ends slotted transversely and in close proximity to said side and having toothed ends opposite the side first named, substantially as set forth.

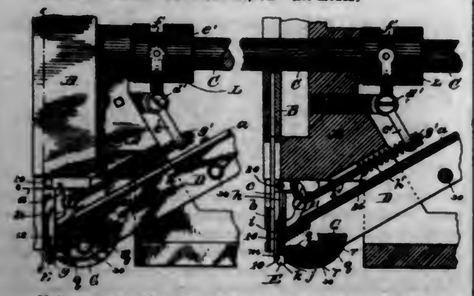
2. The clamp of sheet metal, having its ends provided with transverse slots 4 in close proximity to its front side and having the toothed ends, in combination with the picket having the transverse kerf and with the wire, substantially as set forth.

472,687. NUT-LOCK. BERTHOLD FLOERSHEIM, Allegheny, Pa. Filed Feb. 4, 1892. Serial No. 420,312. (No model.)



Claim.—A nut-lock consisting of a plate having tongues projecting thereupon, said tongues being arranged at right angles to a line drawn through the bolt-holes in said plate and said tongue being adapted to engage with the side of the nut parallel and adjacent thereto, whereby either of said tongues may be bent back to release the nut adjacent thereto without unlocking the other nut, substantially as and for the purpose set forth.

472,688. PEGGING-MACHINE. JOHN HYSLOP, Jr., Abington, Mass. Filed Aug. 22, 1891. Serial No. 403,461. (No model.)



Claim.—1. A nail selecting or separating device consisting of a track or raceway composed of a stationary part D and a movable part E, arranged longitudinally in line with each other, said part E having the laterally-adjustable spaced plates *k k*, between which the nail is received and upon which the nail-head is supported, and means for reciprocating the movable part of the raceway, whereby the nail received from the stationary portion D is moved vertically upward away from the column or line of nails therein, substantially as herein described.

2. In a nail selecting or separating device, the combination, substantially as set forth, of a track or raceway composed of two parts D and E, arranged longitudinally in line with each other, said part E having a vertical movement with relation to the part D, whereby a nail received from the latter is moved vertically upward away from the column or line of nails in the part D, means for vertically reciprocating the movable part of the raceway, and an adjustable stop G, adapted to project into the nail space or throat of the lowermost portion of the track to regulate the number of nails which are permitted to pass from one portion of the raceway to the other at each operation, substantially as described.

3. In a nail selecting or separating device, the combination of a track or raceway composed of a stationary part and a movable part arranged longitudinally in line with each other, the laterally-adjustable plates *k k* within the movable portion separated from each other to form the nail space or throat and adapted to suspend the selected nail by its head, a pusher adapted to enter the space between said plates when the movable part of the raceway is elevated to its highest point and eject the selected nail therefrom, and means for operating the pusher and movable part of the raceway, substantially as herein described.

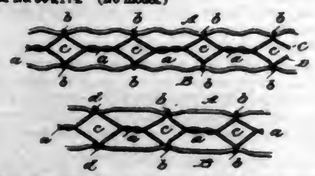
4. In a nail selecting or separating device, the combination of a track or raceway composed of two parts D and E, arranged longitudinally in line with each other, said part E having a vertical movement with relation to the part D, whereby a nail received from the latter is moved vertically upward away from the column or line of nails in the part D, a pusher *a'* above the stationary part of the raceway to enter the space or throat *m* of the part E when the latter is raised and eject the selected nail therefrom, a stop G on the stationary part of the raceway to project into the nail space or throat *m* of the movable part E, and means for operating the pusher, substantially as set forth.

5. In a nail selecting or separating device, the combination of the track or raceway composed of the stationary part D and the vertically-movable part E, arranged longitudinally in line with each other, said part E having an aperture *i* and a vertical opening *j*, the laterally-adjustable plates *k k*, having their portions 10 arranged within said opening *j*, forming between them a throat or space *m* for the reception of the nail, the adjustable stop-plate G, adapted to project into the space *m*, and the pusher *a'*, adapted to enter the space *m* on the ascent of the movable part E and eject the nail therefrom, all constructed to operate substantially as set forth.

6. In a nail selecting or separating device, the combination, with a raceway or track composed of the stationary part D and the movable part E, provided with the adjustable plates *k k*, of a horizontally-adjustable stop secured to the part D and projecting into the space *m* between the plates *k k*, substantially as and for the purpose set forth.

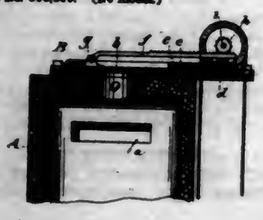
7. In a nail selecting or separating device, the combination of the raceway or track composed of the stationary part D and the movable part E, provided with the aperture *i* and vertical space or throat *m*, and means for actuating said part E, the stop-plate G, the pusher-lever *d'*, having the blade or thin portion 21, adapted to enter the space *m* between the plates *k k*, the rod *b'*, lever *c'*, actuating-cam L, and a yielding or spring connection between the lever *c'* and the rod *b'*, all operating substantially in the manner and for the purpose set forth.

472,689. WIRE FENCE. THOMAS J. INGRAHAM, Hornellsville, N. Y., assignor of one-half to F. G. Babcock, same place. Filed May 26, 1891. Serial No. 394,174. (No model.)



Claim.—A wire fence-strand consisting of two parallel wires, each having a series of crimps or bends, and zigzag wires crossing each other and engaging said crimps or bends, said zigzag wires being twisted at their points of crossing, as set forth.

472,640. VALVE FOR HOT-BLAST STOVES. HUGH KENNEDY, Sharpsburg, assignor to Ritter & Conley, Pittsburg, Pa. Filed Apr. 29, 1891. Serial No. 390,890. (No model.)

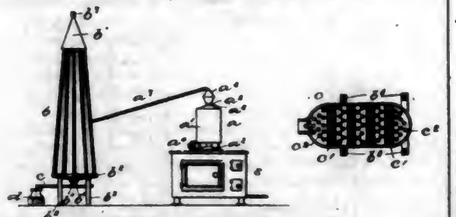


Claim.—1. A valve for hot-blast stoves and other furnaces, consisting in the combination, with an outwardly-seating sliding valve-plate, of a casing in which it is longitudinally movable, said casing having an opening adapted to register with the furnace-port to be controlled and inclosing the valve-plate at its side and end edges and at the margins of its surface, and operating mechanism connected with the outer exposed surface of the valve-plate and adapted to slide the same, substantially as and for the purposes described.

2. A valve for hot-blast stoves and other furnaces, consisting in the combination, with an outwardly-seating sliding valve-plate, of a casing in which it is longitudinally movable, said casing consisting of parallel plates having registering openings, against the upper one of which plate the valve-plate is seated by pressure on its inner surface, said plates inclosing the valve-plate at its side and end edges and at the margins of its surface, and operating mechanism connected with the outer exposed surface of the valve-plate and adapted to slide the same, substantially as and for the purposes described.

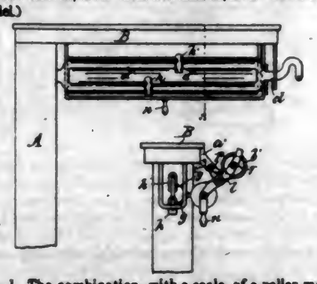
3. A valve for hot-blast stoves and other furnaces, consisting in the combination, with an outwardly-seating sliding valve-plate, of a casing in which it is longitudinally movable, said casing having an opening adapted to register with the furnace-port to be controlled and inclosing the valve-plate at its side and end edges and at the margins of its surface, a rack-arm pivotally connected to the exposed surface of the valve-plate, and a pinion in gear with the rack-arm and adapted to operate the same, substantially as and for the purposes described.

472,641. APPARATUS FOR PURIFYING WATER. LEROY S. LEWIS, East Hartford, Conn., assignor to Harris R. Mitchel, Malden, Mass. Filed Mar. 24, 1891. Serial No. 386,196. (No model.)



Claim.—A water-purifier consisting of a vaporizer, a condenser connected therewith, having a series of vertical steam-tubes connecting two chambers and surrounded by the atmospheric air, a trap-outlet from the lower chamber, an inclined aerating-tray located below the trap-outlet and provided with an embossed and ridged upper surface on the upper face of its bottom, whereby an unevenness is provided, over and around which the purified water must pass to the receiving vessel or receptacle, substantially as specified.

472,642. RECORDING DEVICE FOR SCALES. GEORGE E. MILLER, Lynn, assignor to William A. Macleod and Benjamin Dickerman, Boston, Mass. Filed Nov. 15, 1890. Renewed Mar. 10, 1892. Serial No. 424,394. (No model.)



Claim.—1. The combination, with a scale, of a roller mounted in proximity to the beam of said scale and parallel therewith, a strip of paper or similar material applied to the said roller, and a marker whereby the position of the weight on the scale-beam may be indicated on the said paper, substantially as shown and described.

2. A recording device for scales, consisting of a marker secured to the rider on the beam of the scale and a strip of paper or similar material mounted in proximity to said marker and adapted to be moved against the same to record the position of the rider on the beam, substantially as shown and described.

3. A recorder for scales, consisting of a marker secured to the rider on the beam of the scale and a roll provided with a covering of paper or similar material, said roll being mounted in a swinging frame in proximity to said marker, whereby the roll may be forced against the marker to record the position thereof at a given time, substantially as shown and described.

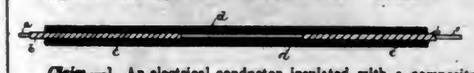
4. The combination, with the beam of a scale and its rider, of a marker *g*, a roll, as *j*, its pivoted frame *l*, and suitable mechanism for turning the roll at each movement of its frame to expose a new portion of the paper, substantially as shown and described.

5. The combination, with the beam of a scale, of a marker *r'*, a movable piece, as *p'*, mounted on said beam, to which said marker is secured, actuating mechanism for said piece connected with the weights suspended from the beam, and a strip of paper mounted in proximity to said marker and adapted to be moved into contact therewith, whereby as the number of weights suspended from the beam is increased or diminished the position of the marker will be changed and the weight may be recorded, substantially as set forth.

6. The combination, with a scale, of a strip of paper or similar material mounted in proximity to the beam of said scale, a rider on said beam and a marker therefor, a movable piece, as *p'*, and a marker thereon, and actuating mechanism for said movable piece, whereby the position of the movable piece is governed by the number of weights suspended from the beam, substantially as shown and described.

7. The combination, with a scale, of a strip of paper or similar material mounted in proximity to the beam of said scale, a movable piece, as *p'*, and a rack thereon, a pinion *n'*, sector *m'* and its arm *g'*, and a sleeve *d'*, resting on top of the weights suspended from the beam of the scale, whereby as the number of said weights is increased or diminished the position of the movable piece *p'* will be changed, for the purposes and substantially as shown and described.

472,643. ELECTRIC CONDUCTOR. WILLIAM R. PATTERSON, Chicago, Ill. Filed Aug. 31, 1891. Serial No. 404,209. (No model.)



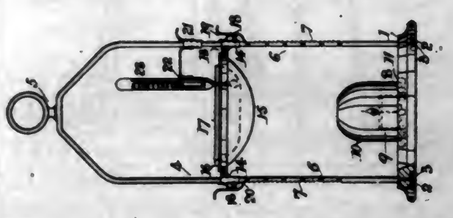
Claim.—1. An electrical conductor insulated with a composite covering of fibrous material and water-proof insulation, the water-proof insulation forming the entire outer coating of the covering and alternating with the fibrous insulation in longitudinal annular sections next the conductor.

2. A cable of insulated conductors, having sections of its length formed of conductors insulated with water-proof covering lying directly upon the surface of the conductors, alternating with sections in which fibrous insulation is next the conductors.

472,644. FOOD PRODUCT. CLIFFORD SAVILLE, New York, N. Y. Filed Nov. 2, 1891. Serial No. 410,666. (No specimens.)

Claim.—As a new article of manufacture, a food product consisting of banana fruit and starch combined and reduced to a flour, substantially as set forth.

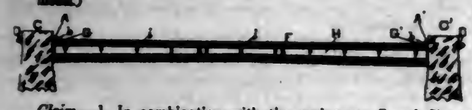
472,645. VAPORIZER. WILLIAM H. SPENCER, St. Leonard's-on-Sea, England. Filed Oct. 29, 1891. Serial No. 410,199. (No model.)



Claim.—1. In combination with a calorific device, a frame which is provided with a series of notches 7, a vessel for holding material to be vaporized, arranged above the said calorific device, a metallic ring supporting the said vessel and provided with sockets which slide up and down on the said frame, and spring-pressed triggers attached to the said ring for engaging the said notches, substantially as set forth.

2. In combination with a calorific device, a frame which is provided with a series of notches 7, a liquid-holding vessel arranged above the said calorific device, a metallic ring supporting the said vessel and provided with sockets which slide up and down on the said frame, spring-pressed triggers attached to the said ring for engaging the said notches, and a second vessel supported within the former one and containing material to be vaporized, substantially as set forth.

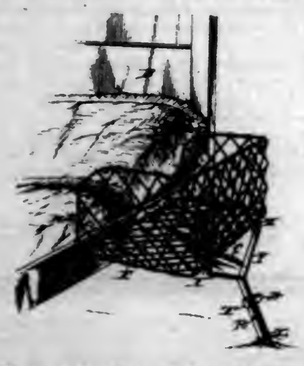
472,646. MACHINE FOR CLEANING STREETS. JOSEPH P. STOKES, Philadelphia, Pa. Filed Nov. 27, 1891. Serial No. 413,330. (No model.)



Claim.—1. In combination with the curbstones C and C' and grooved rails A and A', secured thereto, the sliding beam F and scraper H, adapted to clean a street between the curbs at one continuous operation, substantially as shown and described.

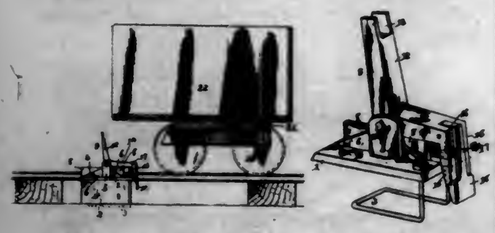
2. The combination of the beam F, tongues G and G', scraper H, bolts *i*, chains O O', rails A and A', grooves *b*, bolts D, and curbstones C and C', substantially as and for the purpose shown and described.

472,647. CRIB ATTACHMENT FOR BEDS. GEORGE D. WALKER, Cleveland, Ohio. Filed Sept. 21, 1891. Serial No. 406,392. (No model.)



Claim.—The herein-described attachment for bedsteads, the same comprising a stout wire frame-work containing wire fabric, forming a bottom, a back, and ends, hooks connected to the front cross-bar of the frame-work, a leg comprising a Y-shaped member, having eyes at its upper ends, which are pivoted on the rear cross-bar, and having a longitudinal slot in its body, a U-shaped member loosely embracing said body and extending beyond its lower end, a bolt passing through a hole in said member and through said slot and a hand-nut on said bolt, and a chain connecting said leg with the body of the attachment, all as and for the purpose hereinbefore set forth.

472,648. DEVICE FOR DUMPING CARS. CHARLES F. WILSON, Breckenridge, Colo. Filed June 22, 1891. Serial No. 397,055. (No model.)



Claim.—1. The combination of the bed-plate having perforated ears and provided with the longitudinal supporting-flange arranged between the ears and the angle trip-lever pivoted between the ears, substantially as and for the purpose described.

2. The combination of the bed-plate provided with perforated ears and having a flange extending longitudinally of the bed-plate and adapted to serve as a stop, and the angle-lever pivoted between the ears and having an extension 15 and provided with an opening, and the latch pivoted in the opening and adapted to engage the rear axle of the car to prevent recoil, substantially as described.

3. The combination of the bed-plate provided with perforated ears and having a stop, the angle trip-lever pivoted between the ears, and the U-shaped clip having L-shaped sides provided with threaded ends and nuts and depending vertically from the bed-plate and adapted to extend horizontally beneath a cross-tie, substantially as described.

472,649. INK-WELL. ROBERT G. YOUNG, Helena, Mont., assignor of one-half to Thomas B. Miller, same place. Filed Nov. 24, 1891. Serial No. 412,917. (No model.)



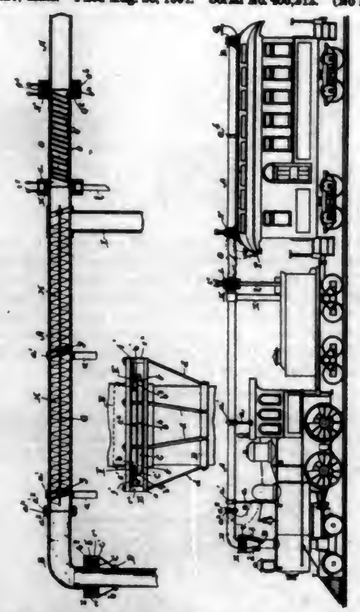
Claim.—1. In combination with a lid or support having a pen-opening therethrough, an ink-well, and a supporting bar or plate therefor mounted to move to and fro beneath the support and also to swing outward beyond the support at will, substantially as described.

2. In combination with the desk-top or like support provided with the pen-opening, the ink-well, the well-supporting bar mounted at one end to slide and to turn horizontally, and the finger adapted to support the opposite end of the bar and to resist its swinging motion, substantially as described.

3. In combination with the desk-top having an opening therethrough, the flanged ink-well, its supporting-bar B, slotted at one end, the pivot extended through said slot, and the supporting-finger F, having the lip *f*.

4. The combination of the perforated desk-top and the cushion thereunder, the ink-well, and the supporting arm or bar whereby the well is held in close contact with the cushion.

472,650. SMOKE-CONVEYER. GEORGE E. BELL, West Somerville, Mass. Filed Aug. 20, 1891. Serial No. 403,212. (No model.)



Claim.—1. In a smoke-conductor, the flue or pipe detachably connected with the smoke-stack of a locomotive and a revolving screw conveyer journaled within said flue or pipe, substantially as set forth.

2. In a smoke-conductor, the flue or pipe provided with a flexible section adapted to removably engage the top of the smoke-stack and a revolving screw conveyer journaled within said pipe, substantially as set forth.

3. In a smoke-conductor, the flue or pipe provided with a flexible section adapted to removably engage the smoke-stack of a locomotive, a revolving screw cinder-conveyer journaled within said pipe, and a discharge-tube connected with the inner end of said pipe and at the inner terminal of said conveyer, substantially as set forth.

4. In a smoke-conductor, a conducting-tube located above the top of the frame, the flexible section of tubing secured to the front end of said pipe and provided with a cap or flange, a corresponding flange rigidly secured to the smoke-stack of the locomotive, and means for clamping said cap or flange to the flange upon the smoke-stack, substantially as set forth.

5. In a smoke-conductor, the combination of a main conducting tube or flue, the flexible section of tubing rigidly secured to the front end of said flue and provided with a cap or flange, a corresponding flange rigidly secured to the smoke-stack, a double rectangular frame horizontally supported upon the smoke-stack and around the flange thereon, and clamping-levers pivotally secured within said frame and adapted to engage said flanges together, substantially as set forth.

6. In a smoke-conductor, the combination of the main conducting tube or flue, the flexible section of tubing rigidly secured to the front end of said flue and provided with a cap or flange, a corresponding flange rigidly secured to the smoke-stack, a double rectangular frame horizontally supported upon the smoke-stack and around the flange thereon, locking-levers pivotally secured within said frame and adapted to engage said jointed flanges, and pivoted dogs secured to said frame and adapted to hold said levers in their locked position, substantially as set forth.

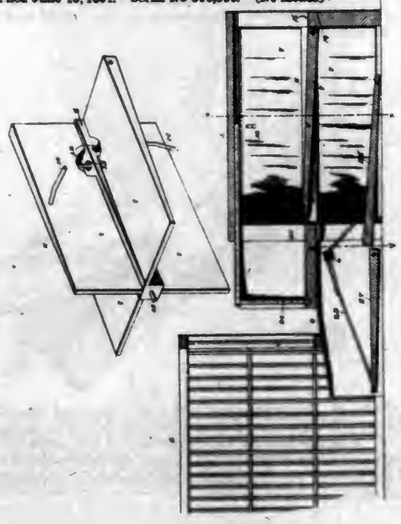
7. In a smoke-conductor, the combination of the main conducting tube or flue, the flexible section of tubing secured to the front end of said pipe and provided with a cap or flange having an inwardly-beveled edge, and a series of coupling-pins projecting from the flat engaging face thereof, a corresponding flange rigidly secured to the smoke-stack and provided with a series of circular perforations or recesses adapted to be engaged by said coupling-pins of the opposing flange, a clamping-frame, and locking-levers pivoted within said frame and provided with beveled edges adapted to engage the beveled edges or faces of said coupled flanges, substantially as set forth.

8. In a smoke-conductor, the combination of the tube or flue provided with a revolving screw conveyor and discharge-tube connected therewith, the flanges located at each end of the conducting-tube and provided with beveled edges or faces and a series of perforations or recesses in the engaging faces thereof, the flexible supplemental connecting-section provided with caps or flanges having the beveled edges, and a series of coupling-pins adapted to engage the perforations of said stationary sections, a clamping-frame, and the beveled locking-levers pivoted within said frame and adapted to engage the beveled edges or faces of the coupled flanges, substantially as set forth.

9. In a smoke-conductor, the combination, with the connecting-tubes having the recessed flanges, of the supplemental flexible connecting-sections comprising a fire-proof cloth-covered spiral spring and provided with caps or flanges having inwardly-beveled edges, and a series of pins projecting from the engaging faces thereof, adapted to couple with said recessed stationary flanges, and a clamping-frame and levers adapted to removably couple said flanges together, substantially as set forth.

10. In a smoke-conductor, the combination, with the conducting flues or pipes having the registering and engaging flanges, of the clamping-frame supported around said flanges, the same comprising parallel rectangular frames spaced and held apart by connecting-bars, beveled locking-levers pivotally secured within and to opposite sides of said flange, and locking-dogs pivoted to opposite sides of said frame and adapted to engage said locking-levers, substantially as set forth.

472,651. ANIMAL-TRAP. THOMAS W. BLACKERBY, Mackville, Ky. Filed June 15, 1891. Serial No. 396,386. (No model.)



Claim.—1. In a trap, the combination of the frame, the trap-door comprising the blades arranged at an angle to one another and secured in pairs, each pair being pivoted and being capable of a limited longitudinal oscillation or swing, the stems projecting from similar sides of the blades, and a stop arranged to be engaged by the stems which are carried out of engagement by the tilting of the blades, substantially as described.

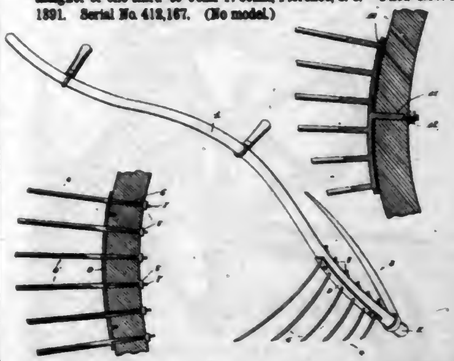
2. In a trap, the combination of the frame, the trap-door comprising the bar S, journaled in the frame and provided with openings, the weighted blades pivoted to the bar and arranged in pairs and the pins connecting the blades of each pair and arranged in the openings of the bar and limiting the oscillation of the blades, a stop, and stems projecting from similar sides of the blades and arranged to engage the stop and adapted to be carried out of engagement by the tilting of the blades, substantially as described.

3. In a trap, the combination of a cage, a passage or conduit communicating therewith, an oscillating door having a cross-bar journaled in the passage or conduit, a board or treadle pivotally mounted, and a cord wound around the cross-bar and connected with the treadle or board, whereby the door is opened and closed by the tilting of the treadle, substantially as described.

4. In a trap, the combination of a cage, a passage or conduit communicating therewith, an oscillating door having a cross-bar journaled in the passage or conduit, a board or treadle pivotally mounted, a cord wound around the cross-bar and connected to the treadle or board, and a weight for holding the door normally opened or closed, substantially as described.

5. In a trap, the combination of a cage, a passage or conduit communicating therewith, an oscillating door having a cross-bar journaled in the passage or conduit, a cord wound around the cross-bar, the treadle 28, pivotally mounted in the passage or conduit and having its free end weighted and connected with one end of the cord and adapted to hold the door open, and the treadle 27, pivotally mounted in the passage or conduit and connected with the other end of the cord and adapted to be depressed to close the door, substantially as described.

472,652. SCYTHE ATTACHMENT. WILLIAM C. BLOUNT, Ebenezer, assignor of one-third to John P. Coffin, Florence, S. C. Filed Nov. 17, 1891. Serial No. 412,167. (No model.)



Claim.—1. A scythe provided with a rake attachment arranged on the snath and having its tines extending therefrom on the side opposite the blade, whereby the ground will be raked as the scythe advances in cutting, substantially as described.

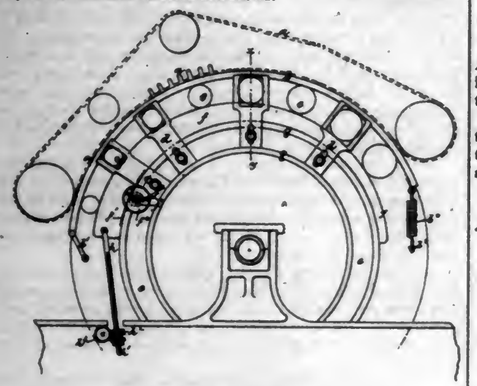
2. A scythe provided with a rake attachment arranged on the snath and having its tines extending therefrom on the side opposite the blade and varying in length, whereby the rake attachment tapers toward the adjacent end of the snath and the tines are enabled to rake the ground, substantially as described.

3. A scythe provided with a rake attachment tapering toward the adjacent end of the snath and comprising a series of tines having their inner ends arranged in transverse openings of the snath and constructed polygonal in cross-section to prevent turning and threaded, nuts engaging the threaded portion and securing the tines to the snath, and a plate secured to the snath and provided with a series of openings to receive the tines, substantially as and for the purpose described.

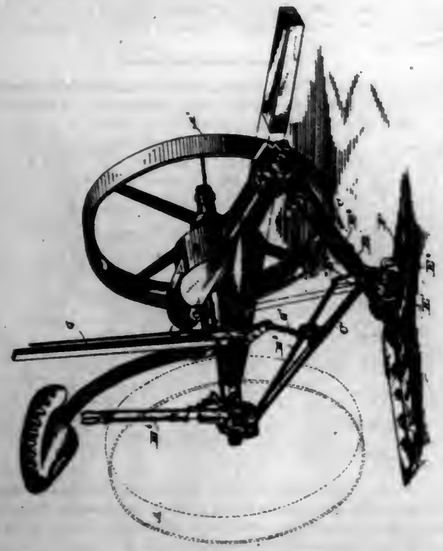
472,653. CARDING-ENGINE. JOHN F. BRADBURY, Bombay, India. Filed Oct. 29, 1891. Serial No. 410,268. (No model.)

Claim.—1. In a carding-engine, the combination of the curved wedge *f*, devices for actuating the same, the circular supporting-pieces *c c*, and the flexible bead *b*, resting thereon, substantially as and for the purpose hereinbefore described and shown.

2. In a carding-engine, the combination of the curved wedge *f*, concentric on its under surface with the cylinder, and devices for actuating said wedge, with the disks or bowls *c e*, resting on the upper surface thereof and having their diameters so graduated that their points of contact with a flexible bend resting thereon are concentric with the cylinder, and the elastic or flexible bend *b*, substantially as and for the purpose hereinbefore set forth and shown.



472,654. MOWING-MACHINE. ORVILLE COOLEY, Batavia, N. Y. Filed Jan. 4, 1889. Serial No. 295,453. (No model.)



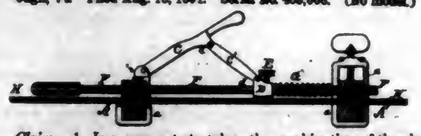
Claim.—1. In a mower, the main frame, the continuous angular coupling-frame jointed at its ends thereto, the hinge-block mounted to turn on the transverse arm of the coupling-frame as a journal and fixed against end motion thereon, and the main shoe connected to the hinge-block by the fore-and-aft axis.

2. In combination with the main frame, the shoe, and the hinge-block having the sleeve transverse to the line of travel, and the coupling-frame formed in a continuous length, its front arm extended through said sleeve from the grass end and joined to the frame and its rear arm carried backward and jointed to the frame.

3. In combination with the main frame, the one-piece L-shaped coupling-frame jointed at its ends to the main frame, and the hinge-block to sustain the cutting mechanism, mounted to turn on the transverse arm of the coupling-frame as a journal.

4. The mower coupling-frame having the integral arms at substantially right angles to each other, each arm having a pivot-bearing at the end and the arm C having its inner end of cylindrical form to serve as a journal for the hinge-plate.

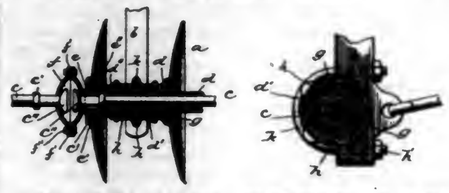
472,655. TROUSERS-STRETCHER. FRANK E. HOUSE, Brattleborough, Vt. Filed Aug. 18, 1891. Serial No. 403,063. (No model.)



Claim.—1. In a garment-stretcher, the combination of the clamps A A', the rod F, extending through and between the clamps and having thereon the sleeve D, regulated by the clamp-screw E, and the toggle-levers C C, substantially as and for the purpose described.

2. In a garment-stretcher, the combination of the clamps A A', the rod F, extending through and between the clamps and having thereon the sleeve D, regulated by the clamp-screw E, the spring G, and the toggle-levers C C, substantially as described.

472,656. DISK HARROW. RUFUS P. HOWARD, La Crosse, Wis. Filed Aug. 20, 1891. Serial No. 403,214. (No model.)

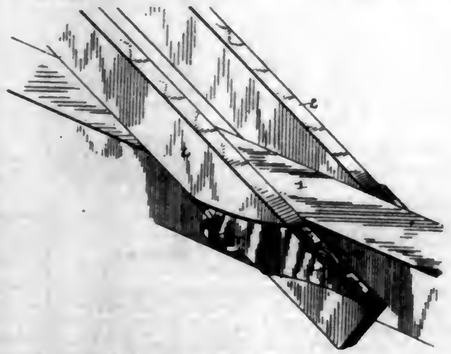


Claim.—1. In a disk harrow, the combination, with the pair of gangs provided with inwardly-projecting headed bolts, of a revolving coupling-casing inclosing said headed bolts and constructed of two dished disks bolted together, each of said disks being constructed of two sections and secured together so that the sections of one disk will break the joint between sections of the other disk, as and for the purpose set forth.

2. The combination of the two gangs, each consisting of a long rectangular bolt *c*, provided with a head *c'* at its inner end and a tightening-nut on its outer end, disks and interposed sleeves on said bolts, a flanged cap *e*, carried on the inner end of the bolts and setting in recesses in the end sleeves, these caps being provided with axial recesses for the heads *c'* of the bolts, knobs *c''* on the extreme inner ends of the bolts *c*, and a sectional coupling inclosing said knobs *c''*, substantially as described.

3. The combination of a support, a sectional box A, clamped thereto, a rectangular bolt passing through the box and provided with sleeves *d* and disks, the sleeve inclosed in said box being reduced in diameter and formed rectangular, as at *d'*, and a sectional bushing inclosing said reduced portion *d'* and adapted to revolve within the sectional box, substantially as described.

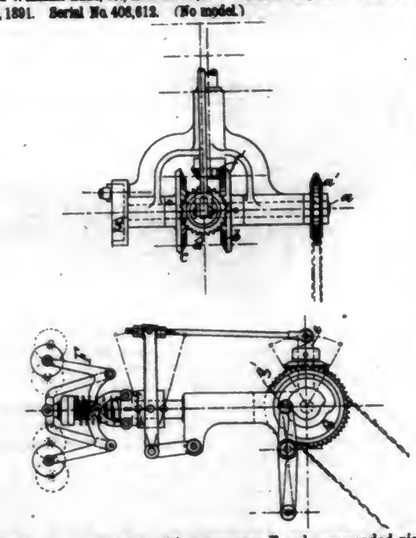
472,657. PLOW-HANDLE CLAMP. JAMES L. O. KING, Fair Play, S. C. Filed May 13, 1891. Renewed Jan. 12, 1892. Serial No. 417,842. (No model.)



Claim.—1. The combination, with a plow-beam and handle-bars, of the clip-plates provided at their sides with flanges to engage the sides of the handle-bars and having curved slots 6 to enable the handle-bars to be adjusted at the desired angle, and bolts arranged in the slots and securing the clip-plates to the plow-beam, substantially as described.

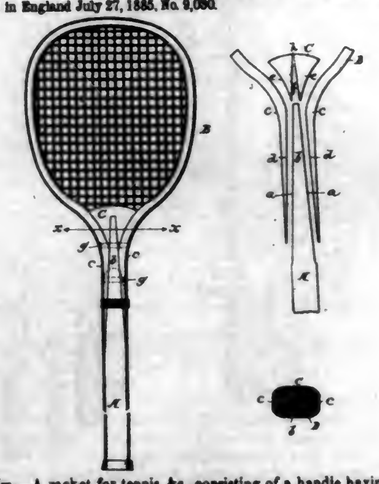
2. The combination, with a plow-beam and handle-bars, of the clip-plates provided at their sides with flanges and having curved extensions and provided in the extensions with curved or arc-shaped slots 6, adapted to receive bolts for clamping the clip-plates to the plow-beam, whereby the handle-bars may be adjusted and arranged at the desired angle, substantially as described.

472,658. CUT-OFF-VALVE GEAR. THOMAS LEES, RALPH LEES, and WILLIAM LEES, Jr., Hollinwood, near Oldham, England. Filed Oct. 13, 1891. Serial No. 408,612. (No model.)



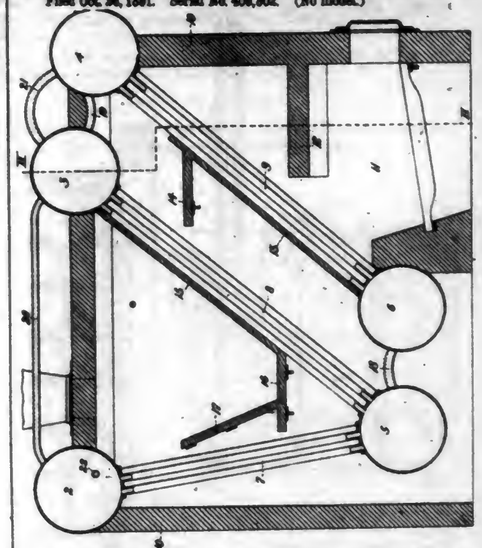
Claim.—In combination with a governor F and a suspended pivoted bearing *e*, connected thereto by links or levers for oscillating the said bearing, a bevel-pinion mounted on the latter, a pair of bevel-wheels engaged by the said bevel-pinion, one of said bevel-wheels being fast on their shaft and the other being loose thereon, a cam turning with the said loose wheel, and devices engaged by said cam for operating a cut-off valve, substantially as set forth.

472,659. TENNIS-RACKET. CHARLES MALINOS, Chicago, Ill., assignor, by mesne assignments, to the American Patents Company, Philadelphia, Pa. Filed Oct. 28, 1890. Serial No. 369,572. (No model.) Patented in England July 27, 1885, No. 9,090.



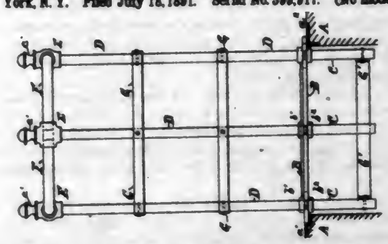
Claim.—A racket for tennis, &c., consisting of a handle having a wedge-shaped end, a yoke having beveled ends conforming to and fitting against said handle end, and a throat-piece provided with a recess to receive the end of the handle and filling the spaces between the handle and yoke, substantially as described.

472,660. TUBULAR BOILER. JAMES PIERPONT, Pittsburg, Pa. Filed Oct. 26, 1891. Serial No. 409,802. (No model.)



Claim.—A water-tube boiler consisting of the drums 2 3 4, having connecting-pipes, mud-drums 5 6, and water-tubes 7 8 9, in combination with the partition-walls 13 and 15, substantially as and for the purposes described.

472,661. SIDEWALK-HOLE GUARD. EDWIN H. ROBERTS, New York, N. Y. Filed July 18, 1891. Serial No. 399,017. (No model.)



Claim.—1. A sidewalk-hole guard consisting of an open ring-base adapted to take the place of the cover when removed, a series of studs attached to and projecting downwardly from said open ring-base, a series of studs attached to and projecting upwardly from said open ring-base, and one or more connecting-rings attached to said upwardly-projecting studs, substantially as set forth.

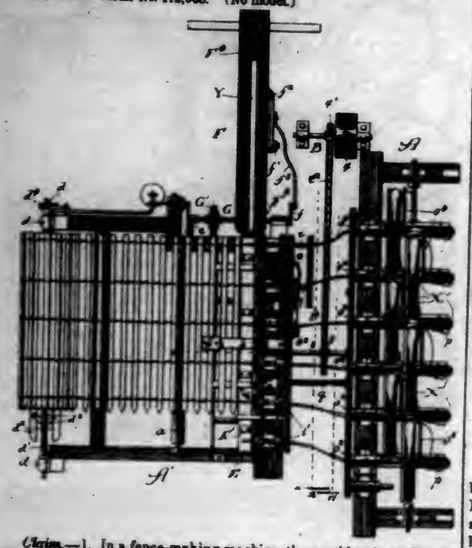
2. A sidewalk hole guard consisting of an open ring-base adapted to take the place of the cover when removed, a series of studs attached to and projecting downwardly from said open ring-base, a series of studs attached to and projecting upwardly from said open ring-base, an upper connecting-ring passing through cross-connections fastened to the top of said upwardly-projecting studs, and one or more lower connecting-rings attached to the projecting studs, substantially as set forth.

472,662. TRACK FOR SLIDING DOORS. LEWIS T. WILCOX, Jackson, Mich. Filed May 21, 1891. Serial No. 393,531. (No model.)



Claim.—The bracket having an inclined member terminating in a vertical flange, a horizontal member terminating in a similar flange, and a horizontal bearing formed by folding the parts together, in combination with a track having the rib *h* and flanges *g g*, substantially as described.

472,663. FENCE-MAKING MACHINE. ALBERT BERNAUER, Chicago, Ill., assignor of one-half to John E. Waugh, same place. Filed Nov. 16, 1891. Serial No. 412,005. (No model.)



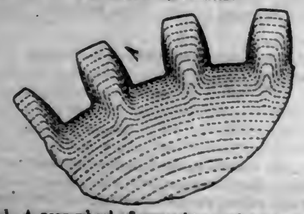
Claim.—1. In a fence-making machine, the combination, with the wire feed and twisting mechanisms, of a support for pickets at one side of the machine, comprising a rack in which the pickets are placed, one upon the other, in a single tier resting on the base of the rack, and intermittent feed mechanism for transferring pickets from the rack to the machine, comprising a reciprocating pusher and guide mechanism therefor operating to direct the pusher in the forward movement to engage the end of the lowest picket of the tier and advance it from under the balance of the tier and in the backward reciprocation to move out of the path of the pickets, and a stop at the rack to prevent the pickets above the lowest in the tier from being advanced therewith, substantially as described.

2. In a fence-making machine, the combination, with the wire feed and twisting mechanisms, of a support for pickets at the side of the machine, an upper and a lower guide-slot in the support, an oscillating rod, and a pusher operated by said rod to move forward in the upper guide-slot and backward in the lower guide-slot, substantially as described.

3. In a fence making machine, the combination, with the wire feed and twisting mechanisms, of a support for pickets at the side of the machine, and means for engaging and advancing the pickets into the machine, comprising a reciprocating pusher and a guide therefor on the support, comprising an upper slot n, a lower slot n', openings n^3 n^4 between the slots at opposite ends, and a switch at the opening n^4, substantially as described.

4. In a fence-machine, the combination, with the wire and picket feed mechanisms and twisters, of a ram for the pickets, comprising a laterally-sliding bar provided with upward-extending arms to engage the pickets and downward extending arms E^3, spring mechanism resisting movement of the ram from its normal position, and revolving wedge-shaped cams operating with each revolution to engage the ram at the arms E^3, advance, and then release the same, substantially as described.

472,664. GEAR-WHEEL. ELIPHALET W. BLISS, New Utrecht, assignor to the United States Projectile Company, Bay Ridge, N. Y. Filed Jan. 28, 1892. Serial No. 419,601. (No model.)



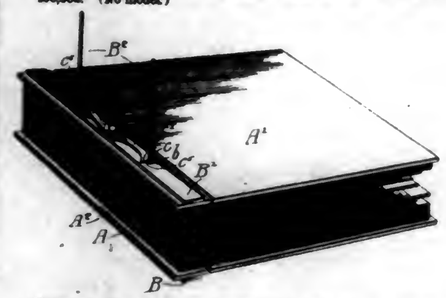
Claim.—1. A gear-wheel of wrought metal, having compressed cog-teeth.

2. A wrought-metal gear-wheel having the grain of the metal distorted into the teeth.

3. A wrought-metal gear-wheel having the grain of the metal curving from tooth to tooth following the outlines of the teeth.

4. A gear-wheel of compressed wrought metal, having its cog-teeth formed by compression with the grain of the metal distorted into the teeth.

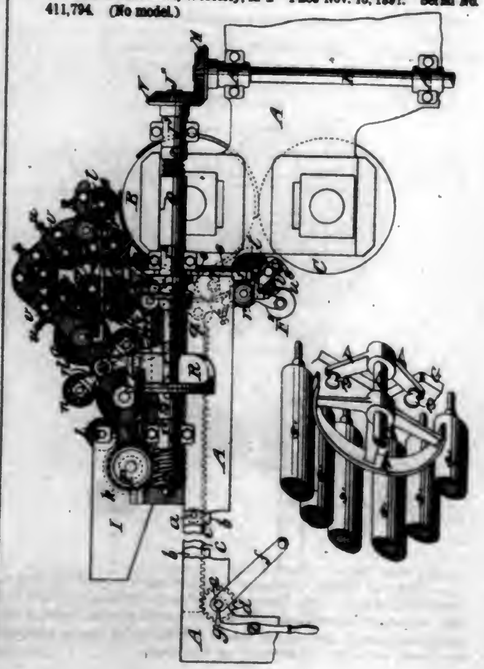
472,665. TEMPORARY BINDER. AUGUSTUS G. BURTON, Chicago, Ill., assignor, by direct and mesne assignments, to Charles R. Hadley and William A. Vawter, both of same place. Filed July 24, 1891. Serial No. 400,552. (No model.)



Claim.—1. In a temporary binder, the combination of the lower bar B, provided with rods B^2, secured thereto, the upper movable bar B', provided with suitable apertures through which the rods B^2 pass, and means for locking the movable bar to said rods, comprising two levers pivotally secured at their outer ends to said movable bar and adapted to engage the said rods, and an eccentric adapted to actuate the inner ends of said levers and press their other ends against said rods, substantially as described.

2. In a temporary binder, the combination of the bar B, provided with rods B^2, the bar B', provided with suitable apertures therethrough, the levers C C', pivoted at their outer ends to the bar B' and provided with engaging arms c', and the eccentric D, pivoted to the bar B', the inner end of the lever C' resting against and being actuated by the said eccentric D and engaging the inner end of the lever C to actuate the same, substantially as described.

472,666. INKING APPARATUS FOR PRINTING-MACHINES. CALVERT B. COTTRELL, Westerly, R. I. Filed Nov. 13, 1891. Serial No. 411,794. (No model.)



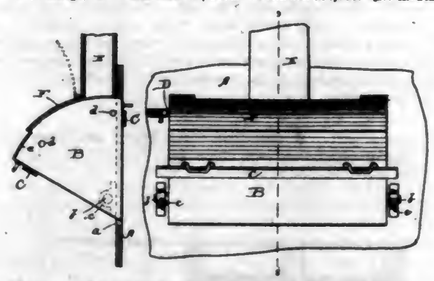
Claim.—1. The combination, with the two form-cylinders of a rotary perfecting printing-machine and a stationary framing and bearings therein for said cylinders, of a separate carriage and inking apparatus therein for each cylinder independently movable toward and from its respective cylinder, a shaft on each carriage for transmitting motion to rollers of its respective inking apparatus, a shaft on the stationary framing in constant gear with one of the cylinders, and gearing between the last-mentioned shaft and the two shafts on the movable carriages, all substantially as and for the purpose herein set forth.

2. The combination, with the two form-cylinders B B' and their respective inking apparatus and separately-movable carriages G G' therefor, of the rotary horizontal shafts J J^2 and J', one on each of said carriages, the cams S S', one on each of said shafts, the upright rock-shafts T T', one on each of said carriages, the arms 16 on said rock-shafts engaging with said cams, the arms 18 on the said rock-shafts engaging with the vibrating inking-rollers, the upright shaft H in constant gear with one of the said cylinders, the two bevel-gears M M' on the said shaft H, and the bevel-gears N N' on the said horizontal shafts, all substantially as herein described, for producing the longitudinal movement of the said rollers.

3. The combination, with the form-cylinder of a rotary printing-machine, a fixed framing containing journal-bearings for said cylinder, an ink-roller carriage movable toward and from said cylinder, and two ink-cylinders in said carriage, of a rock-shaft in said carriage, doctor-rollers carried by said rock-shaft on opposite sides thereof, a rotary shaft and bearings therefor on one side of said carriage, and a cam on the latter shaft for producing the rocking of the said rock-shaft to bring the two doctor-rollers into contact with each of the two ink-cylinders alternately, a rotary shaft and bearings therefor on the fixed framing, and gears on said two rotary shafts for driving the one on the carriage from the one on the fixed framing, all substantially as herein described.

4. The combination, with the inking apparatus for a printing-machine having a rotary form-cylinder and a movable carriage for said inking apparatus, of a templet consisting of a shaft and brackets for supporting the same on the said carriage, and concentric cylindrical sectors on the said shaft, the arcs of whose faces correspond with the arcs of the printing-surfaces of the said cylinder, substantially as herein set forth.

472,667. ASH OR GARBAGE RECEPTACLE. WILLIAM L. FERGUS, Chicago, Ill. Filed June 27, 1891. Serial No. 397,719. (No model.)



Claim.—1. The combination, with a wall or fence, of an ash or garbage box placed in and substantially closing an opening in the wall or fence and swinging upon trunnions, and a locking device, such as D, the box being also provided with limiting devices, such as bars C, substantially as set forth.

2. The combination of an ash-chute E, swinging ash-receptacle B, and the wall or fence in which such box is pivoted, said chute opening into the top of the receptacle, substantially as set forth.

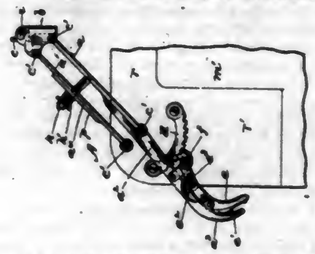
3. The combination of the ash-chute and the swinging ash-box having a cover e, adapted to serve as a bottom to the ash-chute when the box is swung into position for emptying, substantially as set forth.

472,668. PROCESS OF MAKING ALUMINATES OF ALKALIES. EMIL FLEISCHER, Wiesbaden, Germany. Filed June 11, 1891. Serial No. 395,915. (No specimens.)

Claim.—1. The improvement herein set forth in the art of manufacturing alkali aluminates from aluminous substances and alkaline sulphates, alkaline thiosulphates, or alkaline sulphides, consisting in mixing these ingredients with iron and lime and subjecting the whole to the action of heat in the presence of a reducing agent, the quantities of iron and lime being so proportioned, as herein described, that the sulphur present is taken up by the iron and the silicic acid is taken up by the lime, while the latter is in excess in order to prevent the formation of soluble combinations of sulphide of iron with the alkalies.

2. The improvement herein set forth in the art of manufacturing alkali aluminates from aluminous substances and alkaline sulphates, alkaline thiosulphates, or alkaline sulphides, consisting in mixing these ingredients with iron and lime and subjecting the whole to the action of heat in the presence of a reducing agent, the quantities of iron and lime being proportioned as herein described.

472,669. ADJUSTABLE SIGHT. HORACE P. GRISWOLD, Providence, R. I. Filed July 3, 1891. Serial No. 398,368. (No model.)



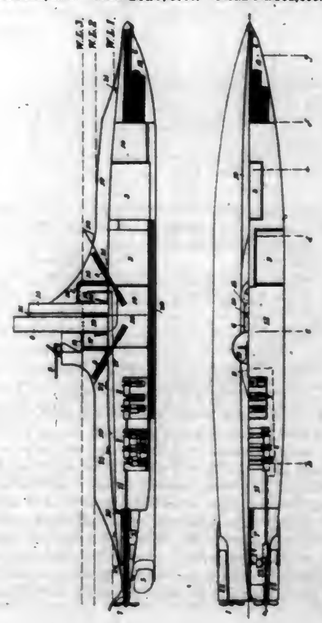
Claim.—1. In a gun, the combination of a forward sight, a rear sight, parallel-motion mechanism jointed to the rear sight and attached to the gun, and an operating-lever or equivalent means whereby the sight may be moved up and down, substantially as hereinbefore described, and for the purpose set forth.

2. The adjustable gun-sights, substantially as hereinbefore described, consisting of parallel links adapted to be jointed to the gun, a sight-carrying block jointed to the opposite ends of the links, an indicator attached to and moving in unison with the links, and means for vibrating the links and securing them in position.

3. The combination, with a pair of parallel links adapted to be jointed to the breech of a gun and a sight c, adjustably mounted in a block jointed to the other ends of the links, of toothed segments also adapted to be secured to the gun, pawls arranged to engage said teeth, and an operating handle or lever carrying the pawls and attached to the links, substantially as described.

4. In a gun of the class hereinbefore described, a graduated or indexed parallel-motion mechanism hinged to the rear portion of the gun, a sight-piece jointed to said parallel mechanism, and means for controlling the vertical movement of the sight and retaining it in position, substantially as described.

472,670. SUBMERGIBLE TORPEDO-BOAT. JOHN P. HOLLAND, Newark, N. J. Filed Dec. 5, 1889. Serial No. 332,695. (No model.)



Claim.—1. A torpedo or gun boat provided with means for completely submerging its hull and having mounted on its hull, at its center, a hollow armored air-tight caisson surrounding the smoke-stack, air-shaft, and companion-way, and having also mounted on its hull an inclosed superstructure having comparatively small apertures for the admission of water, the said caisson serving to suspend the submerged boat by its buoyancy, and the said superstructure serving to gradually retard the sinking of the hull while being submerged.

2. An unarmored torpedo or gun boat provided with means for completely submerging its hull and having erected on its hull, at its center, a hollow and nearly-submergible armored air-tight caisson which provides the necessary buoyancy to suspend the hull in the water at the proper depth and prevent it from sinking to the bottom.

3. A torpedo or gun boat provided with means for completely submerging its hull, having a hollow nearly-submergible air-tight caisson on its deck, over its center of volume, which suspends said submerged hull by its buoyancy, and having companion-ways and air-tight doors in its deck leading from said caisson to the compartments in the hull.

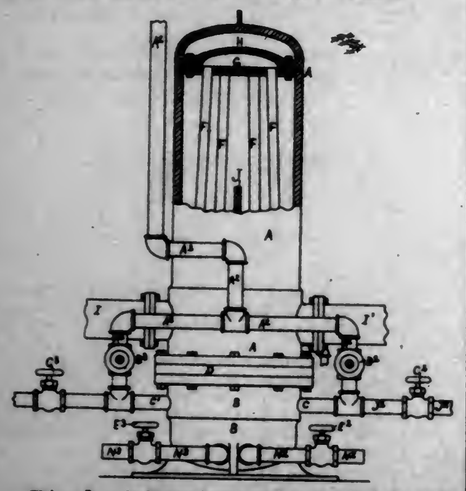
4. A torpedo or gun boat provided with means for submerging its hull, having a nearly-submergible, hollow, and air-tight caisson on its deck, over its center of volume, to suspend it in the water, having air-tight doors in its deck leading from said caisson to the compartments in the hull, and having on its deck a hollow covered superstructure with pointed ends and relatively small apertures in it to admit water, said superstructure inclosing the lower part of said caisson.

5. A torpedo or gun boat having mounted on its deck a hollow and air-tight caisson arranged over its center of volume and a covered apertured superstructure which incloses the lower part of said caisson and having within its hull a water-chamber of sufficient capacity to submerge the hull and superstructure and to nearly submerge said caisson, and means for filling and emptying said chamber.

6. A torpedo or gun boat provided with means for submerging its hull and with vertically-operating rudders for depressing its bow when the boat is in motion and having mounted on its deck a hollow and air-tight structure which projects upward and regulates the degree of enforced submergence of the hull by its resistance and buoyancy.

7. A torpedo or gun boat having a smoke-stack and an air-shaft arranged side by side and provided with a screen to close a shot-hole therein, said screen being provided with means, substantially as described, for operating it from the inside of the boat.

472,671. FEED-WATER HEATER. CHARLES JACOBS, Hyde Park, Mass. Filed June 26, 1890. Serial No. 356,802. (No model.)



Claim.—In a feed-water heater as above described, the combination, with the shell A, provided with the base B, having a partition C, forming two sediment-chambers E E', provided with inlet and outlet pipes, and each having a blow-off pipe, tube-plates D and G, provided with a series of feed-water tubes F and tube-cap H, an exhaust-steam-inlet pipe I, and exhaust-steam-outlet pipe I', of a deflector-plate J between the said exhaust-steam inlet and outlet, and an exterior series of live-steam pipes connecting with each of the said sediment-chambers and provided with valves, whereby live steam may be admitted to pass into and through each of said chambers, so as to form a double blow-off, substantially as described, as and for the purposes set forth.

472,672. UNDERSHIRT. WILLIAM F. KEMP, Ypsilanti, Mich. Filed Oct. 11, 1890. Serial No. 367,804. (No model.)

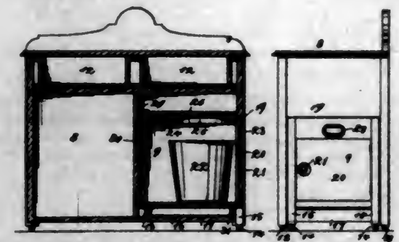


Claim.—1. The herein-described garment of elastic ribbed knit or woven fabric, the same consisting of front and rear vertically-ribbed body-pieces extending upwardly to the neck-opening in front and nearly to the neck-opening behind, a narrow transverse shoulder-strip located between the upper ends of the body-pieces and extending across the garment at the rear of the neck-opening, said strip being cut away upon its forward margin to form the rear part of the latter, and sleeves attached to said body-pieces and to the ends of the said transverse strip, the ribs in said transverse strip being arranged longitudinally or transverse to the ribs of the body-pieces, substantially as described.

2. The herein-described garment of elastic or ribbed knit or woven fabric, the same consisting of front and rear vertically-ribbed body-pieces extending upwardly to the neck-opening in front and nearly to the neck-opening behind, a narrow transverse shoulder-strip located between the upper ends of the body-pieces and extending across the garment at the rear of the neck-opening, said strip being cut away upon the forward margin to form the rear part of the neck-opening and having its ribs arranged longitudinally or transverse to the ribs of the body-pieces, and sleeves made integral with the said shoulder-strip and secured to the body-pieces below the said strip, substantially as described.

3. A shirt or like garment of elastic knitted material, the body whereof is highly elastic across the bust portion from the neck-opening downward and is formed with a space upon the shoulders, said shirt being provided with knitted sleeves having formed in piece therewith extensions for the shoulders of the shirt, said extensions being comparatively inelastic in the direction of their length and elastic in opposite direction.

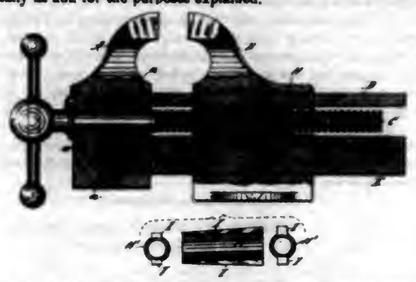
472,673. COMBINATION WASH-STAND AND CLOSE STOOL. LOUIS R. LEWINE, Cincinnati, Ohio. Filed June 17, 1891. Serial No. 396,604. (No model.)



Claim.—A combined wash-stand and close stool, the latter sliding within the former, its inner end being supported within the wash-stand and its outer end resting on the floor, provided with a lid secured to the interior of the wash-stand, said lid being provided with rollers on its under side, which rest in recesses in the top of the close stool when the latter is in its normal position and when pulled out raise the lid off the top to lessen the friction, all as substantially shown, and for the purposes described.

472,674. BENCH-VISE. MORTIMER G. LEWIS, New York, N. Y. Filed Dec. 15, 1891. Serial No. 415,151. (No model.)

Claim.—1. In a bench-vise, the combination, with the vise-heads and the operating-screw, of the slide-bar composed of two flat metal sections, one located above with its flat face turned toward the screw and extending beyond the same and the other arranged at right angles with the first below the screw, presenting its edge to the screw, substantially as and for the purposes explained.



2. In a bench-vise, the combination, with the stationary part or head recessed as explained, of the nut for the operating-screw, said nut being composed of the barrel and side flan inclined as explained, substantially as and for the purposes set forth.

472,675. MOLDING-CUTTER. ROBERT R. LINHAM, Mansfield, Ohio; Hermie Linham, executrix of said Robert R. Linham, deceased, assignor, by mesne assignments, to the Linham Dado Machine Company, same place. Filed Feb. 14, 1890. Serial No. 340,467. (No model.)



Claim.—The herein-described molding-cutter, comprising a shank, a flat triangular foot or cutter having a single point and beveled side, and cutting-edges diverging from said point and again converging toward the shank, for the purpose set forth.

472,676. MOLDING-CUTTER. ROBERT R. LINHAM, Mansfield, Ohio; Hermie Linham, executrix of said Robert R. Linham, deceased, assignor, by mesne assignments, to the Linham Dado Machine Company, same place. Filed Feb. 14, 1890. Serial No. 340,468. (No model.)



Claim.—The herein-described foot or cutter for the purpose named, consisting of a shank having a foot arranged at a right angle thereto and formed with an alternate elevation or depression and having the forward cutting-edge, thus making a compound-curved cutting-edge, and a throat between the rear of the foot and lower portion of the shank to allow the cut material to readily pass away from said foot, substantially as described.

472,677. MOLDING-CUTTER. ROBERT R. LINHAM, Mansfield, Ohio; Hermie Linham, executrix of said Robert R. Linham, deceased, assignor, by mesne assignments, to the Linham Dado Machine Company, same place. Filed Feb. 14, 1890. Serial No. 340,471. (No model.)



Claim.—The herein-described cutter or bit, comprising the shank and a foot or blade at right angles to the lower part of said shank, said foot or blade being of V-shaped form with a cutting-edge at the free extremity and having the flaring sides of the same standing away from the shank at the upper parts of their heels to form recesses or throats, for the purpose set forth.

472,678. MOLDING-CUTTER. ROBERT R. LINHAM, Mansfield, Ohio; Hermie Linham, executrix of said Robert R. Linham, deceased, assignor, by mesne assignments, to the Linham Dado Machine Company, same place. Filed Feb. 14, 1890. Serial No. 340,472. (No model.)

Claim.—The herein-described cutter or bit for moldings, comprising a shank and a foot at right angles and connected to said shank by a neck formed by an upper recess or throat and a lower rear bevel, said foot having a flat or plane top, and a series of parallel cutters arranged to cut a series of grooved beads, as set forth.

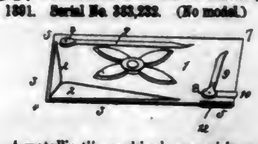


472,679. MOLDING-CUTTER. ROBERT R. LINHAM, Mansfield, Ohio; Hermie Linham, executrix of said Robert R. Linham, deceased, assignor, by mesne assignments, to the Linham Dado Machine Company, same place. Filed Feb. 14, 1890. Serial No. 340,473. (No model.)



Claim.—The herein-described cutter or bit, comprising a shank and a curved tapering solid blade or foot having a beveled cutting-edge, and a throat or recess formed between the rear part of said foot or blade and the lower part of said shank, substantially as described.

472,680. ROOFING-TILE. LEVI H. MONTROSS, Camden, N. J. Filed Feb. 28, 1891. Serial No. 383,232. (No model.)



Claim.—A metallic tile or shingle comprising a body portion having the lower end struck up, forming a recess therein, the strengthening-ribs extending from the side corners to the upper end thereof, the rib intersecting one of said strengthening-ribs, the outwardly-extending flanges, and the cleats consisting of an outwardly-extending strip adapted to be folded over the flange of an adjoining shingle, substantially as described.

472,681. BLOTTER-BATH FOR COPYING-PRESSES. FRANK F. OSBORNE, Sharpsville, Pa. Filed Dec. 14, 1891. Serial No. 414,912. (No model.)



Claim.—1. In combination, the casing, the absorbent stone therein, the perforated sheet of non-absorbent material on the stone, the flexible non absorbent cover, and the adjustable connections between the same and the casing.

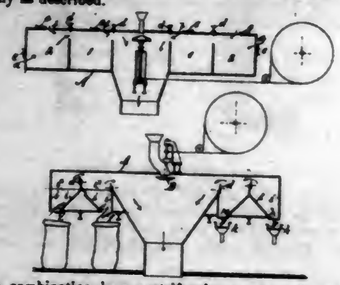
2. In combination, the casing having the base with the inclined sides and the contracted upper part continued into a rim 3, the stone fitting within the rim and confined thereby, forming a water-space around the base, and the rim about the same, substantially as described.

3. In combination, the casing having the base with the inclined sides, the contracted upper part continued into a rim 3, one of the said inclined sides having the opening therein, and the stone having the graduated marks thereon across the line of said opening, substantially as described.

472,682. MEANS FOR DRY SEPARATION OF MATERIALS OF DIFFERENT SPECIFIC WEIGHT AND DIFFERENT SIZE. HERMANN PAPE and WILHELM HENNEBERG, Hamburg, Germany. Filed Oct. 24, 1891. Serial No. 409,702. (No model.) Patented in France Mar. 31, 1891, No. 212,463; in Belgium Mar. 31, 1891, No. 94,358, and in Spain June 27, 1891, No. 11,951.

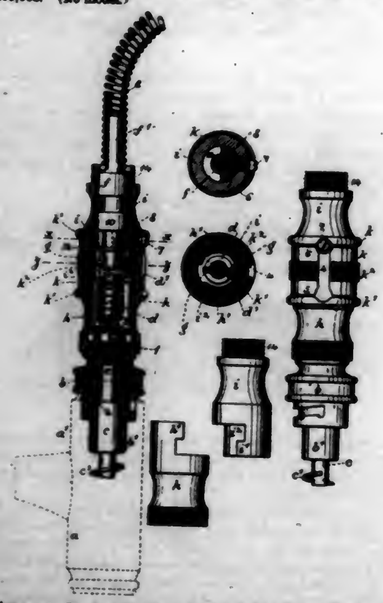
Claim.—1. The combination, in a centrifugal separator, of a stationary inclosed vessel having a central opening and containing a series of concentric circular rims of a height less than the height of the ves-

sel, by which the vessel is divided into a series of annular collecting-chambers having communication with each other in the upper part of the vessel, valves or slides for regulating the size of said communications, the said collecting-chambers having valved communications with the outside atmosphere, and a rotary centrifugal distributer, substantially as described.



2. The combination, in a centrifugal separator, of a stationary inclosed vessel having a central opening, concentric annular rims within the vessel and of a height less than that of the vessel, forming a series of collecting-chambers having communications at the upper part of the vessel, valves or slides for regulating the size of said communications, cross-plates within the collecting-chambers forming a series of hoppers, the said collecting-chambers having valved communications with the outside atmosphere in each of said hoppers, and a rotary centrifugal distributer arranged centrally within the vessel, substantially as herein set forth.

472,683. COUPLING FOR DENTAL-ENGINE SHAFTS AND HAND-PIECES. JOHANNES TH. PEDERSEN, New York, N. Y., assignor to William E. Wells, same place. Filed Aug. 25, 1891. Serial No. 403,682. (No model.)



Claim.—1. The combination, with a flexible dental-engine shaft and a dental hand-piece, of a two-part coupling having similar laterally-interlocking jaws and a longitudinally-movable connecting and binding sleeve, substantially as specified.

2. The combination, with a flexible dental-engine shaft and coupling connected therewith, of a dental hand-piece, the adjustable sleeve-bearing *b*, the shaft *c*, the pinned collar 3, the helical-spring clamp *d*, its finger *d'*, and the cross-pin *g*, substantially as set forth.

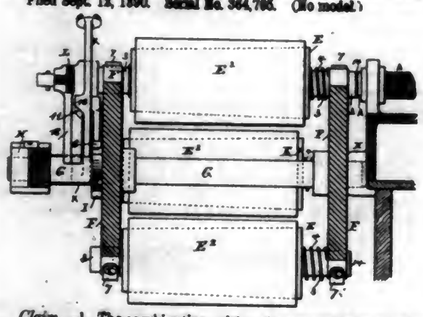
3. The combination, with a flexible dental-engine shaft and two-part coupling, of a shaft *f f'*, having collars 10 12, the segmental nut 8, and screw 7, substantially as set forth.

4. The combination, with the shafts *e* and *f f'* and the devices for transmitting motion from the one to the other, of the two-part coupling *h i*, the interlocking jaws *h' i'*, adapted to come together laterally, the guide-flanges *i*³, and a surrounding and longitudinally-movable and binding-sleeve *k*, substantially as set forth.

5. The combination, with the two-part coupling *h i*, having interlocking jaws coming together laterally, of the binding-sleeve *k*, surrounding the same and movable longitudinally thereon, said sleeve having a longitudinal slot at 4 with rounded ends and cross-cuts at 5 6 to form spring-jaws, and the screw 7, substantially as and for the purpose set forth.

6. The combination, with the shafts *e* and *f*, of a helical-spring clamp *d* and finger *d'* and the cross-pin *g*, whereby the rotation of one shaft is communicated to the other, so that they move together, substantially as set forth.

472,684. PHONOGRAPH. JAMES L. SKILLIN, New York, N. Y. Filed Sept. 12, 1890. Serial No. 364,765. (No model.)



Claim.—1. The combination, with a phonographic motor-shaft, of a carrier and two or more phonogram-cylinders and their shafts supported by such carrier, and coupling devices for connecting the shaft of either phonogram-cylinder to the motor-shaft when in line with the same, and the screw-shaft, diaphragm, and arm carrying the same, substantially as set forth.

2. The combination, with the phonographic motor-shaft, of a carrier adapted to receive two or more phonogram-cylinders and their shafts, a lever, pawl, and ratchet-wheel for rotating the carrier to bring any one of the phonogram-cylinder shafts into line with the motor-shaft, and a swinging lever and centering-point for supporting the shaft and phonogram-cylinder while being rotated, substantially as set forth.

3. The combination, with the motor-shaft in a phonograph-machine, of a carrier having two heads with notched bearings in their peripheries, two or more phonogram-cylinders and their shafts received into such bearings in the carrier, a spring applied to each motor-shaft to move the same endwise, coupling devices upon the cylinder and motor-shafts, respectively, that are disconnected by such springs, mechanism for rotating the carrier and bringing the phonogram-cylinders around successively into line with the motor-shaft, a swinging lever and central point, and means for pressing the centering-point against the end of the phonogram-cylinder shaft to couple the same to the motor-shaft, substantially as set forth.

4. The combination, with a carrier and its supporting-shaft, of two or more phonogram-cylinders and their shafts received into and supported by such carrier, a motor-shaft and coupling devices for connecting the motor with either of the phonogram-cylinder shafts in line with the same, a centering-point, a lever for supporting the same, and a lever for rotating the carrier progressively and for moving the centering-point and its lever out of or into contact with the phonogram-cylinder shaft, substantially as set forth.

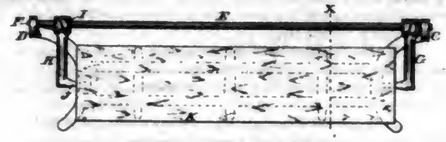
5. The combination, with the phonograph motor-shaft, of a carrier, two or more phonogram-cylinders and their shafts supported by the carrier, and mechanism, substantially as specified, for moving the carrier to bring the shafts of the phonogram-cylinders into line with the motor-shaft successively and for removing and replacing the support for the outer end of the phonogram-cylinder shaft, substantially as set forth.

472,685. WHETSTONE-HOLDER. LEVI C. STROWG, Brooklyn, N. Y. Filed July 16, 1891. Serial No. 399,755. (No model.)

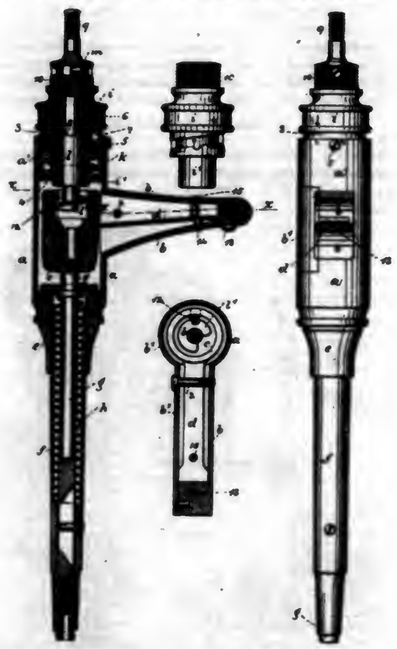
Claim.—1. A whetstone-holder composed of a frame or base having pointed legs and on the rear side at each end an ear to receive a horizontal rod, and arms on said rod, which project forward and between which the stone is rotatably secured, substantially as herein set forth.

2. In a whetstone-holder, the frame or base having the rearwardly-projecting ear at each end, one ear having therein a hole to receive the body of the rod and the other a smaller hole to receive the reduced end of the rod, and arms secured by set-screws for holding said rod in place, substantially as herein set forth.

3. The combination of the base having pointed legs and a rearwardly-projecting ear at each end, a horizontal rod through said ears, two adjustable arms on the rod, each having its forward end bent at right angles and pointed to enter a socket in the end of the stone, and a spring between the frame and one of said arms, substantially as herein set forth.



472,686. DENTAL MALLET. WILLIAM E. WELLS, New York, N. Y. Filed Aug. 24, 1891. Serial No. 403,570. (No model.)



Claim.—1. The combination, with the stock, the plunger-bar, the hammer, and its spring, of a spiral cam and its rotating shaft axially in line therewith, and means, substantially as specified, for longitudinally adjusting and holding the cam and its shaft in axial relation to the hammer to vary the extent of movement of said hammer and the percussive blow given thereby, substantially as set forth.

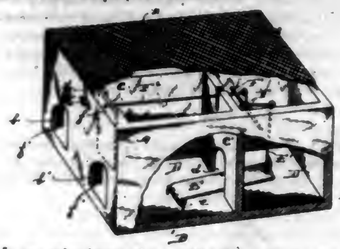
2. The combination, with the hammer and its spring, of a stock for containing the hammer and an arm extending out from said stock, and in which arm said spring is immovably secured at its outer end, the plunger-bar *g*, and the separate screws 14 15 at opposite sides of said spring for adjusting the spring and hammer in their fixed relation to the plunger-bar, and a cam for operating the hammer, substantially as set forth.

3. The combination, with the stock *a*, the arm *b*, and plunger-bar *g*, of the hammer *c* and its spring *d*, the shaft *l*, and cam *l'*, the endwise-movable sleeve-bearing *i i'*, having a notched groove 7, the pin 5, and spring *k*, substantially as set forth.

4. The stock having a thin upper end 3 and flanged portion 4 and the hollow arm, in combination with the sleeve-bearing *i i'*, having a circumferential groove 6 and a notched groove 7, the pin 5, and spring *k*, the shaft *l*, cam *l'*, and the shoulder 8, and collar *m*, substantially as set forth.

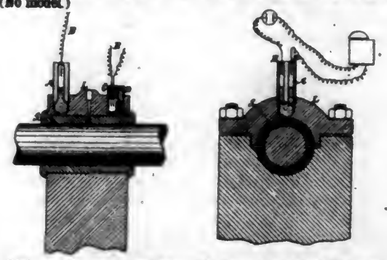
472,687. ANIMAL-TRAP. GEORGE WIEKLER, San Francisco, Cal. Filed Dec. 14, 1891. Serial No. 414,947. (No model.)

Claim.—1. In an animal-trap, the combination, with the frame thereof, of the tread-rod movably secured to the floor, the bell-crank lever to which the tread-rod is connected, slide-operating rod connected to the bell-crank lever, and the gravity-slides adapted to move downward when the slide-operating rod is moved out of engagement therewith, so as to close the trap-opening and prevent exit of animal, as and for the purpose set forth.



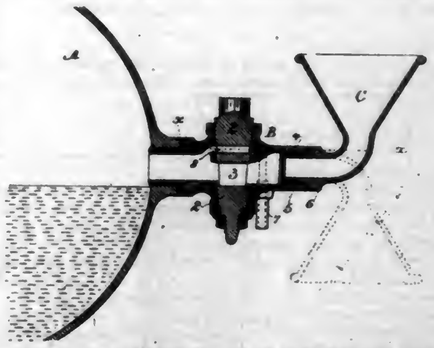
2. In an animal-trap, the combination, with the frame thereof divided into compartments, of the tread-rod movably secured to floor of one compartment and projecting through a passage-way into the other, cross-rod passing through the feed-compartment, and bell-crank lever working on said cross-rod and having one of its arms connected to the free end of the tread-rod, slide-operating rod secured to the other arm thereof, and gravity-slides adapted to be held upward by said rod and when freed to move downward and close the trap-opening, as and for the purpose set forth.

472,688. ALARM FOR HOT AXLES. ANTON BACKHAUS, Altenburg, Saxe-Altenburg, Germany. Filed Sept. 4, 1891. Serial No. 404,796. (No model.)



Claim.—The combination, with the axle or shaft bearing, of the thermometer having an expansible electrical conducting medium, and circuit-wires normally out of contact with said medium and in circuit with a signaling or alarm apparatus, and a second chamber containing circuit-wires, and a fusible electrical medium making contact with the ends of said wires in the chamber when fused, the expansible electrical medium being adapted to be brought into action to close the circuit of its wires at a lower temperature than the fusible electrical medium and the latter to be brought into action after the other medium has established its circuit, substantially as and for the purposes set forth.

472,689. CAR-HEATING APPARATUS. WILLIAM C. BAKER, New York, N. Y. Filed June 15, 1891. Serial No. 396,288. (No model.)

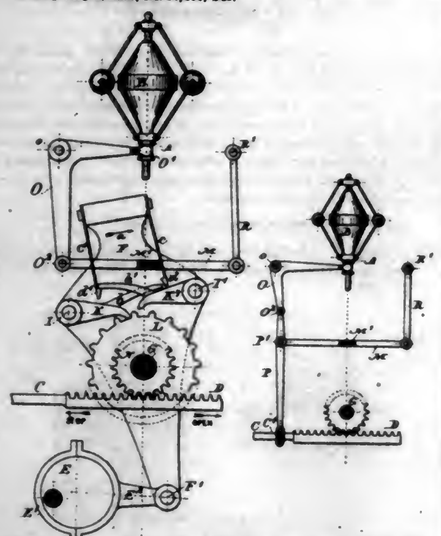


Claim.—1. The combination, with the expansion-vessel and the cock having a horizontal screw-threaded socket, of the funnel having a bend and a horizontal screw-threaded connection to the cock, whereby the funnel is allowed to hang down when partially unscrewed and

held firmly by the friction when turned up for use, substantially as specified.

2. The combination, with the expansion-vessel and the cock having a horizontal screw-threaded socket and the air-vent and plug with two passage-ways, of the funnel having a bend and a horizontal screw-threaded connection to the cock, whereby the funnel is allowed to hang down when partially unscrewed and held firmly by the friction when turned up for use, substantially as specified.

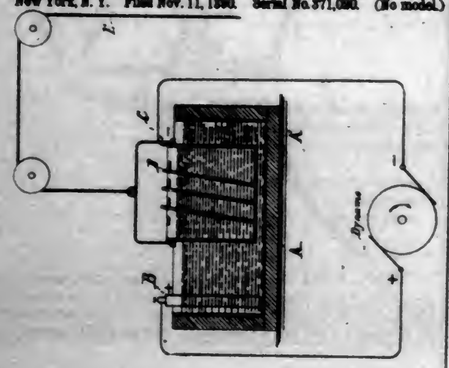
472,690. GOVERNOR. RODOLPHE BAUHAIN, Geneva, Switzerland. Filed Dec. 31, 1891. Serial No. 416,690. (No model.) Patented in Switzerland Jan. 15, 1890, No. 1,773; in France Jan. 24, 1890, No. 201,977, and in Italy July 8, 1890, No. 27,486/249.



Claim.—1. The combination, with a centrifugal governor and a connection for moving the throttle-valve or regulator, of clicks standing in opposite directions, mechanism for moving them first in one direction and then in the other, teeth against which the clicks act to move the regulator of the motor, fingers upon the clicks, spring-hooks to engage the fingers and hold the clicks out of action, and a sliding cam and connection to the centrifugal governor to disengage either one spring-hook or the other, substantially as specified.

2. The combination, with the centrifugal governor, of a lever F, mechanism for rocking the same, clicks pivoted upon the lever and standing in opposite directions, teeth against which the clicks act, and connections to move the throttle-valve or regulator in one direction or the other, fingers on the clicks, spring-hooks to hold the clicks out of action, and a projection and connections from the same to the centrifugal governor for moving one spring-hook or the other from its click to allow the latter to come into action, substantially as specified.

472,691. ART OF MAKING TIN PLATES. GEORGE H. BENJAMIN, New York, N. Y. Filed Nov. 11, 1890. Serial No. 371,090. (No model.)

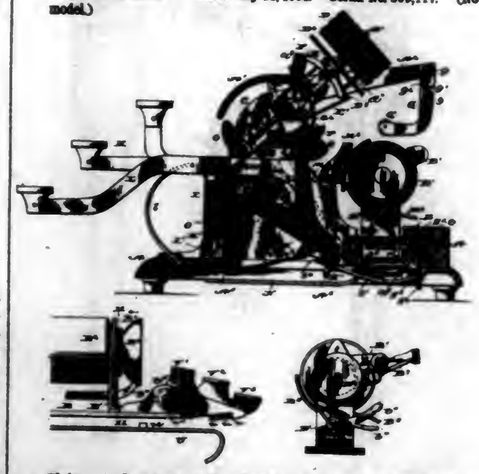


Claim.—1. The herein-described improvement in the art of making tin plates, which consists in placing the plate-blanks to be cleaned within and in electrical contact with a vessel formed of perforated conducting material connected to the negative pole of the source of electricity, in immersing said vessel and plate-blanks in an electrolytic liquid, and while therein transmitting an electrical current through said plate-blanks in such a manner that hydrogen shall be set free from their surfaces.

2. The herein-described improvement in the art of making tin plates, which consists in placing the plate-blanks to be cleaned within and in electrical contact with a vessel formed of perforated conducting material connected to the negative pole of the source of electricity, in immersing said vessel and plate-blanks in an electrolytic liquid, and while therein transmitting an electrical current through said plate-blanks in such a manner that hydrogen shall be set free from their surfaces, and subsequently rinsing the said plate-blanks in clear water and drying them by rapid heating.

3. The herein-described improvement in the art of making tin plates, which consists in immersing the plate-blanks in an electrolytic liquid consisting of a solution of a neutral salt and while therein subjecting them to the action of an electric current, subsequently immersing said blanks in an electrolytic liquid having an acid reaction, and while therein subjecting them to the action of an electric current.

472,692. TYPE-WRITING MACHINE. GEORGE C. BLICKENSDERFER, Stamford, Conn., assignor to the Blickensderfer Manufacturing Company, New York, N. Y. Filed July 11, 1891. Serial No. 399,117. (No model.)



Claim.—1. In a type-writing machine, the combination of a type-wheel, a sleeve, a non-rotative longitudinally-movable spindle, part of which passes through said sleeve to support the type-wheel and the other part bent upon itself to form a ball, and means which engage said ball to hold said spindle against rotation.

2. In a type-writing machine, the combination, with the type-wheel, of a sleeve, a non-rotative longitudinally-movable spindle, part of which passes through said sleeve to support the type-wheel and the other part bent upon itself, means which engage said bent part to move said spindle longitudinally, and means which engage with said bent part to lock the spindle against further longitudinal movement when moved to the desired position.

3. In a type-writing machine, the combination of a type-wheel, a shaft having a sleeve, and a spindle bent upon itself to form a ball, one part passing through said sleeve to support the type-wheel and the other through the shaft to hold said spindle against rotation.

4. In a type-writing machine, the combination of a type-wheel, a shaft having a sleeve, a spindle bent upon itself to form a ball, one part passing through said sleeve to support the type-wheel and the other through the shaft to hold said spindle against rotation, and means for moving said spindle longitudinally.

5. In a type-writing machine, the combination, with the type-wheel, of a non-rotative longitudinally-movable spindle carrying the type-wheel and having a lateral extension at its lower end, a lever acting upon said extension for moving said spindle longitudinally, special key-levers for moving said lever, and means for engaging said extension and holding said spindle against undue longitudinal movement.

6. In a type-writing machine, the combination, with the type-

wheel, of a non-rotative longitudinally-movable spindle carrying the type-wheel and having a lateral extension at its lower end, a lever acting upon said extension for moving said spindle longitudinally, special key-levers for moving said lever, and a locking-bar for engaging said extension and holding said spindle against undue longitudinal movement.

7. In a type-writing machine, the combination, with the rock-shaft which carries the type-wheel spindle or shaft and is rocked when the type-wheel is vibrated laterally, of an eccentrically-faced cam carried by said rock-shaft, a lever moved by said cam, and a feeding mechanism for the paper-carriage, which is actuated to move said carriage by said lever.

8. In a type-writing machine, the combination, with the rock-shaft which carries the type-wheel spindle or shaft and is rocked when the type-wheel is vibrated laterally, of an eccentrically-faced cam carried by said rock-shaft, a lever moved by said cam, feeding mechanism for the paper-carriage, which is actuated by said lever, and a spacer-key lever for moving said lever independently of said cam.

9. In a type-writing machine, the combination of a rock-shaft, key-levers for rockers on said shaft, a type-wheel on said rock-shaft, a paper-carriage having feeding and checking pawls, a lever for operating said pawls, and a cam operating upon said lever to feed and check said carriage when the shaft is rocked.

10. In a type-writing machine in which the carriage is fed and checked during the down movement of the key-lever, the combination of a lever for operating the pawls and a shaft under control of the key-levers and having a cam with faces g and g' for operating said lever, for the purpose set forth.

11. The combination of a paper-carriage, feeding and checking pawls for said carriage, a pawl-controlling lever, a rock-shaft having a cam in contact with said pawl-controlling lever, and key-levers connected by intermediate mechanism with said rock-shaft, the cam of which operates upon the pawl-controlling lever to move and hold the pawls in engagement with the carriage when a key-lever is depressed.

12. In a type-writing machine, the combination, with the type-wheel, of a pinion for moving said wheel axially, two segment-gears for moving said pinion, vibrating arms carrying said segmental gears and having gear-teeth thereon, two vibrating frames carrying arms having gear-teeth thereon, which mesh with the gear-teeth on said segment-carrying arms, and two groups of type-key levers for moving said vibrating frames.

13. In a type-writing machine, the combination, with the type-wheel, of a rock-shaft carrying the spindle of said wheel, a pinion concentric with said wheel for moving the same axially, a stopping-ratchet carried by said pinion, a pawl for engaging said ratchet, that is pivoted on said rock-shaft and having gear-teeth arranged concentric with said rock-shaft, two segment-gears for moving said pinion, carried on arms pivoted on said rock-shaft concentric with said pawl and having gear-teeth arranged in an arc of the same radius as the gear-teeth on the said pawl, two vibrating frames carrying arms having gear-teeth thereon which mesh with the gear-teeth on said segment-carrying arms, two groups of type-key levers for vibrating said frames, a third vibrating frame pivoted concentric with the other frames and embracing both of said frames and in position to be actuated by any of the type-keys of both said groups, and an arm carried by said third frame, having gear-teeth which mesh with the gear-teeth on said pawl.

14. In a type-writing machine, the combination, with the type-wheel, the pinion for moving the type-wheel axially, the pawl and ratchet for stopping the type-wheel, the two vibrating frames for moving the mechanism which moves the pinion, and the single frame for moving the said pawl, of key-levers for actuating said frames, which are pivoted on a common pintle or shaft, are arranged above said frames in two distinct groups and act thereon when depressed, and have uniformly-placed bearing-faces for contacting with the two pinion-actuating frames and other bearing-faces for moving the pawl-actuating frame, which are gradatively arranged in each group of key-levers.

15. In a type-writing machine, the combination, with a series of type-key levers that are pivoted on a common shaft and divided into two groups, of two type-actuating frames pivoted concentrically with said key-levers and arranged each below one of said groups of key-levers, a third frame pivoted concentrically with said type-key levers, arranged below both of said groups of keys and embracing the two other frames, mechanism operated from said third frame for stopping the type-actuating mechanism operated by the two first-named frames, and two bearing-faces on each of the type-key levers for contacting with the two frames below it, said bearing-faces on each key-lever being so graded relative to each other that the outer frame will be moved later than the inner, more or less, according to the distance between the planes of said faces.

16. In a type-writing machine, the combination of a series of type-key levers pivoted on a common pintle-shaft, two frames for actuating the type-wheel from said keys, pivoted on the same pintle-shaft, a frame for operating means for stopping the type-wheel pivoted on said shaft, a lever for actuating the feed mechanism of the paper-carriage, moved from the action of the type-wheel pivoted on said shaft, a spacer-key lever for actuating said feed mechanism independently of the type-wheel mechanism pivoted on said shaft, and a lever for longitudinally moving the type-wheel spindle also pivoted on said shaft.

17. In a type-writing machine, the combination of a series of type-key levers pivoted on a common pintle-shaft, two frames for actuating the type-wheel from said keys, pivoted on the same pintle-shaft, a frame for operating means for stopping the type-wheel pivoted on said shaft, a lever for actuating the feed mechanism of the paper-carriage, moved from the action of the type-wheel pivoted on said shaft, and a spacer-key lever for actuating said feed mechanism independently of the type-wheel mechanism pivoted on said shaft.

18. In a type-writing machine, the combination of a series of type-key levers pivoted on a common pintle-shaft, two frames for actuating the type-wheel from said keys, pivoted on the same pintle-shaft, a frame for operating means for stopping the type-wheel pivoted on said shaft, and a lever for actuating the feed mechanism of the paper-carriage, moved from the action of the type-wheel pivoted on said shaft.

19. In a type-writing machine, the combination of a series of type-key levers pivoted on a common pintle-shaft, two frames for actuating the type-wheel from said keys, pivoted on the same pintle-shaft, and a frame for operating means for stopping the type-wheel pivoted on said shaft.

20 In a type-writing machine, the combination, with the type-wheel D, ratchet D^2 for stopping said wheel, and pawls E E^2 and E' for acting on said ratchet, of a shield at the apex of the lobe of said ratchet for preventing the engagement of said pawl E with the extreme teeth on said ratchet.

21. In a type-writing machine, the combination, with the vibrating type-wheel D, of the swinging arm G, carrying the ink-roller G and engaging with its pintle g^2 detachably by means of the open-ended slot g'.

22. In a type-writing machine, the combination, with the paper-carriage, of a ratchet on the side of the carriage, having rectangular teeth b, and a pushing-pawl and a checking-pawl, which engage said teeth by moving between them by a vertical movement.

23. In a type-writing machine, the combination, with the paper-carriage, of a ratchet on said carriage, having rectangular teeth, a checking-pawl pivoted to the frame-work, a pushing-pawl pivoted to the checking-pawl, and a lever controlled by the key-levers for operating said pawls.

24. In a type-writing machine, the combination, with the paper-carriage, of a type-wheel that vibrates to impress a type, a lever for operating the feed mechanism of the carriage, that is rocked as the type-wheel is vibrated, a checking-pawl that is pivoted to the frame-work and is moved by said lever, a pushing-pawl that is pivoted to the checking-pawl and carried by it, and a ratchet on said carriage, having rectangular teeth and engaged first by the pushing-pawl and then by the checking-pawl.

25. In a type-writing machine, the combination of a paper-carriage normally free to be moved manually, a stop mechanism for arresting the carriage at different points as it moves to the left, and key mechanism for manipulating said stop mechanism to stop the traverse of the carriage at any desired position in the line.

26. In a type-writing machine, the combination of a paper-carriage normally free to be moved manually, a stop mechanism, and a key mechanism for positioning said stop mechanism at any desired point in the line during the motion toward a uniform terminal point.

27. In a type-writing machine, the combination, with the paper-carriage thereof, of a stop device capable of being adjusted at varying points and when so adjusted remains fixed and determines the position of the unit or right-hand figure of amounts to be printed in vertical order, and a series of catches for engaging said stop, representing units, tens, hundreds, thousands, &c., and which will when operated severally stop the carriage while moving toward the left at the point where the numeral represented by said catch should be printed relative to the unit-point.

28. In a type-writing machine, the combination, with the paper-carriage thereof, of a variable-stop mechanism for stopping said carriage at varying predetermined points within its forward traverse and means for bringing said stop into action and out of action and fixing the variable point at which said carriage shall be stopped, which means are under the control of the hand of the operator while it is moving the carriage.

29. In a type-writing machine, the combination, with the paper-carriage thereof, of a variable-stop mechanism for stopping said carriage at varying predetermined points within its traverse and a series of keys and mechanism controlled by said keys for bringing said stop mechanism into action and fixing the variable point at which said carriage shall be stopped, which keys are under the control of the hand of the operator while it is moving the carriage.

30. In a type-writing machine, the combination, with the carriage

thereof, of a variable stop or catch mechanism carried by said carriage and under the control of the operator's hand, used for moving the carriage, and a stop on the frame of the machine for engaging with said variable stop or catch mechanism.

31. In a type-writing machine, the combination, with the carriage thereof, of a variable stop or catch mechanism carried by said carriage and under the control of the operator's hand, used for moving the carriage, and an adjustable stop on the frame of the machine for engaging with said variable stop or catch mechanism.

32. In a type-writing machine, the combination, with the paper-carriage thereof, of a stop on the frame of the machine, a variable-catch mechanism on the carriage, and a series of keys controlling said variable-catch mechanism.

33. In a type-writing machine, the combination, with the paper-carriage thereof, of an adjustable stop on the frame of the machine, a variable-catch mechanism on the carriage, and a series of keys controlling said variable-catch mechanism.

34. In a type-writing machine, the combination, with the paper-carriage thereof, of a detachable and adjustable stop on the frame of the machine, a variable-catch mechanism on the carriage, and a series of keys controlling said variable-catch mechanism.

35. In a type-writing machine, the combination, with the paper-carriage thereof, of a stop on the frame of the machine, a variable-catch mechanism on the carriage, and means for manually actuating said variable catch while moving the carriage.

36. In a type-writing machine, the combination, with the paper-carriage thereof, of an attachment for regulating the point of commencement of the lines, consisting of a graded series of catches on the carriage and a variable stop on the frame-work.

37. In a type-writing machine, the combination, with the paper-carriage thereof, of an attachment for regulating the point of commencement of the lines, consisting of a graded series of fixed catches on the carriage and a variable stop carried by the frame-work that can be moved into line with any of the said series of fixed stops.

38. In a type-writing machine, the combination, with the paper-carriage thereof, of an attachment for regulating the point of commencement of a line, consisting of a series of catches and a variable stop, one part of said attachment being on the carriage and the other on the frame of the machine.

39. In a type-writing machine, the combination, with the carriage thereof, of a variable-stop mechanism for variously vertically aligning the beginning of the several lines of printing, having one part thereof on the frame of the machine and the other part on the carriage, and a second variable-stop mechanism for variously vertically aligning matter to be printed between the beginning and the ends of the lines, having one part thereof on the frame of the machine and the other part on the carriage, and key mechanism for manipulating said stop mechanism to stop the traverse of the carriage at any desired position in the line.

40. In a type-writing machine, the combination, with the carriage thereof, of a series of fixed graduated catches on the carriage, and a lever on the frame, carrying a stop and movable, so as to bring said stop into line with either of said catches.

41. In a type-writing machine, the combination, with the carriage thereof, of a series of fixed catches arranged diagonally on the carriage and a swinging lever carrying a stop and movable, so as to bring said stop into line with either of said catches.

42. In type-writing-machine attachment, the combination of a removable or detachable bar having a lug and a series of keyed bars, having catch-notches which engage said lug on the removable bar.

43. In a type-writing-machine attachment, the combination of an adjustable bar having a lug and a series of keyed bars having catch-notches which engage said lug on the removable bar.

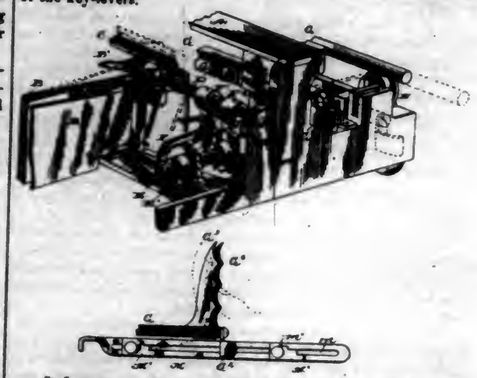
44. In a type-writing-machine attachment, the combination of an adjustable bar having notches on one side, a frame for the adjustable bar, having similar notches to those on the bar, and means for holding the notched side of the bar in contact with the notches of the frame.

45. In a type-writing-machine attachment, the combination of an adjustable bar having notches on one side, a frame for the adjustable bar, having notches similar to those on said bar, and a flexible retaining device for holding the notched bar in contact with the notches of the frame.

46. In a type-writing-machine attachment, the combination of a notched adjustable bar having a lug, a notched frame, means for holding said notched bar against the notched frame, and a series of keyed levers having catch-notches which engage said lug.

472,693. TYPE-WRITING MACHINE. GEORGE C. BLICKENSDERFER, Stamford, Conn., assignor to the Blickensderfer Manufacturing Company, New York, N. Y. Filed Oct. 20, 1891. Serial No. 410,230. (No model.)

Claim.—1. In a type-writing machine, the combination, with the paper-carriage thereof, of a feed-shaft gearing onto said carriage, a rock-shaft moved by the key-levers, two ratchets on the feed-shaft, having oppositely-directed teeth, and two pawls moved by said rock-shaft, one of which acts upon one of said ratchets to move the feed-shaft forward and the other acts upon the other of said ratchets to stop the said movement of the feed-shaft as said rock-shaft is moved by any of the key-levers.



2. In a type-writing machine, the combination, with the paper-carriage thereof, of a feed-shaft for moving said carriage, which is geared thereto positively, a rock-shaft that is moved positively by each key-lever when depressed, mechanism for moving said rock-shaft, and a lock on said carriage, which when engaged to lock the carriage effectuates the locking of the key-levers, as set forth.

3. In a type-writing machine, the combination of a frame, a carriage having a predetermined traverse on said frame, and a movable stop normally in the path of traverse and to temporarily stop the carriage before the end of its movement, whereby the operator is enabled to properly complete a line.

4. In a type-writing machine, the combination, with the frame of the machine, the paper-carriage having a predetermined movement, and the key-levers, of a stop operated by said carriage to lock the key-levers against down movement before the full movement of the carriage is completed.

5. In a type-writing machine, the combination, with the frame of the machine, the paper-carriage having a predetermined movement, key-levers, and intermediate mechanism between said key-levers and carriage for moving said carriage on the downstroke of the key-levers, of a stop operated by said carriage to lock the key-levers against down movement before the full movement of the carriage is completed.

6. In a type-writing machine, the combination of the frame of the machine, the paper-carriage having a predetermined movement to the left, the key-levers, and a stop for controlling the down movements of said key-levers by means of said carriage, said stop being normally in the path of movement of and stopping said carriage before the end of said predetermined movement and manually controlled to move it out of the way of the carriage.

7. In a type-writing machine, the combination of the frame of the machine, a paper-carriage in said frame, having a predetermined movement, and a stop, one part upon the carriage and the other upon the frame and one normally in the path of the other and one of the parts movable out of the way of the other to allow the carriage to be moved forward and complete its traverse.

8. In a type-writing machine, the combination of the frame of the machine and a paper-carriage moving upon said frame a predetermined distance and having a stop normally in position to engage with said frame when the carriage has been moved to a certain point and manually movable to allow said carriage to proceed after said engagement to its predetermined distance.

9. In a type-writing machine, the combination of the frame of a machine, a paper-carriage moving upon said frame a predetermined distance, and a swinging stop hanging from the paper-carriage in position to engage with said frame before the carriage has moved said distance and arranged to be moved out of the way of the frame to allow the carriage to proceed.

10. In a type-writing machine and for the purpose of regulating the width of the margin on the left of the sheet to be printed, the combination, with the paper-carriage, of a series of graduated stops on the frame of the machine below the carriage, a variable catch-lever on said carriage for engaging said stops, and means for indicating the position of said lever.

11. In a type-writing machine, the combination, with the paper-carriage thereof, of means for limiting its movement toward the right and thereby regulating the width of the left-hand margin on the paper to be printed, consisting of a series of fixed graduated stops on the frame of the machine below the carriage and a variable catch-lever on the carriage at the left end thereof in position to be operated by the left hand of the operator.

12. In a type-writing machine having a movable carriage, a stop mechanism composed of a stationary part and a movable part, which is operated by the hand and the movement of which is limited by the hand coming in contact with a fixed part of the machine.

13. In a type-writing machine having a movable carriage, a stop mechanism consisting of two parts, one upon the frame of the machine and the other upon the carriage, one part being manually movable on the part to which it is secured to put it in line for contact with the fixed part of the stop and its limit of movement being regulated by the operator's hand contacting with the part to which it is secured.

14. In a type-writing machine having a movable carriage, a stop mechanism consisting of two parts, one upon the frame and the other upon the carriage, one part being manually moved through a slot in the part to which it is attached to put said movable part in line for contact with the fixed part of the stop and its limit of movement being regulated by the operator's hand contacting with the slotted part through which the movable part of the stop works.

15. In a type-writing machine having a movable carriage, a stop mechanism composed of two parts, a stationary part on the frame of the machine and a movable part on the carriage, said movable part being manually operated to put it in line with the stationary part and its movement being limited by the hand contacting with a recessed part of the carriage.

16. In a type-writing machine, the combination of a movable carriage having a fixed recessed bar and a stop mechanism having a stationary part upon the machine and a manually-operated movable part upon the carriage, the movement of said movable part being regulated by the hand contacting with the recessed bar.

17. In a type-writing machine, the combination of a movable carriage having a fixed vertical bar and a stop mechanism having a stationary part upon the machine and an elbow-lever stop upon the carriage, one end of said lever being in line with the vertical bar, which limits the movement thereof.

18. In a type-writing machine, a columnating attachment consisting of a stop and a catch-lever on the part of the machine opposite to the stop having a variable throw relative to said stop.

19. In a type-writing machine, a columnating attachment consisting of a stop connected with the frame of the machine and a catch-lever having a variable throw relative to the stop and carried on the carriage.

20. In a type-writing machine, a columnating attachment consisting of a stop connected with the frame of the machine and standing in a vertical position and a vertical catch-lever having a variable throw relative to the stop and carried on the carriage.

21. In a type-writing machine, the combination, with the paper-carriage thereof, of means for stopping the carriage at various predetermined points in its traverse toward the left for the purpose of vertically aligning matter to be printed, consisting of adjustably-fixed stops connected with the frame of the machine below the carriage and a catch-lever having a variable throw and carried on the carriage in position to be manipulated by the hand of the operator while moving the carriage to the left.

22. In a type-writing machine and for the purpose of stopping the carriage thereof at various predetermined points while moving to the left, so as to vertically align matter to be printed, the combination, with said carriage, of adjustably-fixed stops connected with the frame of the machine below the carriage, a variable catch-lever on the carriage in position to engage said stops as manipulated, and a fixed limiting-bar by the side of said lever to limit the degree of movement of said lever.

23. In a type-writing machine, the combination, with the carriage thereof, of a variable-catch mechanism on the carriage for engaging a fixed stop on the frame and stopping the carriage at any predetermined point when the same is moving to the right, so as to regulate the point of beginning of the lines of printing, and a second variable-catch mechanism on the carriage for engaging a fixed stop on the frame and stopping the carriage at any predetermined point when moving to the left, so as to regulate the vertical alignment of numerals.

24. In a type-writing machine, the combination, with the platen, of a spring-actuated presser-roll acting against the top of said platen and a spring-actuated tilting concave shield surrounding the lower part of said platen and pressing with its lower edge upon the said platen below the type-field, and means, substantially as set forth, whereby the said tilting parts may be simultaneously moved away from the platen by pressure exerted by the thumb and finger of the operator, as set forth.

472,694. TYPE-WRITING MACHINE. GEORGE C. BLICKENSDERFER, Stamford, Conn., assignor to the Blickensderfer Manufacturing Company, New York, N. Y. Filed Oct. 20, 1891. Serial No. 410,232. (No model.)

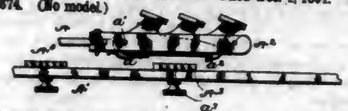
Claim.—1. In a type-writing machine, the combination, with the paper-carriage thereof, of a horizontally-swinging catch on the carriage and laterally-graded stop-block connected with the frame below the carriage for engaging said catch and stopping the carriage at various predetermined points.



2. In a type-writing machine, the combination, with the carriage thereof, of a laterally-graded stop connected with the frame-work below the carriage, a laterally-swinging catch on the carriage, a lever for moving said catch, and a series of catches for holding said lever at various points of adjustment.

3. In a type-writing machine, the combination, with the paper-carriage thereof, of a laterally-graded adjustable stop-block connected with the frame-work below the carriage, a laterally-swinging catch on the carriage, a laterally-swinging and vertically-flexible lever for moving said catch, and a notched bar for engaging the flexible end of said lever.

472,695. ATTACHMENT FOR TYPE-WRITING MACHINES. GEO. C. BLICKENSDERFER, Stamford, Conn., assignor to the Blickensderfer Manufacturing Company, New York, N. Y. Filed Dec. 1, 1891. Serial No. 413,674. (No model.)

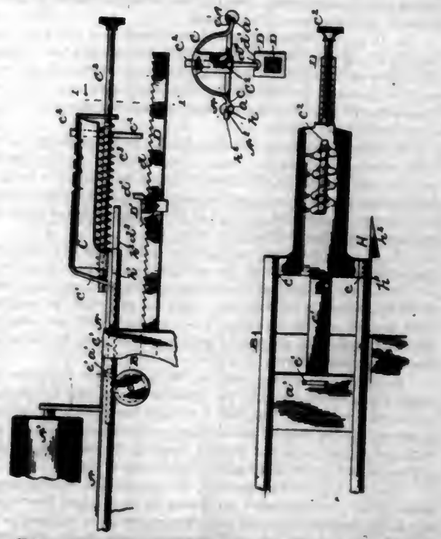


Claim.—1. In a type-writing machine, the combination of a paper-carriage, a key mechanism having catches on the same horizontal line, and a graded stop having its gradations on the same longitudinal lines as the catches, all of which have a separate gradation.

2. In a type-writing machine, the combination of a paper-carriage, a key mechanism having catches on the same horizontal line, and an adjustable graded stop having its gradations on the same longitudinal lines as the catches, all of which have a separate gradation.

3. In a type-writing machine, the combination of a key mechanism having catches, a slotted bar or frame having teeth pointing toward said catches, and a stop held against said teeth by a yielding retaining device.

472,696. TYPE-WRITING MACHINE. GEORGE C. BLICKENSDERFER, Stamford, Conn., assignor to the Blickensderfer Manufacturing Company, New York, N. Y. Filed Feb. 26, 1892. Serial No. 422,867. (No model.)



Claim.—1. In a columnating attachment for type-writing machines, the combination of a stop and a catch variably engaging and manually adjustable relative to said stop at the entry of each item, and

which automatically reverts to a uniform normal position relative to said stop.

2. In a columnating attachment for type-writing machines, the combination of a stop and a longitudinally-movable catch variably engaging and manually adjustable relative to said stop at the entry of each item, and which automatically reverts to a uniform normal position relative to said stop.

3. In a columnating attachment for type-writing machines, the combination of a stop and a catch normally out of the path of the stop, variably engaging and manually adjustable relative to said stop at the entry of each item, and which automatically reverts to a uniform normal position relative to said stop.

4. In a type-writing machine, the combination of a stop, a catch having variable movements relative to said stop, and a plate having points for engagement with said catch when the latter has moved a predetermined distance.

5. In a type-writing machine, the combination of a stop, a catch having variable movements relative to said stop, and a plate having points for engagement with said catch, and said points being arranged in groups, for the purpose set forth.

6. In a type-writing machine, the combination of a paper-carriage, a stop for stopping said carriage attached to the frame of the machine, and a variable catch on the carriage under the control of the operator's hand used for moving the carriage for contacting with said stop, and thereby stopping the carriage at points corresponding to the points of adjustment of said catch.

7. In a type-writing machine, the combination of a paper-carriage, a stop on the frame of the machine for stopping the carriage, and a catch device on the carriage that is variable longitudinally of said carriage and under the control of the operator's hand used for moving the carriage for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device.

8. In a type-writing machine, the combination of a paper-carriage, a stop on the frame of the machine for stopping the carriage, and a catch device on the carriage that is variable longitudinally of said carriage into a series of graduated positions for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device.

9. In a type-writing machine, the combination of a paper-carriage, a variable stop on the frame of the machine for stopping the carriage, and a catch device on the carriage that is variable longitudinally of said carriage into a series of graduated positions for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device and stop.

10. In a type-writing machine, the combination of a paper-carriage, a stop on the frame of the machine for stopping the carriage, and a catch device on the carriage that is variable longitudinally of said carriage into a series of graduated positions and under the control of the operator's hand and for moving the carriage for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device.

11. In a type-writing machine, the combination of a paper-carriage, a stop on the frame of the machine for stopping the carriage, and a catch on the carriage that is variable into a series of graduated positions grouped periodically for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device.

12. In a type-writing machine, the combination of a paper-carriage, a variable stop on the frame of the machine for stopping the carriage, and a catch on the carriage that is variable into a series of graduated positions grouped periodically for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device and stop.

13. In a type-writing machine, the combination of a paper-carriage, a stop on the frame of the machine for stopping the carriage, and a catch on the carriage that is variable into a series of graduated positions grouped periodically and under the control of the operator's hand used for moving the carriage for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device.

14. In a type-writing machine, the combination of a paper-carriage, a stop on the frame of the machine for stopping the carriage, and a catch on the carriage that is variable into a series of graduated positions longitudinally of the carriage, grouped periodically for contacting with said stop, and thereby stopping the carriage at points predetermined by the adjustment of said catch device.

15. In a type-writing machine, the combination, with the paper-carriage, of a variable-catch mechanism for stopping said carriage at any predetermined point, said catch mechanism being adapted to stop the carriage in a series of positions grouped periodically, whereby in printing various amounts in columnated order the numerals of like denomination will be in vertical order and so grouped as to have the separating spaces or points in proper position.

16. In a type-writing machine, the combination, with the paper-carriage, of a variable-catch mechanism for stopping said carriage at any predetermined point, said catch mechanism being carried by the carriage and under the control of the operator's hand used for moving the carriage and adapted to stop the carriage in a series of positions grouped periodically, whereby in printing various amounts in columnated order the numerals of like denomination will be in vertical order and so grouped as to have the separating spaces or points in proper position.

17. In a type-writing machine, the combination of a stop connected with the frame of the machine and a variable catch-pin for engaging said stop and means for varying the position of said pin that is controlled by the hand of the operator used for moving the carriage.

18. In a type-writing machine, the combination of a stop connected with the frame of the machine and a variable catch-pin for engaging said stop, and means for varying the position of said pin that is controlled by the hand of the operator used for moving the carriage, and a spring for automatically returning the said pin to its normal position when said varying means are released by the operator.

19. In a type-writing machine, the combination of a variable stop connected with the frame of the machine and a variable catch-pin for engaging said stop and means for varying the position of said pin that is controlled by the hand of the operator used for moving the carriage.

20. In a type-writing machine, the combination of a variable stop connected with the frame of the machine and a variable catch-pin for engaging said stop, and means for varying the position of said pin that is controlled by the hand of the operator used for moving the carriage, and a spring for automatically returning the said pin to its normal position when said varying means are released by the operator.

21. In a type-writing machine, the combination of a stop connected with the frame of the machine and a variable catch-pin for engaging said stop, a graduated scale for indicating the proper points for adjusting said pin, which scale-points are arranged in periodical groups for the purposes mentioned, and means for varying the position of said pin that are under the control of the operator's hand used in moving the carriage.

22. In a type-writing machine, the combination of a variable stop connected with the frame of the machine and a variable catch-pin for engaging said stop, a graduated scale for indicating the proper points for adjusting said pin, which scale-points are arranged in periodical groups for the purposes mentioned, and means for varying the position of said pin that are under the control of the operator's hand used in moving the carriage.

23. In a type-writing machine, the combination of a stop connected with the frame of the machine and a variable catch-pin for engaging said stop, a graduated scale for indicating the proper points for adjusting said pin, which scale-points are arranged in periodical groups for the purposes mentioned, and means for varying the position of said pin that are under the control of the operator's hand used in moving the carriage, and a spring for automatically returning the said pin to normal when said varying means are released by the operator.

24. In a type-writing machine, the combination of a variable stop connected with the frame of the machine and a variable catch-pin for engaging said stop, a graduated scale for indicating the proper points for adjusting said pin, which scale-points are arranged in periodical groups for the purposes mentioned, and means for varying the position of said pin that are under the control of the operator's hand used in moving the carriage, and a spring for automatically returning the said pin to normal when said varying means are released by the operator.

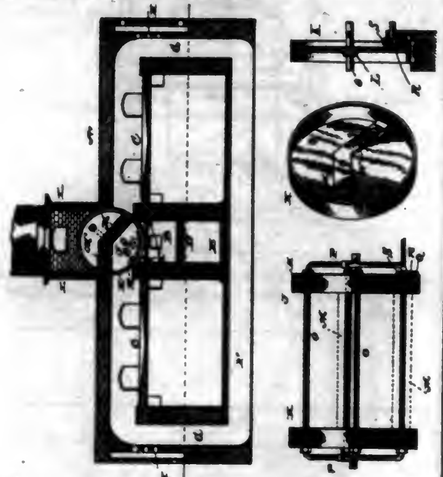
25. In a type-writing machine, the combination of the stop-bar D, connected to the frame of the machine, the variable stop D' on said bar, the frame-piece C C′, detachably connected with the paper-carriage frame and having a notched slot in the part C thereof, the sliding bar C^3, the said frame-piece, the spring C^2 for reacting said bar, and the catch-pin c^4, carried by said bar.

26. In a type-writing machine, the combination of the stop-bar D, connected to the frame of the machine, the variable stop D' on said bar, the frame-piece C C′, detachably connected with the paper-carriage frame and having a slot in the part C thereof, having notches 1 2 3 4, &c., therein arranged in groups with double-width spaces between the said groups, the sliding bar C^3 in said frame-piece, the spring C^2 for reacting said bar, and the catch-pin c^4, carried by said bar.

27. In a type-writing machine, the combination of a bar or frame having teeth and a stop adjustable upon said bar or frame and having a lip engaging with said teeth, which holds said stop against movement in one direction, and a catch normally out of the path of said stop.

28. In a type-writing machine, the combination of a frame, a carriage having a predetermined traverse on said frame, and a movable stop normally in the path of traverse and to temporarily stop the carriage before the end of its movement, said movable stop having a lip which engages with the fixed stop when the carriage is moved to the left, and an inclined face which engages the fixed stop to throw the movable stop out of line with the fixed slot when the carriage is moved to the right.

472,697. FURNACE. SIMEON BURR, Belleville, Ill. Filed Nov. 14, 1891. Serial No. 411,917. (No model.)



Claim.—1. A furnace for treating iron and steel, having a central fire-chamber, lateral metal-supporting beds extending therefrom, flues leading from the ends of said beds, and a rotary damper above the fire-chamber and between the said beds, adapted to divert the products of combustion from either bed.

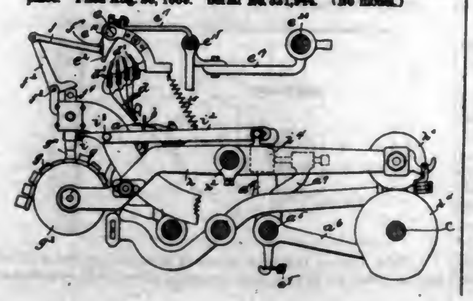
2. A furnace for treating iron and steel, having a central fire-chamber, lateral metal-supporting beds extending therefrom, vertical flues at the ends of the said beds, communicating with the spaces above the same, a bottom return-flue passing below the beds and connecting the said vertical flues, an escape flue or chimney, and a damper arranged between the beds and adapted to divert the products of combustion from either bed.

3. The combination, with the furnace having the central fire-chamber, the lateral beds, and flues to carry the products of combustion from said beds, of the rollers mounted in the end walls of the furnace and the rotary damper resting upon the said rollers and extending over the fire-chamber and adapted to divert the products of combustion from either bed.

4. The combination, with the furnace having a central fire-chamber, lateral beds extending therefrom, and flues leading from the said beds, of the rotary damper arranged above the fire-chamber and adapted to divert the products of combustion from either bed and consisting of end disks mounted in the end walls of the furnace and a substantially V-shaped partition secured to and extending between the said disks.

5. The combination, with the furnace having a central fire-chamber, lateral beds extending therefrom, and flues leading from the said beds, of the damper arranged above the fire-chamber and adapted to divert the products of combustion from either bed and consisting of end disks and a V-shaped partition extending between the same and cooling-pipes extending between the pipes and securing the parts together.

472,698. STRAIGHT-KNITTING MACHINE. WALTER COOLE, Waltham, Mass., assignor to the Boston Manufacturing Company, same place. Filed Aug. 26, 1889. Serial No. 321,944. (No model.)



Claim.—In a knitting-machine, the combination of a gang of needles and means for actuating the same, a series of yarn-carriers for supplying the different yarns to the said needles and an actuator for said yarn-carriers, and a pattern and connections between said pattern and said actuator, whereby the latter is caused to engage with the yarn-carrier determined by the pattern, and a pattern projection that permits the actuator to traverse its whole course without engaging any yarn-carrier, and an obstruction operated by said pattern projection that prevents the needles from operating in the operation of the machine when the actuator traverses without engaging any yarn-carrier, substantially as and for the purpose described.

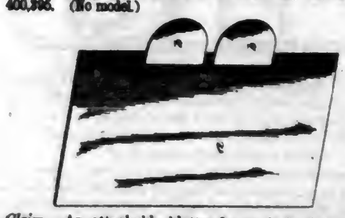
472,699. ILLUMINATING-TILE. LOUIS H. DAVENPORT, New York, N. Y. Filed Feb. 6, 1892. Serial No. 420,822. (No model.)



Claim.—1. An illuminating-lens for tiles, composed of a glass body and a sheet-metal thimble that is tightly applied to the body of the lens and provided with an inwardly-bent protecting top flange and an inwardly-bent retaining bottom flange for the lens, substantially as set forth.

2. The combination, with a supporting tile-frame having bottom openings, of illuminating-lenses provided with tightly-fitting sheet-metal thimbles having overlapping top and bottom flanges, and cement fillings between the frame and incased lenses, substantially as set forth.

472,700. ATTACHABLE BLOTTER FOR USE IN BANK-BOOKS, &c. CHARLES DAVIS, Easton, Pa. Filed July 23, 1891. Serial No. 400,395. (No model.)

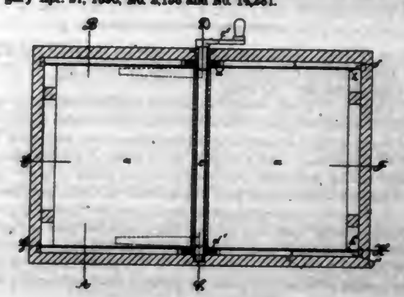


Claim.—An attachable blotter for use in bank-books and other blank books, consisting of a suitable number of sheets or pieces of blotting-paper provided with a suitable number of tabs or tongues attached to the blotting-paper and of sufficiently stiff but flexible and tough material to adapt them to be engaged with the book between its leaves or binding medium to hold the blotter in place and admit of the blotter being transferred from place to place in the book, substantially as described.

472,701. PROCESS OF TAWING HIDES. HERMANN ENDEMANN, Brooklyn, N. Y., assignor to William Zahn, Newark, N. J. Filed Nov. 10, 1891. Serial No. 411,439. (Specimens.)

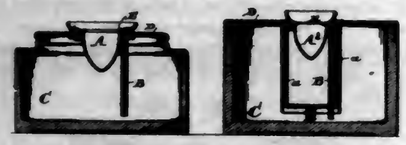
Claim.—The process herein described of tawing hides, which consists in treating the same with a chrome solution and then subjecting them to the action of a solution of cuprous salt, substantially as set forth.

472,702. PHOTOGRAPHIC PLATE-CHANGING APPARATUS. FRIEDRICH A. FICHTNER, Dresden, Germany. Filed Sept. 11, 1890. Serial No. 364,783. (No model.) Patented in Germany Nov. 9, 1889, No. 51,977; in England Jan. 15, 1890, No. 765; in Belgium Jan. 16, 1890, No. 89,183; in France Mar. 15, 1890, No. 202,756, and in Austria-Hungary Apr. 27, 1890, No. 2,138 and No. 14,281.



Claim.—A photographic camera having two separated compartments, each capable of holding a plurality of plates, said compartments communicating with each other at both their front and rear ends by means of apertures or ports sufficient in size to permit the edgewise passage of the plates, movable slides or carriers consisting of racks *e d f f'*, the racks *e* and *d* moving back and forth in line with the front one of said ports or apertures and the other racks *f f'* moving back and forth in line with the rear one of said ports or apertures, and means for reciprocating said slides or carriers, said means consisting of a rotary shaft *c*, carrying toothed wheels *d d'*, said toothed wheel *d* engaging at diametrically-opposite points with said racks *e f* and said toothed wheel *d'* engaging at diametrically-opposite points with said racks *d' f'*, whereby when said shaft is rotated said racks *e d* move in one direction and said racks *f f'* move in the opposite direction, and said racks *e d f f'* having spring-catches *g g' h h'*, respectively, which engage the plates, in combination with springs *b b* in both of said compartments, which maintain the plates in one compartment in such position that the rear plate registers with the rear one of said ports or apertures and is located so as to be acted upon by the rear racks *f f'* and which maintain the plates in the other compartment in such position that the front plate registers with the front one of said ports or apertures and is located so as to be acted upon by the front racks *e d*, substantially as set forth.

472,708. FOUNTAIN-INKSTAND. ALFRED GASKILL, Millville, N. J. Filed Feb. 6, 1892. Serial No. 420,575. (No model.)



Claim.—1. The combination of an ink-well provided with a cover sealing said well, devices for intermittently compressing the air in said well, an ink-conductor leading from the ink in the well into the ink-cup, and an ink-cup containing provisions for automatically retaining the ink in the ink-cup, substantially as described.

2. The combination of an ink-well, a cover sealing said well, devices actuated by the insertion of the pen intermittently compressing the air in said ink-well, an ink-conductor leading from the ink in the ink-well into the ink-cup, and an ink-cup containing provisions for retaining the ink therein independently of the upward movement of the ink in the ink-conductor, substantially as described.

3. The combination of an ink-well, an elastic cover sealing said ink-well and operating by its depression to cause a compression of the air above the ink in the ink-well, an ink-conductor leading from the ink in the ink-well into the ink-cup, and an ink-cup containing provisions for retaining the ink in the ink-cup independently of the upward movement of the ink in the ink-conductor, substantially as described.

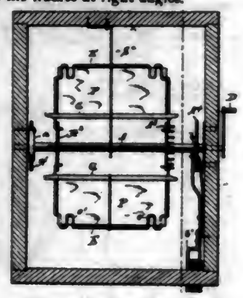
4. The combination, in a fountain-inkstand, of an ink-well, a cover hermetically sealing said ink-well, an ink-cup secured thereto and moving therewith and depressible by the insertion of the pen, an ink-conductor leading from the ink-cup into the ink-well, and provisions in said ink-cup for retaining the ink therein independently of the spring of the ink in the ink-conductor, substantially as described.

5. The combination of an ink-well, a cover sealing said ink-well and provided with a depressible funnel, a cup containing provisions for automatically retaining the ink in the ink-cup independently of the force injecting the ink into the same, and a conductor leading from the ink in the ink-well into the ink-cup, all said parts operating to compress the air above the ink in the ink-well and force the ink upward into the ink-cup, substantially as described.

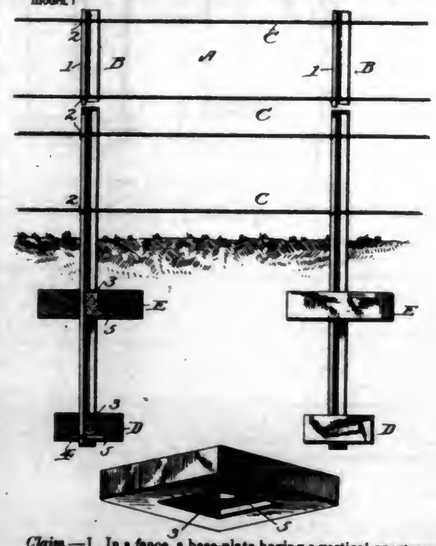
472,704. COIN-CONTROLLED PICTURE OR SURFACE EXHIBITOR. MILTON O. GRENWOLD, Rock Island, Ill. Filed May 14, 1891. Serial No. 392,754. (No model.)

Claim.—1. A coin-controlled picture-exhibitor consisting of the spring-actuated coin-lever, the detent-cam disk mounted upon a shaft, said shaft carrying a picture-holder consisting of two perforated disks, one of which has a series of pins, and a series of picture holders or frames having their ends bent inward to form hooks or feet to engage with said perforations and pins, substantially as shown and described.

2. In a coin-controlled locking mechanism for displaying pictures, a picture-carrier consisting of two disks mounted upon a shaft and perforated near their peripheries, one of said disks having a series of pins, picture holders or frames made in one piece, having their ends bent inward to form hooks, the top pieces or cross-bars having formed therein rectangular clamps, and a spring suspended above said cross-bars to present the frames at right angles.



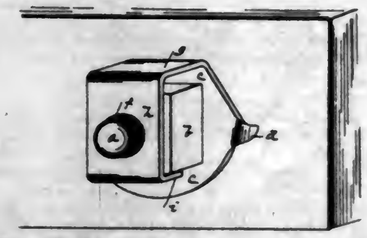
472,705. FENCE-POST. LAWRENCE HEILAND and CHARLES E. BROWSON, Defiance, Ohio. Filed Oct. 30, 1891. Serial No. 410,339. (No model.)



Claim.—1. In a fence, a base-plate having a vertical aperture and a recess in its under side surrounding the aperture, said recess being larger than the aperture, an anchor-plate having a like aperture and recess, an angular post passed through the apertures in the respective plates, and a suitable cement filling within the apertures and the recesses for holding the posts in position.

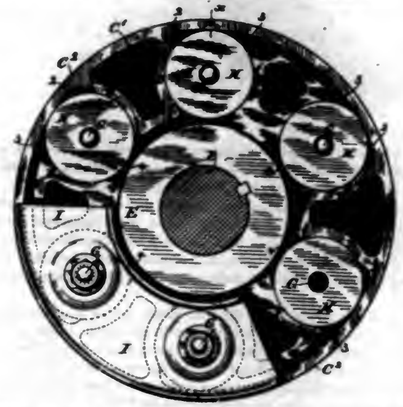
2. In a fence, a base-plate having a vertical aperture and a rectangular recess in its under side surrounding the aperture, an anchor-plate having a like aperture and recess, an L-shaped post resting in the apertures in the respective plates and keyed to the base-plate, and a cement filling within the apertures and the recesses.

472,706. NUT-LOCK. ELIAS M. HILL, Pittsburg, Pa., assignor of one-half to Henry Bradly, same place. Filed Jan. 7, 1891. Serial No. 377,062. (No model.)



Claim.—As an improved article of manufacture, the herein-described device for locking nuts, consisting of the broad base-washer *c*, having an opening for the passage of the bolt and formed at its opposite sides with the barbs *d*, and the oblong piece extending from said part *c* at right angles to the barbs, bent to form the horizontal part *g*, adapted to extend along one side of the nut, the vertical part *h*, adapted to closely engage the outer surface of the nut and formed with an opening for the passage of the bolt, and the horizontal part *i* for closely engaging the other side of said nut, all substantially as shown and described.

472,707. COUPLING. CHARLES W. HUNT, West New Brighton, N. Y. Filed Oct. 6, 1891. Serial No. 407,836. (No model.)



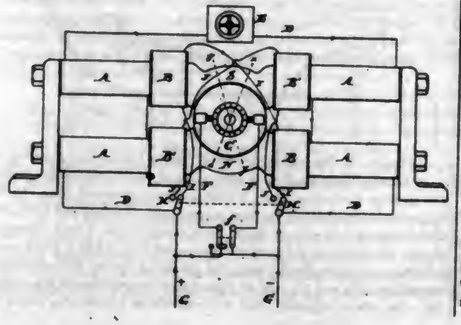
Claim.—1. The combination, in a coupling, of two hubs and similar segmental partitions connected with the respective hubs, the opposite faces of the partitions being concave, and a circular range of cylindrical rubber springs between the respective segmental partitions and adapted to act with uniformity when the shafts are rotated in either direction, substantially as specified.

2. The combination, with two hubs and their shafts, of similar flanges connected with the respective hubs and alternating with each other and a circular range of similar rubber springs pressed tightly into the uniform spaces between the flanges, so that the coupling acts uniformly in either direction and the metallic parts do not come into contact to interfere with the elasticity of the coupling in any direction, substantially as specified.

3. The combination, in a coupling, of hubs secured to the respective portions of the shafting, segmental partitions upon the respective hubs, the partitions of one hub coming between the partitions on the other hub, cylindrical rubber springs between the segmental partitions, bolts passing through the rubber springs, and a cover secured by such bolts, substantially as set forth.

4. The combination, in a coupling, of hubs to be connected to the respective parts of the shafting, segmental partitions upon such hubs, a disk and rim connected with one set of segmental partitions rubber springs introduced between the pairs of segmental partitions, a cover, and bolts passing through the cover and through the springs, there being concave recesses in the inner face of the cover and disk, respectively, at the ends of the springs, substantially as set forth.

472,708. ELECTRIC MOTOR OR GENERATOR. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Nov. 12, 1891. Serial No. 411,672. (No model.)



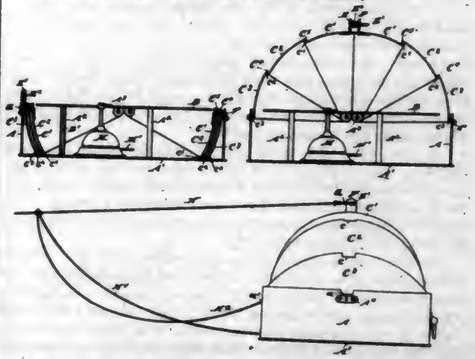
Claim.—1. An electric motor or generator having a revolving armature arranged between two poles, combined with distorting-coils upon the field-magnets, electric circuits independent of the armature for causing the current to flow through the said distorting-coils, and switches independent of the armature-circuit for controlling the flow of the current through the said coils, whereby the magnetic poles of the electric motor or generator may be distorted to permit the reversal of the armature or change of speed thereof without shifting the brushes.

2. In an electric motor or generator, the combination of two horseshoe field-magnets uniting in the polar portions thereof, a revolving armature arranged between the polar portions, polar distorting-coils arranged upon each of the horseshoe-magnets adjacent to the poles and coupled diagonally in pairs, and independent switches to cause the current to flow through said distorting-coils alternately in pairs, whereby the magnetic poles may be shifted or distorted upon changing the rotation of the armature of the speed thereof to avoid the necessity of shifting the brushes.

3. In an electric motor or dynamo, the combination of an armature, stationary brushes therefor, pole-pieces having four cores arranged in pairs, magnetizing-coils upon said cores to maintain the magnetic field of the machine, distorting-coils arranged upon the cores adjacent to the pole-pieces, and circuits and switches independent of the armature-circuit for causing the current to flow through said distorting-coils diagonally in pairs.

4. In an electric motor or dynamo, the combination of an armature, stationary brushes therefor, pole-pieces having four cores arranged in pairs, magnetizing-coils upon said cores to maintain the magnetic field of the machine, distorting-coils arranged upon the cores adjacent to the pole-pieces, and circuits and switches independent of the armature-circuit for causing a current to flow through said distorting-coils diagonally in pairs and maintain them in shunt relation with respect to the armature.

472,709. SPORTING-TRAP. PHILIP B. JOHNS, Lyndhurst, N. J. Filed Jan. 20, 1892. Serial No. 418,982. (No model.)



Claim.—1. In a sporting-trap, the combination, with the casing and the gravitating collapsing sections, of a sounding device, a cord connecting with the liberating means for said sections, and a cord with sufficient slack connected with the sounding device and with said cord, as set forth.

2. In a sporting-trap, the combination, with the case and the pivoted overlapping gravitating sections, with means for normally holding the same distended to cover the case, of a sounding device within the case and having a lever, a cord connected with the holding means for the sections, and a cord connected with said lever and with said cord and having a limited amount of slack, substantially as and for the purpose specified.

3. In a sporting-trap, the sections $C' C^3 C^3$, falling one within the other and normally held distended, in combination with the casing A and with a sound-producing device, as the bell M, connected with and operated by the means that liberate the sections, substantially as herein specified.

4. In a sporting-trap, the collapsing sections $C' C^3 C^3$, in combination with the casing A, centers A^2 A^3, platform B, and bell M, connected with the section-liberating device, substantially as herein specified.

5. In a sporting-trap, the sections $C' C^3 C^3$, the engaging flanges $c' c^3$ and lips $C^4 C^5$, and the centers A^2 A^3, in combination with each other and with the lugs on the uppermost sections, the pin E', passed through said lugs, spring E^3, latch-pin G, passed through said pin E', and the bolt A^4, substantially as herein specified.

6. In a sporting-trap, the sections C^1 C^2 C^3, turning on the centers A^1 A^2, in combination with the casing A A', platform B, pin E', spring F^2, latch-pin G, the bell M, and cords H and H', connected with the bell and with the pin G and with each other, all arranged to serve substantially as herein specified.

7. In a sporting-trap, the combination, with the case and the pivoted sections, the lower ones of which have flanges, of the movable bolt A^4, engaging the said flange, whereby said section may be raised to introduce a bird, as set forth.

472,710. **DISK HARROW.** THOMAS MAXON, Dayton, Ohio. Filed Sept. 14, 1891. Serial No. 405,948. (No model.)



Claim.—1. The combination of two gangs of disks provided with concave sockets and axial recesses in their inner ends, a ball suspended between said gangs and adapted to fit within said sockets, and tubes swivelly or flexibly connected to said ball at diametrically-opposite points, said tubes fitting and revolving within the axial recesses in the gangs, substantially as described.

2. The combination of two disk gangs provided with axial recesses in their adjacent ends, a revoluble hollow ball suspended between the ends of the gangs and adapted to receive the inward thrust of the same, and tubes swivelly connected to the ball at diametrically-opposite points, said tubes fitting and working loosely in the axial recesses in the gangs, whereby the gangs will be free to move independently in an endwise direction and also revolve independently of each other, substantially as described.

3. The combination of the gangs having cylindrical recesses in their inner ends, a ball suspended between the inner ends of the gangs, and tubes connected to said ball at diametrically-opposite points by a swivel connection, said tubes sliding and turning in the recesses in the ends of the gangs and having their outer ends concaved to fit against the ball, substantially as described.

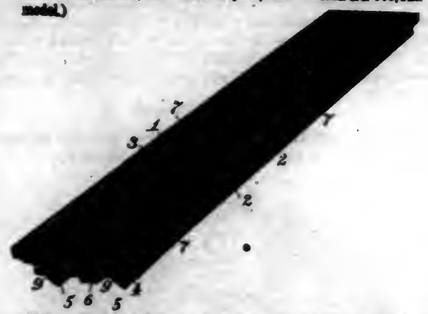
4. The combination of the gangs consisting each of a series of disks mounted upon a bolt and clamped between spacing-sleeves, the inner spacing-sleeves being provided with axial recesses extending outwardly, flanged socket-tubes *e*, fitting in said recesses and secured therein by the gang-bolts, the inner ends of these socket-tubes being provided with concave depressions *e'*, and a hollow ball *f*, suspended between the gangs and carrying tubes working freely in the socket-tubes, substantially as described.

472,711. **SHOE.** ELBRIDGE G. MILLS, San Francisco, Cal. Filed Feb. 2, 1892. Serial No. 420,066. (No model.)



Claim.—The herein-described improved shoe, consisting of the vamp and instep-piece A E, the quarter B B', the filling-piece C, the sole D, quilted directly to the vamp and quarter, and the loops and lacing G *g*, all constructed and fitted together as hereinbefore set forth, and illustrated in the accompanying drawings.

472,712. **BED FOR METAL-WORKING MACHINES.** JOHN MCKENNA, Johnstown, Pa. Filed July 14, 1891. Serial No. 399,442. (No model.)

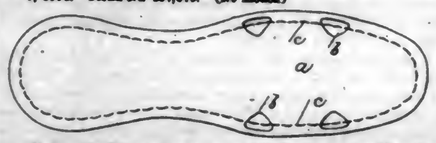


Claim.—1. A bed for metal-working machines, provided with a series of bolt-slots and with open-ended pockets extending under said slots and connected therewith, substantially as set forth.

2. A bed for metal-working machines, having in combination a main bed provided with bolt-slots and an imperforate bed arranged below and a short distance from the main bed, thereby forming a series of open-ended pockets for the reception of chips or other foreign matter passing through the slots in the main bed, substantially as set forth.

3. A bed for metal-working machines, having in combination an upper or main bed provided with bolt-slots and an imperforate bed arranged below and a short distance from the main bed, thereby forming a series of open-ended pockets for the reception of chips or other foreign matter passing through said slots, said beds being formed integral with each other, substantially as set forth.

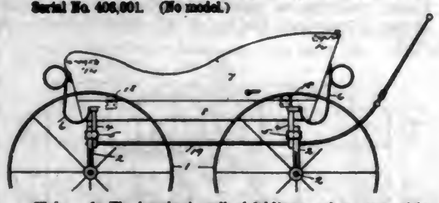
472,713. **INSOLE.** EDWARD H. NOBLE, Salem, Mass. Filed Oct. 5, 1891. Serial No. 407,879. (No model.)



Claim.—1 The improved inner sole having a plurality of short recesses formed in each side thereof and transversely of the sole and in the line of the stitches or fastenings securing said sole, each of said recesses being of varying width, its widest portion being wider than one of the stitches or fastenings or parts of stitches or fastenings uniting the inner and outer soles, leaving the edge of the sole substantially continuous or unbroken, for the purpose set forth.

2. The improved inner sole having a plurality of short recesses formed in each side thereof and in the line of the stitches or fastenings securing said sole, each of said recesses being wider than one of the stitches or fastenings or parts of stitches or fastenings uniting the inner and outer soles, the material of the said inner sole outside the line of stitches or fastenings projecting or extending between the recesses and the edge of the sole to form a support for the shoe-upper.

472,714. **BABY-CARRIAGE.** DAVID REES, Pittsburg, assignor of one-half to Patrick Burrow, Allegheny County, Pa. Filed Oct. 13, 1891. Serial No. 408,601. (No model.)

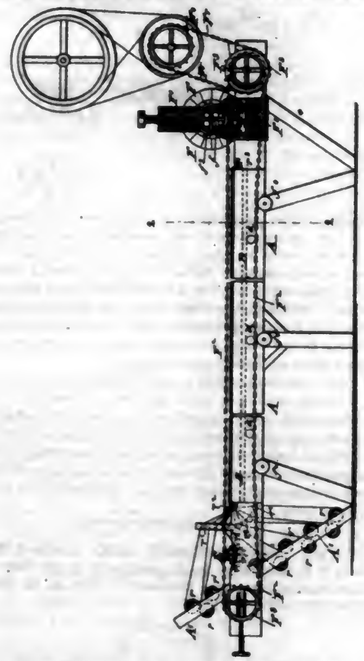


Claim.—1. The herein-described folding carriage, comprising the body having inwardly-folding side and end pieces, means for holding the same in vertical position, a folding seat within said body, the carriage frame, wheels, and springs connecting said frame and body, said springs being pivoted at their lower ends to said frame, extending thence downward a short distance around and up to a point about midway the height of said body, and formed at the top with outwardly-extending coils and pivoted at their upper extremities to the ends of the side pieces, whereby they are capable of assuming a horizontal

position, so as to not interfere with the folding of the side pieces, substantially as described.

2. In a folding carriage, the combination, with the wheels, of vertical pieces 2, having horizontal portions at their lower ends, to which latter said wheels are journaled, and the vertical and horizontal pieces 4, connected together at their ends and having pivoted to them at their points of junction the pieces 2, whereby the same may be folded beneath them and the wheels will lie closely against their under side, and sliding sleeves on said vertical pieces 4, adapted to engage the upper ends of said pieces 2 and hold the same and the wheels in vertical position.

472,715. **CLOTH-CUTTING MACHINE.** HERMANN G. ROSOWSKI, New York, N. Y. Filed May 14, 1891. Serial No. 392,659. (No model.)



Claim.—1. The combination of a supporting-frame having a horizontal table provided with a number of vertical slots, cutting-knives arranged in sections and provided with L-shaped bottom flanges resting on the table, vertical fastening screw-bolts passing through said flanges and certain of the slots in the table, and spring-cushioned pattern-plates located in proximity to the knives and having depending stems passing through other of said slots, substantially as set forth.

2. The combination of a supporting-table, upright cutting-knives formed in sections and provided with bottom flanges, means for attaching said cutting-knives to the table in the form of a pattern, spring-cushioned pattern-plates arranged inside of the pattern formed by the cutting-knives, means for stretching the layers of fabric tightly over the pattern-plates, a pressure-roller, and means for moving the pressure-roller over the layers of fabric to be cut, substantially as set forth.

3. The combination of a supporting-table, upright cutting-knives attached to said table and arranged so as to form cutting frames or dies, spring-cushioned pattern-plates arranged inside of the cutting frames or dies, means for stretching the layers of fabric over the pattern-plates, and means for clamping the layers of fabric to the frame, substantially as set forth.

4. The combination of a supporting-table, upright cutting-knives forming cutting frames or dies, attached to the said table, spring-cushioned pattern-plates located inside of the dies formed by the cutting-knives, a traversing pressure-roller supported on standards guided on the supporting-frame, sprocket-wheels on the shafts of the pressure-roller, and endless chains for moving said pressure-roller over the fabrics, substantially as set forth.

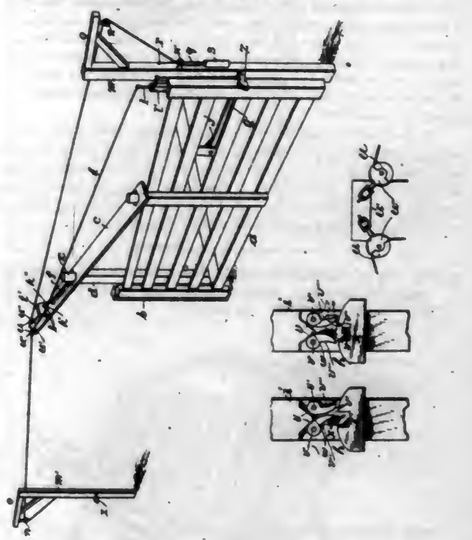
5. In a machine for cutting patterns from fabrics, the combination of a supporting-table provided with slots, cutting-dies formed of knives having bottom flanges, fastening-bolts passing through the flanges of the knives and the slots of the table for securing the cutting-knives to the table, and a metal band or hoop passing around the bodies of the knives in each die and having its ends connected, substantially as set forth.

6. In a machine for cutting patterns from fabrics, the combination of a supporting-table with cutting frames or dies formed of knife-sections attached to said table, said knife-sections being provided with groove-and-tongue joints at their adjacent ends, substantially as set forth.

7. The combination, with a supporting-table, upright cutting-knives forming pattern frames or dies, attached to said table, spring-cushioned pattern-plates arranged inside of the cutting frames or dies, a traversing frame provided with sprocket-wheels and spring-actuated clamping-jaws for moving the layers of fabrics over the pattern-plates, and endless chains for drawing the traversing frame over the pattern-plates, substantially as set forth.

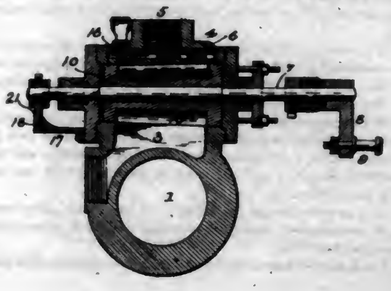
8. The combination, with a supporting-table, upright cutting frames or dies attached to said table, spring-cushioned pattern-plates arranged inside of said cutting-frames, guiding and stretching devices for the fabrics at one end of the supporting-table, a traversing frame provided with spring-actuated clamping-jaws for taking hold of the different layers of fabrics and stretching them over the pattern-plates, and means for clamping the fabrics arranged at the opposite end of the table, substantially as set forth.

472,716. **SWINGING GATE.** ALVA ROSE, Virden, Ill. Filed Aug. 28, 1891. Serial No. 404,132. (No model.)



Claim.—The combination, in a swinging gate, of a gate hinged to a gate-post and provided with an actuating-lever fulcrumed on a separate post at the rear of the gate-post, whereby increased leverage is obtained when the gate is open, swiveled pulleys attached to the rear of said lever, ropes passing over said pulleys and having their opposite ends connected to side posts, and a rope connecting them with a latch upon the gate, all arranged in the manner and for the purpose set forth.

472,717. **ROTARY VALVE.** MICHAEL ROTHFUSS, Williamsport, Pa. Filed Oct. 13, 1891. Serial No. 408,624. (No model.)



Claim.—In an oscillating valve, the combination, with the casing provided with steam inlet and induction and exhaust ports and with a curved partition or wall, of the valve having grooves and wings forming inlet and exhaust passages, the groove on the upper side closed at each end to form an oil-receptacle which is covered by the said curved partition, and an oil-passage in the casing and partition communicating with said oil-receptacle, substantially as and for the purpose set forth.

472,718. SNAP-HOOK. JOHN T. SMITH, Sabula, Iowa. Filed Oct. 27, 1891. Serial No. 410,005. (No model.)



Claim.—1. The herein-described hook, formed of a single piece of metal, the same consisting of a shank terminating at one end in an eye and having its opposite end bifurcated, which bifurcations are bent in reverse directions to form hooks and arranged in the same plane, the hook of one terminal being larger than and inclosing the hook of the opposite terminal, the two combining to form an intermediate space, substantially as specified.

2. The herein-described improved snap-hook, formed of a single piece of metal, the same consisting of a shank having its end bifurcated to form terminals, said terminals being bent in reverse directions to form hooks lying in the same plane, the hook of one terminal inclosing that of the other, the two combining to form an intermediate ring-passage, and the extremities of the hooks reduced to form spring-tongues and inwardly bent and terminating adjacent to the shanks of the hooks, whereby reduced entrances to the passages are formed, substantially as specified.

3. The herein-described improved snap-hook, formed of a single piece of metal, the same consisting of a shank having one of its ends bifurcated to form terminals, which are diverged and bent in reverse directions to form hooks lying in the same plane, the hook of one terminal inclosing that of the other and the two combining to form an intermediate ring-passage, substantially as specified.

472,719. MONEY-CHANGER. WILLIAM H. STAATS, Chicago, Ill., assignor of one-half to James F. Griffin, same place. Filed Aug. 10, 1891. Serial No. 402,343. (No model.)



Claim.—1. In a money-changer, the combination of the rod having hooked or hinged ends, a spring on end, an ejector-slide hinged to the rod, a key-lever having inclined ledge, and a coin-holder having rear lug, substantially as shown and described, and for the purpose set forth.

2. In a money-changer, the combination, with the coin-holder, of the rod connected to the coin-holder and provided with a pulley near its free end, and a key-lever arranged to bear against the pulley to operate the rod, substantially as described.

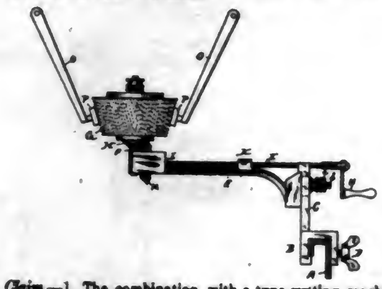
3. In a money-changer, the combination, with a coin-holder having a series of receptacles for the various coins, of a series of rods pivoted to said holder, a spring interposed between the holder and each rod, levers for operating the rods, and an ejector for each rod, substantially as described.

4. In a money-changer, the frame D in one piece, guide-braces d^3, lugs d^7, coin-seats d^7, flange d, and raised surface d^8, substantially as shown and described.

5. In a money-changer, the key-lever K, having shield d^4, inclined ledge a, and thumb-key t, arms r' r', and opening r, substantially as shown and described.

6. In a money-changer, the combination, with a coin-holder having lugs and a pivot-pin passing through the lugs, of a rod having hooks connected to said pivot-pin, and a spring interposed between the rod and the coin-holder, substantially as described.

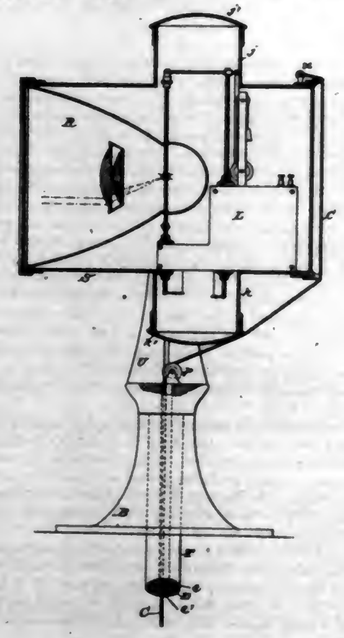
472,720. TYPE-CLEANING DEVICE FOR TYPE-WRITING MACHINES. THOMAS H. STAGEHOUSE, Philadelphia, Pa. Filed Jan. 2, 1892. Serial No. 416,735. (No model.)



Claim.—1. The combination, with a type-writing machine, of a guide carried by the frame of the machine, an arm carried by this guide and adapted to be raised or lowered on this guide, a set-screw or thumb-nut for clamping the said arm and guide, a vertical shaft upon the inside end of said arm, a conical brush and a gear-wheel carried by said vertical shaft, a shaft carried by said arm, a gear-wheel carried by said shaft and gearing into gear-wheel on said vertical shaft, and a crank for revolving said second shaft, all substantially as and for the purposes set forth.

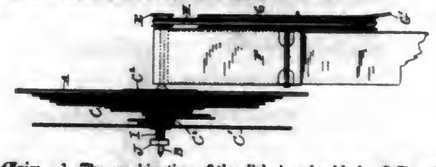
2. The combination, with a type-writing machine, of a conical brush, a vertical shaft upon which said brush is mounted, a horizontal shaft, gear-wheels upon said shafts meshing with each other, an operating-crank upon said horizontal shaft, a horizontal arm carrying said shafts and their connected parts, and means, substantially as described, for carrying this horizontal arm and for adjusting it and the horizontal shaft and their connected parts vertically, substantially as and for the purposes set forth.

472,721. ELECTRIC SEARCH-LIGHT. BARTON R. WARD, New York, N. Y., assignor, by mesne assignments, to the Scott Electrical Manufacturing Company, of New Jersey. Filed Jan. 13, 1890. Serial No. 336,791. (No model.)



Claim.—In a search-light, the cylinder S, provided with doors at each end and projections j and k, with removable caps j' k', in combination with reflector R and lamp L, frame U, base B, and shaft T, cord C, and pulley p, all arranged as described, with electrical connection, substantially as and for the purposes set forth.

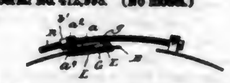
472,722. TOY. ALFRED WIGGINS, Worcester, Mass. Filed June 15, 1891. Serial No. 396,302. (No model.)



Claim.—1. The combination of the disk A, color-blades C C, and axis or spindle B with the separating-washers C^3, interposed between each of said color blades or cards, the adjustable stop J on spindle B, and spiral spring I or its equivalent, interposed between said stop and the color-blades, substantially as and for the purpose set forth.

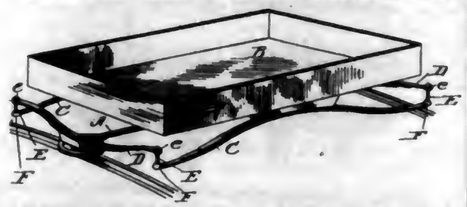
2. The disk A, color-blades C, axis or spindle B, the separating-washers C^3 between said color-blades, adjustable stop J, and spring I, said washers, stop, and spring being fitted on said axis or spindle, in combination with the drive-wheels G K, belt H, fitted thereover, operating-handle G', and the frame or support F, substantially as and for the purpose set forth.

472,723. FASTENING FOR TANK-BANDS. FRANK BERQUIST, Beloit, Wis., assignor to the Moline Pump Company, Moline, Ill. Filed Nov. 24, 1891. Serial No. 412,993. (No model.)



Claim.—A tank-lug having a flat bottom a', opposite sides a, uprising at right angles thereto, each of said sides having upon its inner face the full length thereof a trapezoidal recess G, and a transverse back piece a^3, firmly connecting the two sides, said back piece orificed for reception of a rod R and further provided with slot a^4 for free passage of tank-band D, all in combination with transverse movable rollers L, the opposite ends of which loosely lie within the side recesses, as and for the purpose intended, substantially as described.

472,724. VEHICLE-SPRING COUPLING. WILLIAM BOUGHTON, Mansfield, Ohio. Filed July 6, 1891. Serial No. 398,568. (No model.)



Claim.—1. In a vehicle-spring, the combination, with the parts C and D, having ball-sockets in their exterior sides, of a coupling-bar having a ball at one end to fit in a socket in one of the parts and having its other end threaded, and a part adjustable on the threaded end of the said bar and having a semi-spherical working face to work in the socket in the other part, substantially as and for the purpose described.

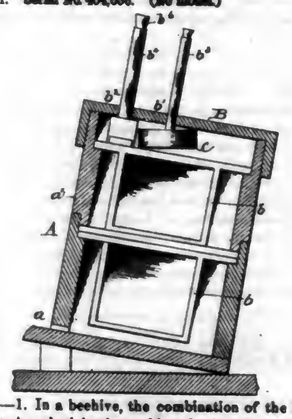
2. The combination, with the end springs D and the side springs C, having ball-sockets in their ends, of single straight coupling-bars having a ball at one end to fit in a socket of one of the springs and having the other end threaded, and parts adjustably mounted on the threaded ends of the said coupling-bars and having semi-spherical working faces to fit in the sockets of the other or corresponding parts, substantially as shown and described.

472,725. KNOB ATTACHMENT. CHARLES M. BURGESS, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Dec. 19, 1891. Serial No. 415,632. (No model.)

Claim.—The herein-described knob attachment, consisting of the two-part knob-spindle with confronting oblique faces, the knob having a socket for said spindle, and a fastening device located in the shank of said knob and bearing upon one of the right-angular side faces of said two-part spindle to force its parts together, substantially as described, and for the purpose specified.



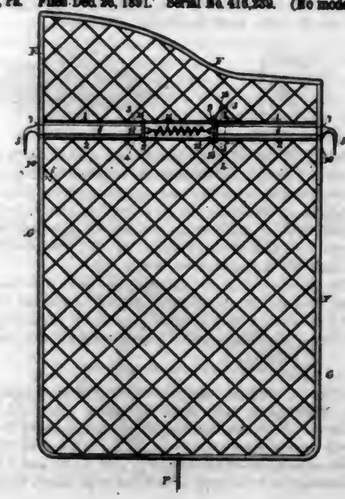
472,726. BEEHIVE. GREEN H. BYRUM, Murray, Ky. Filed Aug. 28, 1891. Serial No. 404,036. (No model.)



Claim.—1. In a beehive, the combination of the hive consisting of the parts A and a', having rabbeted edges, honey-frames b, suspended in said rabbets, cap B, fitting on the top of the hive and provided with perforation b' and leaving a space between the upper honey-frames and the head of said cap, and the feeding device, as described, one side of the lower face of the drum resting on the upper honey-frames and its tube b^3 passing through and fitting tightly in perforation b', substantially as shown and described.

2. In a beehive, the combination of the hive consisting of the parts A and a', having rabbeted edges, honey-frames b, suspended in said rabbets, cap B, fitting on the top of the hive and provided with perforations b' and b^4 and leaving a space between the upper honey-frames and the head of said cap, the feeding device, as described, one side of the lower face of the drum resting on the upper honey-frames and its tube b^3 passing through and fitting tightly in perforation b', and the ventilating device D, as described, its side flanges resting on the upper cross-pieces of the honey-frames and its tube b^4 passing through and fitting tightly in perforation b^4, substantially as shown and described.

472,727. GATE FOR CAR-PLATFORMS. HENRY COCHRAN, Chester, Pa. Filed Dec. 26, 1891. Serial No. 416,339. (No model.)



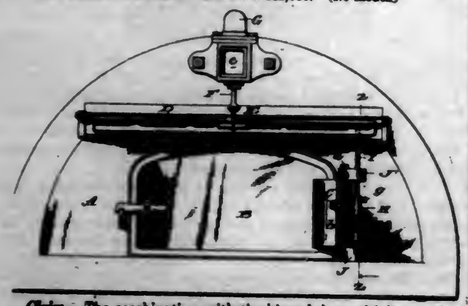
Claim.—1. A gate for car-platforms, comprising a frame, cross-bars between the sides thereof, and a body, combined with hooks having straight bodies sliding through apertures in the frame and moving between the cross-bars, shoulders near the outer ends of the bodies and standing outside the frame, eyes at the inner ends of said bodies, and a contractile spring connecting the eyes, all as and for the purpose set forth.

2. A gate for car-platforms, comprising a frame, two cross-bars within the frame and provided with vertically-aligned slots, and a body also within the frame, combined with hooks having straight bodies sliding in apertures in the frame and moving between the cross-bars, said bodies having reduced shanks and eyes at their inner ends, a contractile spring connecting said eyes, and a guide-plate mounted on each shank with its ends sliding in the slots of the cross-bars, all as and for the purpose set forth.

3. A gate for car-platforms, comprising a frame, cross-bars within the frame and arranged in a pair having two slots in its length, and a body also within the frame, combined with hooks having straight rectangular bodies sliding in apertures in the frame and moving between said bars, shoulders near the outer ends of said bodies and standing outside the frame, reduced shanks and eyes at the inner ends of said bodies, a contractile spring connecting said eyes, and a guide-plate having a hole through its body and mounted on each shank, the ends of the plate sliding between the adjacent faces of the cross-bars and having extensions moving in the slots thereof and with headed outer ends, all as and for the purpose hereinbefore set forth.

4. A gate for car-platforms, comprising a frame, hooks at each side thereof and sliding in ways provided on the frame, and a spring connecting the inner ends of the hooks, substantially as described.

472,728. FURNACE. WARD DECKER and JOHN P. BELL, Owego, N. Y. Filed Nov. 23, 1891. Serial No. 412,819. (No model.)



Claim.—The combination, with the hinged door with its rounded projection *b* at its pintle side working between the pintle-lugs and provided with a cam-lug, of the hinged damper, the vertically-movable notched sleeve, and the vertically-adjustable rod carried by said sleeve, as and for the purposes specified.

472,729. JOURNAL-BOX. WILLIAM R. HOSFORD, Mishawaka, Ind. Filed Dec. 30, 1891. Serial No. 416,547. (No model.)



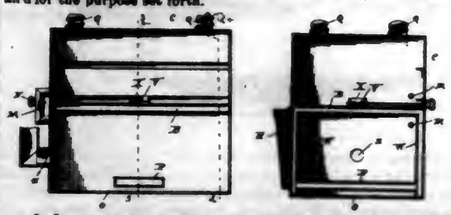
Claim.—1. A self-adjusting journal-box provided with a removable cap having on its inner surface lugs or plates G, substantially for the purpose set forth, combined with a self-adjusting journal-box in two parts C D, as described, the part D being provided with a restraining leg or pin F, adapted to rest between said restraining lugs, plates, or surfaces and thereby restrain the said box from revolution with the shaft, for the purpose set forth.

2. The pillow-block A and its cap B, provided with the plates G G, pendent from the inner surface of said cap, combined with a self-adjusting journal-box C D, provided with a stud F, projecting upward from the upper part D of said box between said pendent plates.

472,730. STEAM COOKING-STOVE. WILL S. JAMES, Abilene, Tex. Filed Feb. 10, 1891. Serial No. 380,940. (No model.)

Claim.—1. In a stove, the combination, with a casing divided vertically by a transverse boiler-body, chambers in the sides of the lower half of the casing, communicating with said body, and a transverse pipe connecting the lower ends of said chambers across the bottom of the casing, of a heat-inlet opening in the bottom of the casing below said pipe, an exit-opening in the rear of the casing, and an oven within the casing between said chambers, as and for the purpose set forth.

2. In a stove, the combination, with a casing having an oven in its lower section, a water-boiler surrounding the oven, and a heat-inlet opening in the bottom and a heat-outlet opening in the rear of said casing, of a steaming-chamber in the upper section of said casing, an opening in the boiler, controlled by a valve extending to the exterior of the casing, and steam-outlet openings in the top of the casing, as and for the purpose set forth.

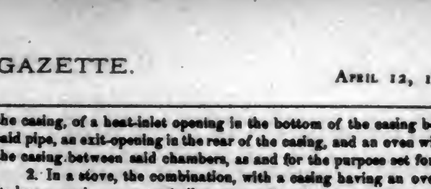


3. In a stove, the combination, with a casing having an oven in its lower section, a water-boiler surrounding the oven, a heat-inlet opening in the bottom and a heat-outlet opening in the rear of said casing, a steaming-chamber in the upper section of the casing, an opening from the boiler-body to said upper section for admitting steam thereto, and steam-outlet openings in the top of the casing, of a communicating pipe connecting the two sections of the casing through the side walls thereof and a valve in said pipe, as and for the purpose set forth.

4. In a stove, the combination, with a casing having chambers in its side walls, a transverse pipe P, connecting said chambers above a heat-inlet opening H in the bottom of the casing, a boiler-body B, connecting the upper ends of said chambers, and an oven surrounded by such water-space, of a receptacle R upon the exterior of the casing, communicating with one of said chambers, but terminating at a point level with the bottom of the boiler-body, a faucet U in the lower end of one of said chambers, and a valved opening X in the top of the boiler-body, as and for the purpose set forth.

5. In a stove, the combination, with a casing having a steaming-chamber in its upper section, an oven in its lower section, and a water-space surrounding said oven and communicating by a valved opening with said steaming-chamber, of raised threaded collars Y in the top of the casing, having notches J in their upper ends and screw-caps Q removably mounted thereon, as and for the purpose hereinbefore set forth.

472,731. STEAM-BOILER. DANIEL KIRK, Pinksburg, Md. Filed May 26, 1891. Serial No. 393,981. (No model.)



Claim.—1. In a steam-boiler, the combination of the boiler-casing, the flue extending through the same, the jacket surrounding the flue, and the hollow bushings interposed between the ends of the flue and jacket and having the interior thereof communicating with the water-space inclosed between said jacket and flue, substantially as set forth.

2. In a steam-boiler, the combination of the boiler-casing, the flue extending through the same, the jacket surrounding the flue, and the rings or flanges arranged in the space between the flue and the jacket, substantially as set forth.

3. The combination of the boiler-casing, the flue extending through the same, the jacket surrounding the flue and having an upwardly-extending stand-pipe, the bushings between the ends of the flue and the jacket, and the ribs or flanges arranged in the space between said flue and jacket, substantially as set forth.

4. The combination of the boiler shell or casing, the flue extending through the same, the jacket surrounding the flue, pipes extending from the bottom of the boiler-casing through the furnace-wall and provided with blow-off cocks, and pipes extending from the annular space between the flue and the cap into the said pipes extending from the boiler-casing, substantially as and for the purpose set forth.

5. The combination of the boiler-casing, the pipes extending from the bottom of the same and having blow-off cocks at their outer ends, the flue extending through the boiler-casing, the jacket surrounding said flue, the ribs or flanges arranged in the annular space between the flue and the jacket, and the pipes extending from the latter into the pipes extending from the boiler-casing and nearly to the ends of said pipes, substantially as set forth.

6. The combination of the boiler-casing, the flue extending through the same, the jacket surrounding the flue, the ribs or flanges arranged in the annular space between the flue and the jacket, the upper portions of the said ribs or flanges being provided with recesses or cut-away portions, substantially as and for the purpose set forth.

7. The combination of the boiler-casing, the flue extending through the same, the jacket surrounding the flue and having an upwardly-extending stand-pipe, the ribs or flanges arranged in the annular space between the flue and the jacket and having recesses or cut-away portions in their upper sides, the pipes extending from the bottom of the boiler-casing and having blow-off cocks, the pipes extending from the spaces of the flue-jacket between the ribs or flanges and into the pipes extending from the boiler-casing, and means for supplying feed-water to the annular space between the flue and its surrounding jacket, substantially as and for the purpose set forth.

8. The combination of the boiler-casing, the flue extending through the same, the flue-jacket, and the hollow bushings of copper or equivalent material interposed between the ends of the flue and the jacket and having open ends communicating with the water-space between said flue and jacket and secured by means of rivets driven through the ends of said flue or jacket and through flanges upon the boiler-heads, substantially as set forth.

9. In a steam-boiler of the class described, the herein-described bushings, consisting of rings approximately U-shaped in cross-section and provided at their open inner ends with cross-bars connecting the sides or flanges of said bushings, substantially as set forth.

10. The herein-described annular bushing, provided with beads or flanges adapted to be upset into the adjacent joints for the purpose of calking the latter, substantially as set forth.

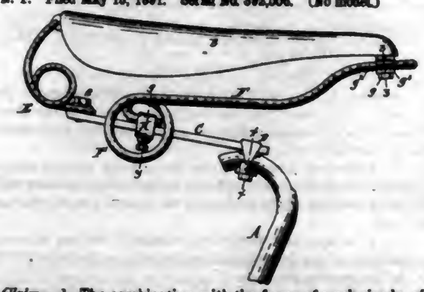
11. The combination, with the boiler-casing having heads provided with flanged openings, the flue, and the flue-jacket, of the bushings consisting of rings U-shaped in cross-section arranged between the ends of the flue and jacket, with their open ends facing the annular water-space between said flue and jacket, whereby the shanks of the connecting-rivets are surrounded by the water in said water-space, substantially as set forth.

12. The herein-described bushings, consisting, essentially, of rings approximately U-shaped in cross-section and provided on their outer sides with annular ribs or shoulders, substantially as and for the purpose set forth.

13. The combination of the boiler-casing having flanged heads, the flue extending through said casing, the flue-jacket, the bushings interposed between the ends of the flue and the jacket, and the tapering rivets connecting said bushings, flue, and jacket with the flanges of the boiler-head, said bushings being approximately U-shaped in cross-section, with their open ends facing the annular space between the flue and the jacket, substantially as and for the purpose set forth.

14. In a steam-boiler, the combination of the boiler-casing, the flue extending through the same, the jacket surrounding the same and having readily-removable extension-pieces fitted to flanged openings in the boiler-head, and the hollow bushings interposed between the ends of the flue and the jacket, substantially as set forth.

472,732. VELOCIPEDE-SADDLE. EMMIT G. LATTA, Friendship, N. Y. Filed May 13, 1891. Serial No. 392,558. (No model.)



Claim.—1. The combination, with the frame of a velocipede, of a reversible saddle-pillar made vertically adjustable on the velocipede-frame and having a curved or arc-shaped head, and a saddle supported upon the curved head of the saddle-pillar by an adjustable clip or clamp, whereby the saddle can be tilted by shifting the clip on the curved head of the saddle-pillar, substantially as set forth.

2. The combination, with a vertically-adjustable saddle-pillar having a curved or arc-shaped head, of a clip or clamp adjustably attached to the curved head of the saddle-pillar, and a saddle having a longitudinal base-plate adjustably secured in said clip, whereby the saddle can be moved forwardly and backwardly by sliding the base-plate in the clip and be tilted by shifting the clip on the curved head of the saddle-pillar, substantially as set forth.

3. The combination, with the saddle-support and the seat, of a longitudinal member or base-plate attached to the saddle-support, and independent springs supporting the front and rear ends of the seat and both attached to the base-plate in front of its connection to the saddle-support, substantially as set forth.

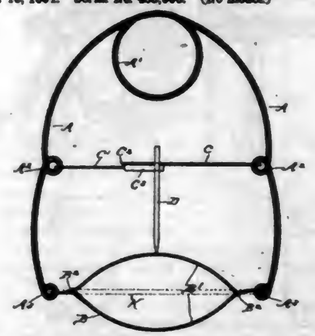
4. The combination, with the saddle pillar or support and the seat, of a longitudinal member or base-plate attached to the saddle-pillar, a front spring supporting the front portion of the saddle, and a rear spring supporting the rear portion of the saddle and made adjustable on the latter, whereby the rear spring and the seat may be shifted with reference to each other to change the leverage of the rear spring, substantially as set forth.

5. In a velocipede-saddle, the combination, with the seat and a longitudinal base-plate or member, of a spring supporting the front portion of the seat and made longitudinally adjustable on the base-plate, and an independent spring supporting the rear portion of the seat and made longitudinally adjustable both on the base-plate and the rear portion of the seat, substantially as set forth.

6. In a velocipede-saddle, the combination, with the seat and the longitudinal base-plate, of independent springs supporting the saddle at opposite ends and both curved forwardly and downwardly from the ends of the saddle and connected to the base-plate under the front portion of the saddle, substantially as set forth.

7. In a velocipede-saddle, the combination, with the seat and the longitudinal base-plate, of a spring attached to the base-plate and supporting the front portion of the seat, a rear spring attached at its front end to the base-plate and composed of a single length of doubled wire forming a longitudinal loop, and a clamping-bolt whereby said loop is adjustably attached to the cantle of the saddle, substantially as set forth.

472,733. ANIMAL-TRAP. ELLIOTT L. LEWIS, Troy, N. Y. Filed Sept. 16, 1891. Serial No. 405,848. (No model.)



Claim.—1. In a trap, the combination, with a spring-bow, of a noose connection between its ends, a detachable link connection between its arms, and a bait-trigger for detachably maintaining the link connection, substantially as described.

2. In an animal-trap, the combination, with a bow and a bow-string provided with a noose, of a bar-link hinged at one end to one arm of the bow and provided with a hook at the other end, a string-link secured at one end to the other arm of the bow and provided with a trigger-block, and a detachable trigger adapted to clamp the block and bar-link together, substantially as described.

472,734. CULTIVATOR. REUBEN H. LITTLE, Red Oak, Ga. Filed Jan. 29, 1892. Serial No. 419,701. (No model.)



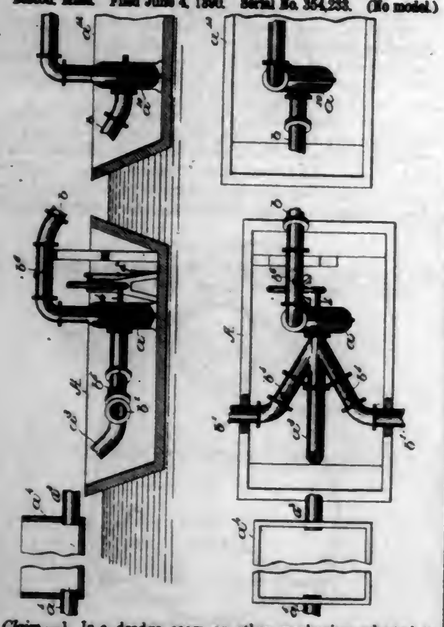
Claim.—1. In combination, the plow-foot, the guard or feeder rising vertically therefrom, and the horizontal bearing-plate extending outward from said guard, substantially as shown and described.

2. In combination with the plow-foot, the vertical guard or feeder and the bearer-plate attached to and projecting from the latter and adjustable to change its angle of inclination, substantially as and for the purpose described.

3. In combination, the plow-foot, the vertical guard having a horizontal extension, the bearer-plate projecting from said guard, having a vertical portion, and two bolts passing through such portion to attach said plate to the guard, the rear one of said bolts being passed through a slot in said portion, substantially as and for the purpose described

4. In combination with a plow-beam, a plow-standard having a U-shaped slotted clip engaging said beam, the bolt fastening the clip adjustably to the beam, and the second bolt in the rear of the clip serving as a center of motion for an adjustment of said standard, substantially as described, and for the purpose specified.

472,735. DREDGING APPARATUS. FREDERIC A. LOCKWOOD, Boston, Mass. Filed June 4, 1890. Serial No. 354,233. (No model.)



Claim.—1. In a dredge, scow, or other mechanism adapted to carry away dredge material, the combination of the following instrumentalities, viz: a hopper to receive dredge material, a pump a, having its inlet below said hopper, a pipe a^2 from said hopper to the pump-inlet, and a discharge-pipe b, substantially as described.

2. The combination, in a dredge, scow, or other mechanism adapted to carry away dredge material, of the following instrumentalities, viz: a hopper a^4 to receive dredge material, a pipe a^3 to supply a stream of water to said hopper, a pump a, having its inlet below said hopper, a pipe a^2 from said hopper to said pump-inlet, a water-inlet pipe b', having a valve b^3 and connected with the pipe a^3 below the water-level, and a discharge-pipe b, substantially as described.

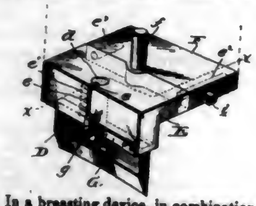
3. The combination, in a dredge, scow, or other mechanism adapted to carry away dredge material, of the following instrumentalities, viz: a hopper a^4 to receive dredge material, a pipe or conduit a^3 to supply a stream of water to said hopper, a pump a, having its inlet below said hopper, a pipe a^2 from said hopper to said pump-inlet, a discharge-pipe b, and an auxiliary pump a^{10} in the line of said discharge-pipe and adapted to operate without breaking the continuity of discharge from the pump a, substantially as described.

4. The combination, in a dredge, scow, or other mechanism adapted to carry away dredge material, of the following instrumentalities, viz: a hopper a^4 to receive dredge material, a pipe a^2 to supply a stream of water to said hopper, a pump a, having its inlet below said hopper, a pipe a^2 from said hopper to said pump-inlet, a water-inlet pipe b', having a valve b^3 and connected with the pipe a^3 below the water-level, a discharge-pipe b, an auxiliary pump a^{10} in the line of said discharge-pipe and adapted to operate without breaking the continuity of discharge from the pump a, and a check-valve b^4, substantially as described.

5. In a dredging or digging machine, the combination of an excavating device, a hopper into which the excavating device delivers the spoil, and a discharge-pump having its inlet below the hopper, whereby a supply of material to the pump will be caused by gravity or hydraulic head-pressure, and a discharge-pipe connected to the pump, through which the spoil is forced to any desired point of deposit.

6. In a dredge, scow, or other mechanism adapted to carry away dredge material, the combination of the following instrumentalities, viz: a hopper to receive dredge material, a pump having its inlet below said hopper, a conduit through which material is moved by gravity from said hopper into said pump, and a discharge-pipe, substantially as described.

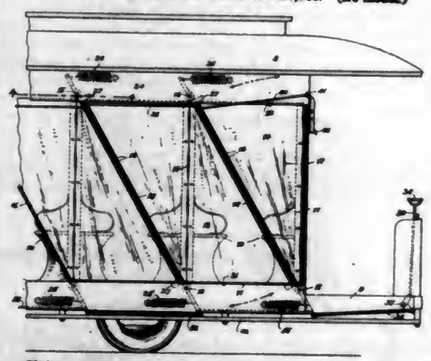
472,736. HEEL-BREASTING MACHINE. MORRIS C. LOCKWOOD, Vineland, N. J., assignor of five-sixths to Joseph Shiner and John Northrup, same place. Filed Feb. 8, 1892. Serial No. 420,737. (No model.)



Claim.—1. In a breasting device, in combination, a knife having a screw-threaded shank and a plate having a threaded opening for the latter, said plate having a slot extending from its surface to said shank to render the latter visible therethrough.

2. In a breasting device, in combination, a knife having a screw-threaded shank, a plate having a threaded opening for the latter and a slot extending from its surface to the shank, the latch device passing through said slot and engaging a slot in said shank, and a second plate connected to the first by means of rods or pins and having a shank for attachment to a suitable part of a heeling-machine.

472,737. STREET-CAR DOOR. FRANK MANSFIELD, New York, N. Y. Filed July 12, 1890. Serial No. 358,518. (No model.)



Claim.—1. A car-door comprising two sections hinged or pivoted at points at or near diagonally-opposite corners of the doorway, whereby the sections may meet on an inclined line when closed, for the purpose set forth.

2. A car-door comprising two spring-acted sections pivoted at points at or near diagonally-opposite corners of the doorway and having their meeting edges closing on an inclined line, for the purpose set forth.

3. A car-door comprising two collapsible sections mounted one at each side of the doorway and each closing a triangular half thereof, for the purpose set forth.

4. A car-door comprising two triangular collapsible sections pivoted in the plane of the doorway, having their centers of motion located at points diagonally opposite relative to the doorway, each section closing a triangular half of the doorway, for the purpose set forth.

5. A car-door comprising two collapsible triangular sections made of flexible material and each provided at its meeting edge with a rigid pole hinged or pivoted near one corner of the doorway, the vertical edge of each section being secured to a side of the doorway, whereby each section may close a triangular half of the doorway.

6. A car-door comprising two collapsible sections moving on centers in the plane of the doorway located at points at or near diagonally-opposite corners thereof and provided with friction devices, for the purpose set forth.

7. A car-door comprising two collapsible triangular sections 13 and 14, each moving on a center 15 at diagonally-opposite corners and adapted to close each a triangular half of the doorway, substantially as and for the purpose set forth.

8. A car-door comprising two collapsible triangular sections 13 and 14, moving on centers 15 at diagonally-opposite corners and in the plane of the doorway and provided each with a spring 28, and a lock, such as 30, for holding the sections together when closed, said lock being under the control of a passenger, substantially as described.

9. A car-door comprising two collapsible triangular sections 13 and 14, moving on centers 15 at diagonally-opposite corners and in the plane of the doorway and provided with friction devices, such as 27, for holding the sections in adjustment, substantially as and for the purpose described.

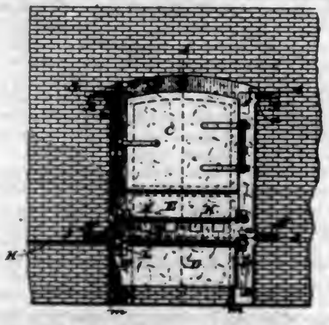
10. A car-door comprising two collapsible spring-acted triangular sections 13 and 14, moving on centers 15 at diagonally-opposite corners and in the plane of the doorway, and a lock for holding the sections together, said sections provided with intermediate connections, such as cords 33, provided with guide-pulleys 34, whereby the sections may be operated together, substantially as and for the purpose described.

11. A car-door comprising two collapsible spring-acted triangular sections 13 and 14, moving on centers 15 at diagonally-opposite corners and in the plane of the doorway, connections intermediate the sections for simultaneously operating them, and a pull connection 40, extending from one of them to the end of the car, substantially as and for the purpose set forth.

12. The combination, with a set of car-doors comprising each two spring-acted collapsible triangular sections 13 and 14, moving on centers 15 at diagonally-opposite corners and in the plane of the doorway, of cords or links 35, connecting the upper section of one door with the upper section of the next door, also the lower section of one door with the lower section of the next, and so on, a pull-cord 40, extending from the lower section of the end door of the set to the end of the car, and a pull cord or connection extending from the upper section of the end doorway of the set to the end of the car, substantially as and for the purpose set forth.

13. A door comprising two triangular sections hinged or pivoted at points at or near diagonally-opposite corners of the doorway, whereby one of said sections tends to swing or gravitate into open position, and connections intermediate the two said sections, whereby they are balanced, for the purpose set forth.

472,738. BRICK-KILN FURNACE. WILLIAM H. MARTIN, Covington, Ky. Filed May 2, 1890. Serial No. 350,401. (No model.)

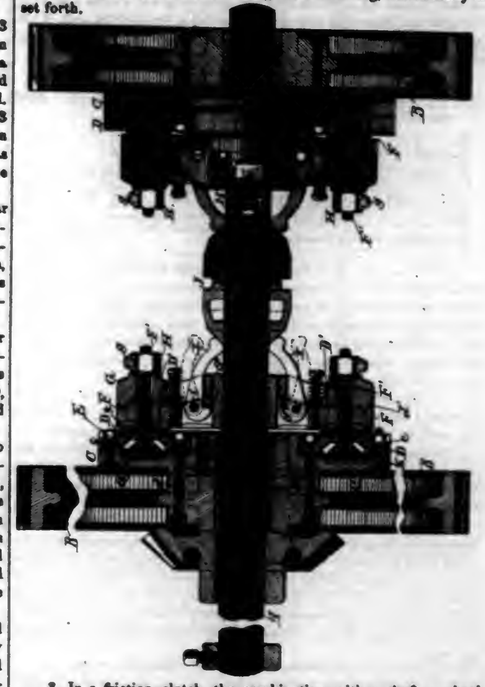


Claim.—In a brick-kiln furnace, the bearing-bars or flanges A and A', made separate from the frame, substantially as shown and described.

472,739. FRICTION-CLUTCH. JOHN R. MORGAN, Alliance, Ohio, assignor of three-fourths to Thomas R. Morgan, Sr., Thomas R. Morgan, Jr., and William H. Morgan, same place. Filed July 10, 1891. Serial No. 398,963. (No model.)

Claim.—1. The combination, with a shaft and two wheels of different diameters loose on said shaft, of a clutch for each wheel, each clutch consisting, essentially, of two rings fast to a wheel and having beveled faces, one ring being located within the other, a clutch-ring having faces corresponding with the beveled faces of the rings, a wheel rigidly secured to the shaft-stems secured to the clutch-ring and passing through the wheel rigid on the shaft, and levers actuated by a cone for forcing the frictional surfaces of the clutch-ring into contact with the frictional surfaces of the friction-rings, substantially as set forth.

2. The combination, with a shaft and a wheel loose thereon, of two friction-rings carried by the wheel, a clutch-ring having contact-faces for engaging the friction-rings, a wheel fast on the shaft, a series of stems secured to the clutch-ring and passing through the wheel fast on the shaft, and levers for actuating the clutch-ring, substantially as set forth.

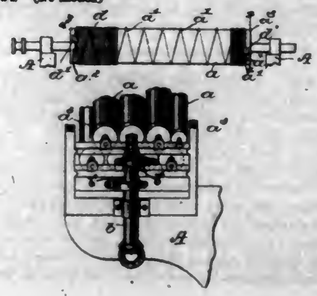


3. In a friction-clutch, the combination, with a shaft, a wheel loose thereon, and two friction-rings carried by said wheel, of a wheel fast on the shaft and provided with friction-blocks for contact with the outer faces of said rings, a clutch-ring having blocks for engaging the inner faces of the friction-rings, and means for actuating the parts for locking the parts of the clutch together.

4. In a friction-clutch, the combination, with a shaft, a wheel loose thereon, a friction-disk rigidly secured to the wheel, and two friction-rings secured to the disk, of a clutch-ring for engaging the inner faces of the friction-rings, a wheel rigidly secured on the shaft, stems secured to the clutch-ring and passing through the wheel rigid on the shaft, and a series of levers engaging the stems for actuating the clutch-ring.

5. In a friction-clutch, the combination, with a shaft, a wheel loose thereon, a friction-disk rigidly secured to the wheel, and two friction-rings, each having a beveled face and arranged as shown, of a wheel fast on the shaft, a clutch-ring having two beveled faces, stems secured to the clutch-ring and passing through the wheel fast on the shaft, and a series of levers for actuating the ring, substantially as set forth.

472,740. CONDENSER FOR WOOL-CARDING MACHINES. JAMES R. MCWILLIAM, Hubbardston, Mass. Filed Oct. 30, 1891. Serial No. 410,334. (No model.)



Claim.—1. A condensing-roll having a metallic retaining-strip wound spirally about its periphery, and an outer surface formed by a fibrous cord wound spirally and closely about the roll over and upon said retaining-strip, the superimposed spirals differing in pitch, substantially as described.

2. A non-metallic condensing-roll having a metallic conducting and retaining strip wound spirally about its periphery, and an outer surface formed by a fibrous cord wound spirally and closely about the roll over and upon said strip and embedded in varnish, the ends of the metallic strip being connected with the journals of the rolls, substantially as described.

472,741. CHECK-BOOK. EDWARD NORTH, Newhall, Cal. Filed Jan. 12, 1892. Serial No. 417,901. (No model.)

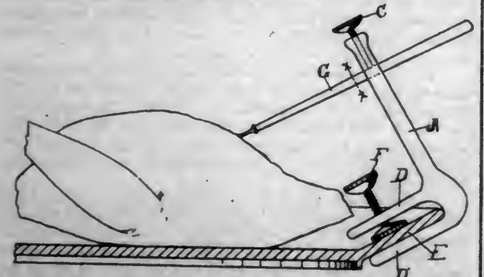


Claim.—1. A check-book comprising the combination of a series of successive checks and corresponding interposed memorandum-stubs having step-like margins, each check and its respective memorandum-stub being so arranged with relation to each other that their faces fold together when the book is closed, and the stubs having their step-like margins constructed of successively-decreasing lengths from the first to the last of the series.

2. The combination, with the checks and step-like stubs, of a supplemental balance-leaf arranged to project outward from the body of the book to expose a suitable surface for footings of the amounts of the checks drawn, the same being so arranged with relation to the step-like portions of the stubs that when the stubs are folded against the balance-leaf the projecting portion will adjoin the step-like portions of the stubs.

3. The combination, with the checks and step-like stubs, of a supplemental folding balance-leaf arranged to project, when unfolded, outward from the body of the book to expose a suitable surface for footings of the amounts of the checks drawn, the same being so arranged with relation to the step-like portions of the stubs that when the stubs are folded against the balance-leaf and the projecting portion thereof is unfolded such projecting portion will adjoin the step-like portions of the stubs.

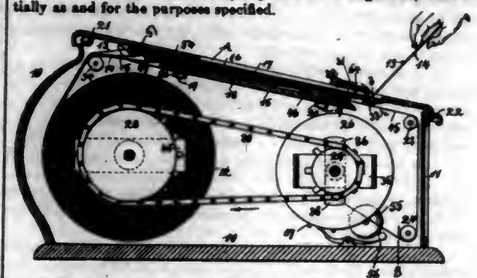
472,742. CARVING-BRACE. ANNA C. PECK, San Francisco, Cal. Filed Oct. 27, 1891. Serial No. 409,963. (No model.)



Claim.—The combination set forth of the fork, the clamp-post provided at its lower end with two clamp jaws or arms arranged to receive the rim of the plate between them and at its top with a mortise to receive the handle of the fork, a clamp-screw arranged to screw through one of such clamp-jaws to engage the rim of the plate and clamp it against the other jaw, and a clamp-screw arranged to screw through the upper part of the post to engage the fork.

472,743. AUTOGRAPHIC COPYING AND RECORDING APPARATUS. ALMY LE G. PERRIN, Grand Rapids, Mich., assignor, by direct and mesne assignments, to the Wilson Improved Store Service Company, of Kentucky. Filed Oct. 22, 1890. Serial No. 368,941. (No model.)

Claim.—1. In a copying and recording apparatus, the storage-drum upheld at one end by a journal-bearing and at the other end provided with friction-disk fixedly secured thereto, and a sprocket or gear wheel provided with spring-arms or elastic spiders fixedly secured to said sprocket-wheel and rotated therewith, and a single journal upholding the said sprocket-wheel, springs, and the adjacent end of the storage-roll and friction-plate, the said journal being provided with a shoulder bearing against the end of the roller, while its journal enters a center opening therein, and the adjustable nut 40, located on the shaft outside of the springs and secured to said shaft by a set-screw for enabling the sprocket-wheels and springs to be separated more or less from the friction-plate and the amount of friction between the friction-plate of the drum and the springs thus to be regulated, substantially as and for the purposes specified.



2. The tablet on which lies the memorandum-paper, and the hinged-flap cutter pivotally connected to the apparatus and whose cutting-edge extends across the machine, the rear or hinged edge of the flap being sufficiently elevated for the paper to pass underneath without being frictionally retarded thereby, and the cutting board or surface 33¼, located immediately beneath the flap 31, the paper to be cut being drawn out from beneath the flap and up out over the said cutting-board, substantially as and for the purposes specified.

3. The tablet on which lies the memorandum-paper, and the hinged-flap cutter pivotally connected to the apparatus and whose cutting-edge extends across the machine, the rear or hinged edge of the flap being sufficiently elevated for the paper to pass underneath without being frictionally retarded thereby, and spring 64, bearing against the cutter-flap, and the anvil or cutting-board 33¼, located beneath the cutting-edge of the flap, the paper when drawn out to be cut lying on the cutting-board and beneath the cutting-edge of the flap, the spring 64 keeping the cutting-edge of the flap-cutter elevated off the paper, except when depressed by the operator in the act of cutting the paper, substantially as and for the purposes specified.

4. The tablet on which lies the memorandum-paper, provided with the hinged-flap cutter, whose cutting-edge extends across the machine, the rear or hinged edge of the flap being elevated and the paper passing beneath the flap, the flap being curved or arched in cross-section, the cutting end portion of the flap extending downward, and the cutting board or surface 33¼, having the inclined face upon which the paper to be cut lies while the cutting-edge of the flap presses on the paper in the operation of severing the latter, substantially as and for the purposes specified.
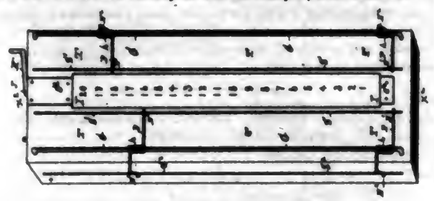
5. The tablet on which lies the memorandum-paper, provided with the hinged-flap cutter, whose cutting-edge extends across the machine, the rear or hinged edge of the flap being elevated and the paper passing beneath the flap, the flap being curved or arched in cross-section, the cutting end portion of the flap extending downward, and the cutting board or surface 33¼, having the inclined face upon which the paper to be cut lies while the cutting-edge of the flap presses on the paper in the operation of severing the latter, and the spring 64, elevating the cutting-edge of the cutter from the cutting-board and paper, except when depressed by the operator to sever the paper, substantially as and for the purposes specified.

6. The tablet on which lies the memorandum-paper, and the hinged-flap cutter pivotally connected to the apparatus and whose cutting-edge extends across the machine, the rear or hinged edge of the flap being sufficiently elevated for the paper to pass underneath without being frictionally retarded thereby, and the cutting board or surface 33¼, located immediately beneath the flap 31, the paper to be cut being drawn out from beneath the flap and up out over the said cutting-board, the apparatus having an open top space whereby the upper surface of the strip 13 of paper is exposed to be written upon and the cutting-edge of the cutter-flap and the cutter-board being located between said open space and the front or delivery end of the said machine, substantially as and for the purposes specified.

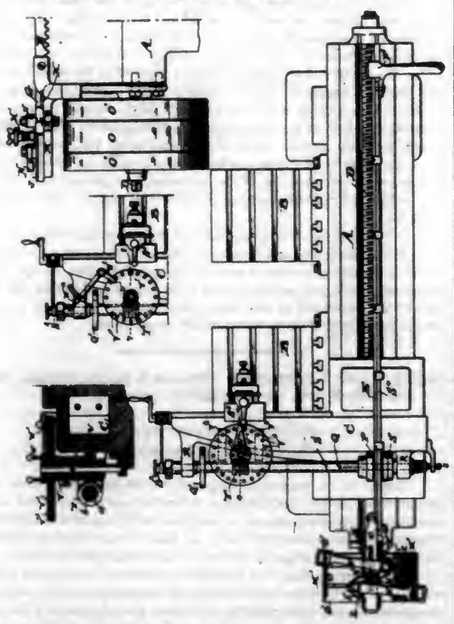
472,744. GAME-COUNTER. EDWARD S. THORNTON, Troy, N. Y., assignor of one-half to Thomas Horton, same place. Filed June 1, 1891. Serial No. 394,681. (No model.)

Claim.—1. In a game-counting device, the combination, with a tablet, of a figure-column arranged in the center thereof, guides arranged upon each side of said figure-column, and spring-pointers, each made with a helical coil arranged to encircle each of said guides, with one of the tangent ends of each of said spring-pointers arranged to bear on the top of the tablet and the other tangent end of each of said spring-pointers to bear upon the adjacent side of said tablet, substantially in the manner as and for the purposes set forth.

2. In a game-counting device, the combination, with a tablet, of a figure-column plate having different columns of figures upon each of its opposite sides and arranged on journals within the top of said tablet, adapted to be reversed, so as to bring either column of figures uppermost, substantially as described, guides arranged upon each side of said figure-column plate, and spring-pointers, each made to encircle one of said guides by means of a helical coil, with one of the tangent ends of each of said spring-pointers adapted to bear on the top of said tablet and the other tangent end thereof upon the adjacent side of the tablet, substantially as and for the purposes set forth.



472,745. BELT-SHIFTER. EDWARD A. WALKER, Philadelphia, Pa. Filed Apr. 29, 1891. Serial No. 390,975. (No model.)

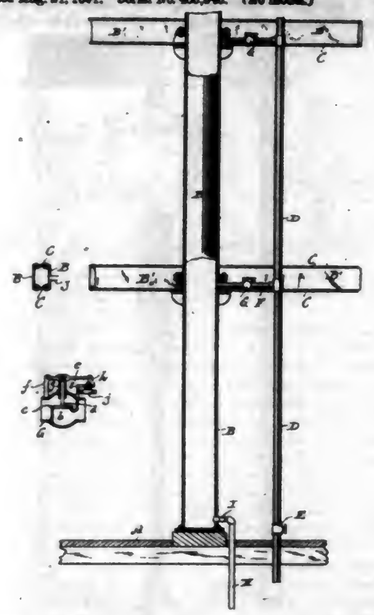


Claim.—1. In a belt-shifting device, the shipper-slide G, having projections I I′ upon its edges, and a flange or flanges, as J, extending from one or both of said projections, as described, in combination with shifter-levers N, having actuating-lugs L arranged, as specified, with respect to projections I I′, one end of the lug being recessed, as at L², to clear the flange J and the opposite end adapted to ride on said flange, all substantially as specified, and so as to hold the shifter-arm in proper position when the shipper-slide moves too far.

2. In a belt-shifter, the combination of the shipper-slide G and its actuating-rack E, the shaft Q, journaled on a movable carriage, a gear-wheel P, attached to said shaft and engaged with rack E, a counter-shaft U′, gearing connecting-shafts Q and U′, so that the latter will be driven by the former, and adjustable stop mechanism arranged to arrest the motion of shaft U′ at determined points and by arresting the motion of shaft Q and gear P to move the rack E and attached shipper-slide.

3. In a belt-shifter, the combination of the shipper-slide G and its actuating-rack E, the shaft Q, journaled on a movable carriage, a gear-wheel P, attached to said shaft and engaged with rack E, a worm T, secured to shaft Q, a shaft U′, having a worm-wheel U engaged with worm T, and adjustable stop mechanism arranged to arrest the motion of shaft U′ at determined points and by arresting the motion of shaft Q and gear P to move the rack E and attached shipper-slide.

472,746. COOLING IRON STRUCTURES. CHARLES J. WILLIAMS, Milwaukee, Wis., assignor of one-half to William Wagner, same place. Filed Aug. 21, 1891. Serial No. 403,243. (No model.)



Claim.—1. The combination, with a hollow iron column, of a water-distributing system having one or more outlets into the column and a thermally-controlled valve governing each outlet, whereby the latter will be automatically opened to said column at a time when the valve may be affected by a certain degree of temperature, substantially as set forth.

2. The combination, with a hollow iron column, of a water-distributing system having one or more outlets into the column, a thermally-controlled valve governing each outlet, whereby the latter will be automatically opened to said column at a time when the valve may be affected by a certain degree of temperature, a waste-pipe leading from the aforesaid column, and a one-way valve controlling the waste-pipe, substantially as set forth.

3. The combination, with a hollow iron column and girders connected thereto, of a water-distributing system having branches leading to the column and girders and a thermally-controlled valve governing each branch, whereby the latter will be automatically opened at a time when the valve may be affected by a certain degree of temperature, substantially as set forth.

472,747. ELECTRIC-ARC LAMP. ROYAL E. BALL, New York, N. Y. Filed Oct. 10, 1891. Serial No. 408,334. (No model.)

Claim.—1. An electric-arc lamp having a carbon reciprocating or swinging transverse the direction in which it is fed.

2. An electric-arc lamp having a reciprocating or swinging carbon moving periodically across the arc.

3. In an electric-arc lamp, the combination, with a lower carbon, of an upper carbon provided with feeding mechanism and adapted to reciprocate or swing transverse the direction in which it is fed and means for reciprocating or swinging it as it is fed.

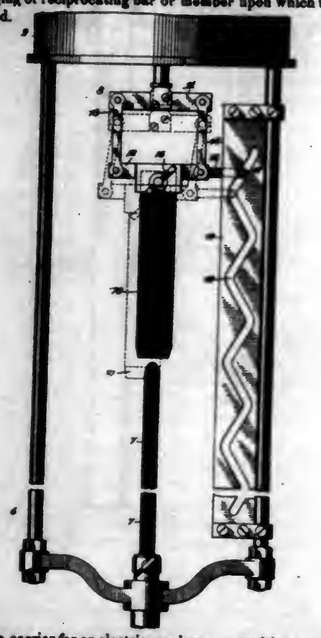
4. In an electric-arc lamp, the combination, with a lower carbon, of an upper carbon provided with a feeding mechanism and adapted to reciprocate or swing transverse the direction in which it is fed and a cam or its equivalent and an arm engaging said cam and connected with and controlling the reciprocations or swinging of the upper carbon, whereby as the upper carbon is fed to the arc it may be automatically reciprocated or swung across the same.

5. In an electric-arc lamp, the combination, with a lower carbon, of an upper carbon having a cross-section twice (or more) as great as the cross-section of the lower carbon and adapted to reciprocate or swing transverse the direction in which it is fed.

6. In an electric-arc lamp, the combination, with a lower carbon, of an upper carbon provided with feeding mechanism for raising and lowering it and a vertically-arranged cam or cam-groove and an arm engaging said cam and connected with and controlling the reciproca-

tions or swinging of the upper carbon, whereby as the upper carbon is raised or lowered it may be reciprocated or swung across the arc.

7. A carbon-carrier for an electric-arc lamp, comprising a horizontally swinging or reciprocating bar or member upon which the carbon is mounted.

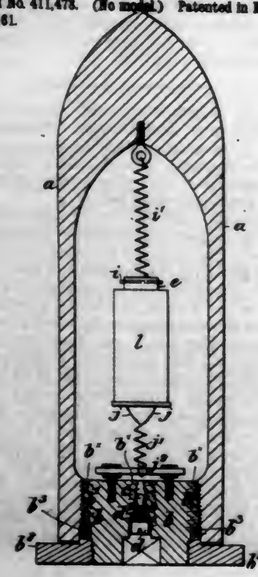


8. A carbon-carrier for an electric-arc lamp, comprising an upper bar and a lower bar swung thereto by links, so as to move in the horizontal and carrying the carbon.

9. In an electric-arc lamp, the combination, with a carbon-carrier comprising an upper bar and a lower bar swung thereto by links so as to move in the horizontal and carrying the carbon, of means for swinging or reciprocating said lower bar for moving the carbon across the arc.

10. An electric-arc lamp having a carbon moving laterally to and fro so as to periodically move across the arc.

472,748. SHELL OR OTHER PROJECTILE. JOSEPH R. BOTT, Stockport, and GEORGE H. CARNELL, Hatherage, England. Filed Nov. 10, 1891. Serial No. 411,473. (No model.) Patented in England Sept. 9, 1890, No. 14,161.



Claim.—1. A self-propelling projectile containing an elastic or expansive fluid, a charge of high explosive, elastic mediums at opposite ends for suspending such charge of high explosive movably within the projectile, a detonator for exploding the charge, arranged in the projectile, and a removable breech-plug for permitting the fluid generated by the explosion to propel the projectile, substantially as described.

2. A shell or projectile comprising the body, its removable breech-piece, a tube *e*, and an elastic medium connecting it with the fore part of the body, a tube *g*, telescoping with the other tube, and a frangible medium connecting it with the breech-piece, a detonating mechanism arranged between these telescoping tubes and fired by their coming together, and a body of high explosive supported by the outer tube, substantially as described.

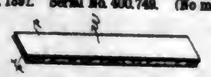
472,749. WEEDER. THOMAS L. DAVIS, Attalia, Ind. Filed Jan. 18, 1892. Serial No. 418,393. (No model.)



Claim.—1. In a weeder, the combination of the frame, the beams B, pivoted thereto to swing laterally and also to permit of vertical adjustment, the roller A′, connected with said beams by ropes or chains, the lever A^3, with a rack and pawl for operating and holding said roller, the narrow sharp-edged blades C, secured to the lower ends of said beams B by means of a pivot-bolt *c′*, which passes through a perforation in said beam and in an upturned flange on said cutters, said cutters being held at the desired pitch or inclination by a pin c^3, which passes through another perforation in said beam and one of a series of perforations in said upturned flange of the cutter, said beams being also provided with handles b^3 for convenience in guiding and operating said cutters, all substantially as described, and for the purposes specified.

2. In a weeder, the combination of the frame, the beams B, pivoted at their forward ends thereto, the inwardly-projecting pins b^3, secured in the adjacent sides of each and arranged to abut, the spring b^4, surrounding said pins and connected at its ends to said beams, the cutters on the lower end of said beams, and handles connected to said beams for adjusting them, substantially as set forth.

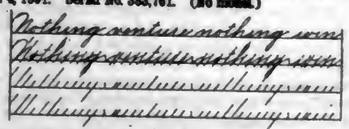
472,750. LAMP-WICK. WILLIAM F. DRAPER, Hopedale, Mass. Filed July 25, 1891. Serial No. 400,749. (No model.)



Claim.—1. A lamp-wick composed of a film of cotton slivers, each sliver having its individual fibers substantially parallel, and the independent strengthening-plies *p p′*, stitched to the opposite sides of the cotton film entering into the wick, the lines of stitches being adjacent to the longitudinal edges of the wick, substantially as described.

2. The herein-described method of producing lamp-wicks, which consists in laying a number of slivers of cotton together, infolding or wrapping the said cotton within a tubular jacket, stitching the said jacket and web together, and slitting the said web into strips to form lamp-wicks, substantially as described.

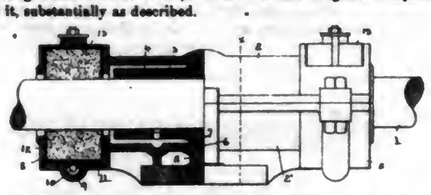
472,751. PENMANSHIP-GUIDE. JOHN EARLE, Primos, Pa. Filed Mar. 4, 1891. Serial No. 383,761. (No model.)



Claim.—In a penmanship-guide, the combination, with a sheet or leaf and a copy to be reproduced, of a series of slanting lines arranged on said sheet or leaf, said slanting lines being arranged in such manner as to mark the height and slant of the letters and parts of letters of the copy and also the relative position of the component parts of the letters of the copy on the sheet or leaf, said slanting lines serving as a guide to the pupil in forming the letters, substantially as set forth.

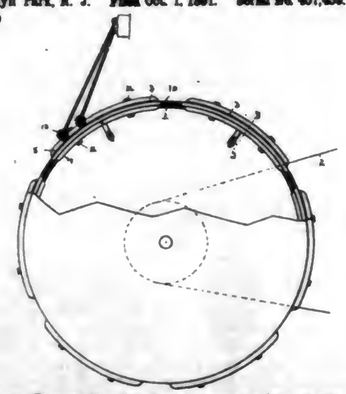
472,752. DUST-PROOF JOURNAL-BEARING. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 1, 1891. Serial No. 407,457. (No model.)

Claim.—1. The combination of a shaft, a shaft-bearing, a box or casing loosely inclosing and supporting the same, said box or casing having at an end thereof a holder forming a part of the box or casing, packing material in the holder, and means for securing and compressing it, substantially as described.



2. The combination of a shaft, a shaft-bearing, a box or casing loosely inclosing and supporting the same, said box or casing having at each end thereof a holder forming a part of the box or casing and closed at the bottom, but open at the top, packing material in the holder, and means for securing and compressing it, substantially as described.

472,753. ORE-SCREENING APPARATUS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 1, 1891. Serial No. 407,459. (No model.)



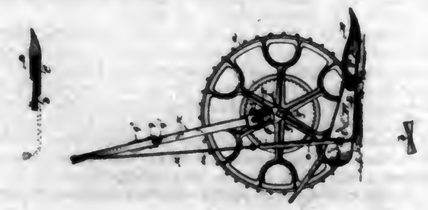
Claim.—1. The combination, in an apparatus for screening, of a rotatable cylinder having openings in one or more circumferential lines, screens over the openings, frames comprising outer and inner sections, the former having longitudinal strengthening-ribs and the latter having ribs, and means for securing the frames and screens to the cylinder, the screens and brushes bearing on the cylinder between the ribs, substantially as described.

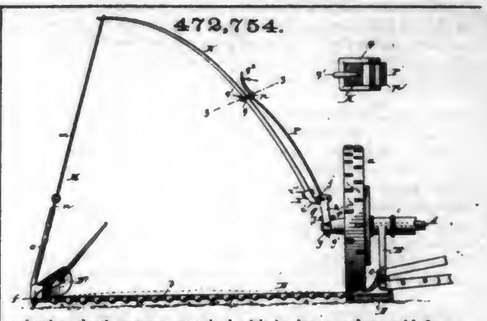
2. The combination, in an apparatus for screening, of a rotatable cylinder having openings in one or more circumferential lines, screens over the openings, outer frames with longitudinal strengthening-ribs, and inner frames with transverse ribs for securing and strengthening the screens, said screens meeting end to end, and brushes bearing on the cylinder between the longitudinal ribs, substantially as described.

3. The combination, with the cylinder or body having an opening, of a perforated screen, the inner and outer frame-sections, between which the screen is held, means for securing the sections of the frame together, and means consisting of a turn-buckle supported by a bolt or stud on the frame for securing the frame to the cylinder, substantially as described.

472,754. MOWER. GEORGE A. FARRALL, Batavia, N. Y., assignor to the Johnston Harvester Company, same place. Filed Aug. 9, 1890. Serial No. 361,541. (No model.)

Claim.—1. The combination, with the mower-frame and the finger-bar pivotally connected to one side of said frame, of a laterally-projecting elastic support attached with its inner end to said frame and having its outer end connected with the outer end of the finger-bar, substantially as set forth.





2. The combination, with the mower-frame and the laterally-projecting finger-bar pivotally connected to one side of said frame, of a pole attached with its inner end to said frame, a spring whereby said pole is yieldingly supported, and a rod connecting the free end of the pole with the outer end of the finger-bar, substantially as set forth.

3. The combination, with the mower-frame and the laterally-projecting finger-bar pivotally secured to one side thereof, of a standard secured to the frame, a pole pivoted with its lower end in said standard, a spring supporting said pole with its upper end and seated with its lower end in said standard, and a rod connecting the upper end of said pole with the outer end of said finger-bar, substantially as set forth.

4. The combination, with the mower-frame and the laterally-projecting finger-bar pivotally connected to one side thereof, of a standard secured in said frame, a laterally-projecting pole pivotally secured with its inner end to said standard, a spring attached with its upper end to said pole and adjustably arranged with its lower end in said standard, and a rod connecting the outer end of said pole with the outer end of said finger-bar, substantially as set forth.

5. The combination, with the mower-frame and a laterally-projecting finger-bar pivoted to one side thereof, of a laterally-projecting support pivoted to the frame and connected with the outer end of the finger-bar, and an adjustable fastening, whereby the pivoted support can be secured at a greater or less elevation, substantially as set forth.

6. The combination, with the mower-frame and the laterally-projecting finger-bar pivotally secured to one side thereof, of a bifurcated standard secured to said frame and having a series of openings at its upper end, a serrated plate secured in the bifurcated standard, clip pivotally secured in said standard by a bolt passing through said openings, a pole secured with its lower end to said clip, a spring connected with its upper end to the pole by means of a pivoted hand-lever and engaging with its opposite end against the serrated plate, a loop or socket embracing the intermediate portion of said spring and pivoted concentric with said clip, and a rod connecting the outer end of said pole with the outer end of said finger-bar, substantially as set forth.

7. The combination, with the mower-frame and the laterally-projecting finger-bar pivotally secured to one side thereof, of a laterally-extending pole secured to the frame with its inner end, a rod connecting the outer end of said pole with the outer end of said finger-bar, and a roller surrounding said rod, substantially as set forth.

8. The combination, with the mower-frame, of a flexible finger-bar having an upward curvature from both ends toward the middle, and a yielding support connecting the outer end of the finger-bar with the mower-frame, whereby the weight of the finger-bar causes it to become straight when in position for use, substantially as set forth.

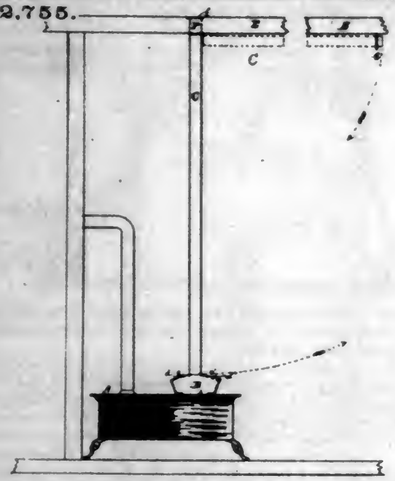
9. A finger-bar having a longitudinal twist, with the front side raised above the rear side at the outer end of the bar, substantially as set forth.

10. The combination, with the mower-frame, of a finger-bar pivoted with its inner end to one side of said frame and having a longitudinal twist, with the front side raised above the rear side at the outer end of the bar, and a support attached with its inner end to the frame and with its outer end to the rear of said bar, substantially as set forth.

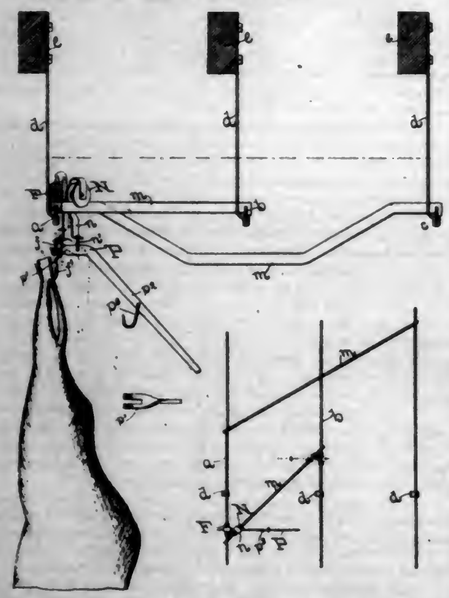
472,755. STOVE. CARRIE H. FERELOVE and CLEMENTINE E. WELCH, McPherson, Kans. Filed Nov. 23, 1891. Serial No. 412,802. (No model.)

Claim.—The combination, with two compartments, one above the other, and having an opening from one to the other, of a pipe, as C, hinged to the ceiling of the lower compartment near the said opening and a heating attachment in communication with the lower end of said pipe and provided with openings in its top for the admission of air, substantially as and for the purpose described.

472,755.



472,756. OVERHEAD-TROLLEY CARRIER. WILLIAM F. GLEES, Lexington, assignor of one-half to Harry A. Voss, Natick, Mass. Filed May 26, 1891. Serial No. 394,328. (No model.)



Claim.—1. In an overhead-trolley carrier, the combination, with two rails, of a cross-over *m*, trolley N, carrier *n*, swivel-eye *n'*, and lever P, having a forked end *p'*, arm p^3, and hook p^2, substantially as described.

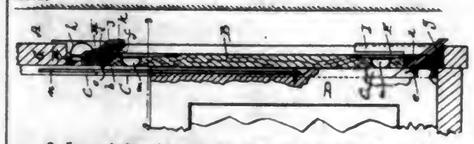
2. In an overhead-trolley carrier, the combination, with three or more rails, of a cross-over to connect any two rails not adjacent to each other, said cross-over dropping under the intervening rail or rails, and a transferring device on said cross-over, substantially as described.

3. In an overhead-trolley carrier, a cross-over to connect two rails, a trolley thereon, a lifting-lever supported thereby, and a retaining device to hold said lever in its position supporting a load, substantially as described.

472,757. WINDOW-FRAME. HERMANN GOMER, Milwaukee, Wis. Filed Oct. 2, 1891. Serial No. 407,554. (No model.)

Claim.—1. In a window-frame, a side thereof provided with an opening, a closure for the opening, tongue-and-groove castings connecting the extremities of said opening with those of the closure, and suitable means for locking said closure in either a normal or retracted position, substantially as set forth.

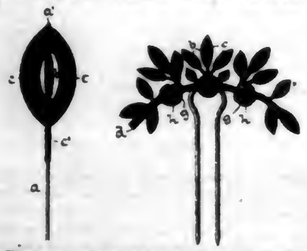
2. In a window-frame, a side thereof provided with an opening, a closure for the opening, tongue-and-groove castings connecting the extremities of said openings with those of the closure, and a spring-controlled latch that engages one of the closure-castings when said closure is in either a normal or retracted position, substantially as set forth.



3. In a window-frame, a side thereof provided with an opening, grooved castings secured to the frame at the extremities of the opening, a closure for the opening, tongue-castings secured to the ends of the closure for engagement with the grooved castings aforesaid, and a sliding latch for engagement with one of the tongue-castings, substantially as set forth.

4. In a window-frame, a side thereof provided with an opening, castings secured to the frame at the extremities of the opening and provided with grooved lugs, a closure for the opening, carrying a portion of the relative parting-rail, castings secured to the ends of the closure and provided with tongues for engagement with the grooved lugs on the former castings, one of these tongues being notched, and a vertically-disposed sliding latch having a prong for engagement with the notched tongue on said closure when the latter is in its normal position, and another prong that engages said notched tongue when the aforesaid closure is moved back to give clearance for a sash, substantially as set forth.

472,758. MANUFACTURE OF WIRE ORNAMENTS. MARIE HAENDLER, New York, N. Y. Filed Mar. 2, 1892. Serial No. 423,492. (No model.)



Claim.—1. The process of manufacturing ornaments from wire, which consists in securing one end of the wire to a stem, then stringing said wire alternately on opposite sides of the stem, coiling the same at each semi-convolution, and finally securing the terminal, substantially as described.

2. The process of manufacturing artificial leaves from wire, which consists in securing one end of the wire to a stem, then winding said wire spirally about the stem, as described, and twisting the same about the stem at each semi-convolution, bending over the projecting portion of the stem at the top of the blade, and finally winding the wire about a portion of the stem below the blade, substantially as described.

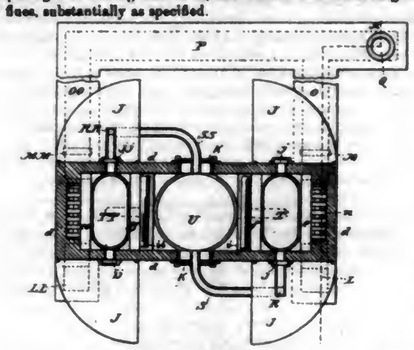
3. A wire ornament consisting of a central stem and a wire extending in spiral lines about the same as a center and twisted about the said stem at each semi-convolution, substantially as described.

4. An artificial leaf or petal consisting of a stem, a center composed of wire wound about said stem and a wire extending in spiral lines about the stem as a center and twisted about the stem at each semi-convolution, said stem being bent over toward the back at one end and the wire coiled about the opposite end of the stem, substantially as described.

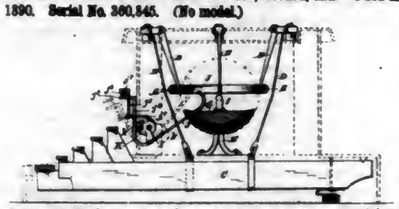
472,759. PUDDLING-FURNACE. HENRY B. HALL, Hero, Pa. Filed July 16, 1890. Serial No. 358,914. (No model.)

Claim.—1. In a furnace, the combination of a puddling-chamber having doors on opposite sides, melting-chambers on opposite sides of said puddling-chamber, said melting-chambers having communication with the stack of the furnace through flues, as described, and having communication with the puddling-chamber through openings *g* and *g g* for the passage of air, troughs R and R R, and spouts S and S S, connecting said melting-chambers with said puddling-chamber and serving to conduct the metal from the one to the other, and means for heating said melting-chambers and puddling-chamber.

2. The combination of melting-chambers having doors, a puddling-chamber between said melting-chambers, doors leading thereto, troughs and spouts connecting said puddling-chamber with both of said melting-chambers, ducts from each of the melting-chambers to the puddling-chamber, a source of heat consisting of a fuel-pipe leading to the puddling-chamber, flues leading to said melting-chamber, means for opening and closing said flues, and a stack communicating with said flues, substantially as specified.



472,760. TYPE-CLEANER FOR TYPE-WRITING MACHINES. BUCKLEY H. HOLMES and J. HUME RALSTON, Goshen, Ind. Filed Aug. 2, 1890. Serial No. 360,845. (No model.)



Claim.—1. A device for cleaning the type of type-writing machines, consisting of a brush rotatory upon its horizontal axis and having a brushing-surface formed on curves concentric upon the axis of rotation and curved toward the ends, whereby the brush may come in contact with all the types of a type-writing machine at each rotation, substantially as set forth.

2. The combination, with the types of a type-writing machine, of a brush rotatory upon its horizontal axis and having an outline corresponding to that of the type-basket, so as to sweep over the entire set of type at each rotation, substantially as set forth.

3. In a device for cleaning the type of type-writing machines, the combination of a horizontally-journaled rotatory brush, with a pivoted bar adapted to bear against the inner sides of the type-levers at one side of the type-basket, substantially as set forth.

4. In a device for cleaning the type of type-writing machines, the combination, with two horizontally-journaled shaft-sections formed with bent inner ends, of a brush secured with its back to said bent ends and having a brush-surface curved to the sides and ends, the curves to the sides being segments of circles centered in the line of the shaft-sections, substantially as set forth.

5. In combination with a type-writing machine, brackets secured upon the side pieces of the machine-frame, a horizontal shaft journaled in said brackets, and a brush secured to said shaft and having a curved brush-surface corresponding to the outline of the type-basket, substantially as set forth.

6. In combination with a type-writing machine, brackets upon the sides of the machine-frame, a shaft horizontally journaled in said brackets, and a brush secured to said shaft with its back at a distance from the line of the shaft and having a curved brush-surface corresponding to the outline of the type-basket, substantially as set forth.

7. In combination with a type-writing machine and a rotatory brush for cleaning the type of the same, a curved type-lever retaining-bar pivotally supported upon the machine-frame, and a locking device connected to said bar to adjust the latter in position against the type-levers, substantially as set forth.

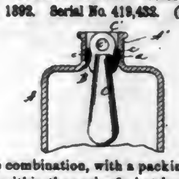
8. In combination with a type-writing machine and a rotatory brush for cleaning the type of the same, a curved type-lever retaining-bar having arms pivotally supported in the machine-frame and having one arm extended to form a handle for rocking it, a notched collar upon the machine-frame, and a pivoted dog upon the handle and engaging the notches of said collar, substantially as set forth.

9. In a type-cleaning device for type-writing machines, the combination of brackets adapted to be secured upon the side pieces of a type-writing-machine frame, two shaft-sections journaled in said brackets and formed with bent inner ends and one of said sections provided with a crank, and a brush having a flat back secured to the bent ends of the shaft-sections and having a brush-surface curved to the sides and ends, substantially as set forth.

10. In combination with a type-writing machine having a horizontal rod at its forward side and a rotatory brush for cleaning the type of said machine, hangers secured upon the horizontal rod, a curved type-lever retaining-bar having arms at its ends pivoted in said hangers, a handle at the end of one of said arms and formed with a finger-piece, a notched collar upon the horizontal rod and at the side of one of the hangers, a dog pivoted upon the handle and having a bent end engaging the notches, a rod pivoted to the other end of said dog and sliding in the finger-piece of the handle and having its end bent into a finger-piece, and a spring interposed between the two finger-pieces, substantially as set forth.

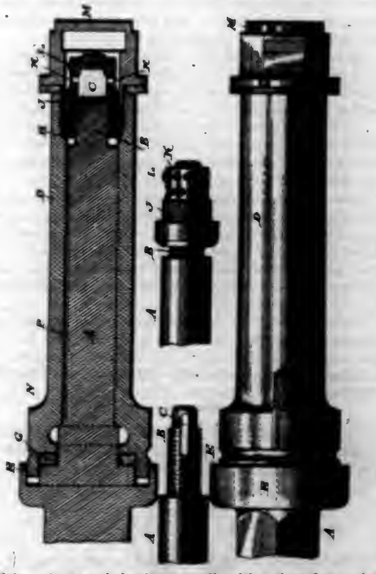
11. In a device for cleaning the type of type-writing machines, the combination of a type-cleaning brush having movement in a vertical plane, with a bar adapted to bear against the inner sides of the type-levers to retain the same in position while the brush is moved, substantially as set forth.

472,761. BOTTLE-STOPPER. WILLIAM J. KOLTS, Rondout, N. Y. Filed Jan. 27, 1892. Serial No. 419,432. (No model.)



Claim.—The combination, with a packing-ring adapted to be permanently located within the neck of a bottle, of a buoyant pear-shaped inside stopper having its smaller end constructed with a flange oppositely notched and perforated, substantially as described.

472,762. AXLE. ROBERT E. LEHMANN, Philadelphia, Pa. Filed Aug. 3, 1891. Serial No. 401,471. (No model.)



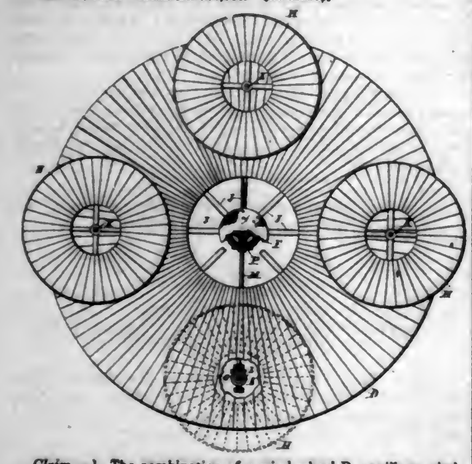
Claim.—1. An axle having a spindle with a slotted threaded end, a longitudinally-adjustable sleeve with an inner shoulder, and a perforated collar on said threaded portion and bearing against said sleeve, said parts being combined substantially as described.

2. An axle having a spindle with a slotted threaded end, a longitudinally-adjustable sleeve having its inner end abutting against a projecting portion of the spindle and provided on its inner surface, near its outer end, with a shoulder, a perforated collar working on said slotted threaded end of the spindle and bearing against the shoulder of said sleeve, and a cap on the outer end of the sleeve, said parts being combined substantially as described.

3. A slotted spindle and a perforated collar therein with a pin fitted in the slot of the spindle and a registering perforation of the collar with a longitudinally-adjustable sleeve, combined substantially as described.

4. In an axle, the collar J, having rows of perforations, the perforations of one row alternating with those of another row, substantially as and for the purpose set forth.

472,768. WIND-WHEEL. WILLIAM B. MYERS, Sterling, Ill. Filed Mar. 30, 1891. Serial No. 387,006. (No model.)



Claim.—1. The combination of a wind-wheel D, auxiliary wind-wheels H, seated in the arms thereof and provided with shafts K and pinions L, rigid gear-collar F, shaft E through said collar, and shafts M, pivoted at one end in the hub G of wheel D and at the other end to the arm J thereof and provided with pinions P and O, substantially as shown, and for the purpose described.

2. The combination of the turn-table C, pivotally seated on the tower A, shaft E, journaled in said table, collar F, rigidly seated on said table around said shaft, wheel D, rigidly seated on shaft E, shafts K, journaled transversely in the arms of wheel D and provided with pinion L, auxiliary wheels H, rigidly seated on shaft L, and shaft M, journaled at one end in the hub of wheel D and at the other end to the arm of said wheel and provided with pinions O and P, substantially as shown, and for the purpose specified.

3. The combination of the table C, collar F, rigidly seated thereon, horizontal shaft E, journaled in said table loosely through said collar and provided with pinion R, wind-wheel D, rigidly seated on said shaft, wind-wheel H, journaled on wheel D, shaft K, provided with pinions L, shaft M, provided with pinions O and P, and mechanism, substantially as shown, for connecting pinion R with any suitable machinery, for the purpose specified.

4. In a wind-wheel, the combination of a main wind-wheel, auxiliary smaller wind-wheels journaled on the arms of said main wheel, and interposed mechanism, substantially as shown, to connect the rotation of said auxiliary wheels to that of said main wheel, for the purpose described.

472,764. WATCH-BOW FASTENER. FRITZ MINK, Philadelphia, Pa., assignor to the Keystone Watch Case Company, same place. Filed Aug. 3, 1891. Serial No. 402,090. (No model.)



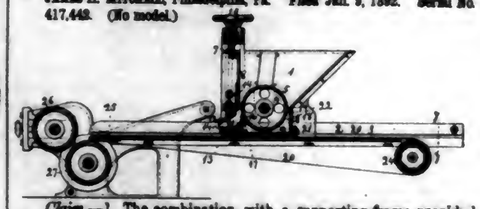
Claim.—1. In a watch-bow fastener, the combination of a pendant carrying laterally projecting arms or ears and a bow having its ends provided with journal-holes, swiveled upon said arms or ears, with a taper formed between the adjacent surfaces of the ends of the bow about the journal-holes and the arms or ears of the pendant, the arms or ears projecting through the journal-holes on the ends of the bow.

2. In a watch-bow fastener, the combination of a bow having its ends provided with journal-holes and a pendant carrying laterally-projecting arms or ears projected through the journal-holes on the ends of the bow and having tapered surfaces, whereby the ends of the bow may be moved upon the tapered surfaces of the ears to take up wear between the parts.

3. In a watch-bow fastener, the combination of a bow having its ends provided with journal-holes having internal tapered surfaces and a pendant carrying laterally-projecting arms or ears extending through the journal-holes on the ends of the bow and having their surfaces tapered to correspond with the taper of the surfaces upon the ends of the bow, whereby the ends of the bow may be moved upon the tapered surfaces of the arms or ears to take up wear between the parts.

4. In a watch-bow fastener, the combination of a pendant, a bow having its ends formed with apertures, and inwardly-tapering arms separable from the pendant, adapted to be inserted through the apertures of the ends of the bow and attached to the pendant.

472,765. CONTINUOUS DOUGH-PRESS FOR FORM-MAKING. JAMES H. MITCHELL, Philadelphia, Pa. Filed Jan. 9, 1892. Serial No. 417,442. (No model.)

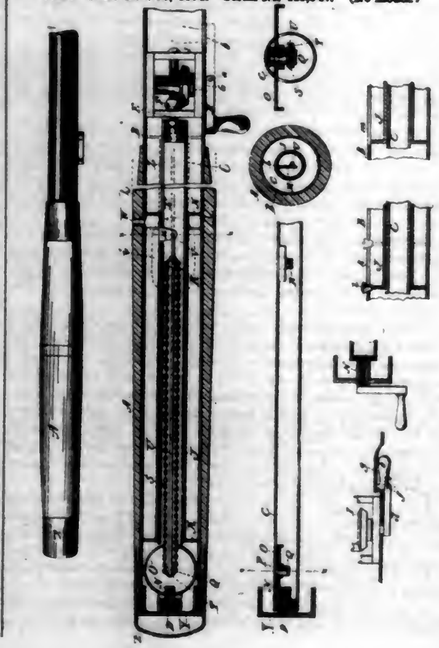


Claim.—1. The combination, with a supporting-frame provided with slideways and a receiving-apron, of a continuous dough form-press movably mounted in said slideways and a pair of sheeting-rolls, arranged substantially as shown and described.

2. In a device of the character herein specified, the combination, with a compressing-roll, of a hopper located above the plane of its axis and a compressing chamber located below the plane of the axis of the compressing-roll, said compressing-chamber having a narrow throat provided with a friction-reducing plate fixed therein opposite to the compressing-roll, substantially as and for the uses and purpose shown and described.

3. In a device of the character herein specified, a casing beneath the compressing-roll, adapted and arranged to receive escaping dough and permit the same to be automatically returned to the feed-hopper, substantially as shown and described.

472,766. FISHING-ROD. HENRY P. MORGAN, South Norwalk, Conn. Filed Nov. 30, 1891. Serial No. 413,647. (No model.)

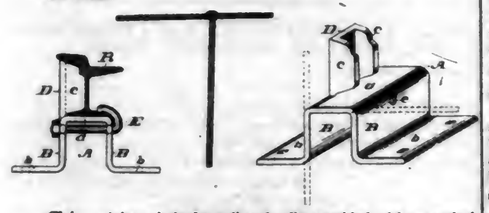


Claim.—1. A fishing-rod having the butt-end made tubular, a tubular shaft arranged therein, mechanism, substantially such as described, for imparting rotation to said shaft, combined with a spool arranged on said shaft, but free for longitudinal movement thereon, a pinion stationary within the said tube, a gear arranged in said shaft upon an axis at right angles to the axis of said shaft and adapted to work into the said stationary pinion, whereby the rotation of the shaft will impart rotation to said gear, the said gear carrying a sprocket-wheel within the said shaft, a corresponding sprocket-wheel arranged upon an axis within the said shaft forward of the sprocket-wheel on the said gear, with an endless chain around said sprocket-wheels, the said shaft constructed with a longitudinal slot forward of said sprocket-wheels, and a rod hung by one end to said chain and so as to travel therewith and the other end of the said rod hung to the said spool through said slot in the shaft, substantially as and for the purpose described.

2. A fishing-rod having the butt portion made tubular, a longitudinal shaft arranged therein, mechanism, substantially such as described, to impart rotation to said shaft, a spool arranged on said shaft, adapted to revolve therewith, but free for longitudinal movement, an opening through which the line may pass to said spool, and the tube constructed with an opening through its side independent of the line-opening and through which the said spool may be reached, substantially as and for the purpose described.

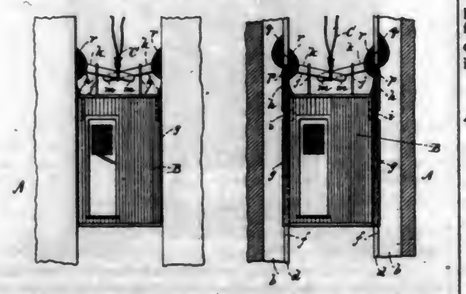
3. A fishing-rod having the butt portion made tubular, a longitudinal shaft arranged therein, mechanism, substantially such as described, to impart rotation to said shaft, a spool arranged on said shaft, adapted to revolve therewith, but free for longitudinal movement, an opening through which the line may pass to said spool, and the tube constructed with an opening through its side by which the said spool may be reached, with a sleeve arranged to slide longitudinally upon said tube and over said opening, substantially as and for the purpose described.

472,767. BOX BRACE-CHAIR FOR GIRDER-RAILS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Feb 20, 1890. Serial No. 341,208. (No model.)



Claim.—A box-chair for railroad-rails, provided with a vertical rail-brace having one or more side wings between said brace and the side of the rail.

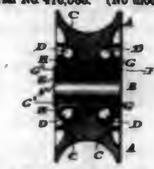
472,768. ELEVATOR. ANDREW MCEACHRAN, Fitchburg, Mass. Filed Jan. 18, 1892. Serial No. 418,399. (No model.)



Claim.—1. A safety-clutch for elevator-cars, comprising a lever mounted on a spring-pushed fulcrum on the car and projecting through a slot in the carways, two clamping-shoes pivoted to said lever respectively at opposite sides of its fulcrum and in position to engage opposite faces of said ways, the shoe-pivots being in different horizontal planes, a lifting-rope secured to the inner end of said lever, and a connection between the lever and car-body disposed between said rope and fulcrum, substantially as described.

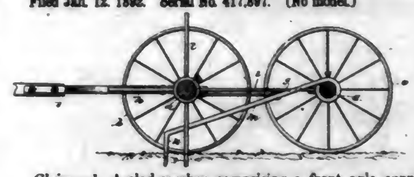
2. In an elevator, the combination, with the car and well having the slotted ways, of the spring-supported arms fitted to slide on the car and in said slots, the levers *k*, fulcrumed, respectively, on said arms and projecting through said slots, the shoes *q r*, pivoted on said levers in different planes and at opposite sides of the ways, the lifting-rope C, secured to the inner ends of the levers, and the loop *j*, connecting the car with said levers between their fulcrums and said rope, all being arranged substantially as described.

472,769. PULLEY. JOSEPH W. PARKER, Philadelphia, Pa. Filed Dec. 30, 1891. Serial No. 416,563. (No model.)



Claim.—A pulley having a body with grooved sides and a sectional bushing with flanged ends, said flanges and grooved sides forming circular chambers, and anti-frictional balls in said chambers, said bushing consisting of inner and outer sleeves, the inner having a shoulder and a lip thereon, said parts being combined substantially as described.

472,770. CLOD-CRUSHER. WILLIAM RAPP, Terre Haute, Ohio. Filed Jan. 12, 1892. Serial No. 417,897. (No model.)



Claim.—1. A clod-crusher comprising a front axle, supporting-wheels therefor, one of which is fast thereon, cross-shaped diggers mounted on and revolving with said axle, a rear axle connected with the front and supported by wheels, and teeth secured at their rear ends to said rear axle, extending forward and downward, and turned down below the earth at points under the front axle and between said diggers, as set forth.

2. A clod-crusher comprising a front axle mounted on wheels, diggers rotating with said axle, a rear axle, wheels journaled thereon, teeth connected with said rear axle, extending forward and downward, and turned down below the earth at points under the front axle and between said diggers, sleeves on the front axle, and braces leading from said sleeves to the outside teeth, as set forth.

3. A clod-crusher comprising a rotating front axle having sleeves journaled thereon near its wheels, a rear axle also having sleeves and whose wheels are journaled thereon, longitudinal braces connecting said sleeves in pairs, the bounds connected to the front sleeves, diggers revolving with the front axle, and teeth leading from the rear axle to points below the front axle between the diggers, as set forth.

4. A clod-crusher comprising a front axle fast in one of its supporting-wheels, collars mounted on said axle and having radiating arms forming diggers, a set-screw through each collar, a rear axle rigidly connected with the front axle, and teeth depending from said rear axle in lines in rear of the spaces between the diggers, as set forth.

472,771. COUNTER-PROTECTOR. CHARLES A. SCHULTE, Ames, N. Y. Filed Jan. 12, 1892. Serial No. 417,797. (No model.)

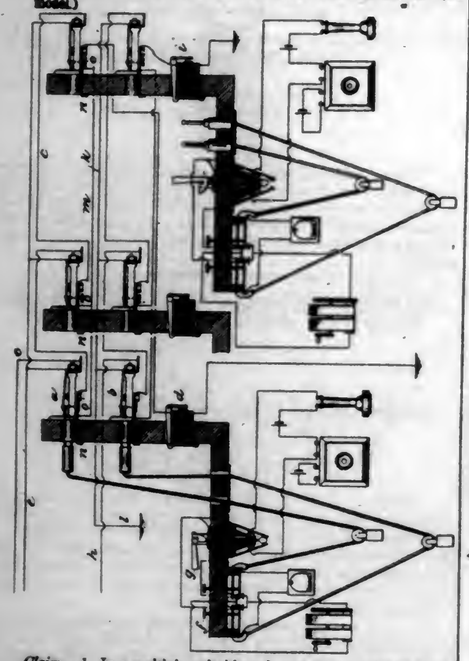


Claim.—1. As an article of manufacture, the herein-described counter-protector, the same consisting of a horseshoe-shaped sheet-metal body provided with screw-holes, an ear rising from the edge of the body and in a plane at approximate right angles thereto, and narrow tangs also rising from said edge at the sides of the ear and turned in at right angles to the latter, the whole adapted for application to a boot, as set forth.

2. As an article of manufacture, the herein-described counter-protector, the same consisting of a body provided with screw-holes, an ear rising from the edge of the body, and narrow tangs also rising from said edge at the sides of the ear and wholly above said screw-

holes, the tips of the tangs being bent in at right angles to the plane of the ear, the whole adapted for application to a boot, as set forth.

472,772. CIRCUIT FOR MULTIPLE-SWITCHBOARD SYSTEMS OF TELEPHONE-EXCHANGES. JOHN A. SEELY, New York, N. Y., and CHARLES E. SCRIBNER, Chicago, Ill., assignors to the Western Electric Company, Chicago, Ill. Filed Nov. 15, 1886. Serial No. 218,961. (No model.)



Claim.—1. In a multiple-switchboard system of a telephone-exchange, a metallic circuit, one limb of which is connected normally at the subscriber's station through switch, generator, and bell to ground and at the central office with its switches on two or more multiple switchboards and through an individual annunciator to ground and the other limb of said circuit consisting of a wire *c*, normally open at the subscriber's station and connected at the central office with the insulated tubes or frames of the spring-jacks of the line, in combination with a test-wire *m*, connected with test-pieces *n* near the different spring-jacks, keys *o* upon said spring-jacks, and switching apparatus, substantially as shown and described.

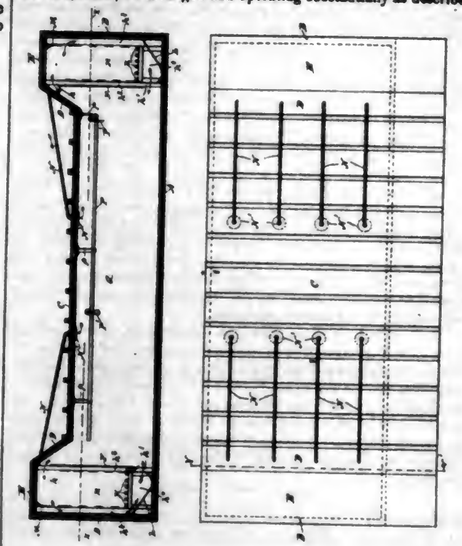
2. In a multiple-switchboard system, the combination of switches, one switch upon each board, with wires *c c*, forming the two limbs of a metallic circuit, the test-wire *m*, a branch wire to ground, including annunciator *d* at the central office, and the loop-plug whereby the two limbs may be connected with the different points of the plug and the test-wire connected with the ground branch.

472,773. REFRIGERATOR. WILLIAM SIEMS, Minneapolis, Minn. Filed Aug. 27, 1891. Serial No. 403,868. (No model.)

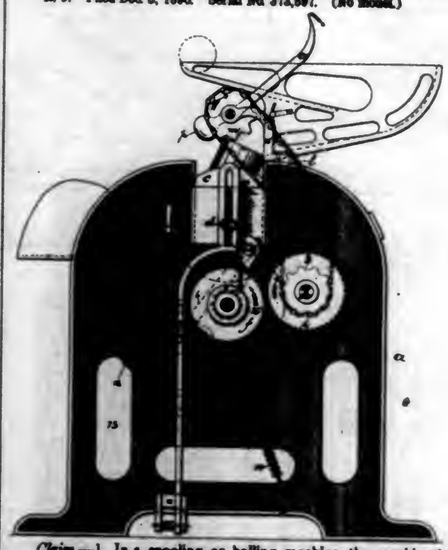
Claim.—1. In a refrigerator, the combination, with the storage-compartment, of the ice-compartments located at opposite extremities of the same and extended above the central part or body of the ceiling over the storage-compartment and warm-air-outflow pipes passing from the top of the storage-compartment through the said ceiling to the external air, and thence to the tops of the ice-compartments, substantially as and for the purpose set forth.

2. In a refrigerator, the combination, with a multiple-walled air-sealed room or chamber, of ice-receptacles located at opposite extremities of the room, extending above the storage-level, and closed from the storage-chamber, except at the top and bottom of the same, and outflow-pipes for the warm air passing through the ceiling of the room to the outside of the same and delivering into the tops of the ice-receptacles, substantially as described, whereby a forced circulation will be effected by the heat of the external atmosphere on the outside portion of said outflow-pipes.

3. The refrigerator, as described, comprising the walls A B, the ceiling C D E, the part C being at a lower level than the part E, the vertical partition F, dividing the room into the storage-compartment G and ice-compartments H, in communication therewith at *h* and *h'*, the ice-crates K, with air-circulating spaces h^3, h^3, and h^4, the deflecting-plates L and M, and the outflow-pipes N N', extending through the ceiling to the outside of the same and delivering into the tops of the ice-receptacles, all arranged and operating substantially as described.



472,774. BALLING-MACHINE. GEORGE J. TORRANCE, Harrison, N. J. Filed Dec. 5, 1890. Serial No. 373,697. (No model.)



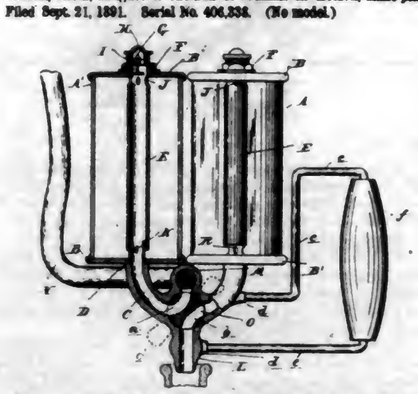
Claim.—1. In a spooling or balling machine, the combination, with the sliver-spooling apparatus and the breaker-lever, of a pivoted cushioning-lever secured to the frame below the breaker-lever, one arm of said cushioning-lever being in a position to be engaged by the lower end of said breaker-lever to cause a gradual stopping thereof, and a spring connecting the other end of the cushioning-lever to the frame.

2. In a spooling or balling machine, the combination, with the breaker-lever and the sliver-spooling apparatus, of a cushioning-lever arranged to receive and cushion the return movement of said breaker-lever, substantially as set forth.

3. In a spooling or balling machine, the combination, with mechanism for spooling the sliver and a breaking-lever, of a cushioning-lever having the inclined surface 9, a stop projection 11, and a spring bearing against said lever, whereby the latter is held into frictional contact with the breaking-lever, substantially as set forth.

4. In a spooling-machine, the combination, with the spooling mechanisms and a breaking-lever, of a cushioning-lever having the inclined surface to receive the break-lever, a lug 12 to limit the movement of the cushioning-lever, a stop projection to limit the movement of the break-lever, and a spring bearing against said cushioning-lever, substantially as and for the purposes set forth.

472,775. PORTABLE MEASURING-FAUCET. SIMON VERDIER, Detroit, Mich., assignor of one-half to William H. Holden, same place. Filed Sept. 21, 1891. Serial No. 406,338. (No model.)



Claim.—1. In a filling and measuring device for liquids, the combination, with two receptacles, a rigid yoke connecting the same, formed with channels therein, a two-way valve for the channels, a flexible tube connected into one of the channels, a handle secured directly to said yoke, and vents for the receptacles, substantially as described.

2. A portable filling and measuring device for liquids, consisting of two like vessels, a yoke connecting and supporting the same, formed with channels, a flexible hose connected into said channels, and a handle on the yoke, substantially as described.

3. In a portable filling and measuring device for liquids, the combination, with a channeled yoke, of two receptacles supported by the yoke, a central tube within the receptacles, bottom and cap plates for the receptacles, and means for securing the plates in place by engaging with the tubes, substantially as described.

472,776. DENTAL ENGINE. WALLACE W. WILLIAMSON, Syracuse, N. Y. Filed May 28, 1891. Serial No. 394,435. (No model.)



Claim.—1. In combination with the suspended driving-belt and pulley riding on said belt and carried thereby, a protecting-case completely surrounding said pulley and provided with guide-openings receiving through them the aforesaid belt and a shaft fixed to the pulley and journaled in the case and extending through the latter for transmitting motion by its outer end, as set forth.

2. In combination with a suspended driving-belt and pulley riding thereon, a case inclosing said pulley and provided with guide-openings receiving through them the aforesaid belt, a shaft fixed to the pulley and journaled to opposite sides of the case and extending through the side thereof for transmitting motion by its outer end, and a counterpoise on the case at the opposite end of the pulley-shaft, substantially as and for the purpose set forth.

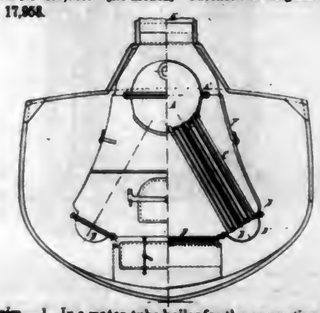
3. In combination with the suspended driving-belt and pulley riding on said belt, a case inclosing and housing said pulley and provided with openings for the passage of the belt, a shaft affixed to the pulley and journaled in the sides of the case, a shaft at the exterior of the case, connected to one end of the pulley-shaft, and a counterpoise formed on the interior of the case at the opposite end of the pulley-shaft, as set forth and shown.

4. In combination with the suspended driving-belt and pulley riding thereon, a case inclosing said pulley and composed of two concave shells detachably united at their peripheral edges, each of said shells being formed with a journal-bearing extending through the center of the shell and one of said shells having passages through it for the belt, a shaft extending diametrically through the case and its journal-bearings and having the aforesaid pulley secured to it, and a shaft at the exterior of the case, secured to the incased shaft, as set forth.

5. In combination with the suspended driving-belt B and pulley P riding thereon, the case C, composed of two hemispherical shells detachably united at their peripheral edges and each provided with a journal-bearing extending through the center of the shell and one of said shells being weighted to preponderate the companion shell, the shaft *a*, extending through the case and journaled in the aforesaid bearings and having the pulley P secured to it, and guards *b b* on the interior of the case to maintain the belt on the pulley, as set forth and shown.

6. In combination with the case C, provided with the tubular hubs *c c'*, the shaft *a*, journaled in said hubs and confined from longitudinal movement and formed with the socket *i*, terminating with the flat bearing *j* at the inner end of the socket, and a shaft inserted in said socket and terminating with the flat end portion *f*, seated on the flat bearing *j*, substantially as described and shown.

472,777. WATER-TUBE BOILER. ALFRED F. YARROW, London, England, assignor to Horace See, New York, N. Y. Filed Aug. 3, 1891. Serial No. 402,073. (No model.) Patented in England Nov. 11, 1889, No. 17,958.



Claim.—1. In a water-tube boiler for the generation of high steam, the combination of the following-named elements: generator-chambers, each chamber composed of two sections separably secured together longitudinally on both sides and both heads by bolts passing through steam-tight joints in said sides and heads, water-tubes for ascending circulation within a furnace and connecting one section of each of said chambers to a section of another chamber, and downcast pipes outside of the furnace-walls, connecting said generator-chambers, substantially as and for the purpose set forth.

2. In a water-tube boiler, the combination of a single upper generator cylinder or drum composed of two semi-cylinders separably bolted together longitudinally through steam-tight joints in both sides and heads and lower water-chambers composed each of two sections, the one a flat tube-sheet and the other a semi-cylinder, separably bolted together longitudinally through steam-tight joints in both sides and both ends, said upper cylinder and lower chambers being connected by circulating-tubes within the furnace, whereby access is obtained to both ends of said tubes by the removal of the bolts in said joints, substantially as set forth.

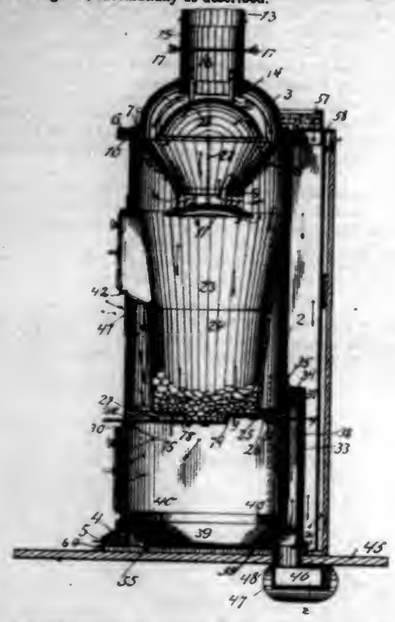
472,778. STREET-CAR HEATER. JAMES ALLINGHAM, Minneapolis, Minn. Filed Oct. 24, 1891. Serial No. 409,718. (No model.)

Claim.—1. The combination, in a heater, of the upright cylindrical portion with the dome thereof, the smoke-pipe extending therefrom, the slidable sleeve arranged therein, the inverted bell or cone suspended therefrom by straps 20, the rod 16, extending through said sleeve, the sides of said pipe provided with two inclined slots having notches 18, wherein the ends of said rod 16 are retained, the slanting walls of the deflector arranged beneath said dome, and a plate 11, suspended beneath the central opening of said deflector, substantially as and for the purpose specified.

2. The combination, in a heater, of the cylinder portion of the stove with the fire-pot arranged within the same, a chamber being formed between them, a grate and a grate-ring therefor, the stove-door casting having lugs 31 to support the rear part of said ring, said cylindrical part provided with the openings 37, through which the air enters from said air-duct, the air-inlet, and the openings 41, arranged in the upper stove-door frame, substantially as described.

3. The combination, in a heater, with the upper stove-door frame

and the lower door-frame, of that portion of the sheet-metal casing extending about and between the two frames, said lower door-frame provided with the flanges 29 and 75 on said frame, the slide 76, arranged to close a slot provided in said frame and adapted to admit the grate-bar 78, the grate, and grate-ring 25, having its forward sides supported by the flange 29, substantially as described.



4. The combination, in a heater, of the cylindrical part with the flaring base 4, having perforations 5, the inclosed ash-pit, the air-duct casting having the top 34 and the flanges 32 and 35, the lugs projecting from said air-duct casting to support the grate-ring, the walls of said casting and the lower part of the stove forming a vertical air duct or trunk, from which the air is admitted into the stove through an opening provided in the head thereof, and a horizontally and externally arranged air-inlet having flaring ends, substantially as described.

5. The combination, in a stove, of the upper ring thereof and a cylindrical casing with the containing-box provided with the crown-piece consisting in the vertical guard part and the horizontal parts adapted to be secured upon the block and to rest upon said ring to hold the stove in position, respectively, substantially as described.

6. The combination, in a stove, of the door with the door-frame whereon the same is secured, the lug upon said door and parallel with the vertical side of the door-frame, and a pivoted latch arranged transversely with respect to said door and having a kicking arm arranged to strike the inner side or end of the door when the latch is lifted, substantially as described.

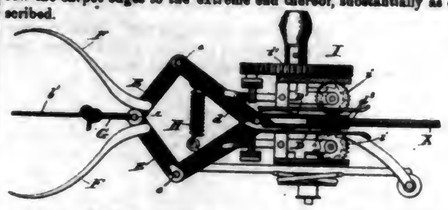
7. The combination of the door and door-frame thereof with the casting 63, pivoted by a pin 62 to said frame and having a hooked arm to engage a lug upon the door, a stop-arm 66, and a kicking arm 67, all as and for the purpose specified.

8. The combination, in a heater, of the upright stove-casing and the dome of the same with the smoke-pipe extending from the same, a sleeve slidably arranged in said smoke-pipe, a rod extending through both sides of said sleeve and pipe and retained in oppositely-located inclined slots therein, and a part or plate hung from and beneath said sleeve and adapted to be raised thereby to shut off the outlet through said smoke-pipe or lowered to open the same, substantially as described.

472,779. SUSPENDING-CLAMP FOR USE WITH CARPET-SEWING MACHINES. FRANKLIN AMES, Chicago, Ill. Filed Nov. 15, 1890. Serial No. 371,600. (No model.)

Claim.—1. A saddle-back sewing-machine adapted to travel along the edges of suspended carpet-lengths, in combination with the long upright clamping-jaws D D′, provided with arms *d*, arranged at a point considerably below the upper ends of said jaws and below the line of travel of the sewing-machine saddle, and the stretching-ropes *d′ b*, whereby when the carpet is suspended the saddle of the sewing-machine may pass out beyond the point of attachment of said arms to the jaws, substantially as described.

2. A saddle-back sewing-machine adapted to travel along the edges of suspended carpet-lengths, in combination with the clamping-jaws D D′, provided with ears or projections *d′*, flush with the upper ends thereof and extending backward beyond the carpet edges from the rear edges of the jaws themselves, handle-arms *d*, attached to the jaws below the said ears or projections, and stretching-ropes connected to said clamps beyond the ends of the carpet edges, whereby the saddle of the machine may pass out over said handles and upon the projecting ears to sew the carpet edges to the extreme end thereof, substantially as described.

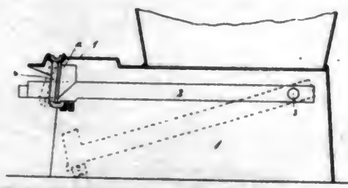


3. In a clamp for suspending carpets for sewing, the clamping-jaws D D′, provided with cord-attaching arms *d*, arranged below the line of travel of the sewing-machine saddle, projections or ears *d′*, on which said saddle may ride beyond the carpet edges, and stops d^3 for the end edges of the carpet-lengths, substantially as described.

4. A saddle-back sewing-machine I, adapted to travel along the edges of suspended carpet-lengths and provided with toothed feed-wheels *i*, in combination with the clamping-jaws D D′, provided with rear extensions *d′*, and an external covering on their upper ends d^5, of copper or other soft metal, substantially as described.

5. In a clamp for suspending carpets for sewing, the clamping-jaws D D′, provided with arms *d*, in combination with the spring H, interposed between said arms, the links E, and the handles F, attached, respectively, to said links, substantially as described.

472,780. GRATE-SUPPORT FOR FURNACES. HENRY D. BABCOCK, Leonardsville, N. Y. Filed June 3, 1891. Serial No. 394,840. (No model.)



Claim.—1. The combination, with a base of a furnace, of a grate-bar frame pivotally supported at its rear end in the base and the hook 4 for supporting the front end of the grate-bar frame, having a semicircular sleeve-shaped shank engaging in a semicular recess in the base, substantially as set forth.

2. The combination, with a furnace-base having a hook perforation or opening with a semicircular recess surrounding it, of a central grate-supporting hook having a semicircular sleeve-shaped shank adapted to engage in the recess, the hook being adapted to be inserted through the opening, substantially as set forth.

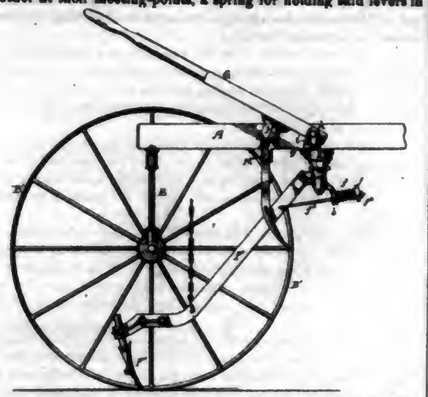
472,781. WHEEL-CULTIVATOR. FRANK BATEMAN, Gremloch, N. J., assignor to himself and Edward S. Bateman, same place, and Edgar C. Wilson, Blackwood, N. J. Filed Aug. 4, 1891. Serial No. 401,698. (No model.)

Claim.—1. The combination of the hanger-bars of a pair of cultivator-blades, with arms having a bearing upon each other and free to slide laterally in hangers on the frame and having portions engaging said hanger-bars, and a single operating-lever for imparting lateral movement in both directions to said arms, substantially as specified.

2. The combination of the hanger-bars of a pair of cultivator-blades, with a pair of controlling-levers free to slide laterally and engaging with each other at their meeting-points and having arms for engaging with said hanger-bars so as to move said bars from or toward each other, and a lever-handle connected to one of said controlling-levers, substantially as specified.

3. The combination of the hanger-bars of a pair of cultivator-blades, a pair of controlling-levers engaging with each other at their meeting-points and having arms for engaging with said hanger-bars, a spring for holding the levers in engagement at their meeting-points, and a lever-handle connected to one of said controlling-levers, substantially as specified.

4. The combination of the hanger-bars of a pair of cultivator-blades, a pair of controlling-levers engaging with said bars and having toothed and recessed heads whereby they are caused to engage with each other at their meeting-points, a spring for holding said levers in



engagement, and a lever-handle for operating one of said controlling-levers, substantially as specified.

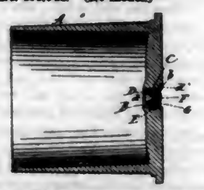
5. The combination of the hanger-bars of a pair of cultivator-blades, a pair of levers engaging with said bars and also in engagement with each other at their meeting-points, a lever-handle for operating one of said controlling-levers, a universal hanger for said lever-handle, and a universal connection between the same and the controlling-lever, substantially as specified.

6. The combination of the hanger-bar of a cultivator-blade, a head to which said bar is pivoted and which has a depending arm, a rod connected to the hanger-bar and passing through said arm and having a bearing-collar beyond the same, and a spring interposed between said arm and collar, substantially as specified.

7. The combination of the hanger-bars of a pair of cultivator-blades, a pair of connected levers engaging said bars and mounted in hangers in which they are free to slide laterally, and a lever-handle connected to one of said levers and mounted so as to swing upward, downward, and sidewise, substantially as specified.

8. The combination of the hanger-bars of a pair of cultivator-blades, a pair of levers engaging the same, but having a lost-motion connection with said bars, and means for moving said levers so as to cause lateral movement of the bars and blades, substantially as specified.

472,782. SHELL. THOMAS G. BENNETT, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Jan. 4, 1892. Serial No. 416,941. (No model.)

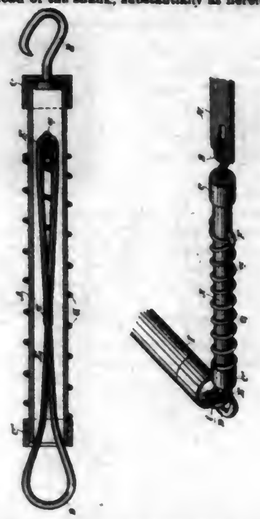


Claim.—A cartridge-shell having a central perforation in its head, combined with a pocket set in said perforation and a primer in said pocket, one or more of the parts constructed with an annular expansion-space between it and the adjacent surface of another part, substantially as and for the purpose described.

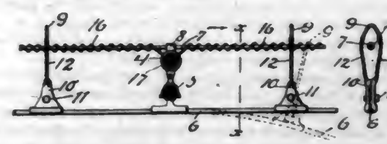
472,788. ELASTIC TRACE CONNECTION. JAMES H. BURKE and IRA N. BURKE, Forest Hill, Cal. Filed Dec. 1, 1891. Serial No. 413,708. (No model.)

Claim.—1. An elastic trace connection consisting of a hollow bar having slotted sides and an end hook for the trace, a cross-head within said bar having ends projecting through the slots in its sides, a spring against which the cross-head bears, and a snap-hook fitted within the bar and formed with a doubled or bent shank having its bight encircling the cross-head and having its free ends confined by the end of the hollow bar, substantially as herein described

2. An elastic trace connection consisting of the hollow or tubular bar having the end caps and the elongated side slots, the swivel-hook for the trace at the forward end of the bar and confined by the front cap, the snap-hook for the whiffletree projecting from the rear end of the bar and formed with a doubled or bent shank extending forwardly in said bar, the cross-head confined in the bight of said shank and projecting sidewise through the slots of the bar, and the spring seated upon the bar and having its ends confined by the rear cap of the bar and the cross-head of the shank, substantially as herein described.



472,784. SAFETY ATTACHMENT FOR OVERHEAD ELECTRIC WIRES. CHARLES D. BROWN, Minneapolis, Minn. Filed Jan. 8, 1891. Serial No. 377,189. (No model.)



Claim.—1. The combination, with the trolley-wire and the supports thereof, of an overlying guard and a loop extending from the trolley-wire above and surrounding said guard, said guard being electrically connected with the ground, substantially as described.

2. The combination, with the overhead wire, of supports therefor, a loop arranged in proximity to a support, and an overlying guard surrounded by but normally insulated from said loop, said loop adapted to make electric contact with said guard and with the ground upon the falling of the said overhead wire, substantially as described.

3. The combination, with a suspended electric wire and the hanger therefor, of an overlying guard, a ground connection extending therefrom, and a loop extending from the wire on each side of the said hanger and electrically connected with the wire, the sides of said loops being insulated and the said guard being surrounded by the same, substantially as and for the purpose specified.

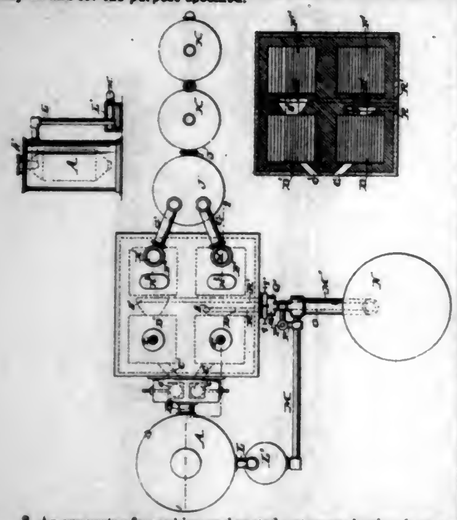
4. The combination, with the pole and the cross-arm thereof, of a hanger depending therefrom, a conductor-wire suspended from said hanger and insulated from said arm, a guard-wire overlying the same, a ground-wire leading therefrom down through said pole to ground, and electric conductor-loops projecting upward from the conductor-wire and surrounding the guard-wire, the sides of said loop being insulated and the top thereof bare, substantially as described.

5. The combination, with the conductor-wire, of the guard suspended above the same and insulated therefrom, a ground connection extending from said guard, and a loop surrounding said guard, the clamping-plates 10 of the loop, a bolt or bolts for securing the same on the conductor-wire, and means for insulating the sides of the loop, substantially as described.

472,785. GAS-MAKING APPARATUS. CHARLES R. COLLINS, Philadelphia, Pa., assignor to the United Gas Improvement Company, same place. Filed Jan. 20, 1891. Serial No. 378,301. (No model.)

Claim.—1. An apparatus for making carbureted water-gas, having, in combination, a generator, two carbureting and fixing chambers or sets of chambers, each having independent connection with the

generator, a gas-receiver connecting with the generator, separate conduits connecting each carbureting and fixing chamber with the receiver, and valves arranged to control the course of gas from the generator and receiver to the carbureting and fixing chambers, substantially as and for the purpose specified.



2. An apparatus for making carbureted water-gas, having, in combination, a generator, two carbureting and fixing chambers or sets of chambers, each having independent connection with the generator, a gas-receiver connecting with the generator, separate conduits connecting each carbureting and fixing chamber with the receiver, a by-pass connecting the conduit leading to the receiver with the conduits leading therefrom, and valves arranged to control the course of gas from the generator and receiver to the carbureting and fixing chambers, substantially as and for the purpose specified.

3. An apparatus for making carbureted water-gas, having, in combination, a generator, two carbureting and fixing chambers or sets of chambers independently connected with the generator, a receiver, a conduit leading from the receiver to the generator, a conduit leading from the receiver jacketed by the conduit leading into it from the generator, independent connections from the conduit leading from the receiver to each set of carbureting and fixing chambers, and valves situated in the conduits for governing the course of the gases, all substantially as and for the purpose specified.

472,786. BICYCLE-TIRE. EDWARD G. DORCHESTER, Geneva, N. Y. Filed Oct. 24, 1891. Serial No. 409,710. (No model.)



Claim.—1. A pneumatic tire composed of two tubes disposed one within the other and the inner tube compressed endwise and a canvas lining cemented to the inner tube to retain the same in its compressed condition, as set forth.

2. A wheel-tire consisting of two rubber tubes arranged one within the other and the inner tube compressed lengthwise, a lining secured to the inner tube to retain the same compressed, and a sheath enveloping the exposed portion of the outer tube, as set forth.

3. In combination with the wheel-rim, two rubber tubes arranged one within the other and the inner compressed lengthwise, a lining secured to the inner tube, a reinforcing-layer interposed between the outer tube and wheel-rim, and a sheath enveloping the outer tube and lapping onto the inner side of the wheel-rim and secured thereto, as set forth.

4. In combination with the wheel-rim and rubber tube, a sheathing enveloping said tube and secured to the rim, a rubber or felt cushion on the tread of the outer tube, a canvas cover over said cushion and secured to the sheathing, and a rubber coat over said cover and sheathing and secured thereto, as set forth.

5. The combination, with the wheel-rim and the rubber tube seated entirely upon the exterior of said rim, of the sheathing enveloping said tube and lapping onto the inner side of the rim, clamping-hooks placed upon the lapping portions of the sheathing, and ties uniting said hoops, as set forth.

6. The combination, with the wheel-rim and rubber tube, of the sheathing lapping onto the inner side of the rim, hoops composed of segments placed upon the lapping portions of the sheathing, expanding bolts interposed at the joints of said segments, and ties uniting said hoops, as set forth.

7. The combination, with the wheel-rim and rubber tube, of the sheathing lapping onto the inner side of the rim and having its edges enlarged in thickness, clamping-hoops placed upon the lapping portions of the sheath, and ties uniting said hoops, substantially as described and shown.

8. The combination, with the wheel-rim and rubber tube, of spurs projecting from the inner side of the rim, the sheathing lapping onto the rim and receiving the spurs through it, cords or bands attached to the edges of the sheath, clamping-hoops placed upon the lapping portions of the sheath, and ties uniting said hoops, as set forth and shown.

9. The combination, with the wheel-rim and rubber tube, of the sheathing lapping onto the inner side of the rim, clamping-hoops placed upon the lapping portions of the sheathing, perforated ears on the hoops and on the rim, and tie-bolts passing through said ears, as set forth and shown.

472,787. INDICATOR FOR DOORS. CHRISTIAN S. GERLACH, Elgin, Ill. Filed June 29, 1891. Serial No. 397,575. (No model.)



Claim.—1. A registering device for water-closet and other doors, consisting of a sliding pin, a movable dog or plate in operative proximity thereto, a catch for holding said dog or plate in an abnormal position while said pin is being moved forward and back, a sign with suitable words thereon adjusted to be operated by said dog, a latch in operative proximity to said catch, means for depressing the free end of said latch beneath the path of the operating pin, means for holding the free end of said latch normally above the path of said pin, and means for connecting said operating pin with the stationary point upon the door-frame, substantially as shown and described.

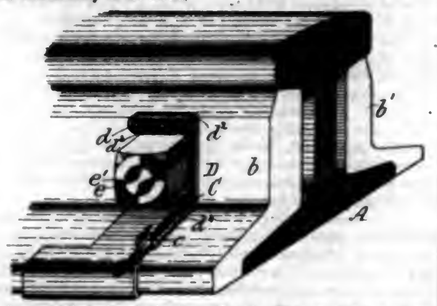
2. The combination, with a door, of a slotted plate through which is displayed a movable disk having different signs or words thereon, a movable pin arranged in a suitable guide and in operative connection with a stationary point upon the door-frame, a movable dog in operative connection with said disk and movable pin, respectively, a catch for holding said disk in an abnormal position, a latch in operative proximity to said catch and movable pin, and means for interposing said latch between said pin and catch with each alternate double movement of said pin, substantially as shown and described.

3. The combination, with a door, of a pin arranged to move in a suitable guide, means for connecting the same with a stationary point, a movable dog interposed in the path of said pin, a sliding frame in operative connection therewith, having different signs or characters thereon arranged to be seen through an opening in the door, means for causing said frame to assume a normal position, a catch for holding the same in an abnormal position, a pivoted latch arranged in the path of said sliding pin, means for normally holding the free end of said latch above the path of said pin, and means for abnormally interposing it between said sliding pin and said catch, substantially as shown and described.

4. The combination, with a door, of the stationary plate *e*, slotted, as described, of the pin *g*, means for loosely connecting the same with a stationary point upon the door-frame, a vertically-movable plate having different signs thereon arranged to be alternately displayed before an opening in said door, dogs *i* and *l* in operative proximity to said sliding frame, latch *k*, means for holding its free end normally above the pin *g*, and means for depressing said latch when said sliding frame is in an elevated position, substantially as shown and described.

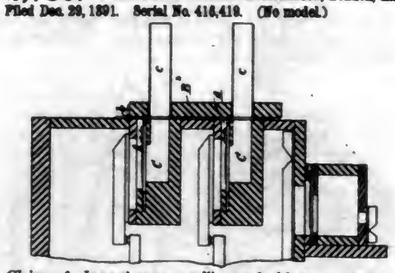
472,788. NUT-FASTENING DEVICE. JOHN W. GRANTLAND, Philadelphia, Pa. Filed Feb. 23, 1892. Serial No. 422,412. (No model.)

Claim.—1. A nut-fastening device for railroad-rails, comprising a metallic plate provided with a bearing or socket and a spring-catch and a detachable hook-shaped locking device held in said bearing or socket and adapted to be brought into engagement with said catch for maintaining a nut firmly to position and against displacement or movement, substantially as set forth.



2. A nut-fastening device for railroad-rails, comprising an oblong metallic washer-plate conforming to the surface of a fish-plate of a rail and clamped to and held firmly in position by said fish-plate and having formed integral therewith a spring-catch and a bearing or socket, and a hook-shaped detachable fastening device held in said bearing or socket and adapted to engage said spring-catch, substantially as and for the purposes set forth.

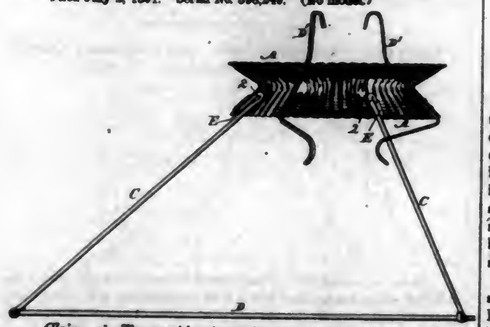
472,789. REED-ORGAN. JAMES R. HAMILTON, London, England. Filed Dec. 28, 1891. Serial No. 416,419. (No model.)



Claim.—1. In reed-organs or like musical instruments, a mute or flap for the reed-cells, provided with openings adapted to be placed in air-tight communication with the reed-chambers whether the reeds therein be acted upon by pressure or by suction, substantially as hereinbefore described.

2. In reed-organs or like musical instruments, a mute or flap for the reed-cells, constructed to carry or constitute the tubes or cavities which are to be placed in air-tight communication with the reed-chambers, substantially as described.

472,790. LAMP-SHADE SUPPORT. THOMAS HIPWELL, Long Island City, assignor to the Manhattan Brass Company, New York, N. Y. Filed July 2, 1891. Serial No. 398,249. (No model.)



Claim.—1. The combination, with the shade-holding arms C and ring D, of a sheet-metal crown A, corrugated in the line of the axis of the crown, or nearly so, and bent conically for the reception of the shade, substantially as set forth.

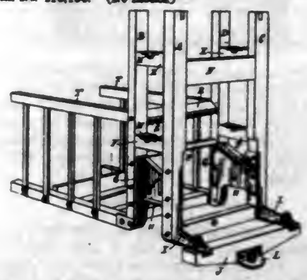
2. The shade-holder having a ring D and arms C, bent as hooks at their upper ends, a crown of sheet metal corrugated parallel, or nearly so, to its axis and bent conically for the reception of the upper end of the shade, and loops upon the crown for the reception of the hooks upon the arms, substantially as set forth.

472,791. LETTER-POUCH. HENRY H. JOHANNIGMAN, Cincinnati, Ohio. Filed Sept. 14, 1891. Serial No. 405,578. (No model.)



Claim.—An envelope or letter pouch perforated near its mouth, as at *a b*, and a perforated tag D D', having a gummed portion E, which tag is folded over said mouth and secured by a paper-fastener, as G, the clinched ends of the latter being sealed by causing said gummed portion E to adhere to one fold of said tag, substantially as herein described.

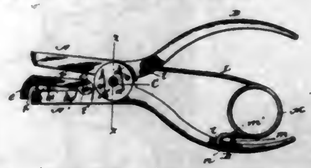
472,792. CLOVER-HULLER FRAME. JOHN N. KAILOR, Columbus, Ind., assignor to Reeves & Co., same place. Filed Oct. 29, 1891. Serial No. 410,180. (No model.)



Claim.—1. In a frame for clover-hullers, the combination of the vertical posts arranged in pairs, the posts forming each pair being connected by the beams E and F and the metallic plate G, and connecting cross-beams connecting said pairs of posts together, substantially as set forth, one of said cross-beams being of metal and having the projecting fingers S and arranged as shown and described.

2. In a frame for clover-hullers, the combination, with the vertical posts and the connecting horizontal beams forming therewith a rectangular frame, of the pair of metallic plates G G, each having an arm I and secured to the opposite sides of the frame, and the bolster secured to said arms, all substantially as and for the purpose set forth.

472,793. TICKET-PUNCH. CHARLES W. KUEN, Chicago, Ill. Filed Dec. 26, 1891. Serial No. 416,240. (No model.)

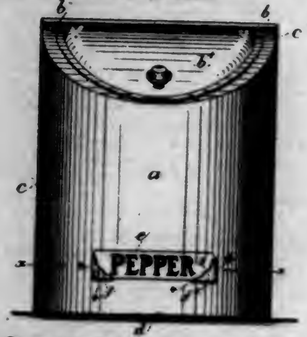


Claim.—1. In a punch, the combination of two jaws pivotally connected together and provided with the integral handles, a die or punch carried by one of the jaws, a stripper provided with an aperture to receive the die or punch and having its inner end bifurcated and fitted in suitable recesses *c'*, formed in one of the jaws, a pivot-pin connecting the bifurcated end of the stripper with the solid portion of the jaw, and a spring formed from a single piece of wire and bent at an intermediate point of its length around the pivot-pin of the stripper and having its ends contacting with the adjacent surfaces of the stripper and jaw to which it is pivoted, substantially as shown and described.

2. In a punch, the combination of two jaws, each provided with an integral handle and an intermediate enlarged portion, a headed pin D, passing through an aperture in the enlarged portion of one jaw and having its end threaded and fitted in a threaded socket in the enlarged portion of the other jaw, the head of such pin being surrounded by flanges on the enlarged portions of the jaws, a stripper pivotally connected to one of the jaws, a die or punch carried by one jaw and ex-

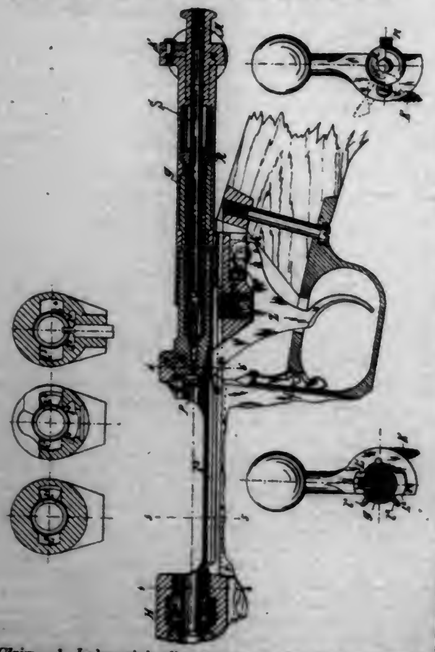
tending through an aperture in the stripper, a spring having its ends fitted in sockets in the adjacent sides of the handles and provided with an intermediate coil, and a bolt *m*, having one end threaded and fitted in a suitable socket in one of the handles and provided with an eye, through which the spring arranged between the handles passes, substantially as described.

472,794. LABEL-HOLDER FOR CANISTERS. HENRY MACARTHY, New York, N. Y., assignor to S. A. Ilsley & Co., same place. Filed Dec. 12, 1891. Serial No. 414,788. (No model.)



Claim.—The combination, with a decorated sheet-metal canister, of sheet-metal clip-pieces, each having two edges at right angles to each other and having tongues projecting from such edges and passing through mortises in the face of the canister for securing such angular clip-pieces in place, and a removable name-plate adapted to be inserted within and held by said angular clip-pieces, substantially as and for the purposes set forth.

472,795. REPEATING-FIREARM. FERDINAND MANNLICHER, Vienna, Austria-Hungary. Filed July 18, 1889. Serial No. 317,889. (No model.) Patented in Belgium June 4, 1889, No. 86,505; in Sweden June 13, 1889, No. 3,230; in England June 13, 1889, No. 9,773; in France June 14, 1889, No. 196,933; in Italy June 30, 1889, XXIII, 25,954; in Norway July 13, 1889, No. 1,593; in Spain Oct. 5, 1889, No. 232/9,829, and in Austria-Hungary Oct. 19, 1889, No. 2,527 and No. 2,573.



Claim.—1. In breech-loading firearms, the combination, with the sliding breech-bolt composed of the rotary part K, provided with the locking-studs W' W², and the sliding part *g*, of the guide-ribs *l' l²*, radially disposed upon the lower side of the sliding part *g*, and the receiver H, having its interior provided with the corresponding grooves *l² l²*, in which said ribs *l' l²* may slide, and with the recesses for the reception of studs W' W², substantially as and for the purpose described.

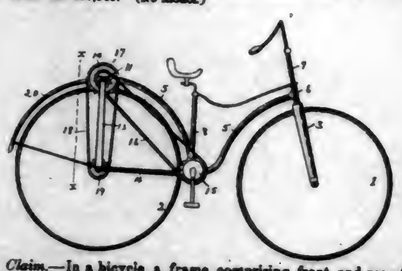
2. In breech-loading firearms, the combination, with the sliding breech-bolt composed of the rotary part K, provided with the locking-studs W' W², and the sliding part *g*, of the guide-ribs *l' l²*, radially disposed upon the lower side of the sliding part *g*, the longitudinal guide-ribs L' L², radially disposed in a horizontal plane upon part *g*, and the breech-receiver H, having its interior provided with the corresponding grooves *l² l²* and L³ L⁴ and recesses for the reception of studs W' W², substantially as and for the purpose described.

3. A breech-loading firearm having a receiver and a breech-bolt movable longitudinally therein, the bolt-head having a notch *fr*, in combination with the trigger having a head at its front end adapted when the bolt is withdrawn to enter said notch and eject the cartridge-shell, substantially as described.

4. In breech-loading firearms, the combination of the sliding breech-bolt composed of a sliding part with guide-ribs L' L² and a rotary part, locking-studs upon the forward end of the rotary part, with an extractor P, bent to follow the outline of one of the locking-studs, so as to permit the turning of the said locking-studs with the rotary part of the breech-bolt, extractor P prevented from rotating with the breech-bolt by groove L in the receiver, substantially as described.

5. In repeating-firearms receiving the cartridges from a magazine situated underneath the receiver and having a sliding breech-bolt, the forward end of said breech-bolt provided with a rim Q for the reception of the cartridge-head, the said rim being cut away flush with the end of the bolt on its under side, leaving an open space facing the top of the magazine when the bolt is unlocked, substantially as and for the purpose described.

472,796. BICYCLE. JACOB D. MOSKOWITZ, Toledo, Ohio, assignor of one-fourth to Samuel J. Braun, same place. Filed Sept. 21, 1891. Serial No. 406,305. (No model.)



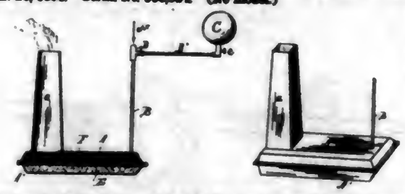
Claim.—In a bicycle, a frame comprising front and rear forks, respectively, a rigid backbone connected therewith and having a rear upwardly-curved portion, a casing secured thereto, having a shaft journaled therein, front and rear wheels journaled in the front and rear forks, respectively, braces extending vertically from the rear axle and having sections of casing secured thereto, in which the shaft is journaled, a crank-shaft journaled in the frame, drive-wheels upon the crank-shaft, rear axle and shaft journaled in the casings, and drive-belts connecting the rear axle and crank-shaft, respectively, with the shaft upon the frame by engaging with the drive-wheels thereon, the drive-wheels being of differential sizes to speed the rear wheel.

472,797. KNOCKDOWN BOX. JOHN J. MCDONALD, Louisville, Ky. Filed Aug. 7, 1891. Serial No. 401,952. (No model.)



Claim.—A blank for forming a paper box provided with side walls, in which are cut slots or scores 3 4, in combination with the corner-pieces A³, left integral with the end walls, said corner-pieces each having the right-angled corner 5 and tongue *a*, which, with the V-shaped excision 2, are adapted to coincide with and lock in the scores 3 4 to form a box provided with reinforced corners, substantially as set forth and described.

472,798. TANK-HEATER. JOHN T. MCGRATH, Palmyra, Ill. Filed Mar. 26, 1891. Serial No. 386,534. (No model.)



Claim.—1. In a submerged heater, the combination, with a water-tight combustion-chamber having an asbestus layer upon its bottom, of a single upwardly-extending tube opening within the chamber above said layer and having above the water-line an open-air branch and a branch leading to an oil-receptacle, the latter branch being provided with a stop-cock, substantially as and for the purpose set forth.

2. In a submerged heater, the combination, with a water-tight combustion-chamber having at one end a smoke-stack and at the other an internal upwardly-open compartment containing asbestus, of a single tube entering said chamber above said compartment to supply both air and oil, and a deflector depending from the top of the chamber near the smoke-stack, whereby the flame first striking the top of the chamber is then thrown against the bottom thereof as it passes to the stack, substantially as set forth.

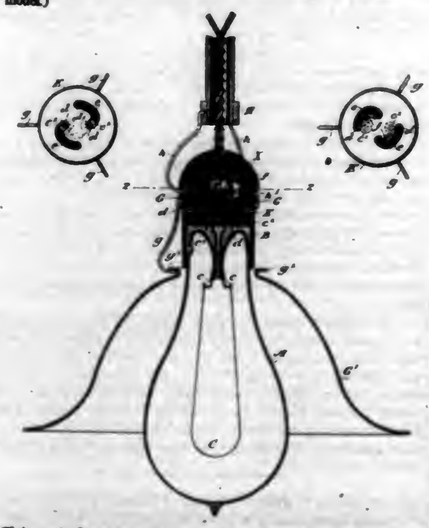
472,799. CAR-COUPLING. THOMAS L. MCKEEN, New York, N. Y., assignor to the Thurmond Car Coupling Company, of West Virginia. Filed July 13, 1891. Serial No. 399,302. (No model.)



Claim.—1. In a twin-jaw car-coupler, the combination, with a hollow draw-head, of a knuckle pivoted therein, the said knuckle having a curved recess therein and a spiral spring fitting in the curved recess and tending to open said knuckle, substantially as described.

2. In a twin-jaw car-coupler, the combination, with a hollow draw-head, of a knuckle pivoted therein, the said knuckle having a curved recess therein, a spiral spring fitting in the curved recess and tending to open said knuckle, and a curved plunger D', rigidly held in said draw-head and fitting in said spring, substantially as described.

472,800. INCANDESCENT ELECTRIC LAMP. GEORGE C. BAILLARD, New York, N. Y. Filed Sept. 22, 1891. Serial No. 406,439. (No model.)



Claim.—1. In an incandescent electric lamp, the combination of the base, the bulb permanently secured therein, the filament, the tubular terminals of the filament on the base, fixed permanent electrical connections between the filament and terminals, and a transversely-movable clamping-plate mounted on the base and constructed and having vertical clamping-edges past which the ends of the circuit-wires extend when inserted into the tubular terminals, whereby when the wires are inserted into the exposed terminals the clamping device may be moved transversely and its vertical edges caused to clamp or pinch the wires against the sides or edges of the tubular terminals.

2. The combination of the bulb, the base, the filament, the tubular filament-terminals on the base, and a slotted cap or plate carried by the base, whereby both circuit-wires may be simultaneously connected with the tubular terminals, substantially as set forth.

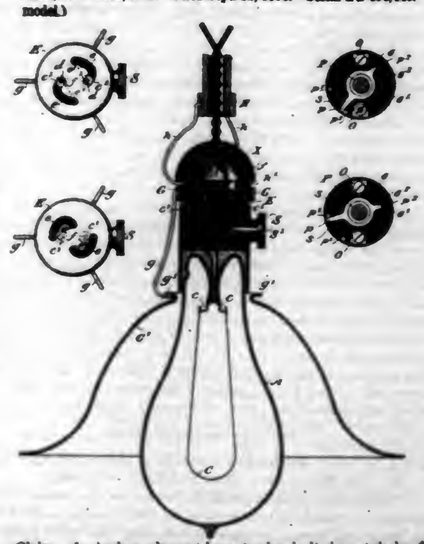
3. In an incandescent electric lamp, the combination of the base, the bulb, the filament, filament-terminals on the base, and a slotted plate mounted on the base and by means of which both ends of the circuit-wires may be simultaneously connected with the terminals.

4. In an incandescent electric lamp, the combination of the bulb, the base, the filament the tubular filament-terminals on the base, and a slotted clamping-plate carried by the base and movable transversely to said terminals, the under face of the clamping-plate being beveled at one edge of each slot, substantially as and for the purpose set forth.

5. The combination of the bulb, the base, the tubular filament-terminals on the base, and a clamping device mounted on the base and movable transversely to the open ends of said terminals in proximity thereto, the clamping device having vertical clamping-edges past which the ends of the circuit-wires extend when inserted into the tubular terminals, whereby when the wires are inserted into the exposed terminals the clamping device may be moved transversely and its vertical edges caused to clamp or pinch the wires against the sides or edges of the tubular terminals.

6. The combination of a tubular terminal adapted to receive the free end of a circuit-wire, a clamping-plate movable transversely across the open face of the tubular terminal and having a vertical clamping-edge past which the wire extends when inserted into the terminal, whereby when the wire is inserted the clamping-plate may be moved transversely and its vertical edge caused to clamp or pinch the wire in the terminal.

472,801. INCANDESCENT ELECTRIC LAMP. GEORGE C. BAILLARD, New York, N. Y. Filed Sept. 22, 1891. Serial No. 406,440. (No model.)

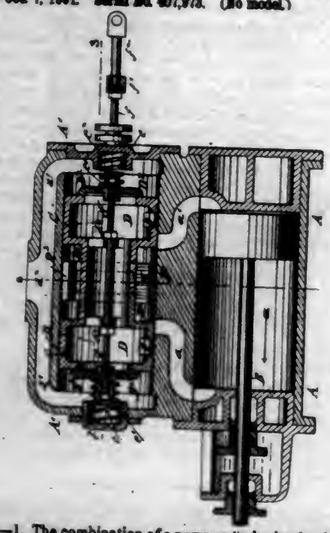


Claim.—1. An incandescent lamp having in its base tubular filament-terminals, the slotted clamping plate or cap movable transversely across said terminals to cover or expose them for the insertion of the ends of the circuit-wires, whereby the ends of the wires may be clamped in the terminals by lateral strain, and a key in the side of the base, substantially as and for the purpose set forth.

2. The combination of the bulb and filament, the lamp-base in which the bulb is seated, the filament-terminals on the base, a recess in the side of the base, the contact-finger and contact-spring located in said recess and interposed in the wire connecting the filament and one of its terminals, the pivoted switch-lever operating upon said spring, and the lever-operating button seated in the recess in the side of the base.

3. In an incandescent lamp, the combination of the base having the recess in its side, the brackets O, the contact-finger, and the overlapping contact-spring arranged within the recess W, the switch-lever pivoted in the recess, and one end of which works against the contact-spring and the other between limiting-stops, the button fitting in the recess, the pins on its inner face for operating the lever, and the screw-bolt screwed into the base and on which the lever and button turn.

472,802. VACUUM-PUMP. JOHN P. BOETTNER, Cold Spring, N. Y. Filed Oct. 7, 1891. Serial No. 407,973. (No model.)

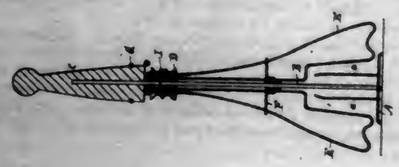


Claim.—1. The combination of a pump-cylinder having induction and eduction ports, a valve-chest, a guide-cylinder in said valve-chest, provided with a lateral suction-port, and delivery-channels in the bottom of the guide-cylinder, a slide-valve guided in said cylinder, spring-cushioned delivery-valves arranged at the ends of the slide-valve, a contracted portion at the central portion of the slide-valve, said contracted portion being arranged to lap over the induction and eduction ports of the pump-cylinder when the piston arrives at one of its dead-point positions, and a split ring or band connected with the contracted portion of the slide-valve, so as to keep the suction-port closed while the compensation of pressure between the dead-spaces of the cylinder takes place, substantially as set forth.

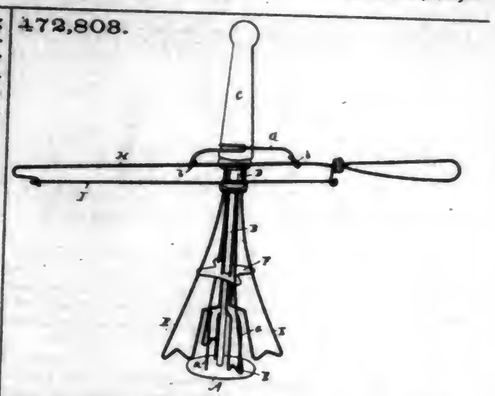
2. The combination, with a pump-cylinder having induction and eduction ports, of a valve-chest, a guide-cylinder in said valve-chest, open at the ends, a slide-valve in said guide-cylinder, provided with openings at the ends and with a contracted portion at the middle portion of the slide-valve, spring-pressed delivery-valves at the ends of the slide-valve, delivery-channels communicating with the ends of the guide-cylinder and the delivery-port, and a split ring that is connected by a web with the contracted portion of the slide-valve and adapted to close the suction-port when the piston arrives at one of its dead-point positions, so that the annular space formed by the contracted portion can be used for compensating the pressure in the cylinder at the opposite sides of the piston, substantially as set forth.

472,808. EGG-BEATER. HOWARD M. BRITTAIN, Martin's Creek, Pa. Filed May 18, 1891. Serial No. 393,205. (No model.)

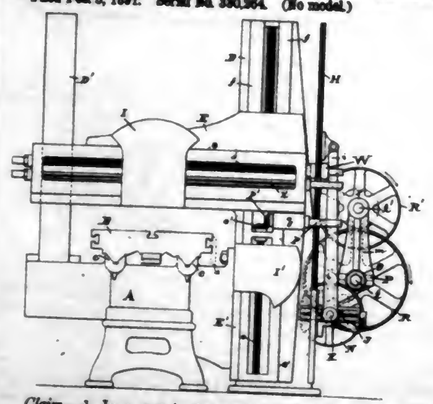
Claim.—An egg-beater consisting of the base, the standard rising therefrom, the handle having grooves, the spool rotating on the standard, the curved beaters having their ends connected to the spool, the spider, the breakers rising from the base between the standard and beaters, the guide having loops, the bow passing through the loops, and the cord connected to the bow and passing around the spool, as described.



472,808.



472,804. METAL-PLANER. JACOB S. DETRICK, Baltimore, Md. Filed Feb. 5, 1891. Serial No. 380,964. (No model.)



Claim.—1. In a metal-planer, the combination of the base or frame, a reciprocating platen, a post fixed rigidly at the side of the platen and having a vertical slideway *f*, and a cross-beam E, having at one end a downwardly-projecting part E', which fits the said vertical slideway of the post, as and for the purpose set forth.

2. In a metal-planer, a cross-beam provided with a horizontal slideway and having at one end a downwardly-projecting part provided with a vertical slideway for a tool-head, as set forth.

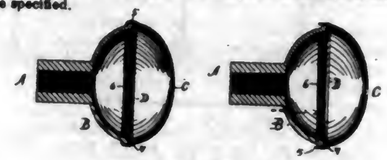
3. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway and having at one end a downwardly-projecting part provided with a vertical slideway, a movable head I on the said horizontal slideway, and a movable head I' on the vertical slideway, as set forth.

4. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway and having at one end a downwardly-projecting part provided with a vertical slideway, a movable head I on the said horizontal slideway and a movable head I' on the vertical slideway, screw-shafts on the cross-beam and a vertical screw on the downwardly-projecting part, said vertical screw having a miter-pinion *o'*, a horizontal shaft *p*, also having a miter-pinion, and a vertical rack H, which imparts motion, as described, to the screw-shafts on the cross-beam and also the vertical screw on the downwardly-projecting part.

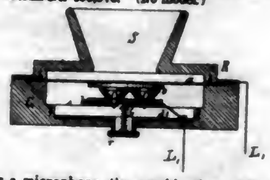
5. In a metal-planer, the combination of the reciprocating platen, the diagonal shaft *q'* to impart motion to the platen, a shaft *k*, provided with a bevel-gear which connects with the said diagonal shaft and also having a driving-pulley R and gear-wheel S, both loosely mounted on said shaft, a double clutch between the pulley and gear-wheel, a second shaft *k'*, having rigidly mounted thereon a driving-pulley R' and a gear-wheel S', which latter is engaged with the said loose gear-wheel, and means to actuate the said double clutch.

472,805. KNOB. ERNEST J. FORBES, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Dec. 19, 1891. Serial No. 415,696. (No model.)

Claim.—A knob-shell consisting of two parts, one of which is provided with an overlapping flange or lip and an internal supporting-disk of a diameter to fill the part provided with said overlapping flange and having an annular bead near its edge of a size in its complete circle to substantially fill the inside of that part of the shell over which said lip is turned down, substantially as described, and for the purpose specified.



472,806. ADJUSTABLE MICROPHONE. HERMANN O. HERTZBERG, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Oct. 10, 1891. Serial No. 408,378. (No model.)



Claim.—1. In a microphone, the combination, with a frame, of a sounding-funnel and vibrating plate or membrane secured together and rotatably mounted in said frame, a carbon plate secured to said membrane, a plurality of carbon bodies supported on a flexible disk and pressing against said carbon plate, and means for regulating the pressure between said carbon bodies and said carbon plate, substantially as and for the purposes described.

2. In a microphone, the combination, with a frame, of a sounding-funnel and vibrating plate or membrane rotatably mounted in said frame, a carbon plate attached to said plate or membrane, a plurality of carbon cones with their bases pressing against said carbon plate, a support for said cone, mounted upon a flexible disk, and means for regulating the pressure upon said support and so adjusting the pressure between the bases of said cones and the carbon plate attached to the membrane, substantially as and for the purposes described.

3. In a microphone, the combination, with a frame, of a sounding-funnel and vibrating plate or membrane rotatably mounted in said frame, a carbon plate attached to said plate or membrane, a plurality of carbon cones with their bases pressing against said carbon plate, a support for said cone, mounted upon a flexible disk, a spring pressing upon said support and holding the bases of said cones in contact with the said carbon plate, and a screw for adjusting the tension of said spring, substantially as and for the purposes described.

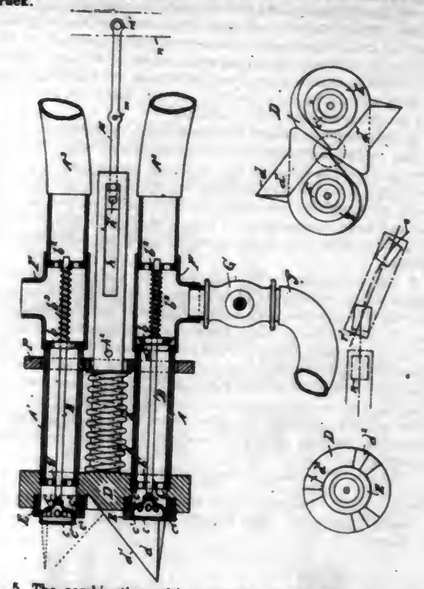
472,807. AIR AND STEAM COUPLING FOR RAILWAY-CARS. JAMES P. HILL, Fleetwood, Pa. Filed June 4, 1891. Serial No. 395,051. (No model.)

Claim.—1. The combination, with a car, of a pipe or hose coupling mechanism, substantially as described, pivotally secured intermediately of its length to the car-body and having its coupling-head extended to a point adjacent to the car-coupling and its opposite end connected with the car-truck, whereby the coupling-head is swung laterally on curves, substantially as and for the purpose set forth.

2. In a pipe or hose coupling mechanism for cars, the combination, with the head-piece having guide-wings at its forward end, elastic rings adjacent to said wings, the pipe entering said head and having guide-plates at its opposite ends, each of said guide-plates having a series of perforations, of a puppet-valve seated within said pipe, a stem projecting through said valve and guide-plates, a hollow perforated head on the forward end of said stem, adapted to make a tight joint with said elastic rings to prevent the passage of air or steam between them, and a spring encircling said stem between said valve and the rear guide-plate, substantially as shown and described.

3. In a double pipe or hose coupling for cars, the combination of the pipes A and A', secured to a common head-piece, puppet-valves seated within said pipes and having operating-stems projecting through the head-piece, joints E in the head-piece inclosing the end of the valve-stems, guiding-pieces on the end piece between the joints, and a spring between said pipes for taking up the movement of the draw-springs and maintaining proper pressure on the joints E at all times, substantially as described.

4. In a double pipe or hose coupling for cars, the combination of the laterally-movable pipes A and A', secured to a common head-piece and a shaft extending rearward from the head-piece, a spring encircling said shaft, and a lever connected with said shaft, pivotally supported at its center from the car-body and pivoted at its rear end to the car-truck.

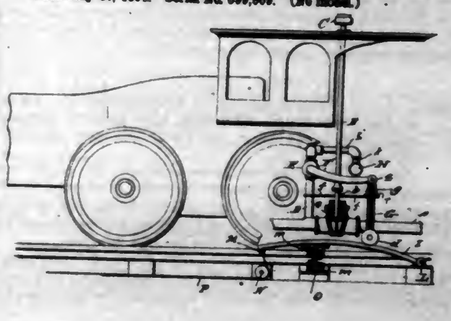


5. The combination, with a car, of a double pipe or hose coupling mechanism consisting of pipes A and A', secured to a common head-piece D, puppet-valves seated within said pipes and having operating-stems projecting through the head-piece, and a shaft extending rearward from the head-piece between the pipes, said shaft being pivotally supported from the car-body, provided with a spring K and having its inner end operatively connected by a lever M with the car-truck, all arranged and adapted to operate substantially as and for the purpose set forth.

6. In a pipe or hose coupling for cars, the combination, with the head-piece and laterally-movable pipe entering the same and provided with means for opening and closing the passage through it, of a shaft adjacent to said pipe, a coil-spring encircling said shaft, and a lever having a pivotal sliding connection at its forward end with said shaft, said lever being also pivoted intermediate of its length to the car-body and at its rear end to the car-truck, all substantially as described, and for the purposes specified.

7. In a pipe or hose coupling for cars, the combination, with the head-piece, a hanger depending from the car-body, and a pipe passing loosely through an opening in said hanger, entering said head-piece at its forward end and provided with a means for opening and closing the passage through it, of a shaft adjacent to the said pipe, provided with a pin A^2 for limiting the movement, a coil-spring encircling said shaft, and a lever having a pivotal sliding connection at its forward end with said shaft, said lever being also pivoted intermediate of its length to the car-body and at its rear end to a car-truck, all substantially as described, and for the purposes specified.

472,808. RAILWAY SIGNAL MECHANISM. THOMAS R. HILL, Rahway, assignor of one-half to William T. Bothwell, Jersey City, N. J. Filed July 17, 1891. Serial No. 399,869. (No model.)

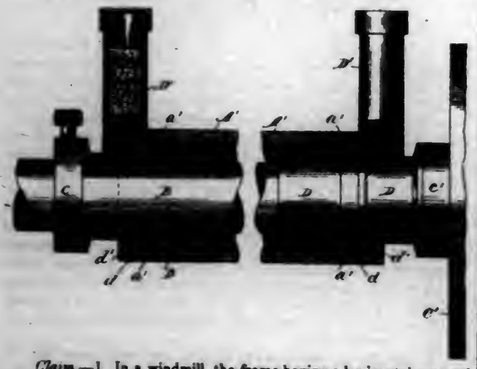


Claim.—1. The combination, with a line-pipe or supply-pipe of an air-brake system, of the vertical pipe tapping the same, the horizontally-arranged glass tube, the branch pipes connecting the said tube with the pipe tapping the supply-pipe, the pivoted lever vertically-movable below the glass tube, the vertically-movable rod carrying a friction-roller at its lower end and having a socket at its upper end, the rod arranged in said socket and connected with one end of said pivoted lever, and a spring surrounding said rod above the socket and below the lever, substantially as specified.

2. The combination, with the supply-pipe of an air-brake system, of a pipe tapping said supply-pipe, a cap of glass or fragile material sealing or closing said tapping-pipe, a pivoted lever movable in a plane below the glass cap and capable of crushing the same, a vertically-movable rod carrying a friction-roller to contact with elevations along the track, and a rod bearing in said rod carrying the roller and connected with one end of the lever for crushing the glass cap, substantially as specified.

3. The combination, with a supply-pipe of an air-brake system, of a pipe leading therefrom and having a cap of glass or other fragile material, the lever pivoted below said glass cap and adapted to crush the same, the vertically-movable rod arranged in the bearing and having a socket at its upper end, and also an external shoulder or stop, and a friction-roller at its lower end, the rod arranged in the socket of said vertically-movable rod or socket-rod and pivotally connected at its upper end with one end of the lever, and a spring surrounding the latter rod and bearing at one end upon the socket-rod and its opposite end bearing upwardly against the outer end of the lever, substantially as specified.

472,809. SHAFT-BEARING FOR WINDMILLS. LA VERNE W. NOYES, Chicago, Ill. Filed Nov. 30, 1891. Serial No. 413,476. (No model.)



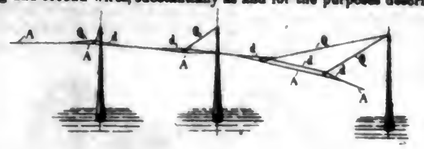
Claim.—1. In a windmill, the frame having a horizontal arm and the windmill-shaft extending therethrough, said horizontal arm having interior annular bosses *a'*, combined with the shaft-bearings D, having exterior annular bosses *d*, adapted to seat within the bosses *a'* and provided with flanges *d'*, which stop against the side of the bosses *a'*, and suitable stops on the shaft outside the bearings, respectively, to prevent endwise movement of the bearings with respect to the shaft, all substantially as and for the purpose set forth.

2. In a windmill, the frame having a horizontal arm and the windmill-shaft extending therethrough, said horizontal arm being provided with interior annular bosses *a'*, combined with the shaft-bearings D, having exterior annular bosses *d*, adapted to seat within the bosses *a'*, respectively, said bearings having rigid with them the oil-cups D' and the arm having notches at the ends, which receive said oil-cups when the bearings are in place with their exterior bosses seated in the bosses *a'*, whereby said oil-cups serve as stops to prevent the rotation of the bearings in the arm, substantially as set forth.

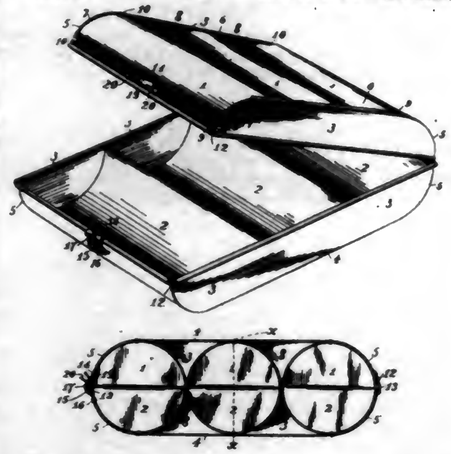
472,810. ELECTRIC-RAILWAY-WIRE SUSPENSION. ALEXANDER PHILIPPSOHN and WALTER REICHEL, Berlin, Germany, assignors to Siemens & Halske, same place. Filed Nov. 27, 1891. Serial No. 413,358. (No model.)

Claim.—1. In overhead conductors for electric railroads, the combination, with the working wire, of a second wire attached thereto and nearly parallel therewith, a rigid spreader between said wires, and a cross-wire connected to said spreader between said working and second wires, substantially as and for the purposes described.

2. In overhead conductors for electric railroads, the combination, with the working wire, of a second wire attached thereto and nearly parallel therewith, a rigid spreader of insulating material between said wires, and a cross-wire connected to said spreader between said working and second wires, substantially as and for the purposes described.



472,811. BAKING-PAN. WILLIAM H. PINKETT and JULIA I. NEILL, Warren, Pa. Filed July 15, 1891. Serial No. 399,589. (No model.)



Claim.—1. A multilocular baking-pan consisting of upper and lower co-ordinate sections hinged together at one end and each composed of a series of cells or compartments semicircular, or approximately so, in cross-section and stamped or struck up from a single piece of sheet metal, and end plates having laterally-projecting flanges overlying and rigidly attached to the walls of the cells or compartments, substantially as described.

2. A multilocular baking-pan consisting of upper and lower sections hinged together and each stamped or struck up from a single piece of sheet metal with semicircular cells or compartments, and end plates for each pan-section, having straight edges and laterally-projecting flanges overlying and rigidly attached to the walls of the cells or compartments, substantially as described.

3. A baking-pan consisting of hinged upper and lower sections, each of which is composed of a series of transverse parallel cells or compartments semicircular in cross-section, and end plates flanged upon and riveted to the walls of the cells or compartments and having curved extremities following the curved shape of the outermost cells or compartments and provided with straight inner edges to come into parallel contact when the pan-sections are closed one upon the other, substantially as described.

4. A baking-pan consisting of upper and lower co-ordinate sections hinged together at one end, each stamped or struck up from a single piece of sheet metal with a series of transverse parallel cells or compartments, and end plates for each pan-section, having inner straight edges and outer flanged edges which overlie and are riveted to the walls of the cells or compartments, said straight edges of the plates containing strengthening-wires, which extend along the outermost cells or compartments and serve as the pivot connection between the pan-section, substantially as described.

5. A multilocular baking-pan consisting of two co-ordinate sections hinged together at one end and provided, respectively, at the opposite end with an attached spring catch-plate and a finger guide-piece, which is formed with two separated outwardly-projecting arms adapted to engage the catch-plate to prevent sidewise movement of the pan-sections upon each other and also serving as a finger-rest for disengaging the catch-plate and swinging the uppermost pan-section to its open position, substantially as described.

472,812. ART OF MAKING PORTRAITS OR OTHER PICTURES. FRANCISCO PIERA Y DE MATA, Havana, Cuba. Filed Oct. 6, 1891. Serial No. 407,990. (No specimens.)

Claim.—1. As an improvement in the art of making portraits or other pictures, the method of producing softness of tint and shading resembling that of an engraving, which consists in filling in the various parts of the picture by means of a suitable brush or brushes rubbed nearly dry in a greasy paste or pigment, substantially as and for the purpose specified.

2. As an improvement in the art of making portraits or other pictures, the method of making the large background and heavy details of clothing, which consists in employing a brush rubbed nearly dry in a greasy paste or pigment and striking such brush endwise against the picture-receiving surface, so that the points or ends of the bristles are driven against said surface, substantially as and for the purpose shown.

3. As an improvement in the art of making portraits or other pictures, the process in the carrying out of which the various parts of the picture are filled in by means of a brush or brushes supplied with the desired color in the form of a greasy paste, and the representation of lace, tulle, or other fabric is produced by placing a piece of material similar to the fabric in texture over the picture-receiving surface and working the coloring substance in through the meshes of the material upon said surface, substantially as and for the purpose set forth.

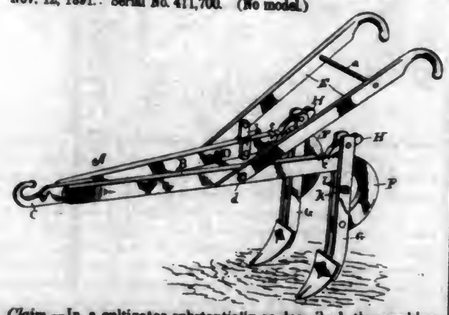
4. As an improvement in the art of making portraits or other pictures, the process in the carrying out of which the various parts of the picture are filled in by means of a brush or brushes rubbed nearly dry in coloring-matter in the form of a greasy paste, and the representation of lace, tulle, or other fabric is produced by placing a piece of material resembling the fabric in texture over the picture-receiving surface, and with a brush or brushes rubbed nearly dry in the greasy coloring-paste going over the material so as to work the coloring-matter in through the meshes of the material upon the surface below, substantially as and for the purpose described.

5. As an improvement in the art of making portraits or other pictures in which lace, tulle, or other fabric is to be shown, the process which consists in taking a piece of material like the fabric to be copied, applying it to a frame or holder adapted to protect the parts of the picture-receiving surface adjoining the portion upon which the fabric is to be represented from the greasy paste or pigment to be used, treating the material with gum-arabic, placing it over the picture-receiving surface, going over it with a brush supplied with a greasy paste of the desired color worked nearly dry, and filling in the other parts of the picture with suitable brushes or other devices, also supplied with a greasy paste or pigment of the required color, substantially as and for the purpose shown and described.

6. As an improvement in the art of making portraits or other pictures in which lace, tulle, or other fabric is to be shown, the method of producing a representation of the fabric, which consists in placing over the picture-receiving surface a piece of material like the fabric and applying any desired coloring-matter to the surface through the meshes of the material, substantially as and for the purpose specified.

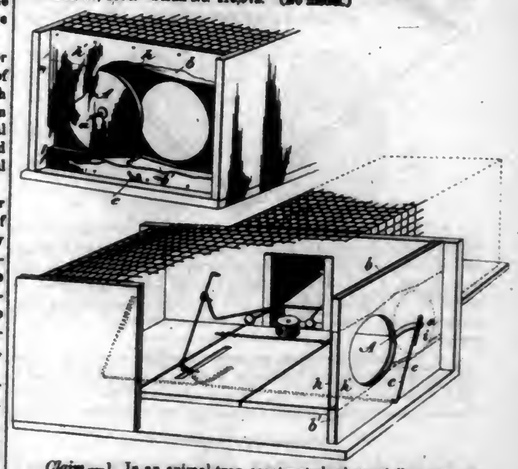
7. As an improvement in the art of making portraits or other pictures in which lace, tulle, or other fabric is to be shown, the method of producing a representation of the fabric, which consists in cutting out a paper pattern having an opening to display only the portion of the picture-receiving surface upon which the fabric is to be represented, taking a piece of material resembling said fabric in texture, placing it upon the paper pattern, treating it with gum-arabic, placing the pattern and fabric over the picture-receiving surface, and going over the material with a brush or brushes supplied with a greasy paste of the desired color, substantially as and for the purpose set forth.

472,813. CULTIVATOR. LEON R. POWTON, Corwin, Tex. Filed Nov. 12, 1891. Serial No. 411,700. (No model.)



Claim.—In a cultivator substantially as described, the combination, with the beam consisting, essentially, of the forwardly-converging branches connected at their forward ends and having the downwardly and forwardly curved branches at their rear ends and rack-teeth on their upper edge adjacent to their rear ends, of the foot comprising parallel branches pivotally connected to the ends of the downwardly and forwardly curved branches of the beam branches, the gravitating pawls pivoted between the upper ends of the foot branches and adapted to engage the rack-teeth of the beam branches, and transverse bolts connecting the foot branches at a point beneath and adjacent to the beam, substantially as and for the purpose set forth.

472,814. ANIMAL-TRAP. GIDEON POTTER, Osceola, Ill. Filed Dec. 30, 1891. Serial No. 416,572. (No model.)

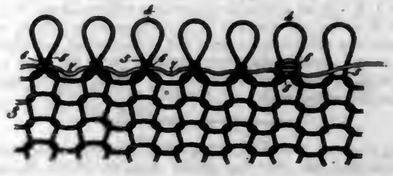


Claim.—1. In an animal-trap constructed substantially as shown, the combination of a shaft *c*, having looped ends which engage with projecting pins carried by rolling doors, said doors resting upon strips having oppositely-inclined surfaces, for the purpose set forth.

2. In combination with an animal-trap having entrance-apertures, rolling doors A, and a shaft *c*, having bent ends which engage with pins carried by the door for operating the same, substantially as shown, and for the purpose set forth.

3. In combination with an animal-trap constructed, substantially as shown, of walls *h* and *h'*, having apertures, strips *b* and *b'*, secured between said walls, the lower strip having oppositely-inclined surfaces, the upper strip being correspondingly cut away, and rolling doors A, having projecting pins with which the operating-shaft engages, substantially as set forth.

472,815. STOCKING. LEONIDAS M. PRESTON, Bonham, Tex. Filed Dec. 31, 1891. Serial No. 416,632. (No model.)



Claim.—1. A knitted stocking composed of attachable and detachable leg and foot sections, each formed at the joining edge with loops which normally protrude lengthwise therefrom and have their necks tied and securely fastened by a thread, which in no wise interferes with the requisite elasticity of the stocking when the sections are united, substantially as described.

2. A knitted stocking composed of leg and foot sections, each having one edge formed with loops which normally protrude therefrom and have their necks locked by a thread, which is tied around each loop transverse to the length thereof in juxtaposition to the knitted body of the section, substantially as described.

472,816. GAME-BOARD. DON W. RANDALL, Wapakoneta, Ohio. Filed July 16, 1891. Serial No. 399,778. (No model.)

Claim.—1. The combination, with a central structure having avenues or ports bisecting it at right angles, of a series of arches arranged outside of said structure and located at equal distances apart, as shown and set forth.

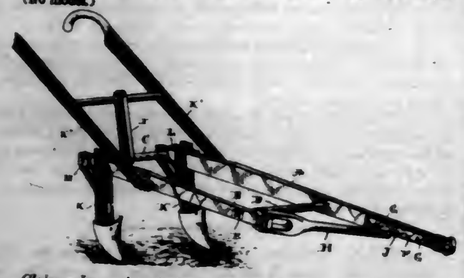
2. The combination, with the central structure having bisecting avenues and a circular depression at the intersection of said avenues, of a series of arches arranged at equal distances apart and directly opposite each solid portion, respectively, of said structure, as shown and set forth.



3. The combination, with a rectangular playing-field and its raised inclosing edge, of a series of arches arranged each equidistant from the said inclosing edge, and a circular structure centrally located in said playing-field, the said structure being bisected by avenues facing, respectively, an angular part of the said playing-field and having solid portions facing, respectively, the said series of arches, all as shown and set forth.

4. The central structure, as herein described, consisting of the solid portions B, central depression *b'*, and the bisecting-avenues *b*, the bed of said avenues having a slight upward incline toward their intersection at the said central depression *b'*, as shown and set forth.

472,817. SHOVEL-PLOW. BENJAMIN RATCLIFF and SEBERN T. LAWRENCE, Coushatta, La. Filed Nov. 18, 1891. Serial No. 412,331. (No model.)



Claim.—In a shovel-plow, the combination, with the parallel beams A B and an adjustable connection between them, of a bar forked at its rear end where it is pivotally connected to the end of the beam B, a hook at the forward end of the said bar, and plates secured to the opposite sides of the forward end of the beam A, and loops on said plates which are engaged by the hook on the bar end, substantially as described.

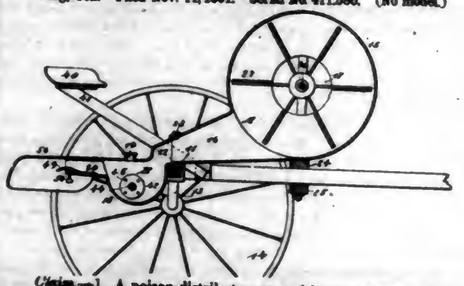
472,818. MOTOR FOR SEWING-MACHINES. BRUNO REICHELT, South Bend, Ind. Filed May 23, 1891. Serial No. 394,348. (No model.)



Claim.—1. In a motor, the combination of a drum keyed to the driving-shaft, said drum being provided with a slot and an inwardly-projecting block having an elastic buffer at one end of said slot, a brake-shoe acting on the circumference of said drum, a hollow brake-arm attached to said shoe, a hollow spindle forming contact with said arm, means for adjusting said brake-shoe, and a stop-pin guided in the tubular spindle and brake-arm and adapted to be placed in the path of the buffer, so as to produce the stopping or permit the starting of the motor on the pushing in or withdrawing of the stop-pin, substantially as described.

2. In a motor, the combination of a drum on the driving-shaft, said drum having a slot and a block with an elastic buffer at one end of said slot, a brake device for the drum, comprising a tubular arm and a hollow spindle, and a stop-pin guided in said brake-arm and spindle, so as to produce the stopping or permit the starting of the motor, substantially as described.

472,819. POISON-DISTRIBUTER. FRANK L. RICHTER, Schulenburg, Tex. Filed Nov. 11, 1891. Serial No. 411,580. (No model.)

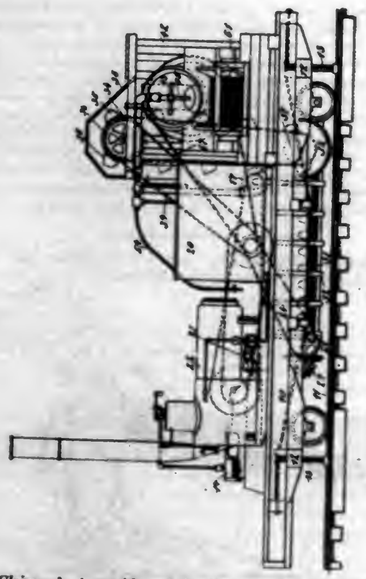


Claim.—1. A poison-distributer comprising a receptacle having an agitator in its lower portion, a blower delivering into its upper portion above the agitator, and a discharge-pipe leading from the upper portion of the opposite end of the receptacle and provided with a regulating-tongue, substantially as set forth.

2. In a poison-distributer, the combination, with delivery or discharge pipe provided with a tongue 49, having an adjusting-screw 50, of the deflector-shields 51, curved downward at their longitudinal edges, substantially as set forth.

3. In a machine of the character described, the combination, with a receptacle adapted to contain a powder, an agitator located in the receptacle and capable of revolving, and spouts connected with and extending in opposite directions from the rear portion of the receptacle, of spring-tongues located in the bottom of the said spouts, an adjusting mechanism connected with the tongues, shields attached to the spouts and extending beyond their rear ends, a fan, a covered connection between the fan and the forward end of the receptacle, and a driving mechanism, substantially as described, connected with the fan and the agitator-shafts, as set forth.

472,820. PHOSPHATE-WASHING MACHINE. GEORGE W. ROBERTS, Chisholm's Island, S. C. Filed Dec. 21, 1891. Serial No. 415,761. (No model.)



Claim.—1. A machine of the character described, comprising a main washing-cylinder mounted upon a portable support, a conveyer arranged at one side of the support, and an elevator adapted to receive material from the conveyer and deliver it into the cylinder, substantially as described.

2. A machine of the character described, comprising a revoluble washing-cylinder, an elevator arranged to deliver into the cylinder, a conveyer to supply the elevator, and a motor to drive the cylinder, the elevator, and conveyer, the whole apparatus being mounted upon a portable structure, substantially as described.

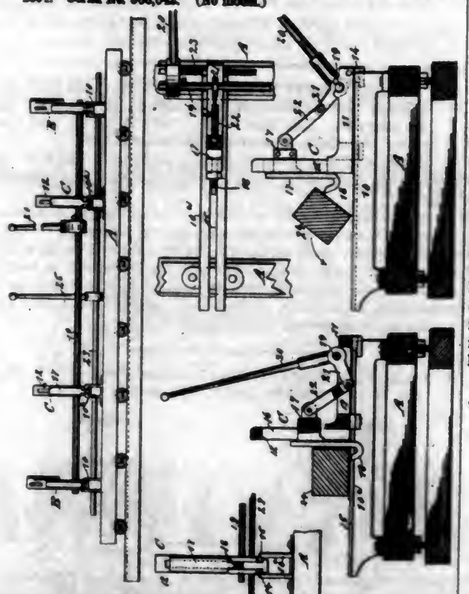
3. A machine of the character described, comprising a portable structure, an inclined washing-cylinder mounted thereon, said cylinder having an inlet-hopper at its lower end and a delivery-screen at its upper end, an elevator arranged to deliver into the hopper, a conveyer arranged at one side of the portable structure and adapted to deliver into the elevator, and a motor mounted upon the portable structure and adapted to run all the movable parts of the machine, substantially as described.

4. A machine of the character described, comprising a car, a revoluble inclined washing-cylinder mounted thereon, a hopper arranged to deliver into the cylinder, an elevator mounted at one side of the car and adapted to deliver into the hopper, a conveyer supported on one side of the car and adapted to supply the elevator, a pump and water-pipes for furnishing water to the cylinder, and a motor mounted on the car and adapted to run the movable parts of the machine, substantially as described.

5. A machine of the character described, comprising a car, a revoluble washing-cylinder mounted thereon, an elevator arranged to deliver into the cylinder, a conveyer mounted on the car and adapted to supply the elevator, water-pipes adapted to deliver water to the cylinder, and means for holding the car in a rigid position, substantially as described.

6. The combination of a car, a revoluble cylinder mounted thereon, a fixed hopper having one end journaled in the lower end of the cylinder, an elevator to supply the hopper, and a conveyer supported on the side of the car and arranged to feed the elevator, substantially as described.

472,821. CANTING-BLOCK FOR SAWMILL-CARRIAGES. PATRICK C. ROCHE and CHARLES COLCLOUGH, Gertrude, Ga. Filed Apr. 7, 1891. Serial No. 388,042. (No model.)



Claim.—1. The combination, with a sawmill-carriage and a shaft journaled upon the carriage, of movable guides, blocks carrying canting-dogs held to slide in the guides, and a link connection between the blocks and the shaft, whereby when the shaft is rocked the canting-dogs are raised and lowered, as and for the purpose set forth.

2. A canting-block for sawmill-carriages, consisting of a frame comprising a vertical and a horizontal member, a block held to slide in the vertical member, having an essentially hook-shaped canting-dog attached, a shaft journaled in the frame, a crank-arm attached to the shaft, a link connecting the crank-arm and the block carrying the dog, and means for rocking the shaft, as and for the purpose specified.

3. The combination, with a sawmill-carriage, its knees, slideways erected transversely upon the carriage in the space intervening the knees, frames held to travel in the slideways, and a feed mechanism connecting the knees and the frames, of blocks held to travel vertically in the frames and provided with hook-like canting-dogs capable of entering the slideways of the frames, a shaft journaled in the frames and provided with attached crank-arms, links connecting the crank-arms of the shaft and the blocks carrying the dogs, and means, substantially as described, for rocking the shaft, as and for the purpose specified.

472,822. TRICK EGG. CHARLES A. ROGERS, Chicago, Ill. Filed Aug. 24, 1891. Serial No. 403,632. (No model.)



Claim.—1. An artificial egg having a fixed excessive weight at one end and also provided with a loop and balance-weight sliding thereon, substantially as and for the purpose set forth.

2. An artificial egg provided with a loop and balance-weight sliding thereon, substantially as and for the purpose set forth.

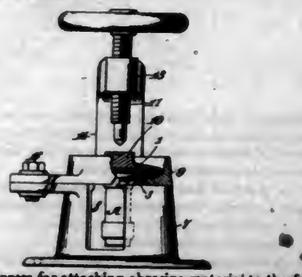
472,823. ABRADING AND FINISHING TOOL. SIMON ROSS, Jr., Cincinnati, Ohio. Filed June 6, 1891. Serial No. 396,349. (No model.)



Claim.—1. A buffing or finishing tool consisting of an elastic disk having its central base portion secured directly to a shank and provided on its working face with a covering of abrasive or finishing material cemented directly thereto, the radially-extended working portion of said disk being adapted to bend and yield to the irregularities of the surfaces to be buffed or finished without straining or loosening the abrasive covering, substantially as specified.

2. A buffing or finishing tool composed of a shank, a radially-projecting rubber disk having its central base portion secured directly to the shank and provided on its working side with a series of radial ribs having flat faces, and a covering of abrasive or finishing material cemented thereto, the radially-extended working portion of said disk and its covering being adapted to conform closely to the hollows and irregularities of the surface to be buffed or finished without straining or loosening the said covering, substantially as set forth.

472,824. PRESS FOR ATTACHING ABRASIVE MATERIAL TO TOOLS. SIMON ROSS, Jr., Cincinnati, Ohio. Filed Dec. 5, 1891. Serial No. 414,142. (No model.)



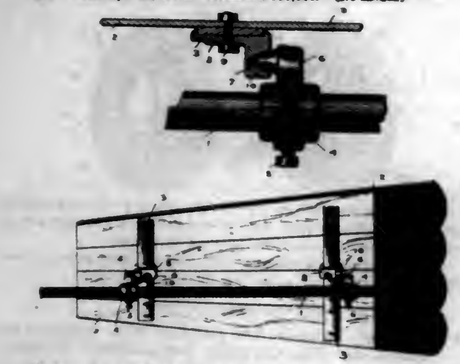
Claim.—1. A press for attaching abrasive material to the face of a tool, consisting of a base 7, a laterally-movable bed supported by the base and having a cavity to receive the disk of the tool, a follower fitting into the said cavity for pressing the abrasive material upon the disk, and means for imparting pressure to the follower, substantially as described.

2. A press for attaching abrasive material to the face of a tool, consisting of a base having an opening or hollow to receive the shank

of the tool, a bed having its inner face shaped to conform to the upper face of the tool resting thereupon, a follower having its compressing-face conforming to the outer face of the tool, and means for actuating the follower to move it into the bed, substantially as described.

3. A press or setting-machine composed, substantially, of the base 7, provided with the opening 8, the bed 9, the follower 10, and the screw-press mechanism for applying pressure to the follower upon an article supported by the bed of the press, substantially as specified.

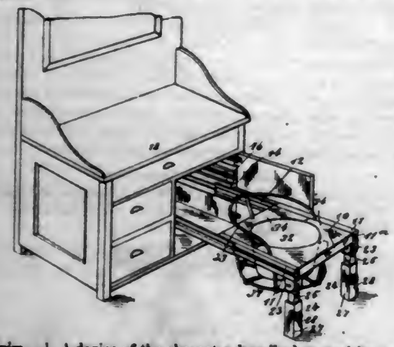
472,825. WINDMILL-HINGE. SEYMOUR A. ROUSE, Indianapolis, Ind. Filed Apr. 22, 1891. Serial No. 389,969. (No model.)



Claim.—1. An adjustable hinge composed of two parts, one being a slip-collar having a pintle connected therewith, the other a clip provided with a conical socket for receiving the pintle, with means for adjusting the parts relatively one to another, so as to take up any lost motion occasioned by the wear of the pintle or socket, substantially as shown and described.

2. An adjustable hinge composed of two parts, one being a slip-collar having a conical pintle connected therewith, the other a female part having a conical socket to receive the pintle, with means, such as a set-screw, for adjusting the collar along the post or rod, substantially as shown and described.

472,826. SUPPORT FOR CHAMBER-VESSELS. GEORGE R. RUDROF, St. Louis, Mo. Filed Oct. 21, 1891. Serial No. 409,366. (No model.)



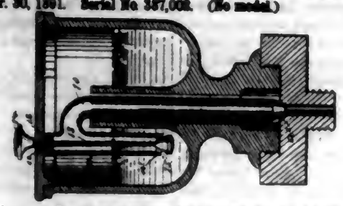
Claim.—1. A device of the character described, comprising a sliding seat adapted to be held upon a support, a vessel-holding basket suspended beneath the seat, and swinging legs secured to the corners of the seat, substantially as described.

2. A device of the character described, comprising a sliding seat held to a support, a vessel-holding basket suspended beneath the seat, and longitudinally-adjustable legs pivoted to the outer corners of the seat, substantially as described.

3. A device of the character described, comprising an extensible frame held to a support, legs secured to the free end of the frame, a vessel-holding basket suspended from the frame, and removable seat-boards to cover the frame, substantially as described.

4. A device of the character described, comprising parallel cleats secured to a support, slideways secured to the cleats, an extensible frame held to slide in the slideways, legs secured to the free ends of the frame, a vessel-holding basket suspended from the frame, and removable seat-boards to cover the frame, substantially as described.

472,827. LUBRICATOR. JOHN SANDALL, New York, N. Y. Filed Mar. 30, 1891. Serial No. 387,002. (No model.)



Claim.—1. In a lubricator, a feed consisting in a siphon having an inlet-valve provided with an operating-stem connected therewith and projecting above the bend of the siphon, substantially as set forth.

2. In a lubricator, a feed consisting in the siphon, an inlet-valve closing upwardly in the lower end of the short leg, a stem extending from the valve up through said leg and above the bend of the siphon and provided with an operating head or handle, substantially as set forth.

3. The combination, with an oil-cup having an outlet in its base or cap, of a siphon having an unobstructed bore and having the lower end of its long leg contracted and closely fitting said outlet and a valve for opening and closing the bore of the siphon, substantially as set forth.

4. The combination, with an oil-cup having an aperture in its top and an outlet in its bottom, of a siphon in the cup, with the lower end of its long arm closely fitting the said outlet and having a valve in its short arm provided with a stem extending up through said top opening, substantially as set forth.

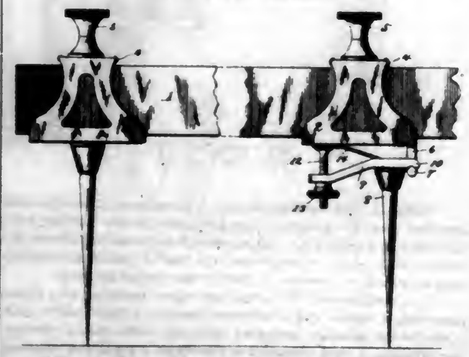
5. The combination, with the oil-cup having an aperture in its top and an outlet in its bottom, of a siphon within the cup, with the lower end of its long arm closely fitting said outlet, the valve 15, closing upwardly in the lower end of the short arm, the valve-stem 13, extending up through said arm and having a threaded portion passing through the upper end thereof and through the aperture in the top of the oil-cup, the said top engaging the upper end of the siphon and holding its lower end in said outlet, substantially as set forth.

472,828. IODINE DERIVATES OF ACETYL PARAMIDO-PHENETOLE. LUDWIG SCHOLVIEN, Berlin, Germany, assignor to J. D. Riedel, same place. Filed Sept. 1, 1891. Serial No. 404,451. (No specimens.) Patented in Germany June 19, 1891, No. 58,409.

Claim.—1. The process of obtaining iodophenin, which consists in combining a solution of acetyl paramido-phenetole with a solution of iodine.

2. The product herein described, which has the following characteristics: it melts under decomposition at 130° centigrade, is readily soluble in glacial acetic acid, not so readily soluble in acetic acid of fifty per cent., quite soluble in alcohol, difficultly soluble in benzole and chloroform, and nearly insoluble in water, it readily yields up its iodine under the action of an alkali or on boiling in its solvent, and has the empirical formula $C_{20}H_{16}N_2O_4I_2$.

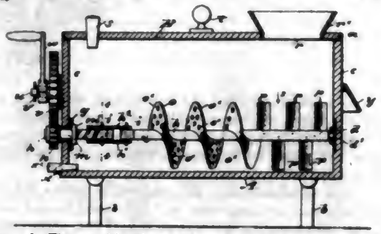
472,829. TRAMMEL. SILAS E. SELLECK, West Troy, N. Y. Filed Aug. 28, 1891. Serial No. 404,011. (No model.)



Claim.—1. The combination, with a beam, of a horizontally-movable trammel-head, a spring-actuated point-carrying plate pivotally connected therewith, and a screw-threaded rod secured to said head and passing through an aperture in said plate, substantially as described.

2. A trammel-head having a depending arm 6, provided with two outwardly-projecting lugs 7 at its lower end, a point-carrying plate 9, recessed at one end so as to form two shoulders 10, a screw-rod depending from the under side of the trammel-head, passing through an aperture in the plate 9, and provided with an adjusting-nut 13, and a spring 14, interposed between plate 9 and the under side of the head, substantially as described.

472,830. COMBINED CHURN AND BUTTER-WORKER. ERIC SILEN, Kelso, Wash. Filed Nov. 17, 1891. Serial No. 412,140. (No model.)

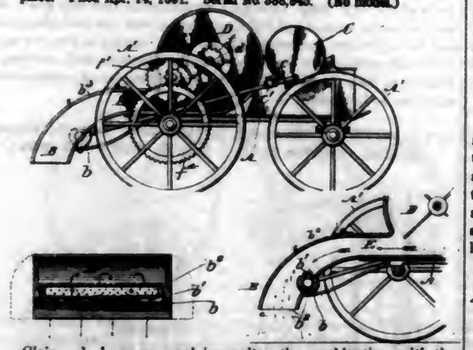


Claim.—1. The combination, with a churn-body, of a horizontal spiral foraminated dasher mounted therein and having a series of radial beater-blades at one end beyond its spiral portion, the said spiral dasher being constructed to gather and force the butter when formed into the path of the beater-blades to be worked thereby, substantially as set forth.

2. The combination, with an elongated churn-body having a concave bottom wall and a lid thereon that is slotted longitudinally near one end, of a horizontal shaft having a spiral blade on one part, which blade is numerously perforated throughout the major portion of its area, two series of beater-blades arranged oppositely on the shaft in sequence with the spiral blade, and gearing to rotate the shaft, substantially as described.

3. In a churn having an elongated body and a rotatable longitudinally-extended shaft therein having a spiral blade and radial beater-blades thereon in sequence, a lid that is slotted above the beater-blades and has a funnel-shaped border-wall thereon to permit water and salt to be introduced upon butter that is being worked by the beater-blades, substantially as described.

472,831. SNOW AND ICE MELTING MACHINE. ROBERT STEEL, Philadelphia, Pa., assignor of one-half to Lewis G. Schmucker, same place. Filed Apr. 14, 1891. Serial No. 388,845. (No model.)

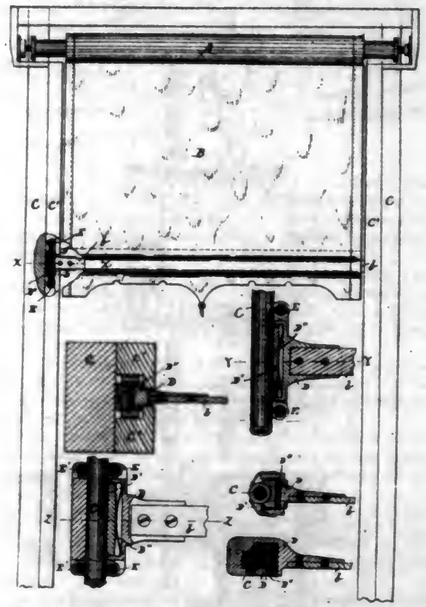


Claim.—1. In a snow and ice melter, the combination, with the wheeled or traveling body, of the combustion-chamber, the asbestus-supporting shelf therein extending transversely of said chamber, the fan communicating with said chamber, the oil-reservoir, and the feed tube or tubes leading therefrom to said shelf, substantially as described.

2. The combination, with the supporting-body and its carrying-wheels, of a downwardly-directed combustion-chamber, a blast-fan communicating therewith, an asbestus-supporting shelf mounted transversely in the forward wall of the drooping portion of said chamber, so that the air-current generated by the fan will in its downward course through said chamber pass over and beyond the shelf, an oil-reservoir, a feed tube or tubes leading therefrom to said shelf, and a system of speed-gearing operatively connecting one of the carrying-wheels with the shaft of the fan, substantially as described.

3. The combination, with the wheeled or traveling body, of the combustion-chamber, the supporting-shelf therein for asbestus or the like, the perforated pipe in said shelf, the oil-reservoir, its feed tube or tubes communicating with said pipe, the fan communicating with said chamber, and means for operating said fan, substantially as described.

472,832. CURTAIN-FIXTURE. HUGH M. SWEENEY, Boston, Mass. Filed May 29, 1891. Serial No. 394,601. (No model.)



Claim.—1. The combination, with a shade-roller, vertical guide-posts, and a shade having a shade-bar at its lower edge, of a box secured to each end of the shade-bar and provided with anti-friction rollers bearing against the guide-posts, a friction-block located inside of each box and guided by the side walls thereof, and a spring acting to press each friction-block against a guide-post, substantially as described.

2. The combination, with a shade-roller, vertical guide-posts, and a shade having a shade-bar at its lower edge, of a metallic box secured to each end of the shade-bar and guided in engagement with the guide-posts, a friction-block located inside of each box and guided by the side walls thereof, and a spring interposed between each box and its friction-block to press the latter against a guide-post, substantially as described.

3. The combination, with a shade-roller, vertical guide-posts, and a shade having a shade-bar at its lower edge, of a metallic box detachably screwed to each end of the shade-bar and provided with upper and lower anti-friction rollers bearing against the guide-posts, a friction-block located inside of each box between the upper and lower anti-friction rollers and guided by the side walls of the box, and a spring interposed between each box and its friction-block to press the latter against a guide-post, substantially as described.

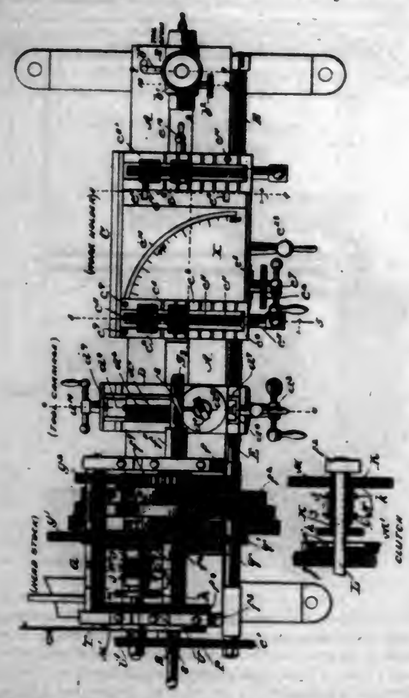
472,833. AUTOMATIC METAL BORING AND TURNING LATHE. ISAAC C. SWISHER, Coffeyville, Kans. Filed Oct. 26, 1891. Serial No. 409,980. (No model.)

Claim.—1. In a boring and turning lathe, the combination, with the bed A, of the tail-stock having a base portion b, having half of a screw-socket formed in its upper side, and the laterally-adjustable top portion b', and the screw-shaft b^3, fitted in the socket, and thereby engaging the thread in the lower half of the same, and means for holding the said parts together, yet permitting adjustment of the upper one, as specified.

2. In a boring and turning lathe, the combination, with the sliding carriage C and the vise C', adjustable in the arc of a circle, of another vise C^3, which is adjustable toward and from the other, as shown and described.

3. In a boring and turning lathe, the sliding work-holder having a recessed base, the vertically-adjustable top plate having guides c^{24} and cam projections on its under side, the screw-shaft c^{23}, the notched cross-head c^{21}, the levers c^{20}, pivoted to said recessed base, the bars c^{19}, sliding on the latter and having slots to receive the outer ends of said levers, and lateral cams, all combined as shown and described.

4. In a boring and turning lathe, the combination, with the sliding tool-carriage, of a horizontal bar pivoted thereto and arranged transversely of the lathe-bed, a tool-carrying block adapted to slide on said bar lengthwise, an adjustable wedge which works beneath the free end of said bar, and means for adjusting the wedge for elevating the tool, as shown and described.



5. In a boring and turning lathe, the combination, with a carriage having a pendent apron and sliding on the bed A, the feed-screw, and gears adapted to engage the latter, of a rotatable shaft on which one of said gears is mounted, the same gear being also provided with a series of holes, a spring having a pin passing through a disk and adapted to enter any of said holes, and a cam adapted to be adjusted beneath said spring, as shown and described.

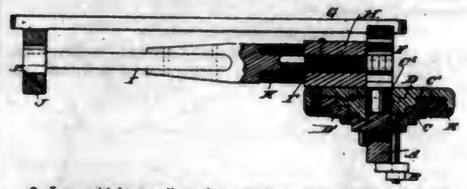
6. In a boring and turning lathe, the combination, with the mandrel and its gear, of the sliding work-holder or other carriage, the reversible feed-screw and its gear, the clutch-shifting rod having tappets for engaging the work-holder, the feathered shaft L and gearing for connecting it with the feed-screw and arbor, the gears M and M', mounted loose on said shaft, and shifting clutches for engaging said gears alternately, substantially as shown and described.

7. In a boring and turning lathe, the combination, with the mandrel and gear, of the sliding work-holder, the reversible feed-screw and its gear, the sliding clutch-shifting rod having tappets for engaging the work-holder, the feathered shaft L, and gears M and M', mounted loose thereon and having a recess and lug, as shown, the sleeves K K' on said shaft, having notched flanges or heads adapted to fit in the recesses of the said gears, and means for connecting the sleeves and shifting-rod and gearing and for transmitting motion from the mandrel to shaft L and from the latter to the feed-screw, substantially as shown and described.

8. In a boring and turning lathe, the combination, with the mandrel, work-holder, feed-screw, and clutch-shifting rod having stops for engaging the work-holder, of the shaft L, a sleeve sliding thereon on a feather and having notched heads, the gears M and M', mounted loose on said shaft and having a recess and lug adapted to engage sleeve-heads, and a spring coiled about the inner separated ends of the sleeves, and a forked plate connected with said sleeves and the clutch-shifting rod, whereby when said rod is shifted it operates both sleeves and at once disengages one clutch, after which the spring holds the other clutch ready for engagement as the shaft L continues to revolve, substantially as shown and described.

472,884. FIFTH-WHEEL FOR VEHICLES. JAMES W. TAYLOR, Vermillion, S. D. Filed July 30, 1891. Serial No. 400,108. (No model.)

Claim.—1. In a vehicle-coupling, the combination, with a fifth-wheel and a hinge connecting the fifth-wheel with the wagon-body, of a bearing on the fifth-wheel, a reach-rod having one end secured in said bearing and its rear end mounted to turn in a bearing on the rear axle, a bearing on the reach-rod, and draft-rods secured to the said bearing and to the rear axle, substantially as described.



2. In a vehicle-coupling, the combination, with a disk formed on its top with steps, of a fifth-wheel having a hinge connection with the body and provided on its under side with steps engaging the steps of the disk, and means for holding the fifth-wheel on the disk, substantially as described.

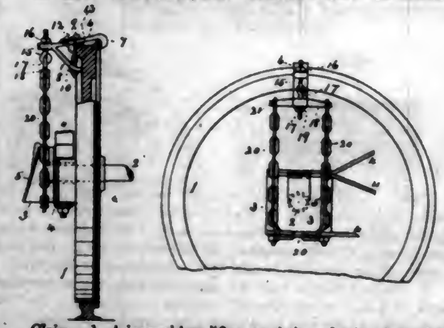
3. In a vehicle-coupling, the combination, with a disk formed on its top with annular rising steps, of a fifth-wheel formed on its under side with steps engaging the steps of the said disk, and a collar formed with a flange and screwing on the said fifth-wheel to hold the latter in position on the said disk, substantially as shown and described.

4. In a vehicle-coupling, the combination, with a stepped disk clipped to the axle and provided in its center with a pivot-pin, of a fifth-wheel formed with steps engaging the steps of the said disk and having a central opening engaged by the said pivot-pin, and a hinge connection for connecting the said fifth-wheel with the wagon-body, the pivot of the said hinge extending longitudinally centrally above the said pivot-pin, substantially as shown and described.

5. In a vehicle-coupling, the combination, with a stepped disk clipped to the axle and provided in its center with a pivot-pin, of a fifth-wheel formed with steps engaging the steps of the said disk and having a central opening engaged by the said pivot-pin, a hinge connection for connecting the said fifth-wheel with the wagon-body, the pivot of the said hinge extending longitudinally centrally above the said pivot-pin, and a reach-rod rigidly connected with the said fifth-wheel and having its rear end mounted to turn in a bearing on the rear axle, substantially as shown and described.

6. In a vehicle-coupling, the combination, with a stepped disk clipped to the axle and provided in its center with a pivot-pin, of a fifth-wheel formed with steps engaging the steps of the said disk and having a central opening engaged by the said pivot-pin, a hinge connection for connecting the said fifth-wheel with the wagon-body, the pivot of the said hinge extending longitudinally centrally above the said pivot-pin, a reach-rod rigidly connected with the said fifth-wheel and having its rear end mounted to turn in a bearing on the rear axle, and draft-rods rigidly connected with the rear axle and carrying a bearing at their front ends engaging the said reach-rod, substantially as shown and described.

472,885. JOURNAL-BOX LIFTER. HENRY R. TAYLOR, Minneapolis, Minn. Filed Dec. 22, 1891. Serial No. 415,886. (No model.)



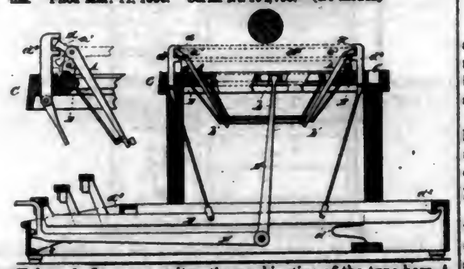
Claim.—1. A journal-box lifter consisting of a bracket adapted to be attached to the top of the wheel, and adjustable connections between the bracket and journal-box, whereby the latter can be lifted, substantially as set forth.

2. A journal-box lifter comprising a bracket consisting of one member adapted to engage the flange of a car-wheel and another member bearing against the face of the wheel and serving as a brace, and connecting devices between the bracket and journal-box, whereby the latter can be lifted by means of nuts and screws, substantially as set forth.

3. A journal-box lifter for car-wheels, consisting of a bracket having a portion for engaging the wheel-flange and a brace bearing against the wheel-face, a vertically-adjustable yoke connected to the bracket, and means for connecting it to the journal-box, substantially as set forth.

4. A journal-box lifter for car-wheels, consisting of a bracket for grasping the upper edge of the wheel and having a brace bearing against the wheel-face, a chain for engaging the journal-box, and means for connecting the chain to the bracket and raising or lowering it, substantially as set forth.

472,886. TYPE-WRITING MACHINE. HENRY H. UHL, New York, N. Y., assignor to the National Type Writer Company, of Pennsylvania. Filed Mar. 11, 1886. Serial No. 194,795. (No model.)



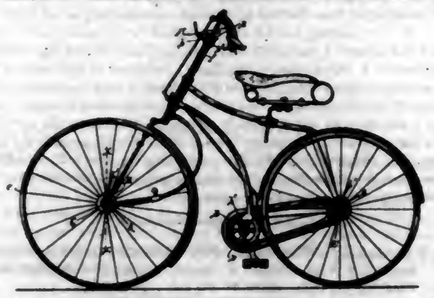
Claim.—1. In a type-writer, the combination of the type-bars A and rotatable annulus B, carrying gage-ring b', substantially as and for the purposes herein shown and set forth.

2. In a type-writer, the combination of the key-lever D, fulcrum d^2, spring d', and type-bars with the guided and positively-acting connection d^3, substantially as and for the purposes herein shown and set forth.

3. In a type-writer, the combination of the rotatable annulus B, carrying the type-bars, with the spring c, which returns and retains it in its normal position, substantially as and for the purposes herein shown and described.

4. In a type-writing machine, the swinging type-bar A and revolving annulus B, in combination with the key-lever D and bifurcated arm d^3, adapted to slide, substantially as and for the purposes herein shown and set forth.

472,887. OIL-CUP FOR BICYCLES. THOMAS WHEATLEY, Syracuse, N. Y. Filed June 8, 1891. Serial No. 395,455. (No model.)

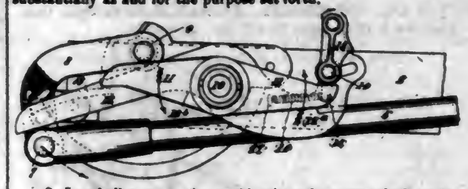


Claim.—1. In combination, a sleeve or journal-bearing, a rod or shaft movable within said bearing, a socket in the sleeve opening to its journal-bearing, a bushing mounted in said socket and formed with a central opening leading to the journal-bearing of the sleeve, a plug movably mounted within said bushing and formed with a central passage b^3, opening from the lower face thereof, and with an angular passage b^4, opening from the upper extremity of said plug to its upper periphery, substantially as and for the purpose set forth.

2. In combination, a journal-bearing having a socket at its end, a shaft or rod journaled in the bearing and projecting beyond the socket, a plug formed with a central passage surrounding the rod, and a laterally-extending passage opening to the outside of the plug and adapted to be closed by the adjacent wall of the socket when the plug is in its normal position, substantially as and for the purpose specified.

472,888. BALING-PRESS. HERBERT L. WHITMAN, St. Louis, Mo. Filed July 25, 1891. Serial No. 400,742. (No model.)

Claim.—1. In a baling-press, in combination with a power-shaft, the inner and outer arms secured to the power-shaft, a pitman moved by the arms, a cross-head, a block 13, pivoted to the outer arm, having a pin-and-slot connection therewith, and an extension 15, projecting beyond the pin-and-slot connection, and a spring 16, secured at one end to said extension and at the other to the outer one of said arms, substantially as and for the purpose set forth.



2. In a baling-press, the combination of a power-shaft, a pitman, a cross-head on the shaft, and the inner and outer arms adapted to be moved by the cross-head and the inner one of them having the straight bearing portion and the curved bearing portion 12ª, substantially as and for the purpose set forth.

3. In a baling-press, the combination of a power-shaft, a cross-head, arms adapted to be moved by the cross-head, a pivoted link, and a pitman, said link having a shoulder 18, between which and the end of the pitman one of said arms fits, substantially as and for the purpose set forth.

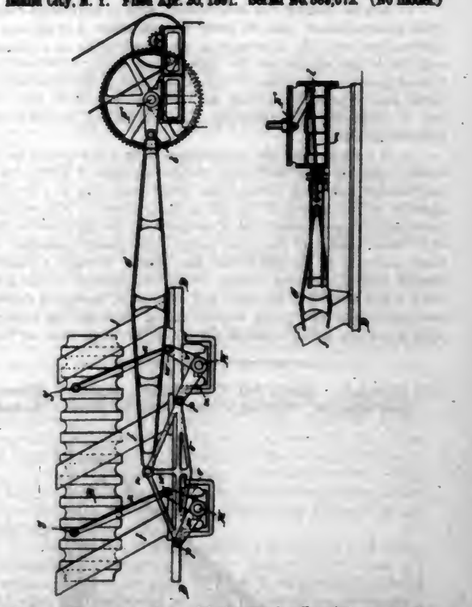
4. In a baling-press, the combination of a plunger, a pitman, a wedge secured to the pitman, and jaws between which said wedge enters as the plunger reaches the limit of its backward movement, substantially as and for the purpose set forth.

5. In a baling-press, the combination of a plunger, a pitman, a wedge secured to the pitman, and adjustable jaws between which the wedge enters as the plunger reaches the limit of its backward movement, substantially as and for the purpose set forth.

6. In a baling-press, the combination of a plunger, a pitman, a wedge secured to the pitman, jaws adapted to receive the wedge as the plunger reaches the limit of its backward movement, and a strap 32 and spring 33 and bolts 34 35, substantially as and for the purpose set forth.

7. In a baling-press, the combination of a plunger, a pitman, a wedge pivoted to the pitman, a spring 41, and jaws between which the wedge enters as the plunger reaches the limit of its backward movement, substantially as and for the purpose set forth.

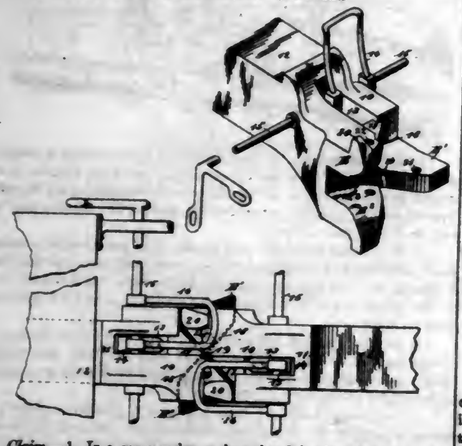
472,889. VENEER-MACHINE. WILLIAM H. WILLIAMS, Long Island City, N. Y. Filed Apr. 20, 1891. Serial No. 389,672. (No model.)



Claim.—The combination, with the stay-log B and the supporting-frame D of a veneer-cutting machine, of guide-arms f, secured to and projecting from the supporting-frame, a pair of bell-crank levers pivoted, respectively, to portions of the supporting-frame, a link o, con-

necting two arms of the levers, a pair of links *x*, pivotally connecting the other arms of the levers with the stay-log, and an actuator G for reciprocating the connecting-link between the bell-crank levers, substantially as described.

472,840. CAR-COUPLING. WILLIAM D. WILLIAMS, Ogden, Utah. Filed Nov. 3, 1891. Serial No. 410,743. (No model.)



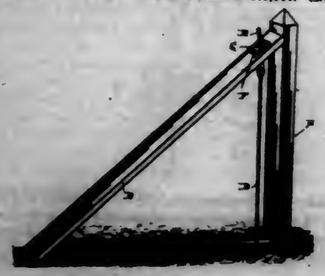
Claim.—1. In a car-coupler, a draw-head having formed at its outer end three prongs—an upper, a lower, and an intermediate prong—the intermediate prong extending in an opposite direction from the upper and lower prongs, a shaft journaled in the draw-head, a link attached to the shaft, and a locking device having a bearing against the link, as and for the purpose specified.

2. In a car-coupler, the combination, with a draw-head having three prongs formed at its outer end—an upper, a lower, and an intermediate prong—the intermediate prong extending in an opposite direction from the upper and lower prongs, of a shaft journaled in the draw-head, a link secured to the shaft at one end and extending at the other over one of the prongs, and a spring locking device located in the draw-head and bearing against the link, as and for the purpose specified.

3. In a car-coupler, the combination, with a draw-head having three prongs formed upon its outer end—an upper, a lower, and an intermediate one—the intermediate prong extending in a direction opposite to the others and the upper prong having a beveled spur formed upon its end surface, of a shaft journaled in the draw-head, a spring located beneath the shaft, and a link secured to the shaft, one end of which link has a bearing against the spring, as and for the purpose specified.

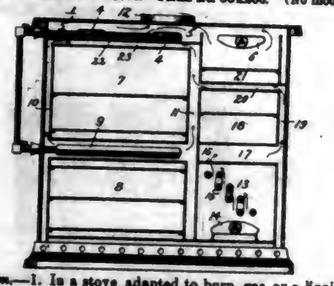
4. In a car-coupler, the combination, with a draw-head having formed upon its outer end three prongs—an upper, a lower, and an intermediate one—the intermediate prong extending in a direction opposite to the others, all the prongs being provided with pin-apertures and the upper prong with a beveled spur, the upper end surface of the draw-head near the upper prong being laterally stepped, of a shaft journaled in the draw-head and passing through a chamber formed therein, a spring located within the chamber of the draw-head, a link secured to the shaft and capable of extending outward over the intermediate prong, an inner end of which link has a bearing against the said spring, substantially as and for the purpose set forth.

472,841. BRACE FOR FENCE-POSTS. CHARLES R. WESTOOD, Huntington, Ind. Filed Sept. 17, 1891. Serial No. 405,969. (No model.)



Claim.—In a fence-post, in combination, the vertical post, an inclined brace therefor having a recess in its outer side near its upper end, wire C, connecting the lower ends of the post and brace, wire D, connected at its lower end to wire C, screw-threaded rod E, connected to the upper end of wire D, a plate adapted to fit the recess in the brace and which is constructed with an opening through which rod E extends, and a nut for the said rod, which bears against the said plate, substantially as shown and described.

472,842. GAS-BURNING COOKING STOVE OR RANGE. CHARLES F. ADAMS, Buffalo, N. Y., assignor to Sherman S. Jewett & Co., same place. Filed Mar. 9, 1891. Serial No. 384,286. (No model.)

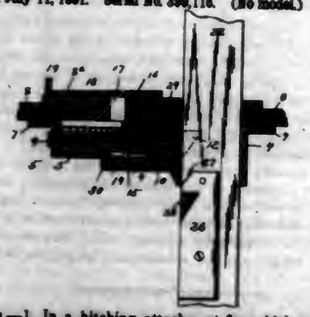


Claim.—1. In a stove adapted to burn gas or a liquid fuel, the compartment in which are arranged a burner and a coil of water-heating pipes, the exit-opening for the products of combustion being from the upper portion of the said compartment at or near one side thereof and the said coil of pipes being arranged above the burner and extending as a series diagonally across the compartment toward the exit-opening therefrom, the warming-oven above the said water-heating compartment, and the flue for the products of combustion extending from the said exit-opening and arranged between the warming-oven and the said compartment, thence extending around one side of and over the top of the oven, substantially as set forth.

2. In a cooking stove or range adapted for the use of gas or liquid fuel, an oven situated to one side thereof, a burner for heating such oven, a centrally-arranged flue 11 at the inner side of the oven for carrying off the products of combustion from the said burner, a water-heating compartment and another oven 18, situated on the side of the stove opposite the first said oven, the flue 11 being between the said ovens and the oven 18 being above the water-heating compartment, the burner in the water-heating compartment, and the flue extending around the bottom, outer end, and top of the oven 18 for the products of combustion from the last said burner, substantially as set forth.

3. In a cooking stove or range adapted for the use of gas or liquid fuel, the burners 4, arranged below the top plate, the baking-oven and the burner 9, which heats it, the flue 11, arranged in the center of the stove to conduct off the products of combustion from the burner 9, the plate 22, which cuts off the said products of combustion from the burners 4 and through which there is an escape-opening to the exit-flue, the warming-oven situated on the side of the flue 11 opposite the baking-oven, a burner 14, and a flue conducting the products of combustion from this burner around the warming-oven and into the space below the plate 22, substantially as set forth.

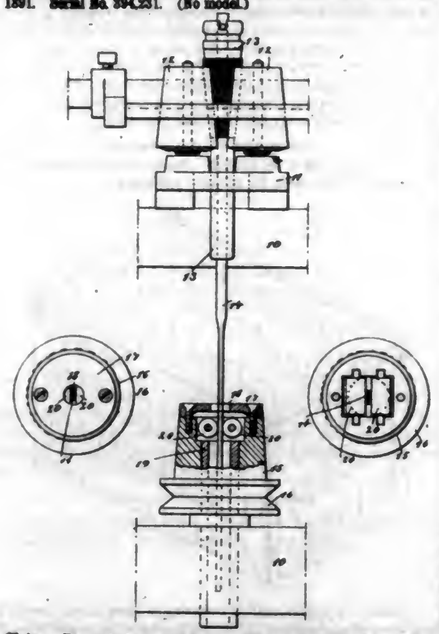
472,848. ATTACHMENT FOR VEHICLES. JAMES H. AKIN, Arkansas City, Kans., assignor of one-half to John M. Palm, same place. Filed July 11, 1891. Serial No. 399,116. (No model.)



Claim.—1. In a hitching attachment for vehicles, the combination, with a weight having a strap secured thereto adapted to be connected with a bridle-bit, of a strap secured to said weight, passing up into the vehicle, by which the weight may be raised and lowered, notched plates having beveled ends secured to said strap, and the spring-actuated bolt having a slotted beveled head adapted to engage with the notches in said plates, substantially as described.

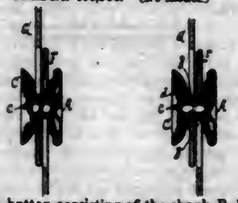
2. In a hitching attachment for vehicles, the combination, with the casting having a horizontal recess, a vertical intersecting-aperture and a vertical slot, the bolt located in said recess having an enlarged head with a slot registering with the slot in the casting, the coiled spring encircling the bolt, the upwardly-projecting arms, the foot-slide, and the cover secured to the casting having slots for the passage of the weight-strap and said arm, of the weight having a strap secured thereto and adapted to be connected with a bridle-bit, the strap secured to the weight passing up through the casting and the slots therein and in the head of the bolt, and the notched plates having beveled upper ends with which the said beveled head engages to force back the bolt and hold the weight in an elevated position, substantially as described.

472,844. WHIRL FOR FILLER-FRAMES. HERBERT ALLCROFT, Paterson, N. J., assignor to Holden Rigby, same place. Filed May 26, 1891. Serial No. 394,231. (No model.)



Claim.—The tubular whirl 15, provided with the pulley 16 and with a recess in its upper portion, said recess having bearings at opposite sides, two transverse parallel-spaced anti-friction rollers 20, provided with trunnions resting in the said bearings, and the cap 17, detachably secured to the upper end of the whirl and provided with the opening 18, aligning the space between the said rollers, substantially as herein shown and described.

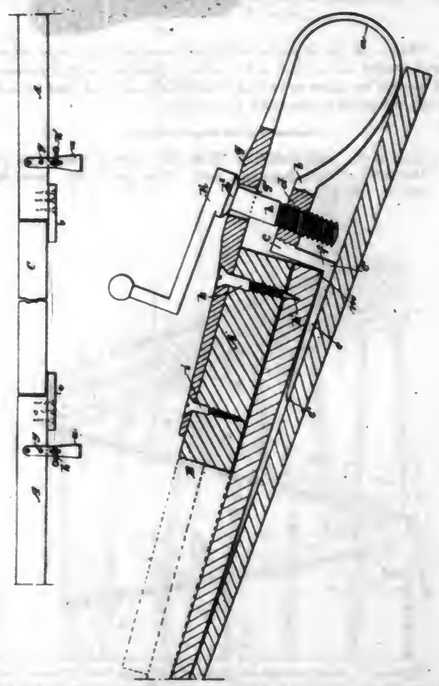
472,845. BUTTON. MORRIS APPELBAUM, New York, N. Y. Filed Dec. 30, 1891. Serial No. 416,580. (No model.)



Claim.—1. A button consisting of the shank B, having the inner buttoning-head composed of the dished flange C and the outer head A, said dished flange having transverse coincident holes *c* for the passage of the retaining-cord E, substantially as described.

2. A button consisting of the outer buttoning-head A, having the tubular shank B, the tubular rivet D, engaging the outer head, passing through the tubular shank, and upset to form a head *d* at its inner end, and the inner buttoning-head composed of the rotary dished flange C, having the orifices *c*, and loosely mounted on the tubular rivet between the head thereof and the inner end of the tubular shank on the outer buttoning-head, substantially as described.

472,846. SHINGLING-GAGE. CHANCY AVERY, Pleasant Lake, Ind. Filed Aug. 31, 1891. Serial No. 404,231. (No model.)



Claim.—1. A shingling-gage comprising a bow-spring, the limbs of which are extended in the same direction, one limb wedge-shaped flatwise and the other limb perforated to receive screws, which attach the gage to an elongated strip, said limbs oppositely apertured for a clamping-screw, and a clamping-screw for the limbs, substantially as described.

2. A shingling-gage comprising a bow-spring, one limb of which is perforated for screws, the other limb bent first at a right angle away from the perforated limb and then forwardly, the extended portion being wedge-shaped, both limbs being perforated to receive a clamping-screw, and a clamping-screw loose in one limb and in threaded engagement with the other limb, substantially as described.

3. A shingling-gage formed of one piece of metal bent into a bow-spring near its longitudinal center to produce limbs that are perforated oppositely to receive a clamping-screw, which has threaded engagement with one limb and passes loosely through the other limb, which is perforated for screws, and two screws that enter a gage-strip and retain the gage device at a right angle thereto, substantially as described.

4. A shingling-gage formed of a flat piece of metal bent into a bow-spring, its limbs thus formed extending in the same direction, one limb bent outwardly from the other limb and then forwardly and wedge-shaped toward the end, having a threaded orifice near the bow-spring to receive a clamping-screw, the straight limb being provided with an elongated aperture, wherein the clamping-screw loosely slides, and also perforated nearer the end to admit screws that enter a gage-strip, substantially as described.

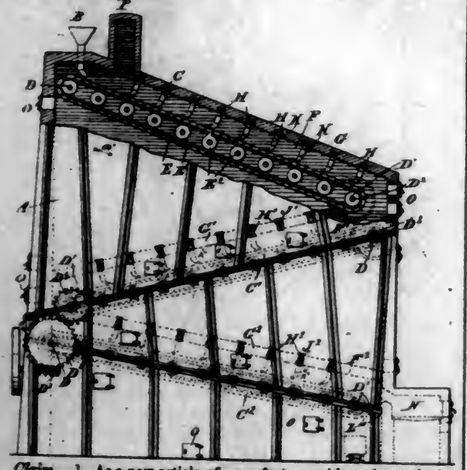
5. The combination, with an elongated gage-strip, of a clamping-gage comprising a bow-spring the lower limb of which is bent at a right angle away from the upper limb and is wedge-shaped flatwise and the upper limb perforated to admit two screws, one screw securing it to the gage-strip and the other screw pointed and projecting through the gage-strip, and a handled clamping-screw passing through the upper limb of the clamping-gage and engaging its threaded body with a tapped hole in the lower limb, substantially as described.

472,847. RIBBON FOR TYPE-WRITING MACHINES. LEONARD BAILEY, Hartford, Conn. Filed Apr. 10, 1888. Serial No. 270,162. (No model.)



Claim.—As an improved article of manufacture, a type-writer ribbon having one or both ends coated or saturated with a material that renders the parts so treated impervious to the ink used for inking the ribbon, all substantially as described.

472,848. ORE-ROASTING FURNACE. GEORGE F. BARTLETT and AUGUSTUS J. O'NEILL, Butte City, Mont. Filed Apr. 8, 1891. Serial No. 388,109. (No model.)



Claim.—1. As a new article of manufacture, a blast-pipe and stirrer consisting in the pipe K, having a series of lateral apertures K' and having its lower end curved or projected forwardly and forming the integral stirring-point K², substantially as set forth.

2. The combination, with the roasting-chamber and ore-carrier extending longitudinally through said chamber, of the blast-pipe crossing the same and provided with a series of depending apertured branches projecting at their lower ends adjacent to the upper surface of the carrier to stir the ore thereon, substantially as set forth.

3. An ore-roaster consisting in the furnace proper, inclined endless carriers, one above the other within the furnace and geared together, a funnel discharging upon the upper end of the upper carrier to impart motion thereto, blast-pipes crossing the spaces above the carriers and provided with depending apertured branches having stirring-points at their lower ends projecting toward the upper ends of the carriers, and a worm geared to a shaft of the lower carrier and operated thereby, to regulate the speed of the carriers, substantially as set forth.

4. In an ore-roasting furnace, the combination, with a casing, of an endless carrier-belt set at an angle in the said casing to receive a traveling motion from the ore discharged thereon, and blast-pipes having branch or agitating pipes extending close to the upper part of the said traveling belt, the said branch pipes being provided with openings for the discharge of air, substantially as shown and described.

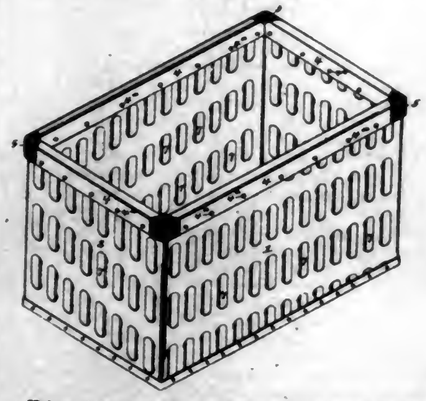
5. In an ore-roasting furnace, the combination, with a casing, of a series of endless carrier-belts arranged one above the other in the said casing and set at angles, the lower end of one belt discharging upon the upper end of the next following belts, tops or partition-walls arranged in the upper part of the casing above said endless carrier-belts, so as to form a space for the latter, and blast-pipes held in the said tops or partition-walls, each blast-pipe being provided with perforated branch or agitating pipes extending through the said space close to the upper surfaces of the carrier-belts, substantially as shown and described.

6. In an ore-roasting furnace, the combination, with a casing, of a series of endless carrier-belts arranged one above the other in the said casing and set at angles, the lower end of one belt discharging upon the upper end of the next following belts, tops or partition-walls arranged in the upper part of the casing above said endless carrier-belts, so as to form a space for the latter, blast-pipes held in the said tops or partition-walls, each blast-pipe being provided with perforated branch or agitating pipes extending through the said space close to the upper surfaces of the carrier-belts, and points formed on the lower ends of the said perforated agitating-pipes, substantially as shown and described.

7. In an ore-roasting furnace, the combination, with a casing, of a series of endless carrier-belts arranged one above the other in the said casing and set at angles, the lower end of one belt discharging upon the upper end of the next following belts, tops or partition-walls arranged in the upper part of the casing above said endless carrier-belts, so as to form a space for the latter, blast-pipes held in the said tops or partition-walls, each blast-pipe being provided with perforated branch or agitating pipes extending through the said space close to the upper surfaces of the carrier-belts, and a chute arranged at the lower end of the lowermost carrier-belt, substantially as shown and described.

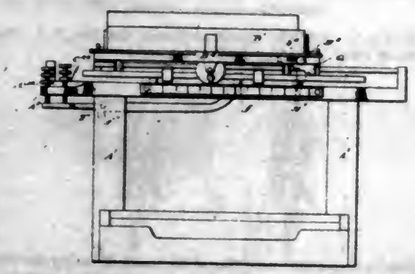
8. In an ore-roasting furnace, the combination, with a casing, of a series of endless carrier-belts arranged in the said casing and set at angles, the lower end of one belt discharging upon the upper end of the next following belts, tops or partition-walls arranged in the upper part of the casing above said endless carrier-belts, so as to form a space for the latter, blast-pipes held in the said tops or partition-walls, each blast-pipe being provided with perforated branch or agitating pipes extending through the said space close to the upper surface of the carrier-belts, and a furnace connected with the lower end of the lowermost carrier-belt, substantially as shown and described.

472,849. BOX OR BASKET. ERNST BEBER, St. Louis, Mo. Filed Sept. 14, 1891. Serial No. 405,645. (No model.)



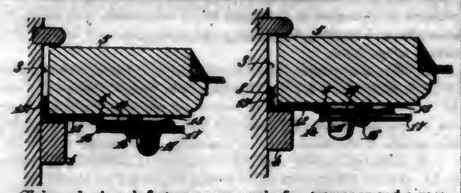
Claim.—A box or basket consisting of sheet metal, having diagonal rows of perforations and strengthening-strips passed through the perforations, substantially as and for the purpose set forth.

472,850. TYPE-WRITING-MACHINE ATTACHMENT. GEORGE C. BLICKENSDERFER, Stamford, Conn., assignor to the Blickensderfer Manufacturing Company, New York, N. Y. Filed July 7, 1891. Serial No. 398,672. (No model.)



Claim.—In a type-writing machine, the combination of a paper-carriage having a graduated stop or catch, a lever pivoted to the front of the machine and parallel with the carriage in line with the catch, and an overhanging bracket provided with a series of keys with their lower ends resting upon said lever.

472,851. SASH-HOLDER. JOSEPH M. BRICKARD, Clarksburg, W. Va. Filed Mar. 2, 1892. Serial No. 423,480. (No model.)



Claim.—1. A sash-fastener composed of a stationary and a movable plate interposed between the sash and the facing-strip, the movable plate having a flange or foot-piece at one end, which is turned inward and lies between the edge of the sash and the window-jamb to bind against the latter, and a device for projecting the movable plate to force its flange or foot-piece against the window-jamb, substantially as described.

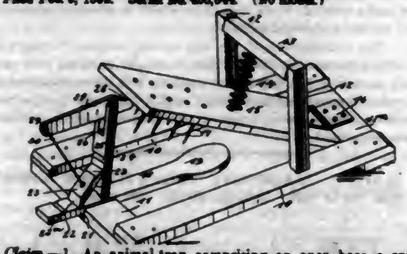
2. A sash-fastener composed of a stationary and a movable plate interposed between the sash and the facing-strip, the stationary plate having a horizontal guide-rib and the movable plate having a slot 13 and a flange 15 at one end, which is turned inward and lies between the edge of the sash and the window-jamb to bind against the latter, and a device for projecting the movable plate to force its flange or foot-piece against the window-jamb, substantially as described.

3. In a sash-fastener, the combination of a stationary plate adapted to be secured to a window-sash, a cam having a pivot-pin connection with the stationary plate, and a movable locking-plate provided intermediate at its ends with a lateral shoulder and having its inner end turned inward away from the cam to lie between the edge of the sash and the window-jamb for binding against the latter, substantially as described.

4. In a sash-fastener, the combination of a stationary plate and a movable plate interposed between the sash and the facing-strip and having a flange at one end turned inward to lie between the edge of the sash and the window-jamb and bind against the latter, and a cam or eccentric pivotally connected with the stationary plate for projecting the movable plate into engagement with the window-jamb, substantially as described.

5. In a sash-fastener, the combination of the stationary base-plate having the horizontal guide-rib 10, lateral pivot-pin 16, and flanged portion 8 turned inward to lie between the edge of the sash and the window-jamb, a movable locking-plate having a slot 13, a lateral shoulder 14, and a flange 15 turned inward to lie between the edge of the sash and the window-jamb, and a cam or eccentric 17, mounted on the pivot-pin, substantially as described.

472,852. ANIMAL-TRAP. SAMUEL H. DUBOIS, Russellville, Ark. Filed Feb. 9, 1892. Serial No. 420,844. (No model.)

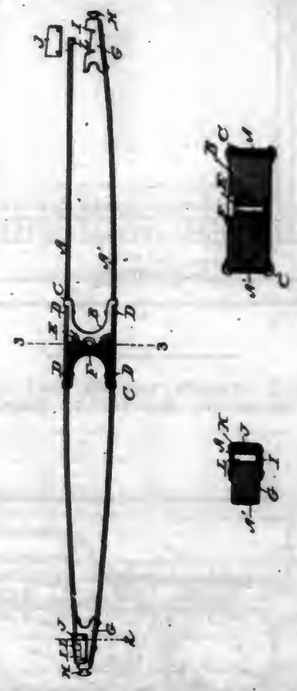


Claim.—1. An animal-trap comprising an open base, a spring-pressed drop-plate pivoted on one end of the base and provided on its under side and near its free end with projecting spikes, a trigger extending beneath the drop-plate, an upright mounted on the trigger, a lever pivoted on the upright and adapted to extend beneath the drop-plate, and a catch connected with the outer end of the lever and detachably secured to the upright and trigger, substantially as described.

2. An animal-trap comprising an open base, a spring-pressed drop-plate hinged to one end of the base and provided with spikes on its under side, a trigger pivoted on the front end of the base and extending beneath the drop-plate, said trigger having transverse notches therein, a notched upright mounted on the trigger, a lever pivoted in the upper end of the upright and extending beneath the drop-plate, a catch having beveled ends to enter the notches of the trigger and upright, and a cord connecting the catch and the forward end of the lever, substantially as described.

3. In an animal-trap, the combination, with the open base having a drop-plate hinged to the rear end thereof, which drop-plate has spikes on its under side, of uprights secured to the frame on each side of the drop-plate, a cross-piece journaled in the upper ends of the uprights, a spring arranged between the drop-plate and the cross-piece, a trigger pivoted on the front end of the frame and extending beneath the drop-plate, an upright mounted on the trigger, a lever pivoted in the upright and extending beneath the drop-plate, and a catch connected with the lever and adapted to support the upright, said catch being released by the movement of the trigger, substantially as described.

472,858. WHIFFLETREE. STEPHEN R. BURKE, Edon, Ohio. Filed Dec. 8, 1891. Serial No. 414,382. (No model.)



Claim.—1. A whiffletree comprising two elastic longitudinal members opposite to each other with their ends free to move, means connecting said two members together between their ends, and stops connected to one member adjacent to its ends and arranged beyond the ends of the other member to have them and the ends of said other member brought together after both members have been moved in the same direction, whereby both members are first permitted freedom of movement and afterward the two are caused to brace each other and form a truss, substantially as and for the purposes described.

2. A whiffletree comprising the two longitudinal members connected together intermediate of their ends with their ends free, blocks secured to the ends of one member, and clasps holding the ends of the other member to said blocks, while permitting longitudinal movement of said ends and blocks relatively to each other, substantially as and for the purposes described.

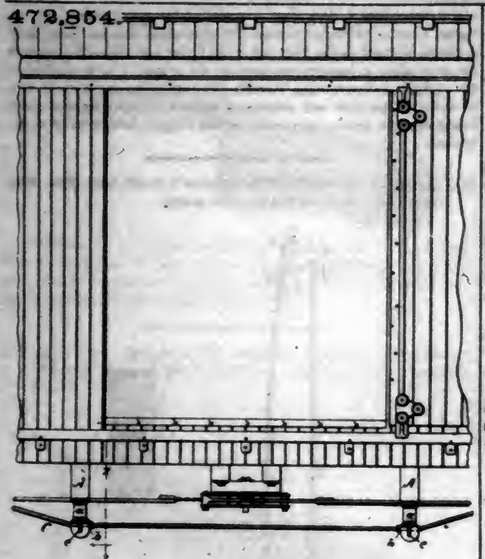
3. In a whiffletree, the combination of the two elastic longitudinal members, the block between the two intermediate of their ends to hold them together at a central point, the blocks formed with ways and secured to opposite ends of one of said members, and clasps holding freely the ends of the other member to said end blocks in position to bear against said block, substantially as and for the purposes set forth.

472,854. UNDER-TRUSSING FOR RAILROAD-CARS. FERDINAND E. CAUDA, New York, N. Y. Filed Nov. 27, 1891. Serial No. 413,280. (No model.)

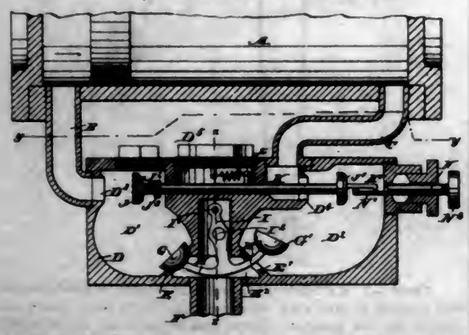
Claim.—1. An imperforate truss-rod for railroad-cars, having formed integrally therewith a projection or circumferential collar adjoining the seat of the queen-post, substantially as specified.

2. The combination, with the queen-posts a, of the rod C, furnished with projections or collars b, adjoining the seat of the queen-post on the truss-rod, substantially as specified.

472,854.



472,855. CYLINDER DRAIN-COCK. ROY P. CAPWELL, Linden, N. Y. Filed Aug. 3, 1891. Serial No. 402,131. (No model.)



Claim.—1. The combination, with the valve-body D, having inlets B C at its ends, leading from the steam-cylinder, chambers D' D^2, and the intermediate outlet-chamber E^2, having valve-seats E E', of the lever I, pivoted at its upper end in the chamber E^2 and having stems at its lower end projecting through the valve-seats and provided at their ends in the chambers D' D^2 with valves G G', substantially as set forth.

2. In a drain-cock for steam-engine cylinders, the combination, with pipes leading from the ends of the cylinder, of a valve-body provided with chambers, into which open the said pipes, valve-seats formed in the bottom of the said chambers and opening into a discharge or outlet compartment, valves adapted to be seated on the said valve-seats and arranged to open inwardly into the said chambers, a lever pivoted in the said valve-body and provided at opposite sides with stems carrying the said valves, and a set-screw screwing in the said valve-body and adapted to engage the said lever to lock the same in an intermediate position to hold both valves off their seats, substantially as shown and described.

3. In a drain-cock for steam-engine cylinders, the combination, with a valve-body formed with two separate and independent chambers provided at their upper ends with a set of valve-seats and another set of valve-seats in the bottom thereof, of pipes leading from the upper set of valve-seats to the ends of the cylinder, valves adapted to be alternately seated at the same time on the lower valve-seats, and a set of valves adapted to be seated on the upper set of valve-seats, substantially as shown and described.

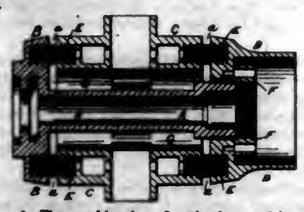
4. In a drain-cock for steam-engine cylinders, the combination, with a valve-body formed with two separate and independent chambers provided at their upper ends with a set of valve-seats and another set of valve-seats in the bottom thereof, of pipes leading from the upper set of valve-seats to the ends of the cylinder, valves adapted to be alternately seated at the same time on the lower valve-seats, a set of valves adapted to be seated on the upper set of valve-seats, and means, substantially as described, for opening and closing the said second set of valves, as set forth.

5. The combination, with the valve-body D, having two chambers D' D^2 to receive the water of condensation, and the inlet-valve seats D^3 D^4, of the sliding rod having two valves, one in each chamber, seating simultaneously on said seats, and means for operating the rod from the outside of the valve-body, substantially as set forth.

6. The combination, with the valve-body D, its separate chambers D' D^2, and the inlet-valves D^3 D^4 in said chambers, of the sliding rod provided with a spring-pressed valve J at its inner end, seating on the valve-seat D^4, a valve-seat J', seating on the seat D^4, and the sliding rod N, adapted at its inner end to engage the valve J and the valve-rod, substantially as set forth.

7. The combination, with the valve-body having end chambers D', provided with alternately opening and closing outlet-valves, aligned inlet-valve seats, and a chamber D^2 between said seats, of the sliding rod extending through the chamber D^2 into chambers D' D^2 and having a valve in both of the latter chambers to close over said seats, springs in the chamber D^2, connected to the said valve-rod, and the sliding rod N, having a hooked inner end engaging the similarly-formed end of the valve-rod, substantially as set forth.

472,856. VEHICLE-WHEEL. HAZELWOOD CARNOFF, London, England. Filed Dec. 26, 1891. Serial No. 416,184. (No model.) Patented in England Apr. 30, 1891, No. 7,481; in France May 5, 1891, No. 213,363; in Belgium May 9, 1891, No. 94,846, and in Germany May 14, 1891, No. 59,768.

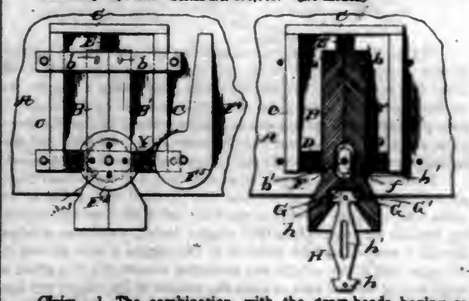


Claim.—1. The combination of a wheel comprising recessed parts, one of which parts is vertically movable with respect to the other, and rubber elements or parts, the ends of which are disposed in the recesses in the parts comprised in the wheel and a portion of the surface of which is exposed, substantially as and for the purpose described.

2. The combination of a wheel comprising recessed parts, one of which parts is movable with respect to the other in the line of pressure exerted by the load carried, and rubber elements or parts, the ends of which are disposed in the recesses in the parts comprised in the wheel and a portion of the surface of which is exposed, substantially as and for the purpose described.

3. The combination of the hub having recesses, the parts B D, provided with recesses, the said hub vertically movable with respect to said parts B D, and the rubber cushions E E, the ends of which are disposed in the recesses in the hub C and parts B and D, a portion of the rubber cushions, as *a*, being exposed, substantially as and for the purpose described.

472,857. CAR-COUPLING. JOSEPH R. CARPENTER, Marietta, S. C. Filed July 25, 1891. Serial No. 400,695. (No model.)

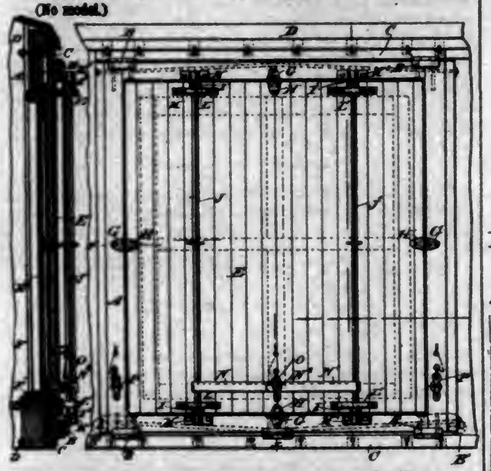


Claim.—1. The combination, with the draw-heads having recesses G', of the springs G, located therein, for the purposes set forth.

2. The combination, with a car-coupler, of an alarm adapted to be sounded by coupling or uncoupling, for the purposes described.

3. In a car-coupler, the combination, with the pivoted draw-heads having grooves *b' b'* and the springs D and E, of a rod having the projection *f*, working in said grooves *b'*, the drum F^5, and disk F^6, the lever F^4, and chain connecting said drum and lever, substantially as described.

472,858. CAR-DOOR. MARLY T. CARSON, Jackson, Tenn., and JAMES D. GUSSAMUS, Whistler, Ala. Filed May 28, 1891. Serial No. 394,281. (No model.)



Claim.—1. The combination, with a car formed with a door-opening, of a frame fitted to slide on the car and arranged to pass over the said door-opening, and a panel fitted to slide transversely in the said frame and adapted to be seated on the said door-opening, substantially as shown and described.

2. A car-door comprising a frame mounted to slide on the side of the car and adapted to pass over the car-door opening, a panel fitted to slide transversely in the said frame and adapted to be seated on the car-door opening, and means, substantially as described, and held on the said frame and connected with the said panel to move the latter transversely, so as to seat it on the car-door opening, thereby locking the frame in place, as set forth.

3. In a car-door, the combination, with a frame mounted to slide longitudinally on the side of the car and adapted to be moved over the car-door opening, of a panel fitted to slide transversely in the said frame and provided with an offset adapted to engage and be seated in a rabbet in the car-door opening, and a mechanism, substantially as described, and held on the said frame and connected with the said panel to move the latter transversely, so as to seat the offset on the rabbet, thus preventing longitudinal sliding of the said frame, as set forth.

4. In a car-door, the combination, with a frame mounted to slide longitudinally on the side of the car and adapted to pass over the car-door opening, of a panel fitted to slide transversely in the said frame and adapted to be seated in the car-door opening, shafts journaled on the said frame and carrying eccentrics, and eccentric-straps secured to the said panel and engaged by the said eccentrics, substantially as shown and described.

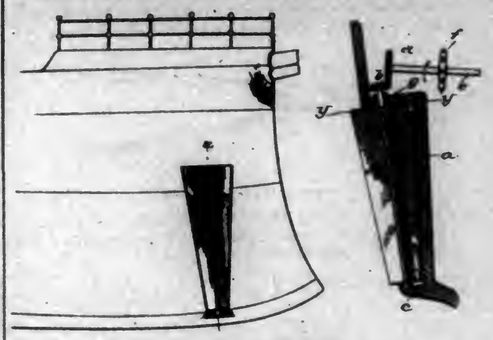
5. In a car-door, the combination, with a frame mounted to slide longitudinally on the side of the car and castings secured on the said frame and each having a groove extending transversely, of a panel fitted into the said frame and castings held on the said panel and provided with tongues engaging the said grooves in the said castings on the frame to permit of sliding the panel transversely in the frame, substantially as shown and described.

472,859. CONSTRUCTION OF VESSELS. OSBORN COWPERTHWAITE, Philadelphia, Pa. Filed Aug. 24, 1891. Serial No. 403,619. (No model.)

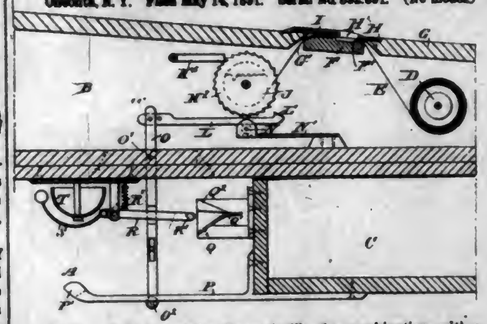
Claim.—1. The combination, with the bow of a vessel having vertical recesses *a* in its wedge-faces, extending from the keel straight up to the water-line, of a pair of propellers set within said recesses upon upright axes parallel to the sides of the vessel, substantially as shown and described.

2. The combination of the hull of the vessel having at its bow the vertical recesses *a*, with horizontal portions *g*, the propellers having their shafts extended through said horizontal portions to the interior of the hull, and driving-gears transmitting motion to said propellers, substantially as shown and described.

3. The combination, with the bow of a vessel having vertical recesses *a* in its wedge-faces, of the elongated propeller A, made tapering or widest at its upper end and arranged in said recesses about an axis inclined to the vertical, substantially as shown and described.



472,860. RECORDER FOR CASH-TILLS. WILLIAM W. DARBEE, Oneonta, N. Y. Filed May 14, 1891. Serial No. 392,691. (No model.)



Claim.—1. In a recorder for cash-tills, the combination, with a drum provided with a ratchet-wheel, of a pivoted lever, a pawl pivoted to the upper end of the lever and extending under the ratchet-wheel, a support for the free end of the pawl, and a till provided with a projection for engaging the lower end of the said lever, substantially as described.

2. In a recorder for cash-tills, the combination, with a drum provided with a ratchet-wheel, of a pivoted lever, a headed pawl pivoted to the upper end of the lever and extending under the ratchet-wheel, a spring for supporting the free end of the pawl, and a till provided with a bar having a projection for engaging the lower end of the said lever, substantially as described.

3. In a recorder for cash-tills, the combination, with a drum provided with a ratchet-wheel, of the pivoted lever O, provided with the roller O^2 at its lower end, the pawl L, pivoted to the upper end of the lever and provided with head L', the spring N', provided with the roller N, and the till C, provided with the brackets F, having the transversely-extending bar P on its end, substantially as herein shown and described.

4. In a device of the class described, the combination, with a bracket held on the sliding till and formed with a spring and a wedge, of a lever carrying a pin adapted to engage the said spring and wedge, a striker held on the said lever, and a bell adapted to be sounded by the said striker, substantially as shown and described.

5. In a device of the class described, the combination, with a bracket held on the sliding till and formed with a spring and a wedge, of a lever carrying a pin adapted to engage the said spring and wedge, a striker held on the said lever, a bell adapted to be sounded by the said striker, and a spring for holding the said lever in a normal position, substantially as shown and described.

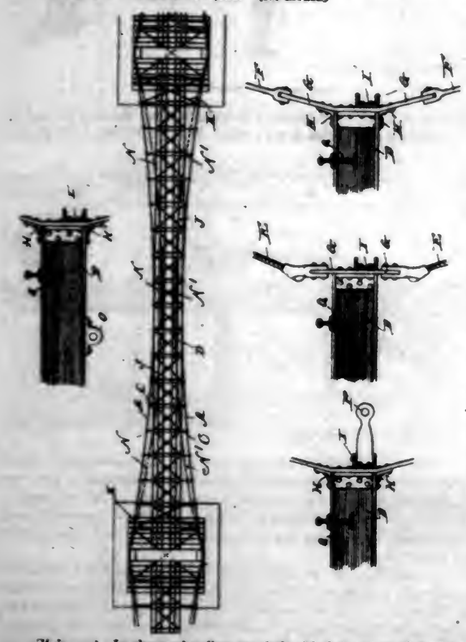
6. A recorder for cash-tills, comprising a casing provided with a cover having openings in it for the passage of the paper, two paper-holding drums below the cover, one of which is provided with a ratchet-wheel, a pivoted lever, a pawl pivoted to the lever and projecting under the ratchet-wheel, a support for the free end of the pawl, a bell, a pivoted and spring-pressed hammer, and a till provided with projections extending from its rear end for engaging the said lever and hammer, substantially as herein shown and described.

472,861. TOBACCO-HANGER. DANIEL V. DAVIS, Fork Church, N. C. Filed Jan. 8, 1892. Serial No. 417,363. (No model.)

Claim.—A tobacco-hanger formed of two sticks flexibly connected at one end and each provided on its outer face with a row of projecting tobacco-hanging pins, said sticks being adapted to spread apart for straddling a supporting beam and to be pressed into parallel contiguity for packing purposes, substantially as described.



472,862. ELEVATED RAILWAY. ST. JOHN V. DAY, Chicago, Ill., assignor to the Day Elevated Railway Plant Company, same place. Filed Dec. 31, 1890. Serial No. 376,323. (No model.)



Claim.—1. In elevated railways of the kind herein referred to, the upper and under curved cables inclined in reverse directions, so that the structure not only spreads outward laterally both above and below the floor-beams, but the cables themselves are farther apart vertically at the ends of a span or bay than at the center thereof, substantially as described.

2. In elevated railways of the kind referred to, the inclined ties connecting the upper and under curved and inclined cables together and these again to the floor-beams, by which the opposite inclinations of the cables and ties at both sides of the structure are effected both above and below the floor-beams and the whole structure maintained in a state of tension stress, substantially as described.

3. In elevated railways of the kind referred to, the diagonal bracing of any span or bay combined with that of the next spans or bays by attaching said bracing to the towers or piers and connecting the points of attachment in the towers or piers together by diagonal tie-rods crossing each other horizontally through the towers or piers, substantially as described.

4. In elevated railways of the kind referred to, the combination of the inclined upper and lower curved cables, the inclined upper and lower ties, the floor-beams, the stringers, rails upon and above the stringers, and the towers or piers, with continuous horizontal diagonal bracing connecting the spans or bays together through said towers or piers, substantially as described.

5. The channel-irons connecting the ends of the floor-beams at opposite sides of the spans or bays so as to stiffen the spans or bays against lateral or wind stress, substantially as described.

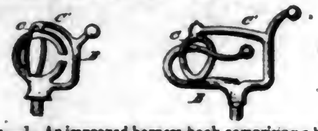
6. The combination of the channel-irons, floor-beams, inclined cables, inclined ties, stringers, rails, horizontal bracing, and towers or piers for producing an elevated-railway structure, substantially as described.

7. In an elevated-railway structure of the kind described, the combination, with towers, of cables carried thereby, floor-beams carried by the said cables, links projecting from the ends of the said beams and eyes secured to the lower surface thereof, and horizontally-curved cables passing through the said links and eyes, as described.

8. In an elevated-railway structure, the combination of the inclined upper and lower cables, the inclined upper and lower ties connected thereto and to the floor-beams, piers carrying the said cables, longitudinal stringers connecting the said floor-beams, and rails carried by the said stringers, as described.

9. In an elevated-railway structure, the combination of the inclined upper and lower cables, the inclined upper and lower ties connected thereto and to the floor frames or beams, piers carrying the said cables, and channel-irons connecting the ends of the floor-beams so as to stiffen the spans or bays against lateral or wind stress, as described.

472,863. HARNESS-HOOK. GUSTUS V. P. DAY, Dinuba, Cal. Filed July 23, 1891. Serial No. 400,521. (No model.)

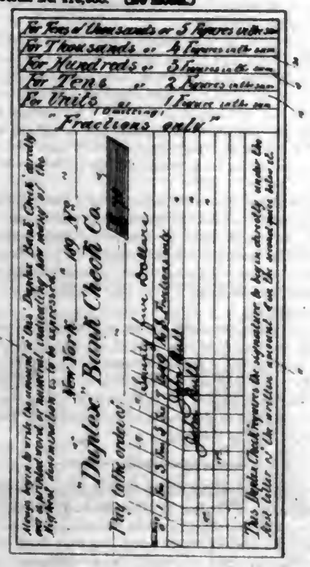


Claim.—1. An improved harness-hook comprising a base portion, the hook and guard-post, the loop integral with the base portion and straddling the hook intermediate its ends, and the brace-arm connecting the guard-post and loop above the hook, substantially as shown and described.

2. An improved check-hook comprising the hook proper, the protecting-loop integral with the base thereof, and the brace-arm integral with the loop, substantially as shown and described.

3. As an improved article of manufacture, the herein-described harness-hook, comprising a base portion, a hook connected with said base portion, a guard-post arranged at the rear end of said base, and a loop attached to the base and straddling the hook intermediate its ends, substantially as shown and described.

472,864. CHECK, DRAFT, OR OTHER MONEY ORDER OR INSTRUMENT. WILLIAM T. DORRIUS, Flatbush, N. Y. Filed Dec. 31, 1891. Serial No. 416,855. (No model.)



Claim.—1. A blank check, draft, money-order, or similar instrument having on its face longitudinal spaces or lines with consecutive numbers in a portion of them, and oblique lines extending between the numbers and merging in transverse cross-lines which intersect the longitudinal lines substantially at right angles, substantially as described.

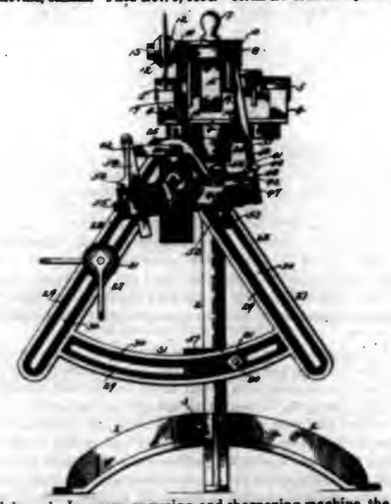
2. A blank check, draft, money-order, or similar instrument having longitudinal lines or spaces upon its face with consecutive numbers produced in numerals and words near one end of the lines or spaces, and transverse lines or spaces near one end of the check, having notation characters produced in duplicate thereupon, substantially as described.

3. A blank check, draft, money-order, or similar instrument having longitudinal lines or spaces upon its face with words and consecutive numbers produced therein near one end, oblique lines intersecting the longitudinal lines between the numbers and merging in perpendicular lines which cross the longitudinal lines, and transverse lines or spaces near one end of the check, having notation-indicating characters produced in duplicate thereupon, substantially as described.

4. A blank check, draft, money-order, or similar instrument having on its face longitudinal spaces or lines with consecutive numbers therein near one end, notation-indicating characters produced in transverse lines and regular mathematical order at one end of the check, and the words "Omitting fractions only" or their equivalent produced in two lines between the notation-indicating characters and the body of the check, substantially as described.

5. A blank check, draft, money-order, or similar instrument having longitudinal spaces or lines upon its face with words and consecutive numbers therein near one end and notation-indicating characters produced in transverse lines and regular order at one end of the instrument, the number of longitudinal spaces beneath the consecutive numbers and the number of denominations expressed by the notation-indicating characters coinciding, substantially as described, and for the purpose specified.

472,865. MACHINE FOR SHARPENING SAWS. FRANCIS J. DRAKE, Belleville, Canada. Filed Nov. 5, 1891. Serial No. 410,925. (No model.)



Claim.—1. In a saw gumming and sharpening machine, the combination, with the upright, the rotatable hubs mounted thereon provided with set-screws, and the arm projecting from the upper hub, of the gate pivoted to said arm, consisting of the inclined bars and curved connecting-arm having recesses and slots, and the screw-bolt connecting said arm and the lower hub on the upright, substantially as described.

2. In a saw gumming and sharpening machine, the combination, with the upright, the rotatable hubs mounted thereon, and the pivoted gate connected with one of said hubs, consisting of the inclined bars and curved connecting-arm provided with recesses and slots, of the saw-holder consisting of the spindle screw-threaded at each end, with an intermediate plain portion and a collar, the cup-shaped hub fitting on said spindle, having a boss adapted to seat in the recess in the inclined bars, the cone fitting on said spindle, and the nuts, substantially as described.

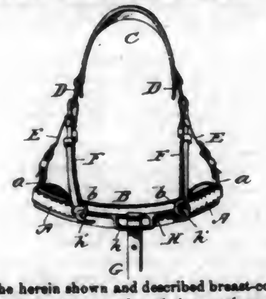
3. In a saw gumming and sharpening machine, the combination, with the upright, the hubs mounted thereon, and the pivoted adjustable gate, of the adjustable horizontal plate connected with said gate, the cogged segments connected with said plate, the adjustable bar and feed-pawl connected with one of said segments, the links connected with the other segment, the frame secured to the upper end of the upright, the pivoted grinding-disk frame connected therewith, and the arm connecting said pivoted frame and the links, substantially as described.

4. In a saw gumming and sharpening machine, the combination, with the adjustable saw-carrying gate, of the adjustable horizontal plate, the cogged segments pivoted thereto, the adjustable arm and feed-pawl connected with one of said segments, and means, substantially as described, for actuating said segments.

5. In a saw gumming and sharpening machine, the combination, with the adjustable saw-carrying gate, of the adjustable plate connected therewith, the cogged segments pivoted to said plate, the adjustable arm and feed-pawl connected with one of said segments, the set-screws for limiting the movement of the segments, and means, substantially as described, for actuating the segments.

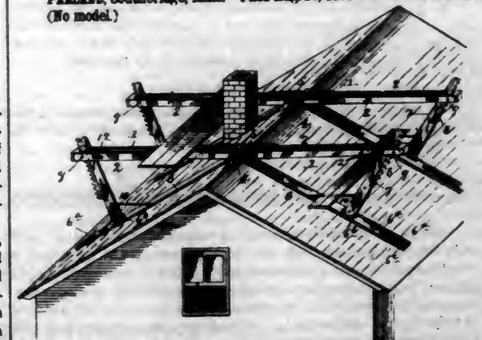
6. In a saw gumming and sharpening machine, the combination, with the upright, the adjustable saw-carrying gate, the vertically-adjustable horizontal plate, the cogged segments pivoted to said plate, the adjustable bar connected with one of said segments and provided with a pawl, the links connected with the other segment, and the set-screws for limiting the movement of said segment, of the frame secured to said upright, the grinding-disk frame pivoted thereto, and the bar connecting said frame with the links, substantially as described.

472,866. BREAST-COLLAR. JOSEPH W. BOGLIOTOS, Ithaca, N. Y. Filed Aug. 28, 1891. Serial No. 403,974. (No model.)



Claim.—The herein shown and described breast-collar, composed of the tug-straps A, having rings *b* at their opposing or forward ends, buckles at their rear ends, and having rings *a* intermediate of their ends, the padding B, secured to and extending from one extreme end of one tug strap to the extreme end of the other tug-strap, the neck-pad C, having rings D, and the short straps E and F, connecting the rings D with the rings *a* and *b* and having buckles whereby they can be lengthened or shortened, and the metal bail H, having loops *h* midway of its ends and having hooks *h'* at its ends, whereby it can be readily attached to or detached from the said rings *b* to connect or disconnect the tug-straps, substantially as described.

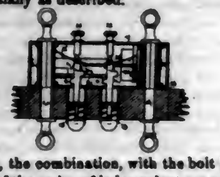
472,867. ADJUSTABLE STAGING OR SCAFFOLDING. ANTOINE FARLAND, Southbridge, Mass. Filed Aug. 27, 1890. Serial No. 363,233. (No model.)



Claim.—In an adjustable folding staging or scaffolding, the combination of the supports 1, consisting of the bars connected together at their ends with an intervening space 3, the angular plates 4, secured to the under side of the supports, the outwardly-extending arms 6, pivoted to the supports near the center thereof, the arms 7, pivoted to said arms, each having a hole near its lower end and provided with rack-teeth 8 on its outer edges, the pins 9, passing through the supports, adapted to engage with said rack-teeth, and the arms 10, adapted to engage with the holes in the arms 7, substantially as described.

472,868. PERMUTATION-LOCK. ERNEST FIENET, Paris, France. Filed July 5, 1889. Serial No. 316,616. (No model.) Patented in France Oct. 26, 1888, No. 193,741, and in England June 4, 1889, No. 9,268.

Claim.—1. In a keyless lock, the combination, with the bolt, of the series of independent spring-projected rods having projections co-operating with the bolt to lock the same against longitudinal movement, with independent finger-pieces for the rods projecting beyond the lock-casing, substantially as described.



2. In a keyless lock, the combination, with the bolt having a series of recesses therein, of the series of independent reversible spring-pressed longitudinally-movable rods having projections on each side, adapted to enter the recesses in the bolt, whereby the bolt is locked, substantially as described.

3. In a keyless lock, the combination, with the bolt having a series of recesses therein, of the series of independent movable rods having projections adapted to enter the respective recesses in the bolt and the catches for holding the rods pressed inward, substantially as described.

4. In a keyless lock, the combination, with the bolt having a series of recesses therein and the series of independent movable rods having projections adapted to enter the recesses in the bolt, of the catches and the movable bolt with which said catches engage to hold the rods retracted, substantially as described.

5. In a keyless lock, the combination, with the bolt having a series of recesses therein and the series of independent spring-pressed movable rods having projections adapted to enter the recesses in the bolt, of the spring-catches, the movable bolt having the projections with which the catches engage to hold the rods retracted, and means for moving said bolts, substantially as described.

6. In a keyless lock, the combination, with the bolt having a series of recesses therein and the series of independent reversible spring-pressed longitudinally-movable rods having projections on opposite sides adapted to enter the recesses in the bolt to lock the latter, of the spring-catches and the second bolt co-operating with said catches to release the rods, substantially as described.

7. In a keyless lock, the combination, with the two locking-bolts, one having a series of recesses therein, of the spring-pressed rods having the projections entering said recesses and the spring-catches for the rods released by the bolt not having the recesses therein, substantially as described.

8. In a keyless lock, the combination, with the locking-bolt and series of independent spring-projected rods co-operating therewith to lock the same, one end of said rods extending outside of the casing, of the series of independent finger-pieces bearing against the opposite ends of the rods, substantially as described.

9. In a keyless lock, the combination, with the locking-bolt, of the series of independently-rotatable rods co-operating therewith to lock the same, each having the irregularly-shaped body with a reduced portion to permit of their reversal, substantially as described.

472,869. WHIP. FRANK FOLEY, Westfield, Mass., assignor of one-half to Patrick H. Kerwin, same place. Filed Oct. 13, 1891. Serial No. 408,596. (No model.)

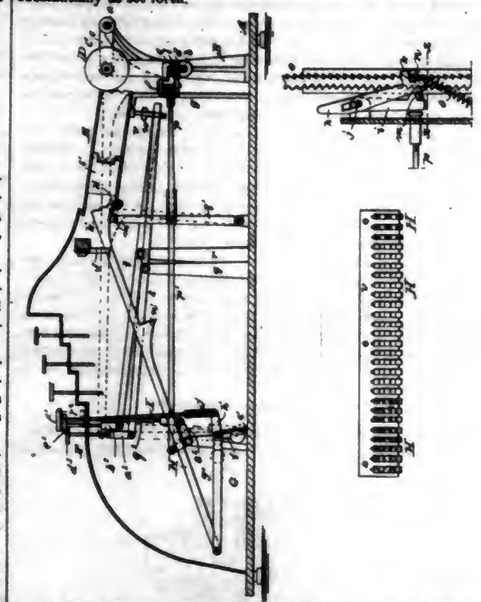


Claim.—As an improved article, a whip-stock consisting of a core wound at its upper end with the tanned throat-pipe of an animal, a braided covering, the butt formed with a series of parallel peripheral grooves, the butt-covering consisting of the seamless tanned wind-pipe or alimentary tube of an animal stretched upon the butt and held thereon by frictional contact, a series of grooves corresponding with those of the butt being formed thereon, and the seamless button, substantially as described.

472,870. TYPE-WRITING MACHINE. EUGENE A. FORD, New York, N. Y. Filed June 15, 1891. Serial No. 396,315. (No model.)

Claim.—1. In a type-writing machine, the combination of a series of type-bars H, the fixed slotted guide J, the triangular type-bar guide E for causing the type-bearing ends of the type-bars to register, and the type-bar-actuating mechanism consisting of levers G, rods I, and finger-pieces *f'*, substantially as specified.

2. The combination, with the horizontal platen, of the vertically-swinging hollow guide having its sides converging toward the platen, levers acting against the lower side of the hollow guide to raise it into two new positions, a series of type-bars having vertically-aligned type or characters on their forward ends, and operating devices for projecting the type-bars forwardly through the hollow guide and its contracted forward end into contact with the platen or paper thereon, substantially as set forth.



3. In a type-writer, the combination, with a series of type-bars converging at their forward ends, each provided with vertically-aligned type or characters, and keys having a lever connection with the rear ends of the bars, of a hollow vertically-swinging guide hinged at its rear end and having a contracted opening at its forward end of a size to firmly guide the forward end of a single type-bar, vertically-swinging levers beneath the said hollow guide and constructed to raise its forward end into two new positions, and a key mechanism adjacent to the keys of the type-bars to be operated simultaneously therewith or separately and connected with the guide-elevating levers, substantially as set forth.

4. The combination, with a series of horizontal levers pivoted near their forward ends, a series of converging type-bars pivoted at their lower ends to the long arms of said levers and inclined upwardly and forwardly therefrom, vertically-aligned type or characters on the forward end of said bars, and a series of vertically-extending key-rods pivoted at their lower ends to the forward ends of said levers to raise the type-bars into a horizontal position and project them forwardly to a common printing-point, of a vertically-swinging hollow guide pivoted at its rear end adjacent to the upper forward ends of the type-bars, and levers acting on the said hollow guide to elevate its free end into two new positions, substantially as set forth.

5. The combination, with the inclined converging type-bars, each having on its forward end vertically-aligned type or characters, the keys connected with said bars, and a stationary bar having vertical slots, through which the converging upper ends of the type-bars pass, of a vertically-swinging hollow guide pivoted at its rear end adjacent to the upper forward ends of the type-bars and tapering forwardly to receive and firmly guide the printing end of a single type-bar, and key-actuated levers acting on the lower side of the hollow guide to raise it into two new positions, substantially as set forth.

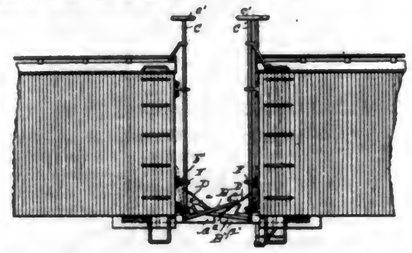
6. The combination, with the vertically-swinging hollow type-bar guide and a rest limiting the downward movement of its forward end, of the vertically-swinging key-levers extending forwardly under said guide and beneath its rest to engage the latter when their forward ends are swung up, and upwardly-projecting studs on the forward ends of said levers and one projecting higher than the other to engage the lower side of the hollow guide and raise its forward end into two new positions, substantially as set forth.

7. The combination, with the paper-carriage, its spacing mechanism having a key-operated rod, and intermediate vertical levers pivoted between their ends to the said rod and connected at their upper ends by a cross bar or rod, of the inclined type-bars crossing at their forward ends the said cross-bar and having depending lugs to engage it and rock the vertical levers forwardly to actuate the spacing mechanism, vertically-aligned type or characters on the forward ends of the said bars, keys for actuating the type-bars, and a vertically-swinging hollow guide contracted at its forward end to form a common printing-opening and pivoted at its rear end adjacent to the upper ends of the type-bars, and key-operated levers acting on the lower side of the hollow guide to raise its forward end to two new positions, substantially as set forth.

8. In a type-writing machine, the combination of the type-bars H, provided with projections *n'*, the levers *l'*, and pawl-and-ratchet mechanism connected with the paper-carriage and arranged to be operated by the impact of the type-bar through the levers *l'* and their connections, substantially as specified.

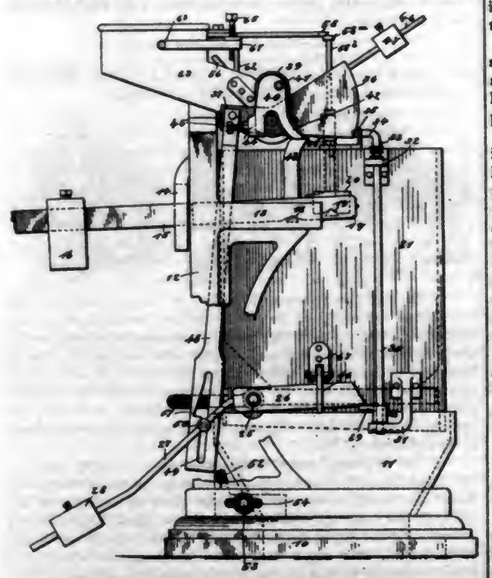
9. In a type-writing machine, the combination, with the paper-carriage and printing mechanism, of the double ratchet-bar *c*, attached to the paper-carriage, the pawl *i*, adapted to engage one side of the ratchet-bar, the slotted pawl *k*, adapted to engage the opposite side of the ratchet-bar, the adjusting-screw *n*, inserted in the pawl *k* and bearing upon the pawl *i*, and the retractile spring *o*, connected with the pawl *k* and with a fixed support, substantially as specified.

472,871. CAR-COUPLING. CURTIS GATES, Lyndon, Vt. Filed Nov. 30, 1891. Serial No. 413,573. (No model.)



Claim.—The car-coupling comprising the draw-heads, having each an angular acute shoulder or projection on its upper face, in combination with the links provided with loose bearings in their respective heads, either of said links being adapted to engage the shoulder or projection of the opposing head, and the vertical rods or shafts having bearings on the car ends and provided with the chain or cable connections with the respective links, pivoted arms or levers, against which the links rest when not in coupling position, and cams on the said vertical rods or shafts adapted to engage said arms or levers, substantially as specified.

472,872. AUTOMATIC GRAIN-SCALE. THOMAS F. GRAY, Mooreville, Ohio. Filed Nov. 17, 1891. Serial No. 412,131. (No model.)



Claim.—1. An automatic scale comprising a tilting scale-beam having upwardly-extending arms thereon, a weighing-hopper supported by the scale-beam and having a counterbalanced discharge-valve at its lower end, a supply-spout adapted to deliver into the hopper, a cut-off valve held to swing in the spout and having an arm adapted to rest upon one of the scale-beam arms, an oscillating valve mounted at the lower end of the spout and provided at one end with an arm adapted to swing against the arm of the primary cut-off, a lever secured to one end of the lower spout-valve and operatively connected with the discharge-valve of the hopper, so as to operate in unison therewith, a catch pivoted on the valve-lever and adapted to engage one of the scale-beam arms, and a rock-shaft pivoted on the weighing-hopper, said shaft having at its lower end an arm adapted to support the discharge-valve and at its upper end a crank which extends into the path of the spout-valve lever, substantially as described.

2. In an automatic scale, the combination, with the tilting scale-beam having upwardly-extending arms near its inner end, and the weighing-hopper supported on the scale-beam, said hopper having a counterbalanced discharge-valve at its lower end, of a supply-spout adapted to deliver into the hopper, a primary cut-off valve held to swing in the spout and provided with an arm adapted to rest upon one of the scale-beam arms, an oscillating cut-off valve mounted at the lower end of the hopper, said valve having at one end an arm adapted to swing against the arm of the primary cut-off valve, a weighted lever secured to one end of the lower cut-off valve, said lever terminating at one end in a cam or segment, a swinging catch pivoted on the valve-lever and adapted to engage one of the scale-beam arms, an operative connection between the lower valve-lever and the discharge-valve, and a rock-shaft pivoted on the weighing-hopper, said shaft having at its lower end an arm to engage and hold the discharge-valve and at its upper end a crank which extends into the path of the valve-lever, substantially as described.

3. The combination, with the tilting scale-beam having upwardly-extending arms thereon and the weighing-hopper carried by the scale-beam, of the supply-spout adapted to deliver into the weighing-hopper, a primary cut-off valve held to swing in the supply-spout and having an arm adapted to rest on one of the scale-beam arms, an oscillating cut-off valve mounted at the lower end of the supply-spout, a catch pivoted at one end of the valve and adapted to engage an arm on the scale-beam, and a bent arm secured to the axle of the lower valve and adapted to swing against the arm of the primary cut-off valve, substantially as described.

4. The combination, with the tilting scale-beam having upwardly-extending arms thereon, said scale-beam being adapted to carry a weighing-hopper, as described, and the supply-spout arranged above the scale-beam, of the primary cut-off valve held to swing in the spout, a supporting-arm adjustably connected with the cut-off valve and adapted to rest upon one of the scale-beam arms, a catch pivoted at one end of the lower cut-off valve and adapted to engage one of the scale-beam arms, and a bent arm secured to the axle of the lower cut-off valve and having means for longitudinal adjustment, said arm being adapted to strike the arm of the primary cut-off valve, substantially as described.

5. In a scale of the character described, the combination, with the supply-spout, of the swinging primary cut-off valve mounted therein and having a projecting arm, and the oscillating cut-off valve at the lower end of the spout, said valve having an arm extending into the path of the primary cut-off-valve arm, substantially as described.

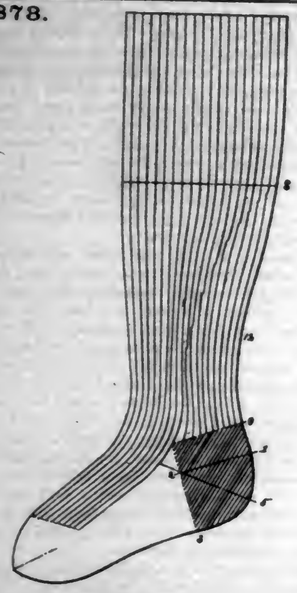
6. The combination, with the tilting scale-beam having a projecting arm thereon, the weighing-scale pivoted on the scale-beam and having a discharge-valve at the bottom with a counterbalanced lever pivoted to its stem, the rock-shaft pivoted on the weighing-hopper and having an arm to engage the lever of the discharge-valve, and the supply-spout adapted to deliver into the weighing-hopper, of an oscillating cut-off valve mounted at the lower end of the spout, a weighted lever secured to one end of the valve and having a segment thereon adapted to operate the rock-shaft, a connecting-rod extending from the lever to the weight-rod of the discharge-valve, and a pendulum-catch pivoted on the cut-off-valve lever and adapted to engage the arm of the scale-beam, substantially as described.

7. The combination, with the tilting scale-beam having an upwardly-extending arm thereon, and the oscillating valve having a weighted lever at one end, of a block on the lever, and a swinging pendulum-catch adjustably pivoted to the block and adapted to swing upon the arm of the scale-beam, substantially as described.

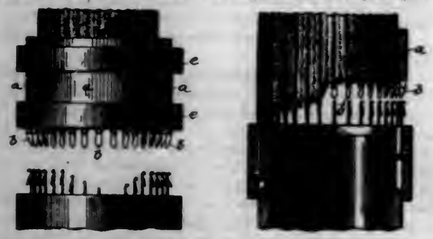
473,873. STOCKING. HENRY J. GRISWOLD, Leicester, England. Filed June 15, 1888. Serial No. 277,192. (No specimens.)

Claim.—As a new article of manufacture, a ribbed stocking having the ribs composing its front half uniform in width for the whole length of the leg and the ribs at its back reduced in width, the reductions in the rearmost ribs beginning nearer the top of the stocking than those farther toward the front, thus gradually narrowing the stocking-leg toward the ankle, substantially as set forth.

472,878.



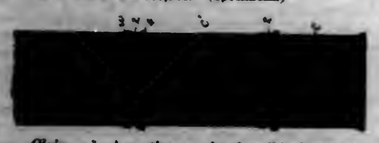
472,874. DEVICE FOR TRANSFERRING KNITTED FABRICS. HENRY J. GRISWOLD, Madison, Conn. Filed July 15, 1890. Serial No. 358,793. (No model.) Patented in England Apr. 5, 1886, No. 4,712.



Claim.—1. A transferring device for use in connection with knitting-machines, consisting of a series of separable segmental blocks or sections carrying a series of parallel quills and means for clamping the same detachably together, substantially as set forth.

2. The combination, in a transferring device for knitting-machines, of a series of segments *a*, constituting a hollow cylinder and carrying a series of quills and means for clamping the segments together, substantially as and for the purpose set forth.

472,875. KNITTED GOODS AND METHOD OF MANUFACTURING THE SAME. HENRY J. GRISWOLD, Madison, Conn. Filed July 15, 1891. Serial No. 399,573. (Specimens.)

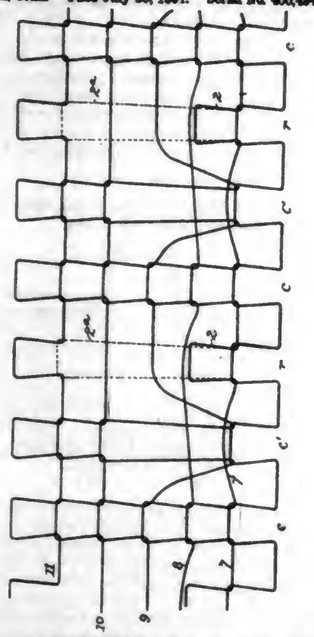


Claim.—1. A continuous circular-ribbed knitted fabric consisting of a series of sections, each having a fast welt at one end and each section connected to the adjacent section by a series of isolated loops and having a section of plain fabric 4, substantially as set forth.

2. As a new article of manufacture, a continuous circular-ribbed knitted fabric in sections connected by a series of isolated loops, each extending from one section to a welt of the adjoining section, substantially as set forth.

3. The within-described improvement in the art of knitting circular-ribbed fabrics with welts, the same consisting in knitting a body-section *c* of ribbed work, then throwing the ribbing-needles out of action, with their loops retained upon them and knitting a section 4 upon the cylinder-needles only, then throwing the stitches off of the cylinder-needles, and then putting the ribbing-needles into action and knitting one course on all the needles, then again throwing the ribbing-needles out of action, with their loops retained upon them and knitting a section upon the cylinder-needles, and then throwing the ribbing-needles again into action and knitting ribbed work, as usual.

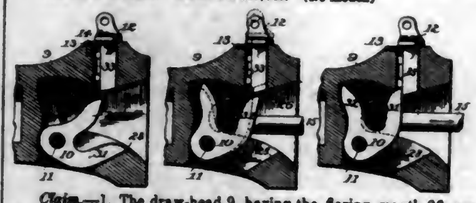
472,876. MANUFACTURE OF HOSIERY. HENRY J. GRISWOLD, Madison, Conn. Filed July 23, 1891. Serial No. 400,494. (No specimens.)



Claim.—1. A knitted fabric having its body composed of two-and-one, three-and-one, or other than one-and-one ribbed work and provided with a fast welt, substantially as set forth.

2. A knitted fabric the body of which is composed of two-and-one, three-and-one, or other than one-and-one ribbed work, with a fast welt consisting of a section 4 and a series of loops 2, extending from the union of the section 4 with the body to the edge of the section, substantially as set forth.

472,877. CAR-COUPLING. GILBERT A. HASLUP, Haslup, Md. Filed Dec. 16, 1891. Serial No. 415,249. (No model.)

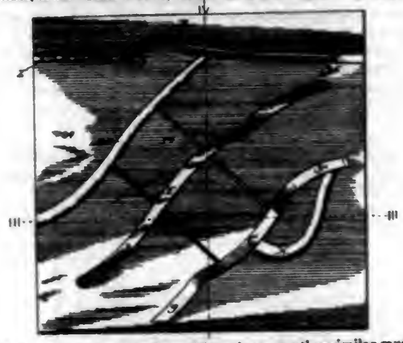


Claim.—1. The draw-head 9, having the flaring mouth 26, central vertical recess 27, and stops 28 29 30, and the oscillating detent 10, having the finger 31, which rests on said stop 28, preparatory to coupling, and abuts against said stop 29 when the detent is thrown backward in the coupling operation, and the thumb 32, which abuts against said stop 30 when the detent is thrown backward, in combination with the pivot-pin 11 and with the gravitating catch 12 and the link 15, both of the latter engaging with said finger 31, substantially as hereinbefore specified.

2. The oscillating detent 10, having the round-backed finger 31, the thumb 32, and a contracted trumpet-shaped notch between said finger and thumb, in combination with the pivot-pin 11, located out of line with said finger and notch, a gravitating catch to engage with the extremity of said finger, a round iron link interlocked with said finger, and a draw-head having a central vertical recess within which said detent is pivoted by said pin, and a flaring mouth the bottom of which is below the end of the coupled link as it rests in said notch, substantially as hereinbefore specified.

3. The one-part gravitating catch 12, having the stop-lug 33 on its back, its keeper 13 and fastening-screw 14, and the draw-head 9, having in its top a grooved vertical hole, a dovetailed seat, and a screw-hole therefor and constructed with the flaring mouth 26 and central vertical recess 27, in combination with the detent 10, pivot-pin 11, and link 15, substantially as hereinbefore specified.

472,878. SOUNDING-BOARD FOR PIANOS. CARL HIRSE, Des Moines, Iowa. Filed Dec. 12, 1891. Serial No. 414,849. (No model.)



Claim.—1. In combination with a piano or other similar musical instrument, a sounding-board supported upon a suitable frame at its edges and suitable bridges supported on the sounding-board for the strings to rest upon, said sounding-board being arched from all of its edges toward a common center for affording the proper amount of strength and firmness, whereby the customary supporting-ribs can be omitted and the sound of the piano improved, substantially as herein set forth.

2. In combination with a piano or other similar musical instrument, a sounding-board supported upon a suitable frame at its edges and arched from its edges toward the center and bridges supported on the sounding-board, for the strings to rest upon, said bridges being curved on their under faces to correspond with the contour of the sounding-board, so as to fit snugly and evenly thereon, substantially as herein set forth.

3. In combination with a piano or other similar musical instrument, a sounding-board supported upon a suitable frame at its edges and arched from its edges toward the center and bridges supported on the sounding-board for the strings to rest upon, said bridges being curved on their under faces to correspond with the contour of the sounding-board, so as to fit snugly and evenly thereon and level on their upper faces to afford the proper seat for the strings, substantially as herein set forth.

4. In combination with a piano or other similar musical instrument, a sounding-board supported from its edges upon a suitable frame, bridges snugly fitting on said sounding-board for the strings to rest upon, and a series of sounding-posts connecting said bridges, whereby the tone of the piano is equalized, substantially as herein set forth.

5. In combination with a piano or other similar musical instrument, a sounding-board supported at its edges upon a suitable frame, bridges snugly mounted on said sounding-board for the strings to rest upon, and a series of sounding-posts connecting said bridges, said sounding-posts having their under faces cut away so that they will come in contact with the sounding-board only at their ends, substantially as and for the purpose herein set forth.

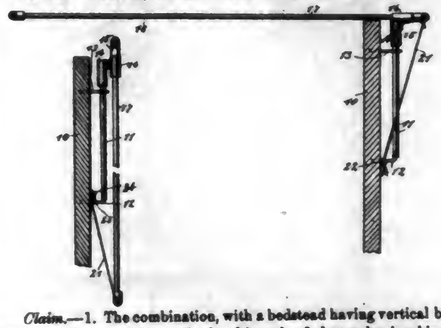
6. In combination with a piano or other similar musical instrument, a sounding-board supported at its edges upon a suitable frame, the treble and bass bridges mounted upon the sounding-board for the strings to rest upon, a third bridge or strip lower than the other two, so as not to touch the strings, and also mounted upon the sounding-board, and a series of sounding-posts extending between said bridges for connecting them, whereby the tone of the piano is equalized, substantially as set forth.

7. In combination with a piano or other similar musical instrument, a sounding-board supported from its edges upon a suitable frame, the treble-bridge, the bass-bridge, and the third sounding-board bridge or strip, all mounted upon the sounding-board and extending in approximately parallel lines, and two or more pairs of tuning-posts connecting said bridges, said pairs of tuning-posts being arranged in approximately parallel lines and each of said pairs extending in approximately a straight line, substantially as and for the purpose set forth.

8. In combination with a piano or other similar musical instrument, a sounding-board supported from its edges upon a suitable frame, the sounding-board bridges mounted upon said sounding-board, the pin-block from which the strings extend, and the string-bridges also mounted upon the sounding-board adjacent to the pin-block, substantially as and for the purpose set forth.

9. In combination with a piano or other similar musical instrument, a sounding-board supported from its edges upon a suitable frame, the bridges mounted upon the sounding-board, sounding-posts connecting the bridges, the bass-bridge being provided with extension ends, and a curved strip extending from the center of said bass-bridge to one of the extension ends, substantially as and for the purpose set forth.

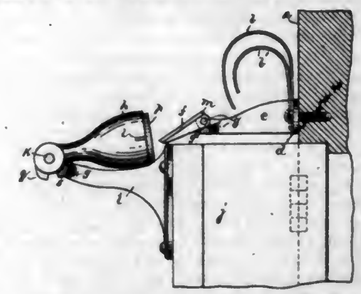
472,879. MOSQUITO-BAR FRAME. ELBRIDGE G. HOLDEN, Fulton, Tex. Filed July 30, 1891. Serial No. 401,140. (No model.)



Claim.—1. The combination, with a bedstead having vertical bars secured to the rear side of the head-board, of sleeves having hinged connections with the upper ends of the bars, and a mosquito-bar frame having its side bars sliding in the said sleeves, substantially as described.

2. In a mosquito-bar frame, the combination, with bars adapted to be secured to the head-board of a bedstead, of hinges, one member of which is a socket to receive the said bars and the other a sleeve, and a mosquito-bar frame having its side bars sliding in the said sleeves, substantially as herein shown and described.

472,880. DOOR-CHECK. JEREMIAH J. HOLWELL, New York, N. Y. Filed Nov. 23, 1891. Serial No. 412,676. (No model.)

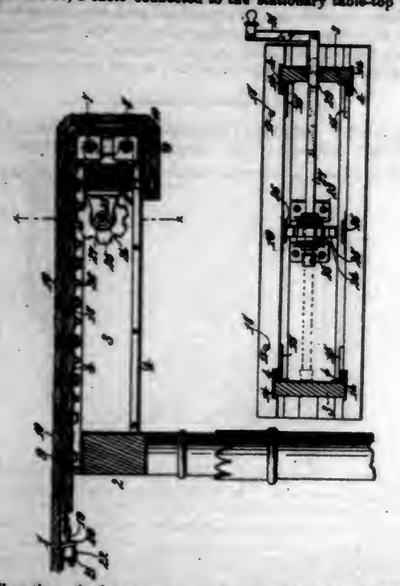


Claim.—The combination, in a door-check, of the C-spring attached to the door-frame and having its free end pendent in front of said frame and terminating above the range of the top of the door, the switch-guide-supporting arm projecting from the said frame beyond and laterally to said pendent end of the spring, the inclined switch-guide pivoted at the outer extremity of said arm for vertical play, and the checking-ram pivoted at its outer end on the extremity of the supporting-arm *i*, projecting from the door and supported on said arm with its striking-head ranging toward but lower than the pendent end of the spring and having the arm adapted for lifting the striking-head by the switch-guide when the door closes, said switch-guide adapted to allow the ram-head to fall without contact with the spring when the door closes gently, and also adapted to be raised by said arm and allow it to pass when the door opens, substantially as described.

472,881. EXTENSION-TABLE. CHAUNCEY S. HOMER and WILLIAM H. PICKETT, Warren, Pa. Filed Aug. 12, 1891. Serial No. 402,451. (No model.)

Claim.—1. The combination, in an extension-table, of a stationary table-top panel, an adjustable leg-frame having at its outer end upper and lower counterpart rollers angular in cross-section, connected to the stationary table-top panel, and a flexible table-top section consisting of a series of contiguous slats 9 and 10, having transverse orifices,

with those in one slat arranged out of alignment with those in the adjacent slat, and said slats 9 having each edge provided with a concaved seat 12 and the slats 10 having each edge provided with a convex portion 13, a cable connected to the stationary table-top panel,



extending through the transverse orifices, and bearing against the upper edge of the orifice in one slat and against the lower edge of the orifice in the adjacent slat, and means for sliding the leg-frame to extend and retract the flexible table-top section round the angular rollers, substantially as described.

2. The combination, in an extension-table, of a stationary table-top panel, an adjustable leg-frame, means for sliding the leg-frame, and a flexible table-top section connected to the stationary table-top panel and consisting of a series of contiguous slats 9 and 10, having transverse orifices, with those in one slat arranged out of alignment with those in the adjacent slat, said slats 9 having each edge provided with a concaved seat 12, coextensive with the thickness of the slat, and the slats 10 having each edge provided with a convex portion 13, coextensive with the thickness of such slat, and a cable connected with the stationary panel and extending through the transverse orifices to bear against the upper edge of the orifice in one slat and against the lower edge of the orifice in the adjacent slat, substantially as described.

3. The combination, in an extension-table, of a stationary table-top panel, an adjustable leg-frame, means for sliding the leg-frame, a flexible table-top section connected to the stationary table-top panel and consisting of a series of contiguous slats provided with transverse orifices, with those in one slat located out of alignment with those in the adjacent slat, and a flexible cable connected to the stationary table-top panel, passing through the orifices and alternately bearing against the uppermost and lowermost edges thereof, substantially as described.

4. The combination, in an extension-table, of a stationary panel, an adjustable leg-frame, a flexible table-top section connected with the panel and engaging the leg-frame, a rack-and-pinion mechanism adapted to slide the leg-frame and the pinion having an orifice therethrough, and a lengthwise-movable crank-shaft sliding through the orifice in the pinion and extensible at one side of the table, substantially as described.

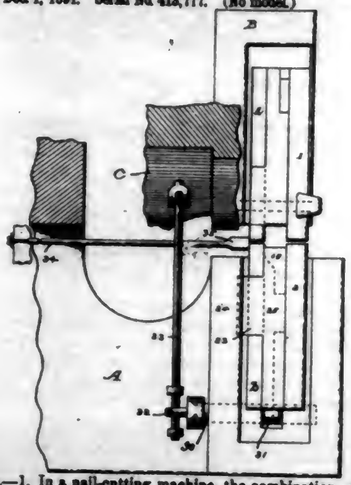
5. The combination, in an extension-table, of a stationary panel, an adjustable leg-frame, a flexible table-top section connected with the panel and engaging the leg-frame, a rack-and-pinion mechanism adapted to slide the leg-frame back and forth and the pinion having an orifice therethrough, and a jointed folding crank-shaft movable through one side of the table and sliding lengthwise in the orifice of the pinion for the purpose of extending and retracting the flexible table-top section from one side of the table, substantially as described.

6. The combination, in an extension-table, of a stationary panel, an adjustable leg-frame, a flexible table-top section composed of flexibly-connected slats provided with attached teeth, a pinion journaled in bearings on the adjustable leg-frame and having an orifice therethrough, and a lengthwise-movable crank-shaft extending through one side of the table and sliding in the orifice of the pinion, substantially as described.

7. The combination, in an extension-table, of a stationary panel, an adjustable leg-frame, a flexible table-top section composed of a series of contiguous slats having attached teeth, a cable extending through the slats and connected with the panel, a pinion journaled in bearings on the adjustable leg-frame and engaging the teeth of the slats, and a crank-shaft extending through one side of the leg-frame for rotating the pinion to slide the leg-frame back and forth, substantially as described.

8. The combination, in an extension-table, of a stationary panel, an adjustable leg-frame having its outer portion provided with an upper and lower roller, both of which are approximately square in cross-section, a flexible table-top section composed of a series of contiguous slats 9 and 10, the former having each edge provided with a concaved seat and the latter having each edge provided with a convex portion, a cable extending through the slats, and means for adjusting the leg-frame to extend and retract the flexible table-top section, substantially as described.

472,882. NAIL-MACHINE. CHARLES R. HOUGHTON, Northumberland, Pa., assignor of one-half to Horace Rufus Johnson, same place. Filed Dec. 1, 1891. Serial No. 413,717. (No model.)



Claim.—1. In a nail-cutting machine, the combination, with laterally-movable point-cutting dies, of expanding liners arranged adjacent to the dies and means for expanding the liners to move the dies outward, substantially as described.

2. In a nail-cutting machine, the combination, with laterally-movable point-cutting dies, of expanding liners arranged adjacent to the dies, said expanding liners consisting of a stationary part and a part having limited and longitudinal and lateral movement, and means for moving the movable part, substantially as described.

3. In a nail-cutting machine, the combination of laterally-movable point-cutting dies and two-part liners adjacent to the dies, said parts having inclined contacting surfaces, whereby when one of the parts is moved longitudinally it is also moved laterally, substantially as and for the purposes specified.

4. The combination, with the laterally-movable point-cutting dies, of expanding liners to push the dies outward, means to expand the liners, and a spring to return the dies inward, substantially as described.

5. The expanding liner for a nail-cutting machine, consisting of the part having a channel in its side and an inclined end piece at the end of the channel and the part formed to fit the channel of the other part and having a notch having an inclined end to engage the incline of the other part, and a projection to engage a moving part of the machine, substantially as and for the purpose specified.

6. The expanding liner for a nail-machine, consisting of the part having a channel terminating in an inclined end and formed with a side-abutting flange and keeper and an opening, and the part formed to fit the channel and opening of the other part and having an inclined end to engage the incline of the other part, substantially as described.

7. The combination, with the gripping-die and the point-cutting die of a nail-machine, of a liner interposed between the dies and formed with a side-extending flange to set over the point-cutting die and against an abutting surface, whereby the pressure of the gripping-die is against liner and not against the point-cutting die, substantially as described.

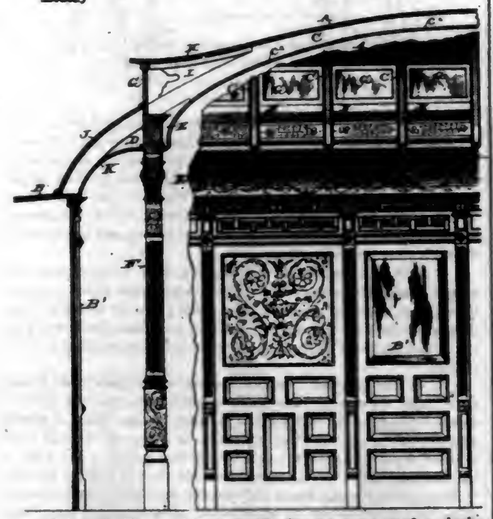
8. The combination, with a laterally-movable point-cutting die of a nail-machine, of a stationary liner adjacent to the die and a movable piece between the liner and the die, whereby the die may be moved outward, and means for moving the movable piece, substantially as described.

472,888. PHOTOGRAPHIC SHUTTER. FRANK R. HOYT, Watkins, N. Y. Filed Sept. 18, 1891. Serial No. 406,048. (No model.)



Claim.—In a camera-shutter, the combination, with a support and a pivoted and spring-actuated shutter carried by the support and provided with a notch in its periphery, of a spring-catch having one end secured to the support and its free end engaging the notch of the shutter, said free end being provided with a stud, a pneumatic cylinder, and a piston in the cylinder, having a beveled upper end adapted to engage the stud of the catch, substantially as and for the purpose set forth.

472,884. CABIN ROOF AND DECK FOR BOATS. GREGORY HUDSON, Milwaukee, Wis. Filed June 19, 1891. Serial No. 396,826. (No model.)



Claim.—1. The combination, with the state-room roofs or decks, of an intermediate cabin-deck and carlings supporting said cabin-deck, said carlings being sharply arched and resting directly upon the state-room decks, substantially as and for the purposes set forth.

2. The combination, with the state-room roofs or decks, of a cabin-deck supported by arched carlings and provided with windows placed in said deck inside of and above the ends of the carlings, which rest upon said state-room decks, substantially as and for the purposes set forth.

3. The combination, with the state-room roofs or decks, of an intermediate cabin-deck supported upon arched carlings resting at their ends directly upon said state-room decks, and transverse beams upon which said carlings rest inside of and above the state-room decks, substantially as and for the purposes set forth.

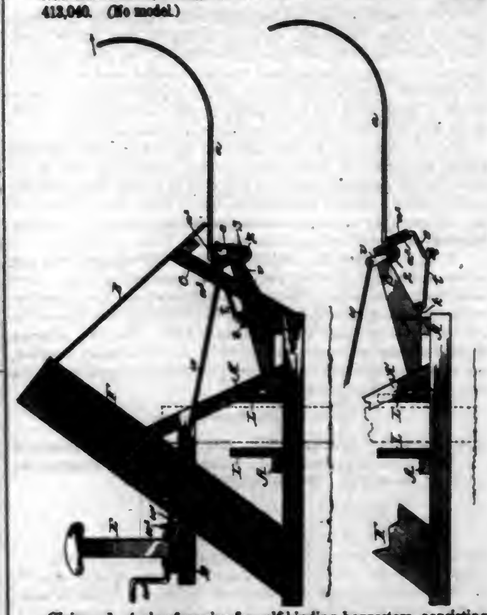
4. In a cabin-roof, the combination of the deck or covering, arched carlings supported at the ends upon the state-room decks, transverse beams upon which said carlings rest near their ends inside of and above said state-room decks, and brackets attached to the inner sides of said beams and abutting at their inner upper extremities against shoulders on said carlings, substantially as and for the purposes set forth.

5. In a cabin-roof, the combination of the covering constituting the deck, arched carlings carrying said deck and supported at the ends upon the state-room decks, a roof-covering of sharp curvature or pitch carried by said carlings between the cabin and the state-room decks, and windows located between the cabin-deck and said curved or inclined roof-coverings, substantially as and for the purposes set forth.

6. In a cabin-roof, the combination of the covering constituting a deck, arched supporting-carlings resting at the ends upon the state-room decks, deck-supports diverging upwardly and outwardly from the carlings and affording window-openings under the edges of the cabin-deck, and roofs of sharp curvature or inclination carried by said carlings between the bases of the windows and the state-room decks, whereby water falling or thrown upon said decks or roofs is carried away from said windows, substantially as and for the purposes set forth.

7. In a cabin-roof, the combination of the deck or covering, arched carlings supported at the ends upon the state-room decks, beams upon which said carlings rest transversely near their ends, and brackets attached to the inner sides of said beams and abutting at their inner upper corners against shoulders on said carlings, substantially as and for the purposes set forth.

472,885. SHEAF-CARRIER FOR SELF-BINDING HARVESTERS. AUGUSTUS JEWELL, Dowagiac, Mich. Filed Nov. 25, 1891. Serial No. 413,040. (No model.)



Claim.—1. A sheaf-carrier for self-binding harvesters, consisting of an approximately-horizontal rock-shaft, said rock-shaft provided with suitable axial bearings for the carrier-arms, a set of carrier-arms journaled therein and provided with cranks, said cranks having their ends removed from the axis of said rock-shaft, a set of suitable stationary keepers, and a corresponding set of anchorage-bars connecting said keepers with said cranks, substantially as set forth.

2. A sheaf-carrier consisting of an approximately-horizontal rock-shaft provided with upwardly-projecting axial bearings for the carrier-arms, a set of carrier-arms journaled therein and the carrier-arms provided at the lower ends of their journals with cranks bent obliquely upward, a corresponding set of anchorage-bars connected to the cranks above the rock-shaft, and stationary keepers for connection with the inner ends of said anchorage-bars, substantially as set forth.

3. A sheaf-carrier consisting of an approximately-horizontal rock-shaft made adjustable longitudinally in its bearings and having axial bearings for the carrier-arms, the carrier-arms journaled in said bearings and provided with cranks, anchorage-bars connecting with said cranks, and keepers for the anchorage-bars provided with an adjustable connection for said bars, substantially as set forth.

472,886. SASH-FASTENER. AXEL JOHNSON, Oakland, assignor to the Marshall Improved Window Furniture Company, San Francisco, Cal. Filed Dec. 30, 1891. Serial No. 416,507. (No model.)



Claim.—1. In a sash-lock, the combination of intercngaging rack and pinion, a movable detent or pawl for engaging the same, oppositely-reciprocating connected push-buttons, one of which engages the

detent to raise it and the other engages the first-named push-button to lower the detent, substantially as herein described.

2. In a sash-lock and in combination with a locking mechanism, the oppositely-reciprocating connected push-buttons, one of which operates and relieves the locking mechanism, substantially as herein described.

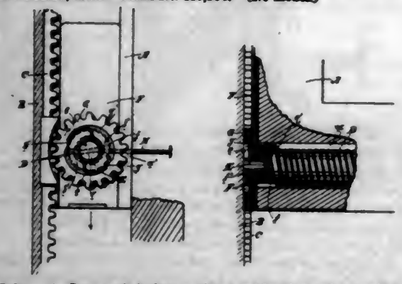
3. In a sash-lock and in combination with the movable operating-rod of a locking mechanism, the push-button I, having a beveled inner end operating on said rod to raise and relieve it, the push-button J, and the centrally-pivoted link K, connecting the two buttons, whereby they are caused to oppositely reciprocate, substantially as herein described.

4. In a sash-lock and in combination with the movable operating-rod of a locking mechanism, the plate having the seats, one of which has a groove receiving the upper end of the rod, the push-button I, mounted in said grooved seat and having a beveled inner end operating under the upper end of the rod to raise and to relieve it, the push-button J, mounted in the other seat, and the centrally-pivoted link connecting the two buttons, substantially as herein described.

5. In a sash-lock, the combination of the intereugaging rack and pinion, the spring-controlled detent or pawl controlling their movement, the rod connected with said detent or pawl, and the oppositely-reciprocating connected push-buttons, one of which has a beveled inner end operating under the end of the rod for raising and relieving it, substantially as herein described.

6. In a sash-lock, the combination of the intereugaging rack and pinion, the spring-controlled detent or pawl controlling their movement, the rod connected with said detent or pawl, and the oppositely-reciprocating connected push-buttons, one of which has a beveled inner end operating under the end of the rod for raising and relieving it, and the plate having the seats in which said buttons are mounted, one of said seats having a cross-groove to receive the upper end of the rod, substantially as herein described.

472,887. SASH-BALANCE. AXEL JOHNSON, Oakland, assignor to the Marshall Improved Window Furniture Company, San Francisco, Cal. Filed Dec. 30, 1891. Serial No. 416,596. (No model.)



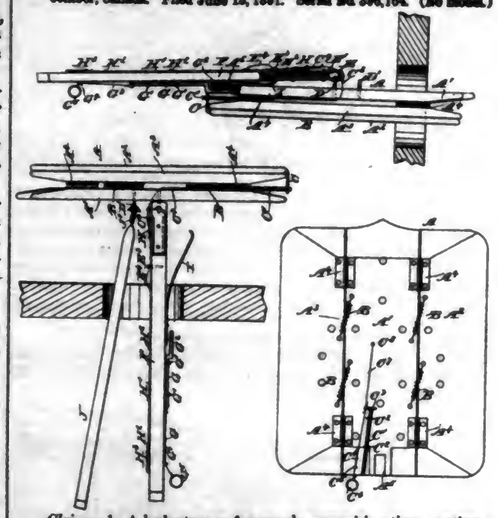
Claim.—1. In a sash-balance, the combination of a spring-controlled pinion, a rack with which the pinion engages, a pawl-and-ratchet connection between the pinion and rod, whereby the former is adapted to wind up the latter in one direction and to rotate independently of it in the other direction, and a means for holding said spring under tension while the pinion is rotating independently, substantially as herein described.

2. In a sash-balance, the combination of a turn-rod, a spring secured thereto and adapted to be wound up thereby, a pinion journaled on the turn-rod, a rack with which the pinion engages, a pawl-and-ratchet connection between the pinion and rod, whereby the former is adapted to turn the rod in one direction and to rotate independently of it in the other direction, and the removable holding-pin for preventing the rod from turning while the pinion is rotating independently, substantially as herein described.

3. In a sash-balance, the combination of the turn-rod, the spring secured thereto and adapted to be wound up thereby, the pinion journaled on the turn-rod and having the recessed face with ratchet-teeth, the pawl carried by the rod and engaging the teeth in one direction and slipping them in the other, the rack engaging the pinion, and a means for holding the rod stationary when the pinion slips its pawl, substantially as herein described.

4. In a sash-balance, the combination of the turn-rod, the spring secured thereto and adapted to be wound up thereby, the pinion journaled on the turn-rod and having the recessed face with ratchet-teeth, the pawl carried by the rod and engaging the teeth in one direction and slipping them in the other, the rack engaging the pinion, and a means for holding the rod stationary when the pinion slips its pawl, consisting of the removable pin H, seated in the sash and passing through a hole in the rod, substantially as herein described.

472,888. LEAK-STOPPER OR BREACH-PLATE. FRANCIS F. JONES, Comber, Canada. Filed June 13, 1891. Serial No. 396,164. (No model.)



Claim.—1. A leak-stopper for vessels, comprising three sections, the outermost sections being hinged to the inner section to fold thereon, and means for holding the sections folded, substantially as described.

2. A leak-stopper for vessels, comprising three sections hinged together, so that the outermost sections will fold upon the central section, means for holding the outermost sections folded, and springs for extending the said outermost sections when released, substantially as herein shown and described.

3. In a leak-stopper, the combination, with spring-pressed and hinged plates, of means for locking the outer plates folded upon the inner plates, a handle connected to the said plates for thrusting them through an aperture in the folded position, and means for disengaging the folded plates to allow them to be extended, substantially as described.

4. In a leak-stopper, the combination, with a plate made in sections hinged together and adapted to be folded one upon the other, of means for locking the said sections in position when folded, a handle adapted to engage one of the said sections to support the said plate in order to pass the same through the opening or leak, a bolt held on the said handle and serving to lock the said plate in a folded position to the said handle, and means for releasing the locking mechanism to allow the outer sections to be extended, substantially as shown and described.

5. In a leak-stopper, the combination, with a plate made in sections hinged together and adapted to be folded one on the other, of means for locking the said sections in position when folded, a handle adapted to engage one of the said sections to support the said plate in order to pass the same through the opening or leak, a bolt held on the said handle and serving to lock the said plate in a folded position to the said handle, and a spring interposed between the said handle and plate and compressed when the said sections are locked to the said handle, substantially as shown and described.

6. In a leak-stopper, the combination, with a plate made in spring-pressed sections hinged together and adapted to be folded, of a bolt for locking the said sections in a folded position, a handle for carrying the said plate, and means, substantially as described, for withdrawing the said bolt to unlock the said sections, substantially as shown and described.

7. In a leak-stopper, the combination, with a plate, of a handle for supporting the said plate, a spring held on the said handle and adapted to engage with its free end the said plate, and a bolt for locking the said plate when the said spring is compressed between the handle and the plate, substantially as shown and described.

8. In a leak-stopper, the combination, with a plate made in sections hinged together and adapted to be folded one upon the other, of springs pressing the said sections, and a handle formed with a hook adapted to engage an eye on one of the said sections, substantially as shown and described.

9. In a leak-stopper, the combination, with a plate made in sections hinged together and adapted to be folded one upon the other, of springs pressing said sections, a handle formed with a hook adapted to engage an eye on one of the said sections, and a bolt for locking the said plate to the said handle, substantially as shown and described.

10. In a leak-stopper, the combination, with a plate made in sections hinged together and adapted to be folded one upon the other, of a handle pivotally connected with one of the said sections, and an auxiliary handle adapted to engage the said plate to assist in manipulating the same, substantially as shown and described.

11. In a leak-stopper, the combination, with a plate made in sections hinged together and provided with threaded openings adapted to be closed by screw-plugs, of bolts engaging the said threaded openings when the screw-plugs are removed, and a fastening-bar adapted to engage the inner surface of the side or bottom of the vessel and to be connected with the said bolts, substantially as shown and described.

12. In a leak-stopper, the combination, with a plate made in sections hinged together and adapted to be placed on the outer surface of the side of the vessel, of eyes held on one of the said sections, a strap adapted to engage one of the said eyes, and a fastening-bar connected with the said strap and adapted to engage the inner surface of the side of the vessel, substantially as shown and described.

13. In a leak-stopper, the combination, with a plate made in sections hinged together and adapted to be placed on the outer surface of the side of the vessel, of eyes held on one of the said sections, a strap adapted to engage one of the said eyes, a fastening-bar connected with the said strap and adapted to engage the inner surface of the side of the vessel, and means, substantially as described, for locking the said strap on the said fastening-bar, as set forth.

472,889. BOMB-LANCE. DANIEL KELLEHER, New Bedford, Mass. Filed Dec. 4, 1891. Serial No. 414,023. (No model.)

Claim.—1. In a bomb-lance, an outer casing constructed with a magazine, a fuse extending therein, and an anvil at the outer end of the fuse, combined with a vertically-moving hammer, and a cap and a cap-tube carried by said hammer, substantially as shown and described.

2. In a bomb-lance, an outer casing constructed with a magazine, a fuse extending therein, and an anvil at the outer end of the fuse, combined with a vertically-moving hammer constructed with a screw-threaded recess and a cap and a screw-threaded cap-tube adapted to fit therein, substantially as shown and described.

3. In a bomb-lance, the combination, with the recessed hammer constructed with a vertical slot, of the cap-tube and a wire extending upward from said cap-tube into said recess, whereby the said tube is prevented from turning, substantially as shown and described.

4. In a bomb-lance, the combination, with the hollow casing-sections, a hollow connecting-plug, and a fuse secured in the lower end of the plug, of a removable hollow anvil secured in the upper end of said plug, a vertically-moving hammer, and a cap and a cap-tube carried by said hammer, substantially as shown and described.

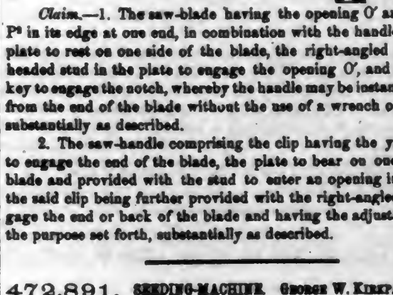
5. In a bomb-lance, the combination, with the hollow casing-sections, a hollow connecting-plug having a projection at its upper end which forms an anvil, and a fuse-tube secured in said plug, of a vertically-moving hammer, and a cap and a cap-tube which are carried by said hammer, substantially as shown and described.

6. In a bomb-lance, the hollow casing-sections and a hollow connecting-plug, combined with a fuse-tube holder secured in the lower end of the said plug, a shoulder formed on the said holder, a fuse, an anvil, a cap, and a vertically-moving hammer, substantially as shown and described.

7. The combination, with the hollow casing-section, a hollow plug connecting them, and a fuse secured in the lower end of the plug, of a removable hollow anvil secured to and projecting from the upper end of the said plug and which is provided with transverse openings in its projecting portion, a vertically-moving hammer, and a cap and a cap-tube which are carried by the hammer, substantially as shown and described.

8. In a bomb-lance, in combination, the hollow casing-sections, a hollow connection therefor, a removable screw-threaded portion secured in the lower end of the said connection, a fuse-tube having a flaring upper end secured in said portion, a fuse, a removable anvil in the upper end of the said connection, having a vertical and transverse opening, a vertically-moving hammer, and a cap and a movable cap-tube secured in said hammer, substantially as shown and described.

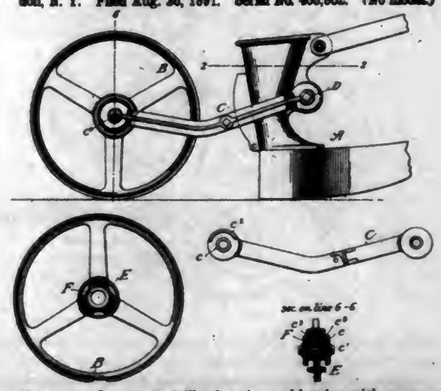
472,890. SAW-HANDLE. WILLIAM H. KIDD, Santa Rosa, Cal. Filed Nov. 25, 1890. Serial No. 372,643. (No model.)



Claim.—1. The saw-blade having the opening O′ and the notch P^3 in its edge at one end, in combination with the handle having the plate to rest on one side of the blade, the right-angled arm, the T-headed stud in the plate to engage the opening O′, and the movable key to engage the notch, whereby the handle may be instantly detached from the end of the blade without the use of a wrench or other tool, substantially as described.

2. The saw-handle comprising the clip having the yoke, the slot to engage the end of the blade, the plate to bear on one side of the blade and provided with the stud to enter an opening in said blade, the said clip being further provided with the right-angled arm to engage the end or back of the blade and having the adjustable key, for the purpose set forth, substantially as described.

472,891. SEEDING-MACHINE. GEORGE W. KIRKPATRICK, Macedon, N. Y. Filed Aug. 26, 1891. Serial No. 403,802. (No model.)



Claim.—1. In a grain-drill, a hoe, in combination with an arm extending rearward therefrom and a follower-wheel mounted within said arm, said wheel having three spokes or less, as distinguished from wheels having four or more spokes, whereby the openings between the

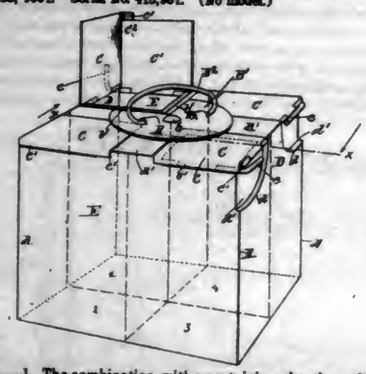
spokes are given such size and shape as to prevent the lodgment of obstructive matters therein.

2. In a grain-drill, a hoe, a vertically-swinging wheel-carrying arm extending rearward from the hoe, and a follower-wheel carried by the rear end of said arm, said wheel having three spokes only or less, as distinguished from wheels having four or more spokes, thus giving an angular space of one hundred and twenty degrees or more between its spokes.

3. In combination with the wheel having the hub and the annular flange or guard encircling the same, the carrying-arm having flanges d^3, overlapping the ends of the hub within the annular flange.

4. The wheel provided with the hub, the oil-openings through the hub, and the annular flange or guard surrounding the hub to prevent foreign matters from falling into the oil-opening.

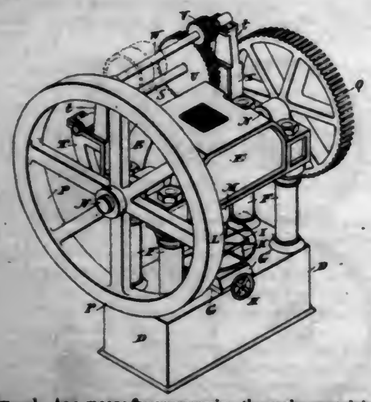
472,892. CANISTER. GEORGE R. KNIGHT, Boston, Mass. Filed Dec. 22, 1891. Serial No. 415,931. (No model.)



Claim.—1. The combination, with a containing-chamber, of the respective upper and under lids C and C', hinged to their respective chamber-walls, the former lid provided with a flange c' and the latter with a lifting device c, and the rotary securing-disk B', having a suitable piece cut therefrom and provided with a swinging handle and loosely riveted by the rivet b to the head of the containing-chamber, substantially as set forth.

2. A containing-canister having several respective chambers, each provided with the respective upper and under lids C and C', hinged to their respective chamber-walls, the former lid provided with a flange c' and the latter with a lifting device c, in combination with the rotary securing-disk B', provided with a suitable swinging handle and loosely riveted by the rivet b to the head of the containing-canister and having a suitable piece cut therefrom to free the lids of a respective chamber, as set forth.

472,893. MANUFACTURE OF METAL WHEELS. JAMES R. LITTLE, Quincy, Ill. Filed Aug. 30, 1891. Serial No. 403,207. (No model.)



Claim.—1. As a means for compressing the spoke-containing boss of a metal hub, a die formed in sections or parts, each of which has a cavity to inclose a portion of the boss, substantially as and for the purpose specified.

2. As a means for compressing the spoke-containing boss of a metal hub, a die formed in sections or parts, having cavities which inclose a portion but not all of the boss, substantially as and for the purpose shown.

3. As a means for compressing the spoke-containing boss of a metal hub, a die composed of two parts having each a cavity to inclose less than half of the boss, substantially as and for the purpose described.

4. As a means for compressing the spoke-containing boss of a metal hub, a die composed of two parts having each cavities corresponding in number to the number of bosses, each cavity being adapted to inclose a portion only of a boss, substantially as and for the purpose shown and described.

5. As a means for uniting spokes to a metal hub having a peripheral offset from which extend spoke-containing bosses, a die composed of two parts, each of which has a number of cavities corresponding in number to the bosses, each cavity being adapted to inclose a portion of a boss and each of said die parts having a portion to abut against the peripheral offset on the hub, substantially as and for the purpose set forth.

6. As a means for uniting spokes to a metal hub having a circumferential offset from which radiate spoke-containing bosses, a die composed of two parts, each of which has a number of cavities corresponding in number to the bosses, each cavity being adapted to inclose a portion of a boss and each of said die parts having an opening to contain a portion of the body of the hub and a part to abut against the circumferential offset on the hub, substantially as and for the purpose specified.

7. As a means for compressing the spoke-containing bosses of a hub, a lower die part adapted to hold the hub and having a number of cavities corresponding to the number of the bosses, each cavity adapted to inclose a portion of a boss, and an upper die part having similar cavities, one of said parts being movable with relation to the other, substantially as and for the purpose shown.

8. As a means for compressing the spoke-containing bosses of a hub, a lower fixed die having a number of cavities corresponding to the number of the bosses, each cavity being adapted to inclose a portion of a boss, an upper die having similar cavities, and means for moving the same relative to the lower die, substantially as and for the purpose set forth.

9. In combination, a lower fixed die, a crank-shaft, a pitman connecting the latter to the movable die, a main driving-shaft, and gearing between it and said crank-shaft, substantially as and for the purpose specified.

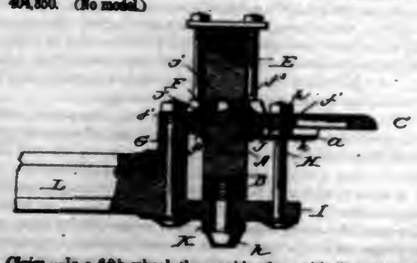
10. In combination, a lower fixed die adapted to receive and support a hub having radial spoke-containing bosses, an upper movable die adapted to impinge upon the latter, a crank-shaft, a pitman connecting the latter to the movable die, and means to rotate said crank-shaft, substantially as and for the purpose shown.

11. In a die-press, in combination with a bed having an inclined face, a die-supporting block upon the latter, and means for moving one of said parts relative to the other to change the plane of its die-supporting surface, substantially as and for the purpose described.

12. In a die-press, in combination with a bed having an inclined face, a die-supporting block having a correspondingly-inclined lower face and a horizontal upper face and means for moving said block upon said bed, substantially as and for the purpose specified.

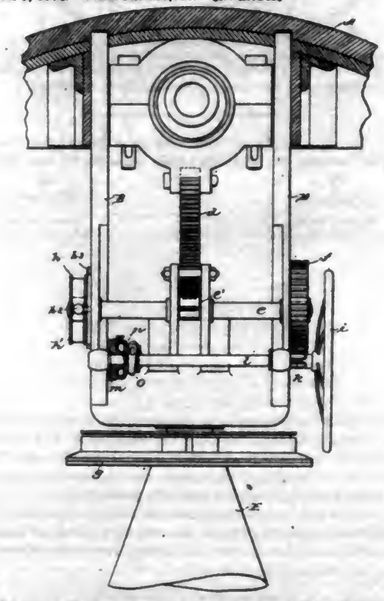
13. In combination; a bed having an inclined face, a die-supporting block having a correspondingly-inclined lower face, the one being laterally movable with reference to the other to vary the plane of the die-supporting surface, a die upon said block, a holding device for said die to prevent lateral displacement thereof, and a suitable part to co-operate with said die, substantially as and for the purpose shown and described.

472,894. FIFTH-WHEEL. PETER LOUDENBELL, Greensburg, Ind., assignor of three-fourths to J. S. Lagenbell, J. W. Donavin, L. K. Donavin, and G. B. Donavin, Delaware, Ohio. Filed Sept. 5, 1891. Serial No. 404,850. (No model.)



Claim.—In a fifth-wheel, the combination, with the axle and the head-blocks, the plates J and F, secured, respectively, to the said axle and the head-block and having a pin between them which forms the axis of the fifth-wheel and having a mutually-interlocking recess and projection and having a wearing-surface exterior to and surrounding the said recess and projection, the upper plate having front and rear arms integrally formed therewith, the perch-plate pivoted between its ends and extending in the front and the rear of the axle, the perch having its front end between the rear end of the perch-plate and the said rear arm, of plate F and bolts connecting the said arms of plate F and the perch-plate, the rear bolt passing through the said perch, and the two nuts A A on the threaded end of the bolt H to adjustably connect the front arm of the plate F with the front portion of the perch-plate, substantially as shown, for the purpose described.

472,895. APPARATUS FOR POINTING GUNS. CARL MARTIN, Magdeburg, Germany, assignor to the Grusonwerk, same place. Filed Feb. 3, 1891. Serial No. 380,056. (No model.)



Claim.—1. In an apparatus for raising and lowering guns, the combination, with the shaft controlling said apparatus, of the friction-brake comprising a ratchet-wheel loosely mounted upon said shaft and having means for retaining it against rotation in one direction, the friction-disk, and means adapted to hold said disk against said wheel, substantially as set forth.

2. The combination, with the gun raising and lowering mechanism and a shaft controlling the same, of the adjustable friction-brake consisting of the wheel and disk having connection, respectively, with said shaft and a fixed portion of the structure, one of which connections is rigid and the other of which operates in one direction only, and the wedge located between one of the disks and the part to which it is connected, all substantially as shown and described.

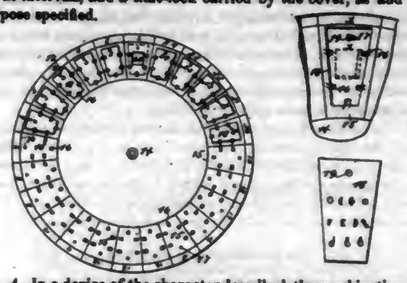
3. The combination, with the gun raising and lowering mechanism and the rotating shafts, which have working connection through reducing gear with said raising and lower mechanism and with each other, of a hand-brake applied to one of said shafts, and an automatic friction-brake having ratchet connection with the other of said shafts, substantially in the manner and for the purpose set forth.

472,896. WATCHMAN'S TIME-RECORDER. HENRY MAY, Scranton, Pa. Filed June 5, 1891. Serial No. 395,237. (No model.)

Claim.—1. In a watchman's clock and indicator, the combination, with a dial and a time mechanism revolving the same, of panels formed upon the dial and representing periods of time, and checks carried by the panels, as and for the purpose specified.

2. In a watchman's clock and indicator, the combination, with a time-movement and a dial having its face divided into panels representing periods of time, of cleats or clamps carried by the panels, and checks removably held by the said cleats or clamps, substantially as shown and described.

3. In a device of the character described, the combination, with a casing having an opening in its front, a time-movement located within the casing, and a dial rotated by the time-movement, having its face divided into panels representing periods of time, a panel being provided with an opening extending through from face to face of the disk or dial, of checks carried by the panels and removable therefrom, a cover provided with an opening through which the checks are visible at intervals, and a time-lock carried by the cover, as and for the purpose specified.



4. In a device of the character described, the combination, with a time-movement, a dial rotated by said movement, having its face divided into panels representing periods of time, and checks removably carried by the panels, of a cover having an opening through which the checks are visible at intervals, and hollow punches adapted to perforate sundry of the checks, as and for the purpose specified.

5. In a watchman's clock or indicator, a check or ticket carrying dial having its face divided into panels representing intervals of time, as and for the purpose specified.

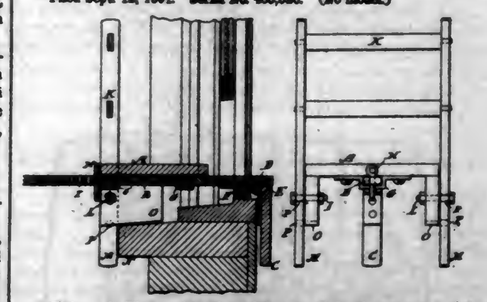
6. In a watchman's clock and indicator, a ticket or check carrying dial having its face divided into panels representing periods of time, each panel being adapted to carry a check or ticket, and a twenty-four-hour time-movement rotating the dial, as and for the purpose specified.

472,897. CATTLE-GUARD. PARKER MERRILL, St. Louis, Mich. Filed Apr. 25, 1891. Serial No. 390,421. (No model.)



Claim.—In a cattle-guard having guard-rails elevated above the ties, the combination of the flat bars E, of metal, set on edge, forming the terminal beams of a guard, with angle-iron guard-rails passing through said beams, formed with the double or reverse bends e e at their ends and having in their flanges the bend t on the outside of said terminal beams to hold them in position, substantially as set forth.

472,898. WINDOW-CHAIR. MAX. METAL, New York, N. Y. Filed Sept. 12, 1891. Serial No. 405,536. (No model.)



Claim.—1. The combination of the arm B, having at one end the hinged brace C, the seat A, having guides G and slidable along the arm, a stop H, engaging the arm for limiting the outward sliding movement of the seat, and a back K, pivotally connected with the seat and having brace-arms M projecting below the seat and arm, substantially as described.

2. The combination of the arm B, having the hinged brace C and

pin-holes I, the seat A, having guides G and slidable along the arm, the stop-pin H for engaging the pin-holes of the arm to limit the outward sliding movement of the seat, and a back K, pivotally connected with the seat and having brace-arms M projecting below the seat and arm, substantially as described.

3. The combination of the arm B, having the pin-holes I and provided at one end with the hinged brace C, the hinged end of which abuts the arm when unfolded, the seat A, having guides G and slidable along the arm, a stop-pin H for engaging the pin-holes to limit the outward sliding movement of the seat, and a back K, pivotally connected with the seat and having brace-arms M projecting below the seat and arm, substantially as described.

4. The combination of the arm B, having at one end the hinged brace C, the seat A, having brackets O and guides G and slidable along the arm, a stop-pin H, engaging the arm to limit the outward sliding movement of the seat, and a back K, having a series of perforations P, adjustably pivoted to the brackets of the seat, and having brace-arms M projecting below the seat and arm, substantially as described.

472,899. FELT ROLLER. JOHN W. MILLET, Dolgeville, assignor to Alfred Dolge, New York, N. Y. Filed Sept. 12, 1891. Serial No. 405,529. (No model.)



Claim.—1. A seamless felt roller consisting of a metallic or resilient hollow base or core and an unbroken felt cylinder or cover, said core having a cut or opening and a wedge or expander for said opening, said wedge being made to rest in said opening, with its outer face in continuity with the surface of the core, substantially as described.

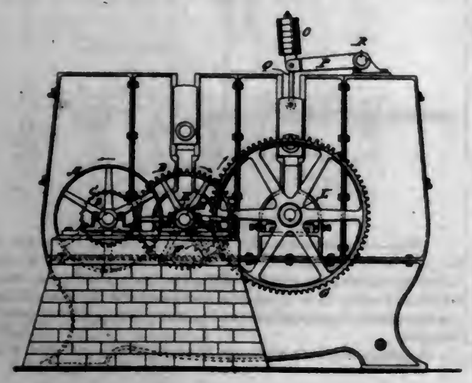
2. A seamless felt roller consisting of a metallic or resilient hollow base or core and an unbroken felt cylinder or cover, said core having a cut or opening and a wedge or expander for said opening, said wedge or expander and the edge of said cut or opening being suitably tongued and grooved for supporting the wedge, with its outer face in continuity with the surface of the core, substantially as described.

472,900. FULLING-MILL. JOHN W. MILLET, Dolgeville, N. Y., assignor to Alfred Dolge, same place. Filed Jan. 7, 1892. Serial No. 417,283. (No model.)

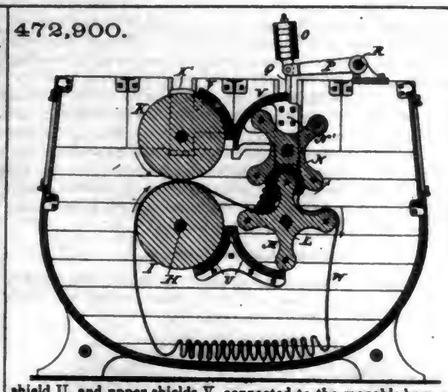
Brief.—The upper feed and working rollers are journaled in movable boxes and the journal-boxes of the upper working roller have connected therewith a peculiar device to exert pressure thereupon. Between the two upper rollers and also between the two lower rollers are shields to prevent the cloth from falling between the two lower rollers or from being carried over the upper working roller.

Claim.—1. In a fulling-mill, the combination, with the feed-rolls I K, the working rolls M N, the rising-and-falling boxes carrying the upper feed and working rollers, and gears connecting the working and feed rollers at one end, of the horizontal rock-shaft R, arranged parallel with the working rollers, the swinging arms P, rigidly secured to the rock-shaft and provided with weights O, and links Q, connecting the swinging arms with the boxes of the upper working roller, substantially as described.

2. The combination, with the feed-rollers, of the two working rollers, one of each of said feed and working rollers being adapted to rise and fall, finger-gears for connecting said working rollers, a fixed lower

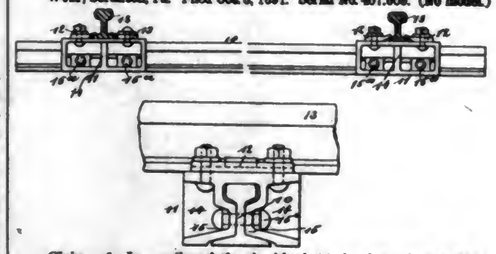


472,900.



shield U, and upper shields V, connected to the movable boxes of the upper feed and working rollers, substantially as described.

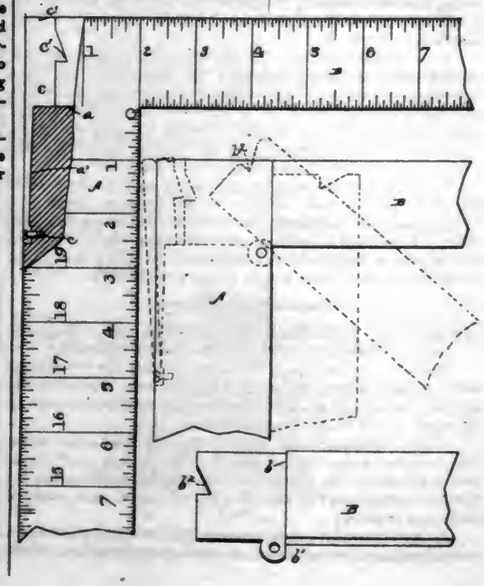
472,901. RAILROAD-TIE. EDWARD S. MOFFAT and THEODORE G. WOLF, Scranton, Pa. Filed Oct. 3, 1891. Serial No. 407,909. (No model.)



Claim.—1. In a railroad-tie, the block 11, having a longitudinal passage through it shaped to receive an ordinary rail and having bolt-apertures through its side walls at the web, lateral flanges 14 on its outer sides, and bolt-holes through its flat upper side to receive the bolts of the track-rail clips, substantially as set forth.

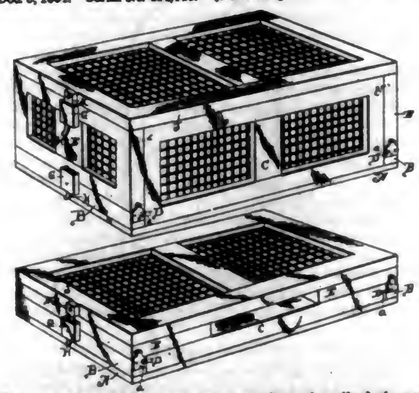
2. A railroad-tie comprising a tie-bar formed of a section of track-rail and track-supporting blocks mounted on the ends of the tie-bar, said blocks having lateral ribs and having inner walls adapted to fit the tie-bar, substantially as described.

472,902. FOLDING FRAMING-SQUARE. THOMAS S. MORSE, Lenox, Mass. Filed Apr. 15, 1891. Serial No. 388,972. (No model.)



Claim.—In a folding framing-square, the combination, with the blade having a recess in its outer longitudinal edge at its connected end and also having said end recessed, the spring-catch seated in the recess in the longitudinal edge of the blade and connected at its lower end to said blade, the locking-tongue formed on the inner longitudinal edge of said catch adjacent to the free end thereof and having its longitudinal edge beveled, and a notch formed in the free end of the spring-catch, of the tongue having the recessed inner end pivotally connected to the blade, and the beveled notch formed in the inner end of said tongue and adapted to be engaged by the beveled tongue of the spring-catch when the tongue is adjusted at right angles to the blade, substantially as and for the purpose set forth.

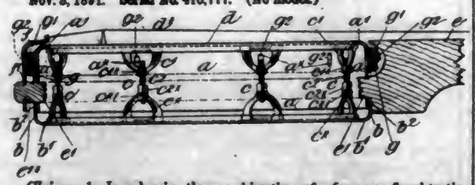
472,908. POULTRY-CRATE. HENRY C. MUNGER, Chicago, Ill. Filed Dec. 5, 1891. Serial No. 414,115. (No model.)



Claim.—1. In a folding crate, substantially as described, the combination, with the bottom having the transverse ledges at its ends, the standard-plates connected to and extending upwardly from the ends of said ledges, the side walls having recesses in its ends, and the longitudinally-disposed trunnions extending from the ends of the side walls and journaled in the transverse ledges of the bottom, of the end walls, the longitudinally-disposed trunnions extending from the ends of the end walls and journaled in the standard-plates of the bottom ledges, and lateral studs extending from the inside of the end walls and adapted to take into the recesses in the ends of the side walls, substantially as and for the purpose specified.

2. In a folding crate, substantially as described, the combination, with the bottom having the transverse ledges at its ends, the standard-plates connected to and extending upwardly from the ends of said ledges, and the strips connected to the upper side of the bottom and having recesses in their laterally-extended ends, of the end walls, the longitudinally-disposed trunnions extending from the ends of the end walls and journaled in the standard-plates, the side walls, the longitudinally-disposed trunnions extending from the ends of the side walls and journaled in the transverse ledges of the bottom, and the tongues connected to the inside of the side walls and depending from the lower longitudinal edges thereof and adapted to engage the recesses in the ends of the bottom strips, substantially as specified.

472,904. BANJO. FREDERICK MYERS, New York, N. Y. Filed Nov. 3, 1891. Serial No. 410,777. (No model.)



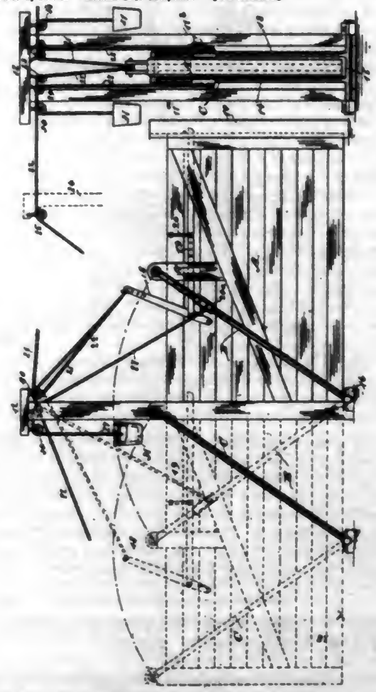
Claim.—1. In a banjo, the combination of a frame *a*, fixed to the neck, a loose ring *b*, adapted to slide upon the exterior of the frame *a* and having the vellum or parchment head attached thereto, and means for forcing the ring and frame apart, substantially as herein shown and described, and for the purpose stated.

2. In a banjo, the combination of a frame *a*, fixed to the shank *d'*, a loose ring *b*, adapted to slide upon the frame *a*, a bezel *g'*, fixed to the ring *b* by screws to secure the vellum or parchment head in place, and means for forcing the ring and frame apart, substantially as herein shown and described, and for the purpose stated.

3. In a banjo, the combination of a frame *a*, fixed to the shank *d'*, a loose ring *b*, adapted to slide upon the frame *a* and having the vellum or parchment head *d* attached thereto, and a tail-piece *f*, formed with a lateral slot therein to fit upon the shank *d'*, and corresponding grooves formed in the shank, substantially as herein shown and described, and for the purpose stated.

4. In a banjo, the combination of a frame *a*, formed with a grooved flange and fixed to the shank *d'*, a loose ring *b*, formed with a similar flange and adapted to slide upon the exterior of the frame *a* and having the vellum or parchment head *d* attached thereto, and a number of regulating devices *c*, each formed with saddle or forked ends to take a bearing in the grooved flanges, and a screw for forcing the saddles apart, substantially as herein shown and described, and for the purpose stated.

472,905. GATE. MARTIN MCDONOUGH, Winchester, Ill. Filed Dec. 1, 1891. Serial No. 413,675. (No model.)



Claim.—1. The combination, with the gate, of the swinging levers B C, pivoted at their upper ends to the gate, the lever B being provided with an adjustable sleeve, and a weighted cord or cable secured to said sleeve and passing over an elevated guide, substantially as set forth.

2. The combination, with the gate and its latch and operating ropes or cables, of the swinging levers B C, pivoted at their upper ends to the gate, the forward lever B having a series of apertures and a sliding sleeve, a transverse pin passed through the sleeve and any of said apertures, and the counterbalancing-weight having a cord or cable connected with the adjustable sleeve, substantially as set forth.

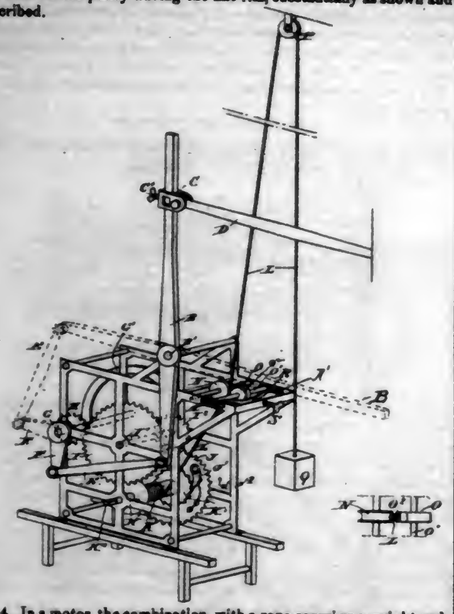
472,906. MOTOR. CHARLES J. NEEY, Texarkana, Ark. Filed Dec. 26, 1891. Serial No. 416,255. (No model.)

Claim.—1. A motor comprising the frame, a clock mechanism thereon, a horizontal shaft G, driven therefrom and having a crank-arm F, a lever B, pivoted between its ends to the frame in a higher plane than shaft G to rock vertically, and a link E, connecting the short arm of the lever with the crank, the lever being adapted to operate in a vertical or horizontal position, substantially as shown and described.

2. The combination of the frame having an extension at one end, the sides of which are provided with slots, two parallel shafts, one of which at its ends enters said slots, pulleys mounted on said shafts, a brake-beam sliding at its ends in said slots, and a set-screw bearing on the center of said bar to cause it to press the loosely-mounted shaft toward the other shaft, with the clock mechanism mounted on the

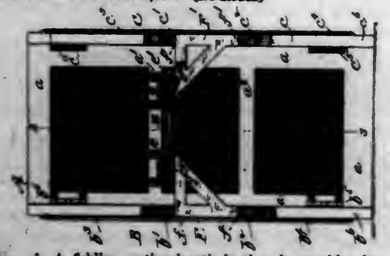
frame and having an operating-cord extending upwardly between the two pulleys over a guide-pulley and provided with a weight, substantially as set forth.

3. In a motor, the combination, with a rope carrying a weight and passing over a pulley, of a hoisting-drum on which winds the said rope, two pulleys between which passes said rope and of which one is grooved and the other provided with a flat rim, and a brake-beam engaging the shaft of the pulley having the flat rim, substantially as shown and described.



4. In a motor, the combination, with a rope carrying a weight and passing over a pulley and a hoisting-drum on which winds the said rope, of two pulleys N O, between which passes the rope between its weight and guide-pulley, the pulley N being grooved and the pulley O flat, the shaft O′ of the flat pulley O being movable toward and from the grooved pulley, a sliding brake-beam engaging the shaft O′ at opposite sides of pulley O, and the screw S, mounted in the frame and engaging the center of the brake-beam, substantially as set forth.

472,907. VOTING-BOOTH. JOHN M. PATTON, Hannibal, Mo. Filed Oct. 19, 1891. Serial No. 409,133. (No model.)



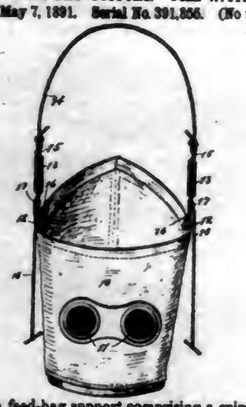
Claim.—1. A folding voting-booth having, in combination, the back, the two sides, the desk, and the brackets, said back and sides each consisting of a frame and a canvas or other covering applied to the outside of said frame, said desk being adapted to be closed into the plane of the back frame and said brackets being adapted to be closed into the planes of the side frames, respectively, substantially as described.

2. A folding voting-booth having, in combination, the back, two sides, the desk, and the brackets, said sides being hinged to said back, said desk being adjustable to be upturned, as described, said brackets being adapted to be swung into position to support said desk and said desk and said bracket being adapted when opened out to be interlocked to form a brace for holding said sides in position when the booth is unfolded, substantially as described.

3. A folding voting-booth having, in combination, the back, the hinged sides, the curtain-rod, and the curtain, one of said sides being furnished with the eye and hook, the other of said sides being furnished with the hook, and said rod having the elongated opening and the eye, substantially as described.

4. A folding voting-booth having, in combination, the back, the two sides, the desk, and the brackets, said back and sides each consisting of a frame, cross-bars, and a canvas or other covering applied to the outer side of said frame, said desk being hinged to the upper cross-bar of said back and adapted to be raised into a position for use or to be closed into the plane of the frame of the back and said brackets being respectively journaled in the cross-bars of said sides and adapted to be swung horizontally into position to support said desk or to be closed into the planes of the side frames, respectively, substantially as described.

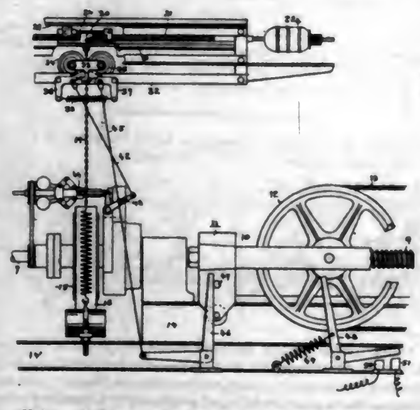
472,908. FEED-BAG SUPPORT. JOHN W. PFEIFFER, New York, N. Y. Filed May 7, 1891. Serial No. 391,856. (No model.)



Claim.—1. A feed-bag support comprising a spiral spring having a snap-hook at its lower end, which hook is provided with an eye, and a chain secured to the upper end of the spring and extending longitudinally through the same, said chain terminating at its lower end in a cross-bar and being of greater length than the spring, through which it freely passes, and serving to limit the expansion thereof, substantially as described.

2. A feed-bag support comprising a spiral spring having at its upper end a ring and at its lower end a snap-hook, which is provided with an eye, and a chain secured to the upper ring and extending longitudinally through the spring, said chain terminating at its lower end in a fastening device by which it may be secured in the eye of the snap-hook and being of greater length than the spring through which it freely passes and serving to limit the expansion thereof, substantially as described.

472,909. ELECTRIC ELEVATOR. CHARLES R. PRATT, New York, N. Y. Filed Apr. 8, 1891. Serial No. 388,134. (No model.)



Claim.—1. The combination of an electric driving-motor, a second electric motor, a switch moved by the second motor and controlling the circuit of the first motor, and a brake also controlled by the second motor, substantially as described.

2. The combination of an electric motor, a brake, a switch for controlling the motor, a second electric motor controlling the switch and the brake, and a connection between the switch and brake, whereby the two are caused to co-operate, substantially as described.

3. The combination of an electric motor, a shaft driven thereby, a second electric motor, a controlling-switch on the circuit of the first motor operated by the second motor, a brake relieved by the second motor, and means independent of the second motor for applying the brake, substantially as described.

4. The combination, in an electrical elevator apparatus, of a hoisting-motor, a separate controlling-motor therefor, a switch controlled by the second motor and consisting of a screw-shaft driven by said motor, a switch carriage or device moved by said screw, and circuit-contacts in position to co-operate with the carriage, substantially as described.

5. The combination, in an electrical elevator apparatus, of a hoisting-motor, a separate controlling-motor therefor, a switch controlled by the second motor and consisting of a screw-shaft driven by said motor, a switch-carriage having pivoted arms carrying contact-blocks moved by said screw, and circuit-contacts in position to co-operate with the contact-blocks, substantially as described.

6. The combination of the switch-carriage, means for moving it, one or more pivoted arms carried by the carriage and having reversible carbon contact-blocks, and contact-terminals in position to co-operate with said blocks, substantially as described.

7. A carbon contact-block substantially polygonal in cross-section, in combination with a carrying-arm passing through it and means for holding the block on the arm, substantially as described.

8. The combination of a switch-arm having a round end and a carbon block substantially polygonal in cross-section, having a corresponding hole through it, said block being mounted on said rod, substantially as described.

9. The combination, with a switch-arm having a round end, of a carbon block having a corresponding hole through it and a sleeve on the rod, said block being mounted on the said sleeve, substantially as described.

10. The combination of a switch-arm pivoted to swing in one plane and a carbon contact-block carried by said switch-arm and pivoted thereon to move in a different plane, substantially as described.

11. The combination of an electric driving-motor, a switch therefor, a controlling electric motor for the switch, a speed-governor, and a circuit-breaker in the circuit of the driving-motor and operated by a speed-governor, substantially as described.

12. The combination of an electric motor, a brake therefor, a switch for the motor, a controlling-motor for the switch, and means operated by a governor for applying the brake, substantially as described.

13. The combination of an electric driving-motor, a switch therefor, a controlling-motor for the switch, means operated by a speed-governor for applying the brake, and means for breaking the circuit of the working motor, substantially as described.

14. In an electric elevator system, the combination of a driving-motor, a circuit-breaker in the circuit thereof, a brake for the driving mechanism, means for causing the brake when applied to open the circuit-breaker, and means for applying the brake, substantially as described.

15. The combination of an electric driving-motor, a brake, a speed-governor which applies the brake, and a circuit-breaker co-operated therewith and breaking the circuit when the brake is applied, substantially as described.

16. The combination of an electric driving-motor, a controlling-switch therefor, a brake, a speed-governor for controlling the brake with the co-operation of the switch, and a circuit-breaker in circuit with the driving-motor, controlled with the brake, whereby the circuit is broken whenever the brake is thrown on by the speed-governor, substantially as described.

17. In an elevator system, the combination of an electric motor, a car, hoisting mechanism connecting the car and the motor and driving the motor as the car descends, a brake-circuit, a switch for connecting the motor with the brake-circuit and gradually varying the resistance therein to control the speed of the car in descent, means for operating the switch, and means operated by the conductor for controlling the switch-operating means, substantially as described.

18. In an elevator system, the combination of an electric motor, hoisting mechanism controlled thereby, a feed-circuit, a brake-circuit, and means for connecting the motor with the feed-circuit and gradually decreasing the resistance therein and for connecting the motor with the brake-circuit and gradually increasing the resistance therein, according as the elevator is to ascend or descend, substantially as described.

19. In an elevator system, the combination of an electric motor, hoisting mechanism controlled thereby, a feed-circuit, a graduated series of resistances through which the motor is connected with the feed-circuit, a brake-circuit, a graduated series of resistances through which the motor is connected with the brake-circuit, and means for throwing the motor into the feed-circuit and gradually decreasing the resistance therein or into the brake-circuit and gradually increasing the resistance therein, according as the elevator is to ascend or to descend, substantially as described.

20. In an elevator apparatus, the combination of an electric motor, hoisting mechanism controlled thereby, a feed-circuit for the motor, a series of graduated resistances therein, a brake-circuit for the motor, a series of graduated resistances therein, a movable member, and means for operating it in raising the elevator, so as gradually to decrease the resistance in the feed-circuit, and in lowering the elevator, so as gradually to increase the resistance in the brake-circuit, substantially as described.

21. In an elevator apparatus, the combination of an electric motor, hoisting mechanism controlled thereby, a switch having two series of contacts connected with graduated resistances, one series in circuit while the elevator ascends, being connected with a feed-circuit of the motor, the other series in circuit while the elevator descends, being connected with a brake-circuit of the motor, and means for operating the switch in such manner that when the switch is thrown to raise the elevator the resistance of the feed-line circuit is gradually diminished, and when it is thrown to lower the elevator the resistance in the brake-circuit is gradually increased, substantially as described.

22. In an elevator system, the combination of an electric motor, hoisting mechanism controlled thereby, a feed-circuit, a brake-circuit, and means for varying the resistance in the two circuits, and means for changing the connection of the motor from one circuit to the other when the motion of the elevator is to be reversed in direction, these means operating when the elevator has been ascending and is to descend to increase gradually the resistance in feed-circuit, break the connection of the motor therewith, connect the motor with the brake-circuit, and gradually increase the resistance therein, or when the elevator has been descending and is to ascend, these means operating gradually to decrease the resistance in the brake-circuit, break the connection of the motor therewith, connect the motor with the feed-circuit, and gradually decrease the resistance therein, substantially as described.

23. In an elevator system, the combination of an electric motor, a car, hoisting mechanism connecting the car and the motor and driving the motor as the car descends, a brake-circuit, means for connecting the motor with the brake-circuit to control the speed of the car in descent, and means operated by a moving part of the apparatus to diminish the resistance at a predetermined point in the descent of the car, thereby increasing the braking effect of the motor and automatically stopping the car, substantially as described.

24. The combination of a driving electric motor, a current-supply circuit, a brake, a weight tending to keep the brake applied, a switch in the circuit of the driving-motor, a motor fed from the current-supply circuit, a movable member of the switch driven by the last-named motor, and means for relieving the brake driven by the same motor, substantially as described.

25. The combination of a brake, an electric motor, a carriage operatively connected to the motor, and a connection between said brake and carriage, whereby the carriage may be moved back and forth by the motor and the brake removed or applied, substantially as described.

26. The combination of a brake, an electric motor, a carriage moved back and forth by the electric motor, and a spring connection between said brake and carriage, whereby the brake is applied or relieved gradually, substantially as described.

27. The combination of a brake, an electric motor, a carriage moved back and forth by the electric motor, a chain or rope connected to the carriage and to the brake by means of a spring, and a pulley over which is a chain or rope connected to the carriage and to the brake by means of a spring, and a pulley over which said chain or rope passes, substantially as described.

28. The combination of a brake, an electric motor, a carriage moved back and forth by the electric motor, a chain or rope connected to the carriage and to the brake by means of a spring, and a pulley on each side of the chain or rope, and over which the chain or rope passes as the carriage is moved to one side or the other, substantially as described.

29. The combination of a brake, an electric motor, a carriage moved back and forth by a motor, a chain or rope connected to the brake and to the carriage by means of a yielding connection, a pulley on each side of the chain or rope and over which the chain or rope passes as the carriage is moved to one side or the other, said pulleys being adapted to move along with the carriage, but being normally held from such movement, and means to release said pulleys, whereby they may move to shorten the chain and apply the brake, substantially as described.

30. The combination of switch-contacts, a movable switch member, a motor for moving said member, a carriage having pulleys movable adjacent to said member, a lock for the carriage, a brake, a yielding connection between the brake and movable switch member, and

a trip for the lock, said trip being operated by a speed-governor, substantially as described.

31. The combination of switch-contacts, a movable switch member, a motor for moving said member, a carriage having pulleys movable adjacent to said member, a lock for the carriage, a brake, a yielding connection between the brake and movable switch member, a trip for the lock, and means operated by a moving part of the apparatus to operate the trip at a predetermined point, substantially as described.

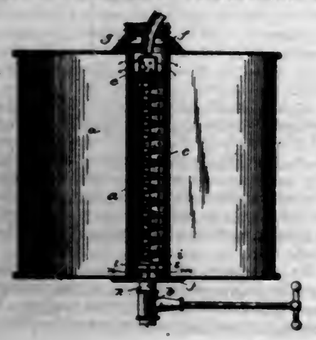
32. In an electrical elevator system, a driving-motor, a switch which controls the driving-motor, having two sets of contacts on opposite sides of a neutral line, a member movable over said contacts and thereby controlling the action of the motor, a brake, means for controlling the brake, together with the movable member of the switch, a pair of catches which control the co-operation of the brake and switch, a speed-governor which operates these catches together and thereby applies and prevents the release of the brake for any position of the switch, and means operated by a moving part of the apparatus to operate one of the catches separately at a predetermined point and thereby applies and prevents the release of the brake until the movable member of the switch is reversed in position, substantially as described.

33. In an electrical elevator system, a driving-motor, a switch which controls the driving-motor, having two sets of contacts on opposite sides of a neutral line, a member moving over said contacts and thereby controlling the action of the motor, a brake, means for controlling the brake together with the movable member of the switch, a pair of catches which control the co-operation of the brake and switch, a speed-governor which operates these catches together and thereby applies and prevents release of the brake for any position of the switch, and means operated by a moving part of the apparatus to operate one of the catches separately at a predetermined point of the ascent of the elevator to apply the brake and prevent its release until the movable member of the switch is reversed in position, so as to start the elevator downward, substantially as described.

34. In an electric elevator system, a driving-motor, a switch which controls the driving-motor, having two sets of contacts on opposite sides of a neutral line, a member moving over said contacts and thereby controlling the action of the motor, a brake, means for controlling the brake together with the movable member of the switch, a pair of catches which control the co-operation of the brake and switch, a speed-governor which operates these contacts together and thereby applies and prevents the release of the brake for any position of the switch, and means operated by a moving part of the apparatus to operate one of these catches separately at a predetermined point in the ascent of the elevator to apply the brake and prevent its release until the movable member of the switch is reversed in position, and means to return the catch to place when the elevator has started downward, substantially as described.

35. In an elevator system, a driving-motor, a controlling-switch which controls the driving-motor, having two sets of contacts on opposite sides of a neutral line, a switch member movable over said contacts and thereby controlling the action of the motor, a break-switch in the circuit of the driving-motor which when operated breaks the circuit, a brake connection between the brake and switches, means for controlling the brake and the break-switch together with the movable member of the controlling-switch, a pair of latches which engage the movable part of the break-switch and thereby control the co-operation of the brake and switches, a speed-governor which operates these latches together, and means operated by a moving part of the apparatus to throw one of the latches separately at a predetermined point, substantially as described.

472,910. SAFETY-VESSEL FOR OILS. CHARLES J. RYDER, Patchogue, N. Y. Filed May 13, 1891. Serial No. 392,605. (No model.)



Claim.—1. In a safety vessel or tank for inflammable liquids, the combination therewith, of a tube formed with fine mesh or perforations throughout its length and having fixed joint connections with the inner walls of said tank around the inlet and outlet openings, a valve within said tube normally closed at its inlet, and a valve within said tube permanently open at the outlet end, a spring pressing upon both valves, and an external support for said outlet-valve secured to the tank by solder to permit the closing of said outlet-valve in the event stated.

2. In a safety vessel or tank for inflammable liquids, the combination, with the said tank having inlet and outlet openings, that for the inlet formed by an outward upset shouldered rim *f*, the opening for the outlet formed by an inward upset shouldered rim *m*, of a tube formed with fine mesh or perforations throughout its length and having fixed seat or joint connection within the shouldered rim at the inlet-opening and over and around the shouldered rim of the outlet-opening, a valve within said tube permanently sustained in open relation to the outlet-opening, a valve within said tube normally sustained in closed relation to the inlet-opening, a spiral spring pressing upon both valves, and an external plate soldered to the said tank for supporting said permanently-open valve, for the purpose stated.

3. In a safety vessel or tank for inflammable liquids, the combination, with said tank having a top inlet and a bottom outlet opening, of a tube having fine perforations and fixed joint connections with both of said openings, a valve for each of said openings arranged within said tube, an expansively-acting spring connecting said valves within said tube, and a plate soldered externally upon the tank for supporting the valve in permanent open relation to the outlet-opening, substantially as described, for the purpose stated.

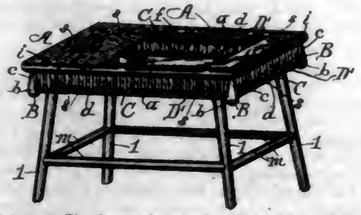
4. In an oil-tank for gasoline-stoves, a safety device for the outflow-opening of said tank, consisting of a soldered plate for closing said opening, a valve-seat at the inner side of said soldered plate, a valve at the inner side of said seat supported permanently in open position upon said plate, a spring for holding said valve upon said soldered plate, and a tube having fine perforations inclosing said valve and spring, substantially as described.

5. In an oil-tank for gasoline-stoves, the outflow-opening in said tank closed by a plate secured by means which is fusible under heat, a valve within said tank supported permanently in open position upon said plate, a valve-seat between the valve and said plate, a spring for holding said valve upon the plate, and a tube having fine perforations inclosing the spring, the valve, and its seat, for the purpose stated.

6. In a vessel for oils, a safety filling device therefor, consisting of an outwardly-upset rim having a filling-opening, a filling-tube of fine mesh joined to and seated upon the inner wall of said upset rim, extending inward therefrom and inclosing said filling-opening, a valve within said tube seated upon the inner wall of said upset rim, and a spring for closing said valve, whereby in case of ignition the flame will be confined within the said filling-tube and explosion prevented.

7. In a vessel for oils, a safety filling device therefor, consisting of an outwardly-upset rim having a filling-opening formed therein, a filling-tube of fine mesh joined to and seated upon the inner wall of said upset rim, inclosing said filling-opening and extending to and seated upon the inner wall at the outlet-opening and inclosing the latter, a valve within said tube seated upon the inner wall of said outwardly-upset rim, and a spring for closing said valve, for the purpose stated.

472,911. TABLE OR STOOL TOP OR CHAIR-BOTTOM. WILLIAM W. SINCLAIR, Phœnix, N. Y. Filed Mar. 31, 1890. Serial No. 346,119. (No model.)

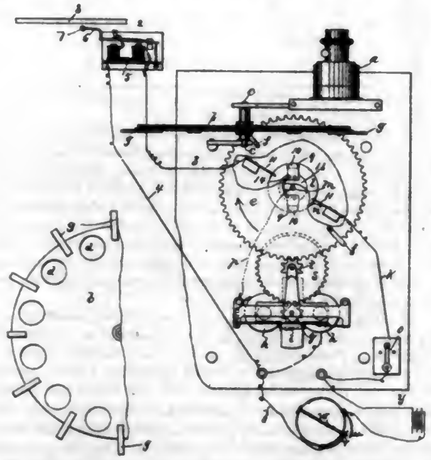


Claim.—1. The herein-described table, stool, or chair, comprising an open main frame having legs secured thereto, downward projections extending from the corners of said frame, longitudinal and transverse bars located diametrically beneath the bars of the main frame and having their ends secured to said downward projections, thereby forming a supplemental or auxiliary frame, the bars of which are out of contact with the bars of said main frame, and the woven strands or splints forming the tops of the table or stool and the seat of the chair, said strands or splints passing over a bar of the main frame, extending thence perpendicularly downward to and around an adjacent bar or round of the auxiliary frame, thence upward and outward in an inclined direction from the auxiliary bar to and over the before-mentioned bar of the main frame and horizontally inward therefrom, said strands or splints having a twist between said bars, whereby their faces are reversed, and the individual strands or splints having their adjacent contacting ends secured together.

2. A table and stool top or chair-bottom comprising the main open frame A, having the bars or rails *a*, the posts B, projecting downward a short distance from the corners of said frame, the bars or rails *d*, secured at their ends to said corner-posts, the woven strands or splints passing over said bars *a*, thence downward and around said bars *d*, thence upward and over the bars *a*, said strands or splints being twisted between said bars *a* and *d* at the inner side thereof, the contacting ends of the adjacent strands or splints being secured together, and strips *i*, secured to said bars *a* over said strands, all substantially as shown and described.

3. The herein-described table, stool, or chair, comprising an open main frame having legs secured thereto, an open supplemental or auxiliary frame beneath said main frame and in non-contact therewith, and the woven strands or splints forming the tops of the table or stool and the seat of the chair, said strands or splints passing over a bar of the main frame, extending thence perpendicularly downward to and around an adjacent bar or round of the auxiliary frame, thence upward and outward in an inclined direction from the auxiliary bar to and over the before-mentioned bar of the main frame and horizontally inward therefrom, said strands or splints having a twist between said bars, whereby their faces are reversed, and the individual strands or splints having their adjacent contacting ends placed parallel with each other and secured together.

472,912. MAGIC-LANTERN ADVERTISING APPARATUS. WILLIAM G. SPIEGEL, New York, N. Y., assignor to Adolph Le Moult, same place. Filed Sept. 15, 1891. Serial No. 405,814. (No model.)



Claim.—1. The combination of advertising apparatus consisting of the stereopticon, intermittingly-shifting plate-carrying disk, electric motor, reducing-train connecting the motor and plate-shifting disk and actuating said plate intermittingly, and the thermostatic circuit-breaker located in the heat-passage of the lantern and connected in the motor-circuit, whereby the said circuit is automatically broken by the burning out of the lamp, substantially as described.

2. The combination of advertising apparatus consisting of the stereopticon, intermittingly-shifting plate-carrying disk having the plates arranged in a circle in the margin of the disk, radially-projecting driving-arms of the disk, the electric motor and reducing-train for actuating the disk, one or more arms of the termical wheel of the reducing-train connecting with the arms of the disk for intermittingly actuating said disk, and the automatic thermostatic circuit-breaker located in the heat-pipe of the lantern and connected in the motor-circuit, whereby said circuit is automatically broken by the burning out of the lamp, substantially as described.

3. The combination of advertising apparatus consisting of the stereopticon, intermittingly-shifting plate-carrier, electric motor, and driving-train actuating said disk, the electric window-tapping call, and the shunt-circuit and shunt devices making the electric circuit through the tapper in the intervals of the movement of the plate-shifter, substantially as described.

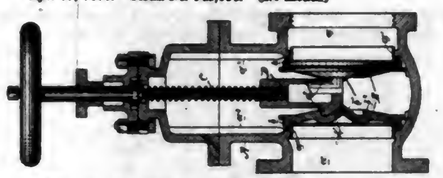
472,918. NAIL OR SPIKE. WILLIAM TAYLOR, Allegheny, Pa. Filed Apr. 9, 1888. Serial No. 270,151. (No model.)



Claim.—1. As a new article of manufacture, a headed nail or spike having a triangular shank provided with a chisel-point and with outwardly-curved triangular shoulders underneath the head, forming part of the same.

2. A nail or spike having a three-cornered or triangular shank, a point of suitable form, and a head provided with a cavity or central depression.

472,914. VALVE. ARTHUR F. L. BELL, San Francisco, Cal. Filed Apr. 15, 1890. Serial No. 348,056. (No model.)



Claim.—1. In a valve or gate having a shell with opposing seats, the combination, with the valve, of disks mounted within said shell and resting and adapted to roll directly on its inner walls and limited by the outer end of the shell to a position opposite their seats, said disks having conical centers on their adjacent faces, with lips encircling the bases of the cones, and a reciprocating plunger having a shoulder on its lower end bearing under the lip of the disks to operate them, substantially as herein described.

2. In a valve or gate having the shell with opposing seats, the combination, with the valve, of disks mounted within said shell and resting and adapted to roll directly on its inner walls and limited by the outer end of the shell to a position opposite their seats and a reciprocating plunger having a wedge-shaped lower end connected with said disks to operate them and permit their rolling action on the walls of the shell, substantially as herein described.

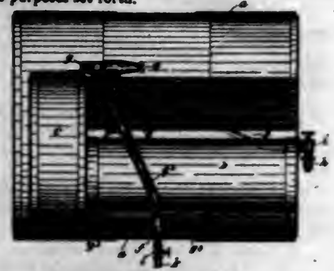
3. In a valve or gate having a shell with seats, the combination, with the valve, of disks mounted in said shell to bear and rest upon its inner walls, whereby they are caused to roll in their movement and limited by the outer end of the shell in a position opposite their seats, said disks having on their inner surfaces the cone-centers with encircling lips at the bases of said centers, and the reciprocating plunger having a shoulder at its lower end bearing under the lip of the disks, and conically-concaved faces fitting only the inner portion of the cone-centers of the disk, substantially as described.

4. In a valve or gate, the shell having the opposing seats and the guides a^2 above said seats, in combination with the rolling disks mounted within the shell and bearing on its inner walls and limited by its outer end when closing and supported by the guides a^2 when opening, said disks having the cone-centers on their inner surfaces, with encircling lips at their bases, and the reciprocating plunger having a shoulder at its lower end bearing under the lip of the disks, and conically-concave faces fitting only the inner portions of the cone-centers of the disks, substantially as herein described.

472,915. WATER-CIRCULATOR. PETER BLOOMSBURG and HARRY BLOOMSBURG, Wilmington, Del. Filed Oct. 8, 1891. Serial No. 408,202. (No model.)

Claim.—1. The combination, with a main steam-boiler, of these appliances when contained within the boiler—namely, a discharge-injector nozzle arranged at or below the water-line, one or more pipes connecting said nozzle with the feed-water pipe or pipes, and a suction-pipe connecting said nozzle with an injector 1 or device arranged at or near the bottom of the boiler and provided with one or more water-suction pipes and also with an orifice for the admission thereto of steam by pipe connection from a donkey-boiler, forming a device for starting and maintaining a constant and rapid circulation of the water in the main boiler, substantially as set forth.

2. The combination of nozzle *e*, provided with an annular feed-water discharge-passage and internal and external suction-passages, pipes *f* and *g* for respectively connecting said nozzle with the usual feed-water pipes located outside the main boiler *a*, suction-pipe f^3, and an injector $\perp$, (marked f_1,) provided with the annular steam-passage and internal and external suction-passages and with an aperture adapted for pipe connection to the donkey-boiler located outside said main boiler and also provided with one or more suction-pipes g^3, all contained within said main boiler and arranged therein, substantially as and for the purposes set forth.



472,916. CORN-HARVESTER. AMOS R. CLIPPINGER, Centralia, Kans. Filed May 29, 1891. Serial No. 394,560. (No model.)



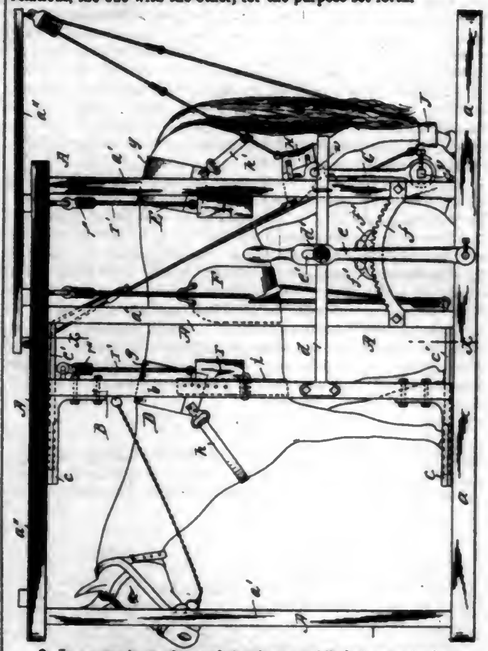
Claim.—1. The corn-harvester having a platform carrying cutters at its forward lateral portions and adjustably supported at its forward end upon a caster-wheel, a rear axle having bearings on the under side of said platform and formed at each end with laterally-turned crank-arms, serving as journals for the wheels, double loops carried by said arms, and arcuate rods secured to each side of the platform and engaged by said loops, whereby the axle is held in different adjustment, substantially as specified.

2. The corn-harvester having the rack supported on its platform, said rack comprising the arms pivoted at their lower forward ends to the platform and the horizontal arm portion adapted to be supported by engagement with any one of a series of lugs or pins on arms hinged to the rear of the platform, substantially as specified.

472,917. APPARATUS FOR HOLDING HORSES WHILE BEING SHOD. MELLEDGE A. CROSMAN, Hyde Park, assignor of one-half to George W. Emerson, Boston, Mass. Filed Feb. 17, 1891. Serial No. 381,768. (No model.)

Claim.—1. In an apparatus for confining horses while being worked upon, the combination, with a suitable supporting frame or structure, of a pair of arms pivotally mounted and suitably separated and adapted to be moved to open and close from and upon each other, and carrying at their extremities appliances for encircling the animal as to a suitable portion of his body and said arms being vertically adjustable on the support therefor, substantially for the purpose set forth.

2. In an apparatus for confining horses while being worked upon, a suitable supporting frame or structure, a pair of arms pivotally mounted and suitably separated and adapted to be moved to open and close the one from and upon the other and carrying at their extremities appliances for encircling the animal as to a suitable portion of his body, combined with devices for confining said arms in their adjusted relations, the one with the other, for the purpose set forth.



3. In an apparatus for confining horses while being worked upon, the combination, with a suitable supporting frame or structure having the rack-bars *m' m'*, of a pair of intermediately-pivoted tong-like levers carrying at the extremities of one of the pair of arms thereof appliances for encircling the body of the animal, springs applied to the other pair of the lever-arms, reacting to maintain the arms carrying the encircling appliances distended, and pawls mounted on arms of said levers for engagement with said rack-bars and for maintaining said carrying-arms in their approached or contracted relations, for the purpose set forth.

4. In an apparatus for the purpose set forth, the combination, with a structure having appliances for the confinement of a portion of the animal to be worked upon, of a second frame movable on said structure and also equipped with confining appliances, a lever suitably fulcrumed and having an engagement with said frame, and devices for confining the lever against being swung, for the purpose set forth.

5. The combination, with a main structure having appliances for the confinement of a portion of the animal to be worked upon, of a second frame movable on said structure and also equipped with confining appliances, a lever fulcrumed on said structure and having an engagement with said frame, a pair of pawls on the lever, and a rack with which said pawls engage, for the purpose set forth.

6. In an apparatus for confining animals while being worked upon, the combination, with the main structure having horizontal ways thereon and the curved rack, of the secondary frame comprising the arm *d* and stud *d'*, and the lever pivoted on said main structure and provided with the slot through which the said stud passes, substantially as described and shown.

7. In an apparatus for confining horses while being worked upon, the combination, with a suitable frame or structure having the rack-bars, a pair of intermediately-pivoted tong-like levers carrying at the extremities of one of the pair of arms a band for encircling the body of the animal, springs applied to the other pair of the lever-arms, reacting to maintain the arms carrying the encircling band distended, pawls mounted on one of the pair of lever-arms for engagement with said rack-bars and for maintaining said carrying-arms in their approached relations, lever-rods *o o*, engaging said pawls suitably fulcrumed, and a spring-pressed hand-rod to which said lever-rods are connected, substantially as and for the purposes set forth.

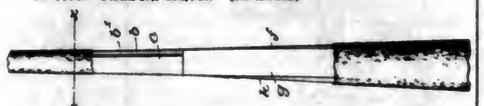
8. In an apparatus for confining an animal to be worked upon, the combination, with a frame or structure in two parts lengthwise adjustable as to each other and having appliances supported on each part adapted to confine the animal by its body and at its opposite end portions, of a band or strap to encircle and confine the ham of the animal, a tackle supported and guided on said structure, and means connecting said tackle to said ham-strap, substantially as described, for the purposes specified.

472,918. WHIP. HENRY S. CUSHMAN, Milford, Mass. Filed Aug. 22, 1891. Serial No. 402,891. (No model.)



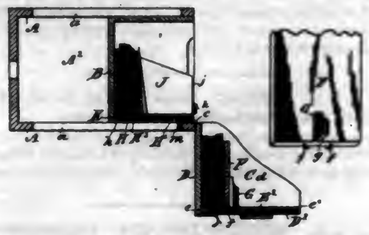
Claim.—In a whip, a core composed of three or more flat and similar strips of material tapered longitudinally and arranged and connected to each other, the edge of one strip abutting against the inner face of the adjacent strip, so as to form a tapering hollow core angular in cross-section, combined with sidings *c*, placed on said core, turned and trued to present a round tapering body, and a braided covering, substantially as and for the purposes set forth.

472,919. WHIP. HENRY S. CUSHMAN, Milford, Mass. Filed Dec. 12, 1891. Serial No. 414,843. (No model.)



Claim.—A whip having a core comprising several strips of rattan, each having applied thereto at its inner surface a strip of tough material, as rawhide, one edge of each of said strips of rattan and rawhide being butted against the inner surface of the adjacent strip to form a hollow core, sidings arranged on the outside of said core, and a covering, substantially as described.

472,920. DOCUMENT-FILE. JOSEPH A. DES RIVIERES and JOSEPH P. PEUD'HOMME, Ottawa, Canada. Filed Dec. 14, 1891. Serial No. 415,035. (No model.)



Claim.—1. In a document-file, the combination, with the file C, of the rectangular sliding case B, the grooves H on the bottom of said case, the guide-plate H^3, the edges of which project over *o* the center of said grooves, the space *h* at one end of the said plate H^3, the stops A^3, and the supplementary case J, having inturned fingers K, the said fingers being adapted to engage and be held by the edges of the said guide-plate, substantially as set forth.

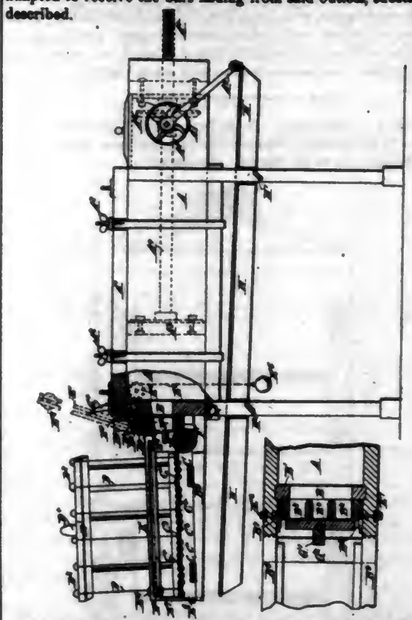
2. The combination, in a document-file, with the file C, having a sliding case hinged thereto, of the sliding and removable supplementary case J, substantially as set forth.

3. The combination, in a document-file, with a file C, hinged to a sliding case sliding in a suitable compartment, of the slot *a* in the said compartment and the removable pin *m* in the said sliding case, substantially as set forth.

472,921. MACHINE FOR MOLDING OR SHAPING BUTTER. WILLIAM FOSTER, Tungamah, Victoria. Filed Aug. 11, 1890. Serial No. 361,763. (No model.) Patented in Victoria Jan. 25, 1889, No. 6,490; in New South Wales Oct. 30, 1889, No. 1,800, and in England Feb. 18, 1890, No. 2,574.

Claim.—1. In a machine for molding butter, the combination, with a press-box provided at one end with two or more outlets for the butter, of a plunger traveling in said box, a slide adapted to move in front of each outlet to regulate the size of the bar issuing from said outlet, and a series of vertically-movable cutting-wires, substantially as described.

2. In a machine for molding butter, the combination, with a press-box provided at one end with two or more outlets for the butter, of a plunger traveling in said box, a slide arranged in front of each outlet, and a series of vertically-movable cutting-wires, and a roller-tray adapted to receive the bars issuing from said outlets, substantially as described.



3. In a machine for molding butter, the combination, with a press-box provided with outlets for the butter, of a plunger traveling in said box, a slide arranged in front of each outlet, a roller in front of said outlets, and a roller-tray beyond said roller, substantially as described.

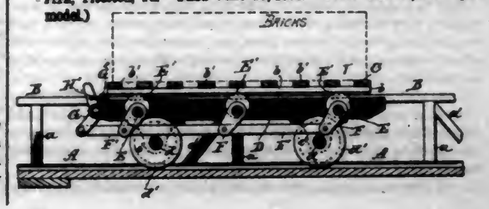
4. In a machine for molding butter, the combination, with a press-box provided at one end with outlets for the butter, of a plunger traveling in said box, a slide arranged in front of each outlet, a roller adjacent to said outlets, a roller-tray beyond said roller, and a series of vertically-movable cutting-wires above the roller-tray, substantially as described.

5. In a machine for molding butter, the combination, with a press-box provided at one end with outlets for the butter, of a plunger traveling in said box, a slide arranged in front of each outlet, a roller adjacent to said outlets, a roller-tray beyond said roller, a series of vertically-movable cutting-wires above the roller-tray, and a printing-roller arranged to travel over the bars of butter on the tray, substantially as described.

6. In a machine for molding butter, the combination, with the press-box provided with an opening at one end, of a plunger traveling in said box, a removable nozzle having two or more outlets, each provided with a slide to regulate the size of the butter bars, a roller in front of the outlets to feed along said bars, and a roller-tray beyond said roller, substantially as described.

7. In a machine for molding butter, the combination, with the press-box provided with an opening at one end, of a plunger traveling in said box, a removable nozzle, as B', having two or more outlets, each provided with a slide to regulate the size of the butter bars, a roller in front of the outlets to feed along said bars, a roller-tray beyond said roller, and a hinged frame above the roller-tray and having cutting-wires adapted to cut the bars into proper size when the frame is let down, substantially as described.

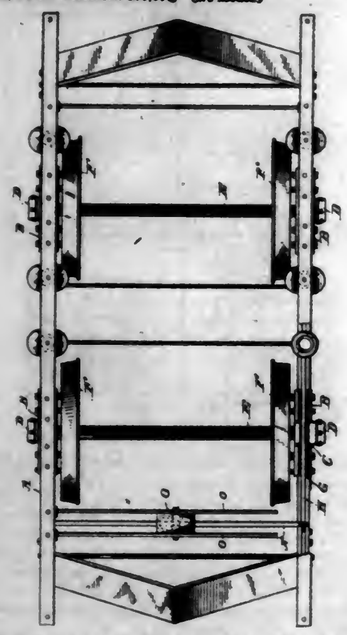
472,922. DEVICE FOR CONVEYING BRICKS. WILLIAM GRIFFITH, Pittston, Pa. Filed June 23, 1891. Serial No. 397,192. (No model.)



Claim.—1. The combination, with a car-frame, of eccentric mechanism supported therein, means for rocking this mechanism independent of any movement of the car-frame, and a platform located above the frame where it is raised and lowered by the rocking of the eccentric mechanism, substantially as set forth.

2. The combination, with a car-frame, of rocking shafts supported in said frame, said shafts having eccentrics thereon, and a platform located over the car-frame in position where it is raised and lowered by the rocking of the shafts and their eccentrics, substantially as set forth.

472,923. CAR-TRUCK. JAMES HENDERSON, Three Rivers, Mich., assignor to the Sheffield Velocipede Car Company, same place. Filed July 10, 1891. Serial No. 398,068. (No model.)



Claim.—1. In a car-truck, the combination, with a single frame and two pairs of wheels, of two sets of equalizing systems, one set supporting the frame over one pair of wheels, as upon two points, and the other set supporting it over the other pair of wheels, as upon one point, whereby a three-point support upon a complete equalizing system is effected, substantially as set forth.

2. In a car-truck, the combination, with a single frame, two pairs of wheels, and their axles, of a four-point connection between one pair of wheels and the frame, and a three-point connection between the other pair of wheels and the frame, substantially as set forth.

3. The combination, with a pair of wheels and axle, of equalizing-bars over the opposite ends of the axle, adapted to sustain a car at two points, a cross equalizing-bar yoking the other ends of the side equalizing-bars together and provided with a central sustaining-point to support the car or frame in its middle, substantially as set forth.

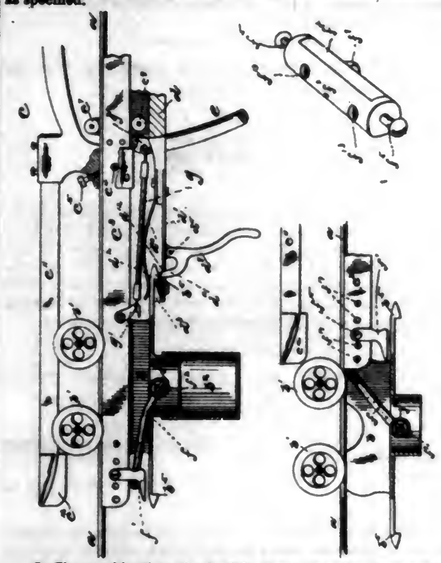
472,924. CASH-CARRIER. CHARLES R. HERRINGTON, Springfield, Ohio, assignor to Jacob K. Mower, same place. Filed May 25, 1891. Serial No. 393,964. (No model.)

Claim.—1. In a cash-carrier, the combination of a flexible elastic impelling-loop, a cylindrical support for said loop, and trunnion-screws in the carrier-frame to form journals for the said cylindrical loop-support, substantially as specified.

2. In a cash-carrier, the combination, with a cash-carrier, of a reversible loop-impelling device connected to a pivoted support, said support being formed in two parts, and means for clamping the ends of said loop between the respective parts of said support, substantially as specified.

3. In a cash-carrier, the combination of an elastic impelling-loop supported centrally in the carrier-frame by a cylindrical support, and removable trunnions adapted to form journals for said support, whereby the impelling-loop may be readily reversed or removed, substantially as described.

4. The combination, with a cash-carrier, of a central pivoted support formed in two parts and having an impelling-spring clamped between the respective parts of said support, and means, substantially as specified, for reversing said spring and said pivoted support to cause the carrier to be impelled in opposite directions, substantially as specified.



5. The combination of a flexible elastic impelling-loop and a pivoted cylindrical support having receiving-openings and engaging projections, and a clamping-screw adapted to force said projections into engagement with the ends of said flexible impelling-loop, substantially as specified.

6. The combination, with a cash-receptacle supported on a movable frame, of a cylindrical support journaled on removable trunnions in said frame, a reversible elastic loop connected to said cylindrical support, a track-wire on which said carrier-frame travels, and a rounded projection connected to said track-wire to reverse said loop, and a hook in the rear of said projection to engage said loop when reversed, substantially as specified.

472,925. EMULSION. SIMON DE JAGER, Denver, Colo. Filed May 19, 1891. Serial No. 393,343. (No specimens.)

Claim.—The herein-described preparation of tannic acid and gelatine, (to be used as a medicine in the form of a solution or emulsion,) in combination with a suitable acid to prevent precipitation, as set forth.

472,926. CONTINUOUS BRICK-KILN. WILLIAM JOHNSON, Leeds, England, assignor of one-half to the Somerset and Johnsonburg Manufacturing Company, Somerset, Mass. Filed Sept. 3, 1891. Serial No. 404,656. (No model.)

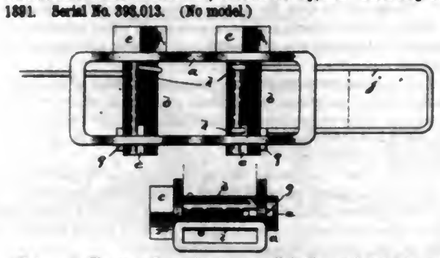


Claim.—1. The combination, with a continuous kiln consisting of parallel tunnels comprising a series of chambers and a hot-air flue arranged in the outer wall of said kiln, of the main central flue, the by-flues extending from either side of said main flue and terminating in recesses formed in the outer wall of each chamber for conveying off the products of combustion, and dampers for closing said by-flues, as set forth.

2. The combination, with a continuous kiln consisting of parallel and communicating tunnels comprising a series of chambers, and a hot-air flue arranged in the outer wall of said kiln, and the main central flue of the by-flues conveying off the products of combustion extending across the tunnel of the kiln from either side of said central flue and arranged in an inclined direction relatively to the main flue, recesses formed in the outer side walls, and vertically-operated dampers for closing said by-flues, as and for the purpose specified.

3. In a kiln, the combination, with the continuous parallel tunnels, the central flue, the side recesses formed in the walls of said kiln, and flues connecting said recesses and the main flue from each side of the main flue, of the surrounding hot-air flue located in the wall of the kiln near its top and having lateral connections with the chambers of the kiln, and vertically-operated dampers for said lateral connections, as set forth.

472,927. WIRE-STRETCHER. GIDEON P. KIDD, Roann, assignor of one-half to James H. Barnhart, Wabash County, Ind. Filed May 16, 1891. Serial No. 393,013. (No model.)



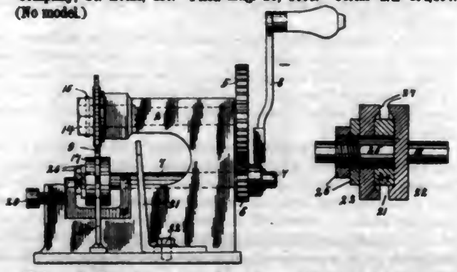
Claim.—1. The open frame having parallel sides and ends, the two independent parallel bolts or winders journaled in the sides of the frame, each having a head on one end, and locking means for said bolts or winders, consisting of seats and keys, each bolt or winder being provided with one or more transverse apertures to receive the wire ends, and the ends of the frame being provided with elongated slots for the passage of the wire.

2. A wire-stretcher consisting of the loop-frame having the end openings, the two parallel revoluble bolts mounted in the sides of said frame, locking means therefor, one bolt having an aperture to receive a fence-wire and the other bolt having two apertures, and the loop *j*, for the purpose set forth, having its ends secured in said apertures of the bolt.

3. A wire-stretcher consisting of the loop-frame having parallel sides and ends provided with elongated transverse openings *i*, the two parallel revoluble bolts mounted in the sides of the said frame parallel with the length of said openings *i* and formed to receive and hold the wire ends, and locking means for said bolts, substantially as set forth.

4. A wire-stretcher consisting of the frame having raised bearings in its sides, the parallel revoluble bolts mounted in said raised bearings and formed to receive and hold wire ends, locking means for such bolts, the opposite frame ends having the elongated openings, with their lower edges located substantially in planes below or flush with the under surfaces of the respective bolts and substantially of the same length as the portions of the respective bolts between the sides of the frame, as set forth.

472,928. SHEARING-MACHINE. CHARLES KIMBER, Baltimore, Md., assignor to the St. Louis Improved Shear and Tool Manufacturing Company, St. Louis, Mo. Filed Aug. 29, 1891. Serial No. 404,137. (No model.)

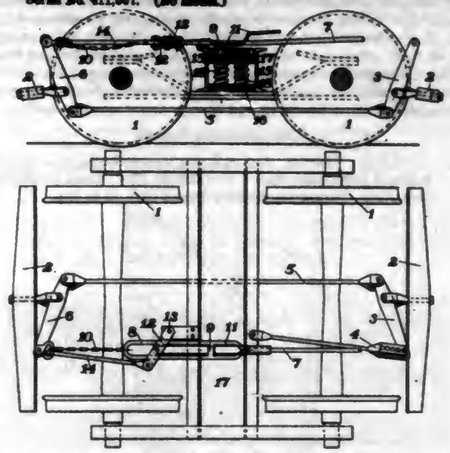


Claim.—1. In a shearing-machine, the combination of the circular plate or disk having a broad notched periphery and cutting-edges, the grooved die having corresponding cutting-edges, and suitable operating mechanism, substantially as set forth.

2. In a shearing-machine, the combination of the circular plate or disk having a broad notched periphery and cutting-edges, the cylindrical grooved female die provided with corresponding smooth cutting-edges, and suitable operating mechanism, substantially as set forth.

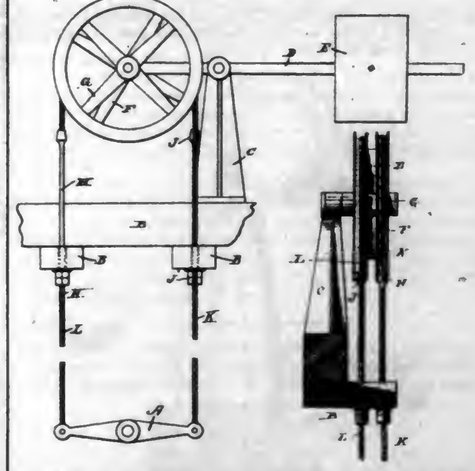
3. In a shearing-machine, the combination of a circular plate or disk, a female die, and suitable operating mechanism, said female die being composed of two members with their adjacent faces dished out, and a ring interposed between the members, one member having a hub, upon which said ring and the other member are held, substantially as and for the purpose set forth.

472,929. CAR-BRAKE. ALBERT P. MASNEY, Watertown, N. Y., assignor to the New York Air Brake Company. Filed Nov. 12, 1891. Serial No. 411,667. (No model.)



Claim.—In a brake mechanism for railroad-cars, a lever with a fixed fulcrum interposed in the line of communication between the pull-rod and the foundation brake-rigging, a hook or pawl attached to said lever, a pull-rod having a direct connection with the brake-rigging and having also a cross-bar or projection that may engage with the hook or pawl attached to said lever, and thereby make a connection to the brake-rigging through said lever, combined with two parts of the truck that vary in relative height when the springs are open or compressed.

472,930. CONTROLLER FOR ELEVATORS. EDWIN S. MATTHEWS, Cincinnati, Ohio, assignor of one-half to James L. Haven, same place. Filed Jan. 25, 1892. Serial No. 418,147. (No model.)



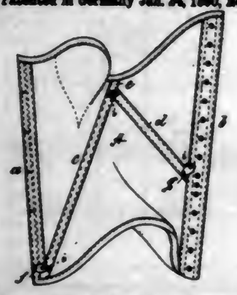
Claim.—1. In a tension device for elevators, the combination, substantially as set forth, of a pair of sheaves arranged side by side upon a common axis at the top of the elevator-well and arranged for vertical movement, a weight arranged to move said sheaves upwardly, a control-rope anchored at its upper end and passing upwardly and bending over one of said sheaves and passing thence downwardly through the elevator-well, and a second control-rope anchored at its top and passing upwardly to the other sheave upon the side opposite that engaged by the upwardly-passing part of the first-mentioned rope and passing thence over said other sheave and down through the elevator-well.

2. In a tension device for elevators, the combination, substantially as set forth, of a pair of sheaves mounted side by side at the top of the elevator-well and capable of vertical movement, a weight arranged to urge said sheaves upwardly, two threaded shanks anchored at the

top of the elevator-well below said sheaves and arranged as opposite tangents to the two sheaves, respectively, and two control-ropes passing upwardly from said shanks and bending each over an appropriate sheave and passing thence downwardly through the elevator-well.

3. In a tension device for elevators, the combination, substantially as set forth, of two control-ropes passing up the elevator-well and bent and anchored at the top of the well, two sheaves arranged side by side upon a common axis and engaging under the bends of said ropes, and a pivoted weighted lever arranged to urge said sheaves upwardly.

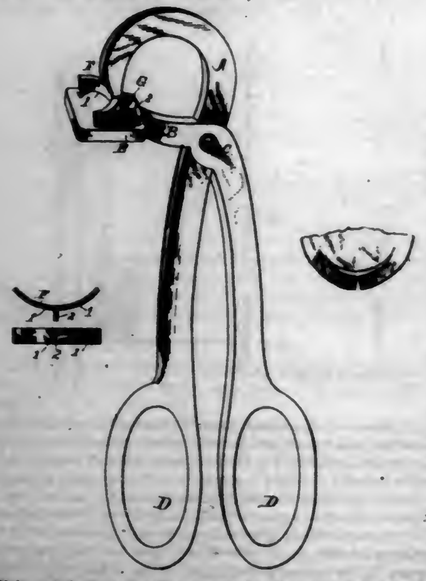
472,931. **CORSET.** SILVAN MEIER, Munich, Germany, assignor to Gerstle & Loffler, same place. Filed July 21, 1891. Serial No. 400,343. (No model.) Patented in Germany Jan. 24, 1890, No. 54,389.



Claim.—1. A corset provided with upright front and back stays *a b* and with a set of inclined stays *c d* in each half of the corset, the stays *c d* diverging from the armpit downward to the front and back stays and being connected to each other at the top and also to the upright stays at the bottom by means of hinges, substantially as specified.

2. A corset provided with upright front and back stays *a b*, a set of inclined stays *c d* in each half of the corset that join the upright stays at their lower ends, slitted plates *i*, pivoted to the ends of the stays, and rivets *i*², secured to the ends of adjoining stays and adapted to be engaged by the slitted plates, substantially as specified.

472,932. **HOG-NOSE CUTTER.** WILLIAM NEEDHAM, Tampico, Ill., assignor of one-half to John O. Needham, same place. Filed Sept. 28, 1891. Serial No. 407,096. (No model.)



Claim.—A hog-nose cutter comprising the pivoted handles D, formed with the jaws A and B, the former provided with a curved blade F and a straight blade G, the latter blade situated at a right angle to the former upon the convex side, about centrally thereof and integral therewith, and the jaw B provided with a cutting-block E, as set forth.

472,933. **JOINT FOR ELECTRIC CONDUCTORS.** THOMAS F. O'CONNOR, New York, N. Y., assignor to the Standard Underground Cable Company, Pittsburg, Pa. Filed Jan. 2, 1892. Serial No. 416,950. (No model.)



Claim.—1. A joint for electric cables, comprising a block of insulating material having peripheral grooves, in which grooves the bare ends of the conductors are united and secured, substantially as described.

2. A joint for electric cables, comprising a block of insulating material having peripheral longitudinal grooves, in which grooves the bare ends of the conductors are united and placed, the insulating-covering of the conductors extending a short distance into the grooves, substantially as described.

3. A joint for electric cables, comprising a number of annular blocks of insulating material having peripheral longitudinal grooves, in which grooves the bare ends of the conductors are united and secured, the conductors having exposed portions on one block passing one or more blocks, substantially as described.

4. A joint for electric cables, comprising a series of annular blocks of insulating material having peripheral grooves, in which grooves the bare ends of the united conductors are placed and secured, the unions being exposed on the exterior of the blocks, substantially as described.

5. A joint for electric cables, comprising a number of annular blocks of varying diameter having peripheral longitudinal grooves in which the exposed ends of the conductors are united, the respective blocks embracing the conductors united on the peripheries of the smaller blocks, and the whole forming a symmetrical joint, substantially as described.

472,934. **HITCHING DEVICE.** JOHN R. PARKISON, Denver, assignor of two-thirds to Will S. Parkison, Glenwood Springs, and Silas Bertenshaw, Denver, Colo. Filed July 13, 1891. Serial No. 399,372. (No model.)



Claim.—1. In a hitching device, the combination, with the boxing or casing, of the eccentric mounted on said casing or boxing, the hitching-weight strap passed through said boxing or casing between one side thereof and said eccentric, and the slide-plate having said strap passed through the same, substantially as and for the purposes set forth.

2. In a hitching device, the combination, with the boxing or casing and the eccentric mounted thereon, of the hitching-weight strap passing through said boxing or casing between one side thereof and said eccentric, and the guide-rod for holding said strap away from the lower surface of said eccentric, substantially as and for the purpose set forth.

3. In a hitching device, the combination, with the boxing or casing and the weighted hitching-strap passing through the boxing, of the weighted eccentric constructed substantially as described, with the heft of the eccentric above its axis and mounted in said boxing, substantially as shown, whereby it may be thrown to one side or the other of a line running vertically through its axis and moved in either direction solely by the strap engaging the same with frictional contact, substantially as described.

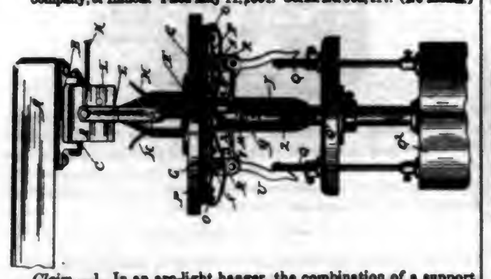
4. In a hitching device, the combination, with a hitching-weight strap and a bearing for the same to be clamped against, of an eccentric for clamping the strap against said bearing, said eccentric adapted to be moved into a locking or unlocking position by frictional contact of the hitching-weight strap therewith and when not clamping the hitching-weight strap to lie out of action at a point back of a vertical line drawn through the axis of the eccentric, a stop on said eccentric, and a shoulder for said stop to strike against to limit the movement of the eccentric beyond said vertical line in its unlocking position, substantially as and for the purposes set forth.

5. In a hitching device, the combination, with the boxing or casing having the recess in one side thereof, of an eccentric mounted in said boxing or casing and adapted in one position to have a portion

thereof to fit in said recess and provided with a stop extending from its end to bear against the casing to one side of said recess, and a hitching-weight strap passed between said eccentric and one side of the boxing or casing and held in place by said eccentric clamping it against said side, substantially as and for the purposes set forth.

6. In a hitching device, the combination, with the hitching-weight and its suspending-strap, of means for suspending said weight under the vehicle-body and an elastic cushion interposed between the bottom of the vehicle and the weight and exerting a pressure on said weight to steady the same, substantially as and for the purposes set forth.

472,935. **ARC-LIGHT HANGER.** CHARLES A. PFLUGER, Chicago, Ill., assignor, by direct and mesne assignments, to the Standard Electric Company, of Illinois. Filed May 11, 1891. Serial No. 392,417. (No model.)

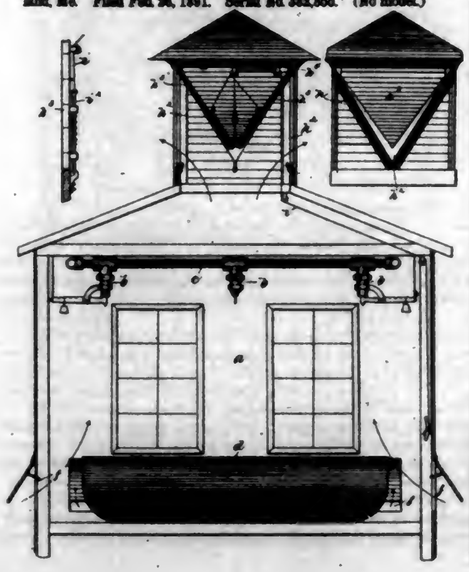


Claim.—1. In an arc-light hanger, the combination of a support with hooks suspended therefrom and adapted to engage each one terminal of the lamp and levers connected with such hooks and adapted to engage some portion of the lamp, whereby the hooks are held out of the path of the lamp-terminals when the lamp is descending.

2. In an arc-lamp hanger, the combination of a support with a hook and lever independently pivoted thereto, a portion of the lamp in the path of the lever and adapted to engage the same, and a terminal of the lamp in the path of the hook adapted to engage the same, the hook and lever related so that the latter may engage the former, and the lever adapted to be moved by the motion of the moving part of the lamp.

3. In an arc-light hanger, the combination of two pivoted hooks adapted to engage the terminals of the lamp with two levers, one associated with and adapted to engage each hook, and a groove or the like on a projecting portion of the lamp, adapted to receive the inner ends of the levers, the parts related so that when the lamp is raised the groove receives the levers and when lowered the levers force the hooks out of the path of the lamp-terminals.

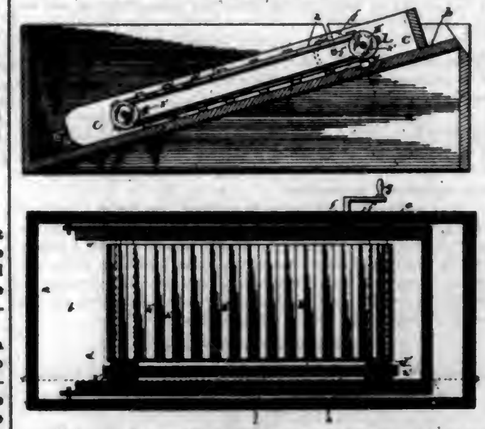
472,936. **COOLING-ROOM FOR BREWERIES.** CHARLES D. STANFORD, Boston, Mass., assignor to the Hanford-Stanford Company, Portland, Me. Filed Feb. 26, 1891. Serial No. 382,855. (No model.)



Claim.—1. A cooling-room for a brewery, containing spraying devices in its upper portion, a collector in its lower portion, surrounding tight walls, air-inlets in said walls arranged below the top of the collector, and an air-outlet at the top of the room provided with adjustable hinged covers for regulating the size of the openings in the outlet, substantially as described.

2. The combination, with a cooling-chamber having substantially air-tight walls provided with air-inlet openings in their lower portions, of a stack or air-outlet at the top of the chamber having triangular openings and covers for such openings hinged to swing inwardly and form an inverted prismatic body to deflect the ascending air outwardly, substantially as described.

472,937. **WASHING-MACHINE.** FREDERICK G. WEIMAR, Pittsburg, Pa., assignor of one-half to William H. Leech, same place. Filed Nov. 3, 1890. Serial No. 370,806. (No model.)



Claim.—1. In a washing-machine, the combination, with the box, of an endless rotating apron, rubbing devices carried thereby, an endless belt at one side of said apron, having projections adapted to cut off particles of soap to facilitate cleansing of the fabrics, and means for rotating said apron and belt.

2. In a washing-machine, the combination, with the box, of an endless rotating apron, flexible rubbers carried thereby, an endless belt at one side of said apron, having projections extending beyond said rubbers and adapted to cut off particles of soap to facilitate cleansing of the fabrics, and means for rotating said apron and belt, substantially as described.

3. The herein-described washing-machine, comprising a box having an inclined bottom, a hinged frame therein, rollers journaled in said frame, an apron engaging said rollers and carrying rubber devices, an endless belt also engaging said rollers and carrying projections adapted to cut off particles of soap to facilitate cleansing of the fabrics, and means in gear with one of said rollers for operating said apron and belt, substantially as shown and described.

472,938. **LEVER-LATCH FOR REFRIGERATORS.** STILLMAN M. ATHERTON, Burlington, Vt., assignor to the Baldwin Refrigerator Company, same place. Filed Oct. 1, 1891. Serial No. 407,440. (No model.)



Claim.—1. A surface lock adapted to be let into the face of a door and having a suitable locking-bolt, combined with a keeper, a wedge-lever having a bearing in the lock to oscillate or turn therein, a compression-spring acting on the wedge-lever, and a draw-bolt passing through the wedge-lever and door, substantially as and for the purpose described.

2. The combination, with a lock provided with a suitable bolt and a fixed keeper on the door-jamb, of a wedge-lever having a bearing in

said lock and a draw-bolt which passes through the wedge-lever and a door, substantially as and for the purpose set forth.

3. A surface lock adapted to be applied to the face of a door and having suitable bolt-works and a bearing for a wedge-lever, combined with a keeper, the wedge-lever provided with a cylindrical shouldered hub, which fits snugly in the bearing, a spring arranged within the cylindrical hub of said wedge-lever, and a draw-bolt passing through the wedge-lever and door, substantially as described.

4. A surface lock adapted to be applied to the face of a door and having suitable locking mechanism and a bearing, combined with the wedge-lever having a cylindrical shouldered hub fitting snugly in the bearing, a stationary bolt passing through the wedge-lever and lock, a spring confined between the lock and wedge-lever and bearing against the latter, and a keeper, substantially as described.

5. The combination, with a suitable lock-casing having a bolt and a fixed keeper, of a wedge-lever, a draw-bolt passing through said wedge-lever, and a spring bearing against the lever and adapted to be compressed by adjusting the draw-bolt, substantially as and for the purpose set forth.

6. The combination of a movable wedge-lever, a single fastening-bolt therefor, and a spring bearing against said wedge-lever and adapted to be compressed by endwise adjustment of the bolt, substantially as described.

7. The combination of a surface lock having an aligned bearing and polygonal spring-seat, the wedge-shaped lever having a hub fitting in the bearing, the spring resting within the hub and the spring-seat, and a single bolt passing through the wedge-lever and polygonal spring-seat, substantially as described.

8. A surface lock adapted to be applied to the face of a door and having the bearing, the stud formed with a polygonal opening and the groove or seat, and a locking mechanism, combined with a wedge-lever having its shouldered hub fitting in the bearing, a single bolt passing through the wedge-lever and the stud and fastened on the inside of the door by a nut, a spiral spring seated in the hub and the seat of the stud, and a keeper, substantially as described.

472,939. MOUTH-SPECULUM FOR HORSES. GEORGE Z. BARBER, Pekin, Ill. Filed Nov. 6, 1891. Serial No. 411,103. (No model.)

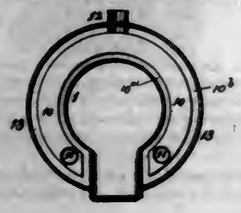


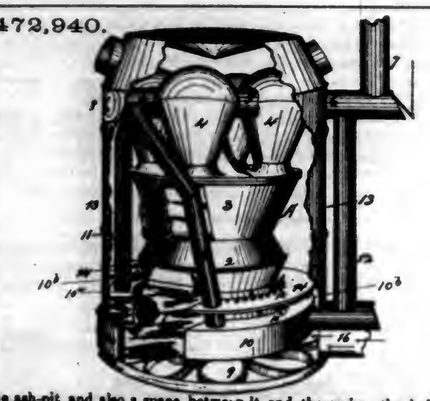
Claim.—1. A speculum for opening and retaining open a horse's mouth, comprising two jaws hinged together at their rear end portions, to extend forward parallel with the jaws of the horse, cups or depressions at the front and free ends of the said jaws, adapted to admit an animal's front teeth, means for retaining the free ends of the jaws separated while in an animal's mouth, and means for fastening the complete device to an animal's head, for the purposes stated.

2. In a speculum, a base-piece C, having a flange *f* and a stop *g*, the ends of two mating jaws fitted to said base-piece and pivoted thereto by means of a screw A, a detachable cover C², having a perforation to admit the screw A, a block *n*, having a stem *n'*, and a spring-actuated lever *n²*, arranged and combined to operate in the manner set forth, for the purposes stated.

472,940. HEATING APPARATUS. ROBERT CALDER, Rochester, assignor to Francis T. Giblin, Utica, N. Y. Filed May 21, 1891. Serial No. 393,563. (No model.)

Claim.—The combination, with the ash-pit, the fire-box, the combustion-chamber, and the casing, of the skeleton bottom, the annular radiator seated on the skeleton bottom, leaving a space between it and





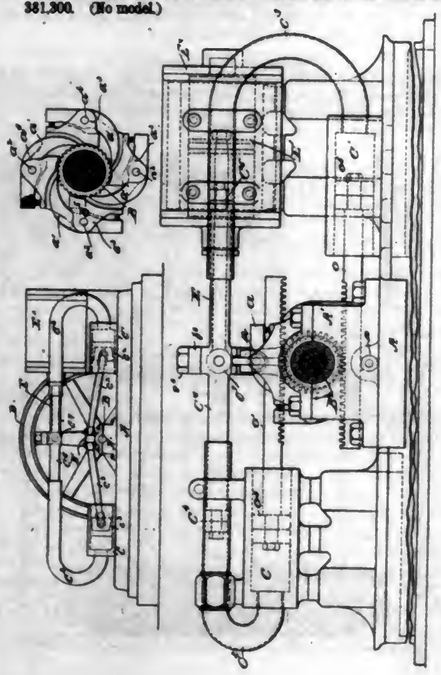
the ash-pit and also a space between it and the casing, the indirect pipes connecting the combustion-chamber with the radiator, air-inlet pipe discharging against the radiator, and the partition located a little distance above the radiator, closing the space between the ash-pit and the casing and having perforations by which the air is diffused all around the fire-box, substantially as described.

472,941. SLEEVE-BUTTON. WALTER R. COOK, Providence, R. I., assignor to the Novelty Pearl Company, same place. Filed July 14, 1891. Serial No. 399,467. (No model.)



Claim.—A link for cuffs, consisting of a pair of eye-buttons and a wire bent at the opposite ends to form hooks, and a wire spring secured rigidly near the center of the bent wire bearing on the two ends of the wire forming the hooks and extending beyond such bearing to form projections adapted to facilitate the connection and disconnection of the button, as described.

472,942. HYDRAULIC ENGINE. HARVEY F. CRAWFORD and RICHARD C. LAMBERT, Brockton, Mass.; said Lambert assignor of one-third of his right to said Crawford. Filed Feb. 13, 1891. Serial No. 381,300. (No model.)



Claim.—1. A bed, the hydraulic cylinders O O', mounted thereon and having pistons, and the shaft B, rotated thereby, combined with the pipes O³ O³, plungers O⁴ O⁴, plunger-rod O⁵, the steam-cylinder E×, and its piston to actuate said plunger-rod, substantially as described.

2. A bed, the hydraulic cylinders O O', mounted thereon and having pistons, and the shaft B, rotated thereby, combined with the pipes O³ O³, plungers O⁴ O⁴, plunger-rod O⁵, the steam-cylinder E×, its piston to actuate said plunger-rod, and the valve-actuating lever *b²*, substantially as described.

472,943. DYNAMO-ELECTRIC MACHINE. GEORGE E. DORMAN, Chicago, Ill., assignor to the Standard Electric Company, of Illinois. Filed Dec. 17, 1890. Serial No. 374,993. (No model.) Patented in England Apr. 17, 1889, No. 6,570.



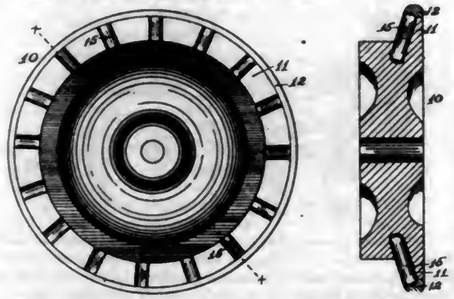
Claim.—1. In a dynamo-electric machine, a series of inwardly-projecting pole-pieces, in combination with a series of coils about such pole-pieces, each of said coils being curved to conform with the surface of a cylinder, substantially as shown.

2. In a dynamo-electric machine, a field-magnet provided with a series of inwardly-projecting pole-pieces, each pole-piece provided with a series of successively-superimposed coils, each being curved to conform with the surface of a cylinder.

3. In a dynamo-electric machine, a field-magnet provided with a series of inwardly-projecting pole-pieces, each pole-piece provided with a series of successively-superimposed coils, each being curved to conform with the surface of a cylinder, and a series of thin strips inserted between adjacent pole-pieces and lying above the coils to keep them in position.

4. In a dynamo-electric machine, a cylindrical field-magnet with a series of inwardly-projecting pole-pieces radially positioned and oblong and provided each with a series of surrounding coils, each coil being curved to conform with the surface of a cylinder.

472,944. ANTI-FRICTION CAR-WHEEL. JOHN D. FARQUHER, Des Moines, Iowa, assignor of one-third to Henry E. Long, same place. Filed Nov. 17, 1891. Serial No. 412,115. (No model.)



Claim.—1. In a railway-car wheel, the combination, with the tread of said wheel and the flange thereof integrally formed, of anti-friction bearings carried by and disposed radially upon the flange of the car-wheel and projecting slightly beyond the face of said flange, whereby said bearings when contacting with the rail of a track are rotated in a plane approximately at right angles to the plane of rotation of the wheel.

2. In a railway-car wheel, the combination, with the flange of said wheel, which flange is formed integrally with the tread, of rollers journaled in said flange, the plane of rotation of said rollers being at right angles to the plane of rotation of said wheel.

3. In a railway-car wheel, the combination, with a wheel and the flange thereof integrally formed, which flange is provided with radial recesses, of a removable and replaceable tire mounted upon the periphery of said flange and means for securing said tire to said flange, together with anti-friction rollers mounted within said radial recesses.

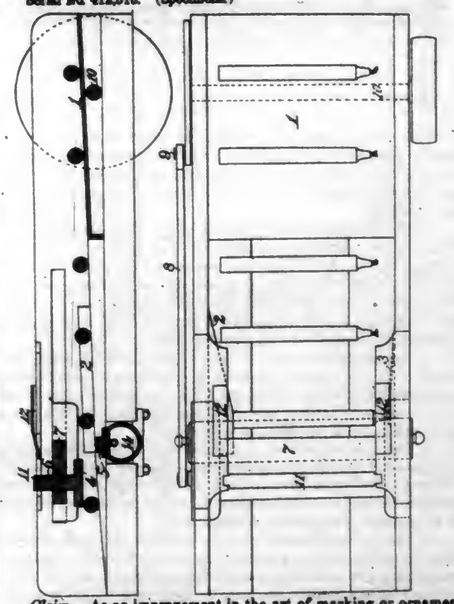
4. The combination, in a railway-car wheel, of a wheel and the flange integrally formed thereon, radial recesses formed in the flange of said wheel or in the flange and tread and extending within the tread thereof angularly relatively to the plane of rotation of said wheel, anti-friction rollers inserted within said radial recesses, and means for securing said rollers and retaining them in the desired position.

5. In a railway-car wheel, the combination, with the wheel and the flange integrally formed thereon, of radial recesses formed in said flange or in the flange and tread and extending within the tread of the wheel, anti-friction rollers rotatably mounted within said radial recesses, and a removable and replaceable tire provided with bearings for said anti-friction rollers mounted about the periphery of said flange, whereby said rollers are held in the desired position.

6. In a railway-car wheel having an integral tread and flange provided with recesses formed in said tread and flange, in combination with anti-friction rollers rotatably mounted within the recesses and adapted to contact with the curved rail of the track in the advancement of the car-wheel along the same, whereby the rollers are rotated at right angles relatively to the plane of rotation of the wheel.

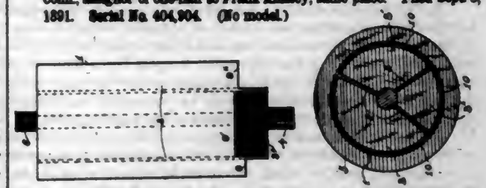
7. In a device for overcoming friction between a curved track-rail and a railway-car wheel, the combination, with the tread thereof, of a plurality of radial recesses in the said tread and flange and a plurality of anti-friction rollers corresponding in number to the recesses and rotatably mounted therein, whereby the rollers are rotated at right angles relatively to the plane of rotation of the wheel.

472,945. ORNAMENTING CANDLES. THOMAS V. FORSTER, Avalon, assignor to W. & H. Walker, Allegheny, Pa. Filed Nov. 20, 1891. Serial No. 412,518. (Specimens.)



Claim.—As an improvement in the art of marking or ornamenting candles and other articles, the herein-described method, which consists in pressing a heated type or die having the desired mark or ornamentation thereon and formed of a material capable of forming a discoloring compound with the stearic acid of the candle or other article, said compound becoming mingled with the material of the candle or other article when softened or liquefied by the heat of the type or die, substantially as set forth.

472,946. CHIME-WHISTLE. HENRY R. FRENNE, Bridgeport, Conn., assignor of one-half to Frank Kinsley, same place. Filed Sept. 5, 1891. Serial No. 404,904. (No model.)

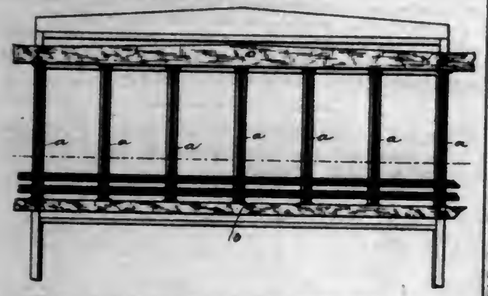


Claim.—1. In a chime-whistle, the bell 1, whose interior is divided into the longitudinal sounding-chambers 3 3' 3², of unequal or different volumes, but of equal depths, by means of the longitudinal par-

titions 2, extending the full length of the bell and arranged unequally about the axis of the same, combined and arranged with the steam-bowl having a steam-orifice, as shown.

2. The bell 1, whose interior is divided into the longitudinal sounding-chambers 3 3' 3², of unequal or different volumes, but of equal depths, by means of the longitudinal partitions 2, extending the full length of the bell and arranged unequally about the axis of the same, thus forming independent whistles, combined with the steam-bowl and a steam-orifice therein, the height of the sounding lips or edges 9 9' 9² above said orifice and the volumes of the chamber so proportioned to each other that a full, clear, and distinct tone will be produced in each of the separate whistles at any and all pressures, as shown and set forth.

472,947. CABLE-RACK. WILLIAM M. GOODRIDGE, Highland Park, assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 30, 1888. Serial No. 292,236. (No model.)



Claim.—1. A cable-rack consisting of upright pipes and pins inserted in holes provided therein, said rack being placed at the rear of the uprights of the frame of a switchboard, whereby the frame is relieved from the weight of the cables, substantially as and for the purpose specified.

2. The combination, with the rails, of the pipes secured between the same, said pipes being provided with holes, into which the supporting-pins d d^2, &c., are inserted, and other holes above and below each of the holes of the supporting-pins, and one or more pins f, said pins supporting cables of a multiple switchboard, whereby the cables may be spread apart to permit of the removal of any one of them, substantially as and for the purpose specified.

3. The combination, with a switchboard, of a cable-rack supported at the rear of the same, said rack consisting of iron pieces or tubes provided with holes, supporting-pins inserted therein, and rails b c, provided with castings adapted to receive the ends of the pipes, substantially as and for the purpose specified.

4. The cable-supporting pins provided with bent ends, said pins being inserted in vertical parallel series at the rear of the board, the bent ends of said pins serving to keep the cables in place when turned upwardly, but when turned to the right or left permitting the cables to be removed, substantially as described.

5. The cable-supporting pins provided with bent ends, said pins being inserted in vertical parallel series at the rear of the board and corresponding in number to the strips of spring-jacks, the bent ends of said pins serving to keep the cables in place when turned upwardly, but when turned to the right or left permitting the cables to be removed, substantially as described.

6. The combination, with the strips of spring-jack switches placed in horizontal rows upon the switchboard, of cables supported at the rear of the board and connected with said spring-jack switches, said cables being arranged in groups, each group of cables corresponding to a particular number of layers of spring-jack switches and being connected therewith, as described, and arranged in layers, the number of layers in each group being less in number than the number of corresponding vertical rows or layers of spring-jack switches.

7. The combination, with five layers of strips of spring-jack switches extending across each section of a multiple switchboard, of cables connected therewith and arranged in layers at the rear of the board, said layers being less in number than the layers of strips of spring-jack switches with which said cables are connected, whereby the cables are brought within a less vertical space than the vertical space occupied by the corresponding rows of spring-jack switches.

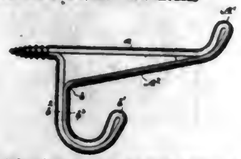
8. The combination, with spring-jack switches in layers, of cables at the rear thereof in layers connected with the said switches, two or more layers of switches being connected to each layer of cables, whereby space is provided between the layers of cables to remove the jacks at the rear.

9. A cable-rack consisting of upright pipes and pins inserted in holes provided therein, said rack being placed at the rear of the switchboard and supported independently of the spring-jack sections of the board, whereby the frame is relieved from the weight of the cables.

10. The combination, with spring-jack switches in layers, of cables at the rear thereof in layers connected with said switches, two or more layers of switches being connected to each layer of cables, whereby space is provided to remove the spring-jacks at the rear.

11. A multiple switchboard provided with spring-jack switches placed in horizontal subdivisions, in combination with cables connected therewith at the rear, each cable being connected with corresponding spring-jack switches on the different sections of the switchboard and laid in a horizontal plane to the rear of the spring-jack switches, the number of cables placed vertically being less than the number of vertical layers of spring-jack switches to which the same are attached.

472,948. HOOK. ROBERT GORTON, Plainfield, N. J. Filed Apr. 23, 1891. Serial No. 390,133. (No model.)

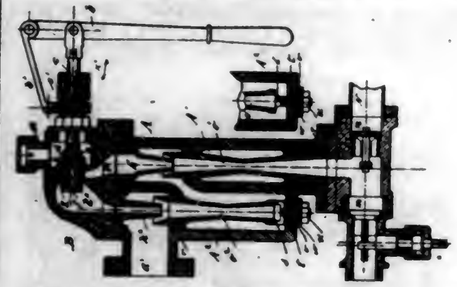


Claim.—1. A hook or hanger formed from a single piece of wire, with its two ends brought together, arranged side by side, and permanently secured, pointed, and screw-threaded to form a securing-shank, substantially as described.

2. A hanger formed from a single piece of half-round wire, having upper and lower hooks, each composed of two portions of the wire, and having a securing-shank formed by the two ends of the wire, which have their flat sides brought together, permanently secured, tapered, and screw-threaded, substantially as described.

3. A hanger formed of half-round wire, with its ends brought together and arranged side by side and permanently secured, pointed, and screw-threaded to form a securing-shank, and having the horizontal portion a, the downwardly and rearwardly extending brace A^0, the lower hook, and the vertical portion b^2, against the flat face of which the flat face b^2 of the lower portion of the brace A^0 has its bearing.

472,949. INJECTOR. FRANZ KRIZIK, Berlin, Germany. Filed Nov. 18, 1891. Serial No. 412,259. (Model.)



Claim.—1. In an injector, the combination, with a head-casing having two steam-channels, of a valve closing both channels, and a hollow apertured stem on which said valve is loosely mounted, substantially as set forth.

2. In an injector, the combination, with a casing having two steam-channels, of a stem provided with an end head, a bore, and side apertures leading to the bore, and a valve mounted loosely in the bore part of the stem, substantially as set forth.

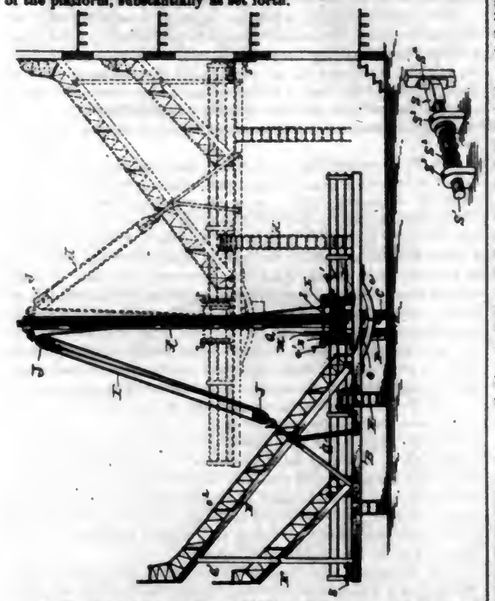
3. In an injector, the combination, with a casing having two steam-channels, at the upper ends of which a seat for a common valve is formed, a tubular laterally-apertured stem on which said valve is loosely mounted, and a head on the end of said stem, substantially as set forth.

4. In an injector, the combination, with a casing, of a nozzle, a valve, an injector-tube provided at one end with a cross-piece, and a screw formed on said cross-piece and passed through the walls of the casing, substantially as set forth.

472,950. FIRE-ESCAPE. DANIEL KNOWLES, Norfolk, Va., assignor of one-fourth to George W. Johnson, same place. Filed Mar. 24, 1891. Serial No. 386,241. (No model.)

Claim.—1. A fire-escape having a rising-and-falling platform, a vertical support for said platform, which provides a vertical axis or

hinge therefor, and is situated from the building a distance greater than that part of the platform which receives those escaping from the building, whereby said platform can, while said support is stationary, be rotated horizontally from a position between the support and building to a position outside thereof, and means for causing the rotation of the platform, substantially as set forth.



2. In a fire-escape, a rising-and-falling platform, a vertical support therefor, one or more ladders secured to said platform, having their receiving ends on one side only of said support, and means for raising and lowering said platform, the latter being connected with the support by a vertical pivot or hinge, whereby it is adapted to have the said ladders turned to a position between the support and the building while the support is stationary, and turned into a position outside thereof either during or after the vertical movements of the platform, and means for causing the rotation of the platform, substantially as set forth.

3. In a fire-escape, the combination of a vertical support, a rising-and-falling and horizontally-rotating platform, said support being at a distance from the building greater than the length of the platform, and mechanism mounted on the platform for raising and lowering it, whereby the platform can be moved both vertically and horizontally while the support is stationary, substantially as set forth.

4. In a fire-escape, the combination of a vertical support, a rising-and-falling platform on said support rotatable horizontally while the support is stationary, and mechanism mounted on the platform for raising and lowering it, substantially as set forth.

5. In a fire-escape, the combination of a vertical support, a rising-and-falling platform on said support rotatable horizontally while the support is stationary, mechanism for raising and lowering said platform, means for causing the rotation of the platform, and a lock for fastening it in any desired vertical position, substantially as set forth.

6. In a fire-escape, a rising-and-falling platform mounted upon a vertical pivot-like guide, said platform being free to rotate around the axis of said guide while rising and falling, and means for causing the rotation of the platform, substantially as set forth.

7. In a fire-escape, the combination of a rising-and-falling platform and a vertical pivot-like guide for said platform and a raising and lowering mechanism connected at one or more points to said platform, and also connected to a stationary support, said mechanism being free to rotate at both of said places of connection around the axis of the said pivot-guide, substantially as set forth.

8. In a fire-escape, the combination, with a vertical pivot-like guide, of a platform adapted to rotate thereon and a raising and lowering mechanism, also adapted to rotate thereon, substantially as set forth.

9. In a fire-escape, the combination of a vertical support secured to or in the ground independently of the building and a rising-and-falling platform pivotally connected to said support and free to swing toward and away from the building, substantially as set forth.

10. In a fire-escape, the combination of a vertical support, a rising-and-falling platform vertically pivoted to said support, a drum on said platform, a rope extending upwardly from said platform to the top of said support and thence downward to the platform again, and a connecting device for the upper part of said rope, pivotally connected to said support, substantially as set forth.

11. The combination of the vertical support, the rising-and-falling platform, the friction-drum mounted in bearings on the platform, the friction-brake on the platform engaging said drum, the rope adapted to be wrapped around said drum, and means on the platform for varying the friction on the drum, substantially as set forth.

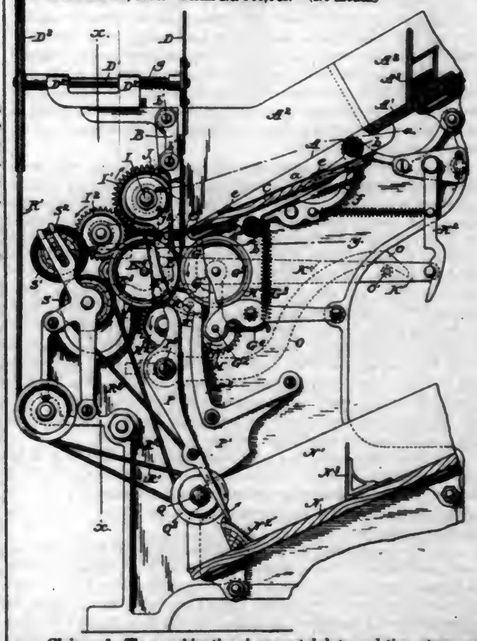
12. In a fire-escape, the combination of the vertical support, the platform which rises and falls and rotates freely on said support while the latter is stationary, and the inclined ladders secured to said platform and adapted to be rotated therewith horizontally to a position between the support and the building and then rotated into a position away therefrom, and means for causing the rotation of the platform, substantially as set forth.

13. In a fire-escape, the combination, with the main support having the vertical pivot, of the rising-and-falling platform having its receiving part shorter than the distance from said pivot to the building and connected to the said support, as set forth, whereby it is free to rotate continuously around said pivot, substantially as set forth.

14. In a fire-escape, the combination, with the rising-and-falling platform, of the ladder projecting upwardly therefrom and provided at the upper ends with the upwardly-projecting feeder or side guard adapted to stand at the side of a window, substantially as set forth.

15. In a fire-escape, the combination, with the rising-and-falling ladder, a friction-brake, the lever for releasing said brake, and the stop for limiting the lever movement, substantially as described.

472,951. POSTAL DATE AND TIME STAMPING MACHINE. OLOF R. LUNDBERGH, Brooklyn, N. Y., assignor to John M. Glover, St. Louis, Mo. Filed Mar. 27, 1891. Serial No. 386,640. (No model.)



Claim.—1. The combination, in a postal date and time stamp, of an inclined way, a slotted wall extending across the lower end thereof, leaving an intervening opening, a follower moving automatically down the way, devices for propelling in a direction parallel with the face of the wall the letter-envelopes pressed against it, so as to produce their delivery at its lower end, and a disk revolving in a plane parallel with the face of the wall and overlapping a portion of its upper end, substantially in the manner and for the purpose herein set forth.

2. The combination, in a postal date and time stamp, of an inclined way, a transverse wall at the foot thereof, devices for propelling in a direction parallel with the face of the wall the letter-envelopes pressed against it to produce their delivery at its lower end, and spring-actuated bars movable at right angles to the face of the wall and terminating in elastically-yielding tips to contact lightly against the lower end of the wall under the foot of the inclined way, substantially in the manner and for the purpose herein set forth.

3. The combination, in a postal date and time stamp, with its revolving printing-head and its opposite impression-roller, of an inclined delivery-way beneath said roller, a slotted or grated chute interposed between the lower end of the inclined way and the printing-head, and revolving disks mounted at the rear of the slotted chute to project severally through the slots therein, whereby the envelopes passing down the chute are fed forward by contact with the peripheries of said disks, substantially in the manner and for the purpose herein set forth.

4. The combination, in a postal date and time stamp, with its revolving printing-head and its opposite impression-roller, of a pivoted slotted or grated delivery-chute whose upper end stands normally in position beneath said head and roller to receive the envelopes delivered therefrom, a rotating shaft mounted at the rear of the lower end of the chute, and disks fitted upon said shaft in position to project through the bars of the chute when it is in its normal position and be clear therefrom when the lower end of the chute is swung forward, substantially in the manner and for the purpose herein set forth.

5. The combination, in a postal date and time stamp, with an inclined way and a transverse slotted wall at the foot thereof, leaving a narrow open interval between the two, of a rotating shaft mounted in a pivoted frame at the rear of the wall to oscillate to and from it, disks mounted on said shaft having peripheral projections adapted to pass through the slots in the wall when the frame is swung toward it and to be clear thereof when the frame is swung back, an arm extending from the swinging frame to operate it, and a catch to confine said arm, substantially in the manner and for the purpose herein set forth.

6. The combination, in a postal date and time stamp, with an inclined receiving-way, of a grated wall at the lower end thereof, leaving a narrow open interval between the two, an oscillating frame at the rear of said wall, a shaft revolving in said frame, carrying feed-segments to revolve between the bars of the grated wall, an arm or lever operating the swinging frame, whereby it is caused to swing to and from the wall, a revolving printing-head, an opposed impression-roller, a swinging frame in which said impression-roller is mounted, a spring carrying said roller against the printing-head, and a finger extending from the swinging frame, carrying the impression-roller into position to be engaged by the lever actuating the swinging frame which carries the revolving feed-segments, whereby when said segments are swung back from their operative position the impression-roller will be swung clear of the printing-head, substantially in the manner and for the purpose herein set forth.

7. The combination, in a postal date and time stamp, with an inclined receiving-way, of a grated wall at the lower end thereof, leaving a narrrow open interval between the two, an oscillating frame at the rear of said wall, a shaft revolving in said frame, carrying segments to revolve between the bars of the grated wall, an arm or lever operating the swinging frame, whereby it is caused to swing to and from the wall, a revolving printing-head and its opposite impression-roller mounted below the end of the receiving-way, an oscillating chute mounted below said head and roller, feed-disks mounted upon a shaft at the rear of the chute to project through the slots in the chute when the latter is in its normal position, and an arm projecting from said chute into engagement with a pin upon the arm or lever governing the swinging frame carrying said feed-disks, whereby when the segments are swung away from the slotted wall of the upper inclined way the delivering-chute will be swung away from its feed-disks, substantially in the manner and for the purpose herein set forth.

8. The combination, in a postal date and time stamp, with its revolving printing-head, of the detachable collar encircling one end thereof, the spring confining said collar, and the canceling plate or stamp carried by said collar, substantially in the manner and for the purpose herein set forth.

9. The combination, in a date and time stamp, with the printing-head mounted on a tubular rotating shaft, of an arbor mounted within the head parallel with the shaft and at one side thereof, a printing-wheel mounted to revolve on said arbor, a ratchet-wheel actuating the printing-wheel, a rock-shaft extending into the head through its tubular shaft, an arm projecting radially within the head from the rock-shaft, and an oscillating pawl actuated by the movement of said arm to engage the ratchet-wheel, substantially in the manner and for the purpose herein set forth.

10. The combination, in a date and time stamp, of a tubular shaft, a central rock-shaft inclosed within the tubular shaft to revolve with it and oscillating independently thereof, a head attached to and revolving with the tubular shaft, indicating mechanism revolving independently upon a lateral shaft fixed in said head to move with it, and an oscillating frame mounted within the head to actuate the indicating mechanism and itself actuated by the independent movement of the rock-shaft, substantially in the manner and for the purpose herein set forth.

11. The combination, in a time-stamp, of a revolving head and time-indicating wheels mounted within the head to revolve independently thereof, substantially in the manner and for the purpose herein set forth.

12. The combination, in a time-stamp, of a revolving head, revolving time-printing wheels mounted within the head upon an independent axis and whose type-faces are brought to line of print through an opening in the head, and an opposite impression-roller serving as a platen for the printing-wheels at each revolution of the head, substantially in the manner and for the purpose herein set forth.

13. The combination, in a time-stamp, of a revolving head, an opposite revolving impression-roller contacting with the head, time-printing wheels revolving independently in the head upon an independent axis and brought to line of print against the impression-roller by the revolution of the head, and devices for feeding letter-envelopes in between the head and impression-roller to be carried forward by their revolution, substantially in the manner and for the purpose herein set forth.

14. The combination of a tubular shaft, the head or casing attached to the end of the shaft to revolve with it, a shaft rocking independently within the tubular shaft and projecting into the head, a wheel and intermediate devices whereby the type-wheel is rotated by the rocking of the shaft, a loose sleeve upon the end of the rock-shaft, a pinion fixed to said sleeve and geared mediately to the rock-shaft, an arm projecting radially from said sleeve within the head, an armature attached to said arm, an electro-magnet fixed to the head in position to attract said armature, and a spring to retract it, whereby the rock-shaft is oscillated by the action of the magnet while revolving in unison therewith about a common axis, an electric circuit connected with the magnet, and a make-and-break mechanism included in said circuit, substantially in the manner and for the purpose herein set forth.

15. The combination, in a time-stamp, of a revolving head, time-wheels revolving within said head upon an independent axis, a rock-shaft projecting into the head coincidently with its axis, intermediate mechanism for actuating the time-wheels, an electro-magnet and intermediate mechanism for actuating the rock-shaft, said magnet revolving in unison with the head, an electric circuit, a clock-movement included therein and operating to make and break the circuit at regular intervals, and a shunt including said magnet, substantially in the manner and for the purpose herein set forth.

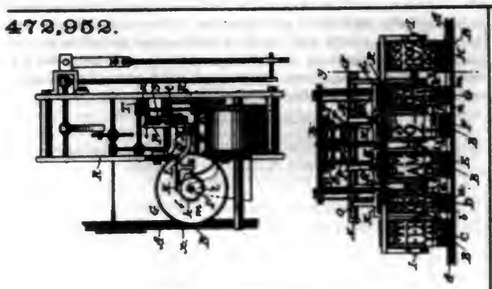
16. The combination, in an electro-magnetic time-stamp, of a revolving head, time-wheels revolving independently within said head, a rock-shaft projecting into the head coincidently with its axis, intermediate mechanism for actuating the time-wheels from said shaft, an electro-magnet and intermediate mechanism for actuating the rock-shaft, said magnet revolving in unison with the head, means for moving the rock-shaft in opposition to the magnet, a clock-movement included in an electric circuit and operating to make and break the circuit at regular intervals, an automatically-closed switch in said circuit, a device operated by the armature of the magnet to open the switch, and a shunt-circuit from the clock-controlled circuit of greater resistance than said clock-circuit and in which the magnet is included and through which the current will be diverted when the clock-circuit is opened, a normally-open shunt of low resistance about said magnet, and means to close said shunt, substantially in the manner and for the purpose herein set forth.

17. The combination, in an electro-magnetic time-stamp, of a revolving printing-head, time-printing wheels revolving independently within said head, a rock-shaft projecting into the head coincidently with its axis, intermediate mechanism for actuating the printing-wheels from said shaft, an electro-magnet and intermediate mechanism for actuating the rock-shaft, said magnet revolving in unison with the head, a clock-movement included in an electric circuit and operating to make and break the circuit at regular intervals, an automatically-closed switch in said circuit, a device operated by the movement of the armature of the magnet to open the switch, a shunt-circuit from the clock-controlled circuit of greater resistance than said clock-circuit and in which the magnet is included and through which the current will be diverted when the clock-circuit is open, conducting-wires forming a short circuit from the clock-circuit, and a circuit-closing device included in said short circuit and mounted to revolve in unison with the printing-head, whereby the short circuit will be closed when the printing-wheels are at line of print, substantially in the manner and for the purpose as herein set forth.

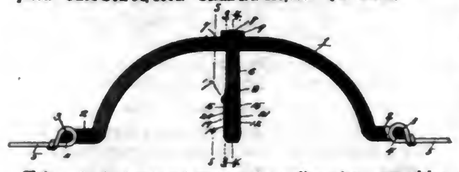
472,952. CALENDAR-CLOCK. WARREN B. MARTINDALE, Kenosha, Wis., and ERNST R. MALMBORG, St. Louis, Mo., assignors, by mesne assignments, to the New York Electrical Device Company, of Virginia. Filed Dec. 30, 1889. Renewed Oct. 14, 1891. Serial No. 408,654. (No model.)

Claim.—The combination, in a calendar-clock, of a time-train, a contrate ratchet-wheel upon its hour-spindle, a pivoted lever having a beveled tooth on one arm engaging the inclined teeth of the ratchet, a spring enforcing said engagement, a pawl pivotally connected to the opposite end of said lever to reciprocate with it, and a date and time indicating device actuated by said reciprocating pawl, substantially in the manner and for the purpose herein set forth.

472,952.



472,953. TROLLEY-WIRE SUPPORT. FRANK C. PRICKETT, Kansas City, Kans., assignor of one-half to Frederick W. Bruchmann, same place. Filed Dec. 14, 1891. Serial No. 415,015. (No model.)



Claim.—1. An improved support for trolley-wires, comprising a vertical bar having at one side a cavity, and a groove communicating with said cavity at its lower margin and opening at opposite sides of the bar, and a retaining-plate connected to the side of the bar and overlying the cavity and groove, substantially as set forth.

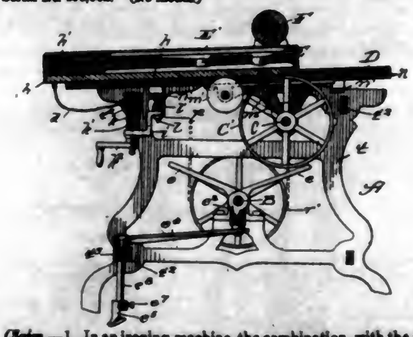
2. An improved trolley-wire support comprising a cross-bar, a vertical bar connected to said cross-bar and provided at one side with a cavity, a groove communicating with said cavity at its lower margin and opening at opposite sides of the bar, and a retaining-plate connected to the side of the bar and covering the cavity and groove, substantially as set forth.

3. An improved trolley-wire support comprising a vertical bar having a cavity in one of its sides, and a curved groove formed in said bar and communicating with the cavity at the lower margin thereof and provided with recesses in its upper and lower margins, substantially as set forth.

4. An improved trolley-wire support comprising a vertical bar having a cavity in one of its sides, a curved groove formed in the lower part of the bar and communicating with the cavity at the lower margin thereof, and a retaining-plate covering said cavity and having on its inner side a flange conforming to the shape of the groove, substantially as set forth.

5. An improved trolley-wire support comprising a vertical bar having a cavity in one of its sides and provided with a curved groove communicating with said cavity, and a retaining-plate covering said cavity and provided on its inner side with a flange conforming to the shape of the groove and also with an inwardly-extending lug or projection entering said cavity, substantially as set forth.

472,954. IRONING-MACHINE. CHARLES R. QUARNSTROM, Chicago, Ill., assignor of one-half to Nels P. Hedin, same place. Filed Oct. 16, 1891. Serial No. 408,802. (No model.)

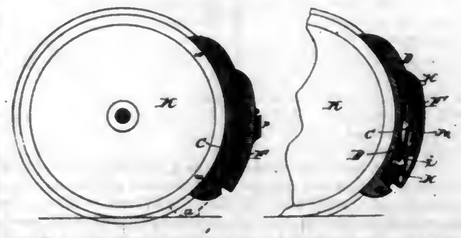


Claim.—1. An ironing-machine, the combination, with the main frame and support for the goods, of a rotating shaft C, a friction-wheel C' on the shaft C, a swinging frame D, in which the said support is mounted to reciprocate, pivoted on the shaft C, ironing-roller F above the shaft C, the center of the roller F being to one side of a line perpendicular to the plane of the path of the said support and passing through the center of the shaft C, and means for swinging the frame D on its pivot, substantially as described.

2. In an ironing-machine, the combination, with the main frame A, of a drive-shaft B, shaft C, and ironing-roller F, journaled in the frame A, the center of the roller F being to one side of a line perpendicular to the plane of the path of the support for the goods and passing through the center of the shaft C, a cog-wheel *o* on the shaft C, pinions *g* and *f* on the shaft B and roller F, respectively, engaging the said cog-wheel, friction-wheel C' on the shaft C, swinging frame D, pivoted on the shaft C, reciprocating support for the goods in the frame D, resting on the wheel C', and means for raising and lowering the frame D on its pivot, substantially as described.

3. In an ironing-machine, the combination, with the main frame and reciprocating support for the goods, of a rotating shaft C, a swinging frame D, pivoted on the shaft C, guideways n^3 in the frame D for the said support, a friction-wheel C' on the shaft C, and a roller m' on the frame D, engaging the said support, ironing-roller F, journaled in the frame A, the center of the roller F being to one side of a line perpendicular to the plane of the path of the said support and passing through the center of the shaft C, and means for raising and lowering the frame D on its pivot, comprising the lug *l* on the frame D, spring *l'* on the lug *l*, threaded lug *k* on the frame A, bracket *i*, sliding on the lugs *l k*, and traveling crank k^3 on the lug *k*, substantially as described.

472,955. CAR-BRAKE SHOE. GEORGE SANDS, Beaver Falls, Pa. Filed Nov. 7, 1890. Serial No. 370,641. (No model.)



Claim.—1. In a combined wheel and rail brake, the combination, with a sliding brake-shoe adapted to bear upon the wheel, the rear face of said shoe being recessed, of a stationary clog arranged within the recess in the shoe, said clog being connected with the brake-beam and upon which the shoe slides, substantially as shown and described.

2. In a combined wheel and rail brake, the combination, with a stationary clog having a longitudinal slot through the same and friction-rollers upon its inner face, of a shoe adapted to bear upon the wheel and having its outer face recessed to receive the clog, a spiral spring arranged between the clog and shoe, and a screw passing through the shoe and working in the slot in the clog, substantially as and for the purpose described.

3. In a railway-brake, the combination, with the clog F, of the shoe D, secured to said clog by the set-screw *e* in such a manner that by removing the washer from the set-screw *e* and tightening said set-screw the shoe D will be made rigid with the clog F, thereby making the shoe solid, substantially as shown and described.

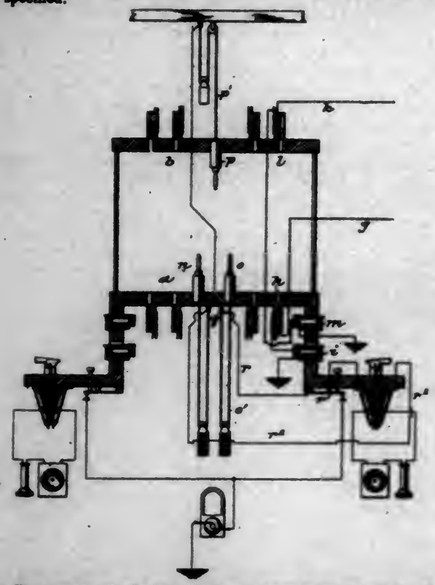
472,956. CANOPY TELEPHONE-EXCHANGE SWITCHBOARD. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 22, 1889. Serial No. 331,208. (No model.)

Claim.—1. The combination, with a switchboard containing the switches of a portion of the telephone-lines of an exchange, of a canopy-board placed above said switchboard, said canopy-board containing the switches of other lines of the exchange, substantially as and for the purpose specified.

2. A set of connecting cords and plugs, consisting of three or more plugs and cords, one of said plugs serving for an answering-plug, the said answering-plug being branched to said two or more plugs through a calling-key, said two or more plugs being placed at different points, whereby the subscribers may be connected together at different points and the second subscriber called, no matter which of the connecting-plugs be used.

3. The combination, with two telephone-lines, each passing through its spring-jack switch and annunciator to ground, of a switchboard containing one of said spring-jack switches and placed above said board, a canopy-switchboard containing the other of said spring-jack switches, and connecting plugs and cords, whereby said telephone-lines may be connected together without crossing the cords between said switchboard and said canopy-board.

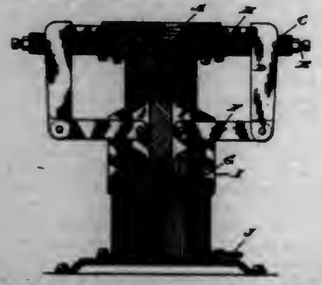
4. The combination, with a switchboard containing the switches of a portion of the telephone-lines of an exchange and containing the individual annunciators for all the lines of the exchange, of a canopy-switchboard placed above said switchboard and containing the switches of a portion of said telephone-lines, substantially as and for the purpose specified.



5. Two groups of telephone-lines, one group being provided with spring-jack switches on a canopy-switchboard and with individual annunciators upon a board below the canopy-board, and the other group being provided with switches and annunciators upon the said lower board, whereby the switches of said telephone-lines are concentrated, substantially as and for the purpose specified.

6. A canopy-switchboard supported upon pipes or tubes, in combination with telephone-lines passing through said tubes to different switches upon said canopy-switchboard, and a table-switchboard placed below said canopy-switchboard, substantially as and for the purpose specified.

472,957. MACHINE FOR HEADING WATER-BOILERS. WALTER S. SMITH, Toronto, Canada, assignor to James Morrison, same place. Filed Apr. 27, 1891. Serial No. 390,619. (No model.)

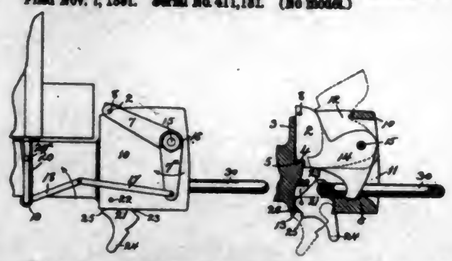


Claim.—1. A ring made in segments, the ends of each segment having fingers formed on them to interlock with the corresponding fingers formed on the adjacent segments, in combination with mechanism arranged to force the said segments together to reduce the size of the ring and compress the head onto the cylinder, substantially as and for the purpose specified.

2. A ring A, made in segments and supported on the table C, the said segments being held apart by the springs B, the arms or levers D, pivoted each on the end of a set-screw E and connected by the block H to the ring A, in combination with the link F, pivoted on the end of the arm or lever D and connected to the piston G, substantially as and for the purpose specified.

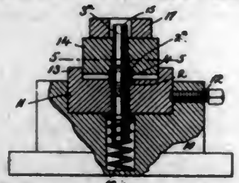
3. A ring A, made in segments, each segment having fingers *a* formed on its ends and supported on the table C, the said segments being held apart by the springs B, the arms or levers D, pivoted each on the end of a set-screw E and connected by the block H to the ring A, in combination with the link F, pivoted on the end of the arm or lever D and connected to the double-ended piston G, fitted into the cylinder having an inlet-pipe J at one end and the hole *d* at its other end, substantially as and for the purpose specified.

472,958. CAR-COUPLING. STEPHEN D. SMITH, Spottswood, N. J. Filed Nov. 7, 1891. Serial No. 411,181. (No model.)



Claim.—In a car-coupler, the combination, with a pivotally-mounted coupling-hook, of a pivotally-mounted link-holder.

472,959. APPARATUS FOR FORMING RINGS. HERMAN V. BERNHARDT, Brooklyn, N. Y. Filed Oct. 26, 1891. Serial No. 410,114. (No model.)



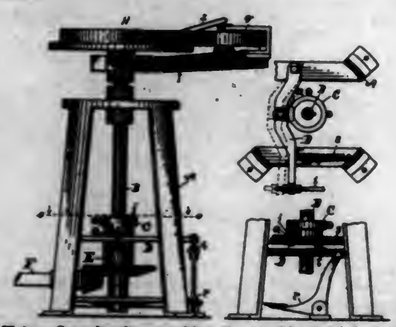
Claim.—1. The combination, with a pair of forming-dies, each die being adapted to bear on the outer face of a tubular blank and to shape one-half of the outer surface of a ring, of an arbor or mandrel which enters the die-bodies and is arranged to shape the inner surface of a ring, substantially as described.

2. The combination, with a die formed or provided with a guiding-flange and arranged to bear upon the lower edge and outer face of a blank, of a supplementary die which fits within said guiding-flange and is arranged to bear upon the upper edge and outer face of a blank and an arbor or mandrel which enters the die-bodies and is arranged to shape the inner surface of a ring, substantially as described.

3. The combination, with a pair of dies, of an arbor or mandrel which enters the dies and is formed with a lower section of a diameter equal to that which it is desired to impart to the ring and with an upper section of reduced diameter adapted to receive the ring after it has been formed, substantially as described.

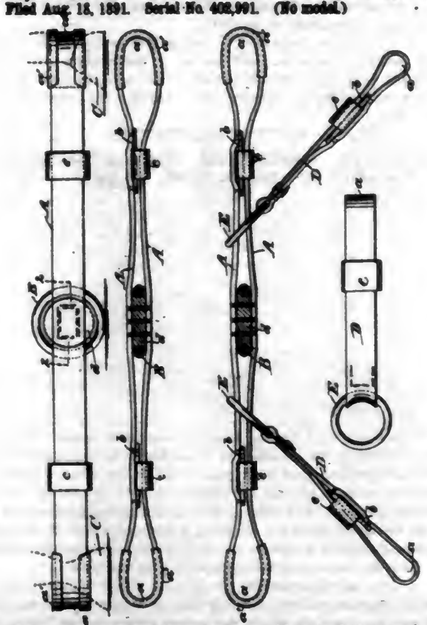
4. The combination, with a pair of dies, of an arbor or mandrel which enters the dies and is formed with a reduced upper section and a spring arranged in connection with the mandrel, substantially as described.

472,960. MACHINE FOR BENDING HARROW-TEETH. HERMAN M. BRENNAN, Kalamazoo, Mich., assignor to the Harrow Spring Company, same place. Filed Jan. 18, 1892. Serial No. 418,375. (No model.)



Claim.—In a bending-machine, the combination of an upright revoluble shaft having attached to its upper end a form, a fixed portion of a clutch attached to its lower end, a vertically-sliding portion of a clutch on said vertical shaft above the fixed portion of the clutch, said sliding portion being provided with the cam-lug; a transverse lever bearing a cam-roller in position to engage said lug, a pivoted foot-treadle, a connecting-rod connecting the upper end of said treadle with said lever, a spring holding said lever in its normal position, and a power-shaft gear connecting with the fixed portion of the clutch on the upright shaft, substantially as set forth.

472,961. HOPPLE. GEORGE P. COLE, Saratoga Springs, N. Y. Filed Aug. 18, 1891. Serial No. 402,991. (No model.)



Claim.—1. An animal-fetter having a self-closing loop at each end and keepers embracing loosely one side or ply of each loop and secured to the opposite side or ply, whereby the loops may be expanded and contracted without the use of buckles or other fastenings, substantially as set forth.

2. An animal-fetter consisting in a doubled strap the plies of which lie face to face and keepers secured to one ply of the strap near the ends of the fetter and loosely embracing the other ply, thus forming self-closing end loops, substantially as set forth.

3. The combination, with a fetter-strap having self-closing end loops, of a vertical anti-friction wheel or roller pivoted to the fetter-strap between the two end loops to contact with the surface of the ground, substantially as set forth.

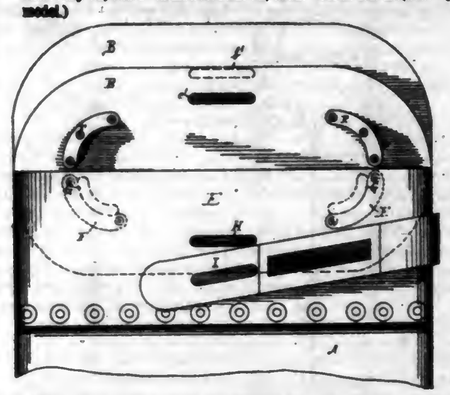
4. The combination, with a fetter formed of an endless strap the plies of which lie face to face, one ply having a keeper secured to it near each end of the fetter and loosely embracing the opposing ply to form self-closing loops, of an anti-friction wheel or roller comprising a pivot-disk secured vertically between the two plies of the strap intermediate of the loops, and a ring rotating on the disk, substantially as set forth.

472,962. SNAP-HOOK. JEREMIAH W. COLLINS, Sheriff, N. Y. Filed Aug. 22, 1891. Serial No. 403,416. (No model.)



Claim.—A snap-hook constructed from a single wire and consisting of a body having substantially parallel sides connected at one end by a spring loop or coil, an eye upon the upper side lying in a plane at substantially a right angle to the plane of the body, a loop extending from said eye across said body around the lower side and extending upward nearly to said eye, said lower side being extended forward and bent to form the hook, and an arm projecting partially across said hook and fitting freely through said eye and engaging with the end of one side of said loop.

472,968. MAIL-POUCH. BUTLER EDGAR and LLOYD T. ROHRBACH, Sunbury, Pa., assignors to said Rohrbach and John Haas, same place, C. G. McWilliams, W. C. McConnell, and George G. Martz, Shamokin, Pa. Filed July 18, 1891. Renewed Mar. 12, 1892. Serial No. 424,679. (No model.)

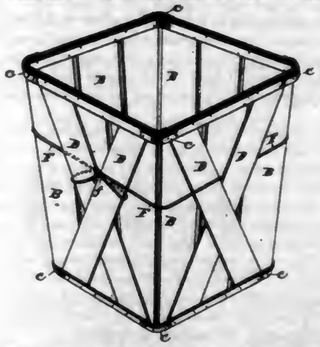


Claim.—1. A mail-pouch consisting of the sack A, outside pocket *e* at the upper end of the sack, inside flap E, and outside flap B, provided with proper staple and slots and adapted to be secured by a suitable hasp and lock, substantially as shown and described.

2. A mail-pouch consisting of the sack A, outside pocket *e* at the upper end of the sack, inside flap E, and outside flap B, and strengthening-pieces C and D, all provided with proper slots, and staple H, adapted to secure said pouch, substantially as shown and described.

3. A mail-pouch consisting of the sack A, outside pocket *e* at the upper end of the sack, inside flap E, outside flap B, segmental pieces F, secured on the flap E, and segmental pieces G, secured on the inside of the said pocket, and staple H, adapted to secure said pouch, substantially as shown and described.

472,964. TRUCK OR FRUIT BASKET. NATHAN T. FITCH, Salisbury, Md., assignor to the Salisbury Manufacturing Company, same place. Filed Nov. 19, 1891. Serial No. 412,449. (No model.)



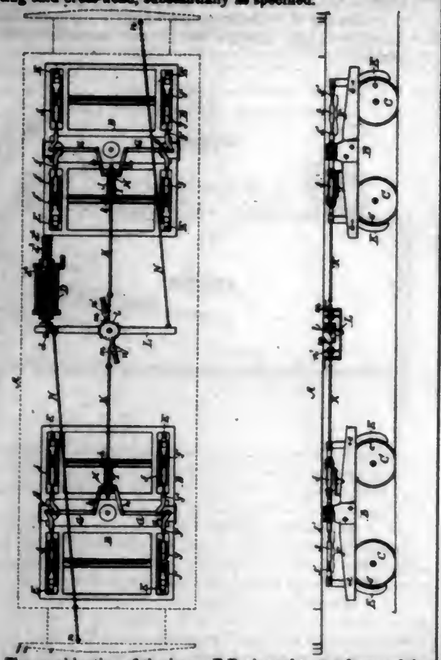
Claim.—1. As an improved article of manufacture, a fruit or truck basket composed of the square or rectangular bottom, substantially vertical slats secured thereto, the top hoop, and the braces on each side extending from each corner to the diagonally-opposite corner and crossed at or near the center, whereby each corner is supported on each side, substantially as described.

2. As an improved article of manufacture, a fruit or truck basket having the tapered body formed by the substantially vertical slats, the diagonal crossed braces overlying the vertical slats, and the central band passing around outside the vertical slats and interwoven with the crossed slats under the inner one and over the outer one, whereby it is held against downward movement, substantially as described.

472,965. CAR-BRAKE. CHARLES PEIRS, WILLIAM H. RICHARDSON, and ISAAC W. HACKETT, Philadelphia, Pa., assignors of one-fourth to August H. Lunneman, same place. Filed Dec. 22, 1891. Serial No. 415,898. (No model.)

Claim.—1. The combination, in a car-brake, of the levers E E, pivoted to the frame of the truck, brake-shoes carried by said levers, the pivoted levers G, rods connecting the levers E and G, a cross-head,

links connecting said cross-head to the levers G, and mechanism for operating said cross-head, substantially as specified.



2. The combination of the levers E E, pivoted to the frame of the truck, brake-shoes carried by said levers, the levers G, pivoted to the truck, adjustable rods connecting the levers E and G, a cross-head, links connecting the levers G to the cross-head, guides for said cross-head, said cross-head being provided with a curved slot *k*, and a brake-rod having one of its ends adapted to said curved slot, substantially as specified.

3. The combination, in a car-brake, of the brake-levers E E, pivoted to the frame of the truck, brake-shoes carried by said levers, the pivoted levers G, a guided cross-head, links connecting the levers G to said cross-head, a guided bar on which said cross-head is carried, and means for adjusting said cross-head on the bar, substantially as specified.

4. The combination, in a car-brake, of the levers E E, pivoted to the frame of the truck, the levers G, pivoted to said truck, and rods F, each having one end connected to the levers E E and their opposite ends pivoted to the lever G on the opposite sides of the pivot-point of the lever G, the cross-head, the links A, connecting the levers G to said cross-head, a guided bar carrying said cross-head, and a spring between said cross-head and a fixed point, substantially as specified.

5. A brake-lever system comprising a pivoted lever L, a drum thereon, chains or cables extending from said drum to the brake-rods, stationary guiding-wheels *n'* for said chains, the brake-rods, brakes adapted to be operated thereby, and a pressure-cylinder for operating upon said lever L, substantially as specified.

6. A braking system comprising the brakes and brake-rods, the lever L, centrally pivoted beneath the car, a drum carried thereby and adapted to operate the brake-rod, a pressure-cylinder, a piston therein, a piston-rod adapted to act upon said lever L, and brake-rods N N, extending from said lever to the hand-brake wheels, substantially as specified.

7. The combination of the pressure-cylinder, its piston, a piston-rod connected thereto, an adjustable nut on said piston-rod, and a brake-lever pivoted to the car and having one of its ends in contact with said nut, but free to move independently of the piston-rod, with brake-rods connected to said lever, substantially as specified.

472,966. MEANS FOR JUSTIFYING MATRICES. MAX GROSSE, Washington, D. C. Filed Jan. 30, 1891. Serial No. 379,449. (No model.)



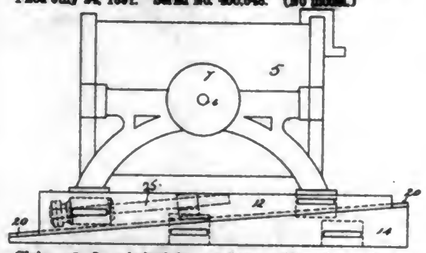
Claim.—1. A justifying-space consisting of two sections adapted to move laterally, in combination with an expanding part provided with right and left hand screw-threads engaging with corresponding screw-threads on the movable sections, substantially as set forth.

2. A justifying-space consisting of two sections adapted to move laterally or axially, in combination with a central hub having right and left hand screw-threads engaging with corresponding interior screw-threads on the laterally-movable sections, substantially as set forth.

3. In justifying apparatus, a rocking shaft and a series of expansible justifying-spaces mounted thereon, in combination with a yielding crank secured to the rocking shaft and means for turning the yielding crank, substantially as set forth.

4. In justifying apparatus, a rocking shaft and a series of expansible justifying-spaces mounted thereon, in combination with a yielding crank secured to the rocking shaft and an actuating-disk provided with a cam-groove for engaging the yielding crank, substantially as set forth.

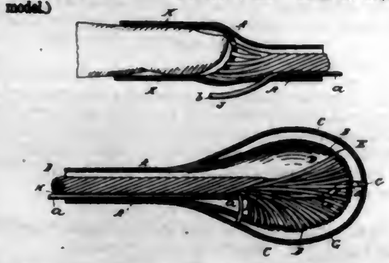
472,967. BELT-TIGHTENER. WILLIAM D. TYLER, Denver, Colo. Filed July 24, 1891. Serial No. 400,642. (No model.)



Claim.—1. In a belt-tightener for machines located above the propelling-shaft, the combination of two frames having oppositely-disposed inclined engaging faces, one of said frames being movable, an actuating screw-shaft, and a stationary support connected with the movable frame by the actuating-shaft, said shaft being swiveled in one of the connected parts and engaging a threaded socket in the other parts, and suitable means for rotating the actuating-screw, whereby the movable frame is shifted, substantially as described.

2. In a belt-tightener, the combination of two frames having oppositely-disposed inclined engaging faces, the upper frame being movable and the lower stationary, and an actuating screw-shaft occupying a position parallel with the inclined engaging faces of the frames, said shaft being swiveled in the movable frame and engaging a threaded socket in the stationary frame, the outer extremity of the shaft being provided with a rigid ratchet-head and a movable lever-arm and engaging pawl, substantially as described.

472,968. ELECTRICAL SURGICAL INSTRUMENT. STEPHEN R. BRADLEY, Nyack, N. Y. Filed Feb. 4, 1892. Serial No. 420,289. (No model.)

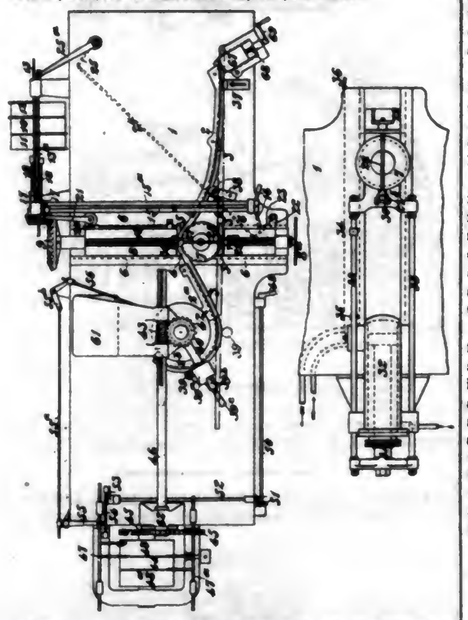


Claim.—1. The above-described instrument, comprising a finger-sheath, wires extending from the interior of the sheath to or near the exterior of a bulb at the other end of the instrument, an elastic exterior bulb or covering for the said bulb, the inner surface whereof is a conductor of electricity, and a wire extending to the said inner surface of the exterior bulb, substantially as set forth.

2. The above-described instrument, comprising, essentially, a finger-sheath, wires extending from the interior of the sheath to the exterior of a bulb at the other end of the instrument, an elastic exterior bulb or covering for said bulb, the inner surface whereof is a conductor of electricity, a wire extending to the said inner surface of the exterior bulb, and means to hold the finger-tip firmly upon the finger of the operator, substantially as set forth.

3. The above-described instrument, comprising a finger-sheath at one end, wires extending from the interior of the sheath to or near the exterior of a bulb at the other end of the instrument, an elastic exterior bulb or covering, the inner surface whereof is a conductor of electricity, a wire extending to the said inner surface of the exterior bulb, and a tube extending from near the finger-sheath and discharging at or near the exterior bulb, substantially as set forth.

472,969. APPARATUS FOR BENDING TUBES. JOHN DONALDSON, Chiswick, England. Filed June 30, 1891. Serial No. 398,737. (No model.) Patented in England Dec. 27, 1890, No. 21,085; in Germany June 21, 1891, and in France June 22, 1891, No. 214,361.



Claim.—1. In a machine for bending tubes, the combination of two rigid formers 2 2^a, fixed to the bed of the machine, an intermediate former 7, arranged to work between said fixed formers in a direction at right angles to the tube to be bent, a reciprocating slide whereon said intermediate former is mounted, and means for operating said slide and intermediate former, substantially as herein described.

2. In a machine for bending tubes, the combination of two formers 2 2^a, fixed to the bed of the machine, an intermediate former arranged to work between said fixed formers in a direction at right angles to the tube to be bent, means for operating said intermediate former, and adjustable guides so arranged in relation to said fixed formers as with them to constitute passages through which the tubes will be partly drawn by the action of said intermediate former, substantially as herein described, for the purpose specified.

3. In a machine for bending tubes, the combination of two formers 2 2^a, fixed to the bed of the machine, an intermediate former 7, arranged to work between said fixed formers in a direction at right angles to the tube to be bent, a roller carried by a rotary arm and adapted to bend a portion of a tube to correspond to a part of one of said fixed formers, and means for operating said intermediate former and said rotary arm, substantially as herein described.

4. In a machine for bending tubes, the combination of two formers 2 2^a, fixed to the bed of the machine, an intermediate former arranged to work between said fixed formers in a direction at right angles to the tube to be bent, means for operating said intermediate former, and a slide-block or former 6 7, arranged to work in guides removably fixed to said bed and adapted to bend one end of a tube partly around the end of one of said fixed formers, substantially as herein described.

5. In a machine for bending tubes, the combination of two fixed formers, one of which is partly of circular shape and partly of irregular shape near one end, an intermediate former arranged to work between said fixed formers, a roller carried by a rotary arm and adapted to bend one end of a tube around the circular portion of said fixed former, an auxiliary former adapted to bend the remaining portion of the end of said tube to correspond to the irregular-shaped portion of said fixed former, and means for operating said intermediate and auxiliary formers and said rotary arm, substantially as herein described.

6. In a machine for bending tubes, the combination of two fixed formers, the curvatures of which correspond, respectively, to the curvature a finished tube is to have at those parts of it situated at each side of an intermediate curved portion, an intermediate former arranged to work between said fixed formers, means for operating said intermediate former, a block adapted to hold a tube against one end of one of said fixed formers and leave one end of the tube unsupported, an additional former arranged to act against said unsupported end of the tube, and means for operating said additional former, substantially as herein described, for the purposes specified.

7. In a machine for bending tubes, the combination of two fixed formers, an intermediate former arranged to work between said fixed formers, a slide whereon said intermediate former is mounted, and a clamping device, substantially as hereinbefore described, carried by said tube and capable of holding a tube to said intermediate former.

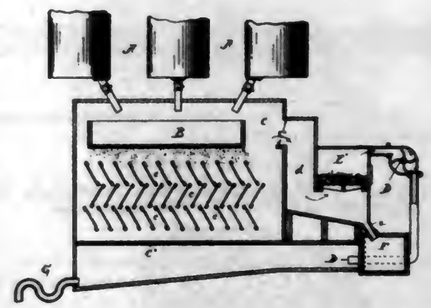
8. In a machine for bending tubes, the combination of two fixed formers, an intermediate former arranged to work between them and carried by a slide, mechanism for reciprocating said slide, and a stopping device for putting said mechanism out of action, said stopping device being arranged to be operated by said slide, substantially as herein described, for the purpose specified.

9. In a machine for bending tubes, the combination of two fixed formers, an intermediate former arranged to work between said fixed formers and carried by a slide, mechanism adapted to reciprocate said slide and comprising fast and loose pulleys with open and crossed belts controlled by belt-shifters, and lever mechanism arranged to be operated by said slide when near the ends of its stroke in each direction and to actuate said belt-shifters, substantially as herein described, for the purposes specified.

10. In a machine for bending tubes, the combination of two fixed formers, one of which has a part bent to the shape of an arc of a circle, an intermediate former arranged to work between said fixed formers in a direction at right angles to the tube to be bent, means for operating said intermediate former, a roller carried by a rotary arm and adapted to bend a portion of a tube around the circular portion of said former, driving mechanism for rotating said rotary arm, lever mechanism capable when actuated of throwing said driving mechanism out of action, and a tappet operated by said driving mechanism and arranged to automatically actuate said lever mechanism when said tube has been sufficiently bent by said roller, substantially as herein described.

REISSUES.

11,232. PROCESS OF EXTRACTING BROMINE. HERBERT H. DOW, Midland, Mich., assignor to the Midland Chemical Company, Midland, Mich., and Cleveland, Ohio. Filed Mar. 14, 1892. Serial No. 424,933. Original No. 460,370, dated Sept. 29, 1891.

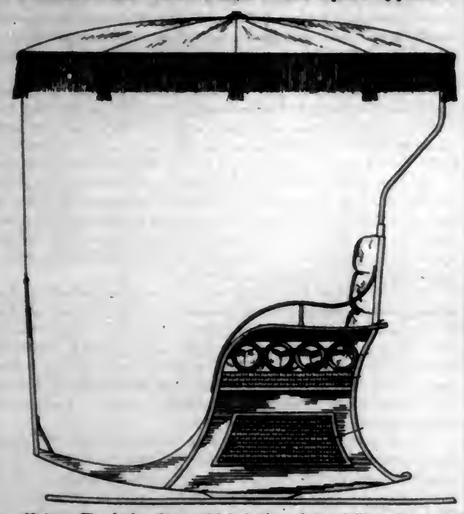


Claim.—1. The process herein described of extracting bromine from brine or bitter water and reducing the product to a solid bromide, consisting, first, in freeing the bromine from its chemical combination; second, separating the bromine from the brine by means of an air-blast; third, forcing the bromine-laden air through a metal or substance that will combine with the bromine, thus producing a bromide, and, finally, boiling the latter to dryness out of contact with the air, substantially as set forth.

2. The improvement in the art of obtaining bromine from natural salt-water, which consists in treating such salt-water to set the bromine free from its chemical combination, then separating the freed bromine from the salt-water by means of an air-blast, and finally absorbing the bromine from the air with suitable absorbing material.

DESIGNS.

21,453. VEHICLE-BODY. WILLIAM B. GRIFFIN, Glens Falls, N. Y. Filed Mar. 5, 1892. Serial No. 423,904. Term of patent 3½ years.



Claim.—The design for a vehicle-body, substantially as shown and described.

21,454. INSULATOR-BRACKET. CHARLES WIRT, Chicago, Ill. Filed Oct. 23, 1891. Serial No. 409,635. Term of patent 3½ years.



Claim.—The design for an insulator-bracket, substantially as shown and described.

21,455. INSULATOR-BRACKET. CHARLES WIRT, Chicago, Ill. Filed Oct. 23, 1891. Serial No. 409,636. Term of patent 3½ years.



Claim.—The design for an electrical insulator-bracket, substantially as herein shown and described.

21,456. COMB-CASE. THOMAS J. WHITNEY, Philadelphia, Pa. Filed Mar. 14, 1892. Serial No. 424,897. Term of patent 7 years.



Claim.—The design for a comb-case, substantially as described, and as shown in the accompanying drawing.

21,457. TOY MONEY-BANK. DANIEL COOKE, Camden, N. J. Filed Mar. 17, 1892. Serial No. 425,357. Term of patent 7 years.



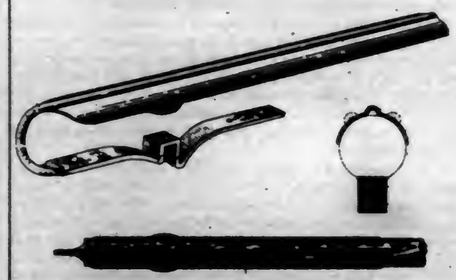
Claim.—The within-described design for a toy money-bank, as fully described, and illustrated in the accompanying drawing.

21,458. DANCING-DRESS. MARIE L. FULLER, New York, N. Y. Filed Mar. 7, 1892. Serial No. 424,067. Term of patent 7 years.



Claim.—The design for a dancing-dress, substantially as shown and described.

21,459. TONGUE-CAP. MARTIN A. JOHNSON, Stoughton, Wis. Filed Feb. 18, 1892. Serial No. 422,040. Term of patent 14 years.



Claim.—The design for a tongue-cap, as herein shown and described.

21,460. SPOON, &c. CALEB C. ADAMS, Brooklyn, N. Y. Filed Sept. 12, 1891. Serial No. 405,589. Term of patent 7 years.



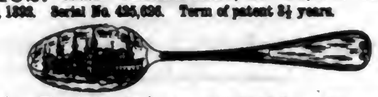
Claim.—The design for spoon and fork handles, herein shown and described.

21,461. SPOON. LOUIS R. HORTON, Providence, R. I., assignor to The J. R. & S. M. Knowles Company, same place. Filed Mar. 8, 1892. Serial No. 424,229. Term of patent 7 years.



Claim.—The design for a spoon, as herein shown and described.

21,462. SPOON. SAMUEL F. MYERS, New York, N. Y. Filed Mar. 18, 1892. Serial No. 425,626. Term of patent 3½ years.



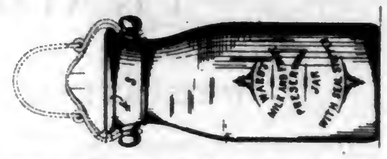
Claim.—The design for a spoon, substantially as shown and described.

21,463. SPOON. DEAN SOUTHWORTH, Braintree, Mass. Filed Mar. 8, 1892. Serial No. 424,232. Term of patent 3½ years.



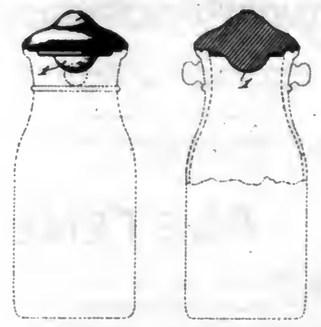
Claim.—The design for a spoon or similar handle, substantially as shown and described.

21,464. JAR. FRANK K. WARD, Washington, D. C. Filed Mar. 10, 1892. Serial No. 424,453. Term of patent 14 years.



Claim.—The design for a jar, substantially as shown and described.

21,465. JAR-STOPPER. FRANK K. WARD, Washington, D. C. Filed Mar. 10, 1892. Serial No. 424,453. Term of patent 14 years.



Claim.—The design for a jar-stopper, substantially as shown and described.

21,466. ORNAMENTATION OF GLASSWARE. WALTER A. WOOD, Honesdale, Pa., assignor to T. B. Clark & Co., same place. Filed Mar. 12, 1892. Serial No. 424,716. Term of patent 14 years.



Claim.—The design for the ornamentation of glassware, as herein described and shown.

TRADE-MARKS

REGISTERED APRIL 12, 1892.

20,954. PUZZLE. WILLIAM H. COLEHAW, Chicago, Ill. Filed Mar. 7, 1892.

CHAUNCEY-DEPEW'S-DILEMMA.

Essential feature.—The words "CHAUNCEY DEPEW'S DILEMMA." Used since October 1, 1891.

20,955. FLAVORING EXTRACTS FOR FOODS. MATHEW J. CHRIST, Syracuse, N. Y. Filed Feb. 29, 1892.

PASTENE

Essential feature.—The word "PASTENE." Used since September 1, 1891.

20,956. TIN AND OTHER METAL PLATES. PHELPS, DODGE & Co., New York, N. Y. Filed Mar. 10, 1892.

PHELPS.

Essential feature.—The word "PHELPS." Used since 1885.

20,957. CONFECTIONS AND CANDIES. PAN CONFECTION COMPANY, Chicago, Ill. Filed Mar. 12, 1892.



Essential feature.—The representation of a steam-heated revolubie pan with the words "PAN CONFECTION" appearing prominently thereon. Used since July 8, 1891.

20,958. VEGETABLE OIL USED AS A REMEDY FOR RHEUMATISM OR PAINS IN THE BACK AND LIMBS. SCHAEFER & Co., Cleveland, Ohio. Filed Mar. 7, 1892.



Essential feature.—The words "YELLOW MOUNTAIN OIL" and the representation of a rocky island surmounted by a bottle, from which issue streams which run down the sides of the mountain into the sea. Used since August 1, 1882.

20,959. LEATHER FOR THE UPPERS OF BOOTS AND SHOES AND FOR BOOTS AND SHOES. ALLEN, FIELD & LAWRENCE, Boston, Mass. Filed Mar. 17, 1892.



Essential feature.—The word "TAURUS." Used since March 3, 1892.

20,960. SUBSTITUTE FOR SHELLAC. BURBANK & RYDER, Boston and Middleborough, Mass. Filed Mar. 18, 1892.

PRIMUM TEGUMENTUM

Essential feature.—The words "PRIMUM TEGUMENTUM." Used since November 15, 1889.

20,961. WHISKY. A. DEYPOOS & Co., New York, N. Y. Filed Mar. 18, 1892.

SYLVAN VALLEY

Essential feature.—The words "SYLVAN VALLEY." Used since March 1, 1892.

20,962. BOOTS AND SHOES AND LEATHER FOR THE UPPERS OF BOOTS AND SHOES. RICE & HUTCHINS, Boston, Mass. Filed Mar. 17, 1892.

REXCALF

Essential feature.—The word "REXCALF." Used since June, 1891.

20,963. ANTISEPTICS. JUNIUS M. STEVENS, Brooklyn, N. Y. Filed Mar. 18, 1892.

DEODORINE.

Essential feature.—The word "DEODORINE." Used since March 15, 1892.

20,964. SPECIFIC FOR NERVE EXHAUSTION. CHARLES SLAUGHTER and DANIEL D. MURRAY, Duluth, Minn. Filed Mar. 14, 1892.

NEURO TECTON

Essential feature.—The word "NEURO TECTON." Used since March 1, 1892.

20,965. PLAYING-CARDS. THE UNITED STATES PRINTING COMPANY, Cincinnati, Ohio. Filed Mar. 19, 1892.



Essential feature.—The abbreviation and numerals "NO. 21" and the word "JUNIOR." Used since October 6, 1891.

20,966. PLAYING-CARDS. THE UNITED STATES PRINTING COMPANY, Cincinnati, Ohio. Filed Mar. 19, 1892.



Essential feature.—The representation of a boy riding a bicycle and the circular device of a three-winged wheel. Used since October 6, 1891.

20,967. CENTRIFUGAL CREAMERS. AKTIEBOLAGET SEPARATOR, Stockholm, Sweden. Filed Mar. 16, 1892.

ALPHA

Essential feature.—The word "ALPHA." Used since October 1, 1889.

20,968. CENTRIFUGAL CREAMERS. AKTIEBOLAGET SEPARATOR, Stockholm, Sweden. Filed Mar. 16, 1892.

BABY

Essential feature.—The word "BABY." Used since February 1, 1887.

20,969. PAPER FOR PRINTING AND WRITING PURPOSES. JOHN R. WATKINS, New York, N. Y. Filed Nov. 22, 1889.



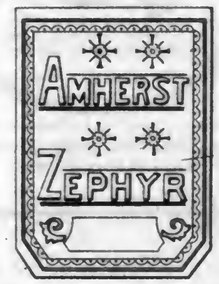
Essential feature.—The representation of an incandescent electric lamp. Used since June 6, 1888.

20,970. ARMPIT-SHIELDS. BROOKLYN SHIELD CO., Brooklyn, N. Y. Filed Mar. 15, 1892.

COMMON SENSE.

Essential feature.—The words "COMMON SENSE." Used since March 1, 1892.

20,971. GINGHAMS. BERKSHIRE MANUFACTURING COMPANY, LIMITED, Philadelphia, Pa. Filed Feb. 18, 1892.



Essential feature.—A shield-shaped figure with a field of golden color and the words "AMHERST ZEPHYR" within said field. Used since January, 1889.

20,972. HATS. COOK, LYMAN & SEIXAS, Chicago, Ill. Filed Mar. 10, 1892.



Essential feature.—The representation of a medallion containing the monogram "CL & S" and the words "THE BUCKSKIN HAT." Used since October 15, 1891.

20,973. PREPARED FOOD FOR HORSES AND CATTLE. CHARLES MARVIN STOCK FOOD COMPANY, Newport, Ky., and Franklin, Pa. Filed Mar. 12, 1892.



Essential feature.—The word "ELECTIONEER" and the pictorial representation of a horse. Used since February 1, 1892.

20,974. PLOWS. DEERE & COMPANY, Moline, Ill. Filed Mar. 5, 1892.

RED JACKET

Essential feature.—The words "RED JACKET." Used since July 3, 1890.

20,975. TARLETAN, LACE-NET, AND ALL OTHER COTTON DRESS GOODS. MAX LANDSMANN, New York, N. Y. Filed Feb. 24, 1892.



Essential feature.—The representation of a safe and the word "FIREPROOF." Used since March 16, 1891.

20,976. EDGE TOOLS AND CUTLERY OF ALL KINDS. McKNIGHT & Co., Wichita, Kans., and New York, N. Y. Filed Mar. 3, 1892.

ROYAL WORCESTER

Essential feature.—The words "ROYAL WORCESTER." Used since February 15, 1891.

20,977. KIDNEY AND LIVER CURE, BLOOD-PURIFIER, PILLS, AND OINTMENT. WILKINS & BECKNER, Greenfield, Ind. Filed Feb. 25, 1892.



Essential feature.—The word "ACME" with a monogram of the letters "W" and "B." Used since February 22, 1891.

PHOTO-LITH. THE NORRIS PETERS CO. WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE SHANNON.

Decided October 21, 1891.

EVIDENCE OF PATENTABILITY.

Where several inventors are striving for the same end and all of them fall just a little short of its attainment, the existence of that state of facts is practically conclusive evidence that he who attains the whole measure of success does so by doing something that was not obvious, and that involves patentable invention.

APPEAL from Examiners-in-Chief.

SOFT WOOD.

Application of John Shannon filed January 30, 1891, No. 379,647.

Messrs. W. Bakewell & Son and *Mr. J. R. Edson* for the applicant.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Examiners-in-Chief denying patentable novelty to the subject-matter of the following claim:

As a new article of manufacture, wood having a natural soft body, and an indurated surface comprising series of closely-adjacent stony plugs of mineral paste, set in artificial indentations arranged in proper order to simulate the natural surface appearance of hard wood, substantially as and for the purposes described.

The references are patents to Bernard, September 24, 1867, No. 69,165; Chambers, December 17, 1867, No. 72,366; Pelstring, May 21, 1878, No. 204,078; Tripler, April 20, 1879, No. 214,970; Struppe, February 22, 1881, No. 238,181; Brillinger, November 18, 1883, No. 288,302; McHugh, October 2, 1888, No. 390,611.

The patents to Bernard and Chambers may be dismissed from further consideration with the remark that they show simply filling compositions, which might properly be called "the mineral paste," specified in the above claim.

Pelstring's patent describes—

a revolving drum having on its peripheral face an electrotyped or engraved plate, which, having suitable raised parts corresponding to the indentations of the grain of the wood to be imitated, serves to impress in any board passed under it the exact imitation of the desired grain, said raised surfaces being inked with a suitable composition.

The practice of Pelstring's improvement produces no "indurated surface" nor any "series of closely-adjacent stony plugs of mineral paste."

Tripler says in his specification:

My improvement consists, essentially, in cutting out, tearing out, or otherwise actually removing some of the material of the base along those lines or parts of lines where the grain of the wood to be imitated would naturally appear. * * * To complete the imitation, I prefer to stain or color the artificially-grained wood or base.

Tripler has no "indurated surface." He has no "closely-adjacent stony plugs of mineral paste."

Struppe says that his improvement—

consists, essentially, in a new and improved construction of the rolls used to produce the imitation grain and prepare the wood for the subsequent process of dyeing where such is employed.

Struppe shows no "indurated surface" and no "closely-adjacent stony plugs of mineral paste."

Brillinger's invention is an improvement in the rolls used for the general purpose of imitating woods, and he says:

My roll * * * is originally a plain-surfaced metal roll, upon which the desired grain is sketched or imprinted and the surface of the roll not so marked cut away, leaving the grain in full relief thereon.

Brillinger makes no suggestion of an "indurated surface" nor of "closely-adjacent stony plugs of mineral paste."

The patent to McHugh more nearly anticipates applicant's improvement than any of the other references. He says in that patent that he has invented—

certain new and useful improvements in processes for inlaying.

Also:

I * * * engrave or stamp in the surface of the article the required design or pattern of the work. I then take a plastic material of some kind—such as a mixture of whiting and glue—of a nature that will become hard when dry, and fill the cavities of the engraved figure or design with the same in such a manner that the plastic material shall be level with the surface of the article.

On referring to the drawing it is to be seen that the pattern cut in the wood and afterward filled with the paste is of some ornamental figure, having a surface of considerable breadth at each point, leaving all the remainder of the surface of the wood untouched. No one on seeing the thing produced by McHugh would have applicant's improvement suggested to his mind, nor are the two things the same in substance, when properly understood. Applicant not only simulates the appearance of a hard-wood surface upon a body of soft wood, but he actually indurates that surface by quick alternations of compressed wood and hardened mineral paste over far the larger part of its whole area to resist wear and injury in a degree perhaps superior to that in which such qualities are possessed by the wood imitated.

No one of these references suggests the improvement which has been arrived at by applicant, and their very multiplicity, when all have fallen short of the result which he has actually attained, is evidence of the exercise of patentable invention on his part, for when a number of inventors are reaching out for a desirable end and all of them fall just a little short of its attainment the existence of that state of facts is practically conclusive evidence that he who attains the whole measure of success does so by doing something which was not obvious and which involves patentable invention.

The decision of the Examiners-in-Chief is reversed.

THOMSON *v.* RIES.

Decided November 14, 1891.

REDUCTION TO PRACTICE, WHAT IS REASONABLE DILIGENCE IN.

Where an applicant delays for more than two years after his conception of invention before reducing it to practice, and where it appears that he had abundant means and was busy meanwhile upon other inventions, and the actual reduction to practice was a simple matter and one not involving great time or expense, *Held* applicant was not reasonably diligent.

ELECTRIC-RIVETING APPARATUS.

Application of Elihu Thomson filed June 14, 1889, No. 314,303. Patent granted to E. E. Ries May 14, 1889, No. 403,374.

Mr. H. C. Townsend for Thomson.
Mr. Joseph J. Lyons for Ries.

SIMONDS, *Commissioner:*

These are two interferences pertaining to the same subject-matter. One of them applies to a process and the other to the apparatus for putting that process in practice. The process interference is between the application of Ries, filed December 10, 1888, and the patent of Thomson, granted January 8, 1889, upon an application filed October 12, 1888. The apparatus interference is between the application of Thomson filed June 14, 1889, and the patent of Ries granted May 14, 1889, upon an application filed March 5, 1889.

The issue in the process interference is:

The herein-described method of riveting, consisting in heating the rivet or rivet-blank electrically while in place, and then heading either or both ends of the same.

The issue in the apparatus interference is:

An electric-riveting apparatus consisting, essentially, of a metallic anvil and a metallic heading-tool, and a charged electric circuit, including the anvil and tool, substantially as described.

As regards both of the inventors, both of the inventions in controversy were necessarily made at one time. There is practically, therefore, but one question in issue between these two contestants.

The case is one in which it is necessary to give a meaning or construction to the issues—that is, to definitely decide what they are intended to cover. They do not cover the electrical upsetting of one end of a metal bar, for that is disclosed in Thomson's patent, No. 396,010, of January 8, 1889. They do not cover the fastening of a single sheet of metal upon a bar by upsetting the metal upon both sides of the sheet, for that is disclosed in the patent to Thomson, (together with Herman Lemp,) No. 418,198, of December 31, 1889. In view of these two patents it is necessary to hold that the issues are both limited to the fastening together of two or more plates by a rivet passing through the plates and headed either at one or both ends electrically.

The testimony is meager in some respects; but, giving equal weight to that offered by both parties, it is found that Thomson conceived of the inventions in controversy May 21, 1886, and reduced them to practice in the second week of August, 1888. It is also found that Ries conceived of the inventions in controversy in the latter part of 1886, and reduced them to practice in July, 1888.

The question then comes down to this: Was Thomson's delay between his conception in May, 1886, and his reduction to practice in August, 1888, consistent with the exercise of reasonable diligence? Thomson seems to have done nothing meanwhile about this particular invention, although he did about other kindred inventions. The reasonable diligence which is demanded from an inventor in a contest over priority of invention is something different from that delay concerning a completed invention which the law calls abandonment to the public. The two things are differently and specifically stated in the statutes. The spirit and meaning of the statute would seem to be that a higher degree of diligence is necessary in adapting and perfecting an invention once conceived of, in order to create a right to a patent, than is necessary in dealing with a completed invention, in order to negative the finding of abandonment to the public.

Here, on the part of Thomson, was a delay of more than two years. Evidently he was possessed of abundant means. In August, 1888, when he reduced to practice, it took but a few hours to produce from machinery, which he had on hand, the requisite apparatus and effect that reduction. Under the circumstances, involving a delay of more than two years, with abundant means and opportunities at hand, and busy meanwhile about other kindred inventions, I find that he did not exercise reasonable diligence.

The decision of the Examiners-in-Chief is reversed, and priority of invention is awarded to Ries.

EX PARTE BENJAMIN AND BAILEY.

Decided March 1, 1892.

POWER OF ATTORNEY—JOINT APPLICANTS.

Where one of two joint applicants subsequently files a sole application for the same improvement, a power of attorney, executed by the other of the joint applicants and their assignee, will be accepted by this Office as sufficient.

SIMONDS, *Commissioner:*

Lyde W. Benjamin and Joseph S. Bailey filed an application for patent upon a certain improvement April 21, 1890, and in that application at present there is no attorney of record.

Lyde W. Benjamin filed a sole application for patent for the same improvement August 19, 1891, with attorneys duly appointed.

Bailey and an assignee of Benjamin and Bailey now present a paper appointing as attorney in the former of these two applications an agent who has never before appeared in either, and the question is whether under this appointment, Benjamin not joining therein, the proposed attorney shall be allowed to act as such.

The rule is familiar that where there are two men owning a patent and one of them desires to bring an equity suit for infringement in which the other will not join, the former may bring the suit, naming and making his co-owner a nominal defendant. The underlying principle of that equity practice warrants the approval of the power of attorney presented by Bailey and the assignee, and it is accordingly approved and accepted.

EX PARTE EDDY.

Decided April 1, 1892.

CONCESSION OF PRIORITY—ESTOPPEL.

Where one party to an interference makes a formal concession of priority to his opponent and a judgment of the Examiner of Interferences is based thereon, such party is estopped from afterward claiming the conceded subject-matter.

APPEAL from the Examiners-in-Chief.

PHOTOGRAPHIC-CAMERA SHUTTER.

Application of Charles W. Eddy filed January 14, 1889, No. 296,254.

Mr. Phillips Abbott and *Messrs. Foster & Freeman* for the applicant.

SIMONDS, *Commissioner:*

This is an appeal from a decision of the Board of Examiners-in-Chief for reasons expressed as follows:

That the Examiners-in-Chief erred in holding that the issue of the former interference and the concession were the same as the present first claim.
That the Examiners-in-Chief erred in not considering or allowing applicant to argue the question of estoppel.

The part of the interference issue referred to material to be considered is as follows:

In a camera, the combination of a lens-tube, a shutter provided with two portions with an opening between them.

The part of the present claim appealed material to be considered is as follows:

The combination, in shutter mechanism for photographic cameras, of a shutter provided with an opening.

Upon the said interference issue Eddy conceded priority of invention to his opponent, and upon this branch of the appeal the material question is whether there is a substantial and patentable difference between that part of the said interference issue which is quoted and that part of the present claim, also quoted.

The interference issue specifically mentions "a lens-tube," which specific mention is absent from the present claim; but that present claim by its mention of "photographic cameras" necessarily includes the presence of a lens, and the lens being present then the presence or absence of a specific tube for the lens is an unsubstantial matter.

Again, the interference issue specifies "a shutter provided with two portions with an opening between them," while the present claim specifies in the same regard "a shutter provided with an opening." This difference is also held to be unsubstantial. It is therefore held that the present claim and the said interference issue are substantially identical.

The more important question is whether the applicant is now estopped from making his present claim. On the 24th of January, 1890, Eddy filed this concession of priority as to said interference issue:

I hereby concede priority of invention of the subject-matter involved in the above interference to * * * contestant herein, and I make said concession as the inventor, applicant, and sole owner of the invention described and claimed in my said application.

Thereupon this judgment was rendered by the Examiner of Interferences on January 27, 1890:

A concession by Eddy * * * of priority of invention of the matter in issue in this interference having been filed, and the same having been found to comply with the requirements of Rule 125, judgment of priority of invention is hereby rendered under said rule in favor of * * * [the contestant.] Said concession being construed as a waiver of the right of appeal from a decision rendered in accordance therewith, this judgment becomes final, and it is ordered that the files and papers of the respective parties be forthwith transmitted to the Primary Examiner.

Bouvier, in defining estoppel by matter of record, says it is—

such as arises from the adjudication of a competent court.

The decision of the Examiner of Interferences just quoted is such "adjudication of a competent court," and while in force operates as an estoppel to prevent applicant from having the claim he now presents. After such a concession is filed it becomes an estoppel whenever the opposing party acts upon it to his detriment. It also becomes an estoppel when the proper Office tribunal has accepted and acted upon it. Whether before the happening of either of these things he who files such a concession may withdraw it when his opponent objects is a question not passed upon herein.

This decision is made without prejudice to the right of applicant to move to vacate the judgment upon consent of parties and upon a showing that the concession was based upon a mistake of fact.

The decision of the Board of Examiners-in-Chief is affirmed.

EX PARTE STEVENS.

Decided April 6, 1892.

ASSIGNEE CANNOT APPLY FOR THE INVENTOR'S PATENT—REVISED STATUTES, SECTION 4896.

The assignee of an inventor who died before making his application has no standing as an applicant before the Patent Office, and this is true where the application sought to be made by the the assignee is a division of one properly filed by the inventor.

IN the matter of the request of Calvin Amory Stevens, assignee, to be permitted to file and prosecute an application for patent for an invention made by David V. Kyte, deceased.

SIMONDS, *Commissioner:*

This is a request to the effect that an assignee of a deceased inventor may be allowed to file and prosecute an application for a patent which is a division of one duly made by the inventor while living. While the said application made by the inventor was pending in the Patent Office a portion of the claims were erased under a requirement of division. Then the inventor died, and a patent issued to his assignee September 22, 1891.

Prior to the date last mentioned the assignee came to the Patent Office with an application for patent covering the claims struck out from the original application, as aforesaid, upon the theory that such application was a division of the inventor's original application, and might be properly presented and prosecuted by an assignee.

The question for consideration is, whether under such circumstances the assignee may make and prosecute this application for patent without the co-operation of the administrator or executor of the deceased inventor.

In the original case the inventor made application for the patent now sought, and he made due oath that he had invented the matter therein claimed. Moreover, it is a fact that under section 4897 of the Revised Statutes—

any person who has an interest in an invention or discovery, whether as inventor, discoverer, or assignee, for which a patent was ordered to issue upon the payment of the final fee, but who fails to make payment thereof within six months from the time at which it was passed and allowed, and notice thereof was sent to the applicant or his agent, shall have a right to make an application for a patent for such invention or discovery the same as in the case of an original application.

It is also true that the improvement having been wholly assigned away by the inventor, his executor or administrator and heirs have no right legal or equitable therein. On the other hand, it is true that—

the patentee gets his right to the patent, not on the ground of any inherent natural right which he has, or right at common

law, but because he is entitled to it by the terms of the statute of the United States which gives it to him; and therefore he has no rights except in compliance with those terms and upon those conditions. (*American Hide and Leather Splitting and Dressing Machine Co.* v. *American Tool and Machine Co.*, 1 Holmes, 508.)

Again:

It is a proposition so axiomatic and elementary as to require no citation of authority that all the rights and remedies of inventors to the exclusive property in their inventions comes from the statutes. (*Refrigerating Machine Co.* v. *Featherstone*, 58 O. G., 1842.)

The principles enunciated in these decisions are sound, and under them there can be no doubt that if the assignee of a deceased inventor is to be permitted to make and prosecute an application for a patent for the improvement of that deceased inventor then his legal right, in distinction from his equitable right, so to do must appear somewhere in the statutes. Does such a legal right affirmatively appear anywhere in the statutes? It is believed that it does not. The following section of the statutes is applicable:

Sec. 4896. When any person having made any new invention or discovery for which a patent might have been granted dies before a patent is granted, the right of applying for and obtaining the patent shall devolve on his executor or administrator in trust for the heirs at law of the deceased in case he shall have died intestate; or if he shall have left a will disposing of the same, then in trust for his devi-ees in as full manner and on the same terms and conditions as the same might have been claimed or enjoyed by him in his life time; and when the application is made by such legal representatives the oath or affirmation required to be made shall be so varied in form that it can be made by them.

Under the terms of this section of the statute the executor or administrator must intervene if the inventor dies "before a patent is granted" for "any new invention or discovery for which a patent might have been granted." It is not enough that the inventor makes application before he dies. Judge Blodgett said in the case last cited:

Under the provisions of this section it is plain that on the death of James Boyle, while the proceedings to obtain the patent were incomplete, his administrator should have suggested his death to the Patent Office and taken up the prosecution of the application and secured the issue of the patent to the administrator. The statute by its express words provides for the administrator or executor to prosecute the application, in case of the death of the inventor, before the patent is granted.

The case is rendered all the stronger against the present assignee because his request is to be permitted to make the application for patent. Clearly upon the principles already stated he cannot be permitted to do that unless that application is, in contemplation of law, one and the same that the inventor made before his death. The Office has adjudicated that question practically in thousands of instances by always requiring a separate petition, oath, specification, drawing, and fees in every case.

It is believed and held that the application which the assignee now seeks to make and prosecute is not legally one and the same as the application which the inventor made before he died.

It follows that the application in question must be made by the executor or administrator of the deceased inventor, and the request is denied.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Maryland.

ASHTON VALVE COMPANY *v.* COALE MUFFLER AND SAFETY VALVE COMPANY.

Decided February 19, 1892.

INFRINGEMENT—SAFETY-VALVES AND MUFFLERS FOR SAFETY-VALVES.

In an action for infringement of Letters Patent No. 200,119, February 12, 1878, for an improvement in safety-valves, and No. 299,503, June 3, 1884, for a muffler for safety-valves, *Held* as to the first patent that the test of infringement lay in the pop-valve used and that defendant did not use the peculiar form used by the complainant, and as to second patent that the muffler patent No. 297,066, granted to Coale April 15, 1884, in conformity with which defendant's device was made, is a sufficient answer.

BILL for infringement of patent.

Mr. James E. Maynadier for the complainant.

Messrs. O'Brien & O'Brien, Mr. Hector T. Fenton, and *Mr. Robert J. Fisher* for the defendant.

Before BOND and MORRIS, Judges.

PER CURIAM:

The complainant asks for an injunction and account based upon Letters Patent No. 200,119, dated February 12, 1878, for an improvement in safety-valves, and Letters Patent No. 299,503, dated June 3, 1884, for a muffler for safety-valves.

The defendant is the manufacturer of a safety-valve and muffler which is alleged to be an infringement.

Complainant's patent, No. 200,119, is for an under-discharge pop-valve surrounded by a chamber or casing which prevents the escape of the steam after it has passed the safety-valve. There is no suggestion in the patent that the chamber surrounding the valve and preventing the free escape of steam was to be used for any muffling device. Ashton, the patentee, states in his specification that the main feature of his invention consists of a pop-valve having a chamber into which the steam enters as soon as the valve begins to rise and causes the valve to open largely and suddenly, in combination with a cylinder into which the valve rises, and a hood or casing to receive the escaping steam, making what he terms "an under-discharge pop-valve." Ashton's real invention and discovery shown in this patent was his peculiar form of pop-valve. He states that pop-valves are not new and that under-discharge valves are not new, but claims that he is the first to combine a pop-valve with an under-discharge device

His first claim is for the pop-valve in combination with a cylinder and casing, and his second claim is for the peculiar construction of the pop-valve itself, having a huddling chamber with perforations. It is not contended that the second claim is infringed, and it is the first claim which is in suit.

The combination of a simple under-discharge safety-valve, with a cylindrical jacket inclosing the spring and protecting it from the escaping steam, is shown in Patent No. 97,472, December 7, 1869, to Ashfield, and also in Patent No. 121,659, December 5, 1871, to Prescott. The exterior casing confining the escape of the steam, in combination with a simple safety-valve is shown in No. 195,003, September 11, 1877, to Guels. There could hardly be claimed to be invention in merely substituting the improved pop-valve, which was patented by Richardson in 1866, in any combination in which the simple valve had been used.

In the English patent to Giles, No. 891, sealed August 23, 1872, for an improvement in safety-valves, there is shown a pop-valve with under discharge and with the spring inclosed so as to exclude the steam, making an inner casing, and also with an outer casing to confine the steam, so that the steam passing the valve ascended between the inner and outer casing and then escaped through perforations in the top or other suitable outlets.

These prior patents show that there was no patentable novelty in the combination in complainant's first claim, so far as it claims simply the combination of a pop-valve, an inner casing, and an outer casing with a suitable outlet. The complainant, therefore, is obliged to base its contention for the patentable novelty of this claim of the patent upon something which certainly is not explicitly set out in the claim.

When an under-discharge safety-valve has the spring inclosed in a jacket or casing to protect it from the steam, the valve to some extent must work in the jacket as a piston does in a cylinder, and through this working space the confined steam, to some extent, penetrates, and if it has no outlet this, to some extent, creates a back-pressure which prevents the valve rising.

This back-pressure can be cured by making an opening from the interior of the spring-casing out to the atmosphere.

In the specification of complainant's patent it is said:

Besides the central hole in the cover *n*, (through which the upper part of the screw *m* passes,) I provide other holes, in order to give a free outlet to the air in the chamber *c*, and to such steam as passes into that chamber while the valve is rising.

This feature of providing a special vent for the spring-chamber is nowhere else mentioned in the specification, and is not spoken of as an invention or discovery. The vent-holes are not mentioned in any claim, but only the combination of his peculiar valve with a spring-chamber, and an outer casing "arranged to operate as described."

The patentee, Ashton, states that the main feature of his invention is his form of pop-valve and its under-discharge construction, and it seems quite evident from the language used that he did not consider the venting of the spring-chamber a discovery which he intended to claim in that patent. Ashton did, however, claim it in combination with other elements in a prior patent granted to them.

Patent No. 197,073, dated November 13, 1877, granted to Ashton about three weeks before the application for the patent in suit, is for an improvement in apparatus for utilizing the escape-steam from safety-valves on locomotives. In two of the drawings is shown the peculiar form of pop-valve claimed in the patent in suit, and he says:

Figures 2 and 3 show the details of the construction of the safety-valve, which will form the subject-matter of another application.

In the first claim of that patent he does claim the vented spring-chamber, in combination with a feed-water tank and other elements, but he does not claim it as a separate invention.

Whenever in a spring-chamber the head of the valve-spindle is carried through the top of the chamber and works up and down through the hole in the top of the chamber, as it does in Giles's patent of 1872, and as it does in the Ashton patent in suit, there is necessarily a venting of the chamber. In Ashton's locomotive feed-water device, in No. 181,624, there was need of additional venting on account of the great back-pressure caused by forcing the steam into the water-reservoir of the tender.

We are of opinion that in the second claim of complainant's patent, No. 200,119, the venting of the spring-chamber, if claimed at all, is claimed only in combination with the other elements of the claim, including complainant's peculiar form of pop-valve, and as defendant does not use complainant's peculiar form of pop-valve there is no infringement.

As to complainant's patent, No. 299,503, for a combination of a muffling-chamber surrounding a safety-valve, with a pipe communicating from the spring-chamber to the outside air—if defendant could be held to infringe it we think it a sufficient answer to cite the Coale patent, No. 297,066, granted April 15, 1884, on application filed January 17, 1884.

This muffler patent is prior to complainant's patent, No. 299,503, and defendant's device is made substantially in conformity with it.

Complainant has endeavored to carry the date of the invention of Ashton's patent, No. 299,503, back prior to the invention of Coale's, No. 297,066; but the burden is upon the complainant to establish this by a clear preponderance of proof sufficient to overcome the presumption arising from the grant of the prior patent.

We do not think the complainant has succeeded in doing so. The testimony as to the dates is purely from memory, unaided by any drawings or models or records which identify the device.

In our judgment the complainant's bill must be dismissed.

U. S. Circuit Court—District of Connecticut.

HAMMOND BUCKLE COMPANY *v.* GOODYEAR RUBBER COMPANY.

Decided February 13, 1892.

INFRINGEMENT—TEMPORARY INJUNCTION.

When the court has a real doubt whether there is any infringement, and assurances have been given that a prompt final hearing shall be had, temporary injunction will not issue.

SUIT by the Hammond Buckle Company against the Goodyear Rubber Company for infringement of a patent shoe-buckle. Heard on motion for a preliminary injunction.

Mr. George W. Hey for the complainant.

Mr. C. H. Duell for the defendant.

SHIPMAN, *J.:*

This bill in equity is to prevent the alleged infringement of Letters Patent No. 301,884, dated July 15, 1884, issued to Theodore E. King and Joseph C. Hammond, Jr., for a shoe-clasp. The present hearing was upon a motion for a temporary injunction. The clasp of the patent was described and the patent was construed in the opinion of this court in *Buckle Co.* v. *Hathaway*, (48 Fed. Rep., 305,) and in a subsequent decision of this court upon a motion for rehearing in the same cause. (48 Fed. Rep., 834.) The buckle of the defendant is made under Letters Patent No. 418,924, dated January 7, 1890, to John Nase, and consists of two plates firmly riveted together at the forward end and free at the other end. The upper plate is bifurcated at its rear end, so as to form rearwardly-extending arms. The tongue is provided with flattened laterally-projecting pivots, which are journaled in angular flanged bearings, formed by bending the ends of the lower plate upward at right angles, and the upper plate is cut through or slotted in each of the rearward extensions, permitting the upwardly-extending ends or lips of the lower plate to project

through the slots. The pivots of the tongue pry apart the two leaves of the tongue-plate in opening the clasp, and the upward projections of the under plate are and must be long enough to be retained in the slots in the upper plate when the clasp is opened, so that the tongue shall not slip out from the tongue-plate. When the tongue engages with the catch-plate, the latter is pulled over the bifurcated extensions of the upper plate, and rests upon the upwardly-projecting ends of the lower plate, which constitute one side of the bearings in which the tongue is pivoted. These projections support the catch-plate when strain is applied by the pull of the tongue upon it. The bifurcated extensions of the double-leaved tongue-plate of the patented buckle were for the purpose—

of forming supports, upon which the catch-plate is drawn as the tongue is closed, and which prevent the catch-plate from changing its position.

The plaintiff and its experts think that each plate of the defendant's buckle extends rearwardly beyond the pivots, and that both plates form the supports which are described in the patent. It is not clear to me that the arms of the lower plate extend rearwardly of the pivot in the sense in which that language is used in the patent. The ends of the lower plate form the bearings for the tongue and are turned upward at right angles; and it does not seem to me, though I do not assert it positively, that the rearward extension beyond the pivot of the lower plate of the patented buckle exists in the defendant's buckle, as contemplated in the patent, though it may nominally exist.

Upon the question of infringement it is to be premised that the arctic-buckle patents and the modifications of the same general type of clasp-buckles are so numerous that the scope of each patented improvement must be a narrow one, and differences in construction which are apparently slight may make patentable differences. It has been heretofore held upon this patent that the mere facts that the upper plate of an alleged infringing buckle is a spring-plate, and that the lower plate does not extend rearwardly of the pivot, do not prevent infringement, provided the bifurcated upper plate extends on both sides of the tongue rearward, to afford a bearing-suface for the catch-plate.

The defendant's buckle has an additional peculiarity of construction. If the suggestion which has been made is correct, the lower plate does not extend rearwardly of the pivot, and the catch-plate rests upon its upturned ends, whereas the catch-plate of buckle D in the Hathaway case rested directly upon and was supported by the upper plate. In this buckle the catch-plate is directly supported by the upwardly-projecting sides of the bearings in which the tongue is journaled. The position of the defendant is that it is not indirectly supported by the upper plate, but that the extensions of that plate are for the purpose of protecting or walling in the upturned ends of the under plate, so that they shall not be drawn away, and thus permit the pivots of the tongue to slip out from their bearings.

I do not decide that there is no infringement, but I think there are such doubts in regard to the question that a temporary injunction should not be granted, especially as assurances were given that a prompt final hearing can be had. The case is in such narrow limits that these assurances can be fully carried out.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 3. TUESDAY, APRIL 19, 1892. PRICE—$5 per year.

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Attorneys.

(ORDER NO. 742.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., February 29, 1892.

With the approval of the Secretary of the Interior, George G. Schroeder, of Washington, D. C., is hereby disbarred from practice before the Patent Office, pursuant to section 487 of the Revised Statutes.

W. E. SIMONDS,
Commissioner.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Issue of April 19, 1892.

Patents	469	No. 472,970 to No. 473,438, inclusive.
Designs	29	No. 21,467 to No. 21,495, inclusive.
Trade-Marks	41	No. 20,978 to No. 21,018, inclusive.
Labels	None.	
Reissues	None.	
Total issue	539	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nevada	....	....
Arizona Territory	....	....	New Hampshire	7	....
Arkansas	....	....	New Jersey	33	2
California	23	1	New York	62	9
Colorado	5	....	North Carolina	2	....
Connecticut	24	....	North Dakota	....	....
Delaware	1	....	Ohio	33	2
District of Columbia	6	....	Oklahoma Territ'y	....	....
Florida	1	....	Oregon	....	....
Georgia	2	....	Pennsylvania	35	5
Idaho	1	....	Rhode Island	9	....
Illinois	44	1	South Carolina	2	....
Indian Territory	....	....	South Dakota	2	....
Indiana	14	3	Tennessee	2	2
Iowa	12	....	Texas	14	....
Kansas	6	....	Utah Territory	1	....
Kentucky	4	....	Vermont	1	....
Louisiana	1	....	Virginia	....	1
Maine	1	2	Washington	1	....
Maryland	7	1	West Virginia	1	1
Massachusetts	26	1	Wisconsin	11	2
Michigan	11	2	Wyoming	1	....
Minnesota	6	....	U. S. Army	1	....
Mississippi	1	....	U. S. Navy	....	....
Missouri	27	....			
Montana	....	....	Total to citizens of the United States	447	35
Nebraska	5	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Mexico	....	....
Austria-Hungary	1	....	Netherlands	....	....
Belgium	....	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	New Zealand	....	....
Canada	10	1	Norway	....	....
Chile, Republic of	....	....	Peru	1	....
Colombia	....	....	Russia	....	....
Cuba	....	1	Scotland	1	....
Ecuador	....	....	South Australia	....	....
England	12	2	Spain	....	....
France	7	....	Sweden	1	....
Germany	12	2	Switzerland	3	....
Honduras	....	....	Victoria	3	....
Ireland	....	....			
Italy	....	....	Total to citizens of foreign countries	51	6
Japan	....	....			

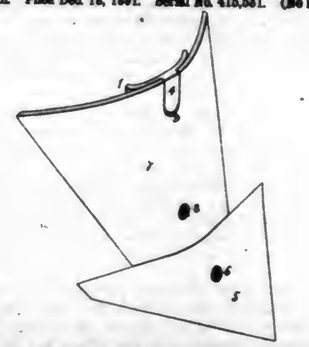
CONDITION OF THE WORK in the Examining Divisions at the Close of Business April 12, 1892.

Room No.	Division No.	Subjects of invention.	Oldest new application awaiting office action. New.	Oldest new application awaiting office action. Amended.	No. of applications awaiting action.	Arrears in months.
209	XIV	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Feb. 29	Apr. 9	64	
105	XI	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Feb. 28	Apr. 8	226	
240	VII	Harvesters, Games and Toys	Feb. 22	Apr. 5	213	
39	XXXI	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Feb. 18	Apr. 4	149	
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30	XII	Mechanical Engineering, Store-Service, etc	Feb. 24	Apr. 2	174	Between 1–2.
158	XX	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Feb. 15	Apr. 2	165	
317	V	Fine Arts, Stationery, Book-Binding, Music, etc.	Mar. 2	Mar. 31	140	
111	XXXII	Advertising, Baggage, Packing and Storing Vessels, etc.	Feb. 18	Mar. 31	298	
25	XXX	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Feb. 15	Mar. 21	240	
221	XXIII	Instruments of Precision, Acoustics, Optics, etc.	Feb. 12	Mar. 19	215	
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149	III	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Jan. 14	Mar. 28	204	
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102	XIX	Stoves and Furnaces	Jan. 6	Mar. 8	463	
123	XXIX	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Nov. 17	Mar. 18	425	
87	XXVI	Electricity, Generation, Distribution, etc	Nov. 19	Mar. 8	370	Between 4–5.
85	XXVIII	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Nov. 28	Feb. 14	369	
211	XV	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Oct. 9	Mar. 3	294	Between 6–7.
		Total number of applications awaiting action			8,482	
		Designs	Apr. 8	Apr. 8	19	Under 1.
		Trade-Marks	Apr. 8	Apr. 7	10	

PATENTS

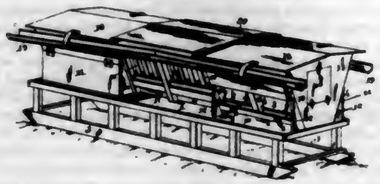
GRANTED APRIL 19, 1892.

472,970. CULTIVATOR-SHOVEL. CHARLES A. ANDERSON, Rockford, Ill. Filed Dec. 18, 1891. Serial No. 415,531. (No model.)



Claim.—A cultivator-shovel comprising a standard having a hole near its lower end, a slotted hole near its middle, and a projecting lug on its upper end, a point secured to the lower end of the standard, a mold-board, a hole near its center and a notch in one of its edges, and a bolt extending through the hole of the board and through the slotted hole of the standard, the notch in the edge of the mold-board engaging the lug on the standard.

472,971. FEED-TROUGH. JOHN S. ANDERSON, Corsicana, Tex. Filed Sept. 5, 1891. Serial No. 404,841. (No model.)

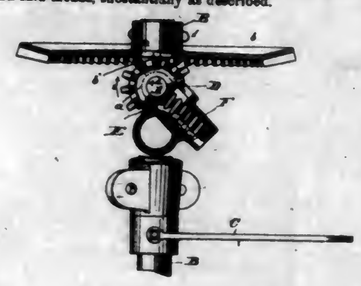


Claim.—A combined feed rack and trough comprising a platform mounted on runners and provided at its sides with troughs, bins arranged at the ends of the platform and provided at the lower ends of their sides with openings communicating with the troughs and having bars arranged on the outer faces of the sides and provided with recesses, slides arranged in said recesses and adapted to vary the size of said openings, strips arranged on the outer edges of the inclined bars, and set-screws connecting the strips and the slides and holding the same in frictional contact with the bars, whereby the slides are secured in their adjustment, and the hinged doors arranged at the sides of the bins, substantially as described.

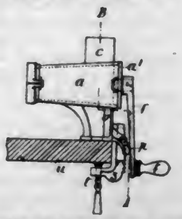
472,972. MECHANICAL MOVEMENT. JOHN F. APPLEBY, Santa Cruz, Cal., and JOHN F. STEWARD, Chicago, assignors to the William Deering & Company, Chicago, Ill. Filed Oct. 26, 1891. Serial No. 409,922. (No model.)

Claim.—1. The combination of the driven mutilated gear, the driving-pinion, and a yieldingly-held bearing, said bearing for supporting said pinion adapted to permit the pinion to move into meshing position with the gear in such direction that the stress of labor shall tend to hold it in such position, substantially as described.

2. In combination with the mutilated gear *b*, the driving-pinion, a yieldingly-held bearing for supporting said pinion, the latter adapted by its propelling force to tend to remain in proper mesh when running, but adapted when idle to be moved out of mesh with the teeth of the gear *b* when said gear is rotated by means other than the driving-pinion, and said means, substantially as described.



472,973. MEAT-CRUSHER, &c. SAMUEL ARNAUD, Maidenhead, England. Filed Jan. 29, 1892. Serial No. 419,726. (No model.) Patented in England July 28, 1888, No. 10,959.



Claim.—1. A machine for crushing and grinding meat and for similar purposes, comprising a casing formed with substantially longitudinal grooves on its interior and provided with a receiving aperture or hopper, and a roller having a series of substantially longitudinal grooves adjacent to said hopper and having other portions provided with a series of grooves extending around said roller transversely adjacent to the longitudinal grooves of the casing, substantially as described.

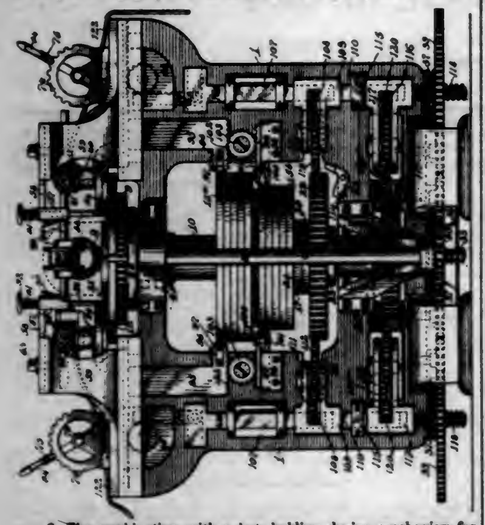
2. A machine for crushing and grinding meat and for similar purposes, comprising a casing formed with substantially longitudinal grooves on its interior and provided with a receiving-hopper, and a roller having a series of substantially longitudinal grooves adjacent to the hopper and having other portions of its surface provided with grooves extending around said roller transversely, said grooves being interrupted at intervals, substantially as described.

3. A machine for crushing or grinding meat and for other purposes, comprising a casing having a grooved interior, a grooved roller adapted to be rotated therein, said casing having an enlarged portion adjacent to the end of said roller, and a knife secured to said roller extending transversely beyond the periphery of the same and engaging the enlarged portion of the cylinder, substantially as described.

4. A machine for crushing or grinding meat and for similar purposes, comprising a casing formed with substantially longitudinal grooves, a roller adapted to be rotated therein and having grooves formed, as shown, a blade or scraper carrying a series of pins secured to the said roller, and a grid or perforated plate clamped over the discharge end of the casing, all substantially as and for the purposes described.

472,974. MACHINE FOR CURLING HAT-RIMS. THOMAS E. AVERY, Danbury, Conn. Filed Aug. 21, 1891. Serial No. 403,260. (No model.)

Claim.—1. The combination, with a rotary spindle carrying a compound cam and provided with means for retaining a hat in place, of slides carrying forming and curling rollers, substantially as described and shown, suitable means for locking said slides together, an arm connected to one of said slides and carrying a roller engaging one section of the compound cam, a roller carried by a slide and engaging the other section of the compound cam, said slide and arm having racks, and a pinion engaging said racks, as and for the purpose set forth.



2. The combination, with a hat-holding device, mechanism for acting upon the hat, and a compound cam consisting of two sections, each section consisting of a series of ovals and each oval corresponding in outline with the oval on the other section occupying the same relative position, of an arm carrying a roller engaging one section of the compound cam, connections between said arm and the mechanism which acts upon the hat, a slide carrying a roller engaging the other section of the compound cam, said slide and arm having racks, and a pinion engaging said racks, as and for the purpose set forth.

3. The combination, with a hat-holding device, mechanism for acting upon the hat, and the compound cam, of slides 60, 61, and 62, suitable means for locking said slides together, a roller carried by an arm extending from one of said slides which engages one section of the compound cam, said arm being provided with a rack, a roller carried by a rack which engages the other section of the compound cam, and a pinion engaging said racks, substantially as described.

4. The combination, with suitable curling mechanism and means for retaining a hat while it is being operated upon, the compound cam, rollers 97 and 101, and intermediate connections, substantially as described and shown, of slide 60, by which roller 97 is carried, slide 61, moving in slide 60, slide 62, moving in slide 61, and suitable means, substantially as described, for locking said slides together.

5. The combination, with the compound cam, rollers 97 and 101, and intermediate connections, substantially as described and shown, of a hat-holding device, mechanism for acting upon the hat, slide 60, by which roller 97 is carried and which is provided with slots 65 and a rack 69, slide 61, moving in slide 60 and having plates 66 extending through said slots, rack 70, means for actuating said rack, pinion 68, journaled between the plates and engaging racks 69 and 70, slide 62, moving in slide 61, and means for locking slides 61 and 62 together.

6. The combination, with plate 12, means for retaining a hat thereon, and the adjustable curling-roller, of forming-roller 55, carried by spindle 56, slide 58, having guide 57, in which the spindle slides, spring 91 for raising the spindle and roller out of operative position, and a pawl 93 for locking the roller in operative position against the power of the spring.

7. The combination, with plate 12 and means for retaining a hat thereon, of slide 61, carrying forming-roller 55 and having notched segment-plate 74, slide 62, carrying curling-roller 54 and having hub 77, with perforated turning plug 77^a, and lever 75, pivoted to the segment-plate and reduced at its lower end to engage the turning-plug and provided at its outer end with a pawl engaging the segment-plate, whereby slide 62 may be moved in or out relatively to slide 61 or said slides may be locked together.

8. The combination, with plate 12, means for retaining a hat thereon, slide 62, and the curling-roller carried thereby, of slide 61, having notched segment-plate 74 and the forming-roller, and lever 75, pivoted to the segment-plate and engaging slide 62, the outer end of said lever having a pawl which engages the notches on the segment-plate, whereby the curling-roller may be moved outward away from the forming-roller and the latter may be raised out of operative position when it is desired to put on or remove a hat.

9. The combination, with plate 12, means for retaining a hat thereon, slide 61, carrying the forming-roller, slide 62, carrying the curling-roller, and suitable means for locking said plates together, of slide 60, having arm 95, carrying roller 97, and having a rack 102, the compound cam, roller 101 and intermediate connections, and suitable means for locking slide 60 to slides 61 and 62.

10. The combination, with plate 12, means for retaining a hat thereon, slide 62, carrying the curling-roller, slide 61, carrying the forming-roller and having downwardly-extending plates 66, and suitable means for locking said slides together, of the compound cam, rollers 97 and 101, and intermediate connections whereby roller 97 is kept in contact with said cam, slide 60, having slots 65, through which plates 66 pass, racks 69 and 70, pinion 68, journaled between plates 66 and engaging said racks, and means for actuating rack 70, said pinion acting to lock slides 60 and 61 together, except when rack 70 is moved vertically.

11. The hat-holding device, mechanism for acting upon the hat, the compound cam, slide 61, having downwardly-extending plates 66, slide 62, and slide 60, having slots 65, rack 69, and intermediate connections between slide 60 and the compound cam, in combination with rack 70, pinion 68, journaled between plates 66 and engaging racks 69 and 70, a slide having a threaded rod at its lower end, a gear 39, internally threaded to engage the rod, and means for holding said gear against vertical movement, so that rotation of said gear will move the rod up or down and will move slides 61 and 62 in or out, as may be required.

12. The combination, with a hat-holding device, mechanism for acting upon the hat, the compound cam, slide 61, having downwardly-extending plates 66, slide 62, and slide 60, having slots 65 and rack 69, and intermediate connections between slide 60 and the compound cam, of racks 70, pinion 68, journaled between plates 66 and engaging racks 69 and 70, slide 106, having recess 108, spindle 10, having gear 22, and cam-gear 112, constructed as described, which engages said gear and the recess in the slide, whereby slide 106 and rack 70 may be raised and slides 61 and 62 moved outward, as and for the purpose set forth.

13. The combination, with a hat-holding device, mechanism for acting upon the hat, the compound cam, and slide 60, having slots 65, rack 69, and roller 97, engaging one section of the compound cam, roller 101, engaging the other section of the compound cam, and a rack-and-pinion connection between said rollers, of slide 61, having plates 66 extending through slots 65, cross-piece 67, connecting said plates, rack 70, having rollers 104, pinions 68, journaled between said plates and engaging racks 69 and 70, slide 106, having a groove in which said roller slides, and means for actuating said slide, whereby when rack 70 is held against vertical movement slides 60 and 61 are moved inward and outward together by the compound cam and when rack 70 is moved vertically slide 61 is moved in and out independently of slide 60.

14. The combination, with a hat-holding device, mechanism for acting upon the hat, spindle 10, the compound cam, and gear 22, detachably secured thereto, of slide 106, having recess 108, cam-gear 112, engaging said recess and gear 22, slide 60, having slots 65, rack 69, and roller 97, engaging one section of the compound cam, roller 101, engaging the other section of the compound cam, a rack-and-pinion connection between said rollers, slide 61, having plates extending through said slots, rack 70, engaging slide 106, and pinion 68, journaled between said plates and engaging racks 69 and 70.

15. The combination, with the forming and curling rollers, means for holding a hat, and slides by which said forming and curling rollers are carried, of the compound cam, rollers 97 and 101, engaging said cam, one of said rollers being connected with the slides, and a rack-and-pinion connection between said rollers.

16. The combination, with the forming and curling rollers, means for holding a hat, slides 61 and 62, by which said rollers are carried, means for locking said slides together, slide 60, having rack 69, rack 70, and pinion 68, engaging said racks, of the compound cam, rollers 97 and 101, engaging said cam, one of said rollers being connected with the slides, a rack-and-pinion connection between said rollers, so that said slides and the forming and curling rollers will all be moved inward and outward by the compound cam, slide 106, engaging rack 70 and having a recess 108, and cam-gear 112, engaging said recess, so that when said cam-gear is rotated the slide and rack 70 will be moved upward and slides 61 and 62, carrying the forming and curling rollers, will be moved independently of slide 60.

17. The hat-holding device, mechanism for acting upon the hat, the compound cam, rollers 97 and 101, engaging said cam, a rack-and-pinion connection between said rollers, and slide 60, by which one of said rollers is carried and which is provided with a rack 69, in combination with rack 70, slide 61, carrying a pinion 68, engaging said racks, slide 62, and means for locking said slides together.

18. The hat-holding device, mechanism for acting upon the hat, the compound cam, rollers 97 and 101, engaging said cam, a rack-and-pinion connection between said rollers, and slide 60, by which one of said rollers is carried and which is provided with a rack 69, in combination with rack 70, slide 61, carrying a pinion 68, engaging said racks, slide 62, and means for moving rack 70, so that slide 61 may be moved independently of slide 60.

19. The hat-holding device, mechanism for acting upon the hat, the compound cam, rollers 97 and 101, engaging said cam, a rack-and-pinion connection between said rollers, and slide 60, by which one of said rollers is carried and which is provided with a rack 69, in combination with rack 70, carrying rollers 104, slide 61, carrying a pinion 68, engaging said racks, vertical slide 106, having a groove engaged by rollers 104, and a recess 108, slide 110, and a socket 109, which receives slide 106 and carries a cam-gear engaging recess 108, whereby rack 70 and the intermediate parts may be moved vertically, for the purpose set forth.

20. The hat-holding device, mechanism for acting upon the hat, the compound cam, rollers 97 and 101, engaging said cam, a rack-and-pinion connection between said rollers, and slide 60, by which one of said rollers is carried and which is provided with a rack 69, in combination with rack 70, slide 61, carrying a pinion 68, engaging said racks, vertical slide 106, engaging rack 70 and having a recess 108, cam-gear 112, engaging said recess, the spindle 10, a gear 22 on said spindle, means for locking said gear to the spindle, and means for locking said gear independent of the spindle when it is not required to use the cam-gear.

21. The combination, with spindle 10 and plate 12, having recess 52, of hat-holder A, having opening 45, slides 51, lying in recess 52 and having blocks extending upward into opening 45, and a movable rod 31 within the spindle, having at its upper end a cone engaging the slides, whereby the latter are moved outward and caused to engage the end walls of opening 45 to lock the holder in position on plate 12.

22. Hat-holder A, consisting of an oval plate corresponding with the crown-opening of a hat and provided with a central opening 45, bearing a definite relation to the size of the plate, and openings 46, in line with opening 45, containing spring-actuated pins the ends of which project into opening 45 in the retracted position and in the thrown position project beyond the edge of the plate and engage the hat, and sliding blocks by which the pins are moved outward.

23. The combination, with plate 12, having recess 52, and movable rod 31, having cone 32, of plate 44, having central opening 45 and spring-actuated pins 47, and slides 51, carrying blocks 50, which are engaged by the cone and moved outward against the walls of opening 45 to lock the plate in position and also to move the pins outward to engage the hat.

24. The combination, with the hat-holder, rod 31, and cone 32, of slides 60, 61, and 62, the forming and curling rollers, the compound cam, rollers 97 and 101, engaging said cam, a rack-and-pinion connection between said rollers, gear-wheels 36 and 39, and intermediate connections, substantially as described and shown, whereby when gear-wheel 36 is rotated rod 31 and the cone are moved upward to lock the holder in position and the slides carrying the forming and curling rollers are moved into operative position.

25. The combination, with the compound cam, plate 12, and the hat-holder, of slides 60 on opposite sides of the machine, intermediate connections, substantially as described and shown, between said slides and the compound cam, slides 61, recessed in slides 60 and having brackets 59, carrying forming-rollers, slides 62, recessed in slides 61 and having brackets 84 provided with boxes 87, and brackets 78, carrying curling-rollers, shaft 86, carried by the bracket 89, bevel-gears 85, keyed to said shaft, but adapted to slide thereon, and intermediate connections, substantially as described and shown, by which the curling-rollers are driven.

26. The combination, with the hat-holding device, the compound cam, rollers 97 and 101, engaging said cam, and a connection between said rollers, which causes them to move toward and from the compound cam, of an adjustable forming-roller carried by a slide 61, a curling-roller carried by a slide 62, a slide 60, carrying roller 97, and suitable means for locking said slides together and also for moving the curling-roller independently of the other slides.

27. The combination, with a hat-holding device, the compound cam, a central spindle by which it is carried, suitable means for adjusting said cam on the spindle, rollers 97 and 101, engaging said cam, and a connection between said rollers to move them toward and from the compound cam, of the forming and curling rollers, independent slides by which they are carried, a slide carrying roller 97, and suitable means for locking said slides together and for moving the slide carrying the curling-roller independently of the others.

28. The combination, with a hat-holding device, the compound cam, rollers 97 and 101, engaging said cam, and a connection between said rollers to move them toward and from the compound cam, of the forming and curling rollers, suitable means for heating the curling-roller, independent slides by which said rollers are carried, a slide carrying roller 97, and suitable means for locking said slides together and for moving one slide independently of the others.

29. The combination, with a hat-holding device, the compound cam, rollers engaging said cam, and a connection between said rollers to move them toward and from the compound cam, of slides 60, 61, and 62, a forming-roller carried by slide 61, a curling-roller carried by slide 62, suitable means for locking said slides together and for moving slide 62 independently of the others, and suitable means for moving slides 61 and 62 independently of slide 60.

30. The combination, with a hat-holding device, mechanism for acting upon the hat, the compound cam, rollers engaging said cam, and a connection between said rollers to move them toward and from the compound cam, of slides 60, 61, and 62, suitable means for connecting slides 61 and 62 and for moving slide 62 independently of slide 61, means for connecting slide 61 to slide 60, and means for moving slides 61 and 62 independently of slide 60.

31. The combination, with a hat-holding device, mechanism for acting upon the hat, slides 60, 61, and 62, the compound cam, a roller carried by slide 60, engaging one section of the cam, a roller engaging the other section of the cam, and a connection between said rollers acting to move them toward and from the compound cam, of gear 22, cam-gear 112, meshing therewith, and intermediate connections between said cam-gear and the slides, whereby slides 61 and 62 may be moved independently of slide 60.

32. The hat-holding device, mechanism for acting upon the hat, slide 60, having slots 65, rack 69, and rollers 97 and 101 and intermediate connections, slide 61, having plates extending through said slots, a cross-piece 67 between said plates, and a pinion journaled in said plates and engaging the rack, in combination with the compound cam engaged by said roller, rack 70, which is held by the cross-piece and engages the pinion, and suitable means for moving rack 70, so that when said rack is held against vertical movement the slides will be moved together by the compound cam and when vertical movement is imparted to the rack slide 61 will be moved independently of slide 60.

33. The hat-holding device, mechanism for acting upon the hat, slide 60, having slots 65, rack 69, and rollers 97 and 101 and intermediate connections, slide 61, having plates extending through said slots, a cross-piece 67 between said plates, and a pinion journaled in said plates and engaging the rack, in combination with the compound cam engaged by said roller, rack 70, engaging said pinion and having at its lower end rollers 104, slide 106, having a groove engaged by said rollers and a recess 108, and a cam-gear engaging said recess and acting when rotated to lift slide 106 and rack 70 and to move slide 61 independently of slide 60.

34. The hat-holding device, mechanism for acting upon the hat, slide 60, having slots 65, rack 69, and rollers 97 and 101 and intermediate connections, slide 61, having plates extending through said slots, and a pinion journaled in said plates and engaging the rack, in combination with the compound cam engaged by said roller, rack 70, engaging said pinion and having at its lower end rollers 104, slide 106, having a groove engaged by said rollers and a recess 108, a cam-gear engaging said recess and acting when rotated to lift slide 106 and rack 70 and to move slide 61 independently of slide 60, gear 22, engaging the cam-gear, a spindle by which said gear is carried, and means for locking said gear to the spindle and also for locking it against rotation when disconnected from the spindle.

35. The hat-holding device, mechanism for acting upon the hat, the compound cam, rollers 97 and 101, connections between said rollers, slide 60, having slots 65 and rack 69, slide 61, having plates extending through said slots, and a pinion journaled in said plates, in combination with rack 70, engaging said pinion, slides 106 and 110 and intermediate connections, threaded rod 118, gear-wheel 39, engaging the threaded rod and having an annular groove 37, angle-piece 38, engaging said groove to hold the gear-wheel in position, and suitable means for rotating said gear-wheel to raise and lower the threaded rod and the slides, as and for the purpose set forth.

36. The combination, with slide 61, having bracket 59, the segment-plate, and lever 75, and slide 62, having bracket 78, hub 77, and turning plug 77^a, engaged by lever 75, of the forming-roller carried by bracket 59, the curling-roller carried by bracket 78, and suitable means for imparting rotation to the curling-roller.

37. The combination, with slide 61, having bracket 59, the segment-plate, and lever 75, and slide 62, having bracket 78, hub 77, and turning plug 77^a, engaged by lever 75, of the forming-roller having a spindle 56, a slide 58, engaging bracket 59 and having a guide through which the spindle passes, a spring acting to hold the spindle and roller at the raised position, a pawl for locking said roller in operative posi-

tion, the curling-roller carried by bracket 78, and pawl 94 for locking the lever to the segment-plate.

38. The combination, with slides 62 on opposite sides of the machine, each of said slides having boxes 82ª, carrying shafts 82, and boxes 87, and curling-rollers journaled in said slides, of shaft 86, journaled in boxes 87, bevel-gears 85, keyed to said shaft, but adapted to slide thereon, and bevel-gears on shaft 82, whereby motion is imparted to the curling-rollers.

39. The curling-rollers, shafts by which they are carried, bevel-gears 80 on said shafts, and slides 62, in which said shafts are journaled and which are provided with boxes 87, in combination with shafts 82, bevel-gears at both ends of said shafts, shaft 86, and bevel-gears 85, keyed to said shaft, but free to slide thereon, said gears being held by boxes 87 in engagement with gears on shafts 82.

40. The combination, with the hat-holder, the rod and cone by which it is operated, the forming and curling rollers, slides 60, 61, and 62, the compound cam, and connections, substantially as described and shown, between said slides and the cam, of gear-wheels 36 and 39, threaded rods 33 and 118, engaged by said gear-wheels, angle-pieces 38, holding said gear-wheels in position, and intermediate connections between threaded rod 118 and the slides, so that when said gear-wheels are rotated the cone is moved upward to lock the hat-holder in position and the forming and curling rollers are simultaneously moved into operative position.

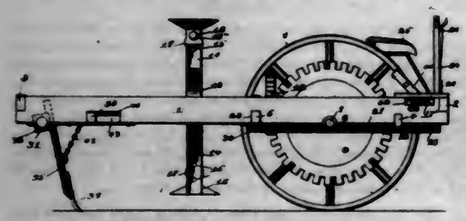
41. The combination, with a compound cam consisting of two sections, each section consisting of a series of ovals and each oval corresponding in outline with the oval on the other section occupying the same relative position, slides 60, 61, and 62, and intermediate connections, substantially as described and shown, between said slides and the cam, of forming and curling rollers carried by said slides, suitable means for connecting said slides together, so that all are moved by the cam, and suitable means for moving slides 61 and 62 independent of slide 60, as and for the purposes set forth.

42. The combination, with the hat-holder, cone and rod 31, by which it is operated, the forming and curling rollers, and slides 60, 61, and 62, of slides 106 and 110, and intermediate connections whereby the movements of said slides are imparted to slides 61 and 62 independently of slide 60, threaded rods 33 and 118, and gears 36 and 39, engaging said rods, whereby the cone and slides are actuated simultaneously to lock the hat-holder and to place the forming and curling rollers in operative position.

43. The combination, with the hat-holder, of forming-roller 55, having shank 56, slide 58, having guide 57, spring 91 for throwing the forming-roller out of operative position, and pawl 93 for locking it in operative position, the curling-roller, slides 61 and 62, having brackets 59 and 78, by which said rollers are carried, and connections between said slides which permit slide 62 and the curling-roller to be moved backward, so that the forming-roller may be raised out of operative position.

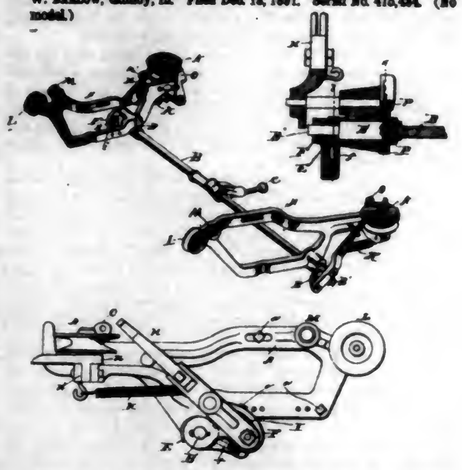
44. The combination, with plate 12 and the hat-holder, of slide 61, having bracket 59, slide 58, engaging said bracket and having a guide 57, spindle 56 in said guide, the forming-roller carried by said spindle, spring 91, adapted to lift the forming-roller out of operative position, slide 62, the curling-roller carried thereby, hub 77, having turning pins 77ª, the segment-plate, and lever 75, engaging the turning pins and having a pawl engaging the segment-plate.

472,975. COTTON-CHOPPER. DAVID BALDRAW, Hazogdoches, Tex. Filed Sept. 16, 1891. Serial No. 405,907. (No model.)



Claim.—In a cotton-chopper, the combination, with the oblong frame-work having bearings in its opposite sides, the transverse plow-beam loosely mounted in the bearings, and the depending plow-standards connected with the beam and terminating in shovels, of a transverse reciprocating bar having its ends mounted in ways formed in the side bars, chains connecting the bar with the standards, a forward reciprocating transverse bar mounted in ways in the side bars, rods connecting the two bars, and a lever fulcrumed upon the frame and connected loosely with said front transverse bar, substantially as specified.

472,976. CHECK-ROW MECHANISM FOR PLANTERS. JOHN W. BARLOW, Quincy, Ill. Filed Dec. 18, 1891. Serial No. 415,484. (No model.)



Claim.—1. In a check-row mechanism for planters, the combination, with the operating-shaft for the seeding mechanism and the lever connected therewith, of the operating-lever pivoted on an independent center and co-operating with the lever connected with the operating-shaft, substantially as described.

2. In a check-row mechanism for planters, the combination, with the operating-shaft for the seeding mechanism and the lever connected therewith, of the operating-lever pivoted on an independent center, having a longer radius and passing in proximity to the center upon which the first-mentioned lever turns and co-operating with said lever, whereby an accelerated motion is imparted to the latter, substantially as described.

3. In a check-row mechanism for planters, the combination, with the operating-shaft for the seeding mechanism and the lever connected therewith, of the operating-lever pivoted on a separate center and having a greater radius than the radius of the first-mentioned lever, said levers being loosely connected for simultaneous movement, whereby the operating-shaft is given an accelerated movement.

4. In a check-row mechanism for planters, the combination, with the operating-shaft for the seeding mechanism and the pivoted lever connected therewith, of the operating-lever pivoted on a separate center and moving across the pivot of the first-mentioned lever, substantially as described.

5. The combination, with the operating-shaft for the seeding mechanism of a check-row corn-planter and the lever mounted thereon, with a pawl-and-ratchet connection between said shaft and lever, of the operating-shaft pivoted on a separate center and co-operating with the lever on the shaft to turn the latter, substantially as described.

6. The combination, with the operating-shaft for the seeding mechanism of a check-row corn-planter and the lever mounted thereon, with a pawl-and-ratchet connection between said shaft and lever, of the operating-lever pivoted on a separate center and moving across the end of the operating-shaft and a loose connection between said levers, substantially as described.

7. The combination, with the operating-shaft for the seeding mechanism of a check-row corn-planter, the lever mounted thereon, having a cam-slot therein, and the pawl-and-ratchet connection between the lever and shaft, of the operating-lever pivoted on a separate center and having the projection fitting in said cam-slot, substantially as described.

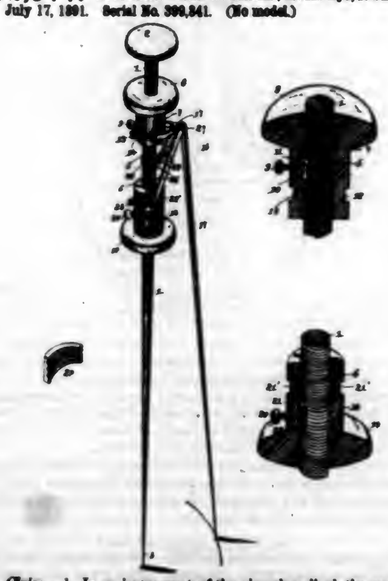
8. The combination, with the operating-shaft for the seeding mechanism of a check-row planter, the cam-lever pivoted thereon and having the cam-slot therein, and the pawl-and-ratchet connection between the lever and shaft, of the operating-lever pivoted on an independent center above the shaft and having the roller on its lower end entering the slot in the cam-lever, substantially as described.

9. The combination, with the operating-shaft for the seeding mechanism of a check-row planter and the operating-lever pivoted on a separate center, of the cam-lever on the operating-shaft having a slot therein, the outer portion of which is concentric with the center for the operating-lever when the cam-lever is at the extreme forward position, and a projection on the operating-lever entering such slot, substantially as described.

10. The combination, with the operating-shaft of a check-row planter, the end frame in which said shaft is journaled, the guide-pulleys on the frame, and the cam-lever journaled on the shaft, with a pawl-and-ratchet connection between the shaft and lever, of the operating-lever pivoted on a separate center and having the downwardly-extending end co-operating with the cam-lever and passing over the end of the shaft, substantially as described.

11. The combination, with the operating-shaft of a check-row planter and the cam-lever for turning the same, having the curved cam or bearing surface, of the operating-lever pivoted on a separate center and having a projection engaging the curved bearing-surface on the cam-lever, the arc traversed by said projection passing in proximity to the center on which the cam-lever turns, whereby the latter is given a full half-turn, substantially as described.

472,977. DIVIDERS. JOHN W. BRANAN, Mount Ayr, Iowa. Filed July 17, 1891. Serial No. 399,841. (No model.)



Claim.—1. In an instrument of the class described, the combination, with the main member provided with a thread, an upper sleeve, and a lower sleeve upon the thread, of a secondary member pivoted and swiveled at its upper end to the upper sleeve, and fulcrum-straps pivoted to the lower member and pivoted and swiveled to and upon the lower sleeve, substantially as specified.

2. In an instrument of the class described, the combination, with the main member terminating at its upper end in a head and below the same provided with right and left hand screw-threads, a sleeve mounted upon each of these threads and provided with an internal recess, clamping-blocks mounted in the recesses and having threads coinciding with those of the sleeves, and set-screws passing through the sleeves and terminating against the clamping-blocks, of a secondary member or leg pivoted at its upper end to the upper sleeve and straps pivoted to the secondary leg and at their lower ends to the lower sleeve, substantially as specified.

3. In an instrument of the class described, the combination, with the main leg provided with right and left hand threads and terminating at its upper end in a head, and the upper and lower adjustable sleeves mounted on the threads of the main leg and provided with annular bearings, of the clamping-collars mounted in the bearings of the sleeves, clamping-screws for connecting the ends of the same, a secondary leg pivoted to the upper clamping-collar, and fulcrum-straps pivoted to the leg and lower collar, substantially as specified.

4. In an instrument of the class described, the main leg 1, having the right and left hand threads, and the intermediate reduced bearing, in combination with the upper and lower adjustable sleeves having annular bearings, the clamping-collars mounted thereon and provided with opposite trunnions and clamping-screws, the secondary member bifurcated at its upper end to embrace the upper collar and perforated to receive the trunnions thereof, and the pair of fulcrum-straps mounted at their lower ends upon the trunnions of the lower collar and pivoted at their upper ends to the secondary leg in rear of its bifurcation, and the collar 28, mounted upon the reduced bearing of the member 1 and extending rearwardly between the straps and the clamping-screw for the same, substantially as specified.

472,978. BED-BOTTOM. SILAS BERTENSHAW, Denver, assignor of one-half to WM. S. Partleton, Glenwood Springs, Colo. Filed July 13, 1891. Serial No. 399,284. (No model.)



Claim.—1. In a bed bottom or rest, the combination, with two revoluble rollers adjustable to the width of the bed and around which a web may be drawn, of a rod or bar for holding one end of said web, arranged below one of said revoluble rollers, adjustable end pieces formed to receive the ends of said rod or bar and provided with flanges, and socket-bearings for said end pieces, formed with flanges to engage with the flanges on said pieces, whereby the rod or bar may be adjusted to the width of the bed-frame and the sides of said frame be prevented from spreading apart, substantially as and for the purpose set forth.

2. In a bed bottom or rest, the combination, with a revoluble roller, around which a web may be drawn and a bar or rod arranged below said roller for the attachment of one end of said web thereto, said roller and bar or rod being adjustable to the width of the bed, of another revoluble roller around which the web may be drawn, adjustable end pieces formed to receive the ends of said last-mentioned roller and provided with flanges, and socket-bearings for said end pieces, formed with flanges to engage the flanges on said pieces, whereby said rollers can turn and be adjusted to the width of the bed-frame and the side rails to which the bearings may be secured will be prevented from spreading apart when tension is placed on said web, substantially as and for the purposes set forth.

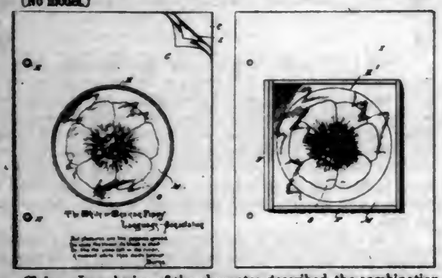
3. In a bed bottom or rest, the combination, with the flanged sockets and the roller having flanged ends freely revoluble in said sockets at one end of the bed-frame, of the segmental and circular bearings at the opposite ends of the frame for the ends of the tension-regulating roller, a ratchet on the end of said roller fitting in said circular bearing, and a pawl passing through an opening in the circular bearing to engage said ratchet, whereby the ratchet end of the roller is held in place by its circular bearing and at the same time the pawl is permitted to engage the ratchet lying in the bearing, flanged sockets having one side open to receive the ends of the flanged bar, and a web connected to said bar and passed around the freely-revoluble roller and attached at its other end to the adjusting tension-roller, substantially as and for the purposes described.

472,979. WASHING-MACHINE. GEORGE V. BLACKSTONE, Jamestown, N. Y. Filed Mar. 14, 1891. Serial No. 385,068. (No model.)



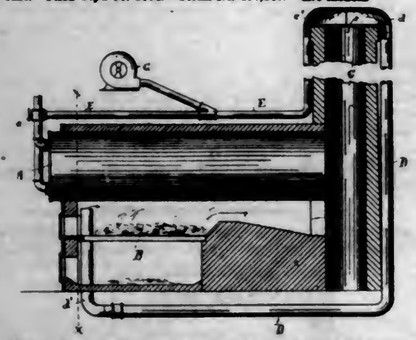
Claim.—In a washing-machine, the combination, with the box or body thereof, of a cover or lid therefor formed with an opening therein, a removable panel to close said opening and adapted when removed to fit inside of said box, and a rubber and operating-gear carried by said panel, said rubber and gear being of such proportions that they, together with the panel, may be inclosed within the box or body without disconnecting the gear and rubber from the panel, and the rubber being of such proportions that it may be passed through the opening in the lid, substantially as and for the purposes set forth.

472,980. DEVICE FOR PRESERVING DRIED FLOWERS. FREDERICK T. BROWN, Colorado Springs, Colo., assignor of one-half to William F. Stearns, Cambridge, Mass. Filed Jan. 2, 1892. Serial No. 416,831. (No model.)



Claim.—In a device of the character described, the combination, with two plates of celluloid, mica, or other transparent substance, and a strip of paper pasted over and around their registering edges and hermetically sealing them, of a cover in folio form, an inner leaf secured within the cover, the three sheets having registering holes, and a strip of paper pasted to the inner leaf and connecting the plates of mica thereto by a hinge at one edge, all substantially as hereinbefore set forth.

472,981. SMOKE-CONSUMER. WILLIAM H. BURDEN, Cleveland, Ohio. Filed Sept. 30, 1891. Serial No. 407,219. (No model.)



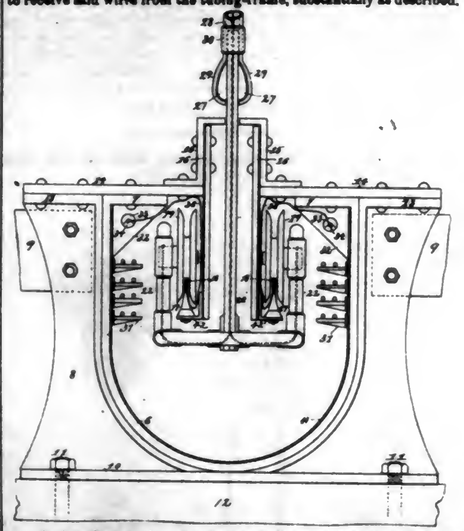
Claim.—In a smoke-consumer, a chimney, a draft-pipe having its mouth at the top of the chimney and its discharge end in the furnace over the coal, and an air or steam supply pipe having its mouth at the top of the chimney opposite the mouth of the draft-pipe and the space between the two pipes closed at the sides, whereby a conduit is formed from one pipe to the other and smoke is prevented from escaping, substantially as described.

472,982. CONDUIT AND TROLLEY FOR ELECTRIC-RAILWAY SYSTEMS. CHARLES W. CARLL and JAMES W. PHILLIPS, Trenton, N. J. Filed Feb. 19, 1891. Serial No. 382,126. (No model.)

Claim.—1. A conduit for electric railways, consisting of a main body portion having re-entering flanges, as 7, at its upper portion, chairs, as 8, for supporting and sustaining said main body portion, said chairs being provided with a basal flange, as 10, and outwardly-projecting top flanges, as 13, ties or sleepers, as 12, to which the basal flange is connected, cross-braces, as 9, for connecting the chair to the track-stringers, and a covering-plate secured to the flanges 7 and 13, said covering-plate being provided with angle-pieces, as 15, separated to form the conduit-slot, substantially as described.

2. A conduit for electric railways, provided with downwardly-extending plates, as 16, brackets attached to the outer sides of said plates, and trolley-track wires supported upon said brackets, substantially as described.

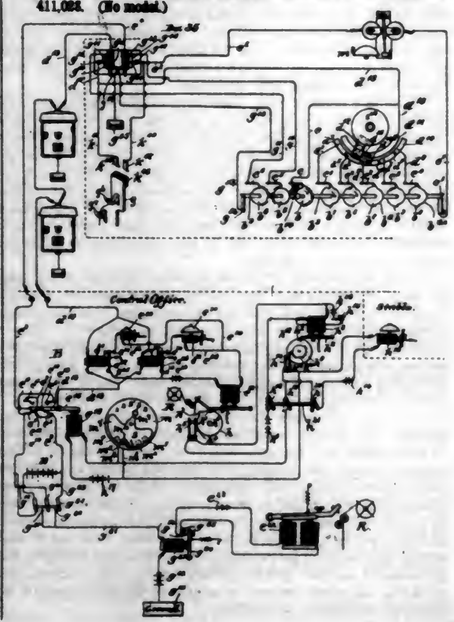
3. A trolley-carriage for electric railways, consisting of a frame comprising sections of tubing connected together and containing the wires leading from the trolley-wheel, and a hanger having channels to receive said wires from the tubing-frame, substantially as described.



4. A trolley-carriage for electric railways, consisting of a frame comprising sections of tubing connected together and containing the wires leading from the trolley-wheel, and a hanger having channels to receive said wires from the tubing-frame, said hanger being jointed or swiveled to the frame, substantially as described.

5. A trolley-carriage for electric railways, consisting of the tube-sections 20, having the cross-tube connection 23, pointed ends 21, U-shaped sides 22, and a hanger jointed or swiveled to the cross connection 23, substantially as described.

472,988. SIGNALING SYSTEM. HENRY A. CRASE, Boston, Mass., assignor to Albert Watts, same place. Filed Nov. 6, 1891. Serial No. 411,023. (No model.)



Claim.—1. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a receiving-instrument located therein, and a signal apparatus or box included in said circuit and provided with a signal-transmitting mechanism constructed and arranged to transmit to the receiving-instrument the same complete signal without additions thereto, subtractions therefrom, or repetitions thereof at different speeds at the will of the operator, whereby two different and distinct purposes may be indicated by the same complete signal, substantially as described

2. In a system for transmitting signals, an electric circuit, a signal-transmitting mechanism included therein and comprising a main and auxiliary signals, a motor mechanism to operate the said transmitting mechanism, a speed-changing device to vary the speed of the motor mechanism, and thereby of the transmitting mechanism, a pointer to control the operation of the speed-changing device, and a receiving-instrument in the electric circuit responsive to the varying speeds of the transmitting mechanism, substantially as described.

3. In a system for transmitting signals, a metallic circuit, a signal-transmitting mechanism comprising a main-signal wheel b, normally included in said circuit and signal-wheels b^5 b^4, normally disconnected from the said circuit, but adapted to be connected therein when the main-signal wheel is operated, safety-fuses included in the main line, contact-pens c^5 c^6, connected to the main line beyond the safety-fuses, a receiving-instrument in the main line, and a receiving-instrument in a ground-tap normally disconnected from the main line while the safety-fuses are in operative condition, but adapted to be connected thereto when the said fuses are rendered inoperative, substantially as described.

4. In a system for transmitting signals, the combination of the following instrumentalites, viz: an electric circuit, a signal-box in said circuit provided with a signal-transmitting mechanism comprising a main and auxiliary signals, a door for said box provided with a stud or projection, and a pointer in said box provided with a slot or opening to register with the stud or projection on the door when the pointer is in its normal position, the said pointer in its normal position permitting the door to be closed and in its abnormal position preventing the closing of the said door, substantially as described.

5. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism in said circuit comprising a main signal in the said electric circuit and one or more auxiliary signals in normally-open branch circuits, a circuit-controller for said branch circuits, a motor mechanism to operate the said transmitting mechanism, a speed-changing device to govern the speed of the motor mechanism, and thereby of the transmitting mechanism, means to operate the speed-changing device, and a receiving-instrument in the main electric circuit responsive to both the main and auxiliary signals, substantially as described.

6. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism comprising a main-signal wheel b and a blank wheel b^4, provided with a notch corresponding to the teeth on the signal-wheel b, a normally-open branch circuit in which the blank wheel b^4 is located, a circuit-controller to connect the said branch circuit to the said electric circuit, a motor mechanism for said transmitting mechanism, a speed-changing device for said motor mechanism, a pointer to operate the speed-changing device, and a receiving-instrument responsive to varying speeds of the motor mechanism, and thereby of the transmitting mechanism, whereby the same signal may be transmitted with the pointer in different positions, substantially as described.

7. In a system for transmitting signals, a signal-box, a signal-transmitting mechanism in said box, a motor mechanism to operate it, a pull-bar connected to said motor mechanism and provided at its lower end with a plurality of hooks or pulls, a dial A^4 in said box provided with a plurality of slots or openings of different lengths, with which said hooks or pulls register, and a receiving-instrument in circuit with the transmitting mechanism, to operate substantially as described.

8. In a system for transmitting signals, the combination, with a signal-box provided with a normally-closed door having a key-hole or opening, of a signal-transmitting mechanism in said box consisting of a break-wheel or circuit-conducting surface provided with only the number of notches or circuit-interrupting portions necessary to indicate the number of the said box, a motor mechanism to revolve the said transmitting mechanism, a pull-bar connected to the motor mechanism, a pivoted arm k^{14}, operatively connected to the said pull-bar to operate the same when the said arm is moved, a pin k^5 on the arm k^{14}, a dial A^4, provided with a slot, through which the pin k^5 is extended, and a key to engage the said pin, whereby the said pull-bar may be moved a sufficient distance to effect a plurality of complete revolutions of the signal-transmitting mechanism, substantially as described.

9. In a system for transmitting signals, a signal-box provided with a door having a key-hole or opening, a signal-transmitting mechanism in said box, a motor mechanism to operate it, a pull-bar connected to said motor mechanism, a dial A^4, a post k^{10}, extended through said dial, a disk k^9, mounted on said post and provided with a slot k^{10} and with a pin or stud k^5, extended through a slot in the dial A^4, a second disk k^8, mounted on the post k^{10} and provided with a pin or stud k^7, extended through the slot in the disk k^9 and through a second slot in the dial A^4, arms on said disk to engage the pull-bar, and keys to actuate the disks and operate the pull-bar, substantially as described.

10. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, a receiving-instrument in said circuit, a local circuit provided with circuit-terminals, a rotary mechanical circuit-controller governed in its operation by the said receiving-instrument and independent of the circuit-terminals of the said local circuit, an electro-magnet k^7 in said local circuit, a second local circuit provided with an electro-magnet c^{16}, governing the main electrical circuit and having circuit-terminals, a second rotary mechanical circuit-controller governed in its operation by the magnet k^7 and independent of the circuit-terminals of the said second local circuit, a third local circuit connected to the circuit-terminals of the second local circuit, a receiving-instrument included in said third local circuit, and switches or circuit-controllers independent of the rotary mechanical circuit-controllers, substantially as described.

11. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, a receiving-instrument in said circuit, a circuit-controller governed in its operation by the said receiving-instrument, a local circuit provided with circuit-terminals, an electro-magnet k^7 in said local circuit, a circuit-controller governed in its operation by the magnet k^7, a local circuit provided with an electro-magnet and having circuit-terminals operated by the said circuit-controller, a second local circuit connected to the said circuit-terminals, a receiving-instrument included in said second local circuit, a local branch circuit including the magnet k^7, a manually-operated circuit-controller or key k^{25}, and a switch k^{20}, and a shield or cover k^{24} for the key k^{25}, actuated by movement of the switch k^{20}, substantially as described.

12. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism in said circuit located at one point or station, a receiving-station, a pole-changer in said circuit located in the receiving-station, an electro-magnet to operate it, a dial m within said receiving-station provided with a series of circuit-controllers or keys, and a shield on said dial normally covering the said keys and provided with a slot or opening to register with one of the said keys, substantially as described.

13. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, a receiving-instrument in said circuit, a circuit-controller governed in its operation by the receiving-instrument and consisting of a disk k, provided with the detent or pin k' and with a tooth or projection k^3, located on the periphery of the disk near the pin k', a local circuit including an electro-magnet k^7 and provided with circuit-terminals operated by the tooth or projection k^3 after the receiving-instrument has received its complete signal, a circuit-controller governed in its operation by the magnet k^7, a local circuit provided with an electro-magnet and having circuit-terminals operated by the said circuit-controller, a second local circuit connected to the said circuit-terminals, and a receiving-instrument included in said second local circuit, substantially as described.

14. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein and consisting of a main-signal wheel located in a branch circuit, a motor mechanism to operate said signal-transmitting mechanism, a speed-changing device to control the speed of the motor mechanism, and thereby of the transmitting mechanism, a circuit-controller to govern the branch circuit of the auxiliary wheel, a pointer to operate the speed-changing device, and two relays in the electric circuit, one of which is responsive to the signal transmitted at one speed and not at the other, substantially as described.

15. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, a motor mechanism to operate it, a speed-changing device for positively varying the speed of the motor mechanism, and thereby of the transmitting mechanism, a pointer to govern the operation of the speed-changing device, and a receiving-instrument responsive to varying speeds of the transmitting mechanism, substantially as described.

16. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, a motor mechanism to operate it, a speed-changing device for positively changing the speed of the motor mechanism, and thereby of the transmitting mechanism, consisting of a clutch, a cam-disk operatively connected to said clutch, and means to move said disk, and a receiving-instrument responsive to the varying speeds of the transmitting mechanism, substantially as described.

17. In a signaling system, a multiple circuit-controller consisting of a dial provided with indications, keys or circuit-controllers registering with the said indications, combined with a movable shield constructed to render accessible any desired key or circuit-controller and to render the remaining circuit-controllers inaccessible, while the selected key or circuit-controller is accessible, substantially as described.

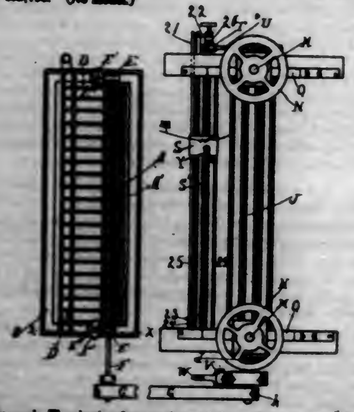
18. In a signaling system, a multiple circuit-controller consisting of a dial provided with indications, keys or circuit-controllers registering with the said indications, combined with a pointer pivoted on said dial and co-operating with said indications and a shield to cover said keys or circuit-controllers secured to said pointer and provided with a notch or opening to register with one of said keys or circuit-controllers, whereby only the key or circuit-controller corresponding to the indication with which the pointer registers is accessible for operation, substantially as described.

19. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal apparatus or box included therein and provided with a signal-transmitting mechanism constructed and arranged to transmit the number indicative of the box or apparatus in a series of short impulses and in a series of long impulses to indicate two distinct purposes, two relays in the said electric circuit, one of which is responsive to both the short and long impulses and the other to only the long impulses, an audible signal controlled by the relay responsive to the long impulses, and a second audible signal controlled by the relay responsive to both the long and short impulses, whereby the signals received upon the two relays may be distinguished and whereby the signals received upon the relay responsive to the long and short impulses may also be distinguished from each other, substantially as and for the purpose specified.

20. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal apparatus or box included therein and provided with a signal-transmitting mechanism comprising a plurality of signal wheels or surfaces and pens or brushes co-operating therewith, a plurality of branch circuits, in which said signal-wheels and pens are connected, a circuit-controller to govern the condition of the said branch circuits and normally in engagement with but one of the said branch circuits, a pointer operatively connected to the said circuit-controller, a motor mechanism to operate the signal-wheels, and a speed-changing device operated by the pointer to vary the speed of the motor mechanism, and thereby vary the rate of movement of the signal wheels or surfaces, whereby the signal may be transmitted over one branch circuit at one speed and over another branch circuit at a different speed, substantially as described.

21. In a system for transmitting signals, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, a receiving-instrument in said circuit, a mechanically-operated circuit-controller governed in its operation by the said receiving-instrument, a local circuit provided with circuit-terminals operated by the mechanical circuit-controller, a magnet A^3 in said local circuit, a second mechanically-operated circuit-controller governed in its operation by the magnet A^3, a local branch circuit including the magnet A^3, and a key or circuit-controller A^{20} for said local circuit, substantially as described.

472,984. MACHINE FOR MAKING ASPHALTED SHEET-METAL PIPE. JOHN P. OELVER, Los Angeles, Cal. Filed Aug. 17, 1891. Serial No. 402,795. (No model.)



Claim.—1. The device for evenly applying a thick coating of waxy material upon a suitable surface, consisting of the combination, as set forth, of suitable means for applying a coating of the waxy material to said surface, a circumferentially-threaded roller arranged to engage such surface after it has been coated with such material, and means for rotating such roller upon such coated surface.

2. In a machine for manufacturing asphalted sheet-metal pipe, the combination of the pair of circumferentially-threaded rollers arranged in an asphaltum-vat, with their contiguous faces above the line of the melted asphaltum within the vat, suitable guides arranged to conduct the sheet down through the asphaltum and introduce its edge between the rollers, and means for revolving such rollers.

3. The combination of the asphaltum-vat, the threaded rollers arranged within the vat, with their contiguous faces above the line of the asphaltum, the upper roller being provided with an axle journaled in suitable boxes arranged to move up and down in suitable guideways and extending out over the wall of the vat and there provided with a pulley, such boxes and guideways and the driving-band arranged to drive the pulley.

4. In a machine of the class set forth, the combination of a movable frame, a pressure-roller adjustably mounted in such frame, yielding means for forcing the frame in the direction the pressure is to be applied, and adjusting means for moving the roller toward and from the point at which the pressure is to be applied.

5. In a machine of the class described, the combination of the base-rollers arranged to support a mandrel, the hinged frame, means for forcing the frame toward the base-rollers, the pressure-roller journaled in the vertically-movable boxes, the screws fixed to such boxes, the screw hand-wheels journaled to the movable frame and arranged to move the screws up and down, and the supports 26 26.

6. The combination of the rollers, the mandrel, the carriage-driving screw, screw-rotating means connecting the screw and rollers, and the wire-carriage arranged to be clutched upon and disconnected from the screw.

7. The combination of the rollers, the mandrel, the carriage-driving screw, the sprocket-wheel journaled upon the screw, the sprocket-chain connecting the rollers with the journaled sprocket-wheel, a clutch arranged to connect the screw and journaled sprocket-wheel, the clutch-actuating rod and lever pivoted thereto, the wire-carriage arranged to clutch upon the threaded portion of the screw, and the stop fixed upon the clutch-actuating rod and arranged in the path of the wire-carriage.

8. The combination of the two semi-cylindrical shells provided with the inclined contact-faces and with cross-ties, and the spreading and collapsing bar arranged to extend between the cross-ties of the two shells and to move longitudinally within the space between the shells and provided with the inclines 7, arranged to extend between and engage the cross-ties and inclined faces to hold the shells together and force them apart, as set forth, and means for moving the bar longitudinally.

9. The combination of the two semi-cylindrical shells provided with the inclined contact-faces, the incline-faced notches, and the cross-ties, the spreading and collapsing bar arranged to extend between the cross-ties of the two shells and to move longitudinally within the space between such shells and provided with the beveled spreader cross-bars arranged to extend into the notches in the edges of the shells, and the inclines arranged, respectively, to extend between and engage the cross-ties and the inclined faces of the shells to hold the shells together and press them apart, and means for operating the bar longitudinally.

10. In a collapsible mandrel such as set forth, the combination of the shells, the spreader-bar provided at one end with the cross-head, the screw journaled in the end of the shell and provided with the thrust-collars and arranged to screw into the cross-head, the movable handle, and adjustable means for securing it to the bar.

472,985. BLIND-STOP. WALLER S. DEATS and DANIEL BROWN, Laredo, Tex. Filed Oct. 8, 1891. Serial No. 408,114. (No model.)



Claim.—1. The herein-described slat-holder for blinds, the same consisting of the spring-metal strip bent to U form and adapted to be inserted between the slats of blinds, substantially as specified.

2. The herein-described holder for the slats of blinds, consisting of a spring-metal strip bent at its center to form an eye and opposite

terminals, the latter being adapted to be interposed between two adjacent slats, and the ends of the terminals oppositely bent to engage the outer edges of the slats, and the attaching-chain loosely connected with the eye and adapted for connection with the casing, substantially as specified.

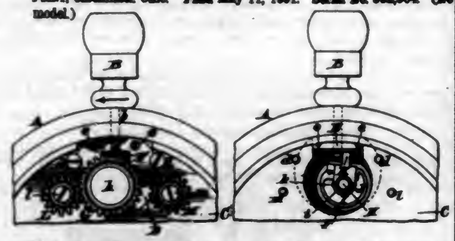
472,986. BRUSH OR BROOM. EDUARD BEHRENDSE, Hamburg, Germany. Filed July 23, 1891. Serial No. 400,462. (No model.) Patented in Germany June 9, 1889, No. 49,673.



Claim.—1. As an improvement in brushes and brooms, the combination of the hollow stock provided with perforations between the bristles, the hollow handle, and the adjustable valve or slide within the cavity of the stock, having flexible tubes or studs entering said perforations, substantially as set forth.

2. As an improvement in brushes and brooms, the combination of the hollow stock provided with perforations between the bristles, a hollow handle, and an adjustable slide or valve having perforations corresponding in number and position with those in the stock, and flexible tubes or studs entering the perforations in the stock, substantially as and for the purpose set forth.

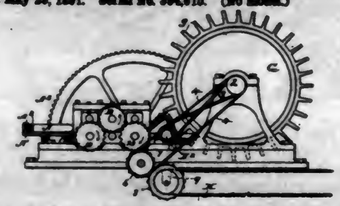
472,987. STEM WINDING AND SETTING WATCH. EDWIN H. FLINT, Cincinnati, Ohio. Filed May 11, 1891. Serial No. 392,304. (No model.)



Claim.—1. The combination, in a watch, of a winding-train, a hands-setting train, a laterally-swinging bearing, a wheel journaled in this bearing, a stem-pinion constantly in gear with said wheel, and a longitudinally-shiftable pendant-stem traversing the hub of said pinion and serving to operate the latter, the arrangement of these devices being such that the proper turning of said pinion will swing said wheel aside and cause it to engage with the winding-train, while the turning of said pinion in another direction will swing said wheel to the opposite side and compel it to engage with the hands-setting train, the pendant-stem being pushed in after the wheel has shifted for the purpose of locking the swinging bearing in position, all as herein described.

2. The combination, in a watch, of a longitudinally-shiftable stem *b*, operated by the pendant, a driving-pinion F, having a hole *f'*, traversed by said stem, a pivot H, a main wheel G, turning on the latter and engaging with said pinion F, a pivot *i'*, a swinging bearing I, hung thereon and having a hub *i*, carrying said pivot H, a spring J, secured at one end to said bearing I, a stop K, pivoted to said hub *i* and having the free end of said spring in contact with it, a winding-gear L, and a hands-setting gear M, all as herein described, and for the purpose stated.

472,988. MACHINE FOR DECORTICATING JUTE, RAMIE, AND OTHER FIBROUS PLANTS. FELIX B. FRESHENEY, Galveston, Tex. Filed May 29, 1891. Serial No. 394,615. (No model.)



Claim.—1. The combination, with the feed-table, of the guides on said table and the slitting-rollers, one of said rollers having peripheral cutting-edges and the other peripheral grooves adapted to receive said edges, substantially as set forth.

2. The combination of the feed-table guides for directing the stalks across said table, slitting-rollers, and spreading-rollers, substantially as and for the purpose set forth.

3. The combination, with the slitting-rollers and spreading-rollers, of fluted crushing or breaking rollers and the beaters, substantially as and for the purpose set forth.

4. The combination of the feed-table, guides for directing the stalks across said table, feeding-rollers for receiving the stalks from said guides, and the slitting and spreading rollers, substantially as set forth.

5. The combination, with the feed-table and the slitting-rollers, of the feeding-rollers having yielding peripheral bands and guides for directing the stalks to said feed-rollers, substantially as set forth.

6. The combination, with the feed-table and the slitting-rollers, of the feeding-rollers, one of which is provided with peripheral bands and the other with corresponding grooves, substantially as set forth.

7. The combination of the traveling feed-table, the slitting and spreading rollers, and guides for directing the stalks to said rollers, substantially as set forth.

8. The combination of the traveling feed-table having guide-ribs, the feed-rollers having peripheral grooves and bands coinciding with the grooves formed by said ribs, and the slitting and spreading rollers, substantially as set forth.

9. The combination, with the feed-table and the slitting and spreading rollers, of a stripper arranged athwart said table in advance of said rollers, substantially as set forth.

10. The combination, with the feed-table and the slitting and spreading rollers, of the perforated partition and rising-and-falling plate arranged athwart said table in advance of the said rollers, substantially as set forth.

11. The combination of the feed-table having guide-ribs, the rising-and-falling plate K^2, and the feed-rollers adapted to drag the stalks under the said plate, substantially as set forth.

12. The combination, with the feed-table and feeding-rollers, of the rising-and-falling plate and the rotary S-shaped levers for elevating said plate, substantially as set forth.

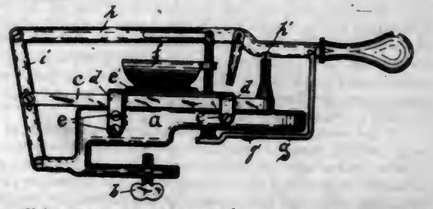
13. The combination of the feed-table having guides, the slitting-rollers, the spreading-rollers D D', one of which has peripheral ribs and the other corresponding grooves, and the succeeding spreading-rollers E, having plain surfaces, substantially as set forth.

14. The combination, with the slitters, spreaders, and breakers, of the revolving drums having beaters *g*, substantially as set forth.

472,989. PROCESS OF PURIFYING CANE-JUICE. WILLIAM V. PEY, Lambayeque, Peru. Filed June 16, 1891. Serial No. 396,426. (No specimens.)

Claim.—The process of purifying cane-juice, which consists in mixing with the cane-juice a decoction of eucalyptus of substantially the strength and in the proportions specified and then applying heat to the liquid until ebullition takes place.

472,990. CARTRIDGE-RELOADING TOOL. HENRY J. GALLUP, Poquetanuck, Conn. Filed June 29, 1891. Serial No. 397,819. (No model.)

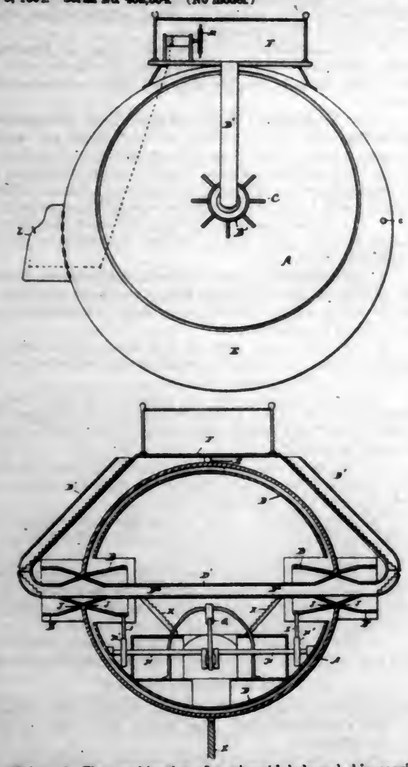


Claim.—1. In a reloading-tool, in combination with a bed-section, a block mounted to slide on said bed bearing a stud *k* to receive a cartridge-shell, a decapping-pin within said stud, as set forth, (the bed being formed with an inclined wall A^3, on which the lower end of said decapping-pin rests,) and a lever A, connected with both the bed and slide-block in manner as set forth and provided with a notch *k'*, which is coincident with the stud *k* when the slide-block is moved in one direction, and with a rod or projection A^3, which is coincident with said stud when the slide-block is moved in the opposite direction, all being substantially as and for the purpose specified.

2. In combination with a bed-section having opening to receive a cartridge-shell, a handled rod A, connected with said bed, as set forth, a longitudinally-movable plunger *m*, coincident with said opening and connected to said handled rod, and a lever *g*, hung at the under side

of said bed, one end of said lever being bent upward into the path of rod A, all being substantially as and for the purpose specified.

472,991. SHIP. ROBERT P. GARSED, Norristown, Pa. Filed Aug. 5, 1891. Serial No. 402,054. (No model.)



Claim.—1. The combination of a spheroidal-shaped ship consisting of an outer revolving casing provided with lateral propeller-blades, an inner non-rotating casing concentrically arranged upon a horizontal non-rotating axle with upwardly-extending extremities, a platform attached to said extremities above the casings, and a keel rigidly connected to said platform and provided with a rudder, substantially as described and set forth.

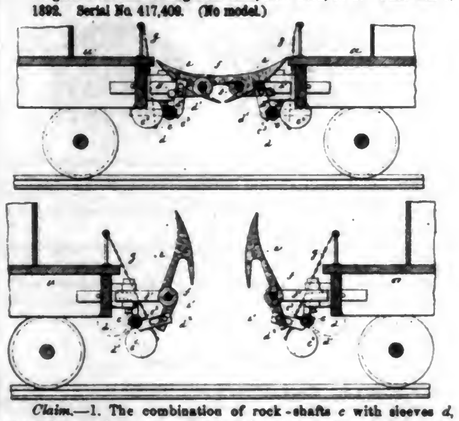
2. The combination of a spheroidal-shaped ship consisting of an outer revolving casing provided with propeller-blades and an inner non-rotating casing concentrically mounted upon a hollow horizontal non-rotating axle with upwardly-extending extremities, a platform secured to said extremities above the casings, a keel with a rudder attached to said platform, and openings and stairs in said hollow axle forming a passage-way to the inner receptacle from the platform, substantially as described and set forth.

3. The combination of a spheroidal-shaped ship consisting of an outer revolving casing, an inner non-rotating casing concentrically mounted upon a hollow horizontal non-rotating axle with upwardly-extending extremities, a platform attached to said extremities above the casings, and a keel fixedly secured to said platform and provided with a rudder and suitable propellers, as and for the purposes set forth.

4. The combination of a spheroidal-shaped ship consisting of an outer revolving casing, with bearings B on the outer casing, mounted with ball-bearings on a horizontal non-rotating axle with upwardly-extending extremities, lateral propeller-blades secured to portions B', an inner non-rotating casing concentrically arranged on said axle, a platform secured to said extremities above the casings, a keel provided with a rudder, and controlling-cables attached to said platform, and a crank-shaft and gearing H' and I within the inner casing and connected with bearings B, substantially as described and set forth.

5. The combination of a spheroidal-shaped ship, an outer revolving and inner non-rotating casing concentrically mounted on a hollow horizontal non-rotating axle with upwardly-extending extremities, a platform secured to said extremities above the casings, an eccentrically-shaped keel provided with a rudder and attached to said platform, and a crank-shaft and gearing H' and I, situated within the inner casing and connected with bearings B on the outer casing to actuate propeller-blades C and to revolve the outer casing, as and for the purposes set forth.

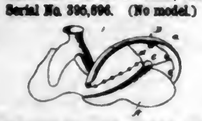
472,992. CAR-COUPLING. CHARLES GRUCHWINDERR, Brooklyn, assignor of one-half to Augustus Sinn, New York, N. Y. Filed Jan. 2, 1892. Serial No. 417,409. (No model.)



Claim.—1. The combination of rock-shafts *c* with sleeves *d*, mounted upon the same and having slotted arms d^3, and with hooks *e*, engaged by such arms, and pins *f*, engaged by the hooks, substantially as specified.

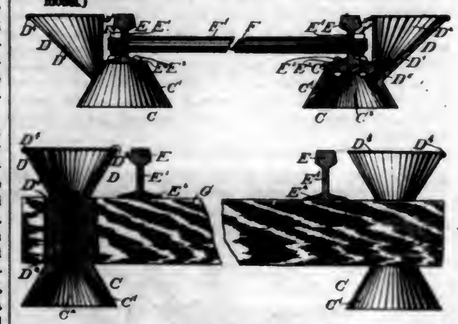
2. The combination of weighted rock-shaft *c*, having pin c^4, with slotted sleeve *d*, engaged by said pin and having slotted arm d^3, and with hook *e* and pin *f*, substantially as specified.

472,993. SADDLE. ERNST F. HAAS, Burlington, Iowa. Filed June 9, 1891. Serial No. 395,696. (No model.)



Claim.—The combination, with a saddle and the cantle thereof, of the extension comprising the attaching-flange C, adapted to be secured to the cantle and the arched grasping-flange *a*, extending rearwardly from the upper edge of the attaching-flange, substantially as shown and described.

472,994. AUTOMATIC BALLASTING DEVICE. BENTON HALSTEAD, Riverside, Ohio. Filed Dec. 18, 1891. Serial No. 415,459. (No model.)



Claim.—1. The railroad-ballasting device consisting of the receptacle C, open at the bottom and provided with a hopper for feeding gravel, sand, earth, or other substance to the receptacle C, supporting the rail or track structure, substantially as and for the purposes specified.

2. In combination with a railroad-bed, the receptacle C, whose chamber C^2 is open at the bottom and larger there than at the top, and the hopper D, connected to the receptacle C by a passage-way, substantially as and for the purposes specified.

3. In a self-ballasting device and a foundation for the support of the rail, the receptacle C, whose chamber is of the form of a truncated cone, and a hopper, substantially funnel-shaped, connected to the receptacle C by a passage-way D^3, substantially as and for the purposes specified.

4. In a self-ballasting device and a foundation for the support of the rail, the receptacle C, whose chamber is of the form of a truncated cone, and a hopper, substantially funnel-shaped, connected to the receptacle C by a passage-way D^3, located in the upper part of the receptacle, substantially as and for the purposes specified.

5. The railroad-ballasting device consisting of the receptacle C, open at the bottom and provided with a hopper for feeding earth to the receptacle, the latter supporting the rail or track structure, and the lid covering the hopper, substantially as and for the purposes specified.

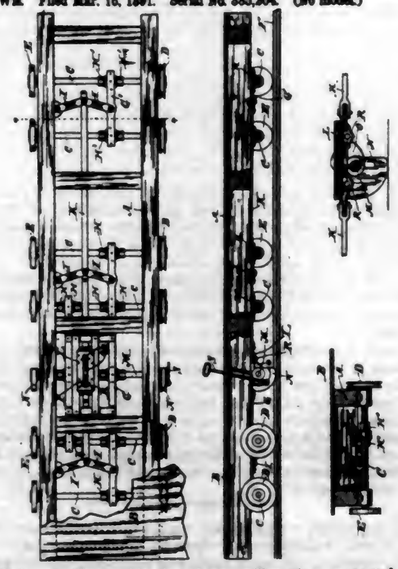
6. The railroad-ballasting device consisting of the receptacle C, open at the bottom and provided with a hopper for feeding gravel, sand, earth, or other substance to the receptacle C, the rail resting on the top of the receptacle and secured thereto by bolts or rivets E^3, substantially as and for the purposes specified.

7. As a new combination of self-ballasting device and track, the receptacle C, open at bottom for the reception of gravel, sand, earth, or other substance, and the hopper for feeding said mobile substance or substances to the receptacle, and the rails respectively bolted to and upon their respective receptacles, and the cross-ties F, connected to the webs or sides of the rails, and the separating-pieces F', embracing or accompanying said tie, substantially as and for the purposes specified.

8. The railroad-ballasting device consisting of the receptacle C, open at the bottom and larger there than at the top and provided with a hopper for feeding gravel, sand, earth, or other substance to the receptacle C, the rail resting on the top of the receptacle and secured thereto by bolts or rivets E^3, substantially as and for the purposes specified.

9. A railroad-ballasting device consisting of the receptacle C, open at the bottom, provided with a hopper feeding gravel, sand, earth, or other substance to the receptacle C for supporting the rail or track structure, the opening from the hopper to the receptacle being located at that side of the receptacle C which is at the outside of the road-bed, substantially as and for the purposes specified.

472,995. SAWMILL-CARRIAGE. JAMES P. HARSON, Oshkosh, Wis. Filed Mar. 16, 1891. Serial No. 385,204. (No model.)

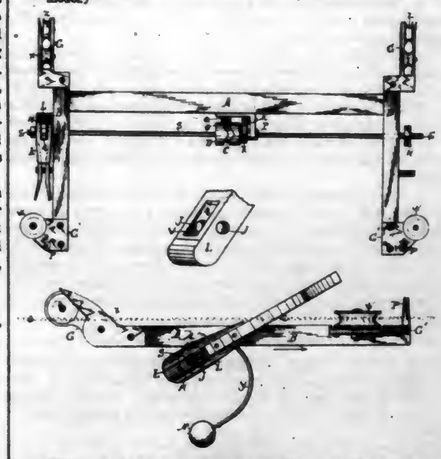


Claim.—1. The combination of a sawmill-carriage supported on axles on which it has lateral movement, toggle-jointed arms pivoted at one end to the carriage and at the other end to a frame or bar carried on the axles without lateral movement thereon, a block supported reciprocably on the axle-supported frame, which block is connected to the toggle-jointed arms medially, a cam on a shaft journaled in the axle-supported frame, which cam acts on and reciprocates the block, and means for rotating the shaft limitedly, substantially as described.

2. The combination, with a sawmill-carriage supported on axles on which it is movable laterally, of laterally-disposed toggle-jointed arms pivoted at their outer extremities, respectively, to the carriage and to a frame or bar carried on the axles, having no lateral movement thereon, a block reciprocable longitudinally of the carriage in the frame carried on the axles and connected to the toggle-jointed arms medially, a cam on a shaft journaled in the axle-supported frame, and a segmental wheel on the shaft arranged to bear upon and be rotated limitedly by the track on which the carriage travels, substantially as described.

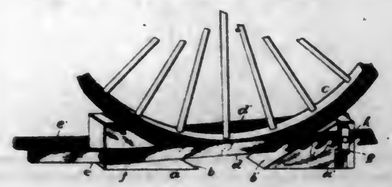
3. The combination, with a sawmill-carriage supported on axles on which it is movable laterally, and a frame carried on the axles without lateral movement, of a shaft journaled in the frame, segmental wheels on the shaft adapted to engage the track on which the carriage reciprocates and rotate the shaft limitedly, a peripheral or radially-acting cam on the shaft, and a block in the frame on the axles, which block is movable at right angles to the shaft by the action thereon of the cam and actuates devices for moving the carriage laterally on the axles, substantially as described.

472,996. CHECK-ROW ATTACHMENT FOR PLANTERS. LOUIS HARPER, Carrow, Ill. Filed Dec. 11, 1891. Serial No. 414,653. (No model.)



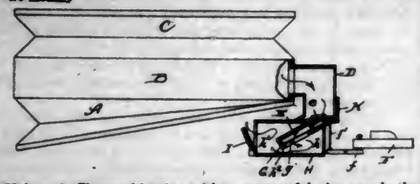
Claim.—In a check-row attachement for seed-planters, the combination of the shaft S, having the ratchet-wheels H secured thereto, one near each end, the forked oscillating lever L, having the aperture V formed to have the shoulder *r* and having the journals J J for journaling said lever on said shaft in such manner that the ratchet-wheel H may be within said aperture, said journals J J being larger in diameter than said shaft, so that said lever will be loosely journaled thereon and so that said shoulder *r* may engage said ratchet-wheel as a pawl, and the weight N, secured directly to said lever at its forward side through the medium of curved arm *y*, substantially as and for the purpose set forth.

472,997. WHEEL-CHOCK. ISAAC H. HAYWARD, Lawrence, Mich. Filed Dec. 2, 1891. Serial No. 413,808. (No model.)



Claim.—In a wheel-chock, the combination of a pair of blocks having sloping surfaces to receive a wheel, levers fulcrumed to one of said blocks, and connecting-bars pivoted to said levers above their fulcrum and having a series of notches in their ends which engage suitable pins on the block, whereby the chock may be made smaller or larger, in the manner and for the purpose set forth.

472,998. QUALIFYING-BOX FOR BASS-REEDS OF ORGANS. FREDERICK W. HEDELAND, Chicago, Ill., assignor to The W. W. Kimball Company, same place. Filed Nov. 27, 1891. Serial No. 413,319. (No model.)



Claim.—1. The combination, with an organ, of the bass-reeds, the wind-passage D, acting also as a resonator, and qualifying-chambers *h h'*, communicating with each other, substantially as specified.

2. The combination, with blowing-bellows, of the wind-passage D, the bass-reeds, and qualifying-chambers *h h'*, located one in front of and the other behind the reeds, substantially as set forth.

3. The combination, in an organ, of the bellows, the resonator D, the qualifying-box H, divided by the reed-board into two qualifying-chambers, and the reed-board and reeds, substantially as set forth.

4. The combination, with a wind-supply, of the bass-reeds and a qualifying-box therefor, the reed-board dividing the box into qualifying-chambers, substantially as set forth.

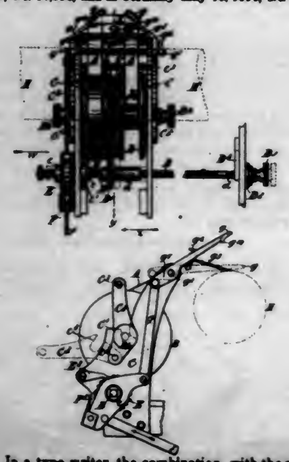
5. The combination, with a blowing-bellows and the reeds, of the passage D, charged by the bellows and delivering the air to the reeds and also acting as a resonator to the latter, substantially as set forth.

6. The combination, with an organ, of wind passage or box D, a reed-board, the cells of which open from the bottom of said box, valves for closing said reed-cells, and a front board K, located relative to the valves and reed-board, as shown, and made removable, substantially as set forth.

7. The combination, with blowing-bellows, of wind-passage D, the reeds and their board, the qualifying-chamber *h* in front of the reeds, the qualifying-chamber *h'* in rear of the reeds and communicating with chamber *h*, and a mute-closing chamber *h'*, substantially as set forth.

8. The combination, with a blowing-bellows, of the bass-reeds sounded by said bellows, a qualifying-box surrounding and receiving the air passing the reeds, and a mute closing the air-exit from said box, substantially as set forth.

472,999. INKING DEVICE FOR TYPE-WRITING MACHINES. EDWARD S. HIGGINS and HENRY C. JENKINS, London, England. Filed Oct. 16, 1891. Serial No. 408,982. (No model.) Patented in England Nov. 1, 1889, No. 17,351, and in Germany May 10, 1890, No. 56,637.



Claim.—1. In a type-writer, the combination, with the spools arranged side by side upon a common axis and the ribbon and ribbon-feeding devices, of the swinging frame G, having the angular inwardly-converging ribbon-guides *g*, and connections for swinging said frame to carry the ribbon to and from the printing-point when the key-lever is operated, substantially as described.

2. In a type-writer, the combination, with the ribbon and the swinging frame arranged to carry the ribbon to and from the printing-point, of the pointer pivoted to the swinging frame and having its free end adapted to swing to and from the printing-point, substantially as described.

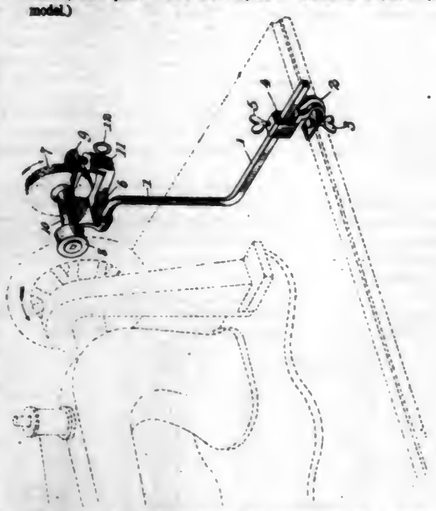
3. In a type-writer, the combination, with the swinging ribbon-supporting frame, of the pointer pivoted at one end to said frame, and stops to limit the motion of the pointer, substantially as described.

4. In a type-writer, the combination of the swinging ribbon-supporting frame, the type-guide connected to said frame, and means for swinging the frame to bring the ribbon and guide to the printing-point when a key-lever is operated, substantially as described.

5. In a type-writer, the combination, with the spools arranged side by side and mounted in a fixed frame, of the swinging ribbon-supporting frame pivoted to said fixed frame, a type-guide upon said swinging frame, and a pointer arranged to swing to and from the printing-point, substantially as described.

6. In a type-writer, the combination, with the spools arranged side by side in a fixed frame, of a swinging frame connected to the fixed frame by a rod *g'* and having angular inwardly-converging arms bent at their outer ends to form ribbon-guides, and a ribbon arranged to pass over the rod *g'* and through said guides, substantially as described.

473,000. GRINDING ATTACHMENT FOR SEWING-MACHINES. HENRY W. HOOK, Chester, Pa., assignor of one-half to William S. McManus, same place. Filed Nov. 14, 1891. Serial No. 411,923. (No model.)



Claim.—1. In a grinding device, the combination of a grinding-wheel and an adjustable tool-rest, the latter consisting of a flat horizontal plate having an inclined stem mounted in inclined bearings, so as to be adjustable relatively to the face of the wheel, so as to grind an edge at any desired angle, substantially as described.

2. The combination of the bracket 6, the grinding-wheel 7, the inclined bearing 11, and the horizontal tool-rest embracing the edge of the wheel and having an inclined shank or stem, substantially as described.

3. A grinding attachment for sewing-machines, consisting of the clamp 2, having the bearing-block 4 and the thumb-screws 3 and 5, the L-shaped arm 1, the horizontal part adjustably secured in sliding bearings in the clamp 4, and the vertical part carrying the bracket 6, a shaft journaled in bearings on the bracket and having at one end the driving-wheel 8 and at the other the grinding-wheel 7, the inclined boss 11, and the tool-rest 9, having an oblique stem or shank adjustable in the bearing-boss 11 by means of the thumb-screw 12, substantially as described.

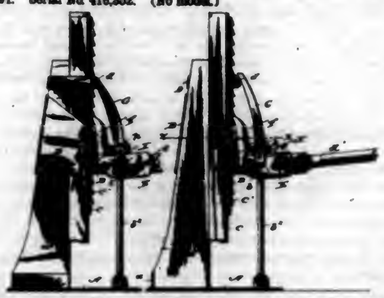
473,001. FENCE-STAY. ISAAC K. HOLLINGER, Weaver's Station, Ohio. Filed Oct. 21, 1891. Serial No. 409,408. (No model.)

Claim.—1. The combination, with the runners of a wire fence, of a stay composed of a chain linked loosely to said runners and the wires looped on the runners at the points where the chains connect and having their opposite ends tightly wrapped to the runners at opposite sides of the chain, whereby any strain in either direction upon the runners will not impair or injure the stays, substantially as specified.

2. The combination, with the runners of a wire fence, of the stay composed of a chain and the wires C, receiving links of the chain and having their opposite ends tightly wrapped around the runners, so as to prevent any sliding movement of the stays upon the runners, substantially as specified.



473,002. LIFTING-JACK. CORNELIUS F. HORRIBOE, Owego, N. Y., assignor of one-half to Edward D. Coburn, same place. Filed Dec. 28, 1891. Serial No. 416,362. (No model.)



Claim.—1. In a lifting-jack, the combination, with a base and a standard, of a lifting-bar, a lever fulcrumed in bearings on the standard, the pawls carried by said lever and adapted to engage with the lifting-bar one above the other, the dog H, pivoted on one bearing-plate and having a slot or recess *h''* and adapted to be elevated to engage with a lug on the larger pawl to hold it out of engagement with the lifting-bar, and the projection *h'* on the smaller pawl, arranged to fit in said slot or recess to elevate the dog when said pawl is raised and to disengage the dog when the pawl is lowered, substantially as described.

2. In a lifting-jack, the combination, with a base and a standard mounted thereon, of a lifting-bar, the bearing-plates on said standard, the lever fulcrumed in said bearing-plates, the pawls carried by the lever, and a dog pivoted on the bearing-plates and adapted to be raised by the lever to engage with a lug on one pawl when the lever is lowered to its limit to lower the lifting-bar, substantially as described.

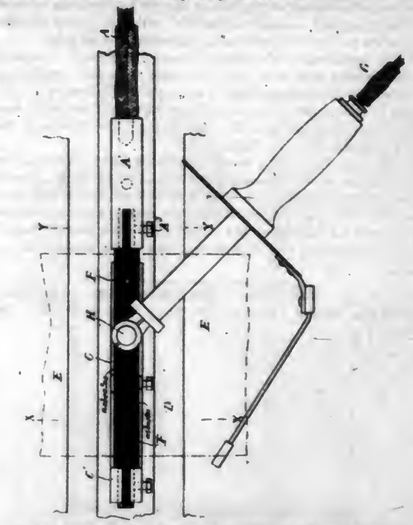
3. In a lifting-jack, the combination, with a base and a standard mounted thereon, of a lifting-bar having a rack, the bearing-plates on the standard and extending in rear thereof, a transverse shaft in the rear ends of said plates, the lever fulcrumed on said shaft and carrying a pawl on its front end, another pawl pivoted on the shaft and having a lug or projection on one side thereof, a dog pivoted on one bearing-plate and adapted to be raised by the lever to engage with the lug on said pawl, and another lug on the smaller pawl to disengage the dog as said pawl descends, substantially as described.

473,003. HEATING AND WELDING BY ELECTRICITY. HENRY HOWARD, Halesowen, near Birmingham, England. Filed Oct. 21, 1891. Serial No. 409,433. (No model.)

Claim.—1. An apparatus for heating or welding by the electric arc, in which the work forms one pole, comprising a pencil forming the other pole, a generator of electricity, circuit connections between the pencil and the generator and between the generator and the work, and a resistance so proportioned in size to the current as to be heated without being consumed interposed in the circuit and arranged in proximity to the work to heat it by radiation.

2. An apparatus for heating or welding by the electric arc, in which the work forms one pole, comprising a pencil forming the other pole, a generator of electricity, circuit connections between the pencil and the generator and between the generator and the work, and a resistance so proportioned in size to the current as to be heated without being consumed interposed in the circuit between the generator and the work to heat the work by radiation while being also heated by the electric arc.

3. An apparatus for heating or welding by the electric arc, in which the work forms one pole, comprising a pencil forming the other pole, a generator of electricity, circuit connections between the pencil and the generator and between the generator and the work, and a resistance interposed in the circuit and arranged in proximity to the work, but at a suitable distance therefrom to avoid short-circuiting, and adapted to heat the work by radiation while being heated by the electric arc, and means for moving the pencil over the work.



4. An apparatus for heating or welding by the electric arc, in which the work forms one pole, comprising a pencil forming the other pole, a conductor connecting the pencil with a source of electricity, a resistance so proportioned in size to the current as to be heated without being consumed and arranged at a suitable distance from the work to avoid short-circuiting, arranged to heat that side of the work opposite the side on which the arc is formed, a conductor connecting the resistance with the source of electricity, and a conductor or conductors connecting the resistance with the work.

5. In apparatus for heating and welding by the electric arc, where the work forms one pole and a pencil the other pole, the combination of a conductor leading from the positive pole of the source of electricity, a metal clip connected to the conductor, a carbon rod, one end of which is held in the clip, a second clip holding the other end of the carbon rod, a conductor connecting the second clip to the work or to the support on which the work rests, and a pencil connected by a conductor to the negative pole of the source of electricity.

473,004. COMBINED DUST-PAN AND SUPPORT. HERBERT H. HULL, Cleveland, Ohio. Filed Apr. 17, 1891. Serial No. 389,201. (No model.)



Claim.—1. The combination of an upright handle-frame having parallel side pieces, a dust-pan support pivoted at the rear ends of its parallel side pieces to swing between the side pieces of the handle-frame and formed with laterally-projecting stops upon its side pieces, adapted to bear against the forward faces of the side pieces of the handle-frame when at substantially a right angle to the same, a dust-pan in said support, and locking devices between said stops and said side pieces of the handle-frame, substantially as set forth.

2. The combination of a dust-pan support having a cross-piece at its rear end, a dust-pan in said support, an upright handle-frame for said support, a cover hinged to said cross-piece, a chain secured to the free edge of said cover, and a catch upon the handle-frame for engaging said chain, substantially as set forth.

3. The combination of a dust-pan support provided with grooves

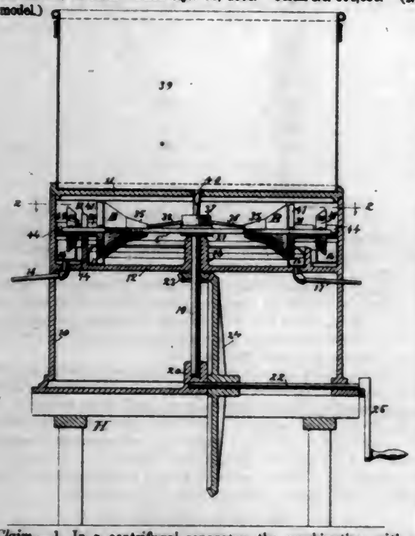
in its side pieces, an upright handle-frame secured to said support, and a dust-pan formed with beads upon its sides sliding in the grooves of the support, substantially as set forth.

4. The combination of a dust-pan support composed of parallel side pieces having grooves in their inner faces, and a rear cross-piece, and a forwardly-inclined wear-plate, an upright handle-frame secured to said support, and a dust-pan provided with beads upon its sides sliding in the grooves of the support, substantially as set forth.

5. The combination of a dust-pan support composed of parallel side pieces having grooves in their inner faces, and a rear cross-piece, and a forwardly-inclined wear-plate, an upright handle-frame pivotally attached to said support and provided with means for locking it, and a dust-pan having beads upon its sides sliding in the grooves of the support, substantially as set forth.

6. The combination of a base-frame having longitudinal grooves in its side pieces, an upright handle-frame for said base-frame, a wear-plate secured forwardly inclined between the forward ends of said base-frame, and a dust-pan formed with tongues upon its sides to slide into the grooves of the base-frame and with notches in the forward ends of its sides to engage the rear edge of said wear-plate, substantially as set forth.

473,005. CENTRIFUGAL CREAM-SEPARATOR. CARL A. HULT, Stockholm, Sweden. Filed Apr. 30, 1891. Serial No. 391,050. (No model.)



Claim.—1. In a centrifugal separator, the combination, with a vertical drive-shaft and a horizontal shaft carried by the vertical shaft, the horizontal shaft being capable of revolving in the vertical shaft, of conical separators attached to the extremities of the horizontal shaft with their apexes projecting inward, the said conical separators having an exit at their base and an exit and inlet at their apex, and mechanism, substantially as described, for imparting a rotary movement to the separator-cups, as and for the purpose specified.

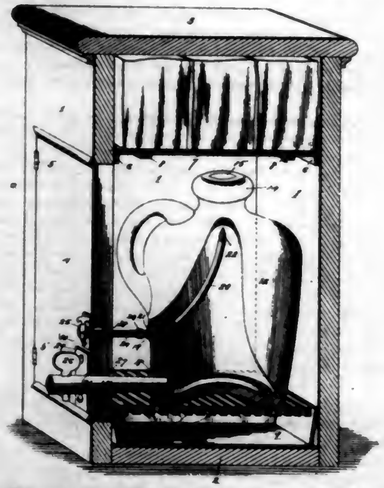
2. In a centrifugal separator, the combination, with a main shaft, a secondary shaft carried thereby and located at a right angle thereto, the secondary shaft being adapted to revolve in the main shaft, of conical separators attached to the secondary shaft, provided with discharge-pipes extending through the base and a central discharge-sleeve communicating with the apex, inlet-pipes leading into the apexes of the separators, and means, substantially as described, for rotating the separator-cups upon their own axes, as and for the purpose specified.

3. In a centrifugal separator, the combination, with a vertical shaft, a horizontal shaft located at a right angle thereto and held to revolve therein, and a distributing-vessel attached to the vertical shaft, of conical separators secured to the extremities of the horizontal shaft, a tubular connection between the distributing-vessel and the separators, pipes located in the separators and extending through the base thereof, a discharge-tube located at the center of the separators and communicating with the apex thereof, means for revolving the separators upon their own axes, substantially as described, fixed distributing-pans located at the base of the separators, receiving-pans capable of a rotary movement located opposite the discharge portion of the central tube of the separators, fixed discharge-pans located back of the receiving-pans, and as and for the purpose specified.

4. In a centrifugal separator, the combination, with a vertical shaft, a horizontal shaft located at a right angle thereto and held to revolve therein, and a distributing-vessel attached to the vertical shaft, of conical separators secured to the extremities of the horizontal shaft, a tubular connection between the distributing-vessel and the separators, pipes located in the separators and extending through the base thereof, a discharge-tube located at the center of the separators and communicating with the apexes thereof, means for revolving the separators upon their own axes, substantially as described, fixed distributing-pans located at the base of the separators, receiving-pans capable of a rotary movement located opposite the discharge portion of the central tube of the separators, fixed discharge-pans located back of the receiving-pans, troughs located beneath the fixed distributing-pans, and communication, substantially as described, between the receiving-pans and the distributing-pans and between the distributing-pans and the troughs, as and for the purpose set forth.

5. In a centrifugal separator, the combination, with a vertical shaft, a horizontal shaft carried by and held to revolve in the head of the vertical shaft, a frame attached to the head of the vertical shaft, extension-shafts journaled in the frame and in the extremities of the horizontal shaft, and a distributing-vessel located upon the head of the vertical shaft, of conical separators secured to the ends of the horizontal shaft, each provided with an inwardly-concaved bottom connected with a central conical tube extending, essentially, to the apex of the cups, and a hub provided with a channel and held to revolve around the extension-shafts, a tubular connection between the separators and the distributing-vessel, conical toothed hoods attached to the extension-shafts and surrounding the inner ends of the separator central tubes, tubes connected with the bottom of the separators and located within the same, means for revolving the separators on their axes, fixed distributing-pans located at the base of the separators, receiving-pans located upon the extension-shafts in front of the hubs of the separators, fixed distributing-pans located back of the receiving-pans, and means, substantially as described, for imparting to the vertical shaft a rotary movement upon its axis, as and for the purpose set forth.

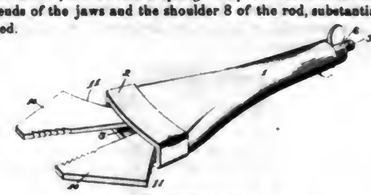
473,006. RECEPTACLE FOR AERATED LIQUIDS. JOSEPH D. ILER, Kansas City, Mo. Filed Oct. 22, 1891. Serial No. 409,546. (No model.)



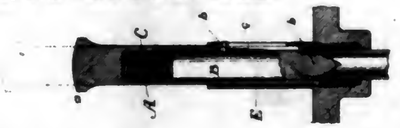
Claim.—A receptacle for aerated liquids, comprising a body portion or receptacle proper of substantially jug form, having an opening in its side near its bottom for receiving a delivery-spigot and also an opening in its side at a point above the delivery-spigot opening and designed to receive a vent-spigot, a bushing inserted into each of said openings, a delivery-spigot inserted into the lower opening, and a vent-spigot inserted into the upper opening, the said vent-spigot being separate from the delivery-spigot and having an upwardly-curved stem extending within the receptacle and perforated at its upper end and also extending at said end above the normal level of the liquid in the receptacle, substantially as set forth.

473,007. WRENCH. CHARLES LEACH, McCook, Nebr., assignor of one-half to Ed. L. Laycock, same place. Filed Nov. 6, 1891. Serial No. 411,082. (No model.)

Claim.—In a wrench, the combination, with the conical handle having the flared rectangular flattened or elongated opening at its lower end merging into the reduced cylindrical opening at its upper end, the threaded bifurcated feed-rod mounted in the latter opening and provided above its bifurcated end with a shoulder 8, the triangular jaws toothed at their inner edges and having outer inclined bearing-faces and at their inner ends recessed, overlapped, and pivoted between the bifurcations of the rod and projecting beyond the same and inclined inward, and the coiled spring interposed between the inclined inner ends of the jaws and the shoulder 8 of the rod, substantially as specified.



473,008. PACKING-TOOL. JOHN F. LYNCH, Philadelphia, Pa. Filed July 15, 1891. Serial No. 399,560. (No model.)



Claim.—1. A packing-tool comprising a winding-surface for the packing material and a headed stem or sleeve adapted to fit thereon, whereby the packing on the winding-surface may be forced around the tube being packed, substantially as set forth.

2. A packing-tool comprising a winding-mandrel for the packing material, a hollow stem in which said mandrel is guided, and a protecting-sleeve adapted to fit over the coils of packing material, substantially as set forth.

3. A packing-tool comprising a winding surface or mandrel for the packing material, a headed and slotted stem in which said mandrel is guided, and a projecting pin on said mandrel, adapted to the slotted portion of the stem, substantially as set forth.

4. A packing-tool comprising a winding surface or mandrel for the packing material, a slotted stem in which such mandrel is guided, a slotted protecting-sleeve on said stem, and a projecting pin on said mandrel, adapted to the slotted portions of said stem and sleeve, substantially as specified.

5. A tube-packing tool comprising a winding-mandrel having a winding-surface for the packing material and a reduced end portion adapted to fit within the tube to be packed, in combination with a stem fitted over and guiding said mandrel, substantially as specified.

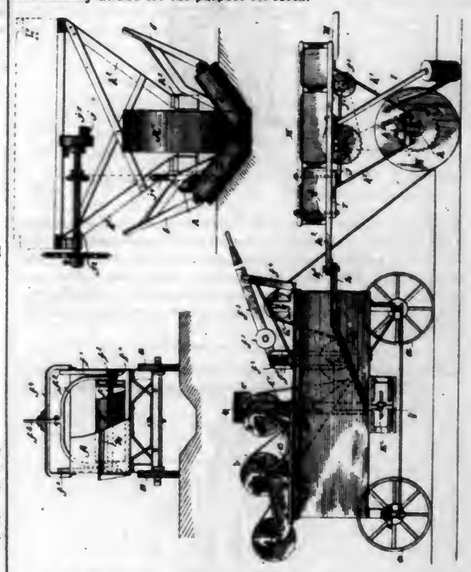
473,009. METHOD OF AND APPARATUS FOR LINING WATER-CHANNELS. CHARLES H. LYON, Ballance, near Ballan, Victoria. Filed Aug. 27, 1891. Serial No. 403,560. (No model.)

Claim.—1. The herein-described method of lining water-channels, consisting, essentially, in conducting continuous lengths of strawboard, brown paper, or other similar material under the surface of molten tar and then one above the other into the channel to be lined, and afterward pressing said material onto the surface of said channels by means of a roller or rollers, substantially as herein described and explained.

2. In apparatus for lining water-channels, a tank mounted on wheels and suitable feed, guide, and delivery rolls arranged to feed the material, and to guide the same through and deliver it from the rear end of the tank, in combination with a pressure-roller for pressing the material onto the face of the channel, a sanding device mounted on the pressure-roller and adapted to deliver sand to the material before it passes under the roller, and a coupling device for coupling the roller and sanding device to the tank, whereby the last-named device is moved along by and with the tank through the pressure-roller, as set forth.

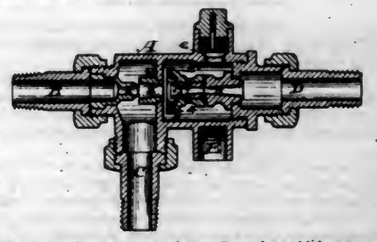
3. In apparatus for lining water-channels, a tank mounted on wheels and having a fireplace below the bottom thereof, in combination with a plurality of rolls, such as D D' D², and a guide-roll, such as G, mounted on the tank above its upper edge, said tank being provided with vertical slotted guides, such as f', a weighted lever fulcrumed on the tank, a U-shaped connecting rod or yoke, such as f^3, having spindle-bearings formed in the lower end of its vertical arms, said arms being guided in the slotted guides f', and a roller loosely mounted in said bearings, substantially as and for the purpose set forth.

4. In apparatus for lining water-channels, an apparatus for pressing the tarred material upon the faces of the water-channel and sanding the outer surface of such material, comprising a compressing roller or rollers, a sand-receptacle supported from one of said rollers and having a portion of its bottom at one end formed by a sieve adapted to vibrate or shake, and actuating mechanism controlled from the supporting-roller and adapted to impart a vibratory motion to the sieve, substantially as and for the purpose set forth.



5. In apparatus for lining water-channels, the combination, with a tank mounted on wheels and provided with means for heating the contents thereof, one or more feed-rolls and a delivery-roll mounted on the tank above the upper edge thereof, and a guide-roll mounted within said tank, of means for pressing the material delivered by the delivery-roll to the faces of the water-channel and sanding the outer surface of said material, comprising one or more compressing-rollers, a sand-receptacle mounted on one of said rollers, a vibrating sieve forming a portion of one end of the bottom of the said receptacle, intermediate mechanism operated from the supporting pressure-roller to impart a vibratory motion to the sieve, and coupling devices for coupling the two apparatus together, substantially as and for the purpose set forth.

473,010. STEAM-INJECTOR. GEORGE MARTY, Cleveland, Ohio. Filed Feb. 29, 1892. Serial No. 423,119. (Model.)

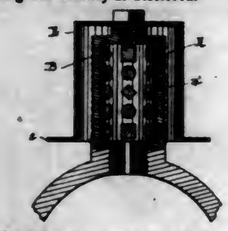


Claim.—1. In an injector, the perforated combining-tube 3 and perforated adjustable sleeve 4, having convex flange 5, in combination, as and for the purpose set forth.

2. In an injector, the perforated combining-tube 3 and perforated adjustable sleeve 4, provided with convex flange 5, in combination with steam-jet 1, lifting-jet 2, and the chamber A' of the case A, provided with steam-inlet B, suction C, discharge D, and overflow E, substantially as and for the purpose set forth.

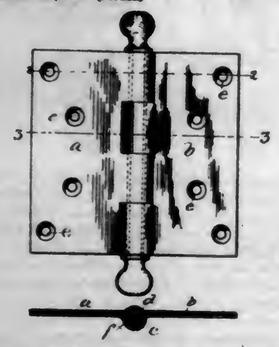
473,011. COLLECTING-TUBE FOR FILTERS. GEORGE H. MOORE, Norwich, Conn. Filed Jan. 30, 1889. Serial No. 298,156. (No model.)

Claim.—1. In a collecting-tube for filters, tube A, having therein the series of perforations *a'* and having mounted thereon in positions to cover said perforations the finely-perforated sleeve B, in combination with an imperforate guard inclosing said tube and sleeve, said guard being closed at the top and having an uncovered open bottom and having an open water-way between its inner surface and said tube, arranged and operating substantially as described.



2. In a collecting-tube, tube A, having the series of perforations *a'* therein, sleeve B, of finely-perforated metal, closely embracing said tube, and cylindrical guard E, superposed upon said tube, said guard having an open water-way between its inner surface and said tube and having an annular flange *e* to serve as a spreader for an ascending current of water through said tube, combined and operating substantially as described.

473,012. **HINGE.** JAMES H. MOORE, Nashua, N. H., assignor to the Nashua Lock and Hardware Company, same place. Filed Jan. 15, 1891. Serial No. 377,832. (Model.)



Claim.—A hinge or butt consisting of two leaves, each of which is composed of a sheet of metal bent at its central line to form an eye or loop, the edges of said sheet being flush with each other, bushings held in the eyes or loops of said leaves, and a pintle uniting the eyes or loops of the two leaves, substantially as described.

473,013. **APPARATUS FOR SEPARATING NATURAL GAS FROM OIL, WATER, &c.** WILLIAM MOSER, Kokomo, Ind. Filed Oct. 21, 1891. Serial No. 409,305. (No model.)

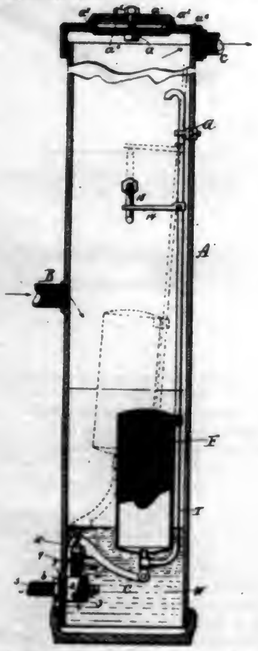
Claim.—1. In a gas apparatus, the combination, with a chamber or reservoir and gas inlet and outlet, of a hollow air-tight float and a tube communicating with the bottom of said float and extending a distance upwardly within the chamber or reservoir, substantially as set forth.

2. In a gas apparatus, the combination, with a chamber or reservoir and gas inlet and outlet, of a hollow air-tight float, a tube communicating with the bottom of said float and extending a distance upwardly within the chamber or reservoir water-outlet, and an outlet-valve connected with said float, substantially as set forth.

3. In a gas apparatus, the combination, with a chamber or reservoir, an inlet constructed to discharge natural gas and foreign matter into the chamber or reservoir at a point between its ends, and a gas-outlet at the upper part of the chamber or reservoir, of a hollow air-tight float within said chamber or reservoir, a tube communicating with the bottom of said float and extending some distance upwardly within the chamber or reservoir, an outlet for the chamber or reservoir, and a valve for said outlet connected with and controlled by said float, substantially as set forth.

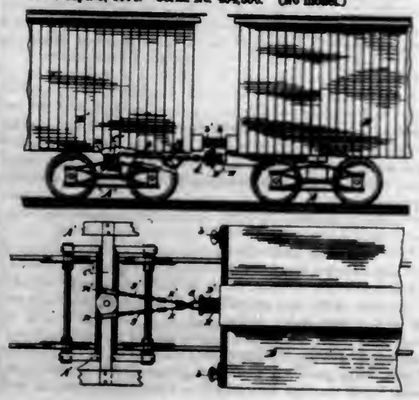
4. In a gas apparatus, the combination, with a reservoir and a float located therein, of an outlet-valve, a lever connecting said float with the stem of said valve, and a pivoted link pivotally connected to said lever at a point in proximity to the pivotal connection of said lever with its valve-stem, whereby a compound leverage is effected in the operation of the valve of the float, substantially as set forth.

5. The combination, with a gas-reservoir, of an outlet-valve, said outlet-valve comprising a body portion having a valve-seat, a bracket projecting from said valve-seat, a sleeve carried by said bracket, a valve-stem constructed to pass loosely through the valve-sleeve and constructed to rest on the valve-seat and normally close the opening therein, and a link pivoted at one end to said bracket and at the other end to a lever, which latter is pivotally connected to the valve-stem at a point in proximity to the pivotal connection of the valve with the link, substantially as set forth.



6. In a gas apparatus, the combination, with a reservoir, of a float therein, a tube communicating with said float and extending above the top of the float, an outlet-valve connected with said float, an arm connected with said tube, a bell-crank lever passing through a stuffing-box in the wall of the reservoir and terminating within the reservoir at a point below the arm on the tube, and a handle on the outer end of said bell-crank lever, substantially as set forth.

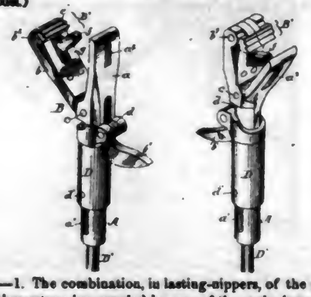
473,014. **CHAIN COUPLING FOR CARS.** JOHN E. MULLANEY, Minneapolis, Minn., assignor of one-half to Louis R. Thian, same place. Filed Sept. 5, 1891. Serial No. 404,856. (No model.)



Claim.—1. The chain having end hooks, a central link capable of use as an ordinary coupling-link, and a pair of hooks for taking up slack, located one on each of the end portions of the chain, whereby the said chain may be used either as a substitute for the ordinary draw-bar and link or to reinforce the ordinary couplings and effect a taut connection between the cars, substantially as described.

2. A movable chain draw-bar and safety chain coupler for railway-cars, comprising a chain having hooks at its extremities, a coupling-link at its center constituting one of the links of the chain and capable of use either as a coupling-link or as the central link of the chain, and a pair of hooks for taking up slack, located one on each of the end portions of the chain between the central link and the end hooks of the chain, the said parts being arranged and capable of use, substantially as and for the purpose set forth.

473,015. **LASTING-NIPPERS.** JAMES F. O'NEILL, Hornellsville, N. Y., assignor to the Whitten-Lake Lasting Machine Company, same place. Filed Oct. 23, 1890. Renewed Sept. 15, 1891. Serial No. 406,761. (No model.)

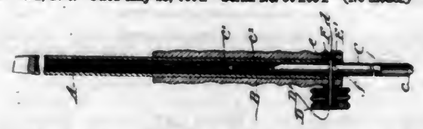


Claim.—1. The combination, in lasting-nippers, of the main jaws with a supplementary jaw carried by one of the main jaws, said supplementary jaw having an outer roughened or toothed portion for gripping the upper, and an inner plain projection extending beyond the toothed or roughened portion and serving to hold the latter out of action until the plain bearing has passed beyond the upper, substantially as described.

2. The combination, in lasting-nippers, of the two main jaws, one of which is smooth, a supplementary jaw pivoted to the opposite main jaw, said supplementary jaw having an outer roughened or toothed portion, and an inner plain bearing portion projecting forward beyond the toothed or roughened portion, with a spring bearing upon the supplementary jaw to force it outward, the plain main jaw having an orifice into which the smooth portion of the supplementary jaw can project when the roughened jaw is in action, substantially as described.

3. The combination of the main jaws, one of said main jaws being smooth, with two supplementary jaws situated side by side and pivoted on the same line to the other main jaw, the said supplementary jaws having smooth bearing-faces and roughened faces, with independent springs for acting on each of said jaws, thus allowing each supplementary jaw to have independent action, substantially as and for the purpose set forth.

473,016. **UMBRELLA-SUPPORT.** HERBERT H. PATTEE, Washington, D. C. Filed May 25, 1891. Serial No. 394,054. (No model.)



Claim.—1. The combination of a hollow handle and stick to which an umbrella-cover is attached, a removable cylindrical support within said stick, and a pin-provided screw-cap which closes the end of the stick when the cylindrical support is within the same and is used to connect said cylindrical support to the stick after the support has been removed therefrom.

2. The combination of a hollow handle and stick to which an umbrella-cover is attached, a removable tube within said stick, a removable rod or tube within the first-mentioned tube, and the pin-provided screw-cap which closes the end of the stick when the first-named tube and the last-named tube or rod are arranged within the stick and is used to connect the first-mentioned tube with the hollow umbrella-stick after the former has been removed therefrom.

3. The combination of a hollow stick A, to which an umbrella-cover is attached, the tube C, located removably within said stick, and the pin-provided cap D, located on the end of stick A to close the said end, but adapted to be removed therefrom and used as a connecting device for the tube and stick after the former has been removed from the latter.

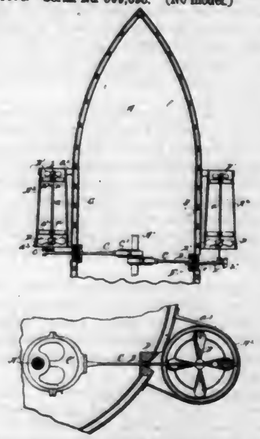
4. The combination of the hollow stick A, to which an umbrella-cover G is attached, the cylindrical support C, located removably within said hollow stick, said cylindrical support being provided near one end with the perforation *f*, and the hollow cap B, located removably on the end of the umbrella-stick, said cap being provided with an internal pin D', which is adapted to serve in connecting the cylindrical support C to the stick A through the perforation *f* after the cylindrical support has been removed from the stick, substantially as described.

5. The combination of a hollow stick A, carrying an umbrella-cover G, the removable cylindrical support C, located within the stick A, the removable rod or tube H, located within the said cylindrical support C, and the pin-provided cap which fits over the handle when all the parts are within the stick and serves at other times as a connection, substantially as described.

6. The combination of a hollow stick A and handle B, the cylindrical support C within the same, the screw-threaded ferrule F, surrounding the end of handle B, the screw-threaded cap D, adapted to engage said ferrule and provided with a pin D', which pin is employed to connect the cylindrical support C to the stick A after said support has been removed from the stick, substantially as described.

7. The combination of a handle B and stick A, a removable tube C within said handle and stick, a screw-threaded sleeve F, surrounding the end of the handle B, a nut E, located inside of the sleeve F, and a screw-cap D, provided with a rigid pin D', screw-threaded at its end at *d*, which pin is adapted to connect the tube C to the stick A after the said tube has been removed from the stick, all substantially as described.

473,017. **PROPELLER.** HENRY PETERSEN, New York, N. Y. Filed July 16, 1891. Serial No. 399,693. (No model.)



Claim.—1. In a vessel, the combination, with a tubular casing secured to the side thereof, of propeller-wheels having bearings supported in said casing, means comprising an oil-vat within the vessel, having pipe connections with the wheel-bearings, for automatically lubricating the bearings, and means for rotating the wheels, substantially as specified.

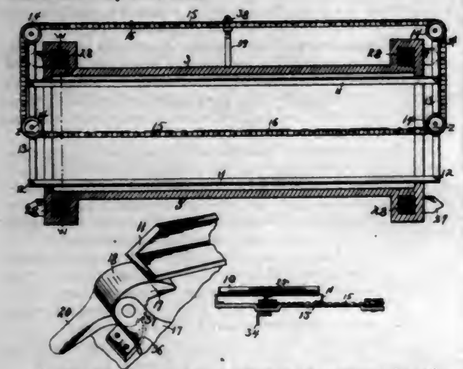
2. In a vessel, the combination, with the main shaft, the propeller-wheels, and the eccentric-rods, of the bearings for said rods, consisting of the transversely-perforated cylindrical bearings D and the blocks D', within which the bearings oscillate, substantially as specified.

3. The combination, with the oscillating bearing, the eccentric-rod, and the crank-pin, of the oil-box for said pin, a pipe communicating with the interior of said box, a pipe extended through the oscillating bearing and having a telescopic connection with the first-named pipe, and an oil-vat for supplying oil thereto, substantially as specified.

4. The combination, with a main shaft, a propeller-wheel, connections between the propeller-wheel and main shaft, and the oscillating bearing, of the pipe secured thereon, an oil-vat, a tube extending therefrom, and a joint connection between the tube and pipe, substantially as specified.

473,018. **BAKER'S OVEN.** JOHN J. PFENNINGER, St. Louis, Mo. Filed Oct. 21, 1891. Serial No. 409,393. (No model.)

Claim.—1. A baking-oven having a baking-chamber 7, track-rails for supporting the series of baking-pans located within said chamber, cross-pieces 13, secured to the terminal portion of said track-rail, chain-wheels 14, mounted on said cross-pieces, an endless chain 15, provided with a series of perforations 16, mounted on said chain-wheels and adapted to pass through said baking-chamber beneath the baking-pans, means for securing said baking-pans to said endless chain, means for rotating said endless chain, and means for elevating said track-rails, substantially as set forth.



2. In a baking-oven, a baking-chamber the openings whereof are provided with doors 21, L-shaped tracks located in said baking-chamber, baking-pans 10, provided with lugs 35 and located on said tracks, cross-pieces 13, secured to said tracks, chain-wheels 14, mounted on said cross-pieces, a crank 34, secured to one of said chain-wheels for rotating the same, an endless chain 15, provided with perforations 16 for the reception of lugs 35, mounted on said chain-wheels, and levers 18 for elevating said tracks simultaneously or independently of each other, substantially as set forth.

3. In a baking-oven, a baking-chamber the openings whereof are provided with doors 21, L-shaped tracks located in said baking-chamber, baking-pans 10, provided with lugs 35, located on said rails, cross-pieces 13, secured to said rails, chain-wheels 14, mounted on said cross-pieces, a crank 34, secured to one of said chain-wheels for rotating the same, an endless chain 15, provided with perforations 16 for the reception of lugs 35, mounted on said chain-wheels, levers 18 for elevating said rails simultaneously or independently of each other, and spring-pawls 36 for holding said levers in their desired adjustment, substantially as set forth.

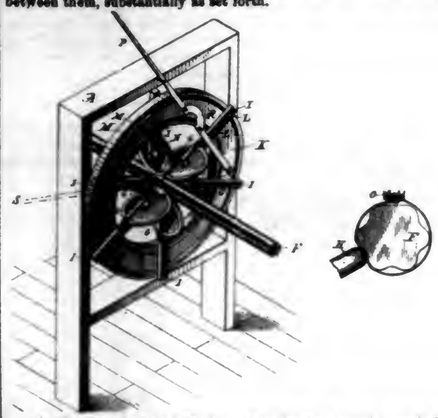
4. In a baker's oven, the combination of carrying-wheels suitably mounted one at each end of the baking-chamber and one at each end of one of the outer sides of the chamber, with an endless chain guided on said wheels, whereby one lap of said chain is caused to pass inside the baking-chamber and the other lap outside thereof, substantially as shown and described.

5. A baking-oven having a baking-chamber 7, a hot-air passage 8, located beneath the same, a series of hot-air passages, such as 24 and 26, located above said chamber, two flues 28, and a combustion-flue located at each end of said oven and in communication with said hot-air passages, cut-off dampers located in said flues, a drying-chamber 32, located above said baking-oven, L-shaped track-rails for supporting the series of baking-pans located within the baking-chamber, baking-pans 10, provided with lugs 35, located on said rails, cross-pieces 13, secured to the terminal portions of said rails, chain-wheels 14, mounted on the said cross-pieces, a crank 34, secured to one of said chain-wheels for rotating the same, an endless chain 15, provided with a series of perforations 16 for the reception of lugs 35 of the baking-pans, a shaft 39, carrying a roller 38 for supporting the portion of said chain located on the outside of the baking-oven, levers 18, provided with rounded arms 19, and a series of ratchet-teeth 37 for elevating or lowering the said rails simultaneously or independently of each other, and spring-pawls 36 for holding said levers in their desired adjustment, substantially as set forth.

473,019. CORRUGATING-MACHINE. WILLIAM J. PLESKER, Galesburg, Ill. Filed Sept. 3, 1890. Serial No. 363,230. (No model.)

Claim.—1. In a machine for forming closed corrugated tubes, the combination of the stationary frame, the corrugation-forming rolls mounted on the stationary frame, and the seam-locking roll in a transverse plane behind that of the corrugating-rolls, but in close proximity thereto and situated substantially as set forth, whereby while one part of the tube is having the seam locked the other part is being simultaneously corrugated.

2. In a machine for corrugating sheet-metal pipe, the combination of the pinion and rack, the bar or carriage secured to the rack, the longitudinally-reciprocating mandrel projecting beyond the transverse planes of the rack and adapted to be entirely surrounded by a sheet-metal tube, the frame supporting the said parts, and the corrugating-rolls mounted on said frame in a transverse plane other than those of the rack and placed, substantially as set forth, around the path of the mandrel, whereby they mutually act to relieve the mandrel of side pressure when the mandrel is caused by the rack and pinion to pass between them, substantially as set forth.



3. The combination, with the longitudinally-movable mandrel, of the ring-like plate and pressing-rolls secured to said plate and adjustable toward and from the mandrel and laterally adjustable, substantially as set forth.

4. The combination, with the longitudinally-movable mandrel, of the plate and pressing-rolls secured to the plate and adjustable laterally, substantially as set forth.

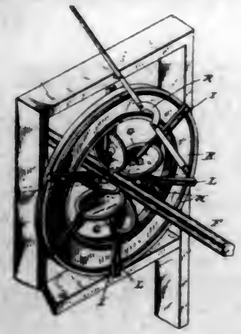
5. The combination of the frame, the plate secured to said frame, the curvilinear guides in said plate, the arms carrying rolls, and clamps for fastening said arms in said guides, substantially as set forth.

6. The combination, with the frame and the longitudinally-movable mandrel, of the ring-like plate secured to the frame and having concentric guides, bifurcated arms secured to said plate and laterally adjustable, and pressing-rolls mounted in said bifurcated arms, substantially as set forth.

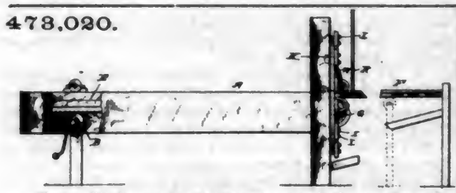
7. The combination, with the frame comprising the rearwardly-extending portion and the upright portion, the ring-like plate mounted on said upright portion and having concentric guides, the arms clamped in said guides, and pressing-rolls mounted in said arms, of a carriage sliding on said rearwardly-extending portion and a mandrel secured to said carriage and passing between said pressing-rolls, substantially as set forth.

8. The combination of the frame, the longitudinally-movable corrugated mandrel, the pressing-rolls mounted on the frame, and a vertically-swinging detent-lever mounted on the frame and adapted to engage with the pipe on the mandrel, substantially as and for the purpose set forth.

473,020. METHOD OF CORRUGATING PIPES. WILLIAM J. PLESKER, Peoria, Ill. Filed Feb. 17, 1892. Serial No. 421,809. (No specimens.)

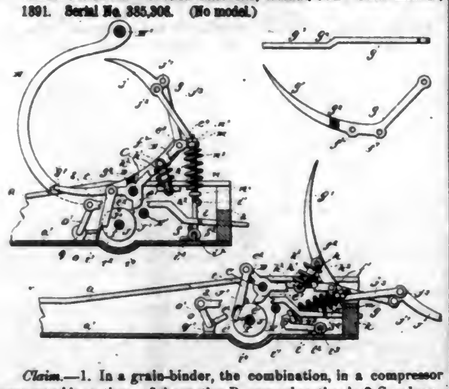


473,020.



Claim.—The herein-described improvement in the art of manufacturing corrugated sheet-metal pipes, it consisting in first forming a tube with loosely-engaged joined edges, then compressing the metal into corrugations on longitudinal lines of the pipe while it is held under tension transversely, and finally tightening the seam or joint by bending the overlapping edges down upon the pipe, substantially as set forth.

473,021. COMPRESSOR AND DISCHARGING MECHANISM FOR GRAIN-BINDERS. GEORGE SCHUBERT, Walnut, Tex. Filed Mar. 16, 1891. Serial No. 385,906. (No model.)



Claim.—1. In a grain-binder, the combination, in a compressor constructed in sections, of the section D, secured on the shaft C and provided with a projection c^3, a dog t, pivoted thereto, a lug m, pivoted in the stubbleward end of section D, a shaft I, having a disk J, provided with a projection J' and a stud J^3 to engage with the dog t, a dog o, secured to a crank-shaft o^3 in position to be engaged by the projection J', a trip-rod pivoted to the crank o' and provided with a stud S^2, a movable or collapsible prop connected to said lug m, and a link h, pivoted to the platform and with its other end pivoted to the section g, said section g pivoted to the section D and provided with a discharging-arm g', as shown, and for the purpose described.

2. In a grain-binder, the combination, in a compressor constructed in sections, of the section D, secured on the shaft C and provided with a projection E^2, a dog t, pivoted thereto, a lug m, pivoted in the stubble end of section D, a shaft I, having a disk J, provided with a projection J' and a stud J^3 to engage with the dog t, a dog o, secured to a crank-shaft o^3 in position to be engaged by the projection J', a trip-rod pivoted to the crank o' and provided with a stud S^2, a movable or collapsible prop connected to said lug m, a link h, having a slot h' to operate on a stud h^3, secured to the platform and with its other end pivoted to the section g, a spring h^2 on said link h, and the section g, pivoted to the section D and provided with a discharging-arm g', as shown, and for the purpose described.

3. In a grain-binder, the combination of a compressor constructed in sections, the section D, secured on the shaft C and provided with projections c' and c^3, a dog t, pivoted to the projection c^3, a shaft I, having a disk J, provided with a projection J' and a stud J^3, a link h, pivoted to the platform and with its other end pivoted to the discharge-arm g', formed integral with the section g, and the section g, pivoted to the section D, substantially as and for the purpose described.

4. In a grain-binder, the combination, in a compressor, of a section D, secured on a shaft C and provided with a projection c' and a projection c^4, a lug m, pivoted in the projection c^4 and perforated to receive the upper end of a prop, a section g, pivoted at f' to the section D at c^3 and having its upper end pivoted with the stubbleward projection, of the section j, a section j^3, pivoted with its lower end on the lug m or extension c^4 and with its upper end pivoted to the section j on its inner side at j^3, so as to impart an increased movement to the section j, a link h, pivoted with one end to the platform and with its other end to the section g, a movable or collapsible prop, as shown, and a shaft I, having a disk J, provided with a projection J', as shown, and for the purpose described.

5. In a grain-binder, the combination, in a compressor, of a section D, secured on a shaft C and provided with a projection c^3, a dog t, pivoted thereto, a lug m, pivoted in the projection c^4 and perforated to receive the upper end of a prop, a section g, pivoted at f' to the section D at c^3 and having its upper end pivoted with the stubbleward projection of the section j, a section j^3, pivoted with its lower end on the lug m or on the extension c^4 and with its upper end pivoted to the section j on the inner side, so as to impart an increase of movement to the section j, a link h, pivoted with one end to the platform and with its other end to the section g, so as to impart an increase of movement to the section g as the section D is operated, a movable or collapsible prop extending with its upper end through the lug m, a shaft I, having a disk J, provided with a projection J' and a stud J^3, a dog o, secured to a crank-shaft o^3 in position to be engaged by the projection J', and a trip-rod pivoted to the crank-shaft o' and provided with a stud S^2, as shown, and for the purposes described.

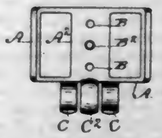
6. In a grain-binder, the combination, in a compressor, of a section D, secured on a shaft C, a lug m, pivoted in the projection c^4 and perforated to receive the upper end of a prop, a section g, pivoted at f' to the section D at c^3 and having its upper end pivoted with the stubbleward projection of the section j, a section j^3, pivoted with its lower end on the lug m and with its upper end pivoted to the section j on the inner side, a link h, having a slot h' to operate on a stud h^3 and with its other end pivoted to the section g, a prop extending with its upper end through the lug m, and a spring n^3 on said prop, as shown, and for the purpose described.

7. In a grain-binder, the combination, in a compressor, of a section D, secured on a shaft C and provided with a projection c^3, a lug m, pivoted in the projection c^4 and perforated to receive the upper end of a prop, a section g, pivoted at f' to the section D at c^3 and having its upper end pivoted with the stubbleward projection of the section j, a section j^3, pivoted with its lower end on the lug m and with its upper end pivoted to the section j on the inner side, a link h, having a slot h' to operate on a stud h^3 and with its other end pivoted to the section g at f^3, a spring h^2 on said link, a movable or collapsible prop extending with its upper end through the lug m, a spring n^3 on said prop, nuts on said prop, as shown, and for the purpose described, the section g being provided with a discharging-arm, as shown, a shaft I, having a disk J, provided with a projection J' and a stud J^3, a dog t, pivoted to the projection c^3, a dog o, secured to a shaft o^3 in position to be engaged by the projection J', and a trip-rod pivoted to the crank o' and provided with a stud S^2, as shown, and for the purpose described.

8. In a grain-binder, a shaft I, provided with a collar or disk e, a stud e^2, secured to said disk e, a rod or bar b, having a notch b' formed in its stubbleward end to engage with the stud e^2, a lever d, pivoted in the platform with its free end projecting in the passage-way of the conveyer-chain, a stud F^3 on said conveyer-chain, the bar or rod b, pivoted to the projection d' on the lever d, guides d^5 d^5, a spring d^3, and a stud or projection d^4, as shown, and for the purpose described.

9. In a grain-binder, a shaft I, provided with a collar or disk e, a stud e^2, secured to said disk e, a rod or bar b, having a notch b' formed in its stubbleward end to engage with the stud e^2, a lever d, provided with the projection d' and pivoted in the platform and having its free end bifurcated and projecting in the passage-way of the conveyer-chain, a stud F^3 on said chain, the bar or rod b, pivoted to the projection d', guides d^5 d^5, a spring d^3, as shown, and a stud or projection d^4, as shown, and for the purpose described.

473,022. WINKER-BRACE SUPPORT AND BUCKLE. CHRISTIAN C. SCHWABEN, Winterset, Iowa. Filed July 14, 1891. Serial No. 399,489. (No model.)



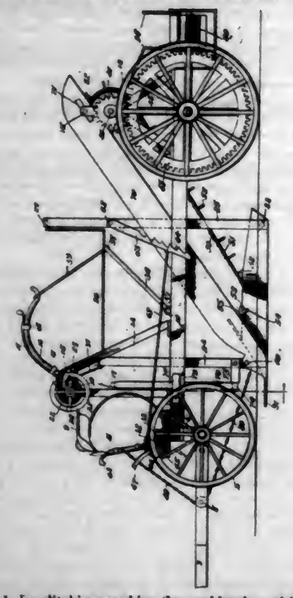
Claim.—1. A winker-brace support and buckle for bridles, consisting of an oblong frame having a transverse bar at its center and a tongue projecting at right angles from the center of said bar, and integral projections extending outward from one of the sides of the frame and adapted to be bent and clamped fast to a winker-brace, in combination with the brow-band and a winker-brace.

2. A winker-brace support and buckle consisting of a metal frame having means for permanently or detachably and adjustably connecting it with a strap, as set forth, and a winker-brace-supporting device at the lower portion thereof, consisting of a series of concavo-convex-shaped projections, each alternate one being curved in an opposite direction, as required, to provide an eye or opening through which the

winker-brace may be extended and by which it may be securely supported, substantially as set forth.

3. A winker-brace support and buckle for bridles, consisting of a frame A, having the bar A^1 extending across its central portion, and provided with the tongue B^2 and the perforations B^3 and extensions C and C^1 on the lower edge thereof, substantially as set forth, for the purposes stated.

473,023. DITCHING-MACHINE. DAVID W. SCOTT, Comad, Nebr. Filed Nov. 27, 1891. Serial No. 413,308. (No model.)



Claim.—1. In a ditching-machine, the combination, with the frame-work, of a pair of inverted-U-shaped stirrups, a ditching-shovel connected to the lower ends of the same, an adjustable reach connecting the upper ends of the stirrups, means for raising and lowering the stirrups conjointly, and means for independently raising and lowering the front stirrup and point of the shovel, substantially as specified.

2. In a ditching-machine, the combination, with the frame-work, the front and rear inverted-U-shaped stirrups, and the shovel connected at the lower ends of the same, of a reach connecting the upper ends of the stirrups, a pair of standards, a lever fulcrumed in the standards, a drum-shaft fulcrumed in the standards, means for locking the lever and shaft, a cable connecting the drum-shaft with the front stirrup, an inverted-L-shaped bail fulcrumed on the frame and taking against the under side of the reach, and an inverted-U-shaped link connected with the lever and the bail, substantially as specified.

3. In a ditching-machine, the combination, with the opposite side bars 10, the front and rear stirrups 24 and 25, the same being of inverted-U shape and mounted between the side bars, the ditching-shovel 30, having the point 31, the wings 32, pivoted at their rear ends to the rear stirrup and at their front ends having the standard 34 adjustably connected with the terminals of the front stirrup, and the reach 26, adjustably connected to the upper ends of the stirrups, of the triangular standards 14, terminating at their upper ends in the segmentally-toothed locking-heads, the curved lever 16, journaled in the heads, the sliding pawls 70, mounted on the lever and adapted to engage the teeth of heads, the bail 36, pivoted, as at 37, to the side beams 10 and taking under the reach, the link 39, connecting the bail with the lever 16, the drum-shaft 19, carrying the drum 20, journaled in the standards 14, the hand-wheel mounted on the end of the drum-shaft, the pawl for locking the hand-wheel, and the cable mounted upon the drum and connected to the front stirrup, substantially as specified.

4. In a ditching-machine, the combination, with the opposite side bars and the shovel-supporting vertically-adjustable stirrups, of means for raising and lowering the stirrups, a pin on the side bar, and a toothed rack-bar for engaging the pin, substantially as specified.

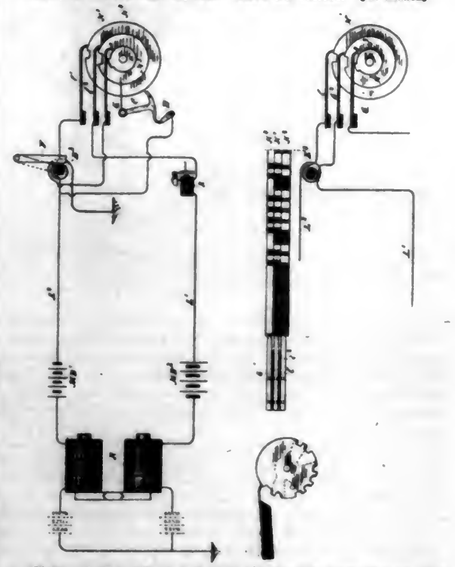
5. In a ditching-machine, the combination, with the opposite side bars and the shovel-supporting vertically-adjustable stirrups, of means for raising and lowering the stirrups, a pin on the side bar, a foot-lever pivoted to the frame-work, a rack-bar having upwardly-disposed teeth pivoted to the shovel-supporting stirrup, a pin on the frame for engaging the same, and a connecting-rod between the foot-lever and rack-bar, substantially as specified.

6. In a ditching-machine, the combination, with the frame-work, the adjustable shovel, and the supporting-stirrups for the same, of brackets extending from one of the supporting-stirrups, blades terminating at their upper ends in levers pivotally engaging the front ends of the brackets, a pair of notched locking-bars extending from the frame and adapted to engage the levers, and a pair of spring-plates for yieldingly pressing the levers into such engagement, substantially as specified.

7. In a ditching-machine, the frame-work provided with the stirrups 24 25 and a reach 26, connecting the stirrups, the ditching-shovel pivoted to the stirrups 25, and means for raising and lowering the stirrups, substantially as specified.

8. In a ditching-machine, the L-shaped scrapers 75, provided with blades 76, the handles 78, and locking means for the scrapers, in combination with the ditching-shovel, whereby the scraping-levers may be operated so as to bring their blades into parallelism with the shovel, as set forth.

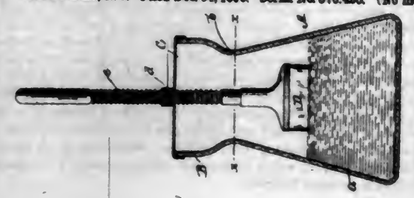
473,024. DISTRICT-TELEGRAPH BOX. CHARLES SELDEN, Baltimore, Md. Filed June 15, 1885. Serial No. 168,683. (No model.)



Claim.—1. In a district-telegraph system, the combination, with signal-boxes having circuit closing and breaking contact-springs and connections in the line and ground circuits, as described, of an indicator having two magnet-coils connected, respectively, to the ground and line circuits from the box, as and for the purpose described.

2. The combination, in a district-telegraph system, of a complete metallic circuit grounded at the central office, signal-boxes having circuit-breaking springs for interrupting the line-circuit through the box and circuit making and breaking connections for interrupting the ground connection from line at either side of the box, and indicators having magnet-coils in the circuits over which currents flow both in sending signals by make and break of line and by make and break of ground connection, as and for the purpose described.

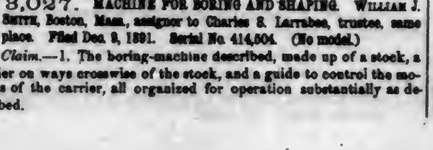
473,025. MUCILAGE BOTTLE AND BRUSH. HENRY C. SEWARD, Budd's Lake, N. J. Filed Dec. 31, 1890. Serial No. 376,420. (No model.)



Claim.—1. The combination, with a mucilage-bottle provided with a contracted neck elongated horizontally, of a cap for the mouth of the bottle, provided with a screw-threaded hole, and a brush having a screw-threaded handle coacting with the screw-threaded hole in said cap, and provided with shoulders on its lower end or brush-holder which coact with the walls of the bottle below the contracted neck, whereby the cap is locked on the mouth of the bottle, substantially as set forth.

2. A mucilage-bottle provided with a horizontally-elongated contraction at the base of its neck between the mouth of the bottle and its body portion, in combination with a cap or cover fitting over the mouth of the bottle and provided centrally with a screw-threaded opening, and a brush having a screw-threaded handle coacting with the screw-threaded opening in said cap or cover and provided with shoulders on its lower end or brush-holder which coact with the walls of the body portion of the bottle below the base of its neck, substantially as and for the purpose set forth.

473,026. WRENCH. JAMES B. SMITH, Falls City, Nebr. Filed July 24, 1891. Serial No. 400,543. (No model.)



Claim.—1. In a wheel-wrench, the combination, with two lever-arms having their adjacent ends adapted to engage a nut from opposite sides, and straps or plates flexibly connecting the inner ends of the same, of the spoke-engaging hooks connected to said lever-arms and extending laterally therefrom, substantially as specified.

2. In a wheel-wrench, the combination, with two lever-arms having their adjacent ends adapted to engage a nut from opposite sides, of connecting straps or plates pivotally connected to said arms adjacent the inner ends thereof, and spoke-engaging hooks connected to the lever-arms and extending laterally therefrom, substantially as and for the purpose specified.

3. In a wheel-wrench, the combination, with two lever-arms having their adjacent ends adapted to engage a nut from opposite sides, of the straps or plates flexibly connecting the inner ends of said lever-arms and having the auxiliary bolt-holes, and suitable devices for connecting the free or outer ends of the lever-arms to the spokes of a vehicle-wheel, substantially as specified.

4. In a wheel-wrench, the combination, with two lever-arms having their adjacent ends adapted to engage a nut from opposite sides, and connecting straps or plates pivotally connected to said arms adjacent the inner ends thereof, of the spoke-engaging hooks, and flexible straps connecting said hooks to the lever-arms, substantially as specified.

5. In a wheel-wrench, the combination, with two levers flexibly connected at their inner ends and having longitudinal slots adjacent their outer ends, of spoke-engaging hooks having threaded shanks adapted to take through the slots of the lever-arms, and nuts mounted on the threaded shanks of the said hooks, substantially as specified.

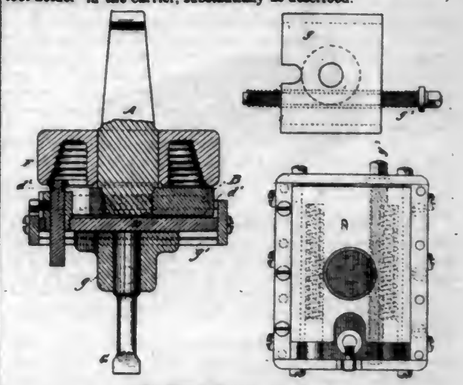
6. In a wheel-wrench, the combination, with two levers having their adjacent ends adapted to engage a nut from opposite sides, flexibly connected at their inner ends and having transverse apertures adjacent their outer ends, of spoke-engaging hooks having threaded shanks adapted to take through the apertures of the lever-arms, the nuts upon the ends of said hooks, and coiled springs interposed between the nuts and lever-arms and surrounding the hook-shanks, substantially as specified.

7. In a wheel-wrench, the combination, with a lever-arm having a rigid jaw at its inner end and two straps pivotally connected to the side of said jaw, of a lever-arm having its inner end pivotally connected between the said straps, a sliding jaw mounted on the latter arm, a threaded rod connected to the sliding jaw and taking through a lug on the lever-arm, and a threaded disk mounted on the threaded rod between the branches of the said lug, substantially as specified.

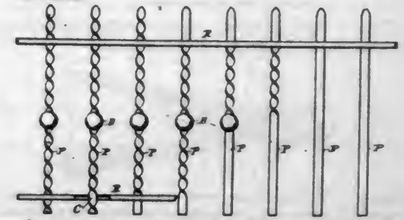
473,027. MACHINE FOR BORING AND SHAPING. WILLIAM J. SMITH, Boston, Mass., assignor to Charles S. Larrabee, trustee, same place. Filed Dec. 9, 1891. Serial No. 414,504. (No model.)

Claim.—1. The boring-machine described, made up of a stock, a carrier on ways crosswise of the stock, and a guide to control the motions of the carrier, all organized for operation substantially as described.

2. In combination, a tool-stock, a carrier, a guide, a tool-holder, and means for adjusting the tool-holder, and means for adjusting the tool-holder in the carrier, substantially as described.



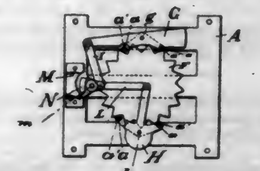
473,028. IRON FENCE. RICHARD C. STEWART, Jr., and WALLACE A. STEWART, Wichita, Kans. Filed June 26, 1890. Serial No. 356,765. (No model.)



Claim.—1. An iron fence consisting of two or more rails having series of equidistant and corresponding picket-holes through their bodies and of a series of flat metal pickets arranged through the holes of said rails and spirally twisted in the same direction throughout their length, the curve being broken at each rail, substantially as and for the purpose set forth.

2. The herein-described iron fence, consisting of two or more rails having corresponding and equidistant picket-holes through their body portions, as shown, in combination with the series of flat metal pickets arranged through said rails in the manner set forth and provided, respectively, with an ornamental ball or block sleeved thereon between the rails and spirally twisted in the same direction throughout their length, the curve being broken at each rail, and an ornamental ball or block, substantially as and for the purpose specified.

473,029. MOTOR FOR FANS. RUPERT STRASSER, Fort Wayne, Ind. Filed Jan. 25, 1892. Serial No. 419,241. (No model.)

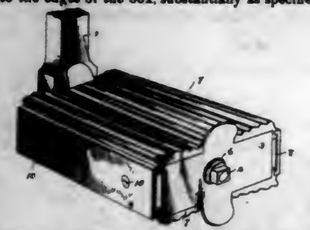


Claim.—A motor for fans, consisting of a clock-train, an escape-wheel with straight-faced teeth, levers on opposite sides of said escape-wheel, said levers having rollers engaging the teeth of the escape-wheel, a fan-shaft having a crank, and links connecting said levers and said crank, all substantially as shown and described.

473,030. BICYCLE-PEDAL. FRANK SWEETLAND, Argola, N. Y. Filed Feb. 10, 1892. Serial No. 420,995. (No model.)

Claim.—1. In a pedal, the combination, with the crank and its pin, of a hollow box mounted loosely on the pin, opposite independent rubber pads mounted at opposite sides of the box, clamping-plates

overlapping the edges of the pads, and screws passed through the plates and into the edges of the box, substantially as specified.



2. In a pedal, the combination, with the crank and its pin, of a hollow box mounted revolubly upon the latter, opposite independent rubber pads concaved and applied to the opposite sides of the box, opposite clamping-plates at the edges of the box overlapping the rubber pads, and clamping-screws passed through the plates and threaded in openings formed in the opposite edges of the box, substantially as specified.

3. In a pedal, the combination, with the crank and its pin, of the hollow box rectangular in cross-section, the opposite rubber pads located at the opposite sides of the box and overlapping the corners of the same, the opposite strips or clamping-plates having their edges inwardly turned to engage the pads, and screws passed through the plates and into the edges of the box, substantially as specified.

473,031. BOTTLE-STOPPER. DANIEL H. TALBERT, Spiceland, Ind. Filed May 19, 1891. Serial No. 393,326. (No model.)



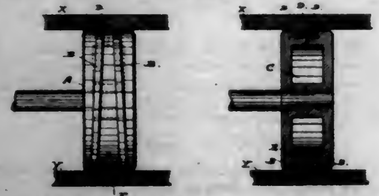
Claim.—1. The combination, with a bottle or sheet-metal vessel and an upwardly-acting spring supporting a ball therein, of a tube having an open funnel-shaped lower end in which said ball normally rests and a brush surrounding said tube and projecting above the same, said tube and its brush being fitted into the mouth of the bottle, substantially as described.

2. The combination, with a bottle or sheet-metal vessel and a ball therein, of a tube having an open funnel-shaped lower end adapted to receive and to be closed by said ball, a brush surrounding said tube and projecting above the same, and a wrapping surrounding the brush and fitting the mouth of the bottle, substantially as described.

3. The combination, with a bottle or sheet-metal vessel, a ball therein, and a stiff rod extending from the ball nearly to the bottom of the bottle, of a tube having an open funnel-shaped lower end adapted to receive and to be closed by said ball and a wrapping surrounding the tube and fitting the mouth of the bottle, substantially as described.

4. The combination, with the bottle or sheet-metal vessel, a tube opening into said bottle, a brush surrounding said tube and projecting above the same, and a wrapping around the brush filling the mouth of the bottle, of a ball within the bottle, an expansive spring extending from the ball to and resting on said bottom and holding the ball normally against the inner end of said tube, a stiff rod extending from the ball nearly to said bottom, and a cap covering the brush and the mouth of the bottle, as and for the purpose hereinbefore set forth.

473,032. BALANCED PISTON. WILLIAM J. THOMAS, Sausalito, assignor of one-half to John T. Wilson, San Francisco, Cal. Filed June 17, 1891. Serial No. 396,620. (No model.)

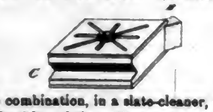


Claim.—1. In a balanced piston for steam-engines, a piston having obliquely-set packing-ring grooves, a steam space or chamber, and passages communicating with the outside through the opposite faces of the piston and between the said grooves, in combination with packing-rings projecting beyond the periphery of the piston-body, having lapping ends, with flush outer faces and cut-away portions on the bottom and at the inner sides, constructed and arranged for operation substantially as set forth.

2. In a balanced piston for steam-engines, having a piston with obliquely-set packing-ring grooves, a packing-ring projecting beyond the periphery of the piston-body and having a lap-joint with a tongue or reduced end portion, which is cut away on the bottom of the rings and on the inner face, and a recessed end adapted to take the said tongue and form a lap-joint, as described.

3. In a balance-piston, the combination, with the hollow body of the piston having peripheral openings and annular circumferential grooves, as described, of a pair of packing-rings each having a lap-joint, said rings being of less width than the width of the grooves and each lap-joint being formed of one recessed end and one reduced end of the ring, said reduced end lying in said recess and making a tight joint all round in the groove when pressed against its outer edge, as set forth.

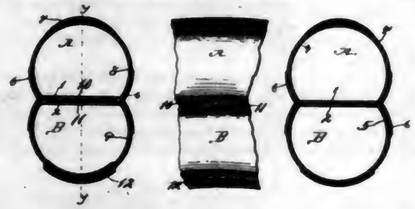
473,033. SLATE-CLEANER. ALFRED THURBER, San Pablo, Cal. Filed Sept. 22, 1891. Serial No. 406,514. (No model.)



Claim.—1. The combination, in a slate-cleaner, of the block and the radially-slotted fur felt and the rubber eraser, substantially as set forth.

2. The combination, in a slate-cleaner, of the block with the groove holding the sand-paper, emery-cloth, or file, the rubber, and the radially-slotted fur felt, all substantially as set forth, and for the purposes herein specified.

473,034. PNEUMATIC TIRE. EMIL ULBRICHT, Chicago, Ill. Filed Dec. 30, 1891. Serial No. 416,554. (No model.)



Claim.—1. A pneumatic tire composed of two concentrically-arranged expansible hollow air-tubes A and B, each of arch or D shape in cross-section, said tubes being arranged one over the other with their flattened side portions 1 and 2 held together and being confined within a non-expansible cover 4 and 5, corresponding in cross-section with the transverse outline of the unflattened portion of said two tubes arranged together, as aforesaid, the tread portion of the tire being provided by the inflated tube A, and the tread portion thus formed being supported by a cushion provided by the inflated tube B, which in turn seats upon the wheel-rim, substantially as and for the purpose described.

2. A pneumatic wheel-tire comprising a couple of tubes confined within an annular holder or pocket covering adapted, substantially as hereinbefore set forth, to compel the tubes when inflated to flatten along their opposing annular portions, and thereby assume a substantially segmental shape in cross-section, for the purpose described.

3. A pneumatic wheel-tire comprising a couple of tubes respectively confined within the annular pocket-spaces of an annular holder or pocket covering which is subdivided by an annular partition into said spaces for the tubes, substantially as and for the purpose described.

4. A pneumatic wheel-tire comprising a couple of concentrically-arranged tubes confined within a pocket-covering and reinforcing-stripe 6, applied to cover the lines of junction between the covered tubes.

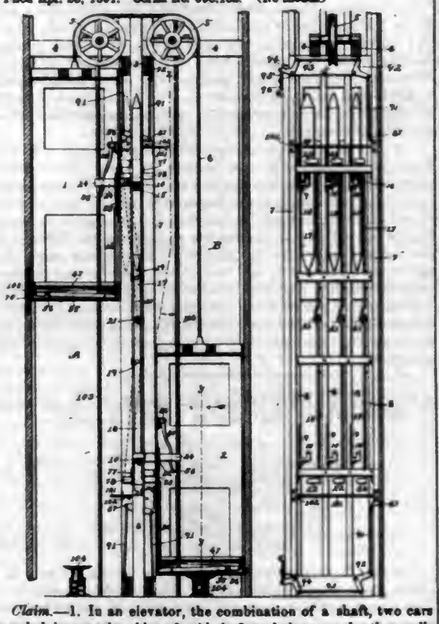
5. A pneumatic wheel-tire comprising a couple of concentrically-arranged tubes and a pocket-covering 8 and 9, having portions arranged and held in folds between the tubes, substantially as and for the purpose described.

473,035. BUTTON-HOOK. JOHN VAN PATTEN, West Troy, assignor of one-half to William R. Hagan, Troy, N. Y. Filed Oct. 24, 1890. Serial No. 369,164. (No model.)

Claim.—The shoe-buttoner herein described, consisting of a handle and a shank secured thereto, made of a single piece of wire having a straight upper portion, a laterally-extended spiral twist at the end thereof, and a lower portion struck at substantially right angles to the shank and terminating in a button-hook.



473,036. ELEVATOR. WILLIAM VERENCHOTEN, Hornellsville, N. Y. Filed Apr. 23, 1891. Serial No. 390,182. (No model.)



Claim.—1. In an elevator, the combination of a shaft, two cars suspended in opposite sides of said shaft to balance each other, rails 10, secured to vertical beams in the space between said cars, weights suspended upon the rails 10, anti-friction rollers in the weights to roll upon the rails, compound levers fulcrumed upon the said vertical beams and having arms at their ends to embrace the weights, and mechanism whereby the compound levers can be operated from one car to connect a weight to the other car, substantially as described.

2. In an elevator, the combination of a shaft, two cars suspended in opposite sides of said shaft to balance each other, rails 10, secured to vertical beams in the space between said cars, weights suspended upon the rails 10, anti-friction rollers in the weights to roll upon the rails, compound levers fulcrumed upon the said vertical beams and having arms at their ends to embrace the weights, rails 14 upon the cars in position to receive the weights from the rails 10, and bars to slide through the sides of the cars and impinge against the compound levers to move the weights from their rails 10 onto the rails 14 of the opposite car, substantially as described.

3. In an elevator, the combination of the shaft, two cars suspended in opposite sides of said shaft to balance each other, rails 10, secured to vertical beams in the space between said cars, weights suspended upon the rails 10, anti-friction rollers in the weights to roll upon the rails, compound levers fulcrumed upon the said vertical beams and having arms at their ends to embrace the weights, the rails 14 upon the cars in position to receive the weights from the rails 10, the spring-actuated bars 23, arranged to slide through the sides of the cars and impinge against the compound levers to move the weights from their rails 10 onto the rails 14 of the opposite car, and levers 55 to operate the spring-actuated sliding bars 23, substantially as described.

4. In an elevator-car, as herein described, having sliding bars 23, a series of levers arranged in the bottom of the car, a false bottom resting upon said levers, a series of weights arranged to be raised by the levers when weight is placed upon the false bottom, a rod 52, a bell-crank lever 53, and a sliding bar 32, having notches 34 in its upper edge, all suitably connected with the said system of levers in the bottom of the car, so that when weight is placed upon the false bottom it will move the notches 34 to register with sliding bars 23, substantially as described.

5. In an elevator-car, as herein described, angular sliding bars 23, suitable guides for said bars, inclined surfaces 30 and 31 upon said sliding bars 23, a sliding bar 61, arranged above the bars 23, lugs 63 upon the sliding bar 61 in position to be operated on by the inclined surfaces 30 and 31, spring-actuated bolts 70 and 71, and connections between the said bolts and the sliding bar 61, by means of which when the latter is moved by the inclined surfaces 30 or 31 the said bolts will be withdrawn, substantially as described.

6. In an elevator, the combination of a shaft divided into two parts, a car arranged to slide in each part and connected together, so as to balance each other, a series of weights supported between the two cars, means for enlarging the weights, mechanism by means of which the weights may be attached to one of the cars, frames 77, inclosing the said weights, and mechanism connecting the frames with the doors, so that the frames will be operated to return the weights to their normal positions, substantially as described.

7. In an elevator, the combination of a shaft divided in two parts, cars arranged one in each part and connected together to balance each other, a series of rails 10 in the space between the two cars and a series of corresponding rails 14 upon the cars, a series of weights of unequal weight supported upon the said rails, anti-friction rollers 16 in the weights to roll upon the rails, compound levers having arms to embrace the said weights and fulcrumed between the upper and lower set of rails 10, sliding bars 23 in the cars, guides for said bars, levers 55, by means of which the sliding bars 23 may be pushed outwardly to cause the compound levers to roll the weights from the rails 10 to the rails 14 upon one of the cars, sliding bars 32, which control the sliding bars 23, a system of levers in the bottom of the car, connected with the sliding bar 32, so that the weight of the person will release the proper bar 23, a sliding bar 61, having lugs operated by the bars 23, bolts 70 and 71, connected with the sliding bar 61, so as to be withdrawn when the said bar is operated, frames 77, inclosing the weights and connected with the elevator-door to return the weights to their normal position when the doors are opened, spring-latches upon the doors, plates 107 upon the cars to withdraw the latches when the car has arrived at the proper position, and rod 103, by which the occupant of the car can operate the elevator, substantially as described, for the purpose specified.

8. In an elevator, the combination of a shaft, two cars suspended in opposite sides of said shaft to balance each other, rails 10, secured in the space between said cars, weights suspended on the rails 10, compound levers having arms at their ends to embrace the weights, and mechanism whereby the compound levers can be operated from one car to connect a weight to the other car, substantially as described.

9. In an elevator, the combination of a shaft, two cars suspended in opposite sides of said shaft to balance each other, rails 10, secured in the space between said cars, weights suspended upon the rails 10, compound levers having arms at their ends to embrace the weights, rails 14 upon the cars in position to receive the weights from the rails 10, and bars to slide through the sides of the cars and impinge against the compound levers to move the weights from their rails 10 onto the rails 14 of the opposite car, substantially as described.

473,037. SPRAY-ROD. WILLIAM WAINWRIGHT, San Francisco, Cal. Filed Aug. 26, 1891. Serial No. 403,819. (No model.)

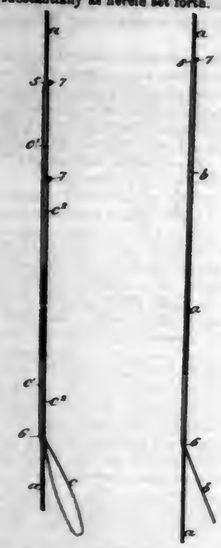


Claim.—A spray rod or pipe consisting of a series of sections detachably connected together to form a continuous vertical pipe provided at one end with an angular nozzle of less diameter than the body of the pipe and having its other end adapted to be connected to a source of supply, in combination with a stay or support comprising two or more sections adjustably connected together, and a series of arms *n*, carried by the stay or support, one or more to each section thereof, and fitting loosely around the spray rod or pipe, so that said pipe may be rotated from its lower end to vary the direction of its nozzle without moving the stay or support, substantially as described.

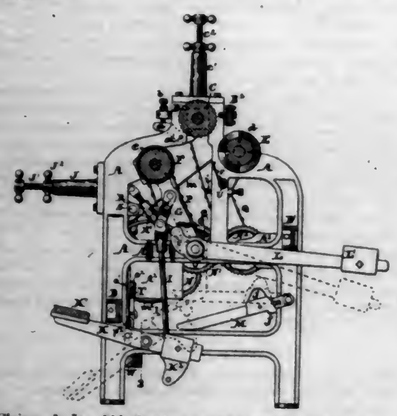
473,038. LEADER FOR FISH-LINES. ALBERT M. WHITE, Waterbury, assignor of one-half to Nathaniel S. Perkins, New London, Conn. Filed July 15, 1891. Serial No. 399,597. (No model.)

Claim.—The combination, with a braided leader for a fish-line, of a dropper, hanger, or loop around which the main strand of the leader

is braided, so that the said dropper, hanger, or loop is ingrafted into the said strand, substantially as herein set forth.



473,039. HIDE-FLESHING MACHINE. ARTHUR E. WHITNEY, Winchester, Mass. Filed Nov. 14, 1891. Serial No. 411,895. (No model.)



Claim.—1. In a hide-fleshing machine, the combination of a revolving fleshing-cylinder mounted in fixed bearings, a feed-roll mounted in yielding bearings, adjustable stops to limit the inward movement of said feed-roll, a bed-roll mounted in bearings in the free ends of a pair of radius-arms, a treadle mechanism connected to and adapted to move said radius-arms about their pivotal connections to move said bed-roll into contact with and away from said feed-roll and fleshing-cylinder, stops to limit the outward movement of said bed-roll, and mechanism having provision for imparting rotary motion to said feed and bed rolls when said bed-roll is moved into contact with said fleshing-cylinder and to arrest said rotary motions of said bed and feed rolls when said bed-roll is moved away from said fleshing-cylinder.

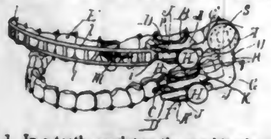
2. In combination with a revolving knife-cylinder mounted in fixed bearings and a feed-roll mounted in adjustable and yielding bearings, the two radius-arms G G, a bed-roll mounted in bearings in the free ends of said radius-arms, the toggle-links H and H', connected at one end to and adapted to move said radius-arms about their axes of motion, the yielding piston-abutment $g\,g'$, connected to said toggle, the spring A, the rod I, and the treadle K K', all constructed, arranged, and operating substantially as described.

3. In combination with a revolving knife-cylinder mounted in fixed bearings and a feed-roll mounted in yielding bearings, adjustable stops to limit the inward or downward movement of said feed-roll, the two radius-arms G G, a bed-roll mounted in bearings in the free or movable ends of said radius-arms, the toggle-links H and H', connected by one end to said radius-arms, the yielding piston-abutment $g\,g'$, connected to the other end of said toggle, the treadle-levers K K, the rods I, connecting said treadle-levers and toggle-links, the weighted levers L L, provided with the laterally-projecting arms or lugs i' to engage said radius-arms, and the arms or levers M M, provided with the arms j and lugs j', constructed relative to the levers L L and K K, as set forth, and arranged and adapted to operate substantially as described.

4. In combination with a revolving knife-cylinder mounted in fixed bearings and a feed-roll mounted in adjustable and yielding bearings, the radius-arms G G, a bed-roll mounted in bearings in the free or movable ends of said radius-arms, the toggle-links H H', the treadle-levers K K, the rods I, connecting said treadle-levers to the toggle-links, the tight and loose pulleys m^2 and m', a belt leading from a pulley on the knife-cylinder to said tight and loose pulleys, a train of gears and belts or chains connecting said tight pulley m^2 with pulleys or sprocket-wheels on the feed and bed rolls, a shipper rod and fork, the three-armed weighted lever T, provided with the pin o' and connected by its upright arm to the shipper-rod, and the slotted arm p^2, pivoted to the treadle-lever and engaging by its slotted end said pin o', all substantially as described.

5. In a hide-working machine, the combination, with a revolving knife-cylinder mounted in fixed bearings and a feed-roll mounted in adjustable and yielding bearings, of a bed-roll mounted in the movable ends of two radius-arms, the rocker-shaft U, the steel plate r, secured to and projecting from said rocker-shaft U in position to be engaged by said bed-roll when it is moved into contact with the fleshing-cylinder carried by said lever, the lever V, mounted on said rocker-shaft, the weight V', carried by said lever V, the stop r' to limit the downward movement of said lever V, a treadle mechanism for moving the bed-roll toward and from the knife-cylinder, suitable gearing for rotating said feed and bed rolls, and a shipper mechanism connected to and controlled by the treadle, all arranged and operating substantially as described.

473,040. TEETH-REGULATOR. DEEL R. WILDER, Los Angeles, Cal. Filed Feb. 2, 1892. Serial No. 420,061. (No model.)



Claim.—1. In a teeth-regulator, the combination set forth of an anchor-block, a clamp-band adapted to only partially encircle the anchor-tooth, and having one end attached to such anchor-block and having its other end adapted to be attached to a suitable cramp-block, such cramp-block and a cramp-block operating-screw arranged in connection with the anchor-block to operate the cramp-block to tighten the clamp-band upon the anchor-tooth.

2. The combination set forth of the upper and lower anchor-blocks, suitable means for clamping such anchor-blocks, respectively, to anchor-teeth in the upper and lower jaws, two hinge-shanks adapted to be secured, respectively, to the upper and lower anchor-blocks, and the ball-and-socket and extensible joint arranged to connect such shanks.

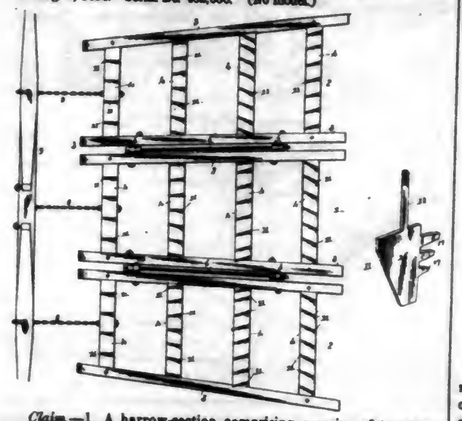
3. In a teeth-regulator, the combination of the upper and lower anchoring devices, a hinge-shank provided at one end with a semi-spherical socket and adapted for attachment to one of such anchoring devices, a hinge-shank provided at one end with a telescoping pintle and adapted for attachment to the other anchoring device, a telescoping tube arranged to receive the pintle and provided at one end with a ball arranged to fit the socket, and means for securing the shanks to the anchoring devices.

4. The combination of the anchor-block channeled in its outer face and provided with the cross-head retaining-lugs, the regulator-bar, the rack-bar attached to the regulator-bar and adapted to fit in such channel, the cross-head adapted to fit over the rack-bar and beneath the lugs of the anchor-block, and the clamp-screw arranged to screw through the cross-head and clamp the bar.

5. In a teeth-regulator, the teeth-regulator bar set forth, formed of two side rails and a series of cross-bars extending across between the side rails.

6. The combination set forth of the channeled upper and lower anchor-blocks having the hooks and having the bottoms of the channels corrugated, means for clamping such blocks, respectively, to teeth in the upper and lower jaws, the hinge-shanks having the corrugated faces and arranged, respectively, in the said channels, the regulator-bar, the rack-bars secured thereto and arranged in said channels with their corrugated faces in engagement, respectively, with the outer corrugated faces of the shanks, the cross-heads inserted beneath the hooks, and the clamp-screws screwed through the cross-heads and against the rack-bars.

473,041. HARROW. ANDREAS WILFERT, Fabacher, La. Filed Aug. 7, 1891. Serial No. 402,090. (No model.)

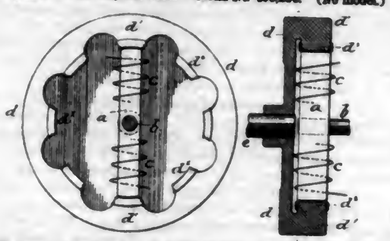


Claim.—1. A harrow-section comprising a series of transverse harrow-bars, each of which is provided with a series of substantially V-shaped teeth, the rear edges of which are provided with fingers, substantially as specified.

2. A harrow-section comprising a series of transverse harrow-bars, each of which is provided with a series of substantially V-shaped teeth having a series of fingers at their rear edges, the teeth of one bar being arranged at an angle to those of the adjacent bars, substantially as specified.

3. In a harrow, a series of harrow-bars and a series of V-shaped teeth disposed at an angle to each other, the teeth of the bars being increased in number toward the rear bar, substantially as specified.

473,042. ELECTRIC CLUTCH. PETER W. WILLIAMS, London, England. Filed July 21, 1891. Serial No. 400,228. (No model.)



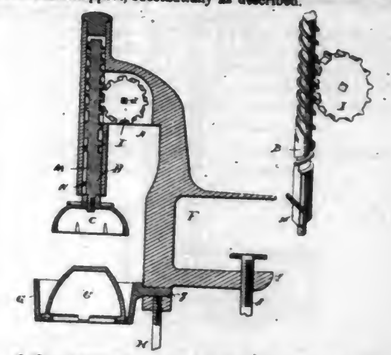
Claim.—1. An electric clutch comprising a shaft with an iron cross-head upon it and another shaft aligned with the first-mentioned shaft and carrying an iron ring surrounding the cross-head and provided with projections d^x in close proximity to the extremities of the cross-head, and circuit-windings upon the cross-head in planes parallel to its axis of rotation.

2. An electric clutch comprising an iron ring provided with a series of horns d^x, provided with rings of metal of low resistance, circuit-windings between the horns, and an iron cross-head mounted to rotate within the ring and having circuit-wires wound upon its opposite extremities in planes parallel to its axis of rotation.

473,043. LEMON-SQUEEZER. HARRY J. WILLIAMS, New Haven, assignor of one-half to Charles L. Lyon, Meriden, Conn. Filed May 8, 1891. Serial No. 391,992. (No model.)

Claim.—1. In a lemon-squeezer, the combination, with the frame, the handle journaled therein, and a toothed wheel moved by the handle, having its teeth set at an angle, of the plunger journaled in the frame, with the inclined teeth thereon meshing with the teeth on the wheel, means, substantially as described, for automatically rotating said plunger as it descends, the cup on the plunger, and a lemon-support co-operating with the cup, substantially as described.

2. In a lemon-squeezer, the combination, with the frame, the handle journaled therein, the toothed wheel moved by the handle, having its teeth arranged at an angle, of the plunger journaled in the frame and having teeth thereon arranged at an angle corresponding to that of the teeth on the wheel, the pin or projection fitting in a recess in the plunger for preventing the rotation of the plunger when raised, and a lemon-support, substantially as described.



3. In a lemon-squeezer, the combination, with the frame, of the movable plunger carrying the cup and having the inclined teeth thereon, the projection on the frame engaging said teeth to rotate the plunger as it descends, and a lemon-support, substantially as described.

4. In a lemon-squeezer, the combination, with the frame and handle journaled therein, of the plunger carrying the cup and having the oppositely-inclined teeth and pin-groove thereon, the projection on the frame engaging said teeth and groove to rotate the plunger as it descends, a wheel moved by the handle and having a worm-gear meshing with the teeth on the plunger, and a lemon-support, substantially as described.

5. In a lemon-squeezer, the combination, with the frame and handle, of the plunger having the oppositely-inclined spiral teeth thereon, and the cut-out portion merging into the space between the teeth at one end, the pin or projection on the frame co-operating with said cut-out portion and spiral, the toothed wheel moved by the handle, co-operating with the teeth at the opposite end of the plunger, and a lemon-support, substantially as described.

6. In a lemon-squeezer, the combination, with the stationary cup, the plunger, and means, substantially as described, for reciprocating the plunger, of the spiral, and the projection co-operating therewith to rotate the plunger while being reciprocated, substantially as described.

7. In a lemon-squeezer, the combination, with the stationary cup, the plunger having the teeth extending entirely around the same, and the gear-wheel meshing therewith, having the handle for reciprocating the plunger, of the spiral and the projection co-operating therewith to rotate the plunger while being reciprocated, substantially as described.

473,044. CONDUIT FOR ELECTRIC WIRES. CHARLES H. WILSON, Chicago, Ill., assignor to the American Bell Telephone Company, Boston, Mass. Filed Sept. 19, 1889. Serial No. 324,451. (No model.)

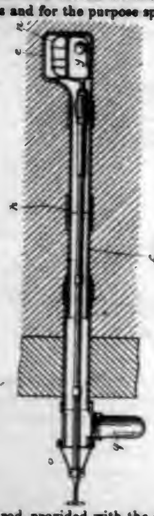
Claim.—1. The combination, with the conduit or subway having two ducts separated by a horizontal partition and a lateral pipe extending therefrom; of a T connection at the junction of said subway and lateral pipe, the main portion of the said T being partitionless or having the full bore of the conduit-pipe, substantially as described.

2. The combination, with the conduit or subway having ducts separated by a horizontal partition and a lateral pipe extending therefrom, of a T connection at the junction of said subway and lateral pipe, the main portion of the said T being partitionless, and the said lateral pipe being provided with a draw-rod or tube and expansible loop, substantially as described.

3. The draw-rod consisting of the tube made up of joints adapted to be screwed together, in combination with the small rod inclosed therein, also composed of sections adapted to be screwed together and carrying an expansible loop, the loop being adapted to be withdrawn within the head of said tube or to be extended beyond the same and expanded, substantially as and for the purpose specified.

4. The combination, with an underground conduit, of a lateral pipe for distributing the wires leading therefrom, wires extending through said lateral pipe from said conduit, and a trap containing oil or like substance through which the conductors are run, whereby gas is prevented from penetrating through the lateral pipe into the building from the conduit, substantially as and for the purpose specified.

5. The pilot *g* of light material, like paper, in combination with an underground conduit, said conduit being provided with two ducts, the partition between said ducts being omitted opposite the lateral connection, said pilot being longer than the omitted portion of the partition, whereby the pilot when forced through either conduit is caused to follow the same duct across the break or opening in the partition, substantially as and for the purpose specified.

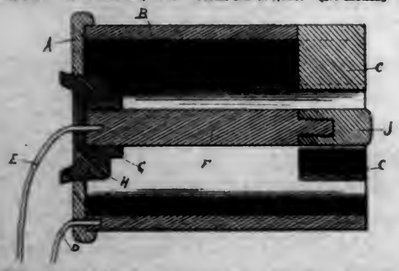


6. The lateral draw-rod provided with the springs *d' d'* for preventing the end of the head from coming against the interior of the pipe, in combination with the contained rod *l*, having the loop *n*, adapted to be drawn within the head or projected in front of the same and expanded, substantially as and for the purpose specified.

7. A subway for electric conductors, formed of sections of pipe, the different sections being joined by a water-proof joint, the pipe containing a horizontal partition dividing the same into an upper and lower duct, and a T forming a part of said pipe, said T having the horizontal partition omitted, in combination with a lateral pipe extending from said T, substantially as and for the purpose specified.

8. A subway for electric conductors, formed of sections of pipe, the different sections being joined by a flexible joint, and a T forming a part of said pipe, in combination with a lateral pipe extending from said T, substantially as and for the purpose specified.

473,045. LIGHTNING-ARRESTER. MONTRAVILLE M. WOOD, Chicago, Ill. Filed June 30, 1891. Serial No. 396,919. (No model.)



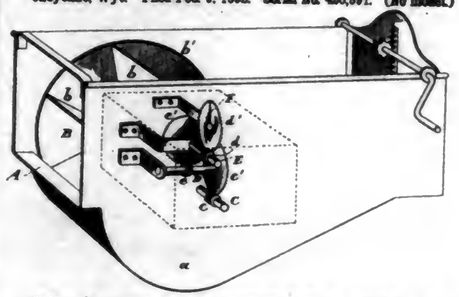
Claim.—1. In a lightning-arrester, the combination of a ground-wire with a wire leading to the line and a connecting-circuit from line to ground, consisting in part of a substance of high resistance and a substance of low resistance, the two opposed to each other and one substantially surrounding the other.

2. In a lightning-arrester, the combination of a ground-wire with a wire leading to the line and a connecting-circuit from line to ground, consisting in part of a conductor of a high-resistance substance shaped so as to present a widely-extended surface and a low-resistance conductor opposed to such widely-extended surface.

3. In a lightning-arrester, the combination of a ground-wire with a wire leading to the main line and a circuit connecting the two, consisting of a cylinder of high-resistance substance with a rod exposed in proximity to such cylinder.

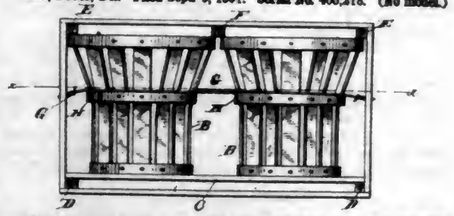
4. In a lightning-arrester, the combination of a ground-wire with a wire leading to the main line and a circuit connecting the two, consisting of a cylinder of high-resistance substance with a rod exposed in proximity to such cylinder, said plates and the head of said rod removable.

473,046. ROTARY WATER-METER. THEODORE WOOLLEN, Jr., Cheyenne, Wyo. Filed Feb. 9, 1892. Serial No. 420,891. (No model.)



Claim.—In a water-meter, the bucket-shaft C, provided with a box carrying a pivoted pawl F and a coiled spring G at one end, the spring having an upwardly-projecting end to come against the free end of the pawl, as and for the purpose set forth.

473,047. CRATE FOR SHIPPING BASKETS. GEORGE W. WORDEN, Dover, Del. Filed Sept. 9, 1891. Serial No. 405,218. (No model.)



Claim.—1. A fruit-crate consisting of an open-sided box adapted to receive fruit-containing receptacles provided with retaining-wires fastened to the ends of said crate at substantially their corners, crossing each other one or more times in the interior of said crate, but independent of each other at such crossings, and inclosing the fruit-receptacles between the same, substantially as described, whereby a secure but yielding fastening is provided.

2. A fruit-crate consisting of an open-sided box adapted to receive fruit-containing receptacles provided with retaining-wires fastened to the end cleats of the crate at about midway of its height, running from one corner to its diagonally-opposite corner and crossing each other between the fruit-containing receptacles, substantially as described.

3. A fruit-crate adapted to receive fruit-containing receptacles provided with retaining-wires inclosing the receptacle and crossing each other within the crate, and a yielding support for the said fruit-receptacle, consisting of one or more flexible strips or slats secured within the crate at a point above the bottom, the ends of which strips are supported in the ends of the crate, substantially as described, and for the purpose set forth.

4. In a fruit-crate of the character described, the retaining-wire for holding in the fruit-receptacle and a ring provided on the end of one of the wires, in combination with a slot formed in one of the end cleats of the crate, substantially as described, whereby the end of the wire is held by said ring when inserted through the slot and turned at an angle thereto.

473,048. WRENCH. JOHAN A. ZANDER, San Francisco, Cal. Filed Nov. 9, 1891. Serial No. 411,356. (No model.)

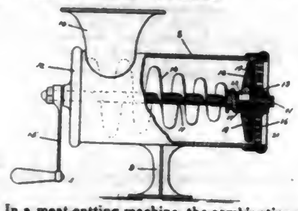
Claim.—1. In a wrench, the combination, with the handle and the shank pivoted thereon, of a movable jaw, a collar surrounding the shank, a screw pivoted in the collar for actuating the jaw, and an adjustable C-spring on the outer face of the shank engaging the upper edge of the collar, substantially as described.

2. In a wrench, the combination, with the handle having a bifurcated end with a straight horizontal upper edge, of a shank pivoted in the bifurcation, a movable jaw on the shank, a collar loosely secured on the shank formed with a straight under edge engaging the straight edge of the handle, a screw pivoted in the collar, and an adjustable

spring secured on the outer face of the shank and engaging the upper edge of the collar for normally holding the edges of the collar and handle into close contact, substantially as described.



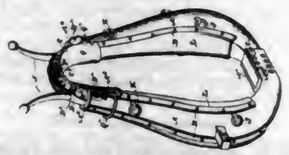
473,049. ROTARY KNIFE. CHARLES ZIES, Baltimore, Md. Filed Dec. 30, 1891. Serial No. 416,558. (No model.)



Claim.—1. In a meat-cutting machine, the combination of a perforated plate, mechanism by which the material to be cut will be forced through the perforations in said perforated plate, a rotating shaft, a knife-holder fixed to said shaft, and one or more knives 19, each of which is provided with a straight cutting-edge 21, one end thereof terminating in the curved cutting-edge 22, the said knives being attached to the knife-holder in such manner that in their rotating movement the straight cutting-edge 21 thereof will be in contact with the surface of the said perforated plate, and the curved cutting-edge 22 will traverse a path near the said shaft, for the purpose set forth.

2. In a meat-cutting machine, the combination of a perforated plate, mechanism by which the material to be cut will be forced through the perforations of said perforated plate, a rotating shaft, a knife-holder fixed to said shaft and provided with beveled seats, and the knives 19, secured in the said beveled seats of the knife-holder, each of the said knives being cut away so that the projecting point 22 will be formed thereon, the said projecting point being curved, whereby the straight cutting-edge 21 of the knife will terminate in the curved cutting-edge 22, the said knives being attached to the knife-holder in such manner that in their rotating movement the straight cutting-edge 21 thereof will be in contact with the surface of the said perforated plate, and the curved cutting-edge 22 thereof will traverse a path near the said shaft, for the purpose set forth.

473,050. HORSE-COLLAR. BENJAMIN J. ZANE, Roberts, Ill. Filed July 6, 1891. Serial No. 398,557. (No model.)



Claim.—1. A collar comprising opposite sections hinged and adjustably connected at their upper ends and provided the one section at its lower end with two sockets and the other section with two tenons, said sockets and tenons having upper and lower perforations, the perforations of one section alternating with those of the other, and a locking-pin passed through an aligning pair of perforations, substantially as specified.

2. The combination, with two opposite collar-sections, one provided at its lower end with a perforated socket and the other with a perforated tenon, a key for the same, the upper ends of said sections being provided with sockets, and curved sections mounted adjustably therein and provided at their upper sides with recesses, the walls of which are perforated, of a hinge the leaves of which are perforated and take within the recesses and adjusting-screws for connecting the hinges with the walls of the recesses, substantially as specified.

3. The herein-described improved metal collar, consisting of the opposite collar-sections and the opposite curved connecting-sections adjustably mounted in the upper ends thereof, said connecting-sections being provided at their upper ends or shoulders with sockets, and horns mounted removably in the sockets, substantially as specified.

4. The herein-described improved collar, consisting of the opposite collar-sections and the opposite curved connecting-sections, the same having transversely-perforated sockets at their outer sides, removable horns mounted in the sockets and provided with perforations, and screws passed through the perforations of the sockets and horns, substantially as specified.

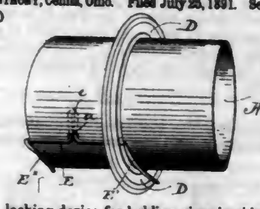
5. The combination, with the opposite collar-sections adjustably connected at their upper and lower ends and provided near their upper ends with curved slots Q^3, of the collar-pad Q and the bands connected to the edges of the pad, some of which encircle the collar and others of which pass through the curved slots, substantially as specified.

473,051. NUTMEG-GRATER. FRANK E. ABBOTT, Chicago, Ill. Filed Sept. 6, 1890. Serial No. 364,190. (No model.)



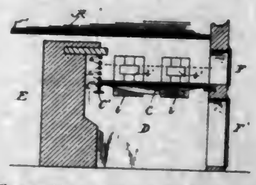
Claim.—In a nutmeg-grater, the combination, with the casing provided at one end with a grating-head and at the opposite end with a removable cap, of a crank-rod working through said cap, a rasping-disk secured to said rod, and a coiled spring confined on said rod between said disk and the removable cap, substantially as described.

473,052. FASTENING OR LOCKING DEVICE FOR STOVEPIPES. JACOB L. ANTHONY, Celina, Ohio. Filed July 25, 1891. Serial No. 400,732. (No model.)



Claim.—A locking device for holding pipes in chimneys, consisting of a bar or wire bent to form an axial shank, an arm, a handle, and a projection, the latter adapted to enter an opening in a pipe when the device is turned in one direction on its axis, substantially as set forth.

473,053. FURNACE OR SETTING FOR STEAM-GENERATORS. CLARENCE O. AREY, Cleveland, Ohio. Filed Aug. 27, 1891. Serial No. 403,875. (No model.)



Claim.—The combination, with a boiler-setting provided at its sides and rear end with air-recesses leading from the ash-pit to a point above the fuel-line, of transverse grate-bars and an overhanging member located at the rear end of the setting over the transverse bars, substantially as set forth.

473,054. WIRE DESK-BASKET. LOUIS G. BERRY, Chicago, Ill. Filed Dec. 19, 1891. Serial No. 415,584. (No model.)

Claim.—1. A desk-basket having a number of posts, made of rubber or similar material, secured to its bottom by means of clamps, substantially as described, whereby the body of the basket will be supported free from the surface of the desk or other piece of furniture on which it is used and is prevented from scratching the same, substantially as and for the purpose set forth.

2. The combination of a basket having a portion of its bottom reinforced, substantially as described, with a number of posts, made of

rubber or similar material, secured to the lower portion of said basket by means of clamps, and the said clamps having holes for the reception of the posts, and catches to engage the wires of the basket, substantially as and for the purpose set forth.

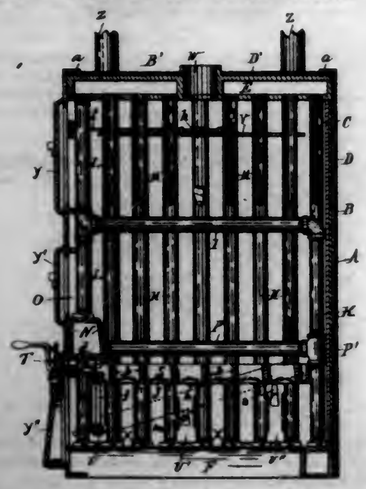


3. In a wire desk-basket, the combination of a basket having the stiffening-rods *b b*, forming a part of the mesh-work, with a number of posts C, having the heads c^3, secured to the lower portion of the basket by means of clamps B, and said clamps having holes *c* in their lower portion for the reception of the posts and their ends formed with catches *c* to engage the wires of the basket, all constructed, arranged, and operating substantially as and for the purpose set forth.

4. In a desk-basket composed of wire, the combination of the basket with a number of posts, made of rubber or similar material, secured thereto near each corner by means of clamps B, and said clamps made of one piece of sheet metal, having in their lower portions the holes *c* for the reception of the posts C and their ends formed with catches *c'* to engage with the wires of the basket, all constructed, arranged, and operating substantially as and for the purpose set forth.

5. In a desk-basket composed of wire, the combination of the basket having a portion of its bottom reinforced, substantially as described, with a number of posts C, made of rubber or similar material, having the heads c^3, secured thereto near each corner by means of clamps B, and said clamps made of one piece of sheet metal, having in their lower portions the holes *c* for the reception of the posts C and their ends formed with catches *c'* to engage with the wires of the basket, all constructed, arranged, and operating substantially as and for the purpose set forth.

473,055. BOILER. GEORGE BOLTON and JAMES R. BOLTON, Detroit, Mich. Filed May 22, 1891. Serial No. 393,633. (No model.)



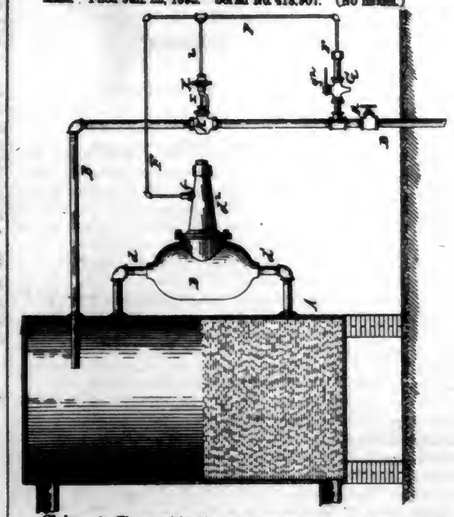
Claim.—1. In a boiler, the combination of the hollow trilateral base, the hollow cap, a series of vertical pipes connecting said base and cap, the grate located within the area inclosed by said vertical pipes and supported above said base, and a series of horizontal pipes located above the grate, said pipes communicating at their rear ends with the base and at their forward ends with the cap, substantially as set forth.

2. In a boiler, the combination of the hollow trilateral base, the hollow cap, a series of vertical pipes connecting said base and cap, the grate located within the area inclosed by said vertical pipes above the base, and the hollow transverse base-section located above the base at the front and connected by vertical pipes with the base and cap, as set forth.

3. In a boiler, the combination of the hollow trilateral base, the hollow cap, a series of vertical pipes connecting said base and cap, the grate located within the area inclosed by said vertical pipes above the base, the hollow base-section crossing the front of the boiler above said base and communicating with said base and cap, and a series of horizontal pipes above the grate, communicating at their rear ends with the base and at their forward ends with the cap, substantially as specified.

4. In a boiler, the combination of the base and cap connected by the vertical pipes, the grate detachably supported within the area inclosed by said pipes, the drop-tubes depending from said cap, and the diaphragm located among said tubes and having the damper-controlled opening that registers with the flue through said cap, substantially as and for the purposes specified.

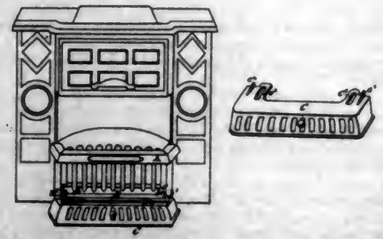
473,056. GOVERNOR FOR HEATERS. CHARLES B. BOSWORTH, Everett, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Jan. 22, 1892. Serial No. 418,907. (No model.)



Claim.—1. The combination of a water-reservoir, its supply-pipe, a valve located in such pipe and provided with a governor, a float-chamber connected to and communicating with such reservoir and provided with a float, and a valve-opening provided with a valve, a pipe leading from such valve-opening and communicating with the water-supply pipe, and another pipe leading from such last pipe to the water-valve governor, as set forth.

2. The combination of a water-reservoir, its supply-pipe, a valve located in such pipe and provided with a governor, a float-chamber connected to and communicating with such reservoir and provided with a float, and a valve-opening provided with a valve, a pressure-pipe leading to such valve-opening from a fluid under pressure and also connected with the water-valve governor, as set forth.

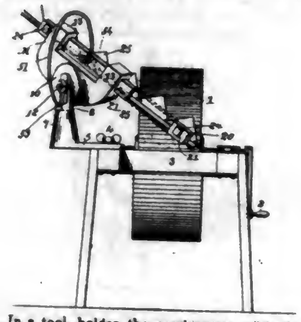
473,057. ASH AND COAL GUARD FOR FRANKLIN STOVES. PHILIP BERGER, Louisville, Ky. Filed July 22, 1891. Serial No. 400,375. (No model.)



Claim.—The combination, with a stove having a grate, a coal-guard A, and a hearth-plate C, provided with slots *c'* and check-nibs c^4,

of an ash-guard having pivot-hooks *b*, adapted to work in the slots *c'*, side flanges b^1, legs b^2, and ears b^3, substantially as described, and for the purpose specified.

473,058. TOOL OR REAPER-KNIFE HOLDER. LAFAYETTE W. BUTLER, Williamsburg, Iowa. Filed Oct. 15, 1891. Serial No. 408,764. (No model.)



Claim.—1. In a tool-holder, the combination, with the slotted base adjustably mounted on the grindstone-frame and having a vertical boss with a socket therein, a stud pivoted in said boss and having an upright circular head flattened on one face, and a set-screw through said boss against the stud, of a U-shaped bracket having eyes in its upper end and its body resting against said circular head, a set-screw through said head and the body of the bracket, and tool-holding devices, substantially as described, connected to the bracket by its eyes, substantially as and for the purpose set forth.

2. In a tool-holder, the combination, with a slotted base, a screw passing through the slot into the frame of the grindstone, a bracket swivelly and adjustably connected with and rising from said base, and tool-holding devices, substantially as described, carried by said bracket, of a spring connected at one end to the bracket, over which latter its body bends, and having an eye in its other end, and a presser-block pivotally connected with said eye and bearing the tool normally against the grindstone, as and for the purpose set forth.

3. In a tool-holder, the combination, with a base adjustably mounted on a grindstone-frame, a stud swivelly connected with the base and having a head at its upper end flattened on one face and provided with a notch in its other face, a bracket, tool-holding devices, substantially as described, carried by said bracket, and a bolt through the body of the bracket and through said head, of a spring having eyes at its ends, one of which eyes is mounted on said bolt under its nut, the body of the spring extending thence through said notch and curving upwardly over the bracket, and a presser-block pivotally connected with the other eye and bearing the tool normally against the grindstone, as and for the purpose set forth.

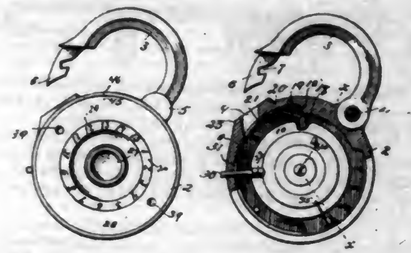
4. In a tool-holder, the combination, with a base adjustably mounted on the frame of a grindstone and a bracket having separated and aligned eyes, its body being pivotally and swivelly connected with said base, of a long bar sliding through said eyes and having a series of holes therein and hooks detachably inserted in the holes of said bar, as and for the purpose set forth.

5. In a tool-holder, the combination, with a base adjustably mounted on the frame of a grindstone and a bracket having separated and aligned eyes, its body being pivotally and swivelly connected with said base, of a long bar sliding through said eyes and having a number of holes through its body, and two hooks, each comprising a body and a shank, standing at acute angles to each other, the latter being of a size to fit any of said holes and having double angles in their bodies, as and for the purpose hereinbefore set forth.

6. In a tool-holder, the combination, with a base adjustably mounted on the frame of a grindstone and a bracket having aligned eyes, its body being pivotally and swivelly connected with said base, of a long bar sliding through said eyes for carrying the device to be sharpened, as and for the purpose set forth.

473,059. COMBINATION-PADLOCK. EDWARD P. CALDWELL, Minneapolis, Minn., assignor of one-half to Edward J. Edwards, same place. Filed Dec. 27, 1890. Serial No. 375,931. (No model.)

Claim.—1. The combination, in a lock, with a bolt and bolt-locking mechanism and operating means therefor, of a pulsating device establishing communication between the exterior and the interior of the lock and an irregular-surfaced member inside the lock and in operative connection with said pulsating device, whereby as the locking mechanism is operated a series of successive pulsations are imparted to said pulsating device to transmit them to an object on the outside and in contact with said device for indicating the movements of the locking mechanism, substantially as described.



2. The combination, in a permutation-lock, with the operating mechanism, of means provided in connection therewith for indicating the positions of the locking devices by one series of indications that can be seen, another that can be heard, and another that can be felt, the last indicator being a pulsating member establishing communication between the interior and the exterior of the lock and pulsated successively as the locking mechanism is operated, substantially as described.

3. The combination, in a lock, of tumblers or combination-wheels arranged to be operated by the movement of a suitable knob provided on the outside of the lock, with a serrated disk upon the inside of the lock in connection with said knob, and a touch-pin extending through the casing of the lock and engaging the serrated portion of the disk, substantially as described.

4. In a lock, the combination, with a suitable casing, of an operating knob or handle and a movable piece adapted to be moved in and out through the lock-casing at regular intervals as the knob is turned in either direction, substantially as described.

5. In a lock, the combination, with handle or knob, of the disk 15, secured upon the knob-spindle and provided with a series of serrations, with a long space between two of said serrations, and the "touch-pin" engaging said disk and extending through the wall of the casing.

6. In a lock, the combination, with casing 2, provided with the open face, the face-plate 28, adapted to be screwed into said casing, and means located entirely within the casing and engaging said face from inside the casing for locking said plate when the device is locked and releasing it when unlocked.

7. In a lock, the combination, with the casing 2, of the screw-threaded front plate 28, provided with the groove 38 and the recess 48, the locking-bolt 8, provided with the dog 19, having the lug 18, the knob, and the disk 41, screwed to the knob-spindle and provided with the notch 42, all substantially as described.

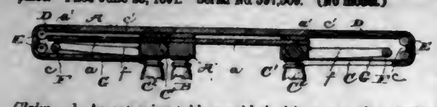
8. In a lock, the combination, with a suitable casing, of a series of combination-wheels, a sliding locking plate or bolt extended along the inner curved wall of the casing and formed with an opening for the shackle to pass through, and a dog pivoted to said plate and engaging said wheels, substantially as described.

9. The combination, in a lock, with a suitable casing, of a series of combination-wheels, each provided with a notch in its periphery, an operating knob or handle, a disk secured thereto and provided with a notch in its periphery, a sliding locking plate or bolt, and a pawl or dog pivoted to said plate and engaging the periphery of said disk and wheels and having its end extended to lie in a recess formed in the face of the casing, whereby when the notches upon said wheel and disk are brought into line with each other beneath the end of said dog said dog will engage therewith and the locking-plate may be removed by turning the disk, and when the pawl is out of said notches it will lock the face of the casing in place, substantially as described.

10. The combination, with the casing 2, of the series of combination-wheels arranged therein, each provided with a notch upon its periphery, the operating-handle, the disk secured to said handle within said casing and provided with a notch upon its periphery, one wall of which slot is angular and the other curved, the pivoted shackle, the sliding plate arranged to engage said shackle and provided with a pivoted dog having a projecting end or lug that bears upon the periphery of said wheel, substantially as described.

11. The combination, with the casing 2, provided upon its inner surface with a lug or projection, of the shackle secured to said casing, the sliding plate extended along the inner curved wall of the casing, arranged to engage said shackle, and the spring-dog pivoted on said plate to the rear thereof and between it and said projection on the casing and provided with a projection adapted to engage the notches in said wheels, substantially as described.

473,060. EXTENSION-TABLE. FREDERICK P. CORHAN, Warren, Pa., assignor of one-half to Orren C. Allen and George H. Higgins, same place. Filed June 25, 1891. Serial No. 397,509. (No model.)



Claim.—1. An extension-table provided with an extension portion adapted to form a continuation of the table-top, consisting of an integral portion of flexible material, substantially as described.

2. In an extension-table, the combination, with the main table-top and supports for the same, of the extension-frames and the extension portions of the table-top, consisting of integral portions of flexible material, adapted to form a continuation of said main top, substantially as described.

3. In an extension-table, the combination, with the main table-top and supports for the same, of the sliding extension-frames provided with rollers, said table-top being provided with integral portions of flexible material adapted to engage said rollers and to form continuations of the table-top when said frames are drawn out, substantially as described.

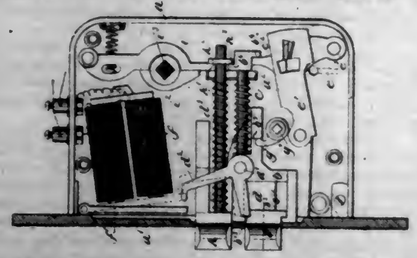
4. In an extension-table, the combination, with the main table-top and supports for the same, of the integral end portions of flexible material adapted to form continuations of said table-top, the sliding extension-frames adapted to support the said integral flexible end portions, and tension devices for said flexible integral portions, substantially as described.

5. In an extension-table, the combination, with the main table-top and supports for the same, of the flexible integral end portions adapted to form continuations of said main top, the sliding frames adapted to support said end portions and provided with the spring-rollers, and flexible connections between said spring-rollers and said end portions, substantially as described.

6. In an extension-table, the combination, with the main table-top and supports for the same, of the sliding extension-frames, the extension portions of the table-top, consisting of integral portions of flexible materials, adapted to form a continuation of said table-top, and the slatted supports for said integral flexible portions.

7. In an extension-table, the combination, with the main table-top and supports for the same, of the sliding extension-frames, and the extension portions of the table-top, consisting of two or more thicknesses of integral flexible material, one or more of said thicknesses of flexible material passing over the main table-top and forming one integral piece from one end of the table to the other, substantially as described.

473,061. ELECTRIC LOCK. CHARLES H. CROCKETT and CHANCELLOR C. ALLEN, Boston, Mass., assignors to the Boston Electric Company, same place. Filed May 5, 1888. Serial No. 272,944. (No model.)

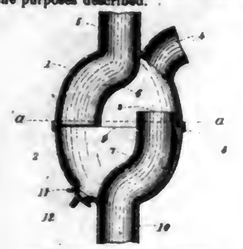


Claim.—1. The combination of a lock provided with two bolts with an electro-magnet and its armature co-operating with one of said bolts and a knob co-operating with the other of said bolts, the said magnet-controlled bolt having clearance between it and the striker-plate when the knob-controlled bolt is engaged with the striker-plate, substantially as described.

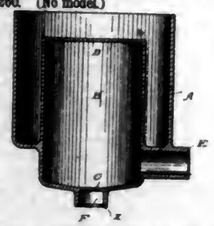
2. The combination of a door and lock and electro-magnet controlling said lock with an electric circuit extending from said lock to various points, and a circuit-changer in said circuit at the door, and circuit-changers at different points, and indicating-instruments in said circuit in proximity to said circuit-changers, whereby the operation of a distant circuit-changer permits the door to be opened and the opening of the door operates the indicating-instrument in proximity to the circuit-changer that was operated, substantially as described.

473,062. LEAD TRAP. JOHN DELLINGER, Buffalo, N. Y. Filed Dec. 16, 1891. Serial No. 415,273. (No model.)

Claim.—A lead trap consisting of an upper portion 1, having a flue extending up from a point above the bottom edge along the side of the case of which it forms a part and terminating in a pipe projecting vertically upward through the top of the portion 1 and provided with a vent-pipe, in combination with a lower portion 2, having a flue extending down in a curved line along the side of the case of which it forms a part and terminating in a central pipe extending in a line with the upper vertical pipe, the upper end of the lower flue terminating in a short pipe which projects slightly above the upper edge of the portion 2, for the purposes described.

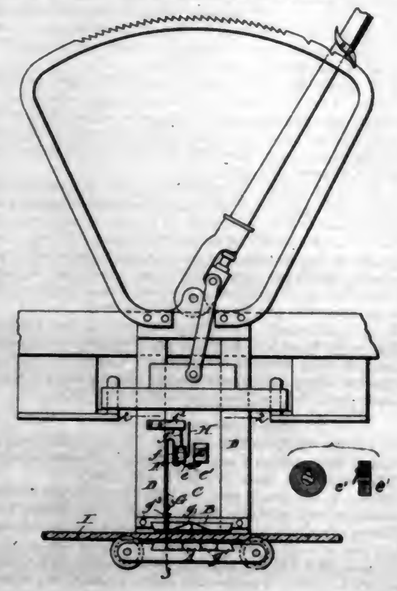


473,063. MANUFACTURE OF GAS-GOVERNORS. CHARLES H. DICKSON and MARCUS S. HOPKINS, Washington, D. C. Filed Aug. 31, 1891. Serial No. 404,260. (No model.)



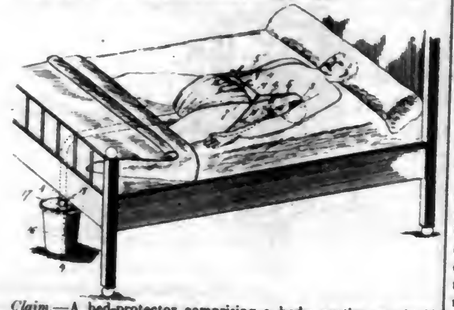
Claim.—An integral casting suitable for the manufacture of the fixed parts of a gas-governor, consisting of the shell A, the cylinder B, the open bottom lug F and the open side lug E, guide cross-pieces C and D over the lug F, and the valve-seat X, formed by the bottom of the lug F, substantially as set forth.

473,064. LUBRICATOR. GEORGE S. DUNCAN, Melbourne, Victoria. Filed Jan. 27, 1891. Serial No. 379,236. (No model.)



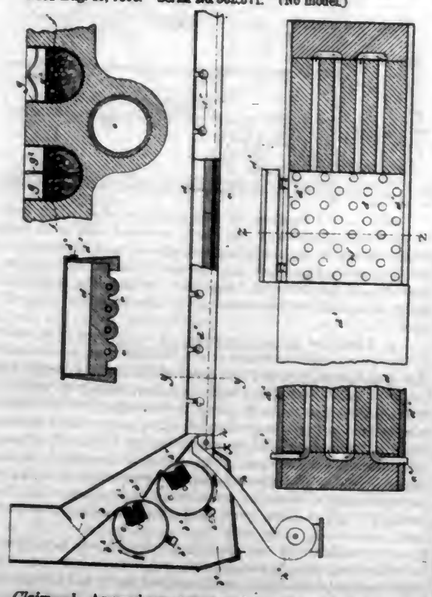
Claim.—In means for lubricating the gripping-dies and cables of cable tramways, the combination, with cylinder F, piston *f*, working therein, and an air-pipe connected with said cylinder, of an oil-reservoir E, pipe *e*, connecting said reservoir with the cylinder F, and a check-valve *e'*, opening in a direction away from said reservoir, substantially as set forth.

473,065. BED-PROTECTOR. JENNIE P. DUVAL, Richmond, Mo. Filed Oct. 22, 1891. Serial No. 409,520. (No model.)



Claim.—A bed-protector comprising a body portion or shield having an outwardly-curved upper margin and outwardly-extending upper side margins, a lower narrower extension formed in one piece with the body portion of the protector and united thereto marginally by oppositely-disposed concaved margins common both to the body portion and the extension, an outwardly-curved lower margin for the extension, a segmental cushion secured to the under side of the body portion contiguous to its upper margin, a reinforce secured to the middle of the shield, opposite pairs of flexible strips attached to the points of union of the upper and upper side margins, also to the points of union of the outwardly-extending margins with the concave margins, and, furthermore, to the points of union of the lower margin with the concave margins, an opening formed through the middle of the extension, a rigid ring inserted into said opening, a flexible tube connected to said opening, a ring or band secured to the free end of the tube, and a rigid cap removably connected to said ring or band, all substantially as set forth.

473,066. ORE-SEPARATOR. SIMON G. ELLIOTT, Quincy, Mass. Filed Aug. 19, 1890. Serial No. 362,371. (No model.)



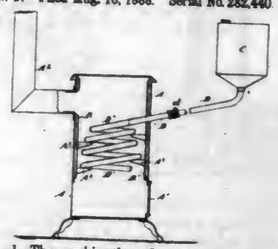
Claim.—1. An amalgamator comprising a long closed trough and means for introducing a blast at one end thereof, the floor of said trough being provided with circulating-passages for heating the same and the surface being provided with a number of independent pockets or recesses, and removable cups contained in said recesses, substantially as and for the purpose described.

2. An amalgamator comprising a long closed trough and means for introducing a blast at one end thereof, the floor of said trough being provided with a number of independent recesses, combined with removable mercury-cups contained in said recesses, said cups being provided with lifting-handles, by which they may be lifted out from said recesses, substantially as and for the purpose described.

3. The combination of the amalgamator, comprising a closed channel or trough having mercury-receptacles in its floor and means for producing a blast through said trough, with an inclined chute leading to the inner end of said trough, the inclined floor of said chute being provided with openings, and movable magnetized bars operating in said openings, whereby the magnetic sands are withdrawn from the chute through the openings in the floor thereof, while the non-magnetic sands are delivered into the amalgamating-trough, substantially as and for the purpose described.

4. The combination of the amalgamator, consisting of a closed channel provided with mercury-receptacles in the floor thereof and means for producing a blast through said channel, with an inlet-chute having an inclined floor provided with transverse openings, rotating drums composed of bars of magnetic material, the periphery of said drum rotating in the openings in the floor of the chute, and means to magnetize the said bars while adjacent to the said openings in their rotary movement, substantially as and for the purpose described.

473,067. PETROLEUM-BURNER. FERDINAND E. FORSTER, New York, N. Y. Filed Aug. 10, 1888. Serial No. 282,440. (No model.)



Claim.—1. The combination of a casing A, a spirally-coiled pipe D', supported therein and having a continuous slot *d'* in its upper side, and a valved pipe connecting the upper end of said coil with a source of supply of liquid fuel, substantially as and for the purpose herein set forth.

2. The combination, with a casing A, closed at the bottom, of an inner casing A^4, open at both top and bottom and having its lower edge above the bottom of the outer and main casing, the spirally-coiled pipe D', supported within the inner casing and having a continuous slot *d'* in its upper side, and a valve-pipe connecting the upper end of said coil with a source of supply of liquid fuel, all arranged for joint operation substantially as and for the purpose herein specified.

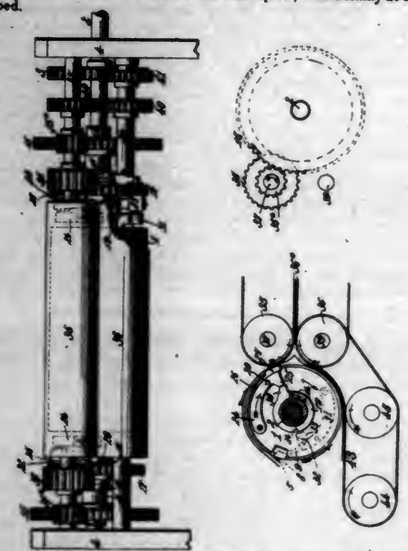
473,068. PAPER-FOLDING MECHANISM. JOSEPH C. FOWLER, Washington, D. C. Filed July 7, 1891. Serial No. 398,709. (No model.)

Claim.—1. In a paper-folding mechanism, the combination, with a drum having means of picking up the edge of the sheet as the latter is fed to said folding mechanism, of a pair of folding-rolls, one of which is in constant contact with said drum, a dog pivoted on a support on the shaft of said drum and having opposite revolution, an independent support moving in the direction of movement of the dog, but making one complete revolution in the same time occupied by the dog in making a plurality of revolutions, by which the dog is projected outward to press the sheet against the roll not in contact with the drum, and means for automatically disengaging the sheet from the pick-up devices, substantially as described.

2. In a paper-folding mechanism, the combination, with a continuously-revolving drum having a series of points or pick-up devices to engage the edge of the sheet, of an independent support carrying a dog having a clamp-block and a nearly-opposite clearing-lever, a separate support carrying cam-ribs operating said dog and lever, and two folding-rolls, one in constant contact with the drum and the other having intermittent contact with the clamp-block on the dog, the support for the latter and that for the cam-ribs having movement in a direction opposite that of the drum, but at different speeds, substantially as described.

3. In a paper-folding mechanism, the combination, with a drum having a clearing-plate pivoted in a slot in its surface and provided

with apertures to allow points or pick-up devices to project radially through the same, said clearing-plate being provided with a spring-closed clearing-lever, of a sleeve loose on the drum-shaft and carrying a gear provided with nearly-opposite pivotal supports, a dog and a clearing-lever pivoted thereon, a collar having independent movement on said sleeve and provided with cam-ribs, two folding-rolls, one in constant contact with the drum and the other having intermittent contact with the dog, and gearing rotating the feed-rolls in opposite directions and rotating the sleeve and collar in a direction opposite to the revolution of the drum, but at different speed, substantially as described.



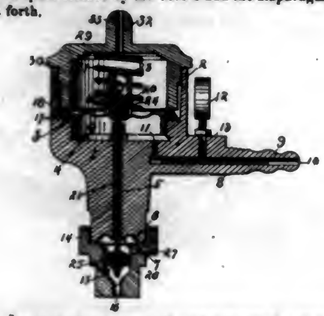
4. In a folder for printing mechanisms, the combination, with a continuously-revolving cylinder or drum having a pick-up device, of a clearer to strip the paper therefrom, a pair of folding-rolls, one of which runs in contact with the surface of said cylinder, the second folding-roll being in surface contact with the first, sleeves loose on the shaft of the cylinder and having gears meshing with pinions on the shaft of one of the folding-rolls, gears loose on said sleeves, dogs pivoted on the said gears and provided with projections and having clamp-blocks upon their free ends, collars positively connected to the sleeves and provided with cam-ribs, a latch-dog or clearing-lever pivoted to one of said gears and having a free end provided with a point or projection adapted to engage a cam-rib on one of the collars a little in advance of the action of the dog and clamp-block to actuate the clearer, and means for conveying the sheets to the cylinder, substantially as described.

5. In a folding mechanism, the combination, with a continuously-revolving cylinder or drum having a pick-up and a clearer, of two folding-rolls, one running in continuous surface contact with the cylinder and with the other folding-roll, clamp-blocks mounted on supports pivoted to independently-rotating gears concentric with the cylinder, a lever to operate the clearer, and means for operating the dog and lever and for feeding the sheets to the cylinder automatically, substantially as described.

6. In a folding mechanism, the combination, with a continuously-revolving cylinder or drum having a pick-up device and provided with a clearer, of means for automatically forming the fold and drawing the sheet off the cylinder, the same consisting of two folding-rolls having contact with each other, one of said rolls having continuous surface contact with the cylinder, dogs carried by pivoted supports revolving oppositely to the cylinder, means for actuating the clearer, and devices operating the dogs an instant later to press clamp-blocks carried by them against the paper on the cylinder and press it against the folding-roll which is out of contact with the cylinder, substantially as described.

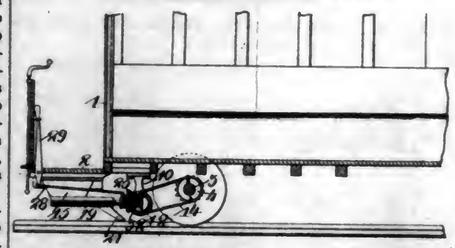
473,069. PRESSURE-REGULATOR. HENRY GEMMINGER, St. Louis, Mo. Filed Dec. 14, 1891. Serial No. 415,044. (No model.)

Claim.—1. In a pressure-regulator, the combination of a casting having an extension 8 formed integrally with the same and provided with a horizontal passage 10, a vertical passage 11, communicating with the said horizontal passage and an opening into the interior of said casting, a vertical passage 5, bores 2 and 4, formed in the upper end of the casting and of different dimensions, forming a seat 3, a diaphragm disposed above said seat, a cover 29, provided with external screw-threads engaging with internal screw-threads formed in the bore 2, a stem 21, adjustably secured to the diaphragm and disposed within the passage 5, a cap 23, mounted upon the upper end of said stem, and a valve at the lower end of said stem and adjustable to and from the bottom of said passage, the passages 11 and 15 communicating with the space formed by the bore 4 and the diaphragm, substantially as set forth.



2. In a pressure-regulator, the combination of a casting having an extension 8 formed integrally with the same and having a horizontal passage 10, a vertical passage 11, communicating with the said horizontal passage and opening into the interior of the said casting, a vertical passage 5, bores 2 and 4, formed in the upper end of the said casting of different dimensions, a screw-threaded collar secured in the smaller of said bores, an annular flange formed on the said collar, a metallic diaphragm secured to said flange, a cover, such as 29, provided with external screw-threads engaging with internal screw-threads formed in the larger of said bores, a nut secured to the said diaphragm and adapted to receive a cap 23, a spring 31, a stem, such as 21, adjustable within said vertical passage, and a valve located at the lower end of said stem and adjustable to and from the bottom of the said passage, the passages 11 and 5 communicating with the space formed by the bore 4 and the diaphragm, substantially as set forth.

473,070. SAND-BOX FOR CARS. HERBERT H. HENSHAW, St. Louis, Mo. Filed Jan. 6, 1892. Serial No. 417,191. (No model.)



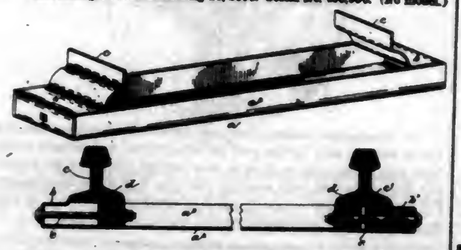
Claim.—1. A sand-box for cars, consisting of a trough, such as 19, in communication with said box, a conveyer, such as 23, located within the said trough and in contact with the sand contained in said box, a gear-wheel mounted upon the axle of the car, suitable gearing between said gear-wheel and conveyer for imparting motion to the same, and means for disconnecting said gearing, substantially as set forth.

2. A sand-box for cars, consisting of a trough, such as 19, attached to the lower surface or bottom of said box and in communication with the same, a shaft, such as 22, mounted within the said trough, a conveyer 23, secured upon the shaft 22, for conveying the sand to the track, a bevel gear-wheel 25, loosely mounted upon the said shaft and adapted to move in a longitudinal direction, a gear-wheel, such as 4, mounted upon the axle of the car, a bearing, such as 10, secured to the under surface of the car, a shaft, such as 11, mounted in said bearing and carrying gear-wheel 13 and bevel gear-wheel 12, a chain, such as 14, forming a connection between said gear-wheels 4 and 13, and means for throwing the bevel gear-wheels 25 and 12 in and out of gear, substantially as set forth.

3. A sand-box for cars, consisting of a trough, such as 19, attached to the lower surface or bottom of the said box and in communication with the same, a shaft, such as 22, mounted within said trough, a conveyer 23, mounted upon said shaft, a bevel gear-wheel 25, loosely mounted upon said shaft and adapted to be moved in a longitudinal

direction, a flanged extension 26, formed with the said gear-wheel 25, a lever, such as 29, fulcrumed in the bottom of the platform of the car, a rod, such as 28, connected to the said lever, a fork, such as 30, formed on the opposite end of the said rod, spanning the neck 27 of said extension, and means for imparting motion from the axle of the car to said conveyer, substantially as set forth.

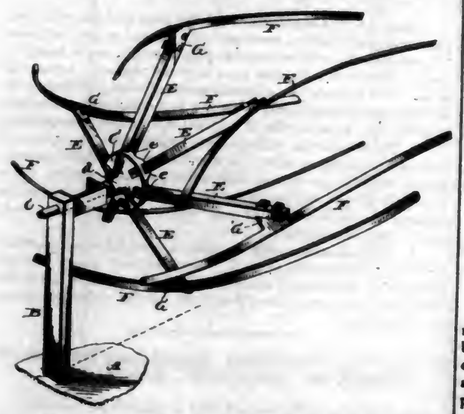
473,071. RAILROAD TIE AND CHAIR. CORNELIUS P. HOWELL, Chattanooga, Tenn. Filed July 26, 1891. Serial No. 400,880. (No model.)



Claim.—1. A railroad-tie constructed of wrought-iron or steel, made as a trough, with side flanges and having its ends turned up substantially parallel with such side flanges and curved to receive the foot of the rail and turned up vertically to engage the web of the rail, substantially as described.

2. A tie made as a trough, with a bottom a^3, side flanges a^2, and upturned and overturned ends, combined with rail-supports and horizontal fastening-bolts for such supports, substantially as described.

473,072. HARVESTER-REEL. OLE KNUDSON, Herman, Minn. Filed Oct. 13, 1891. Serial No. 408,594. (No model.)

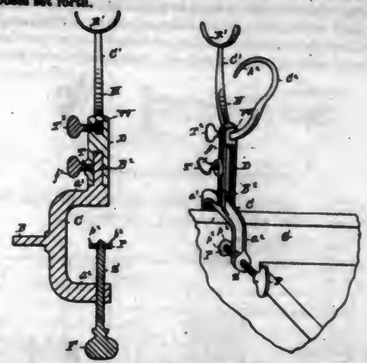


Claim.—The reel described, consisting of a disk with sockets, arms fitted in the sockets and extending in an inclined direction from the disk and having beveled outer ends, and slats carried by the outer ends of the arms and having tapered portions secured to the beveled ends of the arms and curved, substantially as and for the purpose specified.

473,073. FISHING-ROD HOLDER. TIMOTHY LEMAIRE, Troy, N. Y. Filed July 13, 1891. Serial No. 399,353. (No model.)

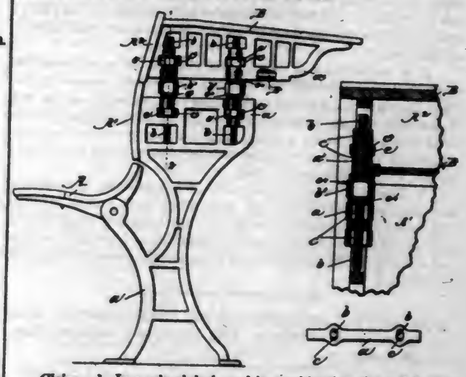
Claim.—1. In a fishing-rod holder, the combination, with a clamp constructed and arranged to connect with the vertical gunwale of a boat or the horizontal edge of a boat-seat and provided with a socket-pin upon one side and also at one end of said clamp, of a socket-sleeve adapted to be entered upon either of said socket-pins and held in place thereon by means of a set-screw, and a rod-holder constructed to be adjustably connected to said socket-sleeve, substantially in the manner as and for the purposes set forth.

2. A fishing-rod holder made with two upcurved arms, one of which at its upper end is constructed with a circular rest for the rod and the other end of which holder is made with a hook under and into which the rod is entered to be held in place, a slideway made in a supporting socket-sleeve for the insertion of the holder, and a set-screw in the socket-sleeve adapted to engage with said holder to secure the same within said slideway, substantially in the manner as and for the purpose set forth.



3. The combination, with the clamp C, made with the arms $c' c^2$, screw S, and socket-pins $B' B^2$, of the socket-sleeve D, made with the set-screws $T' T^2$ and slideway W, and the holder H, made with upcurved arm C', having the rest R', and the upcurved arm C^2, made with the hook A^2, constructed and arranged to operate substantially in the manner as and for the purposes set forth.

473,074. SCHOOL-DESK. GEORGE A. MASTERS, Chicago, Ill. Filed Apr. 13, 1891. Serial No. 388,645. (No model.)



Claim.—1. In a school-desk, and in combination, the end frames made in separate sections, as $a\ a'$, screw-rods $b\ b$, having swivel flexible connection with said sections, adapted to secure them to one another and allow flection between them, and screw-thread connection adapted to adjust said sections toward and from one another, and the parts $b'\ b'$ for revolving said rods, substantially as specified.

2. In a school-desk, and in combination, the end frames made in separate sections and provided with openings c and transverse openings d, intersecting each other, screw-rods fitting loosely in the openings c, nuts e, fitting in said transverse openings and having slight vertical play therein, and the parts b', fixed to said screw-rods, substantially as and for the purpose specified.

3. In a school-desk, and in combination, the end frames made in separate sections $a\ a'$ and provided with intersecting openings $c\ d$, rods b, having the parts b' near their center and provided with threads running in opposite direction on each side of said parts b', and nuts e, in connection with said rods and both of said sections $a\ a'$, as and for the purpose specified.

4. In a school-desk, and in combination, the end frames made in separate sections $a\ a'$, having intersecting openings $c\ d$, screw-rods b, provided with parts b' near the center and right and left hand threads at their opposite ends, screw-nuts e, and jam-nuts e', all connected and adapted to operate as and for the purpose specified.

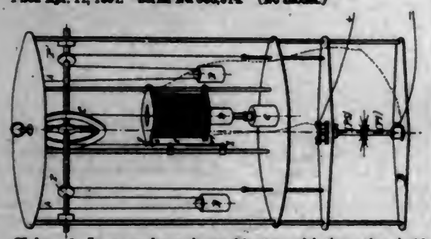
473,075. STIRRUP. ALBERT MATER, San Francisco, Cal. Filed Oct. 30, 1891. Serial No. 410,263. (No model.)

Claim.—The combination, with a stirrup-iron having a vertical slit through its upper part, a side slit at right angles thereto, and a hole opposite said side slit, of a staple provided with a depending leg having a

T-shaped opening and fitting in said vertical slit, a T-shaped pin longitudinally movable across said opening through said side slit and hole, and a round-edged spring of varied thickness secured to and following the loop of said iron, but normally standing out from the upper part thereof and connected with the stem of said pin, substantially as set forth.



473,076. ELECTRIC-ARC LAMP. OCTAVE PATIN, Paris, France. Filed Apr. 11, 1891. Serial No. 388,614. (No model.)



Claim.—1. In an arc lamp, in combination with the carbon-holders, a solenoid, a core movable therein and when unattracted holding the carbons apart, a dash-pot for taking up the shock of movement of the core, a cord attached to the upper end of said core, a shaft, a pulley on said shaft over which the cord passes, a spring attached to one end of the cord and to the frame to form a brake on the pulley, and connections between the shaft and the carbon-carrier, substantially as described.

2. In an arc lamp, in combination with the carbon-holders, the solenoid, the core therefor, the dash-pot, the cord for suspending the core, the shaft, the grooved pulley *c*, the rod *f*, attached at one end to the cord, a spring *r*, secured at one end to the frame and at the other to the rod *f*, and a guiding-casing attached to the frame and inclosing the rod *f*, and connections between the shaft and the carbon-holders, substantially as described.

3. The herein-described carbon-holder, comprising the metallic ball, with clasps for holding the same, a rod, as F, passing through said metal ball and having a socket for the reception of the carbon and having also a recess L, and a circular clasp J, surrounding the rod and pressing through the recess L against the carbon, substantially as described.

473,077. ARMATURE-CORE FOR ELECTRIC MOTORS. DAVID PEPPER, Jr., Philadelphia, Pa. Filed July 24, 1891. Serial No. 400,540. (No model.)



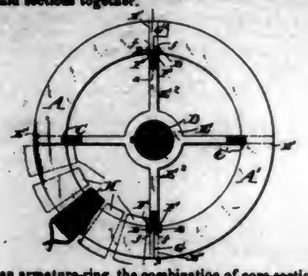
Claim.—1. An armature-core for electric motors or dynamos, formed of sections having at their ends tongues *d'* and inclosed recesses *e*, adapted to fit together, as described, in combination with an interlocking device arranged, as described, to prevent independent movements of the sections when united to or from their common center.

2. An armature-core for electric motors or dynamos, formed of sections having at their ends tongues *d'* and inclosed recesses *e*, adapted to fit together, as described, in combination with an armature-center secured to the core, as described, and so that the core-sections are locked by it against independent movement from or to the center.

3. The combination of an armature-core made up of sections having at their ends tongues *d'* and inclosed recesses *e*, with a spider B, having arms, as *b'*, arranged to grasp and center the interlocked sections.

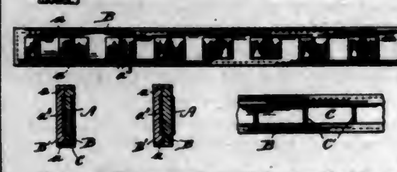
473,078. ARMATURE-RING. DAVID PEPPER, Jr., Philadelphia, Pa. Filed Dec. 3, 1891. Serial No. 413,870. (No model.)

Claim.—1. In an armature-ring, the combination of core-sections meeting end to end and each having near its ends grooves, as B, formed in the inner face of the sections, with a spider, the arms E of which have fingers F F formed to enter the grooves B B of abutting sections and lock said sections together.



2. In an armature-ring, the combination of core-sections meeting end to end and each having near its ends grooves, as B, formed in the inner face of the sections, so as to have wedges *f* between the groove and the section end, with a spider, the arms E of which have fingers F F formed to enter the grooves B B of abutting sections and to rest on wedges *f f*, all substantially as and for the purpose specified.

473,079. HARNESS ORNAMENT. JACOB PFLIPSEN and JOHN KRIENS, Dubuque, Iowa. Filed Nov. 21, 1891. Serial No. 412,623. (No model.)

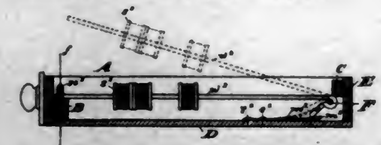


Claim.—1. The combination, with the piece B of the article provided with narrow slits or openings C, of a series of ornamental pieces A, provided with bent portions, as described, said pieces being arranged adjacent to each other, so as to form a continuous ornamental surface for the article, two adjacent bent portions of adjoining pieces A being passed through each of the slits in the manner described and clinched upon the under side of the piece B, for the purpose specified.

2. The combination, with the piece B, provided with a groove C and narrow openings or slits C', as described, of the metallic pieces A, seated within the groove with their upper faces flush with the upper face of the piece B and having their ends bent and passed through the openings and clinched upon the under side of said piece, as described, for the purpose specified.

3. The combination, with the piece B, provided with transverse openings, of the metallic pieces A, having bent ends passed through the openings and clinched upon the under side of the piece B, and the back piece B', secured to piece B over the clinched ends of the pieces A, as described.

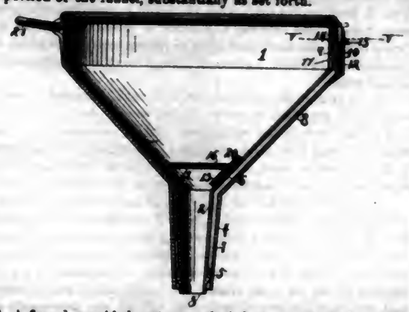
473,080. SPOOL-HOLDER. JOSEPH M. PIERCE, Fort Wayne, Ind. Filed Dec. 24, 1891. Serial No. 416,029. (No model.)



Claim.—A spool-holder consisting of a rod adapted for use in a spool-cabinet drawer, said rod being pivoted or coiled on a transverse pivot in the rear end of said drawer, a spring-catch and curved guide fixed on a shelf in the front end of said drawer for engaging and securing the free end of said rod, and a spring secured to the bottom of said drawer, adapted to elevate said rod when freed from said spring-catch by engagement with the coiled end thereof, all substantially as set forth and described.

473,081. FUNNEL. RUDOLPH RAHN, St. Louis, Mo., assignor of one-fourth to Emile Gist, same place. Filed Nov. 2, 1891. Serial No. 410,576. (No model.)

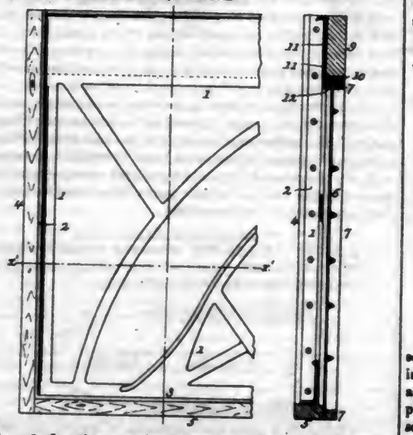
Claim.—1. A funnel having a tube provided with projections around its lower end, an outer tube surrounding the mouth portion of the former or inner tube, thereby forming a space between said mouth and outer tube, and a passage leading therefrom and opening into the body portion of the funnel, substantially as set forth.



2. A funnel provided with a vertical cleat or socket-piece on its inner side, in combination with a removable screen located in the funnel, a finger or bar projecting downwardly from the screen and received by said cleat or socket-piece, and a manipulating device at the top of the screen, whereby the finger or bar may be withdrawn from the cleat or socket-piece, substantially as set forth.

3. A funnel comprising a vessel 1, provided with holes 14, through which air or liquid is adapted to pass, a mouth, such as 3, a tube 4, surrounding said mouth and forming a space 7, an outer wall 8, applied to the funnel, forming a space 6, leading to and connected to space 7, and a sliding door 13, adapted to close an opening formed in the passage 6 opposite the holes 14, substantially as set forth.

473,082. PIANO-BACK. JOHN W. REED, Chicago, Ill. Filed Mar. 11, 1891. Serial No. 384,541. (No model.)



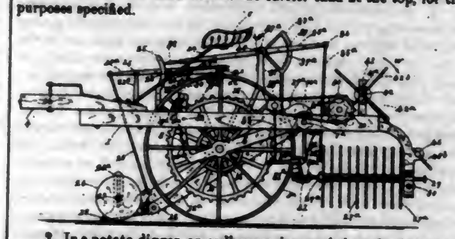
Claim.—1. In a frame or back for pianos, the combination of a piano string-plate, an outer marginal wooden frame secured thereto, so as to inclose the same and project rearwardly, and a sounding-board secured to the back of the outer marginal frame, substantially as set forth.

2. In a frame or back for pianos, the combination of the piano string-plate having marginal cheeks or flanges, the outer marginal wooden frame secured thereto, so as to inclose the same and project rearwardly, and the sounding-board secured to the back of the outer marginal frame, substantially as set forth.

3. In a frame or back for pianos, the combination of the piano string-plate having marginal cheeks or flanges and horizontal rearwardly-projecting flange near its top, the outer marginal wooden frame secured to the marginal flanges of the plate, so as to inclose the same and project rearwardly, the sounding-board secured to the outer marginal frame, and the pin-block resting upon the horizontal flange of the string-plate, substantially as set forth.

473,088. POTATO-DIGGER. WILLIAM REUTHER and JOHN REUTHER, Elma, N. Y. Filed May 6, 1891. Serial No. 391,732. (No model.)

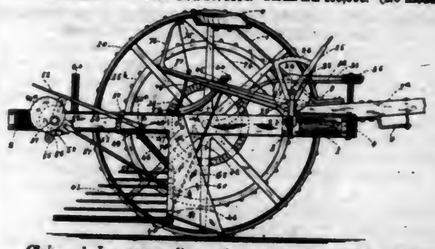
Claim.—1. In a potato-digger, the combination of an endless-chain-gear carrier mounted upon rollers on an incline, a series of angle-bars mounted in bearings, so as to turn easily in said endless chain, each angle-bar consisting of a wide and narrow angle-plate, a guide-piece for keeping the wide portions of the angle-bars substantially in line in their upward movement and allow them to hang vertically in their downward movement, and mechanism, substantially as above described, for operating the chain-gear, whereby the space between the bars is wider at the under side of the carrier than at the top, for the purposes specified.



2. In a potato-digger, an endless carrier consisting of a chain-gear mounted on rollers at an incline and provided with a bearing in each link, a series of angle-bars mounted in said bearings, each angle-bar having a wide and narrow angle-piece, a guide-bar for keeping the wide portions substantially in line at the top and having a series of inclined teeth for slightly agitating the bars in their upward movement at the top of the carrier, whereby the openings at the top of the carrier are comparatively narrow and widen out at the under side of the same as the bars turn over and the wide sides hang down in their downward movement, substantially as described.

3. In a potato-digger, the combination therewith of a tilting shaking separator or screen mounted on a shaft so as to be turned so as to incline from either side of the machine, a means for giving it a reciprocating motion, substantially as above specified, and a pivoted lever mounted on a support on the machine and connected by ball-joints to a connecting-rod pivoted by a ball-joint to the reciprocating screen, and a means for holding it at any point desired, substantially as described.

473,084. POTATO-DIGGER. WILLIAM REUTHER and JOHN REUTHER, Elma, N. Y. Filed Dec. 23, 1891. Serial No. 415,996. (No model.)



Claim.—1. In a potato-digger, the combination, with the shaking-screen for separating the dirt from the potatoes, of two side supporting-arms secured to supports at their upper ends by universal joints and to the screen by similar joints at their lower ends, two vertical pins mounted and rigidly secured to a cross-bar connected to the screen, and an eccentric connected to a shaft mounted in bearings on the frame and connected by a bevel-pinion with a bevel gear-wheel on the driving-shaft, whereby a combined longitudinal and lateral shaking movement may be given to the screen, substantially as described.

2. In a potato-digger, the combination, with the shaking-screen for separating the dirt from the potatoes, of two side supporting-arms secured to supports at their upper ends by universal joints and to the screen by similar joints at their lower ends, an eccentric rigidly secured to a driving-shaft mounted on the main frame and secured to a forked connecting-rod having its forked ends pivoted to the supporting-arms, an agitating-bar rigidly secured centrally to the driving-shaft and provided with friction-rollers near each end, and an arm secured by pins to a cross-bar connected with the screen, so that when the arm is moved the screen moves with it, whereby a combined longitudinal and a vertical shaking movement may be given to the screen, substantially as described.

3. In a potato-digger, the combination, with the shaking-screen for separating the dirt from the potatoes, of two side supporting-arms secured to supports at their upper ends by universal joints and to the screen by similar joints at their lower ends, an agitating-bar rigidly secured centrally to the driving-shaft and provided with friction-rollers near each end, an arm secured by pins to a cross-bar connected to the screen adapted to be operated by the agitating-bar for giving the screen an up-and-down movement and two vertical pins mounted and rigidly

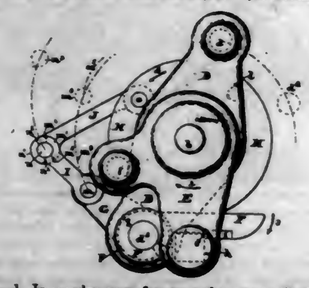
secured to the same cross-bar, and an eccentric secured to a shaft mounted in bearings on the frame and provided with a bevel-pinion, which gears in with a bevel gear-wheel on the driving-shaft, whereby a combined lateral shaking movement and an up-and-down shaking movement may be given to the screen, substantially as described.

4. In a potato-digger, the combination, with the shaking-screen for separating the dirt from the potatoes, of two side supporting-arms secured to supports at their upper ends by universal joints and to the screen by similar joints at their lower ends, an eccentric rigidly secured to a driving-shaft mounted on the main frame and secured to a forked connecting-rod having its forked ends pivoted to the supporting-arms, an agitating-bar rigidly secured centrally to the driving-shaft and provided with friction-rollers near each end, an arm secured by a pin to a cross-bar connected with the screen, two vertical pins mounted and rigidly secured to the same cross-bar, and an eccentric secured to a shaft mounted in bearings on the frame and connected by a bevel-pinion with a bevel gear-wheel on the driving-shaft, whereby a combined longitudinal shaking movement, a side shaking movement, and a vertical shaking movement may be given to the screen, substantially as described.

5. In a potato-digger, the combination, with the shaking-screen for separating the dirt from the potatoes, of two side supporting-arms provided with ball-joints at the top and bottom, the upper joints being connected with stationary supporting-arms by which the screen is suspended and the lower ends being connected by their ball-joints with the screen, and a forked connecting-rod having its single end pivoted to an eccentric by a joint that will permit a lateral movement on the eccentric and having its forked ends pivoted to the side supporting-arms, whereby the screen is capable of being moved either up or down longitudinally or laterally, substantially as described.

6. In a potato-digger, the combination, with the shaking-screen for separating the dirt from the potatoes, of two side supporting-arms secured to supports at their upper ends by ball-joints and to the screen by ball-joints at their lower ends, and an eccentric rigidly secured to a shaft mounted on the main frame of the machine and secured to a forked connecting-rod having its forked ends pivoted to the supporting-arms for giving the screen a longitudinal shaking movement, substantially as described.

473,085. CUT-OFF-VALVE GEAR. RICHARD H. RICE, Providence, R. I. Filed July 15, 1891. Serial No. 399,591. (No model.)



Claim.—1. In a valve-gear for operating an oscillating steam-admission valve, the combination of the two-armed lever D, mounted on and movable about a fixed journal concentric with the axis of the valve-stem, the elbow-lever E, firmly secured upon the valve-stem, the rectangular block or pin A, secured to one arm of said lever E, the pin f, set in the other arm of said lever and carrying the dash-pot rod g, the shaft d^3, mounted in a bearing in one end of the lever D, the hook F, secured to one end of said shaft and adapted to engage the block A, the lever G, secured to the opposite end of said shaft d^3, the governor-controlled pin o, the links I and J, provided with stops to limit the approach of the end of the lever G toward the center line of the link J, and any suitable means of imparting to said lever D a positive and determined vibration about the axis of the valve-stem.

2. The combination of the two-armed lever D, having journaled therein the shaft d^3, the hook-lever F, having set therein the rectangular hardened-steel plate i, the lever E, having changeably secured thereto the cubical or rectangular block A, the lever G, secured upon the shaft d^3, the governor-controlled pin o, and the links I and J, provided with stops to limit their movements toward positions parallel to each other.

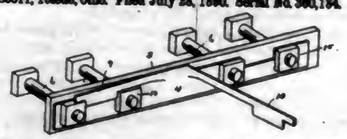
3. The combination of the bonnet C, the valve-stem b, the levers D and E, the shaft d^3, the hook F, provided with the reversible plate i, the reversible or changeable block A, secured to the lever E, the lever G, the governor-controlled pin o, the links I and J, and the stops m^2 and n^2, all constructed, arranged, and adapted to operate substantially as and for the purposes described.

4. In combination with lever D, mounted loosely on a fixed journal concentric with the axis of the valve and carrying the hook F, the lever E, fixed on the valve-stem, the block A, provided with a central screw-hole in each side and a plurality of pin-receiving holes in each side, a steady-pin set in said lever to interchangeably fit either of said pin-holes in said block, and the clamping-screw for clamping said block to said lever.

5. In combination with the levers D and E, mounted, respectively, as set forth, the block A, carried by the lever E, the hook-lever F, carried by the lever D, the rectangular plate i, provided with a central screw-receiving hole and a plurality of pin-receiving holes equidistant from said central hole, a steady-pin set in the hook-lever F, and a screw to clamp said plate to said hook-lever, substantially as described.

6. The combination of the levers D and E, mounted as set forth and connected together by the hook F and block A, the lever G, the lever K, mounted upon a fixed bearing, the governor-rod l, connected to one end of said lever, the rod L, pivoted at one end to the other arm of said lever K and having its other end mounted in a swiveling bearing M, the pin o, set in said rod L, the links I and J, connecting said pin o and the lever G, and stops to limit the movements of said links toward positions parallel to each other.

473,086. COMBINED WASHER-PLATE AND NUT-LOCK. JOHAN SCOTT, Toledo, Ohio. Filed July 28, 1890. Serial No. 360,184. (No model.)



Claim.—1. An improved nut-lock comprising a washer-plate having bolt-apertures produced therein and a slit and recess formed in the plate between the said apertures and a tongue integral with the washer-plate, arranged to one side of the bolt-apertures, said tongue having a projection produced thereon which is adapted to fit the recess between the apertures and engage the opposing sides of the adjacent nuts, and thereby lock the nuts at their sides while the other portions of the tongue will lock upon the top of the nuts.

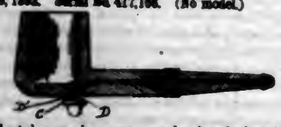
2. An improved nut-lock comprising a washer-plate provided with bolt-apertures and a recess between said apertures and a tongue integral with the washer-plate, arranged to one end of the bolt-apertures, said tongue having a projection produced intermediate its ends, adapted to fit the recess in the plate and engage the opposing sides of the adjacent nuts, the fixed end of said tongue being broader than the other portions, for the purpose described.

473,087. PLANE-IRON. EDMUND A. SCHADE, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Jan. 3, 1891. Serial No. 377,120. (No model.)



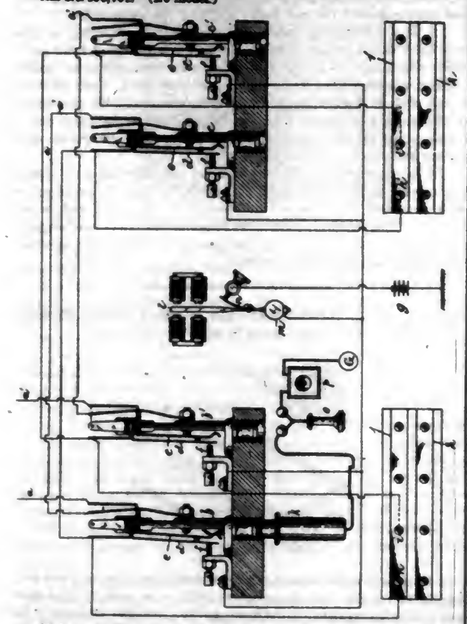
Claim.—In a plane, the combination of a plane-iron having a longitudinal slot 4 with the circular enlargement at its lower end, said slot extending up near to the upper end of the bit without any enlargement at said upper end, and a laterally-adjusting lever having a projecting part fitted to work in the upper end of said slot, substantially as described, and for the purpose specified.

473,088. TOBACCO-PIPE. JOHN F. SCHULHOFF, New Bremen, Ohio. Filed Jan. 6, 1892. Serial No. 417,166. (No model.)



Claim.—The tobacco-pipe constructed as herein described, having a seat formed in the bottom of the bowl, a tap fitted in said seat, and a thumb-screw passing up through the bottom of the pipe and through the tap, whereby an annular space is formed around the projecting interior stem of the screw and the wall of the seat, the stem being located near the bottom of the bowl, as shown, and the screw-threads of the thumb-screw passing up close to and across the air-hole of the stem, all arranged and operated as and for the purposes set forth.

473,089. TESTING APPARATUS FOR TRUNK-LINES OF TELEPHONE-EXCHANGES. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 18, 1885. Serial No. 158,761. (No model.)



Claim.—1. The combination, with two or more multiple switch-boards, of trunk-lines and their spring-jacks, local circuits, one for each trunk-line, a circuit-closer operated by the movement of the springs of the different spring-jacks to close the local circuit of any given line when a connection is made therewith, a reed or vibrator included in the battery-wire common to all of said local circuits, test-terminals or studs connected with the local circuits, one with each local circuit at each board, said test-terminals being placed near one another in line, and testing apparatus at each board to determine whether any given test-terminal is connected with the battery and reed or vibrator.

2. The combination, with two or more trunk-lines extending from one telephone-exchange to another exchange, of multiple switchboards at one of said exchanges, each multiple switchboard being provided with spring-jacks, one spring-jack for each trunk-line, local circuits, one for each line, each local circuit including a stud or test-terminal at each of the multiple boards, said test-terminals at a given board for the trunk-lines which extend to a given exchange being arranged together and in close proximity to each other, a circuit-closer in each local circuit operated by the spring-jacks of the trunk-line of said spring-jacks when a plug is inserted therein, and testing apparatus at each board whereby a quick test may be made to determine which of the trunk-lines are busy.

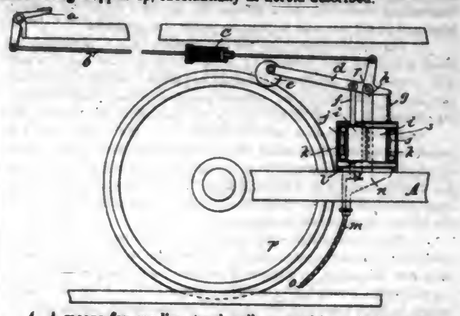
3. In a telephone-exchange, the combination, with two or more trunk-lines, of multiple switchboards provided with spring-jacks, one spring-jack on each board for each line, local circuits, one for each trunk-line, and terminals in each local circuit, one at each board, the terminals at each board being near each other and in a line in a groove, and a plug connected with a circuit including a telephone, whereby a quick test may be made to determine which of the trunk-lines are in use.

473,090. SANDING MECHANISM FOR CARS. NICHOLAS SIEBERT, Boston, Mass. Filed Nov. 27, 1891. Serial No. 413,217. (No model.)

Claim.—1. In combination with the wheel and rail, a sandstone or its equivalent located on the vehicle, means by which mechanically to grind or grate from the surface of the sandstone granular particles, and a conductor for directing the granular particles to a position between the said wheel and rail.

2. A vehicle having a sandstone carried on it, means for disintegrating the sandstone and delivering the disintegrated particles between the wheel of the vehicle and the rail on which it runs, substantially as and for the purpose described.

3. The combination, on a car, of a sandstone, means for disintegrating said sandstone, a tube for delivering the disintegrated particles to the rail, and a rod operating within the tube to prevent the latter being stopped up, substantially as herein described.



4. A means for sanding track-rails, comprising a body of disintegratable material, an opposing body, and a means for operating one of said bodies in contact with the other to separate or detach particles of the disintegratable material for delivery to the rail, substantially as herein described.

5. A means for sanding the rails of a railway, comprising two opposing surfaces of disintegratable material held in contact with each other, and means for causing one of said surfaces to move upon the other and thereby detach particles of the material which are fed to the rails, substantially as herein described.

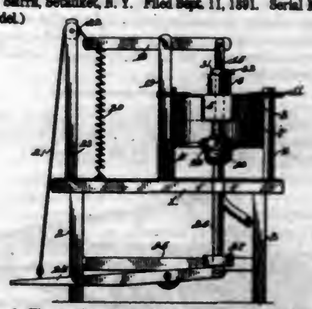
6. A means for sanding track-rails, comprising bodies of sandstone with opposing faces in contact, a means for moving one of said bodies over the other and disintegrating it by the friction of the opposing faces, and a tube for discharging the separated or disintegrated portions upon the track-rails, substantially as herein described.

7. A means for sanding track-rails, comprising a fixed and movable body of sandstone, a holder for the same, devices connected with the movable body of sandstone and with a movable portion of the car, whereby the opposing faces of the bodies of sandstone move upon each other and particles of them are detached, and a tube for conveying the detached portions to the track-rails, substantially as herein described.

8. A means for sanding track-rails, comprising a stationary and movable body of sandstone, a holder therefor, spring-actuated followers for holding the faces of the bodies of sandstone in contact, a lever d, and rod connected with said movable body, a cam or eccentric on said lever, a foot-lever on the car, and a connection therefrom to the lever d, whereby the latter is operated to throw the cam or eccentric into engagement with a movable part of the car and to cause the opposing surfaces of the sandstone to rub upon each other, and a tube leading from the sandstone-holder to the track-rails, substantially as herein described.

9. The combination, on a car having a holder and a discharge-tube, of a body of sandstone within the holder, and means for disintegrating the same and feeding the separated portion to the discharge-tube and the rail, substantially as herein described.

473,091. MACHINE FOR ATTACHING KNOBS TO SHANKS. ISAAC I. SMITH, Setauket, N. Y. Filed Sept. 11, 1891. Serial No. 405,382. (No model.)



Claim.—1. The combination, with the melting-pot and tube 6, leading therefrom and having an opening in its side, of a plunger within said tube, having a longitudinal opening and a lateral opening intersecting therewith, which receives molten metal from the pot, said longitudinal opening being contracted at its lower end, as and for the purpose set forth.

2. The melting-pot having an extension 5, with an opening through

the bottom and a tube 6, extending upward therefrom, said tube having an opening in its side near the bottom of the pot, in combination with plunger 15, having a longitudinal opening and a lateral opening intersecting therewith, and a plunger 26, having a holder by which a knob and shank are held in position under the extension.

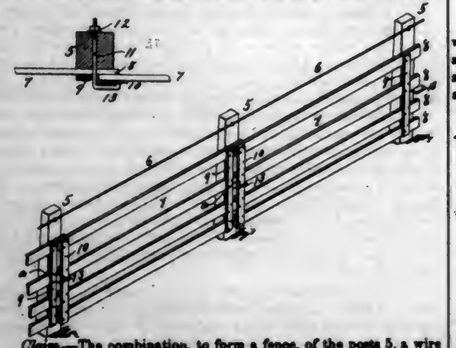
3. The combination, with the melting-pot, tube 6, extending upward therefrom, and plunger 15, lying within the tube and provided with longitudinal and lateral openings, of jacket 7 outside the melting-pot, having openings 13, and suitable gas connections whereby a heating-chamber is formed within the jacket and under the melting-pot.

4. The combination, with standards 4 and the melting-pot and jacket having ears 11, by which they are connected with the standards, of tube 6, extending upward from the melting-pot and having an opening communicating therewith, plunger 15 within said tube, having longitudinal and lateral openings, and suitable gas connections within the jacket, substantially as described.

5. The combination, with the melting-pot, tube 6, extending upward from the melting-pot and having an opening connecting therewith, and the jacket, of plunger 15 within tube 6, plunger 26 for holding the knobs, lever 18, connected to plunger 15, foot-lever 24, a spring acting to draw the outer end of lever 18 downward, and a cord extending upward from the outer end of lever 18 and connecting with the foot-lever, whereby plunger 15 is lowered and plunger 26 raised simultaneously, as and for the purpose set forth.

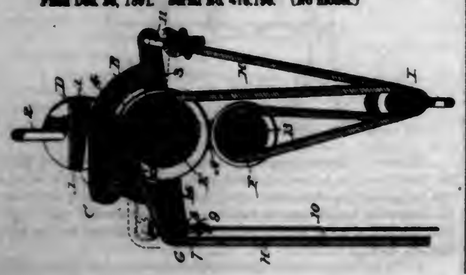
6. The melting-pot having an extension 5, with an opening in the bottom and a tube 6, extending upward therefrom, said tube having an opening 14, and a plunger within said tube, having a longitudinal opening, and a lateral opening intersecting with the opening in the tube, in combination with plunger 26, directly under tube 6 and having a cup-shaped holder 18, foot-lever 24, spring 20, and a cord extending upward from the rear end of lever 18 and connecting with the foot-lever.

478,092. FENCE. WILLIAM D. SNOWDEN and THOMAS J. SNOWDEN, Lorna, Ill. Filed June 20, 1891. Serial No. 396,914. (No model.)



Claim.—The combination, to form a fence, of the posts 5, a wire or rail 6, passing along the top thereof, removable panels 7, applied to such posts below the wire or rail, with ends 8 of the rails of such panels projecting beyond the cross-piece 9, the cross-piece 10 at the other end thereof about flush with the ends of the rails, but having one rail at said end slightly protruding, and a right-angled bolt 11, passing through the posts, upon which said panels rest and are supported and gripping the cross-piece of the overlapping panel, substantially as and for the purpose described.

478,093. SELF-LOCKING PULLEY. BENAIT R. SOCKMAN, Mount Vernon, Ohio, assignor of one-half to William L. McIntire, same place. Filed Dec. 26, 1891. Serial No. 416,196. (No model.)

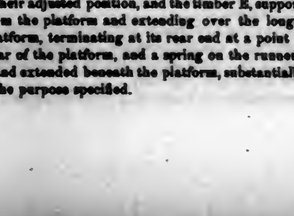


Claim.—1. In a self-locking pulley, a stationary yoke carrying a stop-block and a pulley, in combination with a swinging head journaled within the yoke and carrying a guide-roller at one end, a locking-block, and a hoisting-rope secured to the free end of the said head and passing around the said pulley and over the guide-roller.

2. In a self-locking pulley, a stationary yoke carrying a rigid stop-block and a pulley, in combination with a swinging head journaled within the yoke and having two slots arranged in horizontal register, a locking-block located below the stop-block, a rod working in said slots to support the locking-block and to limit the movement of the head, a guide-roller carried by one end of the head, and a hoisting-rope secured to the other end and passing around the said pulleys and over the guide-roller.

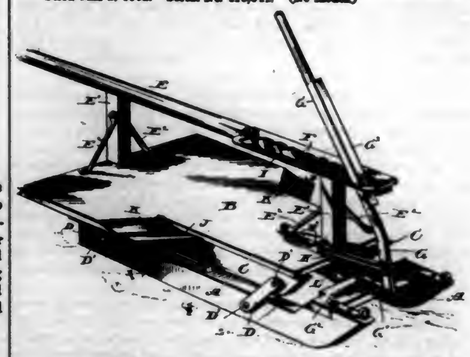
3. In a self-locking pulley, a stationary yoke carrying a stop-block and a series of pulleys arranged one above the other, in combination with a swinging head pivoted on the axle of one of the pulleys and carrying a locking-block adapted to be moved into and out of engagement with the stop-block by the swinging of the head, and a hoisting-rope passing around the said pulleys.

478,094. TRACE CONNECTION. HARRY O. STANLEY, Pittsburg, Pa. Filed Dec. 1, 1891. Serial No. 413,738. (No model.)



Claim.—A trace-fastening link comprising two upwardly and outwardly curved side bars connected at their outer ends by cross-bars and a cross-bar connecting the lower portion, said link adapted to be attached to a trace end to be looped over a whiffletree, substantially as described.

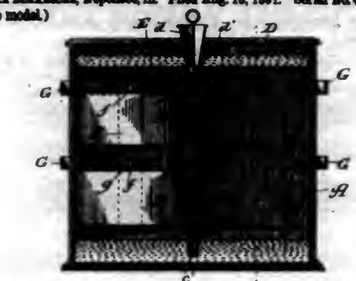
478,095. CORN-HARVESTER. FRED STEVENS, Burlington, Wis. Filed Jan. 2, 1892. Serial No. 416,841. (No model.)



Claim.—1. In a corn-harvesting machine, the combination, with the runners, the platform, the beveled cutting-blades attached to the sides of the platform, the arms pivotally attached at their ends to the runners and to the platform, respectively, lever mechanism for raising and lowering the platform, the rack-bar and flange-plate upon the operating-lever for locking the platform in its adjusted position, and a spring on the runners, with its rear end free and extended beneath the platform, substantially as and for the purpose described.

2. The runners, the platform connected therewith by means of bars pivoted to the runners and platform, respectively, the cutting-blades at the sides of the platform, the lever mechanism for raising and lowering the platform, the rack-bar and flange-plate for locking the parts in their adjusted position, and the timber E, supported upon posts rising from the platform and extending over the longitudinal center of the platform, terminating at its rear end at a point some distance to the rear of the platform, and a spring on the runners with its rear end free and extended beneath the platform, substantially as described, and for the purpose specified.

478,096. STEAM-COOKER. FRANK O. SUNDWALL, Chicago, and EZRA BLAKESLEE, Hopenest, Ill. Filed Aug. 18, 1891. Serial No. 402,969. (No model.)

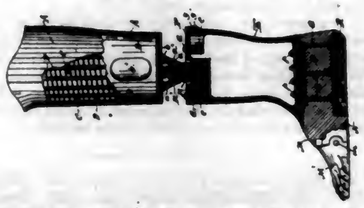


Claim.—1. In a steam-cooker, the combination of a hot-water chamber, cooking apparatus above the same, a condenser located above such compartments, a cold-water chamber, the bottom whereof forms the top of the condensing-chamber, and a passage connecting the hot and cold water chambers and the condenser and connected with the compartments, whereby the steam generated in the hot-water chamber passes to the compartments and thence to the condenser, is condensed therein, heating the water in the cold-water chamber, and is then automatically returned in the form of water to the hot-water chamber, substantially as described.

2. In a steam-cooker, the combination of a hot-water chamber, a cold-water chamber, a passage connecting the two, and a funnel passing through the cold-water chamber and entering the connecting-passage, such funnel being provided with an opening into the cold-water chamber and a suitable valve, whereby water may be introduced through such funnel into the cold-water chamber without entering the passage, and afterward by raising the valve allowed to pass down such passage into the hot-water chamber, substantially as described.

3. In a steam-cooker, the combination of a hot-water chamber, various compartments placed above the same, one or more steam-pipes communicating with the hot-water chamber and provided with nozzles extending into the cooking-compartments, such nozzles being constructed, substantially as shown, to direct the steam toward the bottom of such compartments, substantially as described.

478,097. ARTIFICIAL LEG. ULYSSES TANNER, Minneapolis, Minn. Filed Aug. 17, 1891. Serial No. 402,849. (No model.)



Claim.—1. An artificial limb having the walls of one or more of its sections constructed of vulcanized hard rubber and with flexible pieces of metal embedded in the rubber, substantially as described.

2. In an artificial limb, a stump-socket constructed with an exterior wall or shell of hard rubber and an inner wall or lining of soft rubber vulcanized together, substantially as described.

3. In an artificial limb, a stump-socket having an exterior wall or shell of hard rubber, an inner wall or lining of soft rubber, and flexible pieces of metal located between the inner and outer walls and embedded by the vulcanizing of the two bodies of rubber.

4. In an artificial limb, a stump-socket constructed with an outer wall or shell of hard rubber, an inner wall or lining of soft rubber, and a flexible metallic trussing located between the said inner and outer walls, consisting of longitudinal metallic strips or stays and a winding of wire, the said strips and strands of wire being spaced apart to permit the two bodies of rubber to fuse together between said openings, when vulcanized, embedding the trussing therein, substantially as described.

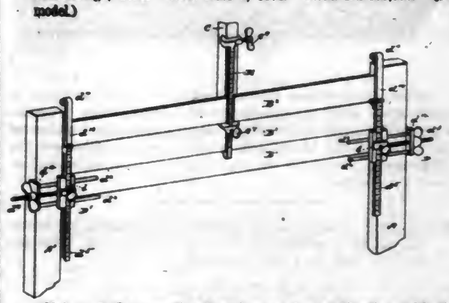
5. In an artificial leg, the combination, with the stump-socket and the ankle-section, of the stump-socket plate adjustable on the ankle-section, and securing devices for fixing the plate in any position in which it may be set.

6. In an artificial leg, the combination, with the separable foot and ankle sections, of the metallic connecting-plate for rigidly uniting the two sections, substantially as described.

7. The combination, with the foot-section provided with the plate-seat, of the ankle-section, the connecting-plate secured to the ankle-section and fitting the seat in the foot-section, and screw-threaded bolts working through the foot-section and engaging screw-threaded holes in said plate.

8. In an artificial leg, the combination, with the stump and ankle sections, of the stump-socket plate provided with the vertical prongs and the sets of side straps or joint-irons, the lower members of which overlap the said prongs and may be secured thereto in any desired position, the said prongs and side straps being connected below the knee-joint, substantially as described.

478,098. WEATHER-BOARD GAGE. ROBERT A. UNDERWOOD, Chattanooga, Tenn. Filed June 8, 1891. Serial No. 395,539. (No model.)



Claim.—1. In a weather-board gage, the combination, with the block d, having the rectangular tongue d^7 and plate d^{10}, of the clamp-plate d^{11}, rods d^9, connected thereto and passing through the tongue d^7, the screw d^{12}, connected to the block d, the nut d^{13} on said screw, the rod d^8, sliding in the block d and having shelf d^{14}, and the clamp-screw d^{15}, adjusting said block at any desired height, substantially as described.

2. In a weather-board gage, the combination, with one or more end gages adapted to clamp on the corner strip or strips, of a center gage E, having arms e' and e^2 and clamp-screw e^4 for clamping the same on a vertical timber, the shelf e^3 for engaging beneath a lapping edge of the weather-boarding, and the block e^5, having arms e^6 and sliding on said rod, with the clamp-screw e^7 for clamping said block at any desired height, substantially as described.

478,099. APPLIANCE FOR HOLDING PAPER SHEETS IN QUANTITY. THEODORE J. VINCENTZ, Orange, N. J. Filed Sept. 18, 1891. Serial No. 406,063. (No model.)

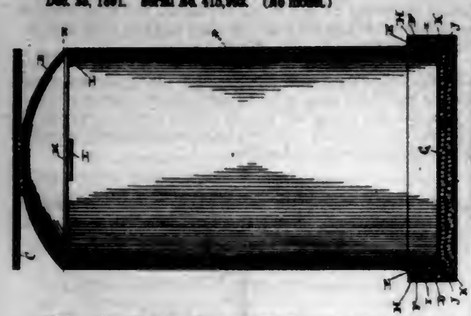


Claim.—1. A holder for clamping together with elastic pressure the folded-over end of a pile of sheets of paper or paper bags, the same consisting of a supporting-plate and a spring clamping-plate connected with the said supporting-plate and having its axis at a sufficient distance from the said supporting-plate to loosely admit the bight of the said folded pile between said supporting-plate and the part of said clamping-plate near its axis, the said clamping-plate having its middle portion curved transversely and presenting the convex side of its curved middle portion toward the said supporting-plate, whereby the distance from its axis of the line of bearing of said clamping-plate upon the folded pile gradually increases as the pile is diminished in thickness by the withdrawal of the sheets therefrom.

2. The supporting-plate a, the sinuously-curved clamping-plate c, presenting the convex face g' toward said supporting-plate, and the wires $f\,f$, formed integrally with the coiled springs $f^3\,f^3$, respectively, each of the said wires having its end f' fastened to said supporting-plate and its end f^4 fastened to said clamping-plate, substantially as shown and described.

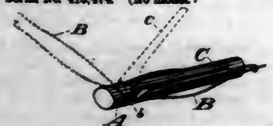
3. The combination, as herein set forth, of the supporting-plate a, the clamping-plate c, formed with the convex face g', and the wires $f\,f$, each of which is formed integrally with a coiled spring f^3 and with a curve f^2 and has its end f' fastened to the supporting-plate a and its end f^4 fastened to the clamping-plate c, substantially as and for the purposes described.

478,100. FRUIT-JAR. AUGUST VOEZ, Willow Point, Tex. Filed Dec. 28, 1891. Serial No. 415,962. (No model.)



Claim.—In a fruit-jar, the combination, with a jar having an inwardly-curved upper end and a removable bottom portion, of a series of projections at the base of the said curved portion, and a perforated plate having notches formed in its periphery which register with the said projections and which when turned rest thereon, substantially as shown and described.

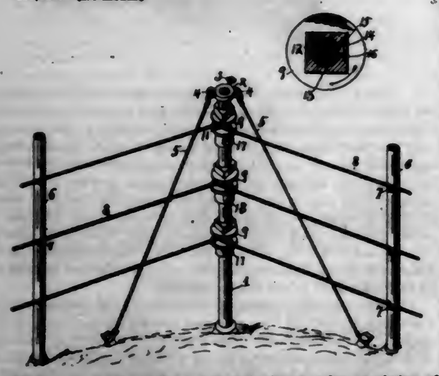
478,101. HAIR-CURLER. JUDSON S. WERTHAUSER, Fort Wayne, Ind., assignor of one-half to William L. Logan, same place. Filed Nov. 30, 1891. Serial No. 413,474. (No model.)



Claim.—1. A hair-curler consisting of a tube or cylinder A, having a perforation *b*, a wire-clamp B, pivoted in said perforation and so constructed that the hooked end of one extremity will securely clasp the other extremity, and a clip or retarding device C, fulcrumed on clamp B at the perforation *b*, all substantially as hereinbefore set forth and described.

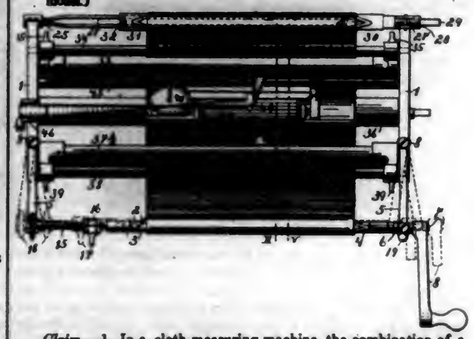
2. In a hair-curler, the combination of a tube or cylinder A, having a perforation *b* at or near one extremity thereof, and a wire rod or clamp B, pivoted in said perforation and having a hook on one extremity for clasping the other extremity, with a clip or retaining device C fulcrumed on rod or clamp B at the perforation *b*, all substantially as set forth and described.

478,102. COMBINED FENCE-POST AND WIRE-STRETCHER. GEORGE M. WILLIAMS, St. Louis, Mo. Filed Nov. 30, 1891. Serial No. 413,505. (No model.)



Claim.—A combined fence-post and wire-stretcher consisting of a post or posts 1, provided with an annular series of openings, spools 9, having peripheral grooves 10, hooks 11, attached to the spools within said grooves, square extensions 12, formed integral with the said spools, collars 17, secured to the said post or posts, upon which the spools are adapted to bear or rest, said collars having plain flat tops, and spring-pawls 14, secured within said square extensions and adapted to take into the openings in the post or posts, substantially as set forth.

478,108. CLOTH-MEASURING MACHINE. CHARLES H. YOUNG, Kansas City, Mo., assignor to David A. Weyer, same place, and William Glow, Independence, Mo. Filed Apr. 26, 1891. Serial No. 390,736. (No model.)



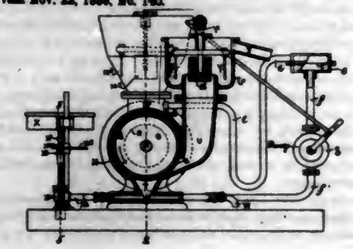
Claim.—1. In a cloth-measuring machine, the combination of a suitable means for supporting a bolt of cloth or other fabric, a friction-roller with which said fabric comes in contact, an indicator in connection with said friction-roller, clamps 3 4 for supporting a board or roll on which the fabric may be wound, said clamp 3 being secured to a screw 15, said screw 15 being supported upon an adjustable bracket 13, provided with a clamp 16 at its upper end, and a handle 19 for moving the clamps and supporting device in a lateral direction, substantially as set forth, and for the purpose described.

2. In a cloth-measuring machine, means for supporting a bale of cloth or other fabric, means in connection with the machine for registering the amount of cloth passed through the same, frames 5, pivoted to the main frame of the machine, posts 11, secured to the frames 5, cross-bar 10, connecting said posts, bracket 13, movably secured on said bar, said bracket supporting a clamp 3, a clamp 4, secured to one of the posts 11, and a projection on the shaft to which the clamp 4 is secured for placing a crank thereon in order to rotate the same, substantially as and for the purpose set forth.

3. In a cloth-measuring machine, the combination of a suitable device for supporting a bolt of cloth or other fabric, means for unwinding the same, tension-rollers 33 37½, roller 36, friction-roller 37, having an indicator in connection therewith, frame 44, to which said friction-roller is journaled, said frame being pivoted to a rod 45, bracket 46, measuring-tape 48, supported thereby, and a pin or roller 49 on the frame 44, forming a bearing for said tape, substantially as described, and for the purpose set forth.

4. In a cloth-measuring machine, the combination of a suitable device for supporting a bale of cloth or other fabric, a friction-roller suitably pivoted to said machine, said roller coming in contact with the fabric as it passes through said machine, pivoted frames 5, bar 10 for connecting the same, movable bracket 13 on said bar, and rods 61, having points 62 for engaging a roll on which the fabric may be wound, substantially as described, and for the purpose set forth.

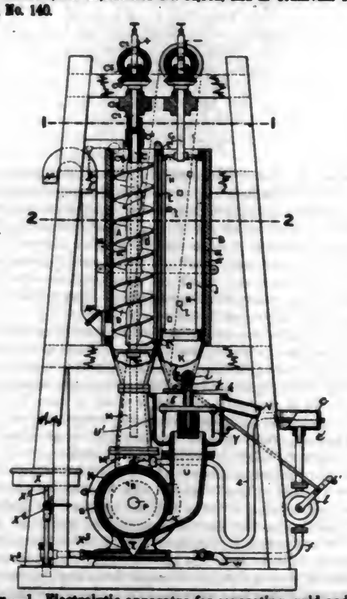
478,104. AMALGAMATING APPARATUS FOR SEPARATING GOLD AND OTHER METALS FROM THEIR ORES. GEORGE J. ATKIN, London, England. Filed Apr. 28, 1891. Serial No. 390,864. (No model.) Patented in England Sept. 28, 1886, No. 12,396; in France Nov. 24, 1887, No. 187,179; in Germany Nov. 27, 1887, No. 45,774; in India of 1887, No. 235; in Cape of Good Hope Dec. 9, 1887, No. 425; in Natal Dec. 19, 1887; in Canada Dec. 30, 1887, No. 28,212; in Victoria Dec. 21, 1887, No. 5,523; in New South Wales Dec. 23, 1887, No. 403; in South Australia Dec. 24, 1887, No. 931; in Tasmania Dec. 29, 1887, No. 330/10; in Queensland Dec. 29, 1887, No. 373; in New Zealand Jan. 4, 1888, No. 2,722; in Spain Apr. 27, 1888, No. 12,412/7,697; in Austria-Hungary May 13, 1888, No. 49,944 and No. 11,502, and in Transvaal Nov. 22, 1889, No. 140.



Claim.—1. The amalgamating apparatus consisting of a cylinder N, containing mercury and having an inlet M' at one end and an outlet U at the other, with a drum O rotating in the said cylinder between the said inlet and outlet, the said drum having grooves or channels S formed across its periphery, a vertically-adjustable mercury-reservoir X, which is in communication with the lower part or sump of the amalgamator-cylinder N by the pipe X', chamber X^2, and pipe X^3, all arranged and operating substantially as hereinbefore described, and illustrated in the drawings.

2. The amalgamating apparatus consisting of a cylinder N, containing mercury and having an inlet M' at one end and an outlet U at the other, with a drum O rotating in the said cylinder between the said inlet and outlet, the said drum having grooves or channels S formed across its periphery, a vertically-adjustable mercury-reservoir X, which is in communication with the lower part or sump of the amalgamator-cylinder N by the pipe X', chamber X^2, and pipe X^3, a mercury-circulating pump *b*, a straining-box *c*, and pipes *e f*, connecting the said pump and straining-box with the amalgamator-cylinder N, all arranged, combined, and operating substantially as hereinbefore described, and illustrated in the drawings.

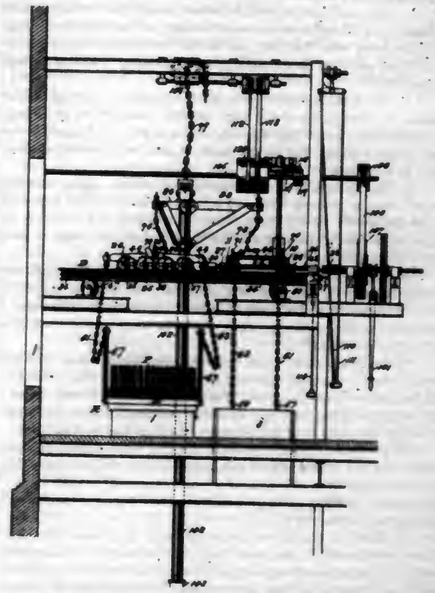
478,105. ELECTROLYTIC APPARATUS FOR SEPARATING GOLD AND OTHER METALS FROM THEIR ORES. GEORGE J. ATKIN, London, England. Filed Apr. 28, 1891. Serial No. 390,866. (No model.) Patented in England Sept. 28, 1886, No. 12,396; in France Nov. 24, 1887, No. 187,179; in Germany Nov. 27, 1887, No. 45,774; in India of 1887, No. 235; in Cape of Good Hope Dec. 9, 1887, No. 425; in Natal Dec. 19, 1887; in Canada Dec. 30, 1887, No. 28,212; in Victoria Dec. 21, 1887, No. 5,523; in New South Wales Dec. 23, 1887, No. 403; in South Australia Dec. 24, 1887, No. 931; in Tasmania Dec. 29, 1887, No. 330/10; in Queensland Dec. 29, 1887, No. 373; in New Zealand Jan. 4, 1888, No. 2,722; in Spain Apr. 27, 1888, No. 12,412/7,697; in Austria-Hungary May 13, 1888, No. 49,944 and No. 11,502, and in Transvaal Nov. 22, 1889, No. 140.



Claim.—1. Electrolytic apparatus for separating gold and other metals from their ores, which consists of an upright anode-compartment through which the ore is passed continuously, having within it an anode constructed to receive and retard the descent of the ore, while the ore itself forms a more or less soluble portion of such anode-pole, and an upright cathode compartment and pole, the said anode and cathode compartments communicating through an opening closed by a porous diaphragm and having outlets at their lower ends for the removal of the ore which has been acted upon in the anode-compartment and of the metals and other substances that have been deposited or precipitated in the cathode-compartment, all combined, arranged, and operating substantially as hereinbefore described, and illustrated in the drawings.

2. Electrolytic apparatus for separating gold and other metals from their ores, consisting of an upright anode-compartment A, through which the ore is passed continuously, having within it an insoluble ore-supporting device which forms part of an anode-pole, while the ore itself forms a more or less soluble portion of such anode-pole, and an upright cathode-compartment B, having a revolving cathode-pole H and scrapers J, the said anode and cathode compartments communicating through an opening closed by a porous diaphragm and having outlets at their lower ends, all substantially as and for the purpose set forth.

478,106. APPARATUS FOR PICKLING METAL PLATES. WILLIAM H. ATKINSON and DANIEL M. SOWERS, Brooklyn, N. Y. Filed Aug. 6, 1891. Serial No. 401,821. (No model.)



Claim.—1. The combination, with a vat for containing a suitable fluid and a cage for holding the articles to be treated, of a rocking lever from which the cage is suspended, a seat for said lever, and means for raising said lever from and permitting its return to the seat, substantially as described.

2. The combination, with a vat for containing a suitable fluid and a cage for holding the articles to be treated, of a rocking lever from which the cage is suspended, seats for said lever, and means for alternately raising opposite ends of said lever from and permitting it to return to the seat, substantially as described.

3. The combination, with a vat for containing a suitable fluid for treating metal articles, of a cage for carrying said articles, a rocking lever to which the cage is attached by flexible connections, stationary seats upon which said lever normally rests, and means for rocking said lever to produce a jigging action, substantially as described.

4. The combination, with a vat for containing a suitable fluid and a cage for holding the articles to be treated, of a rocking lever from which the cage is suspended, a seat for said lever, means for raising said lever from and permitting its return to the seat, and a guide for controlling said lever, substantially as described.

5. The combination, with a vat for containing a suitable fluid and a cage for holding the articles to be treated, of a rocking lever from which the cage is suspended, seats for said lever, means for alternately raising opposite ends of said lever from and permitting its return to the seat, and a guide for controlling said lever, substantially as described.

6. The combination, with a vat for containing a suitable fluid for treating metal articles, of a cage for carrying said articles, a rocking lever to which the cage is attached by flexible connections, stationary seats upon which said lever normally rests, means for rocking said lever to produce a jigging action, and a guide for controlling said lever, substantially as described.

7. The combination, with a vat for containing a suitable fluid and a cage for holding the articles to be treated, of a rocking lever from which the cage is suspended, a seat for said lever, means for raising said lever from and permitting its return to the seat, and a curved guide for controlling said lever, substantially as described.

8. The combination, with a vat for containing a suitable fluid and a cage for holding the articles to be treated, of a rocking lever from which the cage is suspended, seats for said lever, means for alternately raising opposite ends of said lever from and permitting its return to the seat, and a curved guide for controlling said lever, substantially as described.

9. The combination, with a vat for containing a suitable fluid for treating metal articles, of a cage for carrying said articles, a rocking lever to which the cage is attached by flexible connections, stationary seats upon which said lever normally rests, means for rocking said lever to produce a jigging action, and curved guides for controlling said lever, substantially as described.

10. The combination, with a vat and a cage for holding articles therein, of a rocking lever and seats therefor, rods pivoted to the cage and connected with the lever, and means for rocking said lever first on one end and then on the other from a stationary seat, substantially as described.

11. The combination, with a vat and a cage for holding articles therein, of a rocking lever and seats therefor, rods pivoted to the cage and flexibly connected with the lever, and means for rocking said lever first on one end and then on the other from a stationary seat, substantially as described.

12. The combination, with two vats and three cages, each suspended from a rocking lever and adapted to be moved in said vats, of mechanism for raising horizontally, transferring, and lowering the cages, and means for rocking said levers to agitate said cages in their vats, substantially as described.

13. The combination, with two vats and three cages, each suspended from a rocking lever and arranged to be entered, moved in, and withdrawn from said vats, of a hoist connected to said cages, a horizontally-rotating carriage, and means for rotating the same, substantially as described.

14. The combination, with two vats and three cages, each suspended from a rocking lever and arranged to be entered, moved in, and withdrawn from said vats, of a hoist connected to said cages, a horizontally-rotating carriage, means for rotating the same, and a lock for fixing the position of said carriage, substantially as described.

15. The combination, with two vats and three cages, each suspended from a rocking lever and arranged to be entered, moved in, and withdrawn from said vats, of a hoist connected to said cages, a horizontally-rotating carriage, a chain and driving wheel, and clutch, substantially as described.

16. The combination, with two vats and three cages suspended from a horizontally-rotating carriage and arranged to be entered, moved in, and withdrawn from said vats, and three agitating mechanisms for said cages, of three actuating-shafts for said agitating mechanisms, a single driving-shaft, and a clutch for successively connecting the driving-shaft with the actuating-shafts, substantially as described.

17. The combination, with a vat and a cage for containing articles to be treated in said vat, of an agitating mechanism connected with said cage and consisting of a rocking lever, two cams or arms for actuating opposite ends of said lever, and stationary seats alternately receiving the impact of and acting as a fulcrum for said levers, substantially as described.

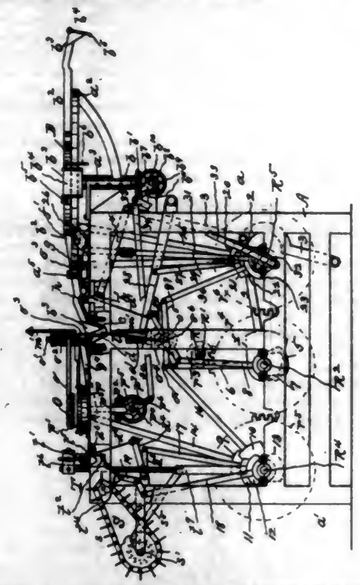
18. The combination, with a vat and a cage for containing articles to be treated in said vat, of a rocking lever connected with said cage, two cams or arms for actuating opposite ends of said lever, stationary seats alternately receiving the impact of and acting as a fulcrum for said levers, a train of gears for rotating the cams or arms, an actuating-shaft for moving the train, a driving-shaft, and a coupling for connecting it with the actuating-shaft, substantially as described.

473,107. CHECK-HOOK. KARL G. BARTH, Madison, Wis. Filed June 19, 1891. Serial No. 396,795. (No model.)



Claim.—The herein-described check-hook, consisting of an upright solid post having an enlarged base provided with a securing-stem, said post being provided with a recess or indenture near its upper end and with an integral bifurcated lug at its lower end projecting at right angles to the post, an arm provided near its upper end with a stud normally engaging said recess or indenture and at its lower end with a lug projecting in the same direction as said stud and pivoted in the bifurcated lug, and a flat spring rigidly secured to the under side of the base and curved upwardly in close contact with the outer side of the pivoted arm, substantially as and for the purpose set forth.

473,108. CIGARETTE-MACHINE. HENRY BAUER, Philadelphia, Pa., assignor, by mesne assignments, to the Climax Cigarette and Cigar Machine Company, of Pennsylvania. Filed Apr. 29, 1891. Renewed Mar. 28, 1892. Serial No. 426,697. (No model.)



Claim.—1. In a cigarette-machine, the combination of an apron, mechanism for forming a loop or pocket in the apron, a loop or pocket closing device, a traveling bight-forming device, actuating mechanism engaging the front or one end of the apron, and actuating mechanism for engaging the rear or other end of the apron, adapted or timed to draw first upon the front or one end of the apron immediately after the pocket is formed and closed and afterward upon the opposite or rear end of the apron while the wrapper is being rolled to unite its edges, substantially as set forth.

2. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed therein, a pocket or loop closing device, a bight-forming device, actuating mechanism engaging the front or one end of the apron, and actuating mechanism engaging the rear or other end of the apron, adapted or timed to draw first upon the front or one end of the apron immediately after the pocket or loop is closed and afterward upon the opposite end of the apron while the wrapper is being rolled, substantially as set forth.

3. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed therein, a pocket or loop closing device, a bight-forming device, a wrapper or cigarette-rolling table, actuating mechanism engaging the front or one end of the apron, and actuating mechanism engaging the rear or other end of the apron, adapted or timed to draw first upon the front or one end of the apron immediately after the pocket or loop is closed and afterward upon the opposite end of the apron while the wrapper is being rolled in the bight of the apron on said table, substantially as set forth.

4. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed therein, loop or pocket closing device, bight-forming and wrapper-rolling devices, actuating mechanism engaging the front or one end of the apron, and actuating mechanism engaging the rear or other end of the apron, adapted or timed to draw first upon the front or one end of the apron immediately after the pocket is closed and afterward upon the opposite end of the apron while the wrapper is being rolled in the bight of the apron, substantially as set forth.

5. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed in it and connected at each end to independently-movable devices, pocket-closing, bight-forming, and wrapper-rolling devices, and independent mechanism connected to each of said movable devices that carry each end of the apron, adapted

to draw first upon the front end of the apron immediately after the pocket is formed and closed and afterward upon the opposite end of the apron while the wrapper is being rolled in the bight of the apron, substantially as set forth.

6. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed in it, a loop or pocket closing device, a wrapper-roller, independently-movable devices engaging each end of the apron, independent mechanism for each of said movable devices engaging the apron, adapted to draw first upon the front or one end of the apron immediately after the pocket or loop is closed and afterward upon the opposite end of the apron while the wrapper is being rolled around the filler to unite its edges, substantially as set forth.

7. In a cigarette-machine, the combination of an apron having a pocket or loop, a device for preventing the filler escaping from the pocket or loop, independently-actuating mechanism engaging each end of the apron, and a traveling wrapper-rolling device, substantially as set forth.

8. In a cigarette-machine, the combination of an apron, a pocket or loop forming device for said apron, a device for preventing the filler escaping from the pocket or loop, independent actuating mechanism engaging each end of the apron, and a wrapper-rolling device, substantially as set forth.

9. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed in it, a device for closing the pocket or loop, a moving wrapper-rolling device independent of the pocket or loop closing device, and actuating mechanism for drawing on that end of the apron which points away from the direction of movement of the moving wrapper-rolling device, substantially as set forth.

10. In a cigarette-machine, the combination of an apron, a pocket or loop forming device for the apron, a device for closing the pocket or loop, a moving wrapper-rolling device independent of the pocket-closing device, a rolling-table, and actuating mechanism for drawing on that end of the apron which points away from the direction of movement of the moving wrapper-rolling device, substantially as set forth.

11. In a cigarette-machine, the combination of an apron, a rolling-table, mechanism for forming a pocket in the apron, independent mechanism for closing the mouth of the pocket, and an independent and movable wrapper-rolling device, substantially as set forth.

12. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop in it, independent mechanism for closing the mouth of the pocket, and an independent and movable wrapper-rolling device, substantially as set forth.

13. In a cigarette-machine, the combination of an apron, mechanism for forming a pocket in said apron, a pocket-closing device, actuating mechanism engaging the apron and for drawing on said apron when the filler is in said pocket to compress the filler to its proper size in the pocket and partially roll the wrapper around the filler, and a wrapper-rolling device for uniting the wrapper edges or lap, substantially as set forth.

14. In a cigarette-machine, the combination of an apron adapted to have a pocket formed in it, a pocket-closing device, actuating mechanism engaging the apron and for drawing on said apron when the filler is in said pocket to compress the filler to its proper size in the pocket and partially roll the wrapper around the filler, and a wrapper-rolling device for uniting the wrapper edges or lap, substantially as set forth.

15. In a cigarette-machine, the combination of a series of horizontally moving or traveling filler-receivers, each having an open top and a normally-closed bottom, independent actuating mechanism for moving each successive receiver into a discharging position, and actuating mechanism for opening the closed bottom of each receiver when in discharging position, substantially as set forth.

16. In a cigarette-machine, the combination of a moving carrier, a number of filler-receivers mounted upon and moving with said carrier, each of said receivers having an open top and normally-closed bottom, actuating mechanism for moving each successive receiver into a discharging position, and independent actuating mechanism for opening the closed bottom of each receiver when in discharging position, substantially as set forth.

17. In a cigarette-machine, the combination of a traveling carrier, separate filler-receivers on said carrier, and each receiver having an open top and normally-closed bottom, and independent actuating devices operating to first move each successive receiver into discharging position, and, secondly, to move it therefrom into the path of return movement, substantially as set forth.

18. In a cigarette-machine, the combination of a traveling carrier, filler-receivers secured to movable arms mounted on said carrier, and each receiver having an open top and a movable and normally-closed bottom, actuating mechanism for said arms, whereby the receivers are placed into discharging position, and actuating devices partly located on the receiver and partly in gear with the driving mechanism of the machine for engaging the movable part of the receivers to open the latter, substantially as set forth.

19. In a cigarette-machine, the combination of a rotating carrier having loosely-mounted arms b^3, a stationary support a^3 therefor, having open slot a^4 for said arms, receivers on the outer ends of said arms, a normally-closed movable discharging side for said receivers, actuating devices for said carrier, and mechanism for lowering the receivers on said arms to a discharging position and raising the same to their normal position, substantially as set forth.

20. In a cigarette-machine, the combination of a traveling carrier having movable arms, receivers on the outer ends of said arms, a support a^3, having open slot a^4 for said arms, actuating mechanism independently of the carrier for lowering the receivers and said arms by way of slot a^4 to a discharging position and for raising them to their path of return movement, substantially as set forth.

21. In a cigarette-machine, the combination of a horizontally-moving carrier having independently-movable arms, filler-receivers secured to the movable arms and having a movement to a discharging position and return independently of the carrier, and actuating mechanism for moving the receivers to the discharging position and returning them, substantially as set forth.

22. In a cigarette-machine, the combination of means for rolling the cigarette, a traveling carrier, independently-movable arms on said carrier, receivers mounted on said movable arms, and devices for positioning each receiver alternately over the means for rolling the cigarettes, substantially as set forth.

23. In a cigarette-machine, the combination of a means for rolling a cigarette, an intermittently-rotating carrier having radiating arms, to the outer ends of which are attached filler-receivers, each having an open top and a movable bottom, devices for alternately positioning the filler-receivers over the latter mechanism, and actuating mechanism for discharging the filler-receivers, substantially as set forth.

24. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed in it, devices for closing the mouth of said pocket or loop, an intermittently-rotating carrier having several independently-movable arms provided with filler-receivers, each having an open top and movable side or bottom, which receivers alternately move into a discharging position in the apron pocket or loop, and mechanism for opening said receivers in said pocket to effect their discharge and for raising them to a normal return position, substantially as set forth.

25. In a cigarette-machine having a cigarette-rolling apron, the combination of a turning wrapper-carrying plate normally located parallel with and approximating to the plane of the rolling-apron, actuating mechanism for first turning said plate to position across the apron, actuating mechanism for lowering it toward or upon said apron and dwelling or resting it near or upon the apron, and actuating mechanism for raising and turning it to make its return movement, the wrapper being by it delivered upon the apron on the initial motion of the return movement of the carrier, substantially as set forth.

26. In a cigarette-machine having a receptacle for the filler, the combination of a movable wrapper-carrier and actuating devices for moving the carrier to present the wrapper to the receptacle with a part of the wrapper delivered into the receptacle, a filler-receiver and actuating mechanism for positioning it and discharging the filler into said receptacle, and devices for closing said receptacle and at the same time engage or hold the part of said wrapper delivered into said receptacle, substantially as set forth.

27. In a cigarette-machine, the combination of an apron adapted to have a pocket or loop formed therein, a device for closing the mouth of the pocket or loop of the apron, and means for limiting the movement of the pocket-closing device and for holding it in position against tendency to rise or move, whereby undue pressure on the apron is prevented, and said closing device serves as a holding or engaging device for the wrapper in said pocket, substantially as set forth.

28. In a cigarette-machine, the combination of an apron, pocket-forming device for the apron, a device for closing the mouth of the pocket, and means for limiting the movement and locking the pocket-closing device in position against tendency to rise or move when in its locked position, whereby undue pressure on the apron is prevented and the wrapper in the pocket is held or engaged by said closing device, substantially as set forth.

29. In a cigarette-machine, the combination of an apron adapted to have a pocket formed therein, a movable wrapper-carrier having actuating devices for presenting the wrapper to the apron-pocket and sustaining the wrapper over the pocket, and a movable pasting device having actuating mechanism for first moving it to and above the wrapper-carrier, then lowering it thereon to apply the adhesive material to the wrapper on the carrier, and giving it a wiping motion as it applies the adhesive material to the wrapper, substantially as set forth.

30. In a cigarette-machine having a receptacle for the filler, the combination of a movable wrapper-carrier having actuating devices for presenting the wrapper to said receptacle and sustaining the wrapper over the receptacle, and a movable device having actuating mechanism for first moving it to and above the wrapper-carrier, then low-

ering it thereon to apply the adhesive material to the wrapper on the carrier, and giving to it a wiping motion as it applies the adhesive material to the wrapper, substantially as set forth.

31. In a cigarette-machine, the combination of a paster device, an intermittently-rotating supply-receptacle for the paster, a fixed main supply-reservoir in said receptacle, and actuating mechanism for depressing and then raising said paster into and from said receptacle and for moving the paster into pasting position, substantially as set forth.

32. In a cigarette-machine, the combination of a rolling-table, an apron adapted to have a pocket or loop formed in it, means for closing the mouth of the pocket in the apron and also acting to impinge one edge of the loop-mouth against the wrapper intermediate of its long edges, means for actuating one end of the apron to contract its loop or pocket when its mouth is closed and draw the filler to a proper size in the pocket and wind the first fold of the wrapper around the filler, and suitable means for fully completing the rolling of the wrapper in the apron on the table, substantially as set forth.

33. In a cigarette-machine, the combination of a rolling-surface for the cigarette, an apron adapted to have a pocket or loop formed therein, means for closing the mouth of said pocket and impinging or holding the wrapper between its edges in said pocket, means for actuating one end of said apron to contract its loop or pocket when its mouth is closed and draw the filler to a proper size in the pocket and wind the first fold of the wrapper around the filler in said pocket, and suitable means for completing the rolling of the wrapper upon said rolling-surface, substantially as set forth.

34. The combination of an apron having a pocket therein, a wrapper-carrier-actuating mechanism for moving the wrapper-carrier to presenting position over the apron, a pasting device adapted for moving to position over the carrier when in presenting position, and actuating mechanism for first moving the pasting device, then lowering it onto the wrapper-carrier, and then, while upon the wrapper on said carrier, imparting to it a wiping motion, substantially as set forth.

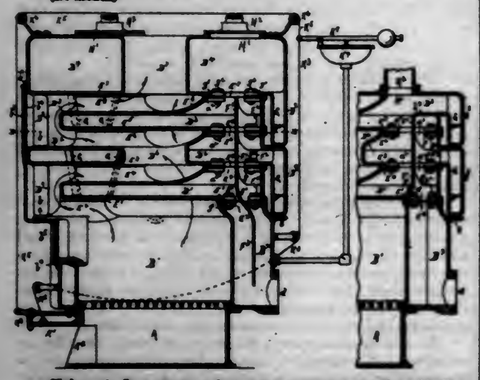
35. In a cigarette-machine, the combination of two sets of cutters, one movable from the other, a pressure-plate between said movable cutters, and a receiver between the remaining cutters and opposite to said pressure-plate, substantially as set forth.

36. In a cigarette-machine, the combination of fixed cutters, movable cutters over or in line with said fixed cutters, a pressure-plate between said movable cutters, a receiver in line with said pressure-plate and between the fixed cutters, and a delivery apparatus for carrying away the trimmed cigarettes, substantially as set forth.

37. In a cigarette-machine, the combination of two sets of cutters, one movable from the other, a pressure-plate between said movable cutters, a receiver between the remaining cutters and opposite to said pressure-plate, and a delivery apparatus for carrying away the trimmed cigarettes, substantially as set forth.

38. In a cigarette-machine, the combination, substantially as described, of an apron adapted to have a pocket or loop formed in it, a device for closing the mouth of the pocket or loop and at the same time binding or holding a wrapper in said pocket, means for preventing said closing device imparting undue closing pressure on the mouth of the pocket and wrapper while the filler in said pocket is being inclosed in the fold or part of the wrapper within the pocket, and means for rolling the apron to unite the edges of the wrapper around the filler.

478,109. STEAM OR HOT-WATER GENERATOR. DANIEL A. DOBERSON, St. Paul, Minn. Filed Sept. 18, 1891. Serial No. 406,053. (No model.)

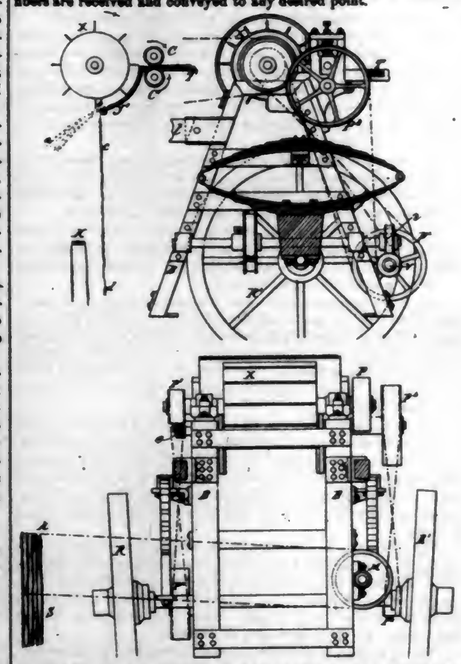


Claim.—1. In a steam or hot-water generator, a series of hollow sections, with alternately annular and solid surfaces around and through which the flame and other products of the combustion are adapted to pass, connections between said sections formed to incline upward from all points of the upper surfaces or sides of said sections, and cross-partitions F' within said connection and extending into the interior of said sections by outwardly-projecting wings F², substantially as and for the purpose set forth.

2. In a steam or hot-water generator, one or more hollow sections alternating with one or more hollow sections of larger diameter and with central openings and having downward extensions forming a water-jacket encompassing said smaller sections, connections between said hollow sections in close proximity to said jacket-extensions, and partitions F' within said connections, and with wings F² extending into the interior of said sections, and with partitions G within said jacket-extensions, whereby a difference of temperature is secured within the generator to cause the requisite circulation of the water, substantially as and for the purpose set forth.

478,110. MACHINE FOR DECORTICATING RAMIE, &c. PIERRE P. FAURE, Limoges, France. Filed July 30, 1891. Serial No. 401,157. (No model.) Patented in France Nov. 28, 1890, No. 210,504, and in England Mar. 7, 1891, No. 4,145.

Brief.—The machine consists of a movable carriage upon which are mounted a feed-table, a pair of feed-rolls, a scutching-drum, and a concave. Below the scutching-drum is a belt traveling in a direction parallel to the axis of the drum, and upon this belt the decorticated fibers are received and conveyed to any desired point.

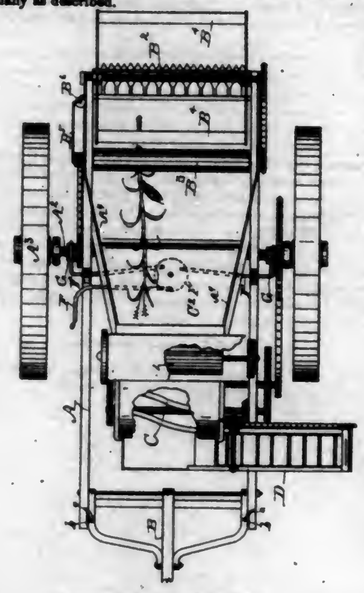


Claim.—1. The combination of the beater-drum X with the concave Y' and feed-rollers C C and with the carrier-belt K, arranged to receive the decorticated tresses astraddle its surface, and with mechanism, substantially as described, for moving said carrier-belt in a direction parallel to and below the axis of the beater-drum on that side toward which the lower end of said beater-drum revolves, substantially as and for the purposes specified.

2. The combination of the movable frame B and its supporting-wheels R R' with the feed-rollers C C, beater-drum X, and means, substantially as described, for actuating the same, the concave Y', and carrier-belt K, said belt being placed below and adapted to move in a direction parallel to the axis of said beater-drum X when one wheel R of the track is removed and the frame B of the machine remains stationary, and with the pulley M and worm-gear r v, substantially as described.

478,111. CORN-HARVESTER AND FEED-CUTTER. CHARLES C. FISHER, Grinnell, Iowa. Filed Dec. 5, 1890. Serial No. 373,631. (No model.)

Claim.—In a corn-harvester, the combination of a frame having a tapering platform, the side walls of which approach each other to the rear, mechanism at the front of the frame for cutting the stalks from the roots, mechanism at the rear for cutting the stalks into short pieces and conveying them to one side of the platform, said mechanism comprising two rollers journaled transversely at the rear of the platform, a rotary cutter at the rear of the rollers and an endless carrier at the rear of the cutter, and means for operating the mechanism, substantially as described.

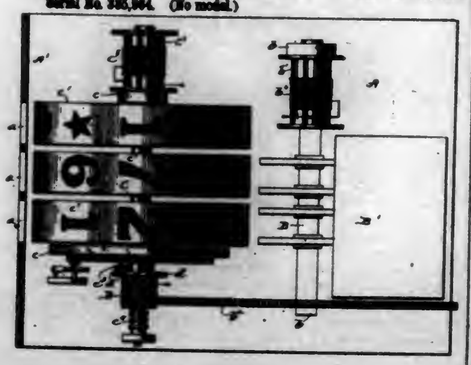


478,112. LOCOMOTIVE-BRAKE. WILLIAM H. FORD, Watertown, N. Y., assignor to the New York Air Brake Company. Filed Jan. 18, 1892. Serial No. 418,364. (No model.)
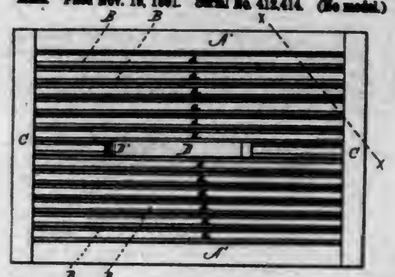


Claim.—In a locomotive-brake apparatus operated by power, the equalizing-lever 11 and the link 10, combined with a bell-crank having a projection or stop 16, for the purpose described, substantially as set forth.

478,113. APPARATUS FOR REGISTERING SALES OF TICKETS, &c. CLARENCE P. GOTT, New York, N. Y. Filed Mar. 23, 1891. Serial No. 385,964. (No model.)



Claim.—The combination, with the gear b^2 of an adding-machine, of the shaft C of a registering mechanism, said shaft having screw-threads c^4 and a stop, the pinion-nut D, fitted to the screw c^4 and meshing with gear b^2 and having a stop to engage the stop of the shaft, substantially as described.

478,114. GAME APPARATUS. JAMES W. HALE, Newburyport, Mass. Filed Nov. 19, 1891. Serial No. 412,414. (No model.)

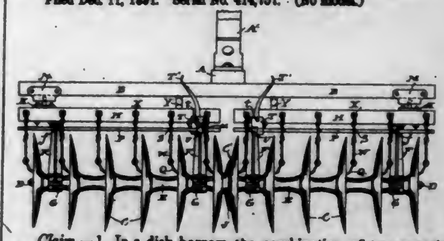


Claim.—1. A game apparatus comprising a series of troughs or U-shaped plates B, laid side by side, with their open sides up, within a suitable tray or frame, substantially as set forth.

2. A game apparatus comprising a frame or tray, as A A' A'', a series of troughs or U-shaped plates B, laid side by side within said tray and with their open sides up, and strips or plates C, secured to the tray so as to overlap the ends of the troughs, substantially as described.

3. In a game apparatus, the combination of a series of troughs or U-shaped plates B, laid side by side, with their open sides up, in a suitable tray or frame, and the tool or stick-knife D E, provided with sharpened end E', substantially as set forth.

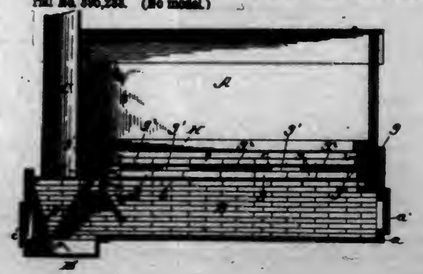
478,115. DISK HARROW. ROBERT W. HARDER, Albany, N. Y. Filed Dec. 11, 1891. Serial No. 414,757. (No model.)



Claim.—1. In a disk harrow, the combination of two opposing disk gangs, and a contact-plate secured to the inner end of one gang and provided with a bearing-surface arranged in a circle concentric with the inner disk of said gang between the axle and cutting-edge of said disk and adapted to bear against the inner disk of the opposing gang between the axle and cutting-edge of said opposing disk when arranged obliquely to the line of draft, substantially as shown and described.

2. In a disk harrow, the combination of a cutting-disk and a scraper having a shank composed of resilient strands crossed to form a bending or twisting point and separated at their lower ends, which are provided with a scraping-blade, substantially as shown and described.

478,116. LUMBER-DRIER. JOHN C. HAY, Kinston, N. C., assignor to himself and Solomon Cottingw, same place. Filed June 6, 1891. Serial No. 395,283. (No model.)



Claim.—In a lumber-drier, the furnace-chamber B, a drying-chamber A, the metallic plate *b*, arranged above the furnace, a layer *g* of refractory material around the edges of said plate, the blocks *g'* of refractory material, arranged at intervals on said layer to leave the openings *g²*, another metallic plate G, placed on the blocks *g'* and forming with the plate *b* a heat-equalizing chamber between them, and a layer *o* on the top of the plate G to receive the ways *h* and prevent them from contacting with said plate, substantially as described.

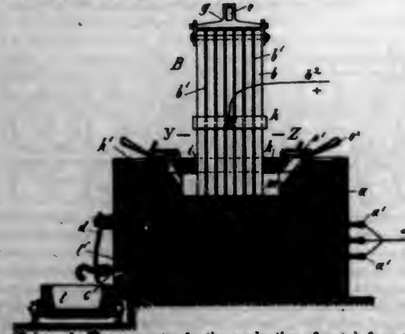
478,117. ELECTRODE FOR USE IN ELECTRO-METALLURGICAL PROCESSES. PAUL HÉROULT, Neuhausen, Switzerland, assignor to the United States Aluminium Metal Company, of New York. Filed Sept. 3, 1889. Serial No. 322,573. (No specimens.) Patented in England Dec. 7, 1887, No. 16,863



Claim.—1. An electrode for use in electro-metallurgical or electro-chemical processes, consisting of a plurality of carbon strips secured together in a single block and a metal combined therewith extending substantially the entire length of the electrode, whereby such metal is adapted to lower the electrical resistance of the electrode when in use.

2. An electrode for use in electro-metallurgical or electro-chemical processes, consisting of a plurality of carbon strips and a metal cast around the strips and extending substantially the entire length of the electrode, whereby such metal holds the strips in place and lowers the electrical resistance of the electrode when in use.

478,118. APPARATUS FOR PRODUCING ALUMINIUM OR OTHER METALS. PAUL HÉROULT, Lanffen, Switzerland, assignor to the United States Aluminium Metal Company, of New York. Filed Dec. 27, 1887. Serial No. 258,042. (No model.) Patented in England Dec. 7, 1887, No. 16,863, and in Germany June 3, 1889. No. 47,165.



Claim.—1. The apparatus for the production of metals from their refractory compounds, consisting of the crucible connected with the negative pole of a generator of electricity and provided with a thick lining of non-heat-conducting material, whereby it is adapted to retain heat within it but not to be heated up externally, an electrode of carbon connected with the positive pole of the generator and extending through an opening in the cover of the crucible, means for suspending the said positive electrode above the crucible, and means for adjusting it up and down, as described.

2. The herein-described apparatus for the production of metals from their refractory compounds, consisting of a crucible comprising a metal shell and a thick lining of non-heat-conducting material, whereby it is adapted to retain heat within it but not to be heated up externally, and a carbon electrode extending within the crucible when in normal operation, the said electrode and crucible connected, respectively, to the positive and negative poles of a generator of electricity, as set forth.

3. The herein-described apparatus for the production of metals from their refractory compounds, consisting of a crucible connected with the negative pole of a generator of electricity and provided with a thick lining of non-heat-conducting material, whereby it is adapted to retain heat but not to be heated up externally, an alloying metal maintained molten therein and thereby also connected with the said generator-pole, a carbon electrode projecting within the crucible and connected with the positive pole of the generator, and means for adjusting the latter electrode toward or away from the alloying metal.

4. The herein-described apparatus for the production of metals from their refractory compounds, consisting of a carbon electrode connected with the positive pole of a generator of electricity and a crucible into which the electrode projects connected with the negative pole of the generator and provided with, first, a thick lining of non-heat-conducting material, whereby it is adapted to retain heat within it but not to be heated up externally, and, second, a tap-hole at the lower end of the crucible and a feed-opening at its upper end, as set forth.

5. The herein-described apparatus for the production of metals from their refractory compounds, consisting of a crucible for containing the compound to be reduced and an electrode connected to one pole of a generator of electricity for passing a current of electricity through the said compound, the electrode consisting of plates or bars of carbon, with intervening spaces filled with relatively good conducting material extending substantially the entire length of the electrode, and a clamp or clamps binding the parts together, as described.

6. In an apparatus for the electrolytical production of metal, a receiver or crucible consisting of a thick heat-retaining lining of carbon and a metallic casing cast around the lining as a core, as set forth.

7. In an apparatus for the electrolytical production of metals, the combination of a carbon receiver or crucible, the positive electrode B, and the graphite cover having a central aperture for the passage of the electrode and having the feed-aperture for the introduction of material to be treated into the crucible.

478,119. PULLEY. HILAND H. KENDRICK, Fulton, N. Y. Filed June 30, 1891. Serial No. 396,939. (No model.)



Claim.—1. A split pulley comprising a sectional rim, cross-beams, rabbeted upon their ends and extending through the rim-sections, flanges upon the inner sides of the rim-sections, housing-disks inclosing the sides of the pulley, a sectional bushing seated in the cross-beams, blocks filling the cross-beam rabbets inside of the rim, and means to secure the sections together, in combination, as set forth.

2. A split pulley comprising a sectional rim, cross-beams rabbeted upon their ends and extending through the rim-sections, dowel-pin guides connecting the ends of the rim-sections, flanges upon the inner sides of said sections, housing-disks inclosing the sides of the pulley, a sectional bushing seated in the cross-beams, blocks filling the cross-beam rabbets inside of the rim, and means to secure the sections together, in combination, as set forth.

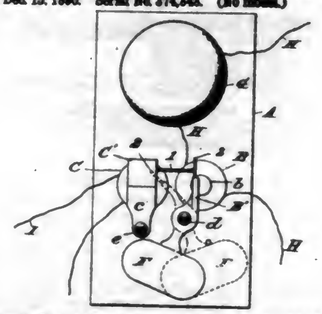
478,120. SLATE-MUFFLER. EDWARD L. KRAMM, Slatington, Pa. Filed Feb. 24, 1891. Serial No. 382,542. (No model.)



Claim.—1. A slate-frame provided with a muffler consisting of a zigzag cord, the bends of which are embedded in the frame and secured by a filling, substantially as specified.

2. A slate-frame provided with a muffler consisting of a zigzag cord provided with a wire core and having its bends embedded in the frame and secured by a filling, substantially as specified.

478,121. ELECTRICAL ANNUNCIATOR. THOMAS W. LANE, Boston, Mass., assignor to the Electric Gas Lighting Company, of Maine. Filed Dec. 15, 1890. Serial No. 374,848. (No model.)



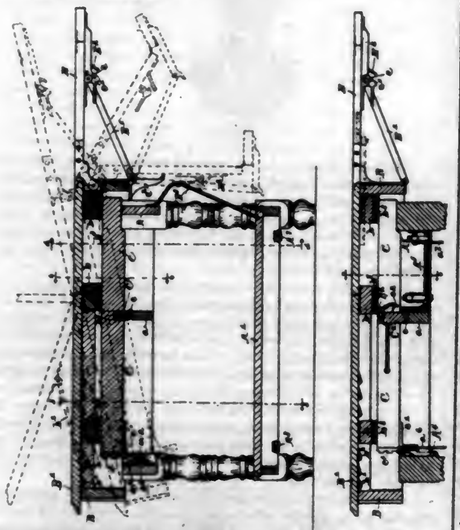
Claim.—1. In an electrical annunciator, in combination with a gravity-signal tag and a magnet properly arranged to operate the same, an electrical set-back composed of a magnet, armature having a spring connection, supporting-post therefor, and a proper locking device, substantially as shown.

2. An electrical annunciator composed of one magnet, a supporter for the armature, an armature with proper extensions to carry a weighted tag or visual signal, a tag properly connected therewith and a second magnet, a supporter for its armature, and an armature with a proper extension arranged to lock the first armature when that is attracted by the first magnet and to unlock the first armature upon the second armature being attracted by the second magnet, so as to allow the signal to fall by gravity, substantially as shown.

3. In an electrical annunciator, the combination, with the gravity-drop F and a magnet properly arranged to operate the same, of the magnet C, support E, armature C', spring-piece *c*, and pin 1, as and for an electrical set-back, as described and shown.

4. The combination, with a proper base A, of the magnet B, armature B', pin 2, support D, weighted visual signal F, and the magnet C, armature C', pin 1, spring-piece *c*, and support E, properly adapted for electrical connection, substantially as described.

478,122. SURGICAL TABLE. CHARLES H. LEONARD, RICHARD B. ROBERTS, and WILLIAM D. ALLISON, Indianapolis, Ind.; said Leonard and Roberts assignors to said Allison. Filed July 17, 1891. Serial No. 399,847. (No model.)



Claim.—1. In a surgical table, the combination of the main frame, the intermediate frame hinged to a cross-bar of said main frame on hinges extending transversely thereof, the rear end of which extends to a point in front of the rear rail of the main frame, the rack-bar secured to the rear end of said intermediate frame, the sliding plate having a pawl on its face, mounted to slide in a housing on the front side of the rear rail of said main frame, with its pawl adapted to engage with the notches of said rack-bar, means for operating said sliding plate back and forth, and the top frame hinged by means of longitudinally-arranged hinges to the top of said intermediate frame, and means, substantially as described, for holding said top frame in the desired transverse adjustment.

2. In a surgical table, the combination of the main frame, the intermediate frame hinged to a cross-bar of said main frame on hinges arranged transversely thereof, a rack-bar secured to the rear end of said intermediate frame, the plate A^5, mounted to slide in a housing on the front side of the rear rail of the main frame and formed with a pawl a^3 on its front face, adapted to engage with said rack-bar, the spring a^4 for holding said plate forward with the pawl in engagement with said rack-bar, the elbow-lever A^6, pivoted on the frame, with one end connected to said sliding plate and the other end connected to a foot-lever, whereby said plate is drawn back to disengage said pawl when desired, and the top frame and table-top mounted on said intermediate frame, all substantially as set forth.

3. The combination, in a surgical table, of the main frame, the intermediate frame hinged to tilt longitudinally, means for supporting said intermediate frame in a fixed position, the top frame hinged to said intermediate frame on hinges secured longitudinally thereof, the serrated bar B^3, depending from said top frame, a serrated plate secured rigidly to a portion of the intermediate frame and arranged to engage said depending bar, the spring b^4, connected at one end with the lower end of said depending bar and at the other end with the frame, the cam-lever c^3, arranged as described and connected with the arm a^6 on the rock-shaft A^6, the spring A^8, connected at one end with said arm a^6 and at the other end with the frame, and the arm A^9, also formed on said rock-shaft and connected by a rod with the foot-lever A^7, said foot-lever suitably hinged to the lower portion of the frame, said spring A^8 being of a greater tension than the spring b^4, all substantially as described, and for the purposes specified.

4. In a surgical table, the combination of the main frame, the intermediate frame hinged to a cross-bar of said main frame to tilt longitudinally thereof, the rack-bar secured to the rear end of said intermediate frame, the sliding pawl mounted on the main frame and adapted to engage with said rack-bar, means for operating said pawl, the top frame hinged to said intermediate frame to tilt transversely thereof, the depending rack-bar B^3, hinged to one side of said top frame and adapted to engage with a fixed notched plate on the intermediate frame, and means for withdrawing said bar from and forcing it into engagement with said plate, as desired, all substantially as set forth.

5. The combination, in a surgical table, with the top frame thereof, of the arm-rest D, having a plate with a curved dog *d* pivoted thereto, said plate being formed with a curved or recessed edge with shoulders at or near each side, and a pin inserted in the under side of said arm-rest against said edge and between said shoulders, whereby said arm-rest is permitted a limited motion, said dog being inserted in a correspondingly-formed socket secured in the side of said top frame, all substantially as set forth.

6. The combination, in a surgical table, of the foot-rest hinged to its front side, the bearing-plate E^2, secured on the rear side thereof, and a curved supporting-brace E^3, secured to and extending out from the front side of said frame and arranged to support said foot-rest when in a closed-down position through said bearing-plate E^2, substantially as set forth.

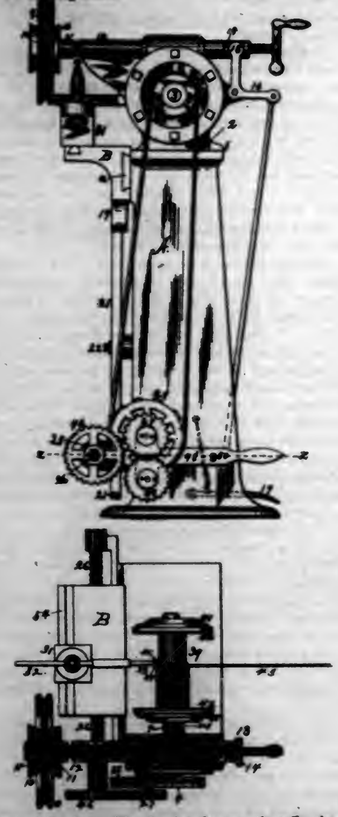
7. The combination, in a surgical table, of a foot-rest hinged to its front edge and a jointed brace for supporting said foot-rest, said foot-rest being composed of two parts hinged together and said supporting-brace being formed of a long and short part, the short portion of which is fixedly connected with the front portion of the foot-rest and the long portion of which is hinged to the frame of the table, a lip *e* being formed to extend back from said short portion, and a catch *e'* being pivoted to the under side of the main portion of the foot-rest and arranged to engage therewith when said foot-rest is raised to a horizontal position, whereby it is held against accidental displacement, substantially as set forth.

8. The combination, in a surgical table, of a foot-rest hinged to its front edge and formed in two parts hinged together and the brace E', hinged to the top frame at one end and secured to the forward portion of said foot-rest at its other end, said brace being formed with a joint at a point which when turned up will be above the line of the direction of the strain thereon.

478,123. MACHINE FOR MAKING INSULATED MAGNETIC COILS. CHARLES E. LIPE, Syracuse, N. Y. Filed Oct. 6, 1890. Serial No. 367,433. (No model.)

Claim.—1. In a machine for making insulated magnetic coils, the combination, with the winding-shaft and means for rotating it, of the tool comprising a shank, a stud upon its outer end, a bevel-edged shearing-cutter upon the stud, and a roller on the same stud in front of the cutter, and a tool-post carrying said tool.

2. In a machine for making insulated magnetic coils, the combination, with the winding-shaft and means for rotating it, of a tool comprising a shank, a pressure-roller, and a shearing-cutter mounted contiguous to the winding-shaft.



3. In a machine for making insulated magnetic coils, the combination, with the winding-shaft and means for rotating it, of a tool comprising a shank, a shearing-cutter mounted contiguous to the winding-shaft, a slide carrying the tool, and means for feeding the tool along the winding-shaft.

4. In a machine for making insulated magnetic coils, the combination, with the winding-shaft and means for rotating it, of a tool comprising a shank, a shearing-cutter mounted upon its end, a slide carrying the tool, and means for feeding the tool toward or from or along the winding-shaft.

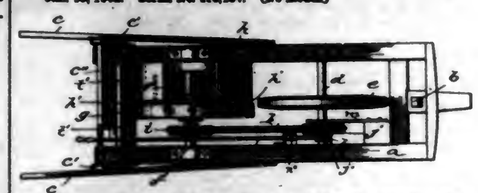
5. In a machine for making insulated magnetic coils, the combination, with the winding-shaft and means for rotating it, of a tool comprising a shank recessed in its front end, a bar mounted in the recess, and a shearing-cutter mounted thereon, and a spring in the recess behind the bar.

6. In a machine for making magnetic coils, the combination, with the winding-shaft and means for rotating it, of a tool comprising a shank recessed in its front end, a bar mounted in the recess, a shearing-cutter mounted thereon, a spring in the recess behind the bar, and a pressure-roller mounted on said bar, and a tool-post carrying said tool.

7. In a machine for making insulated helically-wound magnetic coil in layers, a winding-shaft, and means for rotating it, in combination with a slide, a tool comprising a shank secured in a tool-post mounted in said slide and adapted to yield laterally therein, a bar mounted upon said shank and adapted to yield longitudinally, a pressure-roller mounted upon said bar, and a trimming-cutter also mounted thereon, and means for traversing said slide longitudinally in both directions parallel with said shaft.

8. The combination, with the winding-shaft and means for rotating it and a slide and means for feeding it in a line parallel with the shaft and provided with a tool-post slot, of a tool-post mounted therein and springs in said slot on either side of and engaging with the tool-post.

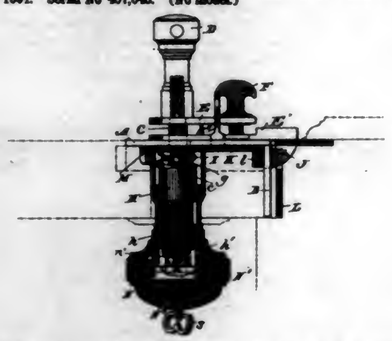
478,124. SEED-PLANTER. AUSTIN NEELY, Greenville, Miss. Filed Jan. 15, 1892. Serial No. 418,127. (No model.)



Claim.—1. In a seed-planter, the combination of a frame, a hopper carried thereby, an open-ended tube depending from its lower side, a wheel journaled on the frame alongside the hopper and provided with a series of lateral trip-arms, an arm y', pivoted on the bottom of the hopper on the opposite side from the wheel, this arm being provided with a plate p near its free end, its extreme end being turned upwardly alongside the open-ended tube, as at q, a spring p', normally holding the plate p over the lower end of the tube, and a pivoted arm s', connected to the pivot of the arm y' within the hopper and provided with a plate normally held to one side of the upper end of the tube, as and for the purposes described.

2. In a combined cotton and corn planter, the combination of a frame carrying an opener and cover, a stirrer-wheel mounted on a shaft and provided with a series of stirrer-arms for feeding cotton-seed, a hopper mounted on the frame adjacent to the wheel, the side next to the wheel being open, a series of trip-arms secured on the periphery of the wheel, a short open-ended tube secured in the bottom of the hopper, and covering-plates adapted to alternately cover the respective ends of the tube, these plates being shifted periodically for discharging seed by the trip-arms on the wheel, as and for the purpose described.

478,125. LOCK. BENJAMIN PIERS, Xenia, Ohio. Filed Sept. 28, 1891. Serial No. 407,045. (No model.)



Claim.—1. A safety-lock comprising the bed-plate, the latch, the hollow post, the sliding arbor rotatably secured within said post, the spring-pressed catch secured to said arbor, the sliding thimble fixed to said arbor so as to rotate therewith, the knob adapted to rotate freely on said thimble, and means for forcing the thimble and catch inwardly against the spring-pressure so as to disengage the latch, substantially as described.

2. In combination with the bed-plate, the spring-pressed latch, means for actuating said latch, the swinging spring-pressed catch, the arbor to which said catch is secured rotatably mounted on said bed-plate and provided at one end thereof with a rigid cross handle or knob and at the other end with a loose rotating knob, and means for engaging the knob so as to force the arbor inward against the pressure of the spring and disengage the catch, substantially as described.

3. In combination with the bed-plate, the latch, the keeper, the swinging spring-pressed catch, means for operating said catch, and a safety-button whereby the catch may be secured so as to bind the operating mechanism thereof and the latch in immovable positions, substantially as described.

4. In combination with the bed-plate, the latch, the keeper, the swinging spring-pressed safety-catch, the arbor to which said catch is secured, the hollow post, the thimble having the cam-faced extension connected to said arbor so as to rotate therewith, the knob rotatably secured on said thimble, and the cam-lever adapted to engage said thimble and thereby disengage the catch, substantially as described.

5. In combination with the bed-plate, the latch, the swinging spring-pressed catch, the arbor which supports said catch, the sleeve or thimble fixed to said arbor and having the cam-shaped end or extension, the knob rotatably secured on said thimble and the cam-lever secured to said knob, and means for engaging said cam-lever and thimble and thereby disengaging the catch, substantially as described.

6. In combination with the bed-plate, the sliding spring-pressed yoke or frame having the thumb-piece or handle and the latch rigid therewith, the cam-faced projection or lug rigidly secured to said yoke, the rotary knob provided with a cam adapted to engage said lug, and the pins on said bed-plate adapted to engage slots in said yoke so as to guide the yoke in its movements back and forth, substantially as described.

7. In combination with the bed-plate, the keeper, the latch, the sliding frame which supports said latch, the thumb-piece or handle on said frame, the sliding arbor rotatably mounted on said bed-plate and provided at one end with a rigid operating-handle and at the other end with a rotary knob adapted to actuate the latch, and means, substantially as described, whereby said knob is adapted to actuate the arbor and disengage the catch, substantially as described.

8. In combination with the bed-plate, the latch, the swinging spring-pressed catch, the arbor which supports said catch, the hollow post, the thimble or sleeve on said post, the rotary knob journaled on said thimble, the latch-actuating cam on said knob, the cam-shaped extension rigid with said thimble, the spring-pressed cam-lever secured to said knob, and the key whereby said cam-lever is adapted to be thrown into the path of said cam-shaped extension so as to actuate the thimble and arbor and thereby disengage the catch, substantially as described.

9. In combination with the bed-plate having the vertically and longitudinally elongated slots therein, the swinging catch, the arbor to which said catch is secured, and the spring which is adapted to hold the catch normally in engagement with one of said slots, substantially as described.

10. In combination with the bed-plate having the catch-receiving slots therein, the sliding spring-pressed latch, the sliding spring-pressed arbor rotatably mounted on said bed-plate, the swinging plate secured to said arbor, and the swiveled safety catch or button carried by said swinging plate and adapted to engage said slots so as to hold the parts locked or unlocked, substantially as described.

11. In combination with the bed-plate having catch-receiving slots therein, the arbor mounted on said bed-plate, provided with an inner rigid operating-handle and an outer rotary knob normally free to rotate thereon, the swinging spring-pressed catch secured to said arbor and movable therewith, the spring-pressed latch, the thimble, the swinging guide-plate, and means whereby the catch may be operated from the outside by the rotation of the knob, substantially as described.

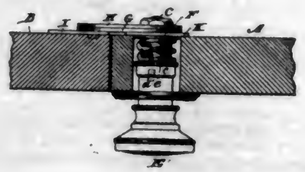
12. In combination with the bed-plate, the latch, the swinging catch, the arbor which carries said catch, the thimble locked to said arbor so as to move therewith, the knob adapted to rotate freely on said thimble and provided with a cam for actuating the latch, the operating-handle rigidly secured to said arbor, the cam-shaped extension or screw rigid upon said thimble, the cam-lever for engaging said cam-shaped extension, and the key for actuating said cam-lever, substantially as described.

13. A burglar-proof lock comprising the bed-plate, the keeper, the spring-pressed latch, means for operating said latch, the swinging spring-actuated catch provided with a safety-button, the arbor which supports said catch rotatably mounted on said bed-plate, the hollow post, the thimble on said post, the knob rotatably secured on said thimble, the cross handle or knob rigidly secured to said arbor, the cap-piece, the cam-lever housed in said cap-piece, and the key for actuating said cam-lever, substantially as described.

14. In combination with the bed-plate, the sliding spring-pressed frame having the latch, the operating thumb-piece or handle, and the cam-faced lug or projection rigid therewith, together with the rotary knob provided with a cam adapted to engage the lug on said frame so as to disengage the latch, substantially as described.

15. In combination with the sliding arbor and swinging spring-pressed catch supported thereby, the swinging guide-plate and the stop for limiting the movements of said plate, substantially as described.

478,126. LATCH. BENJAMIN PIERS, Xenia, Ohio. Filed Sept. 28, 1891. Serial No. 407,046. (No model.)



Claim.—1. A lock or fastening device for closets, cupboards, &c., comprising a sliding rotatable arbor or spindle supporting a catch, an operating handle or knob, which is free to rotate upon said spindle in either forward or backward direction, a slotted plate or device for engaging said catch, and means whereby the knob and spindle when occupying relatively fixed positions in respect to each other may be locked together for the purpose of engaging or disengaging the catch and slotted plate, substantially as described.

2. A lock or fastening device comprising a sliding arbor or spindle, an operating knob or handle loose upon said spindle, a catch secured to said spindle, a locking plate or device adapted to be engaged by said catch, a spring which tends to hold the catch normally in engagement with the locking-plate, and means whereby the knob may be locked to the spindle so as to disengage the catch, substantially as described.

3. In a lock or fastening device, the combination of the sliding arbor or spindle, the loose thimble or sleeve thereon adapted to rotate therewith, the rotary knob or handle adapted to be locked to said spindle, the spring which tends to force said thimble and knob apart, the swinging toothed plate secured to said arbor, and the slotted plate or locking device adapted to be engaged by said toothed plate, substantially as described.

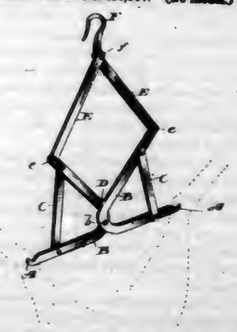
4. A lock or fastening device comprising a pair of slotted plates, a sliding spring-pressed catch adapted to be held normally in engagement with one of said plates, an arbor or spindle to which said catch is attached, a sleeve or thimble fitted on said arbor so as to rotate therewith, a knob or operating-handle secured on said spindle so as to revolve freely thereon, and means whereby the spindle and knob may be made to revolve together so as to disengage the catch, substantially as described.

5. A lock or fastening device comprising a sliding rotatable spindle, a spring-pressed catch secured to said spindle, a locking device or plate adapted to engage said catch, an operating handle or knob rotatably secured on said spindle, means for causing the spindle to revolve with said knob, a detachable handle rigidly secured to said spindle, and a safety-locking device carried by said spring-pressed catch, substantially as described.

6. In combination with the slotted plates, the sliding spring-pressed catch, the arbor carrying a pin which passes transversely through the same, the flanged sleeve having an elongated slot therein to receive the ends of said pin, the spring fitted on said sleeve between said flange and pin, and the knob having the cylindrical shank rotatably secured on said arbor and provided with lugs or projections adapted to engage recesses or depressions formed in said sleeve, substantially as described.

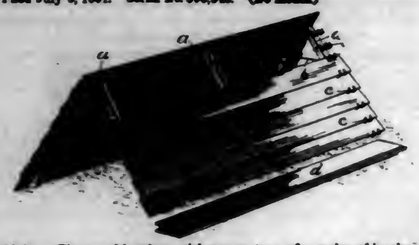
7. In combination with the slotted plates, the sliding spring-pressed swinging plate, the arbor having the pin which passes transversely through the same, the flanged sleeve having an elongated slot to receive the ends of said pin and longitudinal recesses or depressions therein, the spring placed upon said sleeve between said flange and pin, the knob having the cylindrical shank rotatably secured on said arbor and provided with lugs or projections adapted to register with the depressions in said sleeve, the operating-handle detachably secured to an extension of said arbor, and the tooth or catch swiveled in said swinging plate, substantially as described.

478,127. CARCASS-SPREADER. GEORGE T. PLUMB, Danbury, Nebr. Filed Dec. 28, 1891. Serial No. 416,207. (No model.)



Claim.—In a device for spreading carcasses, the combination of the two V-shaped levers pivoted together at their apexes, the free ends of the said lever having gambrel-hooks, a leg D to hold the hooks in a horizontal line, and the levers E E, pivoted to said V-shaped levers at their lower ends and their upper ends pivoted, together with the elevating-hook, all substantially as shown and described.

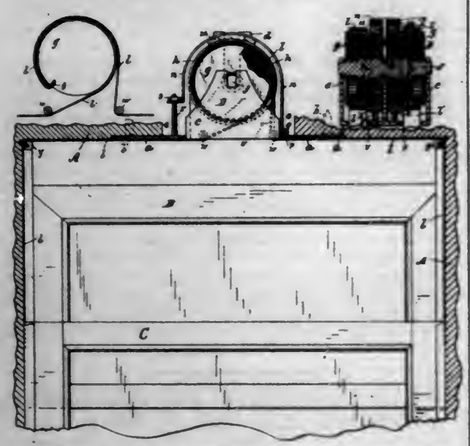
473,128. PORTABLE ROOF. EDMUND RANKIN, Jr., Lincoln, Ill. Filed July 8, 1891. Serial No. 398,843. (No model.)



Claim.—The combination, with supports *a*, of a series of hooks *c*, carried by each of the supports, said hooks each consisting of a wire bent into a loop *c'*, which embraces the support, the ends of the wire being carried outwardly on opposite sides of the support and formed, one or both, into depending hooks *c''* beyond the outer face of the same, and the boards *d*, each having their lower edges resting in the series of hooks *c''* next below and their upper edges under the series of hooks next above, substantially as and for the purpose described.

2. The combination of a support, the pivoted hooks embracing the same and projecting outwardly therefrom and formed into depending hooks *c''*, said hooks *c''* being beyond the outer face of the support, and inclined boards *d*, having their lower edges resting in said hooks *c''* and their upper edges resting under the series of hooks above, substantially as and for the purpose described.

473,129. SASH-BALANCE. JAMES W. SHEPPARD, Rochester, N. Y. Filed Feb 29, 1892. Serial No. 423,278. (No model.)



Claim.—1. A sash-balance secured centrally over the sash, consisting of a rotary spring-drum and a band secured to the latter, said band being doubled at its middle point and secured thereat to the periphery of the drum, both ends of the band being carried around the drum in the same direction and thence to the respective opposite edges of the sash, in combination with anti-friction rollers for the bands to turn on, substantially as shown and described.

2. A sash-balance secured over the sash, consisting of rotary spring-drums turning independently of each other and bands secured to the drums, said bands being doubled and secured to the peripheries of the respective drums, both ends of each band being carried around its drum in the same direction and thence to the sash, in combination with a brake divided longitudinally throughout the greater part of its length, one branch being over each drum and adapted to bear thereon, substantially as described.

3. A sash-balance secured over the sash, consisting of rotary spring-drums turning independently of each other and bands secured to the drums, said bands being doubled and secured to the peripheries of the respective drums, both ends of each band being carried around its drum in the same direction and thence to a sash, said drums being each provided with a peripheral projecting part or flange, in combination with a divided brake, a branch being over each of said flanges and provided with a pad adapted to bear thereon, substantially as shown and described.

473,130. MEAT-SAW. GUSTAF F. SELLSTROM, Jamestown, N. Y. Filed Dec. 8, 1890. Serial No. 373,968. (No model.)



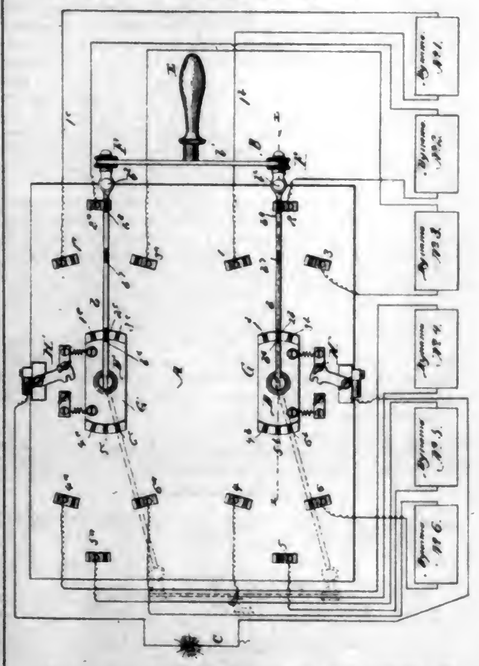
Claim.—In combination with a saw-blade provided at each end with lugs having inner convex tension-bearings extending across its width, a saw-frame provided at the outer end with a slot to receive the blade and a concave on its outer face to receive the convex lugs on one end of the saw, the other end of the frame provided with an adjustable yoke having a concave surface to receive the lugs at the other end of the saw, the yoke having suitable means to give any desired tension to the blade, substantially as shown, and for the purpose set forth.

473,131. CURTAIN SUPPORTER AND FITTINGS. GEORGE SMITH, London, England. Filed Oct. 7, 1890. Serial No. 367,348. (No model.) Patented in England Jan. 24, 1889, No. 1,339; in France Feb. 7, 1890, No. 203,656; in Austria-Hungary May 15, 1890, No. 7,808, and in Canada July 10, 1890, No. 34,673.



Claim.—A curtain-carrier consisting of the combination of a roller grooved to form an axle or journal, and a loop the lower part of which is wide enough to pass over the ends of the said roller and the upper part of which is contracted to constitute a bearing for the said axle or journal, substantially as herein described.

473,132. ELECTRIC SWITCH. FRANCIS H. SODEN, Chicago, Ill. Filed July 2, 1891. Serial No. 398,223. (No model.)



Claim.—1. An electric switch comprising a base provided with contacts and a universally-swinging yoke, having its arms provided with contacts and supported upon the base by universal joints, the yoke being articulated so as to permit its arms, while maintaining a condition of parallelism with one another, to swing about their respectively-allotted centers, substantially as set forth.

2. In an electric switch, a universally-adjustable yoke provided with contacts and having its arms separately held by universal joints but maintained in condition of parallelism with one another, so that while the yoke can be moved to cause its arms to swing, respectively, about separate centers said arms shall remain parallel with one another, substantially as described.

3. In an electric switch, a universally-adjustable yoke provided with contacts and having its arms separately held by universal joints, said arms being at their outer ends connected by a link with joints between the link and said arms, substantially as set forth.

4. In an electric switch, a swinging yoke having the ends of its arms supported upon a base by universal joints and provided with contacts upon said arms, combined with contacts arranged in pairs on lines radiating from the points at which the yoke-arms are pivotally held, and further arranged on lines corresponding with the arcs described by the contacts on the yoke when the latter is swung to the right and left, substantially as set forth.

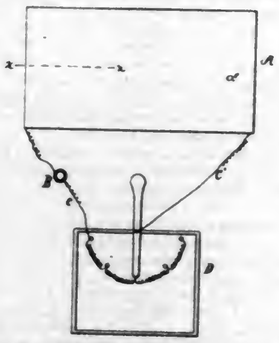
5. In an electric switch, a base provided with contacts arranged in sets at opposite sides of its middle portion, and a universally-swinging yoke provided with contacts and pivotally supported at the middle portion of the contacts, so that it can be swung over toward either side of the same and then adjusted with reference to the portions, substantially as described.

6. In an electric switch, the combination, with a base A, provided with contacts, and further provided with sockets *g*, of the yoke provided with contacts, and having its arms pivoted to swivels arranged to turn in said sockets, substantially as set forth.

7. The combination, with a swinging switch device, of a stop L, arranged upon a pin *l*, a spring arranged to act upon the stop, and a nut arranged for adjusting the tension of the spring, substantially as set forth.

8. The universally-adjustable switch-yoke provided with contact-blades and arranged for service in connection with a base provided with contact-points, said yoke being at the ends of its arms attached to the base by universal joints, each comprising a threaded swivel I, fitted to turn in a threaded socket on the base, and a pivotal connection between the arm and said swivel, substantially as set forth.

473,133. ELECTRO-THERAPEUTIC HEATING-PAD. FRANCIS H. SODEN, Chicago, Ill. Filed Sept. 1, 1891. Serial No. 404,490. (No model.)



Claim.—1. A therapeutic electric heating-pad comprising a heating-conductor confined within a flexible sheet or sheets, substantially as and for the purpose described.

2. A therapeutic electric heating-pad comprising a heating-conductor confined within a flexible sheet of asbestus or like material, provided with a suitable covering, substantially as and for the purpose set forth.

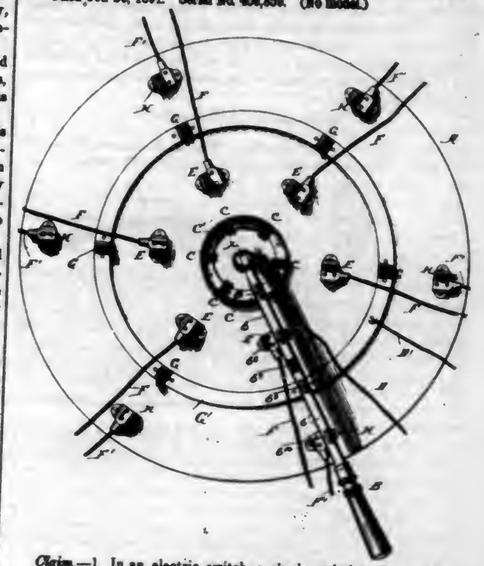
3. A therapeutic electric heating-pad comprising a heating-conductor arranged within depressions in a flexible sheet, such as set forth, and a covering for the same, substantially as and for the purpose set forth.

4. A therapeutic electric heating-pad comprising a heating-conductor arranged within the grooves of a sheet *a*, covering-strips *a'*, and a covering a^3, as set forth.

5. The combination of a therapeutic electric heating-pad, as set forth, and an adjustable resistance in circuit with the source of supply and the heating-conductor in the heating-pad, substantially as and for the purpose described.

6. A therapeutic electric heating-pad comprising a flexible sheet of asbestus, a heating-conductor held against the same, and a tongue for holding the parts together, substantially as described.

473,134. ELECTRIC SWITCH. FRANCIS H. SODEN, Chicago, Ill. Filed Oct. 26, 1891. Serial No. 409,859. (No model.)



Claim.—1. In an electric switch, a single switch-arm pivotally held by a universally-jointed swivel upon a base provided with contacts and provided at points along its length with contact portions insulated from one another, substantially as set forth.

2. In an electric switch, a base provided with contacts arranged in concentric annular sets about a common center, and a switch-arm pivotally held by a universally-jointed swivel so as to swing about said center and provided with contact portions insulated from one another and arranged with reference to the annular sets of contacts, substantially as set forth.

3. In an electric switch, a base provided with contacts on lines radiating from a common center, and a switch-arm pivotally held by a universal joint so as to operate about said center and provided at points along its length with contact portions insulated from one another, substantially as set forth.

4. In an electric switch, a base provided with contacts arranged in concentric annular sets about a common center and further disposed on lines radiating from said center, so that each line shall comprise one contact from each annular set and a switch-arm pivotally held by a universal joint and provided at points along its length with contact portions insulated from one another, substantially as set forth.

5. In an electric switch, a base provided with contacts arranged in annular concentric sets alternately composed of electrically-connected and electrically-disconnected contacts, and a switch-arm held upon the base by a universally-jointed swivel and comprising contact portions insulated from one another, substantially as set forth.

6. In an electric switch, the combination of the annular sets of contacts C E G H, for the purpose set forth, distributed to also form sets of contacts on lines radiating from a common center, conductors C' and G', respectively connecting contacts C and contacts G, and the switch-arm B, held at said center by a universally-jointed swivel and provided with the two pairs of contacts b^3 b^4 and b^5 b^6, one of said pairs of contacts being insulated from the other, as at b^5, substantially as described.

7. In an electric switch, the combination of the base provided with contacts, substantially as set forth, of the switch-arm B, pivotally held by a universally-jointed swivel and provided with conducting portions *b* and *b'*, insulated from one another and each provided with oppositely-arranged couples of contacts, substantially as described.

8. In an electric switch, the combination of the swivel carrying the switch-arm at one end and having its opposite end enlarged to provide a ball-bearing surface, a bearing for the swivel having its socket-bore, in which the swivel is arranged to work, provided with an enlarged portion to receive the enlarged end of the swivel and provide a ball-bearing surface, anti-friction balls arranged between said ball-bearing surfaces, a spring applied to press the swivel outwardly and

against the anti-friction balls, and an adjustable stop applied for varying such spring-pressure, substantially as described.

9. In an electric switch, the combination of the swivel I, carrying at one end the switch-arm and arranged to work within a socket-bore, a spring applied against the opposite end of the swivel and arranged to press the swivel outwardly, so as to tighten up a bearing connection between the swivel and wall of the socket-bore; a spring-catch, for the purpose set forth, arranged within and carried by the swivel, and a nut arranged within the swivel and providing an adjustable stop against which the spring for said catch and the spring acting to press the swivel outwardly, respectively, bear at opposite sides, substantially as described.

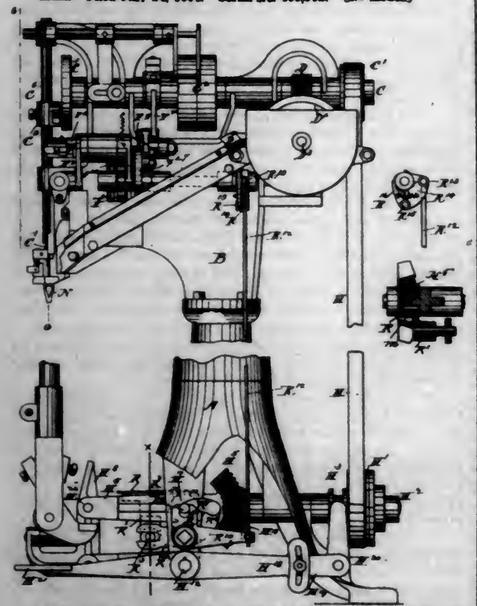
473,185. TICKET-HOLDER. WILLIAM H. THAYER, Weymouth, Mass. Filed Jan. 15, 1892. Serial No. 418,159. (No model.)



Claim.—1. In a ticket-holder, the combination, with a frame or other article having a socket therein, of a spring-clamp removably fitted in said socket and having the upper and lower side pieces connected at their rear ends by a vertical web and their free ends bent inward to form the spring-arms, said clamp being compressed laterally by its upper and lower sides bearing against the walls of the socket and the arms *a' a'* of the clamp forced into contact with each other, the whole being flush with the surface of the frame, substantially as described.

2. In a ticket-holder, a chair-frame or other article having a socket therein, combined with a spring-clamp having the upper and lower side pieces thereof joined together at their rear ends by a vertical web and the free ends bent inward in contact with each other, so that when the clamp is fitted in the socket the sides thereof will impinge against the walls of the socket and laterally compress the arms, and a removable slotted face-plate rigid with the chair-back, substantially as described.

473,186. PEGGING-MACHINE. ERASTUS WOODWARD, Somerville, Mass. Filed July 24, 1891. Serial No. 400,502. (No model.)



Claim.—1. In a tack-driving machine having a movable jack and tack-feeding mechanism, the combination of a jack-moving mechanism, a tack-feed-starting device mounted to move within certain limits, a yielding device, substantially as described, holding the jack-moving mechanism and tack-feed-starting device in unison when the jack is free, and a driving device acting upon said tack-feed-starting device to move said two parts together when the movement of the jack is not resisted and to move the tack-feed-starting device independently to start the feed when the movement of the jack is resisted.

2. In a tack-driving machine, the combination of a continuously-operating driving mechanism, including a reciprocating driver and a continuously-running shaft which gives motion to the driver, a fixed nose-piece through which the tacks are driven, a tack-feed raceway arranged to guide tacks to the driving mechanism, a slide or gate normally in position to prevent the passage of tacks to the driving mechanism, slide or gate operating mechanism organized to stop automatically after moving the slide or gate to feed one tack, and means independent of the nose-piece for starting the slide or gate, said means including a foot-lever H^{31}, located at the base of the machine, and a connecting-rod R^{13}, adapted to transmit motion from the base of the machine and make the slide or gate operating mechanism operative, whereby the operator is enabled by a movement of his foot to cause the feeding of a tack to the continuously-reciprocating driver, as set forth.

3. In a tack-driving machine, the combination of a continuously-operating driving mechanism, including a reciprocating driver and a continuously-running shaft which gives motion to the driver, a fixed nose-piece through which the tacks are driven, a tack-feed raceway arranged to guide tacks to the driving mechanism, a slide or gate normally in position to prevent the passage of tacks to the driving mechanism, a motor adapted to give the slide or gate a tack-feeding movement, normally inoperative connections between the motor and the said continuously-running shaft, said connections being adapted when made operative to give the slide or gate the movement required to feed one tack, and means for making said connections operative, said means including a foot-lever H^{31}, located at the base of the machine, and a connecting-rod R^{13}, engaged with the motor and adapted to make said connections operative, whereby the operator is enabled by a movement of his foot to cause the feeding of a tack to the continuously-reciprocating driver, as set forth.

4. In a tack-driving machine, the combination of a continuously-operative driving mechanism, including a reciprocating driver and a continuously-running shaft which gives motion to the driver, a fixed nose-piece through which the tacks are driven, a tack-feed raceway arranged to guide tacks to the driving mechanism, a slide or gate normally in position to prevent the passage of tacks to the driving mechanism, slide or gate operating mechanism organized to stop automatically after moving the slide or gate to feed one tack, a pulley contiguous to the base of the machine, a connection between said pulley and the said continuously-running shaft, whereby the pulley is continuously operated, a clutch normally separated from said pulley, a clutch-operating lever arranged to be moved by the foot of the operator, whereby the clutch may be engaged with the pulley, a shaft engaged with and rotated by the clutch, a vertically-movable work-supporting jack, and mechanism operated by the rotation of the clutch-operated shaft, whereby the jack and the tack-feeding slide or gate are set in operation successively by a single movement of the clutch-operating lever, said mechanism including a connecting-rod R^{13}, adapted to transmit motion from the clutch-operated shaft and make the slide or gate operating mechanism operative, as set forth.

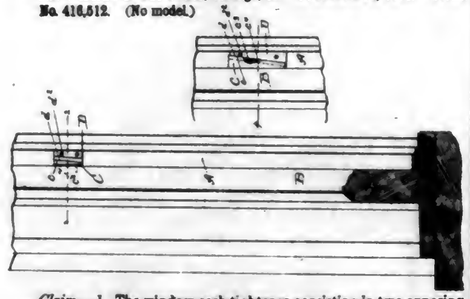
5. In a tack-driving machine, the combination of a continuously-operative driving mechanism, a normally-inoperative tack-feeding mechanism, a continuously-running pulley, a clutch adapted to be engaged with the pulley, a clutch-operating device controlled by the operator, a starting device for making the said tack-feeding mechanism operative, and connections between the pulley and starting device, whereby the latter is operated during the engagement of the clutch with the pulley, said connections comprising a shaft engaged with and rotated by the clutch, and a connecting-rod adapted to communicate motion from said shaft to the starting device, as set forth.

6. In a tack-driving machine, the combination of a continuously-operative driving mechanism, a normally-inoperative tack-feeding mechanism, a continuously-running pulley, a clutch adapted to be engaged with said pulley, a clutch-operating device controlled by the operator, a vertically-movable work-supporting jack, a starting device for making the said tack-feeding mechanism operative, and mechanism operated by the engagement of the clutch with the pulley, whereby the said jack and starting device are successively operated, said mechanism including a clutch-operated shaft, a connecting-rod R^{13}, and devices, substantially as described, connecting the clutch-operated shaft with the jack and connecting-rod, as set forth.

7. In a tack-driving machine, the combination of a continuously-operative driving mechanism, a normally-inoperative tack-feeding mechanism, a continuously-running pulley, a clutch adapted to be engaged with said pulley, a clutch-operating lever arranged to be moved by the operator to connect the clutch with the pulley, a shaft operated by the clutch and provided with a bevel-gear, a lever mounted to oscillate on a fixed fulcrum and provided with a gear-segment meshing with said gear, a jack-operating lever mounted to oscillate on the same fulcrum with the gear-carrying lever, a jack connected with the jack-operating lever and adapted to be raised thereby, a yielding connection between the gear carrying lever and the jack-operating lever, whereby the gear-carrying lever is enabled to move independently after the upward movement of the jack has been arrested, and connections between the gear-carrying lever and the tack-feeding mechanism, whereby the latter is made operative during the said independent movement of the gear-carrying lever and after the arrest of the upward movement of the jack, as set forth.

8. In a tack-driving machine, the combination of a continuously-operative driving mechanism, a normally-inoperative tack-feeding mechanism, a continuously-running pulley, a clutch adapted to be engaged with said pulley, a clutch-operating device controlled by the operator, a vertically-movable work-supporting jack, a shaft H^3, journaled in the fixed bearings at the base of the machine and provided with a gear H^4, a continuously-running pulley H', normally loose on said shaft, a clutch H^5, adapted to connect said pulley and shaft, a lever R R', mounted on a fixed fulcrum and having a gear-segment H^6 meshing with the gear H^4, a jack-operating lever H^7, mounted on said fulcrum and engaged at its outer end with a work-supporting jack, a yielding connection, such as a spring K^9, between the inner end of the lever H^7, and the lever R R', whereby the latter is enabled to move independently after the arrest of the upward movement of the jack, the connecting-rod R^{13}, constituting a starting device adapted to make the feed mechanism operative, a system of levers connecting the lever R R' with the rod R^{13}, whereby said rod is moved during the said independent movement of the lever R R', and a clutch-operating foot-lever adapted to cause the engagement of the clutch H^5 with the pulley H', whereby the operator is enabled by a movement of the foot-lever to cause the jack and the feed mechanism to operate successively, as set forth.

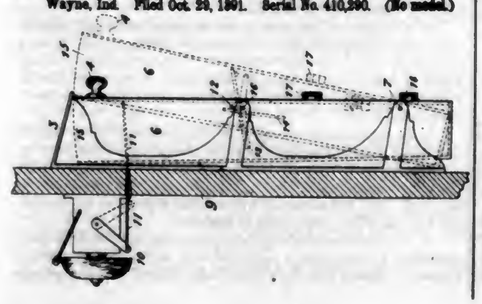
473,187. SASH-HOLDER. JOHN G. ALLBRIGHT, Boston, Mass., and WILLIAM B. ALLBRIGHT, Chicago, Ill. Filed Dec. 30, 1891. Serial No. 416,512. (No model.)



Claim.—1. The window-sash tightener consisting in two opposing wedges C D, one fixed to the sash and the other to the frame in position to tighten the sash when the same is closed, in combination with a similar window-sash tightener C D, having wedge D fixed to the frame and its other wedge C loose from the sash to adapt the sash to be tightened in open positions, said last-mentioned pair of wedges C D having registering tongues and grooves *c' d'*, connected together by a slot and pin c^3 d^3, substantially as specified.

2. A window-tightener consisting in two opposing wedges C D, having guide flanges or tongues *c' d'*, one fixed to the frame and the other loose and connected together by a guide slot and pin passing through said guide flanges or tongues, said wedges being arranged opposing each other, so that the weight of the sash will tend to tighten the wedges, substantially as specified.

473,188. HOUSE-DOOR LETTER-BOX. PETER ANDERSON, Fort Wayne, Ind. Filed Oct. 29, 1891. Serial No. 410,290. (No model.)

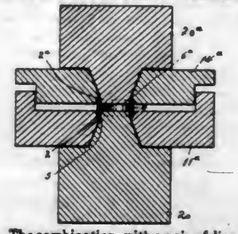


Claim.—1. A mail-box consisting of a box 6, having an opening 15 for the insertion of mail, a handle 4, an adjustable partition 14, hinged on the rod 12, a door 5 to the lower apartment thereof, a transverse slot 13 for the rod 16, and a rod 11, secured to the back of said box and connected to an alarm 10, and an open frame 3, having a rod 16 rigidly fixed in the sides thereof for elevating and supporting partition 14 when box 6 is open and having a hinge 7, upon which box 6 is so pivoted as to automatically close by its own weight when released from the grasp of the operator, all substantially as described.

2. In a mail-box, the combination of a box 6, having an opening 15 for the insertion of mail, a handle 4 for opening said box, an adjustable partition 14, pivoted on the rod 12, secured to the sides thereof, a door 5 to the lower apartment of said box, a transverse slot in the sides thereof for the rod 16, and a rod 11, secured to the back of said box and connected to an alarm 10 with the frame 3, having a suitable top for the protection of opening 15, a rod 16, rigidly secured to the sides thereof, which elevates and supports partition 14 in a horizontal position by its adjustment in slot 13, and a hinge or pivot 7, upon which box 6 is so pivoted as to automatically close by its own weight when opened, all substantially as described, and hereinbefore set forth.

3. The combination, in a mail-box, of a box having an opening 15 in the top thereof for the insertion of mail, a handle 4 for opening said box, a transverse slot 13, through which passes the rod 16, an adjustable partition 14, so pivoted upon the rod 12 in box 6 as to maintain a vertical position when the box is closed, but arranged to automatically assume a horizontal position when box 6 is opened, with a frame 3, having a rod 16 rigidly fixed in the sides thereof, sliding in slot 13 for elevating and supporting partition 14, and a hinge 7, upon which box 6 is pivoted, all substantially as set forth and described.

473,189. APPARATUS FOR FORMING RINGS. HERMAN V. BERNHARDT, Brooklyn, N. Y., assignor to Joseph B Bowden, same place. Filed June 16, 1891. Serial No. 396,438. (No model.)

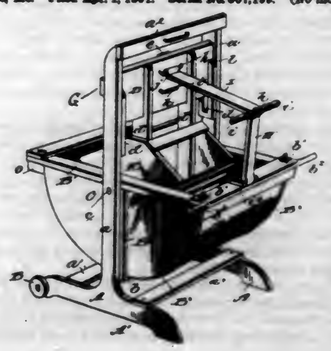


Claim.—1. The combination, with a pair of dies, of an independent or separate sectional arbor or mandrel, each of the dies being made with a section adapted to shape one-half of the outer surface of a ring and each of the mandrel-sections being made with a section adapted to shape one-half of the inner surface of a ring, substantially as described.

2. The combination, with a pair of dies formed with recesses 2 2^a, of mandrel-sections formed with recesses 5 5^a, the dies and mandrel-sections being separate, substantially as described.

3. The combination, with a pair of dies that are centrally apertured, of mandrel or arbor sections which fit within the die-apertures, the parts being shaped so that the mandrel-sections bear upon the dies, whereby pressure applied to the mandrel-sections serves to press the dies together.

473,140. WASHING-MACHINE. EUGENE F. CHAPMAN, Keytesville, Mo. Filed Apr. 1, 1891. Serial No. 387,199. (No model.)

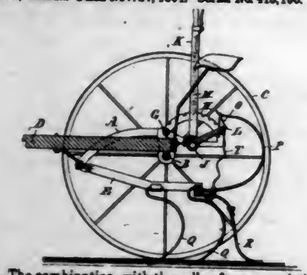


Claim.—1. The combination, with the pivoted tub and the vertically-adjustable rubber, of the adjustable pivotal connections between the tub and a portion of the rubber, as set forth.

2. The combination, with the vertically-adjustable rubber provided with notched bar, of the tub and the pivotal connections between the tub and a portion of the rubber, and the pivoted latch adapted to engage the said notched bar, substantially as specified.

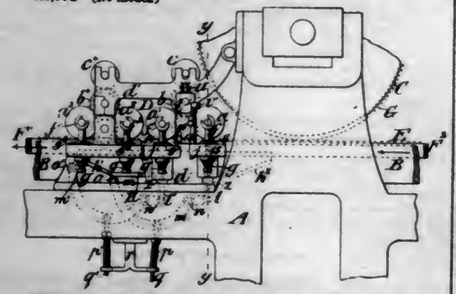
3. The combination, with the support provided with guides, of the board adjustable in said guides and carrying the rubber, the pivoted tub, the staples on the said board, and the adjustable pivotal connections between the tub and a portion of the rubber and comprising a pivot formed into handles, substantially as specified.

478,141. SULKY SPRING-TOOTH HARROW. THOMAS G. COOK, Brockville, Canada. Filed Nov. 27, 1891. Serial No. 413,160. (No model.)



Claim.—The combination, with the sulky-frame consisting of side bars A A, connected by a front and rear bar, of harrow-sections E, hinged at the front to the sulky-frame, vertical C-shaped springs P, connected at the lower ends to the rear part of the harrow-sections, the upper end of said springs normally free, rock-bar J, journaled to the sulky-frame and having an operating-lever K and arms L, chains O, connected to said arms and removably connected to the free ends of said springs, and chains T, connecting said arms to the harrow-sections, whereby greater or less spring-pressure is applied at pleasure to the harrow-sections and, when desired, the harrow-sections freed from the operation of the springs and bodily lifted, as and for the purpose set forth.

478,142. INKING APPARATUS FOR PRINTING-MACHINES. CALVERT R. COTTRELL, Westerly, R. I. Filed Dec. 23, 1891. Serial No. 415,964. (No model.)



Claim.—1. The combination, with the reciprocating bed of a cylinder printing-machine, of an ink-roller stand containing guideways, two form-rollers, bearings for said rollers, separate supports for the bearings of each of said rollers fitted to slide in said guideways, cams on said bed, and levers interposed between said cams and said sliding supports for separately lifting the supports of each form-roller, substantially as herein set forth.

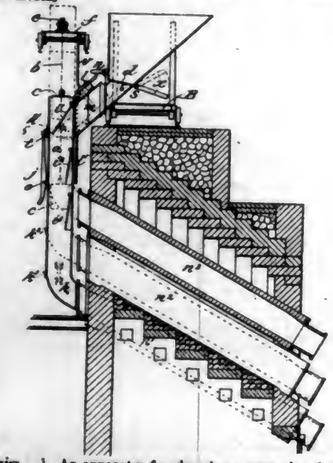
2. The combination, with the reciprocating bed of a cylinder printing-machine and an ink-roller stand, of a pair of form-rollers and a vibrating roller common thereto, bearings for said form-rollers, and separate supports for the said bearings, with which the latter rollers are movable separately toward and from the bed, bearings for the said vibrating roller, with which the said roller is movable toward and from the bed, and lifters between the said supports and the last-mentioned bearings for lifting the vibrating roller with one of the form-rollers, substantially as herein set forth.

3. The combination, in a printing-machine, of a roller-stand composed of fixed lower members or standards *d* and upper members *d'*, which are hinged to the fixed framing of the machine, a pair of form-rollers *a a'*, each having provided for it in said lower members bearings which are capable of being lifted independently of the bearings of the other one for lifting the roller out of inking contact with the form, a vibrating roller common to both form-rollers of the pair, and bearings for said vibrating roller provided in said upper members and vertically movable therein by the lifting of one of the form-rollers, substantially as herein set forth.

4. The combination, with the upper hinged members *d'* of the roller-stand, of a vibrating roller and bearings therefor capable of rising and falling within the said members, springs *u*, applied to said bearings, and stops *v* on the said members to retain the said bearings when said members *d'* are lifted, substantially as herein described.

5. The combination, with the longitudinally-reciprocating bed of a cylinder printing-machine, of an ink-roller stand, two form-rollers and a vibrating roller common to both, supports and bearings therein for the form-rollers, with which the said rollers are vertically movable, vertically-movable bearings for said vibrating rollers, cams on the bed, levers between said cams and supports for lifting the latter, springs applied to said levers for depressing the said supports, and lifters between said supports and the bearings for the vibrating rollers, substantially as and for the purpose herein set forth.

478,143. GAS-RETORT CHARGER. ANDRÉ COKE, Rheims, France, assignor, by direct and mesne assignments, to Socrates Newman and James Green, St. Louis, Mo. Filed Sept. 6, 1890. Serial No. 364,212. (No model.)



Claim.—1. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distances of the retort-mouths from each other, substantially as described.

2. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distance of the retort-mouths from each other, said inlet-openings being provided with flap-doors, substantially as described.

3. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distance of the retort-mouths from each other, and a feed-hopper adapted to register with the inlet-openings, substantially as described.

4. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distance of the retort-mouths from each other, and means for moving said shoot laterally, substantially as described.

5. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distance of the retort-mouths from each other, and counterbalance-weights to facilitate the manipulation of the shoot, substantially as described.

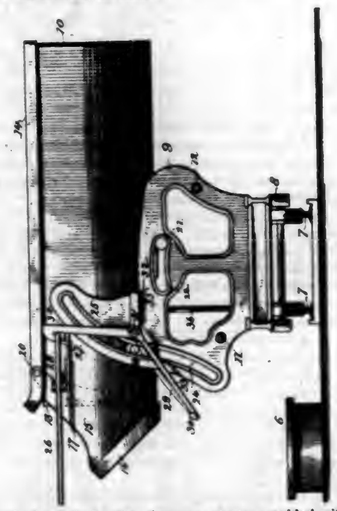
6. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distance of the retort-mouths from each other, and counterbalance-weights to facilitate the manipulation of the shoot, and guards extending along the sides of the shoot for the reception of the counter-weights, substantially as described.

7. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distances of the retort-mouths from each other, and stops for maintaining the shoot in its different adjustments, substantially as described.

8. An apparatus for charging retorts placed at different heights, comprising a longitudinally-movable shoot having an exit-opening adapted to register with the retorts and a number of inlet-openings spaced at distances apart equal to the distances of the retort-mouths from each other, a feed-hopper adapted to register with the inlet-openings, and a truck having a series of separate compartments discharging into said hopper, substantially as described.

9. An apparatus for charging retorts placed at different levels, comprising a truck, a movable shoot mounted upon the truck and having a discharge-opening adapted to register with the retort-mouths, and a second truck carrying a feed-hopper co-operating with the shoot, substantially as described.

478,144. APPARATUS FOR CHARGING GAS-RETORTS. ANDRÉ COKE and ALEXANDRE LENCAUCHEZ, Paris, France, assignors, by direct and mesne assignments, to Socrates Newman and James Green, St. Louis, Mo. Filed Nov. 28, 1890. Serial No. 372,763. (No model.) Patented in France Aug. 30, 1889, No. 200,501.



Claim.—1. A truck for charging gas-retorts, provided with one or more hoppers having roller-trunnions adapted to move in journal-slots in the truck-frame and tiltable transversely to the body of the truck, a bent bar on the hoppers, and a hook on the frame adapted to engage with said bent bar to secure each hopper in a horizontal position, substantially as described.

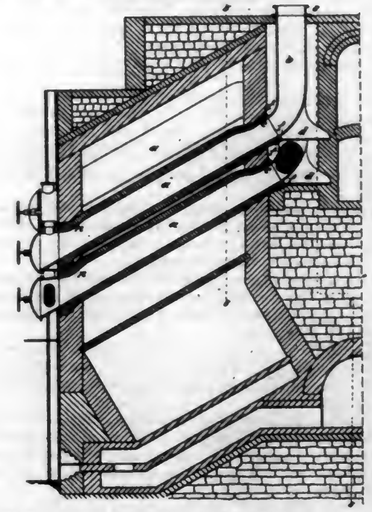
2. A truck for charging gas-retorts, consisting of one or more tilting hoppers provided with roller-trunnions arranged in slots formed in the frame-work of the truck, and slots also formed in extensions of said frame-work engaged by pins carried by the tilting hoppers, said slots being of such curvature in relation to the axis of rotation as to insure the discharge of the coal into the mouth of the chute whatever may be the angle of discharge, substantially as described.

3. A truck for charging gas-retorts, provided with one or more tiltable hoppers, each hopper having at its forward end a discharge-nose, and a swinging gate hinged to the hopper within said discharge-nose, the discharge-nose having a stop to limit the outward swing of the gate, substantially as described.

4. A truck for charging gas-retorts, provided with one or more tiltable hoppers, each having at its forward end a discharge-nose outwardly and downwardly inclined when the hopper is in a horizontal position, the outlet-aperture of said nose being upwardly inclined and the outer side of said nose being cut away, and a gate corresponding in shape to the cut-away portion and hinged to the hopper in front thereof, substantially as described.

5. A truck for charging gas-retorts, provided with one or more tiltable hoppers, each hopper having roller-trunnions adapted to move in journal-slots in the truck-frame and having guide-pins adapted to move in guide-slots in said frame during the tilting operation, a hook-catch adapted to engage with the hopper when the latter is in a horizontal position and attached to the frame on one side of the guide-slots and having a forwardly-projecting rod, and a swinging lock-bar attached to the frame on the other side of the guide-slots and having a hooked projection adapted to be sprung over the said rod, substantially as described.

478,145. GAS-RETORT. ANDRÉ COKE and ALEXANDRE LENCAUCHEZ, Paris, France, assignors, by direct and mesne assignments, to Socrates Newman and James Green, St. Louis, Mo. Filed Nov. 28, 1890. Serial No. 372,762. (No model.) Patented in France Aug. 30, 1889, No. 200,501, and in England Oct. 18, 1889, No. 16,486.



Claim.—1. A gas-retort bench provided with gas-retorts arranged at the angle of repose for the material treated, said inclined retorts being contracted at their ends, substantially as and for the purpose described.

2. A gas-retort bench provided with gas-retorts arranged at the angle of repose for the material treated, said inclined retorts being substantially semicircular in cross-section and contracted at their ends, substantially as and for the purpose described.

3. A gas-retort bench provided with gas-retorts arranged at the angle of repose for the material treated, said inclined retorts being substantially semicircular in cross-section and contracted at their upper ends for the purpose described, in combination with charging-chutes, the charging-mouths of the chutes being constructed to fit upon the contracted mouths of the retorts outside of the setting.

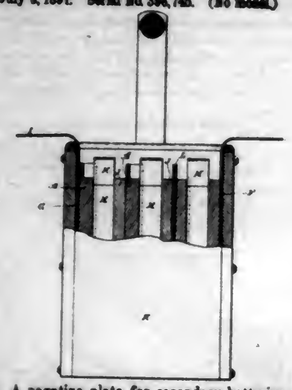
4. A gas-retort bench provided with gas-retorts arranged at the angle of repose for the material treated, said inclined retorts being contracted at their upper ends for the purpose described, in combination with charging-chutes, said chutes having their mouths constructed to fit upon the contracted ends of said retorts and provided with sole-pieces and supports for said sole-pieces.

5. A gas-retort bench provided with gas-retorts arranged at the angle of repose for the material treated, said inclined retorts being contracted at their upper ends for the purpose described, in combination with charging-chutes, said chutes having their mouths provided with sockets constructed to fit over the ends of the retorts, and a suitable packing (preferably of sand) between the sockets and retort ends.

6. A gas-retort bench provided with gas-retorts arranged at the angle of repose for the materials treated, said inclined retorts being contracted at their upper ends, in combination with charging-chutes constructed to fit upon the contracted ends of the inclined retorts, the planes of the joints being at right angles to the longitudinal axes of the retorts, substantially as described.

7. A gas-retort bench provided with gas-retorts arranged at the angle of repose for the material treated and contracted at their upper charging ends, whereby the entering coal will arrange itself in layers parallel to the floors of the retorts, but separated from the tops of the retorts by an increased gas-space, and whereby clogging is prevented, substantially as described.

473,146. SECONDARY BATTERY. HARRY E. DEY, New York, N. Y., assignor to Phœbus H. Alexander, same place. Filed Sept. 10, 1890. Renewed July 8, 1891. Serial No. 398,745. (No model.)



Claim.—1. A negative plate for secondary batteries, composed of finely-divided or spongy lead with compacted and projecting edges, as set forth.

2. A negative plate for secondary batteries, composed of finely-divided or spongy lead having its edges compressed or compacted and raised above one face, forming a flange or projecting edge along the sides and bottom of the plate, as set forth.

3. A negative plate for secondary batteries, composed of finely-divided or spongy lead with compressed or compacted and raised edges or flanges along the sides and bottom and a compressed rib along the top of the same, as set forth.

4. The combination of a series of negative plates composed of finely-divided or spongy lead with compacted and raised edges of rubber packing between the edges of said plates and forming the side walls of cells, as set forth.

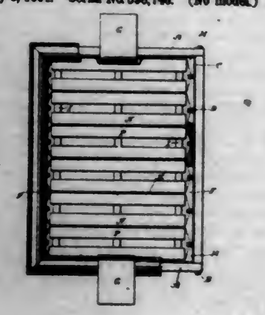
5. In a secondary battery, the combination, with a box or case, of one or more partitions dividing the same into separate compartments or cells and composed of a negative plate of active material and a lead sheet, and rubber packing between the edges of said partitions, as set forth.

6. In a secondary battery, the combination, with a box or case, of one or more partitions dividing the same into separate compartments or cells, each partition being composed of a negative plate of active material with a raised edge or flange on one face and a lead sheet, and rubber packing between the lead sheet of one partition and the raised edge of the negative plate of the next, as set forth.

7. The method of making secondary-battery plates herein described, which consists in filling a conducting form or mold with one active material, such as litharge, then passing an electric current through the mold and the material therein until such material is formed or reduced to spongy lead, and then removing the plate or mass of active material from the mold, as set forth.

8. The method of making secondary-battery plates herein described, which consists in filling a form or mold with an active material, such as litharge, then treating the same, then removing the plate thus formed from the mold, and then compressing it laterally to form solid edges, as set forth.

473,147. SECONDARY BATTERY. HARRY E. DEY, New York, N. Y., assignor to Phœbus H. Alexander, same place. Filed Sept. 17, 1890. Renewed July 8, 1891. Serial No. 398,746. (No model.)

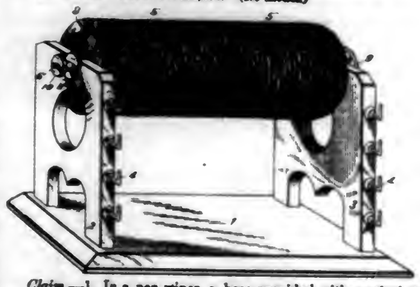


Claim.—1. The combination, in a secondary battery, with the positive and negative plates of the same, of metallic partition-plates interposed between contiguous active plates and provided with thickened or flanged edges, and packing between the edges of said partition-plates, as set forth.

2. In a secondary battery, the combination, with the positive and negative active plates, of partitions dividing the battery into a series of compartments or cells and composed of thin sheets of lead with thickened or flanged edges, interposed between contiguous positive and negative plates, and strips or ribs of rubber between the flanges of the said partitions, as described.

3. In a secondary battery, the combination, with partitions dividing the battery up into a number of compartments or cells and composed of thin lead sheets with thickened or flanged edges, and rubber packing between the edges or flanges of adjacent partitions, of positive and negative plates or blocks of active material, and interposed strips of insulating material for maintaining the same in contact with the partitions, as set forth.

473,148. PEN-WIPER. JOHN L. DU BOIS, Doylestown, Pa. Filed Mar. 7, 1892. Serial No. 424,067. (No model.)



Claim.—1. In a pen-wiper, a base provided with vertical standards, in combination with a revoluble shaft journaled thereon provided with absorbent material, substantially as described.

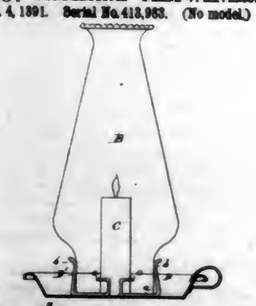
2. A pen-wiper consisting of a series of disks made of absorbent material mounted upon a shaft, in combination with vertical standards, upon which the shaft is journaled, and means, substantially as described, for turning the shaft, as specified.

3. In a pen-wiper, a series of disks mounted upon a shaft, in combination with vertical standards, upon which the shaft is journaled, and a thumb-screw and washer for rigidly securing the shaft to the standards, in the manner substantially as described.

4. The combination, in a pen-wiper, of a series of absorbent disks placed upon a shaft which is journaled in vertical standards, a wheel upon one end of said shaft, whereby the shaft and disks can be revolved, metal guards placed between the inner face of the standards and the disks, and a thumb-screw and washer upon the opposite end of the shaft, whereby the shaft is made rigid with the standards, all arranged and adapted to operate in the manner substantially as described.

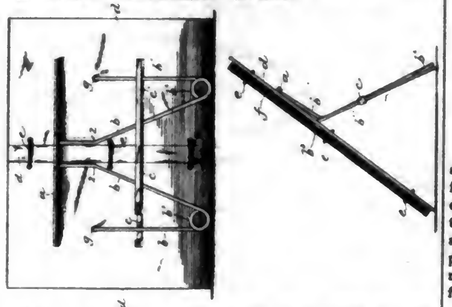
5. The herein-described pen-wiper, provided with a series of wiping-disks mounted on a revoluble shaft, for the purpose set forth.

473,149. CANDLESTICK. FRANK V. RAVENSON, Philadelphia, Pa. Filed Dec. 4, 1891. Serial No. 413,983. (No model.)



Claim.—The combination, in a candlestick, of a base A, wires D D', secured to said base, as at *c*, and having their ends bent up, as at *b*, to form chimney-supports and their bights bent up and around, as at *c*, to form a candle-support, and a chimney B, all substantially as and for the purposes set forth.

473,150. REST OR SUPPORT FOR MUSIC-BOOKS, &c. REUBEN C. PALMER, Foxborough, and HARRY PRESCOTT, Worcester, Mass. Filed Nov. 27, 1891. Serial No. 413,354. (No model.)



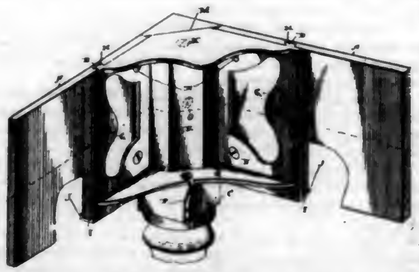
Claim.—1. The improved rest or support composed of a bar adapted to bear horizontally on the back of the article supported, and two downwardly-projecting legs attached to said bar, said legs having upwardly-projecting spring-arms adapted to move in a direction parallel with the back of said article and formed to engage the article, as set forth.

2. The improved rest or support composed of a bar adapted to bear on the back of the article supported, two legs attached to said bar, each leg being bent at an obtuse angle at a point below said bar, so that the bar and the upper portions of the legs are in one plane and the lower portions of the legs in another plane, whereby the lower portions of the legs are adapted to serve as braces, and spring-arms on said legs formed to engage the article supported, as set forth.

3. The improved rest or support composed of a bar adapted to bear on the back of the article supported, two legs attached to said bar, each leg being bent at an obtuse angle below the bar, a stay rod or bar attached to the lower portions of the legs, and spring-arms extending upwardly from the lower portions of the legs and passing through slots in said stay-rod, the upper ends of said arms being formed to engage the article to be supported, as set forth.

4. The combination of an article, such as a folio or book cover, having sockets at opposite sides of its center, a rest or support composed of a bar formed to bear on the back of said article, two legs extending downwardly from said bar, and spring-arms on said legs having bent ends formed to enter said sockets, as set forth.

473,151. TABLE. CHARLES R. GOOD and CHARLES S. WHIPPLE, Sunbury, Pa. Filed Dec. 26, 1891. Serial No. 416,351. (No model.)



Claim.—1. In a table, the combination, with a post having vertical slots formed on its faces and vertical slotted rails adapted to abut the said faces, of a casting having flanges which enter the said vertical slots in the post, and a socket portion which fits around the post between the said flanges, vertical flanges on the outer faces of the casting which engage the slots in the rails, and flanges on the lower edges of the sides of the casting upon which the rails rest, substantially as shown and described.

2. In a table, the combination, with the vertically-slotted leg and the vertically-slotted rails, of a casting having vertical flanges which engage the said slots a web formed on the top of the casting which rests on the top surface of the post, outwardly-projecting flanges on the lower edges of the casting which form rests for the rails, a web formed on the lower end of the casting, and a spring secured at its lower end to the leg and adapted to engage the said last-named web at its upper end, substantially as shown and described.

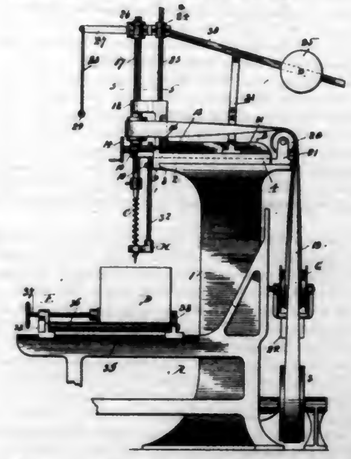
473,152. SLIDE-VALVE. JOSEPH A. HALEY, Fort Wayne, Ind. Filed July 13, 1891. Serial No. 399,274. (No model.)



Claim.—1. In a slide-valve, the combination of a main valve constructed with shortened faces adapted to actuate independent valve-faces, with independent valve-faces adapted to supplement said shortened faces, chamfered edges or openings in the shortened faces adapted to permit steam to act against the ends of the independent valve-faces and confine such action to said ends, and suitable packing adapted to permit the passage of steam between the valve-faces and permit the motion of the main valve without actuating the independent valve-faces.

2. In a slide-valve, the combination of a main valve constructed with shortened faces adapted to actuate independent valve-faces, with independent valve-faces adapted to supplement said shortened faces, and means to prevent the steam from passing between said valve-faces into the exhaust.

473,153. BORING-MACHINE. JOHN HARRIS, Chicago, Ill. Filed Dec. 12, 1890. Serial No. 374,423. (No model.)



Claim.—1. A boring-machine comprising a gang of bit-spindles arranged in series for boring along a piece of work and separately supported for universal lateral adjustment independently of one another, a set of carriers whereon the bit-spindles are respectively supported and operative to permit their respectively-allotted bits to bore into the work, and a set of independently-swinging vibratory adjustable guides for the carriers arranged in series side by side and each pivotally held at one of its ends, the carriers being applied for adjustment along the guides in directions directly from and toward the pivoted ends of their respectively-allotted guides, and the guides being pivoted so that they can be swung into and out of parallelism with one another, substantially as and for the purpose described.

2. A boring-machine comprising a gang of bit-spindles arranged in series for boring along a piece of work and separately supported for universal lateral adjustment independently of one another, a set of carriers whereon the bit-spindles are respectively supported and operative to permit their respectively-allotted bits to bore into the work, a set of vibratory guides for the carriers arranged in series side by side and each pivotally held at one of its ends, so as to permit said guides to be swung into and out of parallelism with one another, and belt-pulleys supported upon the pivoted end portions of the vibratory guides at points over the pivotal centers about which the guides are severally arranged to swing, the carriers being adjustable along the vibratory guides in directions radial to said pivotal centers, so as to adjust the bits along lines in alignment with the guides and radial to the centers over which the belt-pulleys are arranged, substantially as and for the purpose set forth.

3. A boring-machine comprising a gang of bit-spindles arranged

in series for boring along a piece of work and separately supported for universal lateral adjustment independently of one another, a set of carriers whereon the bit-spindles are respectively supported and operative to permit their respectively-allotted bits to bore into the work, supports for advancing and retracting the bit-spindles relatively to the work arranged upon the carriers, and a set of independently-swinging vibratory adjustable guides, along which the carriers for the bit-spindles are arranged to slide, substantially as and for the purpose set forth.

4. The combination, in a boring-machine, of a set of bit-spindles, a series of vibratory guides, a set of sliding carriers for the bit-spindles applied for adjustment along the vibratory guides and provided with bearings for the bit-spindles, and a series of guides 8 for the free ends of the vibratory guides, substantially as described.

5. The combination, in a boring-machine, of a bit-spindle, a vibratory guide, a sliding carrier for the bit-spindle applied for adjustment along the vibratory guide and provided with a bearing for the bit-spindle, and a weighted arm supported upon said slide and connected with the bit-spindle, substantially as described.

6. The combination, in a boring-machine, of a bit-spindle, a vibratory guide, a sliding carrier for the bit-spindle applied for adjustment along the vibratory guide and provided with a bearing for the bit-spindle, a steady-rod 23, arranged upon the sliding carrier, and a weighted swinging arm connected with the bit-spindle through the medium of a bearing arranged to slide upon the steady-rod, substantially as described.

7. In a boring-machine, a gang of bit-spindles operative for boring purposes and supported for universal lateral adjustment independently of one another, a set of vibratory guides 4, arranged side by side upon a bed 2 and pivoted at their rear ends at the rear side of the bed, carriers B for the bit-spindles arranged for adjustment along said guides, adjusting-screws 13 for adjusting the carriers along the guides, and suitable means for locking the vibratory guides in their respective adjustments upon the bed, substantially as described.

8. In a boring-machine, a gang of bit-spindles supported for universal lateral adjustment independently of one another, a set of separately-adjustable carriers for the bit-spindles, a set of vibratory guides for the carriers arranged in series side by side and each pivoted at one end, belt-pulleys 20, supported upon the pivoted ends of vibratory guides, driving-belts 19, passing over the pulleys on the vibratory guides and each arranged to drive two bit-spindles, and automatically-adjustable tightener-sheaves G, applied to the belts, substantially as described.

9. In a boring-machine, a gang of bit-spindles supported for independent lateral adjustment, a set of separately-adjustable guide-bearings for the bit-spindles arranged for adjustment laterally and independently of one another, so as to respectively position the same with reference to the points whereat the bits are to bore into the work, and guides H for the bits respectively appended to one and another of the guide-bearings for the bit-spindles, so as to respectively partake of the independent individual adjustments of the same and severally formed and positioned so as to provide guide-bores for the threaded portions of the bit-spindles at points close to the work and respectively in alignment with the bit-spindle guides, and thereby guide the bits at such points and prevent them from wabbling when rotated at high rates of speed, substantially as described.

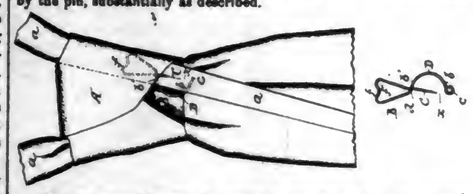
10. The combination, in a boring-machine, of a bit-spindle and bit, a guide-bearing for the bit-spindle, and a guide H for the threaded portion of the bit appended to the guide-bearing for the bit-spindle and comprising a tubular bushing 33, removably held within a holder 34, which is attached to the carrier, whereby bushings having differently-sized bores can be substituted one for another with reference to the size of bit employed, substantially as described.

11. In a boring-machine, a guide-bearing for the bit-spindle supported for lateral adjustment, so as to permit the bit to bore at different points in the work, and a guide for the bit proper arranged in alignment with the adjustable guide-bearing for the bit-spindle and held in rigid connection therewith, substantially as set forth, so as to maintain such alignment and insure the true working of the bit, the said guide for the bit being in position relatively to the guide-bearing for the bit-spindle to guide the bit adjacent to the work, and thereby permit the bit to be driven at a high rate of speed without wabbling.

12. In a boring-machine, a guide-bearing for the bit-spindle provided with an arm and a guide-bearing for the bit proper arranged upon said arm and held in alignment with said guide-bearing at a point to guide the bit close to the work, the connection between the two guides being adjustable to permit the guide for the bit to be adjusted toward and away from the guide-bearing for the bit-spindle in accordance with the position of the work, substantially as and for the purpose described.

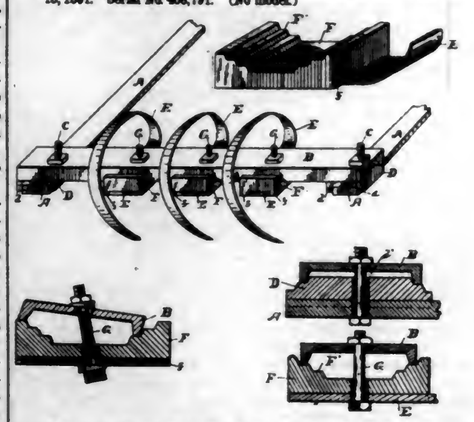
473,154. NECKTIE-FASTENER. JAMES HAYDEN, Philadelphia, Pa. Filed Sept. 21, 1891. Serial No. 406,401. (No model.)

Claim.—1. A necktie-fastener consisting of a pin and a laterally and permanently open bow-shaped guard, the lower arm of which extends beyond the point of the pin and terminates in a ring concentric with said point, the open side of the guard being next and partly closed by the pin, substantially as described.



2. An integral fastener for neckties, consisting of a pin, a bow-shaped guard having an open side partly closed by the pin and extending with its free end beyond the point thereof, and a stop formed by the upper portion of the guard, substantially as described.

473,155. HARROW. JOHN I. HOKE, South Bend, Ind. Filed Oct. 15, 1891. Serial No. 408,791. (No model.)



Claim.—1. The combination of the side bars, the tooth-bars, and the double-stepped blocks interposed between said bars, for the purpose and substantially as described.

2. The combination of a bar, the tooth secured thereto, and the double-stepped block interposed between the tooth and bar, substantially as and for the purpose specified.

3. The combination of the side bars and the tooth-bars, with the double-stepped blocks interposed between the said bars at their meeting or intersecting points, and the securing-bolts transfixing said blocks and bars, substantially as specified.

4. The combination of the flanged tooth-bar, the adjustable double-stepped block bolted thereto, the opposite steps of the block engaging the flanges of the tooth-bar, and the tooth attached to said block and adjustable therewith, substantially as specified.

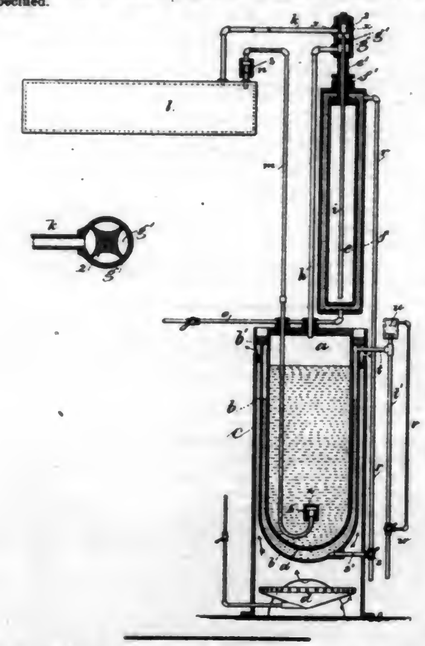
5. The combination of the side bars and the flanged tooth-bars, bolted thereto, with the double-stepped blocks interposed between said bars, and the teeth connected to said tooth-bars, substantially as specified.

6. The combination of the bar, the grooved block having the opposite sides of its groove oppositely stepped, and the bolt transfixing said block and bar and uniting the same, substantially as specified.

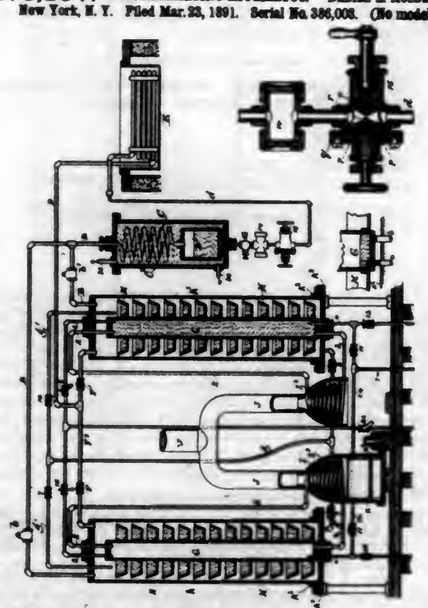
7. The combination of the side bars, the adjustable tooth-bars bolted thereto, and the double-stepped blocks interposed between said side and tooth bars, with the adjustable teeth bolted to said tooth-bars, and the double-stepped blocks interposed between said teeth and tooth-bars, all constructed and arranged to operate substantially as set forth.

473,156. REFRIGERATING-MACHINE. DANIEL L. HOLDEN, New York, N. Y. Filed Apr. 22, 1891. Serial No. 389,918. (No model.)

Claim.—The combination, in a refrigerating apparatus, of a still and heater for the same, a cylindrical condensing-vessel having a tube *d'* and coupling *g*, with two chambers at the upper end thereof and a pipe from the lower chamber leading to the still, the tube *i*, passing from near the bottom of the condenser through the tube *d'* and into the upper chamber of the coupling *g*, a valve 2 in said chamber and at the upper end of the pipe *i*, and a refrigerating-chamber *l* and pipe *k* therefrom to the upper chamber of the coupling, substantially as specified.



473,157. REFRIGERATING APPARATUS. DANIEL L. HOLDEN, New York, N. Y. Filed Mar. 23, 1891. Serial No. 386,008. (No model.)



Claim.—1. The combination, in a refrigerating apparatus, of an ammonia-still having within it a tubular temperature-regulator and a range of pans around the same, pipes and cocks for supplying water into the temperature-regulator and withdrawing the water therefrom, a coil of pipe for supplying steam to heat the regulators, said coil being below and connected at its ends to the temperature-regulator, whereby the proper amount of water is retained in the coil when the water is drawn off from the regulator, and a heater for the coil, whereby any excess of steam and pressure is avoided, substantially as specified.

2. The combination, in a refrigerating apparatus, of a still, a temperature-regulator within the still, pans surrounding and in close contact with the temperature-regulator, water-supply pipes and cocks to the temperature-regulator, a coil of pipe adapted to hold water and connected at its ends to the temperature-regulator, and a heater for heating such coil, substantially as set forth.

3. The combination, with the refrigerator and condenser in a refrigerating apparatus, of two stills, each containing a tubular temperature-regulator and a range of pans around the same, pipes and cocks for connecting the respective stills alternately with the refrigerator and condenser, pipes and cocks for supplying water to the temperature-regulators alternately and withdrawing the water therefrom, two separate coils of pipe for supplying steam to heat the regulators, said coils being below and connected at their ends to the respective temperature-regulators, whereby each coil is filled with water at the same time as the temperature-regulator to which it is connected and the proper quantity allowed to remain in the coil automatically when the water is withdrawn from the temperature-regulator, and a movable heater for vaporizing the water in the respective coils to heat the temperature-regulators alternately, substantially as specified.

4. The combination, in a refrigerating apparatus, of a still having a tubular temperature-regulator within it, pipes and cocks for supplying water into the temperature-regulator and withdrawing the water therefrom, and a steam-generator, and a heating device, and pipes connecting the steam-generator to the temperature-regulator, the water being supplied automatically into the steam-generator from the temperature-regulator, there remaining in the generator only the quantity of water required for steam when the water is withdrawn from the temperature-regulator, substantially as specified.

5. The combination, with the still or generator in a refrigerating apparatus, of a temperature-regulator within the still, a heater for the same, water-supply pipe and cock, and a discharge-pipe rising above the bottom of a temperature-regulator for retaining therein the water necessary to be vaporized by the heater for heating the temperature-regulator, substantially as set forth.

6. The combination, with the refrigerator, a condenser, and the holder for the liquid ammonia below said condenser, of a cock for regulating the passage of the liquid ammonia from the holder and a cylinder below the cock, having glass at both ends, so as to permit of observing the flow of the liquid ammonia through the cylinder to the refrigerating apparatus, substantially as set forth.

473,158. HANGER FOR ELECTRIC WIRES. THOMAS IRBON LEWIS D. TIBBETS, and CHARLES L. F. KELLOGG, Seattle, Wash. Filed Feb. 2, 1892. Serial No. 420,059. (No model.)

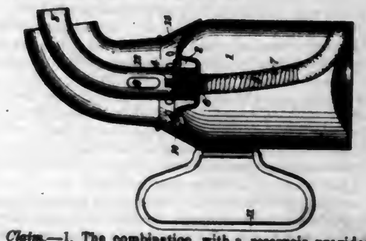


Claim.—1. An electro-conductor or trolley-wire support consisting of the interlocking jaws A B, in combination with the pivot-plate *l*, substantially as described.

2. In an electro-conductor or trolley-wire support, the combination of the interlocking jaws A B and plate *l* with the bolt *j* and nut *k*, substantially as described, and for the purpose specified.

3. In an electro-conductor or trolley-wire support, two interlocking jaws, a plate upon which said jaws articulate, and means for causing said jaws to close upon and bind the wire, substantially as described.

473,159. VAPOR-BURNER OR PLUMBER'S TORCH. HARRY A. KERNLAKE, Auburn, assignor to H. P. Clark, New York, N. Y. Filed Dec. 9, 1891. Serial No. 414,485. (No model.)



Claim.—1. The combination, with a reservoir provided with a cover having an upward extension adapted to hold a wick and provided with a vapor-discharge opening, of a wick provided with a compress and held in said extension, substantially as shown and described.

2. The combination, with a reservoir provided with a cover having an upward extension adapted to hold a wick and provided with a vapor-discharge opening, of a wick provided with a compress and held in said extension and means for heating the extension and generating vapor, substantially as shown and described.

3. The combination, with a reservoir the top of which is provided with a wick-holding socket having a vapor-discharge opening in its top, of a wick held and secured in said socket and means for heating the said socket and generating vapor, substantially as shown and described.

4. The combination, with a reservoir the top of which is provided with a wick-holding socket having a vapor-discharge opening and an oil or naphtha holder adjacent thereto, of a wick held in and suspended from said socket, substantially as shown and described.

5. The combination, with a reservoir the top of which is provided with a wick-holding socket having a vapor-discharge opening, of a wick held and secured in said socket and a tube surrounding the same and connected therewith, provided with air-ingress openings, and means for heating the parts and generating vapor, substantially as shown and described.

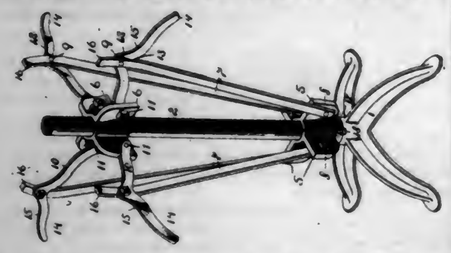
6. The combination, with a reservoir the top of which is provided with a wick-holding socket having a vapor-discharge opening and a cavity adjacent to said socket, of a wick provided with a compress and held in said socket and a tube provided with air-ingress openings surrounding the vapor-discharge opening, substantially as shown and described.

7. The combination, with a reservoir the top of which is provided with a wick-holding socket having a vapor-discharge opening, of a wick provided with a compress held in said socket, that end of the wick within the socket being inclosed within a cap having passages for oil or vapor, substantially as shown and described.

8. The combination, with a reservoir the top of which is provided with a wick-holding socket having a vapor-discharge opening, of a wick provided with a compress and held in said socket, substantially as shown and described.

9. The combination, with the reservoir of a vapor-burner or plumber's torch, of a wick provided with a compress, whereby the capillary action of the wick is limited.

473,160. WIRE-SUPPORTING REEL. WINFIELD S. LIVERMOOD, Kansas City, Mo., assignor to John A. Duncan and William Masters, same place. Filed June 22, 1891. Serial No. 397,061. (No model.)



Claim.—1. In a wire-supporting reel, the combination of a suitable standard and two series of arms pivoted together and having pivotal connection with said standard, one series having their outer portions adapted to rest below the wire coil and the other series having their upper portions adapted to press against the inner side of the wire coil, whereby the arms are adapted to automatically accommodate the size of the wire coil, substantially as set forth.

2. In a wire-supporting reel, the combination of a suitable standard, sleeves on said standard, and wire-coil-supporting arms pivoted to said sleeves and to each other about at the center of one arm and near the upper free end of the other arm, substantially as described, and for the purpose set forth.

3. In a wire-supporting reel, the combination of the base 1, standard 2, secured to the base, sleeves 3 and 4 on said standard, said sleeves having a free vertical movement on the standard, and arms 7 and 10, pivoted to the sleeves, respectively, and to each other, the arms 10 having shoulders near their pivotal points engaged by the arms 7, substantially as described, and for the purpose set forth.

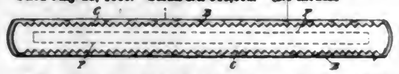
4. In a wire-supporting reel, the combination of the base 1, standard 2, sleeves 3 and 4 on the standard, wings 5 and 6 on the sleeves, respectively, and arms 7 and 10, pivoted to said wings, respectively, and to each other, the arms 10 having just beyond their connection with the arms 7 concavities and shoulders with which the latter arms are adapted to engage, substantially as described, and for the purpose set forth.

5. In a wire-supporting reel, the combination of the base 1, standard 2, sleeves 3 and 4 on the standard, and arms 7, pivoted at their lower ends to the sleeve 3 and pivoted near their upper ends to the arms 10, said arms 10 pivoted at their inner ends to the sleeve 4 and having shoulders 12, against which the arms 7 come in contact and thus limit their outward movement, substantially as described, and for the purpose set forth.

6. The combination of the base 1, standard 2, sleeves 3 and 4 on said standard, and arms 7 and 10, pivoted to said sleeves, respectively, and to each other, said arms 10 having a concave portion 15 just beyond their fulcrums 9, in which a coil of wire may rest, substantially as described, and for the purpose set forth.

7. The combination of the base 1, standard 2, sleeves 3 and 4 on said standard, and arms 7 and 10, pivoted to said sleeves, respectively, and to each other, said arms 7 being curved inwardly at their upper free ends in order that a coil of wire may be readily passed over the same, substantially as described, and for the purpose set forth.

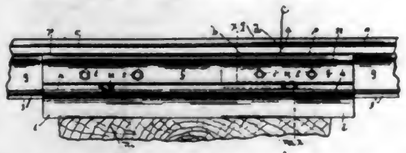
473,161. DRESS-STAY. CHARLES D. MACKAY, Toronto, Canada. Filed July 26, 1889. Serial No. 318,092. (No model.)



Claim.—1. As an article of manufacture, a stay formed of a layer B of a flexible hard substance, such as celluloid, a layer of spring-steel F, a layer E of water-proof adhesive material, and a layer of fabric C, the whole secured together as one slip by the layer E of water-proof adhesive material located between the steel and fabric covering and between the fabric covering and the portion of the layer of celluloid adjacent thereto, substantially as shown and described, and for the purpose specified.

2. As an article of manufacture, a stay formed of a layer B of a flexible hard substance, such as celluloid, in which a recess G is formed, a layer of spring-steel F, a layer E of water-proof adhesive material, and a layer of fabric C, the whole secured together as one slip by the layer E of water-proof adhesive material located between the steel and fabric covering and between the fabric covering and the portion of the layer of celluloid adjacent thereto, substantially as shown and described, and for the purpose specified.

473,162. RAIL-JOINT. JOHN NELSON, West Bay City, Mich. Filed July 27, 1891. Serial No. 400,859. (No model.)

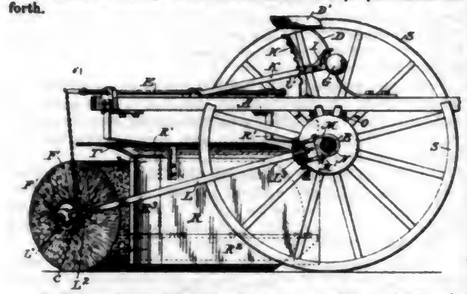


Claim.—In a rail-joint, the combination, with the scarfed ends of the rails overlapping each other and a tie for carrying the rails, a tie-plate between the rail and tie and with its ends projecting beyond the lateral edges of the rail and provided with spike-openings, of the fish-plates upon the opposite sides of the rail-web and provided on their lower portions with lateral extensions reaching over the ends of the tie-plate and with downwardly-turned flanges reaching into the tie and having on their upper edges an outwardly-turned portion with an upwardly-turned lip fitted to hug the under and lateral sides of the rail-tread, and the spikes passed through the said lateral extensions of the fish-plate and through the tie-plate and into the tie, substantially as set forth.

473,163. STREET-SWEEPING MACHINE. CHARLES X. O'NEILL, New York, N. Y., assignor to William Chapman, same place. Filed May 1, 1891. Serial No. 391,188. (No model.)

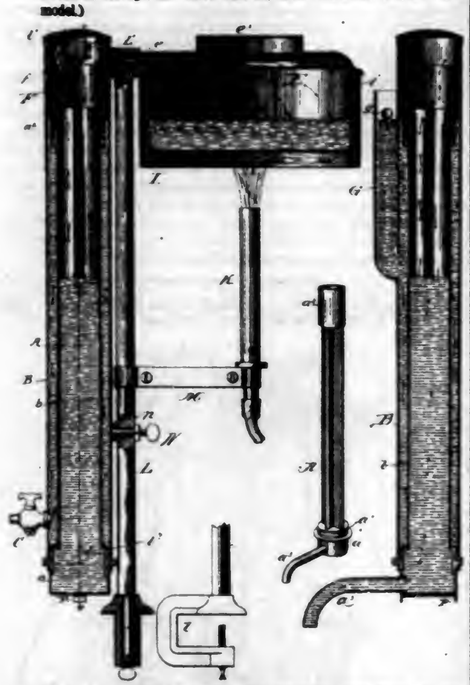
Claim.—1. In a street-sweeping machine, the combination of a counterbalancing-lever by which the broom may be raised and lowered, a laterally-notched standard engaging the free end of the lever, and a latch pivoted upon the side of the lever having lips, one of said lips being adapted to lap over the outer straight edge of the standard, while the other is adapted to lap over the outer edge of the lever, substantially in the manner and for the purpose herein set forth.

2. The combination, in a street-sweeping machine, with the revolving broom and its axial shaft, of the axle, the brace-bar extending from the outer end of said shaft to the proximate end of the axle, the block to which the brace-bar is pivoted, and the band swinging upon the axle to which the block is pivoted, forming a swivel-joint for the brace-bar, substantially in the manner and for the purpose herein set forth.



3. The combination, in a street-sweeping machine, with its axle, its inclined revolving broom, and the brace-bar pivoted to the outer end of the broom and swiveled to the axle, of the vertical mud-fender interposed between the broom and axle and the swinging piece hinged to the end of the fender next the brace-bar, substantially in the manner and for the purpose herein set forth.

473,164. APPARATUS FOR DISTILLING WATER. WILLIAM ROCHLITZ, Chicago, Ill. Filed June 22, 1891. Serial No. 397,160. (No model.)



Claim.—1. A distilling apparatus comprising a condenser, the supply-chamber *b*, surrounding the condenser and provided with a lateral enlargement b^4, a boiler, a feed-pipe D, arranged to lead from said lateral enlargement b^4 of the supply-chamber to the boiler, and a removable plug H, applied for closing an opening formed through the side of the lateral enlargement of the supply-chamber at a point opposite the inlet end of the feed-pipe, substantially as and for the purpose described.

2. The combination of the condenser arranged with its upper end in open communication with the boiler and provided with a coupling-sleeve a^3, closed at its lower end about the condenser at a point below the top end of the latter and arranged to provide a space between the two, and a cylindric jacket B, adapted to provide about the condenser a surrounding supply-chamber *b*, which connects with the lower portion of the boiler, said jacket being provided with an internally-arranged coupling-sleeve F, arranged to couple with the sleeve on the condenser, so as provide a separable joint, substantially as set forth, adapted to prevent steam on its way to the condenser from entering the said supply-chamber, substantially as described.

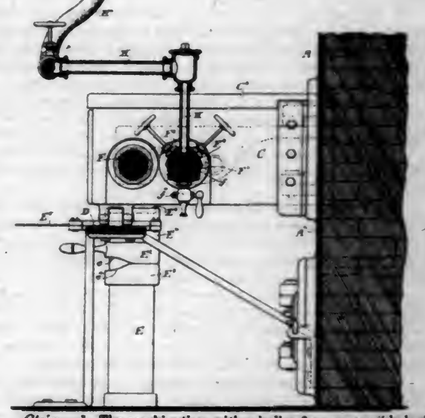
3. The combination, with the distilling apparatus comprising a supply-chamber connected with the boiler and a condenser with which the boiler is connected by a pipe *e*, of the supporting-standard provided at its upper end with an eye in which the pipe *e* is arranged to turn, and thereby permit the apparatus to be swung independently of standard, substantially as described.

4. The combination of the jacket B, adapted to provide about the condenser a supply-chamber *b*, which is connected with the boiler, the condenser removably arranged within the jacket and having a threaded base which is screwed into a threaded bearing in the lower end of the jacket, and a coupling, substantially as set forth, adapted to hold a body of water which shall provide a water seal between the upper open end of the condenser and the supply-chamber *b*, substantially as described.

5. The combination of the boiler, the condenser in open communication with the upper portion of the boiler, and the jacket B, adapted to provide about the condenser a chamber *b*, from which the boiler is supplied and provided with a side chamber G, communicating at its lower end with chamber *b* and at its upper portion provided with an overflow-outlet, the shell of jacket B being employed as the rear wall of said chamber G, substantially as described.

6. A distilling apparatus comprising a boiler, the cylindric shell or jacket B, the condenser A, made star-shaped in cross-section and arranged within the jacket, so as to provide a supply-chamber between the two, and a steam-tight coupling-joint, such as set forth, between the jacket and the upper end portion of the condenser, said condenser being at its lower end connected with the jacket, so as to close the supply-chamber at the bottom, and being at its upper end in open communication with the boiler, but connected below its open end with the jacket by said steam-tight coupling-joint, so as to close the supply-chamber at its top end, substantially as described.

473,165. OIL-BURNING DEVICE. HENRY T. RUSSELL, Chicago, Ill. Filed Feb. 4, 1889. Serial No. 298,587. (No model.)



Claim.—1. The combination, with a boiler-furnace provided with an opening or doorway, of an oil-burning apparatus comprising a movably-supported combustion-chamber movable toward and from the furnace and provided with a nozzle adapted to fit within the doorway, and with an exit-aperture for flames opening through said nozzle, a pipe supplying an admixture of atomized fuel and hot air to the said chamber, and a secondary air-pipe supplying air under pressure to said chamber, substantially as described.

2. The combination, with a boiler-furnace provided with an opening or doorway, an elevated horizontal bed with tracks or guides thereupon, of an oil-burning apparatus comprising a combustion-chamber supported on the tracks, movable toward and from the furnace on said tracks, and provided with a nozzle adapted to fit within the doorway and with an exit-aperture for flames opening through said nozzle, a pipe supplying an admixture of atomized fuel and hot air to the said chamber, and a secondary air-pipe supplying air under pressure to said chamber.

3. The combination, with a boiler-furnace, of a burner comprising a combustion-chamber made separate therefrom and provided with an outlet for flames opening into the said furnace, means movably sustaining the said chamber, whereby the latter may be moved horizontally

toward and from the opening of the furnace, an air-duct supplying an admixture of atomized fuel and air to said chamber, said air-duct being provided with an endwise-sliding section E', and a cam-ring surrounding the air-duct and adapted to both turn and move endwise thereon and constructed to act against the said sliding section to move the latter endwise, substantially as described.

4. The combination, with a combustion-chamber, of an air-pipe passing through said chamber adjacent to the end wall of the same and opening at its end into the chamber, and an oil-pipe supplying oil to said air-pipe, the said chamber being provided with a wall or partial partition arranged adjacent to and parallel with the air-pipe located between the end of the said pipe which enters the chamber and the part thereof which passes through the chamber, substantially as described.

473,166. MEAT-CUTTER. AMOS SHEPARD, Plantsville, Conn. Filed Dec. 5, 1891. Serial No. 414,183. (No model.)



Claim.—1. The combination of the standard having a clamp 12 formed thereon, the segmental case fitted for reception in said clamp, and a clamping device for binding the parts of said case within said standard, substantially as described, and for the purpose specified.

2. The combination of a case having substantially a cylindrical portion, a standard having formed thereon a clamp for embracing the cylindrical portion of said case when it is slipped endwise therein, and a clamping device for binding said cylindrical portion within said clamp, substantially as described, and for the purpose specified.

3. The combination of the clamp having the holding notches or recesses, the clamping device, and the case having the ledges fitted to said recesses, substantially as described, and for the purpose specified.

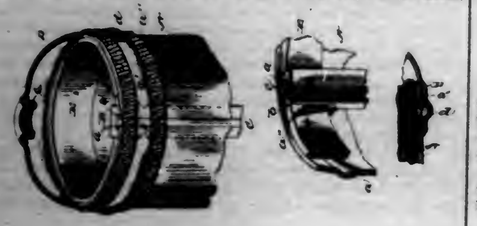
4. The combination of the segmental case, a screw fitted thereto, and clamping devices for holding said case and screw together, substantially as specified.

5. The combination of a screw having cutting-elevations with circumferential grooves or spaces between, a segmental case having cutting-elevations and spaces fitted in bearing contact with said cutting-elevations and grooves on said screw, and clamping devices, substantially as described, and for the purpose specified.

6. The combination of a screw having the short cylindrical portion 21, web 22, and cutting-elevations with circumferential grooves between, a segmental case having the plain band 19, feeding-ribs, cutting-elevations, and spaces, all fitted to said screw, and clamping devices, substantially as described, and for the purpose specified.

7. The combination of clamping devices, a segmental case having cutting-elevations with spaces between, and a screw having cutting-elevations and circumferential spaces fitted in bearing contact with said elevations and spaces of said case, with one circumferential space and groove on said case and screw at the delivery end, having its bottom extending continuously around the same, substantially as described, and for the purpose specified.

473,167. CONSTRUCTION OF BOILERS. WALTER S. SHIPE, Minerva, Ohio. Filed June 5, 1891. Serial No. 395,191. (No model.)



Claim.—1. The metallic joint herein described, consisting of the metal to be joined with its edges turned inward, a uniting-strip to receive said edges, and a calking-piece made separate from said strip and holding the edges of the metal securely therein, substantially as described.

2. The combination, with a cylindrical plate having inturned edges, of a joining-strip having a dovetail groove and a calking-piece expanded into said groove so as to fill the same and hold the edges of the plate in intimate contact with the walls of the groove in the strip, substantially as described.

3. The combination, with the cylindrical plate A, having inturned edges, of the joining-strip B, having a dovetail groove and a calking-piece substantially flush with the surface of the plate and holding the edges in intimate contact with the walls of the groove in the strip B, substantially as described.

4. The combination, with the cylinder A, having inturned edges, and a joining-strip B, of a key C, having its bottom split or grooved, substantially as described.

5. The combination, with a joining-strip B and the cylinder A, having its inturned edges held in said joining-strip, of a strengthening-ring E, tightly fitting against the sides of said strip B, substantially as described.

6. The combination, with a joining-strip B and the cylinder A, having its inturned edges held in said joining-strip B, of a strengthening-ring E, having its edges wedged tightly against the sides of said strip B, substantially as described.

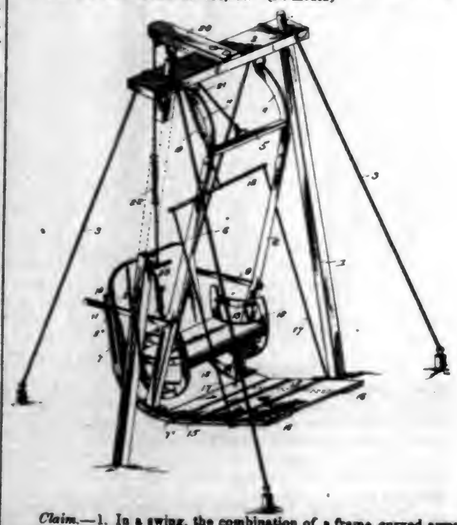
7. The combination, with a joining-strip B and the cylinder A, having its inturned edges held in said joining-strip B, of a strengthening-ring E, having one of its ends cut slightly diagonal, and a wedge F, arranged to tightly fit against the side of said strip, substantially as described.

8. The combination, with a joining-strip B and a head D, having a bead thereon, of the cylinder A, having a bead partially around the same coincident circumferentially with the bead in the head, but gradually terminating near the strip B, substantially as described.

9. The combination, with a head of a boiler having a flange with cuts or grooves inside thereof, of a cylinder having grooves or cuts on the surface covered by said flange and arranged at an angle to those on the flange of the head, substantially as described.

10. A boiler having an opening for a connection bent from the sheet of which said boiler is formed and provided with a reinforcing-washer surrounding the opening, substantially as described.

473,168. SWING. GEORGE W. SMITH, Montpelier, Ind. Filed Nov. 12, 1891. Serial No. 411,706. (No model.)

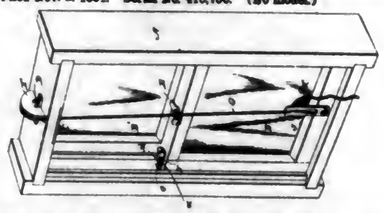


Claim.—1. In a swing, the combination of a frame, curved arms connected therewith, rails connected to said arms, a flexible plate carrying a back-rest connected to the rails, an adjustable seat carried by the rails, a hinged and folding platform connected to the rails, and an operating-cord, substantially as described.

2. In a swing, the combination of a frame, rails or bars supported therefrom, a seat carried by said bars, a flexible plate carried by the bars, having a back-rest adjustably connected to the bars or rails, a foot-rest hinged to the plate, and connections between the rest and bars for operating the swing.

3. In a swing, the combination of a frame, curved arms supported thereby, bars or rails connected to the arms, a seat carried by the bars, a flexible plate carrying a back-rest connected to the bars, a hinged plate or plates, a sectional platform mounted on said plates, a yielding or spring connection between the platform and bars, and a yielding or spring hand-cord, for the purpose described.

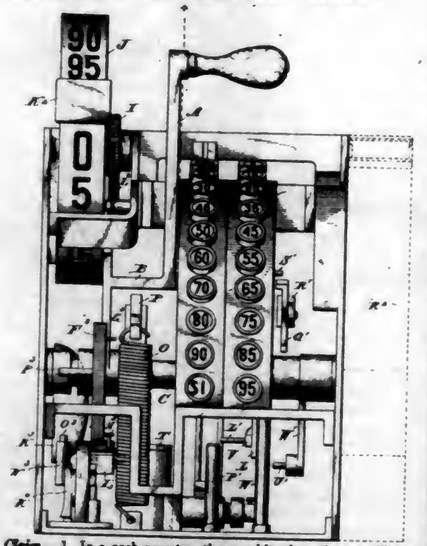
473,169. SASH-BALANCE. CHARLES E. WHIPPLE, Severy, Kans. Filed Nov. 3, 1891. Serial No. 410,750. (No model.)



Claim.—1. The combination of the casing having a recess and opening in the upper rail, the sashes mounted in the casing, the plate fitting in the recess of the casing, the uprights on the plate, having open bearings, the pulley detachably connected or mounted in said bearings, and the cord passing over the pulley and connected to the sashes.

2. The combination of the casing having the opening in the upper rail, the sashes mounted in the casing, the plate having the uprights arranged in the opening of the casing and provided with open bearings, the pulley detachably mounted in said bearings, the plate with wedge-shaped slot, and the cord passing over the pulley and connected to the plate and sash.

473,170. CASH REGISTER AND INDICATOR. THOMAS CARNEY, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Dec. 16, 1891. Serial No. 415,212. (No model.)



Claim.—1. In a cash-register, the combination of an oscillatory segment provided with a ratchet, an actuating-pawl mounted upon a suitable support to travel forward and back beside the segment at each operation of the machine, a series of movable stops or keys co-operating with the pawl during its backward movement to throw it into engagement with the ratchet at different points, and a cam or trip co-operating with the pawl at the end of its backward movement to disengage it from the ratchet of the segment.

2. In a cash-register, the combination of an oscillatory segment provided with a ratchet, an actuating-pawl mounted upon a suitable support to travel forward and back beside the segment at each operation of the machine, a series of movable stops or keys co-operating with the pawl in its backward movement to throw it into engagement with the ratchet at different points, and a cam or trip co-operating with the pawl at the end of its forward movement to throw it into co-operative relation to the keys.

3. In a cash-register, the combination of an oscillatory segment provided with a ratchet, an actuating-pawl mounted upon a suitable support to travel forward and back beside the segment at each operation of the machine, a series of movable stops or keys co-operating with the pawl in its backward movement to throw it into engagement with the ratchet at different points, a cam or trip co-operating with the pawl at the end of its forward movement to throw it into co-operative relation to the keys, and a second cam or trip co-operating with the pawl at the end of its backward stroke to disengage it from the ratchet and throw it out of co-operative relation to the keys.

4. In a cash-register, the combination of an oscillatory segment provided with teeth on its side, an actuating-pawl, and a locking pawl mounted upon a suitable support to travel beside the segment, and a series of stops or keys co-operating with the pawls to throw them into engagement with the teeth upon the segment.

5. In a cash-register, the combination of an oscillatory segment provided with two ratchets having oppositely-facing teeth, an actuating-pawl co-operating with one ratchet and a locking-pawl co-operating with the other ratchet, both pawls mounted upon a suitable support to travel forward and backward beside the segment at each operation of the machine, and a series of stops or keys co-operating with the pawls to simultaneously throw them into engagement with the ratchets at different points in the backward movement of the pawls.

6. In a cash-register, the combination of an oscillatory segment, a swinging frame co-operating with the segment to restore it to normal position at each forward stroke of the frame, a latch interposed between the segment and swinging frame to lock the two together while the frame is moving the segment to normal position, and a trip co-operating with the latch at the end of the forward movement of the frame to disconnect the latter from the segment.

7. In a cash-register, the combination of the oscillatory segment, the swinging frame co-operating therewith to restore the segment to normal position at each forward stroke of the frame, and a locking device thrown into operative position at the end of the forward stroke of the frame to prevent backward vibration of the segment.

8. In a cash-register, the combination of the oscillatory segment provided with a ratchet, a pawl mounted upon a suitable support to travel beside the segment, and two rows of stops or keys arranged side by side and both co-operating with the pawl to throw it into engagement with the ratchet of the segment at different points.

9. In a cash-register, the combination of two rows of stops or keys arranged side by side in radial order to a common axis, two series of laterally-displaceable rolling locking-disks confined in guideways, one co-operating with each row of keys to prevent the simultaneous operation of two or more keys in said row, and a device interposed between the two series of locking-disks and co-operating therewith to cause each series to lock all the keys of its row when any key in the other row is operated.

10. In a cash-register, the combination of the oscillatory segment provided with a ratchet, the rock-shaft, a frame fast thereon and projecting radially therefrom, the operating-handle projecting radially from the frame, the handle and frame constituting a lever for oscillating the rock-shaft, an actuating-pawl mounted upon the frame to travel beside the segment, and a series of stops or keys co-operating with the pawl during the backward movement of the handle and frame to throw the pawl into engagement with the ratchet at different points.

11. In a cash-register, the combination of the oscillatory segment E, provided with the ratchet K, the swinging frame B, the plate Z, pivotally mounted thereon, the lugs E' and E^3 upon the plate Z, and the two parallel rows of keys M, co-operating with the lugs E' and E^3, respectively.

12. In a cash-register, the combination of the segment E, provided with the ratchet K, the swinging frame B, the plate Z, pivotally mounted thereon, the lug E^3 upon the plate, a row of keys M, co-operating with said lug, the stud C upon the plate Z, and the cam or trip D^4, co-operating with said stud to throw the plate toward the ratchet K, substantially as described.

13. In a cash-register, the combination of the segment E, provided with the ratchet K, the swinging frame B, the plate Z, pivotally mounted thereon, the lugs E' and E^3 upon the plate Z, the two rows of keys M, co-operating with the lugs E' and E^3, respectively, the stud C upon the plate Z, and the cams or trips D' and D^4, co-operating with the stud C, substantially as described.

14. In a cash-register, the combination of the segment E, provided with the two ratchets K and L, the swinging frame B, the plate Z, and locking-pawl G', pivotally mounted on the frame B, the lug E^3 upon the plate Z, and the row of keys M, co-operating with the lug E^3, substantially as described.

15. In a cash-register, the combination of the segment E, the swinging frame B, the hook J', carried by the latter and co-operating with the pin L' upon the segment-frame, and the trip P', co-operating with the hook J', substantially as described.

16. In a cash-register, the combination of the segment E, the swinging frame B, co-operating therewith to restore it to normal position at each forward movement of the frame, the locking-plate Q', co-operating with the segment, and the arm W', moving with the frame B and co-operating with the plate Q' to throw it into locking position at the end of the forward movement of the frame, substantially as described.

17. In a cash-register, the combination of the segment E, provided with the ratchet K, an oscillating frame carrying a pawl co-operating with said ratchet, a series of keys co-operating with the pawl, the shaft G, geared to the segment, the indicator-wheel J, geared to the shaft, the sleeve Y', loose upon the shaft, the clutch between the sleeve and shaft, and the registering-wheel Z', fast upon the sleeve, substantially as described.

18. In a cash-register, the combination of the indicator-wheel J, the screen K^3, co-operating therewith and having a notch in its supporting-plate, the oscillating frame B, having a cam-surface M^3, and the lever L^3, interposed between the frame and screen-plate and co-operating with the notch in the latter and the cam-surface on the former, substantially as described.

19. In a cash-register, the combination of the two rows of keys M, radiating from the shaft C and provided with projections O^3, the two series of rolling locking-disks N^3, confined in guideways N, co-operating with the projections O^3 on the keys, and the pivoted cross-bar P^3, co-operating at its opposite ends with the locking-disks of the two rows of keys, substantially as described.

20. In a cash-register, the combination of the rock-shaft C, the arm W^3, fast thereon and provided with lug D^2, the bell-crank lever B^3, provided at its upper end with a hook co-operating with the lug D^2, and the money-drawer co-operating with the lower end of the lever, substantially as described.

21. In a cash-register, the combination of the rock-shaft C, the arm U^3, the link V^3, connecting the arm with parts fast upon the rock-shaft, the spring Y^3, put under tension by the arm U^3, and the locking-lever R^3, actuated by the arm U^3, substantially as described.

22. In a cash-register, the combination of the gong K^2, the striker K^4, its actuating-spring, the housing N^3 on the striker, the spring and plug O^3, confined in said housing, the rock-shaft C, and the pin P^3, carried by a support upon the rock-shaft and co-operating with the plug O^3, substantially as described.

23. In a cash-register, the combination of the rock-shaft C, the cam R, fast thereon, the lever P, carrying friction-roller Q, resting on cam R, the spring O, connected to the free end of the lever P, the speed-retarding contrivance T, and the link S, connecting the piston-rod thereof with the lever P, substantially as described.

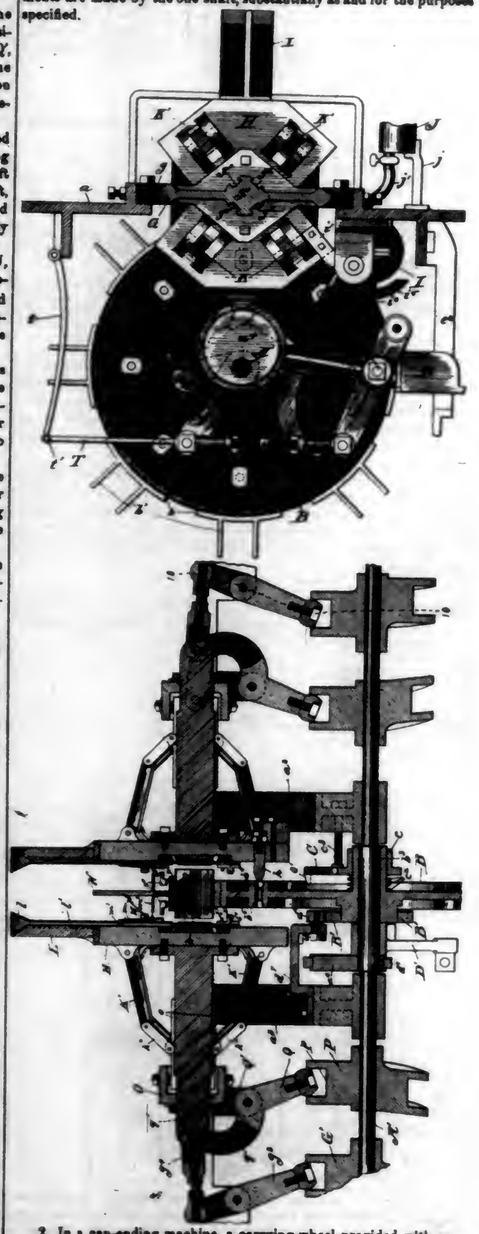
24. In a cash-register, the combination, with the money-drawer, of the tilting shelves S^3, S^4, and S^5, arranged and connected as described and inclosed in a suitable casing provided with a window, and an operative connection between said shelves and money-drawer, whereby the shelves are oscillated at each opening and closing of the drawer, substantially as described.

25. In a cash-register, the combination, with the money-drawer, of the casing R^3, opening at its bottom into the drawer-compartment and provided with a window, as W^3, the three tilting shelves S^3, S^4, and S^5, arranged therein as described and connected by the links T^3 and T^4, a spring U^3 for oscillating said shelves in one direction, and a lever V^3, co-operating with the drawer to oscillate them in the opposite direction, substantially as described.

26. In a cash-register, the combination of the money-drawer, the casing R^3, opening at its lower end into the drawer-compartment, having an opening X^3 in its upper end and a glass-covered window in its middle portion, the three connected tilting shelves arranged therein as described, the plate Z^3 for closing the opening X^3, a connection between said plate and one of the tilting shelves for oscillating the plate, and an operative connection between the shelves and money-drawer, whereby the shelves are oscillated at each opening and closing of the drawer, substantially as described.

473,171. MACHINE FOR CAPPING AND SEAMING THE ENDS OF CANS. ARNOLD D. COLEMAN, Chicago, Ill., assignor of one-half to Michael Cudahy, same place. Filed Oct. 20, 1890. Serial No. 368,669. (No model.)

Claim.—1. In a can-ending machine, a single main shaft, in combination with a carrying-wheel mounted loosely on said shaft and provided with peripheral flanges for receiving and holding the can-bodies, reciprocating die-carrie s mounted immediately above said shaft, reciprocating dies mounted radially in said carriers, and mechanisms mounted on and connected to said main shaft, whereby an intermittent movement is given to the carrier-wheel, a reciprocating movement to the die-carriers to and from said wheel, and a reciprocating movement to the movable dies on the carriers, whereby all these movements are made by the one shaft, substantially as and for the purposes specified.



2. In a can-ending machine, a carrying-wheel provided with peripheral receptacles for the can-bodies, in combination with mechanism for rotating said wheel intermittently, reciprocating slide-frames, and oiling devices and seaming dies, all mounted on said slide-frames, substantially as and for the purposes specified.

3. In a can-ending machine, a carrier-wheel provided with peripheral receptacles for the can-bodies, in combination with mechanism for imparting an intermittent rotary movement to said wheel, an oiling mechanism, an end-seaming mechanism, and a discharging device for removing the completed cans from said wheel, all arranged

to operate at successive stations in the movement of said carrier-wheel, substantially as and for the purposes specified.

4. The main shaft A', provided with an eccentric c^4, in combination with the carrier-wheel B, mounted loosely thereon, the ratchet-wheel B', fastened to the carrier-wheel, the swinging lever D, pawl-lever D', connected thereto; and the eccentric-rod d^3, connecting the eccentric-strap to said lever D, substantially as and for the purposes specified.

5. The main shaft A', in combination with the carrier-wheel B, mounted loosely thereon, the brake C, also mounted loosely on said shaft, the spring c^5, and the adjusting-screws c^6, substantially as and for the purposes specified.

6. The main shaft A', in combination with the carrier-wheel B, mounted loosely thereon, the brake C, also mounted loosely on said shaft and extending on each side thereof to the periphery of the wheel, the supporting-arm c^7, and the rod c^8, connected to the brake to prevent it from turning on the shaft, substantially as and for the purposes specified.

7. The bed or table *a* of the machine, in combination with the main shaft A', the intermittent rotating carrier-wheel B, mounted on said shaft, the slide-frames G, mounted on the table, the die-carriers H, secured to said frames, the cams G' on the shaft A', and the levers g^3, connected to the slide-frames, substantially as and for the purposes specified.

8. The reciprocating slide-frames cut out at their outer ends to provide a central core g', in combination with the die-carriers attached to said frames, the sliding dies mounted in said carriers, and a sliding collar mounted on the core g' and connected to the dies by mechanism whereby the latter are reciprocated by the reciprocation of the collar, substantially as and for the purposes specified.

9. The table or bed *a*, in combination with the slide-frames G, mounted thereon and cut out to provide a central core g', the die-carriers H, secured to said frames, the sliding die-plates mounted in said carriers and provided with slots k', the pivoted levers K', and the sliding collar O, mounted on the core g' and connected by links to the said levers, substantially as and for the purposes specified.

10. The main shaft A', in combination with grooved cams P, fastened thereto, the pivoted levers Q, the slide-frames G, having cores g', the collars O, mounted on said cores and connected to the levers Q, the pivoted die-levers K', the die-carriers H, and the sliding die-plates K, substantially as and for the purposes specified.

11. The slide-frames G, provided with cores g', having longitudinal grooves g^6, in combination with ribs *o*, fitted to said grooves, the collars O, mounted on the cores and connected to said ribs *o*, the die-carriers H, and the actuating die-levers K', linked to the ribs *o*, substantially as and for the purposes specified.

12. The oiler I, composed of the disk *i*, in combination with the ring i^3, flexible covering i^5, and an oil-supply conduit for admitting oil between the disk and covering, substantially as and for the purposes specified.

13. The oiler I, composed of the disk *i*, ring i^3, and flexible covering i^5, in combination with the die-carriers H, to which it is attached, the oil-reservoir J, and a flexible tube j', connecting said reservoir with the oiler, substantially as and for the purposes specified.

14. The die-carriers H, in combination with the receivers L for the can ends attached to said carriers and provided with guide-channels extending down to the center of the die-carriers, and pivoted levers M, provided with angular projections at each end adapted to be thrust across the said passages for the can ends for the feeding of the latter to the dies below, substantially as and for the purposes specified.

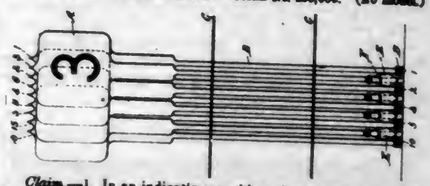
15. The reciprocating die-carriers H, in combination with the end receivers L, attached thereto and provided with continuing channels to the center of the die-frames, the vibrating levers M, provided with angular projections m' m^2, the spring m^3, connecting the lower ends of said levers, the intermittently-rotating wheel B, and a trip-stop arranged between the die-carriers and adapted to be lifted by projections on the wheel B into the space between the lower ends of the levers M, substantially as and for the purposes specified.

16. The reciprocatig die-carriers provided with receivers for the can ends and channels for conducting the same to the dies at the center of the carriers, in combination with the vibrating levers M, provided with projections m' m^2, the connecting-spring m^3, the vibrating lever N', mounted between the said die-carriers and provided with projecting lugs n^2, and the intermittently-rotating wheel B, provided with can-holders, which are adapted to lift the said lever N' when brought up underneath the same, substantially as and for the purposes specified.

17. The reciprocating die-carriers H, in combination with the supporting-arch N, arranged between them, the arm *n*, depending from said arch and provided with a foot n' at its lower end, the pivoted U-shaped lever N', supported by said foot and with its upper arm or member provided with lugs n^2, and the can end feed-levers M, connected by the spring m^3, substantially as and for the purposes specified.

18. The swinging arm U, provided with the flange *u* on one side, in combination with the intermittently-rotating wheel B, provided with bosses b^3, and the vibrating lever D, connected to the lower end of the arm U, whereby the flange on the latter is brought over a boss on the wheel, thereby providing a stop for the latter, substantially as and for the purposes specified.

478,172. CASH REGISTER AND INDICATOR. WILLIAM G. DOUGLAS, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Feb. 8, 1892. Serial No. 420,689. (No model.)



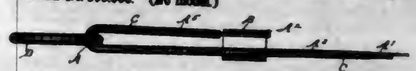
Claim.—1. In an indicating-machine, the combination, with two operating-keys or actuating devices, of an indicator representing the sum of their values and arranged to be moved into view by their joint operation, but to remain stationary upon the operation of either key alone.

2. In an indicating-machine, the combination, with two independently-movable indicators bearing indicating-numbers and their operating-keys or actuating devices, of a third indicator bearing a number representing the sum of the numbers upon the other two and arranged to be exposed to view by their joint operation, but to remain unexposed when only one of them is operated.

3. In an indicating-machine, the combination of two adjacent keys D, representing different values, the intermediate rod B, carrying an indicator A, representing the sum of their values, and a plate E, carried by and movable upon the rod B and co-operating with the keys D in the manner described.

4. In an indicating-machine, the combination of two adjacent keys D, representing different values, two indicators A, representing the respective values of said keys and carried by rods B, lifted by the keys, a third indicator representing the sum of the values of the two keys and carried by a rod intermediate the two keys, and a plate E, pivoted to said third rod and co-operating with the two keys, in the manner described.

473,173. SNAP-HOOK. ADELBERT FILKINS, Round Lake, N. Y., assignor of one-half to Thomas H. Bell, same place. Filed July 3, 1891. Serial No. 398,366. (No model.)



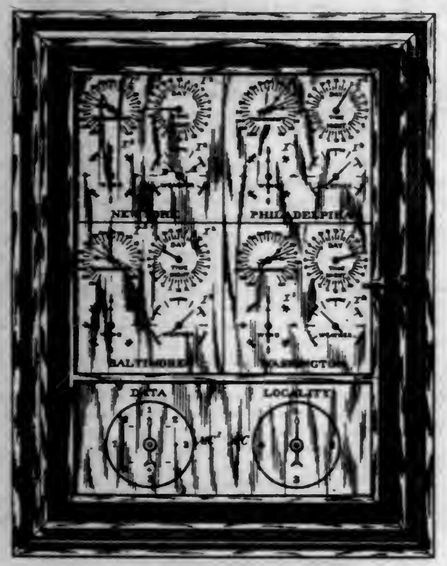
Claim.—1. In a spring safety-hook, the combination, with a U-shaped spring having legs of unequal length, means for attaching the longer leg to a strap, a keeper-slideway on the longer leg, keeper-stops at each end of the slideway, and a keeper-stop on the end of the shorter leg, of a keeper adapted to embrace both legs, movable on such slideway longitudinally of the longer leg to and from the shorter leg, substantially as described.

2. In a spring safety-hook, the combination, with a U-shaped spring, means for securing one leg of the spring to a strap, and a keeper-slideway comprising a transversely-contracted part of the shorter leg located at its end and a similarly-contracted part located intermediately of the ends of the strap-leg, of a tubular slide-keeper adapted to embrace both legs, movable longitudinally of the strap-leg slideway to and from the slideway on the other leg, and a keeper-stop on the end of the last-mentioned leg, substantially as described.

473,174. ELECTRIC INDICATING SYSTEM AND INSTRUMENT. HENRY J. HAIGHT, New York, N. Y. Filed Dec. 15, 1891. Serial No. 415,134. (No model.)

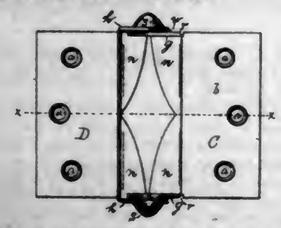
Claim.—1. A ratchet or star wheel capable of rotation in opposite directions, the rotary shaft or spindle carrying said star-wheel, and the spring *g*, bearing on said shaft or spindle, in combination with two oppositely-swinging levers on opposite sides of said ratchet or star wheel, each of said levers swinging through a definite and determined arc, a pivoted pawl pivoted to each of said levers, and a stop *r* and spring *s* on each lever, which co-operate to maintain said pivoted pawl in its normal position resting against said stop, each of said pawls in its normal position and in the normal position of its lever being entirely out of contact and interference with said ratchet or star wheel, but each of said pawls being brought into contact with one of the teeth of said ratchet or star wheel when its said lever is swung toward the same, thereby rotating said ratchet or star wheel, substantially as set forth.

2. A multiple circuit-closer MC^3, having a plurality of equally-spaced electrodes, a circuit-closing arm having a step-by-step movement which is brought successively into contact with and dwells upon each of said electrodes, and an additional electrode *w*, located in the path of said circuit-closing arm and between two of said equally-spaced electrodes, in combination with a second multiple-circuit closer MC, having a plurality of equally-spaced electrodes, a circuit-closing arm having a step-by-step movement, whereby it is brought successively into contact with and dwells upon each of said electrodes, and an actuating-magnet M, an electric generator N, an electric conductor connecting one pole of said generator with the circuit-closing arm of said multiple-circuit closer MC^3, an electric conductor 23, connecting said electrode *w* with said actuating-magnet M, and an electric conductor connecting said magnet M with the opposite pole of said generator, substantially as set forth.



3. A plurality of groups of electric indicating-instruments, each group of indicating-instruments having a plurality of said instruments, the indicating-instruments in one group corresponding with the instruments in the other group or groups, in combination with two multiple-circuit closers MC and MC^3, each having a plurality of electrodes, and a circuit-closing arm capable of a step-by-step movement, whereby it is brought successively into contact with and dwells upon each of the electrodes, each of the electrodes of one of said multiple-circuit closers, as MC^3, being connected in multiple with the corresponding electric indicating-instrument in each of said groups, and each of the electrodes of the other multiple-circuit closer MC being connected in multiple with all of the indicating-instruments in one of said groups, substantially as set forth.

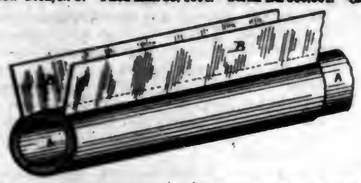
473,175. HINGE. HOWARD S. HART, New Britain, Conn. Filed Feb. 1, 1892. Serial No. 420,007. (No model.)



Claim.—1. A sheet-metal hinge in which the leaves are provided with integral pivotal lugs having pintle-sockets and bosses swaged or struck up to form the hinge-joint, substantially as described.

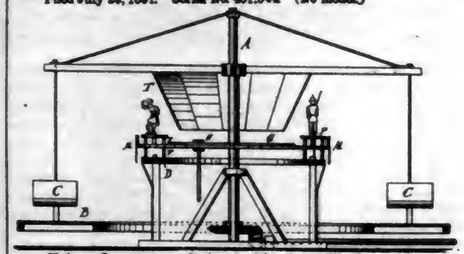
2. A hinge the leaves of which consist of the leaf-body, the back bent at an angle to said body and the pivotal lugs bent from the ends of said back, substantially as described, and for the purpose specified.

473,176. REFRIGERATING APPARATUS. DANIEL L. HOLDEN, New York, N. Y. Filed Mar. 23, 1891. Serial No. 386,001. (No model.)



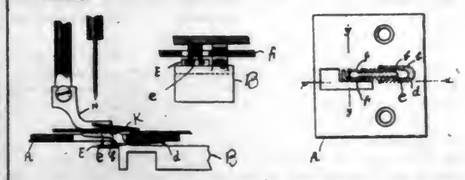
Claim.—The cooling-wings for refrigerator-pipes, formed of sheet metal with the middle portion bent to conform to and spring around the refrigerating-pipe, the end portions that form the wings projecting outwardly, substantially as specified.

473,177. ROUNDABOUT. WILLIAM B. MESSNER, Rockaway, N. Y. Filed July 29, 1891. Serial No. 401,044. (No model.)



Claim.—In a carrousel, the combination, with the usual rotating platform, of a circular track having segmental grooves arranged alternately along the inner and outer edges, a platform above said track, independent wheels on said platform running over those parts of the track provided with the grooves, rotating disks on the platform, and figures on said disks, substantially as set forth.

473,178. SEWING-MACHINE FOR FINISHING BUTTON-HOLES. EUGENE M. PHELPS and ROBERT W. THOMSON, Lynn, Mass., assignors to the Consolidated Button Hole Finishing Machine Company, Nashua, N. H. Filed Feb. 17, 1887. Renewed Mar. 2, 1892. Serial No. 423,558. (No model.)



Claim.—1. In combination with the stitch-forming and feeding mechanism of a sewing-machine and with the needle-hole plate, a pair of vertically-operating thread-gathering levers suitably supported beneath the needle-hole plate and projecting upwardly through openings therein, one upon each side of the line of the bar-cord, forming a channel for the cord and thrum ends, and operating mechanism for said levers, whereby the thrum ends may be gathered to the bar-cord and all bound together, substantially as described.

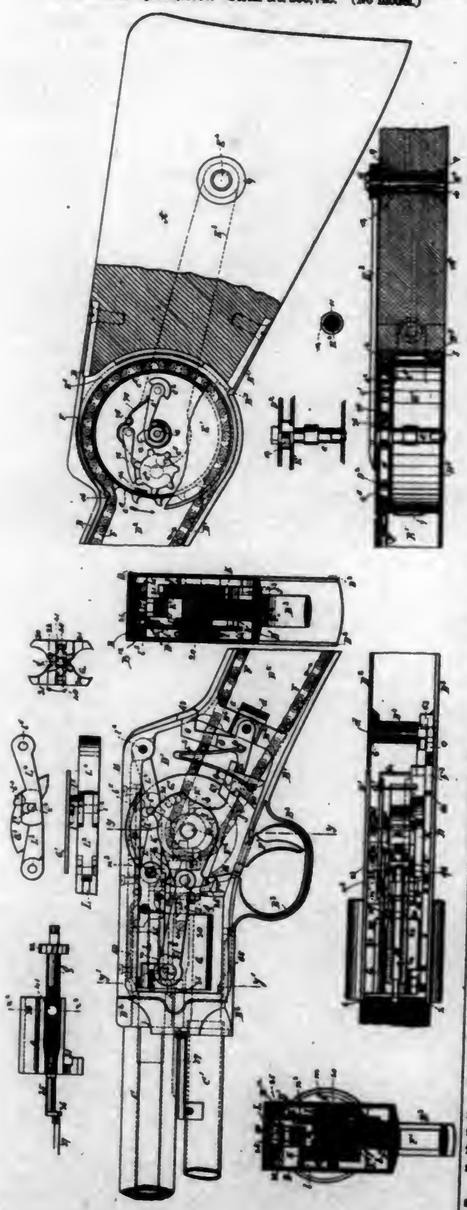
2. In combination with the stitch-forming and feeding mechanism of a sewing-machine and its needle-hole plate, openings in said plate upon each side of the line of the bar-cord, a series of vertically-operating thread-gathering levers pivoted beneath the needle-hole plate and having upturned ends, forming a converging channel, and operating means for moving said levers to cause the ends thereof to pass through said openings to the upper surface of the plate for gathering the thrum ends and bar-cord together, substantially as described.

3. In combination with the stitch-forming mechanism of a sewing-machine and its needle-hole plate, two or more vertically-operating thread-gathering spring-levers pivoted beneath the needle-hole plate and having upturned ends, openings in said plate on each side of the line of the bar-cord for the ends of the levers, and a forked piece E, attached to the feed-bar, for operating said levers, substantially as described.

4. In combination with the stitch-forming and feeding mechanism of a sewing-machine, a device for gathering and guiding loose threads, having a pair of upwardly-projecting points, the throat-plate A, having enlarged openings therein to allow for the passage of and lateral movement of said points, means for lifting said points, and means, substantially as described, for contracting the points directly in front of the needle-hole, substantially as described.

5. In combination with stitch-forming mechanism of a sewing-machine, a device for gathering and guiding loose threads, consisting of the loops *b d*, having upwardly-projecting and yielding points, the plate A, having openings for the passage of the same on each side of line of the bar-cord, and a loop *e*, the said loop having also upwardly-projecting points and having the laterally-bent portions *f f*, as described, the feed-bar, and fork E, substantially as described.

478,179. REPEATING-FIREARM. FRANK REES, South Orange, N. J. Filed Apr. 22, 1887. Serial No. 235,745. (No model.)



Claim.—1. The combination, with the gunstock and the cheeks, of the spring and spring-barrel for actuating the moving parts of the gun, a winding-crank attached to the axis of the spring-barrel, and a sliding crank-handle adapted to pass into a hole in the stock when the crank is in line therewith, substantially as set forth.

2. The combination, with the stock, the cheeks, and the spring and spring-barrel for actuating the firing mechanism in the gun, and a winding-crank, of the stop-wheel pivoted upon the cheek and having teeth upon its periphery, the finger upon the axis of the spring-barrel for turning the stop-wheel in one direction and a projection upon the spring-barrel for turning the stop-wheel in the other direction, and a projecting pin for blocking the rotation of the stop-wheel, substantially as set forth.

3. The combination, with the straps or receiver, spring and spring-barrel, and the connections to the moving parts in the firearm, of the side plates D D' D^2 D^3, beveled at their ends, and the screws *d* for holding the plates to the straps or receiver of the gun, substantially as set forth.

4. The combination, with the spring and spring-barrel in the stock and the chain for actuating the firing mechanism in a gun, of a breech-bolt and carrier in the rear of the barrel, a tumbler, and a chain-wheel that is eccentric to the axis of the tumbler, and a link connecting the tumbler and breech-bolt, substantially as set forth.

5. The combination, with the spring and spring-barrel in the gun-stock, wheels, and connections therefrom for actuating the firing mechanism in a gun, of the revolving tumbler and an axis on which the same revolves, the trigger, and trigger-slide below the tumbler and having a block and hook, forming an escapement for the end of the revolving tumbler, substantially as set forth.

6. The combination, with the revolving tumbler, the trigger, and the trigger-slide, of a safety-lock acting behind the trigger-slide and having an end that projects through a mortise in the strap or receiver at the small of the stock, substantially as and for the purposes set forth.

7. The combination, with the spring, spring-barrel, chain, and chain wheels or connections for actuating the firing mechanism in a gun, of a notched disk G', the tumbler K, having an axis upon which the disk G' and chain-wheel are attached, the trigger, the trigger-slide, the finger 64, projecting laterally at the rear of the trigger-slide and acting in connection with the notched disk G', the safety-lock O behind the trigger-slide, pivoted in the block B^4 and having the projection 65 adjacent to the rear end of the trigger-slide, and the spring F^2, acting between the safety-lock and the trigger-slide, substantially as set forth.

8. The combination, with the breech-bolt, the tumbler, and the link connecting the breech-bolt to the tumbler, of a spring, spring-barrel chain, and chain wheels or connections for revolving the tumbler, a carrier and sectional gearing for rotating and holding the same, and a swinging gate covering an opening in the housing, and means for opening the swinging gate to allow the cartridge-shell to pass out, substantially as set forth.

9. The combination, with the barrel and magazine, of the carrier and means for revolving the same, and the side plate D', having an opening adjacent to the carrier, the swinging gate to close the said opening, the axial pin 35, connected with the same, the crank 36 upon the axis 35, and the spring 37 for closing the gate, substantially as set forth.

10. The combination, with the revolving carrier and the swinging gate, of a spring to close the gate, and the gate-lifters sliding transversely across the axis of the carrier, and a cam for moving the gate-lifters, substantially as set forth.

11. The combination, with the breech-bolt, of a revolving tumbler and link for moving the breech-bolt, toggle-arms for supporting the breech-bolt against the recoil, a disk connected to and revolving with the tumbler, a stud upon the disk for holding the toggles during the explosion of the cartridge, and a hammer upon the disk, and a firing-pin sliding through the breech-bolt, substantially as set forth.

12. The combination, with the magazine, the revolving carrier, the breech-bolt, and the firing-pin within the same, of a hammer to act upon the firing-pin, and a retractor pivoted upon the breech-bolt and acting to withdraw the firing-pin as the breech-bolt is moved back, substantially as set forth.

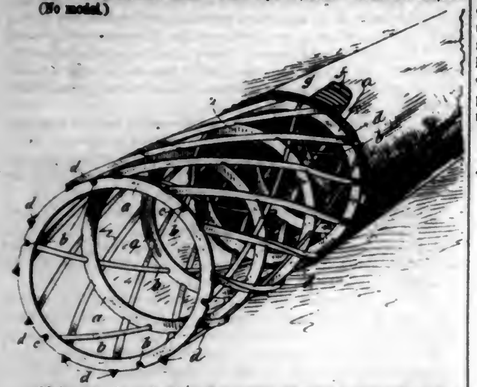
13. The combination, with the magazine and the revolving carrier, of a swinging gate covering the opening through which the cartridge-shell is ejected, and a retaining-spring at the rear end of the magazine to keep the cartridges in the magazine, against which the gate acts as it is closed, substantially as set forth.

14. The combination, with the spring-barrel and spring in a magazine-gun, of an axis for the spring-barrel and a winding-crank permanently connected together, and a pawl to engage one notch in the axis for holding the parts with the winding-crank against the side of the stock, substantially as specified.

15. The combination, with the sliding breech-bolt having grooved sides, of the receiver-strap B, grooved on its under side to form a slide-

way for the breech-bolt and having one portion B^{13} below the fixed portion of the strap B removable to allow for the insertion of the breech-bolt, substantially as set forth.

473,180. DANDY ROLL. CHARLES R. RICHARDSON and WILLIAM H. POOT, Springfield, Mass. Filed Apr. 22, 1891. Serial No. 389,897. (No model.)



Claim.—1. In a dandy-roll, a series of spaced supporting-rings having their edges notched, and a series of ribs running from end to end of the roll in gradual helical lines and let into said ring-notches and held in confinement thereat, and an outer series of ribs running from end to end of the roll in reversed helical lines and having dovetail connections with the said rings, substantially as and for the purpose set forth.

2. An improved dandy-roll, the same consisting of a series of supporting-rings having their edges notched, and a series of ribs running from end to end of the roll in gradual helical lines and let into said notches of the rings, and an outer series of ribs running from end to end of the roll in gradual helical lines and being throughout the entire length of each at the same distance from the axis of the roll, so that all supporting-points for portions of the outer covering on all of said outer ribs are coincident with an imaginary peripheral surface of a cylinder, and said outer ribs crossing over and in contact with the ribs of the inner series without crimping or departure from their general helical course, and the usual dandy-roll covering placed directly upon the said outer helical series of ribs, for the purposes set forth.

3. In a dandy-roll, a series of spaced supporting-rings having their edges notched, and a series of ribs running from end to end of the roll in gradual helical lines and let into said notches to lie below the edges of the rings and held in confinement thereat, and an outer series of ribs of prismatic form running from end to end of the roll in reversed helical lines, the same crossing over and in contact with the ribs of the inner series and having dovetailed connections with the outer edge portions of said rings, which are properly notched therefor, substantially as and for the purposes set forth.

4. In a dandy-roll, a suitable annular supporting-frame having an outer series of prismatic wire ribs running from end to end of the roll in suitable lines and having dovetail engagements with the portions of the supporting-frame next within said ribs, for the purpose set forth.

473,181. COMBINED FOLDING COUCH AND CRADLE. WILLIAM B. TALIAFERRO and CHARLES K. TALIAFERRO, Middlesborough, Ky. Filed Jan. 23, 1892. Serial No. 419,589. (No model.)



Claim.—1. The combination, in a folding crib, of a concave front section consisting of the curved frames A A', having, respectively, segmental end pieces *a a'* and united by longitudinal slats E, a concave back section consisting of the curved frames B B', having, respectively, end pieces *b b'* and hooks D D' and united by longitudinal slats E, a rod C, serving as a common pivot that couples the jointed ends of said frames A B A' B', and flexible connections H H', that limit the opening of said front section when the back section is suspended from a suitable support, all as herein described, and for the purpose set forth.

2. The combination, in a folding crib and cradle, of a concave front section consisting of the curved frames A A', having, respectively, segmental end pieces *a a'* and united by longitudinal slats E, a concave back section consisting of the curved frames B B', having, respectively, end pieces *b b'* and hooks D D' and united by longitudinal slats E, a rod C, serving as a common pivot that couples the jointed ends of said frames A B A' B', and flexible connections H H', that limit the opening of said front section when the back section is suspended from a suitable support, said frames being provided with sockets *i i'* to admit pins I I', projecting from the concave upper surface of a detachable rocker J, all as herein described, and for the purpose set forth.

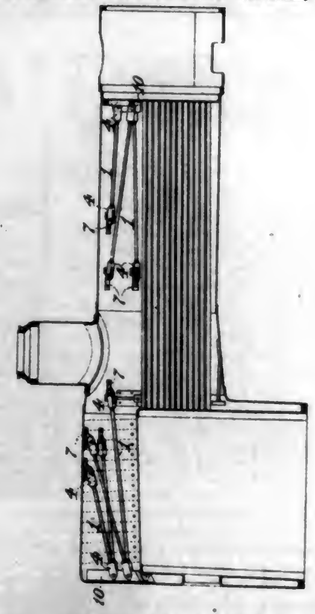
473,182. PACKING FOR PISTONS. AMBROSE A. TRIFOLD and CHARLES F. DAVENPORT, Brooklyn, N. Y. Filed Dec. 17, 1891. Serial No. 415,345. (No model.)



Claim.—1. The packing for steam and other pistons, formed of the two split expansive rings C and D, the ring D having the flanges 3 and 4, the flange 3 being within the ring C, substantially as set forth.

2. The packing for steam and other pistons, composed of the two split expansive rings C and D, the ring D having a flange 3 within the ring C, so that the flat surface 5 is composed of parts of the rings C and D and the cylindrical surface 6 is also composed of portions of the surfaces of the rings C and D, the splits in the respective rings not coinciding, substantially as set forth.

473,183. BOILER-BRACE. DANIEL A. WIGHTMAN, Allegheny, Pa. Filed Dec. 16, 1891. Serial No. 415,266. (No model.)

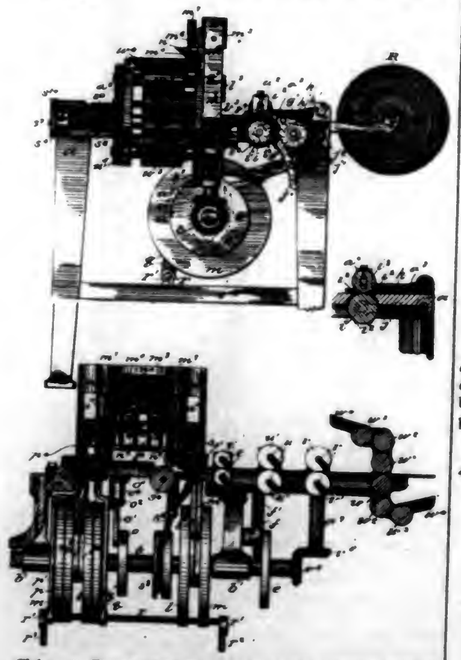


Claim.—1. A weldless boiler-brace in which are combined a brace-rod having oppositely-leading screw-threads on its respective ends and two heads, each of which is threaded to engage one of the threads of said rod and provided with a jaw adapted to engage a fixed bearing-piece and having eyes to receive a coupling-pin for connection thereto, substantially as set forth.

2. The combination of a brace-rod having screw-threads on both its ends, two heads, each threaded to engage one of the threads of said rod and provided with a coupling-pin eye, two bearing-pieces or ties, each adapted to be secured to a boiler-sheet and provided with coupling-pin eyes, and coupling-pins passing through the eyes of the brace-rod heads and bearing-pieces, substantially as set forth.

3. The combination, with a steam-boiler, of a series of bearing-pieces or ties fixed to the heads or ends of the boiler, a series of bearing-pieces or ties fixed to the shell of the boiler, and a series of longitudinally-adjustable braces, each coupled at one end to a head or end bearing-piece and at the other to a shell bearing-piece, substantially as set forth.

473,184. MACHINE FOR MAKING BOX-COVERS. GEORGE A. BARNUM, New Haven, Conn. Filed Mar. 11, 1891. Serial No. 384,557. (No model.)



Claim.—1. The combination, with a bed and a rotative shaft, of a cam on said shaft, a vertical plate loosely mounted in and projecting upward through the bed, a form fixed to the top of said plate, a bent pivoted lever having one elastic arm connected with said vertical plate and another arm connected with said cam, substantially as set forth and described.

2. The combination, with a bed, of two pinions journaled in bearings thereon, each pinion having a folding device secured thereto, two reciprocating racks in ways on said bed, said racks being in position to engage said pinions, two levers which are pivoted at their lower ends to a fixed rod and have pivoted connection at their upper ends with said racks, and mechanism for vibrating said levers, substantially as set forth and described.

3. The combination, with a bed, of two pinions journaled in bearings thereon, folding devices connected with said pinions, two racks in position to engage said pinions, two levers, each of which is connected at its upper end by a link with one of said racks and pivoted at its lower end to a fixed rod, two wheels on a rotative shaft, said wheels being provided with grooves, and rollers secured to the sides of said levers in position to run in the said grooves, substantially as set forth and described.

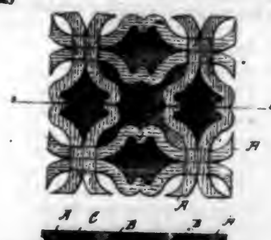
4. The combination, with a bed provided with guide-posts, of two pairs of vertically-movable plates projecting upward from said bed, each pair of said plates being provided with a cross-bar which is movable on said guide-posts, a glue-reservoir connected with the upper cross-bar and provided with a series of vertical tubes extending through the reservoir, each of said tubes containing a plunger, a knife connected with the lower cross-bar, and a driving-shaft provided with cams having connection with said vertical plates, substantially as set forth and described.

5. The combination, with a bed provided with guide-posts, of two vertically-movable plates projecting upward through said bed and provided with a cross-bar which is movable on said guide-posts, a plate secured to said cross-bar and provided with studs, and a glue-reservoir connected with said studs, the latter being provided with springs whereby the reservoir has an elastic connection with said cross-bar, substantially as and for the purposes described.

6. In a box-cover machine, in combination with the driving-shaft, a cam borne on the shaft, a lever with a spring end oscillated by the cam, and a form adjacent to the folders, vibrated by the oscillation of the lever, substantially as specified.

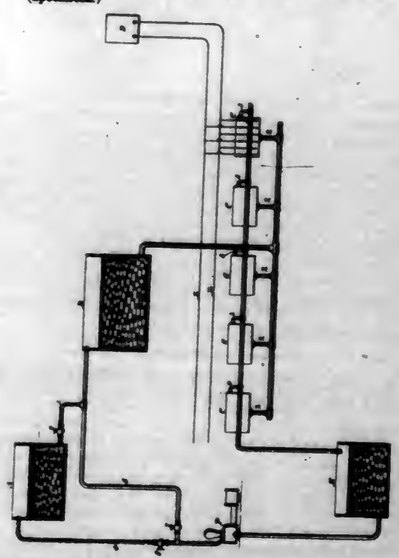
7. In a box-cover machine, in combination with the driving-shaft, a cam, a lever oscillated by the cam, a slide reciprocated by the lever, a roll borne by the slide, and a jointed shaft connecting the roll with a rotary pinion, whereby revolution is imparted to the vibrating roll, substantially as specified.

473,185. ORNAMENTAL WOOD AND METAL WORK. ALLAN R. CAMERON, Williamsport, Pa. Filed Feb. 4, 1891. Serial No. 380,140. (No model.)



Claim.—The combination, in a slab or panel of the type described, of a series of ornamental wooden strips A A A, halved together to produce a grille or lattice work and provided with grooves B, and metal blocks C, filling the interstices in said lattice-work and having ribs or projections entering said grooves.

473,186. METHOD OF PRODUCING METALLIC ZINC. PARKER C. CROATE, Brooklyn, N. Y. Filed Jan. 5, 1891. Serial No. 376,715. (Specimens.)



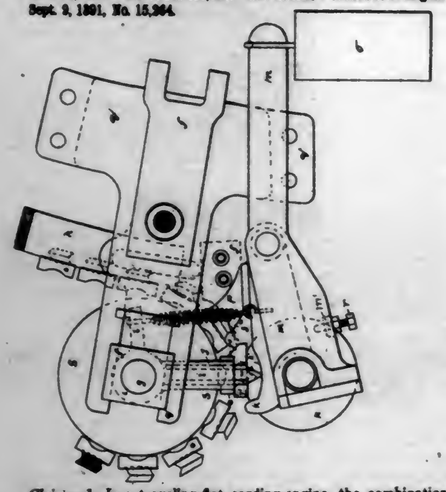
Claim.—1. The above-described process of producing metallic zinc from its ores, which consists in separating the zinc and the equally volatile and more volatile constituents from the less volatile constituents of the ore by the use of heat and a reducing agent, then volatilizing and oxidizing the reduced metal, thereby obtaining a condensed

oxidized fume, subjecting this fume to a moderate heat in order to expel its soluble constituents more volatile than zinc, treating the remaining product with dilute sulphuric acid as a solvent, and finally subjecting the resulting solution to the action of an electric current to precipitate the zinc, as set forth.

2. The above-described process of producing metallic zinc from its ores, which consists in separating the zinc and the equally volatile from the less volatile constituents of the ore by the use of heat and a reducing agent, then volatilizing and oxidizing the reduced metal, thereby obtaining a condensed oxidized fume, treating this fume with dilute sulphuric acid as a solvent, and finally subjecting the resulting solution to the action of an electric current to precipitate the zinc, as set forth.

3. The above-described process of producing metallic zinc, which consists in forming an electrolytic solution by dissolving in dilute sulphuric acid oxide of zinc, however obtained, in the state of fume free from the lighter soluble impurities, such as the oxides of antimony, arsenic, selenium, &c., and then treating this solution by electrolysis, as set forth.

473,187. MECHANISM FOR GRINDING THE TRAVELING FLATS OF CARDING-ENGINES. BENJAMIN A. DOBSON and WILLIAM I. BROOKLEY, Bolton, England, assignors to Dobson & Barlow, same place. Filed Nov. 13, 1891. Serial No. 411,830. (No model.) Patented in England Sept. 9, 1891, No. 15,264.

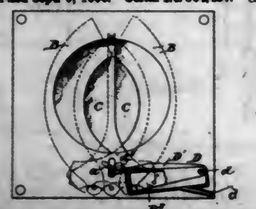


Claim.—1. In a traveling-flat carding-engine, the combination, with the grinding-roller supported in a counterbalanced lever, of the dummy or guide *k*, the slide or intermediate piece *j*, and the lever *i*, centered on the bowl-shaft, substantially as herein set forth.

2. The combination, with the grinding-roller and the guide-surface *k'*, both supported and kept to their work by a weighted lever, of the slide or intermediate piece *j*, one portion of which is prepared to receive the working surface of the flat and another is supported by the aforesaid guide-surface *k'*, substantially as herein set forth.

3. The combination of the slide *f*, the bowl-shaft *g*, bowl *e*, lever *i*, slide or intermediate piece *j*, with its prepared surfaces and finger j^3, as specified, dummy or guide *k*, with its prepared surface *k'*, the balanced lever *m*, snug *m'*, screw *r*, spring *p*, and incline f^3, all substantially as and for the purposes herein set forth.

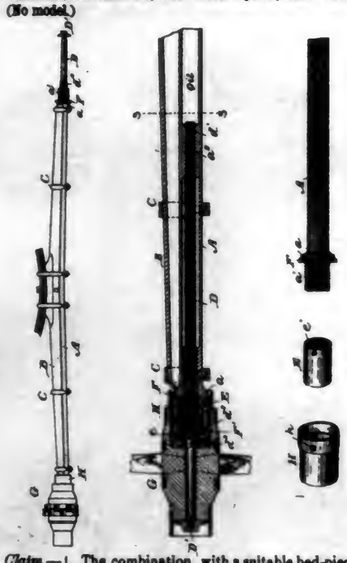
473,188. PHOTOGRAPHIC SHUTTER. GEORGE F. GREEN, Kalamazoo, Mich. Filed Sept. 9, 1890. Serial No. 364,457. (No model.)



Claim.—1. In a photographic apparatus, the combination, with the pivoted shutter-wings, of the pneumatic engine comprising the outer elongated casing, the piston pivoted at one end within said casing and provided at its free end with an arm having a pin or extension adapted to engage the pivoted ends of the shutter-wings, and an air-forcing device communicating with the interior of the piston-case, substantially as described.

2. In a photographic apparatus, the combination, with the shutter-case and the pivoted shutter-wings, of the pneumatic engine comprising the outer triangularly-shaped casing, the correspondingly-shaped piston pivoted at one end within said casing and provided at its free end with an arm having a lateral extension or pin adapted to engage the pivoted ends of the shutter-wings, and the air-tube and bulb communicating with the interior of the piston-case, substantially as set forth.

473,189. VEHICLE-AXLE. ADOLPH HOEFFLER and FRANK L. G. CHAPMAN, Stevens Point, Wis. Filed Sept. 12, 1891. Serial No. 405,506. (No model.)



Claim.—1. The combination, with a suitable bed-piece, of a tubular axle secured to the bottom thereof having a shoulder and containing outer and inner bearings, the latter forming an oil-chamber between them, the spindles mounted to rotate in said bearings and each having a collar adjacent to the end of the axle, the coupler screwed upon the end of the axle and having a flange fitting the axle outside of the collar, the annular dust-guard or washer clamped between said coupler and the shoulder, and the hub having a flange overhanging the washer, substantially as described.

2. The combination, with a tubular metallic axle having enlarged threaded ends and shoulders integral therewith, of a bed-piece fitting the upper side of said axle and confined between the shoulders, clips for holding together the axle and bed-piece, spindles rotating in the tubular axle and provided with collars adjacent thereto, and flanged couplers screwed upon the axle with their flanges bearing against the collars on the spindles, substantially as described.

3. The combination, with a tubular metallic axle having enlarged threaded ends and shoulders adjacent thereto, of spindles rotating in said axle and provided with collars adjacent to the ends thereof, flanged couplers screwed upon the axle with their flanges bearing outside of the collars in the spindles, and hubs rigidly secured to the spindles, the inner end of each hub being counterbored and provided with a metallic thimble fitting around the flanged coupler and inclosing the shoulder, substantially as described.

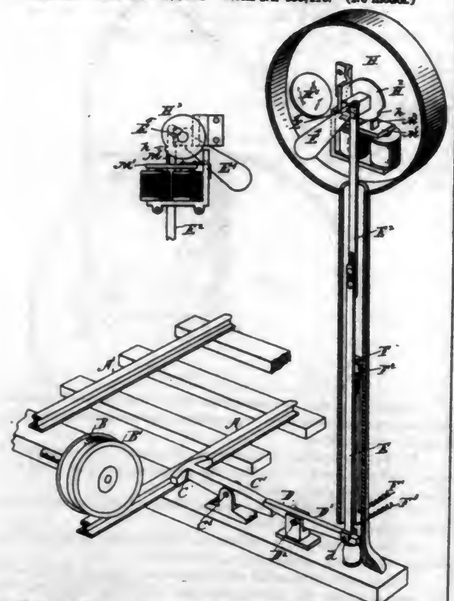
4. The combination, with the tubular metallic axle A, having the shoulders *a*, inner and outer bearings, and an oil-chamber, of the spindles D, mounted in the bearings and each provided with the collars d^3, adjacent to the end of the axle, the couplers E, having flanges *e*, bearing outside of the collars d^3, the washers F, clamped between the ends of the couplers and the shoulders *a*, and the hubs rigidly fastened to the spindles and having the metallic thimbles H, provided with a flange inclosing the washer F, substantially as described.

5. The combination, with a tubular axle having a shoulder, of a spindle rotatable therein, having a collar just outside the end of the axle and a washer outside of the collar, a coupler screwed upon the axle and having a flange abutting against the washer, a second washer

clamped between the coupler and the shoulder, and a hub having a thimble inclosing the coupler, the second washer, and the shoulder, substantially as described.

6. The combination, with a tubular metallic axle A, having shoulders *a*, of a bed-piece B, composed of an inverted-V-shaped piece of sheet-steel clamped upon the axle and resting between the shoulders, substantially as described.

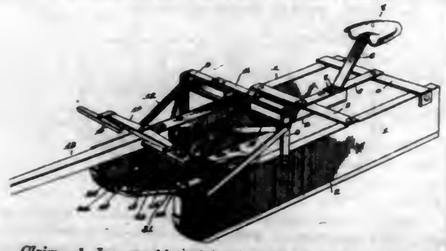
473,190. RAILWAY-SIGNAL. URIAH S. JACKSON, Conipee, N. H., assignor to the Jackson-Cady Electric Railway Signal Company, Portland, Me. Filed Oct. 21, 1891. Serial No. 409,416. (No model.)



Claim.—1. In a railway-signal system, the combination of the signal-wheel B, having an auxiliary disk B', the lever C, adapted to be operated by the said disk B', the lever D', rod E E^2, signal-board E^4, having attached a notched disk H^3, adapted to be held by the armature M', the armature M', and electro-magnets, all operating together, substantially as and for the purpose set forth.

2. In a railway-signal system, the combination of the signal-wheel B, having an auxiliary disk B', the lever C, adapted to be operated by said disk B', the lever D', and rod E E^2, having a circuit-closer F, with an electric current, as described, electro-magnets, an armature under electric control, a notch-disk, and signal-board, all adapted to operate substantially as described, and for the purpose set forth.

473,191. GRUBBING-MACHINE. CHARLES A. KING, Jacksonville, N. J. Filed Nov. 14, 1891. Serial No. 411,883. (No model.)



Claim.—1. In a machine of the class described, the combination, with the opposite side bars, of the inverted-U-shaped standards located opposite each other and having their outer terminals bolted to the side bars, a connecting-bar for the standards, a transverse draft-rod connecting the four terminals of the standards, a draft-tongue pivoted on the rod between the inner terminals, inclined braces connected at their upper ends to the outer ends of the draft-rod, and the V-shaped bail mounted on the draft-rod and having its front terminal bolted to the opposite sides of the draft-tongue, substantially as specified.

2. In a machine of the class described, the combination, with the opposite runners, of the inclined cutter secured to one of the runners, the L-shaped bracket secured to the opposite runner and provided with perforations along its rear edge and a single perforation at its front edge, a deflecting-rod swiveled in the single perforation, and a clamping-bolt embracing the rod and connected to one of the rear adjusting-perforations, substantially as specified.

3. In a machine of the class described, the combination, with the opposite runners, of the triangular bed-plate having its inner edge provided with an upturned flange whose ends terminate in upwardly-disposed lugs having elongated slots, bolts passed through the slots into the runners, and a knife located at the outer edge of the plate, substantially as specified.

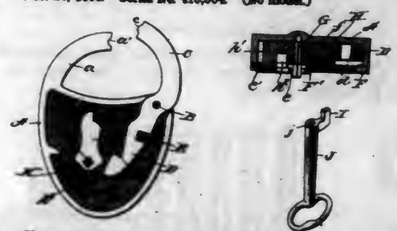
4. In a machine of the class described, the combination, with the opposite runner and the diagonal bed-plate carrying a cutter, of a series of rearwardly-disposed depending cutting-shanks, substantially as specified.

5. In a machine of the class described, the combination, with the opposite runners, the triangular bed-plate, and the cutter located at the front edge of the same, of the series of cutting-shanks secured to and rearwardly declining from the plate and terminating in laterally-bent ends forming hoes, the hoes and shanks being beveled, substantially as specified.

6. In a machine of the class described, the combination, with the opposite runners, the triangular bed-plate, and the cutter located at the front edge of the same, of the series of rearwardly-disposed cutting-shanks bolted to the bed-plate and graduated in length and declination and having their rear ends laterally bent to form hoes, said ends and shanks being beveled, substantially as specified.

7. In a machine of the class described, the combination, with the diagonal cutter and the frame-work supporting the same, of the series of shanks, each of which consists of the straight beveled portion obtusely bent at its front end and bolted to the bed-plate and obtusely bent at its rear end with relation to its lower edge to form a hoe, substantially as specified.

473,192. PADLOCK. CHARLES A. LARSON, Kewanee, Ill. Filed Nov. 27, 1891. Serial No. 413,204. (No model.)



Claim.—1. In a padlock, the combination, with the casing, of a stationary half-bow shackle extending above the center of said casing and provided with a notch in its outer end, an opposing half-bow shackle pivoted to said casing and provided at its outer end with a projecting tongue adapted to engage said notch and with an inwardly-extending spring-actuated operating-arm working within said casing and provided at its lower end with a locking shoulder, an oscillating key-pin journaled in the casing and projecting slightly without the same, a locking-arm carried by said pin and working within said casing, and a key engaging the projecting end of said pin to throw said arm upon and away from said locking-shoulder, substantially as set forth.

2. In a padlock, the combination, with the casing, of a stationary half-bow shackle, an opposing half-bow shackle pivoted to said casing and adapted to meet and work away from said stationary shackle-bow, the said pivoted half-bow shackle being provided with a spring-actuated arm working within said casing and provided at its lower end with a locking-shoulder, a cap-plate, a pivot arm or plate secured to said cap-plate, an oscillating pin journaled or swiveled in said pivot-plate and projecting into the key-hole and within the casing, a locking-arm carried upon the inner end of said pin, and a key engaging the outer end of said pin and arm and adapted to throw the same upon and away from said locking-shoulder, substantially as set forth.

3. In a padlock, the combination, with the casing, of a stationary half-bow shackle, an opposing half-bow shackle pivoted to said casing and provided with a spring-actuated arm working within the same and provided at its lower end with a locking-shoulder, a cap-plate having an inner recess, a pivot arm or plate secured to said cap-plate and projecting over said recess, an oscillating square pin journaled or swiveled in said pivot-plate and projecting into the key-hole and within the cas-

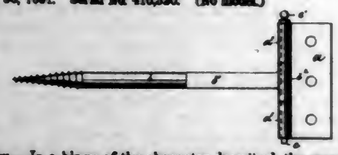
ing, a locking-arm carried upon the inner end of said pin and provided at one end with a locking notch or shoulder and at the other with an operating-notch opening into said cap-plate recess, and a key having a squared recess engaging the outer end of said pin and a wing projecting below the end of the key and adapted to engage the operating-notch of said locking-arm, substantially as set forth.

478,193. NUT-LOCK. WILLIAM MANSFIELD, Ashville, Pa. Filed Apr. 18, 1891. Serial No. 389,062. (No model.)



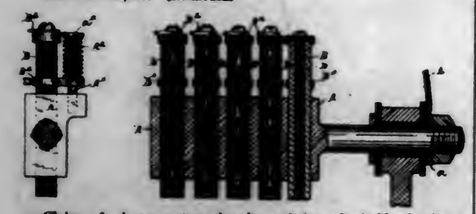
Claim.—The combination of a bolt, a nut having a key-opening 5 extending entirely across the nut and terminating at opposite sides thereof and provided with a pin-opening 6, arranged at an angle to the threaded opening and communicating with the same and intersecting the key-opening and having its outer end terminating at one side of the nut, a locking-pin arranged in the pin-opening 6, and a key arranged in the key-opening and securing the locking-pin in place and projecting from opposite sides of the nut, substantially as described.

478,194. HINGE. JOHN MARTHALER, Jersey City, N. J. Filed Oct. 30, 1891. Serial No. 410,230. (No model.)



Claim.—In a hinge of the character described, the means for adjustably securing the fixed member thereof to a wall or casing, consisting of a stem rigidly attached to the knuckle thereof and having adjacent thereto a thin flattened section *b'* and an enlarged cylindrical section *b*, terminating in a tapering screw-threaded section, substantially as described.

478,195. COMMUTATOR-BRUSH. GEORGE MEYER, Indianapolis, Ind., assignor to Fred I. McGahan, same place. Filed June 6, 1891. Serial No. 395,375. (No model.)



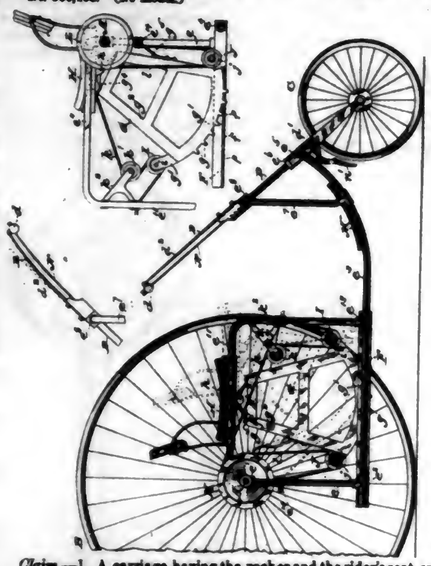
Claim.—1. A commutator-brush consisting of a holder having a series of independently-movable pencils therein, each of which is composed of a center surrounded by a shell, one of which parts is carbon and the other of which is metal, said two component materials extending to and forming the points of said pencils which contact with the commutator, substantially as set forth.

2. The combination, in a commutator-brush, of the holder provided with a series of perforations and a series of corresponding sockets alongside said perforations, standards secured in said sockets, pencils forming the contact-points of the brush mounted to move in said perforations, a yoke secured to each of said pencils and mounted to slide on the adjacent standard, and a spring interposed between said yoke and a suitable rest on said standard.

3. A commutator-brush consisting of the holder, a series of pencils secured therein, composed of a metal rod surrounded by carbon, and a wire running from the upper end of each of said rods to the holder, substantially as set forth.

4. The combination, in a commutator-brush, of the holder formed with a series of perforations and a series of sockets alongside said perforations, standards secured in said sockets, pencils composed of a metal center and a carbon outside mounted in each of said perforations, a yoke secured on each of said pencils and mounted to slide on the adjacent standard, a spring interposed between said yoke and a bearing on said standard, and a wire running from the upper end of each of the pencils down and connected to the holder, substantially as set forth.

478,196. VELOCIPEDE. DAVID J. MOODY, St. Louis, assignor to Charles D. Moody, Webster Groves, Mo. Filed July 28, 1890. Serial No. 360,195. (No model.)



Claim.—1. A carriage having the rocker and the rider's seat, said seat being adjustable to turn in a vertical plane upon said rocker, substantially as described.

2. The combination, in a carriage, of the main axle, ratchets, and belts, the frame-work, the rocker, the rocker-supports, and the belt-sheaves, substantially as described.

3. The combination, in a carriage, of the rocker and the spring-tiller, substantially as described.

4. The combination, in a carriage, of the rocker, the spring-tiller, and the foot-board, substantially as described.

5. The combination of the main wheels and axle, the frame-work, the steering-wheel, the steering-bar and tiller, the foot-board, the rocker, and the rocker-supports, the ratchets, the belts, and the belt-sheaves, substantially as described.

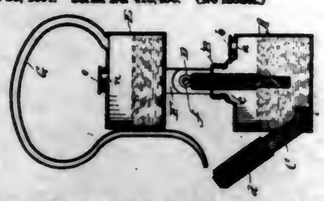
6. The combination of the main axle and ratchet K, the belt *k*, the frame-work, the rocker, and the sheaves *k'* and I, substantially as described.

7. The combination of the main wheel and the ratchet L, the belt *l*, the frame-work, the rocker, and the sheave J, substantially as described.

8. The combination, in a carriage, of the rocker, the adjustable rider's seat, and the spring-tiller, substantially as described.

9. The combination, in a carriage, of the rocker, the adjustable rider's seat, and the foot-board, said adjustable seat turning upon said rocker independently of the inclination of the rocker, substantially as described.

478,197. BLOWPIPE. JOSEPH H. PEERLES, Danville, Ill. Filed Nov. 23, 1891. Serial No. 413,430. (No model.)



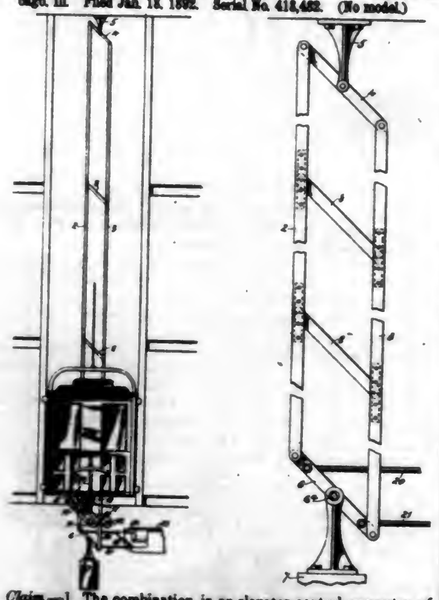
Claim.—1. The combination, in a blowpipe, with a tank or vessel having a vertical central wick-tube and a laterally-projecting wick-tube, of a vaporizer adjustably supported above said tank or vessel, means for securing said vaporizer in its adjusted position, and a tapering pipe adapted to conduct the vapor from the vaporizer to the mouth or end of the laterally-projecting wick-tube, substantially as described.

2. The combination, in a blowpipe, with a tank or vessel having a vertically-projecting wick-tube and a laterally-projecting wick-tube, of a vaporizer adjustably supported above said central wick-tube, and a tapering pipe secured at its enlarged end over an opening in the top of the vaporizer, curving thereover and down alongside said vaporizer, and terminating at a point slightly above and in rear of the end of said laterally-projecting wick-tube, substantially as described.

3. The combination, in a blowpipe, of a tank or vessel having a vertically-projecting wick-tube, a laterally-projecting wick-tube, an adjustable tube for regulating the flame from said lateral tube, a vaporizer arranged above the tank and adapted to be tilted to one side, means for holding it in its tilted position, and a tapering pipe secured at its enlarged end to the top of the vaporizer, curving thereover, and terminating at the end of the laterally-projecting tube, substantially as described.

4. The combination, in a blowpipe, of a tank or vessel having a central wick-tube, a lateral wick-tube, and a tube for regulating the flame from said lateral tube, uprights secured to said tank, a vaporizer, slotted bars secured to and projecting from said vaporizer, thumb-screws for clamping said bars to said uprights, and a tapering pipe secured at one end to the top of said vaporizer, substantially as described.

478,198. ELEVATOR-CONTROLLING DEVICE. HAROLD ROWNTREE, Kansas City, Mo., assignor to The Crane Elevator Company, Chicago, Ill. Filed Jan. 18, 1892. Serial No. 418,462. (No model.)



Claim.—1. The combination, in an elevator-control apparatus, of parallel rods suspended in the elevator-well and connected by links, devices upon the car engaging with said parallel rods and adapted to increase or diminish the distance between said rods, a controlling device governing the movement of the motor or engine, and connections between said controlling device and said rods, substantially as described.

2. The combination, in an elevator-control apparatus, of parallel rods suspended in the well, links connecting said rods, a pair of sheaves running upon each of said rods and connected by link-work to a lever upon the car and adapted to increase or diminish the distance between said rods, a controlling device governing the movement of the engine or motor, and connections from said rod to said operating device, substantially as described.

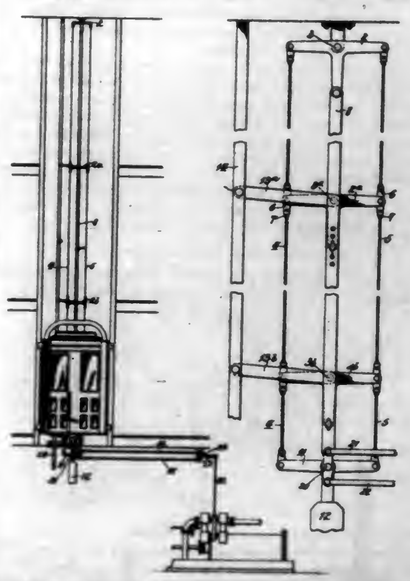
3. The combination of a pair of vertical rods suspended from a lever at the top of the elevator-well and connected at their lower ends by a corresponding lever, a weight connected to said rods and serving to keep them in tension, devices upon the car by which the distance between said rods may be increased or diminished, a controlling device by which the movement of the motor or engine is governed, and connections from said rods to said controlling device, substantially as described.

4. The combination, in an elevator-operating apparatus, of a pair of vertical rods suspended from a lever at the top of the elevator-well and connected at their lower ends by a corresponding lever, devices upon the car by which the distance between said rods may be increased or diminished, a controlling device by which the movement of the motor or engine is governed, connections from said vertical rods to said controlling device, said connections consisting of a lever having a fixed pivot and connected to said operating device, and parallel rods connected to the opposite ends of said lever and to said vertical rods, so that the four points of connection form a parallelogram, substantially as described.

5. The combination, in an elevator-control apparatus, of parallel rods suspended in the elevator-well, a controlling device governing the movement of the engine or motor, connections between said rods and said controlling device, and an operating device upon the car adapted to increase or diminish the distance between said rods, said device consisting of a pair of sheaves running upon each rod, a bar connecting each pair of sheaves and arms connecting said bars, said bars and arms forming a parallelogram, and a hand-lever connected to one of said arms, substantially as described.

6. The combination, in an elevator-operating apparatus, of a pair of vertical rods suspended from a lever at the top of the elevator-well and connected at their lower ends by a corresponding lever, a weight connected to said rods and serving to keep them in tension, devices upon the car by which the distance between said rods may be increased or diminished, a controlling device by which the movement of the motor or engine is governed, connections from said rods to said controlling device, said connections consisting of a lever having a fixed pivot and connected to said controlling device, and parallel rods connected to the opposite ends of said lever and to said rods, so that the four points of connection form a parallelogram, substantially as described.

478,199. ELEVATOR-CONTROLLER. HAROLD ROWNTREE, Kansas City, Mo., and IRWIN VERDER, Chicago, assignors to The Crane Elevator Company, Chicago, Ill. Filed Feb. 5, 1892. Serial No. 420,402. (No model.)



Claim.—1. In an elevator-control apparatus connected to the device governing the motor, the combination of a series of levers having vertical and horizontal arms, a bar suspended in the elevator-shaft upon the vertical arms of said levers, connections between the horizontal arms of said series of levers, and pivots upon which said levers turn, which are, except as to the uppermost lever, free to adjust themselves vertically to accommodate said levers, substantially as described.

2. In an elevator-control apparatus connected to the device governing the motor, the combination of a series of levers having vertical and horizontal arms, a bar suspended in the elevator-shaft upon the vertical arms of said levers, connections between the horizontal arms of said series of levers, pivots upon which said levers turn, which are, except as to the uppermost lever, free to adjust themselves vertically to accommodate said levers, and a weight adapted to maintain the tension of said connections, substantially as described.

3. In an elevator-control apparatus connected to the device governing the motor, the combination of a bar suspended in the elevator-shaft, devices carried by the car and adapted to impart a lateral movement thereto, said devices consisting of a triangular frame pivoted to

a hand-lever and three sheaves upon said frame adapted to make contact with the opposite edges of said bar, a series of T-levers connected to said laterally-movable bar and having, except as to the upper T-lever, the pivots upon which they turn free to adjust themselves vertically to accommodate said levers, and rods connecting the horizontal arms of said series of T-levers, substantially as described.

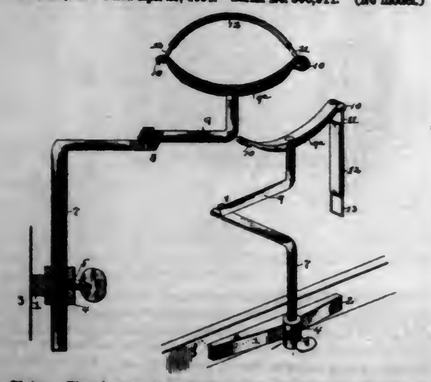
4. In an elevator-control apparatus connected to the device governing the motor, the combination of a laterally-movable bar pivoted to a series of T-levers, rods connecting the horizontal arms of said T-levers, a device upon the car, adapted to impart lateral movement to said bar, and a series of pivots upon which said T-levers turn, said pivots, excepting the uppermost, being attached to links whose opposite ends have pivotal supports, substantially as described.

5. In an elevator-control apparatus connected to the operating device governing the motor, the combination of a bar suspended in the elevator-shaft and capable of lateral movement, a series of T-levers connected to said bar and having their horizontal arms connected by rods, a second bar supported in the elevator-shaft and pivotally connected to the T-levers, devices upon the car by which the first-named bar may be moved laterally, and guides upon the car adapted to the second-named bar, substantially as described.

6. In an elevator-control apparatus, the combination of a bar suspended in the elevator-shaft, devices upon the car adapted to impart a lateral movement thereto, a series of T-levers connected to said laterally-movable bar and having, except as to the upper T-lever, the pivots upon which they turn free to adjust themselves vertically to accommodate said levers, rods connecting the horizontal arms of the said series of T-levers, a weight adapted to maintain the tension of said rods, and the connection to the operating device governing the movement of the motor, whereby the movement of said laterally-movable bar is transmitted to said operating device, said connection consisting of a lever having a fixed pivot, parallel rods connected at their ends to said lever and at their opposite ends to a rocking arm actuated by the movable bar, substantially as described.

7. The combination, in an elevator-control apparatus, of a bar suspended in the elevator-shaft, devices upon the car, adapted to impart a lateral movement thereto, a series of T-levers connected to said laterally-movable bar and having, except as to the upper lever, vertically-movable pivots, rods connecting the horizontal arms of said series of T-levers, the lever connecting the lower ends of said rods and having suspended therefrom a weight, a vibrating arm connected to said lever, a lever having a fixed pivot connected to the actuating device by which the motor is governed, and parallel links connecting said last-named lever and said vibrating arm, substantially as described.

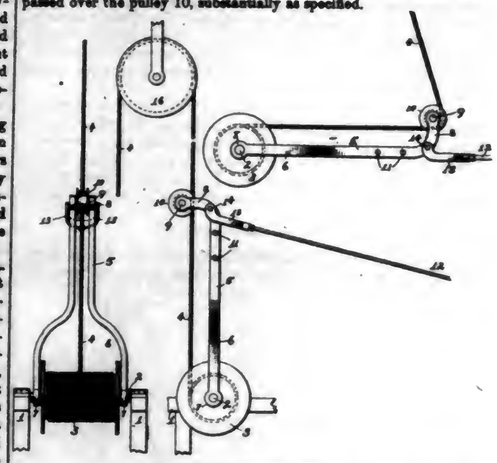
478,200. ARM-REST FOR CORPSES. THEODORE STRETTER, Tunkhannock, Pa. Filed Apr. 28, 1891. Serial No. 390,911. (No model.)



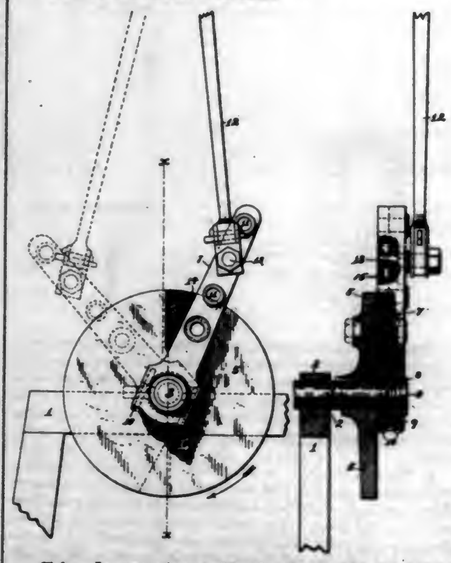
Claim.—The herein-described arm-support, consisting of the bracket provided with perforations for the reception of screws and with a central eye having a set-screw, an inverted-L-shaped standard mounted in the eye and having its upper horizontal portion half-round, the L-shaped standard pivoted at its lower extremity to the upper extremity of the inverted-L-shaped standard and having its lower horizontal portion half-round, the yoke swiveled to the upper end of the L-shaped standard and terminating in hooks, the elastic strap, and the links connected to the ends of the strap and to the hooks, substantially as specified.

478,201. DRILL-OPERATING DEVICE. GEORGE H. SUMMERS, ANDREW J. KIPER, and LORIN O. HARDESTY, Mitchell, S. D. Filed June 30, 1891. Serial No. 398,069. (No model.)

Claim.—In an attachment of the class described, the combination, with the support, the transverse shaft, and the drum mounted thereon, of the lever 5, bifurcated at its lower end, as at 6, to embrace the drum and having shaft-receiving eyes 7 and at its upper end bifurcated, the shaft 9, mounted therein, the pulley 10, mounted upon the shaft, the clevis 13, the bolt 14, and the drill-rope wound upon the drum and passed over the pulley 10, substantially as specified.



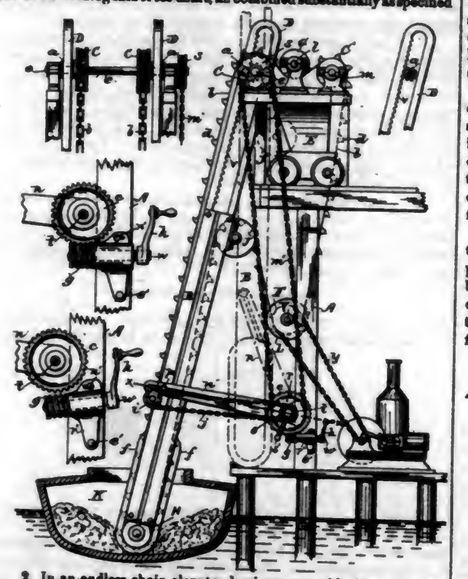
478,202. DRILL-OPERATING DEVICE. GEORGE H. SUMMERS, ANDREW J. KIPER, and LORIN O. HARDESTY, Mitchell, S. D. Filed July 2, 1891. Serial No. 398,298. (No model.)



Claim.—In an attachment of the class described, the combination, with the drive-shaft 3, having the annular groove 4, and the disk 5 at one side of the groove provided with the stop 6 and fixedly mounted upon the shaft, of the grooved lever 7, having a series of perforations and terminating at its inner end in the half-box 8, the companion half-box 9, the two being internally convexed to fit the groove 4, the bolts 10, passing through the half-boxes, the rods 12, and the wrist-pin 13, substantially as specified.

478,208. ENDLESS-CHAIN ELEVATOR. BENJAMIN ARNOLD, East Greenwich, R. I. Filed Dec. 26, 1891. Serial No. 416,164. (No model.)

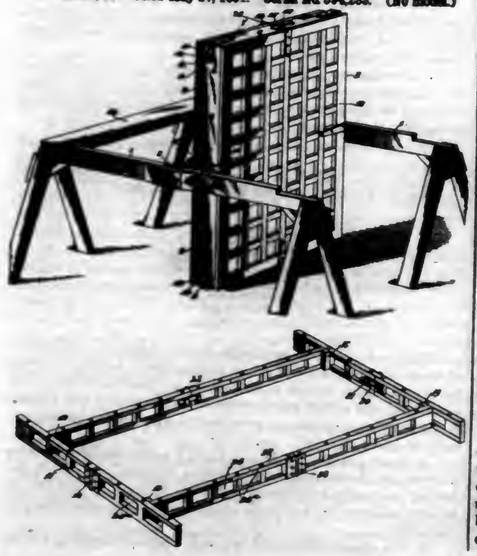
Claim.—In an endless-chain elevator, a stationary frame, a movable frame, guide-bars on the movable frame, provided with racks at their upper ends, a cross-shaft held in bearings attached to the stationary frame and adapted to support the movable frame and serve as a center for it to swing on, gear-wheels fast on the cross-shaft and engaging in said racks and adapted to raise the movable frame, and means for turning said cross-shaft, all combined substantially as specified



2. In an endless-chain elevator having a movable frame for the purpose of adjustment, a swinging arm held at one end on a shaft attached to the stationary frame of the elevator and connected with the movable frame by means of a stud fast in said movable frame and sliding in a slot in the arm, in combination with a chain-wheel held on said shaft and a chain engaging with said chain-wheel and passing out over a pulley pivoted near the outer end of said arm and fastened to said stud, substantially as set forth.

3. In an endless-chain elevator having a movable frame for the purpose of adjustment and a shaft at the upper end of said frame, means for raising and lowering said frame, comprising a worm on the stationary frame, swinging bearings for said worm, a worm-gear and its shaft, and flexible connections between the shafts mentioned.

478,204. MATTRESS-MAKING DEVICE. JAMES R. BRADLEY, Savannah, Ga. Filed May 27, 1891. Serial No. 394,283. (No model.)



Claim.—1. In an apparatus of the class described, the stretching-frame consisting of the independent opposite end bars, and the interposed end-bar-spreading side bars adapted to bear at their outer opposite ends against the end bars, each of said side bars comprising two sections hinged at their inner ends and adapted to inwardly open, keepers mounted upon the inner end of one section of each bar, and latches loosely secured to the corresponding ends of the companion section, substantially as specified.

2. In ad apparatus of the class described, the stretching-frame consisting of the independent opposite side bars, each comprising two sections hinged at their adjacent ends and adapted for inwardly opening, means for locking the sections of the side bars in alignment, and opposite end bars independent of but adapted to be borne against by the ends of the side bars, and cleats secured to the inner faces of the end bars some distance from their ends and adapted to serve as stops for the ends of the side bars, substantially as specified.

3. The combination, with the opposite trestles having bearings in their upper sides and recessed near their ends, the removable cross-piece 28, mounted in the recesses, and the keeper located in the floor between the trestles, of the mattress-receiving frame having perforated opposite walls, the axle secured thereto and terminating in journals taking in the bearings of the trestles, and bolts on the ends of the frame for engaging the keepers, substantially as specified.

478,205. DEVICE FOR REGULATING THE FLOW OF STREAMS. CHARLES BOSSEE, Port Royal, S. C. Filed Nov. 28, 1891. Serial No. 413,396. (No model.)



Claim.—1. In a device for improving and regulating the flow of streams or rivers, deepening the channels thereof, and removing obstructions, &c., a suitable frame provided with any number of cross-bars crossing each other at any desired angle and secured together in any suitable way, in combination with the upwardly-projecting teeth located in said frame and cross-bars, and the weights or stones located on top of said teeth, all substantially as described, and for the purpose set forth.

2. In a device for improving and regulating the flow of rivers, deepening the channels thereof, and removing obstructions, &c., a suitable frame provided with any number of cross-bars crossing each other at any desired angle and secured together in any suitable way, in combination with the upwardly-projecting teeth inserted and fixed rigidly in said frame and cross-bars, and the weights and chains for holding down and anchoring the same in the bed of the river, substantially as described.

3. In a device for improving and regulating the flow of streams, deepening the channels thereof, and removing obstructions, &c., any number of suitable frames provided with any number of cross-bars crossing each other at any desired angle and secured together in any suitable way, said frames being made in sections and joined together by chains or in any practical way and anchored in the river's bed, in combination with the upwardly-projecting teeth inserted and fixed

rigidly in said frames and cross-bars, and the weights and chains for holding down and anchoring and securing together said frames in the bottom of the river, substantially as described.

4. In a device for improving and regulating the flow of streams, deepening the channels thereof, and removing obstructions, &c., a suitable frame provided with any number of transverse bars crossing each other at any desired angle, in combination with the upwardly-projecting teeth inserted and fixed rigidly in said frame and transverse bars, substantially as described, and for the purpose set forth.

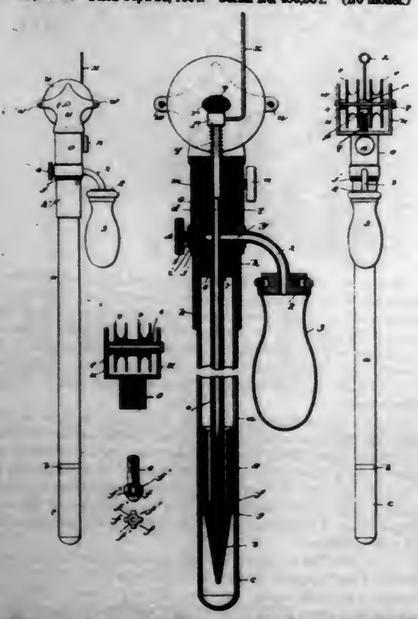
473,206. LIFTING-JACK. GEORGE P. BRINKMAN, Eureka, Cal. Filed Jan. 11, 1892. Serial No. 417,719. (No model.)



Claim.—1. A lifting-jack comprising a casing, two horizontal shafts therein, two gears on each shaft meshing with those on the other, interposed small gears, means for applying rotary power to one shaft, and a vertical rack-bar moving in the casing and between the large gears and having teeth on both its edges engaging the small gears, substantially as described.

2. A lifting-jack comprising a casing, two horizontal shafts therein turning in collars in the casing, two large gears on each shaft meshing with those on the other, interposed small gears, a vertical rack-bar moving between guides in the casing, between the large gears, and through the top of the casing and having teeth on both its edges engaging the small gears, an operating crank-shaft, a ratchet-wheel and pawl therefor, and a spur-wheel on this shaft meshing with the large gears on one of said horizontal shafts, substantially as described.

473,207. MANIPOLDING-PEN. AUGUSTUS C. CAREY, Lake Pleasant, Mass. Filed Sept. 21, 1891. Serial No. 406,351. (No model.)



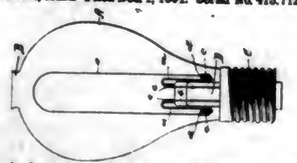
Claim.—1. A pen comprising a reciprocating stylus extending throughout the pen and projecting from both ends thereof, and means to impart the reciprocating movements to each stylus, a surrounding tube terminating in an enlargement, a fountain surrounding the tube and stylus, and a point or nib in which the enlargement is located to center the stylus in the point, substantially as described.

2. A pen comprising a stylus, a surrounding tube, an ink-fountain, an air-valve communicating with such fountain, and an air-forcing apparatus, also connected therewith, substantially as described.

3. A pen comprising a stylus, a tube surrounding it and terminating in an enlargement, a head on such tube terminating in a screw-threaded shank having a circumferential groove, a driving-head having a screw-threaded shank, into which the screw-threaded neck is fitted, and a binding-screw fitted to said circumferential groove to permit the adjustment of the neck in the shank to cause the stylus to project more or less beyond the point, and a fountain having a point in which the enlargement is placed to center the stylus with relation to the point, substantially as described.

4. A driving-head having a cam, a hollow cam-shaft, a driving medium, and a screw-bolt passed through the hollow cam-shaft and constituting the axis for said shaft and secured in the driving-head, combined with a pen-barrel, a stylus, and intermediate connections, substantially as described.

473,208. INCANDESCENT ELECTRIC LAMP. AUGUSTUS C. CAREY, Lake Pleasant, Mass. Filed Dec. 1, 1891. Serial No. 413,712. (No model.)



Claim.—1. In an incandescent electric lamp, a globe, leading-in wires, and the inwardly-projecting holder for the leading-in wires, combined with couplings of flexible material connected with said leading-in wires, conductors also connected with said couplings at one end and depending thence and couplings applied at the other ends of said depending conductors, and the carbon having its ends secured in said last-named couplings, substantially as described.

2. In an incandescent electric lamp having a globe and the holder for the circuit-wires projecting well into the globe, two tube-couplings of flexible material connected by one of their tubes with each of the circuit-wires, conductors secured in the other tubes of said couplings and extending thence toward the butt of the lamp, two tube-couplings applied by one of their tubes to the said conductors, and a carbon secured in the other tubes of said last-named couplings, substantially as described.

3. A coupling for uniting the carbon and the circuit-wires of an incandescent electric lamp, made of a solid piece of metal bored longitudinally and sufficiently flexible to be united with the wires by bending, combined with the globe, circuit-wires, and filament, substantially as described.

4. A coupling for uniting the carbon and the circuit-wires of an incandescent electric lamp, made with a suitable number of tapering holes or tubes, combined with the globe, circuit-wires, and filament, substantially as described.

5. A tubular coupling for uniting the carbon and the circuit-wires of an incandescent electric lamp, constructed with a notch to afford anchorage for the cement used to unite the carbon and the coupling, substantially as described.

473,209. RHEOSTAT. AUGUSTUS C. CAREY, Lake Pleasant, Mass. Filed Jan. 27, 1892. Serial No. 419,458. (No model.)



Claim.—1. A carrier containing electric resistances, any number of which may be included in circuit or all excluded, leading-in or leading-out conductors applied to said carrier and movable with it, a stem upon which said carrier may be revolved, and stationary caps containing appropriate contacts for co-operation with the carrier, substantially as described.

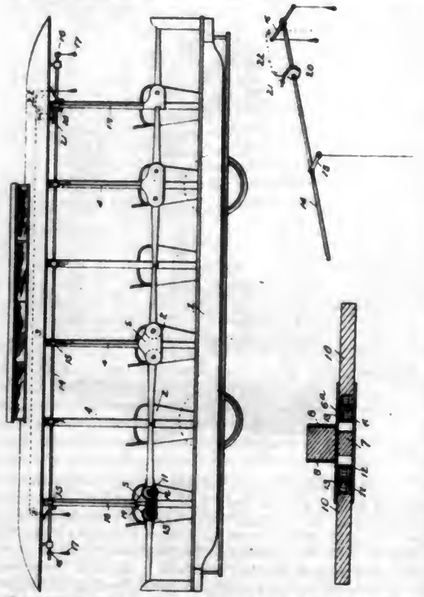
2. In a regulator for electric currents, a carrier containing a series of resistance devices, conductors applied rigidly to one end of said devices, and conductors applied yieldingly to the other end of such devices, combined with suitable circuit connections, substantially as described.

3. In a regulator for electric currents, a carrier containing a series of resistances, conductors applied thereto, leading-in and leading-out wires, a conducting-ring to which the leading-out wire of the circuit-wires is connected, and an expansion-spring applied to the leading-out wire of the regulator and bearing upon said ring to insure good contact, substantially as described.

4. In a regulator for electric currents, a carrier containing resistances, a stem upon which said carrier is adapted to be rotated, caps applied to opposite ends of such stem, and a casing arranged between such caps and connected to the carrier to revolve with or revolve said carrier, substantially as described.

5. In a regulator for electric currents, a carrier containing resistances and a hollow stem upon which it rotates, slotted longitudinally for the passage of the circuit-wires, combined with caps containing contacts to which the circuit-wires are connected, substantially as described.

473,210. SAFETY-GATE FOR CARS. FRANCIS C. CASH, Lynn, Mass., assignor of one-half to Charles B. Lord, same place. Filed Dec. 23, 1891. Serial No. 415,959. (No model.)



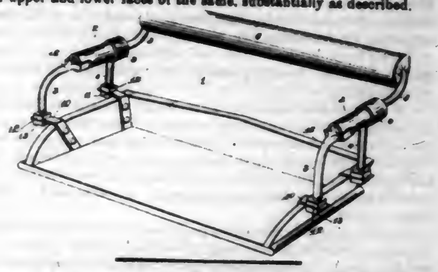
Claim.—1. In combination with a standard at the side of the car, an arm under spring-tension pivoted at or near the standard and normally down to close the opening between the seats, means for releasing the arm to allow it to rise to a vertical position under the action of the spring, and means for positively restoring it to a horizontal position, substantially as described.

2. In combination with a post at the side of the car, a pair of arms hinged at or near the post and arranged to swing in opposite directions across the egress from the car, springs for holding the arms in a vertical position, and a cord extending vertically with two branches connected one to each arm, the said cord having connections within reach of the conductor or driver for forcing the arms to a horizontal position simultaneously, substantially as described.

3. In combination with the standards at the side of a car, arms pivoted at or near the standards, springs to hold the arms in a vertical position, and means for forcing the arms to a horizontal position, consisting of a shaft journaled near the top of the car, arms carried by the shaft above the pivoted arms, connections between the pivoted arms and the arms on the shafts, means within reach of the conductor or driver for rotating the shaft, and means for holding it in its rotated position, substantially as described.

473,211. WAGON-SEAT. GEORGE R. DANIEL, Thompson, Mo. Filed Sept. 4, 1891. Serial No. 404,776. (No model.)

Claim.—The combination, in a vehicle-seat, of a back provided with curved bars, the tubular arms receiving the bars and having their rear ends threaded, the caps arranged on the threaded ends and provided with central openings and having threaded openings in their lower faces, the springs arranged in the tubular arms and interposed between the caps and the front ends of the bars, the plates 10 and 11, secured to the seat and extending horizontally therefrom, the rear braces having their lower ends threaded and adjustably secured to the plates 11 by the nuts and having their upper ends threaded and engaging the threaded openings of the caps to prevent the latter accidentally unscrewing, and the curved front braces having their upper ends forked and pivoted to the front ends of the arms and having their lower ends threaded and secured to the plates 10 by nuts arranged on the upper and lower faces of the same, substantially as described.



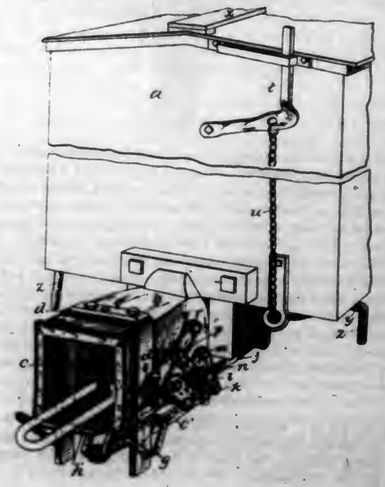
473,212. TOBACCO-PIPE. EDWARD DANNENBERG, Chicago, Ill. Filed Nov. 10, 1891. Serial No. 411,490. (No model.)



Claim.—1. A sectional tobacco-pipe having the bowl divided horizontally into the upper bowl portion 1 and the lower bowl portion A', the lower bowl portion being divided vertically and longitudinally and the said two bowl portions being provided with a screw-threaded connection, so that when the two halves of the lower bowl portion are fitted together the two bowl portions can be coupled together, substantially as and for the purpose described.

2. In a sectional tobacco-pipe, the bowl divided horizontally, so as to provide the upper bowl portion 1 and the lower bowl portion A', the two bowl portions being provided with a screw-threaded connection and the lower bowl portion being provided with a lug and a stem portion and divided vertically and longitudinally, so as to provide a couple of sections 3, each having a section 5 of said lug and a section 4 of said stem portion, combined with a sleeve 6, secured upon the divided stem portion, and a cap C, secured upon the divided lug, substantially as and for the purpose described.

473,213. CAR-COUPLING. HERMAN R. DORR, Contoocook, N. H. Filed Dec. 8, 1891. Serial No. 414,891. (No model.)



Claim.—1. The combination, with the draw-head, of a rock-rod arranged in the bearings beneath the car-body, a vertically-movable yoke on the draw-head, the coupling-pin connected with said yoke, levers fulcrumed on the draw-head and connected with said yoke, and a link-rod *j*, connecting the said levers with the said rock-rod, as set forth.

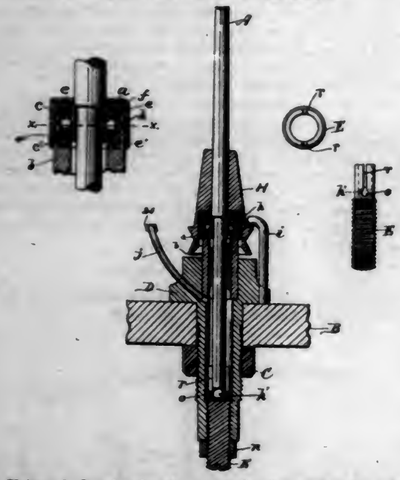
2. The combination, with the draw-head, of a rock-rod arranged in the bearings beneath the car-body, a vertically-movable yoke on the draw-head, the coupling-pin connected with said yoke, levers fulcrumed on the draw-head and connected with said yoke, a link-rod *j*, connecting the said levers with the said rock-rod, a lever fulcrumed on the car-body having its free end extended above the top of the same, and a chain connecting the said lever with the said rock-rod, as set forth.

3. The combination, with the draw-head, of a rock-rod arranged in bearings beneath the car-body, a frame adapted to be swung from beneath the draw-head upward in front of the same to lift the link, arms *d'*, pivoted at their upper ends upon the draw-head, links *d*, supporting the frame from said arms *d'*, arms *d'*, connected with the rock-rod, and pitmen or rods *d*, connecting the arms *d'* with the link-lifting frame, as described.

4. The combination, with the draw-head, of a rock-rod arranged in bearings beneath the car-body, a vertically-movable yoke on the said draw-head, the coupling-pin connected with said yoke, levers fulcrumed on the draw-head and connected with the said yoke, and a link-rod connecting said levers with the said rock-rod, connections between the said link-rod and the rock-rod being loose to permit a limited longitudinal movement of the draw-head independent of the rock-rod, as set forth.

5. The combination, with the draw-head, of the vertically-sliding yoke, the coupling-pin extending through said yoke and draw-head, the head of said pin resting on said yoke, and a plate removably secured to the yoke and covering the head of the pin, as set forth.

478,214. SPINDLE-BEARING. WILLIAM B. DOUGLAS, Phenix, R. I. Filed July 29, 1891. Serial No. 401,087. (No model.)

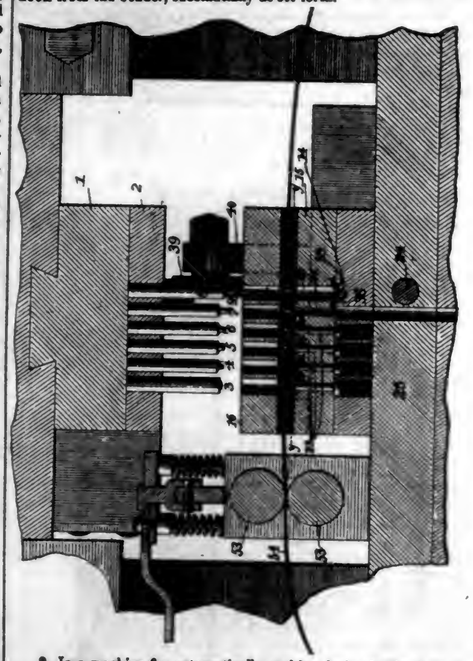


Claim.—1. In a bearing for a spindle, the combination of two rings placed one above the other in a tube to hold a circle of balls between them, said rings each having a V-shaped groove recessed in their contiguous faces to form a lip extending partially over the inner surface of said ring of balls to retain them in place when the spindle is removed, with said balls and tube, substantially as specified.

2. In a step for a spindle, the combination of a cylindrical piece of metal having a screw-thread on a portion of its surface and a recess in its upper end fitting closely to the lower end of the spindle and having one or more slots or openings made through the sides of the recess, a ball of proper size to move freely in the bottom of said recess, with an outer supporting-tube having a screw-thread in its lower end to receive the threaded portion of said cylindrical piece, substantially as described.

478,215. MACHINE FOR MAKING LACING-HOOKS. FREDERICK BEAR, Bridgeport, Conn., assignor to the Smidt & Pupke Manufacturing Company, New York, N. Y. Filed Apr. 30, 1891. Serial No. 391,128. (No model.)

Claim.—1. In a machine for automatically making lacing-hooks which have a tubular shank and a hook-shaped head, the combination of instrumentalities for feeding a strip of metal step by step, instrumentalities carried by the gate of a power-press for forming said shank from said metal by a series of successive operations, instrumentalities for cutting out the finished blank from the metal strip, instrumentalities for delivering the blank to the bending mechanism, a bender for properly shaping the blank into the form of a hook, a bending-block to co-operate with said bender, and means for stripping the hook from the bender, substantially as set forth.



2. In a machine for automatically making lacing-hooks from a strip of sheet metal, said hooks having a tubular shank and an overhanging head, the combination of a series of punches carried by the gate of a power-press, whereby said shank is formed and the finished blank cut from the metal strip, a bending-block, a push-bar actuated from the press-gate, whereby the blank is delivered to the bending-block, a bender carried by said gate and co-operating with said block to shape the blank into the form of a hook, and a stripper for forcing the hook off from the bender, substantially as set forth.

3. The combination of the cutting-punch having depending therefrom the spring-actuated follower-pins whereby the blank is properly delivered within the feed-channel, substantially as set forth.

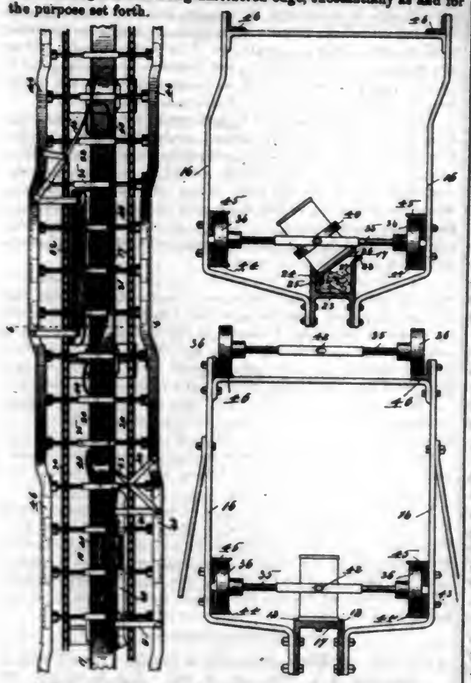
4. The combination of the bender, the bending-block having a feed-channel leading therein, and the reciprocatory push-bar whereby the blanks are delivered within said block, substantially as set forth.

5. The combination of the chute and the bender with the pivoted hub having extending therefrom the deflecting-leg 49 and stripper 51, substantially as set forth.

473,216. PROCESS OF AND MACHINE FOR SOLDERING CANS. CHARLES H. EMERY, Chicago, Ill., assignor to himself and Charles P. Libby, same place. Filed Aug. 20, 1891. Serial No. 403,241. (No model.)

Claim.—1. The process of soldering square cans, which consists in immersing two of the edges of the can at different times in molten solder and tilting the can after immersing each of said edges to cause the surplus solder to flow along and solder the unsoldered edge of the can adjacent to that immersed, whereby the four edges of the can will be soldered by the immersion of only two of the edges in the solder, substantially as described.

2. The process herein described of soldering cans, which consists in heating the can, immersing one edge of the can in molten solder, tilting the can in one direction away from a vertical plane to cause the surplus solder to flow along the edge of the can adjacent to that first immersed, tilting the can in another direction away from a vertical axis and while so tilted immersing the edge opposite that first immersed in molten solder, and again tilting the can away from a vertical axis and causing the surplus solder from the last immersed edge to flow along the remaining unsoldered edge, substantially as and for the purpose set forth.



3. In a can-soldering machine, the combination, with solder-applying devices, of mechanism for tilting the can away from and about a vertical axis, so as to successively depress each of the lower edges of the can below the others, substantially as described.

4. In a can-soldering machine, the combination, with solder-applying devices, of a track for supporting the cans to be soldered, devices for tilting the cans away from and about a vertical axis, so as to successively depress each of the lower edges of the can below the others, and means for moving the can along the said track, substantially as described.

5. In a can-soldering machine, the combination, with solder-applying devices, of a track for supporting the can to be soldered, means for heating said track, devices for tilting the can away from and about a vertical axis, so as to successively depress each of the lower edges of the can below the others, and means for moving the can along said track, substantially as described.

6. In a machine for soldering square cans, the combination, with two solder baths and devices for immersing two of the lower edges of the can at different times in the solder baths, of mechanism for tilting the can away from and about a vertical axis to immerse two edges thereof in the solder baths and cause the molten solder to flow along the unsoldered edges of the can, whereby the four edges of the can will be soldered by the immersion of only two of the edges in the solder, substantially as described.

7. In a machine for soldering square cans, the combination, with two solder baths and devices for immersing two opposite lower edges of the can at different times in the solder bath, of mechanism for tilting the can away from and about a vertical axis to cause the solder to flow along the unsoldered edge of the can, whereby the four edges of the can will be soldered by the immersion of only two of the edges in the solder, substantially as described.

8. In a can-soldering machine, the combination, with a solder-pot, of a track for supporting the can, devices for tilting the can away from and about a vertical axis, so as to successively depress each of its edges below the level of the others, apparatus for moving the can upon said track, and means for reversing the can, substantially as described.

9. In a can-soldering machine, the combination, with a solder-pot, of a track for supporting the can, devices for tilting the can away from and about a vertical axis, so as to successively depress each of its edges below the level of the others, apparatus for moving the can upon said track, substantially as and for the purpose specified.

10. In a can-soldering machine, the combination, with a solder-pot, of a track for supporting the can, devices for tilting the can away from and about a vertical axis, so as to successively depress each of its edges below the level of the others, apparatus for moving the can upon said track, and means for heating said track, substantially as and for the purpose specified.

11. The combination, with a solder-pot, of a track adapted to support and guide a can, means for heating said track, said track being inclined opposite the solder-pot in such manner that one edge of the can will dip into the solder in the pot as it moves along upon said track, a forward inclination in said track beyond the solder-pot, and mechanism for moving the can along said track, substantially as described.

12. The combination, with a solder-pot, of a track adapted to support and guide a can, said track being inclined at a point opposite the solder-pot in such manner that the can will be tilted away from a vertical axis and one of the edges dipped into the solder as the can moves upon the track, devices for tilting the can away from a vertical axis after it has passed the solder-pot to cause the surplus solder to flow along one of its edges adjacent to that which is dipped into the solder, and mechanism for moving the can along said track, substantially as described.

13. In a can-soldering machine, the combination, with solder-pots, of a track having lateral inclinations and forward inclinations arranged in such manner as to successively depress each of the edges of the can below the level of the others as it moves along said track, and mechanism for moving the can along the track, substantially as and for the purpose specified.

14. In a can-soldering machine, the combination of a track having lateral inclinations and forward inclinations alternately arranged, whereby each of the edges of a can is successively depressed below the others as the can moves along upon said track, with solder-pots placed at the laterally-inclined portions of said track and so arranged that the lower edge of the can as it moves over said laterally-inclined portions of the track will dip into the solder, mechanism for moving the can along said track, and means for keeping the solder in the solder-pots in a molten condition, substantially as described.

15. In a can-soldering machine, the combination, with solder-pots and a track upon which the cans are adapted to be moved, said track being so arranged as to cause the cans to tilt away from and about a vertical axis in such manner as to depress each of their edges successively below the others, of a chain for moving said cans along said track, said chain being so arranged as to permit of the tilting of the cans, substantially as described.

16. In a can-soldering machine, the combination, with solder-pots and a track upon which the cans are adapted to be moved, said track being so arranged as to cause the cans to tilt away from and about a vertical axis in such manner as to depress each of their lower edges successively below the others, of a chain for moving the cans along said track and frames carried by said chain, said frames being adapted to receive the cans to be soldered and to permit of the tilting of the cans in a direction at right angles to their line of motion, substantially as described.

17. In a can-soldering machine, the combination, with solder-pots, of a stationary plate extending longitudinally of the machine and formed with inclined portions by which the cans are caused to tilt to depress each of their edges below the others, a chain for moving the cans along said plate, and frames carried by said chain, said frames being adapted to receive the cans to be soldered and said frames being trunnioned or pivotally mounted in said chain in such position that they will be adapted to tilt in a direction at right angles to the line of motion of the chain, substantially as described.

18. In a can-soldering machine, the combination, with solder-pots, of a stationary plate extending longitudinally of the machine and formed with inclined portions by which the cans are caused to depress each of their edges below the others, the chains 34, cross-bars 35, by which said chains are carried, rollers upon the ends of said cross-bars, a frame pivoted or trunnioned in said cross-bars at right angles to the line of motion of the chains, said frame being adapted to receive a can, and a track for the rollers upon the ends of the cross-bars 35, substantially as described.

19. The combination, with a supporting-frame and a plate supported by said frame, said plate being adapted to form a track upon which the cans may be moved and having inclinations for causing the cans to tilt away from and about a vertical axis in such manner as to depress each of their edges successively below the others, of solder-pots supported in said frame in such position that when the cans are carried along upon said plate their alternate lower edges will be immersed in the solder in the solder-pots, devices for heating said plate and for keeping the solder in the solder-pots in a molten condition, and devices for moving said cans upon said plate, substantially as described.

20. The combination, with a supporting-frame and a plate supported by said frame, said plate being adapted to form a track upon which the cans may be moved and said plate being so shaped as to

cause the cans to tilt in such manner as to depress each of their edges successively below the others, of solder-pots supported in said frame in such position that when the cans are laterally tilted their lowermost edges will be immersed in the solder in the solder-pots, devices for heating said plate and for keeping the solder in the solder-pots in a molten condition, a chain adapted to receive said cans and to move them along said plate, said chain having cross-bars 35, and rollers 36 upon the ends of said cross-bars, and angle-irons 44, 45, and 46, said angle-irons being adapted to form tracks for the rollers 36, substantially as described.

21. In a can-soldering machine, the combination, with solder-pots, of a stationary plate extending longitudinally of the machine and formed with inclined portions by which the cans are caused to tilt to depress each of their edges below the others, a chain for moving said cans along said plate, and a track for supporting said carrying-chain, said track being laterally deflected, as described, to cause the edges of the cans to be more completely immersed in the solder in the solder-pots, substantially as described.

22. In a can-soldering machine, the combination, with a plate having lateral inclinations and solder-pots on opposite sides of the plate, said inclinations of the plate being such as to cause the lowermost edge of a can as it moves upon said plate to be immersed in the solder in the solder-pot, of a chain for moving the cans along said plate and a track for supporting said chain, said track being laterally deflected at the points opposite the lateral inclinations of the plate in such manner as to cause the cans to move toward the lowermost side of the plate, substantially as and for the purpose specified.

23. In a can-soldering machine, the combination, with a track having lateral inclinations and forward inclinations alternately arranged, whereby each of the edges of the can is depressed successively below the others as the can moves upon said track, of solder-pots placed at the laterally-inclined portions of said track and so arranged that the lower edge of the can as it moves over said laterally-inclined portions of the track will dip into the solder, mechanism for moving the can along said track, and guide-bars 63 and 65, substantially as and for the purpose specified.

24. The combination, with a supporting-frame, of a plate 17, having laterally-inclined portions 19 and 21 and forwardly-inclined portions 20 and 22 solder-pots located at the laterally-inclined portions 19 and 21 in such position that when a can is moved along upon said plate 17 its lowermost edge will dip into the solder in the solder-pot, and devices for moving the cans upon said plate, substantially as described.

25. The combination, with a supporting-frame and a plate 17, having laterally-inclined portions 19 and 21 and forwardly-inclined portions 20 and 22, of solder-pots 23, supported in the frame opposite the laterally-inclined portions 19 and 21, each of said solder-pots having an opening 26, devices for moving the cans upon said plate 17, and devices for heating said plate 17 and the solder-pots, substantially as described.

26. The combination, with the supporting-frame 15, plate 17, supported thereby, the plate having laterally-inclined portions 19 and 21 and forwardly-inclined portions 20 and 22, and solder-pots supported in said frame opposite the laterally-inclined portions 19 and 21, of jets 29, mounted under said plate 17 and the solder-pots, gas-pipe 30, and air-pipe 31, adapted to conduct gas and air, respectively, into said pipe 29, substantially as described.

27. The combination, with mechanism for soldering the seams at one end of a can and mechanism for soldering the seams at the other end of a can, of a chain adapted to carry the cans from one soldering mechanism to the other and a turning device located between said two sets of soldering mechanism, said turning device serving to lift and deflect the cans laterally, whereby they are overturned, substantially as described.

28. The combination, with a plate 17 and a supporting-frame therefor, of sprocket-wheels journaled at one end of said frame, sprocket-wheels 48, journaled at the other end of said frame, plates 54, vertically secured in the end of the frame between the sprocket-wheels 48, and a can-carrying chain having frame 40, the plates 54 being so arranged as to form guides to hold the cans in a vertical position when they are moving around the end of the frame, substantially as described.

29. The combination, with a plate 17, a supporting-frame therefor, said frame having sprocket-wheels 47 journaled at one end and sprocket-wheels 48 journaled at the other end, and a can-carrying chain having a frame 40, said chain being adapted to be operated by said sprocket-wheels, of a bar 56, secured in said frame and having the rounded end 59 so arranged as to loosen the cans in the frame 40, substantially as described.

30. The combination, with a plate 17, a supporting-frame therefor, and sprocket-wheels 47 and 48, located at opposite ends of said frame, of a can-carrying chain adapted to be operated by said sprocket-wheels to move the cans upon the plate 17, said can-carrying chain having frames 40, and a plate 53, adapted to straighten said frames 40, substantially as described.

31. The combination, with a supporting-frame, of a plate 17, having laterally-inclined portions 19 and 21 and forwardly-inclined portions 20 and 22, solder-pots 23, supported by said frame opposite the laterally-inclined portions 19 and 21 in such position that when a can is moved along upon said plate 17 its lowermost edge will dip into the solder in the solder-pot, and downwardly-projecting lips 25 upon said plate 17, said lips being so placed as to project into the solder-pots, substantially as and for the purpose specified.

32. The combination, with a plate having laterally-inclined portions 19 and 21 and forwardly-inclined portions 20 and 22 and solder-pots located under said laterally-inclined portions 19 and 21 and so arranged that when a can is moved along upon said plate its lowermost edge will dip into the solder in the solder-pots, of devices for wiping the surplus solder from the outside of the can, a cold-air pipe adapted to direct a current of cold air upon said cans immediately after they pass the wipers, and mechanism for moving said cans along said plates, substantially as described.

33. The combination, with a rod, a horizontal disk 71, secured to said rod, said disk having a flat upper surface, and slots in said disk, of a rod 68, pivoted upon the upper end of said rod, said rod 68 having a bearing 73, a disk 72, secured to said bearing, said disk being adapted to rest upon the disk 71 and having pins 74 projecting from its under surface, adapted to enter the slots in the disk 71, and wiper 66, secured upon the outer end of the rod 68, substantially as described.

34. The combination, with a track for supporting cans and a frame for supporting said track, of a rod 69, supported by said frame, a rod 68, pivoted at one end upon said rod 69, a wiper secured in the other end of said rod 68 and adapted to bear against a can as it is moved upon said track, and a spring for holding said wiper in contact with the can, substantially as described.

35. The combination, with a track for supporting cans and a frame for supporting said track, of a rod 69, supported by said frame, a rod 68, pivoted at one end upon said rod 69, a wiper secured in the other end of said rod 68 and adapted to bear against a can as it is moved upon said track, a spring for holding said wiper in contact with the can, and devices for limiting the outward motion of said wiper, substantially as described.

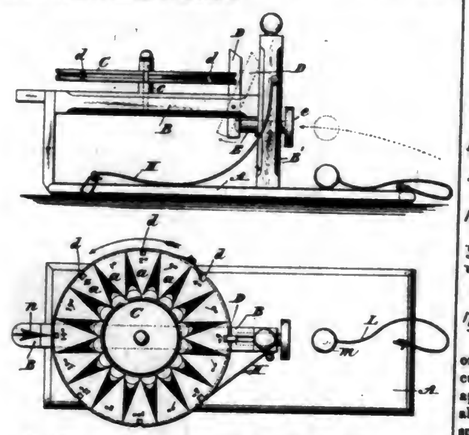
473,217. GAME APPARATUS OR PUZZLE. FRANK L. FITHIAN, Haddonfield, N. J. Filed Sept. 14, 1891. Serial No. 405,617. (No model.)



Claim.—A game apparatus or puzzle consisting of a shallow glass-covered receptacle, a free globule of mercury contained therein, a receiving and dividing device secured to the floor of said receptacle and consisting of upright sides G H, arranged at an angle to each other to form a containing device with sharp edges, and holes or pockets in the floor of the receptacle, said parts being constructed, arranged, and operating substantially as and for the purpose set forth.

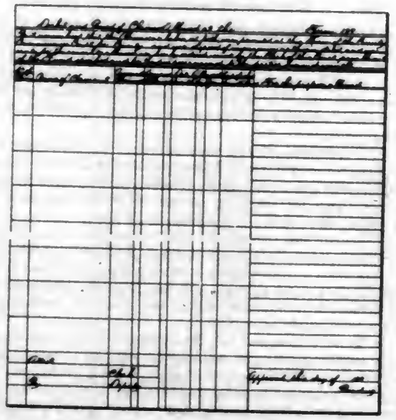
473,218. GAME APPARATUS. FRANK L. FITHIAN, Haddonfield, N. J. Filed Oct. 31, 1891. Serial No. 410,466. (No model.)

Claim.—1. A game apparatus consisting of a fixed wheel-supporting standard, a rotating wheel centrally mounted thereon, spring mechanism to adjustably tension the same, a lever-arm pivoted at about its longitudinal center in said supporting-standard, mechanism between the inner free end of said lever-arm and the wheel to adjustably lock or retain the latter in a tensioned position, and a free shaft mounted in said standard, provided with a batting-face and adapted to contact with the outer free end of the said locking-lever and thereby release the tensioned wheel, said parts being constructed and combined and operating substantially as described.



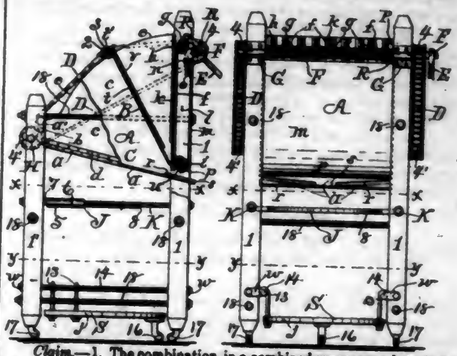
2. A game apparatus consisting of the following elements: a supporting device, upon which is mounted a rotating wheel, mechanism to tension the same, and mechanism to retain the same in its tensioned position, releasing mechanism operating against the wheel-retaining mechanism, and a ball-shooting device upon the supporting-standard, adapted to actuate the releasing mechanism, substantially as described.

473,219. DOCKET, RECORD, OR SIMILAR BOOK. EDWIN C. FEY, Sherman, Tex. Filed Oct. 1, 1891. Serial No. 407,408. (No model.)



Claim.—The docket herein shown and described, whose two opposite leaves constitute one page of the record, having one transverse ruling at the top of each sheet to afford space for variable matter, having ten vertical rulings unequally disposed to afford space for the permanent headings, as "No. of claim," "Name of claimant," "Amount claimed," "Amount allowed," "Date allowed, month, day, year," "Out of what fund allowed," and "For the purpose allowed," having, also, thirteen transverse rulings to afford requisite space to inscribe the information pertaining to each head, the column headed "For the purpose allowed" being subdivided to afford thirty-nine lines, because of the increased quantity of information peculiar to this head. At the bottom of the sheet are the permanent inscriptions "Attest," "Clerk," "By," "Deputy," "Approved this —— day of ——, presiding." The opposite sheet is similarly ruled, having space for variable information at the top and vertical columns inscribed, respectively, for permanent headings with the words "Claim filed, month, day, year," "Warrant issued, month, day, year," "Amount issued, dollars, cents," "No. of warrant," "By whom receipted for," "Remarks," the whole disposed as shown and described, and for the purpose set forth.

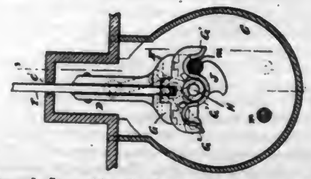
473,220. COMBINED FRUIT SQUEEZER AND STRAINER. GEO. GAHLER, Schiller, N. Y. Filed July 15, 1891. Serial No. 399,650. (No model.)



Claim.—1. The combination, in a combined squeezer and strainer, of an auxiliary strainer mounted movably upon horizontal supports secured to the supporting-legs of the overhead operating-chamber of the apparatus and adapted to forward or rearward longitudinal movement along said supports, substantially as described, and for the purpose specified.

2. The combination, in a combined squeezer and strainer, of a pail support or shelf mounted upon parallel horizontal supports secured to the supporting-legs of the overhead operating-chamber of the apparatus and adapted to forward or rearward longitudinal movement along said supports, substantially as described, and for the purpose set forth.

473,221. CABLE-GRIP. ELIAS R. GUERRA, Hoboken, N. J. Filed Jan. 15, 1892. Serial No. 418,173. (No model.)



Claim.—1. In a cable-grip, the combination, with the body-frame and a gripping-shoe thereon, of a swinging jaw, bars mounted to slide on the body-frame and supporting said swinging jaw, and additional bars mounted to slide on the body-frame and connected by links with said swinging jaw, substantially as set forth.

2. In a cable-grip, the combination, with the body-frame, of a vertically-movable swinging jaw, bars mounted to slide on the body-frame and supporting said swinging jaw, arms on said swinging jaw, links connected with said arms, and additional vertically-sliding bars on the body-frame connected with said links, substantially as set forth.

3. In a cable-grip, the combination, with a body-frame having a gripping-shoe, of vertically-sliding bars on the body-frame, forks on said bars, a swinging jaw mounted on said forks, arms on said jaw, links connected with said arms, and additional vertically-sliding bars on the body-frame connected with said links, substantially as set forth.

4. In a cable-grip, the combination, with a body-frame, of sliding end bars on the same, double-forked head-pieces on the lower ends of said end bars, a rocking shaft mounted in said head-pieces and provided with a jaw having double faces, two opposite arms on said rocking shaft, two independent sliding bars on the body-frame, links connecting said sliding bars with the arms on the rocking shaft, and gripping-shoes on the body-frame, substantially as set forth.

5. In a cable-grip, the combination, with a body-frame, of sliding end bars, cross-bars uniting the upper ends of the end bars, double-forked heads on the ends of the end bars, a rocking gripping-jaw mounted in said heads, arms on the gripping-jaw, links connected with said arms, sliding bars connected with the links, which sliding bars are provided at their upper ends with forks, and cables or chains connected with said sliding link-operating bars, substantially as set forth.

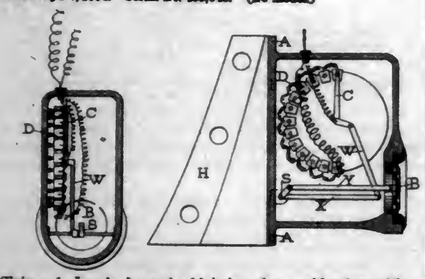
6. In a cable-grip, the combination, with a body-frame, of a vertically-sliding frame on the same, a gripping-jaw mounted to swing in said vertically-sliding frame, and sliding bars for operating the swinging jaw, the top of said sliding frame being mounted in the path of the upper ends of the sliding jaw-operating bars, substantially as set forth.

7. In a cable-grip, the combination, with the body-frame, of a sliding frame carrying a swinging gripping-jaw, cables or chains for raising said sliding frame, sliding bars on the body-frame for operating the swinging jaw, and cables for raising or lowering said sliding bars, substantially as set forth.

8. In a cable-grip, the combination, with a body-frame, of a vertically-sliding frame, a swinging gripping-jaw on the sliding frame, sliding bars for operating the gripping-jaw, cables connected with the sliding bars, pulleys to which said cables are secured, and cables for rotating said pulleys, substantially as set forth.

9. In a cable-grip, the combination, with a body-frame, of a vertically-sliding frame, a swinging gripping-jaw on the sliding frame, means for operating said jaw, and cables or chains for raising or lowering the sliding frame, substantially as set forth.

473,222. SHIP'S LOG. REYNOLD T. HALL, Merchantville, N. J. Filed Sept. 7, 1891. Serial No. 405,040. (No model.)

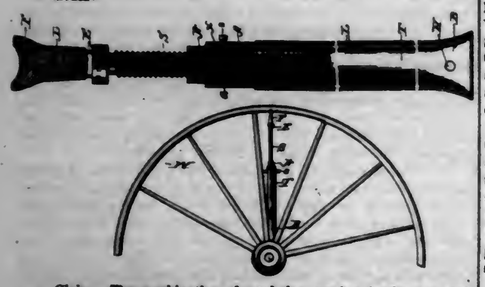


Claim.—1. In a hydrostatic ship's log, the combination, with a flexible diaphragm below the water-line of the vessel and in direct contact with the water, of a resistance-coil, its pole-piece, connections between said pole-piece and diaphragm, whereby movement of the latter causes a variation of resistance, an electric generator, and an indicating device for the variations of resistance, the said generator, indicating device, coil, and pole-piece being in electric circuit, substantially as and for the purpose described.

2. A hydrostatic ship's log comprising a chamber having a flexible diaphragm therein below the water-line of and at right angles to the course of the vessel, the outer side of said diaphragm being acted upon directly by the water, a resistance, its movable pole-piece, an electric generator, and an indicating device in electric circuit with said pole-piece and resistance, and connections between said pole-piece and diaphragm, whereby movement of the diaphragm is communicated to the pole-piece, substantially as and for the purpose described.

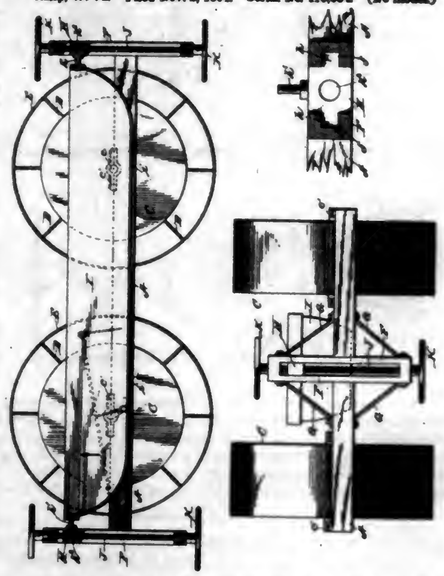
3. In a ship's log, the combination, with a flexible diaphragm in contact with the water below the water-line of the vessel, of a resistance-coil having a series of contacts, a partially-rotatable pole-piece adapted to move over said contacts, connections between said pole-piece and diaphragm to move the former, an electric generator, and a galvanometer in circuit with said generator, resistance-coil, and pole-piece, substantially as described.

473,223. TOOL FOR TIGHTENING WHEEL-TIRES. WILLIAM H. HAMBLEN, Huntsville, Tex. Filed Oct. 20, 1891. Serial No. 409,235. (No model.)



Claim.—The combination of a tubular member having one end beveled and provided with a transverse hole and provided at its other end with an interiorly-arranged annular shoulder, a set-screw passing through the tubular member and arranged near the shoulder, a nut resting on the tubular member and provided with an extension projecting into the same and bearing on the shoulder and provided with an annular groove receiving the set-screw, and a screw passing through the nut into the tubular member and having an enlargement near its outer end and provided with a fork, substantially as described.

473,224. LIFE BOAT AND RAFT. WILLIE HICKMAN, Cherry Camp, W. Va. Filed Nov. 2, 1891. Serial No. 410,634. (No model.)



Claim.—1. In an open life boat and raft, the combination, with a float-supported frame, of a life-boat provided with a series of water-escape slits or openings and pivotally and adjustably suspended within said frame, substantially as set forth.

2. In a life boat and raft, the combination of a float-supported frame, a life-boat pivotally suspended within said frame, and means for vertically adjusting said life-boat in relation to said frame, substantially as set forth.

3. In a life boat and raft, the combination of a rectangular frame, a series of hollow cylinder or float-wheels journaled in said frame and provided with a series of radially-extending blades, means for propelling said wheels, and a life-boat pivotally suspended within said frame and between said wheels, substantially as set forth.

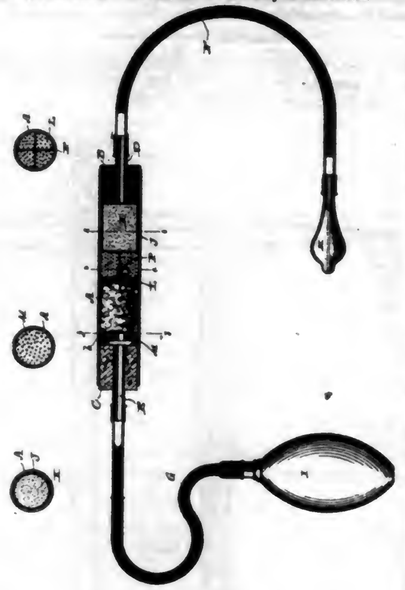
4. In a life boat and raft, the combination of a rectangular frame, a series of hollow cylinders or float-wheels journaled in said frame and provided with a series of radially-extending blades, continuous tires or bands encircling said blades, a life-boat pivotally suspended within said frame and between said wheels, and means for propelling said wheels, substantially as set forth.

5. In a life boat and raft, the combination of a float-supported frame, guide-cleats secured centrally to each end of said frame and provided with vertical longitudinal guide-grooves, a sliding block provided with laterally-projecting tongues adapted to engage said guide-grooves, an inwardly-projecting pivot pin or lug and a longitudinal threaded perforation, an adjusting-screw engaging the threaded perforation of said sliding block and provided with a hand-wheel for operating the same, and a life-boat pivotally suspended upon said pivot pins or lugs at each end of the frame, substantially as set forth.

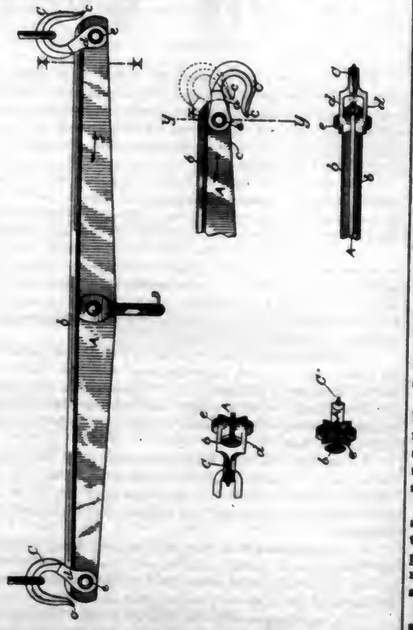
6. In a life boat and raft, the combination, with a rectangular frame, of a series of hollow cylinders or float-wheels journaled in said frame and provided with a series of radially-extending blades, means for propelling said wheels, guide-cleats secured centrally to each end of said frame, sliding blocks vertically adjustable in said guide-cleats and provided with inwardly-projecting pivot pins or lugs, and a life-boat pivotally suspended upon said pivot-pins between said wheels and provided with a series of water-escape slits or openings, substantially as set forth.

473,225. INHALER AND VAPORIZER. LOUIS B. HILBORN, Milwaukee, Wis., assignor of one-half to Harold G. Underwood, same place. Filed July 11, 1891. Serial No. 399,160. (No model.)

Claim.—The combination of the casing A, inclosing a cell J, designed to contain a solid medicament, said cell being constructed of foraminous sheet metal having perforated diaphragms at the ends thereof, with the intermediately-placed air-chamber formed by the cross P and the absorbent chamber formed by the perforated diaphragms L and M, all within said casing, the perforated stoppers B and C, with the air ingress and egress tubes, all substantially as described.



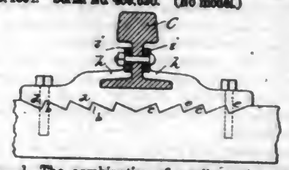
473,226. WHIFFLETREE. WILFORD H. HOLSCLAW, Louisville, Ky., assignor to B. F. Avery & Sons, same place. Filed Dec. 24, 1891. Serial No. 416,041. (No model.)



Claim.—In a metallic whiffletree, the combination, with a bar comprising a plate-like portion and a laterally-enlarged or rib-like front edge, of pivotally-connected trace-hooks, the hinge-like portions

of which are shaped, substantially as described, to embrace but turn clear of the said rib-like front edge of the bar and the points of which hooks are adapted to be moved and lie in close proximity to the front portion and ends of the bar, but may be moved sufficiently far away from the rear edge portion of the bar when turned clear back to permit the easy removal of the trace-rings, all substantially in the manner hereinbefore set forth.

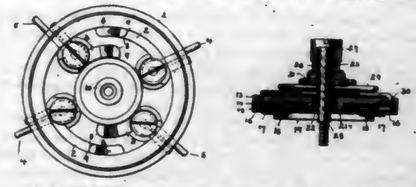
473,227. RAILWAY. ADELBERT C. HOPKINS, Ashippun, Wis. Filed Oct. 23, 1891. Serial No. 409,630. (No model.)



Claim.—1. The combination of a railway-tie provided upon its upper side with two series of teeth faced in opposite directions, a chair cast in one piece to present a pair of rail-engaging lips, as well as teeth that correspond with those of the tie, and suitable means for uniting said tie and chair, substantially as set forth.

2. The combination of a railway-tie provided upon its upper side with two series of teeth faced in opposite directions, a chair cast in one piece to present teeth corresponding to those on the tie, and rail-engaging lips having lateral extensions and suitable means for uniting said tie and chair, substantially as set forth.

473,228. ELECTRIC SWITCH. EDWARD H. JOHNSON, New York, N. Y. Filed Aug. 25, 1891. Serial No. 403,726. (No model.)



Claim.—1. The combination, in a switch, of two rigid members corresponding to the jaws of a vise, one of which members is movable repeatedly in the same direction in making and breaking circuit, contacts carried by the switch members, which when the circuit is closed are held in contact between said rigid members, said members being positively held from moving away from each other, and means for disengaging the contacts, substantially as described.

2. The combination, in a switch, of two rigid members corresponding to the jaws of a vise, one of which members is movable repeatedly in the same direction in making and breaking circuit, contacts carried on the two adjacent sides of the rigid members, which contacts when the circuit is closed are held in contact between said rigid members, means for separating the contacts, and a spring for throwing one member, with its contacts, forward, substantially as described.

3. A circuit making and breaking switch having fixed and movable beveled or wedge-shaped contacts, rigid and relatively-movable bodies, on two adjacent sides of which the contacts are mounted, a spindle for the movable body, and means holding said bodies from moving away from each other in the direction of the length of the spindle when the circuit is closed, whereby when the circuit is closed the contacts are wedged and held together between said rigid bodies, substantially as described.

4. The combination, in a snap-switch, of a fixed and a movable rigid body having a central spindle, the movable body being positively held from moving away from the other body, a spring for throwing the movable body, and contact devices between said bodies and in position to make and break contact as the movable member is turned on its spindle, substantially as described.

5. A circuit making and breaking switch having fixed and movable contacts, rigid bodies, on two adjacent sides of which the contacts are located, which contacts when the circuit is closed are pressed together between said rigid or unyielding bodies, and permanent locking devices for locking the movable bodies and contacts against reverse movement, substantially as described.

6. A circuit making and breaking switch having fixed and movable rigid bodies parallel with each other, contacts on two adjacent sides thereof, which when the circuit is closed are wedged together between said rigid or unyielding bodies, permanent locking devices for locking the movable member against a backward movement, and

a spring for throwing the movable contact when the switch is operated, substantially as described.

7. The combination, in a switch, of a stationary rigid member, a movable rigid member, which is mounted so that it can be rotated in one direction only in making and breaking the circuit, engaging contacts carried by said switch members, and means for rotating the movable member and for moving it toward or from the stationary member, whereby when in one position said contacts are wedged together between the rigid members, substantially as described.

8. A circuit making and breaking switch having fixed and movable rigid bodies, contacts between two adjacent faces thereof, which when the circuit is closed are wedged together between said bodies, the contacts having faces beveled for a portion only of their length, means for moving the contacts directly away from each other, and means for advancing the movable contacts, said latter means operating when the contacts have been moved far enough apart to bring the highest points of the bevels on the contacts adjacent to each other, substantially as described.

9. The combination, in a switch, of two members carrying contacts, one member being fixed and the other movable, a screw rotatable only in one direction and held from longitudinal movement, said screw working in a nut carried by the movable member for moving it from the fixed member when the switch is moved to its open position, and means for turning the movable member on the screw, thus causing it to ride toward the fixed member, said screw constituting a spindle on which the movable member turns, substantially as described.

10. The combination, in a switch, of two members carrying contacts, one member being fixed and the other being movable, a screw rotatable only in one direction, said screw being threaded in such direction that when the screw is turned the movable member will be carried away from the fixed member, and a spring connected to the screw and to the movable member for throwing the latter forward, thereby causing it to ride down on the screw-thread, substantially as described.

11. The combination, in a switch, of two rigid members, contacts carried thereby, which when the circuit is closed are held in contact between said rigid members, which members are movable always in the same direction both in making and breaking the circuit, means for disengaging the contacts, and means for arresting the same before the circuit is again closed, substantially as described.

12. The combination, in a switch, of two switch members, contacts carried thereby, which when the circuit is closed are held in contact between said members, a screw held from longitudinal movement engaging with and adapted to move one member for disengaging the contacts, and a spring for throwing the movable member, with its contact, forward, causing it to ride down on the screw, substantially as described.

13. The combination, in a switch, of a base adapted to be connected to a support carrying circuit-terminals separated from each other, a rigid movable member fitting over the base and carrying connecting devices adapted to co-operate with the terminals to electrically unite them, a screw-threaded sleeve in said movable member, and a screw held from longitudinal movement, but adapted to turn in said sleeve, whereby when in one position said contacts are wedged together between the rigid members, substantially as described.

14. The combination, in a switch, of a base adapted to be connected to a support carrying circuit-terminals separated from each other, a rigid movable member fitting over the base and carrying connecting devices adapted to co-operate with the terminals to electrically unite them, a screw-threaded sleeve in said movable member, a screw held from longitudinal movement, but adapted to turn in said sleeve, and a spring connected to the screw and to the movable member, whereby when the screw is turned the movable member is raised and permitted to advance, substantially as described.

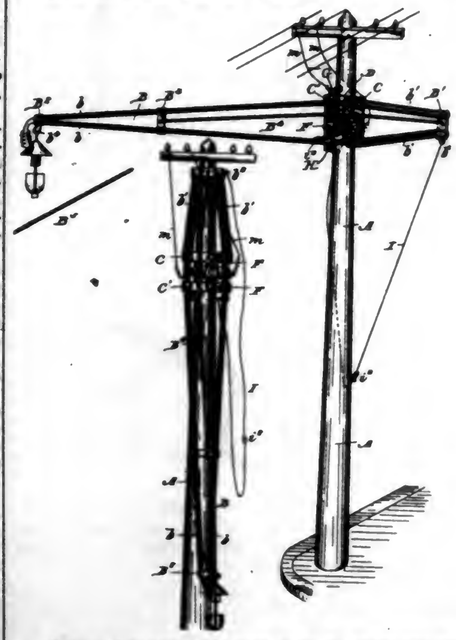
15. The combination, in a circuit making and breaking switch, of a fixed member, a member adapted to rotate, terminal-contacts on the fixed member, an insulating-screen extending between the same, and a connecting-plate or connecting-plates on the movable member, substantially as described.

16. The combination, in a switch, of a connecting plate or device and a pair of terminals having contact-faces and arranged adjacent to each other side by side, the end of the contact portion of each terminal at which the connecting device leaves it being inclined or beveled away from the other terminal, whereby when the connecting device breaks the circuit no arc can be formed between the adjacent edges or corners of said terminals, substantially as described.

17. The combination, in a switch, of a connecting plate or device and a pair of terminals having contact devices and arranged adjacent to each other side by side, the end of the contact portion of each terminal at which the connecting device leaves it being inclined or beveled away from the other terminal, whereby when the connecting device breaks the circuit no arc can be formed between the adjacent edges or corners of said terminals, and an insulating-screen between the terminals, substantially as described.

18. The combination, in a rotary switch, of a fixed and a rotary member, circuit-terminals side by side—that is, in different circles—on one member, and a contact or connecting plate on the other member adapted to electrically unite said terminals, said plate having a transverse movement, whereby it is adapted to rest squarely on both terminals, substantially as described.

473,229. ELECTRIC-LIGHT SUPPORT. GEORGE M. KIN, Allegheny, Pa., assignor to the Keystone Mast-Arm Company, same place. Filed Oct. 10, 1891. Serial No. 408,292. (No model.)



Claim.—1. The pivoted cross-beam having the tubular bars provided with perforations therein at or near the pivotal center thereof, in combination with the circuit-wires passing into said perforations and extending through said tubular bars, whereby contact with and twisting and kinking of the wires are prevented when the beam is lowered, substantially as described.

2. In combination with an ordinary telegraph-pole, the pivoted laterally-swinging cross-beam hinged to said pole at one side thereof, the combined catch and support for said beam projecting laterally from said pole below the hinged support thereof, substantially as described.

3. In combination with the pole, the pivoted horizontally-swinging cross-beam hinged to said pole intermediate the ends thereof, the guide-bracket secured to said pole beneath the hinged support of said beam and having the inclined face or edge adapted to engage and effect the sidewise movement of the beam when the latter is rocked upon its pivot, substantially as described.

4. In combination with the pole, the pivoted horizontally-swinging cross-beam, the catch projecting from said pole, and the guide-bracket arranged in proximity to said catch beneath the pivoted support of said beam, so as to engage the latter and effect the sidewise movement thereof when the beam is rocked upon its pivot, substantially as described.

5. In combination with the pole, the cross-beam, the duplex hinge having one of its members secured to said pole and the other member thereof pivotally connected to said cross-beam, the catch, and the guide-bracket, all constructed and adapted to operate substantially as described.

6. In combination with the pivoted laterally-swinging cross-beam, the operating-cord having one of its ends secured to said cross-beam, and the adjustable stop secured to said cord for limiting the sidewise movement of the cross-beam, substantially as described.

7. In combination with the pole, the pivoted laterally-swinging cross-beam, the catch projecting from said pole, the guide-bracket arranged in proximity to said catch, the rope having one end secured to said beam, and the stop for limiting the sidewise movement of the cross-beam, substantially as described.

8. In combination with the pole, the cross-beam, the duplex hinge comprising a strap-hinge having its stationary member rigidly secured to the pole and a laterally-movable member which carries the spindle or horizontal pivot-bolt on which the cross-beam is journaled, and means for operating the cross-beam, substantially as described.

9. In combination with the pivoted cross-beam, the operating-rope, the catch, the guide-bracket, and the duplex hinge comprising a strap-hinge and a horizontal pivot-bolt or spindle secured to the movable member of said strap-hinge, substantially as described.

10. The cross-beam comprising a pair of rods, each composed of a long tubular section and a short solid section connected together end to end, the tubular members of the rods forming the long arm of the beam, the cross-braces at the junction of the tubular and solid sections, the auxiliary brace, and the brace-rod connecting the several braces with the casting at the end of the short arm of the beam, substantially as described.

11. The balanced cross-beam comprising the tubular rods forming the long arm of the beam, the solid bars or rods secured to said tubular rods and forming the short arm of said beam, the castings connecting the free ends of said tubular and solid rods, respectively, the auxiliary brace, the cross-braces arranged one at either side of the pivotal center of the cross-beam, and the longitudinal brace-rod, substantially as described.

12. In combination with the cross-beam having the tubular rod forming the long arm thereof, the casting at the end of said arm, having a socket in which is fitted the free end of the rod, and the hook formed integrally with said casting for suspending a lamp therefrom, substantially as described.

13. In combination with the pole, the pivoted laterally-swinging cross-beam, the combined catch and support projecting from the side of said pole, having the curved laterally-projecting end provided with a notch in the upper edge thereof forming a rest for the beam, substantially as described.

473,230. PEN AND PENCIL CLASP. SPENCER R. LANE, Waterbury, Conn., assignor to Edward P. Haff, New York, N. Y. Filed Mar. 10, 1892. Serial No. 424,577. (No model.)



Claim.—1. In a pencil-clasp, the combination of the corrugated plate B with the tongued plate D, the tongues *d d* of said plate D being adapted to press laterally against the pen or pencil introduced between said plate D and plate B and to confine said pencil within the corrugations of said plate B, substantially as described.

2. In a pencil-clasp, the combination of the plate B, having two or more corrugations or grooves, with the plate D, having two or more tongues *d d* at one end, said tongues *d d* being bent inwardly and extending within the corrugations of the plate B, and the hinged clasp E, attached to said plate D, substantially as and for the purpose set forth.

473,231. PLUG-CUTTER. URIAH H. LEFFEL, Troy, Ohio. Filed Jan. 19, 1891. Serial No. 378,367. (No model.)

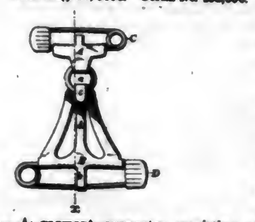


Claim.—1. A plug-cutter consisting of a tubular bit-stock having a toothed lower end, a spring-plunger adapted to fit and reciprocate within said bit-stock and having a toothed lower end and a longitudinally-recessed upwardly-extending spindle, and a screw extending through the bit-stock and engaging the recess in the plunger-spindle, substantially as and for the purpose set forth.

2. A plug-cutter consisting of a bit-stock having a central bore and a circumferential series of saw-teeth, a spring-encircled plunger having a recessed spindle with engaging shoulders and a circumferential series of saw-teeth and contained within and adapted to reciprocate within said bit-stock, and a screw extending transversely through the bit-stock, so as to engage said shoulders for the purpose of securing the plunger within the stock and limiting its vertical movement therein, substantially as set forth.

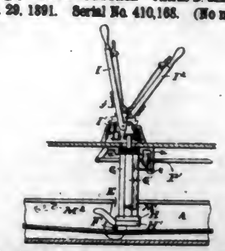
3. A plug-cutter consisting of a stock tubular for a portion of its length and having at its lower end a circumferential series of curved saw-teeth having beveled edges, and a plunger having an upwardly-extending spindle recessed or grooved for a portion of its length, and a screw or pin extending through the stock and engaging the recessed plunger for the purpose of guiding and limiting the same in its reciprocal movements within the stock, substantially as set forth.

473,232. GARMENT-SUPPORTER. EDWIN C. LOSE, Manchester, N. Y. Filed Aug. 17, 1891. Serial No. 402,850. (No model.)



Claim.—A garment-supporter consisting of two plates A B, punched from sheet metal, the plate A being provided with a clasp-pin C, secured to its top, and the plate B having a like clasp-pin D secured to the bottom thereof, the two plates connected by a ring *a*, secured to the bottom of the plate A and detachably engaging the snap-hook on the plate B, the pin-bar of said clasp-pin D having a supporting-hook midway of its ends, the whole in combination and for the purpose substantially as arranged and described.

473,233. CABLE SYSTEM. JAMES B. MAHAFFEY, Baltimore, Md. Filed Oct. 29, 1891. Serial No. 410,168. (No model.)



Claim.—1. A gripper for cable cars, comprising a grip bar or jaw to engage the cable on the upper side and a vertically-movable grip bar or jaw to engage the cable on the under side and having a forwardly-projecting upwardly-inclined arm to facilitate riding over a crossing cable.

2. A gripper for cable cars, hung or pivoted to permit it to swing laterally, and comprising a grip bar or jaw to engage the cable on the upper side and a vertically-movable grip bar or jaw to engage the cable on the under side and having a forwardly-projecting upwardly-inclined arm to facilitate riding over a crossing cable.

3. In a cable railway, the combination of a gripper hung or pivoted to permit it to swing laterally, and comprising a grip bar or jaw to engage the cable on the upper side, a vertically-movable grip bar or jaw to engage the cable on the under side and carrying a projecting stud and a forwardly-extending inclined arm, and a stationary inclined bar located in the conduit in the path of the stud, whereby the movable grip-bar is pushed down to automatically release the cable.

4. A cable car provided with grippers at the forward and rear ends, the lower grip-bar of each gripper having an upwardly-inclined arm projecting from its forward end, and levers at the forward end to work both grippers through suitable connections, in the manner and for the purpose described.

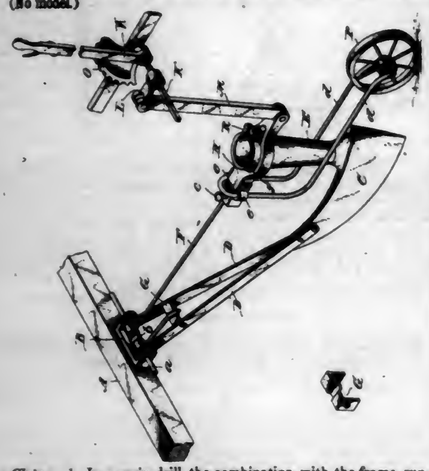
5. In a cable railway, the combination of a gripper at the forward end of a car, hung or pivoted to permit it to swing laterally, and comprising a grip bar or jaw to engage the cable on the upper side, a vertically-movable grip bar or jaw to engage the cable on the under side and carrying a projecting stud and a forwardly-extending inclined arm, a similarly-constructed gripper at the rear end of the car, levers at the forward end to work both grippers through suitable connections, and a stationary inclined bar located in the conduit in the path of the studs on the gripper, whereby the movable grip-bars are pushed down to automatically release the cable.

6. A cable car provided with a gripper at the forward end, a gripper at the rear end, and levers at the forward end to work both grippers through suitable connections, in combination with means to automatically release the forward gripper as it approaches a crossing line, and an automatic signal, arranged substantially in the manner shown.

7. A cable car provided with a gripper at the forward end, a gripper at the rear end, and levers at the forward end to work both grip-

pers through suitable connections, in combination with means to automatically release the forward gripper as it approaches a crossing line, a spring-actuated rod pivoted to the forward gripper, an arm in the conduit projecting in the path of said rod, and a gong to be struck by the upper end of the rod.

473,234. GRAIN-DRILL. WILLIAM G. MUIR and EDWARD CHRISTMAN, Louisville, Ky., assignors to the Brennan & Company Southwestern Agricultural Works, same place. Filed Jan. 28, 1892. Serial No. 419,497. (No model.)



Claim.—1. In a grain-drill, the combination, with the frame, runners, feed-tubes, and drag-bars pivoted to the frame, of spring-pressure rods coiled at the inner end, and pivotal connection therefor to the frame, with rigid support between the bifurcated arms of the drag-bars and free inner ends of said spring-rods pressing thereon, and connecting mechanism at the outer end of said spring-rods connecting same to a rock-shaft, whereby the rocking of said shaft will cause said spring-rods to exert their pressure on the runners, substantially as shown and described.

2. In a grain-drill, the combination, with the frame, runners, feed-tubes, and drag-bars pivoted to the frame, of spring-pressure rods coiled at the inner end, and pivotal connection therefor to the frame, with rigid support between the bifurcated arms of the drag-bars, and free inner ends of said spring-rods pressing thereon, hollow castings surrounding the feed-tubes and rigidly attached to the outer ends of said spring-rods, with lip on the feed-tubes, and means for raising and depressing said hollow castings, whereby the runners may be raised entirely from the ground or driven therein, substantially as shown and described.

3. In a grain-drill, the combination, with the frame and drag-bars pivoted thereto, of a spring-rod, coil formed thereon at its forward end, with pivot-rod for the drag-bars to receive said coil, rigid support between the drag-bars, and free end of said spring-rod extending back and pressing upon said support, hollow casting secured to the other end of said spring-rod and surrounding the feed-tube, means for raising and depressing the said casting, and a covering-wheel, with spring-connecting rods connecting said wheel to the hollow casting, all substantially as shown and described.

473,235. SPARK-ARRESTER. JOSEPH A. PAULLIN, Kansas City, Mo. Filed Dec. 10, 1891. Serial No. 414,592. (No model.)

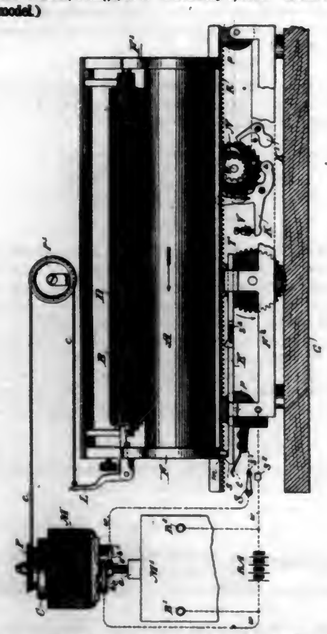


Claim.—1. An improved spark-arrester comprising a frusto-conical smoke-stack, a head located immediately within the top opening of the stack, and a frusto-conical screen of less lateral dimensions than and located within said frusto-conical stack, the walls of the screen being equal in height to the walls of the stack and extending throughout their length parallel with the walls of the stack, substantially as set forth.

2. A spark-arrester comprising a diamond or double frusto-conical stack, a reverted frusto-conical foraminous screen located within the upper part of said stack, the upper end of said screen extending within the top opening of the stack and the lower end of said screen being in horizontal alignment with the juncture of the upper and lower stack-cones, and, furthermore, the sides of the screen being parallel with the sides of the upper stack-section, and a deflector of less diameter than the top opening of the stack and located immediately within said top opening, substantially as set forth.

3. A spark-arrester comprising a lower cylindrical stack-section, an upper diamond stack-section composed of two frusto-conical sections united horizontally at their bases, the upper end of the cylindrical section projecting upward within the lower end of the diamond-section, and a deflector extending at its ends downward and outward from the upper part of the cylindrical stack-section and wholly closing the space between the outer surface of said stack-section and the inner surface of the lower diamond-section, the upper or middle portion of said deflector wholly closing the space between the outer surface of the upper end of the cylindrical stack-section and the inner surface of the lower diamond-section and extending obliquely outward and downward in said space, substantially as set forth.

473,236. ATTACHMENT FOR TYPE-WRITING MACHINES. CHARLES J. REED, Orange, N. J. Filed July 6, 1891. Serial No. 398,472. (No model.)



Claim.—1. A type-writer having a motor for impelling the paper-carriage in one direction and an additional motor for impelling it in the reverse direction and simultaneously storing up energy in the first-named motor, with mechanical and electrical connections, substantially as described.

2. A type-writer having a paper-carriage provided with a source of power for advancing it, in combination with a source of power having electrical and mechanical connections, whereby the carriage is automatically restored to normal position at the end of each line and the first-named source of power replenished, substantially as described.

3. A type-writer having a source of power for advancing its paper-carriage, in combination with a second source of power having mechanical and electrical connections for restoring the paper-carriage and replenishing the first-named source of power, substantially as described.

4. A type-writer having a source of power for advancing its paper-carriage, in combination with a second source of power having mechanical and electrical connections for restoring the carriage to normal position at the end of its journey and additional electrical connections for bringing the second source of power into service at intermediate points, substantially as described.

5. A type-writer having a paper-carriage provided with a source of power for impelling it, in combination with an electric motor having mechanical and electrical connections with the carriage for restoring it to normal position and reviving the source of power at any point of its journey, substantially as described.

6. A type-writer having a source of power adapted to advance the paper-carriage, in combination with a second source of power, as an electric motor, adapted to return the carriage and revive the first-named source of power, substantially as described.

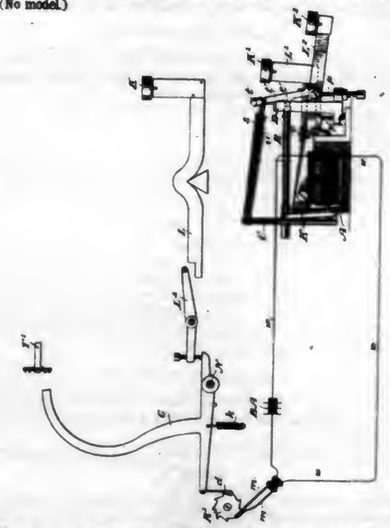
7. A type-writer having its paper-carriage operatively connected to a source of power, as a spring, a motor having mechanical and electrical connections with the carriage, and a circuit-closing device operatively connected with the motor and the carriage, whereby the latter is advanced by the spring and returned by the motor, substantially as described.

8. A type-writer having its paper-carriage operatively connected to a source of power, an electric motor having electrical and mechanical connections with the carriage for returning it to the starting-point at the completion of each line, a sliding circuit-closer controlled in its movements by the carriage, and an independent circuit-closer adapted to be closed by the operator at will, substantially as described.

9. A type-writer having its paper-carriage connected to a constantly-acting source of power, an escapement adapted to control the application of the power, and an electric motor operatively connected to the carriage and adapted to return it at any point of its journey, substantially as described.

10. A type-writer having the paper-carriage connected to a source of power adapted to propel it in one direction and an electric motor provided with clutch mechanism and electrical and mechanical connections, whereby the carriage may be restored to normal position and the power replenished, substantially as described.

473,237. ATTACHMENT FOR TYPE-WRITING MACHINES. CHARLES J. REED, Orange, N. J. Filed July 6, 1891. Serial No. 398,473. (No model.)



Claim.—1. A type-writer provided with key-levers and means for adapting said key-levers to print from different sets of type, in combination with locking mechanism adapted to hold the latter in one position, and additional mechanism adapted to automatically release the locking mechanism after the depression of any one of the aforesaid key-levers, substantially as described.

2. A type-writer provided with key-levers and one or more additional levers for adapting the aforesaid key-levers to print from different sets of type, in combination with locking mechanism for locking said additional lever or levers in one position, and additional means for automatically releasing said locking mechanism after any one of the key-levers has been depressed, substantially as described.

3. A type-writer provided with a set of key-levers and one or more locking-levers operatively connected with the printing mechanism thereof, in combination with locking mechanism for locking the second lever or levers in one position, a releasing mechanism adapted to automatically release said locking lever or levers after the depression of any one of the key-levers, substantially as described.

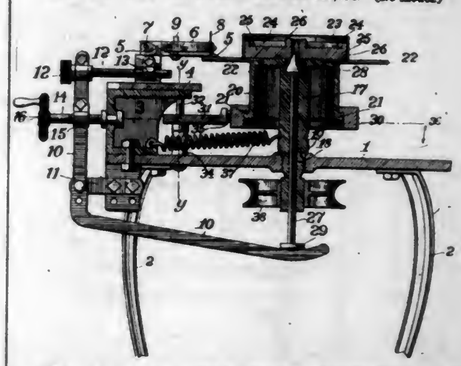
4. A type-writer provided with a set of key-levers operatively connected with printing mechanism and an additional lever also operatively connected with the printing mechanism and adapted when depressed to cause the same to print from a second set of type, and a locking device for locking the latter in a fixed position, and a releasing device operatively connected with the printing mechanism and adapted to automatically release the locking mechanism after the depression of any one of the aforesaid key-levers, substantially as described.

5. A type-writer provided with a set of key-levers operatively connected to printing mechanism, a locking-lever also connected to the aforesaid printing mechanism and adapted to permit the aforesaid key-levers to print from either one of two sets of type, and a locking device for holding the locking-lever in a fixed position, in combination with electro-magnetic means operatively connected to the printing mechanism and adapted to release the locking device, substantially as described.

6. A type-writer provided with a set of key-levers operatively connected to printing mechanism, a pair of locking-levers also operatively connected to the printing mechanism and adapted to cause said printing mechanism to print from either one of three sets of type, in combination with locking devices for each of the locking-levers, and electro-magnetic means also operatively connected to the printing mechanism and adapted to release the locking devices after the depression of any one of the key-levers, substantially as described.

7. A type-writer having a set of key-levers operatively connected to printing mechanism, one or more locking-levers also operatively connected to the printing mechanism, locking devices, one or more, carried by said locking-levers, an electro-magnet having its armature operatively connected to the locking device or devices, a battery included in circuit with said electro-magnet, and a circuit-closing device operatively connected to the printing mechanism and adapted to close the circuit of the aforesaid battery after the depression of each key-lever, substantially as described.

473,238. HAT-ROUNDING MACHINE. CHARLES H. REID, Danbury, Conn. Filed June 8, 1891. Serial No. 396,551. (No model.)



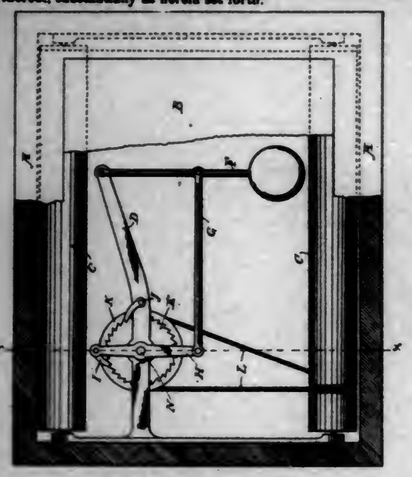
Claim.—1. In a hat-rounding machine, the combination of the pivoted L-shaped lever 10, the knife-carriage to which the upper end of said lever is connected, the spindle 27, supported on the lower end of said lever and having on its upper end a cone, the hat-clamping mechanism, and means, as a screw, for operating said lever, substantially as set forth.

2. In a hat-rounding-machine, the combination, with the knife-carriage and the hat-clamping mechanism, of a pivoted L-shaped lever whose extremities are connected, respectively, with said carriage and mechanism, and means for rocking said lever on its pivotal point, whereby said carriage and clamping mechanism are operated simultaneously, substantially as set forth.

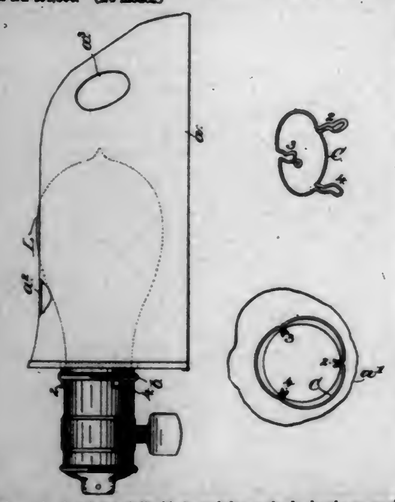
473,239. ADVERTISING-SIGN. WILLIAM R. SANFORD, Brooklyn, N. Y. Filed Oct. 7, 1891. Serial No. 408,045. (No model.)

Claim.—The combination, with an endless curtain and two rollers for carrying the same and a frame for supporting said rollers, of a bracket attached to said frame and projecting therefrom directly between said rollers, a pulley and attached ratchet-wheel and a pendulum carried by said bracket, a pawl actuated by said pendulum and engaging with the ratchet-wheel, and a band between the said pulley

and one of the rollers, said bracket, pulley, ratchet-wheel, pendulum, pawl, and band being within the curtain, between the front and back rods thereof, substantially as herein set forth.



478,240. LAMP-SHADE AND HOLDER FOR INCANDESCENT LAMPS. GEORGE P. SEAVEY, Boston, Mass. Filed Aug. 6, 1891. Serial No. 401,860. (No model.)



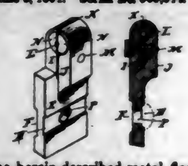
Claim.—1. A substantially U-shaped lamp-shade having a neck provided with a hole for the reception of a lamp and slotted longitudinally at or near the center of the U shape at its upper side to admit of the rays of light passing upwardly and of being reflected downwardly through the open side of the shade, substantially as described.

2. A substantially U-shaped lamp-shade having a neck provided with a hole for the reception of a lamp and slotted at or near the center of the U shape to admit of the rays of light passing upwardly and of being reflected downwardly through the open side of the shade and provided with end holes, as and for the purposes set forth.

3. The herein-described shade-holder, composed of wire and bent to form a base-rim and a series of independent spring-arms having oppositely-bent recesses, one to receive the neck of a shade and the other to embrace a portion of a lamp-socket, the wire portions between the spring-arms being in arcs of different circles to operate substantially as described.

4. A lamp-shade having its shell provided with openings for the transmission of light and having its neck provided with an opening for the reception of an electric lamp, combined with an electric lamp, and a holder composed of wire and having spring-arms adapted to engage the lamp and the neck of the shade, substantially as described.

478,241. FLANGE FOR PIANO-ACTIONS. WILLIAM W. SHAILER, Ivoryton, Conn., assignor to the Comstock, Cheney & Company, same place. Filed June 6, 1891. Serial No. 395,514. (No model.)



Claim.—1. The herein-described metal flange for piano-actions, consisting of the body E, constructed with the two jaws J I, both formed integral with the body, but with a space between the two jaws, combined with a screw extending through one jaw into the other and by which the two jaws are adapted to be clamped upon the pivot-pin, the said two jaws constructed with a projecting boss N at each side, the bosses being formed partly on one jaw and the remainder on the other, substantially as described.

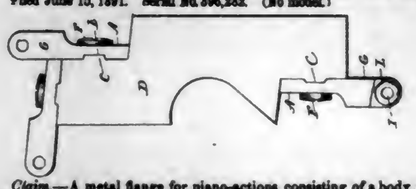
2. In a metal flange for piano-actions, the jaws which clamp the pivot-pin, the said two jaws constructed with a projecting boss N at their two sides, the said bosses being formed partly on one jaw and partly on the other jaw, substantially as described.

3. A flange for piano-actions, consisting of the body E, constructed with a transverse groove H, with a screw-hole through the body in the said groove, the width of the groove less than the width of the bearing under the head of the screw, substantially as described.

4. A flange for piano-actions, the body E, constructed with a transverse groove H on its face, having a screw-hole P through the body in the said groove, combined with a screw through the said hole E, and a spring-washer R between the head of the screw and the body of the flange, the said washer taking its bearing upon opposite sides of the said groove, substantially as described.

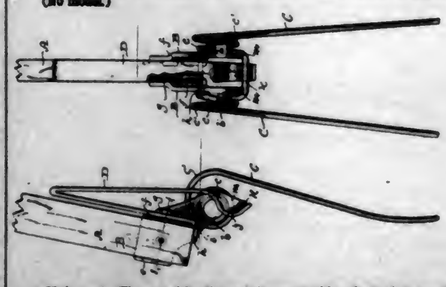
5. A flange for piano-actions, consisting of the body E, constructed with a transverse groove H, and a screw-hole P through the body in said groove, with two jaws I J projecting from the said body, cast integral therewith, but with a division between the two jaws, with a screw through one jaw into the other, substantially as described.

478,242. FLANGE FOR PIANOS. WILLIAM W. SHAILER, Ivoryton, Conn., assignor to the Comstock, Cheney & Company, same place. Filed June 15, 1891. Serial No. 396,282. (No model.)



Claim.—A metal flange for piano-actions, consisting of a body A, having two ears G H projecting therefrom, the ears constructed with pivot-holes and also constructed with a boss upon their insides around the pivot-holes, the said bosses presenting substantially a convex face, substantially as and for the purpose described.

478,243. HAY-TEDDER FORK. CHARLES SILBERMANN and CHAS. A. SILBERMANN, West Bend, Wis. Filed May 15, 1891. Serial No. 392,965. (No model.)



Claim.—1. The combination of the arm, side plates fast on the same and provided with lateral studs, a two-prong spring-fork having connected coils spirally disposed in the direction of the plate-studs and arranged to wind on the latter, the radius of each coil being different

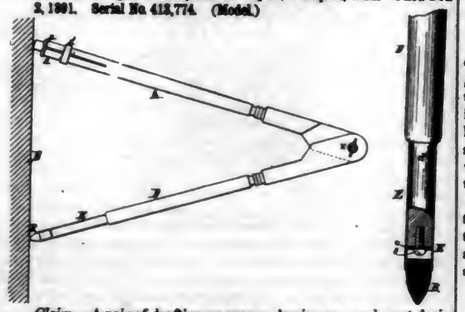
from the radii of all the other coils relative to the same stud, and a leaf-spring having a portion thereof impinged against that portion of the fork between the prong-coils, substantially as set forth.

2. The combination of the arm, side plates fast thereon and provided with lateral studs, a two-prong spring-fork having connected coils spirally disposed in the direction of the plate-studs and arranged to wind on the latter, the radius of each coil being different from the radii of all the other coils relative to the same stud, and a leaf-spring having its free end in the form of a compound curve that impinges against that portion of the fork between the prong-coils, substantially as set forth.

3. The combination of the arm, side plates fast on the arm and provided with downward and forward extensions having lateral studs thereon, a two-prong spring-fork having coils engaging the studs and that portion thereof between the coils opposed to the extensions of the side plates below said studs, and a leaf-spring in direct opposition to the coil-connecting portion of the fork, substantially as set forth.

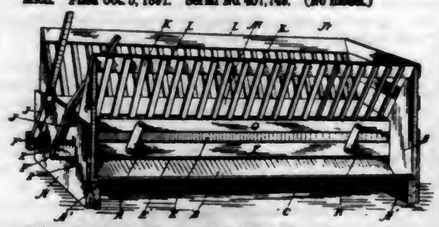
4. The combination of the arm, side plates fast on the arm and provided with flanges *e f g h* and extensions *m*, the latter having lateral studs thereon, a spring-fork having coils arranged on the studs, and a horizontal portion between the coils normally at rest against said side-plate extensions below said studs, and a leaf-spring having an angled end supported on said arm between the plate-flanges *f g h*, extended up, then bent back at an acute angle, and terminated at its free end in a curve opposed to the coil-connecting portion of the fork, substantially as set forth.

478,244. BLACKBOARD-COMPASSES. HIRAM P. SMITH, Brooklyn, N. Y., assignor to Benjamin H. Toquet, Westport, Conn. Filed Dec. 3, 1891. Serial No. 413,774. (Model.)



Claim.—A pair of drafting-compasses having on one leg a tube in which the leg may turn and which carries a rubber or equivalent centering-point, substantially as described.

478,245. FEED-RACK. GEORGE L. TAFT and FRANK TAFT, Ionia, Mich. Filed Oct. 5, 1891. Serial No. 407,749. (No model.)



Claim.—1. The herein-described feed-rack, comprising the rack N, having a movable floor M, sides E, extending downward from opposite sides of said floor, oppositely-inclined strips B beneath said movable floor, said strips being attached at their ends to the rack and out of contact with the lower ends of the sides E, thereby forming two triangular grain-receptacles beneath said rack N, each of which has an opening E' at its lower corner, said strips B being also prolonged beyond said sides E, strips C, hinged at their lower ends to the outer ends of said strips B, thereby forming troughs, which can be closed by folding their sides onto their bottoms, as described, and adjustable gates for uncovering and covering said openings E', all arranged, combined, and operating substantially as shown and described.

2. The herein-described feed-rack, comprising the rack N, having a bottom which is movable to permit its contents to be discharged downward, two grain-receptacles beneath said rack, said receptacles having closed sides and ends and oppositely-inclined bottoms, which are out of contact with the lower ends of its side walls, thereby leaving openings at said points, and said bottoms extending beyond said side walls, inclined strips secured at their lower ends to the outer ends of said inclined bottoms, thereby forming troughs at the sides of the bottoms of said grain-receptacles, swinging gates for covering or uncovering said openings at the lower corners of said grain-receptacles to open or close communication of said grain-receptacles with said troughs, and levers for operating said gates, all combined and operating as set forth.

3. The herein-described feed-rack, comprising the ends A, sides E, oppositely-inclined strips B, which project toward but are out of contact with the lower ends of said sides E, said parts forming two grain-receptacles, each of which has an inclined bottom leading to an opening in its lower corner, a rack N above said grain-receptacles, a piece M, forming the floor of said rack and top of said receptacles, said piece being movable for the purpose specified, troughs beneath the openings in said grain-receptacles, and gates for closing said openings, said gates being adjustable, as set forth.

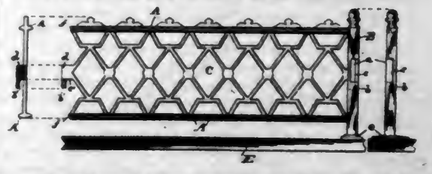
478,246. LEAF-TURNER. CHARLES H. VAN DUSEN, Verona, Ill. Filed May 1, 1891. Serial No. 391,291. (No model.)



Claim.—1. The leaf-turner shown and described, consisting of the combination of the board A, having the foot-rail E, provided with the gate J, forming an extension thereof, the reciprocating racks S R Y, the arms B, having the spring-jaws D on their outer ends and the pinions V on their inner ends for engaging, respectively, said racks, the housings F F, respectively having the slots *m m'*, forming the shoulders *n n'*, and the spring-arms *c c*, having their inner ends forming a coil within said housings, all arranged to operate substantially as and for the purpose set forth.

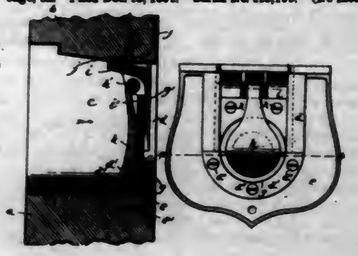
2. In the leaf turner shown and described, in combination with the board A, the housings F F, respectively having the slots *m*, forming the shoulders *n*, and the coil-springs arranged within said housings and having their ends extend to form the spring-arms *c c* for securing a book on said board, substantially as and for the purpose set forth.

478,247. TOY FENCE. WERNER WINDS, Baltimore, Md. Filed Jan. 21, 1892. Serial No. 418,510. (No model.)



Claim.—In a toy fence, the combination of panels, each having at one end a post with a transverse vertical slot having a beveled downward extension and at its opposite end, about the center of the panel, a projecting hook with a beveled side, the said hook of one panel engaging the post of the adjacent panel in its slot, substantially as described.

478,248. VALVE FOR BEER-COOLERS. MORIS BERGHEIM, Chicago, Ill. Filed Dec. 15, 1891. Serial No. 415,199. (No model.)

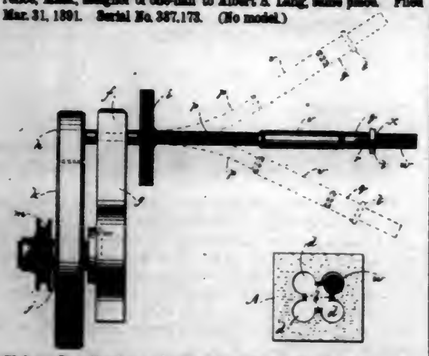


Claim.—1. The combination, with a beer-cooler having an opening *e*, of a U-shaped plate *d*, having slots *f f*, removable piece *i*, adapted to move in said slots, whereby said piece may be removed to permit of the insertion of a cock, and a valve *h*, carried by said piece, substantially as and for the purpose specified.

2. The combination, with a U-shaped plate *d*, having slots *f f*, a removable piece *i*, adapted to move in said slots, whereby said piece may be removed to permit of the insertion of a cock, and a cloak-valve *h*, carried by said piece *i*, of sheets *g g'*, secured to the plate *d* and piece *i*, substantially as and for the purpose specified.

3. The combination, with a plate *d*, having a flange *e*, a packing-sheet *g*, a strip *d'*, and slots *f f* in said plate *d*, of a removable piece *i*, adapted to move in said slots, whereby said piece may be removed to permit of the insertion of a cock, packing-sheet *g'*, attached to said piece, plate *i'* for supporting said packing-sheet *g'* upon the piece *i*, and a valve *h*, hinged to said piece *i* and adapted to hang in a vertical position, substantially as described.

478,249. DIE-SHARPENING MACHINE. MARTIN L. BOSS, Lawrence, Mass., assignor of one-half to Albert S. Lang, same place. Filed Mar. 31, 1891. Serial No. 387,173. (No model.)



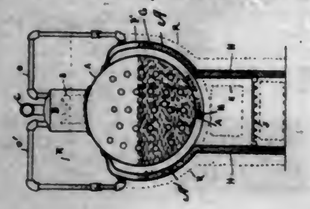
Claim.—In a die-sharpening machine, the combination of a rotary stub-shaft, driving mechanism mounted thereon, a flexible shaft secured to said stub-shaft, having a loose handle, a split chuck mounted on said flexible shaft, said chuck being exteriorly screw-threaded, a solid cylindrical grinder having a reduced portion at its inner end fitted into said chuck, and a nut turning on said chuck-threads.

478,250. IMPLEMENT-HANDLE. MILTON P. CARLETON, Canton, Mich. Filed May 27, 1891. Serial No. 394,313. (No model.)

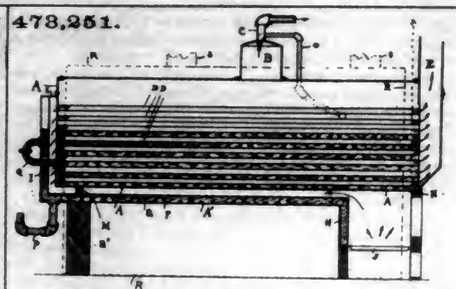


Claim.—As an improved article of manufacture, an auxiliary handle consisting of an open link having two side bars extending obliquely upward, a connecting-bar between the lower ends of the side bars having an upwardly-curved central portion and vertical apertures on opposite sides of the curve, a U-shaped stirrup having its ends inserted through the apertures, nuts on the projecting ends of the stirrup, and a cylindrical hand-piece pivoted between the upper ends of the side bars, substantially as described.

478,251. STEAM-HEATER. ROBERT M. COX and ROBERT CLARK Peoria, Ill. Filed Apr. 22, 1891. Serial No. 389,921. (No model.)

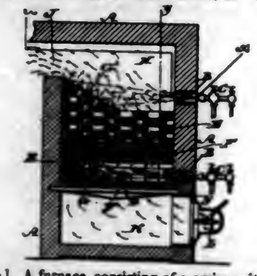


478,251.



Claim.—The herein-described steam-boiler, consisting of a flanged water-shell and steam-dome, of a concentric hot-air space between the boiler and shell, the return-pipe connected to said shell, the equalizing-pipe Q, passed through the shell, the steam-pipes connecting the water-shell with said dome, said water-shell being entirely disconnected from said boiler, except at the point of connection formed by the equalizing-pipe and dome, substantially as set forth.

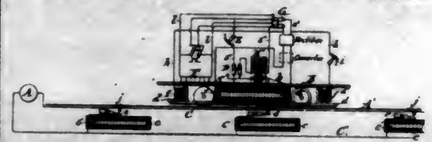
478,252. FURNACE FOR BURNING LIQUID FUEL. STEPHEN COX, Jr., Bridgeton, N. J., assignor to the Cox & Sons Company, of New Jersey. Filed July 13, 1891. Serial No. 399,333. (No model.)



Claim.—1. A furnace consisting of a casing with an opening in its front wall, checker-work supported in said casing below said opening, an inclined spray-plate on said checker-work opposite said opening, and an ash-pit below said checker-work, and means, substantially as described, for discharging fuel under pressure through said opening onto said plate, said parts being combined substantially as described.

2. A furnace consisting of a casing with upper and lower openings in its front wall, checker-work in said casing having a chamber therein opposite said lower opening, inclined spray-plates supported on said checker-work opposite said openings, bars supporting said checker-work, an air-chamber below said bars, and means for forcing fuel into said openings onto said spray-plates, said parts being combined substantially as described.

478,253. CONVERTER SYSTEM FOR ELECTRIC RAILWAYS. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed June 25, 1889. Serial No. 315,457. (No model.)



Claim.—1. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, and a translating device connected with the latter conductor.

2. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, a vehicle, a secondary circuit on the vehicle in suitable inductional relation to the coils, and an electric motor in the secondary circuit to move the vehicle.

3. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, a vehicle, a secondary circuit on the vehicle in suitable inductional relation to the coils, and an electric motor to move the vehicle, and controlling devices in the secondary circuit.

4. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, a paramagnetic core or body for each of said coils, a vehicle, a secondary circuit on the vehicle in suitable inductional relation to one or more of said cores or coils, and a translating device in the secondary circuit.

5. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, an iron core or body within each of said coils, a vehicle, a secondary circuit on the vehicle in suitable inductional relation to one or more of said cores or coils, and an electric motor in the latter circuit to move the vehicle.

6. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, iron cores between said coils and having enlarged poles extending beyond the ends of the coils, a vehicle, a secondary circuit on the vehicle in suitable inductional relation to one or more of said cores or coils, and an electric motor in the latter circuit to move the vehicle.

7. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the railway and connected with the conductor, a laminated iron core or body for each of said coils, a vehicle, a conductor on the vehicle in inductional relation to one or more of said cores or coils, and a translating device connected with the latter conductor.

8. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the railway and connected with the conductor, a laminated iron core or body for each of said coils, a vehicle, a conductor on the vehicle in inductional relation to one or more of said cores or coils, an electric motor to move the vehicle in electrical connection with the latter conductor, and controlling devices.

9. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the railway and connected with the conductor, a core or body of iron for each of said coils having poles extended to, beyond, or in proximity to the surface of the road-bed, a vehicle, a conductor on the vehicle in suitable inductional relation to one or more of said cores or coils, and an electric motor to move the vehicle in electrical connection with the latter conductor.

10. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the railway and connected with the conductor, a core or body of iron for each of said coils in inductional relation to the latter and having its poles extended to or in proximity to the surface of the road-bed, but located on opposite sides of the center thereof, a vehicle, a conductor on the vehicle in suitable inductional relation to one or more of said cores or coils, and an electric motor to move the vehicle in electrical connection with the latter conductor.

11. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the railway and connected with the conductor, a core of iron within each of said coils and having its poles located on opposite sides of the center of the road-bed, a vehicle, a conductor on the vehicle in suitable inductional relation to one or more of said cores or coils, and an electric motor to move the vehicle in electrical connection with the latter conductor.

12. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, a paramagnetic core or body within each of said coils in inductional relation to the latter, a vehicle, a conductor on the vehicle in inductional relation to both the cores and coils, and an electric motor to move the vehicle in electric connection with the latter conductor.

13. In an electric-induction railway, a source of irregular or alternating currents, a line conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, a core of iron within each of said coils and having its poles located on opposite sides of the center of the road-bed, a vehicle, a secondary coil upon the vehicle, a core or body of iron for the latter coil in inductional relation to both the cores and coils of the line conductor, and an electric motor to move the vehicle in circuit with the secondary-coil conductor.

14. In an electric-induction railway, a source of irregular or alternating currents, a line conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, a core of iron within each of said coils having its poles extended to or in proximity to the surface of the road-bed, but located on opposite sides of the center thereof, a vehicle, a secondary coil upon the vehicle, a core of iron within the latter coil having its poles extended to or in proximity to the poles of the primary cores and in inductional relation therewith, and an electric motor to move the vehicle in circuit with the secondary-coil conductor.

15. In an electric-induction railway, a source of irregular or alternating currents, a line conductor extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor, a laminated core of iron within each of said coils having its poles extended to or in proximity to the surface of the road-bed, but located on opposite sides of the center thereof, a vehicle, a secondary coil upon the vehicle, a laminated core of iron within the latter coil having its poles extended to or in proximity to the poles of the primary cores and in inductional relation therewith, and an electric motor to move the vehicle in circuit with the secondary-coil conductor.

16. In an electric railway, a source of irregular or alternating currents, a conductor or conductors extending therefrom along the way, a laminated paramagnetic core or body having its poles located one on each side of the center of the road-bed, a vehicle, a conductor on the vehicle in suitable inductional relation to the core, and a translating device connected with the latter conductor.

17. In an electric-induction railway, a source of irregular or alternating currents, conductors extending therefrom along the railway, a series of coils distributed apart along the way and connected with the conductor in multiple arc, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, and a motor to move the vehicle or other electric translating device connected with the latter conductor.

18. In an electric-induction railway, a source of irregular or alternating currents, conductors extending therefrom along the railway, a series of coils distributed apart along the way in multiple arc connected with the conductors, but normally out of circuit, a circuit maker and breaker for each of said coils, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, a magnetic device on the vehicle to operate the circuit makers and breakers to include one or more coils in the vicinity of the vehicle in circuit, and a motor to move the vehicle or other electric translating device connected with the vehicle conductor.

19. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, but normally out of circuit, a circuit maker and breaker for each of said coils, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, a magnetic device on the vehicle to operate one or more of the circuit makers and breakers to include one or more coils in circuit in the vicinity of the vehicle, and a motor to move the vehicle or other electric translating device connected with the vehicle conductor.

20. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, but normally out of circuit, a circuit maker and breaker for each of said coils, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, a magnetic device in circuit with an electric conductor on the vehicle to operate one or more of the circuit makers and breakers to include one or more coils in circuit in the vicinity of the vehicle, and a motor to move the vehicle or other electric translating device connected with the vehicle conductor.

21. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, but normally out of circuit, a circuit maker and breaker for each of said coils, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, a magnetic device consisting of a bar of metal included in a circuit of very low resistance in inductional relation to the conductor on the vehicle to operate one or more of the circuit makers and breakers to include one or more coils in circuit in the vicinity of the vehicle, and a motor to move the vehicle or other electric translating device connected with the vehicle conductor.

22. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, but normally out of circuit, a circuit maker and breaker for each of said coils, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, a magnetic device on the vehicle, consisting of a magnetic bar extending near and parallel to the surface of the road-bed and in the same direction as the movement of the vehicle to operate one or more of the circuit makers and breakers to include one or more coils in circuit in the vicinity of the vehicle, and a motor to move

the vehicle or other electric translating device connected with the vehicle conductor.

23. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, a vehicle, a secondary circuit entirely on the vehicle in suitable inductional relation to the coils, a current-rectifier in the latter circuit to straighten the currents therein, and an electric motor to move the vehicle or other electric-translating device thereon connected in the latter circuit.

24. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, one or more coils distributed apart along the way and connected with the conductor, a vehicle, a secondary circuit entirely on the vehicle in suitable inductional relation to the coils, a current-rectifier in the latter circuit to straighten the currents therein, and a continuous or direct current motor to move the vehicle connected in the latter circuit.

25. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, a vehicle, a secondary circuit on the vehicle in suitable inductional relation to the coils, a current-rectifier in the latter circuit to straighten the currents therein, a continuous or direct current motor to move the vehicle connected in the latter circuit, and a secondary battery on the vehicle adapted to be connected in the latter circuit.

26. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, a vehicle, a secondary circuit on the vehicle in suitable inductional relation to the coils, a current-rectifier in the latter circuit to straighten the currents therein, a continuous or direct current motor to move the vehicle, a secondary battery on the vehicle, and a switching device for including the motor and battery in the latter circuit alternately.

27. In an electric railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the way and connected with the conductor, but normally out of circuit, a circuit maker and breaker for each of said coils, a vehicle, a conductor on the vehicle in suitable inductional relation to the coils, a magnetic device on the vehicle in circuit with an electric conductor to operate one or more of the circuit makers and breakers, a current-rectifier on the vehicle for straightening the currents in the conductor thereon, and a motor to move the vehicle or other electric translating device connected with the vehicle conductor.

28. In an electric-induction railway, a source of irregular or alternating currents, one or more entirely insulated conductors extending therefrom along the railway, a vehicle, a secondary circuit entirely on the vehicle in suitable inductional relation to said conductors, a current-rectifier in the latter circuit, and a continuous or direct current motor also in the said circuit.

29. In an electric-induction railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the railway and connected with the conductor, a core or body of iron for each of said coils having poles extended to and in contact with the rails of the track, a vehicle, a body of iron carried by the vehicle in contact with the rails, a conductor on the vehicle in inductional relation to the body of iron, and an electric motor to move the vehicle in electric connection with the latter conductor.

30. In an electric-inductive railway, a source of irregular or alternating currents, a conductor extending therefrom, a series of coils distributed apart along the railway and connected with the conductor, a core or body of iron for each of said coils having poles extended to and in contact with the rails of the track, a vehicle, iron axles and wheels for the vehicle to move on the rails, one or more coils on the vehicle in inductional relation to the axles, and an electric motor to move the vehicle and in circuit with the coils.

31. The combination of a car or vehicle movable along a given path, a series of magnetic cores placed at intervals along said path or line of travel, coils surrounding said cores and connected with a source of alternating currents, a magnetic core carried by the car in close proximity to or in contact with the poles of the stationary cores, a secondary conductor wound thereon, and an electro-magnetic motor on the car for propelling the same and connected in circuit with the secondary conductor.

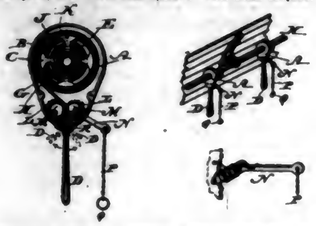
473,254. GRIP-PULLEY. JAMES M. DODGE, Philadelphia, Pa. Filed Nov. 17, 1891. Serial No. 412,198. (No model.)

Claim.—1. The combination, with a rope-wheel composed of two parts, each part rigidly arranged upon the same shaft and having flanges forming the rope-groove, of mechanism for springing one flange toward the other flange, so as to grip the rope, said mechanism being free from and independent of the wheel, substantially as described.

2. The combination, in a wheel, of the two flanged sections B B', situated side by side and rigidly arranged upon the same shaft, so that their flanges form the rope-groove, and so arranged in respect to each other that the normal width of the groove will be wider than the rope, with pressers situated on each side of the wheel and at a point about midway of the bight of the rope and so adjusted as to force the two flanges together, so as to grip the rope, the sections returning to their normal positions by the spring of the metal from which the sections are made as soon as released, substantially as described.



473,255. HOLDING-STRAP FOR CARS. HENRY A. HARTMAN, Philadelphia, Pa. Filed Jan. 9, 1892. Serial No. 417,495. (No model.)



Claim.—1. A casing, a rotary spring-controlled drum mounted therein, a strap secured at one end to said drum and having the opposite or holding end depending from said casing, and mechanism, substantially as described, for clamping said strap in place, said parts being combined substantially as described.

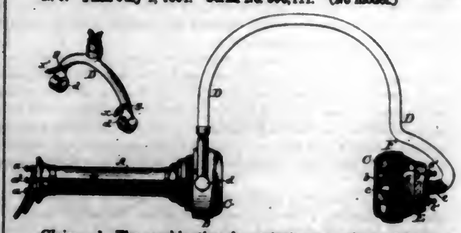
2. A casing with an axle, a drum on said axle, a strap projecting therefrom and connected with winding mechanism within said drum, and a clamping device engaging opposite sides of said strap, said parts being combined substantially as described.

3. A holding-strap consisting of a casing adapted to be mounted on a shaft, a rotatable spring-controlled drum within said casing, a strap having one end secured to the drum and the other passing through the casing, and eccentrics adapted to bear on said strap, said parts being combined substantially as described.

4. A casing, a strap having a winding mechanism attached to one end thereof within the casing and the other depending from said casing, meshing gearing journaled within the casing, eccentrics connected with said gears and adapted to bear on said strap, and a lever connected with one of said gears for releasing the eccentrics from contact with the strap, said parts being combined substantially as described.

5. In a device of the character described, a holding-strap, mechanism for shortening the same, eccentrics for clamping said strap, and means for releasing the eccentrics from said strap, said parts being combined substantially as described.

473,256. TELEPHONE-RECEIVER. EDWIN C. HESS, Camden, N. J. Filed July 1, 1891. Serial No. 398,111. (No model.)



Claim.—1. The combination, in a telephone-receiver, of the main standard receiver, to which the main wires are attached, an arm pivoted to said main receiver, and a second receiver carried at the opposite end of said arm, with wires passing through the arm from the main wires and attached to the opposite receiver, so that both instruments will be in circuit without disturbing the general arrangement of the standard receiver, substantially as described.

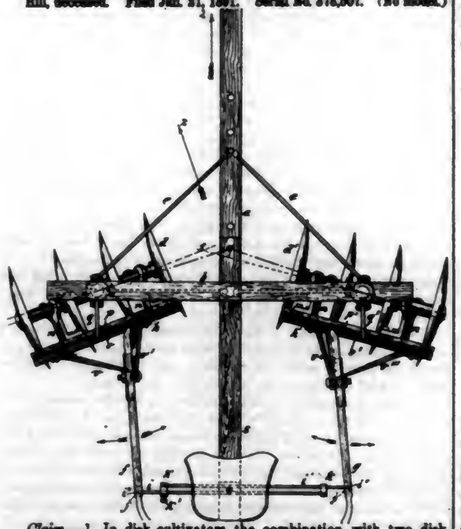
2. The combination of the standard receiver as a main receiver, the ear-piece B, secured thereto, a hollow arm D, pivoted to the ear-piece B, with a receiver E, a universal joint connecting the receiver E with the hollow arm, and an ear-piece F on the receiver E, with wires $x\,x'$ passing from the standard receiver through the arm D to the receiver E, substantially as described.

3. The combination of the main receiver A with an ear-piece B, having a central projection b, adapted to enter the ear, a passage in said projection communicating with the space in front of the diaphragm of the main receiver, a hollow arm D, pivoted to said ear-piece and communicating with a space in front of the diaphragm of the receiver A, with a receiver E, and a hollow projection b thereon adapted to the ear, said receiver being connected to the tubular arm D, thus forming communication between the two receivers, substantially as described.

4. The combination of the receiver A, the yoked hollow arm D, an ear-piece B, to which the yoke is pivoted, a receiver E, having an ear-piece F, and wires $x\,x'$, extending along the receiver A into openings $g\,g'$, at the rear of the yoke-sections of the arm and passing through the arm to the receiver E, the whole arranged substantially as described.

5. The combination of the receiver, the ear-piece B, the central projection b, with passage therein communicating with the space in front of the diaphragm of the receiver, and a hollow annular cushion C, secured to the ear-piece and extending beyond the central projection b, substantially as described.

473,257. DISK CULTIVATOR. ANDREW GEORGE HILL, Prescott, Canada; Terrence Edward Bissell administrator of said Andrew George Hill, deceased. Filed Jan. 21, 1891. Serial No. 378,807. (No model.)



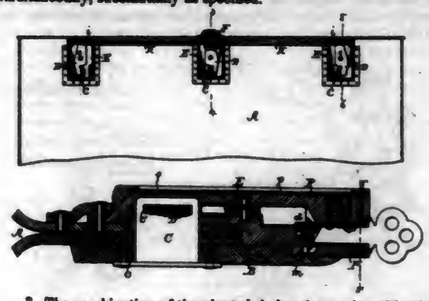
Claim.—1. In disk cultivators, the combination, with two disk gangs, of two handles attached thereto and adjustable bars connected with said handles for simultaneously increasing the angle of one disk gang and diminishing the angle of the other gang, substantially as described.

2. In disk cultivators, the combination, with two disk gangs, of handles secured to the disk-gang beams at their lower ends and containing standards and carrying-wheels, and circular plates containing rims placed on the disk-gang beams and the latches engaging with such rims, substantially as described.

473,258. AUTOMATIC MAIL-BAG FASTENER. GEORGE B. JOHNSON, West Chester, Pa. Filed Oct. 6, 1891. Serial No. 407,871. (No model.)

Claim.—1. The combination, in a locking device for mail-bags, of a series of bolts, gear-teeth thereon, a series of staples with which said bolts are adapted to engage, flexible shafting, worms carried thereby and engaging with the teeth on said bolts, with a centrally-located locking device, said shafting comprising a series of concentric springs and having a flexible covering, the whole inclosed in a fold of the bag and capable of yielding to its movements, substantially as specified.

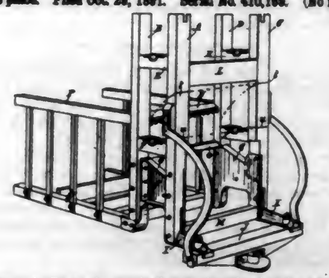
2. The combination of the boxes, independent bolts carried thereby, springs carried by said bolts and adapted to hold them in a locked position, a locking device normally out of engagement with said bolts, flexible shafting connecting said bolts to the locking device, and worms on the opposite ends of the shafting, adapted to engage teeth on the tops of the bolts, whereby the entire series of bolts may be acted upon simultaneously, substantially as specified.



3. The combination of the pivoted bolts, the staples with which said bolts are adapted to engage, teeth on the upper end of said bolts, worms adapted to engage with said teeth, the flexible shafts upon which said worms are mounted, bevel-gears on the opposite ends of said shafts, a lock-barrel, and a bevel-gear on the lower end of said barrel, adapted to engage with the bevel-wheels on the shafts, substantially as specified.

4. The combination, in a mail-bag fastening, with a label-guide, of a gate for closing the mouth of said guide, a lock-barrel, and a cam or eccentric on said lock-barrel, adapted to engage with the gate, substantially as specified.

473,259. CASING FOR CLOVER-HULLERS. JOHN H. KAILOR and ELMER L. WILLIAMS, Columbus, Ind., assignors to Reeves & Co., same place. Filed Oct. 29, 1891. Serial No. 410,169. (No model.)



Claim.—1. In a clover-huller casing having bearings formed therein for two thrashing or hulling cylinders arranged one below the other, the combination of the main casing having in its front side, above the lower cylinder-bearings, an opening through which said cylinder may be inserted in or removed from its bearings, and the removable section adapted to fill said opening and to co-operate with the main casing to inclose said cylinder, substantially in the manner set forth.

2. In a clover-huller casing, the combination of the posts forming the corners of the main frame, the beams E and F, and plates G G, provided with arms I, connecting said posts in pairs, the bolster secured to said arms, the removable casing adapted to fit into the main frame and to co-operate therewith to form an inclosed casing, and the arms rigidly secured to said removable casing and pivotally connected to the bolster, all substantially as set forth.

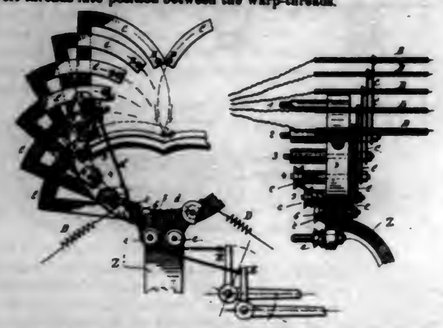
473,260. LOOM FOR WEAVING CHENILLE WEBS. LEON LETAILLE, Beauvais, France. Filed Mar. 20, 1891. Serial No. 385,983. (No model.) Patented in France May 6, 1879, No. 130,518; in England Jan. 2, 1891, No. 75; in Austria-Hungary Feb. 7, 1891, No. 7,562 and No. 22,575, and in Germany Feb. 24, 1891, No. 58,268.

Claim.—1. The combination, in a loom for weaving webs for making chenille, of a distributer, a keyboard operating it to center the weft-threads at a point common to all and a needle catching the thread presented at the common center, and means, substantially as described, for drawing the needle and thread through the shed.

2. In a loom for weaving webs for making chenille, a distributer having a plurality of pivoted weft-carrying sectors centering at a point common to all, a keyboard having a plurality of keys, and connections between each key and one of the sectors, whereby they are operated.

3. In a loom for weaving webs for making chenille, a distributer

comprising a support, a keyboard, weft-carrying sectors independently pivoted to the support and centering the weft-threads at a point common to all, independent actuating connections between each of the sectors and a key of the keyboard, and means for drawing the weft-threads into position between the warp-threads.



4. In a loom for weaving webs for making chenille, a distributer comprising a support and keyboard, weft-carrying movable sectors independently pivoted to the support, and a suitable nipper for seizing a weft-thread upon the depression of one of the keys of the board, and means, substantially as described, for drawing said nipper through the warp-threads, substantially as described.

5. In a loom for weaving webs for making chenille, a distributer comprising a circular support and keyboard, movable weft-carrying sectors independently pivoted to the support, a suitable nipper for seizing a weft-thread upon the depression of one of the keys of the board, means, substantially as described, for drawing said nipper through the warp-threads, and shears for cutting each thread after it has been laid, substantially as described.

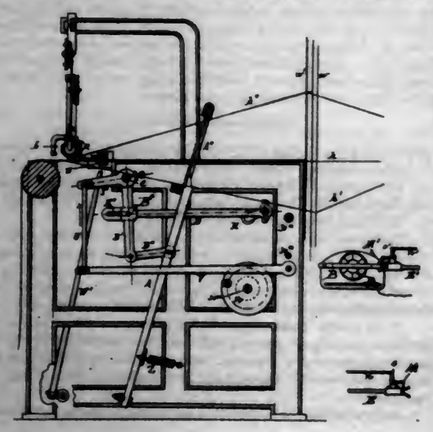
478,261. LOOM FOR WEAVING CHENILLE CARPETS. LEON LETALLE, Beauvais, France. Filed Mar. 20, 1891. Serial No. 385,934. (No model.) Patented in France Jan. 13, 1890, No. 203,116; in England Jan. 20, 1891, No. 1,005; in Austria-Hungary Feb. 7, 1891, No. 7,591, and No. 32,317, and in Germany Feb. 25, 1891, No. 59,821.

Brief.—The chenille-weft shuttle is actuated positively and lays the weft close to the fell of the fabric. On a carriage reciprocating across the warps are combs which vibrate the warps, causing them to sink into the chenille-weft, and a rotating brush which raises the pile or nap of the chenille-weft. The fly-shuttle puts in the usual backing-weft. The lay makes a full beat and a half-beat and is at rest during the reciprocations of the comb and brush.

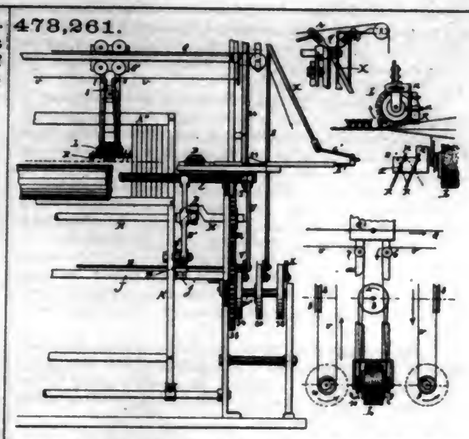
Claim.—1. In a loom for weaving chenille carpets, a rotary brush reciprocating across the warp-threads and raising the nap of the chenille-weft threads, and means for operating the brush.

2. In a loom for weaving chenille carpets, a rotary brush reciprocating across the warp-threads and raising the nap of the chenille-weft threads, a suitable support sustaining the brush above the shed, and means for operating the brush.

3. In a loom for weaving chenille carpets, a way located above the shed transverse thereto, a carriage traveling upon said way, a brush



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supported by said carriage, and means for rotating said brush and reciprocating it across the warp-threads.

4. In a loom for weaving chenille carpets, a way located above the shed, a carriage upon said way, a frame depending from said carriage, a rotating brush supported by the frame, and means for rotating said brush and reciprocating it across the warp-threads.

5. The combination, in a loom for weaving chenille carpets, of a weft-carrying shuttle reciprocating through the shed, a brush suitably mounted upon a way above the shed and following the shuttle in its reciprocations, and means for rotating and reciprocating said brush.

6. The combination, in a loom for weaving long-pile carpets, of two arms operated from opposite sides of the said loom and passing the chenille-weft shuttle from one to the other, and a rotating brush operating to brush the nap of the chenille-weft into position between the warp-threads and following the shuttle in its reciprocating movement, and means for operating said brush.

7. The combination, in a loom for weaving chenille carpets, of a weft-carrying shuttle reciprocating through the shed, a brush suitably mounted upon a way above the shed and following the shuttle in its reciprocations, means for rotating and reciprocating said brush, and combs carried upon the frame of the brush and whipping the warp-threads.

8. The combination, in a loom for weaving chenille carpets, of a brush traveling to and fro across the warp-threads upon a suitable way transverse thereto, means for operating said brush, and a comb or combs carried thereby and in contact with said threads.

9. The combination, in a loom for weaving chenille carpets, of two arms operated from opposite sides of the loom-frame, a chenille-carrying shuttle reciprocated across the warp-threads by said arms, a way above the shed transverse thereto, a carriage upon said way, a frame depending from said carriage, a brush supported by said frame, and means for rotating the brush and reciprocating the brush-carriage and brush across the warp-threads, following the reciprocations of the shuttle.

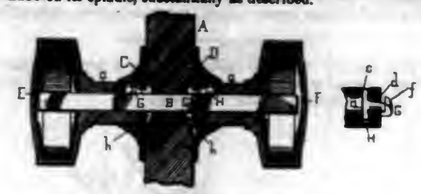
10. The combination, in a loom for weaving chenille carpets, of a shuttle having a convex-faced delivery-tube for raising the warp-threads simultaneously with the delivery of the chenille-weft threads, two arms operated from opposite sides of the loom-frame and reciprocating the said shuttle through the shed, a brush following the reciprocations of the shuttle and brushing the chenille points into position between the warp-threads, and means for rotating and reciprocating said brush.

11. The combination, in a loom for weaving chenille carpets, of a weft-carrying shuttle, means for reciprocating said shuttle across the warp-threads, and a rotating and reciprocating brush, and means, substantially as described, for controlling the movements of said brush, so that it will follow the reciprocations of the shuttle, and a batten alternating in movement with the reciprocations of the brush and shuttle to drive the chenille firmly into place between the warp-threads.

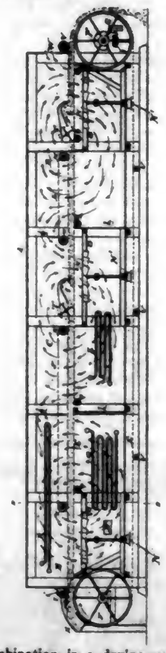
478,262. KNOB ATTACHMENT. CHARLES MARSHALL, Camden, N. J. Filed Nov. 26, 1891. Serial No. 413,058. (No model.)

Claim.—The combination, in a lock, of a knob and shank provided with a transverse journal-bearing, and a longitudinal slot communicating with said bearing and the shank-socket, and a T-shaped vibrating connecting-latch composed of a journal which turns in said transverse bearing, and a latch end which is adapted to swing loosely and disengaged in the longitudinal slot and shank-socket or be held in

engagement with the lock rose-plate by the knob-spindle for securing the knob on its spindle, substantially as described.



478,263. DRYING-MACHINE. JOSIAH K. PROCTOR, Philadelphia, Pa., assignor to the Philadelphia Textile Machinery Company, of Pennsylvania. Filed Aug. 13, 1890. Serial No. 361,934. (No model.)

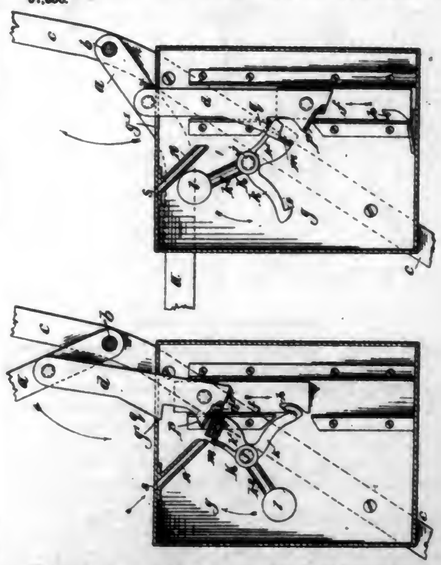


Claim.—1. The combination, in a drying-machine, of external walls or partitions forming a drying-inclosure, one or more interior vertical partitions dividing the said inclosure into two or more drying-compartments, an air-moving fan in each of said compartments to circulate the air therein, a carrier to carry the material to be dried by a continuous motion successively through each of the said drying-compartments, a rotating agitator or opener placed above the carrier for agitating the material thereon and provided with a guide for guiding the agitated material back upon the carrier, inlet and outlet openings from the drying-inclosure to the atmosphere to admit dry cool air at that end of the inclosure where the material is delivered out of the machine by the carrier and to allow the expulsion of the air from the opposite end of the inclosure, and openings through each of said interior vertical partitions to allow the passage of the air from one drying-compartment to another, all arranged to operate as set forth in the specification.

2. The combination, in a drying-machine, of exterior walls or partitions forming a drying-inclosure, an air-moving fan in said inclosure to circulate the air therein, a carrier to carry the material to be dried by a continuous motion through said inclosure, and a rotating agitator or opener placed above the carrier for agitating the material thereon and provided with a guide for guiding the agitated material back upon the carrier, as shown and described.

3. The combination, in a drying-machine, of external walls or partitions forming a drying-inclosure, one or more interior vertical partitions dividing the said inclosure into two or more drying-compartments, heating devices in one or more of said compartments, an endless carrier to carry the material to be dried by a continuous motion successively through each of said drying-compartments, an air-moving fan in each of said compartments to circulate the air therein and arranged to revolve in a horizontal plane located between the upper and lower folds of the endless carrier, a rotating agitator or opener placed above the carrier for agitating the material thereon and provided with a guide for guiding the agitated material back upon the carrier, inlet and outlet openings from the drying-inclosure to the atmosphere to admit the dry cool air at that end of the inclosure where the material is delivered out of the machine by the carrier and to allow the expulsion of the air from the opposite end of the inclosure, and openings through each of said interior vertical partitions to allow the passage of the air from one drying-compartment to another, all arranged to operate as shown and described in this specification.

478,264. AUTOMATIC COIN-FREED SEAT. JOSEF GUITTNER and LEOPOLD GUITTNER, Vienna, Austria-Hungary. Filed Feb. 11, 1892. Serial No. 421,179. (No model.) Patented in Germany Aug. 23, 1890, No. 57,496, and in Austria-Hungary Jan. 2, 1891, No. 37,403 and No. 67,630.



Claim.—1. A coin-controlled mechanism comprising a slide provided with a projection and a guide-bar connected with the slide and provided with a locking-notch, in combination with a weighted lever K, one of the arms of which is adapted to engage the notch in the guide-bar, the other arm of said lever carrying a coin-receiver arranged relatively to the projection on the slide, so that when a coin or coins of proper thickness are placed in the receiver said projection will have bearing thereon and through the same on the receiver, for the purpose set forth.

2. A coin-controlled mechanism comprising a slide provided with two projections *p* and *q* and a guide-bar connected with the slide and provided with a locking-notch *k*, in combination with the three-armed lever K, constructed and arranged to co-operate with the bar and link, as described, for the purpose set forth.

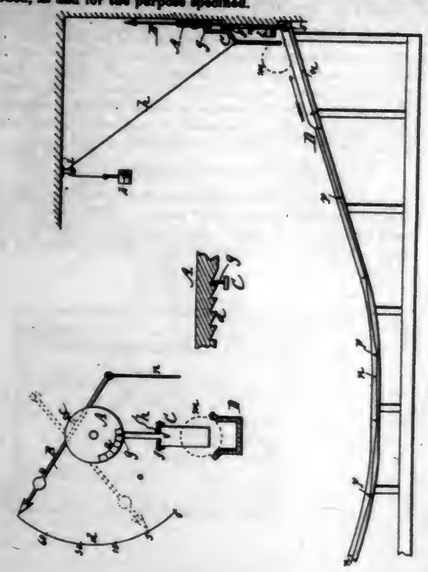
3. The combination, with a seat *a*, pivotally connected with a fixed support, the slide *d*, having projections *p* and *q*, and the bar *f*, having locking-notch *k*, said bar and slide being pivotally connected together and to the seat, of a suitable casing provided with guides for the bar *f*, a coin-slot and a coin-chute, as *n*, and the three-armed lever K, constructed and arranged to co-operate with the link and guide-bar, substantially as and for the purpose set forth.

478,265. GAME APPARATUS. EMIL REINEY, Rochester, N. Y., assignor to Charles Rau, same place. Filed Jan. 21, 1892. Serial No. 418,742. (No model.)

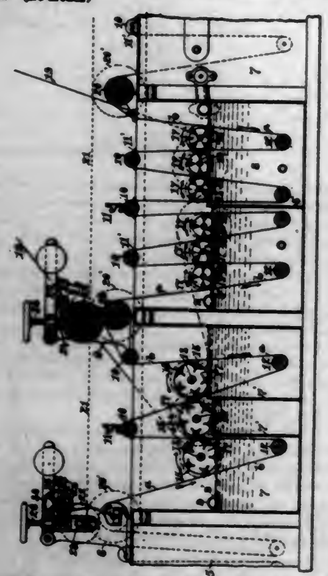
Claim.—1. The combination of the ratchet A, provided with the teeth *a a*, the pointer B, attached to the ratchet, the hinged pawl C, provided with a detent that engages with the ratchet-teeth, the weighted cord *h*, connected with the pawl, and the trough D, leading to the pawl, as and for the purpose specified.

2. The combination of the ratchet A, provided with the teeth *a a*, the pointer B, attached to the ratchet, the hinged pawl C, engaging

with the ratchet-teeth, the weighted cord *k*, connected with the pawl, the trough D, leading to the pawl, and the cord *n*, attached to the pointer and extending backward to the point from which the ball is rolled, as and for the purpose specified.



478,266. **MACHINE FOR CLEANING AND SOAPING FABRICS.** EPHRAIM A. RUSSELL, Providence, R. I. Filed June 20, 1891. Serial No. 396,954. (No model.)

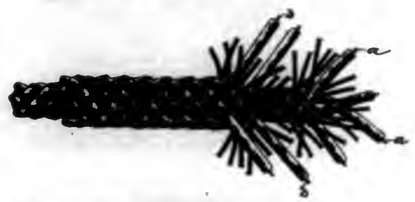


Claim.—1. In a machine of the class described, the combination, with shafts rotatable in tanks and carrying face-plates, of splash-blades having their edges bent at angles with the face thereof and pivoted in said face-plates, as described.

2. The combination, with the shafts 13, journaled in the bearings 14 and carrying the face-plates 17, having the bearings 16, of the splash-blades 15, having the buckets 15′ and heads 15², supported in the bearings 16 by the pivots 18, as described.

3. The combination, with the tanks of a cleansing and soaping machine, having the longitudinally-slit outlet-pipe 9 journaled in the sides thereof, of a series of shafts rotatable in said tanks, face-plates carried on said shafts, and splash-blades 15, having the buckets 15′ and a rounded outer surface, pivoted in said face-plates, as described.

478,267. **ELECTRIC CABLE.** WILLIAM H. SAWYER, Providence, R. I., assignor to the American Electrical Works, same place. Filed Oct. 27, 1891. Serial No. 410,009. (No model.)



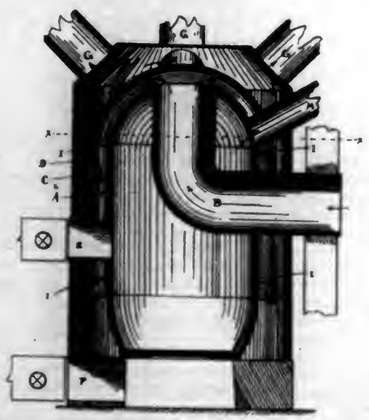
Claim.—1. An electric cable formed of a number of sections, each composed of a series of wires interbraided with fibrous material into tubular form to provide a base or core for the reception of a successive series of wires similarly braided thereon, the wires of the first series being braided on in the opposite direction to that of the successive series and all the wires being approximately equidistant, substantially as specified.

2. In an electric cable, a series of wires interbraided with fibrous material into tubular form to provide a base or core for the reception of successive series of similarly-braided wires thereon, substantially as and for the purpose specified.

3. In an electric cable, the combination of a number of sections, each composed of a series of insulated wires interbraided with fibrous material into tubular form, a successive series of wires being similarly interbraided with fibrous material upon the first series, with a lead sheath or other suitable covering, substantially as specified.

4. In an electric cable, the series of wires interbraided with fibrous material into tubular form to provide a base or core for the reception of a successive series of wires similarly braided thereon, the spirals or convolutions of the wires of one series running in a reverse direction to that of the other series, substantially as specified.

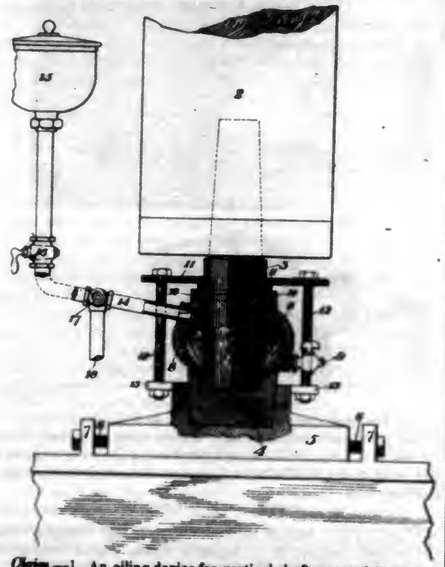
478,268. **FURNACE.** WESLEY SLOAN, Peoria, Ill. Filed Dec. 30, 1891. Serial No. 416,559. (No model.)



Claim.—1. In a hot-air furnace, the fire-pot A, having the cold-air duct placed therein admitting air from below and delivering it at the top of said fire-pot, in combination with the intermediate shell C, dropping to a position near the bottom of fire-pot, and the outer shell D, substantially as herein set forth and described.

2. In a hot-air furnace, a cold-air duct B, entering at the side or back of furnace and fire-pot and delivering air at the top of fire-pot, in combination with the outer casing D and the intermediate casing C, placed between the said fire-pot and said outer casing D, said casing C dropping to a point near the bottom of fire-pot, for the purposes herein set forth and described.

478,269. **LUBRICATOR FOR UPRIGHT SHAFTS.** WILLIAM G. STEVENSON, Wellsville, Ohio, assignor to Stevenson & Co., same place. Filed May 19, 1891. Serial No. 393,299. (No model.)

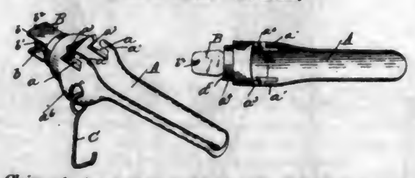


Claim.—1. An oiling device for vertical shafts, comprising an annular reservoir surrounding the shaft and resting upon the shaft-step, a suitable packing in the upper edge of said reservoir, and means for compressing said packing around the shaft, substantially as and for the purposes described.

2. An oiling device comprising an oil-reservoir encircling the lower portion of the shaft, a blow-off cock leading therefrom, and a steam-pressure pipe leading into said reservoir, substantially as and for the purposes described.

3. An oiling device comprising an annular reservoir surrounding the shaft and having a blow-off pipe, a valved oil-supply pipe leading to the reservoir, and a valved steam-pipe leading to the oil-supply pipe between the oil-valve and the reservoir, substantially as and for the purposes described.

478,270. **SAP-SPOUT.** LORIN R. TABOR, Westford, Vt. Filed June 26, 1891. Serial No. 397,612. (No model.)



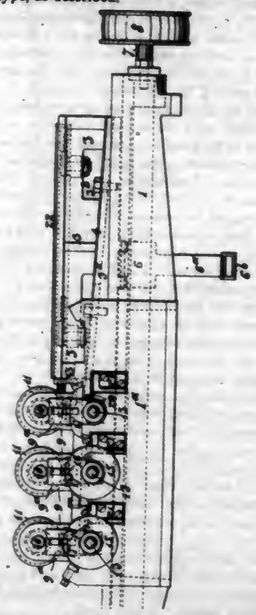
Claim.—1. A sap-spout having the upper edges of its opposite sides provided with grooves and also provided with hooks integral with the spout overlapping said grooves, substantially as set forth.

2. A sap-spout having the upper edges of its opposite sides provided with grooves and also provided with backwardly-projecting hooks overlapping said grooves and with an inclined end wall formed with angular lugs projecting into the grooves, in combination with a cover having its periphery recessed and a wire running across the open end of the recess, said recessed portion of the periphery registering with the grooves of the spout and confined in place by the wire engaging the hooks and angular lugs, substantially as set forth.

3. A sap-spout having the upper edges of its opposite sides provided with grooves and hooks integral with the spout overlapping said grooves and having an inclined end wall provided with angular lugs projecting into the grooves.

478,271. **MACHINE FOR NICKING PRINTING-TYPE.** JOHN R. TOPLISS and JOSHUA A. KAY, Melbourne, Victoria. Filed Oct. 24, 1890. Serial No. 369,238. (No model.) Patented in England June 28, 1890, No. 10,008.

Claim.—1. In a machine for grooving printing-type, the combination of a bed or table, a series of rotary cutters overhanging said bed or table to groove type passed beneath them, said cutters being separately and independently adjustable transversely to the path in which the type move, so that variously-located combinations of grooves can be formed in type, as described.



2. In a machine for grooving or nicking printing-type, as set forth in the preceding claim, the combination of a movable type-carrier, a clamping device thereon adapted to hold by the ends the type to be grooved or nicked, and a rotary cutter arranged to overhang the bed along which said carrier moves and capable of adjustment in a direction transverse to said bed, substantially as hereinbefore described, for the purpose set forth.

3. In a machine for grooving or nicking printing-type, the combination of an endwise-movable type-carrier having a clamp adapted to hold by the ends the type to be grooved or nicked and two or more rotary cutters arranged to overhang the bed along which said carrier moves and each fixed upon a spindle independently adjustable in a direction transverse to said bed, said spindles being arranged parallel to each other and all at one side of said bed, substantially as herein described, for the purpose specified.

4. In a machine for grooving or nicking printing-type, the combination of a type-carriage, a bed upon which the same is capable of endwise motion, a head-stock mounted on said bed and capable of adjustment in a direction transverse to the direction in which said type-carriage moves, a rotary cutter fixed on a spindle provided with a driving-wheel and mounted to rotate in said head-stock, and mechanism for adjusting said head-stock in the direction of the axis of said spindle, substantially as herein described, for the purpose specified.

5. In a machine for grooving or nicking printing-type, the combination of a type-carriage, a bed upon which the same can travel, an adjustable head-stock, a rotary cutter carried by said head-stock and arranged to overhang the said bed, and mechanism for adjusting said head-stock and cutter in a direction transverse to the motion of said type-carriage, said mechanism comprising an adjusting-screw carried by said head-stock, so as to be capable of rotation, but not of endwise movement in relation to said head-stock, a disk formed with a notch or hole and normally fixed to said rod, a catch connected to said head-stock and adapted to be engaged with and disengaged from said disk, and a nut carried by said bed and through which said screw is arranged to work, substantially as herein described, for the purpose specified.

6. In a machine for grooving or nicking printing-type, the combination of a type-carriage, a bed upon which the same can travel, a head-stock capable of movement in a direction transverse to said bed, a rotary cutter carried by said head-stock, an index carried by said head-stock, and a fixed scale arranged in proximity to said index, substantially as herein described, for the purpose specified.

7. In a machine for grooving or nicking printing-type, a type-carriage comprising a bed with raised sides that partly overlap the same,

and raised ends, one of said sides and one of said ends being made removable, and eccentric clamping devices adapted to fix and release said movable side and end at will, substantially as herein described.

8. In a machine for grooving or nicking printing-type, the combination of a rotary cutter, a horizontally-adjustable head-stock for carrying said rotary cutter, a type-carriage arranged to travel below said cutter in a direction at right angles to the axis about which said cutter revolves and made in parts vertically adjustable in relation to one another, and means for reciprocating said type-carriage, substantially as herein described, for the purpose specified.

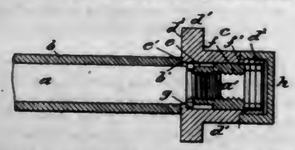
9. A machine for grooving or nicking printing-type, comprising a bed-frame provided with a transverse extension or frame, a type-carriage arranged to reciprocate along said bed-frame and capable of vertical adjustment, means, substantially as described, for operating said carriage, a series of head-stocks, each capable of adjustment in a direction transverse to that in which said carriage travels, a series of rotary cutters arranged to overhang the bed on which said carriage travels and each fixed upon a spindle provided with a driving-pulley and carried by one of said head-stocks, and mechanism, substantially as described, for adjusting each of said head-stocks in the direction of the cutter-spindle, substantially as herein described.

10. A machine for grooving or nicking printing-type, having a vertically-adjustable bed or support for the type to be grooved or nicked and a rotary cutter arranged to overhang said bed and capable of adjustment in the direction of its axis of rotation, substantially as herein described, for the purpose set forth.

11. In a machine for grooving printing-type, the combination of a bed or way along which the type travels, a series of independent parallel shafts extending transversely of the plane in which the type move, rotary cutters carried by said shafts over the bed, and means, substantially as described, for longitudinally and independently adjusting said shafts and holding them in the desired position transversely of the path in which the type moves, as described.

12. In a type-grooving machine, the combination of a bed or way along which the type travel, a series of independently-mounted cutters overhanging said way to groove the type passed beneath them, said cutters being independently adjustable and held transversely of the plane in which the type move, for the purpose described, and indicating means to locate the position of each cutter.

478,272. ADJUSTABLE NUT FOR AXLES. IRA J. TRESCH, Middletown, Conn. Filed Jan. 22, 1892. Serial No. 418,902. (No model.)



Claim.—1. In combination in a nut, an outer body part having a lengthwise socket with a shoulder at the inner end and lengthwise grooves in the walls of the socket, a thimble fitting within the socket and having projecting lugs that engage the said grooves, and a thread on the inside of the thimble, all substantially as described.

2. In combination in a nut, an outer body part having a lengthwise socket with a packing-seat at the inner end, a threaded thimble fitting within the socket in the body part and held against rotation therein, and a cap adapted to cover the outer end of the thimble-socket, all substantially as described.

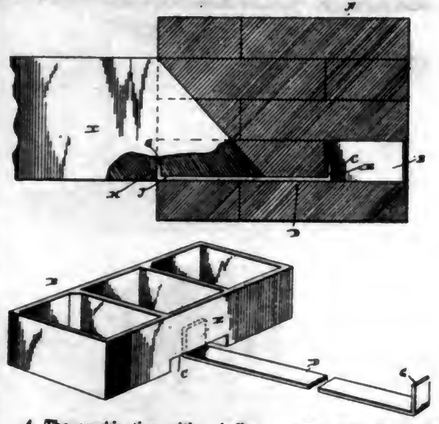
3. In combination with an axle-arm, a nut having a body part with a bearing-face, a squared outer surface, and a lengthwise socket, a packing-shoulder within the socket, a packing-ring fitted within the socket, a threaded thimble held against rotation within the body part of the nut, but free to move lengthwise therein, and a cap covering the outer end of the socket, all substantially as described.

478,273. ANCHOR FOR BRICK WALLS. JOSEPH M. VAN WEY, Hinsdale, N. Y., assignor of one-half to John McHarry, same place. Filed Aug. 17, 1891. Serial No. 402,937. (No model.)

Claim.—1. An anchor for brick walls, consisting of a brick having a vertical opening and an opening at its inner lower edge communicating with the said vertical opening, and a tie-rod having its ends bent laterally and adapted to pass through the said opening at the inner lower edge of the brick, all combined substantially as set forth.

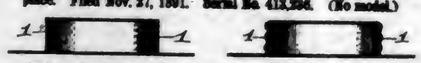
2. In an anchor for brick walls, a brick made hollow, an opening at the lower inner edge of the said brick which communicates with the said hollow, and a tie-rod having its ends turned upward, one adapted to fit inside of the hollow and the other to enter an opening in the joist, all combined substantially as specified.

3. The combination, with a metallic casting B of substantially the size of an ordinary brick and the beam, of a bar, which connects the casting and the beam, substantially as shown and described.



4. The combination, with a hollow metallic brick formed into compartments and provided with a vertical notch on its inner side and the beam, of a bar which engages the beam at its outer end and the said notch in the metallic brick at its inner end, substantially as shown and described.

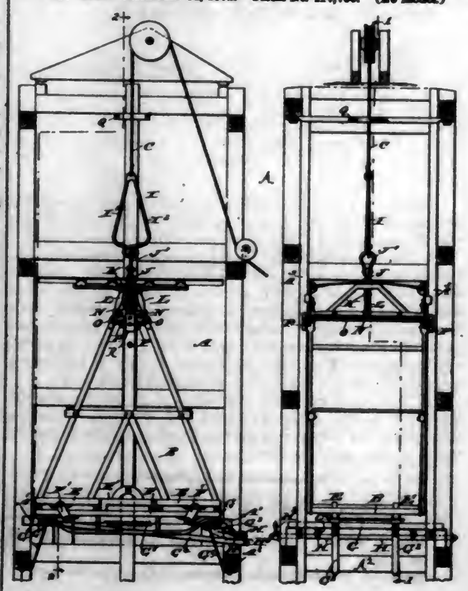
478,274. BREAST OR TOP FOR METALLIC VESSELS. HENRY J. VOGEL, Brooklyn, N. Y., assignor to William Vogel & Brothers, same place. Filed Nov. 27, 1891. Serial No. 413,236. (No model.)



Claim.—1. A top or breast for a vessel, made of a single piece of metal and formed with an integral vertical cap-flange composed of two thicknesses of the metal, and a floor at the base of the inner wall of the vertical flange integral therewith, substantially as described.

2. A top or breast for a vessel, made of a single piece of metal formed with an integral vertical cap-flange composed of two thicknesses of the metal and provided with screw-threads, and an integral floor at the base of the inner wall of the vertical flange, substantially as described.

478,275. ELEVATOR FOR MINING-CARS. THOMAS WAKEFIELD, Ely, Minn. Filed Jan. 11, 1892. Serial No. 417,709. (No model.)



Claim.—1. In an elevator, the combination, with a cage provided with permanent track-rails, of vertically-movable track-rails between the permanent rails and means for raising and lowering said rails, substantially as set forth.

2. In an elevator, the combination, with a cage provided with permanent track-rails and vertically-movable track-rails between the permanent rails, of a support for the cage in the elevator-shaft and adapted to project thereunder and raise the movable rails into position between the permanent rails, substantially as set forth.

3. In an elevator, the combination, with a cage provided with permanent track-rails, of a vertically-movable frame hung on the under side of the cage and carrying movable track-rails, and means to raise said movable frame to extend the rails thereon between the permanent rails, substantially as set forth.

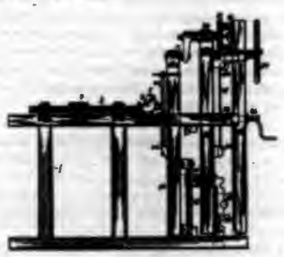
4. In an elevator, the combination, with a cage provided with permanent track-rails and vertically-movable frame hung on the under side of the cage and carrying movable track-rails, of a support in the shaft for said cage and adapted to project beneath the said frame and raise the movable rails thereon between the permanent rails, substantially as set forth.

5. In an elevator, the combination, with the parallel bars G G', supports for said bars, and springs pressing them inward into the path of the cage, of a rock-shaft H, parallel with the said bars and having arms H' H², short links G³, connecting arms H' with bar G, long links G⁴, connecting the arms H² with the bar G', and a handle H on the rock-shaft for rocking it, substantially as set forth.

6. In an elevator, the combination, with the cage-ring, of a hoisting-hook I, having integral arms I' I², having inwardly-projecting arms I³ I⁴ at their lower ends and overlapping inwardly-projecting hooks I⁵ I⁶ at the ends of said arms, substantially as set forth.

7. In an elevator, the combination, with the cage, of a vertical suspension screw-rod J, a spring R, pressing the rod downwardly, a nut on the rod, two parallel rock-shafts O O, provided at their ends with toothed dogs P P and between their ends with arms N, and links L, pivoted at their upper ends to the nut and at their lower ends to the arms N, substantially as set forth.

478,276. WOOD-WORKING MACHINE FOR SHAPING CLOSET-SEATS. FRANK F. WIGHARD, St. Louis, Mo. Filed Sept. 17, 1891. Serial No. 406,046. (No model.)

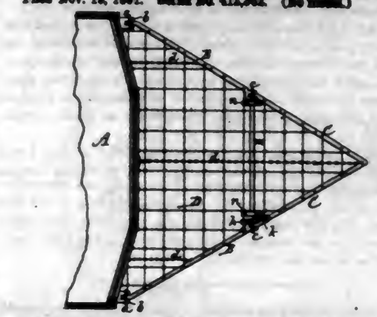


Claim.—1. A machine for shaping closet-seats, comprising a frame carrying a revolving cutter-head, a swivel-bearing, a frame carried thereby and vertically adjustable with relation thereto, and means for moving said frame laterally and longitudinally with relation to the cutter-head, substantially as and for the purpose set forth.

2. A machine for shaping closet-seats, comprising a suitable frame, a cutter-head mounted on said frame, a blank-holding frame 10, having a short vertical shaft 12 fixed in bearings at its lower end, the swiveling bearing 14, in which said shaft 12 is mounted to slide, crank-pin 17, carried by a crank 18 and engaging a bearing upon the upper portion of said frame 10, mechanism for rotating said crank, and mechanism for moving said frame 10 toward and from said cutter-head, substantially as shown and described.

3. In a machine for shaping closet-seats, the combination of a frame, a shaft adapted to carry the cutter-head, a blank-holding frame, as 10, having its lower end carried by a swivel-bearing 14 and its upper end mounted upon the pin 17 of the crank 18, a shaft 19, mounted in bearings 20 so as to lie in a direction parallel to that of the cutter-head shaft, a gear-wheel 21, mounted on said shaft, a pinion 22, mounted on shaft 23 so as to mesh with the teeth of wheel 21, a means for revolving said shaft 23, such as hand-wheel 24, said shafts and connections being mounted upon an oscillating frame formed of two leaves 31 and 32, pivoted at their lower ends, a roller 35, mounted upon the outer surface of gear-wheel 21, a cam 33, fixed upon the leaves 31 so as to be engaged by said roller, and means for continuously urging said leaves 31 and 32 toward each other, substantially as shown and described.

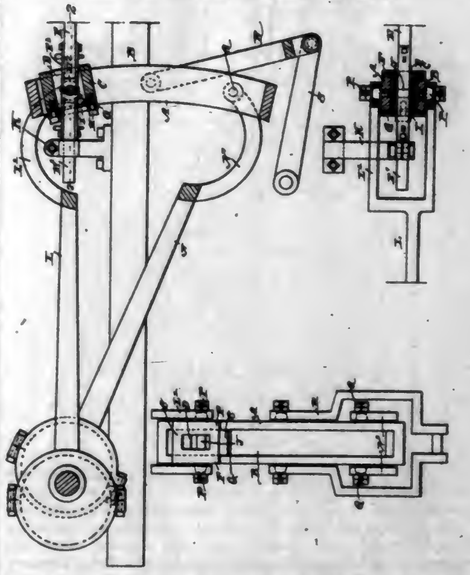
478,277. PILOT FOR RAILROAD-CARS. HENRY R. WILLIAMS, Rochester, N. Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed Nov. 19, 1891. Serial No. 412,362. (No model.)



Claim.—1. The combination, with a railway-car, of the two jointed sections B C, one jointed to the car and the second to the first, the stays *d d d*, connecting said sections with the car, and the flexible covering D, the whole arranged to operate in the manner and for the purpose specified.

2. The combination, with a railroad-car, of a frame made in two sections jointed together, as described, a pair of traction-wheels on each side at the joint, and a flexible covering attached at one end to the frame and at the other to the car, as and for the purpose specified.

478,278. LINK VALVE-GEAR. WILLIAM A. WINN, White Hall, Ill. Filed Jan. 13, 1892. Serial No. 417,934. (No model.)



Claim.—1. A link valve-gear provided with a sliding block formed with a longitudinal opening for the passage of the valve-stem, substantially as shown and described.

2. A link valve-gear provided with a valve-stem pivotally connected with the sliding block and extending through the same and a bearing on the outer or projecting end of the valve-stem, substantially as shown and described.

3. In a link valve-gear, the combination, with a link having a longitudinal slot, of a block fitted to slide therein and formed with a longitudinally-extending opening for the passage of the valve-stem, substantially as shown and described.

4. In a link valve-gear, the combination, with a link having a longitudinal slot, of a block fitted to slide in the said link and a valve-stem pivotally connected with the said block and passing through its longitudinal opening, substantially as shown and described.

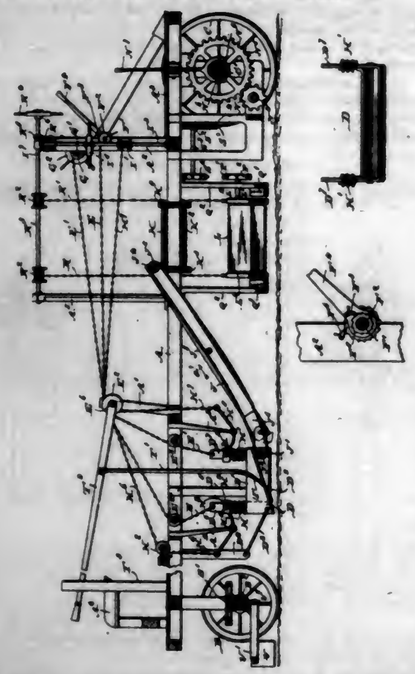
5. In a link valve-gear, the combination, with a link having a longitudinal slot, of a block fitted to slide in the said link, a valve-stem

pivotally connected with the said block and passing through its longitudinal opening, and a bearing engaging the outer or projecting end of the said valve-stem, substantially as shown and described.

6. In a link valve-gear, the combination, with a link formed with a longitudinally-extending slot, of a block fitted to slide in the said link and provided with a longitudinally-extending opening and flanges at its front end, and a cap-plate having a longitudinally-extending opening and secured to the said block and its rear end, the sides of the plate engaging the rear edges of the link, substantially as shown and described.

7. In a link valve-gear, the combination, with a sliding block formed with a longitudinal opening and a pivot-pin extending through the said opening and fastened in the sides of the block, of a valve-stem or extension for the said valve-stem, bearing-blocks held in the said extension and stem and engaging the said pin, and a plate for fastening the extension to the stem and holding the bearing-blocks in place, substantially as shown and described.

473,279. DITCHING-MACHINE. JAMES J. WISHARD, Sacramento, Cal. Filed Sept. 2, 1891. Serial No. 404,519. (No model.)



Claim.—1. The combination, with the main frame, the plow, and the longitudinally-inclined elevator extending upward and rearward therefrom, of two parallel drums or rollers extending longitudinally along opposite sides of the frame in rear of said elevator, an endless belt mounted on said drums or rollers and extending transversely across the main frame, and a second endless carrier having a supporting-frame pivotally supported at its inner end beneath the inner end of said endless belt, extending outward from the opposite side of the main frame and provided with means for adjusting its delivery end up or down, substantially as set forth.

2. The combination, with the main frame, the plow, and the elevator, and the transverse carrier-belt at the upper end thereof, of depending brackets Q^3, provided at their lower ends with transversely-extending guideways Q', bearings Q, adjustable in said guideways, a frame L, mounted at its inner end on said bearings and provided with means for adjusting its outer end, and an endless carrier mounted on the frame L, substantially as set forth.

3. The combination, with the main frame and its plow having an inclined bottom, of the roller mounted under said bottom, links J^9, projecting rearward from the ends of the lower roller, the elevator-frame pivotally connected at its lower end with the rear ends of said links and extending upwardly and rearwardly therefrom and having a roller at its upper end, and the endless elevator extending around said rollers, substantially as set forth.

4. In a ditching-machine, the combination, with a plow provided with an inclined bottom and parallel sides, of posts formed on the sides of the said plow, cushioning-springs carried by said posts, and chains connected with the said posts to support the said plow, substantially as shown and described.

5. In a ditching-machine, the combination, with a plow provided with an inclined bottom and parallel sides, of front and rear posts formed on the sides of the said plow, chains connected with the said posts to support the said plow, and means, substantially as described, for raising or lowering the said chains independently of each other, substantially as shown and described.

6. In a ditching-machine, the combination, with a plow supported on chains adapted to be raised or lowered, of springs pressing on the said plow, cross-bars pressing on the said springs and provided with pivoted arms, and chains connected with the said pivoted arms to increase or diminish the pressure on the said springs, substantially as shown and described.

7. In a ditching-machine, the combination, with a plow supported on chains adapted to be raised or lowered, of springs pressing on the said plow, cross-bars pressing on the said springs and provided with pivoted arms, chains connected with the said pivoted arms to increase or diminish the pressure on the said springs, and mechanism, substantially as described, for exerting a pull on the said chains connected with the arms independently of each other, substantially as shown and described.

8. In a ditching-machine, the combination, with a frame mounted on front and hind wheels, of triangular plows arranged in front of the said front wheels to form a furrow for the latter, substantially as shown and described.

9. In a ditching-machine, the combination, with a frame mounted on front and hind wheels, of triangular plows arranged in front of the said front wheels to form a furrow for the latter, a pivoted frame supporting the said plows, and means, substantially as described, for raising and lowering the said plows, as set forth.

10. In a ditching-machine, the combination, with the main frame provided with rigid guideways, of bearings held adjustably in the said guideways, trunnions engaging the said bearings, a carrier-belt frame on which the said trunnions are secured, a carrier-belt mounted to turn in the said belt-frame, and means, substantially as described, for raising and lowering the free end of the said carrier-belt frame, substantially as shown and described.

11. In a ditching-machine, the combination, with a main frame mounted on wheels, of a plow held on chains supported on the said main frame, links connected with the sides of the said plow and connected with the brackets on the said main frame, and means, substantially as described, for raising or lowering either end of the said plow, substantially as shown and described.

12. In a ditching-machine, the combination, with a plow provided with an inclined bottom and parallel sides, of posts formed on the sides of the said plow, chains connected with the said posts to support the said plow, means, substantially as described, for raising or lowering the said chains independently of each other, and fixed guide-arms engaging the sides of the said plow to prevent sidewise movement of the plow, substantially as shown and described.

13. In a ditching-machine, the combination, with a plow having an inclined bottom, of a scraper arranged vertically and adapted to pass over the said inclined bottom to clean the plow, substantially as shown and described.

14. In a ditching-machine, the combination, with a plow having an inclined bottom, of a scraper arranged vertically and adapted to pass over the said inclined bottom to clean the plow, and a lever adapted to be swung up and down and pivotally connected with the said scraper, substantially as shown and described.

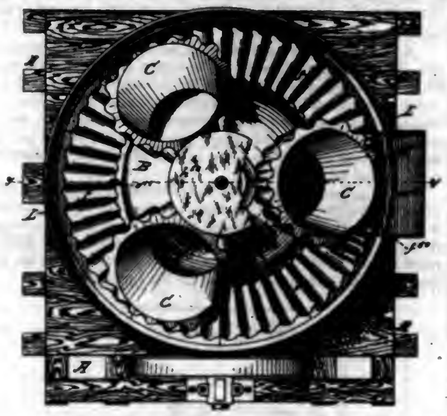
15. In a ditching-machine, the combination, with a plow, of chains connected with said plow for raising, lowering, or tilting the said plow, winding-drums for actuating the said chains, and a transverse shaft carrying pulleys over which pass the said chains from the said plow to the winding-drums, substantially as shown and described.

16. In a ditching-machine, the combination, with a plow provided on its sides with posts, of chains connected with the said posts and two independent winding-drums for winding up the chains independent of each other to raise or lower the plow or one end thereof, substantially as shown and described.

473,280. CRUSHING-MILL. FREDERICK A. WIHWELL, Lynn, Mass. Filed Oct. 26, 1891. Serial No. 409,933. (No model.)

Claim.—1. In a crushing-machine having crushing-cones C fluted on their peripheries, the flutes pointing toward a common center c^3 and engaging with the flutes of the driving-cone D and with the flutes on the plates *f*, substantially as set forth.

2. In a crushing-machine having fluted crushing-cones C driven by the fluted cone D, that is driven by a self-adjusting coupling H, the combination of the cones C with the corrugated plates *f*, detachably secured within the bowl B, having a convex spherical bottom crowned at its highest point with a curb N, for the purpose substantially as set forth.

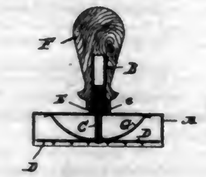


3. In a machine for crushing, the fluted cones C, engaging with and pressing against the wearing-plates *f*, the pressure obtained by the driving-cone D, rotated by the self-adjusting coupling H, all operating substantially as and for the purpose set forth.

4. In a crushing-machine, the combination of a bowl B, the crushing-cones C, and a hollow driving-cone D, within which is a self-adjusting coupling H, that permits of vertical and lateral movement of the cone D while driving the crushing-cones C, for the purpose substantially as set forth.

5. In a crushing-machine, the combination of the bowl B, having a convex spherical bottom, the inside of the rim of the said bowl B lined with vertically-corrugated plates *f*, with the corrugations of which engage similar corrugations on the face of the crushing-cones C, that are driven and pressed apart by the driving-cone D, also having on its face corrugations like those on the cones C and plates *f*, the longitudinal lines of all these corrugations converging toward a common center c^3, the cap h^{13} of the driving-cone D made so as to receive the lower end of the pressure-leg h^{11}, pressure being applied thereto by means of the weighted lever h^{10}, substantially as shown, and the driving-cone D made to revolve by the vertical shaft E through the medium of the self-adjusting coupling H, all operating as and for the purpose substantially as hereinbefore set forth.

473,281. CAKE-CUTTER. FRANK R. WOODWARD, Hill, N. H. Filed Aug. 20, 1891. Serial No. 403,132. (No model.)



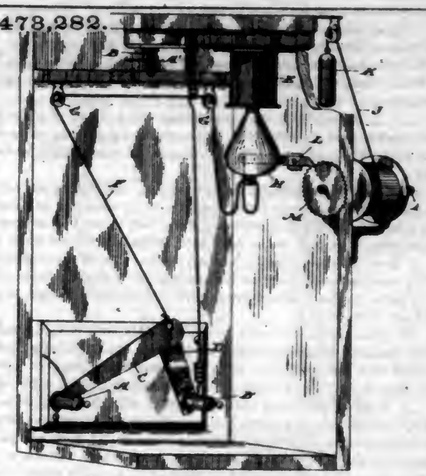
Claim.—A cake-cutter provided with a detachable automatic expeller and a suitable spring-retaining catch, whereby various expellers may be readily inserted, substantially for the purpose set forth.

473,282. CUT-OFF FOR ELECTRICAL MACHINES. JAMES P. WOOLLEY, Simcoe, Canada. Filed Nov. 23, 1891. Serial No. 412,807. (No model.)

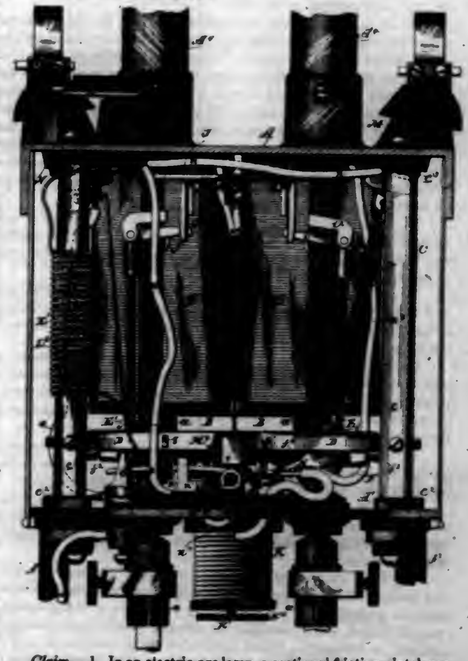
Claim.—1. The combination, with an electro-magnet, of a weight H, normally suspended under and supported by said magnet, and the cord F, passing over pulleys G and connected to the circuit-breaker C D, substantially as described.

2. The combination, with an electro-magnet, of the weight H, cord F, pulleys G, circuit-breaker C D, revoluble spindle I, a weight K, attached to a cord J, wound around a drum on said spindle, a ratchet-wheel M, mounted on said spindle, a pawl L, engaging therewith and connected to the weight H, whereby said weight H as it falls breaks the electric circuit and liberates the weight K, substantially as described.

473,282.



473,283. ELECTRIC-ARC LAMP. THOMAS E. ADAMS, Cleveland, Ohio, assignor to the Brush Electric Company. Filed July 8, 1890. Serial No. 358,037. (No model.)



Claim.—1. In an electric-arc lamp, a sectional friction-clutch provided with a narrow and elongated wearing-surface and an adjoining groove for the reception of dirt or dust, substantially as set forth.

2. In an electric-arc lamp, a sectional friction-clutch constructed with a narrow vertical wearing-surface formed concave transversely its length and having a narrow groove adjacent thereto, substantially as set forth.

3. In an electric-arc lamp, a sectional friction-clutch consisting of a yoke having one portion of the clutch pivoted thereto, in combination with pivoted arms having the other portion of the clutch soldered thereto, substantially as set forth.

4. In an electric-arc lamp, the combination, with a clutch and a contact-plate connected and adapted to move therewith, of a contact-plate electrically connected with the lamp and adapted to have a rubbing contact with the contact-plate connected to the clutch, substantially as set forth.

5. In an electric-arc lamp, the combination, with a friction-clutch, of a balance-rod and a contact-plate, substantially as set forth.

6. In an electric-arc lamp, the combination, with a friction-clutch and balance-rod, of a pivoted dog for supporting the carbon rod, substantially as set forth.

7. In an electric lamp, the combination, with a clutch, of a perforated contact-plate encircling the carbon-rod and a yielding contact-plate electrically connected with the lamp-frame, substantially as set forth.

8. In an electric-arc lamp, the combination, with the top and bottom plates, of electro-magnets fastened to the top plate and provided with extended pole-pieces and diamagnetic pillars connecting such extended pole-pieces with the bottom plate, substantially as set forth.

9. In an electric-arc lamp, the combination, with electro-magnets having extended pole-pieces provided with flattened adjacent faces and an armature having a swage-groove and extended side flanges, substantially as set forth.

10. In an electric-arc lamp, the combination, with two independently-adjustable carbon-rods and their clutches, the latter being each provided with a tripping-arm, of an electro-magnet having an insulated support for both of said tripping-arms, substantially as set forth.

11. In an electric lamp, the combination, with the shunt-helices, of a mechanical cut-out adapted to automatically cut said shunt-helices out of circuit when an excessive current passes through them, said mechanical cut-out comprising a post having a hooked arm, a spring-arm secured to the base of said post and adapted to normally engage the hooked arm of the post, a contact-post with which said spring is adapted to make contact, a collar of insulating material on said spring-arm, and an arm on a moving part of the lamp mechanism adapted to strike said collar and force the spring-arm into contact with the contact-post, substantially as set forth.

12. In an electric lamp, the combination, with the shunt-helices, of a mechanical cut-out adapted to automatically cut said shunt-helices out of circuit when an excessive current passes through them, said mechanical cut-out comprising a post, a hooked arm projecting from said post and having a notch therein, a spring-arm having an angular portion adapted to engage said notch, a conical contact-post arranged in proximity to said spring-arm, a collar of insulating material on the spring-arm, and an arm carried by a moving part of the mechanism of the lamp and adapted to engage the insulating-collar and force the spring-arm into contact with the conical contact-post, substantially as set forth.

13. In an electric lamp, the combination, with the side bars bent substantially as shown, of an adjustable disk having a screw-threaded shank and a nut on said shank adapted to bear against the lower ends of the side bars, substantially as set forth.

14. In an electric-arc lamp, the combination, with a globe-holder, of a spring having flanges attached to both of its free ends, said flanges being arranged to lock the globe against accidental displacement, substantially as set forth.

15. In an electric lamp, the combination, with a lamp-frame, a portion of which is provided with an elongated slot, of a globe-holder provided with a hook having a transverse bar on its free end, whereby said globe-holder can be attached to the frame of the lamp during the operation of trimming, substantially as set forth.

16. In an electric-arc lamp, the combination, with the ash-pan having a raised rim around the opening therein, of a canopy-nut within which said rim is received, substantially as set forth.

17. In an electric-arc lamp, a sectional friction-clutch provided with a narrow and elongated wearing-surface having transverse grooves and an adjoining groove for the reception of dirt and dust, substantially as set forth.

18. In an electric-arc lamp, the combination, with a gravity-feeding carbon-rod holder, a clutch, and magnets adapted to act differentially in controlling the arc and feeding the carbon, of a supplemental electro-magnet, and an armature for said supplemental electro-magnet, adapted to release the clutch, said clutch being constructed and arranged in such manner as to maintain the carbon elevated when no current is passing through the lamp, substantially as set forth.

473,284. BEE-ESCAPE FOR HIVES. GRANVILLE H. AMSWORTH, Sabula, Ia., assignor of two-thirds to Henry R. Wisman and John J. Shrike, same place. Filed Sept. 14, 1891. Serial No. 406,712. (Model.)

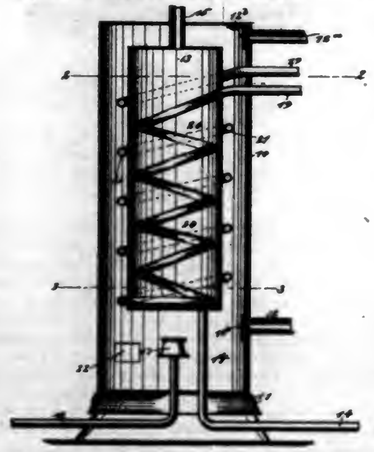


Claim.—I. The combination, with a board having an opening therein and provided with the beveled end C and undercut end D, of the escape arranged in said opening, said escape consisting of a case or tube open at the end adjacent to the end C and provided with a series of pendent guard-fingers at the end adjacent to the end D, substantially as shown and described.

2. The combination, with a board having an opening provided with the beveled ends C and D, of the escape arranged in said opening and consisting of a case or tube having sloping ends, the top of which case projects transversely beyond the sides of the same, the transverse bar secured between the sides near one end of the case or tube, and the pendent guard-fingers loosely attached to said bar and adapted to rest normally upon the bottom of the case, substantially as shown and described.

3. As an improved article of manufacture, an escape comprising a case or tube, the top of which projects transversely beyond the sides of the same, said sides having sloping ends, the transverse bar arranged at one end of case near the top of the same, and a series of pendent guard-fingers loosely attached to said bar and resting upon the bottom of the case, substantially as and for the purpose described.

473,285. GAS-STOVE. FREDERICK W. EGAN, Ogden, Utah. Filed Aug. 19, 1891. Serial No. 403,082. (No model.)



Claim.—A gas stove comprising the two closed drums, one within the other, and each provided with inlet and offtake pipes leading to the outer air, a burner under the inner drum, and a water-pipe extending through the two drums, coiled downwardly within the inner drum, extending therethrough, and coiled upward around the outside of the inner drum, and then extending out through the outer drum at a higher point than where it entered, substantially as set forth.

473,286. WATCH-MAKER'S GAGE. EDWARD BERTON, Toronto, Canada. Filed Jan. 16, 1891. Renewed Feb. 25, 1892. Serial No. 422,794. (No model.)



Claim.—1. A measuring-tool consisting of two parallel arms, one of which carries an adjustable spindle, fitted to move in two directions at right angles to each other, substantially as described.

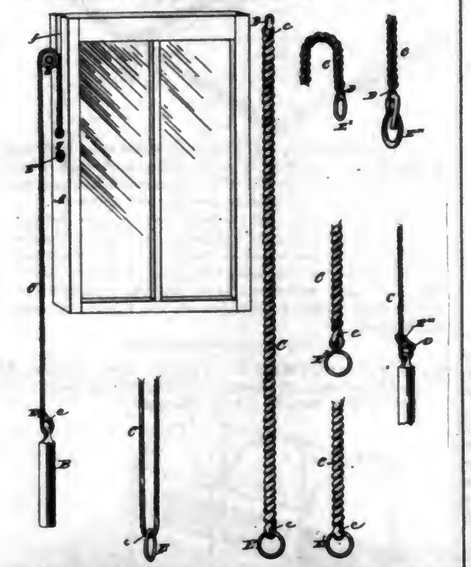
2. A measuring-tool consisting of two parallel arms, through one of which arms a longitudinal slot is made, through which slot a spindle passes at right angles to the surface of the said arm.

3. A measuring-tool consisting of two parallel arms, one arm being longer than the other, and through which long arm a slot is made to receive a spindle which passes through it at right angles to the surface of the arm and within which slot the said spindle is adjustable.

4. Two parallel arms A B and a slot F, made through the arm A to receive the post E, through which post the spindle D is screwed, in combination with the nut G and spring H, made substantially as and for the purpose specified.

5. Two parallel arms A B, an adjusting-pin I, fitted in the arm B and projecting at right angles to its surface, and the slot F, made in the arm A to receive the post E, through which the spindle D is screwed, in combination with a nut G and spring H.

473,287. SASH-CORD. LEHMAN BIRN, Philadelphia, Pa. Filed Nov. 11, 1891. Serial No. 411,611. (No model.)



Claim.—1. A sash-cord having a link or hook at its upper end adapted to pass down through a bore into a pocket in the sash and a locking-ring to detachably engage said link or hook within the said pocket and prevent withdrawal through the bore, substantially as set forth.

2. A sash-cord having a link or hook at its upper end adapted to pass down through a bore into a pocket in the sash and a locking-ring having a hook to detachably engage said link or hook within the said pocket, substantially as set forth.

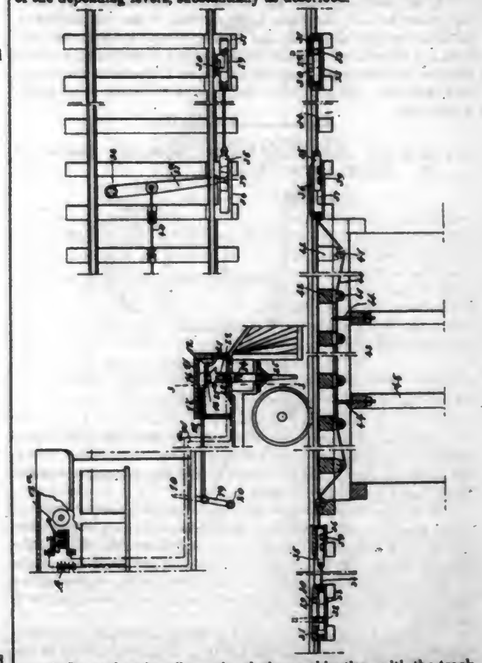
3. A sash-cord doubled and twisted forming loops *e e* at its ends, a hook or link passed through the upper loop and having a detachable locking ring or hook, and a ring or its stated equivalent passed through the lower loop, substantially as set forth.

473,288. ELECTRIC RAILWAY-SIGNAL. JOHN M. BRAMHETON, Morven, N. C. Filed July 24, 1891. Serial No. 400,553. (No model.)

Claim.—1. An electric railway-signal comprising a bell arranged in the cab of a locomotive and included in an electric circuit, a contact-block mounted on the locomotive and having the wires of the bell connected therewith, a spring-pressed lever to contact with the contact-block, a tilting plate to engage the lever and hold it from the contact-block, a lever pivoted on the locomotive and to the tilting plate, said lever extending to a point adjacent to a track-rail, and a signal-post arranged adjacent to a track-rail and adapted to engage the lever, substantially as described.

2. An electric railway-signal comprising a bell arranged in the engine-cab, a battery to operate the bell, a contact-block having the bell-wires connected therewith, a spring-pressed lever to contact with the contact-block, a lever mechanism for pulling the lever from the contact-block, a locking device to secure the lever, main levers pivoted on the locomotive and extending to a point adjacent to the track, said levers being arranged to trip the locking device, and a signal-post arranged adjacent to a track-rail to contact with the main levers, substantially as described.

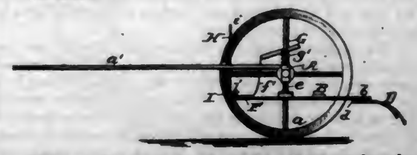
3. An electric railway-signal comprising an electric bell arranged in the locomotive-cab, a casing arranged on the pilot of the locomotive, a contact-block supported in the casing and connected with the wires of the bell, a spring-pressed lever mounted in the casing and adapted to engage the contact-block, a spring-pressed hook mounted above the lever and adapted to engage the same, a lever mechanism for moving the hook and contact-lever from the locomotive-cab, a tilting and sliding plate adapted to engage the contact-lever, a shaft extending transversely beneath the pilot and having depending levers at each end, one of which projects above the shaft and connects with the tilting plate, and a signal-post arranged upon the track in the path of the depending levers, substantially as described.



4. In an electric railway-signal, the combination, with the track and bridge, of the vertically-swinging signal-posts arranged at each end of said bridge, transverse levers pivoted on the track-bed, blocks 36, connected with the outer ends of such levers and adapted to slide lengthwise of the track, cables 34 and 40, connecting said blocks, levers, and bridge, and the cables 40, passing under the bridge on supports 45 and through hangers 44, as shown and described.

5. In an electric railway-signal, the combination, with the vertically-swinging bell-crank signal-post, of a sliding block arranged to engage the short arm of the post, a swinging lever pivoted on the track-bed and adapted to move the sliding block, and a cable secured to the track-lever and extending over suitable guide-pulleys to connect with the bridge, substantially as described.

473,289. SULKY CULTIVATOR AND WEEDER. ZEPHANIAH BREED, North Weare, N. H. Filed July 22, 1891. Serial No. 400,334. (No model.)



Claim.—1. The herein-described sulky cultivator and weeder, comprising the main axle, the carrying-wheels, the frame loosely swiveled to said axle, the head-piece, the teeth fixed in said head-piece, the pivoted seat, and a connection intermediate of the seat and forward part of the frame, substantially as described.

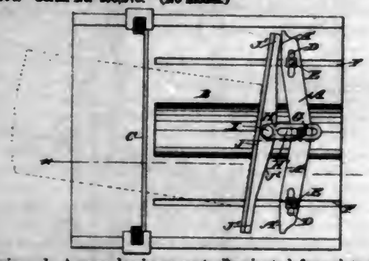
2. In a sulky cultivator and weeder, the carrying-wheels, the axle, the uprights on said axle, the cross-piece having the spring ends operating loosely on the uprights, and the seat pivoted on said cross-piece, substantially as described.

3. In a sulky cultivator and weeder, the carrying-wheels, the axle, the frame supporting the weeder, loosely secured to said axle, the platform on the forward part of the frame, the uprights on said axle, the cross-piece, the seat pivoted on said cross-piece, and a connection between the seat and the platform, substantially as described.

4. In a sulky cultivator and weeder, the carrying-wheels, the axle, the weeder-frame pivoted to the under side of said axle, the platform on the frame, and the lever pivoted on the shafts and adapted to engage with the platform to elevate the weeder, substantially as described.

5. In a sulky cultivator and weeder, the combination of the carrying-wheels, the axle, the frame B, the platform F, the seat pivoted between the uprights on the axle and adapted to raise and lower the platform as it is tilted, and the head-piece *b*, secured on the frame, the teeth fitted in said head-piece, and the extensions E, hinged to the ends of said head-piece and adapted to fold over on the same, substantially as described.

473,290. GAGE. SARAH F. BROWN, Denver, Colo. Filed July 22, 1891. Serial No. 400,273. (No model.)



Claim.—1. A gage having a centrally-pivoted face-plate free to vibrate in either direction and a transverse stop or guide-bar behind the face-plate and serving at its ends to limit the swinging movement of the face-plate in either direction.

2. A gage having a centrally-pivoted face-plate free to vibrate in either direction and a transverse laterally-movable stop or guide-bar serving at its ends to form stops for the face-plate ends, whereby the gage as a whole may be brought to the desired position and the angle at which the face-plate is free to swing determined by regulating the distance of the face-plate from the stop or guide-bar, substantially as set forth.

3. A gage comprising a guide-bar having a forwardly-projecting central arm and a face-plate pivoted at its center to the end of the said arm to vibrate freely in either direction, its movement in either direction being limited by its ends contacting with the guide-bar, whereby when the work is placed against the face-plate and swung in either direction the face-plate will move with the work until one of its ends strikes the guide-bar, substantially as set forth.

4. A gage comprising a guide-bar having a longitudinally-adjustable transverse arm crossing its center at right angles and a face-plate centrally pivoted to the forward end of the said arm to vibrate freely in either direction, the ends of the guide-bar serving to limit the rearward movement of the face-plate, whereby the angle of the face-plate may be changed at will by adjusting its axis toward or from the guide-bar, substantially as set forth.

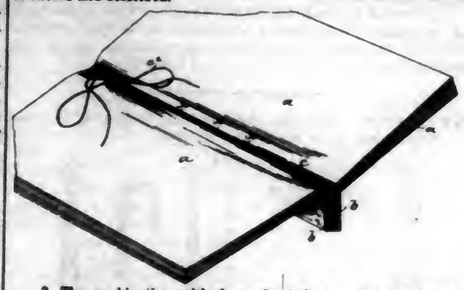
5. A gage comprising a guide-bar having its inner edge between its ends cut away, as at A^3, and having its inner face at its ends straight, as shown at A' A', the face-plate having its inner edge shaped to correspond with the adjacent edge of the guide-bar, as shown at J' J' J^3, a longitudinally-adjustable arm mounted on the center of the guide-bar and pivoted to the center of the face-plate, and means for adjusting the gage as a whole toward and from the device with which it is to be used, substantially as set forth.

6. The combination, with the table having a transverse slot C and two parallel slots F F, of the transverse guide-bar, the adjusting bolts or screws extending through the ends of the bar and the slots F, the slotted arm H, crossing the center of the guide-bar, the set-screw extending through the slotted arm into the center of the guide-bar, the freely-vibrating face-plate pivoted at its center to the arm H, the ends of the guide-bar serving as stops for the ends of the vibrating face-plate, substantially as set forth.

473,291. BLANK BOOK. JAMES W. BURRIS, Uvalde, Tex. Filed July 24, 1891. Serial No. 400,660. (No model.)

Claim.—1. A blank book having detachable sheets, the same being composed of the pack of sheets, an independent binding-strip arranged parallel to the folded edge of each sheets, and a cord formed into a series of loops which pass through coincident openings in both the sheets and the strip, the said loops being connected in series on the inner side of the pack, as shown and described.

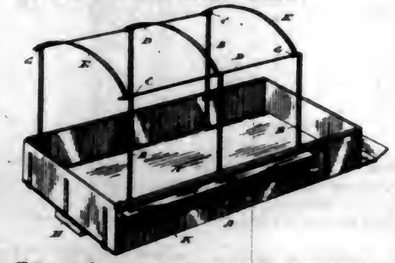
2. The combination, with the pack of sheets and a binding-strip having coincident openings, of a cord which is secured to the strip at one end and formed into a series of loops which are drawn through said openings and secured on the inner side of the sheets, substantially as shown and described.



3. The combination, with the pack of sheets and a binding-strip having coincident openings, of a connecting-cord which is looped through said openings, and the several loops interlocked by means of one loop passing through another, as shown and described.

4. The combination, with the pack of sheets and a binding-strip having coincident openings, of a connecting-cord which is secured to one end of the strip and formed into a series of loops that pass through said openings and are detachably interlocked on the inner side of the pack, and a second cord secured to the other end of the strip and tied to the first cord adjacent to the last-formed loop, substantially as shown and described.

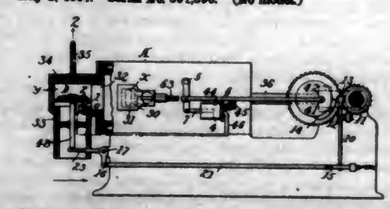
473,292. COVERING FOR WAGONS. JOSEPH CAMPBELL, WILLIAM H. CAMPBELL, and ROBERT J. CAMPBELL, Toronto, Canada. Filed Nov. 23, 1891. Serial No. 412,856. (No model.)



Claim.—1. In a wagon, a skeleton frame comprising the uprights B, each secured at one end to the wagon and having an eye at its other end, top rails D, passing through said eyes, and cross-rails E, having eyes in their ends passing over said top rails D, and a cover I, substantially as described.

2. In a wagon, a skeleton frame comprising the uprights B, each secured at one end to the wagon and having an eye at its other end, top rails D, passing through said eyes, and cross-rails E, having eyes in their ends passing over said top rails D, and a cover I, secured to a roller journaled in a box fixed to one side of the wagon and adapted to extend over said skeleton frame and be secured to the other side, substantially as described.

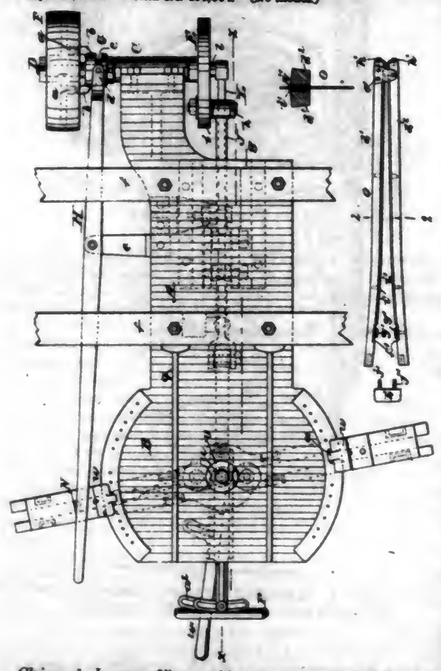
473,293. GAS-ENGINE. JAMES A. CHARTER, Sterling, Ill. Filed May 2, 1891. Serial No. 391,396. (No model.)



Claim.—1. The combination of the atomizer, oil-valve, reciprocating rod for operating the valve and carrying the plate 15, vibrating lever carrying the plate 22 for engaging the plate 15, and governor connected to shift the lever laterally, substantially as described.

2. The combination of the cylinder having an explosion-chamber at the rear end, an atomizer arranged to deliver a spray directly into the cylinder, and a reciprocating valve-cap arranged to cover the atomizer when down, substantially as described.

473,294. SAW-FILING MACHINE. GEORGE N. CLEMSON, Middletown, assignor to the National Saw Company, New York, N. Y. Filed Sept. 26, 1891. Serial No. 406,884. (No model.)



Claim.—1. In a saw-filing machine, the combination of the reciprocating bar K, supported pivotally at one end, the swinging bar R, pivotally connected with the reciprocating bar K, the revoluble file-holder Q, supported by the bar R, and means, substantially as described, for automatically turning the file-holder Q when the angle of the bar R is changed.

2. In a saw-filing machine, the combination of the reciprocating bar K, supported pivotally at one end, the swinging bar R, pivotally connected with the reciprocating bar K, the revoluble file-holder Q, supported by the bar R, means, substantially as described, for automatically turning the file-holder Q when the angle of the bar R is changed, a freely-moving saw-holder O, adapted to be slid by the engagement of the file with a saw, and supports and guides for the saw-holder, substantially as specified.

3. In a saw-filing machine, the combination of the reciprocating bar K, supported pivotally at one end, the swinging bar R, pivotally connected with the reciprocating bar K, the revoluble file-holder Q, supported by the bar R, means, substantially as described, for automatically turning the file-holder Q when the angle of the bar R is changed, a freely-moving saw-holder O, adapted to be slid by the engagement of the file with a saw, supports and guides for the saw-holder, and means for raising and lowering the file-carrier, substantially as specified.

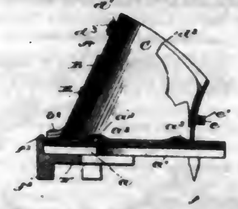
4. A vise for holding a saw while being filed, the same consisting of a pair of inwardly-convex spring-jaws connected at one end and a fastener for holding the jaws in a closed position, substantially as specified.

5. A vise for holding a saw while being filed, the same consisting of a pair of inwardly-convex spring-jaws connected at one end, a fastener for holding the jaws in a closed position, and a pliable jaw-lining, substantially as specified.

6. In a saw-filing machine constructed to file one notch of the saw with a single stroke of the file, the combination of a reciprocating bar pivoted at one end, a swinging bar pivoted to the reciprocating bar, a revoluble file-holder carried by the swinging bar, an adjustable saw guide and holder, and mechanism for raising the file-carrier at the end of its working stroke and lowering it at the beginning of its working stroke, so as to bring the file in contact with the edge of the saw, substantially as specified.

7. In a saw-filing machine constructed to file one notch of the saw with a single stroke of the file, the combination of the frame provided with segmental disks, the saw-guide cross-arm, the saw-vise guides carried by the cross-arm, and means for simultaneously filing the saw and moving it forward into a new position, substantially as specified.

473,295. OVERBOOT FOR HORSES. ROBERT CRATHE, Washington, D. C. Filed May 5, 1891. Serial No. 391,651. (No model.)



Claim.—1. The herein-described improvement in overboots, comprising the two parts or sections, the coil-springs connected at their ends to said parts or sections, holding them toward each other, the rigid separable plate removably secured to the toe ends of said parts or sections and having a rigid calk f^2 and a lug or plate f^3 fitting against said plates or sections, the series of calks, some of which hold said separable plate in position, and the bands or covers attached to said parts or sections and capable of being adjustably secured around a horse's foot, substantially as set forth.

2. The herein-described overboot, comprising a shoe formed in two parts or sections and having a double pad, coil-springs inclosed between the parts of said double pad and connected at their ends to said parts or sections, a rigid separable plate removably secured to the forward ends of said parts or sections of the shoe, the calks having lower sharpened or pointed ends, and the bands or covers secured to said shoe and capable of being secured around a horse's hoof, the pointed ends of the rear calks being at right angles to the points of the forward calks, substantially as set forth.

3. The herein-described overboot, comprising the shoe formed in two parts or sections and having a double pad, said shoe being provided with threaded holes or apertures, the coil-springs located between the parts of said pad and connected at their ends to said parts or sections, the rigid separable plate having a calk and toe-piece, the series of calks having threaded ends screwed into said holes or apertures, some of said calks holding said separable plate, the bands or covers secured to said shoe, the inner one of which has its ends connected, while the outer band has holding rods or lugs projecting therefrom, the clamping ring or band held by said rods or lugs and having angular ends provided with threaded apertures, and the screw or bolt engaging said threaded apertures, substantially as set forth.

473,296. GRAVE-MARKER. JOHN A. COFFEY, Washington, D. C. Filed Oct. 22, 1891. Serial No. 409,535. (No model.)



Claim.—1. A grave-marker or sign-holder consisting of curved plates rigidly secured to each other at their upper ends, a tablet or plate suspended between said plates, and strips for retaining covering-plates thereon and such articles that may be placed beneath the same, substantially as set forth.

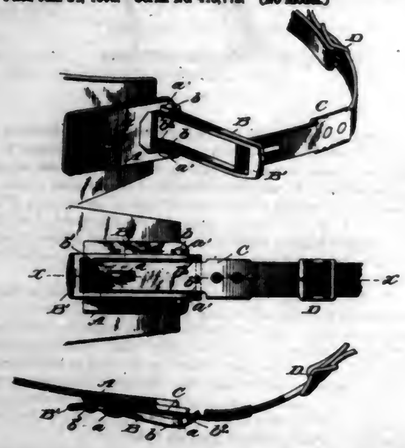
2. In a grave-marker or sign-holder, the combination of the bent plates B and B', adapted to be secured to each other, said plates having inwardly-flanged strips *d*, secured to the inner sides thereof, substantially as set forth.

3. The combination, in a grave-marker, of the bent or curved plates B and B', secured to each other at their upper ends, a strip C,

retained by the same connecting means which hold the plates to each other, and a swinging tablet C, connected to the strip C', for the purpose set forth.

4. In a grave-marker, the combination of a plate B, having on its outer face a suitable inscription, the upper end of said plate being apertured and bent over, the inner side of said plate having strips *d d*, substantially as set forth.

478,297. STRAP-FASTENER. JOHN R. CORBER, Towanda, Pa. Filed Jan. 21, 1892. Serial No. 418,772. (No model.)



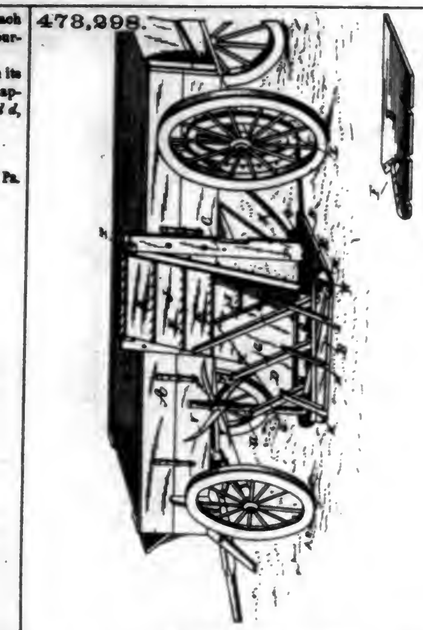
Claim.—1. A device for tightening and securing straps, consisting of a body-plate having a recess at one end and a lug or catch in its upper face near the other end, an open link journaled near one end in said recessed end and adapted to oscillate in the recess and having a cross-bar near its opposite end, and a slotted fastening-plate hinged to said cross-bar by a loose loop and adapted to engage the catch in the face of the body-plate, substantially as described.

2. A device for tightening and securing straps, consisting of a body-plate having a recess at one end and a lug or catch in its upper face near the other end, an open link journaled near one end in said recessed end and adapted to oscillate in the recess and having studs b^3 near the journaled end of the link and a cross-bar near the opposite end, and a slotted fastening-plate hinged to said cross-bar by a loose loop and adapted to engage the catch in the face of the body-plate and the studs b^3 of the open link when folded down upon said body-plate, substantially as described.

3. A device for tightening and securing straps, consisting of a body-plate having a recess at one end, a buckle at the other end, and an intermediate lug or catch in its upper face, an open link journaled near one end in said recessed end and adapted to oscillate in the recess and having a cross-bar near its opposite end, and a slotted fastening-plate hinged to said cross-bar by a loose loop and adapted to engage the catch in the face of the body-plate when folded down thereupon, substantially as described.

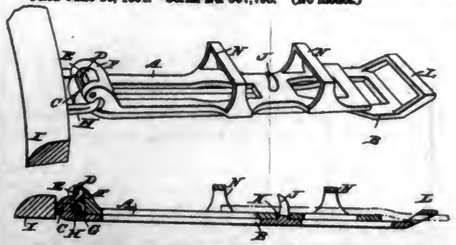
4. A device for tightening and securing straps, consisting of a body-plate having a recess at one end, a buckle at the other end, and an intermediate lug or catch in its upper face, an open link journaled near one end in said recessed end and adapted to oscillate in the recess and having studs b^3 near the journaled end of the link and a cross-bar near the opposite end, and a slotted fastening-plate hinged to said cross-bar by a loose loop and adapted to engage the catch in the face of the body-plate and the studs b^3 of the open link when folded down upon said body-plate, substantially as described.

478,298. CORN-HARVESTER. CHARLES D. COURTRIGHT and CLARENCE A. POWELL, Kenesaw, Nebr. Filed Apr. 20, 1891. Serial No. 391,019. (No model.)



Claim.—In a corn-harvester machine, the combination, with a wagon, of the uprights secured to the side thereof, having a platform attached thereto at their lower ends, said platform being provided with a cutting end, a crib provided on said platform, and an endless-belt conveyor driven by a sprocket-chain running from a sprocket-wheel on the wagon-wheel to a sprocket-wheel on a shaft mounted on the platform and transverse thereto, said shaft having a suitable gear-wheel mounted thereon and operating the roller-shaft at right angles thereto, substantially as described.

478,299. TRACE-IRON. WILLIAM J. DANKWORTH, Gatesville, Tex. Filed June 29, 1891. Serial No. 397,793. (No model.)



Claim.—1. A trace-iron consisting of two leaves pivoted together at their forward ends, the inner leaf being longer than the outer leaf and provided at its rear extremity with a loop and between its ends with a prong extending through an aperture in the outer leaf, and the outer leaf having two loops at opposite sides of the prong-aperture, substantially as and for the purpose described.

2. A trace iron consisting of two leaves separably pivoted at their outer ends and having a transverse aperture G between said ends, a loop L on the rear extremity of the inner leaf beyond the rear end of the outer leaf, a prong on the inner leaf between its ends, projecting through an aperture K in the outer leaf, and the outer leaf having transverse loops N at opposite sides of aperture K, substantially as and for the purpose described.

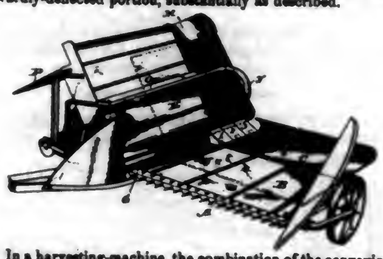
3. A trace-iron consisting of the longer inner leaf B, having an outward-projecting transverse loop L at the rear end and outward-projecting offset O at its front end, provided with a rearward-extended eye D, open on its forward side, a prong J, projecting from between the end of said leaf and the outer shorter leaf A, having its front end F forked and provided with a transverse pin E to receive the eye D, an aperture G being formed between the adjacent parts of the offset O and end F, transverse loops N N on the outer leaf, and an intermediate aperture K, through which the prong J projects, substantially as and for the purpose described.

478,300. HARVESTER. JAMES R. DERRING, Chicago, Ill. Filed Jan. 13, 1892. Serial No. 417,951. (No model.)

Claim.—1. The combination, with the conveying devices, of the sliding head-supporting guide or guides, substantially as described.

2. In a harvesting-machine, the combination of the endless conveyer B and sliding head-supporting extension C, substantially as described.

3. In a harvesting-machine, the combination of the conveying device B and the rearwardly-extensible head-supporting guide C, having an upwardly-deflected portion, substantially as described.



4. In a harvesting-machine, the combination of the conveying device B and the rearwardly-extensible head-support C, having an upwardly and forwardly deflected portion adapted to form a head-guide for the grain, substantially as described.

5. In a harvesting-machine, the combination of a conveying-canvas and the extensible head-supporting plate sliding in its adjustment between the parallel portions of the said endless conveyer, substantially as described.

6. In a harvesting-machine, the combination of the elevating device and sliding head-supporting plate, substantially as described.

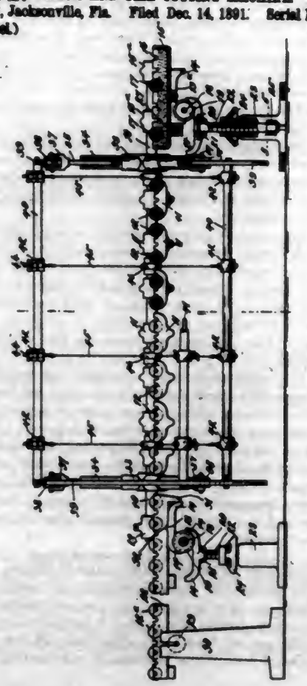
7. In a harvesting-machine, the elevating devices, in combination with the extensible head-supporting plate L, having the upwardly-deflected head-guiding portion, substantially as described.

8. In a harvesting-machine, the combination, with the elevating device, of the extensible head-supporting plate L, having the upwardly and forwardly deflected head-guiding portion, substantially as described.

9. In a harvesting-machine, the combination of the conveying devices, the binder-table, the extensible head-supporting plate L, and the upturned head-guiding portion, and the head-guiding plate M, secured thereto and adjustable therewith, substantially as described.

10. In a harvesting-machine, the combination of the extensible head-support C and the extensible plate L, the said support and plate sliding between the parallel parts of the respective endless conveying-canvases, and a bridge-piece or bridge-pieces adapted to close the gap between said support C and plate L, substantially as described.

478,301. BRICK AND TILE CUTTING MACHINE. RICHARD A. DRAWDY, Jacksonville, Fla. Filed Dec. 14, 1891. Serial No. 414,957. (No model.)



Claim.—1. The combination, with the longitudinal shaft having brackets 11, carrying-rollers 12, and the cutting-reel mounted on the shaft, of depending brackets 13 13^a, secured to the ends of the shaft and having downwardly-curved arms 14 at each end, supporting-brackets 20, mounted below the brackets 13 13^a and having upwardly-curved arms and rollers between the two sets of arms, and the receptacle 15, mounted above the bracket 13^a and having brackets 15^a, mounted on shaft 10, and transverse rollers parallel with and in the plane of the rollers 12, substantially as set forth.

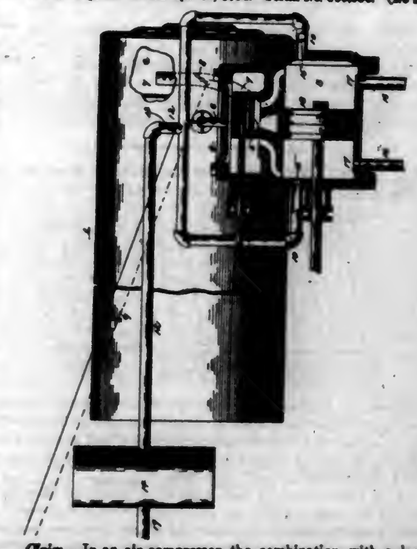
2. The combination, with the reciprocating cutting-table having the transverse rollers 12 and the upper and lower brackets having curved arms 14, between which are placed the rollers 9, the rear upper bracket 13, having a rib, of the rear extension-table 28, also having rollers and provided with a concavity receiving the rib of bracket 13 and depending arm 31, and a support 30, having a roller 29, on which the outer end of the extension-table rests, substantially as set forth.

3. The combination, with the cutting-off table, of radially-extending arms secured to the ends of the table, pulleys mounted in the outer ends of the arms, a reel held to turn on the pulleys, and cutting-off wires carried by the reel and extending radially toward the table-shaft, substantially as described.

4. The combination, with the cutting-table having a main shaft extending longitudinally thereof, of hollow arms extending radially from the table ends, pulleys adjustably mounted on the outer ends of the arms, connected rims held to turn on the pulleys, and cutting-off wires having their inner ends secured to collars mounted on the table-shaft and their outer ends secured to the rim connections, substantially as described.

5. The combination, with the cutting-table having a main shaft extending longitudinally thereof and the arms extending radially from the table-shaft and carrying-pulleys at their outer ends, of the cutting-reel comprising end rims held to turn on the pulleys, cross-pipes connecting the rims, clamping-pieces mounted on the cross-pipes, and adjustable wires extending from the clamping-pieces to collars held to turn on the main table-shaft, substantially as described.

478,302. COMPRESSOR FOR AIR-BRAKES. DENNIS DUNN, Mahanoy City, Pa. Filed Apr. 17, 1891. Serial No. 389,236. (No model.)



Claim.—In an air-compressor, the combination, with a locomotive-boiler, the steam-cylinders, the steam-chest, the valve, the steam-supply pipe, and the exhaust-pipe provided with a stop-cock, of the pipes connected with the cylinders, provided with oppositely-arranged check-valves, the pipe connected therewith and provided with a stop-cock, the air-tank connected with said last-mentioned pipe, and the pipes in the steam-cylinder leading to the atmosphere and provided with oppositely-arranged check-valves, substantially as described.

478,308. PLASTER-BLADE. CHARLES C. ERMSON, Pittsburg, Pa. Filed Dec. 28, 1891. Serial No. 416,206. (No model.)

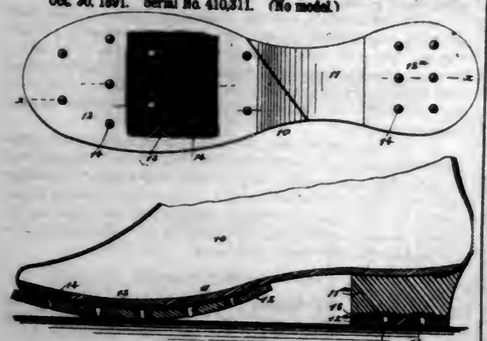
Claim.—1. A plaster-blade having prongs forming teeth, combined with a shield rigidly secured to the blade and moving therewith,

the shield being longer than the blade and provided with openings through which the teeth of the blade pass, substantially as described.



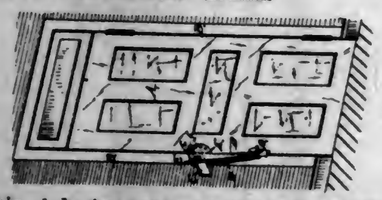
2. The combination, with two plaiter-blades, of two shields, which are placed inside of the blades and between which the teeth of the blades project, the shields being constructed to allow the teeth of the blades to pass through them, whereby one shield disengages the teeth of the other blade from the goods, as specified.

473,304. SOLE. FERDINAND EPERAIN, San Francisco, Cal. Filed Oct. 30, 1891. Serial No. 410,311. (No model.)



Claim.—The combination, with the boot or shoe, of the wire-gauze plate 13, carrying a series of nails clinched to it and having tapering heads, and the outer sole or tap having a series of tapering apertures corresponding in position to and receiving the nail-heads, the ends of the heads of the nails being exposed through said apertures to take the wear, substantially as set forth.

473,305. DOOR-SECURER. WILLIAM W. EWING, Butler, Pa. Filed Jan. 4, 1892. Serial No. 416,955. (No model.)



Claim.—1. In a door-securer, a plate fitted between the door and its casing or frame and projecting inwardly, in combination with two cams or eccentrics fulcrumed to the inner end of said plate, one upon each side, and having projecting arms or levers by which they are moved, substantially as herein described.

2. In a door-securer, a plate adapted to be secured between the door and its frame or casing and projecting inwardly, the cams or eccentric heads fulcrumed to the inner end of said plate, one upon each side, and adapted to bear on the door and door-frame, respectively, and levers or arms projecting from the cams and provided with bells, which sound an alarm when the cams are moved, substantially as herein described.

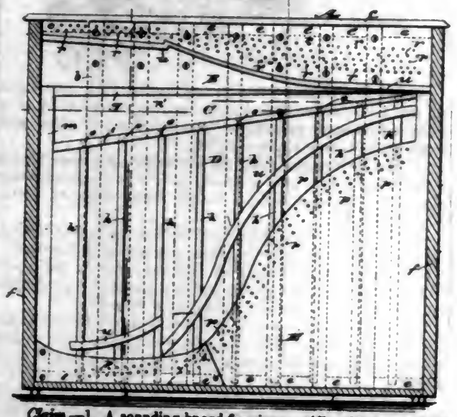
3. In a door-securer, the supporting-plate with its cams or eccentrics adapted to bear one upon the door and the other upon the frame thereof, said cams having holes adapted to receive a pin for locking and adjusting them, substantially as herein described.

473,306. COMPOUND OF SULPHURETED OILS. WALTER D. FIELD, Millburn, N. J., assignor to the Tunnetto Manufacturing Company, of New Jersey. Filed Mar. 6, 1891. Serial No. 383,967. (No specimens.)

Claim.—1. A new composition of matter consisting of the sulphur derivatives or compounds of the glyceyl or glyceryl others of the unsaturated fatty acids and soluble in benzine and pyroxyline or nitro-cellulose.

2. A new composition of matter consisting of the glyceyl or glyceryl others of the unsaturated fatty acids, combined with sulphur to form sulphur-balsam and pyroxyline or nitro-cellulose.

473,307. SOUNDING-BOARD AND RESONANT CHAMBER FOR PIANO-FORTES. JOHN U. FISCHER, New York, N. Y. Filed Jan. 27, 1892. Serial No. 419,445. (No model.)



Claim.—1. A sounding-board for pianos, stiffened by vertical ribs on its front side, plain on its rear face, and held by its edges away from a back board open above and forming an intervening resonant chamber, substantially as described.

2. A sounding-board for upright pianos, stiffened by vertical ribs on its front face, plain on its rear face, and held by its edges against the sides and bottom of the piano-case and free above and supported vertically by a keeper-strip at each side edge independently of a back board, substantially as described.

3. A sounding-board for pianos, held at its edges, projected away from a back board within the case, and forming an intervening unobstructed resonant chamber, substantially as described.

4. The combination, with a piano-case, of a stiffening structure therein composed of a series of upright strips spaced apart by blocks above and below, a transverse wrest-pin plank secured on the strips, a back board below the pin-plank, abutting its edge thereon and of a less thickness than said plank, and a hitch-pin plank below, substantially as described.

5. The combination, with a case and a composite stiffening structure therein constructed substantially as described, of a sounding-board held by its side and bottom edges to the case parallel with and forwardly of a back board that is part of the stiffening structure, substantially as described.

6. The combination, with a case and a back board that is part of a stiffening structure therein, of a wrest-pin plank secured by its lower edge to the upper edge of the thinner back board, so as to extend forwardly thereof, a hitch-pin board below, and a sounding-board located between the wrest-pin plank and hitch-pin board, with a space between its top edge and the lower edge of the plank, and a resonant chamber between the sounding-board and back board, substantially as described.

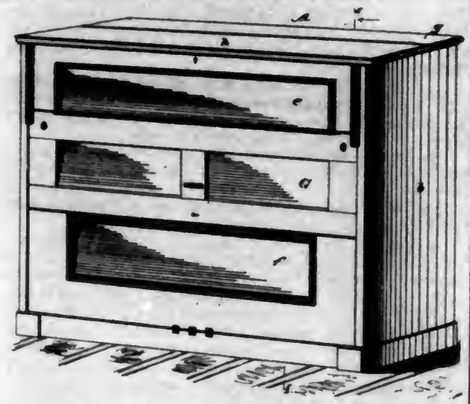
7. The combination, with an upright case having a solid rear wall, a series of vertical strips secured to the top, bottom, and rear wall, spacing-blocks between the strips above and below, a wrest-pin plank secured on the strips and to the top case wall, a thin back board fastened on the strips and to the wrest-pin plank, case sides, and bottom wall by its edges, and a hitch-pin board below, of an intervening sounding-board secured at its edges to the case sides and bottom, having a space between its top edge and the wrest-pin plank and removed from the back board, producing a resonant chamber between, substantially as described.

473,308. UPRIGHT PIANO. JOHN U. FISCHER, New York, N. Y. Filed Jan. 28, 1892. Serial No. 419,489. (No model.)

Claim.—1. In an upright piano, the combination, with a case and a piano-action therein, of a keyboard pivoted to rock between the sides of the case and form a part of its front wall, and means to secure the keyboard vertically or horizontally, substantially as described.

2. In an upright piano, the combination, with a case having a front upper panel and a front lower panel, each panel being made of two pieces hinged together at their side edges, of a keyboard pivoted between the side walls of the case and adapted to form a part of the front wall, substantially as described.

3. In an upright piano, the combination, with the case, of a pivoted keyboard adapted to project partly beyond the case when rocked into a horizontal plane, and removable brackets at the ends of the said keyboard, whereon it rests, substantially as described.



4. In an upright piano, the combination, with the case and a pivoted keyboard adapted to rock into a vertical or horizontal plane, of two end brackets for the keyboard, a folding top panel and a folding lower panel for the front of the case, and a removable covering device for the keyboard, substantially as described.

5. In an upright piano, the combination, with a rectangular case having a hinged lid and upper and lower front panels, each made of two pieces hinged together, and a pivoted keyboard adapted to complete the front wall of the case when upright, of two removable end brackets for the keyboard, adapted to slide between the case and keyboard, and also adapted to lock fast to the keyboard when said board is in a horizontal position, substantially as described.

6. In an upright piano, two keyboard-brackets that are adapted to slide between the case side walls and the end portions of the keyboard, rest on the keyboard and have a locked connection therewith, and loosely engage their top edges with blocks on the case side walls, substantially as described.

7. In an upright-piano case, a front top panel, which is formed of two hinged sections that are held aligned by turn-buttons, substantially as described.

8. In an upright-piano case, a front lower panel formed of two hinged sections hinged together at side edges, held aligned by turn-buttons, and doweled to the base-board of the case, substantially as described.

9. In an upright piano, a detachable two-part folding keyboard-cover, in combination with a music-rest strip hinged by its side edge to the inner face of the cover-piece, substantially as described.

10. In an upright piano, the combination, with a rectangular case, bracket-blocks on the case sides, a keyboard, and a closing strip above the keys on the board, resting its ends on notches in the bracket-blocks, of a two-part hinged keyboard-cover that is seated upon and loosely secured to the bracket-blocks and is adapted to fold over or away from the keyboard, substantially as described.

11. In an upright piano, the combination, with a rectangular case and a keyboard pivoted at its ends between the case side walls, that is adapted to form a part of its front wall and projecting its major portion beyond the case front when horizontal, of two detachable legs for the keyboard, substantially as described.

12. In an upright piano, the combination, with a rectangular case, a pivoted keyboard adapted to project forwardly of the case when horizontal and two end brackets for the keyboard, that slide between the case sides and said board, of blocks secured to the case sides and which bear above upon the inserted brackets and hinged braces below on the case sides, that prop the keyboard when upright, substantially as described.

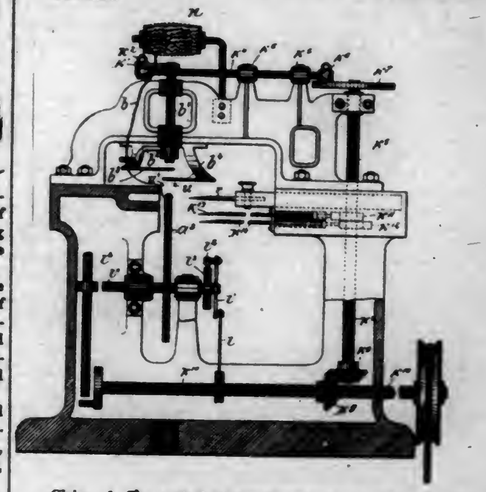
13. In a piano, the combination, with an upright case adapted to be completely closed in front, of pedals hinged at their inner ends and which will fold upright within the case, substantially as described.

14. The combination, with a rectangular upright case, of blocks therein secured to the case sides and adapted to removably support two legs of a keyboard horizontally within the case, substantially as described.

15. In an upright piano, the combination, with a rectangular case, a transverse wrest-pin plank above, a hitch-pin board below, a thin back board between, and structural supports therefor behind, of a sounding-board held away from the back board forwardly, forming a resonant chamber between and separated from the lower edge of the wrest-pin plank to provide for sound-escape forwardly, a piano-action in front, a keyboard below, a hinged lid above opening at the front, and a device actuated by a vibratile pedal which will move the lid in unison with the vibration of the pedal, substantially as described.

16. An upright-piano case completely closed in front by a pivoted keyboard and adjustable panels, and also adapted to retain loose parts of the instrument, and a knockdown stool within the case below the keyboard when the case is in a closed condition, substantially as described.

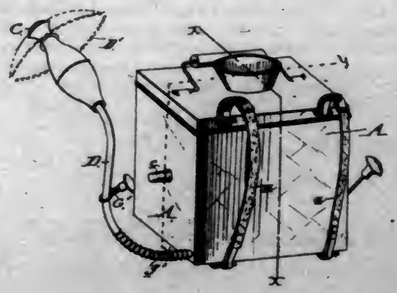
473,309. METHOD OF MANUFACTURING PEARL RIBBONS. OSWALD FRITZSCH, Annaberg, Germany. Filed Sept. 22, 1890. Serial No. 365,856. (No specimens.) Patented in Germany Apr. 27, 1890, No. 53,962; in France May 8, 1890, No. 205,554; in England May 22, 1890, No. 8,094, and in Austria-Hungary Nov. 2, 1890, No. 20,575 and No. 37,827.



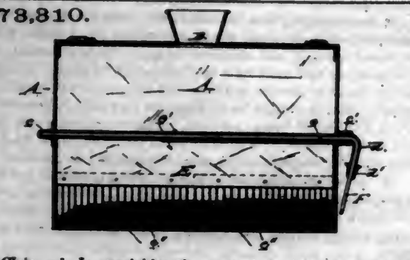
Claim.—1. The method of manufacturing pearl ribbons, consisting in applying a thread alternately full of pearls and empty of them to a cordon or ribbon or to several parallel cordons in a zigzag course, so as to get parallel series of pearls by those parts of the thread which are filled with pearls, and to connect said parallel series of pearls by those parts of the thread which are empty of pearls, as described.

2. The method of manufacturing pearl ribbons, consisting in applying a thread alternately full of pearls and empty of them in equal distances to a cordon or ribbon or to several parallel cordons in a zigzag course, so as to get parallel series of pearls by those parts of the thread which are filled with pearls, and to connect said parallel series of pearls by those parts of the thread which are empty of pearls, said empty parts being also of parallel position, the whole thread being fixed to the cordon or cordons by stitches through or across the latter, as described.

473,310. SPRINKLER. MOSES GOLDMAN, Pittsfield, Mass. Filed July 9, 1891. Serial No. 398,934. (No model.)



478,810.



Claim.—1. In a sprinkler, the reservoir having a shaft mounted horizontally therein, extending through one end of the reservoir and provided with an operating-handle, in combination with an agitator fixed to said shaft and provided with a flexible blade adapted to sweep the floor of the reservoir, a flexible discharge-tube having a protector coiled upon a portion of the same, and a bulb and spraying rose on the end of the tube, substantially as herein described.

2. In a sprinkler, a reservoir having a shaft mounted horizontally therein, in combination with an agitator fixed to said shaft, a flexible blade on the agitator adapted to sweep across the floor of the reservoir, a handle for operating the shaft, and a flexible discharge-tube, substantially as herein described.

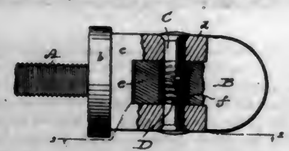
3. In a sprinkler, the reservoir thereof, a shaft mounted therein extending through one end and provided with a handle, an agitator on said shaft, a flexible tube on the extended end of the shaft, and a sliding ferrule for securing the tube, substantially as herein described.

4. The nipple *d'* and flexible tube *d*, in combination with the ferrule *d''* and rod *c*, substantially as and for the purpose described.

5. In a sprinkler, the reservoir having end bearings, a shaft mounted horizontally in said bearings, extending through one end of the reservoir and provided with an operating-handle, a metal plate *f*, fixed to the shaft, and a rubber blade fitted to the end of the plate so that it may sweep the floor of the reservoir as the shaft is oscillated, substantially as herein described.

6. In a sprinkler, a check for the discharge-tube, consisting of a clamp having an opening for the tube and a contracted portion or slot extending from said opening and adapted to receive and compress the tube, substantially as herein described.

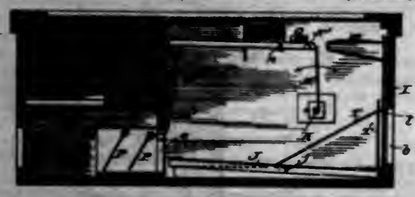
478,811. WHIFFLETREE-HOOK. JOSEPH GROSS, Milwaukee, Wis. Filed Dec. 31, 1891. Serial No. 415,697. (No model.)



Claim.—1. The combination of a bifurcated stem for attachment to a whiffletree, a tongue having a portion thereof positioned between the stem furcations, a pivot-pin engaging these stem furcations and tongue, and a spiral spring compressed in said tongue around the pivot-pin and against both of said stem furcations, substantially as set forth.

2. The combination of a plate having a screw-threaded shank and a bifurcated stem on opposite sides thereof, a tongue positioned between the stem furcations, a pivot-pin engaging these stem furcations and tongue, and a spiral spring compressed in said tongue around the pivot-pin and against both stem furcations, substantially as set forth.

478,812. ANIMAL-TRAP. WILLIAM H. HARDEN, Quitman, Ga., assignor of one-half to William L. Wilkinson and William W. Walker, same place. Filed May 13, 1891. Serial No. 392,637. (No model.)



Claim.—1. A trap comprising an entrance-chamber having an inlet and an outlet, a door controlling the inlet, a motor by which said door may be adjusted to open position, a detent for restraining the movement of said motor, a gate controlling the outlet from the entrance-chamber, and connections between the said gate and detent, whereby the tilting of the gate will release the detent, substantially as set forth.

2. In a trap, the combination of the casing or box, the door for closing the inlet-opening thereof and provided with a rearwardly-projected arm, the motor having a shaft provided with an arm not connected with but arranged to engage that of the door during a portion of the revolution of the shaft, a detent for restraining the said motor, and releasing devices for freeing the said detent, all substantially as and for the purposes set forth.

3. In a trap, the combination of the self-closing door, the tilting platform provided with devices by which to support the said door open and to release the same, and motor mechanism by which to readjust the door to set the same, substantially as set forth.

4. In a trap, the combination of the door, the motor mechanism by which the said door may be adjusted to set position, the detent for restraining the said motor and the hinged or pivoted gate, and connections between the said gate and detent, whereby the tilting of the gate will release the detent, substantially as set forth.

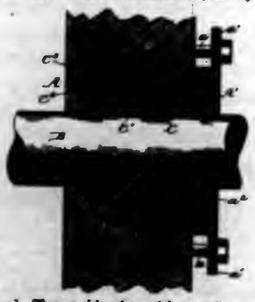
5. In a trap, the combination of the box or casing, the door controlling the inlet-opening, the motor by which to readjust the door to set position, a detent by which to restrain the said motor, the chute having a pivoted gate connected with said detent, and a second gate by which to guard the first gate, all substantially as set forth.

6. In a trap, the combination, with the case or box and the inlet-door controlling the entrance thereto, of the motor, the detent by which to restrain the said motor, the pivoted or journaled exit-gate having a crank-like arm, and connections between the said arm and the detent, substantially as set forth.

7. The combination, in a trap, of the box or case, the door controlling the inlet thereto, provided with a rearwardly-projecting arm, the motor having a shaft provided with an arm to engage that of the door, the detent-bar pivoted between its ends and arranged at one end for engagement by the arm of said shaft, whereby to restrain the motor, and the gate controlling the outlet from the entrance-chamber and having an arm connected with the detent-bar, whereby to adjust the same out of engagement with the shaft-arm, all substantially as set forth.

8. In a trap, the combination of the box or case having an opening and the bait-support having a block fitted and removably held in the said opening, all substantially as and for the purposes set forth.

478,813. METALLIC PACKING. WILLIAM T. HARRIS, Baltimore, Md. Filed July 31, 1891. Serial No. 401,312. (No model.)



Claim.—1. The combination, with a stuffing-box, of the gland A', formed with a concave seat in its inner face, the plate a^3, mounted in said concave seat, its outer face being formed convex to fit therein and its inner face being formed straight, and the packing consisting of the sectional rings C and C', having slip-joints between their sections, the ring C^3, surrounding said sectional rings C and C', also divided and connected by sliding joints, and a spring ring or casing C^2, surrounding said ring C^3, the inner end of said packing being arranged against the adjacent face of the plate a^3, which covers the joints in said end of the packing, forming practically a solid end, substantially as shown and described.

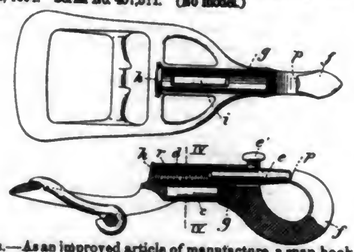
2. The combination, with a piston-rod and stuffing-box, of the gland A', formed with the concave seat in its inner face, the plate a^3, formed as described, mounted in said concave seat, and the metallic packing mounted on said piston-rod in said stuffing-box, with its end against said plate a^3, consisting of the rings C and C', divided and connected by slip-joints, the ring C^3, divided and also connected by sliding joints mounted around said rings C and C', and the spring ring or casing C^2, surrounding said several parts, substantially as set forth.

478,814. UPPER FOR BOOTS OR SHOES. GEORGE P. HERNDON, Birmingham, Ala. Filed June 2, 1891. Serial No. 394,837. (No model.)



Claim.—The herein-described shoe, having the quarter formed in a single piece without a heel-seam and provided in one side of its upper part near the heel and above the counter with a vertically-elliptical opening formed by removing a piece of the material, said opening being seamed up to give shape to the ankle portion of the shoe and extended from above the counter to near the top edge of the quarter, as and for the purposes set forth.

478,815. SNAP-HOOK. EUGENE L. HOWE, Cleveland, Ohio. Filed Oct. 2, 1891. Serial No. 407,511. (No model.)



Claim.—As an improved article of manufacture, a snap-hook comprising a hook-body having a longitudinal recess, a slot in the bottom thereof and offsets on its under side, a barrel having projecting flanges passing through the slot and bent into the offsets, the snap-pin, and spring within the barrel bearing upon the pin, substantially as described.

478,816. SAMPLING DEVICE FOR BALED MATERIAL. CHARLES S. HUNTER, Rock Creek, Kans. Filed Nov. 24, 1891. Serial No. 412,966. (No model.)



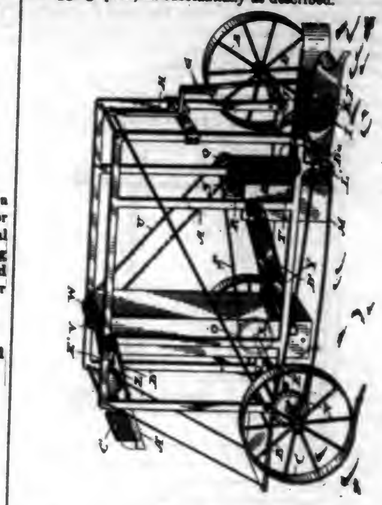
Claim.—1. As an improved article, a sampler for baled material, comprising a tube having a series of saw-teeth at one end and a head or bar at the opposite end, having an angular recess therein, and a removable rod having an angular head adapted to fit in said recess, and a screw-point, substantially as described.

2. In a sampler for baled material, the combination, with the tube having a series of saw-teeth at one end and the head or bar secured to the other end thereof, having an angular recess, of the rod having an angular end fitting in said recess, and a screw-point, and the slidable disk, substantially as described.

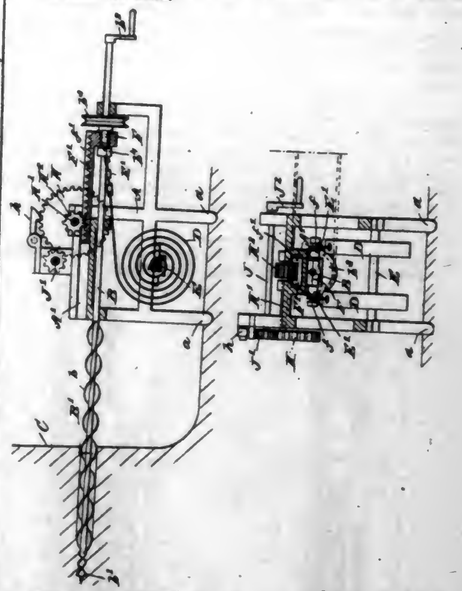
3. In a sampler for baled material, the combination, with the tube having a series of saw-teeth at one end and the head or bar secured to the other end thereof, having an angular recess and an intersecting aperture, of the rod having an angular end provided with a recess and a screw-point, the slidable disk, and the spring-actuated lever pivoted to said head and provided with a lug adapted to engage with the recess in said angular head, substantially as described.

478,817. POTATO-HARVESTER. GEORGE R. IRWIN, Toronto Junction, Canada. Filed July 16, 1891. Serial No. 399,756. (No model.)

Claim.—An improved potato digger and picker comprising a vertically-adjustable shovel, a set of traveling buckets arranged immediately above the shovel to break up the soil and convey the potatoes toward the rear, a second set of elevating-buckets inclosed in a suitable casing to raise said potatoes, a vibrating screen to receive them from the buckets, arranged to sift out the soil and guide the potatoes farther to the rear, a third set of buckets arranged to carry the potatoes to a higher elevation and deliver them to a second screen and to a bagging-spout, all substantially as described.



478,818. SPRING CONVEYER. OLIVER L. JOHNS, Cold Spring Harbor, N. Y. Filed Oct. 17, 1890. Renewed Oct. 10, 1891. Serial No. 408,291. (No model.)



Claim.—1. The combination, with a revoluble screw conveyer, of coil-springs for imparting an endwise movement to the conveyer and means for putting the springs under tension, substantially as described.

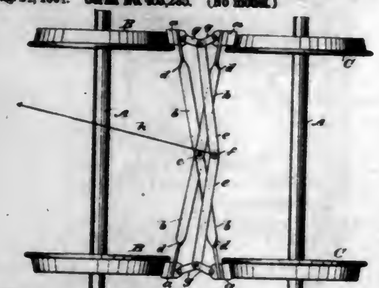
2. The combination, with a revoluble screw conveyer, of coil-springs having their inner ends secured to a shaft and their outer ends connected with the conveyer-shaft, so as to exert an endwise pressure upon the screw, substantially as described.

3. A spring conveyer comprising a frame having a conveyer mounted therein, a cross-head mounted upon the conveyer-shaft, so as to press upon a collar of the same, coil-springs having their inner ends secured to a shaft and their outer ends connected with the cross-head, and a gear mechanism for moving the cross-head in opposition to the springs, substantially as described.

4. A spring conveyer comprising a frame having a screw conveyer mounted therein, the conveyer-shaft having a collar thereon, as shown,

coil-springs mounted upon a shaft and having their inner ends secured to the same, a cross-head adapted to slide upon the conveyer-shaft and press against the collar, said cross-head being connected to the free ends of the springs and having a toothed rack upon its upper side, and a gear mechanism to mesh with the rack and turn the cross-head in opposition to the springs, substantially as described.

473,319. CAR-BRAKE. EDWARD A. KIELEY, Brocsport, N. Y. Filed Aug. 21, 1891. Serial No. 403,285. (No model.)

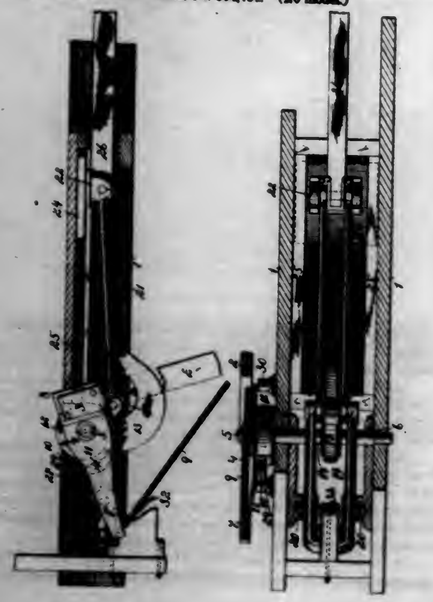


Claim.—1. A car-brake consisting of transverse bars pivotally supported at their inner ends, brake-blocks held on the outer ends of said bars, transverse toggle-levers pivotally supported at their inner ends, links pivoted to the brake-blocks and the outer ends of the toggle-levers, and means for actuating the toggle-levers, substantially as described.

2. The combination, with transverse bars lapping at their inner ends and pivotally supported thereat to swing horizontally, and brake-blocks held on the outer ends of said bars, of horizontal toggle-levers pivotally supported at their inner ends, links pivoted to the brake-blocks and the outer ends of the toggle-levers, and a draft-rod connected to the pivotal support of the toggle-levers, substantially as described.

3. The combination, with two pairs of transverse bars pivoted together at their inner ends, and brake-blocks on the outer ends of said bars, of a T-shaped horizontal lever mounted on the pivot of said bars, a pair of toggle-levers pivoted to the extremities of the short member of said T-shaped lever, links pivotally connecting the brake-blocks with the outer ends of said toggle-levers, and a draft-rod pivoted to the long member of the T-shaped lever, substantially as shown and described.

473,320. BALING-PRESS. WILLIAM A. LAIDLAW, Cherokee, Kans. Filed June 1, 1891. Serial No. 394,731. (No model.)



Claim.—1. In a baling-press, the combination of a supporting-frame, a power-shaft journaled therein, a movable member journaled on said power-shaft, a pawl secured to said member, a ratchet-wheel secured to said power-shaft, a trip-lever on said power-shaft, and means in connection with said trip-lever, whereby a pitman is operated, substantially as set forth.

2. In a baling-press, the combination of a suitable supporting-frame, a power-shaft journaled thereto, a movable member mounted on said power-shaft, a pawl pivoted to said movable member, a ratchet-wheel secured to said power-shaft, a trip-lever secured to said power-shaft, a yoke pivoted to the supporting-frame, a bearing-point on said yoke with which the trip-lever engages, a pitman, and rods for connecting said pitman with said yoke, substantially as described, and for the purpose set forth.

3. In a baling-press, the combination of a suitable supporting-frame, a power-shaft journaled thereto, a movable member journaled on said power-shaft, a pawl pivoted to said member, a spring connecting said pawl with said movable member, a ratchet-wheel on said power-shaft, a trip-lever on said power-shaft, and means in connection with said trip-lever for working a pitman, substantially as and for the purpose set forth.

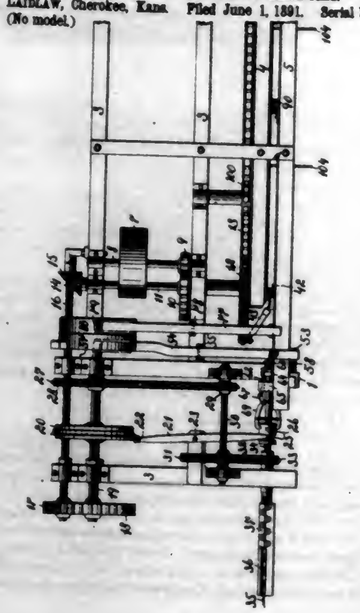
4. In a baling-press, the combination of a supporting-frame, a power-shaft journaled therein, a movable member on said power-shaft, a pawl pivoted to said movable member, a ratchet-wheel on said power-shaft, and a roller located in the path of said pawl for throwing the same out of engagement with said ratchet-wheel, substantially as and for the purpose set forth.

5. The combination of a suitable supporting-frame, a power-shaft journaled therein, an arm journaled on said shaft, a sweep secured to said arm, a pawl pivoted to said arm, a ratchet-wheel secured to said power-shaft, means for throwing said pawl out of engagement with said ratchet-wheel, a trip-lever secured to said power-shaft, a yoke pivoted to said supporting-frame, a roller journaled at the outer end of said yoke, a pitman, a slide, and rods for connecting said pitman and slide with the outer end of said yoke, substantially as described, and for the purpose set forth.

6. The combination of a supporting-frame, a power-shaft, an arm pivoted thereto, a sweep secured to said arm, a pawl pivoted to said arm, a ratchet-wheel secured to said power-shaft, means for disengaging said pawl from said ratchet-wheel, and a trip-lever 13 for operating a pitman, substantially as and for the purpose set forth.

7. The combination of a supporting-frame, shaft journaled therein, a frame 4, pivoted on said shaft, a sweep 2, connected to said frame, a pawl pivoted to said frame 4, a ratchet-wheel secured to said power-shaft, a trip-lever on the power-shaft, and a spring 32 for easing the rebound of said trip-lever, substantially as and for the purpose set forth.

473,321. MACHINE FOR MAKING BALE-TIES. WILLIAM A. LAIDLAW, Cherokee, Kans. Filed June 1, 1891. Serial No. 394,732. (No model.)



Claim.—1. The combination of rods 39, working in a grooved frame, hooks on the end of said rods, around which the loop is formed, means for forming said loop, a twisting device, and a drive-chain with which said rods are connected for reciprocating the same, substantially as set forth.

2. In a machine for making bale-ties, the combination of the grooved bars, the rods 39, operating in said grooved bars and provided with hooks 40, around which the loops are formed, a drive-chain supported adjacent to said grooved bars, means for operating said drive-chain, means for connecting said rods 39 with said drive-chain, and a suitable twisting device and a cutting device arranged in proper working relation at the forward end of the grooved bars, substantially as and for the purpose set forth.

3. In a machine for making bale-ties, the combination of the grooved frame, rods for carrying wire reciprocating in said grooved frame, a drive-chain supported in said frame, means for operating said drive-chain, spring-links connecting said wire-carrying rods with said drive-chains, and a suitable twisting device and a cutting device supported in proper working relation at the forward end of said frame, substantially as herein set forth.

4. The combination of a guiding-frame, rods 39, reciprocating in the same, hooks 40 on said rods, brackets 42, secured to said rods, links 43, pivoted to said brackets, drive-chains with which said links are connected, a twisting device, and a cutting device, substantially as described, and for the purpose set forth.

5. The combination of a guide-frame, rods 39, reciprocating therein and having hooks 40 thereon at one end, bent portions 41 on said rods at the opposite ends, means for connecting said rods with the drive-chain, and a spring-lever 94, located in said guide-frame in the path of said rods 39, substantially as and for the purpose set forth.

6. The combination of a grooved guide-frame, rods 39, having one end operating in the same, hook 40 on said rods, an extension 41 on said rods at the opposite end, links 43, connecting said rods with the drive-chain, and wedges 74 and 98, arranged in said grooved guide-frame for throwing the hook 40 in and out of said grooved frame, substantially as and for the purpose set forth.

7. The combination of the grooved frame, rods 39, traveling therein, hooks on said rods, a drive-chain, links 43, connecting said rods with said drive-chain, a switch-groove in said guide-frame, and switches in connection with said groove, substantially as and for the purpose set forth.

8. The combination of the bars 4 and 5, having grooves 6 therein, rods 39, having hooks thereon and traveling in said grooves, means for reciprocating said rods, a switch-groove 88, switches 89, located at the ends of said grooves 88, and a spring 91 on said switches for holding them in their normal position, substantially as described, and for the purpose set forth.

9. The combination of the bars 4 and 5, having grooves therein, carrier-rods 39, adapted to reciprocate in said grooves, and hook 40 on the same at one end, a drive-chain, links 43 for connecting said carrier-rods with the drive-chain, and suitable sprocket-wheels for operating said drive-chain, substantially as and for the purpose set forth.

10. The combination of guide-bars, reciprocating carriers operating in the same, a looper 49, having a shaft 50, straps 52 and 53 on said shaft, a lever 54, connected with the strap 52, means for rocking said lever in order to partially rotate said looper-shaft, and a twisting device for twisting the wire after said loop has been formed, substantially as and for the purpose set forth.

11. The combination of guide-bars having reciprocating loop-carriers operating therein, a looper 49, having a shaft 50, a strap 52 on said looper-shaft, a lever 54, connected with said strap, and a cam 57 for rocking said lever in order to partially rotate said looper-shaft, substantially as described, and for the purpose set forth.

12. The combination of guide-bars, reciprocating loop-carriers operating therein, a looper 49, having a shaft 50, straps 52 and 53, wound on said looper-shafts, a lever 54, connected with the strap 52, a roller 56 on said lever, a cam 57 for rocking said lever in order to partially rotate said looper-shaft, and a spring 58, attached to said strap 53 for returning said looper to its normal position, substantially as described, and for the purpose set forth.

13. The combination of a grooved supporting-frame, the reciprocating loop-carrier operating therein, a looper supported at the forward end of said frame, a cutter 75, supported adjacent to said looper, means for depressing said cutter, and a presser-foot 85 in connection with said cutter, whereby the presser-foot will be depressed at the same time with the cutter, substantially as set forth.

14. The combination of guide-bars, reciprocating loop-carriers operating therein, a looper, a cutter 75, means for depressing the same, a presser-foot 85, having a shoulder 84, a shoulder 102 on said cutter, a spring 101, interposed between said shoulders, and a stop 83, with which said presser-foot comes in contact and against which the cutter 75 cuts the wire passing over said stop, substantially as and for the purpose set forth.

15. The combination of guide-bars, reciprocating loop-carriers operating therein, a looper, a lever 54 for operating said looper, a cam 57 for rocking said lever, a cutter 75, a lever 77 for operating said cutter, and a cam 80 for operating said lever, said cam 80 being adjustable with respect to the cam 57 by means of bolts 81, and semicircular slots 82, substantially as described, and for the purpose set forth.

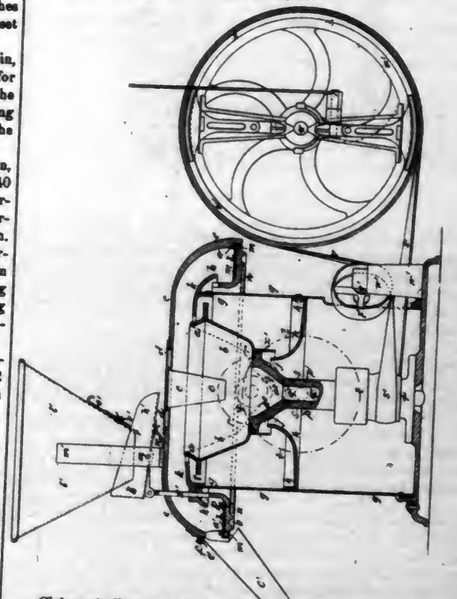
16. The combination of guide-bars, reciprocating loop-carriers operating in the same, a looper, a cutter 75, means for operating the same, a presser-foot 85, an adjustable stop 83, and a clamp 48 for holding the end of the wire after it has been pressed down by the presser-foot 85, substantially as and for the purpose set forth.

17. The combination of a loop-carrier, a looping device, a cutting device, and a reciprocating twisting device, said twisting device consisting of a shaft 34, sliding sleeve on said shaft, a compound toggle in connection with said sleeve, and jaws on the end of said toggle for receiving the wire loop, substantially as described, and for the purpose set forth.

18. The combination of a loop-carrier, a looping device, a cutting device, and a reciprocating twisting device, said twisting device being formed of a shaft 34, having a central opening 38 for the passage of wire, a movable sleeve 26, working on said shaft, a compound toggle, consisting of portions 69 and 62, connected with links 67, and movable jaws 59 and 60 on the ends of said toggle, substantially as described, and for the purpose set forth.

19. In a machine for making bale-ties, a twisting device consisting of a central shaft 34, having a central passage 38, a movable sleeve 26 on said shaft, a compound toggle consisting of portions 69 and 62, connected with links 67, movable jaws 59 and 60 on the portion 62 of the toggle, plates 64, to which the parts 62 are pivoted, a stop 72 near the forward end of said shaft 34, with which said plate 64 comes in contact, a bearing 65, and a spring 73, connecting said toggles for returning the same to their normal position after the loop has been twisted, substantially as and for the purpose set forth.

473,322. CENTRIFUGAL MACHINE. JOHN LAIDLAW, Glasgow, Scotland. Filed July 9, 1891. Serial No. 398,960. (No model.) Patented in England Oct. 17, 1884, No. 13,737.



Claim.—1. The combination, with the revoluble foraminous receptacle or basket, of the chute adapted to receive the contents of a hopper and to discharge the same into the basket through suitable means and the toothed ring adapted to be rotated and to vibrate said chute through suitable means, substantially as set forth.

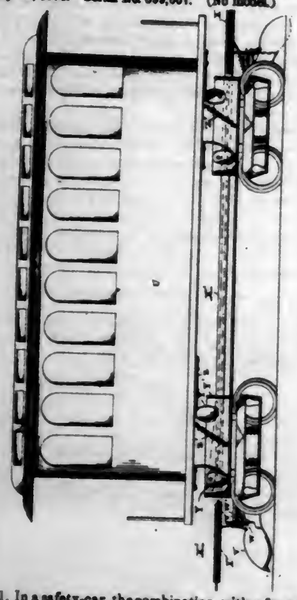
2. The combination of the revoluble basket, the vibrating chute adapted to discharge into said basket, the rod attached to said chute, and the rotatable toothed ring engaging said rod for vibrating the chute, substantially as set forth.

3. The combination of the revoluble basket or foraminous receptacle, the rotatable toothed ring, the pivoted spring-pressed chute, and

the rod having a lever connection with said chute and engaged by said toothed ring, substantially as set forth.

4. The combination of the casing or closure, the chambered cover having its bottom secured to the upper end of said casing and provided with a discharge outlet and spout, the basket or foraminous receptacle having at its upper end an overhanging lip or rim and means for rotating it, the chamber within said casing or closure whose bottom curves upward centrally around and stands at an interval from the support for said basket, the toothed plate or ring supported upon rolls or trucks hung in brackets secured to said casing, and means for rotating said ring or plate, the pivoted chute having connected to it the rod adapted to engage said toothed ring, the spring interposed between said cover and chute, and the hopper arranged above said chute, substantially as specified.

473,323. SAFETY-CAR. ABRAHAM H. LAMPORT, New York, N. Y. Filed July 15, 1891. Serial No. 399,667. (No model.)



Claim.—1. In a safety-car, the combination, with a frame, a shoe, a longitudinally-moving frame C, and a lever fulcrumed in said frame and which supports the shoe, of a bail depending from the first-named frame, which engages the free end of the said lever, and a connection between the frame C and the said bail, substantially as shown and described.

2. The combination, with a safety-car, a shoe, and a lever fulcrumed within said frame and which supports the shoe, of a bail depending from the said car-top, which engages the free end of the lever, a vertically-moving truck, and a connection between the truck and bail, substantially as shown and described.

3. The combination, with car A, frame C, and buffer D, of arms pivoted to and projecting forward from the said car, weights on the outer ends of the said arms, and a suitable connection between the said arms and the frame C and buffer, substantially as shown and described.

4. In a safety-car, the combination, with a longitudinally-moving frame, a lever fulcrumed therein, and a shoe supported on the rear end of the lever, of a bail depending from the said car-top and which engages the said lever, springs connecting the said bail and rear end of the moving frame, and operating-lines extending forward from the said bail, substantially as shown and described.

5. The combination, with a safety-car, a movable frame thereon, a lever fulcrumed in the frame, and a shoe supported on the rear end of the lever, of a means for tripping the said lever, and a connection between the forward end of the said moving frame and the said shoe, substantially as shown and described.

6. In a safety-car, the combination, with a vertically-moving shoe and a means for automatically dropping the same, of a jointed connection between the said car and the engine, and a suitable connection between the shoe and the said joint, whereby when the former drops the joint is broken, for the purpose substantially as shown and described.

7. In a safety-car, the combination, with a vertically-moving shoe and a means for automatically dropping the same, of a jointed connection between the car and the engine, a connection between the said joint and the shoe, whereby when the former drops the latter is broken, a truck for the forward end of the engine, a roller eccentrically pivoted therein, and a strap connecting the roller with the engine, substantially as shown and described.

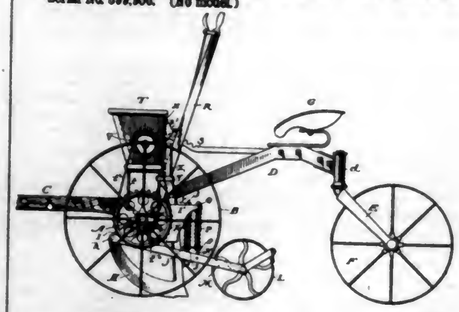
8. The combination, with a safety-car, a vertically-moving shoe therein, and a means for automatically dropping the shoe, of a shoulder formed on the said shoe, a jointed connection between the car and the engine, which is broken when the shoe drops, a truck, and an eccentric roller thereon, which carries the engine upward and forward in engagement with the shoulder on the shoe, substantially as shown and described.

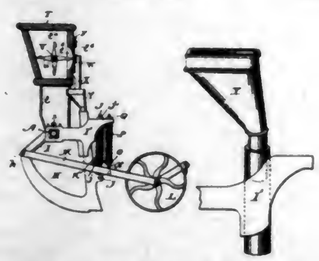
9. The combination, with a safety-car and a longitudinally-moving buffer therein, of a truck for the engine, a shoe pivoted thereto, and a line connecting the buffer-frame with the said shoe, substantially as shown and described.

10. The combination, with a safety-car and a longitudinally-moving buffer-frame therein, of the coach-trucks, shoes pivoted thereto, a lever pivoted to the truck and connected at one end with the shoes, a projecting stop above the free ends of the levers, and a line which connects the free ends of the levers with the said buffer-frame, substantially as shown and described.

11. The combination, with a safety-car, a longitudinally-moving buffer-frame therein, coach-trucks, and dogs pivoted thereto, which are operated by the said buffer-frame, of eccentrically-pivoted rollers on said trucks, coaches supported on the rollers, and oppositely-extending straps secured at their inner ends to the rollers and at their outer ends to the car-bottom, substantially as shown and described.

473,324. SEEDING-MACHINE. AUGUST LINDGREN, Moline, Ill., assignor to the Moline Plow Company, of Illinois. Filed July 18, 1891. Serial No. 399,956. (No model.)





Claim.—1. In a wheeled seeding-machine, a rock-shaft with means for turning and locking the same, in combination with arms rigidly fixed to the shaft and furrow-opening runners jointed at their forward ends to said arms, whereby the turning of the shaft is caused to control the action of the runners.

2. In a wheeled seeding-machine, a rock-shaft and means for turning and locking the same, in combination with cross-arms fixed to the shaft, furrow-opening runners jointed at their forward ends to the arms, and springs acting between the arms and runners to depress the latter.

3. In a wheeled seeding-machine, a rock-shaft, means for turning and locking the same, and cross-arms fixed to the shaft, in combination with the furrow-opening runners jointed to the arms, pressure-wheels behind the runners, and carrying-arms for said wheels independently jointed to the cross-arms.

4. In a wheeled seeding-machine, the arms I and means for rocking and holding them, in combination with the runners and the roller-carrying arms independently jointed to arms I and the depressing-springs acting on the runners and the arms I independently.

5. In combination with the arms I and means for rocking and holding them, the runner, and the roller-carrying arms independently jointed to arms I, the depressing-springs acting, respectively, on the arms, and means, substantially as shown, for changing the tension of the springs independently.

6. In a seeding-machine, the combination of the axle and its sustaining-wheels, the frame jointed to the axle, the swiveling wheel to sustain the rear end of the frame, the cross-arms attached to the axle, the runners jointed to said arms, and means for turning and holding the axle to control the runners.

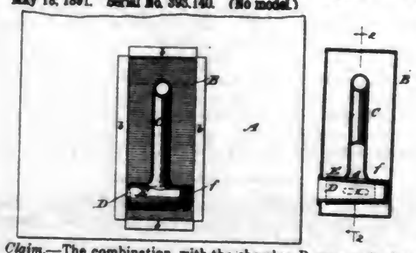
7. In combination with the hopper and seed-delivery arms thereon, the main slide W, provided with openings, in combination with the series of independent adjustable slides Z to control the respective openings.

8. In combination with the seed-hopper and the laterally-adjustable runners, the seed-conductors on the hopper, and the rotary conductors provided with elongated mouths and mounted on the runners.

9. In a seeding-machine, the wheeled axle, in combination with the runners and their carrying-arms secured to the axle and adjustable lengthwise thereof to change the distance between the furrows.

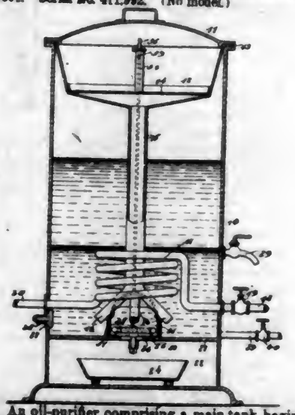
10. In a seeding-machine, and in combination with a rear frame provided with a sustaining-wheel, a front axle provided with ground-wheels and jointed to the frame so that it may be rocked, runners connected with and controlled by the axle, means connecting the frame and axle to rock and hold the latter, and a suitable seed-distributing mechanism driven from one of the front wheels.

473,325. FAUCET. SAMUEL I. MERRILL, Los Angeles, Cal. Filed May 18, 1891. Serial No. 393,140. (No model.)



Claim.—The combination, with the chamber B, open at its front, and the tapering tubular barrel D, having its large end opening through the lower end of one side wall of chamber B, closed at its opposite end, and provided between its ends with a lateral opening *c*, the outer tapering sleeve E upon the barrel D and having a lateral opening *d* to register with opening *c*, a spiral spring on the smaller end of barrel D and bearing at one end against the smaller end of sleeve E and bearing at its opposite end on the adjacent side wall of the chamber B, and the lever-spout C, secured to sleeve E over its opening *c*, substantially as set forth.

473,326. OIL-PURIFIER. RUDOLPH METZ, Philadelphia, Pa. Filed Nov. 16, 1891. Serial No. 411,992. (No model.)

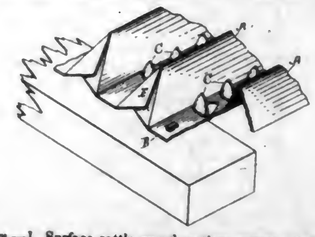


Claim.—1. An oil-purifier comprising a main tank having an inlet-pipe at the bottom arranged to deliver into the tank in jets, a strainer adapted to extend over the inlet-pipe, an outlet-pipe leading from the tank from within the strainer, an overflow-pipe opening through the side of the tank, a hopper arranged in the upper portion of the tank, said hopper having a strainer therein, a pipe leading downward from the hopper into the tank-bottom, said pipe terminating at its lower ends in diverging branch pipes, a steam-coil arranged within the boiler and around the hopper-pipe, and a plurality of oil-discharge cocks arranged one above the other in the side of the tank, substantially as described.

2. The combination, with the main tank having an oil-separating apparatus therein, of a pipe held vertically on the side of the tank and opposite the oil-carrying portion of the tank, said pipe being closed at both ends, a series of cock-controlled inlets opening from the oil-carrying portion of the tank and into the vertical pipe, an outlet-faucet at the bottom of the pipe, and a registering-gage connected with the oil-carrying portion of the tank and arranged at one side of the vertical pipe-cocks, substantially as described.

3. The combination, with the tank, of the inlet-pipe having its inner end curved and perforated, a strainer arranged to extend over the curved end of the pipe, a guard held to swing on suitable supports and to cover the strainer, and a vertical handle secured to the guard and extending upward through the tank, substantially as described.

473,327. SURFACE CATTLE-GUARD. GEORGE W. MILLER, Kalamazoo, Mich. Filed Jan. 12, 1892. Serial No. 417,819. (No model.)



Claim.—1. Surface cattle-guard sections composed of a plate of metal bent to form ribs with slanting sides, alternating with flat portions, said flat portions being provided with a series of upwardly-extending tongues or projections, substantially as set forth.

2. Surface cattle-guard sections composed of a plate of metal bent to form ribs with slanting sides, alternating with flat portions, said flat portions being provided with a series of upwardly-extending tongues or projections and said ribs having portions of the metal at the ends folded over to close said ends and form a closed inclined end, substantially as set forth.

473,328. MOTOR. GEORGE W. MIRES, New Castle, Colo. Filed May 22, 1891. Serial No. 393,761. (No model.)

Claim.—1. In a motor, the combination, with two boats, of a frame pivotally connected with the said two boats and a water-wheel journaled in said frame and extending between the said two boats, substantially as shown and described.

2. In a motor, the combination, with two boats, of a frame pivotally connected with the said two boats, and a water-wheel journaled in the said frame and extending between the said two boats, and means for swinging the said boats on their pivots to adjust their front ends to permit more or less water to pass between the boats, substantially as shown and described.

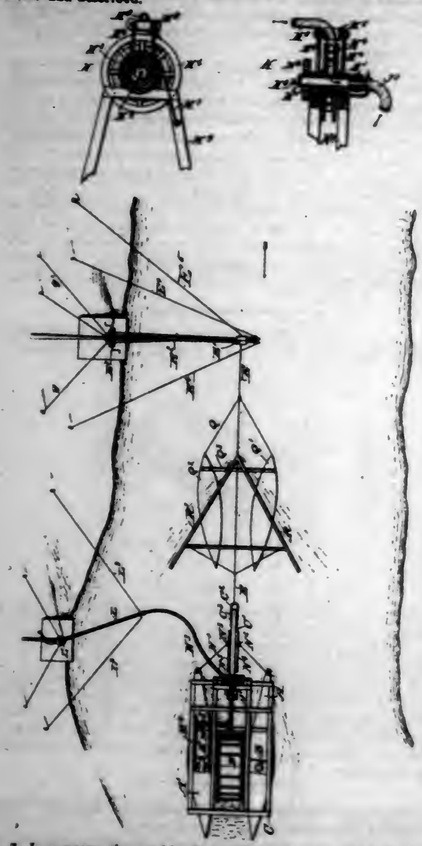
3. In a motor, the combination, with two boats, of bolsters pivotally connected with the said boats, a frame pivotally connected with the said bolsters, and a water-wheel journaled in the said frame and extending into the water between the said two boats, substantially as shown and described.

4. In a motor, the combination, with two boats, of bolsters pivotally connected with the said boats, a frame pivotally connected with the said bolsters, a water-wheel journaled in the said frame and extending into the water between the said two boats, a pole held on the front end of the said frame, and means, substantially as described, for holding the said boats out in the river or stream, substantially as shown and described.

5. In a motor, the combination, with two boats, of bolsters pivotally connected with the said boats, a frame pivotally connected with the said bolsters, a water-wheel journaled in the said frame and extending into the water between the said two boats, a pole held on the front end of the said frame, means, substantially as described, for holding the said boats out in the river or stream, and a drift-wood protector arranged in front of the said pole, substantially as shown and described.

6. In a motor, the combination, with two boats, of bolsters piv-

otally connected with the said boats, a frame pivotally connected with the said bolsters, and a water-wheel journaled in the said frame and extending into the water between the said two boats, a rope connected with the said frame, a block connected with the said rope, and a pivoted beam on which the said block is fitted to slide, substantially as shown and described.



7. In a motor, the combination, with two boats, of bolsters pivotally connected with the said boats, a frame pivotally connected with the said bolsters, a water-wheel journaled in the said frame and extending into the water between the said two boats, a rope connected with the said frame, a block connected with the said rope, a pivoted beam on which the said block is fitted to slide, and a post erected on the shore of the river or stream and carrying the said beam, substantially as shown and described.

8. In a motor, the combination, with two boats, of bolsters pivotally connected with the said boats, a frame pivotally connected with the said bolsters, a water-wheel journaled in the said frame and extending into the water between the said two boats, a rope connected with the said frame, a block connected with the said rope, a pivoted beam on which the said block is fitted to slide, a post erected on the shore of the river or stream and carrying the said beam, and a windlass for raising and lowering the said beam, substantially as shown and described.

9. In a motor, the combination, with two boats, of bolsters held on the said boats, a frame connected with the said bolsters, and a lever pivoted on the said frame and provided with friction-rollers traveling on plates on the said boats, substantially as shown and described.

10. In a motor, the combination, with two boats, of bolsters held on the said boats, a frame connected with the said bolsters, a lever pivoted on the said frame and provided with friction-rollers traveling on plates on the said boats, and a water-wheel journaled in the said frame and extending into the water between the said boats, substantially as shown and described.

11. In a motor, the combination, with two boats, of bolsters held on the said boats, a frame connected with the said bolsters, a lever pivoted on the said frame and provided with friction-rollers traveling on plates on the said boats, links connected with the front ends of the said boats, blocks mounted to slide longitudinally on the said frame and connected with the said links, and levers for shifting the said blocks, substantially as shown and described.

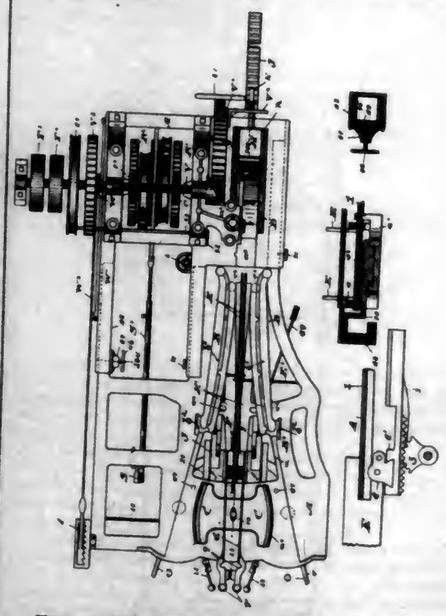
12. In a motor, the combination, with two boats, of bolsters held on the said boats, a frame connected with the said bolsters, a lever pivoted on the said frame and provided with friction-rollers traveling on plates on the said boats, links connected with the front ends of the said boats, blocks mounted to slide longitudinally on the said frame and connected with the said links, levers for shifting the said blocks, and means for locking the said levers in place, substantially as shown and described.

13. In a motor, the combination, with two boats, of bolsters held on the said boats, a frame connected with the said bolsters, a lever pivoted on the said frame and provided with friction-rollers traveling on plates on the said boats, links connected with the front ends of the said boats, blocks mounted to slide longitudinally on the said frame and connected with the said links, levers for shifting the said blocks, and a water-wheel journaled in the said frame and extending into the water between the said boats, substantially as shown and described.

14. In a motor, the combination, with two boats, of bolsters held on the said boats, a frame connected with the said bolsters, a lever pivoted on the said frame and provided with friction-rollers traveling on plates on the said boats, links connected with the front ends of the said boats, blocks mounted to slide longitudinally on the said frame and connected with the said links, levers for shifting the said blocks, a water-wheel journaled in the said frame and extending into the water between the said boats, and a pump held in the said frame and actuated from the said water-wheel, substantially as shown and described.

15. In a motor, the combination, with two boats, of bolsters held on the said boats, a frame connected with the said bolsters, a lever pivoted on the said frame and provided with friction-rollers traveling on plates on the said boats, links connected with the front ends of the said boats, blocks mounted to slide longitudinally on the said frame and connected with the said links, levers for shifting the said blocks, a water-wheel journaled in the said frame and extending into the water between the said boats, a pump held in the said frame and actuated from the said water-wheel, and means for increasing or diminishing the speed of the said pump, substantially as shown and described.

473,329. MACHINE FOR BENDING VEHICLE-SHAFTS. THOMAS E. MONTAGUE, West Lorne, Canada. Filed Mar. 30, 1891. Serial No. 387,052. (No model.)



Claim.—1. A shaft-bending machine having its frame constructed of two main parts, one of which carries the former for bending the front end of the shaft and the other part the former for shaping the rear end thereof, said parts being adjustable lengthwise, substantially as described.

2. A shaft-bending machine having its frame constructed of two main parts, one of which carries the former for bending one end of the shaft and the other part the former for shaping the rear end thereof, and means, substantially as described, for adjusting said parts to vary the distance between said rear and front formers, substantially as described.

3. A shaft-bending machine having its frame constructed of two main parts, one of which carries the former for bending one end of the shaft and the other part the former for shaping the rear end thereof, said parts being connected by slides and secured by clamps, substantially as described.

4. In a shaft-bending machine, a main frame made in two parts connected together by suitable slides 48 and 50, in combination with shaft 52, barrel 55, and suitable clamps 46 and 51, substantially as and for the purpose specified.

5. In a shaft-bending machine, the second-bend or point formers normally lying below the machine-bed, combined with a wedge-bar carrying wedges which raise the formers, and a spring-latch engaging with an arm on a cam-shaft carrying a cam which presses the said formers outward and braces them laterally, substantially as and for the purpose specified.

6. In a shaft-bending machine, the second-bend or point formers normally lying below the machine-bed and supported for vertical and lateral movements, combined with springs normally drawing the formers inward, and a cam mounted on a partially-revolving shaft to spread them apart after they are raised above the bed, substantially as herein set forth.

7. In a shaft-bending machine, the combination, with a bed or table, of a pair of first-bending formers pivoted thereon at one end, a pair of second-bend or point formers, presser-bars adapted to bend the shafts to the formers, a cam fixed on a shaft journaled in the supporting-plate, a lever fast on the shaft, and a sliding bar carrying a wedge separating the spreading-bars and presser-bars to press the shafts to the first-bend formers, said wedge-bar having a spring-latch actuating the lever, shaft, and cam, which spread the second-bend formers, substantially as herein set forth.

8. In a shaft-bending machine, the combination, with a bed or table, of a pair of first-bend formers pivoted thereon at one end, a pair of second-bend or point formers normally lying below the machine-bed and adjustable vertically and laterally, presser-bars adapted to bend the shafts to the formers, a pair of spreader-bars separating the first-bend formers, and a sliding bar carrying a wedge separating the spreader-bars and presser-bars, said wedge-bar having wedges to raise the point-formers through their supporting-plate and its legs, and a spring latch to subsequently spread the point-formers by means of their lever, cam-shaft, and cam, substantially as and for the purpose specified.

9. In a shaft-bending machine, the second-bend formers C, sliding in a plate 7, having legs 6^2, a cam 10, cam-shaft, and lever 11, in combination with wedge-bar J, carrying wedges 8, and spring-latch 12, substantially as and for the purpose specified.

10. In a shaft-bending machine, the combination, with the point-formers C, cam 10, cam-shaft, and lever 11, of the rock-shaft I', carrying an arm 13, connected suitably, as shown, to the said lever 11, and means for operating said shaft I', substantially as and for the purpose specified.

11. In a shaft-bending machine, the combination, with the point-formers and presser bars or plates adapted to bend the shafts to them, of levers adapted to the presser-bars, and a wedge pivoted on a sliding bar, so that in sliding heel first it will rise over the ends of the levers and will then drop in front of them, ready for operation on its return movement, substantially as and for the purpose specified.

12. In a shaft-bending machine, the combination, with first and second bend formers, spreader-bars, bending-bars, and levers adapted to press the shafts to the formers, and latches retaining the bent shafts at the second-bend formers, substantially as specified, of a shaft I', having crank-arms 6 i' 27, a rod 5, connecting the arm 6 to the presser-bars E through arm 4, the segmental rack 3 and block c', to which the bars E are suitably connected, levers B^3, and rods B', connecting the levers to the shaft crank-arms i', said arms 27 located to disengage the second-bend-lever latches, substantially as described, whereby as the shaft I' is rocked the bent shafts will be unclamped endwise and laterally to loosen them for removal from the machine, substantially as and for the purpose specified.

13. In a shaft-bending machine, the combination, with a segmental rack operating the shaft-heel-bending devices, of a crank-arm on the segment-shaft, a pulley driving the gearing actuating said segment, a lever, a shaft carrying a cam or eccentric sustaining the free end of the lever, a crank-arm on the cam-shaft, rod connections from the cam-shaft crank-arm to the segment-shaft crank-arm for raising or lowering the lever as the segment is raised or lowered, a slide on the first-named lever, a cam journaled in the slide and bearing on the lever, and a friction-wheel on the slide adapted to the driving-pulley of the segmental rack, substantially as described, whereby as said rack is raised both lever and slide will be raised to move the slide friction-wheel part way to the rack-driving pulley and said wheel will be pressed to the pulley by subsequent operation of the slide-cam on the lever and both lever and slide with the friction-wheel will be carried from the rack-driving pulley automatically as the rack is lowered or retracted, as and for the purposes herein set forth.

14. In a shaft-bending machine, the combination, with the machine bed and frame, of a flexible device bending the heel of the shafts, a segmental rack V', connected to said flexible device for operating it, a crank-arm w^3 on the segment-shaft, a lever W', fulcrumed at w^4 to the machine-frame, a shaft w^5 on the frame and cam W^3 on the shaft w^5 and under the free end of the lever W', a slide W on the lever W', a friction-wheel W^2 on the lever W', adapted to the driving-pulley of the segmental rack, a cam 36, journaled in the slide W and bearing on the lever W', a pulley w, revolving with wheel W^2, a pulley f^{12} on a main driving-shaft, and a loose belt T^2, connecting the pulleys f^{12} w, all arranged for operation substantially as described, for the purposes set forth.

15. In a shaft-bending machine, the combination, with the machine bed and frame, bend-formers and devices clamping the said shafts to said formers, a shaft, a lever thereon, tappet-arms on the shaft, and connections from said arms to the shaft-bending bars, formers, and levers for unclamping the bent shafts from the formers, of a driving-pulley actuating the heel-bend-forming device, a slide carrying a friction-pulley adapted to said driving-pulley, a cam on the friction-wheel slide, and a rod connecting the cam with the lever on the shaft carrying the tappet-arms, substantially as described, whereby as the tappet-arm shaft is rocked by its lever to free the bent shafts from the formers the driving-wheel of the shaft-bending device will be engaged by the friction-wheel on the cam-lever for retracting the shaft-heel-bending device, as herein set forth.

16. In a shaft-bending machine, the combination, with the machine bed and frame, body, point, and heel-formers thereon, of flexible bars and levers pressing the shafts to these formers, a shaft I', provided with arms 6 i' 27, a rod 5, connecting the arm 6 with the endwise-movable bending-bars through the arm 4, segmental rack 3 and block c', to which the bars E are suitably connected, levers B^2 behind the body-formers, bars B', connecting said levers B^2 with the shaft-arms i', latches P, holding the bending-bars to the point-formers and adapted for operation by the shaft-arms i^3, a lever I on the shaft I', a segmental rack V', connected to the heel-bending device, a crank-arm w^3 on the segment-shaft, a lever W', fulcrumed at w^4 to the machine-frame, a shaft w^5 on the frame, a cam W^3 on the shaft w^5 and under the free end of the lever W', a slide W on the lever W', a friction-wheel W^2 on the slide W, adapted to the driving-pulley of the segmental rack, a cam 36, journaled in the slide W and bearing on the lever W', and a rod W^5, connecting the cam 36 with the lever I', all arranged for operation substantially as described, for the purposes set forth.

17. In a shaft-bending machine, the combination, with the movable first-bend formers B and devices for operating the same, of the presser-bars E, so connected to the frame of the machine as to be adjustable closer to or farther from the formers B to suit different thicknesses of shafts, substantially as and for the purpose specified.

18. In a shaft-bending machine, the combination, with the movable first-bend formers B and devices for moving the same, of the bending-bars E, nuts e, blocks e^2, and right and left hand threaded screw l, operated in any suitable way, substantially as and for the purpose specified.

19. In a shaft-bending machine, the combination, with the point-formers C, of the presser-bars G, operated by levers having adjustable arms to regulate the inward throw of the presser-bars C for different thicknesses of shafts when said levers are operated by the wedge J^3, substantially as and for the purpose specified.

20. In a shaft-bending machine, the combination, with the point-formers C, of the presser-bars G, operated by levers O, having a lower arm 19 in two parts, one rigid with the upper arm 18 and the other engaging with the wedge J^3 adjustable on it by means of set-screw 21, substantially as and for the purpose specified.

21. In a shaft-bending machine, and in combination with the formers thereof, a sliding bar J, operating said formers and having a lug 56, and a fixed shaft 52, having stops 57, substantially as and for the purpose specified.

22. In a shaft-bending machine, and in combination with the formers thereof, a sliding bar J, operating said formers and having a lug 56, a shaft 52, stops 57, and spring-stop 59 on guide-frame 24, cooperating with the lug on the sliding bar, substantially as and for the purpose specified.

23. In a shaft-bending machine, and in combination with the formers thereof, a sliding bar J, operating said formers, a stop 59 on guide-frame 24, rod 61, engaging with spring-stop 59, tappet-arm 60,

operating said rod, and shaft I', carrying said arm 60, substantially as and for the purpose specified.

24. In a shaft-bending machine, and in combination with the heel-bending chain, the pulley I^6, the ratchet-brake 35, the oscillating segmental rack V', and intermediate connections between the rack and brake, pressing said brake 35 against the pulley I^6, substantially as and for the purpose specified.

25. In a shaft-bending machine, and in combination with the heel-bending chain H, the pulley I^3, the oscillating segmental rack V', having an adjustable lug 31 thereon, of an arm 32, shaft 33, arm 34, and ratchet-brake 35, substantially as and for the purpose specified.

26. In a shaft-bending machine, and in combination with the heel-bending chain and the bed thereof, the segmental rack V', a latch 40, pivoted on said rack and engaging with said bed, and mechanism, substantially as described, for releasing said latch, as set forth.

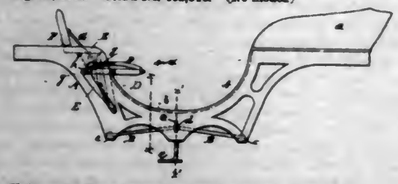
27. In a shaft-bending machine, and in combination with the heel-bending chain and the bed thereof, the segmental rack V', a latch 40, pivoted thereon and engaging with said bed, and crank 42, having two arms, one of which engages the latch with shaft I^{13}, having arm 44 and lever T^5, and a connection between arm 44 and the arm 43 on shaft 42, substantially as described.

28. In a shaft-bending machine, and in combination with the formers thereof, the rods 67, set in guides on the frame of the machine, and cross-head 68, connecting said rods, the pivoted lever 69, connected to the cross-head, and springs 70 on said rods 67, substantially as and for the purpose specified.

29. In a shaft-bending machine, a heel-bending chain, in combination with a spring arranged to stiffen the joint between the outer two links, substantially as and for the purpose specified.

30. In a shaft-bending machine, the heel-bending chain H, its outer link provided with a stem K', in combination with lug V^2 and segmental rack V', the said stem K' being provided with a spring 39, so arranged as to tend to keep the stem K' and lug V^2 in a normal position as regards one another, substantially as and for the purpose specified.

478,330. PHAETON. WILLIAM N. MORRELL, Waterloo, N. Y. Filed Aug. 13, 1891. Serial No. 402,516. (No model.)



Claim.—1. The phaeton rocker-plates A A, having thereon a laterally-extending flange b and provided with the truss-rods or brace-bars B B, substantially as and for the purposes specified.

2. The phaeton rocker-plates A A, curving downwardly between the seat-supporting portions thereof, in combination with the truss-rods or brace-bars B B, arranged parallel to each other and applied to said plates at points about midway between said seat-supporting parts and also at or near the lower ends or portions of said curvatures, substantially as shown and described, and for the purposes set forth.

3. The phaeton rocker-plates having therein the branching or forked slots E E, in connection with the movable or folding seat D, having thereon spindles or trunnions entering the said slots, substantially as and for the purposes specified.

4. The combination, in a phaeton-body, of the folding back F, the folding seat D, and the continuous connecting rods or bars G G, pivotally connected to the said back and seat, one end of the said rods or bars having sliding bearings in slots in the side bars connected thereto, substantially as and for the purposes specified.

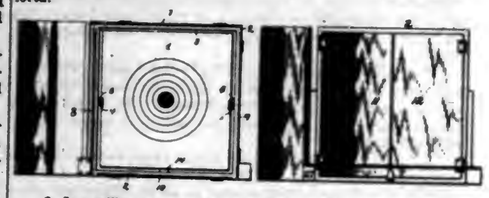
5. The combination, in a phaeton, of rocker-plates having forked or branching slots therein, of a folding seat provided with spindles entering said slots and a back for said seat connected thereto by means of a rod or bar pivotally connected to said back and seat, substantially as and for the purposes specified.

478,331. MEDICINAL FOOD. ANDREW D. MCKAY, Liverpool, England. Filed Oct. 17, 1891. Serial No. 409,055. (No specimens.)

Claim.—The herein-described composition of matter to be used as medicinal food, consisting of dextrin, egg albumen, pepsin, hypophosphite of iron, hypophosphite of calcium, and hypophosphite of sodium, substantially as specified.

478,332. TARGET. THOMAS P. NELSON, Harrisburg, Pa. Filed Aug. 14, 1891. Serial No. 402,609. (No model.)

Claim.—1. In a military target, the combination, with an open frame, of a reversible plate or sheet pivotally supported therein and the adjustable barriers arranged to close the spaces between the open frame and the sheet or plate, substantially as and for the purpose set forth.



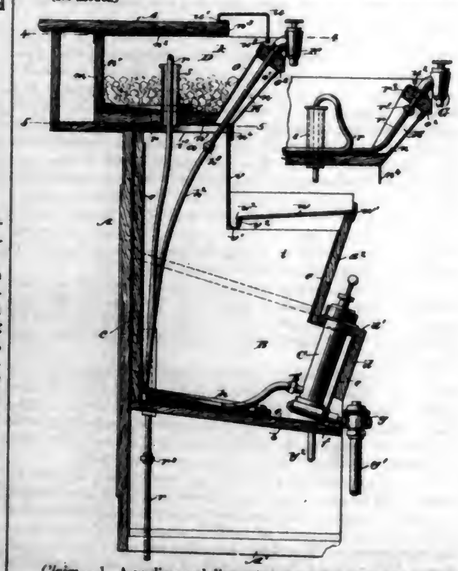
2. In a military target, the combination, with an open frame, of the reversible sheet or plate pivotally supported in said open frame and the barrier-strips connected to said frame and arranged to close the spaces between the frame and the sheet or plate, said sheet having on its reverse faces suitable designs, as and for the purpose described.

3. In a military target, the combination of an open frame, a sheet or plate pivoted therein, and the movable strips for closing the space between the sheet and frame, substantially as described.

4. In a military target, the combination of an open frame, a sheet or plate reversible therein, and the adjustable strips hinged to the frame and arranged when closed to overlap each other, substantially as described.

5. In a military target, the combination of an open frame, a sheet or plate reversible therein, the hinged strips at the front of the frame and arranged to close the space between the frame and the sheet, and the doors at the back of the target, substantially as described.

478,333. COOLING AND DISPENSING DEVICE FOR LIQUORS. JOHN NEUMANN, Brooklyn, N. Y. Filed Nov. 21, 1891. Serial No. 412,616. (No model.)



Claim.—1. A cooling and dispensing apparatus comprising a cooling-box, an ice-box on top thereof, and an air-chamber in the front wall of the ice-box, a coiled ale-pipe in the cooling-box and extended up through said air-space, a coiled beer-pipe in the ice-box, faucets connected with the ale and beer pipes at the front of the ice-box, and pumps connected with said pipes and exposed for operation through the front of the lower or cooling chamber, substantially as set forth.

2. A cooling dispensing apparatus comprising an ale-cooling box having a space between its bottom and the floor, an ice-box for beer on top thereof, ale and beer pipes extending up into the cooling-box and provided with couplings, the ale-pipe being coiled within the cooling-chamber and the beer-pipe being coiled within the ice-box, faucets for the pipes at the front of the ice-box, pumps at the front of the cooling-box, and a drain between the pumps and the said faucets, substantially as set forth.

3. A cooling and dispensing apparatus comprising the frame-work or box, the faucets and pumps in different horizontal planes on the front or exposed side thereof, the pipes connected with the said pumps and faucets, and the drain under the faucets and above and behind the pumps, substantially as set forth.

4. A cooling and dispensing apparatus movable within a stationary bar A and comprising the cooling-box having its bottom spaced from the floor-line of said bar, an offset at the front of the said cooling-box, pumps projecting therethrough, an ice-box upon the cooling-box and covered by the top or counter of the main bar, an air-chamber in the front wall of the ice-box, faucets mounted on the front of the ice-box, a drain therebelow and above the pumps, pipe couplings or connections between the pumps and exterior of the cooling-box, and pipes coiled in the two boxes and connected with the pumps and faucets, the pipe from the lower coil extending up through the air-chamber, substantially as set forth.

5. The combination, with a main or stationary bar or counter, of the separate and independent cooling and dispensing apparatus within said bar or counter and movable along the same, liquor-pipes entering the said apparatus and having couplings exterior thereto for separably connecting them with the main receptacles or kegs, pumps and faucets, and a drain carried by the said apparatus, whereby when the exterior pipe-couplings are disconnected the cooling and dispensing apparatus may be moved to another part of the bar without interfering in any way with the dispensing pipes, faucets, and pumps, substantially as set forth.

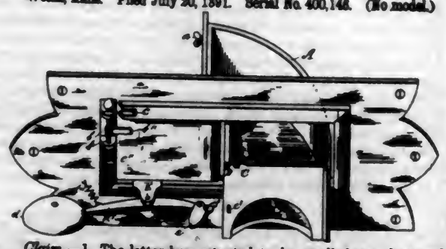
6. The combination, with the upper and lower boxes, the pipes, and faucets, of waste-receptacles between opposite ends of the two boxes, a drain beneath the faucets, and a gutter at the inner edge of the drain, discharging into the two receptacles, substantially as set forth.

7. In a portable cooling and dispensing device for liquors, a rectangular pump-box lined with non-corrosive metal and having its front side outwardly inclined, division-walls in the pump-box forming a slop-chamber at each end thereof, a drain-plate on the pump-box and having a hooked edge, a cooling-box resting on the pump-box, an upright splash-plate between the cooling-box and pump-box, and having a channel below adapted to be engaged by the hooked edge of the drain-plate, pumps within the pump-box connected at one end to a liquor-supply below the box, and also connected by the other end with pipe-coils in the pump-box, draw-cocks on the cooling-box connected to upward extensions of the pump-pipe coils, pipe-coils in the cooling-box, and draw-cocks connected with the latter pipe-coils and located on the front upper part of the cooling-box, substantially as described.

8. In a portable cooling and dispensing device for liquors having a pump-box and a slop-chamber at each end of the pump-box, a cooling-box above the pump-box, and devices for pumping, settling, cooling, and tapping said liquors, an upright splash-plate having a trough-like channel at its lower end and located between the cooling-box front wall and the top of the pump-box, and a corrugated drain-plate having a hooked edge and resting on the pump-box and engaging its hooked edge with the splash-plate channel and adapted to transfer waste liquor to the slop-chambers, substantially as described.

9. In a liquor cooling and dispensing device, a pump-box having its end walls extended as legs below, interiorly covered with non-corrosive sheet metal, provided with a slop-chamber at each end, and furnished with a table-board at its front, which is a portion of the inclined front wall, which table is adapted to support a series of pumps that pass through apertures therein, substantially as described.

478,334. HOUSE-DOOR LETTER-BOX. ORADIAH W. NEWCOMB, Welda, Kans. Filed July 20, 1891. Serial No. 400,148. (No model.)

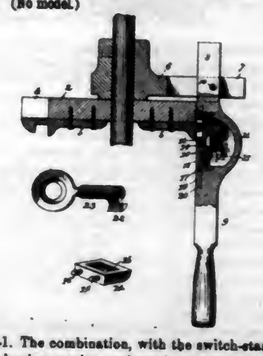


Claim.—1. The letter-box adapted to be applied to a door and having a slot in a top corner edge thereof, in combination with the vertically-adjustable sliding bar having an arm adapted to engage said slot and also a separate slot in the door when disengaged from the aforesaid slot and having a second short arm or trippet c^2, adapted to be engaged by a stud d' on the inner end of said letter-box as the box is closed, substantially as set forth.

2. The letter-box adapted to be applied to a door and having a slot in a top corner edge thereof and an inclined plane D at the entrance to said slot, in combination with the vertically-adjustable sliding bar suitably supported in a bracket or yoke on the door and having at one end a trippet or short arm c^2 and farther up thereon an arm b^2, one arm adapted to separately engage said slot and a slot in the door and the other arm adapted to be engaged by a stud on the inner end of said letter-box, substantially as and for the purposes set forth.

3. The letter-box adapted to be applied to a door and having a slot in a top corner edge thereof and an inclined plane D at the entrance to said slot, in combination with the vertically-adjustable sliding bar having a short arm or trippet at one end and farther up thereon a long arm adapted to separately engage said slot and a slot in the door, and the gong with its spring-retracted hammer provided with an oscillating arm adapted to be engaged by a stud on the inner portion of said letter-box, said letter-box having a second stud adapted to engage the short arm or trippet of said sliding bar, substantially as described.

478,335. RAILROAD-SWITCH STAND. FRANK P. NEWELL and HENRY MOHLE, Stevens Point, Wis. Filed Sept. 14, 1891. Serial No. 405,673. (No model.)



Claim.—1. The combination, with the switch-stand, its mast, the locking-plate having notches, and catches located upon the under side of the same opposite the notches, of a mast-arm located above the plate, a lever pivoted to the end of the arm and provided with a lock-case and an opening above the same, the latter adapted to receive the catches, and a spring-pressed bolt mounted in the lock-case and normally projected into the path of the catches, substantially as specified.

2. The combination, with a switch-stand, a notched locking-plate provided upon its under side and opposite its notches with hooks smaller than the notches, the switch-mast, and the bifurcated arm extending from the mast, of the lever located between the bifurcations and pivoted thereto, said lever being provided with the lock-case or chamber 11, reduced at its upper end to form an opening and having opposite ways, the bolt mounted for sliding in the ways and having the recess 15, and the coiled springs interposed between the bottom of the recess and bolt and serving to yieldingly support the latter in the opening, the side wall of the case being provided with a keyhole adapted to receive a key and located at one side of the bolt, substantially as specified.

478,336. SHIRT-STUD. MILTON E. OPPENHEIMER, New York, N. Y. Filed Sept. 29, 1891. Serial No. 407,161. (No model.)



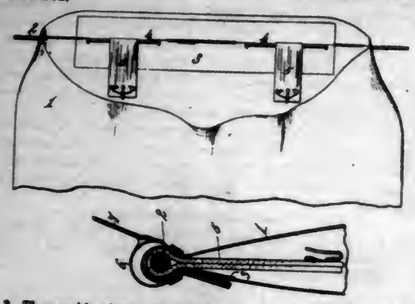
Claim.—The combination, with the tubular back slotted at one side and end, of the stud head and post, the latter passing through the slot of the tubular back, a stem and helical spring, and a joint between the stem and the post, such joint, stem, and spring being within the tubular back, substantially as set forth.

478,337. MOTH-PROOF BAG. FREDERICK G. PAYER, Detroit, Mich. Filed Jan. 14, 1892. Serial No. 418,074. (No model.)

Claim.—1. The combination, with a bag, of a filler-rod interlocked with the bag in juxtaposition to the mouth thereof for retaining the filler-rod in proper position when the bag-mouth is open and a slotted

tube for retaining the mouth portion of the bag in position when folded on the filler-rod, substantially as described.

2. The combination, with a bag, of a filler-rod laced through one side of the bag-mouth and a slotted tube for engaging and retaining the bag-mouth in position when folded on the filler-rod, substantially as described.



3. The combination, with a bag having a reinforced mouth, of a filler-rod laced through the reinforced portion of the bag-mouth and a slotted tube for engaging and retaining the bag-mouth in position when folded on the filler-rod, substantially as described.

4. The combination, with a bag having a reinforcing-strip secured to its mouth portion, of a filler-rod engaged with the reinforced portion of the bag-mouth and a slotted tube for retaining the bag-mouth in position when folded on the filler-rod, substantially as described.

5. The combination, with a bag, of a filler-rod engaged with the bag-mouth, suspension devices carried by the filler-rod, and means for retaining the bag-mouth in position when folded on the filler-rod, substantially as described.

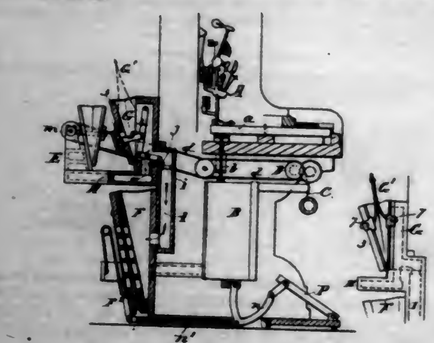
6. The combination, with a bag, of a filler-rod engaged with the bag-mouth, suspension devices carried by the filler-rod, and a slotted tube for retaining the bag-mouth in position when folded on the filler-rod, substantially as described.

7. The combination, with a bag, of a filler-rod engaged with the bag-mouth, flexible straps carried by the filler-rod and provided with suspension devices, and means for retaining the bag-mouth in position when folded on the filler-rod, substantially as described.

8. The combination, with a bag, of a filler-rod engaged with the bag-mouth, flexible straps carried by the filler-rod and provided with suspension devices, and a slotted tube for retaining the bag-mouth in position when folded on the filler-rod, substantially as described.

9. The combination, with a bag, of a filler-rod laced through one side of the bag-mouth, suspension devices carried by the filler-rod inside the bag, and a slotted tube for closing the bag-mouth, substantially as described.

473,388. AUTOMATIC GOVERNOR FOR PNEUMATIC MOTORS. WILLIAM D. PARKER, Meriden, Conn., assignor of three-fourths to Edward H. White, same place. Filed Oct. 16, 1891. Serial No. 408,858. (No model.)



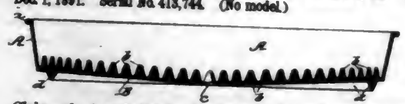
Claim.—1. In a pneumatic-motor engine and wind-inducing apparatus, the combination, with said motor-engine and wind-inducing apparatus, of a motor-regulator consisting of a cut-off valve disposed within the windway between said motor-engine and wind-inducing apparatus, and a collapsible and inflatable pneumatic communicating with said windway and having its movable part connected for moving said valve to diminish or increase the windway-passage in accordance with the collapse or inflation of said pneumatic, substantially as set forth.

2. The combination, with a pneumatic-motor engine and exhaust-bellows connected with said engine, of the governor-pneumatic and the cut-off valve actuated by said pneumatic, disposed between the motor-engine and bellows, and means for expanding said pneumatic with a limited degree of resistance in opposition to the collapsible force, substantially as set forth.

3. The combination, with the pneumatic-motor engine and wind-inducing apparatus for creating air-currents for actuating said motor-engine, of a sliding cut-off valve controlling the windway between the wind-inducing apparatus and the motor-engine, and the spring-expanded bellows-pneumatic internally communicating with said windway-passage between said cut-off and motor-engine and having internally disposed connections from its movable part to said cut-off valve, substantially as and for the purpose set forth.

4. The combination of the pneumatic-motor engine, the wind-inducing bellows, the regulating-valve in the windway to the motor-engine, the collapsible governing-pneumatic connected with said valve and communicating with said windway, its expanding spring, and means, substantially as described, for adjusting said spring to increase or diminish the effective tension or expansive force in said governing-pneumatic, for the purpose set forth.

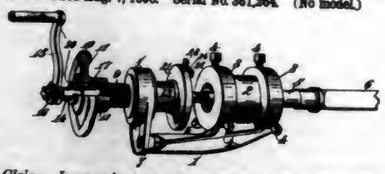
473,339. CASH-DISH. DAVID M. PERINE, Baltimore, Md. Filed Dec. 1, 1891. Serial No. 413,744. (No model.)



Claim.—1. A cash-dish having a thin flexible base provided on its upper surface with a series of rigid nipples and on its under side with a support for holding said base out of contact with the counter, desk, or table, whereby the nipples are permitted to tilt independently on the flexible base without bending themselves, substantially as shown and described.

2. A cash-dish having a thin flexible base provided on its upper surface with a series of rigid nipples, the said base being inclined downwardly toward the center and provided with a drainage-perforation and having a supporting-flange *d* to hold it out of contact with the subjacent support and provided, also, with side walls A, substantially as and for the purpose described.

473,340. AXLE-CUTTER. WILLIAM A. PETTINGILL, Knowlesville, N. Y. Filed Aug. 7, 1890. Serial No. 361,364. (No model.)



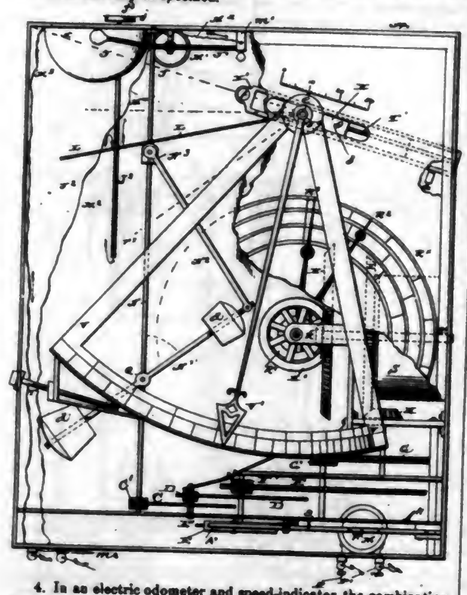
Claim.—In an axle-cutter, the combination of a base-plate 1, provided at one end with a sleeve 2, carrying at its front and rear ends a series of set-screws 4 to impinge against the front and rear portions of the axle for accurately centering the same, with a box 8 detachably bolted to the other end of the base-plate, the externally-threaded tube 9 and tubular extension 13, formed integral with and extending in opposite directions from said box, a cutter-shaft 14, extending through the said threaded tube 9 and tubular extension 13 and provided with the annular shoulder 17 and projecting stud or pin 20 near its outer end, the cutter-disk 21 at the inner end of the cutter-shaft 14, the radially-adjustable cutter 23, the clamping-bar 24, and the internally-threaded hand-wheel 10, engaging the threaded tube 9, turning loosely on the cutter-shaft 14 and provided with a lip or flange 18, located between the shoulder 17 and projecting stud or pin 20, substantially as and for the purpose described.

473,341. ELECTRIC ODOMETER AND SPEED-INDICATOR. WILLIAM A. PHILLIPS, U. S. Army. Filed Mar. 10, 1891. Serial No. 385,713. (No model.)

Claim.—1. The odometer combining a speed-indicator whose hand is controlled by a centrifugal governor actuated by the gearing or wheels of the odometer, substantially as set forth.

2. The odometer combining a speed-indicator whose hand is controlled by a centrifugal governor carried by a shaft geared to the wheel or gear mechanism of the odometer, substantially as set forth.

3. In an electric odometer and speed indicator, the combination, with the anchor or detent of the escapement-wheel, of the register-hand-actuating-gear mechanism, the armature-lever having one end normally resting upon said anchor or detent at its elevated end, and an electro-magnet having electrical connection with the car-wheel axle, substantially as specified.



4. In an electric odometer and speed-indicator, the combination, with the anchor or detent of the escapement-wheel, of the register-hand-actuating-gear mechanism, the armature-lever having one end resting upon the normally-elevated end of said anchor or detent, a spring normally holding the opposite end of said detent in engagement with said escapement, and an electro-magnet having electric connection with the car-wheel axle, substantially as described.

5. In an electric odometer and speed-indicator, the combination, with the register-hand gear mechanism, including the escapement-wheel and detent or anchor, and the spring adapted to hold one end of said anchor or detent normally in engagement with said escapement-wheel, of the armature-lever having one end normally in contact with the elevated end of said escapement or anchor, an electro-magnet, the key held upon the wheel-axle support, the circuit wires, and battery, said wires connecting with said key and said axle having a projection adapted to engage said key, substantially as set forth.

6. In an electric odometer, the combination, with the register-hand gear mechanism, of the speed-indicator hand and its scale or quadrant, and means for controlling the movement of said hand from said gear mechanism, substantially as described.

7. In an electric odometer, the combination, with the hand-register gear mechanism, of the speed-indicator hand and its scale or quadrant, and the centrifugal governor actuated by a shaft geared to said gear mechanism, substantially as specified.

8. In an electric odometer, the combination, with the register-hand gear mechanism, of the speed-indicator hand and its scale or quadrant, the shaft geared to said gear mechanism and carrying a centrifugal governor, and the fork adapted to move or ride upon and with the governor and its shaft, substantially as and for the purposes set forth.

9. In an electric odometer, the combination, with the fork, the speed-hand indicator, and its scale-quadrant, of the slide carrying said speed-indicator hand, fork, and quadrant-scale, and means for adjusting said slide and quadrant, substantially as specified.

10. In an electric odometer, the combination, with the fork, the speed-indicator hand, and the scale-quadrant, of the slide carrying said quadrant-scale and speed-indicator hand, and the adjusting-screws adapted to engage said slide and quadrant, substantially as set forth.

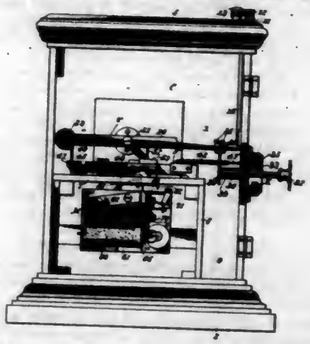
11. In an electric odometer and speed-indicator, the combination, with the speed-indicator hand, of the centrifugal governor and its shaft geared to actuating mechanism, the fork riding upon said governor, said governor comprising a lever carrying a heavier and a lighter weight, and an arm connected to one end of said lever and to a slide arranged on said shaft, substantially as and for the purpose set forth.

12. In an electric odometer and speed-indicator, the combination, with the fork and the speed-indicator hand, of the centrifugal governor and its shaft driven by suitable gear mechanism, and means adapted to secure alarm at a given rate of speed of the moving vehicle or car by moving said fork into an electric circuit adapted to sound said gong or bell, substantially as specified.

13. In an electric odometer and speed-indicator, the combination, with the fork and the speed-indicator hand, of the centrifugal governor and its shaft actuated by suitable gear mechanism, and the electrically-circuited gong or bell and circuit-closer adapted to be engaged by said fork at a given point, substantially as set forth.

14. In an electric odometer and speed-indicator, the combination, with the fork and the speed-indicator, of the centrifugal governor and its shaft actuated by suitable gear mechanism, and the electrically-circuited gong or bell, and the adjustable bifurcated circuit-closer having its arms provided with projections adapted to be engaged by the tines of said fork to produce the alarm, substantially as set forth.

473,342. COIN-CONTROLLED MUSIC-BOX. GEORGE RAAB, Cleveland, Ohio. Filed Dec. 16, 1891. Serial No. 415,250. (No model.)



Claim.—1. An inlet-opening for coin-receptacles, comprising a slotted escutcheon mounted over a slot through the body-wall of the receptacle, a grooved guide at one end of the escutcheon, and a leaf-spring secured to said wall at the other end thereof and having a slot smaller than the coin to be used and registering with the other slot, and a handle at its free end, as and for the purpose set forth.

2. In a coin-controlled apparatus, the combination, with the coin-chute, a centrally-pivoted trip-lever weighted at one end and with its other end standing beneath the chute, and a spring-actuated slide engaged by said lever when in its normal position, of a push-rod for the slide, extending to the exterior of the casing, a link depending from the light end of the trip-lever and having a notch engaging a groove in said rod when the latter is pushed in, a retaining-pawl tripped by the slide when pushed in, and rendering mechanism adapted to be engaged by said pawl, as and for the purpose set forth.

3. In a coin-controlled apparatus, the combination, with the coin-chute, a centrally-pivoted trip-lever weighted at one end and with its other end standing beneath the chute, and a spring-actuated slide engaged by said lever when in its normal position, of a push-rod for the slide, extending to the exterior of the casing, connections between the trip-lever and push-rod when the latter is pushed in, a retaining-pawl tripped by the slide when pushed in, and rendering mechanism adapted to be engaged by said pawl, as and for the purpose set forth.

4. In a coin-controlled apparatus, the combination, with the coin-chute, a pivoted and weighted trip-lever with its lighter end standing beneath the chute, a spring-actuated slide having a recess engaged by a pin on the lever when the slide is in its normal position, and rendering mechanism tripped by the movements of the slide, of a socket through the casing, a push-rod passing through said socket and engaging the slide, the rod having a groove in its body, collars mounted by set-screws on the lighter end of the trip-lever, and a link clamped between said collars with its slotted body embracing said rod and having a notch in the lower end of the slot closely fitting said groove, as and for the purpose set forth.

5. In a coin-controlled apparatus, the combination, with the coin-chute, a weighted and pivoted trip-lever whose lighter end stands below said chute, a spring-actuated slide normally held against the tension of its spring by said lever, and a push-rod for the slide, of an angle-plate carried by the slide and having a lip, a centrally-pivoted retaining-pawl, a spring drawing one end thereof toward the lip, a finger at the other end thereof, and rendering mechanism engaged by said finger, as and for the purpose set forth.

6. In a coin-controlled apparatus, the combination, with the coin-chute, a centrally-pivoted trip-lever standing about horizontal in the casing with a weight at one end and its other end under the chute, tripping devices operated by the movements of said lever, and rendering mechanism adapted to be engaged by said devices, of upright pins astride the lever adjacent its lighter end, and a weight heavier than that on the lever and having holes sliding loosely over the pins, as and for the purpose set forth.

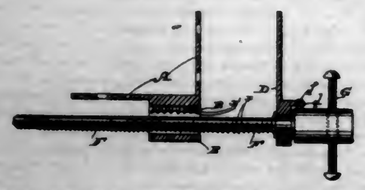
7. In a coin-controlled apparatus, the combination, with a weighted and pivoted lever, a spring-actuated slide engaged thereby, and rendering mechanism tripped by the movements of the slide, of a socket through the casing in line with the slide, a key adapted to be passed through said socket, a key-hole in the casing, driving mechanism connected with said rendering mechanism and having a squared shaft standing opposite the key-hole, and a guard mounted on the slide covering the key-hole in the normal position of the slide and adapted to uncover it when the key is withdrawn from the said socket, as and for the purpose set forth.

8. In a coin-controlled apparatus, the combination, with a pivoted lever, a spring-actuated slide engaged thereby, and rendering mechanism tripped by the movements of the slide, of a socket through the casing in line with the slide, a key adapted to be passed through the slide, a key-hole in the casing, and driving mechanism connected with said rendering mechanism and having a squared shaft standing opposite the key-hole, as and for the purpose set forth.

9. In a coin-controlled apparatus, the combination, with the casing, rendering mechanism therein, a driving mechanism also therein and having a squared shaft, a key-hole through the casing opposite said shaft, a retaining-pawl, and tripping devices for said pawl, of a socket through the casing in line with the tripping devices, a rosette in the form of a ring surrounding the socket on the exterior of the casing, and a key comprising a shank of a size to enter the socket or the key-hole and a head of a size to stand wholly within the outer line of said rosette when the key is in place, as and for the purpose set forth.

10. In a machine of the class described, the combination, with the casing, a musical instrument, a driving mechanism connected therewith and having a squared winding-arbor, a key-hole in the casing opposite said arbor, and a retaining-pawl, of a slide moving in guides and having a recess, an angle-plate connected with the slide and engaging said pawl, a coin-chute in the casing, a centrally-pivoted trip-lever having a weight at one end, a pin depending from this end and adapted to engage said recess, the latter end of the lever standing beneath said chute, a link depending from this end and having a reduced notch in its lower end, a contractile spring leading from the slide through the link and connected with the casing, a socket in the casing in line with the link and having a rosette around its outer end, and a key whose shank is adapted to be passed through the key-hole or the socket and has a groove engaging said notch when the pin engages the recess, the outer end of the key having a head which at this time stands wholly within the outer line of said rosette, all substantially as hereinbefore set forth.

478,343. VISE. HENRY C. RASHER, San Francisco, Cal. Filed Jan. 27, 1890. Serial No. 338,274. (No model.)

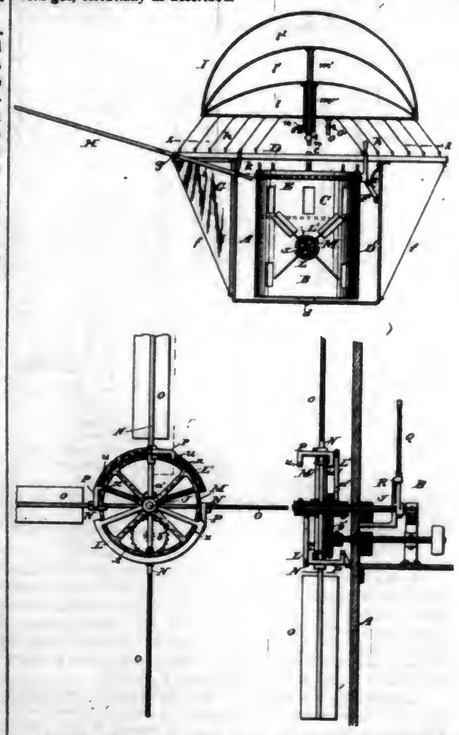


Claim.—In a vise, the combination of a fixed jaw, a movable jaw, a nut in the fixed jaw having a mutilated thread, an operating-screw carried by the movable jaw, having, also, a mutilated thread, the ends of both the threads on the nut and the operating-screw being beveled from front to rear, so that when the lines of the threads on the screw and nut come in alignment the operating-screw will be thrown backward one thread, substantially as and for the purpose set forth.

478,344. AERIAL SHIP. WILLIAM H. RIDDLE, Crowley, Tex. Filed July 11, 1891. Serial No. 399,134. (No model.)

Claim.—1. In an air-ship, the combination, with a main frame, of an upright hull or vessel-body capable of rotation on upper and lower pivots within said frame, propelling-wheels applied to opposite sides of said hull or body, and one or more rudders attached to said main frame, substantially as specified.

2. In an air-ship, the combination, with the hull or body of the vessel and its outer main frame, of a gas-receptacle above, connected with the main frame, constructed of a series of gas-holding compartments, one above the other, and telescopic tubular connections between certain of the compartments, adapted to pass the gas from one of said compartments to the other, and faucets for charging the receptacle with gas, essentially as described.



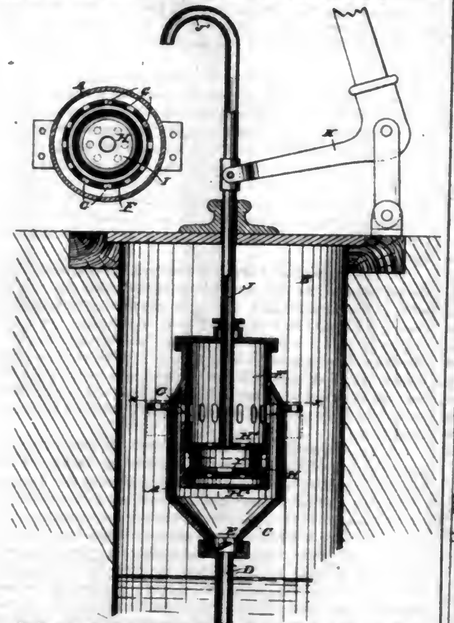
3. In an air-ship, the combination, with the upright rotatable hull A, having a circular rack E and propellers carried by and on opposite sides of the hull, of the main frame D D', within which said hull is pivoted above and below, the catch F, attached to said main frame, adapted to engage with the circular rack E, the stationary rudder G, and the adjustable rudder H, substantially as specified.

4. The combination, with either propelling-wheel shaft J, of the wheel M, fitted to freely rotate upon said shaft, the upper and lower partly-circular tracks L L', arranged the one at a distance apart laterally from the other and secured upon the shaft J, the radial paddle-shafts N, with their attached paddles O, carried by said wheel, made capable of turning on their axes to produce a feathering action of the paddles, and the bell-crank levers P, secured on the paddle-shafts outside of the wheel M and provided with interned flanges or wrists u u at their outer ends for operation in conjunction with the wheel and the stationary tracks L L', essentially as and for the purposes herein set forth.

5. The combination of the toothed lever Q and the stationary toothed quadrant or partly-circular rack R with the rotatable shaft J, the tracks L L', secured on said shaft, the wheel M, independently rotatable on said shaft, the radial turning paddle-shafts N, with their attached paddle O, and the bell-crank levers P, having interned flanges or wrists u u at their opposite ends for operation in relation to the tracks L L', substantially as described.

478,345. PUMP. PADEN B. RIGGIN, Sheffield, Iowa. Filed July 23, 1891. Serial No. 400,477. (No model.)

Claim.—1. In a pump, the combination, with a closed casing, a suction-pipe held in the lower end of the said casing, and a valve in the said suction-pipe, of a cylinder held within the said closed casing and formed with openings at or near the middle of the same, a hollow piston fitted to slide within the said cylinder and provided with an apertured top and bottom, and a valve held loosely in the said hollow piston and adapted to be alternately seated on the apertured top and bottom of the said piston, substantially as shown and described.



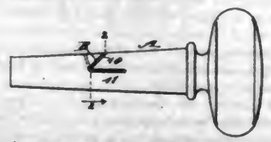
2. In a pump, the combination, with a closed casing, a suction-pipe held in the lower end of the said casing, and a valve in the said suction-pipe, of a cylinder held within the said closed casing and formed with openings at or near the middle of the same, a hollow piston fitted to slide within the said cylinder and provided with an apertured top and bottom, a valve held loosely in the said hollow piston and adapted to be alternately seated on the apertured top and bottom of the said piston, and a discharge-pipe mounted to slide vertically and rigidly connected with the said piston to form a piston-rod for the same, the lower end of the said pipe opening into the said hollow piston, substantially as shown and described.

478,346. CAR-COUPLING. WILLIAM H. ROBINSON, Galt, Canada. Filed Oct. 22, 1891. Serial No. 409,526. (No model.)



Claim.—A draw-head having a projection B and shoulder G formed on it, a spindle D, working in an elongated hole E in the draw-head and having a link connected to it, and a bolt F, connected to the spindle D and arranged to project beyond the face of the draw-head, in combination with a crank H, connected to said spindle D, and connections for operating said crank, substantially as shown and described.

478,347. PEG FOR VIOLINS. GEORGE H. ROWE, Belton, Tex. Filed Jan. 21, 1892. Serial No. 418,737. (No model.)

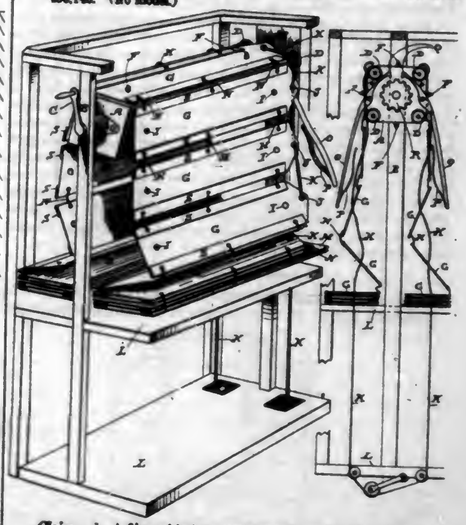


Claim.—1. As an improved article of manufacture, a key for violins and other stringed musical instruments, said key being provided with an angular slot or channel produced in its side, substantially as and for the purpose specified.

2. A key for violins or other stringed musical instruments, having an angular slot or channel formed therein for the reception of a string, as and for the purpose set forth.

3. A key for violins or other stringed musical instruments, having a slot or channel produced therein, extending from a point upon its outer surface diagonally downward in direction of its center and thence practically in a horizontal and reverse direction, substantially as and for the purpose specified.

478,348. CONTINUOUS REVOLVING FILE AND INDEX. ALEXANDER J. RUDOLPH, San Francisco, Cal. Filed Sept. 18, 1891. Serial No. 406,143. (No model.)



Claim.—1. A file and index consisting of a series of cards or holders linked together at their edges to form a flexible chain, a polygonal drum having sides corresponding in shape with the cards, guides upon the faces of the drum, with which the cards engage, and a means for rotating the drum, substantially as herein described.

2. A file and index consisting of a series of cards or holders having their edges flexibly connected together to form a series or chain, a polygonal drum having guides upon its faces adapted to engage the cards as they pass over the drum, tables situated below the drum upon each side and adapted to receive the cards and fold them successively one upon the other as they descend from the drum, substantially as herein described.

3. An index and file consisting of a series of cards having their edges flexibly connected together, a polygonal rotary drum, the sides of which approximate the shape of the cards, guides upon the faces of the drum, with which the cards engage as they pass over it, perforated extensions at one end of each of the cards and a cord or tape passing through these extensions, rollers projecting from each of the angles of the drum over which the tape passes at the upper end and weighted guiding-rollers over which the tape passes at the lower end, whereby the tension is maintained and the cards are caused to fold symmetrically upon each other as they descend from the drum to the table, substantially as herein described.

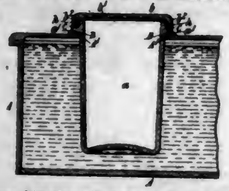
4. A continuous file and index consisting of cards having their edges flexibly connected together, a polygonal drum, the sides of which correspond approximately in shape with the cards, a guiding cord or tape passing through holes in extensions at the end of the cards, rollers projecting from each of the angles of the drum over which the tape passes and a tension device over which the lower end of the tape passes, a ratchet-wheel fixed upon the drum-shaft, pawls engaging said ratchet from opposite sides, with extensions or lever-arms projecting downward and outward therefrom, and a stop mechanism attached to the lowermost of the index-cards at each end and adapted to engage with the pawl-levers when drawn upward to throw the pawls into engagement with the ratchet and stop the rotation of the drum, substantially as herein described.

5. The rotating polygonal drum having a ratchet-wheel upon one end of its shaft, pawls fulcrumed to the frame to engage the ratchet-wheel from opposite sides, with arms or levers projecting outward and

downward therefrom, said levers having springs secured to their inner sides, a series of cards adapted to fit the polygonal faces of the drum, having their edges flexibly connected together, a table situated below the drum, guiding cords or tapes passing through holes in one end of each of the cards, whereby they are caused to fold symmetrically one above the other upon the tables upon either side of the drum, and an angular device attached to the lowermost of the index-cards at each end, adapted to engage the spring-armed levers, so as to throw the pawls into engagement with the ratchet-wheel upon one side or the other and stop the rotation of the drum when the lowest of the index-cards has been brought to the top, substantially as herein described.

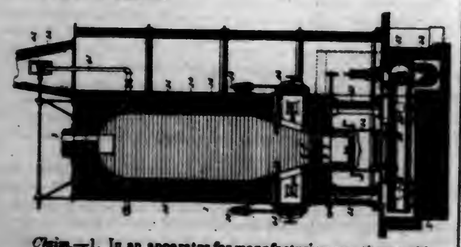
6. An index and file consisting of a rotary polygonal drum, cards approximating in size or shape to the sides of the drum, said cards having channels or guides formed upon each side for the reception of independent removable strips, flexible links or connections by which the edges of the cards are connected together, a table situated below the drum, upon which the cards are alternately folded from either side by the rotation of the drum in one direction or the other, a guiding-cord passing through holes in extensions at the end of the cards, whereby they are caused to fold symmetrically upon each other as they reach the tables and their position upon the drum is maintained, a ratchet-wheel fixed upon one end of the drum-shaft, pawls fulcrumed to the frame-work and engaging said ratchet-wheel upon opposite sides, extensions of said pawls projecting outwardly and downwardly, and a stop mechanism attached to the lowermost card at each end, adapted to engage said levers and throw the pawls into engagement with the ratchet when the final card from either end has reached the top of the drum, whereby the rotation of the drum is stopped, substantially as herein described.

473,349. RECEPTACLE FOR PRESERVED MEAT. DAN RYLANDS, Stairfoot, England. Filed Sept. 14, 1891. Serial No. 405,649. (No model.)



Claim.—The combination of a jar *a*, having an external flange *a'* a short distance below the mouth thereof, a washer *c*, resting upon the said flange, a ring *h*, of cork or the like, surrounding the upper edge of the said jar above the said washer *c*, and a cover *b*, having a downwardly-extending flange b^3, which fits tightly upon the said ring *h* and bears against the washer *c*, the said cover having a plain hole *b'* for egress of air and adapted to be hermetically closed by wax or the like and another hole b^4 with a recess b^5 round the same for wax or cement to seal a stalk in the said hole b^4, substantially as and for the purposes specified.

473,350. APPARATUS FOR THE MANUFACTURE OF GAS. GOTTLIEB SCHARFF, Annapolis, Md. Filed June 9, 1891. Serial No. 395,693. (No model.)



Claim.—1. In an apparatus for manufacturing gas, the combination of the generator or producer provided near its lower end with side gas-escape openings having doors at their outer and grates at their inner ends, opposite horizontal passages extending laterally from opposite sides of said side openings and directly through the lining of the generator, the main gas-conducting pipe, and vertical tubular passages extending up through the bottom of the lining of the generator and connecting said horizontal passages with said main conducting-pipe, substantially as set forth.

2. In an apparatus for the manufacture of gas, the combination of the hollow supporting-columns, the generator or producer located over said columns and provided near its lower end with side openings having doors at their outer ends and provided with lateral passages extending through the lining of the generator and communicating with the side openings, the main gas-conducting pipe, and tubular passages extending through the supporting-columns of the generator and connecting said main outlet-pipe and said lateral passages, substantially as set forth.

3. In an apparatus of the class described, the combination of the generator or producer provided near its lower end with side openings, lateral passages in the lining of the generator communicating with the side openings, the valved conducting-pipe, the central receiving-pipe connected at one end with said conducting-pipe and having laterally-extending branches provided with packing-boxes and sliding sections to admit of contraction and expansion, and the supporting-columns having tubular passages connecting said branch pipes with said lateral channels or passages in the lining of the generator and connected with the latter near its lower end, substantially as and for the purpose set forth.

4. In an apparatus of the class described, the combination, with the generator, of the superheating-chamber provided with a lining, a series of interiorly-arranged horizontal partitions or baffle-plates extending alternately from opposite sides of said chamber, intermediate supporting walls or columns between said baffle-plates and extending only from end to end of the opposite tiers of partitions to leave passages around both ends of the walls or columns, valved steam-inlets near the lower end of the superheating-chamber, and valved inlets for air and for hydrocarbon oil near the upper end thereof, substantially as set forth.

5. In an apparatus of the class described, the combination of the generator or producer, the superheating-chamber having the baffle-plates of refractory material, the passage connecting the upper ends of the generator and the superheating-chamber, the flue-chamber arranged adjacent to the superheating-chamber and connected with the lower end of the latter by a valved passage, parallel diaphragms near the upper and lower ends of said flue-chamber, vertical flues connecting said diaphragms, an air-inlet near the upper end of the space inclosed between said diaphragms, the valved conducting-pipe, a passage connecting said space with the valved conducting-pipe, valved steam-inlets near the lower end of the superheating-chamber, valved inlets for air and for hydrocarbon oil near the upper end of said superheating-chamber, and means for creating suction in an upward direction through the flues in the flue-chamber, substantially as and for the purpose set forth.

473,351. ELECTRIC CABLE. WILLIAM H. SAWYER, Providence, R. I., assignor to the American Electrical Works, same place. Filed Oct. 27, 1891. Serial No. 410,011. (No model.)



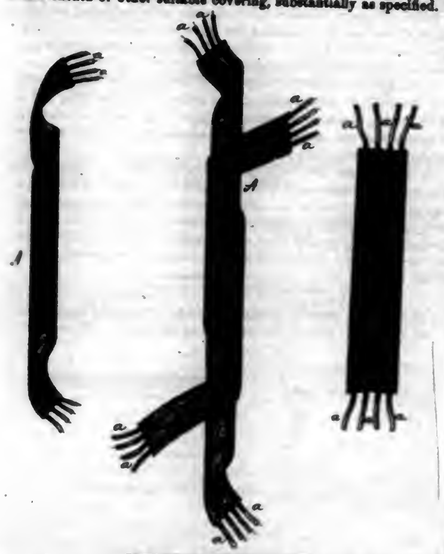
Claim.—1. An electric cable composed of a flexible tube or core formed of the two wires of a metallic circuit coiled spirally together and the wires of one or more metallic circuits interbraided with fibrous material upon said flexible tube or core, substantially as specified.

2. In an electric cable, the combination of a number of sections, each composed of a flexible tube or core formed of two wires of a metallic circuit coiled spirally together, a successive series of metallic circuits interbraided with fibrous material upon said tube or core, and an inclosing sheath or other suitable covering, substantially as specified.

473,352. ELECTRIC CABLE. WILLIAM H. SAWYER, Providence, R. I., assignor to the American Electrical Works, same place. Filed Oct. 27, 1891. Serial No. 410,010. (No model.)

Claim.—1. An electric cable formed of a number of sections grouped together, each section being composed of a series of insulated wires or conductors interbraided with fibrous material into a continuous flat strip or ribbon, which is wound or twisted into a spiral tube having a central air-space, and one or more strips or ribbons similarly constructed being wound upon said spiral tube in reverse directions and the whole inclosed within a lead sheath or other suitable covering, substantially as specified.

2. An electric cable formed of a series of insulated wires interbraided with fibrous material into a continuous flat strip or ribbon, which is wound or twisted into a spiral tube having a central air-space, and a series of successive strips or ribbons similarly constructed wound upon said spiral tube in reverse directions to each other to build up the desired diameter of cable and the whole inclosed within a lead sheath or other suitable covering, substantially as specified.



473,353. ELECTRIC CABLE. WILLIAM H. SAWYER, Providence, R. I., assignor to the American Electrical Works, same place. Filed Oct. 27, 1891. Serial No. 410,012. (No model.)

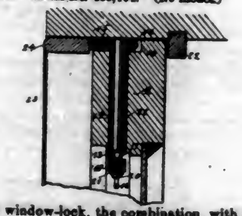


Claim.—1. An electric cable composed of one or more metallic circuits interbraided with fibrous material into tubular form to provide a central core or foundation and a successive series of metallic circuits similarly interbraided with fibrous material upon said core or foundation, the wires or conductors of each successive series being wound on in a reverse direction and at an increased or decreased angle or pitch to the wires of the core or foundation, substantially as specified.

2. An electric cable formed of one or more metallic circuits interbraided with fibrous material into tubular form, the wires or conductors of each succeeding series being wound in a reverse direction and at an increased or decreased angle or pitch to that of the wires of each adjacent series of metallic circuits, substantially as specified.

3. In an electric cable, the combination of one or more metallic circuits interbraided with fibrous material into tubular form with a successive series of metallic circuits similarly interbraided, and an inclosing sheath or other suitable covering, substantially as specified.

473,354. SASH-HOLDER. CHARLES SCHERRER, San Francisco, Cal. Filed Nov. 27, 1891. Serial No. 413,191. (No model.)



Claim.—1. In a window-lock, the combination, with a sash provided with a recess in its outer side face and a bore leading into said recess, in which a sleeve is fixedly held, provided at its inner end with a rib, of a spindle held to turn in the sleeve, an eccentric located in the recess of the sash and secured to the spindle, and a handle attached to the spindle and provided with a lip adapted for engagement with the rib of the sleeve, as and for the purpose set forth.

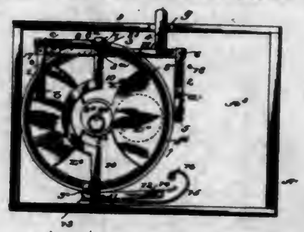
2. In a window-lock, the combination, with a sash provided with a recess in its outer side face and a bore leading into the recess, in which bore a sleeve is rigidly secured, the said sleeve being provided at its inner extremity with a rib or lug, of a spindle held to turn in the sleeve, an eccentric attached to the outer end of the spindle, which eccentric is located in the recess of the sash, the said spindle at its inner end being provided with a flat surface, and a handle secured to the inner end of the spindle, which handle is provided with a lip engaging with the flat surface of the spindle and adapted for engagement with the opposite ends of the rib or lug upon the sleeve, substantially as shown and described.

473,355. FOLDING BED. LOUIS SEKOFSKY, San Francisco, Cal. Filed May 23, 1891. Serial No. 393,550. (No model.)



Claim.—In a folding bed, the combination of the central rectangular section A, the base C, on which it is mounted, the bed B, arranged vertically within the sections A and C and pivoted removably to the section C, the top F of the cabinet, the hinged cabinet-cases M and N, arranged between the top F and the base C alongside of the section A, said case M being provided with a desk H, open cases L L, and locker I, and the horizontal drawers O and R in the lower ends, respectively, of the cases M and N, together with the drawers P and Q, located within the case C, all the parts being arranged to operate substantially in the manner and for the purpose specified.

473,356. PHOTOGRAPHIC SHUTTER. FERDINAND SERVOS, Berlin, Germany. Filed Sept. 13, 1890. Serial No. 364,911. (No model.)



Claim.—1. The combination, with a spring-actuated rotary shutter having peripheral stop-teeth, of a bottom lever 12, having a stop nose or pawl 13, a lengthwise-movable lever 3, a lever 2, operated by the lengthwise-movable lever and having a stop nose or pawl 5, a vertical lever connected with the bottom lever, a lever 8, having a stop-pin 9 and connected with the vertical lever, and means for lifting the vertical lever by the action of the lengthwise-movable lever, substantially as described.

2. The combination, with a rotary shutter having peripheral stop-teeth, of a central shaft or axle 8^9, on which the shutter loosely turns, a spring-case attached to the shutter and turning therewith on the central shaft or axle, a ratchet device 8^7, a bottom lever 12, having a stop nose or pawl 13, a lengthwise-movable lever 3, a lever 2, operated by the lengthwise-movable lever and having a stop nose or pawl 5, a vertical lever 10, connected with the bottom lever, a lever 8, having a stop-pin 9 and connected with the vertical lever, and means for lifting the vertical lever by the action of the lengthwise-movable lever, substantially as described.

3. The combination, with a camera-frame, of a rotary shutter having an annular channel in proximity to its periphery, which contains a packing material for excluding light, substantially as described.

4. The combination, with a camera-frame, of a rotary sheet-metal shutter struck up with an annular channel in proximity to its periphery and containing a soft packing or filling for excluding light, substantially as described.

5. The combination, with a rotary shutter having stop-teeth at its periphery, of the bottom lever 12, having a stop nose or pawl 13, the pivoted vertical levers 1 and 2, the horizontally-movable lever 3, having its ends pivoted, respectively, to the vertical levers, the top lever 8, having a stop-pin 9 and provided with a lever connection with the bottom lever, and means for actuating the top and bottom levers by the action of the horizontally-movable lever, substantially as described.

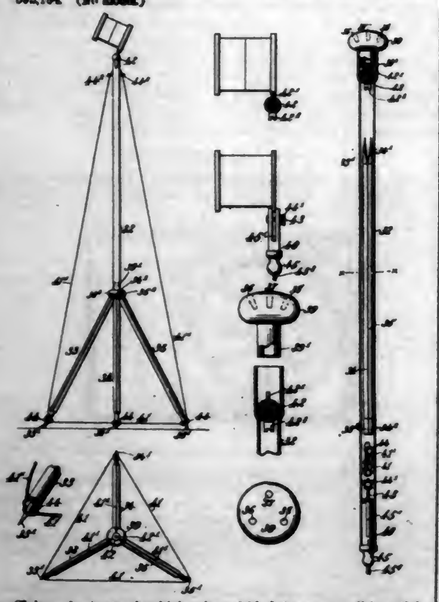
6. The combination, with a rotary shutter having stop-teeth at its periphery, of a bottom lever 12, having a stop nose or pawl 13, a pivoted lever 2, having a stop nose or pawl 5, a lengthwise-movable lever having an angular notch 3^a, a top lever 8, having a stop 9, and a vertical lever 10, connecting the top and bottom levers and having an angular projection 8^a, acted on by the angular notch of the lengthwise-movable lever, substantially as described.

7. The combination, with a rotary shutter having stop-teeth at its periphery, of the sliding and pivoted bottom lever 12, having a stop nose or pawl 13, the pivoted vertical levers 1 and 2, the stop-pins 17 and 18 for limiting the swinging movements of the vertical levers, a horizontally-movable lever 3, having its ends pivoted, respectively, to the said vertical levers, a top lever 8, having a stop 9, a lever connecting the top and bottom levers, and means for operating the said connecting-lever by the action of the horizontally-movable lever, substantially as described.

8. The combination, with a rotary shutter having stop-teeth 8^a 8^a arranged diametrically opposite each other, of the three levers 2, 8, and 12, a connection between the levers 8 and 12, and means for swinging the lever 2 and operating the connection between the levers 8 and 12, substantially as described.

473,357. SUPPORT FOR CAMERAS OR OTHER PURPOSES.

FERDINAND SERVUS, Berlin, Germany. Filed May 9, 1891. Serial No. 392,134. (No model.)



Claim.—1. A stand which when folded forms a walking-stick, consisting of three rods 33 34 35, the knob 39, which is provided with holes 36 37 38 for fastening the rods 33 34 35, furthermore the plug 40, the strings or cords 41 41', provided with rings and hooks, which parts can all be concealed in the tube 32 of the stick and are combined so as to form a stand in such a manner that the tube 32 rests with the knob 39 upon the rods 33 34 35 and carries the camera at its upper end, while the strings or cords 41 41' connect the lower ends of the legs with each other and with the upper part of the tube 32 for the purpose of forming a rigid whole, substantially as described.

2. A camera stand or support consisting of a tube having at one end a detachable knob, a series of rods arranged in the tube, removable therefrom, and having means for engaging the knob to form a tripod, and means for supporting a camera at the upper end of the tube when the rods are adjusted to form a tripod, substantially as described.

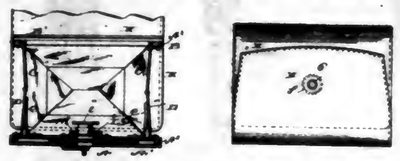
3. In a camera stand or support, the combination, with a tube having means to support it in an upright position, of a split ball having means to engage a camera and a tapering screw engaging the split portion of the ball for expanding the latter and causing it to tightly fit the interior of the tube for holding the ball in different adjusted positions thereto, substantially as described.

4. In a camera stand or support, the combination, with the tube 32, of the knob 39, detachably secured at one end of the tube, and a ball 42, having means to engage and support a photographic camera and held within the tube by frictional contact with the internal surface thereof, substantially as described.

5. In a camera stand or support, the combination of a tube having at one end a detachable knob provided with a series of sockets, a series of rods arranged in the tube, removable therefrom, and having pins at one extremity for engaging the sockets in the knob to form a tripod, and means for supporting a camera at the upper end of the tube when the rods are adjusted to form the tripod, substantially as described.

473,358. PHOTOGRAPHIC CAMERA.

FERDINAND SERVUS, Berlin, Germany. Filed Oct. 8, 1891. Serial No. 408,141. (No model.)



Claim.—1. A folding photographic camera consisting of front and rear walls, flexible side walls consisting of flaps hinged to each other and to the front and rear walls, a spring bearing against said hinged flaps, which constantly tends to extend the flexible side walls, and a leather case or cover, which holds the parts in their folded position, substantially as described.

2. A photographic camera consisting of a rear frame having means to receive and retain a plate-holder, a front frame comprising parallel walls having coincident orifices and an objective, a shutter mechanism arranged between the parallel walls of the front frame, the collapsible side walls hinged to each other and to said front and rear frames, a covering or casing comprising flaps having locking devices to retain the side walls in their collapsed condition, and a spring for automatically extending the side walls when the locking device is released, substantially as described.

3. A camera consisting of front and rear frames provided, respectively, with shutter mechanism and means for retaining a plate-holder, hinged collapsible side walls connecting the front and rear frames, a covering or casing comprising flaps having a clasp or locking device containing a lens for small instantaneous exposures, and a spring for automatically extending the side walls when the clasp or locking device is released, substantially as described.

4. A photographic camera consisting of a rear frame having means to receive and retain a plate-holder, a front frame comprising parallel walls having coincident orifices and an objective, a shutter arranged between the parallel walls, the hinged collapsible side walls connecting the front and rear frames, a covering or casing comprising flaps having a clasp or locking device which contains a lens for small instantaneous exposures, and means for automatically extending the side walls when the clasp or locking device is released, substantially as described.

5. An extensible and collapsible photographic camera having a front frame provided with an objective and a shutter mechanism, in combination with flaps for retaining the camera in its collapsed condition, one of the flaps having a clasp or locking device provided with a lens for small instantaneous exposures while the camera is collapsed or folded, substantially as described.

6. The combination, in a photographic camera, of front and rear frames provided, respectively, with shutter mechanism and means for retaining a plate-holder, the collapsible side walls connecting the front and rear frames, mechanism, substantially as described, for adjusting and holding the front and rear frames at different distances apart, and an inclosing case having a lens for small exposures, substantially as described.

473,359. PLATE-HOLDER.

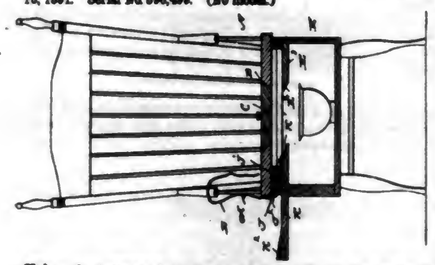
FERDINAND SERVUS, Berlin, Germany. Filed Oct. 30, 1891. Serial No. 410,400. (No model.)

Claim.—The combination, with a frame 1, having an overhanging flange 2 round three of its sides, of a plate-holder composed of a plate 3, having the lateral bead 5, outwardly-extending ledge 6, and inwardly-extending flange 7 round three of its edge portions, the rib 4 on the plate, provided with a light-excluding packing-strip 13, a spring 14, arranged on the rib, and a slide 8, movable beneath the inwardly-extending flange and bearing against the packing-strip, substantially as described.



473,360. COMMODE.

GEORGE E. SHAW, Berlin, Wis. Filed June 16, 1891. Serial No. 396,499. (No model.)



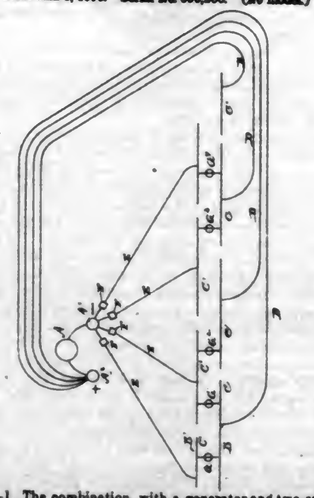
Claim.—1. A commode consisting of the box having one end open, the door hinged to said end and having the strip for tightly closing said opening, the strip carried by the box and having the inclined edge, the cover fitting in said box and having the inclined edge adapted to form a tight joint with the inclined edge of said strip, substantially and for the purpose described.

2. A commode consisting of a box having one end open, a door hinged to said end having the tight-fitting strip, the fastening for securing the door, the strip carried by the box and having the inclined edge, the slide or cover having the inclined edge, forming a close joint with the inclined edge of the strip, and the cord connected to the cover for opening said cover, substantially as described.

3. A commode consisting of a box adapted to be used with a chair, a door having a tight-fitting strip for closing one end of the box, the strip carried by the box, having the inclined edge, the cover having the inclined edge and the inclined strip at the outer edge, the strip on the box having the inclined edge, the cord connected to the cover for opening the same, and the guides for said cord, substantially as described.

473,361. MULTIPLE-ARC RAILWAY SYSTEM.

SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Jan. 5, 1890. Serial No. 336,290. (No model.)
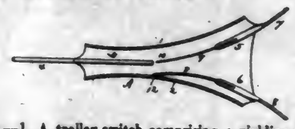


Claim.—1. The combination, with a generator and two sectional trolley lines or conductors, of a series of feed-wires extending from one pole of the generator to and connected with the respective sections of one trolley-line and an automatic cut-out included in each one of said feed-wires at a point near the generator, and a series of feed-wires extending from the other pole of the generator to and connected with the respective sections of the other trolley-line, substantially as set forth.

2. The combination, with a generator, of two trolley lines or conductors, each conductor being composed of a series of insulated sections, the joints of the several sections of one trolley line or conductor alternating with the joints of the sections of the other trolley line or conductor, feed-wires connecting one pole of the generator with the respective sections of one trolley line or conductor, an automatic cut-out device in the circuit of each feed-wire, and a series of wires connecting the sections of the other trolley wire or conductor with the other pole of the generator, substantially as set forth.

473,362. TROLLEY-SWITCH.

SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Jan. 8, 1890. Serial No. 336,281. (No model.)



Claim.—1. A trolley-switch comprising a yielding trackway or switch-rail, on which the trolley runs and a stationary flange, with which the trolley engages and serves to automatically shift the yielding trackway or switch-rail, substantially as set forth.

2. A trolley-switch provided with depending ribs, on which the trolley runs, and with a yielding trackway or section, one end of which is secured or connected to the end of one rib, while its free end is retained normally in line with the end of the opposite rib, in combination with a stationary flange against which the trolley bears for shifting the position of the yielding trackway or section, substantially as set forth.

3. A trolley-switch having a single trolley-wire connected to one end thereof and two trolley-wires connected to its opposite end, and two movable or yielding trackways or sections connected with the two trolley-wires, and a flange for causing the trolley to automatically adjust said movable trackways, substantially as set forth.

4. In a trolley-switch, the combination, with ribs depending from the switch-plate and a yielding trackway on which the trolley runs, of a flange for engaging the trolley and causing the latter to impart lateral movement to the yielding trackway, substantially as set forth.

5. In a trolley-switch, the combination, with the switch-plate having depending flanges at its side edges and three or more depending ribs, of yielding plates or tongues attached to two of said ribs, one spring or yielding plate being adapted to normally align with the rib having no yielding tongue and the other yielding tongue being adapted to normally bear against one of the depending side flanges of the switch-plate, substantially as set forth.

473,368. ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SIDNEY H. SHORT, Cleveland, Ohio. Filed June 10, 1891. Serial No. 396,770. (No model.)

Claim.—1. An armature for dynamo-electric machines, comprising a foundation-ring grooved circumferentially on its inner periphery and a laminated core, a portion of the folds of which are of less width than that of the foundation-ring, and bobbins of insulated wire encircling the foundation-ring and laminated core, substantially as set forth.

2. A ring armature for dynamo-electric machines, consisting of a laminated core, the inner and outer periphery of which projects laterally from the central portion of the core, thereby forming annular grooves in the opposite faces of the laminated core, and bobbins of insulated conductor encircling the core, substantially as set forth.

3. An armature for a dynamo-electrical machine, having a laminated core whose intermediate parts are of narrower material than the adjacent parts surrounded by the bobbins, so as to leave air-passages between the said core and the bobbins thereon, substantially as described.

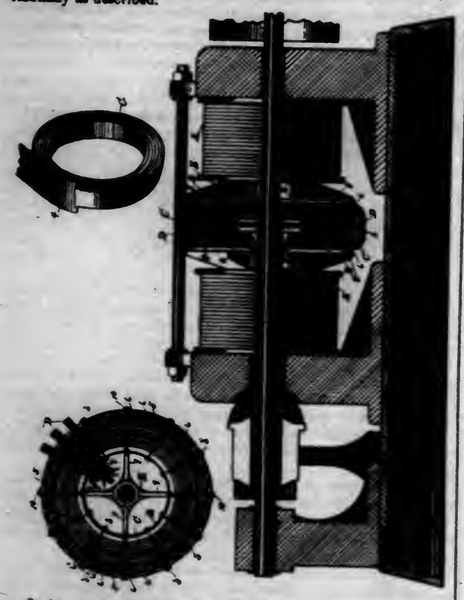
4. An armature for dynamo-electrical machines, consisting of a laminated core having projections formed integral with a portion of the outer folds of the core, forming teeth which extend only partly across the opposite faces or sides of its core, and bobbins of insulated conductor encircling the core, substantially as set forth.

5. An armature for a dynamo-electrical machine, comprising a core having teeth or projections formed integral with the core and extending from its periphery only partly across its side or face, in combination with a foundation-ring and bobbins, the construction being such as to form air-spaces between the bobbins and the outer plane surface of the core, substantially as set forth.

6. An armature for a dynamo-electrical machine, comprising a laminated core having a number of adjacent convolutions of one width

of ribbon and a number of convolutions of wider ribbon notched to form teeth, substantially as described.

7. An armature for a dynamo-electrical machine, comprising, in connection with the bobbins of insulated wire, a laminated core having a number of adjacent convolutions of ribbon of a width not exceeding the distance across the armature between the bobbins and a number of convolutions of wider ribbon notched to form teeth, substantially as described.



8. An armature for a dynamo-electrical machine, comprising, in connection with bobbins of insulated wire, a laminated core having convolutions of ribbon of a width less than the distance between the bobbins, and convolutions of wider ribbon notched to form teeth, substantially as described.

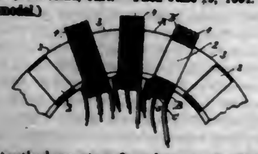
9. An armature for dynamo-electrical machines, comprising, in connection with bobbins of insulated wire, a foundation-ring grooved circumferentially on the inside, and a laminated core composed of ribbon of a width less than the distance between the bobbins, and also of wider ribbon notched to form teeth, the air-passages between the bobbins and the narrower ribbon and the grooves inside the foundation-ring being both in communication with the outside air through the spaces between the bobbins separated by said teeth, substantially as described.

10. An armature for a dynamo-electrical machine, having beyond the bobbins projecting surfaces, which by contact with the poles may keep the bobbins from contact therewith, substantially as described.

11. An armature for a dynamo-electrical machine, having on the core teeth or projections integral with said core and projecting beyond the bobbins toward the field-poles to protect the bobbins from contact therewith, substantially as described.

12. An armature-core consisting of a continuous strip of ribbon wound into superimposed layers and a row of bare or naked rivets or pins extending through such layers and located on a line of equipotential, substantially as set forth.

473,364. ARMATURE FOR DYNAMO-ELECTRIC MACHINES. SIDNEY H. SHORT, Cleveland, Ohio. Filed June 19, 1891. Serial No. 396,820. (No model.)



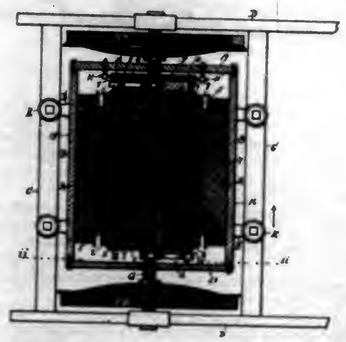
Claim.—1. A toothed armature for a dynamo-electrical machine, having two, at least, bobbins to a bobbin-space and provided with a branch conductor for a commutator connection united at an intermediate place to the bobbin-wire by a flat-lying joint which leaves the bobbin-wire practically continuous for winding, substantially as described.

2. An armature for a dynamo-electrical machine, provided with a branch conductor for a commutator connection united to the bobbin-wire by a flat-lying joint which leaves the bobbin-wire practically continuous for winding, substantially as described.

3. An armature for a dynamo-electrical machine, provided with branch conductors for commutator connections united to the bobbin-wire by soldered joints formed each of bared portions of the bobbin-wire and branch conductor, a split conducting-sleeve, and a wrapping of tape or non-conducting and binding material, substantially as described.

4. The joint for electric conductors, formed of bared portions of the wires inclosed in a split conducting-sleeve soldered on and wrapped with tape or non-conducting and binding material, substantially as described.

473,365. GEARLESS MOTOR FOR ELECTRIC-RAILWAY CARS. SIDNEY H. SHORT, Cleveland, Ohio. Filed June 24, 1891. Serial No. 397,267. (No model.)



Claim.—1. In a dynamo-electric machine, the combination, with its field-poles, of an open-center armature, armature-coils wound thereon, and a metal shell encircling the armature-coils, said shell or cylinder being supported in direct contact with the field-poles, whereby the latter constitute bearings for the armature, substantially as set forth.

2. The combination, with the driving-axle of a car, of a propelling-motor comprising an armature directly connected with the axle and encircling the same, said armature having its coils inclosed in a metal bearing which is supported in the poles of the field-magnet, substantially as set forth.

3. The combination, with the driving-axle of a car, of a propelling-motor provided with a yielding mounting and comprising an axially-placed and directly-connected armature having a metal bearing encircling its coils, and field-magnet poles in which said bearing is supported, substantially as set forth.

4. The combination, with the driving-axle of a car, of a propelling-motor inclosed in a casing surrounding the axle and yieldingly mounted on a frame supported by the axle, the armature being journaled in bearings at its periphery and arranged so as to insure a clearance between the axle and inside of the armature, substantially as set forth.

5. The combination, with the driving-axle of a car, of a casing encircling the axle and containing the field-magnets of a motor, said casing being yieldingly supported on opposite sides of the car-axle on a frame supported by the axle, and an open-center armature encircling the axle and constructed to form a clearance between its inner side and the axle, said armature having a peripheral bearing and yieldingly connected with the axle, substantially as set forth.

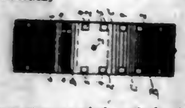
6. The combination, with the driving-axle of a car, of a propelling-motor located and supported in a casing which surrounds the axle and is yieldingly mounted on a frame supported by the axle-boxes, said armature having its coils inclosed within a metal shell or cylinder which is mounted in the field-magnet poles, substantially as described.

7. The combination, with the driving-axle of a car, of a propelling-motor disconnected from the car-body and yieldingly mounted on a frame supported by the axle-boxes, said motor comprising an open-center armature journaled in bearings at its periphery and provided with a driver attached to the armature-core, substantially as set forth.

8. The combination, with the driving-axle of a car, of a casing encircling the axle and inclosing the propelling-motor therein, said motor comprising field-magnets attached to the casing, an open-center armature journaled at its periphery in the field-magnets, and a driving connection between the axle and armature-core, substantially as set forth.

9. The combination, with the driving-axle of a car, of a casing encircling the axle and containing a propelling-motor, said motor comprising an armature having its coils inclosed in a metal shell which is mounted in contact with the field-magnet poles, substantially as set forth.

473,366. ARMATURE FOR ELECTRIC GENERATORS OR MOTORS. SIDNEY H. SHORT, Cleveland, Ohio. Filed June 24, 1891. Serial No. 397,268. (No model.)



Claim.—1. A ring-armature consisting of a laminated core having radial grooves extending through the core from its inner to its outer periphery at each of its sides, each groove being of sufficient size to receive a bobbin, narrow open slots being formed in the sides of the core and communicating with said grooves, said slots being of a width sufficient to allow of the insertion of a single strand of the bobbin, and means for closing the slots after the bobbins have been secured in place, substantially as set forth.

2. A ring-armature consisting of a laminated core having radial grooves rectangular in cross-section extending through the core from its inner to its outer periphery and at each of its sides, each groove being of sufficient size to receive a bobbin, narrow slots being formed in the sides of the core and communicating with said grooves, said slots being of a width sufficient to allow of the insertion of a single strand of the bobbin, and insulating medium for closing the slots after the bobbins have been inserted in the radial grooves, substantially as set forth.

473,367. DYNAMO-ELECTRIC MACHINE. SIDNEY H. SHORT, Cleveland, Ohio. Filed June 24, 1891. Serial No. 397,269. (No model.)



Claim.—1. A dynamo-electric machine having the armature turning in sliding contact with the field-poles, substantially as set forth.

2. A dynamo-electric machine in which the field-poles are presented to the periphery of the armature, having the armature journaled at its periphery in bearings constituted by the field-magnets, substantially as described.

3. A dynamo-electric machine having the armature journaled at its periphery in bearings constituted by the field-magnets and so arranged that the magnetic attraction opposes the gravity of the armature, substantially as described.

4. A dynamo-electric machine having the armature journaled at the periphery in bearings constituted by the field-magnets with the iron of the core in magnetic continuity with that of the field-poles, substantially as described.

5. A dynamo-electric machine having an armature turning in contact with the field-poles and provided with iron on said armature outside the bobbins, substantially as described.

6. A dynamo-electric machine having an armature turning in contact with the field-poles and provided with a continuous ring of iron on said armature outside the bobbins, substantially as described.

7. A dynamo-electric machine whose armature is provided with iron outside of the bobbins in sliding contact with the field-poles, substantially as described.

8. A dynamo-electric machine whose armature is provided with a continuous ring of iron outside of the bobbins in sliding contact with the field-poles, substantially as described.

9. A dynamo-electric machine having an armature turning in contact with the field-poles and provided with iron on said armature outside the bobbins and iron teeth or separators between the bobbins, substantially as described.

10. A dynamo-electric machine having an armature turning in contact with the field-poles and provided with a continuous ring of iron on said armature outside the bobbins and iron teeth or separators between the bobbins, substantially as described.

11. A dynamo-electric machine whose armature is provided with iron outside of the bobbins in sliding contact with the field-poles and iron teeth or separators between the bobbins, substantially as described.

12. A dynamo-electric machine whose armature is provided with a continuous ring of iron outside of the bobbins in sliding contact with the field-poles and iron teeth or separators between the bobbins, substantially as described.

13. A dynamo-electric machine whose armature is provided with iron outside of the bobbins in sliding contact with the field-poles and also with iron teeth or separators integral with the core between said bobbins and in magnetic continuity with said outside iron, substantially as described.

14. A dynamo-electric machine having an armature with a laminated core turning in contact with the field-poles and provided with insulation adapted to prevent the formation of circuits for eddy-currents through such contact, substantially as as described.

15. A dynamo-electric machine having a laminated armature-core provided with a continuous iron ring outside the bobbins insulated from the laminated core and turning in contact with the field-poles, substantially as described.

16. A dynamo-electric machine having a laminated armature-core provided with teeth between the bobbins and also with a continuous iron ring outside the bobbins insulated from the laminated toothed core and turning in contact with the field-poles, substantially as described.

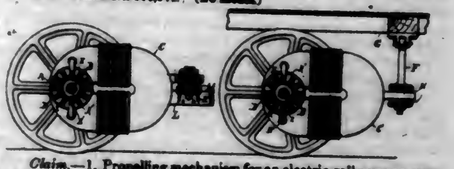
17. A dynamo-electric machine having the armature turning in contact with the field-poles and provided with means for lubricating the sliding bearing so formed, substantially as described.

18. A dynamo-electric machine having the armature journaled at the periphery in the field-magnets and provided with means for lubricating such peripherical bearing, substantially as described.

19. A dynamo-electric machine having a laminated toothed armature-core with iron outside the bobbins and insulated from the armature-core, turning in contact with the field-poles and provided with means for lubricating the sliding contact thus made, substantially as described.

20. A dynamo-electric machine having the armature journaled at the periphery in bearings constituted by the field-magnets and held by the magnetic attraction from endwise motion, substantially as described.

473,368. GEARLESS PROPELLING MECHANISM FOR ELECTRIC-RAILWAY CARS. SIDNEY H. SHORT, Cleveland, Ohio. Filed July 6, 1891. Serial No. 398,571. (No model.)



Claim.—1. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature, substantially as described.

2. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature and with supporting and holding means for the said field-magnets, substantially as described.

3. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith in contact with the poles of the field-magnets, substantially as described.

4. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith in contact with the poles of the field-magnets and field-magnets provided with journal-bearings at the periphery of the said armature and with supporting and holding means for the said field-magnets, substantially as described.

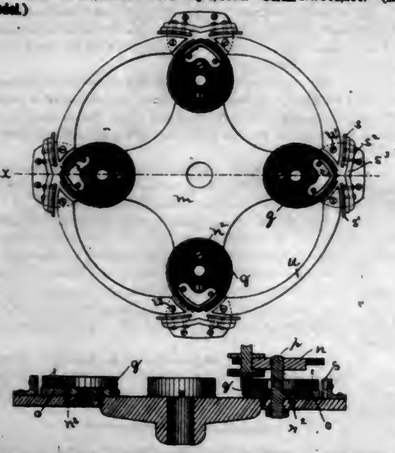
5. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith in peripherical contact with the field-poles and field-magnets provided with journal-bearings at the periphery of the said armature and with supporting and holding means for the said field-magnets, substantially as described.

6. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, a laminated armature mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature, substantially as described.

7. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, a laminated armature with insulated iron shell mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature, substantially as described.

8. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, a drum-armature mounted on said axle and rotating therewith in peripherical contact with the field-poles and field-magnets provided with journal-bearings at the periphery of the said armature and supporting and holding means for the said field-magnets, substantially as described.

473,369. CORD-MACHINE. GEORGE H. SPAULDING and FREDERICK L. MOORE, Norwich, Conn. Filed May 1, 1891. Serial No. 391,259. (No model.)



Claim.—1. In a braiding-machine, in combination, a notched internal gear, a spider bearing carrier-gears in mesh with the said internal gear, raised tracks detachably secured to said spider beneath the carrier-gears, a system of switches, as herein set forth, for transferring the travelers from carrier-gears to internal gear, and vice versa, and a traveler with a separable split foot adapted to engage the said track and switches, as and for the objects specified.

2. In a braiding-machine, in combination, an internal gear, a series of carrier-gears rotating within and meshing with said internal gear, tracks and switches, as herein set forth, for controlling the movements of the travelers, guard-rails *u*, detachably secured between the switches, and a traveler having a split foot adapted to engage the said tracks and switches, and also a curved surface on the outer side of said foot, the inward face of which is adapted to engage the said guard-rails, all substantially as and for the purpose specified.

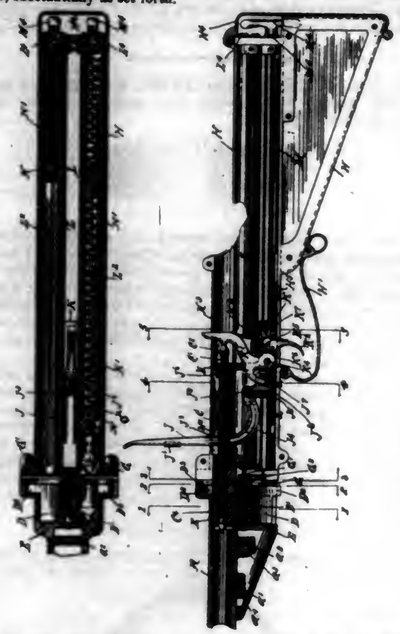
473,370. MAGAZINE-GUN. THOMAS J. THORP, Chicago, Ill. Filed May 27, 1891. Serial No. 394,293. (No model.)

Claim.—1. The combined stock and receiver made in two longitudinal halves secured together by screws or the like and having an inclosed cartridge-magazine extending to near the butt of the stock, having an opening for the insertion of cartridges, substantially as set forth.

2. The combination of the barrel, the breech-frame provided with an opening E, and the breech-block receiver with the cartridge-magazine and the revolving chambered cartridge-carrier journaled to revolve at the end of the barrel and in the breech-frame and having a part extending into the opening, whereby the carrier can be revolved and a cartridge or shell removed, substantially as set forth.

3. The combined receiver and stock having a chamber extending from the breech-frame to or near to the butt of the stock and a magazine located in said chamber and a plunger-rod provided with a projection, the magazine being slotted to receive the projection, a cartridge-forcing spring, and a follower, said follower having a part located in the path of said projection, substantially as set forth.

4. The magazine located in the combined receiver and stock, a pivoted plate accessible to the hand from outside said receiver, said plate being normally extended across the mouth of the magazine, and a spring adapted to hold the plate in such position in a yielding manner, substantially as set forth.



5. The combined receiver and stock, the two magazines extending about the whole length thereof, the breech-block and firing-pin located above said magazines, and the hammer pivoted in the receiver and located between the magazines, substantially as set forth.

6. The combined receiver and stock, the two magazines extending about the whole length thereof, the breech-block and firing-pin located above said magazines, and the hammer pivoted in the receiver and located between the magazines, said hammer normally extending through a slot in the receiver-wall and adapted to be moved into and entirely concealed within the receiver, substantially as set forth.

7. In a magazine-gun, the receiver, the breech-block and the hammer-frame, said block and frame being rigidly secured together and combined with mechanism for sliding them bodily in a right line in the receiver the length of a cartridge, and devices for locking the combined lock-frame and breech-block in their forward position, substantially as set forth.

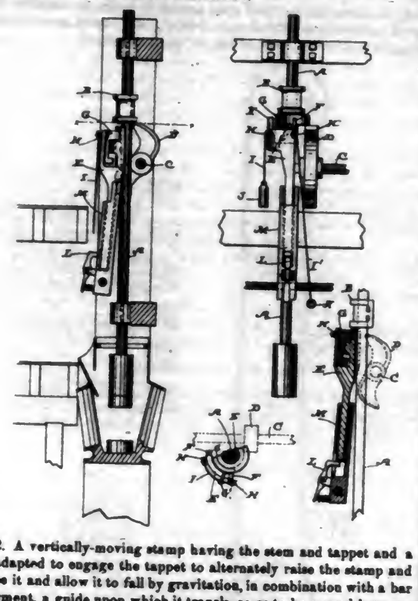
8. The combination of the receiver, the sliding hammer-frame having the breech-block attached thereto, and the lever pivotally secured to said frame and provided with slots J^4, the said breech-block having pins engaging the lever in said slots, whereby the swinging of the lever on its fixed pivot moves the block and the hammer-frame and hammer, substantially as set forth.

9. The combination of the receiver, the sliding hammer-frame having the breech-block attached thereto, and the lever pivotally secured to said frame and provided with slots J^4, said breech-block having pins engaging the lever in said slots, whereby the swinging of the lever on its fixed pivot moves the block and the hammer-frame and hammer, said hammer having a finger J^9 engaging a fixed pin in the receiver, whereby when the frame is moved to the rear the hammer is cocked, substantially as set forth.

10. The combined stock and receiver, the magazines located in said receiver and extending about its whole length, said magazines being provided with cartridge-moving springs and with removable plugs, the plungers adapted to compress the spring, and the hinged breech-plate to give access to the plugs and to the plunger-handles, substantially as set forth.

473,371. STAMP-MILL ATTACHMENT. LOUIS R. TULLOCH, Angel's, Cal. Filed July 1, 1891. Serial No. 398,169. (No model.)

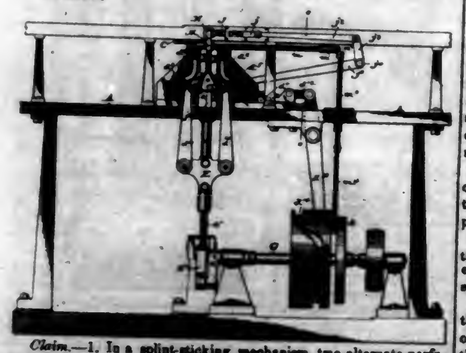
Claim.—1. The attachment for stamp-mills, consisting of the stamp having a stem, a tappet and a cam adapted to raise the tappet, a vertically-movable slide contiguous to the stamp-stem, a horizontally-movable bar or segment and means by which it is introduced between the point of the lifting-cam and the tappet upon which it operates, so that the cam will act upon this device to raise the stamp above the point ordinarily reached by the action of the cam, and a pawl or mechanism engaging a stop, whereby the stamp is retained in its elevated position, substantially as herein described.



2. A vertically-moving stamp having the stem and tappet and a cam adapted to engage the tappet to alternately raise the stamp and release it and allow it to fall by gravitation, in combination with a bar or segment, a guide upon which it travels, so as to be moved between the tappet and the cam or withdrawn therefrom, a cord or handle by which it is moved forward, and a weight or spring whereby it is retracted, substantially as herein described.

3. The rising-and-falling stamp-stem having a tappet, a cam-shaft and cam adapted to engage the tappet to alternately raise and release the stamp-stem, a vertically-moving slide traveling in a guide adjacent to the stamp-stem, a segment or bar adapted to move horizontally upon the top of the slide and stops between which its movement is determined, cords connected with the bar or segment, passing over guide-pulleys upon the upper part of the slide, one of said cords having a handle attached to it, whereby the segment or bar is drawn into position between the cam and the tappet, so that the cam acts upon it, and the other cord having a weight attached to it, by which the bar or segment is withdrawn out of engagement with the cam when the handle is released, together with a pawl engaging the lower end of the sliding guide, whereby the tappet upon the stamp-stem is retained at an elevation out of the line of travel of the cams, substantially as herein described.

473,372. MACHINE FOR STICKING MATCH-SPLINTS. JOHN H. WHITE, Washington, D. C. Filed Apr. 22, 1891. Serial No. 389,906. (No model.)



Claim.—1. In a splint-sticking mechanism, two alternate perforated carriers arranged in opposition to each other and in position to receive the opposite ends of intervening splints, in combination with means for first approximating said carriers and thereafter separating and turning them, whereby splints aligned in close order are seated in the carriers alternately and then separated and arranged in open order in two ranks.

2. In a splint-sticking mechanism, the two opposing carriers provided with grooves and alternated openings to receive the ends of the splints, in combination with means for first approximating said carriers and thereafter separating them, giving them a quarter-revolution, and finally moving them in parallel lines at right angles to the line of separation, whereby they are adapted to receive the splints in close order, to seat them alternately in the respective heads, arrange them in open order in two ranks, and insert them into a frame or other receiver.

3. In a splint-sticking mechanism, the combination of the grooved guides to sustain the splints at opposite ends and in close order, and carriers mounted to reciprocate and rotate, provided in their opposing faces with grooves to receive the ends of the splints from the guides and with alternate openings for the individual splints, a slatted sticking-frame, and means for reciprocating and rotating said carriers, substantially as described.

4. As a means of separating and arranging in line in open order a line of splints presented thereto in close order, two opposing relatively-movable carriers provided in their opposing faces with grooves to receive the ends of the splints and at the base of the grooves with alternated openings to receive the individual splints, whereby the approximation of the carriers is caused to seat the splints in their openings alternately, so that when the carriers are separated the alternate splints will be retained and carried in open order by the respective carriers.

5. In a splint-sticking mechanism, the two grooved and perforated carriers, the cheek-plates provided with angular slots to guide said carriers, the reciprocating cross-head and its connection for moving the carriers in their guides, mechanism for moving the guides of one carrier to and from those of the other carrier, a slatted frame to receive the splints, and mechanism for advancing the frame step by step in position to receive the splints from the carriers.

6. In a splint-sticking mechanism, grooved guides B B' to sustain the ends of the splints, a feed dog or carrier to advance the splints laterally through and beyond the guides, the grooved and perforated carriers to receive the splints from the guides, mechanism for reciprocating and rotating the carriers, a frame to receive the splints from the carriers, and means for advancing the frame step by step, whereby the splints arranged in line in close order are automatically inserted in open order into the receiving-frame.

7. In combination with the grooved and perforated splint-carrier D, a reciprocating block d^9, provided with ejector-pins, and mechanism, substantially as shown, for giving the carrier a quarter-revolution and advancing and retracting the ejector-pins as the carrier is moved from one extreme to the other.

8. In combination with the grooved and perforated carrier D to receive the splints, having trunnions d^8, the sliding ejector-block provided with trunnions d^8, the intervening spring, the cheek-plates having angular slots to receive the trunnions, and the reciprocating arms d^{10}, connected to the trunnions of the ejector-blocks, whereby the carriers are turned from a horizontal to a vertical position and the ejectors finally operated to deliver the splints in an upward direction.

9. In a splint-sticking mechanism, a slatted receiving-frame having its slats or bars urged together by springs, in combination with an inserting or sticking device to introduce the splints endwise between the slats, and mechanism for automatically and momentarily separating the slats during the insertion of the splints, whereby the shattering of weak or cross-grained splints is prevented.

10. The slatted frame having its slats pressed together by springs, in combination with the reciprocating carrier to present the splints endwise between the slats, means for momentarily separating the slats to admit the splints, an ejector to force the splints endwise from the carrier, and operating devices, substantially as shown, timed to effect the separation of the slats, the insertion of the splints between them, the closing of the slats, and the withdrawal of the carrier in the order named.

11. In a splint-sticking mechanism, the receiving-frame consisting of the slats and their connecting-rods and springs, in combination with the movable dogs or arms M, arranged to act between the slats at opposite ends.

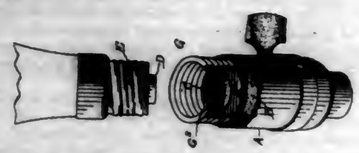
12. In a splint-sticking machine, the receiving-frame consisting of the series of parallel slats, two rods passing through said slats at each end, and springs connected to the ends of the rods, substantially as shown.

13. In a splint-sticking machine, a receiving-frame consisting of the slats or bars arranged to leave spaces or openings between their outer ends, in combination with connecting-rods and springs, whereby the frames are adapted for the co-operation of the separating devices and the feed-dogs with the ends of the slats.

14. In a splint-sticking machine, the combination of the grooved guides to sustain the ends of the splints, the reciprocating carrier, and the feed-dog b^2, pivoted thereto, the grooved dog-controlling bar b^3, and mechanism for reciprocating the carrier and for raising and lowering the controlling-bar, as described, whereby the dog is advanced in an elevated position and retracted in a depressed position.

15. In a splint-sticking mechanism, the combination of a carrier to present the splints to a frame or holder, said carrier provided with holes to receive the individual splints, and means for forcing the heads of the splints into said holes, whereby the head is reduced in size to receive the composition.

478,373. INCANDESCENT-ELECTRIC-LAMP SOCKET. CRAIG R. ARNOLD, Sharon Hill, Pa. Filed Dec. 17, 1891. Serial No. 415,294. (No model.)



Claim.—1. The combination, substantially as described, of a lamp-holder having a contact-terminal consisting of an attached spiral spring constituting a screw-threaded socket for attachment of the lamp and having its turns free or disconnected from one another at the open or socket end, and the lamp having a metal screw contact-terminal formed on or attached to its neck or base and adapted to screw into and out of the said spiral-spring contact, as and for the purpose described.

2. In a socket or holder for incandescent lamps, the combination, substantially as described, with a suitable insulating-base, of a metal ring fastened thereto and a spiral spring projecting from the ring and constituting a contact-terminal of the socket or holder, and a lamp having a screw-threaded metallic collar constituting a contact-terminal of the lamp and adapted to screw into and out of the open end of the spring-socket formed by said spiral spring, as and for the purpose described.

3. In a socket or holder for incandescent lamps, the combination, substantially as described, of two attached socket-terminals, one consisting of a spiral spring forming at its outer end a screw-threaded spring-socket, the turns of which are adapted to contract or to be sprung open, as described, the other consisting of a central projecting contact-stud within said spring-socket, and an incandescent lamp having two contact-terminals, one consisting of a screw-threaded collar adapted to engage with the turns of the spiral spring at its contractible and expansible open end and the other consisting of a stud or projection adapted to engage with and rock upon the central projection within the spiral spring upon the holder.

4. In a holder for incandescent lamps, a contact and socket consisting of a spiral spring G, having at its outer free end a stud G^2, by which the spirals may be sprung apart, in combination with the lamp having a contact-terminal adapted to screw into and out of the open end of the spring, as and for the purpose described.

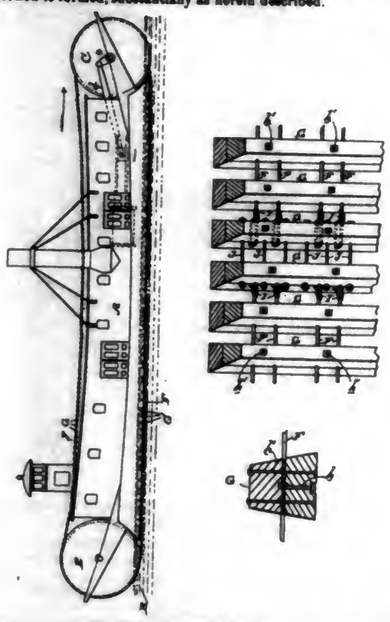
5. In a holder for incandescent electric lamps, the combination, substantially as described, with a plate or support of insulating material, of a ring F, mounted thereon, the spiral spring G, attached to said ring and having a stud G^2, a central projecting contact-stud C, also mounted on the holder, but insulated from the ring, and an incandescent electric lamp having contact-terminals D and E, adapted to engage with the contacts G and C upon the holder, as and for the purpose described.

478,374. PROPELLER. JOHN T. BALDWIN, Petaluma, Cal. Filed July 25, 1891. Serial No. 400,756. (No model.)

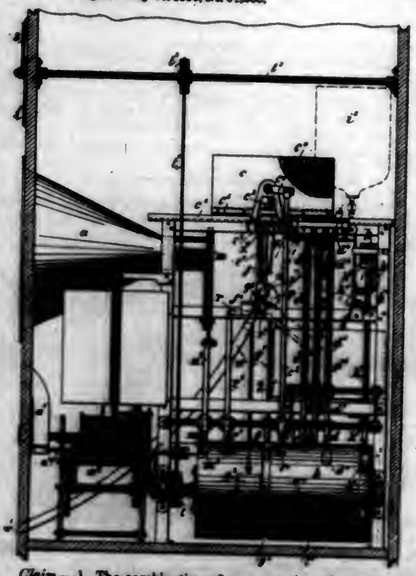
Claim.—1. A propeller for vessels, consisting of drums at the bow and stern of the vessel, the series of endless parallel wires or cables passing over said drums and longitudinally under and above the vessel, the transverse paddles formed of two parts bolted together and having the wires or cables passing through them, and the bolts A, passing into the paddle-sections and having hooked inner ends embracing the wires or cables, substantially as herein described.

2. A propeller consisting of drums at the bow and stern of the vessel, an endless belt located in the middle length of the vessel from end to end thereof and passing around the drum and above and below the vessel, said belt consisting of parallel wires or cables and the two-part paddle-sections, through the central portions of which the wires or cables pass, whereby the paddles extend each side thereof and form double paddles, and means for securing the paddle-sections, substantially as herein described.

3. A propeller for vessels, consisting of drums at the bow and stern of the vessel, the series of endless parallel wires or cables passing over said drums and longitudinally under and above the middle length of the vessel, and the transverse two-part paddles secured together and grooved at their meeting surfaces to receive the wires or cables, said wires or cables having their ends passed through the paddles and thence returned and twisted upon themselves, whereby an adjustable connection is formed, substantially as herein described.



478,375. COIN-OPERATED PHOTOGRAPHIC APPARATUS. WILHELM H. C. BERRITT, Hamburg, Germany. Filed Apr. 20, 1891. Serial No. 390,899. (No model.) Patented in France July 16, 1890, No. 207,010, and in Belgium July 16, 1890, No. 91,285.



Claim.—1. The combination of an intermittently-moving plate-holding box or reservoir c, an oscillating plate-receiving frame f, pivoted to swing from a perpendicular to a horizontal position and conversely, a rotating drum b, and the lever g, operated by the drum for rocking the plate-receiving frame on its pivotal support while the plate is being subjected to the action of the developing, fixing, and coloring solutions, substantially as described.

2. In an automatic apparatus for producing and delivering photographic pictures in exchange for coin deposited therein, the combination of a rotated time or gage drum b, the levers d, l, and v, bearing upon the said drum b, the levers d^3, l^3, and v^3, the pinch cocks or clamps d^4, l^4, and v^4, and nozzles d^5 l^5 v^5, attached to a hose communicating, respectively, with the reservoirs l', containing the solutions for developing, fixing, and coloring the picture, and the frame f, carrying the sensitized plate, substantially as set forth.

3. In an automatic apparatus for producing and delivering photographic pictures in exchange for coin deposited therein, the combination of a rotated time or gage drum b, a lever k', bearing upon said drum, the rod k^4, rose k, and pinch cock or clamp k^5, attached to a hose or flexible pipe of a water-conduit, and the oscillated frame f, carrying the sensitized plate, substantially as set forth.

4. In an automatic apparatus for producing and delivering photographic pictures in exchange for coin deposited therein, the combination of the frame f, carrying the sensitized plate and being caused to oscillate by a time or gage drum for the purpose specified, a lever r', bearing upon said drum, the bipartite support p p', the passage w', and the delivery-chute w, substantially as and for the purpose set forth.

478,376. BRACKET AND SUPPORTING DEVICE FOR RAILINGS. ARTHUR E. BRIGGS, Cincinnati, Ohio, assignor to the Post & Company, same place. Filed Nov. 11, 1891. Serial No. 411,599. (No model.)

Claim.—1. A bracket or support for railings, &c., consisting of an outwardly-extending arm and a compressible split or divided collar, so as to provide separate adjustment to the meeting ends of the rail-sections.

2. In a bracket for supporting railings, balustrades, &c., the combination of the outwardly and upwardly extending arm D and the collar C, subdivided at H, as shown, and provided with separate extensions I and J, all arranged as and for the purposes set forth.

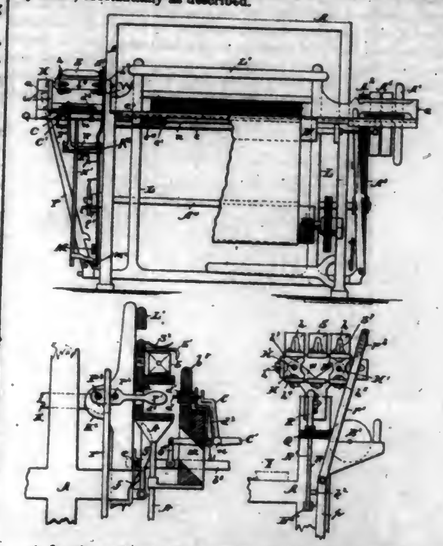
478,377. SHUTTLE-SUPPLYING MECHANISM FOR LOOMS. JOHN C. BROOKS, Paterson, N. J., assignor to George Draper & Sons, Hopedale, Mass. Filed May 9, 1891. Serial No. 392,236. (No model.)

Brief.—When the weft becomes exhausted from the cop in the bobbin, a cam, acted upon by a spring, moves a small lever pivoted in the shuttle, and this lever, acting through devices similar to an ordinary stopping mechanism, operates to introduce a fresh shuttle from the carrying-frame at the time the spent shuttle is expelled.

Claim.—1. The combination, with the lay-swords, the lay-beam, and shuttle-boxes of a loom, of the rod N', supporting the shuttle-boxes, the lever m^3, the vertical rod p, the bracket Q, the angle-lever R, engaged in a slot in said bracket and connected at its short end to the vertical rod p, and means for releasing said lever R to allow the upper shuttle-box to descend to the level of the raceway, substantially as and for the purpose set forth.

2. The combination, with the lay-swords, lay-beam, and shuttle-boxes of a loom, of the rod N', supporting said shuttle-boxes, the lever m^3, and vertical rod p, the bracket Q, having a slot therein, the angle-lever R, adapted to be engaged in a notch in the slot and connected at its short end to the vertical rod p, the lever p', the shuttle-carrier, the pawl carried by said lever p' and adapted to engage with the shuttle-carrier, the sector-cam arranged on the bottom shaft, the lever t, pivotally secured to the rod p and adapted to be moved by said sector-cam, and means for releasing the angle-lever R to actuate the several parts, substantially as and for the purpose set forth.

3. In a loom, the shuttle-rack, the rod N', supporting said rack and adapted to move the same vertically, the lay-beam having a slot therein, and the feathered lever f', arranged to operate through a slot in the lower shuttle-box to expel the shuttle through the slot in the lay-beam, substantially as described.



4. In a loom, the combination of the aligned brackets W W^2, the sprocket-rollers journaled in bearings in said brackets, the belt or carrier comprising a series of cards adapted to travel over said rollers, the spring-controlled clips pivoted in lugs k^3 on the cards, and means for turning said rollers, substantially as described.

5. In a loom, the belt or carrier comprising a series of cards, the links connecting said cards, and the spring-controlled clips carried by the cards at opposite ends thereof to hold the shuttles, substantially as described.

6. In a loom, the combination, with brackets W W^2, and the sprocket-rollers journaled in bearings in said brackets, of the shuttle-carrier arranged to run on the rollers, the lever p', the pawl p^3, carried by said lever and adapted to engage with the belt or carrier to move the same forward, and means for automatically elevating said lever and pawl to feed the shuttles forward, substantially as and for the purpose set forth.

7. In a loom, the combination of the shuttle-rack, the supporting-rod, the lever m^3, the vertical rod p, the bracket Q, having a slot therein, the angle-lever R, adapted to engage a recess in the slot and connected at its short end to the rod p, the shuttle-carrier, the lever p', carrying a pawl p^3, arranged to engage with said carrier, the sector-cam, and the lever t, pivotally secured to said rod p and adapted to be moved by said sector-cam on the bottom shaft, substantially as and for the purpose set forth.

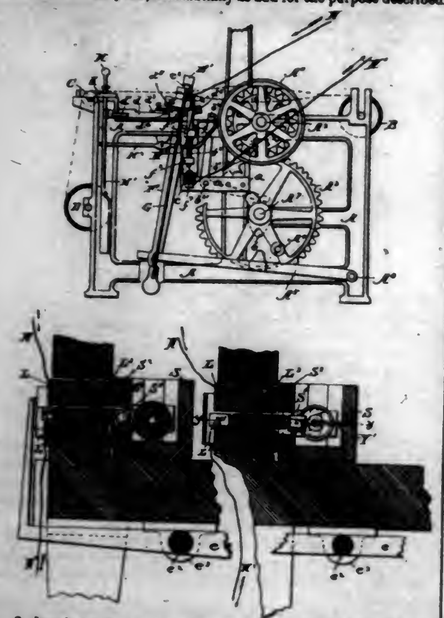
8. In a loom, the combination, with a shuttle-rack, a stationary box-front b^2, the binder-swells d d', arranged in a slot in said front, the pin 21, secured on the front, the finger d^3, carried thereby and arranged to engage with the swell d', the protector-rod c, the lever b^3, pivoted on said rod and adapted to be operated by connections with the finger d^3, the rod n, and the finger C, carried by said rod and arranged in engagement with the swell d, substantially as and for the purpose set forth.

478,378. ELECTRIC STOP-MOTION FOR LOOMS. JOHN C. BROOKS, Paterson, N. J., assignor to George Draper & Sons, Hopedale, Mass. Filed May 14, 1891. Serial No. 392,779. (No model.)

Brief.—The head of the bobbin is wound with wire, and a contact-maker is pivoted within the shuttle and is adapted to rest on the weft covering the head of the bobbin. When the weft is exhausted, the contact-maker, resting on the wires on the head of the bobbin, completes an electric circuit. A magnet attracts an armature connected with the shipping mechanism and brings the hinged end of a slide into the path of a vibrating lever to actuate the shipping mechanism.

Claim.—1. In a loom, the combination, with a supporting-frame and driving mechanism, of a bell-crank lever fulcrumed on the supporting-frame, a cam secured on a suitable shaft and adapted to operate said bell-crank lever, a shipping-lever, a bar mounted on the supporting-frame at one side of the shipping-lever and adapted to move

longitudinally thereon, a slotted lever pivoted at one end to said bar, an armature connected at one end with the slotted lever, a spring adapted to normally hold the armature and the slotted lever in an elevated position, a shuttle-box having an electric connection with one pole of a battery or generator, a magnet having an electric connection with the other pole of the battery or generator and with the shuttle-box and adapted to move the slotted lever into the path of one arm of the bell-crank lever, and a shuttle adapted to complete the connection between said poles, substantially as and for the purpose described.



2. In a loom, the combination, with a supporting-frame and driving mechanism, of a bell-crank lever fulcrumed on the supporting-frame, a cam mounted on a shaft and adapted to operate the bell-crank lever, a shipping-lever, a bar movably supported on the supporting-frame and having at one end an angular arm adapted to be forced against the shipping-lever, a slotted lever pivoted to the other end of said bar, an armature supported in suitable guides and having one end engaged with the slotted lever and a brass stud on its other end, a coiled spring fitted around said armature between a shoulder thereon and one of its guides, a shuttle box having an electric connection with one pole of a battery or generator, a magnet having an electric connection with the other pole of the battery or generator and the shuttle-box, and a shuttle adapted to complete the connection between said poles, substantially as and for the purpose described.

3. In a loom, the combination, with a supporting-frame and driving mechanism, of a bell-crank lever fulcrumed on the supporting-frame, a cam carried by a suitable shaft and adapted to contact with one arm of said bell-crank lever, shipping mechanism carried by the supporting-frame at one side of the bell-crank lever, an armature connected to said shipping mechanism, a double swell, a shuttle-box adapted to electrically connect the sections of the swell, a magnet having an electric connection with one pole of a battery or generator and with one of the swells, electric connections between one pole of the battery or generator and the other swell, and a shuttle adapted to complete the connection between said poles, substantially as described.

4. In a loom, the combination, with a supporting-frame and driving mechanism, of shipping mechanism mounted on the supporting-frame, a bell-crank lever fulcrumed on the frame and adapted to operate the shipping mechanism, a cam carried by a shaft and adapted to contact with one arm of the bell-crank lever, a swell having electric connection with one pole of a battery or generator and provided with a slot, a contact-swell pivoted in said slot, a shuttle adapted to electrically connect the two shells, and a magnet connected with one pole of a battery or generator and with the contact-swell, substantially as described.

5. In a loom, the combination, with a supporting-frame and driving mechanism, of shipping mechanism mounted on the supporting-frame, a bell-crank lever fulcrumed on the frame and adapted to operate the shipping mechanism, a cam carried by a shaft and adapted to contact with one arm of the bell-crank lever, a swell having electric connection with one pole of a battery or generator and provided with a slot, metallic plates attached to the face of said swell on opposite sides of the slot therein, a contact-swell pivoted in the slot in the main swell, a shuttle adapted to electrically connect the swells, and a magnet having electric connection with one pole of a battery or generator and with the contact-swell, substantially as described.

6. In a loom, the combination, with a supporting-frame and driving mechanism, of shipping mechanism, a bell-crank lever fulcrumed on the supporting-frame and adapted to operate the shipping mechanism, a cam carried by the shipping mechanism and adapted to contact with one arm of the bell-crank lever, an armature connected with the shipping mechanism, a swell having electric connection with one pole of a battery or generator and having a longitudinal slot, metallic plates secured in the face of the swell on opposite sides of the slot therein, a contact-swell pivoted in the slot in the main swell, a shuttle having a longitudinal slot in one face, a spring-pressed contact-maker pivoted in the walls of said slot, a contact-plate secured in the face of the shuttle around the slot therein and having electric connection with the pivoted contact-maker, and a magnet having electric connection with one pole of a battery or generator and with the contact-swell, substantially as described.

7. In a loom, the combination, with a supporting-frame and driving mechanism, of shipping mechanism, a bell-crank lever fulcrumed on the frame and adapted to operate the shipping mechanism, a cam carried by a shaft and adapted to contact with one arm of the bell-crank lever, an armature connected to the shipping mechanism, a swell having electric connection with one pole of a battery or generator and provided with a longitudinal slot, conducting-plates attached to one face of the swell on opposite sides of the slot therein, a spring-pressed contact-swell pivoted in the slot in said main swell, a shuttle provided with a longitudinal slot in one face, a spring-pressed contact-maker pivoted in the walls of said slot, a metallic plate attached to one face of the casing around the slot therein, a pin connected at one end to said metallic plate and extending across the interior of the shuttle and carrying the shuttle-tongue, a quill fitted on said tongue and having a wire helix near one end, metallic clips connected to the transverse pin in the shuttle and adapted to contact with the wire helix on the quill, and a magnet having electric connection with one pole of a battery or generator and with the contact-swell, substantially as described.

473,379. BOTTLE OR SIMILAR VESSEL. JAMES R. BROWNE, London, England, assignor to Richard Robert Hunt and James and Marshall Updill, same place, and Walter James Hunt, Wellington, New Zealand. Filed Feb. 2, 1892. Serial No. 420,061. (No model.) Patented in England Feb. 24, 1891, No. 3,390.



Claim.—1. A bottle having a valve C and a valve-protector B, located wholly within its neck, a filling-orifice D in its bottom portion for filling the bottle while the neck and protector are in position, and a plug E, sealed in position to close the filling-orifice after the bottle is filled, substantially as described.

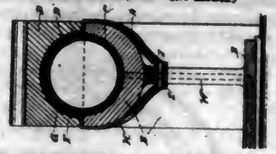
2. A bottle having a valve C and a valve-protector B, located wholly inside its neck, a hollow projection J in its bottom portion, provided with a filling-orifice D, and a plug E, secured in the hollow projection to close the filling-orifice after the bottle is filled, substantially as described.

3. A bottle having its interior formed integral with a contraction to constitute a valve-seat, a valve seating on the valve-seat, a valve-protector connected to and moving with the valve and located wholly inside the bottle-neck above the valve, a filling-orifice in the bottom portion for filling the bottle, and a plug E, secured in position to close the filling-orifice after the bottle is filled, substantially as described.

4. A bottle having a valve C in its neck, a protector B, located wholly inside the bottle-neck and rigidly connected with the valve to move therewith as it opens and closes, a filling-orifice D in the bottom portion for filling the bottle while the valve and protector are in the bottle-neck, and a plug E, secured in position to close the filling-orifice after the bottle is filled, substantially as described.

5. A bottle having its neck formed with lower and upper contractions A and B^3, a valve C, seating on the lower contraction, a valve-protector B, located above the valve and retained in the bottle-neck by the upper contraction, a hollow projection J, with a filling-orifice D, and a plug E, secured in the hollow projection to close the filling-orifice after the bottle is filled, substantially as described.

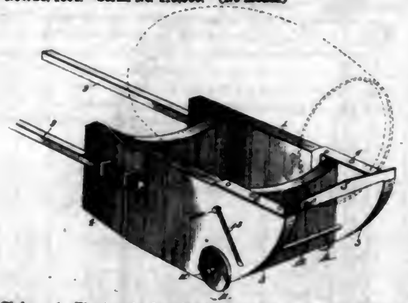
473,380. PNEUMATIC CLUTCH. JAMES BRUSH, Oakland, Cal. Filed Aug. 18, 1891. Serial No. 403,027. (No model.)



Claim.—1. A two-part clutch, one member of which is connected with the driving and the other with the driven part, and grooves made in the adjacent meeting faces of the two parts of the clutch, an expansible tube fitting the groove or channel, and a means for supplying and exhausting air, in combination with the shoe fitting the exterior of the tube and between it and the outer surface of the clutch, substantially as herein described.

2. The two-part clutch, one member of which is connected with the driving and the other with the driven part, grooves made in the adjacent meeting faces of the two parts of the clutch, and an expansible tube fitting said groove, in combination with an exterior flexible metallic shoe intermediate between the tube and the adjacent moving surface, lugs extending from said segment around the inner portion of the clutch, and springs acting through said lugs to hold the shoe in contact with the exterior of the tube, substantially as herein described.

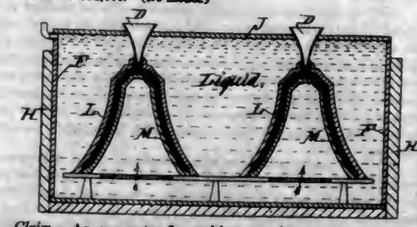
473,881. BARREL-TRUCK. JOHN M. CARR, Knobnoster, Mo. Filed Nov. 23, 1891. Serial No. 413,369. (No model.)



Claim.—1. The herein-described combined truck and stand, the same consisting of the opposite side bars, rest-bars connecting the two, said side bars being provided with handles and having their front ends beveled, as at 4, and their rear ends rounded, as at 3, the axle passed through the side bars, and the wheels mounted on the axle and having their peripheries extended beyond the rounded edges of the side bars, substantially as specified.

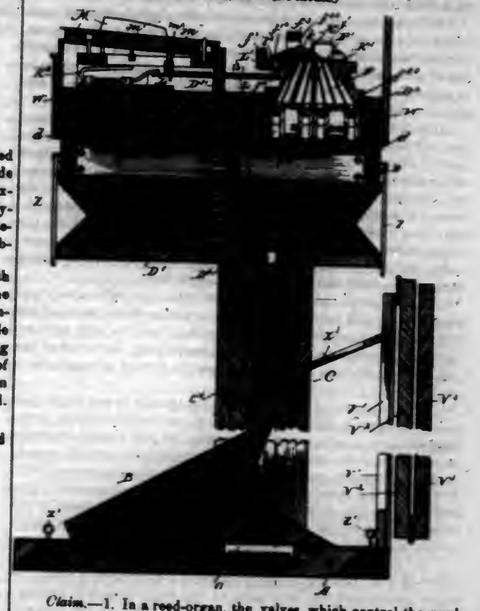
2. The herein-described combined barrel stand and truck, the same comprising the opposite side bars having front beveled rest ends 4 and rear rounded corners 3, the axle connecting the side bars, the wheels mounted on the axle and having their peripheries extending beyond the curved ends thereof, the transverse curved supporting-bars 2, the metal nose 5, projecting rigidly from the front ends thereof, the shafts 12, terminating in the arms 13, the supports 14, the keepers 8, and removable handles 9, substantially as specified.

473,382. METHOD OF AND APPARATUS FOR MAKING METAL CASTINGS. WILLIAM L. CLARK, Sioux City, Iowa. Filed May 8, 1891. Serial No. 392,079. (No model.)



Claim.—An apparatus for making metal castings, comprising a water-receptacle, a two-part metal mold removably arranged within the receptacle, means for supporting the two-part mold above the bottom of the receptacle or vessel, and an ingate detachably connected with the two-part mold, to operate in the manner set forth, for the purposes stated.

473,383. REED-ORGAN. MELVILLE CLARK, Chicago, Ill. Filed Oct. 30, 1891. Serial No. 410,663. (No model.)



Claim.—1. In a reed-organ, the valves which control the reeds seating against the air-pressure by which the reeds are operated and weighted to adapt them to be seated by gravity only, substantially as set forth.

2. In a reed-organ, the valves which control the reeds seating against the air-pressure by which the reeds are operated and weighted to adapt them to be seated by gravity only, the manual keys, and the levers by which they operate the valves, the distance of the weights on said valves from the hinges of the valves being proportional to the leverage of their respective keys, whereby the touch of long and short keys is equalized, substantially as set forth.

3. In an organ, in combination with the manual keys, the valve-operating levers actuated by said keys, provided with counter-weights on their ends remote from the keys to counterbalance the weight of the latter and uphold the keys independently of the pressure which seats the valve, substantially as set forth.

4. In an organ, in combination with the manual, the valve-operating levers and the valve operated thereby, the levers having on their arms remote from the keys plungers to operate said valve, said plungers being in the form of weights to counterbalance the keys, substantially as set forth.

5. In combination with the valves adapted to seat by gravity only and weighted for that purpose, the levers which actuate them and the keys of the manual which actuate the levers, said levers being weighted on their arms remote from the keys to counterbalance the latter, substantially as set forth.

6. In a reed-organ comprising a plurality of series of reed-chambers corresponding to the same series of operating-keys, the reed-chambers of the several series all opening endwise at the same horizontal plane, corresponding individuals of the several series being in line fore and aft, in combination with valves extending fore and aft over the ends of corresponding individuals of the several series and weighted to cause them to seat by gravity thereover, substantially as set forth.

7. In a reed-organ comprising a plurality of reeds and reed-chambers corresponding to the same series of operating-keys, the corresponding individuals of the several series terminating endwise at the same plane and converging from their ends remote from said plane, and the valves which control them seating at said plane, whereby the valved throats or mouths of said chambers are brought into a limited compass, while their opposite ends may be expanded to accommodate the vibration of the reeds, substantially as set forth.

8. In a reed-organ, the reed-chambers of each series which corresponds to a series of operating-keys located side by side and terminating endwise at the same plane and individually valved at said plane, said chambers varying in length according to the length of their respective reeds, and the mutes pertaining to such series at the opposite

ends of said chambers extending in a direction inclined to the plane of the individually-valved ends, substantially as set forth.

9. In a reed-organ, in combination with a principal set of reed-chambers, a set of sub-bass chambers parallel with the principal set, valves of the principal set, and valves of the sub-bass set, the valves of one of said sets having, respectively, rigid extensions which directly engage the corresponding valves of the other set, whereby the principal set opens to the sub-bass set, substantially as set forth.

10. In a reed-organ, in combination with a series of reed-chambers pertaining to a given series of keys of the manual, a further series of reed-chambers located parallel with the first series, the individuals of the second series being wider than the individuals of the first series, whereby said second series occupies greater extent parallel with the manual than the first series, and corresponding individuals are successively from a selected point more and more out of fore-and-aft line, the valves which pertain to one of said series of chambers having, respectively, rigid oblique extensions which directly engage the corresponding valves of the other series, substantially as set forth.

11. In a reed-organ, in combination with a principal set of reed-chambers, a set of sub-bass chambers parallel with the principal set, the valves of the sub-bass set being hinged at their rear ends and having rigid extensions which overhang, respectively, the valves of the principal set, whereby the latter operate the former, substantially as set forth.

12. In a reed-organ, the manual keys and the levers which they actuate to operate their respective reeds, the octave-coupling levers mounted on a coupling-board and having one arm lodged above the forward ends of the manual levers of the keys to be coupled, respectively, and the other arm projecting freely under the keys, respectively, with which the coupling is to be effected, the coupling-board being hinged at its edge proximate to the vertical plane of lodgment of the coupling-levers on the manual levers, and the stop-action pertaining to said coupling-board, substantially as set forth.

13. In an organ, in combination with the mutes, lever-arms by which they are operated, located outside of the chamber in which the mutes are situated, said lever-arms having deflected ends *h*, the stop-rods and the levers H^3, operated thereby and engaging the deflected ends of the mute-operating lever-arms, substantially as and for the purpose set forth.

14. In an organ, in combination with the pedal-bellows and the storage-bellows, the standards which support the action, constituting, also, the air-conduits from the pedal-bellows to the storage-bellows, said conduits consisting of sections hinged together and adapted to collapse inwardly, the abutting ends of such sections having yielding packing to adapt them to make air-tight junctions when erect, substantially as set forth.

15. In an organ, the base and the action-supporting standards adapted to collapse to lower the action toward the base, combined with a case having ends and back rigid with the base and extending high enough to inclose the action when the standards are collapsed, and a removable cover, substantially as set forth.

16. In an organ, the base and the action-supporting standards adapted to collapse to lower the action toward the base, combined with a case having ends and back rigid with the base, and the cover hinged to the upper edge of the back, substantially as set forth.

17. In a blast-organ, in combination with the storage-bellows, springs which are both collapsible and extensible, connected to the bellows, and adapted normally to hold the bellows partly collapsed, whereby they both resist the expansion of the bellows and cushion its collapse, substantially as set forth.

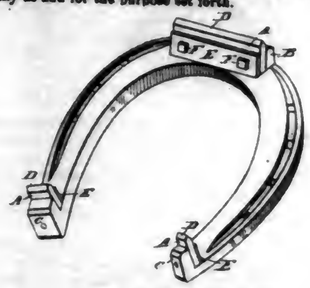
18. In a blast-organ, in combination with the storage-bellows, helical springs connected fixedly at one end and connected at the other end to the fluctuating side of the bellows, said springs adapted to be compressed and extended and at their normal condition of no tension holding the bellows partly collapsed, substantially as set forth.

19. In a blast-organ, the storage-bellows divided horizontally between its top and bottom sides, the helical springs E E, located within the lower section of the bellows, connected at their upper ends to the bar F, which is rigid with the fixed portion of the lower section and at the lower ends to the fluctuating side of the bellows, substantially as set forth.

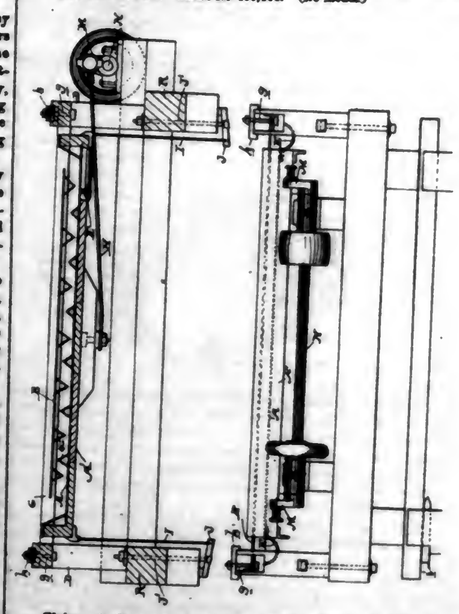
20. In an organ in combination with the action-frame, the pedal-bellows, the storage-bellows, the base which supports the pedal-bellows, the standards which support the action-frame and connect it to the base, said base and standards constituting the air-conduit from the pedal-bellows to the storage-bellows and being composed of sections hinged together and adapted to collapse inwardly, and suitable means for locking the action-frame to the base when the standards are collapsed, substantially as set forth.

473,384. HORSESHOE WITH DETACHABLE ICE-CALK. JOHN L. OSBORNE and CHARLES L. BENDER, St. Joseph, Mo. Filed Oct. 1, 1891. Serial No. 407,670. (Model.)

Claim.—The combination of a horseshoe provided with integral calks, detachable calks, and detachable braces with the bolts whereby the detachable parts are secured to the integral calks of the shoe, substantially as and for the purpose set forth.



473,385. AMALGAMATOR. WILTON R. DARROW, Amador, Cal. Filed Oct. 19, 1891. Serial No. 409,190. (No model.)



Claim.—1. In an amalgamator, a sluice having amalgamating-plates with longitudinal projections extending parallel with the flow of the material and with the projections of one plate entering the spaces between the projections of the other and means whereby one or both plates are given a lateral shaking motion, substantially as herein described.

2. In an amalgamator, a sluice consisting of amalgamated plates having longitudinal ridges extending parallel with the flow of material, arms by which said sluice is supported so as to be movable from side to side, a crank-shaft and cranks connected with the sluice, whereby a side vibrating motion is communicated to it, a stationary amalgamated plate having ridges projecting downwardly, said plate being supported above the vibrating one, so that its ridges project downwardly between those of the vibrating table, substantially as herein described.

3. In an amalgamator, a sluice consisting of an amalgamated trough having upwardly-projecting ridges extending longitudinally and parallel with the line of flow of the pulp, arms by which said sluice is supported, and adjusting mechanism whereby the grade of the sluice is regulated, a crank-shaft and cranks connected with the sluice, whereby a side oscillating motion is imparted thereto, a second amalgamated plate having downwardly-projecting ridges, means whereby said plate is supported in a fixed position above the vibrating one, with its ridges projecting downwardly between those of the lower table, substantially as herein described.

4. In an amalgamator, a sluice consisting of an amalgamated trough with upwardly-projecting ridges extending parallel with the line of flow of the pulp, arms by which said sluice is supported and adjusted, and a mechanism for imparting a side oscillating motion to the sluice, a second amalgamated plate with ridges projecting downwardly from it between the ridges of the lower plate, supports for said upper plate, and mechanism by which it is adjusted with relation to the lower plate, substantially as herein described.

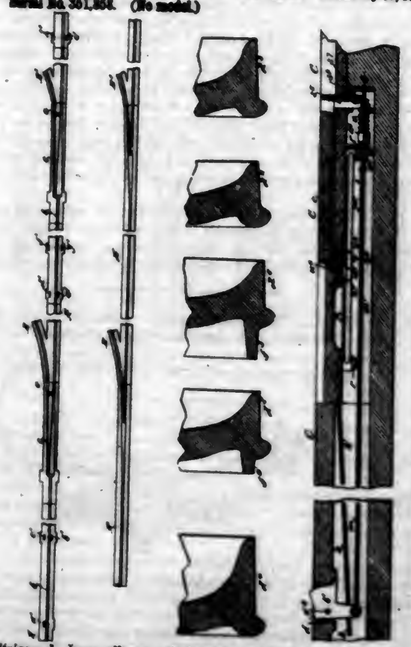
473,386. ELECTRIC BATTERY. JAMES E. BELEY, Laredo, Tex. Filed Jan. 27, 1891. Serial No. 379,289. (No model.)



Claim.—1. In an electric generator, a receptacle for steam, and means for admitting steam thereto, in combination with electrodes consisting of two parallel disks suspended within said steam-receptacle, electrodes of opposite polarity to the aforesaid electrodes arranged between the disks of the first-named electrodes, a shaft extending through the said receptacle upon which the latter electrodes are mounted, and means for rotating the said shaft, substantially as described.

2. In an electric battery, an electrode formed of two disks arranged parallel with each other and suitably secured together, an electrode of opposite polarity, consisting of a disk mounted upon a shaft and arranged to rotate between the disks of the first-named electrode, means for rotating said shaft, and means for conducting the electricity from the electrodes, substantially as described.

473,387. RAILWAY-SWITCH. CALEB K. GAREY, New York, N. Y., assignor of one-half to William White, same place. Filed May 15, 1890. Serial No. 351,858. (No model.)



Claim.—1. In a railway-switch system, the combination, with a switch-tongue and its operating mechanism, of a switch-key throwing the switch in one direction and a second switch-key located between said key and the switch-tongue and throwing the switch in the opposite direction, said switch-keys being operated by the car-wheels and located in different positions transversely to the rail, so that the second key is operated only by car-wheels having treads or flanges of greater width than required to operate the first key, and said keys and tongue being so located relatively to each other and to the car-wheels that a car may set the switch by the first key and reset the switch for itself by the second key, substantially as described.

2. In a railway-switch system, the combination, with a switch-tongue and its operating mechanism, of a switch-key throwing the switch in one direction and two switch-keys located between said key and the switch-tongue and throwing the switch in the opposite direction, said switch-keys being operated by the car-wheels, and the last-mentioned keys being located in position to be operated by car-wheels having, respectively, treads or flanges of greater width than required to operate the first-mentioned key, and said keys and tongue being so located relatively to each other and to the car-wheels that a car may set the switch by the first key and reset the switch for itself by one of the last-mentioned keys, substantially as described.

3. In a railway-switch system, the combination, with the main way, series of branch ways, and switch-tongues and operating mechanism, of switch-keys throwing successive switches in the same direction, and switch-keys located between said keys and their respective switches and throwing the latter in the opposite direction, said switch-keys being operated by the car-wheels and located in different positions transversely to the rail, so that the last-mentioned keys are operated only by wheels having treads or flanges of greater width than required to operate the first-mentioned keys for the corresponding switches, and said keys and tongue being so located relatively to each other and to the car-wheels that a car may set each of the switches by the first-mentioned keys and reset the switches for itself by the last-mentioned keys, substantially as described.

4. In a railway-switch system, the combination, with a switch-tongue and its operating mechanism, of a switch-key throwing the switch for the branch way and a second switch-key located between the branch-way key and the switch-tongue and throwing the switch for the main way, said switch-keys being operated by the car wheels and located in different positions transversely to the rail, so that the main-way key is operated only by car-wheels having treads or flanges of greater width than required to operate the branch-way key, and said keys and tongue being so located relatively to each other and to the car-wheels that a car may set the switch by the branch-way key and reset the switch for itself by the main-way key, substantially as described.

5. In a railway-switch system, the combination, with a switch-tongue and its operating mechanism, of a switch-key throwing the switch for the branch way and two switch-keys located between the branch-way key and the switch-tongue and throwing the switch for the main way, said switch-keys being operated by the car-wheels and the main-way keys being located in position to be operated by car-wheels having, respectively, treads or flanges of greater width than required to operate the branch-way key, and said keys and tongue being so located relatively to each other and to the car-wheels that a car may set the switch by the branch-way key and reset the switch for itself by one of the main-way keys, substantially as described.

6. In a railway-switch system, the combination, with the main way, series of branch ways, and switch-tongues and operating mechanism, of switch-keys throwing the successive switches for the branch ways, and switch-keys located between said branch-way keys and their respective switches and throwing the latter for the main way, said switch-keys being operated by the car-wheels and located in different positions transversely to the rail, so that the main-way keys are operated only by wheels having treads or flanges of greater width than required to operate the branch-way keys for the corresponding switches, and the branch and main way keys for the successive switches are operated only by car-wheels having treads or flanges of greater width than required to operate the keys for preceding switches, and said keys and tongue being so located relatively to each other and to the car-wheels that a car may set the switches by the branch-way keys and reset the switches for itself by the main-way keys, substantially as described.

7. A railway-switch system comprising a main way and series of branch ways, switch-tongues and operating mechanism, and switch-keys operated by the car-wheels and arranged in different positions transversely to the rail, whereby they are adapted to be operated by car-wheels having treads or flanges of different widths, the switch-keys being single or combined in pairs on opposite sides of the rail, and keys of the same pair being constructed to throw the switch in the same direction or in opposite directions, according to the location of the switch controlled thereby, substantially as described.

8. In a railway-switch system, the combination, with the rails, switches, and switch-keys operated by the car-wheels, of cars provided with wheels having treads of different widths for operating said switch-keys, said switch-keys and wheels being so constructed and arranged relatively to each other that each switch is set in one direction by the wheels of all cars passing the switch and in the opposite direction only by the wheels of certain cars, substantially as described.

9. The combination, with a railway-switch tongue and its operating mechanism, of a switch-key throwing the tongue in one direction and operated by the car-wheels, and a second switch-key located between said key and the switch-tongue and throwing the tongue in the opposite direction, said key being arranged to be operated only by the wheels of a portion of the cars operating the first key, substantially as described.

10. The combination, with a railway-switch tongue and its operating mechanism, of a switch-key throwing the tongue in one direction and operated by the wheels of all cars passing it, and a second switch-key located between said key and the switch-tongue and throwing the switch in the opposite direction, said key being arranged to be operated only by the wheels of certain cars, substantially as described.

11. In a railway-switch, a hollow structure underlying one of the rails and provided with a removable side, in combination with a switch mechanism located within said hollow structure, substantially as described.

12. In a railway-switch, the combination of a switch-tongue, a hollow structure underlying one of the rails in front of the heel of the tongue, a pair of pivoted bell-crank levers within said structure, having long arms connected to the tongue in front of its heel and arranged to throw the tongue in opposite directions, switch-keys pivoted in switch-key openings and operated by the car-wheels, and rods connecting the switch-keys and short arms of the bell-crank levers and moving longitudinally of the rail within said hollow structure, substantially as described.

13. In a railway-switch, the combination of a swinging switch-tongue bent downwardly at its heel to form a pivoting-post and likewise bent downwardly at its front end, a plate forming a part of the way and recessed on top to receive the tongue, said plate being provided with a round hole to receive the pivoting-post and a slot to receive the downward projection at the front end of the tongue, a hollow structure underlying the rail in front of the heel of the tongue, and a pair of bell-crank levers within said hollow structure, having long arms connected to the downward extension at the front end of the tongue and arranged to throw the tongue in opposite directions, and switch-keys and connections for operating said bell-crank levers, substantially as described.

14. The combination, with the hollow structure C and switch-tongue *c*, pivoted at one end to shift within a depression in the top surface of structure C and provided at its other end with a depending part operating in an opening in said structure, of a pair of bell-crank levers fulcrumed within hollow structure C and operatively connected to said depending part of the switch-tongue, and a pair of rods coupled to switch-keys and having their opposite ends secured to the lever-arm u u', substantially as described.

15. The combination, with the hollow structure C and pivoted switch-tongue *c*, having a depending part at its front end, of a pair of bell-crank levers fulcrumed within structure C and operatively connected to said depending part of the switch-tongue, and a pair of spring-equipped rods operatively connecting the bell-crank levers and switch-keys together, and means for adjusting the length of said rods to take up the wear of the parts, substantially as described.

16. The combination, with a pivoted switch-tongue, of a pair of bell-crank levers having one of their arms connected to the tongue on one side of its pivot and shifting said tongue in opposite directions, and operating mechanism connected with the other arms of said bell-crank levers, substantially as described.

17. The combination, with a pivoted switch-tongue having a downward projection, of a pair of horizontally-moving bell-crank levers engaging the downward projection on opposite sides, and switch-keys and connections for operating said bell-crank levers, substantially as described.

18. The combination, with a pivoted switch-tongue, of a pair of horizontally-moving bell-crank levers having one of their arms connected to the tongue on one side of the pivot, and switch-keys and operating connections connected with the other arms of said bell-crank levers, said levers being reversely arranged, so that the movement of the respective switch-keys in the same direction throws the switch in opposite directions, substantially as described.

19. The combination, with a pivoted switch-tongue and its operating mechanism, of a coiled spring, the opposite ends of which are seated on beveled points facing each other and placed at a sufficient distance apart to receive the spring under compression, one of said points being stationary and the other movable with the tongue, whereby the tongue is subjected to a sidewise pressure from the spring as the movable point carries one end of said spring back and forth past the other point in the operation of the switch mechanism, substantially as described.

20. The combination, with a switch-support and pivoted switch-tongue, of a spring engaging the switch-tongue and switch-support and under greatest tension when the switch-tongue is in a central position, substantially as described.

21. The combination, with a switch-support C and pivoted switch-tongue *c*, provided with a downwardly-projecting part, of a spring compressed between the downwardly-projecting part of said tongue and the switch-support and under greatest tension when the switch-tongue is in its central position, substantially as described.

22. The combination, with the operating-rods of the switch mechanism, of flanged sleeves adjustable on the rods, collars within which the sleeves are adapted to slide and through which pressure is transmitted to the tongue, springs encircling said sleeves and pressing against the collars, and nuts for adjusting the tension of the springs, substantially as described.

23. The combination, with the operating-rod provided with adjustable washers, as a^4 a^5, of a sleeve and collar adjustable on said rod and an operating-lever connected to the switch-tongue and having an arm connected to the operating-rod between the washers a^4 and the head of said collar, whereby the position of said lever-arm on the rod and of the switch-tongue may be adjusted, substantially as described.

24. In a switch mechanism, the means for adjusting the tension of the springs carried by the operating-rods, the same consisting of a sleeve supporting the spring and provided with a flanged forward end, a collar loose on said rod, a second collar adjusted over the first-named collar and having a flange coacting with the flange of the sleeve, as shown and described, and a nut on the screw-threaded rear end of said sleeve and adjustable thereon against the spring, the forward end of which spring abuts against the flange of the collar, substantially as described.

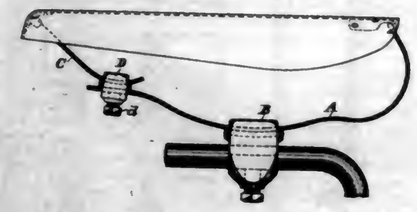
25. The combination, with the hollow structure C, provided with a key-slot and an interior lug, of a switch-key projecting into said slot and pivotally supported within the structure C by a staple-like device, one arm of which passes through an opening in said lug and a coincident hole in the key and the other arm of which is connected to the lower end of the key, substantially as described.

26. The combination, with the hollow structure C, provided with switch-key slots and an interior lug, of a pair of switch-keys projecting into said slots and pivotally supported within structure C by a staple-like device passing through an opening in said lug and coincident holes in the keys and connected to the lower end of said keys, so that they may move in unison, substantially as described.

27. The combination, with the hollow structure C, provided with switch-key slots and interior lugs, of a pair of switch-keys projecting into said slots and independently pivotally supported within the structure by staple-like devices passing through openings in said lugs and coincident holes in the keys and connected to the lower ends of the keys, a bracket depending between the keys, an operating-rod connected to one of the keys, a lever joined to the lower end of the other key and fulcrumed on the bracket and inclined so as to bring its end in the same vertical plane with said operating-rod, and an operating-rod connected to the end of the lever, whereby both rods are brought to the same side of the structure C, one above the other, and the keys are permitted to alternate in rising and falling, substantially as described.

28. The combination, with a switch-tongue, of switch-keys located in different positions transversely to the track, and operating connections between said keys and tongue, extending longitudinally of the track and lying in the same vertical plane, substantially as described.

473,388. VELOCIPEDE-SADDLE. ARTHUR L. GARFORD, Elyria, Ohio. Filed Jan. 9, 1892. Serial No. 417,560. (No model.)



Claim.—1. In a velocipede-saddle, a seat, a support for one end thereof, a spring connected with the other end of said seat, having an upwardly-curved lower end, a clip in which the curved lower end of said spring is adjustable, and a suitable support for said clip, substantially as set forth.

2. In a velocipede-saddle, a spring A and a clip for securing it to the saddle-support, combined with a spring having an upwardly-curved lower end, an adjustable clip adapted to secure the curved part of said spring to the spring A, and a saddle-seat connected with both springs, the connection with the spring A being a pivotal connection, substantially as specified.

473,389. SASH-FASTENER. GEROLT GIBSON, St. Louis, Mo. Filed July 27, 1891. Serial No. 400,802. (No model.)



Claim.—The lock for the lower rail of a window, composed of a member A, having openings A^2 and A^3, casing D at the rear, and spring *d*, forming a part of said casing, seated within the lower rail of the lower sash, and member B, with offset *a*, hinged to the member A, recess B', and hook end B^2, adapted to pass through the hole A^2 of the member A and engage a keeper in the outer edge of the sill, substantially as and for the purpose specified.

473,390. SASH-FASTENER. GEROLT GIBSON, St. Louis, Mo. Filed Aug. 22, 1891. Serial No. 403,455. (No model.)

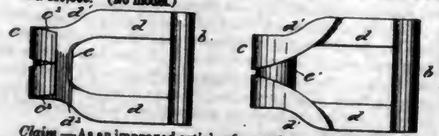


Claim.—The window-sash lock described, composed of the member L, with hook end W, secured to the top of the meeting-rail of the lower sash, the member A, with lugs B and B' and slot C, secured to the vertical dividing-bead of the window-frame, and the member D, with lug E F and sliding bolt H K, all constructed and arranged to operate substantially as and for the purposes specified.

473,391. PAINT. JULIUS HAAKE, Radeboul, near Dresden, Germany. Filed Dec. 31, 1890. Serial No. 376,390. (No specimens.)

Claim.—The paint or color compound herein described, the same consisting of a size composed of dextrine extracted from the husks of rye and from potato-starch, the two being mingled in the proportion of two parts of the former to one part of the latter, and a color mixed with the two dextrines in the proportion of seventy-five parts of color to twenty-five parts of the two dextrines, substantially as described.

473,392. DRIVE-CHAIN. CHARLES E. HART, New Britain, Conn., assignor to the Stanley Works, same place. Filed Feb. 1, 1892. Serial No. 419,869. (No model.)



Claim.—As an improved article of manufacture, a drive-chain link formed of a single piece of plate metal with the center part open, an integral pintle at one end of the link, and a curved knuckle at the other end, the side edges of the plate being folded inward and upon the knuckle at each end thereof, all substantially as described.

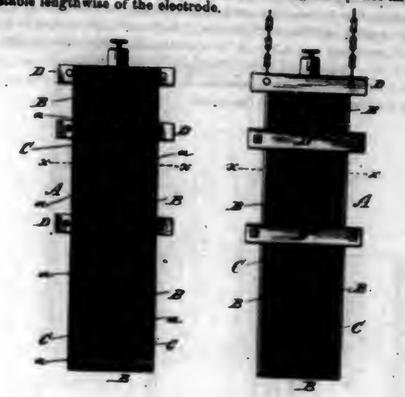
473,393. ELECTRODE. PAUL L. T. HÉROULT, Schaffhausen, Switzerland, assignor to the United States Aluminium Metal Company, of New York. Filed Aug. 8, 1889. Serial No. 320,146. (No model.) Patented in England Dec. 7, 1887, No. 16,853.

Claim.—1. An electrode for electro-metallurgical and similar processes, consisting of carbon; a plate of metal extending substantially the entire length of the electrode, and means for securing the metal plate to the carbon.

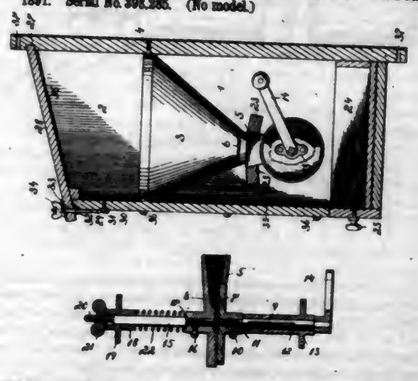
2. An electrode for electro-metallurgical and similar purposes, consisting of carbon blocks or slabs of comparatively small size relatively to the electrode and fitted together to form a compact solid body, transverse pins or dowels binding the blocks together, and metallic plates fitting the sides and extending substantially the entire length of the electrode and secured thereto, as described.

3. An electrode for electro-metallurgical and similar purposes, composed of carbon plates or slabs fitted together, metallic plates fitting the sides and extending substantially the entire length of the electrode, and clamps binding the parts together, as described.

4. In an electrode for electro-metallurgical and similar purposes, the combination of the carbon plates or slabs with the metallic side plates fitted thereto and the clamps surrounding said plates and adjustable lengthwise of the electrode.



473,394. COMBINED SELF-FEEDING COFFEE-MILL AND STORAGE-RECEPTACLE. FRANK J. HOLLIS, Kansas City, Mo. Filed July 2, 1891. Serial No. 398,285. (No model.)



Claim.—1. In a coffee-mill and storage-receptacle, the combination of the holding-receptacle having the upward rear extension and the end with its rear edge engaging a groove in said extension and its front edge held upon the upper front edge of said receptacle by an eyebolt depending from said lid and engaged by a hook on said receptacle, the grinding device and funnel arranged between said receptacle and grinding device, substantially as set forth.

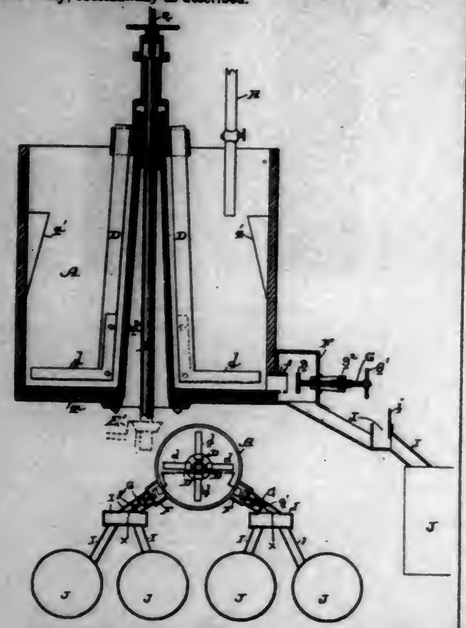
2. In a coffee-mill, the grinding device consisting of the stationary disk held upon a shaft arranged within a sleeve held to the receptacle and a spring interposed between said disk and sleeve, and a nut engaging a screw-threaded end of said shaft, and a rotatable disk held upon a shaft inclosed by a sleeve secured to the receptacle and actuated by a handle, substantially as set forth.

473,395. ART OF AMALGAMATING SILVER ORES. ALEXIS JANIN, San Francisco, Cal. Filed Sept. 1, 1891. Serial No. 404,453. (No model.)

Claim.—1. The improvement in the art of amalgamating silver ores, which consists in subjecting the ore in a preparatory or chloridizing apparatus to the action of an acid solution of ferric chloride, with assistance of heat, agitating the mixture of ore and solution until the silver minerals are chloridized, then discharging the pulp into an amalgamating-pan, adding mercury, and concluding the amalgamation in the usual way, substantially as described.

2. The improvement in the art of amalgamating silver ores, which consists in heating the ore in a preparatory or chloridizing apparatus, together with a solution of metallic chlorides, agitating the mixture of ore and solution until the silver minerals are chloridized, then adding a substance or substances that will neutralize free acid present and reduce ferric chloride to ferrous chloride or precipitate the metallic salts in solution as carbonates or hydroxides, then adding mercury, and concluding the amalgamation in an amalgamating-pan in the usual way, substantially as described.

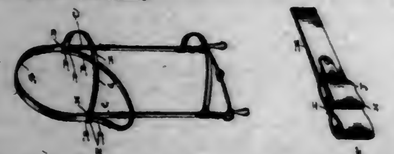
3. The improvement in the art of amalgamating silver ores, which consists in first heating the ore in a preparatory or chloridizing apparatus, together with an acid solution of ferric chloride formed by mixing common salt and sulphuric or hydrochloric acid with chloride of lime in the presence of ferrous sulphate or of sulphides of iron, and then concluding the amalgamation in an amalgamating-pan in the usual way, substantially as described.



4. The combination of a chloridizing-tub having a discharge-opening, a stirring mechanism within said tub, a box inclosing the discharge-opening of the tub, a valve-stem passing through the outer wall of the box, having a valve on its inner end, and a bearing exterior of the outer wall of the box and threaded to receive a threaded portion of the stem, substantially as herein described.

5. The combination of a chloridizing-tub having stirring mechanism and discharge-outlet, amalgamating-pans at a level below the chloridizing-tub, a box inclosing the outlet of the tub, and troughs interposed between the tub and pans, a valve-stem passing through the outer wall of the box, having a valve on its inner end and a hand-wheel at its outer end, and a bearing exterior of the box for said stem, substantially as herein described.

478,396. BRIDLE. LORENZO D. JOHNS, Kenosha, Wis., assignor to the Kenosha Novelty Company, same place. Filed Jan. 5, 1892. Serial No. 417,099. (No model.)



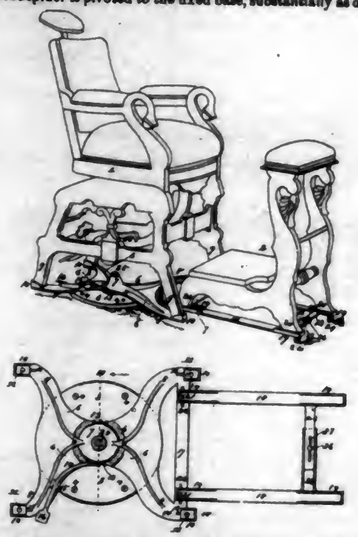
Claim.—1. The combination, with a headstall and a brow-band provided with looped ends, of a supplemental band secured to the front of the brow-band and links secured to the said supplemental band which surround the loops of the brow-band, substantially as shown and described.

2. In a bridle, the combination, with the headstall and the brow-band provided with loops on its ends, of a strip of stiff material secured to the front side of the said band, eyes formed on the ends of the said strip, and links which are confined in the said eyes and which surround the said loops, substantially as shown and described.

478,397. SWIVEL-STAND FOR BARBERS' CHAIRS. ANDREW ERNST, St. Louis, Mo. Filed Apr. 1, 1891. Serial No. 387,263. (No model.)

Claim.—1. The combination of the fixed base 3, having a circular swivel-post 5, a spider 6, having a recessed hub 7, fitting the swivel-post, and horizontal arms 8, provided with boxes at the outer ends of the arms for receiving the legs of a chair, and a king-bolt 25, by means of which the spider is pivoted to the fixed base, substantially as described.

2. The combination of the fixed base 3, having a circular upwardly-tapering swivel-post 5, a spider 6, having a recessed hub 7, providing a downwardly-flaring opening fitting the swivel-post, and horizontal arms 8, provided with adjustable boxes at the outer ends of the arms for receiving the legs of a chair, and a king-bolt 25, by means of which the spider is pivoted to the fixed base, substantially as described.



3. The combination of the fixed base 3, having a circular swivel-post 5 and a circle of cogs 13 at the base of the swivel-post, a spider 6, having a recessed hub 7, fitting the swivel-post, and horizontal arms 8, provided with boxes at the outer ends of the arms for receiving the legs of a chair and with bearings 15 on one of the arms, a lever 14, journaled in the bearings and engaging the cogs, and a king-bolt 25, by means of which the spider is pivoted to the fixed base.

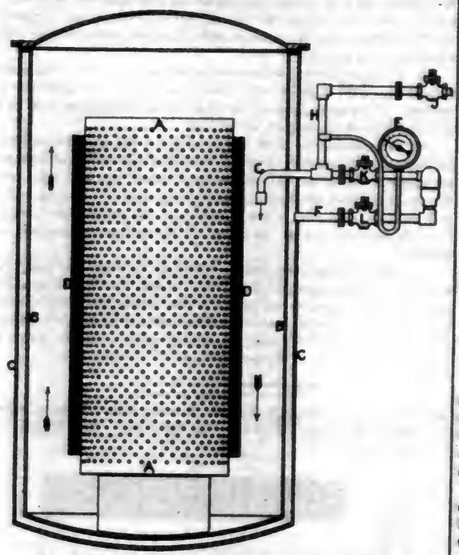
4. The combination of the fixed base 3, having a circular swivel-post 5, a spider 6, having a recessed hub 7, fitting the swivel-post, and horizontal arms 8, formed with slots 12 at their outer ends, a king-bolt 25, by means of which the spider is pivoted to the fixed base, the chair-leg boxes 10, adjustable over the outer ends of the arms, and the bolts 11, by which the boxes are adjustably secured to the ends of the arms, substantially as described.

5. The combination of the fixed base 3, having a circular swivel-post 5, a spider 6, having a recessed hub 7, fitting the swivel-post, and horizontal arms 8, provided with chair-leg boxes, a king-bolt 25, by means of which the spider is pivoted to the fixed base, the cross-bar 17, connecting the front horizontal bars, having slots 21, the parallel bars 18, having rest-leg flanges 19 and overlapping side extensions 23, pin-and-slot connection between the extensions, bolts 21, by which the parallel bars are connected to the cross-bar, and casters for supporting the outer ends of the parallel bars, substantially as described.

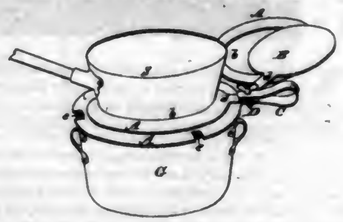
6. The combination, in a chair-support, of the swiveled frame or spider with adjustable boxes 10 to hold the bottoms of the chair-legs, a dog 14 upon the swiveled frame, a fixed base 3, having the cogs 13 and to which the frame 6 is swiveled, a frame with side bars 18, with flanges 19, adapted to hold the feet of the foot-rest 2 and adjustably connected at the inner ends to the swiveled frame, extensions 23 on the side bars 18, adjustably connected together, and casters supporting the outer ends of the bars 18, substantially as set forth.

478,398. APPARATUS FOR FINISHING CLOTH. JOHN KIRK and BENJAMIN LEE, Leeds, England. Filed Apr. 22, 1891. Serial No. 390,087. (No model.) Patented in England Aug. 14, 1890, No. 12,739.

Claim.—In an apparatus for finishing cloth, the combination of a cylinder B, the interior of which constitutes a steam-chamber, an outer casing C, surrounding the cylinder and separated therefrom to provide an intervening steam-space, an open perforated cylinder A, communicating with the steam-chamber of the cylinder, and valved steam-pipes leading, respectively, into the steam-chamber of the cylinder and the steam-space surrounding the same, substantially as described.



478,399. COOKING-UTENSIL ATTACHMENT. PATRICK LEE, Boise City, Idaho, assignor to himself and George W. Dillie, same place. Filed Aug. 17, 1891. Serial No. 402,826. (No model.)



Claim.—1. A multiple cover device consisting of a series of parallel apertured plates fitted to slide one upon the other, the lowest plate having an overhanging handle, and a pivot extending through the handle and uniting the several plates, substantially as set forth.

2. In a multiple-cover-like device, as and for the purposes described, the laterally-pivoted apertured plates and upper close plate, all united by a yielding handle and thumb-screw where pivoted together, substantially as shown and described.

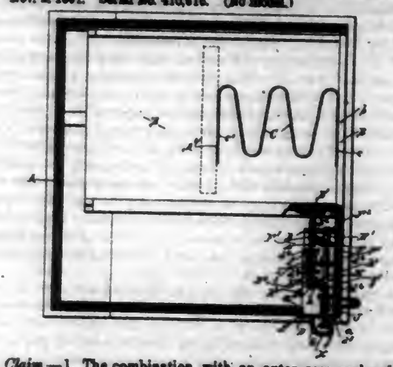
478,400. CULINARY APPARATUS. WILLIAM E. LEWIS, Pemaquid, Me. Filed Mar. 11, 1891. Serial No. 384,605. (No model.)



Claim.—1. The combination of the pot, the pot-cover, a transverse bail arranged on one of the parts, and diametrically-opposite hooks arranged on the other part and adapted to be engaged by the bail, whereby the pot is suspended from the cover, substantially as described.

2. A pot-cover provided on its under side with a transverse bail or bracket, in combination with a cooking-vessel provided at its upper edge with diametrically-opposite hooks to engage said bail or bracket, substantially as set forth.

478,401. LOCK. JOHN B. LIGHTON, Syracuse, N. Y., assignor to the John Lighton Machine Company, same place. Original application filed Feb. 7, 1891, Serial No. 380,901. Divided and this application filed Nov. 2, 1891. Serial No. 410,616. (No model.)



Claim.—1. The combination, with an outer case and a drawer movable within the case, of a locking-bolt supported by the case and adapted to engage the drawer and a rectilinearly-movable push-rod having one end connected to the locking-bolt for operating the same and having the other end adapted to be engaged by the operator, substantially as and for the purpose described.

2. In a lock, the combination, with a frame, of a locking-bolt supported by the frame and adapted to engage the drawer, a lever hinged to one end of the locking-bolt, and a push-rod having one extremity hinged to said lever and the other extremity adapted to be engaged by the operator, substantially as and for the purpose specified.

3. The combination, with an outer case and a drawer movable within the case, of a series of locking-bolts supported by the case and adapted to engage the drawer and a series of push-rods having one extremity flexibly connected, substantially as described, to the locking-bolts and the other projecting beyond the side wall of the outer case, substantially as and for the purpose set forth.

4. The combination, with an outer case and a drawer movable within the case, of a series of rectilinearly-moving locking-bolts having one extremity adapted to engage the drawer, a series of push-rods having their outer extremities projecting beyond the case, and pivoted levers flexibly connected between the locking-bolts and push-rods, substantially as and for the purpose described.

5. In a lock, the combination of a frame with a pair of locking-bolts arranged in planes one beyond the other, a pivoted lever having its opposite extremities pivoted to the locking-bolts for operating both simultaneously, a movable push-rod, and a pivoted lever having one extremity flexibly connected to one end of the push-rod and the adjacent end of one of the locking-bolts, substantially as and for the purpose set forth.

6. The combination, with an outer case and a drawer movable within the case, of a locking-bolt supported by the case and adapted to engage the drawer, a second locking-bolt connected, substantially as described, to the former locking-bolt, so as to be moved simultaneously therewith, and a push-rod having one extremity connected, substantially as described, to one of the locking-bolts and having its opposite extremity adapted to be engaged by the operator, substantially as and for the purpose set forth.

7. The combination, with an outer case and a drawer movable within the case, of a locking-bolt supported by the case, a second locking-bolt, a lever hinged to said bolts for operating both simultaneously, a second lever hinged to one of the locking-bolts, and a push-rod having one end hinged to the latter lever and the other end adapted to be engaged by the operator, substantially as and for the purpose described.

8. The combination, with an outer case and a drawer movable within the case, of a pair of locking-bolts arranged in planes one beyond the other, a pivoted lever having its opposite extremities adjustably pivoted to the locking-bolts, a push-rod having its outer extremity projecting beyond the frame, and a pivoted lever having one extremity pivoted to the push-rod and the other to one of the pivoted levers, substantially as and for the purpose specified.

9. The combination, with an outer case and a drawer movable within the case, of a pair of locking-bolts arranged in planes one beyond the other, a pivoted lever having its opposite extremities adjustably pivoted to the locking-bolts, a push-rod having its outer extremity projecting beyond the frame, a pivoted lever having one extremity pivoted to the push-rod and the other to one of the pivoted levers, and a spring for forcing the foregoing parts to operative position, substantially as and for the purpose described.

10. The combination, with an outer case and a drawer movable within the case, of a locking-bolt supported by the case, projections on the locking-bolt arranged at intervals thereon, a lever provided with a slot adapted to be engaged with said projections, and a push-rod having one end hinged to said lever and the other adapted to be engaged by the operator, substantially as described.

11. The combination, with an outer case and a drawer movable within the case, of a pair of locking-bolts arranged in planes one beyond the other, a series of projections on the locking-bolts, a pivoted lever pivoted at its central portion, with its opposite extremities slotted to receive the projections on the locking-bolts, a push-rod having its outer extremity projecting beyond the case, and a spring for forcing the foregoing parts to operative position, substantially as described.

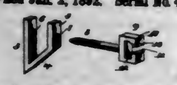
12. The combination, with an outer case and a drawer movable within the case, of a locking-bolt supported by the case and adapted to engage the drawer, a push-rod having one extremity adapted to be engaged by the operator, and a movable lever having one end hinged to said push-rod and the other adjustably connected to said locking-bolt, substantially as set forth.

13. The combination, with an outer case and a drawer movable within the case, of a series of locking-bolts supported by the case and adapted to engage the drawer, a series of push-rods having one extremity adapted to be engaged by the operator, a pivotal pin, a series of levers mounted on said pivotal pin at intervals and connected to said locking-bolts and push-rods, and sleeves mounted on said pivotal pin between the levers, substantially as and for the purpose specified.

14. The combination, with a case having an opening therethrough, a lock-frame adapted to be passed through said opening in the case, and a drawer movable in the case, of locking-bolts rectilinearly guided in said locking-frame and movable push-rods also rectilinearly guided in said locking-frame and connected, substantially as described, to the locking-frame, substantially as and for the purpose described.

15. The herein-described lock, the same consisting of an outer wall and projections from the inner face of said wall, locking-bolts guided in said outer wall and projections, and movable push-rods also guided in said outer wall and projections and arranged with one extremity projecting beyond the wall of the locking-frame, substantially as and for the purpose specified.

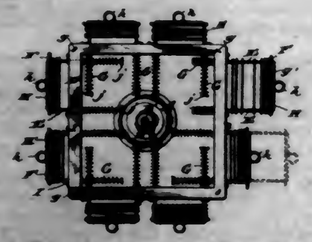
473,402. WINDOW-SHADE BRACKET. JAMES R. LIGON, Sr., Branchville, S. C. Filed Jan. 2, 1892. Serial No. 416,882. (No model.)



Claim.—1. In a shade-roller bracket, the combination of the thin frame consisting of the wall-plate and the upwardly-extending diagonal brace having the upper vertical portion, said parts being perforated at their upper ends, and the attaching-screw consisting of the screw adapted to pass through the perforations in the frame and the socket-head corresponding in height and thickness to the vertical portion of the brace and having the laterally-opening socket, substantially as and for the purposes described.

2. In a shade-roller bracket, the combination of the frame consisting of the wall-plate and the integral brace extending upward and outward from the lower end of said wall-plate, said parts having their upper ends perforated and spaced apart, and the attaching-screw adapted to pass through the perforations in said frame and into the wood and having the head provided with the socket for the roller-gudgeon, all substantially as set forth.

473,403. WARE-EXHIBITOR. DAVID G. MACWATERS, Saginaw, Mich. Filed Oct. 21, 1890. Renewed Feb. 10, 1892. Serial No. 421,036. (No model.)



Claim.—1. The combination, with the support and the rods arranged to slide therethrough, those upon one side independent of those on the opposite side, of the springs surrounding the rods upon the portion thereof inclosed within the support, as set forth.

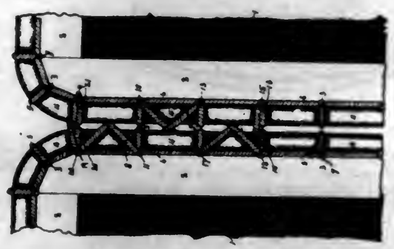
2. The combination, with the support and the rods free to slide through openings therein, those upon one side independent of those on the opposite side, of the springs around the rods upon the inner ends between the inner end of the rod and the inner face of the support, and the holding-wires free to move upon the outer portions of the rod, substantially as specified.

3. The combination, with the support and the rods free to slide in openings in the support with their outer portions connected by a cross-bar, of the springs around the rods between their inner ends and the inner face of the support, as set forth.

4. The combination, with the support and the rods free to slide through openings therein, those upon one side independent of those on the opposite side, of the springs arranged around the rods upon one side of the support, the holding-wires arranged to be moved upon the rods upon the other side of the support, and the catches for holding the rods outward against the tension of the springs, substantially as specified.

5. The exhibitor described, consisting of the telescopic rods, the cap, the supports suspended therefrom, the rods free to slide through openings in the supports and at their outer ends connected by a cross-bar, the springs upon the inner ends of the rods, the holding-wires upon the outer portions of the rods, the gravity-catches, and the plates F on the outer portions of the rods, substantially as specified.

473,404. DOUBLE SLATE. SOLOMON MAHER, Cincinnati, Ohio, assignor to Thomas Kane & Co. Filed May 2, 1891. Serial No. 391,394. (No model.)



Claim.—1. The combination, with two slate-frames having their adjacent sides provided with series of holes, of a cord-hinge extending between the adjacent sides and consisting of a single cord 8, threaded through holes, extending behind and in front of the sides obliquely and transversely between the contiguous edges thereof and across from one frame to the other frame in one direction, and returned and threaded through holes, extending behind and in front of the sides obliquely and transversely between the contiguous edges thereof and across from one frame to the other frame in the opposite direction, and having its ends fastened in adjacent holes, substantially as described.

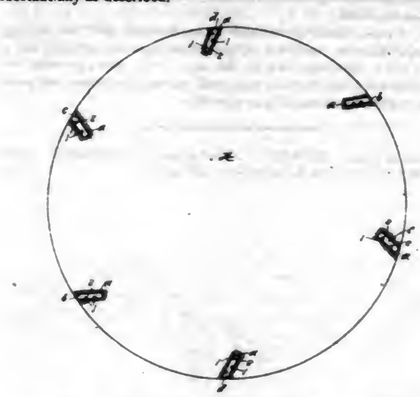
2. The combination, with two slate-frames having holes or perforations and independent muffling-cords threaded through the holes or perforations, of a distinct cord-hinge extending between the adjacent sides and consisting of a cord fastened at one end, threaded through the holes or perforations of the muffling-cords, extending behind and in front of the side and between the contiguous edges thereof and fastened at the other end, the muffling-cords reinforcing and securing the cord-hinge by frictional hold, substantially as described.

3. The combination, with two slate-frames having holes or perforations and independent protecting and muffling cords, of a distinct cord-hinge extending between the adjacent sides and consisting of a cord fastened at one end, threaded through holes or perforations of the protecting and muffling cords, extending behind and in front of the sides and between the contiguous edges thereof in one direction and returned and threaded through holes or perforations of the protecting and muffling cords, extending behind and in front of the sides and between the contiguous edges thereof in the opposite direction, and fastened at the other end, substantially as described.

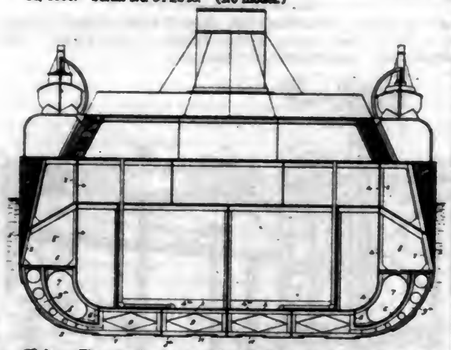
473,405. TYPE SETTING AND DISTRIBUTING MACHINE. ROBERT W. NELSON, Hartford, Conn. Filed Feb. 4, 1892. Serial No. 420,368. (No model.)

Claim.—1. In a type-distributing machine, the combination, with the distributing-channels, of a plurality of receiving-channels for the same type, having reversely-arranged selecting-wards, substantially as described.

2. In a combined type setting and distributing machine, the combination, with the distributing-channels, of a plurality of composing-channels for the same type, having reversely-arranged selecting-wards substantially as described.

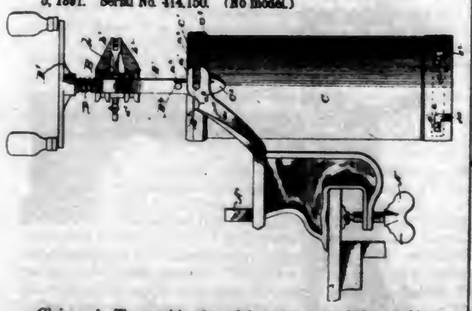


473,406. VESSEL. FRANCIS L. NORTON, New York, N. Y.; Ben L. Fairchild executor of said Francis L. Norton, deceased. Filed June 14, 1889. Serial No. 314,248. (No model.)



Claim.—The vessel constructed with the outer skin and the inner skin, the space between the two skins being subdivided by means of transverse and longitudinal bulk-heads arranged about midships and extending toward each end, and with the center keelson extending from stem to stern and forming the support for the floor of the inner bottom, the valved air-pipes communicating with the air-compartments and the bottom water-inlets, all constructed and arranged substantially as set forth.

473,407. DOMESTIC PRESS. GEORGE W. PELTON, Muscatine, Iowa, assignor of one-half to James Fitzgerald, same place. Filed Dec. 5, 1891. Serial No. 414,150. (No model.)



Claim.—1. The combination of the support, the bifurcated hanger supported thereon, the presser-cylinder removably connected to the bifurcations or legs of said hanger, the screw-shaft playing through guides in said hanger, and the split nut connected to said hanger and engaging the screw-shaft, and a plunger, substantially as described.

2. The combination of the support having diverging upwardly-extending arms slotted at their ends, the hanger having lugs engaging the slots of the arms, and a screw-shaft guide-opening, a split nut mounted in the hanger, a screw-shaft, and a presser-cylinder and plunger, substantially as specified.

3. The combination of a support, the bifurcated hanger connected thereto having a screw-shaft guide-opening, the half-nuts resting and moving in an opening in said casting, the screw-shaft playing therethrough, and a cylinder having lugs on its ends removably engaging slots in the legs of the casting, and a plunger, substantially as specified.

4. The combination of the hanger, the cylinder, a suspending-ring having lugs engaging the hanger, and an annular shoulder fitted to the top of the cylinder, the edge of which is turned over into said shoulder, and a strengthening-band at the lower end of the cylinder over which the metal of the cylinder is turned, said band and lower edge of cylinder having a series of L-shaped slots, with the bottom band having a series of lugs adapted to engage the said slots, substantially as specified.

5. The combination of a hanger having intersecting openings with the clutch-pieces d' d', having half-nuts d' and shanks d^3, the latter pivoted to brackets projecting from the hanger and the former resting in one of the openings, and a catch for holding said parts together, substantially as set forth.

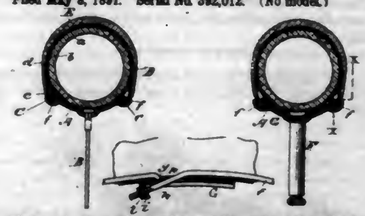
6. The combination of the support having upwardly-curved arms a a, having slotted heads a', with the hanger having curved legs provided with outwardly-projecting lugs and interior-inclined slots, and a screw-shaft guide-opening, the screw-shaft playing through said opening, and the cylinder having lugs engaging the slots of the hanger, substantially as set forth.

7. The combination of the support having upwardly-inclined diverging arms provided with slotted heads on its front upper corner and a rest on its rear upper corner, with the bifurcated hanger having lugs on its legs engaging the slots of the arms, a presser-cylinder removably connected to said hanger and supported on said rest, a follower, the screw-shaft playing through the hanger, and a split nut attached to the hanger and engaging said shaft, substantially as specified.

8. The combination of the hanger having screw-shaft guide-opening b, intersecting opening b', and bracket-arms b^3 at one side of said opening, with the half-nuts d', resting in opening b' and having shanks d^3, pivotally connected to the extremities of brackets b^3, the springs for throwing apart said nuts, and the catch for locking the same, substantially as described.

9. The combination of the support having upwardly-inclined curved and slotted arms, the hanger having curved legs provided with exterior lugs removably engaging the slots in said arms and also having inclined slots in the inner faces of the legs, the presser-cylinder having lugs removably engaging said slots and supported thereby, the follower, the screw-shaft playing through a guide-opening in said hanger, the pivoted screw-clutch pieces playing in an opening in said hanger and adapted to engage the shaft, the springs for separating and the catch for locking the same, all substantially as and for the purpose described.

473,408. WHEEL FOR VELOCIPEDES. CHARLES D. RICE, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed May 8, 1891. Serial No. 392,012. (No model.)



Claim.—1. In a wheel substantially such as described, a rim constructed with a central annular seat for the support of the tire and with an annular groove at each side of said tire-seat, combined with an elastic or flexible tire adapted to rest in said seat, a jacket surrounding said tire and constructed with longitudinal pockets corresponding to the said grooves in the rim, and wires through the said pockets secured to the rim of the wheel and adapted to draw the said pocket edges of the jacket into said grooves to secure the jacket to the rim around the tire, substantially as described.

2. The combination of a wheel-rim constructed with an annular central seat to receive an elastic tire and with annular seats at each side the tire-seat, a jacket surrounding the tire and constructed with pockets in its two edges adapted to be drawn up on the said seats in the rim at each side the tire-seat, wires extending circumferentially through said pockets, their ends extending through openings to the inside of the rim, a felly-plate arranged upon the inside of the rim at

the openings in the rim, one end of the wires secured in said folly-plate, and the folly-plate constructed with ears, through which the other end of the wires pass, with means such as described for straining the said wires, substantially as and for the purpose described.

3. A wheel having a rim constructed with an annular central seat to receive the tire and with an annular seat at each side said tire-seat, an inflatable tire seated in the rim, a jacket surrounding the tire, the edges of the jacket constructed with pockets adapted to be drawn into the said seats in the rim at the sides of the tire-seat, and the exterior of the jacket coated with india-rubber, combined with wires longitudinally arranged in said pockets of the jacket and connected with the rim, substantially as described, whereby said wires are adapted to draw the edges of the jacket around the tire and into said seats at the side of the tire-seat, substantially as described.

478,409. SUSPENDER-BUCKLE. WILLIAM A. SPRINGER, Des Moines, Iowa, assignor to Diamond Suspender Company, same place. Filed July 31, 1890. Serial No. 360,690. (No model.)



Claim.—1. A suspender-buckle comprising a top cross-bar and side bars in substantially the same plane, a lower cross-bar in front of said plane, carrying the hook for the cast-off, a sliding bar on the frame, and a sprig-tongue carried by the frame and engaged with the hook, substantially as set forth.

2. In a buckle, the combination of the top bar, the bottom bar, the parallel sides connected to the top bar, the offsets connecting the parallel sides with the bottom bar, the sliding grip-bar on the parallel sides, the cast-off hook, and the spring-tongue engaging said hook, substantially as and for the purpose set forth.

478,410. GAS-BURNER FOR STOVES. DAVID P. STIRK and JACOB SOMERS, Indianapolis, Ind. Filed Dec. 20, 1890. Serial No. 375,316. (No model.)



Claim.—1. In a gas-burner, the combination, with a rectangular chambered burner, of opposite gas-exit openings extending along the top sides and connecting said chamber and the atmosphere, depending lips adjacent to and extending along and in front of said exit-openings, substantially as set forth.

2. In a gas-burner, the combination, with a rectangular chambered burner, of opposite gas-exit openings extending along the top sides and communicating with the said chamber and the atmosphere, depending lips adjacent to and extending along in front of said exit-openings, and end reinforcing-webs, substantially as and for the purpose set forth.

478,411. MACHINE FOR TRIMMING WALL-PAPER, &c. AARON ALLEN, Philadelphia, Pa. Filed Aug. 7, 1890. Serial No. 361,312. (No model.)
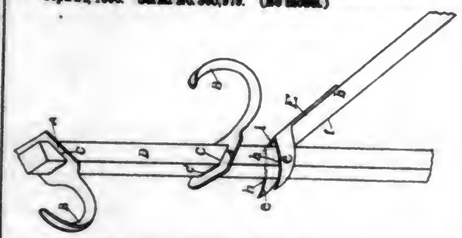


Claim.—1. A machine for trimming paper, consisting of end standards, a laterally-adjustable frame carrying a rotatable paper-holder, rotary shafts carrying adjustable cutters having spring-bearings, detachable guards attached to a bed secured to the standards and extending over the lower cutter, and a shaft for receiving the trimmed paper, said parts being combined substantially as described.

2. In a machine for trimming paper, end standards with a connecting-brace, a bar adjustable lengthwise in the front of said standards and having a depending arm, plates secured to said bar at or near its ends, a rotary shaft journaled in said plates having an adjustable spring-guide thereon, and a lever pivoted to said connecting-brace and to said depending arm, said parts being combined substantially as described.

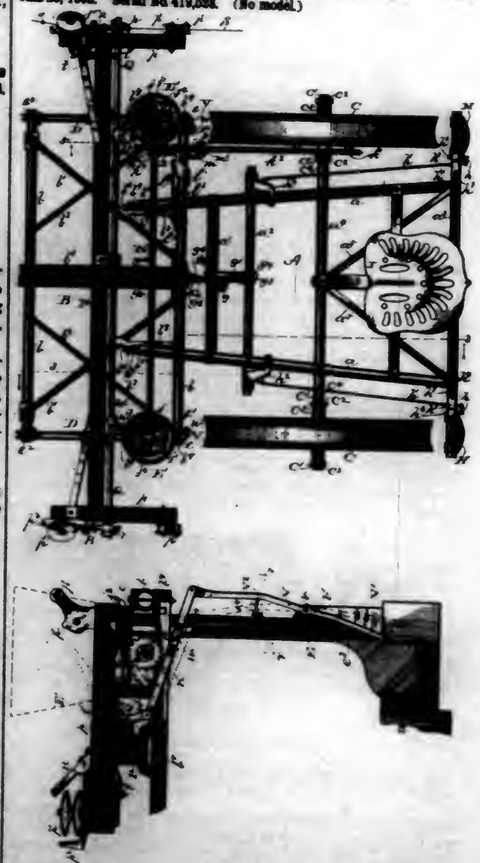
3. A paper-trimming machine having a rotary shaft for winding the paper thereon, consisting of jointed sections, one of which has a socket and a retaining-clamp for the paper, with spring-arms at one end, embracing the shaft, the other end entering the socket, said parts being combined substantially as described.

478,412. TREE-PROP. DOUGLAS BARKER, Riverside, Cal. Filed Sept. 24, 1890. Serial No. 365,979. (No model.)



Claim.—The hanger herein described, comprising a body portion with a central opening and a hook-arm curved transversely and longitudinally.

478,413. CORN-PLANTER. JAMES R. BERING, Decatur, Ill. Assign or to the Chambers, Bering, Quinlan Company, of same place. Filed Jan. 28, 1892. Serial No. 419,038. (No model.)



Claim.—1. In a check-row corn-planter, in combination, substantially as hereinbefore described, a seed-tube and a lever pivoted or hinged thereto and in rear thereof, a valve fixed to said lever above its pivotal point and adapted to act as a gate-valve through an opening in the rear side of the seed-tube, and a valve fixed to said lever below its pivotal point and adapted to act as a flap-valve to open and close the seed-discharging end of the seed-tube, substantially as described.

2. In combination, in a corn-planter, a seed-tube, a lever pivoted or hinged thereto, a valve fixed to said lever above its hinge to the seed-tube and adapted to act as a gate-valve through an opening in the rear side of the seed-tube, a valve fixed to said lever below its hinge to the seed-tube and adapted to act as a flap-valve to open and close the lower end of the seed-tube, and a link and crank-arm connecting said lever with a rock-shaft having a forked lever for rocking it in one direction and a spring for rocking it in a reverse direction, the forked lever receiving motion from a check-row chain, substantially as described.

3. In a corn-planter, in combination with a seed-tube, a seed-measurer in the seed-box, actuated by gear connection with the planter wheel or wheels for delivering seed to said tube in measured quantities, a lever hinged to the seed-tube and provided with valves V' and V^3, geared directly by means of a link w and crank-arm w' with a rock-shaft which carries forked levers that are actuated, respectively, by a check-row chain to swing the rock-shaft in one direction and a spring for swinging it in an opposite direction, substantially as described.

4. In a corn-planter, in combination with a seed-tube E, having orifice e^4 and sloping lower end e^5, and the lever V, carrying alternately-acting valves V' V^3, substantially as described.

5. In a corn-planter, in combination with a seed-tube E, having orifice e^4 and valve-seat e^5, the lever V, carrying valves V' V^3, rod w, arm w', rock-shaft Q, forked lever R, spring t, and check-row chain S, substantially as described.

6. In a corn-planter, in combination with a seed-tube E, having orifice e^4 and valve-seat e^5, a lever V, carrying valves V' V^3, rod w, arm w', rock-shaft Q, forked lever R, spring t, check-row chain S, and a seed-cup disk J, adapted to deliver charges of seed to said seed-tube and actuated by gear connection with the planter wheel or wheels, substantially as described.

7. In a corn-planter, in combination with a rear frame having side frame-bars a, with slotted brackets b^4 at their forward ends, a forward frame having bars b^3, with pivots b^7, to which the slotted brackets b^4 are hinged, and a lever by means of which the forward and rear frames are locked together, substantially as described.

8. In a corn-planter, in combination with a rear frame, side frame-bars a, extended forwardly and provided at their forward ends with slotted brackets b^4, a forward frame having bars b^3, with pivots b^7, located centrally of the forward frame to which the slotted brackets b^4 are hinged, and a lever by means of which the forward and rear frames are locked together, substantially as described.

9. In a corn-planter rear frame of tubular iron, in combination an axle a^4, with wheels C, adjustable thereon, substantially as described, side bars a, unadjustably fixed to said axle and connected unadjustably by transverse bars a' a^3 a^2, and wheel-scrapers H, adjustable on the bar a^3 to correspond with the adjustment of the wheels by means of a block h^3, with slot h^7, through which a bolt h^4 passes, and with a groove h^2, seated over a flange h^3 on the scraper-shank, substantially as described.

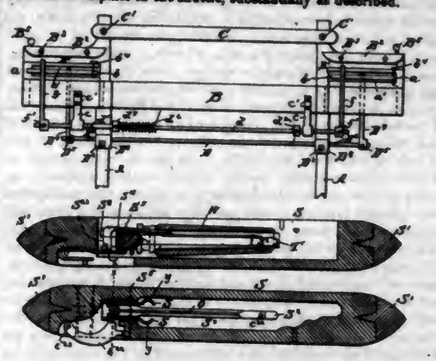
10. In a corn-planter, a forward and a rear frame of tubular iron, having wheels, runners, and seed-boxes laterally adjustable thereon, and wheel-scrapers journaled on the rear frame-bar and adjustable coincidently with the planter-wheels and held after such adjustment, substantially as described, by slotted blocks h^3, having grooves h^2, fitting over flanges h^3 on the scraper-shanks, substantially as described.

11. In a corn-planter, in combination with one of the transverse frame-bars thereof, a wheel-scraper H, journaled on said frame-bar and held from movement lengthwise thereof by a block h^3, with slot h^7, through which a bolt h^4 passes, and with a groove h^2, seated over a flange h^3 on the scraper-shank, substantially as described.

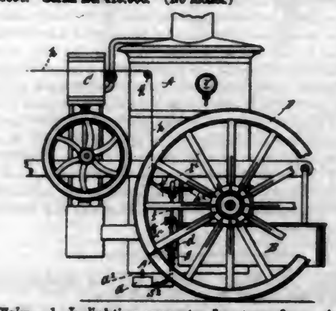
478,414. LOOM-SHUTTLE. JOHN C. BROOKS, Paterson, N. J., assignor to George Draper & Sons, Hopedale, Mass. Filed May 8, 1891. Serial No. 392,128. (No model.)

Brief.—A small lever is pivoted in the shuttle-body and, projecting slightly therefrom, acts on the shuttle-binder. The weft covers a longitudinal slot in the bobbin and compresses a spring which is attached to the shuttle-spindle. The free end of the lever rests against the end of the spring, and when the weft is almost exhausted the spring rises and the lever passes into a notch in the end of the spring. The binder is not moved, and the loom stops in the same manner as if the shuttle were not in its box.

Claim.—A shuttle consisting of an outer shell or case provided with a longitudinal slot, a cam-plate pivoted within the shell or case and projecting through the slot therein, a tongue pivoted within the shell and provided in its head with the intersecting slots, a spring-arm attached at one end to said tongue and having its free end bent to pass through one of the slots in the head of the tongue, said bent end having a notch i formed in one edge and adapted to align with one of the slots in the head of the tongue and designed to receive the free end of the cam-plate in the shuttle, substantially as described.



478,415. APPARATUS FOR IGNITING FIRE UNDER STEAM-BOILERS OF STEAM FIRE-ENGINES. GEORGE CASE, Paterson, N. J., assignor of seven-eighths to Wood McKee, same place. Filed Dec. 1, 1891. Serial No. 413,668. (No model.)



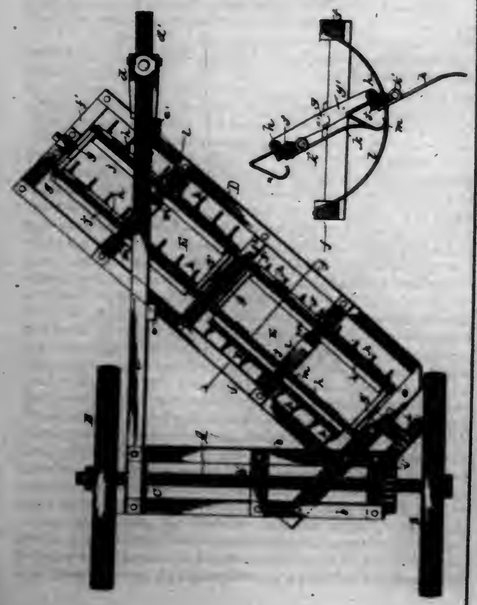
Claim.—1. In lighting apparatus for steam fire-engines, a frame provided with an upper and a lower projecting arm or lug, said frame secured to the end of the coal-box of a steam fire-engine or otherwise suitably located, said lugs or arms being provided with holes, a vertical rod passing through said holes, a stop-collar with arm secured thereto and resting upon the upper lug of said frame, an arm secured to the lower extremity of said vertical rod at the end of said arm, a lighting-pan formed to receive waste saturated with oil or other lighting material, one of the inner sides of said pan or box being provided with a hollow projection to receive the end of a bottle, the opposite side of said box having a hollow part formed on its upper edge to receive and support the neck of the bottle, a bottle containing igniting-fluid, placed horizontally in said lighting pan or box above the soaked waste or other material laid in its bottom, a rod loosely inserted in holes formed in the sides of said lighting-pan near one end thereof, one end secured by nut on the outside of pan, the other end having secured to it on the outside of pan a spring-block, a spring secured to the outside of said pan so as to operate on said spring-block, a hook-breaker forming a part of or suitably secured to said last-mentioned rod inside of the lighting-pan, said hook-breaker formed tapering on its upper edge and projecting above said pan and above the lower edge of engine fire-box and resting upon and held in contact with the bottle by means of the spring operating on said spring-block, an arm secured to the upper end of said vertical rod and provided with a handle, a releasing-catch provided with and connected by pivot to a handle, and an indented tooth to grip the arm of the handle secured to the vertical rod, loosely pivoted to some suitable part or portion of the engine-boiler, a releasing-lever or trigger having a heel formed on one end and an eye on the other end to receive a cord, a cord secured to said eye, a pulley attached to engine-boiler, over which the cord is taken vertically and then horizontally to the driver's seat in front part of engine and there secured in any appropriate manner, a hollow spiral spring surrounding the lower portion of the vertical rod, one end looped about the arm which is secured to lower end of said vertical rod and the other end secured by a nut to the lower pro-

jecting lug on frame, all constructed as shown and described, and for the purpose specified.

2. In a device for kindling a fire in steam fire-engines, a vertical rod, an arm secured to the lower extremity thereof, a lighting-pan formed to receive waste saturated with oil or other inflammable material, secured to the end of said arm, one of the inner sides of said pan provided with a hollow projection to receive the end of a bottle, the opposite side of said pan having a hollow part formed on its upper edge to receive and support the neck of bottle, a bottle containing igniting-fluid placed horizontally in said pan above the soaked waste or other material laid in its bottom, a rod inserted loosely and horizontally through holes formed in the sides of said lighting-pan near one end thereof, one end of said rod secured by a nut on the outside of pan, a spring-block secured to the other end on the outside of said pan, a spring secured to the outside of said pan, so as to operate on said spring-block, a hooked breaker forming a part of or suitably secured to said last-mentioned rod inside of the lighting-pan, said hooked breaker formed tapering on its upper edge and projecting above said pan and above the lower edge of engine fire-box and resting upon and held in contact with the bottle by means of the spring operating on said spring-block, said vertical rod being provided at its upper extremity with an arm and handle and mounted loosely in any frame or bracket suitably located and secured to engine, so that by turning the handle to throw the lighting-pan under the engine fire-grates the upper tapered edge of the hooked breaker will come in contact with the lower edge of the engine fire-box and cause it to break the bottle, as shown and described, and for the purpose specified.

3. In fire-igniting apparatus for steam fire-engines, a lighting-pan formed to receive waste saturated with oil or other lighting material, one of the inner sides of said pan or box provided with a hollow projection to receive the end of a bottle, the opposite side of box having a hollow part formed on its upper edge to receive and support the neck of the bottle, a bottle containing igniting-fluid placed horizontally in said lighting pan or box above the soaked waste or other material laid in its bottom, a rod loosely inserted in holes formed in the sides of said lighting-pan near one end thereof, one end secured by a nut on the outside of pan, the other end having secured to it on the outside of pan a spring-block, a spring secured to outside of said pan, so as to operate on said spring-block, a hooked breaker forming a part of or suitably secured to said last-mentioned rod inside of the lighting-pan, said hooked breaker formed tapering on its upper edge and projecting above said pan and above the lower edge of engine fire-box and resting upon and held in contact with the bottle by means of the spring operating on said spring-block, constructed substantially as shown and described, and for the purpose specified.

478,416. HAY-RAKE. JACOB B. EBERSOLE, Manchester, Iowa. Filed Mar. 4, 1891. Serial No. 383,734. (No model.)

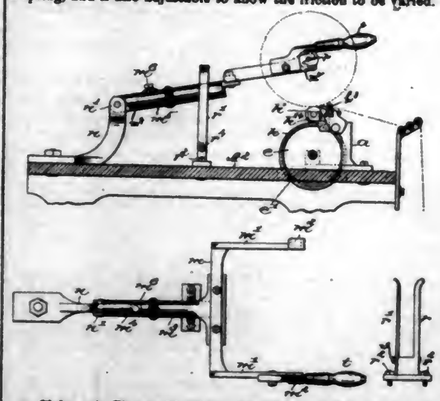


Claim.—1. The combination, with a driving-roll to act on and rotate a quill or cone upon which is to be wound filamentous strands, of a yoke having a pivot substantially parallel with the center of rotation of the driving-roll and also a pivot substantially at right angles to the center of rotation of the driving-roll, an adjustable friction device co-operating with said yoke, and means to adjust said device to vary the friction, substantially as described.

2. In a spooling-machine, the combination, with a yoke provided with bearings adapted to rise and fall about a horizontal pivot parallel with the axis of rotation of the driving-roll and also to rock or tip at right angles to the axis of rotation of the said driving-roll, of an adjustable friction device co-operating with said yoke, said device comprising a fixed and a movable friction-jaw between which the yoke is held, and means to move the jaws toward or from each other, to operate substantially as described.

478,417. SPOOLING-MACHINE. JOHN W. FOSTER, Westfield, Mass., assignor to the Foster Machine Company, same place. Filed Jan. 20, 1892. Serial No. 418,875. (No model.)

Brief.—The yoke is adapted to rise and fall about a horizontal pivot and also rotate about a pivot at right angles thereto, whereby either a quill or cone may be supported thereby. The yoke is prevented from rising too rapidly by a friction device consisting of two jaws between which the shank of the yoke fits. One of said jaws is a spring, and is also adjustable to allow the friction to be varied.



Claim.—1. In a horse hay-rake the combination, with the main frame and obliquely-set rake-frame, of frames revolubly supported in the rake-frame, finger-bars hinged on said revoluble frame, curved plates extending transversely beneath the revoluble frames, these curved plates secured at their ends to the sides of the rake-frame, and cam-plates secured to the finger-bars opposite the curved plates and above the latter and adapted to travel thereon, whereby the finger-bars are confined in a certain position during a part of the revolution of the revoluble frames, substantially as set forth.
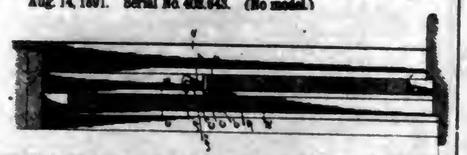
2. The combination, with a main frame, a beam extending rearwardly from said main frame, and a caster-wheel supporting the rear end of the beam, of an oblique frame secured to the main frame and the beam, revoluble frames supported in the oblique frame, finger-bars, curved plates secured to the sides of the oblique frame, and cams secured to the finger-bars in position to travel along the upper faces of the curved plates, substantially as set forth.

478,418. SASH-FASTENER. GEROLT GIBSON, St. Louis, Mo. Filed July 27, 1891. Serial No. 400,801. (No model.)



Claim.—The window-sash lock described, composed of the stationary member secured to the side of the window-casing and having a central slot and pivoted tongue, a member secured to the upper sash, having a projecting lug adapted to engage the tongue of the stationary member, and a member secured to the top of the meeting-rail of the lower sash, having a bent upper end and depending projection adapted to enter the slot of the stationary member, substantially as and for the purposes specified.

478,419. SASH-FASTENER. GEROLT GIBSON, St. Louis, Mo. Filed Aug. 14, 1891. Serial No. 402,643. (No model.)



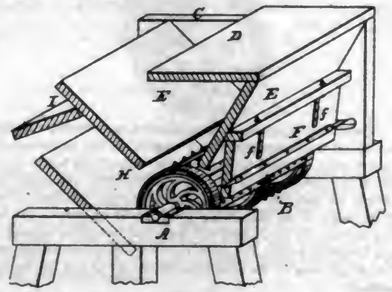
Claim.—The lock described for automatically locking the upper sash of a window to the vertical bead of the outside casing and to the lower sash, composed of the member A, having hook end A', secured upon the top surface of the meeting-rail of the lower sash, member B, having socket B' and lug B², secured to the front surface of the side vertical rail of the upper sash, and the member C, having pivoted catch C', with hook end c^2 and cam-surface c^3, constructed, arranged, and adapted to operate as and for the purposes specified.

478,420. TRACE. EDMOND B. KNAPP, Riverside, Cal., assignor of one-half to Horace B. White, same place. Filed Mar. 11, 1891. Serial No. 384,585. (No model.)



Claim.—The herein-described improved trace, comprising the two opposite sections, the interposed flat shank terminating beyond the end of the trace in a whiffletree-engaging eye, said shank having formed upon its inner face a lug taking into the inner trace-section and terminating short of the exterior thereof and at one side of said lug provided with a rivet-hole, and the rivet passed through the outer section and through the shank, at the inner side of which it is headed, substantially as specified.

478,421. MACHINE FOR PULVERIZING SODS, MANURE, &c. BENJAMIN F. KNAPP, Madison, N. J. Filed Sept. 12, 1891. Serial No. 405,558. (No model.)

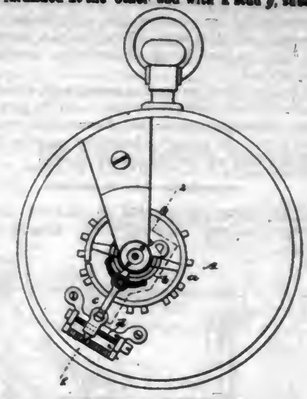


Claim.—In a machine for reducing sods, &c., in combination with a suitable frame and toothed cylinder mounted therein, the hopper composed of inclined bottom E E, sides O O, and lid D, door F, hinged to the rear lower edge of hopper-bottom and held in contact with the cylinder, inclined board H, and lid I, as described and shown, for the purposes specified.

478,422. WATCH-REGULATOR. SERIN E. KOCHENDARFER, Hollidaysburg, Pa. Filed Nov. 5, 1891. Serial No. 410,955. (No model.)

Claim.—1. In a watch-movement, the combination, with the hair-spring, of a two-armed lever pivoted in an adjustable support and provided at one end with a pair of studs for embracing the outer coil of a hair-spring and at the other end with a stud arranged to touch the outer surface of the outer coil of the hair-spring, substantially as specified.

2. The combination, with the hair-spring *b* and regulator-arm *c* of a watch-movement, of the lever B, pivoted in the arm *c* and provided in one end with studs *f* for engaging the outer coil of the hair-spring and furnished at the other end with a stud *g*, substantially as specified.



478,423. ERASING ATTACHMENT FOR PENHOLDERS. FRANK B. KRAUSE, Cleveland, Ohio. Filed Feb. 13, 1892. Serial No. 421,462. (No model.)

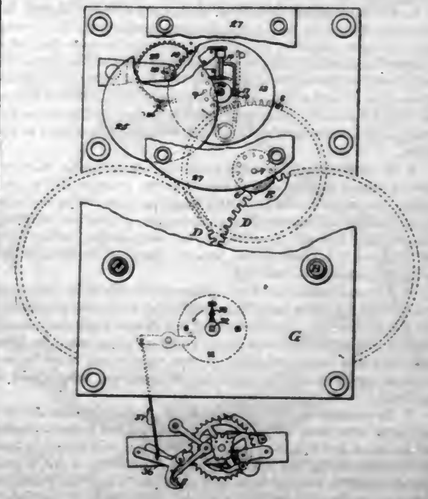


Claim.—1. In an erasing attachment for a penholder, the combination of a metal sleeve of spring metal adapted to be secured to the extremity of a penholder and provided with an integral erasing-blade extending therefrom axially and one or more cups secured to the blade, each cup containing a smoothing or erasing substance, substantially as described.

2. The combination, in an erasive attachment for a penholder, of a sleeve A, blade A', integral therewith, a rivet A^3, and one or more cups B or C, provided with erasing or smoothing material, substantially as described.

3. In an erasive attachment for a penholder, the combination of a hardened-metal erasing-blade rigidly secured to a detachable sleeve adapted to be placed on a penholder and one or more cups secured to the blade, each cup being provided with a block of erasive or smoothing material, substantially as described.

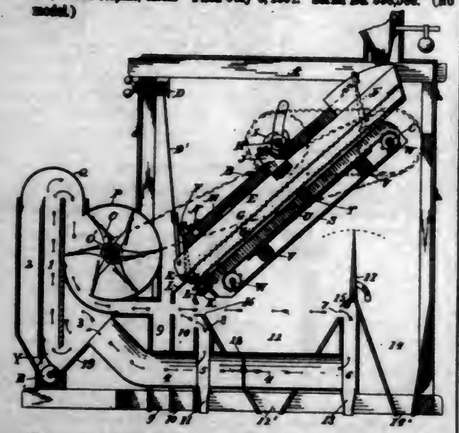
478,424. CALENDAR-CLOCK. ALMERON M. LANE, Meriden, Conn. Filed July 15, 1891. Serial No. 399,660. (No model.)



Claim.—1. A calendar-clock consisting of an equalizing-movement having principal and lesser springs, a calendar mechanism, and calendar-operating devices connected with the principal motive part of said movement and disconnected from that part thereof which is driven directly by the lesser spring, substantially as described, and for the purpose specified.

2. The combination of an equalizing-movement, a calendar mechanism, calendar-operating devices connected with the principal motive part of said equalizing-movement and disconnected from the time-pointers, and a device for setting said calendar-operating devices, substantially as described, and for the purpose specified.

473,425. COMBINED SCALPER AND GRADER. JAMES R. MARTIN, Grand Rapids, Mich. Filed July 6, 1891. Serial No. 398,586. (No model.)



Claim.—1. In combination with an outer adjustable frame and an inner sieve-frame suspended within the same, cams engaging posts on said inner frame, and springs attached to the inner frame having weights attached, substantially as described.

2. In combination with a sieve-frame vertically adjustable at its lower end and discharge-flues beneath said lower end, spring-rolls journaled on said frame, having aprons wound thereon and attached to the walls of said flues, substantially as described.

3. The combination of a fan and casing having peripheral inlet and outlet, a semi-cylindrical separator, vertical flues connecting at their upper ends to said separator and at their lower ends to a conveyer, a chamber adjacent to said conveyer, and an air-pipe extending from said chamber to a point beneath the sieves and opening into transverse chambers having return discharge-openings, substantially as described.

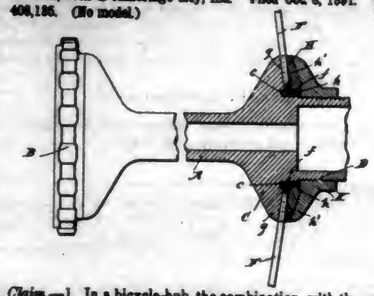
4. The combination of inclined sieves, vertical flues beneath the lower ends of the same having horizontal transverse slits, a fan having a case having a peripheral inlet-opening connected to said slits and a peripheral discharge-opening connected to a semi-cylindrical dust-separator, a vertical flue from the periphery of said separator and a vertical flue from the axis of the same, an air-passage connecting the lower ends of said flues with chambers beneath said sieve, having discharge-openings opposite the inlet-opening of the fan-case, substantially as described.

5. In combination with a fan, a case having peripheral inlet and outlet, a semi-cylindrical dust-separator having a tangential flue and an axial flue parallel to the same, said flues connecting with a conveyer at their bottom and separated by an apron, and a chamber connected with the latter flue and the conveyer, and air-passages leading from said chamber in a closed circuit beneath the sieves to the said fan-casing, substantially as described.

6. The combination of a sieve-frame adjustable at its lower end, flues beneath the lower end of the same having horizontal slits, spring-rolls and aprons connecting the walls of said flues and said sieve-frame, a fan and dust-separator at one side of said flues, chambers at the other side of said flues having air-outlets on their sides toward said flues, and an air-passage from said separator to said chambers, substantially as described.

7. In combination with inclined sieves, vertical flues beneath the lower ends of the same having lateral air-passages and hoppers beneath said sieves, an air-chamber between said hoppers, said chambers having openings facing the lateral openings in said flues, a fan, a dust-separator, and an air-pipe from said separator to said air-chambers, having a damper between said chambers, substantially as described.

478,426. BICYCLE-HUB. JOSEPH U. MORGAN, Dublin, assignor, by direct and mesne assignments, of one-half to Matt Shaw and John R. Bond, both of Cambridge City, Ind. Filed Oct. 8, 1891. Serial No. 408,195. (No model.)



Claim.—1. In a bicycle-hub, the combination, with the axial portion A, having thereon the enlarged hub portion C and the reduced screw-threaded portion D in front of said hub portion, of the washer H, fitting loosely around said screw-threaded portion, the outer hub-section K, having a screw-threaded connection with the portion D and arranged to set closely against the washer, and the headed spokes clamped between said washer and the hub portion C, substantially as specified.

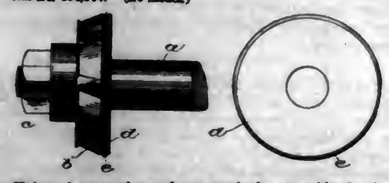
2. In a bicycle-hub, the combination, with the axial portion A, the inner enlarged hub-section C thereon, and the cylindrical reduced threaded portion D in front of said hub-section, said hub-section having an inclined face formed with an annular groove *f* and with a series of radial grooves *h*, communicating therewith, of the washer fitting loosely around the portion D and having an inclined inner face formed with an annular and with radial grooves corresponding each with the similar groove in the inner hub-section, the spokes having T-heads on their inner ends, resting in the annular grooves in the hub-section and washer and clamped in the radial grooves, and the outer hub-section having a screw-threaded engagement with the portion D, the meeting faces of the washer and outer section being of angular form, substantially as specified.

478,427. CAP. JOHN R. MCLOUGHLIN, Utica, N. Y. Filed Feb. 13, 1892. Serial No. 421,465. (No model.)



Claim.—As an article of manufacture, a storm-cap consisting of a cylindrical body provided with a continuous flap extending beyond its lower edge, adapted to fold upward around the body, a visor secured to the lower edge of the front of the body, extending beneath or within the flap, having its outer edge securely stitched to the flap, and the edge of the flap at the front turned back over and secured to the face of the visor, whereby when the remaining portion of the flap is turned down it is caused to curve inwardly and closely embrace the neck and ears of the wearer, substantially as and for the purpose described.

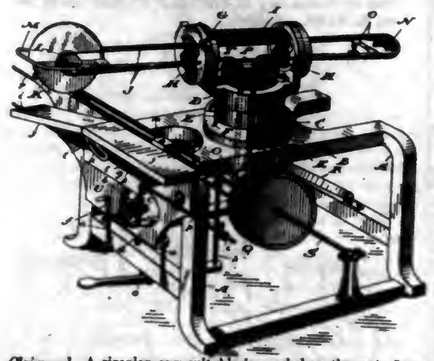
478,428. RAND-GUARD. JEROME I. PACKARD, Boston, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Dec. 7, 1891. Serial No. 414,207. (No model.)



Claim.—1. A rand-guard composed of a rotatable circular body having a grooved periphery and a loose tire or edge in said groove and movable independently of the body to bear against the upper and constitute a track for the body during its rotation, substantially as described.

2. A rotary trimmer-cutter, combined with a rand-guard composed of a rotatable circular body having a grooved periphery and a loose tire in said groove and movable independently of the body to constitute a track for the said body and in which it rotates, substantially as described.

478,429. MITERING-MACHINE. PETER PHILLIPS, Toronto Junction, Canada, assignor to Solomon Phillips, same place. Filed Aug. 21, 1891. Serial No. 403,263. (No model.)



Claim.—1. A circular saw suitably journaled on the end of two parallel rods supported by and longitudinally adjustable in a revoluble frame carried by a frame revoluble at right angles to the frame supporting the parallel rods, in combination with means for holding the revoluble frames at such angles as they may be independently set, substantially as and for the purpose specified.

2. A circular saw suitably journaled on the end of two parallel rods supported by and longitudinally adjustable in a revoluble frame carried by a frame revoluble at right angles to the frame supporting the rods, in combination with a wedge-key operated by a treadle and arranged to lock the revoluble rod-frame, substantially as and for the purpose specified.

3. A divided saw-table hinged upon the face of a plate vertically and horizontally adjustable upon the frame of the machine, in combination with means for independently locking each wing of the divided table at any desired angle, substantially as and for the purpose specified.

478,430. NUT-LOCK. WILLIAM D. ROBINSON, El Paso, Tex., assignor of one-third to William H. Savage, same place. Filed Nov. 11, 1891. Serial No. 411,550. (No model.)



Claim.—The combination of the bolt, the nut having a dovetailed groove across its face, of uniform width throughout its length, and a recess at one side of said groove, and a key having tapered sides and sliding into the dovetailed groove from one side of the nut, said key having a pointed end to engage the bolt and also provided with a projecting part to be bent over into engagement with the recess in the nut, for the purpose described.

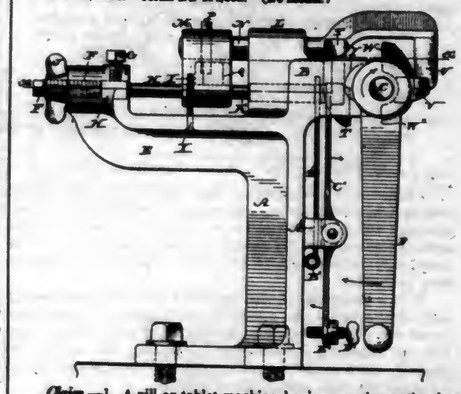
478,431. SAFETY-ENVELOPE. GEORGE W. SCOVILL, Chicago, Ill., assignor of one-half to Warren T. Thomson, same place. Filed Nov. 23, 1891. Serial No. 412,804. (No model.)



Claim.—1. A safety-clasp for envelopes, composed of a single piece and comprising a bifurcated end, and a hook projection formed at the base of the forked part, the opposite end being bent over in the direction of the hook part and having an inclined surface, as described, and for the purpose set forth.

2. The combination, with an envelope provided with loops in a part thereof and having one of the closing-flaps provided with a slit and the other with a tongue adapted to enter said slit, of a locking-clasp having tines on one end, which are inserted through said loops, a hook projection, and the bent-over end, whereby the part of the sealing-flap passing under said bent-over end is punctured by the hook part when the locking parts of the clasp are pressed together, substantially as set forth.

478,432. PILL OR TABLET MACHINE. WILLARD T. SEARS, Philadelphia, Pa., assignor of one-half to William M. Rhoads, same place. Filed Dec. 12, 1891. Serial No. 414,832. (No model.)



Claim.—1. A pill or tablet machine having a reciprocating hopper and dies in said hopper, one of said dies being movable in said hopper and the hopper being movable on the dies, said parts being combined substantially as described.

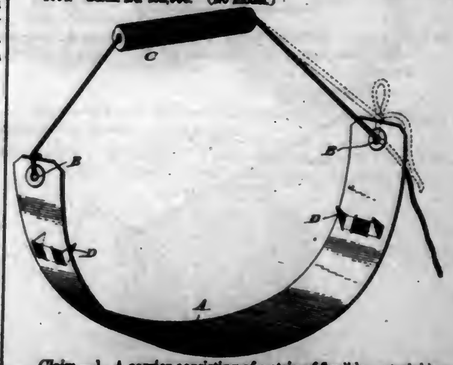
2. A pill or tablet machine having a hopper with an attached bar, mechanism for reciprocating said bar and hopper, a stationary die, and a movable die, said dies fitting in a recess or groove in said hopper and said hopper being movable on said dies, said parts being combined substantially as described.

3. In a pill or tablet machine, a standard, a hopper with a bar having depending arms, and a shaft with cams adapted to engage said arms so as to impart reciprocating motion to said bar and hopper, said parts being combined substantially as described.

4. In a pill or tablet machine, a standard, a die movable on said standard, a spring secured to said standard and bearing against said die, and means, substantially as described, for controlling the play of said spring, said parts being combined substantially as described.

5. In a pill or tablet machine, a standard, dies having a space between their adjacent ends, a driving-shaft with an operating-handle, and a spring adapted to be engaged by said handle and forced between said dies, said parts being combined substantially as described.

478,433. PARCEL-CARRIER. STEPHEN R. SMITH, Belleville, Ill., assignor of one-half to Ernest F. Hilgard, same place. Filed Aug. 18, 1891. Serial No. 402,966. (No model.)



Claim.—1. A carrier consisting of a strip of flexible material having spurs projecting inwardly therefrom, and a cord fastened at one end to one end of said strip and passing loosely through an opening

in the other end of the said strip, said parts being combined substantially as described.

2. A carrier having a flexible strip of suitable material with loops thereon, spurs fitting in said loops and projecting from said strip, and a carrying-cord connected with said strip, said parts being combined substantially as described.

473,434. ICE-VELOCIPEDE. JOHN C. STEVENS, Hartford, Conn. Filed Jan. 14, 1891. Serial No. 377,720. (No model.)



Claim.—1. In a velocipede, a frame supporting a seat, rotatable steering-fork, crank-sprocket, and propelling-wheel bearing a sprocket connected with the crank-sprocket, in combination with a runner detachably connected with the steering-fork, and runners elastically connected with the frame on each side of the propelling-wheel, substantially as specified

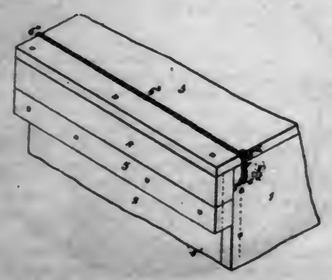
2. In a velocipede, a frame supporting a seat, rotatable steering-head, crank-sprocket, and propelling-wheel bearing a sprocket connected with the crank-sprocket, in combination with a runner elastically and detachably connected with the steering-fork, and runners elastically and detachably connected with the frame on each side of the propelling-wheel, substantially as specified.

473,435. ELECTRIC SWITCH. HERBERT P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 2, 1889. Serial No. 298,492. (No model.)



Claim.—The combination, with two pairs of springs pressing inwardly, the members of each pair being adjusted to close upon different contact-pieces, respectively, of a shifter, said shifter being pivotally mounted between said springs, different contact-points at the free ends of the different springs of the two pairs, the springs being of a tension to close thereon when unopposed by the shifter, whereby on rotating the shifter the electrical connections are transferred, substantially as and for the purpose specified.

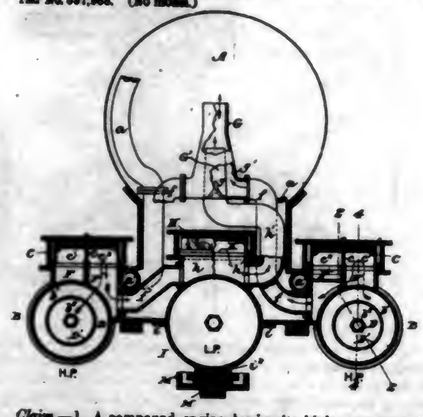
473,436. BOX-FASTENER. JULIUS HIRSH, St. Louis, Mo., assignor to Hirsh Bros., same place. Filed Jan. 13, 1892. Serial No. 417,971. (No model.)



Claim.—1. The fastener for boxes, composed of the metal body 6, having two parallel parts connected by a bent portion, one of which parts passes through the box and the other over the lid of the same, the ends of said parallel parts having means for attachment of a tie 7, substantially as set forth.

2. The fastener for boxes, composed of a metal body having two parallel parts, a hook on one of said parts and an eye on the other, said hook and eye being adapted to receive a tie, substantially as set forth.

473,437. COMPOUND LOCOMOTIVE. HARRY G. REAGAN, Jr., Philadelphia, Pa., assignor of two-thirds to Edward F. Peacock, same place, and Thomas Pray, Jr., New York, N. Y. Filed June 30, 1891. Serial No. 397,963. (No model.)



Claim.—1. A compound engine having its high-pressure valve divided into compartments and having suitable ports and passages whereby the exhaust-steam is divided into two portions, one of which only is led to the low-pressure cylinder, substantially as described.

2. A compound engine having its high-pressure cylinder provided with a tubular piston, whereby the steam is divided into two portions, a suitable valve-gear for leading one of said portions to the low-pressure cylinder, substantially as described.

3. A compound engine having its high-pressure-cylinder heads provided with annular wells, and a piston having annular shells on each side adapted to slide in said wells and a valve admitting steam both inside and outside of said shells, substantially as described.

4. The combination, with a low-pressure cylinder, of a high-pressure cylinder having a piston provided with cylindrical shells dividing said cylinder into two compartments, and a double valve admitting steam to both compartments and directing the exhaust from one compartment to the atmosphere and from the other compartment to the low pressure cylinder.

5. The combination, with the high-pressure cylinder having its heads provided with annular extensions containing annular wells, of a piston having cylindrical shells sliding in said wells, and a double slide-valve having its seat provided with a double set of admission and exhaust ports, substantially as described.

6. A compound engine having a low-pressure cylinder, and a plurality of high-pressure cylinders arranged to divide the high-pressure steam into separated portions, with suitable valve-gear for directing one portion of the high-pressure exhaust into the low-pressure cylinder and the other portion into the atmosphere, substantially as described.

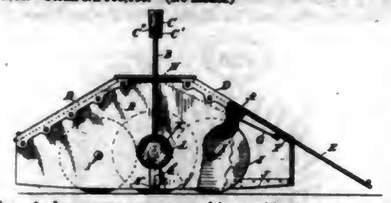
7. In a compound locomotive, the combination, with the low-pressure cylinder, of high-pressure cylinders on each side of the engine divided into two compartments, and a valve on each side arranged to admit steam to both high-pressure compartments simultaneously and to exhaust it from only one of said compartments to the low-pressure cylinder, the other exhausting directly into the atmosphere, substantially as described.

8. The combination, with the frame, of the girt O, the lever N, fulcrumed thereon, connected at one end with the high-pressure valve-rod, and having at its other end a double fork, the low-pressure valve-rod P, having the fork p, and a block uniting the fork p with the double fork of the lever, substantially as described.

9. The combination, with the valve-rod C, of the lever N, having a double fork n' n^2, the rod P, having a fork p, the block consisting of a base Q, stud q, and pieces q^2 q^3, received in the forks, the forked link R, carrying said block, and a bell-crank lever, to which said link is jointed, substantially as described.

10. A compound engine having its high-pressure cylinder divided into compartments, whereby the steam is separated into two portions, and a valve adapted to exhaust only one of said portions to the low-pressure cylinder, the other being exhausted directly into the atmosphere, substantially as described.

473,438. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to Wm. S. Remington, Erastus J. Horton, Fred. C. Remington, S. Stewart White, and Thomas Triant, same place. Filed Sept. 16, 1890. Serial No. 365,183. (No model.)



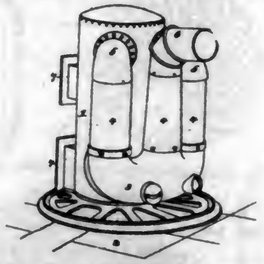
Claim.—1. In a carpet-sweeper and in combination with a suitable case mounted upon traction-wheels with fixed journals I', arranged upon each side of the brush-shaft, a brush-shaft having a pulley in contact with said traction-wheels, bearings for the brush-shaft attached to the bail ends and projecting through the end walls of the case, and elastic bushings K, surrounding the bearings, having radial arms, and arranged in said end walls of said case, substantially as set forth.

2. In a carpet-sweeper and in combination with a case mounted upon traction-wheels with fixed journals I', a brush-shaft having a pulley in contact with said traction-wheels, and journals O' at each end engaging with brush-bearings, brush-bearings Q, connected to the bail ends, and elastic bushings K, surrounding the bearings and having radial arms arranged in end walls of the case, substantially as set forth.

3. In combination with a case provided with suitable driving-wheels journaled therein, a brush-shaft having bearings Q, having downwardly-projecting portions Q' and lugs Q'', and a friction-disk P, and surrounded by an elastic bushing K, arranged in the end walls of the case, and a bail B, having a cup-bearing L, engaging the bearing Q, substantially as and for the purposes set forth.

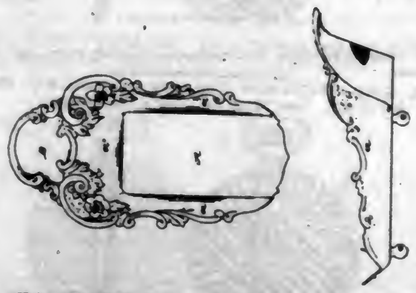
DESIGNS.

21,467. FURNACE. WALTER L. CULVER, St. Louis, Mo. Filed Mar. 21, 1892. Serial No. 425,859. Term of patent 14 years.



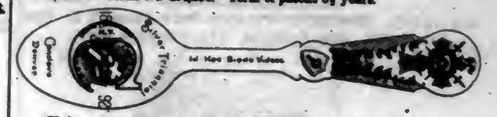
Claim.—The new design for a furnace, herein shown and described.

21,468. HOLDER FOR MATCHES AND CIGARETTES. CHARLES GRAFF, New York, N. Y., assignor to Ferdinand Fuchs & Brothers, same place. Filed Jan. 18, 1892. Serial No. 418,504. Term of patent 3½ years.



Claim.—The design for a cigarette and match holder, as herein described and shown.

21,469. SPOON. BENAGE S. JOSSELYN, Denver, Colo. Filed Mar. 4, 1892. Serial No. 424,231. Term of patent 3½ years.



Claim.—The design for a spoon, herein shown and described.

21,470. SPOON, &c. JOHN W. MAILLOT, North Attleborough, Mass., assignor to Frank M. Whiting, same place. Filed Mar. 21, 1892. Serial No. 425,853. Term of patent 3½ years.



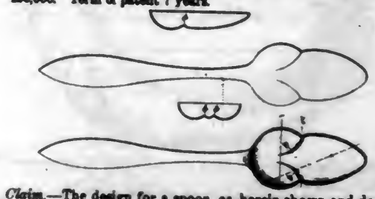
Claim.—The design for the handles of spoons, forks, and the like, herein shown and described.

21,471. CORNER FOR POCKET-BOOK FLAPS, &c. JOSEPH H. PROVENZANO, New York, N. Y. Filed Feb. 20, 1892. Serial No. 423,236. Term of patent 3½ years.



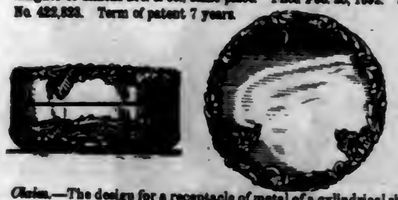
Claim.—The design for corner-pieces for pocket-book flaps, &c., substantially as herein shown and described.

21,472. SPOON. EDWARD W. SEARSON, Waterbury, Conn., assignor to Rogers & Brother, same place. Filed Mar. 22, 1892. Serial No. 426,000. Term of patent 7 years.



Claim.—The design for a spoon, as herein shown and described.

21,473. METALLIC BOX. HENRY A. WHEEMAN, Philadelphia, Pa., assignor to Simons Bro. & Co., same place. Filed Feb. 25, 1892. Serial No. 422,323. Term of patent 7 years.



Claim.—The design for a receptacle of metal of a cylindrical shape, substantially as shown and described.

21,474. MONUMENT. WILLIAM H. PERRY, Concord, N. H. Filed Mar. 3, 1892. Serial No. 423,662. Term of patent 3½ years.



Claim.—The design for a monument, as herein shown and described.

21,475. MONUMENT. WILLIAM H. PERRY, Concord, N. H. Filed Mar. 14, 1892. Serial No. 424,893. Term of patent 3½ years.



Claim.—The design for a monument, substantially as herein described and shown.

21,476. PLATE OR SIMILAR ARTICLE. FRANZ GUILLEAUME, Bonn, Germany. Filed Mar. 15, 1892. Serial No. 425,089. Term of patent 3½ years.



Claim.—The design for a plate or similar article, substantially as herein shown and described.

21,477. VASE. FRANZ GUILLEAUME, Bonn, Germany. Filed Mar. 24, 1892. Serial No. 426,319. Term of patent 3½ years.



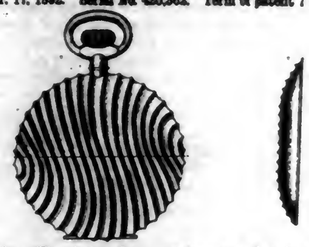
Claim.—The design for a vase or similar article, substantially as herein shown and described.

21,478. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,361. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,479. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,362. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,480. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,363. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,481. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,364. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,482. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,365. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,483. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,366. Term of patent 7 years.



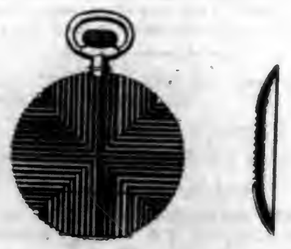
Claim.—The design for a watch-case, as herein shown and described.

21,484. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,367. Term of patent 7 years.



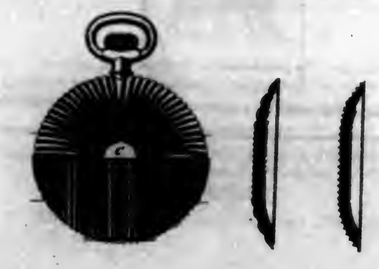
Claim.—The design for a watch-case, as herein shown and described.

21,485. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,368. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,486. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,369. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,487. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,370. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,488. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,371. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,489. WATCH-CASE. THOMAS BENFIELD, Newark, N. J. Filed Mar. 17, 1892. Serial No. 426,372. Term of patent 7 years.



Claim.—The design for a watch-case, as herein shown and described.

21,490. SACHET OR PINCUSHION. WILLIAM H. PLUMB, Ansonia, Conn. Filed Mar. 7, 1892. Serial No. 424,062. Term of patent 7 years.



Claim.—The design for a sachet or pincushion, substantially as herein shown and described.

21,491. VASE OR SIMILAR ARTICLE. FRANZ GUILLEAUME, Bonn, Germany. Filed Mar. 28, 1892. Serial No. 426,902. Term of patent 3½ years.



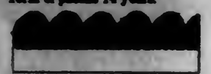
Claim.—The design for a vase or similar article, substantially as herein shown and described.

21,492. PEDESTAL. ALEXANDER J. WHINNAYER, Fort Madison, Iowa. Filed Jan. 27, 1892. Serial No. 419,471. Term of patent 3½ years.



Claim.—The design for the pedestal of a statue, herein shown and described.

21,493. RUFFLING OR RUCHING. ALBERT RAHE, New York, N. Y., assignor to the estate of Tillie Rahe. Filed Feb. 20, 1892. Serial No. 422,366. Term of patent 14 years.



Claim.—A design for a ruffling or ruching, substantially as shown and described.

21,494. VASE OR SIMILAR ARTICLE. FRANZ GUILLEAUME, Bonn, Germany. Filed Mar. 28, 1892. Serial No. 426,897. Term of patent 3½ years.



Claim.—The design for a vase or similar article, substantially as herein shown and described.

21,495. BOTTLE. CARL RICHTER, Chicago, Ill. Filed May 2, 1891. Serial No. 391,416. Term of patent 7 years.



Claim.—The design for a beer-bottle, herein shown and described.

TRADE-MARKS

REGISTERED APRIL 19, 1892.

20,978. BOOT AND SHOE POLISH. ABRAHAM R. ASHTON, Fort Wayne, Ind. Filed Jan. 20, 1892.



Essential feature.—The representation of a horseshoe with the words "GOOD LUCK SHOE POLISH" thereon. Used since October 6, 1891.

20,979. FERMENTED BEVERAGES OR NUTRIENT BEVERAGES OF FERMENTED MILK. AMERICAN MILK AND KUMYS COMPANY, Rutherford, N. J., and New York, N. Y. Filed Feb. 26, 1892.

CHAMPAGNYSS.

Essential feature.—The word "CHAMPAGNYSS." Used since February 6, 1892.

20,980. CANNED OR PRESERVED FRUITS, VEGETABLES, SOUPS, OYSTERS, CATSUP, AND SAUCES. ANDERSON PRESERVING COMPANY, Camden, N. J. Filed Dec. 12, 1891.



Essential feature.—A representation of the bust of a man presenting the general appearance of a monk with a beardless face, a tonsured head, and a glass in one eye. Used since October 1, 1891.

20,981. TWO-SEATED CARRIAGES. SAMUEL B. BAILEY & Co., Amesbury, Mass. Filed Mar. 23, 1892.

ESSEX TRAP.

Essential feature.—The words "ESSEX TRAP." Used since March, 1891.

20,982. BUTTONS, BRAIDS, BINDINGS, AND BUCKLES. EMANUEL W. BLOOMINGDALE, New York, N. Y. Filed Mar. 22, 1892.



Essential feature.—The representation of a man in court dress astride of a goat, on the horns of which hang the tailors' implements of trade. Used since March, 1891.

20,983. REMEDY FOR DYSPEPSIA OR STOMACH TROUBLES. EDWIN L. ESSENTRAGER, Lykens, Pa. Filed Mar. 15, 1892.

"MERIT"

Essential feature.—The word "MERIT." Used since February 17, 1892.

20,984. OLIVE-OIL. ALFRED G. BELDEN, New York, N. Y. Filed Mar. 19, 1892.

Grand Monarque

Essential feature.—The words "GRAND MONARQUE." Used since January 1, 1891.

20,985. SPECIFIC FOR CHOLERA INFANTUM. LATHAM A. DAVIDSON, West Milford, W. Va. Filed Mar. 21, 1892.

SUSANNA

Essential feature.—The word "SUSANNA." Used since March, 1891.

20,986. COMBS. BECHER & Co., Sonneberg, Germany. Filed Mar. 22, 1892.



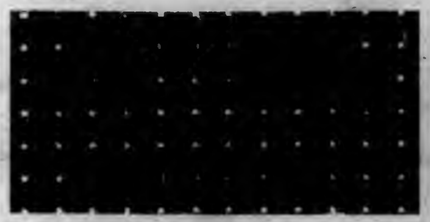
Essential feature.—A picture representing the interior of a barber-shop, the occupants being the barber, a party being shaved, and waiting customers. Used since 1853.

20,987. PROPRIETARY MEDICINE FOR THE CURE OF HEADACHE. JOHN L. MCKEE, Chicora, Pa. Filed Mar. 12, 1892.

HEADACURA

Essential feature.—The word "HEADACURA." Used since January 1, 1892.

20,988. CIGARS. W. G. MARSHALL & Co., Cleveland, Ohio. Filed Nov. 18, 1891.



Essential feature.—The words "CONCORD BOWLING CLUB." Used since 1887.

20,989. SALVE. ELIJAH S. PARKER, New York, N. Y. Filed Feb. 24, 1892.

E.S. PARKER'S TITAN SALVE

Essential feature.—The words "E. S. PARKER'S TITAN SALVE." Used since July 1, 1889.

20,990. WATCH-CASES. THE PARYS WATCH CASE COMPANY, Sag Harbor, N. Y. Filed Dec. 19, 1891.

MONTAUK

Essential feature.—The word "MONTAUK." Used since January, 1888.

20,991. STOVES, HEATERS, AND FURNACES. THE GLASNER-STROBEL OIL STOVE CO., Chelsea, Mich. Filed Mar. 21, 1892.



Essential feature.—The letters and character "B & B." Used since October 10, 1891.

20,992. NATURAL MINERAL WATER. THE HIGHLAND MINERAL SPRING WATER COMPANY, Lewiston, Me., and New York, N. Y. Filed Mar. 21, 1892.



Essential feature.—The representation of two arrows crossing each other. Used since October 28, 1891.

20,993. HOSIERY. WAYNE KNITTING MILLS, Fort Wayne, Ind. Filed Jan. 29, 1892.



Essential feature.—The words "WAYNE KNIT" and the representation of a crossed pair of hose. Used since November 1, 1891.

20,994. HOOKS AND EYES. RICHARDSON & DE LOSSE BROS., Philadelphia, Pa. Filed Mar. 24, 1892.

HUMP

Essential feature.—The word "HUMP." Used since November, 1891.

20,995. HOOKS AND EYES. RICHARDSON & DE LOSSE BROS., Philadelphia, Pa. Filed Mar. 24, 1892.



See that hump?

Essential feature.—The representation of a hook and the words "SEE THAT HUMP?" Used since November, 1891.

20,996. HOOKS AND EYES. RICHARDSON & DE LOSSE BROS., Philadelphia, Pa. Filed Mar. 24, 1892.



It catches the eye

Essential feature.—The representation of a hook and the words "IT CATCHES THE EYE." Used since January 25, 1892.

20,997. LIQUID EXTRACT OF BEEF. EDUARDO AVILA, New York, N. Y. Filed Mar. 15, 1892.



Essential feature.—The representation of a scroll inclosing a monogram of the letters "V V G" and the words "CARNE LIQUIDA" and "LIQUID MEAT." Used since March 30, 1891.

20,998. CIGARS. CASIMIRO ALVAREZ, Havana, Cuba. Filed Mar. 26, 1892.



Essential feature.—The word "CARMENCITA." Used since January 26, 1892.

20,999. DENTIFRICE. ALONZO LILLY, Baltimore, Md. Filed Mar. 15, 1892.



Essential feature.—The representation of a full-blown lily, with a face appearing within it, surmounted by the word "LILLY'S." Used since March 1, 1892.

21,000. FANCY FULL-CREAM CANADIAN CHEESE. ALEXANDER F. MACLAREN, Stratford, Canada. Filed Mar. 25, 1892.



Essential feature.—The representation of two cheese-triers crossed between the heads and shoulders of two cows and surmounted by the words "MACLAREN'S IMPERIAL," with the word "CHEESE" at the bottom. Used since December 18, 1891.

21,001. MOUTH-HARMONICAS. CH. MESSNER & CO., Trossingen, Germany. Filed Mar. 24, 1892.

DAVIDS HARP

Essential feature.—The words "DAVID'S HARP." Used since October 27, 1882.

21,002. BEER. KESTER & V. H. ROSENDE, Henrico County, near Richmond, Va. Filed Feb. 15, 1892.



Essential feature.—An annular band bearing the words "ENJOY IN MALT BREWED BEER COMBINED THE STRENGTH OF FOOD THE VIGOR OF WINE," inclosing the figure of a five-pointed star, whose points reach the outer circumference of said band. Used since July 1, 1891.

21,003. LEATHER AND BOOTS AND SHOES MADE THEREOF. C. T. ROSNITE LEATHER COMPANY, Sheboygan, Wis. Filed Dec. 31, 1891.



Essential feature.—The representation of a shoe being used as a boat, together with the representation of a sail consisting of the tanned hide of an animal, with the words "C. T. ROSNITE LEATHER CO., SHEBOYGAN, WIS.," on said sail, and the words "WATER PROOF BOOT GRAIN" on said representation of a shoe. Used since July 15, A. D. 1891.

21,004. LAGER-BEER. F. & M. SCHAEFER BREWING COMPANY, New York, N. Y. Filed Mar. 16, 1892.



Essential feature.—An annular band inclosing a circular disk and crossed by a streamer, upon the middle of which is the representation of a barrel having on its head a monogram of the letters "F & M S." Used since January, 1892.

21,005. FRESH, CURED, AND SALT MEATS, SAUSAGES, BOLOGNAS, AND FOOD PRODUCTS IN WHICH MEAT IS THE PRINCIPAL INGREDIENT. SCHWARZSCHILD & SULZBERGER, New York, N. Y. Filed Mar. 9, 1892.

MONTEFIORE

Essential feature.—The word "MONTEFIORE." Used since February 25, 1892.

21,006. CORSETS. EMIL SCHWEINBURG, New York, N. Y. Filed Mar. 15, 1892.



Essential feature.—The word "THÉO." Used since July 26, 1888.

21,007. POLISH FOR WOOD, GLASS, AND METAL. ROBERT A. SCHULTZ, Oak Park, Ill. Filed Feb. 25, 1892.

MAU TAU

Essential feature.—The words "MAU TAU." Used since January 25, 1892.

21,008. ARTIFICIAL IVORY AND ARTICLES MADE OR FORMED THEREOF. THE EBURNEA COMPANY, Lancaster, England. Filed Dec. 23, 1891.



Essential feature.—The word "EBURNEA." Used since April 1, 1891.

21,009. VETERINARY REMEDIES. HOMER WILLIAMS, San Francisco, Cal. Filed Feb. 17, 1892.

XXX

Essential feature.—The letters "XXX." Used since August 12, 1872.

21,010. RYE AND BOURBON WHISKY. CUSHMAN & CO., Albany, N. Y. Filed Mar. 25, 1892.

ROYAL CHARTER

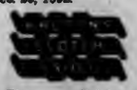
Essential feature.—The words "ROYAL CHARTER." Used since February 8, 1892.

21,011. CLEANING COMPOUND FOR REMOVING GREASE FROM CLOTHING. MAGIC CLOTHES CLEANER CO., Portland, Me. Filed Feb. 26, 1892.



Essential feature.—The word "MAGIC." Used since January 3, 1892.

21,012. SNUFF. BRUTON & CONDON, Davidson County, near Nashville, Tenn. Filed Feb. 29, 1892.



Essential feature.—Three parallel bars and the words "BRUTON'S SCOTCH SNUFF" printed thereon. Used since July, 1891.

21,013. HOES. GEORGE B. DURELL, Harriman, Tenn. Filed Feb. 20, 1892.

THE RAZOR-EDGE HOE



Essential feature.—The representation of a razor and the words "THE RAZOR-EDGE HOE." Used since October 2, 1891.

21,014. BICYCLES. SEBOOMER-BOLTE MANUFACTURING COMPANY, Milwaukee, Wis. Filed Mar. 28, 1892.



Essential feature.—The word "TELEGRAM." Used since August 1, 1891.

21,015. ARTIFICIAL STONE PAVEMENTS, PAVING-BLOCKS, COPINGS, AND ANALOGOUS STRUCTURES. PETER STUART, London, England, and Philadelphia, Pa. Filed Mar. 28, 1892.

Essential feature.—The word "GRANOLITHIC." Used since October 1, 1881.

GRANOLITHIC

21,016. 3068. THE R. H. HOBBS PRODUCE COMPANY OF INDIANA, Union City, Ind. Filed Mar. 14, 1892.

73

Essential feature.—The numerical symbol "73." Used since April, 1868.

21,017. CANDIES. THE CHANDLER & RUDD COMPANY, Cleveland, Ohio. Filed Mar. 26, 1892.

SUNSHINE

Essential feature.—The word "SUNSHINE." Used since April 1, 1891."

21,018.

WITHDRAWN.

THE NORRIS PETERS CO.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

WASHBURN *v.* HADFIELD.

Decided April 8, 1892.

INTERFERENCE—PRELIMINARY STATEMENT—RULE 118.

Where one party to an interference has taken his testimony, the Office will not permit the other party to amend his preliminary statement in the absence of positive proof that the proposed amendatory matter or some material part of it was not within his knowledge when the statement was originally filed. (Affirming *Washburn v. Hadfield*, 57 O. G., 1719.)

MOTION for rehearing.

MANUFACTURE OF STEEL.

Application of Nathan Washburn filed April 4, 1887, No. 233,625. Patent granted Robert Hadfield January 5, 1886, No. 333,748.

Mr. F. Joy and *Messrs. Crosby & Gregory* for Washburn.

Mr. W. Bakewell for Hadfield.

SIMONDS, *Commissioner:*

This is a motion for the rehearing of a Commissioner's decision rendered December 10, 1891, denying (in part) Hadfield's motion to amend his preliminary statement.

Hadfield's first and second present allegations in this regard are as follows:

1. Because it appears from the decision of the Commissioner that the reason for reversing the decision of the Examiner of Interferences and refusing the amendment, to the effect that Joseph D. Weeks about the middle of January, 1884, disclosed the invention of Hadfield to Charles Parkin, who, at Weeks's request and about the latter part of January, 1884, made in the United States steel embodying the invention, was that "the fact now sought to be brought in has been known to Weeks from the first, *but not the date of its occurrence*," and that as the settled practice of the Patent Office in interference cases is not to allow averments to be made in preliminary statements uncoupled with the precise or approximately precise date of the occurrence of the facts sought to be introduced.

2. That for the reason above stated it was impossible that the original preliminary statement or first-amended statement to have made any allegation of the fact now sought to be introduced which would have complied with the requirements of the Patent Office practice.

Hadfield's original preliminary statement was filed December 6, 1888. March 15, 1889, Hadfield moved to amend his preliminary statement, and that amendment was admitted by Commissioner's decision dated June 15, 1889.

Washburn, the junior party, finished his opening testimony September 4, 1889.

Notice of this motion for amendment of preliminary statement dates as of November 7, 1889. The proposed amendment sets up a communication to one Parkin and a reduction to practice by Parkin in January, 1884. The knowledge and actions of one Joseph D. Weeks (Hadfield's agent) are the all-important things. He has known of the disclosure to Parkin and of Parkin's reduction to practice from the first, but has failed to make statement of it heretofore, because he did not remember the dates thereof, and because such dates could not be procured from Parkin on account of Parkin's sickness. It is a matter of course that Weeks knew that the disclosure to Parkin and Parkin's subsequent reduction to practice were an important part of the history of the improvement. He could have caused the mention of this disclosure and reduction to practice either in the original preliminary statement or in the said amendment thereof, stating why the dates thereof were not given, and nothing but the offer so to do and a rejection thereof by the Patent Office could warrant the introduction of this present amendment at this stage of the proceedings.

Hadfield's third and fourth present allegations in this regard are as follows:

3. That the facts now sought to be introduced by amendment to the preliminary statement are of vital importance and that substantial justice would seem to require that permission should be given to introduce them if it is within the discretion of the Commissioner to do so.

4. That as Hadfield has already obtained a patent for the invention in interference, the testimony now sought to be introduced would be material and admissible, in the event of a patent being also granted to the applicant Washburn, or a proceeding under section 4918 of the United States Revised Statutes, by suit in equity to declare the later patent void, and that the exclusion of such testimony in the present interference would be of no substantial benefit to either party, but may entail additional delay, cost, and expense to both parties.

The example of the United States Supreme Court in requiring suitors to abide by right and proper rules of procedure which it formulates, even to their own damage and regardless of future proceedings, is a sufficient guide for this office and a sufficient answer to these allegations.

The motion for rehearing is denied.

HALL *v.* LATTA.

Decided April 8, 1892.

INTERFERENCE—MOTION TO DISSOLVE MUST BE MADE WITH DILIGENCE.

A motion to dissolve an interference will not be allowed unless made with due diligence, and this is a question of fact to be passed upon according to the circumstances surrounding the particular case.

APPEAL from the Examiner of Interferences.

VELOCIPEDE.

Patent granted J. W. Hall October 30, 1888, No. 391,895. Application of E. G. Latta filed February 2, 1888, No. 262,707.

Mr. A. J. Todd and *Mr. J. L. Norris* for Hall.

Messrs. Foster & Freeman for Latta.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Examiner of Interferences denying the motion of Hall for leave to renew a motion to transmit the interference to the Primary Examiner for consideration of a motion to dissolve on the ground of no interference in fact.

This interference was formally declared May 15, 1891, and the preliminary statements were duly approved August 1, 1891.

September 21, 1891, Hall moved for dissolution on the ground of no interference in fact.

October 3, 1891, said motion was transmitted to the Primary Examiner by the Examiner of Interferences in view of his understanding of a stipulation filed.

October 31, 1891, Latta moved to vacate the order of transmittal on the ground that the stipulation was intended to mean that both parties consented to a preliminary hearing before the Examiner of Interferences as to whether the motion for dissolution should be so transmitted.

November 3, 1891, the Examiner granted Latta's motion. On the same day he denied Hall's motion, without prejudice to his right to renew the same on additional showing excusing the delay in bringing the motion.

November 4, 1891, Hall filed such renewal of his motion, supplemented by affidavits.

November 6, 1891, the Examiner of Interferences held the showing to be insufficient, and again refused to transmit the motion for dissolution to the Primary Examiner.

November 12, 1891, Hall appealed to the Commissioner in three separate papers: (1) From the decision of the Examiner of Interferences, setting aside his order of October 3, 1891; (2) from the action of the Examiner of Interferences, dated November 3, 1891, refusing to transmit the motion for dissolution; (3) from the decision of the Examiner of Interferences, dated November 6, 1891, refusing to transmit the renewed motion for dissolution.

December 3, 1891, the Assistant Commissioner denied the first of these appeals, dismissed the second, and affirmed the decision of the Examiner as to the first and third.

December 18, 1891, Hall petitioned for a rehearing.

December 24, 1891, the Assistant Commissioner denied the petition.

January 2, 1892, Hall filed a motion that permission be granted him to renew the motion heretofore made for dissolution.

January 7, 1892, at the hearing before the Examiner of Interferences, Latta moved to dismiss this last motion of Hall, which was granted by the Examiner on the same day.

January 12, 1892, Hall appealed to the Commissioner.

February 3, 1892, the Assistant Commissioner remanded the case to the Examiner of Interferences with "instructions to hear and decide the motion filed by Hall on January 2, 1892."

February 20, 1892, the Examiner of Interferences denied the motion of Hall filed January 2, 1892, holding that the showing failed to establish reasonable diligence.

March 1, 1892, Hall appealed to the Commissioner, which is the appeal now before the Commissioner for decision.

The motion upon which appeal is now taken is for leave to renew the motion for dissolution, and is based upon affidavits which account for the actions of Hall for the twenty days following August 1, 1891. It will, however, be observed that Hall's first motion to transmit to the Primary Examiner was not decided until November 3, 1891, and in the three months intervening between August 1, 1891, and that date there must have been ample time to prepare for the making of any such motion on almost any imaginable ground.

Again, the Examiner of Interferences in denying the motion to transmit, on November 3, 1891, made his action without prejudice to a motion to renew, and by this action Hall was sharply advised to renew his motion in the best possible shape. He renewed that motion to transmit November 4, 1891, and it was denied by the Examiner of Interferences November 6, 1891.

Hall then stands charged with a delay of three months between August 1, 1891, and November 3, 1891, and also with failing to be instructed by the refusal of the Examiner of Interferences to transmit without projudice to a motion to renew. It is of course now too late to permit this motion to be made a third time.

The decision of the Examiner of Interferences is affirmed.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

POPE MANUFACTURING COMPANY *v.* GORMULLY.
No. 204.

Decided April 4, 1892.

1. CONTRACTS AGAINST PUBLIC POLICY.

A contract wherein one party, in consideration of receiving a license from the other party to use certain patents during the life of said patents, agrees never to dispute or contest the validity of certain other patents or the licensor's title thereto, is a contract against public policy.

2. SPECIFIC PERFORMANCE—WHEN EQUITY WILL NOT INTERFERE TO ENFORCE.

Such a contract, entirely aside from any question of its validity in law, is not enforcible in equity, since it is unusual and oppressive in its terms.

3. SAME—MATTER OF JUDICIAL DISCRETION.

Specific performance is not an absolute right, but rests entirely in judicial discretion. (Citing *Hennessy* v. *Woolworth*, 128 U. S., 438.)

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

STATEMENT OF THE CASE.

This was an appeal from a decree dismissing a bill in equity, wherein the plaintiff sought an accounting upon a contract, and an injunction prohibiting the defendant from manufacturing and selling bicycles and tricycles containing certain patented devices, in violation of a contract entered into between the parties on December 1, 1884. A copy of this contract is printed in the margin.*

*This agreement made this first day of December, 1884, by and between the Pope Manufacturing Company, a corporation established under the laws of Connecticut and having a place of business in Boston, Massachusetts, party of the first part, and R. Philip Gormully, of Chicago, Illinois, party of the second part, witnesseth:

That whereas Letters Patent of the United States, numbered and dated as in the following list, were duly granted for the inventions therein set forth, and by certain good and valid assignments the same are now owned by the party of the first:

(Here follows a descriptive list of sixty-five patents.)

And whereas said party of the second part is desirous of making, using, and selling to others to be used bicycles embodying in their construction and modes of operation certain of the said inventions, and of securing license thereof under certain of said Letters Patent: Now, therefore, in consideration of one dollar by the party of the second part to the party of the first part, the receipt whereof is hereby acknowledged, and in further consideration of the covenants, agreements, and stipulations hereinafter contained, said parties have consented and agreed as follows:

First. The party of the first part agrees to license, and does hereby license, the party of the second part, subject to the conditions and provisions herein named, to manufacture at the shop or factory of the party of the second part, in Chicago, in the State of Illinois, and in no other place or places, bicycles of fifty-two inch size and upwards, of such quality, construction, grade, and finish as to be sold in the market at retail prices not greater than eighty per cent. of the retail list prices of the standard Columbia bicycles of same or nearest similar sizes and styles, severally embodying the inventions set forth in those of the said Letters Patent numbered, (here follow the numbers of fifteen patents,) or either of them or either claim thereof and no others, so far as applicable within the conditions and restrictions herein contained, and to sell said bicycles to others to be used, and to use the same within and throughout the United States and the Territories thereof. This license is not to be understood or construed as a license to import, manufacture, buy, sell, or deal in bicycles or tricycles, or in pedals, saddles, springs, rims, bearings, or other patented parts thereof otherwise than as herein expressly stipulated. This license is not transferable, and is in addition to and not to modify or supersede previous ones except as herein expressed.

Second. The party of the second part hereby agrees to maintain a suitable place of business in said Chicago, and to keep there on hand a stock of bicycles as above referred to, and to promote and aid in extending the interest in bicycling and tricycling and the use of bicycles among those not already wheelmen, and to advertise the business by occupying and paying for one-page space continuously during the term of this license in the monthly magazine published by the Wheelman Company, of Boston, Mass., and to a reasonable extent to other publications of general circulation, and to advertise that it is licensed by the Pope Manufacturing Company.

Third. The party of the second part agrees to keep at its place of business full, true, and correct books of account, open at all reasonable times to the party of the first part and to its delegate, in which shall be set down all bicycles made or sold by the party of the second part, with the name or description, size, style, and number thereof, and the names and addresses of the parties to whom sold.

Fourth. The party of the second part agrees to make full and true returns in writing to the party of the first part on or before the tenth day of each calendar month in each year, beginning with the 10th day of January, A. D 1885, of all bicycles (and whether any or not) made, used, or sold in the United States by the party of the second part during the preceding calendar month, with the size, style, number, name, or description, and make of the said machines and the names and addresses of the purchasers, and also of such machines held in stock by the party of the second part at the end of the said preceding month, said returns to be made under oath whenever required by the party of the first part, and to pay the royalties or license fees as herein stipulated on or before the said tenth day of each of said months, on all said bicycles used or sold by them or removed from their said factory or place of business in the preceding month.

Fifth. The party of the second part agrees to pay to the party of the first part the sum of ten dollars upon and for each and every bicycle in whole or in part made by or for it at any time prior to the 1st day of April, A. D. 1886, or the termination of this license, as part license fees or part royalties under several Letters Patent or such or either claim thereof as may be used, and as part of the consideration for this agreement; and it is agreed that the party of the second part shall so pay to the party of the first part, under this license and agreement, at least the sum of

The bill alleged that the plaintiff was engaged in the manufacture and sale of bicycles and tricycles of superior quality; that these machines embodied in their construction inventions covered by Letters Patent owned by the plaintiff; that in pursuance of a plan adopted by it, it reserved to itself the right to manufacture and sell the highest grades, and among others a style of bicycle known as the Standard Columbia bicycle; that under the agreement entered into with the defendant the latter was granted the right to make, use, and sell bicycles fifty-two inches in size and upwards, and of certain style and finish, and embodying the inventions set forth in certain patents named; and that he should not manufacture bicycles embodying the features of certain other patents specified in the agreement. That said defendant expressly agreed that he would not manufacture or sell, directly or indirectly, bicycles, &c., containing any of the inventions or claims in either of said Letters Patent, nor make, use, or sell, directly or indirectly, certain parts of bicycles specified in the contract, other than according to the conditions and terms in said license.

That it was provided by the eleventh clause of said contract that the defendant might surrender the license at any time by written notice, but it was provided in the same clause that no revocation, surrender, or termination of said license, or any part of it, should release or discharge said Gormully from any liability which might have accrued, become due, or arisen prior to, or at the date of, said surrender, or from the obligations, admissions, and agreements contained in sections 6, 7, 8, 9, and 11; that such admissions and agreements were a part of the consideration for the granting of the license, and were irrevocable except by the written consent of the licensor; that it was provided in said clause 11 that if the licensee should continue, after the termination of said license, to make, sell, or use any of the machines or parts thereof containing either of the parts referred to in section 9, plaintiff should have the right to treat the defendant as a party to, and in breach of, the contract; and that defendant, by said section 9, consented that if he did make, use, or sell any machine containing such parts, an injunction might issue in favor of the plaintiff restraining him from so doing.

After setting forth an immaterial modification of such contract subsequently agreed upon, it further averred that the defendant entered upon the manufacture of bicycles under said license, made returns thereof, and paid royalties to plaintiff in accordance with the same, and that said license in respect to the clause claimed to have been violated is still in full force and effect. The bill further charged that since March 1, 1886, defendant has violated the ninth clause of the contract in constructing bicycles of a kind prohibited by the contract, in violation of the first and ninth clauses of said contract.

For which reasons the plaintiff prayed for an account of the machines made in violation of the agreement, and for an injunction.

The court below found that there was no contest between the parties as to the execution of the instrument set out in the bill; that the terms of the contract were such as to prohibit the defendant from making the high-grade styles and kinds of bicycles and tricycles complained of; that, if the contract was valid and in force, it was being violated by the defendant; but that the contract was not of such a nature as to entitle the plaintiff to any relief in a court of equity. (34 Fed. Rep., 877.) From a decree dismissing the bill for the want of equity the plaintiff appealed to this Court.

Mr. L. L. Coburn and *Mr. Edmund Wetmore* for the appellant.

Mr. W. C. Goudy and *Mr. C. K. Offield* for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

This case involves the question whether a court of equity can be called upon to decree the specific performance of a contract, wherein the defendant, in consideration of receiving a license to use certain patents belonging to the plaintiff during the life of such patents, agrees never to import, manufacture, or sell any machines or devices covered by certain other patents, unless permitted in writing so to do, nor to dispute or contest the validity of such patents or plaintiff's title thereto, and further to aid and morally assist the plaintiff in maintaining public respect for and

preventing infringements upon the same; and further agrees that if, after the termination of his license, he shall continue to make, sell, or use any machine or part thereof containing such patented inventions the plaintiff shall have the right to treat him as an infringer, and to sue out an injunction against him without notice.

There are other covenants in this contract which show that the plaintiff intended to reserve to itself a large supervision and control of the defendant's business; for example, in the second clause, wherein the defendant agrees to maintain a place of business in Chicago, keep on hand a stock of bicycles, and advertise his business by occupying and paying for one-page space continuously, during the term of his license, in a certain periodical published in Boston, and in other publications of general circulation; and to advertise that it is licensed by the plaintiff. By the sixth clause he agrees to sell bicycles at retail, and not to sell to any person except upon terms and prices satisfactory to the plaintiff, and as shall first be submitted to and approved by it; and shall not have or sell to any agent in any other place than Chicago, nor pay nor allow freight beyond Chicago, nor any bonus, rebate, allowance, or commission on sales. By the seventh clause he agrees to stamp the word "patented" on each machine, together with the dates of the patents under which each of the machines is made or sold, according to a list furnished by the plaintiff.

It is rarely that this Court is called upon to consider so unique a contract, and we have found some difficulty in assigning to it its proper place among legal obligations. Its requirement is not merely that the licensee shall refrain during the term of his license from infringing other patents than those which he is expressly authorized to use, but shall forever afterward, at least during the life of such patents, refrain from importing, making, or selling articles covered by them, and from disputing the validity thereof or plaintiff's title thereto, and shall afford his moral aid and assistance in securing proper aid and respect for such patents. The exact nature and amount of moral suasion the licensee is bound to exert in behalf of the plaintiff is not specified, but is apparently left to be determined by the circumstances of the case.

(1) Ordinarily the law leaves to parties the right to make such contracts as they please, demanding, however, that they shall not require either party to do an illegal thing, and that they shall not be against public policy or in restraint of trade. It is argued with much earnestness here that this contract is open to the last objection, as an attempt to fetter the defendant from importing or making bicycles, in which he might otherwise have a perfect right to deal, and thus foreclose himself from the ability to earn an honest living in his chosen calling. It is scarcely necessary to say that, without this contract, the defendant would have no right to manufacture or sell bicycles covered by valid patents of the plaintiff, so that the contract is not needed for the protection of the plaintiff to this extent. The real question is whether the defendant can estop himself from disputing patents which may be wholly void, or to which the plaintiff may have no shadow of title. It is impossible to define with accuracy what is meant by that public policy for an interference and violation of which a contract may be declared invalid. It may be understood in general that contracts which are detrimental to the interests of the public as understood at the time fall within the ban. The standard of such policy is not absolutely invariable or fixed, since contracts which at one stage of our civilization may seem to conflict with public interests, at a more advanced stage are treated as legal and binding. In certain cases a man may doubtless agree that he will interpose no defense to a specified claim, and that another may take judgment against

one thousand dollars within and for each and any consecutive twelve calendar months during the continuance of this license.

Sixth. The party of the second part agrees to sell said bicycles at retail and not to sell the same or any of them to any person or party, either directly or indirectly, except upon such terms and at such prices as shall be satisfactory to the party of the first part and as shall first be submitted to and approved by the said party of the first part, such written submission of rates, terms, and prices, with the said approval, to be taken as and to form a part of this agreement, and not to have or sell through any agent or agents in any other place than the said Chicago, nor pay or allow freight beyond the said Chicago, nor any bonus, rebate, allowance, or commission on sales or from prices except as expressly agreed in writing between the parties hereto.

Seventh. The party of the second part agrees to mark or stamp in a legible manner the word "patented" on each machine made or sold under this license, together with the date or dates of the patents under which each machine is made or sold, a list of such patents to be furnished by the party of the first part.

Eighth. The party of the second part hereby expressly admits the validity of the several Letters Patent hereinbefore mentioned, and of each and every claim thereof, and the title of the party of the first part thereto; and further admits specifically that the following inventions are embodied in the "Ideal" bicycle and the "Standard Columbia" bicycle and the "Expert Columbia" bicycle, as follows, to wit: (*a*) the invention claimed in the second clause of claim of said patent, R. 3,297, in the saddles of said bicycle, and their connection therewith; (*b*) the invention claimed in the third clause of claim of the last-named patent in the cranks of said bicycles; (*c*) the invention claimed in the fourth clause of claim of said last-named patent in the backbones and rear forks of bicycles; (*d*) the invention claimed in third clause of claim of said Patent No. 86,527 in the leg-guard of said bicycle; (*f*) the invention claimed in second clause of claim of said Patent 86,834 in the brake mechanism of said bicycles and its connections; (*g*) the invention claimed in the third clause of claim of said Patent 86,834 in the steering-head of the said bicycles and its connections; (*h*) the invention claimed in the fifth clause of claim of said Patent 87,713 in the tires of the wheels of said bicycles; (*i*) the inventions claimed in the third clause of claim of said Patent No. 88,307 in the front forks of said Expert; (*j*) the inventions claimed in the fourth clause of claim of said last-named patent in the pedals of said bicycles; (*k*) the inventions claimed in the claim of Letters Patent No. 194,980 in the balance-gear and its connections in the "Columbia" and "Victor" tricycles; (*l*) the invention claimed in the second clause of claim of said Patent No. 197,289 as embodied in the ball-bearings of said Expert bicycle and Victor tricycle and in "Æolus" ball-pedals; and further admits that any machines or part of machines constructed in a substantially similar manner are or would be infringements of said claims respectively; and these admissions are unqualified and may at any time hereafter be pleaded or proved in estoppel of the party of the second part.

Ninth. The party of the second part agrees that it will not import, manufacture, or sell, either directly or indirectly, any bicycle, tricycle, or other velocipede, or the pedals, saddles, bearings, rims, or other patented parts or devices containing any of the inventions or claims in either of the hereinbefore-recited Letters Patent, nor make, use, or sell, directly or indirectly, either (*a*) backbones bifurcated for a rear wheel, or (*b*) balance-gear allowing two wheels abreast, differing speeds on curves, or (*c*) bearings containing balls or rollers and laterally adjustable, or (*d*) brakes combined with the handle-bars and front wheel, or (*e*) cranks adjustable to different lengths of throw, or (*f*) forks of tubular construction, or (*g*) mud-shield for steering-wheels, constructed to turn within the wheel, or (*h*) pedals that are polygonal or offering two or more sides for the foot, or (*i*) round contractile rubber tires in grooved rims or rims containing or adapted for rubber or elastic tires, or (*j*) saddles adjustable fore and aft, or (*k*) saddles having a flexible seat and means of taking up the slack, or (*l*) steering-heads, open or cylindrical, with stop for complete turning, or (*m*) leg-guards over front wheel, or (*n*) rims of wrought-metal tubing and adapted to receive a tire, or (*o*) rims composed of sheet metal, with overlapping edges, or (*p*) wheels containing hollow metallic rim and rubber tires, or (*q*) steering spindle and fork inclined to each other at an angle, or (*r*) two speed or power gears, or (*s*) "Tangent" spokes or "Warwick" rims, or (*t*) any other device or invention secured by either of these patents, other than according to the permission, conditions, and description in paragraph numbered "first" in this agreement or as otherwise agreed in writing with the party of the first part, nor in any way, either directly or indirectly, dispute or contest

him without notice. This is a matter of every-day occurrence in connection with what are termed "judgment notes." But if one should agree for a valuable consideration that he would set up no defense to any action which another might bring against him, and such other person might enter up judgment against him in any such action without notice, we think that no court would hesitate to pronounce such an agreement invalid. There are certain fundamental rights which no man can barter away, such, for instance, as his right to life and personal freedom, and, in criminal cases, the right to be tried by a jury of his peers. Courts have even gone so far as to say that a man cannot consent to be tried by a jury of less than twelve men, whatever may be the circumstances under which the twelfth man is taken from the panel. (Cooley's Cons. Lims., 319.) We are reluctant to say that a right to defend a whole class of unjust claims may not be one of these. It is as important to the public that competition should not be repressed by worthless patents, as that the patentee of a really valuable invention should be protected in his monopoly; and it is a serious question whether public policy permits a man to barter away beforehand his right to defend unjust actions or classes of actions, though, in an individual case, he may doubtless assent that a judgment be rendered against him, even without notice.

The reports are not entirely barren of authority upon this subject. Thus in *Crane* v. *French* (38 Miss., 503) it was held that though a party may omit to take advantage of a right, such as the right to plead the statute of limitations, secured to him by law, he could not bind himself by contract not to avail himself of such right if it be secured to him on grounds of public policy.

> But there appears to be [says the Court] a clear distinction between declining to take advantage of a privilege which the law allows to a party, and binding himself by contract that he will not avail himself of a right which the law has allowed to him on grounds of public policy. A man may decline to set up the defense of usury, or the statute of limitations, or failure of consideration, to an action on a promissory note. But it would scarcely be contended that a stipulation inserted in such a note, that he would never set up such a defense, would debar him of the defense if he thought fit to make it. * * * Suppose, then, an agreement made by the maker of a note that he would not set up the defense of usury. Would an action lie for a breach of that agreement, in case the party should make the defense in disregard of it? It appears not, and the reason is, that the right to make the defense is not only a private right to the individual, but it is founded on public policy which is promoted by his making the defense, and contravened by his refusal to make it. * * * With regard to all such matters of public policy, it would seem that no man can bind himself by estoppel not to assert a right which the law gives him on reasons of public policy.

There are cases wherein it is held that a promise not to plead the statute of limitations is a good bar, but they are those wherein the promise was made after the cause of action had accrued, and where it was considered by the court as a new promise. There are a few cases, however, which hold that an agreement not to plead the statute, made upon the instrument, or at the time of its execution, may be pleaded as an estoppel. So in *Stoutenburg* v. *Lybrand* (13 Ohio St., 228) it was held that a contract which provides that a defendant in a proceeding for divorce shall make no defense thereto, is against public policy, and therefore void.

> The tendency of such agreements [said the Court] is to mislead the court in the administration of justice and injuriously affect public interests.

A like ruling was made in *Sayles* v. *Sayles* (1 Fost., 312) and in *Viser* v. *Bertrand*, (14 Ark., 267.) So in *Bell* v. *Leggett* (3 Selden, 176, 179) it was said that—

> all contracts or agreements which have for the object anything which is repugnant to justice, or against the general policy of the common law, or contrary to the provisions of any statute, are void;

and that this principle has oft n been applied by our courts to contracts which had for their objects the perversions of the ordinary operations of the Government. In that case a note given by a third person to a creditor in consideration of his withdrawing opposition to

the validity of the Letters Patent hereinbefore mentioned, or either of them or the title thereto of the party of the first part, but will aid and morally assist the party of the first part in maintaining public respect for and preventing infringements upon the same.

Tenth. If and whenever the party of the first part shall reduce the royalties on bicycles of similar sizes, construction, and grade, to any other licensee, the above-named royalties shall be reduced in like manner and proportion to the party of the second part, and the party of the first part will immediately notify the party of the second part of any such reduction of royalties.

The party of the second part may sell said herein-licensed bicycles to regular agents and dealers in the trade and doing business as such in any part of the United States at discounts from the said retail list prices not exceeding twenty-five per cent. in any case, and to the smaller agents not exceeding fifteen per cent., it being understood and agreed that said discount of not exceeding twenty-five per cent. may be allowed only to our (one?) dealer in each or either of the following cities: New York, N. Y.; Philadelphia, Pa.; Boston, Mass.; Baltimore, Md.; St. Louis, Mo.; San Francisco, Cal.; St. Paul, Minn.; and one city in the Southern States, and to two dealers in Chicago, Ill. Said party of the second part also agrees to keep the retail list prices fixed, and not to allow said licensed bicycles to be sold at retail at less than said retail prices, either by his own concern or by agents or dealers.

The party of the second part may sell the said licensed bicycles outside of the United States for actual use in foreign parts without the herein-contained restrictions as to prices and discounts, and upon satisfactory evidence of such export and foreign sale of said bicycles there shall be allowed a rebate or credit of one-half of said royalties thereon.

Eleventh. If and whenever the party of the second part shall fail to make returns or to make payments as herein provided, or shall violate or fail to keep and perform the terms, conditions, promises, or agreements, or either of them herein mentioned on his part to be kept and performed, the party of the first part may withdraw and terminate this license and the agreements on its part mentioned to be kept and performed, by notifying the party of the second part in writing that the license herein contained has been revoked, and the party of the first part may in like manner revoke this license whenever the reported sales by the party of the second part for any consecutive twelve calendar months shall be less than one hundred machines. The party of the second part may surrender the license herein contained at any time by written notice to that effect and the returning of this contract to the party of the first part; but no such revocation or surrender, and no termination of this contract or any part of it, shall release or discharge the party of the second part from any payment, return, liability, or performance which may have accrued, become due, or arisen hereunder, prior to or at the date of such revocation or surrender, or from the obligations, admissions, and agreements contained in the sections hereof numbered "sixth," "seventh," "eighth," "ninth," and "eleventh" *hereof*, which are a part of the consideration for the granting of the license herein and are irrevocable, except by written consent of the party of the first part; and it is agreed that at the termination of the license herein contained at any time by expiration, revocation, or surrender the party of the second part shall pay the within-named royalty on all said herein-licensed machines or parts of machines, whether wholly finished or not, or purchased or on hand, or ordered by or for said party of the second part at the date of said termination, and that the party of the second part will not sell the same except by first paying the full amount of said royalty and by complying with all the terms and conditions of this contract; and, further, that if the party of the second part shall continue after such termination of the license to make, sell, or use any machine or substantial part thereof containing either of the parts specifically referred to in section "ninth" hereof, or in any invention in any form set forth and claimed in the Letters Patent aforesaid or any of them, the said party of the first part shall have the right to treat the party of the second part either as a party to and in breach of this contract or as a mere infringer, and the said party of the second part consents that in such case, upon any suit brought by the said party of the first part against the said party of the second part in any court, either upon this contract or for an infringement of the said Letters Patent, or any of them, an injunction may issue without notice to the said party of the second part restraining him from making, selling, or using the said part or devices or the invention or inventions in said Letters Patent, or any of them set forth.

Witness our hands and seals the day and the year first above written.

THE POPE MANUFACTURING COMPANY.
R. PHILIP GORMULLY.
THE POPE MFG. CO.,
By CHARLES E. PRATT, *Atty.*

the discharge of a bankrupt debtor, was held to be void as against the policy of the law. In most of the States wherein the question has arisen it has been held that a debtor is not bound by his waiver of his homestead or other exemptions upon execution. (*Kneetle* v. *Newcomb*, 22 N. Y., 249, 251.)

> In these cases [said the Court] the law seeks to mitigate the consequences of man's thoughtlessness and improvidence, and it does not, I think, allow its policy to be invaded by any language which may be inserted in the contract.

The exigencies of this case do not require us to decide the question whether a man may or may not contract beforehand not to set up a certain defense to a particular action; but we are of the opinion that a contract not to set up any defense whatever to any suit that may be begun upon fifty different causes of action is in violation of public policy. (See, as pertinent to this question, *Insurance Co.* v. *Morse*, 20 Wall, 445; *Doyle* v. *Continental Ins. Co.*, 94 U. S, 535; *Barron* v. *Burnside*, 121 U. S, 186.)

(2) But whether this contract be absolutely void as contravening public policy or not, we are clearly of the opinion that it does not belong to that class of contracts, the specific performance of which a court of equity can be called upon to enforce. To stay the arm of a court of equity from enforcing a contract it is by no means necessary to prove that it is invalid; from time to time immemorial it has been the recognized duty of such courts to exercise a discretion; to refuse their aid in the enforcement of unconscionable, oppressive, or iniquitous contracts; and to turn the party claiming the benefit of such contract over to a court of law. This distinction was recognized by this Court in *Cathcart* v. *Robinson*, (5 Pet., 264, 276,) wherein Chief Justice Marshall says:

> The difference between that degree of unfairness which will induce a court of equity to interfere actively by setting aside a contract, and that which will induce a court to withhold its aid, is well settled. (10 Ves., 292; 2 Coxe's Cases in Chancery, 77.) It is said that the plaintiff must come into court with clean hands, and that a defendant may resist a bill for specific performance, by showing that under the circumstances the plaintiff is not entitled to the relief he asks. Omission or mistake in the agreement, or that it is unconscientious or unreasonable, or that there has been concealment, misrepresentation, or any unfairness, are enumerated among the causes which will induce the court to refuse its aid.

This principle is reasserted in *Hennessy* v. *Woolworth*, (128 U. S., 438, 442,) in which it was said that specific performance is not of absolute right, but one which rests entirely in judicial discretion, exercised, it is true, according to the settled principles of equity, and not arbitrarily or capriciously, and always with reference to the facts of the particular case. (*Willard* v. *Tayloe*, 8 Wall., 557, 567; *Marble Co.* v *Ripley*, 10 Wall., 339, 357; 1 Story's Eq. Jur., sec. 742; *Seymour* v. *Delancey*, 6 Johns. Ch., 222, 224; *White* v. *Damon*, 7 Ves., 30, 35; *Radcliffe* v. *Warrington*, 12 Ves, 326, 331.)

These principles apply with great force to the contract under consideration in this case. Not only are the stipulations in paragraphs 9 and 11 unusual and oppressive, but there is much reason for saying that they were not understood by the defendant as importing any obligation on his part beyond the termination of his license. Indeed, the operation of these covenants upon his legitimate business was such that it is hardly possible he could have understood their legal purport. The testimony upon this point was fully reviewed by the court below in its opinion, and the conclusion reached that the contract—

> was an artfully-contrived snare to bind the defendant in a manner which he did not comprehend at the time he became a party to it.

We have not found it necessary to go into the details of this testimony. While we are not satisfied that his assent to this contract was obtained by any fraud or misrepresentation, or that the defendant should not be bound by it to the extent to which it is valid at law, we are clearly of the opinion that it is of such a character that the plaintiff has no right to call upon a court of equity to give it the relief it has sought to obtain in this suit. We express no opinion upon the question whether an action at law will lie upon the covenants of the ninth clause of the contract not to manufacture or sell the devices therein specified.

The decree of the court below dismissing the bill is therefore affirmed.

POPE MANUFACTURING COMPANY *v.* GORMULLY & JEFFERY MANUFACTURING COMPANY *et al.* No. 205.

Decided April 4, 1892.

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

Mr. L. L. Coburn and *Mr. Edmund Wetmore* for the appellant.

Mr. W. C. Goudy and *Mr. C. K. Offield* for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

The bill in this case appears to be brought against the defendants as successors of Gormully under the contract of December 1, 1884, which was also made the basis of the suit No. 204, just decided. As it is admitted in the brief that if the Court refused relief against Mr. Gormully for want of equity in the prior suit, there is no reason why it should not refuse it in this case, it is unnecessary to go into its details.

The decree of the court below dismissing the bill is, therefore, affirmed.

POPE MANUFACTURING COMPANY *v.* GORMULLY & JEFFERY MANUFACTURING COMPANY *et al.* No. 206.

Decided April 4, 1892.

PATENT—INFRINGEMENT—BICYCLES.

Patent No. 252,280, to Curtis H. Veeder, January 10, 1882, for bicycle-saddle seat, *Held* not infringed by defendant's device. Patent No. 197,289, to Peters, November 20, 1877, for improvement in anti-friction journal-boxes, *Held* anticipated by patent to Alcott, of March 29, 1870. Patent to Moran, No. 245,542, August 9, 1881, for velocipede-handles, *Held* anticipated by English patent to Harrison, July, 1877. Patent No. 310,776, to Benham, for a method of attaching the handle-bar to the steering-head of a bicycle, *Held* not infringed by defendants. Patent No. 323,162, July 28, 1885, to Latta, for form of protecting or cushioning pedals of velocipedes with india rubber, *Held* of doubtful validity, but of such narrow construction in view of the prior state of the art that defendant does not infringe.

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of eight patents granted to different parties for devices

used in the manufacture of bicycles and velocipedes. Upon a hearing in the court below the bill was dismissed, and the plaintiff appealed to this Court. (34 Fed. Rep., 885.)

The assignment of errors covers only five patents:

1. Patent No. 252,280, issued January 10, 1882, to Curtis H. Veeder, for a seat for bicycles, which the court below held to be limited by previous patents to Lamplugh and Brown, to Shire, and to Fowler, and as so limited not to have been infringed by the defendants.

2. Patent No. 197,289, issued November 20, 1877, to A. L., G. M., and O. E. Peters, for an anti-friction journal-box, which was held to be anticipated, and, if not anticipated, not to have been infringed.

3. Patent No. 245,542, issued August 9, 1881, to Thomas W. Moran, for handles for velocipedes, which the court held did not involve invention, and was void.

4. Patent No. 310,776, issued January 13, 1885, to William P. Benham, for improvements in velocipedes, which the court held had not been infringed by the defendants.

5. Patent No. 323,162, issued July 28, 1885, to Emmit G. Latta, for an improvement in velocipedes, which the court, in view of the state of the art, held to be void for want of novelty.

Mr. L. L. Coburn and *Mr. Edmund Wetmore* for the appellant.

Mr. C. K. Offield for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

The bill in this case, in addition to the usual allegations of a bill for the infringement of a patent, sets forth as a distinct ground for recovery the violation of the contract of December 1, 1884, which it was claimed was obligatory upon the defendants. As this claim was, however, disposed of in the cases Nos. 204 and 205, just decided adversely to the plaintiff, upon grounds which are equally available here, we shall take no further notice of it. The case is, therefore, resolved into an ordinary suit for the infringement of a patent.

(1) Patent No. 252,280, to Curtis H. Veeder, is for a seat for bicycles. In his specification the patentee states that his—

> improvements relate to the class of seats known as "saddles," and especially to devices for suspending the leather or other flexible material of which the seating-surface is composed, and for stretching or taking up the slack in the same, and for connecting the same with the perch or supporting-bar for the seat, and by means of which the seat is made adjustable backward and forward over the perch or bar; and my present invention * * * consists first, in a divided metallic spring or supporting-plate for the flexible seat; second, in a modification of that portion of said metallic spring which forms the frame-work for the rear of the seat; third, in mechanism for elongating or extending said metallic spring so as to take up the slack of the flexible seat; and, fourth, in mechanism for completing the support of the seat and connecting the same with the perch or supporting-bar of the vehicle, so as to be adjustable backward and forward thereon.

He further states that he is "aware that a spring has been used to support the seat or saddle of a bicycle," and, therefore, does not claim the general application of a spring for this purpose, but does claim:

> 1. A suspension-saddle constructed with a flexible portion, C, and having an under spring in two or more parts, B D, to which the flexible portion is attached at either end, and which metallic parts are extensible, substantially as and for the purposes set forth
>
> 2. In a velocipede-seat, the combination of plates B and D, clamp F, stop b^3, adjusting-bolt F', substantially as shown and described.

Referring to the state of the art, as disclosed by prior patents, there appears in the patent of John C. Miller, of April 10, 1866, a saddle-seat suspended at both ends upon springs; the seat, however, has a frame-work of iron, and consequently is not flexible, and, of course, has no provision for taking up the slack. In the patent to Fowler of 1880 there is a saddle-seat, suspended, at the front end, upon a coil-spring, and at the rear end upon a long plate-spring; the seat is rigid however, and lacks the flexibility which characterizes the Veeder patent, and there was apparently no provision for mutual adjustment of the springs. The Shire patent of 1879 has a flexible saddle-seat, the front end of which is attached to a strap which passes through a loop, and is susceptible of being shortened or lengthened by means of a buckle. It also has an under spring to which is attached the forward end of the flexible saddle. It differs principally from the Veeder patent in the fact that the slack is taken up by means of a strap and buckle, instead of by an adjustment of the two springs of the Veeder patent. The Bishop patent of 1859 exhibits a flexible seat suspended upon springs at either end, but it also lacks the adjustable feature. None of these prior patents exhibit a flexible seat supported at either end by two parts of a spring, which are made adjustable relatively to each other, in such manner as to take up the slack; and for the purposes of this case it may be conceded that there was invention in this device, notwithstanding that other patents showed flexible seats suspended upon springs at either end, and in some cases with the feature of adjustability. The Veeder patent, however, differs no more from the prior patents than do the defendant's saddles from it. In the defendants' Champion saddle a flexible saddle is supported at either end upon springs, the rear one being made adjustable in such a way as to take up the slack. But as Veeder's invention, in view of the state of the art, is a very narrow one, we think it cannot be properly considered as covering the defendant's device. The springs of the defendants' saddle are not only wholly different in form from those of the Veeder patent, but there is no relation between them, the rear one being independently adjustable. The feature of extensibility does not pertain at all to the springs, but to the peculiar manner in which the rear spring is adjusted to the perch. If Veeder had been the first to invent a saddle supported upon springs, or a flexible spring-seat capable of adjustment, it might be thought that the defendants could be held to infringe, though they do not employ the double spring of the Veeder patent, but in view of the state of the art, we think the court below was correct in holding that there was no infringement.

(2) Patent No. 197,289 to the Peters is for an improvement in anti-friction journal-boxes for overcoming the friction of the bearing of all vehicles mounted on wheels, and the journals of all revolving shafts, etc. The invention is—

> a combination of rollers or cylinders, made of iron, steel, or any suitable metal or other material, of sufficient number and suitable in length, size, and form, which revolve around the spindle or bearing of the axle within the hub of the wheel, and around the journal or bearing of the shaft or cylinder, and within the journal-box, the rollers being independent of the bearing and the hub or journal-box.

The only claim in issue in the case is the second, which is for—

> the bearings with the shoulder beveled or notched, combined with the nut, or its equivalent, correspondingly beveled or notched, as shown in Fig. 4.

This patent is in substance for a method of overcom-

ing the friction of an ordinary journal by causing the same to revolve upon elongated rollers, whose action is guided and secured by putting them in a cage, so that their relative relations to each other in their revolution shall be the same.

To support and keep the rollers from running against one another and thereby producing friction, both ends of each are made with a bearing, which goes into rings, or their equivalents, in such a manner as to allow the rollers to turn freely on their bearings as they revolve around the bearing of the axle or shaft. These rings may be flat, or one or both sides rounding or oval, and of one entire piece, or made in sections or parts, and the parts fitted or hinged together in such a manner as to form the required ring. To retain the wheel on the bearing of the axle, as the wheel of a common road-vehicle, the ordinary nut in use for that purpose, or its equivalent, is made to bevel in conformity with the beveled ends of the rollers, and the bearing or axle at the inner ends of the rollers is made with a beveled shoulder to correspond with the ends of rollers.

The patent to Allcott, of March 29, 1870, has also for its—

object the diminution of friction in ordinary axle-boxes, and consists in constructing the hub-box larger than the journal of the axle, and filling the space between the journal and the box with longitudinal metallic rollers, of which two sizes are employed, the larger and smaller alternating, and more completely filling said space.

The axle is formed with a grooved flange and the journal with a similarly grooved or beveled nut. The ends of the rollers are also somewhat beveled to correspond with the tapering portions of the journal and nut. When the beveled ends of the rollers become worn down, the beveled sleeve on the nut may be filed down, and the nut screwed up, thus keeping the rollers from any longitudinal motion.

This patent seems to be very nearly, if not quite, a complete anticipation of the Peters patent. Such differences as exist between them are of minor consequence: the beveled shoulder combined with the beveled nut or its equivalent being present in, and the essential feature of, both patents. In any view of the case it required no invention to make the slight alterations apparent in the Peters patent.

In addition to this, however, the Jewett patent of May, 1868, shows—

a journal or axle-box provided with a series of spherical balls, which are placed in a circular recess or chamber, and revolve in contact with the journal or axle, thereby reducing the friction to a great extent, and entirely avoiding the necessity of employing oil or other lubricating material.

The grooves of this patent at the opposite ends of the axles are practically the same in their operation as the beveled shoulder and nut of the Peters patent, the balls giving both vertical and lateral support, and preventing endwise movements. Similar arrangements are shown in the patent to Perley of 1863, and the English patent to Mennons of 1860.

There was also a patent issued to one Smith upon the same day the Peters' patent was issued, namely, November 20, 1877, but upon an application filed September 1, 1877, prior to Peters' application, and, therefore, anticipating Peters' patent, in which was represented an axle formed with a spindle, having a collar at its inner end, in which collar was a circumferential half-round groove. The outer end of this spindle is reduced in circumference, and another collar is placed thereon and fastened by a screw, this collar being also provided with a similar groove. In each collar is placed a series of anti-friction balls, which are of such diameter as to be one half within the groove in the collar. The other half of the ball is within a groove formed one half in the hub and the other half in the flange upon an annular plate. The operation of this patent is practically the same as that of the device used by the defendant.

This device appears to be, however, a minor variation upon the English provisional specification of 1858 to Chinnock, which also consisted in securing the axle in the box by means of one or more spherical balls running in a circular channel, formed partly in the axle and partly in the box in which it fits. Defendants are the owners of and manufacturing under this patent, and the fact that this and the Peters' applications were pending before the Patent Office at the same time, and that patents were issued upon the same day, is strong evidence that they were not even considered as competitive inventions.

As the defendants' manufacture was not of the elongated rollers of the Peters' patent, but of the spherical balls of Chinnock, Jewett, and other patents, it would seem to follow that, if its device be an infringement of the Peters' patent, the Peters' patent itself must be an infringement of the prior ball-bearing patents.

(3) The Moran patent, No. 245,542, of August 9, 1881, is for a handle for velocipedes, and consists simply in providing rubber handles for counteracting the jar on the hands in traveling, and preventing injury to the machine when falling. The claims are:

1. The handle of a velocipede provided with rubber ends, as set forth.
2. The handle of a velocipede, in combination with rubber tips sleeved upon its ends, as set forth.
3. A rubber handle for a velocipede, consisting of a ball and neck combined in one piece, as set forth.

Briefly stated, this patent is for nothing more nor less than the application of a rubber ball or cushion upon the extremities of the handle. The patentee states in his specification that he only claims this rubber in its application to velocipedes, it being a not-uncommon device as applied to other handles. We have very grave doubt as to whether this involves any invention; but if it does it is fully anticipated in the English patent to Harrison, of July, 1877, which exhibits a similar method of covering the handles of bicycles with a sheath or glove of india-rubber. There is a slight difference in the form of the sheath in this case, but it is identical in principle and used for the same purpose. Indeed, the defendant in this connection seems to rely not upon the validity of his patent, but upon the estoppel alleged to have arisen under the contract of 1884, which we have already held not to exist.

(4) Patent No. 310,776, to Benham, is for a method of attaching the horizontal handle-bar to the steering-head of a bicycle, and consists in making the handle-bar, which may be either solid or tubular, continuous, and attaching to the middle of it a lug or detent, which serves not only to locate the handle-bar evenly and quickly by an even division of its length on either side of the middle line of the head, but also to prevent the handle-bar when in position from turning or revolving on its axis. The first and third claims of the patent, which are alleged to be infringed, are as follows:

1. The combination of an undivided bar and an open-slotted lug, and two sleeve-nuts, or their equivalents, one on either side the lug, surrounding the bar and adapted to lock it rigidly to the lug, essentially as set forth.
3. In combination with the handle-bar B, the detent D, constructed and adapted to operate substantially as and for the purposes set forth.

The patent is really for making the handle-bar in one piece and so attaching it to the steering-head of the bicycle so as to prevent any lateral or rotary movement. This is done by the use of sleeve-nuts surrounding the handle-bar and engaging with threaded portions of a lug, through which the bar is thrust.

If there be any scope for invention in the attachment of a horizontal bar to a vertical one in such manner that it shall be firm and immovable in any direction, this device appears to have been substantially anticipated by the English patent to Illston, issued in 1879, which shows substantially the same elements operating for the same purpose, and in substantially the same manner. Illston states that he makes—

near the top of the head of the bicycle or tricycle a cross-hollow bracket open at its ends and top,

corresponding to the open-slotted lug of the Benham patent.

The said bracket has externally a nearly-cylindrical figure, and its ends are furnished with convex screws. * * * On each side of the middle flattened part of the handle bar is a sliding collar milled externally, and screwed internally with a concave screw proper to fit on the convex screw at the end of the hollow or trough bracket on the head.

The screw collars of this patent correspond very closely with the sleeve-nuts of the Benham patent.

Upon the whole, it does not seem to us that there was any patentable difference between these two devices, and if there were, we agree with the opinion of the court below, that it is certainly not infringed by the defendants, who, while they use an undivided handle-bar, have adopted a different method for fastening the same to the steering-head, and do not use either the complainant's open-slotted lug and two sleeve-nuts or their detent.

(5) Patent No. 323,162, of July 28, 1885, to Emmit G. Latta, relates to a form of protecting or cushioning the pedals of a velocipede with india-rubber. There are eight claims to this patent, the second and third only of which are alleged to be infringed. They are as follows:

2. The combination, with the pedal-frame, of a rubber pedal-bar, H, provided with a central longitudinal groove A, and two bearing-surfaces, A' A', on opposite sides of the groove A, substantially as set forth.
3. The combination, with the pedal-frame, of a rubber pedal-bar, H, pivoted to the frame by a rod, f, and provided on each of its sides with a longitudinal groove, A, and two bearing-faces, A' A', on opposite sides of the groove, whereby the bar H is adapted to receive the pressure at its sides or edges and be compressed on opposite sides of the rod f, substantially as set forth.

The invention in these claims consists in the pedal-bar, combined with the pedal-frame, the pedal-bar being rubber, constructed with grooves and bearing-faces; the second claim providing for the bar being pivoted to the frame, so that it works easily either side up, and will turn on its bearings as the foot presses on the front face or the rear face of the pedal. The pedal is centrally grooved and has two bearing-faces, one on each side of the center-rod on which it is pivoted.

The application of india-rubber to foot-pedals is shown in the English patent to Harrison of July, 1877, to prevent the slipping of the feet on the pedals. This rubber is made corrugated, and is placed in the same position upon the pedals as the ordinary smooth surface rubber had been placed. The English patent to Jackson, of 1876, also shows a treadle cast in one piece, having suitable grooves formed therein to allow of india-rubber being affixed within them by means of cement. It is entirely clear that the coating of pedals to prevent slipping being once conceded to be old, there is no novelty in the particular shape in which these rubber coverings are made, or the form which the corrugations or groovings shall take; it is a mere matter of taste or mechanical skill.

If there be any novelty at all in the Latta patent it must receive such an exceedingly narrow construction that the defendant cannot be held to have infringed it.

In short, the patents which are made the basis of this bill are, in view of the state of the art, all of them of a trivial character, and, so far as they possess any merit at all, are not infringed by the devices employed by the defendant.

The decree of the court below dismissing the bill, is, therefore, affirmed.

POPE MANUFACTURING COMPANY *v.* GORMULLY & JEFFERY MANUFACTURING COMPANY *et al.* No. 207.

Decided April 4, 1892.

1. ASSIGNMENT—SEPARATE CLAIMS OF A PATENT NOT ASSIGNABLE.
An instrument purporting to assign certain specified claims of a patent does not operate as an assignment and vest the legal title therein in the assignee, but is a mere license, since the monopoly granted by the patent is for an entire and indivisible thing.

2. INFRINGEMENT—BICYCLE-SEAT.
Patent No. 314,142, to Kirkpatrick, March 17, 1885, for bicycle-saddle, *Held* limited by the Fowler patents of 1880, 1881, and the Veeder patent of 1882, and not infringed by the defendant's device.

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of two Letters Patent, namely, No. 216,231, issued to John Shire, June 3, 1879, for an improvement in velocipedes, and, second, Patent No. 314,142, issued March 17, 1885, to Thomas J. Kirkpatrick, for a bicycle-saddle.

Both patents were contested by the defendant upon the grounds of their invalidity and non-infringement, and in addition thereto it was insisted that plaintiff had no title to the Shire patent. Upon the hearing in the court below the bill was dismissed, and plaintiff appealed to this Court. (34 Fed. Rep., 893.)

Mr. L. L. Coburn and *Mr. Edmund Wetmore* for the appellant.

Mr. C. K. Offield for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

There are two patents involved in this case, both of which relate to what is known as "hammock-saddles for bicycles."

(1) The second claim of the Shire patent, No. 216,231, which is the only one alleged to be infringed, and the only one to which the plaintiff appears to have the title, is as follows:

2. In a velocipede, an adjustable hammock-seat J, substantially as set forth.

Plaintiff derives its title to this patent by assignment from Thomas Kirkpatrick, who himself claimed title to it from Shire, the patentee, under the following instrument:

Be it known that I, John Shire, of Detroit, Wayne county, Mich., for and in consideration of one dollar and other valuable considerations to me paid, do hereby sell and assign to Thomas J. Kirkpatrick, of Springfield, Clark county, Ohio, all my right, title, and

interest in, and to the Letters Patent on velocipedes granted to me June 3, 1879, and No. 216,231, including all rights for past infringement so far as said patent relates to or covers the adjustable hammock seat or saddle, except the right to use said seat or saddle in connection with the velocipede made by me under said patent, in my business at Detroit.

Signed and delivered at Detroit, this 10th day of July, 1884.

JOHN SHIRE.

Witness:
J. M. EMERSON.

The instrument should evidently be read as though there were a comma after the word "infringement," as the following words are evidently intended as a limitation upon the prior granting clause. It is then only so far as this patent "relates to or covers the adjustable hammock seat or saddle," that the patentee conveys his right to the same to Kirkpatrick. The patent itself contains four claims, and covers not only the adjustable hammock-seat mentioned in the second claim, but three combinations set forth in other claims, of which the hammock-seat is an element in only one.

Did this instrument, then, vest in Kirkpatrick the legal title to that element in the patent embodied in the second claim, or was this a mere license, giving him a right to make, use, and sell the device in this claim, but not vesting in him the legal title, or enabling him to sue thereon in his own name, nor to convey such right to the plaintiff? It really involves the question, which is one of considerable importance, whether a patentee can split up his patent into as many different parts as there are claims, and vest the legal title to those claims in as many different persons. This question has never before been squarely presented to this Court, but, in view of our prior adjudications, it presents no great difficulty. The leading case upon this subject is that of *Gayler* v. *Wilder*, (10 How., 477, 494,) wherein it was held that the grant of an exclusive right to make and vend an article within a certain territory, upon paying to the assignor a cent per pound, reserving to the assignor the right to use and manufacture the article by paying to the assignee a cent per pound, was only a license, and that a suit for the infringement of the patent-right must be brought in the name of the assignor. While that of course was a different question from the one involved in this case, the trend of the entire opinion is to the effect that the monopoly granted by law to the patentee is for one entire thing, and that in order to enable the assignee to sue, the assignment must convey to him the entire and unqualified monopoly which the patentee held, in the territory specified, and that any assignment short of that is a mere license.

For [said Chief Justice Taney] it was obviously not the intention of the legislature to permit several monopolies to be made out of one, and divided among different persons within the same limits. Such a division would inevitably lead to fraudulent impositions upon persons who desired to purchase the use of the improvement, and would subject a party who, under a mistake as to his rights, used the invention without authority, to be harassed by a multiplicity of suits instead of one, and to successive recoveries of damages by different persons holding different portions of the patent-right in the same place. Unquestionably, a contract for the purchase of any portion of the patent-right may be good as between the parties as a license, and enforced as such in the courts of justice. But the legal right in the monopoly remains in the patentee, and he alone can maintain an action against a third party who commits an infringement upon it.

As the assignment was neither of an undivided interest in the whole patent, nor of an exclusive right within a certain territory, it was held to be a mere license.

In *Waterman* v. *Mackenzie* (54 O. G., 1562; 138 U. S., 252) an agreement by which the owner of a patent granted to another "the sole and exclusive right and license to manufacture and sell" a patented article throughout the United States, (not expressly authorizing him to use it,) was held not to be an assignment, but a license, and to give the licensee no right to sue in his own name. The language used by the Court in this case was a reaffirmance of that employed by Chief Justice Taney in *Gayler* v. *Wilder*, to the effect that the monopoly granted by the patent laws is one entire thing, and cannot be divided into parts, except as authorized by those laws; and that the right of the patentee to assign his monopoly was limited, either, first, to the whole patent, comprising the exclusive right to make, use, and vend the invention throughout the United States; or, second, to an undivided part or share of that exclusive right; or, third, to the exclusive right under the patent within and throughout a specified territory. (Rev. Stats., 4898.)

A transfer [said the Court] of either of these three kinds of interests is an assignment, properly speaking, and vests in the assignee a title in so much of the patent itself, with a right to sue infringers; in the second case, jointly with the assignor; in the first and third cases, in the name of the assignee alone. Any assignment or transfer, short of one of these, is a mere license, giving the licensee no title in the patent, and no right to sue at law in his own name for an infringement.

We see no reason to qualify in any way the language of these opinions. While it is sometimes said that each claim of a patent is a separate patent, it is true only to a limited extent. Doubtless separate defenses may be interposed to different claims, and some may be held to be good and others bad; but it might lead to very great confusion to permit a patentee to split up his title within the same territory into as many different parts as there are claims. If he could do this, his assignees would have the same right they now have to assign the title to certain territory, and the legal title to the patent might thus be distributed among a hundred persons at the same time. Such a division of the legal title would also be provocative of litigation among the assignees themselves as to the exact boundaries of their respective titles. We think the so-called assignment to Kirkpatrick was a mere license, and did not vest in him or his assigns the legal title to the second claim nor the right to sue in his own name upon it.

This disposition of the assignment renders it unnecessary to discuss the validity of the patent.

(2) Patent No. 314,142, to Thomas J. Kirkpatrick, issued March 17, 1885, contains four claims, the first one of which is relied upon to sustain this bill. This claim is as follows:

1. The combination, with the perch or backbone of a bicycle or similar vehicle, of independent front and rear springs secured to said perch or backbone and a flexible seat suspended directly from said springs at the front and rear, respectively, substantially as set forth.

My invention [says the Patentee in his specification] consists in a peculiar arrangement of front and rear springs secured independently to the reach or "backbone" of the machine in connection with the flexible seat suspended at the front and rear from said springs. * * * These springs D and E are secured independently to the perch or backbone A, each spring being preferably secured as nearly as practicable under the end of the saddle to which said spring is attached. * * * In order to extend the suspended flexible seat as far forward as possible, and at the same time secure the full elasticity of the forward spring D, I construct the said spring with two wings, b' b^2, adapted to extend forward of the head B and turn upward and backward to connect with the forward end of the seat C.

If this claim be extended, as is insisted by the appellant, to include every device by which a flexible seat is suspended upon the perch or backbone of a

bicycle by independent springs at the fr nt and rear ends of such seat, it is anticipated by several patents put in evidence by the defendants. Thus in the Fowler patent of 1880, a saddle-seat is shown to be suspended above the perch or backbone upon a coil-spring in front and with a grooved leaf spring in the rear, these springs being entirely independent of each other. In the Fowler patent of 1881 there is exhibited a saddle-seat suspended from the backbone by independent front and rear springs, though there may be some doubt whether the seat in either of these cases is flexible. There is no doubt, however, that in the Veeder patent of 1882 there is a flexible saddle-seat carried upon the perch or backbone of a bicycle, and resting upon two parts of the same spring, which, however, cannot be said to be entirely independent of each other. Evidently, however, the feature of flexibility cuts no figure in this case, since it would manifestly require no invention to adapt the Fowler saddles to a flexible seat.

In view of these patents, the Kirkpatrick patent cannot be sustained for the combination indicated without the qualification, "substantially as set forth," at the end of the claim, which limits it to a forward spring adapted to extend forward of the head and turn upward and backward to connect with the forward end of the seat; the effect of this being to throw the seat as far forward as possible, and to render unnecessary any intervening mechanism or device between the forward end of the saddle and the perch.

Limited in this way, it is clear the defendants do not infringe, making use, as they do, of springs, which are not only quite different from the Kirkpatrick springs in their design, but omit the important particular of projecting in front of the steering post.

There was no error in the action of the court below, and its decree is, therefore, affirmed.

POPE MANUFACTURING COMPANY *v.* GORMULLY & JEFFERY MANUFACTURING COMPANY *et al.* No. 208.

Decided April 4, 1892.

PATENT—INFRINGEMENT—BEARINGS FOR BICYCLE-WHEELS.

Patent No. 249,278, to Albert E. Wallace, November 8, 1881, for an axle-bearing for vehicle-wheels, *Held* anticipated by the English patent to Bate, November 14, 1878. Claims 2 and 3 of Patent No. 280,421, to Albert E. Wallace, July 3, 1883, for an improvement upon the device covered by his prior patent, *Held* anticipated by English patents to Monks, 1880, Salamon, 1880, and Jeffrey, 1883, and that both patents to Wallace are mere mechanical adaptations of or variations from the English patents.

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of Letters Patent No. 249,278, issued November 8, 1881, to Albert E. Wallace, for an axle-bearing for vehicle-wheels; and Patent No. 280,421, issued July 3, 1883, to the same person and for a similar device. In addition to the usual allegations of the bill for an infringement, it was alleged that the defendants were bound by certain covenants in the contract of December 1, 1884, entered into with the plaintiff, in which they acknowledged the validity of these patents, and agreed not to manufacture ball-bearings such as described and shown and made the subject-matter of its claim, and that they are, therefore, estopped to deny the validity of such patents; and that it was also stipulated in said agreement that the devices such as were being made by the defendant were contained in said patents, and covered by the claims thereof, whereby the defendants were estopped to deny infringement.

The court below held that the defendants were not estopped by this contract; that the patents were invalid; and that, if valid, they were not infringed; and dismissed the bill, from which decree the plaintiff appealed to this Court. (34 Fed. Rep., 896.)

Mr. L. L. Coburn and *Mr. Edmund Wetmore* for the appellant.

Mr. C. K. Offield for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

As we have already held, in the case between the plaintiff and defendant Gormully, No. 204, that the contract of December 1, 1884, did not operate to estop the defendants from contesting the validity of these patents, it is not necessary to consider this case any farther so far as the claim for recovery based upon this contract is concerned. The case must be tried as an ordinary suit in equity for the infringement of a patent.

(1) Patent No. 249,278, to Albert E. Wallace, is for an improvement in axle-bearings for vehicle-wheels. The object of the invention seems to have been the construction of a ball-bearing in two parts in such manner as to admit of the wear of the balls being taken up gradually, as the wear progresses, in order to keep the bearings tight. In reference to this he says in his specification:

Heretofore many anti-friction bearings have been made and described, including various forms of ball-bearings, and the latter class have been constructed so as to be adjustable for wear by having the bearing-box made in two or more parts, and so that they may be made to approach each other to tighten the bearings. In respect to bearings for light wheels, particularly for bicycles, it is desirable to make the parts as light and snug and of as little material as possible, consistently with strength. To make them true—that is, so that the balls shall be perfect spheres—and of even diameter, and that the bearing surfaces in which they revolve shall be of even distance apart, and of even curvature and shape, and shall be kept so, and that in putting together and adjusting the bearing parts shall be made to approach each other with perfect evenness. It is also desirable to make the parts and their joints as few as possible, so that the structure composed of them when put together and in operation shall not be liable to displacement, breakage, or accident.

It is the object of my improvement to secure these desirable qualities in an adjustable anti-friction ball-bearing, and to obviate the difficulties and imperfections existing in previous attempts in this direction.

The second and third claims only are alleged to have been infringed. They are as follows:

2. The described anti-friction bearing for a wheel and axle, consisting of a one-part bearing-box and a two part sleeve, having a circular row of balls within said box and between bearing-surfaces in the box and on either part of the sleeve, and adapted for adjustment for wear and securement in position on an axle by a screw-thread at the outer end of one part of the sleeve, operating to draw it toward and from the other part, substantially as set forth.

3. The described anti-friction bearing for a wheel and axle, consisting of a two-part collar or sleeve adapted to inclose the axle, a one-part bearing box inclosing said sleeve and containing a recess with bearing-surfaces between which and a bearing-surface on either part the said sleeve is held, a circular row of balls combined and constructed essentially as shown and described, for securement in position and adjustment for wear by the pressure of one part of the sleeve against the hub of the wheel, and by an external thread on the other part of the sleeve operating in an internal thread in a boss secured to the axle on the opposite side, substantially as set forth.

In reference to the adjustability of his device he says that—

it is obvious that this bearing will be readily adjustable to compensate for any wear of the bearing parts by simply loosening the set-screw and turning the collar S', so that the thread shall force it farther into the bearing-box, the impinging of the surface p' upon the balls tending to send them to and a properly close bearing upon the surfaces q q and p p', as in putting the parts together.

The essence of this patent, as we gather from the drawings and the application, consists of two sleeves sliding upon the axle from opposite directions, the inner ends of which are each beveled, so that when the ends are brought together, or nearly so, they will form a V-shaped groove upon the axle, the inner one of these sleeves resting upon the hub of the axle, and the outer one connected with the crank, both the crank and the sleeve being threaded with a screw. Upon the axle is fitted a solid bearing-box with a similar V-shaped groove containing metallic balls, and adapted to be partly retained in the groove upon the axle formed by the two beveled sleeves, one of which is made adjustable, so as to approach very near to or in contact with the other sleeve, and thus take up the wear of the balls by narrowing the V-shaped groove in which they are contained.

The use of ball-bearings for bicycle and other wheels was so common at the date of this patent that it is needless even to allude to the large number of prior patents upon this subject.

Bearing in mind that the peculiarity of this patent consists in a sleeve of two parts adapted for adjustment for wear and securement in position by a screw-thread at the outer end of one part of the sleeve, operating to draw it toward and from the other part, we find practically the same device in the English patent to James Bate, for improvements in velocipedes, dated November 14, 1878. Figure 20 of this patent indicates in section a method of affixing and adjusting the cones of a velocipede front or back axle-bearing. A fixed cone corresponding to the plaintiff's sleeve, S, is screwed on to a spindle, and has a sleeve formed solid therewith, and screwed inside and out. Another adjustable cone, corresponding to plaintiff's sleeve, S', is screwed upon the sleeve and is locked by a nut or collar, also screwed upon the sleeve. The groove corresponding to the V-shaped groove of the plaintiff's patent is formed by the contact of these two cones, precisely as in the Wallace patent, and the feature of adjustability is attained by screwing the adjustable cone upon the sleeve as far as necessary to tighten the bearings, and even up to actual contact with the fixed cone. So far as the object to be accomplished is concerned, it makes no difference which one of these cones is adjustable, so long as it affords opportunity for a gradual tightening of the bearing. If there be any difference between this and the Wallace patent, it is not such a difference as affects the essential feature of both, namely, that of adjustability, or such as to involve any patentable novelty.

The English patents to Lewis, of 1879, and to Bown and Hughes, of March, 1880, also exhibit a somewhat similar device of a loose adjustable cone, but the resemblance to the Wallace patent is not so obvious as in case of the Bate patent.

As the Bate patent anticipates every valuable feature of the second and third claims of the Wallace patent, it is unnecessary to consider the question of infringement.

(2) Patent No. 260,421, granted July 3, 1883, to the same party, is for an improvement upon the device covered by the prior patent, and consists in providing the inner sleeve of that patent, which surrounds the axle and rests against the hub of the wheel, with a flange-annulus, and attaching to the hub and wheel a locking-button, which engages with notches or teeth on the edge of the annulus, and locks it to the hub so that the sleeve will always turn with the axle or hub. This construction also provided for an adjustment of the inner sleeve on the axle as well as the outer sleeve.

Another modification of this patent not contained in the first, consists in the construction of the bearing-box. In the first patent the bearing-box was attached directly to the frame of the machine, while in the second it is placed within a shell, which in turn is attached to the frame of the machine.

The claims of this patent alleged to be infringed are the second and third, which read as follows:

2 Constructed and combined substantially as herein set forth, a two-part sleeve, a bearing-box, a row of balls, a serrated annulus, and a locking-button, with an axle and hub and flange, essentially as shown and described

3. The combination, in a ball-bearing device, of a free bearing-box, G, and a shell-case, E, substantially as set forth.

This patent contains in addition all the substantial features of the first patent. Neither of them presented any lateral or side bearing for the bearing-box, its entire bearing being through the balls, both to support the weight vertically and to resist the thrust. Both have two sleeves surrounding the axle. In the first patent, one sleeve was adjustable, while in the other the second sleeve was also made adjustable, and provided with an annular flange serrated on its circumference to engage with a locking-button to lock it at any desired adjustment to the flange. A similar serrated ring, with a corresponding locking device, is found in the English patent to Monks, of 1880, who states that he employs—

a turned bush, conical at the outer end, and a somewhat similar one which is screwed upon the outside of the first said bush In the V-shaped groove, which is formed by these two bushes, when in position, I arrange a series of balls which rotate between the bushes and the lower part of the fork, which forms a cap, somewhat circular, with a segmental groove in it for the balls to work in. * * * The outer end of the bush is formed into a milled or ratchet head, and is prevented from turning round after adjustment by means of a pawl fastened from turning round after adjustment by means of a pawl fastened to a plate, my object being adjustment in a simple and efficacious manner when required.

The shell-case described in the third claim of this patent seems to be found in the Salamon bearing patent of 1880, and the Jeffery patent of 1883, under the latter of which the defendant is manufacturing. The patent, though issued the same year as the Wallace patent, antedates it, both in respect to the application and the patent itself. We agree with the conclusion of the Court below, that—

with these old devices found in the art it seems clear to us that the defendants had the right to use the ball bearing boxes which are shown by the proof to have been embodied in their machine.

It may be said of both of these patents that they are mechanical adaptations of or variations from what had before been exhibited by the English patents, rather than inventions of anything essentially novel. They appear to involve such immaterial changes as would be required to adapt a known device to use in a combination with other elements already existing, and such as would occur to any skilled mechanic. Indeed, the objects of these patents, and the same remark may be made of all, or nearly all, involved in these suits, seems to have been principally to forestall competition, rather than to obtain the just rewards of an inventor. It is true the defendants make use of devices similar in many particulars to those employed by the plaintiff, but they, too, seem rather to have adopted prior and known devices, and fitted them to the peculiar construction of their machine, rather than to have purloined them from the plaintiff.

These cases are not without their difficulties, owing somewhat to the complicated nature of some of the devices, the number of anticipating patents, the difficulty of determining how far the later ones are merely colorable variations of the prior ones, and how far they involve invention; but upon the best consideration we have been able to give them we have seen no reason to differ from the judgment of the court below in its estimate of their value.

The decree of the circuit court is, therefore, affirmed.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 4. TUESDAY, APRIL 26, 1892. PRICE—$5 per year.

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Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., April 16, 1892.

SIR: The Secretary of the Interior has ordered that Samuel R. Hersey, of Washington, D. C., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully, E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., April 19, 1892.

SIR: The Secretary of the Interior has ordered that William R. Drury, of Norfolk, Va., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully, E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Copies of Decisions Furnished.

(ORDER No. 750.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 21, 1892.

Hereafter an uncertified copy of every decision or action by any tribunal in this Office will be furnished by such tribunal to the interested party or parties without charge.

This order does not include the written statements of the grounds of decisions made by Examiners to the appellate tribunal in *ex parte* cases.

W. E. SIMONDS,
Commissioner.

Issue of April 26, 1892.

Patents	456	No. 473,439 to No. 473,894, inclusive.
Designs	18	No. 21,496 to No. 21,510, inclusive.
Trade-Marks	41	No. 21,019 to No. 21,059, inclusive.
Labels	None.	
Reissues	6	No. 11,233 to No. 11,238, inclusive.
Total issue	518	

To citizens of the United States: Patents and Designs—429; Trade-Marks and Labels—35.

To citizens of foreign countries: Patents and Designs—42; Trade-Marks and Labels—6.

Changes in Classification.

(ORDER No. 748.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 15, 1892.

In Division XIV, Class 194, Coin-Controlled Apparatus, a new sub-class is established, entitled "25. Telephones."

In the same Division a new sub-class is established in Class 164, Metal Punching and Shearing, entitled "6. Combined punching and shearing."

In Division XI, Class 24, Clasps, Buckles, and Buttons, the title of sub-class 5 is changed from "Button machines" to "Button setting machines." A new sub-class is established in the same class, entitled "34. Button making machines."

W. E. SIMONDS,
Commissioner.

(ORDER No. 751.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 21, 1892.

It is hereby directed that the sub-class of Hay-caps, Class 56, Harvesters, Division VII, be abolished.

A new sub-class is established in Division XXVI, in Class 172, Electricity, Motive-power, under Motors, to be entitled "Hand-operating devices."

W. E. SIMONDS,
Commissioner.

DISCLAIMER.

461,364.—*Thomas McBride*, Philadelphia, Pa., and *Ebenezer Fisher*, Kinkardine, Ontario, Canada. IMPROVEMENT IN SPECTACLE-BRIDGES. Patent dated October 13, 1891. Disclaimer filed April 15, 1892, by the patentees.

Enter their disclaimer to that part of the specification and claims in which the perforations in the nose-guard form an element of the combination.

The matter disclaimed is contained in claim 3, as follows:

"3. The combination, with the bridge of a pair of spectacles, of an under arch pivoted at its ends to the lower portion of bridge, the said under arch being perforated to admit of the circulation of air, substantially as described, and for the purpose set forth."

CONDITION OF THE WORK in the Examining Divisions at the Close of Business April 19, 1892.

Room No.	Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.	Arrears in months.
			New.	Amended.		
105	XI	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Feb. 29	Apr. 19	246	
30	XII	Mechanical Engineering, Store-Service, etc.	Feb. 24	Apr. 13	206	
209	XIV	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Mar. 11	Apr. 12	69	
240	VII	Harvesters, Games and Toys	Feb. 29	Apr. 12	227	
249	VIII	Furniture, Toilet, Umbrellas and Canes, etc.	Feb. 26	Apr. 9	250	Between 1–2.
39	XXXI	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Feb. 27	Apr. 5	159	
217	V	Fine Arts, Stationery, Book-Binding, Music, etc.	Mar. 9	Apr. 4	139	
25	XXX	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Feb. 22	Apr. 1	276	
231	XXIII	Instruments of Precision, Acoustics, Optics, etc.	Feb. 20	Mar. 22	222	
251	XIII	Metal-Working, Arms and Projectiles, etc.	Feb. 1	Apr. 13	259	
243	XXV	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Jan. 20	Apr. 11	242	
91	XVI	Telegraphy, Telephony, Electric Lighting and Signaling.	Feb. 10	Apr. 9	275	
122	XXIV	Sewing-Machines and Apparel	Jan. 20	Apr. 9	183	
153	XX	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Feb. 15	Apr. 8	174	
106	II	Farm Stock, Products, etc.	Feb. 8	Apr. 8	234	
111	XXXII	Advertising, Baggage, Packing and Storing Vessels, etc.	Feb. 16	Apr. 7	268	Between 2–3.
93	XXI	Textiles, etc	Feb. 5	Apr. 5	199	
85	X	Carriages and Wagons and Railway-Cars	Feb. 1	Apr. 1	608	
215	XVII	Paper-Manufactures and Printing	Feb. 11	Mar. 29	198	
149	III	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Jan. 23	Mar. 28	237	
109	XXII	Firearms, Navigation, Signals, etc.	Jan. 28	Mar. 26	209	
120	IX	Hydraulics, Fire-Extinguishers, etc.	Jan. 25	Mar. 16	402	
32	IV	Civil Engineering, etc.	Feb. 2	Mar. 11	451	
246	I	Tillage and Fences	Feb. 15	Feb. 23	295	
248	XVIII	Steam-Engineering, etc.	Jan. 16	Apr. 15	285	
155	VI	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Jan. 4	Mar. 24	303	
102	XIX	Stoves and Furnaces	Jan. 6	Mar. 18	422	
223	XXVII	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Jan. 16	Mar. 17	344	Between 3–4.
35	XXVIII	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Dec. 19	Feb. 14	395	
128	XXIX	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Nov. 20	Apr. 1	440	
87	XXVI	Electricity, Generation, Distribution, etc.	Dec. 2	Mar. 8	330	Between 4–5.
211	XV	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Dec. 1	Mar. 3	309	
		Total number of applications awaiting action			8,906	
		Designs	Apr. 16	Apr. 18	13	Under 1.
		Trade-Marks	Apr. 15	Apr. 18	16	

PATENTS

GRANTED APRIL 26, 1892.

473,439. VIOLIN. GEORGE ABRAMS, Philadelphia, Pa. Filed Aug. 15, 1891. Serial No. 402,765. (No model.)



Claim.—1. A violin provided with a hollow rosette.

2. A violin provided with a hollow rosette and having a spool removably mounted in the said rosette.

3. A violin having a transverse series of string-receiving perforations in its neck below the tuning-keys.

4. A violin having a chamber in the upper end of its neck to receive the tuning-keys, and a slide adapted to close the front side of the said chamber.

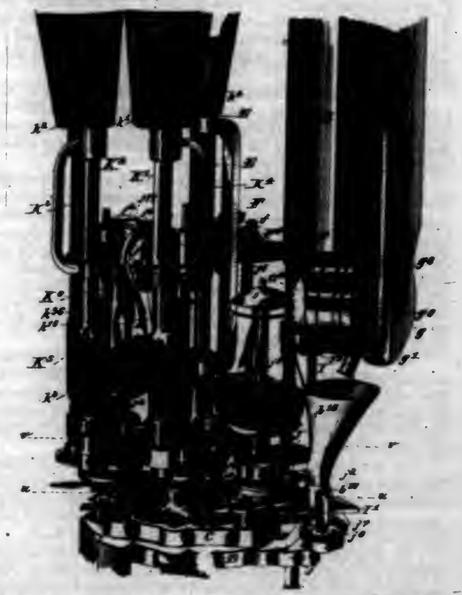
473,440. MACHINE FOR LOADING CARTRIDGE-SHELLS. WILLIAM W. BABCOCK, Galesburg, Ill. Filed Oct. 3, 1890. Serial No. 367,436. (No model.)

Claim.—1. In a machine for filling cartridge-shells, a wad-supplying device consisting of a wad-containing tube having mounted upon its upper extremity a primary wad-supplying hopper, in combination with a tripping-dog and a spring which upon the engagement and release of the tripping-dog by the actuation of the machine will produce a violent movement of the hopper, and thereby cause a shifting of its contents and a discharge of its wads into the wad-holding tube, substantially as set forth.

2. In a machine for filling cartridge-shells, a wad holding and discharging tube, a primary wad-supplying hopper mounted upon the upper extremity of the wad containing and discharging tube, a wad-pushing plate at the base of the wad-holding tube, which operates to move the wads as they are received from the wad holding and discharging tube to the wad-starting opening, and a reciprocating wad-rammer which operates to force the wads through the wad-opening into the mouth of the shell below, substantially as described.

3. In a machine for filling cartridge-shells, an intermittently-operating wad receiving and discharging tube, upon the upper extremity of which is mounted a wad-containing hopper, combined with an upper and a lower vertically-reciprocating spider, the projecting arm of the upper spider carrying the wad-rammer and the corresponding arm of the lower spider having vertical openings which correspond, respectively, with the wad-discharging tube, with the wad-rammer, and with the guide-rod of the spring which actuates the tube and its hopper, and a wad-plate which rests upon the lower spider-arm, which has rotation in a horizontal plane and which has openings through which the wads are forced by the wad-rammer into the cartridge-shell, substantially as specified.

4. In a machine for filling cartridge-shells, an upper vertically-reciprocating spider which is provided with a projecting arm, and a wad receiving and discharging tube and a wad-rammer which are mounted in such projecting arm, combined with a lower spider which is provided with an arm which carries a rotating wad-plate which has wad-openings, a wad-pushing arm, and an opening for the wad-rammer, substantially as described and shown.



5. In a machine for filling cartridge-shells, the combination of a reciprocating wad-rammer, a wad-plate which is provided with a wad-starting opening which is coincident with the wad-rammer, a wad-pushing plate which operates to move the wads to the opening under the wad-rammer, and a wad-holding collar which nearly or quite encircles the lower extremity of the rammer, whereby a wad the diameter of which is greater than that of the wad-opening is held by its periphery in a horizontal position between the collar and the wad-opening, substantially as specified.

6. In a machine for filling cartridge-shells, an upper vertically-reciprocating spider which has an arm which carries a wad receiving and discharging tube and a wad-rammer, and a lower vertically-reciprocating spider which has an arm, at the outer extremity of which is received a wad receiving and discharging plate which has a series of wad-openings, combined with an arm which is sleeved upon the lower extremity of the wad-rammer and which overlies one of the discharge-openings in the wad-plate, substantially as set forth.

7. In a machine for filling cartridge-shells, the combination, with a rotary carrier which is provided with a series of shell-receptacles, of a spider which in its projecting arms is provided with openings which receive the wads and which receive also the upper extremity

of the cartridge-shells as they are brought into coincidence with the wad-rammers, the spider having reciprocation in a vertical plane, as described, so that in the operation of the machine the shells are alternately engaged and released, substantially as described.

8. In a machine for filling cartridge-shells, the wheel S', having shaft s^3 and carrying the arm b^9, provided with the pin b^9, the vertical reciprocating shaft B, having slotted horizontal head s^6, and the shaft b^{11}, carrying the arm b^{10}, slotted at its front and engaged by the crank-pin b^9 and extending backwardly at its rear and engaging the shell elevator or plunger, in combination.

9. In a machine for filling cartridge-shells, a fixed bed-frame having an outer rim or body, central open hub, and intermediate arms, a vertical sleeve in the central hub, a vertical reciprocating shaft within the sleeve, a rotary shell-carrier encircling the sleeve, and a crimper-arm received by one extremity upon the sleeve and provided at its opposite extremity with a vertical crimper-rod which is adapted to operate in connection with the rotary shell-carrier, in combination.

10. In a machine for filling cartridge-shells, a rotary shell-carrier which is actuated by the power-shaft, the power-shaft having an end gear-wheel, the crimper-actuating shaft engaged by such end gear-wheel, and the vertically-reciprocating crimper-rod which in the operation of the machine engages the shells in succession to crimp the same, in combination, as specified.

11. The upper spider F, having arm F^6, the vertical shaft B, the independent arm m upon the vertical shaft, and the crimper-rod M', having vertical movement within the arms F^6 and m, in combination, substantially as and for the purposes set forth.

12. The reciprocating spider F, having arm F^6, the vertical shaft E, the non-reciprocating arm m upon the shaft E, and the crimper-rod M', having pinion m^4 and mounted and having movement vertically in the arms F^6 and m, combined with the shaft S^3, having bevel-wheel s^7 and actuated by the power-shaft S, substantially as and for the purposes specified.

13. In a machine for filling cartridge-shells, the crimper-rod M', having rack-bar and pinion, as described, combined with the spider F, having arm F^6, provided with ratchet friction-wheel f^9, and the inclined shaft S^3, provided with the bevel-wheel s^7, which engages the pinion upon the crimper-rod for rotation thereof.

14. In a machine for filling cartridge-shells, a crimper-rod which is mounted upon a spider which has vertical reciprocation upon the main central shaft of the machine, which has an end recess which is reversely cup-shaped, imperforate, and without annular recess or other depression within its cavity, and which in its inner extremity is slightly in-drawn or diminished in diameter, so as in the downward movement of the rod to bear obliquely inward against the periphery of the upper extremity of the shell, in combination with a revoluble shaft which by an end wheel engages the crimper-rod for rotation thereof, substantially as and for the purposes described.

15. In a machine for filling cartridge-shells, the fixed bed-frame, a rotary carrier having a series of cylindrical shell-receptacles, a cam-lever mounted upon the bed-frame and engaging the shell-receptacles successively to cause rotation of the carrier, and a dog pivotally mounted upon the bed-frame and intermittently engaging the front of the shell-receptacles in succession, in combination, as specified.

16. In a machine for filling cartridge-shells, the fixed bed-frame, the rotary shell-carrier concentric with and having motion upon such bed-frame, the cam-lever pivoted upon the bed-frame and actuated by the power-shaft, and the pivoted dog intermittently actuated by the cam-lever, in combination, substantially as described and shown.

17. In a machine for filling cartridge-shells, a shell-ejecting rod which is mounted upon an intermittently-reciprocating portion of the machine and a pivoted spring-actuated intermittently-operating dog which is mounted upon the bed-frame or equivalent fixed portion of the machine and which is provided with an inking-roller which in the operation of ejecting the shell intermittently engages the contact end of the ejecting-rod to ink the same, in combination, substantially as specified.

18. In a machine for filling cartridge-shells, a vertically-placed reciprocating crimper-rod which is provided with an engaging-rack, a toothed wheel which is operable by the power-shaft of the machine, which engages the rack upon the crimper-rod, an upper spider which carries a ratchet friction-wheel which operates in connection with the toothed wheel, and a friction-arm also upon such upper spider, which bears upon the surface of the friction-wheel, in combination, as described.

19. In a machine for filling cartridge-shells and in combination with an upper spider thereof, a vertically-reciprocating crimper-rod which is provided with a longitudinal groove and which receives rotary motion by means of a gear-wheel which is loosely received upon the body of the rod, which has a feather or ridge upon its central opening, and which operates in the longitudinal groove, and a gear-wheel on the crimper-actuating shaft, which engages the gear-surface upon the crimper-rod, the crimper and spider actuating shaft being actuated by the power-shaft and the crimper-rod receiving motion in a vertical plane by means of an arm upon such spider, in which it is mounted, the arm carrying an adjustable friction-arm and a ratchet friction-wheel.

20. In a machine for filling cartridge-shells, a fixed bed-frame, a rotary shell-carrier which is concentric with and has motion upon such bed-frame and a double cam-lever which has an outer face which engages the receptacles of the carrier to rotate the same and an inner face which engages the outer extremity of a centrally-pivoted dog, the inner extremity of which in turn successively engages the front of the shell-receptacles, thereby momentarily checking and locking the rotary carrier at the end of each movement, in combination.

21. In a machine for filling cartridge-shells, a reciprocating shell-ejecting rod and a centrally-pivoted spring-actuated dog which is mounted upon a fixed portion of the machine and which carries on its inner extremity a spring-supported inking-roller, such inner extremity by the actuation of the spring during each movement of the carrier when it is free to act through lack of contact with the shell-receptacles carrying its inking-roller across the contact end of the shell-ejecting rod for the purpose of inking the same, in combination, substantially as described.

22. In a machine for filling cartridge-shells, a fixed bed-frame, a vertical reciprocating shaft in such bed-frame, a vertical rotating shaft secured in the body of the bed-frame, a shell-distributing receptacle fixed upon the rotating shaft in a place below the bed-frame, and a reciprocating plunger actuated by the vertical reciprocating shaft and operating in connection with the shell-distributing receptacle at regular intervals by successive thrusts from below to eject the shells upwardly, in combination, substantially as described.

23. In a machine for filling cartridge-shells, a fixed bed-frame, a pivoted rotary shell-carrier upon the bed-frame, a power-shaft mounted in bearings below the bed-frame, a cam-lever, and a star-wheel, each pivoted upon the bed-frame, the power-shaft primarily actuating the cam-lever, the cam-lever actuating the shell-carrier, and the shell-carrier operating the star-wheel, and the cam-lever and the star-wheel operating simultaneously in direct contact with the rotary shell-carrier, in combination.

24. In a machine for filling cartridge-shells, a rotary shell-receiver below the bed-frame of the machine, each of the shell-holders of which has a stop at its lower extremity, a rotary shell-carrier above the bed-frame of the machine, each of the shell-holders of which has a shell-engaging spring at its upper extremity, and a plunger which operates to lift the shells from the stops in the receiver below the bed-frame and to thrust them forcibly upward into engagement with the springs of the holders in the carrier above the bed-frame, in combination.

25. In a machine for filling cartridge-shells, a fixed bed-frame, a rear vertically-placed rotary shaft which is received in an opening in such bed-frame, which is provided below the plane of the bed-frame with a shell receiver and distributer, which is provided above the plane of the bed-frame with a horizontally-arranged wheel which has projecting arms, and which is provided above the horizontal wheel with a pinion which in the operation of the machine imparts motion to the shell-delivering apparatus of the primary shell receptacle or reservoir, in combination.

26. In a machine for filling cartridge-shells, a fixed bed-frame, a rotary shell-carrier upon the fixed bed-frame, and a spring which is secured by one extremity to the bed-frame and which extends inwardly within the vertical plane of the rotary shell-carrier and below the horizontal plane of the same and which when a completed cartridge is being ejected serves to temporarily support the same, in combination, substantially as shown and described.

27. In a machine for filling cartridge-shells, a rotary shell-carrier, a vertically-arranged wheel which is journaled in bearings in the machine below the shell-carrier, and a cartridge-discharging chute which is secured upon the machine and which overhangs the vertically-arranged wheel, the periphery of which projects into the body of the chute and in the operation of the machine engages and directs the cartridges, in combination, substantially as and for the purposes set forth.

28. In a machine for filling cartridge-shells, a vertical rotary shaft which is secured in the bed-frame at the rear of the machine, an intermediate shell-receptacle which is fixed upon such vertical rotary shaft, and a plunger below the shell-receptacle, which is secured upon such vertical shaft and is movable up or down thereon, which at one side has an upwardly-extending rod or cylinder, and which at its opposite side is pivotally connected to a pivoted operating-lever, combined for operation, substantially as specified.

29. In a machine for filling cartridge-shells, a fixed bed-frame, a rotary shell-carrier upon the bed-frame, a vertical rod rigidly but adjustably secured in the bed-frame in a plane outside the path of the rotary shell-carrier, a sleeve upon the vertical rod, resting at its foot plate, and a receiving-plate provided with cylinders which extend upon the bed-frame, a star-wheel upon the rod, resting upon the upper extremity of the sleeve and adapted to be engaged by a shell in the rotary carrier, a cylindrical flanged hub upon the star-wheel, a cut-off plate upon the flange of the hub, a measuring-section upon the cut-off

downwardly into the measuring-section and form a part thereof, in combination.

30. In a machine for filling cartridge-shells, an ammunition-supplying apparatus which embraces a cut-off plate, a receiving-plate in which are secured depending cylinders, one or more, which ordinarily measure the charge of ammunition, an intermediate section through which the depending cylinders extend, a central vertical rod upon which the three described parts are loosely received and which at its upper extremity is provided with a vertically-adjustable nut, and a spring which encircles the central rod and bears against the bottom of the receiving-plate and against the top of the cut-off plate, as described.

31. In a machine for filling cartridge shells, a rotary shell-carrier, a spider which has arms which at their outer extremities are divided into an upper and a lower member, a wad-plate which has equidistant wad-openings, which rests upon the upper surface of the lower member, and which has a downward extension which terminates in a star-wheel which is engaged by the shell in the rotary carrier and which has also a holding-arm which has a central eye by which it is received upon a spring-bearing rod, an outer hub or eye by which it is received upon the wad-tube, and a horizontal arm which extends along the surface of the wad-plate and overlies one of the wad-openings in the same, in combination.

32. In a machine for filling cartridge-shells, a rotary shell-carrier and a spider which has arms which at their outer extremities are divided into an upper and a lower member, the lower member supporting the wad-plate and its carrier-engaging star-wheel and the upper member having three vertical cylindrical openings, the inner opening receiving a wad-rammer, the outer opening receiving a wad-discharging tube, and the central opening receiving a spring-bearing rod, in combination.

33. In a machine for filling cartridge-shells, a rotary shell-carrier, an upper spider, and a lower spider, in combination, the upper spider carrying the wad-rammers, the lower spider carrying the wad-tubes, and the rotary shell-carrier conveying the shells, and both the spiders having reciprocating motion in a vertical plane, substantially as described.

34. In a machine for filling cartridge-shells, a rotary shell-carrier, an upper spider, and a lower spider, in combination, the upper spider being rigidly secured to the main vertical reciprocating shaft and the lower spider being loosely received by its hub upon the lower sleeve of such main reciprocating shaft and having movement up and down thereon, substantially as specified.

35. In a machine for filling cartridge-shells, a rotary shell-carrier, a lower spider which has slight reciprocation in a vertical plane and which carries a wad-supplying apparatus, and an upper spider which has greater reciprocation in a vertical plane and which has a central hub and outwardly-extending arms in which a wad-rammer is supported, in combination, substantially as and for the purposes set forth.

36. In a machine for filling cartridge-shells, a wad-pusher and a wad-starting opening, a reciprocating wad-rammer upon which is a rack, a toothed wheel which engages the rack upon the wad-rammer, a ratchet and friction wheel which operate in connection with the toothed wheel, and an adjustable friction-arm which bears upon the face of the friction-wheel, in combination, substantially as described.

37. In a machine for filling cartridge-shells, a wad-rammer which is supported in suitable guides upon the machine and which is provided with an engaging-rack which is fixed upon or forms a part of such rammer, a wad-opening which is coincident with the wad-rammer, a reciprocating arm which is operated by the power-shaft and which carries a toothed wheel which engages the rack-bar upon the wad-rammer, a ratchet and friction wheel which operate in connection with the toothed wheel upon the reciprocating arm, and an adjustable friction-arm which bears upon the face of the friction-wheel, in combination, as described.

38. In a machine for filling cartridge-shells, a rotary shell-carrier, a lower wad-supplying spider above the rotary shell-carrier, and an upper spider which has a central hub and arms which are provided with a wad-rammer, with a gear-wheel which engages the wad-rammer, with a recessed ratchet-wheel, with a fixed arm within the recess, which is provided with a pawl which engages the serrations in the wheel and which is provided, also, with a friction-arm which bears upon the outer face of the ratchet-wheel, in combination, substantially as shown and set forth.

39. In a machine for filling cartridge-shells, an upper vertically-reciprocating spider which has outwardly-extending arms, combined with a rotary shell-carrier upon the bed-frame of the machine and with a wad-delivering apparatus which is provided with an actuating-spring, with a slidable tube-encircling ring which is surmounted by a wad-hopper, and with a tripping-dog which in the downward movement of the reciprocating spider is engaged by one of the arms thereof and is tripped, thereby relieving the spring from compression and permitting it to force upwardly the slidable tube-encircling ring and its connected arm and wad-hopper, substantially as and for the purposes set forth.

40. In a machine for filling cartridge-shells, a primary wad-supplying receptacle or hopper which has a diminished cylindrical downwardly-extending continuation which is adapted to constitute a sleeve for the upper extremity of the wad-tube and which is provided with an arm which terminates downwardly in a short sleeve or ring which encircles the body of the wad-tube, in combination with a spring which is mounted upon the tube-supports and with means for alternately compressing and releasing such spring, whereby in the operation of the machine the spring acts intermittently to thrust the wad-hopper forcibly upward.

41. In a machine for filling cartridge-shells, a central vertical reciprocating shaft and a spider which is rigidly secured to such shaft and has reciprocation therewith and which has a series of outwardly-extending arms, each of which carries a wad-rammer, and a friction-wheel which operates in connection with such rammer, which has also an arm which carries a shell-crimping rod, and which has also an arm in which is rigidly secured a cartridge-ejecting rod, in combination.

42. In a machine for filling cartridge-shells, a central vertical reciprocating shaft, an upper spider upon such reciprocating shaft, a lower sleeve upon the reciprocating shaft, a spider loosely received upon such lower sleeve, and a vertical headed connecting-rod which is fixed in the lower spider and which normally extends a short distance above the upper spider and which in the upward movement of the upper spider is engaged by it and serves to cause upward movement of the lower spider, in combination, substantially as and for the purpose specified.

43. In a machine for filling cartridge-shells, a shot-discharging apparatus which is provided with a cut-off plate which has an outwardly and downwardly extending arm, in combination with a spider which has an end bifurcation, the lower member of which is provided with a downwardly-extending leg or stop against which the downwardly-extending arm of the cut-off plate is received and by which it is held against rotation.

44. In the shot-discharging apparatus of a machine for filling cartridges, a receiving-plate which has discharge-openings, a primary receptacle and discharger which has a depending outlet-cylinder, and a vertically-walled guard or guideway which rests upon the upper surface of the receiving-plate, in combination, substantially as and for the purpose specified.

45. In a machine for filling cartridge-shells, a fixed bed-frame, a rotary shell-carrier upon the bed-frame, a vertical shaft loosely secured in the bed-frame and having a fixed star-wheel and a fixed pinion, and a shell-reservoir which has a shell-discharging wheel which is in engagement with the pinion upon the vertical shaft, in combination with a cam-lever which is actuated by the power-shaft of the machine and which imparts motion successively to the rotary shell-carrier, the star-wheel, the vertical shaft, the pinion, and the shell-discharging wheel, substantially as set forth.

46. In a machine for filling cartridge-shells, a shell-reservoir which is provided with a discharging-wheel which at its front consists of a gear-face which is engaged by a pinion upon an actuating-shaft and which at its rear consists of shell-engaging fingers which extend horizontally backward from the body of the wheel, each pair of such fingers being adapted to receive between them one of the shells and to move it continuously forward, while retaining it in its horizontality to the point of discharge.

47. In a machine for filling cartridge-shells, a shell-discharging reservoir which is provided with a fingered shell arranging and propelling wheel, and which has in connection with such wheel an upper curved shell-supporting plate which is within the inner periphery of the wheel, and which has lower supporting-plates which are without or below the outer periphery of the wheel, whereby the shells both above and below are prevented from falling between the fingers, substantially as set forth.

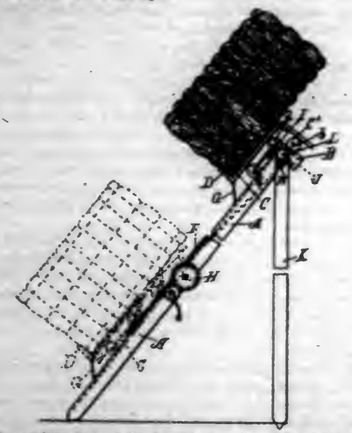
48. In a machine for filling cartridge-shells, an intermediate horizontally-revoluble shell-carrier which has concentrically-arranged shell-receptacles, each of which has at its lower and outer extremity an interior shell-supporting lug or stop, whereby ordinarily the shell will be supported head downward within the receptacle and whereby when a shell has been improperly delivered into the receptacle it will not be retained, but will by its rim engage the stop or lug and will thereby be thrown outwardly away from the central shaft of the carrier.

49. In a machine for filling cartridge-shells, a bed-frame which is provided at a point immediately below the crimper-rod with a shell-recess and with a shell-engaging plate which extends upwardly to a point above the plane of such bed-frame.

478,441. TRUCK-ELEVATOR. CONRAD BAKER and ISAIAH BAKER, Santa Ana, Cal. Filed Jan. 14, 1892. Serial No. 418,004. (No model.)

Claim.—1. The combination, set forth, of the tramway compris-

ing an inclined main member and a supplemental drop member arranged at the upper end of the main member and inclined downward therefrom to receive and steady the wheels of the supplemental portion of the truck when the truck is in its discharging position, a truck comprising the main or body portion consisting of the series of wheels *d*, arranged to run upon the main member of the tramway, and the main platform and tail-board, and the supplemental portion of the truck comprising the supplemental platform shorter than the main platform, hinged by its rear edge to the front edge of the main platform, and the supplemental drop-wheels arranged to run upon the tramway to support the supplemental platform and to run down upon the drop member of the tramway to lower the supplemental platform and remove it from its engagement with the load when the truck is brought into position at the top of the tramway, and means for moving the truck up and down the tramway.



2. The combination, set forth, of the tramway having the inclined main member and the supplemental drop member arranged at the upper end of the main member and inclined downward therefrom to receive and steady the wheels of the supplemental portion of the truck when the truck is in its discharging position, the truck comprising the main or body portion and a supplemental portion hinged thereto, each provided with wheels arranged to run upon the tramway, the wheels of the supplemental portion being adapted to run down upon the drop member of the tramway to lower the supplemental portion and remove it from its engagement with the load when the truck is brought into position at the top of the tramway.

473,442. AUTOMATIC FIRE-EXTINGUISHER. OTHO C. BARBER, Chicago, Ill. Filed Mar. 30, 1891. Serial No. 386,916. (No model.)

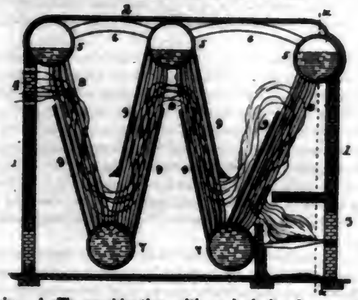


Claim.—1. In a fire-extinguisher, the combination, with a yoke having a water-supply tube opening through one end thereof provided with a cap and the opposite end supporting an abutment, of two pairs of braces, one pair resting at one end against said abutment and the ends of the other pair against said cap, the members of each pair extending diagonally from each other and their ends in juxtaposition with the ends of the opposite pair, and a fusible attachment uniting the adjacent ends of adjacent braces, substantially as shown and described.

2. In an automatic fire-extinguisher, the yoke A, the supply-pipe C, and the cap H, arranged to close it and the spreader F, and the screw D, passing through it and the head E, connected with the inner end of said screw, and the fusible link D, combined with the four braces I, arranged in pairs, the ends of adjacent pairs resting against the head and cap, respectively, and their opposite end resting against supports in the fusible link J, all constructed and arranged substantially as shown and described.

3. The combination, with the head E, the cap H, and the braces I, arranged in pairs and having one end of each pair arranged to rest against said head and cap, respectively, of the fusible link J, having inner ridges K to constitute abutments for the opposite ends of said braces, substantially as shown and described.

473,448. WATER-TUBE BOILER. OTHO C. BARBER, Chicago, Ill. Filed Jan. 25, 1892. Serial No. 419,151. (No model.)



Claim.—1. The combination, with an inclosing furnace having a firing-place and uptake-flue, of a boiler consisting of two series of horizontal drums, one set being located above the other, the several series being connected by alternate ranks of tubes, and baffle-plates arranged adjacent to said ranks of tubes, substantially as shown and described, and for the purpose specified.

2. The herein-described boiler, consisting of the cylinders 5 and 7, the intermediate connecting-tubes 2, and the steam-connecting pipes 6, all constructed and arranged substantially as shown and described, and for the purpose specified.

473,444. HYDRAULIC CLUTCHING MECHANISM. FRED M. BARNEY, Kearney, Nebr. Filed Apr. 25, 1891. Serial No. 390,530. (No model.)



Claim.—1. The combination, with two rotating shafts, of a casing mounted to revolve freely concentric therewith and containing two rotary-pump chambers, a piston in each chamber connected with and driven by one of said shafts, and connecting-passages whereby each pump delivers into the supply-port of the other, substantially as described.

2. The combination, with a casing mounted to revolve freely and containing two chambers C C, of two shafts arranged concentric with the axis of rotation of said casing and each entering one of said chambers, pistons K K', fitting said chambers and sliding in slots in said shafts, and double passages connecting the two chambers, substantially as described.

3. The combination, with a casing mounted to revolve freely and containing two elliptic chambers C C, of a rotatable shaft entering each chamber at a point equidistant from its foci and at one side of the line, joining the same, a diametrically-slotted collar secured to each shaft, a piston sliding in said slot and fitting the chamber, ports G G' G'' G''', entering said chambers on either side of their minor axes, and passages uniting the ports G G'' and G' G''', respectively, substantially as described.

4. The combination, with the wheel A, containing the elliptic chambers C C, of two shafts concentric with said wheel and each entering one of said chambers at a point equidistant from its foci and at one side of the line joining the same, suitable covers P P', carrying stuffing-boxes for said shafts, a diametrically-slotted collar on each shaft, a piston sliding in said slot and fitting the chamber, ports entering each chamber on either side of its minor axis, passages uniting the ports on the same side of the minor axes of the chambers, and valved passages connecting the ports, entering the same chamber, substantially as described.

5. The combination, with two shafts having a common axis of rotation, of a casing mounted to revolve freely about the same axis and containing two elliptic chambers placed side by side, each with its foci

equidistant from said axis of rotation, said chambers receiving, respectively, the ends of the two shafts and being united by two passages, one on each side of their minor axes, a diametrically-slotted collar secured to the shaft in each chamber, and a flat key or piston sliding in the slot in each collar and abutting against the walls of the chamber, substantially as described.

6. The combination, with a cylindrical casing A, containing the two parallel eccentrically-located elliptical chambers C C, separated by the web T and united by the passages F F, formed through said web on either side of the minor axes of said chambers, of plates P P, forming the outer sides of said chambers, the shafts S S, having a common axis of rotation concentric with the casing A, each shaft entering one of said chambers, a collar R, secured upon each shaft within the chamber and tangent to the wall of said chamber on its minor axis, and keys K, sliding in slots in said collars and fitting the interior of the chambers, substantially as described.

7. The combination, with the cylindrical casing A, having the web T, containing the passages F F and separating the two parallel eccentrically-placed elliptic chambers C C, of the plates P P, provided with stuffing-boxes and forming the outer sides of said chambers, the shafts S S, having a common axis of rotation coinciding with the center of the casing A, said shafts passing through the stuffing-boxes and having a bearing in the web T, a collar R, secured to each shaft within its respective chamber and tangent to the wall of said chamber, and a key K, sliding in a slot in said collar and fitting the walls of said chamber, the chambers each having ports G G' entering on each side of the minor axis, said ports being united by a valved passage O' and communicating with the passages F F, substantially as described.

478,445. CAR-COUPLING. ROBERT L. BIRD and JOHN L. BIRD, Durango, Tex. Filed Oct. 22, 1891. Serial No. 409,507. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head provided with a chamber at its forward end, of a double coupling-hook pivoted therein, said hook being provided in its upper side with a vertical recess, a vertical bar provided with a head pivotally secured in said recess, a guide-bracket receiving said bar, and a coil-spring embracing the bar between the pivoted head thereof and the guide-bracket, substantially as and for the purpose set forth.

2. In a car-coupling, the combination, with a draw-head provided with a chamber closed at its under side, of a coupling-hook comprising a body normally resting upon the bottom of the chamber and a double hook-head, said coupling-hook being provided in its top surface with a recess, a vertical bar provided with a head pivotally secured in said recess, a guide-bracket receiving said bar, a coil-spring encircling the latter between its head and the bracket, and means for elevating the hook and connected with the bar, substantially as and for the purpose set forth.

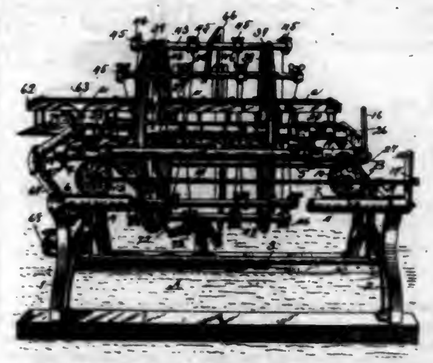
3. In a car-coupling, the combination, with a car, of a yielding draw-head and a transversely-arranged spring-bar secured to the draw-head at its rear end, substantially as set forth.

473,446. BRICK AND TILE CUTTER. JACOB W. BOLTE, Galesburg, Ill. Filed Jan. 23, 1892. Serial No. 419,075. (No model.)

Claim.—1. In a brick and tile machine, the combination, with a supporting-frame, of a pulley-shaft, a pulley mounted thereon, a revoluble band arranged upon the pulley, and a series of radially-arranged cutting-wires, substantially as described.

2. In a brick and tile cutting table, the combination, with a supporting-frame, of a pulley-shaft, fixed pulleys mounted on said shaft, a revoluble band on each of said pulleys, wire-holding devices arranged upon said bands, and a series of cutting-wires secured at their ends to the revoluble devices and to the pulley-shaft, substantially as described.

3. In a brick and tile cutting table, the combination, with a supporting-frame, of a pulley-shaft, fixed pulleys mounted thereon, bands arranged upon said pulleys and carrying wire-holding devices, cutting-wires, and means for revolving the bands upon the fixed pulleys, substantially as described.



4. In a brick and tile cutting table, a fixed shaft, a platen on the shaft, having wire-slots, fixed pulleys on the shaft, revoluble bands on the rims of the pulleys, wire-holding bars connecting the bands, wire-holding rings on the fixed shaft, and cutting-wires connecting the said rings and wire-holding bars.

5. In a brick and tile cutting table, the combination of fixed pulleys, revoluble bands on the rims of the pulleys, wire-holding bars connecting the said bands, loose wire-holding rings on the shaft of the fixed pulleys, having apertures larger than the axle around which they turn, and cutting-wires connecting said rings and bars, substantially as described.

6. In a brick and tile cutting table, the combination of the fixed pulleys, the revoluble bands on the pulleys, bars carrying cutting-wires connecting the bands, and a lever fulcrumed on the frame of the table and formed with an arm having a notch to engage the wire-holding bars, substantially as described.

7. In a brick and tile cutting table, the combination, with the fixed pulleys and the revoluble wire-frame carried by said pulleys and a lever fulcrumed to the frame and an arm jointed to the lever and formed with a notch to engage the wire-bars of the cutting-frame and having its end extended beyond the notch, substantially as described.

8. In a brick and tile cutting table, the combination of a longitudinally-movable table, the revoluble cutting-frame, a lever fulcrumed to the frame of the table to engage and turn the cutting-frame, and a lever at the ends of the table operated by the movement of the first-named lever to push the table in one direction, substantially as described.

9. In a brick and tile cutting table, the combination of a stationary frame having side rails provided with tracks, a carriage on the tracks, a longitudinal connecting-bar between the axles of the carriage, said bar being projected beyond the axle of one of the wheels, stops on the extension of the bar, and a stop on the frame through which the rod plays between the nuts, substantially as and for the purpose specified.

10. In a brick and tile cutting table, the table-frame consisting of side rails, cross end pieces adjustably fitted on the rails, formed with bearings in the middle, and a shaft in the bearings, adapted to be adjusted endwise and held against rotation, substantially as described.

11. In a brick and tile cutting table, the table-frame consisting of side rails, end pieces formed with bearings in their middle portions, a fixed shaft in the bearings, and platens clamped on the shaft and arranged with wire-slots between them, substantially as described.

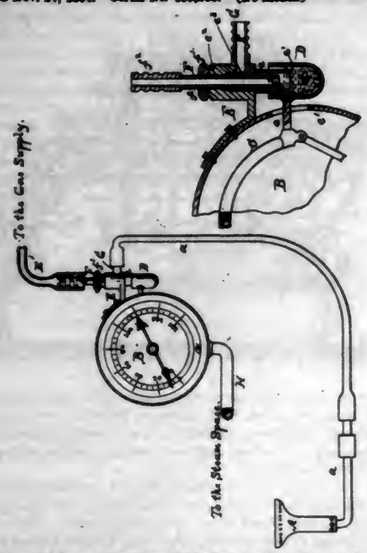
12. The combination of the fixed shaft, platens clamped thereon and guide-rails mounted on standards in the plates, said guide-rails being composed of sections arranged with their adjacent ends to permit the cutting-wires to pass between them, substantially as described.

13. A platen for a brick and tile cutting table, consisting of a central plate and side pieces hinged thereto, substantially as described.

14. A platen for a brick and tile cutting table, consisting of a number of plates having yielding side pieces secured thereto and arranged with wire-spaces between them, substantially as described.

15. The combination of a fixed shaft arranged longitudinally of the cutting-table, a number of platen-plates secured to the shaft, and plates hinged to the side edges of the plates, and a spring to hold the hinged plates in horizontal position in alignment with the other plates, substantially as described.

478,447. AUTOMATIC GOVERNOR FOR REGULATING THE SUPPLY OF GAS TO BURNERS. CHARLES E. BOSWORTH, Everett, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Nov. 27, 1891. Serial No. 413,283. (No model.)

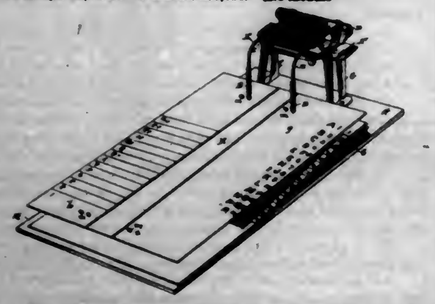


Claim.—1. The combination of a boiler or other receptacle to be heated, the burner for heating the same, a gage communicating with said boiler or receptacle, a supply-pipe for said burner, and a governor located in said supply-pipe and connected with the said gage, whereby the variations in the boiler or receptacle, as indicated by the gage, regulates the pressure in the supply-pipe, as set forth.

2. The combination of a gas-burner, a gage provided with a Bourdon tube, a mercury-cup attached to such Bourdon tube, and a coupling connected to pipes leading therefrom to the gas-burner and a gas-supply, and having a nozzle leading into the mercury-cup and communicating with both of said pipes, as set forth.

3. The combination of the gas-burner A, the pipe *a*, leading thereto, the pipe E', leading from the gas-supply, the gage B, having the Bourdon tube C, and the pipe H, connected therewith and communicating with the steam-space of a boiler or retort, the mercury-cup D, attached to one arm of the Bourdon tube, the bracket E, having the nozzle *e*, the threaded orifice e^2, and the projection G, the last connected to the pipe *a*, and the pipe F, passing through the orifice e^2 in the bracket E and adjustable within the nozzle *e*, so that its lower end f' may be above or immersed in the mercury in the cup D, as set forth.

478,448. LETTER-FILE. BLOOMFIELD BROWER, New York, N. Y. Filed Apr. 21, 1887. Serial No. 235,933. (No model.)



Claim.—1. In a letter-file, the combination, with the impaling-pins B, of the hinged needles E and a locking device, as *d*, for locking the needles in rigid engagement with the pins B, substantially as described.

2. In a letter-file, the combination, with the impaling-pins B, of the curved needles E, secured to the hinged plate D, and the locking device *d* for fastening said plate rigid in position to hold the needles in engagement with the pins, substantially as described.

3. In a letter-file, the combination, with the impaling-pins B, of the hinged stripper-plate F, having the recesses or openings *b* and arranged to be turned over to press the sheets onto said pins, substantially as described.

4. In a letter-file, the combination, with the impaling-pins B, the curved needles E, and the hinged plate D, carrying said needles, of the hinged stripper-plate F, having the recesses or openings *b* and arranged to be turned forward to press the papers onto said pins and to be turned rearward, so as to be locked in position by the hinged plate D, substantially as described.

5. In a letter-file, the combination, with the impaling-pins B and the curved needles E, of the hinged stripper-plate F, having the recesses or openings *b* and the gages *c*, substantially as described.

6. The loose index-sheet H for letter-files, provided with four indices *g h i k* upon the opposite edges of its opposite sides and with openings *m*, whereby said sheet is reversible in both directions.

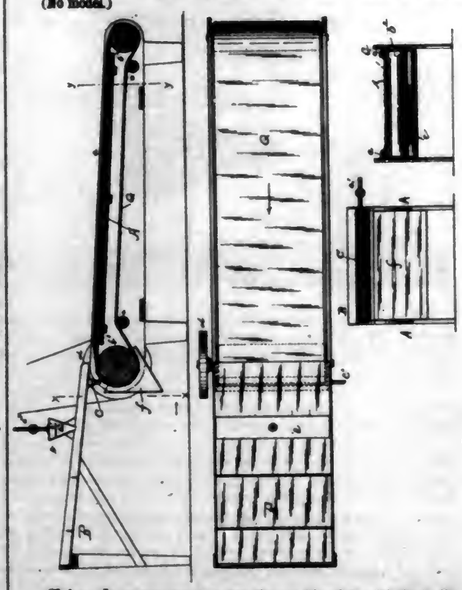
7. The combination, with the impaling-pins B, of loose copying-sheet K, provided with the enlarged openings *n*, whereby said sheet is adapted to be introduced onto the pins both before and after receiving its copy, substantially as described.

8. The reversible index-sheet H, provided with indices upon its opposite edges, substantially as described.

9. The combination, with the impaling pin or pins, of the index-cover H, provided with one or more openings *m* at each end, so that it may be reversed, substantially as described.

10. In combination with the impaling pin or pins, the stepped sheet G and the index-sheet H, provided with one or more openings *m* and one or more indices upon each of its sides, substantially as described.

478,449. ORE-CONCENTRATOR. GUSTAVE L. CUDNER, New York, N. Y., assignor of four-fifths to Jacob Ruppert, Jr., George R. Metz, and Adam R. Schatz, same place. Filed Jan. 6, 1891. Serial No. 376,828. (No model.)

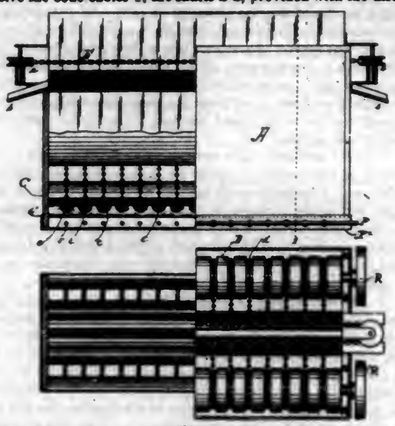


Claim.—In an ore-concentrator, the combination, with the inclined table A, having the drums $b' b^2$, carrying the ribbed-fabric belt G, of the inclined sluiceway B, having its discharge over the upper drum b', the water-distributer *e* over the sluiceway, the water-distributer C, located over the drum b' at a point one side of its vertical radius, and the trough *f* under the drum b', substantially as described.

478,450. COMBINED ORE SEPARATOR AND AMALGAMATOR. GUSTAVE L. CUDNER, New York, N. Y., assignor of four-fifths to Jacob Ruppert, Jr., George R. Metz, and Adam R. Schatz, same place. Filed Jan. 6, 1891. Serial No. 376,824. (No model.)

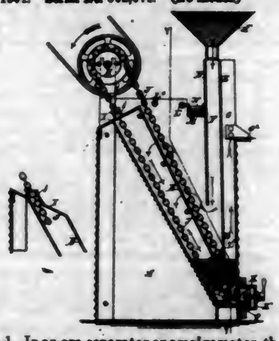
Claim.—1. In a combined ore separator and amalgamator, the combination of the trough A, having partitions $A' A^2$, the partitions B B, provided with the metallic guideway C C, having perforations *e e*, the shafts S S, the cone-cables T T, passing around the said shafts and through the perforations *e e*, the horizontal gutters *b*, located between the cables near the upper portion of the trough, the screens G G over the gutters, the horizontal chain E over the screens, and the pulleys *c* for supporting and operating said chain, substantially as described.

2. In a combined ore separator and amalgamator, the combination of the trough A, having the partitions $A' A^2$, the partitions B B, provided with the metallic guideways C C, having perforations *e e e* to receive the cone-cables T, the shafts S S, provided with the disks D



d and their ends provided with the pulleys R R, the cone-cables passing over said disks, the division-partition X, having the grate or plate *f f*, the removable pipe-holding sections $F' F^2$, the pipe having the jets J, the screened gutters *b b*, the endless horizontal chain E, located over the gutters *b b*, and the amalgamating-balls I, placed partly on the grates *f f* and between the cables T, and the partitions B B, substantially as and for the purpose set forth.

478,451. PLACER DISINTEGRATOR AND AMALGAMATOR. GUSTAVE L. CUDNER, New York, N. Y., assignor of four-fifths to Jacob Ruppert, Jr., George R. Metz, and Adam R. Schatz, same place. Filed May 14, 1891. Serial No. 392,671. (No model.)



Claim.—1. In an ore separator or amalgamator, the combination, with a trough, of an inclined perforated partition therein, a shaft above it, a series of endless chains extending both sides of said partition and over the shaft, and means for rotating the shaft, substantially as described.

2. In an ore separating and amalgamating machine, a triangular trough A, having the partitions E and D, forming the chambers F and G, the inclined perforated plate or screen B, the wedge-shaped eyeleted guideway C, the traveling chains J, the shaft H, provided with grooved pulleys, the gutter M, the spout G^2, the perforated pipes $L' L^2$ L^3 L^4, the discharge-opening Q, the clamps K', provided with levered screw-bolts, and the top plate K, all constructed and operated as shown and described.

478,452. HOT-AIR EVAPORATOR OR DRIER. JOHN H. CROSIER, Bean's Station, Tenn. Filed Mar. 25, 1891. Serial No. 386,354. (No model.)

Claim.—1. In a drying apparatus, the combination, with the drying-chamber having a flue for the heated air at the rear thereof and the shield C, of a plate K in the chamber extending to the flue and a vertically-movable damper in the flue for closing the space at the end of the said plate, as set forth.

2. In a drying apparatus, the combination, with the drying-chamber having a flue for heated air at the rear thereof, of the inclined tray-supports, the division-partition, the movable damper for the rear flue, and the movable plate K, supported upon one set of the tray-supports, all substantially as shown and described, and for the purpose specified.

3. In a drying apparatus, the combination, with the drying-chamber having a flue at the rear thereof, of the upper and lower doors at the front of the drying-chamber, the movable plate K at the junction of the two doors, the movable damper for the rear flue, and the inclined tray-supports, on one of which said plate is supported, substantially as specified.

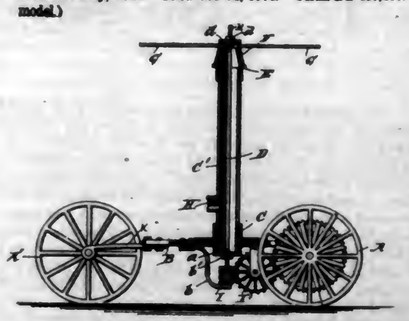


4. The drying apparatus described, consisting of the heating-chamber, the drying-chamber with the rear flue, the inclined tray-supports, the two independent upper and lower doors at the front of the drying-chamber, the central inclined partition, the vertically-movable damper for the rear flue, and the movable plate K, all arranged and operating substantially as shown and described.

478,453. RED DYE. MAX EPTING, Hochst-on-the-Main, Germany, assignor to the Farbwerks, vormals Meister, Lucius & Brüning, same place. Filed June 25, 1891. Serial No. 397,520. (Specimens.)

Claim.—The new dye derived from triamido-triortho-tolylcarbinol, which is the form of its sodium salt is a green mass having metallic luster, of easy solubility in water, but insoluble in absolute alcohol, as set forth.

478,454. TRAVELING LAWN-SPRINKLER. JEROME B. FELLOWS, North Conway, N. H. Filed Oct. 31, 1891. Serial No. 410,496. (No model.)



Claim.—1. The combination, with the supporting-frame and the stand-pipe thereon, of the vertical shaft in said stand-pipe, a connection between said shaft and the sprinkler-arms, and gear carried by said shaft and engaging gear for driving the machine, substantially as specified.

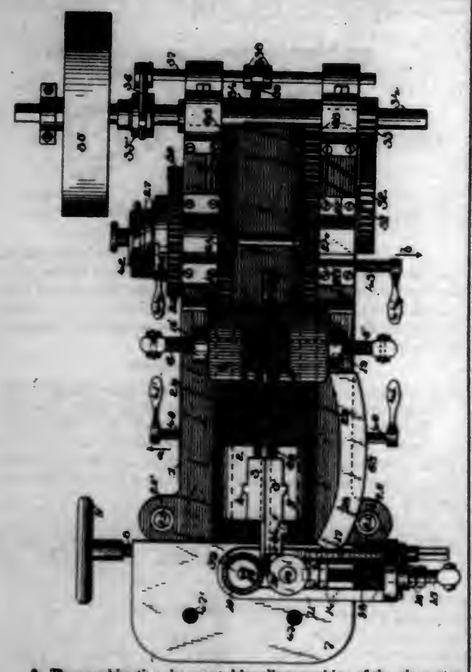
2. The combination, with the supporting-frame and the stand-pipe carried thereby, the sleeve thereon, and the cap having bearings on said sleeve and carrying the sprinkler-arms, of the rotary shaft connected to said cap and carrying a worm meshing with said driving-gear connected with the main axle, and means for automatically steering the machine, substantially as specified.

3. A self-propelled lawn-sprinkler comprising a supporting-vehicle, a stand-pipe supported thereon, sprinkling devices arranged to revolve on the upper end of said pipe, a vertical shaft inside of said pipe and connected to said sprinkling devices, gear on said shaft arranged to propel the vehicle under the rotation of said shaft, and means for steering said vehicle, substantially as specified.

478,455. METAL-BENDING MACHINE. HERBERT E. FOWLER, New Haven, Conn. Filed June 11, 1891. Serial No. 395,967. (No model.)

Claim.—1. The combination, in a metal-bending machine of the character described, of the bending-rolls, a swinging roll-supporting arm, one of said rolls located at the pivotal point of said arm, the

other roll arranged to be adjusted on said arm, as shown, with a table, said roll-supporting arm pivoted thereto and arranged to be turned on its pivoted support and be operated from either side of said table said table having a lateral adjustment on its support, so that by means of such lateral adjustment the first or pivotal roll is carried across the central or feeding line of the pipe or bar and operated from either side of said line to effect double coils or return-bends, combined with gripping-jaws for the pipe or bar and means for advancing the same, as set forth.



2. The combination, in a metal-bending machine of the character described, of the bending-rolls arranged as shown and described, a swinging arm supporting said rolls, one of which is mounted on the pivot of said arm, the other arranged to be adjusted on said arm, as shown, with a laterally-adjustable table, a support for the same, said roll-arm pivoted to said table and arranged to swing on its pivoted support and be operated from either side of said table, and means for securing it in each position, and means, substantially as shown, whereby said table is adjusted laterally, and the bending-roll located at the pivotal point of the roll-arm is operated from either side of the central feeding-line of the pipe or bar or caused to engage with either side of the metal to be bent, whereby double or return bends and other coils can be made, as set forth.

3. The combination, in a metal-bending machine of the character described, of the bending-rolls, bending-roll arm constructed and arranged substantially as shown, a laterally-adjustable table, and roll-supporting arm pivoted thereto and arranged to operate thereon, as described, combined with suitable gripping-jaws arranged to engage the straight part of the pipe or bar to be bent, and means, substantially as shown, whereby said jaw-holder is advanced with the pipe or bar to the bending-rolls, as shown.

4. The combination, in a metal-bending machine, of the bending-rolls, bending-roll arm, said rolls arranged thereon, as shown, laterally-adjustable table, roll-supporting arm pivotally supported thereto, gripping-jaws to engage the straight portion of the pipe, and a holder for said jaws, said holder arranged to be moved on the bed or other suitable support and advance the pipe or bar by longer or shorter stages to the bending-rolls, as set forth.

5. The combination, in a metal-bending machine of the character described, of the bending-rolls, swinging roll-supporting arm arranged to operate substantially as shown, independently-operating gripping-jaws adapted to engage the straight portion of the pipe, a holder for said jaws, a support for said holder, and means, substantially as shown, whereby said holder is caused to move on its support and advance the pipe to the bending-rolls, and means for imparting a retrograde movement to such holder, such means entirely independent of the means for advancing the same, so that through the instrumentality of the independent mechanism for causing said holder to advance or retreat the pipe may be fed to the rolls in longer or shorter stages, as may be desired, whereby the bending of short pieces or very thin pieces of pipe is effected, combined with a movable guiding-die placed between said gripping-jaws and the bending-rolls.

6. The combination, in a metal-bending machine, with suitable bending-rolls, of a movable supporting guide or die to engage the straight portion of the pipe or bar to be bent, said supporting guide or die arranged to be advanced into the bending-field of the bending-rolls, and thus support the pipe or bar in close proximity to the point of deflection or bending-point of said pipe or bar, combined with gripping-jaws or other suitable device, substantially as shown, and means, substantially as shown, to advance the same with said pipe or bar, the supporting guide or die placed between the gripping-jaws and the bending-rolls, as described.

7. The combination, in a metal-bending machine, with the bending-rolls, of a supporting guide or die to support the straight portion of the metal, a holder for such support or die, and a support for said holder, said holder arranged to move on its support and advance the supporting guide or die in close proximity to the bending-field, and thereby support the metal to be bent at the bending-point of such metal, combined with gripping-jaws and means, substantially as shown, for advancing the same, as shown and described.

8. The combination, in a metal-bending machine, of the bending-rolls, supports for the same, said rolls arranged to rotate on said supports, guiding-dies for the straight portion of the pipe or bar to be bent, and a holder for said guiding-dies, said dies adapted to engage the pipe or bar on both sides of the same, one side of said die projecting beyond the other or its companion die, so that said projecting end may be advanced to the bending-line of the bending-rolls and support the pipe or bar at said point, combined with gripping-jaws and means for advancing the same, as set forth.

9. The combination, in a metal-bending machine, of the bending-rolls 10 10′, roll-supporting arm 11, and means, substantially as shown, to adjust one of said rolls on said arm and table 7, said roll-supporting arm being pivotally supported thereon and said table arranged to have a lateral movement on the bed at right angles to the feeding-line of the pipe or bar, so that the roll at the pivotal point of the roll-supporting arm may be operated from either side of said line, combined with gripping-jaws and means for advancing the same, substantially as shown.

10. The combination, in a metal-bending machine of the character described, of the bending-rolls, swinging roll-supporting arm, transversely-movable table, said arm pivoted thereto and arranged to operate thereon, as shown and described, gripping-jaws adapted to engage the straight portion of the pipe and advance the same to the bending-rolls in longer or shorter stages, guiding die or dies, and a support for the same placed between the gripping jaws and the bending-rolls, said gripping-jaw and guiding-die holders arranged to move independently of each other or both together, as may be desired.

11. The combination, in a metal-bending machine, with the bending-rolls supported and operated as shown and described, of the guiding-dies 3 3′ and holder 2, said dies arranged, substantially as shown, to be reversed in their holder, so that the projecting die may be advanced into the bending-field of the bending-rolls from either side of the central or feeding line of the pipe or bar, combined with gripping-jaws and means for advancing the same, as set forth.

12. The combination, in a metal-bending machine of the character described, of the bending-rolls, swinging roll-supporting arm, laterally-adjustable table, roll-supporting arm pivoted thereto and arranged to operate thereon, in the manner and for the purpose shown and described, and means for securing the arm in any position required with gripping-jaws, and means to advance the same, said jaws adapted to engage the straight portion of the pipe or bar, guiding die or dies placed between the bending-rolls and the gripping-jaws, a holder for the same, the gripping-jaw holder arranged to be advanced a predetermined distance on its support, and a pusher arranged substantially as shown, said gripping-jaw holder engaging the pusher and by means of such engagement being enabled to turn the roll-supporting arm on its pivoted support, said jaw-holder also engaging the guiding-die holder to advance the die into the bending-field of the rolls, so as to support the pipe or bar at the bending-point, as set forth.

13. The combination, in a metal-bending machine, of the bending-rolls, supporting-arm for the same, laterally-adjustable table, the arm being pivotally supported thereon, the gripping-jaws for the straight portion of the pipe or bar, a holder for said jaws, and means for operating the same, guiding die or dies, holder for the same, said holder placed between the bending-rolls and the gripping-jaws, the pusher, and guide-roll for the same, all combined and arranged to operate in the manner substantially as shown and described.

14. In a metal-bending machine of the character described, the combination of the bending-rolls, the swinging roll-supporting arm, the table, said arm pivotally supported thereon, and a coil-supporting guide-plate arranged above the table and parallel therewith, said guide-plate pivotally supported on said table and having a vertical adjustment on said support, said guide-plate arranged to turn on its pivoted support in unison with the roll-supporting arm, and thereby support the bent portion of the pipe or bar in any position assumed by the roll-supporting arm, combined with gripping-jaws and means for advancing the same, substantially as shown and set forth.

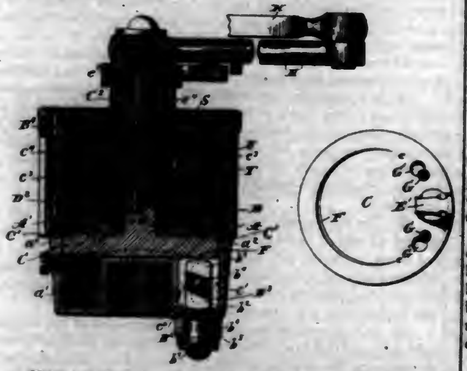
15. In a metal-bending machine, the combination of the bending-rolls, roll-supporting arm, the table, said arm pivotally supported thereon and arranged to operate thereon, substantially as shown, and the coil guide-plate pivotally supported on said table and having a vertical adjustment thereon, the edges of said guide-plate so formed with respect to its pivoted support and the pivoted roll-supporting arm that said arm when turned on its support will carry the coil guide-plate with it, so that the proper relation between said plate and arm will remain substantially the same, combined with the gripping-jaws and means for advancing the same, as set forth.

16. The combination, in a metal-bending machine of the character described, of the coil guide-plate 45, having the edges *j k*, each of the same curved shape or formation, stud 46, projecting downward from said plate, adjustable supporting-screws 51 51′, projecting downward through said plate, with the table 7, having holes 47 47′ through the same, adjusting-screws 49, engaging such holes from beneath the table, and stud 46 of the guide-plate, inserted in said holes on the upper surface of the said table and adapted to rest, as the case may be, on either of said adjusting-screws 49 to effect a vertical adjustment of said guide-plate, combined with the bending-rolls and roll-supporting arm, the curved edges *j k* of said guide-plate so formed with respect to the position of its pivoted stud 46 and the movement of the roll-supporting arm that when said arm is turned on its support it will carry the guide-plate with it, and thus support the bent portion of the pipe in any position said roll-arm may be placed, said guide-plate also adapted to be reversed, as shown, and used on either side of the table and roll supporting arm, combined with gripping-jaws and means for advancing the same, as set forth.

17. In a metal-bending machine of the character described, the combination of the bending-rolls 10 10′, roll-supporting arm 11, gripping-jaws for the straight portion of the pipe, and means, substantially as shown, for advancing the said jaws, and thus feeding the pipe to the bending-rolls, with the internal supporting-roll 61, adapted to be placed within the pipe and between the bending-rolls to support the pipe at the bending-point, the supporting-roll pivotally mounted to the frame 62, so that said roll may turn, and thereby reduce the frictional contact with the interior of the pipe, the roll-supporting frame also swiveled to the rod 64, as shown, to give freedom of action to said frame, so that the supporting-roll may readily locate itself to the curved surface of the bending-rolls, as set forth.

18. The combination, in a metal-bending machine, of the bending-rolls, swinging roll-supporting arm, roll-supporting studs mounted thereon, one of said studs fixedly located at the pivoted point of the arm, the other adapted to be adjusted thereon, and means, substantially as shown, to effect such adjustment, combined with a clamp or yoke, an adjustable block thereon, and a screw actuating such block, one end of the yoke engaging the upper end of the fixed roll-stud, while the movable block engages the upper end of the movable roll-stud, so as to preserve the vertical alignment of such studs while bending heavy pipe or metal, as set forth.

478,456. COMBINED DOOR SPRING AND CHECK. WILLIAM GILFILLAN, New Britain, Conn. Filed Jan. 9, 1892. Serial No. 417,512. (No model.)



Claim.—1. In a door-check, the combination, with a receptacle for the checking medium and a wing or piston arranged to move within said receptacle, of a passage or groove for the escape of the checking medium, so constructed and arranged that it is gradually restricted in area as the door is closed and thereby serves to check the door in closing until it has nearly reached its closed position, and a port arranged to suddenly release the checking medium and thereby release the door to the action of the spring and thus insure the latching of the door, substantially as set forth.

2. In a door-check, a rotary disk provided with an opening for the passage of liquid to counterbalance the pressure on the disk, substantially as set forth.

3. In a door-check, the combination, with a liquid-chamber and a plug located therein, of a rotary disk provided with a wing movable in said chamber, said disk having releasing-ports on opposite ends of its wing, substantially as set forth.

4. In a door-check, the combination, with a liquid-chamber and a plug located therein, of a rotary disk provided with a wing or blade movable in said chamber and having a counterbalancing-hole on each side of the wing, which extends through the rotary disk, substantially as set forth.

5. The combination, with a door adapted to swing in both directions, of a door-check attached to each side of the door and means for automatically cutting either one of the door-checks out of operation when the door is opened to the right or the left, substantially as set forth.

6. The combination, with a bracket and a yoke, of a door-check and means for automatically locking the yoke to the bracket and for disengaging it therefrom, substantially as set forth.

7. In a door-check, a link made in sections, one portion having a series of projections which engage a corresponding series of holes in the other section, and a clamp for securing the sections together, substantially as set forth.

8. In a door-check, the combination, with a liquid-chamber and a rotary disk provided with a wing or blade movable in said chamber, of a tapered groove formed in the face of the rotary disk, the ends of the groove terminating on opposite sides of the wing, and releasing-ports located between the wing and the ends of said groove, substantially as set forth.

9. In a door-check, the combination, with a link having a counterbore formed in one end thereof, of a pin extending through said counterbore and forming an oil-chamber between the pin and walls of the counterbore, substantially as set forth.

10. In a door-check, the combination, with a coiled spring, of a thimble provided with an inclined tooth adapted to engage in a hole in the inner end of the spring when the thimble is turned in one direction and to be disengaged therefrom when turned in an opposite direction, and a sleeve on the spindle constructed to engage the thimble, substantially as set forth.

11. The combination, with a bracket, a yoke pivoted to each end of the bracket and spring-actuated dogs for locking the yokes to the bracket, so as to be rigid therewith, of a door-check connected with each one of the yokes, and means for automatically disengaging the dogs from the bracket, substantially as set forth.

478,457. AUTOMATIC CAR-BRAKE. WILLIAM R. GUERNSEY, Norwich, N. Y., assignor to Jane M. Guernsey, same place. Filed Feb. 25, 1888. Serial No. 265,227. (No model.)

Claim.—1. In a brake-applying mechanism for cars operated through the medium of longitudinally-moving draw-heads, a brake-machine adapted to apply or maintain brake-shoe pressures only when the initial isthrusts of the two draw-heads on the same car are practically simultaneous.

2. In a brake-applying mechanism for cars, the combination of a brake-machine with a disabling or tripping device which operates to prevent the application or the continuance of brake-shoe pressure under compulsion of certain related initial movements of the two independently-moving draw-bars.

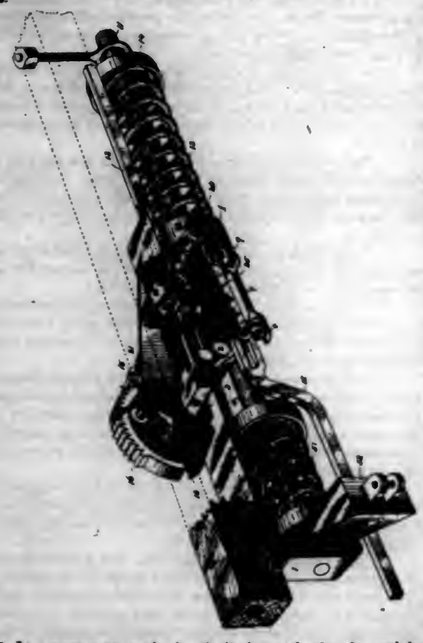
3. In a brake-applying mechanism for cars operated through the medium of longitudinally-moving draw-heads, the combination of a brake-machine with a tripping or disabling device which operates to prevent the application or continuance of brake-shoe pressure whenever the isthrusts of the two draw-heads of a car are not sufficiently simultaneous.

4. In a system of momentum-brakes, the combination of the foundation-brakes, the two oppositely-ended longitudinally-moving draw-heads or buffers, and a brake-machine connected to the said draw-heads and the foundation-brakes, so constructed and arranged as that it will automatically apply the brakes or fail to apply the brakes in response to the simultaneousness or lack of simultaneousness of the draw-head compressions.

5. In a car-brake, the combination of the oppositely-ended longitudinally-moving draw-heads or buffers, the foundation-brakes, connections between the draw-heads and foundation-brakes, a brake-applying device lying within said connections, and means, substantially

as shown and described, for disabling the brake-applying device when the inthrust movements of the draw-heads are not sufficiently simultaneous.

6. In a momentum car-brake, the automatic brake-applying mechanism, in combination with the independently-operable draw-heads, to both of which the said braking mechanism is attached, and a tripping device constructed substantially as shown and described, all the parts being so arranged that an independent inthrust of either draw-head will first apply and then upon further inthrust movement release the brake.



7. In a momentum car-brake, the brake mechanism for applying the brakes under compulsion of inward thrusts of either draw-head, in combination with a tripping mechanism for releasing the brakes in further response to such inward thrusts of one draw-head as are not balanced by corresponding inthrusts practically simultaneous of the opposite draw-head upon the same car.

8. In a car-brake, substantially as hereinbefore shown and described, the combination of the two draw-heads or buffers capable of independent motion connections therefrom through a brake mechanism to the foundation-brake levers, and means for automatically disabling the brake mechanism and releasing the brakes if such movement of the draw-heads or buffers is not sufficiently simultaneous, as set forth.

9. In a car-brake, the combination of the foundation-brakes, two oppositely-ended longitudinally-moving draw-heads or buffers, connections from said draw-heads or buffers to the brakes, brake-applying mechanism lying within and forming part of said connections, and means, substantially as shown and described, for temporarily disabling or disconnecting said brake-applying mechanism when the inthrust movements of the draw-heads are not sufficiently simultaneous.

10. In a car-brake, substantially as hereinbefore shown and described, the combination of the oppositely-arranged and independently-acting draw-heads or buffers located at the respective ends of the car, connections therefrom to foundation-brake levers through a brake-applying mechanism operable by the movement of the said draw-heads or buffers, and a tripping or disabling device to release or prevent the operation of the brakes when the draw-head movements are non-simultaneous or differential, all the parts being so arranged as that the brakes will remain off during the continuation of the same compression.

11. The combination, in a momentum car-brake, of the draw-bars or buffers, a spring common to both, connections between said draw-bars and spring, whereby said spring offers its total resistance to the movement of the one of the draw-bars which is in advance of the other, or if they advance simultaneously then to both, a system of foundation-brakes, and a brake-applying mechanism, all arranged substantially as and for the purposes set forth.

12. In a car-brake, the combination of the independent draw-heads, the buffer-springs, the brake mechanism connected to the draw-heads through the buffer-springs and provided with a tripping device, and the foundation-brakes connected to the brake mechanism, all adapted to operate substantially as and for the purposes set forth.

13. In a car-brake, a brake-applying mechanism, combined with the two draw-heads and buffer-springs of the car, so as to be operated by either or both of the draw-heads through the buffer-springs, the said braking mechanism being connected to the brake-levers, as shown and described, and so constructed as that when operated independently by either draw-head alone it will first apply and then upon further draw-head movement release the brakes.

14. In a car-brake, substantially as hereinbefore described, the combination of the independent draw-heads or buffers, a braking mechanism having a relief-spring, the said draw-heads having buffer-springs of less resistance than the relief-spring, so that the leading draw-head is obliged to travel a greater distance in compression than is necessary to its fellow, the lagging draw-head.

15. The combination, in a momentum-brake system for trains, of the longitudinally-moving draw-heads or buffers connected to the brake-machine and provided with buffer-springs, with the coupling device constructed substantially as shown and described, that imposes a tension whenever two cars are coupled upon the respective buffer-springs, thereby eliminating all free slack and tending to maintain a close contact of the coupled draw-heads, as set forth.

16. In an automatic train-brake, the combination of the longitudinally-moving draw-heads or buffers having buffer-springs, as shown, the braking mechanism connected therewith, and a coupling device imposing a tension on the buffer-springs when the cars are coupled, so that an accidental uncoupling will compel the buffer-springs to apply the brakes.

17. The combination of the hand-brake capstan having a ratchet and dog with a device operated by said hand-capstan, which in response to movements of said capstan which are insufficient for the application of brakes engages or disengages a momentum brake-machine or windlass from compulsion of the draw-heads, so that the position of the hand-capstan shall determine the movement or non-movement of the momentum-windlass or its equivalent and the consequent application or non-application of the momentum-brakes.

18. In an automatic or momentum brake, the combination of foundation-brakes, the momentum draw-head brake mechanism connected therewith, the hand-capstan connected to the foundation-brakes for the purpose of operating the same, said hand-capstan being so constructed and arranged as that when sufficiently rotated in either direction the actuation of the brakes from the draw-heads will be prevented.

19. In combination with a capstan or windlass 16 for applying brakes, a gear or its equivalent 16^a, a mutilated stop-wheel 16^b, which by reason of its mutilation does not hinder the movement of the said windlass or capstan in the direction of "putting on brakes," but which by reason of its stop 16^b prevents the return movement and consequent unwinding of the brake-chain beyond the desired limit of its allowable slack, as set forth.

20. In combination with an automatic or momentum brake mechanism, a tripping device for releasing the brakes, consisting, essentially, of a loose sleeve carrying two tripping-dogs normally engaged with one or two fixed teeth in the tripping-shaft, each tripping-dog being arranged to be lifted out of engagement by its respective draw-head when making an inthrust, and a lift-lever fixed to the tripping-shaft and engaging under the actuating-pawl of the brake mechanism, all arranged substantially as and for the purposes set forth.

21. In a momentum car-brake, the combination of the longitudinally-moving draw-head or buffer, a buffer-spring, an after-follower, a rock-arm for receiving the inward thrusts of the after-follower, all arranged at one end of the car, the braking mechanism connected to the rock-arm by pull-rod, a second pull-rod connecting the braking mechanism to a similar construction at the opposite end of the car, and means for equalizing in the brake mechanism the compressions received from the opposed draw-heads, substantially as shown and described.

22. In a momentum car-brake, the combination of the longitudinally-moving draw-heads or buffers provided with buffer-springs of a certain resistance, the braking mechanism constructed and arranged substantially as shown and described, and a relief-spring of greater resistance than the buffer-springs, said relief-spring having means of adjustment whereby the pressure of the brake-shoes may be altered and determined.

23. The brake-applying mechanism hereinbefore shown and described, connected to the draw-heads of the car and to the brake-shoes and levers, as shown, and consisting, essentially, of the windlass, the ratchet-wheel, and actuating-pawl, said actuating-pawl being operated by draw-head inthrusts, which in turn operates the ratchet-wheel, windlass, brake-levers, and brakes, substantially as set forth.

24. In a momentum car-brake, the combination of the longitudinally-moving draw-head or buffer, the buffer-spring, the after-follower, the rock-arm for receiving the inward thrusts of the after-follower, the braking mechanism connected to said rock-arm by the pull-rod, brake-levers and brakes, and means for connecting them to the braking mechanism, substantially as shown and described.

25. In a momentum car-brake, the combination of the longitudinally-moving draw-head or buffer, the after-follower, the buffer-spring, the rock-arm for receiving the inward thrusts of the after-follower, the pull-rod attached to the rock-arm and extending to and attached to the braking mechanism, the windlass upon said brake-machine, and means for applying brakes, all arranged substantially as and for the purposes set forth.

26. In a momentum car-brake, substantially as hereinbefore shown and described, the longitudinally-moving draw-heads or buffers provided with buffer-springs, after-followers incasing said buffer-spring, rock-arms for receiving the inward thrusts of the after-followers, and pull-rods extending to a braking mechanism, in combination with said braking mechanism, having a rock-arm to which both the pull-rods are attached, a windlass connected with said rock-arm, braking-levers, and brakes connected to said windlass by a brake-chain, all adapted to operate substantially as and for the purposes set forth.

27. In a momentum-brake, the combination of the oppositely-arranged and longitudinally-moving draw-heads or buffers provided with buffer-springs of certain resistance, and after-followers for receiving the inward thrusts of the springs, with a braking mechanism provided with a brake-windlass, and a relief spring or springs of greater resistance than the buffer-springs for receiving further compressions of the draw-heads when the brake-shoes are fully on.

28. In a momentum car-brake, the combination of the independent oppositely-arranged and longitudinally-moving draw-heads or buffers provided with buffer-springs of a certain resistance, the after-followers, the rock-arms, the pull-rods, the braking mechanism connected to the pull rods and to the braking-levers and brakes through means substantially as shown and described, and provided with one or more relief-springs of greater resistance than the buffer-springs, a compression-rod common to both the springs and provided with keys, and means for adjusting the tension of the springs, all arranged substantially as and for the purposes set forth.

29. In a momentum car-brake, a longitudinally-operating draw-head or buffer provided with a buffer-spring of certain resistance, in combination with the opposite draw-head similarly equipped, the intermediate mechanism common to both the draw-heads, the compression-bar, the equalizing-bar pivoted therein and connected through the medium of a windlass to the brakes, one or more relief-springs of greater resistance than the buffer-springs sliding on and connected to the longitudinally-moving compression-bar, with means of adjustment of said spring or springs, as shown and described.

30. In a momentum car-brake, the combination of the independent oppositely-arranged and longitudinally-moving draw-heads of the car, with a brake-applying mechanism connected therewith, and consisting, essentially, of a rock-arm for receiving the draw-head movements, a horizontal equalizing-bar having a relief-spring, a windlass provided with a ratchet-toothed wheel, a pawl and pawl-bearing lever for operating the wheel, suitable connections between the rock-arm and the equalizer, and the pawl-bearing lever, the brakes and the brake-levers, and a brake-chain connected to the windlass and common to both brake-levers, all arranged substantially as described, and for the purpose set forth.

31. In a momentum car-brake, the combination of the oppositely-arranged and longitudinally-moving draw-heads or buffers provided with buffer springs of a certain resistance, and after-followers, as shown, with a braking mechanism connected to the after-followers and provided with a rock-arm, a horizontal equalizing-bar pivoted in a compression-rod carrying one or more relief-springs of greater resistance than the buffer-springs, a windlass having a ratchet-toothed wheel, suitable connections between the equalizer and the other parts, the brake levers and shoes, and the brake-chain extending between said levers and the aforesaid windlass, all arranged as shown and described, and for the purposes set forth.

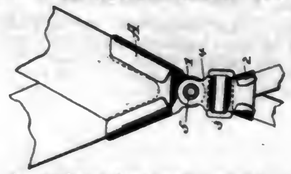
32. In a momentum car-brake, the combination of the independent oppositely-arranged and longitudinally-moving draw-heads or buffers, the braking mechanism common to both draw-heads, and the brake-levers, chain, and brake-shoes connected to the braking mechanism, the latter consisting of a rock-arm, a windlass having a ratchet-toothed wheel and two pulley-wheels, around which the brake-chain is wound, a lever carrying a pawl engaging with the toothed wheel, and equaliser and links connecting it with the rock-arm and pawl-bearing lever, all arranged substantially as and for the purposes set forth.

33. In a momentum-brake, the combination of the independent oppositely-arranged and longitudinally-moving draw-heads, a braking mechanism connected with both of said draw-heads and provided with a windlass having a ratchet-toothed wheel with spur-teeth upon its inner periphery, a mutilated gear or pinion meshing therewith and mounted upon the frame and provided with a counter-weight or spring, and a stop for limiting its retrograde movement, the parts being so arranged as that when the windlass, through the wear upon the brake-shoes, rotates beyond a certain point the pinion-gear will take up and eliminate this additional movement upon the release of the brakes.

34. In a momentum car-brake, the combination of the independently-arranged and longitudinally-moving draw-heads, the braking mechanism common to both draw-heads and connecting to the braking-levers, chain, and shoes, and provided with a take-up consisting of a wheel having spur-teeth on its inner periphery, a mutilated pinion pivoted to the frame and meshing with the spur-teeth and provided with a counter-weight or spring on one side and a stop on the other, and a dog pivoted in the frame and provided with a tooth for engaging with the aforesaid stop, all adapted to operate substantially as and for the purposes set forth.

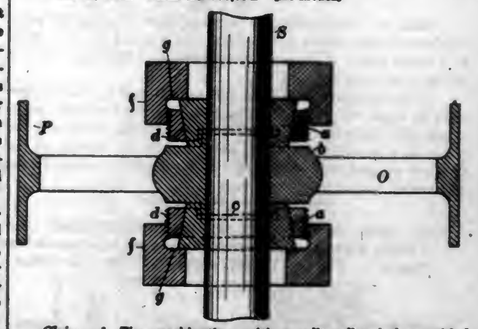
35. In a momentum car-brake, the combination of the longitudinally-moving draw-heads, the brake mechanism connected thereto, two independent pull-rods or their equivalents slotted, as described, and lying in and forming part of the connections between the brake-machine and the draw-heads, whereby the brakes may be applied by independent inthrusts of either draw-head or simultaneous inthrusts of both draw-heads.

478,458. CLASP FOR SUSPENDERS. CHARLES R. HARER, Williamsport, Pa. Filed Jan. 15, 1891. Serial No. 377,836. (No model.)



Claim.—An attachment for suspenders, consisting, essentially, of an upper V-shaped clasp, the side edges of which are adapted to be bent around and lap over the edges of suspender-webs, a second clasp carrying button-straps, and a connection between the two clasps, consisting, essentially, of a plate and a loop loosely connected, the plate overlapping the smaller end of one clasp and secured thereto by a pivot and the loop loosely connected to the smaller end of the other clasp, substantially as set forth.

478,459. SPLIT-PULLEY CLAMP. JOHN J. HOGAN, Brooklyn, assignor to the Hogan Engineering Company, New York, N. Y. Filed June 15, 1891. Serial No. 396,354. (No model.)



Claim.—1. The combination, with a split-pulley hub provided with bosses at its opposite ends, of divided clamp-collars having their parts secured together by bolts and clamped upon the exterior of the bosses, as and for the purpose set forth.

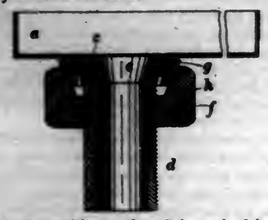
2. The combination, with a pulley-hub having bosses upon the ends tapered inwardly, as described, of threaded sleeves fitted internally upon the tapering bosses, and divided collars *f*, threaded internally to fit the sleeves and provided with the clamping-bolts and the internal flanges *g* to bear upon the ends of the bosses, as and for the purpose set forth.

3. The combination, with a pulley-hub having bosses upon the ends tapered inwardly, as described, of threaded sleeves fitted internally upon the tapering bosses, lugs upon the hub to engage the sleeves and hold them from turning, and divided collars *f*, threaded internally to fit the sleeves and provided with clamping-bolts and with the internal flanges *g* to bear upon the ends of the bosses, as set forth.

478,460. PLUMBER'S SAFE CONNECTION. JOHN J. HOGAN, Brooklyn, assignor to the Hogan Engineering Company, New York, N. Y. Filed June 15, 1891. Serial No. 396,360. (No model.)

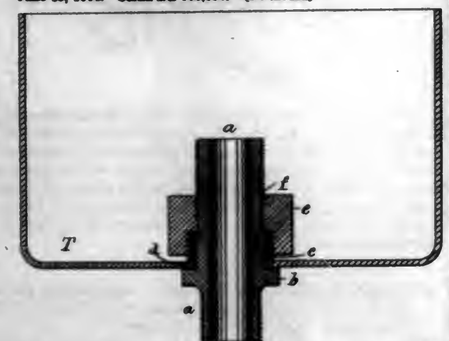
Claim.—1. The combination, with the threaded nozzle *d*, having flared head *c*, provided with groove *e*, of the lead collar *b*, bent from the bottom of the receptacle *a*, and the nut *f*, fitted to the nozzle and

formed with conical seat *h*, adapted to clamp the collar upon the flared head, substantially as herein set forth.



2. The combination, with the threaded nozzle *d*, having flared head *c*, provided with groove *e*, of the lead collar *b*, bent from the bottom of the safe *a*, the nut *f*, fitted to the sleeve and provided with the removable conical seat *g*, split at one side, as and for the purpose set forth.

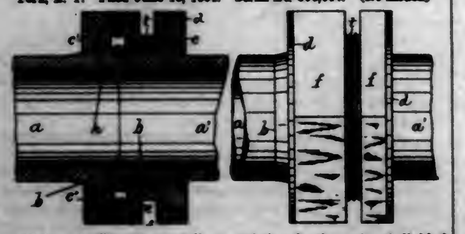
478,461. TANK CONNECTION. JOHN J. HOGAN, Brooklyn, assignor to the Hogan Engineering Company, New York, N. Y. Filed June 15, 1891. Serial No. 396,257. (No model.)



Claim.—1. The combination, with the sleeve *a*, having the collar *b*, of the clamping-ring *c*, provided with nozzle *d*, and the nut *e*, fitted to a thread upon the sleeve and to the exterior of the ring, as and for the purpose set forth.

2. The combination, with the sleeve *a*, having the collar *b*, dished upon its upper side, of the clamping-ring *c*, provided with the nozzle *d* and dished upon the projecting portion outside the nozzle, and the nut *e*, fitted to a thread upon the sleeve and to the exterior of the ring and adapted to press the ring toward the collar *b*, as and for the purpose set forth.

478,462. COUPLING FOR PIPES WITH FLARED ENDS. JOHN J. HOGAN, Brooklyn, assignor to the Hogan Engineering Company, New York, N. Y. Filed June 16, 1891. Serial No. 396,607. (No model.)

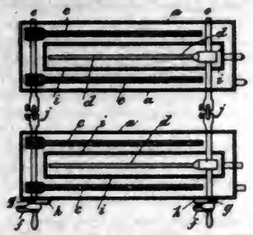


Claim.—1. The pipe-coupling consisting in the pair of divided sleeves *c d*, formed internally to lock upon the pipe ends and provided with the corresponding screw-threads *f*, as set forth, and the collars *f*, fitted to the exteriors of the sleeves to lock their divided parts together, substantially as herein set forth.

2. A coupling for pipe with flared ends, consisting in the divided sleeve fitted internally to the flared end of the pipe and provided with screw-thread, as set forth, and the collar *f*, fitted to the exterior of the sleeve to lock the divided parts together and provided with means for turning the same, substantially as herein set forth.

3. In a coupling for pipe with flared ends, the combination, with the divided sleeves fitted internally to the flared ends of the pipes and provided with the tapering seats *c*, flanges *d*, and corresponding screw-threads, as set forth, of the collars *f*, fitted to the seats *c* upon the sleeves and provided with means for turning the same, substantially as herein set forth.

478,468. PLUNGE-BATTERY. JAMES H. HOWARD, Medford, Mass. Filed Dec. 1, 1890. Serial No. 373,274. (No model.)

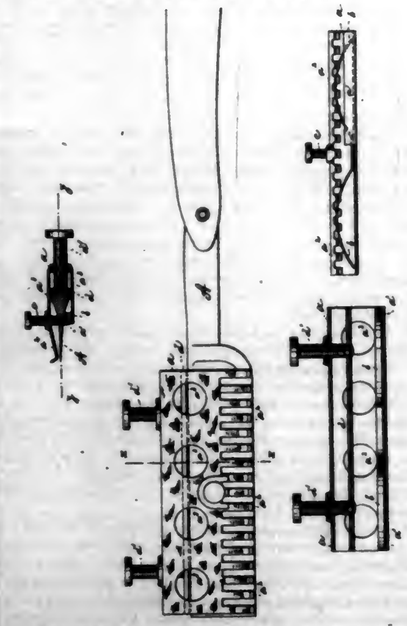


Claim.—1. In a plunge-battery, the combination of the casing, the shafts journaled in the casing near opposite ends thereof, and the carbon and zinc plates attached, respectively, to said shafts, as set forth.

2. In a battery, the combination of a plurality of casings, each having shafts journaled therein near its opposite ends, carbon and zinc plates attached, respectively, to said shafts, and connections extending from the shafts of one casing to those of the next casing in line therewith, substantially as described.

3. In a battery, the combination of the casing, the shafts journaled in the casing near opposite ends thereof, carbon and zinc plates attached to said shafts, and means for holding the plates at any desired point of elevation, substantially as set forth.

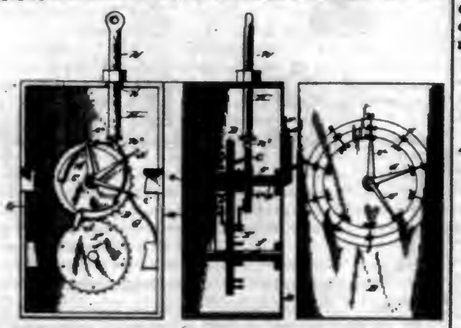
478,464. RAZOR-GUARD. HERMAN HUBS, New York, N. Y. Filed Sept. 28, 1891. Serial No. 406,982. (No model.)



Claim.—A razor-guard having a double bow-spring secured at its middle longitudinally within the guard, to one side thereof, the said spring being adapted to bear at its ends against the same side of the guard and at intermediate points against a side of the razor, substantially as specified.

478,465. REGISTER FOR GRAIN-MEASURES. JOHN A. JAMES and DAVID JAMES, Coffeyville, Kans. Filed June 3, 1891. Serial No. 394,919. (No model.)

Claim.—1. In a register, the combination, with the casing and dial-plate, of a ratchet-disk having an opening in the center thereof and a hub on one side, a pointer sleeved on the hub, a projecting arm on the opposite side of the disk, a cog-wheel having an opening in the center thereof, a hollow shaft rigidly secured in said opening and passing through the opening in the ratchet-disk, a pointer sleeved on the outer end of the hollow shaft, a wheel in the rear of the cog-wheel having an opening in the center thereof, a shaft rigidly secured in said opening and journaled in bearings in the front and rear of the casing, pins on the front face of the wheel near the periphery thereof, a pointer on the outer end of the shaft, a cog-wheel below the other cog-wheel and meshing with the same, a shaft journaled in bearings in the front and rear of the casing and upon which said cog-wheel is secured, pins on the front face of the cog-wheel near the periphery thereof, a projecting arm rigidly secured on the rear face of the cog-wheel, and a pawl engaging with the teeth of the ratchet-disk, substantially as described.



2. In a register, the combination, with the casing and dial-plate, of a registering mechanism within the casing, consisting of a ratchet-wheel formed with an arm near its periphery and a central hub, a cog-wheel mounted on a hollow shaft passing through the hub on the ratchet-disk, a wheel in the rear of the cog-wheel provided with a series of pins on its side, a shaft on which the same is rigidly mounted extending through the hub and hollow shaft on the outer wheels, bearings for the shaft in the casing, a cog-wheel below the other cog-wheel engaging the pins on the rear wheel, a vertically-movable pawl having arms engaging the opposite sides of the ratchet-wheel, and pointers on the outer ends of the hub, hollow shaft, and shaft, substantially as described.

3. In a register, the combination, with a casing, a dial-plate, and a ratchet-disk, of a pawl consisting of a vertically-movable shank located to one side of the axis of the disk, and curved spring-wire arms secured in the end of the shank, looped at their lower ends, and extending down on opposite sides of the ratchet-disk and engaging the teeth on the same, substantially as described.

478,466. MANUFACTURE OF STEEL INGOTS. CHARLES W. KENNEDY and JOHN W. GRAINLAND, Philadelphia, Pa.; said Grainland assignor to said Kennedy. Filed May 20, 1891. Serial No. 393,457. (No model.)



Claim.—The described method of manufacturing compound ingots of inseparably-united strata of metal of different grades, qualities, or kinds, consisting in first separating a suitable mold into adjacent compartments by means of a double wall or partition of fusible material with an intermediate air-space, and subsequently pouring the different grades, qualities, or kinds of metal into said compartments, substantially as described.

478,467. PROCESS OF MAKING NAPHTHOSULTONDISULPHONIC ACID. HANS KUEST, Höchst-on-the-Main, Germany, assignor to the Farbwerks, vormals Meister, Lucius & Brüning, same place. Filed June 30, 1891. Serial No. 398,043. (Specimens.) Patented in Germany Feb. 1, 1890, No. 56,056, and in France June 17, 1890, No. 206,439.

Claim.—1. The process for the production of naphthosultondisulphonic acid, which consists in nitrating the naphthalistrisulphonic acid herein described, reducing the nitro compound, converting the naphthylaminetrisulphonic acid thus formed into the diazo compound, and boiling this compound with acidulated water until the development of nitrogen ceases, substantially as set forth.

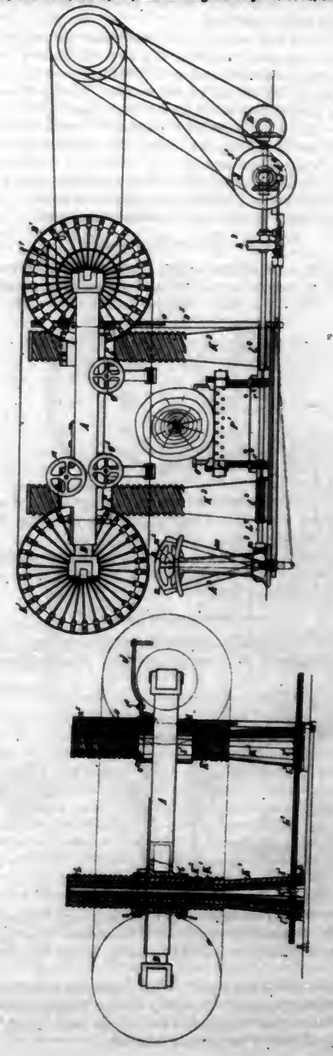
2. As a new article, the naphthosultondisulphonic acid, of which the neutral disodium salt crystallizes in the front of the colorless needles and does not show any fluorescence in aqueous solution, but treated with concentrated ammonia it is converted into a sulphamide of the formula:

$$C_{10}H_4\begin{cases}OH\\SO_2NH_2\\(SO_3Na)_2.\end{cases}$$

The neutral sodium salt is of easy solubility in water. On the addition of alcohol it is precipitated from its concentrated solution in the form of flocks, in absolute alcohol it is almost insoluble, and in ligroin it does not dissolve at all, and it has the formula:

$$C_{10}H_4\begin{cases}O\\SO_2\times\\(SO_3Na)_2.\end{cases}$$

478,468. BAND-SAW MACHINE. JOHANN H. LAMBS, Oerlikon, near Zurich, Switzerland. Filed Sept. 4, 1891. Serial No. 404,743. (No model.) Patented in Switzerland May 16, 1889, No. 956; in France June 24, 1889, No. 199,147; in Germany June 28, 1889, No. 55,599; in Austria-Hungary Nov. 13, 1889, No. 38,827 and No. 53,446; in England May 30, 1890, No. 7,455, and in Belgium Sept. 2, 1891, No. 96,241.



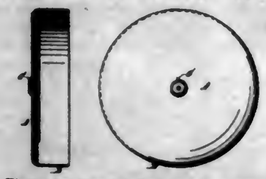
Claim.—1. In a band-saw machine, the mechanism for adjusting and stretching the saw-band, consisting of a shaft *a'*, a pair of screws *b'*, and gearing whereby the said screws are driven by the said shaft, a pair of racks engaging the said screws and receiving endwise motion therefrom, sliding pieces connected to the said rack, bearings on the said sliding pieces, and a pair of rollers or wheels over which the saw-band is stretched, one of the said rollers having its shaft journaled in the said bearings in order that it may be moved at will away from the other roller or wheel to tighten the saw-band, substantially as set forth.

2. In combination with a series of pins fixed to the frame of the machine, a pinion engaging therewith, a hand-wheel and shaft for operating the said pinion, an arm affording bearings for the shaft of the said pinion and moving therewith, a guide-head F', formed on the said arm and provided with a curved dovetailed guideway having a gap or opening, a fixed sliding piece F^2, having a dovetailed recess and constructed to fit the said guide-head, a screw I^2, whereby the said sliding piece is held in any position of such adjustment, the head of the said screw entering the gap in the said guideway, and the wooden guide H, which is held by the said sliding piece and receives the band, substantially as set forth.

3. In a band-saw machine, the cross-beams which support the band-saw rollers, in combination with internally-screw-threaded sleeves constructed to support the said cross-beams, a pair of externally-screw-threaded revoluble hollow pillars K^2, which receive the said sleeves, gearing for turning the said pillars in either direction at will, and a pair of fixed pillars K, on which the said pillars K^2 turn, substantially as and for the purpose set forth.

4. In a band-saw machine, the mechanism for adjusting and stretching the saw-band, consisting of a shaft *a'*, a pair of screws *b'*, and gearing whereby the said screws are driven by the said shaft, a pair of racks engaging the said screws and receiving endwise motion therefrom, sliding pieces connected to the said racks, bearings on the said sliding pieces, and a pair of rollers or wheels over which the said saw-band is stretched, one of the said rollers having its shaft journaled in the said bearings and the said gearing including a conical recessed wheel or screw which is detachably held on a similarly-shaped part of its shaft in order that the adjusting devices for one end of the roller-shaft may be made inoperative at will, substantially as set forth.

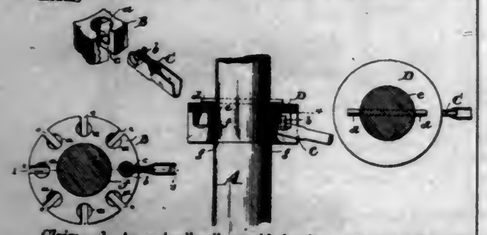
473,469. CYLINDER-CASING. EDWARD W. MACKENZIE-HUGHES, Chicago, Ill., assignor to the FOX Solid Pressed Steel Company, same place. Filed July 3, 1889. Serial No. 316,439. (No model.)



Claim.—1. The pressed-steel cylinder-casing formed of one piece of metal having a flat portion and the inwardly-projecting flange B, substantially as described.

2. The cylinder-casing A, having the inwardly-projecting flange B and the outwardly-projecting flange E, all pressed from one piece of steel, substantially as described.

473,470. UMBRELLA OR PARASOL FRAME. CHARLES B. MAGNAL, Philadelphia, Pa. Filed Oct. 27, 1891. Serial No. 410,007. (No model.)

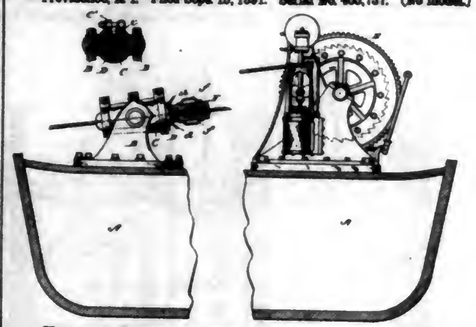


Claim.—1. An umbrella-rib provided at its upper extremity with a pivotally-connected U-shaped wire attachment forming a head adapted to fit tightly in a socketed notch, as and for the purpose specified.

2. In an umbrella, parasol, or like article, the combination, with a socketed notch-ring, of ribs having pivotal U-shaped wire attachments to their upper extremities to connect them tightly with the notch-ring, as and for the purpose specified.

3. In an umbrella, parasol, or like article, the combination, with a ring provided with a series of radial slots, having sockets formed in its upper surface, of ribs provided with U-shaped wire heads, upon which they hinge, which heads are tightly seated in the sockets of the ring, a cover-plate extending over the sockets and fastened to the umbrella-stick with a small pin inserted through said stick over the surface of said cover-plate, as and for the purpose specified.

478,471. MEANS FOR TOWING VESSELS. JOSEPH P. MANTON, Providence, R. I. Filed Sept. 15, 1891. Serial No. 405,737. (No model.)



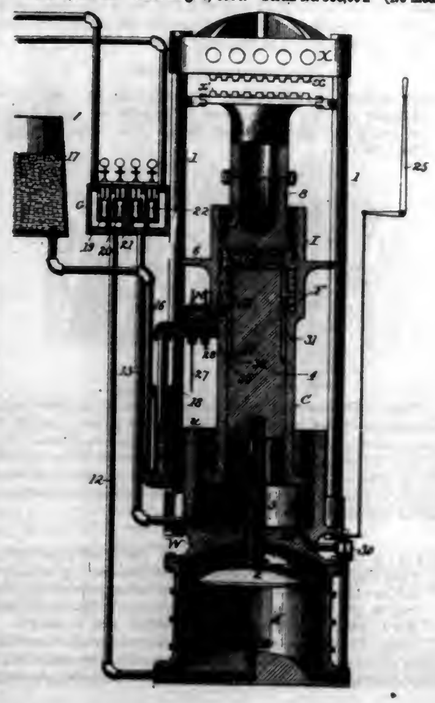
Claim.—1. The combination of a standard, a socketed body pivotedly connected with said standard, and segmental gripping-jaws fitted to said socket, substantially as described.

2. The combination of a standard, a socketed body provided with a lateral slot leading to said socket, and segmental gripping-jaws fitted to said socket, substantially as described.

3. The combination of a standard, a swiveled socketed body mounted in said standard having a lateral slot and segmental gripping-jaws, substantially as described.

4. A hand gripping device for handling wire cables, consisting of the combination of segmental blocks or jaws provided with loops or handles and with recesses to embrace the rope and means, as bolts, for opening and closing the jaws, substantially as described.

473,472. COMPRESSING APPARATUS. LEMUEL A. PARISHER, Shreveport, La. Filed Aug. 1, 1890. Serial No. 360,664. (No model.)



Claim.—1. The combination, with a movable piston X' and with the main cylinder A of a press, of a smaller cylinder B, an annular piston 5 in cylinder B, movable cylinders C and I, carried by said annular piston, a plunger connected with the piston of the main cylinder and sliding in the movable cylinder C, and a piston within the cylinder I, connected with the platen, substantially as set forth.

2. The combination, with the main cylinder A, its piston-rod, and plunger 4, of a smaller cylinder B, having an annular piston 5, a cylinder C, connected with the piston 5 and receiving the plunger 4, a larger cylinder I, connected with the cylinder C and communicating with the source of water-supply, having a check-valve in the communication, and a platen having a plunger or piston fitting the cylinder I, substantially as set forth.

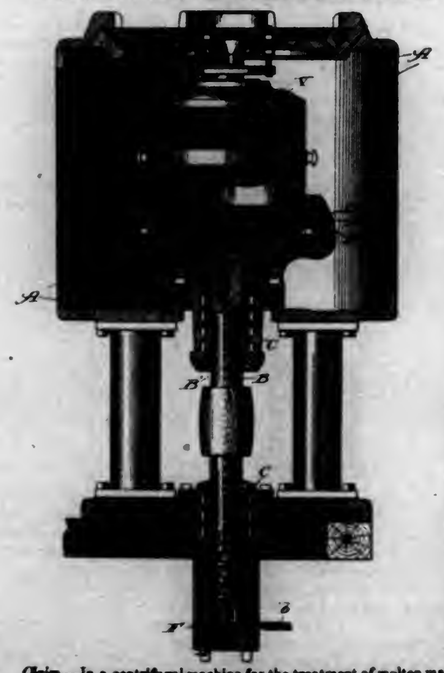
3. The combination, with the cylinder A, its piston and piston-rod, and the cylinder B and its piston, said cylinders having separate steam-inlet passages provided with valves, of means for moving the piston of the cylinder B to compress the steam therein after the communication with the generator has been cut off and a passage between said cylinders provided with a valve, substantially as set forth.

4. The combination, with the plunger 4 and means for operating the same, of a cylinder B, a piston 5 within the cylinder B, a cylinder C, connected with the piston 5, a cylinder I, containing the plunger 4 and being arranged above and connected with the cylinder C, a plunger 8, connected with the platen and fitting the cylinder I, and means for introducing an incompressible fluid into the cylinder I between the plungers, substantially as set forth.

5. The combination, with the movable cylinders C and I, rigidly connected together, the plungers 4 and 8, arranged within said cylinders, respectively, and the extensible water-channel, of a casing H, carried by the cylinders and having its cavity in communication with the space between the plungers, and a check-valve within the casing, said valve having a stem arranged to be moved by contact with a stationary part of the machine, for the purpose set forth.

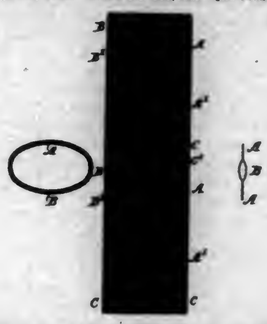
6. The combination, with the cylinder I, having an annular face F, a plunger within the cylinder connected with the platen, and a body of incompressible fluid in said cylinder, of a plunger 4 and means for forcing it into the body of fluid in the cylinder I and a piston 5, connected with the cylinder I, a cylinder B, a cylinder A, having a piston connected with the plunger 4, and a by-pass between cylinders A and B, substantially as set forth.

478,473. MACHINE FOR CENTRIFUGALLY TREATING MOLTEN MATERIAL. ORRIN B. PECK, Chicago, Ill., assignor to Melinda Peck, same place. Filed Mar. 3, 1890. Serial No. 342,436. (No model.)



Claim.—In a centrifugal machine for the treatment of molten material, the combination of a receiving-vessel provided with a water space or channel between the plates forming its bottom, and a shaft provided with a channel for introducing water into such water space or channel, substantially as described.

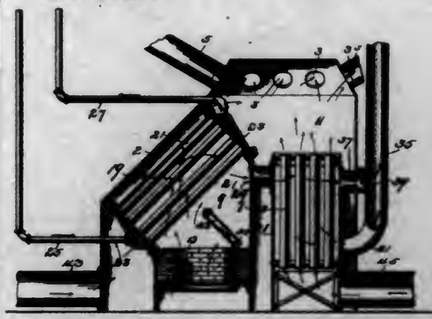
473,474. KNIT FABRIC. WILLIAM H. PEPPER, Lake Village, N. H. Filed Sept. 24, 1891. Serial No. 406,706. (No model.)



Claim.—1. A knit fabric having a body portion, a welt or stripe, and a backing to said welt or stripe, the body portion being formed of rib-stitches and of a single main thread, the welt or stripe being formed of plain stitches and of a welt-thread separate from said main thread, and the backing being formed of plain stitches and of a single thread, which is the main thread and is continuous therewith, said welt or stripe being interknit only at its marginal edges with said body portion of the fabric and the thread of which the welt is composed not entering into or forming part of the body portion, substantially as set forth.

2. A knit fabric having a body portion, a welt or stripe, and a backing to said welt or stripe, said body portion and backing being composed of the same continuous thread and said welt or stripe being composed of a separate and independent thread and being located over said backing and interknit with said body portion and backing only at its margins, the thread of which said welt is composed terminating and being discontinued at the margins of the welt, substantially as set forth.

473,475. COMBINATION HOT-WATER AND HOT-AIR HEATER. FRANK C. PETTELER, Minneapolis, Minn. Filed Aug. 4, 1891. Serial No. 401,991. (No model.)



Claim.—1. The combination, in a heater, with the casing, of the chamber 9, the fire-pot arranged therein, the series of inclined pipes extending through said chamber, the smoke-pipe 29, arranged opposite said pipes, and the deflecting and air-heating chamber 53, arranged above said fire-pot, so as to deflect the products of combustion and cause them to pass among said pipes 21, substantially as described.

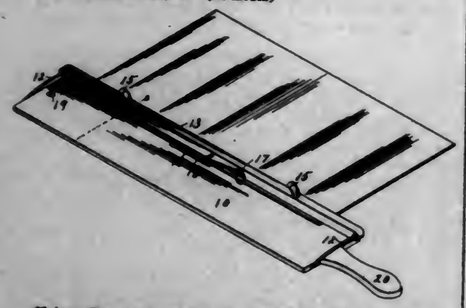
2. The combination, in a heater, of two smoke and combustion chambers, with a fire-pot arranged in one of said chambers, upright flues 33, provided in the other, the duct 29 between said chambers, the water-heating devices arranged in the fire-pot chamber, an inclosed case for the whole, air-ducts for supplying air to the bottom thereof, the smoke-pipe 35, the direct draft connection 37, extending through between the upper parts of the chamber containing the tubes or flues 33 and the said smoke-pipe, a damper arranged therein, said chamber or drum provided with openings at its lower corners, the combined area of said openings equaling the area of said smoke-pipe, and pipes 41, connecting the same with the lower end of said smoke-pipe, whereby an equal distribution of the smoke into all parts of the heating chamber or drum is accomplished, substantially as described.

3. The combination, with the fire-pot and grate, of the walls 7 and 17 to inclose the same, said walls made of sheet metal, a water-heating device arranged slantingly above the fire-pot and made up of heavy tubes 21, having their ends secured in the heavy flue-plates, the inclosing water-tight heads 23, forming with said flue-plates chambers at the ends of said flues or tubes, bolts for securing said parts together, flanges arranged on the sheet-metal walls and whereto said parts are secured, said head 23 having angular portions wherein the ends of the water-heating pipes 25 and 27 are arranged, the inclosing case for the whole, an air-duct leading into the bottom thereof, and hot-air pipes leading from the top of said case, substantially as described.

4. The combination, in a heater, of the walls 7 and 17, the fire-pot inclosed thereby, the heads 23, flue-plates making water-tight joints therewith and forming therewith water-chambers, water tubes or flues extending between the same and slantingly above said fire-pot, water-heating pipes leading from said heads, flanges on the sheet-metal walls 7 and 17 to support said heads, the same being bolted thereto, a drum 31, having upper and lower flue-plates, the tubes 33, secured therein and having ends opening through the same, the cool-air chamber arranged in the lower part of the drum and the upper part being open, and pipes 29, connecting the combustion-chamber beneath the water-pipes with said drum, a smoke-pipe 32, pipes branching from the bottom of the drum thereto, a sheet-metal case surrounding the whole and conforming to the shape thereof, an air-duct connected therewith, a cap therefor provided with hot-air openings, and pipes 5 to carry the heated air therefrom, substantially as described.

5. The combination, with the sheet-metal walls 7 and 17, of the fire-pot, the slanting water-tubes arranged in an inclosing chamber above the same, a drum 31, vertical flues or pipes 33, extending between the heads thereof, pipes 29, connecting the combustion-chamber with the drum, smoke-pipe leading therefrom, a case conforming to the shape thereof having the slanting wall 2 and clean-out openings, and sleeves 47, extending from the walls of the chambers containing the water and air pipes and extending through the rear of said case and removable caps 49 therefor, substantially as described.

473,476. NEWSPAPER-FILE. SIMEON RAY, St. Louis, Mo.; Jessie L. Ray administratrix of said Simeon Ray, deceased. Filed Aug. 25, 1891. Serial No. 403,736. (No model.)



Claim.—The combination of a base 10, a wire 11, fashioned to form spring-arms 12 at each end of said base, a bar 13, spanning the space between said spring-arms, hooks 14, carried by the said base 10, caps 15 upon said bar, adapted to cover the said hooks, and a lever 16, pivoted to said bar and having a handle at one end and at the other end running upon a track on the said base, substantially as and for the purpose described.

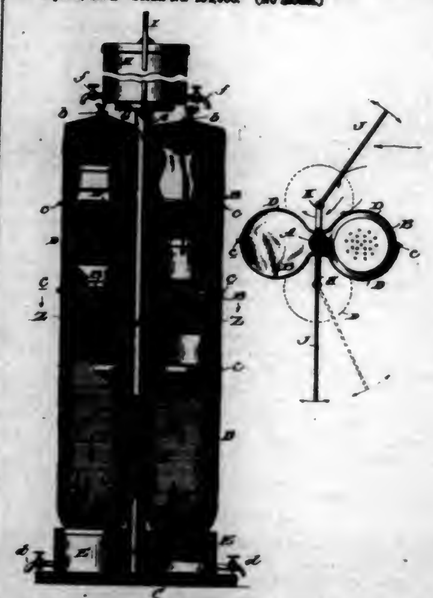
473,477. BUCKLE. JOSEPH SCHAP, Geneva, Nebr. Filed Jan. 26, 1889. Serial No. 418,302. (No model.)



Claim.—1. A buckle consisting of a member D, having a flat base-plate D', provided on opposite sides with the integral right-angled lugs c, having the inwardly-extending flanges d at their free ends, and another member B, consisting of the tapering side pieces or bars b, connected at their ends, said inclined sides of the member B fitting between the base-plate D' and flanges d and lateral movement of said member B being prevented by the lugs c, substantially as described.

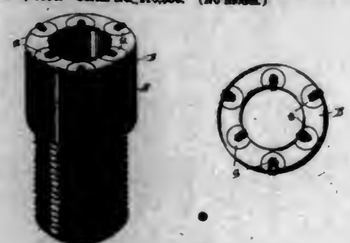
2. A buckle consisting of two members B D, one of which is formed by the tapering side bars or pieces b, connected by cross-bars b' b^2, the latter of which is inclined on its under surface and provided with a groove or channel d and the other member consisting of a base-plate D', the flanged lugs c on said plate and extending over the inclined edges of the side bars b of the other member, and a pin g, secured on the plate D' and aligning with the groove or channel in the cross-bar b^2 of the member B, substantially as described.

473,478. PROVISION-SAFE. JOHN SORRIE, McGregor, Tex. Filed Sept. 3, 1891. Serial No. 404,606. (No model.)



Claim.—A provision-safe consisting of a suitable upright, lateral supports therefrom, a cloth around the said supports and extending from top to bottom of the safe, gathered in at the top and contracted at the lower end, a water-tank supported upon the upright above the cloth, suitable means for collecting the water at the bottom of the cloth, and air-conducting wings movably supported from the said upright, as and for the purpose specified.

473,479. SECURING CARBONS. ELIEL I. SHARPNECK, Denver, and WILLIAM G. SNEED, Leadville, Colo. Filed Jan. 15, 1889. Renewed Nov. 2, 1891. Serial No. 410,669. (No model.)



Claim.—1. A tool having a series of carbons securely fastened in and held in immediate contact with soft-metal projections formed integral with said tool and a shield of harder metal partially inclosing said soft-metal projections and protecting them from wear, substantially as described.

2. A tool having a series of projections arranged at different distances from its center, carbons set in the inner and upper faces of the inner projections and in the outer and upper faces of the outer projections, and a hardened shield arranged on the sides of the projections opposite the carbons and partially surrounding the same, substantially as described.

3. A bit A, having the carbons set in projections a of soft metal,

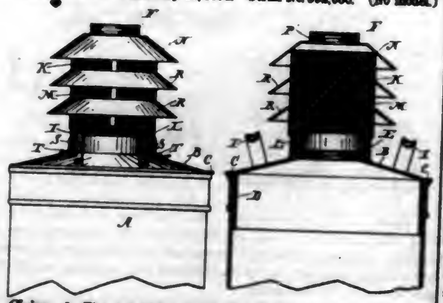
arranged in multiplex circles, and a ring shield or protector B, having recesses b formed in opposite sides of the body of said ring and fitting said projections, all constructed and arranged substantially as described.

473,480. COLD-SAW FOR METAL. CHARLES S. SIEBERT, Schuylkill, Pa. Filed Dec. 21, 1891. Serial No. 415,778. (No model.)



Claim.—A cold-saw consisting of a disk having irregular projections on its periphery irregularly arranged, substantially as described.

473,481. MILK-CAN COVER AND COOLER. NICHOLAS H. TERRIS, Mishicot, Wis. Filed May 14, 1891. Serial No. 392,680. (No model.)



Claim.—1. The combination of a milk-can cover provided with a central aperture, a ring surrounding said aperture, latches secured to the ring and having their free ends engaging catches upon the cover, a cylindrical perforated or wire-cloth screen secured to and projecting above the ring, and a flaring top projecting a distance beyond the cylindrical wire-cloth, substantially as set forth.

2. The combination of a milk-can cover having a central screw-threaded neck, a suitable cap therefor, a cylindrical perforated or wire-cloth screen having a base-support surrounding the neck, and a series of flaring rings arranged exteriorly of the cylindrical screen, the upper one of the series forming a top or cover and provided with a projecting screw-threaded neck to receive a suitable cap, substantially as set forth.

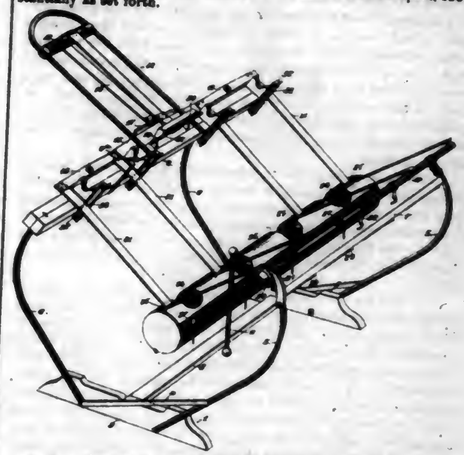
473,482. MACHINE FOR BALING TREES. HENRY O. THOMAS, North Bend, Nebr., assignor of one-half to John W. Stevenson, same place. Filed Mar. 4, 1891. Serial No. 383,765. (No model.)

Claim.—1. In a machine for baling trees, the evener or equalizer and loose straps attached thereto, in combination with the mechanism adjacent said evener for winding the opposite ends of the straps, and supports for said evener and winding mechanism, as and for the purpose set forth.

2. In a machine of the class described, the combination of an evener or equalizer, loose straps attached at one end to the same, mechanism for simultaneously winding the opposite ends of the straps, and supports for said evener and winding mechanism, the latter being located at a point adjacent the normal position of the evener, with means for moving the evener-bar to exert draft on the straps from the ends opposite the winding mechanism, as and for the purpose set forth.

3. In a machine of the class described, the combination, with the winding-shaft and the loose straps having their ends attached thereto, of an evener or equalizer located normally adjacent said shaft, the other ends of the straps being connected to said evener, a strap leading from the evener-bar over a drum, connections between this strap and said shaft, and supports for said shaft and evener, substantially as set forth.

4. A machine for baling trees, having a series of tightening-straps, a suitable evener or equalizer, to which one end of each strap is connected, a winding-shaft for winding the opposite ends of the straps, which are connected thereto, hooks on the shaft, adapted to engage said evener, and means for moving said evener and shaft apart, substantially as set forth.



5. In a machine of the class described, the two jaws composed of curved arms and transverse bars or saddles, the shaft journaled in one of said jaws, the evener or equalizer, a support on the other jaw, a guide-pulley in said support, a strap passing over said guide-pulley and connecting said evener with a rod or roller, means for drawing the roller away from said pulley, and straps having their ends attached, respectively, to the evener and to the revoluble shaft, as and for the purpose set forth.

6. In a machine of the class described, the combination of a revoluble shaft having laterally-extending hooks, an evener or equalizer, the tightening-straps having their ends attached, respectively, to said evener and to the revoluble shaft, a guide-pulley, and a strap passing over said pulley and connecting the evener with a rod adapted to be mounted detachably in the laterally-extending hooks of the revoluble shaft, as and for the purpose set forth.

7. In a machine of the class described, the combination of the pivoted jaws having the saddles and the revoluble shaft journaled in one of the jaws and having laterally-extending hooks, with the brackets extending from the other saddle and having recesses in their under sides, an inverted-U-shaped bracket carried by this saddle, a guide-pulley journaled in said bracket, a strap passing over said guide-pulley and having at one end a rod or roller adapted to fit said recesses, an evener secured to the other end of said strap, and the tightening-straps loosely connecting the said evener or equalizer with the revoluble shaft, substantially as set forth.

8. In a machine for baling trees, the combination, with the pivoted jaws standing normally adjacent and the tightening-straps connecting them, of the spring-actuated straps carried by and at the under side of the saddle of one of the jaws, as and for the purpose set forth.

9. In a machine for baling trees, the combination, with the pivoted jaws standing normally adjacent and the tightening-straps connecting them, of the strips secured to the under side of the saddle of one of the jaws and having downturned ends, and the straps connecting the latter, as and for the purpose set forth.

10. The combination of the arms pivoted to the base, saddles at the upper ends of the arms, and tightening-straps connecting said saddles with the rods pivotally connected to said arms respectively above and below their pivots to the base, as and for the purpose set forth.

11. In a machine of the class described, the combination, with the pivoted jaws, one of which has a revoluble shaft provided with hooks, of a U-shaped bracket carried by the other jaw, a long guide-pulley journaled in said bracket, an evener or equalizer on this jaw having a long staple, a rod or roller adapted to be engaged by said hooks, a strap having loops in its ends engaging said staple and rod and longitudinally adjustable thereon, with its body between its ends passing over said roller, and connections between said shaft and evener, as and for the purpose set forth.

12. In a machine of the class described, the combination, with the upwardly-rising and inwardly-curved pivoted jaws, of the tightening-

straps connecting them and the twine-box supported by said straps between the jaws, substantially as set forth,

13. In a machine of the class described, the combination of a jaw, a pivoted second jaw, the tightening-straps, the twine-box, and the knives or cutters secured to the saddle of the pivoted jaw and bearing against the latter, so as to retain the twine passing under the said knives, substantially as set forth.

14. In a machine of the class described, the combination, with the pivoted jaws, one of which has a revoluble shaft provided with hooks, of a U-shaped bracket carried by the other jaw, a guide-pulley journaled in said bracket, an evener or equalizer on this jaw, having a staple, tightening-straps connecting said evener with the revoluble shaft, a rod or roller adapted to be engaged by said hooks, notched arms projecting from the saddle and normally supporting said rod, a strap, its ends engaging said staple and rod and longitudinally adjustable thereon, with its body between its ends passing over said roller, and the twine-box supported on said tightening-straps, as and for the purpose set forth.

15. In a machine of the class described, the combination, with the pivoted jaws having the saddles and the tightening-straps connecting them and operated as herein described, of the twine-holder consisting of a tubular trough having openings to receive the balls of twine and holes for the passage of the twine strands, and staples in the trough whereby it is suspended upon the tightening-straps, substantially as specified.

16. In a machine of the class described, the combination, with the pivoted jaws, one of which has a revoluble shaft provided with hooks, of a U-shaped bracket carried by the other jaw, a long guide-pulley journaled in said bracket, an evener or equalizer on this jaw having a long staple, tightening-straps connecting said evener with the revoluble shaft, a rod or roller adapted to be engaged by said hooks, notched arms projecting from the saddle and normally supporting said rod, a strap having loops in its ends engaging said staple and rod and longitudinally adjustable thereon, with its body passing over said roller, and a twine-box having staples whereby it is loosely suspended on said tightening-straps, as hereinbefore set forth.

473,483. PERFORATING ATTACHMENT. JUNIUS E. TUCKER, Memphis, Tenn. Filed Apr. 15, 1891. Serial No. 389,060. (No model.)



Claim.—1. In a perforating attachment for printing-presses, the combination, with the gripper-bars provided with dovetailed grooves on their inner sides, of a perforator-bar having dovetailed wings extending laterally from either end, the said wings being adapted to be secured within the grooves in the gripper-bars, substantially as and for the purpose set forth.

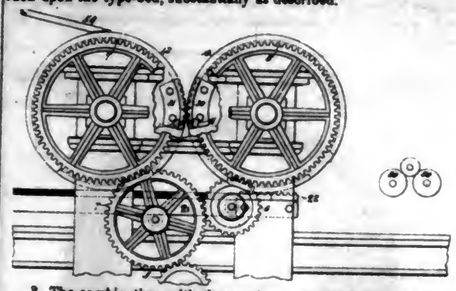
2. In a perforating attachment for printing-presses, the combination, with the gripper-bars provided with dovetailed grooves, of cross gripper-bars having dovetailed wings extending laterally from their ends, and means for securing said wings within the grooves in the gripper-bars, the said cross gripper-bars being provided with dovetailed grooves and with notches on their inner opposite sides, and a perforator-bar provided with lateral dovetailed wings adapted to be secured in the dovetailed grooves of the cross-bars, all substantially as and for the purpose set forth.

3. In a perforating attachment for printing-presses, the combination, with the perforator-bar D, vertically and longitudinally slotted at d^2 and provided with inclined slots d^3, which connect with the vertical slot d^2, of the knife d^4, received in the slot d^2 and projecting at the ends into the slot d^3 and provided with inclined notches registering with said inclined slots, and the springs d^5, arranged in the inclined slots d^3 and bearing against the knife within the inclined notches therein, substantially as and for the purpose set forth.

473,484. DOUBLE-CYLINDER FLAT-BED PRINTING-MACHINE. STEPHEN D. TUCKER, New York, N. Y. Filed Oct. 9, 1891. Serial No. 408,231. (No model.)

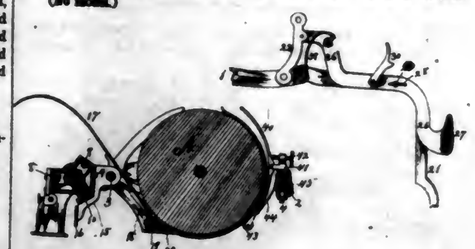
Claim.—1. The combination, with two impression-cylinders and a reciprocating type-bed, of a half-toothed segment-rack upon each cylinder and co-operating toothed rack upon the type-bed, substantially as described.

2. The combination, with the two impression-cylinders, means for lowering and raising said cylinders, and a reciprocating type-bed, of a half-toothed segment-rack upon each cylinder and co-operating toothed rack upon the type-bed, substantially as described.



3. The combination, with the two impression-cylinders and a reciprocating form-carrying type-bed, of means for lowering and raising said cylinders, grippers for carrying the sheet upon one cylinder into printing contact with one form and delivering it to the grippers of the companion cylinder, which latter grippers carry said sheet into contact with the other form, and a half-toothed registering segment-rack upon each cylinder, co-operating with a rack upon the bed to secure register during both printing operations, substantially as described.

473,485. TYPE-WRITER CARRIAGE. FREEMAN L. TWISS and LUTHER A. BARBER, Groton, N. Y. Filed Mar. 9, 1891. Serial No. 384,960. (No model.)



Claim.—1. The combination, with the platen, its frame, and the front roller under said frame, of a casing to which the platen-frame is hinged, a trackway within said casing, and grooved rollers within the casing substantially embracing the trackway and traveling upon it and upon the inside of the casing.

2. The combination, with the platen, its frame, and the front roller under said frame, of a casing to which the platen-frame is hinged, a stationary trackway within said casing, and multiple rollers bearing upon and substantially surrounding said trackway, each roller having a track within said casing.

3. The combination, with the stationary trackway, of multiple auxiliary carriages within and upon which the casing travels, consisting of rollers coupled in pairs bearing upon the trackway and inner faces of the casing, and a platen-frame hinged to said casing.

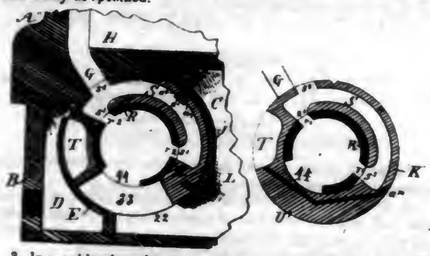
4. The combination, with a platen and a frame carrying it, of a stationary trackway in rear thereof, multiple auxiliary carriages consisting of rollers coupled together and traveling upon and embracing said trackway, and a casing provided with inner tracks and traversing said auxiliary carriages.

5. The combination, with the push-pawl and the ratchet upon the platen, of the lever actuating the pawl, provided with a slot, and an adjustable stop adapted to limit the stroke of the push-pawl to vary the line-spacing.

473,486. STEAM-ENGINE VALVE. NELSON W. TWISS, New Haven, Conn. Filed June 27, 1891. Serial No. 397,742. (No model.)

Claim.—1. In steam-engine valves, the combination, with the steam-chest having a cylindrical valve-chamber opening into the steam-compartment and radial ports communicating, respectively, with the exhaust-compartments and steam-cylinder, of an oscillating annular main valve having an exterior exhaust-cavity and steam-port conforming to the ports of the valve-chamber, an opening into the steam-compartment, a passage within extended circumferentially, its annular body communicating with said steam-port, and interior multiports connecting said passage with the central concentric chamber, a hollow oscillating cut-off valve fitting said central chamber and having ports opening from its interior outward corresponding to the internal ports of said main valve, and a suitable opening adapted to receive steam from the steam-compartment, and suitable drivers for operating the said valves, substantially as and for the purpose specified.

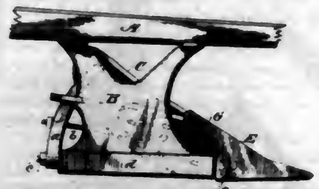
2. In steam-engines, the combination of the steam chest provided with the cylindrical valve-chamber having an opening into the steam-compartment and radial ports communicating, respectively, with the exhaust-compartment and steam-cylinder, an oscillating annular main valve having an exterior exhaust-cavity and steam-port corresponding to the ports of the valve-chamber, an opening for admitting steam into its central chamber, a passage S within its annular body communicating with the external steam-port, and the interior ports s', opening from the central chamber of the valve into said passage S nearly opposite each other, but slightly off from a diametral plane through the valve, substantially as specified, an oscillating hollow cut-off valve fitting within the main valve and having an opening adapted to admit steam into its interior from the steam-compartment, and nearly-balanced steam-ports r^3, slightly off from a diametral plane, as specified, and corresponding to the ports s' of the main valve, and suitable drivers or stems engaging and adapted to operate the said valves, substantially as specified.



3. In combination, the steam-chest having a cylindrical valve-chamber E at each end thereof, having the ports 22, F, and G, the annular main valve K, provided with the ports 33 T s^2, passage S, and interior ports s', the cut-off valve R, having the ports 44 and r^3, the main-valve driver k, engaging the valve and provided with a hollow stem journaled in the bonnet of the valve-chamber, the cut-off-valve driver engaging the cut-off valve and journaled in the hollow stem of the main-valve driver, and suitable levers or rock-arms secured on the ends of said driver and adapted to be operated by the valve connections of the engine, substantially as and for the purpose specified.

4. In a cylindrical oscillating steam-valve having steam and exhaust ports, the combination of the longitudinal and segmental packing-bars fitted in grooves within the valve and springs for expanding said bars, forming a balancing area opposite the exhaust-cavity, and the valve having a drip or relief passage from said balancing area to the exhaust-cavity, substantially as and for the purpose specified.

473,487. SIDE-HILL PLOW. DANIEL B. VANCE and HENRY J. LAWRENCE, Woodbury, Tenn. Filed Sept. 29, 1891. Serial No. 407,208. (No model.)

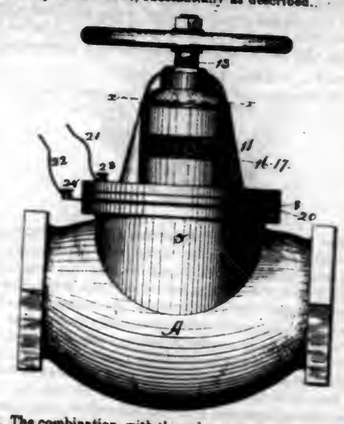


Claim.—1. In a side-hill plow, the combination of the wing or mold-board, the frog, and the point formed separate and afterward connected together, said point having a shouldered socket to receive the pivot end of the ground-bar, substantially as and for the purpose specified.

2. As an improved article of manufacture, a plow-point independent of the frog or mold-board and having a shouldered socket to receive the pivot end of the ground-bar and an extension adapted for attaching the frog thereto, substantially as and for the purpose set forth.

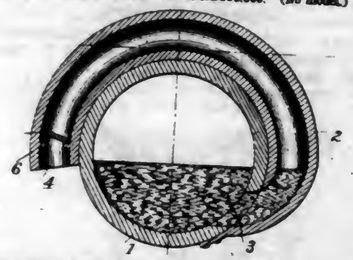
473,488. VALVE. ROBERT WOOD, Syracuse, N. Y. Filed Mar. 16, 1891. Serial No. 385,214. (No model.)

Claim.—1. The combination, with the valve-casing constructed with a partition having a valve-opening and with a tubular shank, a valve, a cap, and a valve-stem, of the binding-post secured to the cap, the non-conducting packing on the shank, the non-conducting packing around the valve-opening, the wire connected with the binding-post and with the cap, and the wire extending through the packing on the shank and into the body of the casing, where its free end hangs flexibly in proximity to the valve, substantially as described.



2. The combination, with the valve-casing constructed with a partition having a valve-opening and with a tubular shank, a valve, a cap, and a valve-stem, of the binding-post secured to the cap, the non-conducting packing on the shank, the horizontal plate having a central depression, the stuffing-box in the depression, the non-conducting packing around the valve-opening, the wire connected with the binding-post and with the cap, and the wire extending through the packing on the shank and into the body of the casing, where its free end hangs flexibly in proximity to the valve, substantially as described.

473,489. SEWERAGE SYSTEM. STEPHEN E. BABCOCK, Little Falls, N. Y. Filed Apr. 22, 1891. Serial No. 390,069. (No model.)



Claim.—1. A covered or pipe sewer provided with a series of auxiliary inlet-pipes entering the sewer at the side near the bottom thereof, the mouths of which are located outside of the sewer above the contemplated sewage-level and face downward, substantially as shown and described.

2. A covered or pipe sewer provided with auxiliary inlet-pipes opening into the sewer at the side near the bottom thereof, the mouths of which are located outside of the sewer above the contemplated sewage-level, face downward, and are furnished with valves opening inward, substantially as shown and described.

3. The combination, with a drain-pipe, of a siphon-inlet, the connection of the inlet-pipe with the drain-pipe being below the sewage-lever and the highest part of the inlet-pipe being at the permissible level of the soil-water and its outboard end being in the surrounding earth, substantially as described.

4. The combination, with a drain-pipe, of a siphon inlet-pipe, the connection of the inlet-pipe with the drain-pipe being below the sewage-level and the highest part of the inlet-pipe being at the permissible level of the soil-water and its outboard end being in the surrounding earth, together with a valve in said inlet-pipe which opens inward, substantially as described.

5. A pipe-sewer having auxiliary pipes disposed closely around the same, opening thereinto near the bottom thereof, the outer ends of which are higher than the contemplated sewage-level and face downward, substantially as described and shown.

473,490. SEWERAGE SYSTEM AND HOLLOW TILE FOR USE IN SAME. STEPHEN E. BABCOCK, Little Falls, N. Y. Filed Nov. 16, 1891. Serial No. 412,290. (No model.)

Claim.—1. A hollow drain-tile which has a longitudinal septum or partition which is cut away at the upper portion, thereby dividing the interior of said tile into two longitudinal compartments connected at the top, and which has an opening or openings through its bottom wall connecting with one of said compartments only, substantially as described.

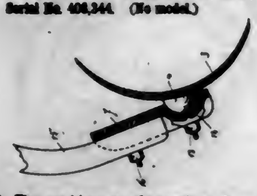


2. A hollow drain-tile which has an interior longitudinal septum or partition which extends from the bottom wall nearly to the top wall, thereby dividing the interior of said tile into two longitudinal compartments connected at the top, and which has a longitudinal slit in the bottom of one of said compartments, the bottom wall of the other compartment being water-tight, substantially as described.

3. The combination of a series of hollow drain-tiles whose ends are matched to form male and female joints, each of which tiles has a central longitudinal septum or partition which is cut away at the upper portion, thereby dividing the interior of said tile into two longitudinal compartments connected at the top and each of which tiles has an opening or openings in the bottom wall connecting with one of said compartments only, said openings connecting with corresponding compartments of the several tiles, substantially as described.

4. The combination, with the walls of a sewer, of a series of hollow tiles which fit into and form the bottom of said sewer, the ends of which are matched to form water-tight male and female joints and each of which tiles has a central longitudinal septum or partition which is cut away at the upper portion, thereby dividing the interior of said tile into two longitudinal compartments connected at the top and each of which has an opening or openings in the bottom wall connecting with one of said compartments only, said openings connecting with corresponding compartments of the several tiles, substantially as described.

478,491. CULTIVATOR. HENRY D. RADCOCK, Leonardsville, assignor of one-half to Charles H. Childs & Co., Utica, N. Y. Filed Oct. 10, 1891. Serial No. 408,344. (No model.)



Claim.—1. The combination of a tooth or share 3, having a ball-bearing 4 secured thereto, a socket-piece 7, having socket 6 and grooved projection 9, bolt 13, and ribbed washer 12, substantially as set forth.

2. The combination of a tooth or share 3, a ball-bearing 4, secured thereto, a socket-piece 7, having socket 6, grooved projection 9, and walls 14, bolt 13, ribbed washer 12, and shank 15, substantially as set forth.

478,492. STRAW-CUTTER. HENRY D. RADCOCK, Leonardsville, assignor of one-half to Charles H. Childs & Co., Utica, N. Y. Filed Oct. 12, 1891. Serial No. 408,496. (No model.)



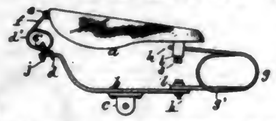
Claim.—1. The combination, in a cutting-machine, of a feed-box, a shearing-edge located at the end of the feed-box, a slotted projection extending substantially at right angles to the shearing-edge on the box side thereof, a knife-hanger secured on the projection, an interposed wedge-shaped rocking adjusting-cam, a securing-bolt, and a lever-knife mounted on the hanger, substantially as set forth.

2. The combination, in a cutting-machine, of a feed-box, a frame 4, secured to the front end of the feed-box and having a shearing-edge, a slotted projection on the box side of the frame, a knife-hanger secured on the projection, with an interposed wedge-shaped rocking cam 9, a bolt securing the hanger and the cam, and a lever-knife, substantially as set forth.

3. The combination, in a cutting-machine, of a feed-box, a shearing-edge located at the end of the feed-box, a projection 8, extending on the box side thereof and having wall *a* and *b*, a knife-hanger mounted on the projection between the walls, an interposed adjusting-cam 9, a securing-bolt, and a lever-knife mounted on the hanger, substantially as set forth.

4. The combination, in a cutting-machine, of the feed-box, the frame 4, having shearing-edge 5, secured to legs 2 2, which legs are removably secured to the end of the feed-box, and the cutting-lever connected to the frame 4, substantially as set forth.

478,493. BICYCLE-SADDLE SPRING. HENRY BERGNER, Newark, N. J. Filed Sept. 14, 1891. Serial No. 405,599. (No model.)

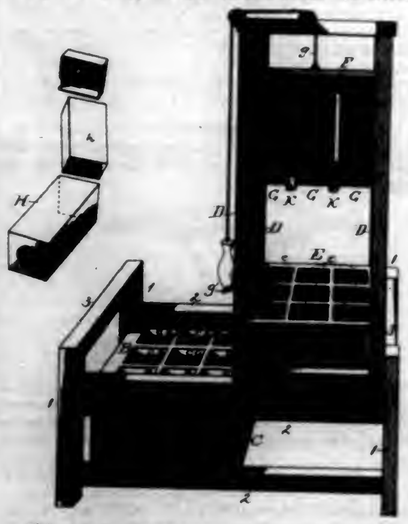


Claim.—1. A bicycle-seat spring having oval or flattened coils, substantially as herein set forth.

2. The combination, with a bicycle-seat spring having oval or flattened coils and free terminals, of a seat having an independent support at its forward end and clamps at its rear end fitted adjustably to such terminals, substantially as herein set forth.

3. The combination, with a support *b*, of a bicycle-seat spring formed with loop *l*, clamped adjustably upon the support *b* and having oval or flattened coils with free terminals *k*, and the bicycle-seat *a*, supported at its forward end by the oval spring *d'* and having at its rear end clamps fitted adjustably to the terminals *k*, substantially as herein set forth.

478,494. BUTTER-PACKING MACHINE. HENRY J. REINE, Chicago, Ill. Filed Apr. 12, 1890. Serial No. 347,689. (No model.)



Claim.—1. In a butter-packing machine, the combination, with vertically-movable plungers G and transversely-movable molds *c*, of a tray C, divided into compartments, said molds being originally under and filled with butter by said plungers, and then, together with said plungers, moved laterally until in position over and in register with the compartments of said tray, whereupon said plungers are moved downward through said molds, so as to force the butter out of the same into suitable packages in said compartments, as set forth.

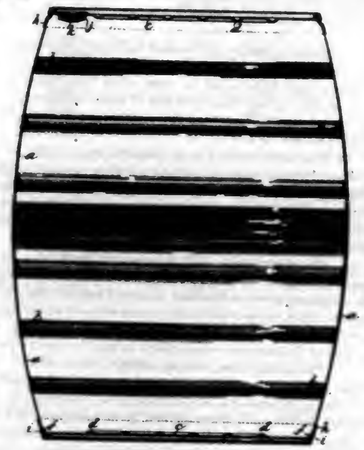
2. The combination, with plungers G, molds *c*, and guide-frame E, having openings therein corresponding in relative location and dimensions to the plan of molds *c*, and the septa between which are slightly wider at the bottom than at the top, of the tray C, divided into compartments, the dimensions and relative position of which correspond to the molds *c*, as set forth.

3. The combination, with plungers G, molds *c*, and guide-frame E, having openings *a* therein corresponding in relative location and horizontal dimensions to the plan of molds *c* and the septa between which are slightly wider at the bottom than at the top, of the tray C, divided into compartments, the dimensions and relative position of which correspond to the molds *c* and each of which has a hole *d* in its bottom, as set forth.

4. The combination, with the vertically-movable plungers G, molds *c*, and platform A, said plungers and molds both being capable of transverse adjustment, of tray C, divided into compartments, as set forth.

5. The combination, with the vertically-movable plungers G, molds *c*, and platform A, of the frame K, composed of longitudinal and transverse cross-bars and located in the spaces between said plungers, and which, when the said plungers move upward above the said molds, rests on top of the molds until the under surfaces of the plungers pass above the plane of its lower surface, thus cleaning off the particles of butter adhering to said plungers, as set forth.

478,495. MANUFACTURE OF METAL BARRELS, &c. DAVID CAIRD, Ulverston, England. Filed Dec. 2, 1890. Serial No. 373,305. (No model.)



Claim.—1. A barrel having a bellied body of seamless rolled metal and heads united to the ends thereof.

2. A barrel having a bellied body of seamless rolled metal formed with circumferential strengthening-ribs.

3. A barrel having a bellied body of seamless rolled metal formed with circumferential corrugations constituting strengthening-ribs.

4. A barrel having a bellied body of seamless rolled metal formed with integral circumferential strengthening-ribs and with metal heads united to the ends of said body.

5. A barrel having a bellied body of seamless rolled metal, said bellied body being thickest in the middle and becoming gradually thinner toward the ends.

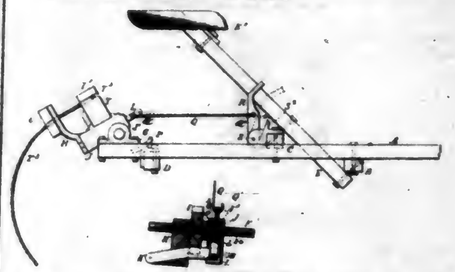
6. In a barrel, the combination of a metal body *a* and metal head *c*, having their edges crimped together, the end portion of the body being crimped inwardly and outwardly in planes overlying the head, and the flange portion of the head being crimped inwardly beneath the inward crimp of the body and extended upwardly, outwardly, and thence downwardly and inwardly around the outer edge of the body portion, so as to conceal that edge and itself receive the wear.

7. In a metal barrel or other similar vessel, the combination of a metal body *a*, having projecting ends *g* and corrugations *f* near its end, head *c*, having a rim or flange *c*, said flange and projecting end *g* folded so as to bear against the head, and a hoop *h*, shrunk on the vessel end and having a corrugation *i*, engaging with said corrugation *f* of said body, substantially as set forth and shown.

8. In a metal barrel, the combination, with a seamless metal body constructed with a corrugation *f* near its end, of a hoop *h* for said barrel, shrunk on the end thereof over said corrugation *f*, and having a corrugation *i*, coinciding with and engaging the latter, whereby when said hoop is shrunk on said body the two are locked together without the aid of rivets, substantially as set forth.

9. A barrel having a body of seamless rolled metal formed with a smooth face on one side and an integral circumferential rib on the other side, consisting of a thicker portion of the metal of the body, and with heads united to the ends of said body.

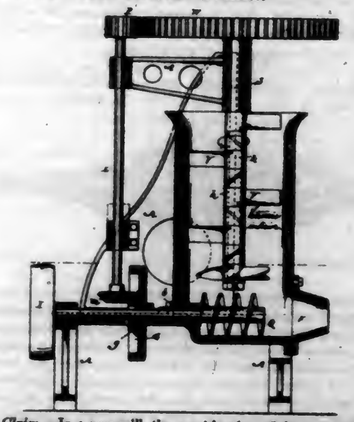
478,496. HORSE HAY-RAKE. GEORGE H. GARVER, Piano, Ill., assignor to the Piano Manufacturing Company, same place. Filed Apr. 7, 1891. Serial No. 388,088. (No model.)



Claim.—1. The combination, in a hay-rake, of a frame-work having a rotatable wheel-axle mounted thereon and provided with a rigidly-attached toothed wheel I, a casting or part H, in close proximity to one side of said toothed wheel, a casting or part J, as described, in close proximity to the opposite side of said toothed wheel, a vibratable bar or latch pivoted at one end to the part H, a sliding bolt L, a draw-rod Q, and pivoted lever R, substantially as and for the purpose specified.

2. The combination, in a hay-rake, of a frame-work having a rotatable wheel-axle mounted thereon and provided with a rigidly-attached toothed wheel I, a casting or part H, in close proximity to one side of said toothed wheel, a casting or part J, as described, in close proximity to the opposite side of said toothed wheel, a vibratable bar or latch K, pivoted at one end to the part H, a sliding bolt L, provided with a shoulder L^2, a retracting-spring O, a draw-rod Q, and pivoted lever R, all substantially as set forth.

478,497. PUG-MILL. JOSEPH CROMLEY, Trenton, N. J. Filed Aug. 14, 1890. Serial No. 361,961. (No model.)

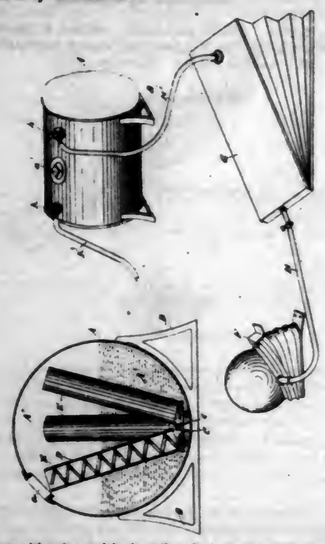


Claim.—In a pug-mill, the combination of the two-part cylinder, the detachable spout on the lower end of the removable part of the cylinder, the agitator-shaft supported at its upper end and depending within the cylinder, the ejector-worm shaft in the bottom of the cylinder beneath the agitator-shaft and in line with the discharge-spout, the drive-shaft M, the loose pinion H and sliding clutch C thereon, the gear G on the ejector-shaft meshing with the pinion H, and the line-shaft L, driven by the gear G and driving the gear W on the upper end of the agitator-shaft, substantially as described.

478,498. CARBURETOR. HENRY L. CRITTENDEN, Northfield, Minn. Filed Mar. 28, 1891. Serial No. 386,963. (No model.)

Claim.—1. The combination, with an oil and air reservoir or receptacle having an inlet and outlet and provided with a hand-hole and

plug in the upper part of the same, of a support mounted to rotate near the bottom of the reservoir and one or more wick-holders provided with wicks secured to said support and projecting into the air-zone, substantially as described.



2. The combination, with the oil and air reservoir or receptacle having an inlet and an outlet and provided with a hand-hole and plug in the upper part of the same, of a support mounted to rotate near the bottom of the reservoir, and one or more wick-holders, each consisting of a coiled spring, secured to said support, and wicks supported by said holders and projecting into the air-zone, substantially as described.

3. The combination, with the oil and air reservoir having an inlet and outlet and provided with a hand-hole and plug in its upper part, of a support mounted to rotate near the bottom of the reservoir, a series of coiled-wire wick-holders secured to said support and projecting therefrom at divergent angles, and tabular wicks sleeving on the said holders, replaceable through said hand-hole, substantially as described.

473,499. CIRCUIT-CLOSER. CHARLES H. DELANO, Woburn, Mass. Filed Sept. 16, 1891. Serial No. 405,889. (No model.)

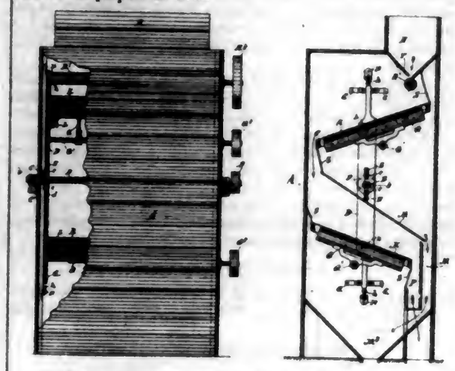


Claim.—1. A circuit-closer fitted to be closed by the hand and provided with a body formed wholly or in part of a conducting material, having a tubular passage therethrough for conducting-wires, an exterior series of flexible strips or wires of conducting material, and a plate of conducting material located at one end of the body, but insulated from the conducting material of the latter and having the said strips or wires connected therewith, substantially as described.

2. The combination, with a circuit-closer which is fitted to be grasped by the hand and which is provided with a body formed wholly or in part of a conducting material, having a tubular passage therethrough, an exterior series of flexible strips or wires of conducting material, and a plate of conducting material located at one end of the body, but insulated from the conducting material of the latter and having the strips or wires connected therewith, of a pair of conducting-wires passing through the tubular passage aforesaid, one of the said wires being in electrical connection with the said body and the other in electrical connection with the said plate, substantially as described.

473,500. GRADER AND SCALPER. JOSEPH DESJARDINS and WILLIAM J. STEWART, Minneapolis, Minn.; said Desjardins assignor to Levi S. Hagebeen, same place. Filed Nov. 24, 1891. Serial No. 413,008. (No model.)

Claim.—1. The combination, with an eccentric-shaft, of a sieve-support mounted on the eccentric portion of said shaft, one or more sieves carried by said support, and sets of stops in the path of said support under its motion from said eccentric, the said support being constructed to yield when intercepted by said stops, substantially as and for the purpose set forth.



2. The combination, with a shaft having a pair of eccentrics spaced apart from each other, of a pair of bars mounted one on each of said eccentrics and constructed to yield when intercepted, one or more sieves carried by said bars, and sets of stops in the paths of the said bars under their motion from the eccentrics, substantially as and for the purpose set forth.

3. The combination, with an eccentric-shaft, of one or more straps on the eccentric portions of said shaft, a sieve-support mounted on said strap and connected thereto with freedom to permit the movement of the straps independent of the support, one or more sieves carried by said support, and stops in the path of the support's movement, substantially as and for the purpose set forth.

4. The combination, with an eccentric-shaft, of a sieve-support, one or more eccentric-straps on the eccentric portion of said shaft, having a slot-and-screw connection with said support for permitting the strap to move independently of the said support in one part of the eccentric's travel, one or more sieves on said support, and stops for intercepting the support, substantially as and for the purpose set forth.

5. The combination, with an eccentric-shaft, of one or more straps on the eccentric portion of said shaft, a sieve-support spring-seated on said straps, so that the straps may move independently of the said support, one or more sieves carried by said support, and sets of stops in the path of said support for intercepting its movements, substantially as described.

6. The combination, with a shaft having eccentrics, of straps on said eccentrics, a sieve-support flexible at one or more points to permit the same to yield laterally and spring-seated on said straps to permit it to yield longitudinally, one or more sieves carried by said support, and sets of stops arranged in the path of said support in both its lateral and longitudinal movement, substantially as described.

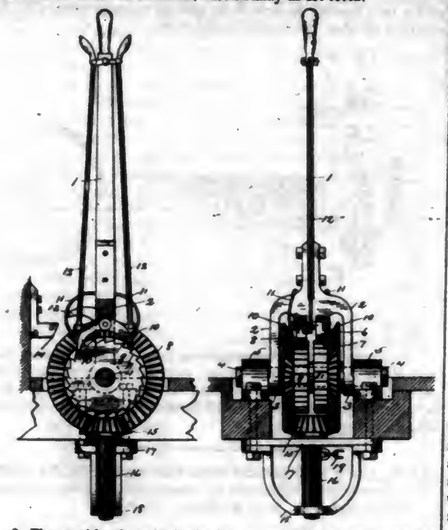
7. The combination, with a pair of movable bars constituting a sieve-support, of a series of sieves secured to said bars at reverse angles to each other, dividing-boards between the sieves, a shaft having a pair of eccentric-straps on said eccentric, secured one to each of said bars, and stops in the paths of the said bars for imparting the motion of the said bars uniformly to the entire series of sieves, substantially as described.

8. The combination, with a suitable case, of the shaft B, having the eccentrics *b*, the pair of bars D, flexible at some point to permit the same to yield laterally, the eccentric-straps C C', having slot-and-screw connection with said bars, the springs E between the eccentric-straps and the said bars, the sets of stops G and H A, and the sieves K, secured to the said bars, the said parts being arranged and operating substantially as described.

9. The combination, with the eccentric-shaft, of the sieve-support mounted on the eccentric portion of said shaft, stops in the path of the sieve-support under its motion from the eccentric-shaft, a feed-hopper having a movable feed-plate, and a link connecting said feed-plate with said sieve-support, whereby the feed is operated from the sieve motion, substantially as described.

473,501. CAR-BRAKE. JOHN A. FISHER, Pittsburg, Pa. Filed Dec. 2, 1891. Serial No. 413,836. (No model.)

Claim.—1. The combination of a brake-stem, a pinion thereon, oppositely-moving bevel-gears meshing with said pinion, ratchets with oppositely-inclined teeth fast with their respective bevel-gears, and dogs engaging with said ratchets and moved by the backward and forward throw of the brake-lever, substantially as set forth.



2. The combination of a brake-lever, a yoke fast to the lower end of said lever, a shaft upon which said yoke turns, two dogs pivoted to said yoke, two ratchets with reverse teeth rotating upon said shaft, two oppositely-moving bevel-gears, each fast to its respective ratchet, and a pinion upon the brake-stems meshing with said gears, substantially as set forth.

473,502. BLANK FOR BOOK-COVER PROTECTORS. WILLIAM R. HARMON, New York, N. Y. Filed June 26, 1891. Serial No. 397,556. (Model.)



Claim.—1. A blank for book-cover protectors, consisting of a rectangular piece of paper, strengthened or reinforced throughout or in part by cloth or similar material attached thereto, and turned-over edges provided at the ends of the said piece of paper, which is gummed on one side at the top and bottom edges and on the opposite side at the corners only.

2. A blank for book-cover protectors, consisting of a sheet of paper, which is provided with gummed surfaces at any two opposite edges on one side of the paper and with gummed surfaces at the corners of the paper on the opposite side of the sheet.

3. A blank for book-cover protectors, consisting of a sheet of paper of substantially rectangular form, provided with gum upon one side near two opposite edges, with gum at the corners on the opposite side of the paper sheet, and with rulings parallel to one another on that side of the paper on which is the first-named gum.

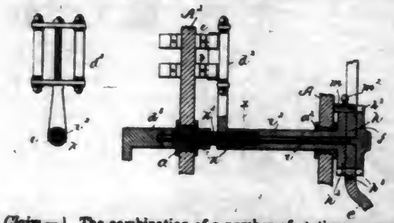
473,503. SWIVEL FOR FISHING-LINES. RUDOLPH HERRING, Jr., Brooklyn, N. Y. Filed May 27, 1891. Serial No. 394,236. (No model.)



Claim.—1. In a swivel, the combination, with the main body having a central aperture for the passage of the line therethrough and provided with a projecting horn adapted to be frictionally engaged by a loop of the line, of a collar revolubly mounted on said main body and provided with an attaching-eye, whereby said swivel may be attached to and adjusted upon a line intermediate its ends without severing said line, substantially as described.

2. In a swivel, the combination, with the main body provided with a central aperture having the flaring end portions and the horns or projections extending longitudinally from said main body, of a collar revolubly mounted on said main body and provided with an attaching-eye, said horns or projections having portions substantially in line with the center of said central aperture, substantially as described.

473,504. ELECTRIC SWITCH. HALBERT K. HITCHCOCK, Louisville, Ky., assignor of one-half to Chas. W. Kellogg, Brookline, Mass. Filed Sept. 16, 1891. Serial No. 405,842. (No model.)



Claim.—1. The combination of a number of stationary contacts with two contact-connectors, each capable of independent movement into position to engage any of said contacts that may be desired, and an actuator connected with both said connectors, whereby both are actuated simultaneously, the said contacts being arranged with relation to said connectors, as described, whereby in the simultaneous movement of the connectors produced by the actuator one of said connectors is disengaged from and the other engaged with the contacts opposite which it is set, substantially as and for the purpose described.

2. The combination of a number of stationary contacts and the supporting-frame therefor, said contacts being adapted to be engaged at each side of said frame with two connectors and carrying shafts therefor, said carrying-shafts being capable of independent rotary motion, and an actuator for moving both said shafts longitudinally, whereby one connector is engaged with the stationary contacts at one side of their supporting-frame and the other connector disengaged from a set of contacts at the other side of the said supporting-frame, substantially as described.

3. The combination of the circularly-arranged sets of contacts with two connectors and concentric shafts therefor, having an independent movement whereby either of said connectors may be placed opposite any desired set of contacts, an actuator having a block to engage said shafts and produce longitudinal movement thereof, and a lock for fastening either of said shafts in predetermined angular position, substantially as described.

4. The combination of the circularly-arranged set of contacts with the two connectors and concentric shafts therefor, an actuator movable longitudinally of said shafts, one of which is engaged positively by said actuator when moving in one direction and the other when moving in the other direction, and a spring interposed between the said shafts, substantially as and for the purpose described.

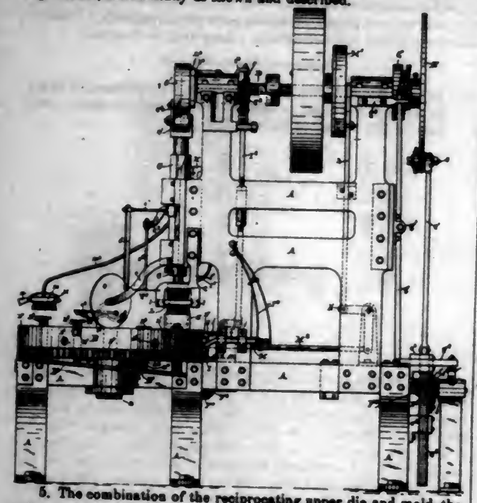
473,505. SOAP-PRESS. CHARLES HOYT, Cincinnati, Ohio. Filed June 20, 1888. Serial No. 277,061. (No model.)

Claim.—1. In a soap-press, the combination, substantially as set forth, of the vertically-reciprocating plunger C, carrying the upper die *c*, the table B, carrying a series of molds arranged to be brought successively under the action of the die *c*, a brake-shoe arranged to bear against the rim of the table, and brake mechanism connected to said shoe and actuated from the driving-shaft to intermittently check the momentum of the table, and stops similarly actuated to stop and hold the table while the plunger is brought down upon the mold beneath it.

2. In a soap-press, the combination, substantially as hereinbefore set forth, of the table B, having a cogged rim, the shafts F^2 F^3, pinions F^4 F^5 F^6, and the click-movement actuated from the driving-shaft for the purpose of imparting an intermittent movement to the table, and a brake-shoe arranged to bear against the rim of the table and connected by a link-movement to a cam on the driving-shaft to gradually check the momentum of the table.

3. The combination of the vertically-moving die *c*, revolving table B, the molds *V*, secured upon said table, the vertically-movable lower dies b^3, the tracks B^7 B^8 to elevate and lower said dies as the table is revolved, the gear connecting said table with its driving-shaft, and the click-movement consisting of the disk F, ratchet *f'*, pawl *f*, pinion F^7, rack *e*, pitman *e'*, and crank-wheel E.

4. The combination, in a soap-press, of the vertically-reciprocating plunger, the revolving table and molds, the click-movement for revolving the table, and the click-releasing devices consisting of the knocker G, cam G', the lever g, and rods connecting said knocker G with the cam G' for the purpose of disconnecting the click-pawl from the driving-ratchet, substantially as shown and described.



5. The combination of the reciprocating upper die and mold, the reciprocating brush L, and means, such as shown, to keep the brush moist and pass it in contact with the upper die after each stroke, substantially as specified.

6. The combination, substantially as specified, of the reciprocating plunger and the intermittently-revolving table carrying a series of molds with the sliding brush L, stationary brush M, tanks N, and connections m^3 l^3, leading from the tank to the brushes, for the purpose set forth.

7. In combination with a soap-press comprising a vertically-reciprocating table carrying molds and means to stop said table to bring said molds successively under the action of the upper die, of the guide-bracket P, arranged above mold 1 for convenience in feeding the blanks to the machine, substantially as specified.

8. The combination, substantially as set forth, of the revolving table carrying molds b' and the lower die b^3, vertically movable within said molds, the inclined tracks B B^3 to alternately raise and lower said lower die b^3, the vertically-reciprocating upper die, and the discharging device consisting of fingers o^3 o^4 and their connections with the upper-die carrier, whereby the die-carrier is first tilted and the cake finally discharged from the mold.

9. In a soap-press of the character described, the combination, substantially as specified, of the disk O, the arms o^2 o^4, pivoted to said disk, the arm o^3, connected to the upper-die carrier, and the pitman o', connecting said arm to the disk, whereby said disk is partially rotated by the downward stroke of the die-carrier and the ends of arms o^2 o^4 brought against the finished cake to discharge it from the mold.

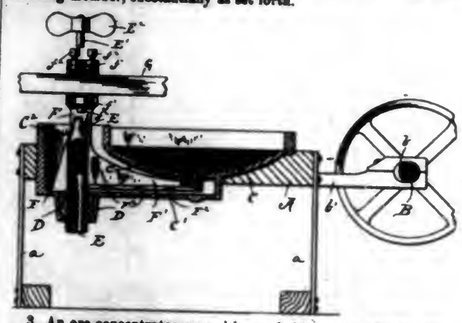
10. The combination of the reciprocating upper die, the revolving table, the molds secured thereon, the moistening-brushes for said dies and molds, and means, such as shown, to alternately bring the molds under the upper die and moistening the dies, the said table having a hollow hub and top inclined from the molds to the center, whereby the overflow from the moistening devices is carried off, substantially as specified.

11. The combination of the frame A, the table and driving-shaft D, mounted to revolve therein, the molds secured upon said table, the perforated brushes for moistening said molds, the vertically-moving upper die, and the cams secured upon the driving-shaft and their connections, whereby the machine is operated to revolve the table, stop it in position, press the cake, and moisten the molds and dies, substantially as set forth.

473,506. ORE-CONCENTRATOR. FRANK M. ILER, Marion, Ohio. Filed Apr. 20, 1891. Serial No. 389,649. (No model.)

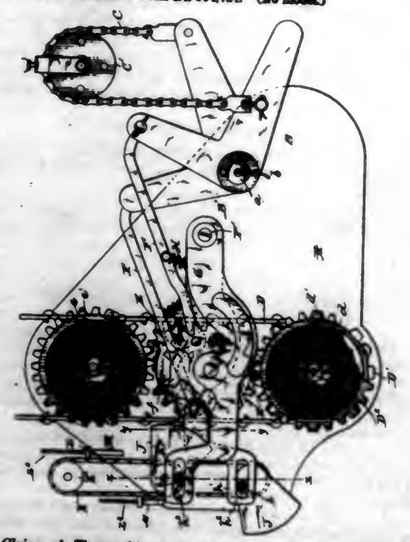
Claim.—1. An ore-concentrator comprising a shaking table bearing one or more concave dishes, substantially as shown, each dish having a central opening connecting with a lateral chamber below, the latter connecting with a vertical chamber located outside the line of the dish, and a valve for controlling the discharge from the vertical chamber, substantially as set forth.

2. An ore-concentrator comprising a shaking table bearing one or more saucer-shaped dishes having connected lateral and vertical chambers, substantially as indicated, of a stationary arm operative within such chamber to serve as an agitator in co-operating with the vibrating member, substantially as set forth.



3. An ore-concentrator comprising a shaking table bearing concave dishes or concentrators proper, each dish having connected lateral and vertical discharging-chambers, the latter having a hollow valve adjustable vertically, such valve and the seat thereof being removable, substantially as set forth.

473,507. SHUTTLE-BOX-OPERATING MECHANISM FOR LOOMS. ALFRED INSINGER, Philadelphia, Pa., assignor to Baker La Rue, same place. Filed June 1, 1891. Serial No. 394,731. (No model.)



Claim.—1. The combination, with the vibrator-levers, of partially-rotatable cranks adapted to actuate said levers, substantially as specified.

2. The combination, with the vibrator-levers slotted at their free ends, of partially-rotatable sleeves carrying crank-pins engaging said slots, the said sleeves being provided with means for holding them in the positions into which they are rotated, substantially as set forth.

3. The combination, with the vibrator-levers, of the partially-rotatable sleeves carrying balance-weights and crank-pins to actuate the levers and connected means whereby the said sleeves may be rotated from the jacquard, as set forth.

4. The combination, with the vibrator-levers provided with slots at their free ends, of the partially-rotatable sleeves carrying crank-pins working in the slots of the levers and connected means whereby said sleeves may be actuated from the jacquard with lost motion permitting partial movement of the jacquard before the said sleeves are actuated, as and for the purpose specified.

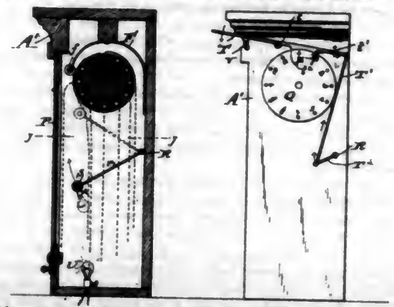
5. The combination, with the partially-rotatable sleeves, of the chains or bands for rotating said sleeves, provided with lugs and plungers and working for a portion of their movement loosely through the lugs, substantially as specified.

6. The combination, with the vibrator-lever and the partially-rotatable crank-carrying sleeve for actuating the same, of the chain or band provided with a lateral lug having an opening therein and the plunger working through said opening, said plunger being of such relative size for a portion of its length as to move through the opening of the lug without engaging the same, substantially as and for the purpose specified.

7. The combination, with the vibrator-lever having a horizontally-slotted free end, of the partially-rotatable sleeve carrying a crank-pin working in the slot of the lever and a segmental weight, the chain or band for actuating the sleeve, a lug having an opening therein carried by the chain or band, and a plunger having a reduced or tapered portion working loosely through the opening of the lug, substantially as specified.

8. The combination, with the cylinder-gear, the bell-crank lever, and the pivoted vibrator-lever provided with stop-notches on its upper edge on opposite sides of the pivot of the crank-gear, of the crank-gear rotatably held on the vibrator-lever and carrying a stop-pin adapted to enter said notches, the arm connected with the bell-crank lever and pivotally connected with the crank-gear, and a spring connecting the said arm with the vibrator-lever and serving to draw the stop-pin into the notches, as set forth.

473,508. EXHIBITING APPARATUS. CHARLES S. JENKINS, Lansdale, Pa. Filed Sept. 24, 1891. Serial No. 406,637. (No model.)



Claim.—1. In exhibiting apparatus, the combination of a rotary shaft, a drum fast to said shaft, a series of sheets carried by the drum and adapted to be rolled upon the drum and unrolled therefrom when the shaft is rotated, a pawl-and-ratchet device having one member thereof carried by the drum and positively moved therewith and the other member loosely journaled upon the shaft, a compensatory spring, and a flexible connection between the compensatory spring and the member of the pawl-and-ratchet device which is loosely carried by the rotary shaft, whereby when the shaft and its drum are positively rotated to unroll the sheets the fast member of the pawl-and-ratchet device is also rotated with the drum and shaft and the flexible connection is wound up thereon to increase the tension upon the compensatory spring and thus compensate for the weight of the sheets that have been unrolled.

2. In exhibiting apparatus, the combination of a rotary drum having a series of sheets attached thereto so that their ends overlap when the sheets are wound up, a lamp, and a movable separating-rod movable to and from the rotary drum to hold back all of the sheets but one away from the rays of the light from the lamp.

3. In exhibiting apparatus, the combination of a rotatable drum having a series of longitudinal grooves and a series of detachable clamping-pieces, each made in two parts, to clamp a sheet between the parts and adapted to be received in the grooves of the drum.

4. In an exhibiting apparatus, the combination of a rotary drum having its periphery provided with a series of longitudinal grooves having an enlarged internal diameter with a contracted opening, a series of sheets, and a series of clamping-pieces adapted to be received in the enlarged portions of said grooves to hold the sheets therein.

5. In an exhibiting apparatus, the combination of a rotary drum, a series of sheets attached thereto so that the ends overlap when the sheets are wound up, a dial connected with said drum, so as to rotate therewith, provided with a series of openings or apertures corresponding to the number of the sheets, a pin adapted to be inserted in said holes, and a stop in the path of said pin.

6. In an exhibiting apparatus, the combination of a rotary drum having a series of sheets attached thereto so that the ends overlap when the sheets are wound up, a rotary dial connected with said drum, so as to rotate therewith, a pin carried by said dial, and a stop in the path of the pin to arrest the rotation of the dial and drum at any desired position.

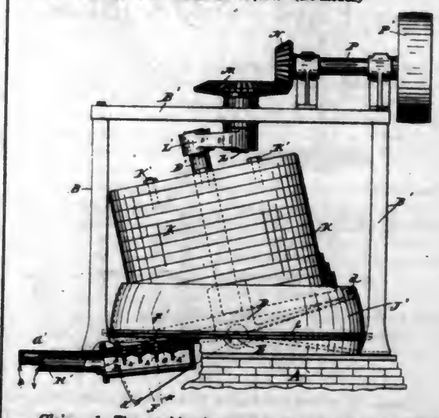
7. In exhibiting apparatus, the combination of a rotary drum, a series of sheets carried thereby so that the ends overlap when the sheets are wound up, a dial Q, carried by said drum, a fixed stop Q', adjacent to the dial, and a movable pin carried by the dial and adapted to be moved so as to strike the stop when the dial is rotated to arrest the drum in a desired position.

8. In an exhibiting apparatus, the combination of a rotary drum having a series of sheets attached thereto so that their ends overlap when the sheets are wound up, a lamp, a movable separating-rod, and mechanism to move said rod to and from the drum to hold back all the sheets but one away from the rays of light from the lamp.

9. In an exhibiting apparatus, the combination of a rotary drum having a series of sheets attached thereto so that their ends overlap when the sheets are wound up, a lamp, a separating-rod S, a lever to raise said rod to and from the drum, the dial Q, pin g, and stops f' f^2.

10. In an exhibiting apparatus, the combination of a closed case having a sight-opening, a lamp within said case, a rotary drum, a series of sheets attached to said drum so that their ends overlap when the sheets are wound up, a separating-rod S, a lever T, connections between said lever and rod S, whereby the latter may be moved to and from the drum, a rotary dial connected with said drum, so as to rotate therewith, a pin g, carried by the dial, and stops f' f^2, carried by the lever T and adapted to be moved successively in the path of the pin g.

473,509. VACUUM-PUMP. WHITCOMB L. JUDSON, New York, N. Y. Filed Sept. 25, 1890. Serial No. 366,167. (No model.)



Claim.—1. The combination, with an inclosing flange or casing, of a fixed and a movable convex head having their convex surfaces opposed to each other, and the said movable head being pivotally mounted on the center of the fixed head, whereby a swinging motion may be imparted to the movable head to effect radial contact between the two heads progressive about their common center.

2. The combination, with an inclosing flange or casing, of a pair of convex heads having their convex surfaces opposed to each other, one of which is fixed and the other of which has a pivotal movement on their common center, of a driving-shaft in line with the axis of the fixed head provided with a crank-arm at right angles thereto and a shaft fixed at one end to the center of the movable head and having its other end journaled in said crank-arm.

3. The combination, with an inclosing flange or casing, of a head fixed in the horizontal plane and having a convex upper surface or face and a movable head having a convex lower surface or face opposed thereto pivotally mounted on the fixed head and loaded with weights and means for swinging said loaded movable head about its pivotal center at an angle to its vertical axis, substantially as described.

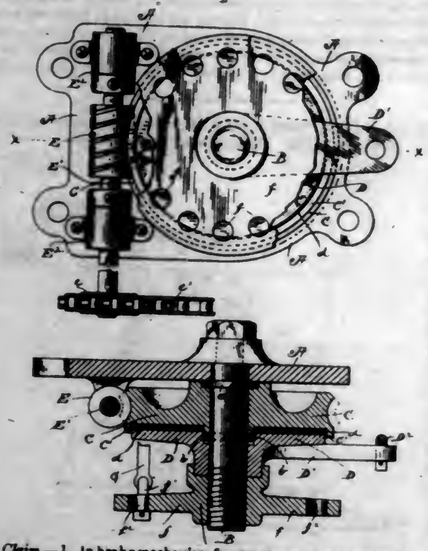
4. The combination, with an inclosing flange or casing, of the convex head fixed in the horizontal plane, the opposed movable convex head, the ball-bearing at the common center of the two heads, the vertical driving-shaft in line with the centers of the heads provided with a crank-arm, the shaft fixed at its lower end to the center of the movable head and journaled at its upper end in said crank-arm, and the weights on the movable head counterpoised about its shaft, substantially as described.

5. The combination, with the fixed convex head, of the opposing movable convex head, the ball-bearing constituting the common pivotal centers between the two heads, the radial abutment integral with said ball pivotally seated in one head and working between packing-strips pivotally seated in the other head, the flange inclosing the space between the two heads, the inlet and outlet ports to and from said

space on the opposite side of said abutment, and means for swinging said movable head about said ball-bearing as a center.

6. The combination, with the fixed head having a convex upper face, of the opposing movable head having a convex lower face, the ball-bearing between the two at their common center, the radial abutment integral with said ball pivotally mounted in one head and working between packing-strips pivotally seated in a slot in the other head, the flange inclosing the space between the two heads, the inlet-ports on one side of said abutment, the outlet-ports on the other side of the same provided with check-valves, the vertical driving-shaft in line with the centers of the head provided with a crank-arm, the shaft rising from the center of the movable head and journaled in said crank-arm, and the weights on said movable head counterpoised about its shaft, substantially as described.

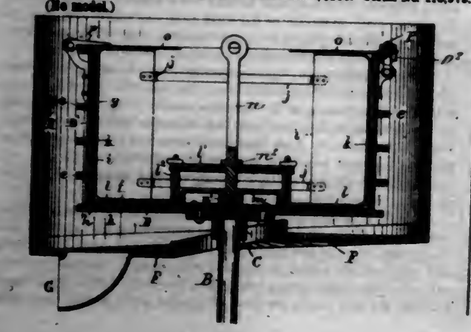
473,510. BRAKE MECHANISM FOR STREET-CARS. HARRY H. KELLEY, Willoughby, Ohio. Filed Aug. 22, 1891. Serial No. 403,494. (No model.)



Claim.—1. In brake mechanism for street-cars, a supporting-plate for attaching to the bottom of the car-body, such plate bearing a depending stud or shaft on which is journaled a worm-gear next the plate and a co-operating friction-disk below the worm-gear, such disk having an arm for actuating the brake, a nut for elevating the friction-disk, such nut having a wheel connecting with the hand-lever, and a worm engaging the worm-gear, such worm being operatively connected with the car-axle, substantially as set forth.

2. In brake mechanism for street-cars, a worm-gear and co-operating friction-disk having a vertical axis in common, the disk being located below the gear and having an arm for actuating the brakes, a nut for elevating the disk, the latter being adapted to back away from the opposing gear by gravity, substantially as set forth.

473,511. CENTRIFUGAL MACHINE FOR REFINING STARCH. GEORGE A. KERR, Columbus, Ind. Filed Dec. 4, 1891. Serial No. 413,979. (No model.)



Claim.—1. In a centrifugal machine, the combination, with the drum, of a false bottom having perforated segments attached thereto and adapted to form a cylindrical basket, as set forth.

2. In a centrifugal machine, the combination, with the drum, of a false bottom having perforated segments hinged thereto and provided with overlapping edges, as and for the purpose set forth.

3. In a centrifugal machine, the combination, with the drum, of a false bottom having perforated segments attached thereto and a lifting-rod secured in the center of the false bottom, as set forth.

4. In a centrifugal machine, the combination, with the drum, of a perforated basket fitted removably thereto, cloths applied to the shell of the basket, and a plate fitted removably within the bottom of the basket to clamp the edges of the cloths, as herein set forth.

5. In a centrifugal machine, the combination, with the drum, of a perforated basket fitted removably thereto, cloths applied to the shell of the basket, a plate fitted removably within the bottom of the basket to clamp the edges of the cloths, a threaded boss secured to the bottom of the basket, a bridge attached to the clamping-plate, and a lifting-rod screwed into the boss and adapted to press the bridge toward the bottom of the basket, as and for the purpose set forth.

6. In a centrifugal machine, the combination, with the drum, of a perforated removable basket and radial partitions fitted removably within the basket, as and for the purpose set forth.

7. In a centrifugal machine, the combination, with the drum, of a perforated removable basket having segmental hinged sides and a series of radial partitions fitted within the basket and attached together by hoops, as and for the purpose set forth.

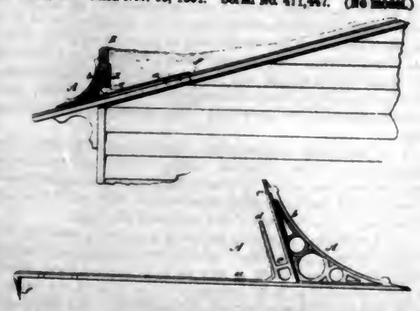
8. In a centrifugal machine, the combination, with the drum, of a perforated removable basket, the radial partitions *i*, attached to the hoops *j*, and the perforated cover *o*, clamped over the basket and partitions, as herein set forth.

9. In a centrifugal machine, the combination, with the rotating drum having clamp-bolts attached to its upper edge, of a perforated basket fitted within the drum and a perforated annular cover hinged at one side of the drum and adapted to engage the clamp-bolts, as herein set forth.

10. In a centrifugal machine, the combination, with a removable basket having perforated shell, of a drum adapted to receive the said basket and having perforations connected by grooves upon the inner side of the drum, as and for the purpose set forth.

11. In a centrifugal machine, the combination, with the drum, of a perforated removable basket, radial partitions removable from the basket, the perforated cover *o*, clamped over the basket and partitions, cloths *k*, applied within the shell of the basket, and a cloth k^2, applied between the cover and partitions and clamped in position by the cover, as and for the purpose set forth.

473,512. SNOW-IRON FOR ROOFS. JOHN M. LAIRD, Huntingdon, Pa. Filed Nov. 10, 1891. Serial No. 411,447. (No model.)



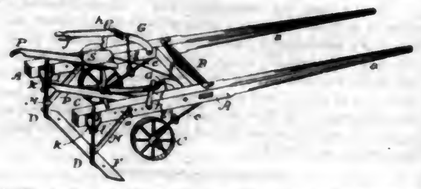
Claim.—1. As a new article of manufacture, the snow-board iron A, having upwardly-projecting bracket *b* and upwardly-projecting arm *d* and between the same the elevated board-support or web *c*, substantially as and for the purposes herein shown and described.

2. As a new article of manufacture, the snow-board iron A, having upwardly-projecting bracket *b* and upwardly-projecting arm *d* and between the same the elevated board-support or web *c*, and provided with a downwardly-projecting hook *f*, all substantially as and for the purposes herein shown and described.

473,513. SULKY-HOE FOR VINEYARDS. JOHN A. LAIRD, Euclid, Ohio. Filed Nov. 9, 1891. Serial No. 411,421. (No model.)

Claim.—1. In a hoeing-machine, the combination, with a frame having depending arms secured thereto and carrying a hoe-blade, of wheels having bent axle journaled in bearings on the frame forward of the wheel, a hand-lever pivoted to the frame and connected by a prop-rod to the axle between the wheel and the journal-bearing, and means for locking the lever in place, substantially as described.

2. In a hoeing-machine, the combination, with a frame having depending arms secured thereto and carrying a hoe-blade, of brace-rods adjustably connected to said arms and to the frame, wheels having bent axle journaled in bearings on the frame forward of the wheel, a hand-lever pivoted to the frame and connected by a prop-rod to the axle intermediate of the wheel and the axle-bearing, and means for locking the lever in place.



3. In a hoeing-machine, the combination, with a frame having depending arms carrying a hoe-blade, of wheels having independent axles bent and journaled in bearings on the frame forward of the wheels, hand-levers pivoted to the frame above each axle and each connected by a prop-rod to the axle below it between the wheel and the point at which the axle is journaled, and means for locking the levers in place, substantially as described.

4. In a hoeing-machine having arms depending from the frame and carrying a hoe-blade, the combination, with the frame and arms, of an adjustable clamping-seat for the arms, said seat bolted to the frame and having the seat *k'* fitting the arms, and the curved slot *m* for varying the inclination of the arms, and the eyebolt for clamping the arms upon its seat, substantially as described.

5. The combination of the frame having depending arms carrying a hoe-blade, wheels with bent axles journaled on the frame forward of the wheels, hand-levers pivoted to the frame and connected by prop-rods to the axles intermediate of the wheel and the journal-bearing, means for locking said hand-levers in place, the driver's seat, and the guiding-handles, all substantially as described.

473,514. INDUCTION-DISCHARGE PROTECTOR FOR WELDING APPARATUS. HERMANN LEMP, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Aug. 14, 1889. Serial No. 320,782. (No model.)



Claim.—1. The combination, with an electro-magnet, of a circuit-breaker actuated by such magnet and having its contacts in the field thereof, and a spring acting in opposition to the pull of the magnet for restoring the circuit-breaker to circuit-closing position after operation of the same for the purpose of interrupting the flow of the current in the circuit of the magnet.

2. The combination, with an electro-magnet, of a movable circuit-breaking contact mounted upon the armature-lever of said magnet and included in the circuit through the coils thereof, a fixed contact located in the arc-disrupting field of the magnet and normally engaged by the first-named contact, and a spring acting on said lever in a direction against the pull of the magnet and in a manner to hold the contacts normally together, as and for the purpose described.

3. The combination, with the induction-coil or converter having a low-resistance secondary and a comparatively high-resistance primary traversed by alternating electric currents, of a branch across the mains supplying said primary, an induction-discharge protector consisting of two electrodes placed in close proximity and normally insulated from one another, located in said branch, an arc-rupturing electro-magnet having its coils located in said branch in circuit with said electrodes, a circuit-breaker controlled by said magnet and also in the branch circuit, said circuit-breaker having its contacts in an arc-disrupting field of the magnet, and a retractor for the magnet's armature, adjusted to respond to the current flowing through the coils and across the space between the electrodes.

4. The combination, substantially as described, of the two arrester-electrodes normally separated by an insulating-space and mounted over one end of an electro-magnet, an armature in the magnetic field at the opposite end of the magnet, and a contact mounted upon the armature-lever thereof and normally making connection with one of said electrodes.

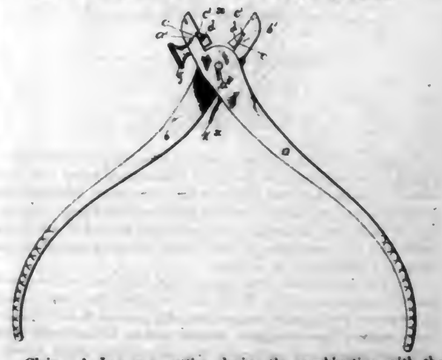
5. The combination, with the electrode c^3, of the carbon electrode c^4, separated therefrom by a narrow insulating-space, the circuit-breaking contact c', normally resting on the first electrode, and an electro-magnet in the circuit of electrodes c^3 c^4 for operating the circuit-breaker.

6. The arc-rupturing magnet having its cores connected by an iron mass of less cross-section than the cores themselves, so as to create an exterior magnetic field, as and for the purpose described.

7. The arc-rupturing magnet having its cores built up of plates of iron integral with connecting parts narrower than the parts of the plates making up the core, so as to create a magnetic field outside said connecting part.

8. The combination, with the circuit, of the protector-electrodes of an electro-magnet, a circuit-breaker actuated by such magnet and having its contacts in the field thereof, and a spring for restoring the circuit-breaker to circuit-closing position after operation of the same for the purpose of interrupting the flow of the arc-forming current over the electrodes.

473,515. SAW-SETTING DEVICE. GEORGE LUTZ, Lancaster, Ohio. Filed Apr. 29, 1891. Serial No. 390,966. (No model.)



Claim.—1. In a saw-setting device, the combination, with the jointed arms *a b*, their jaws *a' b'*, the latter having inner face-depressions *c*, of dies *d*, formed integral with said jaws and having triangular inclined setting-faces, as described, substantially as and for the purpose specified.

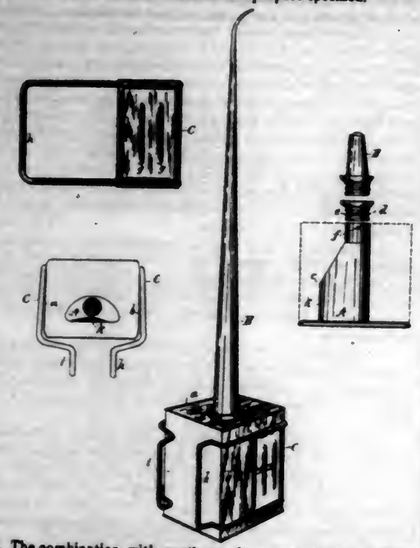
2. In a saw-setting device, the combination, with the jointed arms *a b*, their jaws *a' b'*, each of the latter having inner face-depressions *c*, a vertical slot *e*, formed, as described, in jaw *a'*, of dies *d*, formed integral with said jaws and having triangular inclined setting-faces, the adjustable pin *f*, passing and projecting loosely through slot *e*, having its inner portion flattened and its outer portion rounded and threaded, and a thumb-nut *g* on said threaded portion, substantially as described.

473,516. OIL-CAN. FRANKLIN MARANVILLE, Clinton, Ohio. Filed June 15, 1891. Serial No. 396,309. (No model.)

Claim.—1. In combination with an oil-can having bulged sides, the plates C, attached to the sides thereof and operating conjointly

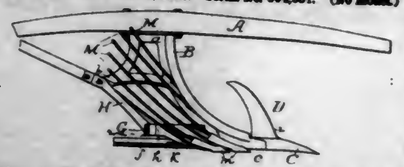
with the handles A and i, attached thereto, in the manner substantially as and for the purpose set forth.

2. In an oil-can, the interior conductor A, having a vent-hole near the upper terminal thereof, in combination with the nozzle B, the bulged sides of the can, and the handles and plates attached to said bulged sides, substantially as and for the purpose specified.



3. The combination, with an oil-can of a rectangular form, bulged sides, and a handle jointed or hinged to the sides of the can, of a nozzle extending from the interior of said can for discharging oil through by the compression of bulged sides by means of said handles, arranged in the manner and for the purpose substantially as described.

478,517. PLOW. JOHN R. MITCHELL and ELIZA M. MITCHELL, Salem, Iowa. Filed June 1, 1891. Serial No. 394,051. (No model.)



Claim.—1. The combination, with a plow beam and standard, of a mold-board consisting of a series of disconnected points removably braced to the standard and a series of bars arranged in pairs, each pair of which is made by suitably bending double a single length of bar and each of said pairs having its bend removably secured to one of said points and the remainder of their length curved to conform to the shape of a mold-board, as set forth.

2. The combination, with a plow beam and standard, of a mold-board consisting of a series of disconnected points detachably secured to a series of prongs, said prongs detachably secured to said standard, and a series of bars detachably secured at their forward ends to said points and prongs and having the remainder of their length curved to conform to the shape of a mold-board, as set forth.

3. In a plow, the combination, with a standard having a plow-point on its forward end and a rack-bar secured to said standard and projecting horizontally to one side therefrom at a suitable angle, of a series of disconnected points adjustable on said rack-bar and a series of bars connected to the said points at their forward ends and so curved as to conform to the shape of a mold-board.

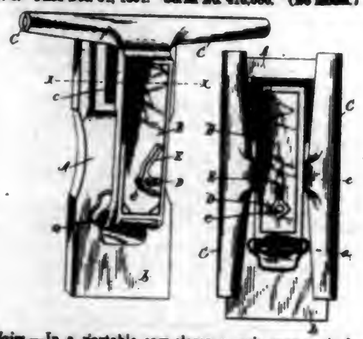
4. The combination, in a plow, with a standard having a plow-point on its forward end and a rack-bar secured to and projecting longitudinally to one side at a suitable angle from said standard and a brace for holding in position the outer end of said rack-bar, of a series of disconnected points secured to said rack-bar and a series of bars connected to said points at their forward ends and curved to conform to the shape of a mold-board.

5. In a plow, the combination, with a standard having a plow-point on its forward end, of a series of disconnected points, a corresponding series of prongs connected to said standard, and a series of bars connected to the forward end of said prongs and clamped in position by said points, as set forth.

6. In a plow, the combination, with a standard having a plow-point on its forward end, of a series of shovel-points, each consisting of a spear-shaped plate and a corresponding series of prongs, to the forward ends of each of which one of said points is respectively connected and which are secured to said standard, and a series of bars secured to the forward end of said prongs and securely clamped and held by said points and curved so as to conform to the shape of a mold-board, as set forth.

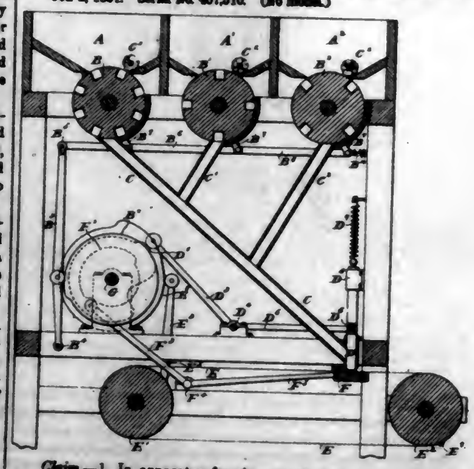
7. In a plow, the combination, with a standard having a plow-point on its forward end, of a series of disconnected points, each consisting of a spear-shaped plate, a corresponding series of prongs connected to said standard, to the forward end of each of which one of said points is connected, and shoe-plates secured, respectively, to the under side of each of said prongs and to said points, and a series of bars connected to the forward end of said prongs and held and secured in place by said points and curved so as to conform to the shape of a mold-board, as set forth.

478,518. SAW-CLAMP. THOMAS R. MCCRACKEN, Washington, D. C. Filed Dec. 31, 1891. Serial No. 416,686. (No model.)



Claim.—In a portable saw-clamp, a main support A, having an arm-support B hinged thereto, the main support extending below the hinge, forming a long flat bar *b*, adapted to be held in a bench-vise, each support having a dovetailed recess *d* in its inner upper face, combined with clamping-jaws C, having dovetailed shanks *c* to fit in the recesses of the supports, said clamping-jaws adapted to be removed and their shanks laid one upon the other between the main and hinged supports and rigidly held therein by the screw-clamp of the hinged support, forming a compact tool for transportation, as set forth.

478,519. APPARATUS FOR THE MANUFACTURE OF COVERINGS FOR FLOORS AND OTHER SURFACES. ARTHUR S. OSTHAUS and SAMUEL J. HARRAGOTT, London, County of Middlesex, England. Filed Oct. 2, 1891. Serial No. 407,510. (No model.)



Claim.—1. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a surface against which

one side of the backing rests, tubes or channels which are normally empty on the other side of the backing, means for delivering into each tube or channel one or more pellets containing a sufficient quantity of plastic material to form a portion of the face of the material equal in area to that occupied by the tube, and means for flattening said pellets onto the backing.

2. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of tubes or channels, means for delivering pellets of plastic material into the tubes, means for depositing the pellets separately on the surface of a backing, and means for afterward flattening said pellets onto the backing.

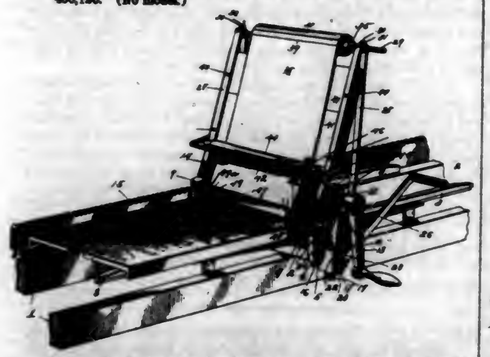
3. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a surface against which one side of the backing rests, tubes or channels on the other side of the backing, plungers working in them, and branch tubes for delivering pellets into them.

4. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a surface against which one side of the backing rests, tubes or channels on the other side of the backing, means for delivering pellets of plastic material into them, plungers working in them, and means for causing the surface to approach and recede from their mouths.

5. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a number of hoppers containing pellets of plastic material, cylinders at the mouths of the hoppers, recesses in the cylinders, means for giving a step-by-step motion to the cylinders, means for conveying the pellets from the cylinders onto a backing, and means for consolidating the pellets onto the backing.

6. In apparatus for the manufacture of coverings for floors and other surfaces, the combination of a number of hoppers containing pellets of plastic material, cylinders at the mouths of the hoppers, recesses in the cylinders, means for giving a step-by-step motion to the cylinders, tubes or channels to convey the pellets from the cylinders onto one side of a backing, plungers working in the tubes or channels, a surface on the other side of the backing, means for giving a step-by-step motion to the backing, and means for causing the surface to approach and recede from the mouths of the tubes or channels.

478,520. PRINTING-PRESS. JOHN C. PADGETT, Alta Vista, and WILLIAM R. BOLTON, Greensburg, Kans. Filed July 30, 1891. Serial No. 400,120. (No model.)



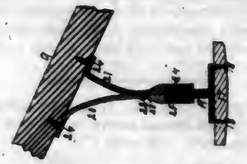
Claim.—1. An improved printing-press comprising a longitudinally-movable bed, a rock-shaft journaled beneath the base of the machine and having an eccentric portion engaging the under side of the base, an impression-cylinder journaled above the bed, and a pair of rods or bolts connecting the end of the shaft with the end bearings of the cylinder, substantially as set forth.

2. An improved printing-press comprising a rock-shaft located beneath the bed of the machine and having an eccentric portion engaging the under side of the base, an impression-cylinder mounted above the bed, a pair of rods or bolts connecting the bearings of the shaft with the bearings of the cylinder, and a pair of springs, each of elongated form and having undertorned separated ends and interposed each between the under side of one of the cylinder-bearings and the upper part of an adjacent portion of the machine-frame.

3. An improved printing-press comprising an apron attached at one end to a winding spring-returned roll, a bed to which the opposite end of the apron is connected, a crank-arm journaled upon the machine-frame, a pivoted hanger carrying a roll to press upon the outer surface of the apron, and a rod connecting one end of the hanger with the crank-arms, substantially as set forth.

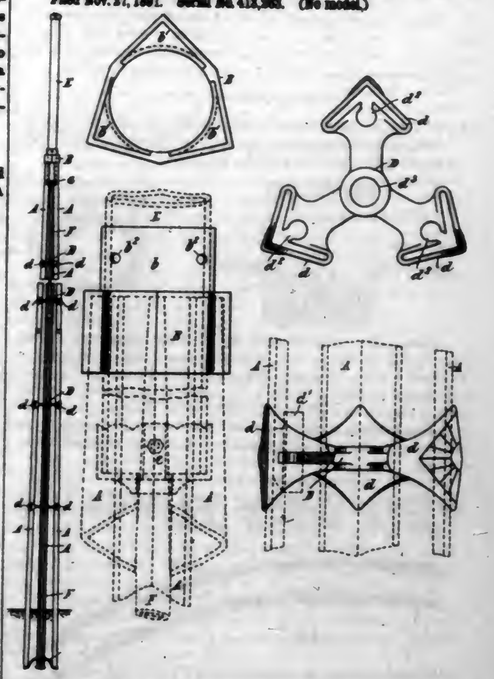
4. An improved printing-press comprising an apron attached at one end to a winding spring-returned roll, a longitudinally-movable bed to which the opposite end of the apron is attached, an inclined supporting-frame for the said spring-returned roll, and a flat spring-pressed clamp carried by the bed and arranged to press upon the latter, substantially as set forth.

478,521. WASHING-MACHINE. HENRY H. PALMER and SAMUEL D. PALMER, Rockford, Ill.; Samuel D. Palmer administrator of said Henry H. Palmer, deceased. Filed July 27, 1889. Serial No. 318,904. (No model.)



Claim.—In a washing-machine, the combination, with an operating-handle, of a lower rubbing-surface, a rubbing-board, plates secured to said rubbing-board and provided with upriving posts, and a two-part bracket having its lower ends brought together to form sockets, in which said posts are secured, and having its upper ends connected with the operating-handle, substantially as set forth.

478,522. TELEGRAPH OR OTHER POLE. WILLIAM PITT, London, England, assignor to the Sectional Standards, Limited, same place. Filed Nov. 27, 1891. Serial No. 413,263. (No model.)



Claim.—1. In poles, the combination of a number of uprights, connections at the top and bottom provided with recesses to receive the ends of the uprights, intermediate connections provided with openings through which the uprights pass, and a central tube or rod securing the upper and lower connections together, substantially as described.

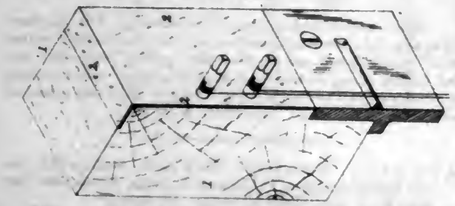
2. In poles, the combination of a number of uprights, each consisting of a length of angle-iron castings at the top and bottom provided with recesses to receive the ends of the uprights, intermediate castings provided with rectangular openings through which the uprights pass, keys to secure the uprights to the intermediate castings, and a tube or rod securing the upper and lower castings together, substantially as described.

3. In poles, the combination of a number of uprights, connections at the top and bottom provided with recesses to receive the ends of

the uprights, the upper connection having, also, a socket to receive the upper section of the pole, intermediate connections provided with openings through which the uprights pass, and a tube or rod securing the upper and lower connections together, substantially as described.

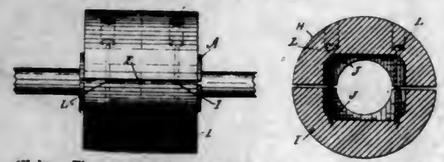
4. In poles, the combination of a number of uprights, each consisting of a length of angle-iron castings at the top and bottom provided with recesses to receive the ends of the uprights, the upper casting also having a central hole through it, an upper section of the pole passing through the hole and secured in it, intermediate castings provided with rectangular openings through which the angle-iron uprights pass, keys to secure the uprights to the intermediate castings, and a tube or rod forming a continuation of the upper section of the pole and serving to secure the upper and lower castings together, substantially as described.

473,523. PIANO PIN-BLOCK. ALANSON H. REED and DENNIS DONOVAN, Chicago, Ill., said Donovan assignor to said Reed. Filed Nov. 20, 1891. Serial No. 412,481. (No model.)



Claim.—As an improved article of manufacture, the herein-described piano pin-block, the same comprising a wood body 1 and a coating 2 of a coherent non-frangible composition, through which the tuning-pins are adapted to pass, essentially as herein described.

473,524. SECURING PULLEYS TO SHAFTS. MILTON O. REEVES, Columbus, Ind., assignor to the Reeves Pulley Company, same place. Filed Jan. 22, 1892. Serial No. 418,892. (No model.)



Claim.—The combination of the shaft, the segmental bushing adapted to fit thereon, the pair of metallic clamps adapted to embrace the exterior of the bushing between them, the bolts arranged to draw said clamps together, and the pulley-sections each having a central opening adapted to embrace the exterior of the bushing and an interior recess adapted to receive the clamp, and means for clamping the pulley-sections together, all arranged to co-operate substantially as set forth.

473,525. VEHICLE-WHEEL. JOSEPH RIDER, Chicago, Ill. Filed Sept. 10, 1891. Serial No. 405,281. (No model.)



Claim.—1. In a vehicle-wheel exterior to and secured to its rim, a series of overlapping springs, the outer ends thereof being free and successively supported one by another, whereby a continuous cushion is formed about the periphery of said wheel, substantially as specified.

2. In combination with rim A, the series of wire springs *c*, having their free ends joined by loops *d*, substantially as described.

3. In combination with rim A, the spring *c* and flexible tire B, substantially as specified.

473,526. COMBINED INHALER AND MEDICATOR. JOHN J. SEGENREDER, Chicago, Ill., assignor to Edward C. Clay, same place. Filed July 20, 1891. Serial No. 400,104. (No model.)

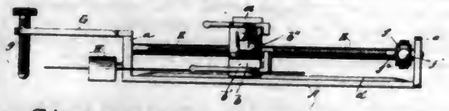


Claim.—1. In a device of the class described, the combination of two bowls separably connected to form a chamber, a cup removably secured in one of said bowls and adapted to contain a suitable drug, a sponge secured in the other of said bowls and adapted to be moistened with a suitable liquid, and means for maintaining a space between said cup and sponge, substantially as shown and described.

2. The combination, with the portions A B, of the cup C, having the bail *c*, adapted to receive and retain a suitable drug, and the sponge *b'*, isolated therefrom by means of the bail *c*, substantially as described.

3. The combination, with the portions A B, of the cup C, having the bail *c*, a suitable drug within the cup, the sponge c^3, holding the same in place and itself retained by means of the bend *c'*, and a second sponge *b'* within the interior, held away from the sponge c^3 by means of the bail *c*, substantially as described.

473,527. WIRE-STRETCHER. HERBERT S. SHAW, Dudley, Mass. Filed May 29, 1891. Serial No. 394,463. (No model.)

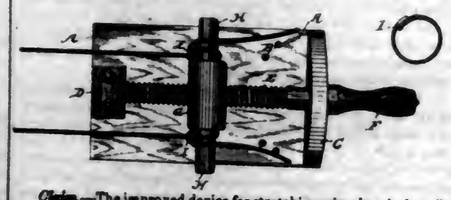


Claim.—1. A stretching apparatus consisting of a base-plate and upwardly-extending end plates, one of said end plates being provided with spurs and a forwardly-extending arm, as G, carrying a set-screw *g*, in combination with a block sliding in guides in the base-plate, the said block having gripping devices for the wires, and means for altering the position of the block, for the purpose set forth.

2. A stretching apparatus consisting of a base-plate and upwardly-extending end plates, one of said end plates being provided with spurs and a forwardly-extending arm, as G, carrying a set-screw *g*, in combination with a rotatable threaded rod, a block sliding in the base-plate and having a nut engaging with said threaded rod, whereby the block is caused to move along the frame, the said block being further provided with a series of gripping devices for the wires, all combined and arranged for the purpose set forth.

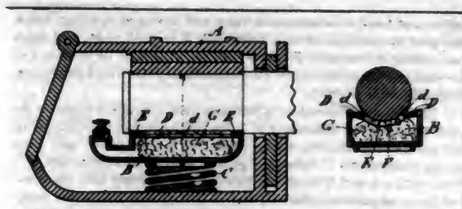
3. In a wire-stretcher, the combination, with the frame thereof and the gripping and stretching devices, of the abutment *a*, spurs a^3, and the forwardly-projecting arm G and set-screw *g*, the latter standing at right angles to the arm, for the purpose set forth.

473,528. DEVICE FOR STRETCHING WIRE. FRED H. SPEED, Rockland, Me., assignor to Edmund N. Wilcox, Meriden, Conn. Filed Feb. 18, 1891. Serial No. 381,775. (No model.)



Claim.—The improved device for stretching wires herein described and shown, consisting of a base-plate provided with the bearings C D, the worm-shaft swiveled in the said bearings, and the slide mounted on the worm-shaft and provided with lateral arms adapted to be engaged by bights in the wires, as specified.

473,529. CAR-AXLE BOX. HENRY R. SPENCER, Ottawa, Canada, assignor to the Edward Best Car Axle Box and Lubricator Company, same place. Filed Dec. 7, 1891. Serial No. 414,260. (No model.)



Claim.—The combination, with a spring-supported removable oil-vessel adapted to contain cotton waste, provided with the space F, through which the waste comes in contact with the axle, of the raised bearings E, substantially as and for the purpose set forth.

473,530. AGITATOR. RICHARD SMITH, Sherbrooke, Canada. Filed Mar. 26, 1891. Serial No. 386,261. (No model.)



Claim.—1. The combination, with an imperforate rotary disk and a shaft by which said disk is carried, of an annular concave plate thereabove and a series of interconnecting arms set edgewise and extending obliquely from a point some distance from the center of said disk outwardly, substantially as described.
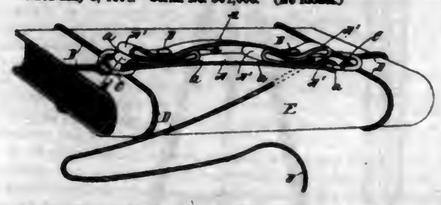
2. The combination, with a revolvable shaft, of a disk carried thereby and provided with a series of arms tangentially disposed upon the upper surface thereof and extending from a point some distance from the center of said disk outwardly and an annular concave plate fixed upon and adapted to cover said arms and to revolve with the said disk, the inner edge of said plate being lower than the outer edge thereof, substantially as set forth.

3. The combination, with a rotary driving-shaft suitably mounted, of an agitator thereupon composed of an imperforate circular disk with an upraised center, a series of arms placed edgewise upon the outer portion of the upper surface thereof, and an annular concaved plate which surmounts and covers said arms projecting therebeyond and with its outer edge 14 upraised above the inner edge 13, substantially as specified.

4. The combination, with an imperforate rotary disk having two or more blades therebeneath and a shaft by which said disk is carried, of an annular concave plate above but non-contiguous and a series of arms interposed edgewise between said disk and plate and extending obliquely outwardly, but terminating at a point some distance from the periphery of said plate and disk, substantially as stated.

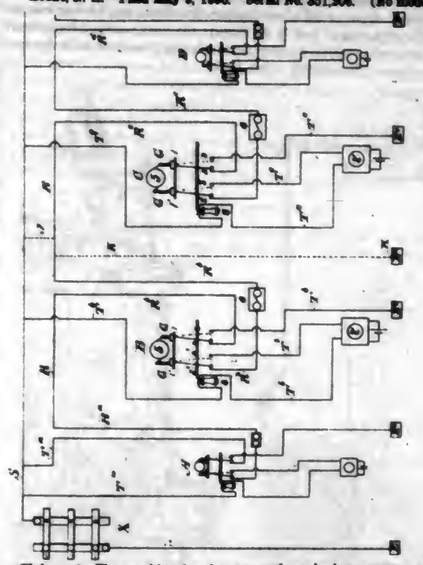
5. The combination, with a rotary shaft and a disk carried thereby, of an annular plate above said disk and a series of interconnecting arms set edgewise and extending from a point some distance away from the center of said disk outwardly, the said arms being tapered and of greatest depth at their inner extremities, substantially as described.

473,531. PACKAGE-CARRIER. WILLARD STOWE, Hartford, Conn. Filed May 5, 1891. Serial No. 391,668. (No model.)



Claim.—A parcel-carrier formed of a continuous strip of suitable material which is gathered in folds or loops at its extremities, the folds or loops of each series being rigidly secured to each other and having rings in two opposite folds for engaging a suitable binding cord or strap.

473,532. TWO WIRE-TELEPHONE SYSTEM. GILES TAINTOR, Keene, N. H. Filed May 9, 1890. Serial No. 351,206. (No model.)



Claim.—1. The combination, in a two-wire-telephone system, of a loop, a generator in connection therewith, and a switch with circuit-closers, combined with a cross-wire and with a branch wire to earth from either said talking or ringing circuits to enable stations outside the lines now short-circuited to be called, substantially as stated.

2. In a two-wire-telephone system, the combination, with a generator located in a loop, a talking-circuit, and a ringing-circuit adapted to be normally connected with the generator, of two movable terminals, a hook-switch, and an operating-receiver S to establish electric connection between the generator and the talking or ringing circuits, substantially as specified.

3. The combination, with a central switch-board, talking and ringing circuits thereto, and a loop in which is located a generator, of the movable circuit-closers, one for each terminal of the loop-circuit, a switch, and its operating-receiver S, to shift the circuit-closers simultaneously and connect the terminals of the loop with the terminals of the talking or ringing circuits, one of said circuits always being open to central, substantially as herein described.

473,533. AMALGAMATOR. BRYAN TYSON, Washington, D. C., assignor of one-tenth to Charles A. Metcalf, same place. Filed Oct. 2, 1890. Serial No. 366,864. (No model.)

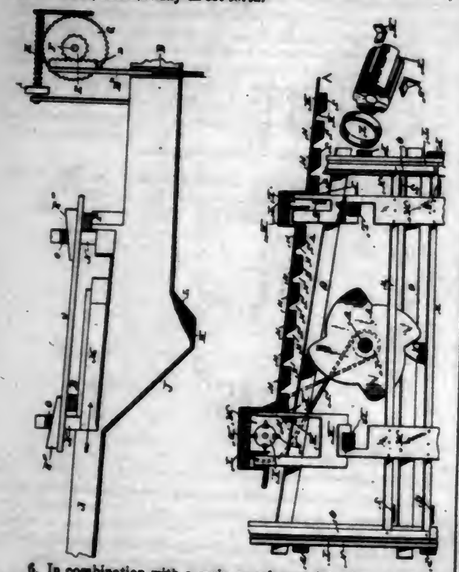
Claim.—1. The combination of the sluice-box provided at its lower end with a vertically-movable gate adapted to arrest substances of value and permit escape of waste above it and also provided at a point removed from said gate with a chamber extending below the general plane of its bottom, and a skimmer-box located immediately over said chamber and above the bottom, said skimmer having a lateral waste-exit, substantially as set forth.

2. A sluice-box having a chamber below the general plane of its bottom, in combination with a skimmer located immediately above said chamber and above the bottom, said skimmer having a lateral waste-exit, substantially as set forth.

3. A sluice-box having a chamber below the general plane of its bottom, in combination with a skimmer located immediately above said chamber and above the bottom, said skimmer having a lateral waste-exit, and devices for vertically adjusting said skimmer, substantially as set forth.

4. A sluice-box provided with an adjustable gate at its lower end to separate substances of value from the waste, said box having above the gate an unobstructed bottom and at a distance above said gate a receptacle below the general plane of its bottom, said receptacle being unobstructed and having an inclined wall on its upstream side, said wall extending above the upper edge of the gate at its highest elevation, and a horizontal bottom and an inclined wall at its downstream side, which is short and steep as compared with the incline first named and terminating at its top below the top of said first-named incline, the construction being such that water and pulp cannot be backed beyond the top of the incline situated above said receptacle, substantially as set forth.

5. In combination with a main or primary sluice-box to separate lighter and heavier substances of value and to discharge waste, a supplementary sluice or riffle box leading therefrom and having two series of wedge-shaped lugs in its bottom, the lower series being placed on a removable strip supported on another strip secured to the bottom of the sluice, substantially as set forth.



6. In combination with a main or primary sluice-box to separate lighter and heavier substances of value and to discharge waste, a supplementary sluice or riffle box leading therefrom and having two series of wedge-shaped lugs in its bottom, the lower series being placed on a removable strip supported by another strip, the latter secured to the bottom of the sluice, and a series of amalgamating plates and strips located in the bottom of the latter box below the said lugs, substantially as set forth.

7. In combination with a main or primary sluice-box to separate lighter and heavier substances of value and to discharge waste, a supplementary sluice or riffle box leading therefrom and having two series of wedge-shaped lugs in its bottom, the lower series being placed on a removable strip or transverse bar supported by another strip secured to the bottom of the sluice-box, a series of amalgamating-strips and amalgamating-plates located in the bottom of the latter box below the said lugs, and a receptacle in said bottom provided with a board extending below its general plane to divert the current downwardly, substantially as set forth.

8. The combination of the sluice or riffle box V, having two receptacles in its bottom, the vertically-sliding frame, means for reciprocating said frame, agitating-blades arranged to traverse on said frame and depending therefrom into said receptacles, a cam-shaft and cam-wheels thereon, and mechanism connecting said wheels and agitating-blades, the blades being provided at their lower ends with amalgamating-points, whereby the revolution of the shaft is caused to operate said blades, lifting them vertically above the pulp and gradually sliding them while making the upward stroke back and forth laterally, substantially as set forth.

9. The combination of the sluice or riffle box V, having two receptacles in its bottom, the vertically-sliding frame, means for reciprocating said frame, agitating-blades arranged to traverse on said frame and depending therefrom into said receptacles, a cam-shaft and cam-wheels thereon, and mechanism connecting the wheels and agitators, whereby the revolution of the shaft is caused to operate the agitators, the roller located in one of said receptacles and provided with teeth, and the cams, cam-shaft, and cam-pins, said pins being connected to the sliding frame and agitators, substantially as set forth.

10. In an amalgamator, the sluice-box provided with a receptacle below the general plane of its bottom, a board to deflect the pulp, a roller located in the upper part of the receptacle to stir the pulp, the lower edge of said board and the upper surface of the roller being below the lowest part of the bottom of the sluice at the highest point of said receptacle on the upstream side and above the highest part of the bottom on the downstream side, and mechanism for operating the roller, substantially as set forth.

11. The main sluice-box A, having a gate whereby to separate the lighter and heavier substances of value and having an aperture below said gate, in combination with a riffle-box V, located under said aperture, having a receptacle D' below the general level of its bottom, and the amalgamating-plate G', located immediately below said receptacle, substantially as set forth.

12. The main sluice-box A, having a gate whereby to separate the lighter and heavier substances of value and having an aperture below said gate, in combination with a riffle-box located under said gate, having a receptacle D' below the general level of its bottom and provided with a board E' to direct flowing pulp directly into the same, and the amalgamating-plate G', located immediately below said receptacle, substantially as set forth.

13. In a riffle-box having an inclined bottom, the riffle-bars having their upstream faces at about right angles to the bottom of the box and their downstream faces inclined thereto and their upper faces horizontal, and removable amalgamating-strips placed on said horizontal faces, substantially as set forth.

14. In a riffle-box having an inclined bottom, the riffle-bars having their upstream faces at about right angles to the bottom of the box, and their downstream faces inclined thereto and their upper faces horizontal and provided with iron caps, and removable amalgamating-strips placed on said iron caps, substantially as set forth.

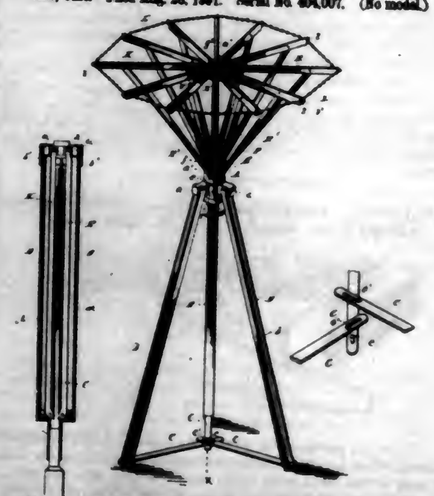
15. The combination of the downwardly-inclined main sluice-box and its gate for separating the lighter and heavier substances of value with the riffle-box provided with riffle-bars H' H', with intervening spaces, and having on their tops the amalgamating-strips arranged in a horizontal plane, substantially as set forth.

16. The combination of the riffle-box having a receptacle L' below the general level of its bottom to be suitably supplied with quicksilver, the agitating-blades, mechanism for moving them vertically and also back and forth lengthwise of the receptacle, and the board between the blades to deflect the pulp, substantially as set forth.

17. The combination of the riffle-box having in its bottom a receptacle to be suitably supplied with quicksilver, the agitating-roller, mechanism for revolving said roller, and the board to direct the pulp down into the receptacle, the lower edge of the board and the upper surface of the roller located in the upper part of said receptacle below the lowest part of the bottom of the sluice at the highest part of said receptacle on the upstream side and above the highest part of the bottom on the downstream side, substantially as set forth.

18. The combination of the riffle-box having in its bottom two receptacles to be suitably supplied with quicksilver, the riffle-bar T', attached to the box and separating said receptacles into two compartments, an agitating-blade in each compartment, mechanism for moving said blades, the agitating-roller in one of said compartments, mechanism for revolving the roller, and the board E' to direct the pulp down into the receptacle, the lower edge of the board and the upper surface of the roller being below the lowest part of the bottom of the sluice on the upstream side and above the highest part of the bottom on the downstream side, substantially as set forth.

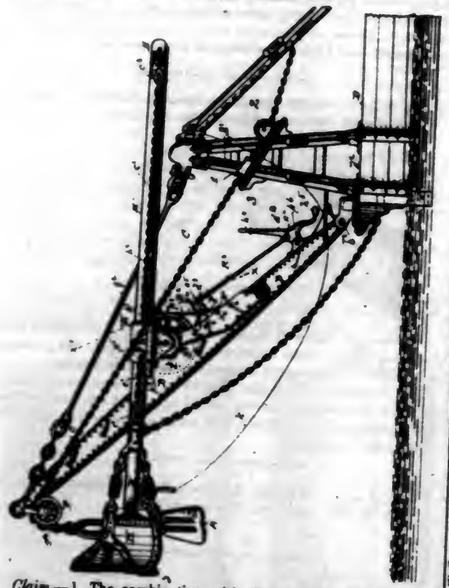
473,534. FOLDING STOOL. WILLIAM H. VAN GILDER, Perrysville, Ohio. Filed Aug. 28, 1891. Serial No. 404,007. (No model.)



Claim.—1. A folding stool comprising a body piece or casting A, having projecting from its sides a series of lugs a, the triangularly-located upwardly-folding channeled legs pivoted at their upper ends to said lugs, the channels thereof receiving said lugs when said legs are folded, radial braces pivoted to the lower portions of said legs and provided with means whereby they are connected together to retain said legs in spread or supporting position and folding upwardly into the channels in said legs when the parts are closed, the stops on said legs, and the folding seat supported from the body piece or casting and having its seat bars and braces folding between said channeled legs when the parts are closed, substantially as specified.

2. The combination, with the body piece or casting A, having the channeled upwardly-folding legs pivoted thereto, of the spindle a', supported in said body piece or casting, the washer c on said spindle, the annular bearing E on said washer, the ring E, the seat-braces E', pivoted at their lower ends to said ring, the annular runner-bearing H, having the inner end of a radial series of seat-bars pivoted thereto, the upper ends of the seat-braces being pivoted to said bars intermediate of their ends, said seat-bars being Π-shaped to receive said braces when folded, and a catch for holding the seat in spread position, said seat bars and braces when the parts are folded being received between the channeled legs, substantially as specified.

473,535. DIPPER-DREDGER. JOHN VAN PATTEN, West Troy, assignor of one-half to Timothy J. Sullivan, Albany, N. Y. Filed Dec. 16, 1890. Serial No. 374,951. (No model.)



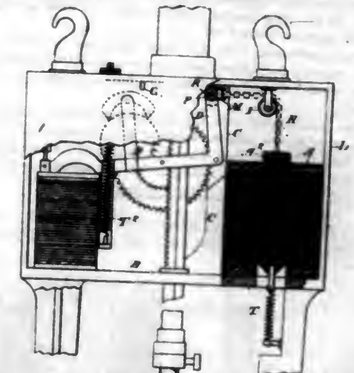
Claim.—1. The combination, with the boom B, made with the slide W, pivoted thereto and having the pulley P^2 and pinions p^2 p^2 at each side, substantially as described, of the dipper-handle H, having the steadying-chains O^2 at each side thereof, each arranged to run on one of said pulleys P^2 and on two pinions p^2 p^2, substantially in the manner as and for the purposes set forth.

2. The combination, with the boom B, of the slide W, made with the slide-passage w^2 and having the pinions p^2 p^2 at each side thereof, the shaft S^2 to pivot said slide to said boom, the pulley P^2, arranged upon said shaft at each side of said slide-passage, the dipper-handle H, made to straddle said boom and arranged in said slide-passage w^2, and steadying-chains O^2, one arranged upon each side of said handle, each of said chains being at its ends connected to said handle and arranged to intermediately run upon one of the pulleys and on two of said pinions at each side of the handle, substantially in the manner as and for the purposes set forth.

3. The combination, with the boom B, of the slide W, made with the slide-passage w^2 and pivoted to said boom by the shaft S^2, the pulley P^2 and pinions p^2 p^2, arranged at each side of said slide-passage way, the brake-wheel B^2, arranged on said shaft S^2, said brake-wheel being provided with a brake-belt, and the dipper-handle H, made to straddle said boom and arranged within said slide-passage, said dipper-handle being at each side provided with a steadying-chain that at its ends connects with the handle and intermediately runs on one of said pulleys and on two of the pinions at each side of the slide, substantially in the manner as and for the purposes set forth.

4. The combination, with the boom B, of the slide W, made with the central slide-passage w^2, and the pinions p^2 p^2 at each side thereof, the shaft S, arranged to pivot said slide to said boom, the pulleys P^2, arranged on said shaft, one at each side of said slide, the brake-wheel B^2, arranged on one end of said shaft and provided with a brake-belt operative to engage with said brake-wheel, substantially as described, the handle H, made to straddle said boom and arranged within said slideway, the steadying chains O^2 O^2, each at its ends attached to one of the sides of said handle and arranged to intermediately run on one of said pulleys and on two of the pinions at each side of said handle, substantially in the manner as and for the purposes set forth.

473,536. ALTERNATING-CURRENT ARC LAMP. BARTON R. WARD, New York, N. Y. Filed Mar. 28, 1891. Serial No. 386,821. (No model.)



Claim.—1. In an alternating-current arc lamp, the combination, with the carbon-supporting lever, of the alternating-current lamp-magnet having its movable core or equivalent moving portion connected with said supporting-lever by a loose connection, and a damper of the vibrations applied between the core and the lever, as and for the purpose described.

2. In an alternating-current arc lamp, the combination, substantially as described, with the carbon-supporting lever, of a lamp-magnet having a laminated core connected with the lever through a connection made up of a number of links, whereby the rapid mechanical vibrations of the core produced by the alternating currents may be cut off from the carbon.

3. In an alternating-current arc lamp, the combination, substantially as described, of a carbon-supporting lever, a connecting cord or chain connecting the same with the actuating-magnet of the lamp, and a wheel on which the chain bears, said wheel being faced with rubber or similar material, as described.

4. In an alternating-current arc lamp, the combination, substantially as described, of a carbon-supporting lever, a lamp-magnet having a movable laminated iron core, a connecting-chain, and a damper with which said chain makes contact, as and for the purpose described.

5. In an alternating-current arc lamp, the combination, with a carbon-supporting lever and the actuating-magnet, of a damper applied between the movable portion of the lamp-magnet and the lamp-lever for cutting off or preventing communication of the rapid vibrations due to the alternating currents, as and for the purpose described.

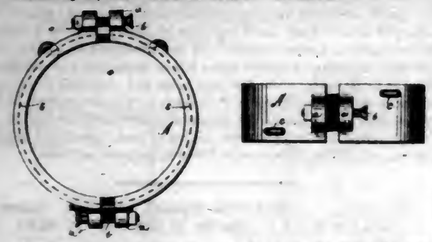
6. In an alternating-current arc lamp, the combination, with the carbon-supporting lever, of an actuating-magnet having mechanical connection therewith through an interposed piece or block of a material such as soft rubber.

7. In an alternating-current arc lamp, the combination, substantially as described, of a carbon-supporting lever, an electro-magnet having a laminated iron core, and a block of rubber P, interposed between the lever and the connections from the core, as and for the purpose described.

8. In an alternating-current arc lamp, the combination, with the carbon-supporting lever, of an actuating-magnet connected with the same through a cord or chain, the links of which have lost motion with respect to one another, whereby the vibrations due to alternating electric currents may be cut off from said lever.

9. The combination, in an alternating-current arc lamp, of a carbon-supporting lever, a lamp-magnet loosely connected therewith for the purpose of actuating the same and a spring applied to the movable core or other movable portion of said magnet and acting upon the same in a direction to oppose the retractor which operates against the magnetic influence.

478,537. HOSE-CLAMP. FRANK T. WEBDAW, Syracuse, N. Y. Filed July 20, 1891. Serial No. 400,063. (No model.)

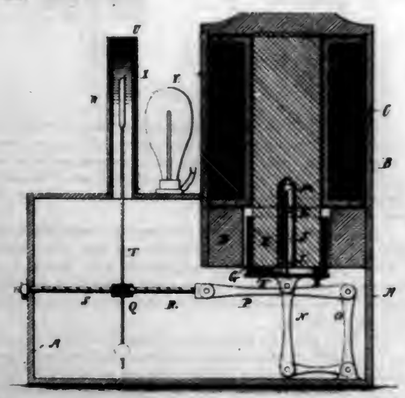


Claim.—1. The combination, with the band and means for contracting it, of the helical spring inserted within the band and having its free ends secured to the band.

2. The combination, with the band constructed in sections and means for securing the said sections together and contracting them, of the helical spring inserted within the band, having its free end secured to the band.

3. The combination, with the band constructed in sections and means for securing the sections together and contracting them and provided upon their inner face with edge flanges, of the helical spring inserted within the band and having its free end secured to the band.

473,538. ELECTRICAL MEASURING INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed Jan. 3, 1891. Serial No. 377,065. (No model.)



Claim.—1. In combination with the working mechanism of an electrical measuring instrument, an index or needle actuated by said mechanism, a box or case wholly inclosing said index and inserted in one of the walls of said case, and a plate of translucent material inscribed with a scale-marking appropriate to the instrument, over which scale said index moves.

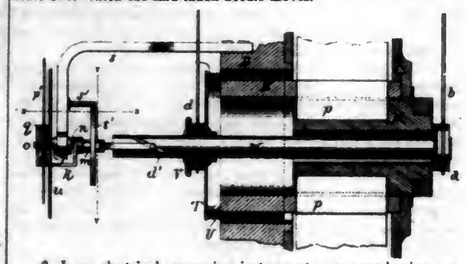
2. In combination with the working mechanism of an electrical measuring instrument, an index or needle actuated by said mechanism, a box or case wholly inclosing said index and inserted in one of the walls of said case, a plate of translucent material inscribed with a scale-marking appropriate to the instrument, over which scale said index moves, and in the opposite wall a plate of glass or other transparent material.

3. In combination with the working mechanism of an electrical measuring instrument, an index or needle actuated by said mechanism, a box or case hermetically inclosing both said index and said mechanism and inserted in one of the walls of said case, a plate of translucent material inscribed with a scale-marking appropriate to the instrument, over which scale said index moves, and in the opposite wall a plate of glass or other transparent material.

4. In combination with the standard of an electrical measuring instrument, the case U, containing the translucent dial X, the movable needle T, and the electric lamp Y, supported in rear of said dial and transmitting light through the same.

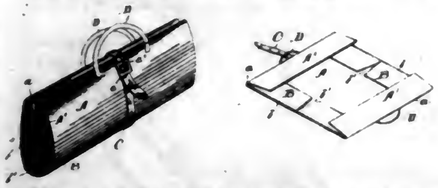
473,539. ELECTRICAL MEASURING INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed Jan. 24, 1891. Serial No. 378,894. (No model.)

Claim.—1. In an electrical measuring instrument, a magnet having concentric annular poles, a coil in the annular interpolar space, a support for said coil axially movable within said magnet and having on its periphery a spiral guide, an independently-supported rotary shaft engaging with said guide, an index carried by said shaft, and a scale over which the said index-needle moves.



2. In an electrical measuring instrument, a magnet having concentric annular poles, a coil in the annular interpolar space, a support for said coil axially movable within said magnet and having on its periphery a spiral guide, an independently-supported rotary shaft engaging with said guide, a spring engaging with said shaft and with a fixed abutment and tending to rotate said shaft in a direction opposite to its impressed movement by said guide, an index-needle carried by said shaft, and a scale over which said index-needle moves.

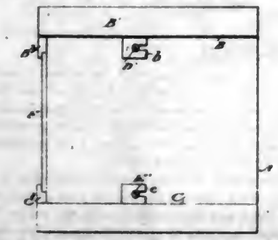
478,540. MUSIC-HOLDER. HELEN D. WHEELER, Chicago, Ill. Filed Nov. 23, 1891. Serial No. 412,774. (No model.)



Claim.—1. A flexible music-holder consisting of the back or cover A, having folding edges A′ and side flaps B, said flaps being notched at the line of folding of the holder, substantially as specified.

2. A flexible music-holder adapted to fold loosely along the center line of the music and having folding edges and side flaps covering all the edges of the sheets, said flaps being notched at the center line, substantially as specified.

478,541. CABINET. RICHARD D. WILLSON, Vincennes, Ind. Filed Jan. 23, 1891. Serial No. 378,809. (No model.)



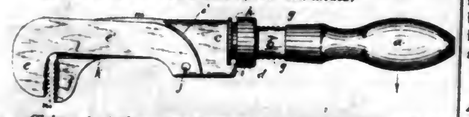
Claim.—1. In a knockdown portable cabinet having projecting slotted arms on its top and bottom adapted to engage pins on the side pieces to hold the frame together, the combination of the inner frame locked together by means of slots in its longitudinal and transverse strips, the ends of the said strips forming the inner frame engaging the slots in the inner face of the outer frame, substantially as described.

2. In a knockdown portable cabinet having projecting slotted arms on its top and bottom adapted to engage pins on the side pieces to hold the frame together, the combination of the inner frame locked together by means of slots in its longitudinal and transverse strips, the ends of the said strips forming the inner frames engaging the slots in the inner face of the outer frame, and a removable back held in position by means of the back pieces on the top and bottom, substantially as described.

3. A knockdown portable cabinet having a top and bottom or other removable parts adapted to be used as a box for packing the other parts, substantially as described.

4. A knockdown portable cabinet having a top and bottom or other removable parts adapted to be used as a box, in combination with slotted arms on one part adapted to engage pins on the other part, substantially as described.

478,542. PIPE-WRENCH. MILFORD J. WILSON, Painesville, Ohio. Filed Nov. 16, 1891. Serial No. 412,102. (No model.)



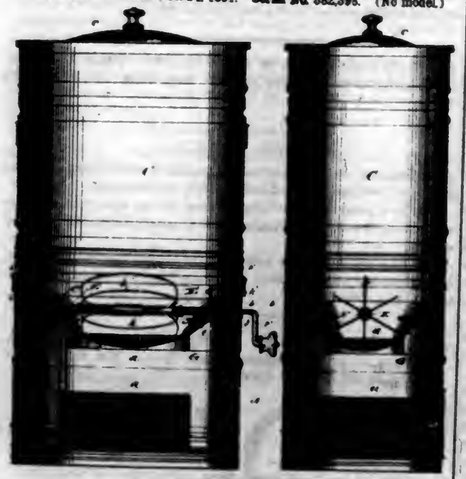
Claim.—1. A pipe-wrench comprising a shank having a fixed jaw integral therewith and extending laterally therefrom, a sleeve movable on said shank, and a movable jaw having extended sides straddling the shank and pivoted to the sleeve at one side of the shank in a line perpendicular to the meeting faces of the jaws, substantially as described.

2. In a pipe-wrench, the movable jaw *e*, pivoted to the sleeve, in combination with the springs *l* and *m*, arranged as described and operating conjointly with the means for opening and closing the jaws, whereby a sufficient amount of take-up is provided for easily and readily gripping and releasing the jaws, as and for the purpose substantially as described.

3. In a pipe-wrench, the combination, with the shank terminating in the jaw *f*, of a sleeve sliding on said shank and having shoulders *c′*, an adjustable jaw *e*, having sides *e′ e²* extending on both sides of the shank and pivoted to the sleeve adjacent to the shoulders *c′*, and springs *l*, fastened to the fixed jaw and bearing against the movable sides *e′ e²*, substantially as described.

4. A pipe-wrench comprising the shank *b*, having a fixed jaw *f*, the sleeve *c*, movable thereon and having a perforated lug of substantially the same thickness as the shank and parallel therewith, and a movable jaw *e*, having extended sides *e′ e²* lying on each side of the shank and pivoted to the lug on the sleeve at *j*, whereby the sides *e′ e²* do not project laterally, thereby making the wrench more compact and handy, substantially as described.

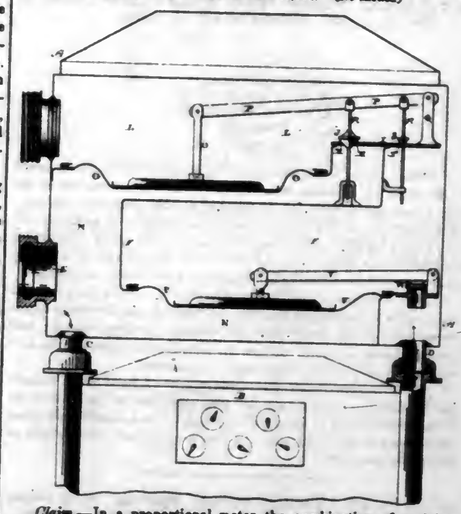
478,543. COMBINED FLOUR BIN AND SIEVE. ABRAHAM WOLFF, Chicago, Ill. Filed Feb. 24, 1891. Serial No. 382,393. (No model.)



Claim.—1. A flour-bin having the margin of its bottom inclined downward toward the center and having tubular bearings therein at points diametrically opposite and in register with each other, a concave sieve in the center of the said bottom, a downwardly-projecting skirt surrounding said sieve, a hollow shaft or sleeve journaled in said bearings, and a transverse shaft passing longitudinally through said sleeve of such length that it can extend beyond the sides of the bin, where it is provided with a crank with which to turn it, and agitators projecting therefrom, in combination with a sub-chamber placed under said bin, an angle-iron secured to the inner surface of the shelf thereof, upon which the edges of said bin rest, and a suitable flour-receptacle therein, as set forth.

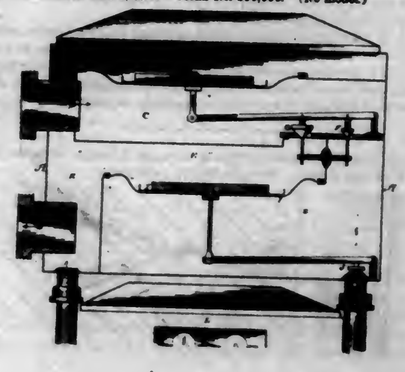
2. A flour-bin having the margin of its bottom inclined downward toward its center, having tubular bearings at points diametrically opposite and in register with each other, a concave sieve in the center of said bottom, downwardly-projecting skirts surrounding said sieve, and a hollow shaft or sleeve journaled in said bearings, in combination with a sub-chamber placed under and surrounding said bin, having an opening in its side in transverse register with the bearings in the inclined margin of the bottom of the bin, an angle-iron secured to the inner surface of the shelf thereof, upon which the lower edges of the said bin rest, a transverse shaft which is inserted through said opening and passes longitudinally through and is secured to said sleeve and is of such length that its outer end is formed into a crank, and a suitable flour-receptacle in said sub-chamber, as set forth.

478,544. PROPORTIONAL METER. FRED E. YOUNGS, Allegheny, Pa. Filed Aug. 2, 1889. Serial No. 319,591. (No model.)



Claim.—In a proportional meter, the combination of an inlet-chamber, an outlet-chamber, a meter-delivery chamber, a tally-meter, a weighted diaphragm U, placed between the inlet-chamber and meter-delivery chamber, a valve placed between the tally-meter and meter-delivery chamber and operated by the weighted diaphragm U in such a manner as to cause a constant fall or difference of pressure between inlet-chamber and meter-delivery chamber, a weighted diaphragm G, placed between the inlet-chamber and outlet-chamber, a proportional valve, one opening of which is placed between the inlet-chamber and outlet-chamber, and the other opening placed between the meter-delivery chamber and the outlet-chamber and operated by the weighted diaphragm G in such a manner as to cause a constant difference or fall of pressure between the inlet and outlet chambers and between the meter-delivery and outlet chambers, substantially as described.

478,545. PROPORTIONAL METER. FRED E. YOUNGS, Pittsburg, Pa. Filed Feb. 8, 1890. Serial No. 339,866. (No model.)



Claim.—1. In a proportional meter, the combination of an inlet-chamber, an outlet-chamber, a meter-feeding chamber, through which a portion of the gas passes to be measured, a tally-meter, proportional valves, and a weighted diaphragm which operates them, a valve for controlling the flow from the feeding-chamber to the tally-meter, and a weighted diaphragm which operates it, substantially as shown and described.

2. In a proportional meter, the combination of an inlet-chamber, an outlet-chamber, proportional valves, a weighted diaphragm placed between the inlet and outlet chambers, which operates the proportional valves, a meter-feeding chamber, a tally-meter, a valve placed between the meter-feeding chamber and the tally-meter, and a weighted diaphragm placed between the meter-feeding chamber and the outlet-chamber for operating it, all combined to operate in the manner substantially as specified.

473,546. SURGICAL PUMP. WILLIAM G. CARROLL, Chicago, Ill. Filed Aug. 11, 1891. Serial No. 402,403. (No model.)



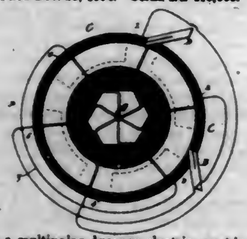
Claim.—1. In a surgical pump, the combination of the standard F, the crank D, provided with the slot M to receive the end of the axle L, and the thumb-screw N, adapted to hold and secure the traveling roller and its axle to such handle, substantially as specified.

2. In a surgical pump, the combination of the crank D, provided with the thumb-screw I and the plate K for the purpose of adjusting the pressure of the roller upon the tubing, substantially as specified.

3. In a surgical pump, the combination of a crank bent twice at right angles for operating the same, the plate K and devices to adjust the pressure of the roller upon the tubing, operating between said crank and said plate, and devices for securing the roller and its axle adjustably to the crank, substantially as specified.

4. In a surgical pump, the combination of a hinged crank to operate the same, provided with a slot adapted to receive the head of the thumb-screw N and to permit the folding of such handle only when the pressure of the roller upon the tubing is released, substantially as shown and described.

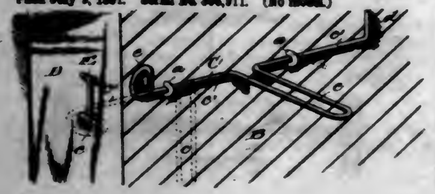
473,547. DYNAMO-ELECTRIC MACHINE. WARD DECKER, Owego, N. Y. Filed Nov. 26, 1891. Serial No. 413,063. (No model.)



Claim.—1. In a multipolar dynamo-electric machine, the combination, with a series of armature-coils, all electrically connected together at one end, of a cross-connected commutator the sections of which are connected, respectively, with the opposite or free ends of the coils, for the purpose set forth.

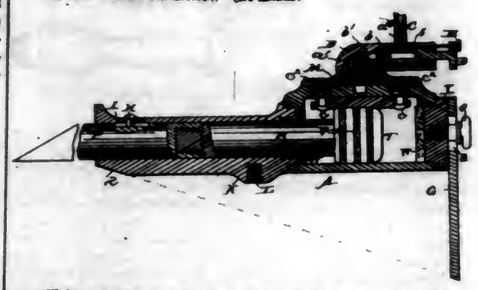
2. In a multipolar dynamo-electric machine, the combination, with a series of armature-coils, all electrically connected together at one end, of a cross-connected commutator, the adjacent sections of which overlap each other, the sections being connected, respectively, with the opposite or free ends of the coils, substantially as described.

473,548. DOOR-FASTENER. PULASKI FARWELL, Frederick, Ill. Filed July 9, 1891. Serial No. 398,911. (No model.)



Claim.—A door-fastener consisting of a piece of metal having horizontal portions, a handle extending at right angles thereto near its center and at one end a loop bead or eye independent of said handle and at right angles to the main portion and to the said handle, as set forth.

473,549. CHISELING, DRILLING, OR PROSPECTING MACHINE. WILLIAM GREENE, San Diego, Cal. Filed Apr. 13, 1890. Renewed Mar. 28, 1892. Serial No. 426,857. (No model.)



Claim.—1. The combination of the main cylinder A, formed at its upper side with the valve-seat M, the passages *d* and *d'* and the exhaust-passage *z*, having their inner upper ends opening on a transverse line across the center of the valve-seat M, the forward and rear tappet-valves *c* and the ports controlled by the same, the curved grooves N, leading from said ports to points on a line with the center of the valve-seat M, the steam-chest B, having the end ports *j* and *j'* communicating with the curved grooves N, the piston *a*, having the reduced central port *a'* and the end ports *g* and *g'* and having the recess a^3 in its under side, the slide-valve *f*, and the small spiral spring mounted in the recess a^3 of the piston *a* and bearing down upon the slide-valve, substantially as set forth.

2. The combination of the steam-chest formed with the tubular projection 5, the feed-pipe rising from the said projection, the throttle-valve mounted in the tubular projection, and means for holding the said throttle-valve closed, substantially as set forth.

3. In a rock-drill, the combination of the cylinder having its rear end provided with the diametrical groove, and a standard adjustably secured in said groove, substantially as set forth.

473,550. GLOBE OR SHADE HOLDER. DUANE H. GLEASON, Brooklyn, N. Y. Filed July 29, 1891. Serial No. 401,109. (No model.)

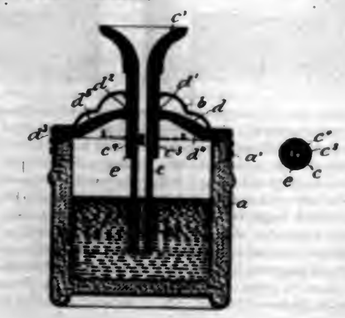


Claim.—1. In a globe or shade holder, a band having arms cut therefrom and bent outward, substantially as described.

2. In a globe or shade holder, a band having arms cut therefrom and bent outward, in combination with a gallery, substantially as described.

3. In a globe or shade holder, a band having arms cut therefrom, in combination with a gallery having a tongue cut therefrom, substantially as specified.

473,551. INKSTAND. JOHN W. GRANTLAND, Philadelphia, Pa., assignor to Arthur J. Ingraham, same place. Filed Sept. 25, 1891. Serial No. 406,794. (No model.)



Claim.—1. In an inkstand, a cap, a movable ink-tube provided with a valve and with a perforation in the wall of said tube, and an arched or convex and centrally-perforated resilient disk connected with said ink-tube and interposed between the cap and inkstand, for the purposes set forth.

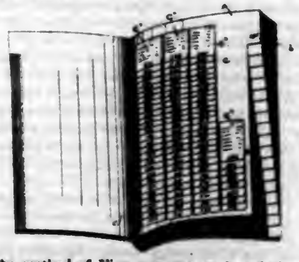
2. In an inkstand, a cap, a movable ink-tube, and an arched or convex and centrally-perforated resilient disk provided with reinforced rims, radial ribs, and webs connecting said rims and ribs, substantially as and for the purposes set forth.

3. In an inkstand, a cap, an arched or convex and centrally-perforated resilient disk provided with reinforced rims, radial ribs, and webs connecting said rims and ribs, and a movable ink-tube having a perforation in the lower part of the wall thereof, for the purposes set forth.

4. In an inkstand, a cap, an arched resilient disk, and a movable ink-tube having a valve consisting of a bar extending across the interior of said tube and formed integral at its extremities with the side walls thereof, substantially as and for the purposes set forth.

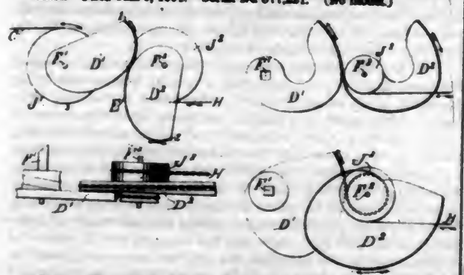
5. In an inkstand, a cap, a movable ink-tube, and an arched or convex and centrally-perforated resilient disk provided with reinforced rims, radial tapering ribs, and webs connecting said ribs and rims, substantially as and for the purposes set forth.

473,552. METHOD OF FILING PHYSICIANS' PRESCRIPTIONS. WALTER R. HALL, San Francisco, Cal. Filed Aug. 26, 1891. Serial No. 403,795. (No specimens.)



Claim.—The method of filing prescriptions in orderly sequence, which consists in attaching the prescription-slips by one edge to a sheet or leaf in a row or column one upon or over the other, one slip partly overlapping the slip next beneath, then consecutively numbering the slips in the row or column upon their uncovered portions exposed to view beginning with the lowest or first attached prescription-slip in regular order, and finally indexing the sheet or leaf when filled by marking on the margin the first and last numbers of the prescription-slip contained on that sheet or leaf.

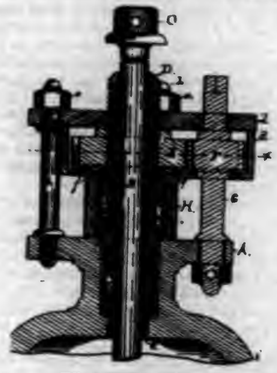
473,553. MECHANISM FOR OPERATING BRAKES. GEORGE HARRISON, Cleveland, Ohio, assignor to Charles Edgar Lamb, Winthrop, Mass. Filed Jan. 9, 1891. Serial No. 377,221. (No model.)



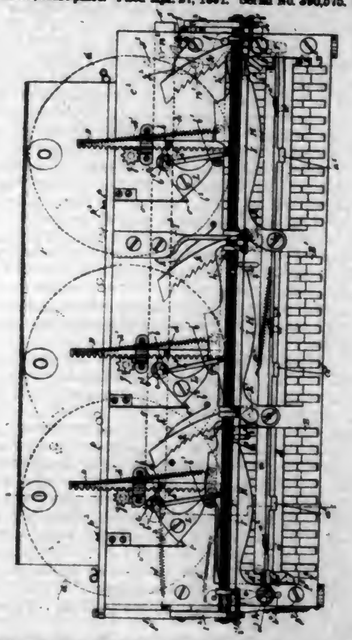
Claim.—The combination of the two disks D' and D^2, pivoted eccentrically and geared to each other, as described, having pulleys or axles F' and F^2, provided with power and brake chains, respectively, all substantially as set forth.

473,554. VALVE-PACKING DEVICE. EDGAR P. HOLLY, Springfield, Mass., assignor to himself, Alvin M. Cushing, and William R. C. Pearsons, same place. Filed Oct. 1, 1891. Serial No. 407,463. (No model.)

Claim.—A packing device comprising a chambered stuffing-box to contain packing, a vertical packing-follower therein resting on the packing, the upper end guided by a positively-fixed plate or flange, said follower threaded on its outer circumference, freely fitting a gear that matches and connects with a pinion-standard, said pinion-standard having a position vertical or parallel to follower and for its upper guide the plate or flange and for its lower bearing the stuffing-box flange, a sleeve interposed between the gear and stuffing-box to retain said gear in the same relative position to stuffing-box, so that by turning the pinion-standard to the right or left the follower will be correspondingly raised or depressed, for the purpose described and set forth.



473,555. CASH REGISTER AND INDICATOR. WILL R. JOHNS, Boston, Mass., assignor of two-thirds to Peter F. Keegan and Charles H. Little, same place. Filed Apr. 27, 1891. Serial No. 390,575. (No model.)



Claim.—1. In a cash indicator and register, the combination of a series of key-levers turning upon a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a detent by which the rocking frame is prevented from retrograde movement after the partial operation of a key until the rocking frame has completed its whole upward stroke, the key-levers all being free on their fulcrum during the entire movement, whereby the upward stroke may be completed by the continued operation of the same key or by any other key, and means for releasing the detent from engagement with the rocking frame upon completion of its upward movement, substantially as described.

2. In a cash indicator and register, the combination of a series of key-levers turning upon a fulcrum-rod, a rocking frame raised by depression of any one of the keys, a detent by which the rocking frame is prevented from retrograde movement after the partial operation of a key until the rocking frame has completed its full upward movement.

the key-levers all being free on their fulcrum during the entire movement, whereby the upward stroke may be completed by the continued operation of the same key or by any other key, and means for releasing the detent from engagement with the rocking frame upon completion of its upward movement, the indication and registration being governed by the last operated key only, substantially as described.

3. In a cash indicator and register, the combination of a series of key-levers turning upon a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a pendent ratchet-bar which prevents retrograde movement of the rocking frame after the partial operation of a key until the rocking frame has completed its full upward movement, the key-levers all being free on their fulcrum during the entire movement, whereby the upward stroke may be completed by the continued operation of the same key or by any other key, and means for releasing the pendent ratchet from engagement when the full upward movement of the rocking frame is completed, the indication and registration being governed by the last operated key only, substantially as described.

4. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a sliding bar on said rocking frame, which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, and means for releasing the sliding bar from engagement with the ratchet-bar when the full upward movement is completed and allowing the rocking frame to descend, substantially as described.

5. In a cash indicator and register, the combination of a series of key-levers turning upon a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar to its full upward stroke and turn the dial back to zero, and means by which when the key is released the rack is allowed to descend a distance varying according to the key being operated, the pinion and disk rotating forward through an arc varying according to the descent of the rack and exposing the number to be indicated, substantially as described.

6. In a cash indicator and register, a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any one of the keys will raise the rack-bar its full upward stroke and turn the dial back to zero, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released after a full depression of the key, and a stop which checks the descent of the rack-bar at a point according to the key being operated, the pinion and indicator rotating forward through an arc varying according to the number of the key operated, substantially as described.

7. In a cash indicator and register, a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a vertically-reciprocating rack-bar raised by the rocking frame, said rack bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of a key will raise the rack-bar its full upward stroke and turn the dial backward to zero, an escapement-pawl which engages with the rack-bar and prevents its descent until its full upward stroke is completed and which prevents any upward movement again after the descent has begun until the next key is operated, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released after a full depression of the key, and a stop which limits the descent of the rack bar according to the key being operated, the pinion and indicator rotating forward through an arc varying according to the number of the key operated, substantially as described.

8. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a detent by which the rocking frame is prevented from retrograde movement after the partial operation of a key until the full upward movement of the rocking frame is completed, which completion may be accomplished by the further depression of the same key by which the stroke was begun or by the depression of any other key in the series, the registration being governed by the last-operated key, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar to its full upward stroke and turn the disk back to zero, means by which when the key is released the rack is allowed to descend a distance proportional to the number indicated by the key being operated, and a detent for holding the rack at that point, the indicator-disk rotating forward through an arc varying according to the descent of the rack, substantially as described.

9. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a pendent ratchet-bar which prevents the retrograde movement of the rocking frame after the partial operation of a key until the full upward movement of the rocking frame is completed, which completion may be accomplished either by the further depression of the same key by which the operation was begun or by depression of any other key in the series, the registration being governed by the last operated key, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward stroke and turn the indicator-disk back to zero, means by which when the key is released the rack is allowed to descend a distance proportional to the number indicated by the key being operated, and a detent for holding the rack at that point, the indicator-disk rotating forward through an arc varying according to the descent of the rack, substantially as described.

10. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a sliding bar on said rocking frame which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, and means for releasing the sliding bar from engagement with the ratchet-bar when the full upward movement is completed and allowing the rocking frame to descend, a vertically-reciprocating rack-bar raised by a projection on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward stroke and turn the indicator-disk back to zero, and means by which when the key is fully depressed the projection on the sliding bar is removed from beneath the rack and the rack is allowed to descend a distance proportional to the number indicated by the key being operated, the indicator-disk rotating forward through an arc varying according to the descent of the rack, substantially as described.

11. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a pendent ratchet-bar which prevents the retrograde movement of the rocking frame after the partial operation of a key until the full upward movement of the rocking frame is completed, which completion may be accomplished either by the further depression of the same key by which the operation was begun or by depression of any other key in the series, the registration being governed by the last-operated key, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack bar its full upward stroke and turn the dial back to zero, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released after a full depression of the key, and a stop which checks the descent of the rack-bar when the rack-bar descends at a point according to the key being operated, the indicator rotating forward through an arc varying according to the descent of the rack, substantially as described.

12. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a sliding bar on said rocking frame which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, and means for releasing the sliding bar from engagement with the ratchet-bar when the full upward movement is completed and allowing the rocking frame to descend, a vertically-reciprocating rack-bar raised by a projection on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward stroke and turn the indicator-disk back to zero, and means by which when the key is released the rack is allowed to descend a distance proportional to the number indicated by the key being operated, the indicator-disk rotating forward through an arc varying according to the descent of the rack, substantially as described.

13. In a cash indicator and register, the combination of a series of key-levers, a rack raised to the full upward limit of its stroke upon depression of any one of the keys, and a shaft carrying an indicator-disk and geared to engage with the rack, so that the disk turns back to the zero position when the rack rises, the rack descending after full depression of a key a distance varying according to the number of the key operated and rotating the disk forward a corresponding distance, substantially as described.

14. In a cash indicator and register, a series of key-levers, a rocking frame raised by depression of any one of the keys, a sliding bar connected with the rocking frame, a rack-bar lifted to its full upward stroke by the sliding bar upon depression of any key, and a shaft carrying an indicator-disk, said rack-bar being geared to the shaft, so that the indicator-disk turns back to the zero position upon depression of any key, the rack then descending and the indicator-disk rotating forward a distance varying with the key operated, substantially as described.

15. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by depression of one of the keys, a sliding bar on said rocking frame reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents retrograde movement of the rocking frame until the full upward movement is completed, a vertically-reciprocating rack-bar raised by a projection on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, and means for releasing the sliding bar when the full upward movement is completed and throwing the projection on the bar out of line with the rack, substantially as described.

16. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a pendent ratchet-bar which prevents the retrograde movement of the rocking frame after the partial operation of a key until the full upward movement of the rocking frame is completed, which completion may be accomplished either by the further depression of the same key by which the operation was begun or by depression of any other key in the series, the registration being governed by the last-operated key, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward stroke and turn the dial back to zero, an escapement-pawl which engages with the rack-bar and prevents its descent until the full upward stroke is completed and which prevents any upward movement again after the descent has begun until a new operation of a key, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released after full depression of the key, and a stop which limits the descent of the rack-bar according to the key being operated, the indicator rotating forward through an arc varying according to the number of the key operated, substantially as described.

17. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a sliding bar on said rocking frame, which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents the retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, and means for releasing the sliding bar from engagement with the ratchet-bar when the full upward movement is completed and allowing the rocking frame to descend, a vertically-reciprocating rack-bar raised by a projection on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward stroke and turn the indicator-disk back to zero, an escapement-pawl which engages with the rack-bar and prevents its descent until the full upward stroke is completed and which prevents any upward movement again after the descent has begun until the next key is operated, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released after full depression of the key, and a stop which limits the descent of the rack-bar according to the key operated, the indicator rotating forward through an arc varying according to the number of the key operated, substantially as described.

18. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any key, a sliding bar on said rocking frame which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, and means for releasing the sliding bar from engagement with the ratchet-bar when the full upward movement is completed and allowing the rocking frame to descend, a vertically-reciprocating rack-bar raised by a projection on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk and a registering-wheel, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward stroke and turn the indicator-disk to zero, an escapement-pawl which engages with the rack-bar and prevents its descent until the full upward stroke is completed and which prevents any upward movement again after the descent is begun until the next key is operated, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released, and a stop which limits the descent of the rack-bar according to the key operated, the indicator rotating forward through an arc varying according to the number of the key operated and the registering-wheel being allowed to turn in one direction only and registering the desired amount, substantially as described.

19. In a cash indicator and register, the combination of two or more sets of key-levers turning on a common fulcrum-rod, a rocking frame raised by the depression of any one of the keys in any of the sets, a sliding bar on said rocking frame, which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents retrograde movement of the rocking frame until the full upward movement is completed, which completion may be accomplished either by the further depression of the same key by which the operation was begun or by depression of any other key in any of the sets, the registration being governed by the last-operated key only, a vertically-reciprocating rack-bar for each set of keys, the racks in all the sets being raised by projections on the sliding bar upon operation of any key, each rack-bar engaging with a pinion on a shaft carrying an indicator-disk and a registering-wheel, the rack-bars being so adjusted that the full depression of any key will raise all the rack-bars the full upward stroke and turn the indicator-disks to zero, an escapement-pawl which engages with each rack-bar and prevents its descent until the full upward stroke is completed and which prevents any upward movement again after the descent is begun until a new operation of a key, a graduated arm for each set, the one in the set to which the operated key belongs being also raised by said key, a ratchet-bar with which the graduated arm engages, a tripping device which disengages the graduated arm and re-engages it at a point corresponding with the key operated, and a device for tripping the escapement-pawl and allowing the rack belonging to the same set as the operated key to descend, and a stop which limits the descent according to the key operated, the indicator rotating forward through an arc varying according to the number of the key operated, the registering-wheel being allowed to turn in one direction only and registering the desired amount, the racks in the unoperated sets being all held at their raised position and with their disks remaining at zero until a key in that set is operated, substantially as described.

20. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a sliding bar on said rocking frame reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, a spring which reciprocates the sliding bar in the reverse direction upon completion of the upward stroke and brings the cam projection on the sliding bar on the reverse side of the pendent cam, disengaging the sliding bar from the pendent ratchet-bar and allowing the rocking frame to descend, a vertically-reciprocating rack-bar raised by projections on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of a key will raise the rack to its full upward stroke and turn the disk back to zero, an escapement-pawl which engages with the rack-bar and prevents its descent until its full upward stroke is completed, this engagement being effected by means of a spring-catch at the heel of the escapement-pawl and a slotted sliding bar, through the slot of which projects a pin on the escapement-pawl, this slotted sliding bar being reciprocated so as to act upon the said pin and engage the upper tooth of the escapement-pawl with the rack on its upward movement, the reciprocation of said slotted sliding bar being effected by means of the sliding bar on the rocking frame operating through the pendent ratchet-lever connected therewith and a reverse pendent lever between the ratchet-lever and the slotted sliding bar, a spring which reciprocates the slotted sliding bar in the reverse direction when the upward movement of the rocking frame is completed, an arm projecting from the upper tooth of the escapement-pawl toward the rear, a swinging bar acted upon by the key-lever at the latter part of its upward stroke to strike the said projecting arm on the pawl and disengage the upper tooth from the rack, allowing the descent and preventing the ascent of the rack, a graduated arm which is also raised by the key-lever, a ratchet-bar with which a pin on the graduated arm engages when the key is released after a full depression of the key, and a stop which limits the descent of the rack-bar according to the key being operated, the pinion and indicator rotating forward through an arc varying according to the number of the key operated, substantially as described.

21. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of one of the keys, a graduated arm raised by the key-lever, a ratchet-bar with which the graduated arm engages, a swinging bar raised by the key-lever and having a tripping device which disengages the ratchet-bar from the graduated arm and holds it in position for

re-engagement at a point graduated according to the key operated, substantially as described.

22. In a cash indicator and register, the combination of an indicator-disk and a registering-wheel on the same shaft, the indicator-disk being fixed to the shaft and rotating in either direction with it, the registering-wheel being loose on the shaft, a series of key-levers, and mechanism by which upon the operation of any key the disk is automatically turned to zero position and then rotates in the reverse direction through an arc varying with the key operated, substantially as described.

23. In a cash indicator and register, the combination of an indicator-disk and a registering-wheel on the same shaft, the indicator-disk being fixed to the shaft and rotating in either direction with it, the registering-wheel being loose on the shaft, a series of key-levers, and mechanism by which the operation of a key-lever causes the shaft to rotate in one direction and then in the reverse direction, the first rotation causing the indicator-disk to turn to zero and the second rotation causing it to indicate the number of the key operated, a detent which prevents the registering-wheel from rotating in but one direction, and a ratchet-and-pawl device which causes the registering-wheel to rotate during one of the movements of the shaft and register the desired amount, substantially as described.

24. In a cash indicator and register, a series of key-levers, a rotating indicator-disk with numbers graduated according to the number of keys, mechanism by which the operation of a key causes the disk to rotate and expose the number corresponding to the key operated, a sliding blind with a reading-opening, through which the number indicated by the disk may be read at the end of the operation, and mechanism for causing the blind to slide and carry the reading-opening out of line with the numbers on the disk until completion of the operation, substantially as described.

25. In a cash indicator and register, a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the operation of one of the keys, a rotating indicator-disk with numbers graduated according to the number of the keys in the series, mechanism by which the operation of a key causes the disk to rotate and expose the number corresponding to the key operated, a sliding blind with an opening, through which the number is exposed at the conclusion of the operation of a key, a pivoted bell-crank lever with the end of one arm pivoted to the end of the blind-slide, the other arm of the bell-crank lever extending under the rocking frame, and means by which when the rocking frame is raised the said bell-crank lever is turned on its fulcrum and slides the blind, so that the reading-opening is out of alignment with the number during rotation of the disk and returns the blind to expose the proper number through the reading-opening at the conclusion of the rotation, substantially as described.

26. In a cash indicator and register, a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the operation of one of the keys, a rotating indicator-disk with numbers graduated according to the number of keys in the series, mechanism by which the operation of a key causes the disk to rotate and expose the number corresponding to the key operated, a sliding blind with a reading-opening, a pivoted bell-crank lever with the end of one arm pivoted to the end of the blind-slide, the other arm extending under the rocking frame, and a cam on the rocking frame, which engages with the lever as the rocking frame rises, turning the lever on its fulcrum and sliding the blind and bringing the reading-opening out of alignment with the numbers on the disk, the downward movement of the rocking frame returning the blind, substantially as described.

27. In a cash indicator and register, a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the operation of one of the keys, a rotating indicator-disk with numbers graduated according to the number of keys in the set, mechanism by which the operation of a key causes the disk to rotate and expose the number corresponding to the key operated, a sliding blind with a reading-opening, a pivoted bell-crank lever with the end of one arm pivoted to the end of the blind-slide, the other arm extending under the rocking frame, and a spring which turns the bell-crank on its fulcrum and slides the blind, bringing the reading-opening out of alignment with the numbers on the disk as the rocking frame rises, the downward movement of the rocking frame returning the blind, substantially as described.

28. In a cash indicator and register, a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the operation of one of the keys, a sliding bar on said rocking frame, which is reciprocated by the upward movement of the rocking frame, a pendent ratchet-bar which engages with the sliding bar and prevents the retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, and means for releasing the sliding bar from engagement with the ratchet-bar when the full upward movement is completed, a vertically-reciprocating rack-bar raised by a projection on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward stroke and turn the indicator back to zero, an escapement-pawl which engages with the rack-bar and prevents its descent until the full upward stroke is completed and which prevents any upward movement again after the descent is begun until a key is again operated, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released after full depression of the key, a stop which limits the descent of the rack-bar, according to the key operated, the indicator rotating forward through an arc varying according to the number of the key operated, a sliding blind with an opening, through which the number on the disk is exposed at the conclusion of the operation of a key, a bell-crank lever, with the end of one arm pivoted to the end of the blind-slide, the other arm of the bell-crank extending under the rocking frame, a device which when the rocking frame is being raised turns the bell-crank on its fulcrum and slides the blind to carry the reading-opening out of alignment with the numbers on the indicator while the disk is rotating, and a device which turns the lever in the reverse direction on its fulcrum and returns the blind to expose the proper number through the reading-opening at the conclusion of the operation substantially as described.

29. In a cash indicator and register, a series of keys numbered to indicate different amounts, a registering-wheel and a carrying-wheel normally in gear and connected with the keys by intermediate mechanism, so as to register the number of the key operated in addition to the amount previously registered on said wheels, the carrying-wheel being fixed on a shaft which is adapted to move axially in its bearings, a finger-piece on said shaft, whereby the said shaft may be pushed inwardly, throwing the carrying-wheel out of gear with the registering-wheel and whereby the carrying-wheel may be rotated freely in either direction and set at zero, the registering-wheel being adapted to be set at zero by operation of a key, and a spring acting upon said carrying-wheel to return it into gear with the registering-wheel when the finger is removed, substantially as described.

30. In a cash indicator and register, a series of keys numbered to indicate different amounts, a registering-wheel and a train of carrying-wheels normally in gear with the registering-wheel and connected with the keys by intermediate mechanism, so as to register the number of the key operated in addition to the amount previously registered, the first carrying-wheel being fixed on a shaft which is adapted to move axially in its bearings, a finger-piece on said shaft, whereby the said shaft may be pushed inwardly, throwing the carrying-wheels out of gear with the registering-wheel and leaving them in gear with each other, whereby the carrying-wheels may be rotated freely in either direction and all set at zero, the registering-wheel being adapted to be set at zero by operation of a key, and a spring acting upon the first carrying-wheel to return all the carrying-wheels into gear with the registering-wheel when the finger is removed, substantially as described.

31. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any one of the keys will raise the rack-bar its full upward stroke and turn the disk back to zero, a graduated arm which is also raised by the key-lever, a ratchet-bar with which the graduated arm engages when the key is released after a full depression of the key, and a stop which checks the descent of the rack-bar at a point according to the key operated, the indicator rotating forward through an arc varying according to the number of the key operated, and an additional key-lever which when operated raises the rocking frame and the rack-bar to their full upward limit, turning the indicator-disks in the series all back to zero, but without changing the engagement of the graduated arm with the ratchet-bar, and a detent which holds the rack-bar at its elevated position with the disks, all remaining at zero after the return of the key, substantially as described.

32. In a cash indicator and register, the combination of two or more sets of key-levers turning on a common fulcrum-rod, a rocking frame raised by the depression of any one of the keys in any of the sets, a detent by which the rocking frame is prevented from retrograde movement after the partial operation of a key until the full upward movement is completed, which completion may be accomplished either by the further depression of the same key by which the operation was begun or by depression of any other key in any of the series, the registration being governed by the last-operated key only, a vertically-reciprocating rack-bar for each set of keys, the rack-bar in each set being raised by the operation of any one of the keys in any one of the sets, each rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bars being so adjusted that the full depression of any one of the keys will raise all the rack-bars to their full upward limit and turn the disks all back to zero, means by which when the key is released the rack belonging to that set will descend a distance proportional to the number indicated by the key being operated, and a detent for holding the rack at that point, the indicator rotating forward through an arc varying according to the descent of the rack and exposing the number to be indicated, and a detent for holding the racks in the other sets at their elevated position without registering and with the disks remaining at zero until a key in that set is operated, substantially as described.

33. In a cash indicator and register, the combination of two or more sets of key-levers turning on a common fulcrum-rod, a rocking frame raised by the depression of any of the keys in any of the sets, a detent by which the rocking frame is prevented from retrograde movement after the partial operation of a key until the full upward movement is completed, which completion may be accomplished by the further depression of the same key with which the operation was begun or by depression of any other key in any of the sets or by simultaneous operation of a key in each of the sets, a vertically-reciprocating rack-bar for each set of keys, the rack-bar in each set being raised by the operation of any one of the keys in any of the sets or by simultaneous operation of a key in each set, each rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bars being so adjusted that the full depression of the keys operated will raise all the rack-bars to their full upward limit and turn the disks all back to zero, means by which when the keys are released the racks belonging to the same set as those keys will each descend a distance proportional to the number indicated by its respective key, and a detent for holding the rack at that point, the indicator-disks rotating forward through an arc corresponding to the descent of the respective racks and each exposing the number corresponding to the key which has been operated in that set, substantially as described.

34. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a sliding bar on said rocking frame, which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar fixed on a shaft and engaging with the sliding bar to prevent retrograde movement of the rocking frame until the full upward movement of the rocking frame is completed, a bell, a bell-hammer connected with the shaft of the said pendent ratchet-bar and vibrating with the ratchet-bar, a spring connected with the pendent ratchet-bar, which allows it to yield to the thrust of the sliding bar and partially turn the shaft, the spring throwing the ratchet-bar back to engage its notches with the sliding bar, the upper notch allowing a greater throw than the lower notches and causing the hammer to strike the bell, a vertically-reciprocating rack-bar raised by projections on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, and a registering-wheel carried on the same shaft as the indicator-disk, all co-operating so that a single stroke operates the indicator-disk, the registering-wheel, and the bell, substantially as described.

35. In a cash indicator and register, the combination of a series of key-levers turning on a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a sliding bar on said rocking frame, which is reciprocated by a pendent cam on the upward movement of the rocking frame, a pendent ratchet-bar fixed on a shaft and engaging with the sliding bar to prevent retrograde movement of the rocking frame until completion of the upward movement, a bell, a bell-hammer connected with the shaft of the said ratchet-bar, which allows it to yield to the thrust of the sliding bar and partially turn the shaft, the spring throwing the ratchet-bar back to engage its notches with the sliding bar, the upper notch being of such depth as to allow a greater throw than the lower notches and cause the hammer to strike the bell, a vertically-reciprocating rack-bar raised by a projection on the sliding bar, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar its full upward movement and turn the indicator-disk back to zero, an escapement-pawl which engages with the rack-bar and prevents its descent until the full upward movement is completed and which prevents any upward movement again after the descent has begun until the next key is operated, a ratchet-bar with which the graduated arm engages when the key is released after full depression of the key, and a stop which limits the descent of the rack-bar, according to the key operated, the indicator rotating forward through an arc varying according to the number of the key operated, and a registering-wheel carried on the same shaft as the indicator-disk, all co-operating so that a single stroke operates the indicator, the registering-wheel, and the bell, substantially as described.

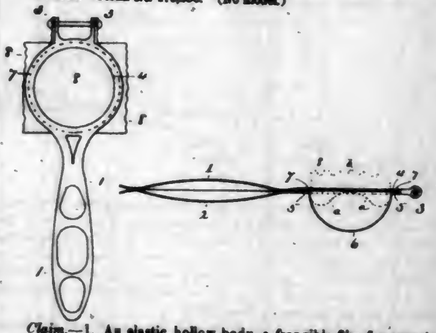
36. In a cash indicator and register, the combination of a series of key-levers, a rocking frame extending crosswise above the key-levers and raised by the depression of any one of the keys, a drawer, a bell-crank lever having one arm with a bolt pivoted thereto, which engages with the drawer, the other arm extending upward in front of the rocking frame, the rocking-frame bearing directly on the upright arm of the bell-crank and sweeping forward in its upward movement, carrying forward the upright arm of the bell-crank, turning it on its fulcrum and lifting the bolt, and a spring which is connected with the drawer and under tension when the drawer is closed and throws open the drawer when the bolt is withdrawn, substantially as described.

37. In a cash indicator and register, the combination of a series of key levers, a rocking frame extending crosswise above the key-levers and raised by depression of any one of the keys, a drawer, a bell-crank lever having one arm with a bolt pivoted thereto, which engages with the drawer, the other arm extending upward in front of the rocking frame, which engages with it and turns it on its fulcrum, lifting the bolt when a key is operated, a catch at the rear of the drawer with which the bolt engages, a shaft, a coiled spring connected with the shaft, and mechanism by which the closing of the drawer turns the shaft and winds the spring, the whole adapted so that upon depression of a key the bolt is withdrawn and the spring throws open the drawer, substantially as described.

38. In a cash indicator and register, the combination of a series of key-levers, a rocking frame extending crosswise above the key-levers and raised by depression of any one of the keys, a drawer, a bell-crank lever with one arm engaged by the rocking frame and turned on its fulcrum when a key is operated, the other arm having a bolt pivoted thereto, which locks the drawer, a shaft having a spring coiled thereon, and a chain connected with said shaft and with the drawer, whereby the act of closing the drawer rotates the shaft and winds the spring, the whole combined so that upon depression of a key the bolt is withdrawn and the drawer thrown open by the spring, substantially as described.

39. In a cash indicator and register, the combination of a series of key-levers turning upon a fulcrum-rod, a rocking frame raised by the depression of any one of the keys, a detent by which the rocking frame is prevented from retrograde movement after the partial operation of a key until the full upward movement is completed, which completion may be accomplished either by the further depression of the same key by which the operation was begun or by any other key in the series, the registration being governed by the last key operated, a vertically-reciprocating rack-bar raised by the rocking frame, said rack-bar engaging with a pinion on a shaft carrying an indicator-disk, the rack-bar being so adjusted that the full depression of any key will raise the rack-bar to its full upward movement and turn the indicator-disk back to zero, means by which when the key is released the rack is allowed to descend a distance varying according to the number of the key operated, turning the disk to indicate the corresponding number, a drawer, a bell-crank lever fulcrumed above the drawer, with the upright arm extending upward in front of the cross-bar, the other arm having a bolt pivoted thereto, a catch at the rear of the drawer with which the bolt engages, and a spring which is wound up by the closing of the drawer, the whole adapted so that depression of a key raises the cross-bar and turns the bell-crank, withdrawing the bolt, the spring throwing open the drawer, substantially as described.

473,556. TOY. JOHN B. KIELER, Minneapolis, Minn. Filed Jan. 16, 1892. Serial No. 418,253. (No model.)



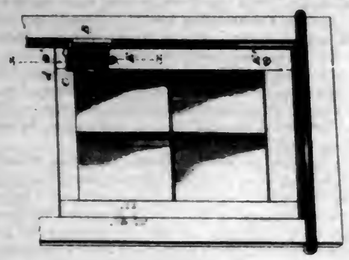
Claim.—1. An elastic hollow body, a frangible film for covering it, and hinged members for clamping the film on the hollow body, for the purpose set forth.

2. In a toy, a pair of hinged rings provided with handles and a flexible hollow body carried by one of the rings, the other ring being adapted to clamp a piece of paper on the opening of the hollow body, for the purpose set forth.

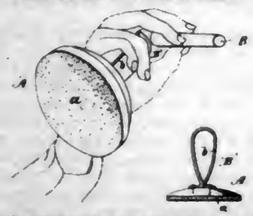
473,557. SASH-FASTENER. WILLIAM H. LYNCH, Denison, Tex. Filed Mar. 1, 1892. Serial No. 423,401. (No model.)

Claim.—In combination with the window-frame and the sash provided with the lugs or projections upon the outer face of one of its side rails, the block B, the plate C, hinged at one of its side edges to the said block and having its under face provided with recesses con-

cealed from the front opening at the ends of the plate, and the spring D, interposed between the frame and plate and secured to the plate and block and serving to normally hold the latter in contact with the outer face of the side rail of the sash in line with the lugs or projections thereon, substantially as described, and for the purpose specified.

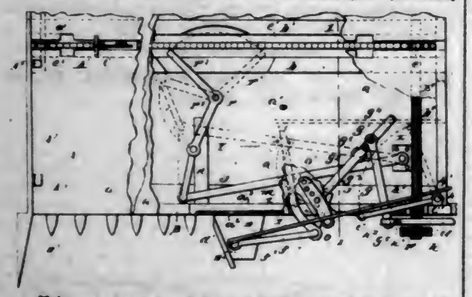


473,558. RUBBER FOR BLACKBOARDS. DORA B. MILLER, New Orleans, La. Filed Aug. 5, 1891. Serial No. 401,729. (No model.)



Claim.—The herein-described blackboard-rubber, having the rubbing-surface *a* and provided with the securing means B', situated opposite to the said rubbing-surface, by which the rubber is held at the edge of the hand of the operator, enabling it to be held and used by the same hand as the crayon, substantially and for the purposes set forth.

473,559. BUTT-BOARD FOR GRAIN-BINDERS. GEORGE SCHUBERT, Walnut, Tex. Filed Apr. 3, 1891. Serial No. 387,574. (No model.)



Claim.—1. A butt-board for grain-binders, supported by the arms A^1 and A^2, secured to the rod A, as shown, an arm *f*, pivoted to the bracket *f'* and having a stud f^3, provided with an arm *j*, and operated by an arm I, a stud g^2, secured in the platform, the arm I, secured to the bar J, the lever P, pivoted in the platform A and connected to the bar J by the connecting-rod *n*, and a conveyer moving in the platform, as and for the purpose described.

2. In a butt-board for grain-binders, the arms A^2 and A^3, pivoted with one end to the butt-board and with their other end to the harvester-frame or to the rod A, as shown, a lever *f*, pivoted to the butt-board D and provided with a stud f^3 and arm *j* and operated by the arm I, in connection with a stud g^2, all as shown, and for the purpose described.

3. In a butt-board for grain-binders, a lever *f*, pivoted to the butt-board D, as shown, and provided with a stud f^3, an arm *j*, secured thereto, in connection with a stud g^2, the arms A^2 and A^3, secured to the rod A and pivoted to the butt-board D, the bar J, provided with the arm I, the lever P, pivoted in the platform and connected to the bar J by a link or rod *n*, and a conveyer moving in said platform, for the purpose described.

4. In a butt-board for grain-binders, a bar J, pivoted in the platform and provided with the arm I, extending toward the front, in connection with lever *f*, pivoted to the butt-board D and provided with the arm *j*, a stud g^2, arms A^2 and A^3, as shown, a lever P, pivoted in the platform and connected to the bar J, and a conveyer moving in said platform, for the purpose described.

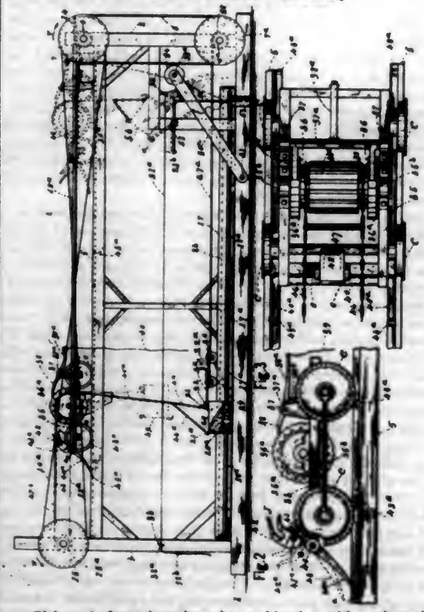
5. In a butt-board for grain-binders, a lever P, pivoted in the platform, a conveyer moving in said platform, a bar J, pivoted in the platform and connected to the lever P and provided with an arm I, in engagement with the stud f^3, the arms A^2 and A^3, pivoted to the butt-board, and lever *f*, pivoted to the butt-board and provided with the arm *j*, in connection with a stud g^2 and a pin *o*, as shown, and for the purpose described.

6. In a butt-board for grain-binders, a lever *g*, pivoted in the platform and provided with the arm g^3, having a stud g^2, perforations *o'* in the plate *a* to receive the stud g^2, a lever *f*, pivoted to the butt-board, provided with an arm *j*, and operated by the arm I, and arms A^2 and A^3, pivoted to the butt-board, as shown, and for the purpose described.

7. In a butt-board for grain-binders, a lever *g*, pivoted in the platform and projecting out from under the platform and provided with a shifting-bar *k*, as shown, with its other arm g^2 extending to near the arm I and provided with a stud g^3, as shown, perforations *o'* in the plate *a* to receive said stud, a lever *f*, pivoted to the butt-board, provided with an arm *j*, and operated by the arm I, and arms A^2 and A^3, pivoted to the butt-board, as shown, and for the purpose described.

8. In a butt-board for grain-binders, a lever *g*, pivoted in the platform and projecting from the edge of said platform, a shifting-bar *k*, attached to said projecting end, with its other arm g^2 extending to near the arm I and provided with a stud g^3, perforations *o'* in the plate *a* to receive said stud, a spring g^4, as shown, to prevent the disengaging of the stud g^2, a lever *f*, pivoted to the butt-board, provided with an arm *j*, and operated by the arm I, and arms A^2 and A^3, pivoted to the butt-board, substantially as described.

473,560. SALT-GRAINER. NATHAN S. SCOVILLE, Warsaw, N. Y. Filed May 6, 1891. Serial No. 391,765. (No model.)



Claim.—1. In a salt-grainer, the combination, with a salt-vat having a series of longitudinal heating-pipes in the bottom, of a salt-scoop having a perforated back and a longitudinal groove in the bottom adapted to fit over and slide along one of the heating-pipes, one or more cables connected with winding-drums for drawing it through the vat, and thereby filling it with salt, a chain connecting the scoop with a car located on a track above the vat, and mechanism, substantially as above specified, for raising the scoop when filled and carrying it forward and dumping the load, as described.

2. In a salt-grainer, the combination, with a salt-vat provided with a railway-track, of a salt-gathering scoop provided with hooks, a car adapted to run on said track, provided with a pivoted bail for engaging with the hooks on said scoop or being easily disengaged therefrom, a bolt for holding said bail in engagement with the hooks on the scoop or quickly releasing it, and a cable connected with winding-drums for drawing the scoop forward and filling it with salt, substantially as described.

3. A scoop for gathering salt, consisting of a box-shaped vessel open at the front and top and having a perforated back, hooks secured to the front portion, rings or holding devices located at the top, by which the suspending-chains are secured, hooks located at the lower rear sides, by which the scoop is damped, and a longitudinal groove on the under side, for the purposes described.

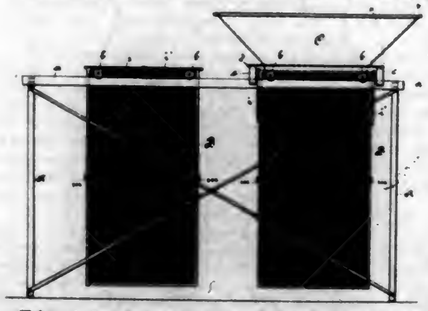
4. In a salt-grainer, a scoop for gathering salt in its forward movement through the salt-vat, open at the front and top and having a series of perforations in the back, hooks to receive a suitable means for drawing it forward, and a longitudinal groove at the bottom adapted to fit over the top and sides of a longitudinal steam-heating pipe located in the vat and along which the scoop is drawn and guided as it moves forward through the vat, substantially as described.

5. In a salt-grainer, a scoop for gathering the salt, having hooks at the lower rear portion, in combination with arms pivoted to the frame-work and carrying a cross-bar, a weight suspended by a flexible cord at the opposite end of the arms, a car located on a railway-track on the top frame for suspending and carrying the scoop, and a cable connected with the car and with a winding-drum for drawing the scoop forward and dumping it, substantially as described.

6. In a salt-grainer, the combination of a car connected by a cable with a winding-drum for moving it one way and by a double chain and sprocket-chain, with a salt-scoop, sprocket and ratchet wheels mounted on said car, pawls for holding or releasing said sprocket and ratchet wheels, a connecting cord or rope for moving said pawls out of engagement with the ratchet-wheels, arms at the front of the car for holding and preventing it from moving when drawing the scoop up, a pivoted cam operated by a cross-bar on the chains for releasing said arms from the track, so that the car can move either way, and a means, consisting of a cable and winding-drum, for drawing the car in the opposite direction, as described.

7. In a salt-grainer, the combination, with the car and mechanism consisting of a cable connected to a winding-drum for moving the car forward, of an arm pivoted substantially centrally to the upper forward end of the frame and having a rope 12, having one end connected to the rear end of the arm and the other end extending across the frame and secured to a permanent support, and a bar connecting with the clutch engaging and disengaging mechanism, having one end pivoted to said arm and the other end fitted in an opening at the opposite side of the frame to allow a longitudinal movement thereto, whereby a movement of the car forward as it passes against the cord 12 will disengage the coupling from the winding-drum, as described.

473,561. DUST AND ASH RECEPTACLE. FRANZ J. STEINWALD, Dresden, Germany. Filed Sept. 2, 1891. Serial No. 404,579. (No model.)



Claim.—1. In a device of the class described, the combination, with a suitable frame-work provided with a hopper and hinged lids or doors closing the bottom of the hopper, of a receptacle supported by said frame-work and adapted to be moved or slid upon the latter so as to occupy a position beneath the hopper, the receptacle being also adapted to be removed from said frame-work, said hinged lids or doors adapted to open downwardly within the receptacle and to automatically close in the manner described, for the purpose specified.

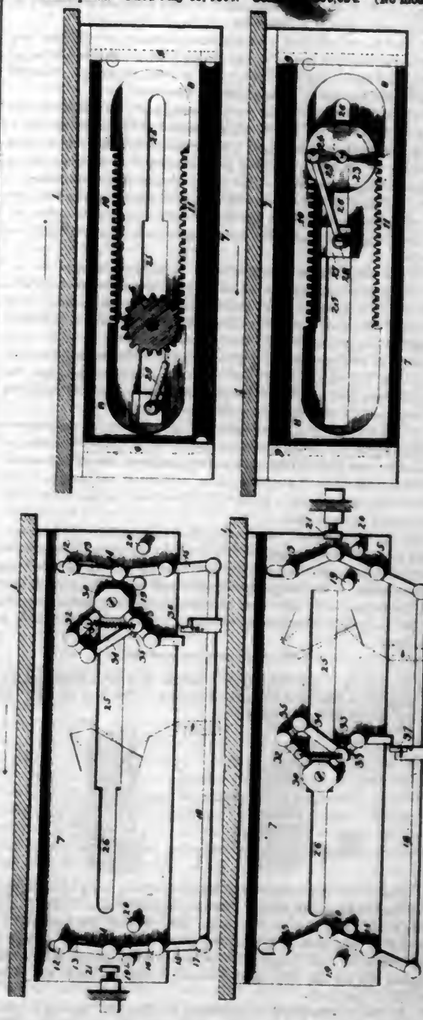
2. In a device of the class described, the combination, with a suitable frame-work provided with a hopper, of a receptacle adapted to be moved or slid upon said frame-work into a position beneath the hopper and to be removed from said frame-work, as and for the purpose specified.

3. In a device of the class described, the combination, with a suitable frame-work provided with a hopper, of a series of receptacles adapted to be moved or slid upon said frame-work successively into position beneath the hopper and to be removed from the frame-work, as and for the purpose specified.

4. In a device of the class described, the combination, with a suitable frame-work provided with a hopper hinged thereto and adapted to be swung thereupon in the manner described, of a receptacle supported by said frame-work and adapted to be moved or slid upon the latter so as to occupy a position beneath the hopper and to be removed from the frame when the hopper has been swung upwardly, as and for the purpose specified.

5. In a device of the class described, the combination, with a suitable frame-work provided with a hopper and suitable guide-rails, of a receptacle provided with rollers traveling upon said guide-rails and adapted to occupy a position beneath the hopper, as and for the purpose specified.

473,562. MECHANICAL MOVEMENT. JOHN H. STONEBATE, Millbury, Mass., assignor to the Stonebate Plasters' Machinery Company same place. Filed July 15, 1891. Serial No. 399,634. (No model.)



Claim.—1. In a mechanical movement, the combination of the gear, the double rising-and-falling rack co-operating therewith, means for raising and lowering said rack, and a crank mechanism connected to positively reverse the movement of said rack, substantially as described.

2. In a mechanical movement, the combination of the gear, the double rack co-operating with the same, and a toggle arranged to raise

and lower said rack, the knee of said toggle being adapted to strike a stationary part as the rack reaches its extreme of travel, substantially as described.

3. The combination of the reciprocating part, the rack-frame fastened to the same, the double rack sliding vertically on the rack-frame, the actuating-gear, and the double-connected toggle adapted as the reciprocating part reaches its extremes to strike against a fixed point and thus raise and lower the rack, substantially as described.

4. The combination of bed 1, frame 2, the rack-frame 7, fastened to the bed, the double rack mounted to move vertically in the rack-frame, the actuating coacting gear 6, and the double toggle 13 15 and connecting-rod 18, and the fixed screws 21, adapted to strike on the knee of the toggle as the bed reaches its extreme of travel in either direction, substantially as described.

5. In a mechanical movement, the combination of the gear, the double rack co-operating with the same, and a toggle arranged to raise and lower said rack, and a pin limiting the movement of the toggle so arranged that when the [illegible] is in its highest position the toggle will be slightly out of line [illegible] locked to resist downward pressure on the rack, substantially as described.

6. The combination, in a mechanical movement, of the gear, the double rack, the rack-frame in which said rack is mounted, the slider working in a slot in the rack-frame, and a crank connection between the said gear and slider, substantially as described.

7. The combination of the reciprocating part, the rack-frame attached to the same, the double rack mounted in the same, the actuating-gear, the slider working in a slot in the rack-frame, and a crank connection between said disk and gear, the length of the crank being the same as the pitch radius of the gear, substantially as described.

8. The combination of the bed, the rack-frame fastened to the same, the slider working in a slot in said rack-frame, the catches on said rack-frame, and means for actuating the slider, substantially as described.

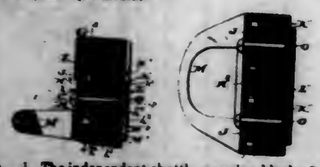
9. The combination of the bed, the rack-frame fastened to the same, the double rack and its actuating-gear, the slider working in a slot in the rack-frame, a crank connection between the gear and the slider, and the double set of catches mounted on the rack-frame, adapted to engage the slider in the manner specified.

10. The catches consisting of the connected pivoted bell-crank levers, means for holding the same normally in one position, and the actuating means consisting of the pawl adapted to engage one of the bell-crank levers, substantially as described.

11. In a mechanical movement, the combination of the reciprocating part, the actuating-gear, the double rack mounted on the reciprocating part and having clearance-spaces, and means for reversing the movement of the reciprocating part when the gear is in the clearance-spaces and not in mesh with either set of teeth on the rack, substantially as described.

12. In a mechanical movement, the combination of the reciprocating part, the actuating-gear, the double rack mounted on the reciprocating part and having clearance-spaces and means for reversing the movement of the reciprocating part, and means for moving said rack, both operating only when the rack is in the clearance-spaces and not in mesh with either set of teeth on the rack, substantially as described.

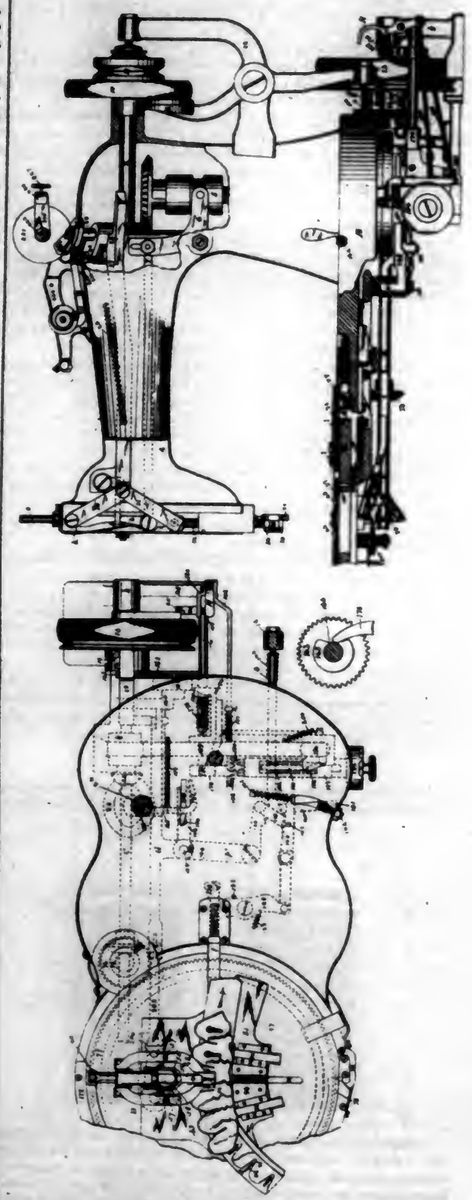
478,568. SWIVEL-LOOM. AUGUST WAGNER, Philadelphia, Pa., assignor to Schaum & Uhlinger, same place. Filed May 18, 1891. Serial No. 393,218. (No model.)



Claim.—1. The independent shuttle-carrying blocks formed with downwardly-extending flanges A^3 and horizontal flanges A^2, said flanges being made integral with the blocks and inclosing the L-shaped recesses A^4 A^5, and said blocks having also vertical recesses formed in their fronts, in combination with pinions J, journaled in the vertical recesses and having their teeth extending into groove A^2 and above the top of the block.

2. The shuttle-block H, consisting of a part H', having a downwardly extending flange A^3, with a horizontal flange A^2 extending from its bottom and inclosing groove A^5, a groove A^4 at the back of groove A^5, and recesses A in its front face to receive pinions J, said part being formed of one piece, in combination with a face-plate H^2, grooves or recesses A A' being formed between parts H' H^2 and pinions secured in said recesses A A' and extending into groove A^5, all substantially as and for the purpose specified.

478,564. BUTTONHOLE SEWING-MACHINE. EDWARD R. ALLEN, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed Oct. 30, 1891. Serial No. 410,305. (No model.)



Claim.—1. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism and a feeding mechanism for spacing the stitches along the edges of the buttonholes, of a work-holding device and a feeding device for advancing the work from one buttonhole-stitching position to another.

2. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism and a feeding mechanism for spacing the stitches along the edges of the buttonholes, of a work-holding device and an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another.

3. In a buttonhole sewing-machine, the combination, with a stitch-

forming mechanism and a work-clamping device, of an automatic feeding mechanism for advancing the buttonhole-piece relative to said clamping device to feed the work from one buttonhole-stitching position to another.

4. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and an automatic barring mechanism, of an automatic feeding mechanism for advancing the buttonhole-piece relative to said work-clamp to feed the work from one buttonhole-stitching position to another.

5. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism and a work-clamp, of a traveling work-holder, to which a buttonhole-piece may be secured, and an automatic feeding mechanism for advancing said work-holder relative to the said clamp to feed the buttonhole-piece from one buttonhole-stitching position to another.

6. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and a feeding mechanism for the latter, of a work-holder to which a buttonhole-piece may be secured, and an automatic feeding mechanism for advancing said work-holder relative to said clamp to feed the buttonhole-piece from one buttonhole-stitching position to another.

7. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and a feeding mechanism for the latter, of an automatic clamping and releasing mechanism, a work-holder to which a buttonhole-piece may be secured, and an automatic feeding mechanism for advancing said work-holder relative to said clamp when the latter is released to feed the buttonhole-piece from one buttonhole-stitching position to another.

8. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism and a feeding mechanism for spacing the stitches along the edges of the buttonholes, of an automatic buttonhole-cutting mechanism, a work-holder to which a buttonhole-piece may be secured, and an automatic feeding mechanism for advancing said work-holder to feed the work from one buttonhole-stitching position to another.

9. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and feeding mechanism for the latter, of an automatic buttonhole-cutting mechanism, a work-holder to which a buttonhole-piece may be secured, and an automatic feeding mechanism for advancing said work-holder to feed the work from one buttonhole-stitching position to another.

10. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and feeding mechanism for the latter, of an automatic clamp-returning mechanism, a work-holder to which a buttonhole-piece may be secured, and an automatic feeding mechanism for advancing said work-holder to feed the work from one buttonhole-stitching position to another.

11. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism and a work-holding device, of an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, a starting and stopping mechanism for said stitch-forming mechanism, and a second starting and stopping mechanism for said automatic work-feeding mechanism.

12. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism and a work-holding device, of an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, a starting and stopping mechanism for said stitch-forming mechanism, and a second starting and stopping mechanism to start and stop the said automatic work-feeding mechanism, said starting and stopping mechanisms being reciprocally connected so that each throws the other into and out of action to alternately start and stop the mechanisms with which they are connected.

13. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, an automatic buttonhole-cutting mechanism, and means for throwing said mechanisms into and out of action alternately, of an automatic feeding mechanism for advancing the work from one buttonhole stitching position to another and means by which said feeding and cutting mechanisms are automatically and successively thrown into action when the stitch-forming mechanism is stopped.

14. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, a feeding mechanism for advancing the work beneath the needle, and an automatic feeding mechanism serving to advance the work from one buttonhole-stitching position to another, of an automatically-operating buttonhole-cutter extending close up to the vertical plane of the needle, so that a buttonhole-slit formed thereby will be in position for the commencement of the sewing operation as soon as made, and thus no time will be required between the cutting and stitching operations to feed the buttonhole-slit up to the needle.

15. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, of a work-holding device, an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, tension devices for the buttonhole-threads, and automatic tension-releasing devices for removing the tension from said threads when the work is to be moved along to form a new buttonhole.

16. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, of a work-holding device, an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, tension devices for the buttonhole-threads, automatic tension-releasing devices for removing the tension from said threads when the work is to be moved along to form a new buttonhole, and an automatic pull-off or thread-unwinding mechanism to draw slack needle-thread from its spool when the work is thus automatically advanced.

17. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, of an automatic releasing and clamping mechanism for releasing the clamping-feet from the work when the latter is to be fed along to bring it into position for a new buttonhole and for returning said feet to their clamping positions when the buttonhole-piece advancing or feeding operation has been effected.

18. In a buttonhole sewing-machine, the combination, with the stitch-forming mechanism thereof, of a work-clamp, an automatic feeding mechanism for advancing the buttonhole-piece from one buttonhole-stitching position to another, an automatic buttonhole-cutting mechanism, an automatic clamping and clamp-releasing mechanism, and alternately-acting automatic starting and stopping mechanism for said stitch-forming mechanism and for the said automatic feeding, cutting, and clamping and clamp-releasing mechanisms, whereby when a buttonhole-piece has been placed in position by the operator a series of buttonholes may be automatically cut and stitched, the work being automatically clamped and unclamped and automatically fed from one buttonhole-stitching position to another when unclamped, the stitch-forming mechanism being stopped when the automatic feeding and cutting mechanisms are operating, and vice versa.

19. In a buttonhole sewing-machine, the combination, with the stitch-forming mechanism thereof, of a work-clamp, an automatic barring mechanism, an automatic feeding mechanism for advancing the buttonhole-piece from one buttonhole-stitching position to another, an automatic buttonhole-cutting mechanism, an automatic clamping and clamp-releasing mechanism, an alternately-acting automatic starting and stopping mechanism for said stitch-forming and barring mechanisms and for the said automatic feeding, cutting, and clamping and clamp-releasing mechanisms, whereby when a buttonhole-piece has been placed in position by the operator a series of buttonholes may be automatically cut, stitched, and barred, the work being automatically clamped and unclamped and automatically fed from one buttonhole-stitching position to another when unclamped, the stitch-forming mechanism being stopped when the automatic feeding and cutting mechanisms are operating, and vice versa.

20. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, of a work-holding device, an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, an automatic stopping mechanism, and an adjustable automatic governing device acting on said stopping mechanism to effect a stoppage of the machine when a predetermined number of buttonholes has been worked.

21. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, of a work-clamp, an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, an automatic buttonhole-cutting mechanism, an automatic clamping and clamp-releasing mechanism, and alternately and reciprocally acting starting and stopping mechanisms for the said stitch-forming mechanism and for said automatic feeding, cutting, and clamping and clamp-releasing mechanisms, a tripping mechanism for disconnecting the said starting and stopping mechanisms from each other, and an adjustable governing device for the said tripping mechanism, whereby the latter may be thrown into action to suspend the operation of the machine when a predetermined number of successively-worked buttonholes has been completed.

22. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, of a work-clamp, an automatic barring mechanism, an automatic feeding mechanism for advancing the work from one buttonhole-stitching position to another, an automatic buttonhole-cutting mechanism, an automatic clamping and clamp-releasing mechanism, and alternately and reciprocally acting starting and stopping mechanisms for the said stitch-forming and barring mechanisms and for the said automatic feeding, cutting, and clamping and clamp-releasing mechanisms, a tripping mechanism for disconnecting the said starting and stopping mechanisms from each other, and an adjustable governing device for the said tripping mechanism, whereby the latter may be thrown into action to suspend the operation of the machine when a predetermined number of successively-worked buttonholes has been completed.

23. In a buttonhole sewing-machine, the combination, with a

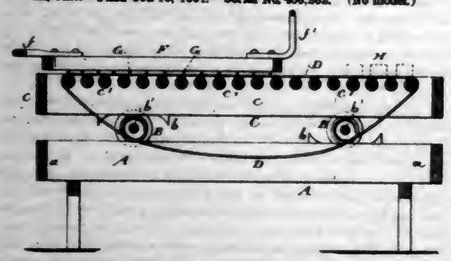
stitch-forming mechanism and a work-clamp, of an automatically-operating buttonhole-cutter having an eyelet-forming portion and an automatically-operating pin for ejecting from the said clamp the eye-pieces or disks of material cut from the work by the eyelet portion of said cutter.

24. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism and a feeding mechanism for spacing the stitches along the edges of the buttonholes, of a work-holder formed to correspond, approximately, to the shape of the buttonhole-piece and means for guiding said work-holder on the work-plate of the machine and for feeding it along from one buttonhole-stitching position to another.

25. In a buttonhole sewing-machine, a stitch-forming mechanism and a work-holder provided with a series of fingers to come between the buttonholes, said fingers having work-holding clamping devices, combined with means for guiding said work-holder on the work-plate of the machine and for feeding it along from one buttonhole-stitching position to another.

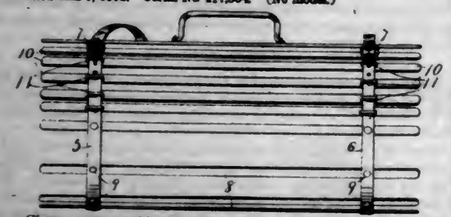
26. In a buttonhole sewing-machine, the combination, with a stitch-forming mechanism, of a work-holder having a series of fingers to come between the button-holes, said fingers extending partly but not entirely across said holder, and means for guiding said work-holder on the work-plate of the machine and for feeding it along from one buttonhole-stitching position to another.

473,565. BRICK AND TILE CUTTER. WILLIAM BROUGHTON, Oberlin, Ohio. Filed Oct. 10, 1891. Serial No. 408,282. (No model.)



Claim.—A brick or tile cutter consisting of a fixed table, a carriage having a limited motion between stops on said table while bricks or tiles are being removed, an endless apron forced over rollers on the carriage by clay emitted out of a brick or tile machine, and a brick or tile cutter movable by hand on a side plate from one end of carriage to the other, all combined and arranged to operate as described.

473,566. PARCEL-CARRIER. CATHARINE CAPLIS, Rondout, N. Y. Filed Jan. 9, 1892. Serial No. 417,534. (No model.)



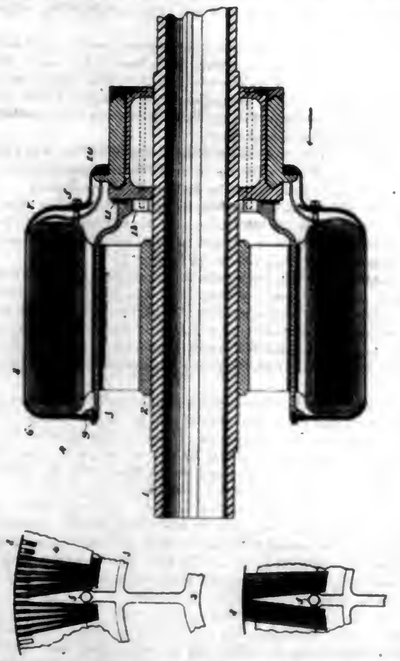
Claim.—The combination of one or more flexible straps, a series of staves fixed rigidly upon the straps, means for adjustably securing the ends of the straps, and another series of staves adjustably mounted upon the same straps, substantially as described, whereby the distances between the said adjustable staves may be lengthened or shortened longitudinally of the straps.

473,567. COMMUTATOR CONNECTION FOR ELECTRIC MOTORS OR GENERATORS. CHARLES G. CURTIS, New York, N. Y., assignor to the Curtis Electric Manufacturing Company, of West Virginia. Filed Aug. 26, 1891. Serial No. 403,779. (No model.)



Claim.—The herein-described mode of forming the commutator connections in an electric motor or generator, consisting in forming a hole in some portion of the commutator-bar, passing the end of the wire or conductor through this hole, then enlarging the projecting end of the wire, so that one of its dimensions is greater than the corresponding dimension of the hole, and then forcing the enlarged end back into the hole, substantially as described.

473,568. ARMATURE FOR DYNAMO-ELECTRIC MACHINES OR MOTORS. CHARLES G. CURTIS, New York, N. Y., assignor to the Curtis Electric Manufacturing Company, of West Virginia. Filed Nov. 12, 1891. Serial No. 411,856. (No model.)



Claim.—1. An armature inclosed in a water-proof covering, that part of the covering in the path of the lines of force being of non-conducting material, and rigid caps protecting the ends of the armature.

2. An armature inclosed in a non-conducting water-proof covering and provided with end caps co-operating with the covering, so as to form a water-tight joint.

3. An armature provided with a compressible non-conducting water-proof covering and end caps compressing the covering against the armature-winding and sealing the commutator connections, thereby rendering the armature water-proof at all points.

4. An armature provided with a waterproofed canvas covering and metallic end caps having their rims firmly compressing the canvas, so as to form a water-tight joint.

5. An armature provided with a water-proof covering of flexible non-conducting material and rigid flaring end caps firmly engaging the covering at the ends of the armature.

6. A ring-armature provided with a water-proof envelope about the winding, said envelope being formed on the inside by a water-proof shell, a non-conducting water-proof covering on the outside, and caps for forming water-proof joints at the ends.

7. A ring-armature provided with a water-proof covering inclosing the winding and commutator connections, the interior of the ring and commutator being in open communication with the atmosphere to promote ventilation.

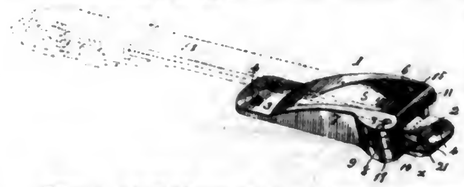
8. A water-proof armature having at the ends protective caps, one of said caps being mounted upon a flange at the inner end of the commutator, the connecting-wires extending to the commutator-segments beneath their surface of contact.

9. In an armature, a commutator having its inner head flanged and carrying a protective cap inclosing the end of the armature, the commutator connections being beneath the surface of the segments to protect them from external injury.

10. A wire joint formed by a conductor with an enlarged end forced into an opening of substantially the size of the body of the conductor, whereby the two are wedged into intimate contact.

11. The combination of a perforated connector and a conductor extending through the perforation and having an expanded or enlarged end forced back into the opening.

473,569. HOLDBACK. ORIN C. DAVIS, Manistee, Mich., assignor of one-half to Thomas Smurthwaite, same place. Filed May 13, 1891. Serial No. 392,625. (No model.)



Claim.—1. A holdback provided along its sides with forwardly and downwardly curved flanges and with a pivoted transverse bar at the front ends of said flanges, substantially as described.

2. A holdback provided along its sides with forwardly and downwardly curved flanges and with a pivoted circular transverse bar at the front ends of said flanges, substantially as described.

3. A holdback provided along its sides with forwardly and downwardly curved flanges and with a pivoted circular spring-pressed transverse bar at the front ends of said flanges, substantially as described.

4. A holdback provided along its sides with forwardly and downwardly curved flanges which are respectively short and thick and long and narrow and with a transverse bar at the front ends of said flanges, substantially as described.

5. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges and with a pivoted transverse bar at the front ends thereof, substantially as described.

6. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges and with a pivoted and spring-pressed transverse bar at the front ends thereof, substantially as described.

7. A holdback formed along its central portion with an upwardly-inclined curved surface and with rounded ends having countersunk openings and provided along its sides with forwardly and downwardly curved flanges and with a spring-pressed transverse bar at the front ends of said flanges, substantially as described.

8. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a circular socket in their front ends and with a transverse bar fitted into said recess and socket, substantially as described.

9. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a circular socket in their front ends and with a circular spring-pressed transverse bar fitting into said recess and socket, substantially as described.

10. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a downwardly and forwardly inclined and circular socket in their front ends and with a circular spring-pressed transverse bar fitting into said recess and socket, substantially as described.

11. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a downwardly and forwardly inclined and circular socket in their front ends, an enlargement having a vertical chamber and a pivot-pin fitting therein, and with a circular pivoted transverse bar fitting into said recess and socket, substantially as described.

12. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a downwardly and forwardly inclined and circular socket in their front ends, an enlargement having a vertical chamber and a pivot-pin fitting therein, and with a circular spring-pressed transverse bar fitting into said recess and socket, substantially as described.

13. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a downwardly and forwardly inclined and circular socket at their front ends, with an enlargement having a vertical chamber and a pivot-pin and spiral spring therein, and with a circular transverse bar having one end flattened and fitted at its two ends into said recess and socket, substantially as described.

14. A holdback provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a circular socket in their front ends and with a pivoted transverse bar fitting into said recess and socket and having a shoulder near one of its ends, substantially as described.

15. A holdback provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a circular socket in their front ends and with a pivoted and spring-pressed transverse bar fitting into said recess and socket and having a shoulder near one of its ends, substantially as described.

16. A holdback provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a circular socket in their front ends and with a pivoted and spring-pressed transverse bar fitting into said recess and socket and having a shoulder near one of its ends and also a finger-piece, substantially as described.

17. A holdback provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a circular socket in their front ends, with an enlargement having a vertical chamber and a pivot-pin and spiral spring fitting therein, and with a circular transverse bar having one end flattened and fitting at its two ends into said recess and socket and also having a finger-piece, substantially as described.

18. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a circular socket in their front ends, with an enlargement having a vertical chamber and a pivot-pin and spiral spring fitting therein, and with a circular transverse bar having one end flattened and fitting at its two ends into said recess and socket and also having a shoulder and a finger-piece near one end, substantially as described.

19. A holdback provided along its sides with forwardly and downwardly curved flanges which are respectively short and thick and long and narrow, the front end of the former being projected somewhat farther forward than that of the latter and with a transverse bar at the front ends of said flanges, substantially as described.

20. A holdback provided along its sides with forwardly and downwardly curved flanges which are respectively short and thick and long and narrow, the front end of the former being projected somewhat farther forward than that of the latter, and with a transverse and inclined bar at the front ends of said flanges, substantially as described.

21. A holdback provided along its sides with forwardly and downwardly curved flanges which are respectively short and thick and long and narrow, the front end of the former being projected somewhat farther forward than that of the latter, and with a transverse and spring-pressed bar at the front ends of said flanges, substantially as described.

22. A holdback provided along its sides with forwardly and downwardly curved flanges which are respectively short and thick and long and narrow, the front end of the former being projected somewhat farther forward than that of the latter, and with a transverse, inclined, and spring-pressed bar at the front ends of said flanges, substantially as described.

23. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved, flanges which are respectively short and thick and long and narrow, the front end of the former being projected somewhat farther forward than that of the latter, and with a transverse bar at the front ends of said flanges, substantially as described.

24. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges which are respectively short and thick and long and narrow, the front end of the former being projected somewhat farther forward than that of the latter, and with a transverse, inclined, and spring-pressed bar at the front ends of said flanges, substantially as described.

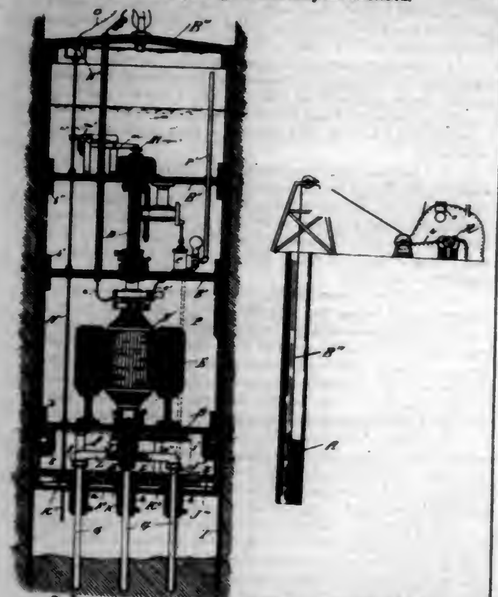
25. A holdback formed along its central portion with an upwardly-inclined curved surface and provided along its sides with forwardly and downwardly curved flanges having, respectively, a semicircular recess and a downwardly and forwardly inclined and circular socket at their front ends, with an enlargement having a vertical chamber and a pivoted and forwardly-inclined bar having one end flattened and fitted at its two ends into said recess and socket, substantially as described.

473,570. APPARATUS FOR SINKING SHAFTS. FULTON GARDNER, Chicago, Ill. Filed Sept. 1, 1891. Serial No. 404,436. (No model.)

Claim.—1. In an apparatus for sinking shafts, a water-tight shell or case entering the bore of the shaft, following up the same, and divided into compartments, one of such compartments serving as a water-tank, so that the water necessary to wash the detritus away from the drill and keep it clean while in motion may be taken down into the

shaft and serve as a weight to keep the drill to its work, substantially as described.

2. In an apparatus for sinking shafts, a water-tight shell or case entering the bore of the shaft and divided into compartments, one of such compartments serving as a water-tank to carry the necessary water down into the hole, acting as a weight to keep the drill to its work, and another such compartment serving as a receptacle for the pump and the necessary gearing to drive the same, in combination with such pump and gearing, substantially as described.



3. In an apparatus for sinking shafts, a water-tight shell or case entering the bore of the shaft, following the same, and divided into compartments, the uppermost compartment serving as a water-tank, whereby the necessary water may be carried into the hole to wash away the detritus and keep the drill to its work, the next compartment affording a receptacle for the pump and its gearing, and the third compartment serving as a water-tight receptacle for the electric motor, in combination with such pump, gearing, and motor, substantially as described.

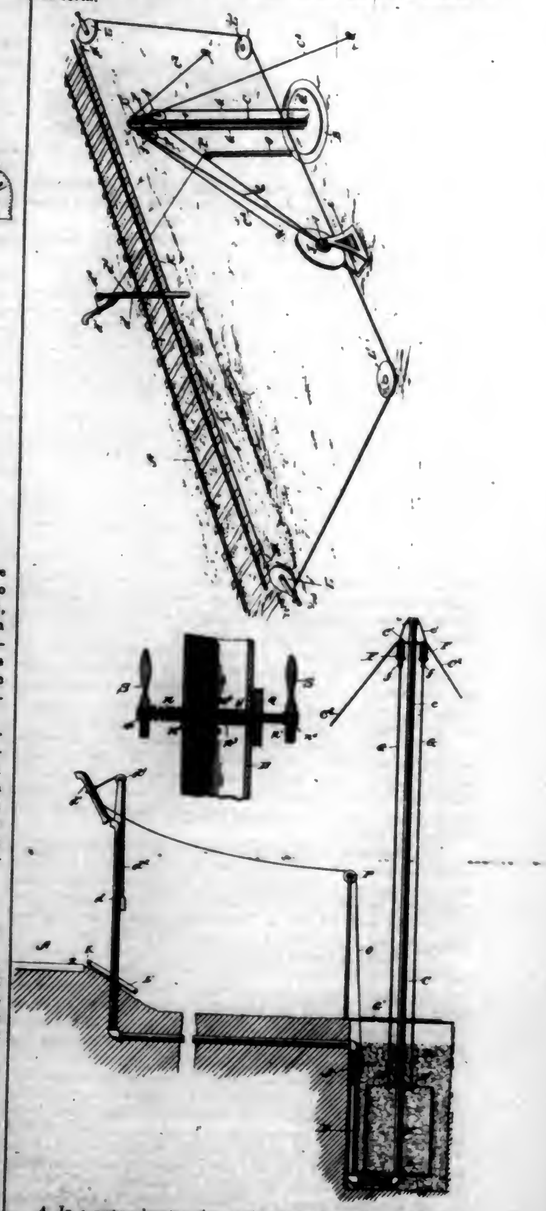
4. In a shaft-sinking apparatus, a water-tight shell or case entering the bore of the shaft, following up the same, and divided into compartments, the uppermost of such compartments serving as a tank whereby the necessary water can be carried into the shaft to wash away the detritus and keep the drill to its work through gravity and the other compartments serving, respectively, as receptacles for the pump with its gearing, the electric motor, and the gearing operating the cutting devices, in combination with such pump, motor, and gearing, substantially as described.

478,571. TANK-FEEDER. GEORGE P. GLENN, Jacksonville, Fla. Filed Jan. 5, 1892. Serial No. 417,066. (No model.)

Claim.—1. In a water-elevator, the combination of a well, a stand-pipe supported within and extending above said well and provided with a series of perforations, a conducting-pipe connected with the lower end of said stand-pipe within the well, a valved water-elevating bucket sliding over said stand-pipe, and means for elevating said bucket to the top of the stand-pipe, substantially as set forth.

2. In a water-elevator, the combination of a well, a stand-pipe supported within and extending above said well and provided with a continuous series of perforations along a portion of its length, a conducting-pipe connected with the lower end of said stand-pipe within the well, a water-elevating bucket sliding over said stand-pipe and provided with bottom upwardly-opening valves, a winding-drum adjacent to said well, elevating wires or ropes connected with said winding-drum and said bucket, and means for operating said winding-drum in either direction, substantially as set forth.

3. In a water-elevator or tank-feeder, the combination, with a railway, of a well located adjacent to said railway, a stand-pipe supported within and extending above said well and provided with a continuous series of perforations or openings along a portion of its length, a valved conducting-pipe connected with the lower end of said stand-pipe within the well and provided with a weighted hinged spout alongside of the track, a water-elevating bucket sliding over said stand-pipe and provided with bottom upwardly-opening valves, a winding-drum located adjacent to said well, elevating wires or ropes connected with said winding-drum and passing over pulleys at the top of the stand-pipe and connected with said bucket, and an endless horizontal cable stretched parallel with said track and passing over said cable-wheel and provided with hooks adapted to be engaged by suitable devices lowered from the passing engine, substantially as set forth.



4. In a water-elevator, the combination of a well, a perforated stand-pipe supported within and extending above said well, a braced pulley-supporting frame suspended from the upper end of said stand-pipe, pulleys suspended from said frame on opposite sides of the stand-pipe, a valved conducting-pipe connected with and forming a continuation of said stand-pipe, a valved water-elevating bucket sliding over said stand-pipe, elevating-ropes passing over said pulleys and connected with said bucket, and means for operating said ropes, substantially as set forth.

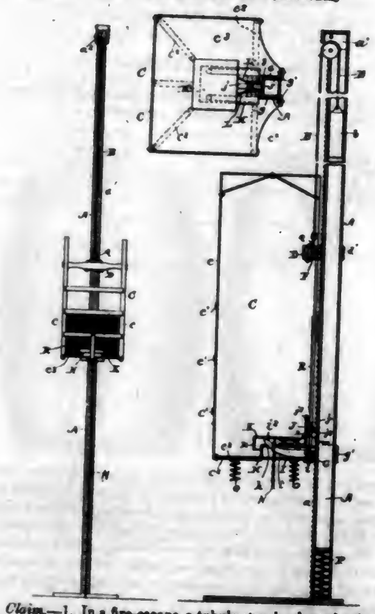
5. In a water-elevator, the combination of a well, a cover inclosing said well, a perforated stand-pipe, a conducting-pipe connected with and forming a continuation of the stand-pipe, a valved water-elevating bucket sliding upon said stand-pipe and of the same diameter as said well-cover, which also forms a cover for the bucket when rising, and means for elevating said bucket upon said stand-pipe, substantially as set forth.

6. In a water-elevator, the combination, with a well and means for forcing the water therefrom, of a conducting-pipe provided with a hinged and weighted spout at its discharging end, an oscillating double check-valve mounted on an axis journaled within said conducting-pipe, a valve-wheel connected with said axis, and a valve-cord connected to said valve-wheel and said hinged spout, substantially as set forth.

7. In a water-elevator, the combination, with a well and means for forcing water from the same, of a conducting-pipe connected with the discharge or force pipe within the well, an oscillating double check-valve mounted upon a hollow vent-axis journaled in said conducting-pipe within the well, said axis being provided with vent-discharge openings within the well, and means for controlling the said valve, substantially as set forth.

8. The combination, with a conducting-pipe, of a hollow valve shaft or axis journaled in said pipe and provided with a central partition, vent-openings on opposite sides of said partition and the axis itself, and the vent-discharge cocks at each end projecting on each side of said pipe, and an oscillating valve mounted on said shaft or axis within the pipe and provided with vent-openings on each face thereof, communicating with the opposite openings in said axis or shaft, substantially as set forth.

473,572. FIRE-ESCAPE. WALTHER GUNNARSON, Jamestown, N. Y., assignor of one-half to Peter Sandberg and Peter Drotz, same place. Filed Nov. 17, 1891. Serial No. 412,190. (No model.)



Claim.—1. In a fire-escape, a tubular track adapted to be secured to the side of a building, a car adapted to travel over said track and provided with squared rectangular recesses taking over said track, friction-roller brakes located in said recess and adapted to be manually and automatically thrown against the outer face of said track, and an overbalanced cable confected to said car and working within said tubular track, substantially as set forth.

2. In a fire-escape, a vertical tubular track adapted to be secured to the side of a building, a car adapted to travel over said track, the same comprising an open metallic frame-work and provided with recesses embracing said track and friction-brakes located directly in rear of said recesses and adapted to be thrown against the outer face of said track, and an overbalanced cable connected to said car and working within said tubular track, substantially as set forth.

3. In a fire-escape, a vertical tubular track provided with an outer serrated or toothed face, a car adapted to travel over said track, the same comprising an open metallic frame-work and provided with recesses embracing said track and with serrated or toothed friction-rollers brakes located directly in rear of said embracing recesses and adapted to be thrown manually and automatically against the outer face of said track, and an overbalanced cable connected to said car and working within said tubular track, substantially as set forth.

4. In a fire-escape, a vertical tubular track, a car traveling upon said track, the same comprising an open metallic frame-work and provided with an upper brake-bar having a recess embracing said track, levers pivoted within said bar and a friction brake-roller journaled in the inner ends of said levers in rear of said recess and adapted to be operated by the hands, a bottom platform having a recess embracing said track and an automatically-operated friction-brake located in rear of said platform-recess, and an overbalanced cable connected to said car and working within said tubular track, substantially as set forth.

5. In a fire-escape, a rectangular tubular track provided with an outer serrated or toothed face, a car traveling over said track and provided with an upper brake-bar secured in the rear of the same and provided with a squared recess embracing said track, hand-levers pivoted within said bar and extending without and within the same, and a serrated brake-roller journaled in the inner ends of said levers in rear of said recess, a bottom platform having a rectangular recess directly in line with the recess of the upper brake-bar and a serrated roller-brake located in rear of said platform-recess and adapted to be automatically operated by the weight of the person within the car, and an overbalanced cable connected to said car and working within said tubular track, substantially as set forth.

6. In a fire-escape, a vertical tubular track, a car traveling upon said track and provided with a main platform having a recess embracing said track, an upper hand-operated brake secured to said car, a cover secured to said platform and provided with top perforations, brake-arms having rearwardly and upwardly curved rounded ends projecting through said top perforations and carrying at their outer ends within said cover a friction-brake directly in rear of said recess, a supplemental platform hinged over said cover and adapted to bear upon the projecting ends of said brake-arms when stepped upon and throw the brake upon the track, and an overbalanced cable connected to said car and working within said tubular track, substantially as set forth.

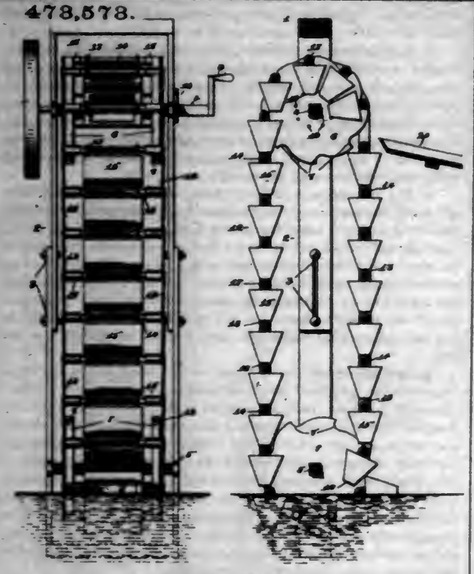
7. In a fire-escape, a vertical tubular track, a car traveling upon said track and provided with a main platform having a recess embracing said track, an upper hand-operated brake secured to said car, a cover secured to said platform and provided with top perforations, brake-arms having rearwardly and upwardly curved ends projecting through said top perforations and carrying at their outer ends within said cover a friction-brake directly in rear of said recess, a spring-actuated stop-pawl mounted over said cover and normally engaging said track, a supplemental hinged platform connected to said pawl and normally located over the projecting ends of said brake-bars, and an overbalanced cable connected to said car and working within said track, substantially as set forth.

8. In a fire-escape, a vertical tubular track, a car traveling upon said track and provided with a main platform having a recess embracing said track, a cover secured to said platform and provided with top perforations, brake-arms having rearwardly and upwardly curved ends projecting through said top perforations and carrying at their outer ends within said cover a friction-brake directly in rear of said recess, a bracket supported upon said cover, a spring-actuated stop-pawl pivoted to said bracket and normally engaging said track, a supplemental platform having rearwardly and upwardly inclined arms intermediately hinged to said bracket and connected at their outer ends with said stop-pawl, said platform normally lying over the projecting ends of said brake-bars, and an overbalanced cable connected to said car and working within said track, substantially as set forth.

478,573. WATER-ELEVATOR. HILEY HARRIS, Krumming, Colo. Filed Aug. 5, 1891. Serial No. 401,723. (No model.)

Claim.—In a chain-pump, the combination of a loosely-suspended vertically-adjustable frame, the upper and lower pairs of notched wheels mounted in the upper and lower ends of said frame, an endless chain, the cross-bars connecting the links of said chain, opposite thimbles on each end of the cross-bars alongside of the links and engaged by the notched periphery of said wheels and the said links passing along outside of the same, tapered buckets loosely suspended from the cross-bars of said chain between said thimbles and adapted to pass through and between the upper pair of wheels, and a series of concentrically-arranged trip-rods located within the space between the upper pairs of wheels and engaging the tapered bottom of the loosely-suspended buckets, substantially as set forth.

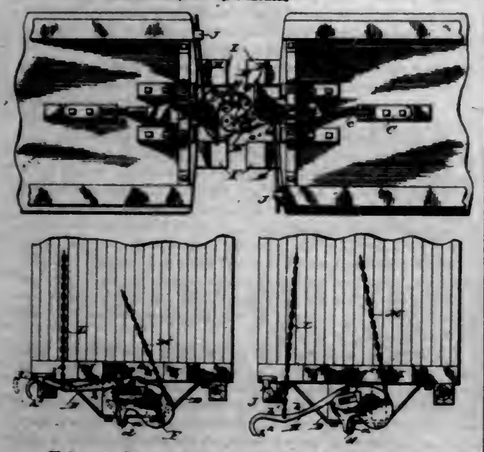
473,573.



5. The combination, with the hook-shaped rocking draw-head E, of the lever H, pivoted thereto and bent downwardly, as at A, said lever at its free end being upwardly inclined, as at A', and bent to form a handle A², and a bracket J, secured to the end of the car and engaged by the inclined end of the lever, serving to support the same in a horizontal position, substantially as shown and described, and for the purpose specified.

6. The combination, with the hook-shaped rocking draw-head E, of the lever H, pivoted at one end to said draw-head and having its other end upwardly inclined and resting within a bracket secured to the end of the car, the said draw-head at one side being recessed, as at K, substantially as shown and described, as and for the purpose specified.

473,574. CAR-COUPLING. ORRIN C. HARRIS, Little Falls, N. Y., assignor of one-half to Charles L. Petree, same place. Filed Aug. 17, 1891. Serial No. 402,837. (No model.)



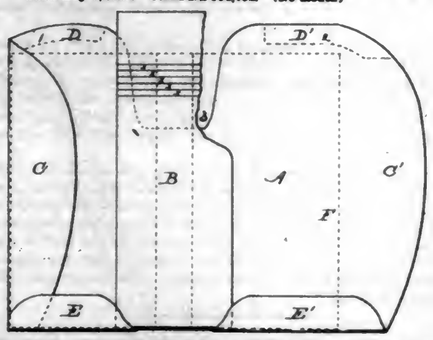
Claim.—1. The combination, with the draw-bar having at one side a depending flange located at one side of the longitudinal center of said draw-bar and resting in a depression formed in a bracket secured to the car and carrying a hook-shaped draw-head, of a lever pivoted to said draw-head and at its free end inclined upwardly and resting in a bracket secured to the end of the car, all constructed, arranged, and operating substantially as shown and described.

2. The combination, with the draw-bar carrying the hook-shaped rocking draw-head, of a lever pivoted thereto and having its free end resting in a bracket secured to the end of the car, said lever when released from the bracket dropping by gravity and uncoupling the draw-head, all constructed, arranged, and operating substantially as shown and described.

3. The combination, with the draw-bar carrying the hook-shaped rocking draw-head, of the gravitating lever pivoted to said draw-head and having its free end resting in a bracket secured to the end of the car, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

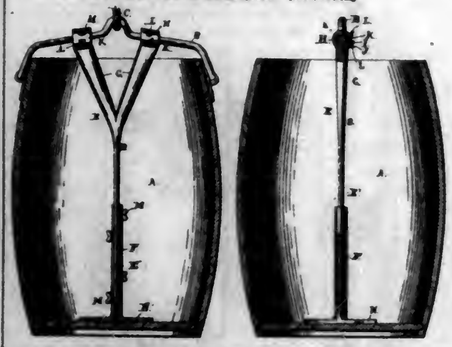
4. The combination, with the hook-shaped rocking draw-head E, of the lever H, pivoted thereto and bent downwardly, as at A, and upwardly inclined at its free end, as at A', resting in a bracket secured to the end of the car, substantially as shown and described.

473,575. BOOK-COVER. GEORGE W. HOLDEN, Springfield, Mass. Filed May 6, 1891. Serial No. 391,732. (No model.)



Claim.—In a book-cover, the blank A, provided with the notch 3 at the top, the top end flaps D D', bottom end flaps E E', and side flaps C C', in combination with the false back B, secured to the inner surface of said blank and provided with a free end to cover said notch and to adapt the same to books of varying lengths, substantially as set forth.

473,576. WELL-BUCKET SINKER. WILLIAM HOWER, Cairo, Ga. Filed Jan. 5, 1892. Serial No. 417,055. (No model.)



Claim.—1. In a well-bucket sinker, the combination, with a bucket and the bail thereof, of a sinker-rod having a weighted upper end loosely connected to said bail and a lower lighter shank portion extending to the bottom of the bucket, substantially as set forth.

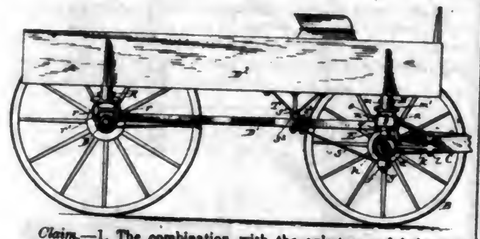
2. In a well-bucket sinker, the combination, with a well-bucket and the bail thereof, of a vertically-adjustable sinker-rod detachably connected with said bail and extending to the bottom of the bucket, substantially as set forth.

3. In a well-bucket sinker, the combination, with a well-bucket and the bail thereof, of a vertically-adjustable sinker having a weighted forked upper end detachably connected to said bail and a lighter reduced shank portion projecting to and resting upon the bottom of the bucket, substantially as set forth.

4. In a well-bucket sinker, the combination, with a well-bucket and the bail thereof, of an adjustable sinker-rod section having upper diverging weighted arms terminating in bail rings or loops engaging said bail and having closed bail-receiving openings and a lower tube-section adjustably receiving said rod-section and resting upon the bottom of the bucket, substantially as set forth.

5. In a well-bucket sinker, the combination, with a well-bucket and the bail thereof, of a sinker comprising an upper vertically-adjustable rod-section having diverging weighted arms terminating in bail rings or loops engaging said bail and having bail-receiving openings, shouldered seats at the outer ends of said openings, and headed plugs detachably secured in said seats and inclosing said openings, and a lower light tube-section adjustably receiving the lighter shank of said rod-section and provided with a right-angularly-disposed cross-foot resting upon the bottom of the bucket, substantially as set forth.

473,577. RUNNING-GEAR FOR WAGONS. LORENZO D. HURD, Wellsville, N. Y. Filed Sept. 4, 1890. Serial No. 363,895. (No model.)



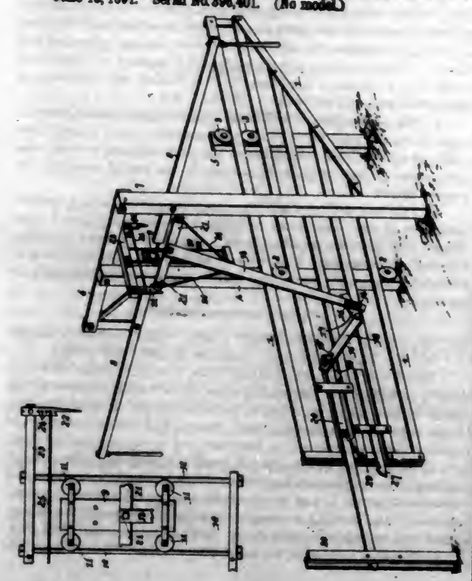
Claim.—1. The combination, with the axle-tree and bolster, of sockets attached to opposite sides of the axle-tree, supporting-springs seated in said sockets, and followers arranged in the sockets upon the springs and pivotally attached to the bolster, substantially as set forth.

2. The combination, with the axle-tree or front frame having bearings, of an upright hollow spindle journaled in said bearings and provided with a horizontal axle-socket and vertical bolts passing through the ends of the hollow spindle and said bearings, whereby the spindle is confined in its bearings, substantially as set forth.

3. The combination, with the head-block or front axle and the rear axle, of a reach connecting the head-block and axle, yielding bolsters supported thereon, the body or box resting upon said bolsters, and a composed connecting-brace consisting of transverse and longitudinal arms secured at their upper ends to the box and at their lower ends to the reach, whereby the brace resists both vertical and lateral deflection of the reach, substantially as set forth.

4. The combination, with the head-block or axle-tree and the rear axle, of a reach connecting the head-block and rear axle, yielding bolsters supported thereon, the body or box resting upon said bolsters, and a compound brace consisting of transverse and longitudinal arms secured at their upper ends to the body and connected at their lower ends by a head which is detachably secured to the reach, substantially as set forth.

473,578. GATE. AUGUST ISELNFELDT, Bloomington, Ill. Filed June 15, 1891. Serial No. 396,401. (No model.)



Claim.—1. The combination of a supporting-frame, a sliding gate, a guide-frame secured to the supporting-frame and having parallel guide-rods, a vertically-movable plate provided with rollers arranged on the guide-rods, a lever connected with the gate and vertical plate, and an operating-lever fulcrumed on the supporting-frame and having its inner end connected with the plate, substantially as described.

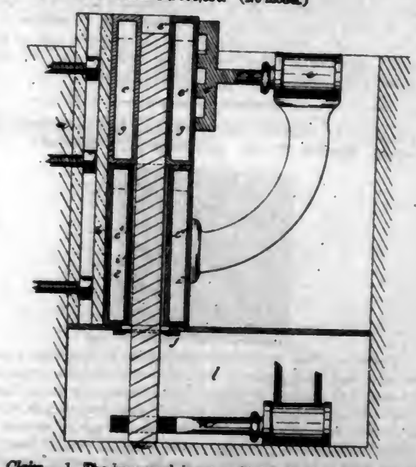
2. The combination of a supporting-frame, a sliding gate, a guide-frame secured to the supporting-frame and having parallel guide-rods, a vertically-movable plate provided with rollers arranged on the guide-rods, catches depending from the guide-frame, a T-shaped lever fulcrumed on the plate and connected with the gate and having its arms arranged to be engaged by the catches, and an operating-lever fulcrumed on the supporting-frame and connected with the plate, substantially as described.

3. The combination of a supporting-frame, a sliding gate located therein, catches located above the gate, a T-shaped lever having its head movably fulcrumed between the catches and having its arms arranged to engage the catches and connected at its lower end with the gate, and means for raising and lowering the T-shaped lever, substantially as described.

4. The combination of a supporting-frame, a sliding gate, a guide-frame secured to the supporting-frame and having parallel guide-rods, vertically-adjustable catches depending from the guide-frame, a rod connecting the catches, a vertically-movable plate provided with rollers arranged on the guide-rods, a T-shaped lever fulcrumed on the plate and having its arms arranged to be engaged by the catches, and an operating-lever connected with the plate, substantially as described.

5. The combination of a supporting-frame, a sliding gate, a guide-frame secured to the supporting-frame, a vertically-movable plate mounted in the guide-frame, catches depending from the guide-frame, a bell-crank lever fulcrumed on the gate, a sliding latch-bar arranged on the gate and connected to the bell-crank lever, a T-shaped lever fulcrumed on the plate and having its arms arranged to be engaged by the catches and having its lower end connected with the bell-crank lever, and an operating-lever connected with the plate, substantially as described.

473,579. INGOT-MOLD. JOHN ILLINGWORTH, Newark, N. J. Filed July 15, 1890. Serial No. 358,856. (No model.)



Claim.—1. The improved ingot-mold herein described, combining with an elevated mold-section immovably secured to a suitable fixture a mold-section movable to and from the same, the said sections being open top and bottom, and means connected with the movable section for operating the same, a cooling-chamber stationed beneath the chamber formed by the mold-sections, and means for supplying the said cooling-chamber with an abnormal cooling medium, substantially as set forth.

2. In an ingot-forming machine, the combination, with separable mold-sections open top and bottom and means for separating the same, of a cooling-chamber independent of the mold and arranged beneath the same in line with the mold-chamber to receive the ingot therefrom, means for supplying the cooling-chamber with a cooling medium, and severing mechanisms arranged beneath the cooling-chamber for severing the ingot into sections, substantially as set forth.

3. In an ingot-forming machine, the combination, with mold-sections, one of which is separable from the other and which together form a mold-chamber open top and bottom, of a cooling-chamber, also open top and bottom, means for supplying the same with a cooling

medium other than normal atmospheric air, and severing mechanisms disposed beneath said cooling-chamber, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

4. In an ingot-forming machine substantially as described, a sectional mold open top and bottom and permanently held in an elevated position, means for separating the sections horizontally, a cooling-chamber in line with said mold beneath the same, means for supplying the cooling medium, and severing means arranged beneath the said cooling-chamber, substantially as set forth.

5. In an ingot-forming machine, the combination, with a bottomless mold, of a cooling-chamber beneath said mold and open top and bottom to allow the ingot to pass therethrough and also larger horizontally in its interior dimensions than the mold-chamber to allow a free gravitation therethrough, and means for supplying the cooling medium, substantially as set forth.

6. The improved ingot-forming machine herein described, combining separable water-chambered mold-sections open top and bottom and having interposed springs, a hydraulic piston and cylinder for forcing said sections together, a cooling-chamber beneath said sections, a die beneath said cooling-chamber, and a piston for forcing the ingot against said die and breaking or severing the same, substantially as set forth.

7. The combination, with the bed-plate *b*, of a mold open top and bottom and in sections *c c'*, one of which is secured to said bed-plate and the other is horizontally movable to open the mold and allow the gravitation of the ingot therefrom, sections c^3 c^4, fixed beneath the mold and having a mold-chamber therein a little larger in its horizontal dimensions than the mold-chamber to allow a free gravitation of the ingot, means for supplying the mold with a cooling medium, and means for severing the ingot beneath said sections c^3 c^4, substantially as set forth.

8. The combination, with the vertical bed-plate *b*, of mold-sections *c c'*, open top and bottom and one of which is fixed to said bed-plate and the other is movable therefrom, a hydraulic piston for operating the movable section, water-jacket sections fixed beneath said mold-sections and forming a chamber *i*, larger than the mold-section, and means for severing the ingot after gravitation from the mold through the cooling-chamber, substantially as set forth.

9. In combination with the bed-plate, mold-sections *c c'*, inclosing a vertical mold-chamber, one of which sections is horizontally movable, a chamber beneath said mold in line therewith, the sections c^3 c^4 of which chamber provide a guideway for the movable section, and means for supplying a cooling medium, and means beneath the cooling-chamber for severing the ingot, substantially as set forth.

473,580. KNITTED FABRIC. WILLIAM JARMEN, Chemnitz, Germany. Filed Feb. 18, 1892. Serial No. 421,979. (No model.)



Claim.—1. The within-described process of producing a fabric with embossed figure pattern or design from a knitted fabric composed of a knitted web of floor thread and coarser threads laid into the meshes of said web and bound to one side thereof by the finer threads thereof, said process consisting in, first, napping the said coarser threads into a fleece on one side of the web; second, brushing the said fleece parallel to bring its fibers straight and parallel; third, coating the surface of the straightened fleece with a cementing solution; fourth, drying this cemented surface and glazing the same, and, fifth, finally producing a relief pattern or design on the so-prepared side of the web by embossing, all as herein set forth.

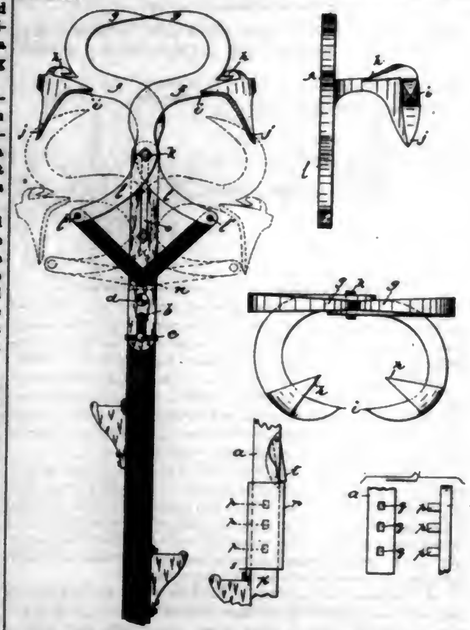
2. As a new manufacture, the ornamented knit fabric herein described, having incorporated into its meshes a coarser thread with a napped surface, on which is an embossed figure, pattern, or design.

473,581. GRIPPER FOR SCALING-LADDERS, &c. THOMAS L. JOHN, East Orange, N. J. Filed Sept. 23, 1891. Serial No. 406,542. (No model.)

Claim.—1. The improved gripper herein described, consisting of the arms *f*, pivotally connected, as at *k*, and carrying a multiplicity of gripping-claws arranged thereon in several pairs and projecting in various directions, and means, as described, for attaching the said arms to a scaling-ladder or other structure, as and for the purposes set forth.

2. The combination of a bar or structure, as *b*, the arms *f*, pivotally connected, as at *k*, with each other and with said structure and having the outwardly-curved extremities *l*, a multiplicity of gripping-claws formed on and extending from the outer portion of the arms *f*, and bars *m*, connected pivotally with said extremities *l* and with said bar or structure *b*, as described, and for the purposes set forth.

3. The combination of the arms *f*, pivotally connected, as at *k*, and a multiplicity of gripping-claws carried by said arms and projecting from the outer edge of the arms in various directions and arranged in several pairs to open and close, as described, and for the purposes set forth.



4. The combination of arms *f*, pivotally connected together, as at *k*, and provided with a multiplicity of gripping-claws extending from the outer edge of the arms, arranged in pairs to open and close and adapted to connect with a ladder or other structure, and bars, as *m*, adapted to connect with said arms and structure to open and close the gripper, as and for the purposes set forth.

5. The combination of the arms *f*, pivotally connected together and provided with a multiplicity of gripping-claws extending outward and downward from the arms and arranged in several pairs, the arms *m*, pivotally connected to one another and to the extremities of said arms *f*, a ladder or other structure adapted to connect with said arms *f* and *m*, and means, as described, for lengthening said structure, as and for the purposes set forth.

6. The combination of a ladder, a slotted plate carried thereby, a pair of curved arms having their pivot movable in said slotted plate, a pair of straight arms connected to the plate and said curved arms, and a series of jaws or grippers carried by the curved arms, for the purpose stated.

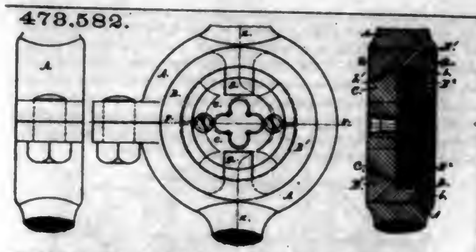
7. As a new article of manufacture, a gripper for scaling-ladders, consisting of two short arms or links, two outwardly-curved arms formed with inward-extending claws, and a series of claws extending outward and downward from the curved arms, all adapted to be connected together and applied to a staff or structure, substantially as set forth.

473,582. SCREW-CUTTING PLATE. HENRY B. KNIPER, Lancaster, Pa. Filed Sept. 9, 1891. Serial No. 405,229. (No model.)

Claim.—1. In a screw-cutting plate, the semicircular dies C C, having perpendicular diametrical faces, screw-cutting chasers at the center of said faces, semicircular grooves having outwardly-sloping upper ends, one on each side of said chasers, and the outer sloping peripheral faces, substantially as described, and for the purpose set forth.

2. In a screw-cutting plate, the collet B, comprising the cylindrical ring B', having an outside cylindrical face, the inside screw-threaded cylindrical portion *b*, and the upwardly and inwardly sloping conical portion *b'*, and the plug-screw or guide-disk B^3, screwed into said portion *b* and having bolt-guide ridges through the center of said disk, screw-threaded orifices on the same diameter, one orifice on each side

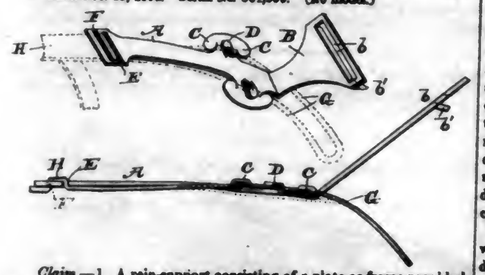
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of said guide-ridges, and the recesses b^3 and b^3, placed in the back of said disk, all substantially as described, and for the purpose set forth.

3. In a screw-cutting plate, the stock A, having the central clamp-ring closed by a clamp-screw, and the lugs *a* and *a*, projecting inward from and integral with the side of said clamp-ring, substantially as described, and for the purpose set forth.

473,583. REIN-SUPPORT. FRANCIS C. KEIL, Milwaukee, Wis. Filed Feb. 13, 1891. Serial No. 381,390. (No model.)



Claim.—1. A rein-support consisting of a plate or frame provided at its forward end with an open-slotted construction to engage the back-strap at or near its rear end with an upwardly-extending rein-support and intermediate the forward and rear ends with lateral clasps to engage the crupper-straps, substantially as described.

2. A rein-support consisting of the main body provided with the upwardly-extending portion adapted to be engaged by the reins, said main body being also provided with side clasps, consisting of the upwardly-projecting ears and tongue adapted to engage the upper faces of straps of the harness and clamp them against adjacent portions of the said main body, and a slotted portion adjacent to one end of said main body for engaging a strap of the harness, substantially as described.

3. A rein-support having the attaching devices adapted to frictionally engage straps of the harness and having an upwardly-extending portion provided with a recess to receive the reins, and the horizontally-disposed flange in line with one edge of the same and adapted to be engaged by said reins, substantially as described.

473,584. REIN-SUPPORT. FRANK A. LEE, Des Moines, Iowa. Filed Nov. 12, 1891. Serial No. 411,725. (No model.)



Claim.—The herein-described improved rein-support, consisting of the E-shaped frame comprising the longitudinal side bar and the upper and lower and the intermediate transverse bars projecting laterally therefrom, the upper and lower bars terminating at their free ends in outwardly-disposed lugs, the intermediate bar terminating in an outwardly-disposed lug and provided with a stud for engaging the perforation in the strap, and the L-shaped prong 9, projecting outwardly and upwardly from the upper transverse bar, substantially as specified.

473,585. CARDING-MACHINE. GOTTFRIED MEYER, Schaffhausen, Switzerland. Filed Sept. 23, 1891. Serial No. 407,074. (No model.)

Claim.—1. In a machine for treating fibrous material, the combination, with two rotating cylinders and two rollers, said rollers and cylinders being provided on their peripheries with teeth or projections, of mechanism for moving the rollers toward and from each other on a line connecting the centers of the two cylinders, and mechanism for oscillating each roller over the periphery of a cylinder, substantially as set forth.

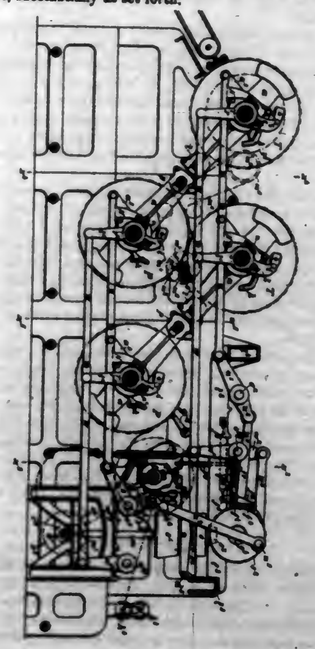
2. In a machine for treating fibrous material, the combination, with two rotary cylinders and two rollers, said cylinders and rollers having their peripheries provided with teeth or projections, of mechanism for moving the rollers toward and from each other on a line connecting the centers of the cylinders, mechanism for oscillating each roller over one cylinder, and mechanism for rotating the rollers in the reverse of the direction of rotation of the cylinders while said rollers are performing their oscillatory movements, substantially as set forth.

3. In a machine for treating fibrous material, the combination, with two rotary cylinders and two rollers, said cylinders and rollers having their peripheries provided with teeth or projections, of mechanism for moving the rollers toward and from each other on a line connecting the centers of the cylinders, mechanism for oscillating each roller over the periphery of a cylinder, mechanism for rotating each roller in the reverse of the direction of rotation of the cylinder over which it oscillates, and mechanism for rotating the rollers in the same direction as the cylinders when said rollers are on a line connecting the centers of the cylinders, substantially as set forth.

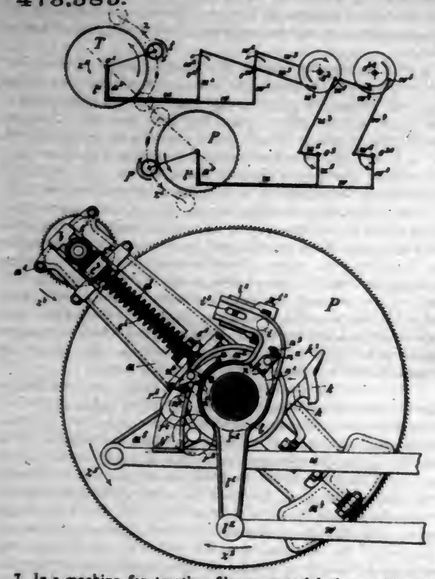
4. In a machine for treating fibrous material, the combination, with two rotary cylinders and two rollers, said cylinders and rollers having their peripheries provided with teeth or projections, of mechanism for oscillating each roller over the periphery of a cylinder, mechanism for rotating the rollers during the time that they oscillate, mechanism for holding the peripheries of the rollers against the peripheries of the cylinders during the time that the rollers perform said oscillatory movements, and mechanism for moving the rollers from the peripheries of the cylinders and toward each other when said rollers oscillate toward the line connecting the centers of the cylinders, and mechanism for rotating said rollers in the same direction as the cylinders when said rollers are on the line connecting the centers of the cylinders, substantially as set forth.

5. In a machine for treating fibrous material, the combination, with a cylinder, of swinging levers mounted on the shaft of the cylinder, slides on the ends of said levers, a roller mounted in said slides, springs acting on the slides, frames connected with the springs, and a lever acting on said springs to compress the springs and draw the roller toward the surface of the cylinder, substantially as set forth.

6. In a machine for treating fibrous material, the combination, with a cylinder, of swinging levers on the shaft of the same, slides in said levers, a roller parallel with the cylinder and mounted on the slides, a spring pressing the slides outward, rods connected with said slides, frames connected with the rods, pivoted levers adapted to act on said frames, and a swinging arm provided with a pin that acts on said levers, substantially as set forth.



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7. In a machine for treating fibrous material, the combination, with a cylinder, of swinging levers on the shaft of the same, slides on the outer ends of said arms, a roller parallel with the cylinder and mounted in said slides, springs for pressing the slides outward, rods connected with the slides, frames connected with said rods, and levers acting on said rods and provided with cam edges, a swinging arm mounted on the shaft of the cylinder, and an adjustable pin on said swinging arm, which adjustable pin acts on the above-mentioned cam-surfaces, substantially as set forth.

8. In a machine for treating fibrous material, the combination, with a cylinder, of swinging levers on the shaft of the same, a roller parallel with the cylinder mounted in said swinging arms, gearing for rotating said roller, a cog-wheel on the shaft of the cylinder for operating the gearing for rotating the roller, and automatically-operating pawls for locking said cog-wheel on the cylinder at intervals, substantially as set forth.

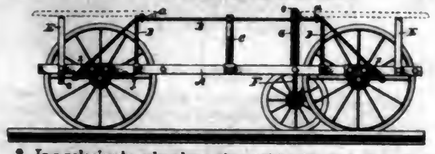
9. In a machine for treating fibrous material, the combination, with a cylinder, of swinging levers on the shaft of the same, a roller mounted on the outer ends of said levers, a cog-wheel mounted loosely on the shaft of the cylinder, gearing for rotating said roller from said cog-wheel on the shaft of the cylinder, gearing for rotating said cog-wheel in one direction on the shaft of the cylinder, gearing for rotating said cog-wheel in the reverse direction, two pawls for locking said gearings at intervals, and two brakes operating said pawls, substantially as set forth.

10. In a machine for treating fibrous material, the combination, with a cylinder, of swinging levers on the shaft of the same, a roller mounted in the outer ends of said levers, a cog-wheel mounted loosely on the shaft of the cylinder, gearing for rotating said roller from said cog-wheel on the shaft of the cylinder, gearing for rotating said cog-wheel in one direction on the shaft of the cylinder, gearing for rotating said cog-wheel on the shaft of the cylinder, gearing for rotating said cog-wheel in the reverse direction and at greater speed, and two pawls for locking said gearings at intervals, substantially as set forth.

11. In a machine for treating fibrous material, the combination, with a cylinder, of swinging levers on the shaft of the same, a roller mounted in the outer ends of said levers, a cog-wheel mounted loosely on the shaft of the cylinder, gearing for rotating said roller from said cog-wheel on the shaft of the cylinder, gearing for rotating said cog-wheel in one direction on the shaft of the cylinder, gearing for rotating said cog-wheel in the reverse direction, two pawls for locking said gearings at intervals, two brakes operating said pawls, and a rocking lever mounted loosely on the shaft of the cylinder, which lever operates the brakes, substantially as set forth.

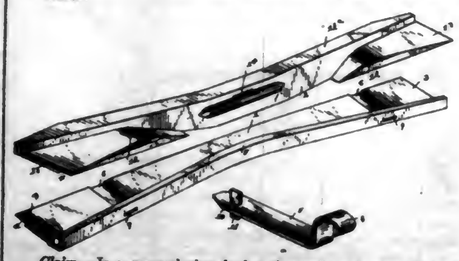
478,586. RAILWAY-VELOCIPEDE. GEORGE W. MILLER, Kalamazoo, Mich. Filed Jan. 6, 1892. Serial No. 417,318. (No model.)

Claim.—1. In a hand-car or velocipede, the combination of the base-bars of the frame, the central posts, one on each side, extending upward from said base-bars, the inverted-U-shaped yokes, one each way from the central posts, attached to and extending upward from the base-bars, sockets each way from said inverted-U-shaped yokes attached to the sides of the base-bars, the truss-rods extending from the top of one of the inverted-U-shaped yokes to the other and attached thereto and intercepting the upper ends of the central posts, to which they are also attached, the ends of said truss-rods extending downward from the yokes and through the sockets, and tension-nuts on the ends of the truss-rods, substantially as set forth



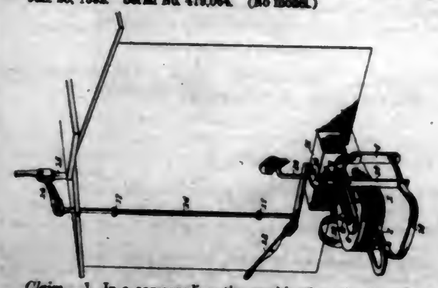
2. In a velocipede or hand-car, the combination of the main frame, the bracket attached to said frame at one side near the forward end, the guide-wheel arm hinged to said bracket, the plate provided with a series of adjusting-holes and attached to one side of the frame near the rear end, the oblique brace-bar jointedly connected at one end to the guide-wheel arm and adapted to be detachably inserted in one of the adjusting-holes of the plate at the rear end, and the hook-rest attached to the rear end of the frame at the side, substantially as set forth.

478,587. CAR-REPLACER. JAMES M. MORRIS and SUMNER J. HARKNESS, Scofield, Utah. Filed June 3, 1891. Serial No. 394,969. (No model.)



Claim.—In a car-replacing device, the replacer having the independent oppositely-inclined end pieces connected by a longitudinal flange raised above the level of the rail or track and provided with the longitudinal grooves or recesses along their inner edges, adapted to fit over the flange of the rail, the intermediate slot between said end pieces, and the hook-clamp secured in said slot and clamping over the rail, substantially as set forth.

478,588. CAR-COUPLING. NEWTON J. PARKER, Blair, Nebr. Filed Jan. 23, 1892. Serial No. 419,064. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head, a coupling-pin, a lifting-frame straddling the draw-head and connected with the coupling-pin and depending below the draw-head, a U-shaped link-lifter loosely mounted in the lifting-frame, and means for raising and lowering the lifting-frame, substantially as described.

2. In a car-coupling, the combination of a draw-head, a coupling-pin, a rectangular lifting-frame straddling the draw-head, a U-shaped link-lifter loosely mounted in the lifting-frame and projecting forward in front of the draw-head, the springs secured to the lifting-frame and having their upper ends curved and provided at their lower ends with openings to receive the link-lifter, and means for raising and lowering the lifting-frame, substantially as described.

3. In a car-coupling, the combination of a draw-head, a coupling-pin, a rectangular lifting-frame straddling the draw-head and provided with a slotted plate to receive the coupling-pin, a link-lifter loosely mounted in the lifting-frame, the springs secured to the frame and supporting the link-lifter, and means for raising and lowering the lifting-frame, substantially as described.

478,589. VENTILATED BARREL. RALPH J. PATTERSON, Gertrude, Ga. Filed Apr. 22, 1891. Serial No. 390,090. (No model.)



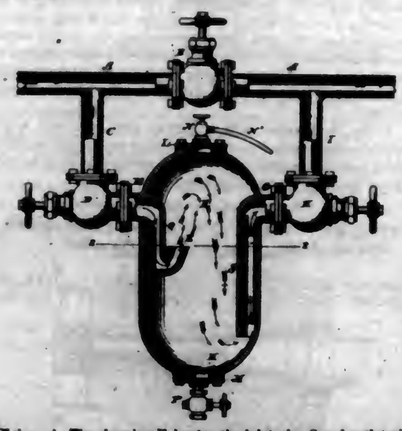
Claim.—A barrel consisting of a series of staves, a series of spacing-blocks between the staves, the two wires connecting the staves and blocks, and the heads and the hoops at each end, said spacing-blocks being located at the longitudinal center of the staves, thereby enabling the ends of the latter to be converged or drawn inward toward each other by the hoops to form a bilge, substantially as shown and described.

478,590. HEEL. GEORGE W. F. RANDOLPH, Salem, W. Va. Filed May 7, 1891. Serial No. 391,971. (No model.)



Claim.—The herein-described improved heel, the same having its under side provided with a recess the walls of which are convexed and the rubber plug having concaved sides and fitting snugly within and conforming thereto, the under side of the plug projecting below the corresponding side of the heel and the upper side of said plug being concaved to form the suction-chamber having a flexible surrounding wall, substantially as specified.

478,591. DEVICE FOR SEPARATING OIL FROM FEED-WATER. JAMES REILLY, Brooklyn, N. Y. Filed Aug. 14, 1891. Serial No. 402,607. (No model.)



Claim.—1. The chamber F, having the inlet-pipe Q and outlet-pipe S, combined with the escape-valve N at the upper end of said chamber, the valve D and pipe C, connecting with said pipe Q, and the valve H and pipe I, leading from the pipe S, substantially as set forth.

2. The chamber F, having the inlet-pipe Q, branch R, and outlet-pipe S, combined with the escape-valve N for oil and air at the upper end of said chamber and the exit at the lower end of said chamber, substantially as set forth.

3. The main water-pipe having the valve B and branch pipes O I, combined with the chamber F, the inlet and outlet pipes Q S in said chamber, the branch E and valve D, connecting said inlet-pipe with the pipe O, the branch G and valve H, connecting said outlet-pipe with the pipe I, the escape-valve N at the upper end of said chamber, and the exit-valve P at the base of said chamber, substantially as set forth.

478,592. RAILWAY-TICKET. WILLIAM B. SHATTUC, Cincinnati, Ohio. Filed Feb. 12, 1892. Serial No. 421,279. (No specimens.)



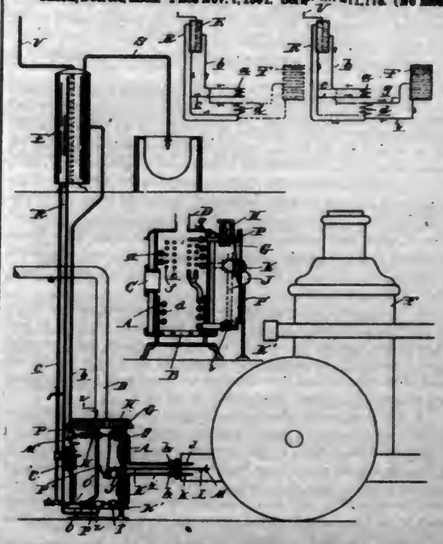
Claim.—1. A railway-ticket having, in combination, a cover-strip, a folded coupon-ticket strip, and a band extending laterally across the face of but not around the ticket-strip and engaged with the margins of the cover-strip on opposite sides of the ticket, said band having a readily-removable engagement with the margin of the cover-strip at one side thereof, substantially as described.

2. A railway-ticket having, in combination, a cover-strip formed with marginal recesses on opposite sides thereof, a folded coupon-ticket strip and an elastic band extending across one face of but not around the ticket and engaged in said marginal recesses of the cover-strip, said band having a readily-removable engagement from the recesses on one side of the cover-strip, substantially as described.

3. A railway-ticket having, in combination, a cover-strip, a folded coupon-ticket strip, and a band engaged with the opposite margins of the cover-strip and extending in two lines across the face of but not around the ticket-strip, said band having a readily-removable engagement with one of the margins of the cover-strip, substantially as described.

4. A railway-ticket having, in combination, a cover-strip, a folded coupon-ticket strip, and a band extending laterally across the face of but not around the ticket-strip, said band engaged with the cover-strip on opposite sides of the ticket and having a readily-removable engagement therewith at one side thereof, substantially as described.

478,598. FEED-WATER HEATER FOR FIRE-ENGINES. PETER SMITH, Detroit, Mich. Filed Nov. 7, 1891. Serial No. 411,178. (No model.)



Claim.—1. In a hot-water heater for fire-engines, the combination, with a heater, of two independent coils passing through the heater, independent circulating systems connected with the coils, two coupling-sections between the respective coils, and valves for directing the water independently through each coil and system or through both coils and one system only, substantially as described.

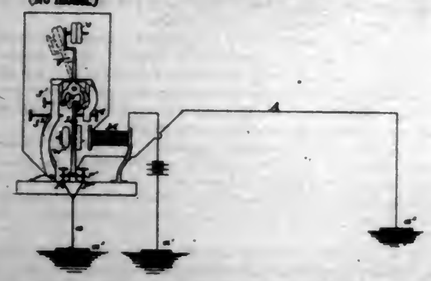
2. In a hot-water-heating apparatus for fire-engines, the combi-

nation, with the heater, of two independent coils located within the heater, a circuit from one coil to the engine, a detachable coupling in said circuit, a circuit from the other coil to a tank, connecting-pipes between the two circuits, and mechanism for closing the engine-circuit and connecting the coil of said circuit with the tank-circuit, substantially as described.

3. In a hot-water-heating apparatus for fire-engines, the combination, with a heater, two independent coils therein, circuits from each coil, an engine-boiler in one circuit, a detachable coupling in said circuit, valved connections between the outgoing and return pipes of both circuits, means for closing the engine-circuit when the engine is withdrawn, means for opening the valves in the connecting-pipes, controlled by the movement of the engine, substantially as and for the purpose described.

4. In a hot-water-heating apparatus for fire-engines, the combination, with the heater, the engine-circuit, the tank, and its circuit, of the pipe R, connecting the tank with the return of the engine-circuit, and a check-valve in said circuit between the engine and said pipe, substantially as and for the purpose described.

478,594. ELECTRIC-CIRCUIT-CONTROLLING DEVICE. MANDEVILLE THUM, Louisville, Ky. Filed June 5, 1891. Serial No. 395,264. (No model.)



Claim.—1. In a circuit-controlling device, the combination of an electro-magnet, an armature, and movable contact-point controlled by said magnet, a second contact adapted to be engaged by the first, means, such as weight W, for forcing said armature and point away from the magnet to separate said contacts, a support or weight, such as V, tending to restrain the movement of the armature in the direction of the magnet and adapted to resist the normal force of the latter and to permit the movement of the armature upon the augmentation of the force of the magnet, said contacts being also separable upon the extreme movement of the armature toward the magnet, substantially as set forth.

2. In a circuit-controlling device, the combination of an electro-magnet, an armature and movable contact-point controlled by said magnet, a second contact adapted to be engaged by the first, means, such as weight W, for forcing said armature and point away from the magnet to separate said contacts, a support or weight, such a V, tending to restrain the movement of the armature in the direction of the magnet and adapted to resist the normal force of the latter and to permit the movement of the armature upon the augmentation of the force of the magnet, said contacts being also separable upon the extreme movement of the armature toward the magnet, and a stop adapted to be adjusted to prevent the movement of the armature in one direction, substantially as set forth.

3. The combination of an electro-magnet, an armature-lever therefor carrying a contact, a second contact, such as F', adapted to hold the armature against the normal force of the magnet, and a movable support, such as V, for said second contact for carrying it beyond the reach of the first contact upon the abnormal movement of the first contact toward the magnet, substantially as set forth.

4. The combination of an electro-magnet, an armature-lever therefor carrying a contact, a second contact adapted to hold the armature against the normal force of the magnet, means, such as a weight W, for forcing the armature away from the magnet and thereby separating the contacts upon the decrease of the force of the magnet, and a movable support for said second contact for carrying it beyond the reach of the first contact upon the abnormal movement of the first contact toward the magnet, substantially as set forth.

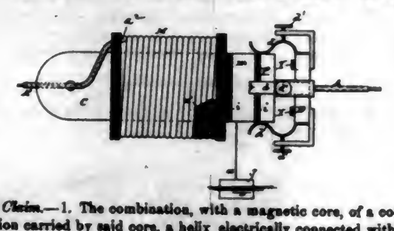
5. The combination of an electro-magnet, an armature-lever therefor carrying a contact, a second movable contact, a second lever carrying the latter, means, such as the weight v, for actuating the second lever to separate said contacts when the lever is moved beyond a predetermined point, and means for forcing the first lever away from the magnet to separate the contacts upon the decrease of the force of the magnet below normal, substantially as set forth.

6. The combination of the magnet M, the armature-lever L, the contacts P P', the supporting-lever V, carrying said contact P', and a controlling means, such as weight v, whose lines of force are adapted to be changed from one side to the other of the lever-fulcrum by the movement of the lever, substantially as set forth.

7. The combination, with the magnet M, of the armature-lever L, the contacts P P', the supporting-lever V, having the insulating-arm I and carrying said contact P', and a controlling means, such as a weight v, whose lines of force are adapted to be changed from one side to the other of the lever fulcrum by the movement of the lever, substantially as set forth.

8. The combination, with a circuit to be guarded and a guard-circuit, of a controlling device consisting of the combination of an electro-magnet, an armature, and movable contact-point controlled by said magnet, a second contact adapted to be engaged by the first, means for forcing said armature and point away from the magnet to separate said contacts, a support or weight tending to restrain the movement of the armature in the direction of the magnet and adapted to resist the normal force of the latter and to permit the movement of the armature upon the augmentation of the force of the magnet, said contacts being also separable upon the extreme movement of the armature toward the magnet, substantially as set forth.

478,595. CIRCUIT-CONTROLLING DEVICE. MANDEVILLE THUM, Louisville, Ky. Filed June 5, 1891. Serial No. 395,265. (No model.)



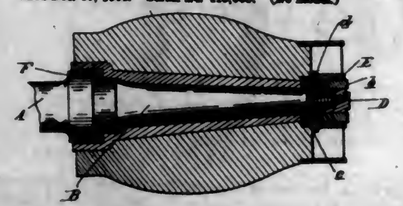
Claim.—1. The combination, with a magnetic core, of a contact portion carried by said core, a helix electrically connected with said contact and surrounding the core, and an armature having a contact normally bearing upon said contact portion and which when in such position permits the movement of the armature toward the core for the purpose of separating said contacts, substantially as set forth.

2. The combination, with a magnetic core, of a helix electrically connected therewith, a contact portion carried by the core, an armature having a contact adapted to bear upon said contact portion and movable toward the core, means for resisting the normal attractive force exerted upon the armature, and an insulation adapted to receive the armature-contact when the latter is moved toward the core, substantially as set forth.

3. The combination, with a magnetic core, of a helix electrically connected therewith, a contact portion carried by the core, an armature having a contact adapted to bear upon said contact portion and movable toward the core, means for resisting the normal attractive force exerted upon the armature, an insulated contact adapted to receive the armature-contact when the latter is moved toward the core, and a conductor extending from said insulated contact, substantially as set forth.

4. The combination, with a magnetic core, of a helix, a contact carried thereby, a helix surrounding the core and connected with said contact, and an armature provided with spring contact-arms adapted to grasp the core, substantially as set forth.

478,596. VEHICLE-HUB. ISAAC M. WARNER, Bronson, Mich. Filed Dec. 19, 1891. Serial No. 415,805. (No model.)



Claim.—1. The combination, with a carriage journal and axle and a wheel thereon, of a nut for holding said wheel upon the journal, screws passing through said nut, and a universal roller-bearing on the inner end of said screws, the parts combined as and for the purpose described.

2. The combination, with a carriage-journal and a wheel thereon, of a nut for holding said wheel upon the journal, screws passing through said nut upon opposite sides, a universal roller-bearing on the inner end of said screws, and a metallic washer upon the journal, against which said bearings impinge.

478,597. ART OF CREATING MEMORIALS OF DECEASED PERSONS. LEWIS H. WORTHINGTON, Canandaigua, N. Y. Filed July 10, 1891. Serial No. 399,066. (No specimens.)

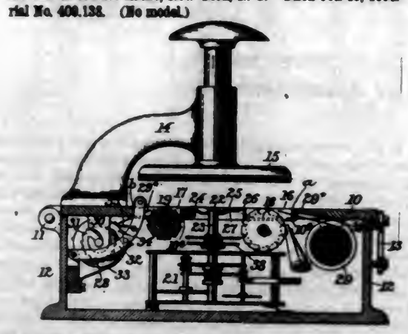
Claim.—1. The improvement in the art of creating memorials of deceased persons, consisting in first treating the incinerated remains with a suitable combining substance to produce a plastic hardening material, and, second, molding or otherwise fashioning the same into memorial forms identifying the deceased and suitable for preservation, substantially as set forth.

2. The improvement in the art of creating memorials of deceased persons, consisting in first treating the incinerated remains with a suitable combining substance to produce a plastic hardening material; second, molding or otherwise fashioning the same into memorial forms identifying the deceased and suitable for preservation, and, third, electroplating or otherwise covering the same with a layer of metal, substantially as set forth.

3. As a new article of manufacture and use, a bas-relief, tablet, or other memorial object, identifying the deceased person, formed of or containing the incinerated remains of such person treated with a combining and hardening substance, whereby it is rendered firm and durable, substantially as set forth.

4. As a new article of manufacture, a bas-relief, tablet, or other memorial object, identifying a deceased person, formed of or containing the incinerated remains of such person and electroplated or otherwise covered by a layer of metal, preserving the external contour of said object, substantially as set forth.

478,598. TIME-STAMP. MORITZ WEISS, Brooklyn, assignor of one-half to Charles Kruse, New York, N. Y. Filed Oct. 19, 1891. Serial No. 409,138. (No model.)



Claim.—The combination, in a time-stamp, of a plate having an annulus with the characters of a clock-face formed thereon, a clock-movement beneath the plate, an arbor and sleeve driven by said movement and projecting through said plate but terminating below the plane of said annulus and immovable axially, clock-hands secured to said arbor and sleeves one above the other and having their outer ends in the plane of print, said plate having within the annulus an annular support adapted to hold said hands with their upper surfaces in the plane of print, and a movable platen, substantially as shown and described.

478,599. PORTABLE MOSQUITO-NET. ERNEST WEISSMANN, New York, N. Y. Filed Feb. 15, 1892. Serial No. 421,503. (No model.)



Claim.—The combination of an outer folding sectional ring having eyes a', with an inner folding expansible ring having pivots b^3 in line with such eyes and with radial connecting-arms, and netting secured to the rings, substantially as specified.

478,600. FAUCET. JAMES WHITEHEAD, Butler, N. J. Filed Nov. 28, 1891. Serial No. 413,302. (No model.)



Claim.—In a faucet, the combination, with the body a, of a barrel f, secured to said body and provided with a conical threaded portion f^2 integral with said barrel, a strainer f^3, arranged at the outer end of said threaded portion and integral therewith, a shoulder h, arranged on said barrel, a sleeve g, surrounding said barrel and provided with a threaded end g' and at the other end with a wrench-hold g^2 integral with said sleeve, an inwardly-extending shoulder i, arranged on said sleeve, an internally-threaded washer or plate d, adapted to be secured to the outside of the barrel and surrounding the bung-hole and adapted to receive the threaded portion g' of sleeve g, said threaded end g' of the sleeve g and said washer or plate d being so arranged as not to enter the bung-hole or barrel when secured thereto, and a packing-ring arranged around the said barrel and between said shoulders h and i, all said parts being arranged and adapted substantially as described, and for the purposes set forth.

478,601. CLOTHES-DRIER. JOHN B. WOLFE, West Duluth, Minn., assignor of one-fourth to Cassius C. Merritt, same place. Filed Oct. 6, 1891. Serial No. 407,880. (No model.)



Claim.—In a clothes-drier, the combination of a tubular standard, a tube arranged in the tubular standard and projecting upward therefrom, a plug arranged in the upper end of the tube, a pin secured in the plug, crossed plates 9, having central openings to receive the pin and provided at their ends with perforations, a hub having a central opening to receive the tube and mounted on the upper end of the standard and provided with extensions 4, L-shaped in cross-section and arranged at the sides of the hub and projecting from the corners thereof, arms secured to the extensions, and bracing-wires connected to the arms and the crossed plates, substantially as described.

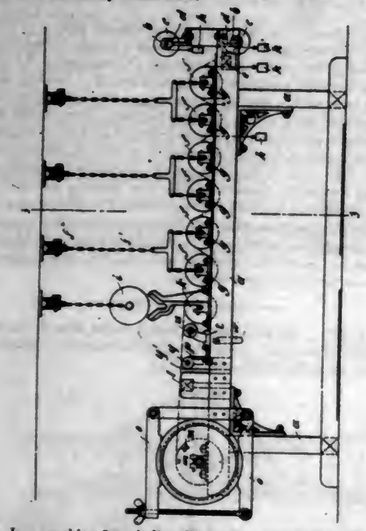
478,602. CLOTH-WINDING MACHINE. JOHANN J. ZÜRRER-MÖSLI, Rebstobel, Switzerland. Filed Jan. 2, 1892. Serial No. 416,805. (No model.)

Claim.—1. In a machine for winding fabrics on a fabric-beam, the combination, with a frame, of a series of rollers arranged end to end and adjustable at one end of the machine, which rollers carry the fabric that is to be wound upon the fabric-beam, a series of parallel tension-rollers over which the fabric is passed, a roller upon which the fabric is temporarily wound after passing the tension-rollers, and a swinging board provided with pins for holding the ends of the pieces of fabrics, substantially as set forth.

2. In a machine for winding fabrics on a fabric-beam, the combination, with a frame, of a series of rollers at one end of the same, a roller at the opposite end on which the pieces of fabric are temporarily wound, a series of tension-rollers between the ends of the machine, a swinging board having pins for holding the ends of the fabrics, and bearings for the fabric-beam adjacent to said swinging board, substantially as set forth.

3. In a machine for winding fabrics on a fabric-beam, the combination, with a frame, of a series of rollers at one end of the same for receiving the pieces of fabric to be wound upon the fabric beam, a roller at the opposite end of the machine, a series of tension-rollers between said end rollers, a vertically-adjustable pressing-roller above one of said tension-rollers, a swinging board provided with pins adjacent to said pressing-roller, and a support for the fabric-beam between said swinging board and the pressing-roller, substantially as set forth.

4. In a machine for winding fabrics on a fabric-beam, the combination, with a frame, of a series of rollers at one end of the same for receiving the fabric to be wound upon the fabric-beam, a roller at the opposite end of the frame, a series of tension-rollers between the end rollers, a pressing-roller above one of the stretching-rollers, a support for the cloth-beam adjacent to the pressing-roller, a holding device for the fabric adjacent to said support for the fabric-beam, and a series of transverse gage-bars for controlling the movements of the pieces of fabric, substantially as set forth.



5. In a machine for winding fabrics on a fabric-beam, the combination, with a frame, of a series of rollers at one end of the same for receiving the fabrics to be wound upon the fabric-beam, a roller at the opposite end of the frame, a brake for said latter roller, a series of tension-rollers between the end rollers, a pressing-roller above one of the stretching-rollers, a support for the fabric-beam, and a fabric-holding device adjacent to said support for the fabric-beam, substantially as set forth.

473,603. MAIL-BAG. JAMES F. ALLEN, Elyria, Ohio. Filed June 1, 1891. Renewed Mar. 30, 1892. Serial No. 426,906. (No model.)

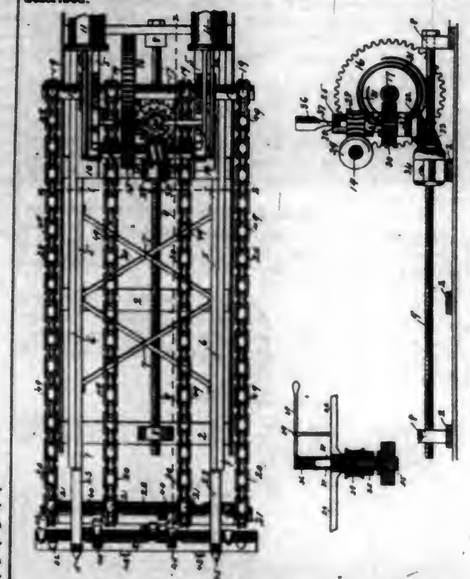


Claim.—1. In a mail-bag, the combination of the bag A, flanges a a', applied at the mouth or upper edge of the bag and forming a flexible strengthening-binding from end to end of the bag, hinges B, having their leaves attached to the contiguous ends of the flanges, a flexible, sliding, closing, and locking strap placed on the top edge of the bag, so as to close the joint, and a series of angular pendent clamps connected to the strap and bearing against and under the flanges, substantially as described.

2. In combination, the bag having the flanges, as described, the strap having the sliding clamps engaging said flanges, and the label-holder formed of a plate c, having vertical flanges d at one end and both sides, movable spring top plate c', secured at one end to an end flange and provided with a flange c', depending from its free end, and said holder being attached to one of the clamps of the closing and locking strap, substantially as described.

473,604. COAL-MINING MACHINE. ARCHIBALD BAILEY, Philipsburg, assignor of seventeen twenty-fourths to Bigler, Read & Co., and Glasgow A. Read, Clearfield, and Chester R. Glenn, Butler, Pa. Filed July 3, 1891. Serial No. 398,266. (No model.)

Claim.—1. In a coal-mining machine, the combination, with a main or stationary frame and a movable carriage mounted thereon and provided with revolvable cutters at its front end, of a feed-screw rigidly secured at its ends to said stationary frame, a revolvable interiorly-screw-threaded feed-nut surrounding said feed-screw and attached to said carriage, and means for revolving said feed-nut in opposite directions for advancing and withdrawing said carriage and its cutters, said means comprising a bevel-wheel on the rear end of said feed-nut, an upright shaft provided with a bevel-wheel at its lower end, with two loose worm-wheels, with a clutch for engaging either of said wheels, and with a vertically-movable slide for raising and lowering said clutch, a hand-lever for raising and lowering said slide, and revolvable devices for operating said shaft and its gearing, these devices including the crank-shaft provided with the pinion and the spiral or worm, and the rear chain-shaft provided with the large gear-wheel having the worm or spiral flange on its inner surface, substantially as described.



2. In a coal-mining machine, the combination, with a main or stationary frame and a movable carriage mounted thereon and provided with gear-connected and revolvable cutter and chain-shafts at its front end, with a chain-shaft at or near its rear end, said chain-shafts having sprocket-wheels and with endless sprocket-chains passing over said sprocket-wheels, of a feed-screw rigidly secured at its ends to said stationary frame, a revolvable interiorly-screw-threaded feed-nut surrounding said feed-screw and attached to said carriage, and means for revolving said feed-nut in opposite directions for advancing and withdrawing said carriage, said means comprising a bevel-wheel on the rear end of said feed-nut, an upright shaft provided with a bevel-wheel at its lower end, with two loose worm-wheels, with a clutch for engaging either of said wheels, and with a vertically-movable slide for raising and lowering said clutch, a hand-lever for raising and lowering said slide, and revolvable devices for operating said shaft and its gearing, these devices including the crank-shaft provided with the pinion and spiral or worm and the large gear-wheel mounted upon said rear chain-shaft and provided with the worm or spiral flange on its inner surface, substantially as described.

3. In a coal-mining machine, the combination, with a revolvable cutter-shaft, of a shaft for revolving the same, each of said shafts being provided with a series of spirally-arranged contacting gear-teeth along their peripheries, substantially as described.

4. In a coal-mining machine, the combination, with a revolvable cutter-shaft, of a shaft for revolving the same, each of said shafts being provided with a series of spirally-arranged wedge-shaped contacting gear-teeth along their peripheries, substantially as described.

5. In a coal-mining machine, a revolvable cutter-shaft provided with a series of gear-teeth and a series of cutters along its periphery, which are arranged spirally, said cutters being also located directly in front of said gear-teeth, substantially as described.

6. In a coal-mining machine, a revolvable cutter-shaft provided with a series of gear-teeth and a series of cutters along its periphery, which are arranged spirally, said cutters being also located directly in front of said gear-teeth and made slightly longer than the same, substantially as described.

7. In a coal-mining machine, a revolvable cutter-shaft provided with a series of gear-teeth and a series of cutters along its periphery and directly in front of said gear-teeth, in combination with a revolvable shaft journaled closely to said cutter-shaft and provided with a series of contacting gear-teeth along its periphery, substantially as described.

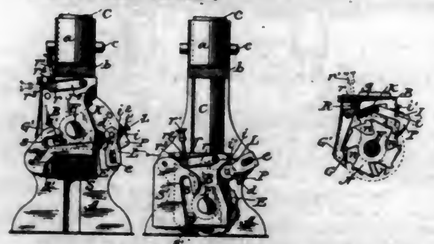
8. In a coal-mining machine, a revolvable cutter-shaft provided with a series of gear-teeth and a series of cutters along its periphery and directly in front of said gear-teeth, in combination with a revolvable shaft journaled closely to said cutter-shaft and provided with a series of contacting gear-teeth along its periphery, said cutters and gear-teeth being arranged spirally along the peripheries of said shafts, substantially as described.

9. In a coal-mining machine, a revolvable cutter-shaft provided with a series of gear-teeth and a series of cutters along its periphery, which are longer than said teeth, in combination with a revolvable shaft journaled closely to said cutter-shaft and provided with a series of contacting gear-teeth along its periphery and with a series of recesses opposite to said cutters, substantially as and for the purpose described.

10. In a coal-mining machine, a revolvable cutter-shaft provided with a series of spirally-arranged gear-teeth and a series of cutters along its periphery, in combination with a chain-shaft provided with a series of contacting spirally-arranged gear-teeth and formed with sprocket-wheels having low angular teeth and the sprocket-chains, said sprocket wheels and chains being constructed to permit full-length cutters to be revolved directly in front thereof, substantially as described.

11. In a coal-mining machine, a revolvable cutter-shaft provided with a series of spirally-arranged gear-teeth and a series of cutters along its periphery, in combination with a chain-shaft provided with a series of contacting spirally-arranged gear-teeth and formed with grooves having angular teeth between them, constituting the sprocket-wheels and the sprocket-chains, said sprocket wheels and chains being constructed to permit full-length cutters to be revolved directly in front thereof, substantially as described.

473,605. NUMBERING HAND-STAMP. OSWALD BARTOSH, Brooklyn, N. Y., assignor to Joseph Wetter, Memphis, Tenn. Filed July 8, 1891. Serial No. 398,815. (No model.)



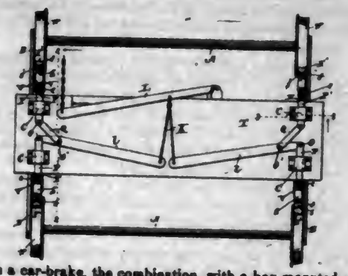
Claim.—1. The combination, in a hand-stamp, with its outer supporting-frame, its reciprocating wheel-frame, a shaft carried by said wheel-frame, numbering-wheels revolving on said shaft and provided with ratchet-wheels, a pawl-frame swinging freely upon said shaft, a pawl-plate pivoted to said frame, and pawls carried by said plate to engage the ratchet-wheels, of a bolt carried by said plate and adapted to engage a shoulder on the pawl-frame to hold the pawls out of engagement with the ratchets, substantially as shown and described.

2. The combination, in a hand-stamp, with its outer supporting-frame, its reciprocating wheel-frame, a shaft carried by said wheel-frame, numbering-wheels revolving on said shaft and provided with ratchet-wheels, a pawl-frame swinging freely upon said shaft, a pawl-plate pivoted to said frame, pawls carried by said plate to engage the ratchet-wheels, a loose ratchet-wheel on said shaft having both deep and peripheral notches, and a retaining-pawl for said wheel, of a cam to act upon said pawl and hold it out of engagement with said wheel and an actuating-pawl on said plate and adapted to enter the deep notches or rest upon the shallow notches of said wheel and permit or prevent engagement of the other actuating-pawls with their ratchets, substantially as shown and described.

3. The combination, with a supporting-frame and a reciprocating printing-head, of an inking-pad, swinging arms carrying said pad and pivoted to the supporting-frame and having slots formed therein and open at the end, and pins projecting from the side of the wheel-frame and entering said slots, said pins at their lower limit of motion being free of said slots, substantially as shown and described.

473,606. CAR-BRAKE. HORACE P. BARNETT, Warren, Ohio. Filed May 22, 1891. Serial No. 393,746. (No model.)

Claim.—1. In a car-brake, the combination, with a main lever pivoted at one end and connected at its other end with the brake mechanism and a secondary lever connected at one end with said main lever between the ends of the latter, of plungers mounted in boxes on the truck, brake-shoes at their outer ends, and springs for moving said plungers inwardly, the outer end of the secondary lever being pivoted to one plunger and the other plunger being connected by a short link with said secondary lever just inside its outer end, substantially as described.

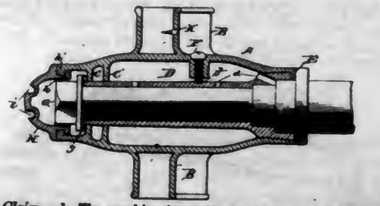


2. In a car-brake, the combination, with a box mounted on the truck, a plunger sliding longitudinally therein and having a bifurcated outer end, a spring bearing said plunger away from the car-wheel, and means for moving the plunger against the tension of the spring, of a brake-shoe having an ear on its rear face mounted on a horizontal pivot in said bifurcation, substantially as described.

3. In a car-brake, the combination, with a box, a plunger moving therein and having a bifurcated outer end, a spring holding said plunger normally in one position, and means for moving it against the tension of the spring, of a brake-shoe having an ear on its rear face mounted on a horizontal pivot in said bifurcation, a bar secured to the truck, and a link rising from said bar and pivotally connecting said bar with the upper end of the shoe, substantially as described.

4. In a car-brake, the combination, with a lever *l*, connected at one end with the operating mechanism, of longitudinally-movable plungers, one of which is pivoted to the opposite end of said lever, a link connecting the other plunger with the lever between the ends of the latter, and shoes carried by said plungers, substantially as described.

473,607. VEHICLE-HUB. GUSTAV BLECHSCHMIDT and PAUL BLECHSCHMIDT, Quincy, Ill. Filed Dec. 30, 1891. Serial No. 416,608. (No model.)

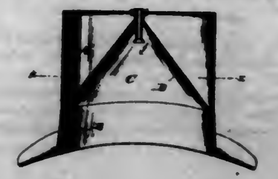


Claim.—1. The combination, with the hub or shell having independent spoke-sockets formed integral therewith on the outside and the series of internal annular flanges, of the axle-box fitting tightly in said flanges and having the oil-holes, substantially as described.

2. The combination, with the hollow hub or shell having the spoke-sockets formed integral therewith and the two internal annular flanges at the front end to prevent the escape of oil, of the box fitting tightly in said flanges and having the enlarged rear end fitting the hub and provided with oil-holes communicating with the interior of the shell, substantially as described.

3. The combination, with the hollow hub or shell having the spoke-socket formed integral therewith, the internal annular flanges on the hub, and the box fitting tightly in said flanges, of the lugs on the hub or shell bent down over the rear end of the hub, substantially as described.

473,608. EAR-TRUMPET. WILLIAM G. A. BONWILL, Philadelphia, Pa. Filed Mar. 10, 1891. Serial No. 384,904. (No model.)



Claim.—1. As a new article of manufacture, a hat adapted for use as an ear-trumpet, having upon its interior a bell-mouth leading from a contracted sound-transmitting opening through the structure of the hat down to the open portion of the hat which is adapted to receive the head of the wearer, whereby said hat may be used as an ear-trumpet when removed from the head of the wearer, the sound-waves being received into the interior of the hat through the ordinary opening therein and transmitted thence through the bell-mouth to the contracted opening in the body of the hat to the ear.

2. A hat having a sound-transmitting opening through the top of the hat structure and a bell-mouth upon the interior thereof leading from said contracted opening down to the ordinary opening of the hat which receives the head of the wearer and being otherwise closed to the reception of sound-waves, whereby the sound-waves may enter the ear-trumpet only through the ordinary opening to the interior of the hat when it is removed from the head.

3. As a new article of manufacture, a hat adapted for use as an ear-trumpet, having upon its interior a bell-mouth leading from a contracted sound-transmitting opening through the structure of the hat down to the open portion of the hat which is adapted to receive the head of the wearer, whereby said hat may be used as an ear-trumpet when removed from the head of the wearer, the sound-waves being received into the interior of the hat through the ordinary opening therein and transmitted thence through the bell-mouth to the contracted opening in the body of the hat to the ear, and a movable tube for transmitting the wave-currents to the ear carried by said contracted opening in the hat structure.

4. As a new article of manufacture, a hat provided upon its interior with a bell-mouth for transmitting sound-waves, formed of aluminum and terminating in a contracted opening communicating with an opening through the hat structure.

5. The combination of the hat structure A with the metallic bell or cone C, arranged within it and having its bell-mouth leading to the opening in the hat which receives the head of the wearer, whereby it may receive sound-waves through said opening when removed from the head and terminating in a tubular part E through the top of the hat, and an internal lining or covering D, extending over and concealing the interior surface of the bell or cone.

6. As a new article of manufacture, a hat having a sound-receiving portion open to the atmosphere at its large end and formed with a corrugated or grooved internal surface, and terminating at its smaller end in a sound-transmitting orifice.

478,609. SADDLE FOR BICYCLES. WALTER BRAMPTON, Birmingham, England. Filed Oct. 30, 1891. Serial No. 410,204. (No model.) Patented in England June 16, 1891, No. 10,190, and Aug. 23, 1891, No. 14,911.



Claim.—1. In a saddle for a bicycle or similar vehicle, the frame T, consisting of a single bar bent at *t* to form two diverging arms, in combination with a leather A, a nut B, attached to the front end of the said leather, an adjusting-screw W, which is straddled by the bent part of the said frame and engages the said nut, and devices between the said frame and the said leather for supporting the latter, substantially as set forth.

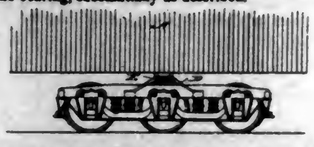
2. In saddles for the purpose herein mentioned, the combination of the springs M with their supporting-plates, the adjusting device W and B, and the frame T and saddle-bar socket K, substantially as herein set forth, and shown upon the drawings.

478,610. SIDE BEARING FOR CARS. WILLIAM S. BURLING and HERMAN G. REID, Chicago, Ill. Filed Feb. 8, 1892. Serial No. 420,997. (No model.)

Claim.—1. In a side bearing for car-bodies, the combination, with the bearing members, of a sliding wedge adapted to be moved to compensate for the vertical approximation of the parts, substantially as described.

2. In a side bearing for car-bodies, the combination, with the upper and lower bearing members, of a sliding wedge interposed between the upper bearing member and a fixed part of the car, and means for moving the wedge, substantially as described.

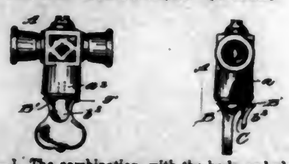
3. In a side bearing for car-bodies, the combination, with the upper and lower bearing members, the upper member comprising a box or case having an inclined bottom, of a wedge resting upon said bottom and adapted to receive upon its top a fixed part of the car, and means for moving the wedge to compensate for vertical approximation of the parts of the bearing, substantially as described.



4. In a side bearing for car-bodies, the combination, with the lower or fixed member of the bearing, of an upper member comprising a box or casing, a truss depending from the car-body and having the truss-bar adapted to enter between the side walls of the box or case, bolts securing the case to the truss-bar, and a sliding wedge adapted to be moved longitudinally of the case, whereby to adjust the bearing to compensate for vertical approximation of the contacting surfaces or faces of the bearing, substantially as described.

5. In a side bearing for car-bodies, the combination, with the lower or fixed member of a bearing, of an upper member provided with an adjusting-wedge and anti-friction devices journaled upon the lower surface of the upper bearing and adapted to bear upon the lower member, substantially as described.

478,611. SAFETY GAS-COCK. JOSEPH CLARK, San Francisco, Cal. Filed Nov. 24, 1891. Serial No. 412,936. (No model.)



Claim.—1. The combination, with the body and plug of a cock, of a catch carried by and moving at an angle to the thumb-piece of the plug and constructed and arranged to engage the inner wall of the opening in the body in which the plug works, as set forth.

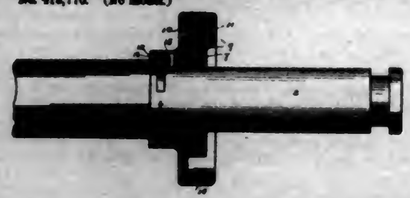
2. The combination, with the body and plug of a cock, of a catch seated in a radial slot in the plug and yieldingly pressed outwardly from the plug to automatically engage a groove in the inner wall of the opening in the body in which the plug works, as set forth.

3. The combination, with the body and plug of a cock, of a catch mounted for diametrical movement in the plug and yieldingly pressed outward at an angle to the thumb-piece thereof to engage with a groove in the inner wall of the opening in the body in which the plug works, as set forth.

4. The combination, with the body and plug of a cock, of a catch seated in the plug and having an integral spring portion held at one end in the plug and with a bend providing for radial movement of the catch, as set forth.

5. The combination, with the body and plug of a cock, of a catch and of a spring having a bend at its inner end provided for an automatic radial movement of the catch, substantially as specified.

478,612. DUST-COLLAR FOR VEHICLE-AXLES. HENRY COCHRAN and JAMES L. HARBER, Chester, Pa. Filed Jan. 21, 1892. Serial No. 418,770. (No model.)



Claim.—1. The combination, with the axle 1, having the reduced bearing 2, forming the shoulder 4, and the segmental bosses 5, located upon the reduced portion a short distance from the said shoulder, and the oil-box having the annular inner side, of the collar consisting of the hub 9 and L-shaped annular flange 10 for embracing the oil-box, the hub being provided at its inner edge with an L-shaped recess provided with internal segmental collar-sections, and the spring-pressed bolt located in a recess formed in the hub and adapted to engage with a notch formed in one of the boss-sections of the axle, substantially as specified.

2. The combination, with the axle having the reduced portion 2, the diametrically-opposite boss-sections 5, one of which is provided with a recess, and the oil-box having the inner annular portion, of the collar having the hub and L-shaped flange, the latter embracing the oil-box, said hub being provided at its outer edge with an annular recess, segmental flanges located in the outer end of the recess and adapted to pass between the ends of the boss-sections of the axle, the hub being further provided with a longitudinal recess beyond the end of one of its segmental flanges, a bolt mounted in the recess and terminating at its outer end in a head for engaging the recess of the boss, and the coiled spring interposed between the head of the bolt and the bottom of the recess, substantially as specified.

3. The axle-journal 2, having the bosses 5, notched as described, combined with the dust-collar having the spring-pressed bolt adapted to engage the notches, substantially as described.

4. The axle-journal having the bosses 5, notched as described, combined with the dust-collar having internal collar-sections to interlock with the bosses and a spring-pressed bolt located within the collar to engage the notches of the bosses, substantially as described.

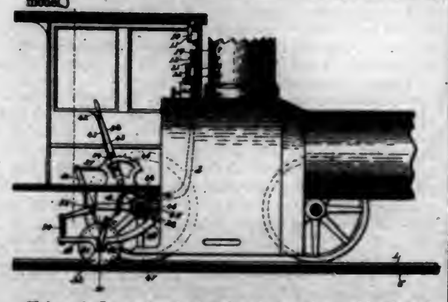
478,618. NUT-LOCK. JOHN COLEMAN, Lynchburg, Va., assignor of three-fourths to J. L. Beck, Wm. A. Carpenter, and Edward P. Lee, same place, and Frank Huger, Roanoke, Va. Filed Dec. 12, 1890. Serial No. 374,471. (No model.)



Claim.—1. The herein-described nut-lock, consisting of a flat shank terminating at one end in a tapered driving-head disposed at a right angle to the shank, the outer face of which is concaved to fit a bolt, substantially as specified.

2. The herein-described nut-lock, consisting of a flat shank terminating at one end in a flat head having a driving end at one side thereof and having its inner face concaved to fit a bolt, the shank of the device having a transverse kink at one side of the head, substantially as specified.

478,614. ELECTRIC RAILWAY-SIGNAL. CHARLES E. CORPORAN, Colorado City, Colo. Filed June 17, 1891. Serial No. 396,587. (No model.)



Claim.—1. In an electric signaling device, the combination of a railway the rails of which form continuous conductors, an intermediate conductor between said rails, the same comprising an insulated rail provided with longitudinal grooves on either side of the top thereof and sectional conductors secured in said grooves, a vehicle to travel upon the track, the wheels of which make electrical contact with the rails, a frame pivoted at one end beneath the vehicle, a trolley-wheel journaled in the opposite end of the frame to make contact with the conductors of the central track, a lever flexibly connected with said frame and provided with a spring-actuated dog, a notched segment adjustably engaged by said lever-dog, and a battery and signaling device carried by said vehicle and connected with the driving-wheels and trolley thereof, respectively, substantially as set forth.

2. In an electric signaling device, a frame pivoted at one end beneath a vehicle, a trolley-wheel journaled in the sides of the frame, an arched connector spanning said trolley-wheel and attached to the opposite journals of the same, a spring to which the other end of the frame is attached, a lever suitably connected with the said spring to raise and lower the frame, and a locking device upon said lever to hold the trolley in a raised position, substantially as described.

3. In an electric signaling device, a railway the rails of which form an electrical conductor, a second conductor along the track, one of said conductors being formed in sections, bars 55, arranged across the track at the ends of the bridges, and a cable 59, extending across the bridge and connected at its ends to the bars 55 and along its length with the bridge, so that should the bridge press upon the cable the bars 55 will be moved into electrical contact with the conductors along the track connecting them together, in combination with a vehicle carrying a battery and signaling devices connected to the said conductors, so that when the vehicle passes upon the section of conductor which is in connection with the said bar 55 the circuit will be closed and sound an alarm in the said vehicle, substantially as described.

4. In an electric signaling device, the combination of a railway the rails of which form an electrical conductor, a second conductor along the track, one of said conductors being formed in sections, a vehicle adapted to travel upon said track, a pole-changer within the said vehicle, one side of which is connected with the track-rails and the other side connected with the second conductor, a battery connected with the said pole-changer, a supplemental cylinder and piston, a lever connected with the piston of said cylinder and with said pole-changer, so as to connect the poles of the battery with the rails and the second conductor and to change the polarity of the said rails and conductors, and signaling devices included in the circuit to sound an alarm when the circuit is closed from the rails to the second conductor, substantially as described.

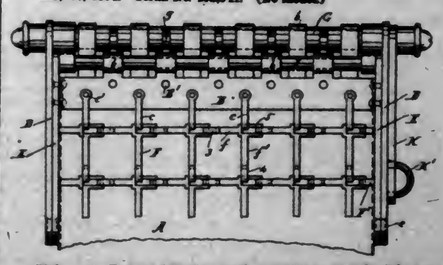
5. In an electric signaling device, a frame pivoted at one end beneath a vehicle, a trolley-wheel journaled in the sides of the frame, having recesses in the ends of the journals, connectors secured to the frame, having pointed ends which extend into the recesses in the ends of the journals, an arched connector located over said trolley and attached to said pointed connectors and bearings to make electrical connection therewith, a spring to which the other end of the frame is attached, a lever suitably connected with the said spring to raise and lower the frame and provided with a spring-actuated locking-pawl, and a notched segment adapted to be adjustably engaged by said locking-pawl, substantially as described.

478,615. SHOE-LACE FASTENING. ALBERT I. CROWELL, New York, N. Y., assignor of one-half to Frederick B. Goddard, same place. Filed June 22, 1891. Serial No. 397,044. (No model.)



Claim.—The lacing-button described, consisting, essentially, of a single piece of sheet metal having one end formed with the penetrating-prongs a^4 a^4 and its opposite end depressed so as to form an inward bulge a^5, which presents a smooth clamping-surface to the lace, said strip being bent twice upon itself so as to form oppositely-directed loops and the upper loop having the bulged portion a^5 lying within its plane, substantially as specified.

478,616. MAIL-BAG. JAMES W. DU LANEY, Canton, Ohio. Filed Aug. 11, 1891. Serial No. 402,341. (No model.)



Claim.—1. The combination, with a mail-bag, of a flexible armor formed of links provided with interlocking eyes or loops, inclosing the bag and secured around its mouth or opening, substantially as set forth.

2. The combination, with a mail-bag provided with pivoted hinge-plates at its sides and plates secured to its upper edges and furnished with loops, of a flexible chain-armor surrounding the bag and formed

of interlocking links connected to the said loops, each link consisting of two bars arranged substantially at a right angle and provided with an eye at their junction and with eyes at their ends and plain links connecting the end links with the said hinge-plates, substantially as set forth.

3. The combination, with a mail-bag having plates inclosing its upper edges and provided with central bars bent around to form loops, of the pivoted hinge-plates secured to the sides of the bag, the outer tube provided with holes, the catch-bar provided with catches, said tube and bar being carried by the upper ends of the said hinge-plates and by the loops, and a locking-tube provided with holes for securing the catches in the holes of the outer tube, substantially as set forth.

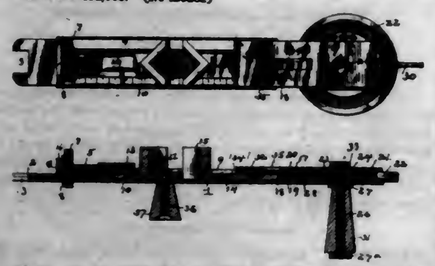
4. The combination, with a mail-bag provided with pivoted hinge-plates, of the outer tube provided with holes, the catch-bar provided with catches, said tube and bar being connected to the upper ends of the hinge-plates and to the top of the bag, and the retractible locking-tube journaled in the outer tube and provided with holes for the catches to pass through, the said holes having lateral extensions for locking the catches, substantially as and for the purpose set forth.

5. The combination, with a mail-bag provided with pivoted hinge-plates, of the outer tube provided with holes, the catch-bar provided with catches having circular bosses fitting the interior of the locking-tube and projecting shoulders fitting the interior of the outer tube, and the retractible locking-tube journaled in the outer tube and provided with holes having lateral extensions for receiving and locking the catches, the said locking-tube being also adapted to eject the catches by pressing against the said shoulders, substantially as set forth.

6. The combination, with a mail-bag provided with pivoted hinge-plates, of the outer tube provided with holes, the catch-bar provided with catches, the retractible locking-tube journaled in the outer tube and provided with holes having lateral extensions for receiving and locking the catches, and an automatic locking device adapted to secure the locking-tube to the outer tube, substantially as set forth.

7. The combination, with a mail-bag provided with pivoted hinge-plates, one of which has a staple projecting laterally from its side near the pivot-pin, of the outer tube provided with holes, the catch-bar provided with catches, the retractible locking-tube provided with holes adapted to receive and lock the catches, and a lever provided with a slot and secured to the end of the locking-tube, said slot being adapted to slip over the said staple when the locking-tube is turned in the outer tube by the lever and pushed in to lock the catches, substantially as set forth.

473,617. SOCKET-WRENCH. BENJAMIN H. DUNLAP, St. Louis, Mo., assignor to William W. Dunlap, same place. Filed Aug. 7, 1891. Serial No. 401,993. (No model.)



Claim.—1. In a wrench, the combination, with a base-plate having ways and a bearing located between the same, of a feed-screw mounted in the bearing, a jaw-carrying plate mounted in the ways and having a threaded opening for the reception of the screw, a sliding plate mounted in the ways and carrying a jaw, and means for moving said sliding plate, substantially as specified.

2. In a wrench, the combination, with a base-plate having opposite ways and a bearing at one end of the ways, of a jaw located between the ways, a plate located for movement within the ways between the jaw and bearing and carrying a companion jaw, and a threaded feed-screw journaled in the bearing and having its threaded end entered into a threaded bore formed in the base-plate, substantially as specified.

3. In a wrench, the combination, with a base-plate having ways and a jaw located between the ways, of a plate mounted for movement in the ways and carrying a companion jaw and terminating at its rear end in an L-shaped lug or extension, an eccentrically-pivoted disk having an annular groove, and a shoe mounted in the groove and loosely connected with the outer end of the lug, substantially as specified.

4. In a wrench, the combination, with the base-plate having ways and a jaw located between the ways, of a plate mounted for sliding in the ways and carrying a companion jaw, an eccentrically-pivoted disk located upon the base, and devices connecting the disk with the plate, whereby a rotation of the disk will cause a reciprocation of the plate, substantially as specified.

5. In a wrench, the combination, with the base having opposite ways, of the two plates mounted for sliding in the ways, each carrying a jaw at its inner end, an eccentrically-pivoted disk mounted on the base, connections between the same and one of the plates, whereby an oscillation of the disk causes a reciprocation of the plate, and means for adjusting the opposite plate, substantially as specified.

6. In a wrench, the combination, with the oblong base having the opposite ways and a bearing at one end of the ways, of the pair of plates mounted loosely in the ways and carrying angular jaws at their inner ends, one of said plates being provided with a threaded bore, a feed-screw having a milled nut mounted in the bearing and engaging the bore of one of said plates, a disk eccentrically pivoted upon the base, and means for connecting the disk with the remaining plate, whereby an oscillation of the disk causes a reciprocation of the plate, substantially as specified.

7. In a wrench, the combination, with the oblong base having its opposite edges upwardly and inwardly turned to form ways, of plates mounted loosely in the ways and terminating at their inner ends in jaws provided with grooves for fitting the edges of the ways and devices for adjusting the jaws within the ways, substantially as specified.

8. In a wrench, the combination, with the oblong base provided upon one of its sides with opposite ways, jaws mounted loosely in the ways, and means for adjusting the jaws, of a central stud, a handle loosely mounted thereon, a second stud located near one end of the base, and a handle loosely mounted thereon, substantially as specified.

9. In a wrench, the combination, with the base having ways, the plate having the jaw mounted in the ways, and means for adjusting the plate, of a second plate having a jaw provided at its rear end with a key-hole-shaped opening and beyond the same with an L-shaped lug or extension, a disk eccentrically pivoted upon the base and provided with an annular groove, a shoe mounted in the groove and engaging the outer end of the lug, and a shoe located outside of the disk and having a key-hole-shaped lug engaging the opening of the plate, substantially as specified.

10. In a wrench, the combination, with the base having the ways and the jaw located on the under side of the ways, of a plate mounted for reciprocation in the ways and carrying a companion jaw, said plate being provided at its outer end with a rearward L-shaped extension or lug, an eccentrically-pivoted disk mounted on the base, having an annular groove, and a friction-shoe mounted in the groove and engaging the rearward extension of the plate, substantially as specified.

11. The combination, with the oblong base having the opposite ways and the L-shaped bracket or plate at one end having a bearing, the stud projecting from the rear side of the base and provided with a swiveled handle, and the two jaw-carrying plates mounted in the ways, the inner one of which is provided with a threaded bore, of a screw-shaft journaled in the bearing of the plate and engaging the threads of the bore, having a milled nut projecting through a slot in the base, the opposite plate being provided with an outward L-shaped extension, a disk having an eccentric opening and provided with a loose centrally-bored bushing, the same registering with the perforation in the base near the outer end thereof, a securing-plate slotted to receive the L-shaped lug and having on its under side a rib fitting between the ways and at its outer end an opening registering with that of the bushing, a bolt having at its outer end a loose handle and near its inner end a head and beyond the same passed through the base, bushing, and securing-plate, a nut mounted on the bolt, a lug extending from the periphery of the disk, and a friction-shoe mounted in the groove of the disk and provided with a perforation for engaging the outer end of the L-shaped lug of the plate, substantially as specified.

473,618. DYNAMO-ELECTRIC MACHINE. RUDOLF ECKENSTEIN, Yonkers, N. Y. Filed June 13, 1888. Serial No. 276,960. (No model.)



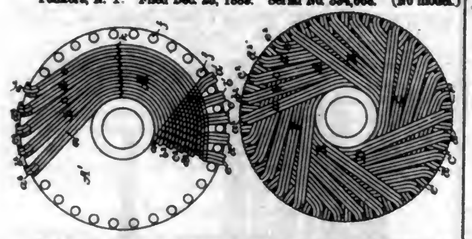
Claim.—1. The combination, substantially as hereinbefore described, of an armature drum or core having at its ends projecting studs or pins, and a set of counterpart detachable coils, each having a long side and a short side which is a little longer than the face of the drum or core and having ends which are located between said studs and diverge from the short side to the long side, said ends near their long sides overlying the ends of other coils near their short sides.

2. In a dynamo-electric armature, a winding composed of a set of detachable counterpart-coils, each having a keystone form and each having but one of its sides in immediate contact with the face of the armature drum or core, substantially as described.

3. In a bipolar dynamo-electric armature, the combination, with a drum or core, of a winding composed of a set of detachable counterpart-coils, each having a short side and a long side located at opposite sides of the drum and ends which gradually diverge from the short side to the long side and which are bent or curved for avoidance of the axis or shaft of the armature, substantially as described.

4. An armature-coil or section of winding composed of many convolutions of wire which are divided into sections, each with its own terminals, the whole constituting a complete detachable coil having a long side and a short side for occupying positions on the face of an armature drum or core and also having ends which diverge from the short to the long side, substantially as described.

473,619. DYNAMO-ELECTRIC MACHINE. RUDOLF ECKENSTEIN, Yonkers, N. Y. Filed Dec. 23, 1889. Serial No. 334,668. (No model.)



Claim.—1. In an armature for dynamo-electric machines, the combination, substantially as hereinbefore described, of a drum or core and a winding composed of a set of multiple coils, each of which is composed of a group of two or more independent coils, each having a short side and a long side, said short sides and said long sides in each group being separated by spaces for respectively receiving the long sides and the short sides of other similar coils, all of said coils in each group being mechanically connected and constituting a multiple coil, which as a complete section of winding is readily applicable to and detachable from the drum or core.

2. In an armature for dynamo-electric machines, the combination, substantially as hereinbefore described, of a drum or core and a series or set of detachable groups or sections of windings or coils completely clothing said drum, each group consisting of two or more individual coils, which are alike in having the same length of wire, a long side and a short side, but differ in contour or form at their ends and have the short sides of the coils in each group arranged in a consecutive order, which is the reverse of the order of arrangement of the long sides of said coils.

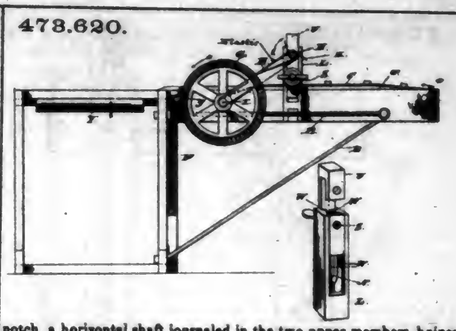
3. A section of armature-winding, substantially as hereinbefore described, composed of two or more separate or independent coils, each having its own terminals, all substantially alike as to length of wire, but longer at one side than at the other and united and forming a multiple coil, readily applicable to and detachable from an armature drum or core.

4. A detachable section of armature-winding, substantially as hereinbefore described, consisting of two or more mechanically-united but independent coils, each longer at one side than at the other, each centrally at its ends being in the form of a curved flat web and all but one of them folded flatwise inwardly near one side at a different point in each and thence extended tangentially.

473,620. BAND-CUTTER AND FEEDER. WILAM H. ELLINGER, Mt Wot, Colo. Filed Sept. 29, 1891. Serial No. 407,138. (No model.)

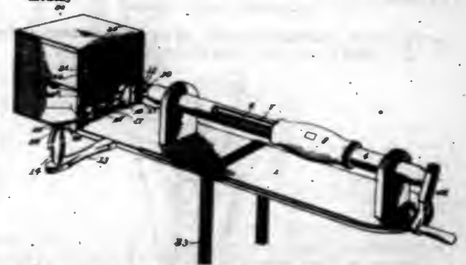
Claim.—In a band-cutter and feeder, the combination, with the feeding-table, a carrier moving over the same, and supports for the table, of standards at each side of the table, each comprising a lower member having a deep notch in its upper end transverse to the table and provided with webs at the sides of the notch, an upper member of inverted-U shape, its arms passing down between the arms of the lower member and against opposite edges of the webs, and a set-screw connecting the arms of the upper member and passing through said

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notch, a horizontal shaft journaled in the two upper members, knives located thereon, and means for rotating it, as and for the purpose hereinbefore set forth.

473,621. APPLE PARER, CORER, AND CUTTER. ELMORE H. ELLIOTT, Truebade, W. Va. Filed Nov. 2, 1891. Serial No. 410,660. (No model.)



Claim.—1. In a machine of the class described, the combination, with a base, a pair of bearing-standards rising from the same, of a shaft rotatably mounted in the bearing-standards and provided with a longitudinal bore and a slot, a plunger-rod mounted for reciprocation in the bore and terminating at its outer end in a spike, spikes located upon the end of the shaft, a sleeve mounted for reciprocation upon the shaft and connected rigidly with the plunger-rod, a coring-tube mounted in the path of the plunger-rod and provided with radial knives, means for operating the shaft, and a parer, substantially as specified.

2. In a machine of the class described, the combination, with the base having the opening, the box mounted thereover, the coring-tube mounted in the box and having its rear end terminating outside the same, the radial knives extending from the tube and secured to the walls of the box, and the standards rising from the base in front of the box and provided with bearings, of the shaft longitudinally bored and slotted, mounted in the bearings and provided at one end with a crank and at its opposite end with spikes, a plunger-rod mounted for reciprocation in the bore and terminating at its outer end in a spike, a sleeve, externally shaped to form a handle, mounted for reciprocation upon the shaft, a transverse bar connected to the plunger-rod and sleeve and mounted for reciprocation in the slot of the shaft, and a parer, substantially as specified.

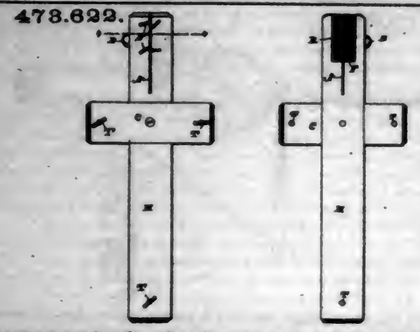
3. In a machine of the class described, the combination, with a base, an apple-supporting rotating mechanism mounted thereon, of an arm extending from the base, and a paring-knife, and a flexible strap adjustably connecting the paring-knife and arm, substantially as specified.

4. In a machine of the class described, the paring-tool consisting of a handle merging at its outer end in a head having a beveled side, a U-shaped blade secured at its ends to the opposite sides of the head, a spring-plate secured to the handle and terminating under the blade, and set-screws for adjusting the spring-plate to and from the blade, substantially as specified.

473,622. TOOL FOR DRESSING SAW-TEETH. GEORGE C. FERGUSON, Odell, Nebr. Filed Aug. 1, 1891. Serial No. 401,386. (No model.)

Claim.—The herein-described tool for dressing saw-teeth, the same comprising a handle proper having a deep longitudinal notch in one end and a recess at said extreme upper end in one face across the notch and in the arms at the sides thereof, the file, a bolt passing transversely through the arms at the sides of the notch and directly back of said recess to removably clamp the file in said recess, adjust-

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ing-screws passing through each arm into the back or rear wall of said recess at right angles to said bolt above and below the same and contacting with the back of the file to adjust the same, a cross-piece on the handle between its ends and gage-screws through the ends of the cross-piece and the end of the handle remote from its notch, substantially as set forth.

473,623. UMBRELLA-STAND. HENRY J. PFORTWARDER, Elmira, N. Y. Filed July 30, 1891. Serial No. 400,144. (No model.)



Claim.—The herein-described improved umbrella stand, the same consisting of a vertical standard provided at intervals with angular annular recesses dividing the standard into a series of inverted truncated cone-shaped sections, the upper ends or bases of which are provided with an annular series of inclined cylindrical sockets of a depth adapting them to receive the lower ends of umbrella-sticks, said sockets being disposed at an angle less than that of the walls of the conical sections, substantially as specified.

473,624. SHAFT-TUG. JOHN GRAMMER, Houston, Va. Filed July 16, 1891. Serial No. 399,769. (No model.)



Claim.—1. In a shaft-tug, the combination of an inner and outer portion hinged together at their lower ends, said inner portion being rigid and provided with the side bars 6, adapted to receive between them the harness-strap, an upper cross-bar 7, having a buckle-tongue, and a lower cross-bar 8, situated between said side bars and adapted to engage the inner side of said strap, substantially as set forth.

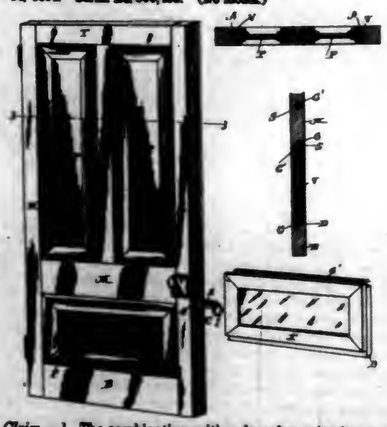
2. In a shaft-tug, the combination of an inner and outer portion hinged together at their lower ends, said inner portion being rigid and provided with the side bars 6, adapted to receive between them the harness-strap, an upper cross-bar 7, having a buckle-tongue, a lower cross-bar 8, situated between said side bars and adapted to engage the inner side of said strap, and a third cross-bar x above the bar 7, substantially as set forth.

3. In a shaft-tug, the combination of an inner and outer section hinged together at their lower ends, the inner section being slotted to form the stop 15 for supporting the outer section in position to sustain the shaft, and the pin p, carried by said outer section and situated in said slot, substantially as set forth.

4. In a shaft-tug, the combination of an inner and outer section hinged together at their lower ends, the buckle-tongue 9, mounted upon the inner section and having its free end adapted to be secured between said sections, and a fastening device for the latter, substantially as set forth.

5. In a shaft-tug, the combination of an inner and an outer section hinged together at their lower ends, the cross-bars and tongue 9 for attaching the inner section to the harness, the catch 20 for securing the outer section, and the rigid pin 24, substantially as set forth.

473,625. DOOR. WILLIAM T. GREGG, Lakeport, Cal. Filed July 14, 1891. Serial No. 399,432. (No model.)



Claim.—1. The combination, with a door-frame having an upper and a lower opening, the vertical sides of each opening being provided with beads flush with one face of the door and the horizontal sides of each opening being provided with grooves, that in the middle rail opening through the locking-stile of the door-frame, of paneled, glass, screen, and blind sections interchangeably fitting said openings, each section being cut away at its vertical edges, so as to engage said beads, having a groove in one edge adapted to register with that in the middle rail and having a tongue on its other edge adapted to fit the groove at the other vertical side of said opening, and a locking-strip removably inserted through the locking-stile and standing in said registering grooves, as and for the purpose set forth.

2. The combination, with a door-frame having an upper and a lower opening, the horizontal sides of each opening being provided with grooves, that in the middle rail extending through the locking-stile of the door-frame, of paneled, glass, screen, and blind sections interchangeably fitting said openings, each section having a groove in one edge adapted to register with that in the middle rail and a tongue on its other edge adapted to fit the groove at the opposite side of said opening, and a locking-strip removably inserted through the locking-stile and standing in said registering grooves, as and for the purpose set forth.

3. The combination, with a door-frame having an upper and a lower opening, the horizontal sides of each opening being provided with grooves, one end of the groove in the middle rail being continued into a recess in the hanging stile and the other end being continued in an opening through the locking-stile, of paneled, glass, screen, and blind sections interchangeably fitting said openings, each section having a groove in one edge adapted to register with that in the middle rail and a tongue on its other edge adapted to fit the groove at the opposite side of said opening, and a locking-strip removably inserted

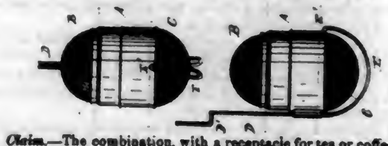
through the locking-stile, its body standing in said registering grooves and its inner end in said recess, as and for the purpose set forth.

4. The combination, with a door-frame having an opening, the horizontal sides of such opening being provided with grooves, one of which extends through one of the stiles of the door-frame, of paneled, glass, screen, and blind sections interchangeably fitting said opening, each section having a groove in one edge adapted to register with said extended groove and a tongue on its other edge adapted to fit the opposite groove, a locking-strip removably inserted through said stile and standing in said registering grooves, and a handle at the outer end of said strip normally flush with the edge of said style, as and for the purpose set forth.

5. The combination, with a door-frame having an opening, one horizontal side of such opening being provided with a groove which is continued through one of the stiles in the door-frame in an opening having a cavity around its outer end, of paneled, glass, screen, and blind sections interchangeably fitting said openings, each section having a groove in one edge adapted to register with that in the frame, detachable connections between its other edge and the opposite side of the opening, a locking-strip removably inserted through said stile, with its body standing in said registering grooves, and a handle connected to the outer end of said strip and normally standing in said cavity flush with the outer edge of said stile, as and for the purpose set forth.

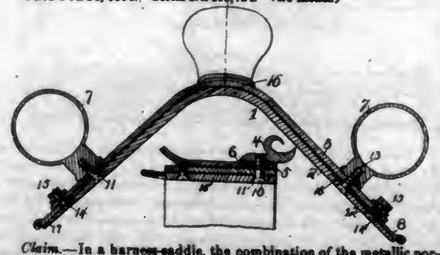
6. The combination, with a door-frame having an upper and a lower opening, the horizontal sides of each opening being provided with grooves, one end of the groove in the middle rail being continued into a recess in one stile and the other end being continued through the opposite stile in an opening having a cavity around its outer end, of paneled, glass, screen, and blind sections interchangeably fitting said openings, each section having a groove in one edge adapted to register with that in the middle rail and a tongue on its other edge adapted to fit the groove at the opposite side of the opening, a locking-strip removably inserted in said registering grooves, one end standing in said recess and the other end in said cavity, and a ring-shaped handle pivoted in said latter end and normally standing in the cavity flush with the edge of the stile, as and for the purpose hereinbefore set forth.

473,626. TEA OR COFFEE STRAINER. HENRY HENNIG, Paterson, N. J. Filed Mar. 14, 1891. Serial No. 385,090. (No model.)



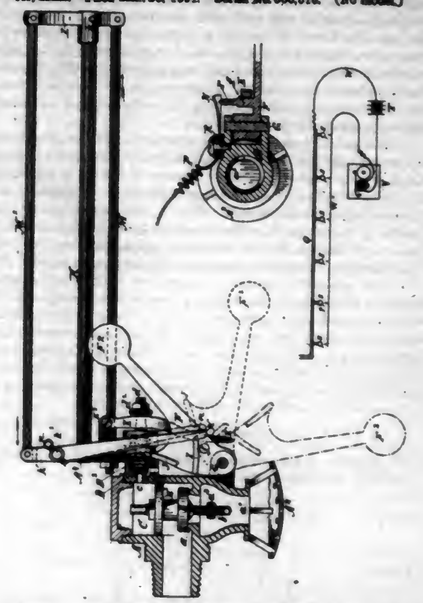
Claim.—The combination, with a receptacle for tea or coffee, of a bottom hemispherical screen-head on the same and a handle-wire secured to said receptacle, and a curved guard-wire extending under said bottom head a short distance from the same, so as to form a guard which will come in contact with the bottom of the pot before the screen-head can be pressed or indented, said guard and handle-wire being made integral, substantially as set forth.

473,627. HARNESS-SADDLE. CHARLES HORNEYER, St. Louis, Mo. Filed Dec. 21, 1891. Serial No. 415,734. (No model.)



Claim.—In a harness-saddle, the combination of the metallic portion, such as 2, having countersunk openings formed therein, hooks 4, having a square extension 5, a square opening 6, formed in the said metallic portion, a screw-threaded bore formed in the said extension 5 for receiving a screw-threaded end and screw 10, rein-rings 7, having screw-threaded bores 13, screws adapted to pass through said saddle and into said bores for holding the said ring to the saddle, plates 8, interposed between the metallic portion 2 of the saddle and the leather covering 3, and screws passing through the said saddle and the said plates for securing the same to said saddle, substantially as set forth.

473,628. AUTOMATIC SPRINKLER. ALBERT P. HOWES, Worcester, Mass. Filed Mar. 26, 1891. Serial No. 386,618. (No model.)



Claim.—1. A sprinkler-body having its delivery water-way provided with an inwardly-faced valve-seat, an internal chamber in line with said valve-seat and communicating with the inlet-passage within the body, the outwardly-closing stop-valve provided with a piston-disk fitted to work freely within said chamber, an outlet-orifice from said chamber above the valve-piston disk, a spring-pressed valve controlling said orifice, and a lever fulcrumed on the body-frame and connected with the stem of the controlling-valve to act in opposition to the spring-pressure, in combination with thermostatic expansion mechanism, and connections for moving said lever thereby to effect the opening of the valve, substantially as set forth.

2. The combination, with the controlling-valve in an automatic sprinkler, of a lever for opening said valve, a valve-closing spring, adjusting devices for said lever, a pivoted operator having a stud that engages the arm of said lever and provided with a detent or flange, an escapement-lever that engages with said flanges for retaining said operator, and a thermostat connected to said escapement-lever for imparting movement thereto, substantially as and for the purpose set forth.

3. The pivoted escapement-plate having an actuating-weight, a series of alternated detents or flanges, and an engaging stud or stade, the swinging escapement-lever having a lug or notch for engagement with said flanges, and a thermostat connected with said escapement-lever for automatically moving it in accord with the rise or fall of temperature for releasing and engaging the alternate flanges, in combination with the controlling-valve and valve-actuating connections in an automatic sprinkler, substantially as set forth.

4. The combination, with the sprinkler-body having the bracket A' thereon, of the thermostat comprising the support-bar H, fixed in said bracket, the expansion-rods M and M', one of which is adjustably secured in the bracket, as at m, the multiplying-lever or swing-bar pivoted to said support-bar and connecting said expansion-rods, the swinging escape-lever fulcrumed at K', with its short arm connected to and receiving motion from the rod M and carrying the leg n on its longer arm, the flanged escapement F, valve-lever E, and valve D for controlling the operation of said sprinkler, substantially as and for the purpose set forth.

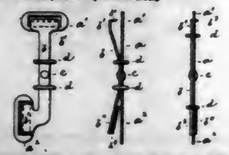
5. The combination, with the body in an automatic sprinkler, a thermostatic operator, and mechanism, substantially as described, that effects the opening of the valve by rise of temperature and the automatically closing of the valve by fall of temperature, of an electric connection having insulated attachment upon and to the body, and a contact point or points mounted on the valve-actuating escapement that operates to close the circuit when the valve is opened and to break the circuit when the valve is automatically closed, substantially as set forth.

6. The weighted pivotally-supported escapement F, having alter-

nate detents or flanges I and J and an engaging stud or studs *f*, a swinging lever having a lug or notch for engaging said flanges, a thermostat connected with said lever for automatically moving the same from the flange, an electric conductor or alarm-circuit, and a contact point or points *r*, attached to said escapement that engages therewith for closing the circuit and disengages for breaking the circuit at alternate positions of said escapement, in combination with the controlling-valve and valve-actuating connections in an automatic sprinkler, substantially as set forth.

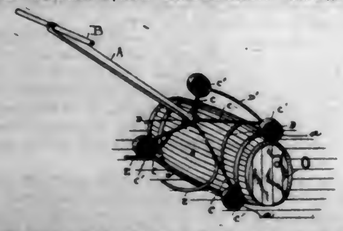
7. In a sprinkler apparatus, the combination of the chambered sprinkler-body, the valve and valve-piston disposed within the internal chamber free to operate by varied pressure of the water within the body, the relief-orifice from said chamber above the valve-piston, and the controlling-valve closing said orifice, an electric conductor in circuit with an alarm apparatus V and battery X and having an end attached to the body, a thermo expanding and contracting regulator, and an operating-escapement mounted on the body and provided with detents that engage the regulator-trip, studs for working said controlling-valve, and contact-points projecting therefrom into range with the conductor end and engaging therewith when at corresponding position, substantially as described, whereby said mechanism automatically effects the operation of simultaneously opening said controlling-valve and closing the electric circuit with the expansive action of said regulator and the simultaneous closing of the controlling-valve and breaking of the circuit with the contractive action of said regulator.

473,629. CLASP. EDWARD K. KELLY, New York, N. Y. Filed Mar 14, 1892. Serial No. 424,883. (No model.)



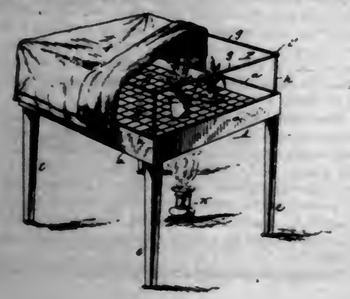
Claim.—The combination of a bent bar *a*, having terminal eyes a' a^2 placed at right angles to each other, with a bent bar *b*, having downwardly-bent edges entering the eyes, and with a connecting-rivet *c* and slides *d*, substantially as specified.

473,630. BARREL-ROLLER. WILLIAM W. LEFFINGWELL, Dalton City, Ill. Filed Nov. 27, 1891. Serial No. 413,177. (No model.)

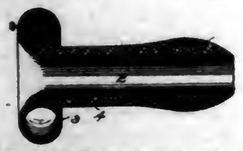


Claim.—The herein-described barrel-roller, the same comprising the handle A, the hand-piece B, the frame C, the frame-braces D, the curved hooks E, the axles D', and the wheels C', all substantially as set forth.

473,631. FUMIGATOR. HUGO F. LOEPNER, Buffalo, N. Y., assignor of one-half to Reinir L. H. Loepner, same place. Filed Mar. 19, 1891. Serial No. 385,695. (No model.)



473,632. VETERINARY IMPREGNATOR. CHARLES C. LYFORD, Minneapolis, Minn. Filed Sept. 18, 1891. Serial No. 406,160. (No model.)



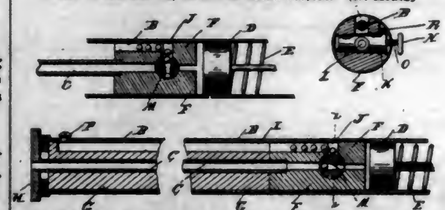
Claim.—1. The herein-described veterinary instrument, consisting of a tube 2, provided with a flexible bulb at one end thereof and with a hollow flexible ring surrounding its opposite end.

2. The herein-described veterinary instrument, consisting of the tube 2, having a hollow flexible ring surrounding one end thereof.

3. The herein-described veterinary instrument, consisting of the tube 2, provided with a bulb or rounded end and with a hollow flexible ring surrounding its opposite end.

4. The herein-described veterinary instrument, consisting of the tube 2, having a flexible bulb at one end, a funnel-shaped opposite end, and a flexible ring surrounding said funnel-shaped end, substantially as described.

473,633. SPRING AIR-GUN. WILLIAM F. MARKHAM, Plymouth, Mich. Filed Mar. 14, 1891. Serial No. 385,133. (No model.)



Claim.—1. In an air-gun, the combination, with the false barrel, the filling therefor, and the true barrel within the filling, of a detachable abutment in the rear of the filling and within the false barrel, a magazine formed in the filling and abutment and communicating with the true barrel, a turning-plug within the abutment, having a transverse aperture therein registering, respectively, with the bore of the true barrel and the communicating passage from the magazine, a lateral pin on the end of the plug within the false barrel, a shoulder with which said pin engages, and a removable turning-stem on the end of the plug extending through the false barrel, substantially as described.

2. In a spring air-gun, the combination, with the false barrel, the true barrel, and a magazine communicating with the true barrel, of a turning-plug extending transversely across and arranged within the false barrel and having a transverse tapered aperture therein registering with the bore of the true barrel and the communicating passage, respectively, a lateral pin on the plug, a shoulder with which said pin engages, and a turning-stem secured in the plug and extending through the false barrel, substantially as described.

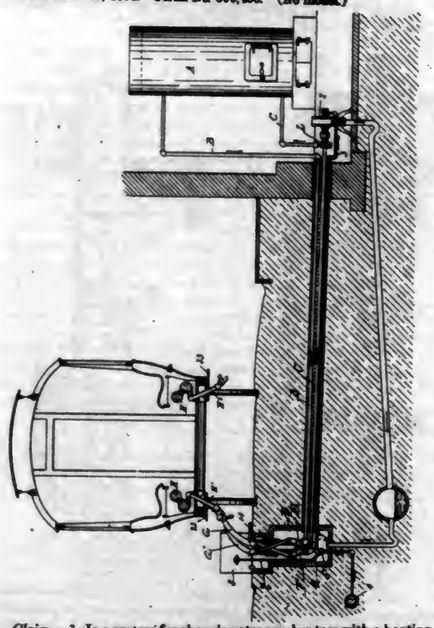
3. In an air-gun, the combination, with the false barrel and true barrel, of a filling for the false barrel, a detachable abutment on the filling in the false barrel, having a transverse aperture therein, a magazine having communication with the aperture, and a transverse turning-plug in the aperture in the abutment and within the false barrel, formed with a transverse tapering aperture therein registering, respectively, with the bore of the true barrel and the communicating passage from the magazine, substantially as described.

473,634. CUSPIDOR. HERBERT R. MILLARD, Hartford, Conn., assignor to the Hartford Sanitary Manufacturing Company, same place. Filed May 11, 1891. Serial No. 392,275. (No model.)



Claim.—A cuspidor consisting of a receptacle made from a single piece of material having portions folded upon and their free ends secured to the body thereof and a shield having a central opening and provided with tabs adapted to pass beneath the folds of the receptacle, whereby the shield is temporarily secured to the receptacle.

473,635. SYSTEM OF CHARGING CAR-HEATING APPARATUS WITH HEATING MEDIUMS. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car-Heating Company, Wheeling, W. Va. Filed June 15, 1891. Serial No. 396,408. (No model.)



Claim.—1. In a system for charging storage-heaters with a heating medium, the combination, with a tank on a car, of a stationary heater, an outgoing and return pipe communicating with the heater, a coupling system between the tank and pipes, and means for governing the movement of the heating medium through the pipes and tank and permitting the entrance of air into the system, substantially as described.

2. In a system for charging storage-heaters with a heating medium, the combination, with the tank on the car, the heater outgoing and return pipes between the heater and tank, one of which has an air-passage therein, a coupling-section for uniting the pipes and tank, and a pump in the return-pipe, of valves adapted to shut off the supply-pipe and open the air-passages, whereby the coupling-section may be drained, substantially as described.

3. In a system for charging storage-heaters with a heating medium, the combination, with the tank on the car, the stationary water-heater, outgoing and return pipes from the heater, and a pump in the return-pipe, of a coupling-section connecting the pipes with the tank and a three-way valve having an air-passage therein and located at the junction of said section with the supply-pipe adapted to open the air-passage when the supply-pipe is closed, substantially as described.

4. In a system for charging storage-heaters with a heating medium, the combination of a storage-tank and coupling-section, by-pass valves located at opposite ends thereof, levers connecting the valves, a three-arm bell-crank lever, and connecting-rods between two of the arms of the bell-crank and the ends of the levers, substantially as described.

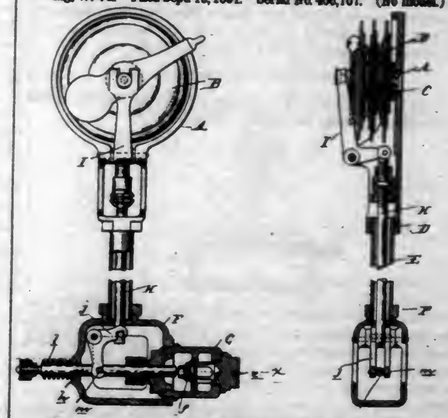
5. In a system for charging storage-heaters with a heating medium, the combination of a tank on the car, a stationary heater, outgoing and return pipes leading from the heater, a coupling-section for the pipes and tank, a pump in the return-pipe, and means for shutting off the outgoing-pipe and to admit air to the return-pipe, substantially as described.

6. In a system for charging storage-heaters with a heating medium, the combination of the heater, outgoing and return pipes for the same, a tank on the car, a coupling-section comprising two connecting-pipes for connecting the tank with the outgoing and return pipes, a by-pass on the car, and the valves I I' for controlling the passage of the heating medium through the tank and by-pass, substantially as described.

7. In a system for charging heaters with a heating medium, the combination of the heater, outgoing and return pipes for the same, a tank on the car, a coupling-section between said pipes and tank, comprising two connecting-pipes, a by-pass on the car, and the valves E F for controlling the passage of the heating medium through the pipes, and valves I and I' for controlling the passage through the by-pass and tank, substantially as described.

8. In a system for charging storage-heaters with a heating medium, the combination, with a storage-tank and heater, of outgoing and return pipes from the heater, a coupling-section between the pipes and tank, valves in the coupling-section, a lever having arms arranged at an angle to each other, a hand-piece on the lever, connecting-links between the valve-stems of the valves and the opposite ends of the lever formed with elongated slots in their lower ends, and means for making the coupling between the section and the tank, substantially as described.

473,636. TEMPERATURE-REGULATOR. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car-Heating Company, Wheeling, W. Va. Filed Sept. 18, 1891. Serial No. 406,107. (No model.)



Claim.—1. In a temperature-regulator, the combination, with a frame, a thermostat, and a connecting-rod, of a valve, a stem having a flexible connection with the valve and arranged at right angles to the connecting-rod, a spring on the stem normally holding the valve open, and a bell-crank lever engaging with its respective ends the connecting-rod and the valve-stem at a point between the spring and valve, substantially as described.

2. In a temperature-regulator, the combination, with a supporting-frame, a thermostat thereon, a bell-crank actuated by the thermostat, and a connecting-rod on the bell-crank, of a valve having a stem extending out at right angles to the connecting-rod, a spring on the stem normally holding the valve open, and a bell-crank actuated by the connecting-rod to force the valve to its seat against the tension of the spring, substantially as described.

3. In a temperature-regulator, the combination, with a supporting-frame, a thermostat thereon, a connecting-rod actuated by the thermostat, a tubular connection through which the connecting-rod passes, and a valve-casing, of a frame between the valve-casing and tube, a valve in the valve-casing, a stem on the valve arranged at right angles to the connecting-rod and passing through the frame on the valve-casing, a spring on the stem normally holding the valve open, and a bell-crank pivoted to the frame on the valve-casing at a point between the outer end of the stem and the connecting-rod, its ends arranged to engage, respectively, with the connecting-rod and the valve-stem, substantially as described.

4. In a temperature-regulator, the combination, with a supporting-frame, a thermostat, and a connecting-rod actuated by the thermostat, of a valve having a stem arranged at an angle to the connecting-rod, a spring for normally holding the valve from its seat, and a bell-crank arranged between the ends of the stem and engaging, respectively, the lower end of the connecting-rod and the valve-stem, substantially as described.

473,637. COUPLING FOR ELECTRIC WIRES. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car-Heating Company, Wheeling, W. Va. Filed Nov. 24, 1891. Serial No. 412,949. (No model.)



Claim.—1. In a coupler for electric wires, the combination, with two corresponding heads, of metallic tongues projecting beyond the heads and arranged to closely engage with each other when the coupling is made, the outer face of the tongues being formed with suitable shoulders, and contact-springs forming terminals for the circuit arranged within the head, their outer ends engaging the projecting ends of the tongues of the opposite heads to form a coupling and to closely unite the respective tongues, substantially as described.

2. In an electric coupler, the combination of a coupling-head of insulating material having an upper flat face, of contact-springs secured to the rear end of this face and extending to near the forward end of the head, an interiorly-grooved cap secured upon the head and inclosing the springs, and the forwardly-extending metallic tongues, arranged as and for the purpose described.

3. In a coupler for electric wires, the combination of two heads of insulating material, a series of metallic tongues forwardly extending therefrom, one or more of said tongues being yieldingly supported in the head, and of springs to engage with said tongues within the heads, substantially as and for the purpose described.

473,638. RAIL-JOINT. MILTON C. NILES, Oak Park, Ill. Filed July 28, 1891. Serial No. 400,957. (No model.)

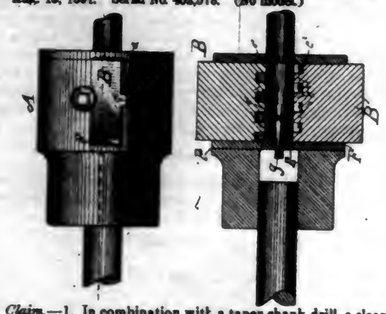


Claim.—1. In a rail-joint, the combination, with the rails, the lever-plates, and the overhanging lips thereon resting upon the flanges of the rail, of the struts extending between the lower edges of said plates, brace-plates extending between the upper edges thereof and the rail-tops, and means for operating said lever-plates, substantially as described.

2. In a rail-joint, the combination, with the rails, the lever-plates, and the overhanging lips upon said plates bearing upon the rail-flanges, of the struts connecting said plates below the rails, brace-plates extending between the upper edges of said plates and the under side of the rail-tops, and screw-bolts connecting the lever-plates between the struts and the rails, substantially as described.

3. In a rail-joint, the combination, with the rails, the vertical plates lying parallel therewith and extending below the rail, and inwardly-extending horizontal lips along the upper edges of said plates resting upon the rail-flanges, of shouldered struts connecting the lower edges of said plates below the rail, obliquely-disposed brace-plates extending between the upper edge of said plates and the under side of the rail-tops, and screw-bolts working through said lever-plates between the struts and the rails for drawing said plates toward each other, substantially as described.

473,639. SLEEVE FOR TAPER DRILLS. CHARLES T. PRATT, Clayville, N. Y., assignor to the Pratt Chuck Company, same place. Filed Aug. 13, 1891. Serial No. 402,578. (No model.)

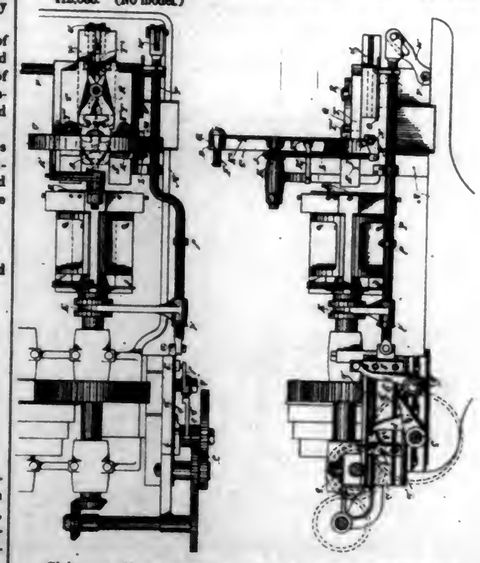


Claim.—1. In combination with a taper-shank drill, a sleeve having its internal surface tapered to fit the taper of the drill-shank and having its outer surface cylindrical to fit the teeth of the jaws of the chuck.

2. In combination with a taper-shank drill, a sleeve having its internal surface tapered to fit the drill-shank and its outer surface cylindrical and said sleeve having a longitudinal slot from end to end through its substance.

3. In combination with a taper-shank drill, a sleeve having its internal surface tapered to fit the drill-shank and its outer surface cylindrical and a helicoidal slot through the substance of the sleeve from end to end thereof.

473,640. MACHINE FOR CUTTING SCREW-THREADS ON BOLTS. HERBERT W. PUDAN, Sacramento, Cal. Filed Nov. 16, 1891. Serial No. 412,065. (No model.)



Claim.—1. The combination, with a bolt-cutting machine having holding-jaws and screw-cutting dies, of a rotary disk having radial slots made in its periphery adapted to receive the bolts and deliver them successively and automatically to holding-jaws to be carried to the screw-cutting dies, substantially as herein described.

2. The combination, with a bolt-cutting machine, of the rotary disk having radial slots made in the periphery, a stationary casing within which said disk rotates, having an opening in the bottom, through which the bolt drops from the carrying-slots when they reach this point, jaws situated beneath the disk, movable in horizontal guides, said jaws receiving the bolts from the feed-disk, and a mechanism by which the jaws are moved forward, so as to present the end of the bolt to the screw-cutting dies, substantially as herein described.

3. In a bolt-cutter, the screw-cutting dies and die-heads, a rotary disk having radial slots upon its periphery adapted to receive bolts, a stationary casing surrounding the disk, a slot in the lower portion of

the casing, through which the bolts drop from each radial slot of the disk when it reaches this point, jaws reciprocating beneath the disk, adapted to receive the bolt as it is delivered from the feed-disk, springs by which the point of the bolt is supported, guided, and centered, so as to enter the cutting-dies when it reaches them, and guide-plates between which the jaws move and by which they are closed to clamp the rear end of the bolt when the jaws advance toward the dies and which open the jaws to release the bolt after the thread has been cut and the jaws have been retracted to the end of their rearward stroke, substantially as herein described.

4. In a bolt-cutting machine, the screw-cutting dies and die-head, a rotary disk having radial channels in its periphery, a stationary casing within which the disk revolves, by which the bolts contained in the channels are retained in place, a slot at the bottom of said casing through which the bolts from each channel are delivered, horizontally-moving jaws, a mechanism by which they are retracted and brought to a point beneath the disk to receive each bolt as it is delivered, a pawl-and-ratchet mechanism by which the disk is rotated, and an intermediate connecting-rod and arms, whereby the disk is rotated simultaneously with the movement of the jaws, substantially as herein described.

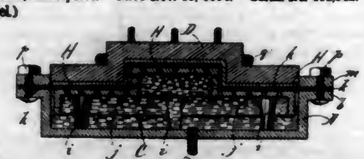
5. In a bolt-cutting machine, the rotary bolt carrying and feeding disk, a pawl-and-ratchet mechanism by which the disk is advanced the distance between two of the bolt-carrying slots at each movement, an elastic arm and stop mechanism by which the disk is retained at each position of rest, and a horizontally-moving clamping and carrying mechanism into which the bolts are delivered from the magazine-disk and by which they are presented to the screw-cutting dies of the machine, substantially as herein described.

6. In a bolt-cutting machine, the rotary feeding-disk, the jaws adapted to receive the bolts successively from said disk and carry them forward to the screw-cutting dies, a shaft with crank-arms, one of which connects with the carrier of the bolt-holding jaws and the other with a sliding plate, and arms d d', whereby said plate and the connected parts are reciprocated, substantially as herein described.

7. In a bolt-cutting machine, the bolt-feeding device reciprocating beneath the disk and adapted to receive the bolts successively from the feed-disk to carry them forward and present them to the screw-cutting dies, withdraw them, and deliver them into a delivery-chute, a mechanism by which the reciprocating motion of the jaws is produced, consisting of the sliding plate a, having the plates b b' secured thereto, an arm d, the mechanism whereby it is rotated so as to strike the plate b and move the slide and its connected parts in one direction, a lever-arm f, connected with the plate b', and a second arm d', adapted to engage the lever-arm and move the sliding plate in the opposite direction, substantially as herein described.

8. The sliding plate a, the plate b, secured thereto, having the two vertical faces and the inclined connecting-face b^3, the arm d' and gearing whereby it is rotated, so that the point is first brought in contact with the upper vertical edge of the plate b, then caused to traverse the inclined face b^3 and afterward to move in contact with the lower vertical edge of the plate, whereby the slide a is moved forward in two successive impulses with an intermediate pause, bolt-carrying jaws connected with this slide and actuated thereby, and a feeding-disk adapted to deliver bolts to said jaws during the time when the pause in their motion takes place, said jaws carrying the bolt thus received and presenting it to the screw-cutting dies with the completion of the movement, substantially as herein described.

473,641. MACHINE FOR BLOCKING AND PRESSING HATS. MICHAEL QUINN, Westborough, Mass., assignor of one-half to Richard S. Coltman, same place. Filed Nov. 10, 1891. Serial No. 411,512. (No model.)



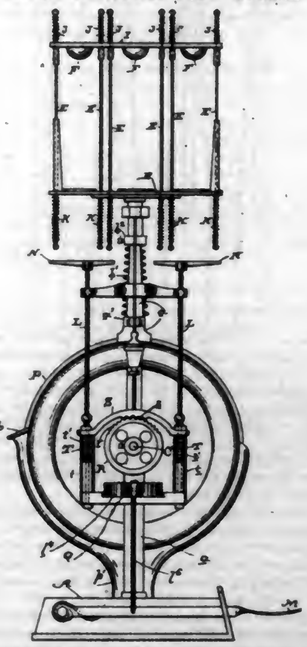
Claim.—In a hat blocking and pressing machine, the combination of a tank having an annular flange, means for supplying and discharging water to and from said tank, a detachable perforated block supported on legs within said tank on a plane flush with the flange of said tank, a sheet of rubber covering said perforated block and annular flange of the tank, an annulus resting upon the outer portion of said rubber covering and connected to the flange, and a die shutting within the annulus.

473,642. NUT-LOCK. WILLIAM SCHAUWECKER, Pittsburg, Pa. Filed Feb. 27, 1892. Serial No. 423,057. (No model.)



Claim.—The combination of a lock-seat having a bolt-hole through it with a series of slots in the sides of and parallel with the said hole, a plate having a bolt-hole through it and one or more feathers at the side of the hole fitted to closely engage the aforesaid slots, and mechanical means for connecting the plate with a nut and disconnecting it at will, substantially as described, whereby the same washer may be set at various angles around the hole and be mechanically engaged with or disengaged from the nut repeatedly at any such angle without changing the form of the washer.

473,643. DRINK-MIXER. RICHARD D. SCHROEDER, San Francisco, Cal. Filed Dec. 7, 1891. Serial No. 414,337. (No model.)



Claim.—1. In a machine for shaking liquids, the combination of the standard, the shaking platform having a stem mounted on the standard, the tumbler-holders upon each side of the standard, having depending rods, means for actuating the rods, a counterbalance-spring on said stem, and a collar adjustably secured to the stem and bearing upon the spring, substantially as herein described.

2. In a machine for shaking liquids, the combination of the shaking platform, the tumbler-holders, the vertically-movable rods carrying said holders, and the means for raising said rods to lift the holders and receive the tumblers, consisting of the arms or bars N under said rods, the vertically-movable rods L, carrying said arms or bars, the pivoted bail-lever P^3 for raising said rods, and the foot-lever M and connection with the bail-lever, substantially as herein described.

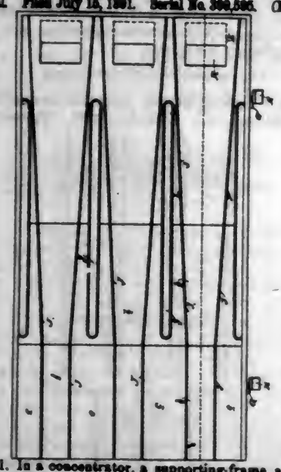
3. In a machine for shaking liquids, the combination of the shaking platform, the tumbler-holders, the vertically-movable rods carrying said holders, and the means for raising said rods to lift the holders and receive the tumblers, consisting of the arms or bars N under said rods, the vertically-movable rods L, carrying said arms or bars, the adjustable cross-bar connecting the lower ends of rods L, the pivoted bail-lever bearing under said cross bar, and the foot-lever and connection with the bail-lever, substantially as herein described.

4. In a machine for shaking liquids, the shaking platform with

its stem and the motor crank-shaft connected with the stem, in combination with the holding and braking mechanism, consisting of the brake-wheel on the crank-shaft, the brake-shoe adapted to operate upon said wheel, the spring-controlled posts supporting said brake-shoe, the cross-bar of the posts, the foot-lever, and connections between said foot-lever and said cross-bar for pulling the posts and brake-shoe down, substantially as herein described.

5. In a machine for shaking liquids, the combination of the vertically-movable rods L with their arms or bars N for lifting the holders of the machine, the brake-wheel of the motor-shaft, and vertically-movable spring-controlled brake-shoe operating on said wheel, the pivoted ball-lever, connections therefrom for lifting the rods L and pulling down the brake-shoe, and the foot-lever and connection for operating the ball-lever, substantially as herein described.

473,644. CONCENTRATOR. ADOLPH SCHULENBURG, San Francisco, Cal. Filed July 15, 1891. Serial No. 399,595. (No model.)



Claim.—1. In a concentrator, a supporting-frame and a superposed concentrating-table supported one above the other, a cam and bumper and springs acting upon the lower table whereby a longitudinal percussive movement of the tables is produced, an inclined or wedge-shaped lug upon the side of the upper table and a corresponding stationary piece against which it acts when the tables are moved, and longitudinally elastic connecting-arms F between this table and the lower one, whereby the upper table partakes of the longitudinal percussive movement and has in addition a side oscillating motion, substantially as herein described.

2. In a concentrator, the supporting-frame and the superposed table connected together as described and having a combined longitudinal percussive and side shaking motion, surfaces formed upon the upper table for the reception of the material to be concentrated, said surfaces converging from the receiving to the discharge end having an upward inclination, and adjustable rims or sides over which the lighter portions of the material may flow while the heavier concentrates are retained upon the tables, substantially as herein described.

3. In a concentrator, the supporting-frame and superposed table, means whereby said frame and table receive a longitudinal percussive and a side shaking motion, and inclined surfaces with converging sides and rims formed upon the table, said surfaces being divided into sections from one end to the other, each section toward the discharge end having a greater upward inclination than the previous section which discharges upon it, substantially as herein described.

4. In a concentrator, the supporting-frame and superposed table having the longitudinal percussive and side shaking motion, surfaces formed upon the table, having an increasing upward slope from the receiving to the discharge ends and diverging in the same direction, rims or flanges upon the sides of said surfaces over which the lighter materials flow while the heavier sulphurets are retained upon the surfaces, supplemental surfaces of similar shape and convergence fitted in the diverging surfaces of the table between the first-named surfaces, and longitudinal channels between these supplemental surfaces, substantially as and for the purpose herein described.

5. In a concentrator, the supporting-frame and superposed table, means whereby a longitudinal percussive and side shaking motion of the frame and table is produced, surfaces with converging sides formed upon the table side by side having an increasing upward slope from the receiving to the discharge end, and adjustable rims or flanges upon the sides of these surfaces to retain the heavier concentrates and allow the lighter to flow over, similarly-shaped supplemental surfaces formed in the diverging spaces intermediate between the first-named surfaces, and depressions or chambers at the receiving ends of the apparatus into which the material is delivered, said chambers having overlapping lips or plates whereby a preliminary separation and concentration takes place within these chambers, substantially as herein described.

6. In a concentrator, the supporting-frame and superposed table, a means whereby a longitudinal percussive and a side shaking motion of the frame and table is produced, surfaces and subdivisions of the table with sides converging toward the discharge end having rims or flanges whereby the concentrates are retained thereon and the lighter portions allowed to flow over said rims, preliminary concentrating-chambers at the receiving ends of the table, and chutes arranged in series above the table into which the pulp is first delivered and from which it flows to the concentrating-surfaces, substantially as herein described.

7. In a concentrator, the supporting-frame and superposed table, a means by which longitudinal percussive and a side shaking motion of the frame and table is produced, and surfaces and subdivisions of the upper table with overflow-rims, in combination with a series of superposed suspended chutes of different lengths, with side rims or flanges, and means for producing a longitudinal side and rocking motion of the chutes, substantially as herein described.

8. In a concentrator, the supporting-frame and superposed table, a means for producing a longitudinal percussive and a side shaking motion of the frame and table, subdivisions of the table with rims, and longitudinal channels between these subdivisions, with open slots through which the particles settling in the channels escape, substantially as herein described.

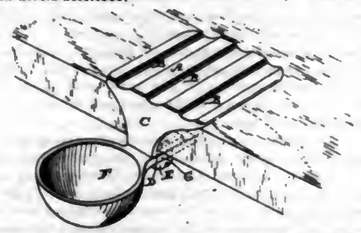
473,645. BAILING-PRESS POWER. ELIN C. SOUTHWICK, Newark, Ill. Filed Nov. 26, 1891. Serial No. 413,043. (No model.)



Claim.—The combination, in a bailing-press power, of the grooved cam D, the sliding bar H, carried by the cam and so located that the ends of the sliding bar will project alternately through the rim of the cam and into the groove in the face of the cam on opposite sides, the cam K, attached to the stationary frame in such position as to slide the bar H horizontally in its bearings and release the sliding block E, the sliding block E, and chain F, by which the power is transmitted from the grooved cam to the bailing-press, substantially as specified.

473,646. CIGAR AND ASH HOLDER. EDWIN A. TIBBITS and CLARENCE W. SADLER, Sutter Creek, Cal. Filed June 10, 1891. Serial No. 396,209. (No model.)

Claim.—1. A combined cigar-support and ash-receiver consisting of a grooved or corrugated plate having extensions to fit the front and under side of the table, a screw passing into the extension under the table to clamp it to the under side of the table, in combination with the cup below the under side of the table, having a flange projecting from its upper edge and perforated to fit loosely upon the screw-shank, whereby the cup may be turned under the table when not in use, substantially as herein described.



2. A combined cigar-support and ash-receiver consisting of a grooved or corrugated plate fitting the top of the table, having an extension fitting the front edge and turned under the lower edge, a cup-shaped receiver below the plane of the under surface of the table having a perforated flange, a screw passing through said flange, so that the receiver is revolvable about the screw-shank and may be turned under the table, said screw securing the plate to the table and the receiver of the plate, substantially as herein described.

473,647. CHECK-PERFORATING MACHINE. GEORGE B. WEBB, New York, N. Y. Filed May 6, 1891. Serial No. 391,714. (No model.)



Claim.—1. In a check-marking machine, the combination of a shaft having a rotatory and a vibratory motion, a marking-wheel on said shaft, having puncturing devices constructed to tear or disrupt the fibers of the paper, a combined feed-roller and abutment having a yielding surface, and a step-by-step feed mechanism for turning the same, actuated by the vibratory movement of said shaft, substantially as set forth.

2. In a check-marking machine, the combination of a shaft having a rotatory and a vibratory motion, a marking-wheel on said shaft, having puncturing devices constructed to tear or disrupt the fibers of the paper, a combined feed-roller and abutment having a yielding surface, a step-by-step feeding mechanism, and a spring, as 44, substantially as set forth.

3. In a check-marking machine, the combination of a shaft having a rotatory and a vibratory motion, a marking-wheel thereon having puncturing devices constructed to tear or disrupt the fibers of the paper, a combined feed-roller and abutment having a yielding surface, a ratchet-wheel, a driving-lever, a pivoted arm, and a spring, substantially as set forth.

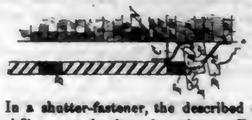
4. In a check-marking machine, the combination of a shaft having a rotatory and a vibratory motion, a marking-wheel thereon having puncturing devices constructed to tear or disrupt the fibers of the paper, a combined feed-roller and abutment having a yielding surface, a ratchet-wheel, a driving-lever, a pivoted arm, a stop or pin for said lever, and a spring, substantially as set forth.

5. In a check-marking machine, the combination of a shaft having a rotatory and a vibratory motion, a marking-wheel thereon having puncturing devices constructed to tear or disrupt the fibers of the paper, a combined feed-roller and abutment having a yielding surface, a step-by-step feeding mechanism, and a spring-pressure plate, substantially as set forth.

6. In a check-marking machine, the combination of a casing, a shaft, a tabular bearing in which to rotate said shaft, lateral pivots for said bearing, a handle and an index on one end of the said shaft, a marking-wheel on said shaft having puncturing devices constructed to tear or disrupt the fibers of the paper, a cover or top on said casing, an opening in said cover, a slotted pressure-plate, a combined feed-roller and abutment having a yielding surface, a feeding mechanism, and a locking contrivance for said shaft, substantially as set forth.

7. In a check-marking machine, the combination, with a casing or support and an abutment, of a shaft having a marking-wheel rigidly secured thereto and a tabular bearing extending longitudinally of said shaft to support the same and arranged between said marking-wheel and the handle of said shaft and pivoted laterally on both sides to the casing or support to have an up-and-down vibratory movement only and to guide said shaft and marking-wheel when the handle is depressed and the wheel raised to puncture the paper.

473,648. SHUTTER-FASTENER. GEORGE C. WEEKS, Boston, Mass. Filed Aug. 18, 1891. Serial No. 403,005. (No model.)

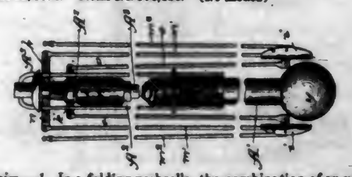


Claim.—1. In a shutter-fastener, the described combination of two catches J and J', separately pivoted to a hanger F, attached to the bottom of the shutter, catch J being formed with a salient corner J^3 and a receding curve J^4 and catch J' with an inwardly-curved corner J^3, the two catches being respectively provided with projections J^5 and J^6, each extending below the hook of its catch and also pivotally arranged relatively to each other and formed to interlock, as described, whereby the raising or depressing of the hook of catch J will raise the hook of catch J', while the raising of the hook of catch J' will be independent of and without effect upon catch J, as and for the purposes specified.

2. In combination, a supporting-bracket M, fixed to the wall and provided with a slot R and a catch-holder S, and a catch J', pivotally secured to the bottom of the shutter and having an incline K and a correspondingly-inclined notch L' and projection J^6, extending below the notch, whereby the shutter is firmly supported against sagging and securely locked in its open position, as specified.

3. The described combination of catches J and J', pivoted to a hanger F, attached to the shutter, the catches being formed with inclines K and K', leading into correspondingly-inclined slots L and L', and with downward projections J^5 and J^6, extending below the inclines and serving as stops against the catch-holders and to insure the interlocking of the catch and holder, as specified.

473,649. UMBRELLA. HOWARD S. WHITCOMB, Chicago, Ill. Filed June 13, 1891. Serial No. 396,126. (No model.)



Claim.—1. In a folding umbrella, the combination of an umbrella-stick A, formed in sections, consisting of a rod A^2 and a handle portion telescoping therewith, ribs *m*, pivotally connected with the rod A^2, braces *o*, pivotally connected with the handle portion, and a sleeve *l* below the rod A^2 and rigidly connected therewith, substantially as described.

2. In a folding umbrella, the combination of an umbrella-stick A, formed in sections, consisting of a rod A^2 and a handle portion telescoping therewith, bearing *p* for the brace-rods on the handle portion, bearing *n* for the ribs on the rod A^2, sleeve *l*, and rods *k*, connecting the sleeve *l* and bearing *n*, substantially as described.

3. In a folding umbrella, the combination of an umbrella-stick A, formed in sections, consisting of a rod A^2 and a handle portion telescoping therewith, rib-sections *m'*, pivoted to the rod A^2, pivot-bearings *i* on the sections *m'*, provided with lugs i^3, rib-sections m^2, pivoted to the bearings *i*, brace-rods pivotally connected at opposite ends, respectively, to the handle portion and lugs i^3, and a sleeve *l*, rigidly connected with the rod A^2, substantially as described.

4. In a folding umbrella, the combination of an umbrella-stick A, formed in sections, consisting of a rod A^2 and a handle portion telescoping therewith, ribs *m*, formed in sections *m'* m^2, connected pivotally together, braces *o*, rib-bearing *n* on the rod A^2, brace-bearing *p* on the handle portion, sleeve *l*, and rods *k*, connecting the sleeve *l* and rib-bearing *n*, substantially as described.

5. In a folding umbrella, the combination of an umbrella-stick A, formed in sections, consisting of a rod A^2 and a handle portion telescoping therewith, ribs *m*, formed in sections *m'* m^2, connected pivotally together, braces *o*, rib-bearing *n* on the rod A^2, loose brace-bearing *p* on the handle portion and held thereon against independent longitudinal movement and provided with openings *k'*, sleeve *l*, rods *k*, passing

loosely through the openings k' in the bearing p and connecting the sleeve l and rib-bearing, a groove s' in the handle portion, and a lug r' on the rod A^2, substantially as and for the purpose set forth.

6. In a folding umbrella, the combination of an umbrella-stick A, formed in sections, consisting of a rod A^2 and a handle portion telescoping therewith, ribs m, braces o, rib-bearing n on the rod A^2, brace-bearing p on the handle portion, sleeve l, rods k, connecting the sleeve l and rib-bearing, and a spring h between the said rib and brace bearings, substantially as described.

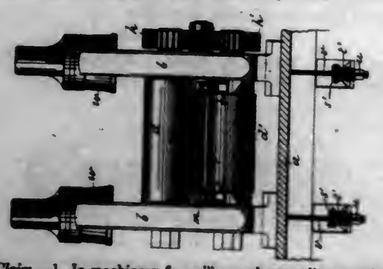
7. In a folding umbrella, the combination of the telescoping umbrella-stick sections A' A^2 A^3, rib-bearing n on the section A^2, loose brace-bearing p on the section A^2, sleeve l, rods k, connecting the runner and rib-bearing, locking means between the adjacent ends of the extended sections, and locking means, as the pin q and sockets q' on the sections A' A^2, for securing the said sections together against independent rotation when telescoped, substantially as and for the purpose set forth.

473,650. RUBBER SHOE. FRANCIS C. WILLIAMS, Philadelphia, Pa. Filed Feb 4, 1892. Serial No. 420,868. (No model.)



Claim.—A rubber shoe having its outer sole or wearing-surface provided with a series of perforations separated from each other, said perforations being filled with a compound of rubber and grit and the whole vulcanized, substantially as described.

473,651. MACHINERY FOR ROLLING AND EXPANDING METAL TUBES. THOMAS C. BARRACLOUGH, London, England. Filed May 11, 1891. Serial No. 392,264. (No model.)



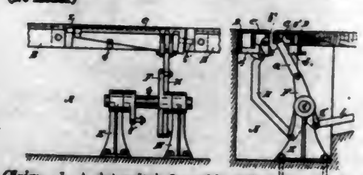
Claim.—1. In machinery for rolling and expanding metal tubes, the combination, with a roller or roll mounted in fixed bearings, a roller or roll driven in the same direction as the first-named roller and mounted in movable bearings, said movable bearings being fitted in vertical guideways and normally forced toward said fixed bearings by powerful pressure, means for driving said rollers in the same direction, and means for forcing said movable roller toward said fixed roller, of a mandrel for carrying the tube to be operated upon adapted to enter between said rollers, a mandrel and tube carriage revolubly supporting said mandrel and adapted to run said mandrel with the tube to be operated upon sidewise into position between said lower and upper rollers, substantially as set forth.

2. In machinery for rolling and expanding metal tubes, the combination, with a roller or roll mounted in fixed bearings, a roller or roll driven in the same direction as the first-named roller and mounted in movable bearings, said movable bearings being fitted in vertical guideways and normally forced toward said fixed bearings by powerful pressure, means for driving said rollers in the same direction, and means for forcing said movable roller toward said fixed roller, of a mandrel for carrying the tube to be operated upon adapted to enter between said rollers, a mandrel and tube carriage revolubly supporting said mandrel and adapted to run said mandrel with the tube to be operated upon into position between said lower and upper rollers and to maintain said mandrel there in position during the rolling operation, and a counterpoise arranged to lift said upper roller and its bearings when said pressure is removed to permit insertion and withdrawal of said mandrel and tube, substantially as and for the purpose set forth.

3. In machinery for rolling and expanding metal tubes, the combination, with the lower roller or roll mounted in fixed bearings and an upper roller or roll driven in the same direction as said lower roller, movable bearings in which said upper roller is mounted, means for driving said rollers in the same direction, vertical guideways for said movable bearings, and hydraulic cylinders normally exerting downward pressure on said movable bearings, of the counter-weights s, levers s', carrying at their outer ends said counter-weights, fulcrums t for said levers, links t', engaging the other ends of said levers, lifting-plates u beneath the inner ends of said levers and to which said levers are connected at the centers of the plates, and vertical rods v, connected rigidly and equidistant from said links to said plates u at their lower ends and extending thence upwardly on opposite sides of the rollers and engaging said movable bearings at their other ends, said parts constructed to transmit the counterpoising force of said counter-weights s to said movable bearings for said upper roller, whereby when said hydraulic pressure is removed the roller d' and its bearings e are lifted, substantially as set forth.

4. In machinery for rolling and expanding metal tubes, the combination, with a lower roller or roll mounted in fixed bearings, an upper roller or roll driven in the same direction as said lower roller, movable bearings in which said upper roller is mounted and which are normally kept down by powerful pressure, vertical guideways for said movable bearings, means for driving said rollers in the same direction, and means for forcing said movable roller toward said fixed roller, and a counterpoise adapted to lift said upper roller and its bearings when the downward pressure thereon is removed, of a mandrel for carrying the tube to be operated upon adapted to enter between said rollers, and a mandrel and tube carriage revolubly supporting said mandrel and adapted to run said mandrel with the tube to be operated upon sidewise into position between said lower and upper rollers when the upper roller is lifted by said counterpoise and to maintain it in position during the rolling operation and while said upper roller is kept down by powerful pressure and to withdraw it from position when said pressure is removed and said counterpoise again lifts said upper roller, said counterpoise constructed to permit the free operation of said mandrel and tube carriage sidewise toward and from said rollers, substantially as set forth.

473,652. CABLE-RAILWAY SWITCH. IRA BISHOP and ARTHUR F. L. BELL, San Francisco, Cal. Filed Jan. 29, 1892. Serial No. 419,708. (No model.)



Claim.—1. A slot-switch for cable railways, consisting of opposing rotary slot-rail sections so mounted that at one end the position of the space between them shall be constant and remain in line with the inleading main slot and at the other end shall be variable and be brought by their rotation into line with either the outleading main slot or with the branch slot, substantially as herein described.

2. A slot-switch for cable railways, consisting of separated rotary slot-rail sections pivoted centrally at one end and eccentrically at the other end, whereby the position of their intervening space remains constant at the former end and is variable at the latter end, substantially as herein described.

3. A slot-switch for cable railways, consisting of the separated rotary slot-rail sections having the pivot-pins c at one end and the pivot-pins c' at the other end, said pins being so located that at the former end the position of their intervening space remains constant and in line with the inleading main slot and at the other end is variable to bring it in line with either the outleading main slot or with the branch slot, substantially as herein described.

4. In a cable railway, the rotary separated angular sections of the slot-switch, each of said sections having its sides of equal width at one end and unequal at the other end and each being so mounted that at the former ends the position of the space between them shall be constant and remain in line with the inleading main slot and at the latter ends shall be variable and be brought into line with either the outleading main slot or with the branch slot, substantially as herein described.

5. In a cable railway, the rotary separated angular sections of the slot-switch, each of said sections having its sides of equal width at one end and unequal at the other end, and each being pivoted centrally at the former ends, whereby the position of the space between them at said ends shall remain constant and in alignment with the inleading main slot and pivoted eccentrically at the latter ends, whereby the position of the space between them at said ends shall be variable and be brought into alignment with either the outleading main slot or with the branch slot, substantially as herein described.

6. In a cable railway, the combination of the rotary unequal-sided slot-rail sections forming the slot-switch, and the brackets D, in which they are mounted and operate, substantially as herein described.

7. In a cable railway, the combination of rotary slot-rail sections forming the slot-switch and the brackets D, in which they are mounted, said brackets having the stops and supports d, substantially as herein described.

8. In a cable railway, the combination of opposing separated slot-switch sections pivoted centrally at one end and eccentrically at the other, for the purpose described, and mechanism within the cable-railway tube for rotating said sections in opposite directions, substantially as herein described.

9. In a cable railway, the combination of opposing rotary slot-switch sections and the means for operating them, consisting of the rock-shaft, with the crank F, the links G and H, connecting the arms of said crank with said sections and the crank d of the rock-shaft and the rod I, substantially as herein described.

10. A cable-railway switch consisting of opposing rotary slot-switch sections, the track-switch tongue L, the operating-lever J, having the eccentric or cam head, and connections from said head to the slot-switch sections and to the track-switch tongue, respectively, whereby they are operated simultaneously, substantially as herein described.

11. A cable-railway switch consisting of rotary slot-switch sections, the rock-shaft, with its crank and connected links for operating said sections, the track-switch tongue L, the operating-lever J, with its cam-head, the rod I, connecting said head with the rock-shaft of the slot-switch sections, and the rod K, connecting said head with the track-switch tongue, substantially as herein described.

473,653. IRONING-BOARD. SARAH BOONE, New Haven, Conn. Filed July 23, 1891. Serial No. 400,474. (Model.)



Claim.—1. An ironing-board having its edges respectively curved to correspond to the outside and inside seams of a sleeve, and provided at one end with a fixed transverse support and at its opposite end with a movable support attached to it by a hinge and arranged in line with the board, the outer and inner edges whereof respectively have, in effect, outward and inward longitudinal curvature, substantially as described.

2. An ironing-board having its edges respectively curved to correspond to the outside and inside seams of a sleeve, and constructed at one end with a notch to receive a transverse support, which is fixed in it, and with a bearing-face, and at its opposite end with a notch, which receives a movable support which is hinged to the said end and extends in line with the board, the outer and inner edges whereof respectively have, in effect, outward and inward longitudinal curvature, substantially as described.

473,654. LAST. JOSEPH BRIGHAM, Northampton, Mass. Filed Aug. 20, 1891. Serial No. 403,252. (No model.)

Claim.—1. In combination, an integral fore-part foot-and-ankle section having at the rear of the sole portion thereof a step-like recess or depression o, a rear-ankle section shorter than the length of the foot-and-ankle section and adapted to match with the fore-part ankle portion thereof, but having its one end terminating at a distance from the contour of the sole, and means for confining said parts in matching engagement, and a heel-section having a forwardly-extended sole portion m to fit in said step-like depression and having a pin-and-socket engagement with the upper end of said rear ankle-section, substantially as described.

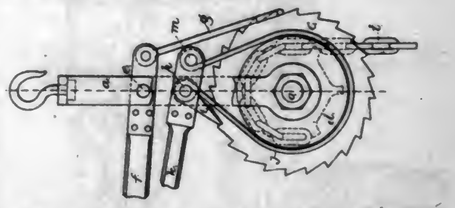
2. In combination, in a sectional last, a part comprising a base and rear-ankle standard rigidly fixed thereon and having a transverse opening or slideway extended horizontally from front to rear thereof, a heel-section removably mounted on the upper end of said standard, and a fore-ankle and fore-part foot-section having a stud or bar, which is horizontally extended from the rear of the fore-ankle portion for engagement in said slideway, and a fastening device for an engagement between said standard and said bar, substantially as described.

3. The combination, with an integral fore-part foot-and-ankle section, which has at the rear of the sole portion thereof the step-like depression o, of a base and permanent rear-part ankle-standard, of less height than the aforesaid section, and one of said parts having a transverse socket and the other a bar to fit therein, and a device for locking the bar in the socket, and the heel-section having the forwardly-extended sole portion m to fit in the said depression, and having a pin-and-socket engagement with the end of the rear-part ankle-standard, all whereby by the substitution of an interchangeable extension heel or foot and fore-part ankle-section, the form and dimensions of the last may be modified, substantially as and for the purposes set forth.



4. The combination, with the rear-ankle standard and the heel section having dowel-and-socket engagements with the standard, substantially as described, the said heel-section having the forward extension m, and the standard having the opening h, of a fore-part foot-and-ankle section having the recess o to match with said heel-extension and having the stud or bar q, that is adapted to slide in said opening, and the set-screw, substantially as described.

473,655. HOISTING-MACHINE. MARTIN CURRAN, Jr., Deering, Me. Filed Oct. 29, 1891. Serial No. 410,170. (No model.)

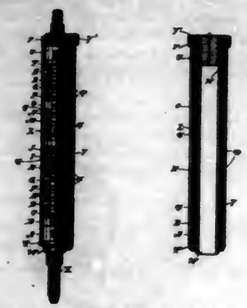


Claim.—In a hoisting-machine, the combination, with a suitable yoke, a sprocket-wheel, a ratchet-wheel, a friction-pulley set on a shaft journaled in said yoke, a lever having a swinging link adapted to engage the ratchet-wheel, and a swinging pawl adapted to engage said ratchet-wheel, of a friction-band adapted to pass around said pulley, and a lever fulcrumed in said yoke and adapted to operate said band, substantially as and for the purposes set forth.

473,656. POCKET CASH-ACCOUNTANT. JAMES DAVIS, San Francisco, Cal. Filed June 30, 1891. Serial No. 398,091. (No model.)

Claim.—1. A mechanical accountant consisting of the cylinder, a series of rings fitted thereon and rotatable upon it, said rings having numerals, respectively, for debit and credit sides of the account, ab-

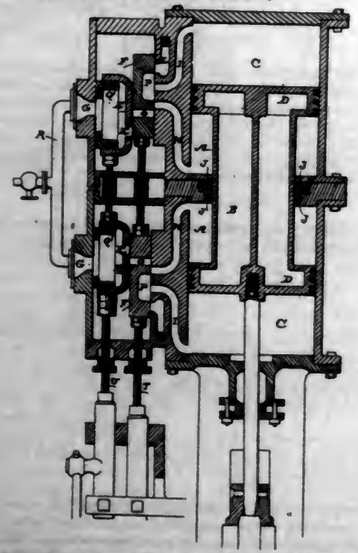
breviations indicating debtor and creditor, and calendars to correspond with each, holes made in the rings for the introduction of a pin, whereby they may be moved with relation to each other, and a screw-threaded ring fitting corresponding threads upon the end of the cylinder and serving to lock the calendar and account rings, substantially as herein described.



2. A mechanical accountant consisting of the cylinder, a series of rings rotatable thereon, numerals marked upon the rings to indicate, respectively, debit and credit, and corresponding abbreviations and calendars for each set of rings, means for rotating the rings and locking them in place, and an exterior casing or cover fitting over the rings, with a cap whereby the casing is retained in place, substantially as herein described.

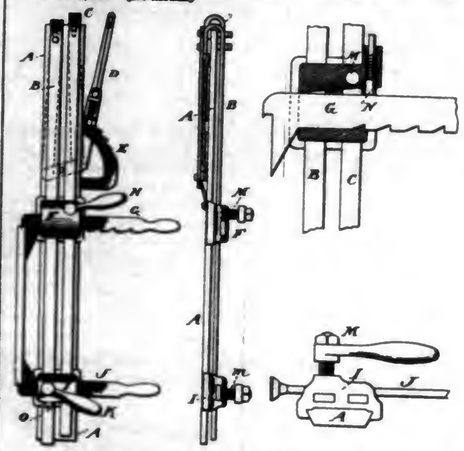
3. A mechanical accountant consisting of the cylindrical tube having the rings rotatable upon its exterior surface, said rings being marked with numerals, abbreviations for debit and credit and for calendars with relation to each set of numerals, an exterior casing, and a disk or cap whereby it is secured in place, said disk having a central opening corresponding with the openings of the central tube for the reception of a pen or pencil, substantially as herein described.

478,657. ENGINE. MILES B. DODGE, San Francisco, Cal. Filed July 1, 1891. Serial No. 398,171. (No model.)



Claim.—In an engine, the separate and independent cylinders, with independent valve-chambers in connection therewith, said cylinders being secured together in line with each other, an intermediate removable head having a chamber and packing-rings removably fitted therein, pistons fitting each of the cylinders, a trunk connecting said pistons passing through the intermediate head of the cylinder and the packing-rings, ports connecting each of the cylinders with its independent steam-chest, and exhaust-ports leading from the outer ends of each of the steam-chests, valves F, having chambers P, by which the inner and outer ends of the cylinders and the outer ends and exhaust-passages are each alternately connected together, supply-ports made through the extended inner ends of the cylinders, whereby steam from the boiler is admitted directly to the inner ends of the cylinders only, slide cut-off valves movable upon the backs of the main slide-valves, and connecting-rods extending through the intermediate walls of the valve-chambers, whereby the slide and cut-off valves of each of the cylinders may be removed or adjusted independently of each other, substantially as herein described.

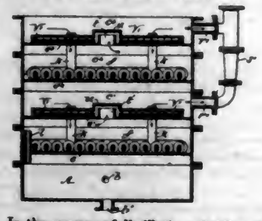
478,658. SAWMILL-DOG. PATRICK J. DOYLE, FORREST R. THRALL, and MARVIN B. WILKINSON, Asheville, N. C. Filed July 2, 1891. Serial No. 398,309. (No model.)



Claim.—1. The combination, with the bar A, slotted at the upper end, of the sliding bars B C, bolts connecting the parallel portions of said bars and passed through the slots of the bar A, having parallel portions and a curve at one end over the slots of the bar A, and the lever D, pivoted to the bar A and connected to the sliding bars to move them simultaneously in opposite directions, and the heads carrying dogs, one of which is notched, and operating means, substantially as described.

2. The combination, with the bar A, slotted at the upper end, of the sliding bars B C, bolts connecting the parallel portions of said bars and passed through the slots of the bar A, having parallel portions and a curve at one end over the slots of the bar A, and the lever D, pivoted to the bar A and connected to the sliding bars to move them simultaneously in opposite directions, the heads, the screws, the dogs, and the levers mounted to bind the dog to the head and the heads to the sliding bar at one movement, substantially as described.

478,659. ART OF DISTILLATION AND APPARATUS USED THEREFOR. ARTHUR W. ELLIS, London, England, assignor of one-half to Thomas Horsefield Carman, same place, and Montreal, Canada. Filed Oct. 21, 1890. Serial No. 368,865. (No model.)



Claim.—1. In the process of distillation, dividing the liquid to be distilled into a series of layers gradually decreasing in depth downward toward the lowermost, (the opposite extremes of depth being approximately two inches and one inch and the degree of diminishment about one-eighth of one inch,) and increasing in density and applying steam-heat in a plurality of streams or bodies to each layer of such liquid, as set forth.

2. In the process of distillation, dividing the liquid to be distilled into layers gradually decreasing in depth downward toward the lowermost, (the opposite extremes of depth being approximately two inches and one inch and the degree of diminishment about one-eighth of one inch,) and increasing in density and applying steam-heat in a plurality

of streams or bodies through each layer in increased quantity to each liquid as the same increases in density, as set forth.

3. In a distilling apparatus, the combination, with a boiler supplying steam, of the distillatory apparatus set at a height above the boiler, heating-coils within said distillatory apparatus and composed of pipes the upper wall of each of which is substantially horizontal and the lower wall inclined and with their outlets and fittings arranged to have an uninterrupted fall, feed-pipes from said boiler to said heating-pipes, and an inclined main return-pipe, with vertical connection between it and said heating-pipes, having its lowest end entering the boiler above the water-line of same and in the steam-space thereof, all as shown, and for the purpose set forth.

4. In a distilling-column, a series of superimposed chambers by which the liquid to be distilled is divided into different layers having communicating openings between them of gradually-increasing area in an upward direction to accommodate an increasing volume of vapor, and means for heating the liquid in each chamber, as set forth.

5. In a distilling-column, the combination, with a series of superimposed chambers having connecting-openings between them by which the liquid to be distilled is divided into different layers, of heating-coils located within said chambers and composed of pipes the upper wall of each of which is substantially horizontal and the lower wall inclined, for the purposes set forth.

6. In distilling apparatus, the combination, with the boiler and a distilling-column comprising a lower receiving-chamber, a series of superimposed chambers by which the liquid to be distilled is divided into different layers of varying depths, heating-coils within, and communicating openings between such superimposed chambers, of main feed and return pipes from and to said boiler, separate branch inlet and outlet pipes, respectively, between said feed and return pipes and each of said chambers, and means for regulating the supply of heat to each of said heating-coils, as set forth.

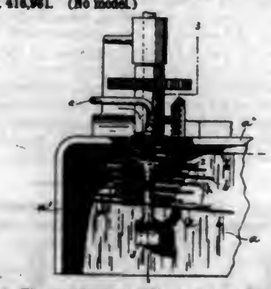
7. In a distilling-column, the combination, with a series of chambers superimposed on each other, of steam-piping contained in each and having a separate inlet and outlet, and communicating apertures between each chamber, increasing in area upward from that between the first and second chambers, substantially as and for the purposes set forth.

8. In a distilling-column, the combination, with a series of chambers superimposed on and communicating with each other, each provided with steam-piping having a separate inlet from main steam-pipe and outlet to main return-pipe, of trays in same, with overflow increasing in depth in even ratio upward, as and for the purposes set forth.

9. In combination with each of a series of the chambers *e e*, a gridiron of steam-pipes, composed of a cross inlet-pipe communicating directly with main steam-pipe, an outlet-pipe, and pipes *f' f'*, connected with both, circular in section at or near the inlet and oval in section at the outlet, as and for the purposes set forth.

10. In a distilling-column, a series of chambers superimposed on each other, each alternate chamber being furnished with a gridiron of pipes and the intervening chambers being each constructed with a central opening from below communicating with pierced radiating pipes, and an outlet to a main pipe constantly increasing in diameter for carrying off the vapor.

478,660. PACKING DEVICE FOR MACHINES FOR MARKING MAIL-MATTER. MARTIN V. B. SYBRIDGE, Everett, assignor to the American Postal Machines Company, Boston, Mass. Filed Jan. 4, 1892. Serial No. 416,981. (No model.)

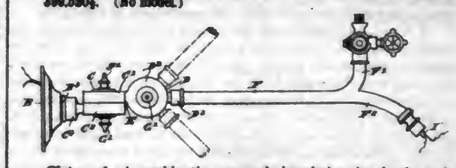


Claim.—1. The combination, with a packing-table and a packing-screw, of means for directing a current of air against the letters delivered to said table and screw, as set forth.

2. The combination, with the table and packing-screw, of a pipe or conduit arranged to deliver a jet of air above the table and in the direction in which the letters are moved by the packing-screw, as set forth.

3. The combination, with a letter-supporting table and a packing device adapted to give lateral movement to letters delivered to said table, of means for directing a current of air against the letters in the direction required to give them their initial lateral movement.

478,661. COMBINED GAS AND ELECTRIC-LIGHT BRACKET. JOHN FITZGERALD, Montreal, Canada. Filed July 14, 1891. Serial No. 399,530. (No model.)



Claim.—1. A combination gas and electric bracket having tubular parts, means for attachment, and a universal joint formed of two hollow cylindrical portions arranged axially at right angles to each other and each composed of half-sections with their inner faces held together in swiveling relation, means for holding each sections to each other, and a rigid tubular connection between one half-section of one cylindrical portion and another half-section of the other cylindrical portion.

2. In a combination gas and electric bracket having tubular parts, means for attachment, and a universal joint, a rubber tubing extending between the entry and exit ends of the gas-passage of the bracket proper, and means for holding same firmly and closely in contact with the bracket at such points, as set forth.

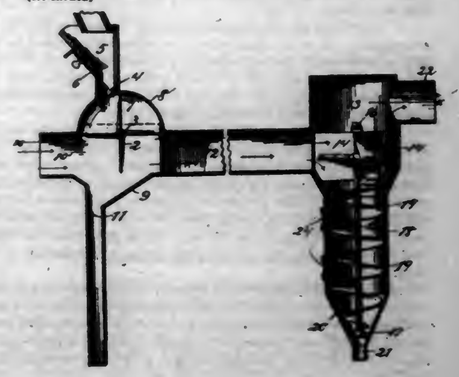
3. In a combination gas and electric bracket having tubular parts, means for attachment, and a universal joint, a rubber tubing extending between the entry and exit ends of the gas-passage of the bracket proper, means for holding same firmly and closely in contact with the bracket at such points, and a spiral spring arranged within said tubing, for the purposes set forth.

4. In a combination gas and electric bracket having tubular parts, means for attachment, and a universal joint, a rubber tubing extending between the entry and exit ends of the gas-passage of the bracket proper, shoulders in the bracket at said points, perforated wedges inserted in the ends of said tubing, and perforated screw-nuts adapted to bear upon said wedges and force them inward to press the tubing firmly and closely in contact with said shoulders.

5. In a combination gas and electric bracket having tubular parts, means for attachment, and a universal joint, a common passage-way for the gas and electric wires formed by said tubular parts and jointed for the greater length centrally of the bracket, and separate end channels to and from said common passage-way for the electric wires, and means for plugging up said channels after such wires are in place, as and for the purpose set forth.

6. A combination gas and electric bracket having tubular parts, means for attachment, and a universal joint formed of two hollow cylindrical portions arranged axially at right angles to each other and each composed of half-sections with their inner faces held together in swiveling relation by central axial connections, and a rigid tubular connection between one half-section of one cylindrical portion and another half-section of the other cylindrical portion.

478,662. DUST-COLLECTOR AND GRAIN-CLEANER. PHILIP HANCKLER, Minneapolis, Minn. Filed Aug. 14, 1891. Serial No. 402,604. (No model.)

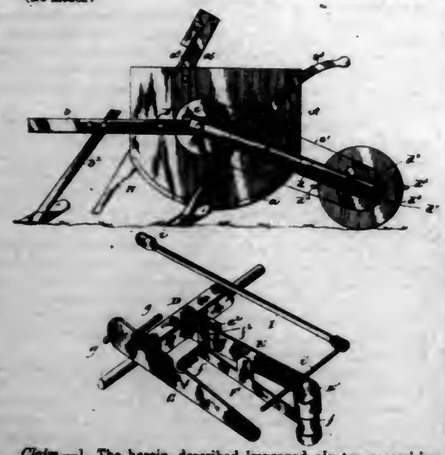


Claim.—1. The combination, with the hopper 5, provided with the narrow opening or mouth 4, of means for limiting the width of the opening, the semi-cylindrical casing 8, having the lower portion provided with a large air-inlet 10 and with the inclined hopper-plate 9, the small spout 11, extending therefrom, a dust-laden air-duct 12, and the shaft 3, loosely fixed in bearings in the ends of said casing and provided with a series of wings 2, upon which the stream of grain from the mouth 4 continuously falls, and means for disposing of the dust passing off through the duct 12, substantially as described.

2. The combination, with the hopper 5, having the narrow discharge or mouth 4, of the shaft 3, provided with the wings 2 and arranged to continuously present one of its wings beneath the mouth 4, the casing 8 of the same, a large free air-inlet 10, a hopper and spout to conduct the grain from the lower part of the casing, a dust-laden air-duct 12, the chamber 13, free in its upper part and having in its lower portion the vertically-arranged fan, the inclined wings 14 of said fan, the lower chamber 18, into which the air is directed by the incline of said wings 14, and a purified-air discharge 22, extending from the upper portion of the chamber 13, substantially as described.

3. The combination, with the chamber 13, of the pipe 12, entering the lower portion of the same at a tangent, a vertically-arranged spindle 15, the portion 18, provided with doors 24, a spiral dust-conveyer provided on said spindle, the upper portion of the chamber 13 being free and open, the air-discharge 22, and the regulating-valve, all substantially as described.

473,663. CORN-PLANTER. ANDREW J. HALL, Carmel, Tenn., assignor of one-half to J. W. Dunn. Filed Oct. 9, 1891. Serial No. 408,271. (No model.)



Claim.—1. The herein-described improved planter, comprising the hopper or receptacle, the rotary shaft passed transversely therethrough, means for rotating said shaft, the grain-carrying cup secured to said shaft and designed to revolve therewith, the spring-impelled plunger fitting in said cup, a trip for forcing said plunger therein and ejecting the grain therefrom, and the finger pivotally secured in said hopper and serving as a scraper over the end of said cup, substantially as set forth.

2. The herein-described improved planter, comprising the hopper or receptacle, the rotary shaft passed transversely therethrough, the plate secured to said shaft and having a grain-carrying cup at its outer end, the lever pivotally secured to said plate and having a plug attached to one end fitting said cup, and a trip for said lever for forcing said plunger in said cup, substantially as set forth.

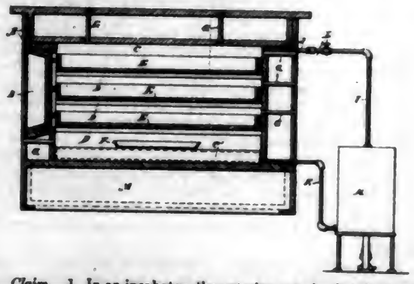
3. The herein-described improved planter, comprising the hopper or receptacle, the rotary shaft passed transversely therethrough, the plate secured to said shaft and having its outer end curved or bent back upon itself, forming a grain-cup, the lever pivotally secured to said plate and having a bent or angular end, and a projection at its outer end fitting said grain-cup, and an arm or lever pivotally secured to the inner side of said hopper and having a lug or projection with which said bent or angular end of said lever engages, substantially as set forth.

4. The combination, with the hopper or receptacle having its front wall or partition provided with a slot or opening, of a spring bar or plate designed to cover said slot or opening, and a rotary shaft passed transversely through said hopper or receptacle, carrying a grain-cup designed to be projected through said slot or opening, substantially as set forth.

5. The combination, with the hopper or receptacle, of the rotary shaft extended transversely therethrough, the plate secured to said shaft, having a grain-cup at its outer end, and an arm pivoted at one end to the inner side of said hopper and having a right-angular finger serving as a scraper at its free end, substantially as set forth.

6. The combination, with the hopper or receptacle having its front wall or partition provided with a slot or opening, of a spring bar or plate normally extended over said slot or opening, the parallel bars between which said hopper or receptacle is secured, the plows projecting from said bars, the scrapers also projecting therefrom, the shaft extended transversely through said hopper or receptacle and having a pulley thereon, the grain-carrying cup projecting from said shaft, the lever having a plunger fitting said cup, the arm or lever having a lug or projection designed to be engaged by said former lever, the pivoted arm having a finger acting as a scraper for said cup, the frame pivotally secured to said parallel side bars and carrying an axle at its outer end, the pulley secured on said axle, the belt encircling the same and said former pulley, and the driving-wheel also secured on said shaft and having opposite lugs, substantially as set forth.

473,664. INCUBATOR. EDMUND HARRISON, Tulare, Cal. Filed Sept. 26, 1891. Serial No. 406,940. (No model.)



Claim.—1. In an incubator, the exterior case having the double walls and a side door, each adapted to contain an intermediate filling of non-conducting material, the metallic water-chamber C, extending along the inner sides of the casing and having the shallow continuations extending horizontally inward from the bottom and meeting in the center of the case, a heater exterior to the case, supply-pipes I J J, with a cock L, and the return-pipes K, substantially as herein described.

2. In an incubator, the exterior case with double walls, top, and door, each adapted to contain an intermediate filling of non-conducting material, separate water-chambers extending along the sides and having the horizontal L-shaped extensions meeting in the center of the box and forming a bottom of the interior chamber, an exterior water-heater having the pipes I J J, connecting its top with the upper part of the chambers C, and the pipes K K, connecting the lower part with the bottom of said chambers, cleats or supports fixed upon the inner vertical side of the chambers C, sliding trays E, supported upon said cleats and adapted to contain eggs, and ventilating-openings G, made in the walls and top of the exterior case, substantially as herein described.

3. In an incubator, the exterior case having its double walls, top, and door adapted to contain an intermediate non-conducting filling, and a single bottom, the independent water-chambers C, extending along the sides of the chamber, with cleats upon their inner faces, said chambers having shallow L-shaped extensions at the bottom of the chambers meeting in the center and covering the floor of the case, egg-trays adapted to slide upon said cleats, and compartments formed below the floor of the case and deriving heat through it from the shallow extensions of the interior chambers, said compartments adapted to contain brooding devices, and means for supplying heat to the water-chambers C, substantially as herein described.

473,665. FISHING-REEL. ANDREW B. HENDRYX, New Haven, Conn. Filed Mar. 14, 1892. Serial No. 424,796. (No model.)



Claim.—The herein-described improvement in fishing-reels, consisting in a bearing composed of a concavo-convex flange formed in the head around the arbor-opening, and a bearing-piece constructed with a tubular shank extending through the said opening, so as to bring the said bearing-piece to rest against one side of the flange around the said opening, combined with a collar upon the reverse side of the said flange and around the tubular shank of the bearing-piece, and the shank connected to the collar, so as to make connection through the head between the bearing-piece on one side and the collar upon the reverse side, the faces of the said collar and of the said bearing-piece in shape corresponding to the concavo-convex flange around the bearing-opening in the head, substantially as described.

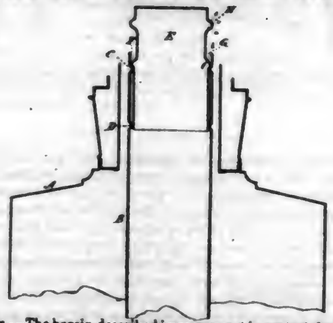
473,666. TOBACCO-PIPE. WILLIAM R. HUGHES, Newark, N. J. Filed July 23, 1891. Serial No. 400,402. (No model.)



Claim.—1. The improved pipe-stem combining therein the stem *b* and sections *c'*, separable from said stem and from one another, open at opposite ends, and forming the smoke-passage complete, substantially as set forth.

2. The improved pipe-stem in which is combined the longitudinally bored or perforated stem, trough-shaped sections flanged from end to end and fitted together, with their flanges face to face and located in the bore of the stem and having abutments fitted against the end of the stem, substantially as set forth.

473,667. CENTRAL-DRAFT LAMP. JOSEPH JAUCH, Meriden, Conn., assignor to The Bradley & Hubbard Manufacturing Company, same place. Filed Oct. 6, 1890. Serial No. 367,211. (No model.)



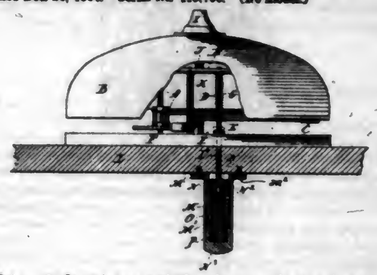
Claim.—The herein-described improvement in central-draft lamps, consisting of the central draft-tube B, constructed with an annular rib C upon its inside and below its upper end and with an annular internal rib D below said rib C, combined with a distributer closed at its upper end, the external diameter of which is less than the internal diameter of the said tube, said distributer constructed with an outwardly-projecting annular rib F of a diameter greater than the diameter of the rib C and so as to rest thereon and leave an annular space G within said tube above said rib F, said distributer extending into the said tube and below the said rib D, the external diameter of the distributer at the said rib D corresponding to the internal diameter of said rib D, the sides of the distributer and the said rib F being perforated, the perforations of the said rib opening into the said annular space G, substantially as described.

473,668. DOOR-FASTENER. SAMUEL N. LAWING, Chattanooga, Tenn., assignor of one-half to August P. Smith and Clarence L. Walsh, same place. Filed Dec. 11, 1891. Serial No. 414,773. (No model.)



Claim.—A door and window-sash securer consisting of a single piece having one edge adapted to fit over a door-sill or threshold, a blade projecting centrally and longitudinally from said edge, a shoulder extending lengthwise with and on each side of said blade, and a curved projecting sharp-pointed spur, substantially as described.

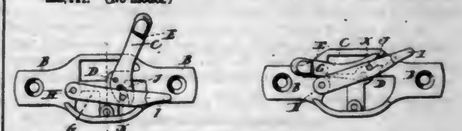
473,669. THERMOSTATIC FIRE-ALARM. GEORGE D. MOSHER, Birmingham, Conn., assignor of one-half to Simon Novitsky, same place. Filed Dec. 21, 1891. Serial No. 415,760. (No model.)



Claim.—1. In a thermostatic fire-alarm, an alarm-train normally ready to operate, a bell, a bell-hammer in connection with the said train for actuation thereby, and a movable spring-actuated detent to normally restrain the said train, all of the said parts being organized together, in combination with an independently-organized thermostatic tripping device consisting of a striker arranged for moving the said detent when released, a spring for throwing the striker and acting in opposition to the spring of the detent than which it is heavier, a body of fusible material normally holding the striker in its retired position against the tension of the spring of the striker, which is thereto constructed to be gripped by the said material, and a pocket to contain the said fusible material and a portion of the striker, substantially as described.

2. In a thermostatic fire-alarm, an alarm-train normally ready to operate, a bell, a bell-hammer in connection with the said train for actuation thereby, and a movable spring-actuated detent to normally restrain the said train, all of the said parts being organized together, in combination with an independently-organized thermostatic tripping device consisting of a socket having its inner end flanged for securing it in place, a plunger located in the said socket and having its inner end cut away, whereby it is adapted to receive and thus be gripped by the said material, a spring interposed between the said socket and plunger, so as to constantly tend to project the latter toward the said detent, which it then moves by overcoming the detent-spring than which it is heavier, and a restraining-plug of fusible material located in the bottom of the said socket and entering the cut-away portion of the plunger to grip the same, substantially as described.

473,670. FASTENER FOR THE MEETING-RAILS OF SASHES. CHARLES F. RUSSELL, New Haven, Conn. Filed Feb. 23, 1892. Serial No. 422,441. (No model.)



Claim.—The herein-described sash-fastener, consisting of a case, an arm C, hung upon a pivot D within the case, so as to swing in a horizontal plane, one end of the arm adapted to engage a keeper, the other end of the arm extending beyond the pivot and constructed with a slot J, combined with a lever G, hung upon a pivot H near one end of the case and extending longitudinally across the slotted end of the lever and through the opposite end of the case, there terminating in a thumb-piece I, the lever being provided with a stud K, arranged to operate in the said slot of the arm, the said slot constructed with a stud-bearing surface J at right angles to the line of the lever when the same is in the engaging position, substantially as described.

473,671. ARTIFICIAL LEG. JOHN SCHMID, Rotterdam, N. J. Filed Mar. 4, 1892. Serial No. 423,738. (No model.)

Claim.—1. A fastening device for the thigh portions of artificial legs, composed of a strap attached to one edge of the thigh portion and provided with hooks, a second strap attached to the opposite edge of the thigh portion and also provided with hooks intermediately

between the hooks of the first strap, and a connecting-rod pivoted to the lower end of the second strap and adapted to interlock with the hooks of both straps, substantially as set forth.

2. In a fastening device for thigh portions of artificial legs, the combination, with a strap attached to one edge of the thigh portion, said strap being provided with keepers, of V-shaped spring-hooks having recesses at their outer edges, so as to be adapted to engage the keepers of the strap, substantially as set forth.



3. The combination, with a strap attached to one edge of the thigh portion of an artificial leg, said strap being provided with keepers, of adjustable hooks having spring-shanks recessed at the outer edges so as to be adjusted in said keepers, a strap attached to the adjoining edge of the thigh portion and provided with hooks intermediately between the adjustable hooks of the first strap, and a connecting-rod pivoted to the lower end of the second strap and adapted to interlock with the hooks of both straps, substantially as set forth.

478,672. VALVE. GEORGE H. F. SCHRADER, New York, N. Y. Filed Nov. 19, 1891. Serial No. 412,352. (No model.)



Claim.—1. In a valve or stopper, the combination of relatively fixed and movable parts, the one constituting a stem or neck and the other a tube or socket and the one formed with a seat and the other with a valve or stopper, screw-threads on the respective parts for adjusting the valve and a stop-shoulder on the stem engaging a shoulder on the socket, and the respective shoulders screw-threaded inversely relatively to the threads for adjusting the valve and arranged relatively to the latter threads to engage after the latter are unscrewed and disengaged, whereby the withdrawal of the movable part is prevented until it is turned in the opposite direction to screw the threaded collars past each other.

2. In a valve or stopper, the combination of the socket C, having screw-thread *b* and inversely-threaded collar *j*, the stem having screw-thread *c* and inversely-threaded collar *i*, said screw-threads *b* and *c* being adapted to adjust the valve and said collars *i* and *j* being adapted to abut when said screw-threads *b* and *c* are unscrewed, and thereby to prevent the separation of said socket and stem.

3. In a valve or stopper, the socket C, having a valve-opening, in combination with the stem D for closing said opening, said socket constructed with the collar *j* and the enlarged portion *l*, and said stem constructed with the collar *i* and the reduced portion A, all substantially as and for the purpose set forth.

478,673. VALVE FOR PNEUMATIC TIRES. GEORGE H. F. SCHRADER, New York, N. Y. Filed Feb. 17, 1892. Serial No. 421,549. (No model.)



Claim.—1. In a valve, a casing having a conduit, in combination with a flexible disk inclosed therein to interrupt said conduit, having a leak-tight joint with said casing around its outer portion, but left free at its center and perforated at its free portion.

2. In a valve, the casing, in combination with a perforated flexible disk inclosed therein and an imperforate plug passing through the perforation in said disk.

3. In a valve, a casing having a conduit, in combination with a flexible disk inclosed therein to interrupt said conduit, having a leak-tight joint with said casing around its outer portion, but left free at its center and perforated at its free portion, and an imperforate plug passing through the perforation in said disk and movable independently of said casing.

4. In a valve, a casing having a conduit, a flexible perforated disk in said casing and interrupting said conduit, and a plug passing through said disk and partially filling said conduit at the induction side of the valve, substantially as and for the purpose set forth.

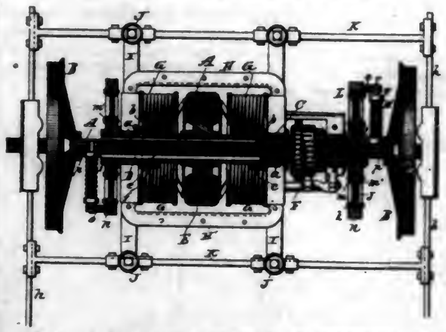
5. In a valve, the combination, with an induction-casing having a conduit and a seat, of a perforated flexible disk interrupting said conduit and acting against said seat, and an eduction-casing having a conduit adapted to be coupled to said induction-casing and constructed when coupled thereto to clamp said disk to said seat with a tight joint exteriorly of said conduit, substantially as and for the purpose set forth.

6. In a valve, the induction-casing C, the perforated disk E, the casing D, and the plug F, combined substantially as and for the purpose set forth.

7. In a valve, the casing C, the perforated disk E, the ring H, the packing-ring I, and the casing D, combined substantially as and for the purposes set forth.

8. In a valve, the casing C, having seats *f* and *m*, the disk E against said seat *f*, and the plug F, passing through the disk E and acting on the seat *m*, combined substantially as and for the purposes set forth.

478,674. ELECTRIC LOCOMOTIVE. SIDNEY H. SHORT, Cleveland, Ohio. Filed May 26, 1891. Serial No. 394,163. (No model.)



Claim.—1. In an electric locomotive, the combination, with a driving-axle and a field-magnet frame yieldingly supported on the truck-frame and independently of the car-body, of an armature-sleeve encircling the axle and journaled in the field-magnet frame, a driving-disk secured to each end of the armature-sleeve, and springs connecting said driving-disks and driving-wheels, substantially as set forth.

2. In an electric locomotive, the combination, with a driving-axle, an armature-supporting sleeve encircling the axle and mounted on bearings independent thereof, of a spiral spring connected at one end with the armature-sleeve and insulated therefrom and at the other end with the driving-wheel, substantially as and for the purpose set forth.

3. In an electric locomotive, the combination, with a driving-axle and field-magnets encircling the axle, of an armature-sleeve mounted in bearings formed in or connected with the field-magnet frame and means for adjusting the sleeve longitudinally within its bearings, substantially as and for the purpose set forth.

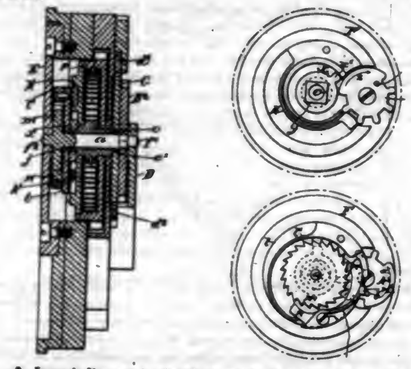
4. In an electric locomotive, the combination, with a driving-axle and an armature-sleeve encircling the axle, of an insulated driving-disk fastened to the armature-sleeve and a spring connecting the driving-disk and one of the driving-wheels, substantially as and for the purpose set forth.

5. In an electric locomotive, the combination, with a driving-axle and an armature-sleeve encircling the axle, of a driving-disk secured to each end of the armature-sleeve, the periphery of each disk being insulated from the sleeve, and springs connecting said disks with the driving-wheels, substantially as set forth.

478,675. WINDING MECHANISM FOR WATCHES. NATHAN SILBERSTEIN, Jassy, Roumania. Filed Mar. 18, 1891. Serial No. 385,564. (Model.) Patented in Switzerland Sept. 13, 1890, No. 2,662.

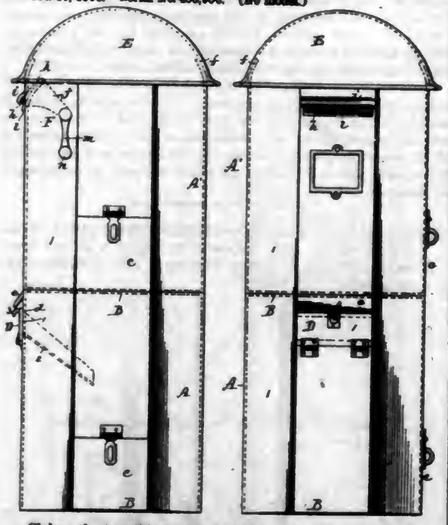
Claim.—1. In a winding mechanism for watches, the combination, with the shaft *a*, rotatively mounted and ratcheted in the movement-plates, of the mainspring rotatively mounted on said shaft, the ratchet-wheel and its pawl for communicating the movement of shaft *a* to the spring, and means, substantially as described, for disengaging said spring and shaft, whereby overwinding or straining of the mainspring is prevented.

2. In a winding mechanism for watches, the combination, with the shaft *a*, rotatively mounted and ratcheted in the movement-plates, of the arbor *c*, bearing the mainspring, and its casing loosely mounted on said shaft *a* and ratcheted to the movement-plates, the ratchet-wheel *m* on shaft *a*, its pawl *n*, mounted on arbor *c* and provided with a tail, whereby arbor *c* is ratcheted to shaft *a*, the disk I^2, mounted on the spring-casing and provided with a projection adapted to engage the tail of pawl *n*, and means, substantially as described, for rotating disk I^2 and pressing said projection against the tail of pawl *n*, whereby said pawl is lifted from engagement with the teeth of wheel *m*, and said arbor *c* and shaft *a* disengaged, substantially as and for the purposes set forth.



3. In a winding mechanism for watches, the combination, with the shaft *a*, rotatively mounted and ratcheted in the movement-plates, of the arbor *c*, bearing the mainspring, and its casing loosely mounted on said shaft and ratcheted to the movement-plates, the ratchet-wheel *m* on shaft *a*, its pawl *n*, mounted on arbor *c* and provided with the springs *l'* and n^3, said spring n^3 provided with the enlargement n^2, the disk I^2, rotatively mounted on the casing and provided with teeth, and a pin *b*, adapted as said disk is rotated to press against the spring n^3, and the disk *x*, fixed on arbor *c* and provided with a tooth adapted to engage the teeth of disk I^2, all arranged to operate substantially as and for the purposes set forth.

478,676. LETTER-BOX. WILLIAM W. SPEER, Pittsburg, Pa. Filed Oct. 16, 1891. Serial No. 408,966. (No model.)



Claim.—1. A mail-box polygonal in form, the sides extending continuously from its top to the bottom, said box divided into compartments, the bottom and partition or partitions having flanges at the edges, and doors hinged at the edge of the bottom and partition or partitions, substantially as set forth.

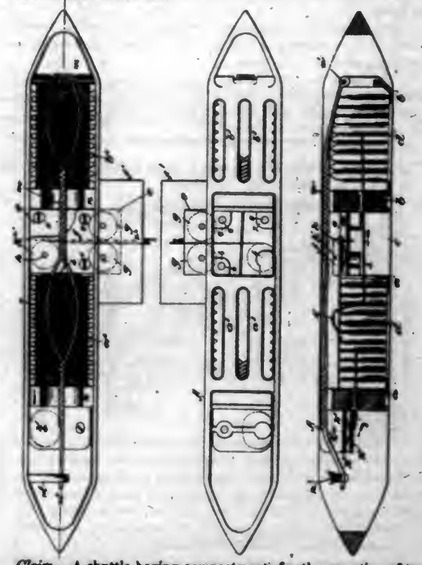
2. A mail-box octagonal in form and composed of four plates, two of which are bent to form three sides and two to form one side each, the latter having flanges adapted to overlap the edges of the adjacent members and adapted to be secured thereto, substantially as set forth.

3. In a mail-box, the combination, with a body portion, of a flange or flanges projecting upwardly from the top thereof and a roof or dome secured to said flanges, substantially as set forth.

4. The combination, with a mail-box having an opening therein for the reception of mail-matter, said box having sides projecting at obtuse angles to each other, of brackets on two of said sides and in line with said opening and a weighted drop journaled in said brackets, substantially as set forth.

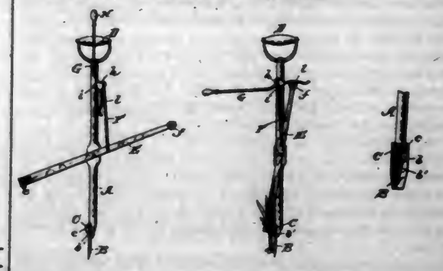
478,677. LOOM-SHUTTLE. HENRY K. SWINCOE, Clinton, Mass. Filed Jan. 13, 1891. Serial No. 377,642. (No model.)

Brief.—The shuttle is formed with two compartments for receiving cops of wire, whereby the liability of the wire to become uncoiled and tangled existing in single large cops is avoided. The ends of the wires of the two cops are so united that the delivery is continuous, and guide-rolls are so arranged that the delivery is from the side of the shuttle near the center.



Claim.—A shuttle having compartments for the reception of two independent cops or coils of weft, combined with weft guides or rolls, one located near one end of the shuttle and another located between the spaces receiving two independent cops, whereby the weft may be delivered from the side of the shuttle near its central point from one to the other of the said cops in succession, substantially as described.

478,678. CORN-THINNER. JOHN L. TANDY, Columbia, Mo. Filed Sept. 22, 1891. Serial No. 406,460. (No model.)



Claim.—1. An implement consisting of a staff, a longitudinally-slotted cutting-blade attached to the staff by bolts which pass through the slot therein and the staff, a pad or cushion carried by the staf

and having its attaching-bolt extending through the slot in the cutting-blade, an auxiliary arm pivotally connected to the staff above the cutting-blade and having one end bent to extend across the face of the cutting-blade, an operating-lever fulcrumed on the staff, and a rod connecting said lever with the auxiliary arm, substantially as described.

2. The combination of a staff, a cutting-blade carried by the staff, an auxiliary arm pivoted on the staff and having a friction-roller near one end, an operating-lever fulcrumed on the staff and provided with a curved portion which extends over the friction-roller on the auxiliary arm, and a rod connecting the auxiliary arm with the operating-arm, substantially as shown and described, for the purpose specified.

3. In an implement for thinning corn, the combination, with cutting and pulling mechanism, of the swiveled hand-rest, substantially as shown and described.

478,679. COLORING AND BURNISHING COMPOSITION. JAMES F. TROUSDALE, Rockland, assignor of one-half to Charles F. Baker, Boston, Mass. Filed Dec. 21, 1891. Serial No. 415,738. (No specimens.)

Claim.—1. The improved burnishing composition hereinbefore described, comprising an alkaline solution and wax dissolved therein, as set forth.

2. The improved coloring and burnishing composition hereinbefore described, comprising an alkaline solution, wax dissolved therein, and coloring-matter, as set forth.

3. The improved coloring and burnishing composition hereinbefore described, comprising a solution of wax with an alkali, a solution of gum with an alkali, and coloring-matter, as set forth.

478,680. FARE-BOX. SAMUEL O. TUREE, Fulton, N. Y. Filed Feb. 16, 1891. Serial No. 381,906. (No model.)



Claim.—1. In a receiving-box, the combination of a frame having a receiving-slot, a drawer movable within the frame, a lock for holding the drawer, a movable trip normally in alignment with the receiving-slots and adapted to be engaged and brought into operation by articles forced through said slot, and connections, substantially as described, between said lock and trip for releasing the lock when the trip is engaged by said articles, substantially as specified.

2. In a receiving-box, the combination of a frame having a receiving-slot, a drawer movable within the frame, a lock for holding the drawer, a movable trip having its end normally in alignment with the receiving-slots and adapted to be engaged and brought into operation by articles forced through said slot, connections, substantially as described, between said lock and trip for releasing the lock when the trip is engaged by said article, and a stop for preventing the movement of the article after the operation of the trip, substantially as set forth.

3. In a receiving-box, the combination of a frame having a receiving-slot, a drawer movable within the frame, a lock for holding the drawer, a movable trip having its end projecting normally into the path of articles passed through the receiving-slots, whereby articles forced through the slot encounter and rock the trip, connections, substantially as described, between said lock and trip for releasing the lock when the trip is engaged by said article, a stop for preventing the movement of the article after the operation of the trip, and a connection between said stop and trip, whereby the movement of the former operates the latter, substantially as described.

4. In a receiving-box, the combination of a frame having a receiving-slot having its extremity projecting into the path of articles passed through said slot, a hinged trip beneath the slot, a drawer movable within the frame, a shoulder on the drawer, a hinged stop for engaging the shoulder, a movable support for the stop, and a connection between the trip and stop, substantially as and for the purpose set forth.

5. In a receiving-box, the combination of a frame having a series of slots, a drawer movable within the frame, a pivoted trip beneath the slots, having its end projecting into the path or articles passed through said slots, a stop beneath the trip in the path of said articles for preventing their further movement, connections between the trip and stop for permitting the passage of the article prevented from movement by the stop, a movable lock for engaging the drawer, and connections between the trip and lock for operating the lock, substantially as and for the purpose specified.

6. In a receiving-box, the combination of a frame having a series of slots, a drawer movable in the frame, a pivoted trip beneath the slots, an arm on said trip, a movable stop beneath the trip, an arm on the stop, a link between the arms on said trip and stop, whereby the movement of the former operates the latter, a movable lock for engaging the drawer, and connections, substantially as described, between the trip and lock for operating the lock, substantially as and for the purpose set forth.

7. In a receiving-box, the combination of a frame having a fixed wall formed with a receiving-slot and a display-opening, a trip having its end adapted to project within the slot, whereby the trip is rocked by the passage of articles through said slot, a drawer movable in the frame, a movable shoulder in the path of the drawer, a movable support for the shoulder, and a connection between said support and the trip, substantially as and for the purpose described.

8. In a receiving-box, the combination of a frame having a fixed wall formed with a receiving-slot and a display-opening, a trip having its end in alignment with the slot, whereby the trip is rocked by the passage of articles through said slot, a drawer movable in the frame, a movable stop for preventing the passage of said articles, connections, substantially as described, between the trip and the stop, a movable shoulder in the path of the drawer, a movable support for the shoulder, and a connection between said support and the trip, substantially as specified.

9. In a receiving-box, the combination of a frame having a receiving-slot, a trip and stop arranged one above the other and adapted to move independently during a portion of their movement, and a connection between said trip and stop for moving both simultaneously during a further portion of their movement, substantially as set forth.

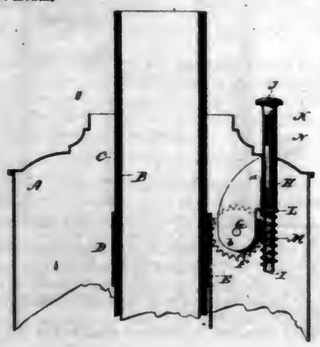
10. In a receiving-box, the combination of a frame having a receiving-slot, a trip and stop arranged one above the other and adapted to move independently during a portion of their movement, a connection between said trip and stop for moving both simultaneously during a further portion of their movement, and an open receptacle beneath said stop for receiving the articles released thereby, substantially as specified.

11. In a receiving-box, the combination of a frame having a receiving-slot, a series of pockets for cash-indicating cards, a hinged support for said pockets, a lock for retaining said support in its normal position, and a receptacle beneath said hinged support, substantially as and for the purpose set forth.

12. In a receiving-box, the combination of a frame, a drawer movable within the frame, a bell, a lever for operating the bell, a dog on the drawer for operating said lever, said dog being movable in a line at right angles to that of the lever for permitting the same to assume its normal position without operating the bell, a spring for forcing said dog to its normal position, and a stop for preventing undue movement of the dog, substantially as described.

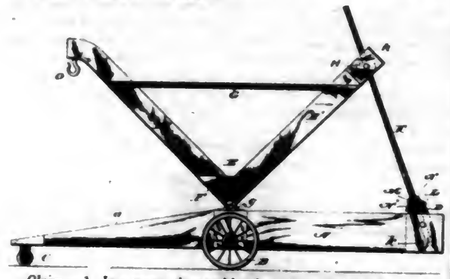
13. In a receiving-box, the combination of a frame having a receiving-opening, a trip E in alignment with the opening, a drawer movable in the frame, a pivoted lever in the path of the drawer, a movable support for the lever, a shoulder on said lever for preventing its movement in the same direction as the drawer, and connections, substantially as described, from the trip to said lever, all substantially as described.

478,681. WICK-RAISER FOR CENTRAL-DRAFT LAMPS. WALDO L. UPSON, Meriden, Conn., assignor to The Bradley & Hubbard Manufacturing Company, same place. Filed Oct. 6, 1890. Serial No. 367,163. (No model.)



Claim.—In a wick-raiser for central-draft lamps, the combination of the wick-holder provided with a vertical rack, combined with a toothed pinion working into said rack, and a vertical shaft constructed with a worm at its lower end to work in said pinion and extending upward through the foot, the upper end provided with means for the rotation of said shaft and the bearing H, constructed to form a tube *a* at its upper end as a support for the shaft and with two ears *b b* at its lower end for the support of the pinion, the said shaft constructed to engage said bearing, so as to prevent the vertical movement of the shaft yet permits its free rotation, all substantially as described.

478,682. CRANE. JOHN VANES, Brazil, Ind. Filed Dec. 29, 1891. Serial No. 416,406. (No model.)

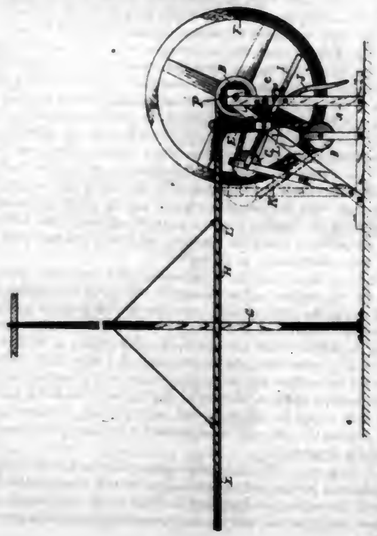


Claim.—1. In a crane, the combination of a portable carriage, the quadrant pivoted at its angle to said carriage, a swiveled bearing carried near one end of the quadrant, an operating-shaft journaled in the frame of the carriage, a screw passing through the bearing on the quadrant and geared at one end to the operating-shaft, and means for turning the operating-shaft in its bearings, substantially as described.

2. In a crane, the combination of a portable carriage having the inclined front, a quadrant pivoted to said carriage, a swiveled bearing arranged near one end of the quadrant, an operating-shaft journaled in the frame of the carriage, and a screw-shaft geared directly to the operating-shaft and passing through a threaded opening in the swiveled block, substantially as described.

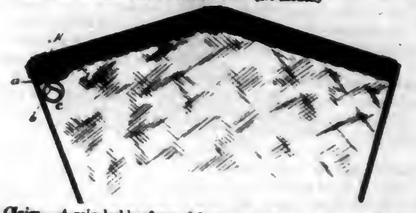
3. In a crane, the combination of a portable carriage having its front inclined, a quadrant pivoted at its angle to said carriage and having the free end on one of its members bifurcated, a swiveled bearing arranged in the bifurcated end of the quadrant, an operating-shaft, and a screw-shaft geared to the operating-shaft and working in a threaded opening in the swiveled bearing, substantially as described.

478,683. HORSE-POWER. ANDREW M. WEAD, Kalamazoo, Mich., assignor to Kirk A. Smith and Willis N. Pomeroy, same place. Filed Jan. 21, 1892. Serial No. 418,786. (No model.)



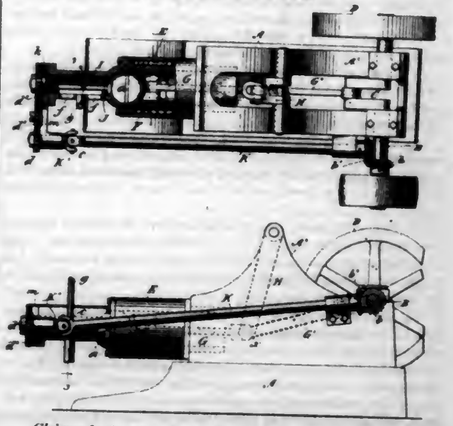
Claim.—In a horse-power, the combination of the horizontal wheel-like sweep, a suitable frame, a power-shaft having bearings in said frame, a pulley carried by said power-shaft, the tensioning-arm pivoted to the frame at one end and bearing a pulley at its free end, the rack pivoted at one end to said tensioning-arm, the elbow-lever bearing a pawl for operating said rack, a pawl pivoted to the frame in position to engage the rack and lock it in different positions, the two pulleys having fixed bearing-supports in the frame, and a rope belt or cable passed around the periphery of the sweep and around each of the above-named pulleys, substantially as set forth.

478,684. REIN-HOLDER. HENRY G. WEATHERILL, Elgin, Ill. Filed July 7, 1891. Serial No. 398,896. (No model.)



Claim.—A rein-holder formed from a single piece of wire and provided with the rigid screw-shank B, the short straight section *b*, extending at an angle to the shank, the coils *c*, and the curved yielding arm *d*, extending at right angles to the shank B, substantially as shown and described.

478,685. GAS-ENGINE. CARL W. WEBB, Brooklyn, N. Y. Filed June 26, 1891. Serial No. 397,422. (No model.)



Claim.—1. A gas-engine having an elongated rotating tubular valve aligned axially the cylinder and always open thereto at its forward end, said valve being provided with a single port in its side, and a valve-casing having air and gas inlets, an exhaust-outlet, and an igniting-aperture, said port in the valve being brought successively to the receiving-ports, the igniting-point, and the exhaust-outlet, as set forth.

2. In a gas-engine, the combination, with the cylinder, the piston, and the valve-casing I, secured to the cylinder and provided with air-inlets, a gas-inlet, an exhaust-outlet, and an aperture to receive the igniting-tube, of the said igniting-tube and the elongated tubular rotating valve J, mounted in said casing and provided with a single port *e*, the air and gas inlets being arranged in line, whereby they open to the valve-port simultaneously, as set forth.

3. In a gas-engine, the combination, with the cylinder, the piston, and the valve-casing secured to the cylinder and aligned axially therewith, said casing having in it an exhaust-outlet, an aperture for the reception of the igniting-tube, a gas-inlet *g*, and two air-inlets *f f*, one at each side of the gas-inlet, of the igniting-tube and the rotating valve mounted in said casing and provided with a port *e*, substantially as set forth.

4. In a gas-engine, the combination, with a cylinder and piston, of the valve-casing I, provided with gas and air inlets, an exhaust-outlet, an aperture to receive the igniting-tube, and a recess *i*, connecting with the latter aperture, the igniting-tube, and the valve J, mounted

in said casing and having a port *e*, which opens simultaneously to the exhaust-outlet, and the recess *i'*, whereby the burned gases in the igniting-tube are exhausted.

5. In a gas-engine, the combination, with the valve-casing provided with an exhaust-outlet, an aperture to receive the igniting-tube, and a recess *i'*, extending from the said aperture nearly to the exhaust-outlet, of a rotating cylindrical valve mounted in said casing and provided with a port *e*, adapted to open the said recess to the exhaust-outlet, as set forth.

473,686. DIAL-KNOB FOR COMBINATION-LOCKS. GEORGE H. WILLIAMS, Boston, Mass. Filed July 20, 1891. Serial No. 400,163. (No model.)



Claim.—1. A combination-lock having its operating-dial flush with the surface of the article to which it is attached and a dial-turning knob or device held normally in a recess in the dial with its outer surface flush or substantially flush with the dial-surface and adapted to be moved outward from said surface to provide means for turning the dial, substantially as and for the purpose described.

2. The combination, in a combination lock, of the dial having its face flush or substantially flush with the surface of the article to which it is attached and provided with a central cavity with a knob or turning device contained in said cavity, a spring for moving said knob or device outwardly, and a latch for locking said knob or device in its closed position, as and for the purposes described.

3. The combination, in a combination-lock, of a dial having a recess extending inward from its face and a turning knob or device contained in said recess and a spring for moving it outward therein, as and for the purposes described.

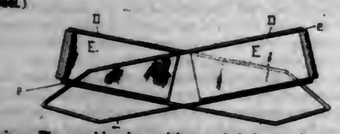
4. The combination, in a combination-lock, of the dial having a recess extending inward from its front plate, a turning knob or device contained in said recess and movable outwardly therefrom, and a latch for holding it in its closed position in said recess, substantially as described.

5. The combination, in a combination-lock, of the dial having a hole opening from its face, a knob or turning device contained in said hole, a spring for moving said knob or turning device outwardly, and a latch for holding said knob or turning device closed in said hole, as and for the purposes described.

6. The combination, in a combination-lock, of the dial-plate having a hole extending from its face, with a turning knob or device contained in said hole and movable lengthwise the hole, a spring for moving said knob or turning device outward, a latch for locking it in its closed position, and a latch-disengaging pin, substantially as described.

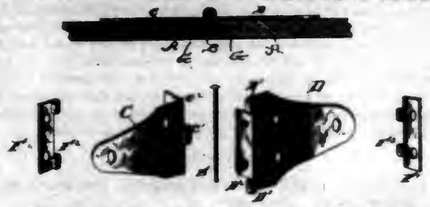
7. The combination, in a combination-lock, of the dial-plate having a central hole extending inward from its face, the knob having the central extension *c* and spring-holding cavity *c'* and pin-hole *c*, the laterally-movable latch D, carried in a hole in said extension and having the inclined surfaces c^4, the piece c^3, having the latch-hole c^3, the knob-stop and latch-pin E, having the recess *c'* to receive a portion of the latch D, and the inclined surfaces c^5 to engage the inclined surfaces c^4 of the latch, as and for the purposes described.

473,687. STRETCHER FOR NECKTIE-BOWS. JAMES W. AMSWORTH, Camden, N. J. Filed May 20, 1891. Serial No. 393,415. (No model.)



Claim.—The combination, with a necktie-bow, of a stretcher D, formed of a single piece of wire bent centrally to form a square end and parallel sides, which are afterward inwardly disposed to form a pointed end to conform to the edges of the necktie-flap *e*, and a base E, which is jointed to the square end of the stretcher and located within its sides for retaining the shape of the necktie and keeping it flat and smooth, substantially as shown and described.

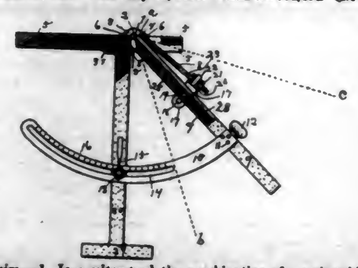
473,688. HINGE. HENRY W. BAKER and WILLIAM J. STUMP, Keyser, W. Va. Filed Mar. 14, 1891. Serial No. 384,964. (No model.)



Claim.—1. A hinge consisting of two leaves having lips at right angles thereto and eyes or sleeves, leaves having eyes or sleeves and adapted to rest against and be secured to said lips, and a pintle passing through the eyes or sleeves of all of said leaves.

2. A hinge consisting of a leaf having a central eye or sleeve and lips at right angles thereto, a leaf having a central lip and sleeves at the edges thereof, leaves having sleeves normally in line with the sleeves of the first-named leaves and adapted to rest against and be secured to said lips, and a pintle passing through all of said sleeves, substantially as described.

473,689. PRINTER'S MITER-TOOL. WILLIAM H. F. BLOEDAUM, Cincinnati, Ohio. Filed May 12, 1890. Serial No. 351,404. (No model.)



Claim.—1. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end and two pivotal points, one at each side of the opening, a rule-holder having one end pivoted at its upper end to the pivotal point of the table and so as to turn about an axis extending across the opening in the table and coincident with the upper surface of the table, substantially as set forth.

2. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end and having two perforated lugs on its upper surface, one at each side of the opening, a rule-holder having two perforated lugs or hinges at its upper end, and a beveled upper end edge coincident with the axis of its hinges, said hinges connecting the rule-holder to the table along an axis coincident with the upper surface of the table, substantially as set forth.

3. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end, a rule-holder having a rectangular outline and hinges connecting the holder to the table, a recess or formation of the holder of substantially the width and depth of the rule for receiving and holding a rule, said recess having its bottom surface in the plane of the axis of the hinges, and suitable means for retaining a rule in the said formation, substantially as set forth.

4. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end, a rule-holder hinged to the table with the axis of the hinges and its upper end coincident, a formation for holding a rule, a gage for adjusting and setting the rule, and suitable means for retaining the rule in position when operated upon, substantially as set forth.

5. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end, a rule-holder hinged at its end to the table, suitable provision for retaining the rule in position on the holder, and a clamping device arranged to hold the rule firmly in position when operated upon, substantially as set forth.

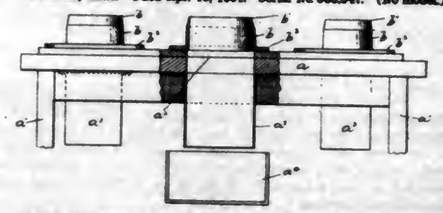
6. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end, a rule-holder hinged to the table, a recess in the body of the holder of the width and depth of a rule, a gage for adjusting and setting a rule, a clamp engaging and holding the rule, and an eccentric for tightening the clamp, substantially as set forth.

7. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end, a rule-holder having suitable means for receiving and holding a rule and hinged to the table at its upper end, and an arm connecting the rule-holder with a part of stationary framing as a means of retaining the holder in a desired position, substantially as set forth.

8. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end, a rule-holder having suitable means for receiving and holding a rule and hinged to the table at its upper end, and a sector-arm connected to the holder and arranged to slide in engagement with a part of stationary framing and having adjusting and securing means for adjusting the inclination of the holder and securing it in a desired position to the said frame part, substantially as set forth.

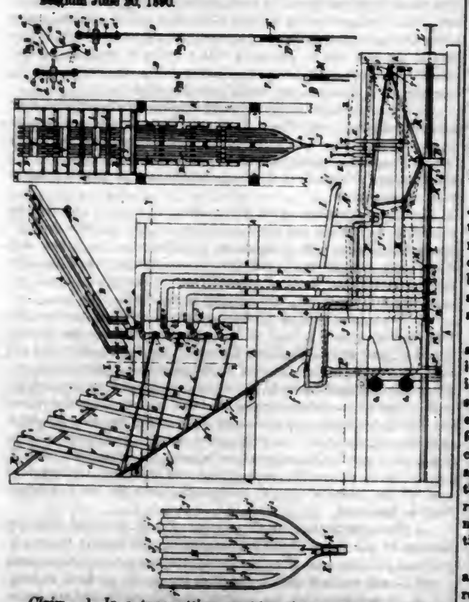
9. In a miter-tool, the combination of a main table having an even flat top surface and an opening in one end, a rule-holder having suitable means for receiving and holding a rule and hinged to the table at its upper end, and a sector-arm connected to the holder and having a central slot arranged to slide in engagement with a part of the stationary framing, and having a binding-screw as a means for adjusting and securing the holder in any desired position, substantially as set forth.

473,690. LEATHER-CUTTING DIE. WENDELL P. BOSWORTH, Brockton, Mass. Filed Apr. 10, 1891. Serial No. 388,347. (No model.)



Claim.—The combination, with a fixed bed or table, of a series of dies of different sizes mounted thereon and projecting upward therefrom and having flanges and means for securing them to the bed, said bed having openings communicating with the interiors of the dies, and chutes extending downwardly from said openings to guide the pieces cut by the dies into separate receptacles, as set forth.

473,691. TYPE-SETTING MACHINE. GEORGES A. BOTTON, Beaumont-du-Perigord, France. Filed Oct. 23, 1890. Serial No. 368,545. (No model.) Patented in France Dec. 23, 1889, No. 202,702, and in Belgium June 20, 1890.



Claim.—1. In a type-setting machine, the combination, with a plurality of type-reservoirs, an ejector for each of said reservoirs arranged to operate upon the lowermost type therein, and an actuating-bar for each of said ejectors, of a single key-lever on which said actuating-bars have bearing, and a locking device for locking any one of the actuating-bars against motion with the key-lever, substantially as set forth.

2. In a type-setting machine, the combination, with a series of type-reservoirs arranged in rows or banks, an ejector for each of said reservoirs adapted to operate upon the lowermost type therein, and an actuating-bar for each of said ejectors, of two superposed rows of key-levers, on each of which a plurality of actuating-bars have bearing, and a locking device adapted to lock the bars in series against movement with the key-levers, substantially as set forth.

3. In a type-setting machine, the combination, with a series of type-reservoirs arranged in rows or banks transversely and longitudinally of the machine, an ejector for each type-reservoir adapted to operate on the lowermost type therein, and an actuating-bar for each of said reservoirs, of rows or banks of key-levers arranged vertically and transversely of the machine, on each of which levers a plurality of actuating-bars have bearing, and a locking device adapted to lock the actuating-bars in transverse series against movement with the key-levers, substantially as set forth.

4. In a type-setting machine, the combination, with the type-reservoirs provided with a stop-plate on their rear faces and a connecting plate or bar rigidly connecting a plurality of said reservoirs, of the inclined rails R', the transverse rails *f f*, and the housings H', constructed as described, substantially as and for the purpose set forth.

5. In a type-setting machine, a type-reservoir consisting of a sheet-metal case U-shaped in cross-section and having the edges at one end of its sides bent inwardly and its front cut away at that end to form an opening *h*, a sheet-metal cover, also U-shaped in cross-section and slightly shorter than the case, said cover being provided with a cleat *c*, and said case with a hand-hold *g*, substantially as and for the purpose set forth.

6. In a type-setting machine, the combination, with the type-reservoir and an ejector adapted to operate on the lowermost type in said reservoir, of means for imparting motion to the ejector, consisting of an angle gravital bar, a connection between the bar and ejector to convert the vertical motion of the bar into horizontal motion, and a key from which said bar is supported in a normal or non-operative position, as set forth.

7. In a type-setting machine, the combination, with a type-reservoir and an ejector adapted to operate upon the lowermost type in said reservoir and having a forked bearing at its forward end, of means for imparting motion to the ejector, consisting of an angle gravity-bar, the horizontal arm of which has also a forked bearing, a bell-crank lever provided with pins a' a^4, fitting the forked bearings of the ejector and bar, respectively, and a key-lever, on a horizontal fulcrum on which lever said bar is seated, substantially as and for the purpose set forth.

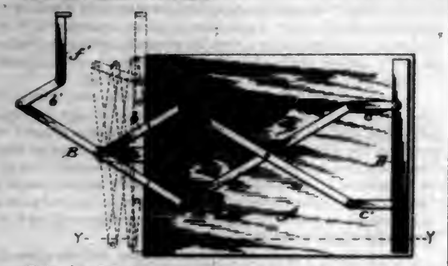
8. In a type-setting machine, the combination, with the delivery-channel I and the collecting-chute arranged at an angle to said channel, of means for feeding the type delivered by the chute to the channel along the same, consisting of a horizontal lever the outer end of which is U-shaped, a follower pivoted to the upper arm of said U-shaped portion and working in the delivery-channel, a vibrating support for said lever, a pivotal connection between said support and lever, and a key-lever adapted to impart to the feed-lever a substantially horizontal reciprocating movement, as and for the purpose set forth.

9. In a type-setting machine, the combination, with the feed-lever J, constructed as described, the follower *f*, pivoted to the rear end thereof, and the pivoted support P for said lever, of a key-lever and means for imparting a rising and falling movement to the feed-lever, consisting of a lever upon the free end of which said key-lever has bearing, and a connecting-rod rigidly secured to the lever-fulcrum and connected with the forward end of the feed-lever, substantially as and for the purpose set forth.

10. In a type-setting machine, the combination, with key-levers arranged in superposed series, the delivery-channel I, a type-collecting chute discharging into said channel, and a feeding device for feeding the type along the channel, consisting of the feed-lever J, constructed as described, the follower *f''*, pivoted to the lever at its rear end and the pivotal support P for said rear end of the lever, of means for rocking the lever and its pivotal support, consisting of two bell-crank levers arranged on opposite sides of the key-levers and having a common fulcrum b^3, the cross connecting-rods *b* and *b'* upon which the upper and lower series of key-levers have bearing, the rod R^5, rigidly connected with the fulcrum b^3 of the angle-levers, and a connection between said rod and the outer end of the feed-lever, substantially as and for the purpose set forth.

11. In a type-setting machine, the combination, with key-levers arranged in superposed rows or banks, type-reservoirs arranged in rows or banks, ejectors adapted to operate upon the lowermost type in said reservoirs, an actuating gravity-bar for each of said ejectors, said gravity-bars having bearing on the key-levers, of the sliding register-plate L, provided with a slot *m*, and the shutters *n*, hung on fixed rods *n'*, said plate and shutters being constructed and operating relatively to the gravity-bars, substantially as set forth.

473,692. LOCOMOTIVE-ASH-PAN SCRAPER. HARRY T. CARRINGTON, Birmingham, Ala., assignor to Henry G. Sterne and Morris Karger, same place. Filed June 11, 1891. Renewed Mar. 21, 1892. Serial No. 425,864. (No model.)



Claim.—1. In a locomotive-ash-pan scraper, the lazy-tongs pivotally secured on the ash-pan and carrying a scraper at the forward end, adaped to be moved over the pan and push the ashes therefrom, substantially as described.

2. In a locomotive-ash-pan scraper, the combination of the lazy-tongs pivotally secured in rear of the pan, a scraper secured on the front of said tongs, and a hand-lever pivotally connected to said tongs to operate the same, substantially as described.

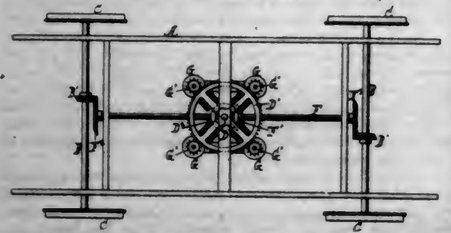
3. In a locomotive-ash-pan scraper, a bracket secured on the rear end of the pan and projecting therefrom, the lazy-tongs pivotally secured to said bracket, the scraper carried by the tongs, and the lever adapted to operate the lazy-tongs and the scraper, substantially as described.

4. In a locomotive-ash-pan scraper, a bracket secured on the rear end of the pan and projecting therefrom, the lever carrying the lazy-tongs, pivotally secured to said bracket, the reinforce secured to the front ends of the tongs, and the scraper carried by the reinforce on the tongs, substantially as described.

5. In a locomotive-ash-pan scraper, the lazy-tongs pivotally secured in rear of the pan, the scraper secured on the front ends of said tongs, and the vertical hand-lever fulcrumed in a bracket in the locomotive-cab and having an angular projection connected with the tongs, substantially as described.

6. In a locomotive-ash-pan scraper, the upwardly-projecting bracket secured on the rear end of the ash-pan, the lever fulcrumed on said bracket, the lazy-tongs pivotally connected to said lever, the reinforce secured on the front ends of the tongs, the scraper attached to said reinforce, and the hand-lever having the angular projection pivotally connected with said lever and adapted to operate the scraper, substantially as described.

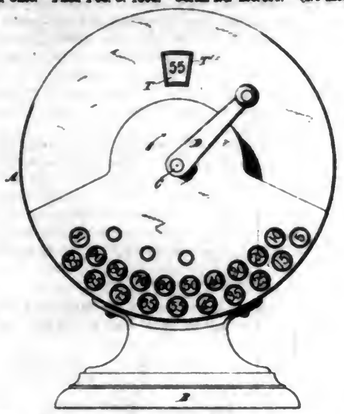
473,693. ELECTRIC LOCOMOTIVE. JOSEPH I. COMLIN, Brooklyn, N. Y. Filed Mar. 4, 1891. Serial No. 383,701. (No model.)



Claim.—1. In an electric motor for cars, the combination, with a frame, of a vertical shaft, a gear-wheel on said shaft, a series of motors around said shaft, the armature-shafts of said motors being extended upward and provided with gear-wheels in position to engage the gear-wheel on said vertical shaft, a horizontal shaft provided with gearing at its extremities to connect with the car-axles, and gearing which connects said horizontal shaft with said vertical shaft, substantially as and for the purposes described.

2. The combination, with a frame, of a central vertical shaft D, provided with gear-wheel D' and gear-wheel D^2, a series of motors G, arranged around said vertical shaft, the armature-shafts of which motors extend upward and are in position to engage the larger gear-wheel D', a horizontal shaft provided with gear-wheel F to connect with gear-wheel D^2, and gearing at the extremities of said horizontal shaft to connect with the car-axles, substantially as set forth and described.

473,694. CASH INDICATOR AND REGISTER. HUGO COOK, Dayton, Ohio. Filed Feb. 5, 1892. Serial No. 420,411. (No model.)



Claim.—1. The combination of a revoluble driving-disk provided with two cam-grooves and a driving-shoulder, a revoluble and radially-movable latch-bar provided with two lugs fitting in the cam-grooves in the driver and alternately co-operating with the driving-shoulder, and a series of stops co-operating with the latch bar to disconnect its engaged lug from the shoulder of the driver at different points, substantially as described.

2. The combination of a revoluble driving-disk provided with two cam-grooves and a driving-shoulder, a toothed latch-plate carried by the disk, a radially-movable and revoluble latch-bar provided with two lugs fitting in the cam-grooves in the disk and alternately co-operating with the driving-shoulder and the toothed plate, and a series of stops co-operating with the latch-bar to disengage its engaged lug from the driving-shoulder at different points, substantially as described.

3. The combination of a revoluble driving-disk provided with two cam-grooves and two driving-shoulders, a double-toothed latch-plate carried by the disk, a radially-movable and revoluble latch-bar provided with lugs fitting in the cam-grooves and alternately co-operating with the driving-shoulders and toothed plate, and a fixed cam co-operating with the latch-bar at the end of the first half of the revolution of the driving-disk to disconnect its engaged lug from one of the shoulders of the disk and co-operating with a series of stops during the second half of the revolution of the driving-disk to disconnect said lug from the other shoulder, substantially as described.

4. The combination of the revoluble driving-disk E, provided with the two grooves G′ and G^2 and driving-shoulder K′, the radially-sliding and revoluble bar I′, having the lugs H′ and H^2 fitting in the grooves G′ and G^2 and alternately co-operating with the driving-shoulder K′, and the series of stop-keys C′, co-operating with the bar I′, substantially as described.

5. The combination of the driving-disk E, provided with the two grooves G′ and G^2 and the driving-shoulder K′, the toothed plate G^3, the radially-sliding and revoluble bar I′, having the two lugs H′ and H^2 fitting in the grooves G′ and G^2 and co-operating alternately with the shoulder K′ and toothed plate G^3, and the series of keys C′, co-operating with the bar I′, substantially as described.

6. The combination of the driving-disk E, provided upon one side with the cam-groove L^2 and on the other side with the two grooves G′ and G^2, and driving-shoulders K′ and K^2, the radially-movable and revoluble bar K, having the stud M fitting in the groove L^2 and provided with the teeth L and L′, the registering-wheel F, with which the teeth L and L′ alternately engage, the bar I′ upon the opposite side of the disk E, revolving with the bar K, but radially movable independently thereof, the lugs H′ and H^2 on the bar I′, fitting in the grooves G′ and G^2 in the disk E and co-operating with the driving-shoulders K and K^2, the fixed stop N^2, co-operating with the bar K and the fixed cam N^4, and series of keys C′, co-operating with the bar I′, substantially as described.

7. The combination of the driving-disk E, provided with the grooves L^2 and G′ and G^2 and driving-shoulders K′ and K^2, the bar K, provided with the stud M, co-operating with the groove L^2, the teeth L and L′, and toothed studs O and O′ on the bar K, the fixed locking-disk P, co-operating with the toothed studs O and O′, and the registering wheel F, co-operating with the teeth L and L′, the gear N, revolving with the bar K, the bar I′, revolving with the bar K and provided with lugs H′ and H^2, fitting in the grooves G′ and G^2 in the disk E, and with cams J^2 and J^3, the fixed stop N^2, co-operating with the

bar K, and the fixed cam N^4 and keys C′, co-operating with the cams J^2 and J^3 on the bar I′, substantially as described.

8. The combination of a driver E, having a driving-shoulder K′, a radially-movable and revoluble bar I′, provided with the two lugs H′ and H^2, alternately co-operating with the shoulder K′, the keys C′, co-operating with the bar and the gear N, revolving with the bar, the pinion N', meshing with the gear N, the pinion N^2, revolving with the pinion N', the indicator-wheel T, and the gear S, fast thereon and meshing with the pinion N^2, substantially as described.

9. The combination of a driver E, having a driving-shoulder K′, a radially-sliding and revoluble bar I′, provided with lugs H′ and H^2, alternately co-operating with the shoulder K′, and also provided with the two cams J′ and J^4, each having an arresting-shoulder O^3, and the series of keys C′, co-operating with the cams J′ J^4 and shoulders O^3, substantially as described.

10. The combination of a revoluble driver, a radially-movable and revoluble bar driven thereby, and two concentric rows of keys cooperating with the bar, substantially as described.

11. The combination of a revoluble driver having a driving-shoulder, a radially-movable and revoluble bar provided with a lug co-operating with the shoulder of the driver, and two concentric rows of keys co-operating with the bar, substantially as described.

12. The combination of a revoluble driver having a driving-shoulder, a radially-movable and revoluble bar provided with a lug co-operating with the driving shoulder, and a fixed cam and two concentric rows of movable cams or keys co-operating with the bar, substantially as described.

13. The combination of a revoluble driver, a revoluble wheel, a revoluble latch for connecting them, and two concentric rows of keys co-operating with the latch to disconnect them.

14. The combination of a revoluble driver, a revoluble registering-wheel, a latch for connecting them at the end of the first half of the revolution of the driver, a series of stops for disconnecting them during the second half of the revolution of the driver, and a lock actuated by the driving mechanism to lock the registering-wheel at the beginning of the first half of the revolution of the driver and to unlock it at the end of said half-revolution.

15. The combination of a revoluble driver, a revoluble indicator-wheel, and a revoluble registering-wheel, a latch for connecting the driver and indicator-wheel during the first half of the revolution of the driver, and a cam co-operating with the latch at the end of said half-revolution to cause it to connect the driver and registering-wheel, a series of stops co-operating with the latch during the second half of the revolution of the driver to disconnect the driver from both the indicator and registering wheels, and a lock actuated by the driving mechanism to lock the registering-wheel at the beginning of the first half of the revolution of the driver and to unlock it at the end of said half-revolution.

16. The combination of the locking-ratchet I, revolving with the registering-wheel, the revoluble disk Z, provided with the cam-groove Y, and the bar U, provided with the stud X, co-operating with the cam-groove Y, and with the locking-tooth W, co-operating with the ratchet I, substantially as described.

17. The combination of a revoluble driver, a revoluble wheel, a revoluble latch for connecting them, a series of stops co-operating with the latch to disconnect them, and a lock for the driver, actuated by the operation of a key to release the driver and operating automatically to lock the driver again at the completion of its revolution.

18. The combination of a revoluble shaft, a driver fast thereon, a revoluble wheel loose thereon, a latch for connecting them, a series of keys co-operating with the latch to disconnect them, a locking-disk revoluble with the driver, a locking-dog co-operating therewith to lock the driver from movement and actuated by the operation of any one of the keys to release the driver.

19. The combination of a revoluble shaft, a driver fast thereon, a revoluble wheel loose thereon, a latch for connecting them, a series of shouldered keys co-operating with the latch to disconnect them, a detent-plate moved by the operation of any one of the keys and co-operating with the shoulder of the key to hold the key in operated position, a locking-disk fast upon the shaft, and a locking-dog co-operating with the disk and actuated by the movements of the detent-plate to lock the driver from movement, except when one of the keys is operated.

20. The combination of a revoluble driver, a revoluble wheel, a revoluble latch for connecting them, a series of shouldered keys co-operating with the latch to disconnect them, a movable detent-plate co-operating with the shoulders of the keys to detain them in operated position and moved by the driving mechanism at the completion of the revolution of the driver to release the operated key.

21. The combination of a revoluble driver, a revoluble wheel, a latch for connecting them, a series of shouldered keys co-operating with the latch, a movable detent-plate co-operating with the shoulders of the keys to detain them in operated position, and a cam actuated by the driving mechanism and co-operating with the detent-plate to move the same and release the operated key at the end of the revolution of the driver.

22. The combination of a revoluble shaft, a driver fast thereon, a wheel loose thereon, a latch for connecting them, a series of shouldered keys co-operating with the latch to disconnect them, a movable detent-plate co-operating with the shoulders of the keys to detain them in operated position, and a cam fast upon the revoluble shaft and actuating the detent-plate to release the operated key at the completion of the revolution of the driver.

23. The combination of a revoluble driver, a revoluble indicator, a revoluble latch for connecting them, a series of stops co-operating with the latch to disconnect them, a casing provided with a reading-opening for the exposure of the numbers upon the indicator, and an automatic screen actuated by the driving mechanism to open and close the reading-opening to alternately expose and hide the numbers on the indicator.

24. The combination of a revoluble shaft, a driver fast thereon, a revoluble wheel loose thereon, a latch for connecting them, a series of stops co-operating with the latch, a casing provided with a reading-opening for the exposure of the numbers on the indicator, a screen movable back and forth between the reading-opening and indicator to alternately hide and expose the numbers on the latter, and a cam fast upon the revoluble shaft and co-operating with the screen.

473,695. WHIP. FREDERICK P. COBB, Westfield, Mass. Filed July 3, 1891. Serial No. 398,263. (No model.)



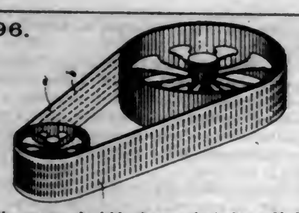
Claim.—A whip having a center of rawhide, a rubber tube normally of less length than said rawhide center and applied and stretched thereover to inclose the entire length of the rawhide center and having its opposite ends held against movement on said center, plaiting applied over the stretched rubber tube, which maintains the latter in its stretched condition, sidings glued or cemented to the plaited center, and an outer covering for the sidings, substantially as described and shown, for the purposes set forth.

473,696. BELTING. ROBERT COWEN, Cambridge, assignor to the Boston Woven Hose Company, Boston, Mass. Filed May 8, 1891. Serial No. 392,008. (No model.)

Claim.—1. Belting stitched or quilted with lines of stitches, the threads of which on one side of face extend longitudinally of the belt and on the opposite side run across or transversely of the same and within the marginal edges of the belt, as set forth.

2. Belting composed of a plurality of plies of material united by lines of stitches, the threads of which stitches on one side or face extend longitudinally of the belt and on the opposite side run across or

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transversely of the same and within the marginal edges of belt, as set forth.

478,697. KNITTING-MACHINE NEEDLE. JOHN C. BELT, Philadelphia, Pa., assignor, by mesne assignments, to Thomas A. Pearce and Rose E. Egly, same place. Filed June 10, 1889. Serial No. 313,741. (No model.)



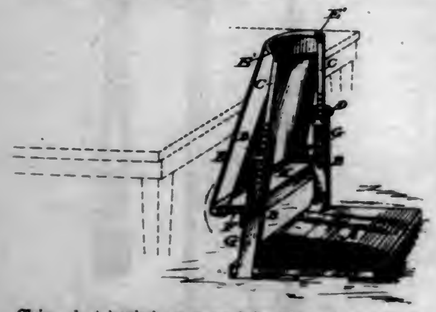
Claim.—1. The knitting-needle A, having the hook B, with an oblique or slanting portion extending from the curve at the upper end of the depending portion of said hook to the upper end of its body, the said depending portion of the hook and a portion of the oblique or slanting part being outside of the line of the latch side of the body of the needle, substantially as described.

2. A needle for knitting-machines, having an angular head formed by the depending part 1 and the oblique portion 2, extending from the head of said depending part to the body or shank of the needle, substantially as described.

3. A knitting-machine needle having a head with an abrupt angular bend therein, substantially as described.

4. A knitting-machine needle having a head with a substantially vertically-depending part and an oblique portion extending from the upper termination of said depending part to the body or shank of the needle, to thereby form an abrupt angular bend in said head, substantially as described.

478,698. BOTTLER'S APRON. ALBERT FISCHER, Philadelphia, Pa. Filed Jan. 9, 1892. Serial No. 417,472. (No model.)



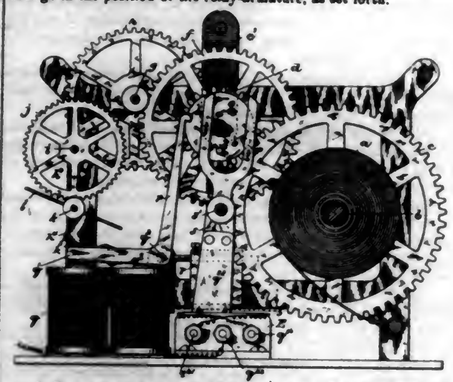
Claim.—1. A bottler's apron consisting of an apron proper connected at its ends to stays, standards having upper parts vertically adjustable and secured to the stay at the upper end of the apron, and arms pivoted to the lower stay and the lower part of the standard, substantially as described.

2. The movable base A, having the standards B secured thereto, the parts C, vertically adjustable on said standards B, the apron E, having the stays E' and H, respectively, at the upper and lower ends thereof, and the arms F, pivoted to said stay H and the standard B, the upper stay E' being secured to the parts C, said parts being combined substantially as described.

478,699. AUTOMATIC HEAT-REGULATING APPARATUS. CHAS F. GUNNISS, Boston, Mass. Filed May 20, 1891. Serial No. 394,504. (No model.)

Claim.—1. In a temperature-controlling apparatus, a single electric circuit having a thermostatic circuit-closing device and a polarized relay, combined with a damper-operating motor and a current-reversing device controlled by said motor, the armature of the polarized relay being adapted to be moved by each reversal of the current caused by said reversing device, as set forth.

2. In a temperature-controlling apparatus, the combination, with a motor adapted to alternately open and close a damper or draft-regulating device, of a detent which normally locks said motor, a single electric circuit, including an electro-magnet, which, when energized, displaces said detent and permits the operation of the motor, a current reversing or changing device operated by said motor, a polarized relay the armature of which is located between contact points or springs, and a thermostatic arm or bar located between contact-points which are electrically connected with the contact-points of the polarized armature, said thermostat closing the circuit by contact with either contact-point, and thereby energizing the electro magnet and causing the release of the motor, the movement of the current-reversing device, the reversal of the direction of the current, and a change in the position of the relay-armature, as set forth.



3. In a temperature-controlling apparatus, the combination of a polarized relay, a thermostatic circuit-closing device, a damper opening and closing motor, a detent for said motor, electrical connections, substantially as described, comprising a single electric circuit, whereby the detent is displaced and the motor released by a closure of the circuit, and a current-reversing device operated by the motor, whereby each release of the motor is caused to reverse the direction of the current through the circuit and change the position of the relay-armature, as set forth.

4. The combination of the mechanically-impelled train or motor having a notched wheel on one of its shafts, a movable detent adapted to engage the notches of said wheel, an armature connected with said detent, an electro-magnet controlling said armature, a pivoted lever having current-reversing arms or springs and adapted to be moved by the motor, and a thermostatic arm or bar, a polarized relay, and electrical connections, substantially as described, including said current-reversing arms, thermostatic arm, and polarized relay, whereby upon each release of the motor caused by a closure of the circuit by a movement of the thermostatic arm the direction of the current is reversed and the armature of the relay is caused to make connections, whereby the next movement of the thermostatic arm will again close the circuit, as set forth.

478,700. FISHING-REEL. ANDREW B. HENDRYX, New Haven, Conn. Filed Mar. 14, 1892. Serial No. 424,796. (No model.)

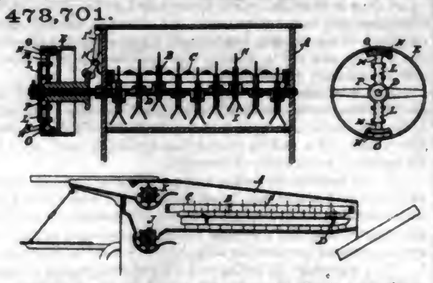


Claim.—The herein-described improvement in fishing-reels, consisting in a bearing-piece for the arbor of substantially spherical shape, having a hole diametrically through it to receive the arbor, the head of the reel constructed with a recess corresponding, substantially, to one half the said bearing-piece, combined with a cap having a recess corresponding, substantially, to the other half of said bearing-piece and so that the cap and head together form a seat for the bearing-piece, substantially as described.

478,701. RAKE MECHANISM FOR CLOVER-HULLERS. JOHN H. KAILOR and ELMER L. WILLIAMS, Columbus, Ind., assignors to Reeves & Co., same place. Filed Nov. 13, 1891. Serial No. 411,774. (No model.)

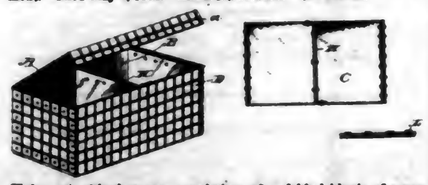
Claim.—In a clover-hulling machine having two cylinders for operating on the clover, said cylinders being arranged one above the other, the combination of the upper cylinder, the lower cylinder, the

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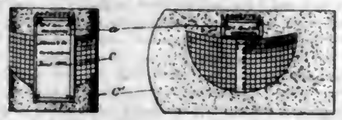
open rake-bed arranged to receive the material after it passes the upper cylinder, the rake-bars arranged in the interstices of the rake-bed and provided with teeth on their upper and their under surfaces, the multiple-crank shaft on which said rake-bars are mounted, the loose pulley mounted on said shaft, the belt connecting said loose pulley with the lower cylinder so as to revolve therewith, the clutch mounted on the crank-shaft so as to revolve therewith and adapted to engage the loose pulley, and the lever arranged to throw the pulley into and out of engagement with the clutch, all arranged to co-operate in the manner and for the purpose set forth.

478,702. SHIPPING CASE OR BOX. EUGENE T. KEPNER, Helena, Mont. Filed July 7, 1891. Serial No. 398,698. (No model.)



Claim.—A shipping-case consisting of a folded blank of paper-board having its entire outer surface sheathed with a metallic fabric embedded in and cemented to the board, the sides and end of the blank being bent up and secured by fastenings passing through the meshes of the fabric and board and having their edges bent over the adjacent strands of the fabric and a cover integral with the blank, substantially as described.

478,703. BOOK OR ENVELOPE FOR THEATERS OR OTHER PLACES OF AMUSEMENT. IBRAHIM G. KENRALLA and ANTOSH F. HADDAD, Cairo, Egypt. Filed Dec. 30, 1891. Serial No. 416,545. (No model.)



Claim.—1. The combination of a ticket and programme, said ticket having its coupon secured to said programme, and said programme containing advertisements.

2. The combination of a ticket and diagram, said ticket having a coupon rigidly attached to said diagram, and the admission or body part of the ticket detachably secured to said coupon.

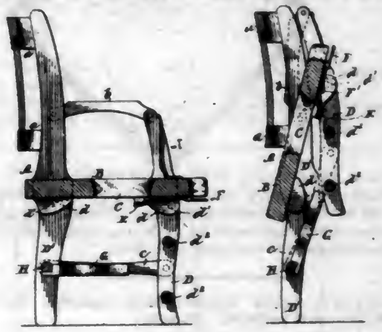
3. The combination of the programme and diagram for a theater or other place of amusement, entertainment, or instruction and means for securing the coupon of a ticket, which coupon shall designate the position of the reserved seat.

4. The combination of a programme and diagram for a theater or other place of amusement, entertainment, or instruction, and a coupon to the ticket, said coupon giving the position of a reserved seat on said diagram and have detachably secured thereto an admission-ticket.

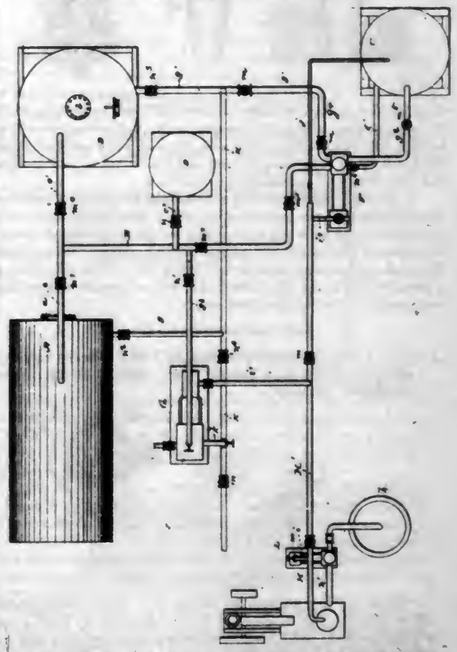
478,704. FOLDING CHAIR. THOMAS J. LE COUNT, New York, N. Y. Filed June 10, 1891. Serial No. 395,790. (No model.)

Claim.—1. In a folding chair, the combination of the seat having a central opening, the removable concave segmental returned drip-pan closed at one end and open at the other and applied beneath the seat around the forward end of the central opening by means of open-end slots in the outer edge of the pan, and headed fastening-pins applied on the under side of the seat, and the pivoted locking-hook F for locking the pan in position, substantially as described.

2. In a folding chair, the combination, with the seat, legs, and pivoted connecting-braces, of the single revolving brace-rod H, extending the entire width between the rear legs and forming a cross strengthening-brace between the rear legs, and the support G, rigidly secured to the said brace-rod and adapted by the turning of the rod to be swung up and down as the chair is folded and unfolded and when down forming a support which is open at the front for the insertion of any article desired to be placed on the support, substantially as described.



478,705. PROCESS OF TREATING WOOD TO PREVENT DECAY. MARCUS A. LOCKENBACH, Denver, Colo. Filed May 20, 1890. Renewed Jan. 2, 1892. Serial No. 416,772. (No specimens.)

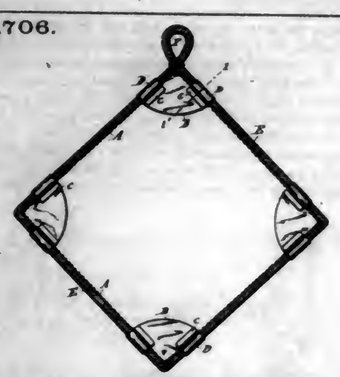


Claim.—The herein-described process of treating timbers, consisting of first drying and opening the pores thereof, then injecting a mixture of warm crude petroleum and oxide of iron under pressure, then subjecting them to a solution of poison, and subsequently drying the timbers, in the manner described.

478,706. FRAME FOR MIRRORS, &c. ARTHUR MARTIN, London, England, assignor to George J. B. Rodwell, Buffalo, N. Y. Filed June 8, 1891. Serial No. 395,453. (No model.) Patented in England July 9, 1890, No. 15,837.

Claim.—As an improved article of manufacture, a frame for a

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mirror or analogous article, composed of corner-pieces adapted to receive the corners of the article to be framed and a separately-formed continuous tie extending around the article to be framed and connecting the corner-pieces to said article, as set forth.

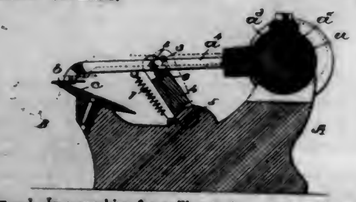
473,707. VALVE. MICHAEL D. O'BRIEN, Lorain, Ohio. Filed July 30, 1891. Serial No. 400,042. (No model.)



Claim.—1. A valve-casing having a tapering valve-seat and a threaded neck around the upper portion of said seat and locking-studs on opposite sides above said threaded neck, in combination with a valve in said seat, a cross-piece engaging said valve and said studs and holding said valve from turning, and a threaded spindle to raise and lower the valve, substantially as described.

2. The valve-casing having a valve-seat and a pair of studs on opposite sides at its top, in combination with a valve in said seat having an angular shank at its top, a cross-piece having an opening at its center engaging said shank and projections on opposite sides engaging said studs, an inclosing cap over said valve, and a valve-stem having a threaded end in the valve-shank and secured against longitudinal movement, substantially as described.

473,708. MACHINE FOR PULLING TACKS. OCTAVE PAQUETTE and ISRAEL LA CHAPELLE, Haverhill, Mass. Filed Oct. 10, 1891. Serial No. 408,094. (No model.)



Claim.—1. In a machine for pulling tacks, a tack-pulling device and an arm carrying it, combined with an eccentric for moving said arm longitudinally and a movable fulcrum-post connected to said arm intermediate its ends to move it transversely, substantially as described.

2. In a machine for pulling tacks, a tack-pulling device, its supporting or carrying arm, means, substantially as described, for reciprocating said arm longitudinally, and an independent rocking support to raise and lower the arm, the outer or free end of said arm being moved in an elliptical path by the combined movements of the arm and rocking support, or nearly so, substantially as described.

3. In a machine for pulling tacks, a tack-pulling device, a bar, as a^4, intermediate and connecting said tack-pulling device and eccentric-strap, and the eccentric-strap and eccentric, combined with a movable fulcrum-post for said bar and having an adjusting-screw 6, and a spring 7, connected to and to retain the bar in contact with said fulcrum-post, substantially as described.

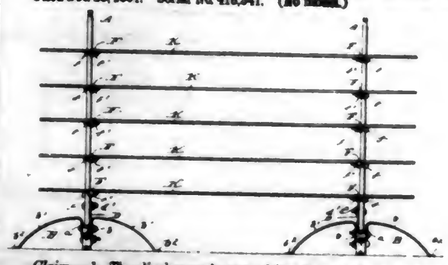
4. In a machine for pulling tacks, a tack-pulling device, arm a^4, connecting said tack-pulling device and eccentric, and an eccentric, combined with a movable fulcrum-post 4, slotted, as at 3, to receive pins 2 on the arm and to which it is pivoted thereby intermediate its ends, substantially as described.

5. In a machine for pulling tacks, a bed-plate, against the under side of which the boot or shoe is borne, combined with a tack-pulling device, and means to reciprocate it over said plate to engage and withdraw a tack, and a rocking fulcrum-post for said device to lift it from the bed-plate, substantially as described.

6. In a machine for pulling tacks, a rotatable bed-plate, against which the boot or shoe may be placed, combined with a tack-pulling device including a supporting-arm therefor, an eccentric to move said arm longitudinally, and a movable rocking fulcrum-post to which said arm is connected intermediate its ends, substantially as described.

7. In a machine for pulling tacks, a bed-plate having a tapering or thin edge, against the under side of which plate the boot or shoe is borne, with the tacks adjacent to the edge of the plate, and a tack-pulling device acting over and being supported in its forward movement by the opposite upper side of said bed-plate to engage the tacks beyond its edge, means, substantially as described, for reciprocating said device longitudinally, and a fulcrum-post connected to said device for lifting it above the bed-plate, substantially as described.

473,709. DISPLAY-RACK. CHARLES PUDDEFOOT, Morrison, Ill. Filed Dec. 26, 1891. Serial No. 416,341. (No model.)

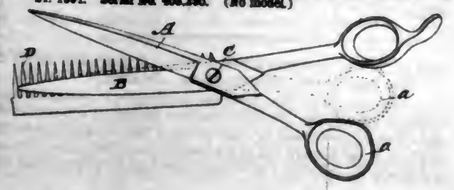


Claim.—1. The display-rack comprising the standards supported in suitable bases and angularly adjustable with relation thereto, a series of transverse arms secured to each standard and having both a vertical and an angular adjustment with relation thereto, said arms having their upper edges notched or corrugated and projecting at equal distances to each side of the standard, and the removable rods or bars supported on and connecting the respective transverse arms of the opposite standards, substantially as specified.

2. The display-rack comprising the cruciform bases, having each an elongated slot therein, an upright or standard supported in each said base and having its lower end held in said slot by an adjusting-screw, an arm or brace D for each standard, consisting of a link connected at one end to the base and at the other end having an elongated slot adjustably engaging an adjusting-screw in the standard, a series of transverse bars or arms secured centrally to each upright by adjusting-screws engaging elongated slots in both the arms and the standards, and the rods or bars supported on and connecting the respective pairs of said arms on the opposite standards, substantially as specified.

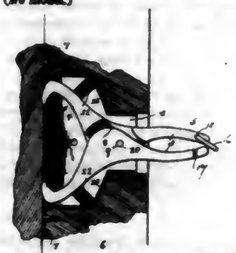
3. In a display-rack, a stand or support for the display rods or bars, said stand or support comprising a base having an elongated vertical slot therein, an upright or standard having its lower end engaging said slot and held therein by an adjusting-screw, said standard having therein a series of elongated vertical apertures, one above the other, and a series of transverse arms secured centrally to said standards by means of adjusting-screws passing through elongated horizontal slots in the arms, and the vertical slots in the standard, whereby said arms are capable of both a vertical and an angular adjustment with relation to the standard, each arm having its upper edge notched or corrugated, substantially as specified.

473,710. SHEARS. AUGUST RIMMLIN, St. Louis, Mo. Filed Aug. 21, 1891. Serial No. 403,295. (No model.)



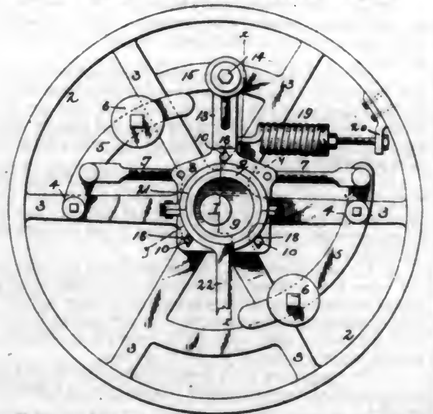
Claim.—A right-hand shears whose thumb-plate is toward the hand and the loop of which blade is nearer the shears-pivot than is the loop of the opposing blade, substantially as described.

478,711. SASH-HOLDER. JAMES R. ROSE, Woodsport, N. Y., assignor of one-half to Louis R. Klumpp, same place. Filed Sept. 30, 1891. Serial No. 407,339. (No model.)



Claim.—In a sash-holder, the combination of a casing, levers arranged within the casing and pivoted intermediate their ends and having their outer ends provided with heads and their inner ends shaped into handles, one of which is provided with a perforation and the other of which has notches, a link secured to the perforated handle and arranged to engage the notches 17, whereby the heads are held out of engagement with the window-frame, and springs arranged within the casing and engaging the levers, substantially as described.

478,712. ENGINE-GOVERNOR. MICHAEL ROTHFUSS, Williamsport, Pa. Filed Oct. 13, 1891. Serial No. 408,695. (No model.)



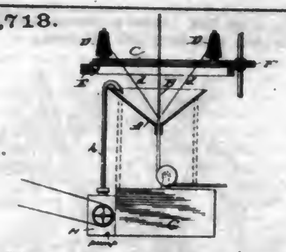
Claim.—1. In a governor, the combination of the shaft, the wheel secured thereto, the levers pivoted to said wheel, having adjustable weights, the adjustable plate formed or provided with an eccentric, the links connecting said plate with the levers, the plate secured to said adjustable plate, having an arm pivoted to the wheel, and the coiled spring connected with said arm and with the wheel, said plates being secured together and working in unison, the eccentric-plate being adjustable upon the other plate, whereby the eccentric may be shifted and the lead of the valve varied, substantially as described.

2. In a governor, the combination of the shaft, the wheel having radial arms secured thereto, the levers pivoted to said arms and provided with adjustable weights, the adjustable plate carrying an eccentric and provided with projecting tongues, the links connecting said plate with the levers, the plate having grooves in which said tongues fit, and elongated slots, the arm formed with said plate and pivoted to the wheel, the bolts connecting said plates, and the coiled spring connected with said arm and wheel, said plates being secured together and working in unison, the eccentric-plate being adjustable upon the other plate, whereby the eccentric may be shifted and the lead of the valve varied, substantially as described

478,718. COVERED ELECTRIC WIRE. HENRY A. RUETER, Boston, Mass. Filed July 20, 1891. Serial No. 400,750. (No model.)

Claim.—1. The hereinbefore-described method of covering wire, consisting of taking a strip or strips, subjecting the same to a bath of

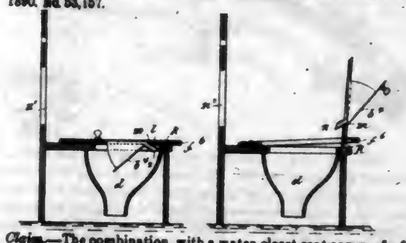
478,718.



parchmentizing material, and winding the strip or strips while wet and soft upon the wire, substantially as described.

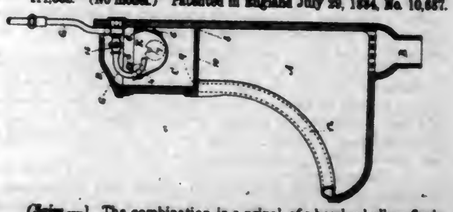
2. A wire combined with a homogeneous covering of parchmentized vegetable fiber, substantially as described.

478,714. WATER-CLOSET COVER. MAX SCHUBERT, Cottbus, assignor of one-half to Moritz Kohn, Berlin, Germany. Filed Aug. 26, 1891. Serial No. 403,665. (No model.) Patented in Germany Feb. 4, 1890, No. 53,157.



Claim.—The combination, with a water-closet-seat cover, of a funnel-shaped urinating-vessel hinged to the same and mounted to swing to the front of the seat and provided with an outlet-tube, substantially as set forth.

478,715. FLUSHING DEVICE FOR URINALS AND CLOSETS. JOHN SHANKS, Barrhead, Scotland. Filed Nov. 14, 1891. Serial No. 411,862. (No model.) Patented in England July 29, 1884, No. 10,657.



Claim.—1. The combination, in a urinal, of a bowl, a hollow flushing-rim, and a box with a back extending above the box, the bottom of the box being perforated and the flushing-rim opening into such box, the whole being in one piece of earthenware, a tipping cistern pivoted within the box, and a water-supply pipe and regulating-cock, substantially as specified.

2. The combination, in a urinal, of a bowl, a hollow flushing-rim, and a box with a back extending above the box and having an opening in the same, the bottom of the box being perforated and the flushing-rim opening into such box, the whole being in one piece of earthenware, a tipping cistern pivoted within the box, and a water-supply pipe and regulating-cock and a connection for the same to the back at the aforesaid opening, substantially as specified.

3. The combination, in a urinal, of a bowl, a hollow flushing-rim, and a box with a back extending above the box and having an opening in the same, the bottom of the box being perforated and the flushing-rim opening into such box, the whole being in one piece of earthenware, a tipping cistern pivoted within the box, and a water-supply pipe and regulating-cock and a connection for the same to the back at the aforesaid opening, and a cover resting upon the top of the box and setting against the back and having a notch for the supply-pipe, substantially as specified.

4. The combination, with a closet or urinal, of a box having a back extending above the box and a downwardly-descending pipe in one piece of earthenware, a tipping cistern within the box, pivots and a stop for the cistern, a supply water-pipe and connection to the back of the box, and a cover resting upon the box and against the back and notched for the supply water pipe, substantially as specified.

473,716. HOSE-PIPE. JOSEPH A. STEVENS, Springfield, Mass. Filed Aug. 20, 1891. Serial No. 403,250. (No model.)



Claim.—1. The combination, with a plate provided with a hook projected from its under side, of a hose-nozzle having its intermediate portion pivotally connected at the upper side of said hook-provided plate, with its rear portion extended back of said point of pivotal connection, whereby the hooked support may have a temporary engagement for a tilting movement of it and the nozzle in a vertical plane and whereby the nozzle may be by its rear end independently swung laterally on the hooked support, substantially as described.

2. The combination, with a hose-pipe having a collar provided with the boss *f*, of the plate C, thereunder provided with one or more hooks and the headed bolt *g*, passed through the said plate and with an engagement into said boss, substantially as described.

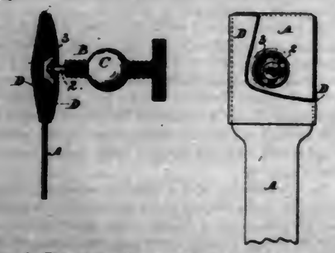
3. The combination, with a hose-pipe, of a supporting-plate thereunder, to which the pipe is pivotally connected, and said plate having one or more hooks and a forwardly-extended guard or fender A, substantially as and for the purposes set forth.

4. The combination, with the hose-pipe, of the supporting-plate C thereunder, to which the pipe is pivotally connected, and said plate having the pair of members riveted thereto, each of which comprises the hook *h*, with its bend or bight forwardly disposed and the rear or lower section of the hook reversely bent and forwardly extended in the guard-section A, substantially as shown and described.

5. The combination, with a metallic hose-pipe having its rear portion bent, as described, of the supporting-plate under an intermediate portion of the pipe, with which said intermittent portion has a pivotal engagement, and said supporting part having a hook or hooks for engagement with an available support, substantially as and for the purpose set forth.

6. A hose-pipe provided on its under side with a hook or yoke and a forwardly-extended guard or fender, which is constituted by a continuation of the hook, substantially as and for the purposes set forth.

473,717. ELECTRIC-CONTACT PROTECTOR. RICHARD VARLEY, Jr., Englewood, N. J. Filed July 7, 1891. Serial No. 398,667. (No model.)



Claim.—1. Two electrodes, one of which is recessed in line with the other electrode, in combination with an elastic septum through which one electrode passes and which septum sets tightly against the raised surface of the other electrode, substantially as specified.

2. The combination, with an elastic septum in the form of a band, of an electrode made as a plate introduced into the elastic band and the opposite electrode having a neck, the elastic septum surrounding the neck and lying close upon the surface of the electrode-plate, substantially as set forth.

3. An electrode plate or spring having a recess and a plate of platina or similar metal secured in the base of the recess, in combination with an elastic septum secured to the face of the plate, and an adjusting-screw having a neck near the end and passed through the elastic septum into the cavity of the plate, substantially as set forth.

4. An electrode formed of a plate of metal recessed and having a convex or projecting surface around the recess, in combination with an elastic band passing around such plate and drawn tightly upon the convex surface to form an air-tight septum and perforated in line with the recess, and an electrode having a neck and a head within the recess and the elastic material surrounding the neck, substantially as set forth.

473,718. TYPE-WRITING MACHINE AND RIBBON-HOLDER THEREOF. GEORGE B. WEBB, New York, and LOUIS H. CHAPIN, Brooklyn, assignors to the Remington Standard Type Writer Manufacturing Company, New York, N. Y. Filed Nov. 2, 1891. Serial No. 410,864. (No model.)



Claim.—1. The combination of a type-writer ribbon, a slotted case incapable of being opened without destruction, and a spool arranged within said case and incapable of being extracted without destroying said case.

2. The combination of a type-writer ribbon provided at one end with fastening devices, a slotted case incapable of being opened without destruction, and a hollow spool arranged within said case and incapable of being extracted without destroying said case, the said case being provided with open bearings and the said spool being provided at its ends with hollow journals.

3. The combination, with a slotted case incapable of being opened without destruction, of a spool journaled within said case and incapable of being extracted without destroying said case, and a type-writer ribbon connected to said spool and adapted to pass out through the slot in said case.

4. The combination, with a slotted case having perforated heads, of a hollow spool arranged within said case and incapable of being extracted without destroying the same and having hollow journals fitted to the perforations in said heads to permit the passage of a ribbon-spool shaft, and a type-writer ribbon connected to said spool and adapted to pass out through the slot in said case.

5. The combination of a type-writer ribbon, a spool, and a slotted case provided with means to enable its attachment to a type-writing machine.

6. The combination, in a type-writing machine, of a shaft or axle, a slotted case fitted thereon, and a spool bearing a ribbon arranged within said case and adapted to slide on said shaft and constructed and arranged to rotate within said case.

7. The combination, in a type-writing machine, of a shaft or axle, a slotted case adapted to slide thereon, a spool bearing a ribbon arranged within said case and also adapted to slide on and turn with said shaft, and means for preventing rotation of said case.

8. The combination, in a type-writing machine, of a shaft or axle having a groove and a spool bearing a ribbon within a slotted case and provided with a pin to engage said groove.

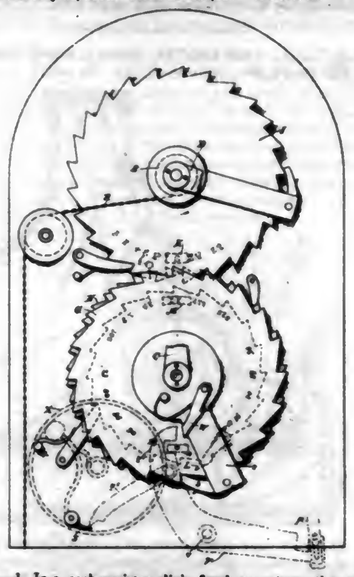
9. The combination, in a type-writing machine, of a shaft or axle, a spool bearing a ribbon, a slotted case inclosing the same, and a catch or fastening to prevent turning of the case.

10. The combination, in a type-writing machine, of a shaft or axle, a spool bearing a ribbon, a slotted case inclosing the same and provided with an arm, and means on the machine to engage said arm to hold the case in proper position for the paying out or taking up of the ribbon.

11. The combination, in a type-writing machine, of a shaft or axle, a spool bearing a ribbon, a slotted case inclosing the same, and a slide connected to said case.

12. The combination, in a type-writing machine, of a shaft or axle, a spool bearing a ribbon, a slotted case inclosing the same and provided with a perforated arm, a slide, a depending perforated plate thereon, and a catch-pin.

473,719. CASH-REGISTER. RUEL W. WHITNEY, San Francisco, Cal. Filed July 18, 1890. Serial No. 358,232. (No model.)



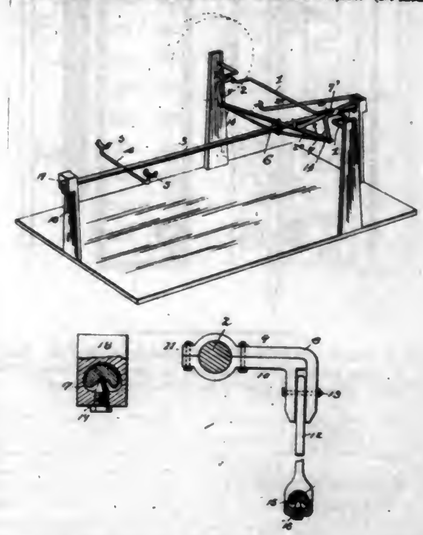
Claim.—1. In a cash-register, disks fixed one above the other, shafts extending through their centers, a single ratchet-disk turning loosely upon the upper shaft, two ratchet-disks turning upon the lower shaft and overlapping the lower edge of the upper disk, one in front and one behind, a pawl upon the lower front disk which engages and moves the upper disk one tooth at each revolution of the lower disk, a pawl upon the upper disk which engages and moves the rear lower disk one tooth at each revolution of the upper disk, figures marked upon the peripheries of the disks, and openings in the front and rear faces of the case, through which the figures appear, hubs or sleeves upon the two shafts, with pointers fixed to their outer ends and movable over the dial-faces, and arms fixed to their inner ends, with pawls which engage the upper and the lower front ratchet-disks, respectively, whereby the disks may be advanced independently or collectively to indicate the amounts and sums over which the pointers are moved upon the dials, substantially as herein described.

2. The dials having figures marked thereon, pointers movable about central shafts and carrying ratchet-disks having figures marked upon them, openings in the case, through which one of said figures or amounts may be seen at one time, a pulley connected with one of the ratchet-disks and movable with it, and a chain passing around said pulley, extending down through the table, and connected with the drawer, so that when the drawer is closed the chain will act upon the pulley and ratchet-disk and return the latter and the pointer to its starting position, substantially as herein described.

3. In a cash-register, dials fixed one above the other, shafts extending through their centers, a single ratchet-disk turning upon the upper shaft, two ratchet-disks turning upon the lower shaft and overlapping the lower edge of the upper disk, pointers fixed to the hubs upon the shafts and movable over the dials, pawls carried by arms fixed to the hubs, engaging and moving the upper and the lower ratchet-disks, respectively and independently, a horizontally-sliding drawer in the table beneath the indicating mechanism, a vertically-reciprocating bolt engaging and locking the drawer when in its closed position, a lever-arm V, fulcrumed in the lower part of the case and connected with the locking-bolt, a contact-piece W, carried by the hub of the lower pointer to engage and move the lever and the bolt, with an arm projecting through a slot in the dial-face by the side of the knob of the upper pointer, whereby the two may be seized simultaneously and the drawer unlocked before the upper pointer is moved and independently of the connections with the lower one, substantially as herein described.

4. In a cash-register, the superposed dials with independent pointers movable over their faces, shafts extending through the centers of the dials, ratchet-disks turning upon these shafts, hubs to which the pointers are attached also turning upon the shafts, pawls carried by the hubs and engaging the ratchet-disks, whereby the latter are rotated independently or collectively by the movements of the pointers, a spring-actuated horizontally-sliding drawer in the table beneath the dial mechanism, a vertically-sliding bolt engaging and locking the drawer in its normal and closed position, an arm extending from the bolt through a slot in the face of the upper dial by the side of the knob of its pointer, whereby the two may be seized simultaneously and the drawer released before the pointer is moved, a lever V, fulcrumed in the lower part of the case and connected with the bolt, a contact-piece W, carried by the hub of the lower pointer to move the lever and retract the bolt when the lower pointer is moved, a gong and striking-hammer, and an arm v^2, carried by the lever V and actuating the gong-hammer when the lever is moved or the bolt withdrawn, substantially as herein described.

473,720. DEVICE FOR CONVERTING MOTION. MORTEN C. WILSON, Malden, Mass. Filed Jan. 7, 1892. Serial No. 417,267. (No model.)



Claim.—1. In combination, the rocking shaft, a bar arranged transversely thereof and pivoted thereto to oscillate longitudinally of the rock-shaft, the part to be driven, and the connection from the transverse bar to said part, substantially as described.

2. In combination, the rocking shaft, a bar arranged transversely thereof and pivoted thereto to oscillate longitudinally of the rock-shaft, the crank-shaft, and the connections from said oscillating bar to the cranks of said shaft, substantially as described.

3. In combination, the rocking shaft, a bar arranged transversely of the rock-shaft and pivoted thereon to oscillate longitudinally thereof, the part to be driven, and the angular connection between the oscillating bar and said part, substantially as described.

4. An oscillating bar pivoted upon a rocking shaft, connections between the ends of the oscillating bar and the cranks of the driving-shaft, and means for preventing the retrograde movement of the oscillating bar, substantially as described.

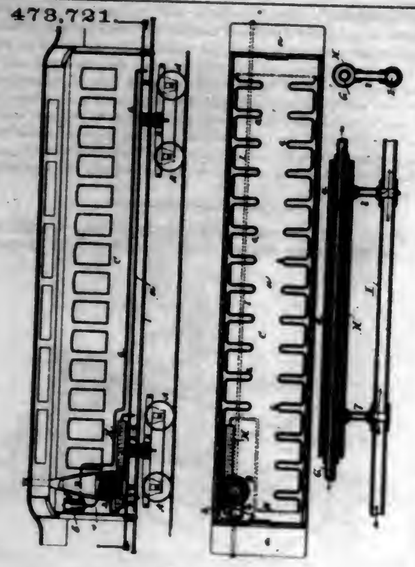
5. An oscillating bar mounted on a rocking shaft, connections between the ends of the bar and the cranks of the driving-shaft, and spring-arms carried upon a pivoted support and adapted to engage the oscillating bar and prevent the retrograde movement thereof, substantially as described.

6. An oscillating bar mounted on a rocking shaft and connections between the ends of the bar and the cranks of the driving-shaft, said connections consisting of a boxing having an angular extension, and a rod pivoted between the arms of the extension, substantially as described.

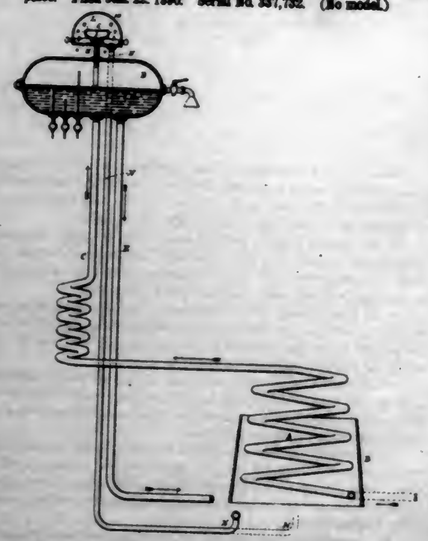
473,721. RAILWAY-CAR HEATER. WILLIAM C. BAKER, New York, N. Y., assignor to the Baker Heater Company, same place. Filed June 24, 1887. Serial No. 242,340. (No model.)

Claim.—The combination, in a car-heater, with the heating-pipes containing water, of a fire-chamber, a coil of pipe within the same connected at its ends to the heating-pipes and to an expansion-vessel, respectively, a jacket surrounding a portion of the heating-pipe, a steam-pipe extending along the car and adapted to receive steam from the locomotive, and two branch pipes from such steam-pipe to the jacket and near the ends thereof, substantially as specified.

473,721



473,722. SAFETY-VENT FOR STEAM APPARATUS. WILLIAM C. BAKER, New York, N. Y., assignor to the Baker Heater Company, same place. Filed Jan. 22, 1890. Serial No. 337,732. (No model.)

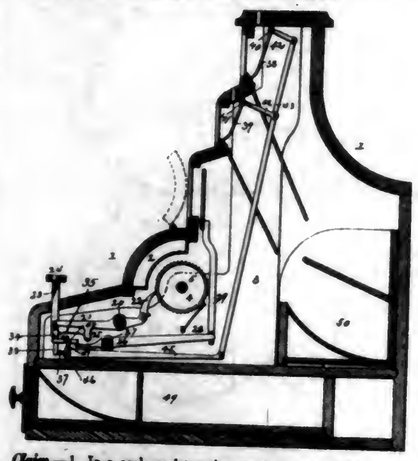


Claim.—1. The combination, with a car-heating apparatus having a fire-chamber, an expansion-vessel, and pipes in which the heated liquid is caused to circulate, of a safety-vent adapted to be ruptured by undue pressure, an inclosure for the same, and a pipe for directing the steam or water to the fire-chamber, substantially as specified.

2. The combination, with the car-heating apparatus having a fire-chamber, an expansion-vessel, and circulating-pipes, of a safety-vent formed of cast metal with a thick body and a thin face, adapted to be blown off by undue pressure, a chamber inclosing such safety-vent, and a pipe from the same to the fire-chamber for directing the steam and water upon the fire when the safety-vent is ruptured by the pressure, substantially as set forth.

3. The combination, in a car-heating apparatus, of a fire-chamber, a closed system of heating-pipes within the car, and a water-heating coil or vessel acted on by the fire, an expansion-vessel, a safety-vent adapted to be ruptured by undue pressure, a pipe connecting the same with the system of heating-pipes, a closed chamber into which the steam passes when the safety-vent is ruptured, and a pipe leading from such chamber to the fire, substantially as set forth.

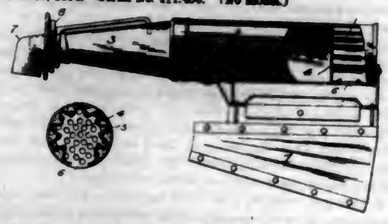
473,723. CASH-REGISTER. HENRY A. BERLEY, Lexington, Ky. Filed Dec. 14, 1891. Serial No. 415,014. (No model.)



Claim.—1. In a cash-register, the combination, with the registering-wheels, of the pivoted key-levers having spring-pawls at their inner ends, the key-bars, the downwardly-depending arms formed with said levers, the bars pivoted to the key-bars, provided with cams, the transverse plate having a rectangular aperture and an intersecting slot, the levers with which said plate and arms are adapted to engage, and the rods carrying the display-plates, substantially as described.

2. In a cash-register, the combination, with the casing provided with cash-openings and the shutters secured to pivoted transverse shafts provided with cranks, of the vertical bar connected with said cranks, the lever pivoted to said bar and fulcrumed to a transverse shaft, and the short vertical arm engaging with a notch in the sliding plate, actuated by the indicating-keys, substantially as described.

473,724. BEE-SMOKER. TRACY F. BINGHAM, Abronia, Mich. Filed Nov. 10, 1891. Serial No. 411,436. (No model.)



Claim.—1. In combination with the bellows, stove, and perforated fire-plate fitting within the stove, a corrugated or ribbed sheet-metal support extending nearly around the same, substantially as described.

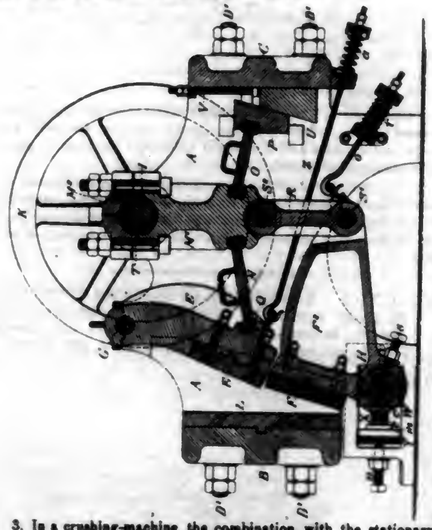
2. The combination, in a bee-smoker, of a horizontally-arranged bellows, a stove, a tapering nozzle, and the angular head for deflecting the jet of smoke downward without tipping the smoker, substantially as described.

3. In combination with bellows and stove, the tapering nozzle having a suitable operating-handle consisting of a wire having one end secured to the nozzle and its remaining portion coiled around the said nozzle, part of the coils extending out from the surface of the nozzle, substantially as described.

473,725. STONE OR ORE CRUSHING MACHINE. EDGAR H. BOOTH, San Francisco, Cal. Filed June 20, 1891. Serial No. 396,926. (No model.)

Claim.—1. In a crushing-machine, the combination of the stationary jaw, the upper movable jaw, which is fulcrumed above its crushing-face, the lower movable jaw, which is fulcrumed below its crushing-face, the actuating-shaft eccentric thereon, a pitman which receives its motion from said eccentric, a connecting-toggle between the pitman and the upper jaw, a link pivoted to the lower end of the pitman, and an extension or lever upon the lower jaw, to the end of which extension the lower end of the said link is pivoted, substantially as described.

2. In a stone and ore crushing machine with two jaws E and F, the eccentric T, fixed to driving-shaft I, and the link or pitman M', actuated by said eccentric and transmitting its motion through toggles or thrust-plates N and O to the upper movable jaw E, pivoted above its crushing-face, in combination with the extension-link R, transmitting its motion through lever F^3 to the lower jaw F, pivoted below its crushing-face, so as to produce alternate and approximately continuous crushing movement of jaws E and F and divide the strains upon eccentric-shaft, together with the abutment or end member C, substantially in the manner and for the purposes specified.



3. In a crushing-machine, the combination, with the stationary jaw, of a jaw having a rearward lever or extension, a spring-rod arranged to act as a tension device on the rear end of the said lever, the actuating-shaft, an eccentric thereon, a pitman operated by said eccentric, and a link pivoted to said pitman and to the lever on the jaw, substantially as described.

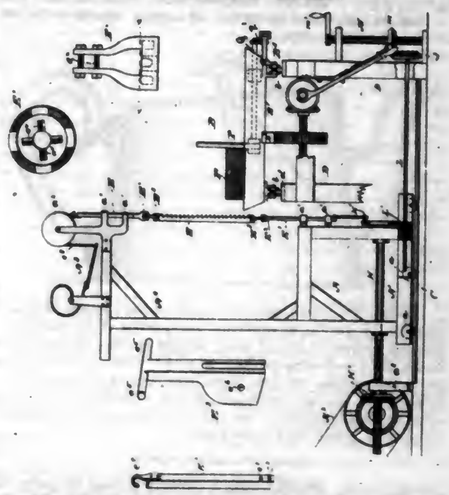
4. In a stone and ore crushing machine, the jaw F, pivoted below its crushing-face, with the fulcrum or pivot pin H, in combination with the bearing W, in which pin H rests, the cap-piece *c*, the spring *e*, the plate *m*, set-screw *n*, and the movable plates Y, substantially as herein described.

5. In a stone and ore crushing machine, the combination of the stationary jaw L, the movable jaws E and F, one being fulcrumed or pivoted above its crushing-face and the other placed beneath it and pivoted or fulcrumed below its crushing-face, so that the material will fall from the upper edge E to the lower edge F, the drive-shaft I, eccentric T thereon, link M', actuated by said eccentric, toggles N and O, said toggle N being situated between the pitman M' and the jaw F and said toggle O being situated between the pitman M' and the wedge P, the end abutment C, the link R, pivoted to pitman M' and to the extension F^3 on the rear side of the jaw F, the spring-rod Z, connected to the jaw E, and the spring *e*, acting upon the jaw F, substantially as described.

6. In a stone and ore crushing machine, the combination of the main frame having the side members and the end members, the stationary jaw L, the movable jaws E and F, said jaw F having a rearward extension F^3, the shaft I, eccentric T thereon, pitman M', driven by said eccentric, toggles N and O, the adjustable wedge U, acting against the thrust-wedge P, which is adjusted up or down by the screw-bolt V, and the link R, pivoted to the lower end of the pitman M' and also to the extension F^3, substantially as described.

7. In a stone and ore crushing machine, the combination of the main frame having the side members A and the end members B and C, the stationary jaw L, the movable jaws E and F, located opposite thereto, the drive-shaft with an eccentric thereon, and the pitman operated by said eccentric, the toggles N and O, said toggle N being located between the pitman and the jaw E and said toggle O being located between the pitman and the wedge P, adjustable wedge U, the screw-bolt V, upon which the wedge P is adjusted up or down, the link R, connecting the pitman M' with the lever F^3 on the rear of jaw F, the spring-rod Z, connecting with the movable jaw E, and the spring-rod *e*, connecting with the extension F^3 on jaw F, all substantially as described.

473,726. SAWMILL-CARRIAGE. JOHN M. BURNET, McCaskill, S. C. Filed June 9, 1891. Serial No. 395,622. (No model.)



Claim.—1. In a framing-mill for cutting lumber, the combination, with a timber-carriage mounted on a suitable frame-work, of a saw-carriage mounted on trucks at right angles to said timber-carriage, with means for moving said saw-carriage backward and forward, a jig-saw mounted on said saw-carriage, a revolving shaft mounted on said saw-carriage and adapted to drive said saw, said shaft having a longitudinal slot therein, a bevel gear-wheel mounted loosely on said shaft and having a key sliding in said groove, but holding said bevel gear-wheel against turning on said shaft, a fixed stanchion behind said bevel gear-wheel and holding the same against backward pressure, a driving-shaft, a bevel gear-wheel mounted thereon engaging said gear-wheel on the slotted shaft, and means for revolving said driving-shaft, substantially as described.

2. In a framing-mill for cutting lumber, the combination, with a jig-saw and means for imparting the reciprocating motion thereto, of the holder E^2, having arms e^2, attached to the saw, a guide-rod at each end of the saw, guides for the said rod attached to the frame-work for keeping the saw vertical and holding it against turning, and a swivel-shaped joint E^3, attached to the end of the guide-rods and having a plurality of recesses e^4 for the reception of the arms e^2 on the holder E^2, substantially as described.

3. In a carriage for a jig-saw, the combination, with suitable frame-work, of a shaft journaled in the said frame-work for driving the saw, a spring at the opposite end of the saw for drawing the saw backward, a rope or chain connected at one end to said spring, a grooved pulley receiving said rope or chain, two square guide-rods, one attached to the other end of said rope or chain and the other connected by a connecting-rod and crank-pin to the said shaft, a swivel-shaped joint having a plurality of grooves attached to the ends of said guide-rods next the saw, a jig-saw, and holders therefor, with arms on the said holders for engaging in the said grooves in the swivel-shaped joint, substantially as described.

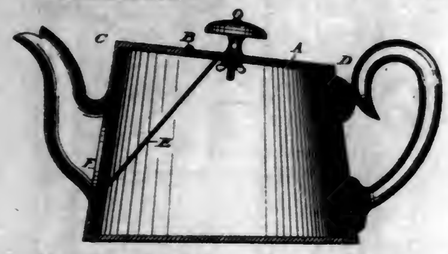
4. In a device for altering the angle at which a jig-saw is set, the combination, with a saw and suitable guide-rods for keeping that saw at the desired angle, of a holder attached to each end of the saw, having arms extending therefrom, and a swivel-shaped joint attached to each saw-rod, having a plurality of recesses therein adapted to receive said arms, substantially as described.

5. In a framing-sawmill for cutting lumber, the combination, with a movable and angularly-adjustable saw, of a fixed frame-work having a slot therein for the admission of said saw, a lumber-carriage mounted on said frame-work and having cross-pieces carrying the trucks, and a central string-piece carrying the feed-rack and only one side timber, thus having the side next the saw open, except for the cross-pieces, substantially as described.

6. In a framing-mill, the combination, with a movable saw-carriage and an angularly-adjustable saw, of the frame-work for the timber-carriage, having the slot D' in one side timber thereof for the

entry of the saw, all substantially as described, and the timber-carriage moving upon the said frame-work, said timber-carriage consisting, essentially, of the cross-pieces B', carrying the trucks, the central string-piece B^2, carrying the feed-rack, and the side piece B^3 for stiffening the carriage, substantially as described.

478,727. TEA-POT. RICHARD CHIDLEY, London, England. Filed Sept. 16, 1891. Serial No. 406,353. (No model.) Patented in England Oct. 21, 1890, No. 16,522.



Claim.—The herein-described tea-pot, having a top and lid hinged thereto, both slanting downward in the direction of the handle, the free-edge portion of the lid being adapted to bear adjacent to the handle, and a perforated partition or screen within the body of the pot, extending from the base of the inner opening of the spout to a point beyond the inner portion of the top, whereby when the lid is raised access may be had to the interior of the pot on both sides of the partition, substantially as set forth.

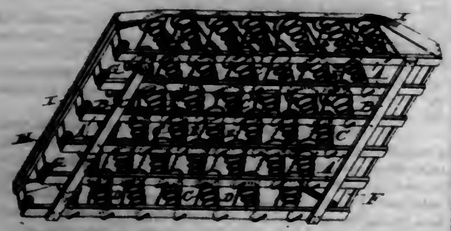
478,728. WHEEL. LOUIS J. CRECELIUS, St. Louis, Mo., assignor of one-half to Charles R. Pearce, same place. Filed July 6, 1891. Serial No. 398,577. (No model.)



Claim.—1. A hub composed of parts, each part having a chamber opening toward the interior or axis of the hub, formed by the peripheral shell and end walls and having, also, divisional walls which lie in planes radial to the axis of the hub, the end walls having openings with the edges fitted to the shaft or journal, the inner edges of the divisional walls being also fitted to bear upon the said shaft or journal, the said hub parts being provided, also, with holes for spokes and being fitted to receive and combined with a fusible filling adapted to harden within the shell, substantially as described.

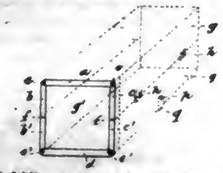
2. The method hereinbefore described of putting up a sectional wheel having chambered hub, the same consisting in inserting the spokes through peripheries in the chambers of the hubs and fastening the outer ends of the spokes to the rim-sections, then putting the sections together while the inner ends of the spokes are loose, forcing the wheel by pressure upon the periphery into proper circular shape, and then forcing or pouring the filling material into the chambers about the inner ends of the spokes, all substantially as described.

478,729. SPRING-BED. HERBERT L. DAY, Cherryfield, Me. Filed Dec. 12, 1891. Serial No. 414,782. (No model.)



Claim.—The combination, in a spring-bed, of the bottom frame consisting of the longitudinal slats A and transverse slats B, the rigid or stationary foot-board secured to slats A, the end springs G, secured to slats A and to the movable head-board H, the coiled springs C, connected together at their upper ends by chains E and secured to slats A, the chains D, secured to said slats and to the springs C intermediate their ends, and the flexible cover fastened at one end to the rigid foot-board and at the other end to the yielding head-board and overlapping the upper coils of the springs C at opposite sides, substantially as described.

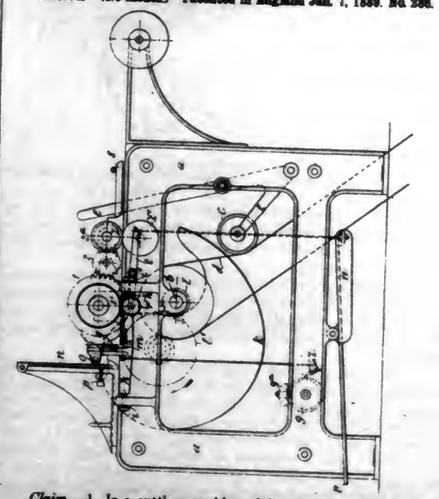
478,730. FOLDING BOX OR CRATE. EDGAR DERBER, London, England. Filed July 7, 1891. Serial No. 398,732. (No model.) Patented in England Jan. 30, 1891, No. 1,734.



Claim.—1. A folding case or basket consisting of metal end frames pivoted at their corners, with the opposite side bars divided at their center and the sides held to said end frames and hinged at the center, substantially as described.

2. A folding case or basket consisting of metal end frames pivoted at their corners, with the opposite side bars divided at their center and the sides held to said end frames and hinged at the center, said end frames being formed of angle-iron, except the top bar, which is flat.

478,731. MACHINERY OR APPARATUS FOR CUTTING PAPER OR OTHER SUBSTANCES INTO SHEETS. ARCHER EDWARDS and RICHARD J. EDWARDS, London, England. Filed June 3, 1891. Serial No. 395,531. (No model.) Patented in England Jan. 7, 1889. No. 286.



Claim.—1. In a cutting-machine of the character described, the combination, with a frame and a driving-shaft set transversely thereon, of a cam driven by said driving-shaft, a reciprocating knife pivoted at one end to said frame and lifted at the other end by said cam, an adjustable inclined guide for said reciprocating knife, a fixed knife set in said frame and adapted to coact with said reciprocating knife, and means for bringing the material between said knives, substantially as described.

2. In a cutting-machine of the character described, the combination, with a transverse shaft, of the cam *k* on said shaft, a toothed wheel *w*, with teeth extending only partly around the periphery thereof, also on said shaft, an adjustable toothed wheel *w'*, meshing with said toothed wheel *w*, a toothed wheel w^2, meshing with said toothed wheel *w'*, and friction-rollers *r'* and *r* on the same shafts with the said toothed wheels *w* and *w'* and driven thereby, substantially as and for the purposes described.

3. In a cutting-machine of the character described, the combination, with a transverse shaft, of the cam *k* on said shaft, a toothed wheel *w*, with teeth extending only partly around the periphery thereof, also on said shaft, an adjustable toothed wheel *w'*, meshing

with said toothed wheel *w*, a pivoted frame carrying said toothed wheel and screws for adjusting said frame horizontally and vertically, and a toothed wheel w^2, meshing with said toothed wheel *w'*, and friction-rollers *r'* and *r* on the same shafts with the said toothed wheels *w* and *w'* and driven thereby, substantially as and for the purposes described.

4. In a cutting-machine of the character described, a reversible H-shaped knife-blade composed of a central rectangular bar and reversible rectangular plates secured on either side of said bar and lapping over the sides thereof, substantially as described.

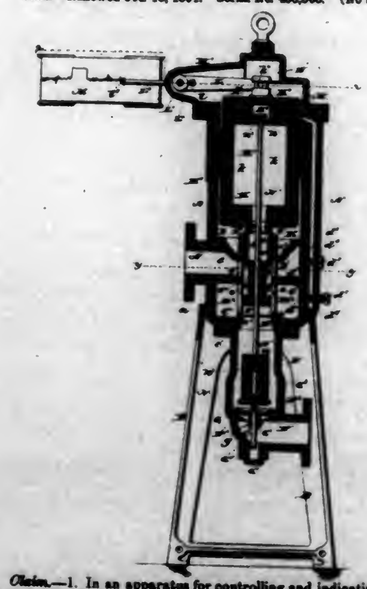
5. In a cutting-machine of the character described, the combination, with a revolving cutting-disk *z*, held against axial movement, of an axially-adjustable disk *z'*, overlapping the edge of the said disk *z* and mounted upon adjustable conical bearings 5, a frame 3, adapted to be moved in the line of the axis of the disk *z'*, and guides 4 for the said frame, substantially as described.

6. In a cutting-machine of the character described, the combination, with a revolving cutting-disk *z*, held against axial movement, of an axially-adjustable disk *z'*, overlapping the edge of the said disk *z* and mounted upon adjustable conical bearings 5, a frame 3, adapted to be moved in the line of the axis of the disk *z'*, and guides 4 for the said frame, and a hand-screw 5^2, and rubber buffer 6, substantially as described.

478,732. METHOD OF LOOSENING TUBES FROM MANDRELS. FRANCIS E. ELMORE and ALEXANDER S. ELMORE, Leeds, assignors to the Elmore's American and Canadian Patent Copper Depositing Company, Limited, London, England. Filed Feb. 11, 1892. Serial No. 421,184. (No specimens.) Patented in England Mar. 23, 1891, No. 5,167; in Luxemburg June 1, 1891, No. 1,456, and in Italy June 10, 1891, LVIII, 229.

Claim.—The herein-described method of loosening from a thin hollow mandrel a tube electrolytically deposited thereon, consisting in reducing the fluid-pressure within the mandrel.

478,733. APPARATUS FOR CONTROLLING AND INDICATING STEAM-SUPPLY. CHARLES E. EMERY, Brooklyn, N. Y. Filed Apr. 18, 1884. Renewed Oct. 13, 1891. Serial No. 408,565. (No model.)



Claim.—1. In an apparatus for controlling and indicating steam-supply, in combination with a supply-pipe for supplying steam or other fluid under pressure and a delivery-pipe, valve mechanism adapted to maintain a substantially constant difference between the pressure of the steam supplied and that delivered and to throttle the flow of the steam or fluid when the difference in such pressures becomes too great, all substantially as and for the purpose described.

2. In combination with the inlet and outlet chambers connected, respectively, with the supply and delivery pipes, valve mechanism controlling the communication between the inlet and outlet chambers, adapted to diminish the area of the communication between the two chambers as the difference between the pressures in the two chambers diminishes, and to shut off the communication between the chambers when the difference between such pressures tends to become too great, substantially as and for the purpose described.

3. In an apparatus adapted to regulate the pressure of steam in a delivery-pipe, in combination with the inlet and outlet chambers, valve mechanism, substantially as described, adapted to diminish the communication between the chambers as the difference in pressures in the two chambers diminishes, and to increase or enlarge such communication as the difference in the pressures increases up to a certain point, and as the pressure tends to rise above such point to diminish or throttle the communication with the outlet-chamber, substantially as and for the purpose described.

4. In combination with the inlet, intermediate, and outlet chambers, the valve mechanism adapted automatically to lessen or increase the communication between the inlet and intermediate chambers as the difference between the pressures in such chambers diminishes or increases and to throttle or close the communication between the intermediate and outlet chambers when the difference between the pressures in the inlet and outlet chambers becomes too great, and means, substantially as described, for indicating the position or movements of the valve, substantially as and for the purpose described.

5. In combination with the inlet, the intermediate, and the outlet chambers connected by suitable valve openings or passages, the loaded valve actuated to fall and rise as the difference between the pressure in the inlet and outlet chambers diminishes or increases, adapted to close the communication between the inlet and intermediate chambers as it descends and the communication between the intermediate and outlet chambers as it ascends, substantially as and for the purpose described.

6. In combination with the intermediate chamber communicating with the inlet and outlet chambers, the valve-head adapted to diminish or close the communication between the intermediate and inlet chambers when it is moved in one direction and that between the intermediate and the outlet chambers when it is moved in the other direction, substantially as and for the purpose described.

7. In combination with the intermediate chamber and the inlet and outlet chambers connected therewith by suitable ports or passages, the valve adapted to regulate the communication between the inlet and intermediate chambers, and the valve connected therewith, adapted to regulate the communication between the intermediate and the outlet chambers, substantially as and for the purpose described.

8. In combination with the intermediate chamber connected with the inlet and outlet chambers by suitable ports, the loaded valve actuated by the difference between the pressures in the inlet and outlet chambers to close or open the port between the inlet and intermediate chambers as the difference in the pressures tends to diminish or increase, and the valve connected therewith, adapted to close the port between the intermediate and outlet chambers when the pressure in the outlet-chamber falls too low and the difference in pressures becomes too great, substantially as and for the purpose described.

9. In combination with the inlet and outlet chambers and the intermediate chamber connected therewith by suitable ports or passages, the loaded valve adapted to be actuated by the difference of pressures in the inlet and intermediate or the inlet and outlet chambers to open or close the port or passage between the inlet and intermediate chambers, and the valve connected therewith, adapted to close the connection between the intermediate chamber and the outlet-chamber when the difference in pressures becomes too great, substantially as and for the purpose described.

10. In combination with the valve controlling communication between the intermediate and the inlet and outlet chambers, a loaded piston actuated by the difference in the pressures in the inlet and intermediate chambers, substantially as and for the purpose described.

11. In combination with the intermediate and the inlet and outlet chambers connected therewith by suitable ports or passages, the valve controlling and regulating the communication between the inlet and intermediate chambers, the loaded piston fitted and moving in a cylinder, a port or passage connecting the space below the piston with the inlet-passage, and a port or passage adapted to connect the outlet-chamber with the space above the piston, substantially as and for the purpose described.

12. In combination with a valve controlling the communication between the inlet and the intermediate chambers and between the intermediate and the outlet chambers, the loaded piston fitting in a cylinder, the port connecting the space in the cylinder below the piston with the inlet-chamber, and the passage opening into the space within the cylinder above the piston, adapted to be connected with the intermediate or outlet chambers, substantially as and for the purpose described.

13. In combination with the bushing connected with the inlet and outlet chambers and provided with ports connecting with the intermediate chamber, the loaded valve adapted to close the lower portion of the ports with its lower edge as it descends and the upper portions

of the ports with its upper edge as it ascends, substantially as and for the purpose described.

14. In combination with the inlet, the intermediate, and the outlet chambers, the bushing connected with the inlet-chamber and provided with ports opening into the intermediate and outlet chambers, the piston-valve having a head fitting in the lower portion of the bushing, the reduced shank or neck above such end, and the head at its upper end fitting the bushing and the weighted piston attached to the valve, substantially as and for the purpose described.

15. In combination with the bushing connected with the inlet-chamber and provided with ports connecting with the intermediate and outlet chambers, the piston-valve having the head at its lower end fitting the bushing and the reduced portion or neck above such head, the loaded piston fitting in a cylinder and means for connecting the inlet-chamber with the space in the cylinder below the piston, and means, substantially as described, for connecting the space above the piston with the intermediate or outlet chamber, substantially as and for the purpose described.

16. In combination with the casing and the weighted piston fitting and sliding in a chamber therein, the inlet, intermediate, and outlet chambers, the bushing connected with the inlet-chamber and provided with ports opening into the intermediate and outlet chambers, the piston-valve having the head on its lower end controlling the ports communicating with the intermediate chamber, the reduced shank or neck above such head, and the port or passage connecting the inlet-chamber with the space below the weighted piston, and means, substantially as described, for connecting the space above the weighted piston with the intermediate or outlet chamber, as desired, substantially as and for the purpose described.

17. In combination with the bushing communicating with the inlet-chamber and having one or more ports opening into the intermediate chamber made larger at their upper ends and one or more ports opening into the outlet-chamber, the piston-valve having the head fitting in the bushing, adapted as it is moved downward to close the lower ends of the ports opening into the intermediate chamber and as it is moved upward to close the upper ends of the same, the reduced shank or neck, and the head at its upper end fitting the bushing, substantially as and for the purpose described.

18. As a means for connecting the intermediate or the outlet chamber with the space in the cylinder above the weighted piston, the port or passage connected at its upper end with such space, threaded openings between the chambers and this port, a screw-plug adapted to be screwed into either opening, as desired, larger threaded openings in the outer wall of the port or passage, a screw stop-plug, and a screw having a conical end, both adapted to be interchangeably screwed into either of such openings, as desired, substantially as and for the purpose described.

19. In combination with the valve mechanism for maintaining a constant difference between the pressures in supply and delivery pipes, the supplemental leak-preventing valve, substantially as described.

20. In a pressure-regulating apparatus, the loaded valve adapted to maintain a constant difference between the pressures in the chambers and actuated substantially as described, the supplemental valve controlling the connection between the supply-pipe and the inlet-chamber, and a weight connected with the main valve, adapted, when such valve is closed, to rest on the supplemental valve and hold it closed until the difference between the pressures in the supply-pipe and the inlet-chamber becomes greater than that at which the main valve is set to act, substantially as and for the purpose described.

21. In combination with the supplemental valve in the inlet-chamber, the weight adapted to rest thereon and hold it closed and the rod connecting such weight with the main pressure-regulating valve, substantially as and for the purpose described.

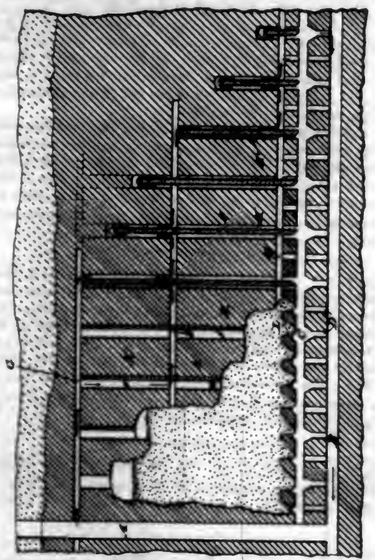
22. In combination with the piston-valve and the weighted piston thereon, the rod passing loosely up through the valve and piston and provided with a nut or head adapted to be engaged by the piston as the latter rises, the weight on the lower end of the rod, and the supplemental valve controlling the connection between the supply-main and the space below the piston-valve, substantially as and for the purpose described.

23. In combination with the piston-valve and the weighted piston thereon, provided at its upper end with a recess, the supplemental valve below the piston-valve, having a stem projecting upward, the weight having a socket to receive this stem loosely and a rod attached to the weight and passing up through the piston-valve and piston, and a nut on the upper end of the rod in the recess in the piston, all substantially as and for the purpose described.

24. In combination with the piston-valve and the weighted piston, the grooved projection or stud on the upper end of the piston, an arm provided with a pin engaging the groove in the stud, the rock-shaft, to which the arm is attached, the arm on the rock-shaft operating a pencil or marker, and the recording-strip adapted to be driven by clock-work, substantially as and for the purpose described.

25. In combination with the piston-valve, the bushing having the valve-ports shaped so as to admit the passage of an amount of steam proportional to the height of the portion of the ports left open, and a recording or registering mechanism for indicating the movements of the valve, substantially as and for the purpose described.

478,784. METHOD OF MINING COAL. PETER C. FORRESTER, Wilkeson, Wash. Filed Nov. 27, 1891. Serial No. 413,242. (No model.)



Claim.—1. The herein-described method of mining, consisting of forming in the vein a series of vertical and horizontal intersecting cuts or shafts and then undercutting or blasting from below the pillars or blocks formed between the said intersecting cuts, substantially as shown and described.

2. The herein-described method of mining, consisting of first forming a main vertical shaft, then a series of horizontal cuts or shafts leading from the said main shaft, and then forming a series of vertical cuts intersecting the said cross-cuts or shafts, so as to form blocks or pillars, substantially as shown and described.

3. The herein-described method of mining, consisting of first forming a main vertical shaft, then a series of horizontal cuts or shafts leading from the said main shaft, and then forming a series of vertical cuts intersecting the said cross-cuts or shafts, so as to form blocks or pillars, and building a partition-wall in each breast to form an air-passage leading up one side of the partition-wall and down the other to connect with the next lowermost cross-cut or air-shaft, substantially as shown and described.

4. The herein-described method of mining, consisting of first forming a main vertical shaft, then extending a series of horizontal cuts or air-shafts from the said main shaft, then connecting a series of vertical cuts to intersect with the said cross-cuts or air-shafts, and then emptying said vertical cut, substantially as shown and described.

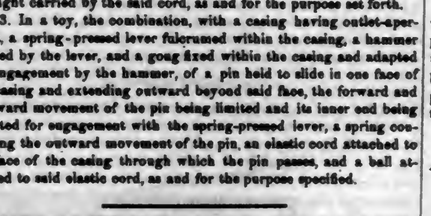
5. The herein-described method of mining, consisting of first forming in the vein a main shaft, then extending a gangway from the bottom of the said shaft, then forming a series of cross-cuts or air-shafts in the vein and leading from the said main air-shaft, and then building a series of vertical partition-walls intersecting with the several air-shafts or cross-cuts, substantially as shown and described.

6. The herein-described method of mining, consisting of first forming in the vein a main shaft, then extending a gangway from the bottom of the said shaft, then forming a series of cross-cuts or air-shafts in the vein and leading from the said main air-shaft, then building a series of vertical partition-walls intersecting with the several air-shafts or cross-cuts, and then connecting the lowermost air-shaft by chutes with the said gangway, substantially as shown and described.

478,785. FEED-TROUGH. KARL B. FRENCH, Oakland, Cal. Filed Aug. 12, 1891. Serial No. 402,414. (No model.)

Claim.—1. In a feed-trough, the combination, with a bowl, of a hopper at one side of the bowl, and having a vertically movable and swinging partition extending down to within a short distance of the bottom of the bowl, substantially as and for the purpose set forth.

2. In a feed-trough, the combination, with a bowl, of a hopper at one side of the bowl, a swinging partition in the front of the hopper and extending down to within a short distance of the bottom of the bowl, and means for imparting a vertical movement to the said partition when pressure is applied thereto to swing it inward, substantially as described.



3. In a feed-trough, the combination, with a bowl and a hopper at one side of the bowl and discharging into the said bowl, of a cover having flange sides and open ends and hinged to the front of the hopper, whereby the cover is made to serve both as a cover and a chute, substantially as described.

4. The combination, with the bowl A, provided with the reservoir B, of the partition C, furnished with the ratchet c, and the pawl *f*, connected with the reservoir and adapted to engage the ratchet, substantially as specified.

5. The combination of the bowl A, the reservoir B, provided with the studs *g*, the partition C, provided with the ratchet c and lugs *d*, and the pawl *f*, adapted to engage the ratchet, substantially as specified.

6. The combination of the bowl A, the reservoir B, having inwardly-turned edges *b* and the studs *g*, the partition C, provided with the ratchet c and lugs *d*, and the lid D, hinged to the partition C, substantially as specified.

478,786. TOY. GEORGE W. GALBREATH, Sedalia, Mo. Filed July 14, 1891. Serial No. 399,508. (No model.)



Claim.—1. As an improved article of manufacture, a toy comprising united casings, one of which is provided in its face with an aperture and the other with a tubular stud, a gong located within the casing, a lever fulcrumed within the casing and carrying a hammer adapted for engagement with the gong, a pin held to slide in the aperture of the apertured casing and adapted for engagement with the hammer-lever, an elastic cord secured to the casing adjacent to the pin, and a weight carried by the said cord, substantially as shown and described.

2. In a toy, the combination, with a casing, a spring-pressed lever fulcrumed within the casing, carrying a hammer at one end, and a gong fixed within the casing and adapted to be struck by the hammer, of a pin held to slide in the casing, extending beyond one face thereof and adapted for engagement with the hammer-lever, an elastic cord attached to the face of the casing through which the pin passes, and a weight carried by the said cord, as and for the purpose set forth.

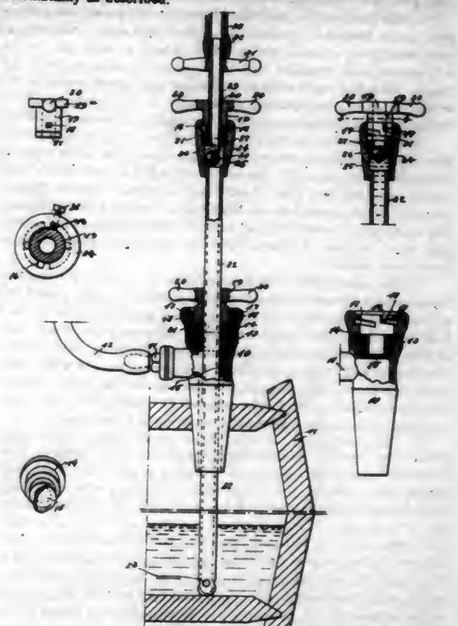
3. In a toy, the combination, with a casing having outlet-apertures, a spring-pressed lever fulcrumed within the casing, a hammer carried by the lever, and a gong fixed within the casing and adapted for engagement by the hammer, of a pin held to slide in one face of the casing and extending outward beyond said face, the forward and rearward movement of the pin being limited and its inner end being adapted for engagement with the spring-pressed lever, a spring controlling the outward movement of the pin, an elastic cord attached to the face of the casing through which the pin passes, and a ball attached to said elastic cord, as and for the purpose specified.

478,787. BEER-DRAWING APPARATUS. PETER F. GAYNOR, Greenbush, N. Y. Filed Dec. 8, 1891. Serial No. 414,363. (No model.)

Claim.—1. The combination, with the spile adapted to connect with a cask and draft-pipe, of a flexible packing-valve seated in the spile and provided on its inner side with a swinging lid, substantially as described.

2. The combination, with the main spile, the draft-pipe extending through it, and the packing-valve seated in the spile and having a swinging flap, of a locking-sleeve adapted to embrace the draft-pipe and enter the spile, the sleeve having lateral lugs which fit cam-grooves in the spile, substantially as described.

3. In a beer-drawing apparatus, the combination, with the draft-pipe having a valve-casing at its upper end, of a valve mounted in the case, a packing-washer seated in the casing above the valve, a locking-sleeve adapted to be secured in the casing and to compress the packing-ring, and a hollow stem adapted to enter the locking-sleeve, substantially as described.



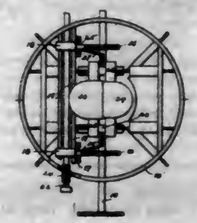
4. In a beer-drawing apparatus, the combination, with a spile provided with a valve, of a pipe projecting through the spile and provided with a valve-chamber at its upper end, a loose valve in the valve-chamber, and a hollow stem leading from the valve-chamber and adapted to be projected into the same to force the valve from its seat, substantially as described.

5. The combination, with the draft-pipe terminating at its upper end in a valve-casing, and a valve mounted in the casing, of the packing-ring seated in the valve-casing, the locking-sleeve adapted to enter the casing and compress the ring, and the hollow stem adapted to extend through the sleeve, said stem having a handle at its outer end and having an angular inner end, substantially as described.

6. In a beer-drawing apparatus, the combination, with a spile having a packing and downwardly-opening valve, of a pipe projecting through the spile and opening the valve, a valve-casing at the upper end of the pipe, a valve in said casing, and a hollow stem projecting into the said valve-casing and forcing the valve from its seat, substantially as described.

7. An apparatus for drawing beer, comprising a spile provided with a valve, a packing and means for compressing the same, a pipe projecting through the spile and provided with a valve-casing at its upper end, having a packing and means for compressing the same, a ball-valve in said casing, and a hollow stem projecting through the packing into the valve-chamber and provided with a handle, substantially as herein shown and described.

478,788. LAMP-BURNER. PATRICK J. F. GRAHAM, Beulah, Canada. Filed June 19, 1890. Renewed Aug. 25, 1891. Serial No. 403,706. (No model.)



Claim.—1. The combination, with the wick-tube of a burner and a triangular frame capable of vertical movement at each side of the same, of horizontal spring-actuated piston-rods arranged at each side of the said frames, each provided with a head-block contacting with the frames, and telescopic hoods secured to the said head-blocks inclosing the wick-tube, substantially as shown and described.

2. The combination, with the wick-tube of a burner and a triangular frame capable of vertical movement at each side of the same, of horizontal spring-actuated piston-rods arranged at each side of the said frames, each provided with a head-block contacting with the frames, telescopic hoods secured to the said head-blocks inclosing the wick-tube, and knives attached horizontally in the hoods capable of closing over the wick-tube, substantially as and for the purpose specified.

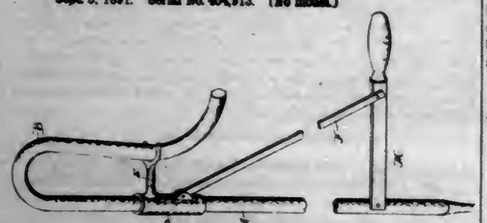
3. The combination, with the wick-tube of a burner and a triangular frame capable of vertical movement at each side of the same, of horizontal spring-actuated piston-rods arranged at each side of said frames, each provided with a head-block contacting with the frames, telescopic hoods secured to the head-blocks inclosing the wick-tube, and a horizontal knife having an inclined cutting-edge secured within each hood capable of contact over the wick-tube, substantially as shown and described.

4. The combination, with the wick-tube of a burner, a triangular frame capable of vertical movement at each side of the same, and horizontal spring-actuated piston-rods arranged at each side of the said frames, each provided with a head-block contacting with the frames, of telescopic hoods secured to the head-blocks inclosing the wick-tube, a horizontal knife having an inclined cutting-edge secured within each hood, said knives being capable of contacting over the wick-tube, and a tray secured to the wick-tube, adapted for peripheral contact with the base of the hoods, substantially as shown and described.

5. The combination, with the wick-tube of a burner and a triangular frame capable of vertical movement at each side of the same, horizontal spring-actuated piston-rods arranged at each side of the said frames, each provided with a head-block contacting with the frames, and telescopic hoods secured to the said head-blocks capable of inclosing the wick-tube, of a wick-spindle provided with a pinion at each side of the wick-tube, horizontal parallel guide-rods arranged in pairs, slideways having lateral movement upon the guide-rods, racks held to slide vertically in the said ways, meshing with the pinions of the wick-spindle, and connected with the triangular frame, and a shifting spindle rigidly secured to the slideways and journaled in the frame of the burner, substantially as shown and described.

6. The combination, with the wick-tube of a burner and a triangular frame capable of vertical movement at each side of the same, horizontal spring-actuated piston-rods arranged at each side of the said frames, each provided with an attached head-block contacting with the frames, telescopic hoods secured to the head-blocks inclosing the wick-tube, a horizontal knife secured within each hood capable of contacting over the wick-tube, and a tray secured to the wick-tube, adapted for peripheral contact with the hood, of a wick-spindle provided with a pinion at each side of the wick-tube, horizontal parallel guide-rods arranged in pairs located in one side of the wick-tube, slideways capable of lateral movement upon the guide-rods, racks held to vertically slide in the said ways, meshing with the said pinions, and connected with the triangular frames, and a shifting spindle rigidly secured to the said ways and journaled in the main frame of the burner, all combined for operation substantially as shown and described.

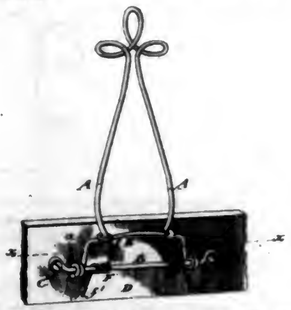
478,739. CATCHING-TOOL. RICHARD C. GROOM, Cobb, Ky. Filed Sept. 5, 1891. Serial No. 404,913. (No model.)



Claim.—In a tool for catching and holding animals and fowls, the combination, with the main rods bent into a hook at one end, of the adjustable sleeve loosely mounted on the main rod, the lateral securing-arm carried by the adjustable sleeve and having its free end forked, and a suitable means for adjusting said sleeve and arm, substantially as specified.

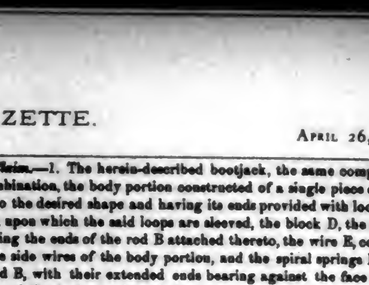
478,740. BOOTJACK. OSCAR M. HASSET and CHARLES F. BUTAR, Rock Valley, N. Y. Filed Feb. 24, 1892. Serial No. 422,573. (No model.)

Claim.—1. The herein-described bootjack, the same comprising, in combination, the body portion constructed of a single piece of wire bent to the desired shape and having its ends provided with loops, the rod B, upon which the said loops are sleeved, the block D, the screws C, having the ends of the rod B attached thereto, the wire E, connecting the side wires of the body portion, and the spiral springs F upon the rod B, with their extended ends bearing against the face of the block and the body portion of the jack, substantially as and for the purpose described.



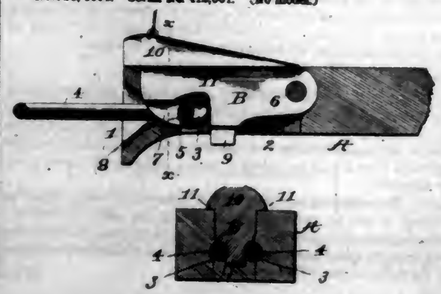
2. The combination, with the board D, the body portion formed of a single piece of wire with its ends formed into coils *a a*, and horizontal portions with bends at their junction with the arms of the jack, a wire E, having its ends seated in the said bends, the rod B, passed through the coils *a a* and having its ends formed with eyes, the screws C, with annular grooves in which said eyes are held, and the springs F, coiled around the rod B, with one end of each bearing against the board D and the other ends connected with the wire E near the bends in the body portion of the device, substantially as shown and described.

478,741. APPARATUS FOR SMELTING CAST-IRON BORINGS, TURNINGS, AND SHAVINGS. JENS HANSEN, Helsingör, Denmark. Filed Oct. 4, 1889. Serial No. 326,008. (No model.) Patented in Switzerland Jan. 18, 1890, No. 1,887.



Claim.—In a smelting apparatus, the combination of the furnace, provided with an air-chamber, a stand provided with suitable supports and having a cylindrical case provided with a supply-hopper and opening into the furnace, a hollow tube revolubly mounted within the case and having a spiral wing, an air-pipe communicating with said tube, a bearing for said tube, and a hollow connection between the said tube and the air-chamber, substantially as set forth.

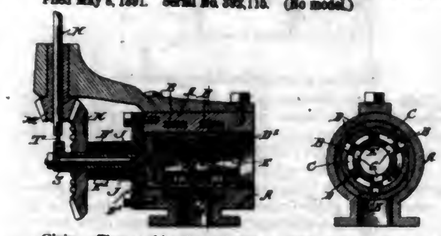
478,742. CAR-COUPLING. OLE HANSON, Lake Crystal, Minn. Filed Nov. 21, 1891. Serial No. 412,601. (No model.)



Claim.—1. The combination, with a draw-head formed with longitudinal slots 3, a seat 5, and a bottom opening, as described, of a dog pivotally secured within the draw-head and provided with a hook 3, and a depending lug 9, substantially as described.

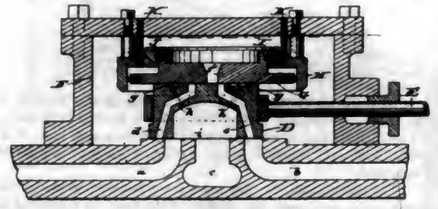
2. The combination, with a draw-head formed with longitudinal slots 3, a seat 5, and a bottom opening 2, of a gravity-dog formed with a curved hook 3, a link stop or lug 9, and a weighted block formed with a shoulder 11, substantially as described.

478,743. CUT-OFF GOVERNOR. LEVI O. HARRIS, Cadillac, Mich. Filed May 6, 1891. Serial No. 392,115. (No model.)



Claim.—The combination of the case A, having a chamber and ports on its inner surface, the revolving sleeve or head D, with openings C and extension D', the inner sleeve E, with ports G, and shaft E', passing through sleeve or head extension D', the gear-wheel K, attached to extension D', the governor-sleeve N, having pinion M, and the slide-rod H, link T, and crank S, connecting with the oscillating shaft E', substantially as shown and described.

478,744. BALANCED SLIDE-VALVE. WILLIAM T. HARRISON, Pooler, Ga., assignor to himself and John Smith, same place. Filed Dec. 10, 1891. Serial No. 414,582. (No model.)



Claim.—1. In a balanced slide-valve, the combination, with an open casing held in the steam-chest, of a balance-plate fitted to slide in the said casing and formed with a port adapted to connect the interior of the steam-chest alternately with inlet-ports in the slide-valve, substantially as shown and described.

2. In a balanced slide-valve, the combination, with the slide-valve having inlet-ports adapted to register with the cylinder inlet-ports, of a balance-plate held on top of the said slide-valve and provided with a central port adapted to alternately register with the said valve inlet-ports, and a casing in which the said balance-plate is fitted to slide vertically, substantially as described.

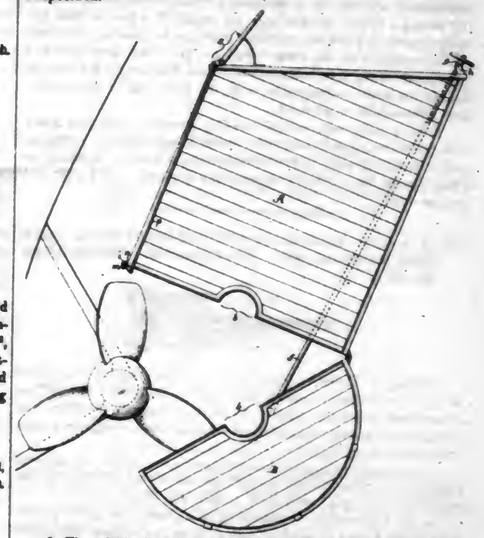
3. In a balanced slide-valve, the combination, with the slide-valve having inlet-ports adapted to register with the cylinder inlet-ports, of a balance-plate held on top of the said slide-valve and provided with a central port adapted to alternately register with the said valve inlet-ports, a casing in which the said balance-plate is fitted to slide vertically, and a piston formed on top of the said balance-plate and fitted to slide in a cylinder formed in the said casing, substantially as shown and described.

4. In a balanced slide-valve, the combination, with the slide-valve having inlet-ports adapted to register with the cylinder inlet-ports, of a balance-plate held on top of the said slide-valve and provided with a central port adapted to alternately register with the said valve inlet-ports, a casing in which the said balance-plate is fitted to slide vertically, and air-pipes connecting with the interior of the said casing above the balance-plate, substantially as shown and described.

478,745. PROPELLER-DAM FOR TWIN-SCREW VESSELS. JOHN HAUG, Norristown, Pa. Filed Jan. 9, 1892. Serial No. 417,441. (No model.)

Claim.—1. The within-described propeller-dam for twin-screw vessels, the same consisting of upper and lower boxes hinged together at their outer sides, whereby the inner portion of the lower box can be dropped so as to permit the dam to pass over the propeller, substantially as specified.

2. The within-described propeller-dam for twin-screw vessels, the same consisting of upper and lower boxes hinged together at their outer sides, and each having, both in its fore and aft sides, openings for receiving the bracket-bearing for the propeller-shaft, whereby the dam is applicable to either the starboard or port propeller, substantially as specified.

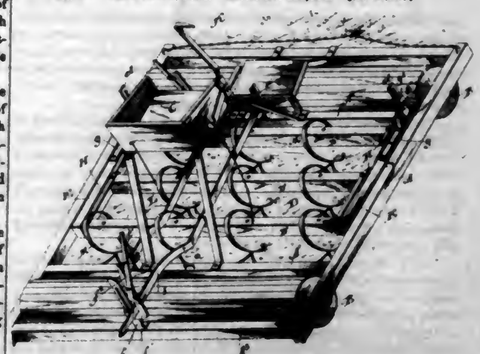


3. The within-described propeller-dam for twin-screw vessels, the same consisting of an upper rectangular box and a lower semi-cylindrical box, said boxes being pivoted together at their outer sides, substantially as specified.

4. The combination, in a propeller-dam for twin-screw vessels, of the upper and lower boxes pivoted together at their outer sides, with operating screws and nuts whereby the movement of the lower section of the dam in respect to the upper section is controlled, substantially as specified.

5. The combination, in a propeller-dam for twin-screw vessels, of the upper and lower boxes pivoted together at their outer sides, with retaining-catches for locking together the inner portions of the two boxes when the dam is closed, and with rods and levers for operating said catches, substantially as specified.

478,746. HARROW AND ROLLER. FRANCIS B. HARVEY, Pickering, Pa. Filed Nov. 5, 1891. Serial No. 410,994. (No model.)



Claim.—1. In combination with a harrow and roller frame constructed substantially as shown and provided with a cross-beam A^3, vertical standards or uprights secured to said beam, angle-plates g^6, rigidly bolted to said standards, straps g, pivoted between the angle-plates and standards and secured at their opposite ends to the harrow-frame, and a lever I, bearing upon a pivot adjustable on a standard secured to the roller-frame, said lever being adapted to engage with

the harrow-frame, substantially as shown, and for the purpose set forth.

2. In a combined harrow and roller constructed substantially as shown and provided with a pivoted lever I, a slotted upright f, carrying a bracket-arm f^4, adjustably secured thereto, and a pivoted locking-lever f^5, substantially as shown, and for the purpose set forth.

3. In a roller and harrow constructed substantially as shown, the combination of a support or standard, a bracket-arm carried thereby and having a portion parallel with the standard, a lever or lock pivotally secured in place and provided with an offset having a bent end, which engages with the outer vertical edge of the bracket-arm to limit the swinging movement thereof in one direction, and a link for holding the lever in engagement with the upper end of the bracket-arm, substantially as set forth.

4. In a roller and harrow carrying upwardly-projecting standards and levers pivotally connected thereto, angle-plates g^3, having apertures for the passage of the pivot-bolts, and nuts for clamping the plates against the standards, substantially as shown, and for the purpose set forth.

478,747. MACHINE FOR SOFTENING COTTON BRAID. JOHN H. HIGGS, Westborough, Mass. Filed Mar. 28, 1891. Serial No. 386,908. (No model.)

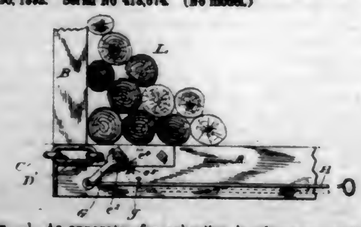


Claim.—1. In combination with a suitable frame and with guides for the fabric, a pair of wheels, each having a barred rim and inclined toward each other and adapted to catch the edge of the fabric and to separate its threads, and an intermediate part separating said wheels, substantially as set forth.

2. In combination with a supporting-frame, an inlet and an outlet guide for the fabric, an intermediate roll, and wheels with barred rims set slightly inclined to each other at each side of said roll.

3. In combination, a supporting-frame, inlet and outlet guides, the inclined wheels C D and E F, and a roll having inclined sides placed between said wheels and adjustable around its support, as and for the purpose set forth.

478,748. LOGGING-CAR. JAMES R. HENRY, Zealand, N. H. Filed Jan. 30, 1892. Serial No. 419,674. (No model.)

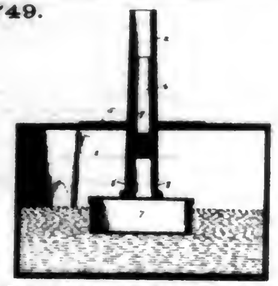


Claim.—1. An apparatus for unloading logging-cars, consisting of one or more cross-timbers fitted with mortises opening outward in their outer ends, an upright having its heel adapted to fit in said mortise, a bridle for holding said upright in place, and mechanism actuated from the opposite side of the car for letting go said bridle and releasing said upright, substantially as described.

2. An apparatus for unloading logging-cars, consisting of one or more cross-timbers fitted with mortises opening outward in their outer ends and an upright having its heel adapted to fit in said mortise, a bridle permanently connected at one end and detachably connected at the other end to said timber, the said bridle holding said upright in place, a rock-shaft having a hook at one end, adapted to engage the detachable end of said bridle, and a crank and hand-rod for actuating said rock-shaft, substantially as described.

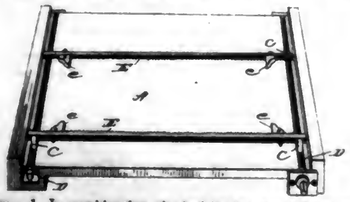
3. An apparatus for unloading logging-cars, consisting of one or more cross-timbers fitted with mortises opening outward in their outer ends, and an upright having its heel adapted to fit in said mortise, a bridle permanently connected at one end and detachably connected at the other end to said timber, the said bridle holding said upright in place, a rock-shaft having a hook at one end, adapted to engage the detachable end of said bridle, a detachable safety-pin passing through said rock-shaft and normally engaging an eyebolt in said cross-timber, and a crank and hand-rod for actuating said rock-shaft, substantially as described.

478,749. CUT-OFF FOR WATERING-TROUGHS. CHARLES F. HERMAN, Tobias, Nebr. Filed Sept. 16, 1891. Serial No. 405,981. (No model.)



Claim.—In an automatic cut-off, the combination of a discharge-tube provided with a conical lower portion, a float, a float-tube secured at its lower end to the float and having its lower portion flared or conical and its upper portion arranged within the discharge-tube and guided by the same and provided intermediate its ends with discharge-openings and being closed at the lower ends of the opening, the upper portion of the float-tube forming a water-pipe, and a flexible conical covering extending over the lower portion of the float-tube and adapted to enter and close the discharge-tube, substantially as described.

478,750. LOCK-UP MECHANISM FOR PRINTERS' FORMS. JACOB R. HORNING and EDWARD D. CLAPP, Washington, D. C. Filed June 20, 1891. Serial No. 396,943. (No model.)



Claim.—1. In combination, the bed having parallel grooves, the dogs, with operating and holding means in the grooves, and the vertical confining-walls extending along the outer margins of each of said grooves, said walls constituting the bearers of the bed, substantially as described.

2. In combination, the bed having the bearers and the parallel grooves opening through the surface of the bed, the transverse bar extending between the bearers over the surface of the bed and resting upon the same and to press upon the form, and means in the grooves projecting therefrom above the bed-surface at each end of the bar for forcing it against the form, substantially as described.

3. In combination, the bed having the groove, the clamp-block in said groove, the means for engaging and operating the block in the groove, said block being movable longitudinally of the groove independent of its operating means, substantially as described.

4. In combination, the bed having the groove, the bar extending longitudinally thereof, and the block engaging said bar and projecting from the groove, said block being movable independently of the bar, substantially as described.

5. In combination, the grooved bed, the rack-bar in said groove and movable longitudinally, a block having a tooth to engage said bar and adapted to be disengaged therefrom, and operating means for the rack-bar, substantially as described.

6. In combination, the grooved bed, the rack-bar in the groove, the block having an extension, with teeth forward of the rear end thereof, whereby the block may be tilted and the teeth disengaged from the bar, and the lateral wings above the groove to bear upon the surface of the bed, substantially as described.

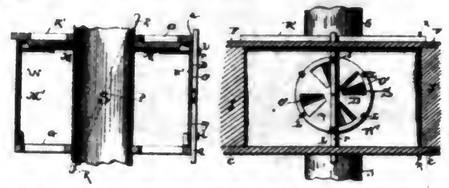
478,751. REGISTER. THEODORE C. HOWE, Genesee Fork, Pa. Filed July 14, 1891. Serial No. 399,500. (No model.)

Claim.—1. A register-box adapted to be located between a ceiling and floor and provided with a side opening and means for opening and closing the same, substantially as specified.

2. A register-box adapted to be located between a ceiling and floor, said box having its side wall provided with openings, a damper adapted to cover or uncover the openings, and an operating-rod connected to the damper and having its ends extending through the upper and lower sides of the box, substantially as specified.

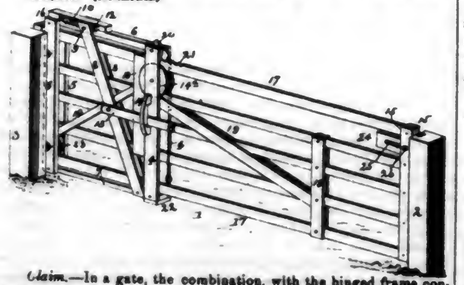
3. In a device of the character described, the combination, with a wall provided with openings radial to a common center and inwardly-bent lips concentric thereto, of a damper pivoted at said center and having registering openings, the periphery of said damper engaging beneath said lips, an operating-handle for the damper, and a flue leading from the openings, substantially as described.

4. In a device of the character described, the combination, with a wall provided with openings radial to a common center and inwardly-bent lips concentric thereto, of a circular damper pivoted at said center and having registering openings, the periphery of said damper engaging beneath said lips, tongues on the damper, and an operating-rod across the latter and secured beneath said tongues, substantially as described.



5. In a device of the character described, the combination, with a vertical wall located in a horizontal flue within a flooring, said wall having openings radial to a common center, of a circular damper pivoted at said center and having registering openings, tongues on said damper, and an operating-rod secured across the damper beneath said tongues with its extremities projecting through the slots in the ceiling and floor, as and for the purpose hereinbefore set forth.

478,752. GATE. WILLIAM HUFF, Landess, Ind., assignor of one-half to Charles C. Huff, same place. Filed Apr. 22, 1891. Serial No. 389,985. (No model.)



Claim.—In a gate, the combination, with the hinged frame consisting of the uprights 4 4 and 5 5, of the sliding gate having notches 21 in its upper rail, the guideway 10, provided with ratchet-teeth 12, the diagonal bars pivoted to the hinged frame and provided with a transverse rod 9, adapted to engage with said ratchet-teeth, the pivoted bar 13, provided with an operating-rod, the guide 14, the pawl 20, and the rollers 14^a and 23, substantially as described.

478,753. MAKING RELIEF-PLATES BY PHOTOGRAPHY. JACOB HUBNIK, Prague, Austria-Hungary. Filed July 22, 1889. Serial No. 318,310. (No specimens.)

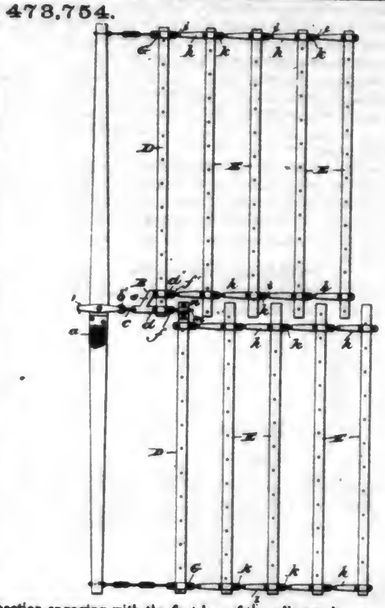
Claim.—The method of making relief-plates, which consists in applying a layer of gelatine solution to a suitable paper, then drying the same, then bathing the sheet in a solution of potassium bichromate and caustic ammonium, then spreading the sheet upon a glass covered with a film of wax, then drying the same in the dark, then exposing the sheet under the desired design to the sun, then pouring a solution of bichromate of sodium upon the sheet and removing the superfluous gelatine, and then washing and drying the sheet, as set forth.

478,754. HARROW. WILLIAM J. HYDE, Traer, Iowa. Filed Oct. 24, 1891. Serial No. 409,731. (No model.)

Claim.—1. The combination, in a harrow constructed substantially as shown, of a jointed draft-bar and a plate B, having two rearwardly-extending members, said plate being connected rigidly to one of the harrow-sections and flexibly to the draft-bar to one side of the hinge, one member d of the plate carrying a pin which engages with the front bar of a harrow-section, the parts being organized substantially as shown, and for the purpose set forth.

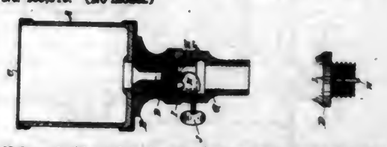
2. The combination, in a harrow, of a jointed draft-bar A, having a draft attachment to one side of the joint, a plate B, having eyes f and f', said plate being rigidly secured to the first bar of a harrow-section, connecting means engaging with the eye f', and a swivel con-

478,754.



nection engaging with the first bar of the adjacent harrow-section on a line with the clevis, the ends of the harrow-bars being connected to each other, as shown, and to the ends of the draft-bar, for the purpose set forth.

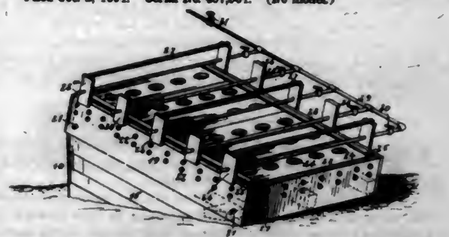
478,755. LUBRICATOR-CUP. HENRY IVES, San Francisco, Cal., assignor to A. W. Sanborn, same place. Filed Sept. 10, 1891. Serial No. 405,319. (No model.)



Claim.—1. The valve-chamber and passage through which the lubricant flows from the source of supply to the point of application, an upwardly-closing valve fitted within said chamber and controlling the passage, and an adjustable plate by the movement of which the opening of the valve is increased or diminished, substantially as herein described.

2. A valve-chamber, a passage communicating therewith through which the lubricant flows from the source of supply to the point of application, an upwardly-closing valve fitting said chamber and controlling the supply-passage, a plate fulcrumed within the valve-chamber so that the valve rests upon one edge of it, and a screw passing through the side of the chamber and engaging the plate so that by the movement of the screw the plate may be turned and the valve raised or depressed within the chamber, substantially as herein described.

478,756. PLANT-FRAME. EDWARD K. JOHNS, Fort Bragg, Cal. Filed Oct. 2, 1891. Serial No. 407,581. (No model.)



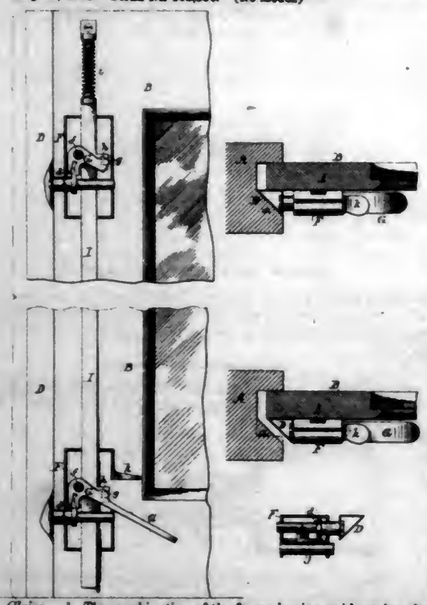
Claim.—1. A plant-frame provided with a soil-receptacle having a cover and fruit-protector provided with plant-openings through

which the plants may project, the space between the several openings being adapted to prevent the washing away of the soil and the spattering thereof upon the plants and fruit, substantially as set forth.

2. A plant-frame comprising an inclined soil-receptacle provided with side and bottom apertures, and a combined cover and protector having a series of plant-openings through which the plants may project, the space between the several openings serving to prevent the soil from being washed away or spattered on the plants and fruit, substantially as set forth.

3. The combination, with the soil-receptacle having a cover and protector provided with plant-openings through which the plants project, of perforated watering-pipes supported above said cover and protector, the latter serving to prevent the discharge from the pipes from washing away the soil or spattering it on the plants and fruit, substantially as set forth.

473,757. SASH-FASTENER. JOHN KANE, Philadelphia, Pa. Filed May 11, 1891. Serial No. 392,336. (No model.)



Claim.—1. The combination of the frame having guide-strips, the sash, the tightening-bar mounted on the sash and engaging with one of the guide-strips of the frame, and means for advancing and retracting said bar, one of the engaging parts being beveled, and the bearing-surface of the guide-strip being uniform from top to bottom, substantially as specified.

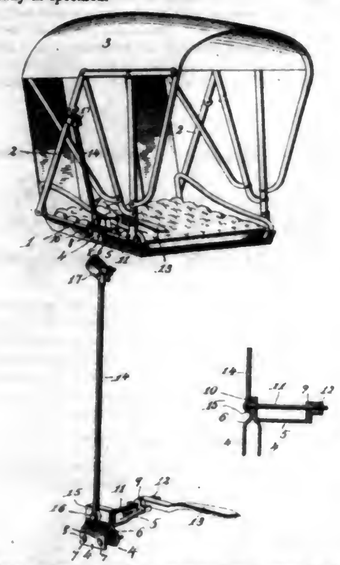
2. The combination of the frame having guide-strips, the sash, the tightening-bar engaging with one of the guide-strips, one or other of said parts being beveled, retracting devices engaging with the upper and lower portions of said tightening-bar, and a bar for connecting said retracting devices, substantially as specified.

3. The combination of the frame having guide-strips, the sash, the tightening-bar engaging with one of the guide-strips of the frame, one or other of said parts being beveled, bolts carrying said tightening-bar, levers engaging with said bolts, a bar connecting said levers, and a spring acting on said bar, substantially as specified.

4. The combination of the window-frame having guide-strips, the sash, the tightening-bar mounted on the sash and engaging with one of the guide-strips, one or other of said parts being beveled, a locking-bolt adapted to engage with stops on the window-frame, and means for simultaneously advancing and retracting the tightening-bar and the locking-bolt, substantially as specified.

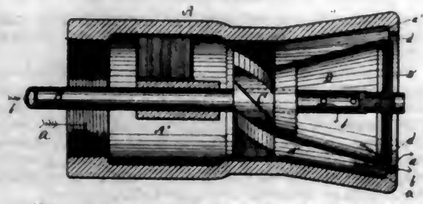
473,758. BUGGY-TOP ATTACHMENT. JAMES KING, Gaines Station, Mich., assignor of one-half to Frank King, same place. Filed July 30, 1891. Serial No. 401,195. (No model.)

Claim.—1. The herein-described attachment for the purpose specified, the same consisting of a bracket having its ends upturned and perforated to form opposite transverse bearings and having upon its under side depending seat-rail-embracing plates, with means for securing the same to the top-supporting rail of a buggy, a rocking bolt mounted in the bearings of the bracket and terminating at its inner end in a bolt-operating handle-lever, and a rod mounted upon the outer end of the bolt and adapted at its upper end for loose connection with the side brace of a buggy-top adjacent to the knee-joint thereof, substantially as specified.



2. The combination, with the top-supporting rail, the top, and the jointed side brace, of the herein-described attachment, the same consisting of the opposite clamping-plates, the L-shaped laterally-disposed bracket, which at its bent end is riveted with the clamping-plates and at its inner end is provided with an eye laterally opposite a bearing perforation formed in the clamping-plates and outer bent end of the bracket, said clamping-plates being diverged at their lower ends and perforated and mounted upon and embracing the top-supporting rail, clamping-bolts mounted in the perforations below the rail, a rocking bolt mounted in the bearings of the bracket and plates, a handle-lever located at the inner end of the rocking bolt, a nut for securing the lever, a trip-rod terminating at its lower end in an eye receiving the bolt and located between the head of the latter and the clamping-plates, and the U-shaped clip embracing the brace immediately below the knee-joint thereof and pivoted loosely to the upper end of the trip-rod, substantially as specified.

473,759. ATOMIZER. JOHN S. KLEIN, Oil City, Pa. Filed Oct. 9, 1890. Serial No. 367,487. (No model.)



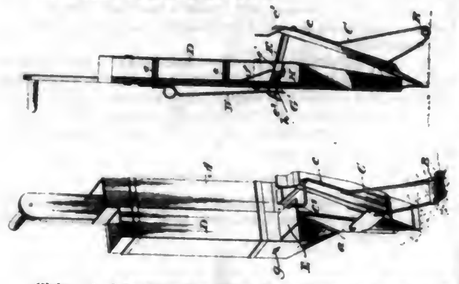
Claim.—1. In an atomizer, the combination, substantially as set forth, of the nozzle A, having an air-passage A' and an inwardly-projecting lip a' at its mouth, a concentrically-contained oil-duct B, and a centrifugal distributer D, mounted concentrically on said oil-duct and having its point of centrifugal distribution opposite said lip a, whereby the centrifugally-discharged oil will be thrown against the outgoing air-current at the point where it is deflected inwardly by said lip.

2. In an atomizer, the combination, substantially as set forth, of a nozzle A, having an air-passage A' and an inwardly-projecting lip or deflector a' at its mouth, a concentrically-journaled conical distributer arranged with its base in the mouth of said nozzle and its apex back of said mouth, and an oil-duct B through the axis of said distributer with openings b within the distributer, so that the inflowing oil will fall upon the inner walls of the distributer.

3. In an atomizer, the combination of a nozzle, an oil-duct concentrically placed within said nozzle, and a distributer mounted to revolve on said oil-duct and having a hollow discharging-cone at its outer end and a propeller-wheel at its inner end, substantially as shown.

4. In an atomizer, the combination of a nozzle, an oil-duct concentrically placed within said nozzle, a distributer mounted to revolve on said oil-duct and having a hollow discharging-cone at its outer end, which receives the oil from the duct on its inner wall and discharges it from the periphery of its base, and means for rotating said distributer.

473,760. COMBINED HAND CORN-PLANTER AND FERTILIZER-DISTRIBUTER. ADAM KNAPP, Jr., Strykersville, N. Y. Filed Jan. 21, 1892. Serial No. 418,836. (No model.)



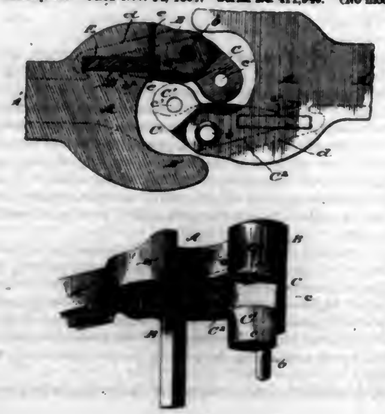
Claim.—1. In combination with a hand-planter having an oscillating lever, a fertilizer-distributer carried by the hand-planter and provided with a spring-actuated slide, said slide being adapted to be operated in opposition to the spring when the lever is moved to actuate the seed-slide, substantially as shown, and for the purpose set forth.

2. In combination with a hand-planter having an aperture in one side of the same below the seed-slide, a fertilizer-carrier carried by the planter so as to connect with said aperture, the seed-slide and fertilizer-slide being adapted to operate in unison, a cut-off slide H, located below the slide E, and an interposed block, substantially as shown, and for the purpose set forth.

3. The combination, with a hand-planter constructed substantially as shown and provided with a bar c, having a bent end, and an aperture in the body portion of the seed-planter leading into the seed-spout below the seed-slide, of a fertilizer-distributer carried by the seed-planter and provided with slides which are spring-actuated in one direction and actuated in the opposite direction by contact with the operating-bar of the lever, substantially as shown, and for the purpose set forth.

4. In a combined planter and fertilizer-distributer constructed substantially as shown, the fertilizer-distributer having an apertured slide E with a reduced end bent as shown, a slide H, located beneath the same, a spring D', adapted to engage with the slide E and with apertures in the cut-off slide H, the depending end of the slide E also connecting with the cut-off slide H, and means which contact with the slide E to reciprocate the same in opposition to the spring, substantially as shown, and for the purpose set forth.

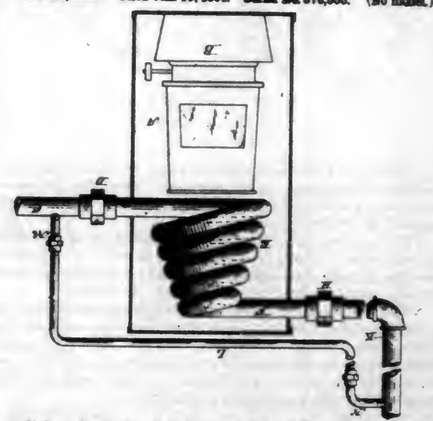
473,761. CAR-COUPLING. EPHRIAM H. B. KNOWLTON, West Superior, Wis., assignor of two-thirds to James Gunn and Patrick McGuire, same place. Filed Nov. 14, 1891. Serial No. 411,949. (No model.)



Claim.—1. The combination, with a draw-head having a vertical longitudinal recess, of the coupling-jaw pivoted to the draw-head and composed of the coupling and locking arm, the locking-arm having a shoulder upon its forward face near the rear end, and the detent composed of the horizontal and vertical arms, the horizontal arm being pivoted at its forward end within the recess near the forward end, the vertical arm projecting below the draw-head, substantially as and for the purposes described.

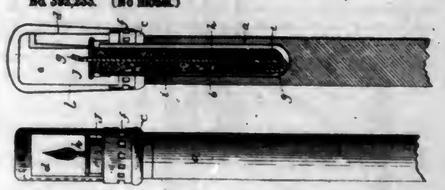
2. The combination, with the upper section having a longitudinal recess and surrounding flange and the lower section having a longitudinal opening and surrounding flange, of the coupling-jaw pivoted between sections and the gravity-detent pivoted within the recess and working in the opening, substantially as and for the purpose described.

473,762. SERVICE-PIPE WATER-HEATER. JACOB KRUSCHKE, Boston, Mass. Filed Jan. 19, 1891. Serial No. 378,353. (No model.)



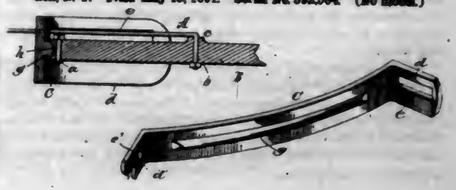
Claim.—In a water-supply system of a building, the combination of the regular cold-water-supply pipes with a heat-generator B, having a heating-coil E directly connected with the regular service, and a loop-pipe L, so arranged that it shall embrace within its points of junction with the regular cold-water-supply pipes the said heat-generator and such portions of the regular cold-water-supply pipe as would otherwise become so cold as to freeze the contained water, substantially as and for the purpose set forth.

473,768. COMBINED LAMP AND CANE OR UMBRELLA. SIMON LANGSNER, Buda-Pesth, Austria-Hungary. Filed May 9, 1891. Serial No. 392,233. (No model.)

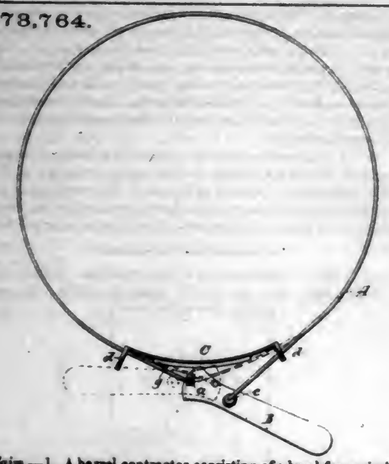


Claim.—The combination, with a walking-stick or umbrella, of a lamp in the handle thereof, consisting of the metal tube b, perforated sponge-tube i, and wick-tube k, the lid j, flange c, with ventilated gallery, and hood c, movable reflecting and closing plate d therein, and the covering-cap l, adapted to be attached to the said gallery and forming the handle, substantially as set forth.

473,764. BARREL-CONTRACTOR. PERRY LITTLE, Mount Vernon, N. Y. Filed May 13, 1891. Serial No. 392,564. (No model.)



473,764.

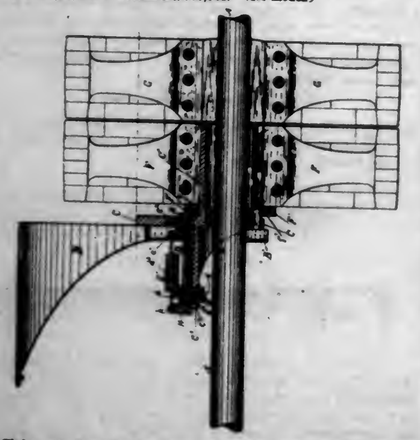


Claim.—1. A barrel-contractor consisting of a band for encircling the barrel, a guard-plate through the ends of which the band passes, and a lever to which the ends of the band are pivotally connected, substantially as set forth.

2. The combination, with a band and a guard-plate through which the ends of the band pass loosely, of a lever to which the ends of the band are pivotally connected and a rib on the guard-plate, upon which the inner end of the lever bears, substantially as set forth.

3. The combination, with a band and a guard-plate having ears on its ends, through which the ends of the band pass, one of said ears having a notch formed therein, and a rib on the back of the guard-plate, of a lever to which the ends of the band are pivotally connected, the inner end of the lever having a groove formed therein to receive the rib on the plate, substantially as set forth.

473,765. DEAD-PULLEY RIGGING. JOHN O. MARSH, Erie, Pa. Filed July 3, 1891. Serial No. 398,373. (No model.)



Claim.—1. In a dead-pulley rigging, the combination, with the hanger B B', of a bracket having the plate C for attachment with said hanger, the slotted sleeve C' on one side of said plate, embracing the shaft A for journaling the dead-pulley concentrically with said shaft, and the part C^3 on the opposite side of said plate and above said shaft for supporting the mechanism for laterally moving the dead-pulley, and means for adjusting said bracket both laterally and vertically on said hanger.

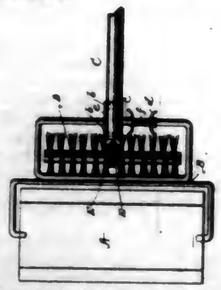
2. In a dead-pulley rigging, the combination of the hanger B B', the bracket C C' C^3, adjustably attached to said hanger and embracing the shaft A, a dead-pulley journaled on the sleeve C' of said bracket, the sliding block E, guided in ways on the top of the back extension C^3 of said bracket and having means for engaging said dead-pulley, and the lever D, pivoted on the back extension C^3 of said bracket, for moving said sliding block.

3. In a dead-pulley rigging, the combination of a hanger B B', a bracket C C' C^3, adjustably attached to said hanger and embracing the shaft A, a dead-pulley journaled on the sleeve C' of said bracket, the sliding block E, guided in ways on said bracket and having means for engaging said dead-pulley, and the lever D and spring E', supported on the part C^3 of said bracket, for moving said sliding block E in opposite directions.

4. In a dead-pulley rigging, the combination of a hanger, a bracket adjustably secured to said hanger, a sleeve forming part of said bracket, which is slotted to straddle the shaft and form a journal for the dead-pulley, a dead-pulley journaled on said sleeve and movable laterally thereon, a block guided to slide longitudinally on the top of the back extension C^3 of said bracket and engaging with said dead-pulley, a shifting-lever pivoted on said back extension and acting with the short end upon said sliding block, and a belt-shifting bar carried by the long end of said lever.

5. In a dead-pulley rigging, the combination of a fixed supporting-journal for the dead-pulley, which embraces the shaft, a split dead-pulley mounted on said fixed support, a split grooved collar F' on said pulley having lap-joints *f f f f*, a sliding block having a lip for engaging said grooved collar and movable in ways on said fixed support, and means for moving said block.

473,766. CARPET-SWEEPER. JAMES P. MARSH, Chicago, Ill., assignor to Otto R. Barnett, trustee, same place. Filed Nov. 9, 1891. Serial No. 411,382. (No model.)



Claim.—1. In a carpet-sweeper, a detachable handle provided with an auxiliary brush attached to its lower end, substantially as described.

2. In a carpet-sweeper, a detachable handle provided with an auxiliary brush, and a clamp connecting said brush and handle, substantially as described.

3. In a carpet-sweeper, a detachable handle provided with an auxiliary brush at its lower end, and a bail connecting said handle and brush and forming a rectangular frame surrounding said auxiliary brush, substantially as described.

4. In a carpet-sweeper, a detachable handle provided with an auxiliary brush at its lower end, a bail provided with pins, and a spring-impelled catch engaging the opposite sides of said handle, said bail forming a rectangular frame surrounding said auxiliary brush, substantially as described.

5. In a carpet-sweeper, a detachable handle C, provided with an auxiliary brush D, connected thereto by the clamping-ring E, fitted to the spherically-curved ring F, attached to the brush, substantially as described.

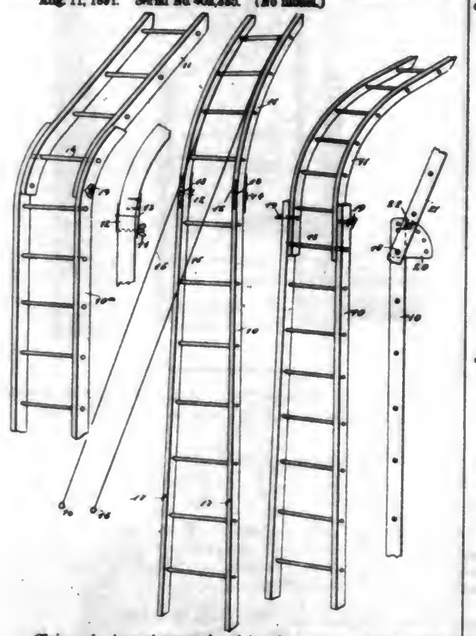
473,767. PROCESS OF IMPROVING OIL-PAINTINGS BY PHOTOGRAPHY. LUDWIG METER, Berlin, Germany. Filed Sept. 21, 1891. Serial No. 406,382. (No specimens.)

Claim.—1. A method for the reproduction of oil-paintings and colored pictures, which consists in photographing the original painting, photolithographing said photograph, painting the face of said photolithograph with pigments corresponding to the original painting, applying the face of this painted photolithograph to a stretched canvas or other suitable material, stripping off the photolithograph from the said canvas, and finally retouching the applied painting, substantially as described.

2. A method for the reproduction of oil-paintings and colored pictures, which consists in photographing the original painting, photolithographing said photograph, painting the face of said photolithograph with pigments corresponding to the original painting, applying the face of this painted photolithograph to a stretched canvas or other suitable material, and finally stripping off the photolithograph from the said canvas and leaving the printing thereon, substantially as described.

3. A method for the conversion of photolithographs into oil or other colored paintings, which consists in applying to the face of said photolithograph suitable colored pigments, attaching the face of this colored photolithograph to stretched canvas or other suitable material, and then stripping off the photolithograph and retouching the picture left on the canvas, substantially as described.

473,768. LADDER. JAMES F. MITCHELL, Titusville, Fla. Filed Aug. 11, 1891. Serial No. 402,285. (No model.)



Claim.—1. As an improved article of manufacture, a ladder for use in picking fruit, the same having a straight body and a top portion, which is curved and extends laterally in a plane at a large angle to the said body, as shown and described.

2. A ladder comprising a straight section, a curved section hinged to the top of the straight section, and strengthening-straps secured to one section and adapted to overlap the joints of the ladder, substantially as described.

3. A ladder comprising a straight section having projecting hooks thereon, a curved section hinged to the top of the straight section, and adjusting-wires secured to the top section and having rings to fit over the hooks on the straight section, substantially as described.

473,769. SMOKE-CONDUIT FOR RAILWAY-TRAINS. CHESTER L. MORRISON, West Point, Va. Filed Sept. 10, 1891. Serial No. 405,277. (No model.)

Claim.—1. A smoke-conduit for railroad-trains, adapted to extend rearward over the train-top from the locomotive smoke-stack, said conduit having flexible couplings at the rear end of the locomotive and at the ends of the cars and having said couplings supported in swinging hangers, substantially as described.

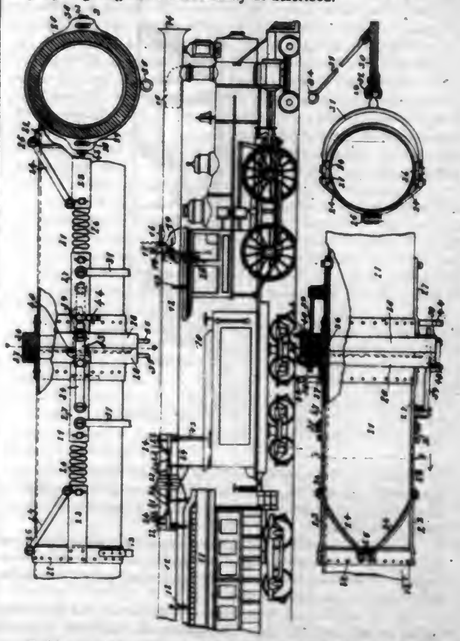
2. In a smoke-conduit for railroad-trains, the combination, with flexible pipes between the sections of the conduit, of sectional and yielding braces at the sides of the said flexible pipes, substantially as described.

3. In a smoke-conduit for railway-trains, the combination, with flexible pipes between the sections of the conduit, of sectional side braces together for the flexible pipes and springs interposed between and connecting the sectional braces, substantially as described.

4. In a smoke-conduit for railway-trains, the combination, with flexible pipes between and connecting the sections of the conduit, of sectional side braces for the flexible pipes, springs interposed between and connecting the sections of the said braces, and braces extending from the free ends of one section of the side braces and pivoted to the ends of the conduit-sections, substantially as herein shown and described.

5. The combination, with the conduit-sections arranged upon different cars, of flexible pipes secured to the ends of the conduit-sections, each pipe having its free end provided with a coupling-ring, swinging hangers to support the flexible pipe, and a locking device to secure the coupling-rings together, substantially as described.

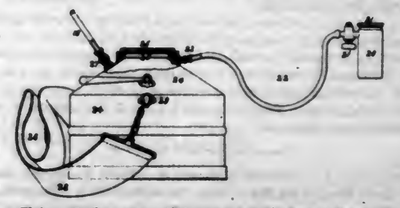
6. The combination, with the conduit-sections, of flexible pipes secured to the ends thereof, the pipes having registering coupling-rings at their free ends, spring side braces arranged upon the sides of the flexible pipe and hinged to the tops of the conduits, swinging hangers to support the flexible pipes, and a locking device to fasten the coupling-rings together, substantially as described.



7. The combination, with the flexible coupling-pipes, of registering coupling-rings secured to the free ends of the pipes, each ring having on one side a swinging guide-arm and a locking-lug and on the opposite side a slotted lug to receive the guide-arm of an opposing ring, and a locking-latch to engage the locking-lug of an opposing ring, substantially as described.

8. The combination, with the flexible coupling-pipe having side braces thereon, of a hanger to support the pipe, said hanger comprising a rigid body portion, a yoke swivelly mounted in the body portion and adapted to connect with the side braces of the pipe, and a brace pivoted on the body portion of the hanger and connected with the free end of the coupling pipe, substantially as described.

473,770. COW-MILKER. WILLIAM MURCHLAND, Kilmarnock, Scotland. Filed Feb. 3, 1891. Serial No. 380,062. (No model.) Patented in England Sept. 27, 1889, No. 15,310, and in France July 9, 1890, No. 206,887.



Claim.—1. In a cow-milking apparatus adapted for the application of suction teat-cups, each consisting of an external impervious shell and an inner sheath perforated with a number of holes, substantially as described.

2. In a cow-milking apparatus adapted for the application of suction teat-cups, each consisting of an external impervious shell and an inner perforated sheath and having a stop-cock connection near the top or lip, substantially as herein set forth.

478,771. SECTIONAL INTERCHANGEABLE BAR-FIXTURES. JOHN NEUMANN, Brooklyn, N. Y. Filed Nov. 23, 1891. Serial No. 412,731. (No model.)



Claim.—1. The combination, with a bar or counter, of a set of glass draining and rinsing fixtures that are arranged in sequence interchangeably by interlocking connections at adjacent ends, substantially as described.

2. A set of bar-fixtures comprising a glass-supporting shelf, a rinsing-box, and a drain-tray, all interchangeably and removably secured together in sequence behind a bar by tongue-and-groove connections at the ends, substantially as described.

3. The combination, with a bar, of a shelf at one end thereof supported on the bar, a rinsing-box engaged by the other end of the shelf with a tongue-and groove connection, and a drain-tray seated on the box, to which it is locked by a tongue-and-grooved connection inclined toward said box and supported at its other end by another rinsing-box, substantially as described.

4. In a set of interchangeable fixtures for a liquor-dispensing bar, a drain-tray having a removable tongue-and-grooved connection at each end with a rinsing-box, substantially as described.

5. In a set of interchangeable fixtures for a bar, a drain-tray grooved transversely on its lower side near each end and adapted to have a removable interlocking connection with the end walls of two aligned rinsing-boxes, substantially as described.

6. In a set of interchangeable fixtures for a bar, a drain-tray having a splash-board vertically projected on one side edge thereof and slotted at each end to permit it to removably interlock with the top edges of two rinsing-boxes, substantially as described.

7. In a set of interchangeable bar-fixtures, a rinsing-box having a back board at its rear side, whereon tongues are formed that are adapted to interlock with the slotted ends of a drain-tray splash-board, substantially as described.

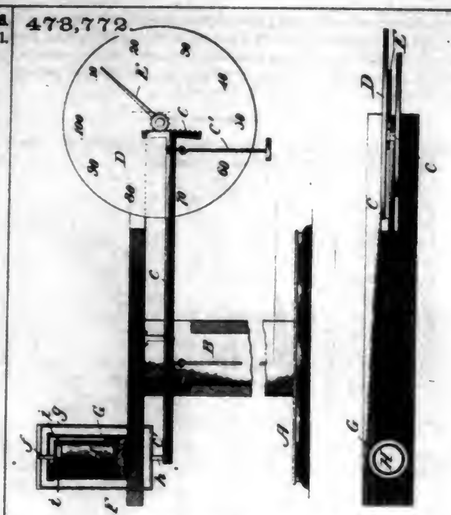
8. In a set of interchangeable fixtures for a liquor-dispensing bar, a drain-tray having a splash-board vertically projected on one edge thereof and slotted at each end to interlock with tongues on a rinsing-box, and further provided with longitudinal corrugations, and a transverse groove near each end on the lower side to interlock with edges of two rinsing-boxes aligned with each other in the recess of a bar, substantially as described.

478,772. HYDROSTATIC SCALE. MILTON W. NEWTON, Battle Creek, Mich. Filed May 8, 1891. Serial No. 392,088. (No model.)

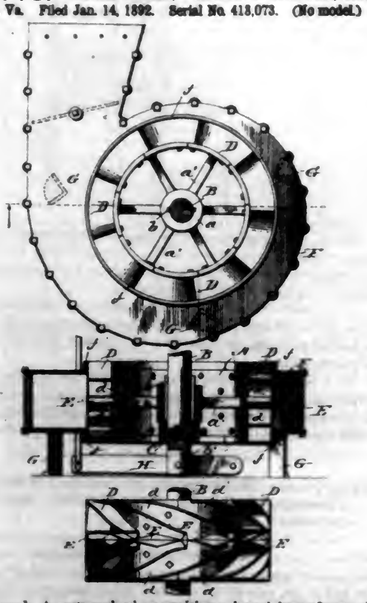
Claim.—1. In a weighing apparatus, the combination of a hydrostatic counterpoise consisting of a liquid containing vessel having one coefficient of expansion, a float having a higher coefficient of expansion, and an automatic indicator or pointer, substantially as described.

2. The combination of an automatic compensating hydrostatic counterpoise, an ordinary balance-beam, and an automatic indicator, substantially as described.

478,772.



478,773. WATER-WHEEL. CHARLES W. NICHOLSON, Assamoosick, Va. Filed Jan. 14, 1892. Serial No. 418,073. (No model.)

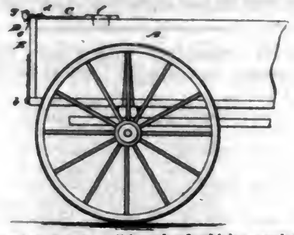


Claim.—1. A water-wheel comprising a broad imperforate rim, and diamond-shaped deflectors arranged around the rim midway between the edges thereof and having spaces between the opposing ends of the said deflectors and buckets about equal in height to the height of the deflectors, provided in pairs and obliquely disposed on opposite sides of the said deflectors, the inner ends of the buckets being separated and coming opposite the spaces between the ends of the said deflectors, substantially as specified.

2. A water-wheel comprising a broad imperforate rim and diamond-shaped deflectors and buckets secured to the said rim, the buckets being arranged in pairs, and a bucket of each pair having integrally formed therewith a longitudinal half of the said deflector, substantially as and for the purpose described.

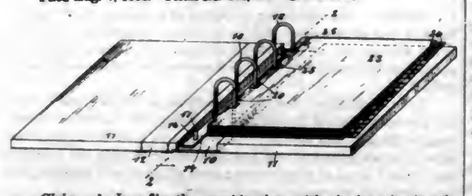
3. A water-wheel comprising a broad imperforate rim and buckets and diamond-shaped deflectors secured to the said rim, the buckets being in pairs and having a flange or foot and a longitudinal half of the deflector formed therewith, substantially as described, for the purpose specified.

478,774. TAIL-BOARD SPRING. FREEMAN NICKERSON, Jr., Fall River, Mass., assignor to himself and Henry McCusky, same place. Filed Jan. 15, 1892. Serial No. 418,170. (No model.)



Claim.—A spring for the tail-boards of vehicles, consisting of the body part C, formed of one piece of spring metal, and the catch part D, composed of another piece of metal firmly secured to the body part and constructed with an elongated outer or upper leaf *d* and with a lip *e*, forming, with the leaf, a notch *s* to receive the outer end of the spring-body, said lip also forming the locking part of the spring for the tail-board of the vehicle, essentially as shown and described.

478,775. JOURNAL-PAGE FILE. JOHN O'ROURKE, Mandan, N. D. Filed Aug. 7, 1891. Serial No. 401,991. (No model.)

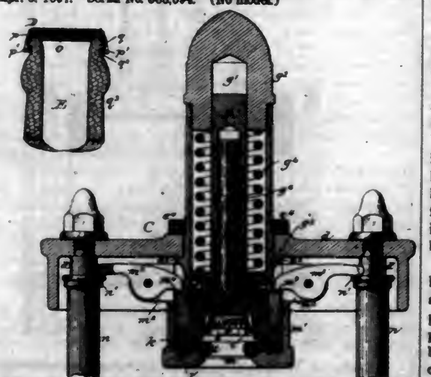


Claim.—1. In a file, the combination, with the base having the straight file-posts thereon, of a spring-pressed bar extending longitudinally across the base and provided with curved file-posts to engage the straight file-posts, and spring-catches to fix the position of the bar, substantially as described.

2. A journal-page file comprising a base having the straight file-posts thereon, a spring-pressed bar extending longitudinally across the base and provided with curved file-posts to engage the straight file-posts, spring-catches to fix the position of the bar, and covers suitably hinged to the edges of the base, substantially as described.

3. The combination, with the base and the straight file-posts thereon, of a spring-pressed bar extending longitudinally across the base and provided with curved file-posts to engage the straight file-posts, guide-rods secured to the base and projecting through the bar, and spring-catches on the guide-posts to engage the bar, substantially as described.

478,776. METHOD OF AND MEANS FOR BOTTLING LIQUIDS AND SEALING BOTTLES. WILLIAM PAINTER, Baltimore, Md. Filed Apr. 8, 1891. Serial No. 388,094. (No model.)



Claim.—1. The method, substantially as hereinbefore described, of sealing bottles, which consists in surmounting a bottle-head having an annular locking-shoulder with a corrugated flanged metal sealing-cap, and then bending or indenting the inner corrugations into locking-contact with the engaging-shoulder on the bottle-head by applying pressure simultaneously to the several outer corrugations.

2. In a bottling-machine, the combination, substantially as hereinbefore described, of a filling-chamber having sufficient interior capacity for receiving the heads of bottles to be filled, an annular gasket having a central opening for the reception of bottle-heads, and means within said chamber for bending the flanges of metallic sealing-caps into locking-contact with bottle-heads.

3. In a bottling-machine, the combination, substantially as hereinbefore described, of the following mechanism: a filling-chamber communicating with a source of supply and provided with an opening for the reception of a bottle-head and with a gasket for maintaining a closure of the space between the bottle-head and the adjacent walls of the chamber, a plunger having its head within the chamber, means for supporting within said chamber a flanged metal sealing-cap containing a sealing-disk and having its flange in a pendent position, means for forcing the bottle, the cap, and the disk into close relations, thereby causing the disk to conform to the lip of the bottle, and means for bending the flange of the cap beneath and in close locking-contact with a suitable locking-shoulder on the head of the bottle.

4. In a bottling-machine, a filling-chamber closed except as to the induction of liquids and to the complete reception of the head of a bottle and provided with an annular funnel-shaped gasket or packing having a pendent lip and normally adapted to receive a bottle-head and by the inward rolling action of the lip to maintain a shifting packing-contact with different portions of the head of a bottle during the filling and sealing operation.

5. In a bottle-filling machine, the combination, substantially as hereinbefore described, of a filling-chamber closed except as to a suitable induction-aperture for liquids and an opening for the complete reception of a bottle-head, an annular funnel-shaped gasket or packing-ring in said opening, and means for varying its interior annular dimensions and causing it to maintain packing-contact with the bottle-head, and then to release said head for withdrawal after the sealing-cap has been applied.

6. In a bottling-machine, the combination, substantially as hereinbefore described, of a filling-chamber having an annular gasket adapted to maintain shifting packing-contact with different portions of the head of a bottle when inserted into said chamber, and means for bending the flange of a sealing-cap upon the head of a bottle within the filling-chamber.

7. In a bottling-machine, the combination, substantially as hereinbefore described, of a bottle-filling chamber, an annular gasket or packing-ring at its lower open side, a gasket-controller for varying the area of opening in the annular gasket, vertically-sliding rods, frictionally-controlled sleeves capable of resting during the descent of said rods for operating the gasket-controller and also capable of moving with said rods, a cross-head on said rods for carrying the filling-chamber and other operative parts, and a spring for supporting and a treadle for depressing the same.

8. In a bottle-sealing machine, the combination, substantially as hereinbefore described, of an annular bending-tool adapted to encircle and to bend the flange of a sealing-cap into locking-contact with a bottle-head, a cap-plunger centrally located with relation to the bending-tool, and means for supporting the sealing-cap with its flange in a pendent position in line with the bending-tool and below said plunger.

9. In a bottling-machine, the combination, substantially as hereinbefore described, of a filling-chamber provided with a tubular dome, a hollow piston having a stem projecting into said dome and having a flange serving as a movable base for a spring, a sealing-cap plunger having its head in the filling-chamber proper and its stem loosely fitted in and connected with said piston, and an annular gasket compressed beneath the flange of the piston for packing the joint around the head of the cap-plunger and preventing the passage of liquid from the filling-chamber upwardly into the dome.

10. In a bottling-machine, the combination, substantially as hereinbefore described, of a filling-chamber adapted to receive a bottle-head, a packing-gasket for engaging with a bottle-head well below its lip and a hollow tapering bending-tool within said chamber, a support for a bottle, and means for forcing the bottle-support and bending-tool into working relations with respect of a metallic cap surmounting a bottle-head within the filling-chamber.

11. In a bottle-sealing machine, the combination, substantially as hereinbefore described, of a plunger adapted to bear upon the top of a sealing-cap, a bottle-socket for supporting a bottle in line with said plunger, an annular non-rotative bending-tool concentric with said plunger and having hard unyielding pressure-surfaces and adapted to bend portions of the flange of a hard-metal sealing-cap into locking-contact with a bottle-head, and means for forcing the cap, the interior sealing medium, and the bottle into close relations, and also for operating the bending-tool.

12. In a machine for applying flanged metal sealing-caps to bottles, the combination, substantially as hereinbefore described, of a hol-

low internally-tapered and rigid flange-bending tool, a support for a bottle, and means, substantially as described, for forcing said support and bending-tool into working relations with respect of an interposed bottle surmounted by a cap, and thereby bending the flange of the cap into locking contact with the head of the bottle.

13. In a bottle-sealing machine, the combination, substantially as hereinbefore described, of a hollow tapering cap-flange-bending tool, a cap-plunger, and cap-supporting fingers for maintaining a sealing-cap with its flange in a pendent position during its reception of a bottle-head and in proper relation to the bending-tool preparatory to operation by the latter in bending the flange of the cap into locking-contact with the bottle-head.

14. In a bottle-sealing machine, the combination, substantially as hereinbefore described, of a hollow tapered bending-tool adapted to bend the flange of a sealing-cap into locking-contact with a bottle-head, a cap-plunger in line with said bending-tool, a bottle-support in line with said bending-tool and cap-plunger, and means for forcing the bottle and the cap-plunger into compressing-contact and thereby extending the flange of the cap upon the head of the bottle, and also means for varying the relative positions of the tapered bending-tool and the flange of the cap, and thereby bending the flange inwardly into locking-contact with the head of the bottle.

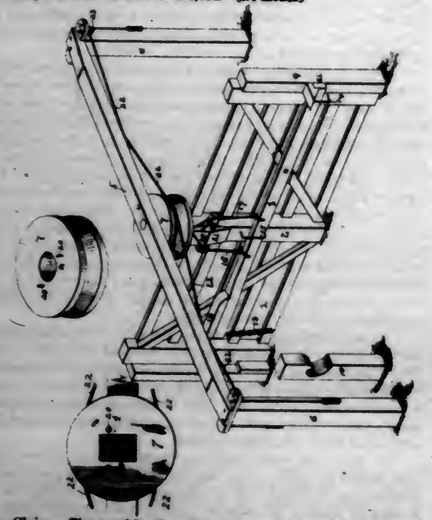
15. In a machine for bending flanged sealing-caps into locking-contact with the heads of bottles, the combination, substantially as hereinbefore described, of a bottle-socket, a longitudinally-movable cap-plunger having a concave face, an annular flange-bending tool concentric to said plunger, and means for forcing the cap-plunger and the head of a bottle into close relations with an interposed sealing-cap, said concave face on the plunger serving to center the cap and the bottle to with relation to the bending-tool.

16. In a bottle-sealing machine, a conical bottle-socket having a bottle-bearing surface composed of a series of thin metal plates, in combination with an elastic cushion interposed between said plates and the body of the socket, substantially as described.

17. In a machine for applying metal sealing-caps to bottles, the combination, substantially as hereinbefore described, of a bottle-support, and a cap-plunger provided with a self-adjusting metallic face adapted to bear upon and to distribute pressure evenly upon the top of the cap.

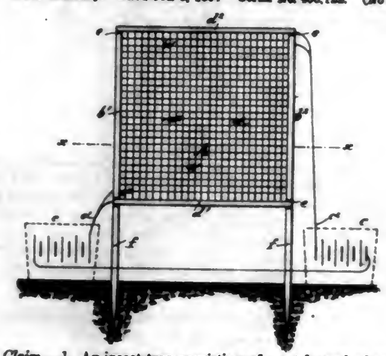
18. In a bottle-sealing machine adapted to operate upon flanged sealing-caps, a cap-compressing plunger having a concaved or recessed face and containing back of said face an inclosed elastic cushion, substantially as described.

473,777. GATE. WILLIAM J. PEARCE, Pilot Point, Tex. Filed July 30, 1891. Serial No. 401,184. (No model.)



Claim.—The combination of a gate provided with a centrally-arranged and pivotally-mounted post 2, a latch-bar pivoted to the gate and extending longitudinally of the same and having its outer end arranged to engage latch-posts and provided at its inner end with means for holding its outer end in such engagement, a disk loosely mounted on the upper end of the central post and provided with stops to engage the post to limit the independent movement of the disk, guides extending from the post 2 at right angles to each other, cords having their upper ends attached to the disk and passing through the guides and having their lower ends connected to the latch-bar at the inner side of the pivotal point, and operating-ropes passing around the disk and adapted to rotate the same, substantially as described.

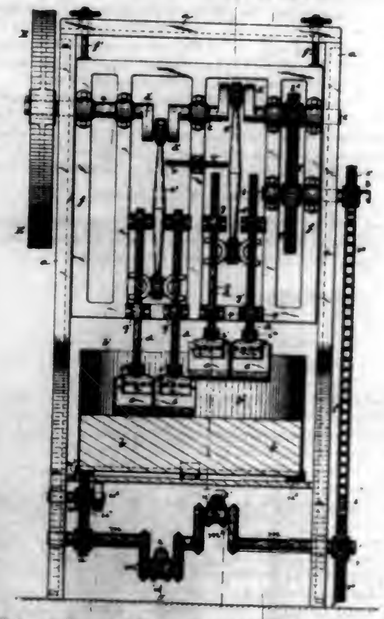
473,778. INSECT-TRAP. HEINRICH GRAF V. PÜCKLER, Oberweistritz, Germany. Filed Oct. 8, 1891. Serial No. 408,122. (No model.)



Claim.—1. An insect-trap consisting of a net formed of conducting-wire, the electric generator, and electrical connections therefrom to the net, the wire of said net forming parts of a closed circuit and adapted to be heated to a glow to form the lure, substantially as described.

2. In combination, the frame consisting of the side rods b' b^2 and the horizontal rods d' d^2, insulated therefrom, the electrical connections to the said rods b' b^2 and d' d^2, respectively, the horizontal cross-wires d' between the side rods, and the wires a^2 between the rods d' d^2, each of said series of wires forming parts of the circuit between their respective rods, substantially as described.

473,779. MEAT-CHOPPER. ALEXANDER C. RANKIN, Glenfield, Pa. Filed July 30, 1891. Serial No. 401,149. (No model.)

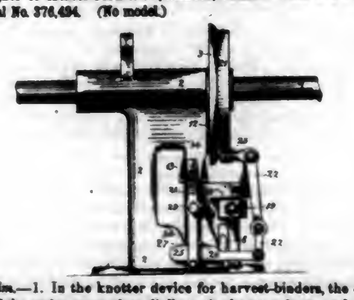


Claim.—1. In meat-choppers, the combination of a driving crank-shaft carrying a sprocket-wheel, levers fulcrumed back of the crank-shaft and extending over and bearing on the cranks thereof, a vertically-adjustable frame carrying a shaft provided with a sprocket-wheel, a chain connecting said wheels, and a crank-shaft in said vertically-adjustable frame geared to said sprocket-wheel and driving the reciprocating cutting-knives by pitmen, substantially as and for the purposes set forth.

2. In meat-choppers, the combination of a crank-shaft, a pitman, a cross-head, and two separate knife-shafts connected to the cross-head and each reciprocating in separate bearings extending above and below the cross-head, each said knife-shaft carrying a single knife, substantially as and for the purposes set forth.

3. In meat-choppers and like machines, the combination of a driving crank-shaft mounted in the lower part of the machine-frame, driving-levers fulcrumed back of said crank-shaft and extending forward over the cranks thereof, connections from said crank-shaft to the operative mechanism of the machine, and a stationary hand-bracket supported on the machine and extending forward from the upper part thereof above the outer ends of said driving-levers, substantially as and for the purposes set forth.

473,780. HARVEST-BINDER. ABRAM G. REAMAN, Ringwood, assignor to Mercer Bros. & Co., Alliston, Canada. Filed Dec. 31, 1890. Serial No. 376,494. (No model.)



Claim.—1. In the knotter device for harvest-binders, the combination of the spring secured medially to the knotter-frame and guided at its lower end between studs on said knotter-frame, with the grip-plate also guided between said studs and secured against said knotter-frame by said spring, and having a hook on its upper edge to hold the twine, and a shank by which it is operated, substantially as shown and described.

2. In combination, the spring secured medially to the knotter-frame and guided by studs on said frame, the grip-plate having a hook formed on its upper edge to hold the twine secured against the knotter-frame, and having a shank on said grip-plate to connect it to a lever operated by a cam-wheel, so as to reciprocate said grip-plate horizontally, and the studs on the knotter-frame above and below said grip-plate to guide it and said spring, substantially as shown and described.

3. In combination, the clamping-spring secured medially by a set-screw to the knotter-frame to clamp the grip-plate, the grip-plate having a hook on its upper edge to hold the twine, and the studs on the knotter-frame to guide said grip-plate and spring, substantially as shown and described.

4. The combination of the twine-guide formed at the bottom of the needle-opening in the frame of the knotter, with the grip-plate having a hook thereon, the spring secured medially by a set-screw and guided by studs on the said frame of the knotter, the said guide-studs to direct said grip-plate and spring, the bell-crank hinged to said grip-plate, and the cam-wheel having a raceway formed on its periphery to operate said bell-crank, substantially as shown and described.

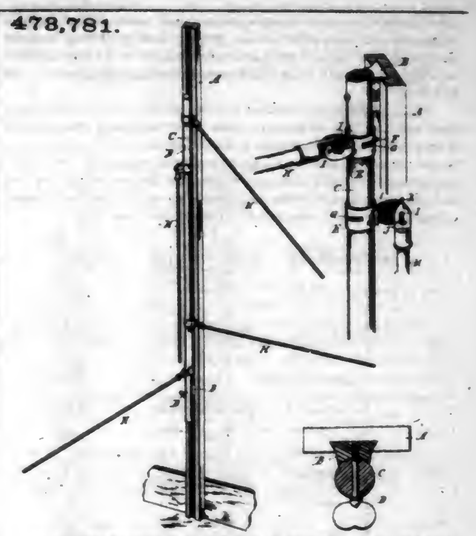
5. The combination of the cam-wheel having an inwardly-curved raceway formed on a portion of its periphery with the bell-crank vibrated by said raceway, the grip-plate hinged to said bell-crank, and the spring secured medially by a set-screw to bear on said grip-plate, substantially as shown and described.

6. The combination of the cam-wheel having an inwardly-curved raceway formed on a portion of its periphery, with the bell-crank vibrated by said raceway, the grip-plate hinged to said bell-crank, the spring secured medially by a set-screw to bear on said grip-plate, and the studs on said frame to guide said grip-plate and spring, substantially as shown and described.

473,781. CLOTHES-DRIER. ROBERT M. REED, Covington, Ky., and FREDERICK BOOS, Cincinnati, Ohio; said Boos assignor to R. P. Christian, Cincinnati, Ohio. Filed June 9, 1891. Serial No. 395,736. (No model.)

Claim.—1. A clothes-drier consisting of the standard vertically adjustable in the grooved strip A, combined with the rotatable collars turning freely on said standard, the ends of each of said collars being bent outward and connected by rivets and the arms slotted and having a horn K, as described.

478,781.



2. In a clothes-drier, the wall-strip A, having a central undercut groove, the slides B, and adjusting-screw D, in combination with the standard, the rotatable collar encircling the standard, and the adjustable arms having angular slots and terminal projections adapted to engage said collars, substantially as herein set forth.

478,782. ICE-PLOW. THOMAS H. REEVES, Minneapolis, Minn., assignor of one-fourth to Isaac F. Bissell, Trenton, N. J. Filed Mar. 24, 1891. Serial No. 386,243. (No model.)

Claim.—1. In an ice-plow, the combination, with a slotted plate, of a removable tooth inserted in the forward slot and a removable heel-piece inserted in the rear slot and adapted to follow loosely in the kerf cut by the tooth, so as to prevent lateral movement, substantially as described.

2. In an ice-plow, the combination, with a plate having the slots therein, of a cutting-tooth secured removably in one slot and a heel-piece secured removably in another slot, said tooth and heel-piece being situated so that their sides will be flush with the sides of the plate, substantially as described.

3. In an ice-plow, the combination, with a plate having slots extending inwardly from the lower edge thereof, of a tooth having its shank inserted in the forward slot flush with the sides of the plate, said shank being split and perforated, so as to be secured by a rivet, and a heel-piece inserted in the rear slot flush with the sides of the plate, said heel-piece being split and perforated and held by a rivet and being adapted to follow loosely in the kerf cut by the tooth, so as to prevent lateral movement, substantially as described.

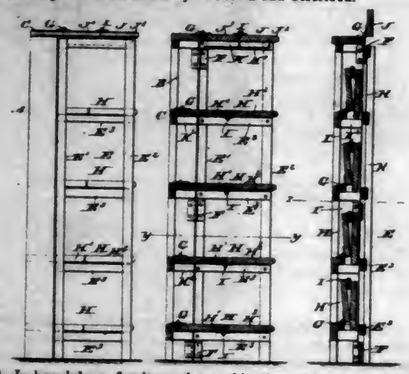
478,788. KNOCKDOWN EXHIBITION-STAND. HERMAN A. J. RIECKERT, New York, N. Y. Filed Aug. 8, 1891. Serial No. 402,149. (No model.)

Claim.—1. In knockdown furniture, the combination, with two connected corner-posts, of sides hinged to the said posts and shelves hinged to the connecting-bars of said posts, and each made in two parts hinged together and resting on cleats formed on the said sides, substantially as shown and described.

2. In knockdown furniture, the combination, with two corner-posts and bars for connecting the same rigidly with each other, of

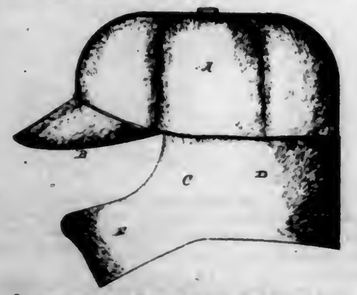
sides hinged to the said corner-posts and each made of two uprights connected with each other by bars forming cleats projecting from the inner surface of the said sides and shelves hinged to the post-connecting bars and resting on the said cleats, substantially as shown and described.

3. In knockdown furniture, the combination, with two corner-posts and bars for connecting the same rigidly with each other, of sides hinged to the said corner-posts and each made of two uprights connected with each other by bars forming cleats projecting from the inner surface of the said sides, shelves hinged to the post-connecting bars and resting on the said cleats, each shelf being made in two parts hinged together lengthwise, substantially as shown and described.



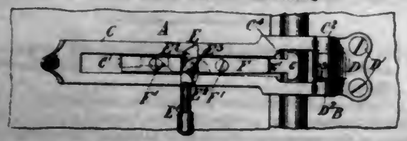
4. In knockdown furniture, the combination, with two connected corner-posts, of shelves hinged to the connecting-bars of the said posts and each made in two parts hinged together, and short cleats attached to the inside of the said posts to rest the lower edge of the outermost shelf part on when the shelves are folded, substantially as shown and described.

473,784. CAP. DAVID SAMUEL, New York, N. Y. Filed Jan. 23, 1892. Serial No. 419,028. (No model.)



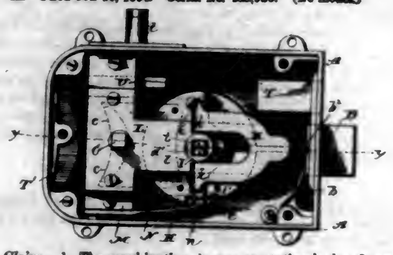
Claim.—In a cap, substantially as described, the combination, with the crown and the visor extending forwardly therefrom, of the storm-collar comprising the body D, connected at its upper edge to the edge of the crown and having its lower edge inclined upwardly from its middle to the points where it merges into the reduced ends E, and the said ends E, connected together and having their lower edges inclined forwardly and downwardly and their upper edges carved inwardly, substantially as specified.

473,785. DOOR-CHECK. LAWRENCE SAMUEL, London, England. Filed Sept. 8, 1891. Serial No. 405,101. (No model.)



Claim.—In a fastener such as described, the combination, with the plate having the headed end and the pivoted yoke having the slot therein, enlarged at one end and co-operating with the headed plate, of the pivoted latch having the elongated body, adapted to pass through the yoke, and the cam-surfaces co-operating with the yoke to turn the latch into proper position to enter the slot in the yoke, substantially as described.

473,786. PERMUTATION-LOCK. LEOPOLD R. SCHNEIDER, Galena, Ill. Filed Oct. 16, 1891. Serial No. 408,929. (No model.)



Claim.—1. The combination, in a permutation-lock, of a casing, a locking-bolt therein, a spindle D, journaled in the casing and provided with a knob, a sleeve *e*, journaled on the spindle and carrying rigidly a toothed tumbler-disk, one or more toothed tumbler-disks journaled loosely thereon, all the disks being provided with shifting-pins on their adjacent faces and radial slots, clicking springs engaging the teeth on the disks, an arm engaging the sliding locking-bolt and adapted to enter the radial slots in the disks, and means for operating this arm to withdraw the bolt, as and for the purposes described.

2. In a permutation door-lock, the combination of a casing, a sliding bolt therein, a longitudinally-movable spindle journaled in the casing and having an angular formation at a suitable point in its length, a sleeve journaled on the spindle and carrying a series of tumblers, a sleeve surrounding the spindle and journaled axially in line with the tumbler-carrying sleeve, the two sleeves having the openings in their adjacent ends formed angular to receive the angular formation on the spindle, and means connecting the latter sleeve to the sliding bolt, as and for the purposes described.

3. In a permutation door-lock, the combination of a casing, a sliding bolt therein, a longitudinally-movable spindle journaled in the casing and having an angular formation at a suitable point in its length, a sleeve journaled on the spindle and carrying a series of tumblers, a sleeve surrounding the spindle and journaled axially in line with the tumbler-carrying sleeve, the two sleeves having the openings in their adjacent ends formed angular to receive the angular formation on the spindle, the latter sleeve being provided with oppositely-projecting arms, a sliding U-shaped part K, having its arms in engagement with said oppositely-projecting arms, and provided with an arm i^3, engaging a slot in the bolt, substantially as described.

4. In a permutation-lock, the combination of a casing, a slotted sliding bolt B therein, a longitudinally-movable spindle having one end journaled in the casing and its outer end provided with a knob, a sleeve on the spindle carrying radially-slotted tumbler-disks, an independent sleeve embracing the end of the spindle and adapted to be rotated thereby, a sliding part adapted to be moved by the rotation of this sleeve, this sliding part being provided with an arm engaging the bolt and adapted to enter the radial slots in the disks, and an independent spindle C, having one of its ends journaled in the casing and provided with a part engaging the sliding bolt and its other or outer end carrying an operating-knob, substantially as described.

5. In a permutation-lock, the combination of a casing, a sliding bolt and means for operating the same, a spindle journaled in the casing and carrying a series of radially-slotted disks, the inner disk being provided with a pin A', a rock-shaft O, journaled in the casing and provided with a trip-arm adapted to engage said pin A', and a bell-hammer and a gong or bell attached to the lock, substantially as described.

6. In a permutation-lock, the combination of a casing, a sliding bolt and means for operating it, a spindle journaled in the casing and carrying a series of tumbler-disks, one of said disks being provided with projection A', a longitudinally-movable rock-shaft O, journaled in the casing and actuated by a spring, said rock-shaft being provided at one end with a beveled arm, adapted to be engaged by the pin A' and at its other end with a bell-hammer, and a bell or gong, substantially as described.

7. In a permutation-lock, the combination of a casing, a sliding bolt therein, a longitudinally-movable spindle having one of its ends journaled therein and provided with a flange, permutation devices on the spindle, a bolt-shifting device adapted to be operated by the spindle, an adjustable plate on the casing, this plate being slotted to engage the flange on the spindle and thereby lock the spindle in engagement with the bolt-shifting devices, substantially as described.

8. The combination of a casing, an independent outside spindle D, having its inner end journaled therein and carrying a series of slotted

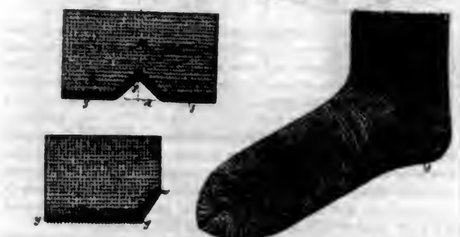
tumbler-disks, means for operating and controlling these disks, a sliding locking-bolt B, provided with slots b^2 b^3 on opposite sides of the spindle, an arm i^3, loosely engaging the slot b^3, means on the spindle for operating this arm in withdrawing the bolt B, an independent inside spindle C, having its outer end journaled in the casing alongside the spindle D, said inner end being provided with an arm c, working in and engaging the slot b^2 in the bolt B, whereby the latter may be withdrawn independently of the permutation devices, and a sliding dead-lock bolt T in the casing, this bolt being provided with an arm T', engaging the sliding bolt B, substantially as and for the purpose specified.

9. In a permutation-lock, in combination, a locking-bolt, permutation devices, a bolt-shifting device, a spindle for operating the latter and the permutation devices, and an independent device to hold said spindle out of engagement with the permutation devices and lock it in engagement with the bolt-shifting device, and means for holding said device in its locked position, substantially as described.

10. In a permutation-lock, in combination, a suitable bolt, permutation devices, a bolt-shifting device, a longitudinally-movable spindle for operating both these, and an independent sliding plate for engaging the spindle to lock it in engagement with the bolt-shifting device.

11. In a lock, in combination, a locking-bolt, a series of radially-slotted rotary tumblers, the spindle for operating them, the armed sleeve journaled axially in line with the spindle, the movable piece engaging the sleeve-arms, the arm extending from said piece to co-operate with the slots of the tumblers and having a loose connection with the locking-bolt, and the second spindle engaging the latter, substantially as described.

473,787. STOCKING AND METHOD OF MAKING SAME. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, same place. Filed June 24, 1891. Serial No. 397,300. (No model.)



Claim.—1. A stocking having a heel with graduated courses of stitches on each side of the lower portion and having along the bottom and rear corner running courses of stitches, forming a V at the rear corner of the heel, and united at their meeting edges along the bottom and corner of the heel, substantially as specified.

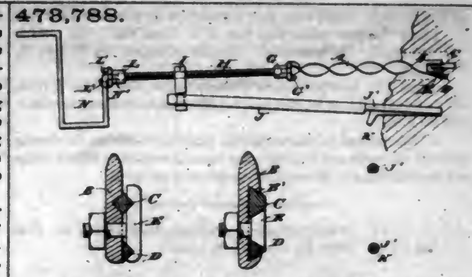
2. A stocking having a leg with enlarged or calf portion having graduated courses of stitches on each side and below the same running courses of stitches extending around the ends of the graduated courses, the lowermost of said running courses of stitches being united throughout a portion of its length to the top course of the ankle-tube and the opposite stitches throughout the remaining portion of the course being united to each other, substantially as specified.

3. The mode herein described of forming the tapered portion of a stocking, said mode consisting in forming courses of stitches graduated in length on opposite sides of a central line, and forming running courses of stitches beyond said graduated courses and extending along the ends of the same, so as to form a V-shaped recess at the center of the courses, substantially as specified.

4. The mode herein described of forming the heel upon a stocking, said mode consisting in first throwing out of action a portion of the needles upon which the leg-tube was produced, but permitting them to retain their stitches, forming heel-stitches upon the remaining needles, graduating the courses on opposite sides of a central line, forming running courses beyond said graduated courses and extending along the ends of the same, then throwing into action the other needles and forming the foot-tube, and finally uniting the rear edges of the sole to the front edges of the heel and uniting the running courses along the bottom and corner of the heel, substantially as specified.

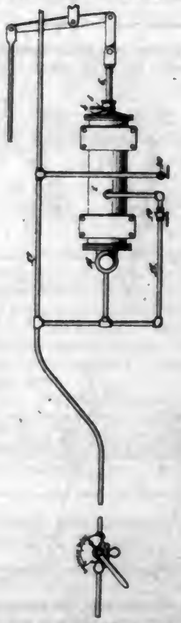
473,788. COAL-DRILL. CHARLES S. SHEPPARD, Pittston, Pa. Filed Nov. 12, 1891. Serial No. 411,678. (No model.)

Claim.—1. In a coal-drill, the combination, with an auger, of a center adjustable longitudinally on the end of the auger, a cutter held adjustably on the end of the auger and standing at an angle to the said center, and a wedge and a bolt held in the said auger and engaging with its head the shanks of the center and the cutter, so that both are loosened simultaneously by unscrewing the nut of the bolt, substantially as shown and described.



2. In a coal-drill, the combination, with an auger formed at one end with a dovetailed groove having its sides diverging outwardly, of a center cutter engaging with its shank one side of the said groove, a cutter standing at an angle thereto and engaging with its shank the other side of the said groove, and a bolt held in the said auger end and having its head wedge-shaped and engaging the adjacent inner sides of the shanks of the said center and cutter, substantially as shown and described.

473,789. AUTOMATIC BRAKE MECHANISM. EDWARD C. SHORTT, Carthage, assignor to Charles G. Emery, trustee, New York, N. Y. Filed Oct. 21, 1891. Serial No. 409,397. (No model.)



Claim.—1. The combination, with a compressed-air reservoir, a brake-chamber, a diaphragm or partition, a brake-operating rod connected with the diaphragm or partition, and a pipe for releasing and restoring fluid-pressure in the brake-chamber, of a valved by-pass for placing the reservoir in communication with the brake chamber to transfer air from the reservoir to the brake-chamber for releasing the brakes and rendering the parts susceptible of applying the brakes while the car is disconnected from the main air-reservoir of a train or locomotive, substantially as described.

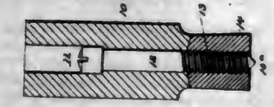
2. The combination, with a cylinder, a diaphragm or partition dividing the cylinder into a compressed-air reservoir and a brake-chamber and having means for admitting air to the reservoir for charging the same, a section of a train-pipe for supplying the compressed air to the brake-chamber, and a conductor's valve, of a by-pass pipe or tube having a part extending into the car in proximity to the conductor's valve and provided with a cock or valve for placing the reservoir in communication with the brake-chamber to transfer air from the reservoir to the brake-chamber for releasing the brakes and rendering the parts susceptible of subsequently applying the brakes while the car is disconnected from the main air-reservoir of a train or locomotive, substantially as described.

473,790. ZINC-FOIL AND METHOD OF MANUFACTURING THE SAME. ALBERT SIEBEL, New York, N. Y. Filed Nov. 7, 1891. Serial No. 411,182. (No specimens.) Patented in England Dec. 22, 1891, No. 22,490.

Claim.—1. As a new article of manufacture, zinc-foil tin, flexible, and pliable enough to be used as a wrapper, substantially as hereinbefore set forth.

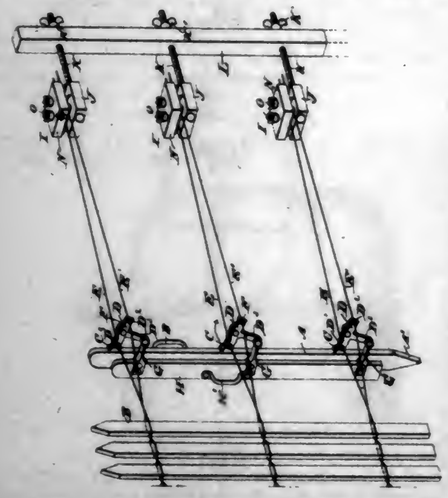
2. The method of manufacturing zinc-foil, consisting in placing sheet-zinc in packs and subjecting the packs to successive cross-rollings and cross-foldings in the manner hereinbefore set forth.

473,791. PUNCH. FRANCIS H. SIMMONDS, San Francisco, Cal. Filed Dec. 1, 1891. Serial No. 413,682. (No model.)



Claim.—A punch consisting in a body 10, provided with a longitudinal bore, the upper end of which is enlarged, as at 11, a face 14, having a screw-threaded bore, and a screw 12, having an operating-head at its upper end and a screw-threaded lower end terminating in a centering-point 15ª, the screw being passed down through the two bores, with its threaded end engaging the threaded bore of the face and its point projecting beyond the lower side of the face 14, substantially as set forth.

473,792. MACHINE FOR WIRING FENCE-PICKETS. LEMUEL H. SLAGLE, East Brady, Pa. Filed Dec. 29, 1891. Serial No. 416,457. (No model.)



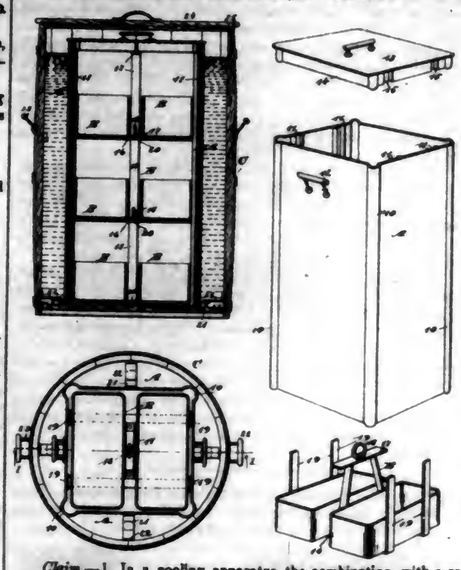
Claim.—1. In a fence-machine, the combination, with a post, of a series of levers pivoted on the said post and each having its ends forked to receive the wires, a retaining-wire held on each lever and extending across the fork to hold the wires in place therein, and a bar pivotally connected with the said levers to impart a swinging motion to the same, substantially as shown and described.

2. In a fence-machine, the combination, with a post provided with a series of brackets, of levers fulcrumed on the said brackets and each provided with forked ends, a retaining-wire held on each lever and extending across the forked ends, and a bar provided with arms pivotally connected with the said levers, substantially as shown and described.

3. In a fence-machine, a tension device consisting of a lower plate provided with a transverse bar at about the center of its upper face and with a bolt for adjustably connecting it to a post, an upper plate provided with transverse bars on its lower face, one at each side of the center, and bolts for clamping the two plates together, substantially as described.

4. A fence-machine provided with a three-armed lever, of which two opposite arms have their ends forked to receive the wires, and a retaining-wire secured on the lever and extending across the forked ends to hold the wires in place, substantially as shown and described.

473,793. COOLING APPARATUS. SHERMAN L. SMITH, Plymouth, Pa. Filed Nov. 19, 1891. Serial No. 412,401. (No model.)



Claim.—1. In a cooling apparatus, the combination, with a receptacle having slideways produced upon its inner face, of trays adapted to fit into the receptacle and provided with vertical bars or runners adapted to enter the slideways in the receptacle, the said bars extending above the trays and forming supports to space the several trays apart, substantially as set forth.

2. In a cooling apparatus, the combination, with a receptacle having slideways produced in its inner surface, of trays spaced and connected at their bottom portions and provided at their outer sides with vertically-disposed bars or runners adapted to enter the slideways in the receptacle, and an essentially-A-shaped standard located between the trays, substantially as and for the purpose specified.

3. In a cooling apparatus, the combination, with a receptacle provided with a series of slideways, of trays arranged in pairs, each pair of trays being spaced and connected, bars or runners attached to the outer sides of the trays and extending upward above the same, an essentially-A-shaped standard located between the trays and connected therewith, and a handle attached to the standard, substantially as and for the purpose specified.

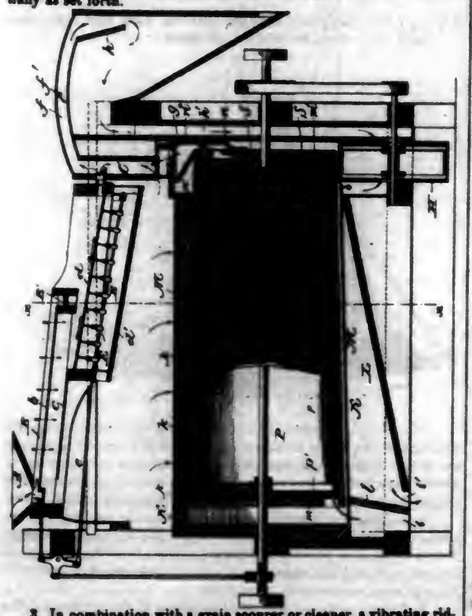
4. In a cooling apparatus, the combination, with a cask and a receptacle located in the cask, a space intervening its walls and the walls of the cask, the said receptacle being provided with a series of slideways, of trays provided with bars attached to their sides and extending above them, the said bars being adapted to enter the slideways in the receptacle, and a locking connection between the receptacle and the cask, substantially as set forth.

5. In a cooling apparatus, the combination, with a cask and a receptacle essentially rectangular in shape, but having rounded projecting corners, the said receptacles being located in the cask and provided with slideways upon its inner faces, of trays arranged in pairs, said trays being spaced and connected, bars or runners attached to the outer sides of the trays and projected upward beyond them, a standard provided with a flat top and located between the trays, connected therewith, and provided with an attached handle, the handle being adapted to enter an opening in the connecting-platform between the set of trays above it, and the bars being adapted to enter the slideways in the receptacle, as and for the purpose specified.

473,794. GRAIN CLEANER AND SCOURER. GEORGE A. SMITH, Paulding, Ohio. Filed Sept. 26, 1891. Serial No. 406,964. (No model.)

Claim.—1. The combination, in a grain-scourer, of a conical scouring-drum mounted on a rotary shaft, said drum having an outer surface of interlocked wire fabric held over a solid backing, and a two-part conical scouring-case loosely mounted on said shaft and provided with means for holding the same against rotation and for adjusting the same longitudinally, said conical scouring-case having the body portion made up of interlocked wire fabric, the scouring drum and case being inclosed within a casing having air-inlet apertures in the upper part thereof, the lower portion of said case being connected by a chute or way with a fan, substantially as shown, and for the purpose set forth.

2. The combination, in a grain-scourer, of a rotary scouring-drum constructed substantially as shown and mounted on a horizontal shaft, a two-part scouring-case loosely mounted on the shaft and provided with means for holding the same against rotation and for adjusting it longitudinally with respect to the scouring-drum, an inclosing-casing K, having perforations *k* in the upper part thereof, the lower portion of said inclosing-casing connecting with a chute or way, and a fan for drawing air through the perforations and around the casing, substantially as set forth.



3. In combination with a grain scourer or cleaner, a vibrating riddle carrying a hopper, an inclined screen *b*, a depression *b'* beneath the hopper and below the upper surface of the screen at the upper end thereof, and a trough B', connected with a discharge-spout at the lower end of the screen, an imperforate guide-plate *c* and downwardly-inclined bars *d*, placed in close proximity to each other, said bars leading into the air-leg of the air-trunk which communicates with the scouring mechanism, and reciprocating scrapers having grooved or recessed edges contacting with the under side of the bars *d*, the grain-separating device being operated from the shaft of the scouring-drum, substantially as set forth.

4. The combination, in a grain-scourer, of a riddle B, constructed substantially as shown and provided with a perforated plate *b*, an imperforate plate *c*, and bars *d*, scrapers adapted to reciprocate beneath the bars *d*, the scrapers having recessed upper edges, in which the bars lie, and mechanism for alternately reciprocating the riddle and scrapers in opposite directions, said mechanism being operated from the main shaft of the scourer, substantially as set forth.

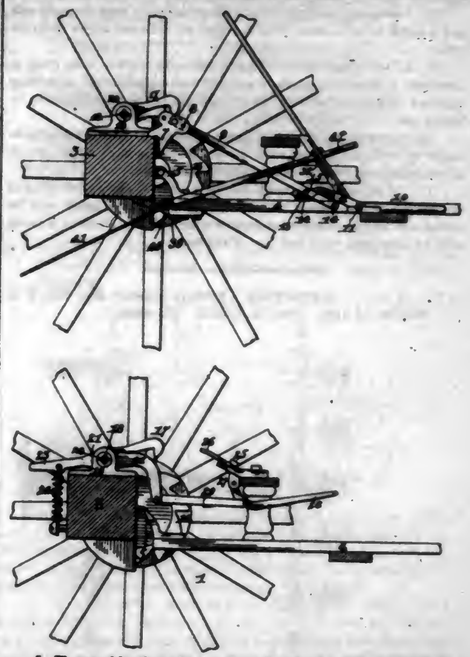
473,795. HORSE HAY-RAKE. WILLIAM STRAIT, Elmira, N. Y. Filed Nov. 25, 1891. Serial No. 413,060. (No model.)

Claim.—1. The combination of a frame, wheels, an axle, a vibrating head, connections between the head and wheels for oscillating the head, a treadle pivoted to the frame, and a link pivoted at one end to the treadle and at the other to the head above and forward of the center of motion of the head, the pivotal joint between the link and treadle lying below the line of the center of motion of the head throughout the movements of the rake and the joint between the link and the head passing below said center when the rake is up.

2. In a rake-locking mechanism, the combination of a frame, a head having suitable bearings, a treadle pivoted to the frame, having a slot therein, a link pivoted to the head and passing through said slot, and pins or stops on the link for limiting its play.

3. The combination of a frame, a head, a treadle pivoted to the frame, having a curved bearing-surface thereon, and a link pivoted to the head and loosely connected to said treadle and provided with a pin or stop adapted to bear against said curved or inclined surface.

4. The combination of a frame, a vibrating head having suitable bearings, a dog-operating lever or its equivalent pivoted upon the head, and a lever connection pivoted to the frame and to said dog-operating lever, whereby when the lever connection is operated the pivotal joint between said dog-operating lever and connection is thrown into substantially axial line with said bearings of the head.



5. The combination of a frame, a vibrating head having suitable bearings, a dog-operating lever pivoted upon the head, having projecting arms, a lever connection pivoted to the frame and to said dog-operating lever-arm, and a stop upon the frame, whereby when the lever connection is operated the pivotal joint between it and the dog-lever is thrown into substantially axial line with the rake-head bearings and one of the projections on said dog-lever is thrown into engagement with the stop upon the frame.

6. The combination, with the frame and rake-teeth, of a cleaner-bar pivoted to the frame, cleaner-fingers on said bar, a lever attached to the cleaner for oscillating the same and independent of the rake-teeth, and an adjustable stop upon the frame for variously adjusting the normal position of the cleaner.

473,796. HARROW. WILLIAM STRAIT, Elmira, N. Y. Filed Dec. 24, 1891. Serial No. 416,060. (No model.)



Claim.—1. An adjusting tooth-seat having a series of seats lying at relatively different angles, within any one of which a tooth may be seated and bodily removed.

2. An adjusting tooth-seat having a series of seats lying at relatively different angles, one in advance of the other, within any one of which a tooth may be seated and bodily removed.

3. An adjusting tooth-seat having a series of relatively different-angled plane seats, having their sides or edges adjacent to one another and provided with means for supporting or binding the tooth within any one plane seat.

4. An adjusting tooth-seat having a series of plane seats lying in different but substantially horizontal planes, within any one of which a tooth may be seated and bodily removed.

5. An adjusting tooth-seat having a series of plane seats lying at relatively different angles and an intervening ledge or stop connecting said seats.

6. A coupling having a frame-seat and a series of plane tooth-

seats lying at relatively different angles, in each of which tooth-seats a tooth may be independently supported by a binder.

7. An adjusting tooth-seat and coupling having a frame-seat upon one side and a series of plane seats lying at relatively different angles upon the other.

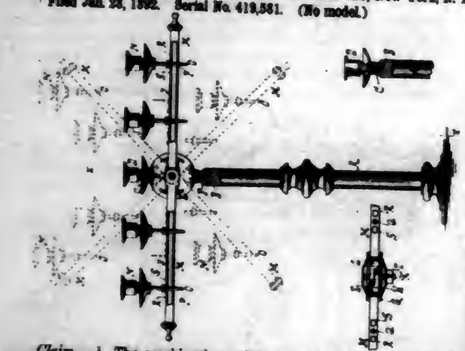
8. A coupling having an intersecting frame-bar seat upon one side and a series of plane seats lying at relatively different angles upon the other.

9. An adjusting tooth-seat having a series of plane seats lying at relatively different angles, the front and rear edges of said seats lying adjacent to one another, in combination with the tooth adapted to be seated and bodily removed in any one of said seats.

10. An adjusting tooth-seat having a series of plane seats lying at relatively different angles, each plane seat being open outwardly at substantially right angles to the plane of the seat.

11. An adjusting tooth-seat having a series of plane seats lying at relatively different angles, within any one of which a tooth may be seated and bodily removed, combined with a binder, whereby a tooth may be supported upon any one of the seats.

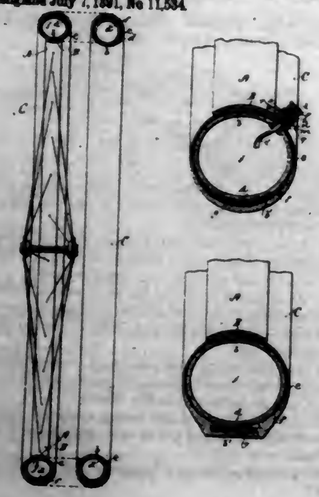
473,797. CANDLESTICK. STEPHAN SIGHSTEY, New York, N. Y. Filed Jan. 28, 1892. Serial No. 419,581. (No model.)



Claim.—1. The combination, with a standard or pedestal, of adjustable branches jointed thereto, said branches being provided with holes angularly located with respect to one another on opposite sides of the branches, and candle-holders having stems adapted to enter the holes, substantially as described.

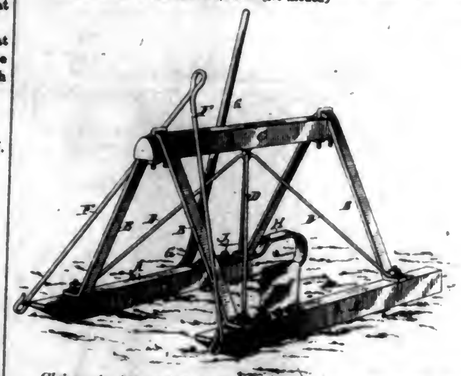
2. The combination, with a standard or pedestal having an opened-sided head, of a bolt provided with a nut or screw, and with closing and spring plates located on the open side of the head, and candle-supporting branches swinging on said bolt and adapted to be clamped or fixed by the nut, substantially as described.

473,798. PNEUMATIC TIRE. PARDON W. TILLINGHAST, Providence, R. I. Filed June 22, 1891. Serial No. 397,137. (No model.) Patented in England July 7, 1891, No. 11,534.



Claim.—The combination, with a vehicle-wheel provided with a groove for holding the tire, of an annular pneumatic tire made of less interior diameter than the diameter of the wheel at the bottom of the holding-groove or seat for the tire and provided with a valve for the purpose of inflation, and also having its inner wall stretched to embrace the holding-groove, and having a non-tensible reinforcement of textile material inclosed within its outer wall and adapted to prevent the corresponding extension of the said wall when subjected to the pressure of inflation, substantially as described.

473,799. ANT-HILL CUTTER. JOHN TYM, North Bend, Nebr. Filed July 8, 1891. Serial No. 398,860. (No model.)

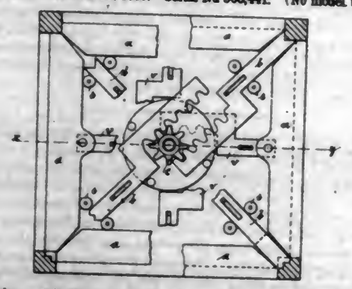


Claim.—1. An ant-hill cutter comprising the frame having the side runners, the cutter arranged obliquely to and secured at its front end to one of the runners and arranged and adapted at its rear end to permit trash and the like to pass off, and a connection between said end of the cutter and the other runner, all substantially as set forth.

2. An improved ant-hill cutter comprising the side runners, the cutter connected therewith, the end arches, the top beam connected with and extended between said arches, and the brace-rods connected at their ends with the runners and centrally between their ends with the top beam, substantially as set forth.

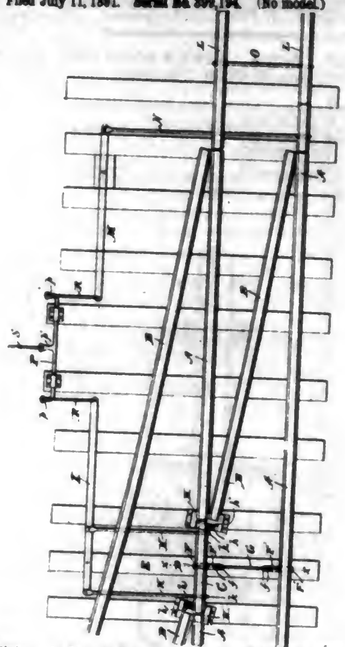
3. The improved ant-hill cutter consisting of the runners A A, the end arches, the top beam secured to and extended between said arches, the brace-rods connected at their ends with the runners and centrally between their ends to the top beam, the cutter secured to one runner and extended obliquely to a point in rear of the other runner, the bar connecting said end of the cutter with such runner, the lever pivoted to one of the runners and having a runner portion arranged to project below such runner when the lever is depressed, and a fastening by which the lever may be held depressed, substantially as set forth.

473,800. SAFE-LOCK. WILHELM J. VAN BROEK, Cologne, Germany. Filed Feb. 19, 1889. Serial No. 300,441. (No model.)



Claim.—A locking device consisting of four bolts *a*, operated by means of wing E and driving-wheel *d* to slide, two horizontally and two vertically, into corresponding recesses in the door-frame, said bolts *a* when in the locked position forming a rectangular frame having wedge-shaped gaps at the corners, and of four diagonal bolts *b*, operated by means of hollow head F and driving-wheel *c*, said bolts *b* when in the locked position taking into the wedge-shaped gaps of the frame formed by bolts *a* and securing them in their positions, bolts *b* being in turn secured in the locked position by means of a safety-lock, substantially as described and shown.

473,801. RAILROAD-SWITCH. THOMAS J. WALSH, Pittsburg, Pa. Filed July 11, 1891. Serial No. 399,194. (No model.)



Claim.—1. In a railroad-switch, in combination with the separated rails, the pivoted rail-section and the brace rod or bar having adjusting means and connected to said section at its pivotal point, substantially as and for the purpose set forth.

2. In a railroad-switch, in combination with the movable rail-section pivoted between its ends, the bracing device extending from the pivot thereof to an adjacent fixed rail, substantially as and for the purpose described.

3. In a railroad-switch, in combination with the movable rail-section pivoted between its ends, the bracing device consisting of the rail-flange-engaging plates and a rod or bar connected thereto and to another fixed point, substantially as and for the purpose specified.

4. In a railroad-switch, in combination with the movable rail-section pivoted between its ends, the bracing device consisting of the two plates having each a lug engaging the flange of such section on opposite sides and having the upturned portions and the brace rod or bar attached at one end to the latter and at its other to some fixed point, substantially as and for the purpose shown.

5. In a railroad-switch, in combination with the movable rail-section pivoted between its ends, the bracing device consisting of the two plates placed one upon the other at the pivot thereof, having each a lug engaging the flange of such section and having the upturned portions, and the brace-bar passing through the latter and having nuts on opposite sides thereof and connected to an adjacent fixed rail, substantially as and for the purpose set forth.

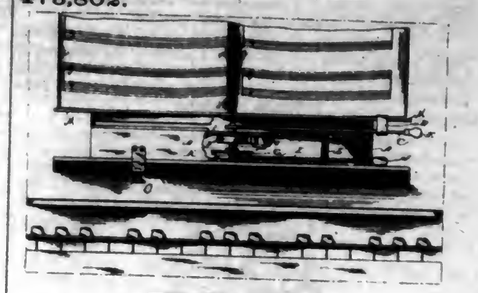
6. In a railroad-switch, in combination with the movable rail-section and the pivot pin or stud therefor, the bracing device consisting of plates engaging the section through which passes said pivot-pin and a brace-bar connected to said plates, substantially as and for the purpose described.

7. In a railroad-switch, in combination, the rail-sections to be connected, the movable rail pivoted between its ends, the bracing device extending from its pivot to an adjacent fixed rail, the shifting-lever, and the two links connecting said movable rail on both sides of its pivot to said lever, said links and lever being located opposite the bracing device, substantially as and for the purpose specified.

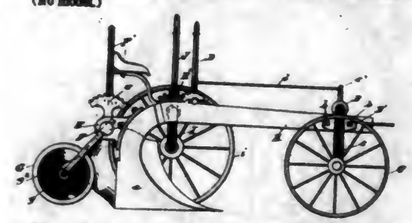
473,802. MUSIC-LEAF TURNER. JOHN H. WARD, Troverton, Pa. Filed Oct. 6, 1891. Serial No. 407,860. (No model.)

Claim.—A rotary shaft, a spring for effecting its rotation, a turning-arm carried by said shaft, and a disk having a notch therein, also carried by said shaft, in combination with a pivoted lever having a handle at one end and having a detent at the other end which fits in said notch and a spring which holds said detent in said notch, substantially as set forth.

473,802.



473,803. WHEEL-PLOW. EDMUND C. WESTERVELT and CHARLES W. CLAFF, South Bend, Ind. Filed Feb. 5, 1892. Serial No. 420,462. (No model.)



Claim.—1. The combination, with the plow-beam, of the casting having a rounded face bearing against the side of beam, the bolts for securing and adjusting said casting, and the rocking crank-shaft connected to said casting and adjusted therewith, means for rocking said shaft, and the wheel thereon, substantially as described.

2. The combination, with the plow-beam, of the tubular casting having a depending flange rounded on its inner face and bearing against the side of the beam, the bolts in the ends of said flange connecting the same adjustably to the beam, the crank-shaft journaled in said casting, the wheel thereon, and the devices for adjusting said crank-shaft, substantially as described.

3. The combination of the beam, the bracket on the rear thereof, the horizontal stub rock-shaft journaled therein, and the sector on said bracket, with the vertically-swinging yoke connected to said rock-shaft, the wheel carried thereby, and the lever connected to said rock-shaft for adjusting said yoke, substantially as described.

4. The combination of the bar, the cranked shaft journaled thereon, the wheel on the lower end of said shaft, the armed lever pivoted above the wheel, and the plate loosely connected to the shaft beside the wheel, and the yielding spring-controlled connection between the upper end of said plate and the arm of lever, substantially as described.

5. The combination of the beam, the bar connected thereto, the crank-shaft journaled on the extremity of said bar, the wheel on the lower end thereof, the lever loosely pivoted on the shaft above the wheel, the plate loosely connected to the shaft beside the wheel and having its upper end slotted and engaged by an arm on the lower end of the lever, and the spring interposed between the plate and said arm, and means for adjusting and locking said lever, substantially as described.

473,804. MANGLE. THOMAS S. WILES, Albany, and MERRO E. WESDELL, Troy, assignors to the Troy Laundry Machinery Company, Limited, Troy, N. Y. Filed Mar. 12, 1891. Serial No. 384,708. (No model.)

Claim.—1. The combination, with a clothed drum, of a series of separate stationary ironing-bars, substantially as specified.

2. The combination, with a clothed drum, of a series of separate ironing-bars capable of slight radial movement, substantially as specified.

3. The combination, with a clothed drum, of a series of hollow stationary bars adapted to be heated and means for separating the drum from the bars, substantially as specified.

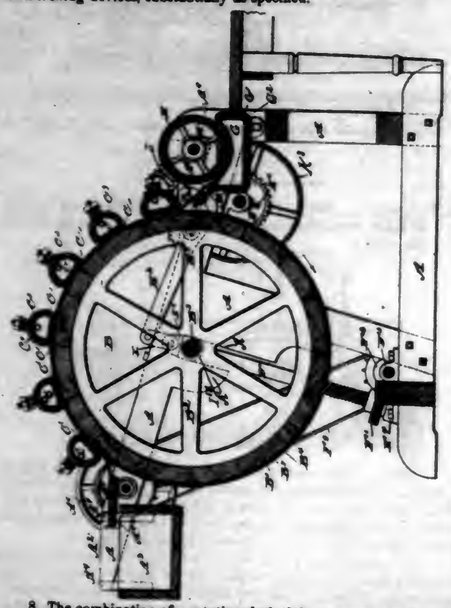
4. The combination, with a clothed drum adapted to be rotated, of a series of separated hollow ironing-bars over a portion only of the drum, whereby goods carried by the drum and between it and the bars are uniformly and successively pressed and freed from the vapor produced, substantially as specified.

5. The combination, with a clothed drum, of a series of stationary separated bars adapted to be heated and mounted to yieldingly bear upon the periphery of the drum, substantially as specified.

6. The combination, with a clothed drum and co-operating sepa-

rated ironing devices, of a steam-chest and a superimposed clothed roller, substantially as and for the purpose specified.

7. The combination of a clothed drum, a series of separately-stationary ironing devices arranged about a portion of the periphery of said drum and a steam-chest and coacting clothed roller arranged and operating to finish the opposite side to that acted upon by the drum and ironing devices, substantially as specified.



8. The combination of a rotative clothed drum, a series of heated ironing devices, a rotative clothed roller, a stationary steam-chest, means for elevating and depressing the drum, and connecting devices for elevating and depressing the roller, substantially as specified.

9. The combination, with an arched series of stationary separated ironing-bars, a clothed drum mounted in reciprocative bearings, and means for elevating and depressing said bearings, substantially as specified.

10. The combination, with a series of stationary ironing-bars, a clothed drum mounted in reciprocative boxes, screw-threaded standards for the boxes, rotative nuts mounted on the screws, and gearing for rotating the nuts for the purpose of elevating and depressing the drum, substantially as specified.

11. The combination, with a drum mounted in sliding boxes, of screw-threaded standards non-rotatably connected with the boxes, steps perforated for the passage of the standards and adapted to receive worm-geared nuts fitted to the threads of the standards, a worm meshing with the nuts, and sprocket-and-chain connections between the gear and a hand-wheel, arranged in convenient access to an operator, substantially as specified.

12. The combination, with a drum and its shaft and drum elevating and depressing devices comprising screw-threaded standards, of shaft-embracing links, levers, and a clothed roll mounted for reciprocation by the levers, substantially as specified.

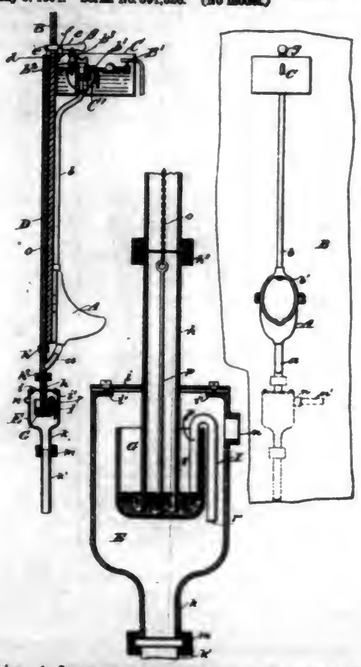
13. The combination, with a rotative drum, of a series of hollow stationary ironing-bars, each having a face conforming more or less to the periphery of the drum and having a receiving-bevel, substantially as specified.

14. The combination, with a rotative drum, of a series of bars, each provided with a beveled receiving edge on its working face and each having said working face more or less conforming to the periphery of the drum and each having its remaining portions protected by a non-conductive covering, substantially as specified.

473,805. TANNING COMPOUND. SAMUEL W. WRIGHT, Mountain Grove, Mo. Filed Aug. 3, 1891. Serial No. 402,070. (No specimens.)

Claim.—The herein-described tanning compound, consisting of ten gallons of water, five pounds of dog-fennel, one ounce of muriatic acid, one ounce of copperas, five pounds of smart-weed, five ounces of leaf-tobacco, two gallons of lye from horse-manure, two pounds of wheat-flour, one pound of dried ginseng-root, and one pound of hardwood ashes, all thoroughly commingled and used in the proportions substantially as specified, and for the purpose set forth.

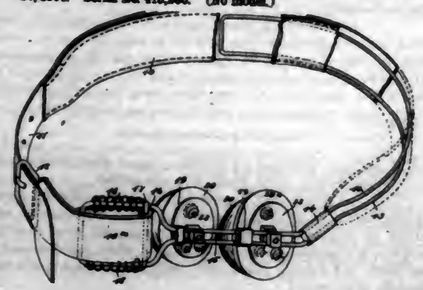
473,806. URINAL. CHARLES G. ZELLMAN, Albany, N. Y. Filed May 5, 1891. Serial No. 391,622. (No model.)



Claim.—1. In an automatic flushing device for urinals, the combination, with the discharge-pipe of the urinal and the operating-lever of the flushing device, of a sealing-cup suspended from said operating-lever, said sealing-cup being adapted to fall by gravity from the initial increment of urine, and thereby operate the flushing device, substantially as herein shown and described.

2. The combination, with a receiving-bowl, a flushing-tank above said bowl, a flush-pipe between the tank and bowl, an air-chamber in the tank engaged with a sliding upper end of the flush-pipe, an air-escape pipe on the air-chamber or float, a pivoted lever having a weight on one end, and a pendent valve, and adapted to hold said valve on the air-escape pipe normally closed, a guide-tube extending from below the lever end to a point below the bowl, and a branch pipe extending from the bowl to the guide-tube extension, of a sealing-cup suspended below the guide-tube by a rod and chain passing up through the guide-tube and connecting with the unweighted end of the lever, a siphon-tube in the sealing-cup adapted to remove part of its contents, and an inclosing chamber for the sealing-cup having a connection with a drain-pipe and also with a soil-pipe to respectively remove liquid and sewer-gas, substantially as described.

473,807. TRUSS. WILLIAM A. ADAIR, Moline, Kans. Filed Nov. 27, 1891. Serial No. 413,286. (No model.)

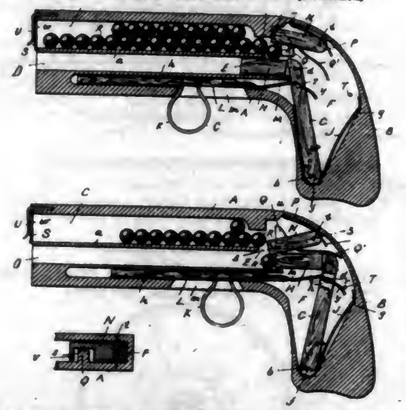


Claim.—1. A truss comprising a hollow belt, a wire spring carried by the belt and terminating at one end in a loop, a spring connection between the loop and the buckled portion of the belt, and pads carried by the spring, substantially as described.

2. The combination, with the hollow belt, of a spring carried by the belt, said spring being formed of nearly parallel wire members terminating in an enlarged loop, keepers secured to the spring at the points where it leaves the belt and where its loop begins, and spring-pressed pads carried by the exposed portion of the belt between the keepers, substantially as described.

3. The combination, with the truss-belt and the pad-carrying springs supported in the belt, one end of the spring terminating in a loop, of a spring-pressed cross-bar carried by the loop and adapted to be secured to a portion of the belt, substantially as described.

473,808. MAGAZINE SPRING-GUN. OLIVER H. ARMS, Boston, Mass. Filed June 23, 1891. Serial No. 397,223. (No model.)



Claim.—1. In a pistol, the combination, with the barrel-chamber, of a spring-lever pivoted to the pistol and having a block or plunger pivoted thereto and arranged to move back and forth in the barrel-chamber, for the purpose specified.

2. In a magazine-pistol, the combination, with the barrel-chamber and the magazine-chamber having communication with each other, of a spring-lever pivoted to the pistol and having a block or plunger pivoted thereto and arranged to move back and forth in the barrel-chamber, substantially as and for the purpose specified.

3. In a magazine-pistol, the combination, with the barrel-chamber and the magazine-chamber having communication with each other, and a spring-lever pivoted to the pistol and having a block or plunger pivoted thereto and arranged to move back and forth in the barrel-chamber, of a spring-block pivoted to the pistol, having an arm Q, and arranged to swing down and close the opening between the two chambers, for the purpose specified.

4. In a magazine-pistol, the combination, with the barrel-chamber and the magazine-chamber having communication with each other, of a spring-block pivoted to the pistol and extending into the magazine-chamber and adapted to swing down and close the opening between the two chambers, for the purpose specified.

5. In a magazine-pistol, the combination, with the barrel-chamber and the magazine-chamber having communication with each other, of a spring-lever pivoted to the pistol, having a shoulder and a block or plunger pivoted thereto, arranged to move back and forth in the barrel-chamber, a trigger, a spring-arm to said trigger provided with a shoulder *q*, and an abutment *r* of the lever, substantially as and for the purpose specified.

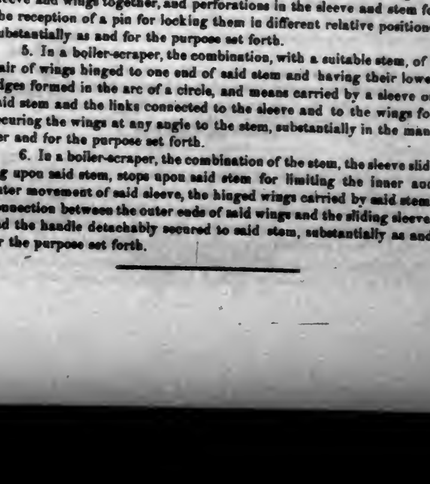
6. In a magazine-pistol, the combination, with its magazine-chamber having an opening at its end and a plate secured over said opening, having an opening *w* opening into said chamber, of an arm pivoted to the end of the pistol and arranged to swing over said plate-opening, for the purpose specified.

7. In a magazine-pistol, the combination, with the barrel-chamber and the magazine-chamber having communication with each other, and a rear wall at the end of the magazine-chamber having a portion of its side cut away, of a spring-block pivoted to the pistol and provided with a transverse groove in which said rear wall is disposed, for the purpose specified.

8. In a magazine-pistol, the combination, with the barrel-chamber and the magazine-chamber having communication with each other, a spring-lever pivoted to the pistol, having a shoulder and a block or plunger pivoted thereto, arranged to move back and forth in the barrel-chamber, and a spring-block pivoted to the pistol and extending into the magazine-chamber and adapted to swing down and close the opening between the two chambers, of a trigger, a spring-arm to said trigger provided with a shoulder *q*, and an abutment *r* of the lever, substantially as and for the purpose specified.

9. In a magazine-pistol, the combination, with the barrel-chamber and the magazine-chamber having communication with each other, and a spring-lever pivoted to the pistol, having a block or plunger pivoted thereto, arranged to move back and forth in the barrel-chamber, and a spring-block pivoted to the pistol and extending into the magazine-chamber and adapted to swing down and close the opening between the two chambers, of a trigger, a spring-arm to said trigger provided with a shoulder *q*, and an abutment *r* of the lever, substantially as and for the purpose specified.

473,809. BOILER-SCRAPER. THOMAS J. BAKER, Findlay, Ohio. Filed Oct. 24, 1891. Serial No. 409,680. (No model.)



Claim.—1. In a boiler-scraper, the combination of the stem, the wings hinged to the stem and adapted for folding thereon, and means attached to the wings for moving them in either direction and adjustably connected with the stem for fixing said wings at any angle to the stem, as and for the purpose set forth.

2. In a boiler-scraper, the combination of the stem, the wings hinged at one end of the stem, the sleeve moving upon the stem, and connection between said movable sleeve and said wings for moving them in either direction, substantially as and for the purpose set forth.

3. In a boiler-scraper, the combination of the stem, the wings hinged at their inner ends to the end of the stem and adapted to fold upon the sides of said stem, the sleeve arranged to slide upon said stem, the locking device carried by said sleeve, and the rods or arms hinged to said sleeve and to said wings at or near the outer ends.

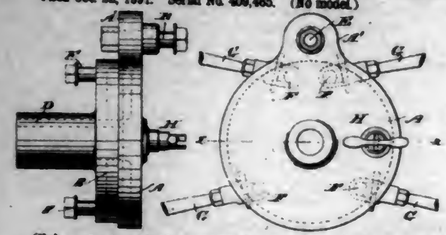
4. In a boiler-scraper, the combination of the stem, the wings hinged to said stem, and means for locking said wings at any angle to the stem, consisting of the sleeve on the stem, links connecting the sleeve and wings together, and perforations in the sleeve and stem for the reception of a pin for locking them in different relative positions, substantially as and for the purpose set forth.

5. In a boiler-scraper, the combination, with a suitable stem, of a pair of wings hinged to one end of said stem and having their lower edges formed in the arc of a circle, and means carried by a sleeve on said stem and the links connected to the sleeve and to the wings for securing the wings at any angle to the stem, substantially in the manner and for the purpose set forth.

6. In a boiler-scraper, the combination of the stem, the sleeve sliding upon said stem, stops upon said stem for limiting the inner and outer movement of said sleeve, the hinged wings carried by said stem, connection between the outer ends of said wings and the sliding sleeve, and the handle detachably secured to said stem, substantially as and for the purpose set forth.

473,810. WRIST-PLATE. James Barclay, Sioux City, Iowa.

Filed Oct. 22, 1891. Serial No. 409,465. (No model.)



Claim.—1. A wrist-plate comprising two plates or disks arranged concentrically and mounted to turn independently one of the other, one of the said disks being connected with the valve-rods and the other with the hook or eccentric rod, and a locking device, substantially as described, for connecting the two disks with each other, as set forth.

2. The combination, with two disks or wrist-plates, of which one is connected with the valve-rods and the other with the hook or eccentric rod, of a locking mechanism for connecting the two disks with each other and comprising a spring-pressed pin, a casing carrying the said pin and secured on one of the wrist-plates, and a seat held in the other wrist-plate and adapted to be engaged by the said spring-pressed pin, substantially as described.

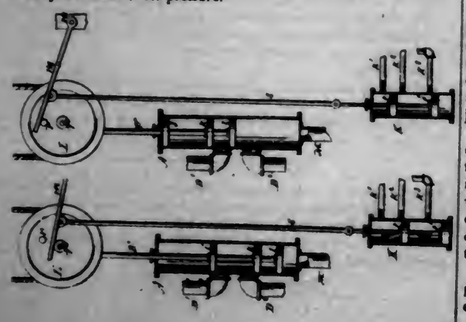
3. A wrist-plate comprising two plates or disks mounted to turn independently one of the other, one of said disks being connected with the valve-rods and the other with the hook or eccentric rod, and a locking mechanism consisting of a spring-pressed pin adapted to engage a seat provided in the other wrist-plate, a casing secured on one of said wrist-plates, a cap screwing into said casing, inclosing said spring-pressed pin, and a handle connected with the said spring-pressed pin and adapted to engage notches provided in said cap to rotate it in either direction and to hold the pin in or out of contact with the said bushing or seat, all constructed, arranged, and adapted to operate substantially as and for the purpose specified.

4. The combination, with two disks or wrist-plates, of which one is connected with the valve-rods and the other with the hook or eccentric rod, of a locking mechanism for connecting the two disks with each other and comprising a spring-pressed pin, a casing, and cap carrying the said pin and secured on one of the wrist-plates, a seat held in the other wrist-plate and adapted to be engaged by the said spring-pressed pin, and a handle connected with the said spring-pressed pin and adapted to engage notches in the said cap to hold the pin in or out of contact with the said bushing or seat, all constructed, arranged, and intended to operate substantially as set forth.

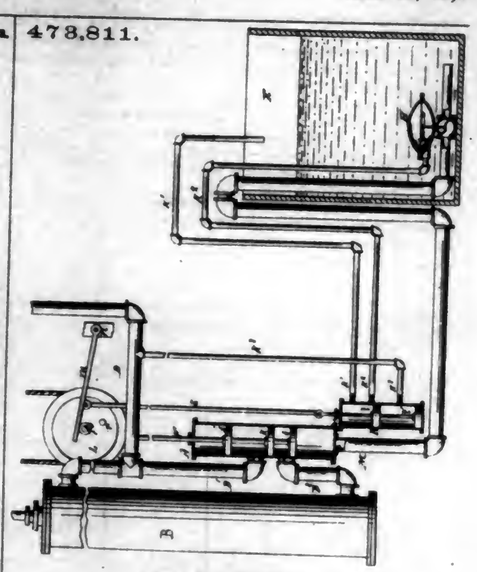
5. In a wrist-plate, the combination of the disks A and B, one of which is connected with the valve-rods and the other with the hook or eccentric rod, the pin J, the casing I, the cap N, provided with the notches N' and N², the conical offset J', the bushing K, held in the face of disk B, the handle O, and the rod L, and the notch N², formed in the face of cap N, all as set forth.

473,811. HYDRAULIC ELEVATOR. Joseph R. Barry, New York, N. Y. Original application filed Apr. 10, 1891, Serial No. 388,416. Divided and this application filed Aug. 5, 1891. Serial No. 401,789. (No model.)

Claim.—In hydraulic elevators, the combination of an operating-valve, a separate positively-operated valve in the discharge-pipe, a pipe leading from such valve in the discharge-pipe to the water-pressure, and another valve or cock operating in connection with the operating-valve, through which the valve in the discharge-pipe is operated by the main water-pressure.

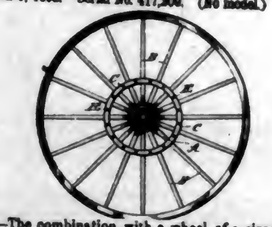


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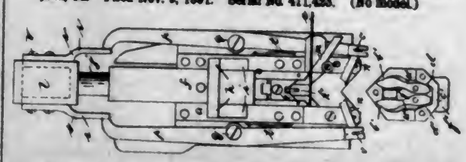
473,812. VEHICLE-WHEEL. August Bauer, Sandusky, Ohio.

Filed Jan. 6, 1892. Serial No. 417,209. (No model.)



Claim.—The combination, with a wheel, of a circular brace fastened to the wheel at a point between the hub and felly and consisting of two circular rings or flanges C C, with intermediate filling blocks or sections D, arranged between the spokes, and bolts or rivets clamping the rings and filling-blocks together, substantially as shown and described.

473,813. BOX-STAPLING MACHINE. Charles Buck, Philadelphia, Pa. Filed Nov. 9, 1891. Serial No. 411,423. (No model.)



Claim.—1. In a box-stapling machine, the staple-driving die and its plunger and head, the downwardly-extending cam-arms rigid with said head, the hollow head of the machine, the lower bending-blocks movable in and out of the path of the die in said head, the levers pivoted between their ends to the head and at their upper end bearing on and controlled by said cam-surfaces and at their lower ends loosely joined to and operating said blocks, and springs acting on the levers.

2. The main head, the plunger therein having the staple-driving die, the cam-arms adjustably secured to the upper end of the plunger, the lower guiding-blocks extending through the sides of the head and movable in and out of the path of the driving-die, and the rocking levers between their ends fulcrumed on said head and at their upper ends held bearing on said cam-arms by springs and having their lower ends removably embracing the outer ends of said blocks, as and for the purposes set forth.

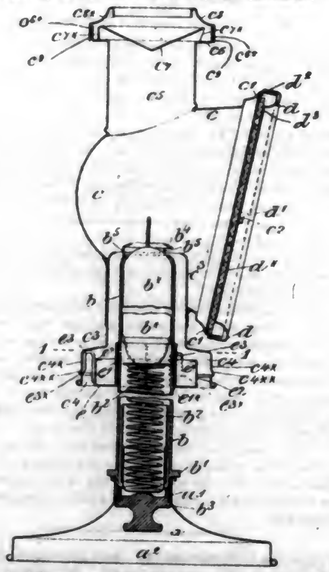
3. In a stapling-machine, the combination of the head, a driving-plunger having cam-surfaces moving therewith, means clamping said cam-surfaces in position so that they can be vertically adjusted, substantially as described, the swinging levers pivoted to said head with their upper ends held yieldingly in engagement with said cam-surfaces by springs, and the movable bending-blocks extending into the head and loosely joined to said blocks so that the blocks can move in and out of the head.

4. In a stapling-machine, a head, a reciprocating plunger having cam-surfaces, the swinging levers fulcrumed on the head and at their upper ends bearing on said surfaces, springs holding the upper ends of the levers against said surfaces, and the bending-blocks moving in and out of the head, the lower ends of said levers formed to removably straddle the outer ends of said blocks so as to control the in-and-out movement thereof, combined substantially as described.

5. In a stapling-machine, the combination of the head, reciprocating plunger therein, the cam-arms having longitudinal slots, and means for clamping said arms to the upper portion of said plunger so that the arms can be vertically adjusted, the swinging levers fulcrumed to the head with their upper ends bearing on said arms, and bending-blocks extending into the head engaged and operated by the lower ends of said levers, substantially as described.

6. In a box-stapling machine, the combination of the head, the reciprocating plunger, the levers fulcrumed to the head and operated by movement of said plunger, the bending-blocks extending into the lower portion of said head provided with lateral lugs on their outer ends, the lower ends of said levers being slotted, substantially as described, so as to straddle the outer ends of said blocks and move the blocks in and out, as described.

473,814. CANDLE-LAMP FOR USE IN PHOTOGRAPHIC DARK-ROOMS. Herbert A. Benham and William H. Tobson, London, England. Filed July 10, 1891. Serial No. 399,023. (No model.)



Claim.—1. A lamp comprising a tube or stem, a hood, and a removable and replaceable foot or base adapted to fit either upon the tube or stem or upon the hood, substantially as described and shown.

2. A lamp comprising a tube or stem, a hood having a ring or cap, and a removable and replaceable foot or base adapted to fit either upon the tube or stem or upon the ring or cap of the hood, substantially as described and shown.

3. The combination of the tube or stem having a bead or shoulder, the hood having a ring or cap formed with an outer rim, and a removable and replaceable foot or base having a socket receiving the tube or stem and supporting it by means of the bead or shoulder thereon and provided with a rim adapted to fit upon the rim of the ring or cap of the hood, substantially as described and shown.

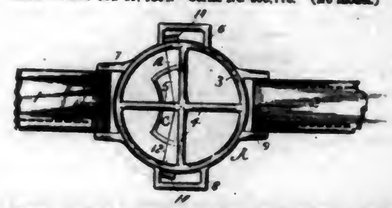
4. The combination, with a tube or stem having a foot or base and a hood having a short tube of large diameter, provided with an enlargement at its lower end, of a trough having an inner wall adapted to slide on the tube or stem and an outer upwardly-extending wall, and means by which the short tube is supported on the trough, so as to provide an air-space between the outer wall of the latter and the enlargement around and over the trough, substantially as described.

5. The combination of a foot or base, a tube or stem, a hood having a short descending tube of large diameter formed with an enlargement, having a wall provided with an annular groove, and a trough having an inner wall sliding on the lamp tube or stem and an outer wall provided with distance-pieces fitting against the wall of the enlargement and engaging the annular groove thereof, substantially as described and shown.

6. The combination of the foot or base, the tube or stem, the annular trough formed with an inner split wall and an outer wall having a horizontal flange and provided with distance-pieces, and the hood having a short tube of large diameter formed with an enlargement at its lower end, provided with an annular groove to receive the lower ends of the distance-pieces, the trough and enlargement providing an air space or chamber around and over the trough, substantially as described and shown.

7. The combination of a foot or base, a tube or stem, and a hood provided with a chimney consisting of a short tube of large diameter, having an enlargement at its upper end formed with a shoulder and rim, a scalloped ring having an inverted-cone deflector, and a dwarf-cap formed with a rim and central opening, substantially as described and shown.

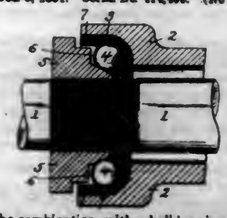
473,815. TUG-SECURING DEVICE. Albert Bennett, Quincy, Mich. Filed Oct. 15, 1891. Serial No. 408,773. (No model.)



Claim.—1. In a tug-securing device, substantially as described, the combination, with the main frame, the pivot-post rising from the center thereof, and the keeper-plate connected to the main frame, of the swinging catches pivotally connected to the pivot-post and having the hook branches at their free ends for engaging the eyes of the tugs or traces, as and for the purpose set forth.

2. In a tug-securing device, substantially as described, the combination, with the main frame having brace-bars, the pivot-post rising from said frame, and the segmental concavo-convex keeper-plate formed integral with the circle of the main frame and tapered toward its free end and having said end curved inwardly, of the swinging catches pivotally connected to the pivot-post and having the upwardly and inwardly curved hook branches at their free ends for engaging the eyes of the tugs or traces, substantially as specified.

473,816. BALL-BEARING FOR BICYCLES. William H. Benn, Chicago, Ill., assignor to the Chicago Sewing Machine Company, same place. Filed Dec. 9, 1891. Serial No. 414,499. (No model.)



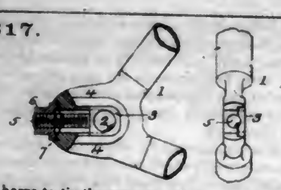
Claim.—1. The combination, with a ball-bearing constructed, essentially, as herein described, of the ball-holder 6, having an annular disk-shaped body and a series of bent spring-fingers 7, substantially as set forth.

2. The combination, with a ball-bearing constructed, essentially, as herein described, of the ball-holder 6, having an annular disk-shaped body formed with an annular depression or track, and a series of bent spring-fingers 7, substantially as set forth.

473,817. CHAIN ADJUSTMENT FOR BICYCLES. William H. Benn, Chicago, Ill., assignor to the Chicago Sewing Machine Company, same place. Filed Dec. 9, 1891. Serial No. 414,498. (No model.)

Claim.—1. In a bicycle or like vehicle, the combination, with the rearwardly-extending guide-horns 4 4 on the main frame, of the head or box 3, having a screw-threaded extension 5, and a cap-nut 6, screwing upon such extension and having an annular lip 7 to engage the

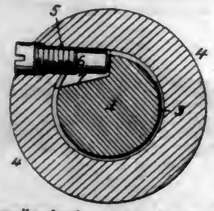
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rear ends of the horns to tie the same together against a tendency to spread apart, substantially as set forth.

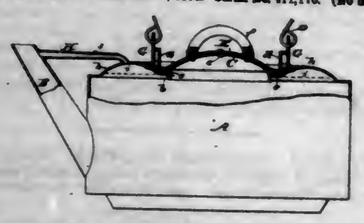
2. In a bicycle or like vehicle, the combination, with the rearwardly-extending guide-horns 4 4 of the main frame, of the head or box 3, having a screw-threaded extension 5, and a cap-nut 6, screwing upon such extension and having an annular lip 7, having a V-shaped section to engage the rear ends of the horns to tie the same together against a tendency to spread apart, substantially as set forth.

473,818. HUB AND SHAFT COUPLING FOR BICYCLES. WILLIAM H. BIRNS, Chicago, Ill., assignor to the Chicago Sewing Machine Company, same place. Filed Dec. 9, 1891. Serial No. 414,500. (No model.)



Claim.—In a coupling for the pedal-shaft of bicycles and like uses, the combination of the shaft 1, provided with a collar or stop 2, a screw-threaded portion 3, and a peripheral recess 7, with the hub 4, having a screw-threaded bore and the tangent set-screw 6, substantially as set forth.

473,819. TEA-KETTLE. JOHN BLACK and FRED. C. A. NATION, South Chicago, Ill. Filed Nov. 7, 1891. Serial No. 411,170. (No model.)



Claim.—A tea-kettle or other vessel provided with transversely-apertured ears G, provided on their inner faces with lugs or projections, the upper edges of which form supports or rests for the bail when swung down and the lower edges being spaced above the top or breast of the vessel, a cover having projections adapted to look under said lugs or projections, and a bail the ends of which are pivotally connected with the said ears, substantially as set forth.

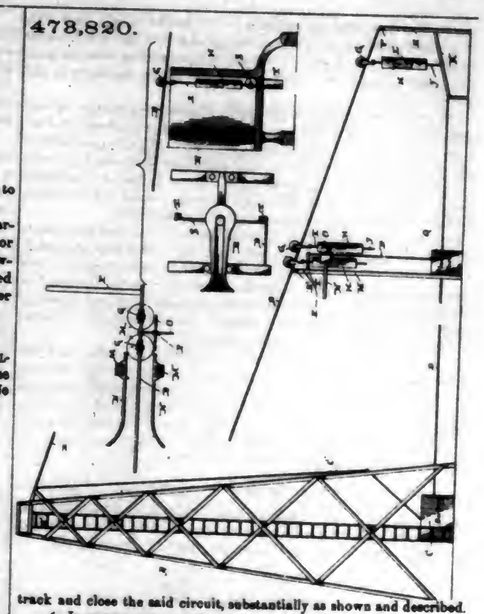
473,820. AUTOMATIC TRANSPORTER AND EXPLODER FOR EXPLOSIVES FOR AIDING RAIN-FALL. LAURUS L. BROWN, Potmos, Kans. Filed Jan. 5, 1892. Serial No. 417,084. (No model.)

Claim.—1. In an apparatus of the character described, the combination, with a track and an electrical circuit, of a bomb adapted to be carried on said track and close the said circuit, whereby the bomb is exploded, substantially as shown and described.

2. In an apparatus of the character described, the combination, with an inclined track which forms an electrical conductor, and which is connected with the source of supply at its upper end, and a second conductor extending outward from the source of supply and in a line with the track of a bomb, adapted to move on the said track and connect the outer ends of the said conductors, whereby the circuit is closed and the bomb exploded, substantially as herein shown and described.

3. In an apparatus of the character described, the combination, with a tower, a track, vertical supports, arms projecting outward therefrom, and an electrical circuit, of a bomb adapted to travel on the said

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track and close the said circuit, substantially as shown and described.

4. In an apparatus of the character described, the combination, with the inclined track-conductor B and the conductor D, both of which are connected to a common electrical source, and a bar at the outer end of the conductor D, of a bomb carried by a trolley on the said track and a rod extending through the bomb, having a reduced portion, the lower projecting end of said rod being adapted to engage the said bar when the trolley has reached the lower end of the track, whereby the circuit is closed, the rod passing through the bomb heated, and the explosive ignited, substantially as shown and described.

5. In an apparatus of the character described, the combination, with an inclined track, a support therefor, and a circuit, of a bomb adapted to be carried on said track and close the circuit and a means for moving the bombs at regular intervals on the track, substantially as shown and described.

6. In an apparatus of the character described, the combination, with the inclined track, the circuit, and the bomb moving on the track and adapted to close the circuit, of a vertical support in a line with the said track, guides secured to said support, between which the bomb passes, a shaft journaled to one side of the track, blades extending outward from said shaft and into the line of travel of the bomb, and a means for partially rotating the said shaft at predetermined times, substantially as shown and described.

7. The combination, with an inclined track and an electrical circuit, of a mortar arranged at the lower end of the track and a bomb adapted to be carried on said track and which enters the motor, where it is exploded by closing the said circuit, substantially as shown and described.

473,821. FLUE-CLEANER. MICHAEL J. CARRE, Bingham, Utah. Filed Dec. 22, 1891. Serial No. 415,844. (No model.)

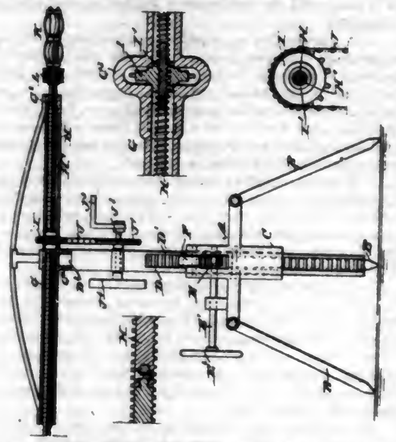
Claim.—1. The scraper K, comprising a body portion and a series of blades K', each secured at its ends and middle to the said body and bowed outwardly at both sides of its center the longitudinal edges of the blades at one end of the scraper being curved laterally in an opposite direction to those at the opposite end, substantially as set forth.

2. The combination, with a tripod provided with a vertically-adjustable post having a transverse casing on its upper end provided with a nut, of a feed-screw passing through said nut and carrying a scraper at one end, and means for rotating the said screw, substantially as set forth.

3. In a flue-cleaner, the combination, with a tripod, of a post fitted to slide in the said tripod and provided with gear-teeth, a pinion in mesh with the said teeth, a shaft held to turn on the said tripod and carrying the said pinion, a casing arranged on the upper end of the said post, a feed-screw mounted to turn in the said casing and engaging a nut therein, and a scraper held on the outer end of the said feed-screw, substantially as shown and described.

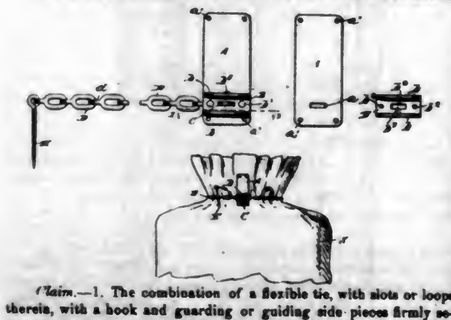
4. In a flue-cleaner, the combination, with a tripod, of a post fitted to slide in the said tripod and provided with gear-teeth, a pinion in

mesh with the said teeth, a shaft held to turn on the said tripod and carrying the said pinion, a casing arranged on the upper end of the said post, a feed-screw mounted to turn in the said casing and engaging a nut therein, a scraper held on the outer end of the said feed-screw, and a circular brush attached to the said feed-screw in the rear of the said scraper, substantially as shown and described.



5. In a flue-cleaner, the combination, with a tripod, of a post fitted to slide in the said tripod and provided with gear-teeth, a pinion in mesh with the said teeth, a shaft held to turn on the said tripod and carrying the said pinion, a casing arranged on the upper end of the said post, a feed-screw mounted to turn in the said casing and engaging a nut therein, a scraper held on the outer end of the said feed-screw, a circular brush attached to the said feed-screw in the rear of the said scraper, a sprocket-wheel held loosely on the said feed-screw rod and provided with a key engaging a keyway in the said screw-rod, and means for imparting a rotary motion to the said sprocket-wheel, substantially as shown and described.

473,822. TIE FOR BAGS, BALES, AND BUNDLES. EDWIN Z. CARPENTER, Glenville, executor of Daniel Edgar Ladd, deceased, assignor to Charles H. C. Morris, Jarus Wheeler, and Earl G. Wheeler, Amsterdam, N. Y. Filed Nov. 23, 1891. Serial No. 412,890. (No model.)



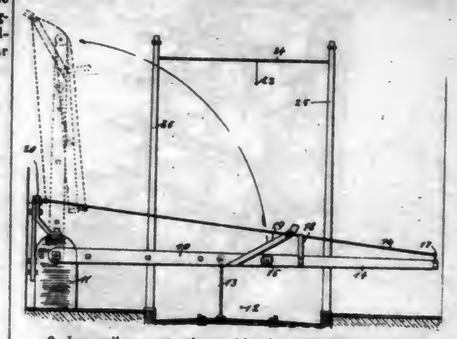
Claim.—1. The combination of a flexible tie, with slots or loops therein, with a hook and guarding or guiding side pieces firmly secured to a plate beneath said hook and side pieces, substantially as described.

2. The combination of a flexible looped or slotted tie with a hook having guards or guides on either side thereof and secured thereto and holes through said guards or guides for a sealing or locking device, substantially as described.

473,828. RAILWAY-GATE. JOHN S. CHAMBERS, Jr., Allegheny, Pa. Filed July 1, 1891. Serial No. 398,096. (No model.)

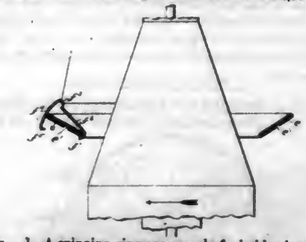
Claim.—1. In a railway-gate, the combination, with a pivoted main arm, of a supplemental arm pivoted to the main arm, an inclined guide secured to the main arm and projecting over and beyond the pivot of the said arms, and a cable having one end secured to the free end of the supplemental arm, passed through the said guide, and at its other end secured to the support at the pivoted end of the main arm, substantially as described.

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2. In a railway-gate, the combination, with the pivoted main arm 10, of the supplemental arm 14, pivoted to the main arm, the inclined guide 19, secured to the main arm and provided with the friction-rollers 22, the guide 18, secured to the supplemental arm, and the cable 16, having one end secured to the free end of the supplemental arm, passed through the guide 18 between the rollers of the guide 19, and its other end secured to the brace 20 on the support 11, to which the main arm is pivoted, substantially as herein shown and described.

473,824. SPINNING RING AND TRAVELER. CHARLES H. CHAPMAN, Groton, Mass. Filed May 2, 1891. Serial No. 391,389. (No model.)



Claim.—1. A spinning-ring composed of a holder-base having upturned lips, a ring-race constructed with a groove, and a neck constructed with slits in its lower edge to adapt it to be sprung upon such lips, and thereby secure it and the base, and also constructed with slits in its upper edge, whereby it is adapted to be sprung into the groove of the ring-race to unite them, substantially as described.

2. A spinning-ring traveler having a hook at one end, a straight inclined shank terminating at its upper end in a yarn-eye, a curved spring portion whose center of motion is the aforementioned hook, and a stop-hook at the end of said curved portion, substantially as described.

3. An inclined ring-race flaring outwardly, in combination with a traveler having a hook to engage the inner and lower end of the race and vibrating thereupon as a lever upon its fulcrum and provided with an elevated yarn-receiving eye which has a to-and-fro motion relatively to the spindle, and also provided with a curved spring portion having a hook to engage the outer and under edge of the ring-race, substantially as described.

4. A traveler constructed with an upwardly-inclined shank, a hook at the lower end of said shank to engage the inner edge of the ring-race, upon which the traveler swings inwardly and outwardly in relation to the spindle as a lever upon its fulcrum, a stop-hook to engage the outer edge of the ring-race, and a yarn-eye at the upper end of said shank, by which the yarn is prevented from slipping down upon the shank when the traveler is thrown outwardly by its centrifugal force, in combination with a ring-race upon which the said traveler can swing inwardly and outwardly in relation to the spindle to an angle of forty-five or more degrees toward the horizontal, substantially as described.

473,825. RACK. JAMES H. CRAWFORD, Afton, Iowa. Filed May 6, 1891. Serial No. 391,781. (No model.)

Claim.—1. In a show-rack, the combination of the base, the standards erected thereon and suitably braced, arms F, projecting beyond the front standards and having formed in their upper edges concaved recesses G, open bearings H, secured in said recesses, and rollers I, journaled in the open bearings H and extending between the supporting-arms, whereby said rollers will be arranged in a concave arc and will

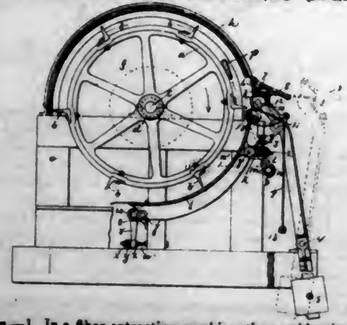
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accommodate rolls of material shorter or longer than the rollers, substantially as described.

2. The combination of the supporting-frame, arms F, projecting forwardly therefrom and each having a concave recess in the upper edge of its forward end, bearings secured in said recesses, rollers I, extending between said arms and journaled in said bearings and arranged in an arc, a rigid knife M, extending between the arms F and arranged below and in front of the forward roller and having its upper edge sharpened, and spring-arms K, extending forward from the frame and carrying rollers L at their forward ends, said rollers L being adapted to normally press upon the upper front sides of the rolls of goods and prevent them being pulled off the supporting-rollers, as and for the purpose described.

473,826. MACHINE FOR EXTRACTING FIBER. FRANK DARKIN, Passaic, N. J. Filed July 6, 1891. Serial No. 398,624. (No model.)



Claim.—1. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, of the pivoted feeding-stand and holding-clamp located in front of and movable toward and from said drum, substantially as described.

2. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, of the pivoted feeding-stand and holding-clamp located in front of and movable toward and from said drum, and the roll over which the leaves enter between the beaters and the said apron, substantially as described.

3. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, having pivotal support of one end, of the feeding-stand located in front of and movable toward and from the drum, and connections between said apron and feeding-stand, whereby the end of the apron may be adjusted by the movement of the feeding-stand, substantially as described.

4. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, having pivotal support of one end, of the feeding-stand located in front of and movable toward and from the drum, and adjusting-supports for one end of the apron, and connections between said supports and feeding-stand, whereby the end of the apron may be adjusted by the movement of the feeding-stand, substantially as described.

5. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, of the feeding-stand and holding-clamp located in front of and movable toward and from said drum, the roll over which the leaves enter between said drum and said apron, and the flexible feeding-apron attached to said stand and movable forward and backward over said roll in unison with the movements of the feeding-stand, substantially as described.

6. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, of the pivoted feeding-stand and holding-clamp located in front of and movable toward and from said drum, the roll over which the leaves enter between the beater and said apron, the weighted feeding flexible apron working over said roll in unison with the movements of the feeding-stand, and the guide-roll for the said flexible apron below the feed-roll, substantially as described.

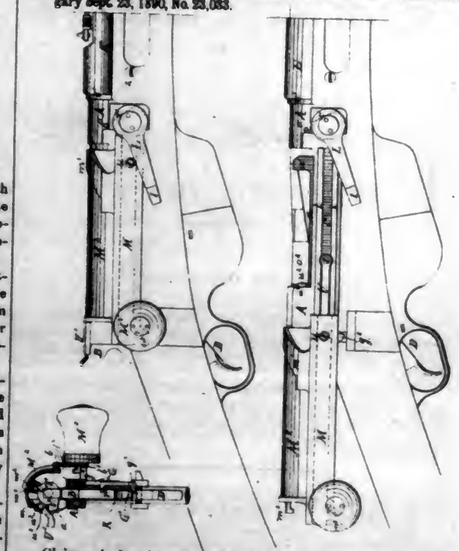
7. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum, the apron whereon the fibers are dressed, and the feeding-stand, of a duplex holding and gripping clamp, one pair of the jaws being adapted for holding the leaves by an undressed portion and the other part for holding by the dressed fibers, substantially as described.

8. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum, the apron whereon the fibers are dressed, and the feeding-stand, of a duplex gripping and holding clamp, one pair of the jaws being adapted for holding the leaves by an undressed portion against the pull directly toward the drum and the other pair adapted to hold by a dressed portion of the fiber and against the pull in the reverse direction and over the axis of the movable jaws, substantially as described.

9. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the feeding-stand, of a duplex gripping and holding clamp, one pair of the jaws adapted to hold the leaves by an undressed portion and the other pair adapted to hold by a dressed portion of the fibers, and said clamp mounted on a slideway for shifting laterally in front of the drum, substantially as described.

10. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the feeding-stand, of the apron whereon the fibers are dressed, having the flared opening in the end for the entry of the butt-ends of the leaves, substantially as described.

473,827. REPEATING-FIREARM. LOUIS M. R. DAUDETEAU, Vannes, France. Filed June 19, 1890. Serial No. 356,023. (No model.) Patented in France July 30, 1888, No. 192,109; in Belgium July 31, 1888, No. 82,748; in Switzerland May 8, 1890, No. 2,210; in England June 4, 1890, No. 8,672; in Spain July 17, 1890, No. 10,827, and in Austria-Hungary Sept. 23, 1890, No. 23,033.



Claim.—1. In a breech-loading firearm, the combination of a receiver provided with a groove a^3, and a breech-bolt, with an operating-lever M, having a curved plate to cover the bolt, the said plate provided with a rim m to engage in the groove a^3, substantially as and for the purpose set forth.

2. In a breech-loading firearm, the combination of a receiver, a breech-bolt having a firing-pin, and a hammer therefor, with an operating-lever M, engaging with the breech-bolt and provided with a cover-plate M^3, a projection m^3 on the under side of the cover-plate to cock the hammer, and a groove in the projection, and a projection on the firing-pin adapted to enter the said groove to guide the firing-pin, all substantially as set forth.

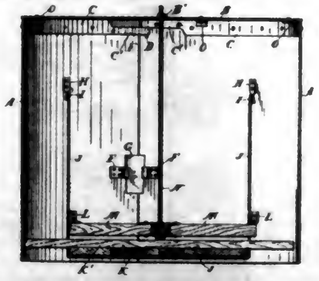
3. In a breech-loading firearm, the combination of a receiver carrying the breech-bolt and provided with an external groove l^x, and a spring in the groove provided with a head, with an operating-lever provided with a screw u, projecting into the said groove and adapted to strike against the head on the spring to limit the backward movement of the lever, all substantially in the manner and for the purposes set forth.

4. In a breech-loading firearm, the combination of a receiver, and a breech-bolt having a firing-pin therein, with an operating-lever M, a hammer B, and a spring-controlled safety-bolt pivoted to the receiver and capable of being sprung between the hammer and the firing-pin, as and for the purposes set forth.

5. In a firearm, the firing mechanism consisting of a trigger, a hammer, a spring to act upon the hammer, a pivoted sear-nose engaging in a notch in the hammer, a pivoted sear provided with three projections, one g' between the sear-nose and the trigger adapted to be acted upon by the trigger and engage with the sear-nose, another g^3, acted upon by a moving part of the gun to control the movement of the sear, and the last g^3 to engage with the hammer, all substantially in the manner and for the purposes specified.

6. In a breech-loading gun, the combination of a receiver, provided with a groove a, and a movable breech-bolt having a notch l^6, with inclined edges, a firing-pin in the breech-bolt provided with a head having a projection l^4 with inclined edges to engage with the notch l^6, a projection l^5 to engage in the groove a, and a projection l', with an operating-lever having a groove m^x, in which the projection l' is guided after the projection l^5 leaves the groove in the receiver, substantially as and for the purpose set forth.

473,828. DEVICE FOR CEMENTING WELLS AND CISTERNS. WILLIAM H. H. DAVIS, Oakfield, Mich. Filed July 23, 1891. Serial No. 400,426. (No model.)



Claim.—1. The combination, with a forming-cylinder for use in cementing wells and cisterns, of a partial top cover having a cut-away portion, substantially as and for the purpose described.

2. The combination, with the forming-cylinder A, of the partial top cover B, having a cut-away portion provided with flanged edges B', substantially as described.

3. The combination, with the forming-cylinder A, having an extensible and reducible top band C, of the partial top cover B, having stays O and a cut-away portion provided with flanged edges B', substantially as described.

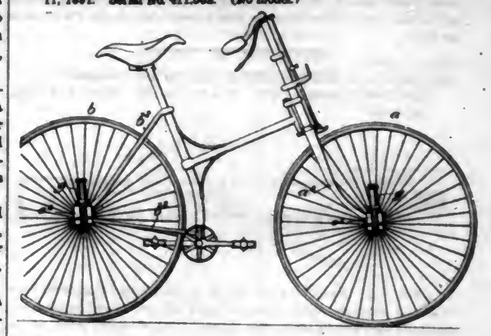
4. The combination, with the forming-cylinder A, of the extensible and reducible top band C, the wedge-blocks F, secured in the lower portion of the cylinder and having grooves F' in the center of the acting faces of said blocks, and the wedge G, engaged in said grooves but out of contact with the cylinder, substantially as described.

5. The combination, with the forming-cylinder A, of the hangers H, secured to the inside of the cylinder, the bails J, suspended from said hangers, and a platform supported by the bails, substantially as described.

6. The combination, with the forming-cylinder A, of the partial top cover B, the bails J, suspended in said cylinder, and the platform K K', supported by said bails, substantially as described.

7. The combination, with the forming-cylinder A, having an extensible and reducible top band C, grooved wedge-blocks F, and wedge G, of the partial top cover B, the hangers H, secured to the inside of the cylinder, the bails J, suspended from said hangers, and a platform supported by said bails, substantially as described.

473,829. BICYCLE. JAMES DIAMOND, Aston, near Birmingham, assignor to Richard Edmund King, Birmingham, England. Filed Nov. 11, 1891. Serial No. 411,862. (No model.)



Claim.—1. The combination, with the fork of a bicycle having frames c, of tubes or hollow cylinders g, formed distinct from and independent of the frames and detachably mounted thereupon, the axle f, the blocks d, fixed on the end of the axle, sliding vertically in the frames, and each provided with a rod d^3, having a piston d^5, located in one of the tubes or cylinders, and a spring A, arranged in each tube or cylinder and acting on the piston therein, substantially as described.

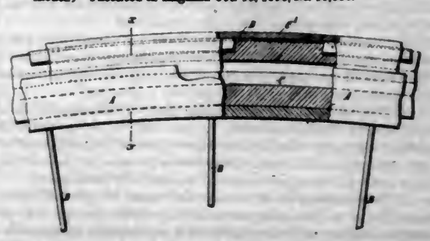
2. The combination, with the fork of a bicycle having frames c, of the tubes or cylinders g, mounted on the frames, the adjustable plates c^2, arranged in the frames, the axle f, the blocks d, provided with rollers bearing against the adjustable plates, the rods d^3, secured to the blocks and provided at their upper ends with pistons d^5, arranged in the tubes or cylinders, and the springs A, located in the tubes or cylinders and acting on the pistons, substantially as described.

473,830. TRACE-CARRIER. HENRY C. DOBBS, Macksville, Kans. Filed Nov. 30, 1891. Serial No. 413,529. (No model.)



Claim.—The herein-described improved trace-carrier, the same consisting of the opposite longitudinal side bars, each terminating near its ends in perforations, those perforations of one side bar being threaded, hooks rising from the side bars in rear of their centers and being upwardly, inwardly, and downwardly curved and terminating at their ends in forwardly-disposed parallel branches 7, and the headed bolts constituting connecting end bars, said bolts being passed through the plain perforations of one of the side bars and having their ends threaded in the perforations of the companion side bar, substantially as specified.

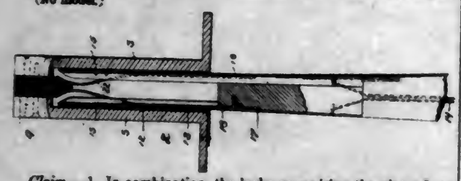
473,831. TIRE FOR WHEELS OF VELOCIPEDES. JOHN B. DUNLOP, Belfast, assignor to the Pneumatic Tyre and Booth's Cycle Agency, Limited, Dublin, Ireland. Filed Dec. 18, 1890. Serial No. 375,160. (No model.) Patented in England Oct. 10, 1890, No. 16,060.



Claim.—The herein-described elastic tire for the wheels of vehicles, which consists of an inner elastic part of india-rubber C, an outer elastic part C', having a cavity or recess, and a continuous strip or band

D, of linen, cloth, or other non-elastic material, fitted into and secured in the cavity or recess of the outer elastic part C, the sides of said outer elastic part C extending on either side of the non-elastic part D and suitably secured to the inner elastic part C, as and for the purpose set forth.

473,832. ELECTRIC SIGNAL FOR RAILWAY-TRAINS. LAWRENCE DUNN, Fort Smith, Ark. Filed Nov. 30, 1891. Serial No. 413,533. (No model.)

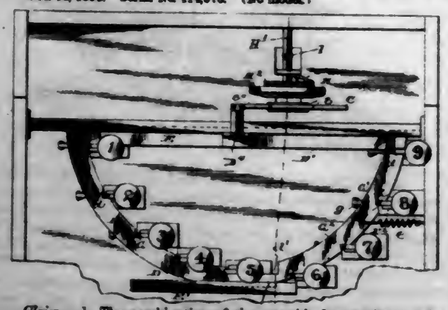


Claim.—1. In combination, the jacks comprising the plates 5, to which the electrical conductors are attached, an insulating-plug between the connected ends of said plates having a conical point, and a plug having contact-pieces connected to the coupling-wires 19, which pieces are adapted to form electrical connections with the plates 5, and the spring contact-plates 22, arranged to be separated by the conical point of the insulating-piece, substantially as described.

2. In combination, the jacks comprising the plates 5, having the projections 15, insulating-pieces between the connected ends of the plates 5, having a conical point, the plug having the contact-plates 18, connected to the coupling-wires 19 and having openings fitted to the projections 15 on the jacks, and spring-contacts 22, arranged to be separated by the conical ends or the insulating-piece, whereby the plug will be securely held in place, substantially as described.

3. In combination, the jacks comprising the conducting-plates 5, the spring-contact 13, the contact-plate 40, secured to one plate and extending over the other and normally out of contact therewith, operating connections to said plate 40, and a plug having contacts and carrying coupling-wires 19, said plugs being adapted to the jacks, substantially as described.

473,833. CALCULATOR. HUGH V. DUNN, Huntington, W. Va. Filed Dec. 11, 1891. Serial No. 414,673. (No model.)



Claim.—1. The combination of the movable frame with a series of pivoted frame-shifters G G, adapted to engage the edges of and move the frame, and a series of vertically-movable key-stems, and connections between the stems and frame-shifters, substantially as specified.

2. The combination of the movable frame formed with a curved front portion having a series of bearing-notches in its outer edge at one side and in its inner edge at the other side with a series of movable cams respectively engaging said bearing-notches and key-stems for operating said cams, substantially as described.

3. The combination of a movable frame and pivoted cam frame-shifters G, having stops G^3, and means for arresting the movement of said stops with the support for said shifters, and keys and connections for operating said shifters, all substantially as specified.

4. The combination of the rotatable shaft, an indicating-dial thereon, a movable frame, mechanism for imparting rotary movement to the shaft from said frame, and a series of pivoted frame-shifters G G, and the key-stems and connections between the same and said shifters, constructed and arranged to operate substantially as described.

5. The combination of the movable frame, the pivoted rocking frame-shifters G, the spring-controlled key-stems, and the links pivotally connecting said stems and shifters, substantially as specified.

6. The combination, with the frame D, constructed substantially as described, of the frame-shifters G G, having stops G^3, and the key-stems and connections for operating said shifters, substantially as described.

7. The combination of the dial, its shaft and ratchet-wheel, the movable frame D, the rack-bar C, connected to said frame and engaging said ratchet-wheel, the frame-shifting cams, and the key-stems for operating the same, substantially as specified.

8. The combination of the dial, its shaft and ratchet-wheel, the horizontally-movable frame, the ratchet-bar pivotally connected to said frame and engaging said ratchet-wheel, the series of pivoted rocking frame-shifters engaging the edges of said frame, the key-stems and the link connections between said stems and frame-shifters, and springs for returning the frame to normal position, substantially as and for the purpose described.

9. The combination of the movable frame with the slotted tubes arranged below the same, the springs therein, the key-stems playing in said tubes, and the cams operated by said stems, adapted to shift the frame, substantially as specified.

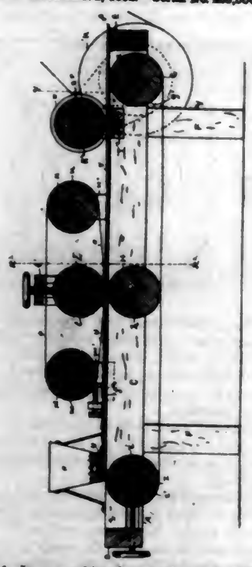
10. The combination of the movable frame with the slotted tubes below the same, the frame-shifters pivoted to the upper ends of said tubes, the key-stems playing in said tubes, and the link connections between the lower ends of said stems and the frame-shifters, as and for the purpose described.

11. The combination of the registering-dials, the movable frame D, the ratchet-bar C, the series of tubes F, the pivoted frame-shifters G, and the key-stems for operating said shifters, substantially as specified.

12. The combination of the horizontal frame D, the grooved guides therefor, the series of frame-shifters G, pivoted below said frame, the key-stems, and the link connections for operating the frame-shifters from the stems, substantially as set forth.

13. The combination of the registering-dials, the horizontally-movable plate D, constructed substantially as described, the ratchet-bar pivoted to the frame and engaging a ratchet-wheel on the first dial-shaft and the spring for controlling said frame, the series of frame-shifter supports below the frame, the key-stems guided by said supports, the frame-shifting-cams, and the connections between said cams and key-stems, substantially as specified.

473,834. FUEL PRESS AND CUTTER. GUSTAVE FRANK, New York, N. Y. Filed Mar. 3, 1892. Serial No. 423,530. (No model.)

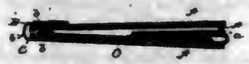


Claim.—1. In a machine for pressing and cutting artificial fuel, the roller g', the roller H, and adjustable roller I, all journaled to the frame of the machine in the same horizontal plane, over all of which passes the endless apron J, combined with the belt O, and the adjustable pressure-roller L, substantially as and for the purpose set forth.

2. In a machine for pressing and cutting artificial fuel, the fixed presser-roller H and the adjustable presser-roller L, journaled to the machine, as described, in combination with the endless apron J, substantially as and for the purpose set forth.

3. In a fuel pressing and cutting machine, the arrangements of the following instrumentalities: the adjustable roller I and roller g', the hopper P, the adjustable roller M and fixed roller N, the endless apron O, passing around rollers M and N, the fixed presser-roller H, the adjustable presser-roller L, the circular cutters S on shaft S^4, the sleeves R^2, the presser-block T^4, all of said rollers keyed on suitable shafts journaled, as described, in bearing on the frame of the machine and revolved by suitable pulleys and belting, all arranged substantially as and for the purpose set forth.

473,835. BILL AND LETTER HOLDER OR FILE. THOMAS E. GOULD, Brooklyn, N. Y. Filed Aug. 13, 1891. Serial No. 402,568. (No model.)



Claim.—1. The bill and letter holder or file having the flexibly-connected leaf adapted to form an extension of one lid or cover, substantially as set forth.

2. The bill and letter holder or file having its lids or covers provided with the folding and unfolding back, substantially as set forth.

3. The bill and letter holder or file having its lids or covers provided with the back composed of inflexible strips flexibly connected together and to said lids or covers and clipped or clasped in a folded position, substantially as specified.

4. The bill and letter holder or file having the back composed of inflexible strips covered by a flexible material and flexibly connected together and to the lids or covers of said file or holder, and the clips or clasps of an approximately U shape and each having an arm pivoted to one strip and adapted to engage the other strip and the flexible covering, substantially as set forth.

5. The letter and bill holder or file comprising the lids or covers, one having the flexibly-connected leaf, the back consisting of the strips of wood secured to the leather covering, in turn secured to said lids or covers, and the approximately U-shaped clips or clasps, each having an arm pivoted to one of said strips of wood and adapted to engage the other strip of wood with the covering of leather, substantially as set forth.

6. The letter and bill holder or file having its lids or covers provided with the flexible back, in combination with the clasps or clips of an approximately U shape, each having an arm pivoted to one strip or section of the back and adapted to engage the other strip or section of the back and the flexible covering, said clips or clasps being automatically held in position by springs, substantially as set forth

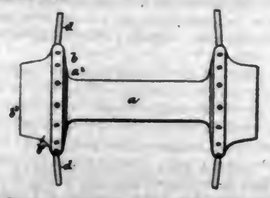
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473,836. FLOWER-POT. HENRY GOODACRE, Lexington, Ky. Filed Oct. 11, 1890. Serial No. 367,734. (No model.)



Claim.—The herein-described vessel, the same comprising a body divided vertically into sections S, each section having its lower inner corners cut away, as at C, and having a projection P at its lower end on its outer face, means, substantially as described, for detachably connecting the upper ends of the sections, the bottom B, and the upwardly-extending flange F thereon having an inwardly-projecting edge I, detachably engaging said projections, as and for the purpose set forth.

473,837. HUB. RICHARD GREEN, Birmingham, England. Filed Nov. 23, 1891. Serial No. 412,837. (No model.) Patented in England Sept. 5, 1891, No. 15,001.

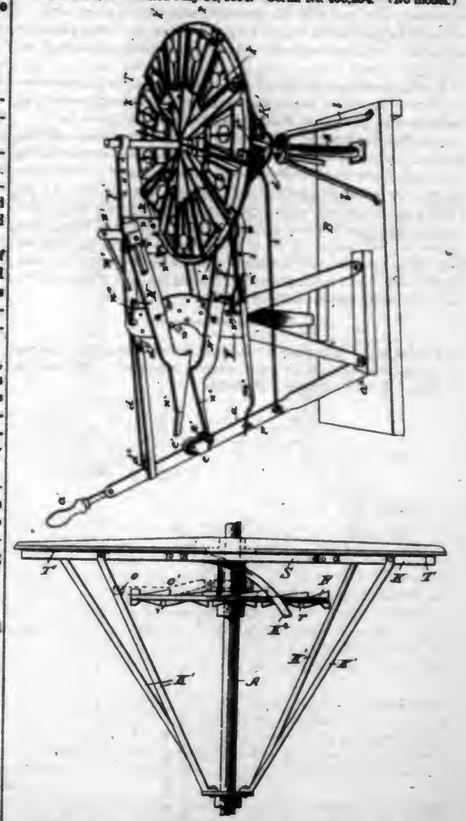


Claim.—1. In a hub or wheel-center, the combination of a waist portion *a*, having enlarged ends *a'* a^3, with the heads *b*, having annular flanges b^3, fitting over said enlarged ends and pierced for the passage of spokes, substantially as described.

2. In a hub or wheel-center, the combination, with heads *b*, having annular flanges b^3, surrounding a soft-metal bushing, of spokes passing through unthreaded holes in the said flanges and into threaded holes in the bushing, substantially as described.

3. The combination, with the heads of a wheel-center and inner screwed ends of spokes, of tapped holes c^3, made within soft-metal parts, and plain holes b^3, made through the outer casing of the head, substantially as described and set forth.

473,838. MACHINE FOR PITTING FRUIT. THOMAS HARDING, San José, Cal. Filed July 21, 1891. Serial No. 400,254. (No model.)



Claim.—1. In a fruit-pitting machine, the combination of two knives adapted to cut the fruit from opposite sides, and a rotary table situated between said knives and provided with trays having separable parts, substantially as set forth.

2. The combination, with a revolving table having a series of receptacles or means for holding the fruit, of cutting devices situated above and below the table adapted to operate upon the fruit as the latter is presented by the movement of the table, mechanism connecting said table with the cutting devices, and a latch for securing the table, also connected with and adapted to be operated by said mechanism, substantially as set forth.

3. The combination, with the upper and lower knives, and means for forcing the pit from the parts of the cut fruit, of the receptacles or trays for the fruit, made in parts held in frames mounted in the latter on vertical pivots and provided with springs, whereby they are enabled to yield in horizontal planes to permit the passage of the pit, substantially as set forth, the pivots being situated at or near the ends of the trays.

4. The combination, with the revolving table provided with a series of receptacles for the fruit, of the upper and lower knives *n n'*, levers carrying said knives and provided with inclines or cam-surfaces, and means for causing the oscillation of said levers to operate upon the fruit, substantially as set forth.

5. The combination, with the revolving table provided with a series of receptacles for the fruit, of the upper and lower knives *n n'*, levers carrying said knives and provided with inclines or cam-surfaces, and means for causing the oscillation of said levers to operate upon the fruit, one of said knives having a longer movement than the other and adapted to force out the pit of the fruit, substantially as set forth.

6. The combination of a revolving table provided with a series of tilting receptacles for the fruit, the knives *n n'*, levers carrying said knives and provided at their rear ends with inclines or cam-surfaces, a projection *c*, adapted to enter between said inclines to operate the knives, a bar or part *a*, carrying said projection, means for throwing the projection out of line with said inclines, and mechanism for revolving said table, substantially as set forth.

7. The combination, with the knives, of the tray having separable parts l^2, provided with the points l^3, substantially as set forth.

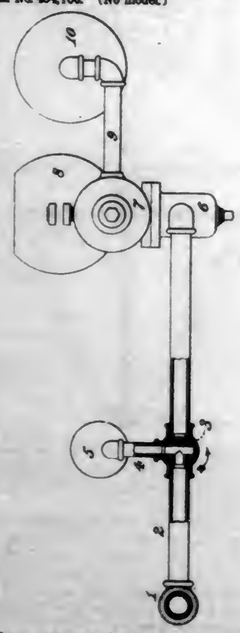
8. The combination, with the knife *n*, of the tray having separable parts l^2, and the wedge n^3, carried with the knife, substantially as set forth.

9. The combination, with the pivoted knife *n*, of a fruit-receptacle, lever N, means for actuating the latter, and link m^3, connecting the knife with a relatively fixed object, substantially as set forth.

10. The combination, with cutting devices, and means for forcing the pits from the parts of the cut fruit, of the horizontal rotary table, the receptacles or trays for the fruit hinged and adapted to tilt thereon and made in parts and provided with springs, whereby they are enabled to yield to permit the passage of the pit, substantially as set forth.

11. The combination of a revolving table, a series of tilting trays thereon, a track sustaining the trays and having an opening to permit their tilting, a cutting-knife, means for actuating the latter and rotating the table, and a latch or stop for holding the table with a tray beneath said knife, substantially as set forth.

473,889. AIR-BRAKE. THOMAS J. HOGAN, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Filed Aug. 29, 1891. Serial No. 404,106. (No model.)



Claim.—1. In an automatic fluid pressure brake system, the combination, with the triple valve and train-pipe and the supplemental release-valve, of a valve controlling passages from the train-pipe to the triple valve and from the train-pipe to said supplemental release-valve, respectively, substantially as set forth.

2. In an automatic fluid-pressure brake system, the combination, with a triple valve and quick-action devices for releasing the air from the train-pipe in making emergency stops, of a supplemental release-valve, substantially as set forth.

3. In an automatic fluid-pressure brake system, the combination, with a train-pipe, auxiliary reservoir, brake-cylinder, and quick-acting triple valve, of a supplemental release-valve adapted to be put into and out of operative communication with the train-pipe by means of a valve which controls communication between the train-pipe and quick-acting devices, substantially as set forth.

4. In an automatic fluid-pressure brake system, the combination, with the train-pipe, triple valve, and quick-action devices, of a supplemental release-valve and a cut-out valve controlling the passages from the train-pipe to the triple valve, quick-action devices, and supplemental release-valve, said cut-out valve being arranged so as to open communication from the train-pipe to the quick-action devices when it closes communication from the train-pipe to the supplemental release-valve and to open communication from the train-pipe to the supplemental release valve when it closes communication from the train-pipe to the quick-action devices, substantially as set forth.

5. In an automatic fluid-pressure brake system, the combination, with a quick-acting triple valve and the passage by which it is connected to the train-pipe, of a supplemental release-valve and a cut-out valve, by means of which either the supplemental release-valve or quick-action devices may be cut out or both simultaneously put in communication with the train-pipe, substantially as set forth.

6. The combination, with a train-pipe, of a valve-casing connected thereto, a movable abutment in the casing, a passage from the train-pipe to an exhaust-port and to a storage-chamber, and valve devices operated by the movement of the abutment, controlling independent exhaust-ports, one from the train-pipe and one from the chamber directly to the atmosphere, substantially as set forth.

7. The combination, with a train-pipe, of a valve-casing, a movable abutment therein, a chamber having passages by which it may communicate with the atmosphere or with the train-pipe, and valve devices controlling the communication from the chamber directly to the atmosphere and a release-port from the train-pipe, said valve devices being operated by the movable abutment when said abutment is actuated by variations of pressure in the train-pipe and chamber, substantially as set forth.

8. The combination, with a train-pipe normally containing fluid under pressure, of a valve-casing having a chamber therein, a movable abutment exposed on one side to pressure in the train-pipe and on the other side to pressure in the chamber, and valve devices operated by movement of the abutment on a reduction of train-pipe pressure to release pressure from the chamber directly to the atmosphere and by a separate passage from the train-pipe to a signaling device, substantially as set forth.

9. The combination, with a valve-casing, of a movable abutment therein, a valve connected to and operated by the abutment, and a differential passage controlled by the valve, said differential passage having two different areas of cross-section, one next to the valve proportioned to the area of the valve which it is desired shall be exposed to the pressure in the passage and the other proportioned to the volume or quantity of fluid which the passage is intended to convey.

10. The combination, in a valve device for controlling the passage of fluid, of a passage restricted in proportion to the desired flow of the fluid and a concentric enlargement of the passage between the restricted portion and the seat of the valve controlling the passage, substantially as set forth.

11. The combination, with a train-pipe, of a release-valve connected thereto, a movable abutment within the casing of the release-valve, a valve controlling a cylindrical port in the casing, and a valve through which the stem of the abutment passes, controlling an annular port, both valves being arranged to be operated by the movable abutment, substantially as set forth.

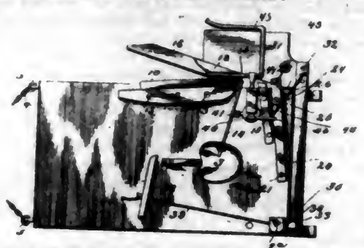
12. The combination, with a train-pipe, of an automatic release-valve device operated by variations in train-pipe pressure and containing a valve controlling a release-port from the train-pipe, and an annular valve controlling a port, opening from a chamber within the casing of the release-valve device to the atmosphere, substantially as set forth.

13. The combination, with a train-pipe, of a supplemental release-valve casing, a chamber within the casing, a movable abutment exposed on one side to pressure in the train-pipe and on the other side to pressure in the chamber, a valve operated by the movement of the abutment to open communication from the train-pipe to the atmosphere, and an annular valve operated by the abutment to open communication from the chamber to the atmosphere, the annular valve being opened and closed between the times of opening and closing the other valve, substantially as set forth.

14. The combination, with a train-pipe, of a supplemental release-valve casing, a movable abutment working therein and operating a valve controlling communication from the train-pipe to the atmosphere, and a valve controlling communication from a chamber within the casing to the atmosphere, the opening and closing of the train-pipe release-valve being controlled by the pressure within the chamber and its exhaust therefrom to the atmosphere, substantially as set forth.

15. The combination, with a train-pipe, of a supplemental release-valve casing, a chamber within the casing, a movable abutment operated by variations of pressure, a valve outside of the chamber, connected to and operated by the abutment, and a valve within the chamber, operated by movement of the abutment and controlling a port leading from the chamber to the atmosphere, substantially as set forth.

478,840. CORN-HARVESTER. WILLIAM C. HOUSER, Utica, Ohio. Filed Jan. 4, 1892. Serial No. 416,953. (No model.)



Claim.—1. A cutting apparatus consisting of a reversible knife resting upon and oblique to a base, a bar removably secured upon said knife and having an outturned heel, a pivoted finger for directing the grain to the knife, and means for holding said finger in operative position or in position beneath the knife, as set forth.

2. A cutting apparatus consisting of a knife resting upon and oblique to a base, screws detachably connecting it thereto, a finger pivotally connected with said base at the heel of the knife and moving in a plane below the knife, and means for holding said finger at an angle to the knife to direct the grain thereto or in position beneath the knife to protect its cutting-edge, as set forth.

3. A cutting apparatus, in combination with a finger pivotally connected with the base at the heel of said apparatus and having a bevsled rear end, a catch pivoted on said base and having a downturned free end with a beveled outer face, and a pin for locking said catch, as and for the purpose set forth.

4. A base, a cutting apparatus mounted thereon, and a table hinged to the base adjacent said apparatus, in combination with a weighted lever connected with said table and extending across the rear of the base, a trip for holding said lever in horizontal position, a foot-lever connected with the trip, a cranked rod journaled in a support, a guard carried by the rod, and a cord connecting said crank with the table, as and for the purpose set forth.

5. A base, a cutting device mounted thereon, a pivoted finger adjacent said device and having its outer upper edge beveled, and a catch for holding said finger in one of two positions, in combination with a table hinged to the base beneath the finger, a trip for the table, and a guard and connections therefrom to the table, all substantially as and for the purpose set forth.

6. A base and a cutting apparatus mounted thereon, in combination with a table hinged to the base adjacent the cutting apparatus, a lever connected to the table and leading across the base, an upright on the base, a spring-trip secured to said upright and adapted to engage the lever when the latter is lowered, a foot-lever pivoted on the base, a cord leading from the foot-lever through the upright and connected with said trip, a cranked rod journaled in a support, a guard carried by the rod, and a cord connecting said crank with the table, as set forth.

7. A base, a cutting apparatus mounted thereon, a table hinged to the base adjacent the cutting apparatus, and means for tripping said table, in combination with an upright on the base, a rod adjustable in said upright, a crank-shaft journaled through the rod and carrying a guard, and a cord adjustably connecting the table with a crank, as and for the purpose set forth.

8. A base, a cutting apparatus thereon, and a dumping-table, in combination with a tubular upright on the base, a set-screw therethrough, a rod therein, a crank-shaft journaled through the upper end of the rod, a U-shaped guard connected with this rod and standing above the table, and a cord connecting said crank and table, as set forth.

9. A base, a cutting apparatus thereon, and a dumping-table, in combination with a rod adjustably supported by the base and having its upper end turned over and provided with aligned eyes, a shaft journaled through said eyes and having a crank at its inner end and a U-shaped guard at its outer end, and a cord adjustably connecting said crank with the table, as and for the purpose set forth.

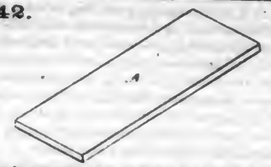
473,841. MANUFACTURE OF CARBON BLOCKS. LÉON HULIN, Froges, France, assignor to Grosvenor P. Lowrey, New York, N. Y. Filed Apr. 23, 1890. Serial No. 349,193. (No model.) Patented in France Nov. 7, 1889, No. 201,784.

Claim.—1. The herein-described process of making articles of carbon, which consists in shaping and preparing ready for baking separately a number of comparatively small plates or blocks of carbon, building up the desired article from such plates while still unbaked, and then baking the article thus formed, as described.

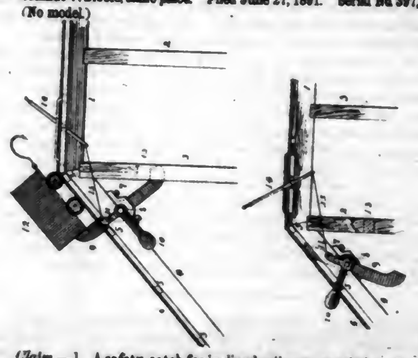
2. The herein-described process for forming a carbon electrode, which consists in shaping from carbon paste and preparing ready for baking separately a number of plates or blocks of carbon of comparatively small size, fitting such plates together with a suitable agglomerating material to form an electrode of the desired dimensions, and baking the electrode thus formed, as set forth.

3. A carbon conductor consisting of a number of separately-prepared carbon plates or slabs fitted together and baked, substantially as described.

478,842.



478,842. SAFETY-CATCH FOR INCLINED RAILWAYS. DAVID JAMES and THOMAS JAMES, Wadsworth, Ohio, assignors of one-third to Orlando V. Dibble, same place. Filed June 27, 1891. Serial No. 397,683. (No model.)



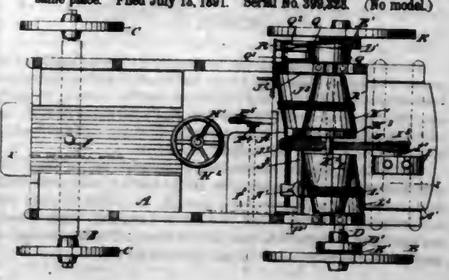
Claim.—1. A safety-catch for inclined railways, consisting of rocking bars arranged to project above the inclined track sufficiently to engage the body of the car and to rock downward to permit the passage of a car and a device, as a weighted lever, to constantly hold said bars projecting above the inclined track, substantially as shown and described.

2. A safety-catch for inclined railways, consisting of rocking bars arranged to project above the inclined track sufficiently to engage the car and to rock down and permit the passage of the car, said bars being arranged when extending above the track to encounter buttresses to resist the shock from the descending car, substantially as shown and described.

3. In a safety-catch for inclined railways, rocking bars arranged to extend above the inclined track sufficiently to engage the car and to rock down to permit the passage of the car, in combination with a counter-weight to constantly rock said bars upward and a lever to rock them down, substantially as shown and described.

4. In a safety-catch for inclined railways, rocking bars arranged to extend above the track sufficiently to engage the car and to rock down sufficiently to permit the passage of the car and a counter-weight to constantly rock said bars above the track, in combination with buttresses arranged to be simultaneously engaged by opposite ends of the said bars, substantially as shown and described.

473,843. MECHANISM FOR PROPELLING VEHICLES. ISAAC R. JONES, Xenia, Ohio, assignor to himself and Robert E. Richardson, same place. Filed July 13, 1891. Serial No. 399,228. (No model.)



Claim.—1. In a mechanism for propelling vehicles, the combination, with a shaft adapted to be driven in either direction from a motor located on the vehicle-body, of a cone-pulley held on the said shaft, a belt passing over the said cone-pulley, a second cone-pulley secured on the axle of the vehicle, and a shifting mechanism for shifting the said belt on the said cone-pulleys, the said shifting mechanism comprising a fork engaging the belt, a nut carrying the said fork, and a screw-rod mounted to turn and engaging the said nuts to shift the latter laterally, substantially as shown and described.

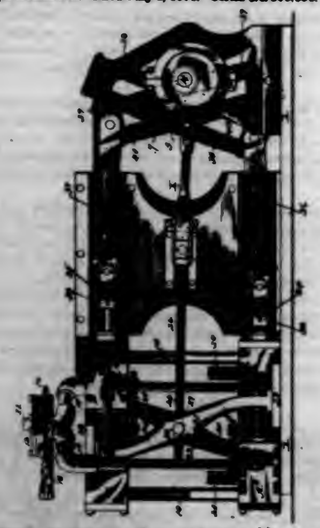
2. In a mechanism for propelling vehicles, the combination, with a shaft adapted to be driven in either direction from a motor located on the vehicle-body, of a cone-pulley held on the said shaft, a belt passing over the said cone-pulley, a second cone-pulley secured on the axle of the vehicle, a shifting mechanism for shifting the said belt on the said cone-pulleys, the said shifting mechanism comprising a fork engaging the belt, a nut carrying the said fork, a screw-rod mounted to turn and engaging the said nut to shift the latter laterally, and means for revolving the said screw-rod, substantially as shown and described.

3. In a mechanism for propelling vehicles, the combination, with a motor held on the vehicle-body, of a cone-pulley adapted to be driven from the said motor, a belt passing over the said cone-pulley, and a second cone-pulley held on the axle of the vehicle and over which passes the said belt, and means for reversing the motion of the said first-named cone-pulley, substantially as shown and described.

4. In a mechanism for propelling vehicles, the combination, with a motor, of a shaft driven from the said motor, a second shaft connected by crossed belt and pulleys with the first-named shaft, a cone-pulley secured on the said second shaft, a belt passing over the said cone-pulley, and a second cone-pulley secured on the axle of the vehicle and over which passes the last-mentioned belt, substantially as shown and described.

5. In a mechanism for propelling vehicles, the combination, with a motor held on the vehicle-body, of a cone-pulley adapted to be driven from the said motor, a belt passing over the said cone-pulley, a second cone-pulley held on the axle of the vehicle and over which passes the said belt, and a recording mechanism and sounder actuated from the said second cone-pulley, substantially as shown and described.

473,844. STEAM-ENGINE. JOHN H. KEMMERER, Loganton, Pa., assignor of three-fifths to John K. Heckman, William R. Goodman, and Joseph Kemmerer. Filed July 8, 1891. Serial No. 398,858. (No model.)



Claim.—1. In an engine, the combination, with the shaft and its crank, of levers arranged side by side and having a sliding connection between their ends with said crank, one of said levers being pivotally secured at one side of the shaft and the other lever being pivotally secured at the opposite side of the shaft, and operating devices whereby to rock the said levers, substantially as set forth.

2. In an engine, the combination of the shaft and its crank, the slotted levers arranged parallel and having a sliding connection with the crank, one of said levers being pivotally secured at its upper end and the other at its lower end, and the two cylinders whose pistons are connected with the free ends of such levers, all being arranged to operate substantially as and for the purposes set forth.

3. In an engine, the combination, with the shaft and its crank, of the levers arranged side by side and connected with said crank, the steam-cylinders, the piston-rods connected with the said levers, the steam-inlet valves to said cylinder, and devices controlling the same, all arranged and adapted to operate substantially as described, whereby steam is admitted to each cylinder just prior to the end of the stroke of the piston in the other cylinder, all substantially as and for the purposes set forth.

4. An improved engine, substantially as described, provided with two cylinders, each having a steam-chest at both ends and valves therein and provided with steam pipes or channels, one of such pipes or channels having branches leading to the front chest of one cylinder and the rear chest of the other and the other pipe or channel having branches connecting the other two chests, and devices whereby steam may be admitted to either of said pipes or channels, all substantially as set forth.

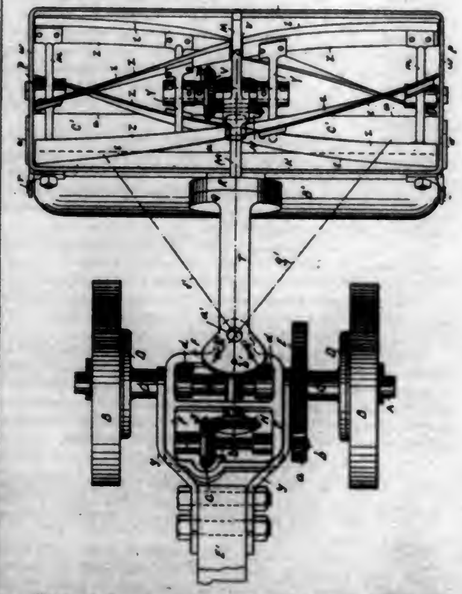
5. In an engine, substantially as described, the combination of the steam-cylinders, chests at the opposite ends of each of said cylinders, valves in each of said chests, a bar connected with the front valve of one cylinder and the rear valve of the other cylinder, a bar connected with the other two valves, a connection between said bars whereby the movement of one may effect the movement of the other, and operating mechanism by which to move one of such bars, all substantially as set forth.

6. In an engine, the combination of the two cylinders, each having chests at both ends, the valves in such chests, the two bars connected with the said valves, substantially as described, and a lever connected at its opposite ends with said bars and pivoted between said ends, substantially as set forth.

7. In an engine, substantially as described, the combination of two cylinders, each having a steam-chest at its front and rear ends and steam pipes or channels, and controlling devices whereby steam may be supplied to the front chests of one of said cylinders and the rear chest of the other cylinder, all substantially as and for the purposes set forth.

8. In an engine, the combination of the cylinders having chests and valves at both ends, the bars connected with the front valve of one cylinder and the rear valve of the other, connections between said bars, a rod connected at one end to one of said bars, a cross-head to which the opposite end of such rod connects, a shaft having an eccentric, and a pitman connecting such eccentric with the cross-head, all substantially as set forth.

473,845. LAWN-MOWER. NATHANIEL LOMBARD, Boston, Mass., assignor of one-half to Henry A. Clark, same place. Filed Oct. 22, 1891. Serial No. 409,501. (No model.)



Claim.—1. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable frame, to which shaft said cutters are secured, gearing connected to said cutter-shaft, a vertical swivel-joint connecting said cutter-shaft frame and driving-wheel frame, a rod connected to said cutter-shaft frame, and a universal joint connecting said rod with said driving-wheel frame.

2. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable frame, to which shaft said cutters are secured, gearing connected to said cutter-shaft, a vertical swivel-joint connecting said cutter-shaft frame and driving-wheel frame, a rod connected to said cutter-shaft frame, and a universal joint connecting said rod with said driving-wheel frame.

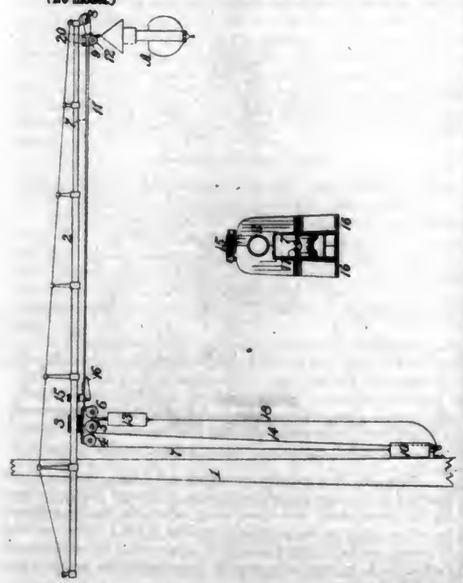
3. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable support, to which shaft said cutters are secured, a plate connected to said cutter-shaft, a plate connected to said driving-wheel frame, and a recess in said plate, in which is disposed and adapted to turn said cutter-shaft plate and secured from detachment therefrom.

4. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable support, to which shaft said cutters are secured, a plate connected to said cutter-shaft, a plate connected to said driving-wheel frame, having a screw-thread thereon, a recess in said plate, in which is disposed and adapted to turn said cutter-shaft plate, and a cap-plate of said cutter-shaft support, having a screw-thread to screw onto said driving-wheel gearing-plate.

5. In a lawn mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support and adapted to engage with one of said wheels, a series of cutters, a shaft adapted to revolve in a suitable frame, to which shaft said cutters are secured, gearing connected to said cutter-shaft, and a vertical swivel-joint connecting said cutter-shaft frame and the driving-wheel frame.

6. In a lawn-mower, in combination, a shaft, driving-wheels on said shaft, a support, gearing carried by said support, adapted to engage with one of said wheels, an opening d' in said support, a series of cutters, a shaft to which said cutters are secured and adapted to revolve in a suitable frame, said frame pivoted to said wheel-gearing support and having a series of openings concentric with said pivot, and a pin to engage with said opening d' in said wheel-gearing support and one of said series of openings.

473,846. SUPPORT FOR LAMPS. AUSTIN H. LUCAS, Pittsburg, Pa., assignor of two-thirds to George P. Shane, same place, and Edward G. Miller, Wilkinsburg, Pa. Filed May 26, 1891. Serial No. 394,131. (No model.)



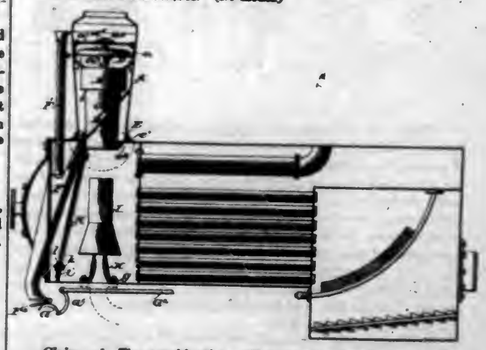
Claim.—1. The combination of a mast and jib with a trolley movable along the jib, a rope passing over guide-pulleys arranged near the mast and outer end of the jib, respectively, and having one end connected to the trolley and the opposite end to a weight, and a rope passing over guide-pulleys arranged near the mast and on the trolley, respectively, the ends of said rope being connected to a lamp and to a weight, respectively, substantially as set forth.

2. The combination of a mast and jib with a trolley movable along the jib, a rope passing over guide-pulleys arranged near the mast and the outer end of the jib, respectively, and having its ends connected to the trolley and weight 10, respectively, a rope passing over guide-pulleys arranged near the mast and on the trolley, respectively, and having its ends connected to a weight 13 and the lamp, and a rope passing over a guide-pulley near the mast and having its ends connected to the weights 10 and 13, substantially as set forth.

3. The combination of a mast and jib with a trolley movable along the jib, a rope passing over pulleys 4 and 8 and having its ends connected to the trolley and a weight 10, respectively, a rope passing over the pulleys 6 and 12, the latter being mounted in the trolley and having its end connected to the lamp and to a weight 13, respectively, a rope passing over the pulley 5 and having its ends connected to the weights 10 and 13, respectively, and a bracket for holding the trolley at or near the inner end of the jib, substantially as set forth.

4. The combination of a mast and jib with a trolley movable along the jib, a rope passing over pulleys 4 and 8 and having its ends connected to the trolley and a weight 10, respectively, a rope passing over pulleys 6 and 12, the latter being mounted in the trolley and having its ends connected to the lamp and a weight 13, respectively, a rope passing over the pulley 5 and having its ends connected to the weights 10 and 13, respectively, and a rope connected to the weight 13 and hanging down along the mast, substantially as set forth.

473,847. SPARK-ARRESTER. LAFFORD C. MANN, Richmond, Va., assignor of one-half to Ezekiel J. Levy, same place. Filed May 9, 1891. Serial No. 392,341. (No model.)



Claim.—1. The combination, with an engine smoke-stack, of a freely-revolving wheel having a peripheral rim and two sets or series of inclined radial blades, the blades of one series alternating with the spaces between the blades of the other series, substantially as shown and described.

2. The combination, with an engine smoke-stack, of a freely-revolving wheel having a peripheral rim and two series of inclined blades alternating with each other, with conical pivots above and below the same, and bearings for the same, substantially as shown and described.

3. The combination, with an engine smoke-stack, of two freely-revolving wheels having radial blades inclined in opposite directions for opposite revolution, the upper one of said wheels being of larger diameter than the lower one to reach out and catch the diverging or centrifugally-flying cinders and sparks that escape the lower wheel, substantially as shown and described.

4. The combination, with an engine smoke-stack and a freely-revolving wheel located therein, of a detachable conical pivot d^3, screwed into the hub of the wheel and provided below with a step-bearing, substantially as described.

5. The combination of the inner and outer smoke-stack, the intermediate shell B, and the two freely-revolving wheels of different diameters, the smaller one being located in and substantially filling the intermediate shell and the larger one being located above it and substantially filling the outer stack, substantially as shown and described.

6. The combination of the stacks A C and intermediate shell B, the supporting bracket-arms a b, cross-bars c' V c', the yoke-bearings a^2 b^2 b^3 c^2, and the two reversely-revolving wheels D D', of different diameters, having pivotal bearings above and below, substantially as shown and described.

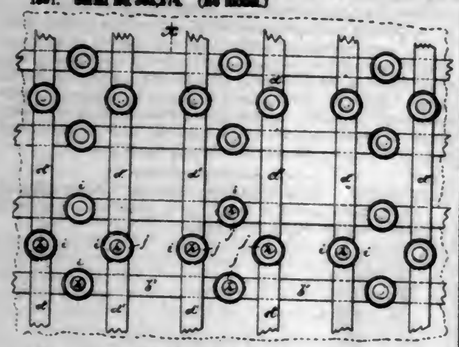
7. The combination, with the cross-bar c', sustaining the pivot of one of the wheels, and the inner stack C, of the cone c, having its base connected to the cross-bar c', and its apex extending down into the inner stack C, substantially as shown and described.

8. The combination, with a smoke-stack having inner and outer walls with space for downdraft between, of a revolving wheel or wheels for creating said downdraft, and a spark pipe or receptacle communicating with said space and having a relief-pipe opening into the outer air, substantially as shown and described.

9. The combination, with the saddle E, having opening *e* between the two stacks, of the shouldered spark-pipe F, having a damping-valve at its lower end, and a relief-pipe F', rising from its shoulder in front of the smoke-stack, substantially as shown and described.

10. The combination, with the smoke-box in an engine, of the draft-pipe I, and the short nozzle H, located in the bottom of the smoke-box and made flaring at the top and terminating at the lower edge of the said pipe I, substantially as shown and described, and for the purpose set forth.

478,848. ELECTRIC SWITCHBOARD. JOHN B. MAYER, Newark, N. J., assignor of one-half to Joseph Meier, same place. Filed May 11, 1891. Serial No. 392,374. (No model.)



Claim.—1. The improved electrical switchboard for electrical-lighting systems herein described, combining with a board *a* a series of crossing dynamo-machine and lamp connections *b' b' d' d'*, each having plug receivers or terminals *i* open or exposed at the front of the board and forming groups of four, each group having negative and positive terminals in connection with the lamp and dynamo-machine circuits or connections, insulating material extending between and beyond the extremities of said terminals of each group, and a plug having four projecting arms arranged in pairs, one pair being insulated from the other, and said arms being adapted to enter into or be withdrawn from contact with the said four terminals simultaneously, substantially as and for the purposes set forth.

2. The improved electrical switchboard for electrical-lighting systems herein described, combining with a board *a* a series of crossing dynamo-machine and lamp connections *b' b' d' d'*, each of said connections having terminals consisting of projecting sockets *k'*, split to secure a spring action, and threaded shanks *k*, which receive the said connections, and nuts for holding the parts together, insulating material interposed between said sockets, and a plug having two pairs of insulated arms, all said parts being arranged and combined substantially as set forth.

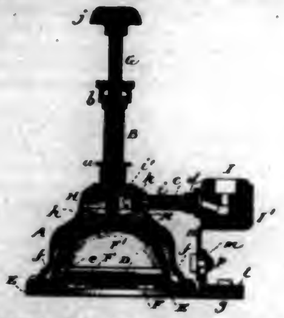
3. In a switchboard, the combination, with the connections *b' d'*, of sockets *k' k'*, projecting from the board and inclosed by insulation excepting at the front where said insulation projects beyond the extremity of the sockets, and a plug, substantially as and for the purposes set forth.

4. The combination, with the dynamo-machines and their connections arranged on a switchboard, of lamps and their connections crossing said machine connections and groups of terminals projecting from the switchboard and inclosed by perforated blocks of insulating material, the said terminals extending but part way through the blocks, substantially as set forth.

5. In combination with the dynamo-machines and negative and positive wires, the lamps and negative and positive wires, the switchboard having terminals projecting from the front of the board and having shanks projecting from the rear of said board, link-like connections connecting the dynamo-machine terminals, link-like lamp connections crossing the dynamo-machine connections and joining the lamp-terminals, and a plug or plugs having arms to engage the terminals, substantially as and for the purposes set forth.

478,849. LOOM-SHUTTLE THREADER. JAMES M. HOTTEL, Richmond, Va., assignor of one-half to William J. Payne, same place. Filed July 2, 1891. Serial No. 398,312. (No model.)

Claim.—1. In a loom-shuttle threader, a shell, a base, a tubular guide, a flexible inverted cup, and a branch pipe, combined with a hollow stem having an aperture within the shell, a perforated dished plate attached to the lower end of said stem, and a valve closing the inner end of the branch pipe and opening into the shell, substantially as set forth.

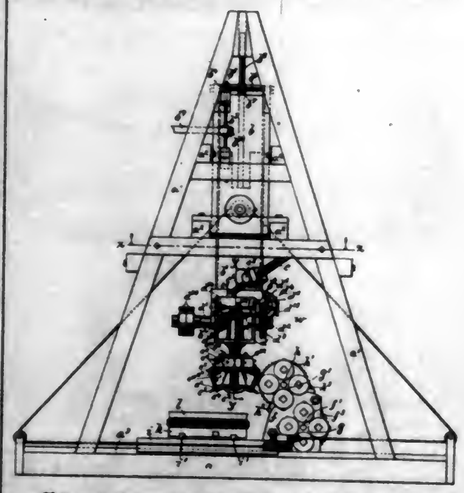


2. In a loom-shuttle threader, a shell, a base, and an inverted flexible cup, said shell having a branch pipe for connection with the shuttle to be threaded, combined with a hollow stem having an aperture, a perforated dished plate at the lower end of the stem, and a perforated knob at its upper end, substantially as set forth.

3. In a loom-shuttle threader, a shell, a base, and an inverted flexible cup, said shell having a branch pipe for connection with the shuttle to be threaded, and a valve on the inner end of said pipe opening into the shell, combined with a hollow stem having an aperture within the shell, and a perforated dished plate at the lower end of said stem, substantially as set forth.

4. The combination of a shell, a perforated hollow stem, a perforated dished plate attached to the lower end of said stem, a knob on the upper end of the stem having a central outlet, a branch pipe for connection with the shuttle to be threaded, a valve over the inner end of the said pipe within the shell, a flexible inverted cup, and a perforated base, substantially as set forth.

478,850. MACHINE FOR CUTTING AND DRESSING STONE. ALEXANDER MCDONALD, Cambridge, Mass. Filed May 9, 1891. Serial No. 392,237. (No model.)



Claim.—1. In a machine for cutting and dressing stone, a chuck provided with means to positively rotate it, thereby positively rotating its cutters jointly, said chuck being adjustable, thereby adjusting its cutters jointly to the inclination required to cut a desired molding by means adapted to swing said chuck, substantially as described, said cutters also being adjustable severally and severally free to turn in contact with the stone.

2. In a machine for cutting and dressing stone, the combination, with the movable plate *b'*, of a telescopic brace pivotally attached to the frame *a'* and to the movable plate *b'*, consisting of a rod *c'*, and a tubular portion *c*, provided with a clamping-plate *c'*, and a set screw *c²* to rigidly clamp the rod and tubular portion together, substantially as described, for the purpose specified.

3. In a stone-cutting chuck provided with means to positively rotate it, thereby positively rotating its cutters jointly, said cutters also being severally free to turn in contact with the stone, and a cutter-head provided with an arm rigidly united with it and adjustable by means of devices bearing upon said arm, said arm serving also to keep the axis of the cutter carried by the cutter-head at an angle to the axis of the chuck, substantially as described.

4. In a machine for cutting and dressing stone, the combination of two chucks provided with means to positively rotate them oppositely, thereby positively rotating oppositely the cutters of each chuck jointly, one of said chucks being adjustable concentrically with the other chuck, thereby adjusting its cutters jointly and concentrically with said other chuck, substantially as described, the cutters of both of said chucks also being adjustable severally and severally free to turn in contact with the stone.

5. In a machine for cutting and dressing stone, the combination of two chucks provided with means to positively rotate them oppositely, thereby positively rotating oppositely the cutters of each chuck jointly, one of said chucks being adjustable endwise in its bearings in a line parallel with the length of the shaft of the other chuck and into a cutting plane parallel to that of said other chuck, substantially as described, the cutters of both of said chucks also being adjustable severally and severally free to turn in contact with the stone.

478,851. PROCESS OF MANUFACTURING TURNED SHOES. RICHARD J. MCNALLY, Utica, N. Y., assignor to A. Charles Luce and Robert R. Gibbs, same place. Filed June 20, 1891. Serial No. 396,963. (No specimens.)



Claim.—The herein-described process of making shoes without insoles, consisting, first, in preparing the outer face of the sole with the usual fly and the inner face with a groove running from a point near the front of the heel on one side around the toe and to a similar point on the other side; second, tacking said sole with its inner face outward onto a last properly shaped to receive and hold the fly when turned back out of the way of the operating-needle; third, lasting both sole and upper while in turned position onto the last and whip-stitching said sole and upper together; fourth, removing the last and perpendicularly stitching together the sole and upper, with the edge of said upper and stitching confined within the groove, leaving the heel unstitched, and, fifth, turning the upper, closing the heel, and finishing the shoe.

478,852. EXTENSIBLE LADDER. JOHN MCQUILLAN, Hooker, Ill. Filed June 24, 1891. Serial No. 397,347. (No model.)

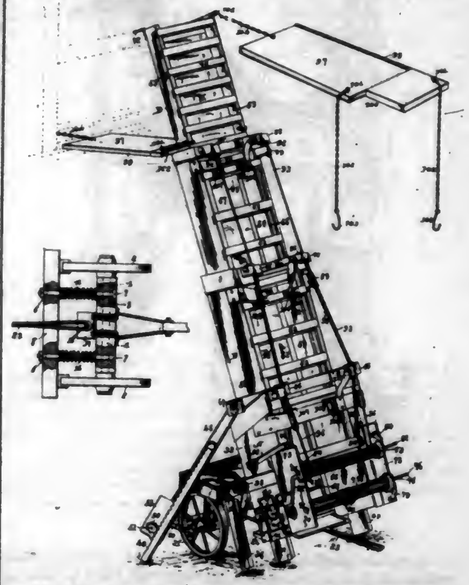
Claim.—1. In an apparatus of the class described, the combination, with a rear truck and a hinged main ladder-section, of a brake-bar yieldingly supported out of contact with the rear wheels of the truck, a shaft journaled in the main ladder-section, a drum mounted thereon, means for locking the same and for rotating the shaft, and cables extending from the drum to the brake-bar, substantially as specified.

2. In an apparatus of the class described, the combination, with the rear truck comprising the bolster having an opening, an axle, and ground-wheels, of a bar mounted for reciprocation in the opening, a brake-bar mounted thereon and terminating in shoes for operating on the wheels, rods extending from the bolster through the brake-bar, springs mounted on the rods and interposed between the brake-bar and bolster, a ladder-section hinged to the truck, a drum journaled in the ladder-section, means for operating the drum, and a cable connected at its center to the drum, having its terminals passed through the opening in the bolster and connected with the brake-bar, substantially as specified.

3. In an apparatus of the class described, the combination, with the rear truck and a ladder-section hinged to the front edge of the same, of the braces 36, loosely connected to the front of the truck and terminating in anchoring-points, substantially as specified.

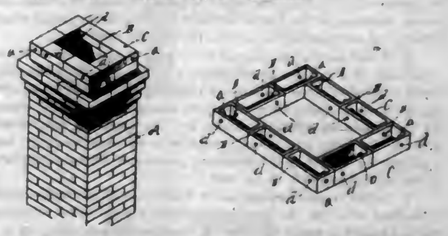
4. In an apparatus of the class described, the combination, with the rear truck and hinged ladder-section, of the inclined braces 36, loosely connected, as at 37, to the front of the truck and terminating in the points 38, the hooks extending from the opposite sides of the ladder-section, and the brace-supporting chains connected to the hooks, adapted to be passed around the braces, and removably connected with the hooks, substantially as specified.

5. In an apparatus of the class described, a series of ladder-sections telescopically connected, in combination with pulleys mounted upon the upper ends of the sections, a drum mounted for rotation in the lower section, cables leading from the lower end of the second section, passing over the pulleys of the first section, and connected to the windlass, and cables connected to the lower end of each section above the second and passing over the pulleys at the upper ends of the next adjacent section below and secured fixedly to the first section, substantially as specified.



6. The combination, with the ladder, of the platform 97, having the recess 100 at one corner, adapted to receive a side rail of the ladder, the short chain at the inner end of the recess, the long chain at the inner opposite end of the platform, and the chain 104 at the outer end of the platform, the said chains terminating in hooks, substantially as specified.

478,853. CHIMNEY-TOP. MURRAY M. RAYMOND, Corry, Pa., assignor to the Raymond Manufacturing Company, same place. Filed Oct. 19, 1891. Serial No. 409,192. (No model.)

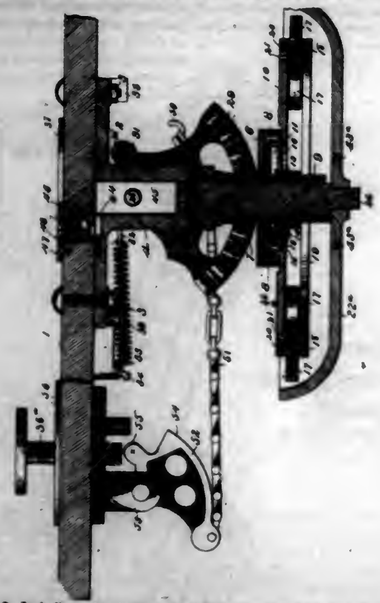


Claim.—1. A chimney-top section consisting of a hollow rectangular block having holes or slots in the sides of the block near one end thereof and also holes or slots in the ends thereof, substantially as and for the purpose set forth.

2. A chimney-top consisting of a series of hollow rectangular blocks or sections, as C, secured together at the sides and ends of the chimney by means of bolts, as D, passing through holes or slots in the ends thereof, and at the corners of the chimney by bolts D, passing through holes or slots in the side of one block and in the end of the adjoining block, substantially as and for the purpose set forth.

478,854. BELL. EDWARD D. ROCKWELL, Bristol, Conn., assignor to The New Departure Bell Company, of Connecticut. Filed Sept. 9, 1891. Serial No. 405,104. (No model.)

Claim.—1. In a bell adapted to be secured to the under side of a platform of a car, the combination, with a gong and revolving frame adapted to sound the same, of actuating mechanism for operating the frame, a spring for operating the actuating mechanism in one direction, a foot-piece adapted to be operatively connected with the actuating mechanism below the platform and to extend upwardly through the platform, and pawl-and-ratchet mechanism between the frame and its actuating mechanism, whereby continuous motion in one direction may be imparted to the frame, substantially as set forth.



2. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of actuating mechanism for operating the frame, designed to extend upward through the floor of the platform so as to be operated from above the same, and connecting mechanism loosely connecting the actuating mechanism and the frame, whereby the motion of the actuating mechanism imparts a momentum to the frame that causes it to revolve under the direct impulse of the actuating mechanism and to continue to revolve after such impulse has terminated independently of the actuating mechanism, substantially as set forth.

3. The combination, with a revoluble frame and gong, of a loosely-pivoted striker, and a pin adapted to be passed through the frame and pivotal aperture of the striker to fasten it to the frame out of reach of the gong, substantially as and for the purpose specified.

4. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of actuating mechanism for operating the frame, a spring for restoring the actuating mechanism, releasing mechanism between the frame and the actuating mechanism, whereby the frame is constantly propelled in the same direction, and a plunger for operating the actuating mechanism from the platform of the car, substantially as set forth.

5. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of a segmental gear swinging in a vertical plane, a disk on the frame-support, a hub on said disk formed with a pinion which meshes with the segmental gear, releasing mechanism between the disk and frame, whereby momentum in one direction is imparted to the frame, a spring for restoring the segmental gear to its normal position, and a plunger for operating the segmental gear, designed to extend through the platform of the car to be operated from above, substantially as set forth.

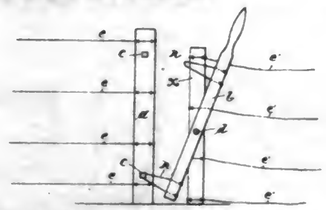
6. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong, a revolving frame adapted to sound the same, and a support for the frame, of a segmental gear swinging in a vertical plane, a disk mounted loosely on the frame-support, a hub on said disk formed with a pinion which meshes with the segmental gear, pawl-and-ratchet mechanism between the disk and the frame, a spring for operating the segmental gear in one direction, and a plunger adapted to extend upward through the platform of the car to impart motion to the gear in opposition to the force of the spring, substantially as set forth.

7. In bell mechanism, the combination, with a suitable support and a gong mounted thereon, of a revolving frame adapted to sound the gong mounted on said support, means for actuating the revolving frame, a plurality of loosely-pivoted hammers upon the frame, adapted to be thrown out by centrifugal force and to successively strike the gong, and means for retaining one or more of the hammers out of action, substantially as set forth.

8. In bell mechanism adapted to be secured to the under side of the platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of a spring-balanced segmental gear swinging in a vertical plane and operatively connected with the revolving frame to drive it, a bell crank lever to be secured under the opposite platform of the car, connecting mechanism between the bell-crank lever and the segmental gear, and a foot-piece for operating the bell-crank lever from above the platform of the car, substantially as set forth.

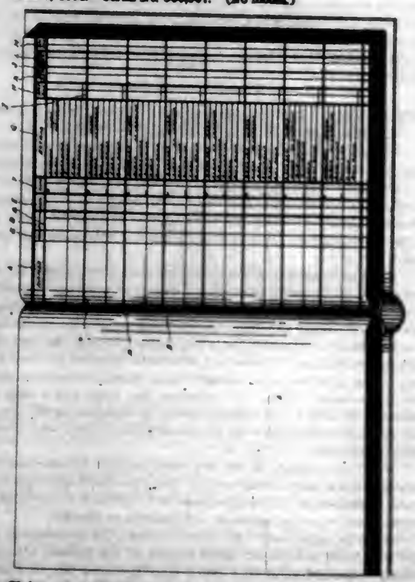
9. In bell mechanism adapted to be secured underneath a car and to be operated by an attendant upon either platform of the car, the combination, with suitable bell mechanism and a lever for operating the same, of a lever adapted to be carried underneath the platform of the car, a foot-piece for operating said last-named lever from the platform, and a band or the like connecting the two levers, substantially as set forth.

473,855. WIRE-FENCE GATE. JOHN M. SAILER, Jamesville, Wis., assignor of one-half to Henry H. Harris, same place. Filed July 31, 1891. Serial No. 401,329. (No model.)



Claim.—An improved wire-fence gate constructed substantially as herein shown and described, and consisting of a pivoted lever furnished with loops *n n*, in combination with a pivot-bolt *d*, upright bar *x*, fence-wires *d d d d*, fence-post *a*, and hooks *c c*, as set forth, and for the purpose herein shown and described.

473,856. HOTEL-LEDGER. LEE SIMON, Denver, Colo. Filed Feb. 7, 1891. Serial No. 380,867. (No model.)

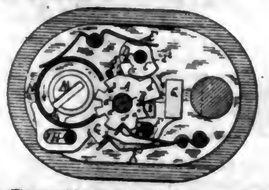


Claim.—1. A hotel-ledger provided with four columns, wherein may be kept an itemized statement of each guest's bill, the amount paid, the date of payment, and the balance due, each column being provided with an appropriate heading, substantially as and for the purpose set forth.

2. A hotel-ledger having that portion of the "Rate" column opposite each guest's name divided into two spaces, one for the day-rate and the other for the rate per week, each space being appropriately marked, substantially as described.

3. A hotel-ledger provided with four columns, one of which columns is provided with suitably-designated spaces to receive an itemized statement of the guest's bill, the remaining columns being adapted to contain the amount paid, the date of payment, and the balance due, each column being provided with an appropriate heading, substantially as described.

473,857. LOCK. EUGENE C. SMITH, New York, N. Y., assignor to the Universal Lock Company, same place. Filed Mar. 5, 1890. Serial No. 342,693. (No model.)



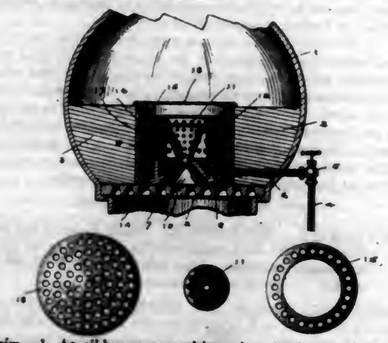
Claim.—1. The combination, in a lock, of a shiftable locking-bar having an integral locking-arm and tumblers, each having a projection adapted to shift said locking-bar, and also an auxiliary projection adapted to engage with said locking-arm and prevent moving the locking-bar, as described.

2. In a lock, a shiftable locking-bar having a projection adapted to actuate a bolt-restraining lever, as described.

3. The combination, in a lock, of a shiftable bolt, a shiftable locking-bar, and a bolt-restraining lever adapted to be actuated by the locking-bar, as described.

4. The combination, in a lock, of a shiftable locking-bar having a projection and a lever having an arm adapted to be actuated by the projection on the locking-bar, and an arm adapted to prevent the withdrawal of the bolt, as described.

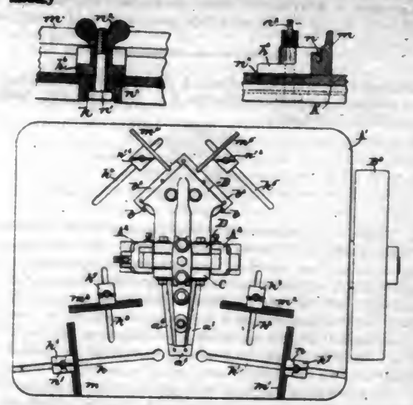
473,858. COAL-OIL BURNER. HENRY STAGEY, Indianapolis, Ind., assignor of one-half to Michael H. Cain, same place. Filed Nov. 28, 1891. Serial No. 412,758. (No model.)



Claim.—1. An oil-burner comprising a base having an oil-chamber within, a perforated cap, a central draft-opening, a hollow perforated deflecting-cone seated in such opening and extending above the burner, a perforated shell inclosing such burner and cone, and an air-chamber formed around such perforated shell and between it and the wall of an outer inclosing shell having a perforated top, in combination with a supply-pipe tapping the oil-chamber and connected with a suitable tank, and a regulating-valve between the tank and burner, substantially as shown and described.

2. An oil-burner comprising a base adapted to rest upon a fire-grate and cored out below, a triangular oil-chamber in the base covered by a perforated cap, a central opening through the burner, a hollow perforated deflecting-cone having a neck loosely seated in such central opening, a perforated shell surrounding the cone, an outer shell of greater diameter surrounding the perforated shell, whereby an air-chamber is formed between the outer and inner shells, a perforated ring covering the air-chamber, and a perforated cap covering the outer shell, in combination with a supply-pipe tapping the oil-chamber, its other end connected to the oil-tank, and a regulating-valve between the tank and burner, substantially as shown and described.

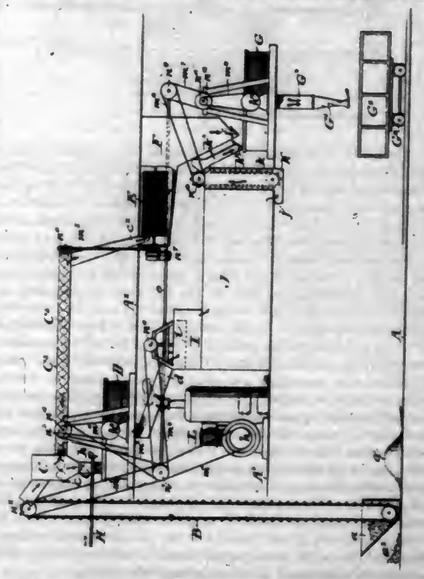
473,859. CORNER-CUTTER FOR PAPER-BOX BLANKS. EUGENE H. TAYLOR, Lynn, Mass., assignor to the Cushman Paper Box Machine Company, Portland, Me. Filed Sept. 29, 1890. Serial No. 366,707. (No model.)



Claim.—1. The bed and its attached plates a^2, combined with the cross-head and its attached cutter-carrier C, and the cutter *a* to notch a blank, and with the adjustable independent gage-holding blocks located at the same side of the cutter, and the corner-gages *m* m^3, each adjustable longitudinally in its holding-block, substantially as described.

2. In a machine for notching blanks, a cross-head, a cutter-carrier, and cutter, combined with the table, and the gages *m* *m'* m^3 m^3, and adjustable holders in which they are made adjustable, substantially as and for the purpose set forth.

473,860. ART OF MAKING MORTAR. EDWARD T. WARNER and JOHN F. CUREY, Wilmington, Del., assignors to the Charles Warner Company, same place. Filed Mar. 19, 1892. Serial No. 425,962. (No model.)



Claim.—1. The improvement in the art of making mortar, which consists, first, in mechanically mixing lime and water to produce slaked lime; second, in retaining in bulk the lime paste thus produced for a time sufficient to insure its slow but thorough digestion, its becoming slowly but finally cold and homogeneous, and its assuming a

putty-like or plastic consistency, and, third, in mechanically mixing the digested lime paste with sand, substantially as set forth.

2. The improvement in the art of making mortar, which consists, first, in mechanically mixing lime and water to produce slaked lime; second, in straining or screening the slaked lime to free it from core and foreign particles; third, in retaining in bulk the lime paste thus produced for a time sufficient to insure its slow but thorough digestion, its becoming slowly but finally cold and homogeneous, and its assuming a putty-like or plastic consistency, and, fourth, in mechanically mixing the digested lime paste with sand, substantially as set forth.

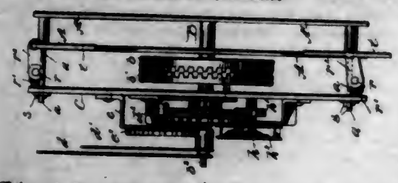
478,861. BUTTON. FRANK H. WILLIAMS, New York, assignor of one-half to James B. Hills, Brooklyn, N. Y. Filed Apr. 2, 1891. Serial No. 387,265. (No model.)



Claim.—1. A button or stud head having a shank or post with a horizontal foot at the lower end thereof with a flat bearing-surface and extending from one side of the shank only at a right angle, a sliding shoe in which said foot is mounted having an inclosing cap-plate with a straight radial slot therein of less width than the foot and extending from the center completely to the periphery of the shoe, said head being immovable and the shoe adjustable on said shank and foot by pushing it in a horizontal plane, and a plate in connection with said shoe on which said foot has bearing, substantially as described.

2. A button or stud head having a shank with a horizontal foot at an angle thereto and provided with a flat bearing surface, said foot being at the lower end of the shank and extending from one side only thereof, a sliding shoe movable in a straight horizontal plane and provided with a cap-plate having a straight radial slot extending from the center completely to the periphery thereof, and a bottom plate in connection with said shoe on which the shoe has bearing and movement, one of said parts having a channel or groove into which the other projects, substantially as described.

478,862. RAILWAY TIME-SIGNAL. GEORGE A. XANDER, Hamburg, Pa., assignor of one-half to Alexander Murdoch, same place. Filed Nov. 12, 1891. Serial No. 411,679. (No model.)

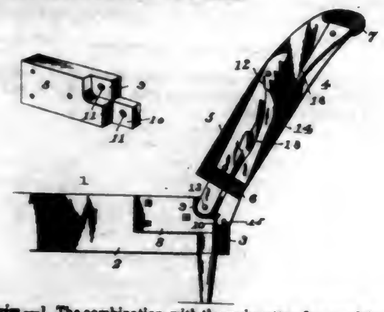


Claim.—1. In a time-signal for railways, &c., a central arbor, a movable frame carrying an extension thereof, the adjacent ends of said extension and central arbor having a clutch, means for holding said movable frame normally in its innermost position and the members of the clutch in engagement with each other, shafts carrying cams adapted to engage said movable frame and force the same outward, and means for operating said shafts, in combination with a dial, index-hands carried by said extension of the central arbor, means for turning said hands to a predetermined point on the dial when the extension and arbor are out of gear, and means for returning said hands to their original position upon the re-engagement of the members of the clutch.

2. In a time-signal for railways, &c., a central arbor, a movable frame carrying an extension thereof, the adjacent ends of said arbor and extension each carrying a member of a clutch, means for holding said movable frame normally in its innermost position, shafts carrying cams adapted to engage said movable frame and force the same outward, cranks on the ends of said shafts, a pivoted horizontal lever having an end adjacent to a rail of the track and adapted to be engaged by the wheels of a passing train, and a rod connecting said cranks with said lever, in combination with a dial, hands carried by said extension of the central arbor and adapted to traverse said dial, means for turning said hands to a predetermined point on the dial when the members of the clutch are out of engagement with each other, and means for returning said hands to their original position upon the re-engagement of the members of the clutch.

3. In a time-signal for railways, a central arbor, a movable frame carrying an extension thereof, the adjacent ends of said arbor and extension each carrying a member of a clutch, means for holding said movable frame normally in its innermost position, and means for forcing said movable frame to its outermost position, in combination with a dial, hands carried by the outer end of the arbor-extension and adapted to traverse said dial, a pinion b^3, secured to said arbor-extension, a gear-wheel intermeshing with said pinion, a spring coiled around the arbor of said gear-wheel, the intermeshing pinion c^4, and gear-wheel d^3, a retarding mechanism geared with said arbor-extension, and a stop mechanism geared with said hands, said parts being arranged and operating substantially as shown and described.

478,868. COMBINED SETTEE AND BED. JAMES ALEXANDER, Altoona, Pa., assignor of one-half to A. P. Koontz, same place. Filed Oct. 16, 1891. Serial No. 408,899. (No model.)

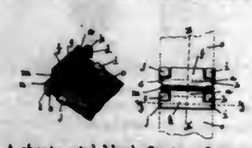


Claim.—1. The combination, with the main settee-frame, of the opposite wings, the rack-bars connected to the inner faces of the side bars of the wings and pivoted to the side bars of the main frame, the pawls pivoted to said side bars of the main frame out of line with the pivots of the rack-bars, the springs for pressing the pawls into engagement with the rack-bars, and means for withdrawing said pawls from such engagement, substantially as specified.

2. The combination, with the oblong settee-frame and the pairs of opposite plates secured to the inner faces and near the ends and side rails thereof and provided with pairs of recesses having openings and located out of alignment with each other, of the oblong wings, the lower cross-bars of which are recessed, the rack-bars secured to the side rails of the wings, having inclined teeth, and extending beyond the inner ends of the wings and bolted pivotally to the inner recesses of the plates, the pawls located in the recesses of the cross-bars of the wings in rear of the rack-bars and pivotally bolted to the outer recesses of the plates, the springs secured to the inner faces of the bars of the wings and pressing against the free ends of the pawls, and the transverse spreader-bars journaled in the opposite side bars of the wings between the pawls and rack-bars and having one end extended beyond its bearing, substantially as specified.

3. The combination, with the settee-frame, of the wings, the rack-bars secured to the side rails of the wings, having inclined teeth, and extending beyond the inner ends of the wings and bolted pivotally to the settee-frame, the pawls located in rear of the rack-bars and pivotally bolted to the settee-frame, the springs secured to the inner faces of the bars of the wings and pressing against the free ends of the pawls, and the transverse spreader-bars journaled in the opposite side bars of the wings between the pawls and rack-bars and having one end extended beyond its bearing, substantially as specified.

478,864. BELT-FASTENER. WILBER H. BAILEY and CHARLES F. TILTON, Bay City, Mich., assignors to the Eureka Tape and Belt Fastening Company, same place. Filed June 6, 1891. Serial No. 395,358. (No model.)



Claim.—1. A sheet-metal blank for tape-fasteners, consisting of a body portion *a*, having the lateral extensions *b* and *c*, provided with serrated edges, and the extended portion *f*, provided with serrations *g*, and having the tongue *h*, with its outer edge provided with the serrations *k*, and having the portions *i* and *j*, extending laterally from its outer portion and provided with serrations, substantially as set forth.

2. A printing-press tape-fastener consisting of two clasps adapted to be attached to the abutting ends of the tape and each clasp composed of the body portion *a*, provided on its lateral edges with extensions *b* and *c*, bent over the lateral edges of the tape, and provided with a tongue portion *h*, bent to overlap the body portion, and provided on its end edge with teeth or serrations *k* for impinging on the tape and having on the lateral edges of its outer portion the extensions *i* and *j*, bent over and impinging on the lateral edges of the tape, and a wire loop *m*, passed through the adjacent bent portions of the clasps for pivotally connecting the clasps together, substantially as set forth.

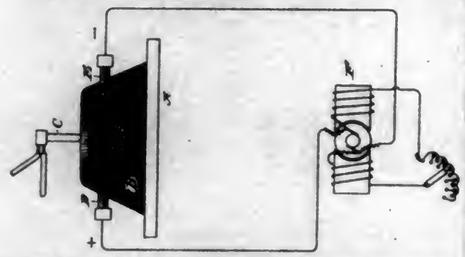
478,865. EAR-TRUMPET. WILLIAM G. A. BONWILL, Philadelphia, Pa. Filed Mar. 10, 1891. Serial No. 384,995. (No model.)



Claim.—1. As an article of manufacture, a hat having a sound-receiving chamber formed in its brim and made to open to the atmosphere at one end and terminating at the other end in a tube leading to the ear of the wearer.

2. As an article of manufacture, a hat having a sound-receiving chamber of gradually-reduced area formed in its brim and made to open to the atmosphere at its larger end, arranged in the front of the hat and terminating at the other or smaller end at the rear of the hat in a tube leading to the ear of the wearer.

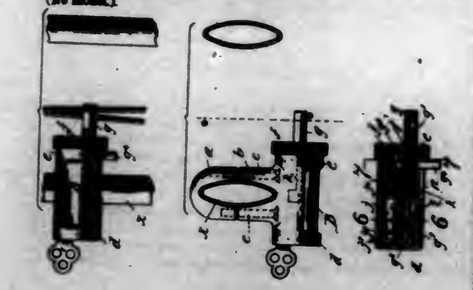
478,866. PROCESS OF OBTAINING METALS FROM THEIR ORES OR COMPOUNDS. CHARLES S. BRADLEY, Yonkers, assignor to Grosvenor P. Lowrey, New York, N. Y. Original application filed Feb. 23, 1883, Serial No. 85,967. Divided and this application filed Sept. 16, 1889. Serial No. 324,124. (No specimens.)



Claim.—1. The herein-described process of obtaining metals from aluminous and the like class of highly-refractory ores or compounds, which consists in fusing and, when fused, establishing an electric current through a bath of the material to be treated and by such current, together with a blowpipe-flame or other auxiliary source of heat concentrated directly upon the material treated rather than through the walls of a furnace or crucible, maintaining the fused bath of ore constant and electrolyzing the same, as set forth.

2. The herein-described process of obtaining metals from aluminous and the like class of highly-refractory ores or compounds, which consists in fusing and, when fused, establishing an electric current through a bath of the material treated, projecting a blowpipe or similar flame down upon the material in the immediate neighborhood of the electrodes, and by the combined effects of such flame and the continued passage of the electric current maintaining the fused bath of ore constant and electrolyzing it, as set forth.

478,867. BICYCLE-WHEEL LOCK. CORNELIUS J. BRENNAN, Springfield, Mass., assignor of three-fifths to Frank M. Coe, Henry A. Chapin, and Lyman W. Bosse, same place. Filed Jan. 27, 1892. Serial No. 419,394. (No model.)



Claim.—1. In a lock for a bicycle, in combination, a lock-body having therein a boltway and a socket and supporting and attachment devices for mounting said body on the bicycle, a bolt movable endwise in said way and provided with a catch-lug which is extended partially across the socket, a member adapted to have a rotational movement in said socket and having an abutment portion which but partially fills the socket, and which may be turned to impede the catch-lug or to permit the longitudinal movement thereof, locking devices for maintaining the said member against its rotational movement, and a spring for effecting the rotational movement of said member at the time of the disengagement of its locking device, substantially as described.

2. In a lock for a bicycle, in combination, a lock-body having therein a boltway and a socket and supporting and attachment devices for mounting said body on the bicycle, a bolt movable endwise in said way and provided with a catch-lug which is extended partially across the socket and having the thumb-lug extended to the exterior of the lock-body, a member adapted to have a rotational movement in said socket and having an abutment portion which but partially fills the socket and which may be turned to impede the catch-lug or to permit the longitudinal movement thereof, locking devices for maintaining the said member against its rotational movement, and a spring for effecting the rotational movement of said member at the time of the disengagement of its locking device, and the retracting-spring for the bolt substantially as described.

3. The combination, with the two-part clip, one member thereof having a supporting-casing for a lock-body, provided with a bayonet-joint slot on its under side, of a lock-body having the parallel holes *h* and *i*, with the uniting-slot 14 and the slot 12, and having the holes *m m* therein and the spring-pressed pins, the tumbler-bar set for rotation in said hole *h*, having the narrowed extremity j^7 and the pin-holes and tumbler-pins therein, the tumbler-bar-rotating spring and the key-slot, the bolt endwise movable in the hole *i*, having the catch-lug g^3 extended through said slot 14 and partially across said hole *h*, the bolt also having a thumb-lug extended through the slot 12 and said casing-slot, and the bolt-retracting spring, arranged for operation substantially as described.

4. In a bicycle-lock, the combination, with a two-part clip, one member thereof having a supporting-casing, provided with a head at one end having the opening *e*, and having a removable screw-cap *f* at its other end and an opening through its under part, of the cylindrical lock-body having the socket and boltway and the tumbler-bar *j*, having the narrowed abutment extremity j^7, the rotating spring and the tumbler-pins coacting between the tumbler-bar and said cylindrical body, the bolt movable endwise in the hole *i*, having the catch-lug g^3, and the thumb lug g^4, and a retracting-spring therefor, said elements and features of construction being arranged and formed for conjoint action substantially as described.

5. In a bicycle-lock, the combination, with a two-part clip, one member thereof being formed to constitute a lock holder or casing, of a cylindrical lock-body supported and confined in said casing and having a tumbler-bar socket and a boltway therein, and a series of holes transversely extending from the exterior of the lock-body to said socket and having the dovetailed way formed at the exterior of said body, intersecting the orifices of said holes, tumbler pins and springs in said holes, and the dovetailed slide-piece m^4, the tumbler-bar in said socket having registering holes and tumbler-pins and a key-slot, and the bolt endwise movable in said way, having a catch-lug adapted to be engaged by said tumbler-bar, substantially as described.

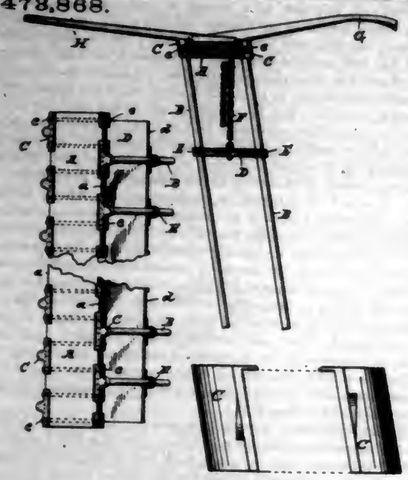
6. The combination, with the fork-leg of a bicycle, of a clip for engaging same, having a lock-body with a boltway and a bolt therein, which is movable in a straight line at right angles to the length of the fork-leg for projection between the wheel-spokes, a movable locking device inclosed within the lock-body for holding the bolt in its locking projection, and a thumb-lug g^4, projected from the bolt through a slideway, which is longitudinally formed therefor through the lock-body, whereby when the bolt is within the lock-body it may be forced into the spoke-engaging projection, substantially as described.

478,868. WEEDER AND CULTIVATOR. WILLIAM H. M. CATE, Hamilton, assignor to the Universal Weeder Company, Weare, N. H. Filed Dec. 19, 1891. Serial No. 415,571. (No model.)

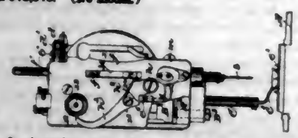
Claim.—1. In a weeder, the combination, with a head, the front and rear edges of which are inclined parallel with each other, of sockets upon each of said edges, and a tooth secured to said head by each of said sockets, said teeth being parallel with each other throughout their length and being inclined relatively to said head, substantially as set forth.

2. In a weeder, the combination, with a head, the front and rear edges of which are inclined parallel with each other, of sockets upon each of said edges, a tooth secured to said edges by each of said sockets, said teeth being parallel with each other throughout their entire length and being inclined relatively to the head, and a stiffening-board below the head, the edges of which are provided with sockets for the reception of the teeth, substantially as set forth.

478,868.



478,869. TENSION-RELEASING DEVICE FOR SEWING-MACHINES. GEORGE H. DUNCAN, Bridgeport, Conn., assignor to The Wheeler & Wilson Manufacturing Company, same place. Filed Nov. 25, 1890. Serial No. 372,573. (No model.)



Claim.—1. A spring-controlled tension device, a needle-bar, and a presser-bar, each provided with a projection, combined with a tension-releasing device moved by the projection on the presser-bar as the latter is elevated into inoperative position, the construction and operation of the parts being substantially as described, whereby the said releasing device having been moved by the rising foot will remain in active position and leave the needle-thread substantially free from tension until after the needle-bar and presser-bar have both been lowered.

2. A sewing-machine containing the following instrumentalities, viz: a thread-tension device, a needle-bar provided with a lug, a presser-bar provided with a lug, and a thread-tension-releasing lever pivoted upon the head of the machine in position to be moved in one direction by the lug e^4 on the presser-bar to release the tension on the needle-thread when the presser-bar is lifted and in the opposite direction by the lug f on the needle-bar as it descends on the formation of a stitch to thus restore the tension on the needle-thread, substantially as described.

3. In a sewing-machine, the face-plate f', slotted at 30 and 31, the tension-releasing lever N, pivoted on the said face-plate, and the tension device, combined with the needle and presser bars, having lugs extended through the said slots and adapted to co-operate with the said tension release to operate substantially as described.

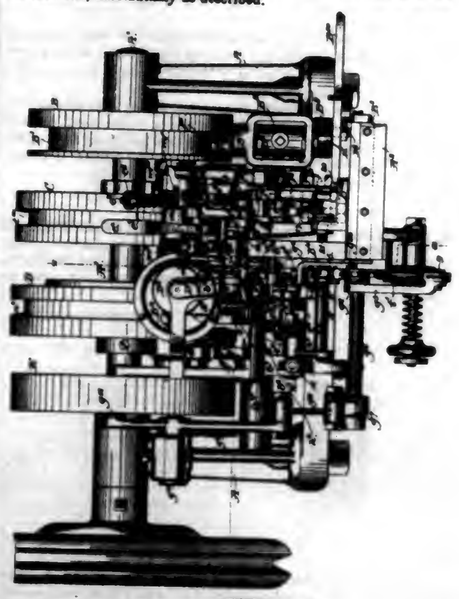
4. The combination, with a needle-bar and needle, and a presser-bar and tension device, of tension-releasing mechanism operated in one direction by or through the presser-bar to release the tension on the needle-thread and in the other direction by or through the needle-bar to restore the tension on the needle-thread, substantially as described.

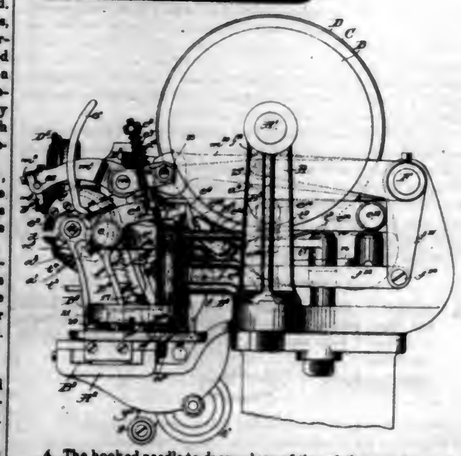
478,870. SOLE-SEWING MACHINE. ZACHARY T. FRENCH and WILLIAM C. MEYER, Boston, Mass., assignors to the Goodyear Shoe Machinery Company, Hartford, Conn. Filed Oct. 4, 1890. Serial No. 367,066. (No model.)

Claim.—1. The presser-foot-carrying lever, a stud about which it is free to oscillate, a reciprocating or sliding frame f, connected to the said lever at one end, the needle and complemental stitch-forming mechanism, and a pull-off independent of the said needle, combined with intermediate devices between the said frame and the rock-shaft carrying the pull-off, whereby the rise and fall of the presser-foot upon varying thicknesses of stock results in lowering and raising said frame to thus increase or decrease the amount of thread pulled off by the pull-off, substantially as described.

2. A circularly-moving shuttle, its race or guide, and a thread-lifter to engage the needle-thread and aid in opening the loop formed in the said thread for the entrance of the shuttle, a hooked needle, and its segment, combined with the needle-guide independent of said needle, its segment, shaft b^4, pinion b^2, and clamp-pinion b^7, attached to said shaft, and the toothed sector-lever b^3, and means to actuate the lever and thereby oscillate said needle-guide positively to cover the hook of the needle while the shuttle is passing through the loop cast off from the said needle, substantially as described.

3. The work-support, the lever d, the presser-foot, the pin 3, and the frame f, made movable by the presser-foot lever, according to variations in thickness of the stock between the presser-foot and work-support, combined with the slide-box, means to move it, connections between it and the said frame, the thread pull-off, the rock-shaft to which it is attached, and connections between the said rock-shaft and the slide-box, substantially as described.





4. The hooked needle to draw a loop of thread through the stock, combined with the thread-lifter to engage the loop of needle-thread and aid in opening the said loop for the passage of the shuttle through it, the lever m', to which the said lifter is attached, the lever m^{29}, and the grooved cam to actuate the lever m^{29} positively, as and for the purpose set forth.

5. The hooked needle, the presser-foot-carrying lever, the stud about which it is free to oscillate, a reciprocating sliding frame f, connected to the said lever at one end and guided at its other end, an oscillating slide-box pivoted on said frame, and a pull-off, combined with intermediate devices between the said slide-box and the rock-shaft carrying the pull-off, whereby the rise and fall of the presser-foot upon varying thicknesses of stock lowers and raises the said frame to increase and decrease the amount of thread pulled off by the pull-off, substantially as described.

6. The presser-foot-carrying lever, the frame f, and the pin 3, carried thereby and entering the said lever loosely, and a pull-off and connections between it and the said frame, combined with the horizontally-movable feed-slide and its upright provided with a fulcrum-stud for the said lever and with an abutment to keep the said frame from being strained out of place, substantially as described.

7. The curved needle, the looper, its slide-bar, a pivoted yoke containing the said slide-bar and having a roller or other stud, a lever f', connected with the said slide-bar and having a roller or other stud, and the shaft A', combined with the cams O D, having grooves to receive the roller-studs on the lever f' and the said yoke, the said rollers or other studs being in substantially the vertical plane of the longitudinal center of the said shaft, whereby the lever and yoke are made to move the looper positively, substantially as described.

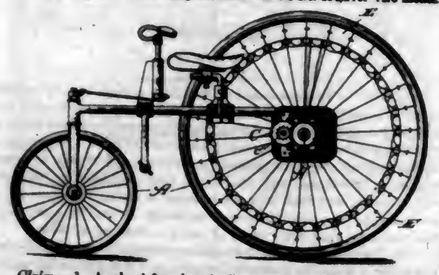
8. The main take-up g^4, the pull-off, and the sheave g', located between them, combined with the pivoted clamping-lever h, the rock-shaft h^2 and its arms, a link h^3, and means to connect it with one of the arms of the said rock-shaft in an adjustable manner to provide for the diameter of the thread being used, and the lever h^5, whereby the said clamping-lever is moved, and means to positively actuate said rock-shaft to clamp the needle-thread positively at the proper time, substantially as described.

9. The sheave g', the clamping-lever h, the rock-shaft having an arm to engage one end of the clamping-lever and having a second arm h^3, combined with the lever h^5, means to actuate said lever, and adjustable connections between said lever h^5 and the arm h^3 of the rock-shaft, whereby the clamping-lever may be made to clamp the thread with any desired pressure and at the desired time, substantially as described.

10. The hooked needle to draw a loop of thread through the stock, the lever m', and the thread-lifter having a laterally-extended projection fitted into a hole in the said lever, combined with means to clamp the said projection in the said lever, the said projection being freely adjustable in said lever both toward and from the said needle and about the said projection as a center to thereby enable the said thread-lifter to be placed in correct position with relation to the needle, according to the diameter of the latter, substantially as described.

11. The hooked needle and the looper, combined with the guide-bar n^2, the slide-bar n^4, fitted to slide in the said guide-bar and having the thread-hook n^3 at one end and a roll at its opposite end, and a cam to receive said roll and actuate the said slide-bar positively to enable its hook to engage the needle-thread between the stock and the looper preparatory to the needle drawing the loop through the stock to thus aid in forming a loop of the proper length to avoid the reading of the needle-thread across the hook of the needle.

478,871. ELECTRICALLY-PROPELLED VEHICLE. FULTON GARDNER, Chicago, Ill. Filed Aug. 31, 1891. Serial No. 404,279. (No model.)



Claim.—1. A wheel for electrically-propelled vehicles, carrying a storage-battery, the cells whereof are arranged at suitable points around such wheel, whereby a more uniform distribution of the load is obtained, substantially as described.

2. A wheel for electrically-propelled vehicles, carrying a storage-battery, the cells of such battery being secured to the wheel at points equidistant from the center thereof, substantially as described.

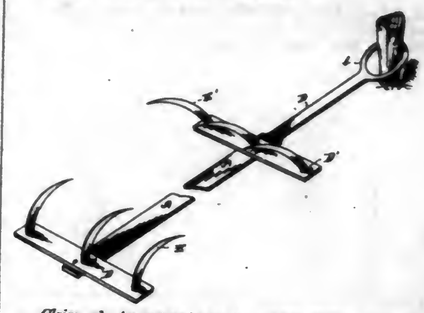
3. A wheel for electrically-propelled vehicles, having a storage-battery contained in the tire thereof, substantially as described.

4. The combination of a vehicle, a motor to propel the same, a storage-battery the cells whereof are secured to one or more of the wheels of the vehicle, and connections between such battery and the motor, substantially as described.

5. A wheel for electrically-propelled vehicles, carrying a storage-battery, the cells of such battery being contained within the tire of the wheel, substantially as described.

6. The combination of a vehicle, a motor to propel the same, a storage-battery contained in the tire of one or more of the wheels of the vehicle, and connections between such battery and the motor, substantially as described.

478,872. ANIMAL-EXTERMINATOR. GEORGE GILLPATRICK, Martinez, assignor of one-half to George W. Ellis, Oakland, Cal. Filed Dec. 14, 1891. Serial No. 414,941. (No model.)



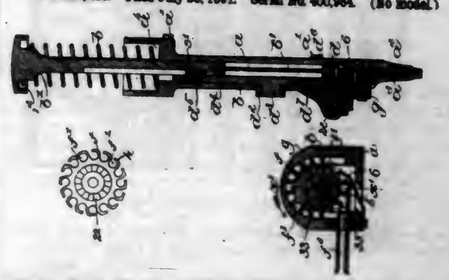
Claim.—1. An exterminator for ground-animals, consisting of a supporting strap or rod having a series of cutting knives or blades secured thereto and projecting upwardly, said rod or strap being adapted to be secured within the animal's burrow, as and for the purpose set forth.

2. The combination, with a flexible strap, of the knife-plate fastened thereto and of the knives projecting therefrom, said strap and knives being adapted to be secured within the animal's burrow, as and for the purpose set forth.

3. The combination, with the flexible supporting-strap, of a handle provided with a ground-fastener, knife-plates secured near the top and bottom of the strap, and the cutting-blades arranged thereon, as and for the purpose set forth.

4. In an animal exterminator, the combination, with the knife-plate, of knives arranged thereon and projecting upwardly therefrom, and means of securing the plate and knives within the animal's burrow, as and for the purpose set forth.

478,873. TACK OR NAIL DRIVER. CHARLES B. GODFREY, Milford, Mass., assignor to The McKay & Copeland Lasting Machine Company, Portland, Me. Filed July 23, 1891. Serial No. 400,984. (No model.)

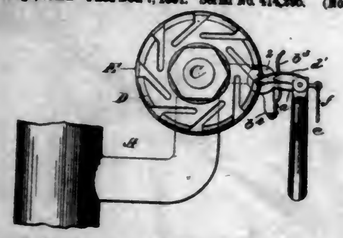


Claim.—1. A nail or tack driving apparatus containing the following instrumentalities, viz: a shell or case, a nail tube or delivery connected to one end of said shell or case, a longitudinally-movable driver-bar provided with a cam, a driver connected with said driver-bar, a feed-wheel located between the said tube and the lower end of the said driver-bar when in its elevated position, said feed-wheel having peripheral pockets open at one side, the upper part of the feed-wheel serving as an anvil or support for a tack-strip, a tack-strip guideway tangential to the said feed-wheel and having an extended portion to co-operate with projections at opposite sides of the pocket from which the nail is to be driven, a lever interposed between the said driver-bar and feed-wheel, said lever having a pawl to engage a ratchet of the feed-wheel and a projection to be actuated by the cam-surface of the driver-bar, and a detent to restrain retrograde motion of the feed-wheel, substantially as shown and described.

2. The shell or hand-piece, the feed-wheel having at its periphery open pockets and intermediate teeth formed by the side walls of the

pockets, and a tangential guideway having a portion extended to close the open side of the adjacent pocket and having near its center of rotation a series of ratchet-teeth, and having a tack-strip-supporting surface between the ratchet-teeth and its periphery, combined with a driver, a driver-bar, a pawl, a pawl-controller, and a cam having a straight central portion and oppositely-inclined end portions to actuate the pawl-controller in such manner, substantially as described, that the pawl will pass behind a ratchet-tooth only after a full driving-stroke of the driver, as set forth.

473,874. ROTARY TRIMMER. MICHAEL T. HARRIGAN, Wollaston, and JEROME L. PACKARD, Boston, assignors to James W. Brooks, trustee, Cambridge, Mass. Filed Dec. 7, 1891. Serial No. 414,295. (No model.)



Claim.—1. In a trimmer mechanism, a rotary cutter combined with a pivoted tipping rest, the pivot or axis of motion of said rest being parallel to the actuating-shaft of the cutter and in a plane substantially tangent to the periphery of the cutter, and a crank-arm rigidly connecting said pivot and rest, the path of movement of the rest intersecting the cutting-edge of the cutter, substantially as described.

2. A rotary trimmer-cutter combined with a pivoted rest and with an automatic locking device, substantially as described, to positively engage and restrain said rest from movement in its extreme positions, substantially as described.

3. A rotary trimmer-cutter and a pivoted rest, the pivot thereof being parallel to and in substantially the same horizontal plane with the cutter-axis, and a crank-arm rigidly connecting said pivot and rest, combined with a rod connected to said rest to move it on its pivot to tip toward or away from the face of the cutter, substantially as described.

473,875. COMBINED ORDER-BOOK, FILE, AND COUPON SYSTEM. JAMES W. HILL, St. Louis, Mo. Filed Mar. 16, 1891. Serial No. 385,171. (No specimens.)



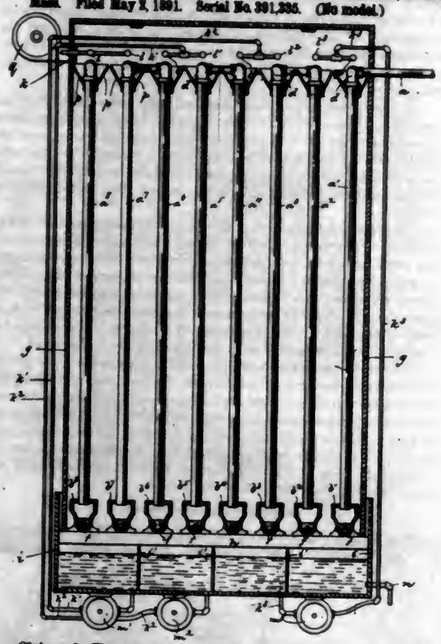
Claim.—1. In a combined order-book, file, and coupon appliance, the combination of the perforate detachable bill-slips bearing itemized accounts and the stub-record thereof, of the order-book, the perforate detachable coupons, and the column-dated record of the coupons-book, and the file 24, arranged for canceling and filing the used coupons, substantially as and for the purpose set forth.

2. In a combined order-book, file, and coupon appliance, the combination of the perforate detachable coupon-slips bearing a record of their denominational amount and the distinguishing-number of the owner of said coupons, the bill-slips 20, containing itemized records of orders, bound in an order-book, the stub-leaves of said book from which said itemized bill-slips are arranged to be severed, the said stubs carrying a record of the date of order, the distinguishing-number of the owner of the coupons, and the aggregate of the amount of the bill, substantially as and for the purpose set forth.

3. In a combined order-book, file, and coupon appliance, the combination of the coupon-book having a record on its covers of the amount of coupons contained therein, the name of the firm or merchant by whom, and the customer to whom, said coupon-book is issued, the coupons contained in said book, the distinguishing-number on said coupons that designates the owner of the book, the order-book with its itemized bill-slip and its stub-record, and the file on whose needles the used coupons are canceled and filed away, substantially as and for the purpose set forth.

4. In a combined order-book, file, and coupon appliance, the combination of the coupon-book which contains a certain amount of detachable coupons, marked with their denominations and the distinguishing-number of the owner of said book, the index-record 12 on the fly-leaf of said book, the order-book 17, containing the perforate bill-slips 18 and the registry-stubs, the file 24, which contains the base 25, the needles that rise vertically from said base, the distinguishing-numbers at the foot of said needles on the base of said file, the package of canceled coupons 27, and the elastic band that confines said coupons, the top coupon carrying the record of the user's name and date of issue arranged for filing away for future record, substantially as and for the purpose set forth.

473,876. CONDENSER FOR REFRIGERATING OR ICE-MAKING MACHINES. HORACE F. HODGES and DAVID J. HAVEMEYER, Boston, Mass. Filed May 2, 1891. Serial No. 391,336. (No model.)

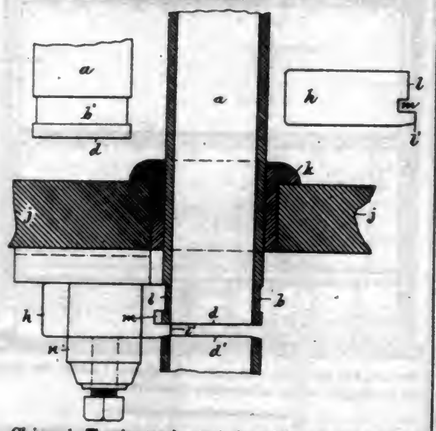


Claim.—1. The combination, with a condenser having parallel ranks of vertical pipes through which the gas to be condensed circulates and a pipe adapted to deliver water over certain of said ranks of pipes, of a series of troughs under said ranks of pipes and pipes connected with said troughs, and pumps thereon adapted to raise the water in said troughs to the upper end of the next rank of pipes, whereby water having been used to cool one series of ranks will be caused to cool another series and will be used consecutively until the same water has been used upon every series of ranks of pipes, as set forth.

2. The combination, with a condenser having its condensing-pipes vertically arranged in parallel ranks, of a pipe arranged to deliver water onto the series of ranks farthest from the point of entrance into the condenser of the gas to be condensed, a trough arranged below said series of ranks, adapted to catch the water flowing down the same, a pipe provided with a pump adapted to raise the water from said trough and deliver it to the upper ends of the second series of ranks, and a similar trough, conducting-pipe, and pump for each series of ranks, whereby the same water is used consecutively on every series of ranks of the condensing-pipes, as set forth.

3. The combination, with a condenser having the ranks of condensing-pipes a' a^2 a^3 a^4 a^5 a^6 a^7 a^8 all suitably connected, of a pipe arranged to deliver water onto the first series of ranks of condensing-pipes, the casing i under said condenser divided into troughs, each trough corresponding with a given series of ranks of pipes aforesaid, so that water running down said ranks will fall into said troughs on said pipes, pipes connected with said troughs, delivering, respectively, to corresponding ranks, and pumps thereon whereby the water is pumped from the first trough and caused to flow over the second series of ranks of pipes and from the second trough over the third series of pipes, and so on, until the same water has flowed over all the series of condensing-pipes, and the lips or troughs p, arranged near the top of each rank of condensing-pipes, as set forth.

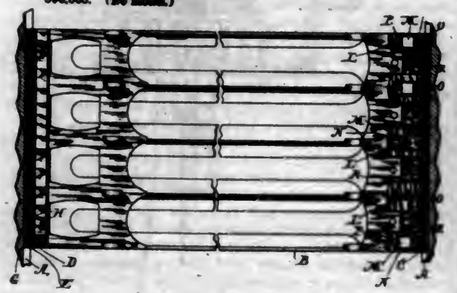
473,877. PIPE-TURNING TOOL. JOHN J. HOGAN, Brooklyn, assignor to the Hogan Engineering Company, New York, N. Y. Filed June 15, 1891. Serial No. 396,250. (No model.)



Claim.—1. The pipe-turning tool adapted for grooving pipe ends, as herein described, and provided with the tongue l, adapted for turning out the groove in the pipe, the tongue l', of greater length, and the intervening notch m to gage the distance of the tongue l from the end of the pipe, substantially as herein set forth.

2. The pipe-turning tool adapted for grooving pipe ends, as herein described, and provided with the tongue l, adapted for turning out the groove in the pipe, the tongue l', of greater length, adapted to cut off the pipe, and the intervening notch m for gaging the distance of the tongue l from the end of the pipe, substantially as herein set forth.

473,878. SHUTTLE-BOX FOR LOOMS. CHARLES ILLING and AUGUST STOFFREGEN, Jefferson, Wis. Filed June 13, 1891. Serial No. 396,065. (No model.)

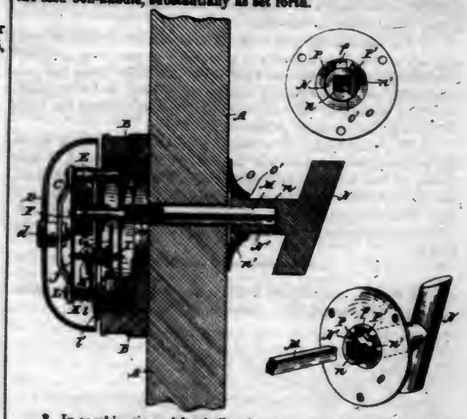


Claim.—In a shuttle-box for looms, the combination, with the body of the box, of a slide provided with lugs bearing movably on the surface of the body of the box and secured adjustably thereto, and studs projecting from the body of the box between lugs on the slide and forming a bearing therefor, substantially as described.

473,879. DOOR-BELL HANDLE. ALBERT IBER, Lancaster, Pa. Filed July 16, 1891. Serial No. 399,730. (No model.)

Claim.—1. An escutcheon having a central opening, a groove p, connected therewith, and two lugs P P' on the inner face of the said escutcheon and arranged one on each side of the said groove, in combination with a handle N, having a stem N' and a lateral lug n', and alarm devices actuated by the turning of the said handle, the said groove and lugs P P' allowing the lug n' to be introduced behind the escutcheon and turned and drawn into such position that the lugs P P' will serve both to limit the turning and to prevent the handle from being accidentally detached, substantially as set forth.

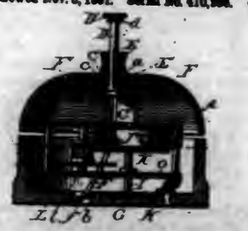
2. In combination with a pair of fixed lugs for limiting its axial movement, a bell-handle having a lug arranged to be in contact with one or the other of said lugs at certain points of such movement and to limit the rotary motion of said handle by contact with the said lugs and clock-work-alarm mechanism, and connecting devices operated by the said bell-handle, substantially as set forth.



3. In combination with a bell and a rotary handle and detachable connections, an escutcheon provided with lugs for limiting the turning of said handle in either direction.

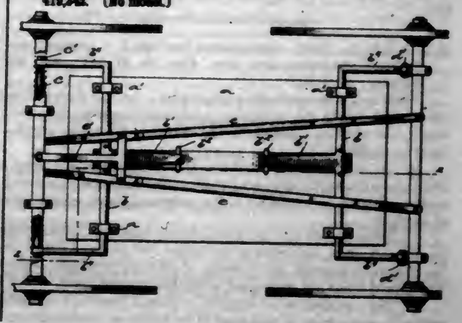
4. In combination with a door-bell handle arranged to turn on its axis, an escutcheon provided with lugs for limiting this turning and preventing the detachment of said handle, substantially as set forth.

473,880. CALL-BELL. ALBERT IBER, Lancaster, Pa., assignor to Geo. R. Fahnestock and Clayton G. Landis, same place. Filed Nov. 20, 1890. Renewed Nov. 5, 1891. Serial No. 410,996. (No model.)



Claim.—In combination with a push-button stem and a bell through which it works, a bell-crank lever arranged to receive the pressure of said stem, a winding-chain connected to said lever, a winding-pulley, clock-work mechanism, and hammer for operating said bell, and a hollow base or casing which with said bell incloses the aforesaid operative parts, substantially as and for the purpose set forth.

473,881. VEHICLE. IRA H. JOHNSON, Paw Paw, Mich., assignor of one-half to R. M. Buck, same place. Filed Jan. 26, 1892. Serial No. 419,242. (No model.)

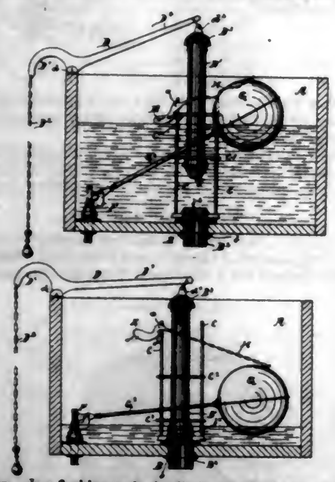


Claim.—1. The combination, with the axles and a vehicle-body, of a rock-shaft journaled thereon at each end, the front shaft being provided with forwardly-extending arms pivotally connected to the head-block and the rear shaft with rearwardly-extending arms pivotally connected to the rear axle, downwardly-extending elbows being formed on the ends of one pair of arms and upwardly-extending elbows being formed on the ends of the other set of arms, and a spring attached to the vehicle for holding the rock-shafts in their normal positions, substantially as described.

2. The combination, with a vehicle, of a rock-shaft journaled near each end of the body thereof and provided with bent arms pivotally connected to the rear axle and head-block, said shafts being also provided with inwardly-projecting arms carrying loops, and a longitudinal spring connecting the rock-shafts and passing through the loops on the arms, substantially as described.

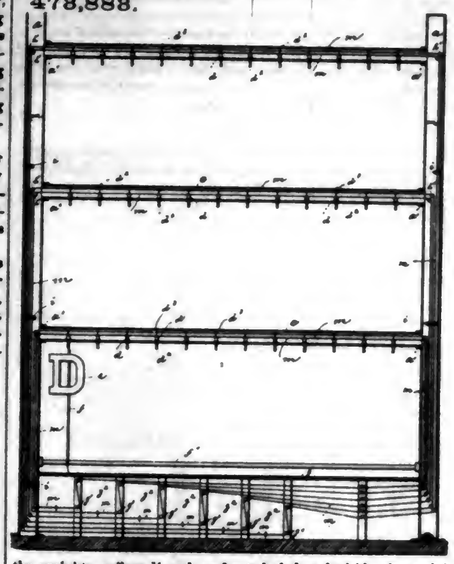
3. The combination of a vehicle, a rock-shaft journaled across the bottom thereof at each end, these shafts being provided at their ends with bent arms pivotally connected to the head-block and axle, and also provided with inwardly-extending arms carrying loops at their ends, a loop secured to each of the rock-shafts, and a longitudinal flat spring extending through the said loops, substantially as described.

478,882. FLUSHING-TANK. GEORGE W. KETTER, Indianapolis, Ind. Filed Sept. 23, 1891. Serial No. 407,085. (No model.)



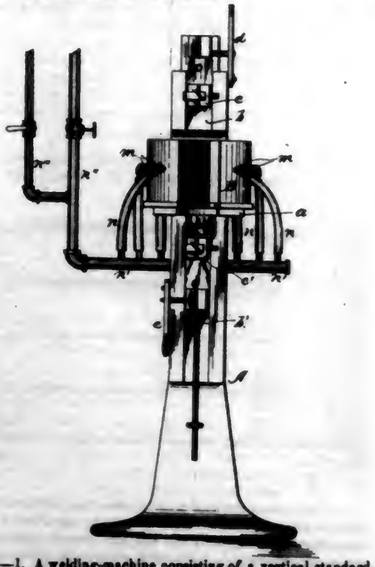
Claim.—In a flushing-tank, the discharge-pipe in two sections, the upper of which will form a discharge-valve and the lower section the valve-seat, the rods C, fixed to the tank and serving as guides to insure a register of the valve with its seat, one of said rods C having a notched and weighted lever pivoted thereto, an arm attached to the valve by being attached to the upper section of the pipe B' and adapted to engage the notch in the lever pivoted to the guide-rod and to be held in an elevated position by said weighted and notched lever, a float attached to the supply-valve and regulating the supply of water by its position and also attached to the notched and weighted lever, preferably by a chain, and a supply-valve, and a lever for operating the discharge, all combined substantially as and for the purposes specified.

478,888.



the uprights, pulleys *N*, and perforated shelves *i* within the uprights for guiding the wires, substantially as specified.

478,884. PROCESS OF AND APPARATUS FOR WELDING METALS. CHARLES R. LIPE and JOHN A. PROSS, Syracuse, N. Y. Filed Apr. 20, 1891. Serial No. 389,579. (No model.)



Claim.—1. A welding-machine consisting of a vertical standard, a table supported thereby, ways above and below the table, slides in the ways, grips carried by the slides, a furnace mounted upon said table, and multiple burners opening therein and connected to the sources of air and gas supply, in combination, as set forth.

2. The combination, with the vertical standard and the grip-carrying slides movable vertically therein, of a tubular furnace open on one side, multiple ports opening into the furnace, radial tubes connected to said ports, and means for supplying air and gas to said tubes, as set forth.

3. In a welding-machine, a heating-furnace comprising a body open at both ends and in one side and multiple burners inserted radially through the body, and piping connecting them to separate sources

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478,888. SIGN. JOSEF LEINDERS, New York, N. Y., assignor of one-half to Martin Gruber, same place. Filed Dec. 30, 1891. Serial No. 416,546. (No model.)

Claim.—1. The combination of uprights *a*, tubular slotted cross-rails, trucks within the cross-rails, sign-letters suspended from said trucks, and wires *m*, connected to and operating the trucks, substantially as specified.

2. The combination of uprights *a*, slotted cross-rails *c*, trucks within each cross-rails, perforated plates c^3, and pulleys secured to the trucks, and wires *m*, connected to the perforated plates, substantially as specified.

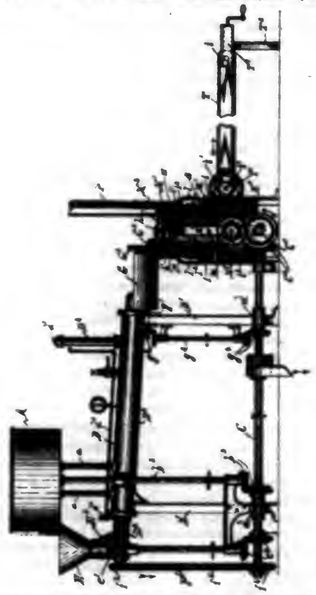
3. The combination of uprights *a*, slotted cross-rails, trucks within the same, wires *m*, connected to the trucks and passing through the uprights and cross-rails, and a series of pulleys *g'*, arranged in steps and around which the wires pass, substantially as specified.

4. The combination of uprights *a*, slotted cross-rails *c*, trucks within the same, wires *m*, connected to the trucks and passing through

of supply of air and gas, and means to regulate the flow of either to the burners, in combination, as set forth.

4. The process of welding consisting in simultaneously heating to unequal degrees in a furnace bars of metal fusing at different temperatures by adjusting them independently with reference to the point of highest temperature therein and forcing them together when the bars reach their respective welding heat without removing them from the furnace.

478,885. APPARATUS FOR CANNING CORN. GAIUS L. MERRELL, Syracuse, N. Y., assignor to himself, Oscar F. Soule, and Frank C. Soule, same place. Filed Oct. 20, 1890. Serial No. 368,709. (No model.)



Claim.—1. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn and liquid in order to release its imprisoned milk and mix it with the said liquid, a cooking-chamber for cooking the corn, whereby said milk and liquid are rendered inseparable, a conveyer for feeding the corn from the former into the latter chamber, a filler for inserting said material into the cans, a cooling-receptacle interposed between the cooking-chamber and the filler for receiving and cooling the heated corn, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as specified.

2. A canning-machine comprising a chamber for receiving the corn or other material to be canned, a cooking-chamber for cooking the corn and heating the same to a greater heat than the predetermined temperature of the corn when about to be inserted into the can, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the corn discharged from the cooking-chamber for bringing the same to the required degree of temperature for insertion into the cans, a filler for inserting the said material into the cans, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as and for the purpose set forth.

3. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn and liquid in order to release its imprisoned milk and mix it with the said liquid, a cooking-chamber for cooking the corn, whereby said milk and liquid are rendered inseparable, a conveyer for feeding the corn from the former into the latter chamber, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the heated cooked material discharged from the cooking-chamber, an agitator for agitating the material in the cooling-receptacle, a filler for receiving the cooled material and inserting the same into the cans, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as set forth.

4. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn in order to release its imprisoned milk and mix it with said liquid, a cooking-chamber for receiving and cooking said corn, whereby said milk and liquid are rendered inseparable, a receiving-chamber for said cooked material, a filler for feeding said material to the cans, and a feed for feeding the can forward during the operation of the filler and while the can is being filled by said filler, and connections, substantially as described, between the foregoing parts, whereby the parts operate conjointly and the operation of canning the corn is continuous, substantially as described.

5. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn in order to release its imprisoned milk and mix it with said liquid, a cooking-chamber for receiving and cooking the said corn, whereby said milk and liquid are rendered inseparable, a cooling-receptacle in proximity to the cooking-chamber for receiving the corn discharged from the cooking-chamber, an agitator for stirring the corn within the cooling-receptacle, one or more fillers connected with the cooling-receptacle and having a combined capacity substantially equal to that of the foregoing parts, and connections, substantially as described, between the foregoing parts, whereby the parts operate conjointly and the operation of canning the corn is continuous, substantially as described.

6. A canning-machine comprising a chamber for cooking the corn or other material to be canned, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the heated corn discharged from the cooking-chamber, a filler for feeding said cooked material to the cans, and a feed for feeding the can forward during the operation of the filler and while the can is being filled by said filler, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as specified.

7. A canning-machine comprising a chamber for cooking the corn or other material to be canned, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the cooked corn discharged from the cooking chamber, an agitator within said chamber for stirring the corn, a movable can feed or support, a filler for feeding said cooked material to the cans during the movement of the can feed or support, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as specified.

8. A canning-machine comprising a chamber for cooking the corn or other material to be canned, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the cooked corn discharged from the cooking chamber, a conveyer for feeding the material through said cooling-receptacle, a filler for feeding said cooked material to the cans, and a feed for feeding the can forward during the operation of the filler and while the can is being filled by said filler, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as described.

9. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revolving measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said chambers, and a plunger movably mounted in the measuring-chamber and adapted to be revolved therewith for forcing the material from said chamber through said outlet-passage into the cans, substantially as and for the purpose set forth.

10. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, two or more measuring-chambers communicating with the receiving-chamber and provided with outlet-passages whereby the material passes from the receiving-chamber to the measuring-chambers and thence through the outlet-passages to the cans, a cut-off between the receiving-chamber and the measuring-chambers, adapted to shut off communication of the receiving-chamber with one of said measuring-chambers and open communication with the other of said measuring-chambers, plungers movably mounted in the respective measuring-chambers and adapted to be revolved therewith, and an actuator for operating said plungers to discharge the measuring-chambers successively, substantially as and for the purpose described.

11. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revolable measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving-chamber to the measuring-chamber and thence through the outlet-passage to the cans, a cut-off between the receiving and measuring chambers, a discharge-plunger movably mounted in and revolable with said measuring-chamber for discharging the material from the measuring-chamber through said outlet-passage into the cans, and a can-seat mov-

able toward the end of said outlet-passage for retaining the can in position during the operation of the plunger, substantially as and for the purpose set forth.

12. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a substantially vertically-extending measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby said material passes from the receiving to the measuring chamber and thence through said outlet-passage to the cans, a cut-off between said chambers, a plunger beneath said cut-off movable toward the cut-off for forcing the material from the measuring-chamber through said outlet-passage into the cans, and a second plunger movable in said outlet-passage and formed with its end of substantially the same diameter as that of the outer end of the outlet-passage, whereby the plunger end passes to the extreme end of the outlet-passage and ejects all of the material in front of the same into the cans, substantially as and for the purpose described.

13. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revoluble measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving-chamber to the measuring-chamber and thence through the outlet-passage to the cans, a cut-off between the receiving-chamber and said measuring-chamber, a discharge-plunger for discharging the material from the measuring-chamber through said outlet-passage into the cans, and an additional plunger movable in said outlet-passage for further discharging the material into the cans, substantially as and for the purpose set forth.

14. In a machine for filling cans, the combination of a revolving receiving-chamber for the material to be filled, a revolving measuring-chamber communicating with the receiving-chamber, provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said chambers, a plunger movably mounted in the measuring-chamber for forcing the material from the measuring-chamber through said outlet-passage to the cans, and an actuator for operating said plunger during the revolution of said measuring-chamber, substantially as and for the purpose set forth.

15. In a machine for filling cans, the combination of a revolving receiving-chamber for the material to be filled, revolving measuring-chambers opening from said receiving-chamber and provided with outlet-passages whereby the material passes from the receiving to the measuring chambers and thence through the outlet-passages to the cans, a cut-off between the receiving-chamber and the measuring-chambers, a revolving can-feed, discharge-plungers for forcing the measured material from the measuring-chambers through the outlet-passages into the cans, plunger-rods on the plungers, and a revolving frame having an opening through which the plunger-rods are guided, substantially as and for the purpose set forth.

16. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revolving measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby said material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said chambers, a plunger movably mounted in the measuring-chamber and revolvable therewith for forcing the material from said chamber through its outlet-passage into the cans, a plunger-rod projecting from said plunger, a lateral projection on said rod, and opposite cam-faces for engaging said projection and operating the plunger, substantially as and for the purpose set forth.

17. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revolving measuring-chamber leading from the receiving-chamber, a cut-off between the receiving and measuring chambers, a filler-chamber adapted to discharge into the cans, a passage between the measuring and filler chambers for conducting the material from the measuring to the filler chamber, a plunger movably mounted in the measuring-chamber and revolvable therewith for forcing the material from the measuring to the filler chamber, and a second plunger having its extremity of substantially the same diameter as that of the filler-exit, whereby said extremity passes to the extreme end of the filler-chamber for discharging all of the material therefrom into the cans, substantially as specified.

18. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revoluble measuring-chamber leading from the receiving-chamber, a cut-off between the receiving and measuring chambers, a revoluble filler-chamber adapted to discharge into the cans, a passage between the measuring and filler chambers for conducting the material from the measuring to the filler chamber, a plunger movable within and revoluble with the measuring-chamber for forcing the material from the measuring to the filler chamber, a second plunger movable within and revoluble with the filler chamber, having its extremity of substantially the same diameter as that of the filler-exit, whereby said extremity passes to the extreme end of the filler-chamber for discharging all of the material therefrom into the cans, and a can-seat for registering the cans with the end of the filler-chamber wall when the latter plunger is operated, substantially as and for the purpose specified.

19. In a machine for filling cans, the combination of a revoluble frame, a receiving-chamber for the material to be filled mounted on said frame, a measuring-chamber leading from said receiving-chamber and also mounted on said frame, a stationary cut-off between the receiving and measuring chambers, a filler-chamber also mounted on said frame and adapted to discharge into the cans, a connecting-passage between the measuring and filler chambers for conducting the measured material into the cans, a plunger movable in the measuring-chamber, a second plunger movable in the filler-chamber, and a feed for feeding the cans to the filler-chamber, substantially as and for the purpose set forth.

20. In a machine for filling cans, the combination of a revoluble chamber for receiving the material to be filled, a revoluble measuring-chamber opening from the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said receiving and measuring chambers, a plunger movably mounted in and revoluble with said measuring-chamber for discharging the measured material from the measuring-chamber through the outlet-passage into the cans, an adjustable actuator for said plunger whereby its movement is regulated and the size of the charge governed, and a second plunger movable in said outlet-passage and revoluble with the measuring-chamber, substantially as and for the purpose set forth.

21. In a machine for filling cans, the combination of a chamber for the material to be filled, two or more revoluble measuring-chambers, a cut-off between said receiving-chamber and the measuring-chambers, discharge-plungers for forcing the material from said measuring-chambers, two or more revoluble filling-chambers opening from the measuring-chambers for conveying the material into the cans, plungers movable in said measuring-chambers for discharging the material therefrom into the filling-chambers, and plungers movable in the filling-chambers for discharging the material into the cans, substantially as and for the purpose set forth.

22. In a machine for filling cans, the combination of a chamber for the material to be filled, a movable measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said chambers, a plunger movably mounted in the measuring-chamber and movable therewith, and a can-feed movable with the measuring-chamber for feeding the can forward during the feeding of the material into the cans, substantially as and for the purpose set forth.

23. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a measuring-chamber communicating with the receiving-chamber, a cut-off between the receiving and measuring chambers, a discharge-plunger for forcing the material from the measuring-chamber, a movable filling-chamber opening from the measuring-chamber for conveying the material into the cans, a plunger mounted in the filling-chamber and movable therewith, and a can-feed movable with the movable filling-chamber, whereby the can is fed forward as the material is fed into the same, substantially as and for the purpose described.

24. In a machine for filling cans, the combination of a chamber for the material to be filled, two or more revoluble measuring-chambers leading from said receiving-chamber, a cut-off between the measuring-chambers and the former chamber, two or more filling-chambers at one side of the measuring-chambers for conducting the material into the cans, lateral connecting-passages between the measuring and filling chambers for conducting the material from the measuring to the filling chamber, a discharging-plunger for forcing the material into the cans, and a can-seat also at one side of the measuring-chamber in alignment with the filling-chamber, substantially as described.

25. In a machine for filling cans, the combination of a chamber for receiving the material to be canned, a measuring-chamber opening from the receiving-chamber, a cut-off between the receiving and measuring chambers, a filling-chamber opening from one side of the measuring-chamber, a plunger for discharging said measuring-chamber, said plunger having its upper face provided with a groove leading toward the inlet-opening of the filling-chamber, substantially as and for the purpose specified.

26. In a machine for filling cans, the combination of a chamber for receiving the material to be filled, a measuring-chamber opening from the receiving-chamber, a cut-off between the receiving and measuring chambers, a filling-chamber opening from one side of the measuring-chamber, a plunger for discharging said measuring-chamber, said plunger having its upper face provided with a groove leading toward the inlet-opening of the filling-chamber, and a plunger movable in said filling-chamber, substantially as set forth.

27. In a machine for filling cans, the combination of a chamber for the material to be canned, a revoluble measuring-chamber opening from said receiving-chamber and provided with an outlet-passage, whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between the receiving and measuring chambers, a plunger movably mounted in and revoluble with the measuring-chamber for discharging the measured material into the cans, a stationary cam for reciprocating said plunger, a vertically-movable revoluble can-seat beneath said outlet-passage, and a cam for reciprocating said seat toward and away from the outlet-passage, substantially as and for the purpose described.

28. In a machine for filling cans, the combination of a can-filler, a can-feed, a movable can-seat for the cans, and a cam for actuating said seat having a section of its cam-face removably secured in position, whereby said section may be removed at will from operative position, substantially as and for the purpose specified.

29. In a machine for filling cans, the combination of a movable can-support, a can-feeding tube having a cut-out for permitting egress of the cans, and a stationary plate extending from said tube to a point above the can-support, substantially as described.

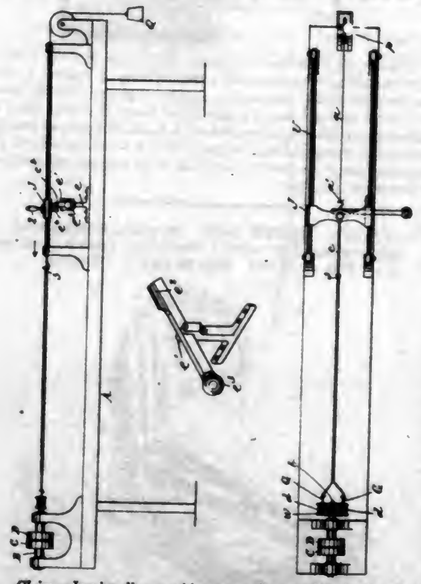
30. In a canning-machine, the combination of a movable can-support, a can-feeding tube having a cut-out for permitting egress of the cans, a plate extending from said tube to the point above the can-support for supporting the cans, and a revoluble can-feed having arms adapted to engage said cans when mounted on said plate, substantially as set forth.

31. In a canning-machine, the combination of a can-feed, a can-feeding tube for feeding cans to the can-feed, and a pivoted stop having one extremity movable into and out of said tube, substantially as and for the purpose specified.

32. In a machine for filling cans, the combination of a plate M, upon which the cans are supported, feeding projections M' for feeding the cans forward, a filler for filling the can, and a discharge-plate R', having one extremity disposed in a plane at one side of the plane of the projections M' and adapted to project into the path of the cans for removing the cans from said support, substantially as and for the purpose specified.

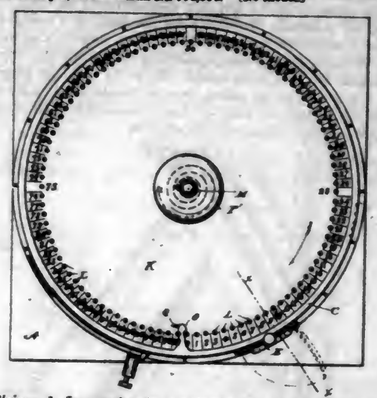
473,886. BANDING-MACHINE. WILLIAM H. MCDAVITT, Lawrence, assignor to George Draper & Sons, Hopedale, Mass. Filed Oct. 5, 1891. Serial No. 407,764. (No model.)

Brief.—A gravity-catch in the path of the carriage prevents the carriage from moving to the extreme end of the frame under the influence of the weight when the attendant removes the twisted band.



Claim.—In a banding-machine, a traveling carriage having a hook for the reception of the central part of the strands to be twisted into a band, combined with an automatically-operating latch consisting of a tilting lever placed in the path of and adapted to arrest the backward movement of the carriage and means constantly acting to place said lever in the path of the carriage, as and for the purpose set forth.

473,887. CASH-REGISTER. TIMOTHY ROGERS, Springfield, Ohio. Filed July 3, 1891. Serial No. 398,358. (No model.)



Claim.—1. In a registering mechanism, the combination, with a wheel of a lower order and a wheel of a higher order having teeth and a journal-bearing and casing for said wheels, of a spring-actuated pawl on the former wheel, kept normally out of engagement with said teeth on the latter wheel, a cam on said casing adapted to effect the engagement of said pawl and teeth, a locking-detent mounted on said casing and having a cam-surface and adapted to normally engage with said teeth, and a pin or projection on the wheel of the lower order adapted to throw said detent out of its locking position by the rotation of the latter wheel.

2. In a registering mechanism, the combination, with a frame or casing, two wheels therein of lower and higher order, respectively, and having teeth, intermediate mechanism operatively connecting said wheels, and means to actuate said mechanism intermittently, of a locking-detent having an arm-extension provided with a cam-surface and pivoted to said frame and adapted to normally engage with the latter wheel and a pin or projection on the former wheel to engage and hold said detent during the rotation of one tooth by the impingement of the pin or projection upon the said cam-surface.

3. In a registering mechanism, the combination, with a case having sight-slots and a door normally closed, of a series of wheels mounted within said case and having numbers or characters adapted to be shown through said sight-slots, pawls mounted between said wheels and adapted to operatively connect the adjacent wheels, but normally out of action, locking-detents mounted on said door and normally engaged with said teeth, and cams for effecting the engagement of said pawls and also carried by said door, whereby on opening the door the wheels will be unlocked and may be freely rotated.

4. In a registering mechanism, the combination, with adding-disks and a casing therefor provided with a movable door portion, of pawls forming the operating connections between said disks and actuating-cams for said pawls carried by said door portion of the casing, adapted to be engaged with said pawls or thrown out of the path thereof, according to the position of the said door portion near to or away from said disks.

5. In a cash-register, the combination, with a rotatable wheel having teeth and a pivot therefor, of a casing for said wheel having a circumferential slot opposite said teeth and forming guides, a carrier piece or support mounted in said guiding-slot, a spring acting to keep said carrier at one end of the slot, a sliding piece mounted in said carrier adapted to be pushed into engagement with said teeth, but normally out of engagement therewith, and a spring to effect said normal disengagement of the sliding piece, whereby the said sliding piece may be pushed into engagement with said teeth, maintain said engagement while its carrier is slid along the said guides to rotate said wheel, and disengage itself therefrom and return to its position at one end of the slot when freed from the action of the operator.

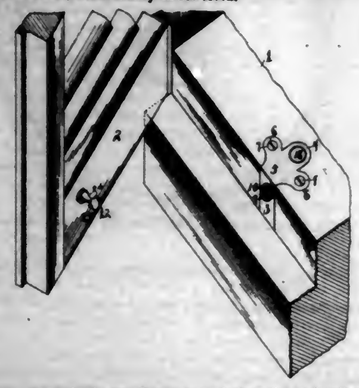
473,888. SHUTTER-FASTENER. HARRY J. SAXTON, St. Louis, Mo., assignor to Frederick Kolles and James V. Saxton, same place. Filed Nov. 16, 1891. Serial No. 412,047. (No model.)

Claim.—1. An automatic shutter-fastener having a bolt adapted to move vertically, a push-plug mechanically connected to the same, by means of which the said bolt may be depressed, said plug being located above the bolt, so as to have a position at the top of the sill, substantially as set forth.

2. An automatic shutter-fastener having a casing, a bolt secured therein and adapted to move vertically, a push-plug mechanically con-

nected to the said bolt and flush with the top of the said casing when not depressed, and a device carried by the shutter and adapted to come in contact with the said bolt, substantially as set forth.

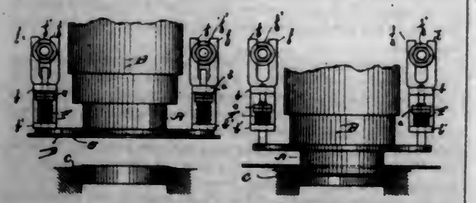
3. An automatic shutter-fastener consisting of a casing, a bolt, such as 8, secured therein and provided with a stem 13, a spring, such as 14, encircling the said stem, a push-plug 18, mechanically connected to the said bolt and being located above the bolt, said plug being flush with the top of said casing when not depressed, and a screw carried by the shutter, the head of which is adapted to come in contact with the said bolt, substantially as set forth.



4. An automatic shutter-fastener consisting of a casing 3, a bolt 8, having a block 9, an inclined face formed upon the said block, a stem, such as 13, secured to the said block, a coil-spring 14, encircling said stem and interposed between said block and the solid portion 11, formed in said casing, right-angular arm 15, secured to the block 9, push-plug 18, rod 17, connecting the said plug with said arm 15, and a suitable device carried by the shutter and adapted to pass behind the said bolt when the said shutter is closed, substantially as set forth.

5. An automatic shutter-fastener consisting of a casing 3, an opening 10, formed therein, an extension 4, formed integral with the said casing, plate 5, forming a covering for the said casing, bolt 8, having a block 9 with inclined and curved surfaces, stem 13, secured to the said block and passing through a suitable opening 12, coil-spring 14, encircling the said stem, right-angular arm 15, secured to or formed integral with the said block 9, bars 17, secured to the said arm, push-plug 18, carried by the opposite end of the said bar 17, and a screw 20, carried by the shutter, the head of which is adapted to come in contact with the inclined and curved surfaces of the block 9 and pass behind the same when the said blind is closed, substantially as set forth.

473,889. PRESS-STRIPPER. HENRY SCHAAKE, Baltimore, Md., assignor to Charles B. Kendall, Newton, Mass. Filed Dec. 14, 1891. Serial No. 414,967. (No model.)

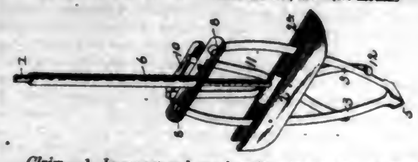


Claim.—1. The combination, with a die-press, of a supporting-bracket and a vertically-movable stripper surrounding the male die and provided with upwardly-exteeding guide-arms working in said bracket, said stripper being adapted to be moved with the movement of the die.

2. The combination, with a die-press, of a vertically-adjustable bracket, a movable stripper supported by said bracket surrounding the male die and adapted to be depressed with the movement of the die, and means for automatically returning the stripper on the upstroke of the die.

3. The combination of a supporting-bracket provided with forwardly-projecting arms, a movable stripper having standards working in said arms and provided with rigid collars between the same, and springs coiled around said standards between the collars and the lower arms.

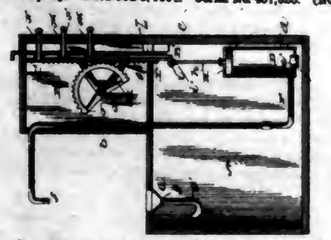
473,890. WEED AND ROOT PULLER. WILLIS W. WHEELOCK, Decorah, Iowa, assignor to R. M. Wheelock and H. B. Hustvedt, same place. Filed Sept. 12, 1891. Serial No. 405,508. (No model.)



Claim.—1. In a root and weed pulling implement, substantially as described, the combination, with the body, the parallel guides secured thereto, the blade-carrying jaws 3, pivoted between the guides, and the auxiliary clamp-arms pivoted to the guides and having their lower ends bent to engage the blade-carrying jaws, of the reciprocating sleeve mounted on the body, the transverse arms 7, fixed to the lower end of said sleeve and engaging the upper portion of the blade-carrying jaws, and the loop 10, connected to the transverse arms 7 and engaging the upper portion of the auxiliary clamp-arms, substantially as specified.

2. In a root and weed pulling implement, the combination of the body, the parallel guides secured thereto, the reciprocating sleeve mounted upon said body, the blade-carrying jaws 3, pivoted between the guides, and the transverse arms 7, affixed at the lower end of the sleeve and adapted to control the blade-carrying jaws, substantially as set forth.

473,891. SELF-MEASURING PUMP. JOHN J. BECKER, Fort Wayne, Ind., assignor, by direct and mesne assignments, to the Wayne Oil Tank Company. Filed Oct. 3, 1891. Serial No. 407,635. (No model.)



Claim.—In a self-measuring pump, the combination, with a tank, a cylinder having valved inlet, and a discharge-pipe, of a piston, a rack-bar connected to the piston-rod, a segment engaging with the rack-bar, a fixed stop-bar having a plurality of openings, a tube fitted in each opening and having a threaded end, a stop slidingly passed through each tube to be projected into the path of the rack-bar, and nuts on the threaded ends of the tubes on each side of the stop-bar, substantially as shown and described.

473,892. LEATHER-GAGE. AUGUSTUS G. BURTON, Chicago, Ill., assignor of one-half to George A. Marshall and Frank H. Lewis, same place. Filed Apr. 3, 1890. Serial No. 346,373. (No model.)



Claim.—1. In a machine for measuring the thickness of leather, the combination, with a suitable frame having a scale marked thereon, of a support for the leather attached to said frame, a lever pivoted to the frame having a roller secured directly to one end thereof in position above the support, an index-finger for the scale pivoted to the frame, and a suitable connection between the end of the lever opposite the roller and the index-finger, substantially as described.

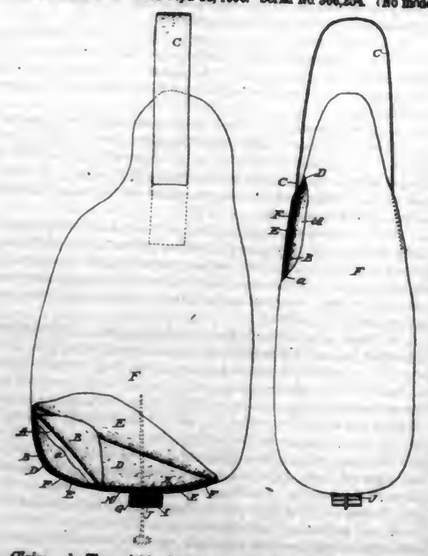
2. In a machine for measuring the thickness of leather, the combination, with a suitable frame having a scale marked thereon, of a support for the leather attached to said frame, an index-finger for the scale pivoted to the frame, a lever also pivoted to the frame, one arm being provided with a roller located in position over the support, a suitable connection between an arm of said lever and the index-finger, a spring normally holding the lever and index-finger in certain determined relation with respect to the scale, and an adjusting-screw bearing against the under side of said lever, whereby the same may be adjusted with respect to the index-finger, substantially as described.

3. In a machine for measuring the thickness of leather, the combination, with a suitable frame having a scale marked thereon, of a support for the leather attached to said frame, an index-finger for the scale pivoted to the frame, a lever also pivoted to the frame, its short arm being provided with a roller located in position over the support, suitable connections between the lever and the index-finger, and a brace-arm, as A^5, on the frame having a bearing-surface against one side of the short arm adjacent to the roller, substantially as described.

4. In a machine for measuring the thickness of leather, the combination, with a suitable frame having a scale thereon, of a support for the leather attached to said frame, an index-finger for the scale, a pinion pivoted on the frame to which said index-finger is secured, a toothed segment also pivoted to the frame and engaging said pinion, a lever also pivoted to the frame, the short arm thereof having a roller located in position over the support, a link, as E, pivoted at one end to the toothed segment and having a slot at its opposite end in which the long arm of the lever is supported, substantially as described.

5. In a machine for measuring the thickness of leather, the combination, with a suitable frame having a scale thereon, of a support for the leather attached to said frame, an index-finger for the scale, a pinion pivoted on the frame to which said index-finger is secured, a toothed segment also pivoted to the frame and engaging said pinion, a lever also pivoted to the frame, the short arm thereof having a roller located in position over the support, a link, as E, pivoted at one end to the toothed segment and having a slot at its opposite end in which the long arm of the lever rests, a spring d^9, keeping the long arm of said lever normally against the bottom of said slot, an adjusting-screw bearing against the under side of the long arm of said lever, and a spring F, secured at one end to the frame and at the other end to the lower part of the link E, substantially as described.

473,893. PRESERVING ANIMAL FOOD. JAMES W. CAMERON, New York, N. Y. Filed Sept. 26, 1890. Serial No. 366,254. (No model.)

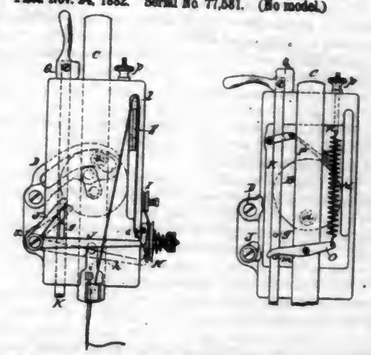


Claim.—1. The within-described water-proof air-tight envelope for animal food, consisting of a coating of lime applied to the article, a wrapper of fabric outside of said coating of lime, a coating of varnish mixed with an earthy powder, said coating being allowed to dry, a second coating of a similar compound, an envelope of fabric caused to adhere to said second coating by application thereto while the latter is soft, and an outer coating of a similar compound, substantially as shown and described.

2. The combination, with a water-proof air-tight envelope of textile fabric closely wrapped about a piece of animal food, of a nozzle fitted to said envelope with a hermetically-sealed joint and a detachable stopper closing said nozzle, substantially in the manner and for the purpose herein set forth.

3. The combination, with a water-proof air-tight envelope closely wrapped about a piece of animal food, of a nozzle fitted to said envelope with a hermetically-sealed joint, a plastic compound sealing said nozzle, and a cap or stopper closing the nozzle and protecting the compound, substantially in the manner and for the purpose herein set forth.

473,894. SEWING-MACHINE. EARLE H. SMITH, New York, N. Y. Filed Nov. 24, 1882. Serial No. 77,581. (No model.)



Claim.—1. The mechanism for operating the needle-bar, consisting of a lever connected with the needle-bar and pivoted to one side of the machine-head, the said lever having an upwardly-arched cam-groove, in combination with a rotating crank-pin traversing the cam-groove in the part nearest the fulcrum in its upward motion.

2. The revolving shaft in the bracket-arm, the needle-bar and needle actuated therefrom, a drawing-in lever acting to give down thread and draw in the stitch while the needle is above the work, and means on the shaft for operating said lever, in combination with a spring take-up acting in connection with the needle and said lever, a thread-holder against which said lever draws the thread, and means carried by the needle-bar for retracting the spring take-up to relieve the thread during the operations of the drawing-in lever.

3. A needle, needle-bar, presser-bar, and needle-actuating shaft, a positively-moved drawing-in lever, a cam for operating said drawing-in lever to give down thread and draw in the stitch while the needle is above the work, and mechanism operated from said shaft for holding the needle above the work during the operations of said lever, in combination with a spring take-up acting in connection with the needle and said lever, a thread-holder against which said lever draws the thread, and means governed by said presser-bar for arresting and automatically varying the action of the take-up with respect to the needle and said lever and according to the thickness of material under the foot.

4. A needle and needle-bar, a needle actuating shaft, the drawing-in lever, and a cam on said shaft operating said lever to give down thread and draw in the stitch while the needle is above the work, the spring take-up acting in connection with the needle and said lever, a thread-holder against which said lever draws the thread, a stud or stop for arresting and varying the action of the take-up, and means for retracting the take-up during the action of the drawing-in lever, as set forth.

5. The positively-moved drawing-in lever, means for operating the same, the two armed spring take-up lever J J', and a thread-holder against which said lever pulls, in combination with the presser-foot and bar, and the governing-stop on said bar acting on one arm of the take-up, the other arm of the take-up serving to control the slack.

6. In combination, the drawing-in lever, means for positively moving the same, the two-armed spring take-up lever, the stop g on the presser-bar, and a stud on the needle-bar for retracting the take-up to relieve the thread of the spring force of the take-up lever.

7. In combination with the presser-bar and its spring, means for adjusting the power of the spring, and a compensating-lever, one end of which is connected with the spring and the other is provided with a cam-bearing surface acting on a stud in the presser-bar.

8. The combination, with the presser-bar, of the flexible spring gripping-lever arranged transversely to and embracing the presser-bar,

and a cam acting on said lever to hold and release the presser-bar, substantially as set forth.

REISSUES.

11,283. INKSTAND. EDWARD S. RAFF, Canton, Ohio. Filed Jan. 20, 1892. Serial No. 418,714. Original No. 445,200, dated Jan. 27, 1891.



Claim.—1. As an article of manufacture, an inkstand comprising an ink-fountain pivotally supported at or near one end, and a yielding support for yieldingly sustaining the free end of the ink-fountain, substantially as set forth.

2. As an article of manufacture, an inkstand comprising an ink-fountain pivoted at or near one end and yieldingly supported at the opposite end, and a stop located beneath the yieldingly supported end of the fountain, where it will limit the downward movement of the fountain, substantially as set forth.

3. As an article of manufacture, an inkstand comprising a supporting-base having a pair of upright frames or members, and an ink fountain or receptacle pivotally hung to and between said upright frames or members and adapted to tip or swing by a downward pressure of the pen on the mouth of the fountain, in combination with a spring acting in the direction to return the fountain to its normal position upon the removal of the pressure from the mouth of the fountain, and an adjustable stop located below the mouth of the fountain to limit the depression of the same, substantially as set forth.

4. As an article of manufacture, an inkstand having a support consisting of a base A, said base having at one of its ends upwardly-projecting lugs B, having at their top portion a cross-bar C, and a fountain D, having lugs F, by which said fountain is pivotally secured to said base to swing above said bar, a spring to support the front end of said fountain, and a stop H to arrest the downward movement of the fountain, substantially as described, and for the purpose set forth.

11,284. INKSTAND. EDWARD S. RAFF, Canton, Ohio. Filed Jan. 20, 1892. Serial No. 418,715. Original No. 430,194, dated June 17, 1890.



Claim.—1. As an article of manufacture, an inkstand comprising a pivotally-supported ink fountain or receptacle adapted to move the body of ink with each tip or swing of the fountain, in combination with an adjustable stop for limiting the depression of the mouth of the ink-fountain, substantially as and for the purpose set forth.

2. As an article of manufacture, an inkstand comprising a support, an ink-fountain pivoted thereto, and a stud or projection on one of said parts projecting into an opening in the other for limiting the swing of the fountain, substantially as set forth.

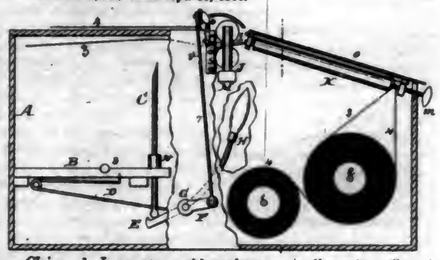
3. As an article of manufacture, an inkstand comprising an ink fountain or receptacle pivotally supported and poised or balanced in such a manner as to yield or swing by a downward pressure of the pen on the mouth of the fountain and upon the removal of the pen to swing back or return to its normal position by gravity, in combination with an adjustable stop for limiting the depression of the mouth of the fountain, substantially as and for the purpose set forth.

4. As an article of manufacture, an inkstand comprising a pair of upright frames or members and an ink fountain or receptacle pivotally hung to and between said upright frames or members and adapted to move the body of the ink with each tip or swing of the fountain, the ink-fountain at the forward end having a mouth and a narrow opening or aperture establishing open communication between the interior of the body of the fountain and the mouth, the ink-fountain having a flanged opening in the top thereof, and a cap for said flanged opening, substantially as set forth.

5. As an article of manufacture, an inkstand having a support consisting of a base A and side frames B B', said frames having at their apex pivots D and side frame B having at its upper portion a slot F and slide G, adapted to be moved back and forth therein by the thumb-screw J, and an ink-fountain I, pivotally secured in said frame to be tipped or swung on said pivots and to be adjusted by the thumb-screw and slide, substantially as described.

6. In an inkstand, the supporting-frame described and an ink-fountain pivotally secured therein, said fountain having a body portion L, depressions E, diametrically opposite, a stud, as *s*, to engage an adjustable portion of said frame, a neck portion *b*, surmounted by a hard-rubber mouth-piece having a central tube portion *n*, and means for adjusting the swing of said fountain in said frame, substantially as described, and for the purpose set forth.

11,285. AUTOGRAPHIC REGISTERING APPARATUS. JOHN R. THIEL, Dayton, Ohio. Filed Feb. 4, 1890. Serial No. 338,922. Original No. 410,616, dated Sept. 10, 1889.



Claim.—1. In an autographic register, paper-dispensing rolls, writing-tablet, and mechanism for propelling the paper over said tablet, in combination with cutting-knives and means for giving a shearing cut for severing the paper from the rolls, substantially as described.

2. In an autographic register, paper-dispensing rolls, writing-tablet, and mechanism for propelling the paper over said tablet, in combination with a cutting-shears for severing said paper and means for operating the same independently of the propelling mechanism, substantially as described.

3. The combination, in an autographic register, of paper-dispensing rolls, feeding mechanism to unwind said paper, cutting appliances to sever the same from the rolls, and filing-pins upon which duplicate sheets may be filed, substantially as described.

4. The combination, in an autographic register, of paper-dispensing rolls, feeding mechanism to unwind said paper, cutting appliances to sever the same from the rolls, and filing-pin upon which duplicate sheets may be filed, the cutting appliance and filing-pin being operated independently of the propelling mechanism.

5. In an autographic register, the combination, with paper-dispensing rolls, of writing-tablet and transfer-paper, feeding-rollers by which the paper is drawn out, cutting-knife for severing the same, and filing-pins upon which the duplicate sheets are filed, substantially as shown and described.

6. In an autographic register, the combination, with a series of paper-dispensing rolls and gripping-rollers through which said paper is fed, of a cutting-knife operated by a hand-lever affixed to a shaft, and filing-pins upon which to file the duplicate sheet raised by an arm on said shaft, so that the sheets are cut and filed away at one operation, substantially as described.

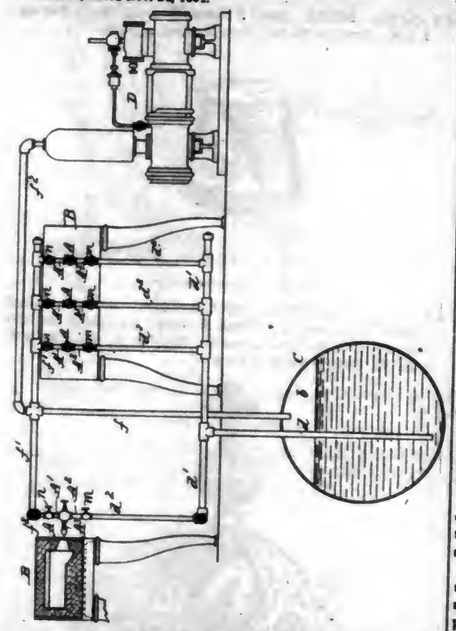
7. In an autographic register, the combination of the frame, paper-dispensing rolls journaled therein, writing-tablet to support the strips drawn therefrom with intermediate transfer-paper, feeding-rollers through which said strips are drawn, and cutting mechanism for severing said sheets, with lever and connecting-rod to operate the same, substantially as described.

8. In an autographic register, the combination, with the frame, of a shaft journaled therein, arm affixed thereto, filing-pins carried upward by said arm to pierce the paper to be filed, movable cutting-knife, and fixed cutting-edge against which said knife acts, said knife being operated simultaneously with the filing-pins to sever the sheets of paper and fix the under sheet on said pins, substantially as described.

9. In an autographic registering apparatus, the combination of the frame A, shaft G, arm E, filing-pin C, carried upwardly by said arm to pierce the under strip of paper as it is thrust against the top of said frame and pierced by the filing-pin points entering orifices *x x* of said top, the crank F, connection-rod 7, the moving blade 6, and fixed blade 5, and the operating-handle H, these parts to simultaneously sever the two strips of paper and fix the under strip on the said filing-pin, substantially as described.

10. In an autographic register in which a writing-tablet and a number of strips of paper are employed, the combination of the frame A, the shaft G, with the operating-handle H attached, crank F, connection-rod 7, and shears of parts 5 and 6, the latter being operated by the movement of the shaft and the paper fed to the shears by rollers, substantially as described.

11,286. APPARATUS FOR BURNING HYDROCARBON. JAMES H. BULLARD, Springfield, Mass., assignor to the Aerated Fuel Company, same place. Filed Mar. 19, 1892. Serial No. 425,962. Original No. 463,853, dated Nov. 24, 1891.

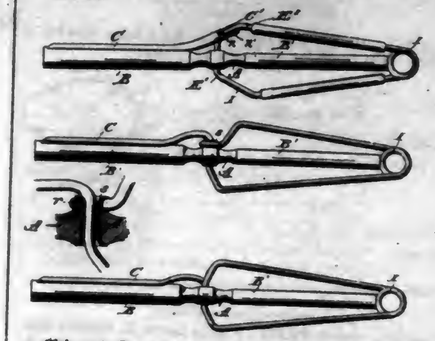


Claim.—1. The combination, with an oil-service tank and an air-compressor, of a gang of hydrocarbon-injector burners elevated above the oil-service tank and each comprising an air-inlet, a downwardly-extended oil-inlet limb, and a burner-nozzle extended laterally relative to the oil-inlet limb, an oil-delivery pipe rising from the bottom portion of the service-tank, an oil-distributing pipe connected with the oil-delivery pipe and having a gang of upwardly-extended oil-conducting and burner-draining pipes connected, respectively, with the downwardly-extended limbs of the burners, an air-distributing pipe having a series of branches connected, respectively, with the air-inlets of the burners, an air-pipe leading from the air-compressor to the air-distributing pipe, and a pipe connection between the top portion of the service-tank and the air-distributing pipe, the whole organized and arranged for conjoint action substantially as described.

2. The combination, with an oil-service tank and an air-compressor, of a gang of hydrocarbon-injector burners elevated above the oil-service tank and each comprising an air-inlet limb having a cock or valve, a lower vertical oil-inlet limb having a cock or valve, and a lateral burner-nozzle, the vertical oil-delivery pipe rising from the bottom of the service-tank, a horizontally-arranged oil-distributing pipe connected with the upper end of the oil-delivery pipe and having along its length a gang of vertical oil-conducting and burner-draining pipes connected, respectively, with the lower vertical oil-inlet limbs of the burners, a horizontal air-distributing pipe elevated above the oil-distributing pipe and having along its length a series of branches connected, respectively, with the air-inlet limbs of the burners, an air-pipe leading from the air-compressor to the air-distributing pipe, and a pipe connection between the top portion of the service-tank and the air-distributing pipe, the whole organized and arranged for conjoint action substantially as described.

3. The combination, with an oil-service tank and an air-compressor, of a gang of hydrocarbon-injector burners elevated above the oil-service tank and each comprising an air-inlet limb having a cock or valve, a lower vertical oil-inlet limb having a cock or valve, and a lateral burner-nozzle, the vertical oil-delivery pipe rising from the bottom of the service-tank, a gang of vertical oil-conducting and burner-draining pipes communicating with the oil-delivery pipe and connected, respectively, with the lower vertical oil-inlet limbs of the burners, an air-distributing pipe having a series of branches connected, respectively, with the air-inlet limbs of the burners, an air-pipe leading from the air-compressor to the air-distributing pipe, and a pipe connection for conducting compressed air into the top portion of the service-tank, substantially as and for the purposes described.

11,287. CURLING-IRON. MARK CAMPBELL, Chicago, Ill. Filed Mar. 13, 1892. Serial No. 424,735. Original No. 463,326, dated Nov. 17, 1891.



Claim.—1. In a curling-iron, the combination, with the gripping-finger, of a rod A, carrying at one end a curling-bar of one size and at the other end a curling-bar of different size, and a pivotal connection between the rod and gripping-finger, whereby the latter may be caused to co-operate with either bar, substantially as described.

2. In a curling-iron, the combination, with a rod A, carrying at each end a curling-bar, of a gripping-finger pivotally connected to the rod, whereby it may be caused to co-operate with either bar, substantially as described.

3. In a curling-iron, the combination, with the rod A, carrying at each end a curling-bar, of a gripping-finger C, and a pivotal connection between the gripping-finger and the rod A, substantially as described.

4. In a curling-iron, the combination of the rod A, carrying at each end a curling-bar, a fixed part carrying a gripping-finger C, and a pivotal connection between the fixed part and the rod A, said fixed part constituting a handle extending from the rod A and adapted to receive the bars in their rotation on their pivot, substantially as described.

5. In a curling-iron, the combination, with the rod A, centrally perforated and carrying at each end a curling-bar, of a handle carrying a gripping-finger and affording in part of its length a pivot for the rod, substantially as described.

6. In a curling-iron, the combination, with the rod A, centrally perforated and carrying at each end a curling-bar, of a fixed part constituting a handle provided with a spring and in part of its length affording a pivot for the rod A, and a gripping-finger operated by the spring-handle, substantially as described.

7. A curling-iron comprising, in combination, a central rod A, provided with a perforation, bars B B', carried by opposite ends of the rod, a spring-handle formed of a single wire I, passing in part of its length through the perforation, a gripping-finger C, carried by the extremity of the introduced part of the wire I, and a connection between the inner end of the finger C and the opposite end E' of the wire I, the parts being arranged to operate substantially as described.

11,288. SECONDARY BATTERY. ISAIAH L. ROBERTS, New York, N. Y., assignor to the Roberts-Brevoort Electric Company, Limited, same place. Filed Jan. 26, 1892. Serial No. 419,613. Original No. 464,665, dated Dec. 8, 1891.



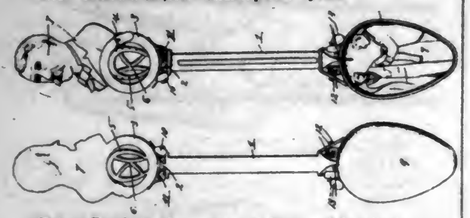
Claim.—1. In a secondary or storage battery, the combination of the electrodes with an electrolyte of a salt of iron, which is capable of absorbing an acid radical, and a non-porous electrolytic diaphragm interposed between the electrodes, as set forth.

2. In a secondary or storage battery, an iron electrode and an element or plate electro-negative thereto in a solution of chloride of iron, in combination with a non-porous electrolytic diaphragm interposed between the electrodes, as set forth.

3. In a secondary or storage battery, the electrodes of iron and carbon, respectively, in a solution of chloride of iron, in combination with a partition or diaphragm intermediate to the electrodes and composed of fibrite, as set forth.

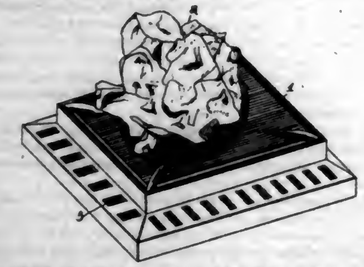
DESIGNS.

21,496. SPOON. WILL F. HOLBROOK, Seward, Nebr. Filed Feb. 1, 1892. Serial No. 419,996. Term of patent 7 years.



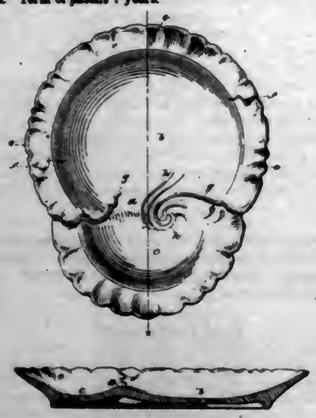
Claim.—The design for a spoon, as shown and described.

21,497. PAPER-WEIGHT. WILLIAM LANYON, Jr., Pittsburg, Kans., assignor of one-half to Hed V. Lanyon, same place. Filed Mar. 25, 1892. Serial No. 426,456. Term of patent 14 years.



Claim.—The design for a paper-weight, substantially as herein described and shown.

21,498. RECEPTION-PLATE. EDGAR W. ABBOT, Brooklyn, assignor to O. A. Gager & Co., New York, N. Y. Filed Mar. 3, 1892. Serial No. 423,534. Term of patent 7 years.



Claim.—The design for a plate, substantially as shown.

21,499. COFFIN-HANDLE. OLIVER MCCARTHY, Meriden, Conn., assignor to The Meriden Britannia Company, same place. Filed Apr. 1, 1892. Serial No. 427,483. Term of patent 7 years.



Claim.—The herein described design for a coffin-handle, as shown in the accompanying illustration.

21,500. BOTTLE. JOSEPH P. CHERRY, Nashville, Tenn. Filed Apr. 2, 1892. Serial No. 427,545. Term of patent 14 years.



Claim.—The design for a bottle, herein shown and described.

21,501. ORNAMENTAL TOP FOR STOVES. DAVID M. IRELAND, Detroit, Mich., assignor to William G. Howard and Fred E. Lee, executors of P. D. Beckwith, deceased. Filed Dec. 21, 1891. Serial No. 415,799. Term of patent 14 years.



Claim.—The design for the top of a stove, substantially as herein shown and described.

21,502. GATE. HENRY R. VAN ERT, Peoria, Ill. Filed Feb. 13, 1892. Serial No. 421,453. Term of patent 3½ years.



Claim.—The design for a gate, as herein shown and described.

21,503. CHAIR. FRANK K. WARD, Washington, D. C. Filed Mar. 30, 1892. Serial No. 427,129. Term of patent 14 years.

21,503.



Claim.—The design for a chair, substantially as shown and described.

21,504. DRESS-TRIMMING. THOMAS ADAMS, Philadelphia, Pa., assignor to the Hensel-Calladay Company, same place. Filed Apr. 4, 1892. Serial No. 427,754. Term of patent 3½ years.



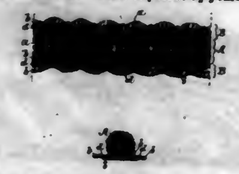
Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawings.

21,505. DRESS-TRIMMING. THOMAS ADAMS, Philadelphia, Pa., assignor to the Hensel-Calladay Company, same place. Filed Apr. 4, 1892. Serial No. 427,755. Term of patent 3½ years.



Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawings.

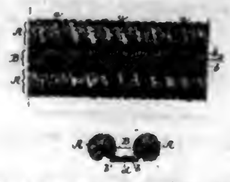
21,506. DRESS-TRIMMING. THOMAS ADAMS, Philadelphia, Pa., assignor to the Hensel-Calladay Company, same place. Filed Apr. 4, 1892. Serial No. 427,756. Term of patent 3½ years.



Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawings.

21,507. DRESS-TRIMMING. THOMAS ADAMS, Philadelphia, Pa., assignor to the Hensel-Calladay Company, same place. Filed Apr. 4, 1892. Serial No. 427,757. Term of patent 3½ years.

21,507.



Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawings.

21,508. COFFIN-PLATE. OLIVER MCCARTHY, Meriden, Conn., assignor to the Meriden Britannia Company, same place. Filed Mar. 26, 1892. Serial No. 426,825. Term of patent 7 years.



Claim.—The design for a coffin-plate, herein described, as shown in the accompanying illustration.

21,509. BOTTLE. MAX OBERFELDER, Chicago, Ill. Filed Mar. 10, 1892. Serial No. 424,461. Term of patent 14 years.



Claim.—The design for a bottle, herein shown and described.

21,510. SILVERSMITH'S STOCK. ASTON WEBER, Philadelphia, Pa., assignor to the Headly & Carrow Manufacturing Company, same place. Filed Apr. 4, 1892. Serial No. 427,753. Term of patent 7 years.



Claim.—The design for silversmiths' stock, substantially as described, and as shown in the accompanying drawing.

TRADE-MARKS

REGISTERED APRIL 26, 1892.

21,019. SADDLERY HARDWARE. THE EBERHARD MANUFACTURING COMPANY, Cleveland, Ohio. Filed Nov. 10, 1891.

E.MFG.CO.

Essential feature.—The letters "E. Mfg. Co." and an inclosing oblong figure. Used since January 1, 1883.

21,020. CHEWING-GUM. WILLIAM H. BREWER, Cleveland, Ohio. Filed Feb. 27, 1892.

PICTURE

Essential feature.—The word "PICTURE." Used since December 1, 1891.

21,021. CIGARETTES. RADOM & Co., Baltimore, Md. Filed Feb. 23, 1892.

LA CAROLINA

Essential feature.—The words "LA CAROLINA." Used since February 11, 1892.

21,022. COTTON AND LINEN TEXTILE GOODS. WILLIAM DIERKLAERS, Stadtlingen, Germany. Filed Jan. 21, 1892.



Essential feature.—The figure of Liberty, standing on a globe bearing the word "AMERICA." Used since July 1, 1891.

21,023. BAKING-POWDER. CHARLES R. GROVE, St. Paul, Minn. Filed Mar. 29, 1892.

SNOW

Essential feature.—The word "SNOW." Used since 1867.

21,024. CONFECTIONERY. HALL & HAYWARD COMPANY, Louisville, Ky. Filed Mar. 7, 1892.

FATIMA'S DELIGHT

Essential feature.—The words "FATIMA'S DELIGHT." Used since December, 1891.

21,025. CONFECTIONERY. HALL & HAYWARD COMPANY, Louisville, Ky. Filed Mar. 7, 1892.

AGATE

Essential feature.—The word "AGATE." Used since December, 1891.

21,026. CONFECTIONERY. HALL & HAYWARD COMPANY, Louisville, Ky. Filed Mar. 7, 1892.

TE-TO-TUM

Essential feature.—The word "TE-TO-TUM." Used since October 31, 1891.

21,027. PERIODICALS. JOHN L. O'REILLY, New York, N. Y. Filed Mar. 30, 1892.



Essential feature.—The words "MODES AND FABRICS." Used since May 1, 1891.

21,028. KID AND OTHER GLOVES. PIPER & PIPER, New York, N. Y. Filed Mar. 29, 1892.



Essential feature.—The representation of a glove with a dog holding the wrist end of the glove in its mouth and five pups holding the finger ends of the glove in their mouths. Used since October 16, 1891.

21,029. COOKING-STOVES. BRIDGE & BEACH MANUFACTURING COMPANY, St. Louis, Mo. Filed Mar. 11, 1892.

21,029.



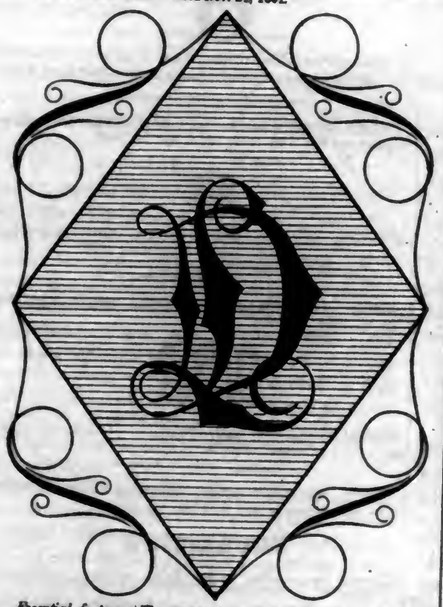
Essential feature.—The representation of a bird and a bunch of grapes. Used since February 1, 1889.

21,030. OATS, WHEAT, AND BUCKWHEAT. JAMES BUTLER, New York, N. Y. Filed Mar. 30, 1892.

TRIUMPH.

Essential feature.—The word "TRIUMPH." Used since March 1, 1892.

21,031. METAL-BURNISHING POWDER. DIAMOND LUSTER POLISH Co., Boston, Mass. Filed Nov. 21, 1891.



Essential feature.—The monogram "D L" upon a diamond-shaped symbol and a scroll in the border arranged at the four sides of the diamond. Used since January 21, 1891.

21,032. OPTICAL INSTRUMENTS FOR IMPROVING EYESIGHT. JOHN JAMES WOOD, Liverpool, England. Filed Mar. 26, 1892.

SPECTALETTE

Essential feature.—The word "SPECTALETTE." Used since December 10, 1891.

21,033. PERFUMERY. WINKELMANN & BROWN DRUG COMPANY, Baltimore, Md. Filed Mar. 30, 1892.

LILIOPTUS.

Essential feature.—The word "LILIOPTUS." Used since January 14, 1892.

21,034. PERFUMERY. WINKELMANN & BROWN DRUG COMPANY, Baltimore, Md. Filed Mar. 30, 1892.

DEW DRIPLETS.

Essential feature.—The words "DEW DRIPLETS." Used since January 14, 1892.

21,035. CORSETS. MARY M. BLISS, Pawtucket, R. I. Filed Mar. 26, 1892.

STESROC.

Essential feature.—The word "STESROC." Used since September, 1891.

21,036. TEA-TRAYS. BEHALF OF WALTER M. CONGER, Jr., Newark, N. J. Filed Mar. 18, 1892.



Essential feature.—An oval figure and the letters "N. T. T. Co." Used since March 16, 1892.

21,037. KID AND OTHER GLOVES. PIPER & PIPER, New York, N. Y. Filed Jan. 14, 1892.

TUXEDO

Essential feature.—The word "TUXEDO." Used since January 2, 1891.

21,038. KID AND OTHER GLOVES. PIPER & PIPER, New York, N. Y. Filed Jan. 14, 1892.

Chaumont

Essential feature.—The word "CHAUMONT." Used since January 2, 1891.

21,039. KID AND OTHER GLOVES. PIPER & PIPER, New York, N. Y. Filed Jan. 14, 1892.

BERTHOLD

Essential feature.—The word "BERTHOLD." Used since January 2, 1891.

21,040. KID AND OTHER GLOVES. PIPER & PIPER, New York, N. Y. Filed Jan. 14, 1892.

FONTAINE

Essential feature.—The word "FONTAINE." Used since January 2, 1891.

21,041. KID AND OTHER GLOVES. PIPER & PIPER, New York, N. Y. Filed Jan. 14, 1892.

P&P

Essential feature.—The letters and character "P & P" Used since January 2, 1891.

21,042. WITHDRAWN.

21,043. ALE AND STOUT. THE ROBERT SMITH INDIA PALE ALE BREWING COMPANY, Philadelphia, Pa. Filed Oct. 27, 1891.



Essential feature.—The word "SMITH'S" and the representation of a tiger's head. Used since 1840.

21,044. SHOES. TUCKER & MOULTON, Boston, Mass. Filed Apr. 1, 1892.

21,044. CAPITOL

Essential feature.—The word "CAPITOL." Used since January 1, 1890.

21,045. LOCAL ANÆSTHETIC IN LIQUID FORM. CHARLES A. TRAUTNER, Chicago, Ill. Filed Mar. 21, 1892.

AROPHENE

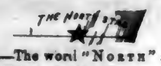
Essential feature.—The word "AROPHENE." Used since November, 1891.

21,046. CHEESE. S. R. UDELL & Co., Chicago, Ill. Filed Mar. 12, 1892.

MONARCH

Essential feature.—The word "MONARCH." Used since May 1, 1886.

21,047. EGG CARRIERS AND CASES, EGG-CASE FILLERS, AND FRUIT-CARRIERS. HENRY WEIS, Waterloo, Iowa. Filed Dec. 12, 1891.



Essential feature.—The word "NORTH" and the representation of a star. Used since February 12, 1878.

21,048. PILLS. JOHN SIMPSON ABRAHAM, Sydney, New South Wales. Filed Aug. 30, 1891.



Essential feature.—A central panel containing the representation of a dandelion-plant and end panels formed of sprays of dandelion and containing printed matter in script type. Used since August 28, 1874.

21,049. LUBRICATING-OILS. BLIVEN & CARRINGTON, New York, N. Y. Filed Sept. 15, 1891.



Essential feature.—The words "VALVE-OLEINA" and the representation of a globe. Used since January, 1889.

21,050. FABRIC-CLEANSING COMPOUNDS OF SEMI-LIQUID OR LIQUID FORM. WILLIAM J. KAYSER, Milwaukee, Wis. Filed Mar. 14, 1892.

AMBORIA

Essential feature.—The word "AMBORIA." Used since May 1, 1891.

21,051. REMEDY FOR THE CURE OF HEADACHE, COLDS, NEURALGIA, OR SIMILAR AILMENTS. CHARLES B. KIDDERLEY, Northampton, Mass. Filed Mar. 30, 1892.

PYRO-FEBRIN.

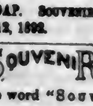
Essential feature.—The word "PYRO-FEBRIN." Used since December 15, 1891.

21,052. COTTON-SEED OIL, CRUDE AND REFINED. MARIO LEHMAN, New York, N. Y. Filed Mar. 21, 1892.

YELLOW ROSE

Essential feature.—The words "YELLOW ROSE." Used since January, 1890.

21,053. ARTIFICIAL IVORY AND ARTICLES MADE OR FORMED THEREOF. THE ERURNEA CO., Lancaster, England. Filed Dec. 28, 1891.



Essential feature.—The representation of a negro standing against a background formed by a shield and an elephant's head and holding with his left hand the small end of an elephant's tusk, the large end being at his feet. Used since April 1, 1891.

21,054. COTTON THREAD. JONAS BROOK AND BROTHERS, Meltham, England, and New York, N. Y. Filed Mar. 25, 1892.



Essential feature.—The words "BROOK'S SOFT FINISH" and the heraldic representation of a goat's head. Used since 1840.

21,055. COTTON THREAD. JONAS BROOK AND BROTHERS, Meltham, England, and New York, N. Y. Filed Mar. 25, 1892.



Essential feature.—The word "BROOK'S" on a band crossing a disk or label of a contrasting color. Used since 1840.

21,056. LAXATIVE. DAVIS CHEMICAL CO., Ypsilanti, Mich. Filed Mar. 28, 1892.

FIGLAX

Essential feature.—The word "FIGLAX." Used since October 1, 1891.

21,057. TRAMWAY-TRUCKS. SHEFFIELD VELOCIPEDE CAR COMPANY, Three Rivers, Mich. Filed Mar. 28, 1892.

EQUALIZING

Essential feature.—The word "EQUALIZING." Used since April 1, 1891.

21,058. TOILET SOAP. SOUVENIR MANUFACTURING CO., Providence, R. I. Filed Mar. 12, 1892.

SOUVENIR

Essential feature.—The word "SOUVENIR." Used since February 19, 1892.

21,059. MALLEABLE CASTINGS. THE EBERHARD MANUFACTURING COMPANY, Cleveland, Ohio. Filed Nov. 10, 1891.

Essential feature.—The letter "E" and the inclosing figure of a circle. Used since January 1, 1883.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

GUERRANT *v.* CABLE *v.* COFFEE.

Decided April 12, 1892.

PRACTICE—APPEALS ON INTERLOCUTORY MOTIONS.

No appeal lies to the Commissioner from a decision of the Examiner of Interferences affecting the evidence before his own tribunal, but a motion to take additional testimony is not within this rule, and an appeal from the Examiner's adverse decision thereon is properly taken to the Commissioner.

APPEAL on motion.

MACHINE FOR STEMMING TOBACCO.

Application of Mary L. Guerrant, administratrix, filed March 29, 1890, No. 345,925. Application of George W. Cable filed November 25, 1889, No. 331,406. Application of Robert W. Coffee filed November 7, 1889, No. 329,500.

Mr. F. D. Johns for Guerrant.

Mr. L. W. Serrell for Cable.

Messrs. Church & Church for Coffee.

SIMONDS, *Commissioner:*

This case comes here on cross-appeals by parties to an interference alleging error on the part of the Examiner of Interferences in admitting certain testimony and suppressing certain other testimony. It is objected in the first place that it was error not to suppress the rebutting depositions of the witnesses, Massie, Guerrant, and Bethell, taken on behalf of Guerrant, and the counter objection of the opposing party is that the rebutting deposition of one Hamlin was improperly suppressed.

The uniform practice of the Office renders it unnecessary to consider these objections at this time. When the case comes here on the merits, if it does, these questions will be considered. For the present the lower tribunal will exercise an absolute discretion in admitting or rejecting testimony.

But the alternative of the first objection is that Coffee be allowed to introduce surrebutting testimony if the depositions are permitted to stand, and this from the nature of the relief asked is a question that demands immediate consideration, and was properly appealed to the Commissioner. An examination of the record, however, shows no good ground for permitting the moving party to take further testimony, and the motion is denied.

TOMPKINS *v.* SELKIRK.

Decided April 18, 1892.

INTERFERENCE—BURDEN OF PROOF.

Where an attorney and skilled expert of a company made application for certain patents with the full knowledge of the company and the president of the company applied for patents for the same invention, sixteen and seven months, respectively, later than the senior party, *Held* that the presumption and probabilities are all with the senior party and can only be rebutted by the strongest possible proof.

APPEAL from Examiners-in-Chief.

PROCESS OF MANUFACTURING PAPER-STOCK.

Application of John D. Tompkins filed December 6, 1889, No. 332,839. Application of Alexander Selkirk filed August 4, 1888, No. 282,072.

Mr. George H. Benjamin for Tompkins.

Messrs. Prindle & Russell for Selkirk.

SIMONDS, *Commissioner:*

This is an appeal from the Examiners-in Chief involving two interferences, one for a process and the other for an apparatus. They were heard together on appeal and this decision is applicable to both. It appears from the record in each case that Selkirk was employed as attorney and skilled workman by the Tompkins Company, of which the junior party hereto is or was president, and that while acting in that dual capacity he made the two applications which are before the Office in his name and involved in these interferences. Selkirk's applications were filed, respectively, August 4, 1888, and May 31, 1889, sixteen and seven months, respectively, ahead of the interfering applications of Tompkins.

It appears in evidence that Selkirk in December, 1887, for a consideration agreed to assign to the Tompkins Company all and any improvements which he had at that time made or might thereafter make upon a certain invention of Tompkins in this same art. These facts are strongly corroborative of the state of facts which the testimony tends to establish and which Tompkins has not met with any satisfactory evidence. Indeed, certain answers of Tompkins given in the course of his testimony (see questions 53, 109, 257, and cross-question 175, Tompkins's testimony, Tompkins's Record, pp. 15, 23, 53, and 38) are practically admissions by him that in the day and time of these transactions he conceded to Selkirk the invention of the subject-matter in controversy. It is impossible to read this testimony without deducing that inference therefrom.

But even without such admissions the established rules of evidence would compel, on the record presented in this case, a decision in favor of Selkirk. He is the senior party. The burden of proof is upon Tompkins to dislodge him from that position, and this is not to be done by such testimony as that offered by Tompkins for the purpose. It is a self-

evident proposition that the testimony offered by a junior party must be absolutely conclusive as to one point at least—to wit, it must carry the junior party's date of conception back beyond the filing date of his opponent, because that filing date is a matter of record and a matter that is beyond impeachment by any sort of testimony. Tompkins's testimony has not done this. His case is vague on the record and it proves nothing. Selkirk, on the other hand, is corroborated by circumstances, his position is strengthened by the natural probabilities of the case, and he has the strong advantage of priority on the records of the Office.

The decision of the Examiners-in-Chief awarding priority of invention to Selkirk is affirmed.

EX PARTE WENDELL.

Decided April 20, 1892.

PRACTICE OF THE OFFICE—DIVISION.

Where applicant's machine was in its entirety a mangle or ironing-machine, *Held* that the Examiner properly required division as to certain claims in the application which related purely to a belt-shifting device.

ON petition.

MANGLE.

Application of Menzo E. Wendell filed September 22, 1891, No. 406,519.

Mr. E. B. Stocking for the applicant.

SIMONDS, *Commissioner:*

This is a petition taken from an action of the Primary Examiner, the practical meaning of which is that claims 14, 15, and 16 shall be eliminated from the application by division, as pertaining to a different invention from that to which the other twenty claims relate.

The machine shown in the application under consideration is in its entirety a mangle or ironing-machine, and the said three claims all relate, as originally presented, to a belt-shifting device, which is a mere appendage to the machine considered as a whole, and which is also applicable to other machines where a belt-shifter is desirable. Belt-shifters are well-known devices, which in the classification of this Office belong in a different division from that which receives and acts upon ironing-machines or mangles. There is no necessary connection between applicant's ironing-machine, considered as such, and the peculiar kind of belt-shifter which he shows in his application. Moreover, as just remarked, the two things belong in different divisions of the Office, and one range of examination into the prior art cannot cover both.

At the hearing applicant was understood to rest his case upon the precedent furnished in the case of *Willcox et al.*, (C. D., 1888, 144,) where the machine shown in the application for patent was a sewing-machine and the question was whether two claims which related to a looper might be joined with claims upon other features of the sewing-machine, the question being decided in the affirmative. The two cases are not parallel. The looper is a well-recognized part of a sewing-machine. A particular kind of belt-shifter is not a well-recognized part of any machine. Therefore the case cited by applicant does not hold as a precedent nor does the principle upon which the decision in that case proceeded apply to this.

The decision of the Primary Examiner as to division is affirmed.

Applicant's petition ends with these words:

The attention of the honorable Commissioner is brought to the fact that the Examiner, although requested to do so, has failed to give any indication to applicant of the state of the art, as required in *ex parte Stearns*, (50 O. G., 1768.)

This part of the petition was waived at the oral hearing, and is therefore not passed upon.

EX PARTE FAILOR.

Decided April 20, 1892.

PRACTICE—FEES NOT REQUIRED IN CERTAIN CASES WHERE UNCERTIFIED COPIES ARE FURNISHED.

A single uncertified copy of a decision or action by any tribunal of this Office will be furnished to an interested party without charge.

IN the matter of the petition of Ezra K. Failor that the practice of requiring fees for copies of decisions rendered by the appellate tribunals be changed and that such copies be furnished to the appellant without charge.

SIMONDS, *Commissioner:*

This is a petition in the nature of a protest against the Office practice of requiring payment from an appellant for a copy of a decision rendered upon an appeal or petition from a Primary Examiner.

The sections of statute applicable to this question are the following:

Sec. 483. The Commissioner of Patents, subject to the approval of the Secretary of the Interior, may from time to time establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

Sec. 4934. The following shall be the rates for patent fees:

On filing each original application for a patent, except in design cases, fifteen dollars.

On issuing each original patent, except in design cases, twenty dollars.

In design cases: For three years and six months, ten dollars; for seven years, fifteen dollars; for fourteen years, thirty dollars.

On filing each caveat, ten dollars.

On every application for the reissue of a patent, thirty dollars.

On filing each disclaimer, ten dollars.

On every application for the extension of a patent, fifty dollars.

On the granting of every extension of a patent, fifty dollars.

On an appeal for the first time from the Primary Examiners to the Examiners-in-Chief, ten dollars.

On every appeal from the Examiners-in-Chief to the Commissioner, twenty dollars.

For certified copies of patents and other papers, including certified printed copies, ten cents per hundred words.

For recording every assignment, agreement, power of attorney, or other paper, of three hundred words or under, one dollar; of over three hundred and under one thousand words, three dollars.

For copies of drawings, the reasonable cost of making them.

Neither of these sections of the statute makes it obligatory upon the Commissioner to charge for such copies. It is within his reasonable discretion to furnish such copies, if uncertified, without charge.

In order to assimilate the practice of the Office in this respect to the present practice of furnishing copies of the actions and decisions of the Primary Examiners without charge, hereafter an uncertified copy of a decision or action by any tribunal of the Office will be furnished to the interested party or parties without charge.

BENJAMIN *v.* SEARLE.

Decided April 20, 1892.

PRACTICE—PATENTABLE NOVELTY IS AN EX PARTE QUESTION AND NOT A SUBJECT FOR CONSIDERATION IN AN INTERFERENCE.

In an interference proceeding the contention by one of the parties that the issue is devoid of patentable novelty is not a proper one for consideration, since it is *ex parte* in character.

APPEAL from the Examiners-in-Chief.

CAR-HEATING APPARATUS.

Application of G. H. Benjamin filed November 26, 1888, No. 291,916. Application of J. Q. C. Searle filed March 23, 1888, No. 268,303.

Mr. Randolph Parmly for Benjamin.

Mr. J. L. Norris for Searle

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Examiners-in-Chief awarding priority of invention to Searle.

Searle's application was filed March 23, 1888. Benjamin's application was filed November 26, 1888. Neither party reduced to practice before Searle's application was filed. The testimony offered by Searle—that, for instance, of Atkinson and Perry, that he made a disclosure to them in the early part of March, 1887—is quite as good in kind and degree as that by which Benjamin undertakes to establish conception on his part later in the same month. As to the contention of Benjamin to the effect that the issue lacks patentable novelty. it is to be said, in the first place, that such a question if entered upon would be *ex parte;* and in the second place, that the points of location of the two heaters referred to in the issue appear to be a matter of substance, the heater which is located at the bottom of the circulatory system being specially useful at that point in inducing speed of circulation, and the other heater being especially useful in determining the direction of the circulation.

The decision of the Examiners-in-Chief is affirmed.

HILL *v.* PARMELEE.

Decided April 9, 1892.

DEPOSITION—PARTY AS A WITNESS UNDER SECTION 863, REVISED STATUTES.

H, a party to an interference, served notice on P., the opposing party, that he would take the testimony of certain persons named therein upon a certain day. When the testimony was taken, the party P., who had not been named as a witness in the notice, was called upon by H. and testified under protest. Upon motion here made to suppress his deposition, *Held* that P. as a witness for H. stands in the same position as any other witness under the rule regulating the taking of depositions, that the same formalities of notice must be observed, and the deposition having been taken informally should be suppressed.

APPEAL on motion.

APPARATUS FOR TRIMMING FINS FROM DIE-FORGED AXLES.

Application of Leroy D. Hill filed April 22, 1891, No. 390,013. Patent granted Wolcott J. Parmelee August 12, 1890, No. 337,752, on application filed January 22, 1890.

Messrs. Foster & Freeman for Hill.

Messrs. C. A. Snow & Co. for Parmelee.

FROTHINGHAM, *Assistant Commissioner:*

This is an appeal taken from the decision of the Examiner of Interferences denying a motion made on behalf of the above-named Parmelee to suppress the deposition of said Parmelee taken on behalf of Hill, the junior party to the interference.

The facts are as follows: Notice was served on the opposite side on behalf of Hill that on a certain day and at a certain time and place he would proceed to take the testimony of certain persons, giving their names, places of residence, etc. The notice did not contain the name of said Parmelee as a witness.

When the time came to take testimony, the attorneys for Hill requested the officer before whom the testimony was being taken to swear Mr. Parmelee, the senior party, as a witness in the case. Counsel for Parmelee objected at that time against the examination of said person as a witness, principally on the ground that his name was not included in the said notice of intention to take testimony, and stated that the calling of Parmelee as a witness by the attorneys for Hill was the first intimation that they had received that he was to be called as a witness on behalf of Hill; that the calling of said witness was in the nature of a surprise to them, and that they would refuse to cross-examine him after his examination by the attorneys for Hill had been concluded.

Parmelee went on the witness-stand and testified, and cross-examination was declined. Notice was given on the record that at the proper time and before the proper tribunal motion would be made to strike the said deposition from the record.

Rule 154 (1) is as follows:

Before the depositions of witnesses are taken by either party due notice shall be given to the opposing party, as hereinbefore provided, of the time when and place where the depositions will be taken, of the cause or matter in which they are to be used, and of the names and residences of the witnesses to be examined, and the opposing party shall have full opportunity, either in person or by attorney, to cross-examine the witnesses. * * *

The question thus raised for consideration is this: Is an exception to be made to said rule as to the naming of the witness in the notice in a case like the present, where the opposing party desires to put the other party to the case on the stand and make him his witness?

It is contended on behalf of Hill that there is no necessity for naming a *party* in the notice in a case like the present, on the ground that a party to the case cannot properly be taken by surprise; that the reason for the rule no longer exists in such case.

The present rule is presumably based upon section 863 of the Revised Statutes of the United States, relating to the taking of the testimony of witnesses *de bene esse*, in which it is stated that the "notice shall state the name of the witness."

In the case of *Carrington* v. *Stimson* (1 Curtis, 437) it was held that a deposition of a witness whose name was not stated in the notice should be excluded. Inasmuch as parties are competent witnesses in cases in which they are involved, I am unable to distinguish between them and any other competent witness, so far as the necessity for stating their names in the notice for taking testimony in interference cases is concerned.

It is not improbable that a party to the case might be surprised if suddenly called upon to testify. He may not have been able to confer with his attorney as to how far he might truthfully make answers in respect to certain prospective questions, and, again, his attorney may not have been able to prepare suitable cross-interrogatories.

Furthermore, the authority to take testimony *de bene esse*, being in derogation of the rules of the common law, is strictly construed, and it is therefore necessary to establish that all the requisites of the law have

been complied with before such testimony is admissible. The taking of testimony in open court is not analogous to that of taking testimony *de bene esse*, and it is not safe to say that what may be done in open court may necessarily be done under the provisions of section 863 of the Revised Statutes.

No other objection being urged why the deposition should not be stricken out, it follows that the decision of the Examiner of Interferences should be and is hereby overruled.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Pennsylvania.

STAUFFER *v.* SPANGLER *et al.*

Decided December 23, 1891.

1. PATENT—INFRINGEMENT.

Letters Patent No. 345,186, July 6, 1886, to David F. Stauffer, for improvements in apparatus for treating unbaked bretzels, *Held* not infringed by defendants.

2. SAME—CLAIMS ANALYZED.

Claims 1 and 2 of plaintiff's device being for the combination, with a vapor-generator, of a perforated pipe extending from near the bottom of the generator through it and to a perforated spray-pipe above, are old as to all the devices entering therein, operating in the old way, and practically anticipated by prior patents. Claim 3 is not infringed, since defendant's device does not contain the perforated drum, or any equivalent salting device, which is the essential feature thereof.

3. ANALOGOUS USE—MECHANICAL SKILL.

The use of a mechanical contrivance for subjecting bretzels to a hot alkaline bath, when an analogous appliance has long been employed for steaming crackers, shows nothing more than ordinary mechanical skill.

Mr. Joseph C. Fraley and *Mr. Joseph de F. Junkin* for the appellant.

Messrs. Strawbridge & Taylor for the appellee.

ACHESON, *J.:*

The bill charges the defendants with the infringement of Letters Patent No. 345,186, granted July 6, 1886, to the plaintiff, David F. Stauffer, for improvements in apparatus for treating unbaked bretzels and crackers and other similar articles formed of dough for baking—

so as to more conveniently give them the glazed and salted surfaces characteristic of such articles when baked.

The specification states that theretofore the dough when formed into proper shape—

has been dipped in a suitable solution and the salt afterward sprinkled over the same by hand, which is a slow and tedious operation, involving the loss, in addition, of considerable material, which is scattered and wasted.

The declared object of the invention is—

to provide an apparatus by which these operations may be conveniently and thoroughly effected with comparatively little loss of material and in a much more thorough and expeditious manner than heretofore.

The apparatus shown by the illustrative drawing and described in the specification consists of a trough, above which moves an endless carrier or apron, which conveys a reticulated shelf, upon which the articles to be treated are placed, "a small boiler or vapor-generator" in which there is a steam-coil for heating the solution, a pipe with side perforations in the lower part where it is within the generator and extending from near the bottom of the generator through the top and up to a perforated spray-pipe above the carrier, at the other end of the trough and above the carrier a hollow perforated drum mounted so as to rotate and to be "charged with salt to be sprinkled upon the articles," and a pipe to conduct the superfluous liquid from the trough down to a collecting vessel or tank which communicates with a pump, whereby the contents can be pumped into the generator.

The specification thus describes the operation:

The articles to be prepared are placed upon the reticulated shelf and the shelf is moved by means of the carrier and its operating mechanism so as to bring the articles directly under the spraying device. The liquid or vapor is then admitted through the connecting-tube from the boiler or generator and from thence is sprayed or diffused upon the articles. The spray is then stopped and the carrier moved so as to bring the articles under the perforated drum, after which the shelf is removed at one end of the trough through a suitable opening for the purpose, and the articles are placed in an oven for baking. The surplus solution passes from the trough into the collecting-vessel, from whence it is passed back to the generator or boiler to be used over again, as before mentioned.

The claims of the patent are as follows:

1. The combination, with the generator, of the perforated pipe leading from near the bottom of the generator, and connecting with a perforated spray-pipe above the carrier, whereby the alkaline solution is forced out of the generator and sprayed over the articles, substantially as specified.

2. The combination, with the generator and perforated pipe, of the spray-pipe and casing located over the carrier, substantially as specified.

3. The combination, with the generator and the spraying and salting devices, of the collecting-trough, whereby the salt solution is collected, and the tank and pump, with the pipes for conveying the salt solution back to the generator, substantially as specified.

The solution commonly employed in treating bretzels and similar articles for the purposes contemplated by the patent is an alkaline solution composed of water and potash or lye, and is hot when used. This treatment was old at the date of Stauffer's alleged invention, the articles being dipped (as stated in his specification) in the heated solution, and the most that can be said of the plaintiff's method of applying the solution is that thereby the work is more rapidly done.

Now, taking up the first and second claims of the patent in suit, we clearly perceive that the several devices or parts entering into the combinations therein set forth were all old, and that in the plaintiff's apparatus each part operates in its old way. In Etzensberger's United States patent of April 1, 1879, No. 213,815, for an improvement in apparatus for making infusions, we find a generator having therein a steam-coil to heat the liquid in the generator precisely as in Stauffer's apparatus, together with a perforated pipe extending from near the bottom of the generator through its top and thence upwardly, for the purpose of delivering the liquid to a device above, which is effected by steam-pressure when steam is raised in the generator by heat from the steam-coil.

Again, Mitchell's United States patent of September 8, 1874, No. 154,886, shows a machine for steaming cakes and crackers, having an endless apron upon which the articles are placed and by which they are carried past the steam-ejecting nozzles, whereby a stream of moist steam is thrown upon them, the device having a steam-supply pipe and also a water-supply pipe to moisten the steam with "aqueous spray or vapor." Then the patent of Oberle and Janggen of July 10, 1883, No. 281,201 discloses an apparatus for steaming jumbles, crackers, etc., before baking, consisting of a casing within which are spray-pipes with fine perforations for emitting steam, an endless apron with a moving mechanism, and means for regulating the speed, the articles to be treated being placed upon the apron, and thereby carried under the steam-spray pipes.

Such being the known prior state of the art, the idea

of subjecting bretzels to the bath of hot alkaline solution by the use of mechanical appliances analogous to those employed in steaming crackers and the like articles required for its accomplishment nothing more than the exercise of ordinary mechanical skill. It is to be borne in mind, too, that no new result was thereby secured, nor, indeed, any better result than is effected by dipping the articles in the heated solution. The conclusion that Stauffer's first and second claims do not disclose anything of patentable novelty is in line with the rulings in *Hollister* v. *Benedict Manufacturing Co.*, (113 U. S., 59,) *Aron* v. *Manhattan Railway Co.*, (49 O. G. 1365; 132 U. S., 84,) *Burt* v. *Evory*, (50 O. G. 1294; 133 U. S., 349,) and many other like adjudications.

As respects the third claim of the Stauffer patent, it is only necessary to say that as the defendant's machine does not contain the perforated drum or any equivalent salting device, the salt being sprinkled by hand upon the bretzels after they leave their machine, there is no infringement of that claim. The plaintiff's counsel indeed has made an ingenious but unconvincing argument to show that the third claim does not include the perforated drum or any equivalent therefor, but that the phrase "spraying and salting devices" refers altogether to the one device for spraying the alkaline solution. The basis of this argument is that the file-wrapper shows that the Office rejected a claim which had as elements the spray-pipe and the perforated drum as a mere aggregation. But this argument loses any force it might otherwise have when we come to note that the collecting-trough by which these two devices are connected was omitted from the rejected claim. The construction upon which the plaintiff here insists is a forced one, contrary to the specification throughout, and against the words and plain meaning of the claim. The sprinkling of salt over the bretzels by a distinct operation after they have been treated with the alkaline solution is a prominent feature of the invention, and the mechanical device for so salting the articles is fully explained in the specification and shown by the drawing. By the described operation the articles are first brought "under the spraying device," and after being sprayed with the solution are then brought "under the perforated drum" to be salted. To hold, then, that the words "spraying and salting devices" mean the "spraying device" alone, to the exclusion of the salting device, would be to violate every recognized canon of construction applicable to the subject.

The foregoing views being decisive of the case, I do not deem it necessary to consider other matters of defense which counsel have discussed.

Let a decree be drawn dismissing the bill with costs.

DECISIONS OF STATE COURTS.

Court of Appeals of New York—Second Division.

MILLER *v.* UNION SWITCH AND SIGNAL COMPANY.

Decided March 15, 1892.

BREACH OF CONTRACT—LICENSE.

A contract provided that a corporation should employ a certain patentee as its general manager for ten years, subject to termination by either party on one year's notice, or by the patentee's death or inability to act, and that, in the event of a termination of the agreement, the corporation should have a license to use his patents on payment of a certain royalty. *Held*, that a wrongful discharge of the patentee by the corporation was a mere breach of contract, and did not terminate the agreement so as to render the corporation liable to pay the royalty. (*Johnson* v. *Signal Co.*, (N. Y. App.,) 29 N. E. Rep., 964, followed.

APPEAL from Superior Court of New York City, general term.

STATEMENT OF THE CASE.

Action by Frank W. Miller as assignee of Charles R. Johnson, against the Union Switch and Signal Company, to recover a sum due said Johnson under a written contract between him and the defendant. Plaintiff obtained judgment, which was affirmed by the general term.

The other facts fully appear in the following statement by Landon, J.:

The plaintiff, as asignee of Charles R. Johnson, brought the action to recover $1,625 alleged to have become due and payable to said Johnson under a written contract between him and the defendant, executed September 20, 1886, whereby it was agreed, in substance, (1) that Johnson should become the general manager of the defendant; (2) defendant to pay him a salary of $4,500 per year; (3) he should sell to the defendant the exclusive right to use all his inventions relating to the signal business, and also the right to use the inventions of Henry Johnson relating to signal-switches, then or thereafter acquired by Charles R. Johnson; and (4) defendant to pay him $3,000 per year therefor; (5) employ Henry Johnson as manager of its works, at $4,000 per year; (6) defendant also to pay Charles R. Johnson, in addition to the above, ten per cent. net profits of the company. The contract further provided as follows:

Seventh. It is mutually agreed that this contract shall continue for a period of ten years, subject to termination by either party, however, by one year's notice (in writing) to the other party at any time after the second year, or by the death of Charles R. Johnson, or by his permanent inability to perform his duties as general manager.

Eighth. It is further mutually covenanted and agreed that, in the event of the termination of this agreement, the said company, by reason of the expenditures that shall have been made during the continuance of this agreement, shall have a license, not exclusive, to use all the inventions that may have been used in carrying on the business of the company, on the payment of sixty-five hundred dollars per year, said sum to be paid quarterly; and shall be entitled to purchase from the said Charles R. Johnson, or his executors, the exclusive right to use all of the inventions upon as favorable terms as he or his executors may be willing to grant to any other parties.

Ninth. This agreement to take effect from June 1, 1886, so far as the management of the business is concerned, but to take effect so far as the payments are concerned July 1, 1886; all accounts and expenses and all details with reference to the past business of the company to be adjusted during the month of June.

The complaint alleges—

that the contract continued in existence and was acted upon by both parties thereto, and the said Charles R. Johnson continued under said contract to be general manager of the defendant company down to the first day of March, 1888, when the said contract was terminated by the said defendant company, and the said Charles R. Johnson was notified by the defendant to that effect and that his services would be no longer accepted by the said defendant after the first of March, 1888; that under said contract the defendant had used, and was on the first day of March, 1888, still using, and has since that time continued to use certain appliances invented by said Charles R. Johnson and for which he held Letters Patent, and certain other inventions and appliances invented by Henry Johnson, but held and controlled by said Charles R. Johnson, which were referred to in said contract;

and further alleges that there was due to Charles R. Johnson on September 1, 1888, to be paid him by defendant as royalties under the contract, $1,625 for the quarter ending that day, and specifies the particular inventions referred to in the contract. The answer admits the making of the contract, and "it admits that on March 1, 1888, it dismissed Charles R. Johnson from its employ;" denies its use of his inventions after that date, and also those of Henry Johnson. Further facts are stated in the opinion.

Mr. John W. Houston for the appellant.

Mr. George W. Miller for the respondent.

LANDON, *J.*, (after stating the facts:)

The theory of the plaintiff's action is that the contract between Charles R. Johnson and defendant was terminated March 1, 1888; that thereafter the defendant continued the use of his inventions and those of Henry Johnson; and thus, by the terms of the eighth provision of the contract, became indebted to Charles R. Johnson in the sum of $1,625 for the quarter ending September 1, 1888. The defendant's contention is that the dismissal of Charles R. Johnson from its employment was a mere breach of the contract, and not the termination of it provided for in its seventh clause, and therefore the eighth clause of the contract was not brought into operation. This construction of the contract has recently been upheld by this court in an action for another installment of royalties under the contract brought by Charles R. Johnson against this defendant. (*Johnson* v. *Signal Co.*, N. Y. App.; 29 N. E. Rep., 964.)

This construction of the contract requires a reversal of the judgment, unless such a termination of the contract as brings its eighth clause into operation is admitted upon the pleadings. The general term held that it was admitted. In construing the pleadings it is proper to notice the construction given them by the trial court in this respect. The allegation of the complaint is that—

the said contract was terminated by said company, and the said Charles R. Johnson was notified by the defendant to that effect, and that his services would be no longer accepted by the said defendant after said first day of March, 1888.

The answer contained no denial of these allegations, but contained this allegation:

It admits that on March 1, 1888, the defendant dismissed Charles R. Johnson from its employ.

Upon the trial the plaintiff's counsel contended that the pleadings admitted the termination of the contract. The defendant's counsel contended that only the termination of employment was admitted. After considerable discussion the defendant's counsel remarked that, if there was any doubt as to his construction of the pleadings, he would move to amend at once. The plaintiff's counsel was heard upon the motion to amend. The court disposed of the motion by this remark:

There is nothing in this case or in the pleadings that prevents your alleging here that whatever termination there was was not the termination provided for by covenant eight of the contract.

Defendant's counsel then said:

I only asked for the amendment upon the assumption that there might be some other contention made.

There was no question, apart from the allegation in the complaint, that—

the said contract was terminated by said company,

but that the dismissal of Mr. Johnson was what effected the alleged termination. The complaint apparently alleges that the termination of the contract was thus effected. The plaintiff proved upon the trial the summary and peremptory manner in which he was dismissed. The trial court therefore adopted no forced or strained construction of the pleadings when it held, as it in effect did, that there was nothing in them to preclude the defendant from insisting that the actual termination was not the one contemplated by the contract. Except for such a construction of the pleadings, justice would seem to indicate that defendant's motion to amend the answer would have been granted. With that construction no amendment was needed. The defendant was permitted to insist upon the defense which the evidence disclosed. It would be unjust now, upon appeal, to deprive the defendant of that defense by receding from the construction of the pleadings adopted and accepted upon the trial and giving them a contrary construction. Especially is this so in view of the fact that the termination of the contract alleged in the complaint is as consistent with a termination which does not call the eighth clause of the contract into operation as with the termination which does, and therefore the admission in the answer may be true without conceding the proposition upon which the plaintiff's right to recover rests. The judgment should be reversed and a new trial granted, with costs, to abide the event. All concur.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 5. TUESDAY, MAY 3, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the developement of American invention.

W. E. SIMONDS,
Commissioner.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of May 3, 1892.

Patents	457—No. 473,895 to No. 474,351, inclusive.
Designs	8—No. 21,511 to No. 21,518, inclusive.
Trade-Marks	21—No. 21,060 to No. 21,080, inclusive.
Labels	None.
Reissues	None.
Total issue	486

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nevada	.....	.....
Arizona Territory	.....	.....	New Hampshire	3	.....
Arkansas	2	.....	New Jersey	18	1
California	10	.....	New York	68	4
Colorado	4	.....	North Carolina	.....	.....
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Illinois	50	1	South Carolina	2	.....
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Indiana	13	.....	Tennessee	.....	1
Iowa	10	.....	Texas	12	.....
Kansas	7	.....	Utah Territory	4	.....
Kentucky	7	1	Vermont	1	.....
Louisiana	3	.....	Virginia	1	.....
Maine	1	.....	Washington	4	.....
Maryland	5	.....	West Virginia	2	.....
Massachusetts	40	2	Wisconsin	6	.....
Michigan	15	1	Wyoming	.....	.....
Minnesota	10	.....	U. S. Army	.....	.....
Mississippi	3	.....	U. S. Navy	.....	.....
Missouri	14	.....			
Montana	2	.....	Total to citizens of the United States	423	17
Nebraska	3	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
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Austria-Hungary	1	.....	Netherlands	.....	.....
Belgium	.....	.....	Newfoundland	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	New Zealand	.....	.....
Canada	7	.....	Norway	.....	.....
Chile, Republic of	.....	.....	Peru	.....	.....
Colombia	.....	.....	Russia	.....	.....
Cuba	.....	.....	Scotland	1	.....
Ecuador	.....	.....	South Australia	.....	.....
England	10	3	Spain	.....	.....
France	6	.....	Sweden	.....	.....
Germany	12	1	Switzerland	2	.....
Hawaii	1	.....	Victoria	.....	.....
Ireland	.....	.....			
Italy	1	.....	Total to citizens of foreign countries	49	4
Japan	.....	.....			

APPLICATIONS UNDER EXAMINATION.

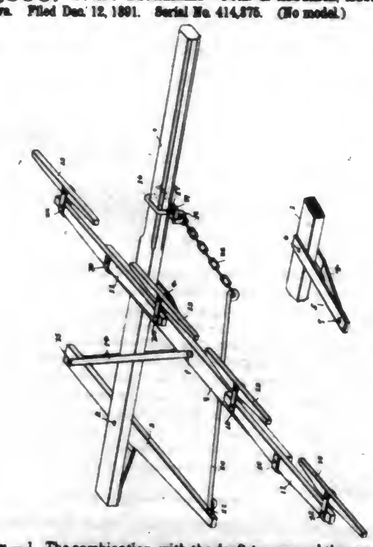
Condition at Close of Business April 26, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	Between one and two months in arrears.			
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7	Harvesters, Games and Toys	Mar. 7	Apr. 19	230
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28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Dec. 29	Feb. 20	404
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29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Nov. 20	Apr. 5	437
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	Under one month in arrears.			
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PATENTS

GRANTED MAY 3, 1892.

473,895. DRAFT-EQUALIZER. FUBE L. ANDERSON, Audubon, Iowa. Filed Dec. 12, 1891. Serial No. 414,575. (No model.)



Claim.—1. The combination, with the draft-tongue and the equalizing bar or lever pivoted at one side of its center to the same, of the bifurcated fulcrum-arm pivoted at its inner end to the tongue, the main doubletree fulcrumed at its center to the outer end of the arm, the pair of diagonal straps embracing the tongue pivoted at their rear ends to the short end of the equalizing bar or lever and at their front ends to the fulcrum-bolt of the main doubletree, the secondary doubletrees pivoted to the opposite ends of the main doubletree, the singletrees pivoted to the ends of the secondary doubletrees, the inverted-U-shaped clip embracing the tongue and adapted to slide thereon and having one of its terminals bent to form a hook, the perforated clip for receiving the terminals, the nuts on the ends of the clip, the rod loosely connected with the long end of the equalizing-lever, and the chain connected to the ends of the rod and adapted to connect with the hook, substantially as specified.

2. The combination, with the draft-tongue and the equalizing bar or lever pivoted at one side of its center to the same, of the fulcrum-arm pivoted to the tongue, the main doubletree pivoted at its center to the fulcrum-arm, the diagonal straps between the main doubletree and short end of the equalizing bar or lever, the doubletrees pivoted to the opposite ends of the main doubletree, the singletrees at the ends of the secondary doubletrees, and the adjustable connection between the longer end of the equalizing bar or lever and the tongue, substantially as specified.

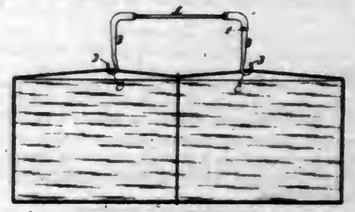
473,896. COMBINED STEP-LADDER AND IRONING-BOARD. DANIEL W. ARAVE, Ogden, Utah, assignor of one-half to Edward A. Barnes, same place. Filed July 2, 1891. Serial No. 398,241. (No model.)

Claim.—1. The combined ladder and ironing-board consisting of the ladder proper, an ironing-board pivoted thereto, and a support for the ladder, hinged at its upper end and located between the ironing-board and the ladder, said support having a pivoted lower part with means for locking it to the upper part, substantially as described.

2. The combined step-ladder and ironing-board consisting of the ladder proper, having brackets projecting from its upper end, an ironing-board pivoted thereto, a support hinged to a cleat on the ironing-board, the lower part of said support being pivoted to the upper part and adapted to be swung down on the outside of the ladder to support the ironing-board in a horizontal plane, substantially as described.



473,897. PACKAGE-CARRIER. CHARLES E. BALDWIN, Newark, N. J. Filed Mar. 23, 1891. Serial No. 386,074. (Model.)



Claim.—The herein-described package-carrier composed of the yoke-shaped bar with the flat back forming a handle, the end hook on each of its depending limbs to receive the cord of a package, and the laterally-projecting spur at the extremity of each of said hooks forming a stop to preserve the engagement of the cord with the hooks, as set forth.

473,898. SASH-HOLDER. JUDSON A. BALDWIN, Burlington, Vt. Filed Jan. 26, 1892. Serial No. 419,257. (No model.)

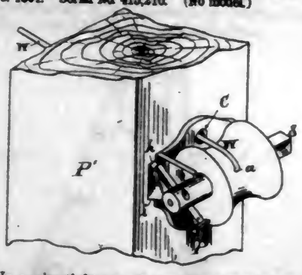


Claim.—1. In a holder for blinds and similar articles, the combination, with the blind, of a holder formed of a flexible and elastic substance having its base rigidly connected with the blind and a free end extending toward the stop and longer than the distance in a straight line to said stop, and reversible, as described, whereby when reversed the end of the said holder will be held in an inclined position, substantially as set forth.

2. The combination, with the blind and stop, of one of which parts is formed an aperture, of a holder consisting of a block of india-rubber having its base fitting closely in said aperture and an outwardly-extending free end, as described, and an adjusting-screw seated in said aperture with its head forming a support for the holder, substantially as set forth.

3. The combination, with the stops 3 and 4, having, respectively, the shallow and deep grooves, of the blind having an aperture 13 in the edge and a holder secured to the blind and adapted to enter said aperture and lie flush with the edge of the blind to permit the insertion of the latter into said stops, substantially as set forth.

473,899. WIRE-TIGHTENER. MARVIN BERDAN, Plymouth, Mich. Filed Dec. 16, 1891. Serial No. 415,210. (No model.)



Claim.—1. In a wire-tightener, the combination of a hanger provided with journal-supports and a seat adapted to rest against the fence-post and holding-lugs on said journal-supports, a spool provided with a shaft squared at one end and perforated at the other, and a pin adapted to pass through said perforation and engage with one of said lugs, the said lugs being provided with a long bearing-face parallel to a diameter of said shaft and removed from said diameter one-half the diameter of the said perforation through the shaft, whereby a long bearing without twisting strain is secured, substantially as and for the purpose specified.

2. In a wire-tightener, the combination of a hanger provided with journal-supports and a seat adapted to rest against the fence-post and holding-lugs on said journal-supports, a spool provided with a shaft squared at one end and perforated at the other end, and a pin adapted to pass through said perforation and engage with one of said lugs, the said lugs being triangular in shape, with an acute angle toward the bearing part of the journal-support, and each lug being provided with two long bearing-faces parallel to the diameters of said shaft and each face being removed from the diameter to which it is parallel by a distance equal to one-half the diameter of the perforation through the shaft, whereby the said pin is provided with a long bearing and the said spool may be wound in either direction, substantially as and for the purpose specified.

473,900. CHURN-DASHER. CONRAD BERST, Kansas City, Mo. Filed Dec. 19, 1891. Serial No. 415,572. (No model.)



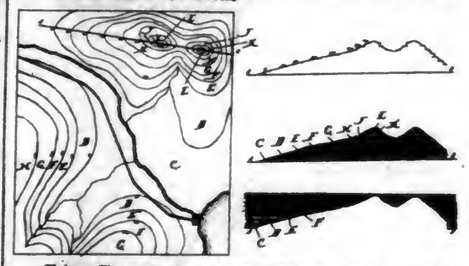
Claim.—1. A dasher having two breaker-boards arranged upon opposite sides of a central perforated support, the one fixed and the other movable bodily in the direction of movement of the dasher, as set forth.

2. A dasher consisting of a central plate having a central aperture and vertical perforations near its periphery, an upper fixed breaker-board, a dasher-shaft, and a lower breaker-board movable bodily to and from the center plate and adapted to serve as a valve to close said aperture, as set forth.

3. A dasher consisting of a central plate with central aperture, a fixed breaker-board, and a movable one, the latter adapted to move bodily in the direction of movement of the dasher and close the aperture in the central plate of the dasher, as set forth.

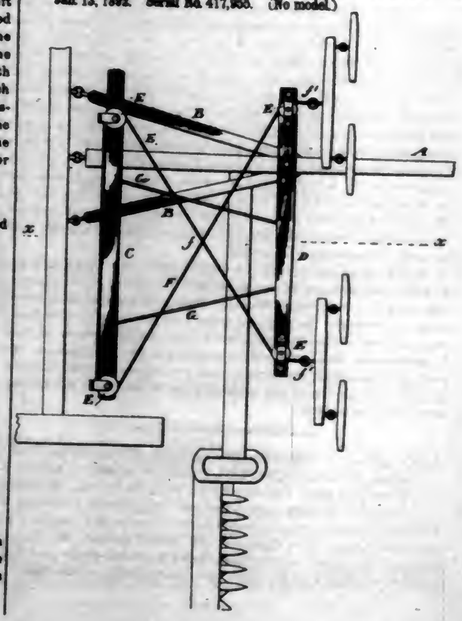
4. A dasher having a central plate with central aperture and peripheral perforations, an upper fixed breaker-board, and a lower breaker-board carried by a support guided by opposite perforations of said plate and movable with relation to the central plate and upper breaker-board and close said aperture, as and for the purposes specified.

473,901. MANUFACTURE OF CONTOUR RELIEF-MAPS. JOSEPH E. BLANTHER, Chicago, Ill. Filed Apr. 24, 1890. Renewed Feb. 23, 1892. Serial No. 422,597. (No model.)



Claim.—The method of making relief-maps, which consists in, first, impressing the contour-lines of a country on a series of wax plates, the number of plates being equal to the number of lines on each map; second, cutting each plate each along its contour-line; third, building out of the sections so formed by successively superimposing them suitable positive and negative forms; fourth, finishing and smoothing the surface of such wax forms and the edges of the sections according to the topography of the country to be indicated, so as to give smooth surfaces of wax, as shown, fifth, forming pressure-plates, positive and negative, on such forms; sixth, pressing a printed map of paper into relief between such positive and negative forms, and, seventh, backing such printed relief-map as required, all substantially as shown and described.

473,902. DRAFT-EQUALIZER. PHILIP BOUCK, Trent, S. D. Filed Jan. 13, 1892. Serial No. 417,955. (No model.)



Claim.—A draft-equalizer comprising two cross-bars rigidly attached to the pole, pulleys secured to said cross-bars, braces between the cross-bars, and a single rope or cable passing around the pulleys on the rear cross-bar, crossed and passed through the pulleys on the front cross-bars and doubletrees attached to the free ends of the rope or cable, substantially as described.

473,903. REVOLVING FIREARM. VICTOR BOVY, New York, N. Y. Filed Jan. 13, 1892. Serial No. 417,982. (No model.)

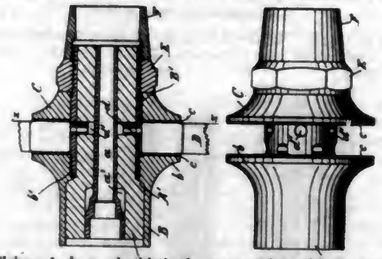


Claim.—1. In revolving firearms, the combination of the finger F, having a wedge-shaped prolongation *f*, with the trigger T, the flanged cylinder C, and the frame A, having the recess *g*, as and for the purposes herein shown and described.

2. In revolving firearms, the trigger T, carrying the finger F, having a wedge-shaped prolongation *f* and mounted upon a pin *t*, the retaining-disk *u*, having the tooth *p* and actuated by the spring *s*, in combination with the flanged cylinder C, and the frame A, having the recess *g*, as and for the purposes herein shown and set forth.

3. In revolving firearms, the retaining-disk *u*, having the tooth *p* and actuated by the spring *s*, in combination with the trigger, the frame, and a flanged cylinder engaged by the tooth *p*, as and for the purposes herein shown and described.

473,904. WHEEL-HUB. RICHARD BRENT and EDWIN BRENT, Wilkes-Barré, Pa. Filed Nov. 18, 1891. Serial No. 412,317. (No model.)



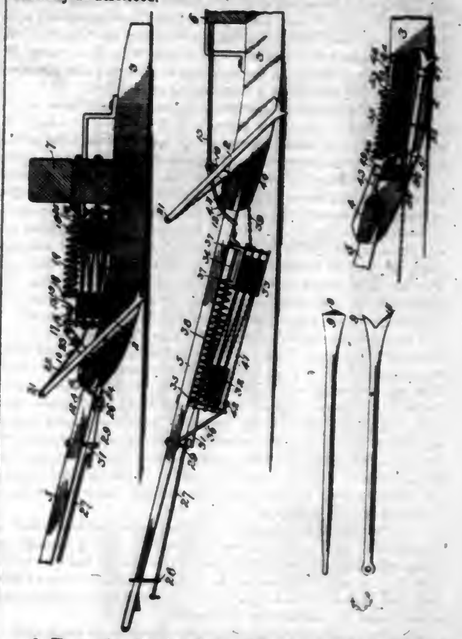
Claim.—1. In a wheel-hub, the combination, with the wooden body portion adapted to receive the metallic box, of a metallic tube secured upon the said body and provided with a back flange, the wheel-spokes provided with projections extending through holes in the said tube into the said body portion, a sliding front flange, and a nut on the end of the tube for securing the spokes between the said flanges, substantially as set forth.

2. In a wheel-hub, the combination, with the wooden body portion adapted to receive the metallic box and provided with a shoulder near one end, of a metallic tube formed of two portions, the larger of the two said portions being provided with the back flange and secured against the shoulder on one end of the said body portion and having the smaller portion screwed into it, the wheel-spokes provided with projections extending through holes in the smaller portion of the tube into the said body portion, the front flange sliding on the said smaller portion of the tube, and the nut for pressing the said front flange against the spokes, substantially as set forth.

3. In a wheel-hub, the combination, with the wooden body portion adapted to receive the metallic box, of the metallic tube secured upon the said body portion and provided with the back flange, the wheel-spokes provided with projections extending through holes in the said tube into the said body portion, a front flange sliding on the tube, the washers interposed between the said flanges and the spokes, and the nut and the nose-band for securing the said spokes between the said flanges, substantially as set forth.

473,905. SLED-STARTER. HAT E. BROWN, Anoka, Minn. Filed May 6, 1891. Serial No. 391,704. (No model.)

Claim.—1 The combination, in a device of the class described, of a sled with a starting-bar 2, a stationary block and a movable block, both provided with pulleys or sheaves, a chain or rope passing over the same, and a connection between said movable block and said bar, whereby upon the drawing out of said chain said bar is operated, substantially as described.



2. The combination, in a device of the class described, of the sled with a starting-bar 2, pulleys arranged in connection therewith and a chain passing over the same, and a reach-bar 27, provided with a hook 31, and a fixed loop or ring upon the sled, adapted to be engaged thereby, substantially as and for the purpose set forth

3. The combination, in a device of the class described, of a starter-bar 2, arranged in connection with the cross-bar 4, blocks and pulleys arranged in connection therewith, a chain passing over the same and having its end fixed thereon, and a returning-spring adapted to normally hold said blocks apart, substantially as described.

4. The combination, in a device of the class described, of a sled with a bar 4, a rod 43, blocks having pulleys 46 and 48 arranged thereon, the starting-bar 2, having its forward end attached to the movable block, and the spring 55, substantially as described.

473,906. VALVE-GEAR FOR STEAM-ENGINES. MILAN C. BULLOCK, Chicago, Ill. Filed Jan. 14, 1890. Serial No. 336,866. (No model.)



Claim.—1. An engine comprising a frame, a cylinder or cylinders attached to the frame, a crank-shaft actuated from said cylinders, an eccentric crank-pin supported upon the crank-pin of the crank-shaft and connected with and actuating the valves of the engine, a sleeve interposed between the shaft-bearing adjacent to the crank and the shaft, said sleeve being connected with and adapted to give oscillatory movement to the eccentric crank-pin, and a longitudinally-moving sleeve upon the shaft, provided with a spiral flange engaging the said sleeve first mentioned, by which the latter sleeve may be partially rotated with reference to the shaft and the position of the eccentric crank-pin thereby changed to accomplish the reversal of the engine, substantially as described.

2. An engine comprising a frame, a cylinder or cylinders attached to the frame, a crank-shaft actuated from said cylinders, an eccentric crank-pin supported upon the crank-pin of the crank-shaft and connected with and actuating the valves of the engine, a sleeve H, interposed between the shaft-bearing adjacent to the crank and the shaft, said sleeve being connected with and adapted to give oscillatory movement to the eccentric crank-pin, a longitudinally-moving sleeve H upon the shaft, provided with spiral flanges engaging the said sleeve H, which latter sleeve H is provided with a shell H^3, and segments H^4, secured within the said shell and engaging at their ends with the spiral flanges upon the said sleeve I, substantially as described.

3. A hoisting-engine comprising a frame, a steam cylinder or cylinders attached to the frame, a crank-shaft actuated from said cylinders, an eccentric crank-pin supported upon the crank-pin of the crank-shaft and connected with and actuating the valves of the engine, a sleeve H, interposed between the shaft-bearing adjacent to the crank and the shaft, said sleeve being connected with and adapted to give oscillatory movement to the eccentric crank-pin, a longitudinally-moving sleeve I upon the shaft, provided with spiral flanges engaging the said sleeve H, said sleeve H being provided with a shell H^3, and segments H^4, secured within the said shell and engaging at their ends with the spiral flanges upon the said sleeve I, the said shell being longitudinally split and provided with bolts by which its split ends may be drawn together, substantially as and for the purpose set forth.

4. A hoisting-engine comprising a frame, a steam cylinder or cylinders attached to the frame, a crank-shaft actuated from said cylinders, an eccentric crank-pin supported upon the crank-pin of the crank-shaft and connected with and actuating the valves of the engine, a sleeve H, interposed between the shaft-bearing adjacent to the crank and the shaft, said sleeve being connected with and adapted to give oscillatory movement to the eccentric crank-pin, and longitudinally-moving sleeve I upon the shaft, provided with a spiral flange engaging the said sleeve, a ring I^3, engaging a groove in the said sleeve I, and an actuating-lever mounted upon the machine-frame and engaged with said ring I^3, substantially as described.

5. The combination, with the engine-cylinders and crank-shaft, of an eccentric crank-pin supported by a shaft C^4, passing through the crank-pin of the crank-shaft and provided on its inner end with a rigid arm C^5, a sleeve H, surrounding the crank-shaft adjacent to the crank-disk and provided with a rigid arm H', and a link λ, connecting said arms C^5 and H', substantially as described.

6. The combination, with the engine-cylinders and crank-shaft, of an eccentric crank-pin supported by a crank-shaft C^4, passing through the crank-pin of the crank-shaft and provided on its inner end with a rigid arm C^5, a sleeve H, surrounding the crank-shaft adjacent to the crank-disk and provided with a rigid arm H', and a link λ, connecting said arms C^5 and H', said crank-disk being provided with stops to limit the oscillatory movement of the eccentric crank-pin, substantially as described.

478,907. DRILLING APPARATUS. MILAN C. BULLOCK and SAMUEL W. DOUGLASS, Chicago, Ill.; said Douglass assignor to said Bullock. Filed Jan. 17, 1890. Serial No. 337,166. (No model.)

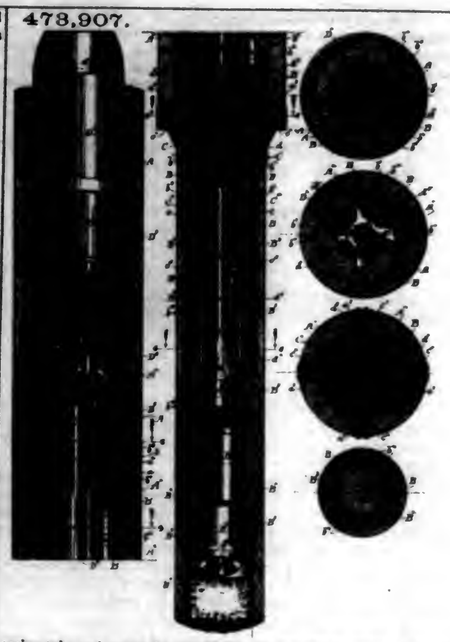
Claim.—1. A drilling apparatus comprising a rotating casing-tube, a core-barrel smaller than and adapted to pass through the casing-tube and to project below the same and provided with an annular cutting-head, and means for detachably connecting said core-barrel with the casing-tube, comprising stops or shoulders on the tube and core-barrel for limiting the downward movement of the latter, and expansible reamers upon the core-barrel, adapted to engage the lower end of the casing-tube, substantially as described.

2. A drilling apparatus comprising a casing-tube having an internal upwardly-facing shoulder near its lower end, a core-barrel extending below the same, a tubular part attached to said core-barrel and extending upwardly within the casing-tube, and means for detachably connecting said tubular part with the casing-tube, comprising a downwardly-facing shoulder upon said tubular part, adapted to engage said shoulder in the casing-tube, and expansible reamers connected with the tubular part and adapted to engage the lower end of said casing-tube, substantially as described.

3. A drilling apparatus comprising a casing-tube having notches or open slots in its lower end, a core-barrel projecting below the same, means for detachably connecting said core-barrel with the casing-tube, comprising expansible reamers connected with said core-barrel and adapted to engage said notches or open slots, and guide-ribs located on said casing-tube and core-barrel and adapted to bring said expansible reamers opposite said notches or slots, substantially as described.

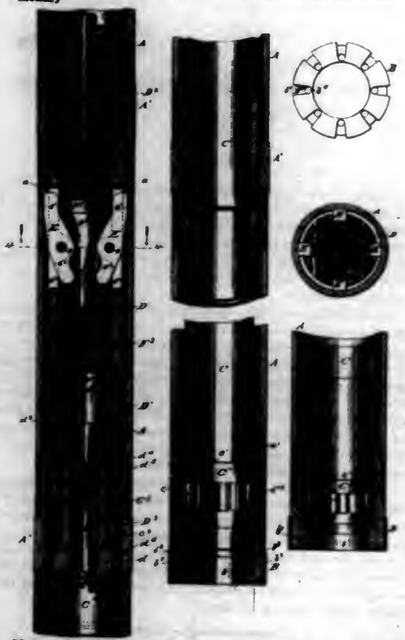
4. A drilling apparatus comprising a casing-tube, a core-barrel adapted to pass through the casing-tube and to project below the same, and means for detachably connecting said core-barrel with said casing-tube, comprising stops or shoulders to limit the downward movement of the core-barrel relatively to the casing-tube, and expansible reamers upon the core-barrel adapted to engage the lower end of the

478,907.



casing-tube and means for retracting said expansible reamers, whereby the said core-barrel can be drawn upwardly through the casing-tube, substantially as described.

478,908. ROCK-CORE DRILL. MILAN C. BULLOCK, Chicago, Ill. Filed June 29, 1888. Renewed Oct. 5, 1891. Serial No. 407,669. (No model.)



Claim.—1. A tubular drill-rod provided with an annular cutting-head at its lower end, said drill-rod having an internal diameter not less than the smallest diameter of the drill-head thoughout its entire length above the drill-head, thereby allowing the upward passage of a rock-core through the drill-rod, substantially as described.

2. A tubular drill-rod provided with an interior core-lifter which is removable upwardly through the drill-rod, whereby a core may be removed from a hole without withdrawing the drill-rod.

3. The combination, with a tubular drill-rod, of an interior core-lifter which is removable upwardly through the drill-rod and is provided with a clamp for gripping a rock-core and a detachable fastening for holding the core-lifter from rising within the drill-rod while the core is being formed and advanced therein.

4. In combination with a rotating tubular drill-rod, an interior core lifter or barrel which is removable upwardly through the drill-rod and is relatively rotatable in the drill-rod and a fastening for detachably holding the core-lifter in operative position within the drill-rod.

5. The combination, with a tubular drill-rod, of an interior core-lifter provided at its lower end with a grip for seizing a core and at its upper end with a shouldered part or extension for engagement with a suitable harpoon or grapple to be let down into the drill-rod for the purpose of seizing and lifting it out of the drill-rod.

6. The combination, in a rock-drilling apparatus, of a tubular drill-rod, a core-lifter within and upwardly removable through the drill-rod, a grip belonging to the core-lifter for seizing the core, and a separate grapple for seizing the core-lifter

7. The combination, with a tubular drill-rod and a core-lifter upwardly removable through the drill-rod, of a two-part cutter, one part of which is attached to the drill-rod and the other part of which is attached to the core-lifter.

8. The combination, with a tubular drill-rod and a core-lifter within and upwardly removable through the drill-rod, of a cutter-head composed of two annular parts, one within the other, said parts of the cutter being provided with intercngaging projections and recesses on their adjacent faces and said projections being armed with diamonds or other cutters.

9. The combination, with a tubular drill-rod provided with a downwardly-facing shoulder, of an interior core lifter or barrel which is removable upwardly through the tubular drill-rod and is provided with one or more retractible dogs arranged to engage the shoulder of the drill-rod.

10. The combination, with a tubular drill-rod provided with an interior shoulder facing upward and at a higher point with an interior shoulder facing downward, of an interior core lifter or barrel which is removable upwardly through the drill-rod and is adapted to rest upon the upwardly-facing shoulder and provided with one or more retractible dogs arranged to engage the downwardly-facing shoulder.

11. The combination, with a tubular drill-rod provided with a downwardly-facing shoulder, of an interior removable core-lifter provided with retractible dogs to engage said shoulder, a lengthwise-movable double-cone spool for throwing and retracting the dogs, which also, when lifted, suspends the core-lifter, and a harpoon or grapple which detachably connects with the spool.

12. In a grapple or harpoon for detachable connection with an interior upwardly-removable core-lifter of deep-rock tubular drills, the combination of a recessed rod H', pivoted expansion-dogs H^2, provided with shoulders h^3 h^4, and a sliding sleeve I, substantially as described.

13. The combination, with a removable core-lifter for tubular rock-drills, provided with an interiorly-shouldered tube G, having a recessed bottom or base, of a harpoon or grapple H, comprising a rod H', a loose sleeve I, and shouldered expanding dogs H^2, which are retracted by entering the recess of the base.

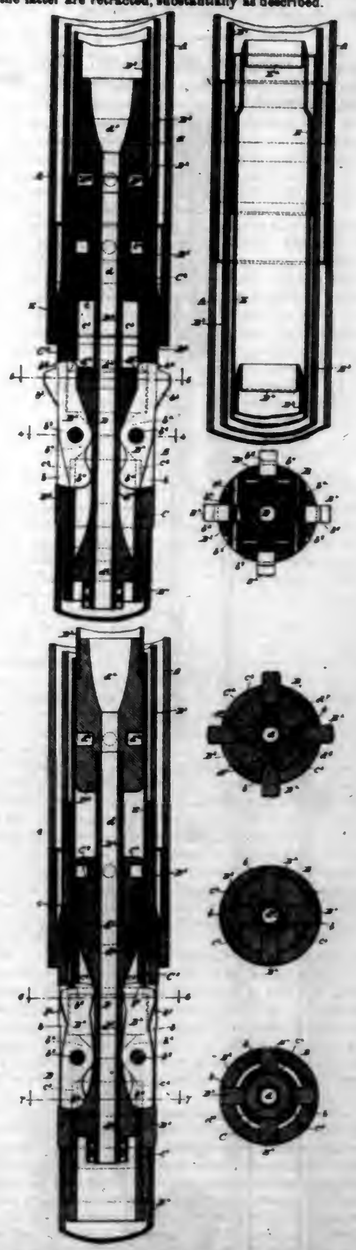
14. The combination, with a tubular drill-rod A, of an interior core-lifter C, having a tubular extension D, provided with centrally-pivoted dogs E for engaging the drill-rod, a double-cone spool in the tube D for shifting the dogs, an apertured head D', attached to the tube D, a rod F^3, connected with the spool and extending through the head D', a head G', connected with the rod F^3 and provided with a recess G^2, a tube G, connected with the head G' and provided with an annular shoulder g, and a harpoon H, comprising a rod H', having its lower end formed to enter the recess G^2 and provided with shouldered expanding dogs, and a sliding sleeve I.

15. The combination, with a tubular drill-rod, of a core lifter or barrel which is removable upwardly through the drill-rod and which has swiveled thereto at its upper end a part having detachable engagement with the drill-rod.

478,909. ROCK-DRILLING APPARATUS. MILAN C. BULLOCK, Chicago, Ill. Filed May 18, 1889. Renewed Oct. 5, 1891. Serial No. 407,670. (No model.)

Claim.—1. The combination, with a casing-tube or drill-rod and expansible reamers pivoted to the same, of an actuating-core or spool located within said casing-tube adjacent to said reamers and adapted to hold the same normally expanded and a locking-sheath adapted to engage the reamers when they are at the inward limit of their movement, substantially as described.

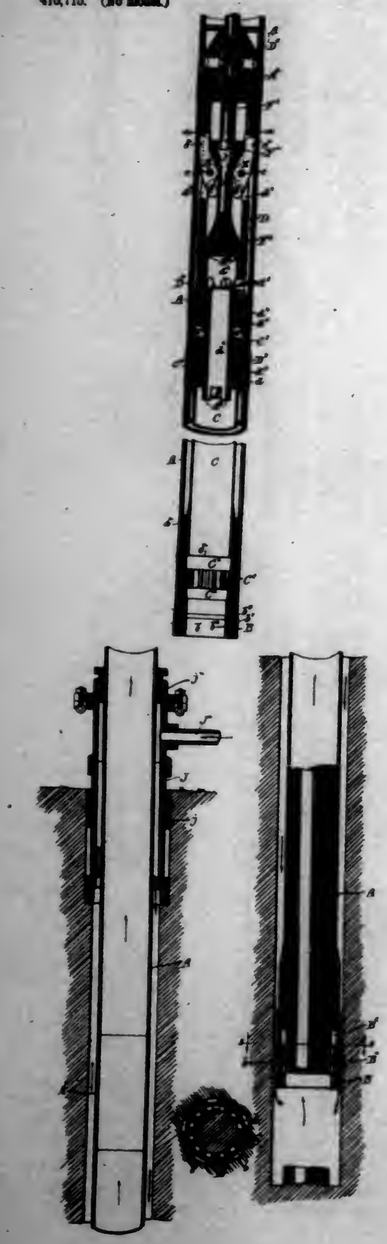
2. The combination, with a casing-tube or drill-rod and expansible reamers provided on their upper ends with shoulders, of an actuating-core or spool located within the casing-tube adjacent to said reamers and adapted to hold the same normally expanded and a sliding locking-sheath arranged to engage the shoulders of said reamers when the latter are retracted, substantially as described.



Claim.—1. The improvement in the art of rock-core drilling, which consists in forming a cylindric rock-core by means of a tubular drill and removing detached sections of the said cylindric rock-core up-

3. The combination, with a casing-tube or drill-rod and expansible reamers provided on their upper ends with shoulders, of an actuating-core or spool located within the casing-tube adjacent to said reamers and provided with an upwardly-extending tube or sheath by means of which it may be operated and a sliding locking-sheath arranged to engage the shoulders of said reamers when the latter are retracted, said locking-sheath having an upwardly-extending tube by means of which it may be operated, substantially as described.

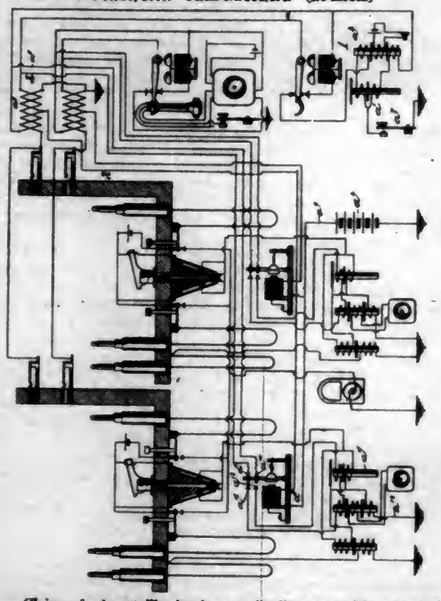
473,910. ART OF ROCK-CORE DRILLING. MILAN C. BULLOCK, Chicago, Ill. Filed Feb. 24, 1891. Renewed Nov. 3, 1891. Serial No. 410,715. (No model.)



wardly through the tubular drill while allowing the latter to remain within the drill-hole, substantially as described.

2. The improvement in the art of rock-core drilling, which consists in forming a cylindric rock-core by means of a tubular drill and removing detached cylindric sections of the rock-core upwardly through the tubular drill by means of an abundant supply of water forced downwardly within the drill-hole outside of the tubular drill and upwardly within the same, substantially as described.

473,911. TELEPHONE-EXCHANGE APPARATUS. JOHN J. CARTY, New York, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 25, 1889. Serial No. 331,498. (No model.)



Claim.—1. A metallic circuit normally disconnected from ground at the subscriber's station thereon, a branch from said metallic circuit at the central office through a circuit-closing device, and a source of electricity to ground, in combination with a grounding-key at the subscriber's station, whereby the circuit-closing device may be operated on grounding the metallic circuit at the subscriber's station.

2. The combination, with the metallic-circuit telephone-line, including the differential coils of the telephone and transmitter-inductorium of a subscriber's station, of a key for closing the said line at the center of the coils of said telephone to ground and a branch from said line to ground through a circuit-closing device and a battery.

3. The combination, with the metallic-circuit telephone-line, including the differential coils of the telephone and transmitter-inductorium at a subscriber's station, of a key for closing the said line at the center of the coils of said telephone to ground, the coil of a converter included in said circuit at the central office, a branch from said coil to ground through a circuit-closing device and battery, and a telephone at the central office telephonically connected with the metallic circuit of the subscriber by the circuit-closing device on grounding the line at the subscriber's station.

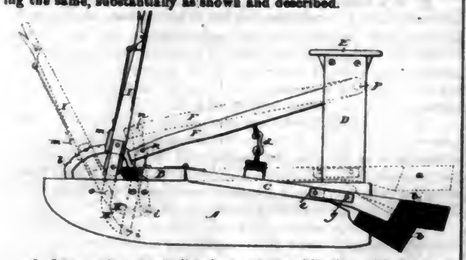
4. The combination, with the metallic-circuit telephone-line, including the differential coils of the telephone and transmitter-inductorium at a subscriber's station, of a key for closing the said line at the center of the coils of said telephone to ground, the coil of a converter included in said circuit at the central office, a branch from the center of said coil to ground through a circuit-closing device and battery, and a telephone at the central office telephonically connected with the metallic circuit of the subscriber by the circuit-closing device on grounding the line at the subscriber's station.

473,912. WEED-CUTTER FOR LISTED CORN. MAHARSHI A. CHAMBERLAIN, Kosta, Kans. Filed Sept. 3, 1891. Serial No. 405,107. (No model.)

Claim.—1. In a weed-cutter for listed corn, the knives bent inward to form an obtuse angle, the lower or cutting edge thereof being approximately straight and extending farther forward than the upper

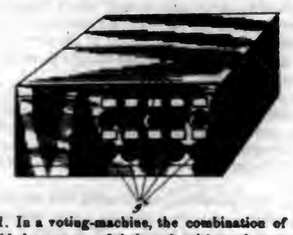
edge or back of same, thus throwing the inner surface or face upward, substantially as shown and described.

2. In a weed-cutter for listed corn, the hinged shovel-beams having attached thereto the inwardly-bent knives *a* and *b*, and connected by a cross-bar, to which is secured the lever F for raising and lowering the same, substantially as shown and described.



3. In a weed-cutter for listed corn, the combination, with the cross-head B, of the hinged shovel-beams C C, cross-bar J, knives *a* and *b*, and means for raising and lowering the same, substantially as shown and described.

478,913. VOTING-MACHINE. GEORGE A. CLIBE and WILLIAM TRIMBLE, Toronto, Canada. Filed Jan. 2, 1891. Serial No. 376,450. (No model.)



Claim.—1. In a voting-machine, the combination of a series of key-rods provided upon one of their ends with pawls, numeral-wheels engaged by said pawls, a pawl-operating slide engaged and actuated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by said slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

2. In a voting-machine, the combination of a series of key-rods provided at different points upon their lengths with locking-grooves, a series of numeral-wheels operated by the key-rods, and a locking-bar provided with a series of notches for the passage of the key-rods, said bar constructed to be moved longitudinally, so as to throw the notches out of register with the key-rods and the full width of the bar into engagement with the outer locking-grooves of the pressed-in key-rods and the inner groove of the key-rods not pressed in, substantially as set forth.

3. In a voting-machine, the combination of a frame, a series of key-rods provided upon one of their ends with pawls, numeral-wheels engaged by said pawls, a pawl-operating slide operated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by said slide, an adjustable regulating-stop upon the upper face of said ratchet-wheel, a trip-block having its inner end engaged by said stop after the ratchet-wheel has been moved a regulated number of teeth, a spring-pressed dog pivoted to the frame-work, and a locking-bar provided upon its upper edge with a notch within which the pivoted dog normally fits, said dog being tripped by the outer end of the trip-block when said trip-block is turned, and a spring having one end secured to the frame and its opposite end secured to the locking-bar, whereby the latter when the dog is thrown out of engagement is moved longitudinally, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

4. In a voting-machine and the like, the combination, with a frame, one of the side bars thereof provided with guide-slits, of a series of key-rods provided at diametrically-opposite points with guide-lips, whereby said rods in passing through the slits are prevented from turning in their bearings, and a series of numeral-wheels operated by the key-rods, substantially as set forth.

5. In a voting-machine, the combination of a frame, one of the side bars thereof provided with guide-slits, a series of key-rods provided at diametrically-opposite points with guide-lips, a series of spring-pressed latches adapted to fall behind said guide-lips when the keys are pressed inward, and a series of numeral-wheels operated by the key-rods, substantially as set forth.

6. In a machine for registering votes and the like, the combination of a wheel-case, a numeral-wheel journaled therein, a pin passing across the lower portion of said case, friction-springs passing over said pin, the forward ends thereof bearing against the under side of the numeral-wheels, a key-rod provided upon one end with a pawl for engaging the numeral-wheel, and a spring having its lower end connected to one of the first-named springs and its upper end connected to the under side of the pawl, substantially as set forth.

7. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide provided with an inwardly-working pivoted spring-pressed latch, a key-rod provided with a laterally-extending cam adapted to act upon the end of the latch upon the inward movement of the key-rod and cause a lateral movement of the slide, and upon the outward movement of said key-rod to cause the latch to move inwardly upon its pivot, numeral-wheel operated by the key-rod, a ratchet-wheel constructed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

8. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide consisting of a series of sections, each of said sections provided with an inwardly-working pivoted spring-pressed latch, a series of key-rods provided with laterally-extending cams, adapted to act upon the ends of the latches upon the inward movement thereof and cause a lateral movement of the slide and upon the outward movement of said key-rods to cause the latches to move inwardly upon their pivots, numeral-wheels operated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, substantially as set forth.

9. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide consisting of a series of sections having their opposing ends provided with semicircular grooves, each of said sections also provided with an inwardly-working pivoted spring-pressed latch, a series of key-rods provided each with a laterally-extending cam and at a diametrically-opposite point with a laterally-extending lock, said cams adapted to act upon the ends of the latches upon the inthrust of the key-rods and cause a lateral movement of the slide and upon the outward movement of said key-rods to cause the latches to move inwardly, and said locks adapted to contact with the grooves of the sections of the slide contiguous when more than one key is pressed in at a time, numeral-wheels operated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, substantially as set forth.

10. In a voting-machine, the combination of a frame, a pawl-operating slide working in guides formed in one of the side pieces of the frame, said slide consisting of a series of sections having their opposing ends provided with semicircular grooves, each of said sections also provided with inwardly-working pivoted latches, a series of key-rods provided each with a laterally-extending cam and at a diametrically-opposite point with a laterally-extending lock, collars upon the key-rods, located thereon at a distance from the locks equal to the thickness of the pawl-operating slide, numeral-wheels operated by the key-rods, a ratchet-wheel constructed to be engaged by the pawl carried by the slide, and a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, substantially as set forth.

11. In a voting-machine, the combination of a frame, guide-plates secured to one of the side pieces of the frame, a series of numeral-wheels, key-rods for operating said wheels, said rods provided with locking-grooves at different points upon their length, a collar and cushioning-washer upon each key-rod, located thereon at a distance from the innermost grooves equal to the thickness of the guide-plates, and a locking-bar constructed to engage the inner or outer grooves of the key-rods, according as the same are pressed in or out, substantially as set forth.

12. In a voting-machine, the combination of a frame, a series of key-rods working through said frame, said key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind said lips when the keys are pressed inward, a series of numeral-wheels operated by the key-rods, and a releasing-bar provided with a series of notches into which the spring-pressed latches fit, said releasing-bar constructed to be moved toward the numeral-wheels, so as to press the bordering edges of the notches against the latches and cause the release of the key-rods, substantially as set forth.

13. In a voting-machine, the combination of a frame, a series of key-rods working through the frame, said key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind said lips when the keys are pressed in, a series of numeral-

wheels operated by the key-rods, a releasing-bar constructed to be moved toward the numeral-wheel and engage the latches, so as to effect the release of the key-rods, and a spring secured at one end of the machine, its free end bearing against the end of the releasing-bar and causing the same to be returned to its normal position after acting upon the latches, substantially as set forth.

14. In a voting-machine, the combination of a frame, a pawl-operating slide working in guideways in said frame, a series of key-rods for operating said slide, said key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind the lips upon the isthrust of the keys, a series of numeral-wheels operated by the key-rods, a ratchet-wheel adapted to be engaged by the pawl carried by the slide, a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, a pivoted arm having a downward projection engaging the pawl, and a releasing-bar engaging the latches and provided with two upwardly-extending arms adapted when said bar is operated to engage the horizontal portion of the pivoted arm and throw the pawl out of engagement with the ratchet-wheel, substantially as set forth.

15. In a voting-machine, the combination of a frame, a pawl-operating slide working in guideways in said frame, a series of key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind the lips upon the isthrust of the keys, a series of numeral-wheels operated by the key-rods, a ratchet-wheel adapted to be engaged by the pawl carried by the slide, a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock both the pressed-in keys and those not pressed in, a pivoted arm having a downward projection engaging the pawl, a detent-pawl for the ratchet-wheel, and a releasing-bar engaging the latches, said bar provided with two upwardly-extending arms adapted when said bar is operated to engage the horizontal portion of the pivoted arm and throw the pawl out of engagement with the ratchet-wheel, and the releasing-bar further provided upon its extremity with a depending pin adapted to engage the detent-pawl and throw the same out of engagement, substantially as set forth.

16. In a voting-machine, the combination of a frame, a series of key-rods working through said frame, said key-rods provided with a laterally-extending lip, a series of spring-pressed latches adapted to fall behind said lips upon the isthrust of the keys, a series of numeral-wheels operated by the key-rods, a releasing-bar provided with a series of notches into which the spring-pressed latches fit, said releasing-bar constructed to be moved toward the numeral-wheels, so as to press the bordering edges of the notches against the latches and cause the release thereof, and a spring secured at one end of the frame and having its free end bearing against the releasing-lever, so as to cause the return of the same to its normal position, substantially as set forth.

17. In a voting-machine, the combination of a series of key-rods, numeral-wheels operated thereby, a locking-bar provided at one end with a niche, a spring-pressed dog normally engaging said niche, a trip-block having one end engaging beneath said dog, and mechanism engaging the opposite end of the trip-block, so as to throw the dog out of engagement with the niche of the locking-bar and permit said bar to move longitudinally and lock the key-rods, substantially as set forth.

18. In a voting-machine, the combination of a series of key-rods, numeral-wheels operated thereby, a locking-bar provided at one end with a niche, a spring-pressed dog normally engaging said niche, a trip-block having one end engaging beneath said dog, mechanism for engaging the opposite end of the trip-block, so as to throw the dog out of engagement with the niche of the locking-bar and permit said bar to move longitudinally into locked engagement with the key-rods, a pivoted cross-bar having one end engaging the locking-bar, and mechanism for engaging the opposite end of said cross-bar, so as to return the locking-bar to its normal position, substantially as set forth.

19. In a voting-machine, the combination of a series of key-rods, a pawl-carrying slide operated by the key-rods, numeral-wheels also operated thereby, a ratchet-wheel constructed to be engaged by the pawl carried by said slide, a pivoted arm bent downwardly at right angles to engage the pawl, a detent-pawl, a key-releasing bar provided at one end with a depending pin, a U-shaped piece adjustably secured to the releasing-bar, having two upwardly-extending arms to receive the horizontal portion of the pawl-releasing arm and its extremity provided with an upwardly-extending arm, a locking-bar constructed to be operated after the ratchet-wheel has been moved a regulated number of teeth, so as to lock the key-rods, a pivoted cross-bar having one end engaging the locking-bar and provided near its opposite end with a depending arm and a key-releasing rod, its angular end when said rod is slid inwardly adapted to act against the depending arm of the cross-bar and the end arm of the releasing-bar, substantially as set forth.

20. In a voting-machine, the combination of a frame, a series of key-rods working through said frame, a series of numeral-wheels operated by the key-rods, a releasing-bar for disengaging the key-rods from their locked position after their isthrust, a releasing key-rod sliding in bearings, so as to contact with and operate the releasing-rod, said releasing key-rod provided with a slot, and a lock for engaging said slot, substantially as set forth.

21. In a voting-machine, the combination of a frame, a series of numeral-wheels, key-rods operating said numeral-wheels, said key-rods provided with laterally-extending cam-surfaces, a key-rod running transversely of the first-named rods and provided with depending pins adapted to be engaged by the cams on the isthrust of the rods carrying said cams, and a numeral-wheel adapted to be operated by the transverse key-rod, substantially as set forth.

22. In a voting-machine, the combination of a series of key-rods provided upon one of their ends with pawls, registering mechanism, substantially as described, actuated by said key-rods, and a locking-bar constructed to automatically lock both the key-rods pressed in and those not pressed in after a predetermined number of said pressed-in key-rods have been operated, substantially as set forth.

23. In a voting-machine, the combination of a frame, a series of key-rods mounted in said frame, registering mechanism actuated by the key-rods, each of said key-rods provided on its outer end with a head or button, mechanism for locking the key-rods upon their isthrust, a spring for returning the same to their normal position after release, and a locking-bar constructed to automatically lock both the key-rods pressed in and those not pressed in after a predetermined number of said pressed-in key-rods have been operated, substantially as set forth.

24. In a voting-machine, the combination of a series of key-rods, registering mechanism operated by said rods, a ratchet-wheel, a slide consisting of a series of sections to actuate said ratchet-wheel, said slide so constructed as to permit the isthrust of one key-rod at a time and effectually stop the simultaneous isthrust of two or more key-levers, substantially as set forth.

25. In a voting-machine, the combination of a series of key-rods, of an operating-slide provided with apertures fitted with pivoted latches, actuated by said key-rods passing through said apertures, registering mechanism actuated by said key-rods, and mechanism for automatically locking off the machine actuated by said operating-slide, substantially as set forth.

26. In a voting-machine, an operating-slide consisting of a series of sections sliding in suitable guides and having apertures fitted with outwardly-working pivoted latches, each of which is provided with a returning-spring, in combination with the key-rods, registering mechanism, and mechanism for automatically locking off the machine actuated by said operating-slide, substantially as set forth.

27. In a voting-machine, the combination of a series of key-rods, registering mechanism actuated by said key-rods, a ratchet-wheel provided on one of its faces with a stop, a trip-block, one end of which is actuated by said stop, a locking-bar to lock off the the machine upon the isthrust of the regulated number of key-rods actuated by the other end of said trip-block, substantially as set forth.

28. The combination of the key-rods having pivoted to their inner ends pawls G′, the numeral-wheels, pawl-operating slide W, the pawl C′, ratchet-wheel C, trip-block E, and locking-bar F, substantially as and for the purpose set forth.

29. The combination of the key-rods G, the pawl G′, numeral-wheels, cams i″, pawl-operating slide W, the pawl C′, recoil-pawl C″, ratchet-wheel C, the stop D, trip-block E, and locking-bar F, substantially as and for the purpose set forth.

30. The combination of the key-rod G, fitted on its outer end with an enlarged head or button and on its inner end with a pawl G′, the guides i, guide-slits i′, formed in a side bar A′, the recoil-spring M″, with the side bar A A′, grooves g g′, and locking-bar F, substantially as and for the purpose set forth.

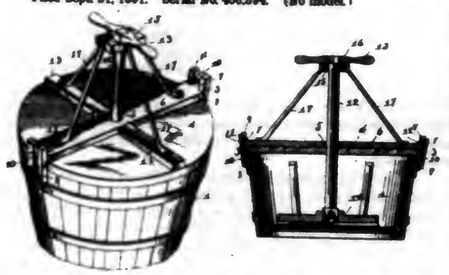
31. The combination of the key-rods G, pawls G′, operating numeral-wheels e e′ e″, the guides i i, belts N″, cams i″, pawl-operating slide W, the pawl C′, ratchet-wheel C, stop D, trip-block E, locking-bar F, cross-bar K′, and releasing-bar F′, substantially as and for the purpose set forth.

32. In a voting-machine, the releasing-bar F′, provided with a U-shaped piece N, one end of which O′ engages with the outwardly-extending arm i′ of the pivoted pawl-releasing arm n, in combination with a pawl-releasing bar, the pawl C′, and ratchet-wheel C, substantially as and for the purpose set forth.

33. In a voting-machine, the frame of the machine consisting of two side bars A A′, an end bar a, and the intermediate bar a′, a bed-plate B, connected to the open end a″ of the said end bars and having journaled therein the lower end of the ratchet-spindle b, while the opposite end is journaled in a cross-bar b′, extending outwardly from and secured to the side bar A′, in combination with the locking-bar F, sliding in guide-plates M′, secured to the inner face of the side bar A, the pawl-operating slide W, sliding in guides D, secured to the inner face of the side bar A′, the ratchet-wheel C, the stop D, trip-block E, niche f,

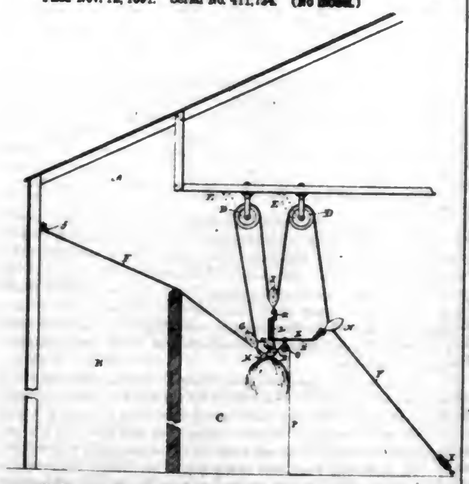
cut in the upper edge of the locking-bar F, into which engages the end e′ of the trip-block E, notches f′, cut in the lower edge of the said locking-bar and through which pass the key-rods G, the key-rods G, fitted with grooves g g′, and into which engage the said locking-bar, substantially as and for the purpose set forth.

473,914. WASHING-MACHINE. SAMUEL COOK, Little Valley, N. Y. Filed Sept. 21, 1891. Serial No. 406,394. (No model.)



Claim.—The combination, with a washing-machine body, of a cover wholly removable therefrom, provided with a cleat arranged on its upper face and having the ends reduced to form tenons, the slotted plates secured to the body at diametrically-opposite sides and projecting above the edge of the body and adapted to receive the said tenons and the shoulders, and spring-catches adapted to engage the tenons of the cleat, substantially as described.

473,915. HAY-ELEVATOR. JAMES C. CULBERTSON, Oakland, Pa. Filed Nov. 12, 1891. Serial No. 411,734. (No model.)



Claim.—1. In a hay-elevator, the combination, with the supporting-wheels, a single hoisting-rope passing over said wheels, and a hay-fork having a ring, of an L-shaped hoisting-bracket loosely connected at the short arm thereof with the hoisting-rope between said pulleys, a guide-pulley secured to the end of the long arm of said bracket and engaging the hoisting-rope on the outside of one of said supporting-pulleys, a hook swiveled in the angle end of said bracket and adapted to be connected with said fork-ring, and a trip-rope, substantially as set forth.

2. In a hay elevator and carrier, the combination of a pair of grooved supporting wheels or pulleys located at the top of the barn, a continuous hoisting-rope passing over said pulleys and secured at a point lower than the same, a hoisting-pulley carried by the portion of the rope between the supporting-pulleys, an L-shaped hoisting bracket or frame connected to said hoisting-pulley and provided with a swiveled hook at one end and directly in line with the hoisting-pulley and with a guide-pulley at the other end thereof, through which the hoisting-rope passes, and a fork-carrying pulley having a ring engaging said swiveled hook and thus carrying the same in a vertical line to the top of the barn with said lifting-bracket and adapted to be automatically released from the same and travel over the inclined portion of the hoisting-rope, substantially as set forth.

3. In a hay elevator and carrier, the combination of a pair of grooved supporting wheels or pulleys, a continuous hoisting-rope passing over said pulleys and secured at one end at a point lower than the same, an L-shaped lifting-bracket carried by the portion of the hoisting-rope passing between the supporting-pulleys, the said lifting-bracket being provided with a guide-pulley located at the end of its long arm and receiving the hoisting-rope, over which said guide-pulley travels and holds the bracket in a normal horizontal position, a hook swiveled at the angle end of said bracket, a trip-rope pulley secured to said bracket adjacent to said hook, a fork-carrying pulley provided with a ring adapted to loosely engage said hook, thus carrying the same in a vertical line with said lifting-bracket up to said supporting-wheels and adapted to be automatically released from the same and travel over the incline of the hoisting-rope, and a trip-rope passing over said trip-pulley and connected to the hay-fork to operate the same, substantially as set forth.

473,916. HORSE-BLANKET FASTENER. EUGENE H. DANFORTH, Colebrook, N. H. Filed Jan. 12, 1892. Serial No. 417,839. (No model.)

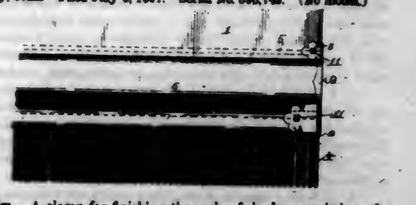


Claim.—1. In a horse-blanket holder, a detachable crupper-strap and a fastening device, comprising a keeper-plate provided with staple-keepers, and staples passing through said plate and adapted to secure said crupper-strap adjustably to a horse-blanket, substantially as and for the purpose described.

2. The combination of the plate formed with elevated open-sided keeper-lugs and staple-holes, the flexible or pliable staples passed through the holes and adapted to be bent or sprung under the keeper-lugs, and a strap passed through the bowed portions of the staples beneath the plate, substantially as described.

3. The keeper-plate having elevated open-sided lugs stamped upon it so as to stand above its upper side and with holes through it near each end, in combination with U-shaped flexible or pliable penetrating staples fastened to the plate by bending and springing them under the lugs, substantially as described.

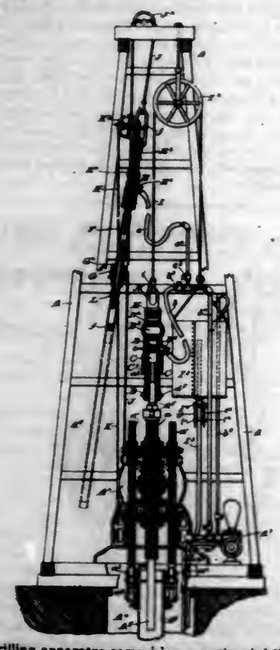
473,917. CLAMP FOR FINISHING SHADES. LOUIS DOLL, Danbury, Conn. Filed July 8, 1891. Serial No. 398,749. (No model.)



Claim.—A clamp for finishing the ends of shades, consisting of a plate having a central opening of suitable shape and size to receive the cross-piece, a pair of clamping-arms adapted to embrace the edge of the shade above the cross-piece and covering the end of the seam by which the pocket is formed, and a pair of clamping-arms adapted to embrace the edge of the shade below the cross-piece and also the end of the fringe and to cover the end of the seam by which the fringe is held in place.

473,918. WATER-SWIVEL FOR DRILLING APPARATUS. SAMUEL W. DOUGLASS, Chicago, Ill., assignor to Milan C. Bullock, same place. Filed Jan. 28, 1891. Serial No. 379,397. (No model.)

Claim.—1. A drilling apparatus comprising a sectional revolving drill-rod, a water-swivel consisting of rotating and non-rotating parts and provided with a valved passage for the drill-rod extending through the same, a second water-swivel consisting of a non-rotating part and a rotating part adapted for attachment to a drill-rod section, and water-supply pipes connecting with both of said water-swivels, substantially as described.



2. A drilling apparatus comprising a sectional drill-rod, a water-swivel provided with a chuck for attaching the same to the drill-rod and with a valved passage for the drill-rod extending through the same, a second water-swivel adapted for attachment to a drill-rod section, and water-supply pipes connected with both of said water-swivels, substantially as described.

3. A drilling apparatus comprising a sectional drill-rod, a water-swivel consisting of rotating and non-rotating parts and provided with a valved passage for the drill-rod extending through the same, a packing located upon said rotating part for making a tight joint with the drill-rod sections, and a removable sleeve adapted for attachment to the upper end of said rotating part and provided with a packing for making a tight joint with said sections, substantially as described.

4. A drilling apparatus comprising a sectional drill-rod, a water-swivel provided with a valved passage for the drill-rod extending through the same, a removable sleeve adapted for attachment to said water-swivel and provided with a packing for making a tight joint with the drill-rod section passing through the same, a second water-swivel adapted for attachment to a drill-rod section, and water-supply pipes connected with said water-swivels, substantially as described.

5. A drilling apparatus comprising a sectional drill-rod, a water-swivel provided with a valved passage for the drill-rod extending through the same, a removable sleeve adapted for attachment to said water-swivel and provided with a packing, and a second water-swivel provided with a tube adapted to receive the said sleeve when the latter is detached.

6. A drilling apparatus comprising a drill-rod, a water-swivel, and a counterbalance-weight connected with the water-swivel, said weight consisting of a tank having a water-supply pipe and exit-passages, whereby its gravity may be varied, as desired.

7. A drilling apparatus comprising a drill-rod, a water-swivel, and a counterbalance-weight connected with the water-swivel, said weight consisting of a tank provided with a water-supply pipe and with an exit-pipe extending upwardly through the bottom of the tank and adjustable vertically therein, substantially as described.

8. A drilling apparatus comprising a sectional drill-rod, a water-swivel consisting of rotating and non-rotating parts and provided with a valved passage for the drill-rod through the same, a second water-swivel consisting of rotating and non-rotating parts and provided with a passage for a hoisting-rope, a hoisting-rope extending through the said passage, a gripping or other tool attached to said rope, a tube attached to the rotating part of the second water-swivel to receive the said tool, and water-supply pipes connected with both of said water-swivels, substantially as described.

9. A drilling apparatus comprising a sectional drill-rod, a water-swivel provided with a valved passage for the drill-rod sections extending through the same, a second water-swivel provided with a passage for a hoisting-rope, a hoisting-rope extending through said passage, a pulley for the said rope, and a yoke for supporting the pulley connected by a swiveled joint with the water-swivel.

10. A drilling apparatus comprising a sectional drill-rod, a water-swivel provided with a valved passage for the drill-rod sections extending through the same, a second water-swivel adapted for the attachment of its lower end to a drill-rod section and having a passage for a hoisting-rope, a packing in said passage for making a water-tight joint with the hoisting-rope passing through the same, and water-supply pipes connected with both of said water-swivels, substantially as described.

11. A drilling apparatus comprising a sectional drill-rod, a water-swivel provided with a valved passage for the drill-rod extending through the same, a second water-swivel adapted for attachment to a drill-rod section and provided with a hoisting-rope, and water supply pipes connected with both of said water-swivels, substantially as described.

12. A drilling apparatus comprising a sectional drill-rod, a water-swivel provided with a valved passage for the drill-rod extending through the same, a second water-swivel provided with a passage for a hoisting-rope, a hoisting-rope extending through said passage, a grappling or other tool attached to said rope, a hoisting-rope attached to said last-mentioned water-swivel, and water-supply pipes connected with both of said water-swivels, substantially as described.

13. A drilling apparatus, comprising a sectional drill-rod, a water-swivel consisting of rotating and non-rotating parts and provided with a valved passage for the drill-rod sections extending through the same, a second water-swivel also consisting of rotating and non-rotating parts having a valved passage extending through the same and having its rotating part adapted to attachment to a drill-rod section, and water-supply pipes connected with both of said water-swivels, substantially as described.

14. A drilling apparatus comprising a sectional drill-rod and a water-swivel provided with a passage for the drill-rod sections extending through the same, said water-swivel comprising a barrel B, a tube C in the lower end of said barrel and adapted for attachment to the drill-rod sections, an external annular flange c' on said tube, a sleeve or ring C' in the lower end of said barrel surrounding said tube, and a water-supply pipe connected with said water-swivel, substantially as described.

15. A drilling apparatus comprising a sectional drill-rod and a water-swivel provided with a passage for the drill-rod sections extending through the same, said water-swivel comprising a barrel B, a tube C in the lower end of said barrel and adapted for attachment to the drill-rod sections, an external annular flange c' on said tube, a sleeve or ring C' in the lower end of said barrel surrounding said tube, a packing in said sleeve for making a water-tight joint with the tube, and a water-supply pipe connected with said water-swivel, substantially as described.

16. A drilling apparatus comprising a sectional drill-rod and a water-swivel provided with a passage for the drill-rod sections extending through the same, said water-swivel comprising a barrel B, a tube C in the lower end of said barrel, a chuck D on said tube, and a water-supply pipe connected with said water-swivel, substantially as described.

17. A drilling apparatus comprising a sectional drill-rod and a water-swivel provided with a valved passage for the drill-rod sections extending through the same, said water-swivel comprising a barrel B, having an annular chamber B^4 communicating with a source of water-supply, and a tube C in the lower end of said barrel and adapted for attachment to the drill-rod sections, said tube extending past said chamber B^4 and having ports c adjacent to said chamber, substantially as described.

473,919. ADJUSTABLE JOINT FOR DISPLAY-FRAMES. WILLIAM H. RIDALL, Brooklyn, N. Y. Filed Jan. 29, 1892. Serial No. 419,636. (No model.)

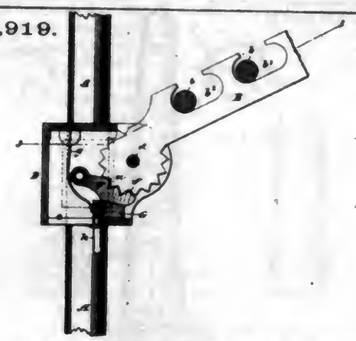
Claim.—1. The combination of the pivoted arm B, having ratchet-teeth a, with the pawl F, and with the slide G, adapted to lock said pawl to said ratchet-teeth, substantially as described.

2. The combination of the pivoted arm B, having ratchet-teeth a, with the pawl F, and with the slide G, adapted to lock said pawl to said ratchet-teeth, and with the spring g, substantially as described.

3. The combination of the casing D, having slot e, with the slide G, having handle A, protruding through said slot e, and with the pawl F, and pivoted arm B, having ratchet-teeth a, all arranged substantially as herein shown and described.

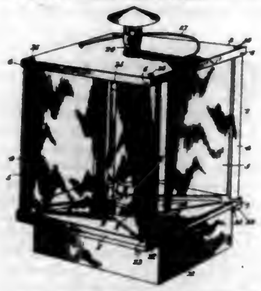
4. The combination of the upright A, with the casing D, carried

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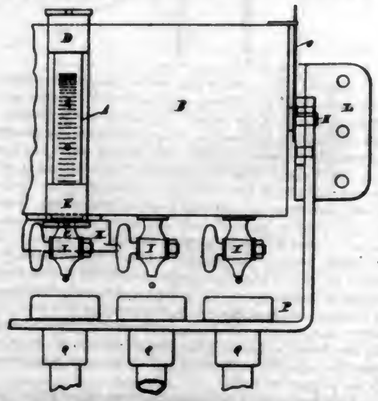
thereby, and with the arm B, pivoted in said casing and having ratchet-teeth a, and with the pawl F and spring-controlled slide G, arranged within said said casing D, said slide being adapted to hold said pawl F in contact with the ratchet-teeth of said arm B, substantially as described.

473,920. INSECT-TRAP. JOSEPH H. EDWARDS, Giddings, Tex. Filed Dec. 5, 1891. Serial No. 414,132. (No model.)



Claim.—In a trap, the combination of a frame having a bottom provided with an approximately star-shaped opening, the transparent walls mounted in the frame and forming re-entrant angles and providing entrance-openings and being adjustable to vary the size of the entrance-openings, a receptacle arranged beneath the opening in the bottom of the frame, and a lamp arranged within the frame, substantially as described.

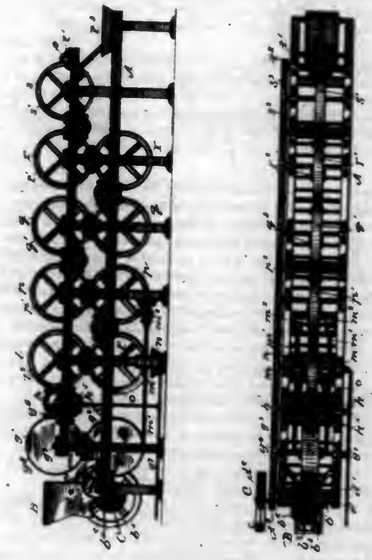
473,921. LUBRICATOR. NELSON POLEY, Naples, Italy. Filed June 24, 1891. Serial No. 397,318. (No model.) Patented in England Sept. 24, 1890, No. 15,065.



Claim.—1. In a lubricator, the combination, with the closed reservoir, serving as the long leg of the siphon, of a gage-glass attached to said reservoir and serving as the short leg, and trunnions on which the reservoir is mounted, whereby it may be inverted.

2. In a lubricator, the combination, with the closed reservoir serving as the long leg of the siphon and adapted to be inverted, of a gage-glass attached to said reservoir and serving as the short leg, said reservoir having a cap at its lower end provided with an air-hole.

473,922. MATCH-MACHINE. FREDERICK F. GUMAER, Trenton, N. J. Filed Sept. 28, 1891. Serial No. 407,012. (No model.)



Claim.—1. In combination, in a match-machine, a hopper, pocketed rolls for conveying splints from the hopper, a rotary drum having closed ends and a pocketed periphery, a heating system connected with the drum, a wax-vat adjacent to the drum in the path of the splints, and pocketed rolls for conveying splints from the waxing-vat substantially as specified.

2. In combination, in a match-machine, a hopper, pocketed rolls for conveying splints from the hopper to a waxing-vat, a waxing-vat, pocketed rolls for conveying splints from the waxing-vat to a composition-vat, a composition-vat, and a train of pocketed rolls for conveying splints from the composition-vat, substantially as specified.

3. In combination, in a match-machine, a hopper, pocketed rolls for conveying splints from the hopper, a rotary drum having a pocketed periphery, steam-pipes connected with said drum, a waxing-vat on each side adjacent to the drum near the path of the splints, pocketed rolls for conveying splints from the waxing-vat to a composition-vat, a composition-vat, and a train of pocketed rolls for conveying splints from the composition-vat, substantially as specified.

4. In combination, in a match-machine, a hopper, pocketed rolls for conveying splints from the hopper, a rotary drum having a pocketed periphery, a waxing-vat adjacent to the drum near the path of the splints, pocketed rolls for conveying splints from the waxing-vat to a composition-vat, a composition-vat, pocketed rolls for conveying splints from the composition-vat, and a system of steam-pipes connected with the drum, waxing and composition vats, substantially as specified.

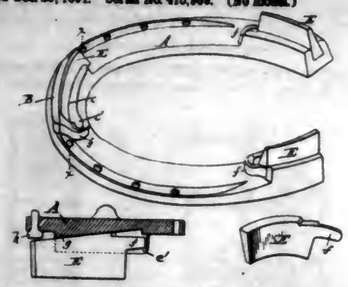
5. In combination with a match-machine, a hopper, pocketed rolls for conveying splints from the hopper to a waxing-vat, a waxing-vat, pocketed rolls for conveying splints from the waxing-vat to a composition-vat, a composition-vat, pocketed rolls for conveying splints from the composition-vat to a cutter, and a cutter for dividing the splints, substantially as specified.

6. In the herein-described match-machine, in combination with the train of pocketed conveying-rolls, a waxing-vat provided with grooves and openings in the path of the ends of the splints on each side of and adjacent to one of the conveying-rolls, substantially as specified.

7. In the herein-described match-machine, in combination with the train of pocketed conveying-rolls, a rotary drum having a pocketed periphery, and steam-pipes leading into the drum, whereby the splints are heated by the drum, substantially as specified.

8. In combination with the pocketed conveying-rolls of a match-machine, a hopper having a portion of its side walls double, the inner of which are movable toward or from the outer, and means for moving the inner, substantially as specified.

473,923. HORSESHOE. CHARLES HAMMELMANN, Buffalo, N. Y. Filed Dec. 23, 1891. Serial No. 415,969. (No model.)



Claim.—1. The combination, with the body of the horseshoe having a tapering groove or socket, of a tapering calk seated removably in said socket and provided at its narrow end with a lip or spur which is bent against the wall of the socket, substantially as set forth.

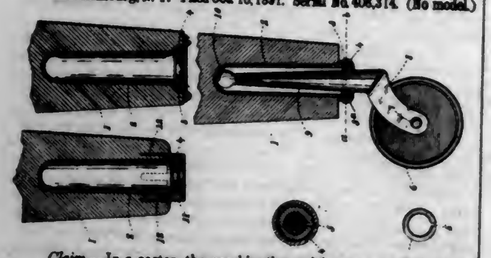
2. The combination, with a removable calk having a fastening-lip, of the body of the horseshoe provided with a groove or socket for the calk having one of its walls extending lengthwise beyond the opposite wall, whereby the bending of the calk-lip against the projecting wall of the socket is facilitated, substantially as set forth.

3. The combination, with the body of the horseshoe provided with a longitudinally-tapered groove or socket having curved side walls and open ends, of a tapered calk curved lengthwise and removably seated in said socket, substantially as set forth.

4. The combination, with the body of the horseshoe provided with a longitudinally-tapered groove or socket having curved side walls and open ends, of a correspondingly-shaped calk arranged in said socket and provided at its narrow end with a lip or spur which is bent against the wall of the socket, substantially as set forth.

5. The combination, with the removable calk, of the body of the horseshoe provided with a calk groove or socket having its bottom arranged below the under side of the shoe, whereby the calk is permitted to clear the heads of adjacent nails in inserting and removing the calk, substantially as set forth.

473,924. CASTER. ABNER HARDENBERGH and WILLIAM C. FROHNLEY, Hamburg, N. Y. Filed Oct. 10, 1891. Serial No. 408,314. (No model.)

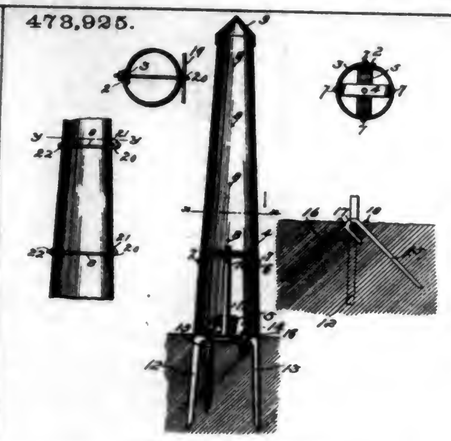


Claim.—In a caster, the combination, with a separated clasping-ring, of a suitable case in which it is held so as to turn freely and enlarge or contract therein and a caster provided with a plain smooth shank adapted to pass into and be held by said ring, substantially as described.

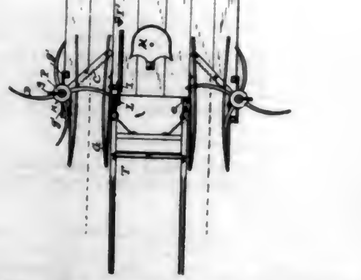
473,925. METALLIC FENCE-POST. HIRAM A. HARRINGTON, Anoka, Minn. Filed Sept. 28, 1891. Serial No. 407,011. (No model.)

Claim.—1. The combination, with the sheet-metal post, of means for securing the lapping edges thereof, cross-bars 4 and 5, arranged with said post, one above the other, the fork having the threaded shank 11 to engage said cross-bars, the prongs 12 and 13 thereof, the horizontal portion 14, and the hook fastening-pegs 15 and 16, and means for securing the hooked ends thereof on the parts 14 of said fork, substantially as described.

2. The combination, with the post proper formed of a taper sheet of metal, of a fork having a shank 11, cross-ties within said post for fastening the same to said shank, the upper end of said shank being threaded and secured in the threaded opening of the upper cross-bar 4, hooked bolts 8 for securing the lapping edges 2 and 3 and for securing the wire to the post, a cap for the post, stay-rods 24, secured upon the post by clamping-collars 25, staples 27 for securing the lower ends of said stay-rods, and pegs 28 for securing said staples, and similar pegs for securing said fork, substantially as described.



473,926. CORN-HARVESTER. CHARLES P. HASKELL, Wichita, Kans. Filed Nov. 10, 1890. Serial No. 370,901. (No model.)



Claim.—1. The cornstalk-harvesting machine consisting of the combination, with the platform A, formed with a beveled forward portion at each side, of the cutters *c c*, fixed to and projecting forward from said beveled portions, the guards G, fixed to the platform-frame and extending forward one each side of each cutter and having portions curved upward and extending over and rearward of the cutters, the traveling wheels *w w* and *w' w'* for supporting the platform horizontally, the former of said wheels having integral side bevel-gears *a*, the corresponding gears *a'*, journaled in the harvester-frame and arranged in mesh with said wheel-gears, the reel-posts P P, supported by suitable bearings and adapted to rotate with said gears, the reels having the curved arms D, supported and driven by said posts and operating horizontally above the cutters *c*, the caster-wheel *m*, supported by the crank-shaft *m'*, the lever L for operating said caster to bring it to bear upon the ground and raise the forward portion of the harvester, and the thills T, attached to the forward portion of the harvester between the path of the cutters for hauling the same, substantially as and for the purpose set forth.

2. In the cornstalk-harvester described, the combination, with the platform A, of the binder mechanism consisting of the curved binder-arm F, carrying the swiveled grip E and pivotally supported at one end on the post 2, the slotted gear-wheel B' and the rotary cutter 5 thereof pivoted to the side of post 3, the segment B, arranged to

be operated by means of a treadle in one direction and a spring in the reverse direction for rotating said slotted gear, the stationary cutting-plate fixed to said post and arranged to shear with the rotary cutter, the guide J, fixed to said post opposite the gear and cutters, the arm O, extending laterally from said post in the path of the grip of the binding-arm, and the spool-supporting post 4, and wire-guide *f f'*, substantially as and for the purpose specified.

3. In combination with the binding mechanism in the harvester described, the wire holding, cutting, and twisting mechanism consisting of the slotted gear B', and recessed rotary cutter 5, fixed to the gear, the stationary cutting-plate P², arranged to shear with the rotary cutter to cut the wire, and the segment and treadle mechanism for rotating the gear to twist the wire ends to secure a bundle, substantially as set forth.

4. In the harvester described, the combination, in the binder mechanism, of the curved binder-arm F, pivotally supported at one end by means of a post and provided at its free end with the swiveled grip E, adapted to grasp and hold the binding-wire in its jaws, and the arm O, supported in the path of said grip for engaging and operating the trail-arm of said grip to open its jaws and turn it on its swivel to face it about, substantially as and for the purpose set forth.

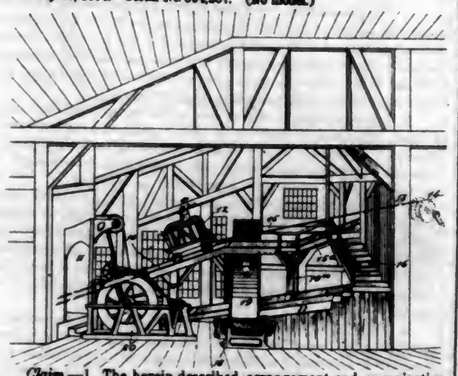
5. In the binder mechanism of the harvester described, the combination of the slotted gear B', carrying therewith at its side in contact with a stationary cutting-plate the rotary recessed cutter 5, the segment B, arranged in mesh with said gear, the treadle Q, connected with said segment through the agency of rod R for giving movement to said segment to rotate the gear in one direction, and the spring *b*, arranged connecting said segment for giving movement thereto to reverse the said gear when the treadle is released, substantially as set forth.

6. In the binder mechanism of the harvester described, the combination, with the slotted gear B', studded to a post 3, of the inclined and offset guide J, fixed to the opposite side of the post, with its offset in line with the gear-slot, substantially as and for the purpose set forth.

7. In the binder mechanism of the harvester described, the combination, with the binder-arm F, of the grip E, swiveled to the free end of said arm and consisting of a pair of jaws pivoted together yieldingly, held closed by means of the coil-spring 7, arranged between rearwardly-extending arms of said jaws, and the lower jar thereof provided with the depending trail-arm E', adapted to be engaged to open the jaws and turn about the grip, in the manner substantially as and for the purpose set forth.

8. In the harvester described, the combination, with the frame thereof, of the caster-wheel *m*, the cranked cross-shaft *m'*, bearing on its cranked portion said caster-wheel, of the lever fixed to said shaft and arranged to be grasped by a person upon the harvester to operate the shaft to bring the caster upon the ground and of the catches I and I' for holding the lever, substantially as and for the purpose set forth.

473,927. STAGE EFFECT. EVA HEATON, Holly Beach, N. J. Filed May 27, 1891. Serial No. 394,237. (No model.)



Claim.—1. The herein-described arrangement and organization of machinery to produce a stage effect, consisting of an inclined railway extending upward across the stage, a car traveling upon the railway, a crusher beneath the railway, and an inclined chute extending forwardly beneath the railway and at its lower end delivering into the crusher, substantially as described.

2. The herein-described arrangement and organization of machinery to produce a stage effect, consisting of an inclined railway extending across the stage, a car to run upon the railway, landings arranged at the upper end of the railway and upon the stage beneath, a stairway connecting the two landings, a crusher at the foot of the lower landing, and a chute extending from the upper landing beneath the railway and delivering upon the crusher, substantially as described.

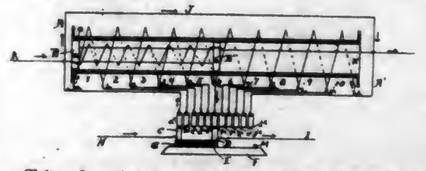
3. The herein-described arrangement and organization of machinery to produce a stage effect, consisting of an open shaft produced on one side of the stage, an inclined railway leading upward across the stage from the shaft, a car traveling upon the railway, landings arranged at the upper end of the railway, a crusher beneath and in front of the railway, a chute extending forwardly under the railway from the upper landing to the crusher, and a stairway leading from the upper landing to a point adjacent to the crusher, substantially as described.

4. A scenic effect to represent a coal-breaker, comprising an entrance to a mine-shaft, a track extending from the shaft-entrance upward across the stage, a car on the track, a crusher on the stage below the track, a chute inclined downward and forward under the track to the crusher and having its bottom formed of an endless belt, and means for operating the car, the crusher, and the belt, substantially as set forth.

473,928. PROCESS OF DYEING BLACK. MEINHARD HOFFMANN, Mainkur, near Frankfort-on-the-Main, assignor to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed Nov. 22, 1890. Serial No. 372,260. (No specimens.)

Claim.—The process of producing new black azo combinations on animal or vegetable fibers, which consists in first dyeing the material with the coloring-matter or substance named "naphthaline violet," herein described, then treating the dyed material with nitrous acid, and finally passing the same through a solution of a phenol or an amine.

473,929. SOLENOID AND ITS ELECTRICAL CONNECTIONS. HENRY H. HOSFORD, Cleveland, Ohio. Filed June 3, 1891. Serial No. 394,917. (No model.)



Claim.—In a solenoid, a series of energizing-coils formed of a conductor closed from one coil to the other and having the outer extremities of said conductors closed on each other, thereby forming a closed or unbroken electrical circuit, substantially as described.

2. A solenoid consisting of two or more coils, conductors from one coil directly to the other, and a conductor between the outer ends of the two outer coils, substantially as described.

3. A solenoid having energizing-coils electrically connected directly one to another, and a conductor connecting two of said coils located in different parts of the solenoid and having other coils between them, substantially as described.

4. A solenoid composed of a series of electrically-connected coils and contact-points, having each a conductor connected directly with two of said coils, substantially as described.

5. A solenoid composed of electrically-connected coils and separate contact-points and conductors for said coils, in combination with an independent conductor connecting two of said coils, and brushes to engage said contact-points, substantially as described.

6. In a solenoid, a series of energizing-coils having the terminals of adjoining coils in permanent electrical connection and the outer terminals of the extreme or end coils in permanent electrical connection, thereby forming a closed electrical circuit, substantially as described.

7. In a solenoid, a magnetic core, a non-magnetic shell or support for the coils, a conductor forming the coils and wound in the same direction around such support and having the outer terminals of the end coils in permanent electrical connection, so as to form a closed electrical circuit, substantially as described.

8. In a solenoid, a magnetic core capable of longitudinal movement, a series of motor-coils having the terminals of the sections in electrical connection to form a closed electrical circuit, and means for connecting the closed circuit at two or more points to a source of electrical energy, substantially as described.

9. In a solenoid, a series of coils forming a continuous conductor and permanent electrical connection of the terminals of the conductor, so as to form a closed electrical circuit, substantially as described.

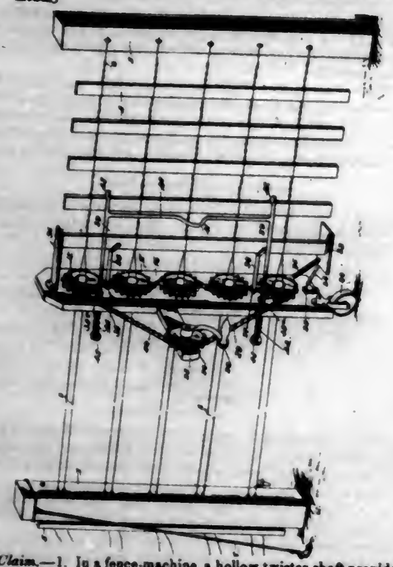
10. In a solenoid, a series of coils with permanent electrical connection through the coils and outside of the same to form a complete or closed electrical circuit, contact points for admitting current to the coils, means, such as movable brushes, for connecting the said contact-points with a source of electrical energy and to make successive contact with said points, substantially as described.

11. In a solenoid, a movable magnetic core, motor-coils so united as to form a permanently-closed electrical circuit, and means for connecting the circuit at two or more points with a source of electrical energy, substantially as described.

12. In a solenoid, a magnetic core, coils around the core so united as to form a closed electrical circuit, and means for connecting the coils or sets of coils with the two terminals of a source of electrical energy, substantially as described.

13. In a solenoid, energizing-coils so united as to form a permanently-closed electrical circuit, means for connecting the terminals of a source of electrical energy to the closed circuit at such points as to divide the closed circuit into electrically-parallel paths of substantially equal resistance, and means for shifting the connections of said terminals from one set of such points to another set of such points on the closed circuit, substantially as described.

473,930. FENCE-MACHINE. EDMUND HOUSER, Cookport, Pa. Filed Apr. 29, 1889. Renewed Oct. 20, 1891. Serial No. 409,302. (No model.)



Claim.—1. In a fence-machine, a hollow twister-shaft provided at one end with a clamping-frame provided with opposite pairs of grooves, in combination with sliding plates mounted in the grooves and adapted to overlap in the frame and provided with opposite perforations near their ends and with aligning elongated slots, and a set-screw inserted through said slots, substantially as specified.

2. In a fence-machine, a frame having perforations, in combination with loosely-mounted reciprocating picket-embracing arms provided at each side of the machine with stops, springs mounted upon the arms between the rear stops and the machine, whereby the embracing ends of the arms are drawn toward the machine, and a vertical connecting-bar for connecting the same, substantially as specified.

3. In a fence-machine, a tension device consisting of a plate perforated and provided with opposite bearings, a vertical shaft mounted in the plate and adapted to be oscillated and provided with a series of wire-receiving openings aligning with the perforations of the plate, and mechanism for rotating the shaft and locking the same in any of its positions, substantially as specified.

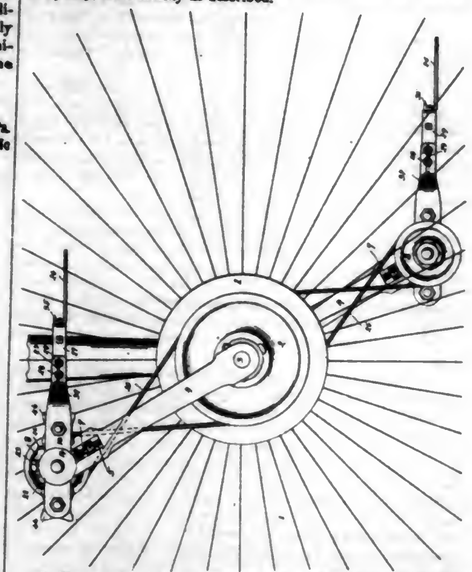
4. In a fence-machine, a tension device consisting of a base-plate provided with brackets, a vertical shaft provided with wire-receiving openings mounted in the brackets and having a polygonal boss, a curved adjusting-plate surrounding the shaft, perforated and secured to the base-plate, and a wrench for embracing the boss and provided with a depending tooth to engage said adjusting-plate, substantially as specified.

5. The combination, with a fence-post, of a rotatable shaft and means for supporting the same located in front of the post, said shaft being provided with a series of wire-receiving openings, means for rotating the shaft, and means for locking the same in position, substantially as specified.

473,931. BICYCLE. LOUIS C. JAQUES, Chicago, Ill. Filed Dec. 21, 1891. Serial No. 415,909. (No model.)

Claim.—1. The combination, with a pulley and a crank rotating about the same axis as the pulley, but independently thereof, of mechanism for rotating said pulley by the rotation of said crank and mechanism for giving an additional speed to said pulley, substantially as described.

2. The combination, with a pulley and a crank rotating about the same axis as the pulley, but independently thereof, of a second pulley carried by said crank, said pulleys being geared together, and mechanism for causing said second pulley to give an additional speed to the first pulley, substantially as described.



3. The combination, with a crank and a pulley rotating upon the same axis and adapted to rotate at a greater speed than the crank, of devices for rotating said pulley by the rotation of said crank and mechanism for accelerating the speed of said pulley independently of said crank, substantially as specified.

4. The combination, with a pulley and a crank rotating about the same axis as the pulley, but independently thereof, of a second pulley carried by said crank and geared to said first pulley and mechanism for holding said second pulley in a fixed position in its revolution with the crank about the crank-axis, substantially as described.

5. The combination, with a pulley and a crank rotating about the same axis as the pulley, but independently thereof, of a second pulley secured at the end of the crank and geared to the first pulley, devices adapted to hold said second pulley in a fixed position in its revolution with the crank about the crank-axis, and devices for locking said second pulley to the crank, substantially as described.

6. The combination, with a main wheel having a hollow hub, of a crank journaled in said hub, a hollow pedal-axle carried by said crank, a pin journaled in said pedal-axle, gearing connecting said pin with the hub of the main wheel, and devices for locking said pin to the crank and for releasing it, substantially as described.

7. The combination, with a main wheel having a hollow hub, a pulley mounted upon and rigidly attached to said hub, of a crank journaled in said hub, a hollow pedal-axle carried by said crank, a pin journaled in said pedal-axle, a pulley mounted upon and rigidly connected with said pin, gearing connecting said two pulleys, a foot-pedal, and means for locking said pin to the foot-pedal, substantially as described.

8. The combination, with a main wheel having a hollow hub, a pulley mounted upon and rigidly attached to said hub, of a crank journaled in said hub, a hollow pedal-axle carried by said crank, a pin journaled in said pedal-axle, a pulley mounted upon and rigidly connected with said pin, gearing connecting said two pulleys, a foot-pedal, means for locking said pin to the foot-pedal, and means for locking said pin to the pedal-axle, substantially as described.

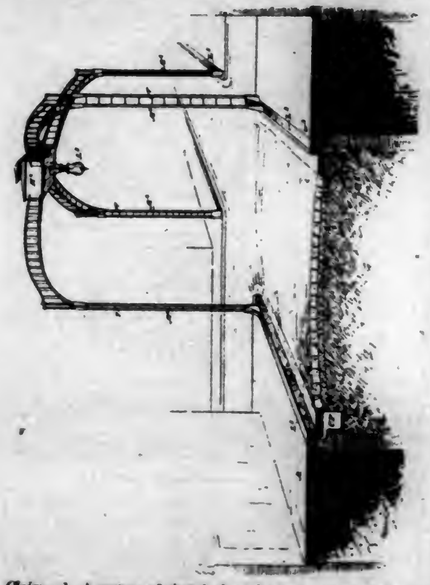
9. The combination, with the main wheel of a bicycle, having a hollow hub, a shaft journaled in said hub, a crank mounted upon said shaft, a hollow pedal-axle carried by said crank, a pin journaled in said pedal-axle, and gearing connecting said pin and the hub of the main wheel, of a foot-pedal mounted upon said pedal-axle, a clutch operated from said foot-pedal to lock said pin either to the foot-pedal or to the pedal-axle, substantially as described.

10. The combination, with the main wheel of a bicycle, having a hollow hub, a shaft journaled in said hub, a crank mounted upon said shaft, a hollow pedal-axle carried by said crank, a pin journaled in said pedal-axle, and gearing connecting said pin and the hub of the main wheel, of a foot-pedal mounted upon said pedal-axle, a clutch having a peripheral groove, a sliding frame mounted in the foot-pedal and having projections 24 adapted to fit into the groove in the clutch, and upward-projecting lugs 23, adapted to be engaged by the foot of the rider, whereby the sliding frame may be moved transversely of the pedal, substantially as described.

11. The combination, with the main wheel of a bicycle, having a hollow hub 1, a shaft 3, journaled in said hub, a crank 4, mounted upon said shaft, a hollow pedal-axle 6, carried by said crank and having teeth 40 on its outer end, a pin 12, journaled in said pedal-axle 6 and having a polygonal portion 16, and gearing connecting said pin and the hub of the main wheel, of a foot-pedal mounted upon said pedal-axle 6 and having a sleeve 11, said sleeve having teeth 40 upon its inner end, a clutch 17, having teeth 41 upon each end, adapted to mesh with the teeth 40, said clutch being mounted upon said polygonal portion 16 of the pin 12, and devices for throwing said clutch into engagement either with said pedal-axle 6 or with the sleeve 11, substantially as described.

12. In a bicycle, the combination, with a main wheel having a hollow hub 1, a shaft 3, journaled in said hub, a crank 4, mounted upon said shaft, a hollow pedal-axle 6, carried by said crank and having teeth 40 upon its outer end, a pin 12, journaled in said pedal-axle, gearing connecting said pin with the hub 1, said pin having the squared portion 16, of a pedal 9, mounted upon said pedal-axle and having a rearward-extending frame 37 and a heel-plate 26, a sleeve 11, formed integral with the pedal-frame and having teeth 40 on its inner end, a clutch 17, sliding upon the squared portion 16 of the pin 12 and having a peripheral groove 18 and teeth 41, a sliding frame mounted in the pedal-frame and having inward projections 24, notches 32 and 33, and lugs 23, and a spring 30, adapted to engage the notches 32 and 33, substantially as described.

478,932. SYSTEM OF ELECTRICAL CONDUCTORS. CHARLES J. KINTNER, New York, N. Y. Filed Apr. 18, 1890. Renewed Sept. 30, 1891. Serial No. 407,222. (No model.)



Claim.—1. A system of electrical conductors, consisting of an insulated conducting main or lead connected at one end to one pole of a dynamo-electric machine or equivalent source of electrical energy and located in an insulating-conduit situated substantially above ground and provided with removable covers, in combination with a series of insulated branch conductors connected to the aforesaid main or lead, provided with concentric return-conductors connected to the earth, the other pole of the dynamo being connected directly to earth and the conducting main or lead being removable from the conduit, substantially as described.

2. An insulated electrical main located in an insulating-conduit situated substantially above ground and connected directly to one pole of a dynamo-machine or equivalent source of electrical energy, in combination with a branch circuit consisting of a pair of concentric conductors, the inner conductor being removable and the outer conductor being connected directly to the earth, and one or more translating devices included in the branch circuit, the other pole of the dynamo being connected directly to earth, substantially as described.

3. An insulated electrical main removably inclosed in an insulating-conduit located substantially above ground, said main being connected directly to one pole of a dynamo-machine or equivalent source of electrical energy, in combination with a branch circuit consisting of a pair of concentric conductors, the outer conductor being connected directly to the earth, and one or more translating devices included in the branch circuit, the other pole of the dynamo being connected directly to earth, substantially as described.

4. In a system of electrical distribution, the tubular archways of conducting material electrically connected to earth, in combination with a concentric conductor the outer or inclosing conductor of which is electrically connected to the archways, substantially as described.

5. A system of electrical distribution consisting of a generator, one or more translating devices, as an electric lamp, a conductor joining the generator and the lamp, and a surrounding conducting-shield extending from the generator to the lamp and constituting a return-circuit, with a switch for making and breaking the connection between the generator and the lamp, said switch having electrical connection with the conducting-shield, substantially as described.

6. In a system of electrical distribution, an insulated removable cable located in a conduit near the surface of the sidewalk, in combination with metallic archways adapted to carry said cable over the street and alley crossings, said archways having electrical connection with the earth and constituting the return-circuit for the current used, substantially as described.

7. The described system of house-conduits and terminal fixtures for electric lighting, consisting of separable longitudinally-divided conducting-tubes joined together around an insulated incoming conductor and to each other, protecting said inclosed conductor, forming a path for the return current, and electrically connected to earth, all substantially as described.

8. In a system of electrical distribution, a conduit inclosing a main conductor, branch conduits located in alternate streets and connected to the main conduit, branch mains inclosed in said branch conduits and connected directly to the main conductor, concentric feeders having their interior concentric conductors connected directly to the branch mains and their exterior conductors connected directly to the earth, with translating devices connected in circuit with the concentric feeders, and a source of electrical energy having one pole connected directly to the main and its other pole to earth, all of said conduits being located substantially above ground, substantially as described.

9. The described system of house-conduits and terminal fixtures for electric lighting, consisting of concentric conductors, including one or more translating devices in circuit with said concentric conductors, and a switch for each translating device, said switch being connected electrically with the exterior concentric conductor, the latter being in electrical contact with the earth, whereby dangerous shocks are avoided in connecting and disconnecting the translating devices, substantially as described.

10. In a system of electrical distribution, a conduit located substantially above ground, an electrical main or conductor inclosed in said conduit, and switch-boxes communicating with the conduit, located also above ground and including switch connections, in combination with concentric conductors running from the switch-boxes to the translating devices, the exterior concentric conductors being electrically connected to earth, the main or conductor being connected to one pole of a source of electrical energy, having its other pole electrically connected to earth, substantially as described.

11. In a system of electrical distribution, a conduit located above ground, having removable covers and inclosing an electrical main or conductor, and switch-boxes also located above ground, having communication with the conduit and provided with switch connections, in combination with concentric conductors running from the switch-boxes to the translating devices, the exterior concentric conductor being electrically connected to earth and the main being connected to one pole of a dynamo, having its other pole electrically connected to earth, substantially as described.

12. In a system of electrical distribution, the combination of the following elements: a source of electrical energy, having one pole electrically connected to earth and its other pole electrically connected to a conductor located in a conduit situated above the surface of the earth, said conduit being provided with removable covers, switch-boxes located at intervals above the surface of the earth and having communication with the conduit, and concentric conductors running from the switch-boxes to the translating devices, the exterior concentric conductors being connected with the earth and separable, whereby the en-

tire system of interior conductors may be easily removed and repaired, substantially as described.

13. In a system of electrical distribution, a main conduit inclosing one or more conductors, in combination with two-way archways located at alternate streets and single-way archways located at intervening streets and branch conductors located in conduits running around the blocks in sets of four from the two-way archways, substantially as described.

14. In a system of electrical distribution, one or more conducting-tubes inclosing each one or more electrical conductors having electrical translating devices in circuit therewith, in combination with switches or keys for the translating devices, the conducting portions of said switches being connected electrically with the earth through the surrounding pipes or tubes, substantially as described.

15. A system of interior or house wiring, consisting of a series of conducting conduit-tubes extending throughout a building and having electrical connection with the earth, in combination with removably-inclosed insulated conductors including translating devices in circuit and a switch for each translating device, the conducting portion of which is connected electrically with the system of tubing, substantially as described.

16. In a system of electrical distribution, a dynamo-electric machine having one pole connected with the earth and the other with a removably-insulated conducting-main located in a conduit near the earth's surface, in combination with concentric branch mains running into buildings, the inner branch being removable and the outer branch in electrical connection with the earth, substantially as described.

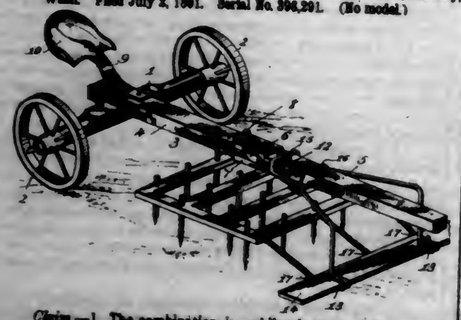
17. A system of electrical conductors for distribution of large-quantity or high-tension currents, consisting of a single electrical main running through the center of the district to be supplied and connected to one pole of a generating-dynamo, branch mains radiating from this main through alternate streets, and concentric conductors surrounding the branch mains and connected electrically to earth, the other pole of the generating-dynamo being connected, also, to earth, substantially as described.

18. A system of electrical conductors for the distribution of large-quantity or high-tension currents, located in conduits near the side-walk, metallic switch-boxes joined to the conduits at the intersection of the streets or alley-ways, having their bases electrically connected with the earth and being provided with switching apparatus located above the surface of the earth and doors for admitting of access to the switching apparatus, substantially as described.

19. A system of electrical conductors for use in the transmission of large-quantity or high-tension currents, consisting of a series of concentric conductors having lateral branches also concentric, the inner conductors of the entire series being removable from the outer conductors and the latter electrically connected with the earth, substantially as described.

20. A main or feeder connected with one pole of a generating-dynamo and located in an insulating-conduit running through the district to be supplied, and branch feeders radiating therefrom through alternate streets and surrounded by concentric return-conductors electrically connected with the earth, the inner conductors or branch feeders being removable and the other pole of the dynamo connected electrically to earth, substantially as described.

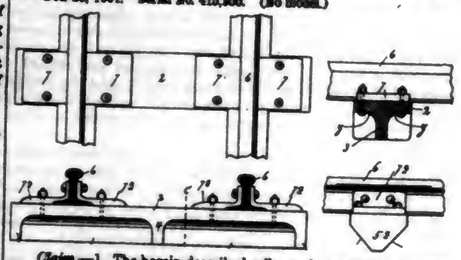
478,933. RIDING-HARROW. REMEMBRANCE L. KIRBY, Pomeroy, Wash. Filed July 2, 1891. Serial No. 398,291. (No model.)



Claim.—1. The combination, in a riding-harrow, of the axle carrying ground-wheels, the rear reach-section rigidly connected thereto, the front reach-section pivoted at its rear end to the front end of the rear section, the V-shaped bail secured at its angle to the front section and having its terminals downwardly bent, the evener-bar secured thereto, the harrow-section located under the reach, and the chains connecting the front end of the harrow and evener-bar, substantially as specified.

2. In a harrow, the combination, with the axle having the ground-wheels, the rear reach-section rigidly mounted on the axle and reduced and perforated at its front end, of the front reach-section bifurcated at its rear end to embrace the rear reach-section, the pivot-bolt connecting the two, the V-shaped bail offset at its angle to embrace the front reach-section and at its front ends downwardly bent and terminating in clevises, the evener-bar connected with the clevises, the staple mounted on the front reach-section, and the binding-wires passed around the reach through the staple and around the terminals of the bail, substantially as specified.

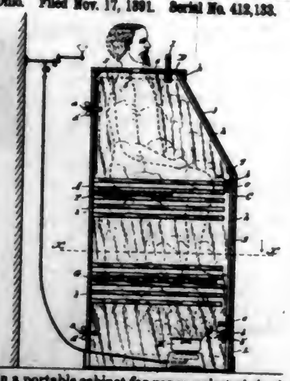
478,934. RAILWAY-TIE. ORVILLE M. KNOX, Oneida, N. Y. Filed Dec. 22, 1891. Serial No. 415,950. (No model.)



Claim.—1. The herein-described railway-tie, having surface plate 2, downwardly-projecting central integral flange 3, ribs 4 4, and end walls with the angles between the flange and surface plate and walls and surface plate filled and rounded, as set forth.

2. The herein-described railway-tie, having surface plate 2, downwardly-projecting central flange 3, and end walls with the angles between the flange and surface plate and walls and surface plate filled and rounded, as set forth.

478,935. VAPOR-BATHING APPARATUS. ROBERT LANGE, Columbus, Ohio. Filed Nov. 17, 1891. Serial No. 412,133. (No model.)



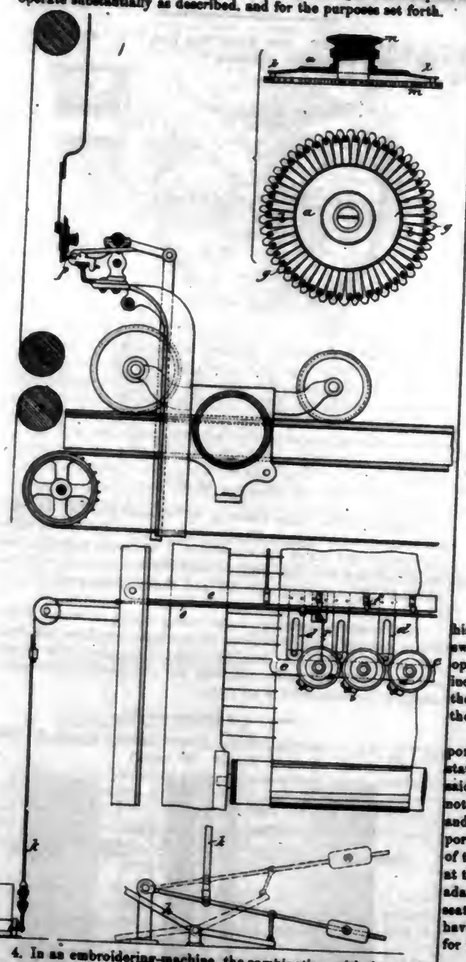
Claim.—In a portable cabinet for vapor or hot-air baths, the back A, sides B B, means for separably uniting the back and sides, eyes e at the front of the sides, rods b, adapted to detachably engage said eyes to maintain the sides in position, and the front C or sections thereof provided with hooks d, arranged to engage the rods to hold the front or sections thereof in place, substantially as shown and described.

478,936. READING ATTACHMENT FOR EMBROIDERING-MACHINES. FRANÇOIS P. LANGUY, Paris, France. Filed Sept. 10, 1891. Serial No. 405,349. (No model.) Patented in France Jan. 3, 1889, No. 195,143; in Switzerland Feb. 6, 1889, No. 823, and in Germany Feb. 12, 1889, No. 49,066.

Claim.—1. In an embroidering-machine, the combination, with the stitch-forming mechanism, of a bead-holder comprising a bottom disk perforated with needle-holes near its outer periphery, a presser-plate provided with flexible tongues on its outer periphery for securing beads between said flexible tongues and bottom disks in the line of movement of the needle, and means for properly presenting the holes in the beads successively to the action of the needle, substantially as described, and in the manner and for the purposes set forth.

2. In an embroidering-machine, the combination, with the stitch-forming mechanism, of an automatic rotating and vertically-reciprocating bead-holder comprising a bottom disk perforated with needle-holes near its outer periphery, a presser-plate provided with flexible tongues on its outer periphery, gear-teeth on the outer edge of the said presser-plate, ratchet-pawls adapted to engage said gear-teeth, and a tightening-nut adapted to secure the beads between said presser-plate and disk in proper position for the needle, substantially as described, and for the purposes set forth.

3. In an embroidering-machine, the combination, with the needle mechanism, of a bead-holder provided with beads properly adjusted thereto, and means for automatically rotating and vertically reciprocating said bead-holder, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

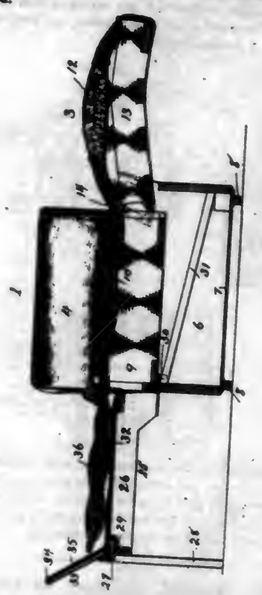


4. In an embroidering-machine, the combination, with the needle mechanism, of a bead-holder adapted to automatically present the beads to the needle, a pawl adapted to engage said bead-holder and regulate its forward movement, and a pawl adapted to engage said bead-holder when the regulating-pawl is out of contact, substantially as described, and for the purposes set forth.

478,937. COMBINED CHAIR AND SOFA-BED. RUDOLF LEHMANN, Chicago, Ill. Filed July 22, 1891. Serial No. 400,530. (No model.)

Claim.—1. The combination, with a hollow base-frame 6, of a segmental rack 15, rigidly secured in a stationary position to the base-frame and provided with a lateral journal-pin 14, a swinging back-frame 13 and a seat-frame 9, both pivoted on the journal-pin of the stationary rack, a pawl 18, carried by the swinging back-frame, means for releasing the pawl from engagement with the rack, and an extension foot-rest frame arranged in the hollow base-frame and removable through the top portion thereof when the pivoted seat-frame is swung upward on its pivotal connection with the rack, substantially as described.

2. The combination, with a base-frame 6, of guides 31, arranged therein and inclined upwardly from the rear lower portion to the front top portion of the same, a seat-frame hinged at one edge to the base-frame and serving to open the top thereof when raised, and an extension foot-rest frame provided with slides 30, which ride up the inclined guides for removing such extension foot-rest frame through the open top of the base-frame when the seat-frame is elevated, substantially as described.



3. In a chair, the combination, with a base-frame and a back hinged thereto and adapted to be lowered to a horizontal position, of a swinging seat hinged at one edge to the base-frame and serving to open the top thereof when raised, and an extension foot-rest frame inclosed within the base-frame and removable through the open top thereof when the seat is swung upward on its hinged attachment to the base-frame, substantially as described.

4. In a chair, the combination, with a base-frame adapted to support the seat and back of a chair, a segmental rack rigidly secured in a stationary position on the base-frame, back 3, hinged at the back of said frame, pawl 18, secured to said back and adapted to engage the notches of the rack, lever 19, and a cord 22, connected to said lever and extending to the outside of the chair, of a seat, a frame for supporting said seat, said frame being hinged at its rear end to the frame of the chair to adapt its forward end to be elevated, bars 31, arranged at the inside of the frame of the chair, and an extension-frame 25, adapted to be removed through the top of the base-frame when the seat-frame is swung upward on its rear hinge, said extension-frame 25 having legs 28, adapted to support its outer end, substantially as and for the purpose specified.

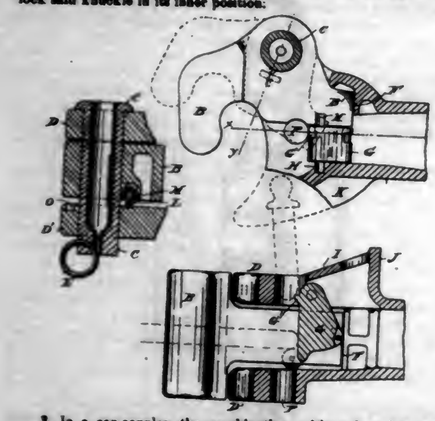
5. The combination, in a chair, of a base-frame having a hinged seat 9, provided with an attached cushion 10, and an extension-frame 25, inclosed within the base-frame and adapted to be removed through the top thereof when the seat is swung upward on its hinge, a cushion 36, flexibly connected at its inner edge to the outer edge of the seat-cushion to fold upon the latter and to be extended over the extension-frame when such extension-frame is withdrawn, substantially as described.

478,938. CAR-COUPLING. ROBERT F. LUDLOW, Springfield, Ohio. Filed June 29, 1891. Serial No. 397,572. (No model.)

Claim.—1. The combination, with a draw-head having a housing in the upper part thereof, of a locking-pawl pendent in said housing and adapted to be swung back and forth, a knuckle pivoted in said head and adapted to raise said pawl within said housing as the knuckle is swung to its inner position and having a normal tendency to swing outward, and lifting means connected to the rear of said pawl to raise it within said housing and allow the outward swing of the knuckle, whereby the pawl will return to its pendent position after the passage

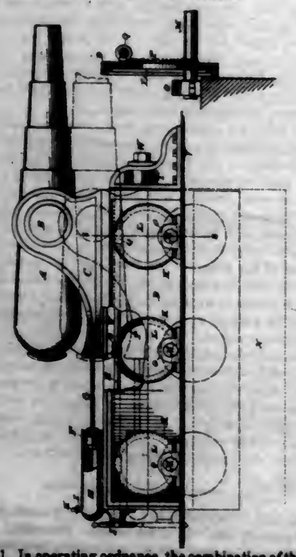
of the knuckle and may be raised from said position to allow of opening the same.

2. The combination, with a draw-head having ears at one side thereof, of a knuckle pivoted between said ears and having a vertical play or movement, the lower ear of said head being provided with an inclined path at one side of the pivot and a corresponding notch or depression at the other side of the said pivot, a roller carried by said knuckle and adapted to cause the outward swing of the same by traveling down the inclined path and supporting the knuckle as it is swung outward to its extreme position and also acting to lock the same by engaging with the opposite notch or depression, and locking means to lock said knuckle in its inner position.



3. In a car-coupler, the combination, with a draw-bar and a knuckle pivoted therein and arranged to be swung on its pivot to one side of the draw-bar to give room for a link to enter the draw-bar, of a pawl pivoted in the draw-bar head and having a projection to support a pin, the said draw-head having pin-openings.

473,939. ORDNANCE. JOHN MASON, New York, N. Y. Filed July 11, 1891. Serial No. 398,131. (No model.)



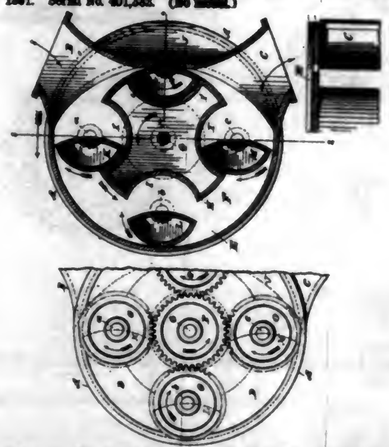
Claim.—1. In operating ordnance, the combination of the supporting-frame, the ordnance thereon, the rotary eccentrics located beneath and engaging said frame, and mechanism for simultaneously rotating said eccentrics to raise and lower said frame and ordnance, substantially as and for the purpose set forth.

2. In operating ordnance, the combination of the supporting-frame having circular openings in its opposite sides, the carriage and ordnance on said frame, the eccentrics mounted on shafts and filling said openings, and mechanism for rotating said eccentrics to raise and lower said frame, substantially as set forth.

3. In operating ordnance, the combination of the supporting-frame, the carriage, and ordnance thereon, the eccentrics for raising and lowering said frame, and the abutting bracket for said frame when in its upward position, substantially as set forth.

4. In operating ordnance, the combination of the supporting-frame, the sliding carriage thereon, the ordnance mounted on said carriage, the cylinders and pistons forming the air-cushion for said carriage, and the rotary eccentrics carrying said frame, substantially as set forth.

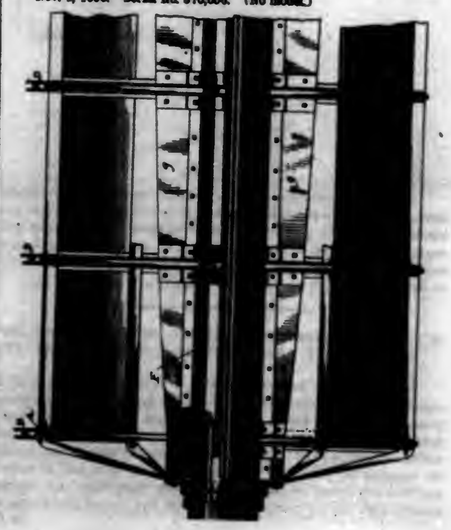
473,940. PUMP. JOHN MASON, New York, N. Y. Filed Aug. 1, 1891. Serial No. 401,382. (No model.)



Claim.—1. The pump consisting of the casing having the inlet and discharge openings, combined with the hub mounted on the main driving-shaft and having the concavities I, the blades engaging said concavities, and the inner walls of said casing, and mechanism for simultaneously actuating said hub and blades, substantially as and for the purposes set forth.

2. The pump consisting of the casing having the inlet and discharge openings and provided with the revolvable face-plates, combined with the hub having the concavities I, the blades adapted to engage said concavities and move with said hub and plates, and the gear-wheels O P, substantially as set forth.

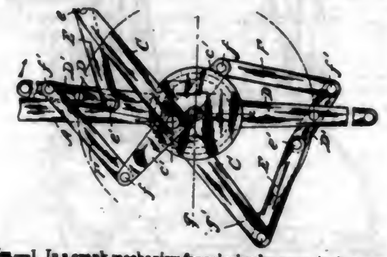
473,941. WATER-POWER. ALONZO C. MATHER, Chicago, Ill. Filed Nov. 1, 1890. Serial No. 370,056. (No model.)



Claim.—1. The combination, with the piers supporting the bridge, of a water-wheel suspended between the piers, a shaft on the bridge, and a series of link belts surrounding the wheel and connected to the shaft upon the bridge, substantially as described.

2. The combination, with the piers supporting the bridge, of a shaft supported on the bridge, a water-wheel suspended between the piers, the shaft of the water-wheel being made in segments and provided with stiffening-pieces between the segments tapering from the center toward the ends of the wheels, and a series of link belts surrounding the wheel and connected with the shaft on the bridge, substantially as described.

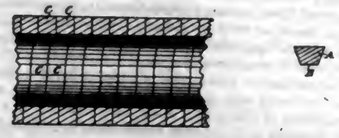
473,942. CRANK MECHANISM. GEORGE W. MEUS and EDWARD LEYDEN, Reading, Pa. Filed July 31, 1891. Serial No. 401,206. (No model.)



Claim.—1. In a crank mechanism for velocipedes or equivalent purposes, the combination, with cranks fixed to the rotary shaft, of eccentrically-pivoted rotary operating-levers and links pivotally connected at opposite ends to said levers and cranks, respectively, substantially as and for the purpose set forth.

2. In a crank mechanism for velocipedes or equivalent purposes, the combination, with cranks fixed to the rotary shaft, of eccentrically-pivoted rotary operating-levers, rocking arms pivoted to said operating-levers, and links F and F, connecting the opposite ends of said rocking arms to the fixed cranks, substantially as and for the purpose set forth.

473,943. PROCESS OF MAKING TUBULAR ROLLERS. CHARLES D. MERRILY, Albany, N. Y. Filed Nov. 10, 1891. Serial No. 411,471. (No model.)



Claim.—The process of constructing a tubular roller, consisting of coiling a trapezoidal-shaped bar about a mandrel, the adjacent faces coinciding with each other throughout their whole extent, applying heat to said coil, and welding the sections of the coil together, substantially as described.

473,944. UPRIGHT-PIANO ACTION. LOUIS G. MERKEL, St. Louis, Mo., assignor, by direct and mesne assignments, of one-half to Arthur A. Merryman and Frederick G. Merryman, same place. Filed May 15, 1891. Serial No. 392,834. (No model.)

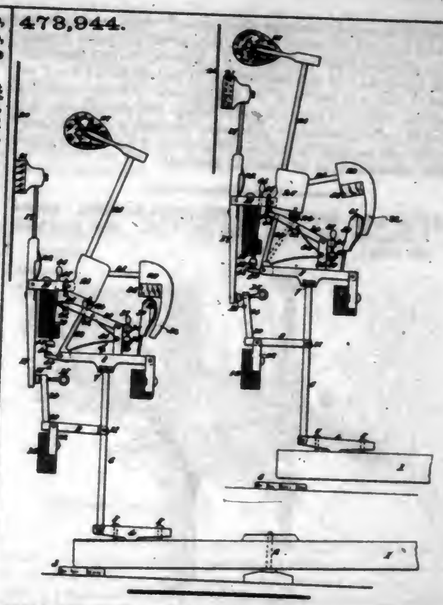
Claim.—1. The combination, in an upright-piano action, of the lever 8, supporting the jack 23 and the repeater-lever 34, the check 30, standing upon the lever 8, and a hammer having a weighted arm or rod 28, with head 29, adapted to rest on the check when in normal position and having a projection 32, adapted to engage the check when the parts are in the position for repetition of the note, substantially as set forth.

2. The combination, with the lifting-rod 6 and damper-lever 17, of the bell-crank lever 10, connected to the lifting-rod and carrying a screw 15, adapted to impinge against the lever, substantially and for the purpose set forth.

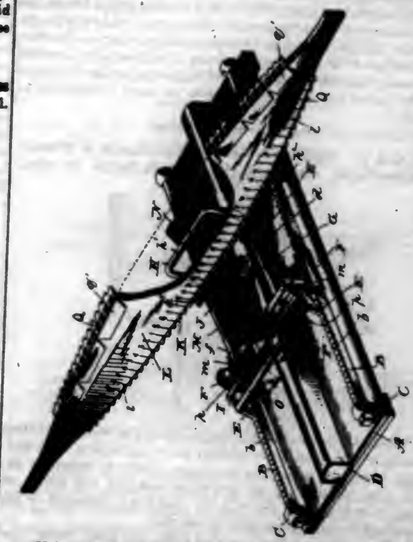
3. The combination, in an upright-piano action, of the lever 8, the check 30 thereon, and the hammer having a weighted arm or rod 28, with head 29, adapted to arrest the downward movement of the hammer, substantially as set forth.

4. The described construction of the levers 8 and 34, the jack 23, the spring 40, the hammer having weighted arm or rod 28, with head 29, and the check 30 upon the lever 8, substantially as and for the purpose set forth.

473,944.



473,945. TYPE-WRITING MACHINE. MATTHIAS K. MORRIS, Holliday's Cove, W. Va. Filed Jan. 30, 1892. Serial No. 419,767. (No model.)



Claim.—1. In a type-writer of the character described, the combination, with the base, the rack-bars, and the paper-support mounted on the base, of a carriage mounted on the rack-bars, means for moving the carriage over the said base, a paper-holder secured to the carriage, a type-bar-supporting frame pivotally connected with the carriage, and a spring adapted to be compressed on depressing the said type-bar-carrying frame and press the said paper-holder more closely upon the paper-support, substantially as and for the purpose set forth.

2. In a type-writer of the character described, the combination, with the paper-support and a carriage adapted to be moved over the said paper-support, of a type-bar-supporting frame having pivotal connection with the carriage and having a rest N and platforms N' at its free end, said platforms being dipped toward the center of the said frame, substantially as and for the purpose described.

3. The combination, with the base having rack-bars and a paper-

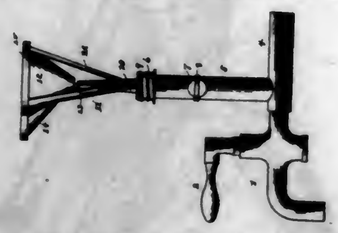
support, of a carriage consisting of side pieces F, which are mounted on the rack-bars, and a cross-bar *f*, connecting the said side pieces, a paper-holder projected from the cross-bar *f*, a type-bar-carrying frame pivotally connected with said side pieces F by rock-shaft *m*, a bar P, secured by arms *p* to the bar *m* and having pawls *o* pivotally connected therewith, said pawls being adapted to engage with the rack-bars, and spring M, secured between its ends to the rock-shaft *m* and adapted to have its ends engaged, respectively, with the bar P and the said paper-holder, substantially as set forth and described.

478,946. REEL FOR THRASHING-MACHINES. EDMUND D. MULLANEY, Rodna, S. D. Filed Nov. 2, 1891. Serial No. 410,643. (No model.)



Claim.—In a reel, the combination of a shaft, the hubs 2 and 3, mounted thereon and provided in their inner faces with recesses, the hub 2 consisting of two sections bolted together and provided with an eye, and the hub 3 being provided in its inner face with a socket, the radial arms secured in the recesses of the hubs, and a rod having an eye linked into the eye of the hub 2 and adapted to engage at its other end the socket of the hub 3, the eyes being of sufficient size to permit the necessary longitudinal movement of the rod to engage the socket and to be moved out of engagement with the same, substantially as described.

478,947. FAUCET BOTTLE-WASHER. CHARLES H. MURPHEY, Madisonville, Ky. Filed June 19, 1891. Serial No. 396,813. (No model.)

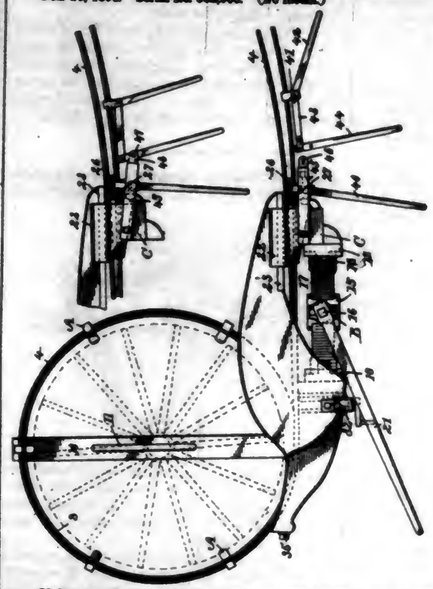


Claim.—1. The herein-described bottle and glass washer, the same consisting of a reduced nipple adapted to be applied to a water-supply pipe, a cap for supporting the nipple, standards extending upwardly from the cap, and an inverted-cone-shaped rest having an opening at its bottom in line with the nipple and supported by the standards of the cap, substantially as specified.

2. The herein-described combined bottle and glass washer, consisting of the T-shaped pipe, the horizontal branch of which is adapted for connection with a faucet and water-supply pipe and the upper end of which is provided with a cap from which rises a discharge-nipple, standards projecting from the cap, and an inverted-cone-shaped rest mounted in the standard and having an opening at its lower end above the nipple, substantially as specified.

3. The herein-described combined bottle and glass washer, the same consisting of the T-shaped pipe, the lower branch of which is adapted for connection with a supply-pipe and a faucet, a cap threaded on the upper end of the upper branch, a cut-off located below the cap in said branch, diverging standards mounted on the cap, a reduced nipple extending from the cap between the standards, and the inverted-cone-shaped rest having an opening at its lower end, a lip at one side, a surrounding L-shaped flange, and mounted upon the standards, substantially as specified.

478,948. MACHINE FOR SETTING TIRES. BERNARD MCGOVERN, Norwalk, Conn., assignor to Oscar B. Madden, Boston, Mass. Filed Feb. 26, 1891. Serial No. 382,908. (No model.)



Claim.—1. The combination, with a suitable frame, of a series of straps connected thereto and coiled upon themselves, the inner ends of the outer straps beyond their point of connection to the frame being separated from the main portions thereof and secured together and to the inner strap by rivets 6, and suitable means for compressing the straps about a tire.

2. The combination, with a suitable frame, of a series of straps 4, connected thereto and coiled upon themselves, the inner ends of said straps having bevels 5 and the beveled portions of the outer straps being separated from the main portions thereof and connected to each other and to the inner strap by rivets 6, the free ends of said straps extending outward tangentially, and suitable means for contracting the straps, so as to compress a tire placed within them.

3. The combination, with a series of straps coiled upon themselves and means for closing said straps inward about a tire, of a sectional band 9, consisting of independent pieces, each piece having a mortise and tenon by which it is connected to the contiguous pieces.

4. A frame consisting of upper and lower plates having slots 8 on their upper and under sides, respectively, in combination with a series of metallic straps coiled upon themselves and having lugs 7 on their opposite edges, which engage said slots to lock the straps in position, the free ends of said straps extending outward tangentially, and means acting in connection therewith to close said straps inward, as and for the purpose set forth.

5. The frame consisting of upper and lower plates connected by webs and having L-shaped slots 8, in combination with a series of straps coiled upon themselves and having lugs 7 on their edges, adapted to engage said slots, the inner ends of said straps being beveled, as shown, and the beveled portions of the outer straps being separated from the main portions and connected to each other and to the inner strap, as shown, a sectional band 9, lying within said straps, and suitable means for drawing the free ends of said straps outward to close the sectional band inward upon a tire.

6. The combination, with the frame, straps 4, connected thereto, and means for closing said straps inward about a tire, of shaping-plate 28, and slide 29, screw 35, and block 37 for curving said plate to correspond with the curvature of the tire to be set.

7. The combination, with the frame, straps 4, connected thereto, and means for closing said straps inward about a tire, of shaping-plate 28, slide 29, to which said plate is connected, and screw 31 for moving said slide, whereby one end of said plate is adjusted, pivoted block 37, connected to the other end of the shaping-plate, and a screw 35, engaging said block for adjusting the other end of said shaping-plate.

8. The combination, with the frame, and a series of straps connected thereto, which form a circle, the free ends of said straps extending outward tangentially, of a sliding block having an opening, through which the free ends of the straps pass, wedges 26 and 27 for locking the straps to the block, suitable means for setting and releasing said wedges, and a toggle, one end of which bears against the block and the other against the frame, whereby the block is forced outward to compress the straps about a tire.

9. The combination, with the frame and a series of straps, the inner ends of which are connected to the frame and which form a circle, the free ends extending outward tangentially, of clips A for holding a wheel and tire in place, said clips consisting of U-shaped pieces 12, which partially encircle the straps, and detachable blocks 13, whereby they are held in place, and suitable means for closing said straps inward upon the tire.

10. The combination, with the frame, straps 4, connected thereto, and the sliding block, of wedges 26 and 27, whereby the block is locked to the straps, and hand-lever 40 and screw 48, by which the blocks are set and released.

11. The combination, with the frame, straps 4, connected thereto, and the sliding block, of wedges 26 and 27, whereby the block is locked to the straps, hand-lever 40 and screw 48, by which the blocks are set and released, clip 41, through which certain of the straps are passed, a clamping-lever for locking the clip in position, yoke 45, pivoted to the block, link 43, and lever 44, pivoted to the link and adapted to be pivoted to the yoke, whereby the straps may be drawn through the blocks when the wedges are loosened.

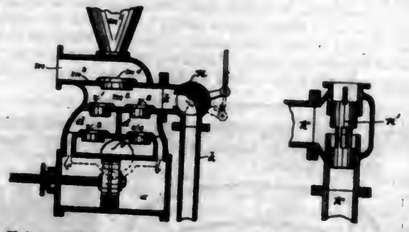
12. The combination, with the frame, straps 4, and sliding block C, of yoke 45, connected to the block, clip 41, clamping-lever 42 for locking the clip to the straps, link 43, and a lever 44, pivoted to the link and adapted to be pivoted to the yoke, whereby the straps may be drawn through the sliding block.

13. The combination, with the frame, straps 4, connected thereto and adapted to curve around a wheel, the ends thereof extending outward tangentially, of sliding block C, means for locking the sliding block to the straps, and a toggle consisting of blocks 15, links 17, bearing against the blocks and against the sliding block and the frame, respectively, and a right-and-left screw engaging blocks 15, whereby the sliding block is forced outward to close the straps inward, as and for the purpose set forth.

14. The combination, with the frame, and a series of straps secured thereto and coiled upon themselves, the inner ends of said straps being beveled and the beveled portions of the outer straps being separated from the main portions thereof and secured to the inner straps by rivets 6, of sectional band 9 within said straps, which engages the tire, a sliding block adapted to be locked to the straps, and a toggle acting to force said block outward, as and for the purpose set forth.

15. The combination, with the frame, straps 4, connected thereto and coiled upon themselves, the inner ends of the outer straps being separated therefrom, substantially as shown and described, and sectional band 9, of sliding block C, adapted to be locked to the straps, means for moving said block outward, shaping-plate 28 and slide 29, screw 35, and block 37, whereby the curvature of the straps may be adjusted to different sizes of wheels.

478,949. MECHANISM FOR RAISING WATER. JOHN H. MCGOWAN, Cincinnati, Ohio. Filed Dec. 4, 1890. Serial No. 373,612. (No model.)



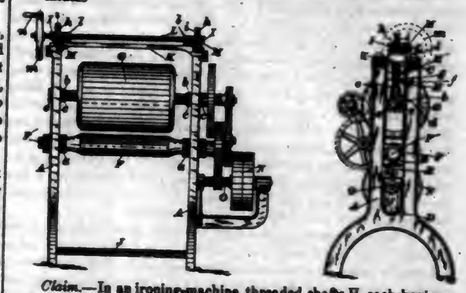
Claim.—1. In a force pump, the combination of a lift-valve therein seated in the pump-outlet by the pressure of the discharge-column, a second lift-valve seated therein in the same direction, a vent-passage leading outward above said second valve independently of the discharge-column and of the suction end of the pump, and a controlling-valve in said outlet, substantially as set forth.

2. In a force-pump, a discharge-passage, two independent valves in said passage both opening tandem in the direction of discharge, a waste-passage leading from said discharge-passage between said valves, and an adjustable controlling-valve in said waste-passage, substantially as set forth.

3. In pumping apparatus, in combination with a supplemental discharge-chamber and a supplemental discharge-valve interposed between the pump mechanism and its ultimate discharge-passage, an independent vent-passage leading from said supplemental chamber, and a valve in said vent-passage automatically actuated to control the discharge of fluid through the same, substantially as set forth.

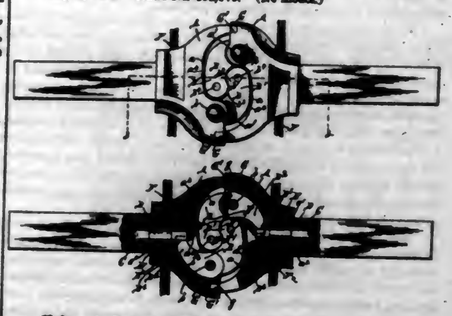
4. The combination, in pumping apparatus, of a normal discharge-passage, a supplemental discharge-chamber and valve interposed between said normal discharge-passage and the pump mechanism, an independent vent-passage leading from said supplemental discharge-chamber, a controlling-valve in said vent-passage, and a governor device operated by the pump and actuating said controlling-valve, substantially as set forth

478,950. IRONING-MACHINE. ROBERT S. NELSON and ADAM KRETTER, Chicago, Ill. Filed Sept. 4, 1891. Serial No. 404,702. (No model.)



Claim.—In an ironing-machine, threaded shafts H, each having a shank *h*, journal-boxes *b* of movable roller G, said boxes fitted to move longitudinally between the bifurcations of standards A, said boxes each having a threaded portion *d*, in which operates the threaded portion *f* of one of the shafts H, the top portion of each of said shanks *h* supported in a bearing in cross-piece K, springs H', one spring bearing against a projection of each of said shanks, the upper end of said springs bearing against a cross-piece K, and a worm-wheel I, mounted at the top end of each of said shanks, said worm-wheels revolving with said shanks, said shanks capable of a longitudinal motion through said worm-wheels, each of said worm-wheels geared to and driven by a worm, in the manner and for the purpose substantially as described.

478,951. CAR-COUPLING. CHARLES H. OLDS, Sayre, Pa. Filed Aug. 4, 1891. Serial No. 401,678. (No model.)



Claim.—1. In combination, a draw-head adapted to carry one member of a car-coupler, a shaft journaled in the draw-head and provided with a socket, an arm or pin removably mounted in said socket, and an actuating-shaft mounted on the car and connected to the arm or pin removably mounted in the socket in the shaft journaled in the draw-head, substantially as and for the purpose set forth.

2. In combination, a draw-head adapted to carry one member of a car-coupler, a shaft journaled in the draw-head and provided with a socket, a pin loosely mounted in said socket and removable therefrom, a link pivoted to the pin, an actuating-spindle having a hand-engaging portion, and a crank pivoted to said link, substantially as and for the purpose set forth.

3. In combination, a pair of draw-heads, locking members on the opposite draw-heads having vertically-arranged locking-surfaces, a socket on one of the draw-heads, and a projection on the other draw-head of considerably less cross-sectional area than the socket and adapted to enter said socket for preventing vertical disengagement of the locking members, substantially as and for the purpose set forth.

4. In combination, a draw-head having a central chamber, a dog pivoted to the draw-head and provided with two arms, one being

adapted to engage a corresponding locking member and the other extending within the recess in the draw-head and formed with the inclined face B^4 and the vertically-arranged engaging face B^5, and a catch-lever having one end pivoted to the draw-head and the other provided with the cut-out D' and the inclined face D^2 and adapted to be forced by gravity into engagement with the inwardly-extending arm of the locking-dog for retaining said dog in its operative position, substantially as and for the purpose specified.

5. In combination, a draw-head having a central chamber, a dog pivoted to the draw-head and provided with two arms, one being adapted to engage a corresponding locking member and the other extending within the recess in the draw-head, a catch-lever having one end pivoted to the draw-head and the other adapted to be forced by gravity into engagement with the inwardly-extending arm of the locking-dog for retaining said dog in its operative position, and a cam adapted to rock said catch-lever out of engagement with the dog for permitting its movement, substantially as and for the purpose set forth.

6. In combination, a draw-head having a central chamber, a dog pivoted to the draw-head and provided with two arms, one being adapted to engage a corresponding locking member and the other extending within the recess in the draw-head, a catch-lever having one end pivoted to the draw-head and the other adapted to be forced into engagement with the inwardly-extending arm of the locking-dog for retaining said dog in its operative position, and a cam having a face for engaging said dog and forcing the same out of its operative position, substantially as and for the purpose specified.

7. In combination, a draw-head having a central chamber, a dog pivoted to the draw-head and provided with two arms, one being adapted to engage a corresponding locking member and the other extending within the recess in the draw-head, a catch-lever having one end pivoted to the draw-head and the other adapted to be forced into engagement with the inwardly-extending arm of the locking-dog for retaining said dog in its operative position, a cam having an actuating-face adapted to engage said actuating-lever and lock the same from engagement with the dog for permitting movement of the dog, and a second actuating-face on said lever adapted to force the locking-dog from operative position, substantially as and for the purpose set forth.

8. In combination, a draw-head, a horizontally-swinging dog having a vertically-arranged engaging face and an inwardly-extending arm, a vertically-movable lever having one extremity pivoted to the draw-head and the other movable toward and away from said inwardly-extending arm of the locking-dog, and a cam having two engaging faces, one being adapted to rock the lever and the other adapted to engage the locking-dog and force the same from operative position, substantially as and for the purpose specified.

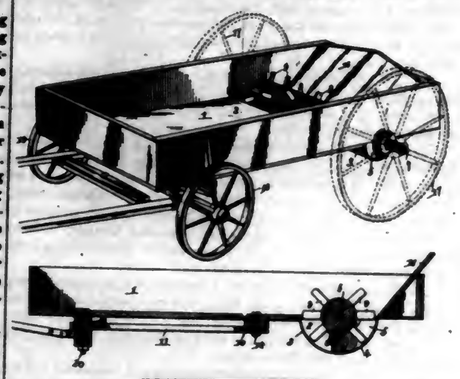
9. In combination, a draw-head, a horizontally-swinging dog having a vertically-arranged engaging face and an inwardly-extending arm, a vertically-movable lever having one extremity pivoted to the draw-head and the other movable toward and away from said inwardly-extending arm of the locking-dog, a cam having two engaging faces, one being adapted to elevate the lever and the other adapted to engage the locking-dog and force the same from operative position, a spindle for operating the cam, and an actuating-spindle journaled on the car with one extremity loosely connected to the cam-operating spindle, whereby the two are automatically separated should the coupler become disengaged from the car and fall to the ground, substantially as and for the purpose set forth.

10. In combination, a pair of draw-heads, horizontally-moving locking-dogs pivoted to the draw-heads and formed with vertically-arranged engaging faces and inwardly-extending arms, catch-levers having one extremity pivoted to the draw-heads and the other adapted to engage said inwardly-extending arms, cams for engaging said catch-levers, a horizontal stop-face on one of the draw-heads, and a projection on the opposite draw-head for engaging said shoulder and preventing vertical disengagement of the draw-heads, substantially as and for the purpose specified.

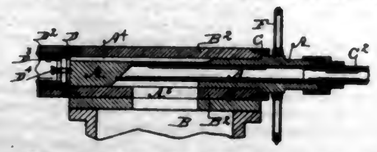
478,952. FERTILIZER-DISTRIBUTER. JOHN H. OBLEY, Cane Ridge, Ia. Filed Jan. 27, 1892. Serial No. 419,494. (No model.)

Claim.—1. In a fertilizer-distributer, the combination, with the oblong body constituting a receptacle and provided at its rear end with an opening, and a hopper having feed-openings located under the opening of the receptacle, of a wheel-receiving shaft journaled in bearings formed in the receptacle and over the hopper, provided with agitating-arms, means for locking the wheels removably upon the shaft, and a reach located under the receptacle and adapted to be coupled with the front truck of a wagon, substantially as specified.

2. In a fertilizer-distributer, the combination, with a body constituting the receptacle and having its bottom near its rear end provided with a transverse opening, a semicircular hopper having openings secured under the opening of the receptacle, bearing-blocks mounted in the opposite ends of the hopper, a transverse shaft mounted in the bearing-blocks and terminating at its outer end in spindles adapted to receive wheels and between its bearings over the hopper provided with agitating-arms, a pair of hooks pivoted at their inner ends to the spindles and adapted to engage the spokes of said wheels, a front wagon-truck for supporting the front end of the receptacle, and a coupling device for connecting the front end of the body with the front truck of a wagon, substantially as specified.



478,953. VALVE FOR STEAM-ENGINES. DAVIS PATTEN, Des Moines, Iowa. Filed June 4, 1891. Serial No. 395,146. (No model.)

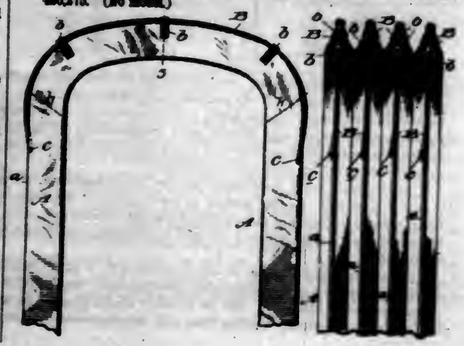


Claim.—1. A tubular valve having one solid end, a slot or port extending longitudinally in its central portion, and an exhaust-port on the outside face of the valve, extending from its central portion and over the solid end portion and divided at its outer end by an elongated rib, in combination with a valve-chamber and a cylinder having slots or ports corresponding with the port in the central portion of the valve, to operate in the manner set forth, for the purposes stated.

2. The tubular valve A, having a closed end A^2, an elongated port A^3, and an exhaust-port A^4, divided by a rib A^5, in combination with a valve-chamber B^3, having a port B^4, a steam-supply pipe C^2, and means for actuating the valve, for the purposes stated.

3. In a steam-engine, a cylindrical valve-chamber having an elongated slot at its central portion, a tubular valve fitted in said chamber and provided with an elongated slot or port in its central portion, and an exhaust-port in its outside surface extending from its central portion to its end, a steam-cylinder having a slot or port corresponding with the port in the valve-chamber, a supply-pipe connected with the end of the valve, and means for actuating the valve, arranged and combined to operate in the manner set forth, for the purposes stated.

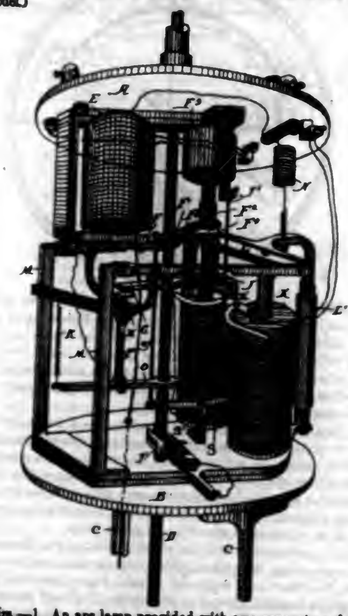
478,954. BELLOWS-FOLD COUPLING FOR CAR-VESTIBULES. EDWARD L. PERRY, Paterson, N. J. Filed Feb. 4, 1892. Serial No. 420,875. (No model.)



Claim.—1. A bellows-fold coupling provided with a support or supports, in combination with the arch of the folds and retained in place thereon by keepers, as set forth.

2. A bellows-fold coupling formed from a single ply of fabric and having that portion constituting the arch or curve thereof formed separate and afterward united to the sides, combined with supports held to the folds of the coupling and over the joints between the arch and sides, substantially as and for the purpose set forth.

478,955. ELECTRIC-ARC LAMP. CHARLES A. PFLUGER, Chicago, Ill., assignor, by direct and mesne assignments, to the Standard Electric Company, of Illinois. Filed July 16, 1890. Serial No. 358,963. (No model.)



Claim.—1. An arc lamp provided with two separate and distinct gravity-clutches, a main-circuit magnet or solenoid always in circuit and working solely upon one of such clutches, a stop to throw such clutch out of operation when the arc has been established by its agency, and a derived-circuit magnet or solenoid to actuate the other clutch and regulate the arc.

2. In an arc lamp, a combination of an arc-establishing device consisting of a clutch and actuating main-circuit magnet or solenoid always in circuit with an arc-regulating device consisting of a clutch and actuating derived-circuit magnet or solenoid, each clutch and its associated magnet or solenoid normally inactive during the operation of the other clutch and its associated magnet or solenoid.

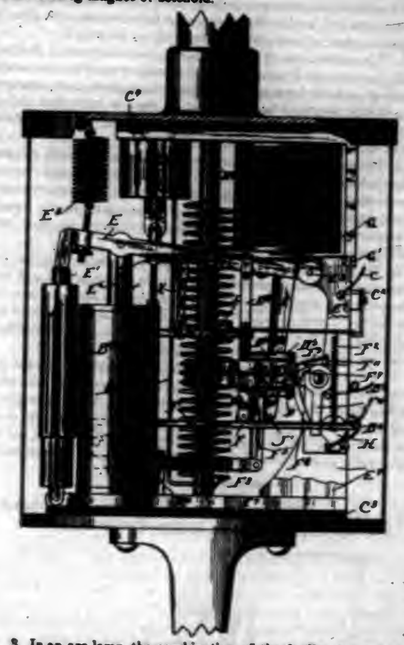
3. In an arc lamp, the combination of a fixed main-circuit magnet or solenoid always in circuit, a clutch actuated thereby, and a stop to throw such clutch out of action when the arc is established, with a fixed derived-circuit magnet or solenoid, a spring-frame actuated solely thereby, and an arc-regulating clutch supported on the frame.

4. In an arc lamp, the combination of a movable carbon-support which is moved solely by gravity toward its opposed support with two distinct devices adapted one to separate the carbons and establish the arc and then go out of action, said device containing a main-circuit magnet always in circuit, the other to sustain the movable support and regulate the arc until it is again extinguished.

478,956. ELECTRIC-ARC LAMP. CHARLES A. PFLUGER, Chicago, Ill., assignor, by direct and mesne assignments, to the Standard Electric Company, of Illinois. Filed Nov. 13, 1890. Serial No. 371,294. (No model.)

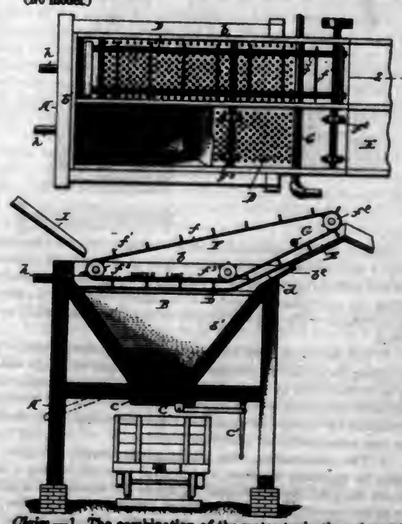
Claim.—1. In an arc lamp, a current-carrying device consisting of fingers to engage the carbon-rod on opposite sides and means whereby they may be adjustably brought together, and a vertical pivot on which such device is supported, so that the fingers bear with equal pressure on opposite sides of the carbon-rod.

2. In an arc lamp, the combination of the feeding magnet or solenoid with a current-carrying device independent of such feeding magnet or solenoid and adapted to lead the current from a fixed portion to the upper-carbon rod, said device consisting of arms clasping the rod on both sides, movably responsive to variations in the strength of the feeding magnet or solenoid.



3. In an arc lamp, the combination of the feeding magnet or solenoid with a feeding-clutch operated thereby and a separate current-carrying device distinct from such clutch and adapted to lead the current to the upper-carbon rod, said device supported so as to be always equidistant from and to travel with the feeding-clutch.

478,957. COAL WASHING AND SEPARATING MACHINE. JAMES POLLOCK, Wilkes-Barré, Pa. Filed Nov. 28, 1891. Serial No. 413,365. (No model.)



Claim.—1. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line, and the endless-chain conveyer having flights arranged to travel upon or close to the upper side of said plate, substantially as described.

2. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line and having an inclined perforated extension extending above the water-line, and the endless-chain conveyer located partly above and partly below the water-line and having flights arranged to travel upon or close to the upper surface of said plate, substantially as described.

3. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line, the trough E, inclined upward from said plate, and the endless-chain conveyer having flights arranged to travel upon or close to said plate and up said trough, whereby the material to be cleaned may be carried across and out of the tank, substantially as described.

4. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line, the trough E, connecting with the perforated plate, the endless-chain conveyer arranged to travel upon or close to the plate and through the trough, and means for drawing off the dirt deposited beneath the plate, substantially as described.

5. The combination of the water-tank, the substantially flat perforated plate extending across the tank below the water-line and having an extension extending above the water-line, an endless-chain conveyer having flights arranged to travel close to the upper side of said plate, a water-supply pipe at one end of said tank, and an overflow-pipe at the other, substantially as described.

6. The combination of the water-tank, the substantially flat perforated plate extending across said tank, the trough E, connecting with said plate, the endless-chain conveyer having flights arranged to travel along said plate and trough, a chute for delivering culm at the back shaft of the conveyer, the spray-pipe, the overflow-pipe, and the gate or valve at the bottom of the tank, substantially as described.

478,958. DRIVE-GATE. BENJAMIN F. PRICE, Bloomington, Ill. Filed May 13, 1891. Serial No. 392,915. (No model.)



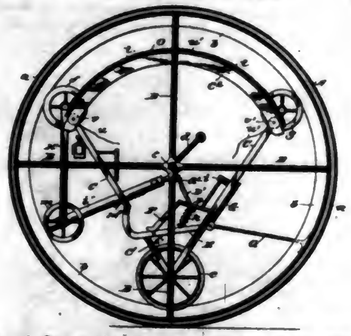
Claim.—1. The combination, with a sliding gate, of a supporting-frame, a post, an oscillating lever fulcrumed on the post and connected with the gate, an operating-lever fulcrumed on the frame, a link connecting the operating-lever and the oscillating lever, and a swinging bar fulcrumed on the post and pivoted to the link, substantially as described.

2. The combination of a sliding gate, a supporting-frame, a post 12, having its upper end provided with a V-shaped recess, an oscillating lever fulcrumed on the post and connected with the gate, an operating-lever fulcrumed on the frame, a link connecting the levers, and a swinging bar pivoted to the said link and fulcrumed in the recess of the post, substantially as described.

3. The combination, with the supporting-frame, the gate, and means for operating the same, of a pivoted gate-rail forming a latch-bar for the gate, latches secured rigidly to the side of the latch-bar, one at the rear of the gate proper and the other at the end of the gate-extension, and keeper-blocks secured to the supporting-frame and adapted to be engaged by the latches.

4. The combination of the gate, the supporting-frame, a post anchored at the one side of the gate, a keeper-block secured on the supporting-frame, a latch secured on the side of one of the gate-bars and adapted to engage the keeper-block, said gate-bar being provided with a lateral projection, suitable operating mechanism, and an oscillating lever connected to the operating mechanism and to the gate and having its lower end loosely fulcrumed on the anchored post, whereby the said lever is enabled to impinge against the lateral projection, lift the latch-bar, and disengage the latch from the keeper-block before it begins to oscillate.

478,959. MONOCYCLE. JOHN T. GERALY, South Coventry, Conn. Filed Nov. 30, 1891. Serial No. 413,580. (No model.)



Claim.—1. In a monocycle, the combination of the large traction-wheel having the arched braces or spokes B meeting at two concentric hubs *c*, a frame inclosed within said traction-wheel and supporting rollers which engage and run upon the inner circumference of said wheel, a rider's seat also supported upon said frame, and means attached to said large traction-wheel for rotating it directly without intermediate mechanism, all as set forth.

2. In a monocycle, the large traction-wheel having the arched braces or spokes D meeting at two concentric hubs *c* and crank-handles secured to said hubs and extending inward from the same, a frame inclosed within the traction-wheel and supporting rollers which engage and run upon the inner circumference of said wheel, and a rider's seat also supported upon said frame below the crank-handles in a position to be operated by the rider, all as set forth.

3. In combination with the wheel A, having the flanges *b b*, the frame supporting the rollers which engage with and run upon said flanges, the rider's seat supported on said frame above the lower rollers, and the brake G, pivoted to the upright O of said frame and having its outer end and brake-pad inclosed between the flanges *b b* and its inner or upper end curved inward and over the rider's seat, all as and for the purposes described.

4. In combination with the wheel A, having the flanges *b b*, a frame inclosed within said wheel and supporting rollers which engage with and run on said flanges, and the tube I, supported upon the upright O of said frame, whereby said tube may be permitted a slightly-lateral swinging movement and a longitudinal movement, the outer end of said tube being inclosed between the flanges *b b* and said tube being pivotally supported near said outer end by a hanger or link which is loosely pivoted to said frame, all as and for the purpose set forth.

5. In combination with the wheel A, having the arched spokes or braces B and the hubs *c c*, the seat D, and the spring and yielding brace D', extending under said seat and attached at each end to the inner extensions of the hubs *c* by loose rings, all as and for the purpose set forth.

6. In combination with the wheel A, having the flanges *b b*, a frame inclosed within said wheel and supporting rollers which engage with and run on said flanges, the tube I, supported upon the upright O of said frame, whereby said tube may be permitted a slightly-lateral swinging movement and a longitudinal movement, a swinging hanger loosely pivoted at one end to said frame, and rollers *m* for engagement with the flanges *b b*, journaled to the lower portion of the said hanger and also to the sides of the tube I and at positions upon said tube that will enable the outer or forward ends of the tube to be inclosed between the flanges *b b* and to almost touch the inner rim of the wheel A when said rollers *m* are in contact with said flanges, all as set forth.

7. In combination with the wheel A, having the flanges *b b*, the tube I, having an internal screw-thread and supported upon the inclosed frame, as described, and the outwardly-threaded brake-rod K, passing through the tube I and provided on its forward end with a pad for entering between the flanges *b b* and for pressure against the inner rim of said wheel, all as set forth.

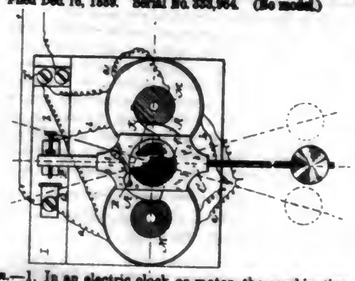
8. In combination with the wheel A, having the flanges *b b*, the tube I, supported upon a horizontal cross-bar of the inclosed frame, as described, and having the notches *n* on the under part of said tube for engagement with the rear edge of said cross-bar, all as and for the purposes set forth.

9. In combination with the large traction-wheel, its arched spokes or braces and hubs *c*, the blocks *o*, ring *p*, arms L, and sectors M, all arranged and adapted to operate in the manner described.

10. In combination with the large traction-wheel, its arched spokes or braces and hubs *c*, the blocks *o*, ring N, ring *p*, arms L, and sectors M, all arranged and adapted to operate in the manner described.

11. In combination with the large traction-wheel, the frame C C C', supporting rollers which engage with and are adapted to run on the inner circumference of said wheel, a flexible screen supported on the arched part C' of the frame, and means for extending the same over said part and for gathering said screen at one end of said part from near the center of said wheel, all as set forth.

478,960. ELECTRIC CLOCK-MOTOR. ANTHONY REICHMANN, Stockwell, England, assignor of one-half to James A. Pentz, Philadelphia, Pa. Filed Dec. 16, 1889. Serial No. 333,964. (No model.)



Claim.—1. In an electric clock or motor, the combination, with power-transmitting mechanism and an electro-magnetic device for maintaining movement of said mechanism from the supply-circuit so long as there is a current in said circuit, of a pair of insulated wires in circuit with the supply-circuit and wound side by side about said electro-magnetic device, and a make-and-break device in the circuit of one of said wires for automatically breaking the circuit of said wire without disconnecting the other wire from the supply-circuit, said make-and-break device being operated on by the electro-magnetic device to close the circuit, whereby polar and non-polar effects are set up in alternation in the electro-magnetic device without disconnecting the supply-circuit and the power-transmitting mechanism thus kept in motion, substantially as described.

2. In an electric clock or motor, the combination, with power-transmitting mechanism and an electro-magnetic device for maintaining movement of said mechanism from the supply-circuit so long as there is a current in the supply-circuit, said electro-magnetic device comprising two electro-magnet bobbins and their cores and an armature, a pair of insulated wires wound side by side upon each bobbin and oppositely connected in circuit to produce alternately polar and non-polar effects as the current passes through only one or both of said wires, and a make-and-break contact in the circuit of one of said wires, said contact being rendered sparkless by one of the wires remaining in circuit with the supply-circuit and acted on by said electro-magnet through said armature to close the circuit in which it is located, substantially as and for the purposes described.

3. The combination, with a rotatable spindle for transmitting power, of an armature and mechanism deriving momentum therefrom and imparting it to said spindle, and an electro-magnetic device for influencing said armature, said device having a pair of insulated wires, one of which has a make-and-break contact controlled by the movement of said armature, said wires being wound side by side into coils, through one of which the current flows until the circuit is established in the other, after which it flows through each one in a direction opposite to the other, whereby said device is magnetized and then demagnetized without sparking at the make-and-break contact, substantially as described.

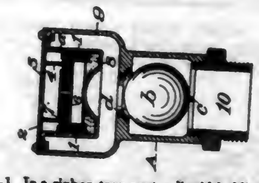
4. The combination of a rotatable spindle for transmitting power, an armature and mechanism deriving power therefrom and imparting it to said spindle, an electro-magnetic device for influencing said armature, and a contact device for establishing a circuit in a portion of said electro-magnetic device, said contact device comprising a spring and a contact-point, one of said elements being moved to meet the other to close the circuit by said above-mentioned mechanism, substantially as described.

5. The combination of a rotatable spindle for transmitting power, an armature and mechanism deriving power from said armature and imparting it to said spindle, an electro-magnetic device for influencing said armature, a contact device for establishing a circuit in a portion of the coils of said electro-magnetic device, said contact device comprising a spring and a contact-point adjustable to control the movement of said mentioned mechanism, a buffer for said contact device, and an adjustable stop to move said buffer to limit the movement of said before-referred-to mechanism, substantially as described.

6. The combination of the electro-magnet bobbins, the wires wound side by side upon the same and connected with a supply-circuit, the shaft for transmitting power, the armature and swinging member carrying a circuit-closer connected together and turning loosely upon said shaft, means for transmitting motion from the armature to the shaft, the elastic contact-point in circuit with the wires, and the point carried by said moving member and in circuit, said points constituting a make-and-break device to close the circuit in one set of wires, substantially as and for the purposes set forth.

7. The combination, with the magnet-bobbins each having wires wound side by side, a swinging member actuating a circuit-closer, an armature actuating said swinging member, and a make-and-break device comprising the elastic plate and the circuit-closer point carried by said swinging member, of the buffer for the make-and-break device composed of the spring-plate, and the set-screw for adjusting it, substantially as and for the purposes set forth.

478,961. AIR-VALVE FOR TRAPS AND WASTE-PIPES. CHARLES H. REEVE, Baltimore, Md. Filed Oct. 30, 1891. Serial No. 410,875. (No model.)



Claim.—1. In a siphon-trap vent, a liquid-holding vessel having a closed bottom, a perforated cover for admitting air, a valve-seating in the top of the vessel, an air-outlet at the side, a valve below the seating, and a buoyant liquid in the vessel under the valve, whereby the inlet is closed by the valve to prevent the escape of sewer-air or opened for the admission of the external air, according as the pressure of the sewer-air varies, substantially as described.

2. The combination, in a siphon-trap vent, of a cup-shaped vessel closed at the bottom and a perforated cover for admitting air, a valve-seating rim in the top of the vessel, an air-outlet at the side, a valve below the seating, having a concave bottom and an annular groove in the top to hold the liquid, and mercury in the vessel under the valve to actuate the valve, according as the pressure of the sewer-air varies, and a side connection, substantially as described.

3. The combination, in a siphon-trap vent, of a cup-shaped vessel closed at the bottom, with a perforated cover, a valve-seating rim in the top, perforations in the sides, a valve below the seat, with a concave bottom, and a central hole for a fixed guide, and an annular groove in the top to hold mercury, mercury in the vessel under the valve for controlling the valve, according as the pressure of the sewer-air varies, and a hollow casing having a central bottom connection, substantially as described.

4. The combination, in a siphon-trap vent, of an annular cup-shaped vessel closed at the bottom and having a perforated cover, a valve-seating rim in the top, perforations in the sides of the vessel, a valve below the seat, with a concave bottom, and an annular groove in the top, mercury in the vessel under the valve to actuate it according as the pressure of the sewer-air varies, a central bottom connection to the hollow casing, a chamber formed within the air-outlet pipe containing a valve, a cross-bar at the bottom supporting the valve, and above it in the interior of the chamber a valve-seating for the valve, substantially as described.

5. In a siphon-trap vent, the combination, with a vessel containing a liquid and an air-valve, of an air-outlet pipe having a chamber in the pipe and a float valve in the chamber, a seating for the valve in the top of the chamber, a cross-bar at the bottom to prevent the valve obstructing the outlet, the sides of the chamber to guide the valve to the seating, and a trap connection, whereby regurgitation will float the valve against the seating and exclude back-water from the vessel and the valve, substantially as described.

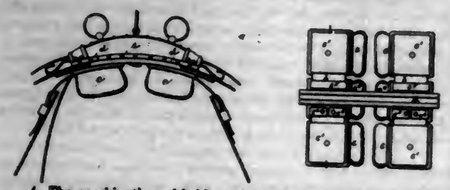
478,962. CART-SADDLE. JOHN ROGERS, New York, N. Y. Filed Jan. 14, 1892. Serial No. 418,123. (No model.)

Claim.—1. The combination of a bridge *a* with a pair of side bars secured thereto, a series of pads secured to each of the side bars, and with means for adjusting said pads longitudinally of the side bars, substantially as specified.

2. The combination of a bridge *a* with a pair of side bars *b*, secured

thereto, and with pads having straps for adjusting said pads longitudinally of the side bars, substantially as specified.

3. The combination of bridge *a* and side bars *b* with pads *c*, having pockets *c'*, adapted to engage the side bars, substantially as specified.

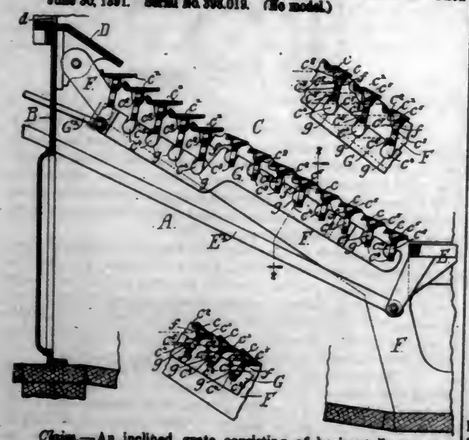


4. The combination of bridge *a* and side bars *b* with end pads *c*, having pockets *c'*, and with central pads *c²*, having straps that encircle the side bars, substantially as specified.

5. The combination of bridge *a* and side bars *b* with laterally-adjustable pads, covers *e*, and screws *d* for securing both the covers and pads in place, substantially as specified.

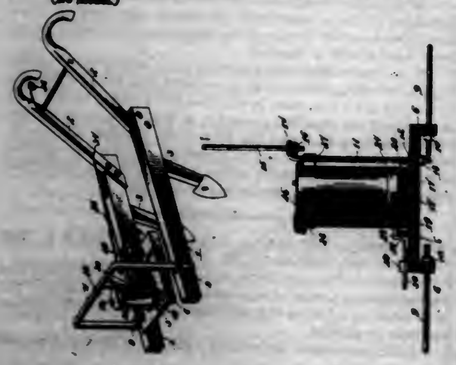
6. The combination of bridge *a* and side bars *b*, with removable pads having the flaps *c²*, substantially as specified.

478,963. GRATE. WILLIAM R. ROBEY, Chicago, Ill., assignor to the Westinghouse, Church, Kerr & Company, New York, N. Y. Filed June 30, 1891. Serial No. 398,019. (No model.)



Claim.—An inclined grate consisting of horizontally-arranged grate-bars having inclined top surfaces and depending webs or flanges, said grate-bars having openings or slots extending horizontally from their inclined faces to their rear or outer surfaces, and the depending webs or flanges being provided with longitudinal slots or openings arranged opposite said slots or openings in the grate-bars, substantially as described.

478,964. REPLANTING ATTACHMENT FOR CULTIVATORS. JAMES H. ROWLETT, Ludlow, Mo. Filed Jan. 9, 1892. Serial No. 417,561. (No model.)



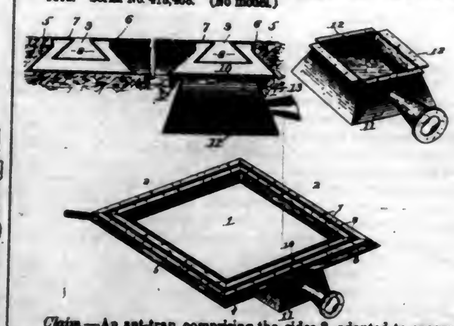
Claim.—1. The combination, with the two-horse cultivator comprising the inverted-U-shaped arch, of the replanting attachment comprising a base, and the hooks extending from the sides of the base and bottom of the base and engaging the top and sides of the arch, substantially as specified.

2. The combination, with the two-horse cultivator comprising the inverted-U-shaped arch, of the replanting attachment, the same comprising a base having a perforation and opposite depending side flanges, each having a perforation, hooks having threaded shanks mounted in these perforations and adapted to engage the top and sides of the arch, and nuts threaded on the inner ends or shanks of the hooks, substantially as specified.

3. The combination, with the two-horse cultivator comprising the inverted-U-shaped arch, of the replanting attachment comprising the base having the perforation and opposite side flanges, each having a series of perforations, a supporting-rod mounted in the perforation of the base and terminating at its upper end in an elongated bent eye, hooks mounted in the eye and in one of the perforations of each flange, said hooks engaging the top and sides of the arch, and nuts threaded on the ends of the hooks, substantially as specified.

4. In a replanting attachment, the combination, with the base, the hopper mounted thereon, and the ratchet seed-disk, of keepers mounted on the base in line with each other, a rear keeper disposed at an angle to the first mentioned, mounted on the extension of the base, a bayonet-shaped reciprocating pawl mounted in the keepers and provided with a shoulder, a coiled spring mounted on the pawl between the shoulder and the rear keeper, and a guide located at one side of and adjacent to the disk and adapted to guide the front end of the pawl into engagement with the disk, substantially as specified.

478,965. ANT-TRAP. JOHN ROTHE, Bonham, Tex. Filed Jan. 18, 1892. Serial No. 418,468. (No model.)



Claim.—An ant-trap comprising the sides 2, adapted to encompass an ant-hill and composed of a bottom 4, inclined walls 5, and horizontal top portions 7, having depending inclined flanges, one of the sides 2 having an opening in its bottom and provided with ways arranged on opposite sides of the opening, a removable receptacle provided with flanges arranged in said ways and having inwardly-inclined walls, and a discharge-tube arranged at one corner of the trap, substantially as described

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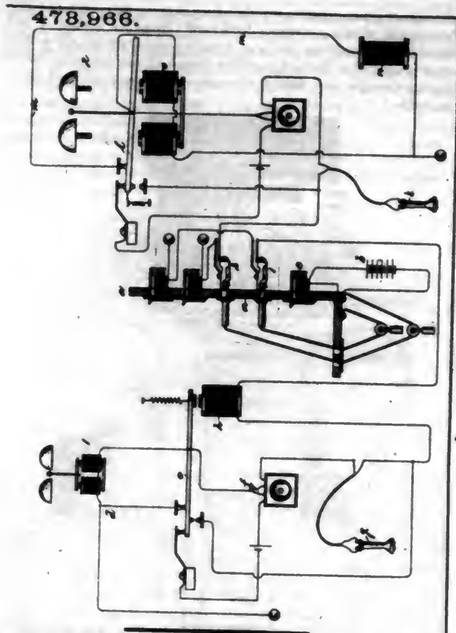
478,966. TELEPHONE-SWITCH. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Aug. 19, 1884. Renewed Oct. 16, 1891. Serial No. 408,362. (No model.)

Claim.—1. The combination, at the central office, of a battery and switching apparatus for connecting two telephone-lines together in the circuit of said battery and relays included in the telephone-lines at the different stations, whereby the telephones of two lines when connected are brought into circuit, substantially as and for the purpose specified.

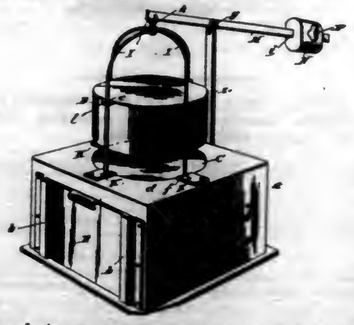
2. The combination, with a telephone-line connecting a subscriber's station with the central office, of a bell and telephone, said bell and telephone being connected with the said telephone-line at the subscriber's station, and a battery included in the circuit of the line at the central office, and a relay or electro-magnetic switching device at the subscriber's station included in the line, whereby the telephone is brought into the circuit of the line when the electro-magnetic device is operated by the battery, while at the same time the bell is disconnected from the circuit of the line.

3. An electro-magnet, in combination with a telephone-switch controlled by the armature of the electro-magnet, a shunt-circuit including resistance adapted to be closed by the switch around the electro-magnet, and a telephone-circuit adapted to be shunted by the same movement of the switch which opens the said shunt-circuit including resistance.

478,966.



478,967. ANIMAL-TRAP. JOHN D. SHAFFER, Salt Lake City, Utah, assignor of one-half to William A. Kinney. Filed Nov. 9, 1891. Serial No. 411,352. (No model.)



Claim.—1. A trap comprising a main cage or frame having an opening in its top and a vertically-movable cage suspended in said opening, and having a top or hood separated from its floor to form a passage for the animal, substantially as specified.

2. In an animal-trap, a combination, with a main cage or frame having an opening in its top, of a vertically-movable cage suspended in said opening and normally held raised therein by a balance-weight, said movable cage having a top separated from its floor by an interspace, and the floor adapted to be held from rising entirely out of the opening in the main cage, substantially as specified.

3. An animal-trap comprising a main frame or cage having an opening in its top, the vertically-movable cage arranged therein and formed with a hood or top adapted to move in said opening, and a floor, separated from the lower edges of the side walls of the top and of a greater circular area, so that it may be prevented from entirely leaving the opening in the main cage, a standard secured to the main cage, and a lever pivoted on the standard and connected at one end with a movable cage and its opposite end carrying an adjustable weight, substantially as specified.

4. The main cage or frame having perforated side walls and a door in one of the walls, said cage also having an opening in its top and notches in said opening, in combination with a vertically-movable cage comprising the floor F, the top or hood E, separated from the floor, so as to form a passage, the rods connecting the floor to the hood and looped above the same, the standards secured to the main cage, the lever pivoted to the standard and connected at one end to the movable cage, and a weight on the opposite end of said lever carrying a set-screw, substantially as specified.

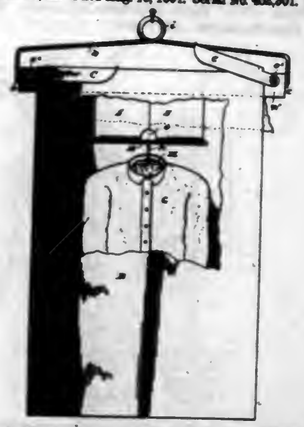
478,968. DETACHABLE PLANER-BIT FOR SAWS. TRIPLETT L. SLAUGHTER and EMANUEL C. DREW, Arcadia, La. Filed Apr. 30, 1891. Serial No. 390,676. (No model.)



Claim.—The combination, with a saw having V-shaped ribs between two of its teeth and a transverse aperture at one side, of a reversible planer-tooth having V-shaped grooves upon opposite sides, a beveled outer or acting face, a transverse aperture at the inner curved end, and a transverse aperture *f* at both sides of the tooth between its inner and outer faces, substantially as and for the purpose described

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478,969. BAG FASTENER AND SUPPORT. WALTON D. SMITH, Prophetstown, Ill. Filed Aug. 10, 1891. Serial No. 402,901. (No model.)



Claim.—1. The herein-described clasp for bags and the like, the same comprising a straight bar provided with a bail or handle standing above the bar and spring-clamp of inverted-U shape at each end of the bar and adapted to tightly clasp the bag on the bar, as and for the purpose set forth.

2. The combination, with a bag of flexible material, of a bar over which the mouth of the bag is passed, the bar being longer than the width of the bag, and a spring-clamp of inverted-U-shaped cross-section adapted to hold the bag on the bar, one end of the clamp having a notch forming two tongues passing astride the bar and pivoted to its sides, as and for the purpose set forth.

3. The combination, with a bag of flexible material, of a bar over which the mouth of the bag is turned, the bar being longer than the width of the bag, spring-clamps removably holding the bag on the bar, and a handle connected to and rising from the ends of the bar, as and for the purpose set forth.

4. The combination, with a bag of flexible material, of a bar over which the mouth of the bag is turned, the bar being longer than the width of the bag, spring-clamps removably holding the bag on the bar, and a wire handle having inturned ends pivoted to the ends of the bar, as and for the purpose set forth.

5. The combination, with a bag of flexible material, of a bar over which the mouth of the bag is turned, the bar being longer than the width of the bag, spring-clamps of inverted-U-shaped cross-section adapted to hold the bag on the bar, the outer ends of the clamps having tongues pivoted to the sides of the bar, and a wire handle having inturned ends pivoted in the ends of the bar, as and for the purpose set forth.

6. The combination, with a bag of flexible material and a garment-support, substantially as described, secured within said bag, of a bar over which the mouth of the bag is passed and a spring-clamp removably holding the bag on the bar, as and for the purpose set forth.

7. The combination, with a bar and a garment-support, substantially as described, secured within the same, of a closure for the mouth

of the bag and a wire bail connected to said closure and having an eye, as and for the purpose set forth.

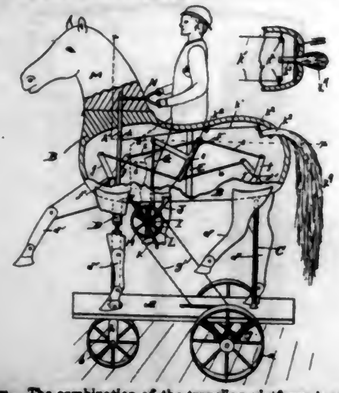
8. The combination, with a bag, doubled strips standing at slight distances apart and having both ends secured to one face of the bag, and a rod resting in their bends, of a closure for the mouth of the bag and a supporting-handle rising from the closure, as and for the purpose set forth.

9. The combination, with a bag of flexible material, doubled strips standing at slight distances apart and having both ends secured to the inner face of the bag, and a rod resting in their bends, of a bar over which the mouth of the bag is passed, a spring-clamp removably holding the bag on the bar and closing its mouth, and means for supporting said bar, as and for the purpose set forth.

10. The combination, with a bag, of a doubled strip of material having its ends secured adjacent to the mouth of the bag and having an opening at the center of the fold, a rod supported in the fold of said strip, and a garment-holder connected to said rod, substantially as described.

11. The combination, with a bag and a garment-support secured within the same, of a closure consisting of a bar, to which the top of the bag is applied, clamps removably fitted over said applied end of the bag and the bar, and means for suspending said closing devices, substantially as described.

478,970. TOY. WALDO V. SNYDER, Canton, Ohio. Filed May 25, 1891. Serial No. 393,980. (No model.)



Claim.—The combination of the traveling platform A, provided with body B, the vertical bar K, provided with the cross-arm k, the wire or cord k', the pivoted tail-shank k^2, the tail k^4, and the guide-bar N, substantially as and for the purpose specified.

478,971. DETACHABLE FENDER FOR VEHICLE-WHEELS. ROWIE B. SHEAD, Hartford, Conn. Filed Oct. 23, 1891. Serial No. 409,698. (No model.)



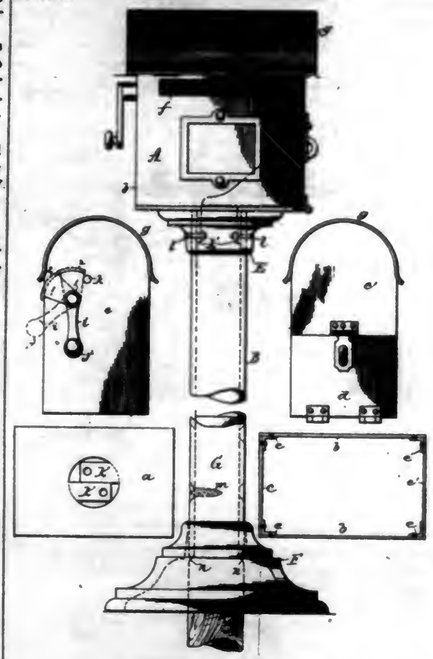
Claim.—A detachable guard or fender for the wheels of vehicles, composed of a front b, the edges of which are concave, which makes said front narrower along the line $x\ x$ than at the ends, and segmental sides $a\ a$, sewed diagonally from the outside inwardly to the front b, said guard or fender retaining position upon the wheels by means of frictional contact produced by the peculiar clamping construction of the device.

478,972. LETTER-BOX AND POST THEREFOR. WILLIAM W. STONE, Pittsburg, Pa. Filed Sept. 24, 1891. Serial No. 406,069. (No model.)

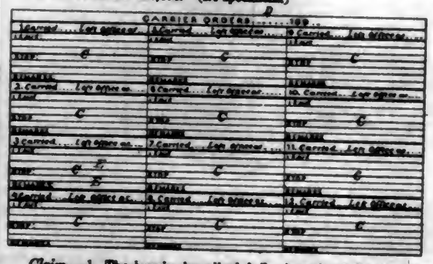
Claim.—1. The combination, with a post having an enlarged flaring collar at the top, of a box located on the top of the post, projections extending from the box downward, and bolts or similar devices passing through the projections, post, and collar, whereby to fasten the box to the post, substantially as set forth.

2. The combination, with a box having a slot formed therein, of a drop or guard comprising the sides, a rim secured to the sides, perforated beams having recesses adapted to bear in holes in the sides of the box, lugs having contracted ends, one of the lugs having a weighted handle, and bolts passing through the beams and lugs for holding said parts together, substantially as set forth.

3. The combination, with a metallic letter-box and a tubular post or support, of ears projecting downwardly from the bottom of said letter-box and entering said post, a casting surrounding said post in close proximity to the bottom of the letter-box, and fastening devices passing through said casting, the post, and the ears, substantially as set forth.



478,973. DAILY SHEET AND RECORD-BOOK FOR DELIVERY SYSTEMS. JOSEPHUS C. STROAT, Grand Rapids, Mich. Filed July 20, 1891. Serial No. 400,160. (No specimens.)



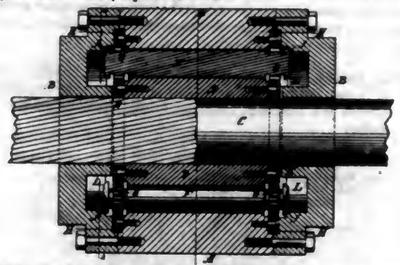
Claim.—1. The herein-described daily sheet for delivery systems, divided at its top into a space D for heading and date and beneath said space D into numbered squares C, having at their tops spaces for headings, each of said spaces C being subdivided into spaces E, one for the memoranda of new customers and the other for memoranda of orders to stop leaving, and one of said spaces E of each space C being subdivided to form a space for remarks, all substantially as described.

2. The herein-described book for use in delivery systems, having the alternate pages numbered to correspond with the spaces of the daily sheet and the pages on one side divided by horizontal and vertical lines into spaces for the names, residences, and payments of the customers, and the opposite pages having double horizontal rulings for both the date of payment and time paid to, as set forth.

478,974. ANTI-FRICTION JOURNAL-BOX. MARSHALL B. STAFFORD and ROBERT W. MORGAN, New York, N. Y. Filed Sept. 2, 1891. Serial No. 404,510. (No model.)

Claim.—1. In an anti-friction journal-box, the shaft and the series of rollers encompassing said shaft and having the curved annular bearing-shoulders, combined with the inclosing shell having the reversely-curved annular bearing-shoulders for contact with the shoulders on the rollers, the contact-point of said shoulders being on the pitch-line of the rollers, substantially as and for the purposes set forth.

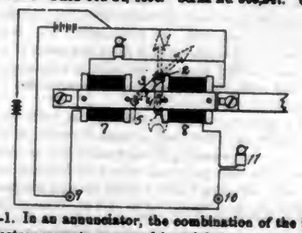
2. In an anti-friction journal-box, the shaft and the series of rollers encompassing said shaft and having the pinions and the curved annular bearing-shoulders, combined with the inclosing shell having the reversely-curved annular bearing-shoulders for contact with the shoulders on the rollers, the gearing on said shaft to engage said pinions, and the gearing on the shell also to engage said pinions, the contact-point of said shoulders being on the pitch-line of the rollers, substantially as and for the purposes set forth.



3. In an anti-friction journal-box, the shaft, the sleeve and gearing on said shaft, and the series of rollers having the pinions and the curved annular bearing-shoulders, combined with the inclosing shell having the reversely-curved annular bearing-shoulders for contact with the shoulders on the rollers, and the gearing on the shell to engage said pinions, the contact-point of said shoulders being on the pitch-line of the rollers, substantially as shown and described.

4. In an anti-friction journal-box, the shaft and the inclosing-shell, combined with the series of rollers intermediate said shaft and shell and having the curved annular bearing-shoulders, and the reversely-curved annular bearing-shoulders in contact with the first-mentioned shoulders on the pitch-line of said rollers, substantially as set forth.

478,975. ELECTRICAL ANNUNCIATOR. FREDERICK W. STERN, St. Paul, Minn. Filed Oct. 24, 1890. Serial No. 369,247. (No model.)



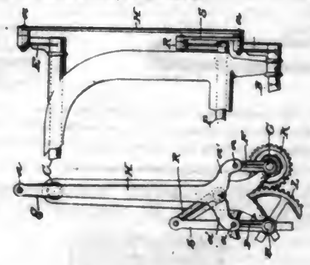
Claim.—1. In an annunciator, the combination of the indicator-hand, two electro-magnets arranged in axial alignment, an endwise-movable bar connected to the indicator-hand and forming the armatures to both electro-magnets and adapted to be moved thereby in opposite directions, two electric circuits in which said electro-magnets are respectively situated, and circuit-closers for opening and closing said circuits, substantially as described, for the purpose set forth.

2. In an annunciator, the combination of the indicator-hand, two electro-magnets arranged in axial alignment, an endwise-movable bar forming the armature of both electro-magnets and having a link connection with the spindle of the indicator-hand, call and return circuits in which said electro-magnets are respectively situated, and circuit-closers in said circuits, the circuit-closer in the call-circuit being at a distant point from the indicator and the circuit-closer in the return-circuit in the vicinity of the indicator, substantially as described.

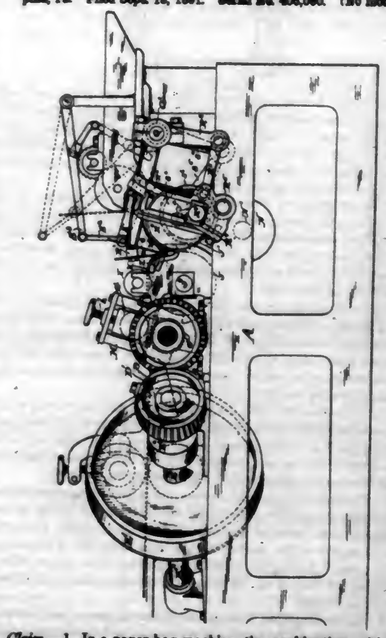
3. In an annunciator, the combination of the spindle upon which the annunciator-hand is mounted, the two electro-magnets arranged in axial alignment, an endwise-movable bar having its ends fitted in the electro-magnets, a radial arm mounted on the spindle and connected to the endwise-movable bar, two separate circuits in which the electro-magnets are respectively included, signal devices included in one or both circuits, and means for opening or closing said circuits independently of each other, substantially as described.

478,976. MECHANICAL MOVEMENT FOR GRAIN-BINDERS. BENJAMIN F. STEWART, Canton, Ohio. Filed Feb. 26, 1890. Serial No. 341,883. (No model.)

Claim.—The combination of the packer-shaft J, provided with a gear-wheel, the binder-actuating shaft B, provided with a gear-wheel in mesh with the first-named gear-wheel, a stud G, fixed to the frame, cranks D and F, secured to the shaft B and stud G, respectively, a knotter-shaft C, a crank E, secured to the end thereof, a pitman H, having one end pivoted to said crank and its opposite forked end pivoted to the cranks D and F, a needle-shaft P, a crank R, secured to the end thereof, and a link S, pivoted to the crank R and to the end of the crank D, substantially as set forth.



478,977. PAPER-BAG MACHINERY. CHARLES B. STILWELL, Wayne, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Sept. 18, 1891. Serial No. 406,060. (No model.)



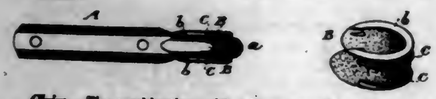
Claim.—1. In a paper-bag machine, the combination, with feed rolls F F', of a knife edge or edges, and a striker coacting therewith to sever the tube, as described, and situated on the delivery side of said rolls, and a pair of intermittently-acting rolls G G', set with their axes in a plane extending obliquely backward to the plane of the former and geared to rotate at less surface speed than rolls F F', all substantially as and for the purpose specified.

2. In a paper-bag machine, the combination of a tucker R, a supporting bell-crank lever, as R', Q, and R^3, a pivoted slotted link R^4, a rotating pin R^5, working on the slot of link R^4 and arranged to give an oscillating movement of varying speed to the link R^4, and a connecting-bar R^2, arranged between the link and bell-crank lever, substantially as and for the purpose specified.

3. In a paper-bag machine, the combination of the concentrically-pivoted bell-crank levers R' Q R^3 and S' Q' S^4, a shaft J', a pivoted link R^4, and a crank-pin or its equivalent R^5, secured to shaft J' and connected to the link R^4, so as to give it an oscillatory movement, a connecting-rod R^6, operatively connecting link R^4 and lever R' Q R^3, an eccentric or its equivalent S', secured to shaft J' and operatively connected with lever S' Q' S^4, a tucker-blade R, secured on the arm R'

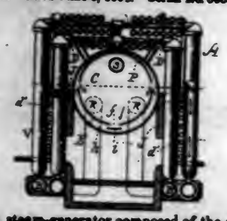
of lever R' Q R³, a paster-blade S, pivoted on the arm S' of lever S' Q' S³, and levers S² S², connected and arranged, as described, with reference to the paster-blade, all substantially as and for the purpose specified.

473,978. HAME-TUG CLIP. GEORGE D. STULKEN and ANDREW J. CLOYD, Jr., McCook, Nebr. Filed Dec. 3, 1891. Serial No. 413,996. (No model.)



Claim.—The combination, with a hame-tug clip and its wearing-piece B, of the wires C C, fastened on the opposite edges of the leather B and projecting up on each side of the clip, as shown and described.

473,979. STEAM-GENERATOR. THOMAS I. STURTEVANT, Framingham, Mass. Filed June 6, 1891. Serial No. 395,308. (No model.)



Claim.—1. A steam-generator composed of the steam and water drum, base-pipes longitudinally therebeneath, the return-pipes, which connect the drum with each base-pipe or series of base-pipes, a group of vertical pipes having interior circulating-tubes and mounted upon the base-pipes, and steam-conducting pipes, which unite the vertical pipes with the drum, substantially as specified.

2. In a steam-generator, the combination, with a series of base-pipes, a group of steam-generating pipes, each having interior circulating-tubes and positioned on said base-pipes, and the steam-conducting pipes from their upper ends, of a steam and water drum, its shield P, and circulating-partition E, apertured as shown, and the return-pipes, substantially as described.

3. In a steam-generator, the combination, with a series of base-pipes, a group of steam-generating pipes mounted on said base-pipes, and the steam conducting pipes discharging against the shield P, of a steam and water drum, its shield P, the partition E, apertured as shown, and the return-pipes, which connect said drum with the base-pipes, substantially as specified.

4. In combination with a steam and water drum having a circulating apertured partition, as stated, the feed-pipes *d*, and steam-conducting pipe D, a series of base-pipes connected with the water-space of the drum by the return-pipes and with the steam-space of said drum by the steam-generating pipes V, substantially as set forth.

5. The combination, with a steam and water drum having a circulating apertured partition, as stated, the feed-pipes *d*, steam-conducting pipes D, and a series of base-pipes, of the return-pipes, which unite the water-space of the drum with the base-pipes, and the steam-generating pipes V, having the interior circulating-tubes, which unite the steam-space of said drum likewise with the said base-pipes, substantially as explained.

6. The combination, with the longitudinal base-pipes, the vertical steam-generating pipes positioned thereupon, and their interior tubes, of the steam and water drum provided with the interior shield P, the steam-conducting pipes, which discharge against said shield and connect the steam-generating pipes with the drum, and the return-pipes, which unite the water-space of said drum with the base-pipes, substantially as specified.

7. In a steam-generator, the combination, with a drum having a steam-discharge and water-supply, of an apertured circulating-partition longitudinally along the bottom, but non-contiguous thereto, and a shield positioned in the upper portion, substantially as described.

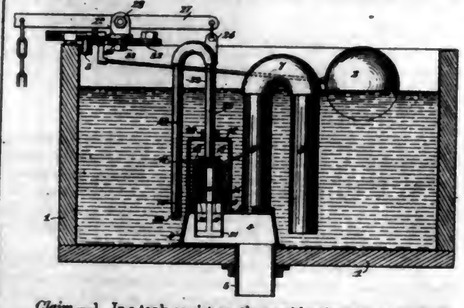
8. In a steam-generator, the combination, with the drum, the shield in the upper part, and the circulating apertured partition longitudinally in the lower portion, of a lower shield interposed between the shell of the drum and the circulating-plate and oppositely of the aperture in said partition, substantially as set forth.

9. In a steam-generator, the combination, with a drum having a steam-discharge and a water-supply, the apertured circulating-partition at the bottom, but non-contiguous, and an imperforate shield similarly arranged in the top part, of a divisional wall transversely of the shell of the drum and the coil-partitions below said wall and vertically between the steam-generating pipes, substantially as described.

10. In a steam-generator, the combination, with the drum, its shield at the top, and the circulating apertured partition longitudinally in the lower portion, of the lower shield interposed between the shell of the drum and the circulating-plate opposite said aperture and a divisional wall exteriorly of the drum extending from each side of the latter to the steam-generating pipes, substantially as set forth.

11. The combination, with the longitudinal base-pipes, the vertical steam-generating pipes positioned thereupon, and their interior tubes, of the steam and water drum provided with the interior shield P, the feed-pipes *d*, which discharge against the shield, the steam-conducting pipes, which also discharge against said shield and connect the steam-generating pipes with the drum, and the return-pipes, which unite the water-space of said drum with the base-pipes, substantially as specified.

473,980. TANK OR CISTERN FOR WATER-CLOSETS. JOSEPH H. TABELE, Jersey City, N. J., assignor to The Meyer-Sniffen Company, Limited, New York, N. Y. Filed Dec. 5, 1891. Serial No. 414,098. (No model.)



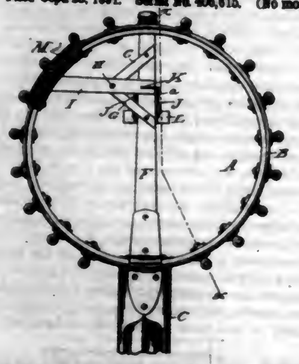
Claim.—1. In a tank or cistern, the combination of a valve-chamber, a lifting-valve, a main siphon secured to said valve-chamber, and a supplemental siphon, also connected to said valve-chamber and communicating therethrough with the said main siphon.

2. In a tank or cistern, the combination of a valve-chamber, a main siphon fixed thereto, and a supplemental movable siphon carrying a valve adapted to a seat on said valve-chamber and communicating through said valve and valve-chamber with the said main siphon.

3. In a tank or cistern, the combination, with the main siphon, of a valve-chamber, a valve-seat, a valve composed of a weight and a facing, a tube passing through the valve, a supplemental siphon secured to said tube, and an operating-lever connected to said supplemental siphon.

4. In a tank or cistern, the combination, with the main siphon, of a valve-chamber, a valve-seat, a valve composed of a weight and a facing, a flanged tube passing through said valve, an open guide-frame screwed onto the lower end of said tube, a supplemental siphon screwed into the upper end of said tube, a guide for said supplemental siphon, and an operating-lever connected to said supplemental siphon.

473,981. MUSICAL INSTRUMENT. ALBERT P. VERRY, Seattle, Wash. Filed Sept. 23, 1891. Serial No. 406,615. (No model.)



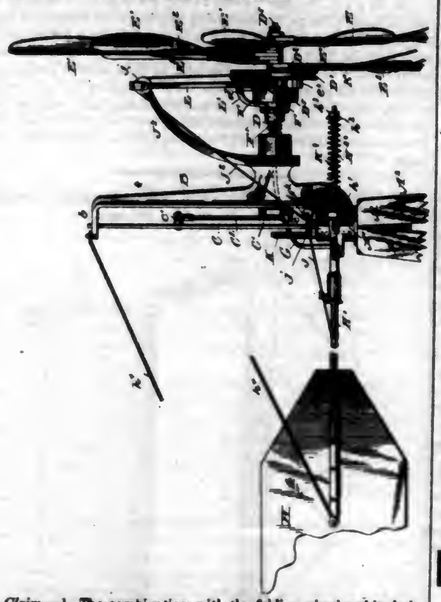
Claim.—1. A banjo provided with an attachment whereby to soften the vibrations, consisting of a damper-pad adapted to be held against the head of the banjo and a lever pivoted to the cross-bar and connected to the damper-pad at one end and at its other end to a lever having a horizontal movement and extending to the rim of the banjo.

substantially as described, whereby the damper is operated and controlled by the movement of the horizontal lever by the body of the player.

2. A damper attachment for a banjo, consisting of a lever pivoted to the cross-piece, having a damper-pad at one end and at its other end connected to or in contact with the end of a lever having a horizontal movement and adapted to operate the lever provided with the damper-pad, said controlling-lever being pivoted to a suitable extension on the cross-piece and provided on its outer end with an engaging-pad, substantially as described, and for the purpose set forth.

3. In a damper attachment for a banjo or other stringed instruments, the combination of the bar F, the lever J, pivoted thereto, the damper-pad I, connected to one end of said lever, and the lever I, pivoted to bar F or an extension thereof, having one end connected or in contact with the lever J and its outer end provided with the engaging-pad M, adapted to rest on the rim of the banjo, substantially as described.

473,982. WINDMILL. ABOE WALLACE, Little Rock, Iowa. Filed Oct. 31, 1891. Serial No. 410,436. (No model.)



Claim.—1. The combination, with the folding wheel and its hub, of the clutch for engaging therewith, the lever for operating the clutch, the ratchet and pawl actuated through the movement of the clutch, and the hinged arm on the wheel engaging the pawl, as set forth.

2. The combination, with the folding wheel and its hub, of the clutch for engaging therewith, the lever for operating the clutch, the ratchet-wheel, the wheel on the main shaft, the cord connected therewith, the hinged downwardly-curved arm L' on the wheel on the shaft, and the spring-pawl acting on the ratchet, as set forth.

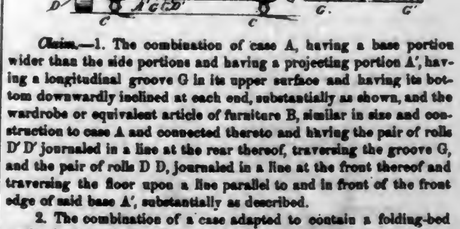
3. The combination, with the folding wheel and its hub, of the clutch engaging therewith, the lever for operating the clutch, the tail-vane for operating the lever, the lug on the loose member of the clutch, the hinged downwardly curved arm L', and the spring-arm acting on the said lug, as set forth.

4. The combination, with the folding wheel and its hub, of the clutch for engaging therewith, the lever for operating the clutch, the tail-vane, the side vane, the cord-supporting pulley on the shank of the side vane, a cord passed thereover for operating the main vane, the lug on the loose member of the clutch, and the spring-arm acting on said lug, as set forth.

5. The combination, with the fast and loose members of the clutch, of the lug on the loose member, the arm J³, and the spring-arm attached to one end of the arm J³ and acting on the said lug, substantially as and for the purpose specified.

473,983. BLOTTER-HOLDER. JAMES S. WELCH, Fort Elliott, Tex. Filed Feb. 5, 1891. Serial No. 380,345. (No model.)

Claim.—1. The herein-described fastening plate or disk, having the flat under surface and convex upper surface provided with a slot wider at one end than the other and having the side walls beveled to give a gradual upward incline to the bearing edges from the wider end to the narrower, substantially as described, and for the purpose specified.



2. The herein-described blotter-holder, and in combination therewith, a base having screws or headed pins secured therein, and a plate or disk having the flat under surface and convex upper surface and having a key-hole slot therein, the side walls of the narrow portion being beveled, the inclination of the bevel gradually increasing toward the end of the slot, whereby when the edges of the narrow portion are forced under the head of the screw or pin the fastener will be drawn down tightly on the paper, clamping it securely, substantially as described.

473,984. COMBINED FOLDING-BED CASE AND WARDROBE. ARTHUR S. WHITE, Grand Rapids, Mich. Filed July 17, 1891. Serial No. 399,868. (No model.)

Claim.—1. The combination of case A, having a base portion wider than the side portions and having a projecting portion A', having a longitudinal groove G in its upper surface and having its bottom downwardly inclined at each end, substantially as shown, and the wardrobe or equivalent article of furniture B, similar in size and construction to case A and connected thereto and having the pair of rolls D' D' journaled in a line at the rear thereof, traversing the groove G, and the pair of rolls D D, journaled in a line at the front thereof and traversing the floor upon a line parallel to and in front of the front edge of said base A', substantially as described.

2. The combination of a case adapted to contain a folding-bed section having a forwardly-projecting base, said base having a groove in its upper surface, and a wardrobe having rolls traversing said grooves and other rolls traversing the floor and passing in front of said base, and horizontal rods attached to the upper part of said case and wardrobe, respectively, and a link connecting said rods, substantially as described.

3. The combination of a case adapted to contain a folding-bed section having a forwardly-projecting base and having one or more grooves in its upper surface, said grooves having oppositely-inclined ends, and a wardrobe having rolls traversing said grooves and also rolls traversing the floor and passing in front of said base, a rod across the front of said case and a rod across the back of said wardrobe in

the same horizontal plane, and a link surrounding both of said rods and movable thereon, substantially as described.

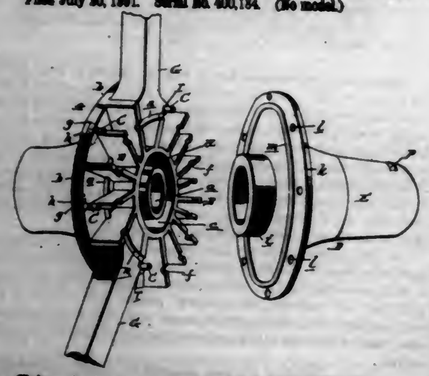
4. The combination of the case A, adapted to contain a folding bed having a base portion wider than the side and having a projecting portion A', forming a support for the section B when the bed is closed and provided with a longitudinal way or groove G, having its bottom downwardly inclined at each end, substantially as shown, and the wardrobe or equivalent article of furniture B, similar in size and outline to the case A and connected thereto and having the pair of rolls D' D' journaled to the bottom in a line at the rear thereof and traversing the groove G for supporting the section B when the structure is closed, and the rolls D D, journaled to the bottom in a line at the front thereof of greater size and having their axles below the plane of the axles of rolls D' D' for supporting said section B when the structure is open and traversing the floor upon a line parallel to and in front of the front edge of said base when the structure is being closed, substantially as set forth.

5. The combination of a case A, adapted to contain a folding-bed section having a forwardly-projecting base A' and mounted upon suitable casters C, and a wardrobe or equivalent article of furniture B, mounted upon two pairs of rolls D D and D' D', rolls D' being of small size and journaled at the rear corners and longitudinally traversing the upper surface of said base, rolls D of large size journaled at the front corners and traversing the floor in front of the rolls D, two parallel rods, one of which is attached to the wardrobe and the other to the case, and a link connecting said rods, and oppositely-inclined ways G in the upper surface of the base A' for the rolls D', whereby when the case B is moved in front of the case A the same will be lifted from the floor and the whole structure rest and be movable upon casters C, substantially as set forth.

6. The combination of a case A, adapted to contain a folding bed having a forwardly-projecting base A' and mounted upon suitable casters C, and a wardrobe or equivalent article of furniture B, closing the front of the case A, mounted upon rolls D', journaled at its rear corners and longitudinally traversing the upper surface of base A', and larger rolls D, journaled at its front and traversing the floor in front of said base, and parallel horizontal rods E E', attached to said case and wardrobe, respectively, and connected by a movable link, whereby said rods and link serve as a guide for the movable case in its traverse, substantially as set forth.

7. The combination of a case A, adapted to contain a folding-bed section having a forwardly-projecting base A', having oppositely and outwardly inclined ways G for rolls and mounted upon suitable casters C, and a wardrobe or equivalent article of furniture B, closing the front of the case A, mounted upon two pairs of rolls D D and D' D', respectively, arranged as described, the inner pair longitudinally traversing the base A' and the outer pair traversing the floor in front of said inner pair, a rod E across the front of said case A and a rod across the back of said wardrobe B in the same horizontal plane, and one or more links F, surrounding said rods and movable thereon, whereby the said case and wardrobe are connected together and the wardrobe lifted from the floor, and the entire structure rests upon the casters C when closed, substantially as set forth.

478,985. VEHICLE-HUB. WELLS H. WHITE, Los Angeles, Cal. Filed July 30, 1891. Serial No. 400,184. (No model.)



Claim.—1. A wagon or carriage hub comprising two sections, one of which is provided on its inner side with a rib or projection, and walls forming chambers or seats for spokes and having notches in one edge, said section also having bolt-apertures, with angular seats in its flange and a groove around in its bore, and the opposite section having a tongue adapted to enter said groove and a rib to enter the notches in said walls and also having holes to receive the connecting-bolts, the whole being adapted to receive the inner ends of spokes and outer grooves in three outer walls thereof, substantially as specified.

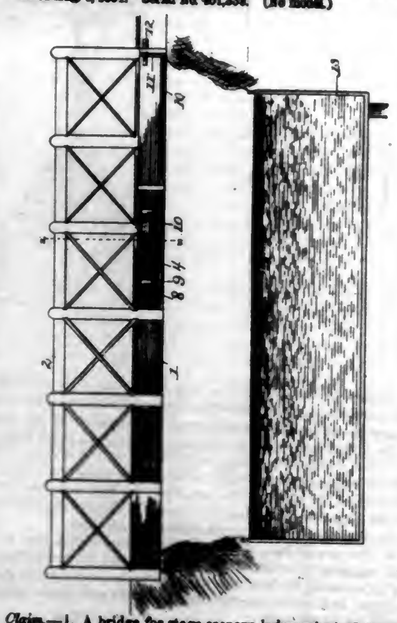
2. In a wagon or carriage hub, the combination, with two sections adapted to receive and seat spokes between them, of bolts connecting said sections, elastic or yielding washers interposed beneath the heads of the bolts, and nuts arranged in angular seats on the outer side of one of the hub-sections to receive the threaded ends of the connecting-bolts, substantially as specified.

3. A carriage or wagon hub formed in two sections and having spoke-seats, in combination with spokes having a groove in one wall and bolts adapted to serve the twofold function of connecting the hub-sections and securing the spokes by entering said groove thereof, substantially as specified.

4. In a carriage or wagon hub having each short alternate spoke-seat walls of a corresponding height, in combination with an opposite section having its flange provided with bolt-holes, and connecting-bolts passing through the holes in the respective flanges above the short walls and projecting laterally therefrom, so as to enter a groove in the spoke-seats, substantially as specified.

5. In a hub, the inner section having the angular nut-seats in the outer side of its flange, the alternating long and short walls on its inner side and each wall having a notch in its inner edge at a corresponding point, and the flanges also having a rib or projection on its inner side between each wall, in combination with an outer section having bolt-holes in its flange and a continuous rib or projection on its inner side to enter the notches of said walls and connecting-bolts arranged over the outer edges of the short walls, and spokes having three side walls grooved to receive the ribs and connecting-bolts, respectively, as set forth.

478,986. STAGE APPLIANCE. FRED C. WHITNEY, Detroit, Mich. Filed Aug. 1, 1891. Serial No. 401,330. (No model.)



Claim.—1. A bridge for stage-scenery independent of the stage and provided with a trap, substantially as and for the purpose specified.

2. A bridge for stage-scenery, provided with a trap, supported in its closed position by attachments on said bridge, substantially as described.

3. A trap for stage use, comprising a falling door 5 and a horizontal shaft 10, having arms 9 for the support of the trap-door, and fastening means, as the lever 11 and pin 12, substantially as described.

4. A bridge for stage-scenery, provided with a trap having a clear unobstructed space beneath said trap, substantially as described.

5. A bridge for stage-scenery, provided with a trap supported by the beams of the bridge, substantially as described.

6. A bridge for stage-scenery, provided with a trap supported and concealed from the audience by means of the bridge, substantially as described.

7. A bridge for stage-scenery, provided with a trap supported by the beams of the bridge, and means for tripping the trap near the end of the bridge, substantially as described.

8. The combination, in a stage appliance, of a bridge, a trap therein, and a tank adapted to contain water to receive the horse as it falls through the trap, substantially as described.

478,987. BOILER-FLUE CLEANER. WILLIAM F. WHITNEY, Waukesha, Wis. Filed Aug. 17, 1891. Serial No. 402,539. (No model.)



Claim.—1. In a boiler-flue cleaner, the combination of the steam-supply pipe provided with a face-plate at or near one end, having a universal-joint connection therewith, whereby said face-plate is adapted to bear against the end of a boiler-flue at whatever angle said steam-supply pipe may be held, substantially as and for the purposes set forth.

2. In a boiler-flue cleaner, the combination of a steam-supply pipe provided at or near its discharge end with a spherical bearing, and a face-plate provided with a socket adapted to said spherical bearing upon which it is mounted, substantially as and for the purposes set forth.

3. In a boiler-flue cleaner, the combination of a steam-supply pipe having a suitable connection for attachment to a boiler or steam-generator and a thin helical partition-plate inserted in said steam-supply pipe and dividing it diametrically into distinct spiral passages some distance from its discharging end, so as to impart within said pipe a positive spiral or twisting movement of the steam with little obstruction thereto, substantially as and for the purposes set forth.

4. In a boiler-flue cleaner, the combination of a steam-supply pipe, a helical partition-plate screw-threaded in said pipe and dividing the same diametrically into distinct spiral passages for a distance from its discharging end and provided adjacent to the discharge-aperture of said steam-supply pipe with a spreader, by which said aperture is closed, more or less, as desired, substantially as and for the purposes set forth.

5. In a boiler-flue cleaner, the combination of a steam supply-pipe, a helical partition-plate screw-threaded in said pipe and provided at its exposed end with a spreader and means for turning the same, whereby said partition-plate and spreader are screwed in or out to diminish or increase the size of the discharge-aperture, said partition-plate dividing said pipe diametrically into distinct spiral passages some distance from its discharging end, substantially as and for the purposes set forth.

6. In a boiler-flue cleaner, the combination of a steam-supply pipe, a branch steam connection entering the same at an acute angle, a valve controlling the supply of steam to said pipe, and a face-plate having a universal-joint connection with said pipe and adapted to close the end of a flue, against which it is held at whatever angle the supply-pipe may be placed, substantially as and for the purposes set forth.

7. In a boiler-flue cleaner, the combination of a steam-supply pipe serving as a handle for the manipulation of the cleaner, a steam connection joining said pipe at an acute angle, a valve for controlling the supply of steam to the cleaner, a face-plate having a universal-joint connection with said pipe at or near its discharging end, and a helical partition-plate inserted in said pipe and provided adjacent to the discharge-aperture of said pipe with a spreader, said plate and spreader being longitudinally adjustable to vary the size of the aperture through which steam is admitted into the boiler-flue, substantially as and for the purposes set forth.

478,988. KNOB ATTACHMENT. HENRY J. P. WHIPPLE, New Haven, Conn. Filed June 5, 1891. Serial No. 395,199. (Model.)



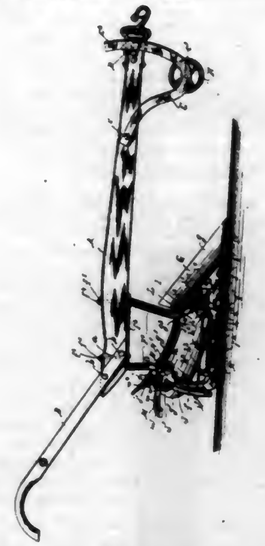
Claim.—1. The combination, with the externally-threaded knob-spindle, of the internally-screw-threaded rose, the externally-screw-threaded collar, the tubular sleeve seated in said collar and provided with locking-recesses, the knob having a hub to engage the spindle and one or more locking-lugs, and means for engaging and holding the screw-threaded collar as against rotation.

2. The combination, with the knob-spindle having a knob attached to one end and screw-threaded as to the other end, of an internally-screw-threaded rose, an externally-screw-threaded collar provided with an abutment-shoulder and adapted to enter said rose, the tubular sleeve seated in the collar and fitting the squared portion of the knob-spindle and provided with locking-recesses in its outer face, the loose knob having a screw-threaded hub and locking-lugs to engage the recesses in the sleeve, and a spring-actuated locking device mounted in the rose and adapted to engage and hold the screw-threaded collar as against rotation, substantially as and for the purpose specified.

3. In a knob attachment, the combination, with the spindle, of a sleeve sliding thereon and provided with locking-recesses, the knob provided with projecting lugs adapted to fit the recesses, and a screw-threaded collar interposed between and engaging the sleeve and rose and adapted to operate the sleeve outward into engagement with the knob, substantially as described.

4. In a knob attachment, the combination, with the knob and its shank, of the internally-screw-threaded knob-rose, the externally-screw-threaded collar 17, seated in and movable relative to said rose and engaging the inner end of the knob-shank, and means carried by the rose and engaging the collar, whereby the latter may be firmly held as against movement when in adjusted position, substantially as set forth.

478,989. PLOW. HARRY WIARD, Syracuse, N. Y. Filed May 1, 1891. Serial No. 391,213. (No model.)



Claim.—1. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, having a substantially horizontal securing-bar f^3 and arranged with one extremity passed through the opposite extremity, and a mold-board supported on the securing-bar of said frame, substantially as and for the purpose set forth.

2. In a plow, the combination, with the beam, of a metallic bar secured to the beam and bent into an open frame with both extremities secured together, a reversible mold-board supported on said bar, and a movable catch secured on said bar and adapted to retain the mold-board in either position, substantially as and for the purpose set forth.

3. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, a projecting arm on one end of said bar extending toward the opposite extremity, a shoulder on the latter extremity for engaging said projecting arm, and a mold-board mounted upon said frame, substantially as and for the purpose specified.

4. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, a projecting arm on one end of said bar extending toward the opposite extremity, a lug on the latter extremity for engaging said projecting arm, a shoe secured to said bar, and a reversible mold-board pivoted to said shoe, substantially as and for the purpose specified.

5. In a plow, the combination, with the beam, of a standard, a mold-board mounted upon said standard, a support adapted to be secured to said standard and formed with projecting arms, a clamp for

drawing said arms together and retaining said support in position, and a catch pivoted to said support and adapted to retain the mold-board in either position, substantially as and for the purpose set forth.

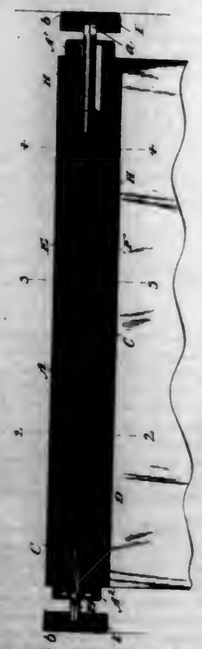
6. In a plow, the combination, with the beam, of a frame, a shoe mounted on the frame, a mold-board having one extremity opposite to the shoe, a projecting arm or bracket secured to the mold-board pivoted to the shoe, a plate secured to the mold-board and formed with the outwardly-bent portion *l*, and a bar secured to said outwardly-bent portion of the plate and to the projecting arm pivoted to the shoe, substantially as and for the purpose specified.

7. In a plow, the combination, with the beam, of a standard, a mold-board mounted upon said bar, a support adapted to be secured to said bar and formed with projecting arms, a clamp for drawing said arms together and retaining said support in position, a catch pivoted to said support and adapted to retain the mold-board in either position, recesses in the outer faces of the arms on said support, and a spring having its extremities mounted in said recesses and its central portion bearing against a shoulder on the catch, substantially as and for the purpose specified.

8. In a plow, the combination, with the beam, the frame, and the mold-board, of a block secured to the under face of the mold-board and formed with substantially right-angular bearing-faces and a recessed upper face, rearwardly-extending shoulders at the rear of said casting, a depressed shoulder at its opposite extremity, bolts engaged with said shoulders for securing the casting in position, and a wearing-plate secured to the bearing-faces of said block, substantially as and for the purpose set forth.

9. In a plow, the combination, with the beam, of a metallic bar bent into an open frame, a shoe secured to said bar and formed on its upper face with a recess adapted to receive a portion of said bar, a clamp for securing the shoe in position, a mold-board, a block composed of the casting i, and the wearing-plate i^5, secured to the mold-board, and a bracket also secured to the mold-board, and trunnions on the shoe adapted to receive recesses in said bracket and block, substantially as and for the purpose set forth.

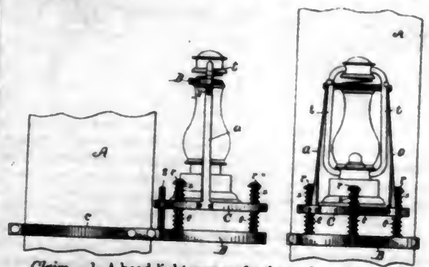
473,990. WINDOW-CURTAIN ROLLER. BENJAMIN F. WILKINSON, Kansas City, Mo. Filed Jan. 23, 1892. Serial No. 419,547. (No model.)



Claim.—1. The combination, with a cylindrical roller, of an inclosed roller with a spring around the same and secured thereto and to an end bearing, a tube secured to the inner roller, and a spring-pressed end spindle endwise movable and rotatable within the said tube, as set forth.

2. The combination, with the cylindrical roller A, having at one end a metal cap, of a cap A^3 at the other end of the roller, a smaller solid roller within the roller A, a shaft B, secured in the outer end of said smaller roller, the spring around the smaller roller, and secured thereto at one end and at the other end secured to the cap A^3, a tube secured to the inner end of the smaller roller, a spring within this tube, with one end bearing against the inner end of the smaller roller, and a spindle loosely held in said tube, with its inner end bearing against said spring and its outer end squared and extended through the cap A', all substantially as shown and described.

473,991. HEAD-LIGHT FOR STEAM-THRASHERS. FRANK H. WILSON, Cooper, Mich. Filed Dec. 10, 1891. Serial No. 414,559. (No model.)



Claim.—1. A head-light support for the engines of steam-thrashers and the like, comprising a bracket and a spring supported and cushioned plate upon said bracket and upon which the light is supported, said plate being provided with upwardly-extending elastic bars for keeping the light in place, substantially as set forth.

2. A head-light for the engines of steam-thrashers and the like, comprising a bracket and a spring supported and cushioned plate upon said bracket upon which the light is supported, said plate being provided with upwardly-projecting elastic bars for keeping the light in place, the upper end of said elastic bars being provided with a series of notches, and a yoke, the ends of the same being adapted to adjustably engage said notches for controlling the clamping-pressure of said elastic bars against the light or lantern, substantially as set forth.

3. A head-light support for the engines of steam-thrashers and the like, consisting of a bracket provided with bars for encircling a smoke-stack in attaching said bracket thereto, posts extending upward from said bracket, a plate loosely mounted upon said posts and adapted for supporting and holding the light or lantern, and cushioning-springs on the posts above and below said plate, substantially as set forth.

4. A head-light support for the engines of steam-thrashers and the like, consisting of a bracket provided with bars for encircling a smoke-stack and for attaching said bracket thereto, posts extending upward from said bracket, a plate loosely mounted upon said posts and adapted for supporting and holding the light or lantern, and cushioning-springs on the posts above and below said plate, and a rear fulcrum-post extending upward from the bracket and loosely passing through the cushioned plate, substantially as set forth.

5. The combination, with the smoke-stack of a traction-engine, of a bracket adapted to be attached to said smoke-stack, posts extending upward from said bracket, a plate loosely mounted upon said posts, cushioning-springs above and below said plate, a lantern supported by said plate, and upwardly-extending elastic bars attached to said plate and adapted to clamp against the frame of the lantern for holding it in place, substantially as set forth.

6. The combination, with the smoke-stack of a traction-engine, of a bracket adapted to be attached to said smoke-stack, posts extending upward from said bracket, a plate loosely mounted upon said posts, cushioning-springs above and below said plate, a lantern supported by said plate, and upwardly-extending elastic bars attached to said plate and adapted to clamp against the frame of the lantern for holding it in place, the upper ends of said elastic bars being provided with a series of notches, and a yoke, the ends of which are adapted to adjustably engage said notches, substantially as set forth.

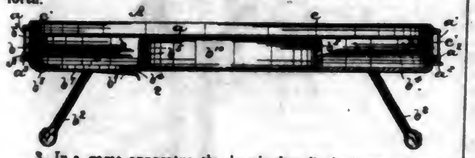
7. A lantern-support for head-light purposes stated, said support comprising a supporting-bracket, posts extending upward from said bracket, a plate having a series of holes corresponding to the number of posts, which holes fit loosely over said posts, the openings of said holes above and below the plate being flared outward, springs on said posts above and below the plate, and elastic bars extending upward from said plate and adapted to clamp against the frame of the lantern, substantially as set forth.

473,992. GAME-BOARD. ARBORE C. G. WILLIAMS-FOOTE, Duluth, Minn. Filed July 31, 1891. Serial No. 401,251. (No model.)

Claim.—1. In a game apparatus, the herein-described playing-pieces, in combination with a game-board consisting of a supporting-frame and a flexible diaphragm thereon, a diagram on said diaphragm

comprising therein the three fields c^3, c^4, and c^5, and counting-spots in said field c^4, substantially as and for the purposes set forth.

2. In a game apparatus, the herein described playing-pieces, in combination with a game-board consisting of a supporting-frame and a flexible diaphragm thereon, a diagram on said diaphragm comprising therein the three fields c^3, c^4, and c^5, counting-spots in said field c^4, and a ring *c* and means connecting said ring with the supporting-frame for stretching the diaphragm, substantially as and for the purposes set forth.



3. In a game apparatus, the herein-described playing-pieces, in combination with a game-board consisting of a supporting-frame and a flexible diaphragm thereon, a diagram on said diaphragm, comprising therein three fields c^3, c^4, and c^5, counting-spots c^3 and c^5, and a black spot c^7 in said field c^4, substantially as and for the purposes set forth.

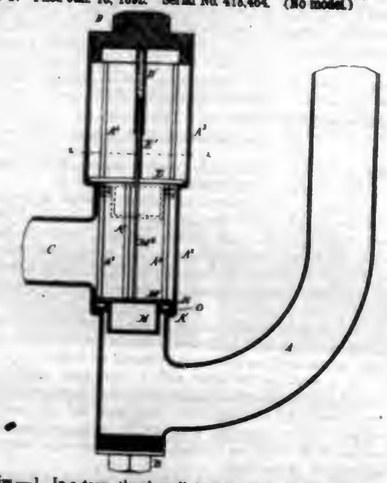
4. In a game apparatus, the herein-described playing-pieces, in combination with a game-board consisting of a supporting-frame and a flexible diaphragm thereon, a diagram on said diaphragm comprising therein three fields c^3, c^4, and c^5, counting-spots c^3 and c^5, and a black spot c^7 in said field c^4, a ring *c*, and means connecting said ring with the supporting-frame for stretching the diaphragm, substantially as and for the purposes set forth.

5. The herein-described game apparatus, consisting of a supporting-frame *b* and a diaphragm *a*, said frame having inwardly-projecting sides b^4 and a central opening for the insertion of the hand, for the purposes set forth.

6. The herein-described game apparatus, consisting of a supporting-frame *b* and a diaphragm *a*, said frame having inwardly-projecting sides b^4 and a central opening for the insertion of the hand, a ring *c*, and means connecting said ring with the supporting-frame for stretching the diaphragm, substantially as and for the purposes set forth.

7. The herein-described game apparatus, consisting of a supporting-frame *b* and a diaphragm *a*, said frame having inwardly-projecting sides b^4 and a central opening for the insertion of the hand, a ring *c*, and an opening b^3 in said sides b^4, provided with a cover, as and for the purposes set forth.

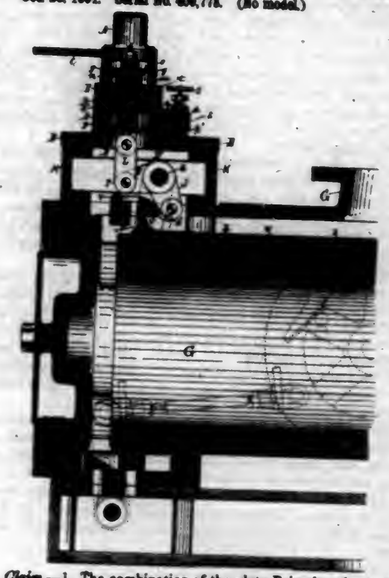
473,993. PLUMBER'S TRAP. BENJAMIN C. ANDERSON, Brooklyn, N. Y. Filed Jan. 18, 1892. Serial No. 418,464. (No model.)



Claim.—1. In a trap, the deep light valve M, with its metal disk M' and stem M^3, in combination with the main pipe A, extended upward past the connected delivery-pipe C and having a valve-seat A', and the bottom plug B and top plug D, removable spider E, and matched tubes D' E', all arranged for joint operation substantially as herein specified.

2. In a trap, the deep light valve M, provided with the elastic washer N and soft washer O, with its metal disk M' notched in its periphery, and stem M^3, in combination with the main pipe A, extended upward past the connected delivery-pipe C and having a valve-seat A' and internal vertical ribs or ridges A^4, and the bottom plug B and top plug D, removable spider E, and matched tubes D' E', all arranged for joint operation substantially as herein specified.

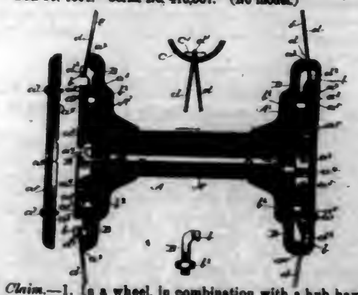
473,994. STEAM DASH-POT. ALBERT J. BATES, Joliet, Ill. Filed Oct. 26, 1891. Serial No. 409,773. (No model.)



Claim.—1. The combination of the plate B, having the ports r r', controlled by a valve and having the open-bottom cylinder F, opening into the steam-chest, the plunger-head D, arranged in said cylinder and having the vertically-extending hollow stem E, the rod E', arranged in said hollow stem and having its upper end screw-threaded therein and having a set-nut e on its upper end, and the link L for connecting said plunger with the valve mechanism, substantially as and for the purpose set forth.

2. The steam dash-pot shown and described, consisting of the combination of plate B, having the cylinder F, and ports r r', leading from the steam-chest to the side of said cylinder near its upper end, valve y λ for controlling said ports, plunger-head D, fitting said cylinder and having the hollow stem E, and the vertically-adjustable rod E', arranged in said hollow stem and adapted to be connected with the engine-valve, substantially as and for the purpose set forth.

473,995. CYCLE-WHEEL. NOBLE E. BENNETT, Bloomington, Ill., assignor to the Bloomington Manufacturing Company, same place. Filed Dec. 30, 1891. Serial No. 416,507. (No model.)



Claim.—1. In a wheel, in combination with a hub having a disk at each end thereof, with an annular flange on each disk, tension bolts adjustably attached to said annular flange, and a wheel-rim, a system of spokes formed of a continuous wire, with a series of bends attached to the wheel-rim and another series of bends attached to said tension-adjusting bolts, whereby in adjusting the tension of any spoke or pair of spokes the tension of adjacent spokes will at the same time be adjusted to establish a proper equilibrium, substantially as described.

2. In a wheel, in combination with a hub having a disk A^2 A^3 on each end thereof, with an annular flange a^2 thereon having slots a^4, tension-bolts B, adjustably mounted in slots, and a wheel-rim, a continuous wire D, bent to form a system of connected spokes d, attached at one end to the wheel-rim and at their other ends to said tension-bolts, substantially as described.

3. In a wheel, in combination with a hub having a disk at each end thereof with an annular flange on each disk, tension-bolts adjustably attached to said annular flanges in radial positions on each disk opposite a median line between said bolts on the other disk, and a wheel-rim, a system of spokes formed of a continuous wire, with a series of bends attached to the wheel-rim and another series of bends attached to said tension-adjusting bolts, whereby in adjusting the tension of any spoke or pair of spokes the tension of the adjacent spokes will at the same time be adjusted to establish a proper equilibrium, substantially as described.

4. In a wheel, in combination with a hub having a disk at each end thereof, with an outer annular flange for aligning the spokes in the same plane at each disk and an inner annular flange, to which tension-bolts are adjustably attached, and a wheel-rim, a system of spokes formed of a continuous wire attached at one end of each spoke to the wheel-rim and at their other ends to said tension-adjusting bolts, substantially as specified.

5. In a wheel, in combination with a hub having a disk at each end thereof, with an outer annular flange for aligning the spokes in the same plane at each disk and an inner annular flange having radial slots, as a^4, in which tension-bolts are adjustably seated, and having an inwardly-projecting flange a^2 to prevent tilting of said bolts, and a wheel-rim, a system of spokes formed of a continuous wire attached at one end of each spoke to the wheel-rim and at their other ends to said tension-adjusting bolts, substantially as specified.

6. In a wheel, in combination with a hub having a disk at each end thereof, with an outer flange a^2 and an inner flange a^3 on each disk, the inner flange of each disk having radial slots a^4 opposite a median line between the similar slots of the other disk, tension-bolts B, adjustably seated in said slots, and a wheel-rim, a continuous-wire system of spokes d, attached at one end of each spoke to the wheel rim and at their other ends to said tension-bolts, substantially as described.

478,996. LEADING-IN DEVICE FOR OVEREDGE SEWING-MACHINES. WILLIAM R. BOULTER, Washington, D. C., administrator of Ernst R. Rudolph, deceased. Filed Nov. 2, 1889. Serial No. 329,081. (Model.) Patented in Germany Mar. 20, 1884, No. 30,463, and in England Mar. 22, 1884, No. 5,330.



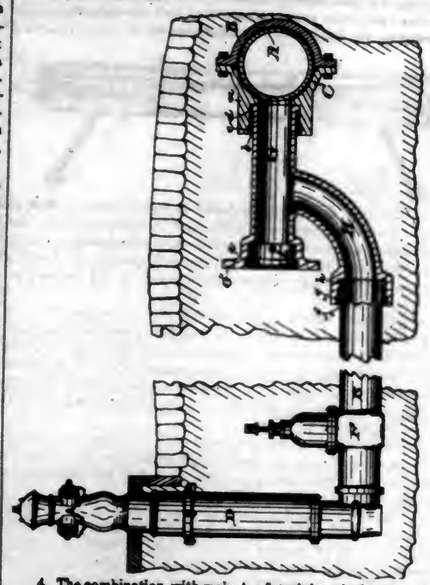
Claim.—In a device of the character described, the combination, with the plate a^3, having the projection b^3 and a slot c^3, of the plates c^3, secured to plate a^3 on either side thereof and provided with projections d^3 r^4, the latter fitting within the slot c^3, the plate f^4, secured to the plate a^3 and provided with a fork at its lower end, a tongue dividing the space of said fork and forming slots g^3, lying in the same vertical planes with the slots formed between the projections d^3 and b^3, and means whereby the plate a^3 may be secured to a machine, all arranged and adapted for co-operation, substantially as and for the purpose specified.

473,997. METHOD OF AND APPARATUS FOR TAPPING WATER-MAINS. HARVEY H. BURRITT, Belleville, N. J. Filed Sept. 19, 1890. Serial No. 365,486. (No model.)

Claim.—1. The improvement in the art of tapping a main under pressure, which consists in connecting to the main a pipe having a branch forming a connection with other pipes and attaching a gate-valve to said pipe, tapping the main through said gate-valve and pipe, closing the pipe between the gate-valve and main by a plug making a tight joint against the main-pressure when forced into the pipe, and constructed to be packed within the pipe, removing the gate-valve, and packing the plug within the pipe, substantially as described.

2. The improvement in the art of tapping a main under pressure, which consists in connecting to the main a pipe having a branch forming a connection with other pipes and attaching a gate-valve to said pipe, tapping the main through said gate-valve and pipe, closing the pipe between the gate-valve and main by forcing in a plug having a head of wood or similar elastic material, fitting the pipe closely to form a tight joint and hold the plug against the main-pressure when the gate-valve is removed, removing the gate-valve, and packing the plug, substantially as described.

3. The combination, with main A, of straight valveless pipe G, connected therewith and permanently closed at its outer end by a plug constructed to form a tight joint and be held within the pipe against the main-pressure by its own construction and packed within the pipe, and a branch H on said pipe, forming a connection with other pipes, substantially as described.



4. The combination, with main A, of straight valveless pipe G, connected therewith and permanently closed at its outer end by a plug having a head P, of wood or similar elastic material, fitting the pipe closely, and a metallic portion P', packed within the pipe, and a branch H on said pipe, forming a connection with other pipes, substantially as described.

5. The combination, with main A, of sectional sleeves B C, one of which is provided with a hub, straight valveless pipe G, packed within said hub and permanently closed at its outer end by a plug having a head P, of wood or similar elastic material, fitting the pipe closely, and a metallic portion P', packed within the pipe, and a branch H on said pipe, forming a connection with other pipes, substantially as described.

6. A plug consisting of a head P, of wood or similar elastic material, constructed to fit closely the pipe to be plugged, and a reduced metallic portion P', having the stem s for attachment to a forcing-tool, substantially as described.

473,998. STOCK-CAR. JOHN M. BURTON, Wichita, Kans. Filed Feb. 18, 1891. Serial No. 381,789. (No model.)

Claim.—1. The combination, with a stock-car, of the manure-receptacles consisting of a frame-work curved on its side or sides to extend sidewise at its upper portion, sheathing secured to said frame-work, an inclined floor supported by said frame a distance from the car-floor, a metallic lining within the receptacle, and a screened urine-exit pipe leading from the receptacle, substantially as and for the purpose set forth.

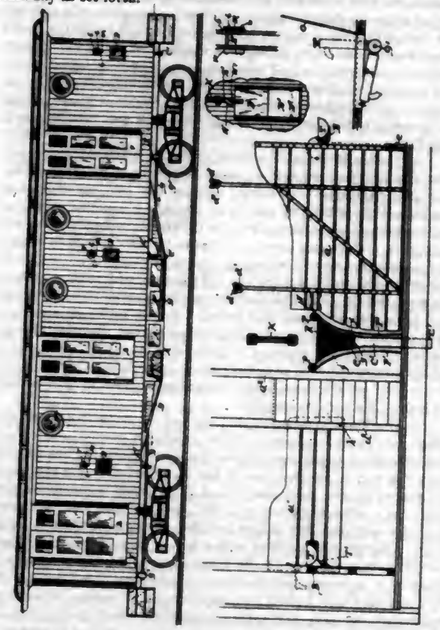
2. The herein-described manure-receptacle, consisting of the curved side walls and the double inclined floor supported by said side walls, substantially as and for the purpose set forth.

3. A stock-car provided with a water-tank beneath the floor thereof, pipes leading from said tank to other portions of the car-bottom, doors in the car-floor above said tank and pipe-terminals, and pumps pivotally connected with said pipes beneath said doors and adapted to be turned up through the said doors into position for use, substantially as set forth.

4. A stock-car provided with series of stalls across within the main car-body, with a cross-aisle within the car at the head of each series of stalls, and with a manure-receptacle across within the car at the foot of each series of stalls, and with doors in the side walls of the car at the ends of the manure-receptacles for providing an exit for manure accumulated in the receptacles, substantially as set forth.

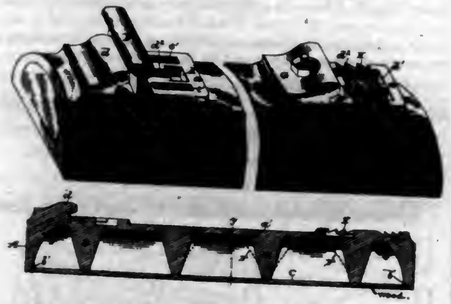
5. A stock-car provided within its main body with stalls for the accommodation of stock during transportation and with a manure-receptacle arranged transversely at the foot of said stalls, said receptacle being provided with a door or doors leading therefrom to without the car for providing an exit or exits for accumulated manure, substantially as described.

6. A stock-car provided with a manure receptacle or receptacles arranged within the main body of the car for catching and holding deposits of manure and urine from stock during transportation, said receptacle or receptacles being provided with a screened urine exit or exits and with an exit door or doors for the removal of manure, substantially as set forth.



7. A stock-car provided with a manure-receptacle arranged within the main body of the car for catching and holding deposits of manure from stock during transportation, said receptacle being provided with an inclined floor arranged above the floor of the car, and with curved side walls overreaching toward the stock in transit, and with a bar fixed along the upper terminal of said receptacle-walls, adapted to be engaged by the rear body portion of the stock, substantially as and for the purpose set forth.

473,999. RAILROAD-TIE. HIRAM DAILY, Lancaster, Pa., assignor of one-half to David F. Kline, same place. Filed Apr. 28, 1891. Serial No. 390,796. (No model.)



Claim.—1. A hollow tie having metallic sides, top, and ends, in combination with a plate of wood or other similar material secured in the opening in the bottom of said metallic portion, substantially as and for the purpose specified.

2. A hollow tie having metallic sides, top, and ends, in combination with a removable bottom plate formed of wood or other similar material adapted to be fitted in the opening in the bottom of said metallic portion, substantially as and for the purpose specified.

3. A hollow tie having an open bottom, in combination with a removable plate adapted to close the bottom and partitions located in the tie and extending downward from the top thereof to said plate, substantially as and for the purpose specified.

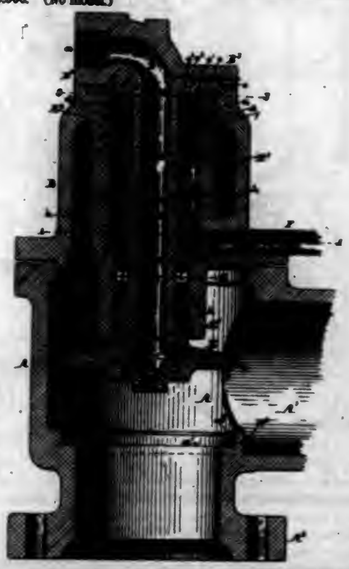
4. A hollow tie having metallic sides, ends, and top, in combination with a plate of wood or other similar material secured in the bottom of said metallic portion and partitions located in the tie and extending from the top thereof to the bottom plate, substantially as and for the purpose specified.

5. A hollow tie having metallic sides, ends, and top and having a recess formed around the inside of the edges of its walls, in combination with partitions B, extending downward from the top of the tie to the recess, and a plate of wood or other similar material adapted to fit in said recess, substantially as and for the purpose specified.

6. A semi-cylindrical hollow tie having metallic sides, ends, and top and having a recess formed around the inside of the edges of its walls, in combination with transverse partitions B and end braces b, extending downward from the top of the tie to the recess, and a plate of wood or other similar material adapted to fit in said recess, substantially as and for the purpose specified.

7. A semi-cylindrical hollow tie having metallic sides, ends, and top and having a recess formed around the inside of the edges of its walls, in combination with partitions B, extending downward from the top of the tie to the recess, a plate of wood or other similar material adapted to fit in said recess, rail-bearings formed on the tie, a fixed clamp located on one side of one of the rail-bearings, depressions formed on the other side of said bearing and on both sides of the bearing on the opposite side of the tie, removable clamps having projections on the bottom adapted to engage said depressions, and means for securing the removable clamps to the tie, substantially as and for the purpose specified.

474,000. INTERCEPTING-VALVE FOR COMPOUND ENGINES. PEARCE W. DEAN, Cambridge, Mass. Filed Dec. 17, 1891. Serial No. 415,360. (No model.)



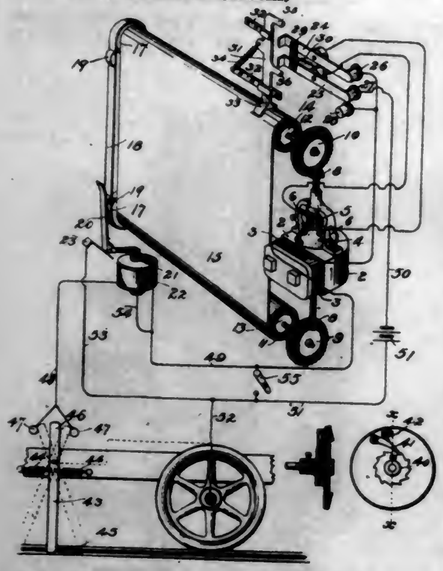
Claim.—1. In an intercepting-valve for compound engines, the combination of the casing A, provided with the valve-seat a', the casing B, provided with the pendent cylinder B', having two different interior diameters, the valve E, provided with the tubular stem E', fitted to the smaller diameter of said cylinder, the piston E^2, secured to the upper end of said stem and fitted to the larger diameter of said cylinder, the cap B^2 for closing the upper end of said cylinder, and the tube D, connected to and pendent from said cap and extending downward to or below the lower end of the cylinder B' and fitted steam-tight to the interior of the valve-stem E', an orifice leading from the interior of said tube to a chamber above the valve-stem and piston, and a plurality of radial openings through the valve-stem at such a distance above the valve as to be covered by the pendent tube D until the valve has descended nearly to its seat, substantially as described.

2. The combination of the casing A, provided with the seat a' and the annular rib a^3, the casing B, provided with the cylinder B', having two different interior diameters, the valve E, provided with the seating-face b and having an outside diameter corresponding substantially to

the inner diameter of the rib a^3, the tubular valve-stem E', provided with the orifices *i i*, made rectangular or having flat bottoms, and also with the packing-rings *g*, and the packing-grooves *h* in its periphery, the piston E^2, secured to the upper end of said valve-stem and provided with two pairs of packing-rings *d d* and the packing-grooves *f* in its periphery, the cap B^3, provided with the pipe connection *a*, the pendent tube D, connected to said cap and extending downward within the valve-stem to a point below the lower end of the cylinder B' and provided in its exterior with two pairs of packing rings *k* and a series of packing-grooves *j* and at its upper end with the orifice *m*, leading from the interior of the tube D to the chamber above the valve-stem and piston, the pipe F for supplying live steam from the boiler to the chamber B^2, and the bushing G, provided with the contracted orifice *l*, all constructed, arranged, and operating substantially as described.

3. The combination of the casing A, provided with the seat *a*, the casing B, provided with cylinder B', having two different interior diameters, the cap B^3, provided with tube D, opening through said cap at *a*, and with the escape-orifice *o*, the valve E, provided with the tube-like stem E', the piston E^2, secured to the upper end of said stem and provided with the packing-rings *d d* and grooves *f f*, a pipe or passage for admitting steam from the boiler to the annular chamber below said piston, and the discharge-orifice *n*, communicating at one end with the orifice *o* and at its other end with the interior of the cylinder B' at a point coinciding with one of the grooves *f* in the piston when said piston is in its highest position.

474,001. STATION-INDICATOR. JAMES H. DEAN, Minneapolis, Minn., assignor of one-half to Bernard Goutier, same place. Filed Dec. 21, 1891. Serial No. 415,704. (No model.)



Claim.—1. The combination, with a car, of parallel rolls arranged thereon, a strip of paper wound upon said rolls, an electric motor geared between said rolls, an electro-magnetic circuit-closer, the armature thereof, means provided in connection with said rolls for disengaging said armature, a circuit extending through the same and through the windings of said electric motor, a battery included in said circuit, and a branch circuit and secondary circuit-closer adapted to be operated to close the circuit of said battery and temporarily energize the magnet of said electro-magnetic circuit-closer to operate the same, substantially as described.

2. The combination, with the rolls and the sign-strip arranged thereon, of an electric motor arranged between the said rolls and connected therewith to drive the same, an electro-magnet, an armature therefor, contacts upon each, means provided in connection with said rolls for disengaging said armature from said magnet to separate the contacts, an arm pivoted upon the frame of the car, raised blocks and depressions in the car-track, said arm adapted to engage said blocks, a battery arranged on said car, a circuit extending through the same and through said electric motor, the ends of said circuit terminating in said contacts, a leg or branch extending from the one side of the circuit and including the windings of the electro-magnet, and a break in said branch adapted to be closed by the operation of said depending arm, substantially as described.

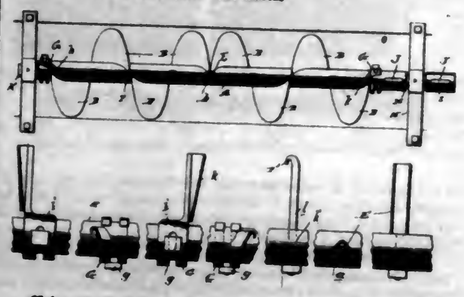
3. The combination, with the rolls and the sign-strip arranged thereon, of miter-gears provided in connection with said rolls, an electric motor arranged transversely between the same and having a shaft provided with pinions to engage said gears, the car whereon said parts are arranged, an arm depending therefrom, the track, blocks arranged therein and with which said arm is adapted to engage, an electro-magnet, an armature therefor, means provided in connection with said rolls for disengaging the armature from the core of said magnet, a circuit extending from said core through the windings of said motor, through battery, and thence to said armature, a connection or leg to ground and a second connection or leg including the windings of said electro-magnet, and a contact or contacts connected therewith and adapted to be closed by the movement of said depending arm, substantially as described.

4. The combination, in a street or station indicator, of the parallel rolls and the sign-strip arranged to be wound thereon, an electric motor arranged transversely between said rolls, miter-gears arranged on the roll-shafts and fixed thereto by oppositely-arranged ratchet devices, miter-pinions fixed on the armature-shaft to mesh with said gears, a three-pole switch, a slidable bar having legs to engage the same and a foot 33 to engage one of the rolls of the sign-strip, means for continually holding the same against said rolls, an electro-magnetic switch, a circuit extending from the contacts thereof through said motor and said three-pole switch, a battery included in said circuit, one side of said circuit being grounded and the other side extended through the windings of the electro-magnetic switch, and a switch arranged in said extended branch and means for operating the same at the street intersections to ground said branch, all substantially as and for the purpose specified.

5. The combination, with the car and the track thereof, of the track provided with raised blocks 45, an arm 43, pivoted on said truck and adapted to engage said blocks, springs for normally holding said arm in a vertical position, rolls 13 and 14, arranged on said car, a strip 15, wound thereon, miter-gears 9 and 10, arranged in connection with said rolls, a motor, the armature-shaft 7, provided with pinions 8, meshing with said gears, the pulleys provided on said rolls, the belt 18, arranged thereon and provided with a dog or dogs 19, an electro-magnet 22, having the core 21, the bell-crank armature 20 therefor and adapted to be disengaged therefrom by said dogs 19, a battery, a circuit including said battery and said motor and having its terminals connected with said core and said armature, respectively, a circuit-changing switch arranged in said circuit for reversing the motor, a branch 52, extending to a ground connection, and a branch extending from the other side of the circuit through the windings of the electro-magnet 22, said arm 43 adapted to operate to close the circuit through said branch, substantially as described.

6. The combination, with the car, of the track provided with blocks 45, an arm 43, pivoted on said car to engage the same, rolls 13 and 14, shafts therefor, a motor arranged between the same and connected therewith by ratchet devices, an electro-magnetic circuit-closer, a circuit including a battery, the motor, and said electro-magnetic circuit-closer, an electric connection therefrom connected with said arm 43, a branch from the other side of the circuit extending to the ground, means provided on said rolls for opening said electro-magnetic circuit-closer, the contact-levers 24 and 25, the strap 29, connecting the same, three contact-posts 26, 27, and 28 therefor, said parts included in said circuit, and the bar 31, having the foot 33 and the lugs 35 to engage said levers, all substantially as and for the purpose specified.

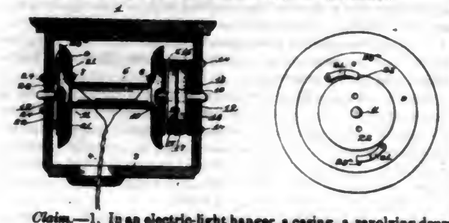
474,002. CONVEYER. JOSEPH H. DIX, Stockton, Cal. Filed Sept. 2, 1891. Serial No. 404,566. (No model.)



Claim.—1. In a spiral conveyer, the combination, with a shaft having transverse holes, of a spiral blade having each wing provided at opposite edges with hooks to engage each other and a hooked bolt embracing said engaging edges and secured at its opposite end to the shaft, substantially as specified.

2. The combination, with a shaft, of a reversed spiral conveyer secured thereto and having the adjacent inner ends of the reversed spirals provided with hooks and the keys E for securing said meeting ends or edges, substantially as specified.

474,003. ELECTRIC-LAMP HANGER. ELBERT DILLS, Sprague, Wash. Filed Sept. 8, 1891. Serial No. 405,074. (No model.)

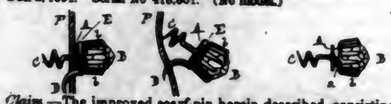


Claim.—1. In an electric-light hanger, a casing, a revolving drum provided with opposite end plates having projecting spindles forming the journals of said drum, double reversely-wound spiral springs connected rigidly at their centers with one end of said spool and the casing, respectively, and their outer free ends to each other, a pawl-and-ratchet device located at the opposite end of the spool, and means for establishing an electric circuit through the cord wound on said drum and the opposite journal ends thereof, substantially as set forth.

2. In an electric-light hanger, a casing, a revolving drum provided with opposite end plates having projecting spindles forming the journals of said drum, conducting screws or pins projecting entirely through the ends of the spool and connected with opposite ends of the suspending-cord and having their outer ends in contact with the inner faces of said end plates, separated and reversely-wound actuating-springs located at one end of said spool and connected directly with each other, a pawl-and-ratchet device located at the opposite end of the spool, and means for connecting or placing the journal ends of the spool in electric circuit, substantially as set forth.

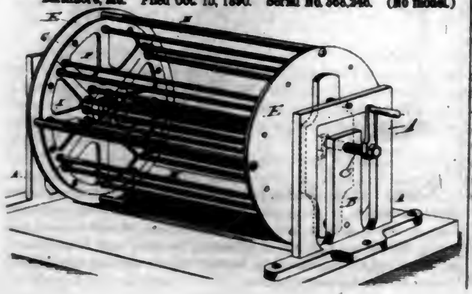
3. In an electric-light hanger, a casing, a revolving drum provided with spindles journaled in the opposite sides of said casing, a conducting-plate secured to the inner side of said casing adjacent to one end of the spool and provided with a sleeve or collar, a coiled spring secured to said sleeve, a parallel twin spring secured to the journal of the spool, a division-plate interposed between said spring and provided with a slot or opening, a plate or bar connecting the free ends of said spring, and a pawl-and-ratchet device located at the opposite end of said spool, substantially as set forth.

474,004. SCARF-PIN. ALBERT EPPLE, Providence, R. I. Filed Dec. 2, 1891. Serial No. 413,801. (No model.)



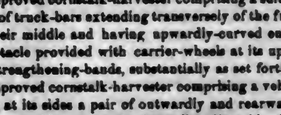
Claim.—The improved scarf-pin herein described, consisting of a circular base-plate A, having an ornamental front and a circumferential groove *a*, a spirally-bent pin C, extending from the rear of said plate, and a rotatable pin consisting of a curved spur or point D and a ring E, integral therewith, which is loosely mounted on said plate A in the groove *a* thereof, substantially as specified.

474,005. ROTARY DRYING-MACHINE. RICHARD E. FISCHER, Baltimore, Md. Filed Oct. 15, 1890. Serial No. 368,246. (No model.)



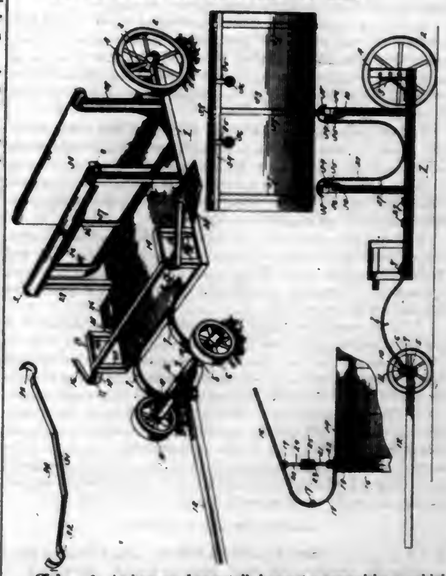
Claim.—The combination, in rotary machines for setting and oxidizing fast-black dye on cotton or cotton-mixed yarns, of a rotary shaft carrying fixed rectangular blocks, a reel mounted thereon and having slotted heads or disks fitting and moving on said blocks, projections on the outer face of said disks, the knocking-arms having projections thereon which on revolution of said reel come in contact with the projection on said disks, whereby diametrical vibrating motion is caused in said reel, substantially as described.

474,006. CLAY PIPE. WILLIAM J. PETER, New York, N. Y. Filed Nov. 3, 1891. Serial No. 410,764. (No model.)



Claim.—The pipe described, composed of the porous terra-cotta body A, the lining of denser clay B, thoroughly incorporated as a unit therewith, and the glazing C, surfacing the interior of the latter, combined and adapted to serve as herein specified.

474,007. CORN-HARVESTER. MERRIT C. GAYER, Denison, Kans. Filed May 28, 1891. Serial No. 394,338. (No model.)



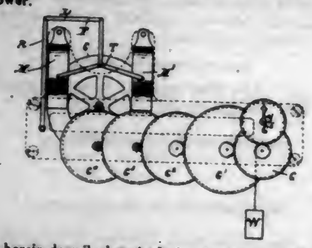
Claim.—1. An improved cornstalk-harvester comprising a vehicle body or frame having at its sides a pair of outwardly and rearwardly extending cutters located at the front part of the machine, and a pair of horizontally-adjustable deflectors secured upon the front of the machine in advance of the cutters and extending outwardly and rearwardly from the machine, substantially as set forth.

2. An improved cornstalk-harvester comprising a suitable vehicle-frame, a pair of truck-bars extending transversely of the frame and depressed at their middle and having upwardly-curved ends, and a U-shaped receptacle provided with carrier-wheels at its upper portions and having strengthening-bands, substantially as set forth.

3. An improved cornstalk-harvester comprising a vehicle body or frame having at its sides a pair of outwardly and rearwardly extending vertically-movable cutters, horizontally-adjustable deflectors secured upon the front part of the machine in advance of the cutters and extending outwardly and rearwardly from the machine, screw-threaded arms arranged in pairs and secured to the outer parts of the machine and to the inner parts of the deflectors, and turn-buckles connecting each of the adjacent ends of each pair of said arms, substantially as set forth.

474,008. APPARATUS FOR MAINTAINING CONSTANT SPEED IN MOTOR MECHANISMS. JOHN W. GIBBONEY, Lynn, Mass. Filed Sept. 26, 1890. Serial No. 366,057. (No model.)

Claim.—1. The method of maintaining a constant speed in a motor mechanism, consisting in loading it with an electric generator and changing the relative position of the field-magnet and the moving conductor of said electric generator, whereby the counter-torque or breaking effect produced is suitably proportioned to changes in the driving-power.



2. The herein-described method of maintaining a uniform speed in a mechanical movement, consisting in loading the same with an electric generator and displacing the field-magnet and armature portions of said generator relatively to each other, whereby any increase in the driving-power will be proportionately compensated for by an increased absorption of energy in the electric generator and any decrease in the driving-power will be proportionately compensated for by a decreased consumption of energy in the electric generator.

3. The combination, with a motor mechanism which it is desired to operate at a uniform rate of speed, of an electric generator driven thereby, and means for displacing the field-magnet and armature of said generator relatively to each other, whereby the counter-torque or breaking effect produced maintains a practically constant speed in said mechanism.

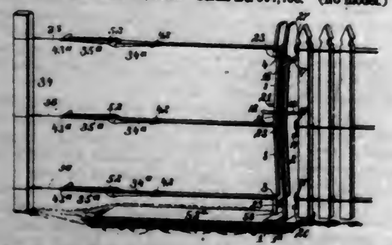
4. The combination, with a motor mechanism, of a source of variable power, an electric generator driven thereby, an auxiliary device also driven thereby, and means for automatically adjusting the position of the field-magnet and armature of said generator with respect to each other, whereby the breaking effect produced maintains a practically constant speed in said mechanism.

5. The combination, with a motor mechanism, of an electro-magnetic generator for retarding and regulating its rate of movement, and a thermo-responsive device for increasing or decreasing the amount of retardation effected by said electric generator in correspondence with changes of temperature.

6. In an electric regulator, the combination of an armature, a permanent field-magnet, a coil for magnetizing said magnet, a source of electric current, and an automatic circuit-closing device whereby current from said electric-current source is periodically passed through said coil to preserve constant the strength of the permanent magnet.

7. The combination, in a retarding or governing device consisting of a closed-circuit electric conductor, a permanent magnet, and mechanism for moving them relatively to each other, so as to generate electric currents in the closed conductor, of means for automatically establishing a flow of current through a coil wound upon said magnet, whereby constancy of its magnetic strength is maintained.

474,009. FENCE-BUILDING MACHINE. JOHN M. GRAHAM, Johnstown, Mo. Filed June 27, 1891. Serial No. 397,733. (No model.)



Claim.—1. An improved fence-building machine comprising a suitable frame-work having externally-projecting upper and lower shoulders at one side, a number of revoluble twisting-hubs, each of hollow tubular form, having a single thin internal transverse spreader-bar located adjacent to that side of the machine which stands next to the picket being secured between the fence-wires, having, also, each a transverse radial slot formed at its opposite end, provided, also, with external sprocket-teeth and with a removable and adjustable stop-plate located in said slot, a pair of bearing-plates for each hub, secured in opposite sides of the supporting-frame of the machine and having each a circular boss provided with an opening at one side and with divergent flanges adjacent to the opening, and a sprocket-chain extending over the twisting-hubs and having a transverse handle-bar working between the upper and lower shoulders of the frame, substantially as set forth.

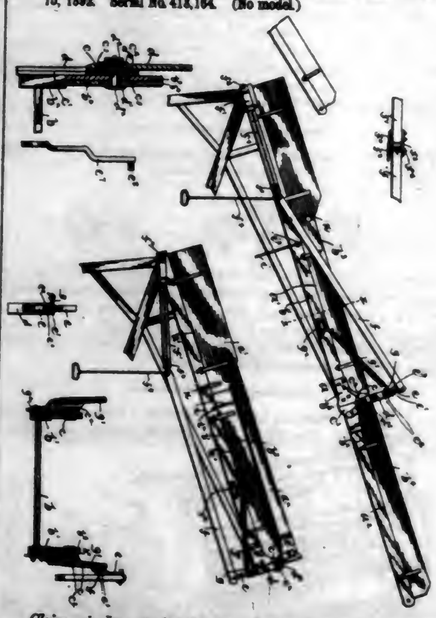
2. An improved fence-building machine comprising a suitable frame-work having externally-projecting upper and lower shoulders at one side, a number of revoluble twisting-hubs, each of hollow tubular form and having each external sprocket-teeth, a pair of bearing-plates for each hub, secured in opposite sides of the supporting-frame and having each a circular boss provided with an opening at one side and with divergent flanges adjacent to said opening, and a sprocket-chain extending over the twisting-hubs and having a transverse handle-bar working between the upper and lower shoulders of the frame-work, substantially as set forth.

3. In a fence-building machine, a tension-bar having a number of studs or knobs at one of its sides and designed to receive the fence-wires, a hook projecting laterally from one end of said bar and designed to receive one of the fence-wires, and a revoluble drum provided with a crank-handle and located at the opposite end of the bar from that occupied by the hook, said drum being designed to receive a straining-wire, substantially as set forth.

4. In a fence-building machine, the tension-bar having a number of studs or knobs formed at one side of the bar and designed to receive the fence-wires, a hook extending laterally from one end of the bar and designed to receive one of the fence-wires, a pair of ears located at the opposite end of the bar from that occupied by the hook, a connecting-bar for said ears, and a revoluble drum working in said ears and provided at one end with a crank-handle, substantially as set forth.

5. An improved fence-building machine comprising a pair of supporting-standards for the operative parts of the machine, a number of twisting-hubs mounted in said standards and having each a series of external sprocket-teeth, a sprocket-chain running over said hubs, a cross handle-bar for connecting the ends of the sprocket-chain, a hooked bolt extending vertically through the bar and connected to one end of the chain, a pair of hooked bolts extending horizontally through said handle-bar and connected to the opposite end of the sprocket-chain, and a tension-nut screwed upon the upper end of the vertical bolt, substantially as set forth.

474,010. STRAW-STACKER. JEFFERSON GRUBB, Auburn, Ind., assignor to the Howark Machine Company, Columbus, Ohio. Filed Jan. 18, 1892. Serial No. 418,164. (No model.)



Claim.—1. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed stacker-sections a' a^3 and standard bars or levers d, fulcrumed at the hinge-point of said sections and rising therefrom, of springs g', affixed to the outer ends of said standard-bars and to the sides of the forward stacker-section, substantially as and for the purpose specified.

2. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed sections a' a^3 and standard bars or levers d, connecting with the rear section and rising from the hinge-point of said sections, of the jointed locking and operating bar sections f f', the latter being fulcrumed to the front section and the former to one of the standard-bars, substantially as and for the purpose specified.

3. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed sections a' a^3 and standard-bar d, connecting with the rear section and rising from the hinge-point of said section, of the locking and operating bar sections f f', the latter fulcrumed to the front stacker-section and the former to one of the bars d, and a handle-rod f^4, one end of which jointedly connects said operating-bar sections, substantially as and for the purpose specified.

4. In a stacker for clover-hulling or thrashing machines, the combination, with the jointed sections a' a^3 and standard-bars d, connected with the rear section and rising from the hinge-point of said sections, of springs g', affixed to the outer end portions of said standard-bars and to the sides of the front stacker-section, and jointed locking and operating bar sections f f', one of said operating-bar sections being fulcrumed to one of the standard bars d and the remaining section thereof fulcrumed to the front stacker-section, substantially as and for the purpose specified.

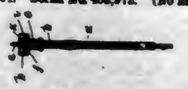
5. In a stacker for clover-hulling and thrashing machines, the combination of the jointed sections a' a^3, and standard bars or levers d, connected with the rear section and rising from the hinge-point of said sections, springs g', connecting the outer ends of said standard bars or levers and the sides of the front stacker-section, locking and operating bar sections f f', the former fulcrumed to one of the bars d or an extension thereof and the latter fulcrumed to the front stacker-section, a handle-rod f^4, one end of which jointedly connects said operating-bar sections, and a hook-shaped lever k, projecting from the side of the front stacker-section and adapted to form a locking-rest, as described, for the operating-bar, substantially as and for the purpose specified.

6. In a stacker for clover-hulling or thrashing machines, the combination of the sections a' a^3, hinge-plates b^3 c' on said sections, said plates b^3 c' jointedly connected at points above the side frame-pieces of said sections, and side boards b^3 b^4, attached to each of said stacker-sections, said side boards having overlapping ends, substantially as and for the purpose specified.

7. In a stacker for clover-hulling or thrashing machines, the combination, with the stacker-sections a' a^3, hinge-plates b^3 c', affixed thereto, standards or levers d, rising from said hinge-plate c', springs g', connecting the outer end portions of said standards and the side of the front stacker-section, overlapping ears c c^3, formed with said hinge-plates, hubs c^3, projecting from said ears c^3, upon which said standard bars or levers and ears c are fulcrumed, and the hinge-bolts d^3, passing through said hubs, and nuts on the outer ends thereof adapted to be clamped against the standards d or a washer d^3, substantially as and for the purpose specified.

8. In a stacker for clover-hulling or thrashing machines, the combination, with the stacker-sections a' a^3, hinge-plates b^3 c', secured thereto, ears c c^3, formed with said hinge-plates, standards d, rising from said hinge-plates c', side boards b^3 b^4, supported, as described, on said stacker-sections and having overlapping ends, hubs c^3 on said ears c^3, hollow pins d', having enlarged heads, the stem ends of said pins forming inward continuations of the inner hub c^3, the standards or levers d and ears c, fulcrumed on said hub-pins, bolts d^3, passing through said hollow pins and nuts, and nuts on the outer ends of said bolts adapted to be turned against the outer sides of the standards d or intervening washer d^3, substantially as and for the purpose specified.

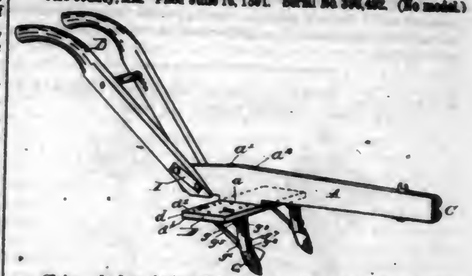
474,011. DENTAL TOOL. ALMER M. HARRISON, Columbus, Ohio. Filed Aug. 28, 1891. Serial No. 403,972. (No model.)



Claim.—1. In a dental tool, the combination of the shank a, the mortise d, and screw-threaded extension b, connected therewith, with a cutting-blade i, inserted within said mortise, and a thumb-nut c on its screw-threaded extension, said thumb-nut adapted to clamp said cutting-blade in the outer end of the mortise, substantially as and for the purpose specified.

2. In a dental tool, the combination, with the shank a, screw-threaded extension b, central mortise d in the latter, and bearing extension e, formed with said screw-threaded extension, of a cutting-blade i, inserted, as described, within said mortise, a washer f, a blade-bearing groove g in said washer, adapted to receive the base edge of the blade, as described, and a thumb-nut c on said screw-threaded extension and adapted to bear against said washer, substantially as and for the purpose specified.

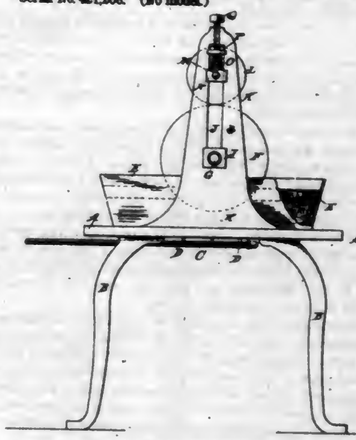
474,012. COMBINATION IMPLEMENT. MORRIS HERRING, Chambers County, Ala. Filed June 16, 1891. Serial No. 396,492. (No model.)



Claim.—1. In a device of the class specified, the beam of a plow, a supplementary beam pivoted thereto, having several series of holes therein, each series arranged in a semicircle around a center hole near the edge of same and a series of holes in line with said center hole, forming in connection with said center holes a series the center holes of which are half the distance apart as the holes of the circular series are from their center holes, and a standard having a case thereon provided with two holes adapted to register with any two alternating holes of the straight series or with a center hole and one of the corresponding semicircular series, all combined, arranged, and operating substantially as and for the purpose specified.

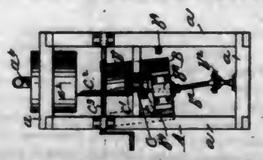
2. In a device of the class specified, the beam A of a plow and the supplementary beam pivoted thereto, a brace pivoted to the supplemental beam between its end and pivotal point, said brace extending forwardly and passing under the beam and being perforated, and a bracket adapted to be bolted to the beam, and a lug carried on said bracket and adapted to enter a perforation in said brace, substantially as and for the purpose specified.

474,013. METHOD OF WAXING OR WATERPROOFING SHOE-COUNTERS. GEORGE W. HILL, Brooklyn, N. Y. Filed Feb. 11, 1892. Serial No. 421,208. (No model.)



Claim.—The method herein described of waxing or waterproofing shoe-counters, consisting in melting the wax upon the top of water, revolving a roller in the wax and the water, and passing the counter in contact with said roller, substantially as set forth.

474,014. GOLD-CONCENTRATOR. WILLIAM H. HILL, Atlanta, Ga. Filed Nov. 17, 1891. Serial No. 412,235. (No model.)

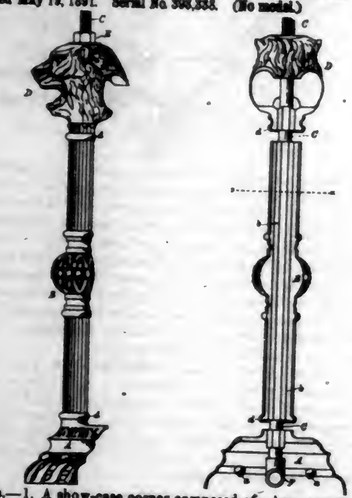


Claim.—In a device of the class specified, a frame and a cradle suspended therein carrying a spherical bearing-box on its end, a crank

and shaft revolubly mounted in said frame, and a perforated ball having end-play upon the wrist-pin of the said crank and seated and freely rotatable within the said spherical bearing-box for the purpose of imparting to the said cradle the requisite compound motion, for the purpose specified.

474,015. SHOW-CASE CORNER. JOHN HOFMAN, Rochester, N. Y.

Filed May 19, 1891. Serial No. 393,333. (No model.)



Claim.—1. A show-case corner composed of a base corner-piece suitable to clamp and hold the corners of the base-moldings of the case, a cap suitable to fit upon and clamp the upper edge moldings thereof, a standard fixed between said cap and said base-piece, and means for clamping said parts together.

2. A show-case corner consisting of a base-piece adapted to fit upon and clamp the base-moldings of the case, a cap adapted to fit upon and clamp the upper edge moldings thereof, a standard adjusted between said cap and said base-piece and provided with grooves suitable to fit upon the edges of the sides of the show-case, and means for clamping said parts together.

3. A show-case corner consisting of a base-piece adapted to fit upon and clamp the base-moldings of the case, a cap adapted to fit upon and clamp the upper edge moldings thereof, a hollow standard adjusted between said cap and said base-piece, and a pipe extending through the said base-piece, standard, and cap suitable to conduct inflammable liquid or gas to a burner attached above said cap.

4. A show-case corner consisting of a base-piece adapted to fit upon and clamp the base-moldings of the case, a cap adapted to fit upon and clamp the upper edge moldings thereof, a hollow standard adjustable to said base-piece and said cap, and a bolt extending through said base-piece, standard, and cap.

5. A show-case corner consisting of a base-piece adapted to fit upon and clamp the base-moldings of the case, a cap adapted to fit upon and clamp the upper edge moldings thereof, a standard adjusted between said cap and said base-piece and provided with grooves suitable to fit upon the edges of the sides of the show-case, a strip adapted to clamp the edges of the sides of the show-case to said standard, and means for clamping said base-piece, standard, and cap together.

474,016. KEYBOARD FOR MUSICAL INSTRUMENTS. PAUL V. JANKÓ, Buda-Pesth, Austria-Hungary. Filed May 18, 1891. Serial No. 393,066. (No model.)

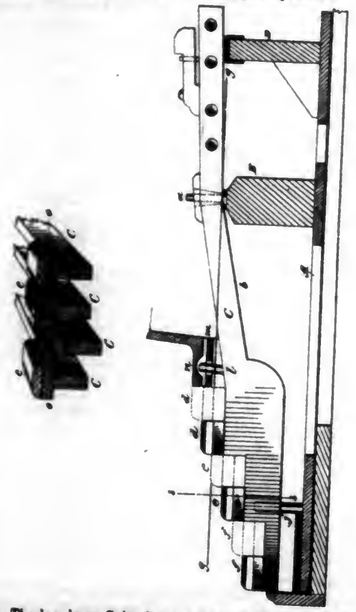
Claim.—1. The key-lever C, having series of touch-plates *d e f* at different heights, combined with a pivotal support B, all arranged so that the pivotal support of the key-lever shall be lower than the plane of the upper touch-plate of said key-lever, substantially as herein shown and described.

2. The frame or drawer A, having the bridge B, combined with key-levers C C, said key-levers having touch-plates *d e f* at different elevations, the top of the bridge B being higher than the plane of the lower touch-plate *f* and lower than the plane of the upper touch-plate *d*, substantially as and for the purpose herein shown and described.

3. The key-lever C, having step-shaped front or outer portion and series of touch-plates *d e f* at varying elevations, and provided with the rearwardly and upwardly inclining shank *b*, so arranged that the pivot of said key-lever may be higher than the plane of the lower touch-plate *f*, substantially as and for the purpose specified.

4. The key-lever C, having series of touch-plates *d e f* at varying elevations and pivoted to a fixed support, all arranged so that each touch-plate will have its front portion above the plane of the pivotal support, substantially as herein shown and described.

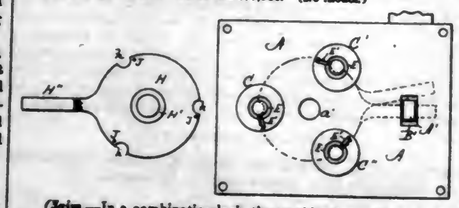
5. The key-lever C, having series of touch-plates *d e f* at varying elevations, each touch-plate having a downwardly-extending apron or shield *o*, substantially as and for the purpose specified.



6. The key-lever C, having touch-plates *d e f* at varying degrees of elevation, and combined with the fixed guide-pin *j*, and with the movable guide-pin *l* and guide-board *m*, substantially as and for the purpose specified.

7. In a keyboard having series of key-levers C and step-shaped touch-plates *d e f*, arranged substantially as described, the combination of said key-levers with the rear rail *n*, whose upper surface is substantially on a level with the uppermost row of touch-plates *d*, substantially as and for the purpose herein shown and described.

474,017. COMBINATION-LOCK. JUSTUS E. KNOWLES, Lynn, Mass. Filed July 22, 1891. Serial No. 400,316. (No model.)

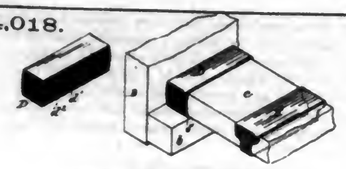


Claim.—In a combination-lock, the combination, with the bolt H, provided with the pins J and the numbered disks D D' D'', of the rear disks C C' C'', secured to said numbered disks, respectively, and provided with the central recesses E, formed into annular grooves by the insertion centrally therein of the heads of the screws *c*, which secure the numbered disks and rear disks together, and said rear disks being further provided with the radial grooves or slots E', extending from and connecting with said recesses E, substantially as set forth.

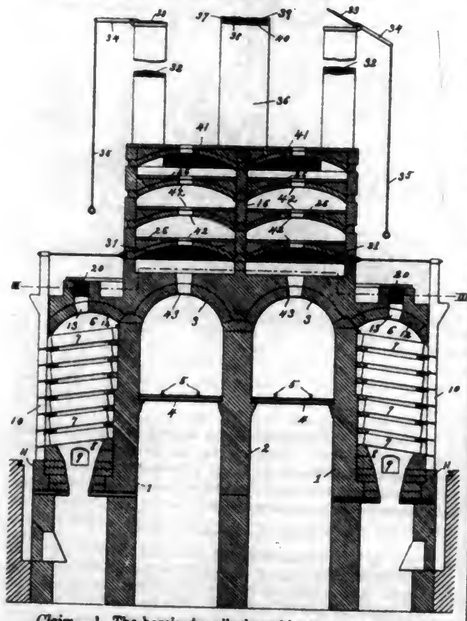
474,018. CUSHION FOR BED-SLATS. ALSINA LALIBERTE, Albany, N. Y. Filed Nov. 15, 1890. Serial No. 371,574. (No model.)

Claim.—The combination, with the supporting-bar *b* and side rail B of a bedstead and the slat *c*, of the cushioning device D, made of soft or flexible material and with angular portions *d' d''*, integral with each other, and provided with means for holding said cushioning device in place between said slat and the said parts of the bedstead, substantially as and for the purposes set forth.

474,018.



474,019. APPARATUS FOR ROASTING AND SMELTING. ROBERT H. LAMYON, Nevada, Mo., and WILLIAM LAMYON, Pittsburg, Kans. Filed Oct. 28, 1891. Serial No. 410,128. (No model.)



Claim.—1. The herein-described combined roasting and smelting furnace, having upright piers or walls 1 and 2, located apart from each other, arches 3, provided with holes 43, surmounting and connecting said piers, smelting-chambers 6, located on the outside of piers or walls 1, in which a suitable number of retorts may be placed, arches 12, provided with heat-exit openings overlying said smelting-chambers, a roasting-furnace composed of a series of roasting-ovens located above said smelting-chambers and supported on the said pillars 1 and 2 and arches 3, flues communicating with said roasting-ovens and the heat-exit openings, and heating-furnaces located under the smelting-chambers, substantially as set forth.

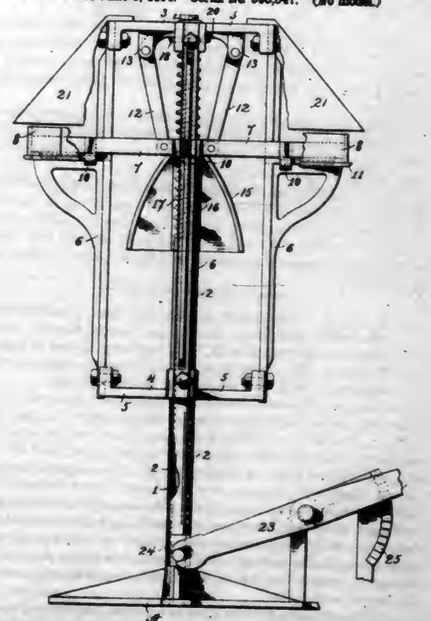
2. A combined roasting and smelting furnace having upright piers or walls 1 and 2, smelting-chambers located outside of said piers or walls 1, arches 12, provided with exit-openings overlying said smelting-chambers, a roasting-furnace or series of roasting-ovens located above said smelting-chambers and communicating with the exit-openings thereof, intermediate chambers 17, located within said roasting-furnace and in communication with said series of roasting-ovens, relief-flues 32, communicating directly with said chambers 17 and provided with valves, means for controlling said valves, and heating-furnaces located under the smelting-chambers, substantially as set forth.

3. A combined roasting and smelting furnace having upright piers or walls 1 and 2, located apart from each other, car-tracks 5, located between and supported on cross-pieces 4, secured to said upright walls, arches 3, provided with holes 43, surmounting and connecting said piers or walls, smelting-chambers 6, located on the outside of piers or walls 1, in which a suitable number of retorts may be placed, arches 12, provided with three heat-exit openings overlying said smelting-chambers, a roasting-furnace or series of roasting-ovens located above said smelting-chambers and supported on the said pillars or walls 1 and 2 and arches 3, intermediate chambers 17, located within said roasting-furnace and in communication with said series of roasting-ovens, three converging hot-air flues or passages leading from the said heat-exit openings and smelting-chambers to and in communication with said chambers 17, rods 35 for operating said valves, a central flue 36, having openings or flues 37, 38, 39, and 40, said flues being in communication with the series of roasting-ovens, through which the heat passes out after passing around and throughout said series of roasting-ovens, and heating-furnaces located below the smelting-chambers, substantially as set forth.

5. In a combined roasting and smelting furnace, a series of roasting ovens or chambers, two vertical transverse chambers located in the central portion thereof and in communication therewith, relief-flues in communication with said transverse chambers, valves secured to said relief-flues and means for operating the same, a central draft-flue having four flues or passages formed therein, the same being in communication with the series of roasting-ovens, and means for heating the latter, substantially as set forth.

6. In a combined roasting and smelting furnace, a series of roasting ovens or chambers arranged above the smelting-chambers, vertical transverse chambers located in and in communication with said series of roasting-ovens, the floors of alternate roasting-ovens being secured to and projecting from the walls of said transverse chamber and the end walls of the roasting furnace or ovens, respectively, but leaving passages at the free ends thereof for the passage of heat, relief-flues in communication with said transverse chambers and means for regulating the passage of heat therethrough, a central draft-flue provided with four passages, the same being in communication with the series of roasting ovens or furnaces, and means for heating the latter, substantially as set forth.

474,020. BARREL-EXPANDER. PERCY LITTLE, Mount Vernon, N. Y. Filed June 8, 1891. Serial No. 395,547. (No model.)



Claim.—1. The combination, with the expanders and levers pivotally connected to the expanders, of a cam for forcing the ends of

these levers connected with the expanders outward and means for forcing the levers normally inward, substantially as set forth.

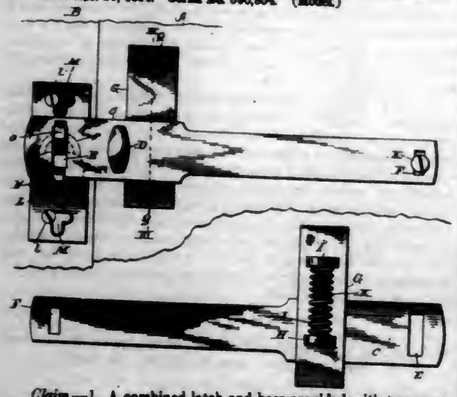
2. The combination, with a stationary rod and frame loosely mounted thereon, of expanders arranged to slide outwardly on the frame and a loosely-mounted sleeve having cams thereon adapted to operate in connection with the expanders for forcing them outward, substantially as set forth.

3. The combination, with a stationary rod and a frame connected therewith, of expanders, levers connected with the latter, cams for operating to force the expanders outward, and a spring for returning them to their normal position, substantially as set forth.

4. The combination, with a suitable frame and expanders, of a cone-shaped hood located over the expanders in position to guide the article being operated upon over the expanders, substantially as set forth.

5. The combination, with a stationary rod, a frame loosely mounted thereon, a sleeve loosely mounted on the rod, and means for sliding said sleeve, of a set of expanders, levers connected with the expanders, a spring interposed between one arm of each lever and the sleeve, and a cam for operating against the levers, whereby the expanders are forced outward, substantially as set forth.

474,021. HASP-LOCK. CHARLES C. LINENDOLL, Fort Edward, N. Y. Filed Apr. 23, 1891. Serial No. 390,854. (Model.)



Claim.—1. A combined latch and hasp provided with transverse slots at each end, a bolt passing through the inner one of said slots for permitting lateral play of the latch, the other slot being adapted to receive a catch, and a spring for pressing on the latch, substantially as set forth.

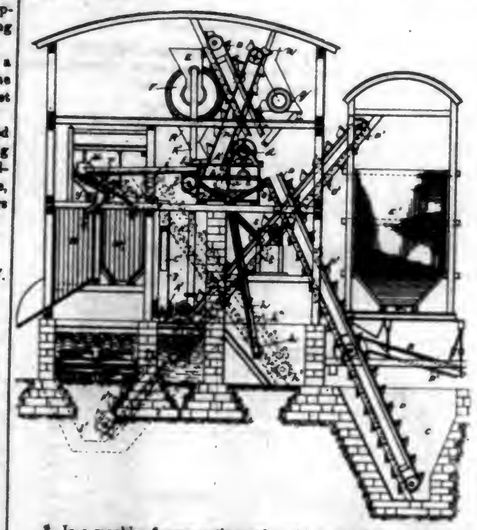
2. The herein-described keeper-plate for latches, provided with T-shaped openings, and screws passing through the latter and taking into the jamb for affording longitudinal and lateral adjustment of the plate, substantially as set forth.

3. The combination of a hasp and slotted keeper, a lateral lug on the hasp and extending through the keeper, a lateral lug on the inside of the keeper, said lugs being located one above the other and provided with recesses, and a coil-spring having its opposite ends loosely seated in said recesses, in the manner and for the purpose substantially as described.

474,022. PROCESS OF SEPARATING AND CLEANING COAL AND OTHER MINERALS. CARL LÖSCHE, Dresden, Germany, assignor to the Löhrig Coal and Ore Dressing Appliances, Limited, of England. Filed Dec. 2, 1891. Serial No. 413,763. (No model.) Patented in England June 18, 1886, No. 7,900, and Apr. 23, 1888, No. 6,341.

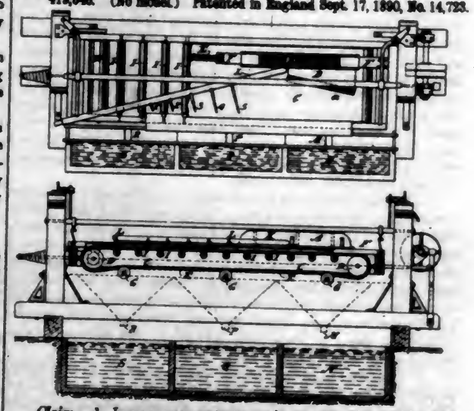
Claim.—1. The hereinbefore-described process of treating mixed or broken coal containing more or less foreign matter in mechanical mixture, consisting in subjecting the mass of such material to a rotary screening action, and thus centrifugally separating the mass into particles of different sizes and discharging them into separate compartments, where the particles are washed and further separated, the lighter from the heavier, then crushing the larger of these heavier particles and separating therefrom any remaining lighter material that may have remained intergrown or in natural combination therewith by washing the crushed mass and recovering said lighter material from the water used, as fine coal or sludge-matter, substantially as and for the purposes set forth.

2. In a machine for separating and washing broken coal, the combination of the following-named instrumentalities, all operating and coacting substantially as described, namely: a centrifugal or rotary screen, as F, jiggers or washer-compartments for receiving the coal screened through said screen, a conveyer or elevator for removing the heavier material from the jiggers, a crusher for crushing said heavier material, and a jigger or washer-compartment for washing the crushed material, whereby different sizes of coal are sorted from the mass, separately washed and recovered, and smaller coal separated by crushing from said heavier material, washed, and recovered, leaving as a residuum sludge or sedimentary material, substantially as and for the purposes set forth.



3. In a machine for separating and washing coal, the combination of a sediment-collector, a water-clarifier, and a screen-drum of finely-graduated meshes, whereby the sludge or residuary sedimentary material is recovered and sorted into different-sized particles, substantially as and for the purposes set forth.

474,023. APPARATUS FOR WASHING, SEPARATING, AND CONCENTRATING ORES OF DIFFERENT SPECIFIC GRAVITY. CARL LÖSCHE, Dresden, Germany, assignor to the Löhrig Coal and Ore Dressing Appliances, Limited, of England. Filed Jan. 20, 1892. Serial No. 418,646. (No model.) Patented in England Sept. 17, 1890, No. 14,723.



Claim.—1. In an ore concentrator and separator, the combination, with a percussion-frame and endless apron or belt revolving thereon, of a sectional ridge, substantially as described, on the outer surface of the belt and a guide composed of an inverted-U-shaped channel bar or groove embracing both sides of said ridge, for the purpose set forth.

2. In combination with a percussion-frame and endless apron or belt revolving thereon, a pulp-feeder composed of an inclined plane above the belt, communicating with the surface of the same through the medium of an absorbent fabric resting on the belt, substantially as described.

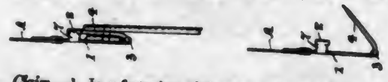
3. In an apparatus for washing, separating, and dividing ore concentrates into classes having different specific gravities, a plurality of laterally-inclined revolving belts, each delivering plural classes of concentrates and intermediate to the discharges of one belt and the feed of another or others, a divided receptacle for the said different classes, each division thereof, except that for the tailings, communicating to the feeder of a successive belt, whereby a subdivision of the divided concentrates from the preceding belt is automatically effected simultaneously, as described.

474,024. SPECTACLE-LENS. GEORGE W. MEIER and JOHN W. MEIER, Reading, Pa. Filed Oct. 20, 1891. Serial No. 409,246. (No model.)



Claim.—As a new article of manufacture, a spectacle-lens having its edges beveled in opposite directions with an angularity increasing from the minor axis to a maximum at the major axis, substantially as set forth.

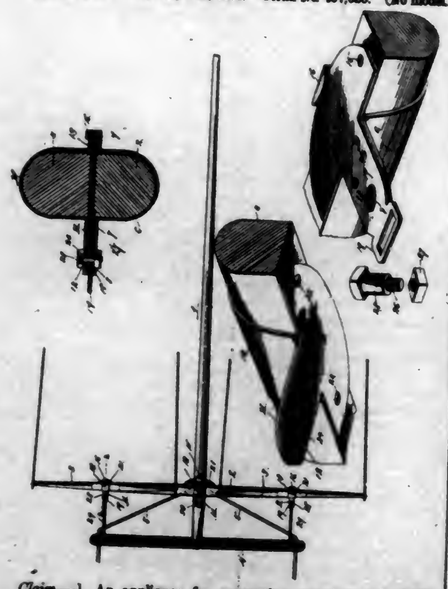
474,025. BUTTON AND PIN CLASP. GEORGE H. MERRILL, Naugatuck, Conn. Filed Nov. 27, 1891. Serial No. 413,234. (No model.)



Claim.—1. In a fastening of the character described, the combination, with the base-plate having a loop at its upper end for the attachment of a suspending-strap, of a pair of sockets projecting from the opposite upper corners of the plate and supported at a sufficient distance from its face to permit the entrance of a button between them and said plate and with an opening between said sockets, and the U-shaped pin hinged to the end of the plate and adapted to be held by engagement with the sockets, the whole arranged to operate in connection with a button or as a pin-fastening, substantially as and for the purpose set forth.

2. The blank consisting of a base-plate for a combined pin and button fastening, the same consisting of the central portion 1, forming the base-plate, the projecting ears *a*, adapted to form the sockets 2, and the wings 6, the whole constructed and adapted to operate as described.

474,026. WHIFFLETREE ATTACHMENT. JOHN A. MILLIAN, Dexter, Kans. Filed Sept. 28, 1891. Serial No. 407,025. (No model.)

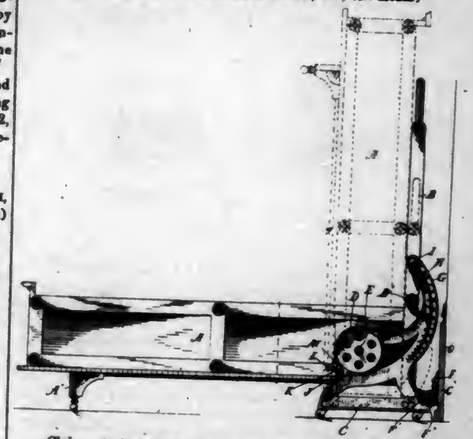


Claim.—1. An appliance for connecting superimposed whiffletrees, &c., comprising an upper bearing-plate arranged to extend across the under side of the upper whiffletrees, a lower bearing-plate arranged to extend across the upper side of the lower whiffletree and in contact at its upper side with the under side of the upper bearing-plate, a rearward extension of the upper bearing, a similar rearward extension of the lower bearing-plate, a pivot connecting-bolt passing through said extensions back of the single and double trees, and an angular extension of the front of one bearing-plate embracing the front marginal portion of the companion bearing-plate, substantially as set forth.

2. An appliance for superimposed whiffletrees, &c., comprising a U-shaped clip for embracing the upper side of a singletree and provided with a rearward extension of its lower margin, a second U-shaped clip to embrace the under side of the doubletree and having a similar rearward extension of its upper margin, a bearing-plate to extend across the under side of the singletree and provided with a rearward extension, a second bearing-plate to extend across the upper side of the doubletree and having its upper surface in contact with the lower surface of the upper bearing-plate and also provided with a similar rearward extension, a connecting pivot-bolt extending through the extensions of the clips and bearing-plates and located back of the single and double trees, and an angular extension of the front margin of one bearing-plate embracing the corresponding front margin of the companion bearing-plate, substantially as set forth.

3. An improved appliance for connecting superimposed whiffletrees, &c., comprising a pair of U-shaped clips for embracing the whiffletrees, each having a rearward extension, a pair of bearing-plates, each arranged to extend across the adjacent sides of the whiffletrees and having also a rearward extension interposed between the extensions of the clips and having, furthermore, forwardly-extending curved front margins, an upward angular extension of one of said margins overlying the corresponding margin of the companion bearing-plate, and a pivot-bolt passing through the said rear extensions, substantially as set forth.

474,027. FOLDING BED. LUTHER V. MOULTON, Grand Rapids, Mich. Filed Feb. 24, 1891. Serial No. 382,640. (No model.)



Claim.—1. In a folding bed, a case, as A, a head-board hinged to one end and side frames pivoted to the sides of the same, curved slots in said side frames, and studs attached to the head-board and traversing said slots, substantially as described.

2. In a folding bed, a case adapted to contain the bed, a head-board hinged to one end, and side frames pivoted to the sides of said case, said frames having curved slots corresponding to the curve traversed by the hinge of said head-board and above the same at corresponding points cut by parallel radial lines, and studs attached to said head-board traversing said slots and engaging the respective sides of said frames, substantially as described.

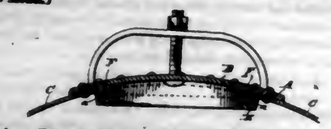
3. In a folding bed, in combination with a case to contain the bed and a head-board hinged thereto, side frames having spring-cases, said cases having rims in contact with the sides of said bed-case, said frames also having upwardly-projecting curved arms having slots curved in arcs corresponding to the arc traversed by the head-board hinges and above the same at all corresponding points cut by parallel radial lines, and studs traversing said slots and engaging the respective sides of said arms and attached to said head-board, substantially as described.

4. In a folding bed, in combination with a case adapted to contain the bed and a head-board hinged thereto, independent side frames pivoted to said case, said frames having spring-cases with rims in con-

tact with the sides of said bed-case, curved slots in said frames, studs attached to the respective edges of the head-board, said studs traversing said slots and engaging the respective sides of said frames, and detachable fastenings connecting said frames to the building, substantially as described.

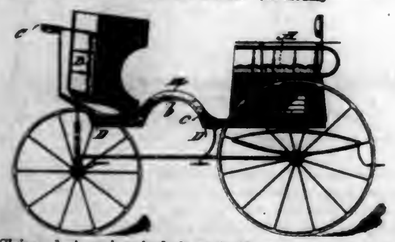
5. In a folding bed having independent detached side frames and a bed-case pivoted thereto, the following means for maintaining said frames in position: annular bearings surrounding said pivots and engaging the sides of the case, curved slots in said frames, and studs attached to said case and traversing said slots, said studs engaging the sides of said frames to maintain the same in parallel vertical planes, and detachable fastenings connecting said frames to the building to prevent said frames from tilting forward, substantially as described.

474,028. MANHOLE-COVER FOR STEAM-BOILERS. NELSON NEWMAN, Springfield, Ill., assignor of two-thirds to Geo. A. Sanders and Samuel J. Willett, same place. Filed June 10, 1891. Serial No. 396,778. (No model.)



Claim.—The combination, with a boiler-shell, of the separate right-angled plate united thereto and having the joint between itself and the shell rendered steam-tight by calking, and the cover fitted within the plate, with the exposed face of the same flush with the plate and having its inner edge doubled or folded upon itself and forming a groove or channel which receives the flange of the plate, the joint between the plate and cover being rendered steam-tight by calking the same and the leakage of steam and packing being obviated by fitting the cover within the plate, as set forth.

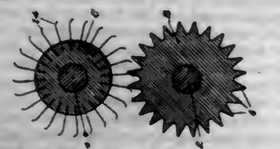
474,029. CARRIAGE. AUGUSTUS H. PARRY, Amesbury, Mass. Filed Nov. 24, 1891. Serial No. 412,962. (No model.)



Claim.—1. A carriage-body formed with an upward curve, termed a "wheel-house," and having the sides thereof set inward from the side sills, so as to be narrower than the full-width body when the doors are opened, but when they are closed constituting a full-width body, substantially as specified.

2. In a carriage-body, the side sills *a* of the wheel-house set inward from the sills D, as shown at *c*, and a projection *e*, formed upon the front seat to open and close the space between the inner face of the door and the end of the wheel-house, substantially as specified.

474,030. DRAWING-ROLLS FOR SPINNING-MACHINES. FRANCIS H. RICHARDS, Hartford, Conn. Filed July 8, 1891. Serial No. 398,761. (No model.)



Claim.—1. A pair of drawing-rolls for fibrous materials, consisting of one ribbed roll and a roll provided with spring-blades coacting with the ribs of the other roll, substantially as described.

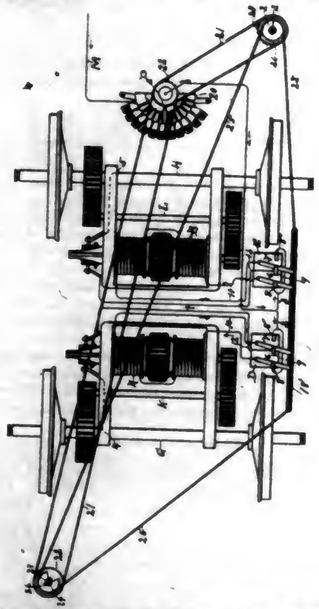
2. A pair of drawing-rolls for fibrous materials, consisting of one V-ribbed roll and a roll provided with spring-blades, coacting with the ribs of the other roll and having the edges of the springs backwardly curved, substantially as described.

3. The combination, with supporting frame-work, of the ribbed roll and the spring-roll revolubly supported in the frame-work, and gears actuating one said roll from the other and set to bring the blades of the spring-roll into working relation with one side of the ribs of the opposite roll, substantially as described.

4. The combination, with supporting frame-work, of the ribbed roll and the spring-roll revolubly supported in the frame-work, and gears actuating one said roll from the other and set to bring the blades of the spring-roll into engagement with one side of the ribs of the opposite roll and having their teeth of a variant number relatively to the ribs of the rolls, whereby the coaction of the ribs and blades may be adjusted, substantially as described.

5. The combination, with the frame-work having the uprights 3 and 5, each having a journal-bearing and a seat for a removable bearing, of the removable bearings set in said uprights, the ribbed roll journaled in said journal-bearings, the spring-roll journaled in said removable bearings, means for removably fixing said removable bearings in place, and means rotating the one roll from the other, substantially as described.

474,031. MODE OF ARRESTING ELECTRIC LOCOMOTIVES. SIDNEY H. SHORT, Cleveland, Ohio. Filed Mar. 10, 1891. Serial No. 384,447. (No model.)



Claim.—1. The method of arresting or checking the movement of electric motor-cars provided with two propelling-motors by breaking the supply-circuit and connecting the motors in a local circuit in such a way that the electro-motive force of each motor, acting as a generator under the rotation imparted thereto by the forward movement of the car, opposes the other and tends to produce a current in the direction to increase the magnetism of its own field and to cut down or reverse the field magnetism of the other motor, substantially as described.

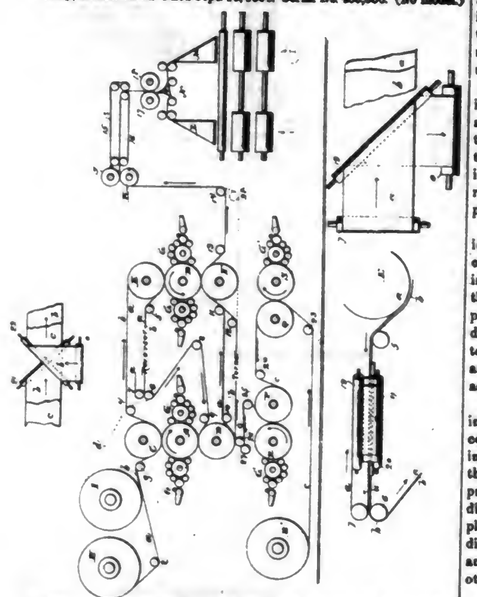
2. In combination with the motors of an electric car arranged in multiple, switching apparatus comprising the reversing-switches, one in each of the motor branches, a circuit-breaker in the supply-circuit, and operating mechanism connecting the said switches and circuit-breaker, substantially as described.

3. In combination with the motors of an electric car arranged in multiple, switching apparatus comprising the reversing-switches one in each motor branch, the circuit-breaker in the supply-circuit, and operating mechanism for said switches and for said circuit-breaker, adapted to be operated by a person, without altering his position, so as to break the supply-circuit and reverse the switches, thereby putting the motors in a local circuit with the supply-circuit open, substantially as described.

4. The method of checking or arresting electric motor-cars propelled by two electric motors, which consists in cutting off the supply-current and operating one of the motors by the momentum of the car to generate current for reversing the other motor, substantially as described.

5. The method of checking or arresting electric motor-cars propelled by two electric motors having different current-generating capacities, consisting in cutting off the supply-current and placing the two motors in a local circuit in series and operating the motor of greater capacity by the momentum of the car to generate current for the reversal of the other motor, substantially as described.

474,032. PRINTING-PRESS. LOUIS W. SOUTHGATE, Worcester, Mass., assignor to the Campbell Printing Press and Manufacturing Company, of New York. Filed Sept. 10, 1891. Serial No. 405,353. (No model.)



Claim.—1. The method of perfecting and associating three webs, which consists in perfecting two webs or a double web, perfecting a supplemental web, bringing the supplemental web against one of the two webs, turning the latter and the supplemental web, and associating all three webs, whereby the supplemental web will lie between the double web, substantially as described.

2. The method of perfecting and associating three webs, which consists in printing on the exterior surfaces of a double web, reversing the webs and printing on the then exterior surfaces of the double web, perfecting a supplemental web, and then associating the three webs, substantially as described.

3. The method of perfecting and associating three webs, which consists in printing on the exterior surfaces of a double web, reversing the webs and printing on the then exterior surfaces of the webs, perfecting a supplemental web, bringing the same in contact with one of the two webs, and turning the latter and the supplemental web, substantially as described.

4. The method of forming six-page papers and similar products, which consists in perfecting two webs, perfecting a third web, slitting the same and then leading the supplemental web in contact with one of said two webs, turning the latter and the supplemental web and associating one web and one part of the supplemental web and the other web and the other part of the supplemental web, and finally severing sheets from each associated web and part web to form the desired product, substantially as described.

5. The combination, with a printing mechanism adapted to perfect a double web and a supplemental printing mechanism adapted to perfect a supplemental web, of means for leading the supplemental web in contact with the double web, and a turner arranged to turn one part of the double web and the supplemental web, whereby the supplemental web will be disposed between the double web, substantially as described.

6. The combination, with a printing mechanism adapted to perfect a double web and a supplemental printing mechanism adapted to perfect a supplemental web, of a slitter for said supplemental web, means for leading the supplemental web against the double web, and a turner arranged to turn one part of the double web and the supplemental web, substantially as described.

7. The combination, with a printing mechanism adapted to perfect a double web and a supplemental printing mechanism adapted to perfect a supplemental web, of a slitter for the supplemental web, means for leading the supplemental web in contact with the double web, and a turner arranged to turn one part of the double web and the supplemental web, and two oppositely-arranged longitudinal folders, and means for leading one web and part of the supplemental web to each folder, substantially as described.

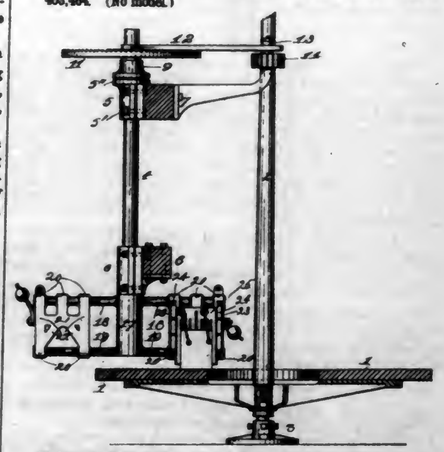
8. The combination of the type-cylinder A, having the coacting impression-cylinders C and D, and the type-cylinder B, having the coacting impression-cylinders E and F, the reverser arranged between impression-cylinders E and D, whereby two webs may be perfected, the turner arranged between cylinders D and F, the supplemental printing mechanism adapted to perfect a supplemental web, and means for directing the same to said turner, substantially as described.

9. The combination of the type-cylinder A, having the coacting impression-cylinders C and D, and the type-cylinder B, having the coacting impression-cylinders E and F, the reverser arranged between the impression-cylinders E and D, whereby two webs may be perfected, the turner arranged between cylinders D and F, the supplemental printing mechanism adapted to perfect a supplemental web, means for directing the same to said turner, and a slitter arranged to slit said supplemental web, substantially as described.

10. The combination of the type-cylinder A, having the coacting impression-cylinders C and D, and the type-cylinders B, having the coacting impression-cylinders E and F, the reverser arranged between impression-cylinders E and D, whereby two webs may be perfected, the turner arranged between cylinders D and F, the supplemental printing mechanism adapted to perfect a supplemental web, means for directing the same to said turner, means for cutting said webs so as to form associated sheets, two oppositely-arranged folders, and a switch arranged to switch said sheets alternately to said folders, substantially as described.

11. The combination of the type-cylinder A, having the coacting impression-cylinders C and D, and the type-cylinders B, having the coacting impression-cylinders E and F, the reverser arranged between impression-cylinders E and D, whereby two webs may be perfected, the turner arranged between cylinders D and F, the supplemental printing mechanism adapted to perfect a supplemental web, means for directing the same to said turner, a slitter arranged to slit said supplemental web, and two oppositely-arranged folders, and means for directing one web and one part of the supplemental web to one folder and the other web and the other part of the supplemental web to the other folder, substantially as described.

474,033. MACHINE FOR EDGING AND SURFACING MARBLE TILES. GEORGE TAYLOR, Atlanta, Ga. Filed Aug. 22, 1891. Serial No. 403,464. (No model.)



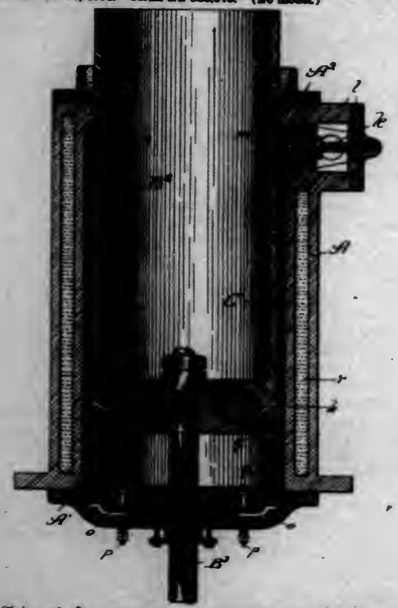
Claim.—1. In a device of the class specified, a rubbing-bed and a carriage suspended thereover comprising the frame having a gear mounted on a shaft therein and means for revolving same, a bed-plate mounted and movable vertically in guides on said frame and carrying on its back a rack engaging said gear, and means for securing a tile to said bed-plate, substantially as and for the purpose specified.

2. In a device of the class specified, a rubbing-bed, a tile-holding head pivoted thereover in such a position as to bring said tile into contact with said rubbing-bed, a ratchet-wheel on the shaft of said head, a gear mounted on the frame of the machine and carrying a wrist-pin, and an oscillating lever pivoted at one end on the said shaft

and at the other engaging said wrist-pin, having intermediately a lip engaging the teeth of said ratchet, substantially as and for the purpose specified.

3. In a device of the class specified, a rubbing-bed and a carriage suspended thereover comprising the frame having a gear mounted on a shaft therein and means for revolving same, a bed-plate mounted and movable vertically in guides on said frame and carrying on its back side a rack meshing with said gear, correlative lugs on said frame and bed-plate, and a screw passing through the lug on the bed-plate, adapted to impinge against said lug on said frame, all combined, arranged, and operating substantially as and for the purpose specified.

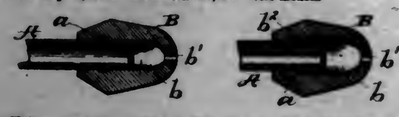
474,084. AIR-COMPRESSOR. BENJAMIN F. TRAIL, Chicago, Ill. Filed Mar. 30, 1891. Serial No. 386,975. (No model.)



Claim.—1. In a compressor for gaseous fluid, the combination of an outer cylinder and a piston therein, the latter comprising a trunk and a head forming, with the cylinder, an initial compression-chamber at the face of the head opposite that carrying the trunk and between the cylinder and trunk, an annular space affording a final compression-chamber, the said piston operating by its successive strokes alternately to introduce the gas at normal pressure into the initial compression-chamber and to compress it thence from one side of the head into the initial compression-chamber at the opposite side of the head, substantially as described.

2. A compressor for gaseous fluid, comprising, in combination, a cylinder A, containing a piston B, formed with a head B' and trunk B^2, an annular chamber C between the piston and cylinder, controlled by a check-valve m between the said chamber and its outlet k and controllably communicating with the inlet end of the cylinder, and inwardly-opening check-valves in the piston-head and adjacent cylinder-head, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

474,085. ATOMIZER. VICTOR G. VAET WOUD, Brooklyn, N. Y. Filed July 18, 1891. Serial No. 399,947. (No model.)



Claim.—As a new article of manufacture, the herein-described nose-piece for atomizers, having a discharge-opening and an opening to engage the discharge-nozzle of an ordinary atomizer, the walls of said nozzle-engaging opening being made of soft rubber, whereby said nose-piece is adapted for use with atomizers having nozzles of different sizes without being fitted thereto, substantially as described.

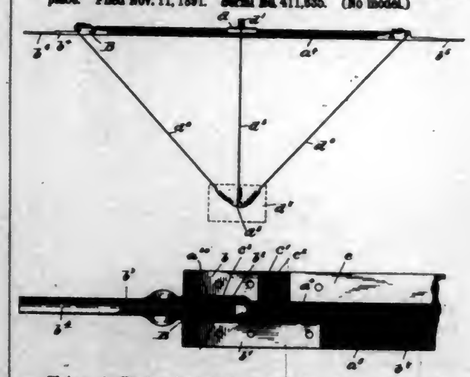
474,086. FUNNEL. ALBAMA P. WOOD, Atlanta, Ga. Filed Aug. 17, 1891. Serial No. 402,919. (No model.)



Claim.—1. In a device of the class specified, a funnel and a split ring secured thereto, surrounding the nozzle thereof by means of one or more wires secured to the said ring and at their other end to the said funnel near its top, substantially as and for the purpose specified.

2. In a device of the class specified, the funnel carrying sockets on its sides, and the ring and wires secured to said ring and introduced and movable within said sockets, substantially as and for the purpose specified.

474,087. TROLLEY-WIRE-CIRCUIT BREAKER. JOHAN M. ANDERSEN, Boston, Mass., assignor of one-half to Albert Anderson, same place. Filed Nov. 11, 1891. Serial No. 411,635. (No model.)



Claim.—1. The herein-described trolley-line breaker, it consisting of a non-conducting body, circuit-terminals attached to the said body near its ends, and an independent conductor c, attached to the non-conducting body and out of contact with the circuit-terminals, substantially as described.

2. The herein described trolley-line breaker, it consisting of a non-conducting body, circuit-terminals attached to the said body near its ends and having extended portions b', and an independent conductor c, separated from the circuit-terminals by the non-conducting body and extending beyond the ends of the circuit-terminal strips to overlap the same, substantially as and for the purpose specified.

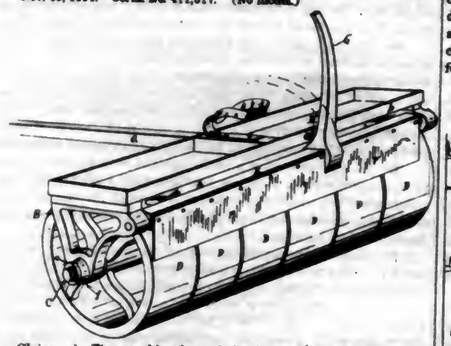
3. The herein-described trolley-line breaker, it consisting of the non-conducting bar a^4, non-conducting base a^3, to which the said bar is attached, circuit-terminals B, attached to the ends of the said bar and base and having the extended portions b', and the independent conductor c, secured to the base a^3 on the opposite side of the bar a^4 and having its ends extended beyond the portions b' of the circuit-terminals, substantially as described.

4. The herein-described trolley-line breaker, it consisting of the non-conducting bar a^4, non-conducting base a^3, provided with the transverse slots b^2 and to which the said bar is attached, circuit-terminals B, attached to the ends of the said bar and base and having the extended portions b', and the independent conductor c, secured to the base a^3 on the opposite side of the bar a^4 and having its ends extended beyond the portions b' of the circuit-terminals, substantially as described.

5. The herein-described trolley-line breaker, it consisting of the non-conducting bar a^4, non-conducting base a^3, circuit-terminals B, provided with the extended portions or strips b' and having the sockets b^2 fitted over the bar a^4, and the independent conductor c, secured to the base a^3 on the side of the bar a^4 opposite to the extended portions b', substantially as described.

6. The combination, with a trolley-line composed of sections, of a trolley-line breaker consisting of a non-conducting bar, circuit-terminals secured to the non-conducting bar at its ends and to which the sections of the trolley-wire are connected, the independent conductor c, separated from the circuit-terminals by the non-conducting bar, but extended to overlap the said terminals, as described, and a fuse electrically connected to the independent conductor, substantially as described.

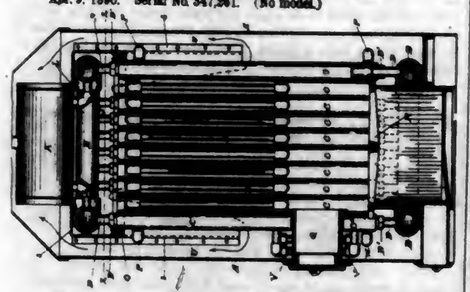
474,088. LAND-ROLLER. FREDERICK RAUSH, Alliance, Ohio. Filed Nov. 13, 1891. Serial No. 411,817. (No model.)



Claim.—1. The combination of the frame A, provided with the arms B, the pivoted scraper-bar E, provided with an operating lever or handle and the scraper F, the brake-blocks b, fixed to the scraper-bar E, and the roller-sections D, mounted on the shaft C, substantially as and for the purpose set forth.

2. The combination of the frame A, provided with the arms B, the shaft C, having mounted thereon the roller-sections D, the scraper-bar E, provided with the scraper F, and the brake-blocks b, the lever or handle G, and the spring H, substantially as and for the purpose set forth.

474,089. STEAM-BOILER. EDWIN P. CLAPP, Rush, N. Y. Filed Apr. 9, 1890. Serial No. 347,261. (No model.)



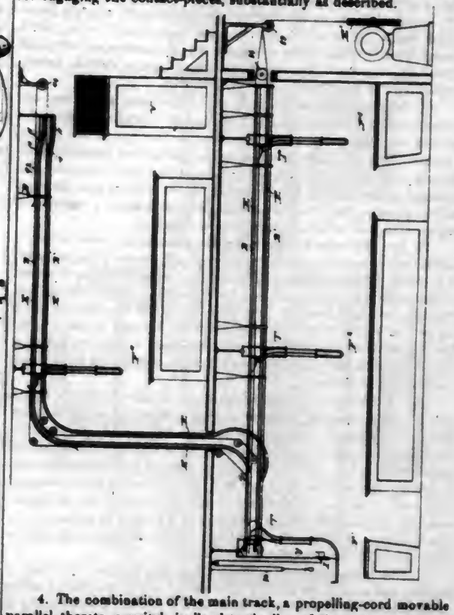
Claim.—In a vertical steam-boiler, the combination of a continuous tubular water-drum and a continuous tubular steam-drum with a series of contiguous independently-removable vertical water-tubes connected to the water-drum and to the steam-drum by adjustable coupling-pipes smaller than said tubes, a grate set at the level of the lower ends of said tubes, the vertical tubes surrounding the grate and adapted with it to form the water-pot, together with a series of double-bent pipes connected at each end with one of the vertical tubes and extending inward over the central grate, and a diaphragm extending over the steam-drum and downward on two sides of the vertical tubes, and a steam-dome placed above the diaphragm and connected with the steam-drum, all arranged and operating as set forth.

474,040. STORE-SERVICE APPARATUS. JAMES T. COWLEY, Lowell, Mass., assignor, by mesne assignments, to the Lamson Consolidated Store Service Company, of New Jersey. Filed Apr. 18, 1888. Serial No. 271,015. (No model.)

Claim.—1. In a store-service apparatus, the combination, with a way, a traveling cable, a contact-piece 18, and a switch 12, of a carrier provided with a movable finger adapted to engage with the switch and with a catch for the cable, and a finger adapted to make contact with the contact-piece to disconnect the catch from the cable adjacent to the point where the carrier is to leave the way and also connected to move the switch-engaging finger, substantially as described.

2. The combination of a way, cable, switches in the form of rails adjacent to the way in position to deflect carriers therefrom and to support the same after they are deflected, contacting pieces adjacent to the switch-rails, and carriers each provided with a cable-catch, with a contacting finger to strike the contacting piece to disconnect the catch from the cable, and with a finger for engaging the switch-rail, substantially as described.

3. The combination, with the tracks, contact-pieces, cable, and carriers, of switch-rails arranged adjacent to the way in position to deflect the carriers and to support the same after they leave the way and out of the line of the way, each carrier provided with means for clutching the cable, a finger for engaging the switches, and a finger for engaging the contact-pieces, substantially as described.



4. The combination of the main track, a propelling-cord movable parallel thereto, a switch inclined to the line of the main track and constructed to support the carrier in position adjacent to the main track, a carrier supported and guided on the main track and provided with an engaging-finger distinct from the portions of the carrier that engage the main track for engaging the switch, a cable-engaging catch attached to the carrier, and a contact piece to release the catch from the cable adjacent to the junction, substantially as described.

5. In a store-service apparatus, the combination of the main track, propelling-cable, switch-rails inclined to the line of the main track, carriers supported and guided on the main track and each provided with an engaging-finger distinct and separate from those parts of the carrier that support it on the main track, said engaging-finger adapted to engage the switches and to support the carriers thereon, a cable-engaging catch attached to each carrier, and contacting pieces arranged and operating to release the catches of the several carriers from the cable when the carriers are to be disconnected therefrom, substantially as set forth.

6. In a store-service apparatus, the combination, with a way and a carrier adapted to travel thereon, of a fixed switch located adjacent to and independent of the way, a movable engaging-finger carried by and held normally out of the path of said switch, and a contact-piece for moving said finger into engagement with said switch, substantially as described.

7. In a store-service apparatus, the combination, with a way and a carrier adapted to travel thereon, of a fixed switch located adjacent to the way, a movable shaft mounted on the carrier and having an engaging finger held normally out of the path of said switch, and a contact-piece for moving said shaft to place its finger in position to engage with said switch, substantially as described.

8. In a store-service apparatus having a way and a series of stations and switches, a series of carriers, each provided with a movable engaging-finger held normally out of the path of said switches, and graduated contact-pieces for moving their respective engaging-fingers into engagement with the respective switches, substantially as described.

9. In a store-service apparatus having a way and a series of stations and switches, a series of carriers, each provided with a movable shaft having an engaging-finger normally out of position to engage

with the switches, and graduated contact-pieces to change the positions of the said fingers as the carriers reach their respective stations, substantially as described.

10. In a store-service apparatus, the combination, with a way and a carrier adapted to travel thereon, of a switch diverging from the way, a movable engaging-finger mounted upon the carrier, a contact-finger upon the carrier, and a contact-piece arranged at the side of the way in the path of said contact-finger for moving said engaging-finger into position to engage with the switch, substantially as described.

11. In a store-service apparatus, the combination, with a way and a carrier adapted to travel thereon, of a switch located adjacent to the way, a movable shaft having an engaging-finger mounted on the carrier, a contact-finger on the carrier holding the shaft, whereby its engaging-finger is normally held out of the path of said switch, and a contact-piece arranged at the side of the way in position to strike said contact-finger to move the engaging-finger to engage with the switch, substantially as described.

12. In a store-service apparatus, the combination, with a way and a carrier adapted to travel thereon, of a switch located adjacent to the way, an engaging-finger, a shaft mounted in bearings on the carrier, a contact-finger pivotally mounted on the carrier and normally holding said shaft and engaging-finger in one position, and a contact-piece arranged in the path of the contact-finger, whereby to free the shaft and its engaging-finger and cause the latter to assume a position to engage with said switch, substantially as described.

13. In a store-service apparatus, the combination, with a way, a carrier, and a traveling cable for moving said carrier along the way, of a switch adjacent to the way, a movable engaging-finger mounted on the carrier, a cable-catch carried with said engaging-finger and normally held in position to grip the cable, while the finger is out of the path of said switch, and a contact-piece adjacent to the way for moving the cable-catch and the engaging-finger to free the car from the cable and to place said finger in position to engage the switch, substantially as described.

14. In a store-service apparatus, the combination, with a way, a carrier, and a traveling cable for moving said carrier along the way, of a switch adjacent to the way, a movable engaging-finger, and a cable-catch mounted on the carrier, said finger normally held out of the path of said switch, and the catch in position to grip the cable, a contact-finger also carried by the carrier, and a contact-piece arranged at the side of the way in the path of said finger to strike the latter, whereby to cause the engaging-finger and the catch to be moved, the one to engage with the switch and the other to disconnect the carrier from the cable, substantially as described.

15. In a store-service apparatus, the combination of a way, a carrier, and a cable for moving said carrier along the way, a cable-catch pivotally mounted transversely on the car and held normally in position to grip the cable, a contact-finger also mounted on the carrier, and a contact-piece in the path of said finger to strike the same and move the catch from engagement with the cable and out of the horizontal plane thereof, substantially as described.

16. In a store-service apparatus, the combination, with a way, a carrier, and a cable for moving said carrier along the way, of a pivoted cable-catch mounted in bearings on the carrier, a spring bearing upon said catch, a finger normally holding the catch in position to grip the cable against the action of the spring tending to move the catch from engagement with the cable, and a contact-piece located in the path of said finger to operate the same and cause the catch to be released from the cable, substantially as described.

17. In a store-service apparatus, the combination, with a carrier and a cable adapted to propel the same, of a pivoted cable-catch mounted on the carrier, a contact-finger, and a stop holding said catch in position to grip the cable, and a contact-piece for moving the finger to permit the cable-catch to assume a position out of the path of the cable, substantially as described.

18. In a store-service apparatus, the combination, with a carrier and a cable adapted to propel the same, of a pivoted catch mounted on the carrier, a spring, a stop on said catch, and a pivoted finger engaging the catch to hold it in position to grip the cable against the force of said spring, and a contact-piece for moving the contact-finger to permit the catch to move to be released from the cable, substantially as described.

19. The combination of a carrier, a shaft pivotally mounted thereon and having an engaging-finger, as 9, a cable-catch carried by said shaft, a spring connected to said shaft to rock the same, a stop on the shaft, and a movable finger for holding the shaft and catch in normal position, substantially as described.

20. The combination of a carrier, a horizontal shaft mounted in bearings transverse of the carrier and having an engaging-finger 9, a cable-catch having a notch therein, and a stop carried by the shaft, a spring connected with said shaft to rock the same, and a finger engaging with the stop for holding said shaft in its normal position, substantially as described.

21. The combination, with the rails or supports of a store-service way, of side guards 11, one of which is curved outward at the station to constitute a switch, substantially as described.

22. The combination, with the rail and switch of a store-service apparatus, of a guard-rail 11 at opposite sides of the way, and a carrier provided with a movable contact-finger and an engaging-finger, substantially as described.

23. The receiving-track, the upper portion of which is substantially horizontal and connects with a horizontal main track, and is thence continued in the form of a contracting spiral to a straight vertical portion leading downward toward the counter, substantially as described.

24. The combination, with the tracks and a motor-cable of a store-service apparatus, of switches diverging from the tracks, graduated contact-pieces and carriers provided each with a cable, a contact-finger, and a switch-engaging finger, said cable-catch and engaging-finger being connected to move together, substantially as described, whereby the engaging-finger moves into position to engage a switch when the catch moves from engagement with the cable, substantially as described.

25. The combination of a track provided with an opening closed by a movable section, a carrier provided with a cable-catch and a motor-cable, and an elevator arranged to conduct the carrier through the opening in the track into position for the catch to engage the cable, substantially as described.

26. The combination of the track, a cable, an elevator, a carrier provided with a cable-catch, and an ejector-arm for moving the carrier into position for its catch to engage the cable, substantially as described.

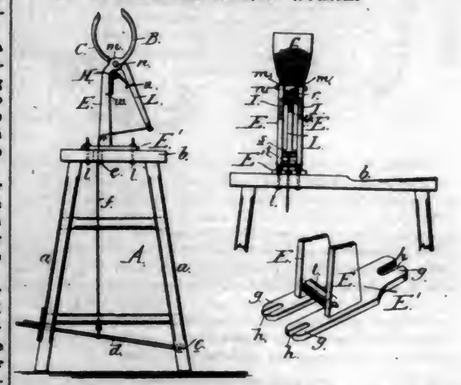
27. The combination of the track, a cable, an elevator having a pocket to receive the carrier, a carrier provided with a cable-catch, and an ejector for moving the carrier into position for its catch to engage the cable as the elevator reaches its upper position, substantially as described.

28. The combination, with the elevator, of a pocket to receive the carrier, an ejector-finger, an arm 74, and a stop arranged to contact with the arm 74 as the elevator is raised, substantially as described.

29. The combination, with the horizontal, curved, and vertical track portions, and with the cable arranged to carry the carriers toward the descending track, of guide-pulleys arranged to hold the cable out of the path of the carriers at the descending track, so that the carriers move downward by gravity alone, substantially as described.

30. The combination, with a straight track, of a spiral track having its upper end connected therewith, a drop connected to the lower end of the said spiral track, upper and lower frames D^3 D^4 for the said drop-track, a rail suspended loosely from the upper frame and bent at its lower end to enter a socket in the lower frame, and a spring 51, connected to said rail to throw it inward, as described.

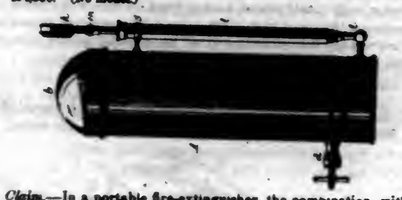
474,041. STITCHING-HORSE. HERMAN DOERING, Reedsburg, Wis. Filed Jan. 13, 1892. Serial No. 417,947. (No model.)



Claim.—1. A stitching-horse comprising a fixed jaw having an integral bifurcated standard detachably secured to a main frame, a roller within the lower portion of said bifurcation, a movable jaw pivotally secured in the upper portion of the bifurcation and having a single arm extending through the latter, a spring for actuating the movable jaw, and a flexible connection extending from the lower end of said arm over said roller to the power device, substantially as herein described.

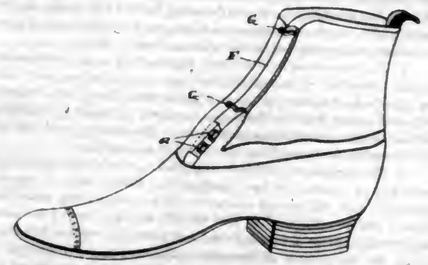
2. In a stitching-horse, the main frame and operating foot-lever, the fixed jaw having an integral bifurcated standard, a base-plate integral with the standard and provided with slotted foot portions, bolts detachably uniting the standard with the main frame, a movable jaw pivotally held within the bifurcation of the standard and having a lever-arm extension, a spring for holding the jaws open, a guide-roller in the base of the standard, and a flexible connection secured at one end to the arm of the movable jaw, passing over said roller, and having its opposite end secured to the foot-lever, substantially as herein described.

474,042. PORTABLE FIRE-EXTINGUISHER. HENRY D. GREENE, Philadelphia, Pa. Filed Dec. 30, 1890. Renewed Mar. 9, 1892. Serial No. 424,338. (No model.)



Claim.—In a portable fire-extinguisher, the combination, with a reservoir having a fluid-inlet, of a discharge-nozzle having a valve and the screw-threaded tip for the purposes set forth, an air-pump, a gage temporarily secured thereto, and supports on the side of the cylinder for temporarily securing the pump and gage thereto, as described.

474,043. SHOE-FASTENING. CHARLES A. HARVEY, New York, N. Y., assignor, by direct and mesne assignments, to the Harvey Fastening Company, of New Jersey. Filed July 2, 1891. Serial No. 398,365. (No model.)



Claim.—1. A fastening for shoes and other articles, consisting of a strip of elastic material secured to one flap of the shoe, a series of hooks connected with the free edge of said elastic strip and projecting through the flap and above the surface of the side of the flap opposite the elastic material, and securing devices adapted to engage the said hooks, and a facing strip for concealing the fastening devices secured to the other flap of the shoe, substantially as described.

2. A shoe-fastening consisting of a series of hooks secured to one flap on one side of the same through the intervention of a strip of elastic material, said hooks projecting through said flap and projecting above the surface of the same on the side opposite the elastic material, the opposite flap being provided with securing devices for engaging said hooks, and a facing-strip concealing said hooks and securing devices, and clips secured to the first-named flap adapted to engage and retain said facing-strip, substantially as described.

3. A fastening device for adjacent edges of flexible material, consisting of the elastic gore secured to one edge and provided with a row of hooks, the slotted plate secured to the opposing edge and adapted to engage said hooks, the facing-strip for concealing the said devices, and the retaining-clips provided with a portion for engaging the facing-strip, having inwardly-extending portions adjacent its inner and outer ends, substantially as described.

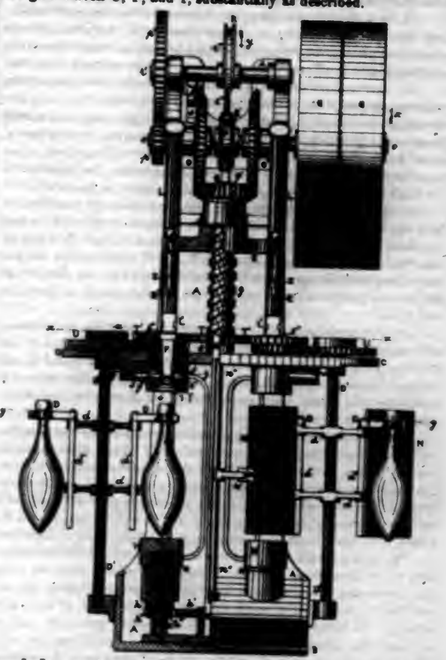
474,044. MACHINE FOR FILLING AND CORKING BOTTLES. HENRY HEARTFIELD, Croydon, England, assignor of two-thirds to Thomas Webb, Stockport, England, and Charles Henry Heartfield, New York, N. Y. Filed Jan. 27, 1891. Serial No. 379,230. (No model.) Patented in England May 26, 1888, No. 7,756.

Claim.—1. In a bottle-filling machine, a holder for containing the bottles to be filled, consisting of the spring-clips D, the brackets d, the sliding rods d', the spindle D', and a coiled spring, by which it is automatically rotated to bring the bottles successively under and away from the filling-nozzle, substantially as described.

2. In a machine for filling bottles, the combination of the spring-clips D, the brackets d, the sliding rods d', and the rotating spindle D', forming a holder for the bottles, substantially as described.

3. In a machine for filling bottles, the combination, with the holder formed of the spring-clips D, the brackets d, the sliding rods d', and the rotary spindle D', of the gauze-wire guards N, the stops n, the stop-piece n', and the upright rod n'', substantially as described and shown.

4. In a machine for filling bottles, the combination, with the bottle-holder formed of the spring-clips D, the supporting-brackets d, the sliding rods d', and the rotating spindle D', of the coiled spring u and the gear-wheels U, T', and T, substantially as described.



5. In a machine for filling bottles, the combination, with the bottle-holder formed of the spring-clips D, the brackets d, the sliding rods d', and the rotating spindle D', of the gear-wheels T, T', and U, and the coiled spring u, which give an intermittent motion to the bottle-holder, and the stops n n', which arrest it when the bottle-mouth is under the filling-opening, substantially as described.

6. In a machine for filling and corking bottles, the combination, with the rotating cone F, through which the corks are introduced, and lug f on the side thereof, of the filling-valve J, through which the liquor passes, and valve-spindle j', which is actuated by the lug f and opens the valve, substantially as described.

7. In a machine for filling and corking bottles, the combination, with the reciprocating plunger E, by which the corks are inserted in the bottle-mouths, the cross-head K, to which the plunger E is affixed, and the screw g, which gives a reciprocating movement to the cross-head and plunger, of the gear-wheels T T', connected to the shaft G to give motion to the cork-funnel F, the rotating cork-funnel F to guide or deliver the corks to bottles provided with a lug f, which at each revolution engages with the spindle j' and opens the filling-valve J, the filling-chamber j, in which the cork-funnel rotates, provided with an inlet or opening i, and the filling-valve J, provided with a spindle j', with which the lug f engages, through which the required amount of liquor passes.

8. In a machine for corking bottles, the combination, with the bottle-holders D, of the packing-piece I, against which the mouth of each bottle is pressed while being filled, the filling-chamber j, into which the liquor enters, the valve J, which controls the flow or admission of the liquor, the rotating cork-funnel F, provided with a lug f, which as the funnel rotates engages with the spindle j' and opens the valve J, and the pusher E, by which the corks are inserted.

9. In a machine for filling and corking bottles, the combination, with the cork-magazines L and sliding conveying-tubes L', of the cross-head K, forked arm k, pivoted lever l, connected to the tube L', and spring l', substantially as and for the purposes described.

10. In a machine for filling and corking bottles, the combination, with the bottle-holder formed of the spring-clips D, the brackets d, the sliding rods d', and the rotating spindle D', with the lifting pusher or table H and the screw h, substantially as described.

11. In a machine for filling and corking bottles, the combination, with the pusher H and screw A, of the gear-wheel k', the wheel k'', and the spring k''', substantially as and for the purpose described.

12. In a machine for filling and corking bottles, the combination, with a filling-chamber, of an air-vessel M, provided with a spring-regulated piston, by which its internal capacity is regulated to correspond with the capacity of the bottle, substantially as and for the purpose described.

13. In a machine for filling and corking bottles, the combination, with the filling-chamber j, of the air-chamber M, the piston M', the connecting-pipe m, the piston-rod m'', the adjustable collar m', and the regulating-spring m''', substantially as and for the purpose described.

14. In a machine for filling and corking bottles, the combination, with the reciprocating pusher or plunger E for pressing the corks into the bottles, the cross-head K for carrying the plungers, the central shaft G and screw g, which operate the cross-head, and the bevel-wheel g', of the bevel-wheels O O', which alternately gear with and set in motion the wheel g', the clutch P, which engages with the wheels O O', the shaft o, and the driving-pulleys Q, substantially as described.

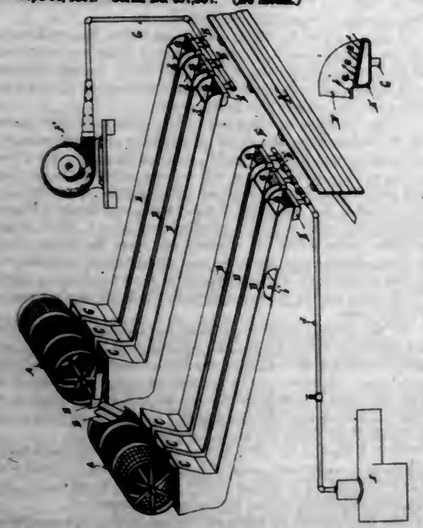
15. In a machine for filling and corking bottles, the combination, with the bevel-wheels O O' and clutch P and bevel-wheel g', of the central shaft G, the screw g, the cross-head K, and plunger E, which insert the corks, and the gear-wheels T, T', and U, which rotate the bottle-holders, and the gear-wheels k' and k'', placed at the foot of the shaft G and which raise the bottle-tables H, substantially as described and shown.

16. In a machine for filling and corking bottles, the combination, with the driving-pulley Q, bevel-wheels O O', shaft o, clutch P, the wheels p p', and cam R, of the central shaft G, the cross-head K, and plungers E, which insert the corks, and the bottle-holder formed of the spring-clips D, the brackets d, sliding rod d', rotating spindle D', substantially as described.

17. In a machine for filling and corking bottles, the combination, with the reciprocating plungers or pushers E, which press the corks into the bottles, the cross-head K, which carries the plungers, the central shaft G and screw g, which operate the cross-head, of the bevel-wheel g', the bevel-wheels O O', which alternately gear with and set in motion the wheel g', the shaft o, the clutch P, which engages with the wheels O O', the wheels p p', and the cam R, substantially as described.

18. In a machine for filling and corking bottles, the combination, with the reciprocating plungers or pushers E, which press the corks into the bottles, the cross-head K, which carries the plungers, the central shaft G and screw g, which operate the cross-head, of the bevel-wheel g', the bevel-wheels O O', which alternately gear with and set in motion the wheel g', the shaft o, the clutch P, which engages with the wheels O O', the cam R, and the pivoted forked lever R', substantially as described.

474,045. COAL-CLEANER. ADDISON K. HILLS, Erie, Pa. Filed Sept. 30, 1891. Serial No. 407,267. (No model.)



Claim.—1. The combination, in a machine for separating slate and dirt from coal, of an inclined chute having its bottom lined with steel plates or other hard substance until near the discharge end thereof with a chamber having a sharply-inclined surface forming the bottom of said chute from the end of said lining to the discharge end of the chute, having perforations or slots therein through which air or steam jets may be forced in an upward and forward direction, substantially as and for the purpose set forth.

2. The combination, in a machine for separating slate and dirt from coal, of rotating screens, as A, hoppers, as C, and inclined chutes, as D, with chambers, as E, the surfaces of which are at a greater inclination than the bottoms of the chutes, forming the bottoms of the discharge ends of said chutes, having holes or slots in the upper surfaces thereof through which jets of steam can be projected upward and forward toward the line of travel of the material passing down the chutes, substantially as and for the purpose set forth.

474,046. METALLIC BALE-COVERING. GEORGE B. HUSSEY, Providence, R. I. Filed June 3, 1891. Serial No. 394,873. (No model.)



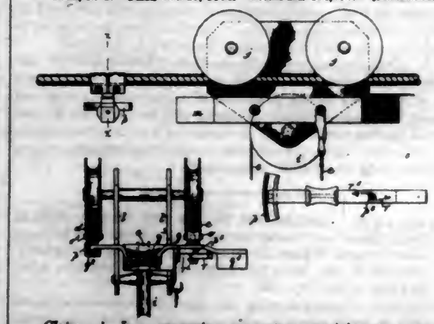
Claim.—1. The sheet-metal blank, substantially as hereinbefore described, consisting of a center portion having four lateral wings or sides integral therewith, the outer or free edges of said sides being reinforced and arranged to receive fastening devices and having the adjacent ends or edges of said sides non-lapping and arranged and adapted to be secured together when the sides are bent or folded in use.

2. The sheet-metal bale-covering, substantially as hereinbefore described, consisting of an upper section and a lower section, each having a perforated center portion and perforated folding sides integral with said center portion, hinge-eyes arranged to receive joint-wires formed at the vertical edges or corners of the covering, and detachable fastening devices uniting the two sections together.

3. The sheet-metal bale-covering blank a, hereinbefore described, consisting of a center or base portion, four folding sides b, integral therewith, each side having a crease m and a corresponding projection formed therein at its junction with the said base and having the outer or free edges of the sides reinforced and slotted to receive fastening-hooks, the end portions of the several sides arranged and adapted to be locked together when the sides are folded, substantially as set forth.

4. In a metallic bale-covering, the combination of two perforated semi-covering sections or blanks a, each consisting of a center or base portion having integrally-formed folding sides b, reinforced and slotted along their outer edges and having the adjacent edges or ends of the sides provided with eyes, adapted when the sides are folded to receive joint-wires, and hooks for securing the two sections together, substantially as described.

474,047. CONVEYING APPARATUS. THOMAS S. MILLER, New York, N. Y. Filed Oct. 15, 1891. Serial No. 408,750. (No model.)



Claim.—1. In a conveying apparatus containing two parallel cables, a carriage to travel thereon, and a rope supported by said carriage, in combination with said parts, a rope-carrier, a clamp whereby it is connected with one of said cables, means whereby the free end of said carrier is normally steadied, and a clamp whereby said means is secured to the other of said cables, substantially as described.

2. In a conveying apparatus containing two parallel cables or trackways, a carriage to travel thereon, and a rope supported by said carriage, in combination with said parts, a rope-carrier connected with one of said cables or trackways and extending into the space between the cables or trackways, and means whereby the free end of said carrier is normally sustained by the other cable or trackway, substantially as described.

3. In a conveying apparatus containing two parallel cables or trackways, a carriage to travel thereon, and a rope supported by said carriage, in combination with said parts, a rope-carrier connected with one of said cables or trackways and extending into the space between the cables or trackways, and means whereby the free end of said carrier is normally sustained by the other cable or trackway, substantially as described.

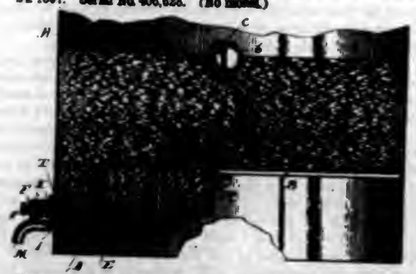
4. In a conveying apparatus containing two parallel cables or trackways, a carriage to travel thereon, and a rope supported by said carriage, in combination with said parts, a rope-carrier connected with one of said cables or trackways and extending into the space between the cables or trackways, means whereby said rope-carrier is normally held in said position, and a buffer mounted upon the carriage, whereby said rope-carrier is thrust out of the path of the carriage, substantially as described.

5. In a conveying apparatus containing two parallel cables or trackways, a carriage to travel thereon, and a rope supported by said carriage, in combination with said parts, a rope-carrier, and a substantially perpendicular pivotal connection between said rope-carrier and one of said cables or trackways, whereby said rope-carrier may swing in a plane substantially parallel with the plane of said cables or trackways into and out of the path of said carriage, substantially as described.

6. In a conveying apparatus containing two parallel cables or trackways, a carriage to travel thereon, and a rope supported by said carriage, in combination with said parts, a rope-carrier, a swinging arm pivotally connected intermediate its ends by a substantially perpendicular pivot to one of said cables or trackways and carrying said rope-carrier on one end, and a counterpoise carried by the other end of said arm, substantially as described.

7. In a conveying apparatus containing two parallel cables or trackways, a carriage to travel thereon, and a rope supported by said carriage, in combination with said parts, a rope-carrier connected with one of said cables or trackways by substantially perpendicular pivotal connection and extending into the space between the said cables or trackways, and a spring tending to hold said carrier in position for supporting said rope, substantially as described.

474,048. LIQUID-MEASURE. LOUIS FOX, Chicago, Ill. Filed Sept. 24, 1891. Serial No. 406,628. (No model.)



Claim.—1. In a liquid-measure, the combination, with the main tank or source of supply, of a measure having an adjustable air-vent tube adapted to rise and fall with the level of the liquid in said tank, and a two-way draw-cock for simultaneously closing communication between the tank and measure and permitting the liquid in said measure to escape, substantially as set forth.

2. In a liquid-measure, the combination, with the main tank or source of supply, of a measure in said tank having an adjustable air-vent arranged to adapt itself to the fluctuations of the level of the liquid in the tank, and means for opening communication between said tank and measure and for closing such communication and permitting the contents of the measure to escape, substantially as set forth.

3. In a liquid-measure, the combination, with the main tank or source of supply, of a measure in said tank having a floating air-vent, and means for opening communication between said tank and measure and for closing such communication and permitting the contents of the measure to escape, substantially as set forth.

4. In a liquid-measure, the combination, with the main tank or source of supply, of a measure in said tank having a flexible floating air-vent, and means for opening communication between said tank and measure and for closing such communication and permitting the contents of the measure to escape, substantially as set forth.

5. In a liquid-measure, the combination, with the main tank or source of supply, of a measure in said tank having an air-vent provided with an air-actuated alarm, said vent being adapted to rise and fall with the level of the liquid in the tank, and means for opening communication between said tank and measure and for closing such communication and permitting the contents of the measure to escape, substantially as set forth.

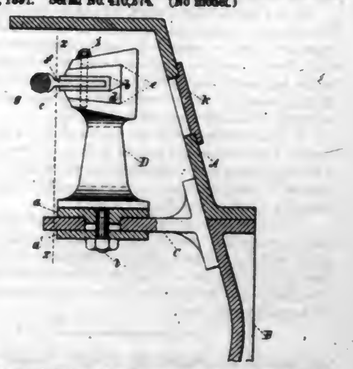
6. In a liquid-measure, the combination, with the main tank or source of supply, of a measure in said tank having a flexible air-vent, a ball supporting said vent and carrying an alarm, and means for opening communication between said tank and measure and for closing such communication and permitting the contents of the measure to escape, substantially as set forth.

7. In a liquid-measure, the combination, with the main tank or source of supply, of a measure in said tank having a floating air-vent provided with a whistle, and means for opening communication between said tank and measure and for closing such communication and permitting the contents of the measure to escape, substantially as set forth.

8. In a liquid-measure, the combination, with the main tank or source of supply, of a measure in said tank, a rubber tube communicating with the upper part of said measure, a float secured to the extremity of said tube, a double-acting whistle on the end of said tube, and means for opening communication between said tank and measure and for closing such communication and permitting the contents of the measure to escape, substantially as set forth.

9. In a liquid-measure, the combination, with the main tank having the chamber or basin D communicating therewith, of the measure C, a two-way cock having communication with said measure and basin D, adapted to alternately close communication between said basin and measure and open communication between the measure and discharge-nozzle, and an adjustable vent communicating with said measure, adapted to rise and fall with the level of the liquid in said tank, substantially as set forth.

474,049. INSULATING-SUPPORT FOR ELECTRIC-RAILWAY WIRES. ABRAHAM A. SHOUP and WILLIAM ENSLEY, Jerseyville, Ill. Filed Oct. 29, 1891. Serial No. 410,374. (No model.)

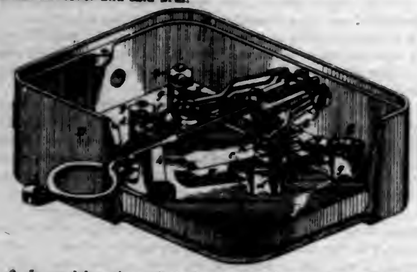


Claim.—1. In an electric railway, a jointless or continuous supply-conductor supported by laterally-projecting slotted plates secured to the sides thereof, said plates adapted to slide in insulating-supports, each of the latter consisting of a standard made of insulating material and provided with an insulating-block containing a metallic lining, all supported upon brackets located in the slot-rail or drain-tube, said parts constructed, combined, and adapted to operate substantially as and for the purpose herein set forth.

2. In an electric railway having a supply-conductor consisting of a continuous bar provided at intervals along its side with horizontally-projecting slotted plates f, the combination, with said conductor, of metallic guides e, adapted to receive said slotted plates and allow them to slide freely therein, said plates being retained in position by pins i, insulating-blocks d, adapted to contain and insulate the said metallic guides e, each of said blocks secured in the head of a standard D, made of insulating material and clamped at its base to a bracket C, secured to the inside of the slot-rail or drain-tube, the standard D being provided with a clamping-bolt l, and plates a a', one on the upper side and the other on the lower side of said supporting-bracket, so as to insulate the standard D, all constructed and adapted to operate substantially as and for the purpose set forth.

474,050. ELECTRIC SWITCH. JAMES J. WOOD, Fort Wayne, Ind. Filed Nov. 3, 1891. Serial No. 410,736. (No model.)

Claim.—1. In a quick-action switch, the combination of a lever of the first class, a grooved roller of insulating material mounted to run along said lever with its groove engaging the edge thereof, a carrying-arm on which the roller is mounted, and a spring pressing against said arm to communicate a tension to the roller and press it against the lever, whereby the flanges of said roller overhanging the edge of the lever serve as insulating-shields for preventing flashing or arching between the lever and said arm.



2. In a quick-action switch, the combination of a lever of the first class, a roller movable along the lever past its fulcrum, the lever formed with projections to engage the roller at the opposite limits of its travel, a spring for pressing the roller toward the lever, and forked terminal contact-plates the bifurcations of which are entered by said lever, and the terminal shoulders of the bifurcations serving as stops to limit the movement of the lever and thereby in turn to limit the travel of the roller while increasing the conducting-surface of the contacts.

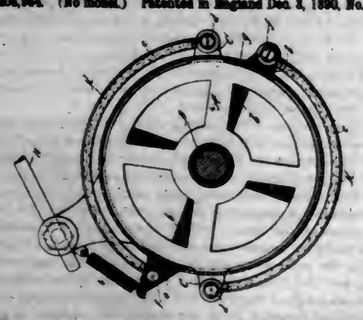
3. In a quick-action switch, the combination of a switch-lever in connection with a line-circuit, two opposite forked terminal contact-plates of rigid material, the bifurcations of which are entered by said lever in its movement, and a spring-plate carried by the lever and arranged to enter with it the bifurcations of said contacts and to press outwardly against one side thereof while forcing the lever in contact with the opposite side thereof, substantially as specified.

4. In a quick-action switch, the combination of two levers of the first class, an actuating part comprising two rollers movable along the respective levers to opposite sides of their fulcrums, arms for carrying said rollers, a carrier to which said arms are connected, an operating-handle for moving said carrier, and two independent springs arranged to press outwardly on the respective arms and each reacting independently of the other against said carrier.

5. In an electric switch, the combination of a box B, inclosing the operating mechanism and formed at its lower front side with a notch *r* for the passage of the operating-bar of the switch mechanism, and a cover B', fitting over said box, formed at its bottom with an angular extension *r'*, adapted to fill said notch.

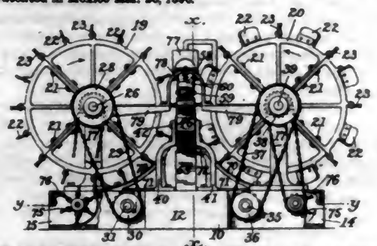
6. In an electric switch, the combination of binding-posts *d' d'*, conducting-levers E E, pivoted thereto, binding-posts *g g*, formed integrally with rigid contact-plates F F, bridge-piece G', having rigid contact-plates G G, contact-springs *p p*, carried by the levers, and an operating mechanism for throwing the levers simultaneously from one pair of contacts to the other.

474,051. BRAKE FOR CYCLES. RICHARD M. WOODHEAD and PAUL ARSOM, Nottingham, England. Filed Oct. 16, 1891. Serial No. 408,964. (No model.) Patented in England Dec. 3, 1890, No. 19,692.



Claim.—A band-brake for cycles, consisting in the combination, with a friction-drum, of a strap or band embracing the same and divided into two or more sections, a fixed or stationary disk, to which one end of each section is connected, a movable or loose disk or lever, to which the other ends are connected, and gearing by which the said disk or lever is turned upon its center, thereby forcing the bands upon the drum, all as herein set forth.

474,052. FIBER-PREPARING MACHINE. JOHN L. ACOSTA, Vera Cruz, Mexico. Filed Sept. 9, 1891. Serial No. 405,155. (No model.) Patented in Mexico Mar. 30, 1890.



Claim.—1. A fiber-carrying chain composed of links substantially triangular in longitudinal section, with one end substantially vertical, and jaws also substantially triangular and oppositely set with respect to said links and pivotally secured thereto near the apices of said links, substantially as shown and described.

2. The combination of a series of links pivoted end to end substantially triangular in longitudinal section, having each a substantially vertical end and an inclined upper surface provided with teeth, and a series of jaws pivotally secured to said links and set reversely with respect thereto and having each a substantially vertical end and an inclined lower surface provided with teeth, substantially as shown and described.

3. The combination, with an endless fiber-carrying chain composed of links and jaws adapted to co-operate to grasp the fiber, wheels carrying said chain, and wheels armed with devices for cleaning the fiber, of a fixed block below the lower member of the chain to support the same, a block supported between the upper and lower members of said chain and grooved on its upper and lower sides to receive the chain, and a pressure device to press upon the upper member of said chain, substantially as shown and described.

4. The combination, with a fiber-carrying chain and horizontally-disposed wheels to support and move said chain, of wheels armed with devices for cleaning the fiber and set adjacent to the line of travel of said chain, and plates set with their upper edges about on a line with the line of travel of the upper member of said chain and adapted to support the fiber under the action of the cleaning devices, one of said plates having a slit about on a line with the line of travel of the lower member of said chain, substantially as shown and described.

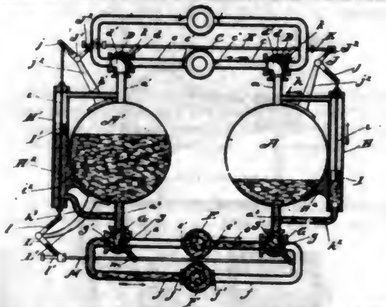
5. The combination, with a fiber-carrying chain and horizontally-placed wheels to support and move said chain, of two wheels placed on opposite sides of said chain and adjacent to the line of travel thereof, fiber-cleaning blades and brushes upon the periphery of said wheels, the blades and brushes upon one wheel having one end rounded to meet the fibers carried by the one member of said chain and the blades and brushes upon the other wheel having both ends rounded to meet the fibers carried in each direction by the upper and lower members, respectively, of said chain, plates to support the fibers under the action of both wheels and having their upper edges adjacent to the upper member of said chain, and a third plate having its upper edge adjacent to the lower member of said chain and adapted to support the fibers carried by said member under the action of said second wheel, substantially as shown and described.

6. The combination, with a fiber-carrying chain and horizontally-placed wheels to support and move said chain, of two wheels placed on opposite sides of said chain and adjacent to the line of travel thereof, fiber-cleaning blades and brushes upon the periphery of said wheels, the blades and brushes upon one wheel being parallel with the axis and with each other and the brushes upon the second wheel being also parallel with the axis and with each other, while the blades upon said wheel are obliquely inclined with respect to the axis alternately in opposite directions, plates to support the fibers under the action of both wheels and having their upper edges adjacent to the upper member of said chain, and a third plate having its upper edge adjacent to the lower member of said chain and adapted to support the fibers carried by said member under the action of said second wheel, substantially as shown and described.

7. The combination, with a fiber-carrying chain, supports therefor, and a pressure device to press upon said chain, of a water-tank straddling said pressure device and provided with perforations in the extremities of its legs to permit water to escape upon the fibers projecting from said chain, substantially as shown and described.

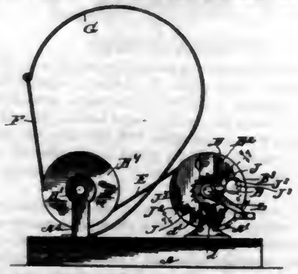
8. The combination, in a fiber-preparing machine, of a base composed of rectangular sections 11 and 12, bolts to unite them end to end, rectangular sections 14 and 15, and bolts to secure them to opposite sides of the first-named sections, said last-named bolts passing into and engaging the sides of both of said sections 11 12, and brackets removably secured to said sections and adapted to support the operative parts of the mechanism, substantially as shown and described.

474,053. HYDRAULIC GAS-PUMP. CHARLES M. BENNETT, Logansport, Ind. Filed Oct. 6, 1890. Serial No. 367,289. (No model.)



Claim.—In a gas-pumping apparatus, the gas-holders A A', in combination with the valve-cases D and G, connected with both said holders, gas supply and delivery pipes B C, provided, respectively, with branches *b c*, connecting with the respective valve-cases D and having suitable check-valves, water pressure and exhaust pipes E F, provided with branches *e f*, connecting with the respective valves G and having suitable check-valves, the valves *d g*, mounted in the respective valve-cases, the cylinders H H', connected with the water-pipes at one end and the gas-pipes at the other, the pistons I I', the sliding rods K and M, connected, respectively, to arms on the valves *d* and *g*, the bell-crank levers J, J', and L, and connecting-rods *i*, *i'*, and *i²*, substantially as described.

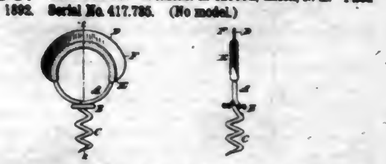
474,054. MOTOR OR TREADLE-POWER. JOHN CHARLTON, Chicago, Ill. Filed June 29, 1891. Serial No. 397,603. (No model.)



Claim.—1. The combination of a rotatable shaft mounted in supports, treadle-arms secured thereon, wheels loosely mounted upon the treadle-shaft, adapted to alternately move forward and backward, a connection between the crank-shaft and such wheels, whereby continuous movement of the crank-shaft produces alternate forward movement of such wheels, a second shaft rotatably mounted in standards, wheels mounted thereon and connected by a ratchet thereto, so as to be rotatable in one direction without rotating the shaft thereof and rotatable in the other direction synchronously with the shaft, connecting-cords extending partially around one of the wheels upon one of the shafts and one of the wheels upon the other of the shafts, and springs, one end thereof being secured to an abutment and the other end having a cord attached thereto, extending therefrom to and partially around the wheels on the second-named shaft of the motor, substantially as described.

2. The combination of a rotatable shaft mounted in supports, treadle-arms secured thereon, wheels loosely mounted upon the treadle-shaft, adapted to alternately move forward and backward, a connection between the crank-shaft and such wheels, whereby continuous movement of the crank-shaft produces alternate forward movement of such wheels, a second shaft rotatably mounted in standards, wheels mounted thereon and connected by a ratchet thereto, so as to be rotatable in one direction without rotating the shaft thereof and rotatable in the other direction synchronously with the shaft, and a non-rotatable ring-standard having openings therein, through which the connection between the crank-shaft and such wheels can pass, connecting-cords extending partially around one of the wheels upon one of the shafts and one of the wheels upon the other of the shafts, and a spring, one end thereof being secured to an abutment and the other end having a cord attached thereto, extending therefrom to and partially around the wheels on the second-named shaft of the motor, substantially as described.

474,055. CORKSCREW. WILLIAM R. CLOUGH, Alton, N. H. Filed Jan. 12, 1892. Serial No. 417,785. (No model.)

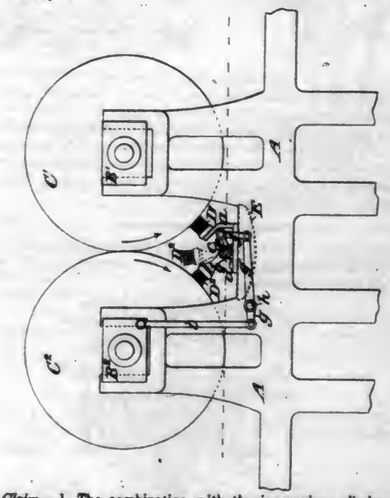


Claim.—1. A corkscrew having the open handle provided with the flange extending vertically above the outer periphery of the handle, the portion of the handle below the base of the flange along the length of the flange being broader in cross-section than the thickness of the flange, whereby to afford a broad bearing for the fingers beneath the flange, substantially as and for the purposes set forth

2. The corkscrew having the handle and worm, combined with the vertical plate formed with an arched eye inclosing the wire of said handle, whereby said plate is held in an upright position and the handle is strengthened by the arched eye, substantially as and for the purposes set forth.

3. The corkscrew having the open handle, combined with the arched eye E, encompassing the wire of the handle and by its arch strengthening the handle and preventing it from collapsing and forming an enlarged bearing for the fingers, substantially as and for the purposes set forth.

474,056. CYLINDER PRINTING-MACHINE. CALVERT B. COTTRELL, Westerly, R. I. Filed Jan. 22, 1892. Serial No. 418,574. (No model.)



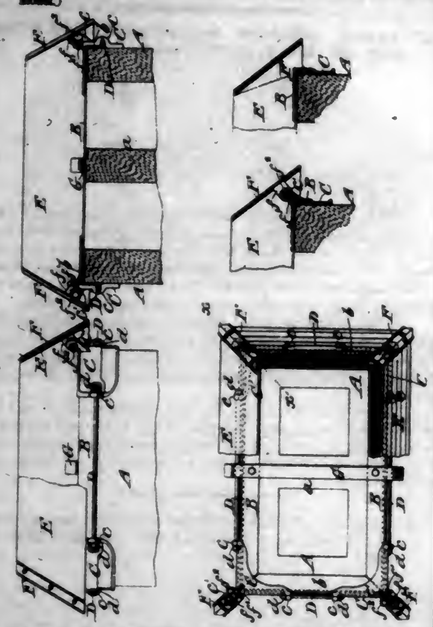
Claim.—1. The combination, with the impression-cylinder of a printing-machine capable of a lifting motion and depression, of a brush movable toward and from said cylinder, and connections between the said brush and cylinder for producing the movement of the brush from and toward the cylinder by the lifting and depression of the same, substantially as and for the purpose herein set forth.

2. The combination, with the impression-cylinder of a printing-machine and movable journal-boxes for lifting the said cylinder, of a brush for smoothing sheets on said cylinder, and mechanism intermediate to said brush and one of said boxes for moving the said brush toward and from the cylinder by the movements of said box, substantially as herein set forth.

3. The combination, with the impression-cylinder of a printing-machine and journal-boxes for lifting said cylinder, of a brush for smoothing sheets on said cylinder, a rock-shaft and arms thereon for carrying said brush, a lever and connections between said lever and one of said boxes, and said rock-shaft for moving said brush from and

toward the said cylinder by the lifting and depression of the said boxes, substantially as herein set forth.

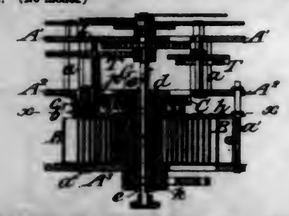
474,057. FLUE-PROTECTOR AND WIND-GUARD. WILLIAM CURRY, Brooklyn, N. Y. Filed Sept. 30, 1891. Serial No. 407,247. (No model.)



Claim.—1. In combination, the corner-plates, binding-rods for holding the corner-plates in position, a cowl or wind-guard, and supporting-brackets engaged with the corner plates and adapted to engage the corners of the cowl or wind-guard, substantially as set forth.

2. In combination, the corner-plates, binding-rods for securing them in position, a cowl or wind-guard, supporting-brackets, and means for securing the supporting-brackets to the corner-plates in swinging adjustment, substantially as set forth.

474,058. CLOCK. WALTER D. DAVIES, Brooklyn, assignor to the Ansonia Clock Company, New York, N. Y. Filed Jan. 2, 1892. Serial No. 416,787. (No model.)

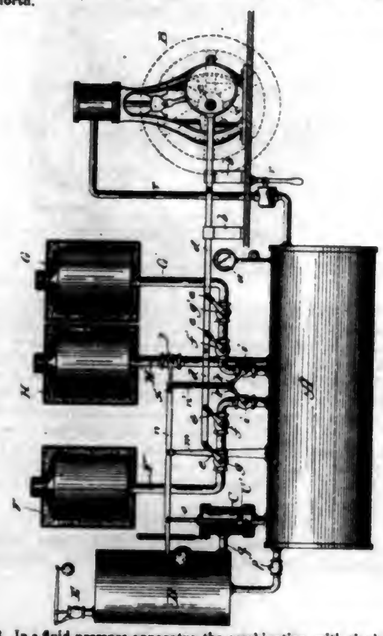


Claim.—The combination in a clock-movement, with a centrally-arranged main wheel and hollow winding-arbor and a center spindle passing through said arbor, of three united supporting-plates, the front one of said plates containing a bearing for the center spindle, the rear one of said plates containing a bearing for the rear part of the winding-arbor, and the middle one of said plates containing a fixed central bearing for the said spindle and having on its back a central hub or boss, the exterior of which forms a fixed bearing for the front end of the winding-arbor, substantially as herein set forth.

474,059. FLUID-PRESSURE APPARATUS. ISAAC T. DYER, Chicago, Ill., assignor of two-thirds to Ricard O'R. Burke and John R. Coffey, same place. Filed Mar. 20, 1891. Renewed Jan. 2, 1892. Serial No. 416,892. (No model.)

Claim.—1. In a fluid-pressure apparatus, the combination, with a holder and means for supplying thereto gas under pressure, of a subsidiary chamber and a cylinder opening into the holder and containing a piston and communicating with the subsidiary chamber from a point between the extremities of the stroke of the piston, substantially as and for the purpose set forth.

2. In a fluid-pressure apparatus, the combination, with the holder A and means for supplying thereto gas under pressure, of a subsidiary chamber D, communicating through a pipe *p* with the holder, and a cylinder C, opening into the holder and containing a piston C' and communicating with the chamber D from a point between the extremities of the stroke of the piston, substantially as and for the purpose set forth.



3. In a fluid-pressure apparatus, the combination, with the holder A, of a reservoir from which the holder is supplied with gas under pressure, a cylinder C, into which the holder opens and containing a piston C', a valve in the communication between the said reservoir and holder, and a lever *n*, connected with the valve and piston and actuated by the movement of the piston under excess of pressure in the holder to actuate the said valve to control the supply, substantially as described.

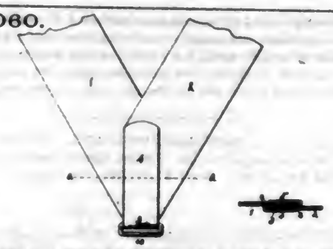
4. In a fluid-pressure apparatus, the combination, with the holder A and a suitable engine B, of a reservoir communicating with the holder and from which it receives its supply of gas under pressure, a pair of oppositely-working valves, and a valve *i* in the communicating passage between the reservoir and holder, a cylinder C, into which the holder opens and containing a piston C', a lever *n*, connected at opposite sides of its fulcrum respectively with the valve *i* and piston, and a reciprocating bar *d*, actuated from the engine B and connected with the said pair of valves alternately to open and close them by its movement, substantially as described.

5. A fluid-pressure apparatus comprising, in combination, a holder A, an engine B, driven by the gas-pressure from the holder, a chamber D, communicating through a pipe *p* with the holder, a cylinder C, into which the holder opens and communicating with the said chamber, a piston C' in the cylinder, reservoirs F and G, communicating with the holder through pipes F' and G', containing valves *g*, *f*, and *i* and valves *g'*, *f'*, and *i*, respectively, a reservoir H, having a pipe H' leading into the holder and containing a valve *l*, a weighted lever *n*, connected at one side of its fulcrum with the rod of the piston C' and toward its opposite end with the valves *l* and *i*, and a reciprocating bar *d*, actuated from the engine and connected with the valves *g*, *f*, *g'*, and *f'*, the whole being constructed and arranged to operate substantially as described.

474,060. SUSPENDER-CLASP. JACOB H. FAHNY, Rockford, Ill. Filed Oct. 24, 1890. Serial No. 369,243. (No model.)

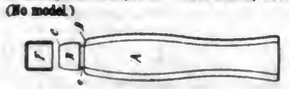
Claim.—1. A clasp for a suspender, consisting of a metallic plate comprising a center section provided with slots at intervals along its outer edges, two side sections provided with teeth along their outer edges, and an extension depending from one of said sections.

474,060.



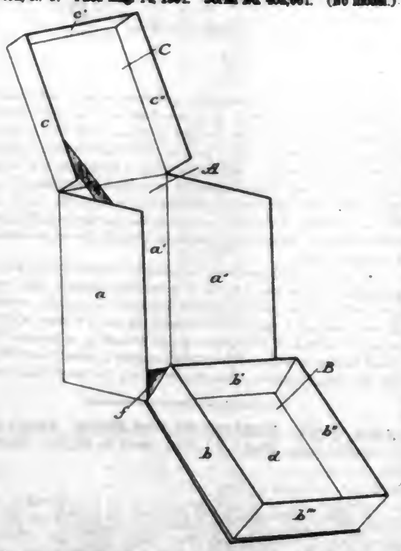
2. A clasp for a suspender, consisting of a metallic plate comprising a center section provided with slots at intervals along its outer edges and upper end, two side sections provided with teeth along their outer edges and upper ends, and an extension depending from one of said sections.

474,061. METHOD OF APPLYING FERRULES TO HANDLES. PHILEMON T. GATES, New York, N. Y. Filed Dec. 9, 1890. Serial No. 374,007. (No model.)



Claim.—The method of applying a ferrule to a wooden handle, which consists in forming on the handle a cylindrical tenon with a tapered extremity, a shoulder at its base, and a circumferential groove adjacent to the shoulder and then forcing on the tenon from its said tapered extremity a cylindrical ferrule, the inner diameter of which is less than the original diameter of the tenon, whereby a portion of the side of the tenon is cut away above the groove, leaving the part below the groove unaffected by the ferrule, as and for the purpose herein described.

474,062. BOX FOR STATIONERY, &c. GEORGE B. HURD, New York, N. Y. Filed Aug. 14, 1891. Serial No. 402,661. (No model.)

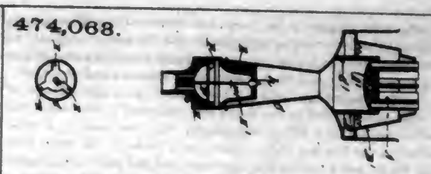


Claim.—In combination, a box open on two sides, having hinged to the bottom thereof at its open edge a shallow box with sides adapted to pass inside the larger box, and with a bottom adapted to form one side of the said larger box, and a cover hinged to one edge of said larger box, with lips adapted to fit over its upper edges, substantially as shown and described.

474,068. ATMOSPHERIC GAS-BURNER. CHARLES M. LUDGREN, Brooklyn, N. Y. Filed Jan. 16, 1890. Serial No. 337,067. (No model.)

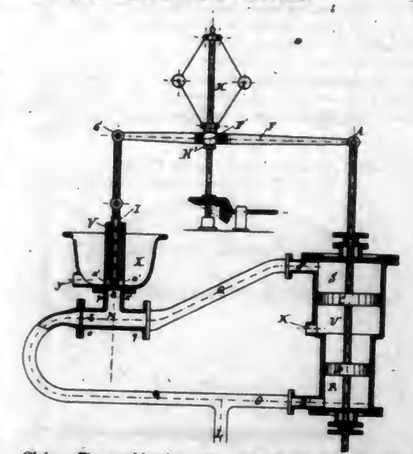
Claim.—1. In a gas-burner, the combination of a mixing chamber or passage to convey mixed gas and air to the burner-tip and a gas nozzle arranged to deliver gas into said chamber or passage, the opening of which nozzle into the mixing-chamber is automatically controlled by the pressure of the gas, substantially as specified.

474,068.



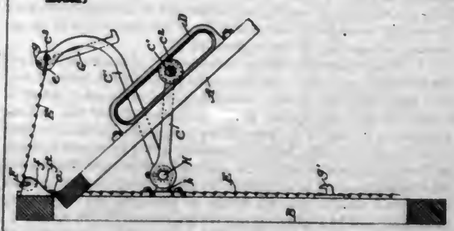
2. An adjustable nozzle for an atmospheric gas-burner, comprising a gas-chamber provided with a gas-inlet, a gas-outlet opening directly into the gas and air mixing chamber of the atmospheric burner and constituting the opening from which the eduction-jet of gas issues, a float arranged to move in said chamber and be sustained by the gas-pressure, and a valve automatically operated by the float and serving to open and close the outlet into the mixing-chamber, substantially as specified.

474,064. GOVERNOR. PAUL PICCARD, Geneva, Switzerland. Filed Jan. 19, 1892. Serial No. 418,021. (No model.)



Claim.—The combination, with a centrifugal governor and a connection for the flood-gate, of two connected cylinders, piston-rod and pistons of unequal diameters, a pipe for supplying a liquid under pressure and connecting pipes from the same to the opposite ends of the cylinders, a contraction with an opening *b* in the pipe leading to the largest cylinder and piston, there being a second opening *a* of larger diameter, the box M, the valve I to the opening *a*, and the lever F, pivoted at one end to the rod of the valve I and at the other end to the piston-rod and acted upon by the governor for raising the valve to lessen the pressure on the larger piston when the gate is to be closed, or the reverse, substantially as set forth.

474,065. TRANSOM-LIFTER. JEFFERY H. ROSE and WILLIAM A. ROSE, Brooklyn, N. Y. Filed Feb. 5, 1892. Serial No. 420,633. (No model.)



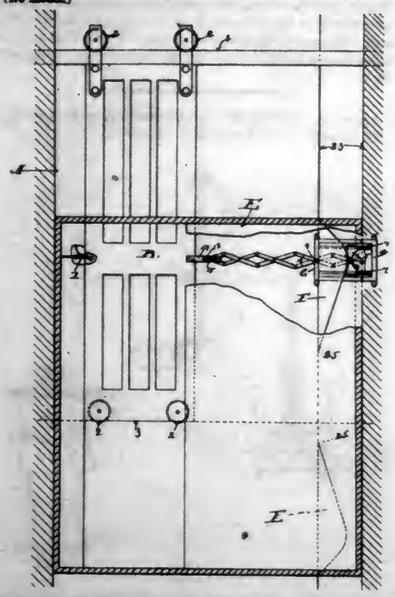
Claim.—1. The combination, with a hinged sash or door and its frame, of two lever-arms pivoted to the frame, means to connect said arms with limited lost motion between them, one of said arms having a sliding engagement with the transom, and a cord or chain attached to the free end of the other arm, substantially as shown and described.

2. The combination, with a hinged sash or door and its frame, of

two lever-arms pivoted to the frame and connected to each other, one of said arms having a sliding engagement with the sash, a latch carried by the other arm, and a cord or chain connected to said last-named arm and adapted to trip said latch, substantially as shown and described.

3. The combination, with a hinged sash or door and its frame, of two lever-arms pivoted to the frame and connected to each other, one of said arms having a sliding engagement with the transom, a chain attached to the free end of the other arm, a guide for the chain, fixed to the frame, and a pin fixed to the frame near the guide and adapted to be engaged by the chain, substantially as shown and described.

474,066. DEVICE FOR OPERATING ELEVATOR-DOORS. EDMUND SAVAGE, Albany, N. Y. Filed June 29, 1891. Serial No. 397,396. (No model.)



Claim.—1. An elevator-door provided with mechanism for automatically effecting the opening and closing movements of said door, said mechanism consisting of a cross-head fitted to move on guides, compressible springs which bear against said cross-head to normally press it toward the door, a lazy-tongs having one extremity connected to the door and the opposite extremity connected to said cross-head, and an attachment of said cross-head that is fitted to engage with operating devices on the elevator-car, in combination with an elevator-car provided with means, substantially as described, for engaging with said cross-head attachment, as and for the purpose herein specified.

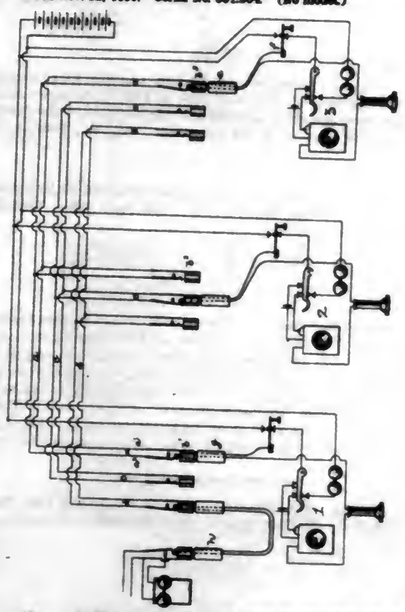
2. The combination of an elevator-door which is normally held in a closed position and is connected by means of a lazy-tongs to a cross-head fitted to slide on horizontal guides, compressible springs which bear against said cross-head for effecting the opening movement of said door, and an elevator-car provided with means, substantially as described, for moving said cross-head to automatically effect the closing movement of the door without the intervention of an attendant, substantially as herein specified.

3. The combination, with an elevator-door, of automatic mechanism for closing said door, a slotted guide secured to the edge of said door adjacent to said closing mechanism, said guide being slotted in a direction that corresponds to the movement of said door a head attached to the end of the door-closing mechanism and fitted to slide in the slot of said guide, and a compressible spring interposed between said head and the edge of the door, said spring forming an elastic cushion whereby time will be afforded to permit the door to become secured in its closed position and the danger of damaging the door-closing mechanism will be avoided, as and for the purpose herein specified.

4. The combination of an elevator-door which is normally held closed, a lazy-tongs connected to said door and to a cross-head, springs that are fitted to bear against said cross-head, a friction-roller pivoted to said cross-head, and an elevator-car which is provided with cams that are fitted to take against said friction-roller, as and for the purpose herein specified.

5. An elevator-door, a cross-head fitted to move on guides, a lazy-tongs having one of its extremities connected to said door and its opposite extremity connected to said cross-head, and a friction-roller pivoted to the cross-head, in combination with an elevator-car provided with means for engaging with said cross-head, whereby the closing movement of said door will be effected, substantially as specified.

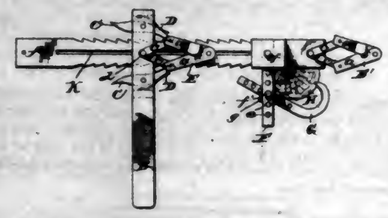
474,067. HOUSE-TELEPHONE SYSTEM. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 22, 1889. Serial No. 331,304. (No model.)



Claim.—1. The combination, with three or more users' telephone-stations, of metallic-circuit telephone-lines, one for each station, extending each to all the stations and provided each with a connecting device at each station, and a user's outfit at each station, consisting of a loop-plug and cord, a telephone-switch, a telephone and bell, and a battery with both poles extended to each of said stations and normally open, and a key included in one strand of each of the cords at each station, whereby the user at any given station may readily signal any other station to bring the two stations into telephonic connection over a metallic circuit.

2. A city telephone-line connected in metallic circuit with a connecting device at one of three or more users' stations, said users' stations being reciprocally connected together by metallic circuits, one for each station, a user's outfit at each station, a battery with its poles extended to each of said stations, and switching apparatus whereby either station may be connected with another in metallic circuit or with the city telephone-line, substantially as and for the purpose specified.

474,068. STRETCHER FOR WIRE FENCES. ANDREW M. SHAW, Larkin, Kans. Filed July 1, 1891. Serial No. 398,164. (No model.)



Claim.—1. In a wire-stretcher for fences, the centrally-slotted double-ratchet bar provided with a ratchet-lever movably secured to and adapted to slide on said bar and carrying spring-controlled pawls and an automatically-operated wire-gripper, in combination with the adjustable holding device consisting of the perforated horizontal bar

adjustably secured in a transverse slot or opening of the ratchet-bar and a perforated dog or hook adjustably secured to said bar, whereby the side of the ratchet-bar is brought in contact with and maintained on a line with the front face of the post, substantially as described.

2. The combination, with the centrally-slotted double-ratchet bar provided with the movably-secured ratchet-lever carrying the spring-controlled pawls and the automatically-operating wire-gripper and with the hooked supporting-rod, of the adjustable holding device consisting of the perforated horizontal bar adjustably secured in a transverse slot or opening of the ratchet-bar and a perforated hook adjustably secured to said bar, substantially as described.

3. The combination, with the slotted double-ratchet bar provided with the movable ratchet-lever adapted to slide thereon and carrying the spring-controlled pawls and wire-gripper and with the fixed automatically-operating gripper at one end, of the adjustable holding device consisting of the perforated horizontal bar adjustably secured in a transverse slot or opening of the ratchet-bar and a perforated hook adjustably secured to said bar, substantially as and for the purpose set forth.

4. The combination, in a stretcher for wire fences, of the slotted double-ratchet bar, the ratchet-lever movably secured thereto and carrying the spring-controlled pawls and wire-gripper, the fixed automatically-operating wire-gripper secured to one end, the supporting and holding rod, and the adjustable holding device consisting of the perforated horizontal bar adjustably secured in a transverse slot or opening of the ratchet-bar and a perforated dog or hook adjustably secured to said bar, all combined and arranged substantially as and for the purpose described.

474,069. ROCK-DRILL. JEAN SPRENGER, Vevay, Switzerland, assignor to the Ateliers de Constructions Mécaniques, same place. Filed Sept. 25, 1891. Serial No. 406,833. (No model.) Patented in Switzerland July 15, 1891, No. 2,473.

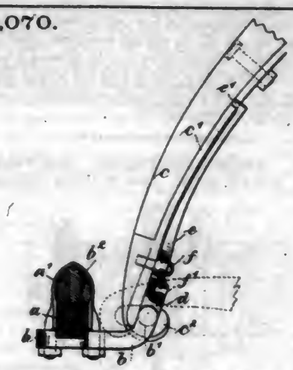


Claim.—The combination, with the cylinder in a rock-drill, of guide-rods upon which the cylinder may slide, cross-heads at the respective ends of such guide-rods, one of which is adapted to be held firmly in position, the piston-rod sliding through the other cross-head, a clamp applied to the piston-rod, clamps adapted to act against the guide-rods for holding the cylinder in position, a piston and wedge-shaped piston-rod acting upon the clamps, ports, and a flexible pipe extending to the front cross-head, whereby the piston-rod and cylinder are clamped and released alternately, substantially as set forth.

474,070. THILL-COUPLING. VERNON A. TYLER, Morris Park, N. Y. Filed Jan. 8, 1892. Serial No. 417,364. (No model.)

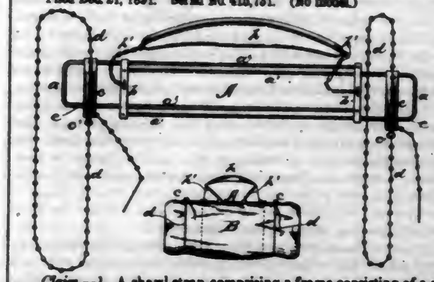
Claim.—1. The combination, with the clip having an opening in its plate and the integrally-formed pintle, of the thill-iron for a shaft or pole and its hook adapted to engage said pintle, a sliding block concave on the under side to fit said pintle, a spring-lever pivoted to the under side of the thill-iron and engaging by its short arm the sliding block and by the end of its long arm the thill-iron, substantially as and for the purposes set forth.

474,070.



2. The combination, with the clip and the integrally-formed round pintle, of the thill-iron for a shaft or pole and its hook adapted to engage said pintle, a sliding block concave on its under side and fitting over and in length extending beyond said pintle and filling the open mouth of the hook, and a spring-lever pivoted to the under side of the thill-iron and having a circular end on its short arm engaging a recess in the sliding block and the long end of said spring-lever having a catch for locking the lever, whereby the sliding block automatically keeps the parts tight and takes up wear, substantially as set forth.

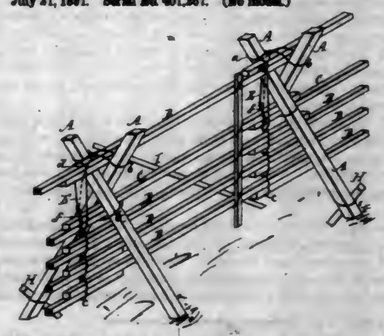
474,071. SHAWL-STRAP. EARL G. WHEELER, Amsterdam, N. Y. Filed Dec. 21, 1891. Serial No. 415,731. (No model.)



Claim.—1. A shawl-strap comprising a frame consisting of a pair of rod-sections which are bent upon themselves and have their heads united by cross-heads in which they freely slide, a handle yieldingly connected to said cross-heads, and locking-jaws located near the curve of each rod and having chains thereon for engaging said jaws.

2. The combination, with the frame and the handle connected thereto, of the cross-bars upon the frame, provided with jaws sloping and slotted longitudinally and each provided with a stop-shoulder within the jaw, and chains connected to said bars and adapted to be detachably locked in said jaws.

474,072. FENCE. FRANK A. WILLIAMS, Clarendon, N. Y. Filed July 21, 1891. Serial No. 401,267. (No model.)



Claim.—The combination, with the crossed stakes A A and the rails B C, resting, respectively, in the upper and lower crotches of the

stakes, of the wire E, attached at one end to the top of one of the stakes, thence carried over the top rail and around the other stake and back over the rail again, thence down and up, forming a loop to receive the lower rails of the fence, thence over and around the top rail again, and thence down and attached to the second rail, as shown and described, and for the purpose specified.

474,078. ELECTRIC RESISTANCE-BOX. ALOYS WIRSCHING, New York, N. Y. Filed Mar. 13, 1891. Serial No. 385,499. (No model.)



Claim.—1. In a rheostat or resistance-box, the combination, with two suitably-spaced frames or plates having the inner or opposing face of one or both provided with guideways, of spacing-blocks made of insulating material and fitting in the guideways and between the frames, and a wire wound in spiral layers with the spacing-blocks interposed between the layers for supporting and ventilating the wire.

2. In a rheostat or resistance-box, the combination, with two suitably-spaced frames having the inner or opposing face of one or both of them provided with guideways, of spacing-blocks made of insulating material and placed in the guides between the frames and having an edge thereof formed with notches or serrations for receiving and supporting the strands of the wire, and a wire wound in spiral layers, with the spacing-blocks interposed between the layers for spacing them.

3. In a rheostat or resistance-box, the combination, with suitably-spaced parallel frames or plates having their opposing faces provided with guideways arranged similarly and directly opposite each other, of spacing-blocks made of insulating material and adapted to be inserted in between the frames, with their opposite ends taking in diametrically-opposite guideways thereof, and a wire wound spirally in layers between the frames, said blocks interposed between the layers of wire and serving to support and space them.

4. In a rheostat or resistance-box, the combination, with suitably-spaced parallel frames having their opposing faces provided with radially-arranged guideways radiating from a common axis and lying directly opposite each other, of a wire wound in spiral layers between the frames, and spacing-blocks made of insulating material and interposed between the said layers for supporting and spacing the wire, the opposite ends of said blocks taking in opposite guideways.

5. The combination, with a suitable frame and the wire 7, wound in concentric spiral layers, of the spacing-blocks 11, made of insulating material, interposed between the layers as the winding is built up and having opposite edges thereof engaged by adjacent layers between which they are interposed for spacing the layers, and the strands or turns of the layers, substantially as and for the purpose set forth.

6. The combination, with a suitable frame and the wire 7, wound in concentric spiral layers, the sets of spacing-blocks 11, made of insulating material and interposed between the layers and having two opposite edges thereof engaged by adjacent layers between which they are interposed for spacing the layers, and the turns or strands of the layers, the blocks of each set being arranged radially in the same plane, so that the stress on the blocks beyond the innermost block may be imparted to each other in a direct line, substantially as and for the purpose set forth.

7. The combination, with the frames 4 and 5, suitably spaced and provided with the guideways 12 12, of the wire 7, wound in the frame in layers, and the spacing-blocks 11, made of insulating material and set in the guideways 12 and interposed between the layers of wire for supporting and spacing the wire, substantially as and for the purpose set forth.

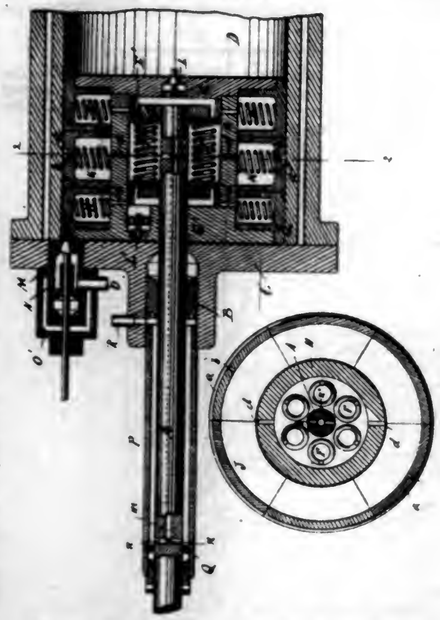
8. The combination, with the resistance-box, of a ceiling-block or fixture comprising a casing or shell 16, in which the resistance-box is seated and secured, and a hook 17, extending through the casing and secured to the resistance-box and provided with a nut 19, formed with an attaching hook 20, substantially as and for the purpose sent forth.

474,074. DRESS FACING AND PROTECTOR. ANNIE M. YOUNG, Providence, R. I. Filed Nov. 16, 1891. Serial No. 412,001. (No specimens.)



Claim.—As an article of manufacture, a dress-facing and skirt-protector combined, consisting of a sheet of suitable facing material *a*, having a sheet of cement connected with one face thereof, and a protector connected at one of its edges to one edge of the facing material and extending a considerable distance beyond the said edge, whereby after the facing is attached to the dress goods the protector may be turned up on the inside of the facing and be cemented thereto, and so form a means for preserving the lower edge and inner lower face of the skirt against undue wear, as set forth.

474,075. LUBRICATING-PISTON. WILLIAM BERRENBERG, Boston, Mass., assignor of one-half to Albert L. Reinmann, New York, N. Y. Filed Aug. 26, 1891. Serial No. 403,697. (No model.)



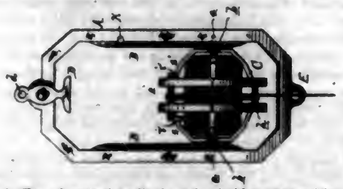
Claim.—1. The combination, with a cylinder, of a hollow piston-rod, a piston formed of two heads, a cylindrical section connecting said heads and provided with apertures, U-shaped piston-rings surrounding said circular sections, and springs in said piston-rings for pressing them outward, which springs rest on the cylindrical section, substantially as set forth.

2. The combination, with a cylinder, of a hollow piston in the same, an inwardly-opening outlet-valve in each head of the piston, means for conducting a liquid into the hollow piston, and an outlet-valve in the head of the cylinder, substantially as set forth.

3. The combination, with a cylinder, of a hollow piston in the same, a piston-rod connected with said piston and provided with a longitudinal bore and with two transverse bores, one within the piston and the other outside of the same, a jacket surrounding the piston-rod, stuffing-boxes at the ends of said jacket, through which stuffing-boxes the piston-rod passes, and a pipe for conducting a liquid into the jacketed space, substantially as set forth

4. The combination, with a cylinder, of a hollow piston in the same, an inwardly-opening outlet-valve in each head of the piston, means for conducting a liquid into the hollow piston, an outlet-valve in the head of the cylinder, a casing containing said valve, and a tube for carrying off the oil from said casing, substantially as set forth.

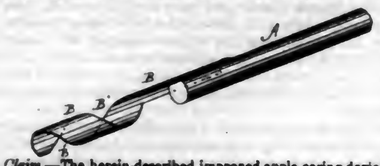
474,076. GRAVITY TWINE-BOX. WILLIAM G. BOLIN, Cleveland, Ohio, assignor to the Gravity Twine Box Company, same place. Filed Oct. 24, 1891. Serial No. 409,656. (No model.)



Claim.—1. The herein-described twine-holder, comprising a frame having rack bars at its sides and openings between its sides and said rack-bars, said frame also having a recess adjacent to the upper end of one of said rack-bars, a guide-loop adjacent to the lower end of said frame, a pivoted stop at the upper end of said frame, and a twine-receptacle removably inserted within said frame, said receptacle being made in separable sections, each of which has an axial arm engaging the frame and a pinion engaging the rack-bar, all arranged and operating substantially as shown, and for the purposes set forth.

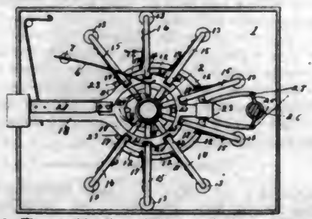
2. The herein-described twine-receptacle, comprising a frame having rack-bars at its sides and a recess K adjacent to the upper end of one of said rack-bars, a guide-loop at the lower end of said frame, a pivoted stop at the upper end thereof, and a twine-receptacle consisting of the separate sections *c d*, an axial arm projecting from each of said sections and engaging said frame, a pinion on each of said arms engaging a rack-bar, a series of rods *h* on one of said sections and engaging the other, and the rods or bars *i*, journaled in said parts *c d* and each having lugs or projections at its ends, said parts *h* and *i* having the combined functions set forth.

474,077. APPLE-CORER. WILLIAM H. BOUTELL, Fort Payne, Ala. Filed Aug. 19, 1891. Serial No. 403,061. (No model.)



Claim.—The herein-described improved apple-coring device, consisting, essentially, of the shank or handle A and spiral blade B, connected to and extending therefrom, said spiral blade forming a screw-shaped slot B', whereby when the corer is rotated the core is but partially separated from the apple, substantially as set forth.

474,078. PERMUTATION-LOCK. WILLIAM H. BRICKER, Canton, Ohio. Filed June 24, 1891. Serial No. 397,286. (Model.)



Claim.—1. The combination of the case 1, the post 2, the sliding bolt 18, provided with an open ring or link having the notches 20, the locking-bars 15 and 16, the counting-disk 4, the ring or band 8, the catch-arms 9, and the catches 10 and 11, substantially as and for the purpose specified.

2. In a permutation-lock, the combination of a suitable casing and a cover fixed thereto, a hollow center post adapted to receive and hold the counting-spindle, a disk located upon the counting-spindle and provided with notches, a spring to bear against the disk, a sliding bolt provided with an open link having notches, locking-bars provided with shoulders to engage the sliding bolt, and means for adjusting the locking-bars, substantially as and for the purpose specified.

3. The combination of the casing 1, the locking-bars 15 and 16, provided with the tension-springs 17, the spacing-posts 12, and the ring 8, substantially as and for the purpose specified.

4. The combination of the casing 1, the center post 2, provided with the shoulder 34, the springs 30 and 32, the band 8, provided with the catch-arms 9, the catch 10, and the combined catch and push-pin 11, the disk 4, provided with the stop-lug 27, and the spring 28, substantially as and for the purpose specified.

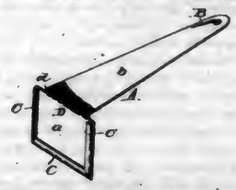
5. The combination of the casing 1, having located therein a sliding bolt, an open ring or link 19, provided with notches, the band 8, provided with catch-arms, the counting-disk 4, provided with the notches 5, the spring 6, and the catches 10 and 11, fixed to and rotating with said disk, substantially as and for the purpose specified.

6. The combination of the spindle 3, having fixed thereto the disk 4, the catches 10 and 11, the locking-bars 15 and 16, provided with the tension-springs 17, and the posts 12 and 23, the bolt-spindle 26, provided with the dogs 25, the sliding bolt 18, provided with the hooked arms 24, substantially as and for the purpose specified.

7. The combination of the ring 8, provided with the catch-arms 9, and the aperture 37, and the pin or post 38, substantially as and for the purpose specified.

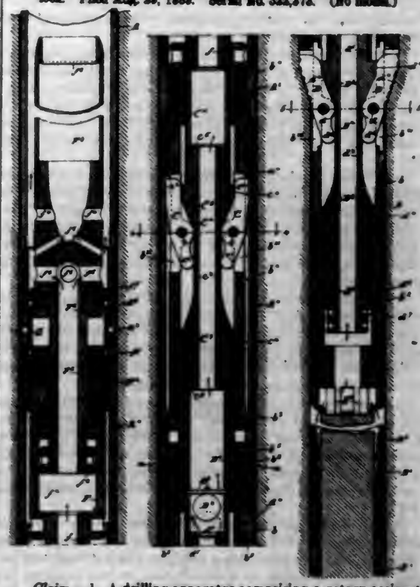
8. In a permutation-lock, a sliding bolt having an open link, as 19, and the interchangeable locking-bars 15 and 16, substantially as and for the purpose set forth.

474,079. DEVICE FOR MARKING GOODS. SAMPSON H. BROWN, Lockhart, Tex. Filed July 13, 1891. Serial No. 399,317. (No model.)



Claim.—The herein-described improved marking device, the same consisting of a strip of ductile metal or any other material comprising a tapering finger *b*, having a pointed hook or prong at its outer end and a square or rectangular plate *a*, integral with the tapering finger and provided on three sides with overturned edges or flanges and on the fourth side with a raised shoulder or offset *d*, adapted to form a stop for the removable marking-tag E, so as to hold the same in place removably, substantially as and for the purpose set forth.

474,080. ROCK-DRILLING APPARATUS. MILAN C. BULLOCK and SAMUEL W. DOUGLASS, Chicago, Ill.; said Douglass assignor to said Bullock. Filed Aug. 29, 1889. Serial No. 322,573. (No model.)



Claim.—1. A drilling apparatus comprising a rotary casing-tube, means for actuating the same, a core-barrel provided with a cutting-

head adapted to extend below the casing-tube, said core-barrel and cutting-head being smaller in diameter than and adapted to pass through the casing-tube, and means for detachably securing the upper end of the core-barrel to the lower part of the casing-tube, whereby the core-barrel is driven by the casing-tube and may be removed upwardly through the same, substantially as described.

2. A drilling apparatus comprising a rotary casing-tube, means for actuating the same, a core-barrel provided with a cutting-head adapted to extend below the casing-tube, said core-barrel and cutting-head being smaller in diameter than and adapted to pass through the casing-tube, stops or shoulders on the casing-tube and core-barrel to limit the downward movement of the core-barrel relatively to the casing-tube, and means for detachably securing the core-barrel to the casing-tube, substantially as described.

3. A drilling apparatus comprising a rotary casing-tube, means for actuating the same, a core-barrel provided with a cutting-head extending below the casing-tube, said core-barrel and cutting-head being made smaller than and adapted to pass through the casing-tube, means for detachably securing the core-barrel to the lower part of the casing-tube, and expansible reamers connected with the core-barrel, said expansible reamers being adapted to enlarge the hole cut by the cutting-head for the reception of said casing-tube, substantially as described.

4. A drilling apparatus comprising a casing-tube, a core-barrel projecting below the same, means for connecting said core-barrel with the casing-tube, comprising expansible dogs connected with the core-barrel and adapted to engage the casing-tube, a cutting-head, and expansible reamers adapted to enlarge the holes cut by the cutting-head for the reception of the said casing-tube, substantially as described.

5. A drilling apparatus comprising a casing-tube, a core-barrel projecting below the same, means for connecting said core-barrel with the casing-tube, comprising expansible dogs connected with the core-barrel and adapted to engage the casing-tube, a cutting-head, expansible reamers adapted to enlarge the hole cut by the cutting-head for the reception of the said casing-tube, and means for retracting said dogs and reamers, whereby the said core-barrel can be drawn upwardly through the casing-tube, substantially as described.

6. A drilling apparatus comprising a casing-tube, a core-barrel having a cutting-head and projecting below said casing-tube, said core-barrel being provided with pivoted expansible dogs for detachably connecting the same with said casing-tube and with expansible pivoted reamers adapted to enlarge the hole previously cut for the reception of said casing-tube, and actuating spools or cores engaging said dogs and reamers and adapted to expand and retract the same, substantially as described.

7. A drilling apparatus comprising a casing-tube, a core-barrel provided with a cutting-head extending below the casing-tube, said core-barrel and cutting-head being smaller than and adapted to pass through the casing-tube, means for detachably securing the core-barrel to the casing-tube, and a packing interposed between the casing-tube and the core-barrel, substantially as described.

8. A drilling apparatus comprising a casing-tube, a core-barrel extending below the same, a tubular part attached to said core-barrel and extending upwardly within the casing-tube, said tubular part embracing two sections having sliding connection with each other, and a tubular packing attached to said sections and adapted to expand against the casing-tube by the weight of the upper section, substantially as described.

9. A drilling apparatus comprising a casing-tube, a core-barrel detachably connected therewith and projecting below the lower end of the same, said core-barrel being provided with a cutting-head and having expansible reamers, an actuating spool or core engaging said reamers, passages for water leading from the interior of said casing-tube through said spool to the core-barrel, and a packing interposed between said casing-tube and core-barrel, substantially as described.

10. A drilling apparatus comprising a casing-tube, a core-barrel extending below the same and detachably connected therewith, said core-barrel and cutting-head being removable upwardly through the tube, and an expansible packing interposed between the casing-tube and core-barrel, said casing-tube being provided with water-holes opposite the said packing, substantially as described.

11. A drilling apparatus comprising a rotary casing-tube, a core-barrel provided with a cutting-head arranged to project below the said casing-tube, a tubular part or section uniting the core-barrel with the casing-tube, extending upwardly within the latter, means detachably connecting the tubular part or section with the casing-tube, and an upwardly-opening check-valve in said tubular part, substantially as described.

12. A drilling apparatus comprising a casing-tube, a core-barrel detachably connected therewith and projecting below the lower end of the same, said core-barrel being provided with a cutting-head and having expansible reamers, an actuating spool or core engaging said reamers, a passage for water leading from the interior of the said casing-tube through said spool to the core-barrel, and an upwardly-opening check-valve in said passage, substantially as described.

13. A drilling apparatus comprising a casing-tube, a core-barrel detachably connected therewith and projecting below the lower end of the same, said core-barrel being provided with a cutting-head, pivoted expansible dogs connected with the core-barrel and engaging the casing-tube, a spool engaging and actuating said dogs, a tubular nut attached to the upper end of said spool, a longitudinally-sliding head engaging said tubular nut and having stops to limit the movement thereof, an external flexible packing-ring secured at its opposite ends to said nut and head, whereby the weight of said head will expand said packing-ring against the inner surface of the outer casing, and passages for water leading from the interior of said tube through the said spool to the core-barrel, substantially as described.

14. A drilling apparatus comprising a casing-tube, a core-barrel projecting below the same, and means for connecting the core-barrel with the casing-tube, comprising upwardly and downwardly facing shoulders in the casing-tube, a shoulder on the core-barrel engaging the upwardly-facing shoulder of the casing-tube, and expansible dogs connected with the core-barrel and engaging the downwardly-facing shoulder of the casing-tube, substantially as described.

15. The combination, with a tube and reamers or similar movable parts, of means for pivotally connecting the same with the tube, consisting of notches in the outer faces or edges of said reamers, and a ring upon the tube engaging said notches, substantially as described.

16. The combination, with a tube formed of two connected sections and reamers or similar movable parts, of means for pivotally connecting the same with the tube, consisting of notches in the outer faces or edges of said reamers and a bearing-ring located in the joint which unites the said sections, substantially as described.

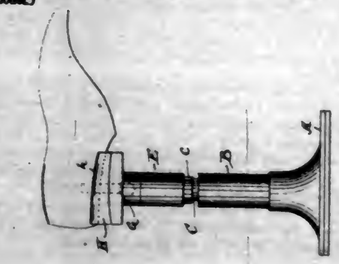
17. The combination, with a tube provided with slots and reamers or similar movable parts located in said slots and provided with notches in their outer edges or faces, of a ring upon the tube engaging said notches and an actuating core or spool engaging said reamers and adapted to hold the same in engagement with the said ring, substantially as described.

18. The combination, with a tube provided with slots formed therein and reamers or other similar movable parts located in said slots and having notches in their outer faces or edges, of a ring upon said tube adapted to engage the said notches and forming pivots for the reamers and an actuating core or spool engaging said reamers and adapted to hold the same in engagement with the said ring, said core or spool being provided with lateral recesses or notches to form passages for water between it and the walls of the said tube, substantially as described.

19. The combination, with a tube provided with a plurality of slots and an internal ring, of expansible reamers having notches in their outer faces or edges and engaged with said ring, said reamers being provided with cutting-heads adapted to fit within said slots when the reamers are expanded, and an actuating core or spool located within said tube adjacent to said reamers and adapted to hold the same in engagement with said ring, said actuating core or spool being provided with lateral recesses or notches to form passages for water between it and the walls of the said tube, substantially as described.

20. The combination, with a tube consisting of two connected sections, of a bearing-ring resting upon the shoulder formed by the end of one of said sections, lugs upon the other section, adapted to hold said bearing-ring against said shoulder, a plurality of slots formed in said casing or drill-tube, expansible reamers having notches in their front faces or edges engaging said bearing-ring and provided with cutting-heads adapted to fit within and project through said slots when the reamers are expanded, stops upon said cutting-heads to limit the outward movement of said reamers, and an actuating core or spool adjacent to said reamers and adapted to hold the same in engagement with said ring, substantially as described.

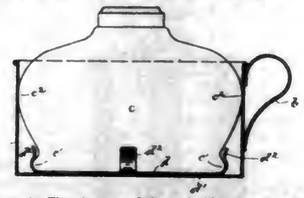
474,081. NAILING-JACK. JAMES BONFIELD and WALTER BONFIELD, Haverhill, Mass. Filed Dec. 14, 1891. Serial No. 414,962. (No model.)



Claim.—1. In a heel-nailing machine, a jack or support for a boot or shoe adapted to be adjusted longitudinally and vertically and having a cap E, adapted at its upper end to receive a ball *f* on the end of a dowel F, and a piece G, having a tapering hole, in combination with a sliding piece H, having a flange *h* on each side for holding the sides of the last, thereby preventing it from splitting, the sliding piece being also provided with a tapering hole, substantially as set forth.

2. In a heel-nailing machine, an adjustable dowel for holding the last and a sliding piece H, having a flange *h* on each side to embrace the sides of the last to prevent it splitting, substantially as set forth.

474,082. LAMP-HOLDER. FRANCIS O. DEWEY, Reading, Mass. Filed June 1, 1891. Serial No. 394,791. (No model.)



Claim.—1. The improved lamp-holder hereinbefore described, comprising the receptacle *a*, having a handle and a flat external base, and the plate *d*, permanently secured to the central inside portion of its bottom, said plate having a plurality of radial arms provided with upwardly-turned ends to form spring-catches d^3, adapted to ride over the bead at the bottom of a lamp-body when the latter is pressed downwardly into the said receptacle and to engage the said bead and prevent accidental or easy removal of the lamp from the said holder, as set forth.

2. The combination, with a lamp, of a holder comprising a handled and flat-bottomed receptacle, the sides of which extend above and furnish lateral support for the upper portion of the sides of the lamp-body or oil-reservoir, said lamp-body being provided with a bead at its lower edge, and spring-catches secured to the bottom of the receptacle and adapted to engage the said bead and removably unite the said lamp-body and receptacle, whereby the lamp-body is held against separation from the receptacle by a lateral or tilting movement, substantially as described.

474,083. ASH-SIFTER. JOHN HOKIN and ANTHONY W. CROSS, Jersey City, N. J. Filed Sept. 1, 1891. Serial No. 404,388. (No model.)



Claim.—In an ash-sifter, the combination, with a vessel having a curved bottom and semicircular end pieces provided with raised central parts, and pivots projecting from the outer surfaces of the end pieces at said raised parts, hooks on the rear edge of said vessel, a detachable curved screen having end pieces provided with recesses for receiving the raised parts of the end pieces of the vessel, a catch for locking the front of the curved screen on the front of said vessel, and a receptacle provided with recesses for receiving the above-mentioned end pivots, substantially as set forth.

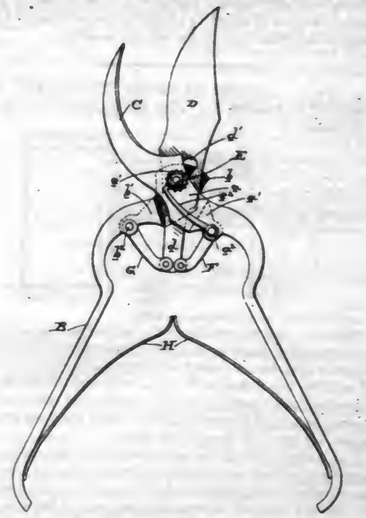
474,084. INSERTIBLE TOOTH FOR DIAMOND SAWS. HENRY FORSTER, New York, N. Y. Filed Apr. 3, 1891. Serial No. 387,508. (No model.)



Claim.—1. The combination, with a recessed saw-blade, of an insertible saw tooth or bit formed of cast steel or other hard material and having diamonds inserted into the same, grooved soft-metal edge pieces for said tooth, and rivets or keys by which the edge pieces and tooth are secured into the recesses of the saw-blade, said tooth being made of greater thickness than the saw-blade and edge pieces, substantially as set forth.

2. An insertible diamond saw tooth or bit formed of a body of cast steel or other hard metal, provided with diamonds inserted in the same and with grooved soft-metal edge pieces soldered to the ends of the tooth or bit, the body of the tooth being made of greater thickness than the edge pieces, substantially as set forth.

474,085. PRUNING IMPLEMENT. LEWELL J. GILMAN, Santa Rosa, Cal., assignor of one-half to Alexander Westrup, same place. Filed Nov. 27, 1891. Serial No. 413,236. (No model.)



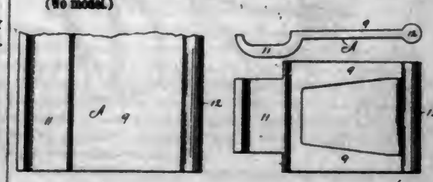
Claim.—1. In pruning-shears having pivoted handles, one of which carries a finger C, and a blade slotted upon the pivot-post of the handles and having a shank passing through the same and with its lower end connected with said handles, substantially as herein described.

2. In pruning-shears, the combination of opposing pivoted handles, a blade slotted on the pivot-post of the handles and having a shank extending downwardly between said handles, and links pivoted at their outer ends to said handles and at their inner ends to the blade-shank, substantially as herein described.

3. In pruning-shears, the combination of the opposing handles having the slotted heads, one of said handles having a finger, the slotted blade lying between said handle-heads and having a downwardly-extending shank passing between the slotted heads of the handles, the pivot-post of the handles passing through the slotted blade, and the links pivoted to the handles and to the blade-shank, substantially as herein described.

4. In pruning-shears, the combination of opposing pivoted handles, the blade having an inclined elongated slot fitting over the pivot-post of the handles and a shank extending downwardly between said handles, and the links pivoted at their outer ends to the handles and at their inner ends to the blade-shank, substantially as herein described.

474,086. MANUFACTURE OF DRIVE-CHAIN LINKS. GEORGE P. HART, New Britain, Conn. Filed Jan. 20, 1892. Serial No. 418,655. (No model.)

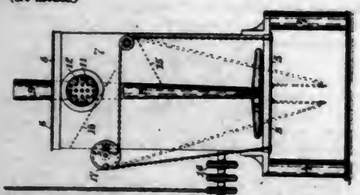


Claim.—1. The herein-described method of making drive-chain links, which consists in forming a bar of rolled metal with a rounded bead-like pintle-forming portion, a thickened knuckle-forming portion and a plate-like body-forming portion between said pintle and knuckle-forming portions, then cutting out link-blanks therefrom transversely to the lengths of said portions, and then rolling or curving the knuckle-forming portion into a knuckle, substantially as described, and for the purpose specified.

2. The bar for forming drive-chain links herein described, having a pintle-forming portion, a thickened knuckle-forming portion, part of which is curved on a radius substantially equal to that of the link-pintle, and a plate-like portion for forming the body of the link-blanks between said pintle and knuckle forming portions, substantially as described, and for the purpose specified.

3. A bar for forming drive-chain links, having longitudinal bead-like pintle-forming portions, a plate-like portion for forming the body of the links, and a thickened knuckle-forming portion extending longitudinally with said bar and having a portion curved on a radius about equal to that of the curve of said pintle-forming portion, substantially as described, and for the purpose specified.

474,087. MACHINE FOR DRYING TEXTILE FIBER. WILLIAM HARTLEY, Jr., Lonsdale, R. I. Filed May 23, 1891. Serial No. 393,902. (No model.)

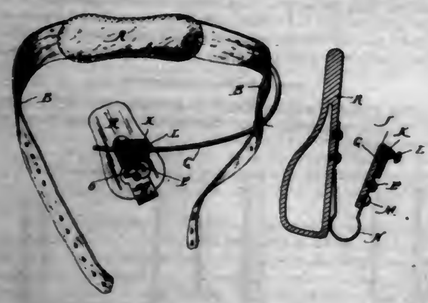


Claim.—1. In a machine for drying textile fiber, the combination, with a rectangular chamber, of inlets near the bottom of the opposite ends for the admission of heated air, outlets near the top of the opposite ends for the discharge of the air and vapor, doors in the top and bottom of the chamber for the admission and discharge of the fiber, and a series of horizontal shafts provided with beaters adapted to agitate and open the fiber, as described.

2. In a machine for drying textile fiber, the combination, with the rectangular drying-chamber provided with air-inlets near the bottom at opposite ends, of the exhaust-tubes 12 near the top of the chamber at the opposite ends, the centrally-hinged doors 5, forming the bottom of the chamber, the centrally-hinged doors 8, forming the top of the chamber, the oppositely-inclined shelves 15, and the shafts 13, provided with the beaters 14, adapted to operate substantially as described.

3. In a machine for drying textile fiber, the combination, with the rectangular drying-chamber having the vertical sides 6 and ends 7, of the centrally-hinged doors 8, forming the top, the centrally-hinged doors 5, forming the bottom, the hot-air inlets 10, near the bottom, at the opposite ends of the chamber, the perforations 11, and exhaust-tubes 12, near the top, at opposite ends, the perforated oppositely-inclined shelves 15 in the top of the chamber, the shafts 13, provided with the beaters 14 near the bottom of the chamber, and mechanism, substantially as described, for rotating the beater-shafts and operating the doors 5, as described.

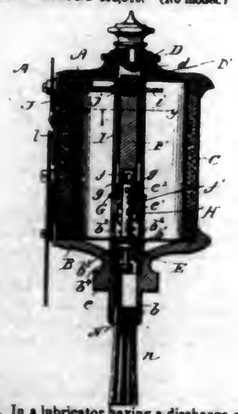
474,088. TRUSS. THOMAS Y. KAYE, Chicago, Ill., assignor to Hattie M. Henley, same place. Filed Dec. 5, 1890. Serial No. 373,961. (No model.)



Claim.—1. In a truss, the combination of a rod to which the back plate and the pad are secured and which passes somewhat more than half-way round the person and is normally free therefrom at its curved part, and a securing-belt adapted to be tightened about the person, and thus hold the pad and plate in position while the rod is free from the body, said back plate secured to the strap and said rod passing through the strap at its forward end, so that the body is protected from the curve of the rod by the tightening of the strap which lies under it, the rod and belt being disposed and connected together so as to be substantially in the same plane.

2. In a truss, the combination of a rod with a back plate and a front pad, said pad consisting of a clamping-plate adjustably secured by a set-screw to the rod, a spring-support pivoted to such clamping-plate and adjustably held thereon by means of an arc-shaped slot and set-screw so as to be capable of adjustment as to angle, and a pad proper secured to the spring-support, whereby such pad proper may be reversed or changed as to angle or position on the rod or turned about the rod thereupon, as may be required.

474,089. LUBRICATOR. FRANK KELLER, Culbertson, Nebr. Filed July 22, 1891. Serial No. 400,319. (No model.)



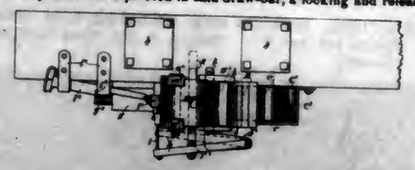
Claim.—1. In a lubricator having a discharge-opening in its base, the combination of a valve-rod, a valve-stem having a valve and constructed to move on the said valve-rod and having a projecting portion, a collar loosely mounted on the valve-rod and having a cam end to operate on the said projecting portion of the valve-stem, and means for rotating the said collar, substantially as shown and described.

2. In a lubricator, the combination, with the receptacle having a discharge-opening in its base, of a valve-stem held against rotation and provided with a valve and having a lateral projection, the collar having a cam end to engage with the said lateral projection and loosely mounted on the valve-rod, the sleeve connected with the said collar, and means for rotating the said sleeve, substantially as shown and described.

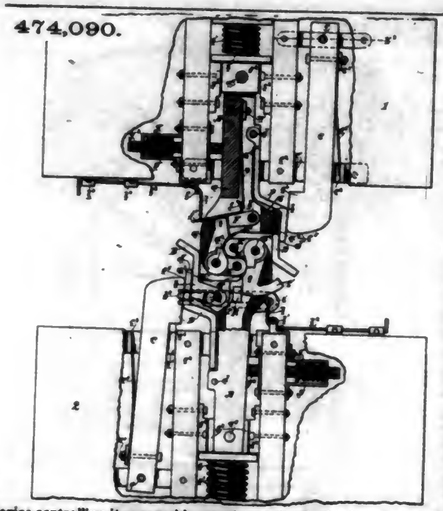
3. In a lubricator, the combination of the base having a tubular extension and having openings b^3 in the said tubular extension, the cap, the rod F, screwed to the said tubular extension, the stopper D, screwed on the rod F, the valve-stem having a plunger and a valve and working in the rod F, the pin c^4, passing transversely through the valve-stem and a slot in the rod F, a spring to return the valve-stem to a normal position, the loose collar G, having a cam end arranged to operate on the projecting portion of the valve-stem, the sleeve I, and means for rotating the said sleeve, substantially as shown, and for the purposes specified.

474,090. CAR-COUPLING. JOHN C. LOCK, San José, Cal. Filed Jan. 19, 1892. Serial No. 418,568. (No model.)

Claim.—1. In a car-coupling, the combination of a laterally-movable spring-controlled draw-bar having a side projecting buffer-arm, a rotary hook-head pivoted in said draw-bar, a locking and releasing



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device controlling it, a movable guard opposite the hook and pivoted to the buffer-arm, and a spring-guard attached to the car to press on the movable guard and hold the couplings together and permit their separation sidewise, substantially as herein described.

2. In a car-coupling, the combination of a laterally-movable spring-controlled draw-bar having a side projecting buffer-arm, a rotary hook-head pivoted in said draw-bar, a locking and releasing device controlling it, a yielding inner guard opposite the hook-head and pivoted to the buffer-arm, and an independent movable spring-controlled outer guard-bar pivoted to the car and acting on the yielding inner guard to hold the couplings together and permit their separation sidewise, substantially as herein described.

3. In a car-coupling, the combination of a laterally-movable draw-bar having a side projecting buffer-arm, a rotary hook-head pivoted in said draw-bar and having a rearwardly-extending locking-lever arm against which the opposing hook impinges, a locking and releasing device for the hook-head, a movable guard pivoted to the buffer-arm and opposing the hook, and side springs acting on the draw-bar and on the guard to force them toward each other and permit their separation sidewise, substantially as herein described.

4. In a car-coupling, the combination of a laterally and longitudinally movable draw-bar having a hook-head, a movable guard pivoted to the draw-bar opposite the hook-head and separated therefrom, a spring secured to the car and acting on the draw-bar from one side, and a spring secured to the car and acting on the movable guard from the other side to force the draw-bar and guard toward each other and permit their separation sidewise, substantially as herein described.

5. In a car-coupling, the combination of a laterally and longitudinally movable spring-controlled draw-bar having a hook-head, a movable inner guard pivoted to the draw-bar and opposing the hook, and an independent movable spring-controlled outer guard-bar pivoted to the car and acting on the movable inner guard to press it against the back of the opposing coupling-hook and keep the two coupling-hooks pressed in together and allow said inner guard to follow the longitudinal movement of the draw-bar, substantially as herein described.

6. In a car-coupling, the combination of a laterally-movable draw-bar having a flat-face hook-head, a movable guard pivoted to the draw-bar and opposing the hook, the two constituting a coupling-bar forming a pocket for the opposite coupling-hook, and a spring-guard attached to the car with an inner stop, whereby the coupling-bar is pressed over and held in such a position that the hook-head of the coupling on one car comes opposite the guard and pocket of the coupling of the opposite car when the cars are separated, substantially as herein described.

7. In a car-coupling, the combination of a laterally-movable draw-bar having a hook-head and pivoted guard, said guard being spring-actuated, and an outer stop connected with the car to limit the movement of said guard to a point where the draw-bar can follow it and beyond the point sufficient to permit the said guard to be pressed out for the entrance of the opposite coupling-head, substantially as herein described.

8. In a car-coupling, the combination of a laterally-movable draw-bar with a hook-head and yielding inner guard opposite the hook and pivoted to the draw-bar, an independent laterally-movable spring-controlled outer guard-bar pivoted to the car for acting on the inner guard and draw-bar, and an outer stop to limit the movement of the outer guard-bar to a point where the draw-bar can follow it and beyond the point sufficient to permit the inner guard to be pressed out for the entrance of the opposite coupling-head, substantially as herein described.

9. In a car-coupling, the combination of a laterally-movable draw-bar having a flat-face buffer-arm a and jaws a' for a rotary hook-head and an incline a^4 between the buffer-arm and the jaws, a flat-face hook-head pivoted in the jaws and having a locking-lever arm e fitted in a recess in the draw-bar and whose outer edge follows the walls of the incline a^4 in the draw-bar, and a yielding guard opposite the hook-head and pressing against the back of the opposite coupling-hook, all for the purpose of turning the rotary hook to its locking-place and to relieve the end of the hook from the buffing-shock by causing the knuckle to strike the buffer-arm, substantially as herein described.

10. In a car-coupling, the combination of a laterally and longitudinally movable draw-bar with hook-head, a movable guard opposite the hook and pivoted to the draw-bar, a spring-guard attached to the car to act on the movable guard, and the equalizing-bar D, pivoted to the draw-bar back of the movable guard and lying between it and the spring-guard, so that the pressure of the spring-guard transmitted through the equalizing-bar falls at a certain distance forward of the pivot-pin of the movable guard as the draw-bar moves longitudinally, substantially as herein described.

11. In a car-coupling having a pivoted hook-head with locking-lever arm and a gravity-lock for locking the lever, the lifting-bar i, fulcrumed in a projection extending out from the draw-bar, said lifting-bar passing under the gravity-lock and to the opposite side of the draw-bar, a chain attached to the free end of said lifting-bar and passing upwardly through a guide in the draw-bar and thence to an operating lever or bar for the purpose of raising the gravity-lock, substantially as herein described.

474,091. ELECTRIC-ARC LAMP. WILLIAM B. LOOK, Brookline, Mass. Filed Aug. 8, 1891. Serial No. 402,060. (No model.)

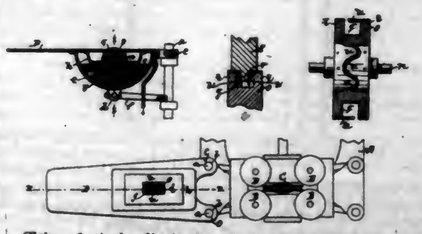


Claim.—1. In a electric-arc lamp, the combination, with a movable carbon, of a solenoid and a magnetic core composed of two or more parts, and a clutch consisting of clamping-rings secured to said parts and embracing the movable carbon, the said clamping-rings normally encircling the said carbon loosely and acting upon opposite sides of the said carbon to grip the same when the magnetic core is attracted by the solenoid, substantially as described.

2. In an electric-arc lamp, the combination, with a movable carbon, of a solenoid, a magnetic core composed of two semi-cylindrical parts or halves, and one or more clamping-rings secured to the inner side of the said parts or halves, and through which the movable carbon is extended, substantially as described.

3. In an electric-arc lamp, the combination, with a movable carbon, of a solenoid, a magnetic core composed of two semi-cylindrical parts a^{20} a^{21} and cross-piece a^{23}, clamping-rings a^{25} a^{24}, attached to the said parts, a clamping-ring a^{27}, pivoted to the cross-piece a^{23}, and pieces a^{26} a^{28}, attached to said pivoted ring, substantially as described.

474,092. GLUING ATTACHMENT FOR MATCHING-MACHINES. BENJAMIN G. LUTHER, Worcester, Mass. Filed Oct. 26, 1891. Serial No. 409,553. (No model.)



Claim.—1. A glue-distributing wheel provided with a circumferential groove adapted to receive the tongue and the projecting flexible covering for applying the glue to the side of the tongue as the edge of the board passes over the wheel, substantially as described.

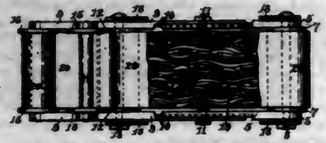
2. A glue-distributing wheel provided with a circumferential groove adapted to receive the tongue, the projecting flexible covering, and yielding means for supporting the said wheel against the edge of the board, substantially as described.

3. The combination, with the cutter and the fluted-rolls of a match-

ing-machine, of the glue-distributing wheel provided with the circumferential groove adapted to receive the tongue and the projecting flexible covering for applying the glue to the side of the tongue as the edge of the board passes over and rotates the wheel, substantially as described.

4. The combination, with the cutter and the feed-rolls of a matching-machine, of the glue-pot, a glue-distributing wheel, and yielding means for holding the wheel against the edge of the board, so as to be rotated thereby, substantially as described.

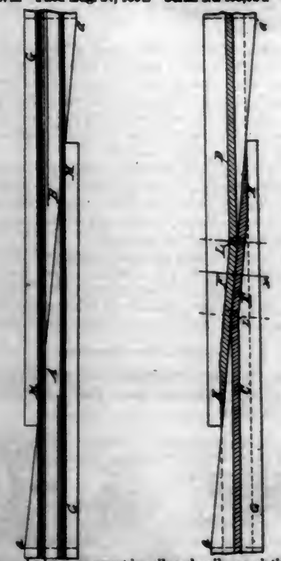
474,093. GRAINING MECHANISM. JOSEPH MADDEN, Providence, R. I. Filed Nov. 17, 1891. Serial No. 412,136. (No model.)



Claim.—1. In a graining-machine, the combination, with an endless belt having a raised graining design carried on rollers revolving on shafts secured in an extensible frame, of a band of absorbent material carried between the graining design and the surface to be grained, as and for the purpose described.

2. The combination, with the rollers 7 and 12, journaled on shafts secured in the frame formed by the arms 5 5 and 9 9 and carrying the endless belt 19, having a raised graining design thereon, of the rollers 14 and 16, journaled on shafts secured in the arms 9 9, and the band 19 of absorbent material adapted to be operated by the flanges 15, secured to the end portions of the roller 14 and bearing against the roller 12, as and for the purpose described.

474,094. RAILROAD-RAIL. BERNHARD G. MARSCHNER, Milwaukee, Wis. Filed Aug. 27, 1891. Serial No. 403,994. (No model.)

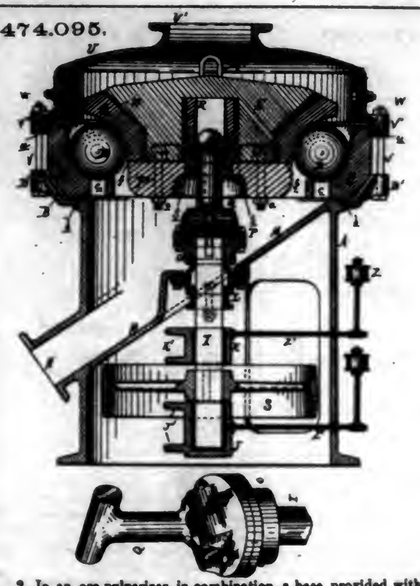


Claim.—An improvement in railroad-rails, consisting of a diagonal splice the face of which is parallel to itself entirely through the rails and the diagonal webs of the spliced portions beveled to thin edges to lie parallel with the edges of the top of the rail and extending under and to the points of the splice and projecting outward from the webs of the main rails, as and for the purpose specified.

474,095. ORE-PULVERIZER. WILLIAM L. MOORE, Cleveland, Ohio. Filed May 6, 1891. Serial No. 391,776. (No model.)

Claim.—1. In an ore-pulverizer, in combination, a primary weight, a supplemental weight suspended from said primary weight, and a grinding-ring encircling said primary weight, the latter being provided with a central removable bearing for the head of the actuating-shaft, substantially as and for the purposes described.

474,095.

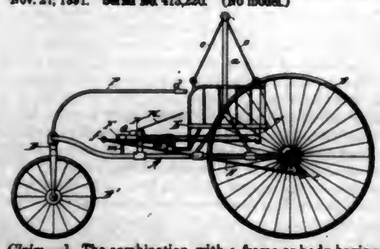


2. In an ore-pulverizer, in combination, a base provided with a flaring flange, an inclined shelf, and a discharge-opening, a ring-track resting within said flange and having discharge-openings, rotatable balls resting within said ring-track, a driver in peripheral contact with said balls, and a cap between which and the flange of the base the said ring-track is retained against accidental displacement, the parts being constructed, arranged, and operating substantially in the manner and for the purposes specified.

3. In an ore-pulverizer, a rotatable driver consisting of a primary weight, a supplemental weight secured to the lower end of said primary weight and projecting beyond the same, and a grinding-ring secured to said primary weight and resting at its lower end on said projecting portions of said supplemental weight, in combination with a ring-track and a series of balls between said grinding-ring and ring-track.

4. In an ore-pulverizer, the combination, with the driver having a bearing formed in its axial center, of a rotatable driving-shaft, a bearing P at the upper end of said shaft, and a wabbler Q, having its lower end secured to said bearing P and its upper end T headed and received by the bearing in the driver, substantially as described.

474,096. TRICYCLE. THOMAS MCCORMICK, Brooklyn, N. Y. Filed Nov. 27, 1891. Serial No. 413,220. (No model.)



Claim.—1. The combination, with a frame or body having an upright frame erected thereon, a shaft journaled near the rear of the last-mentioned frame or body and provided with a crank formed therein, and driving-wheels fixedly secured to the ends of said shaft, of a seat suspended in such upright frame, a rod and pitman intermediate said seat and crank, and means for insuring a proper rectilinear movement being imparted to the joint between the forward ends of the rod and pitman, whereby when the seat is swung back and forth a rotary motion is communicated therefrom to said shaft, substantially as described.

2. The combination, with a frame or body having an upright frame erected thereon and a seat suspended in such upright frame, of a cord or rope for drawing the seat forward and a spring for driving it back, substantially as described.

3. The combination, with a frame or body having an upright frame erected thereon, a seat suspended in such upright frame, and a pulley, of a cord secured at one end to said seat and passed around such pulley, with its other end extended backward toward the seat, substantially as described.

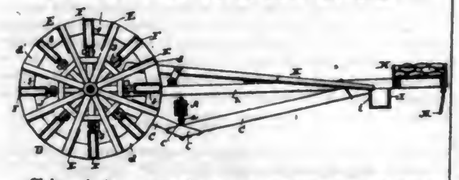
4. The combination, with a frame or body having an upright frame erected thereon, a shaft arranged to be rotated in bearings secured to the rear of the first-mentioned frame or body and provided with a crank formed therein, and a swinging seat suspended in the upright frame, of a rod F, secured at one end to said seat, a pitman H, to which its forward end is jointed, a guide-rod I, secured to such joint, and a socket L, in which such guide-rod operates, substantially as described.

474,097. VEHICLE-SEAT. JOHN MCFARLAND, Wakefield, R. I. Filed Nov. 16, 1891. Serial No. 412,289. (No model.)



Claim.—In a vehicle, the combination of the back-board having two parallel grooves equidistantly disposed on either side of a longitudinal median line, the rotary seat having attached to its base sliding hinges capable of reciprocating in said grooves, said seat being, moreover, provided with an independent adjustable back and capable of being folded under the front seat, and the stationary hollow front seat capable of accommodating thereunder the rear seat when folded, as and for the purpose set forth.

474,098. WATER-WHEEL. JOSEPH H. PIERCE, Glenwood Springs, Colo. Filed Sept. 19, 1891. Serial No. 406,370. (No model.)



Claim.—1. In a water-elevator, the combination, with suitable bearings, of the current-wheel journaled in said bearings and provided with alternately-arranged stationary paddle-blades and paddle water-boxes, said boxes having a longitudinal inlet-opening in one face thereof, and angularly-disposed discharge-spouts projecting from one end of said boxes without one side of said wheel, substantially as set forth.

2. In a water-elevator, the combination, with a supporting sill or beam, of a trussed frame fulcrumed to said beam, a current-wheel journaled at one end of said frame and provided with alternately-arranged stationary paddle-blades and paddle water-boxes having a longitudinal inlet-opening in one face thereof, and angularly-disposed discharge-spouts projecting from one end of said boxes without one side of said wheel, and weighted boxes secured to the opposite end of said fulcrumed frame and counterbalancing said wheel, substantially as set forth.

3. In a water-elevator, the combination, with a supporting-beam, of a trussed frame fulcrumed to said beam, a current-wheel journaled at one end of said frame and provided with alternately-arranged stationary paddle-blades and paddle water-boxes having inlet and discharge openings, a series of regulating-buckets radially adjustable upon one side of said wheel, weighted counterbalancing-boxes supported upon the other end of said fulcrumed frame, the inner and lower of said boxes being provided with an overflow-vent, and a flume located slanting over and upon said trussed frame and connecting the discharge of said regulating-buckets with said weight-box having the vent-opening, substantially as set forth.

4. In a water-elevator, the combination, with suitable bearings, of the current-wheel journaled in said bearings and provided with alternately-arranged stationary paddle-blades and paddle water-boxes, said boxes having a longitudinal inlet-opening in one face thereof, sloping or slanting bottoms, and angularly-disposed discharge-spouts projecting from one end of said boxes without one side of said wheel and at the farthest end of said slanting bottom, substantially as set forth.

474,099. METHOD OF PREPARING FIGS. GEORGE W. REAMER, Forest Hill, Cal. Filed Oct. 12, 1891. Serial No. 408,607. (No specimens.)

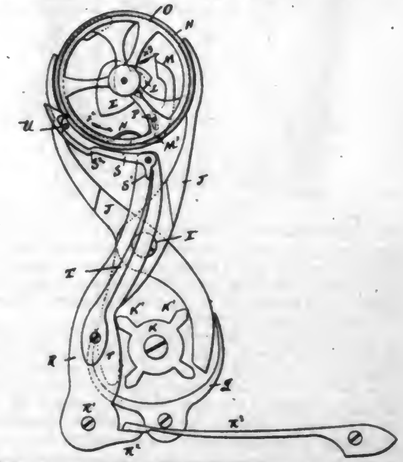
Claim.—1. The process of preparing figs for food products, which consists in first subjecting the dried uncooked figs to the action of steam to soften and clean them and then in subjecting them to a dry heat just sufficient to cause an exudation of juice, substantially as herein described.

2. The process of preparing figs for food products, which consists in first subjecting the dried uncooked figs to the action of steam to soften and clean them, then subjecting them to a dry heat just sufficient to cause an exudation of juice, and then subjecting them to an expressing and straining operation to obtain a portion of the juice and reduce the figs to a consistent mass, substantially as herein described.

3. The process of making a fig product, which consists in subjecting the dried uncooked figs to the action of steam to soften and clean them, then subjecting them to a dry heat just sufficient to cause an exudation of juice, then subjecting them to a straining operation to reduce them to a consistent mass, and finally dividing and forming the mass into suitable shapes, substantially as herein described.

4. The process of making a fig product, which consists in subjecting the dried uncooked figs to the action of steam to soften and clean them, then subjecting them to a dry heat just sufficient to cause an exudation of juice, then subjecting them to an expressing and straining operation to obtain a portion of the juice and reduce the figs to a consistent mass, then adding to the mass a portion of the boiled juice, and finally dividing and forming the mass into suitable shapes, substantially as herein described.

474,100. STOP-WATCH. ADRIEN REYMOND, New York, N. Y. Filed Oct. 19, 1891. Serial No. 408,159. (No model.)



Claim.—1. In a stop-watch, the combination, with a tubular seconds-hand arbor and a split-seconds-hand arbor in said tubular arbor, of a heart-cam fixed on the tubular arbor, a brake-wheel fixed on the split-seconds-hand arbor, a heart-cam lever pivoted on said brake-wheel, brake-levers for gripping the brake-wheel, and mechanism for moving the heart-cam lever pivoted on the brake-wheel from the heart-cam fixed on the tubular arbor when the brake-levers are applied, substantially as set forth.

2. In a stop-watch, the combination, with a tubular seconds-hand arbor and a split-seconds-hand arbor passed through the same, of a heart-cam on the tubular arbor, a brake-wheel fixed on the split-seconds-hand arbor, a heart-cam lever pivoted to the brake-wheel, a tooth-wheel mounted loosely on the split-seconds-hand arbor and engaging the heart-cam lever, and a hook-pawl for operating said tooth-wheel, substantially as set forth.

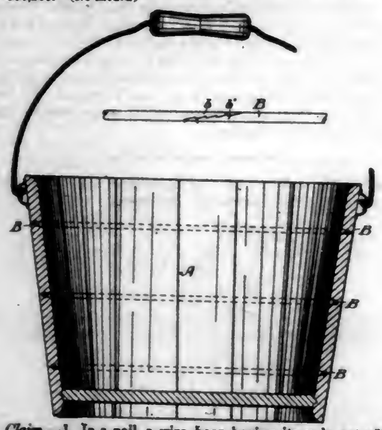
3. In a stop-watch, the combination, with a tubular seconds-hand arbor and a split-seconds-hand arbor passed through the same, of a heart-cam on the tubular arbor, a brake-wheel fixed on the split-seconds-hand arbor, brake-lever for holding said brake-wheel, a heart-cam lever pivoted on the brake-wheel, a tooth-wheel mounted loosely on the split-seconds-hand arbor and engaging the heart-cam lever, a lever pivoted on one of the brake-levers, a hook-pawl on said lever, and means for operating the brake-levers and the lever pivoted on one of said brake-levers, substantially as set forth.

4. In a stop-watch, the combination, with a tubular seconds-hand arbor and a split-seconds-hand arbor passed through the same, of a heart-cam on the tubular arbor, a brake-wheel fixed on the split-seco-

onds-hand arbor, brake-levers for holding said brake-wheel, a heart-cam lever pivoted to the brake-wheel, a pin on the brake-wheel engaging said heart-cam lever, a tooth-wheel mounted loosely on the split-seconds-hand arbor, a lever pivoted on one of the brake-levers, a hook-pawl pivoted to said lever and provided with a bend or shoulder, and a fixed pin between said hook-pawl and the rim of the tooth-wheel, substantially as set forth.

5. In a stop-watch, the combination, with a tubular seconds-hand arbor and split-seconds-hand arbor passed through the same, a heart-cam on the tubular arbor, a wheel fixed on the split-seconds-hand arbor, a heart-cam lever pivoted on said wheel, and means for bringing said lever out of contact with said heart-cam on the tubular arbor, substantially as set forth.

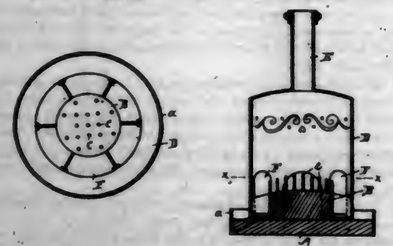
474,101. HOOP. ARNETTE F. SAWYER, Denver, Mass., administratrix of William A. Sawyer, deceased. Filed June 13, 1891. Serial No. 396,208. (No model.)



Claim.—1. In a pail, a wire hoop having its ends cut off at an angle and correspondingly serrated, in combination with the walls of a continuous circular passage-way around the pail through the material of the staves, within which passage-way the hoop is adapted to fit, whereby when said staves are pressed together the hoop ends are guided in said passage-way to slip by each other and automatically interlock, substantially as described.

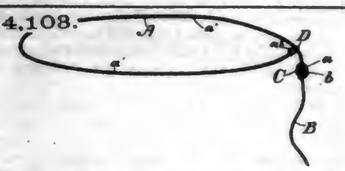
2. A pail or similar receptacle having concealed passages through the staves thereof parallel to the top and bottom, in combination with hoops B, contained within said passages, having ends *b b'* cut off at an angle and correspondingly serrated with a series of teeth, whereby when said ends slip by each other within the hoop-hole they engage and lock together, forming a junction of uniform cross-section with the material of the hoop, substantially as described.

474,102. GAME APPARATUS. JOHN SCHUMAN, Detroit, Mich., assignor to John S. Ellis, same place. Filed Jan. 18, 1892. Serial No. 418,455. (No model.)



Claim.—In a game, the base A, carrying the upwardly-convex block B, and pins C E, extending vertically from the upper surface of said block, in combination with the outer shell or case D, ending in the mouth-piece E, and the irregularly-numbered perforations F, substantially as shown and described.

474,108. LASSO. EDGAR SHAW, Swampscott, Mass. Filed Dec. 26, 1891. Serial No. 416,148. (No model.)



Claim.—In a lasso, the combination, with a flexible gathering-rope B, of a loop forming rope A, provided with the spirally-wound reinforcing wire or fiber *a'*, a connecting-swivel C, and a noose-forming swivel D, all arranged and operating substantially as described.

474,104. ARTIFICIAL DENTURE. JOHN J. STEDMAN, La Porte, Ind. Filed Dec. 21, 1891. Serial No. 415,777. (No model.)

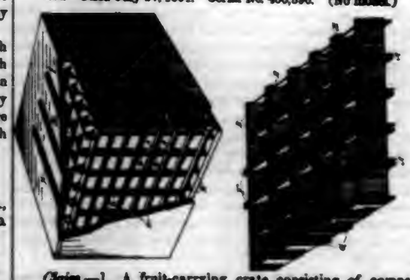


Claim.—1. An artificial denture having spring mechanism located between its upper and lower plates, said spring mechanism comprising a casing D, provided at its upper end with a perforated detachable cap, a plunger working within said cap, and an incased spring within said plunger, substantially as described.

2. An artificial denture having spring mechanism located between its upper and lower plates, said spring mechanism comprising a casing D, screw-threaded at its upper end and provided with a perforated screw-threaded cap *d*, a hollow plunger E, passing through said cap and provided with a flange or stop *e*, a coiled spring F within said plunger, and a spring-rod G within said coiled spring, substantially as described.

3. An artificial denture having spring mechanism located between its upper and lower plates, the upper one of said dentures being provided with a straight-faced bearing-plate H and the opposite denture being provided with a casing D, having a perforated detachable cap *d*, a plunger E, passing through said cap and provided with a flange or stop *e*, and a coiled spring within said casing, substantially as described.

474,105. FRUIT-CARRIER. GEORGE W. STEVENS, San Francisco, Cal. Filed July 27, 1891. Serial No. 400,896. (No model.)



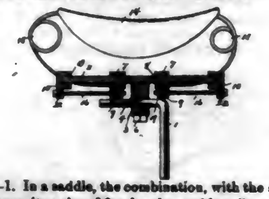
Claim.—1. A fruit-carrying crate consisting of compartments formed of double parallel strips having slits made in one of the edges, corresponding double parallel strips extending transversely to the first ones, with slits whereby the two series are locked together, one series having a space left below its lower edges and the other series having a space extending in the opposite direction between its upper edges, and a box within which several series of these compartments are contained, with interposing diaphragms, substantially as herein described.

2. A fruit-carrier consisting of compartments formed of double parallel strips of material crossing each other at right angles and notched together, so that each compartment has a double elastic wall around it, in combination with reinforcing-strips of heavier material crossing each other near the center of each compartment series, said reinforcing-strips extending from the extreme upper to the extreme lower edges of the compartments and acting as a support for the superposed series, substantially as herein described.

3. In a fruit carrier, compartments formed by the double transversely-arranged strips notched together so as to leave air-spaces between the parallel sets of strips on one side and corresponding air-spaces between transverse parallel strips upon the opposite side, double reinforcing-strips forming a part of said compartment and extending entirely from the top to the bottom thereof, with air-spaces between them, diaphragms fitted between the different compartments, having slits or openings made in them corresponding with the spaces between the reinforcing-strips, and an exterior case or box within which these compartments are fitted one above the other, with the interposing diaphragms, the top, bottom, and sides of said boxes being perforated or slotted to correspond with the passages between the strips and through the diaphragms, substantially as herein described.

4. A fruit-carrier consisting of compartments formed of double parallel strips of material crossing each other at right angles and notched together, so that each compartment has a double elastic wall around it, and air-spaces formed above and below each compartment at right angles with each other, reinforcing-strips of heavier material crossing each other near the center of each compartment series and extending from the extreme upper to the extreme lower edges of the compartments, horizontal diaphragms interposed between each compartment series, with openings corresponding with the spaces between the double walls, gratings at the top and bottom, and an inclosing case with ventilating-openings corresponding with those in the diaphragms, substantially as herein described.

474,106. BICYCLE-SADDLE. FRANK SWEETLAND, Angola, N. Y. Filed Jan. 20, 1892. Serial No. 418,668. (No model.)



Claim.—1. In a saddle, the combination, with the spring supporting-bar and opposite pairs of fixed and movable collars mounted thereon, the outer collars being provided with perforations, of adjusting-bolts connecting the pairs of fixed and movable collars, a superimposed saddle, and front and rear springs connected to the ends of the saddle and having their terminals passed by the outer collars and secured to the inner movable collars, substantially as specified.

2. In a saddle, the combination, with the spring supporting-bar and opposite pairs of fixed and movable collars mounted thereon, the outer collars being provided with perforations, of a superimposed saddle, front and rear pairs of springs connected to the ends of the saddle and having their lower terminals passed by the outer collars and secured to the inner movable collars, and means for adjusting said inner collars with relation to the outer collars, substantially as specified.

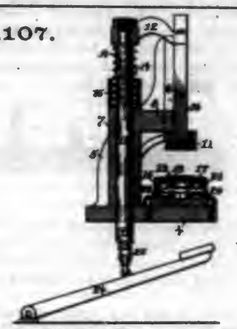
3. The combination, with the spring supporting-bar, the opposite outer pair of L-shaped fixed and inner opposite pair of adjustable collars, each of the outer fixed pair being provided with a slot and bore and each of the inner movable collars having a bore, a slot and perforations, threaded bolts passing loosely through the bores of the inner and outer pairs of collars and terminating at their inner ends opposite transverse notches 17, formed in the inner faces of the inner collars, and nuts 18, having opposite cylindrical trunnions 19 threaded on the bolts and fitting the notches, of the saddle-leather 14, and the front and rear pairs of springs 15, having their lower ends or terminals passed at the sides of the outer collars and their inner ends secured to the inner collars, substantially as specified.

4. The combination, with the inverted-L-shaped standard 1, the spring-bar 2, having the stud 14 depending from its under side and recessed to receive and adjustably mounted upon the standard, the binding-bolt 6, the notched or reduced ends of the spring-bar, the oppositely-fixed end collars 10, recessed, as at 11, to fit the ends of the spring-bar and provided with bores 12, the inner pair of movable collars 7, slotted, as at 8, to receive the spring-bar and having the bore 9, the opposite threaded bolts loosely fitting the bores of the collars, the nuts 18, having trunnions 19 mounted on the inner ends of the bolts and having their trunnions fitting notches at the inner sides of the inner collars, of the saddle 14, and the front and rear pairs of springs 15, connected to the extremities of the saddle and having their lower extremities secured to the movable collars, substantially as specified.

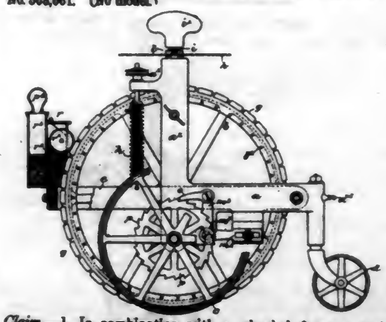
474,107. CIGAR-WRAPPER-CUTTING MACHINE. GEORGE W. TANNER, Providence, R. I. Filed June 20, 1891. Serial No. 396,981. (No model.)

Claim.—1. The combination, with the platen-case 16, secured below the upper cutting-die of a cigar-wrapper cutter and provided with the sliding cutting-die 17, of the supporting-platen 18, operated by the springs 20, carried on the pins 21, as described.

2. The combination, with the base 4, having guide-supports 5 5 and a central tubular standard 7, the cross-plate 6, and guides 9 9, secured to the face of the supports 5 5, the plate 10, provided with the reciprocating cutting-die 11, vertically movable in said guides, and a depressible spring-lifted rod 13, movable in the standard 7, connected with the plate 10 by the yoke 12, of the platen-case 16, provided with the sliding cutting-die 17 and the spring-operated supporting-platen 18, as described.



474,108. PRINTING-MACHINE. GEORGE VIBERT, Hartford, Conn., assignor to Thomas M. Parker, same place. Filed Oct. 30, 1890. Serial No. 368,661. (No model.)



Claim.—1. In combination with a wheeled frame, a swinging frame suspended therein, a marking-wheel with its periphery provided with dovetailed slots, pivoted in said frame, the removable type with beveled edges fitting the dovetailed slots, whereby the type are securely held in place, the spring extending between the two frames and operating normally to hold the periphery of the marking-wheel out of contact with the surface until the frame is placed, and the sliding plunger by means of which the swinging frame and the marking-wheel are depressed, all substantially as described.

2. In combination with a wheeled frame, a swinging frame suspended therein, a marking-wheel provided with dovetailed slots, pivoted in said frame, the removable type fitting said dovetailed slots, the spring extending between the two frames and operating normally to hold the periphery of the marking-wheel out of contact with the surface on which the frame moves, the bent lever pivoted to the main frame, having one end slotted and engaging a pin on the swinging frame and the other end bearing a swinging pawl in engagement with a ratchet-wheel secured to the side wheels, the ratchet-wheel, and the sliding plunger, by means of which the swinging frame and the marking-wheel are depressed, all substantially as described.

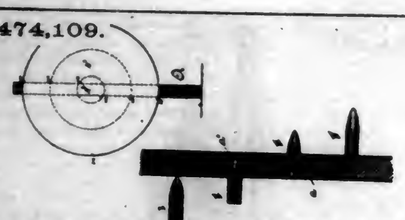
3. An inking device for a marking-machine, consisting of an inking-wheel supported with its periphery adapted to engage the type of the marking-machine, the porous wiper engaging the periphery of the inking-wheel, the perforated roller-box supporting the porous wiper, the closed ink-receptacle communicating by the narrow slot with the roller-box, and the screw-cap provided with an elastic bulb, whereby ink is forced from the ink-well into the porous wiper, all substantially as described.

474,109. SELF MARKING AND INDICATING TARGET. CARL VOGEL, Stuttgart, Germany. Filed Dec. 10, 1891. Serial No. 414,597. (No model.)

Claim.—1. A target provided with a conducting front cover, a conducting rear cover insulated therefrom, in combination with a source of electricity, and suitable conductors between the source of electricity and the covers, substantially as set forth.

2. A target provided with conducting-covers on each side thereof, the cover on one side being insulated from that on the other side, and the cover on one side, moreover, being made in sections insulated from each other, substantially as set forth.

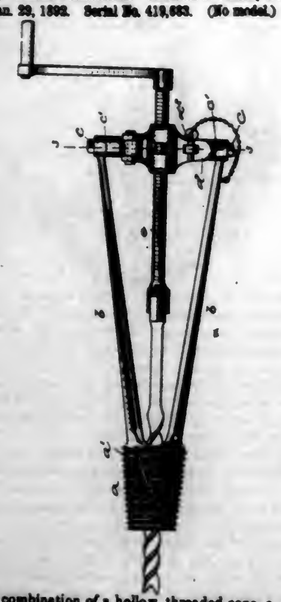
474,109.



3. The combination of a target provided with front and rear conducting-covers insulated from each other with a source of electricity, indicating devices, and suitable connections between the indicating devices, the covers of the target, and the source of electricity, substantially as set forth.

4. A target provided on one side with a single cover of conducting material and on the other with a cover of conducting material made in sections insulated from each other and from the cover on the other side, in combination with a source of electricity, an indicating or marking device, and electrical connection between the covers and the source of electricity and the indicating or marking devices, whereby each station of the target will be separately indicated when struck by a projectile, substantially as set forth.

474,110. MINING-MACHINE. AMANDA J. WHITE, Wilkes-Barré, Pa. Filed Jan. 29, 1892. Serial No. 419,683. (No model.)

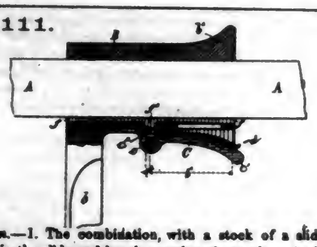


Claim.—The combination of a hollow threaded cone, a supporting-frame consisting of a pair of elastic arms provided with holes in their outer ends, a bar inserted between the ends of the arms and provided with threaded recesses in its ends, headed screw-bolts *c c*, passed loosely through the holes in the ends of the arms and screwed into the threaded recesses in the ends of the bar, these screws being set at right angles to the drill-screws, a two-part boxing supported by the bar, and a drill-screw clamped between the boxes, said drill-screw and cone being arranged in the same axial line, substantially as described.

474,111. SLIDE-GAGE. GOTTHILF BAUER, Esslingen, Germany. Filed Dec. 30, 1891. Serial No. 416,540. (No model.)



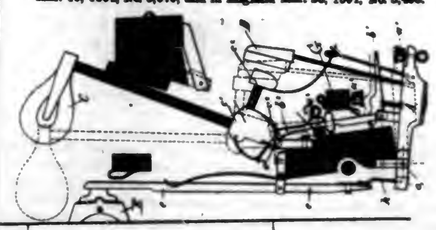
474,111.



Claim.—1. The combination, with a stock of a slide, a spring held within the slide and bearing against the stock, and a lever whose shorter arm is adapted to yieldingly bear against the center of the spring.

2. The combination, with a stock of a slide, a spring held within the slide and bearing against the stock and having a lug, as *f*, a lever pivoted in the slide, and a spring, as *d*, for bearing against the outer arm of the lever.

474,112. REPETITION-ACTION FOR PIANOS. VALENTIN BERDUX, Hellbronn, Germany. Filed July 22, 1891. Serial No. 400,356. (No model.) Patented in Germany Jan. 8, 1891, No. 58,257; in Switzerland Mar. 19, 1891, No. 3,679, and in England Mar. 28, 1891, No. 5,493.

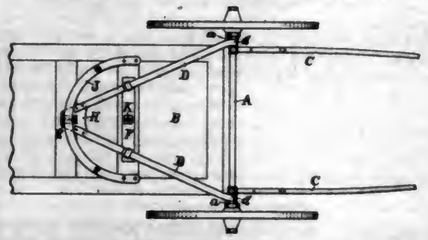


Claim.—1. In a piano-action, a hammer-butt pivoted at a point intermediate of the extreme upper and lower positions of the striker, substantially as set forth.

2. In a piano repeating mechanism, a striker or jack, as B, formed in the shape of an angle-lever, in combination with an adjustable projection, as a^2, arranged on the vertical striker-arm, and an adjustable check, as a^3, arranged to bear on the horizontal arm of jack B, whereby the same may be so adjusted that the striker-arm always bears under the hammer-butt and the displacement of the hammer may be adjusted independently of the projection a^2, substantially as set forth.

3. In a piano repeating mechanism, a pivoted striker, as B, having a horizontal arm, as *b'*, in combination with a riser, as A, provided with an adjustable check, as *a'*, and an adjustable check, as a^3, arranged to one side of the check *a'*, whereby the displacement of the striker may be accomplished, so that the slightest pressure on the key will return the striker beneath the hammer-butt to repeat the hammer action, substantially as set forth.

474,118. VEHICLE RUNNING-GEAR. JOHN J. BLACK, Cleveland, Ohio. Filed Sept. 19, 1890. Serial No. 365,463. (No model.)



Claim.—1. The combination of the springs D D, converging toward their rear ends, having their front ends attached to the front axle and their rear portions united by a cross-bar F, which is connected to the bottom frame of the body by a king-bolt or other equivalent fifth-wheel device, a segment-bar J, rigidly secured to and suspended from the bottom of said body, and a friction or roller bearing H E, secured to the terminal rear ends of said springs and adapted to ride upon the top surface of said segment-bar when turning the vehicle to either hand, substantially as set forth.

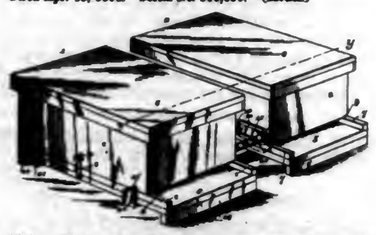
2. The combination of the front axle cylindrical near the wheels, the springs D D, converging toward their inner ends and having their outer ends bent to form eyes which surround said cylindrical parts of the axle, a cross-bar rigidly connected with said springs, a king-bolt connecting said cross-bar with the wagon-body, a plate rigid with said springs and connecting their inner ends and lying behind said cross-bar, a device, as J, secured to the wagon-body and supporting said plate, and shafts rigidly secured to the axle, substantially as and for the purpose specified.

3. The combination of an axle cylindrical near the wheels and having shoulders *a a*, the springs D D, converging toward their inner ends and having eyes formed in their outer ends which surround the cylindrical parts of the axle inside of said shoulders, a cross-bar rigidly connected with said springs, a king-bolt connecting said cross-bar and wagon-body, a plate connecting said springs behind said cross-bar, a roller mounted in said plate, and a segment-bar secured to the wagon and lying beneath the roller, substantially as and for the purpose specified.

474,114. CHEMICAL REAGENT FOR THE MANUFACTURE OF ALLOYS. SHERWOOD R. CHESEBRAH, Kansas City, Mo. Filed Oct. 16, 1891. Serial No. 408,913. (No specimens.)

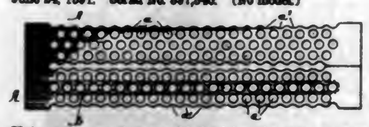
Claim.—A new composition of matter for the purpose set forth, consisting of an insoluble arsenite in an alkaline liquid.

474,115. BEE-SWARMER. WESLEY DUBBLE, Middleburg, N. Y. Filed Apr. 15, 1891. Serial No. 389,089. (Model.)



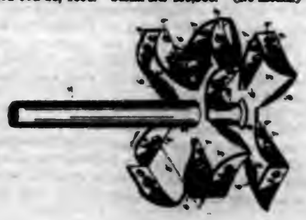
Claim.—The combination, in a bee-swarmer, of the hives 1 and 2, each provided with a bee-entrance and being arranged adjacent to each other and provided with oppositely-disposed openings 18, the reversible and detachable tubular conductor connecting the openings 18 and having openings for light and provided with a contracted end, the brood-frames arranged in the hives, the bottom 15, arranged in the hive 2 beneath the brood-frames and above the bee-entrance and provided with openings 16, and a slide 24, provided with openings similar to those of the false bottom and arranged at the bee-entrance of the hive 1, substantially as described.

474,116. GRATE-BAR. JOHN A. DUNCAN, Kansas City, Mo. Filed June 24, 1891. Serial No. 397,340. (No model.)



Claim.—A grate-bar provided with at least three rows of perforations alternately arranged, substantially as shown, and provided upon its under side with a central longitudinal perforated rib extending between the perforations of the central row, the sides of said rib extending along the spaces between the inner and outer rows of perforations and being shaped to conform to the metal between the rows of perforations, substantially as described.

474,117. CHURN-DASHER. JOSEPH H. EDGERLY, Morrilton, Ark. Filed Oct. 23, 1891. Serial No. 409,580. (No model.)



Claim.—1. The combination, with a dasher-rod provided at its lower end with a journal, of the upper and lower dashers mounted thereon and constructed of suitable metal and composed each of four blades and each having its edges at one side bent downward and having its edges at the opposite side and end bent upward and forming flanges, substantially as described.

2. The combination, with a dasher-rod provided at its lower end with a journal, of the upper and lower dashers mounted thereon and constructed of sheet metal and composed of four blades having their edges at one side bent downward and their edges at the opposite side and outer end bent upward and forming flanges and provided with perforations, substantially as described.

3. The combination, with a dasher-rod provided at its lower end with a journal, of the upper and lower dashers mounted thereon and each constructed of sheet metal and consisting of the four wings or blades each having one side edge bent downward and the opposite side and end edges bent upward and forming flanges and provided with perforations, said dashers being oppositely or reversely arranged, the depending sleeve secured to the upper dasher and interposed between the same and the lower dasher and the upwardly-extending sleeve secured to the lower dasher and arranged within the depending sleeve, substantially as described.

474,118. MOUTHPIECE FOR MUSICAL INSTRUMENTS. JOHN R. FOWLER, Chicago, Ill. Filed Oct. 13, 1891. Serial No. 408,618. (No model.)

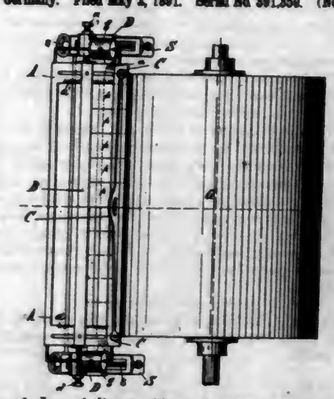


Claim.—1. In a musical instrument of the character specified, a piece of leaf *a*, adapted by flexion to lengthen or shorten the vibratory portion of an artificial lip B, substantially as set forth.

2. The combination of lip B, hinged leaf *a*, and spring *c*, with the mouthpiece A, substantially as described.

3. The hinged leaf *a*, provided with studs *b*, in combination with the perforated lip B, substantially as specified.

474,119. GLASS-GRINDING MACHINE. ROBERT FRIEDEL, Stuttgart, Germany. Filed May 2, 1891. Serial No. 391,359. (No model.)



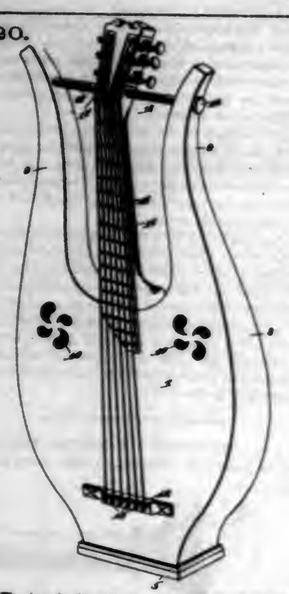
Claim.—1. In a grinding-machine, a clamping-frame, in combination with a clamping-strip, as C, and a shouldered back-stop, as B, both the back-stop and clamping-strip extending entirely across the frame, substantially as set forth.

2. In a grinding-machine, the combination, with an abrading-wheel, of separate supports, as S, separate carriages supported thereon, and separate means for adjusting the carriages toward or away from the abrading-wheel, and a clamping-frame mounted on the carriages, substantially as set forth.

3. In a grinding-machine, the combination of an abrading-wheel and supporting-frames, as S, with carriages and adjusting-screws, as *s*, a pivoted clamping-frame, and stops mounted in the carriages for limiting the downward motion of the pivoted clamping-frames, substantially as set forth.

474,120. STRINGED INSTRUMENT. ALBERT GAMS, Austin, Tex. Filed Oct. 30, 1891. Serial No. 410,304. (No model.)

474,120.



Claim.—1. The herein-described musical instrument of the class mentioned, consisting of a lyre-shaped hollow body, an intermediate fretted neck located between the lyre-like arms and connected to the body, and strings connected to the body and to the outer end of the neck of the body, substantially as specified.

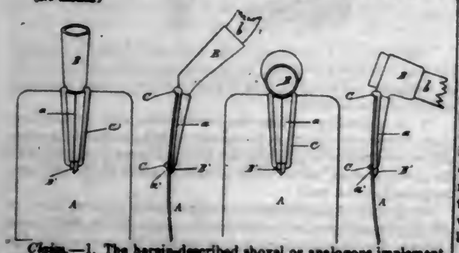
2. The herein-described musical instrument, consisting of the lyre-shaped hollow body, the fretted neck secured to the body, extending between the arms thereof, and the transverse brace-rods leading from the opposite sides of the neck to the arms of the body, and the strings connected to the body and to the outer end of the neck, substantially as specified.

3. The herein-described musical instrument, consisting of the lyre-shaped hollow body, the fretted neck secured to the body and located between the arms thereof, the strings connected to the body and connected to the outer end of the neck, and the transverse brace-rods leading from the opposite sides of the neck to the arms of the body, the outer ends of said rods being extended through the arms and nutted outside of the same, substantially as specified.

4. In a musical instrument of the class described, the combination, with the body, and the perforated peg-receiving string-securing bridge, and the reinforcing-strip glued to the under side of the front of the body immediately opposite the bridge, substantially as specified.

5. The herein-described musical instrument, consisting of a lyre-shaped veneer body having at its lower end the reduced flattened portion provided with an opening and an encircling flange, and the removable cover secured removably to the flange by means of screws and adapted to serve as a base or stand for the instrument, substantially as specified.

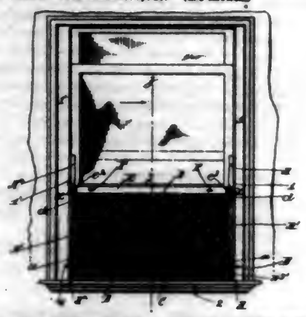
474,121. HANDLE ATTACHMENT FOR SHOVELS, HOES, &c. LEON GAYOT, Paris, France. Filed July 2, 1891. Serial No. 398,212. (No model.)



Claim.—1. The herein-described shovel or analogous implement, the same consisting of a blade having an eye or socket secured solely thereto by an intermediate stirrup, whereby bolts, rivets, and like fastening devices are entirely dispensed with and the socket can be removed from the blade by simply detaching the stirrup, substantially as set forth.

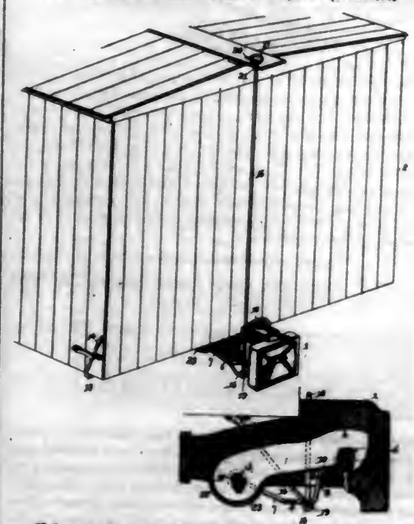
2. A shovel or analogous implement having an eye, with a portion engaging the groove of the blade, a blade with central angular groove, and a continuous stirrup, the latter detachably holding the eye to the blade, as set forth.

474,122. BEAD ATTACHMENT. ALEXANDER GODFREY, Haverhill, Mass., assignor of one-half to John H. Godfrey, same place. Filed Oct. 24, 1891. Serial No. 408,740. (No model.)



Claim.—In a window-screen fixture, the attachments adapted to be secured to the beads at the sides of a window, provided with vertical ways for the screen edges, bearings for the roller-journals, slots for receiving a gage, and screw-holes intersecting said slots, in combination with a spring-roller, a screen attached thereto and engaging the ways, a gage seated in the slots, and set-screws working in the screw-holes and bearing against said gage, substantially as set forth.

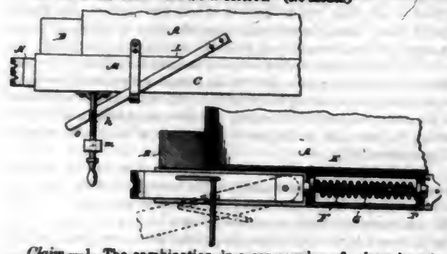
474,123. CAR-COUPLING. DAVID U. GRAVELINE, Granby, Canada. Filed Jan. 16, 1892. Serial No. 418,276. (No model.)



Claim.—1. In a car-coupling, a hollow draw-head having an open mouth and provided in its bottom with a slot arranged near the front end and having an opening near its rear end, a transverse pivot passing through the sides of the draw-head, a hook arranged in the draw-head and having its rear end mounted on said pivot, a yoke having its sides arranged on the sides of the draw-head and provided with eyes receiving said pivot, said yoke having an L-shaped portion arranged on the bottom of the draw-head and extending vertically through the said slot and supporting the hook, and a rock-shaft provided with a crank-loop arranged beneath the yoke and adapted to lift the same, substantially as described.

2. In a car-coupling, a hollow draw-head provided in its bottom with a slot and with an opening, a transverse pivot passing through the sides of the draw-head, a hook arranged in the draw-head and having its rear end mounted on said pivot, a yoke having its sides arranged at the sides of the draw-head and mounted on the pivot and provided with an L-shaped portion extending through said slot and supporting the hook when the latter is elevated, a rock-shaft provided with an angular crank-loop arranged beneath the yoke, and a vertical rod provided at its lower end with an arched portion straddling the draw-head and connected to the crank-loop, substantially as described.

474,124. CAR-COUPLING. SAMUEL P. GREEN, Salamanca, N. Y. Filed Jan. 29, 1892. Serial No. 419,864. (No model.)

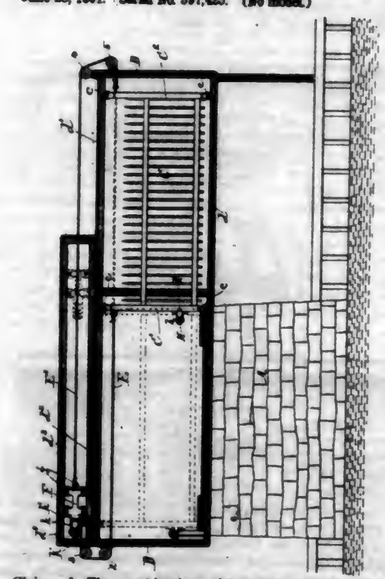


Claim.—1. The combination, in a car-coupler, of a draw-bar pivotally secured at its rear end and having a slot formed longitudinally therein, and a lever having a central loop inserted in said slot, substantially as described.

2. The combination, in a car-coupler, of a draw-bar pivotally secured at its rear end to its stem and having a longitudinal slot formed therein, a weighted lever having a central loop engaging said slot, and notched or hooked bars for retaining said lever in its set position, substantially as described.

3. The combination, in a car-coupler, of a draw-bar pivotally mounted at one end and formed of a single piece of spring metal divided for a portion of its length and formed with a longitudinal slot, a lever having a loop adapted to engage said slot, adjustable weights secured to said lever, spring-bars having hooked ends adapted to engage said lever, and a rope or chain connected at one end to one of said bars and led to the opposite side of the car, substantially as described.

474,125. BRIDGE-GATE. WILLIAM HAYNES, Chicago, Ill. Filed June 25, 1891. Serial No. 397,425. (No model.)



Claim.—1. The combination, with a gate, of a suitable shifting device—such, for example, as a block or truck—connected with said gate and arranged to move in directions opposite to the movements of the gate, and a bridge provided with arms or projections arranged at different elevations to engage the gate and the block or truck, substantially as described.

2. The combination, with a movable gate, of a suitable shifting device—such, for example, as a block or truck—suitable connections between said shifting device and the gate, and suitable projections upon the bridge, one of said projections being arranged to engage the gate and the other of said projections being arranged to engage the shifting device, substantially as described.

3. The combination, with a movable gate, of a suitable shifting device—such, for example, as a block or truck—cable-sections connecting said block or truck with the gate in such manner that said block or truck and said gate shall move in opposite directions, and suitable projections upon a bridge for engaging with the gate and with the block or truck, whereby said gate may be opened or closed by the swinging of the bridge in either direction, substantially as described.

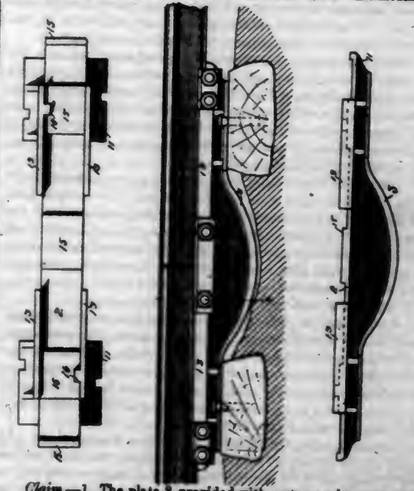
4. The combination of a sliding gate, a block or truck F, cable-sections E and E', connected to said block or truck, said block or truck F and said gate being provided with means for engagement with suitable arms or projections upon the bridge, and a bridge provided with arms or projections, substantially as described.

5. The combination of a sliding gate, a block or truck F, cable-sections E and E', connected to said block or truck, suitable supports whereby said gate and said block or truck are sustained in a manner permitting them to move in opposite directions, and a bridge provided with arms or projections arranged at different elevations and adapted, respectively, to engage with the block or truck and with the gate, substantially as described.

6. The combination, with a sliding gate, of a block or truck arranged in a manner permitting it to be moved back and forth, cable-sections connecting said block or truck and said gate, pulleys over which said cable-sections are extended, so that the movement of the block or truck shall be opposite that of the gate, and a bridge provided with two sets of arms arranged at different elevations, like arms being arranged at diagonally-opposite corners of the bridge, said arms being adapted to engage with the block or truck and with the bridge-gate, substantially as described.

7. The combination, with a sliding gate and with a gate-frame, of a block or truck F, provided with a stop or roller K, whereby a double engagement can be secured with an arm projecting from a bridge, cable-sections E and E', connecting said stop or truck F and said gate C, said gate being provided with a stop or roller H, whereby a double engagement can be effected with an arm or projection upon the bridge, and a bridge having suitable arms or projections arranged at different elevations to engage, respectively, with the stop or truck F and with the gate C, substantially as described.

474,126. TRUSS-RAIL-JOINT FASTENING. FREDERICK H. HEATH, Minneapolis, Minn., assignor to the Heath Rail Joint Company, Waterloo, Iowa. Filed Jan. 16, 1891. Serial No. 377,958. (No model.)

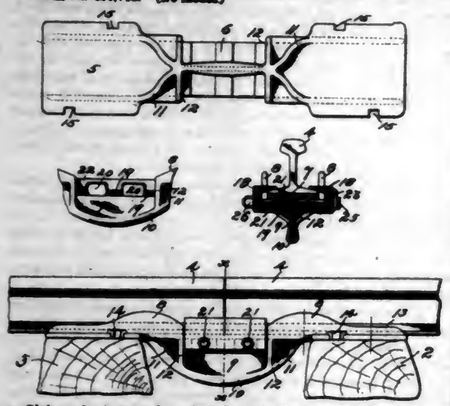


Claim.—1. The plate 2, provided with seats upon its upper surface to receive the ends of the rails, and formed with chairs at its ends adapted to rest upon and be secured to the ties, and provided with a truss formed integrally therewith and arranged on its under surface between said chairs, substantially as described.

2. The plate 2, provided with the truss-rib and web upon its under surface, the plate portions 11 at its end, and the upwardly-projecting flanges 13, and the lugs 16, substantially as described.

3. The combination, with the rails of the trussed plate 2, provided with the raised portions 15, the upwardly-projecting flanges 13, and the plates 25, passing between said plate 2 and the base of the rail in the spaces between said raised portions 15, and provided with the head 27, and the flanged head-plates 33, substantially as described.

474,127. RAIL-CHAIR, TIE-PLATE, TRUSS-JOINT, AND JOINT-FASTENING. FREDERICK H. HEATH, Minneapolis, Minn., assignor to the Heath Rail Joint Company, Waterloo, Iowa. Filed July 25, 1891. Serial No. 400,712. (No model.)



Claim.—1. A truss-fastening for rail-joints, comprising, in combination with the rails, a plate having a truss formed integrally therewith and arranged centrally on the under side thereof, with diagonal trusses also formed integrally with said plate and extending from the ends of said central truss toward the edges of the plate, and means for securing the meeting ends of the rails to said plate, substantially as described.

2. A truss-fastening for rail-joints, comprising, in combination with the rails, a plate having a truss formed integrally therewith and arranged centrally on the under side of said plate, and transverse trusses also formed integrally with said plate and the central truss and extending from the ends of said central truss toward the edges of said plate, substantially as described.

3. The combination of the plate provided with the truss formed integrally and centrally with said plate and arranged on its under surface with the transverse trusses or brackets, and the diagonal trusses or brackets also formed integrally with said plate and the central truss, top truss-extensions on the upper surface of said plate formed integrally therewith and between which the rails are adapted to fit, and means for securing the meeting ends of the rails to said plate.

4. The combination, with the plate provided at its ends with the chairs adapted to rest upon and be secured to the ties and with the vertical trusses 8, projecting from its upper surface and between which the ends of the rails are adapted to rest, of the central depending truss formed integrally with said plate, the transverse trusses and the diagonal trusses also formed integrally with said plate, and means for securing the ends of the rails to said plate.

5. A truss-fastening for rail-joints, comprising, in combination with the rails, a plate having a truss formed integrally therewith and arranged centrally on the under side thereof, with diagonal trusses also formed integrally with said plate and extending from the ends of said central truss toward the edges of the plate, top truss-extensions on the upper surface of said plate formed integrally therewith and between which the rails are adapted to rest, and means for securing the meeting ends of said rails to said plate, substantially as described.

6. A truss-fastening for rail-joints, comprising, in combination with the rails, a plate having a central depending truss and top truss-extensions 8, projecting vertically from the edges of the plate, said extensions being four in number and having their inner ends overlapping the upper ends of the depending truss, all of said parts formed integrally, whereby the plate is strengthened and bending at the junctions with the ties avoided, substantially as described.

7. A truss-fastening for rail-joints, comprising, in combination with the rails, a plate having a truss formed integrally therewith and arranged centrally on the under side thereof, with transverse trusses or brackets, also formed integrally with said plate and extending from the ends of said central truss toward the edges of the plate, top truss-extensions on the upper surface of said plate formed integrally therewith and between which the rails are adapted to rest, and means for securing the meeting ends of said rails to said plate, substantially as described.

8. The combination, in a device of the class described, of a plane tie-plate having ends adapted to rest upon the ties, a depending truss formed with a strengthening-rib and provided with diagonal and transverse trusses or brackets 11 and 12, respectively, and trusses 8, integral therewith and with the plate and provided with extensions 13, substantially as described.

9. The combination, in a device of the class described, of the plate having the rail-chair portions 5, the depending truss, the upper extension 8 thereof, the openings 20, arranged in the plate and beneath the upper surface thereof, clamping-blocks 18, the inclined surface 19 on the plate, and bolts for fastening said clamping-blocks, as described.

10. The combination, in a device of the class described, of the plate having the plane upper surface and the rail-chair portions 5 of a greater width than the other portions of the plate, an integral truss for strengthening said plate, said truss having upper and lower extensions, the lower one adapted to extend down between the ties, lugs or projections 16, formed on the plate and adapted to extend into notches provided in the rail-bases, means for securing said plate upon the ties, and means for securing the rails upon said plate, substantially as described.

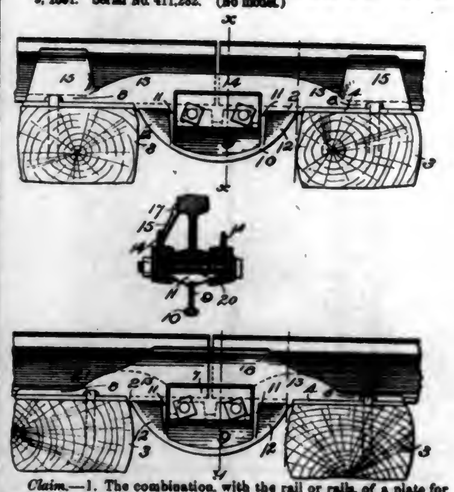
11. The combination, in a device of the class described, of the plate having the inclined surface 19, with the clamping-blocks 18, having inner surfaces corresponding therewith and with the angles of the surface of the rail-base, bolts for securing said clamping-plates, and ribs 23, having inclined sides 24 for securing the heads of said bolts, substantially as described.

12. The combination, with the tie-plates, of means for securing the rails thereon, a truss for said tie-plate formed integrally therewith and consisting in the depending portion 9, provided with the rib 10, the transverse and diagonal trusses 12 and 11, and the upper extension 8, formed in the top of the plate, as and for the purpose specified.

13. A combined rail-joint and brace comprising a plate to extend across the ties and whereon the rails are adapted to rest and arch trusses arranged vertically on the upper surface of said plate and over the junctions thereof with the ties and between which the rail base or bases are adapted to fit, substantially as described.

14. The combination, with the rail or rails, of a plate for the same to rest upon, said plate extending across and between adjoining ties, a depending truss arranged centrally on said plate and having laterally-extended ends, arch trusses arranged on the upper surface of the plate and adapted to retain the rail base or bases, blocks for clamping the same on the plate and secured by bolts passing beneath the plate, said arch trusses having their ends extended to meet the ends of said blocks, the highest points of said arch trusses being above the junctions of the plate and ties, the outer ends of the trusses being thence slanted downwardly, and means for fastening the whole upon the ties, substantially as described.

474,128. COMBINED RAIL-BRACE AND TRUSS-FASTENING FOR RAIL-JOINTS. FREDERICK H. HEATH, Minneapolis, Minn., assignor to the Heath Rail Joint Company, Waterloo, Iowa. Filed Nov. 9, 1891. Serial No. 411,282. (No model.)



Claim.—1. The combination, with the rail or rails, of a plate for the same to rest upon, said plate extending across and between adjoining ties, a depending truss arranged centrally on said plate and having laterally-extended ends, arch trusses arranged on the upper surface of the plate and adapted to retain the rail base or bases, blocks for clamping the same on the plate and secured by bolts passing beneath the plate, said arch trusses having their ends extended to meet the ends of said blocks, the highest points of said arch trusses being above the junctions of the plate and ties, the outer ends of the trusses being thence slanted downwardly, and means for fastening the whole upon the ties, substantially as described.

2. The combination, with the rail or rails, of a plate extending between and across adjoining ties and whereon said rail or rails rest, with vertical arch trusses arranged on the upper surface of said plate, means for securing the rail or rails on said plate, and a rail-brace extending upwardly and inwardly from and formed integrally with the trusses of one side of the plate, substantially as described.

3. A combined rail joint and brace comprising a plate to extend across two ties and whereon the rails are adapted to rest, arch trusses arranged vertically on said plate and between which the rail-bases are adapted to fit, and a rail brace or braces constituted by an inwardly-inclined plate or plates formed integrally therewith, substantially as described.

4. A combined rail joint and brace consisting of a plate whereon the rails are adapted to rest and extending across adjoining ties, vertical arch trusses formed on the upper surface of the plate, the inner portions of the same connected by an integral part 14, and a rail-brace formed in integral connection therewith, substantially as described.

5. The combination, with the rail or rails, of a plate arranged beneath the same and extending across adjoining ties, with a truss for the lower side of said plate and integral therewith, arch trusses formed upon the upper surface of the plate, and connecting portions 14, sprung over the middle of the plate and integrally connecting the pairs of arch trusses, substantially as and for the purpose specified.

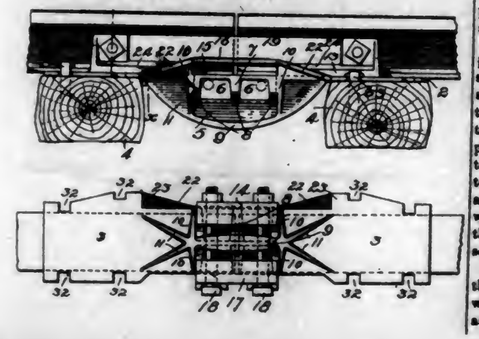
6. The combination, with the rail or rails, of the plate whereon the same are adapted to rest, said plate adapted to extend across adjoining ties, arch trusses arranged vertically on the upper surface of the plate, said arch trusses being disposed to strengthen the plate at the points of the junction between the same and the ties, and an inwardly-slanting rail-brace extending from and connecting the arch trusses on one side of the plate, the upper edge of the rail-brace adapted to engage the tread of the rail, and said plate and truss and brace parts all formed integrally, substantially as described.

7. The combination, with the rail or rails, of the plate whereon the same are adapted to rest, said plate adapted to extend across adjoining ties and provided with a depending truss, arch trusses arranged vertically on the upper surface of the plate, said arch trusses being disposed to strengthen the plate at the points of junction between the same and the ties, flanges to engage the edge of the rail-base and forming continuations of said trusses on the upper surface of the plate, and an inwardly-slanting rail-brace extending from and connecting the arch trusses on one side of the plate, the upper edge of the rail-brace adapted to engage the tread of the rail, and said plate, trusses, flanges, and brace being all formed integrally, substantially as described.

8. The combination, with the rail or rails, of a plate for the same to rest upon, said plate extending across and between adjoining ties, an integral depending truss arranged centrally beneath said plate and having laterally-extending ends, arch extension-trusses arranged on the upper surface of the plate and adapted to retain the rail base or bases, clamping-blocks secured by bolts passing beneath the plate, said arch trusses having their inner ends extended to meet the ends of said blocks, the highest point of said arch trusses being above the junction of the plate and ties, the outer ends of the trusses being thence slanted downwardly, and a rail-brace, formed by an upwardly and inwardly slanting extension of the arch trusses of one side of the plate, substantially as described.

9. The combination, with the rail or rails, of the plate having its ends provided with the extended edges 4, vertical arch trusses sprung above the junction-points of the plate and ties, the flanges 8, extending from said arch trusses along the edges of the rail-base, clamping-blocks for securing the rail or rails upon said plate, an inwardly and upwardly slanting rail-brace proceeding from the arch trusses upon the plate, the whole being formed integrally, and means whereby longitudinal movement of the rail or rails upon the plate is prevented, substantially as described.

474,129. RAIL-JOINT. FREDERICK H. HEATH, Minneapolis, Minn., assignor to the Heath Rail Joint Company, Waterloo, Iowa. Filed Nov. 18, 1891. Serial No. 412,963. (No model.)







Claim.—1. The combination, with the rail or rails, of a tie-plate arranged between and extending over adjoining ties, an angle-bar formed integrally with and on the upper surface of said plate and having an inner vertical part to engage the web only of the rail, said vertical part provided with holes, the rail web or webs having holes registering therewith, and bolts arranged therein, for the purpose specified.

2. The combination, with the rail or rails, of a tie plate whereon the same are adapted to rest, said plate adapted to extend between and across adjoining ties, clamping-blocks thereon, an angle-bar formed integrally with said plate and having, as described, the inner vertical part to engage the rail web or webs only, a fish-plate arranged to engage the tread and the base of the opposite side of the rail or rails, and bolts passing through said plate, through the web or webs, and through the angle-bar, whereby the rail or rails are aligned, strengthened, and fastened, substantially as described.

3. The combination, in a rail-joint, of the rail or rails, with a plate upon the upper surface of which the same are adapted to rest, clamping-blocks for securing the rails on the plate, bolts for fastening the said blocks and extending beneath the said plate, an angle-bar raised on one edge of the plate and having the inwardly-extending part and the inner vertical part to be bolted to the web of the rail and engaging the web only, said inwardly-extending part consisting of a higher horizontal portion and the slanting end parts, and the brackets 30, arranged to strengthen the angle-bar, all parts of said bar being formed integrally with said plate, substantially as described.

4. The combination, with the plate 2, adapted to extend across adjoining ties, of the clamping blocks and bolts therefor for securing the rail or rails thereon, said plate provided with a centrally-depending and integral truss, an integral angle-bar formed on the top of the plate and extending in to engage the web or webs only of the rail or rails, the fish-plate arranged to engage the other side of the rail or rails, and bolts extending through and locking together said fish-plate, rail, web, and bar, substantially as described.

5. The combination, with the plate 2, of the angle-bar formed integrally therewith, and rail clamps and bolts for securing together the bar and rail or rails to be aligned thereby, the space beneath the angle-bar and brace being larger than the rail-base, whereby the bearing is had on the web of the rail, substantially as described.

6. The combination, with the rail or rails, of the tie-plate 2, having the rail-chair ends whereon the rails are adapted to rest, said ends being wider than the rest of the rail, the vertical part or ledge 13, arranged parallel with the base of the rail or rails, the inwardly-extending part having the raised middle portion 16, side trusses 22, extending from the rail-chair ends thereto, the inner vertical part 19, said part grooved on its inner side, whereby bearing-surfaces are provided at the upper and lower surfaces thereof, and the brackets or braces 30, arranged substantially as described, all of said parts being formed integrally.

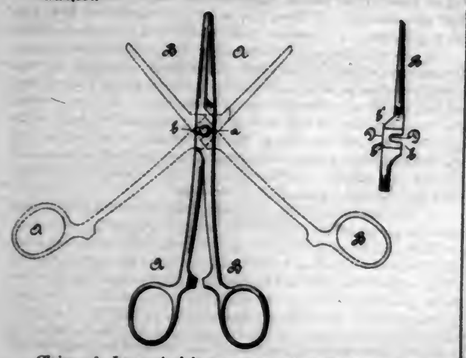
7. The combination, with the rail or rails, of the tie-plate having the rail-chair ends whereon the rails are adapted to rest, said ends being wider than the rest of the rail, said plate provided with a centrally-depending truss having divided ends extending up to the edges of the plate, means for clamping the rail or rails thereon, and the vertical part or ledge 13, arranged upon the upper surface of the plate and parallel with the rail-base, and the inwardly-extending part jutting inward over the rail-base and having the vertical portion 19 integrally tied or braced therewith, said vertical part and the web or webs having coincident bolt-holes and bolts arranged therein, whereby said part and web or webs are drawn into firm engagement, substantially as and for the purpose specified.

8. The combination, with the rail or rails, of the tie-plate 2, having the extended rail-chair ends, whereon the rails are adapted to rest, said ends being wider than the rest of the rail, said plate provided with an integral centrally-depending truss having divided ends extending up to the edges of the plate, means for clamping the rail or rails thereon, the vertical part or ledge 13, arranged upon the upper surface of the plate and parallel with the rail-base, the inwardly-extending part jutting inward over the rail-base and having the vertical portion 19 integrally tied or braced therewith, and a fish-plate to engage the base and the thread of the opposite side of the rail, said vertical part, the web, and fish-plate provided with coincident bolt-holes, bolts arranged therein, and nuts thereon, whereby said three parts are drawn into solid engagement, substantially as and for the purpose specified.

9. The combination, with the rail or rails, of the plate 2, whereon the same are adapted to rest, the ends of the said plate being provided with the extended edges 23 and 31, notches 32 therein, the integral angle-bar or brace having the inner part adapted to engage the web

or webs of the rail or rails, clamping-blocks for securing the same on the plate, the side of said plate opposite said angle-bar, which is integral with the plate, being without vertical projection, the ties and spikes 33, driven into the same and arranged in said notches, the heads of said spikes engaging the tops of the rail base or bases, substantially as and for the purpose specified.

474,180. SURGICAL INSTRUMENT. PAUL HEBERR, Stuttgart, Germany. Filed Dec. 10, 1891. Serial No. 414,602. (No model.) Patented in Germany Mar. 7, 1891, No. 56,080, and in England May 29, 1891, No. 9,117.



Claim.—1. In surgical instruments and similar tools, a leg provided with an open slot, provided with a countersunk portion, in combination with a second leg provided with a pin for engaging said slot, having a head for engaging the countersunk portion of the slot, substantially as described.

2. In surgical instruments and similar tools, a leg provided with a slot having an outer conical enlargement and also provided with a transverse mortise on its inner surface, in combination with a second leg provided with a headed pin for engaging said slot, substantially as described.

474,181. DENTAL CERVIX-CLAMP. JAMES W. IVORY, Philadelphia, Pa. Filed Aug. 3, 1890. Serial No. 360,752. (No model.)



Claim.—1. A frame with a jaw at the center thereof, in combination with a tongue of flexible material, which is guided on the frame opposite to said jaw and projects toward the latter, forming an improvement in dental cervix-clamps, as set forth.

2. A dental clamp consisting of a frame with screws fitted therein to hold the same in position, and a flexible jaw and an opposed jaw intermediate of said screws, substantially as described.

3. A dental clamp consisting of a frame having arches with screws fitted therein to hold said clamp in position on the tooth, an adjustable flexible jaw, and a stationary opposed jaw, said jaws being intermediate of said screws, substantially as described.

4. A dental clamp consisting of a frame having arches with screws fitted therein to hold said clamp in position on the tooth, and a stationary integral jaw, a flexible jaw carried by a sliding head, and means for adjusting said head, said jaws being intermediate of the screws in said arches, substantially as described.

474,182. DENTAL MATRIX-RETAINER. JAMES W. IVORY, Philadelphia, Pa. Filed May 11, 1891. Serial No. 392,312. (No model.)



Claim.—1. A matrix-retainer having jaws provided with flaring or widening lips adapted to register with the openings of the matrix and having reduced necks on said lips at the places of connection with the said jaws, whereby the matrix may be interlocked with the retainer, substantially as described.

2. A matrix-retainer having a yoke connected with the jaws thereof, said yoke being provided with a threaded aperture at each end for the engagement of the closing-screw of said jaws at either end, substantially as described.

3. Pivoted jaws with a separating-spring, a yoke embracing the said jaws and carrying a screw the inner end of which bears against one of the said jaws, and outwardly-flaring lips connected by necks with said jaws, said parts being combined substantially as and for the purpose set forth.

474,183. BARREL-FASTENER. ELIZABETH F. JENKINS, Dewese, Nebr. Filed Nov. 24, 1891. Serial No. 412,936. (No model.)

Claim.—1. The combination, with a barrel-cover, of a contractile hoop secured to the same, a spiral spring attached to one end of the

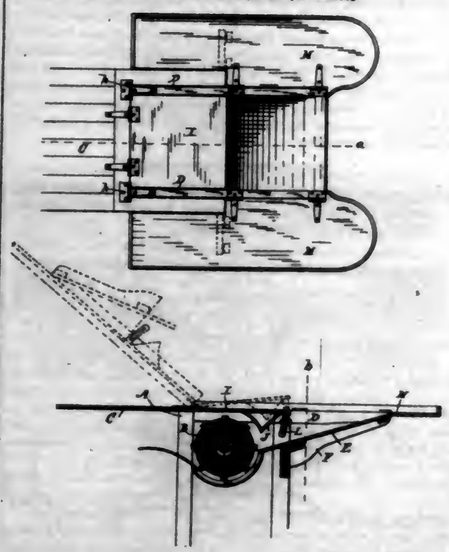


hoop, and a lever fulcrumed on the other end of the hoop and connected with the spiral spring and adapted to draw the end of the hoop together, whereby the cover is clamped on a barrel, substantially as described.

2. The combination, with a barrel-cover, of a contractile hoop attached to the same, a spiral spring secured to one end of the hoop, a lever fulcrumed on the other end of the hoop, a link connecting the lever and the spring, and suitable packing for the cover and the hoop, substantially as described.

3. The combination of a cover composed of sections hinged together, a segmental plate secured to the section 3 of the cover and provided with a depending curved flange, a contractile hoop secured to the curved flange, a curved plate secured to the hoop and projecting beyond the free end of the same and forming with the curved flange a recess to receive the free end of the hoop, a spiral spring secured to one end of the hoop, and a lever fulcrumed on the other end of the hoop and connected with the spiral spring, substantially as described.

474,184. FEED-TABLE FOR CLOVER-HULLING MACHINES. JOHN H. KAILOR, Columbus, Ind., assignor to Reeves & Co., same place. Filed Oct. 29, 1891. Serial No. 410,172. (No model.)



Claim.—The above-described feed-table for thrashing-machines, consisting of the central frame hinged at one end to the main casing of the thrashing-machine and having at its opposite end an inclined chute, the upper side of which is vertically adjustable, substantially as set forth, and the pair of leaves hinged to opposite sides of said frame and adapted to fold thereon, all combined substantially as set forth.

474,185. SAFETY APPLIANCE FOR STEAM-BOILERS. JOHN KASTNER, Jr., Evansville, Ind. Filed June 19, 1890. Serial No. 355,994. (No model.)



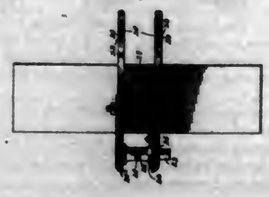
Claim.—A valve-casing having a cylindrical portion *a* and an annular valve-seat *b*, a cap *d*, covering said casing, an inlet to said casing, and an outlet from said cap, a valve having an inverted cup portion *e* fitting and sliding within the cylindrical portion *a* of said valve-casing, a flanged seating portion *g*, adapted to said seat *b*, and an upper enlarged annular flange *h*, a coiled spring *i* within said cup portion *e*, and a regulating-screw *n* for said spring, screwing through an aperture in said cap *d* and having exterior to said cap a manipulating-wheel *o*, in combination with the power-cylinder G, the piston H, sliding in said cylinder, the rod I, attached to said piston and extending above said cylinder, said power-cylinder beneath said piston receiving steam from said outlet from said cap *d*, the guide-pulleys O and S, the cross-bar K, attached to said rod I and having position always above said pulleys, and chains M and N, connected to the ends of said cross-bar, one of said chains extending downwardly from said cross-bar around one of said pulleys and thence to a signaling device and the other of said chains extending downwardly from said cross-bar around the other of said pulleys and thence to a door or damper, substantially as set forth.

474,186. SLATE-PENCIL SHARPENER. CHARLES G. KENNAN and WILLIAM J. MORRIS, Allegheny, Pa. Filed Feb. 13, 1889. Serial No. 299,806. (No model.)
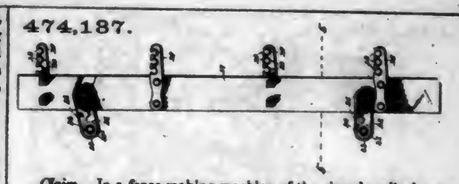


Claim.—The pencil-sharpening device comprising a cup constructed with roughened interior, as described.

474,187. TENSION DEVICE FOR FENCE-MACHINES. CHARLES P. LAMAR, Lyndon, Kans. Filed Apr. 1, 1891. Serial No. 387,253. (No model.)



474,187.



Claim.—In a fence-making machine of the class described, a tension device comprising a post or upright, a series of brackets secured to opposite sides of said post and extending laterally therefrom, each of said brackets being provided with a series of notches or recesses in its upper side, said notches having upper reduced necks or upper ends and enlarged beveled lower ends to prevent the slipping and cutting of the wire, horizontal and downwardly-inclined brackets extending laterally in the opposite direction to the aforesaid brackets and having winding-drums adapted to be connected with a suitable point of attachment, whereby the tension-post may be moved toward the said point of attachment for straining the fence-wires, substantially as set forth.

474,188. COMBINED CHILD'S WAGON, VELOCIPEDE, AND BABY-WALKER. DAVID F. LOSH, Wadsworth, Ohio. Filed May 26, 1891. Serial No. 394,494. (No model.)



Claim.—1. A child's wagon having in the bottom of the bed a rabbeted opening, in combination with two detachable boards hinged together and arranged to fit said orifice, substantially as shown and described.

2. The wagon-box having the detachable hinged sliding bottom and the gearing and wheels, the rear axle being bent to form oppositely-disposed cranks, combined with the treadles, each detachably connected at one end with one of said cranks and suspended at the other by a swinging link, substantially as shown and described.

3. A child's wagon having a part of the bed-bottom detachable, combined with a detachable frame arranged to fit in said bed and provided with means, as hooks, to sustain a harness to support the child.

4. The combination, with a child's wagon having a part of the bed-bottom detachable, of a frame arranged to rest in the wagon-box and provided with means to sustain a child's harness and a bar for the child's hands to grasp, substantially as shown and described.

5. The combination, with a child's wagon having a part of the bed-bottom detachable and a detachable frame arranged to rest in said bed-bottom, of a harness to support the child, arranged to be connected with said frame, substantially as shown and described.

474,189. HEAT-REGULATING DEVICE. ALFRED R. MORSE, Boston, Mass. Filed Apr. 21, 1891. Serial No. 389,804. (No model.)

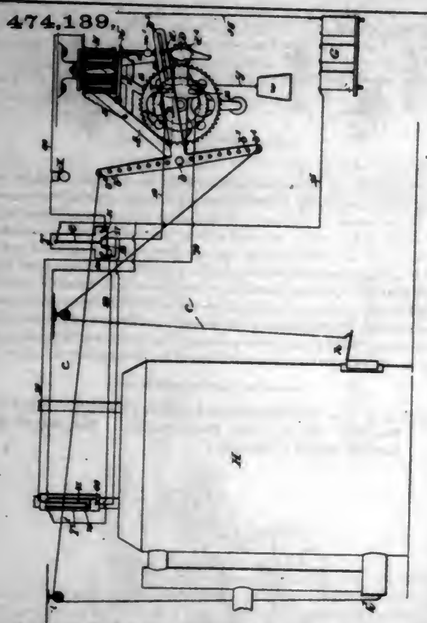
Claim.—1. In a heat-regulating device, the combination, with a regulating mechanism, of a thermostat, the contact-arm of which normally moves between two contacts in circuit with and to control said regulating mechanism, and the safety-contact 50, also in circuit with said regulating mechanism, to operate substantially as described.

2. A heat-regulator containing the following instrumentalities, viz: a regulating-arm, a trip-lever to move the same and actuating means for the said trip-lever, an electro-magnet, its armature, and a releasing-lever held thereby to control the said trip-lever, to operate substantially as described.

3. A heat-regulator containing the following instrumentalities, viz: a regulating-arm, a trip-lever pivoted at its middle and mechanism to rotate the same, and a connection between said trip-lever and regulating-arm, whereby rotation of the former will move the latter, a releasing-lever acted upon by one end of the trip-lever, and an electro-magnet and its armature to control the releasing-lever, to operate substantially as described.

4. A heat-regulator containing the following instrumentalities, viz: a frame, a shaft journaled therein and mechanism to rotate the same, a trip-lever mounted at its middle on said shaft, a regulating-arm pivoted to the frame and connected to and moved by one end of the said trip-lever, a pivoted releasing-lever acted upon by one end of the trip-lever, and a magnet and its armature to control the said releasing-lever, substantially as described.

474,139.



5. A frame, a regulating-lever pivoted at one end thereto and having a slot at its free end, combined with a shaft journaled in said frame and mechanism to rotate it, a trip-lever D, fast to said shaft and connected with the free end of the said regulating-lever by a stud located in the said slot, and an electro-magnet, its armature, and mechanism controlled thereby to hold said trip-lever, to operate substantially as described.

6. A frame, a regulating-lever pivoted at one end thereto and having a slot at its free end, combined with a shaft journaled in the said frame and mechanism to rotate the same, a trip-lever D, fast to said shaft, and a stud *d* in the said slot and carried by one end of the said trip-lever, the releasing-lever *m*, pivoted at *m'*, and an electro-magnet and its armature *n*, provided with a hook *n'*, to operate substantially as described.

7. A frame, a regulating-lever B, pivoted at *b* and having arms *b'*, provided with a series of holes b^3, and a slot B in the free end of the said regulating-lever, combined with a shaft journaled in said frame and mechanism to rotate it, a trip-lever D, fast to said shaft and connected with the free end of the said regulating-lever by a stud located in the said slot, and an electro-magnet, its armature, and mechanism controlled thereby to hold said trip-lever, to operate substantially as described.

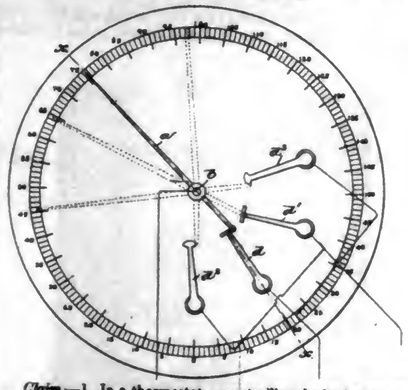
8. A frame, a regulating-lever movable thereon, an electro-magnet, its armature, and mechanism controlled thereby to move the said regulating-arm, combined with two contacts insulated from said frame, one of which is in contact with the said regulating-arm at a time, and a thermostat having three fixed contacts electrically connected with said insulated contacts, substantially as and for the purpose specified.

9. A heater, a thermostat placed in the room to be heated and adapted to respond to changes in the temperature of the room, and a regulating mechanism in circuit with and controlled by said thermostat, combined with a thermostat arranged to respond to the changes in the temperature of the heating medium and also in circuit with and to control said regulating mechanism and when moved to operate said mechanism to cut the thermostat in said room in or out of circuit, substantially as described.

10. In a heat-regulating device, a regulating mechanism and a thermostat T, having two contacts connected by wires 18 19 with and to control said regulating mechanism, combined with a thermostat T', connected in circuit to operate in connection with the wire 19 of the thermostat T, and the pens 70 71, placed in the line 18 and adapted to be separated by operation of the thermostat T' to direct the circuit of the thermostat T through the wire 18, substantially as described.

11. In a heat-regulating device, a heater and a regulating mechanism to control the same, combined with a thermostat having a contact-arm, a contact arranged at one side of said contact-arm to cooperate therewith and arranged in circuit with and to operate said regulating mechanism, and a second contact arranged beyond said first contact and in circuit with said regulating mechanism, closure of the circuit through the said second contact acting to operate the said regulating mechanism to reverse the effect caused by the operation of the said mechanism by closure with the first of the said contacts, substantially as described.

474,140. THERMOSTAT. ALFRED R. MORSE, Easton, Mass. Filed Apr. 28, 1891. Serial No. 390,819. (No model.)

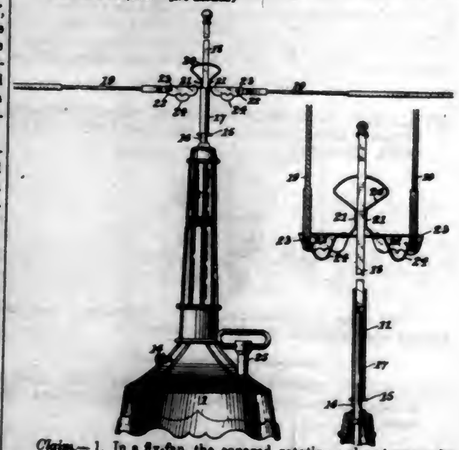


Claim.—1. In a thermostat, a controlling device having an automatically-movable contact-arm and containing three co-operating fixed contacts, the two outside contacts being arranged in circuit to effect a common operation when either is acted upon by said contact-arm and the middle contact arranged in circuit to effect another and different operation when it is acted upon by said contact-arm, substantially as described.

2. In a thermostat, a contact-arm, combined with contacts *d d* and the safety-contacts d^3 d^3, arranged in circuit, respectively, with the contacts *d* and *d*, to operate substantially as described.

3. In a thermostat, a contact-arm, combined with a rotatable stud *s*, a contact thereon to co-operate with said contact-arm, an adjusting-head at one end of said stud, a plate in which said stud is journaled, and a spring interposed between said head and plate, to operate substantially as described.

474,141. FLY-FAN. AUGUSTUS MORTON, Bridgeport, Conn., assignor to The Bridgeport Brass Company, same place. Filed Mar. 2, 1892. Serial No. 423,500. (No model.)

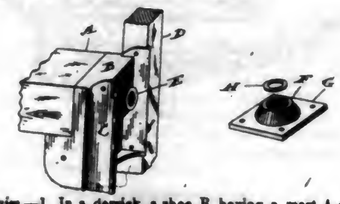


Claim.—1. In a fly-fan, the squared rotative rod and means for driving the same, in combination with the bowed spring embracing said rod, housings upon the outwardly-extending ends of said bowed spring, and the arms fulcrumed in said housings, substantially as described.

2. The combination, with the rotative rod, of the bowed spring embracing said rod frictionally, housings secured upon the opposite ends of said spring, fan-carrying arms fulcrumed in said housings, and supplemental friction-springs engaging the ends of the arms, substantially as and for the purpose specified.

3. The combination, with the squared and rotative rod 18 and means for driving the same, of the bowed spring 20, having an opening for the passage of the rod and opposite parallel portions for engaging the sides thereof, the housings 22, borne on the ends of the spring and adapted to accommodate the ends of the arms, and friction-springs secured within said housings and engaging the extremities of the arms, substantially as described.

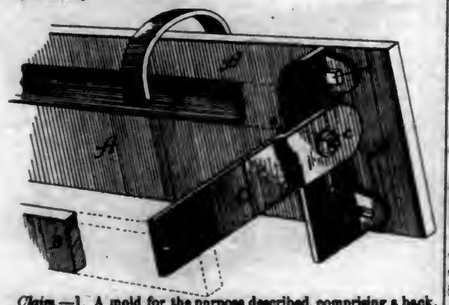
474,142. DERRICK. AUGUSTUS MYERS, Toronto, Canada. Filed Feb. 1, 1892. Serial No. 419,967. (No model.)



Claim.—1. In a derrick, a shoe B, having a mast A connected thereto and provided with flanges C C and hub E, in combination with cross-bars D D, connected to said flanges C C, a flanged ring I, connected to said cross-bars D D, a step G, arranged to support the mast and having a recessed projection F, forming a bearing for said hub E, and suitable mechanism for rotating said flanged ring, substantially as described.

2. In a derrick, a mast A, having the boom K connected thereto, a shoe B, connected to the bottom end of said mast A and provided with flanges C C, a hub E, projecting from said shoe B, cross-bars D D, connected to said flanges C C, a flanged ring I, rigidly connected to said cross-bars, stays J J, connecting said flanged ring with said mast, and a step G, arranged to support said mast and having a recessed projection F adapted to receive the hub E and form a bearing for the same, in combination with suitable gearing arranged to revolve said flanged ring I, substantially as described.

474,148. MOLD FOR FORMING CASTINGS FROM CEMENT. SAMUEL P. MCKELVEY, Chicago, Ill. Filed July 14, 1891. Serial No. 399,446. (No model.)



Claim.—1. A mold for the purpose described, comprising a back, end pieces secured thereto, vertically and angularly adjustable arms connected to the end pieces, and means for forming the front edge of the casting, substantially as described.

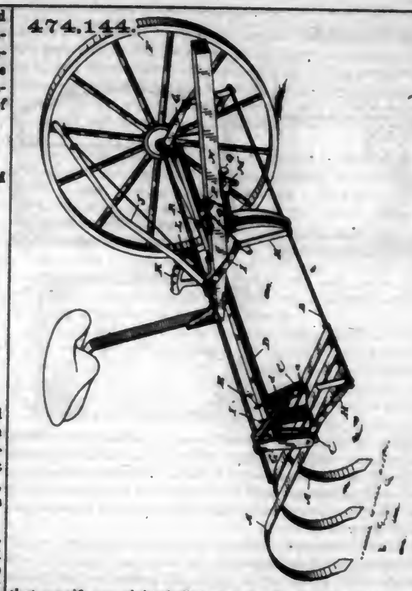
2. A mold for the purpose described, comprising a back, vertical end pieces secured thereto, angularly and vertically adjustable arms connected to the end pieces, and a bar attached to the ends of the arms opposite to the end pieces for forming the front edge of the casting, substantially as described.

474,144. CULTIVATOR. THOMAS H. NIXON, Ingersoll, Canada. Filed Apr. 27, 1891. Serial No. 390,582. (No model.)

Claim.—1. In a cultivator, a vertically-adjustable bar B and spring-tooth pivoted thereon, a fulcrum located between the pivot-point and the cutting end of the tooth, and means, substantially as described, for adjusting the bar B to any desired position, as set forth.

2. In a cultivator, a vertically-adjustable bar B and spring-tooth pivoted thereon, in combination with an elastically-compressible fulcrum located between the pivot-point and cutting end of the tooth and means, substantially as described, for adjusting the bar B to any desired position, as set forth.

3. In a cultivator, a series of pivoted spring-teeth of unequal lengths, in combination with a series of pressure-bars, each bar located in such a position between the pivot-point and cutting end of its tooth



that a uniform weight shall impart a substantially uniform pressure on the cutting end of each tooth.

4. In a cultivator, a vertically-adjustable bar B and spring-teeth pivoted thereon, in combination with an axle on which the ground-wheels are journaled, said axle being journaled on the frame, arms connecting said axle with the bar B, and means, substantially as described, for adjusting the bar B to any desired position, as set forth.

5. An arm fixed to a rock-shaft and having pivoted on it a strap connected to the bar on which the spring-teeth are pivoted, in combination with a chain or cord connected at one end to the arm and at the other end to one arm of a pivoted bell-crank to which the power is applied.

6. In a cultivator having pivoted spring-teeth, a tongue N, a bell-crank to which power is applied secured thereto, a pivoted foot-lever R, a pulley thereon, and a cord or chain passing over said pulley and connecting the bell-crank with the bar on which the teeth are pivoted, whereby pressure on the lever R will cause the forward draft of the horses to be utilized for applying downward pressure on the teeth, substantially as described.

7. In a cultivator, a bar B, teeth pivoted thereon, a bar D, a wheel-axle E, movable independent of said bar D, brackets G, secured to said bar D and forming bearings for the axle, and arms fixed to said axle and supporting said bar B, substantially as described.

8. A bar having on each end of it a bracket rigidly secured thereto, in which brackets the wheel-axle is journaled, and arms fixed to the said axle and supporting the bar on which the teeth are pivoted, in combination with loops projecting from the bar and forming guides and supports for the said teeth.

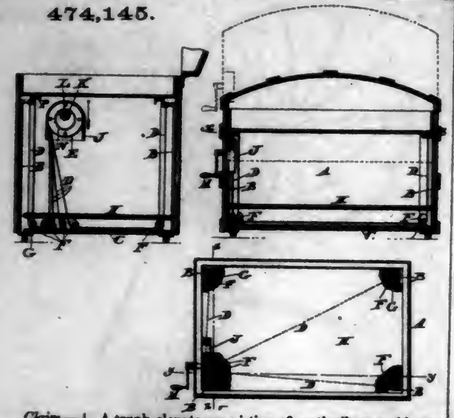
9. A bar having on each end of it a bracket rigidly secured thereto, in which brackets the wheel-axle is journaled, and arms fixed to the said axle and each arm connected by a pivoted link to the bar on which the teeth are pivoted, each end of the said bar being braced to the end bracket immediately opposite to it, in combination with a hand-lever rigidly fastened to the journaled axle and an arm also rigidly fastened to the axle and connected to the tooth-bar by a pivoted link.

10. A cultivator having teeth connected thereto by a horizontal pivot, from which point their working angle is varied, in combination with a draft device and intermediate mechanism between the draft device and teeth, whereby the said variation of the angle is effected and the teeth are caused to enter the soil at varying angles to its surface all by the draft of the horses, substantially as described.

11. A cultivator having teeth connected thereto by a horizontal pivot, from which point their working angle is varied, in combination with a draft device and intermediate mechanism between the draft device and teeth, the whereby the latter are presented to the soil at varying angles to its surface and are driven in and held there at the will of the operator, substantially as and for the purpose specified.

474,145. TRUNK-ELEVATOR. ELIZABETH R. PALMER, Philadelphia, Pa. Filed Nov. 30, 1891. Serial No. 413,632. (No model.)

474,145.



Claim.—1. A trunk-elevator consisting of vertically-movable legs normally located within the trunk, pulleys mounted on lugs on the inner face of the bottom of the trunk, cords connected with the upper ends of said legs, passing around said pulleys, and means, substantially as described, for operating said cords, said parts being combined substantially as set forth.

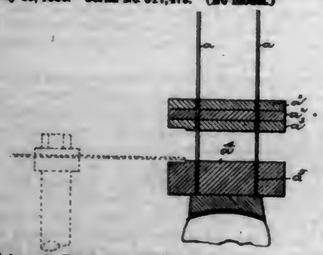
2. A trunk-elevator consisting of vertically-movable legs normally within the trunk, pulleys mounted on lugs on the inner face of the bottom of the trunk, a false bottom above said pulleys, cords connected to the upper ends of the legs, passing through said false bottom and around said pulleys, and a rotatable drum on which said cords are wound, said parts being combined substantially as described.

3. A trunk-elevator consisting of vertically-movable legs normally within the trunk, pulleys mounted on lugs on the inner face of the bottom, and a drum on the sides of the trunk, cords on said pulleys and connected with said legs and drum, and catches secured to said trunk and adapted to engage with said legs and prevent their movement downward and out of the trunk, substantially as described.

4. A trunk-elevator having vertically-movable legs normally within the trunk and mechanism connected with the same for lowering said legs, so as to project downward and outside of the trunk, and a false bottom in said trunk, said parts being combined substantially as described.

5. A trunk-elevator having vertically-movable props or legs, a drum with an internally-geared wheel thereon, cords connected with said legs and drum, a rotary pinion having a suitable bearing in the wall of the trunk and engaging said gear-wheel, and a casing inclosing said drum and gearing, said parts being combined substantially as described.

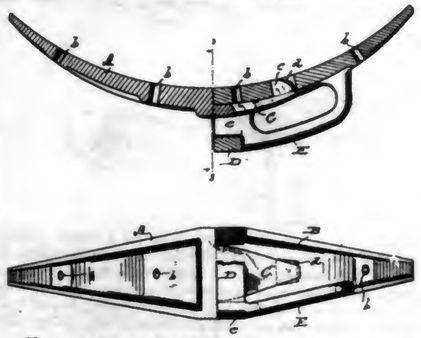
474,146. METHOD OF ATTACHING HEELS TO THE SOLES OF BOOTS OR SHOES. FREDERICK F. RAYMOND, 2d, Newton, Mass. Filed July 13, 1889. Serial No. 317,479. (No model.)



Claim.—1. The improvement in the method of forming and driving nails into heel-blanks, consisting in severing the ends of any desired length from a gang or group of wires, holding the said ends in a suitable holding device, and then driving said severed ends from said holding device into the heel-blank by the wire lengths or main sections of the wire from which the ends forming the nails or wires have been cut, substantially as described.

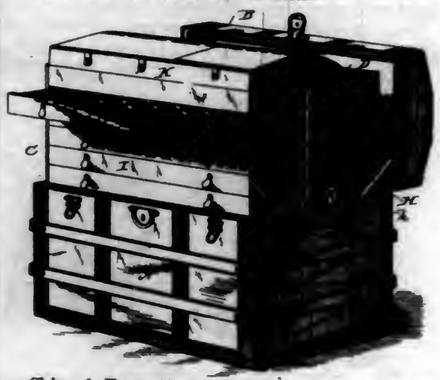
2. The method of forming and driving nails into the heel-blanks, which consists, first, in arranging the ends of a gang or group of wires in the order in which the fastenings are to be driven; second, in clamping the wires any desired distance above their ends; third, in severing the ends of the clamped wires to any desired extent or length from said ends; fourth, in placing said severed ends in a suitable holding device; fifth, in changing the location of the clamp upon the assembled wires, and, sixth, in driving the severed ends from said templet or nail-holder into the heel-blank by the wire lengths or main sections of the wire from which the ends forming the nails or wires have been cut, substantially as specified.

474,147. HORSE-COLLAR FASTENER. ANTON RITTER, Milwaukee, Wis. Filed Dec. 14, 1891. Serial No. 414,960. (No model.)



Claim.—A horse-collar fastener comprising the sections A B, the first of which is provided with the tongue C, having the lug *c*, and the second with the opening *d* for engagement with the tongue-lug, the guide-loop D, martingale-loop E, and corner post *e*, connecting said loops, substantially as set forth.

474,148. TRUNK. CHARLES N. ROMAINE, Petersburg, Va. Filed Dec. 16, 1891. Serial No. 415,361. (No model.)



Claim.—1. The combination of a case, a hinged top, a vertically-movable frame adapted to contain compartments and occupying the entire interior of said case, a pulley attached to the side of said case, and a flexible strap attached to the frame and to the hinged top and passing over said pulley, whereby said frame is automatically lifted and lowered vertically in said case by the opening and closing of the hinged top, as described.

2. The combination of a case, a hinged top, a vertically-movable frame adapted to contain compartments and occupying the entire interior of said case, a suitable guide between said frame and case, a pulley attached to the side of said case, and a flexible strap passing over said pulley and attached to the hinged top and to the frame, substantially as described.

3. The combination of a case, a hinged top, a vertically-movable frame occupying the entire interior of said case, sliding drawers in said frame, a pulley attached to the side of said case, and a flexible strap passing over said pulley and attached to the hinged top and to the frame, whereby the entire contents of the case is automatically raised and lowered and the drawers rendered accessible by the opening and closing of the hinged top, substantially as described.

4. The combination of a case, a hinged top, a vertically-movable frame occupying the entire interior of said case, compartments in said frame rendered accessible by the lifting of the frame, a pulley attached to the side of said case, a strap passing over said pulley and attached to the hinged top and to the frame, whereby the frame is raised and

lowered, and a catch to lock the frame from descending, substantially as described.

474,149. THERMOSTAT. LEWIS G. ROWAND, Camden, N. J., assignor to Henry C. Terry, Philadelphia, Pa. Filed Oct. 7, 1891. Serial No. 408,062. (No model.)



Claim.—A thermostat consisting of a casing, a spring-plate secured at one end to said casing and having a slot in its free end, a rigid plate connected with said casing, a holding-head having an interiorly-screw-threaded tube secured thereto, a rod with a threaded end in said tube and a tongue on the other end inserted in said slot, and a pin in said tongue below said slotted plate, said holding-head being secured to said tube by solder fusible above a normal temperature, said parts being combined substantially as described.

474,150. BUTTON. SAMUEL W. SHOREY, Boston, Mass. Filed May 15, 1890. Serial No. 351,908. (No model.)



Claim.—1. A button composed of a front and a back, a tubular shank, and a tubular reinforce within said shank, the reinforce being open from end to end, the inner end of the reinforce overlapping the inner end of the shank, the outer end of the reinforce terminating within and supporting the interior of the shank, substantially as described.

2. A button composed of a front plate, a back plate, a connected tubular shank, and a reinforce made tubular and open from end to end, combined with a fastening having a head at one end and adapted to be driven through the material and out through the inner end of the reinforce and to be clinched backwardly and against the inner end of the reinforce, substantially as described.

3. A button composed of a front plate, a back plate, a cap or anvil contained between the same, and a shank, as *b*, combined with an open-ended tubular reinforce having a concavity at its inner end and adapted to reinforce and stiffen the shank, and with a tack or fastening adapted to be driven through the material entirely through the said reinforce and to be clinched upon the anvil, detached from the reinforce, whereby the clinched end of the tack may be upset and the upset portion be made to follow back to and be firmly seated upon the open inner end of the reinforce, thus drawing the inner side of the head of the tack and the outer end of the shank of the button firmly toward each other to clamp the material between them, as and for the purpose set forth.

474,151. FIFTH-WHEEL. ERRA B. SMITH, Cincinnati, Ohio, assignor to Amelia Koehler Smith, same place. Filed Dec. 3, 1890. Serial No. 373,977. (No model.)



Claim.—1. In a pivotal connection between the head-block and axle, the combination of the head-block, journal P, secured thereto, axle and sleeve R, secured thereto, concealed locking or king-bolt device T, fitting the opening of journal P and having flange bearing against surface S' of sleeve R, and king-bolt bolt passing through said locking device, journal and sleeve, and head-block, substantially as and for the purposes specified.

2. In a pivotal connection between the head-block and axle, the combination of the head-block, journal P, secured thereto, axle and sleeve R, secured thereto, concealed locking or king-bolt device T, fitting the opening of journal P and having flange bearing against surface S' of sleeve R, and king-bolt bolt passing through said locking device, journal and sleeve, and head-block, the head of the king-bolt bolt fitting the countersunk opening T^3 in the locking or king-bolt device T, and the nut W^4 on the king-bolt bolt above the axle, substantially as and for the purposes specified.

3. In a pivotal connection, the head-block and axle and fifth-wheel, and the journal P, connected directly to the plate M, attached to the upper half of the fifth-wheel, and the sleeve R, connected to the plate H, and the angulated concealed locking or king-bolt device T, entering the angulated opening in journal P and engaging therewith, and king-bolt bolt, securing together the said axle, sleeve, locking device, journal, and head-block, substantially as and for the purposes specified.

4. In a pivotal connection between the head-block and axle, the combination of the head-block, journal P, secured thereto, axle and sleeve R, secured thereto, concealed locking or king-bolt device T, fitting the opening of journal P and having flange bearing against surface S', the king-bolt bolt passing through said locking device, journal and sleeve, and head-block and securing the same together, and the upper perch-iron I_3, rigid with the head-block, and the lower perch-iron M, connected by a pivotal connection to the axle, the two irons combining to prevent the axle from twisting away from the head-block, substantially as and for the purposes specified.

5. In a pivotal connection of the head-block and axle and fifth-wheel, the front brace being bolted to the head-block and bracing the lower pivotal connection below the axle, which last-named connection consists of the lower perch-iron having the pivotal lug entering opening I^4, and plate I, containing said opening and secured to the axle, in combination with an upper pivotal connection in the vicinity of the fifth-wheel, and flanges each side of the axle-cap for strengthening the king-bolt counterbore, substantially as and for the purposes specified.

6. In a pivotal connection of the head-block, axle, and fifth-wheel, the front brace K, bolted to the head-block and bracing the lower pivotal connection below the axle, which last-named connection consists of the lower perch-iron having the pivotal tapering lug M^2, entering and fitting the countersunk opening I^4, the plate I, containing the said opening I^4 and secured to the axle, in combination with the upper pivotal connection for retaining the upper side of the axle and the head-block always together at their longitudinal centers, substantially as and for the purposes specified.

7. In a pivotal connection of the head-block and axle and fifth-wheel, the lower pivotal connection below the axle, consisting of the plate I, provided with the recess I^3, forming a depressed central portion, the said depressed central portion being provided with the tapered opening I^4, the plate being secured to the under side of the axle, and the lower perch-iron lying in the recess of the plate I and upon the depressed portion of the latter, substantially as and for the purposes specified.

8. In a pivotal connection of the head-block and axle and fifth-wheel, the lower pivotal connection below the axle, consisting of the plate I, provided with the recess I^3, forming a depressed central portion, the said depressed central portion being provided with the tapered opening I^4, the plate being secured to the under side of the axle and the lower perch-iron lying in the recess of plate I and upon the depressed portion of the latter and having the pivotally-tapering lug entering opening I^4 and fitting closely therein, substantially as and for the purposes specified.

9. In a pivotal connection between the head-block and axle, the combination of the head-block, journal P, secured thereto, axle and sleeve R, secured thereto, locking device T, fitting the opening of journal P and having flange bearing against surface S' of sleeve R, and king-bolt bolt passing through said locking device, journal and sleeve, and head-block, and the lower pivotal connection below the axle, consisting of the lower perch-iron, having the pivotal lug entering the opening I^4, and plate or strap I, containing said opening and secured to the axle, substantially as and for the purposes specified.

10. In a pivotal connection between the head-block and axle, the combination of the head-block, journal P, secured thereto, axle and sleeve R, secured thereto, locking device T, fitting the opening of journal P and having flange bearing against surface S' of sleeve R, and king-bolt bolt passing through said locking device, journal and sleeve, and head-block, and the lower pivotal connection below the axle, consisting of the lower perch-iron having the pivotal tapering lug M^2 and the strap or plate I, secured to the axle and provided with countersunk opening I^4, in which said lug M^2 is received, substantially as and for the purposes specified.

11. In a pivotal connection between the head-block and axle, the combination of the head-block, journal P, secured thereto, axle and sleeve R, secured thereto, locking device T, fitting the opening of journal P and having flange bearing against surface S' of sleeve R, and king-bolt bolt passing through said locking device, journal and sleeve, and head-block, and the lower perch-iron having the pivotal tapering lug M^2, and the strap or plate I, secured to the axle and provided with countersunk opening I^4, in which said lug M^2 is received, and upper perch-iron rigid with the head-block, and brace at front for guarding against separation of head-block and axle, substantially as and for the purposes specified.

12. In a pivotal connection between the head-block and axle, the combination of the head-block, journal P, secured thereto, axle and sleeve R, secured thereto, locking device T, fitting the opening of jour-

nal P and having flange bearing against surface S' of sleeve R, and king-bolt bolt passing through said locking device, journal and sleeve, and head-block, and the lower pivotal connection below the axle, consisting of the lower perch-iron having the pivotal tapering lug M^3, and the plate I, secured to the axle and provided with countersunk opening I^4, in which said lug M^3 is received, and upper perch-iron L, rigid with the head-block, and forward brace K, connected below to the extension of the lower perch-iron and rigidly secured to the head-block, substantially as and for the purposes specified.

13. The combination of the vehicle head-block, axle-cap, top and bottom fifth-wheel friction-plates, concealed adjustable king-bolt device, and the plate H of the bottom friction-plate provided with hollow sleeve R, having opening R' for the reception of the hollow journal P, the sleeve being connected to the plate H not only at its base, but also by means of the strengthening-flanges R^3 on each side thereof, substantially as and for the purposes specified.

14. The combination of the vehicle head-block, axle-cap, top and bottom fifth-wheel friction-plates, concealed adjustable king-bolt device, and the plate H of the bottom friction-plate provided with hollow sleeve R, having opening R' for the reception of the hollow journal P, the sleeve being connected to the plate H not only at its base, but also by means of the strengthening-flanges R^3 on each side thereof, the extremities of the said bottom friction-plate H being provided with the circles of the lower fifth-wheel, substantially as and for the purposes specified.

15. The combination of the vehicle head-block, axle, journal P, top and bottom fifth-wheel, friction-plates, king-bolt device of angular form fitting angulated recesses in journal P, substantially as and for the purposes specified.

16. The combination of the vehicle head-block, axle, journal P, top and bottom fifth-wheel friction-plates, concealed king-bolt device of angular form fitting angulated recesses in journal P, and the king-bolt bolt passing through the angular king-bolt device, substantially as and for the purposes specified.

17. The combination of the head-block, axle, journal P, and concealed king-bolt device T, interlocking with journal P for preventing the rotation of the said king-bolt device independently of the axle, substantially as and for the purposes specified.

18. The combination of the head-block, axle, journal P, and concealed king-bolt device T, interlocking with journal P for preventing the rotation of the said king-bolt device independently of the axle, the latter being provided with the king-bolt bolt rotatable with the king-bolt device, substantially as and for the purposes specified.

19. The combination of the head-block, axle, sleeve R, journal P, and concealed king-bolt device T, interlocking with journal P for preventing the rotation of the said king-bolt device independently of the axle, the king-bolt device being provided with a flange and king-bolt bolt passing up through the head-block and king-bolt devices and above the spring or block, provided with a nut whereby the axle, journal P, sleeve R, and king-bolt and friction-plates and perch-irons are secured together, substantially as and for the purposes specified.

20. In a pivotal connection of the head-block and axle and fifth-wheel, the lower pivotal connection below the axle, consisting of the plate I, provided with the recess I^3, forming a depressed central portion, the said depressed central portion being provided with the opening I^4, the plate being secured to the under side of the axle, and the lower perch-iron lying in the recess of plate I and upon the depressed portion of the latter and having the pivotal lug entering opening I^4 and fitting closely therein, substantially as and for the purposes specified.

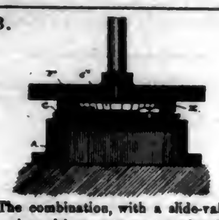
474,152. PLUMB-LEVEL. AUGUSTUS G. TAYLOR, Claremont, N. H. Filed Dec. 15, 1891. Serial No. 415,187. (No model.)



Claim.—1. A plumb and level comprising a body provided with a circular opening extending through said body, two parallel glass disks in said opening, each forming the front of a chamber, a wire ring separating said disks, annular metallic rings securing said disks together, all forming an air-tight chamber, and a liquid in said chamber.

2. A plumb and level comprising a body provided with a circular opening extending through said body, two parallel transparent disks, each forming a front of a chamber, provided with a graduated scale, a wire ring separating said disks, annular metallic rings securing said disks together, all forming an air-tight chamber, and a liquid in said chamber.

474,153. BALANCED SLIDE-VALVE. WILLIAM J. THOMAS, Scottsville, assignor to the American Balance-Slide-Valve Company, San Francisco, Cal. Filed June 17, 1891. Serial No. 396,619. (No model.)

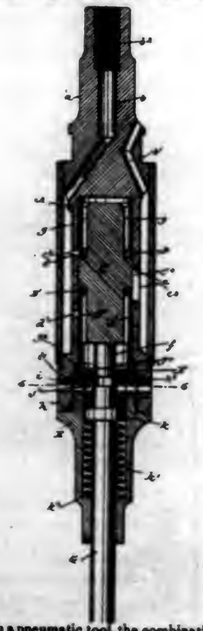


Claim.—1. The combination, with a slide-valve, of a top plate having a standing ring with an extreme tapering face near the outer edge or rim, a center depressed portion with a passage communicating with the exhaust, and an expansive ring tapered to fit the outer wall of the standing ring and having the top face projecting above the said ring, as set forth.

2. In a balanced slide-valve, a top plate having a standing rim, with tapering outer face or wall within the edge or margin of the plate, in combination with an expansible ring tapered to fit the standing rim and to project above it and a holding-screw having a longitudinal passage through it and extending through the plate and the top of the valve, constructed and applied for operation as set forth.

3. The combination of the valve A, top plate C, having a beveled standing ring or flange on its upper face, and screws securing the top plate to the valve, having apertures F through them, with a bearing-ring E, fitting upon the ring or flange on the top plate, as set forth.

474,154. PNEUMATIC TOOL. FRANK A. BAGHAGO, Long Island City, N. Y. Filed Aug. 30, 1890. Serial No. 363,494. (No model.)



Claim.—1. In a pneumatic tool, the combination of a piston-chamber having inlet and exhaust ports and a valveless piston working in the chamber, said piston having grooves adapted to register with the ports in the chamber, and openings or channels extending from the grooves outward to the ends of the piston.

2. In a pneumatic tool, the combination of a piston-chamber, inlet and exhaust ports in said chamber, a valveless piston working in the chamber, annular grooves in the piston registering with the ports in the chamber, and channels or openings forming communication between the grooves and the piston-chamber at opposite ends.

3. In a pneumatic tool, the combination of a cylinder having a piston-chamber, a jacket surrounding said cylinder and forming an air-space outside of the cylinder, a valveless piston working in the chamber, inlet and exhaust ports leading from the interior chamber to the outer air-space, grooves in the said piston registering with said inlet and exhaust ports, and channels or perforations leading from the grooves outward to the piston-chamber at opposite ends of the piston.

4. In a pneumatic tool, the combination of a piston-chamber, a piston working therein, a hollow thimble whose upper end forms the lower end of the piston-chamber and in the bore of which the reduced striking end of the piston plays, and vent-openings in the walls of the thimble.

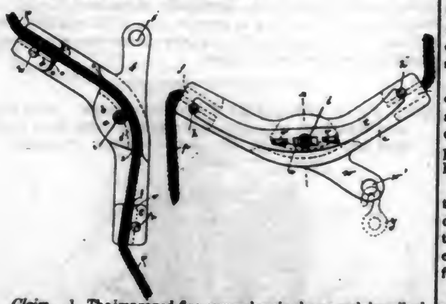
5. In a pneumatic tool, the combination of a piston-chamber, a piston working therein, a spring-seated tool-carrying spindle, a hollow thimble whose upper end forms the lower end of the piston-chamber and in the bore of which the reduced striking end of the piston plays, and vent-openings in the walls of the thimble.

6. In a pneumatic tool, the combination of a cylinder having a piston-chamber, a valveless piston working in said chamber, inlet and exhaust ports in the chamber, grooves in the piston adapted to register with the ports in the chamber, channels or perforations leading from the grooves outward to the piston-chamber at opposite ends of the piston, a hollow thimble in the lower end of the cylinder forming the bottom of the piston-chamber, the piston having the hammer playing in the bore of the thimble, vent-openings in the walls of the thimble.

7. In a pneumatic tool, the combination of a cylinder having a piston-chamber, a valveless piston working in said chamber, inlet and exhaust ports in the chamber, grooves in the piston adapted to register with the ports in the chamber, channels or perforations leading from the grooves outward to the piston-chambers at opposite ends of the piston, a hollow thimble in the lower end of the cylinder forming the bottom of the piston-chamber, the piston having a hammer playing in the bore of the thimble, vent-openings in the walls of the thimble and cylinder, a nose-piece secured to the cylinder, a tool-carrying spindle playing in said nose-piece, a shoulder or collar on the spindle, and a spring to hold the collar normally against the lower end of the thimble.

8. A pneumatic tool having a piston air-cushioned at the return end of the piston-chamber and vented at the opposite or striking end thereof, substantially as described.

474,155. FIRE-ESCAPE. JACOB BOWER, Newark, N. J. Filed Aug. 6, 1891. Serial No. 401,834. (No model.)

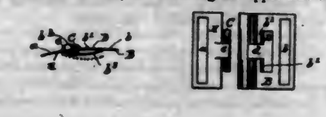


Claim.—1. The improved fire-escape herein shown and described consisting of a body provided with channels with a V-shaped side, the outer portions of said channels being nearly at right angles with each other and their V sides in opposite position and adapted to receive a rope, a cover, a locking-plate pivoted to said body and securing the cover thereon, and a suspending-arm made integral with said body, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

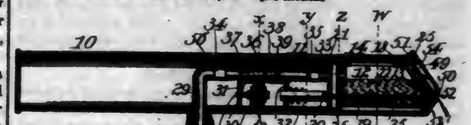
2. An improved fire-escape consisting of a body *a*, provided with a central lug *b*, having a curved channel *c* with inner V-shaped side, two outer lugs *c d* integral with body *a*, each of said outer lugs being provided with a channel with one V-shaped side, said channel being arranged at about right angles to each other and having their V sides in opposite positions, a cover *r*, a locking-plate *t*, adjustably pivoted to body *a* and securing the cover thereon, a suspending-arm made integral with said body, and a rope adapted to pass through the various channels, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

474,156. CLASP. LILLIAN H. BUELL, Boston, Mass. Filed July 23, 1891. Serial No. 400,302. (No model.)

Claim.—A clasp-fastening consisting of a metallic plate-piece and a hook-bar attached and a plate-piece in which is formed an opening to receive and engage said hook-bar, having one edge turned up and provided with a convexity for receiving the upper side of said hook-bar, and a guard-plate underneath, all substantially for the purpose set forth.



474,157. AIR-BRUSH. CHARLES I. BURDICK, Chicago, Ill. Filed July 23, 1891. Serial No. 400,435. (No model.)



Claim.—1. The combination, in air-brushes, of a shell in handle form tapered to a point and perforated at one end, a reservoir within the shell and separated therefrom by an air-passage, an opening through the shell and into the reservoir, a lid hinged to the shell to cover the said opening, and an elastic packing-ring around the opening to close the lid-joint, substantially as described.

2. The combination, in an air-brush, of a shell conical and perforated at one end, an ink-reservoir correspondingly conical and perforated within the shell, and an air-passage between the two, an air-supply pipe communicating with the said passage and with the rear portion of the said reservoir, a valve for the forward or delivery end of the said reservoir, another valve for the said air-supply pipe, and a single finger-key connected with both of the said valves, substantially as described, whereby a single movement of the operator's finger may control both the delivery of ink and the air-blast.

3. The combination of a tapered and perforated air-brush shell, a tapered and perforated reservoir therein, a needle fitted to close the last-named perforation and to slide longitudinally in attachments to the shell and having an enlarged portion with a slanting or screw-shaped shoulder, the said attachment adjacent to the said shoulder being slanting or screw-shaped to correspond thereto as a seat, a spring acting upon the needle to hold it against the said seat, an arm projecting to one side of the needle, and a finger-key extending to said arm from out side of the shell, substantially as described.

4. The combination of an air-brush shell having a delivery at one end, a reservoir within the shell and having a corresponding delivery, an air-passage leading into the reservoir, whereby its contents may be ejected through the said delivery, and a nozzle connected with the air-passage and located to direct its delivery of air in a line crossing the line of delivery from the reservoir, substantially as described.

5. The combination of an air-brush shell, a reservoir for paint therein, the shell and reservoir having each a delivery and the said deliveries being in a line, a nozzle having a delivery in a line crossing the line of delivery of the said shell and reservoir, and air-passages connecting the said shell, reservoir, and nozzle deliveries with a source for supplying compressed air, substantially as described.

6. The combination of an air-brush shell having a delivery and a nozzle fixed to one side of the shell, with its line of delivery crossing the line of delivery of the shell, and means for supplying compressed air to both deliveries, substantially as described.

7. The combination, in an air-brush, of an ink-reservoir having a delivery-nozzle and a valve therefor, an air-supply pipe having a delivery-nozzle adjacent to the said reservoir-nozzle, and a passage from the air-supply pipe to the reservoir at a distance from its nozzle, a valve for the air-supply pipe, and a finger-key fitted to actuate both of the said valves, substantially as described.

8. The combination of an air-brush shell and a reservoir therein, having each a delivery-aperture, an air-tube communicating with passages leading thereto and ending in a nipple, another air-tube entering the shell and ending in line of the said nipple, another tube or pipe journaled to revolve in bearings in line of and between the said nipple and the second-named air-tube, flexible tubular connections between the said revolving tube and adjacent tube ends, a partition closing the revolving tube at its center, an aperture in the side of the revolving tube at each side of the partition, a flexible pipe around the revolving tube, loosely covering the region of the side aperture therein and tightly secured at its ends upon the tube, and a closer fitted to press the flexible pipe upon one of the said side apertures as a valve therefor, and means for revolving or rocking the said journaled tube, substantially as described.

9. The combination, in air-brushes, of a shell or handle having a delivery-aperture, a supply-pipe connected with the handle, a communicating nipple within the handle, a tube journaled to revolve in the handle between the supply-pipe and nipple and connected with each by a flexible pipe and having a central partition and a side aperture at each side thereof, a flexible pipe loosely covering the said tube over the side apertures and secured to the tube beyond the apertures, a roller journaled upon a stud fixed in the handle to bear upon the said

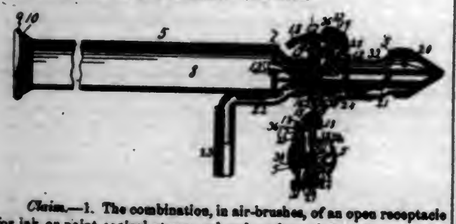
flexible covering-pipe, and means for revolving the journaled pipe, substantially as described.

10. The combination, in an air-brush, of the following elements, forming a valve therefor: a tube journaled to revolve in a handle and having a central partition, with a side aperture at each side thereof, a flexible pipe loosely covering the tube over the side apertures and fixed closely upon the tube beyond the apertures, a roller journaled in the handle to revolve against the said flexible pipe and bear it upon the journaled tube to close one of the holes therein, and means for revolving the journaled tube, substantially as described.

11. The combination, in air-brushes, of a handle containing a reservoir having a delivery-aperture, a needle fitted and provided with a spring to close said aperture, and further provided with a screw-thread or a slanting shoulder, and a bearing fitted thereto, and a rotating arm, an air-supply tube fitted with a valve to be opened and closed by revolving the tube, an arm upon the tube, and a key fitted in the handle and connected with both the said arm upon the needle and arm upon the tube, and means, substantially as described, for adjusting one of the arm connections with the key, as and for the purpose specified.

12. The combination, in air-brushes, of an adjustable paint-delivery, a nozzle directing an air-blast across the line of said delivery, and an aperture into the side of the air-passage, into which free air may be drawn by the action of compressed air, substantially as described.

474,158. AIR-BRUSH. CHARLES I. BURDICK, Chicago, Ill. Filed Jan. 19, 1892. Serial No. 418,595. (No model.)



Claim.—1. The combination, in air-brushes, of an open receptacle for ink or paint conical at one end and perforated for delivery of the said ink or paint, a valve to close the said perforation and adapted to be operated by hand, a cap covering the conical end of the body and forming an air-space between and perforated in line of the said delivery, and means for connecting the said air-space with a source of supply for compressed air, substantially as described.

2. The combination, in air-brushes, of a receptacle for ink or paint, perforated for delivery thereof, and open to atmospheric pressure from the rear, a finger-valve for the said perforation, and a suction-nozzle forward of the perforation, substantially as described.

3. The combination, in air-brushes, of a body containing a paint-reservoir, a valve therefor, a delivery formed in the body at some distance from the said valve and connected therewith by a paint trough or receptacle open to the outer air, a finger-valve for the said delivery, and a suction-nozzle forward of the delivery, substantially as described.

4. The combination, in air-brushes, of a tubular body having a paint-reservoir in its rear portion and made conical at its forward end and perforated as a paint-delivery at the apex of the cone, a valve-seated opening in the forward end of the reservoir, a valve-rod shaped at its forward end as a valve for the said delivery and provided at its rear end with a valve fitted to the said valve-seated opening, one of the said valves being adjustably connected with the rod, and a spring, and a finger connection for said valve-rod, substantially as described.

5. The combination, in air-brushes, of a body having a perforated paint-reservoir and a delivery at some distance apart, each provided with a valve-opening, a rod having valves at its ends and fitted to slide between the reservoir and delivery-openings, a perforated cap in front of the delivery-opening, leaving an annular air-space between the cap and body, a tube closed at its end and having a delivery at one side, means for connecting this tube with a source of supply for air under pressure, a flexible pipe connecting the tube and the aforesaid annular air-space and loosely covering the said side delivery as a valve therefor, a bracket fitted to slide transversely to the body and having an arm to bear upon the said flexible pipe over the said side delivery, and a finger-lever pivoted to the valve-rod and passing through a slot in the bracket and pivoted to the body and having a shoulder to engage the bracket, substantially as described.

6. The combination, in air-brushes, of a perforated reservoir, a paint-delivery located at some distance therefrom, a suction-nozzle beyond the delivery, an air-pipe communicating with the nozzle, a valve for the pipe, a valve for the reservoir, a valve for the said delivery, and a finger-lever connected with the three valves, substantially as described, whereby all the valves may be operated by one finger, substantially as described.

7. The combination, in air-brushes, of a delivery-valve, a bracket fitted to slide transversely to the implement and having a slotted segment, a spring for the bracket, a telescoping lever connected with the said valve and pivoted to swing in the said slot and provided with a thumb-piece to slide upon the said segment, and a compressed-air valve connected with the said bracket, substantially as described.

8. The combination, in air-brushes, of a paint-receptacle perforated for delivery, a valve for the perforation, a suction-nozzle forward of the delivery, a connection between the nozzle and compressed-air source, a valve for the said connection, and a finger-lever hung for two movements, substantially as described, whereby the operator's finger may make one movement to control the air-supply and another movement to control the paint-delivery.

9. The combination, in air-brushes, of a receptacle for paint having a delivery-aperture, a suction-nozzle in front thereof, an air-tube connecting with the nozzle, valves for the delivery-aperture and air-tube, and an operating-lever fitted to play both longitudinally and transversely to the body and connected with the valves, substantially as described.

474,159. SEMI-ELLIPTIC SPRING. EDWARD CLIFF, Newark, N. J. Filed Dec. 1, 1891. Serial No. 413,713. (No model.)

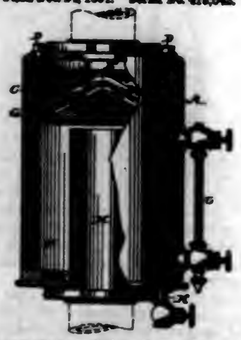


Claim.—1. In combination with the spring *a*, the bearing-plate *c*, formed with the recess *d* across its center, and the band *b*, embracing the spring and seated directly on the bottom of said recess, as set forth.

2. In combination with the spring *a*, the band *b*, embracing said spring, and the bearing-plate *c*, formed with the recessed seat *d* for the band and with seats *e e* for supporting the spring at opposite sides of said band-seat, as set forth.

3. In combination with the spring *a*, the band *b*, embracing said spring, and the bearing-plate *c*, formed with the recessed seat *d* for the band, seats *e e* for the spring at opposite sides of the said band-seat, and flanges *f f* on the spring-seats engaging opposite sides of the spring, substantially as described and shown.

474,160. SEPARATOR FOR PURIFYING STEAM. DAVID COOPERAKER, Philadelphia, Pa., assignor to the Harrison Safety Boiler Works, same place. Filed Dec. 24, 1891. Serial No. 416,042. (No model.)



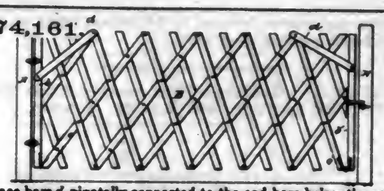
Claim.—1. A separator consisting of a casing with inlet and outlet pipes at opposite ends, an arched baffle-plate secured in said casing opposite said inlet-opening by posts and bolts and having a deep rib on the center of its faces and openings in its ends, and a pipe within said casing having a surrounding well, the spaces between the sides of said baffle-plate and the casing forming steam passage-ways, said parts being combined substantially as described.

2. A separator consisting of a casing with inlet and outlet pipes, an arched-shaped baffle-plate with openings in its ends and ribs on its faces and having passage-ways at its sides between it and the casing, a pipe in said casing having a surrounding well, and a discharge-pipe leading from said well, said parts being combined substantially as described.

474,161. LATTICE GATE. FRANK R. COMART, Reed City, Mich. Filed July 14, 1891. Serial No. 399,133. (No model.)

Claim.—In an expansion-gate, the combination, with the two ground-posts, of two end bars, a hinged connection between one end bar and one of the posts, a lazy-tongs lattice-work between the end bars, hinged connections between the lower ends of the end bars and the lower ends of oppositely-inclined members of the lattice-work, and

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the brace-bars *d*, pivotally connected to the end bars below the upper ends thereof, their outer ends having pivotal connections with the upper ends of intervening oppositely-inclined cross-bars of the lattice-work, substantially as described.

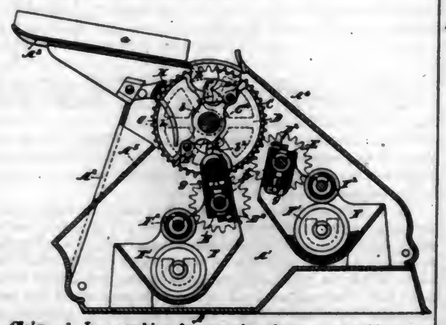
474,162. TIRE-SETTING MACHINE. CHARLES W. COTTON, Indianapolis, Ind. Filed Aug. 24, 1891. Serial No. 403,541. (No model.)

Claim.—1. In a tire-setting machine, the combination, substantially as set forth, of a table for the support of the wheel at the rim, clamps engaging over the wheel at the rim, a movable support under the center of the wheel, and means for moving said central support vertically with reference to the rim of the wheel.



2. In a tire-setting machine, the combination, substantially as set forth, of a table, an adjustable support thereon for the center of the wheel, and clamps thereon to engage over the wheel at the rim.

474,163. MACHINE FOR STAMPING CIGARS. ALEXANDER D. CHENEY, Cincinnati, Ohio. Filed Nov. 21, 1891. Serial No. 412,648. (No model.)



Claim.—1. In a machine for stamping cigars, a rotatable cylinder having a horizontal groove therein, with a clamp pivotally connected to said cylinder and adapted to operate within said groove, a yielding rotatable stamp, and suitable means for operating said parts, substantially as and for the purposes specified.

2. In a machine for stamping cigars, a rotatable cylinder having a groove therein, the latter being concave on one face, and a clamp pivotally connected to said cylinder and operating within said groove opposite its concave surface, said clamp having a lever b^3, in combination with a stationary cam and a rotatable stamp, for the purposes specified.

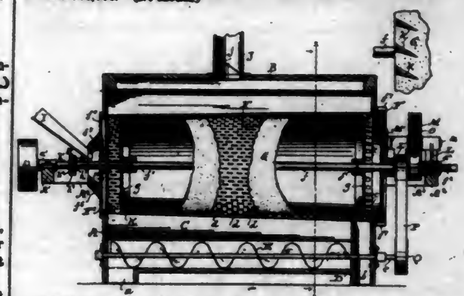
3. The grooved rotatable cylinder having a clamp pivotally connected thereto and resting within said groove, one side wall of said groove being concave, the outer face of said clamp being correspondingly concave, in combination with automatic mechanism for moving said clamp in opposite directions at certain determinate intervals, and a rotatable stamp, substantially as set forth.

4. The grooved cylinder C, having a clamp B^3 pivotally connected thereto and resting within said groove, a lever b^3, connected to said clamp, a stationary cam *b*, and a suitable elastic bearing for retaining said lever in contact with said cam, in combination with a yielding rotatable stamp, substantially as set forth.

5. The grooved rotatable cylinder C, having a clamp resting therein and pivotally connected to said cylinder, a lever b^3, connected to said clamp, a cam *b* and suitable means for retaining said lever in contact with said cam, a gear D, mounted on the cylinder-shaft C^3, a gear D^3, mounted on shaft D^4, and a stamp adjustably connected to said shaft D^4, and suitable means for feeding the printing material to said stamp, substantially as set forth.

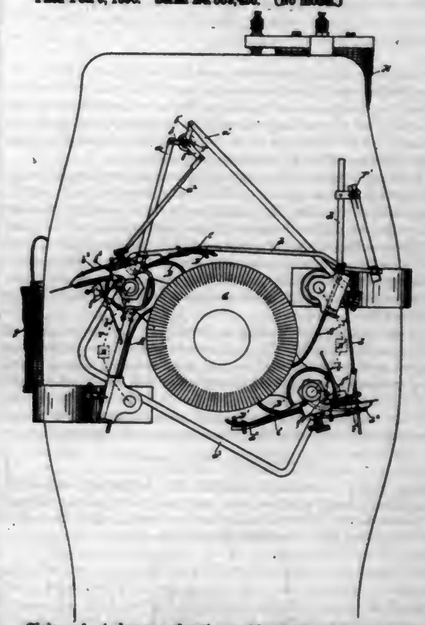
6. The grooved cylinder having a clamp pivotally connected thereto and resting within said groove, said clamp having a lever adapted to operate against a stationary cam, in combination with a yielding stamp consisting of casing E, mounted on shaft D^4, a type-plate E^3, a rod e^3, connected to said plate and projecting through said casing, a nut e^4, an elastic packing interposed between said plate and casing, and suitable means for rotating said cylinder and shaft and for feeding the printing material to said stamp, substantially as set forth.

474,164. MACHINE FOR HULLING OATS, BARLEY, AND OTHER GRAINS. JAMES R. DAVIS, Milwaukee, Wis. Filed Feb. 16, 1891. Serial No. 381,668. (No model.)



Claim.—In a machine for hulling grain, the combination, with a horizontally-disposed tapered revolving perforated shell, of an inner longitudinally-adjustable tapered drum having a rough-coated exterior surface and a series of short triangular recesses or guiding-channels of a uniform length and distance apart extending from the edge of the feeding end of said drum all around the periphery thereof, substantially as set forth.

474,165. REGULATOR FOR DYNAMOS AND MOTORS. WILLIAM H. BLEIN, Boston, Mass., assignor to Henry S. Irvine, New York, N. Y. Filed Feb. 6, 1890. Serial No. 339,496. (No model.)



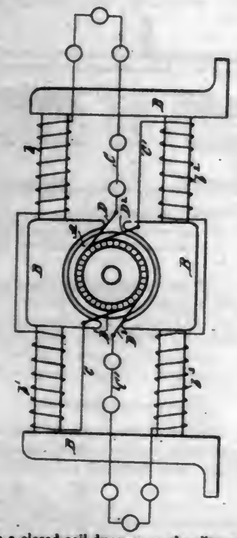
Claim.—1. A dynamo-electric machine having two or more sets of brushes placed at successive points in the periphery of the commutator and provided with a resistance adapted to be shifted in circuit from one brush to the next, combined with a lifting mechanism for two or more of said brushes, by which a desired set may be brought into contact with the commutator and the other set lifted therefrom.

2. The combination, with a dynamo-electric machine, of three sets of commutator-brushes placed at successive points in the periphery

of the commutator, lifting mechanism for two or more sets of said brushes, by which a desired set may be brought into contact with the commutator and the other lifted therefrom, and a resistance adapted to be shifted from the circuit of one brush to the circuit of the next.

3. The combination, in a dynamo-electric machine, of three sets of commutator-brushes placed at successive points around the periphery of the commutator, the intermediate sets being fixed and the other two sets being movable, and automatic mechanism for lifting the movable brushes into and out of contact with the commutator.

474,166. SYSTEM OF ELECTRICAL DISTRIBUTION. WILLIAM H. BLEIN, Cambridge, Mass. Filed July 11, 1891. Serial No. 399,234. (No model.)



Claim.—1. In a closed-coil dynamo, a plurality of circuits independent both externally and internally, each with brushes of its own and each comprising armature-coils which are connected with the adjacent coils and adjacent segments of the commutator, and which are common to all the circuits as the armature revolves, but wholly in one circuit while operative, all substantially as described.

2. In combination in a closed-coil dynamo, a circuit comprising a positive brush, one portion of the field-coil, a negative brush, and a portion of the armature-coils, armature-coils each connected with adjacent coils and adjacent segments of the commutator, and a second circuit comprising a second positive brush, a second portion of the field-coil, a second negative brush, and a portion of the armature-coils, the two circuits being independent except in so far as the armature-coils are common to both as the armature revolves, all substantially as described.

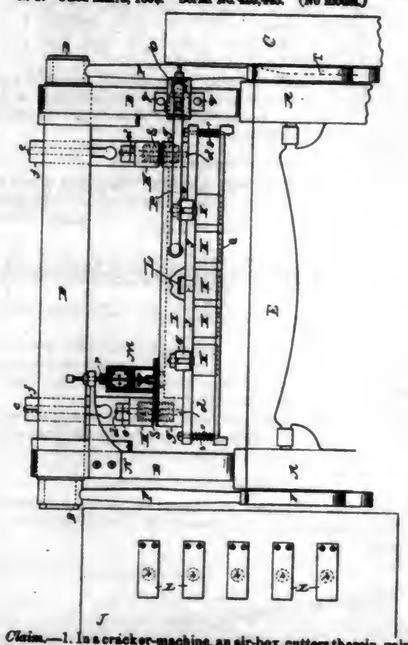
3. In a closed-coil dynamo, a plurality of circuits independent both externally and internally, each with brushes of its own and each comprising armature-coils which are connected with adjacent coils and to adjacent segments of the commutator, and which are common to all the circuits as the armature revolves, but yet wholly in one circuit while operative, in combination with means for moving the brushes to regulate the current in the circuits, substantially as described.

474,167. PACKAGE ADAPTED FOR AUTOMATIC DELIVERY. ALTON H. FARCHER, Canton, Conn., assignor, by direct and mesne assignments, to the Universal Selling Machine Company, New York, N. Y. Filed Feb. 3, 1887. Serial No. 226,353. (No model.)



Claim.—The described package adapted for automatic delivery from coin-controlled vending-machines, consisting of one or more gummed postage-stamps held flatly and loosely between a flatly-folded card having the desired requisite thickness or rigidity, whereby such package may, without detriment to the gummed stamp, be passed through such machines, as set forth.

474,168. CRACKER-MACHINE. CHARLES S. FOWLER, Brooklyn, N. Y. Filed Mar. 2, 1892. Serial No. 423,443. (No model.)



Claim.—1. In a cracker-machine, an air-box, cutters therein, valves L, connected therewith, a compressed-air reservoir connected by suitable valve with said air-box, and a relief-valve M, opening out of said air-box and automatically opened by said box in its reciprocating motion, and with mechanism for causing said air-box to reciprocate in unison with the plate carrying said cutters, substantially as shown and for the purposes specified.

2. A cracker-machine provided with a vertically-reciprocating bar, yokes rigidly attached thereto, the under side of each branch of which yokes is hollowed out to receive the upper end of a spiral spring, an air-box, the upper side of each corner of which is similarly hollowed out to receive the lower end of said spiral spring, and a spiral spring set in each of said hollowed-out yokes and corners around the bolts connecting said yokes with said air-box, substantially as shown and described.

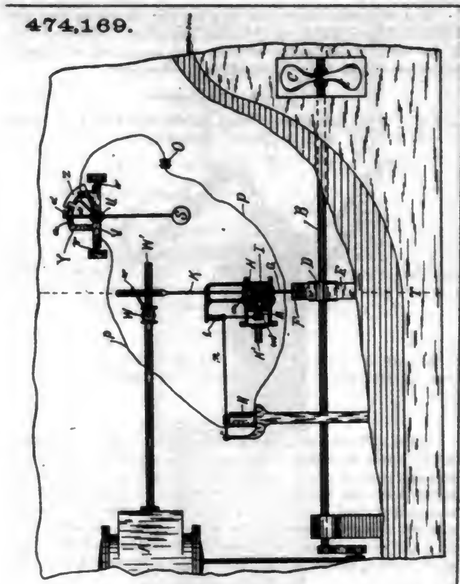
474,169. REGULATING PROPELLERS OF VESSELS. ADOLPH HELLBORN, St. Louis, Mo. Filed Jan. 16, 1891. Serial No. 377,977. (No model.)

Claim.—1. In devices for the regulation of propellers for steam-vessels, a throttle-valve for controlling the supply of motive fluid to the screw-engine, and a brake capable of being applied to the screw-shaft, said throttle-valve and said shaft-brake being operated by being mechanically connected with a piston, said piston being operated by motive fluid under the control of electric appliances, the operative current to said electric appliances being furnished by closing an electric circuit by devices operated by contrivances susceptible of and capable of being actuated by the varying depths to which the stern of the vessel is immersed in the water, combined and operating substantially as described, and for the purposes specified.

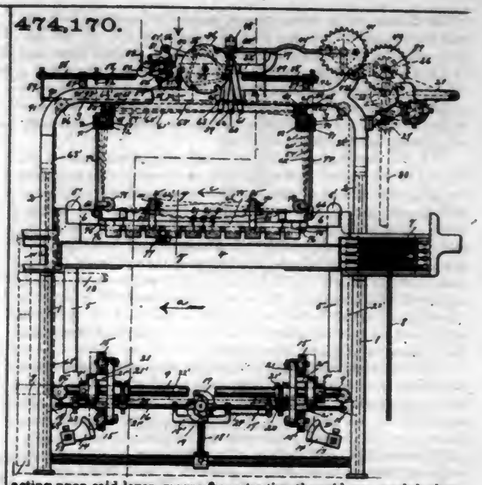
2. In devices for the regulation of propellers for steam-vessels, the combination, with a throttle-valve W and shaft-brake D, with piston H and piston-rods G and K, cylinder I, valve M, magnet N, circuit P, and battery O, rocking frame V and attached rigid arm Y and adjustable arm Z, pendulum S, and pendulum-arm *s* and attached contact-springs *a* and *a'*, operating substantially as described, and for the purposes specified.

3. In a marine governor, the combination, with a throttle-valve W, of piston H, piston-rod K, cylinder I, valve M, magnet N, circuit P, battery O, rocking frame V, having rigid arm Y and adjustable arm Z, and pendulum S, having arm *s*, provided with contact-springs *a a'*, substantially as and for the purposes specified.

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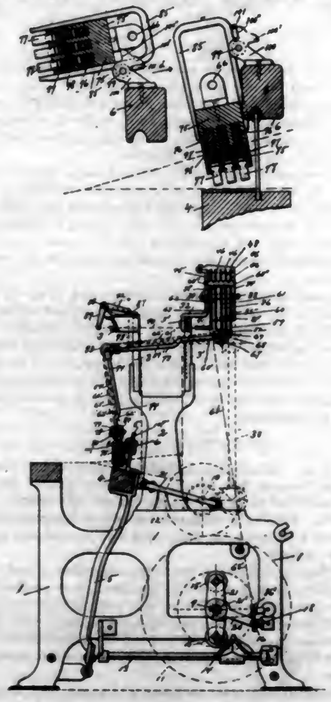


474,170.



474,170. SWIVEL-LOOM. GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Mar. 23, 1891. Serial No. 386,169. (No model.)

Claim.—1. The combination, with a swivel-rail, fly-shuttle-actuating mechanism, and shipping devices for rendering such actuating mechanism operative and inoperative, as required, of a lever, connections between the said lever and the said swivel-rail, and shipping devices whereby the rail may be moved into and out of working position simultaneously with the actuation of the shipping devices, a cam



acting upon said lever, means for actuating the said cam, and devices for controlling such actuation of the cam, substantially as described.

2. The combination, with the fly-shuttle-actuating mechanism and shipping devices for rendering such mechanism operative and inoperative, as required, of automatic devices for actuating such shipping devices, comprising a lever in operative connection with the said shipping devices, a cam acting upon the said lever, a pawl for moving said cam, and means for operating the pawl, substantially as described.

3. The combination, with a swivel-rail, a lever having operative connections with the said rail, whereby to move the latter in the direction of its length, a second lever, a connection between the two levers which is adjustable to vary the throw communicated to the lever first mentioned, a cam acting upon the second lever, a pawl operating said cam, and a crank operating said pawl, substantially as described.

4. The combination, with a cam having in its periphery notches formed with contracted open ends, of a pawl, a crank operating said pawl, and a rod or pin supporting said pawl and acting in conjunction therewith, substantially as and for the purposes set forth.

5. The combination, with the swivel-racks and levers in operative connection therewith, of a series of cams engaging with the said levers, pawls operating the said cams, indicating-levers controlling the action of the pawls on the cams, and a crank operating the pawls, substantially as described.

6. The combination, with the swivel-rail, a frame supporting the same, and the lay, of means for automatically swinging the frame and changing the position of the swivel-rail longitudinally thereof, such means consisting of a cam, an operating-pawl, means for actuating said pawl, a lever acted on by the cam, and flexible connections extending from said lever around sheaves on the frame and connected to the lay, substantially as described.

7. The combination, with the lay, guides carried thereby, and a swivel-rail, of a supporting-frame pivoted to the loom-frame and by which the swivel-rail is suspended, a cam, actuating devices for the said cam, controlling devices whereby the time of movement of the cam is determined, a lever operated by the said cam, and connections from the lever to the pivoted frame for swinging the latter to move the swivel-rail into and out of working position, substantially as described.

8. The combination, with the lay, guides carried thereby, a swivel-rail, and a supporting-frame above the lay with which the swivel-rail is connected, of means for raising and lowering the said frame and the swivel-rail, consisting of a cam, an operating-pawl, devices for actuating the said pawl, a lever acted upon by the cam, a rocking shaft, connections from the lever to the shaft, whereby the said shaft may be rocked, and connections from the shaft to the frame, whereby the latter and swivel-rail may be raised and lowered, substantially as described.

9. The combination, with the lay, guides carried thereby, and a swivel-rail, of a supporting-frame pivoted to the loom-frame and by which the swivel-rail is suspended, a lever and operative connections between the same and the supporting-frame for moving the latter to place the swivel-rail in and out of working position, a second lever and operative connections between the same and the supporting-frame for moving the latter to shift the swivel-rail in the direction of the length thereof, cams acting on said levers, actuating devices for the said cams, and controlling devices whereby the time of movement of the cams is determined, substantially as described.

10. The combination, with a swivel-rail, two or more series of

swivel-shuttles, two or more series of pinions for engaging with the said shuttles, and two or more racks in engagement with the said pinions, of two or more levers, connections between the said levers and racks, whereby the latter may be actuated as the levers are moved, a series of cams acting to move the said levers, means for moving the respective cams, and devices whereby the actuation of the said cams by the said means is controlled in accordance with the requirements of a pattern, substantially as described.

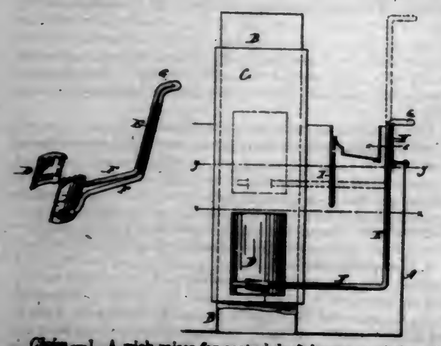
11. The combination, with a swivel-rail, a supporting-frame therefor, two or more series of swivel-shuttles, two or more series of pinions engaging with the said shuttles, and two or more racks in engagement with the said pinions, of a series of levers, operative connections between one of the said levers and the supporting-frame, whereby the said frame and the swivel-rail are raised and lowered as the said lever is moved, connections intermediate certain of the said levers and the racks, whereby the said racks are operated as the said levers are moved, a series of cams acting upon the series of levers, means for moving the respective cams, and devices whereby the actuation of the said cams by the said means is controlled in accordance with the requirements of a pattern, substantially as described.

12. The combination, with a swivel-rail, a supporting-frame therefor, two or more series of swivel-shuttles, two or more series of pinions engaging with the said shuttles, and two or more racks in engagement with the said pinions, of a series of levers, operative connections between one of the said levers and the supporting-frame, whereby said frame and the swivel rail are raised and lowered as the said lever is moved, connections intermediate certain of said levers and the racks, whereby the said racks are operated as such levers are moved, and connections with another one of the said levers, whereby the swivel-rail is moved in the direction of its length as the said lever last mentioned is moved, a series of cams acting upon the series of levers, means for moving the respective cams, and devices whereby the actuation of the said cams by the said means is controlled in accordance with the requirements of a pattern, substantially as described.

13. The combination, with the swivel-shuttles, a series of levers, and devices intermediate the said shuttles and the levers, whereby the shuttles are brought into action when the said levers are actuated, of cams for moving the levers, pawls for moving the cams, means for operating the pawls, and indicating mechanism controlling the action of the pawls, such indicating mechanism consisting of a series of indicating-levers, one for each cam and operating-pawl, and mechanism for operating said indicating-levers, the action of the latter mechanism controlled by Jacquard or harness cords, substantially as set forth.

14. The indicating mechanism consisting of a series of indicating-levers, each provided with a cam-surface, in combination with a series of weighted levers, each provided with a cam-surface to engage the cam-surface on the corresponding indicating-lever, the said weighted lever operated by a Jacquard or harness cord to engage and raise said indicating-lever, a pawl for engaging said weighted lever to hold the same in engagement with the indicating-lever, and a second weighted lever operated by a Jacquard or harness cord to trip the pawl and release the indicating-lever, substantially as set forth.

474,171. WICK-RAISER FOR CENTRAL-DRAFT LAMPS. JOSEPH JAMES, Meriden, Conn., assignor to The Bradley & Hubbard Manufacturing Company, same place. Filed July 13, 1891. Serial No. 399,349. (No model.)



Claim.—1. A wick-raiser for central-draft lamps, consisting of a vertical rod R, made from wire doubled to form two substantially parallel branches, the said branches bent inward at their lower ends to form transversely-elastic arms F F and the said branches provided at their inner ends with jaws adapted to engage the wick, combined with a guide in the throat through which the double rod passes, substantially as described.

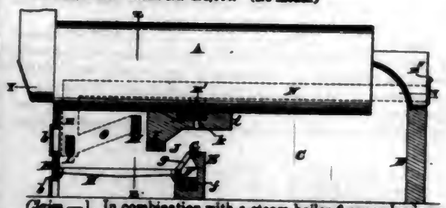
2. A wick-raiser made from wire, the wire doubled to form the vertical lifting-rod and the two branches bent inward at the lower end of the rod, the said inward branches each terminating in a clamp adapted to engage the wick, substantially as described.

474,172. OIL-CAN. HIRSCH KAPLAN, New York, N. Y. Filed Oct. 16, 1891. Serial No. 408,849. (No model.)



Claim.—The can A, provided with the spout B, having the valve-seat L, located in the line of the orifice thereof, the screw-cap C and the seat O, located on the top of said can and having the guide-tube E, secured within the walls of said can, so as to form a passage from the outer sides thereof, in combination with the operating-rod F, the forward end of which is provided with a valve K, screw-threaded rod I, nut J, and spring M, and the rear end of which is provided with a button N, valve R, and the spring S, substantially as shown and described.

474,173. FURNACE. PETER KIEFER, Jr., Cincinnati, Ohio. Filed Feb. 16, 1892. Serial No. 421,687. (No model.)



Claim.—1. In combination with a steam-boiler furnace having a baffle-plate I near the rear end thereof, an opening M in the side wall C and near said baffle-plate, another opening L in said wall near the front of the furnace and above its grate-bars, and a smoke-passage O, that permits the gases to be drawn in at said opening M and discharged at said opening L, for the purpose described.

2. In combination with a steam-boiler furnace having a baffle-plate I near the rear end thereof, an opening M in the side wall C and near said baffle-plate, another opening L in said wall near the front of the furnace and above its grate-bars, which opening L communicates with a diving-passage n of a horizontal flue N, traversing said wall, and a smoke-passage O, connecting these openings L M, for the purpose described.

3. The combination, in a steam-boiler furnace, of the side walls C C, traversed by air-flues N P, having diving branches n n' and p p', the baffle-plate I, having an air-heating chamber K, provided with a vantage k, the openings L L' and M M', located in said side walls C C in the manner described, the inclined smoke-passage O, connecting these openings, and the bridge-wall E, having an air-heating chamber F, with an inlet f and a series of vents g, all as herein explained, and for the purpose stated.

474,174. DEVICE FOR DAMPENING ENVELOPES. ELISHA L. KIMBERLY, Syracuse, N. Y., assignor of one-half to Edward I. Rice, same place. Filed Feb. 29, 1892. Serial No. 423,149. (No model.)

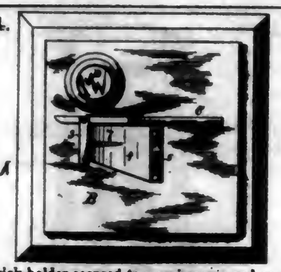
Claim.—1. A device for dampening envelopes, comprising a tank having a main wick and an auxiliary wick held in separable contact therewith, as set forth.

2. A device for dampening envelopes, comprising a tank with a main wick below the plane of the top of the tank and an auxiliary wick held in separable contact with the top of the main wick.

3. A device for dampening envelopes, comprising a tank, a main wick therein, and an auxiliary wick normally in capillary contact with the main wick and separable vertically therefrom by the insertion of the envelope.

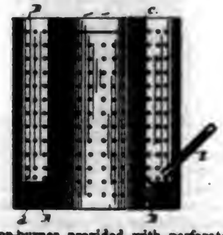
4. The combination, with the tank and the main wick therein, of

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an independent wick-holder secured to a spring-arm and an auxiliary wick mounted therein and normally in capillary contact with the main wick and vertically separable therefrom, as set forth.

474,175. VAPOR-BURNER. JOHN A. LAMBERT and WILLIAM R. JEAVONS, Cleveland, Ohio. Filed Nov. 9, 1891. Serial No. 411,269. (No model.)



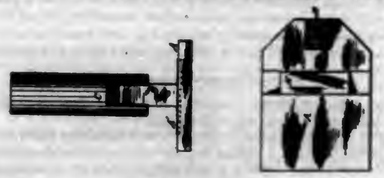
Claim.—A vapor-burner provided with perforated combustion-walls, and an air-tight bottom between the lower ends of said walls, and an oil and vapor distributing channel having greater depth than width and one or both of its sides out of line with the said perforated walls, said channel open about its top, substantially as described.

474,176. CARPET-STRETCHER. SAMUEL C. MAINS, Glendon, Iowa. Filed Oct. 9, 1891. Serial No. 408,573. (No model.)

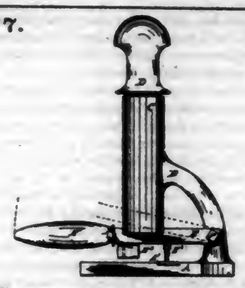


Claim.—In a carpet-stretcher, the combination, with the bar having an upwardly-projecting pivot-pin at one end, a cross-head at its other end provided with a series of inclined teeth or pins on its under side, and the upwardly-projecting pin secured to said bar intermediate its ends, of the lever pivoted to said bar, having an eye or staple on its under side, the rod connected with said staple, the short rod connected therewith, having its end bent at a right angle and adapted to be driven into a floor, the bent plate having apertures at each end through which the pins on the bar pass, and the torsional spring-rod bent at its center into an eye or loop adapted to engage with the pins on the said bar intermediate of its ends and having its ends curved outwardly and secured to the cross-head, substantially as and for the purpose specified.

474,177. RIVETING-MACHINE. ELLSWORTH D. MIDDLEKAUFF, Stockton, Cal. Filed Feb. 18, 1892. Serial No. 422,002. (No model.)

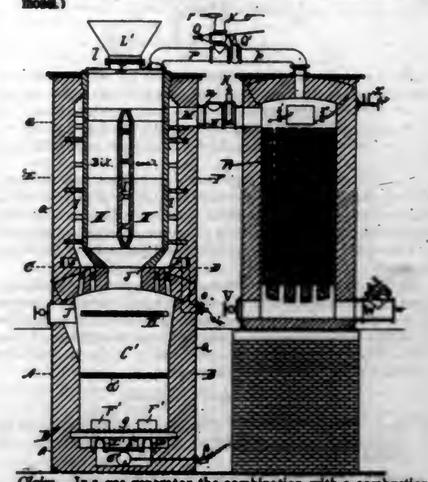


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Claim.—The improved riveting-machine herein set forth, consisting of the base A, having a slot containing the plate A', the standard B, attached to the base A, the tube C, with slotted lower ends, attached to the standard B, the driver D within the tube C and impinging upon the lever E, the lever E, hinged to the standard B and provided with the handle E', and the cutting-tube E² and the lug E³, attached beneath the lever E, all substantially as shown and described.

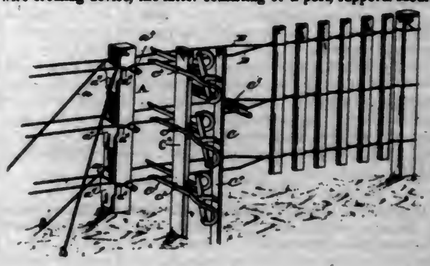
474,178. GAS-GENERATING APPARATUS. WILLIAM H. MORGANS, Pontiac, Mich. Filed May 14, 1890. Serial No. 351,717. (No model.)



Claim.—In a gas-generator, the combination, with a combustion-chamber, of an arch for the same, having a series of flues therein near the outer edge and a central feed-opening, a coking-chamber above and communicating with the combustion-chamber through the feed-opening, a flue surrounding the coking-chamber, communicating with the combustion-chamber through the flues of the arch, an air-flue at the base of the coking-chamber, a hollow central partition in the coking-chamber, its center communicating with the surrounding flue, and an exit for the coking and combustion chambers, substantially as described.

474,179. FENCE-MACHINE. JOHN H. MORRIS, Maquoketa, Iowa. Filed Jan. 26, 1892. Serial No. 419,277. (No model.)

Claim.—1. A fence-machine comprising a tension device and a wire-crossing device, the latter consisting of a post, supports secured

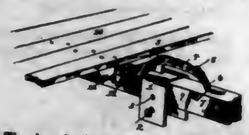


thereto, levers pivoted at their center to the supports, wire-crossing arms pivoted to the levers and having their free ends provided with eyes, a bar pivotally connected to each of the levers, and a handle connected to the bar, substantially as described.

2. A fence-machine comprising a tension device and a wire-crossing device, the latter consisting of a post having guideways, supports secured to the posts, three-armed levers pivoted centrally to the supports, wire-crossing arms pivoted to two of the lever-arms and working in the said guideways, the free ends of the said arms being provided with eyes, a bar pivotally connected to each of the three lever-arms, and a handle secured to the bar, substantially as described.

3. A fence-machine comprising a tension device consisting of a post provided with revoluble studs, pins under which the wires are to be passed, and holders attached to the post and provided with notches for the reception of the wires, and a crossing device consisting of a post, reciprocating arms provided with eyes for receiving wires, levers to which the arms are attached, and a bar attached to the levers, whereby by the up-and-down movement of the bar a reciprocating movement is imparted to the arms, substantially as described.

474,180. FLOOR-CLAMP. JAMES W. MCGUAID, Calloway County, Ky. Filed June 25, 1891. Serial No. 397,479. (No model.)

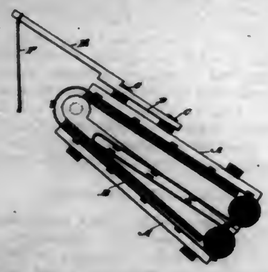


Claim.—1. The herein-described floor-clamp, consisting of the inverted-U-shaped clip and means for securing the same to a sleeper, and a vertically and rearwardly disposed anchoring-dog reduced at its rear end to form a driving-point for entering the sleeper and above the same widened to form the driving-shoulder S, substantially as specified.

2. The herein-described floor-clamp, consisting of the inverted-U-shaped clip, the terminals of which are perforated at intervals, a pin to be inserted in the perforations, and a vertically and rearwardly disposed dog terminating in a point for entering the sleeper and provided above the same with a driving-shoulder, substantially as specified.

3. The herein-described clamp, consisting of the inverted-U-shaped clip perforated at intervals, an adjusting-pin mounted therein, and a vertically and rearwardly disposed dog having a front shoulder and terminating in a rear point, said dog being provided above the point with a gaging-shoulder and above and in rear of the point with a driving-shoulder, substantially as specified.

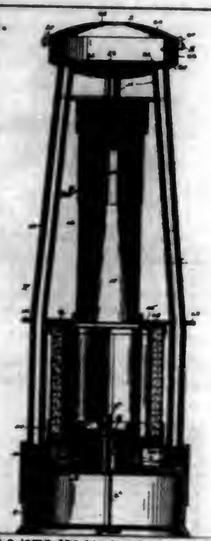
474,181. ATTACHMENT FOR STRAW-CARRIERS. JOHN MCGUILLAN, Hecker, Ill. Filed Nov. 14, 1891. Serial No. 411,908. (No model.)



Claim.—In an attachment for straw stackers and carriers, the combination, with the folding inclined endless-apron frame, of receiving-sockets secured to the under side of the upper section, a lever having a reduced shank removably inserted in said sockets and an extended lever portion to obtain the requisite leverage, and an operating-rope secured to the outer end of said lever and by a downward pull upon the same adapted to throw the upper section or member of the apron-frame over and upon the lower section and back into its normal inclined position in alignment with said lower section, substantially as set forth.

474,182. SAFETY MINER'S LAMP. ANDREW L. NELSON, JOSEPH KNAPPER, and ISAAC TAYLOR, Dunbar, Pa. Filed June 23, 1891. Serial No. 397,061. (No model.)

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Claim.—1. In a lamp, the combination of an upper inlet-chamber having an opening in the top thereof, tubes leading downward from and connected to the bottom of said chamber, a closed cylindrical base comprising a top, to which said tubes are connected and open therethrough, a disk screwed into said base and having a central opening, a flange rising from said disk around its openings and itself having openings, a gauze strip outside of said flange over the openings therein, an oil-cup screwed into said base and having a burner, an upright tube on said oil-cup around the said burner thereof and having openings near its lower end adapted to register with those in the flange, a globe fitted over said burner in an air-tight manner, a cone above said globe, and a gauze covering over said cone, substantially as described.

2. In a lamp, the combination, with an inlet-chamber having an opening in its top, tubes leading downwardly from said chamber, a base into which said tubes open, and an oil-cup supported by said base and carrying a burner, of a globe mounted on said base, a collar at the upper end of said globe, ears thereon embracing said tubes, a cone rising from said collar and having an upward extension opening beneath said inlet-chamber, and a gauze cylinder surrounding said cone and extension, substantially as described.

3. In a lamp, the combination, with an oil-cup and burner, a base embracing the same and having an annular opening, a gauze strip between said opening and burner, and tubes extending upwardly from said opening, of a globe and chimney surrounding the burner, an inlet-chamber above the chimney and with which said tube communicates, a gauze disk across the chamber, the latter having an opening in its upper end, and a bail or handle secured to the side walls of the chamber, substantially as described.

4. In a lamp, the combination of a closed cylindrical base having internal screw-threads, a disk screwed therein and having a central opening, a flange rising from said disk around its opening and itself having openings, an oil-cup screwed in said base, a burner at the center of the top thereof, an upright tube on said cup around the burner having holes adapted to register with those in the flange, a globe over said burner, an upper extension over said globe, an upper inlet air-chamber, and tubes connecting said air-inlet chamber with the base, substantially as described.

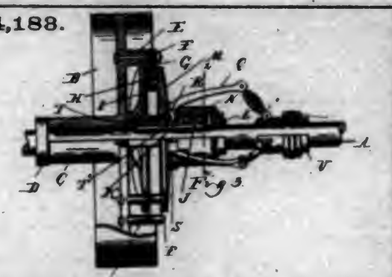
5. In a lamp, the combination, with a base having internal screw-threads, a disk therein having a central opening, and a flange rising from said disk around its opening and itself having openings, of an oil-cup screwed into the base, a lock between said cup and base, a burner at the center of the top of the cup, and an upright tube on said cup around the burner having holes adapted to register with those in the flange, substantially as hereinbefore set forth.

6. In a lamp, the combination of a base with a burner and a globe around said burner, a cone mounted over and extending upward from said globe, and a gauze covering surrounding said cone and having the upper part thereof of double thickness, substantially as described.

474,183. CLUTCH. JACOB NEUBERT, Cleveland, Ohio. Filed Jan. 11, 1892. Serial No. 417,645. (No model.)

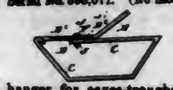
Claim.—In a friction-clutch, the combination, with the pulley having a friction-flange, of a sliding hub carrying a friction-flange and having recesses formed therein, a hub slidingly secured on the other

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hub and formed with a series of apertures and carrying a friction-flange, a series of levers fulcrumed on the outer hub, projecting through the apertures therein and engaging the side walls of the recesses in the outer hub, and means for moving the levers, substantially as described.

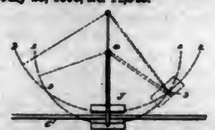
474,184. EAVES-TROUGH HANGER. BENJAMIN F. NORTON, Perry, Iowa, assignor of one-half to John H. Patten, same place. Filed May 18, 1891. Serial No. 393,071. (No model.)



Claim.—1. A hanger for eaves-troughs, consisting of a metal strap having at one end perforations adapted to admit nails or screws, as required, to attach the device to the eaves of a building and having its central portion in the form of a loop adapted to encircle an eaves-trough, ears projecting from the strap to engage the top edge of an eaves-trough, a series of perforations formed in the strap at the top of the loop, and a bolt extended through the other end of the strap to enter perforations at the top of the loop and produce a detachable and adjustable connection therewith, substantially as set forth.

2. A metal strap adapted to encircle and support an eaves-trough, having its one end adapted to be attached to the roof of a house and the other end detachably connected with a portion of the strap on top of the eaves-trough, and diagonal incisions formed in the sides of the strap in juxtaposition to one of the top edges of the eaves-trough to form ears or clasps to engage the said top edge of the eaves-trough, for the purposes stated.

474,185. CABLE-GRIP. THEODOR OTTO, Schkeuditz, assignor to Julius Pohlig, Cologne, Germany. Filed Aug. 12, 1891. Serial No. 402,473. (No model.) Patented in Germany Sept. 27, 1887, No. 44,576, and in England July 23, 1890, No. 11,548.



Claim.—1. A cable-grip comprising two juxtaposited gripping-jaws, one of said jaws vibrating on a pivot perpendicular to the haulage-rope, the gripping-face of said jaw describing an arc of a circle intersecting said rope and an arc of a circle passing through the gripping-face of the other jaw, for the purpose set forth.

2. A cable-grip comprising two juxtaposited gripping-jaws, a pendulous or vibratory support for one of said jaws, and a pivotal connection between the jaw and its support, which latter is arranged so that the gripping-face of the gripping-jaw pivoted thereto will describe an arc of a circle intersecting the plane of the other jaw, for the purpose set forth.

3. A cable-grip comprising two juxtaposited gripping-jaws, one of said jaws vibrating on a pivot perpendicular to the haulage-rope, the gripping-face of said jaw describing an arc of a circle intersecting the haulage-rope and an arc of a circle passing through the gripping-face of the other jaw, in combination with a shifting device for shifting the axis of vibration of the vibrating jaw toward and from the haulage-rope, for the purpose set forth.

4. A cable-grip comprising two juxtaposited gripping-jaws arranged relatively to each other, so that the gripping-face of one of said jaws will vibrate in an arc of a circle intersecting the plane of the operative face of the other jaw, and means for regulating the distance between the operative faces of said jaws, for the purpose set forth.

5. A cable-grip comprising two juxtaposited gripping-jaws vibrating on pivots perpendicular to the haulage-rope, the gripping faces of said jaws describing arcs of circles intersecting each other and the haulage-rope, for the purpose set forth.

6. A cable-grip comprising two gripping-jaws, a pendulous or vibratory support therefor, and a pivotal connection between said jaws and supports, which latter are arranged so that the gripping-faces of the jaws will describe arcs of circles intersecting each other when said supports are vibrated, for the purpose set forth.

7. A cable-grip comprising two juxtaposited gripping-jaws vibrating on pivots perpendicular to the haulage-rope, the gripping-faces of said jaws describing arcs of circles intersecting each other and the haulage-rope, in combination with a shifting device for shifting the axis of vibration of one of the jaws toward and from the haulage-rope, for the purpose set forth.

8. A cable-grip comprising a fixed support provided with pivots perpendicular to the haulage-rope, and two gripping-jaws loosely mounted on said pivots, the gripping-faces of said jaws describing arcs of circles intersecting each other and the haulage-rope, for the purpose set forth.

9. A cable-grip comprising a fixed support and two juxtaposited gripping-jaws having their pivots on said support in a plane at right angles to and intersecting the plane of motion of the haulage-rope and vibrating in arcs of circles intersecting each other, for the purpose set forth.

10. The combination, with the haulage rope or cable of a cable road and the carriage, of a cable-grip comprising two juxtaposited pendulous or vibratory gripping-jaws arranged relatively to each other, so that their gripping-faces will describe arcs of circles intersecting each other, and a carrier for said cable connected with one of said jaws, for the purpose set forth.

11. A cable-grip comprising two juxtaposited gripping-jaws, pendulous or vibratory supports therefor arranged relatively to each other, so that the gripping-faces of the jaws will describe arcs of circles intersecting each other, and a revoluble carrier consisting of a sheave or pulley at opposite ends of and journaled in the lower jaw and balancing each other, said jaw being pivotally connected with its pendulous or vibratory support, for the purpose set forth.

12. A cable-grip comprising two juxtaposited gripping-jaws, pendulous or vibratory supports therefor arranged relatively to each other, so that the gripping-faces of the jaws will describe arcs of circles intersecting each other, a revoluble carrier consisting of a sheave or pulley at opposite ends of and journaled on the lower jaw and balancing each other, said jaw being pivotally connected with its pendulous or vibratory support, and a spring operating to hold the jaw in a normally horizontal position, for the purpose set forth.

13. A cable-grip comprising two juxtaposited gripping-jaws, pendulous or vibratory supports therefor arranged relatively to each other, so that the gripping-faces of the jaws will describe arcs of circles intersecting each other, and a sheave journaled at each end of the lower jaw and balancing each other, said jaw having its gripping-face between the sheaves in a plane below their periphery, for the purpose set forth.

14. A cable-grip comprising two juxtaposited gripping-jaws, pendulous or vibratory supports therefor arranged relatively to each other, so that the gripping-faces of the jaws will describe arcs of circles intersecting each other, a sheave journaled at each end of the lower jaw and balancing each other, and a shifting device for shifting the axis of vibration of one of said jaws, for the purpose set forth.

15. A cable-grip comprising two juxtaposited gripping-jaws, a fixed support with which said jaws are pivotally connected at different points in the same plane, so that their gripping-faces will describe arcs of circles that intersect each other, and a regulating device for regulating the distance between the gripping-faces of the jaws, for the purpose set forth.

16. The combination, with the haulage rope or cable of a cable-road and a carriage, of a cable-grip comprising two jaws adapted to grip the cable from opposite sides, said jaws having a pendulous or vibratory motion on independent axes arranged on one and the same side of the cable either above or below and in a plane intersecting said cable, the gripping-faces of said jaws vibrating in arcs of circles intersecting each other, for the purposes set forth.

17. A cable-grip comprising two juxtaposited gripping-jaws, pendulous or vibratory supports therefor arranged relatively to each other, so that the gripping-faces of the jaws will describe arcs of circles intersecting each other, a revoluble carrier consisting of a sheave or pulley at opposite ends of and journaled in the lower jaw and balancing each other, said jaw being pivotally connected with its pendulous or vibratory support, and a shifting device for shifting the axis of vibration of one of said jaws, for the purpose set forth.

18. A cable-grip comprising two juxtaposited gripping-jaws, pendulous or vibratory supports therefor arranged relatively to each other, so that the gripping-faces of the jaws will describe arcs of circles intersecting each other, a revoluble carrier consisting of a sheave or pulley at opposite ends of and journaled in the lower jaw and balancing each other, said jaw being pivotally connected with its pendulous or vibratory support, and a regulating device for regulating the distance between the gripping-faces of the jaws, for the purpose set forth.

19. A cable-grip comprising two juxtaposited synchronously pendulous or vibratory jaws having their axes of vibration above their grip-

ping-faces and arranged so that said gripping-faces will describe arcs of circles intersecting each other, and a weighted lever connected with the axis of rotation of one of the jaws for maintaining the same in a normal position, for the purpose set forth.

20. A cable-grip comprising two juxtaposited synchronously pendulous or vibratory jaws having their axes of vibration above their gripping-faces and arranged so that said gripping-faces will describe arcs of circles intersecting each other, a shifting device for shifting the axis of vibration of the upper jaw, and a weighted lever secured to said axis, for the purpose set forth.

474,186. SLIDE FOR EXTENSION-TABLES. REBA PLEUCKHARP, Rockford, Ill., assignor to Joshua R. Lehman and Edgar R. Lehman, same place. Filed Sept. 9, 1891. Serial No. 405,191. (No model.)



Claim.—1. The combination, with the slides having on their opposing faces the coincident T-grooves of uniform width, of the metallic connection or casting having its longitudinal side plates 15 16 fitting in the enlarged parts of the grooves in said slides, said casting provided with the integral transverse webs 17 18, having the aligned notches 27 in their upper edges, the lower edges of both webs bearing on the edges of the grooved slides, and the notches 27 in said webs affording a loose bearing for the edge of the moving slide, whereby the slides are held in true relative positions and the moving slide can move freely without binding on the connection or casting, as set forth.

2. In a table-slide, the combination, with the grooved members, of the casting or iron comprising the parallel plates and the transverse webs, each web having a notch or groove 27 in the upper edge thereof, which receives the flange formed by the groove in one member, and the lower edges of the webs riding on the lower flange of the slide member, substantially as described.

3. In a table-slide, the casting or iron comprising the thick wide plate 16, having a notch, the narrow thin plate 15, parallel with the plate 16, and the transverse webs 17 18, flush with the edges of the thin plate and provided with the aligned grooves 27 in their upper edges, as set forth.

474,187. BOBBIN-WINDER. JOHN B. PRICE, Wollaston, Mass. Filed Jan. 20, 1892. Serial No. 418,686. (No model.)



Brief.—The shaft *b* has an endwise movement in the frame and the pulley B is held in contact with the pulley F by the bobbin between the step *b'* and the spring-pressed arbor. The pulley F is adjustable on the spindle C to allow it to approach the center of the pulley B or to recede therefrom, according as coarse or fine thread is being wound. The spindle C is screw-threaded to engage with a worm-wheel having a cam which reciprocates the thread-guide J through the intermediate lever *d* and segments K K. The pulley F is adjustable on the spindle C by means of a key or by means of a threaded rod engaging a lug projecting inwardly from the hub of the pulley F.

Claim.—1. In an automatic bobbin-winder, the combination, with a frame and the spring-pressed arbor, of a horizontal shaft journaled in said frame and having the bearing *b'*, adapted to receive a bobbin between itself and the spring-pressed arbor, said shaft having a limited endwise movement in the frame and carrying a pulley, the traversing arm, and means intermediate of the traversing arm and the pulley to communicate vibrating motion to said arm, substantially as described.

2. In an automatic bobbin-winder, the combination, with a frame, of a horizontal shaft having a limited endwise movement therein, the bearing *b'* and spring-pressed arbor adapted to receive a bobbin between them, the pulley carried by the shaft, the spindle arranged in the frame parallel with the face of said pulley, an adjustable friction-roller carried by the spindle and arranged in contact with the pulley, the traversing arm, and gearing intermediate of said arm and the spindle, whereby the arm is reciprocated as the pulley revolves, substantially as described.

3. In an automatic bobbin-winder, the combination, with a frame, of the pulley, a spindle arranged parallel with the face of the pulley, the friction-roller carried by said spindle and adapted to be adjusted longitudinally thereof and arranged in contact with the face of the pulley, the traversing arm, and devices intermediate of the spindle and said arm to reciprocate the latter, substantially as described.

4. In an automatic bobbin-winder, the combination, with a frame, a shaft journaled in said frame and adapted to rotate the bobbin, a pulley carried by said shaft and having its outer face inscribed with a series of concentric circles, a spindle parallel with the face of the pulley, a friction-roller adapted to be adjusted on the spindle and arranged in contact with the pulley, a traversing arm, and means intermediate of the spindle and said arm to reciprocate the latter, substantially as described.

5. In an automatic bobbin-winder, the combination, with a frame, of a shaft journaled in a bearing in said frame, a pulley carried by said shaft, the bearing *b'* and spring-pressed arbor adapted to receive a bobbin between them, a spindle arranged parallel with the face of said pulley, a friction-roller adjustably secured on said spindle and provided with an annular groove, an elastic friction-ring fitted in said groove, the traversing arm, and gearing intermediate of said arm and the spindle to reciprocate the arm, substantially as described.

6. In an automatic bobbin-winder, the combination, with a frame, the pulley, a threaded spindle carrying a friction-roller adapted to engage with the pulley, a toothed wheel having a cam and adapted to be operated by the spindle, a traversing arm, and a lever pivotally secured on the frame and having one arm arranged in contact with the cam and its other arm adapted to reciprocate the traversing arm, substantially as described.

7. In an automatic bobbin-winder, the combination, with a frame and the pulley, of a threaded spindle arranged by the side of the pulley, a friction-roller carried by the spindle and adapted to be adjusted longitudinally thereof, a toothed wheel journaled on said frame and arranged to engage with the spindle, a cam rigid with the wheel, a traversing arm pivoted on the frame and having a toothed segment, a lever having a set-screw at one end to bear against the cam and a toothed segment on its other end to mesh with the segment on the traversing arm, substantially as described.

8. In an automatic bobbin-winder, the combination, with a frame, a pulley, a hollow threaded spindle journaled in bearings in said frame, the traversing arm, gearing intermediate of the spindle and said arm to actuate the latter, a friction-roller carried by the spindle, and means arranged within said spindle to adjust said friction-roller longitudinally of the spindle, substantially as described.

9. In an automatic bobbin-winder, the combination, with a frame and a pulley, of a hollow threaded spindle journaled in bearings in the frame, the traversing arm, gearing intermediate of the spindle and said arm to actuate the latter, a friction-roller arranged on said spindle, a gib carried by said roller, and a threaded adjusting-rod arranged within the spindle and meshing with the toothed face or edge of said gib through a slot in the spindle, substantially as described.

10. In an automatic bobbin-winder, the combination, with a frame, a horizontal shaft journaled in said frame, a bearing *b'* and spring-pressed arbor adapted to receive a bobbin between them, of a pulley, a hollow threaded spindle journaled in bearings in the frame, the traversing arm and gearing intermediate of said arm and the spindle to reciprocate the latter, a friction-roller arranged on the spindle, a threaded gib carried by the roller, and a threaded adjusting-rod within the spindle, arranged to mesh with the gib to adjust the roller, substantially as described.

474,188. GAME APPARATUS. ROBERT RAMSDEN and EMIL RAMSDEN, Philadelphia, Pa. Filed June 22, 1891. Serial No. 397,033. (No model.)



Claim.—1. The combination, in a game apparatus, of the three dice-disks mounted in suitable bearings, with the central shaft having a friction-disk for driving said dice-disks by contact with their peripheries, said shaft being free to sway slightly in its bearings, substantially as specified.

2. The combination of the base, the dice-disks mounted thereon, the central shaft, a disk on said central shaft adapted to engage with the dice-disks when the shaft is revolved, pins connected together and adapted to engage with the dice-disks, and means for moving said pins, substantially as described.

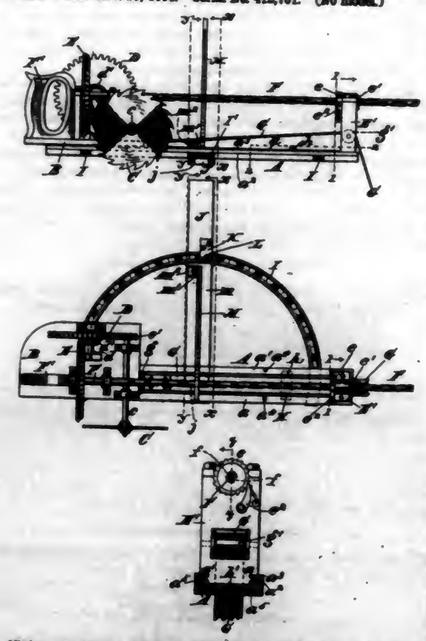
3. The combination, in a game apparatus, of the base, the disks having dice-marks thereon, a central shaft for giving motion to said disks, a series of pins connected together and adapted to enter orifices in the disks, and a lever for moving said pins, substantially as described.

4. The combination of the base, the cover-plate having openings for exposing a portion of each disk, dice-disks mounted on said base and having tapered locking-openings therein, mechanism for rotating said disks, the locking-pins, and mechanism for raising said pins so as to cause them to enter the tapered openings in the disks, thus locking the disks in position to expose a number at each opening in the cover-plate, substantially as described.

5. The combination of the base, two bearing-plates connected together, a central shaft provided with a handle by which it is turned, a friction-disk on said shaft, dice-disks arranged in respect to said friction-disk, as described, a spindle on each dice-disk adapted to the bearing-plates, a plate between the bearing-plates, locking-pins carried by said plate, and a lever for moving the plate, the dice-disks having openings with which the pins engage when the plate is raised, and the cover-plate having openings to expose a single figure on each dice-disk, substantially as described.

6. The combination of the dice-disks having spindles adapted to bearings, mechanism for revolving said disks, a plate having pins adapted to engage with the dice-disks when raised, two projections on the under side of said plate, and a lever having one arm adapted to strike the two projections and another arm to be depressed by the player, substantially as described.

474,189. SAWING-MACHINE. THOMAS V. RANKIN, Cincinnati, Ohio. Filed Nov. 23, 1891. Serial No. 412,761. (No model.)



Claim.—1. In a sawing-machine, the combination of a bed-plate having a suitable track thereon, a handled saw-carriage reciprocating on said track, a circular saw mounted on said carriage, a longitudinal spirally grooved or threaded shaft connected by a train of gearing with said saw, the outer end of which shaft engages a feather in a standard or post at the fore end of said bed-plate, and a suitable abutment bar or plate, which is rested against one edge of the work, substantially as and for the purpose herein set forth.

2. In a sawing-machine, the combination of the bed-plate having a suitable track or guideway thereon, a handled saw-carriage reciprocating on said track or guideway, a circular saw mounted on said carriage, a longitudinal driving spiral shaft connected by a train of gearing with said saw, the outer end of which shaft engages a feather in a standard or post at the fore end of said bed-plate, a lateral abutment bar or plate, which is rested against one edge of the work, and a horizontal graduated segment attached to said bed-plate and connected by a center bolt or swivel with said abutment-bar, substantially as and for the purpose herein set forth.

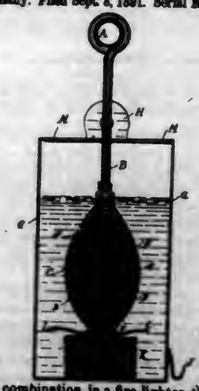
3. In a sawing-machine, the combination of the bed-plate having a suitable track or guideway thereon, a handled saw-carriage reciprocating on said track, a circular saw mounted on said carriage, a longitudinal driving spiral shaft connected by a train of gearing with said saw, the outer end of which shaft engages a feather in a standard at the fore end of said bed-plate, a lateral abutment bar or plate, which is rested against one edge of the work and to which the bed-plate is hinged an upright graduated quadrant projecting from said abutment-bar, and a lateral arm or plate projecting from said bed-plate over said abutment-plate and which engages said quadrant, substantially as and for the purpose specified.

4. In a sawing-machine, the combination of the bed-plate having a suitable track or guideway thereon, a handled saw-carriage reciprocating on said track, a circular saw mounted on said carriage and connected by a suitable train of gearing with a longitudinal driving spiral shaft, the outer end of which shaft engages a feather in a standard at the fore end of said bed-plate, a lateral abutment-bar which rests against one edge of the work, a horizontal graduated segment, to the opposite ends of which said bed-plate is hinged, and which segment is connected by a center bolt or swivel with said abutment-bar, an upright graduated quadrant projecting from said segment, a lateral arm projecting from said bed-plate over a central radial bar on the said segment, and suitable clamping devices for holding the saw-frame at the desired angle on both said segment and quadrant, substantially as and for the purpose specified.

5. In a sawing-machine, the combination of a bed-plate having a suitable track or guideway thereon, a handled saw-carriage reciprocating on said track, a circular saw mounted on said carriage, a spiral shaft connected by a train of gearing on said carriage with said saw, and a spiral feather in the upper end of a standard, which is mounted at the fore end of said bed-plate, said saw-carriage and its accompanying gears, saw, and spiral shaft on being propelled forward engaging said spiral feather, whereby said spiral shaft and gears are rotated, and they in turn driving the saw, substantially as herein set forth.

6. In a sawing-machine, the combination of a spiral or screw shaft suitably mounted at one end on a saw-carriage, a track or bed-plate for said carriage, a circular saw and intermediate mechanism between it and said spiral shaft, and a suitably-controlled ratchet-wheel mounted at the fore end of said bed-plate and internally threaded to correspond with and engage the spiral groove in said shaft, whereby said shaft is rotated on its forward stroke to in turn impart or communicate motion to the saw and at rest on the return or backward stroke, substantially as herein set forth.

474,190. FIRE-LIGHTER AND RECEPTACLE. FRITZ SAHLFELD, Hanover, Germany. Filed Sept. 3, 1891. Serial No. 405,096. (No model.)

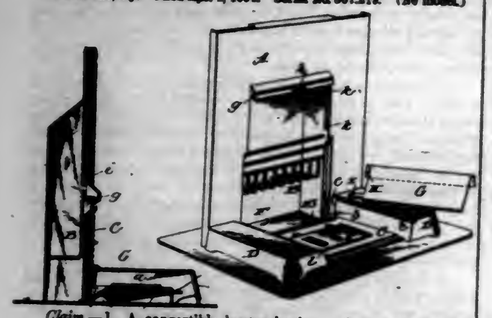


Claim.—1. In combination, in a fire-lighter, the casing having the interior cover, the spring for forcing the same upward into place, and the lighter device adapted for insertion within the opening in the top of the casing and to press upon the cover and force the same down, substantially as described.

2. In combination, in a fire-lighter, the casing having the interior

spring-cover closing upwardly against the top of the casing and the lighter device having the button at the end thereof, substantially as described.

474,191. COMBINED STOVE AND GRATE. EDWARD SCANLAN, Louisville, Ky. Filed Apr. 1, 1891. Serial No. 387,219. (No model.)



Claim.—1. A convertible heater having a dampered movable front constructed to be turned into either a vertical or a horizontal position and a movable hearth-plate movable independent of the front, substantially as specified.

2. In a convertible heater, a pivoted front, combined with an independently-movable hearth-plate arranged to cover the front when the latter is in its horizontal position, as set forth.

3. In a convertible heater, an independently-pivoted front, combined with a pivoted hearth-plate arranged to cover the front when the latter is in its horizontal position, as set forth.

4. In a convertible heater, a pivoted front, a movable blower, and a hearth-plate independently movable of the front plate, substantially as specified.

5. In a convertible heater, a pivoted front, combined with a vertically-movable blower and a pivoted hearth-plate movable independently of the front and constructed to cover the front when the latter is in its horizontal position, substantially as specified.

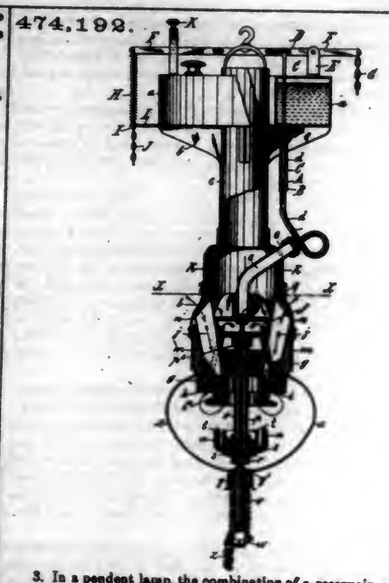
6. In a convertible heater, a vertically-movable blower arranged to move freely in its guides and to be moved bodily to and from the rear and provided with a hook adapted to engage one of a plurality of holes in the rear wall of the guide, as set forth.

7. In a convertible heater, side hearth-pieces and a bottom plate having lugs, combined with a pivoted front having its pintals arranged in openings between the rear ends of the side pieces and the side wall of the fireplace and fitted at its lower edge against said lugs, substantially as specified.

8. In a convertible heater, a pivoted front, combined with a vertically-movable blower having a projecting flange to embrace the upper edge of the front and a movable hearth-plate movable independent of the front and blower, constructed to cover the front when the latter is in its horizontal position, substantially as specified.

9. In a convertible heater, side hearth-pieces, combined with a movable hearth-plate pivoted by a vertical pivot to one of the side pieces and an independently-pivoted movable front constructed to be turned into either a vertical or a horizontal position, substantially as specified.

474,192. REGENERATIVE HYDROCARBON-LAMP. JULIUS SCHÜLER, Gross Lichterfelde, Germany. Filed Apr. 29, 1891. Serial No. 390,962. (No model.)



Claim.—1. In a lamp, the combination of a reservoir, a tube connecting said reservoir with a vaporizing-chamber, an adjustable orifice opening from said vaporizing-chamber to a gasifying-chamber, a series of annularly-arranged burner-tubes leading downward from said gasifying-chamber, and a folded mantle of thin sheet metal outside of and around the same, communicating with the outer air, so that the air entering said folded mantle from the outside shall deflect the flame at the mouth of said burner-tubes and cause said flame to turn inward and upward, substantially as described.

2. In a lamp, the combination of gasifying and vaporizing retorts which are heated by means of the products of combustion passing off, a folded mantle *j*, consisting of outer and inner folds, surrounded by an asbestus mantle *m*, the products of combustion being led upward through the inner folds of the mantle *j* to the head *k* at the same time that the air from the outside is being drawn downward through the outer folds thereof, by which means the said outer air is heated by its contact with the inner folds of the mantle, said outer air afterward flowing through the perforations *i* of the ring *k* to be fed to the flames formed at the ends of the tubes *g*, the head *k* carrying the chimney *o*, said head *k* being connected by a pronged ring *f* to the folded mantle *j*, substantially as described.

3. In a pendent lamp, the combination of a reservoir, a tube connecting said reservoir with a vaporizing-chamber, said tube having located within the same a valve A, an adjustable orifice opening from said vaporizing-chamber to a gasifying-chamber, a series of annularly-arranged burner-tubes leading downward from said gasifying-chamber, a folded mantle of thin sheet metal outside of and around the same and connecting with the outer air, and a pipe *o*, leading downward from said gasifying-chamber and communicating with a small cup-shaped receptacle *t* and tubes *u* through borings *s*, said tubes and receptacle being filled with some non-combustible material possessing capillary power and being filled with hydrocarbon through their communication with the pipe *o*, substantially as described.

4. The device for regularly feeding the hydrocarbon or the like from the reservoir *a* to the retort *e*, consisting of the needle-valve A in the connecting-tube, the valve-rod C being connected to a two-armed lever F, having a limited stroke, and being provided with chains G J, the needle-valve being securely closed by a spring H when the ring I is attached to the arm L, Fig. 1, substantially as described

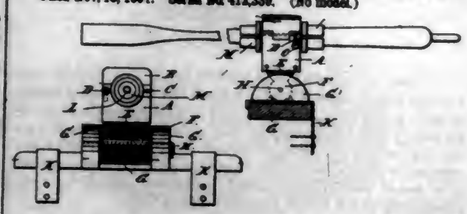
5. The combination of the spring *v* for pressing the glass globe *x* onto the asbestus ring *m* with the movable pawl *w* and the chain *z*, so that the globe *x* and spring *v* are retained in position by the pawl *w*, substantially as described.

474,193. LOCK FOR BUGGY-TOPS. DANIEL J. SHULTZ, Spruce Creek, Pa. Filed Jan. 30, 1892. Serial No. 419,750. (No model.)



Claim.—In a buggy or other vehicle, the combination, with the jointed stay-rods, of the springs secured to one of the bars thereof, the sliding clamp on the other bar, provided with a beveled lug, the slotted springs adapted to engage with said lugs, and the operating-cord connected with said springs and passing transversely across the top or canopy on the inside thereof, substantially as described.

474,194. OAR-LOCK. WILLIAM F. SPENCE, Pass Christian, Miss. Filed Nov. 18, 1891. Serial No. 412,339. (No model.)



Claim.—The combination, with an oar, of a sectional sleeve having the flanges on its outer side and the bits on its inner side, the lock A, having its lower section provided with a pintle, a cover or cap hinged to the lower section and adapted to embrace the sectional sleeve on the oar, the casting G, having the uprights G', provided with journaled apertures H, bearing F, in which the lock is pivoted, arranged between said uprights, the pin passing through the uprights and also through said bearing, so as to pivotally connect the same, and the angular clamps K for securing the casting G to a bolt, the lock being also provided with a securing-key on the hinged section, all adapted to operate substantially as specified.

474,195. CROSS-LINE BUCKLE. ALBERT P. STORY, Richland, Minn. Filed Dec. 26, 1891. Serial No. 416,216. (No model.)

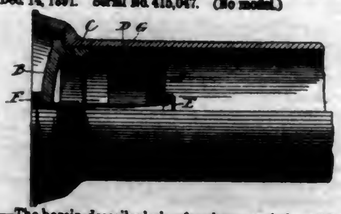


Claim.—1. In a cross-line buckle, the combination, with the oblong frame comprising opposite side bars the upper edges of which are provided with laterally-projecting stops, front and rear end bars, and an intermediate transverse bar, the latter having a dependent stud, of the U-shaped wire locking-bail pivoted at its terminals to one end of the buckle-frame and having its opposite end adapted to be swung over the front end of the buckle-frame, substantially as specified.

2. In a cross-line buckle, the combination, with the oblong buckle-frame comprising opposite L-shaped side bars, the front cylindrical, rear flat, and the intermediate connecting-bars, the latter having the depending tongue or stud, of the U-shaped spring-wire bail the opposite side bars of which embrace the side bars of the frame, the rear ends of the bail being upwardly curved and seated in notches formed in the flanges of the side bars of the frame and connected by a transverse clamping-bar, and the front ends of the side bars of the bail being bent to form inwardly-disposed hooks for engaging over the rear recessed ends of the side bars of the frame, substantially as specified.

3. In a cross-line buckle, the combination, with the oblong frame comprising opposite sides having laterally-disposed flanges, opposite end, and a central connecting-bar, the latter provided with a depending stud, of the U-shaped spring-wire locking-bail embracing the buckle-frame and having its free ends inwardly bent to form hooks for engaging the side bars and extended inwardly under the central transverse bar, the opposite end of the bail being adapted to swing over the opposite end of the buckle-frame, substantially as specified.

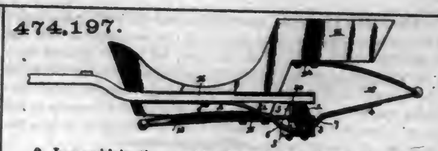
474,196. PIPE-PLUG. DANIEL A. STREETER, Waterbury, Conn. Filed Dec. 14, 1891. Serial No. 415,047. (No model.)



Claim.—The herein-described plug for pipes, consisting of the conical plug A, of a diameter less than the internal diameter of the pipe and adapted to be inserted into the pipe the larger end inward, combined with a flange C, of an external diameter somewhat less than the internal diameter of the pipe to be plugged, the flange provided with a cross-bar B, adapted to rest upon the end of the pipe, while the flange extends into the pipe, the edge of the said flange forming an annular shoulder D within the pipe and around the plug, a ductile metal ring G between the said plug and adapted to rest against the said edge of the flange, with mechanism substantially such as described between the said cross-bar and plug adapted to draw the said plug into the said ring and toward the said bar, substantially as and for the purpose described.

474,197. TWO-WHEELED VEHICLE. WILLIAM F. SUMNER, West Valley, N. Y. Filed Aug. 4, 1891. Serial No. 401,660. (No model.)

Claim.—1. In a vehicle, the combination of an axle, a body, longitudinal springs clipped to the axle and supporting the body and provided intermediate their ends with curved depressions, and the spring-blocks interposed between the axle and the springs and adjustably securing the latter to the former and provided in their tops with recesses to receive the axle and having their bottoms curved and conforming to the depressions of the springs, substantially as described.

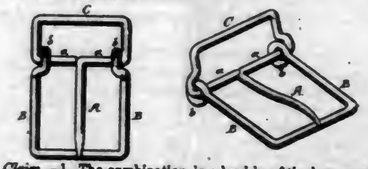


2. In a vehicle, the combination of an axle, a body, the longitudinal springs clipped to the axle and provided intermediate their ends with curved depressions and having lugs on the upper faces of the same, and the spring-blocks adjustably securing the springs to the axle and provided in their tops with recesses to receive the axle and having their bottoms curved and provided with grooves to receive the said lugs, substantially as described.

3. In a vehicle, the combination of an axle, a body, longitudinal springs clipped to the axle, and the end springs connected to the longitudinal springs and extending inward therefrom and arranged at the front and at the back of the body and having their inner ends curved laterally inward under the body and secured to the same, substantially as and for the purpose described.

4. In a vehicle, the combination of an axle, a shaft provided with a recess, a plate secured to the shaft and having a longitudinal slot, a clip securing the shaft above the axle and provided with a T-shaped lug to engage said plate, and a spring having its rear end secured to the lower face of the axle and its front end secured to the shaft, substantially as described.

474,198. BUCKLE. FRANK R. TATE, St. Louis, Mo., assignor of one-half to James L. Blair, same place. Filed Apr. 8, 1889. Serial No. 306,339. (No model.)



Claim.—1. The combination, in a buckle, of the bow consisting of a wire loop having its ends bent to form pivot-eyes, with a structure comprising the tongue, tongue-bar, and operating-yoke extending upward therefrom, said structure consisting of a single piece of wire forming, first, the tongue, then a portion of the tongue-bar, then the upwardly-extending operating-yoke, and, finally, the remaining portion of the tongue-bar, the wire at the inner end of the latter abutting against the base of the tongue, substantially as specified.

2. The combination, in a buckle, of the bow consisting of a wire loop having its ends bent to form pivot-eyes, with a structure comprising the tongue, tongue-bar, and operating-yoke extending upward therefrom, said structure consisting of a single piece of wire forming, first, the tongue, then a portion of the tongue-bar, then the upwardly-extending operating-yoke, and, finally, the remaining portion of the tongue-bar, the wire at the inner end of the latter being nicked, so as to abut against and overlap the top and bottom of the tongue at the base of the same, substantially as specified.

3. The combination, in a buckle, of the bow consisting of a wire loop having its ends bent to form pivot-eyes in the same plane as the sides of the bow, with a structure consisting of a single piece of wire bent to form the tongue, tongue-bar, and operating-yoke extending upward from said bar, the yoke having offset side portions for receiving the eyes of the bow and the end of the wire forming part of the tongue-bar abutting against the base of the tongue, substantially as specified.

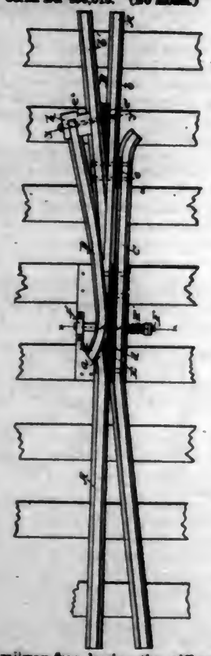
4. The combination, in a buckle, of the bow consisting of a wire loop having its ends bent to form pivot-eyes in the same plane as the sides of the bow, with a structure consisting of a single piece of wire bent to form a tongue, tongue-bar, and operating-yoke extending upward from said bar, the yoke having offset side portions for receiving the eyes of the bow and the end of the wire forming part of the tongue-bar abutting against the base of the tongue and being notched, so as to overlap said base, substantially as specified.

474,199. SUSPENDER-BUCKLE. JUSTUS A. TRAUT, Hartford, Conn. Filed June 11, 1891. Serial No. 396,264. (No model.)



Claim.—In a buckle, the combination, with the locking-lever having the clamping-bar and depending hook for co-operation with the cast-off ring, of the buckle-frame to which the lever is pivoted, having the independent depending spring-arms extending below the point of the hook and having enlargements or beads on their free ends wider than the openings in the sides of the hook to prevent the escape of the ring, and co-operating with the sides of the locking-lever to hold the same in locked position, substantially as described.

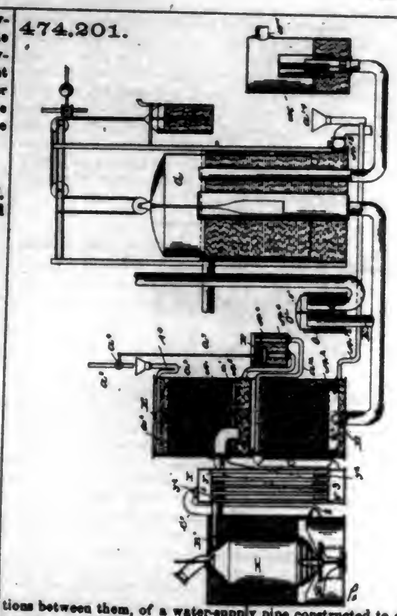
474,200. RAILWAY-FROG. DAVID F. VAUGHAN, Haddonfield, N. J., assignor of one-half to McLeod W. Thomson, Altoona, Pa. Filed Oct. 7, 1891. Serial No. 408,013. (No model.)



Claim.—1. A railway-frog having the stiff point-rails, the stiff wing-rail, the main-track rail A, having its end terminating in advance of the frog-point and forming the channel or way between said frog-point and the end of the main-track rail, and a spring-rail secured at one end outside of the line of wheel travel and having its inner end curved and fitting in the channel or way between the rail A and the frog-point, substantially as described.

2. In a railway-frog, the combination, with the stiff point-rails and the wing-rail, of the main-track rail having the deflected beveled inner end terminating in advance of the frog-point and forming the channel or way between said point and rail, the spring-rail D, secured at one end outside of the line of wheel travel and having its inner end deflected or bent and fitting in the channel or way between the frog-point and main rail, and means to hold the spring-rail in position, substantially as described.

474,201. APPARATUS FOR MAKING GAS. PAUL A. H. WIMAND, Philadelphia, Pa., assignor to Schleicher, Schumm & Co., same place. Filed Mar. 20, 1890. Serial No. 345,091. (No model.)



Claim.—1. The combination, with a producer, of a scrubber connected thereto, a moistener communicating with the scrubber and the producer, a water-feed pipe discharging into the scrubber, a thermostat interposed between the scrubber and moistener and connected with a controlling-valve in the water-feed pipe, and an air-supply pipe opening into the moistener, substantially as and for the purpose specified.

2. The combination of a scrubber, a moistener, a water-feed pipe discharging into said scrubber, a waste-pipe leading from the scrubber, a tank into which said waste-pipe opens, a thermostat located in said tank, suitable connections between the thermostat and the water-feed pipe to regulate the supply of water to the scrubber, and a pipe leading from said tank and discharging into the moistener, substantially as and for the purpose specified.

3. The combination, with a producer, a scrubber, a superheater interposed between the producer and scrubber, and suitable connections between them, of a water-supply pipe constructed to discharge into the scrubber, a moistener connected to said scrubber to receive the heated water therefrom, a thermostat interposed between the scrubber and moistener and connected with a controlling-valve in the water-supply pipe, a pipe to supply air to the moistener, and suitable connections leading from the moistener to the superheater and from the latter to the producer, substantially as and for the purpose specified.

4. The combination, with a producer, a scrubber, a superheater interposed between them, and suitable connections between the producer, superheater, and scrubber, of a water-supply pipe constructed to discharge into the scrubber, a tank constructed to receive the water from the scrubber and discharge it into the moistener, a thermostat in said tank, means connected therewith to control the supply of water to the scrubber, a pipe to supply air to the moistener, and suitable connections leading from the moistener to the superheater and from the latter to the producer, substantially as and for the purpose described.

5. The combination, with a producer, a scrubber, a superheater interposed between and connected to the scrubber and producer, and a water-feed pipe discharging into the scrubber, of a tank into which the water is discharged from the scrubber, a thermostat in said tank, suitable connections between the thermostat and the water-feed pipe, whereby the supply of water to the scrubber is regulated, a moistener, a pipe leading from the tank and discharging into said moistener, an air-supply pipe opening into the moistener, suitable connections leading from the moistener to the superheater and from the latter to the scrubber, a gas-holder, and a pipe leading from the scrubber to the holder, substantially as described.

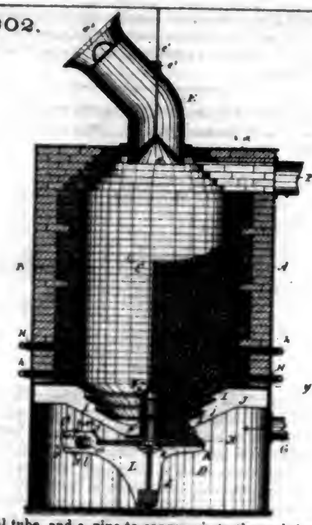
474,202. GAS-PRODUCER. PAUL A. H. WIMAND, Philadelphia, Pa., assignor to Schleicher, Schumm & Co., same place. Filed Mar. 20, 1890. Serial No. 345,092. (No model.)

Claim.—1. In a gas-producer, a bottom mounted on a pivot and arms projecting from said bottom, combined with eccentric bushings supported by the producer, a shaft journaled in said bushings, cams on the shaft adapted to engage the projecting arms, and means to rotate the bushings and the shaft, substantially as described.

2. In a gas-producer, a bottom mounted on a pivot and arms projecting therefrom, each having a slotted end, combined with bearings secured to the producer, eccentric bushings mounted in said bearings, a revoluble shaft journaled in the bushings, cams on the shaft engaging the slotted ends of the projecting arms, and means to rotate the bushings and the shaft, substantially as set forth.

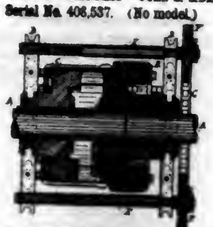
3. In a gas-producer having a sealed ash-pit, a series of superimposed overlapping rings located below the combustion-chamber and supported for the passage of air between them to said chamber, said rings being ofdo creased diameter from the top one downward, and a tube extending upward centrally of said rings to the combustion-chamber, combined with a perforated bottom below the series of rings and the central tube, the area of the bottom being greater than that of the lower ring of the series and the perforations in said bottom registering

474,202.



with the central tube, and a pipe to convey air to the sealed ash-pit substantially as and for the purpose specified.

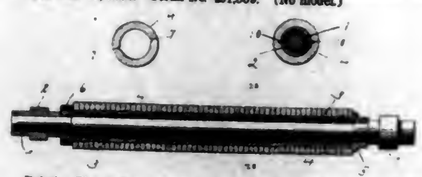
474,203. CLUTCH-SHIFTER. JOHN S. ADAMS, Elgin, Ill. Filed Oct. 12, 1891. Serial No. 408,537. (No model.)



Claim.—1. In a clutch-shifter, the combination of a fixed yoke and a series of sprocket-wheels with the movable threaded yoke, the actuating-screws, and the sprocket-chains, substantially as shown and described.

2. In a clutch-shifter, the combination, with the fixed and movable yokes, of the actuating-screws and the sprocket wheels and chains connecting the said screws with the supplementary crank-shaft, substantially as shown and described.

474,204. TOP ROLL. ALBERT A. ANDREWS, Whitinsville, Mass. Filed Feb 15, 1892. Serial No. 421,559. (No model.)



Brief.—The roller consists of a series of leather disks clamped between the shoulder 5 and nut 6. To prevent the disks from turning, the tube 3 is provided with flanges 10, which fit in notches 7 in the disks.

Claim.—1. In a top roll, the combination of the shell having a key formed integral therewith and a series of leather washers mounted on said shell and having notches to engage said key, and means to clamp said washers in place, substantially as described.

2. In a top roll, the combination of the shell having two keys, diametrically opposite, formed integrally therewith, and a series of leather washers mounted on said shell and having notches to engage said keys, and means, as nut 6, for clamping said washers, substantially as described.

474,205. DRAINAGE-TRAP. THOMAS E. AVERY, Danbury, Conn. Filed Aug. 6, 1891. Serial No. 401,863. (No model.)



Claim.—1. A trap consisting of a pipe having openings in one side and a cross-piece below the upper opening, a trap proper carried by a sleeve, the ends of which trap are adapted to register with the openings in the pipe or to be closed by said pipe when the sleeve is turned.

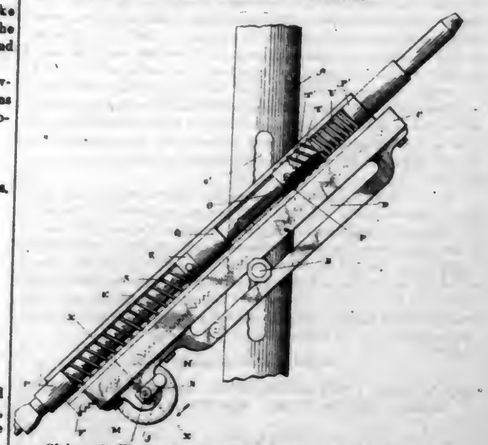
2. A trap consisting of a pipe having a shoulder 4, openings in one side, a cross-piece below the upper opening, and a sleeve resting upon the shoulder and covering said openings, said sleeve being provided with a trap of ordinary construction, the ends of which are adapted to register with the openings in the pipe.

3. A trap consisting of a pipe having openings in one side, a cross-piece below the upper opening, and a pipe 13, leading through said pipe and closed within it, a sleeve carrying a trap of ordinary construction, the ends of which are adapted to register with the openings in the pipe, and a pipe leading from the bottom of the trap through the sleeve in position to register with pipe 13 when the sleeve is turned, so that the trap may be drained, substantially as described.

4. The combination, with pipe 1, having openings in one side, a cross-piece below the upper opening, and a pipe 13, leading through it and open at the ends, of a sleeve surrounding said pipe and adapted to turn thereon, a trap carried by said sleeve and having openings adapted to register with the openings in the pipe, a pipe leading from the bottom of the trap and adapted to register with pipe 13, and a pipe 12, leading from the other side of the sleeve in line with the pipes leading from the trap.

5. The combination, with pipe 1, having openings in one side, a cross-piece below the upper opening, a vent 14 above the upper opening, an enlargement 5, and a pipe 13, extending through said enlargement and closed within it, of a sleeve adapted to turn on said pipe and carry a trap the ends of which are adapted to register with the opening in said pipe when in operative position and to be closed by said pipe when not in operative position, and a pipe connecting with the bottom of the trap and the sleeve in such position as to register with pipe 13 when it is required to drain the pipe.

474,206. ROCK-DRILL SUPPORT. JOHN BERVIN, Durango, Colo. Filed Nov. 2, 1891. Serial No. 410,627. (No model.)



Claim.—1. The combination, with a support provided with a vertical slot and a horizontal bolt adjustably secured therein, of a drill-supporting table having a longitudinally-recessed projection on its under side through which the said bolt extends, whereby the said table is afforded a vertical, a pivotal, and a longitudinal adjustment, substantially as shown and described.

2. In a drill-support, an adjustable table provided with a groove or passage in its upper face, a drill-carriage adapted to move in said passage, teeth formed on the under side of the said carriage, and a spring-actuated toothed wheel adapted to engage the said teeth on the carriage, the parts being combined to operate substantially as shown and described.

3. In a drill-support, an upright, a drill-carrying table supported

adjustably on said upright and provided with a dovetailed passage in its upper face, a drill-carriage adapted to move in said passage, teeth formed on the under side of the carriage, depending bearings, a toothed wheel journaled in said bearings, stationary disks supported on the axis of the said wheel, and springs which are connected at one end to the said disks and at their opposite ends to the wheel, the parts being combined to operate substantially as shown and described.

4. In a device of the character described, the combination, with the table and the drill-carriage supported thereon, of the wheel which engages the said carriage, having recessed sides, the stationary disks having inwardly-projecting hubs which form drums, and springs which are connected at one end to the inner periphery of the wheel and at their opposite ends to the said drums, substantially as shown and described.

5. The combination, with a recessed drill-carriage and a movable drill-rod therein, of stops P and Q, secured within the carriage, stops R, secured to the rod, spring S between stops P and R, clutch-section R' on the rod, revolvable clutch-head T, adapted to move within the carriage and engage clutch-section R', stop P', and spring U' between clutch T and the last-named stop, substantially as shown and described.

474,207. AIR AND STEAM COUPLING. JOSEPH BLATTNER, Allegheny, Pa. Filed Feb. 11, 1892. Serial No. 421,159. (No model.)



Claim.—1. A coupling composed of rectangular frames consisting of side pieces, end castings or pieces having two horizontal and two vertical passages, the side pieces being swiveled to the horizontal passages, and pipes swiveled to the vertical passages, the pipes at the upper ends of the frame being connected with a car, and the pipes at the lower ends of the frames being connected to a coupling, a coupling composed of two members having each two passages with which the said pipes are respectively connected, and openings at the inner sides of the members which register and extend into the said passages, the members being adapted to interlock, substantially as specified.

2. A coupling composed of two rectangular frames consisting each of side pipes and end castings having, respectively, two horizontal and two vertical passages, the inner ends of these passages being separated by means of a diagonal wall, the ends of the side pipes being swiveled to the outer ends of the horizontal passages, the vertical passages of the casting at the upper ends of the frames being connected with pipes that are connected with the cars, and a coupling for the inner ends of the frames, consisting of two members which interlock, each member having two longitudinal chambers, pipes which have one end connected, respectively, with the said passages and their other ends connected with the vertical passages of the casting at the lower ends of the frames, the members having openings in the inner sides of their inner ends which register and which communicate, respectively, with the said chambers, all combined substantially as and for the purpose set forth.

3. A coupling composed of rectangular hollow frames having side pieces and end pieces, two pipes which extend under the car, the said end pieces provided with two separate passages, the said side pieces of the frames being respectively swiveled with one end of each of the passages, and the said car-pipes swiveled, respectively, with the opposite end of each of the said passages, and a coupling for the pipes at the lower ends of the frames, composed of two members having each two passages which register, respectively, and with which the said pipes at the lower ends of the frames respectively connect.

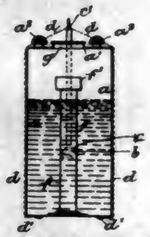
474,208. FIRE-EXTINGUISHER. JOSEPH E. BOTT, Stockport, England. Filed Nov. 10, 1891. Serial No. 411,487. (No model.)



Claim.—1. In an automatic fire-extinguisher, the combination, with a receptacle *a*, of trunnions *b*, journals *c*, carrying such trunnions, coacting spaces formed in such trunnions and journals, a hole at the lower part of each journal communicating with the spaces, and fusible solder filling the said spaces, substantially as herein shown and described, and for the purpose stated.

2. In an automatic fire-extinguisher, a receptacle *a*, containing sprinkling-nozzles, a guide *f*, a sealed glass tube or bulb containing acid and arranged in said guide, and a point *g'* in line with said guide to break the glass tube or bulb when the receptacle is reversed, combined with receptacle-reversing means consisting of trunnions *b*, journals *c*, carrying such trunnions, coacting spaces formed in such trunnions and journals, a hole at the lower part of each journal communicating with said spaces, and fusible solder filling said spaces, substantially as described.

474,209. AUTOMATIC FIRE-EXTINGUISHING APPARATUS. JOSEPH E. BOTT, Stockport, England. Filed Nov. 10, 1891. Serial No. 411,488. (No model.)



Claim.—1. In an automatic fire-extinguisher, the combination, with a reversible receptacle *a*, provided with a supply-aperture *a'*, sprinkling-nozzles a^3, and trunnions *b*, supported in journals *c*, of suspending means, such as the forked bar or frame *d'* and the band *d*, containing readily-fusible parts *d'*, interposed between the suspending means and the receptacle, substantially as described.

2. In automatic fire-extinguishers, the combination, with a reversible receptacle *a*, having a supply-orifice *a'* and sprinkling-nozzles a^3, of an acid-containing tube *f*, fixed within such receptacle, a sharp edge to such tube *f*, and a heavy lead valve or cover *f''*, fitted by its own weight to such sharp edge and freely separable therefrom, substantially as herein shown and described, and for the purpose stated.

474,210. MOLDING-FLASK. SAMUEL S. CASKEY and JAMES M. DODGE, Philadelphia, Pa., assignors to the Link-Belt Engineering Company, same place. Filed Sept. 17, 1891. Serial No. 406,941. (No model.)



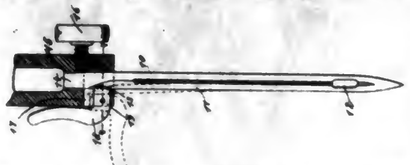
Claim.—1. The combination, in a molding-flask, of the cope and drag with a cheek-piece situated between the cope and drag, said cheek-piece having a series of openings through which the sand can be rammed, substantially as described.

2. The combination of the cope and drag with a cheek-piece situated between the cope and drag, said cheek-piece having an internal supporting-flange for the sand and openings through which the sand between the faces of the cope and drag can be rammed and through which vent-openings can be made in the sand, substantially as described.

3. The combination, in a cheek-piece for molding-flasks, of the two rings, webs uniting the two rings together and provided with openings between the rings, and an internal flange forming an extension of one of the rings, substantially as described.

4. The combination, in a cheek-piece for molding-flasks, of the two rings, webs uniting the two rings together and provided with openings between the rings, an internal flange projecting from one of the rings, and braces for said flange, substantially as described.

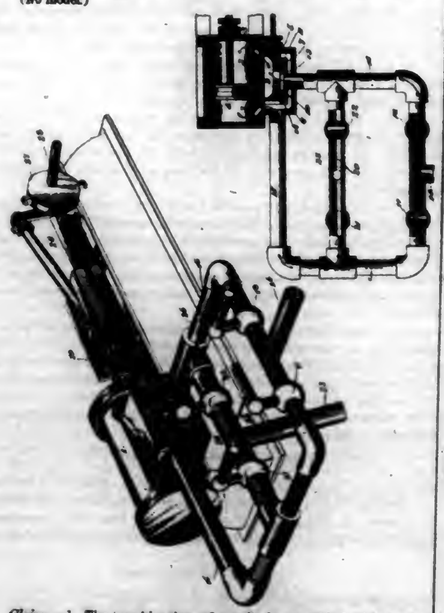
474,211. SEWING-MACHINE NEEDLE. JOSEPH B. CHESNUTT, Johnstown, N. Y., assignor of one-half to James M. C. Walker, same place. Filed Sept. 10, 1891. Serial No. 405,966. (No model.)



Claim.—1. The combination, with a needle-bar having a radial recess, of a needle having a slit extending from the eye to a point adjacent to its upper end, and a cam-lever pivoted in the said recess and having its lower end grooved to fit the needle, substantially as described.

2. The combination, with the needle-bar having a transverse recess in the bottom and a radial recess opening therefrom, of the needle adapted to be held in the needle-bar, said needle having a slit extending from the eye to a point adjacent to the radial recess in the needle-bar, and a cam-lever pivoted in the radial recess and adapted to impinge upon one member of the needle, substantially as described.

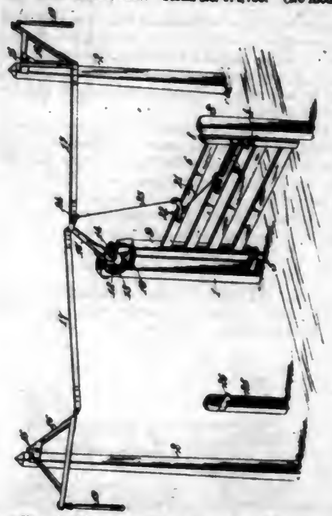
474,212. REVERSING-VALVE FOR ENGINES. CALVIN F. CHRISTOPHER, Spartanburg, S. C. Filed Sept. 14, 1891. Serial No. 405,668. (No model.)



Claim.—1. The combination of a cylinder provided with steam-ports, a steam-chest having an inner casing provided with a recess, a slide-valve arranged within the valve-casing and having an interior chamber and provided with an opening, a follower-plate arranged within the recess and having a slot communicating with the opening of the valve, and separate supply-pipes communicating, respectively, with the steam-chest and with the valve-casing, substantially as described.

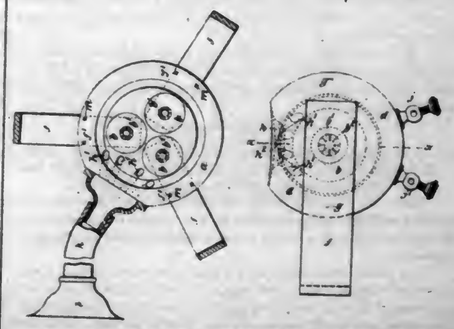
2. The combination of a cylinder provided with steam-ports, a steam-chest, a slide-valve having an interior chamber and arranged within the steam-chest, supply-pipes communicating, respectively, with the chamber of the valve and with the steam-chest and provided with throttle-valves, an exhaust-pipe connecting the supply-pipes and provided with exhaust-valves, and rods connecting the throttle-valves with their companion exhaust-valves, whereby a throttle-valve and its companion exhaust-valve will be simultaneously operated, substantially as described.

474,213. GATE. OLIVER R. CLEMENTS and JAMES I. SMITH, Madison, Mo. Filed Dec. 11, 1891. Serial No. 414,795. (No model.)



Claim.—The combination, with a pivoted gate having a gear at the upper portion of its end bar and a swinging lever having a gear or toothed segment engaging the gear on the end bar of the gate, of a standard arranged at each side of the gate, an oscillatory triangular lever-frame pivoted at its angle to each standard and having one end provided with a pivotally-attached pendent handle, a rigid rod at one end pivotally engaged with the opposite end of the lever-frame and at the other end jointed to the swinging lever, a gate-latch pivoted to the gate, a rocking latch-operating lever pivoted at one end to the gate, a link connecting the other end of the rocking latch-operating lever directly with the upper end of the swinging lever, and a link jointed to the latch-operating lever between its extremities and pivotally engaged with the gate-latch, substantially as described.

474,214. TELEPHONE-RECEIVER. ARTHUR T. COLLIER, Caterham Valley, England. Filed June 30, 1891. Serial No. 398,006. (No model.)



Claim.—1. A telephone provided with two diaphragms or tympans, each of which is arranged between the poles of two magnets or between the poles of two groups of magnets, one of the magnets or groups of magnets being actuated by the current in the line-wire, the other being independent of such line-current and provided, also, with one or more ear-pieces or mouthpieces connected with the space or spaces between the tympans, substantially as herein described.

2. In a telephone, the combination, with a straight electro-magnet having its coil in the line-circuit, of an independent magnet having its respective poles opposed to the poles of the electro-magnet, and two

diaphragms, each of which is interposed between one of the pairs of opposed magnet-poles, substantially as described.

3. A telephone comprising two diaphragm on tympans, an electro-magnet actuated by a current in the line-wire, arranged between the said tympans in a box or case provided with an ear-piece or mouth-piece, and a second magnet the poles or pole-pieces of which are in suitable proximity to the said tympans, substantially as herein described.

4. The combination of a cylinder or disk *a*, provided with an ear-piece *A*, communicating with the spaces at the ends of the said cylinder or disk, an electro-magnet *b*, extending longitudinally through the said cylinder or disk, and diaphragms or tympans *c*, secured one to each end of the said cylinder or disk, substantially as and for the purposes above specified.

5. The combination of a cylinder or disk *a*, provided with an ear-piece *A*, communicating with the spaces at the ends of said cylinder or disk, an electro-magnet *b*, extending longitudinally through the said cylinder or disk, diaphragms or tympans *c*, secured one to each end of the said cylinder or disk, and a permanent magnet *f*, the poles of which are exterior to the said diaphragms or tympans and opposite the poles of the said electro-magnet, substantially as and for the purposes above specified.

474,215. TOY CART. CHARLES M. COLLINS, South Bend, Ind., assignor of one-half to John M. Studebaker, same place. Filed Oct. 12, 1891. Serial No. 408,412. (No model.)



Claim.—1. The cart A, provided with propelling-treadles *d d*, and means for transmitting their motion to the axle C, and the imitation horse F, provided with legs pivoted to the body, the supporting-wheel *e*, the cranks *g g*, and connecting-rods *h h* and *i j*, substantially as set forth.

2. An imitation horse F, provided with four legs hinged to the body, connecting-rods *i j* to couple the fore and hind legs, a supporting-wheel *e*, provided with cranks *g g*, and connecting-rods *h h*, whereby when the horse is moving it is supported on said wheel and the legs are moved in simulation of the motion of the horse.

3. An imitation horse F, provided with four legs pivoted to the body, and the connecting-rods *i j*, each jointed at one end to one of said legs and provided at the other with a latch-pivot, substantially as described.

4. An imitation horse F, provided with four legs pivoted to the body, connecting-rods *i j*, a supporting-wheel *e*, provided with cranks *g g*, whereby the legs will be moved, and a clutch whereby the relative positions of said cranks may be changed, as set forth.

5. The wheel *e*, provided with the cranks *g g* and the clutch and operative cord *p*, whereby said clutch may be released at will to change the gait of the horse, as set forth.

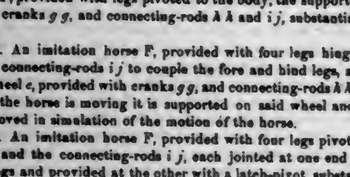
6. The clutch-ring *s*, attached to the crank *g*, the clutch-ring *r*, attached to the shaft and provided with the spring-impelled latch described, and the clutch-sleeve *n*, with its operative lever *o* and cord, substantially as set forth.

474,216. METALLIC RAILWAY TIE AND STRINGER. ROBERT J. COLVIN, Lancaster, Pa., assignor of one-half to David P. Bitner, same place. Filed Sept. 30, 1891. Serial No. 407,285. (No model.)

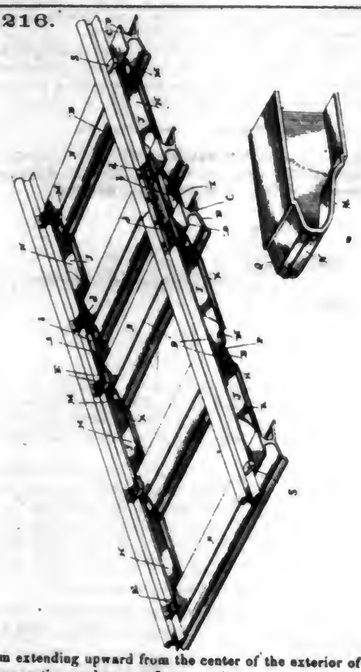
Claim.—1. A railway-tie having the shape of an inverted Y and provided with strengthening-fillets at the junction of the stem with the upper cross-flange and the lower U-shaped portion, substantially as specified.

2. A railway-tie comprising a semicircular lower portion, a stem extending vertically from the center thereof, a cross-flange at the upper end of the said stem for supporting the rails, and strengthening-fillets at the junction of the stem with the circular portion and the said cross-flange, substantially as set forth.

3. A metallic tie comprising an expanded semicircular lower portion, a stem extending upward from the center of the exterior of the said circular portion, and a cross-flange at the upper end of the said stem for supporting the rails, substantially as specified.



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4. A metallic stringer for railways, comprising a central vertical web and a laterally-extending flange entirely around its edge upon opposite sides thereof, substantially as set forth.

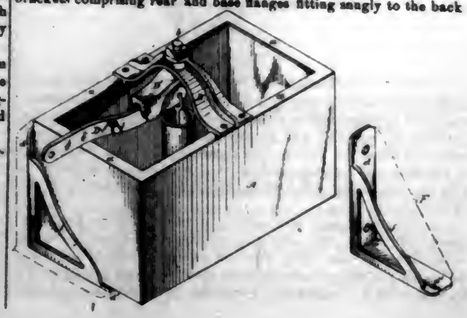
5. In a railway tie and stringer, a tie, combined with a stringer having its ends adapted to be secured to the ties and its upper edge flush with the upper rail-surface of the tie, the said stringer provided with cavities in its upper ends for the flanges of the tie, substantially as specified.

6. In a railway-track, metallic ties having a semicircular lower portion, a stem extending therefrom, a horizontal flange upon the upper edge of the said stem, combined with a metallic stringer having a curved portion to fit the circular portion of the said tie and its ends shaped to fit between the circular portion and the horizontal flange of the tie, and a means for securing the stringer and ties together, substantially as set forth.

7. In a railway-track, a metallic tie having a circular lower portion, a vertical stem extending therefrom, a horizontal flange upon the upper end of the said stem, combined with a metallic stringer having its ends shaped to fit the said tie and provided with lateral flanges which are provided with bolt-holes, and the stem of the tie having bolt-holes, all of which register, and bolts which pass through the said holes, substantially as specified.

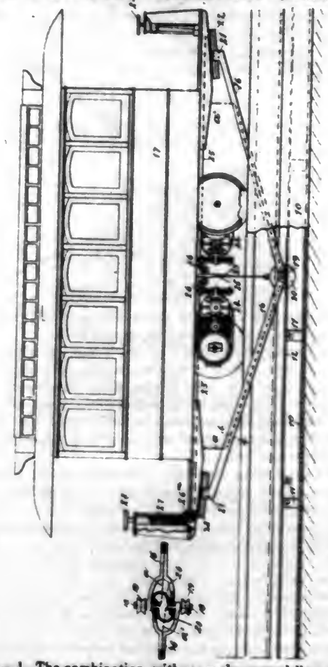
474,217. WATER-CLOSET RESERVOIR. WILLIAM S. COOPER, Philadelphia, Pa. Filed May 16, 1889. Serial No. 311,018. (No model.)

Claim.—1. The combination of the tank with the supporting-brackets comprising rear and base flanges fitting snugly to the back and bottom of the tank, and a side web fitting snugly against the end of the tank, substantially as specified.



2. The combination of the tank and the cross-bar bridging the same and having a raised central portion with a valve-operating lever and an arm pivoted to the under side of the raised central portion of the bridge-piece extending laterally therefrom and having at its outer end depending lugs for the reception of the pivot-pin of the lever, substantially as specified.

474,218. CONDUIT-TROLLEY. JAMES J. COSGROVE, Jr., Philadelphia, Pa. Filed June 3, 1891. Serial No. 394,936. (No model.)



Claim.—1. The combination, with an underground line-wire and a car carrying electric motors, of downwardly-converging arms having sliding connections with the under side of the car, a trolley mounted in the converging ends of the said arms, connections between the trolley and the motors, and means for raising and lowering the trolley, substantially as described.

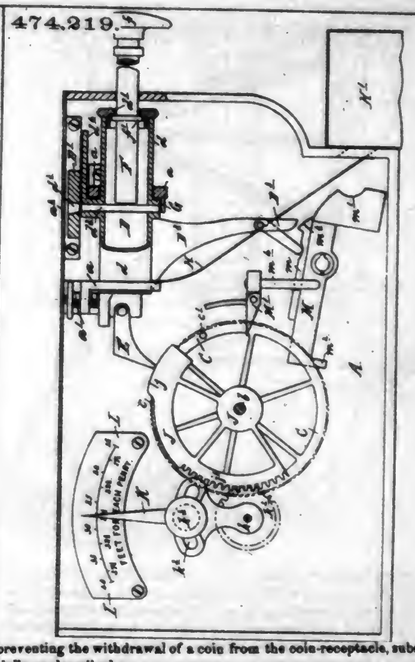
2. The combination, with an underground line-wire and a car carrying electric motors, of downwardly-converging arms having sliding connections with the under side of the car, two trolley-pulleys mounted in the lower ends of the arms, connections between the pulleys and the motor, and cables connected to the converging ends of the arms for raising them, substantially as described.

3. The combination, with a continuous underground line-wire and a car carrying electric motors, of downwardly-converging arms having their upper ends fitted to slide on ways on the under side of the car, two axles mounted in the lower ends of the arms, a trolley-pulley on each axle, a casing inclosing the inner ends of the axles, connections between the said pulleys and the motors, and cables secured to the casing for raising the said arms, substantially as herein shown and described.

474,219. COIN-FREED GAS-METER. WILLIAM COWAN, Edinburgh, Scotland. Filed Jan. 8, 1892. Serial No. 417,375. (No model.) Patented in England July 23, 1890, No. 11,537; Feb. 27, 1891, No. 3,575; May 16, 1891, No. 8,444, and Oct. 22, 1891, No. 18,141.

Claim.—1. In a coin-controlled gas-meter, the combination of a wheel adapted to permit the passage of a predetermined quantity of gas through the meter at each revolution thereof, a reciprocating coin-receptacle carrying a pawl engaging said wheel to impart a uniform partial rotation to said wheel at each reciprocation thereof, a pawl, a pusher sliding in said coin-receptacle and adapted on insertion of a coin to actuate said receptacle and rotate the wheel to admit a predetermined quantity of gas through the meter, a movable index for regulating the rotation of the wheel by the said pawl, mechanism for automatically stopping the flow of gas through the meter, and a guard for

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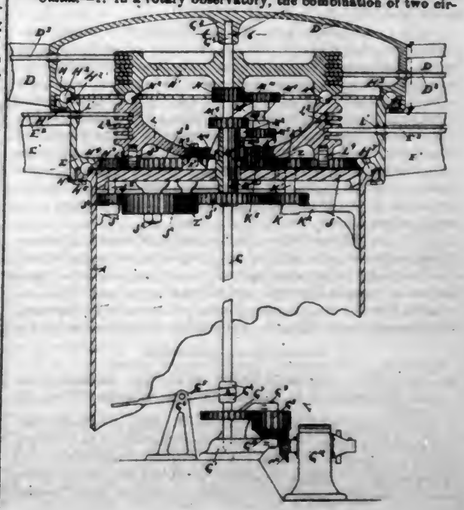
preventing the withdrawal of a coin from the coin-receptacle, substantially as described.

2. The combination of the wheel C for controlling the passage of the gas through the meter, the reciprocating coin-receptacle D, provided with the transverse coin-slot d^3 and carrying at its end the pivoted pawl E, engaging the wheel C, the pusher F, sliding in the coin-receptacle, the adjustable index K, engaging the wheel C and adjustably regulating the rotation of said wheel by the said pawl, and the detent M for automatically stopping the meter, substantially as described.

3. The combination of the wheel C, the reciprocating coin-receptacle D, carrying the pawl E, engaging said wheel, the spirally-grooved tube Q, the sliding pusher-rod F, carrying the pin q^3, traveling in the spiral groove q', and the adjustable index K, substantially as set forth.

474,220. ROTARY OBSERVATORY. FREDERICK C. CROWE, Chicago, Ill. Filed June 26, 1891. Renewed Feb. 29, 1892. Serial No. 423,112. (No model.) Patented in England July 20, 1891, No. 12,294.

Claim.—1. In a rotary observatory, the combination of two cir-



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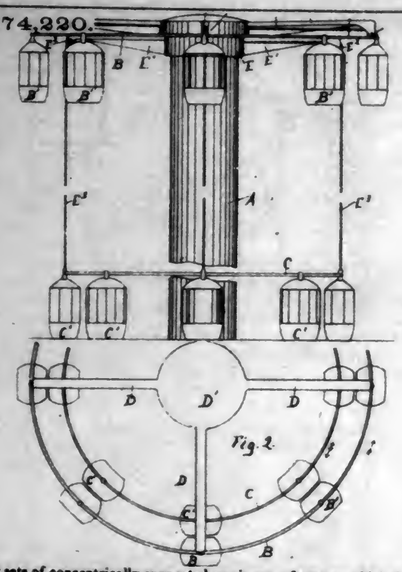


Fig. 2.

cular sets of concentrically-supported carriages, a frame on which they are normally supported at different altitudes, driving mechanism to rotate them each constantly in the same direction, but in a direction opposite to that of the other, and lifting mechanism to simultaneously move the carriages in opposite vertical directions.

2. In a rotary observatory, the combination of two sets of concentrically-supported carriages with driving mechanism to rotate them in opposite directions and lifting mechanism to raise and lower them, said mechanism connected with the sets of carriages, so that their weights tend to balance each other.

3. In a rotary observatory, the combination of two sets of carriages concentrically supported in circles of different diameters, ropes whereby they are raised and lowered, laterally-extending arms which support such ropes, winding-drums alternately fixed and rotating, on which such ropes are wound, and mechanism to rotate said arms in opposite directions, the relation between the arms and drums being such as to simultaneously move the carriages in opposite vertical directions.

4. In a rotary observatory, the combination of a series of carriages arranged in a circle, ropes whereby they are raised and lowered, laterally-extending arms which support such ropes, and a winding-drum within said circle, on which such ropes are wound and about which they are carried by the arms, and driving mechanism to rotate such arms continuously in one and the same direction and also to rotate such drums intermittently in one and the same direction, but at a greater speed than the arms.

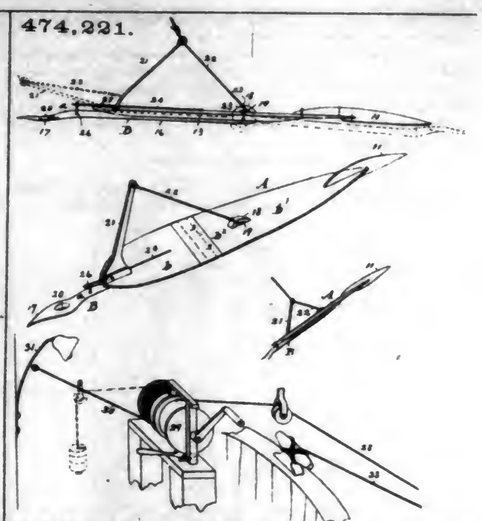
5. In a rotary observatory, the combination of two sets of carriages arranged in circles of different diameters and normally at different altitudes, ropes whereby they are raised and lowered, laterally-extending arms which support such ropes, winding-drums within said circle, on which such ropes are wound and about which they are carried by the arms, and guiding mechanism to rotate such arms each continuously in one and the same direction, but opposite to the direction of rotation of the other, and driving mechanism to rotate such drums intermittently each in one and the same direction, but in an opposite direction from the rotation of the other, said drums during rotation adapted to be moved each at a greater speed than the speed of its associated set of arms.

6. In a rotary observatory, the combination of two sets of concentrically-supported carriages with supporting-arms, one series for each set of carriages, and supporting-ropes, driving mechanism to rotate the arms in opposite directions, and concentric winding-drums to receive the ropes for the purpose of raising and lowering the carriages, said drums alternately locked to and freed from the driving mechanism.

474,221. SHALLOW-WATER INDICATOR. ALONZO G. CROSMAN, Huntington, N. Y. Filed Dec. 30, 1890. Serial No. 376,193. (No model.)

Claim.—1. A shallow-water indicator for ships and smaller craft, acting on the principle of an inverted kite, comprising a body portion flexibly connected to the vessel, a spear or lever pivoted to said body portion adapted to engage the ground at one end and near its pivotal point detachably connected to retaining mechanism, which releases

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one of the guy ropes or rods of the equalizing-bridle, by which said indicator is towed, and said retaining mechanism.

2. As a means for determining the shallowness of water within certain limits from a vessel in motion, a submerged mechanism, serving on the principle of an inverted kite, said mechanism comprising a body flexibly connected at its upper face to the vessel and provided with a pivoted spear, the distal end of which projects beyond the front end of the body for engagement with the ground, substantially as and for the purpose specified.

3. The shoal-alarm described, consisting of a body A, adapted to be trailed at a depth below the vessel, provided at its lower side with a pivoted spear, the distal end of which projects beyond the front end of the body, and a latch and trip mechanism connected with the spear, substantially for the purpose specified.

4. The shoal-alarm described, consisting of an elongated body adapted to be trailed at a depth below the vessel, having a flexible connection therewith and provided with a longitudinally-extending pivoted spear on its under side, the distal end of which projects beyond the front end of the body, a latch separably connecting the body and spear in front of its pivot, a draw-bar connected to the upper side of the forward part of the body, and a trip-bar connected at its upper end with the upper end of the draw-bar and at its lower end separably connected with the inner end of the spear to be released when the spear swings on its axis, as and for the purpose specified.

5. The shoal-alarm described, consisting of an elongated body adapted to be trailed at a depth below the vessel, having a flexible connection therewith and provided with a pivoted spear on its under side, the distal end of which projects beyond the front end of the body, a latch separably connecting the forward part of the spear with the body, a draw-bar pivoted to the upper forward part of the body, a trip-bar pivotally connected to the said draw-bar and adapted at its lower end to separably connect with the pivoted end of the spear, and a drag or float located between the device and the vessel, engaging the line connecting the two, substantially as specified.

6. In a device of the character described, the combination, with a body constructed of a material capable of floating and having curved front and rear ends, of a spear pivoted at one end beneath the body, projecting at its distal end beyond and separably connected thereat with the body, a draw-bar pivotally connected with the body at its bow, and a trip-bar pivotally connected with the upper end of the draw-bar and having a detachable connection at its lower end with the spear at its pivoted end, as and for the purpose specified.

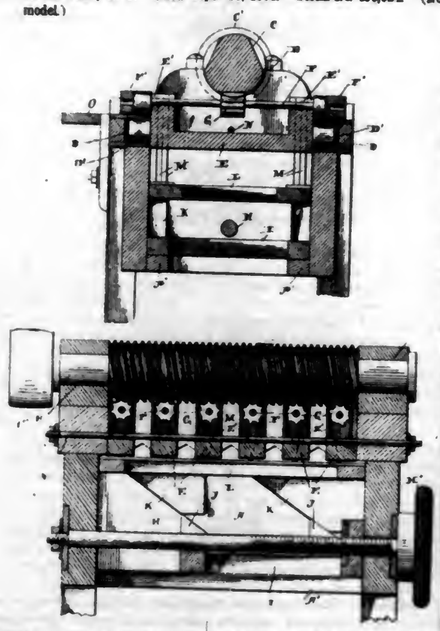
7. In a device of the character described, the combination, with a kite-like body provided with a rudder at its stern, of a spear pivoted at or near the center of the lower side of the body, the pivotal end of the spear being extended up through the body and provided with a recess and the distal end projecting in front of the body, a draw-bar pivoted at the forward end of the body, a trip-bar connected with the upper end of the draw-bar and with the recessed portion of the spear, a keeper attached to the forward part of the spear, and a spring-latch secured to the front end of the body and engaging the said keeper, as and for the purpose specified.

8. In a device of the character described, the combination, with a body constructed of a material capable of floating and having a kite-like outline, a rudder secured to the stern of the body, and a metal

keel attached longitudinally to the bottom of a body, of a spear, the rear end whereof is pivoted in the keel and projecting above the top of the body, being provided in its projecting portion with a recess, and the distal end of the spear projecting in front of the body, a draw-bar pivoted to the bow of the body, a trip-bar connected at its upper end with the upper end of the draw-bar and at its lower end with the recessed portion of the spear, a keeper attached to the forward portion of the spear, and a spring-latch secured to the front end of the body and engaging with the keeper, as and for the purpose specified.

9. A shallow-water indicator for ships, acting on the principle of an inverted kite, comprising a body portion having a tow-line to connect with the vessel, a drag-line leading from the vessel to the tow-line, a spear or lever pivoted to said body portion adapted to engage the ground at one end and near its pivotal point detachably connected to retaining mechanism, which releases one of the guy ropes or rods of the equalizing-bridle, by which the indicator is towed, and said retaining mechanism.

474,222. BLIND-STILE-BORING MACHINE. GILBERT CURTIS, Crown Point, N. Y. Filed Sept. 26, 1891. Serial No. 406,934. (No model.)



Claim.—1. A boring-machine comprising a main frame, laterally-movable bearings mounted therein, tool-carrying shafts journaled in said bearings, a means for revolving the shafts, and wedges adapted to be adjusted between said bearings.

2. A boring-machine comprising a main frame, laterally-movable bearings mounted therein, provided with slanting grooves, wedges adapted to be adjusted in said grooves, tool-carrying shafts journaled in the bearings, and a means for revolving the shafts.

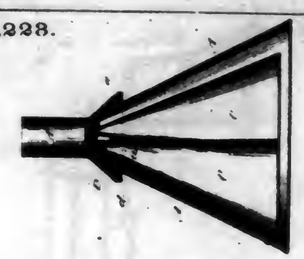
3. A boring-machine comprising a main frame laterally-movable tool-carrying bearings mounted therein, and wedges interposed between the said movable bearings, each wedge being out of line with the next adjacent wedges, for the purpose described.

4. A boring-machine comprising a main frame, laterally-movable bearings mounted therein, shafts journaled in said bearings, a means for revolving the shafts, a vertical movable support, and wedges carried by said support, which extend between the said bearings.

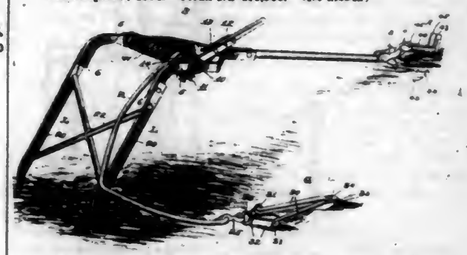
474,223. CLOTHES-POUNDER. JORDAN G. DAVIS, Waco, Tex. Filed Nov. 5, 1891. Serial No. 410,992. (No model.)

Claim.—The herein-described clothes-pounder, consisting of an outer cone with openings and socket near its upper end, a plurality of smaller cones with open bottoms within the outer cone and having their upper ends secured to the bottom of the said socket of the larger cone, and a conical guard around the upper end of the outer cone and extended below said openings independent of the outer cone and terminating in a vertical depending flange at a distance from the said outer cone, substantially as shown and described.

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474,224. WIRE-STRETCHER. GEORGE A. DEAN, Ranger, Tex. Filed Sept. 22, 1891. Serial No. 406,508. (No model.)



Claim.—1. The herein-described wire-stretcher, the same comprising a Y-shaped body, an anchor detachably connected to the inner end thereof, a windlass journaled across and within its outer forked end, a rope on said windlass, a grapple detachably connected to said rope, and a support pivotally connected to said body, each and all substantially as set forth.

2. In a wire-stretcher, the combination, with a Y-shaped body whose single end is sharpened and a windlass journaled in its forked end, of a support comprising two legs having sharpened lower ends and having their upper ends pivoted to said arms near the extremities of the latter, and braces connecting said legs as and for the purpose set forth.

3. In a wire-stretcher, the combination, with the stretcher-body having a downward-turned inner end, a windlass therein, and a support for the outer end of said body, of a clevis near said pointed inner end of the body, a snatch-link connected therewith, and an anchor comprising a shank having a hook adapted to engage said link, its other end being bent at right angles and extending to a pounding-face and then bent upon itself, passing across the shank, and continued into an inwardly-curved and flattened blade having a sharpened point, as and for the purpose hereinbefore set forth.

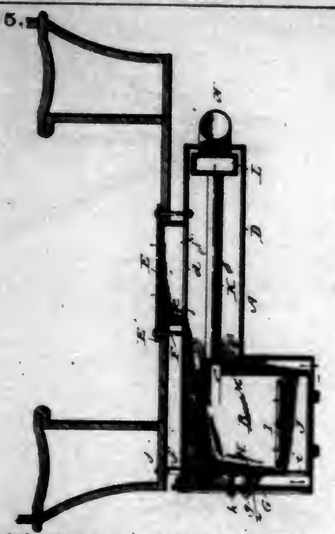
474,225. CAR-HEATER. CYRUS S. DEAN, Port Erie, Canada. Filed Oct. 27, 1891. Serial No. 409,961. (No model.)

Claim.—1. A heater comprising a casing having the front portion comparatively deeper than the rear portion and having said rear portion wide and shallow and constructed to have a register connected therewith, a smoke-conductor located in the shallow rear portion of the casing and composed of a series of pipes connected at their ends by smoke-boxes, and a fire-pot removably inserted in the front portion of the casing and adapted to automatically connect with the inner smoke-box of the said smoke-conductor, substantially as described.

2. The herein-described heater, composed of a casing having a wide and shallow supplemental hot-air chamber projected from its rear, a smoke-conductor located in the said hot-air chamber and composed of a series of pipes which are connected at their ends by smoke-boxes, a fire-pot removably inserted through the front end of the casing and suspended therein by lateral projections on the fire-pot engaging with ribs on the sides of the casing and adapted to connect automatically with a smoke-box of the said smoke-conductor, and a door to close the open end of the casing and provided with a stop to hold the door of the fire-pot closed and prevent the latter from shaking about, substantially as described.

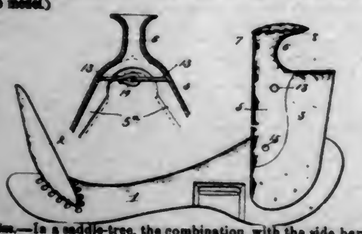
3. In a car-heater, the combination, with the casing having ribs *a* on its opposite sides and having its front end open, of a fire-pot adapted to be thrust through the open end of the casing and having lateral projections which engage with the ribs *a* and support the pot and prevent lateral movement of the same, and having a bail and provided with a door in its front side and a door to close the open end of the casing, and having an adjustable stop to engage with the fire-pot door and hold it shut and prevent longitudinal movement of the said fire-pot within the casing, substantially as described.

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4. The hereinbefore shown and described car-heater, consisting of a casing having its front portion deeper than the rear portion and having the said rear portion wide and shallow and constructed to have a register connected therewith, a smoke-conductor located in the shallow rear portion of the casing, composed of a series of pipes which ing the said rear portion wide and shallow and constructed to have a register connected therewith, a smoke-conductor located in the shallow rear portion of the casing, composed of a series of pipes which are connected at their ends by smoke-boxes, a fire-pot having a ball and provided with lateral projections and adapted to be thrust through the open end of the casing and be supported therein by the lateral projections engaging with ribs on the sides of the casing, and a door to close the open end of the casing and provided with an adjustable stop to hold the fire-pot door closed and prevent the said fire-pot from longitudinal movement in the case, substantially as described.

474,226. RIDING-SADDLE. RICHARD M. DENNIS and CHARLES E. CLAGGETT, Louisville, Ky. Filed Nov. 11, 1891. Serial No. 411,615. (No model.)



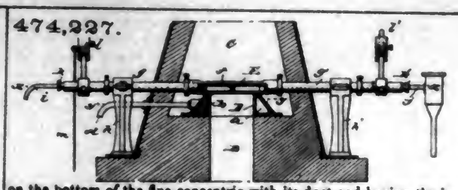
Claim.—In a saddle-tree, the combination, with the side bars and the fork secured thereto having an upwardly-projecting neck, of the metal shield having side wings covering the rear edge of the fork and formed with aligned apertures and a hollow neck and concave head, the headed rods passing through the shield from opposite sides and having their inner ends beat or formed into eyes interlocking with each other and their heads countersunk into the shield, so as to be flush with the surface thereof, and the rivets passing through the shield, the fork, and the side bars, substantially as described.

474,227. WATER-COOLED DAMPER. SIMON B. DEXTER, Glendale, Mont. Filed Aug. 20, 1890. Serial No. 362,510. (No model.)

Claim.—1. The combination, with the hollow seat D, having inlet and outlet water-pipes, of the hollow vertically-swinging damper or valve resting on the upper edge of said seat and provided with inlet and outlet pipes *g g'*, respectively, bearings *h h'*, in which said pipes are journaled, arms projecting from pipes *g g'*, adjustable counterbalancing-weights *l l'*, mounted on said pipes, and means for operating the valve, substantially as set forth.

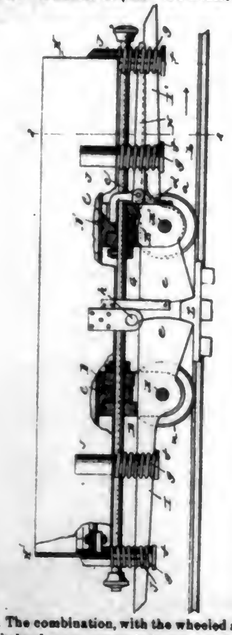
2. The combination, with the enlarged flue C and the smaller duct B, leading downward from its bottom, of the hollow annular seat

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on the bottom of the flue concentric with its duct and having the inlet and outlet pipes, the vertically-swinging counterbalanced hollow damper E on top of the seat and having inlet and outlet pipes *g g'* extending out through the walls of the flue, bearings *h h'*, in which said pipes are journaled, and means for operating the damper, substantially as set forth.

474,228. SLAG-CAR. SIMON B. DEXTER, Glendale, Mont. Filed Aug. 30, 1890. Serial No. 362,512. (No model.)



Claim.—1. The combination, with the wheeled axles having yokes and the car-body having transverse bolsters on its lower side provided with ears pivoted to the yoke to permit the body to dump laterally, one of the ears having a recess, of a longitudinally-extending angle-lever H, pivoted to one of the yokes, with its inner end engaging said recess to lock the body, substantially as set forth.

2. The combination, with a slag-car, of the locking-levers I I' and the stop L, substantially as specified.

3. The combination, with the slag-car body, of spring-supported side and end pieces, substantially as specified.

4. The combination, with the car-body F, of the slotted cylindrical supports J, the springs *g*, and the movable side and end pieces K and K', substantially as specified.

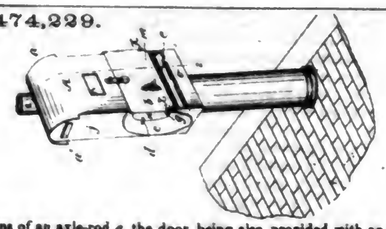
5. The combination, with the car, of the longitudinally-extending levers I I', pivoted between their ends beneath the car, with their outer ends projecting beyond the ends of the car, the inner ends of the said levers being spaced apart and projected downward to engage a track projection and lock the car, substantially as shown and described.

6. A car comprising a main wheeled platform or bottom and an open-top body, within which the platform or bottom slides, substantially as set forth.

474,229. LETTER-BOX. MICHAEL J. DONAHUE, Boston, Mass. Filed Feb. 24, 1891. Serial No. 382,672. (No model.)

Claim.—1. The combination, with a mail-box, of an inclined intermediate floor *f*, dividing the box into upper and lower compartments, the upper compartment provided with two letter-ports *a a* and an opening on its front side, the lower compartment provided with an opening *c* above the inwardly-projecting flange *c'*, the upper compartment provided with a door *b*, said door being attached to the box by

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means of an axle-rod *g*, the door being also provided with an extension *m* below its pivotal point, so that it will partially close the opening *c* in the lower compartment when the door is closed, substantially as hereinbefore described.

2. The combination, with a mail-box having two compartments separated by an inclined intermediate floor *f* and having two openings on its front side, an upper delivery-opening and a lower mailing and collection opening, of a door *b*, having an extension *m* and secured to the box by means of a single axle-rod and arranged to close the openings, as described, the door having externally-operating side guards carrying obliquely-arranged pins *d d*, substantially as and for the purpose set forth.

3. The combination, with a mail-box divided into two separate compartments by means of the inclined intermediate floor *f*, substantially as described, of a door *b*, hinged adjacent to the floor *f* in front of the openings to said compartments and adapted to close the openings to the upper compartment, said door being provided below the pivotal point with an extension *m*, adapted when said door is closed to partially cover the opening to the lower compartment, and two externally-operating side guards *h h*, located one on each side of the door *b* and arranged to operate outside the main walls of the box, substantially as set forth.

4. The combination, with a mail-box divided into two separate compartments by means of the inclined intermediate floor *f*, of a door *b*, hinged adjacent to the floor *f* in front of the openings to said compartments and adapted to close the opening to the upper compartment, said door being provided below the pivotal point with an extension *m*, adapted when said door is closed to partially cover the opening to the lower compartment, and having two externally-operating side guards *h h*, located one on each side and arranged to operate outside of the main walls of the box, and two funnel-shaped obliquely-arranged pins *d d*, all operating substantially in the manner and for the purpose set forth.

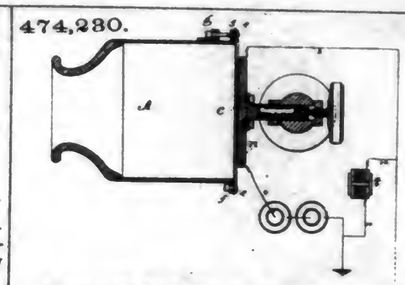
5. The combination, with a mail-box divided into two separate compartments by means of the inclined intermediate floor *f*, substantially as described, of a door *b*, hinged adjacent to the floor *f* in front of the openings to said compartments and adapted to close the opening to the upper compartment, said door being provided below the pivotal point with an extension *m*, adapted when said door is closed to partially cover the opening to the lower compartment, and two externally-operating side guards *h h*, located one on each side of the door *b* and arranged to operate outside the main walls of the box and inside the two cleats *e e*, said cleats being attached to the outer sides of the end of the box and of suitable shape to receive said guards, substantially as set forth.

6. The combination, with a mail-box divided into two separate compartments by means of the inclined intermediate floor *f*, substantially as described, of a door *b*, hinged adjacent to the floor *f* in front of the openings to said compartments and adapted to close the openings to the upper compartment, said door being provided below the pivotal point with an extension *m*, adapted when said door is closed to partially cover the opening to the lower compartment, and two externally-operating side guards *h h*, located one on each side of the door *b* and arranged to operate outside the main walls of the box and inside the two cleats *e e*, said cleats being attached to the outer sides of the end of the box and of suitable shape to receive said guards, and two notches *v v* in the sides of the box *j j*, fitting the parts cut away of the portion *m* of the door, all operating substantially in the manner and for the purpose set forth.

474,230. SPEAKING-TELEGRAPH. THOMAS A. EDISON, Menlo Park, N. J., assignor to The Western Union Telegraph Company, New York, N. Y. Filed Apr. 27, 1877. (Model.) Patented in England July 30, 1877, No. 2,909; in Canada Oct. 20, 1877, No. 8,026; in France Dec. 19, 1877, No. 121,687; in Belgium Jan. 11, 1878, No. 43,964; in Austria-Hungary Jan. 15, 1878; in Italy Jan. 19, 1878, No. 9,791; in Germany Jan. 23, 1878, No. 14,306; in Spain May 6, 1878, and in Russia Feb. 15/27, 1882. No. 1,161.

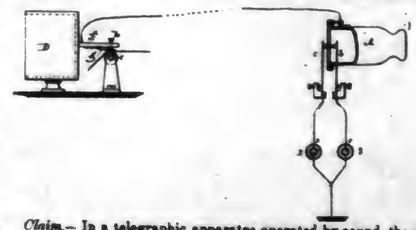
Claim.—1. In a speaking-telegraph transmitter, the combination of a metallic diaphragm and disk of plumbago or equivalent material, the contiguous faces of said disk and diaphragm being in contact, substantially as described.

474,230.



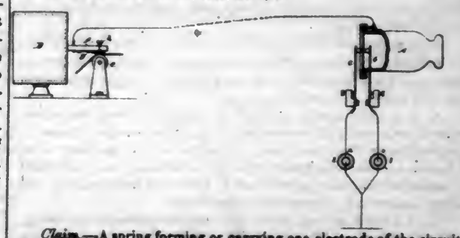
2. As a means for effecting a varying surface contact in the circuit of a speaking-telegraph transmitter, the combination of two electrodes, one of plumbago or similar material, and both having broad surfaces in vibratory contact with each other, substantially as described.

474,231. SPEAKING-TELEGRAPH. THOMAS A. EDISON, Menlo Park, N. J., assignor to The Western Union Telegraph Company, New York, N. Y. Filed July 20, 1877. (Model.) Patented in England July 30, 1877, No. 2,909; in Canada Oct. 20, 1877, No. 8,026; in France Dec. 19, 1877, No. 121,687; in Belgium Jan. 11, 1878, No. 43,964; in Austria-Hungary Jan. 15, 1878; in Italy Jan. 19, 1878, No. 9,791; in Germany Jan. 23, 1878, No. 14,306; in Spain May 6, 1878, and in Russia Feb. 15/27, 1882. No. 1,161.



Claim.—In a telegraphic apparatus operated by sound, the combination, with the diaphragm, of one or more contact-points of plumbago or similar inferior conductor in the electric circuit, whereby the rise and fall of electric tension is proportionate to the pressure exerted upon the said point or points by the diaphragm, substantially as set forth.

474,232. SPEAKING-TELEGRAPH. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to The Western Union Telegraph Company, New York, N. Y. Original application filed July 20, 1877. Divided and this application filed Feb. 16, 1886. Serial No. 192,456. (No model.) Patented in England July 30, 1877, No. 2,909; in Canada Oct. 20, 1877, No. 8,026; in France Dec. 19, 1877, No. 121,687; in Belgium Jan. 11, 1878, No. 43,964; in Austria-Hungary Jan. 15, 1878; in Italy Jan. 19, 1878, No. 9,791; in Germany Jan. 23, 1878, No. 14,306; in Spain May 6, 1878, and in Russia Feb. 15/27, 1882. No. 1,161.

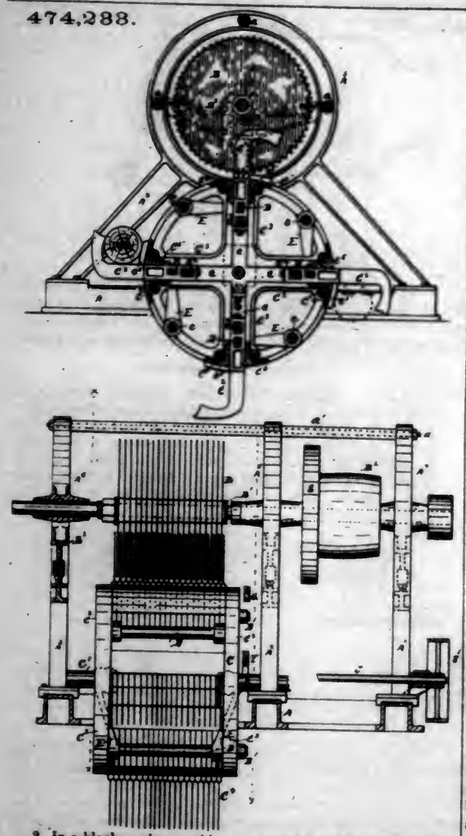


Claim.—A spring forming or carrying one electrode of the circuit of a telephone and constantly pressing against the other electrode and diaphragm to maintain the required initial pressure between the electrodes and yield to the movement of the diaphragm, substantially as described.

474,233. BLOCK-SAWING MACHINE. DANIEL R. EDWARDS, Saginaw, Mich., assignor of one-half to Marvette D. La Due, same place. Filed Dec. 16, 1890. Serial No. 374,897. (No model.)

Claim.—1. In a block-sawing machine, a rotatable feeding-drum provided with gripping-fingers arranged in two or more parallel series, each finger of each series independently reciprocatory in a line radial from the drum, substantially as set forth.

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2. In a block-sawing machine, a rotatable feeding-drum having in combination therewith, a series of gripping-fingers, a movable support engaging said fingers, a roller on said support, a track adjacent to said roller, and a movable arm located above the line of movement of the roller, substantially as set forth.

3. In a block-sawing machine, a rotatable drum provided with gripping-fingers, a track to open said fingers, an arm G to close said fingers, and a vacuum dash-pot connected with said arm, substantially as set forth.

4. In a block-sawing machine, a rotatable feeding-drum provided with radially-reciprocatory gripping-fingers engaged upon a shaft, and vibratory arms connected at their outer ends with said shaft, substantially as described.

5. In a block-sawing machine, a rotatable feeding-drum having, in combination therewith, radially-reciprocatory gripping-fingers located upon a transverse shaft, said shaft having a yielding engagement with said fingers, substantially as described.

6. In a block-sawing machine, a rotatable feeding-drum constructed with radial guideways *c*, having, in combination therewith, gripping-fingers C^3, reciprocatory in said guideways, oscillatory arms E, having a jointed engagement upon the drum at one end, and shafts D, connected with the opposite ends of said arms and engaging said fingers, respectively, substantially as set forth.

7. In a block-sawing machine, a rotatable feeding-drum having, in combination therewith, oscillatory arms E, having a jointed engagement at one end with the drum, shafts D, engaged with the opposite ends of a pair of said arms, and a series of radially-reciprocatory fingers engaged with each of said shafts, the series of fingers simultaneously movable with the respective shafts with which they are engaged, substantially as set forth.

8. In a block-sawing machine, a rotatable feeding-drum having, in combination therewith, oscillatory arms E, having a jointed engagement at one end with the drum, shafts D, engaged with the opposite ends of a pair of said arms, and a series of radially-reciprocatory fingers engaged with each of said shafts, the series of fingers simultaneously movable with the respective shafts with which they are engaged and having an independently-yielding engagement therewith, substantially as set forth.

9. In a block-sawing machine, a rotatable feeding-drum constructed with heads and end connecting cross-bars C^2 C^2, having, in combination therewith, radially-reciprocatory gripping-fingers C^3, projected between said cross-bars, shafts D, engaged with said fingers, and oscillatory arms E, engaged at one end with said shafts and jointedly engaged with the drum at the opposite ends, substantially as set forth.

10. In a block-sawing machine, the combination, with rotatable saws, of a vertically-rotatable feeding-drum, said drum provided with radially reciprocatory gripping-fingers projecting outward from the periphery of the drum to engage the work and hold it to the saws, substantially as described.

11. In a block-sawing machine, the combination, with a series of rotatable saws, of a rotatable feeding-drum provided with radially-reciprocatory fingers, said saws rotatable between said fingers, substantially as described.

12. In a block-sawing machine, the combination, with a series of rotatable saws, of a feeding-drum provided with radially-reciprocatory gripping-fingers arranged across the drum, and a shaft D, engaging said fingers, substantially as described.

474,284. LAWN-MOWER GRASS-RECEPTACLE. CHARLES EVEN, Davenport, Iowa. Filed Oct. 26, 1891. Serial No. 409,915. (No model.)



Claim.—1. As an article of manufacture, an attachment for lawn-mowers, comprising a main member having a horizontal body provided with a number of holes and upturned ends, a U-shaped upper member, its ends pivotally connected with the ends of the main member, a flexible receptacle secured to said members and open at the top, a strap rising from the bend of the upper member, and two twisted metallic straps, each bolted into one of the holes in said body and having a number of holes through its outer end.

2. In an attachment for lawn-mowers, a frame comprising an upper elongated U-shaped member having its front ends pivotally attached to the vertical portion of the front member of said frame, a piece of flexible material attached to and enveloping the sides, one end, and bottom of the said attachment and having the front end entirely open, a strap connected to the rear portion of the upper member of said frame, adapted to be adjustably attached to the handle of a lawn-mower, and metallic straps adjustably secured to the front member of said frame and having their ends bent at such an angle as to be readily attached to a lawn-mower, substantially as described.

474,285. EYEGLASS-CASE. CYRUS H. FARLEY, Portland, Me. Filed Aug. 3, 1891. Serial No. 401,598. (No model.)



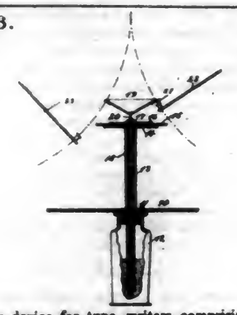
Claim.—1. An eyeglass-case consisting of two leaves held permanently a slight distance apart with an opening at the edge thereof, substantially as described.

2. An eyeglass-case consisting of two leaves held permanently a slight distance apart with an opening at one edge and an interposed spacing-partition between the leaves arranged centrally thereof, substantially as described.

474,286. INKING DEVICE FOR TYPE-WRITERS. JOHN R. FREE, Ovid, Mich. Filed June 19, 1891. Serial No. 396,850. (No model.)

Claim.—1. An inking device for type-writers, comprising a tube supported centrally between the type-bars and adapted to connect at its lower end with an ink-bottle, a pad secured to the top of the tube and connected with the ink by means of a wick, and an inking-cup flexibly connected with the upper end of the tube and extending into the path of the type, substantially as described.

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2. An inking device for type-writers, comprising a cross-bar adapted to be attached to a type-writer frame, a tube supported vertically upon the cross-bar and having its lower end projecting beneath the same, a pad secured to the top of the tube and connected with a wick extending downward through the tube, and an inking-cup arranged in the path of the type and having a flexible connection with the tube, substantially as described.

3. An inking device for type-writers, consisting of a cross-bar adapted to extend beneath the type-basket, said cross-bar having a central depending nozzle, a tube extending vertically through the nozzle and having a flange at its upper end, a pad secured to the top of the flange and connected with a wick which extends downward through the tube, and an inking-cup flexibly connected with the top of the tube and arranged to extend into the path of the type, substantially as described.

474,287. BLOTTING-PAD. ROBERT FROST, Olympia, Wash. Filed Dec. 16, 1891. Serial No. 415,209. (No model.)

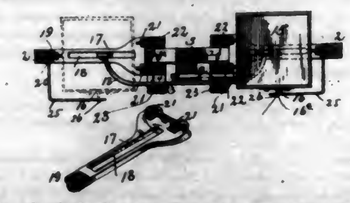


Claim.—1. The improved blotting-pad holder composed of a spring-plate doubled upon itself, whereby one flat portion 16 extends over the other 10, the latter being provided with means for holding the blotting material, as shown and described.

2. A device of the character described, comprising a base-plate having slideways on opposite sides and having one end formed into a roll and the opposite end doubled upon itself to form a spring, substantially as described.

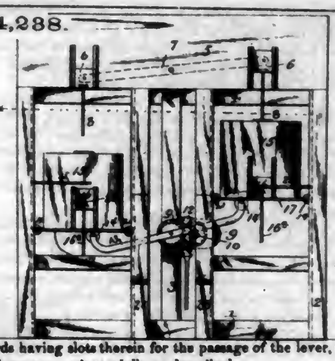
3. A device of the character described, comprising a base-plate having curved slideways on opposite sides adapted to receive the blotter, a roll at one end to form a rest for the fingers, and a spring formed by doubling the plate at one end, the spring extending nearly parallel with the base-plate and terminating at its free end in a curved flange, substantially as described.

474,288. OSCILLATING HYDRAULIC MOTOR. PRINCE A. GARDNER, Spartanburg, S. C. Filed Oct. 13, 1891. Serial No. 408,622. (No model.)



Claim.—In a hydraulic motor, the combination, with the frame, of the reservoir supported thereby, having sliding gates with depending arms, the pivoted oscillating lever with rollers in each end, the buckets having bottom plates or bars having horizontal slots and rollers in each end, the end standards with vertical grooves, the intermediate

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standards having slots therein for the passage of the lever, and double vertical grooves, substantially as described.

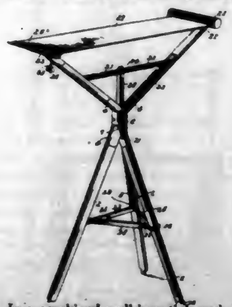
474,289. ADJUSTABLE FIRE GUARD AND SCREEN. NAT. B. GIBSON, Thorp's Spring, Tex. Filed June 1, 1891. Serial No. 394,730. (No model.)



Claim.—1. In a fire guard and screen, the combination, with a fireplace, of a series of adjustable shields constructed and arranged as herein described, each of said shields being provided with studs C, the slotted guides in which the studs move, and means for retaining the shields at any height desired, and the receptacle adapted to receive and retain the shields, substantially as and for the purposes herein set forth.

2. In combination with a fireplace provided with a receptacle A and guideways D, the shields B, each slotted at E and connected by bolts F, movable in said slots, the lower shield having bolts C, provided with triggers G to engage in the holes in the guideways, all as and for the purposes set forth.

474,240. CAMP-STOOL CANE. CHARLES T. GOLDING, Newton, Iowa. Filed Dec. 17, 1890. Serial No. 374,991. (No model.)



Claim.—1. In a combined walking-stick and stool, the combination, with the lower portion thereof adapted to serve as a support, and a stud or standard extending upwardly therefrom and provided at its upper end with an opening, of a spring mounted in the standard and having an outwardly-projecting catch, opposite seat-supporting sections pivoted to the support at opposite sides of the standard, a flexible seat connecting the upper ends of the sections, and a pair of brace-

sections semicircular in cross-section pivoted at their extremities to the seat-sections and adapted to be received by recesses therein, said brace-sections having their adjacent ends recessed to embrace the standard and to engage the spring-catch and pivoted together at opposite sides of the standard, substantially as specified.

2. In a combined walking-stick and stool, the combination, with the lower portion thereof adapted to serve as a support, of a pair of pivoted seat-supporting sections, a flexible seat-support connected to the upper extremities of the sections and a folding brace-section located between and adapted to fold within and be inclosed by the seat-supporting sections, and means for locking the brace in operative position, substantially as specified.

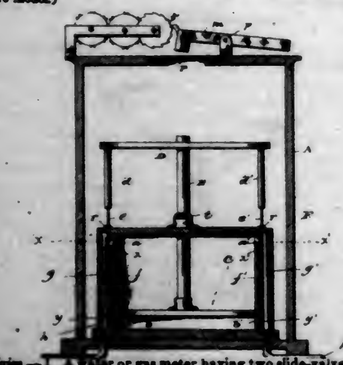
3. In a combined walking-stick and stool, the combination, with the upper seat-supporting sections and a collar to which they are pivoted, of a pair of lower sections also pivoted to the collar, a stud depending between the same, and a supplemental support connected removably on the lower ends of the lower pivoted sections and adapted to be connected to the stud, substantially as specified.

4. The combination, with the upper seat-supporting standards, of the lower pivoted standards or sections, a stud inclined and projecting from between said sections, a supplemental section threaded on the stud and adapted to be threaded on the lower ends of the sections when the latter are closed, a ring for encircling the supplemental section, and a pair of braces pivoted to the ring and at their outer ends to the pivoted sections, in which latter they are adapted to fold, substantially as specified.

5. The combination, with the upper pivoted seat-supports, of the lower supporting-sections pivoted out of alignment below the lower ends of the seat-supporting sections and having their lower ends reduced and threaded, an inclined stud depending from a point between the pivoted sections, a supplemental cylindrical section adapted to be threaded on the lower ends of said sections when the latter are brought together, a ring encircling said supplemental section, a pair of braces pivoted to the ring and at their outer ends pivoted to the sections and adapted to fold within the same, and a rule-jointed brace pivoted to the said deflected sections and adapted to fold within the same, substantially as specified.

6. The combination, with an intermediate cylindrical collar or coupling-sleeve recessed at opposite sides at its upper and lower ends, a pair of upper seat-supporting sections pivoted in the upper end of the collar, a folding-brace interposed between said upper seat-supporting sections, and a seat connecting the upper ends of said sections, of a stud extending upwardly from the collar and carrying a spring-catch for engaging the brace, an inclined threaded stud depending from the collar, a supplemental supporting-section threaded on the stud, a pair of diverging supporting-sections pivoted out of alignment with the collar and to the same and made hollow to receive the stud, a rule-jointed brace pivoted at its ends between the two supporting-sections and adapted to fold within the same, a ring removably mounted on the supplemental section, and braces pivoted to the ring and at their outer ends pivoted to the supporting-sections and adapted to fold therein, substantially as specified.

474,241. WATER OR GAS METER. JOHN GOODMAN and HENRY M. GOODMAN, Louisville, Ky. Filed Dec. 31, 1891. Serial No. 416,645. (No model.)

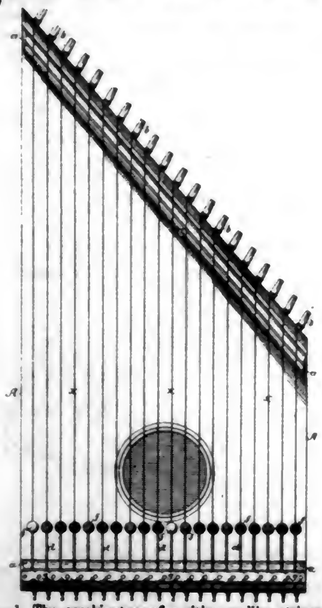


Claim.—1. A water or gas meter having two slide-valves operated in unison by the action of the piston or any mechanical device connected therewith having openings so arranged that when they are moved in one direction the pressure is brought to bear upon one side of the piston and when moved in the opposite direction the pressure is brought to bear on the other side and a magnet actuated by the piston, in combination with an armature influenced by said magnet and operating a register, substantially as specified.

2. In a gas or water meter hermetically sealed in a case or covering surrounding the motor mechanism, a magnet actuated to a to-and-fro movement by being connected directly or indirectly with the piston, in combination with an armature on the outside of the case, which being influenced by the movements of the magnet operates a set of dials, whereby the strokes of the piston are recorded and the quantity of the fluid which passes through is indicated, substantially as specified.

3. In a water or gas meter, the combination, with the slide-valves arranged to admit pressure alternately on opposite sides of a piston and the rods connected thereto, of the arms moving with the piston-rod and having apertures or slots therein in which said rods move freely to a certain extent, whereby the play of the valves is less than the movement of the piston, substantially as specified.

474,242. STRINGED MUSICAL INSTRUMENT. FREDERICK J. HAYNES, Philadelphia, Pa. Filed Feb. 3, 1892. Serial No. 420,033. (No model.)



Claim.—1. The combination of a zither or like stringed instrument with hammers mounted above the strings and arranged in sets distinguished from each other, so as to indicate chords or harmonious notes, substantially as specified.

2. The combination of a zither or like stringed instrument with a series of hammers mounted above the strings and having elastic stems confined at their outer ends and having heads at their inner ends, substantially as specified.

3. The combination of a zither or like stringed instrument with a series of hammers mounted above the strings and having enameled heads, substantially as specified.

4. The combination of a zither or like stringed instrument with hammers mounted above the strings and an elastic strip or tube secured to the instrument and perforated for the reception of the outer ends of the hammer-stems, substantially as specified.

5. The combination of a zither or like stringed instrument with an elastic strip or tube secured to the instrument and hammers mounted above the strings and having stems adapted to openings in said elastic strip or tube and movable longitudinally therethrough, substantially as specified.

474,243. BUTTER STAMP AND CUTTER. WILLIAM HALLENBECK, GEORGE W. WITT, and WALTER PATTISON, Hammondsport, N. Y. Filed Oct. 31, 1891. Serial No. 410,470. (No model.)

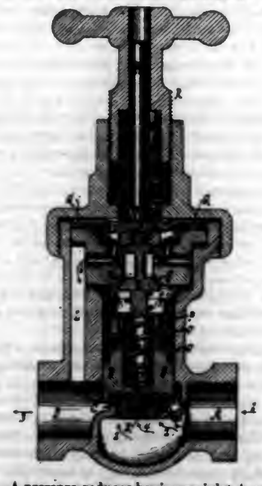
Claim.—1. In a butter-working machine, the combination, with a standard, a rack loosely attached to the standard, and an arm provided with a pinion engaging with the rack and encircling the latter, of a tubular knife carried by the arm, a plunger held to move in the knife, and a lever operating upon the plunger, as and for the purpose specified.

2. In a butter-working machine, the combination, with a standard, a rack capable of movement around the standard, an arm pivoted upon the standard and surrounding the rack, and a pinion carried by the arm and engaging with the rack, of a tubular knife secured to the arm, a plunger having movement in the knife, a stem attached to the plunger and provided with a series of grooves, a lever surrounding the stem and pivoted upon the arm, and an adjusting-lever fulcrumed in the main lever and engaging with the grooved surfaces of the stem, as and for the purpose set forth.

3. In a butter-working machine, the combination, with a standard, a rack held to move around the standard, an arm capable of turning upon the standard and surrounding the rack, a pinion journaled in the arm and engaging with the rack, and a pivoted table adapted to receive a receptacle containing butter, of a tubular knife secured to the arm, a plunger held to slide upon the knife and provided with a stem having a series of grooves, a lever fulcrumed upon the arm and surrounding the stem, and an adjusting-lever pivoted in the main lever, the adjusting-lever engaging with one of the grooves in the stem of the plunger, as and for the purpose specified.

4. In a butter-working machine, the combination, with a standard, a base, a table pivoted upon the base in front of the standard, a rack connected with the standard and capable of moving around the same, an arm capable of swinging upon the standard, embracing the rack, a pinion journaled in the arm and engaging with the rack, and a crank-arm operating the pinion, of a tubular knife, a plunger held to slide in the knife and provided with an upwardly-extending stem, a main lever pivoted upon the arm surrounding the stem, an adjusting-lever carried by the main lever and adapted for engagement with the stem, and a stamp located over the base, the plunger of which stamp is provided with an adjusting-lever, and a knife pivoted upon the stamp at the top thereof, as and for the purpose specified.

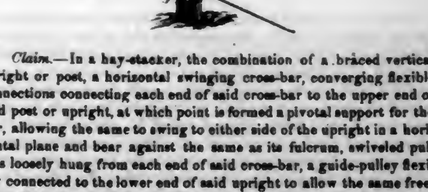
474,244. FLUID-PRESSURE REGULATOR. THOMAS HANSON, New York, N. Y. Filed July 2, 1891. Serial No. 398,248. (No model.)



Claim.—1. A pressure-reducer having an inlet A, an outlet D, and a chamber N, a perforated valve or piston B in said chamber, a passage L, leading from the chamber to the outlet, a valve E, having the seat F, a regulator or diaphragm G, a spring Q, interposed between the two valves and acting to constantly press them in opposite directions to their valve-seats, a spring I, acting on the regulator or diaphragm, and an adjusting-screw R, substantially as described.

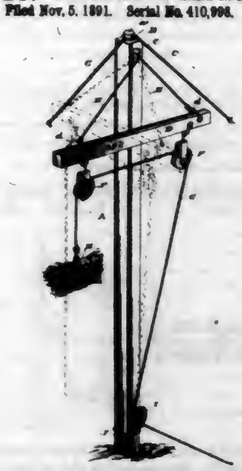
2. A pressure-reducer having an inlet A, an outlet D, and a chamber N, a perforated valve or piston B in said chamber, a passage L, leading from the chamber to the outlet, a valve E, having the seat F, a spring-pressed regulator or diaphragm G, and a spring Q, interposed between the two valves and acting to constantly press them in opposite directions to their valve-seats, substantially as described.

474,245. VEHICLE-WHEEL BOX. LEVI HARRIS, Kalamazoo, Mich., assignor of one-half to Oscar M. Allen, Sr., same place. Filed Feb. 15, 1892. Serial No. 421,573. (No model.)



Claim.—The combination of a vehicle-axle having the tenoned end and the box of a wheel, the interior of which is provided near its outer end with an interior peripheral rib, the washer provided with the two inwardly-extending flanges, one outside and the other inside of the free end of the box of the wheel, the inner flange being of such a length that a circular groove will be established to receive the interior rib of the box, said washer being interlocked with the axle, so as not to turn with the wheel, a nut for holding on the wheel screw-threaded onto the end of the axle and against the body of said washer, and the supplemental nut screw-threaded onto said wheel-holding nut in a manner to be adjusted against the washer to take up the end wear, substantially as set forth.

474,246. HAY-STACKER. CHARLES N. HAWORTH, Promise City, Iowa. Filed Nov. 5, 1891. Serial No. 410,998. (No model.)



Claim.—In a hay-stacker, the combination of a braced vertical upright or post, a horizontal swinging cross-bar, converging flexible connections connecting each end of said cross-bar to the upper end of said post or upright, at which point is formed a pivotal support for the bar, allowing the same to swing to either side of the upright in a horizontal plane and bear against the same as its fulcrum, swiveled pulleys loosely hung from each end of said cross-bar, a guide-pulley flexibly connected to the lower end of said upright to allow the same freedom of movement thereabout, and an operating and hoisting rope passing over said swiveled pulleys parallel with and below the bar under said guide-pulley and connected at one end with a hay-fork suspended from one end of said cross-bar and with suitable operating mechanism at the other end, substantially as set forth.

474,247. CAR-VENTILATOR. CLARENCE V. HEATH and AUGUST G. MILLER, Sacramento, Cal. Filed Sept. 19, 1891. Serial No. 406,361. (No model.)

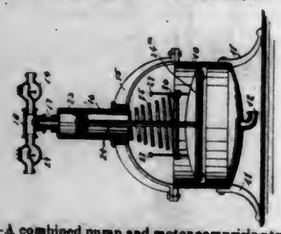
474,247.



Claim.—1. The railway-car having panels between its windows provided with air-passages therein, an air-space between said panels and the sheathing of the car, false panels pivoted in said space and arranged to move toward or away from the open-work panels, passages from said air-space to the exterior of the car, and means for operating said panels, substantially as specified.

2. The herein-described apparatus for ventilating railway-cars, comprising the air-supply pipes running throughout the train and terminating at the front in air-inlets, the boxes underneath the cars, having interior air-chambers communicating with said supply-pipes, cut-off valves for controlling the communication between said pipes and chambers, operating-rods connected to said valves and projecting through the floor into the interior of the car, spring lever-arms connected to said rods, rack-plates for securing said levers, openings connecting said chambers with the interior of the car, and means for the escape of the vitiated or impure air, substantially as specified.

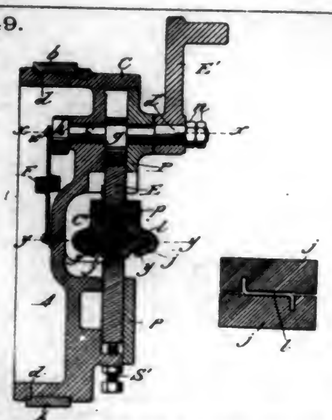
474,248. COMBINED PUMP AND MOTOR. THOMAS HENDERSON, Dallas, Tex. Filed Dec. 31, 1891. Serial No. 416,634. (No model.)



Claim.—A combined pump and motor comprising two cylinders of different diameters provided with connected pistons and a spring adjustably mounted on the piston-rod between the two pistons and forcing the pistons in one direction to cause the smaller piston to act as a suction-pump to supply the smaller cylinder, a centrally-apertured cross-piece 26, on which the lower end of the spring bears and through which the rod freely passes, exposed screws 27, passing through the cross-piece and bearing on the outer side of the larger piston, a coupling to connect the larger cylinder below its piston with a water-supply of fluctuating pressure to move the pistons against the action of the spring and force the water out of the smaller cylinder, an inlet-pipe leading to the smaller cylinder above its piston and separate and independent of said coupling, a check-valve in said pipe, and an outlet-pipe leading from said smaller cylinder and provided with a check-valve, substantially as set forth.

474,249. GRIP MECHANISM FOR CABLE-WAYS. WILLIAM HEWITT, Trenton, N. J., assignor to the Trenton Iron Company, same place. Filed Oct. 2, 1891. Serial No. 407,568. (No model.)

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Claim.—1. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a jaw-carrying yoke pivoted to the plate, and companion gripping-jaws mounted in the yoke, the jaws being pivoted at the outer sides of the yoke and projecting inwardly toward each other and having the gripping-surfaces at their inner ends, substantially as described.

2. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a jaw-carrying yoke pivoted to the plate, companion gripping-jaws mounted in the yoke, and an opposing adjustable gripper-block or anvil between which and the companion jaws the cable is gripped, substantially as described.

3. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a transverse shaft journaled in the casting and carrying an eccentric working in a transverse slot in the plate, a jaw-carrying yoke or hanger pivoted to the plate, companion gripping-jaws pivotally mounted in the yoke, an opposing adjustable gripper-block or anvil between which and the companion jaws the cable is gripped, and means for raising and lowering the plate, substantially as described.

4. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a stationary gripper-block or anvil mounted in a slot or slideway therein, means for adjusting the position of the block, and a cover-plate for the slideway, having ribs projecting from its face and serving to protect the screw or bolt heads holding the cover in position from injury by the cable, substantially as described.

5. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a jaw-carrying yoke pivoted to the plate, companion gripping-jaws pivotally mounted in the yoke, and an opposing stationary adjustable grip-block or anvil, between which and the companion jaws the cable is gripped, the jaw-operating plate and the gripper-block being mounted in suitable slideways in the grip-casting and having removable cover-plates, whereby access may be had to the interior for cleaning or removing of the parts, substantially as described.

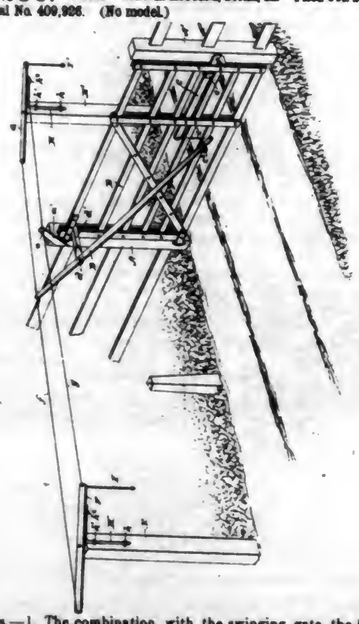
6. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a transverse shaft journaled in the casting and carrying an eccentric working in a transverse slot or opening in the plate, a jaw-carrying yoke or hanger pivoted to the plate, companion gripping-jaws pivotally mounted in the yoke, an opposing stationary gripper-block or anvil, between which and the companion jaws the cable is gripped, the plate-operating shaft having on one end a trip-arm projecting from the side opposite to the eccentric, a wrist-pin on the other end of the shaft, and a spring connected at one end to the pin and at the other to the frame for holding the shaft in either of its extreme positions, substantially as described.

7. In a gripping mechanism for traction-cable ways, the combination of a yoke or hanger having its side edges standing inwardly toward each other, substantially as shown, and companion gripping-jaws mounted in the yoke so that their outer ends shall pivot in the angle formed by the instanding sides, said jaws projecting toward each other and the center of the yoke and having their inner ends connected together by a spring tending to hold the gripping-surfaces in the ends of the jaws normally apart, substantially as described.

8. In a gripping mechanism for traction-cable ways, the combination of a horizontally-arranged yoke or hanger having open-ended pintle-bearings and horizontal companion jaws mounted therein, said jaws being pivotally connected to the sides of the yoke at their outer ends by pintles integral with the jaws and projecting inwardly toward each other and having the gripping-surfaces on their inner ends, the yoke being provided with end plates to hold the jaws in place, substantially as described.

9. In a gripping mechanism for traction-cable ways, the combination of a yoke, companion gripping-jaws mounted therein, said jaws being pivoted at their outer ends at the sides of the yoke and projecting inwardly toward each other and meeting at or near the center of the yoke, and the spring *l*, lying in a groove lengthwise of the jaws, having its ends bent in opposite directions, and projecting into recesses in the jaws, substantially as described.

474,250. GATE. JOHN L. HIGGINS, Dixon, Ill. Filed Oct. 26, 1891. Serial No. 409,926. (No model.)



Claim.—1. The combination, with the swinging gate, the hinge and latch posts, the catch extending from the latter, and the latch pivoted in the gate and adapted for vertical vibration and normally engaging the catch, of the arm extending laterally from the hinge end of the gate, the lever fulcrumed thereon and extending beyond the same, a loose connection between the lower end of the lever and the inner end of the latch, the posts arranged at opposite sides of the hinged post, the levers pivoted on the upper ends of the posts, and the pair of wires connecting the ends of the levers, one of said wires being directly connected to the end of the latch-operating lever, substantially as specified.

2. The combination, with the swinging gate having lateral arm *d* projecting therefrom at the top at its hinge end and the latch and latch-lever, of the lever D, pivoted on the lateral arm and pivotally connected with the latch-lever, the pivoted levers F and G, the cords connecting the same, one of which is connected with the end of the lever D, the L-shaped brace-rods pivotally supported on the posts and secured to the under sides of the levers F and G, and the guide-arm *a* on the hinge-post for guiding one of said cords, substantially as shown and described.

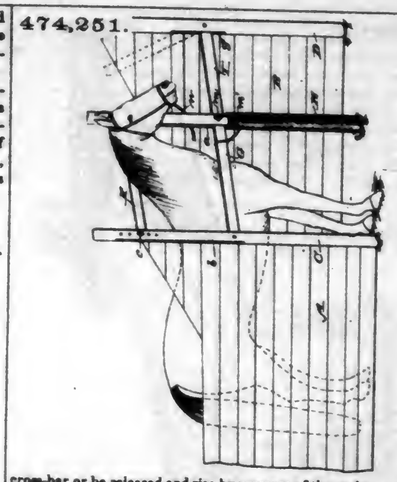
474,251. DEVICE FOR SECURING ANIMALS. JOSEPH A. HINDMAN, Iuka, Ill. Filed Nov. 7, 1891. Serial No. 411,190. (No model.)

Claim.—1. In animal-securing devices, the combination, with two side supports, of an intermediate post, a top cross-bar between one side support and the post, a lower cross-bar, and a gate-bar that is movable and bars the space between the post and the other side support, substantially as described.

2. In animal-securing devices, the combination, with two spaced side supports and an intermediate upright post, of a fixed horizontal cross-bar and a movable gate-bar that aligns with the cross-bar, substantially as described.

3. In animal-securing devices, the combination, with two spaced stanchions and an intermediate upright post, of an adjustable top cross-bar and a lower cross-bar engaging one stanchion and the post and a spring-pressed gate-bar that may be held in alignment with the lower

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cross-bar or be released and rise by pressure of the spring, substantially as described.

4. In animal-securing devices, the combination, with two spaced upright stanchions, one being longitudinally slotted a part of its length above and a center post slotted to mate the slot in the stanchion, of a vertically-movable cross-bar above on the post and stanchion secured by its ends in the slots, a lower cross-bar having its ends held in said slots of the post and stanchion, and a gate-bar pivoted on the other stanchion so that its free end may lie in the post-slot aligned with the lower cross-bar, a removable pin to hold the gate-bar depressed, and a spring adapted to rock said gate-bar upwardly when it is released from the post, substantially as described.

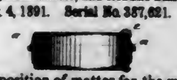
474,252. BUTTON. WALLACE E. JACKSON, Waterbury, Conn. Filed Aug. 7, 1891. Serial No. 402,019. (No model.)



Claim.—1. The herein-described improved button, consisting of the back having a central opening, the hollow tubular cylindrical hub passed through the opening, terminating at its inner end in a head larger than the opening, at its rear end bent inwardly within itself to form an annular shoulder and longitudinally split to render yielding the face-plate or cap fitting over the back of the button and having its edge engaging that of the back, and the fastening device comprising a base and a stud reduced at its forward end to form a penetrating-point and between its end and base provided with a series of annular shoulders for engaging the shoulder of the tubular hub, substantially as specified.

2. The herein-described improved button, the same comprising the body portion of the button and the rearwardly-disposed hollow cylindrical hub, the rear end of which is inwardly turned or bent within itself to form an annular flange and split, whereby the same is yielding, and the fastening device comprising the base and stud rising therefrom, the latter being provided with a shoulder for engaging the flange of the hub, substantially as specified.

474,253. COMPOSITION OF MATTER FOR SPINNING-RINGS, &c. ROSE A. JOHNSON, Manchester, and ROBERT BREWSTER, New Barnet, England. Filed Apr. 4, 1891. Serial No. 387,621. (No specimens.)

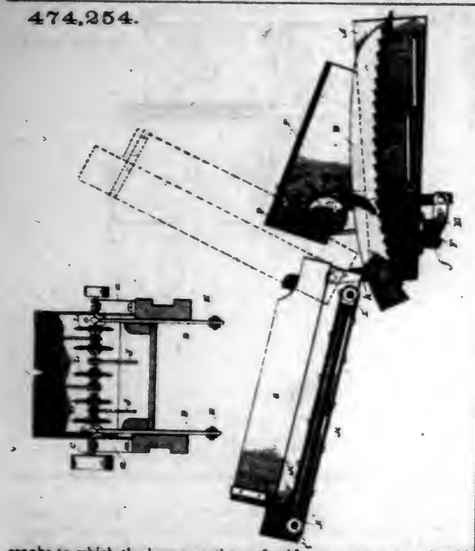


Claim.—A composition of matter for the manufacture of spinning and doubling rings, consisting in about the following proportions: fifty parts feldspar, fifty parts rock-crystal, thirty parts china-clay, and thirty parts of a flux, such as borax.

474,254. SELF-FEEDER FOR THRASHING-MACHINES. JOHN JUEL, Larchwood, Iowa. Filed Oct. 30, 1891. Serial No. 410,342. (No model.)

Claim.—1. In a self-feeder for thrashing-machines, the combination, with the frame having the bundle-carrier connected thereto, of the crank-shaft journaled in said frame near the rear end thereof, the oscillating vertical arms carried by the cranks on said shaft, the bell-

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cranks to which the lower portions of said arms are connected, said bell-cranks having journals thereon, and a corrugated table having bearings loosely engaged by said journals, said crank-shaft also carrying a series of band cutters and feeders, substantially as specified.

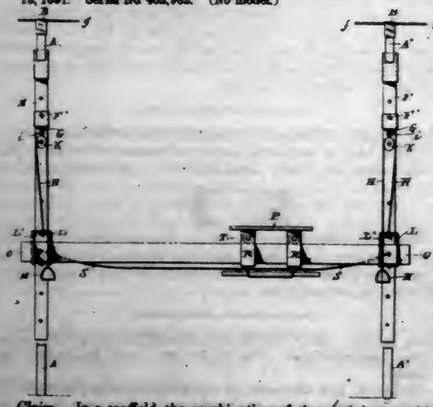
2. In a self-feeder for thrashing-machines, the driving-shaft having the cranks thereon, and the table-oscillating mechanism connected to said cranks, a series of rotary cutters also carried on said shaft, and a series of curved spreader and feeder arms carried by said shaft between said cutters, substantially as specified.

3. The combination, with the frame having the feed-table thereon and the hood or guard arranged over said table and formed with a recess at its rear portion, of the bundle-carrier hinged to said frame and having a central longitudinal vertical partition adapted when the carrier is folded up against the frame to rest in the recess in said hood or guard, substantially as specified.

4. In a self-feeder for thrashing-machines, the combination, with the frame, of the oscillating feed-table supported thereon, said feed-table being transversely corrugated throughout its length and curved downward at its rear portion, substantially as specified.

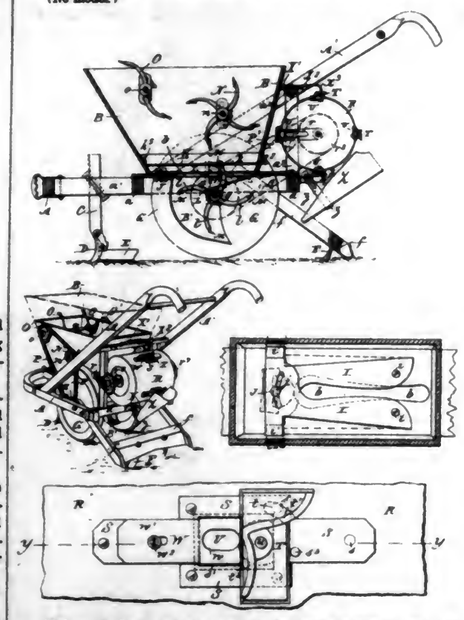
5. The combination, with the feed-table, formed with a series of continuous transverse corrugations and bent downwardly at its rear portion, of the crank-shaft journaled over said rear portion having mechanism connected thereto for oscillating said table, said shaft carrying a series of rotary cutter-disks and a series of spreader and feeder arms between said disks, substantially as specified.

474,255. SCAFFOLD. HENRY KNUPP, Poland, Ind. Filed Aug. 13, 1891. Serial No. 402,962. (No model.)



Claim.—In a scaffold, the combination of the uprights provided at their upper ends with castings, said castings having arms to support the uprights against a building, with the side standards having holes and pins and provided at their upper ends with eyes to engage with hooks on the said uprights, a cross-piece, and holders embracing said cross-piece and side standards, an adjustable sliding block provided with a pulley on each standard, and a cord over said pulley, to one end of which is connected a holder and to the other end a stirrup, the sliding carriage provided with rollers mounted on said cross-piece, and a rope connected to the cross-piece for pulling the carriage along the cross-piece, substantially as described.

474,256. SEED-PLANTER AND FERTILIZER-DISTRIBUTER. JOSEPH LAUDE, Monticello, Ark. Filed May 13, 1890. Serial No. 351,691. (No model.)



Claim.—1. In a seed-planter and fertilizer-distributer, the combination, with the main frame and the hopper fixed thereon, of a feed-wheel, which works through the slotted bottom of said hopper, an axle on which the feed-wheel is keyed, transporting-wheels mounted on said axle, and means for adjusting the frame and hopper vertically relatively to said feed-wheel and axle, as shown and described.

2. In a seed-planter and fertilizer-distributer, the combination with the hopper, of a pair of laterally-adjustable gage-plates pivoted at one end to the hopper beneath its outlet and having their overlapping free ends provided with coincident slots and also with lateral projections, which serve as handles, and a fastening-screw passed through said slots into the hopper, substantially as herein set forth.

3. In a seed-planter and fertilizer-distributer, the combination, with the frame, axle, wheels, and hopper, of an upper removable auxiliary slotted bottom fitted in the hopper above its slotted bottom, and a feed-wheel on the axle having arms provided with detachable blades, substantially as described, whereby when the auxiliary bottom is detached the feed-wheel blades may be applied to work coarse fertilizer from the main hopper-outlet, and when the feed-wheel blades are detached and the auxiliary bottom is applied to the hopper the feed-wheel arms will work fine fertilizer or seeds through the slot of the auxiliary bottom, as herein set forth.

4. In a seed-planter and fertilizer-distributer, the combination, with the hopper, of an auxiliary detachable bottom provided with a discharge-slot and having a tongue or tenon at one end and three flanges, one at the other end and one at each side and adapted to the hopper-walls, substantially as herein set forth.

5. In a seed-planter and fertilizer-distributer, the combination, with the hopper, of an auxiliary detachable slotted bottom provided with a tongue or tenon at one end and having three flanges, one at the other end and one at each side, said flanges being disconnected from each other to adapt them to fit the hopper-walls, substantially as herein set forth.

6. In a seed-planter and fertilizer-distributer, the combination, with the hopper, of an auxiliary detachable bottom K, having a bottom plate k, slotted at k', a tenon k^2, and marginal flanges k^3 k^4 k^5, a vertical slot k^6, and a fastening screw or device passed through the slot k^6 into the hopper, substantially as described, for the purposes set forth.

7. In a seed-planter, the seed-drum made with a discharge-opening, a plate held to the drum and having a coincident opening adapted to receive a seed gage or pocket, two right-angularly-disposed valves held to a pin journaled in the main plate, the outer valve having projections adapted to tappets for operating both valves, and an elastic medium held next one valve and drawing both valves to their seats, substantially as herein set forth.

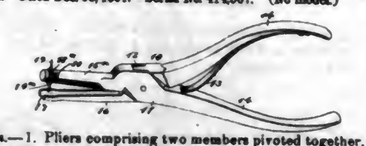
8. In a seed-planter, the seed-drum made with a discharge-opening, a main plate held to the drum and having a coincident opening, said plate at one side of its opening made higher or more prominent than at the other side thereof, two right-angularly-disposed valves fitted one at each face of the plate and held to a pin journaled in the plate, a seed-gage having a body portion or pocket fitted to the plate-opening and having a stem extending over the lower portion of the main plate to allow the outer valve to work over the gage, and a fastening device for the gage, substantially as herein set forth.

9. In a seed-planter, the combination, with the frame, the seed-drum, and the seed-dropping valves thereon provided with projections or flanges, of a tappet-arm held to the frame and a spring having a shoulder, against which the tappet normally rests to hold it for operating the seed-dropping valves and allowing the tappet to be swung out of the path of the valves, substantially as herein set forth.

10. In a seed-planter, the combination, with the frame, the seed-drum, and seed-dropping valves on the drum, of a tappet-arm X on the frame and a spring X^3 on the frame and having a shoulder x^6, forming a stop to the tappet-arm, substantially as herein set forth.

11. In a seed-planter, the combination, with the frame, the seed-drum, and seed-dropping valves on the drum, of a tappet-arm X on the frame, a spring X^3 on the frame and having a shoulder x^6, forming a stop to the tappet, and a plate X′ on the frame having a shoulder or shoulders limiting the swinging movement of the tappet, substantially as herein set forth.

474,257. WATCH-MAKER'S PLIERS. DAVID MENDELSON, Eureka, Utah. Filed Dec. 10, 1891. Serial No. 414,587. (No model.)



Claim.—1. Pliers comprising two members pivoted together, one member having a concave lower jaw with a slotted free end and the other member having a rounded jaw carrying a removable punch adapted to enter the slot in the lower jaw, substantially as shown and described.

2. The combination, with the pliers having a concave lower jaw with a slotted free end and a rounded upper jaw adapted to fit within the lower jaw, of a sliding punch mounted on the upper jaw and adapted to enter the slot in the lower jaw, substantially as shown and described.

3. The combination, with pliers having a concave lower jaw with a slot in its free end and a rounded upper jaw, of a ring held to slide on the upper jaw and adapted to be secured thereto, said ring having punches projecting therefrom, substantially as shown and described.

474,258. BLIND-STOP. JOHN A. MESINA, Key West, Fla., assignor of one-half to W. H. Williams, "T.," same place. Filed Jan. 7, 1892. Serial 417,291. (No model.)



Claim.—1. The combination, with a blind comprising the pivoted slats, the connecting-bar, and the cross-bar, of the locking-casting secured to the cross-bar and having a curved bore, a locking-bar pivoted to the lower end of the connecting-bar and passing loosely through the bore, and means for securing the same at any point within the bore, substantially as specified.

2. The combination, with the blind comprising the pivoted slats, the cross-rail, and the slat-connecting bar, of the casting secured to the upper edge of the cross-bar and having a curved bore, a locking-bar loosely connected to the lower end of the connecting-bar and curved according to and mounted in the bore, and a binding-screw mounted in the inclined perforation formed in the casting and adapted to bear against the locking-bar, substantially as specified.

3. The combination, with the pivoted slats, the slat-connecting bar, and the cross-rail, of the casting 7, having the angular recess 8, mounted upon the corner of the rail and perforated for the reception of screws, said casting being further provided above its recess with a uniformly-curved bore and an inclined threaded perforation communicating with the same, a split ferrule riveted to the lower end of the connecting-bar and provided with depending perforated ears, a uniformly-curved locking-bar mounted in and agreeing with the bore of the casting and having its upper end taking between the perforated ears of the ferrule, a pivoting-pin passed through the ears and bar, and a binding-screw located in the inclined perforation of the casting and bearing on the locking-bar, substantially as specified.

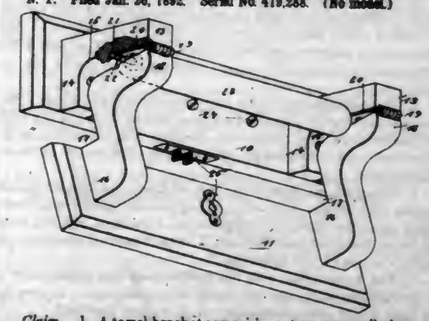
474,259. WINDOW-BLIND. HARVEY MURDOCK, Brooklyn, N. Y. Filed Nov. 2, 1891. Serial No. 410,647. (No model.)



Claim.—1. The combination of the casing, the box secured to the top of the casing and extending across the same, the box having an opening near the top and on the inner side and a curved guard extending across it beneath the opening, vertical grooves or tracks produced in the casing and extending into the box, the grooves being widened at their upper ends, guide-rollers pivoted in the ends of the box and in the path of the blinds, and a blind comprising a series of slats hinged together, held to slide in the groove, and adapted to fold one upon another within the box, substantially as described.

2. The combination of the window-casing, the box secured at the upper end of the casing, vertical grooves produced in the casing and having their upper ends curved and made to enter the box, a curved guard extending across the box beneath its front opening, said guard forming one side of the upper end of the grooves, guide-rollers pivoted in the ends of the box immediately above the guard, and sliding blinds mounted in the grooves and comprising a series of slats hinged together at the ends and adapted to fold one upon the other within the box, substantially as described.

474,260. TOWEL-BRACKET. WILLIAM A. NEIDHARDT, New York, N. Y. Filed Jan. 26, 1892. Serial No. 419,288. (No model.)

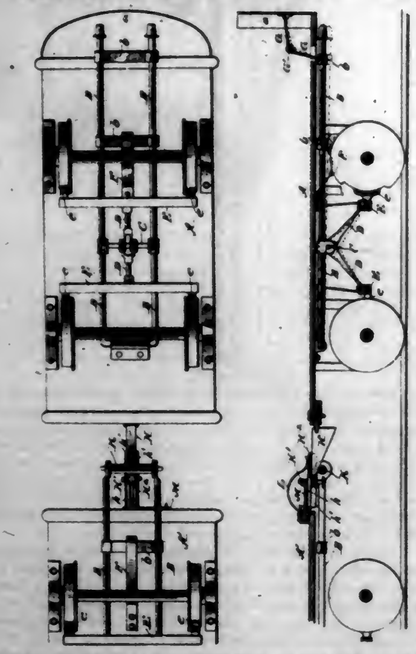


Claim.—1. A towel-bracket comprising a two-part wall-plate, one part being fixed and having outwardly-extending arms and the other part having outwardly-extending arms hinged to the arms of the fixed portion of the plate, the abutting arms being adapted to support a roller at its ends between their adjacent faces, the space between the two pairs of arms being open to permit a towel to depend from said roller, substantially as described.

2. A towel-bracket comprising a wall-plate having a fixed and a swinging member, outwardly-extending arms secured to the fixed member, outwardly-extending arms secured to the swinging member and hinged to the arms of the fixed member, bearing-boxes between the fixed and swinging arms, a removable roller journaled at its ends in the bearings, the space between the two pairs of arms being open to permit a towel to depend from the roller, and a lock to secure the two members of the wall-plate together, substantially as described.

3. The combination of a separable wall-plate, separable arms hinged together at their outer ends and secured to the parts of the wall-plate, and a roller having trunnions to turn in the arms, the hinges of the arms having their butts shaped to form bearing-boxes for the roller-trunnions, substantially as described.

474,261. CAR-BRAKE. JOHN W. NEUHARS and JOHN R. PYLANT, Louisville, Ky. Filed Sept. 21, 1891. Serial No. 406,417. (No model.)



Claim.—1. The combination, with the brake-beams carrying shoes, of the pitman-rods connected therewith and the operating-rods connected with the pitman-rods, said operating-rods being pivoted at the rear ends and free to be depressed at their forward ends, substantially as shown and described.

2. The combination, with the brake-beams, of the pitman-rods attached thereto, the pivoted operating-rods connected with the pitman-rods, a spring adapted to maintain said rods normally in a raised position, and a depressor adapted to bear upon the forward ends of the operating-rods to apply the brakes, substantially as shown and described.

3. The combination, with a draw-head having an inclined lower face, of a coupling-pin connected with the free end thereof, a longitudinally-slotted draw-head, the pivoted operating-rods, the friction-roller, pitman-rods, and brake-beams, all arranged substantially as shown and described.

4. The combination, with the brake-beams, pitman-rods, operating-rods, and friction-roller, of the longitudinally-slotted draw-head having depending sides, the wedge-shaped draw-head, and the vertically-movable coupling-pin having a T-shaped head, all arranged substantially as shown and described.

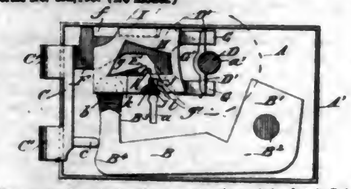
5. The combination, with the brake-beams and pitman-rods, of the pivoted operating-rods and the lever-rods adapted to depress the free ends of said rods, substantially as shown and described.

6. The combination, with the operating-rods and attached parts of the lever-rods, of the dash-board, the slotted platform, and transverse bar, all arranged substantially as shown and described.

474,262. WASHING COMPOUND. JACOB ODELL, Dresden, Tex. Filed Nov. 27, 1891. Serial No. 413,192. (No specimens.)

Claim.—A washing compound consisting of soda-ash, common salt, muriate of ammonia, alum, salt of tartar, borax, and cocoanut-oil soap, substantially as set forth.

474,263. GRAVITY-LATCH. JOEL R. PALMER, Salisbury, Mo., assignor of one-half to Oscar Palmer, same place. Filed Aug. 10, 1891. Serial No. 402,195. (No model.)

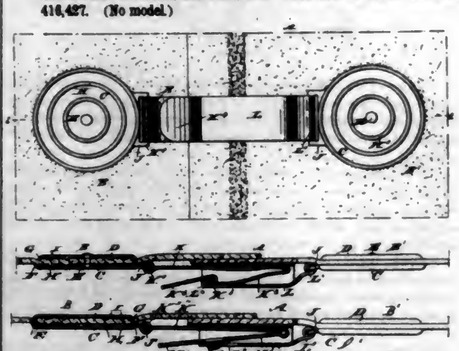


Claim.—1. In a lock, the combination of the latch C, having the extension F, provided with lugs G, the weighted lever B, having the arm B^3, provided with lug E, and the sliding locking-plate H, having central opening H′ and lug *h* and the key-recesses *J j*, substantially as described.

2. The combination of the latch C, having the extension F, provided with recesses *f* and G′ and lugs G, the gravity-lever B, pivoted at *b* and provided with the arm B^3, having lug E, and the sliding locking-plate H, having rib I, entering recess *f* and having the central opening H′, wherein is lug *h*, said plate having also the key-slot, substantially as described.

3. The combination of the latch C, having the extension F, provided with the recess *f* on one edge and the recess G′ at one end, on each side of which are lugs G, the bent lever B, pivoted at *b* and having the arm B^3, provided with lug E, the sliding plate H, having rib I, that enters recess *f*, and having likewise central opening H′, wherein is lug *h*, and having also slots *J j* to receive the key, and the knob-spindle D, having lugs or projections D′ thereon, all arranged substantially as described.

474,264. HORSE-BLANKET FASTENER. CHARLES H. PITCHER and GEORGE A. MOODY, Red Bank, N. J. Filed Dec. 29, 1891. Serial No. 416,427. (No model.)



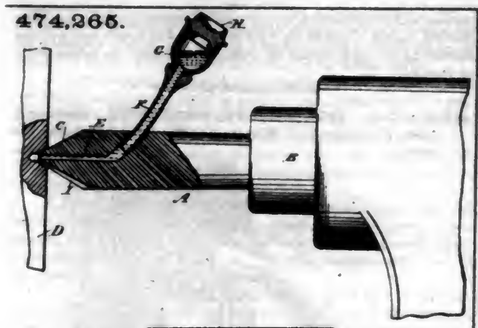
Claim.—1. A blanket-fastening comprising two pairs of clamping-disks provided on their inner adjacent faces with circular ribs and corrugations, the ribs of one disk registering with the corrugations of the opposite disk, a two-part clasp, the two members of which are hinged, respectively, to one disk of each pair, and means of securing the clamping-disks in place, substantially as set forth.

2. The herein-described blanket-fastening, comprising two pairs of clamping-disks, a loop J on the adjacent edges of one disk of each pair, a clasp consisting in two members K L, having their opposite ends engaging said loops, as at K′ L′, the member K having its spring-section K^2 folded upon itself between its ends, forming the tongue K^3 on its outer face, and the other section L being in the form of a casing having one end edge folded inward, as at L^2, to receive the tongue K^3 under it, substantially as set forth.

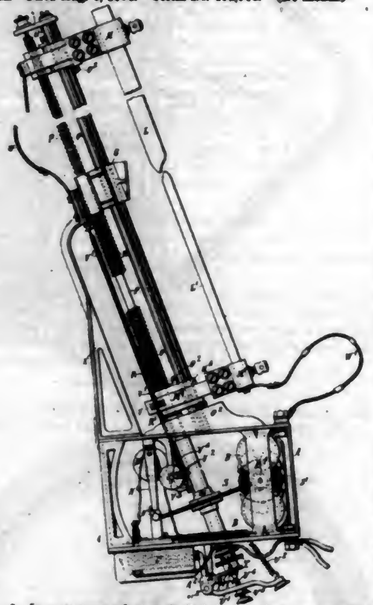
474,265. LATHE-CENTER. WILLIAM C. ROE, Honolulu, Hawaii. Filed July 7, 1891. Serial No. 398,662. (No model.)

Claim.—A lathe-center A, having a conical point, a longitudinal central bore E, leading from the point inward and outward through the center at a rearward incline, a removable lubricating-receptacle having an outlet-tube entering said inclined portion of the bore, and the distributing-groove I, leading from the point of the center along its conical portion, substantially as set forth.

474,265.



474,266. ELECTRIC-ARC LAMP. ALFRED L. SHEPARD, London, England. Filed Aug. 6, 1891. Serial No. 401,910. (No model.)



Claim.—1. In a system of electric-lighting mains arranged for running arc lamps in parallel branches of two in series, the combination of two arc lamps arranged in series between the said mains, one of the said lamps having the regulation of its arc controlled by a coil in series with its arc and the other lamp having its regulating mechanism controlled by a coil in a shunt upon its own arc, substantially as and for the purpose specified.

2. The combination, with an arc lamp whose regulation is controlled by a coil in shunt upon the arc and a switch for completing and interrupting the shunt-circuit and controlled by an electro-magnet in the main circuit of the lamp, of a governor-lamp whose regulation is controlled by a coil in a series with its arc, substantially as described.

3. The combination, in a motor arc lamp, of one or more movable contacts controlled by an electro-magnet, and a revolving contact-piece which is rotated by the motor, so as to continually present fresh surfaces to the said movable contacts, substantially as and for the purpose above specified.

4. In an electric-arc lamp, the combination, with an electric motor having its field-magnets wound partly with thick wire included in the main circuit and partly with fine wire included in a shunt on the arc, of a regulating-coil included in another shunt on the arc for controlling the direction and duration of the current in the armature of the said motor, substantially as described.

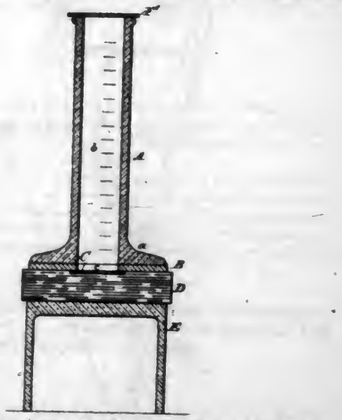
5. In an electric-arc lamp, the combination, with an electric motor having its field-magnets wound with fine wire included in a shunt on the arc, of a regulating-coil included in a shunt on the arc and another regulating-coil included in the main circuit for controlling the direction and duration of the current in the armature of the said motor, substantially as set forth.

6. In an arc lamp, the combination of a feed-screw formed in two parts, one of which is movable independently of the other, the field-magnet of the motor, which is geared to the feed-screw, said field-magnet being energized by a coil in series with the arc, and a yoke which is so connected to the movable part of the feed-screw that when it is attracted by the said field-magnet the movable part of the feed-screw is moved relatively to the other part thereof, substantially as and for the purpose specified.

7. In an arc lamp, a carbon-holder formed in two parts, in combination with a rack and pinion for adjusting one of the said parts relatively to the other part while maintaining the carbon, so that it always points in the same direction, substantially as set forth.

8. The combination of parts comprising the two rotating armatures for feeding the carbons, the switches for reversing the direction of the current in such armatures, and the magnetic bar in proximity to the arc for controlling the movement of the said switches through the medium of electro magnets or solenoids, substantially as described, whereby I provide for maintaining the arc unifocal, as above specified.

474,267. MICROSCOPIC SEDIMENT-FILTER. PORTER W. SHIMER, Easton, Pa. Filed May 8, 1891. Serial No. 392,092. (No model.)



Claim.—1. In a microscopic sediment-filter, the combination of a tube, an apertured plate or sheet of bibulous material applied to the lower end of the filter-tube, and a plate for receiving the sediment from the tube, substantially as specified.

2. The combination of a graduated tube, an apertured bibulous sheet or plate, a plate for receiving the deposit, and a receiver for receiving the filtrate, substantially as described.
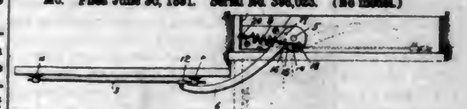
3. The combination of a tube, an apertured bibulous sheet or plate, a plate for receiving the deposit, and a bibulous pad for receiving the filtrate, substantially as specified.

4. The combination, with the tube A, of the apertured bibulous sheet or plate, a pad for receiving the deposit, and means for connecting the tube with the pad, substantially as set forth.

5. The combination, with the vessel E, provided with the hooks *d*, the pad D, contained by the said vessel, and the flanged tube A, of the elastic band *c*, engaged by the hooks *d* and extending over the flange *a* of the tube A, substantially as specified.

6. The combination, with a tube or receptacle and a separate and independent plate to cross the lower open end of the tube or receptacle, of a filtering medium at the lower end of the tube, through which the filtrate may pass out laterally and thus leave the deposit upon the plate for examination, substantially as set forth.

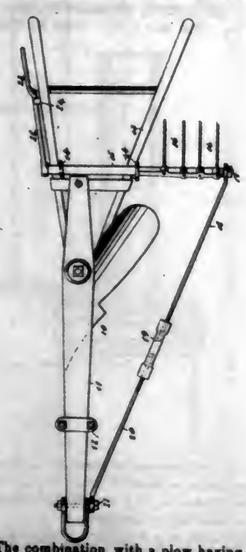
474,268. DOOR-SPRING. WILLIAM H. SIDENSTRICKER, Moberly, Mo. Filed June 30, 1891. Serial No. 398,023. (No model.)



Claim.—1. The combination, with a door and a door-lintel, of a pair of studs secured to the top portion of the door, a horizontal guide-rod connected with the studs and adjustable in one of the same, a bracket secured to the door-lintel, a bell-crank lever having its two arms arranged in the same plane and its long arm provided with a pivotally-attached guide which moves along the horizontal guide-rod between the studs, and a spring connected at one end with the short arm of the lever and at its opposite end with a bracket on the door-lintel, substantially as described.

2. The combination, with a door and a door-frame, of a guide-bar attached to the door-frame, a pivoted swinging lever provided with a series of orifices or recesses, a pin or bolt adjustable into any one of the orifices or recesses, a guide on the lever, adapted to move along the guide-bar, and a spring connected at one end with the pin or bolt and at its opposite end with the lintel of the door-frame, substantially as described.

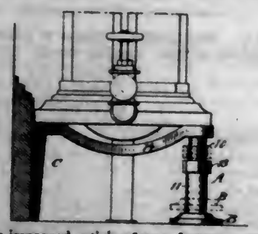
474,269. HARROW ATTACHMENT FOR PLOWS. WILLIAM O. SILVEY, Middleport, Ohio. Filed Dec. 29, 1891. Serial No. 416,454. (No model.)



Claim.—1. The combination, with a plow having bearings on its handles, of a shaft journaled in the bearings and projecting outward in rear of and beyond the mold-board, a series of knives carried by the shaft, an operating handle or lever connected with the shaft and extending adjacent to the hand-grasping portion of one handle, and a rigid brace-rod extending from the forward end of the plow-beam and having a bearing at its rear end in which the outer end of the shaft is journaled, substantially as set forth.

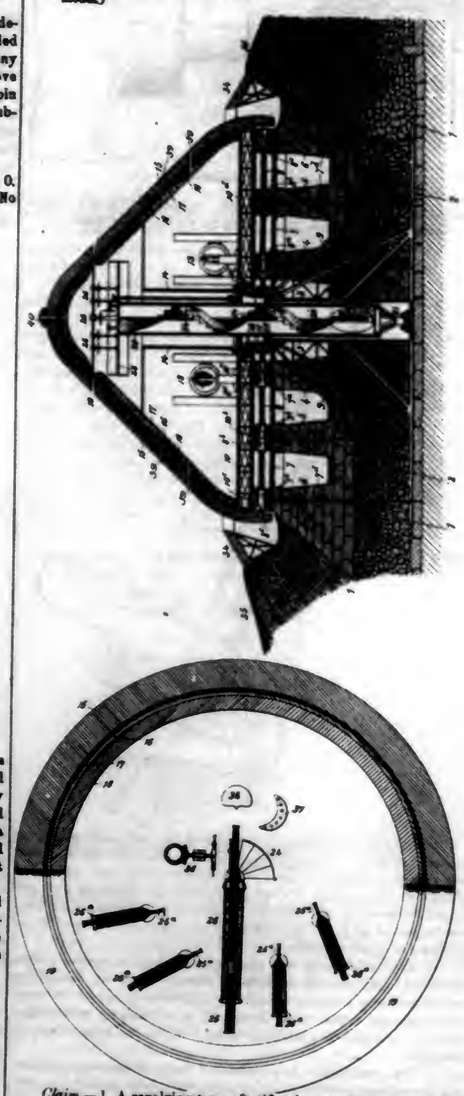
2. The combination, with a plow, of a transverse shaft journaled thereon in rear of the mold-board and provided with a lever 22, extending upward alongside of one plow-handle, a lug or catch on the said plow-handle to engage said lever and lock it, and a series of knives on the outer end of the said shaft, substantially as set forth.

474,270. LEG FOR RADIATORS OR OTHER ARTICLES. WILBUR H. STEVENS, Ellenville, N. Y. Filed Apr. 18, 1891. Serial No. 389,411. (No model.)



Claim.—As an improved article of manufacture, a support for radiators, consisting of a leg comprising three sections, an upper rigid section, an intermediate section vertically adjustable upon the rigid section, and a foot-section having a swivel connection with the intermediate section, a second leg rigid throughout its length, and a bridge connecting the rigid leg and the sectional adjustable one, substantially as described.

474,271. REVOLVING-TOWER FORTIFICATION. THEODORE R. TIMBY, Washington, D. C. Filed Jan. 27, 1892. Serial No. 419,454. (No model.)



Claim.—1. A revolving-tower fortification constructed with a bell or funnel shaped tower the surface of which extends upward or nearly straight, and converging lines at an angle of about forty-five degrees to the horizon, as shown and described.

2. A revolving tower for fortifications, having an outer surface formed on substantially straight converging lines and with a dome-shaped apex and a nearly perpendicular skirt around its lower margin, as shown and described.

3. A revolving tower or turret constructed, as herein described, with walls inclined on substantially straight converging lines and formed of an inner and outer shell, with an interposed body or packing of yielding material to deaden or break the shock of concussion from the impact of shots, as explained.

4. A revolving tower or turret constructed with inclined walls, in combination with an annular fixed cover of metal masking the outer margin of the revolving tower and presenting an inclined surface for the deflection of shots, and a glacis or embankment in which the outer margin of the fixed metal cover is embedded, as herein shown.

5. A revolving-tower fortification constructed with a central hollow column supporting a sighting-platform communicating with a passage-way in the foundation of the structure, giving access to the sighting-platform and affording ingress of air for ventilation, a conduit for electrical and other conductors for power and other purposes said column being capable of rotary movement independently of the tower, as explained.

6. The combination of the revolving tower or turret, a central hollow column 20 supporting a sighting-platform 23 and giving access thereto, and a packing 22, bracing the hollow column concentrically in the foundation of the tower and preventing the communication of the shock from the impact of projectiles.

7. A revolving-tower fortification constructed with a turret having a well 14, in combination with a central hollow column 20, sighting-platform 23, carried thereby, electrical conductors and connections 27 28 31, external to the well, and guns 13 to be fired automatically by said conductors, as explained.

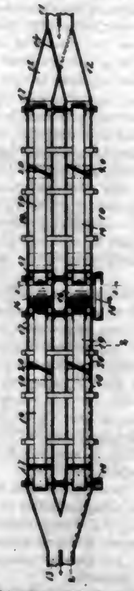
8. The combination of the revolving tower or turret with a central well 14, the central hollow column 20, moving independently therein, sighting-platform 23, carried by said column, external electrical conductors and connections 27 28 31, guns 13, and switches 29 30, and flexible conductors 31 32, permitting the automatic discharge of the guns either simultaneously or independently, as explained.

9. In combination with a revolving tower or turret, the foundation constructed, as herein described, with concentric walls 4 5 6, having chambers between, tunnel 33, giving approach to the interior, and hollow column 20, having an opening 20ª communicating with the tunnel, said column being capable of oscillating movement independently of the tower, as explained.

10. The combination of the independent annular foundation-walls 4 5 6, base-plate 2, upper foundation-floor 7, tie-rods 7ª, connecting the plate 2 and floor 7, and the revolving tower or turret supported on the floor 7, as explained.

11. In a revolving-tower fortification, the combination of a sighting-platform capable of rotary or oscillating movement independently of the tower, and one or more sighting-telescopes mounted on said platform in cushioned bearings to take up shocks or vibrations, substantially as described.

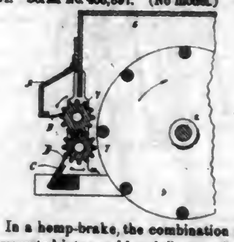
474,272. ORE-CONCENTRATOR. CRIGHTON R. TOWNSEND, Idaho Springs, Colo. Filed Sept. 2, 1891. Serial No. 404,541. (No model.)



Claim.—1. The combination, with the two longitudinally-inclined stationary flumes 10 10, one in advance of and below the other, and an inclined connecting portion 16, of the transverse shafts at the ends of the two flumes, the adjacent shafts being connected, an endless belt mounted on each pair of shafts and provided with transverse rakes having spaced teeth to stir the solid contents of the flumes and permit a free flow of water therethrough, and doors in the bottoms of the flumes, substantially as set forth.

2. An ore-concentrator consisting of two parallel pairs of flumes 10, each pair having a connecting-incline 16, shafts crossing the two pair of flumes at their ends, a belt 18ª, connecting the middle shafts at the said incline, an endless belt within each flume and provided with rakes to stir the ore and permit a free flow of water, doors in the bottoms of the flumes, a main flume 11, having branches 12 12 connected with the upper ends of flumes 10 and provided with a gate 14 to direct the water through either branch, and a common offtake 13 at the lower ends of flumes 10, substantially as set forth.

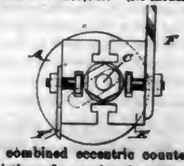
474,273. HEMP-BRAKE. JONAH O. WARD, Orange, N. J. Filed Aug. 27, 1891. Serial No. 403,897. (No model.)



Claim.—1. In a hemp-brake, the combination of a rotary riddle-beater 5, the corrugated intermeshing delivery-rolls 7, and the elastic rubber cleaner-strips B and D, co-operating, respectively, with the corrugated rolls, substantially as described.

2. In a hemp-brake, the combination, with a frame-work and a rotary riddle-beater 5, of the corrugated intermeshing delivery-rolls 7, the upper and lower brackets A and C, supported by the frame-work, and the elastic cleaner-strips B and D, secured to the brackets and co-operating, respectively, with the corrugated delivery-rolls, substantially as described.

474,274. COMBINED EXCENTRIC COUNTERBALANCING-COLLAR AND SHAPER-GUARD. WATSON T. WEBB, Salt Lake City, Utah. Filed Oct. 27, 1891. Serial No. 410,043. (No model.)



Claim.—1. A combined eccentric counterbalancing-collar and shaper-guard, consisting of a washer formed with an elongated slot and adapted to be secured eccentrically on the end of the cutter-head carrying the knives or cutters, substantially as shown and described.

2. In a device of the class described, the combination, with the cutter-spindle, of a head held thereon, cutters attached to opposite sides of the said head, and a collar held eccentrically on the end of the said head, substantially as shown and described.

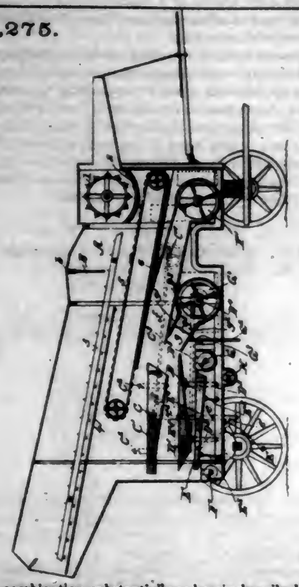
474,275. THRASHING-MACHINE. JOHN WELLER, Funkstown, Md. Filed Nov. 9, 1891. Serial No. 411,393. (No model.)

Claim.—1. In an apparatus substantially as described, the combination of the shoes C, D, and E, arranged one above the other, as described, of the fan F', having a fixed chute arranged to direct a blast to the upper shoe C, and the fan G', having its discharge-chute adjustable and arranged to be set to direct a blast to any one of the shoes, whereby it may be caused to direct a blast to the middle or lower shoe or to supplement the blast of the fan F' to the upper shoe.

2. In an apparatus substantially as described, the combination of the shoes C D E and the hangers and bars supporting the same, said shoes being arranged one below the other and each to discharge to the next lower one, the levers E', arranged alongside the shoes and pivoted between their ends to the framing and connected at their upper ends with the shoes C, links E⁴, connecting the lower ends of said levers with the lower shoe E, rods C⁴, connecting said levers E' with moving parts of the machine, and rods D⁴, connecting the shoe D with moving parts of the machine, all substantially as and for the purposes set forth.

3. In a machine substantially as described, the combination of the framing, the upper, lower, and middle shoes, the hangers supporting the upper shoe, the bars supporting the middle shoes, the rods or bars supporting the lower shoe, said rods being pivoted at their lower ends to the framing and at their upper ends to the lower shoe, and operating mechanism, all substantially as and for the purposes set forth.

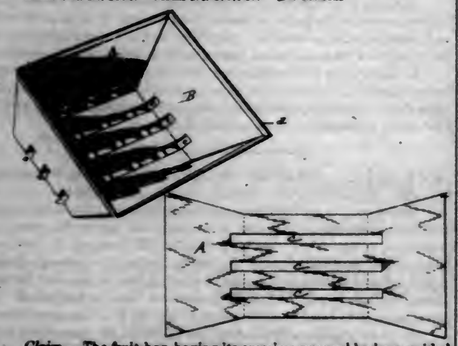
474,275.



4. The combination, substantially as herein described, of the framing, the upper and middle shoes and their hangers and supporting-bars, the lower shoe and its supporting rods or bars, the levers connecting the upper and lower shoes, and operating mechanism for oscillating the upper and middle shoes, substantially as set forth.

5. In an apparatus substantially as described, the combination of the shoe C, the hangers C^3, supporting the shoe C, the shoe D, arranged below the shoe C and in position to receive the discharge from said shoe, the rods or bars supporting the shoe D, the shoe E, arranged below and in position to receive the discharge from the shoe D, rods supporting the shoe E, the levers E^3, arranged alongside the shoes C, D, and E and connected at their upper ends to the shoe C and at their lower ends with the shoe E, and mechanism for reciprocating the shoes C and D, substantially as set forth.

474,276. FRUIT-BOX. CHARLES W. WESTON, San Francisco, Cal. Filed Oct. 22, 1891. Serial No. 409,543. (No model.)

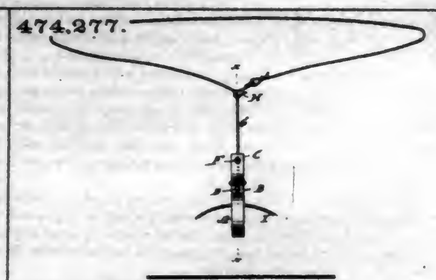


Claim.—The fruit-box having its crossing veneer blanks provided each in its bottom with slots extending throughout said bottom and a short distance up into its sides, the corners of said box being closed, substantially as set forth.

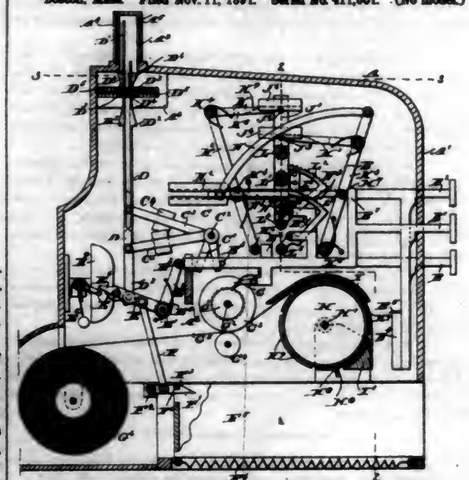
474,277. CLASP. JOHN S. YOUNG, Brooklyn, N. Y. Filed Feb. 18, 1892. Serial No. 422,005. (No model.)

Claim.—A clasp consisting of two sheet-metal jaws A, curved outwardly, then bent adjacent to each other into gripping-surfaces, and formed with transverse inwardly-extending beads B, which are in contact with each other across the width of the jaws and extend into handles C, a pin D, loosely mounted and extending transversely through the beads and formed with a head at each end, and a spring E, interposed between the ends of the handles, substantially as described.

474,277.



474,278. CASH REGISTER AND RECORDER. ALBERT R. ABBOTT, Boston, Mass. Filed Nov. 11, 1891. Serial No. 411,601. (No model.)



Claim.—1. In a machine of the class described, the combination, with two sets of keys, of which one is for odd and the other for even numerals, of levers adapted to be actuated from the said keys, pawls held on the said levers, sliding bars provided with pins actuated from the said pawls, gear-wheels mounted to turn in the said sliding bars, and segmental gear-wheels connected with the said keys and adapted to engage the said gear-wheels, substantially as shown and described.

2. In a machine of the class described, the combination, with an adding-machine provided with a casing having connected bars mounted to slide vertically, of driving gear-wheels journaled in the said bars and adapted to actuate the said adding-machine, segmental gear-wheels adapted to be engaged by the said driving gear-wheels at the downward movement of the said casing, and two sets of keys, of which one is for odd and the other for even numerals, the said keys serving to actuate the said segmental gear-wheels, substantially as shown and described.

3. In a machine of the class described, the combination, with an adding-machine provided with a casing having connected bars mounted to slide vertically, of driving gear-wheels journaled in the said bars and adapted to actuate the said adding-machine, segmental gear-wheels adapted to be engaged by the said driving gear-wheels at the downward movement of the said casing, two sets of keys, of which one is for odd and the other for even numerals, the said keys serving to actuate the said segmental gear wheels, and means, substantially as described, for moving the said bars, the driving gear-wheels, and casing in a lowermost position, so that the driving gear-wheels engage the segmental gear-wheels, as set forth.

4. In a machine of the class described, the combination, with sliding bars supporting the adding-machine and provided with pins and gear-wheels for actuating the adding-machine, of pawls for pressing on the said pins to impart a sliding motion to the said bars, levers carrying the said pawls, and keys for actuating the said levers, substantially as shown and described.

5. In a machine of the class described, the combination, with sliding bars supporting the adding-machine and provided with pins and gear-wheels for actuating the adding-machine, of pawls for pressing on the said pins to impart a sliding motion to the said bars, levers carrying the said pawls, keys for actuating the said levers, and segmental gear-wheels pivotally connected with the said levers and adapted to engage the said driving gear-wheels of the adding-machine, substantially as shown and described.

6. In a machine of the class described, the combination, with an adding-machine provided with a gear-wheel for actuating the tens mechanism and a gear-wheel for actuating the units mechanism, of a set of keys for actuating the said gear-wheels in succession, levers connected by a bar adapted to be engaged by the said keys, a rack-slide connected with the said levers and adapted to engage the gear-wheel of the units mechanism, and a segmental gear-wheel pivotally connected with the set of keys and adapted to actuate the gear-wheel for the tens mechanism, substantially as shown and described.

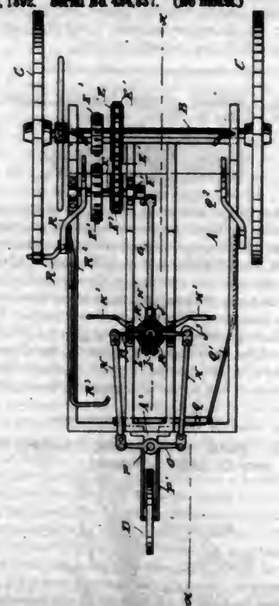
7. In a machine of the class described, the combination, with an adding-machine provided with a gear-wheel for actuating the tens mechanism and a gear-wheel for actuating the units mechanism, of a set of keys for actuating the said gear-wheels in succession, levers connected by a bar adapted to be engaged by the said keys, a rack-slide connected with the said levers and adapted to engage the gear-wheel of the units mechanism, a segmental gear-wheel pivotally connected with the set of keys and adapted to actuate the gear-wheel for the tens mechanism, and a link connecting the said levers with the said slide, so as to actuate the units gear-wheel on the return motion of the pressed key, substantially as shown and described.

8. In a machine of the class described, the combination, with a series of keys, of segmental gear-wheels pivotally connected with the said keys and an adding-machine having a casing mounted to slide vertically and provided with driving gear-wheels adapted to engage the said segmental gear-wheels, substantially as shown and described.

9. In a machine of the class described, the combination, with a series of keys, of segmental gear-wheels pivotally connected with the said keys, an adding-machine having a casing mounted to slide vertically and provided with driving gear-wheels adapted to engage the said segmental gear-wheels, and intermediate mechanism, substantially as described, for connecting the said keys with the said segmental gear-wheels, as set forth.

10. In a machine of the class described, the combination, with a series of keys, of segmental gear-wheels pivotally connected with the said keys and adapted to engage a driving gear-wheel of the adding mechanism, levers connected with each other by a bar adapted to be actuated by the said keys, pawls carried by the said levers, and an adding mechanism provided with a casing having sliding bars and pins secured thereon, the said pins being engaged by the said pawls to move the driving gear-wheels in position for engagement with the said segmental gear-wheels, substantially as shown and described.

474,279. TRICYCLE. CLARENCE R. ARNOLD, Wellsville, Ohio, assignor to Helen M. Arnold, same place. Filed July 23, 1890. Renewed Mar. 14, 1892. Serial No. 424,857. (No model.)



Claim.—1. In a tricycle, the combination, with a tubular rocking post connected with the drive-wheels, of an extensible post turning in the tubular post, connected with the steering-wheel to operate it, and provided with operating-handles for the twofold purpose of steering and imparting a rocking motion to the tubular shaft, substantially as set forth.

2. In a tricycle, the rocking hollow post having trunnions and connected with the drive-wheels, in combination with a sleeve free to rotate in said post, provided with a vertical series of apertures, and having two arms projecting from its side downward to points in line with said trunnions, pitmen connecting the lower ends of said arms with the steering-bar, and a handle-post vertically movable in said sleeve and provided with a spring-actuated locking-lever having a handle at its upper end adjacent to one of the post-handles and a projection at its lower end to enter any one of the sleeve-apertures.

3. In a tricycle, the combination, with a hollow post mounted to swing, of a sleeve mounted to turn in the said hollow post and connected with the steering-wheel to operate it and a second post held vertically adjustable in the said sleeve, adapted to turn it, and provided with handles whereby the posts may be rocked or the sleeve turned to guide the steering-wheel, substantially as shown and described.

4. In a tricycle, the combination, with a hollow post mounted to swing, of a sleeve mounted to turn in the said hollow post and connected with the steering-wheel, a second post held vertically adjustable in the said sleeve, adapted to turn it, and provided with handles, and means, substantially as shown and described, for connecting the said sleeve with the steering-wheel, as set forth.

5. In a tricycle, the combination, with the main frame, an axle journaled in the said frame and carrying driving-wheels, and a guide-wheel held in the said frame, of a shaft mounted to turn in the said main frame and adapted to rotate the said main axle, a crank-arm held on the said shaft, a pitman pivotally connected with the said crank-arm, a post having trunnions journaled in the said main frame, the said post being connected at its lower end with the said pitman, a sleeve turning in and rocking with the hollow post, operating connections between the sleeve and the guide-wheel, and means, substantially as shown and described, for swinging the said post forward and backward by hand and foot, substantially as set forth.

6. In a tricycle, the combination, with the main frame, an axle journaled in the said frame and carrying driving-wheels, and a guide-wheel held in the said frame, of a shaft mounted to turn in the said main frame and adapted to rotate the said main axle, a crank-arm held on the said shaft, a pitman pivotally connected with the said crank-arm, a post having trunnions journaled in the said main frame, the said post being connected at its lower end with the said pitman, foot-pieces projecting from the lower end of the said post, a sleeve mounted to turn in the said post and connected with the said steering-wheel to steer the latter, and a vertically-adjustable post held in the said sleeve and provided with handles for either imparting swinging motion to the said first-named post or for turning the said sleeve to actuate the guide-wheel, substantially as shown and described.

7. In a tricycle, the combination, with a main frame, an axle journaled in the said frame, and main drive-wheels, of a lever fulcrumed on one side of the said main frame, a brake-arm extending from the said lever and adapted to engage one of the said drive-wheels, and a bar fitted to slide longitudinally on the said main frame, provided with a foot-piece, substantially as shown and described.

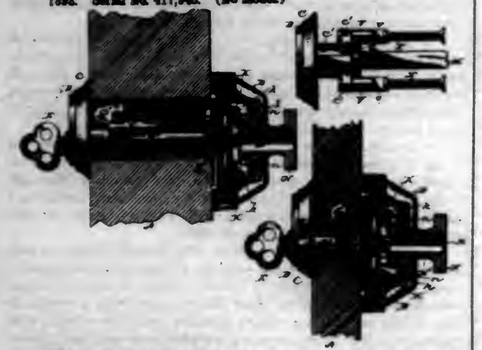
474,280. LETTER-FILE. GEORGE A. BAKER, South Bend, Ind. Filed Dec. 10, 1891. Serial No. 414,590. (No model.)



Claim.—1. In combination with the box, a series of leaves, a wire frame having vertical sides passing through the series of leaves, and horizontal sides extending along the upper and lower sides of said series between the vertical sides to bind them together, the means for holding the upper part of said frame removably to the casing, and the groove extending across the box to receive the lower part of the frame, substantially as described.

2. In combination, the box, the series of leaves, the rectangular frame binding said leaves together, the groove extending across the box for receiving the lower side of the said frame, and the catch acting upwardly within the box for engaging the under side of the upper part of the frame, the said box having an opening through its upper side above the spring-catch, substantially as described.

474,281. LOCK. WALDO R. BALLOU, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Jan. 13, 1892. Serial No. 417,945. (No model.)



Claim.—1. A tumbler-case or escutcheon member for locks, provided with screw-threaded pockets longitudinally adjustable relatively to said tumbler-case for the reception of the holding-screws by which the said tumbler-case is secured to a holding-plate on the opposite side of the door, as explained.

2. In combination with the escutcheon or tumbler-case and a holding-plate or internal lock-case and connecting-screws for securing the same to a door, the screw-pockets V, provided with notches *v*, and lugs *c'* on the tumbler-case for securing the screw-pockets adjustably to said tumbler-case, substantially as and for the purpose set forth.

3. The combination of an escutcheon or tumbler-case with longitudinally-adjustable screw-pockets, holding-screws engaging in said pockets to secure the escutcheon to a holding-plate on the interior of a door of any required thickness, a latch-bolt and slotted roll-back for actuating the same in the internal lock-case, a connecting-bar rotated by a key-plug in the escutcheon and passing to an indefinite distance through the slotted roll-back and transmitting rotary movement thereto, and a hollow thumb-knob permitting the projection of the connecting-bar within it, the whole co-operating to permit the adaptation and application of the attaching-screws and the operating-bar to doors of various thicknesses, as explained.

4. The combination of the tumbler-case C, rotating plug G, connecting-bar H, slotted roll-back or cross-head I, door-latch K', thumb-knob N, excavated longitudinally for the reception of the projecting end of the bar, connecting-screws T for securing the tumbler-case to the door, and the screw-pockets V, longitudinally adjustable relatively to the tumbler-case to permit the application of the lock to doors of different thicknesses, substantially as explained.

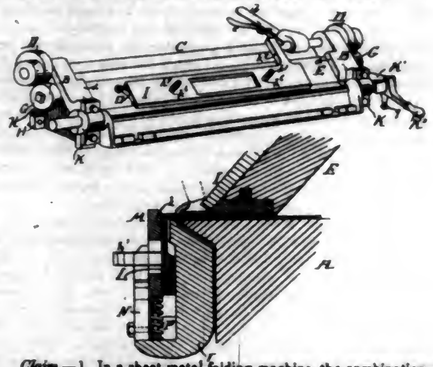
474,282. OIL-BURNER. JACOB BARROW, Windfall, Ind. Filed Aug. 27, 1891. Serial No. 403,941. (No model.)



Claim.—1. In a burner for gas generated from oil, the combination of a supply-pipe, a porous sleeve surrounding said pipe, said sleeve having minute apertures or perforations in its upper portion connecting with a chamber between the supply-pipe and the exterior of the burner, substantially as set forth.

2. In a burner for gas generated from oil, the combination of a hollow or longitudinally-apertured sleeve of porous material, having minute apertures or perforations in its upper portion which extend from the longitudinal aperture therein to the exterior of said sleeve, a supply-pipe maintained centrally within said sleeve and connected with an oil-supply, said supply-pipe having apertures *c c*, and threaded ends, to which are attached heads *a* and *b*, substantially as shown, and for the purpose set forth.

474,288. SHEET-METAL-FOLDING MACHINE. THOMAS C. BELDEN, Canton, Ohio, assignor to the Canton Steel Roofing Company, same place. Filed Mar. 3, 1892. Serial No. 423,604. (No model.)



Claim.—1. In a sheet-metal-folding machine, the combination of the bed-plate provided with the end plates having journaled thereto the shaft C, provided with the eccentrics D and the operating-lever *b*, the top clamping-bar E, located at an angle to the bed-plate and provided with the extensions F, having journaled to said extensions the rollers G, the springs H, and the folding-leaf J, pivoted or journaled to the bed-plate and carrying the movable gages L and M, substantially as and for the purpose specified.

2. The combination of the bed-plate A, the end plates B, fixed to said bed-plates, the folding-leaf J, journaled to the end plates B, the gage L, provided with the stops *k* and the pins *k'*, the operating-lever K^3, fixed to the folding-leaf J by means of the bracket K', the pin or stud *g*, the connecting-rod *h*, the diagonal slots h^2, and the top clamping-bar E, substantially as and for the purpose specified.

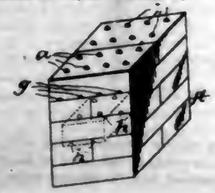
3. The combination of the bed-plate A, the end plates B, the lifting-springs H, the shaft C, provided with the eccentrics D, the lever *b*, the top clamping-bar E, provided with a suitable stop, the folding-leaf J, having attached thereto the front gage L and the final gage M, the operating-lever K^3, the connecting-bar *h*, and the gage-supports N, substantially as and for the purpose set forth.

474,284. SHEARS. THOMAS BERRIDGE, Sturgis, Mich. Filed Mar. 4, 1891. Serial No. 383,791. (No model.)



Claim.—In a pair of scissors or shears, the combination, with the member A, having a circular transverse aperture, and the member A', having a similar aperture at a corresponding point and a transversely-disposed groove formed in the wall of said aperture, of the pivot-bolt taking loosely through the aperture in the member A and having a flange-head at one end and a central longitudinal threaded bore at its opposite end, a transversely-disposed groove formed in the periphery of the bolt, a feather seated in the aligned grooves of the member A' and the bolt, and the removable head-covering, the aligned grooves of the member and bolt, and the feather, and having a threaded shank seated in the bore of the pivot-bolt, substantially as and for the purpose set forth.

474,285. BRICK. CYRUS BOSWORTH, Philadelphia, Pa. Filed Jan. 20, 1892. Serial No. 419,646. (No model.)

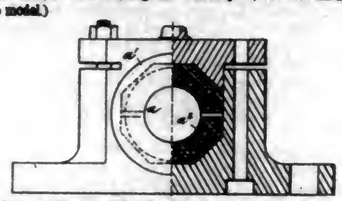


Claim.—1. As an improved article of manufacture, a brick provided with projections arranged equidistant, and in a plurality of pairs on one side and corresponding depressions in the opposite side.

2. As an improved article of manufacture, a brick provided with projections arranged in a plurality of longitudinal and transverse equidistant pairs on one side, and corresponding depressions in the other side and opposite said depressions.

3. A brick provided with a plurality of pairs of projections arranged equidistant longitudinally and transversely of the brick and on one side thereof, and grooves in the opposite side of the brick.

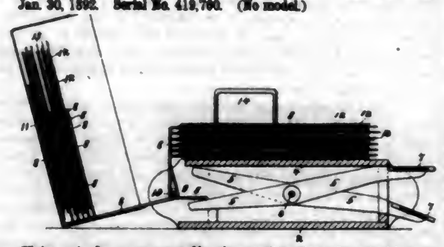
474,286. STEP AND BEARING FOR MACHINERY. ROBERT BREWSTER, New Barnet, England. Filed Apr. 4, 1891. Serial No. 387,673. (No model.)



Claim.—1. Steps and bearings for machinery, consisting of feldspar, rock-crystal, china-clay, and a flux.

2. Steps and bearings for machinery, consisting of feldspar, rock-crystal, china-clay, and borax in about the proportions stated.

474,287. ACCOUNT-FILE. WILLIAM H. BROWN, Quincy, Ill. Filed Jan. 30, 1892. Serial No. 419,790. (No model.)



Claim.—1. In an account-file, the combination of a suitable base, pivoted keys, and hinged levers located between sheets of paper and arranged to be operated by the keys so as to expose the sheets of paper at any desired point, substantially as and for the purpose set forth.

2. In an account-file, the combination of a suitable base, pivoted keys provided with finger-pieces, levers arranged to be operated by the keys, and sheet-supports connected to said levers, substantially as and for the purpose set forth.

3. In an account-file, the combination of a suitable base, pivoted keys provided with finger-pieces, levers arranged to be operated by the keys for moving sheets of paper, and a cover connected to one of said levers, so as to be operated thereby, and which is adapted to receive the sheets when the file is open, substantially as and for the purpose set forth.

4. In an account-file, the combination of a suitable base, pivoted keys provided with finger-pieces, levers adapted to be operated by the keys for moving sheets of paper, and a cover adapted to receive the sheets when the file is open, substantially as set forth.

5. In an account-file, the combination of a suitable base, keys pivoted to the base, levers pivoted to the base and consisting of a horizontal portion, a vertical portion, and an extended arm, and sheet-supports secured to the horizontal portion of the levers, substantially as and for the purpose set forth.

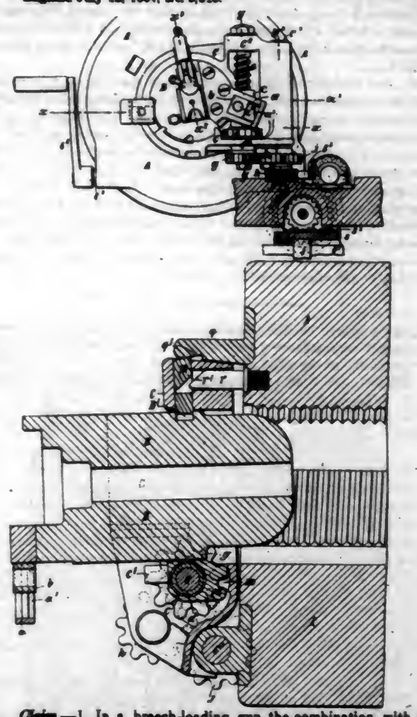
6. In an account-file, the combination of a suitable base, keys pivoted to the base, levers arranged to be operated by the keys for moving sheets of paper, and the guides 14 15, substantially as and for the purpose set forth.

7. In an account-file, the combination of a suitable base, levers pivoted to the base and located between sheets of paper, and means for operating the levers, whereby the sheets can be exposed at any desired point, substantially as and for the purpose set forth.

8. In an account-file, the combination of a suitable base, levers pivoted to the base, sheet-supports attached to said levers, and means for operating the levers, whereby the sheets can be exposed at any desired point, substantially as and for the purpose set forth.

9. In an account-file, the combination of a suitable base, levers pivoted to the base, sheet-supports attached to said levers, means for operating the levers, whereby the sheets can be exposed at any desired point, and the guides 14 and 15, substantially as and for the purpose set forth.

474,288. BREECH-LOADING GUN. JEAN B. G. A. CANET, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Openshaw, England. Filed Feb. 16, 1889. Serial No. 300,300. (No model.) Patented in France June 7, 1887, No. 184,078, and in England July 12, 1887, No. 9,613.



Claim.—1. In a breech-loading gun, the combination, with the breech-screw and the pivoted bracket for supporting the same, of a grooved or slotted extension or lug on the said breech-screw, a block or bearing arranged to slide in the said grooved or slotted extension, a screw-shaft fitted to rotate in bearings in the said bracket, a nut working on the said screw-shaft, and a sleeve secured upon the said nut and provided with a pin or stud working in the said sliding block or bearing, substantially as and for the purposes set forth.

2. In a breech-loading gun, the combination, with the breech-screw and the pivoted bracket for supporting the same, of a block or bearing fitted to slide in a groove or slot in an extension of the said breech-screw, a screw-shaft fitted to rotate in bearings in the said bracket, a nut on the said screw-shaft having formed with it a pinion adapted to gear with a longitudinal rack on the breech-screw, a sleeve on the said nut provided with a pin or stud working in the said sliding block or bearing, a pinion fixed upon the said screw-shaft, a pinion mounted on the pivot of the said bracket and geared with the pinion on the said screw-shaft, and means for rotating the said pinion on the pivot of the bracket, substantially as and for the purposes set forth.

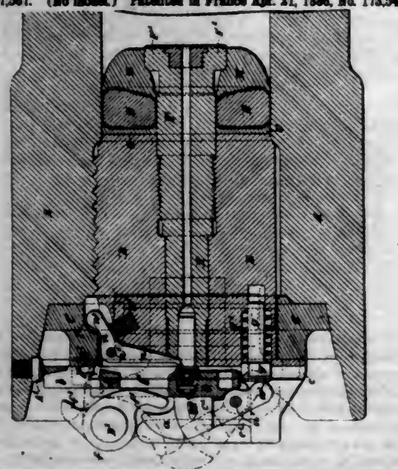
3. In a breech-loading gun, the combination, with the breech-screw B and the pivoted bracket C, of the grooved or slotted extension *a* and rack *n* on the said breech-screw, the sliding block or bearing arranged to move in the groove or slot of the said extension, the screw-shaft *e*, the nut *d*, working thereon, the pinion *f*, attached to the said nut and adapted to gear with the said rack *n* on the breech-screw, a sleeve *o* on the said nut, provided with a pin or stud *c'*, working in the said sliding block or bearing, a pinion *g*, fixed on the said screw-shaft, a pinion *j*, mounted on the pivot C' of the said bracket and geared with the said pinion *g*, and means, substantially such as above described, for imparting rotary motion to the said pinion *j*, all substantially as and for the purposes set forth.

4. In a breech-loading gun, the combination, with the breech-screw and the pivoted bracket for supporting the same, of locking mechanism comprising a bolt fitted to slide in the said bracket and adapted to enter a notch in the breech-screw when the latter is withdrawn from the breech, substantially as and for the purposes above specified.

5. In a breech-loading gun, the combination, with the breech-screw and the hinged or pivoted bracket for supporting the same, of a locking-bolt which slides in the said bracket, a projection or lug on the body of the gun, provided with a notch, into which the said bolt is adapted to enter, and with an inclined surface which when the said bracket is swung about its pivot to open the breech disengages the bolt from the said notch and causes it to enter a notch in the breech-screw, and a pin or stud fixed in the body of the gun, which when the said bracket is swung about its pivot to close the breech disengages the said bolt from the breech-screw and causes it to enter the notch in the said projection or lug, substantially as and for the purposes above specified.

6. In a breech-loading gun arranged to recoil upon a beam or slide, the combination, with a breech-screw having interrupted threads and a bracket or carrier hinged to the gun for supporting the said breech-screw when out of the breech, of breech-opening mechanism comprising a shaft supported in bearings attached to the said bracket or carrier, a pinion fixed on the said shaft, an operating-shaft, and gearing connecting the said operating-shaft with the said pinion and comprising a toothed wheel rotatively connected with but free to slide longitudinally upon a shaft parallel to the longitudinal axis of the gun, whereby the opening and closing of the breech can be effected whatever may be the position of the gun upon its beam or slide and whatever may be the angle of elevation of the gun.

474,289. **BREECH-LOADING ORDNANCE.** JEAN B. G. A. CANET, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Openshaw, England. Filed Apr. 17, 1889. Serial No. 307,567. (No model.) Patented in France Apr. 21, 1886, No. 173,544.



Claim.—1. In a breech-loading gun, the combination, with the breech-screw, of a rod or stem firmly fixed therein and projecting from the forward end thereof, a cup or washer, and a plastic obturator placed upon the said rod or stem in front of the breech-screw, and a head fitted and retained upon the said rod or stem so that it is free to move longitudinally thereon, for the purposes above specified.

2. In a breech-loading gun, the combination, with the breech-screw, of a rod or stem firmly fixed therein and projecting from the forward end thereof, a plastic obturator on the said rod or stem in front of the breech-screw and having rounded edges, a cup or washer on the said rod or stem between the said obturator and the breech-screw and shaped to fit the rounded edges of the obturator, and a head secured upon the said rod or stem in front of the obturator and capable of to-and-fro movement upon the said rod or stem, the said head having its rear surface of conical form, substantially as and for the purposes above specified.

3. In a breech-loading gun, the combination, with the breech-screw, of a sliding bolt or bar arranged in a transverse groove in the rear end thereof, a firing-hammer pivoted to the said bolt or bar, an operating-lever pivoted to the breech-screw, and an arm or cam formed or fixed on the fulcrum-pin of the said lever and whereby the said sliding bolt or bar is actuated in the turning of the said lever about its pivot preparatory to opening the breech, for the purposes above specified.

4. In a breech-loading gun, the combination, with the breech-screw, the sliding bolt or bar arranged in a transverse groove in the rear end thereof, the firing-hammer mounted upon a pivot carried by the said sliding bolt or bar, and the operating-lever pivoted to the said breech-screw, of an arm or cam formed or fixed upon the fulcrum-pin of the said lever and projecting in front of the said hammer, so that in the turning of the said lever about its pivot preparatory to opening the breech the said arm or cam will cock the hammer, substantially as and for the purposes above specified.

5. In a breech-loading gun, the combination, with the breech-screw, of a sliding bolt or bar arranged in a transverse groove in the rear end thereof, a firing-hammer pivoted to the said bolt or bar, an operating-lever pivoted to the breech-screw, and a double-armed cam formed or fixed upon the fulcrum-pin of the said lever and whereby the said sliding bolt or bar is actuated and the hammer is cocked in the turning of the said lever about its pivot preparatory to opening the breech, substantially as and for the purposes above specified.

6. In a breech-loading gun, the combination, with the breech-screw, of a sliding bolt or bar arranged in a transverse groove in the rear end thereof and carrying the firing-hammer, an operating-lever pivoted to the said breech-screw, an arm or cam attached to the said lever for actuating the said sliding bolt or bar, and an adjustable stop secured in the body of the gun for limiting the movement of the said sliding bolt or bar, substantially as and for the purposes above specified.

7. In a breech-loading gun, the combination, with the breech-screw and a hinged or pivoted bracket or carrier for supporting the same, of a sliding bolt or bar arranged in a transverse groove in the rear end of the breech-screw and carrying the firing-hammer, and provided with a projection adapted to enter a notch in the said bracket or carrier to prevent the turning of the breech-screw therein, substantially as and for the purposes above specified.

8. In a breech-loading gun, the combination, with the breech-screw, of the bolt or bar sliding in a transverse groove in the rear end thereof, a firing-hammer pivoted to the said sliding bolt or bar and provided with lateral projections or studs, and projections on the breech-screw which operate, in conjunction with the projections or studs on the firing-hammer, to retain the said hammer in its cocked position until the breech-screw is locked and then release the hammer and permit the operation thereof, substantially as and for the purposes above specified.

9. In a breech-loading gun, the combination, with the breech-screw and its supporting bracket or carrier, of the hand-lever D, pivoted to the breech-screw, the bolt or bar *b*, sliding in a transverse groove in the rear end of the said breech-screw and having a projection adapted to engage with a notch in the said bracket or carrier, a firing-hammer *a*, pivoted to the said sliding bolt or bar and acted upon by a plunger *g* and spring *g'*, contained in a recess in the breech-screw, and the lever or cam *f*, fixed upon the fulcrum of the lever D and whereby when the said lever D is turned about its pivot preparatory to opening the breech the said sliding bolt or bar is disengaged from the notch in the bracket or carrier and the firing-hammer is cocked, substantially as and for the purposes above specified.

10. In a breech-loading gun, the combination, with the breech-screw, of a sliding bolt or bar arranged in a transverse groove in the rear end thereof and carrying the firing-hammer, a lever pivoted to the said breech-screw, one arm of which is in engagement with the said sliding bolt or bar and the other arm of which is adapted to receive a hook or ring on a firing-cord or lanyard, so that when the said firing-cord is pulled the said lever will be turned about its pivot and will actuate the sliding bolt or bar and thus fire the gun, substantially as and for the purposes above specified.

11. In a breech-loading gun, the combination, with the breech-screw and its supporting bracket or carrier, of the sliding bolt or bar *b*, arranged in a transverse groove in the said breech-screw and carrying the firing-hammer *a*, the firing-lever *l*, pivoted to the breech-screw and one end of which is in engagement with the said sliding bolt or bar, and a groove *m*, formed in the rear end of the breech-screw, which groove is adapted to receive a hook or ring on the firing-cord or lanyard, the said firing-lever being so arranged that when the gun is ready for firing it extends across the said groove, but in the firing of the gun it is moved clear of the said groove, substantially as and for the purposes above specified.

12. In a breech-loading gun, the combination, with the breech-screw and its supporting bracket or carrier, of a bent lever or extractor, which is pivoted to the breech-screw and one arm of which works in a circumferential groove in the said bracket or carrier, the other arm being adapted to engage with the flange of the shell or case of the fuse or primer, and a shoulder or projection at one end of the said groove, whereby the said extractor is operated at the termination of the partial rotation of the breech-screw about its axis to disengage it from the screw-threads in the breech, substantially as and for the purposes above specified.

13. In a breech-loading gun, the combination, with the breech-screw and its supporting bracket or carrier, of an automatically-operated bolt carried by said supporting bracket or carrier for locking said breech-screw to said carrier when the former is withdrawn from the breech, substantially as described.

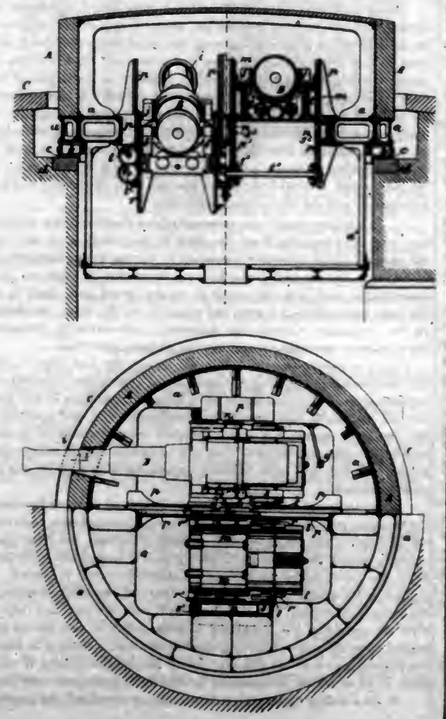
14. In a breech-loading gun, the combination, with the breech-screw and its supporting bracket or carrier, of a bolt carried by said supporting bracket or carrier, and means for operating said bolt to lock said breech-screw and carrier together on the withdrawal of the former from the breech and to lock said supporting bracket or carrier to the gun-body on the return of said breech-screw to the breech, substantially as described.

15. In a breech-loading gun, the combination, with the gun-body provided with a bolt-receiving notch, and a breech-screw provided with a corresponding bolt-receiving notch, of a breech-screw carrier, a bolt carried thereby automatically operating to lock the breech-screw and carrier together on the withdrawal of the former from the breech and to automatically lock the said carrier to the gun-body on the return of the breech-screw, substantially as described.

16. In a breech-loading gun, the combination, with the breech-screw and its supporting bracket or carrier, of locking mechanism comprising a bolt fitted to slide in the said bracket or carrier, a pin or stud fixed in the body of the gun and having an inclined surface whereby in the closing of the breech the said bolt is disengaged from the breech-screw and caused to engage with a notch in the body of the gun, and a spring attached to the said bracket or carrier and acting upon the said bolt, whereby in the opening of the breech the said bolt is disengaged from the notch in the body of the gun and caused to engage with the breech-screw, the said breech-screw being adapted while in the breech to retain the said bolt in the notch in the body of the gun, substantially as and for the purposes set forth.

17. In a breech-loading gun, the combination, with the breech-screw, of a supporting bracket or carrier therefor hinged or pivoted to the body of the gun and having a taper or conical flange or collar, a corresponding conical recess or seat in the breech of the gun into which the said flange or collar fits when the breech is closed, and a shoulder or flange B^1 on the breech-screw, which when the breech is closed bears against the rear surface of the said bracket or carrier, substantially as and for the purposes above specified.

474,290. **MOUNTING FOR TURRET AND OTHER GUNS.** JEAN B. G. A. CANET, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Openshaw, England. Filed June 25, 1889. Serial No. 315,539. (No model.) Patented in France July 15, 1885, No. 170,123, and July 11, 1887, No. 184,711, and in England Feb. 21, 1888, No. 2,569, and July 28, 1888, No. 10,905.



Claim.—1. A gun-mounting comprising a vertically-adjustable chassis upon which the gun slides longitudinally in its recoil and running-out movements, said chassis being adjustable for vertical pointing or elevation about an imaginary or virtual pivot or axis forward of the same.

2. In a gun-mounting, the combination, with a vertically-adjustable chassis upon which the gun slides longitudinally in its recoil and running-out movements, of guides for the vertically-adjustable chassis having segmental or arc-shaped surfaces, whereby the said chassis when adjusted for vertical pointing or elevation is caused to turn about an imaginary or virtual pivot or axis, for the purpose above specified.

3. In a gun-mounting, the combination, with a vertically-adjustable chassis upon which the gun slides longitudinally in its recoil and running-out movements, of guides for the vertically-adjustable chassis, having segmental or arc-shaped surfaces, the centers of which are in a horizontal line intersecting the chase of the gun, substantially as and for the purpose above specified.

4. In a gun-mounting, the combination of an armored wall or shield having a port-hole or embrasure, a vertically-adjustable chassis upon which the gun slides longitudinally in its recoil and running-out movements, and guides having segmental or arc-shaped surfaces, whereby the said chassis when adjusted for vertical pointing or elevation is caused to turn about an imaginary or virtual pivot or axis in the said port-hole or embrasure, substantially as and for the purposes above specified.

5. In a gun-mounting, the combination, with a chassis or gun-slide, of guides therefor having segmental or arc-shaped surfaces, whereby the said chassis or slide when adjusted for vertical pointing or elevation is caused to turn about an imaginary or virtual pivot or axis, segmental racks secured to the said chassis or gun-slide and concentric with the guiding-surfaces, and bevel-wheels geared with the said rack and provided with means for rotating them to turn the said chassis or slide about the said imaginary or virtual pivot, substantially as and for the purposes above specified.

6. In a gun-mounting, the combination, with a chassis or gun-slide and segmental or arc-shaped guiding-surfaces, whereby the said chassis or slide when adjusted for vertical pointing or elevation is caused to turn about an imaginary or virtual pivot or axis, of another chassis or gun-slide guided by similar segmental or arc-shaped surfaces, whereby this chassis or slide when adjusted for vertical pointing or elevation is caused to turn about a prolongation of the said imaginary or virtual pivot or axis, and elevating-gear, whereby the said chassis or gun-slides are connected, so that they equilibrate or counterbalance each other, and when one is raised the other will be lowered, and vice versa, and whereby the said gun-slides are turned about their imaginary or virtual pivots or axes, respectively, substantially as and for the purposes above specified.

7. In a gun-mounting, the combination, with a chassis or gun-slide and segmental or arc-shaped guiding-surfaces, whereby the said chassis or slide when adjusted for vertical pointing or elevation is caused to turn about an imaginary or virtual pivot or axis, of another chassis or gun-slide guided by similar segmental or arc-shaped surfaces, whereby this chassis or slide when adjusted for vertical pointing or elevation is caused to turn about a prolongation of the said imaginary or virtual pivot or axis, segmental racks attached to the chassis or gun-slides and concentric with the guiding-surfaces, shafts arranged between the said slides and working one within the other, bevel-wheels fixed upon the said shafts and geared with the said racks, and a locking device or clutch whereby the said shafts may be connected and disconnected, substantially as and for the purposes set forth.

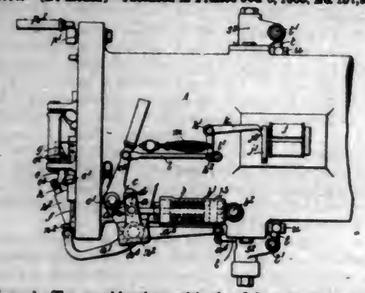
8. The combination of the rotating platform or turn-table, the segmental or arc-shaped guides attached thereto, and a vertically-adjustable chassis upon which the gun slides longitudinally in its recoil and running-out movements, said chassis being adjustable in the said guides about an imaginary or virtual pivot or axis, substantially as and for the purposes set forth.

9. The combination, with the rotating platform or turn-table and a chassis or gun slide supported thereon, of a chamber beneath the said platform or turn-table, in which the gunners can stand while working the gun and which is secured to and rotatable with the said platform or turn-table, for the purpose above specified.

10. The combination of the rotating platform, the segmental or car-shaped guides carried thereby, a chassis or gun-slide adjustable in the said guides about an imaginary or virtual pivot or axis, and a chamber beneath the said platform or turn-table, in which the gunners can stand while working the gun and which is secured to and rotatable with the said platform or turn-table, substantially as and for the purposes set forth.

11. The combination of a rotating platform or turn-table, a chassis or slide supported thereon, a gun arranged to recoil on the said chassis or slide, an armored shield above the turn-table, a chamber secured to the under side of the said turn-table and in which the gunner can stand while working the gun, and an armored wall surrounding the said turn-table and the chamber beneath it, for the purposes above specified.

474,291. TORPEDO-LAUNCHING APPARATUS. JEAN B. G. A. CAREY, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Openshaw, England. Filed June 9, 1891. Serial No. 395,656. (No model.) Patented in France Oct. 8, 1883, No. 157,914.



Claim.—1. The combination, with the firing mechanism, of a spring-actuated lever for operating the same, a spring-actuated retaining-catch for the said lever, and an electro-magnet the armature of which is adapted to lock and unlock the said retaining-catch, substantially as described.

2. The combination, with the firing mechanism, of a spring-actuated lever for operating the same, a retaining-catch for the said lever, a spring-actuated lever for operating the said retaining-catch, and an electro-magnet the armature of which is adapted to lock and unlock the last-named lever, substantially as described.

3. The combination, with the firing mechanism, of a spring-actuated lever for operating the same, a retaining-catch for the said lever, a spring-actuated lever for operating the said catch and connected therewith by a pin-and-slot connection, and an electro-magnet the armature of which is adapted to lock and unlock the last-named lever, substantially as described, and for the purpose specified.

4. The combination, with the lever *a* and its actuating-spring *b*, of the catch or scar *c*, adapted to engage with the said lever, the bent lever *k*, connected with the said catch, the electro-magnet *j*, provided with the armature *j'*, adapted to engage with the said bent lever, and the spring *m*, connected with the said bent lever, substantially as and for the purposes set forth.

5. The combination, with the torpedo-tube and the lever for operating the firing mechanism, of a stop-bolt for retaining the torpedo in place in the said tube, and intermediate connections between the said lever and stop-bolt, whereby the said bolt will be disengaged or withdrawn in the operation of the firing mechanism, for the purposes above specified.

474,292. GRATE. FREDERICK CAREL and WAYLAND F. DAVIDSON, Charleston, W. Va. Filed Apr. 9, 1891. Serial No. 388,330. (No model.)

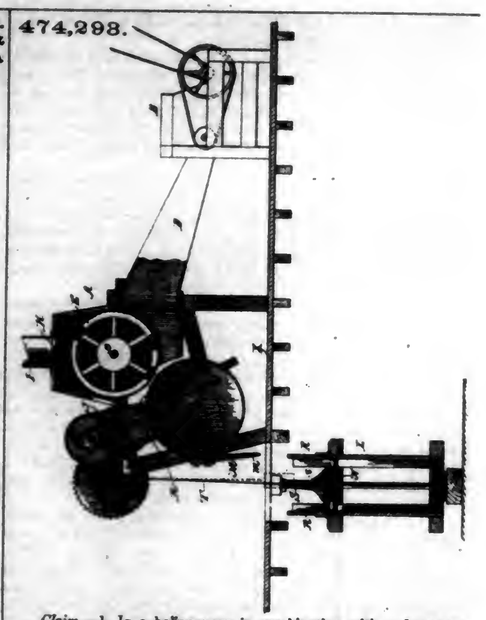


Claim.—1. A revolvable grate formed in longitudinal sections, one of which is provided with the pivotal or socket piece and has therein sockets *k*, the other sections having lower tenons K, fitted in the sockets *k*, and the several sections being provided with upper tenons L, fitted in the sockets *l* of the adjacent sections, substantially as set forth.

2. The combination of the fireplace arranged to open into two or more rooms, the revolvable grate fitted in said fireplace and provided with a partition dividing it into compartments, and the fire boards or plates J, conformed on their inner edges to and fitted to the grate, substantially as and for the purposes set forth.

3. The improved revolvable grate herein described, provided with grooves 1 and 2 and made in longitudinal sections, one of which has a socket-piece and is provided with sockets *k*, the other sections being provided with tenons K to fit sockets *k*, and the several sections being provided with tenons L and sockets *l*, the partition G, fitted at its ends in grooves 1 and provided centrally with grooves *y*, and the partitions H, fitted in grooves 2 and *g*, all substantially as and for the purposes set forth.

474,298. COTTON-BALING APPARATUS. EDWARD D. CARTER, Celeste, Tex. Filed Sept. 12, 1891. Serial No. 405,545. (No model.)



Claim.—1. In a baling-press, in combination with a frame or support provided with a cotton-receiving chamber, a condensing-cylinder mounted in such chamber, compressing-rolls of different diameters mounted on such frame, such rolls and compressing-cylinder arranged relatively, whereby the condensed cotton is partially compressed between one of such rolls and the cylinder and whereby such partially-compressed cotton is fed between the pressure-rolls for its final compression, a baling mechanism arranged to receive the compressed batting from the rolls, and means for operating the rolls and condenser-cylinder, substantially as and for the purpose described.

2. In a baling apparatus of the kind described, a combined condensing and compressing mechanism, comprising a condensing-chamber formed with a discharge-opening, the condensing-cylinder E, operating in such chamber to condense the cotton and feed it to the discharge-opening, the compressing-roll F, disposed at the mouth of such discharge-opening and arranged under the cylinder E, the said cylinder and roll operating to draw the condensed cotton through the discharge-opening of the chamber and partially compress it, the adjustable roll G, mounted over the roll F, such rolls, in connection with the roll F, operating to finally press the cotton to form the bat, and a baling mechanism arranged to receive the bat from the rolls F and G, all arranged as and for the purpose described.

3. In a baling apparatus, substantially as described, the combination, with the condenser A and the shaft U, journaled on the discharge end thereof, of the swinging press-box L, having dual chambers, the followers N, having pin projections *s s*, the straps S, arranged to be connected to said pins, the cords T, wound about said shaft U, and the gear connections between the shaft U and the drive mechanism on the condenser, whereby the follower is automatically lowered as the condenser operates, as and for the purpose described.

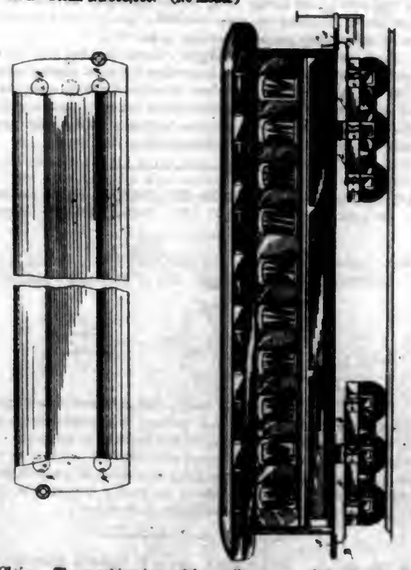
4. In a roller-compress-baling apparatus, the combination, with the condensing and lapping mechanism and a press-box to receive the cotton-bat from the condensers, of a follower operating in the press-box, an automatic feed mechanism connected with and operated by the condenser mechanism and connected with the follower to automatically lower the follower into the press-box as the cotton-bat is formed and fed onto such follower, substantially as and for the purpose described.

5. In an apparatus for the purpose described, the combination of the swinging press-box L, formed with dual cotton-chambers, each forming alternately the receiving and pressing chambers, the fixed platen or cross-head O, the followers N, having lateral projections *s*, the pawls B' in the lower edges of the cotton-chambers with the cond A, having its discharge end disposed over the receiving-chamber of the press L, the shaft T, journaled in said end, the gear and belt devices for operating the condenser and the shaft U, and the cords T, wound upon the shaft U, having catch members S, arranged to engage the projections *s s* on the follower N and the weighted cords W on the shaft U, all arranged substantially as and for the purpose described.

6. In a baling apparatus, substantially as described, the combination, with the condenser-frame, the shaft U, journaled therein, the cords T T, and the straps S, of the swinging press-box L, the fixed platen O, the hook-fingers P, the latches Q, the followers N, arranged to be supported in their upper position on said latches Q and to be detachably connected with the straps S, all arranged as and for the purpose described.

7. In a baling apparatus, the combination, with the baling mechanism arranged substantially as shown and described, of the combined condensing and compressing mechanism, consisting of the frame provided with a condensing-chamber C, a condensing-cylinder E, mounted therein and having its rear portion projected beyond the discharge end of such chamber, the large pressure-roller F, disposed below the cylinder E and arranged to receive the condensed cotton as it leaves the chamber C, the adjustable pressure-roll G, mounted over the roll F for contact therewith, the lapper M, mounted in front of the roll F, and means for operating the rolls, cylinder, and lapper, substantially as shown, and for the purpose described.

474,294. AXLE COOLER AND LUBRICATOR. ROBERT B. COGAN, WILLIAM M. PIERCE, and JOHN C. F. JONES, Braddock, Pa. Filed May 23, 1891. Serial No. 393,909. (No model.)



Claim.—The combination, with a railway-car, of the herein-described lubricator and cooling device for the journals thereof, comprising one or more reservoirs secured to each platform of the car and each having a cover flush with the top of said platform when closed, independent lubricating-pipes C, each of which extends along the length of one of the trucks of the car, a flexible tube B, connecting each of said pipes with a reservoir and entering the latter at the bottom thereof, and a series of flexible tubes or pipes *c*, connecting the same with the journal-boxes of the trucks, substantially as shown and described.

474,295. ANTI-FRICTION ALLOY. JOHN FOWLER, Louisville, Ky. Filed Oct. 8, 1891. Serial No. 408,205. (No specimens.)

Claim.—1. The herein-described alloy, comprising tin, antimony, copper, and phosphorus, substantially as specified.

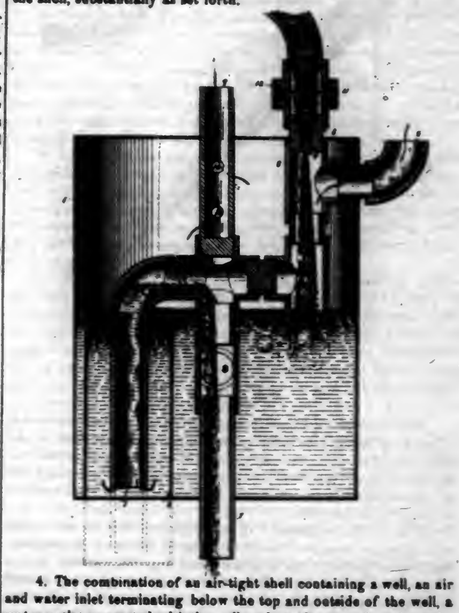
2. The process of making the herein-described alloy, which consists in fusing antimony, copper, and phosphor-tin, and subsequently fusing the alloy formed thereby with block-tin, substantially as specified.

474,296. HYDRAULIC AIR-COMPRESSOR. SAMUEL HANFORD, Binghamton, N. Y. Filed Oct. 28, 1891. Serial No. 410,068. (No model.)

Claim.—1. In a hydraulic air-compressor, the combination, with a shell and a well therein, of a connected water-supply pipe and air-supply pipe opening within the shell, a vent or discharge pipe extending from near the bottom of the well upwardly and outwardly through the shell, and an air-discharge pipe, substantially as set forth.

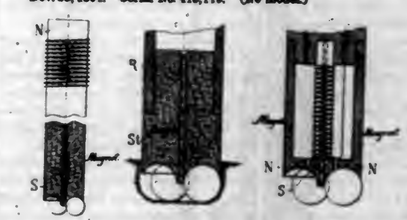
2. In a hydraulic air-compressor, the combination of an air-tight shell containing a well, an air and water inlet terminating below the top and outside of the well, and an air-outlet and a water-outlet connected with the well, substantially as set forth.

3. In a hydraulic air-compressor, the combination, with the shell and a well, and air and water inlet, of a vent-pipe extending upwardly from near the bottom of the well over the top and outwardly through the shell, substantially as set forth.



4. The combination of an air-tight shell containing a well, an air and water inlet terminating below the top and outside of the well, a water-outlet connected with the well, and an air-reservoir and an air-outlet communicating between the shell and the air-reservoir, substantially as set forth.

474,297. APPARATUS FOR ROCK-BORING. CARL HOFFMANN, Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Filed Nov. 25, 1891. Serial No. 413,119. (No model.)



Claim.—1. In a rock-drill, the combination, with a rotary drill-head having an annular groove in the front end thereof, of a plurality of hard-metal balls suitably held in but protruding from and free to roll in said annular groove, substantially as described.

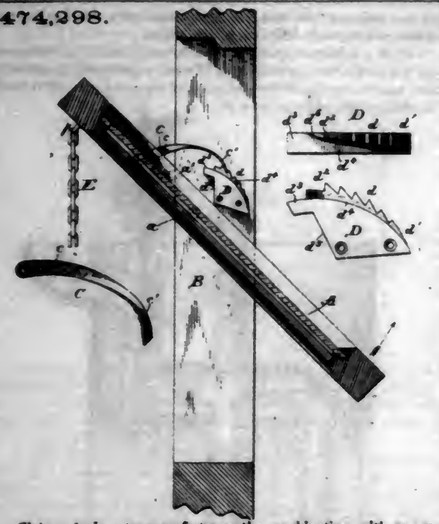
2. In a rock-drill, the combination, with a rotating drill-head having a conduit for water therein and having an annular groove in the front end thereof, of a plurality of hard-metal balls free to roll in said groove, but suitably held therein and protruding therefrom, substantially as described.

3. In a rock-drill, the combination, with a magnetized rotating drill-head having an annular groove in the front end thereof, of a plurality of hard-iron or steel balls held by magnetism in said groove, but rolling freely therein and protruding therefrom, substantially as and for the purposes described.

4. In a rock-drill, the combination, with a magnetized rotating drill-head having a conduit for water therein and having an annular groove in the front end thereof, of a plurality of hard-iron or steel balls held by magnetism in said groove, but rolling freely therein and protruding therefrom, substantially as and for the purposes described.

474,298. TRANSOM-LIFTER. BILL G. LOWREY, Pine Mountain, Miss. Filed Mar. 22, 1892. Serial No. 425,905. (No model.)

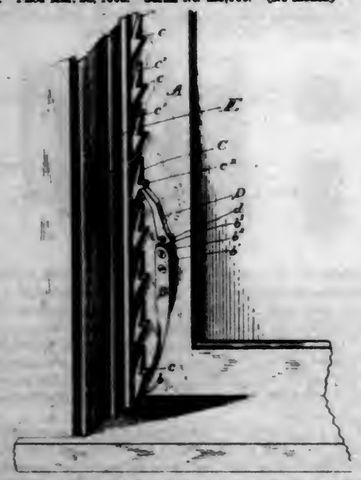
474,298.



Claim.—1. In a transom-fastener, the combination, with an arc-shaped rack having a plurality of teeth tapering, as described, on the outer edge thereof and next the door-jamb, and a smooth inclined surface at the side of said teeth, of a spring attached to the transom and adapted to catch in said teeth and slide down said inclined surface, substantially as described.

2. In a transom-fastener, the combination, with an arc-shaped rack having a plurality of teeth tapering, as described, on the outer edge thereof and next the door-jamb, and a smooth inclined surface at the side of said teeth, of a flat spring with its upper portion attached to the transom and the lower portion twisted to catch in said teeth and slide dowd said inclined surface, substantially as and for the purposes described.

474,299. SASH-FASTENER. BILL G. LOWREY, Blue Mountain, Miss. Filed Mar. 22, 1892. Serial No. 425,906. (No model.)



Claim.—1. In a sash-fastener, the combination, with a rack-bar attached to the window-frame and having a plurality of teeth with flat upper faces and sloping lower faces and inclined planes between said teeth, substantially as described, of a spring attached to the sash and adapted to catch on the upper edges of said teeth and to slide on said inclined planes.

2. In a sash-fastener, the combination, with a rack-bar attached to the window-frame and having a plurality of teeth with flat upper faces and sloping lower faces and inclined planes between said teeth, substantially as described, of a flat spring with its lower end twisted at right angles to the upper, the said upper end being attached to the rack and the said lower end being adapted to catch on the upper edges of said teeth and to slide on said inclined planes.

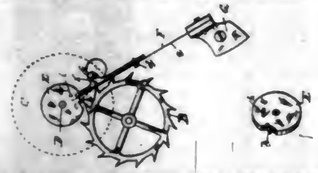
474,300. PIPE-WRENCH. GEORGE MCKERCHER, Jonesville, Mich., assignor of three-fourths to Edward McKercher, William S. Coleman, and Frank J. McIntee, same place. Filed Dec. 15, 1891. Serial No. 415,185. (No model.)



Claim.—1. A wrench consisting of the two plates provided with the rigid jaw, the movable jaw pivoted between said plates and having its heel below the pivot thereof, and the spring fastened at one end to said plates on one side thereof, said spring extending around the lower ends of the plates and extending upwardly in rear of the same, the rear part of the spring being bowed outwardly beyond the rear edges of the plates and the upper end of the spring bearing against the heel of the pivoted jaw, substantially as described.

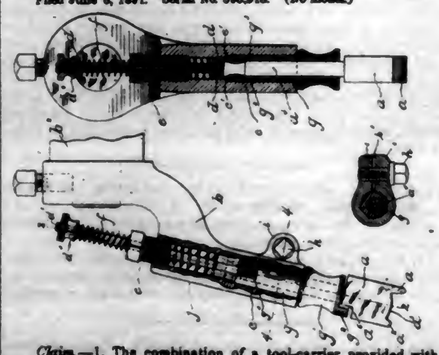
2. A wrench consisting of the two plates provided with the rigid jaw, the pivoted jaw having its heel below the pivot thereof and provided with the downward extensions on said heel, and the spring having one end secured between the plates and its other end bent around the ends of the plates and bearing against the heel of said pivoted jaw between the extensions thereon, substantially as described.

474,301. CHRONOMETER-ESCAPEMENT. FRANK PROUDHAT, St. Louis, Mich. Filed May 27, 1891. Serial No. 394,316. (No model.)



Claim.—In a chronometer-escapement, a detent-lever consisting of a single-piece spring secured at one end to a suitable bracket and having its opposite end reduced from a point at or about the center of the lever and a rigid reinforcing-plate secured to the lever below the reduced portion and extending parallel therewith to a point slightly below the end of the lever, whereby the lever is formed with two independent bending-points, substantially as described.

474,302. TOOL-HOLDER. JOHN W. PLUMMER, Somerville, Mass. Filed June 8, 1891. Serial No. 396,513. (No model.)

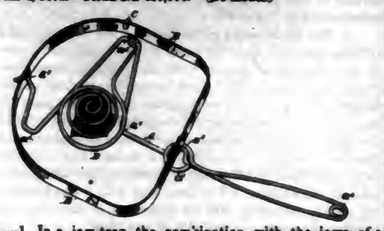


Claim.—1. The combination of a tool-carrier provided with a longitudinal socket having an enlarged portion and a contracted portion, a rod fitted to slide in said socket and provided with a pair of tool-grasping jaws, a spring arranged to normally hold said jaws in the contracted portion of the socket, a sleeve located in said socket and projecting below the same, said sleeve having at its lower end a stop g^3 to limit the turning movement of the tool, and means for securing the sleeve rigidly to the carrier, as set forth.

2. The combination of a tool-carrier provided with a longitudinal

socket having an enlarged portion and a contracted portion, a rod fitted to slide in said socket and provided with a pair of tool-grasping jaws, a spring arranged to normally hold said jaws in the contracted portion of the socket, a sleeve located in said socket and projecting below the same, said sleeve having at its lower end a stop g^3 to limit the turning movement of the tool, and a spring arranged to exert a downward yielding pressure on the sleeve, as set forth.

474,308. ANIMAL-TRAP. ALBERT F. ROCKWELL, Bristol, Conn. Filed Jan. 4, 1892. Serial No. 416,960. (No model.)

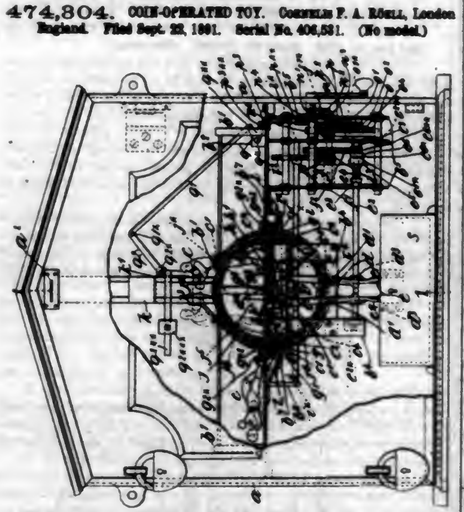


Claim.—1. In a jaw-trap, the combination, with the jaws, of a base and springs composed of a single bent wire that forms the pivot of the jaws, which are made of parts separate from it, substantially as set forth.

2. In a jaw-trap, the combination, with the jaws, of a base and springs composed of a single bent wire that forms the pivot of the jaws, which are made of parts separate from it, and a combined bait-holder and latch pivoted to the base at a^3, substantially as set forth.

3. In a jaw-trap, the combination, with the base, of a bait-holder and jaw-latch formed of a single piece of wire pivoted to the base, substantially as set forth.

474,804. COIN-OPERATED TOY. CORNELIS F. A. RÖELL, London England. Filed Sept. 22, 1891. Serial No. 406,531. (No model.)



Claim.—1. In a mechanical toy, the combination of suitable mechanical figures and objects, a sliding stop bar or bars for controlling the movements of said figures or objects, means for traversing the same, and means for accidentally or irregularly arresting the movement thereof, substantially as herein shown and described.

2. In a mechanical toy, the combination of suitable mechanical figures and objects, several sliding stop-bars for controlling the movements of said figures or objects, means for traversing such bars, and means for accidentally or irregularly arresting the movement of one of the stop-bars while the other continues its traverse, substantially as herein shown and described.

3. In a mechanical toy, the combination of suitable mechanical figures and objects, two sliding stop-bars coupled by a yoke for controlling the movements of said figures or objects, means for traversing such yoke from the center thereof, and means for accidentally or irregularly arresting the movement of one of the stop-bars while the other continues its traverse, substantially as herein shown and described.

4. In a mechanical toy, the combination of suitable mechanical figures or objects, two sliding stop-bars for controlling the movements of said figures or objects, a yoke-bar attached to both of said sliding stop-bars and provided at its center with a stud, a slot in which said stud operates, means for traversing said yoke, and means for arresting the movement of one of the stop-bars while the other continues its traverse, substantially in the manner set forth.

5. In a mechanical toy, the combination of a suitable platform, mechanical figures or objects supported above said platform upon suitable pivoted rods passing through slots in the table, sliding stop-bars supported in suitable bearings beneath the platform and adapted to cross the slots therein and engage the pivoted rods for holding the figures or objects in position, means for operating said figures, means for retracting said stop-bars, and means for arresting the movement of one of them, substantially as and for the purpose set forth.

6. In a mechanical toy, the combination of the mechanical figures or objects, the pivoted rods supporting said figures, the sliding stop-rods for supporting said pivoted rods in raised position, means for retracting said stop-rods, means for operating said figures, and means for throwing said pivoted supporting-rods and their figures from a vertical position when the support of the stop-rods is withdrawn, substantially as set forth.

7. In a mechanical toy, the combination of the figures or objects and their pivoted supporting-rods, means for operating the figures, the sliding stop-rods adapted to support the pivoted rods and figures in vertical position, spring-pressed arms bearing on the opposite sides of said supporting-rods and tending to throw them from their vertical position, a yoke connecting said sliding stop-bars, means for retracting said stop-bars, and pivoted levers operated by said yoke and adapted to engage the pivoted supporting-rods and raise them to vertical position, substantially in the manner and for the purpose set forth.

8. In a mechanical toy, the combination of the figures or objects and their pivoted supporting-rods, means for operating said figures, the sliding stop-rods for supporting said pivoted rods in raised position, means for irregularly retracting said stop-rods for allowing the figures to fall singly and irregularly from their vertical position, and suitable means for raising or returning the fallen rod into vertical position, substantially as and for the purpose set forth.

9. In a mechanical toy, the combination of suitable mechanical figures or objects, a sliding stop bar or bars for controlling the movements of said figures, means for traversing the same, and a movable perforated stop-disk supported in the path of said stop bar or bars and adapted to arrest the movement thereof, substantially as set forth.

10. In a mechanical toy, the combination of suitable mechanical figures or objects, a sliding stop bar or bars for controlling the movements of said figures or objects, means for traversing the same, a movable perforated stop-disk supported in the path of said stop bar or bars and adapted to arrest the movement thereof, and suitable means for changing the position of said disk, substantially as set forth.

11. In a mechanical toy, the combination of suitable mechanical figures or objects, sliding stop bars for controlling the movements of said figures or objects, means for traversing the same, a movable perforated stop-disk supported in the path of said sliding stop-bars and adapted to arrest their movement, and a drum adapted to be set in motion by a falling coin for changing the position of said disk, substantially as and for the purpose set forth.

12. In a mechanical toy, the combination of suitable mechanical figures or objects, sliding stop-bars for controlling the movements of said figures or objects, means for traversing the same, a movable perforated stop-disk supported in the path of said stop-bars and adapted to arrest their movement, means for changing the position of said disk, and coin-operated means for preventing the operation of the machine until after the insertion of a coin, substantially as set forth.

13. In a mechanical toy, the combination of suitable figures or objects, sliding stop-bars adapted to control the movement of said figures, means for traversing said stop-bars, and a stopping device adapted to arrest the movement of one of said stop-bars and allow the other to be withdrawn from engagement with the support of one of said figures, said stopping device consisting of a suitable plate formed with a number of apertures and recesses therein, substantially as set forth.

14. In a mechanical toy, the combination of suitable figures or objects, sliding stop-bars adapted to control the movement of said figures, and a rotary stop-disk supported in proper relation to said stop-bars and formed with a number of apertures and recesses, the apertures being diametrically opposite to the recesses, substantially as set forth.

15. In a mechanical toy, the combination of several moving figures or objects mounted upon rods or holders, several sliding stop-bars crossing the path traversed by such holders, means for traversing the stop bars and withdrawing them from across the path of the holders, and means for accidentally or irregularly arresting the movement of one of the stop-bars while the other continues its traverse, substantially as herein shown and described.

16. In a mechanical toy, the combination of several moving figures or objects mounted upon rods or holders, several sliding stop-bars crossing the path traversed by the holders and connected by a yoke,

means for traversing the yoke and withdrawing the stop-bars from across the path of the holders, means for accidentally or irregularly arresting the movement of one of the stop-bars while the other continues its traverse, and means for raising or returning the figures to their normal position and afterward placing the stop-bars across their path, substantially as herein shown and described.

17. In a mechanical toy, the combination of several oscillating figures or objects mounted upon vertical rods, several sliding bars, to each of which one of such rods is attached, a separate lever corresponding with each sliding or swinging bar, a separate cam-wheel acting upon each swinging bar through intervening levers and imparting a reciprocating movement thereto and an oscillating movement to the figures or objects, and means for rotating the cam-wheels, substantially as herein shown and described.

18. In a mechanical toy, the combination of the oscillatory figures or objects mounted upon vertical rods, the reciprocating rods pivoted thereto, a suitable motor, a shaft extending from said motor and provided with two cam-wheels, and pivoted levers engaging said cam-wheels and said reciprocating rods, substantially as set forth.

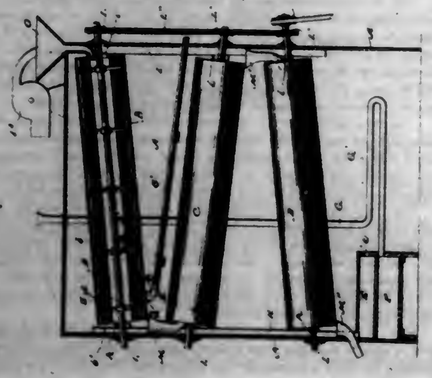
19. In a mechanical toy, the combination of several oscillating figures or objects mounted on vertical rods or holders, several sliding stop-bars crossing the path traversed by such rods, means for traversing the stop-bars and withdrawing them from across the path of the rods, means for accidentally or irregularly arresting the movement of one of the stop-bars while the other continues its traverse, means for raising the fallen figure, a separate cam-wheel for imparting a positive movement to each figure, and means for rotating the cam-wheel, substantially as herein shown and described.

20. In combination with a mechanical toy, a suitable motor therefor and a winding mechanism consisting, primarily, of a double-toothed wheel formed with a break in one set of teeth, a winding-shaft provided with means of rotation, a pinion fixed upon the winding-shaft and corresponding with such break, a break in the other set of teeth, a pinion fixed upon the spring-shaft and corresponding with such break, and means for giving a partial rotation to the double-toothed wheel, substantially as herein shown and described, and for the purpose stated.

21. In a mechanical toy, a winding mechanism consisting of a winding-shaft, a winding-key loosely mounted upon the winding-shaft, a pawl fixed with such key, a ratchet-wheel fixed upon the winding-shaft and engaging the pawl, a double-toothed wheel formed with a break in one set of teeth, a pinion fixed upon the winding-shaft and corresponding with such break, a break in the other set of teeth, a spring-shaft, a pinion fixed upon the spring-shaft and corresponding with such break, a ratchet-wheel fixed upon the shaft of the double-toothed wheel, a driver forced forward by a spring for giving a partial rotation to the double-toothed wheel, a cam for retracting the driver, a detent for holding the driver retracted, and means actuated by a coin passed into the machine for withdrawing the detent, substantially as herein shown and described, and for the purpose stated.

22. In a mechanical toy, a winding mechanism consisting of a double-toothed wheel formed with a break in one set of teeth, a winding-shaft provided with means of rotation, a pinion fixed upon the winding-shaft and corresponding with such break, a break in the other set of teeth, a spring-shaft, a pinion fixed upon the spring-shaft and corresponding with such break, a ratchet-wheel fixed upon the shaft of the double-toothed wheel, and a coin released or operated driver for giving a partial rotation to the double-toothed wheel, substantially as herein shown and described, and for the purpose stated.

474,805. DRIER. JAMES G. SANDERSON, New York, N. Y. Filed Feb. 12, 1891. Serial No. 381,227. (No model.)



Claim.—1. The combination of the inclined shaft having radial arms, the cylinder for collecting the water of condensation, mounted upon the outer ends of the arms and discharging the water of condensation at its lower end, the inner perforated tube or wire-gauze lining through which the grains or wet mass of material is passed, mounted upon the outer portions of the arms, leaving air-spaces between the cylinder and the tube or lining, and the longitudinal radial perforated flanges or wire-gauze wings for shifting the grains or wet mass on the inner surface of the tube or lining, mounted upon the arms contiguous to the tube or lining, the inner tube or lining extending beyond the portion of the cylinder where the water of condensation is discharged, substantially as described.

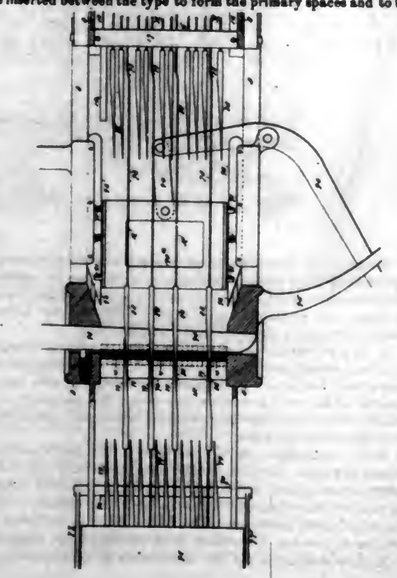
2. The combination of the inclined shaft having radial arms, the cylinder mounted upon the arms, the inner perforated tube supported by the arms out of contact with the cylinder, leaving air-spaces between the tube and cylinder and having longitudinal radial perforated flanges or wings secured to the arms on the inner sides of the tube, a hot-air chamber within which the cylinder rotates, a feed-hopper discharging into the upper end of the tube, a furnace located within the chamber having a hot-air drum, a hot-air flue connected with the drum and having a short neck extending into the lower end of the tube, an exhaust-fan, a flue connected with the exhaust-fan and having a neck extending into the upper end of the tube, and means for rotating the shaft, substantially as described.

3. The combination of a hot-air chamber, an inclined shaft mounted in said chamber, having radial arms, the cylinder mounted upon the arms, the inner perforated tube supported by the arms out of contact with the cylinder, leaving air-spaces between the tube and cylinder and having longitudinal radial perforated flanges or wings secured to the arms on the inner side of the tube, and the discharge-trough having a pipe by which the water is carried off from the discharge end of the cylinder, substantially as described.

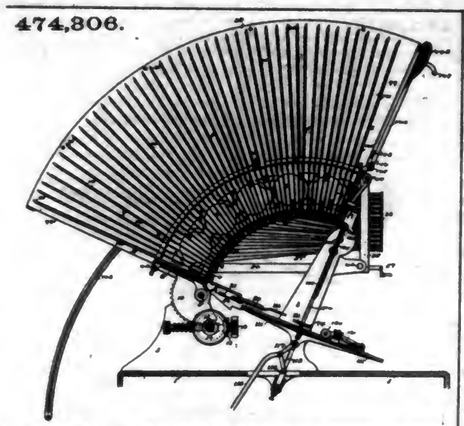
474,806. MECHANISM FOR JUSTIFYING COMPOSED LINES OF TYPE. JACOBS W. SCHUCKERS, Philadelphia, Pa., assignor to the Electric Typographic Company, of New York, N. Y. Original application filed Feb. 27, 1885, Serial No. 157,304. Divided and this application filed Nov. 18, 1886. Serial No. 219,263. (No model.)

Claims.—1. The combination of the type and mechanism, substantially as described, for assembling them in line, with justifying-wedges adapted to be introduced between the type to form the primary spaces and tapered to constantly increase the spaces between the type as they are advanced and to form justifying-spaces at every point of their advancement, and means, substantially as described, for introducing said wedges between the type to form the primary spaces, and for then advancing said wedges to effect the justification, all substantially as described.

2. The combination of the type and mechanism, substantially as described, for assembling them in line, with the justifying-wedges 79 and the wedge-plates 82 tapered in opposite directions and arranged to be inserted between the type to form the primary spaces and to then



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be advanced, one with relation to the other, so as to increase the spaces and effect the justification, substantially as described.

3. The combination of the type and mechanism, substantially as described, for assembling them in line, with the justifying-wedges 79 and the wedge-plates 82 arranged to be inserted between the type to form the primary spaces, and means, substantially as described, for advancing said wedges along said plates to increase the spaces and effect the justification, substantially as described.

4. The combination of the type and mechanism, substantially as described, for assembling them in line, with the justifying-wedges 79, the wedge-plates 82, carried by said wedges and arranged to be inserted with the wedges between the type to form the primary spaces, and means, substantially as described, for advancing said wedges along said plates to increase the spaces and effect the justification, substantially as described.

5. The combination of the type and mechanism, substantially as described, for assembling them in line, with the spreading-bars having justifying-wedges adapted to be introduced one by one between the type to form the primary spaces as they are required and tapered to constantly increase the spaces between the type as they are advanced and to form justifying-spaces at every point of their advancement, and means, substantially as described, for introducing said wedges between the type as the type are assembled to form the primary spaces, and for then simultaneously advancing said wages to effect the justification, all substantially as described.

6. The combination of the type and mechanism, substantially as described, for assembling them in line, with a justifying mechanism consisting of the wedge-plates 82 and the spreading-bars 75, having the justifying-wedges 79, means, substantially as described, for operating the said plates and bars one by one to introduce them into the line as they are required to form the primary spaces, and means, substantially as described, for then advancing all of the bars which have been introduced into the line to increase the spacing and effect the justification, substantially as described.

7. The combination of the type and mechanism, substantially as described, for assembling them in line, with the justifying-bars A, consisting of the spreading-bars 75, having the justifying-wedges 79, and the wedge-plates 82, carried by said bars, substantially as described.

8. The combination of the type and mechanism, substantially as described, for assembling them in line, with the justifying-bars consisting of the spreading-bars 75, having the justifying-wedges 79, and the wedge-plates 82, carried by said bars, means, substantially as described, for operating the justifying-bars one by one as they are required to be inserted in the line to form the primary spaces for then simultaneously advancing all of the spreading-bars which have been inserted in the line and for simultaneously retracting all of the bars, substantially as described.

9. The combination of the type and mechanism, substantially as described, for assembling them in line, with the justifying-bars consisting of the spreading-bars 75, having the justifying-wedges 79, and the wedge-plates 82, carried by said spreading-bars and movable thereon, means, substantially as described, for operating said bars one by one to introduce them between the type to form the primary spaces for simultaneously advancing all of the spreading-bars which have been introduced into the line to effect the justification and for simultaneously retracting all of the bars and returning the plates to their normal position, substantially as described.

10. The combination, with the rest-bar 74, of the wedge-plates 82, having the projections 83, and the justifying-wedges 79, substantially as described.

11. The combination, with the spreading-bars 75, having the justifying-wedges 79, of the rest-bar 74 and the wedge-plates 82, carried by the spreading-bars and having the projections 83, substantially as described.

12. The combination, with the spreading-bars 75, having the justifying-wedges 79 and the shoulders 88, of the thrust-plate 90, rest-bar 74, and the wedge-plates 82, having the projections 83, substantially as described.

13. The combination, with the rest-bar 74 and the thrust-plate 90, of the spreading-bars 75, having the justifying-wedges 79 and the shoulders 88, and the wedge-plates 82, carried by said bars and having the projections 83, substantially as described.

14. The herein-described justifying mechanism consisting, essentially, of a spreading-bar 75, having a justifying-wedge 79 and a wedge-plate 82, said wedge and plate being tapered in opposite directions, substantially as described.

15. The combination, with the spreading-bars 75, having the justifying-wedges 79, of wedge-plates 82, having the tongue-pieces 81, arranged to be moved along said bars, substantially as described.

16. The combination, with the spreading-bars 75, having the justifying-wedges 79, of wedge-plates 82, having the tongue-pieces 81, arranged to move along said bars, and the detents 89, substantially as described.

17. The combination, with the justifying-wedges 79, having channels 78, of the wedge-plates 82, having the tongue-pieces 81, arranged to move in said channels, substantially as described.

18. The combination of the type and mechanism, substantially as described, for assembling them in line, with the spreading-bars 75, having the justifying-wedges 79 and the shoulders 88, the wedge-plates 82, having the tongue-pieces 81 and projections 83, the rest-bar 74, and the thrust-plate 90, substantially as described.

19. The combination, with the type or dies, of a series of two-part justifying devices, one part of each of which is movable, while the other part is locked in with the type or dies, and means for operating such justifying devices in series.

20. The combination of type or dies and mechanism, substantially as described, for assembling them in line, with a series of wedge-plates arranged to be inserted between the type or dies, another series of wedges, and means, substantially as described, for advancing the wedges along the wedge-plates.

21. A series of type or dies and supports therefor, combined with a series of wedges adapted to engage the supports and a second series of wedges connected by sliding joints to those first named.

22. The combination of type or dies and mechanism, substantially as described, for assembling them in line, with justifying-wedges and wedge-plates carried by said wedges and arranged to be inserted with the wedges between the type or dies to form the primary spaces, and means, substantially as described, for advancing said wedges along said plates.

23. The combination of a series of type or dies and means for moving them into operative position, with a plurality of movable justifying-spaces, each consisting of two parts movable one with respect to the other, a support for the dies in the operative position, and a contacting or thrust plate for adjusting the justifying-spaces.

24. The combination of spreading-bars having justifying-wedges and shoulders, with a thrust-plate engaging the shoulders.

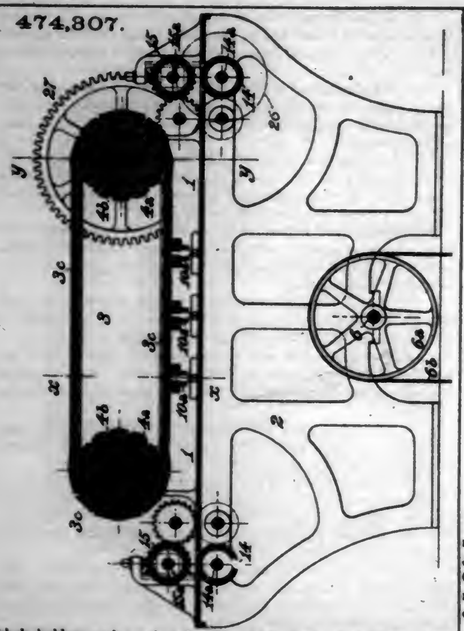
474,807. WOOD-GRAINING MACHINE. JOHN SHANNON, Pittsburg, Pa. Filed Nov. 19, 1891. Serial No. 412,457. (No model.)

Claims.—1. In a wood-graining machine, the combination of a table or rest, an endless-belt design-plate having an embossed or relieved surface and fitted to traverse above the table, two or more scoring-blade holders, each located in a plane transverse to the line of movement of the design-plate, and a series of scoring-blades fixed upon stocks which are fitted to move toward and from the table in each of the scoring-blade holders, and which abut directly and continuously against the surface of the design-plate, substantially as set forth.

2. In a wood-graining machine, the combination of a table or rest, an endless-belt design-plate having an embossed or relived surface and fitted to traverse above the table, two or more scoring-blade holders, each located in a plane transverse to the line of movement of the design-plate, devices for effecting the adjustment of the scoring-blade holders transversely to the line of movement of the design-plate, and a series of scoring-blades fixed upon stocks which are fitted to move toward and from the table in each of the scoring-blade holders and which abut directly and continuously against the surface of the design-plate, substantially as set forth.

3. In a wood-graining machine, the combination of a table or rest, an endless-belt design-plate having an embossed or relieved surface and fitted to traverse above the table, two or more scoring-blade holders each located in a plane transverse to the line of movement of the design-plate, devices for effecting the vertical adjustment of the scoring-

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blade holders, and a series of scoring-blades fixed upon stocks which are fitted to move toward and from the table in each of the scoring-blade holders and which abut directly and continuously against the surface of the design-plate, substantially as set forth.

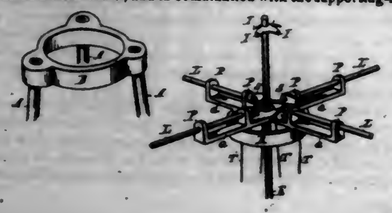
4. In a wood-graining machine, the combination of a table or rest, an endless-belt design-plate having an embossed or relieved surface and fitted to traverse above the table, guiding devices for maintaining the rigidity of the part or side of the endless-belt design-plate nearest the table, two or more scoring-blade holders each located in a plane transverse to the line of movement of the design-plate, and a series of scoring-blades fixed upon stocks which are fitted to move toward and from the table in each of the scoring-blade holders and which abut directly and continuously against the surface of the design-plate, substantially as set forth.

5. In a wood-graining machine, the combination of a table or rest, an endless-belt design-plate having an embossed or relieved surface and fitted to traverse above the table, drums carrying the ends of said endless-belt design-plate, feed-rolls and driving mechanism for effecting the traverse of a strip of wood to be grained upon the table, driving-gearing imparting rotation to one of the carrying-drums of the design-plate at such rate of speed as to substantially equalize the surface speeds of the design-plate and feed-rolls, two or more scoring-blade holders each located in a plane transverse to the line of movement of the design-plate, and a series of scoring-blades fixed upon stocks which are fitted to move toward and from the table in each of the scoring-blade holders, and which abut directly and continuously against the surface of the design-plate, substantially as set forth.

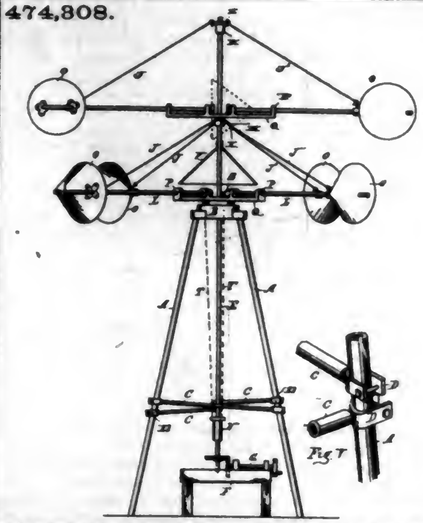
474,808. WIND-WHEEL. SYLVANUS I. SHOLLEY and WILLIAM H. BOSWELL, Jr., Brookville, Ind. Filed Mar. 10, 1891. Serial No. 384,666. (No model.)

Claim.—1. In combination with the tripod-frame A, having secured to its upper end the curb B, and the main shaft E, the ring R, having integral therewith the arms Q, carrying by means of the lugs P the sail-shafts L, said ring being placed within the hub B and said shaft passing centrally through said ring.

2. In a wind-wheel, and in combination with the supporting-frame

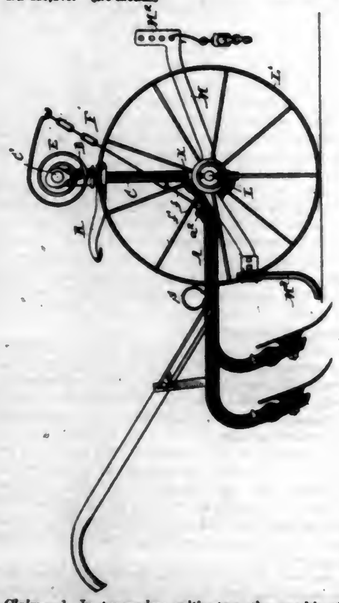


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and central shaft, as described, the cap H on said shaft, the stay-rods J, connecting the same with the sail-shafts, the reversible conical sails O, the sail-shaft carried by arms Q, the ring R, and the curb B on the main shaft, to which said curb is secured, and crank S, and means for operating the same.

474,809. CULTIVATOR. WILLIAM SOBEY, Racine, Wis., assignor to the J. I. Case Plow Works, same place. Filed Jan. 25, 1892. Serial No. 419,173. (No model.)



Claim.—1. In tongueless cultivators, the combination, with the free arch or cross-bar and with the swinging hanger sustained therefrom, of the pivoted plow-beam, the machine-wheel and the rear standard carried, respectively, by said hanger, and the yielding spring-connector extended between the arch bar or hanger and the plow-beam (or its equivalent) to prevent toppling, substantially as described.

2. In tongueless cultivators, the combination, with the companion hangers, having a wheel-spindle projecting from each, of the swivel-mounted plow-beams and the rear standards extending from said hangers, respectively, the cross-bar or arch pivotally sustained by the opposite hangers, and the spring-connectors located across the spindle-axis

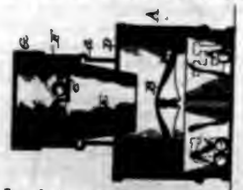
and uniting each hanger with its corresponding plow-beam, whereby the latter is counterpoised, and the common cross-bar held in normal position, substantially as described.

3. In tongueless cultivators, the combination, with the free arch or cross-bar and with the swinging hanger suspended pivotally therefrom and having a horizontal extension, of the swivel-mounted plow-beam, the machine-wheel, and the rear standard sustained, respectively, from said extension, the helical spring carried by said hanger, and the intermediate link joining the free end of said spring with the plow-beam, whereby said beam is counterpoised and the hanger prevented from toppling, substantially as described.

4. The combination, with the free arch or cross-bar, of the swinging hanger supported therefrom, the plow-beam pivoted upon said hanger, and the machine-wheel journaled thereon, the intermediate spring-connector joining said beam and hanger, and the clevis-bar and supporting-standard extending, respectively, front and back from said hanger, substantially as described.

5. In tongueless cultivators, the combination, with the free arch bar, of the swinging hanger supported thereby, the plow-beam swiveling from said hanger, the intermediate spring-connector joining said beam and hanger, and the machine-wheel journaled and laterally pivoting upon said hanger, substantially as described.

474,810. GAME APPARATUS. SYLVESTER T. F. STERICK, Gaithersburg, Md. Filed Feb. 15, 1892. Serial No. 421,584. (No model.)



Claim.—1. In a device of the class described, the combination of a case provided with a downwardly-inclined diaphragm, a compartment divided into a series of chambers below said diaphragm, an upper section containing marbles, having a strip or partition across its top, and a revolvable cap or sleeve mounted on the upper section and provided with a device for pushing the marbles off from the partition, substantially as described.

2. In a device of the class described, the combination, with a case having a downwardly-inclined diaphragm recessed at its edge, of a lower compartment having a series of chambers, a cap or sleeve to the case provided with a tubular extension, a chute depending from said extension and having its top partially closed by a strip, and a revolvable cap having a downwardly-inclined diaphragm, substantially as described.

474,811. SECTIONAL HEATER. EDWARD P. WAGGONER, Syracuse, N. Y., assignor of one-half to the Pierce, Butler & Pierce Manufacturing Company, same place. Filed Oct. 6, 1891. Serial No. 407,904. (No model.)

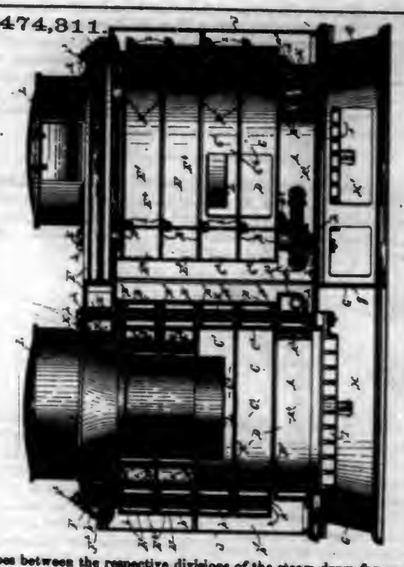
Claim.—1. The herein-described section for sectional heaters, the same consisting of separate divisions arranged end to end and provided with separate interior chambers, and connecting-pipes between said divisions for equalizing the pressure therein, substantially as and for the purpose set forth.

2. The herein-described section for sectional heaters, the same consisting of separate divisions disposed in substantially the same plane and formed with separate interior chambers, clamps for drawing said divisions together, and connecting-pipes between the separate sections for connecting one with the other and equalizing the pressure in the separate chambers, substantially as and for the purpose specified.

3. The herein-described heater, the same comprising a lower section composed of separate divisions arranged end to end and provided with separate interior chambers, connecting-pipes between said divisions for connecting one with the other, a steam-drum above the lower section, also composed of separate divisions, and connected with the lower section, whereby a circulation is produced between the two, and connecting-pipes between the divisions of the steam-drum for equalizing the pressure therein, substantially as and for the purpose set forth.

4. In a heater, the combination of a lower section composed of separate divisions formed with circulating-passages, connecting-pipes between the respective divisions for connecting one with the other, an upper section composed of separate divisions, having circulating-passages communicating with the former passages for producing a circulation between the lower and upper sections, projecting chambers on the divisions of the upper section extending beyond the side wall of the lower section for heating the water therein, a steam-drum composed of separate sections, having circulating-passages communicating with the former passages of the underlying sections, and connecting-

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pipes between the respective divisions of the steam-drum for equalising the pressure therein, substantially as and for the purpose specified.

5. The herein-described section for sectional heaters, the same consisting of separate divisions, rounding bearings on the adjacent portions of the separate divisions, clamps for drawing said divisions together, and connecting-pipes between the respective divisions of the sections, substantially as and for the purpose set forth.

6. In a section for sectional heaters, the combination of the division A^3, having bearings at its opposite extremities, a division A^4, having a bearing at one extremity lapping upon one of the bearings of the former division and having the bent extremity a^4, provided with a bearing-face, the division A^5, having one end lapping with the bearing on the opposite extremity of the division A^3 and having its opposite end a^5 bent toward the bent extremity of the division A^4 and formed with a bearing lapping upon the corresponding bearing on the division A^4, clamps for drawing said divisions together, and connecting-pipes between the respective divisions for equalising the pressure therein, substantially as and for the purpose specified.

7. In a duplex heater, the combination of two separate section-halves composing a section, separate divisions composing each section-half, connecting-pipes between the divisions of the respective section-halves for connecting one division thereof with the other, and a main connecting-pipe between the former pipes for equalizing the pressure in the separate section-halves, substantially as and for the purpose set forth.

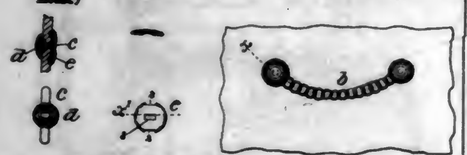
8. In a duplex heater, the combination of the separate lower section-halves lying at one side of each other, separate divisions composing said section-halves, having circulating-passages, connecting-pipes between the separate divisions for connecting one with the other, a main connecting-pipe between the former pipes for connecting the respective section-halves with each other, steam-drum-section halves lying at one side of each other, separate divisions composing the steam-drum section halves, having circulating-passages communicating with the like passages of the underlying sections, connecting-pipes between the separate divisions of the steam-drum, and a main connecting-pipe between the connecting-pipes of the separate divisions of the steam-drum sections, substantially as and for the purpose set forth.

474,812. CAM-CLUTCH FOR ROTATING SHAFTS. BENJAMIN J. ABBOTT, Chicago, Ill., assignor to the Abbott Metal Dressing Company, of Illinois. Filed Aug. 8, 1891. Serial No. 402,112. (No model.)



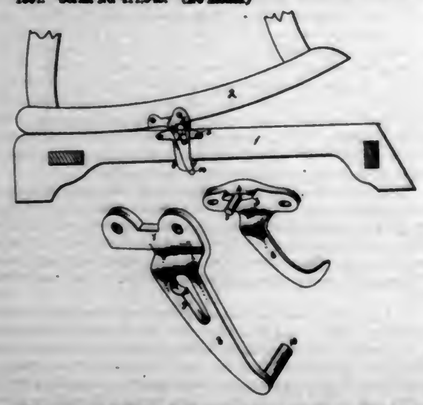
Claim.—The combination, with a drum for receiving a shaft or axle, of two cam-clutches pivoted to the ends of the drum and coil-springs countersunk therein, the ends of the springs being secured to the cam-clutches and to the drum, a lever pivoted to the drum and having connections by means of a rod with each cam-clutch, one of the cam-clutches being provided with an operating-lever, whereby both cam-clutches are released from the axle, as specified and shown.

474,313. GARMENT-SUPPORTING LOOP. LEONARD G. ABBOTT, Syracuse, N. Y., assignor, by direct and mesne assignments, of two-fifths to William Wallace Guilford, West Medford, and Cummer, Jones & Co., Boston, Mass. Filed Sept. 22, 1891. Serial No. 406,469. (No model.)



Claim.—The herein-described garment-suspending loop, consisting of a chain, a headed two-pronged staple connected to each end of the chain, the prongs of said staple being adapted to pass through a single opening in the material, and a concavo-convex anchor having a hole in the center to receive both staple-prongs and notches or openings at or near its base diametrically opposite each other, the concaved side of the anchor being turned toward the material, the prongs of the staple being extended through the center hole over the outside of the anchor in opposite directions and returned to the interior of the anchor through said openings or notches, the extremities of the prongs being concealed therein, substantially as described.

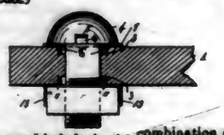
474,314. ROCKING-CHAIR. JOHN W. H. DOUBLER, Rockford, Ill., assignor of one-half to Robert W. Raymond, same place. Filed Nov. 9, 1891. Serial No. 411,345. (No model.)



Claim.—1. A rocking-chair comprising a platform, a chair proper mounted thereon and having a rocking movement, a bracket having a connection with the platform, said bracket having a lateral projection, a downward extension, and openings in the bracket for the passage of screws, by means of which it is secured to the platform, in combination with a downwardly-extending arm secured to the chair proper, a slot in the arm to receive the lateral projection on the bracket, said slot having an enlarged upper end, and a pin extending from the lower portion of the arm, passing under and engaging the lower face of the bracket, and forming an engagement between the chair and the platform, so that the whole may be lifted together.

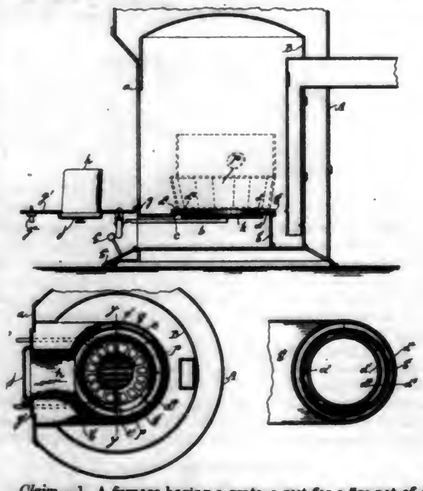
2. A rocking-chair comprising a platform, a chair proper mounted thereon and having a rocking movement, a bracket having a connection with the platform, said bracket having a lateral projection, a downward rear-curving extension, and openings in the bracket for the passage of screws, by means of which it is secured to the platform, in combination with a downwardly-extending arm secured to the chair proper, a slot in the arm to receive the lateral projection on the bracket, said slot having an enlarged upper end, and a pin extending from the lower portion of the arm, passing under and engaging the rear-curving extension, and forming a connection between the chair and the platform, so that the whole may be lifted together.

474,315. NUT-LOCK. ALBERT DORR, Pomeroy, Pa., assignor of one-half to O. L. Phillis, same place. Filed Dec. 10, 1891. Serial No. 414,694. (No model.)



Claim.—In a nut and bolt lock, the combination of a plate having a bolt-opening and pockets at opposite sides of said opening and at each end thereof, a washer having lugs or projections at either side, a bolt having recesses in its sides, the lugs on said washer being adapted to enter the pocket at one side of the plate and the recesses in the bolt, the nut, and a second washer having projections adapted to enter the other pockets of the plate, and a series of outwardly-projecting portions adapted to be bent into engagement with the sides of the nut, substantially as described.

474,316. HEATING-FURNACE. GEORGE F. FRENCH, Evanston, Ill., assignor to Lulu E. French, same place. Filed Oct. 26, 1889. Serial No. 328,370. (No model.)



Claim.—1. A furnace having a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of a smaller size, substantially as set forth.

2. A furnace having a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of a smaller size projecting inward over the grate, substantially as set forth.

3. A furnace having the grate *k*, the rest *c* for a fire-pot of one size situated in proximity thereto, and the removable rest *d*, adapted to rest upon the rest *c* and project over the edge of the grate for supporting a fire-pot of smaller size, substantially as set forth.

4. A furnace having a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of a smaller size situated within the first-named rest, in combination with a knockdown fire-pot consisting of a number of separate narrow sections or staves and an adjustable encircling band, substantially as set forth.

5. In a furnace, a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of smaller size projecting inward over the grate, in combination with a knockdown fire-pot consisting of a number of separate narrow sections or staves and an adjustable encircling band, substantially as set forth.

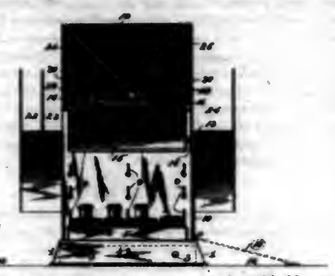
6. In a furnace, a grate *k*, a rest *c* for a fire-pot of one size situated in proximity thereto, and the removable ring *d*, adapted to rest upon the rest *c* and project over the edge of the grate, said ring having a rest for a fire-pot of smaller size, in combination with a knockdown fire-pot consisting of a number of narrow sections or staves and an adjustable encircling band, substantially as set forth.

7. The combination, with the grate *k* and the casing *b'*, having flange *c*, of the removable ring *d*, adapted to rest upon the flange *c* and having the concentric annular flanges d^2 and d^3, forming, with the upper margin of the casing *b'*, two concentric grooves d^2 and d^3, the band *e*, having means for adjusting it so that it may rest in either of

said grooves, and the removable fire-pot sections or staves encircled by said band and resting on one or the other of said flanges, substantially as set forth.

8. In a furnace, the combination, with the grate and fire-pot, of a casing having a removable side section, a feed-door formed therethrough, and a chute secured to and carried by said section and projecting over the fire-pot, substantially as set forth.

474,317. COMBINED INKSTAND, ENVELOPE, AND CARD HOLDER. EDWARD G. GERBER, St. Louis, Mo., assignor of one-half to Charles R. Withall, same place. Filed Feb. 24, 1892. Serial No. 422,685. (No model.)



Claim.—1. A combined inkstand, envelope, and card holder provided with a downwardly and rearwardly inclined receptacle or receptacles for envelopes, substantially as described.

2. In a combined inkstand, envelope, and card holder, the combination of the basement-casing 1, the cash-drawer in said casing, the ink and sponge stand 5, the closet 8, the pen-racks 9, the inclined long-envelope holder 16, and the inclined short-envelope holder 19, substantially as described.

3. In a combined inkstand, envelope, and card holder, the combination of the basement-casing, the cash-drawer in said casing, the ink and sponge stand, the ink-bottles and sponge in said stand, the closet 8, the hinged drop-door to said closet, the latch by which said door is fastened, the pen-racks 9, the receptacle 15 for holding the rubber and steel erasers, &c., and the inclined long and short envelope holders provided with acute-bevel rear ends that project the uppermost envelope, substantially as described.

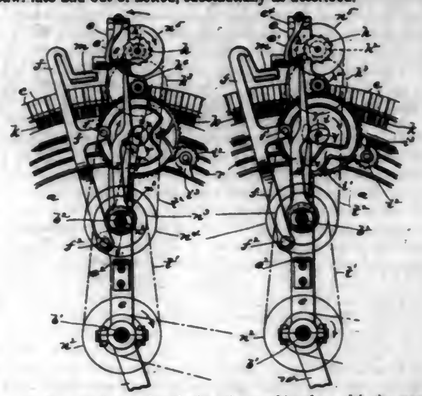
4. In a combined inkstand, envelope, and card holder, the combination of the basement-casing, the drawer in said casing, the ink and sponge stand, the closet 8, the pen-rack 9, the receptacle 15, the downwardly-inclined envelope-holders 16 and 19, the twin receptacles 22 and 23 for holding cards, postal-cards, &c., and the receptacle 24 for bills, &c., substantially as described.

5. In a combined inkstand, envelope, and card holder, the combination of the basement-casing, the drawer in said casing, the ink and sponge stand, the closet 8, the pen-rack 9, the receptacle 15, the downwardly-inclined envelope-holders provided with acute-angle rear ends that project the uppermost envelope, the twin downwardly-inclined receptacle 22 and 23, the downwardly-inclined receptacle 24, the receptacles 25 and 26 for pencils, &c., and the surmounting receptacle 27 for incoming and outgoing mail, substantially as described.

474,318. CARD-STRIPPING APPARATUS. EVERETT GIBSON, Providence, R. I., assignor of one-half to Edgar G. Durfee, same place. Filed Jan. 23, 1892. Serial No. 419,017. (No model.)

Brief.—A device for driving the stripping apparatus at a slow speed when moving from one flat to another and at a rapid speed when lifting, cleaning, and replacing the flats. Journaled in a bracket secured to the frame of the carding-machine is a shaft b^3, which is driven by means of a belt passing over a pulley thereon and also over a pulley on the shaft of the main cylinder of the carding-machine. On the shaft b^3 is a loose pulley n^4, that is caused to rotate with the shaft, when desired, by means of a clutch-sleeve splined to the shaft, and when the pulley so rotates it communicates motion to the card-stripping apparatus by means of the belt i^4, pulley n^3 on shaft *k'*, and gears k^3, k^4, k^5, *i*, and i^3. On the shaft b^3 is also an eccentric, to which is attached a pawl, which, when pressed by a spring, engages a ratchet-wheel on shaft *k'*, thus, when desired, rotating the shaft, and, by means of the intermediate mechanism before mentioned, actuating the stripping mechanism, which may thus be driven either at a rapid rate of speed from the pulley n^4 or at a slow speed from the pawl. The pawl is pressed away from the ratchet-wheel by means of a cam projection on the shaft *z* of the mangle-wheel at the time when the loose pulley is engaged by the clutch-sleeve operated by another cam projection on the shaft *z*.

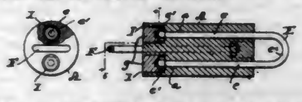
Claim.—1. In a card-stripping apparatus, the combination of a belt-driven pulley n^3, revolving at a substantially uniform speed, a spring-resisted pawl and clutch working in unison with the pulley, a loose pulley located between said clutch and pulley, a shaft *k'*, driven at fixed intervals by said pawl, and a belt leading from the loose pulley, a mangle-wheel arranged to perform the usual functions of such wheels, a gear-train actuated by the shaft *k'* and driving the mangle-wheel, and cams formed on the mangle-wheel, arranged to throw said clutch and pawl into and out of action, substantially as described.



2. In a card-stripping device, the combination, with the mangle-wheel and its usual dependent parts and the gear-train intergearing with and rotating said wheel, of a pawl or pusher reciprocating at a regular rate of movement and actuating said gear-train, means, as described, for throwing the pawl into and out of action, a clutch-pulley and belt operating the gear-train independently of and faster than said pawl, and means, as described, for operating the clutch portion of said pulley, substantially as hereinbefore described, and for the purpose set forth.

3. The combination of a mangle-wheel and the usual dependent parts actuated and controlled therefrom, a driving-shaft, as *k'*, having a pulley and ratchet-wheel secured thereto, a gear-train transmitting motion from said shaft to the mangle-wheel, and means, substantially as described, for actuating said driving-shaft through the pulley and ratchet-wheel at different rates of speed during each revolution of the mangle-wheel, for the purpose set forth.

474,319. INSULATOR. CHARLES F. GOODRICH, Chicago, Ill., assignor of one-half to John G. Thompson, Milwaukee, Wis. Filed Dec. 29, 1891. Serial No. 416,494. (No model.)



Claim.—1. An insulator for electric wires, comprising a body portion of insulating material and two staples or loops having their ends embedded within said insulating-body and their looped portions extending to the outside of the said body, substantially as described.

2. An insulator for electric wires, comprising a body portion of insulating material and two staples or loops having their ends embedded within said body and their looped portions extending to the outside of said body at opposite ends of the same, substantially as described.

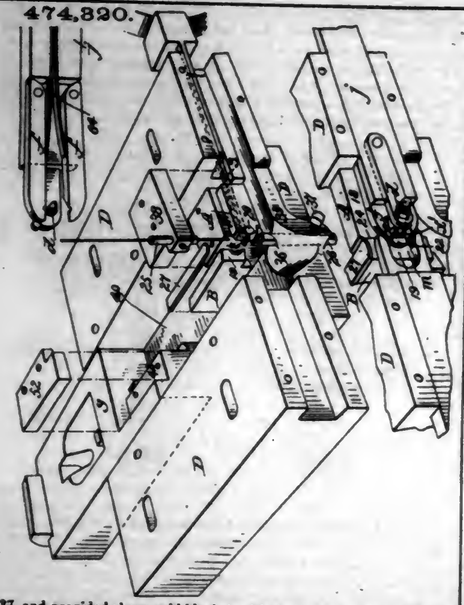
3. An insulator for electric wires, comprising a body portion of insulating material and two metallic staples having their ends embedded within said body and their looped portions extending to the outside of said body at opposite ends, said staples being arranged in planes substantially at right angles to each other, substantially as described.

4. An insulator for electric wires, comprising a body portion of insulating material and two staples or loops having enlarged heads upon their ends and said ends embedded in said body portion and having their looped ends extending to the outside of the said insulating-body at opposite ends of the same and adapted for engagement with supporting or line wires, substantially as described.

474,320. BUTTON-MACHINE. FRED. H. HARDMAN, Beverly, assignor to Walter R. Bennett, Boston, Mass. Filed Aug. 21, 1891. Serial No. 403,365. (No model.)

Claim.—1. In an eye-forming mechanism for button-machines, the combination of a main support or bed-piece having a block or portion A thereon, with the stud *a*, and said bed-piece having the underlying ledge 35 provided with the vertical aperture 36 and set-screw

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37, and provided above said block A with the part or extension 38, adjustably supported, the wire-guide 25, the gage-bar 26, and the sliding die-block B, having the U opening *b* and provided with a part to act in conjunction with the wire-guide as a shear, substantially as described.

2. In a button-machine, the combination, with a die-block, as A, having a stud projecting from the end thereof, and a die-depression 20 in the side next to said end, which depression leads to said end adjacent to said stud, of a die-block B, movable by one side thereof in the plane of the end of the other die-block and provided with the U-opening *b* in its side and the depression 22 in its end, and the die C, movable at right angles to the plane of the ends of said die-blocks which have said depressions therein, substantially as described.

3. In an eye-forming mechanism for button-machines, in combination, a block having a stud projected from one face thereof, and another block movable by one side thereof in the plane of said face and provided within such side with the U-opening *b*, a guide for directing the wire across the side of said stud in a line at right angles to the movable block, a member carrying a tapered stud or lug and movable to present it into proximity to said stud on said block, and a pair of jaws *f f*, movable to swing toward and from each other and the sides of said tapered lug, and means for moving one of said die-blocks and the lug-carrying member independently of each other, and a means for contracting the said jaws, substantially as set forth.

4. In an eye-forming mechanism for button-machines, in combination, a block having the V-stud projected from one face thereof and the movable block having the U-opening, a slide carrying a tapered stud or lug and movable to carry it into proximity to the said V-stud, and jaws *f f*, mounted on said slide at each side of the said lug and adapted to swing toward and from the latter and having a spring 64, and another slide having a cam-opening *m* and movable relative to said jaws *f* to contract the same, and means for imparting the respective movements to the movable die-block and the said slides, all for operation as described.

5. In an eye-forming mechanism, the combination, with the block and V-stud and the block with the U-opening, of the slide with the tapered lug *d*, which has a screw engagement with the slide for lateral adjustment, the jaws *f f*, and means for contracting same, as set forth.

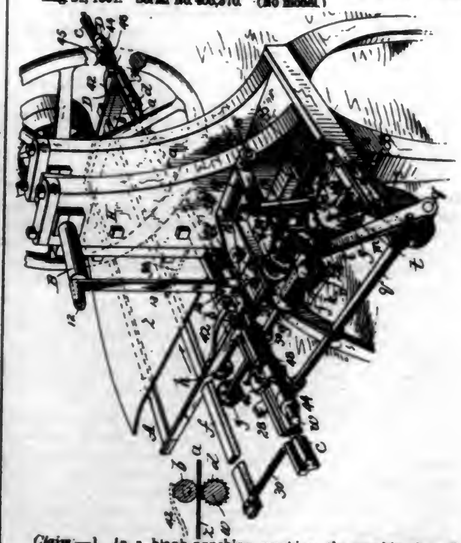
6. In an eye-forming mechanism for button-machines, the combination, with the die A, having the V-stud, and the slide *g*, having thereon the die B, and the latter provided with the U-opening, and the cam 43 for moving said slide, of the slide *j*, movable at right angles to the movement of the slide *g* and having the shank-forming lug and also the pair of pivoted jaws *f f* and the expanding spring therebetween, and the cam 51, and the slide *k*, having the opening *m*, and the cam 59 for said slide, as described and shown.

7. In an eye-forming mechanism for button-machines, the combination, with the die-block A, having the V-stud *a*, and the slide *g*, of the die-block B thereon, which has the U-opening, said slide being movable to place the said block in the relation to the other block, as described, the cam 43, acting to force the said slide forward, and one or more cams 47, acting relative to an extension which is provided on the slide *g* to effect the return movement of the latter, substantially as described.

8. In a button-machine, the combination of the button-blank receiver consisting of the jaws 32 32, having the pocket therein, and the carrier on which said jaws are mounted and movable, as described, provided with the block 82, and parallel rods 84 84, movable in sockets which are provided therefor in the carrier, and the screw 85 by its shank entering the carrier and by its head bearing against said block, and the cam 80, having an engagement with the said block, all as and for the purpose set forth.

9. In a button-machine, the combination of the dies A B, having the depressions 20 22, and the carrier E and ways in which the same has a longitudinal movement, supplemental ways provided on said carrier at right angles to its line of movement, the blank-receiver consisting of forwardly-extended jaws 32 32, having their edges which are toward each other inclined and having the outwardly-extended extensions 72 fitted and adapted to be guided in the transverse ways of the carrier, springs applied to maintain the jaws together, and the reciprocatory carrier F, having the head *r*, adapted to impinge upon the inclined portions of said jaws and carrying in advance thereof the die C, substantially as described.

474,321. FEED MECHANISM FOR PUNCHING-MACHINES. FRED. H. HARDMAN, Beverly, assignor to Walter E. Bennett, Boston, Mass. Filed Aug. 21, 1891. Serial No. 403,370. (No model.)



Claim.—1. In a blank-punching machine, the combination of the frame, as A, and supports therefor on which the same is movable, said frame being provided with a rack-bar which extends in the direction of the movement thereof, a pair of separated pinions *g* and *h*, engaging the said rack-bar, and the arbors *g'* and *h'*, on which said pinions are carried, and the one *g'* having thereon the ratchet-wheel *m* and the arbor *h'* having thereon the gear-wheel *i*, the sleeve *k*, loosely mounted on the arbor *g'* and having the gear-wheel *j*, which meshes with the one *i*, and also having the ratchet-wheel *l* thereon, and mechanism for alternately actuating said ratchets *l* and *m*, for the purpose set forth.

2. In a blank-punching machine, the combination, with a frame, as A, supported and movable, substantially as described, and the separated ratchet-wheels *l* and *m*, respectively mounted on rotary bearing-supports therefor and connected with the said frame for reversely moving same, substantially as described, of the pawl-carrier *n*, mounted for a reciprocating movement, and means for imparting the same thereto, the double-membered pawl pivoted on the carrier, and devices intervening between and connected to the said movable frame and said double pawl for periodically shifting the latter, whereby the one or the other member thereof may be in engagement with the one or the other of the said ratchet-wheels, for the purpose set forth.

3. In a blank-punching machine, the combination, with the ratchet-wheels *l* and *m* and axial rotary parts on which same are mounted, of the reciprocating pawl-carrier *n*, having the double-membered pawl pivoted thereon and the same being provided with the extension-lug 24, the yoke 25, engaging said lug, and the slide *s*, on which the same is carried, having the studs 33 33, the rock-shaft *q*, having the radial arm 28 thereon, and the arm *t*, provided with the trough and ball, and the movable frame A, provided with separated lugs 30 30, adapted to alternately engage the said arm 28, and intervening movable connections connected to the said frame and to the rotary ratchet-supporting parts, substantially as and for the purposes set forth.

4. In a blank punching machine, in combination, the frame A, supported and movable, as described, the ratchet-wheels *l* and *m*, having separate rotary supports which are gear-connected to the said frame for respectively insuring a line movement thereof in reversed directions, the swinging pawl-carrier *n*, having the double pawl pivoted thereon, the rock-shaft 16, having arms 15 and 17, the link connecting the latter with the pawl-carrier, the driving-shaft having the crank-pin, and a connection between the same and the arm 15, substantially as described.

5. The combination, with the ratchets *l* and *m*, of the reciprocatory pawl-carrier having the double-membered pawl pivoted thereon provided with the arm 19, the arrow-head mounted on the pawl-carrier and forwardly spring-pressed and having a yielding pressure on the said arm, the frame A, having the abutment-lugs 30 30, the rock-shaft *q*, having the radial arm 28, and the trough and ball and carrying-arm *t*, the slide *s*, having the studs 33 33 and supporting a yoke which has an engagement with said double-membered pawl, all for operation substantially as and for the purpose set forth.

6. In a blank-punching machine, the combination, with a frame, as A, having thereon the feed-roll shaft *w* and a coacting feed-roll *b*, and said shaft *w* having thereon the fixed ratchet-wheels 48 48, and the sleeves D D, each having the cam 44, and the spring-pressed pawl 47, the stationary impingement-studs 52 52, and means for moving the said frame, all as and for the purposes set forth.

474,322. LEAD-LINED PIPE. GEORGE W. HARRINGTON, Wakefield, Mass. Filed Nov. 20, 1891. Serial No. 412,492. (No model.)



Claim.—1. A lead-lined iron pipe having its end unflanged or of a diameter no greater than that of the body of the pipe and having a lead bead formed upon said end, said bead being integral with the lining and rounded or beveled outward to a point not exceeding the outer circle or edge of said end, for the purpose set forth.

2. A lead-lined iron pipe having lead beads of convex form in cross-section formed upon its ends, combined with a lead-lined coupling having seats on the ends of its lining, said seats being arranged to bear on the beads, as set forth.

474,323. TELEPHONE-CIRCUIT. HAMMOND V. HAYES, Cambridge, assignor to the American Bell Telephone Company, Boston, Mass. Filed Jan. 13, 1892. Serial No. 417,967. (No model.)



Claim.—1. Two telephone-circuits, each extending from a sub-station to the same central station and completed or closed through a section of conductor common to both, which common conductor includes an electrical generator, such as a storage-battery, and an induction-coil interposed between the said generator and one of the conductors of the said circuits and having its two helices or windings included in the said two circuits, respectively.

2. The combination of two telephone-circuits extending from sub-stations to the same central station, each provided at its sub-station with suitable transmitting and receiving telephones and both completed at the central station through a section of conductor common to both, a battery of low internal resistance included in the said common section of both circuits and supplying both with currents, and an induction-coil the two helices or windings of which are of like length and resistance located at the central station and having its said helices connected in the said two circuits, respectively, whereby each circuit when transmitting constitutes the primary and when receiving the secondary circuit of said induction-coil, substantially as described.

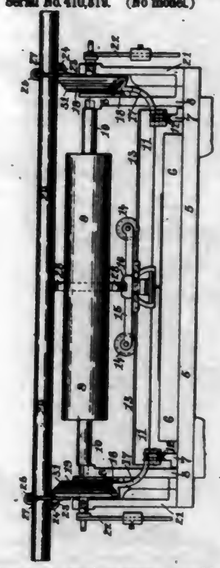
3. A compound telephone-circuit extending between two terminal stations through an intermediate station, provided at each terminal station with receiving-telephones and variable-resistance transmitters and constituting a single conversation-circuit composed of two independent battery-circuits, the battery being common to both and included in a bridge or branch between the direct and return conductors at the intermediate station, combined with an induction-coil the two windings of which are substantially alike and connected, respectively, in the said two battery-circuits, substantially as described.

4. A compound telephone-circuit extending between two terminal stations through an intermediate station, a transmitting and receiving telephone at each terminal station, an induction-coil at the intermediate station having its two windings or helices in series in the direct conductor of said circuit, and an electrical generator, such as a storage-battery, in a bridge or derivation extending from the return conductor to a point on the direct conductor between the said two helices of said induction-coil, substantially as described.

5. The combination, in a system of centralized transmitter-batteries, of a number of telephone-circuits, each extending from sub-stations to a central station and each provided at its sub-station with suitable transmitting and receiving telephones, switch connections for connecting the said circuits in pairs for through communication and for simultaneously establishing a bridge or derivation between the two conductors at the two circuits concerned, a battery of low internal resistance adapted to be included simultaneously in the bridge-circuit of several such pairs, and an induction-coil for each pair, having its two helices connected, respectively, in the two circuits constituting such pair, substantially as described.

6. The combination, in a compound telephone-circuit extending between two sub-stations through a central station, of a main-line transmitter battery therefor, and a disconnecting-annunciator included in the said circuit or in a derived circuit thereof, with two branch circuits at the sub-stations, one including the telephones and the other including a condenser and a call-bell, and an automatic switch actuated by the removal of the telephone from its support to close the battery-circuit by connecting the telephone branch and by the replacement of said telephone to break the battery-circuit by connecting the bell and condenser branch, whereby the replacement of said telephone is enabled to automatically operate the disconnecting-signal.

474,324. PANTOGRAPH ENGRAVING-MACHINE. CHARLES H. HOPE, Providence, R. I., assignor to John Hope & Sons, same place. Filed Nov. 4, 1891. Serial No. 410,819. (No model.)



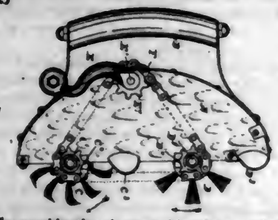
Claim.—1. In a pantograph engraving-machine, a curved guide-bar movable in the traverse-groove of the stylus-carriage and secured to mechanism carrying the tracing-points, as described.

2. In a pantograph engraving-machine, the combination, with the stylus-carriage 15, having a traverse-groove, and a curved guide-bar movable in said groove and secured to a longitudinally-movable rod or shaft carrying the tracing-points, of means for revolving said rod or shaft around the surface of the roll, as described.

3. The combination, with the shaft 29, carrying tracing-points and movable longitudinally on the disks 24 and 25, secured to a shaft working on suitable bearings in the brackets 23 and arms 27, and the curved guide-bar 28, secured to said said shaft and movable in the traverse-groove 16 of the stylus-carriage 15, of the step-pulleys 19, carrying said brackets 23 and arms 27 and supported on counterweighted shafts working in suitable bearings, and the bands or belts 31, wound around

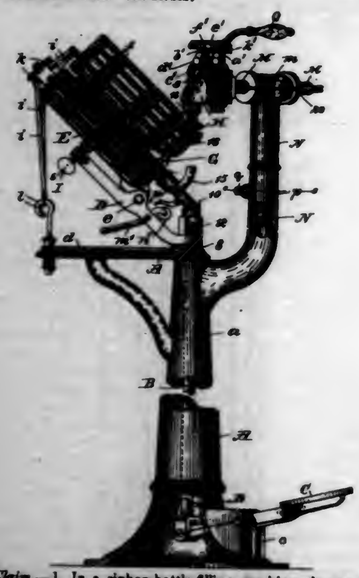
steps of said pulleys and having their ends secured to slotted extensions 18 of the arms 17, secured to the traverse-carriage 11, as and for the purpose described.

474,325. CURRYING AND BRUSHING MACHINE. SAMUEL A. JOHANSON, Everett, Mass., assignor of one-half to Alexander Sandberg and John Sandberg, same place. Filed Oct. 17, 1891. Serial No. 409,086. (No model.)



Claim.—The combination, in a machine for currying and brushing animals, of a box or frame A, open at its lower side and provided with the toothed plates C^3 D^3, a pair of brush-shafts C' D', journaled to the box or frame, having brushes which act against the toothed plates and provided, respectively, with sprocket-wheels C'' D'', a drive-shaft E', journaled in the box or frame, extending in a plane parallel with the brush-shafts and provided with a sprocket-wheel E'' and a crank-handle E, an endless chain belt F, engaging the sprocket-wheels of the brush and drive-shafts, and a handle B, rigidly connected with the box or frame for guiding the apparatus while in use, substantially as described.

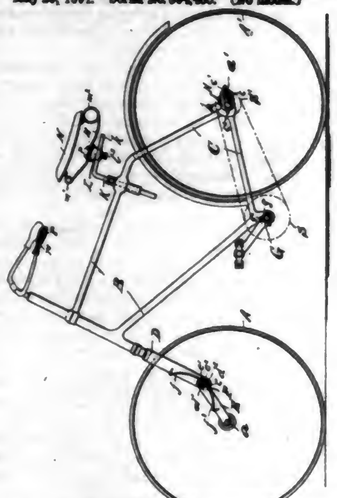
474,326. SIPHON-BOTTLE-FILLING MACHINE. FREDERIC J. JOHNSTON, Cambridge, and GEORGE E. BARTON, Somerville, assignors to the American Soda Fountain Company, Boston, Mass. Filed Jan. 6, 1892. Serial No. 417,230. (No model.)



Claim.—1. In a siphon-bottle-filling machine, the combination, with the frame or standard A and the vertically-movable supporting arm or bracket D, adapted to be operated by a treadle, of the inclined siphon-bottle holder E, pivoted to the arm or bracket D, and the regulating-screw I, passing through the arm D and swiveling in the under side of said bottle-holder, whereby the latter can be adjusted to vary its angle of inclination, substantially as described.

2. In a siphon-bottle-filling machine, the combination of the frame A, the vertically-inclined supporting arm or bracket D, adapted to be operated by a treadle, the inclined siphon-bottle holder E, pivoted at *e* to the arm or bracket D and provided with the regulating-screw I, passing through said arm and connected with said bottle-holder, and the filling-head H, mounted upon a vertical post N, adapted to swivel upon its supporting-arm *p*, whereby said filling-head is adapted to be traversed horizontally in the arc of a circle, all constructed to operate substantially as set forth.

474,327. BICYCLE. GEORGE W. MEIGS and JOHN G. ZIEGLER, Reading, Pa.; said Meigs assignor to Edward R. Ziegler, Philadelphia, Pa. Filed May 29, 1891. Serial No. 394,485. (No model.)



Claim.—1. In a cycle, the combination, with a saddle-supporting stand, of a saddle having an elastic base forming normally a tangent with the supporting-surface of the stand, and adjustable clamping mechanism adapted to distort the normal shape of said elastic base in clamping the same to the stand, substantially as set forth.

2. In a cycle, the combination, with a saddle-supporting stand, of a saddle having an elastic base forming a tangent with the supporting-surface of the stand, a seat connected to the upwardly-extended ends of the elastic base, and adjustable clamping mechanism whereby the tension upon said seat is regulated, substantially as set forth.

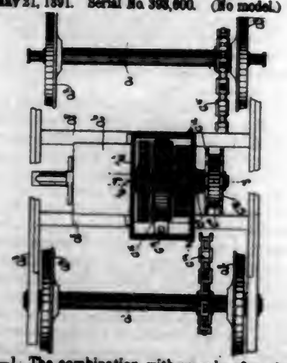
3. In a bicycle, a saddle-supporting stand having a curved supporting-surface for the saddle and a T-slot therein for the clamping-bolts, substantially as set forth.

4. In a cycle, the combination, with a saddle-stand having an upwardly-curved supporting-surface, of a saddle having an elastic base curved upward to a larger radius than the supporting-surface of the stand, and means for clamping said base to the stand, substantially as set forth.

4. A cycle-handle consisting of an elastic core, as of rubber, and a fibrous absorbent covering of linen or other suitable non-conducting material, substantially as and for the purpose set forth.

6. In a velocipede, the combination, with the pedal-shaft having three or more longitudinal grooves, of the crank having a correspondingly-grooved hub-bore loosely inclosing the shaft and a slot in the crank extending from said bore, pins entered in the grooves, and a clamping-bolt, all substantially as and for the purpose set forth.

474,328. ELECTRIC-MOTOR MECHANISM. SAMUEL E. MOWER, New Haven, Conn., assignor to Henry G. Thompson & Sons, same place. Filed May 21, 1891. Serial No. 393,600. (No model.)



Claim.—1. The combination, with an axle, of an electric motor to rotate it independent of the said axle, a sprocket-wheel on the axle, a

sprocket-chain, a sleeve on the armature-shaft of the motor, a sprocket-wheel on said sleeve, a gear on said sleeve, and reducing-gearing between said gear on the sleeve and the armature-shaft, substantially as described.

2. The combination, with an axle, of an electric motor to rotate it independent of the said axle, a sprocket-wheel on the axle, a sleeve on the armature-shaft of the motor, a sprocket-wheel on said sleeve, and sprocket-chain, a gear on said sleeve, a disk, as *c*, mounted on the armature-shaft, one or more shafts carried thereby and provided with a pinion in mesh with the said gear on the sleeve and also with a gear meshing with a gear fast to the shaft, and means for varying the relative speed of the disk and shaft, substantially as described.

3. The combination, with an axle, of an electric motor to rotate it, a sprocket-wheel on the axle, a sprocket-chain, a sleeve on the shaft and sprocket-wheel thereon, a gear on said sleeve, a disk, as *c*, loose on the shaft, one or more shafts carried by it and provided with a pinion engaging the gear on the sleeve, and with a gear engaging a gear fast to the shaft and with a friction device engaging said disk, substantially as described.

4. The combination, with two axles, of a sprocket-wheel on each axle, an electric motor and supports therefor for supporting it between the said two axles, a sleeve on the armature-shaft of said motor, two sprocket-wheels on said sleeve, two sprocket-chains connecting the sprocket-wheels on the sleeve with the sprocket-wheels on the axles, and reducing-gearing between the said sleeve and the armature-shaft and means for controlling the operation of said reducing-gearing, substantially as described.

5. In combination with an axle of a railroad-car, an electric motor mounted on an axle between the driving-wheels to rotate the same, a sleeve mounted on the armature-shaft for transmitting the power to the axle, and speed-reducing mechanism connecting the sleeve to the armature-shaft, comprising a toothed gear on the sleeve, a toothed gear on the shaft, a disk or drum located between said gears and mounted loosely on the shaft, differential toothed gears and pinions borne by said disk on either side thereof, adapted to respectively engage the toothed gear on the shaft and toothed gear on the sleeve, substantially as described.

6. In combination with an axle of a railroad-car, an electric motor mounted on the axle under the car and between the driving-wheels to rotate the same, a sleeve loosely mounted on the armature-shaft for transmitting the power to the axle, and speed-reducing mechanism connecting the sleeve to the armature-shaft, comprising a toothed gear on the sleeve, a toothed gear on the shaft, a disk or drum located between said gears and mounted loosely on the shaft, differential toothed gears and pinions borne on either side by said disk, adapted, respectively, to engage the toothed gear on the shaft and toothed gear on the sleeve, and means for holding and releasing said disk or drum at will, substantially as described.

474,329. SASH-BALANCE. BYRON H. ROSE, Rochester, N. Y., assignor to the Pullman Sash Balance Company, same place. Filed Mar. 12, 1892. Serial No. 424,630. (No model.)



Claim.—In a sash-balance, the combination of the case A, provided with the side plates *b b*, the spring-drum B, turning on a rivet therein and provided with the projecting rim *d*, the cover E, fitted loosely between the side plates, inclosing the drum and resting against its rim *d*, and the spring G, interposed between the cover and the side plate of the case for forcing the cover against the rim of the drum, as herein shown and described.

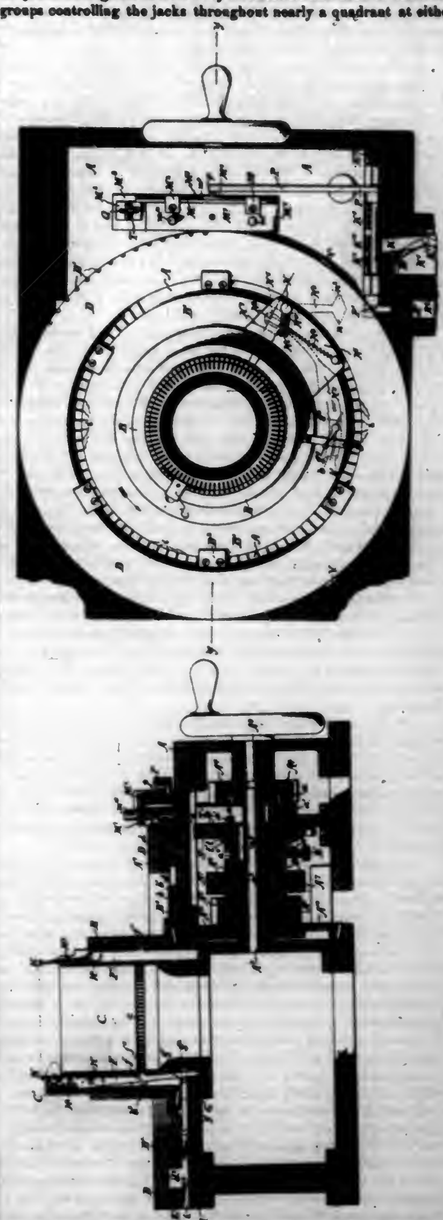
474,330. CIRCULAR-KNITTING MACHINE. JULIA M. SLACK, Bristol, administratrix of James M. Slack, deceased, and George J. Graff and John B. Paxton, Philadelphia, Pa.; said Paxton assignor to said Julia M. Slack, administratrix, and George J. Graff. Filed Aug. 9, 1888. Serial No. 282,264. (No model.)

Claim.—1. The combination, with the needle-cylinder having a slot *c*, which communicates with the bottoms of the needle-grooves, of the needles and the jacks pivoted to the same, said jacks having projections f^3 on their inner sides adapted to enter said slot.

2. The combination of the needles, the jacks pivoted thereto, the sliding jack-shifters engaging with the lower ends of said jacks, and mechanism, substantially as set forth, whereby said shifters are moved in a direction radial to the needle-cylinder.

3. The combination of the jack-shifters G, having uprights *g*, the cam-cylinder B, having a flange B' and communicating grooves *b b'* therein, adapted to receive said uprights, and switching mechanism, substantially as set forth, whereby said communication is controlled.

4. The combination, with the needles and the jacks hinged thereto, of three distinct groups of jack-shifters, one of said groups controlling the jacks throughout substantially a semicircle and each of the other groups controlling the jacks throughout nearly a quadrant at either



end of said semicircle, and mechanism, substantially as set forth, whereby each group of jack-shifters is independently actuated.

5. The combination, with the needle-cylinder, cam-cylinder, needles, jacks, jack-shifters J and J', and their toothed actuating-rings D and E, arranged one above the other, of a pair of pawls facing in opposite directions and having shafts capable of vertical movement, a horizontally-movable carriage for said pawls, a pawl-shifter engaging with the respective pawls and adapted to shift them from the plane of one ring to that of the other, and mechanism, substantially as set forth, whereby said carriage is reciprocated and said pawl-shifters are actuated at stated intervals in the knitting operation.

6. The combination, with the cam-cylinder B and flange B', said flange having a pair of communicating grooves *b b'*, of the pivoted switch-gate g^3, handle and stud g^4, the fixed piece N', having a groove N^2, with a funnel-shaped front end, and a pivoted slotted gate-piece N^3, arranged near the rear end of said groove, and mechanism, substantially as set forth, whereby said gate-piece is shifted at definite intervals in the rotation of the cam-cylinder.

7. The combination, with the toothed rings D and E, of the pawls *m m'*, the longitudinally-movable shafts m^3 m^{10}, the pins m^2 m^3, mounted on said shafts, the horizontally-sliding box M^7, in which said shafts are journaled, the plate M, longitudinally movable with reference to said box and having slots m^7 m^8, inclined in opposite directions and adapted, respectively, to engage with the pins m^2 m^3, the cam-pieces M^5 and M^6, the lever P, having a stud *p*, adapted to engage between said cam-pieces, the piece Q, longitudinally movable with reference to said box and having slots *q q'* with opposite inclines, the strips Q^3 Q^4, having pins which engage in said slots and having pins q^4 q^5, adapted to engage with the pawls *m m'*, respectively, and actuating mechanism, substantially as set forth, whereby said box as a whole is reciprocated and said plate Q is shifted relatively to said box, and also mechanism, substantially as set forth, whereby said lever P is actuated at definite intervals in the movement of said box.

8. The combination, with the driving-shaft A^9 and beveled gear A^{10}, rigidly mounted thereon, of the loose gears A^4 A^5, the sliding clutch-coupling whereby either of said gears may be coupled to said shaft, the gear A^{12}, engaging with the gear A^5, the segment A^{11}, engaging with the gear A^4, the radius-arm of said segment being provided with a slot A^{13}, the pin A^{14}, mounted upon the proximate face of the gear A^{12} and engaging with said slot, and the main driving-shaft A^6, having a spur-gear adapted to rotate said gear A^{12}, whereby either a continuous rotary motion or an oscillating motion may be imparted to the shaft A^9 and its bevel-gear, substantially as set forth.

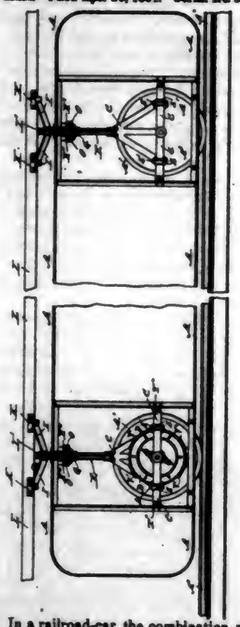
9. The combination, with the driving-shaft A^6 and the clutch-coupling which controls its movement, of the shifting-lever K, pin K^7, and the cylinder K^9, free to rotate in one direction only, and having a cam-slot K^8, adapted to engage with said pin, whereby a movement of the shifting-lever in the wrong direction is prevented.

10. The combination, with the driving-shaft A^6 and the clutch-coupling which controls its movement, of the shifting-lever K, having a stud K^{10}, hinged flap K', having notches adapted to engage with said stud, and mechanism, substantially as set forth, whereby said flap is raised at suitable intervals in the rotation of the driving-shaft, whereby shifting of the lever at the wrong time with reference to said rotation is prevented.

11. The combination, with the driving-shaft A^6 and the clutch-coupling which controls its movement, of the shifting-lever K, having a stud K^{10}, a hinged flap K', having notches adapted to engage with said stud, mechanism, substantially as set forth, whereby said flap is raised at intervals in the rotation of the driving-shaft, and a pair of springs normally tending to maintain said lever and said coupling in a neutral position with reference to the driving mechanism, substantially as set forth.

12. The combination, with the needle-cylinder, the cam-cylinder, the needles, and the jacks and jack-shifters connected with said needles and arranged in groups substantially in the manner set forth, of a bevel-gear engaging with said cam-cylinder, driving mechanism embracing a driving-gear and a driving-segment operatively connected with the main driving-shaft, a sliding clutch-coupling for determining the control of the said bevel-gear by the said driving-segment and driving-gear, a hand-lever engaging with said coupling, rotatable rings provided with cam-grooves adapted to engage with the respective jack-shifters of two groups thereof, an annular flange mounted upon the cam-cylinder and provided with cam-grooves adapted to engage with the jack-shifters of a third group, a gate-piece controlling the communication between said last-mentioned cam-grooves, actuating mechanism, substantially as set forth, for rotating said rings, respectively, and actuating mechanism, substantially as set forth, for shifting said gate-piece, a pattern-chain having high links *o'* and low links o^2, studs O^3 O^4 upon its opposite sides and rollers o^3 upon one of its sides, a spring-actuated lever P, provided with a finger P', which rests upon said links, pawls engaging with said rings, actuating mechanism, substantially as described, for said pawls, operatively connected with and controlled by said lever P, a lever N^9, having projections n n^2, adapted to engage, respectively, with said studs O^3 O^4 and operatively connected with the actuating mechanism of said gate-piece, a lever V', adapted to engage with the rollers q^5, a hinged flap K', engaging in one position with said hand-lever, which controls said coupling, but in its other position clearing said hand-lever, and means, substantially as set forth, whereby the lever V' is operatively connected with said hinged flap to control the times of movement of said hand-lever, substantially as set forth.

474,831. BICYCLE ELECTRIC CAR. EBEN M. BOYNTON, West Newbury, Mass. Filed Apr. 20, 1891. Serial No. 389,564. (No model.)



Claim.—1. In a railroad-car, the combination, with the car-body, of a frame fastened to same, extending vertically therethrough and revoluble about a vertical axis, a supporting-wheel at the base of such frame, and lateral supporting-wheels in the frame above the car-body, substantially as set forth.

2. In a railroad-car, the combination, with the car-body, of a frame fastened to same, extending vertically therethrough and revoluble about a vertical axis, said frame supporting the top of the car by means of springs, a supporting-wheel at the base of such frame, and lateral supporting-wheels in the frame above the car-body, substantially as set forth.

3. In a railroad-car, the combination, with the car-body, of a frame fastened to same, revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, a column fastened to said frame and laterally supported in a bearing in the roof of the car, the top of the column being provided with arms carrying guide-wheels suited to embrace the top guide-rail, a shaft journaled in said frame, and a supporting-wheel mounted on the shaft, substantially as set forth.

4. In a railroad-car, the combination, with the car-body, of a frame fastened to same, revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, a column fastened to said frame and laterally supported in the roof of the car, the top of the column being provided with arms carrying guide-wheels suited to embrace the top guide-rail, means for securing the central position of the frame, a shaft journaled in said frame, and a supporting-wheel mounted on the shaft, substantially as set forth.

5. In a railroad-car, the combination, with the car-body, of a frame fastened to same, revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, a column fastened to said frame and laterally supported in a bearing in the roof of the car, the top of the column being provided with arms carrying guide-wheels suited to embrace the top guide-rail, springs transferring the weight of the car to a hub loosely mounted on the column, means for supporting the hub and means for securing the central position of the frame, a shaft journaled in said frame, and a supporting-wheel mounted on the shaft, substantially as set forth.

6. In a railroad-car, the combination, with the car-body, of a frame fastened to same near one end thereof and revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, electric-motor field-magnets fastened to the frame, a shaft journaled in same, and a driving-wheel and armatures mounted on the shaft, the armatures to be acted on by said field-magnets and said wheel forming the support for that end of the car, substantially as set forth.

7. In a railroad-car, the combination, with the car-body, of a frame fastened to same, revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, a column fastened to said frame and laterally supported in a bearing in the roof of the car, electric-motor field-magnets fastened to the frame, a shaft journaled in same, and a driving-wheel and armatures mounted on the shaft, the armatures to be acted on by said field-magnets, substantially as set forth.

8. In a railroad-car, the combination, with the car-body, of a frame fastened to same, revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, a column fastened to said frame and laterally supported in a bearing in the roof of the car, the top of the column being provided with arms carrying guide-wheels suited to embrace the top guide-rail, electric-motor field-magnets fastened to the frame, a shaft journaled in same, and a driving-wheel and armatures mounted on the shaft, the armatures to be acted on by said field-magnets, substantially as set forth.

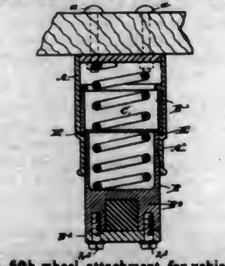
9. In a railroad-car, the combination, with the car-body, of a frame fastened to same, revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, a column fastened to said frame and laterally supported in a bearing in the roof of the car, the top of the column being provided with arms carrying guide-wheels suited to embrace the top guide-rail, means for securing the central position of the frame, electric-motor field-magnets fastened to the frame, a shaft journaled in the same, and a driving-wheel and armatures mounted on the shaft, the armatures to be acted on by said field-magnets, substantially as set forth.

10. In a railroad-car, the combination, with the car-body, of a frame fastened to the same, revoluble about a vertical axis and arranged to be capable of movement in a vertical direction independent of the car-body, a column fastened to said frame and laterally supported in a bearing in the roof of the car, the top of the column being provided with arms carrying guide-wheels suited to embrace the top guide-rail, springs transferring the weight of the car to a hub loosely mounted on the column, means for supporting the hub and means for securing the central position of the frame, electric-motor field-magnets fastened to it, a shaft journaled in same, and a driving-wheel and armatures mounted on the shaft, the armatures to be acted on by said field-magnets, substantially as set forth.

11. In a railroad-car, the combination, with the car-body, of two frames fastened to same, one in each end of the car, both extending vertically therethrough and revolvable about vertical axes, a supporting-wheel at the base of one of said frames, electric-motor field-magnets fastened to the other frame, the latter having a shaft journaled in it, and a driving-wheel and armatures mounted on the shaft, the armatures to be acted on by said field-magnets, each of said frames also being provided with lateral supporting-wheels above the car-body, substantially as set forth.

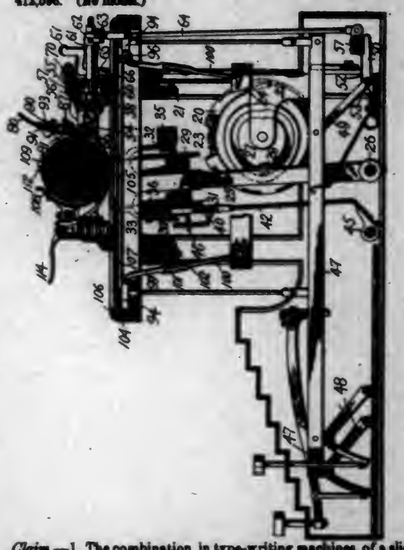
12. In a railroad-car, the combination, with the car-body, of two frames fastened to same, one in each end of the car, both extending vertically therethrough and revolvable about vertical axes, electric-motor field-magnets fastened to each frame, the latter having a shaft journaled in each of them, and a driving-wheel and armatures mounted on each shaft, the armatures to be acted on by said field-magnets, each frame also being provided with lateral supporting-wheels above the car-body, substantially as set forth.

474,882. FIFTH-WHEEL. LEWIS S. BROWNING, Montreal, Canada. Filed Feb. 12, 1891. Serial No. 381,205. (No model.)



Claim.—In a fifth-wheel attachment for vehicles, the combination of the cylindrical section A, the cylindrical section B, the yielding resistance C, and means for securing such sections, respectively, to the vehicle-body and the axle, the section A having an extended contracted end and the section B an extended expanded end adapted to bear, respectively, upon the main portions of the sections to furnish substantial bearing between and prevent the disconnection of such sections.

474,888. TYPE-WRITING MACHINE. CHARLES M. CLINTON and JAMES MCNAMARA, Ithaca, N. Y. Filed Nov. 21, 1891. Serial No. 412,596. (No model.)



Claim.—1. The combination, in type-writing machines, of a sliding carriage, a ribbon-carrier mounted for transverse movement, a spring-wheel journaled upon the frame and connected with the carriage by a cord or chain, a ratchet-wheel journaled to the frame concentrically with the spring-wheel, a spring-pawl upon the spring-wheel to engage the said ratchet, and a detent hung upon the frame to engage the same ratchet, a cam-shaped groove in the face of the ratchet-wheel, and a stud or roller upon the ribbon-carrier to engage the said groove, substantially as described, whereby a positive reciprocating motion will be given to the ribbon-carrier.

2. The combination, in type-writing machines, of a carriage-feed wheel and a grooved cam-wheel connected to be revolved together, a ribbon-carrier mounted for transverse movement and having a stud or roller engaging the said cam-groove, substantially as described.

3. The combination, in type-writing machines, of a spool-carrier having two journal-bearings, a shaft having a journal at one end, a screw-thread near it, a body to receive a spool next to the screw, a shoulder at the end of the body to hold the spool, a journal and a head beyond the shoulder, the said journals fitted to the said bearings, and a ratchet feed-wheel screw-threaded through its hub to receive the said screw-shaft, substantially as described.

4. The combination, in type-writing machines, of a spool-shaft shouldered near one end, screw-threaded near the other end, and provided with journals beyond the shoulder and screw, a ratchet-wheel screw-threaded to receive the said shaft-screw, and a spool-carrier having journal-bearings for the said shaft, substantially as described, whereby a commercial ribbon-spool, a ratchet-wheel, and the shaft therefor may be bound to revolve as one.

5. The combination, in type-writing machines, of a spool-carrier pivoted at one end to the frame, a ratchet-wheel and spool journaled in the carrier, a brace pivoted to the frame at a distance from the carrier-pivot and freely connected to swing with the carrier, and a hook-shaped pawl having ears at one end straddling the said brace and pivoted thereto, and a spring between the brace and pawl, substantially as described.

6. The combination, in type-writing machines, of draw-bars for the type-keys, each draw-bar mounted for a parallel motion on pivoted braces, the rear braces being provided with rearwardly-projecting arms, a spacer-bar having arms pivoted to the frame and resting freely upon the said rear arms, and connections between it and the escapement, substantially as described.

7. The combination, in type-writing machines, of a carriage mounted to slide upon a frame and provided with a feed-rack, two detents pivoted to the frame to engage the rack alternately, a rock-shaft provided with two arms to engage the said detents, respectively, a crank

upon the rock-shaft, and a binding screw adjustably securing the same, a spacer-bar, and a rod connecting it with the said crank, substantially as described.

8. The combination, in type-writing machines, of two feed-rack detents, a rock-shaft provided with arms to engage the detents, a crank upon the rock-shaft, and connections between the crank and spacing-key, the said crank being adjustable around the rock-shaft, substantially as described, whereby the action of the rock-shaft arms upon the detents may be accurately adjusted to control the escapement.

9. The combination, in type-writing machines, of a block upon the carriage having a spring-pin projecting forward in the line of travel, and a locking device for the spacing mechanism having its actuating-arm in the path of the said pin, substantially as described, whereby the advancing carriage first automatically locks the spacing mechanism at the end of a line and then the operator may unlock the same to permit a hyphen or one or more letters to be added.

10. The combination, in type-writing machines, of a carriage, a block longitudinally adjustable thereon, a spacing-mechanism-locking device having its actuating-arm in the path of the said block, and a yielding tripper to communicate motion from the said block to the said actuating-arm, substantially as described.

11. The combination, in type-writing machines, of a block upon the carriage in the path thereof, the actuating-arm of an automatic spacer-locking device, and a yielding tripper between the said block and arm, substantially as described.

12. The combination, in type-writing machines, of a dash-type, means for operating it independently of the spacing mechanism, and means for releasing the carriage to permit it to be drawn freely to and fro, substantially as described, whereby the dash-type is caused to draw a line.

13. The combination, in type-writing machines, of a dash-type rounded at the end in sled-runner fashion, means for holding the type against the paper or ribbon, and means for releasing the paper-carriage to be freely slid along, substantially as described.

14. The combination in type-writing machines, of a bell, a block adjustably secured upon the carriage, and a pin projecting from the block and fitted to slide into it, a spring impelling the pin outward, and a hammer for the bell pivoted to the frame and having an arm projecting into the path of the pin to be pushed by the pin as the latter advances, the said arm being nose-shaped at its end to wedge the pin out of its path in retreating, substantially as described.

15. The combination, in type-writing machines, of a block adjustably fixed upon the carriage, a pin fitted to slide endwise into the block transversely to the line of travel, and a bell-hammer having an arm in the path of the said pin and nose-shaped at its end, substantially as described.

16. The combination, in type-writing machines, of a block adjustably secured upon the carriage, a pin fitted to the block with a yielding movement in line of the carriage, an escapement-operating rock-shaft provided with a radial arm and a hook pivoted to the frame to engage the said radial arm and having an arm extending into the path of the said block-pin, substantially as described.

17. The combination, in type-writing machines, of a trip-pin attached to the carriage with a yielding movement in the direction of the carriage, and an escapement-locking device provided with an actuating-arm in the path of the said yielding trip-pin, substantially as described.

18. The combination, in type-writing machines, of an impression-cylinder journaled in a frame, an apron freely journaled upon a shaft, the latter being fixed at one end and journaled at the other end in the said frame and further being thinned for a portion of its length to serve as a torsional spring, a finger-lever secured to the free end thereof, and connections between the apron and shaft, substantially as described.

19. The combination, in type-writing machines, of a cylinder-frame, a torsional spring-shaft secured at one end and journaled at the other end in said frame, and an apron mounted upon said shaft, substantially as described.

20. The combination, in type-writing machines, of a cylinder-frame, a shaft journaled therein and having a centrally-fixed radial arm and a finger-lever near one end, an apron having two end bearings and a central bearing, all journaled upon the said shaft, and a binding-screw and a set-screw connecting the apron with the said radial arm of the shaft, substantially as described.

21. The combination, in type-writing machines, of a series of separate brackets secured one upon another and all dependent from the ring-table or top ring, substantially as described.

22. The combination, in a type-writing machine, of a series of separate brackets secured one upon another, each to one side of another upon a different radius, and all dependent from the ring-table or top ring, substantially as described.

23. The combination, in type-writing machines, of two portions of a type-bar fitted together midway the length of the bar and secured by screws fitting loosely in holes in one of the portions, substantially as described, whereby the type may be adjusted as to alignment in any direction.

24. The combination, in type-writing machines, of a cylinder mounted to revolve upon a shaft in a frame which has trunnions projecting from its ends directly over the line of the shaft and is provided with a circular segment concentric with one of its trunnions, a carriage having open Y-bearings to receive the said trunnions, and a spring-catch having a stud to engage the inner edge of the said segment, substantially as described.

25. The combination, in type-writing machines, of a cylinder-frame having trunnions and a circular segment notched on its inner edge, a carriage having open Y-bearings for the said trunnions, and a spring-catch having a stud to engage the said segment and the notches therein, substantially as described.

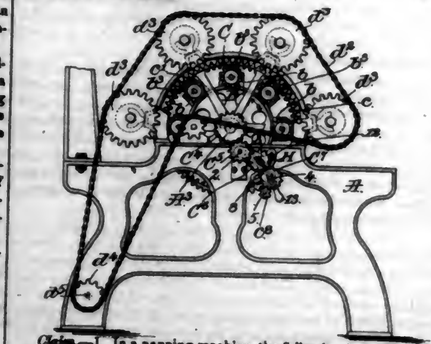
26. The combination, in type-writing machines, of a cylinder-frame having trunnions and a circular segment notched on its inner edge and nose-shaped at one end, a carriage having open Y-bearings for the said trunnions, and a spring-catch upon the carriage having a stud to be raised by the said nose and to engage the said segment and notches, substantially as described.

27. The combination, in type-writing machines, of a cylinder-frame having projecting trunnions, a carriage having open Y-bearings to receive the said trunnions, the shoulder upon the trunnion-shaft, and the adjacent side of the bearing, each being provided with a segmental flange to register with the other, substantially as described, whereby the trunnions will be held in the open bearing when the cylinder is down at work, and will be released when the cylinder is swung upward.

28. The combination, in type-writing machines, of a line-spacing pawl pivoted upon a revolver-lever and having a side projecting leaf and a stop pivoted to the carriage and having two shoulders, either of which may be set in the path of the said leaf to limit the motion thereof to one or two line-spaces, substantially as described.

29. The combination, in type-writing machines, of a block longitudinally adjustable to letter-spaces on the carriage and provided with two trippers, a bell-hammer-actuating arm hung in the path of one of the said trippers, and the actuating-arm of a spacer-locking device hung in the path of the other tripper, substantially as described, whereby a single adjustment arranges to operate both the bell and the locking device at the end of a line.

474,884. CLOTH-NAPPING MACHINE. CHARLES T. DANIELS and GEORGE O. WICKERS, Lawrence, Mass. Filed May 11, 1891. Serial No. 392,305. (No model.)



Claim.—1. In a napping-machine, the following instrumentalities, viz: a rotating drum, a series of napping-rolls having their journals mounted in bearings carried by the said drum and provided with a series of toothed pinions, combined with a loose gear having its teeth engaged by the teeth of the pinions mounted on the napping-rolls, and gearing between the said drum-shaft and the said toothed gear, whereby, while the said drum is rotated, carrying with it the napping-rolls, the latter are positively rotated about their own axes by the engagement of the roll-pinions with the said loose gear, substantially as described.

2. A napping-machine containing the following instrumentalities, viz: a rotating drum, a series of napping-rolls having their journals mounted in bearings in the said drum, a series of pinions fast upon the journals of the napping-rolls, a loose gear mounted loosely on the shaft of the said drum, and speed-changing gearing to rotate the said gear positively and cause the napping-rolls, the pinions of which are engaged by the said gear, to be rotated about their own axes at a faster or slower speed, substantially as described.

3. In a napping-machine, the rotating drum having bearings for the journals of the napping-rolls, a series of card-clothed napping-rolls having each a pinion, a gear loosely mounted upon the shaft of the drum and having internal and external teeth, and a positively-driven gear, combined with speed-changing gearing located between the said

positively-driven gear and the said loose gear, whereby the speed of rotation of the said loose gear may be made more or less, as compared with the rotation of the drum, to thereby effect the positive rotation of the napping-rolls at a predetermined speed, thus enabling the napping to be done uniformly, substantially as described.

4. In a napping-machine, a rotating drum provided with a series of card-clothed napping-rolls, a series of feed-rolls surrounding the said drum, a series of rock-shafts, independent adjustable depressing-bars, rolls or rods carried thereby between the said feed-rolls and arranged in pairs, one upon each side of the napping-rolls, and to depress the cloth more or less toward the said napping-rolls, said rods moving toward and from said rolls in a curved path eccentric to the surface thereof, substantially as described.

5. In a cloth-napping machine, the rotating cylinder provided with a series of card-clothed rolls and a surrounding series of feed-rolls, combined with a series of rock-shafts having arms, cloth-depressing rolls or rods carried by said arms, handles to rock said shafts to adjust the rods, and with locking devices to confine the said handles in adjusted position, substantially as described.

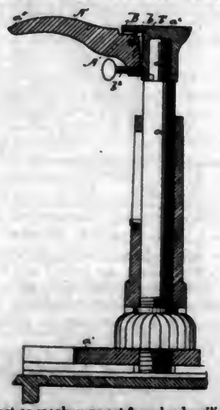
6. In a napping-machine, a rotating drum, a series of card-clothed napping-rolls carried thereby and having pinions provided with non-metallic teeth, an independent gear loose upon the shaft of the drum carrying the napping-rolls and having teeth engaging the pinions of the napping-rolls, combined with a train of gearing driven by or from the drum-shaft and adapted to engage and rotate the said loose gear in the desired direction at the desired speed, substantially as described.

7. A napping-machine containing the following instrumentalities, viz: a drum, a series of napping-rolls carried by and having their bearings on the said drum, a gear fast on the shaft of the said drum, means to engage the said napping-rolls, removable change-gearing intermediate said means, and the gear fast on the drum-shaft to positively actuate said means engaging the napping-rolls and rotate the said rolls on their axes as the drum is rotated, an idle-gear intermediate the said change-gear and the said gear on said drum-shaft, and means to adjust said idle-gear to mesh correctly with said change-gear, substantially as described.

8. In a napping-machine, a rotating drum, a series of card-clothed napping-rolls carried thereby and provided with pinions having non-metallic teeth, combined with a gear engaging a series of the said gears and actuating them during the rotation of the drum, substantially as described.

9. In a napping-machine, the rotating drum having bearings for the journals of the napping-rolls, a series of card-clothed napping-rolls, means to rotate said rolls about their own axes, and speed-changing gearing comprising a series of intermeshing, removable, and idle gears intermediate said means for rotating the napping-rolls and the main shaft of the drum, whereby when the drum is rotated carrying the said rolls they may be rotated about their own axes at a faster or slower speed in the desired direction, substantially as described.

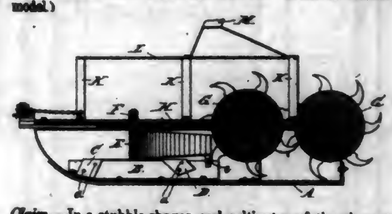
474,885. LAST OR SUPPORT. GEORGE T. DEMARY, Boston, Mass., assignor to the National Heeling Machine Company, Portland, Me. Filed Dec. 22, 1886. Serial No. 222,256. (No model.)



Claim.—1. A last or work-support for a heel-nailing machine, having a stump or heel-support, a fore part pivoted thereto by a horizontal pivot, and the holding-screw b^3, substantially as described.

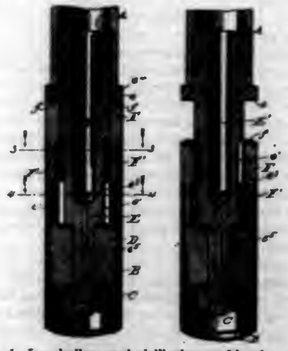
2. The combination, in a last or support for a heel-nailing machine, of the heel-support a^2, having at its forward end the ears B, with the fore part A, having the forward extension a^4, and the rear leg or extension b, secured to the rear part a^2 between the ears B by means of the pin or stud b' passing through the ears and tongue, and a device for adjusting the elevation of said fore part in relation to the surface of the part a^2, substantially as described.

474,886. STUBBLE SHAVER AND CULTIVATOR. SIMEON DOCKERSON, Franklin, La. Filed Sept. 18, 1891. Serial No. 406,123. (No model.)



Claim.—In a stubble shaver and cultivator of the character described, the combination of the blades C and D and the flukes E with the rotary cutters G, substantially as and for the purpose set forth.

474,887. CORE-BARREL FOR ROCK-DRILLS. SAMUEL W. DOUGLASS, Fort Collins, Colo., assignor to the M. C. Bullock Manufacturing Company, Chicago, Ill. Filed Feb. 6, 1888. Serial No. 263,158. (No model.)



Claim.—1. In a hollow rock-drill, the combination, with a drill-rod, of a duplex core-barrel comprising an inner tube attached to the drill-rod and an outer tube having a longitudinal movement with respect to the inner one and with respect to the drill-rod, said inner tube being provided with gripping-dogs, which are engaged with the core by the longitudinal movement of the outer tube, substantially as specified.

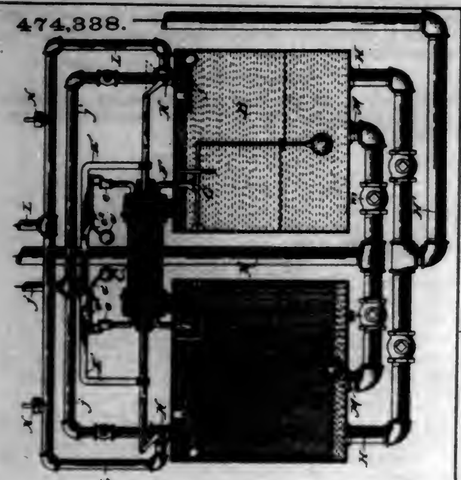
2. The combination, with a drill-rod and a cutter-head, of a duplex core-barrel comprising an inner tube attached to the drill-rod, provided with inwardly and outwardly movable gripping-dogs, and an outer tube carrying the cutter-head and freely movable longitudinally with respect to the inner tube, which outer tube has an interior upwardly-contracting recess into which said dogs normally project when the inner tube is depressed, whereby upon lifting the drill-rod the inner tube is raised and said dogs are caused to grip or seize the core, substantially as specified.

3. The combination, with a drill-rod and a duplex core-barrel, the latter comprising two tubes, the outer one of which is longitudinally movable with respect to the inner one and with respect to the drill-rod, of a plug uniting the inner core-barrel and the drill-rod, said plug having keyways in its periphery, provided with shoulders or offsets, and a head secured in the end of the outer tube, provided with keys suitably arranged to engage said keyways and the shoulders thereof, whereby said tubes may be locked and released, substantially as specified.

4. The combination, with a hollow drill-rod having at its lower end a stem, of a duplex core-barrel comprising two concentric tubes, the inner one of which is attached to the stem and the outer one of which is movable lengthwise relative to the inner tube and to the drill-rod, said stem being provided with one or more passages for water, leading from the interior of the drill-rod to the interior of the core-barrel.

474,888. AUTOMATIC WATER-LIFTING APPARATUS. ISAAC T. DYER, Chicago, Ill., assignor of two-thirds to Ricard C. Burke and John R. Colby, same place. Filed Nov. 25, 1890. Renewed Oct. 16, 1891. Serial No. 408,873. (No model.)

474,338.



Claim.—1. In a water-lifting apparatus, the combination of two tanks adapted to receive water, a cylinder connecting the tanks, piston heads and rods movable back and forth in the cylinder, pipes through which air may be alternately forced into the one tank while it is drawn from the other, pipes through which water may be alternately admitted into the one tank while it is drawn from the other, valves in the air-pipes, with stems connected to the rods of the piston-heads to be operated by the movements of the piston-heads, and valves opening into the cylinder behind the piston-heads, automatically closing alternately as the tanks fill with water and opening alternately as the tanks fill with air, substantially as described.

2. In a water-lifting apparatus, the combination of two tanks adapted to receive water, a cylinder connecting the tanks, piston heads and rods moved back and forth in the cylinder as the air is forced into the one tank or the other, vents opening into the cylinder behind the piston-heads, valves for closing the vents, a carriage moved back and forth with the piston-rods, and trips arranged on the carriage to engage with and lift the valves and open the vents at a certain point as the carriage is moved back and forth, substantially as described.

474,339. ARTIFICIAL-STONE BLOCK. GEORGE M. GRAHAM, Houston, Tex. Filed Dec. 9, 1889. Renewed Nov. 30, 1891. Serial No. 413,504. (No model.)



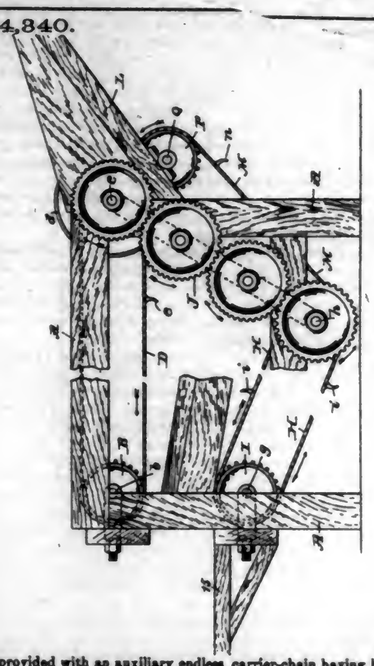
Claim.—A building or paving block adapted to be used singly or in groups, having its opposite faces *b b* square, the faces *c* of oblong hexagonal form, extending between the two square faces, and the rectangular faces *d* intermediate of the hexagonal faces *c*, substantially as described.

474,340. PAN-CONVEYING DEVICE. WILLIAM T. HARPER, Cambridge, Mass., assignor to James W. Hazen, same place. Filed Dec. 21, 1891. Serial No. 415,792. (No model.)

Claim.—1. In a pan-conveying device, the combination, with a frame or table, of two endless carrier-chains arranged one beneath the other and adapted to travel in opposite directions, said chains having carrier hooks or lugs adapted to engage the ends of the pans, and an inclined guide located at one end of the frame or table and adapted to receive the pans from the upper carrier-chain and conduct them right side uppermost to the lower carrier-chain, whereby they are returned to the starting-point without being turned over, substantially as described.

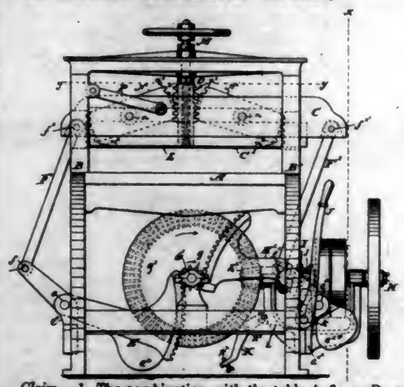
2. In a pan-conveying device, the combination, with the frame or table, of two endless carrier-chains arranged one beneath the other and adapted to travel in opposite directions, said chains having carrier hooks or lugs adapted to engage the ends of the pans, and an inclined guide located at one end of the frame or table and adapted to receive the pans from the upper carrier-chain and conduct them right side uppermost to the lower or return carrier-chain, said inclined guide

474,340.



being provided with an auxiliary endless carrier-chain having hooks or projections adapted to engage the pans after being released by the upper carrier-chain and deliver the same to the lower or return carrier-chain, substantially as set forth.

474,341. PAPER-CUTTER. ALEXANDER MAIN, New York, N. Y. Filed Feb. 4, 1892. Serial No. 420,333. (No model.)



Claim.—1. The combination, with the table A, frame B, and cutter-head C, of the segment-levers E E', the rod F, extending from the outer end of the segment-lever E to the cutter-head, the rod F', extending from a point between the pivot *d* and the inner end of the segment-lever E' to the cutter-head, the shaft G, means for gearing this shaft with the segment-levers E E' and with the driving-shaft H, and a clutch mechanism I for throwing the shafts G and H in or out of engagement, substantially as described.

2. The combination, with the table A, frame B, and cutter-head C, of the segment-levers E E', the connecting-rods F F', the shaft G, geared with the segment-levers and with the driving-shaft H, the clutch mechanism I, and the tappet-lever K, geared with the clutch mechanism and having a free end portion arranged in the path of the segment-lever E' to actuate the clutch mechanism when the knife has descended to the desired point, substantially as described.

3. The combination, with the table A, the frame B, the clamping-bar L, and the screw-spindle M for depressing the clamping-bar, of two levers which engage the clamping-bar at points between their ends

and the frame B at their outer and the screw-spindle at their inner ends, substantially as described.

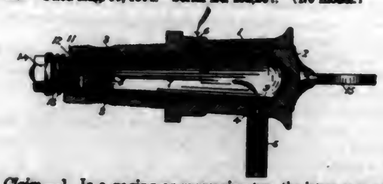
4. The combination, with the table A, the frame B, the clamping-bar L, and the screw-spindle M, of the nut O, provided with cogs *o o*, and the levers N N, pivoted to the clamping-bar between their ends and provided with cogs *n' n'* to engage the nut O and with cogs n^2 n^2 to engage cogs b^2, formed on the frame B, substantially as described.

474,342. STENCH-TRAP. WILLIAM H. MERRICK, Long Island City, N. Y. Filed July 25, 1891. Serial No. 400,700. (No model.)



Claim.—The combination, with a sink having a waste-opening covered by a perforated plate or strainer, of the bearing-arch 4, the metal cup 8, the rubber cushion 9, secured thereto, the pivoted cam-lever having the flat body formed with the projecting edge flange 7, and the connecting-link 11, pivoted at its lower end to the metal cup 8, and formed at its upper end with the points 12, curving inward at their free ends over the edge flange 7 of the cam-lever, substantially as and for the purpose set forth.

474,343. MEASURING-FAUCET. GEORGE F. OAKLEY, Toronto, Canada. Filed Aug. 10, 1891. Serial No. 402,237. (No model.)



Claim.—1. In a gaging or measuring tap, the inner case adapted to fit neatly to operate within an outer case and having a capacity chamber within it, an air-vent in the top and an outlet in the bottom side to coincide both with a corresponding air-vent and an outlet in the outer case in discharging, a stop-pin to operate in a slot in said outer case, and the diametrical ports at the opposite end arranged to open when said air-vent and outlet in the other end are closed, substantially as shown and described.

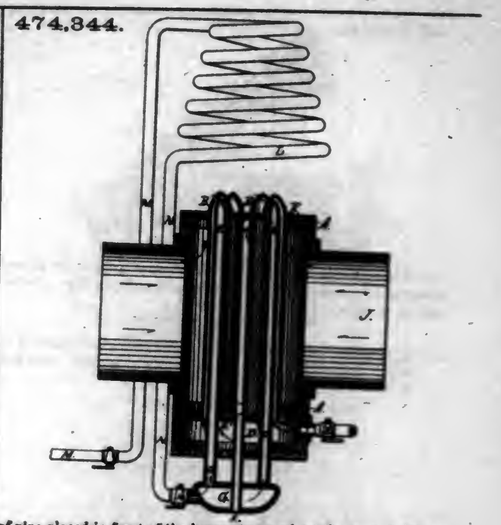
2. In a gaging or measuring tap, the combination of the outer case provided with means whereby it is secured in a vessel and having both an air-vent and an outlet in the end without the said vessel and a slot in the end within said vessel, with the inner case fitted neatly to operate within said outer case and having an air-vent and an outlet to correspond to the same in said outer case when discharging, a stop-pin to operate in a slot in said outer case, and diametrical ports in the opposite end of said inner case within the vessel and arranged to open after said air-vent and outlet in the outer end have closed, substantially as shown and specified.

474,344. APPARATUS FOR GENERATING HEAT. HENRY A. RAMSAY, Baltimore, Md. Filed May 1, 1891. Serial No. 391,233. (No model.)

Claim.—1. A burner for liquid hydrocarbon, consisting of a casing having a perforated tube-head, a series of open oil-tubes in the casing extending to said tube-head, a series of open steam-tubes within the oil-tubes terminating just within the ends of the oil-tube, and hot-air conduit communicating with the casing, substantially as shown, and for the purpose set forth.

2. The combination, in a burner for liquid hydrocarbon, consisting of a casing having a perforated tube-head, a series of open oil-tubes in the casing extending to said tube-head, a series of open steam-tubes within the oil-tubes terminating just within the ends of the oil-tubes, and hot-air conduit communicating with the casing, and a spiral coil

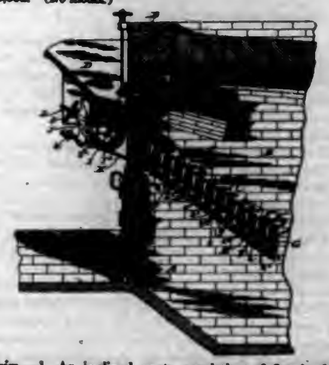
474,344.



of pipe placed in front of the burner to superheat the steam in its passage to the chamber G, giving communication to the aforesaid series of steam-tubes, all substantially as set forth.

3. In a burner for liquid hydrocarbon, the combination of a casing having a perforated tube-head, a series of oil-tubes secured to and communicating with chamber D at one end and extending through said tube-head of casing at the other end, a series of open steam-tubes within the oil-tubes secured to chamber G outside and independent of chamber D, said steam-tubes passing through oil-chamber D and thence into the oil-tubes, terminating just within the ends of the latter, and connected superheater, together with the hot-air conduits passing through the furnace and connecting with the casing, substantially as described.

474,345. GRATE. WILLIAM B. ROBEY and JOHN T. ARNOLD, Chicago, Ill. Filed June 23, 1890. Renewed Feb. 23, 1892. Serial No. 422,352. (No model.)



Claim.—1. An inclined grate consisting of flat horizontally-arranged grate-bars having depending webs or flanges provided with longitudinal slots or openings, substantially as described.

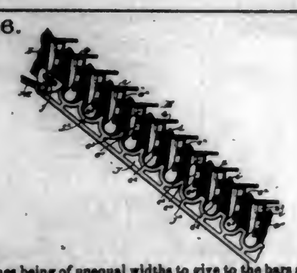
2. An inclined grate provided with flat horizontal grate-bars arranged to overlap each other and provided with depending webs or flanges having slots or openings arranged opposite the spaces between the grate-bars, substantially as described.

3. An inclined grate consisting of flat horizontal grate-bars provided with depending webs or flanges having longitudinal slots or openings, said grate-bars being apertured or perforated, substantially as described.

474,346. FURNACE-GRATE. WILLIAM B. ROBEY, Chicago, Ill. Filed July 25, 1890. Renewed Feb. 23, 1892. Serial No. 422,361. (No model.)

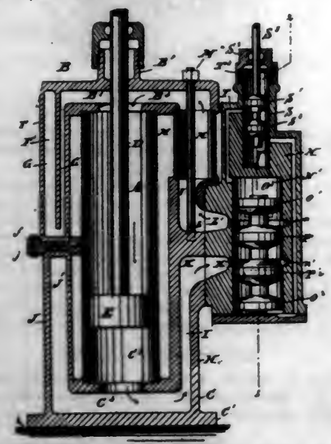
Claim.—The combination, with an inclined grate consisting of a series of horizontal transversely-arranged movable grate-bars, of a reciprocating actuating-bar provided with notches to engage the grate-

474,846.



bars, said notches being of unequal widths to give to the bars a greater movement in one part of the grate than to those in another, substantially as described.

474,847. WATER-MOTOR. SYLVANUS D. SHEPPERD, Newark, N. J., assignor to the Backus Water Motor Company, same place. Filed Nov. 13, 1891. Serial No. 412,340. (No model.)



Claim.—1. The combination, with a tube and a piston in the same, of two head-sections placed against the ends of the same, one section being provided with a leg provided with channels, a valve-casing secured to said leg, and a piece of tubing connecting said leg with the other head section and communicating with one of the channels in said leg, substantially as set forth.

2. The combination, with a tube, of two head-sections placed against the ends of the same, one head-section being provided with two legs, of which legs one has two channels, the other leg forming an air-chamber, the other head-section being provided with a single leg, forming an air-chamber, a piece of tubing inserted between the head, having one leg and the leg provided with channels, bolts for holding the two head-sections together, and a valve-casing secured on the leg provided with the channels substantially as set forth.

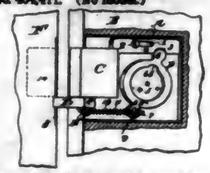
3. The combination, with a tube, of two head-sections placed against the same, of which head-sections one is provided with two legs and the other with one leg, the two opposite legs having flanges which are bolted together, a piece of tubing inserted between the remaining leg of one section and the under side of the other head-section, a rod passing through said piece of tubing and secured in the leg on which the tubing rests and also passing through the other head-section, a nut on said rod, channels in the leg in which the rod is secured, and a valve-casing secured on said leg provided with the channels, substantially as set forth.

4. The combination, with a tube, of two head-sections held against the ends of the same, which head-sections are provided with legs, one leg of one section being provided with two channels and with a seat, which seat has two bores communicating with the channels, a valve-casing bolted on said seat, valves in said casing, and mechanism for operating said valves, substantially as set forth.

5. The combination, with a tube, of two head-sections held against the ends of the same, which sections are provided with legs, one leg of one section being provided with two channels and with a valve-seat having two ports communicating with the channels, and a valve-casing bolted on said seat, which casing has two independent bores—a water-actuated valve in one bore and a governing-valve for said water-actuated valve in the other bore—substantially as set forth.

6. The combination, with a tube and a piston on the same, of two head-sections on the same, which head-sections are provided with legs, one leg of each section forming an air-chamber, one of said air-chamber legs being provided with a partition forming in said leg a channel and an air-chamber, the remaining leg of one section being provided with two channels and a valve-casing seat, a valve-casing on said seat, valves in said casing, and a piece of tubing connecting the leg on which the valve-seat is attached with the opposite head-section, substantially as set forth.

474,848. CYLINDER-LOCK. EUGENE C. SMITH, New York, N. Y., assignor to the Universal Lock Company, same place. Filed Sept. 1, 1891. Serial No. 404,411. (No model.)



Claim.—1. In cylinder-locks, and in combination with a bolt and a strike-lever, an idler pivoted to move independently of the cylinder, and devices for connecting the idler with the cylinder, so that the idler may be moved by the cylinder.

2. The combination, in cylinder-locks, of shiftable tumblers, a shiftable locking-bar actuated by the tumblers, and an idler pivoted so as to move independently of the cylinder and having a socket adapted to be engaged by a spring-cam on the locking-bar.

3. The combination, in cylinder-locks, of a locking-bar actuated by tumblers and having a cam adapted to enter a socket in the fixed case of the lock and also having a spring-actuated cam to enter a socket in an idler that is pivoted to move independently of the cylinder.

4. The combination of a lock-cylinder carrying a shiftable cam and an idler pivoted to move independently of the cylinder and having a socket to be engaged by the cam.

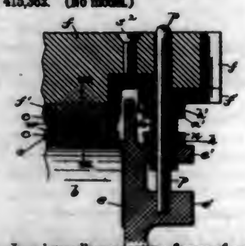
5. The combination, in a lock, of a lock-cylinder, a bolt, a strike-lever, an idler connected with the bolt and the strike-lever and pivoted to move independently of the lock cylinder, and devices for connecting the idler with the lock-cylinder.

6. In cylinder-locks, a lever connected with the lock and with devices for throwing the lock by the closing of the door, and said lever pivoted to move independently of the cylinder, and devices for connecting the lever with the cylinder.

7. In locks, a locking-bar adapted to be actuated by tumblers, a spring-cam pivoted on the locking bar, and a shoulder on the locking-bar to engage the cam, as described.

8. In a lock, the combination of a cylinder and an idler adapted to move independently of the cylinder and devices connecting the cylinder with the idler, so that the cylinder can move the idler.

474,849. TOP-FLAT-ADJUSTING DEVICE FOR CARDING-MACHINES. EVERETT GIBSON, Providence, R. I. Filed Dec. 17, 1891. Serial No. 415,362. (No model.)

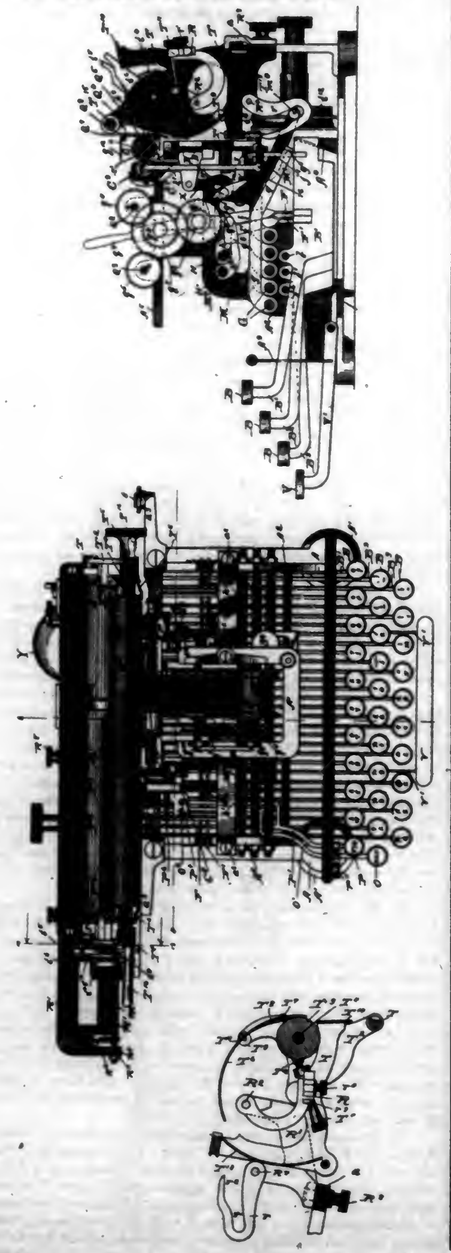


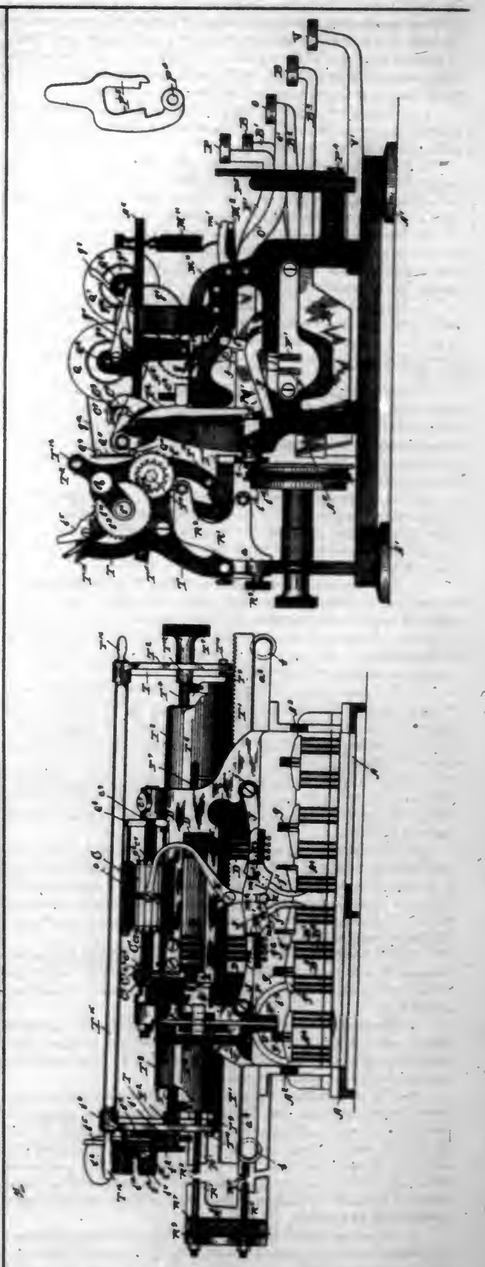
Brief.—In a laterally-projecting flange of a card-frame is rigidly secured the lower end of an arch-pin, the upper end of which passes through the end of the top-flat to guide the same. Around the arch-pin is an adjusting-screw engaging another projecting flange of the frame, the upper end of this adjusting-screw being flattened to support the end of the top-flat and the adjusting-screw being provided with a check-nut.

Claim.—1. The combination of an arch-pin *p*, arranged to be rigidly fixed to a card-frame and adapted to freely engage a top-flat of a carding-machine, an adjusting-screw bored out longitudinally to receive said arch-pin and having its upper portion arranged to support an end of the top-flat, and a check-nut fitted to the screw, substantially as hereinbefore described.

2. In a carding-machine, the combination, with the card-frames, cylinder, top-flats, &c., of a series of arch-pins rigidly secured to said frames and extending radially therefrom and engaging the end portions of the top-flats, adjusting-screws supporting the top-flats tapped into the frames, having said arch-pins passing longitudinally therethrough to guide the same, and check-nuts fitted to the screws, substantially as hereinbefore described, and for the purpose specified.

474,850. TYPE-WRITING MACHINE. SAMUEL J. SEIFRIED, Chicago, Ill., assignor to the Munson Type Writer Company, same place. Filed Aug. 14, 1891. Serial No. 402,684. (No model.)





Claim.—1. In a type-writer having a type wheel or sleeve and an impression-hammer, the combination, with the impression-hammer, of a rock-shaft R^3 for operating said hammer and a goose-neck frame or support upon which said rock-shaft is journaled, so that the paper may pass around the hammer or between it and the machine proper, substantially as specified.

2. In a type-writer, the combination, with the main frame, of a telescopic or sliding goose-neck frame and an impression-hammer mounted upon said sliding goose-neck, substantially as set forth.

3. In a type-writer having a type wheel or sleeve and an impression-hammer, the combination, with the impression-hammer, of a rock

shaft for operating said hammer, a second rock-shaft for communicating motion to said first-mentioned rock-shaft, and a goose-neck frame or support, upon each of the two limbs of which one of said rock-shafts is journaled, so that the paper may pass around the hammer or between it and the machine proper, substantially as specified.

4. In a type-writer having a type wheel or sleeve and an impression-hammer, a star-shaped hammer-head having a series of operating-faces, substantially as specified.

5. In a type-writer having a rotatable sliding type-sleeve, the mechanism for rotating the type-sleeve, consisting in the gears C^2 C^3 and swinging segment gear or rack C^4, said gear C^2 being mounted upon a swinging arm or lever C^5, substantially as specified.

6. The paper-carriage T, furnished with pivotal or swinging frame T^1, carrying feed-roll T^2, and curved guard or shield T^3, pivoted to said swinging frame T^1 and furnished with adjusting-screws T^{11} and springs T^{12}, substantially as specified.

7. The combination of the paper-carriage having erasing-plate T^{14} and furnished with swinging frame T^1, upon which the paper-feed roll is mounted, said swinging frame serving to impose the paper on said erasing-plate when the swinging frame is turned up, substantially as specified.

8. The combination of the paper-carriage having erasing-plate T^{14} and furnished with swinging frame T^1, upon which the paper-feed roll is mounted, said swinging frame serving to impose the paper on said erasing-plate when the swinging frame is turned up, said swinging frame being provided with a curved guard or shield T^3, substantially as specified.

9. The combination, with paper-carriage T, of swinging frame T^1, feed-roll T^2, having shaft T^4, provided with ratchet-wheel f', gear-wheel f^3, pawl-lever f^5, furnished with pivoted pawl f^6 and pawl-tooth f^7, gear f^8, and ratchet-wheel f^9, all combined and operating substantially as specified.

10. The combination, with paper-carriage T, of swinging frame T^1, feed-roll T^2, having shaft T^4, provided with ratchet-wheel f', gear-wheel f^3, pawl-lever f^5, furnished with pivoted pawl f^6 and pawl-tooth f^7, gear f^8, and ratchet-wheel f^9, said swinging frame T^1 being provided with graduated holes f^{10} and stop-pin f^{11} to limit the throw of said pawl-lever f^5, substantially as specified.

11. The combination of paper-carriage T with a swinging frame T^1, paper-feed roll T^2, curved guard T^3, having lips T^7, by which it is secured to said frame T^1, and adjusting-screws T^{11} for regulating the pressure between said feed-roll T^2 and the upper edge of said curved guard T^3, substantially as specified.

12. The combination of paper-carriage T, having erasing-plate T^{14}, with swinging frame T^1, carrying the paper-feed roll T^2 and provided with guide-bar T^{13}, adapted to swing past said erasing-plate, substantially as specified.

13. The combination, in a type-writer, of a type-sleeve, an impression-hammer, a lever, as M', for operating the impression-hammer, and a slotted arm r for communicating motion from said operating-lever M' to the hammer, the slot of said arm having a widened portion to permit the hammer to freely rebound from the type-sleeve after receiving an impulse, substantially as specified.

14. The combination of a type-sleeve with a swinging impression-hammer R, a lever M' for operating the same, a slotted arm r, and mechanism for connecting said arm r with the hammer, substantially as specified.

15. The combination of hammer-operating arm M' with hammer R, slotted arm r, goose-neck frame or support R' for said hammer, rock-shaft R^4, arm R^5, link R^6, arm R^7, and rock-shaft R^8, upon which the hammer is secured, substantially as specified.

16. The combination, in a type-writer, of the main frame with a hammer-operating lever M', mounted thereon, a sliding goose-neck frame R', hammer R, mounted on said goose-neck, rock-shaft R^3, arm R^7, link R^6, arm R^5, rock shaft R^4, and slotted arm r, connected with said lever M' by a pin m^4, so that the act of sliding the goose-neck frame out or in connects or disconnects the hammer-operating mechanism on the main frame with or from that on the goose-neck frame, substantially as specified.

17. In a type-writer, the combination, with a rotary type sleeve or wheel, of a gear on its shaft for revolving the same and two swinging arms, one carrying a segment gear or rack and the other an intermediate gear meshing with said rack and with said gear on said type-wheel shaft, one of said swinging arms being connected to and operated by the key-levers and the other being connected to and operated by the lever or levers for changing the case of type to be operated by the key-levers, substantially as specified.

18. The combination of rotary type-sleeve C, its shaft C', a gear C^2, connected therewith, a swinging arm C^5, carrying gear C^3, and swinging segment gear or rack C^4, the key-levers, and a case-changing key-lever, mechanism connecting said segment-gear C^4 with said case-changing lever, and mechanism connecting said swinging arm C^5 with the key-levers, substantially as specified.

19. The combination of the rotary sliding type-sleeve C, its shaft C', gear C^2, gear C^3, swinging segment-gear C^4, swinging arm C^5, mechanism for operating said swinging arm C^5 from the key-levers, and a stop C^7 and a stop-pin C^8 to limit the throw of said arm C^5, substantially as specified.

20. The combination of a rotary sliding type-sleeve C, its shaft C', gear C^2, intermediate gear C^3, segment-gear C^4, swinging arm C^5, lever K, connected to said swinging arm C^5, and rock-shaft H, having lever-arm A, furnished with cam A', engaging a pin on said lever K, substantially as specified.

21. The combination of a rotary sliding type-sleeve C, its shaft C', gear C^2, intermediate gear C^3, segment-gear C^4, swinging arm C^5, lever K, connected to said swinging arm C^5, rock-shaft H, having lever-arm A, furnished with cam A', engaging a pin on said lever K, rock-shaft H', having arm A^3, furnished with cam A^4, likewise adapted to engage the pin on said lever K, rock-shaft M, furnished with lever-arm M^4, having double-inclined or cam-shaped notch m^2, and a spring for turning said rock-shaft M, substantially as specified.

22. The combination of the rotary type-sleeve, its shaft C', gear C^2, intermediate gear C^3, swinging segment gear or rack C^4, swinging arm C^5, carrying said gear C^3, mechanism for operating said swinging arm from the key-levers, a case-changing key and lever O O', a link connecting said lever O' with said segment-gear C^4, and a stop O^2 for limiting the movement of said lever O', substantially as specified.

23. The combination of rotary sliding type-sleeve C, its shaft C', gear C^2, intermediate gear C^3, swinging segment-gear C^4, swinging arm C^5, the key-levers, and mechanism connecting said key-levers with said swinging arm C^5, case-changing keys and levers O O' P P'. link P^3, connecting said levers O' P' with said segment C^4, a spring P^4 for returning the same, and stops O^2 and P^7 for limiting the movement of said levers O' and P', substantially as specified.

24. The combination of rotary sliding type-sleeve C, its shaft C', gear C^2, intermediate gear C^3, swinging segment-gear C^4, swinging arm C^5, the key-levers, and mechanism connecting said key-levers with said swinging arm C^5, case-changing key and levers O O' P P', link P^3, connecting said levers O' P' with said segment C^4, a spring P^4 for returning the same, stops O^2 and P^7 for limiting the movement of said levers O' P', a pivoted latch P^6, adapted to engage said levers O' and P' to hold the same in their depressed position, substantially as specified.

25. The combination, with sliding type-sleeve C, having annular groove c, of lever N, having pins n n', horizontal levers J J, having cam-shaped ends engaging said pin n, and spring-actuated lever M', furnished with cross-bar m^3, having cam-shaped faces m^2 m^2, terminating in a registering notch m^1, adapted to engage said pin n on the lever N, substantially as specified.

26. The combination, with a rotary sliding type-sleeve C, of the keys B, key-levers B' B^2 B^3, cross-bars F F', links f f', rock-shafts H H', having arms h h^3, furnished with cams h' h^4, lever K, having pin k, link k', swinging arm C^5, carrying gear C^3, segment-gear C^4, gear C^2 on said type-sleeve shaft, and rock-shaft M, having arm M^4, furnished with notch m^2, engaging said pin k on said lever K, substantially as specified.

27. The combination, with a rotary sliding type-sleeve C, of the keys B, key-levers B' B^2 B^3, cross-bars F F', links f f', rock-shafts H H', having arms h h^3, furnished with cams h' h^4, lever K, having pin k, link k', swinging arm C^5, carrying gear C^3, segment-gear C^4, gear C^2 on said type-sleeve shaft, and rock-shaft M, having arm M^4, furnished with notch m^2, engaging said pin k on said lever K, rock-shafts G, having lever-arms g, furnished with feet g', spanning each three of said key-levers, one in each row, and furnished with arms g^2, stop-pins D, operated thereby, horizontal levers J J, having cam-shaped ends, upright lever N, having pins n n', engaging, respectively, said lever J and the type-sleeve C, rock-shaft M, and lever M', furnished with wings m, spanning said lever g^2, substantially as specified.

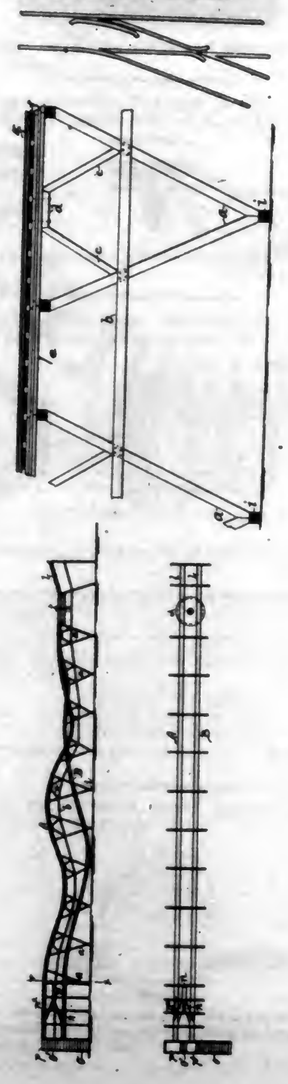
28. The combination, with a rotary sliding type-sleeve C, of keys B, key-levers B' B^2 B^3, cross-bars F F', links f f', rock-shafts H H', having arms h h^3, furnished with cams h' h^4, lever K, having pin k, link k', swinging arm C^5, carrying gear C^3, segment-gear C^4, gear C^2 on said type-sleeve shaft, rock-shaft M, having arm M^4, furnished with notch m^2, engaging said pin k on said lever K, rock-shafts G, having lever-arms g, furnished with feet g', spanning each three of said key-levers, one in each row, and furnished with arms g^2, stop-pins D, operated thereby, horizontal levers J J, having cam-shaped ends, upright lever N, having pins n n', engaging, respectively, said levers J and the type-sleeve C, rock-shaft M, lever M', furnished with wings m, spanning said levers g^2, hammer R, and mechanism connecting said lever M' with said hammer, substantially as specified.

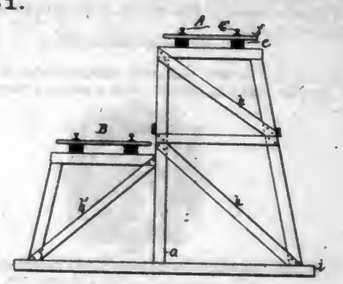
29. The combination, with a rotary sliding type-sleeve C, of keys B, key-levers B' B^2 B^3, cross-bars F F', links f f', rock-shafts H H', having arms h h^3, furnished with cams h' h^4, lever K, having pin k, link k', swinging arm C^5, carrying gear C^3, segment-gear C^4, gear C^2 on said type-sleeve shaft, rock-shaft M, having arm M^4, furnished with notch m^2, engaging said pin k on said lever K, rock-shafts G G, having lever-arms g, furnished with feet g', spanning each three of said key-levers, one in each row, and furnished with arms g^2, stop-pins D, operated thereby, horizontal levers J J, having cam-shaped ends, upright lever N, having pins n n', engaging, respectively, said levers J and the type-sleeve C, rock-shaft M, lever M', furnished with wings m, spanning said levers g^2, hammer R, and mechanism connecting said lever M' with said hammer, the ribbon-spools, and the pawl-and-ratchet mechanism for operating the ribbon-spools, the pawl of said mechanism being carried by said lever M', substantially as specified.

30. The combination, with the keys and levers, of the rock-shaft G, having arms g, furnished with feet g', spanning the key-levers, and arms g^2, rock-shaft M, having hammer-operating lever M', furnished with feet m, spanning said arms g^2, the hammer R, and mechanism connecting the hammer with said lever M', substantially as specified.

31. The combination, with the keys and levers, of the rock-shaft G, having arms g, furnished with feet g', spanning the key-levers, and arms g^2, rock-shaft M, having hammer-operating lever M', furnished with feet m, spanning said arms g^2, the hammer R, and mechanism connecting the hammer with said lever M', horizontal levers J J, upright lever N, and type-sleeve C, operated thereby, substantially as specified.

474,351. COASTING-RAILWAY. WILL E. SMITH, Chicago, Ill. Filed Aug. 1, 1891. Serial No. 401,358. (No model.)





Claim.—1. In a coasting-railway, the combination, with outgoing and return tracks of substantially like descending grades, of a turn-table near the end of the outgoing track and intermediate tracks near the terminal point of the return track, which by a both upward and lateral course connect with the main track near its starting-point, substantially as specified.

2. In a coasting-railway, the combination, with outgoing and return tracks, of a turn-table surrounded by a fixed and notched wall wherein the notches fit said main tracks, substantially as specified.

3. In a coasting-railway, the combination, with outgoing and return tracks, of intermediate tracks near the terminal end of the return track, which by a both upward and lateral course connect with the main track near its starting-point, substantially as specified.

4. The combination, with outgoing and return tracks, of separate bents rising and spreading from the same sill into V-shaped supports connected by chords b, and intermediate smaller bents rising from the inner sides of said main bents and carrying blocks d, and stringers to connect the tops of said bents and blocks, substantially as specified.

5. The combination, with the outgoing and return tracks, of separate bents resting on a single sill and oppositely braced and spread at their upper ends, so as to form V-shaped supports connected by chords b, and intermediate smaller bents rising from the inner sides of the main bents and carrying blocks d, and stringers composed of several overlapping members to connect the tops of said bents and blocks, substantially as specified.

DESIGNS.

21,511. MATCH-STAND. OLAF STROM, Brooklyn, N. Y., assignor of one-half to Octavius E. Nelson, same place. Filed Dec. 9, 1891. Serial No. 414,519. Term of patent 3½ years.



Claim.—The design for a match-stand or similar article, consisting of a Brother Jonathan with his hat in his hand inverted, as herein shown and described.

21,512. BADGE. CHARLES F. IRONS, Providence, R. I. Filed Mar. 26, 1892. Serial No. 426,004. Term of patent 3½ years.



Claim.—The design for a badge, herein described and shown.

21,513. SPOON, &c. AUSTIN F. JACKSON, Taunton, Mass. Filed Apr. 1, 1892. Serial No. 427,424. Term of patent 7 years.



Claim.—The design for the handle of a spoon, &c., herein shown and described.

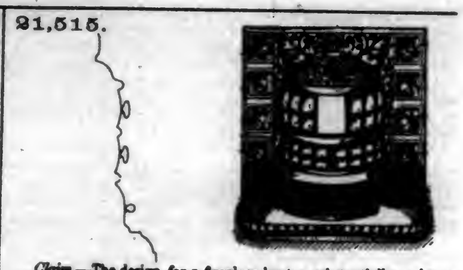
21,514. STOVE-DOOR. CHARLES R. MCADAMS, Evansville, Ind., assignor to Kiechle, Brentano & Oberdorfer, same place. Filed Apr. 5, 1892. Serial No. 427,942. Term of patent 7 years.



Claim.—The design for the ornamentation of a stove-door, as shown and described.

21,515. FIREPLACE-HEATER. JEREMIAH J. RICHARDSON, Brooklyn, assignor to the Richardson & Morgan Company, New York, N. Y. Filed Jan. 11, 1892. Serial No. 417,750. Term of patent 3½ years.

21,515.



Claim.—The design for a fireplace-heater, substantially as shown and described.

21,516. GALLOON. CHARLES WEINBERG, New York, N. Y., assignor to C. Weinberg & Co., same place. Filed Mar. 18, 1892. Serial No. 426,480. Term of patent 7 years.



Claim.—The design for a galloon, substantially as shown and described.

21,517. BUCKLE. JUSTUS A. TRAUT, New Britain, Conn. Filed Feb. 17, 1892. Serial No. 421,834. Term of patent 7 years.



Claim.—The design for a buckle, herein shown and described, substantially as set forth.

21,518. LANTERN-BODY. JOHN F. BUCHHOLTZ, Philadelphia, Pa. Filed Mar. 29, 1892. Serial No. 426,990. Term of patent 7 years.



Claim.—The design for a lantern-body, substantially as shown and described.

TRADE-MARKS

REGISTERED MAY 3, 1892.

21,060. REFINED PETROLEUM. ARBUCKLE & DOUGLAS, New York, N. Y. Filed Apr. 5, 1892.



Essential feature.—The words "LIGHT OF THE CENTURY" and the representation of a kangaroo. Used since December 12, 1891.

21,061. STOVE-POLISH. CHARLES H. CURTEW, Providence, R. I. Filed Apr. 6, 1892.



Essential feature.—The words "LADY'S FRIEND." Used since July 1, 1891.

21,062. THREAD. GLASCO YARN MILLS COMPANY, Glasco, Conn. Filed Oct. 7, 1891.



Essential feature.—The word "TWILLED." Used since April 15, 1889.

21,063. ANAL OR RECTAL SALVE. ALGERNON R. JAMISON, New York, N. Y. Filed Mar. 30, 1892.



Essential feature.—The representation of a box or receptacle, an injector, and the lid or cover partially concealing the box and the injector. Used since March 1, 1892.

21,064. GAME FOR OUTDOOR AND INDOOR USE. JAMES CONYERS MORRELL, Manchester, England. Filed Apr. 5, 1892.

COZARI

Essential feature.—The word "COZARI." Used since October 25, 1891.

21,065. ANTISEPTIC FOR THE PREVENTION OF GONORRHŒA, SYPHILIS, AND ALL CONTAGIOUS VENEREAL DISEASES. JOHN R. SAWYER and MARTIN L. MOORE, Memphis, Tenn. Filed Mar. 28, 1892.

PHYSICAL PURITY.

Essential feature.—The words "PHYSICAL PURITY." Used since March 1, 1892.

21,066. BICYCLES AND TRICYCLES. THE QUADRANT CYCLE CO., Birmingham, England. Filed Apr. 5, 1892.

QUADRANT

Essential feature.—The word "QUADRANT." Used since August, 1892.

21,067. TOILET PREPARATIONS. FOOTE & JENKS, Jackson, Mich. Filed Feb. 29, 1892.

PYTHIAN BOUQUET.

Essential feature.—The words "PYTHIAN BOUQUET." Used since March, 1891.

21,068. BICYCLES MADE PARTLY OF WOOD. BRADSHAW MANUFACTURING COMPANY, Boston, Mass. Filed Apr. 2, 1892.

YOUNG AMERICA

Essential feature.—The words "YOUNG AMERICA." Used since March 28, 1892.

21,069. HEADACHE MEDICINE. THE CAFAZOL CO., Boston, Mass. Filed Feb. 15, 1892.

Cafazol

Essential feature.—The word "CAFAZOL." Used since January 1, 1890.

21,070. LEATHER OF ALL KINDS, SKINS UNWROUGHT AND WROUGHT, AND ARTICLES MADE OF LEATHER. J. MEREDITH-JONES & SONS, Wrexham, England. Filed Apr. 7, 1892.



Essential feature.—The letter "W." Used since 1883.

21,071. SHIRTS, OVERALLS, AND PANTALOONS FOR MECHANICS' WORKING-CLOTHES. JACOB LEVI, Paterson, N. J. Filed Apr. 8, 1892.



Essential feature.—The representation of an arm uplifted, the hand grasping a hammer as if in the act of striking a blow. Used since April 1, 1892.

21,072. BOXES, BOTTLES, TUBES, ATOMIZERS, AND POWDER-DISTRIBUTERS USED FOR DISPENSING POWDERS, LIQUIDS, AND SEMI-LIQUIDS. MCKESSON & ROBBINS, New York, N. Y. Filed Mar. 24, 1892.

PULVERFLATOR

Essential feature.—The word "PULVERFLATOR." Used since March 14, 1892.

21,073. RAZOR-STROPS. WILLIAM A. SHULL, Philadelphia, Pa. Filed Apr. 8, 1892.



Essential feature.—The pictorial representation of a horse, and a negro barber engaged in stropping a razor upon the tail of the horse. Used since October 20, 1891.

21,074. REMEDIES FOR GONORRHŒA, GLEET, AND SIMILAR DISEASES. JAMES THOMPSON, Chicago, Ill. Filed Feb. 16, 1892.

9383.

Essential feature.—The number "9383." Used since January 1, 1892.

21,075. WOOL DRESS GOODS. THE FIRM OF FRIEDRICH ARNOLD, Greiz, Germany. Filed Feb. 20, 1892.



Essential feature.—The representation of a wreath with a bee inclosed therein. Used since 1885.

21,076. HOOKS AND EYES. RICHARDSON & DE LONG BROS., Philadelphia, Pa. Filed Mar. 24, 1892.



Essential feature.—The representation of a row of panels or tablets. Used since March 1, 1890.

21,077. RAZORS. RAMSDEN & RANDOLPH, Toledo, Ohio. Filed Apr. 1, 1892.

INVINCIBLE

Essential feature.—The word "INVINCIBLE." Used since February 1, 1892.

21,078. WHISKY. FIELD & CRABB DISTILLING COMPANY, Eminence, Ky. Filed Apr. 11, 1892.



Essential feature.—The words "BLUE RIBBON." Used since 1876.

21,079. PERSPIRATION-POWDERS. GEORGE T. RIEFFLIN, Mount Vernon, N. Y. Filed Apr. 9, 1892.

PEDOLIN

Essential feature.—The word "PEDOLIN." Used since July, 1891.

21,080. SALVES, OINTMENTS, OR LINIMENTS, AND COUGH-MIXTURE. FRANKLIN B. SCHNEIDER, Philadelphia, Pa. Filed Feb. 4, 1892.



Essential feature.—The word "FROSTIBLE." Used since February, 1891.

PHOTO-LITH. THE NORRIS PETERS CO. WASHN. D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

WITHEROW *v.* ROBERT.

Decided April 22, 1892.

ABANDONMENT—REDUCTION TO PRACTICE.

W. filed an application in 1884, which became abandoned November 17, 1887, by reason of two years' lack of prosecution. In March, 1887, he had reduced the improvement to practice in public, and in January, 1889, his present application was filed. *Held* that the reduction to practice before the abandonment of the first application and the filing of the second application within two years thereafter saved his rights from dedication to the public.

APPEAL from the Examiners-in-Chief.

PROCESS OF CONVERTING CRUDE IRON INTO IRON AND STEEL.

Application filed by James P. Witherow January 2, 1889, No. 295,171. Application filed by Gustave L. Robert November 14, 1888, No. 290,776; Patent No. 395,175, granted December 25, 1888.

Mr. T. B. Kerr for Witherow.

Messrs. Foster & Freeman for Robert.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Examiners-in-Chief awarding priority of invention to Witherow upon the following issues:

1. The process of converting crude iron into malleable iron or steel, which consists in imparting to successive limited portions of a bath of molten metal a violent atomic agitation, and separating the metal and the impurities, returning the metal to the body of the bath and maintaining the eliminated impurities in their separated state, and repeating these operations until the entire body has been repeatedly operated upon, substantially as set forth.

2 The within-described improvement in converting crude iron into malleable iron or steel, consisting in imparting to limited portions in succession of a bath of molten metal violent agitation in the presence of a converting agent, separating the impurities and the metal, returning the latter to the body of the metal in the bath, and back from the body of metal in the bath to the area of agitation, and repeating these operations until all the metal has been acted upon, the impurities are separated therefrom, and the conversion is complete, substantially as set forth.

Witherow filed an application for patent January 23, 1884, which, as amended June 23, 1885, and possibly as originally presented, disclosed the substance of the improvements in controversy, the following being an excerpt from that specification, as amended:

It is desirable in the manufacture of ingot iron and steel to treat the metal to a low pressure or to so apply the blast that it operates upon but a portion of the metal at a time. To accomplish this, and at the same time to avoid the necessity of using stoppers without to any considerable extent destroying the uniformity of the product, I have devised my present improvement, which consists in arranging the tuyeres either horizontally or with a downward projection at or near the surface of the metal in the converter, so as to blow on or near the surface of the metal in the converter, so as to blow on or near the surface of the charge. When thus arranged, there being but a small portion of metal above the nozzles of the tuyeres at any time, only a very mild or low pressure-blast is necessary to keep the mouths of the tuyeres clear, and but a small portion of the metal is treated at a time. The effect of the blast, however, is to cause an upward circulation of the molten metal which will bring all portions of the entire charge successively under the oxidizing influence of the blast, so that it is thoroughly decarbonized and purified during the operation.

Witherow reduced the improvement to practice in public in March, 1887, and it has continued to be practiced in public for commercial purposes ever since. His said application for patent filed January 23, 1884, became abandoned on November 17, 1887, by reason of two years' lack of prosecution. His present application for patent was filed January 2, 1889.

Robert's first appearance on the scene was by taking of a Belgian patent published September 30, 1885.

Witherow's case is that of an inventor first to conceive and duly diligent in reducing to practice in public. His title to a patent can only be defeated either by abandonment or two years' public use, neither of which is proven in this case, although, as a matter of course, the abandonment of his application filed in 1884 would be a serious thing were it not for the fact that before the date of that abandonment he had reduced to practice in public and has made a second application for patent before two years' public use accrued.

The decision of the Examiners-in-Chief is affirmed.

EX PARTE CONNELLY.

Decided March 30, 1892

1. DIVISION—ELEMENTS OF A COMBINATION CLAIM.

The Office has no right to say that an element of a combination claim is not a part of the combination in advance of an action on the merits thereof.

2. SAME—DEFINITE STATUS IN ART AND MANUFACTURE.

Where a certain claim was considered as a *combination* claim and not a claim for *some of the elements* of the combination, *Held* that the subject-matter of the claim had not acquired a definite status in art and manufacture.

ON petition.

SPEED GOVERNOR.

Application of John S. Connelly filed August 31, 1891, No. 404,201.

Messrs. W. Bakewell & Sons for the applicant.

FROTHINGHAM, *Assistant Commissioner:*

This is a petition taken from the action of the Examiner requiring division between claim 3 and claims 1 and 2.

The Examiner holds that claims 1 and 2 "are drawn for a rotary pump in combination with a throttle-valve and certain connections to shut off the steam when the shaft revolves too fast;" that this is a "speed-governor" and is properly examined in Division XVIII; that claim 3 is "drawn for a specific rotary pump," which is examined in Division IX, which "can be used in any position where a rotary pump is needed, and

has no relation in its details with the speed-governor as a device in the art."

For these reasons division was required. Applicant thereupon took this petition.

Upon examination it appears that claim 3 does not cover a rotary pump *per se*, but covers, in addition, not only the "connections between said air-pump and the admission-valve of the engine," but also the "admission-valve" itself—that is to say, the "throttle-valve" of claims 1 and 2. In this connection it is stated that the Office has no right to say that an element of a combination claim is not a part of the combination in advance of an action on the merits thereof. If the claim covers merely an aggregation, that question cannot properly be decided by the Commissioner until it comes to him through the regular course of appeals.

The following remarks in the case of *Fay et al.* v. *Cordesman et al.* (25 O. G., 1276; 109 U. S., 408) with reference to the elements of combination claims are pertinent:

The claims of the patents sued on in this case are claims for combinations. In such a claim, if the patentee specifies any element as entering into the combination, either directly by the language of the claim or by such a reference to the descriptive part of the specification as carries such element into the claim, he makes such element material to the combination, and the court cannot declare it to be immaterial. It is his province to make his own claim, and his privilege to restrict it. If it be a claim to a combination and be restricted to specified elements, all must be regarded as material, leaving open only the question whether an omitted part is supplied by an equivalent device or instrumentality. (*Water Meter Company* v. *Desper*, 101 U. S., 332; *Gage* v. *Herring*, 23 O. G., 2119; 107 U. S., 640.)

In view of what has been said it follows that division should not be required unless it should appear that the subject-matter covered by claim 3 not only could be used in other relations, but also had obtained a definite place in art and manufacture.

Treating claim 3, therefore, as a *combination* claim, and not as a claim for *some of the elements* of the combination, it is clear that the subject-matter covered thereby has not acquired that "definite status," within the meaning of the rule laid down in *ex parte* Speckbauch (54 O. G., 1265) and many other cases, which is requisite to necessitate division.

The petition is granted.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Western District of Pennsylvania.

LANE *v.* PARK *et al.*

Decided February 11, 1892.

1. PATENT—INFRINGEMENT.

In Letters Patent No. 82,130, to John Lane, September 15, 1868, the claim for "the improvement herein described in the manufacture of plows and cultivators—that is to say, the making of them of metal plates having a center layer of soft iron or steel, with exterior layers of cast-steel, substantially as and for the purposes described," *Held*, that soft-center steel plates themselves being old, the patent was not infringed by the defendants, who as steel manufacturers made plates to order for certain persons other than the plaintiff and cut them into shapes proper for plow mold-boards.

2. SAME.

The defendants were not bound to inquire whether their purchasers were licensed by the plaintiff to use the invention, and having done no wrong themselves they are not answerable for the unlawful acts of others.

3. A PATENTEE BOUND BY THE RESTRICTIONS IMPOSED BY THE PATENT OFFICE.

A restricted claim as finally formulated by an applicant for a patent and allowed by the Office after the rejection of broader claims is strictly binding upon the patentee, and he is precluded from afterward insisting on a broader construction.

ACTION by John Lane against Sarah Park and others for infringement of a patent.

STATEMENT OF THE CASE.

In pursuance of written stipulation this case was tried by the court without the intervention of a jury. The following facts, therefore, are found by the court:

(1) On September 15, 1868, Letters Patent of the United States No. 82,130 were granted to the plaintiff, John Lane, for an improvement in the manufacture of plows and cultivators, the invention consisting, the specification declares—

in constructing the mold-boards and shares of metal plates having a center layer of iron, with a layer on both exterior surfaces of cast-steel.

After stating the advantages of the invention and the method of manufacturing the compound plates the specification closes with the following disclaimer and claim:

Since perfecting my invention I have learned that compound bars of iron and cast-steel, constructed in a similar manner, were described as having been invented in England for the manufacture of edge tools, and therefore I do not claim the bars themselves as my invention; but,

Having thus fully described my invention, what I do claim is—

The improvement herein described in the manufacture of plows and cultivators—that is to say, the making of them of metal plates having a central layer of soft iron or steel, with exterior layers of cast-steel, substantially as and for the purposes described.

The Letters Patent are made part of this finding.

(2) On December 17, 1866, Lane filed in the Patent Office an application for Letters Patent for an—

improvement in plates used in the manufacture of plows,

the described method of manufacturing the same consisting in welding two layers of soft semi-steel on a central layer of tough fibrous iron, heating the plate thus formed, and then casting on both sides of it highly-carbonized molten steel and rolling down the ingot to the proper thickness. The claim was this:

As a new article of manufacture, plates for manufacturing plows, composed of layers of metal of the several qualities herein specified, arranged substantially as and for the purposes described and set forth.

The application was rejected, and after amendments was again rejected, and on August 27, 1867, was withdrawn. On April 11, 1867, Lane filed an application for "an improvement in cast-steel plows," the invention consisting—

in making the mold-boards of cast-steel plows of layers of metal of different qualities, the face or wearing-surface being composed of highly-carbonized cast-steel, while there is secured thereto or combined therewith in any suitable manner a layer or layers of iron or soft wrought-steel, forming a center lining or back, which serves to toughen and strengthen the mold-boards.

The original claim of this application was:

A plow, when the mold-board thereof is composed of cast-steel, combined in any suitable manner with a toughening layer or layers, substantially as specified, and for the purposes set forth.

This application was rejected upon references, and after repeated amendments was still rejected. In the course of the proceedings the applicant addressed a communication to the Commissioner of Patents, in which he stated:

Finally, I would add, my claim is for a mold-board made of steel with iron center. I do not claim the method of making this steel, though described in the specification. It is the result only—the mold-board—that I claim; and, if necessary, I would disclaim expressly everything except that.

In another communication to the Commissioner the applicant said:

I do not claim the ingot; that is not my invention; but I do claim the final product—the mold-board; that is my invention.

The final claim was this:

I claim as new articles of manufacture, mold-boards for plows, when made in laminated plates having a steel face and back and a central toughening-layer, substantially as specified.

This application was finally rejected March 23, 1868. On September 26, 1867, Lane filed a third application, being the one under which the patent in suit, No. 82,130, was granted. Originally this application was for "an improvement in the manufacture of cultivator-teeth," and the material, use, and mode of manufacture were thus described:

I take a plate of the proper thickness and composed of a layer of cast-steel on one side and a layer of soft steel or wrought-iron on the other, or of two layers of cast-steel with a layer of soft steel or wrought-iron between them, and cut it into blanks of the proper size to make the teeth, and then from these blanks I form the teeth by swaging or in any other convenient way, and finally harden the cast-steel, if desired, in the usual manner.

The first original claim was this:

The above-described blank for making cultivator-teeth, composed of a layer or layers of cast-steel, combined with a layer or layers of wrought iron, soft steel, or other suitable toughening material.

This application having been rejected, Lane, on April 9, 1868, addressed to his attorney a letter, which was filed in the Patent Office in the case, and in which he said:

I am aware that to make plates of compound quality is not new; but I believe law will allow me the claims in some shape that will be good for a tooth of cast-steel face and back, combined with a tough layer throughout the center, hardened, the face and back being very hard, while the tough layer is soft, or softer than face and back. * * * Drop all claim to the unsharpened blank and confine to the finished tooth; also confine, if you think best, to hardened tooth. I think best.

Lane's attorney then, on May 26, 1868, canceled the original specification and claims and substituted the specification and claim of the patent in suit, the petition for the allowance of this change stating that the new application was—

intended to be a substitute for both the previously-filed applications, that on the plows being withdrawn for the purpose of having it embodied in this case.

Eventually the patent in suit was granted September 15, 1868. Exhibits A, B, and C, being copies of the file-wrappers and contents in the three above-recited applications, are made part of this finding.

(3) The manufacture by the method set forth in Lane's patent of compound or soft-center steel having a central layer of iron, with an outer layer on each face of cast-steel, was made known and fully described in English Letters Patent No. 2,033, *prout*, dated January 19, 1795, granted to Arnold Wilde, for the invention of—

making and manufacturing of all sorts of plane-irons, scythes, sickles, drawing-knives, hay-knives, and all other kinds of edge tools from a preparation of cast-steel and iron united and incorporated together by means of fire.

And the use in the manufacture of plows of iron-backed steel, or two-ply compound plates, composed of an iron back and steel face, as shown by United States Letters Patent No. 34,262, dated January 28, 1862, granted to William Morrison, *prout*, and United States Letters Patent No. 47,753, dated May 16, 1865, granted to Francis F. Smith, *prout*, was old at the date of Lane's invention.

(4) In the manufacture of plows and cultivators the old and customary method was to cut the rolled metal plates into blanks or pieces of suitable size and shape, and these pieces were first bent into proper form, and were then tempered or hardened, and finally were ground or polished, and when finished were bolted in place; but with the metal plates used prior to Lane's invention the tempering or hardening process was apt to warp the pieces out of proper form

(5) The object of Lane's invention was the production of plow mold-boards and shares and cultivator-teeth which, after being bent to the required forms, could be tempered or hardened without warping or change of form. To prevent this warping in the tempering or hardening process is the distinctive and valuable feature of Lane's invention. This he accomplishes by the use of "soft-center" or "iron-center" steel, as it is called, or plates formed of an iron or soft semi-steel center layer between two steel faces or outer layers. Lane's invention soon came into very general use.

(6) The plaintiff's established license-fee was five dollars per ton, and the defendants' books show the exact number of tons of plow and cultivator shapes made and sold by them, as set forth in the next finding.

(7) The defendants at the times and on the occasions mentioned in the declaration, between the grant of the plaintiff's patent and the expiration thereof, were steel manufacturers at Pittsburg, in the western district of Pennsylvania, and then and there, in the usual course of their business, manufactured and sold metal plates having a center layer of soft iron or steel, with exterior layers of cast-steel for use chiefly in the manufacture of plows and cultivators, safes, and jail-bars; and the defendants, upon the order of the purchasers, cut these plates to pattern for plow mold-boards, plowshares, landsides, and cultivator-shovels, and also into such shapes and patterns for other purposes as ordered by the purchasers. The blanks or pieces so cut to shape for plows and cultivators they shipped to their customers, manufacturers of plows and cultivators, in a flat, unbent, unpolished, and unhardened state.

Mr. C. C. Linthicum, *Mr. S. Whipple Gehr*, and *Mr. George W. Acklin* for the plaintiff.

Messrs. W. Bakewell & Sons for the defendants.

ACHESON, *J.*:

Waiving the question whether the plaintiff's application of soft-center steel—a material confessedly old—to the manufacture of plows and cultivators involved anything more than the exercise of good mechanical judgment, and assuming that his specification disclosed a patentable invention, we proceed at once to the question of infringement. And here we have first to notice that the claim of the patent is so awkwardly expressed as to give rise to controversy whether it is for the method of making plows and cultivators out of the described material or for the product or manufacture made in the defined manner. The plaintiff takes the latter view, and we adopt it as the better opinion. But what, as new articles of manufacture, does the claim cover? The plaintiff contends that it embraces the flat pieces of metal plate cut to pattern by the steel manufacturer upon the order of the purchaser—the mere blanks out of which the mold-boards and plowshares and the cultivator, teeth are made by the person ordering the material. But assuredly these blanks are not in terms within the claim, which, as we have seen, is in these words:

The improvement herein described in the manufacture of plows and cultivators—that is to say, the making of them of metal plates having a central layer of soft iron or steel, with exterior layers of cast steel, substantially as and for the purposes described.

According to the letter of the claim, the pronoun "them" plainly relates to the "plows and cultivators" previously mentioned. But, if we look beyond the claim itself, into the specification, we find nothing therein to countenance the broad construction upon which the plaintiff insists. The method of cutting the steel plates in prior use into pieces of proper size and form to make the mold-boards, plowshares, and cultivator-teeth is described as old, as is also the after treatment of these pieces—namely, the shaping, tempering, grinding, and polishing thereof. It is shown that the difficulty sought to be overcome did not arise until after the blank pieces had been built

and formed into mold-boards, plowshares, and cultivator-teeth; that it is in the still later process of tempering or hardening these formed parts that the difficulty existed. To prevent these completely-formed parts from warping during the process of tempering or hardening is the very essence of the described invention. The specification declares that—

the invention consists in constructing the mold-boards and shares of metal plates having a central layer of iron, etc.

And, again:

By having the steel on both sides of the iron the mold-boards and shares, after being bent to the required form, can be tempered without warping or changing their form.

By no allowable reading of the specification can the invention be held to exist in the bare metal blanks cut from the admittedly-old soft-center steel plates. Again, we have seen that in his second application, which became merged in his third one, the plaintiff addressed the Commissioner of Patents thus:

My claim is for a mold-board made of steel with iron center. I do not claim the method of making the steel * * * It is the result only- the mold-board—I claim; and, if necessary, I would disclaim expressly everything except that.

Then he intentionally and very deliberately canceled and abandoned his claim for the blanks for making cultivator-teeth. The restricted claim, as finally formulated by the plaintiff and allowed by the Office, after repeated rejections of broader claims, is strictly binding upon the plaintiff, and he is precluded from insisting upon a construction which would so broaden the claim as to take in the mere flat metal blanks in their rough state. (*Sargent* v. *Lock Co.*, 114 U. S., 63; 5 Sup. Ct. Rep., 1021; *Shepard* v. *Carrigan*, 116 U. S., 593; 6 Sup. Ct. Rep., 493.)

But the plaintiff further contends that if the patented invention was not embodied in the metal blanks, so as to constitute a direct infringement of the claim of the patent, still the defendants are liable, by reason of their contributory act in cutting the blanks, as joint infringers with the manufacturers who used them in making plows and cultivators; and to sustain this position *Wallace* v. *Holmes* (5 Fish. Pat. Cas., 37) is cited. But between that case and the one in hand there is no real analogy. In *Wallace* v. *Holmes* the defendants made and sold the completed burner, which contained the distinguishing feature of the invention, and which was entirely useless without the lamp-chimney, so that, as the court said, every sale of a finished burner was a proposal to the purchaser to supply the chimney, and every purchase was a consent that this should be done. Moreover, the acts of the defendants there were clearly indicative of the intention to infringe, and actual concert with others to do so was a certain inference from the proofs. The case here is rather within the principle of the case of *Keystone Bridge Co.* v. *Phœnix Iron Co.*, (5 Fish. Pat. Cas., 468,) where, the patent being limited to the use of the described chords in bridge structures, it was held by Judge McKennan that the defendants might lawfully make the chords and were not responsible for the infringing act of the bridge-builders in using them. Now, indisputably, the right to manufacture soft-center steel plates was open to everybody, and the mere cutting them, according to order, into convenient patterns or shapes to suit the purposes of the plow-maker or manufacturer of the cultivators was no encroachment upon the exclusive rights of the plaintiff. The defendants were not bound to inquire whether or not the purchasers from them were licensed by the plaintiff to use the invention, and, having done no wrong themselves, they are not answerable for the unlawful acts of others.

In the facts of this case we discover no ground whatever for imputing infringement to the defendants. And now, February 11, 1892, upon the facts found, the court finds in favor of the defendants.

U. S. Circuit Court—Northern District of New York.

DEDERICK *v.* GARDNER *et al.*

Decided April 19, 1892.

1. PATENT—INFRINGEMENT—BALING-PRESSES.
   Letters Patent No. 341,559 and No. 415,029, granted to the complainant May 29, 1886, and November 12, 1889, respectively, for improvements in baling-presses, *Held* infringed, and Letters Patent No. 232,400, for an improvement in baling-presses, granted to complainant September 21, 1880, *Held* not infringed by defendants.
2. PUBLIC FAVOR AS EVIDENCE OF PATENTABILITY.
   The fact that a device has gone into extensive public use is entitled to great weight in determining the question of patentable novelty.
3. DOCTRINE OF EQUIVALENTS—WHEN NOT APPLICABLE.
   Where change of form or combination only is involved, the doctrine of equivalents cannot be invoked to suppress improvements, and each inventor must be content with the mechanism claimed by him.

FINAL hearing.

Messrs. Church & Church for the complainant.
Mr. George H. Knight for the defendants.

COXE, *J.*:

This is a suit for the infringement of three patents, Nos. 415,029, 341,559, and 232,400, granted to the complainant November 12, 1889, May 11, 1886, and September 21, 1880, respectively, for improvements in baling-presses. The latter patent, No. 232,400, was granted to complainant as assignee of Albert A. Gehrt. The application for the first two patents was filed October 31, 1882. This application was divided and a new one filed December 18, 1885, on which No. 341,559 was granted.

The invention of No. 415,029 relates to improvements in the manner of connecting the horse-lever to the toggle in the power-applying devices of "continuous" baling-presses.

Letters Patent No. 257,153, granted to complainant May 2, 1882, show mechanism by which the toggle is pushed from one side of the center line to the other, the back expansion of the hay operating to return the traverser and project the joint of the toggle alternately out at opposite sides of the press as the horse-lever is worked from side to side. This is known as a "push-power device."

The patent in hand describes a pull-power device. The substitution of a pull-power mechanism for the push-power of the older patent is the essential feature of the invention. Instead of pushing the toggle over the central line by direct contact with the head of the horse-lever it is pulled over by the horse-lever through the intervention of a loose rope or chain connection.

After describing the various figures of the drawings and the operation of the machine, the patentee says:

These modifications in the form and location of the horse-lever and cam may be multiplied indefinitely so long as the central idea is preserved of having the lever or the cam thereon connected to the toggle by a loose connection, such as a rope, chain, or the like, so that the vibration of the horse-lever will draw the toggle back and forth across the center, as stated.

The claims involved are as follows:

2. In a baling-press, the combination, with a double-acting toggle and a double-acting reversible horse-lever, of a double-acting reversible connecting member secured at one end to said toggle and at the other end to the horse-lever, whereby the said toggle and the said connecting member will be drawn bodily across the center alternately from opposite sides of the press when the horse-lever is vibrated, substantially as and for the purpose set forth.
4. In a baling-press, the combination, with the traverser, of the arms E, the double-acting pitman extending beyond the point of connection with the arms E, the double-acting horse-lever, also extended beyond its pivot, and the loose connection, such as a chain, for connecting the extended end of said pitman and horse-lever, substantially as described.
7. In a baling-press, the combination, with a double-acting toggle moving in a horizontal plane, of a reversible horse lever or sweep operating in a plane substantially parallel with the plane in which the toggle operates and having a rounded or drum-shaped end, and a flexible connection attached at one end to the toggle and at the other end to the rounded or drum-shaped end of the horse lever or sweep, as set forth.

The invention covered by the single claim of No. 341,559 was originally part of No. 415,029. As the granting of the latter patent was delayed by an interference commenced by the defendant, George Ertel, the complainant filed a divisional application designed to cover an arrangement of the power mechanism not involved in the interference proceedings.

The distinguishing feature of the invention is that the horse-lever is mounted upon a pivot separate from the pivot on which the arms of the toggle are mounted. Instead of having the horse-lever and fulcrum-arms on the same pivot each has a pivot of its own.

The claim sufficiently described the invention. It is as follows:

In a baling-press, the combination, with a traverser and a double-acting toggle, of a horse-lever mounted upon a pivot separate from the pivot of the outer arm of the toggle, and a loose connection between the horse-lever and toggle, whereby upon the vibration of the horse-lever the toggle will be pulled back and forth across the center, substantially as described.

The defense to these patents is that they are void for lack of patentable novelty. Infringement is not seriously disputed.

The patent No. 261,823, granted to George Ertel July 18, 1882, is chiefly relied upon by the defendants. The press described in this patent is upright, the traverser moving vertically instead of horizontally.

A detailed description of this press is unnecessary. Suffice it to say, that while the principle on which it operates is somewhat analogous to that of the complainant's structure the mechanism is wholly unsuited to operate in a horizontal press. Instead of being a simple and durable machine it is the reverse of this. If the power device described could be made to operate in a horizontal press at all, it would be a most cumbersome structure, requiring, in place of the compact frame of complainant's press, which is two and one-half feet wide, the substitution of a frame between twelve and fifteen feet wide. The difference between the two presses is the difference between partial and complete success.

As the Ertel press of 1882 is the nearest approach to the combinations of the claims in question, it is not necessary to examine other references.

It is thought that complainant is entitled to the credit of having made the first operative pull-power machine for horizontal presses, and that the production of such a machine required the exercise of the inventive faculty. As was said by Mr. Justice Brown in *Western Electric Co.* v. *La Rue*, (36 O. G., 453; 139 U. S., 601:)

While the invention does not seem to be one of great importance, we think the adaptation of this somewhat unfamiliar spring to this new use, and its consequent simplification of mechanism, justly entitles the patentee to the rights of an inventor.

The fact that this press has gone into extensive use and has been adopted by the defendants to the exclusion of devices patented by Mr. Ertel is entitled to great weight. (*Magowan* v. *N. Y. Belting and Packing Co.*, 57 O. G., 841; 141 U. S., 332; *Washburn & Moen Mfg. Co.* v. *Wire Co.*, 58 O. G., 1555.)

The claims quoted above seem to be aptly expressed to cover the inventions, and that they are infringed there can be no doubt.

In Letters Patent No. 232,400 it was the design of Gehrt to provide means for resisting the retraction of the traverser produced by the expansion of the hay for the purpose of preventing shock. This is done by applying more or less friction to the traverser during its backward movement, thus stopping its motion gradually.

The specification says:

Various instrumentalities may be employed in carrying out this idea; but I prefer to adjust the lining or planking E by means of an adjusting screw or screws S, so as to cause it to bear upon the top of the upper rear extension of the traverser, as shown in Fig. 1. By operating the screw the lining or planking can be made to bear more or less tightly, as will be readily understood. The lining or planking may be made permanently contracted, if desired, and the same result be produced.

The third claim only is involved. The second claim, which is much broader, has been declared invalid by this court. (*Dederick* v. *Seigmund*, 52 O. G., 1537; 42 Fed. Rep., 842.)

The third claim is as follows:

3. The combination, with the traverser having the rearward extension, of the lining or planking and the set-screw for adjusting the same, substantially as described, for the purpose specified.

The defenses are non-infringement, anticipation, and lack of patentable novelty.

The defendants' apparatus for checking the backward movement of the traverser consists of a clamp-lever pivoted in its middle on the point of a screw. It is a double self-acting clamp. When the incline on the rear of the traverser strikes the incline on the rear of the lever, the forward end of the lever is forced down upon the top of the traverser and arrests its backward motion. Whether the traverser comes back with a heavy or a light rebound is immaterial, for when it has reached the point where it is desirable to stop it the clamp catches it instantaneously and holds it firm. This device effectually prevents further backward motion, but offers no resistance to the next forward movement of the traverser. In this respect it is superior to the complainant's device, which does not adjust itself to the varying rebounds of the traverser, which sometimes returns with great force and at other times with comparatively little force. If, for instance, the lining is set to arrest a fast return and the back expansion is light, the front end of the traverser will not clear the feed-opening, thus causing inconvenience and delay.

The defendants' screw does not perform the same function as the set-screw of the patent. The latter is

used to force down the lining or planking and hold it in position to resist the backward throw of the traverser. The former is the pivot on which the lever operates, but it does not regulate the amount of the clamping force.

The defendant Ertel obtained a patent, No. 349,934, on the 28th of September, 1886, for the apparatus used by the defendants.

Whether the defendants infringe or not depends upon the construction of the claim. If a broad construction is justifiable, one which gives complainant the benefit of the doctrine of equivalents, infringement may be found, otherwise not.

In the first place, it may well be doubted whether the subject-matter of the Gehrt patent can in any view be regarded as belonging to the realm of invention. The problem he had to solve was an exceedingly simple one. The traverser bounded back too far. It did not require even a skilled mechanic to appreciate this defect. The remedy might not have occurred to the farmer who used the press, but had he called to his assistance the village carpenter and asked him how to stop the traverser it is at least possible that he might have replied—unconscious that his answer was giving him a place by the side of Bell, Brush, and Edison—"Put on a brake."

It is and for years has been a matter of common knowledge in many similar arts that friction should be applied when the object is to stop or retard a moving body. The record discloses many instances where it has been used to accomplish results very similar in principle to that accomplished by Gehrt's device. For instance, if the word "traverser" were substituted for "shuttle" in the following quotation from the Haskins patent of 1868 it would describe the Gehrt mechanism in all essential particulars.

To check this momentum gradually and arrest the motion of the shuttle at the proper point to receive the return blow of the picker-shaft, a shuttle-binder is generally placed upon or in the side of each shuttle-box, the operation of which binder is gradually to narrow the width of the passage in which the shuttle is moving and produce more or less friction upon the shuttle until it is brought to a standstill. As the speed of looms is liable to be changed at times, so that the rate of motion of the shuttle and its momentum will be greater at one time than another, it is desirable to vary the amount of friction or pressure exerted by the binder upon the shuttle, so that the shuttle, whatever its rate of speed, may always be stopped at the same point.

It is thought that this case belongs to that class of inventions where the doctrine of equivalents cannot be invoked to suppress improvements. Where change of form or combination only is involved, each inventor must be content with the mechanism claimed by him. (*McCormick* v. *Talcott*, 20 How., 402; *Burr* v. *Duryee*, 1 Wall., 531; *Railway* v. *Sayles*, 15 O. G., 243; 97 U. S., 564; *Bragg* v. *Fitch*, 39 O. G., 829; 121 U. S., 478.)

The traverser, moving in the press-box, was forced back too far, and Gehrt made the box smaller at the desired point and stopped it. It is by no means clear that this involved invention. (*McClain* v. *Ortmayer*, 57 O. G., 1129, 141 U. S., 419; *Cluett* v. *Claflin*, 140 U. S., 180; *Patent Clothing Co.* v. *Glover*, 57 O. G., 1281, 141 U. S., 560; *Blake* v. *San Francisco*, 113 U. S., 682; *Pope Mfg. Co.* v. *Gormully*, bicycle cases, decided April 4, 1892; 59 O. G., 464.)

But if the third claim can be sustained at all it must be within narrow limits and confined to the precise mechanism claimed.

As Gehrt could not claim all means of arresting the traverser by friction, he must be strictly confined to the method described, which consists in adjusting by a set-screw the planking of the press-box to pinch and hold the traverser, and as the defendants do not use this mechanism they cannot be held as infringers.

The complainant is entitled to a decree upon the claims 2, 4, and 7 of No. 415,029 and the single claim of No. 341,559, but without costs.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 6. TUESDAY, MAY 10, 1892. PRICE—$5 per year.

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Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., May 3, 1892.

SIR: The Secretary of the Interior has ordered that James Dugan, of Washington, D. C., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully, E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in '93 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the developement of American invention.

W. E. SIMONDS,
Commissioner.

Changes in Classification.

(ORDER No. 753.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., May 3, 1892.

It is hereby directed that the following class be established in Division III:

204. Electrolysis:
1. Aqueous bath—
2. Alloys,
3. Aluminium,
4. Anodes,
5. Apparatus,
6. Cathodes—
7. Cleaning,
8. Metallizing,
9. Chemicals,
10. Copper,
11. Depolarizing and burnishing,
12. Gold,
13. Multiple,
14. Nickel,
15. Ores,
16. Silver,
17. Tin,
18. Zinc.
19. Fused bath—
20. Aluminium,
21. Sodium.
22. Bleaching.
23. Ozone.
24. Purifying liquids—
25. Water,
26. Alcohol.
27. Tanning.

The sub-classes under the head Electrolysis, Class 75, Metallurgy, Division III, are abolished. A new sub-class, to be entitled "158, Reducing and separating, sodium," is established in the same class.

Sub-class 25 Incrustation, in Class 175, Electricity, Special Applications. Division XVI, is abolished.

Sub-class 27, Electrolysis, in Class 23, Chemicals, Division VI, is abolished.

Sub-classes 6, 7, 8, Distilled spirits, aging, apparatus, electric, in Class 195, Alcohol, Division XXXI, are hereby abolished.

The following sub-classes are established in Class 73, Measuring-Instruments, Division XXIII:

94. Grain-meters, oscillating—
95. Twin buckets,
96. Positively actuated,
97. Double-trap bottom.
98. Disk meters.
99. Balances, equal arms—
100. Recording,
101. Electrical attachments,
102. Pick-up weights.
103. Steelyards.
104. Price-scales.

A sub-class is hereby established in Class 104, Railways, Division IV, to be entitled:

Railways—
Portable track.
112. Cross-overs.

W. E. SIMONDS,
Commissioner.

Issue of May 10, 1892.

Patents	449—No. 474,352 to No. 474,800, inclusive.
Designs	19—No. 21,519 to No. 21,537, inclusive.
Trade-Marks	36—No. 21,081 to No. 21,116, inclusive.
Labels	None.
Reissues	None.
Total issue	504

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	1	Nevada		1
Arizona Territory			New Hampshire	3	
Arkansas	3		New Jersey	20	1
California	14		New Mexico Territ'y	1	
Colorado	3		New York	74	7
Connecticut	19	1	North Carolina	2	
Delaware	2		North Dakota	1	
District of Columbia	3		Ohio	27	3
Florida	1	1	Oregon		
Georgia			Pennsylvania	31	3
Idaho			Rhode Island	2	
Illinois	44	3	South Carolina	1	
Indian Territory			South Dakota		
Indiana	20	3	Tennessee	2	
Iowa	11		Texas	6	
Kansas	7		Utah Territory		
Kentucky	1	1	Vermont	2	
Louisiana	3	1	Virginia	3	1
Maine	2		Washington	3	
Maryland	13		West Virginia		1
Massachusetts	45		Wisconsin	13	
Michigan	11		Wyoming		
Minnesota	7		U. S. Army		
Mississippi	2		U. S. Navy		
Missouri	20	1			
Montana	4		Total to citizens of the United States	432	30
Nebraska	5	1			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Mexico		
Austria-Hungary	1		Netherlands		
Belgium	1		Newfoundland		
Bermuda			New South Wales		
Brazil	1		New Zealand		
Canada	4		Norway		
Chile, Republic of			Peru		
Colombia			Russia		
Cuba	1		Scotland	1	
Ecuador			South Australia		
England	12	5	Spain		
France	1	1	Sweden		
Germany	11		Switzerland	1	
Hawaii			Victoria		
Ireland	1				
Italy	1		Total to citizens of foreign countries	36	6
Japan					

DISCLAIMER.

458,721.—*Peter Woll, Jr.*, Philadelphia, Pa. IMPROVEMENT IN METHODS OF MANUFACTURING CURLED HAIR. Patent dated September 1, 1891. Disclaimer filed May 5, 1892.

Enters his disclaimer, to be considered a part of said Letters Patent, as follows:

"I am aware that attempts have been made to combine the ordinary processes of spinning and curling or 'buttoning' in one continuous operation; but such a continuity is not intended or contemplated to be included in my claim, for I twist the sliver to form the gasket in one operation on one machine and curl the twisted gasket or sliver by an independent operation upon a separate machine. I desire my claims to be construed not to cover both methods, but to be confined and restricted to separate and distinct operations of twisting upon one machine and curling or buttoning upon another. I desire to disclaim the continuous process."

APPLICATIONS UNDER EXAMINATION.

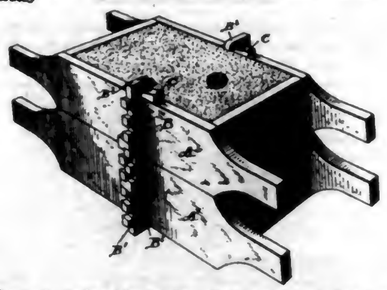
Condition at Close of Business May 3, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Mar. 21	Apr. 30	199
7	Harvesters, Games and Toys	Mar. 14	Apr. 26	219
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Mar. 19	Apr. 25	82
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Mar. 19	Apr. 23	156
2	Farm Stock, Products, etc	Mar. 7	Apr. 23	219
8	Furniture, Toilet, Umbrellas and Canes, etc.	Mar. 9	Apr. 20	255
12	Mechanical Engineering, Stores-Service, etc.	Mar. 8	Apr. 20	208
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Mar. 4	Apr. 20	237
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Mar. 7	Apr. 18	235
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Mar. 16	Apr. 15	164
23	Instruments of Precision, Acoustics, Optics, etc.	Mar. 10	Apr. 12	239
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Mar. 17	Apr. 7	132
1	Tillage and Fences	Mar. 3	Mar. 3	294
	Between two and three months in arrears.			
24	Sewing-Machines and Apparel	Feb. 15	May 2	142
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Feb. 19	Apr. 27	236
18	Steam-Engineering, etc	Feb. 16	Apr. 26	300
13	Metal-Working, Arms and Projectiles, etc.	Feb. 4	Apr. 26	277
21	Textiles, etc	Feb. 18	Apr. 25	186
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Feb. 3	Apr. 21	243
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Feb. 5	Apr. 14	291
10	Carriages and Wagons and Railway-Cars.	Feb. 20	Apr. 8	595
22	Fire-Arms, Navigation, Signals, etc.	Feb. 20	Apr. 5	223
9	Hydraulics, Fire-Extinguishers, etc.	Feb. 9	Apr. 5	292
17	Paper-Manufactures and Printing.	Feb. 23	Apr. 4	224
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Feb. 4	Apr. 1	348
4	Civil Engineering, etc	Feb. 15	Mar. 22	430
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Feb. 8	Mar. 3	289
	Between three and four months in arrears.			
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Jan. 4	Mar. 31	241
19	Stoves and Furnaces	Jan. 11	Mar. 22	410
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Dec. 5	Apr. 5	446
26	Electricity, Generation, Distribution, etc	Dec. 11	Mar. 23	383
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Jan. 2	Mar. 9	391
	Total number of applications awaiting action			8,586
	Under one month in arrears.			
	Designs	Apr. 26	Apr. 26	18
	Trade-Marks	Apr. 30	Apr. 29	16

PATENTS

GRANTED MAY 10, 1892.

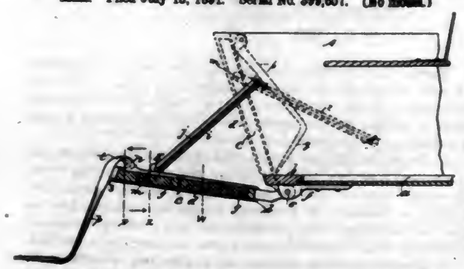
474,852. CLAMP FOR MOLDERS' FLASKS. WILLIAM W. ARCHIBALD, Newport News, Va. Filed Nov. 14, 1891. Serial No. 411,920. (No model.)



Claim.—1. A clamp for molders' flasks, consisting of two symmetrical and reversible rectangular pieces having holding-arms at their outer ends, dovetailed grooves on the side opposite said holding-arms, and wedge-shaped locking-arms adapted to slide into said dovetailed grooves, substantially as described.

2. A clamp for molders' flasks, consisting of two symmetrical and reversible rectangular pieces B, having holding-arms B^2, adapted to engage the sides of the flasks, lugs b, having inclined sides b' and b^2, forming wedge-shaped dovetail grooves, and wedge-shaped arms B^3, adapted to engage in any of said grooves, substantially as and for the purposes described.

474,858. CARRIAGE END-GATE. SAMUEL R. BAILEY, Amesbury, Mass. Filed July 15, 1891. Serial No. 399,857. (No model.)



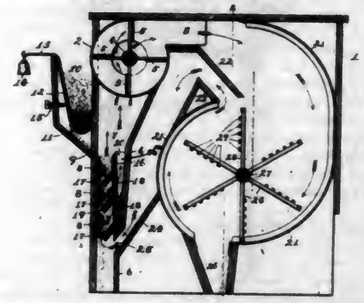
Claim.—The combination of tail-board e, the channeled end-irons d, secured to the tail-board, pivoted to the body, and formed with a slot 2 to receive the links i, and said links formed with a longitudinal slot j, a seat k for stud l, and pivoted in said iron d, all substantially as specified.

474,854. MIDDLINGS-PURIFIER. SETH H. BAKER and JAMES H. VERITY, Rapidan, Minn. Filed June 4, 1891. Serial No. 395,069. (No model.)

Claim.—1. In a machine of the class described, the combination of a rotary fan, a casing arranged to receive the discharge from the fan-case and having a spirally or eccentrically disposed rim or shell, and a beating-reel mounted in the casing eccentrically with relation to the rim or shell thereof, substantially as set forth.

2. In a machine of the class described, the combination, with a rotary fan, of a casing having a spirally or eccentrically disposed rim or shell extended up and arranged to receive the discharge from the fan-case, passages to reconduct the air to the latter from the spirally-disposed casing, and a beating-reel eccentrically mounted in said casing, substantially as set forth.

3. In a machine of the class described, the combination of a rotary fan, a casing having a spirally or eccentrically disposed rim or shell arranged to receive the discharge from the fan-case, a reel mounted revolubly in said casing and eccentric with relation to the rim or shell thereof, and passages connecting the casing with the inlet of the fan-case, substantially as and for the purpose set forth.



4. The combination of a rotary fan, an air or suction trunk arranged below the same and having a feed-hopper, a casing having a spirally or eccentrically disposed rim or shell arranged to receive the discharge from the fan-case, passages connecting the casing with the suction-trunk near the lower end of the latter, and a beating-reel eccentrically mounted in said casing, substantially as set forth.

5. The combination of a rotary fan, the air or suction trunk arranged below the same and having a feed-hopper, a plate mounted in said spout and having inclined deflectors and slots or openings below the same, a spiral casing arranged to receive the discharge of the fan-case, passages connecting the said spiral casing with the spout below the deflecting-plate, and a beating-reel eccentrically mounted in said casing, substantially as set forth.

6. The combination of a rotary fan, an air or suction trunk arranged below the same and having a feed-hopper, a casing having a spirally or eccentrically disposed rim or shell arranged to receive the discharge from the fan-case and provided with a discharge-spout, a beating-reel mounted in said casing eccentrically with relation to the rim or shell thereof, and passages connecting the casing with the lowermost end of said suction-trunk, arranged below the fan-case, substantially as and for the purpose set forth.

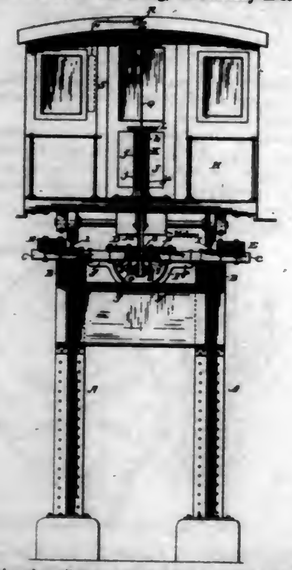
7. The combination of a rotary fan, an air or suction trunk arranged below the same and having a feed-hopper and a series of triangular steps, a plate mounted in said hopper and having a series of inclined deflectors and slots or openings below the latter, a spiral casing arranged to receive the discharge of the fan-case and provided with a discharge-spout, a reel eccentrically mounted in said casing, and passages connecting the latter with the spout below the deflecting-plate in the latter, substantially as set forth.

474,855. ELECTRIC RAILWAY. CHARLES H. BAKER, Lake Geneva, Wis. Filed Oct. 30, 1891. Serial No. 410,870. (No model.)

Claim.—1. In an electric railway, the combination, with the vertical supports and the parallel longitudinal stringers secured thereon, of the rail-supporting half-ties secured transversely to said stringers and terminating short of each other between the same, longitudinal planks or guard facings secured upon the inner ends of said half-ties and forming a continuous slot, and protectors for the conductors directly there-

beneath in the open conduit of the elevated road, semicircular arches or braces having outwardly-extending securing arms or flanges at each end secured to the under side and near the inner ends of each half-tie and spanning said slot to form a conduit, and electrical conductors supported from the inner ends of said ties within the conduit, substantially as set forth.

2. In an electric railway, the combination, with a conduit and electrical conductors supported upon each side of the communicating slot, of the motor-car provided with a hollow tubular upright, a hollow sheave-bar depending from said upright, a sliding plow working in the lower end of said bar and provided with contact devices, and a counterbalancing connection secured to said plow and passing through said hollow upright and into the car-casing, substantially as set forth.



3. In an electric railway, the combination, with a conduit and electrical conductors supported upon each side of the communicating slot, of the motor-car provided with a hollow tubular upright, a hollow sliding block having an interiorly-threaded hollow end and located within said upright, a hollow exteriorly-threaded shank engaging the upper end of said sliding bar and provided with a hand-wheel, a hollow sheave-bar depending from said vertically-adjustable sliding block and provided with slots at its lower end, a sliding plow working in the lower end of said bar and provided with oppositely-disposed contact devices working in said slots, a counterbalancing-rope secured to said plow and passing through the sheave-bar, hollow block, and threaded shank and over suitable pulleys in the car, and a weight secured to the end of said rope within the car-casing, substantially as set forth.

474,356. UMBRELLA-LOCKING DEVICE. JAMES H. BEVINGTON, Chicago, Ill. Filed June 15, 1891. Serial No. 396,268. (No model.)

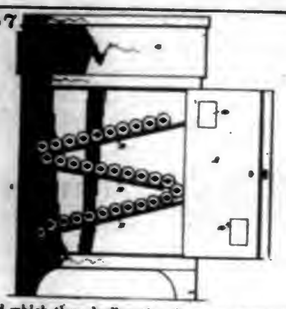


Claim.—An umbrella-stick A, in combination with a ferrule B, projecting from its extremity and provided with the threaded section *b* and aperture *b'*, the handle C, the ferrule D, projecting from the handle and provided with the threaded section *d* and cone-shaped extremity *d'*, the sliding rib-holder E, provided with annular groove *e*, and the spring G, arranged within the ferrule B and bent to be retracted by the tubular end of the handle-ferrule as it passes in over it, substantially as described.

474,357. REFRIGERATOR. CHARLES BOLDT, Annapolis, Md. Filed Sept. 24, 1891. Serial No. 406,063. (No model.)

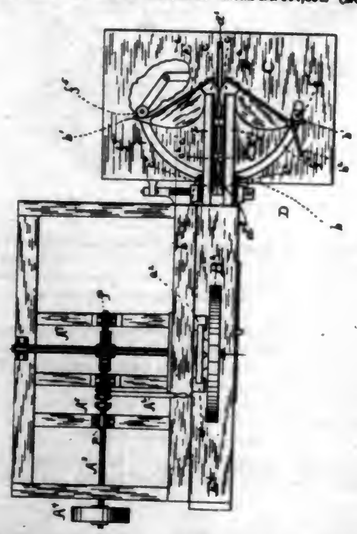
Claim.—The combination, with the refrigerator having the front wall or door hinged thereto and provided near its upper and lower ends with small openings or bottle-passages having hinged doors, of the series of oppositely-declining shelf-sections extending from alternately-opposite side walls of the refrigerator and terminating short of

474,357.



the walls toward which they decline, thus forming a zigzag shelf, substantially as specified.

474,358. BENDING MACHINERY. EVERETT L. BOOSER, Tippecanoe City, Ohio. Filed June 20, 1891. Serial No. 397,291. (No model.)



Claim.—1. In a shaft or pole bending machine, the combination of a main frame having a vertically-reciprocating form, a table with horizontally-operating forms, and a pivoted clamping device normally held in an upright position between said frame and table by a yielding connection, substantially as specified.

2. The combination of a main frame having a vertically-operating form and a hinged table supporting horizontally-moving forms, a clamping device between the said frame and table and means, substantially as described, for producing an opposite movement of the respective horizontal forms simultaneously with a vertical movement of said table and one of the vertical forms, substantially as specified.

3. In a shaft-bending machine, the combination, with the vertically-arranged forms and the oppositely-moving horizontal forms, of a catch mechanism adapted to automatically lock said horizontal forms to one of the said vertical forms by the movement of said horizontal forms produced in bending the shafts, substantially as specified.

4. The combination of a vertically-arranged removable form having a T-shaped projection, oppositely-moving horizontal forms having perforated projections adapted to be threaded onto said T-shaped projection by the movement of said horizontal forms, and a latch adapted to automatically lock said horizontal forms to said T-shaped projection at the limit of their movement, substantially as specified.

5. The combination of the removable form E and the reciprocating form E', the vise D and table C, and the oppositely-moving heel-forms on said table, substantially as specified.

6. The combination, in a shaft-bending machine, of a supporting-table having curved slotted guides, and the removable forms having flexible metallic pieces, as described, engaging rollers adapted to be operated in said curved slotted guides to engage said forms, and means for operating said rollers, substantially as specified.

7. The combination, with a vertically-reciprocating form and an

oppositely-arranged removable form, of a spring-strip secured at one end to said removable form, a hook-shaped projection on said strip, and a catch projection on said form, said catch projection being adapted to be engaged by said hook-shaped projection by the movement of said reciprocating form, substantially as specified.

8. The combination, in a bending-machine, with a set of vertically-arranged forms, of a horizontal pivoted table having a set of horizontally-moving forms and means for changing the angle of said table synchronously with the movement of the vertical forms, substantially as specified.

9. The combination of the removable form E and the reciprocating form E', movable catches h', pivoted to the form E', a reciprocating bar h^4, supported at each end upon suitable bell-crank levers at the side of said frame, so as to engage said catches, and means for producing a vertical movement of said bar, substantially as specified.

10. In a heel-form for a shaft-bending machine, the combination of a supporting-piece b^3, having a slotted opening b^7, a form-piece b^4, and bolts connecting said form-piece to the supporting-piece through the slotted opening, substantially as specified.

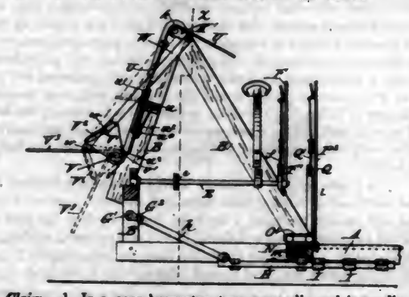
11. In a shaft-bending machine, the combination, with the vertical forms and the horizontal forms operating at right angles to each other, as described, of a hinged table supporting said horizontal forms, stop projections supporting said table in a normally-horizontal position, and means, substantially as described, for raising said table as the forms are moved, as specified.

12. In a bending-machine, the combination, with the vertical forms and the horizontal forms and a hinged supporting-table for said horizontal forms, having stop projections to hold it in a normally-horizontal position, of a pitman connection pivoted to said table, and operating mechanism for moving said pitman to elevate said table, as described, and a slotted connection in said pitman to permit its operating mechanism to move independent thereof when the table has reached its normal position, substantially as set forth.

13. The combination, with the main frame supporting a vertically-moving form, and a set of horizontally-moving forms supported on a hinged table, as described, of a pivoted vise arranged between said forms and normally held in an upright position by a yielding connection, substantially as specified.

14. The combination, with the vertical and horizontal forms, of a table supporting said horizontal forms, a sliding bar adapted to engage said horizontal forms, and a rack and pinion for operating said bar, a rope with a stirrup connected to said pinion and adapted to revolve said pinion, and a weight for returning the pinion to its normal position, substantially as specified.

474,359. CORN-HARVESTER. EUGENE R. BOWEN, Centreville, Md. Filed Dec. 10, 1891. Serial No. 414,570. (No model.)



Claim.—1. In a corn-harvester, two upwardly and inwardly inclined guiding-arms and endless guide-chains mounted thereon, in combination with two forwardly-extending bars which are rigidly attached to said arms and provided at their front ends with supporting-wheels, and the frame of the machine, to which the said bars are hinged at their rear ends, substantially as set forth.

2. In combination with a pair of upwardly and inwardly inclined guiding-arms and endless traveling guide-chains mounted thereon, the frame of a corn-harvester, horizontal bars which are hinged at their rear ends to the said frame for vertical motion and rigidly attached at their forward ends to the said guiding-arms, a pair of shafts on the said frame, driven by one of the transporting-wheels, a second pair of shafts supported on the said hinged bars and rotating with the pair of shafts first mentioned, but having flexible connection thereto, and gearing between the shafts on the said bars and the said guide-chains, substantially as set forth.

3. In a corn-harvester, the combination of a dumping-shaft provided with outwardly-extending dumping-arms and inwardly-extending rods or equivalent attachments, with a set of pivoted fingers or guards arranged to have their lower ends struck by the said rods or attachments as the said dumping-arms descend, the upper ends of said guards or fingers being bent horizontally and held out to catch the cornstalks while the said rods remain thus in contact, and the said fingers being provided with replacing-springs, which restore them to their original position when the dumping-arms ascend and the pressure of the said rods is removed, substantially as set forth.

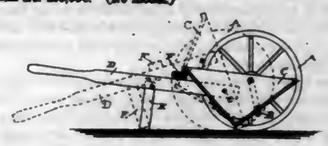
4. In a corn-harvester, the combination of a rotating shaft K, having a crank-arm, with a pitman operated thereby and having a stud at or near its lower end, and a dumping-shaft provided with dumping-arms and a slotted plate, the slot in said plate receiving the said stud and being of sufficient length to allow the shaft K and its crank-arm to turn without affecting the dumping-shaft while the latter is in its normal position, but terminating at a point such that the rotation of the former shaft and its crank-arm after dumping will turn the dumping-shaft back into its normal position, substantially as set forth.

5. In a corn-harvester, the combination of a dumping-shaft having dumping-arms and a notched disk, with a lever carrying a flange for engaging with the said notch to lock the said dumping-shaft, a shaft K, provided with a loose crank-arm and a feathered clutch operated by the said lever for engaging the said crank-arm, and a pitman driven by said crank-arm and engaging an attachment of the said dumping-shaft, the said lever being spring-pressed into engagement with the said disk and so as to clutch the said crank-arm, substantially as set forth.

6. In a corn-harvester, the combination of a lever U, having a pivoted extension U' and a stud which engages such extension, with a disk or wheel on the dumping-shaft, which is notched to be engaged by a flange of said extension, a spring operating against the said extension to cause the said engagement, a rotating shaft K, which is provided with a loose crank-arm and with a clutch shifted by said lever to engage the said crank-arm, a spring operating against the said lever to cause the said clutching, a pitman operated by the said crank-arm, and a plate which is rigid with the said dumping-shaft and provided with a slot that receives a stud on the said pitman, the said slot being of such length that the turning of the crank-arm will not affect the dumping-shaft except when the latter is in the dumping position, substantially as set forth.

7. In a corn-harvester, the combination of a dumping-shaft with a rotating shaft K, connections between the said shafts, whereby the said dumping-shaft is lifted from its dumping position, a clutch and shifting-lever for making and disconnecting such connections at will, an attachment of said lever which locks the said dumping-shaft, and springs arranged to normally cause the said clutching and the said locking, the latter being effected after the clutching has caused the dumping-shaft to be turned back into its normal position, substantially as set forth.

474,360. TRUCK. JOHN BRACK, Albany, N. Y. Filed Feb. 10, 1892. Serial No. 420,930. (No model.)



Claim.—1. In a truck, the combination of two wheels, an axle upon which said wheels revolve, a box secured to the axle between the wheels, handles attached to the forward portion of the box, and rests attached to the handles between the box and the ends of the handles in such a manner that by pressing downward on the ends of the handles the forward portion of the box will be raised and the rear portion caused to descend, substantially as described, and for the purpose set forth.

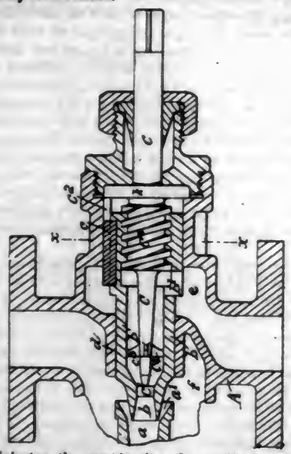
2. In a truck, the combination of two wheels, an axle upon which said wheels revolve, a triangular-formed box supported by said axle, handles attached to the forward portion of said box, and rests attached to the handles between the box and the ends of the handles in such a manner that by pressing downward on the ends of the handles said box will be tipped toward the rear, substantially as described, and for the purpose set forth.

474,361. INJECTOR. ROBERT G. BROOKE, Blackpool, England. Filed Nov. 16, 1888. Serial No. 290,582. (Model.) Patented in England May 26, 1888, No. 7,743; in France May 3, 1888, No. 197,858, and in Italy June 30, 1888, No. 457.

Claim.—1. In an injector, the combination of a fixed combining-nozzle, a longitudinally-movable steam-nozzle, and a spindle the inner end of which terminates at a point within said movable nozzle, which is so proportioned and arranged in relation to said fixed nozzle and

spindle that an internal area in said movable nozzle and also the area between the exterior of that nozzle and the interior or the end of the second nozzle will be simultaneously altered by longitudinal movement of said movable nozzle alone, substantially as herein described.

2. In an injector, the combination of a combining-nozzle, a longitudinally-movable steam-nozzle formed with a valve-seat, and a spindle able to rotate but fixed in a longitudinal sense and formed with a valve, said parts being so proportioned and arranged that rotation of said spindle will cause said steam-nozzle to move longitudinally and open or close a passage for steam between said valve and valve-seat, substantially as described.



3. In an injector, the combination of a combining-nozzle divided or provided with outlets at some parts of its length in such a manner as to render the injector self-starting with steam fully on, a longitudinally-movable steam-nozzle, and a spindle able to rotate but fixed in a longitudinal sense, as herein described, for the purpose specified.

4. In an injector, the combination of a fixed combining-nozzle, a longitudinally-movable steam-nozzle closed at its outer end and formed with a lateral inlet for steam, and a central spindle able to rotate but fixed in a longitudinal direction and capable of causing longitudinal movement of said steam-nozzle, substantially as herein described, for the purpose specified.

5. In an injector, the combination of a fixed combining-nozzle, a longitudinally-movable steam-nozzle, and a spindle able to rotate but fixed in a longitudinal direction and capable of moving said steam-nozzle endwise, said spindle being made hollow from its free or forward end outward for part of its length and formed with an inlet for passage of steam to its hollow portion, substantially as herein described, for the purpose set forth.

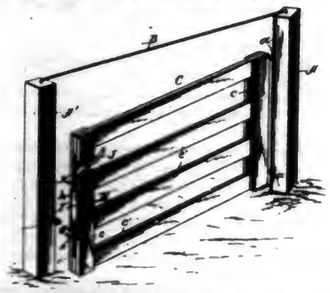
6. In an injector, the combination of a fixed combining-nozzle, a longitudinally-movable steam-nozzle, and a spindle able to rotate but not to move longitudinally with said steam-nozzle, said spindle having its inner or forward end terminating at a point within said steam-nozzle and provided with an externally-screw-threaded enlarged part adapted to engage with a correspondingly screw-threaded portion of said steam-nozzle and said steam-nozzle having lateral inlets for steam located at the forward end of the screw-threaded part of said spindle, and a seat that bears against the enlarged part of said spindle when the nozzle is at its outermost position, substantially as herein described, for the purpose specified.

7. In an injector, the combination of a fixed combining-nozzle, a steam-nozzle capable of sliding longitudinally and having an outlet of gradually-increasing size, and a spindle made hollow for part of its length and formed with a steam-inlet, said spindle being fixed in a longitudinal sense independently of said steam-nozzle but capable of rotating and of effecting endwise movement of said steam nozzle, said spindle and sliding nozzle being so relatively constructed and arranged that said sliding nozzle by its sliding movement will cause the opening or closing, as required, of a passage through said spindle and at the same time will open, close, or alter the area of a passage between itself and the spindle, substantially as described, for the purpose specified.

8. In an injector, the combination of a fixed combining-nozzle *a*, a movable steam-nozzle *b*, contracted at *c* and arranged to slide longitudinally in the injector-casing but not to rotate, and a spindle C, able to be rotated from the exterior of said injector but not to move longitudinally with said steam-nozzle and having its inner or forward end terminating at a point within said steam-nozzle, said spindle being formed with a screw-threaded part adapted to engage said movable nozzle and move the same endwise when rotated, and said steam-nozzle having lateral steam-inlet holes located at the forward end of its screw-threaded part, substantially as herein described, for the purpose specified.

9. In an injector, the combination of a fixed combining-nozzle *a*, a movable steam-nozzle *d*, arranged to slide longitudinally in the injector-casing but not to rotate, having an outlet of gradually-increasing cross-sectional area and provided with an internal screw-thread, and a spindle C, capable of being rotated from the exterior of the said injector but fixed in a longitudinal direction independently of said steam-nozzle, having its inner or forward end terminating at a point within said steam-nozzle and provided with an external screw thread that engages the screw-thread in said nozzle, substantially as herein described, for the purposes specified.

474,862. GATE-LATCH. WILLIAM BROWN, Reily Springs, Tex. Filed Nov. 21, 1891. Serial No. 412,611. (No model.)



Claim.—1. In a gate-latch, the combination, with the gate-posts and a swinging gate hinged thereto and provided with an outwardly-projecting latch-pin, of a latch secured to one of said posts and comprising a horizontal bar extending to either side of said posts, drop or gravity latches pivoted to each end of the bar and provided with inwardly and downwardly inclined portions terminating short of each other, and the vertical shoulder portions arising from the inner ends of said inclined portions and having flanged ends forming stops adapted to rest upon the top of said bar, and stop-pins projecting from said bar and regulating the upward movement of said latches, and a latch-raising plate sliding above said latch-pin on the gate and adapted to raise said latches above the plane of the pin, substantially as set forth.

2. In a gate-latch, the combination, with the gate and posts, of a double drop-latch having downwardly-inclined portions terminating short of each other and vertical shoulder portions arising from said inclined portions parallel with each other, a latch-pin projecting from said gate and adapted to engage said latches, a guide-plate secured to the gate above the latch-pin and provided with inturned guide flanges or lugs, a latch-raising plate mounted within said guide-lug and provided with a slot to work over said pin and with outturned shoulders or flanges at its lower end adapted to normally take beneath the inner end of each latch, and an operating-lever pivoted to said gate and connected with the upper end of said latch-raising plate, substantially as set forth.

3. In a gate-latch, a drop-latch having downwardly-inclined portions terminating short of each other and shoulder portions arising from said inclined portions, a latch-pin projecting from the gate and adapted to engage between the shoulders of said opposing latches, and a latch-raising plate sliding above the latch-pin and adapted to raise said latches above the plane thereof, substantially as set forth.

474,868. CORN-PLANTER. GEORGE W. BROWN, Galesburg, Ill. Filed Feb. 10, 1892. Serial No. 420,968. (No model.)



Claim.—1. The combination, substantially as hereinabefore described, of a toothed intermittent rotary seed-cup disk, a reciprocating slide-bar, an elbow-lever pivotally connected at its angle with a fixed part of the machine and having one of its ends pivotally connected with said slide-bar and its other end pivotally connected with one end of a pull-pawl, the other end of which is hook-shaped to adapt it to act as a pull-pawl, and a lug, such as *l*, adapted to force said pawl into engagement with the seed-cup disk at the alternate throws of the slide-bar for giving a partial rotation to said disk.

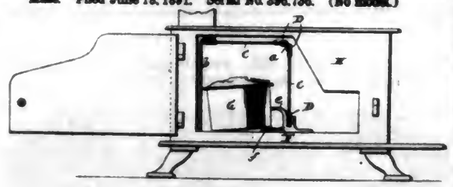
2. The combination, substantially as hereinbefore described, of a toothed intermitting rotary seed-cup disk, a slide-bar, and an elbow-lever pivotally connected at its angle with a fixed part of the machine and having one of its ends pivotally connected with said slide-bar and its other end pivotally connected with one end of a pawl, the other end of which is hook-shaped to adapt it to act as a pull-pawl for giving a partial rotation to the seed-cup disk at each alternate throw of the slide-bar.

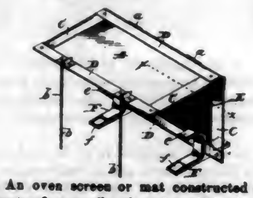
3. The combination, substantially as hereinbefore described, of a toothed intermitting rotary seed-cup disk, a slide-bar, and a pawl hinged or pivotally connected with said slide-bar and having an end extended beyond said hinge or pivot as a cam-bar adapted to slide in contact with a fixed part and thereby force said pawl into contact with a tooth of the seed-cup disk at each alternate throw of the slide-bar.

4. The combination, substantially as hereinbefore described, with a toothed intermitting rotary seed-cup wheel and slide-bar, of an elbow-lever pivotally connected at its angle with a fixed part of the machine and at one of its ends with said slide-bar and its other end g^6 adapted to act as a detent for arresting the movement of said wheel, a pull-pawl hinged to one end of said elbow-lever, a detent *l*, adapted to act on said pull-pawl, a pawl hinged to the slide-bar and having a projecting rear end adapted to act as a cam in forcing said pawl into contact with the seed-cup wheel, and a detent *k*, fixed to the slide-bar and adapted to arrest the movement of the seed-cup disk after each movement given it by the pawl H.

5. The combination, in a seed-dropping mechanism, of a toothed intermitting rotary seed-cup disk D, slide-bar B, elbow-lever G, pivoted, as described, to the seed-box and to the slide-bar and provided with a detent end g^6, a pawl H, lug *l*, pawl I, with cam-bar end i^7, wall d^3, and detent *k*, substantially as described.

474,864. OVEN SCREEN OR MAT. JOHN S. BRIGG, Worcester, Mass. Filed June 18, 1891. Serial No. 396,736. (No model.)





Claim.—1. An oven screen or mat constructed with a metallic back and an asbestus face smaller than the said back, and the retaining-strips holding the same together, the whole so arranged that the back can expand and contract without warping or breaking the asbestus face, substantially as described.

2. An oven screen or mat composed of a metallic back, an asbestus face, and a wire-gauze face over the asbestus face, and means for holding the same together, substantially as described.

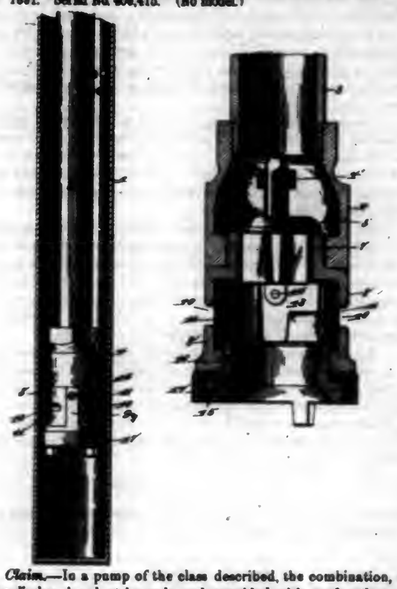
3. An oven screen or mat constructed with a metallic back and an asbestus face smaller than said back, and a wire-gauze face over said asbestus face, and the retaining-strips holding the same together, the whole so arranged that the back can expand and contract without warping or breaking the asbestus face, substantially as described.

4. An oven-screen consisting of the two parts hinged together, one or more supports for the same, and the hinged supporting-rods on the front of one of said parts, substantially as described.

5. An oven-screen or similar article consisting of the two leaves hinged together and one or more supports for the same, having the tapered projecting ledge for supporting the pan, substantially as described.

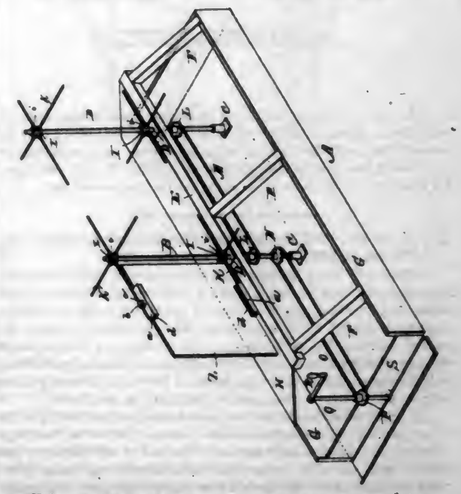
6. An oven-screen or similar article consisting of the two leaves hinged together, the bases for the same, having the tapered projecting ledges, and the guards or projections *e*, substantially as described.

474,865. PUMP-PLUNGER. WILLIAM P. CARLIN, Jeffersontown, Ky., assignor of one-half to Jesse M. Marlin, same place. Filed Oct. 21, 1891. Serial No. 409,415. (No model.)



Claim.—In a pump of the class described, the combination, with the cylinder closed at its ends and provided with perforations, of a discharge-pipe, a valve-body secured to the lower end of the same, a valve therein, a plunger having reduced upper ends forming the valve-seat, threaded in the valve-chamber and having an internally-threaded lower end, said plunger having vertical external ribs and between the same provided with transverse slots forming inlets, L-shaped clamping-plates located upon the inner side of the plunger opposite each of the ribs, screws countersunk in the ribs passing through the same, the wall of the plunger, and the clamping-plates, leather valves interposed between the plates and wall of the plunger, a clamping-ring threaded in the lower end of the plunger, and a leather packing-ring interposed between the lower end of the plunger and clamping-ring and secured in position by the latter, substantially as specified.

474,866. ADVERTISING-WAGON. WILLIS S. CARTER, Woburn, Mass. Filed June 19, 1891. Serial No. 396,880. (No model.)



Claim.—1. The combination of a vertical shaft B, means whereby the said shaft may be rotated, upper and lower sets of arms carried by the said shaft, and oppositely-placed sign-holders carried by the

said arms and open to permit of the convenient insertion and removal of the edges of signs, substantially as described.

2. The combination of a vertical shaft B, means whereby the said shaft may be rotated, upper and lower sets of arms carried by the said shaft, and oppositely-placed sign-holders *a a*, carried by the said arms and consisting of grooved blocks to which signs may removably be applied, the grooves of the said blocks being open to permit of the convenient insertion and removal of the edges of signs, substantially as described.

3. The combination of a vertical shaft, a sprocket-wheel thereon, an actuating-shaft, a sprocket-wheel thereon, an endless chain passing around the said sprocket-wheels, upper and lower sets of arms on the said shaft, and oppositely-placed sign-holders carried by the said arms and open to permit of the convenient insertion and removal of the edges of signs, substantially as described.

4. The combination of two vertical sign-supporting shafts, an actuating-shaft, sprocket-wheels and endless chains whereby to actuate the first of said sign-supporting shafts from the actuating-shaft and the second thereof from the first thereof, upper and lower sets of arms on each sign-supporting shaft, and oppositely-placed sign-holders carried by the said arms and open to permit of the convenient insertion and removal of the edges of signs, substantially as described.

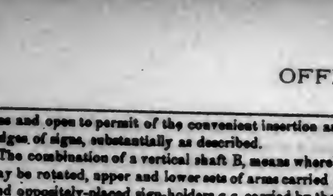
5. The combination of a vertical shaft B, means whereby said shaft may be rotated, upper and lower sets of arms carried by said shaft, and oppositely-placed sign-holders *a*, carried by the said arms and consisting of blocks, each having therein two grooves into which the edges of signs may removably be slid, the grooves of the said blocks being open to permit of the convenient insertion and removal of the edges of the signs, substantially as described.

474,367. STOVE-GRATE. DANIEL CHAMBERLAIN, Boston, Mass. Filed Apr. 15, 1891. Serial No. 389,109. (No model.)



Claim.—A grate-bar formed with the flat top surface *m*, the depending bar ends *c*, and convex faces *d*, forming arcs of a circle, and with the pivotal studs *e f*, arranged below bars *a* and in line with the apex or center of said arcs, substantially as specified.

474,368. BRIDLE-BIT. ANDREW H. COSH, Wilton Junction, Iowa. Filed June 16, 1891. Serial No. 396,424. (No model.)



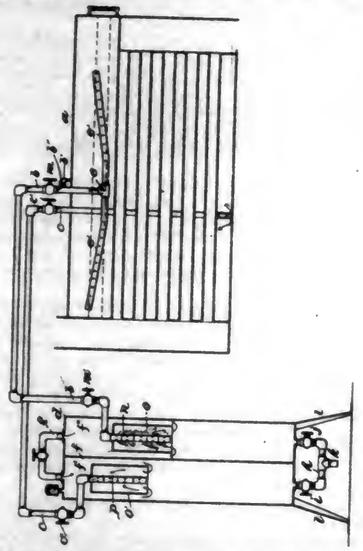
Claim.—A bridle-bit consisting of mating cheek-pieces, each of which has a mouthpiece-bearer inclined outward and upward from its lower portion and elbow-shaped at its top portion and a cross-bar or rigid mouthpiece having sliding connection at its ends with said bearers to operate in the manner set forth, for the purposes stated.

474,369. BOILER-CLEANER. JEROME O. COOK, Huntington, Ind. Filed Jan. 13, 1892. Serial No. 417,944. (No model.)

Claim.—1. In a boiler-cleaner, a boiler provided with a receiving-pipe emptying near its bottom and a discharge-pipe provided with obliquely-perforated branching arms, in combination with an exterior mud-drum divided into compartments, being connected by pipes, the ends of said receiving and discharge pipes entering said compartments and provided with open-bottom cylinders, and a steam-pipe entering said discharge-pipe, whereby circulation is increased, all arranged and adapted to operate in the manner substantially as described.

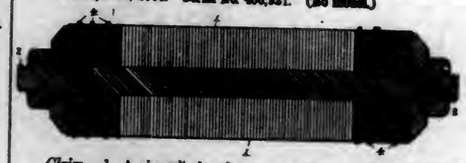
2. In a boiler-cleaner, receiving and discharge pipes leading to and from a mud-drum having two compartments, the end of the receiving-pipe entering one compartment and the end of the discharge-pipe leading from the other compartment, both of said ends being perforated and surrounded by open-bottom vertical cylinders, in the manner and for the purpose described.

3. In a boiler-cleaner, the combination of a boiler provided with receiving and discharge pipes leading to and from an exterior mud-drum, and a vertical partition in the drum, dividing the latter into two compartments, said compartments being connected at the top by a valved exterior pipe and at the bottom by a similar pipe, as and for the purpose described.



4. In a boiler-cleaner, an exterior mud-drum divided into two compartments, and receiving and discharge pipes leading to a boiler, the ends of said pipes in the compartments being perforated and surrounded with open-bottom cylinders, the discharge-pipe entering the compartments at a point lower than that of the receiving-pipe and exterior pipes connecting the compartments, substantially as described.

474,370. MUSIC-BOX. FRED H. CORTELL, New Haven, Conn. Filed Sept. 26, 1891. Serial No. 406,921. (No model.)

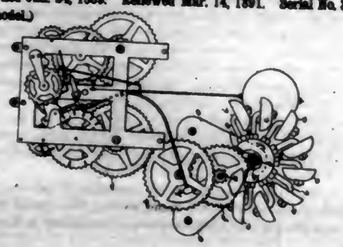


Claim.—1. A pin-cylinder for a music-box or like instrument, composed of circular disks provided with suitable pins on their peripheries and arranged side by side, an arbor passing centrally through said disks, and means for securing the latter together, substantially as set forth.

2. A pin-cylinder for a music-box or like instrument, composed of circular disks having suitable pins on their peripheries and detachably secured upon an arbor, and a key to hold the disks and arbor in fixed relation circumferentially, substantially as set forth.

3. A pin-cylinder for a music-box or like instrument, composed of disks having pins and secured together side by side, an arbor passing centrally through the disks, and clamping-nuts to force the disks together on said arbor, substantially as set forth.

474,371. CLOCK-CHIME. GEORGE I. CUMMINGS, New York, N. Y. Filed Jan. 24, 1889. Renewed Mar. 14, 1891. Serial No. 384,990. (No model.)



Claim.—1. A clock-chime consisting of moving bells passing along the hammer so as to be successively struck by a single ordinary clock-hammer, substantially as described.

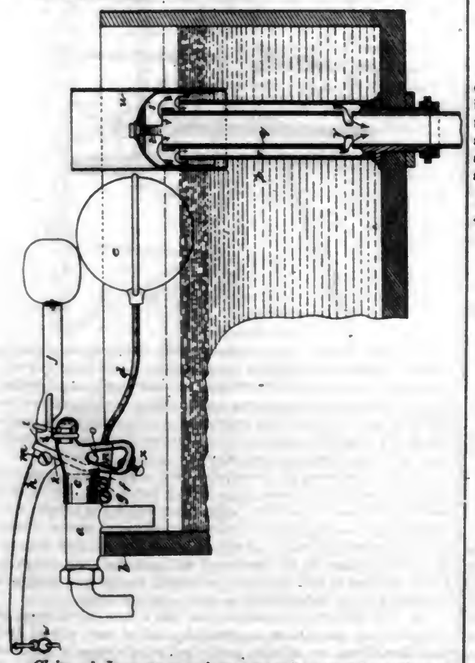
2. The combination, with the bell-hammer of a clock, of a movable chime of bells, and bell-operating mechanism connected with the striking-train of the clock and moving the bells successively to the hammer when striking, substantially as described.

3. The combination, with the bell-hammer of a clock, of the rotatory chime of bells, and bell-operating mechanism connected with the striking-train of the clock and moving the bells successively to the hammer when striking, substantially as described

4. The bells connected to the carrying-hub by the bent arms adjustably fitted in the hub, and having the check-nut fastening, substantially as described.

5. The combination, with the bell-hammer of a clock, of a moving chime in which the bells are placed in pairs juxtaposited so that the hammer strikes both bells of a pair together, substantially as described.

474,372. WATER-SUPPLY APPARATUS FOR WATER-CLOSETS. GILBERT K. DEARBORN, Somerville, Mass., assignor, by mesne assignments, to William A. Murry, same place. Filed Apr. 27, 1891. Serial No. 390,704. (No model.)



Claim.—1. In a water-supply apparatus for water-closets, the combination, with a stationary siphon, of a supply-cock, an angular lever for operating the valve of the cock, a ball and its rod connected with the said lever, and a lever A, arranged to act upon the angular lever to open and lock in open positions the valve of the supply-cock, as set forth.

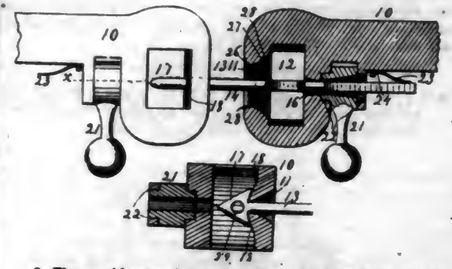
2. The combination, with a siphon and the supply-cock, angular lever *f*, provided with the incline *s* and notch *o*, the ball and its rod connected with the said lever, of the weighted lever A, provided with the dog *k*, arranged to act upon the incline of the angular lever, as set forth.

3. A siphon for water-closet tanks, consisting of the inner tube provided with extensions at its upper end, an outer tube shorter than the inner tube, a hood supported upon the extensions of the inner tube and extended below the upper end of the outer tube, and a tube *u*, vertically adjustable upon the hood to practically lengthen and shorten the downward extension of the latter, as set forth.

474,373. CAR-COUPLING. DANIEL DONAHUE, New York, N. Y. Filed Jan. 23, 1892. Serial No. 419,057. (No model.)

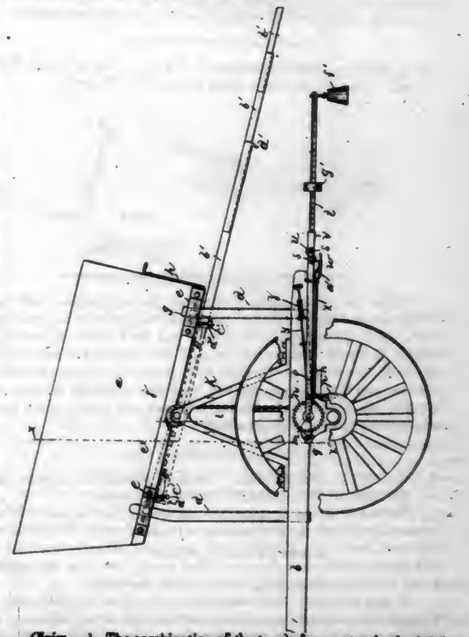
Claim.—1. The combination, in a car-coupling, of a draw-bar having a horizontal cross opening, a slotted mouth with spiral lips, a weighted lever journaled in the draw-bar to the rear of the cross-opening and having a vertical-sided slot through its axis, the said slot having a vertically-narrow point and being wider beyond, and an arrow-headed link having side flukes midway and a shank flattened at its sides to engage the said slotted lever, substantially as described.

2. The combination, in car-couplings, of a draw-head having a horizontal cross-opening and vertically slotted through the walls both at the front and rear of said opening, a weighted lever journaled in the draw-head in line of the said slot and slotted to register therewith, and a link having an arrow-shaped head, a shank flattened on its vertical sides, and laterally-projecting flukes midway, substantially as described.



3. The combination, in car-couplings, of a draw-head having a cross-opening and a vertical slot-shaped mouth leading to the opening, the sides of the mouth being formed as oppositely-slanting or spiral lips in front and as square or acute-angled shoulders in the rear, and an arrow-headed link having lateral flukes midway, both head and flukes being adapted to engage the said shoulders, substantially as described.

474,374. COAL-CART. CARL BIBER, Brooklyn, N. Y. Filed Apr. 4, 1891. Serial No. 387,691. (No model.)



Claim.—1. The combination of the truck-frame, standards rigidly supported thereon, box fitted to be raised and lowered along said standards, drum-shaft for raising and lowering said box mounted in the truck-frame under the box, chains connecting said drums and the box, the sheaves over which the chains are suspended, ratchet-wheel on the drum-shaft, lever and pawl for raising and lowering the box, holding-pawls, and the rods controlling the pawls, said rods and the lever ranging along and projecting beyond the wheels, substantially as described.

2. The combination, with the box adapted to be raised and lowered, the drum-shaft, chains, and chain-suspending sheaves, of the de-

plex ratchet and lever mechanism, and a bar connecting the ends of the ratchet-levers behind the box, substantially as described.

3. The combination, with the box adapted to be raised and lowered, the drum-shaft, chains, and chain-suspending sheaves, of the ratchet and lever mechanism for working the drum-shaft, consisting of a ratchet-wheel, pawl-lever and pawl for working it, holding-pawl, the disconnecting rod and lever connected with the pawl-lever and its pawl, and the disconnecting-rod of the holding-pawl, all constructed and arranged substantially as described.

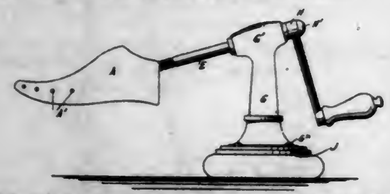
4. The combination of the vertically-moving dumping-box, front and rear guiding-standards and guiding-cleats on the box, said rear standards having heads or stops to limit the rise of the rear of the box and the front standards having the curved upper portions, permitting the front end of the box to rise higher than the rear end for dumping, substantially as described.

474,375. TROLLEY-WIRE SUPPORT. OWEN F. EVANS, Columbus, Ohio, assignor of one-fourth to Hannah J. Biddlecome, same place. Filed Jan. 24, 1891. Serial No. 378,971. (No model.)



Claim.—In a wiring for electric railways, the combination, with the poles arranged in pairs, pole-connecting wires *b*, and suspension-wire *d*, charged with electricity and connecting wires *b* by sagging spans, each of said spans being provided with an intervening turn-buckle, as described, of the horizontal trolley-wire suspended from said suspension and supply wire by conducting and supporting wires *g* of varying lengths, substantially as and for the purpose specified.

474,376. BOOT-STRETCHER. WATKIN L. FAIRE, London, England. Filed Jan. 20, 1892. Serial No. 418,968. (No model.)



Claim.—In a boot and shoe stretcher, the combination, with the divided last and the standard, of the screw-rod journaled in a bearing in the top of the standard, the follower-nut held within the last and adapted to travel on the screw-rod, and the cam-piece fitted on the end of the screw-rod, co-operating with grooves in the last, whereby when the rod is turned the last will be moved along the rod and be brought into co-operation with the cam-piece and spread apart, substantially as set forth and described.

474,377. CULTIVATOR. JOSEPH W. FAWKS, Sr., Burbank, Cal. Filed July 10, 1891. Serial No. 398,010. (No model.)

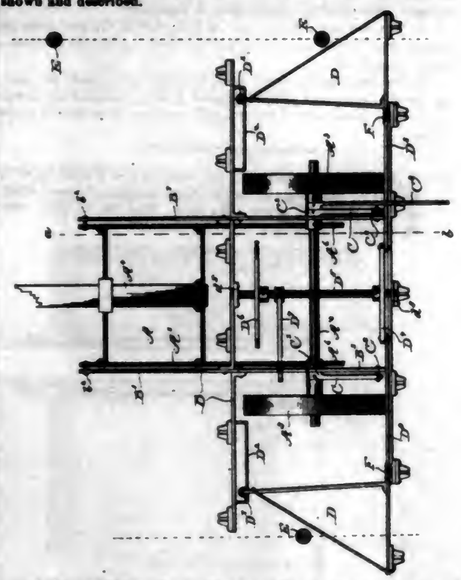
Claim.—1. In a cultivator, the combination, with a main shovel-frame, of a lateral supplemental shovel-section joined at its front to said main frame by a shiftable pivot connection, whereby the front of said supplemental section may be shifted toward and from the middle of the machine, substantially as shown and described.

2. In a cultivator, the combination, with a main shovel-frame, of a supplemental shovel-frame located at each side of and supported at its front and rear by said main shovel-frame on suitable guides, and suitable shifting mechanism engaged with said supplemental section for shifting the latter toward and from the middle of the machine, substantially as shown and described.

3. In a cultivator, the combination, with a main shovel-frame, of a lateral supplemental shiftable shovel-section, a rock-shaft, and suitable connection between said rock-shaft and said supplemental section, whereby said supplemental section may be shifted toward and from the middle of the machine by the rotation of said rock-shaft, substantially as shown and described.

4. In a cultivator, the combination, with a main shovel-frame, of a supplemental shovel-frame supported by and at each side of said main shovel-frame on suitable guides, a rock-shaft, and suitable connection between said rock-shaft and said supplemental section, whereby said supplemental section may be drawn toward and from the middle of the machine by the rotation of said rock-shaft, substantially as shown and described.

5. In a cultivator, the combination, with a main shovel-frame, of a supplemental frame supported by said main shovel-frame at each side of the latter on suitable guides, and a rotatable cross-arm joining said supplemental section to said main shovel-frame, substantially as shown and described.



6. In a cultivator, the combination, with a main shovel-frame, of a lateral supplemental shiftable shovel-section, a rock-shaft, and suitable connection between said rock-shaft and said supplemental section, whereby said supplemental section may be shifted toward and from the middle of the machine by the rotation of said rock-shaft, and a suitable device attached to said rock-shaft for turning the latter or holding it in a fixed position, substantially as shown and described.

7. In a cultivator, the combination, with a main shovel-frame, of a supplemental shovel-frame supported by and at each side of said main shovel-frame on suitable guides, a rock-shaft, and suitable connection between said rock-shaft and said supplemental section, whereby said supplemental section may be drawn toward and from the middle of the machine by the rotation of said rock-shaft, and a suitable device attached to said rock-shaft for turning the latter or holding it in a fixed position, substantially as shown and described.

8. In a cultivator, the combination, with a main shovel frame, of a supplemental shovel-frame supported by and at each side of said main shovel-frame on suitable guides and being oblique at the sides farthest from the middle of said main shovel-frame, the portions of said oblique sides at the rear of said supplemental sections being farthest from the middle of said main shovel-frame, a rock-shaft, and suitable connection between said rock-shaft and said supplemental section, whereby said supplemental section may be drawn toward and from the middle of the machine by the rotation of said rock-shaft, substantially as shown and described.

9. In a cultivator, the combination, with a main shovel-frame, of a supplemental frame supported by said main shovel-frame at each side of the latter on suitable guides and being oblique at the side farthest from the middle of said main shovel-frame, the portion of said oblique side at the rear of said supplemental section being farthest from the middle of said main shovel-frame, and a rotatable cross-arm joining said supplemental section to said main shovel-frame, substantially as shown and described.

10. In a cultivator, the combination, with the main shovel-frame, of the lateral supplemental shovel-frame having both ends supported upon the main frame upon suitable guides and having a shovel extending downward, the attachment of said shovel to said frame being shorter than the normal distance between the rear support upon the main frame and the ground, and suitable mechanism for shifting said supplemental frame upon said guides, substantially as described.

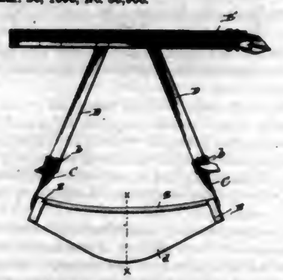
11. In a cultivator, the combination, with a frame B, having the track-bar B^3 and guide-rollers F, of supplemental, shiftable, and oblique shovel-sections D, having rollers D′, resting on said track-bars, and bars D^3, resting between the guide rollers F, a rock-shaft D^2, and suitable connection between said rock-shaft and the bars D^3, and a suitable device rigidly connected with said rock-shaft for turning the latter, substantially as shown and described.

12. In a cultivator, the combination, with a suitable carriage, of a main shovel-frame, a supplemental shovel-frame supported by said main shovel-frame at each side of the latter on suitable guides, and a rotatable cross-arm joining said supplemental section to said main shovel-frame, substantially as shown and described.

13. In a cultivator, the combination, with a suitable carriage, of a main shovel-frame, a lateral, supplemental, and shiftable shovel-section, a rock-shaft, and suitable connection between said rock-shaft and said supplemental section, whereby said supplemental section may be shifted toward and from the middle of the machine by the rotation of said rock-shaft, and a suitable device attached to said rock-shaft for turning the latter or holding it in a fixed position, substantially as shown and described.

14. In a cultivator, the combination, with a frame B, having the track-bar B^3 and guide-rollers F, of supplemental, shiftable, and oblique shovel-sections D, having rollers D′, resting on said track-bars, and bars D^3, resting between the guide-rollers F, a rock-shaft D^2, and suitable connection between said rock-shaft and the bars D^3, and a suitable device rigidly connected with said rock-shaft for turning the latter, substantially as shown and described.

474,378. CATAMENIAL SACK. HANNAH F. FERGUSON, Fort Erie, Canada. Filed Aug. 3, 1891. Serial No. 401,569. (Model.) Patented in Canada Mar. 20, 1890, No. 33,963.



Claim.—1. As an improved article of manufacture, a catamenial sack comprising a waistband, the sack or bag of rubber or yielding material, the non-elastic strips secured to the opposite ends of the sack, the short straps secured to said strips and carrying buckles, and the supporting-straps secured at their upper ends to the waistband at a point above the hips and their opposite ends secured to said buckle-straps, substantially as specified.

2. The sack composed of two approximately gore-shaped pieces, thin rubber united together at their curved edges, the strips B, secured to the opposite transverse ends of the sack, and the binding *a* on the upper longitudinal edges, in combination with a waistband and straps for adjustably connecting said back to the band, substantially as specified.

474,379. GARMENT-SUPPORTER. SHERWOOD B. FERRIS, Lakewood, N. J. Filed Jan. 7, 1890. Serial No. 336,168. (No model.)



Claim.—1. A garment-supporter consisting of a piece of wire doubled or bent upon itself at two points *a* and *b*, thus forming three substantially parallel limbs *h i j*, the limbs *h i* forming a clasping-loop A and the limbs *i j* forming a clasping-loop E, all of said limbs being connected together near the bend *b*, whereby the loop A is closed and the loop E strengthened, and the limb *j* being bent outwardly at *c* to form an open mouth for the loop E, substantially as described.

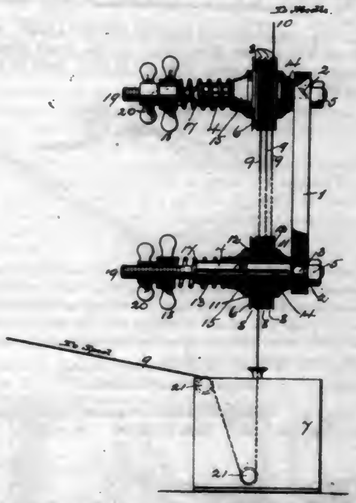
2. A garment-supporter consisting of a piece of wire doubled or bent at *a* and *b* to form three substantially parallel limbs *h i j*, the end of the limb *j* being flared outwardly at *c* and bent into a loop C and the end of the limb *h* being bent or tied about the limbs *i* and *j* near the bend *b*, thus forming a closed clasping-loop at one end and an open clasping loop at the other end of the supporter, substantially as described.

474,380. NUT-LOCK. NOAH P. GARRETT, Covington, Tenn. Filed Feb. 1, 1892. Serial No. 419,953. (No model.)



Claim.—In a nut-lock, the combination, with the bolt and the nut provided with ratchets on its under face, of a continuous washer having longitudinal leaf-springs struck up from its side edges, said springs being parallel with each other, the free ends of which come opposite the bolts and are adapted to engage the ratchets on the under face of the nut, substantially as and for the purposes specified.

474,381. TENSION DEVICE FOR SHOE-SEWING MACHINES. FRANK H. HAGADORN and MATTHEW J. NIOUL, Rochester, N. Y. Filed Apr. 30, 1890. Renewed Feb. 24, 1892. Serial No. 422,690. (No model.)



Claim.—The tension device consisting of the fixed supporting-shafts, the tension-wheels, each revolubly on its shaft and having several grooves and provided with recesses 11, the elastic blocks 12, and collars 15, said collars being held against rotation and having transverse dimensions less than that of the recesses and adapted to be pressed therein, and having a spring tending to move the collars to compress the said blocks within the recesses, substantially as set forth.

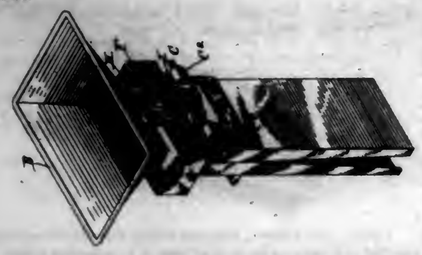
474,382. PACKER'S FUNNEL. JOHN H. J. HAINES, New York, N. Y. Filed July 30, 1891. Serial No. 401,145. (No model.)

Claim.—1. The combination, in a packer's funnel, of a hinged or pivoted side movable to and from the opposite side, so as to permit the end to be collapsed by hand, and a spring connected to said movable side and tending constantly to move in a direction to expand the end, whereby after the end is collapsed by hand it will be automatically opened in the package by the action of the spring.

2. The combination, in a packer's funnel, of a pivoted side movable to and from the opposite side, so as to permit the end to be collapsed by hand, a spring connected to said movable side and tending to move the same in a direction to expand the end, and a stop carried by the movable side and adapted to limit the extent of the opening movement.

3. The combination, substantially as described, with a packer's funnel, of an adjustable stop located on the outside thereof for limiting the extent to which the wrapper shall be slipped upon the former end of the funnel.

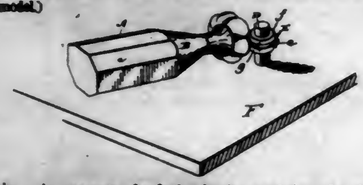
4. The combination, substantially as described, with a packer's funnel and its plunger, of a catch and a detent for automatically disengaging the catch when the funnel is raised, as and for the purpose described.



5. The combination, substantially as described, in a packer's funnel, of a catch-lever carried by the plunger and engaged by the funnel when the same is lifted, so that the catch will be disengaged and on a continuance of movement the plunger will be lifted with the funnel.

6. In a packer's funnel having its end which receives the wrapper made in two parts hinged to move to and from one another, the combination, with the hinged side, of an upward extension or tail-piece and a spring acting on said tail-piece and tending constantly to open the end of the funnel.

474,883. MACHINE FOR FLUTING WOODEN KNOBS. EMIL G. HERR and WILLIAM HERR, West Toronto Junction, Canada, assignors to Alice Grace Herr, same place. Filed Apr. 27, 1891. Serial No. 390,679. (No model.)



Claim.—An apparatus for fluting knobs, consisting of a plain table, combined with a cutter-head having its cutters revolving in a plane parallel to the face of the table and with a knob-holder consisting of a polygonal part A and a holding end, the sides of the polygonal part being fitted to bear upon the table and sustain the holder and knob, substantially as described.

474,884. COMBINATION-TOOL. LEONARD HEINLE, Indianapolis, Ind. Filed Aug. 3, 1891. Serial No. 401,547. (No model.)



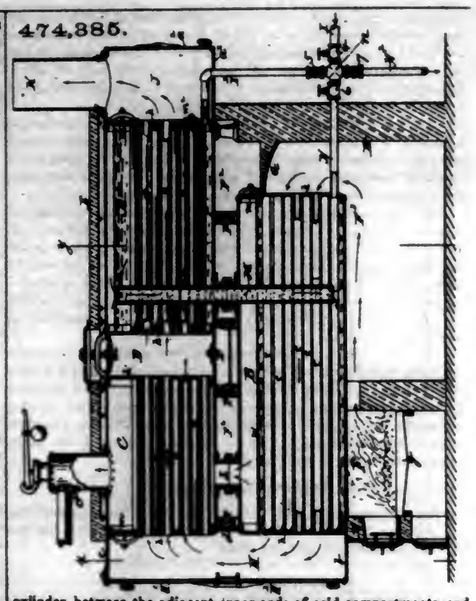
Claim.—1. In a combination-tool, the pinchers having jaws A B of equal length, one of said jaws being provided with a nose *a* and a thumb-screw D and the other jaw having a fulcrum *b* and a recess *d* opposite the thumb-screw, substantially as described.

2. In a combination-tool, the pinchers having the jaws A B pivoted at X, the jaw A, having a hammer-head C and a thumb-screw between the hammer-head and the pivot, the jaw B, having a recess *d* opposite the thumb-screw and a fulcrum *b*, formed at the intersection of the face of the jaw and the bottom of the recess, and handles A' B', terminating, respectively, in a screw-driver and a tack-puller, substantially as described.

474,885. STEAM-GENERATOR. JOSEPH H. HOADLEY, San Francisco, Cal. Filed Dec. 9, 1891. Serial No. 414,656. (No model.)

Claim.—1. The combination, with a horizontal boiler and its furnace, of the overlying boiler-compartment having tubes or passages through which the products of combustion after passing the first boiler are carried and consisting of a steam-compartment, a water-compartment, and an interval-chamber or manhole-space located within the

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cylinder between the adjacent inner ends of said compartments and having a manhole from the exterior thereinto, substantially as and for the purpose set forth.

2. The combination, with the horizontal tubular steam-boiler, of the horizontal tubular water-compartment disposed for receiving the heat of the escaping gases and products of combustion, and the open stand-pipe disposed within the interior of the boiler through the coupling-neck and connecting the upper part of said water-compartment with said boiler for delivering water therefrom by overflow-feed into said boiler, substantially as set forth.

3. A steam-generator comprising two tubular water-compartments, through which the products of combustion are passed on their way from the fire-chamber to the chimney, connected by a trunk through which the water overflows from the upper to the lower compartment, in combination with a tubular steam-compartment through which the products of combustion are passed intermediate to said two water-compartments, and a low-down supplemental pipe or way provided with a valve or stop-cock for transferring the contents of the upper water-compartment to the lower compartment, substantially as set forth.

4. The combination, with the main boiler B and heating-compartment A, of the feed-pipes I, I', and N, the escape-pipe N', joined in the common cross-fitting *n*, and their cocks or valves 4, 5, 6, and 7, as and for the purpose shown and described.

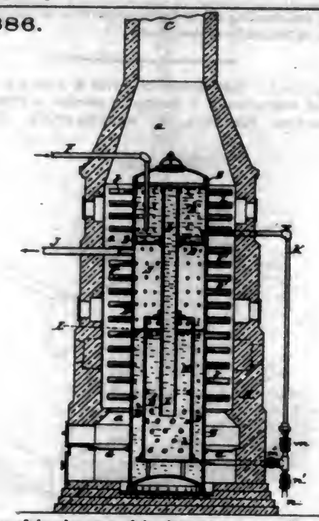
5. The combination, substantially as described, of the furnace F, with the inclosing walls E, the horizontal tubular boiler B, immediately over said furnace, the upper boiler-sections comprising the tubular steam-compartment C, tubular water-compartment A, and intermediate inclosed space D, the connecting-neck L, and stand-pipe M, the front flue-chamber H, having doors H', the rear extension *d'*, with door *a*³, inclosing the smoke-chamber J, and the chimney K, for the purposes set forth.

474,886. PORCUPINE STEAM-GENERATOR. JOSEPH H. HOADLEY, San Francisco, Cal. Filed Nov. 27, 1891. Serial No. 413,161. (No model.)

Claim.—1. The upright cylindrical boiler-shell having within its upper end an inclosed compartment into which the feed-water is delivered, a series of radial or outwardly-projecting heating-tubes communicating with said compartment, a lower boiling-chamber having a steam-space below said water-compartment, and a stand-pipe or conductor extending through said steam-space and leading from the upper part of said top compartment to the lower compartment, substantially as set forth.

2. A boiler of the porcupine class, comprising a main body-shell provided externally with projecting heating-tubes and having internally, at positions substantially as described, a partition or diaphragm separating the interior space of the body-shell into an upper water-compartment and a lower steaming-compartment, and an open hollow trunk arranged through said diaphragm and extending up within said water-compartment to a position near but somewhat below the top head of the boiler, for the purpose set forth.

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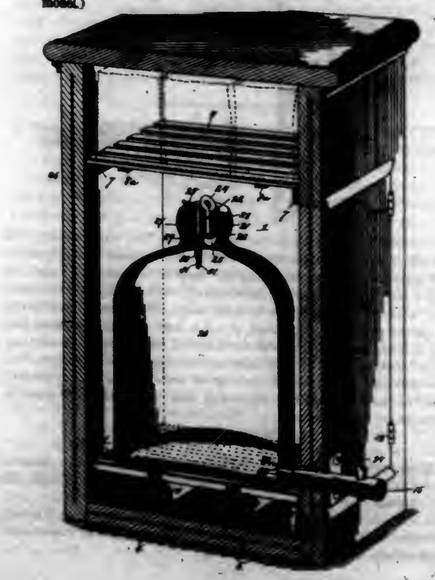


3. A boiler of the class named, having a steam-space disposed between an upper water-compartment and a lower water-space, provided with a series of radial or outwardly-projecting tubes communicating with said steam-space and extending into the combustion-chamber of the furnace at its hottest part for the superheating of the steam, and a trunk or conductor from said upper water-compartment to said lower water-space for conveying the water past said steam-space, as set forth.

4. The combination, substantially as described, of the external boiler-shell having the projecting heater-tubes, the close diaphragm separating the interior of the shell into upper and lower compartments, the water-feed pipe, the interior chamber formed by the inner perforated shell, and the overflow pipe or trunk leading from the upper part of the top compartment downward into said internal chamber and open at its ends, for the purpose set forth.

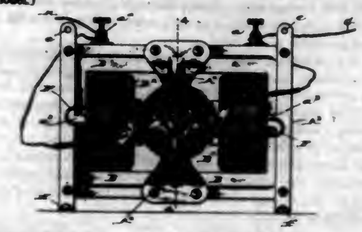
5. The combination, with the boiler having the water-compartment at its top, the lower chamber, and the overflow-pipe from the upper part of said compartment to the lower chamber, of the safety-pipe from the lower part of said top compartment into the lower chamber and the stop-valves *m m'* in said pipe, substantially as and for the purpose set forth.

474,887. RECEPTACLE FOR AERATED LIQUIDS. JOSEPH D. ILER, Kansas City, Mo. Filed Oct. 22, 1891. Serial No. 409,545. (No model.)



Claim.—A receptacle for aerated liquids, &c., comprising a body portion of substantially jug form having a mouth in its upper part, a stopper inserted into said mouth, a pin extending vertically through said stopper and provided at its upper end with an eye, a washer surrounding the lower end of the pin, a nut secured upon the lower extremity of the pin, an inverted-L-shaped vent-tube, one arm of which extends vertically through the stopper and the upper arm of which extends horizontally upon the upper end of the stopper, a swell or enlargement at the lower end of the vent-tube, and an elastic auxiliary tube embracing said swell at its upper end and having a longitudinally divided and flattened lower end, substantially as set forth.

474,888. DYNAMO-ELECTRIC MACHINE OR MOTOR. CHARLES D. JENNEY, Indianapolis, Ind., assignor to the Jenney Electric Motor Company, same place. Filed Jan. 8, 1891. Serial No. 377,110. (No model.)

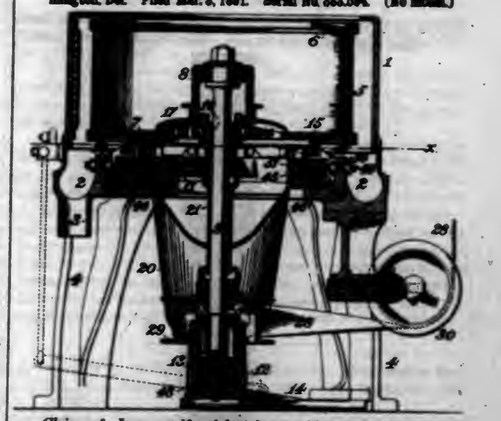


Claim.—1. The combination, in a dynamo-electric machine or motor, of an integral frame-work surrounding the field-magnet and fitted at determinate points to evenly support the plates of which said field-magnet is composed, and said field-magnet composed of plates of sheet metal stamped out in the desired form and fitted within said integral frame, substantially as shown and described.

2. The combination, in a dynamo-electric machine or motor, of a surrounding frame fitted at determinate points to receive and support the field-magnet, said field-magnet and bars secured to said frame and forming both means of holding the field-magnet within the frame and feet therefor, substantially as shown and described.

3. The combination, in a dynamo-electric machine or motor, of a commutator composed of two hubs or disks of insulating material mounted on a shaft provided with grooves in their sides which face each other and holes extending through that disk nearest the armature, commutator-sections corresponding in number to the sections of the armature mounted in said grooves, projections on said commutator-sections extending through said holes and connected with wires from the sections of the armature and said armature, said several parts being constructed, arranged, and operated substantially as shown and described.

474,889. CENTRIFUGAL MACHINE. HUGH W. LAFFERTY, Wilmington, Del. Filed Mar. 3, 1891. Serial No. 383,594. (No model.)



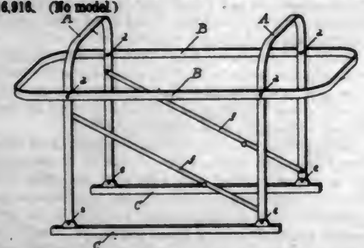
Claim.—1. In a centrifugal draining-machine, the combination of a spindle, a drum or basket fixed thereon, a step or bearing supporting the lower end of the spindle, an upper-bearing frame inclosing the spindle, a circumferential series of springs interposed between and abutting against said bearing-frame, and bearing-faces connected to the main frame of the machine, and a series of supporting-springs fixed to said main frame below the bearing-frame, substantially as set forth.

2. In a centrifugal draining-machine, the combination of a spindle, a drum or basket fixed thereon, a step or bearing supporting the lower end of the spindle, an upper-bearing frame composed of a central hub inclosing the spindle, and an outer rim connected by radial arms to said hub, a series of rubber blocks, each supported on and abutting against the outer rim of the bearing-frame, and a series of bearing-faces, each fitting against one of said blocks and provided with a stem connected to the adjacent portion of the main frame of the machine, substantially as set forth.

3. In a centrifugal draining-machine, the combination of a spindle, a drum or basket fixed thereon, a step or bearing supporting the lower end of the spindle, an upper-bearing frame inclosing the spindle, a series of rubber blocks supported circumferentially on said bearing-frame, a main frame having a series of recesses or pockets, each adapted to admit the outer end of one of said blocks, a series of bearing-faces, each fitting against the outer end of one of said blocks and provided with a screw-stem passing through the outer wall of the adjacent pocket, and nuts engaging said stems on opposite sides of said walls, substantially as set forth.

4. In a centrifugal draining-machine, the combination of a spindle, a drum or basket fixed thereon, an upper-bearing frame inclosing the spindle, springs interposed between said frame and faces on the main frame of the machine, a lower step or bearing supporting said spindle and having a spherical outer face adjoining its top, and a series of circumferential projections below said spherical face, and a vertically-movable supporting block or carrier having a series of bearing-faces corresponding with the spherical face of the step and separated by openings for the passage of the circumferential projections of said step, substantially as set forth.

474,390. REMOVABLE FOLDING FRAME FOR WAGON-TOPS. WILLIAM LESCH, New Haven, Conn. Filed Jan. 4, 1892. Serial No. 416,916. (No model.)



Claim.—In a removable folding frame for a wagon-top, the combination of a continuous bow B, pivoted to and folding outside of two or more supporting-bows A A, the ends of which supporting-bows are pivoted to side bars C C, and folding braces F F, extending between said supporting-bows, substantially as described.

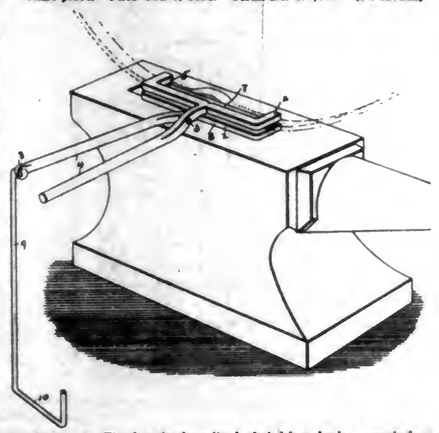
474,391. RIGHT AND LEFT STOCKING. WALTER C. LEWIS, Boston, Mass. Filed May 23, 1891. Serial No. 393,712. (No model.)



Claim.—1. A pair of right and left stockings one only of which is provided with a relatively thick rib near the top or upper edge, whereby one stocking can be distinguished from the other by the sense of touch, substantially as set forth.

2. A pair of right and left stockings one only of which is provided with a relatively thick annular rib near the top or upper edge, whereby one stocking can be distinguished from the other by the sense of touch, substantially as described.

474,392. TIRE-SHRINKER. JOHN M. LILES and JAMES B. WILLIAMS, Rockingham, N. C., assignors of one-third to Willie A. Williams, same place. Filed Oct. 6, 1891. Serial No. 407,873. (No model.)

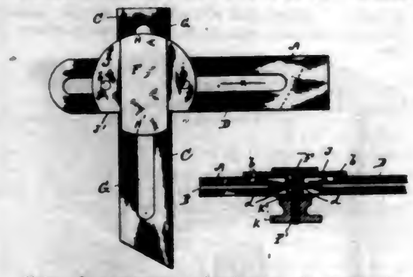


Claim.—1. The herein-described shrinking device, consisting of the opposite crossed members terminating at their rear ends in handles and at their front ends bifurcated and bent to form U-shaped jaws, the lower jaw having its terminals connected by a cross-bar, substantially as specified.

2. The herein-described shrinking device, consisting of the opposite crossed members terminating at their rear ends in handles and at their front ends bifurcated and bent to form U-shaped jaws, the lower jaw having its terminals connected by a cross-bar and roughened below the terminals of the upper jaw, substantially as specified.

3. The herein-described shrinking device, consisting of the two members crossed and pivoted together and terminating beyond their pivot in clamping-jaws, one of said members being provided at its rear end with an eye, and a rod loosely hung in the eye and bent to form a stirrup, substantially as specified.

474,393. PROTRACTOR AND BEVEL. EDWARD M. LOSE, Worcester, Mass. Filed Dec. 30, 1889. Serial No. 335,362. (No model.)

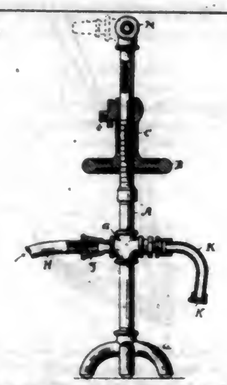


Claim.—In a protractor or bevel square, the combination, with a stock A, provided with slots B and D and a slotted blade C, held in said stock and capable of an angular motion therein, of a segmental disk J of greater diameter than said stock, said disk J being cut away at J' to correspond with the working edge of said stock and having its curved periphery graduated, pins *b b*, held in said segmental disk and entering the slot D in said stock, bolt E, passing through said segmental disk and said slotted blade and having a common angular motion with said blade, head F, having its ends curved and concentric with the periphery of said segmental disk, and a tightening-nut K, substantially as described.

474,394. COMBINED WHEEL LIFT AND WASHER. FORDYCE A. LYMAN, Cleveland, Ohio. Filed Jan. 4, 1892. Serial No. 417,093. (No model.)

Claim.—1. A combined wheel lift and washer, consisting of a body provided with an inlet and an outlet for water and a rest for the axle, substantially as described.

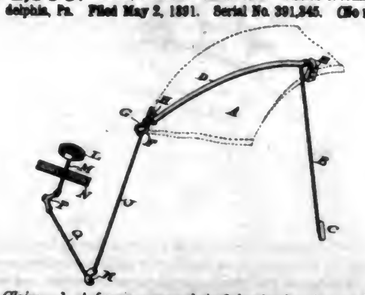
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2. The combined lift and washer having a hollow standard forming a water-passage, an axle-rest on said standard, a water-inlet and water-outlets above and below said axle-rest, substantially as described.

3. In a combined wheel lift and washer, an upright body provided with a water-passage and a laterally-directed nozzle and an axle-rest on said body, substantially as described.

474,395. TYPE-WRITING MACHINE. CLARK O. MALTBY, Philadelphia, Pa. Filed May 2, 1891. Serial No. 391,345. (No model.)



Claim.—1. A frame, a curved shaft having bearings on lugs at or near the inner and outer edges of said frame, a type-bar connected with the inner end of said shaft at a right angle thereto, a key, and mechanism connected with said key and to said shaft for oscillating the latter, said parts being combined substantially as described.

2. In a type-writing machine, a frame, lugs on the inner and outer upper edges of said frame, a curved shaft extending above and diagonally across said frame and having bearings in said lugs, a depending type-bar connected with the inner end of said shaft, and a rod extending from said shaft and connected with operating mechanism for oscillating said shaft, said parts being combined substantially as described.

474,396. MACHINE FOR FINISHING VELVETS AND OTHER PILE FABRICS. EDWIN T. MARBLE and EDWIN H. MARBLE, Worcester, Mass. Filed Jan. 25, 1892. Serial No. 419,127. (No model.)

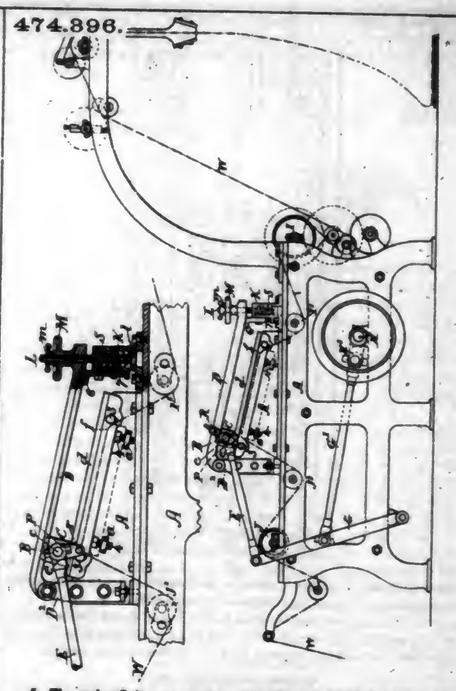
Claim.—1. The table F, having its surface formed, as shown, with flat central plane and the curved edge *f* merging into said plane, in combination with the straight guides D *d* and the peg-bar B, supported in bearings that travel on said guides and having movement past the curved edge of the table, substantially as and for the purpose set forth.

2. The adjustable bottom guide *d* and means for effecting adjustment thereof, in combination with the peg-bar B, the fixed table F, the yielding top guide D, and pressure devices, substantially as and for the purpose set forth.

3. In a machine for pegging cut pile fabrics, the pegging table or slab having a flat central surface and curved edge surfaces over which the fabric is drawn, in combination with a peg-bar having a direct line of movement across said flat table-surface and past the edges of said table, substantially as set forth.

4. The combination, with the peg-bar carrying the peg, the fixed table, and the yielding top guide, of a pressure-spring arranged within a socket fixed on the frame and a tension-adjusting mechanism for effecting increase or diminution of the spring-pressure to force the peg-bar toward said table, an adjustable stop-guard for limiting the downward movement of said top guide, and an adjustable bottom guide that prevents the peg striking the surface of the table, substantially as set forth.

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5. The spring S, its supporting-socket K, fixed upon the frame, the threaded adjusting-bolt L, having a shoulder *l*, whereon said spring is seated and projecting from said socket through the top guide-bar, and the hand-nut M, arranged on said bolt above the guide-bar, in combination with the yielding top guide, the movable peg-bar, and the pegging-table, substantially as set forth.

6. The combination of the peg-bar axle *c*, the sliding bearing-box C, having the stop or stud 5 fixed thereon, and the handle-bar N, secured on said axle and provided with a lug *n*, that engages said stud, substantially as and for the purpose set forth.

7. In combination with the oscillatory peg-bar B, the arm or guard P, fixed to the peg-bar axle and carrying an offset or stud *r*, and a suitable stop on the bearing with which said stud engages to limit the upward oscillation of the peg-bar at its return stroke, substantially as set forth.

8. The peg-bar provided with axles having bearing-journals for the sliding boxes C and for the connecting-bar bearings *e*, the said bearing-journals being eccentric to each other, substantially as and for the purpose set forth.

9. The equipoise-weight R and means for effecting adjustment thereof, in combination with the oscillative peg-bar B, its reciprocating bearings C, operating connections E, and table F, for the purpose set forth.

10. In a machine for the purpose specified, the combination, substantially as described, of the yielding top guide D, having the straight guiding-surface, its end flexibly connected with the vertically-adjustable hinge-bracket, means for effecting adjustment of said bracket on the frame, the adjustable bottom guide *d*, having the straight bearing-surface, the presser-spring S, its supporting-socket K, fixed on the frame, means for adjusting the spring-tension, the oscillating peg-bar B, carrying the peg *b*, the reciprocating boxes C, running on said guides and supporting the peg-bar axles, the fixed pegging-table F, having the flat top surface and curved edge *f*, the connecting-rods E, and the stop devices N, 5, and P, for the purpose set forth.

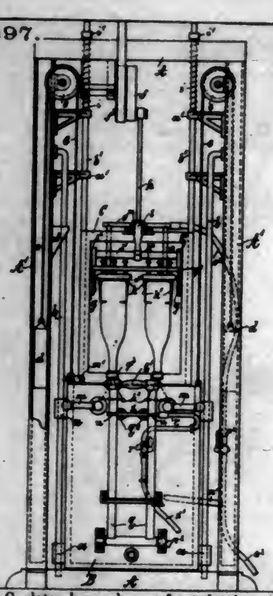
474,397. BOTTLE-WASHING MACHINE. JOHN MASSON, Hoelach, Baden, Germany. Filed May 1, 1891. Serial No. 391,305. (No model.)

Claim.—1. The combination of frame A with vertically-movable box B and the independently-movable frame C, having clamps *k'*, tubes *c'*, and funnels k^3, substantially as specified.

2. The combination of frame A with box B, having water-pipes *t'*, and with vertically-movable frame C, having plates *g' k*, clamps *k'*, and eccentrics l^2 for depressing plate *g'*, substantially as specified.

3. The combination of frame A and box B with the vertically-

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movable frame C, plates *k*, annular perforated tubes *o'*, deflectors *p*, clamps *k'*, and funnels A^3, substantially as specified.

4. The combination of frame A, box B, and frame C with cock n^2, bolt *n'*, and with the spring-cock *r'*, tubes *s t'*, and levers *q* for throwing the tube *s* inward and opening cock *r'*, substantially as specified.

474,398. ELECTRICALLY-HEATED VESSEL. WILLIS MITCHELL, Malden, assignor to the Butterfield-Mitchell Electric Heating Company, Boston, Mass. Filed Sept. 5, 1891. Serial No. 404,838. (No model.)



Claim.—1. In combination with an inner receptacle and an outer shell, an electrical resistance in the space between them, insulating-sleeves extending through the said shell, and conductors extending through the said sleeves and connected to the ends of the said resistance for establishing an electrical circuit through the latter, substantially as set forth.

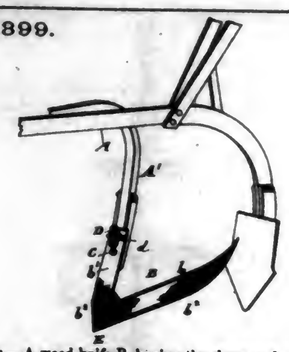
2. In combination with an outer shell and a perforated base, an inner receptacle having a stud extending from it down through the said base, insulating-sleeves extending in through openings in the said base and shell, and a device below said base engaging the said stud to clamp the said parts together, substantially as set forth.

3. In combination with a recessed bottom board or support and U-shaped springs secured therein, wires forming part of an electric circuit in contact with the said springs, and an electrically-heated receptacle having protruding conductors, and a resistance in contact with them, the said conductors entering the said springs when the said receptacle is set into the said bottom board to complete the electric heating-circuit, substantially as set forth.

4. An inner receptacle and wire wound thereon, in combination with an outer shell and base, metallic bolts passing in through the said shell and connected to the ends of the said wire, insulating-sleeves inclosing the said bolts and fitting into openings of the said shell and base, and clamping devices for fastening the said shell-base and inner receptacle together, substantially as set forth.

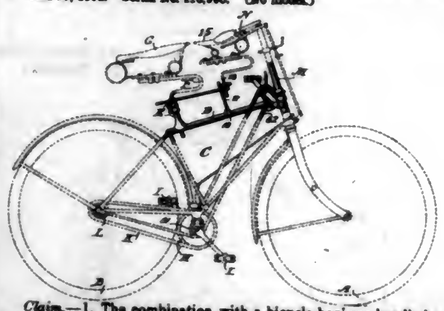
474,399. WEED-CUTTER. WILLIAM A. MCCOY, Benton, Kans. Filed July 20, 1891. Serial No. 401,051. (No model.)

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Claim.—A weed-knife B, having the sharpened edge b^3, the diamond-point E, the sweep *b*, turned inwardly at the bottom from about the middle to the end thereof, and the vertical shank b' with the holes *c d*, substantially as shown and described.

474,400. BICYCLE. THOMAS R. MCKENNA, Newark, N. J. Filed Jan. 23, 1892. Serial No. 418,996. (No model.)



Claim.—1. The combination, with a bicycle having a handle-bar, driving mechanism, and the usual saddle, of a pedal-mechanism secured to the frame adjacent the steering-head, sprocket-wheels and chain connecting the same with the driving mechanism, and a second saddle adjacent the said steering-head, substantially as and for the purposes described.

2. The combination, with a bicycle having a handle-bar, driving mechanism, and the usual saddle, of a pedal mechanism secured to the frame adjacent the steering-head, sprocket-wheels and chain connecting the same with the driving mechanism, a clutch connecting one of said wheels with its shaft, and a second saddle adjacent the said steering-head, substantially as and for the purposes described.

3. In a bicycle, the combination of a pedal-bearing shaft, a support in which it is journaled, a sprocket-wheel loose on said shaft, a chain connecting said wheel with a sprocket-wheel fast on the driving mechanism of the bicycle, and a clutch device connecting said loose wheel and said shaft, substantially as and for the purposes described.

4. In a bicycle, the combination of a pedal-bearing shaft, a support for said shaft, a loose sprocket-wheel on said shaft, a chain connecting said wheel with a sprocket-wheel fast on the driving mechanism, a clutch device connecting said wheel with said shaft, and lever mechanism for disconnecting said clutch, substantially as and for the purposes described.

5. In a bicycle, the combination of a pedal-bearing shaft, a support therefor, a loose sprocket-wheel on the shaft, a chain connecting said wheel with a sprocket-wheel fast to the driving mechanism, and a clutch device having a single point of engagement for connecting said loose wheel with the said shaft, substantially as and for the purposes described.

6. The combination of a shaft, a wheel loose thereon, a stationary sleeve or stop on one side of said wheel, a spline on the shaft abutting against a smooth face of said wheel at the other side thereof, a grooved sleeve on said shaft and engaging said spline, and a clutch outside of said spline, one part being on said sleeve and the other on said wheel, substantially as described.

7. The combination of a shaft, a bearing in which it is journaled, means for preventing endwise motion of said shaft in one direction, a wheel loose on said shaft and abutting against said bearing, a spline or feather on said shaft, the end thereof abutting against a continuous face of said wheel, whereby said shaft is prevented from endwise movement in the other direction, and a clutch outside the spline, one member thereof being on said wheel, the other on said shaft, and having a groove engaging said feather, substantially as and for the purposes described.

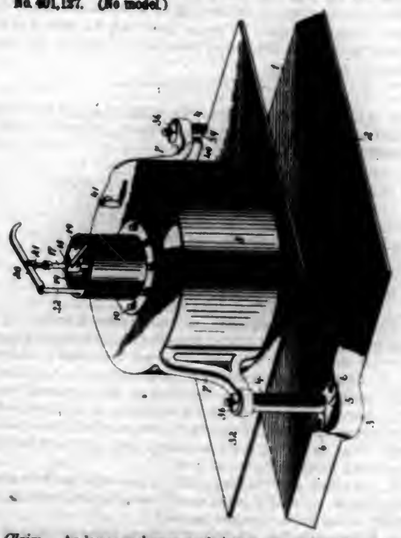
8. In a bicycle, the combination, with the backbone and the bearing for supporting the goose-neck or other saddle-support, said bearing having two parallel perforations from front to rear, of two bars, one in each of said perforations, means for rigidly retaining them therein, a perforated block on the forward ends of said bars, a supporting rod or bar in one of said perforations of said block and resting on the backbone, a seat-support in another of said perforations, and means securing said bars, support, and block rigidly together, substantially as and for the purposes described.

9. In a bicycle, the combination, with two rigid bars extending forward from the usual saddle-supports, of a block rigidly secured on the forward ends thereof, two up-and-down perforations in said block, a supporting rod or bar in one of said perforations, said rod resting on the backbone, a seat-supporting rod or bar in the other of said perforations, and means for rigidly securing said rods in place, substantially as and for the purposes described.

10. In a bicycle, the combination of support E, backbone *D*, rods or bars 3 4, means for securing them to support E, block 7, means securing it to rods 3 4, perforations 12 16 in said block, supporting-rod 17 in perforation 16 and having a shoe 19, resting on the backbone *D*, goose-neck 13 in perforation 12, a saddle, as 15, on the goose-neck, and means securing supporting-rod 17 and goose-neck 13 to said block 7, substantially as and for the purposes described.

11. In a bicycle, the combination of a pedal-bearing shaft, as 20, a bearing, as 26 28, therefor, a collar 32, fast to the shaft 20 and abutting against one end of the bearing, a sprocket-wheel 34, loose on said shaft and abutting against the other end of the bearing, a notch or kerf 40 in the face of said wheel, a sleeve 36, having a groove 38 and a tooth 39, a spline 37, abutting as described, and means for opening said clutch, substantially as described.

474,401. PNEUMATIC LETTER-PRESS. WILLIAM R. PAGE and LAWRENCE J. BUCHANAN, Kansas City, Mo. Filed July 30, 1891. Serial No. 401,127. (No model.)



Claim.—An improved pneumatic letter-press comprising a base or bed, a pair of vertical tubular standards rising from said base, an inclosing casing located above the base, a pair of supporting brackets extending oppositely from the casing and resting upon the upper ends of the tubular standards, a vertically-movable platen interposed between the inclosing casing and the base and having a pair of oppositely-disposed projections working through longitudinal slots in the vertical tubular standards, a pair of lifting-springs interposed between the under sides of the platen-extension and the lower ends of the standards, and also located within said standards, a rigid diaphragm located above the platen and connected rigidly thereto by a pair of vertical rods and also inclosed and vertically movable within the casing, a compression-chamber located above the casing and having a vertical standard, an operating-lever pivotally connected to the upper end of the standard, a piston working vertically within the compression-chamber and provided with one or more ports, spring-pressed valves, each operating to close one of said ports, one or more ports in the top of the inclosing casing and establishing communication between said casing and the compression-chamber, and a number of spring-pressed valves, each operating to close one of the last-named ports, substantially as set forth.

474,402. TRUSS. CHARLES PEROT, Galena, Kans. Filed Nov. 27, 1891. Serial No. 413,361. (No model.)



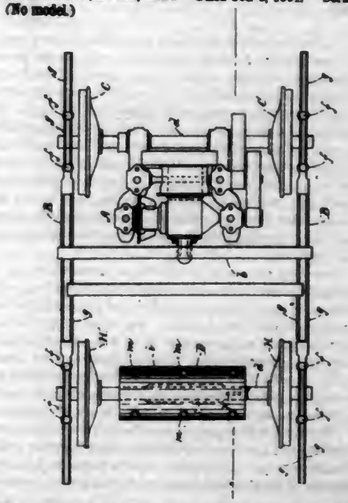
Claim.—1. A truss comprising a frame composed of two arms having each at its rear extremity an upwardly-extending C-shaped or spiral-like portion, said portions being separate from each other and arranged to rest upon the sides of the rump, substantially as set forth.

2. A truss comprising a frame composed of two arms having each at its rear extremity an upwardly-extending C-shaped or spiral-like portion and an elastic band surrounding said portions, the said C-shaped or spiral-like portions being separate from each other and arranged to rest upon the sides of the rump, substantially as set forth.

3. A truss comprising a frame composed of two integral arms each having its extremities of C-shaped or spiral like form, having inverted-U-shaped bends united to the said C-shaped or spiral-like portions, straight oblique portions united to the U-shaped portions, and an elongated portion uniting the oblique portions and adapted to be bent for adjusting the measurement of the frame, substantially as set forth.

4. A truss comprising a frame composed of a resilient rod or wire having two integral arms the extremities of which are C form or spiral-like shape, U-shaped portions united to said portions, straight oblique portions united to said U-shaped portions, coils to surround pad-knobs at the ends of the straight portions, an elongated portion connecting the straight portions and arranged to be bent for adjusting the frame, and a sheath surrounding the rod or wire, substantially as set forth.

474,403. TRUCK FOR ELECTRICALLY-PROPELLED VEHICLES. LOUIS PFINGST, Boston, Mass. Filed Oct. 6, 1891. Serial No. 407,893. (No model.)



Claim.—1. In an electrically-propelled vehicle, a weight mounted on a free axle of the vehicle-truck, substantially as described.

2. In an electrically-propelled vehicle, a weight detachably mounted on the free axle of the motor-truck to counterbalance the weight of the motor at the companion axle, substantially as specified.

3. In an electrically-propelled vehicle, a weight secured to a free axle of the truck and having bearing-points adjacent the axle-boxes, substantially as described.

4. The axle *d'*, in combination with the sectional weight D, detachably mounted thereon and fitted to rotate therewith, substantially as specified.

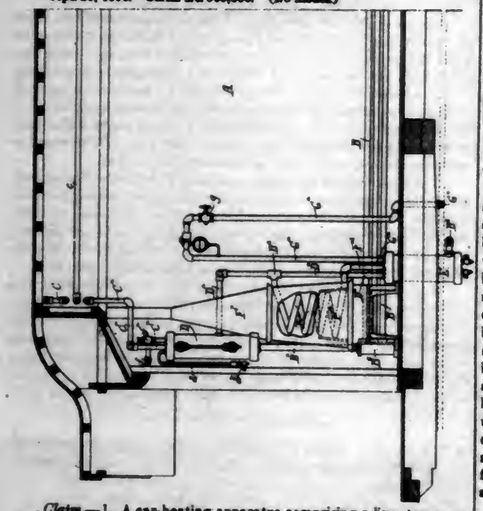
5. The weight D, comprising the sections *h i*, chambered at *j* and provided with an axle-groove registering with said chamber, said sections being adapted to be secured together on a car-axle, substantially as specified.

6. The axle *d'*, provided with the spline-groove *p*, in combination

with the weight D, mounted on said axle and comprising the semicircular sections *h i*, one of said sections being provided with a spline fitted to enter said groove, substantially as described.

7. In a device of the character described, a truck and an electric motor mounted thereon and actuating one axle of said truck, in combination with a weight detachably secured on a companion truck-axle and adapted to rotate therewith, substantially as and for the purpose set forth.

474,404. CAR-HEATING APPARATUS. GEORGE A. PRESCOTT, Topeka, Kans., assignor, by direct and mesne assignments, of three-fourths to William M. Abernathy and William Wadsworth, same place. Filed Sept. 23, 1890. Serial No. 365,383. (No model.)



Claim.—1. A car-heating apparatus comprising a live-steam-supply pipe, a water-heating chamber into which said supply-pipe discharges, a separating-chamber, a pipe leading upwardly from the heating-chamber to the separating-chamber, an auxiliary water-heater provided with a coil in communication at its opposite ends with the water-heating chamber and separating-chamber, water-circulating pipes communicating with the separating-chamber and with the water-heating chamber, a steam-condensing pipe leading from the top of the separating-chamber, an open local return-pipe for water of condensation, connected with said condensing-pipe and leading back to the water-heating chamber, and a valved return or discharge pipe for water of condensation, also connected with the said steam-condensing pipe, substantially as described.

2. A car-heating apparatus comprising a live-steam-supply pipe, a water-heating chamber into which said supply-pipe discharges, a separating-chamber, a pipe leading upwardly from the heating-chamber to the separating-chamber, an auxiliary water-heater provided with a coil in communication at its opposite ends with the water-heating chamber and separating-chamber, water-circulating pipes communicating with the separating-chamber and with the bottom of the water-heating chamber, a steam-condensing pipe leading from the top of the separating-chamber, an open return pipe for water of condensation, connected with said condensing-pipe and leading back to the water-heating chamber, and a return or discharge pipe connected with said steam-condensing pipe at a point below that at which the local return-pipe is connected therewith and provided with a valve, substantially as described.

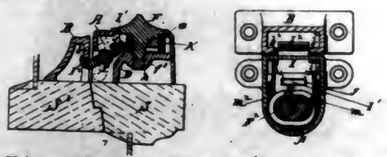
3. A car-heating apparatus comprising a live-steam-supply pipe, a water-heating chamber into which said supply-pipe discharges, a separating-chamber, a pipe leading from the heating-chamber to the separating-chamber, an auxiliary water-heater provided with a coil in communication at its opposite ends with the heating-chamber and separating-chamber, water-circulating pipes communicating with the separating-chamber and with the water-heating chamber, a steam-condensing pipe leading from the top of the chamber, an open local return-pipe for water of condensation, connected with said condensing-pipe and leading back to the water-heating chamber, a tank for water of condensation, located above the level of the water-circulating pipes, a valved return or discharge pipe leading from the condensing-pipe to the said tank, and a return or discharge pipe for water of condensation, opening into the upper part of said tank and leading downwardly from the latter, substantially as described.

4. A car-heating apparatus comprising a live-steam-supply pipe, a water-heating chamber into which said supply-pipe discharges, a vertical pipe leading into said chamber, connected with said steam-supply pipe and provided within the chamber with a plurality of horizontal branches provided with steam-exit apertures or perforations, tubes within the chamber surrounding the apertured or perforated branch pipes, and water-circulating pipes in communication with said water-heating chamber, substantially as and for the purpose specified.

5. A car-heating apparatus comprising a live-steam-supply pipe, a water-heating chamber into which said supply-pipe discharges, a separating-chamber, a pipe leading upwardly from the heating-chamber to the separating-chamber, an auxiliary water-heater provided with a coil in communication at its opposite ends with the water-heating chamber and separating-chamber, water-circulating pipes communicating with the separating-chamber and with the water-heating chamber, a steam-condensing pipe leading from the top of the separating-chamber, a water-tank located above the level of the water-circulating pipes, an open local return-pipe for water of condensation, connected with said condensing-pipe and leading back to the water-heating chamber, a valved return or discharge pipe connected with the upper part of the tank and leading downwardly therefrom, and a valved outlet upon the tank, substantially as described.

6. A car-heating apparatus comprising a live-steam-supply pipe, a water-heating chamber into which said supply-pipe discharges, a separating-chamber, a pipe leading upwardly from the heating-chamber to the separating-chamber, an auxiliary water-heater provided with a coil in communication at its opposite ends with the water-heating chamber and separating-chamber, water-circulating pipes communicating with the separating-chamber and with the water-heating chamber, a steam-condensing pipe leading from the top of the separating-chamber, an open local return-pipe for water of condensation, connected with said condensing-pipe and leading back to the water-heating chamber, a water-tank located above the level of the water-pipes, a valved return-pipe, also connected with said condensing-pipe and leading to the tank, a return or discharge pipe connected with the upper part of the tank and leading downwardly therefrom, and a pipe extending from the bottom of said tank to the water-circulating pipes and provided with a valve by which water may be allowed to flow from said tank to the circulating-pipes for replenishing the latter, substantially as described.

474,405. FASTENER FOR THE MEETING-RAILS OF SASHES. OLIVER K. PUTNAM, Worcester, Mass. Filed Aug. 23, 1891. Serial No. 403,923. (No model.)



Claim.—1. The combination, as hereinbefore described, of the casing, the bed-block fitted within said casing, the locking-lever having the hooked end and side trunnions supported in recesses in said bed-block for outwardly and upwardly swinging action, the horizontally-rotative operating-plate having the eccentric and pivot-stud formed thereon mounted in an opening in the top of the case, and the link or eccentric-strap embracing said eccentric and provided with a mortise, through which the curved upper arm of the locking-lever is arranged for operating, substantially as set forth.

2. The striker-plate B, having the inclined side lips b^3, in combination with the outwardly and upwardly swinging locking-hook, substantially as and for the purpose set forth.

3. The movable link provided with the shoulder or notch *m* and the casing provided with the notch or lug m^2, in combination with the operating-plate having the lug *n* and actuating-eccentric, and the locking-lever, as and for the purposes set forth.

4. The locking-lever having a hooked end I^2, adapted to latch under and lift the striker-plate and side trunnions *i*, whereby it is fulcrumed on the bed-block, and a backwardly and upwardly curved arm I', that extends through a recess in a horizontally-movable link or slide, whereby the said lever is swung outward and inward by backward and forward movement of the slide, substantially as set forth.

474,406. SCAFFOLD-BRACKET. MARCELLUS RAMSEY, Miles Grove, Pa. Filed Apr. 20, 1891. Serial No. 390,010. (No model.)

Claim.—1. The herein-described scaffold-bracket, the same comprising a horizontal member, a vertical member rigidly secured to and depending from the horizontal member at a point between its ends, brackets secured to the outer end of the horizontal and the lower end of the vertical member and having reduced inner ends, a tubular brace connecting said inner ends, and means, substantially as described, for attaching the device to a window or door, as set forth.

2. The herein-described scaffold-bracket, the same comprising a horizontal member, a vertical member depending from the center thereof, a diagonal brace connecting said members, a loop at the inner end of the horizontal member, a cross-bar passing through said loop, and a screw for engaging said bar therein, as and for the purpose set forth.

3. The herein-described scaffold-bracket, the same comprising a horizontal member, a vertical member depending from the center thereof, a diagonal brace connecting said members, a loop at the inner end of the horizontal member, a cross-bar passing through said loop and having a plate at each end provided with a longitudinal slot having one end enlarged, cushions having headed studs whose shanks fit closely in said slot, and a screw engaging the inner end of each loop and bearing against the rear side of said bar, as and for the purpose set forth.

4. In a scaffold-bracket, the combination, with the horizontal member, the vertical member depending from the center thereof, and a bracket O near the lower end of said vertical member, of a cross-bar through said bracket, a hook O in the angle between the horizontal and vertical members, a cross-bar P in said hook, a loop on the horizontal member, a cross-bar through said loop, and means for adjusting it therein, as and for the purpose set forth.

5. In a scaffold-bracket, the combination, with the horizontal member, the vertical member depending from the center thereof, a bracket O near the lower end of said vertical member, and a hook E in rear of its lower end, of a cross-bar *r* through said bracket, a cross-bar F through said hook, a hook O in the angle between the horizontal and vertical members, a cross-bar P in said hook, a loop on the horizontal member, a cross-bar through said loop, and means for adjusting it therein, as and for the purpose set forth.

6. The combination, with the two scaffold-brackets A, each comprising a horizontal member, a vertical member depending from the center thereof, a hook O in the angle, an inclined brace B on the outer side of the bracket connecting the two members and having brackets U at its ends and a hook E inside the lower end of the vertical member, of cross-pieces connecting said brackets and said hooks, a cross-piece under the inner ends of the horizontal members, and means for adjusting it relatively to the vertical members, as and for the purpose set forth.

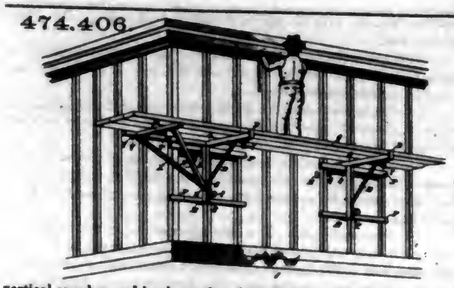
7. The combination, with the scaffold-bracket A, comprising a horizontal member and a vertical member depending from the center thereof, a cleat R on one face of the horizontal member and a cleat S on the opposite face of the vertical member near its lower end, of the extension-bracket T, comprising two members at right angles to each other and connected by a brace *t'*, an L-iron U at one end of one member detachably engaging said upper cleat R and, braces X X', connecting the opposite end of said member and both ends of the other member with said lower cleat S, as set forth.

8. The combination, with the scaffold-bracket A, comprising a horizontal member and a vertical member depending from the center thereof, a cleat R on one face of the horizontal member and a cleat S on the opposite face of the vertical member near its lower end, of the extension-bracket T, comprising two members at right angles to each other and connected by a brace *t'*, an L-iron U at one end of one member detachably engaging said upper cleat R, an eye V near the opposite end of said member, a cleat W near the farther end of the other member, a brace X, having a hook Y engaging said eye, a brace X' having an iron Y' engaging said cleat, and irons Z at the lower ends of said braces engaging the lower cleat S on the vertical member of the bracket proper, as set forth.

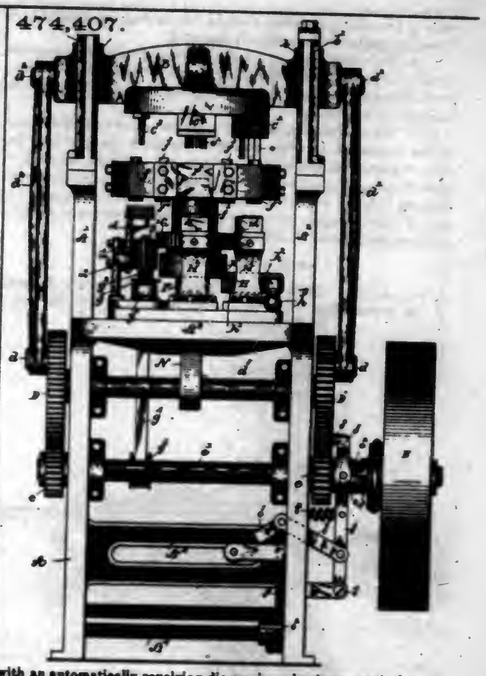
474,407. HEELING-MACHINE. FREDERICK F. RAYMOND, 2d, Newton, Mass. Filed Feb. 11, 1889. Serial No. 299,510. (No model.)

Claim.—1. In a heeling-machine, a cross-head carrying a non-rotative gang of drivers, awls, and pressure-blocks, in combination

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with an automatically-revolving die-carriage having a vertical movement and pitmen connecting the cross-head and the actuating mechanism which moves the carriage vertically, substantially as described.

2. The combination, in a heel compressing and loading machine having a non-rotative vertically-reciprocating gang of drivers, awls, and pressure-blocks, of the die-carriage *f*, the dies supported thereby, a post or support for said carriage, upon which it is vertically movable, and a cam engaging the lower end of said post or support for imparting to it a vertical movement, substantially as described.

3. The combination, in a heel compressing and loading machine having a non-rotative vertically-reciprocating gang of drivers, awls, and pressure-blocks, of the post or support for the die-holding carriage, the die-holding carriage vertically movable thereon, the dies supported by the carriage and vertically movable therein, and stops for limiting the extent of said vertical movement, and a cam engaging the lower end of said post or support for imparting or permitting a vertical movement of the die-carriage and dies, substantially as described.

4. The combination, in a heel compressing and loading machine having a non-rotating vertically-reciprocating gang of drivers, awls, and pressure-blocks, of the post or support for the die-carriage, the die-carriage vertically movable in relation thereto, the cam N, engaging the lower portion of said post or support, and connecting-rod N', substantially as described.

5. The combination, in a heel compressing and loading machine, of the die-carriage post or support F, the die-carriage mounted thereon, a connecting-rod N', having a latch n^2, the projection n^4, and a rotary cam or latch-block to engage said cam-pin or latch to hold the table stationary or practically stationary relatively to the movement of the cross-head, and a reciprocating cross-head, substantially as described.

6. The combination, in a heel compressing and loading machine, of the die-carriage *f*, dies F', carried thereby, a latch or lock for holding the dies in operative position, and a positively-operated pinion and gear for turning the die-carriage upon the release of the latch or lock, substantially as described.

7. The combination, in a heel compressing and loading machine, of the die-carriage and dies supported thereby, the gear G, mounted thereon, the pinion *g'* to engage the gear, pulley g^6, belt g^4, and pulley g^3, substantially as described.

8. The combination, in a heel compressing and loading machine, of the die-carriage *f*, the dies supported thereby, the dial H, having the latching-recesses *h*, the spring bolt or lock *k'*, lever k^3, gear G, and its operating-pinion *g'*, substantially as described.

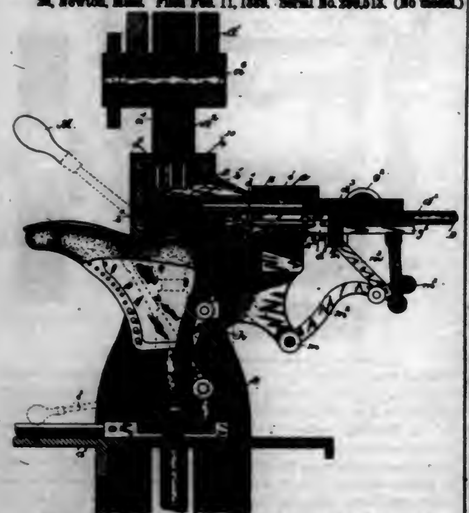
9. The combination, in a heel compressing and loading machine, of the die-carriage *f* and the dies carried thereby, its post or support, a cam engaging said post or support for vertically moving the die-carriage, and a connection between the cam and the die-carriage, and a

leans or swiveling connection whereby the carriage is permitted to be turned or rotated, substantially as described.

10. The combination, in a heel compressing and loading machine, of the rotary die-carriage, the dies supported thereby, the stationary heel-formers *n n' n²*, and the vertically-movable heel-lifter n^4, substantially as described.

11. The combination, in a heel compressing and loading machine, of the cross-head carrying a compressing-block, gang of awls and gang of drivers adapted to be simultaneously operated, the shaft d^3, gears D, cam-pins *d*, connecting-rods *d'*, main shaft *d'*, pinions *e* thereon, meshing with the gears D, the die-carriage *f*, the dies supported or carried thereby, a post or support upon which it is vertically movable, and its actuating-cam N, substantially as described.

474,408. HEEL-RANDING MACHINE. Frederic F. Raymond, 2d, Newton, Mass. Filed Feb. 11, 1889. Serial No. 299,513. (No model.)



Claim.—1. In a rand-forming mechanism, a block having a forming or pressing surface for flattening the rand, and a former, substantially as described, movable vertically in relation to the operating-surface of the first-named block, the edge of which former determines the curve of the rand, substantially as described.

2. The combination, in a randing device, of a support for the work, a pressure-block, and a yielding former-block, substantially as described, the edge of which determines the curve of the rand and which blocks are movable vertically relatively to the support, substantially as described.

3. In a randing appliance, a templet having holes through which fastenings are driven, and a yielding rand-forming block, substantially as described, having a yielding or vertical movement in relation to the templet, substantially as described.

4. In a randing-machine, a templet-block having holes through which fastenings are driven and a chamber or cavity for the reception of the rand-forming block, with said rand-forming block formed to fit said chamber or cavity and secured to the block to be movable in relation thereto, and a spring for moving the former from the said templet-block, substantially as described.

5. The combination, in a rand-forming device, of a support for the work, a templet having holes through which the rand-attaching fastenings are driven, a vertically-movable forming-block, substantially as described, and a reciprocating gang of drivers, substantially as described.

6. In a randing-machine, the combination of a work-support, a templet-plate having a rand flattening or compressing surface, a vertically-movable rand-former, substantially as described, and a gang of drivers carried by a reciprocating block, the surface of which forms a hammer for delivering a compressing action to the templet, substantially as described.

7. The combination, in a rand-attaching machine, of a work-support, a templet having holes through which rand-attaching fasteners are driven, a former, substantially as described, vertically movable independently of the templet, a reciprocating gang or group of awls, and a reciprocating gang or group of drivers, substantially as described.

8. The combination of the templet-block having the cavity or hole b^9 with the vertically-movable rand-former B', having a spring-holding recess and attached to the templet-block to be movable vertically in relation thereto, with the spring b^8, held in said recess, substantially as described.

9. The combination, in a randing-machine, of the templet B, the table C, having the extensions h h', the side rods h^2 h^3, boxes h^4, and randing devices, as set forth.

10. The combination, in a randing-machine, of the templet B, the table C, mounted upon the side rods h^2 h^3, the said side rods, and springs h^5, substantially as described.

11. The combination, in a randing-machine, of the table C, the templet B, arranged to slide upon the side rods h^2 h^3, said side rods, a spring or springs h^5, and the table-depressing lever *d'*, substantially as described.

12. The combination, in a randing-machine, of the table C, the templet B, supported thereby, the table being arranged to slide upon the side rods h^2 h^3, the said side rods, a cross-head A', and gang or group of drivers a^4, mounted thereon, substantially as described.

13. The combination, in a randing-machine, of a table C, having the cross-section h^6, and the upper sections h^{10} h^9, shaped to support the templet B in a forward position, substantially as described.

14. The combination, in a randing-machine, of the table C, having the sections h^9 h^{10} and c^3 c^4, the two sections h^9 and c^3 c^4 being separated from each other to form a guideway for the slide carrying or supporting the fastening-carrier, with said slide and said fastening-carrier, substantially as described.

15. The combination, in a randing-machine, of the table C, having the sections h^9 h^{10} and c^3 c^4, the two sections h^9 and c^3 c^4 being separate from each other to form a guideway for the slide, said slide supporting the rand-curving devices, and said rand-curving devices, substantiantially as described.

16. The combination, in a randing-machine, of table C and the suspended templet B, the table having the cavity h^7 h^8 and randing devices, substantially as described.

17. In a randing-machine, the forming strap or tape D and mechanism for moving it about the heel end of the outsole, with the rand-forming block B' and templet or block B, substantially as described.

18. The combination of the rand-forming strap movable in relation to the rand-forming block and heel end of the outsole, as specified, the said rand-forming block, and the templet or pressure block vertically movable in relation to the rand-former block, substantially as described.

19. The combination of the rand-forming strap or tape movable in relation to the rand-former block and heel end of the outsole, as specified, the rand-former block, the templet or pressure block having a vertical movement relatively to the rand-former block, and the reciprocating head to come in contact with the templet-block and move it forcibly downward, substantially as described.

20. The combination of the forming strap or tape, the rand-forming block, the templet having a vertical movement in relation to the rand-forming block and provided with holes through which fastenings are driven, a gang of fastening-drivers, and a pressure-head upon which said drivers are mounted, substantially as described.

21. The combination of the rand-forming tape or strap movable in relation to the rand-forming block and heel end of the outsole, as specified, the rand-forming block, the templet having holes through which fastenings are driven vertically movable in relation to the rand-forming block, the fastening carrying slide, the gang of drivers, and the reciprocating head supporting the same, substantially as described.

22. The combination of the work-support, the rand-forming block B', the extensible rand-forming tape or strap D, mounted upon two horizontally-movable supports, a slide having a horizontal movement upon which said supports are mounted, a spring for drawing said supports toward each other, and gaging devices for holding said supports at any desired distances apart during the first portion of the outward or forward movement of the slide and which then operate to release the supports to permit them to close upon the sides of the sole of the boot or shoe and to remain closed thereon during the remainder of the movement of the slide, substantially as described.

23. The combination of the extensible tape or strap D, its separable supports, a spring for closing or drawing toward each other said supports, a slide upon which said supports are mounted, and gages for determining the time of release of said supports, substantially as described.

24. The combination of the extensible strap or band D, the separable supports therefor horizontally movable, a spring or other yielding force acting to draw said supports toward each other and gages for holding said supports separated in opposition to said spring, and means for adjusting the position of said gages in relation to each other, substantially as described.

25. The combination of the extensible band or strap D, the supports d^5 d^6, mounted at the ends of the levers d^8 d^7, said levers pivoted to the slide d^9 and having the beveled or inclined end d^{10} with the gages or holders G G', substantially as described.

26. The combination of the extensible strap or band D of a width to extend upon the edge of the outsole of the boot or shoe in applying the rand thereto, and a separable and horizontally-movable roll d^5 d^6 of a width equal to or greater than that of the strap or band and extending below the upper surface of the sole of the boot or shoe and adapted to bear upon the edge thereof, substantially as described.

27. The combination of the extensible strap or band D, its separable supports having a horizontal movement imparted to them, and rand-holders in front of said strap and supports and each of which has a flat surface below the upper edge of the strap or band to support a rand while it is being formed, substantially as described.

28. The combination of the extensible strap or band D, its separable supports, and devices for imparting to them a horizontal movement, with the independently-movable rand-supports for supporting the rand-rests in front of said strap and supports, substantially as described.

29. The combination of the extensible strap or band D, its separable and horizontally-movable supports, and rand-rests vertically movable in relation to said supports, substantially as described.

30. In a randing-machine, the combination of an extensible strap or band, its separable and horizontally-movable supports, and rests having devices in connection therewith, as set forth, for moving the same lengthwise and crosswise over the line of the horizontal movement of said rests, substantially as described.

31. The combination of the extensible strap or band, its separable and horizontally-movable supports, a spring for closing said supports upon the boot or shoe, the rand-rests, their supports, and a spring for closing them upon the boot or shoe, substantially as described.

32. The combination of the extensible strap or band, the separable and horizontally-movable supports therefor, the rand-rests, their independent supports, and stops for adjusting or varying the extent of movement of the rests in relation to the supports, substantially as described.

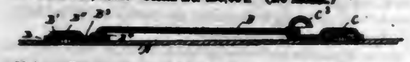
33. The combination of the work-support, the rand-former, the templet vertically movable in relation to the rand former, the separable and horizontally-movable rolls d^5 d^6, and the separable and horizontally-movable rand-rests, substantially as described.

34. The combination of the work-support, the rand-former, the templet, the separable and horizontally-movable supports d^5 d^6, the extensible strap or band D, and the separable and horizontally-movable rand-rests having downwardly-extending sections which bear upon the sole edge, substantially as described.

35. The combination, in a randing-machine, of the last or work-support, the rand-former block, and the templet, with the separable and horizontally-movable rand-rests, substantially as described.

36. The combination, in a rand forming and setting machine, of a work-support, a rand-forming block, the edge of which determines the inner curve of the rand, a templet having a vertical movement in relation to the rand-block to compress or flatten the rand, rand feeding, forming, and holding devices, a reciprocating gang of drivers, and a pressure-block to force the templet upon the rand, substantially as described.

474,408. GLOVE-FASTENER. Charles H. Reed, Boston, Mass. Filed Mar. 23, 1892. Serial No. 426,054. (No model.)



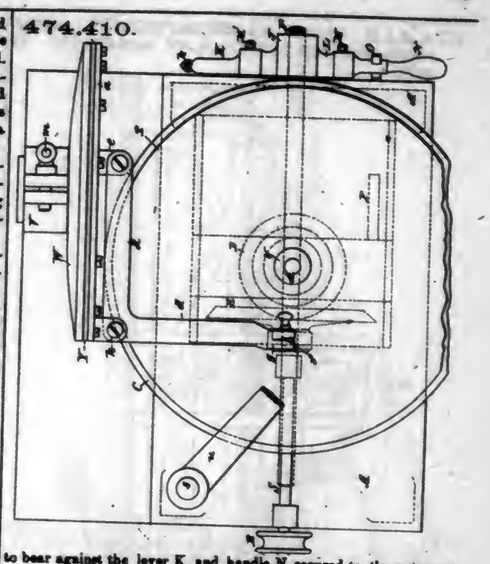
Claim.—The herein-described glove or garment fastener, consisting of a pair of cup-shaped metallic plates and eyelets or rivets for securing them to the garment, one of said plates having an extension terminating as a perforated cup-shaped cord-holder, a cord secured to the latter, and a hook on the other plate for securing to it the cord, substantially as and for the purpose set forth.

474,410. APPARATUS FOR REPRODUCING SOUNDS. Louis Rosenthal and Salomon Frank, Frankfort-on-the-Main, Germany. Filed Jan. 21, 1892. Serial No. 418,982. (No model.)

Claim.—1. The combination of a diaphragm Y, elbow-lever *d*, pivoted at its inner end to a central stud on said diaphragm, clamp *g*, secured to the outer end of said lever, stylus *f*, adjustably secured in said clamp at right angles to the plane of said lever and parallel with the plane of the diaphragm and receiving its desired lateral motion therefrom, table C, and mechanism for moving said table under said stylus, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

2. The diaphragm Y, combined with the tension-spring *p*, elbow-lever *d*, pivoted to said diaphragm Y between the tension-spring *p* and the diaphragm, and stylus *f*, substantially as and for the purposes herein shown and described.

3. The combination of the rotary table C and its shaft c^2 with the sliding carriage B, screw-shaft F, divided nut J, pivoted lever K, connected to the upper portion of said divided nut, spring *k*, automatically controlling said lever K, lever L, connected to the lower portion of said divided nut and provided with an arm at its inner end adapted

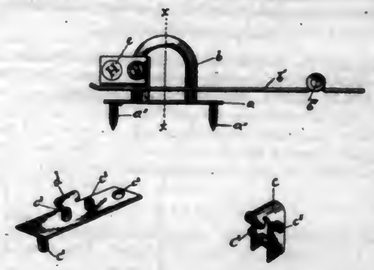


to bear against the lever K, and handle N, secured to the outer end of lever L and adapted, in connection with spring *k*, to operate both levers K and L for opening or closing said divided nut, all substantially as described, and for the purposes set forth.

4. The combination of the rotary table C and its shaft c^2 with the sliding carriage B, having prong P, screw-shaft F, divided nut J, levers K L, spring *k*, and catch O, all arranged substantially as herein shown and described.

5. The combination of the table C with the stylus *f* and friction-wheel Q for rotating said table C, said stylus and wheel being placed on opposite sides of said table and in direct line with each other and at an equal distance from the axis of the table and with the screw-shaft F, gearing from the table C to the shaft F, carriage B, nut J, levers K L, and spring *k*, all arranged substantially as and for the purposes specified.

474,411. HASP-SEAL. George J. Saubert, Columbus, Ohio. Filed Apr. 20, 1891. Serial No. 390,083. (No model.)

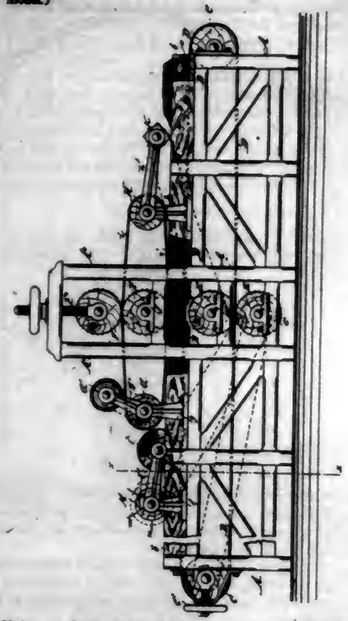


Claim.—1. In a hasp and seal therefor, the combination, with the fixed plate *a*, its projecting staple or keeper *b*, and hinged and slotted latch-plate *b'*, of a soft metallic seal-strip *c*, a pin c', formed integral with and projecting from one end of said strip, a pin-opening c^2 in the opposite end thereof, and a central laterally-projecting T lug or key *d*, substantially as specified.

2. In a hasp-seal, the soft metallic strip *c*, pin c', projecting from one end thereof and formed integral therewith, pin-opening c^2 on the opposite end of said strip, and one or more stop projections c^3, formed with and projecting from the outer surface of said seal-strip, substantially as specified.

3. In a hasp and seal therefor, the combination, with the fixed plate *a*, staple *b*, projecting therefrom, a slotted latch-plate *b'*, through the slot of which loosely passes said staple, of soft metallic seal-strip *c*, pin c', formed with and projecting from one end of said strip *c*, an opening c^2 on the opposite end of said strip, a T-lug *d*, projecting, as described, from one edge of said strip, and one or more stop-pins c^3, projecting from the outer side of said seal-strip, substantially as and for the purpose specified.

474,412. MACHINE FOR FORMING FUEL-BRICKS. JOHANN P. SCHMIDT, Jersey City, N. J. Filed Jan. 6, 1892. Serial No. 417,207. (No model.)

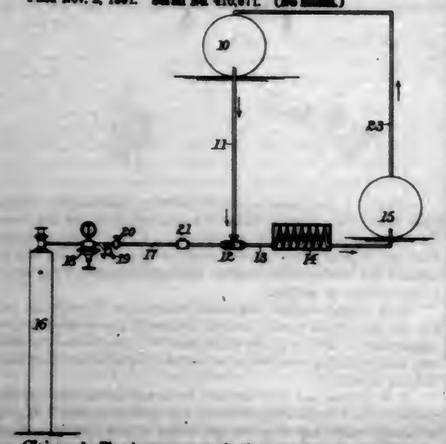


Claim.—1. In a machine for forming fuel-bricks, a rotating shaft of a square cross-section to more thoroughly mix the fuel mass and distribute the same over the feed belt, substantially as set forth.

2. In a machine for forming fuel-bricks, the combination of the rollers F F with the rollers G and H and the belt *i*, running over the lower roller F, and the rollers G and H, by which belt the fuel mass is pressed together when the same is fed over the table, substantially as set forth.

3. In a machine for forming fuel-bricks, the combination of the spring-acted rollers E E, one located over the other one, with the end rollers C C and the belt D, guided over the said rollers C C and between the spring-acted rollers E E, substantially as set forth.

474,413. ART OF AND APPARATUS FOR AERATING LIQUIDS. JOSEPH SCHEIBLE, Brooklyn, and CARL A. SCHEIBLE, New York, N. Y. Filed Nov. 2, 1891. Serial No. 410,671. (No model.)



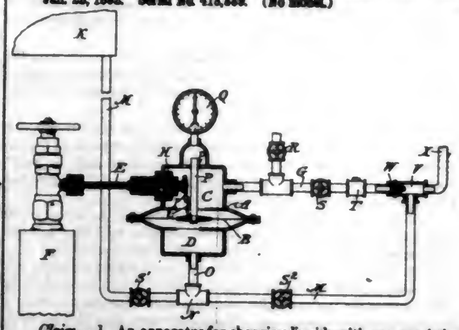
Claim.—1. The improvement in the art of aerating or charging liquids with gas, which consists in producing a smooth and steady flow of the liquid under a uniform pressure, producing a smooth and steady flow of the gas under a uniform pressure, mingling the gas and liquid quietly and without agitation, and maintaining a uniform pressure upon the mingled gas and liquid, substantially as shown and described.

2. The improvement in the art of aerating or charging liquids with gas, which consists in producing a smooth and steady flow of the liquid under a uniform pressure, producing a smooth and steady flow of the gas under a uniform pressure, mingling the gas and liquid quietly and without agitation, and maintaining a substantially equal pressure upon the liquid before and after the mingling of the gas therewith, substantially as shown and described.

3. The improvement in the art of charging liquids with gas, which consists in producing a smooth and steady flow of the liquid under pressure, producing a smooth and steady flow of the gas under a substantially equal pressure, mingling the gas and liquid quietly and without agitation, and establishing free communication, without access to the external air, between the surface of the charged liquid and the supply of liquid to be charged, substantially as shown and described.

4. An apparatus for charging liquids with gas, comprising a liquid-supply tank, a receiving-tank, a pipe for communicating the liquid from the supply-tank to the receiving-tank, means for introducing gas into the moving column of liquid in said pipe, means for maintaining the pressure of the gas substantially equal to the pressure on the liquid, and an independent pipe for establishing free communication below the surface of the liquid in the receiving-tank and the liquid in the supply-tank, substantially as shown and described.

474,414. APPARATUS FOR AERATING LIQUIDS. CARL A. SCHEIBLE, New York, and JOSEPH SCHEIBLE, Brooklyn, N. Y. Filed Jan. 23, 1892. Serial No. 418,889. (No model.)



Claim.—1. An apparatus for charging liquids with gas, consisting of a gas-supply and a liquid-supply, pipes for conducting the gas and liquid from the sources of supply and connected to mix the gas and liquid, the gas-conducting pipe having at the point of connection a nozzle with a contracted orifice, through which the gas may flow into the liquid, and a pressure-regulator having a diaphragm acted upon by both the gas and the liquid before mixture and having a valve operated by said diaphragm to control the flow of one of the fluids, substantially as shown and described.

2. An apparatus for charging liquids with gas, consisting of a gas-supply and a liquid-supply, pipes for conducting the gas and liquid from the sources of supply and connected to mix the gas and liquid, a pressure-regulator having a diaphragm acted upon by both the gas and the liquid before mixture and having a valve operated by said diaphragm to control the flow of one of the fluids, and two stop-cocks inserted in the other conducting-pipe, one on each side of its connection with the pressure-regulator, substantially as shown and described.

3. An apparatus for charging liquids with gas, consisting of a liquid-supply and a gas-supply, in which the gas may be compressed, pipes for conducting the gas and the liquid from the sources of supply and connected to mix the gas and liquid, an expansion-chamber for the gas intermediate the supply and said point of mixture, and a conducting-tube for the charged liquid led from the point of mixture through the expansion-chamber, substantially as shown and described.

474,415. BICYCLE-SUPPORT. MARTIN L. SCHOCH, New Berlin, Pa. Filed Dec. 3, 1891. Serial No. 413,918. (No model.)

Claim.—1. In a bicycle-support, a clip for securing the supporting-rod, in combination with washers, whereby the clip may be attached to either a slanting or horizontal base, substantially as described.



2. In a bicycle-support, a clip provided with brackets and a spring secured to its inner face, in combination with a bell-crank supporting-lever secured between the brackets, said spring bearing upon the short arm thereof, keeping it in position when not in use, substantially as described.

3. In a bicycle-support, a clip provided with brackets and a ring secured to the clip, in combination with a bell-crank supporting-lever supported between said brackets, said ring being adapted to pass over the short arm of said lever and hold it in position when in use, substantially as described.

4. In a bicycle-support, a supporting-rod having the form of a bell-crank lever and fulcrumed to the frame of the machine, in combination with a spring at the upper end for holding it in closed position, and a fastening device for holding it outward, substantially as described.

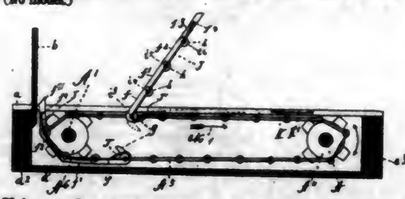
5. In a bicycle-support, a clip secured to the frame by bolts and adjustable washers and brackets at the lower end of the clip, in combination with a bell-crank supporting-lever secured between said brackets, a plate-spring secured to the upper inner face of the clip, and a ring secured to the upper part of the clip, which holds the lever in position when in use, substantially as described.

6. A bicycle-support comprising a lever secured to a clip, said clip being secured to the bicycle by bolts, substantially as described.

7. A bicycle-support, comprising a supporting-rod, in combination with a clip secured to the bicycle by bolts and washers, one side of said washers being made concaved, substantially as described.

8. In a bicycle-support, a rod and a spring for normally holding it out of operative position, in combination with a ring or loop adapted to drop over the top of the rod to hold it in operative position, in the manner and for the purpose substantially as described.

474,416. GRAIN-CONVEYER FOR HARVESTERS AND BINDERS. GEORGE SCHUBERT, Walnut, Tex. Filed July 8, 1891. Serial No. 398,768. (No model.)



Claim.—1. In a grain-conveyer for harvesters and binders, a jointed conveyer arm or arms pivoted to a chain or its equivalent and provided with the projection *g*, as shown, and for the purpose described, said arm being elevated and straightened by a spring or its equivalent, substantially as shown and described.

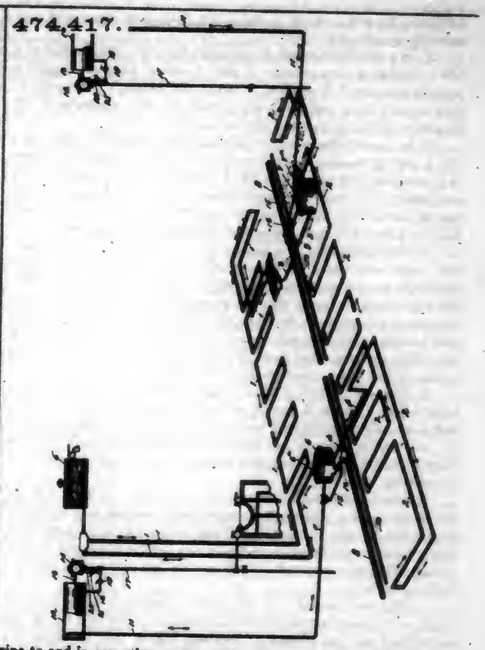
2. In a grain-conveyer for harvesters and binders, a jointed conveyer arm or arms pivoted to a chain or its equivalent and provided with the projection *g*, as shown, and having the axles *i* or the pins of its joints projecting, as shown, and perforated, a spring extending through said perforations and resting with one end on the chain and secured with its other end to the conveyer-arm, substantially as shown, and for the purpose described.

3. In combination with a harvester-platform having a slotted apron plate and a lower plate, sprocket-wheels arranged within said platform, a reciprocating sprocket-chain passing around said wheels, flexible conveyer-arms pivoted to the sprocket-chain, and springs for holding said arms at an angle with said chains, and a space between the outer sprocket-wheel and the outer end sill of the platform, into which the flexible arm is withdrawn when the chain reciprocates.

474,417. APPARATUS FOR HEATING RAILWAY-CARS. JOHN Q. C. SEABLE, Chicago, Ill. Filed Nov. 2, 1889. Serial No. 329,096. (No model.)

Claim.—1. In a car-heating apparatus, the combination, with the liquid-circulating pipes that are located on the opposite sides of the car, of cross-over pipes located intermediate said circulating-pipes, steam-heated liquid-circulating passages located on opposite sides of the car, communicating with said cross-over pipes and with said circulating-pipes, and a train-pipe for supplying steam to heat said liquid-circulating passages.

2. In a car-heating apparatus, the combination, with the train-pipe and liquid-circulating pipes that are located on the opposite sides of the car, of cross-over pipes located intermediate said circulating-pipes, steam-heated liquid-circulating passages located on opposite sides of the car, communicating with said cross-over pipes and with said circulating-pipes, an expansion-chamber located above and communicating with the circulating system, branch pipes leading from the train-pipe to and in operative contact with said steam-heated liquid-circulating passages, a cock or valve in said branch pipes, and a chamber or trap for discharging the condensed steam while the car is being heated.



3. In a car-heating apparatus, the combination, with the train-pipe and liquid-circulating pipes that are located on the opposite sides of the car, of cross-over pipes located intermediate said circulating-pipes, steam-heated liquid-circulating passages located on opposite sides of the car, communicating with said cross-over pipes and with said liquid-circulating pipes, an expansion-chamber located above and communicating with the circulating system, branch pipes leading from said train-pipe to and in operative contact with said steam-heated liquid-circulating passages, an auxiliary branch pipe communicating with said train-pipe, a cock or valve in said auxiliary branch pipe, and a chamber or trap for discharging the condensed steam when the car is not being heated.

4. In a car-heating apparatus, the combination, with the liquid-circulating pipes 1 and 2, the cross-over pipes 3 and 4, communicating with said liquid-circulating pipes, and the liquid heating and circulating passages 6 and 7, communicating with said cross-over pipes, of the train-pipe 8 for supplying heat to the liquid heating and circulating passages, a steam-trap 14, communicating with a liquid heating and circulating passage, and the valved branch pipe 15, communicating with said trap and with the train-pipe.

474,418. PENCIL-SHARPENER. JOHN SIDEN, Montreal, Canada. Filed Jan. 21, 1892. Serial No. 418,640. (No model.)



Claim.—1. The combination of a bed-frame or box, a plane guided in a track on the top of said bed, a crank-shaft journaled on the top of said bed near the end at the heel of said plane and provided with means of turning it and connected to the plane by a pitman, a rotary chuck having one end journaled yieldingly in the bed end opposite said crank-shaft, so that its free end and center line slopes upward and laterally and the latter intersects the plane-track at an acute angle near its far end and side at the level of the cutting-edge of the plane-bit, said free end being elastic and tapering, a sliding locking-collar on said free elastic end, mechanism for sliding said collar, mechanism for rotating said chuck, an adjustable support for the end of the object

projecting from the chuck, and a spring pressing it downward, substantially as set forth.

2. In a pencil-sharpener or pointing-plane, the combination of a bed A, having a race or track *a*, with guides *a'*, adapted to guide a plane, a plane-body B, adapted to run in said guides, a cutting-bit B', held on said body adjustably by a screw B'', and waste-guard B''', hinged to said body, substantially as set forth.

3. In a pencil-sharpener or pointing-plane, the combination of a bed A, having an open race or track *a*, a plane B, guided in said race and provided with adjustable bit B' and hinged waste-guard B''', a crank-shaft C, journaled across said track near one end thereof, a pitman B⁴, connecting said plane with the crank, a fly-wheel C' on said shaft, and handle *d* on said fly-wheel, substantially as set forth.

4. The combination of a bed or box A, having at one end a beveled recess with end *a''*, with an elastic tubular chuck D, journaled yieldingly in said end and diagonally in said bed, so that its center line forms an acute angle with the top surface of the bed, its free end slit open and tapering in diameter, the sliding collar E on the tapering split portion having a circular groove, and the lever E', pivoted below said collar and projecting through a slot in the top and engaging the groove of the collar, substantially as set forth.

5. The combination of a bed or box A, having in its top a race or track *a*, and a chuck D, having one end journaled below the level of said track at one end of said bed and having its other end projecting into said bed or box at a line rising and deviating laterally, so as to intersect said track at the opposite end at an acute angle, substantially as set forth.

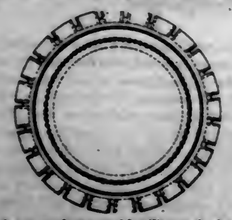
6. The combination of a bed or box A, a race or track *a* in the top of the same, a recess with beveled end *a''* normal to a line intersecting the opposite end and side of said track at an acute angle in an upward and lateral direction, and a tubular and flexible chuck D, journaled yieldingly in said end and taking said line as a center, substantially as set forth.

7. The combination of a bed or box A, having in its top a race or track *a*, a tubular flexible chuck D, journaled below said top at one end of said bed and projecting into said bed, so that its center line intersects the race *a* at an acute angle, a sliding collar E on said chuck, the lever E', pivoted upon the axle *d* and connected to the collar by screws *e*, a grooved pulley F, normal to the line of said chuck and near the end of the line, the bar F', upon which said pulley is journaled, having a threaded eye *f'*, a screw F'', journaled in the bed-top and passing through the eye *f'* and provided with a milled head *f''*, and the spring G between the end of the chuck D and the pulley F, substantially as set forth.

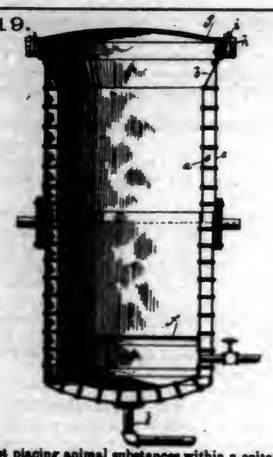
8. The combination of a bed or box A, having in its top a race or track *a*, a tubular flexible chuck D, journaled in the recessed and beveled end *a''* of said bed and below the top, so that its center line intersects said track at an acute angle, a ratchet-wheel D', mounted near the end of said chuck, a rocker D'', journaled upon said chuck between its bearing and the ratchet-wheel and having arms projecting above and below, the pawl *d''*, pivoted on said rocker and gearing in the ratchet-wheel, the spring D''', pressing against the lower arm of said rocker, the face-cam C' at the end of a crank-shaft, against which the end of the upper arm of the rocker is pressed by said spring, the crank-shaft C, journaled across the track *a*, opposite said rocker and having said cam mounted upon its end, and the trumpet-mouthed cover D⁴, inclosing said ratchet-wheel, substantially as set forth.

9. The combination of the box A, having an open track *a* in its top and having one corner recessed by a beveled end *a''*, said box forming a receptacle for waste, a plane B, provided with adjustable bit and having a hinged waste guard B''' running on said track, a crank-shaft C, journaled across the track, a fly-wheel C' on said shaft provided with handle *d'*, a pitman B⁴, connecting the crank and plane, a cam C' on the end of said shaft, a chuck D, journaled in the end *a''* below the top of the bed and having mounted upon it a ratchet-wheel and journaled upon it a rocker operated by said cam and a spring and carrying a pawl gearing in said ratchet-wheel, substantially as set forth.

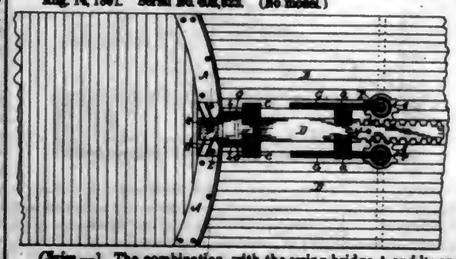
474,419. PROCESS OF MAKING FERTILIZERS. THOMAS M SMITH, Baltimore, Md. Filed May 16, 1891. Serial No. 392,999. (No specimens.)



Claim.—In the manufacture of fertilizers, the improvement which consists in first placing animal substances within a suitable vessel with a definite amount of water, sufficient only to reduce said materials to a soft or pasty mass while hot, and then closing said vessel and subjecting the contents thereof to the action of heat until the texture of the crude material has been destroyed and the material has been reduced to a mass soft while hot and brittle and pulverable substantially without further desiccation when cold, as and for the purpose set forth.



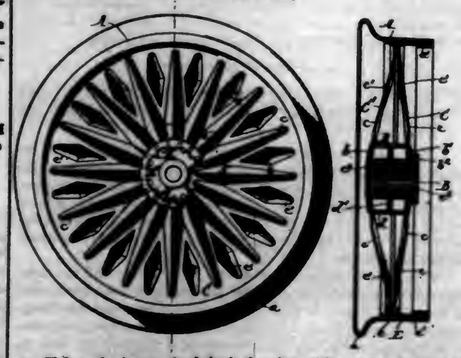
474,420. BRIDGE-GATE. AUSTIN J. SMITH, Coal City, Ill. Filed Aug. 14, 1891. Serial No. 402,622. (No model.)



Claim.—1. The combination, with the swing-bridge A and its approach B, of the cam-guides E' E', rack-bar D, having the roller *r*, pin *v*, boxes *e* and *e*, latch L, gates G F, and segment-pinions S S, all arranged to operate substantially as and for the purpose set forth.

2. In the bridge-gate shown and described, the combination, with the swing-bridge A, of the cam-guides E' E', rack-bar D, having the pin *v* and roller *r*, and the latch L, substantially as and for the purpose set forth.

474,421. CAR-WHEEL. LOUIS R. SUTTER, Chicago, assignor to the Buda Foundry and Manufacturing Company, Harvey, Ill. Filed Nov. 30, 1891. Serial No. 413,458. (No model.)



Claim.—1. A car-wheel the body whereof is composed of metal plates having inwardly-turned flanges about their hub portions and a space block or ring between which and the hub the flanges of said metal plates extend, and a hub and tire suitably connected to said plates, substantially as described.

2. A car-wheel the body whereof is composed of metal plates having inwardly and outwardly turned flanges at their inner and outer edges, a flanged hub to which said body is secured, and a flanged tread-plate to which the outer portion of said body is bolted, substantially as described.

3. A car-wheel comprising a hub and tire and a body united to said hub and tire, said body being composed of metal plates C and C', having the alternately-arranged long and short radial corrugations *c* and *c'*, substantially as described.

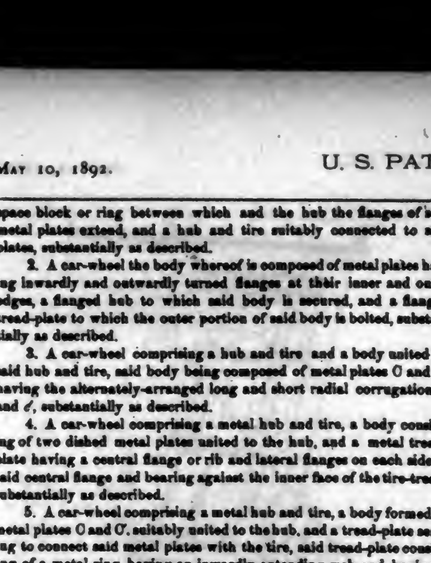
4. A car-wheel comprising a metal hub and tire, a body consisting of two dished metal plates united to the hub, and a metal tread-plate having a central flange or rib and lateral flanges on each side of said central flange and bearing against the inner face of the tire-tread, substantially as described.

5. A car-wheel comprising a metal hub and tire, a body formed of metal plates C and C', suitably united to the hub, and a tread-plate serving to connect said metal plates with the tire, said tread-plate consisting of a metal ring having an inwardly-extending web and having a flange extending from the outer edges of the metal plates to the edge of the tire-tread, substantially as described.

6. A car-wheel comprising a metal hub and metal tire and a body united to said hub and tire, said body consisting of dished plates C and C', having radial corrugations extending from approximately the hub to the tire, and a space-block D, set between said corrugated plates and having correspondingly corrugated edges and corrugated rings to retain said plates in position upon the hub, substantially as described.

7. A car-wheel comprising a body formed of metal plates C and C', a metal hub to which such plates are attached, a tread-plate consisting of a metal ring having an inwardly-extending web and having a flange extending from the outer edge of the metal plates to approximately the edge of the tire-tread, and a tire having at the edge of its tread an inwardly-turned flange, between which flange and the tread of the tire said tread-plate is held, substantially as described.

474,422. HAY-STACKER. DANIEL M. STEPHENS, Thrall, Iowa. Filed Sept. 19, 1891. Serial No. 406,191. (No model.)



Claim.—1. In a hay-stacker having a fork-elevating arm, a fork having its central teeth fixed to the said arm and provided with two teeth of greater length than the said central teeth and having their rear ends pivoted to the elevating-arm outside of the fixed fork in such a manner that the said outside teeth may be raised above the fixed fork while the said arm is being elevated, for the purposes stated.

2. The combination, in a hay-stacker, of the elevating-arms pivotally connected to the sides of the frame, having their forward ends connected by means of a cross-bar on the under side and a cross-bar on the top thereof, a hay-fork of common form fixed to the said top cross-bar, two fork-teeth of greater length than the said fork pivotally connected at their rear ends with the outer sides of the elevating-arms and connected with each other by means of a cross-bar, a coil-spring attached to the said cross-bar connecting the movable teeth and the cross-bar on the under side of the elevating-arms, which tends to draw them together, and means for limiting the distance to which they may be separated, substantially as set forth, for the purposes stated.

3. In a hay-stacker, means for producing a direct draft and an accelerated ending to the movement of the elevator-arm, comprising a bar resting on the top of the frame and connected to the rear end of the frame by means of ropes, two pulleys attached to each end thereof, and a rope on each side of the frame, terminating in a single rope, to which a draft-animal may be attached, each of the said ropes being extended through a pulley on the rear top portion of the frame, one of the pulleys on the said bar, a pulley attached to the elevating-arm, and the remaining pulley on the said bar and having its end fixed to the elevating-arms, to operate in the manner set forth, for the purpose stated.

4. In combination with a hay-stacker having pivoted elevating-arms, means for aiding in starting the said arms in both the upward and downward movements, comprising a lever fulcrumed to a cross-bar on the base of the device, a weight fixed to its rear end and having its forward end adapted to engage a portion of the elevating-arm upon its descent, as required, to raise the said weight, and a cord or rope fixed to the said weight and to a portion of the elevating arm in such a manner that the weight will be lifted by the arm before it finishes its upward movement, as required, to start the arm on its downward movement, substantially as shown and described.

5. An improved hay-stacker consisting of a supporting-frame having two elevating-arms hinged to its rear portion, a fork fixed to the forward end of the arms, two fork-teeth pivoted to the said arms connected by means of a cross-bar and adapted to be raised above the fork, means for normally holding the said pivoted teeth approximately parallel with the fork and means for limiting the upward movement of the pivoted teeth relative to the fork, a bar resting on the top of the frame and connected with the rear end thereof by means of ropes, a weight attached to a lever and to the fork-arm, as shown and described, and ropes to operate the fork-arm, passing through pulleys attached to the frame, the said bar and the fork-arm to operate in the manner set forth, for the purposes stated.

474,428. RUBBER TIRE FOR BICYCLES. ALEXANDER STRAUS, New York, N. Y., assignor to the New York Belting and Packing Company, Limited, same place. Filed Apr. 27, 1891. Serial No. 390,658. (No model.) Patented in England May 20, 1891. No. 8,953.



Claim.—1. A hollow tire composed of layers of rubber and canvas or similar fabric and having a loop or loops formed on or applied to the canvas portion of the combined tube and adapted to receive a holding-wire, substantially as described.

2. A hollow tire composed of inner and outer layers of rubber and an intermediate layer of textile fabric provided with a loop or loops adapted to receive a holding wire or band for attachment of the tire to a grooved felly, substantially as described.

3. A hollow tire composed of a tube of rubber and a tube of textile fabric provided with external parallel loops for holding wires, in combination with a rim or felly having grooves corresponding with the loops, substantially as described.

4. The method of manufacturing hollow tires by making a tube of textile fabric, forming a loop or loops thereon, inserting a rubber tube and vulcanizing the latter by steam admitted under pressure to the interior thereof, splicing the ends of the composed tube thus formed, and covering the same with a layer of rubber, substantially as described.

474,424. TOBACCO-MOISTENING CASE. HENRY D. STERATOR, Kalamazoo, Mich. Filed Dec. 21, 1891. Serial No. 415,714. (No model.)

Claim.—1. The combination of a tray, a case supported above the same, an air-passage between said tray and case, air-passages in the bottom and upper part of said case, and a molding attached to said case and projecting downward and outward over said passage between the tray and case, substantially as described.

2. The combination of a tray, a case supported above the same,

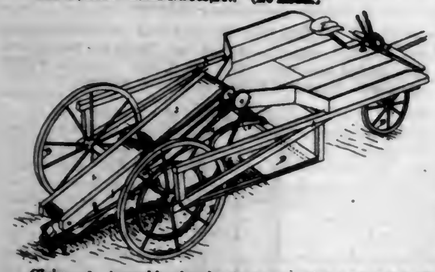
474,424.



as air-passage between said tray and case, air-passages in the bottom and upper part of said case, and outwardly and downwardly inclined flanges attached to said case and tray above and below said passage between said case and tray, substantially as described.

3. The combination of a tray having an outwardly and downwardly inclined flange around its upper edge and a detached case having legs resting in each corner of said tray and supporting said case above the same, leaving an air-passage between said case and tray, an outwardly and downwardly projecting flange attached to the lower end of said case, and air-passages in the bottom of said case and near the top of the same, substantially as described.

474,425. PLANTER. EDWARD J. UPDIKE, Mishawaka, Ind. Filed Mar. 16, 1891. Serial No. 385,247. (No model.)



Claim.—1. A machine for planting peppermint-roots and the like, consisting, essentially, of a frame supported upon wheels, and attached to the same a plow to open a furrow, a force-feed delivery apparatus consisting of parallel belts which receive said material and forcibly convey it to the furrow, substantially as set forth, and means for propelling said belts.

2. A machine for planting peppermint and the like, consisting in the combination, with a suitable frame mounted upon wheels, of a plow for opening a furrow, a force-feed apparatus consisting of parallel belts, means for transmitting motion from the wheels to the rollers of said belts, and covering-scrapers, substantially as set forth.

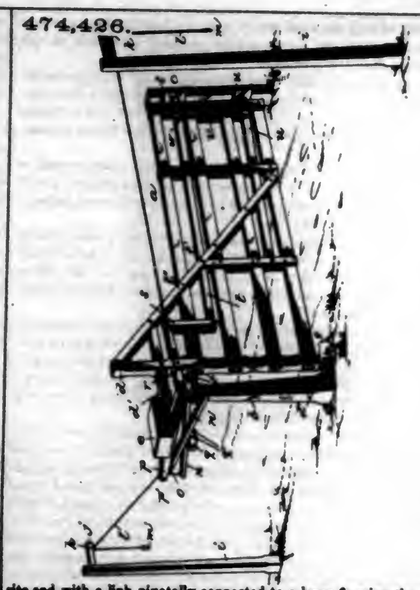
3. In a machine for planting peppermint-roots and the like, a force-feed apparatus consisting of two or more sets of parallel belts having imparted to them progressively more rapid motion for the purpose of drawing out and separating said roots and delivering them upon the ground, substantially as set forth.

4. In a machine for planting peppermint-roots and the like, a frame supported upon wheels, a force-feed delivery apparatus consisting of two or more sets of parallel belts mounted in a frame, a belt connection with one of said wheels to propel one of said belt-rollers, and connections whereby the motion of said roller is transmitted to the remaining rollers of the system.

474,426. FARM-GATE. GEORGE VAN HORN, Wallis Run, Pa. Filed July 6, 1891. Serial No. 398,626. (No model.)

Claim.—The combination, in a swinging gate, of a rearwardly-extending arm provided with a cross-bar, a pair of cross-levers hinged to the under side of said cross-bar, a lever fulcrumed on the gate and having one end loosely connected with said cross-levers and its opposite end with a link pivotally connected to a lever forming the upper latch, a lower latch having its free end connected with the upper latch by means of an oblong slot or opening, forming a loose connection, a pair of oppositely-faced keepers, and overhanging ropes for actuating the gate and latch mechanism, all arranged and adapted to operate substantially as described.

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474,427. SHEET-METAL CAN. GUSTAVUS A. WALKER, New York, N. Y. Filed Mar. 19, 1891. Serial No. 385,697. (No model.)



Claim.—1. The herein-described improvement in the method of manufacturing sheet-metal cans and other metallic vessels and receptacles provided with a strip-section which has an incision along one of its sides and is secured on its other side by a soldered joint, as described, said improvement consisting in forming a groove or bead in the material of which the side wall of the body or the rim or flange of one of the heads of the can or vessel is composed, but without turning outward or reversing such groove or bead, and in putting in combination therewith an incision made partly through the metal and located as described, the whole operating substantially in the manner and for the purpose set forth.

2. In a sheet-metal can or other metallic vessel or receptacle provided with a strip-section which has an incision along one of its sides and is secured on its other side by a soldered joint, as described, the combination of a groove or bead located in the side wall of the body of the vessel or in the rim or flange of one of its ends or heads, with an incision made partly through the metal near to such groove or bead, substantially as and for the purpose set forth.

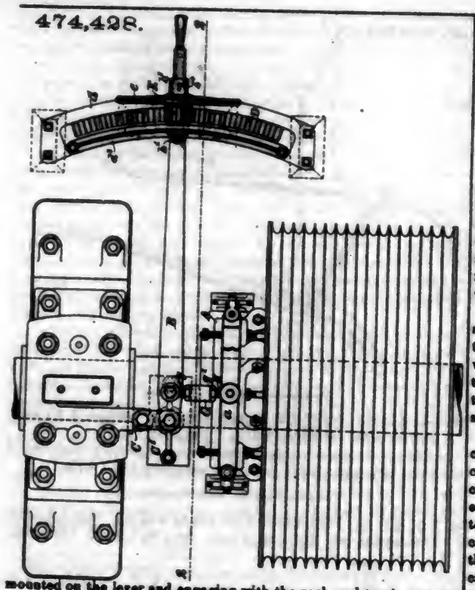
474,428. DEVICE FOR OPERATING SLIDING SLEEVES. JOHN WALKER, Cleveland, Ohio. Filed Feb. 4, 1892. Serial No. 420,337. (No model.)

Claim.—1. The combination of a sliding sleeve and a pivoted lever suitably connected therewith and adapted to operate it with a segmental rack, a pinion loosely mounted on the lever, and means for revolving said pinion, substantially as set forth.

2. The combination of a sliding sleeve and a pivoted lever suitably connected therewith and adapted to operate it with a segmental rack, a segmental track, a roller loosely mounted on the lever and adapted to ride on said track, a pinion loosely mounted on the lever and engaging with said rack, and means for revolving said pinion, substantially as set forth.

3. The combination of a sliding sleeve and a pivoted lever suitably connected therewith and adapted to operate it with a segmental rack, a segmental track, a guard rail, and a pinion and a roller, both loosely

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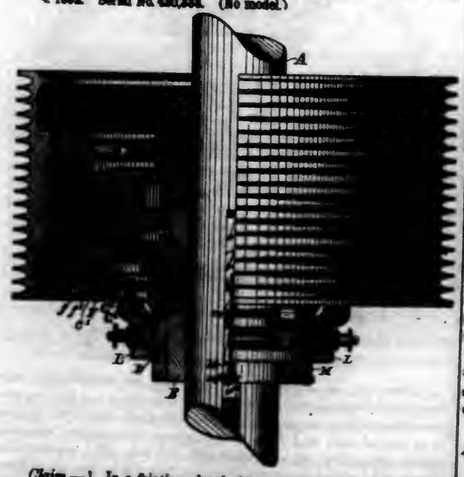
mounted on the lever and engaging with the rack and track, respectively, substantially as set forth.

4. The combination of a sliding sleeve and a pivoted lever suitably connected therewith and adapted to operate it with a segmental rack, a pinion loosely mounted thereon and engaging with said rack, a hand-wheel rigid with said pinion, and a movable collar b^3, substantially as and for the purpose specified.

5. The combination of a sliding sleeve and a collar in which said sleeve is revoluble with a forked lever, a fixed standard, and an arm to which said forks are pivoted and by which the lever is supported, and adjustable links pivotally connected with said collar and lever, substantially as set forth.

6. The combination of a sliding sleeve, a collar in which said sleeve is revoluble, a pivoted lever, and adjustable links connecting said lever and collar with a segmental rack, a pinion engaging therewith, loosely mounted on said lever, a segmental track, and a roller loosely mounted on the lever and riding on said track, substantially as set forth.

474,429. CLUTCH. JOHN WALKER, Cleveland, Ohio. Filed Feb. 4, 1892. Serial No. 420,336. (No model.)



Claim.—1. In a friction-clutch, in combination, a longitudinally-movable clutch member, a fixed collar, a wedge interposed between the proximate faces of said clutch member and collar, a toggle, one arm of which is pivoted to said wedge and the other arm to the clutch member, and means for operating said toggle, substantially as set forth.

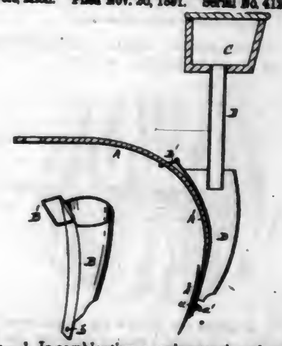
2. In a friction-clutch, in combination, a longitudinally-movable clutch member having a flange at its forward end, a bracket on said flange extending rearward over the rear end of said clutch member, a fixed collar, a wedge interposed between said fixed collar and the rear end of the movable clutch member, a toggle, one link of which is pivoted to said wedge and the other link to said bracket, a sliding sleeve L, and a link connecting said sleeve and the toggle, substantially as set forth.

3. In a friction-clutch, a sleeve C, having a flange c, which surrounds the shaft and is adapted to be moved lengthwise thereof, a bracket c', rigid with said flange, a collar D, fixed with relation to said shaft, and a movable wedge interposed between the proximate faces of said sleeve and collar, combined with a toggle, one arm of which is adjustably connected with the said bracket, the other arm being connected to said wedge, a sliding sleeve L, and a link pivotally connected with said sleeve and toggle, substantially as set forth.

4. In a friction-clutch, a longitudinally-movable clutch member, a sliding sleeve, and mechanism operated by said sliding sleeve, whereby the said clutch member is moved in the clutching direction, combined with rods secured to such clutch member, lying parallel to the axis of the shaft on which the clutch mechanism is supported and extending through said sleeve, and adjustable stops secured to said rods on both sides of said sleeve, substantially as set forth.

5. In a friction-clutch, a fixed collar D, a longitudinally-movable clutch member, wedges inserted between the proximate faces of said collar and clutch member, said wedges having the ears $c\,c$ and a concave bearing-surface between them, and the jaw-pieces F, each having ears $f\,f$ and a concave bearing-surface between them, combined with toggles consisting each of the similar links G G', having one cylindrical end, and having at the other end the cylindrical extension g and the concave bearing-surface g', the bifurcated link G^3, having the concave bearing-surface g^4, the pins G^4, connecting said links with each other and with said wedges and jaw-pieces, respectively, and a sliding sleeve, to which the link G^3 is pivotally connected, substantially as set forth.

474,430. SPRING-HOE FOR SEED-DRILLS. PHILIP R. WELLS, Detroit, Mich. Filed Nov. 20, 1891. Serial No. 412,495. (No model.)



Claim.—1. In combination, a spring-tooth and a conducting-tube engaged with said tooth, said tooth free to spring independently of the tube, substantially as described.

2. In combination, a spring-tooth and a conducting-tube united to said tooth, said tooth and tube having a movable relation the one to the other at the upper end of the tube, substantially as described.

3. In combination, a spring-tooth and a conducting-tube firmly united to the tooth toward its lower end, the tube and tooth having a movable relation the one to the other at the upper end of the tube, substantially as described.

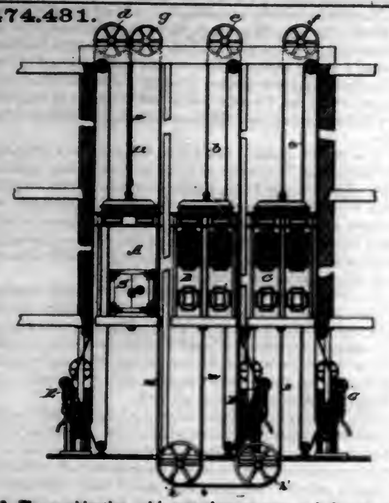
4. In combination, a spring-tooth and a conducting-tube firmly united to the tooth at its lower end, said tube provided toward its upper end with a loop B' and said tooth passed through said loop, substantially as described.

5. In a seed or fertilizer drill, the combination of a spring-tooth, a conducting-tube engaged therewith, a seed or fertilizer box C, and a tube leading from said box to the conducting-tube, substantially as described.

474,431. ELEVATOR. CHARLES WHITTIER, Boston, Mass. Filed May 16, 1891. Serial No. 392,127. (No model.)

Claim.—1. The combination, with two or more independent elevator mechanisms, each normally operating a separate elevator-car, of an auxiliary connection between the elevator mechanisms, whereby the power of one mechanism may be combined with the power of another mechanism, substantially as described.

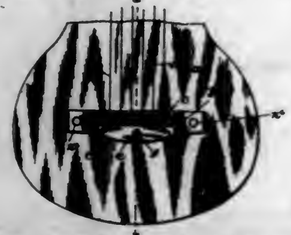
474,481.



2. The combination, with two elevator-cars and elevator mechanisms to operate the same independently, of a detachable table connecting the said cars, whereby the lifting power of one mechanism may be transmitted to the other when said cable is attached to each car, substantially as described.

3. The combination, with a series of elevator mechanisms, each normally operating its own elevator-car, of an intermediate connection or connections between said mechanisms, whereby the aggregate lifting power of all the elevator mechanisms may be concentrated or transmitted to lift a single elevator-car, substantially as described.

474,482. GUITAR-BRIDGE. THEODOR WOLFRAM, Columbus, Ohio. Filed Oct. 5, 1891. Serial No. 408,066. (No model.)



Claim.—1. In a bridge for guitars, the combination, with the bridge-body *b*, having an extension *e* formed therewith and a pin-hole *f* in said extension, of a pin or button *k*, the stem of which is adapted to pass through the instrument-body and said extension pin-hole, substantially as specified.

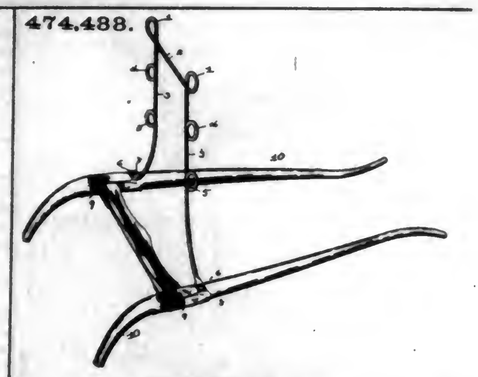
2. In a guitar-bridge, the combination, with the bridge-piece *b*, having extension *e* formed therewith and a pin-hole *f* formed in said extension, of button *k*, the stem of which is adapted to pass through the upper side of the instrument-body and through said bridge pin-hole, and a key-pin k^2, entering said bridge-extension at right angles with the pin *k* and intersecting the latter, substantially as and for the purpose specified.

474,488. REIN-HOLDER. JOHN A. YOUNG, Fulbright, Tex. Filed Nov. 6, 1891. Serial No. 411,042. (No model.)



Claim.—The herein-described improved rein-support, the same being formed of wire and comprising a frame having its opposite vertical members secured at their lower ends to the thills, the corners and opposite members being provided with pairs of integrally-formed eyes, and a cross-bar at the top connecting said opposite members, substantially as specified.

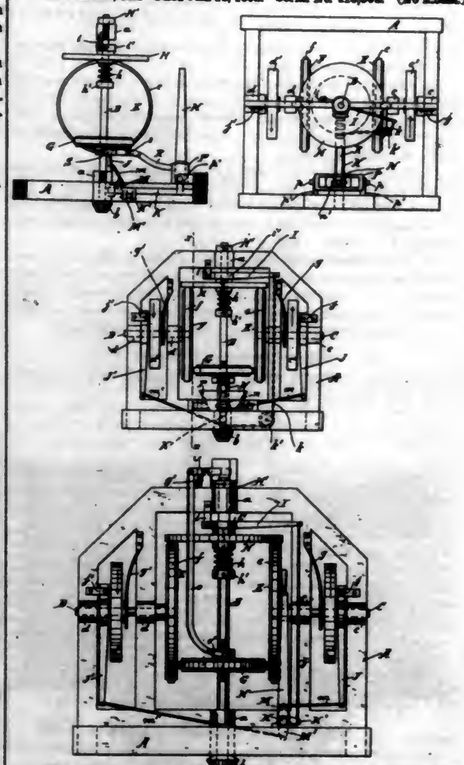
474,488.



474,484. PAINT-OIL. GEORGE W. BARKER, Brooklyn, N. Y. Filed Mar. 25, 1891. Serial No. 386,357. (Specimens.)

Claim.—As a new article of manufacture, a paint-oil composed of a solution of naphthaline in fish-oil, substantially as set forth.

474,485. FEED MECHANISM FOR SAWMILLS. JOHN L. BARNES, Kendallville, Ind. Filed Jan. 18, 1892. Serial No. 418,302. (No model.)



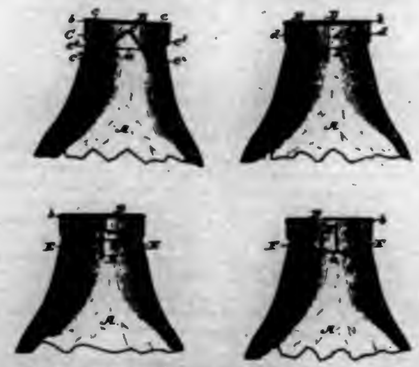
Claim.—1. In sawmill feed mechanism, the combination, with the central friction-wheel for actuating the carriage and the two friction-disks revolved in opposite directions, of a single hand-lever adapted to be moved back and forth in two planes, intermediate actuating devices connecting the said lever with the said disks, whereby the disks may be moved simultaneously to or from the friction-wheel when the lever is moved in one plane, and operating devices connecting the said lever with the friction-wheel and adapted to move it to vary its speed when the said lever is moved in the other plane, substantially as set forth.

2. In sawmill feed mechanism, the combination, with a central shaft and a friction-wheel secured on the said shaft and adapted to move the carriage in one direction, of two combined friction-disks and friction-wheels driven with equal speed in opposite directions and a friction-disk secured on the said central shaft and adapted to move the carriage in the reverse direction, the two said combined disks and wheels being adapted to drive the said wheel in one direction and the said disk in the other direction, substantially as and for the purpose set forth.

3. In sawmill feed mechanism, the combination, with a central shaft and a friction-wheel secured on the said shaft, of two combined friction-disks and friction-wheels driven with equal speed in opposite directions, a friction-disk splined on the said central shaft, two pivoted levers adapted to press the two said disks simultaneously upon the said friction-wheel, a pivoted lever adapted to press the said disk upon the said two wheels, and a rock-shaft provided with a hand-lever and with arms operatively connected with the three said levers, whereby the said central shaft may be revolved in opposite directions, substantially as and for the purpose set forth.

4. In sawmill feed mechanism, the combination, with the central shaft, the friction-wheel, and the friction-disk, each splined on the said shaft, and the two combined friction-disks and friction-wheels driven in opposite directions, of the oscillatory rock-shaft, intermediate operating devices connecting the rock-shaft with the said friction-disk and with the said two combined disks and wheels and permitting the central shaft to be revolved in opposite directions, a hand-lever secured to the rock-shaft and provided with a joint, and a yoke inclosing the said hand-lever and pivoted crosswise of the said rock-shaft and provided with a projecting arm adapted to move the said friction-wheel to vary the speed of the central shaft, substantially as and for the purpose set forth.

474,486. MILK-JAR AND CLOSING DEVICE THEREFOR. HARVEY P. RAMHART, Potsdam, N. Y., assignor to the Thatcher Manufacturing Company, same place. Filed Feb. 12, 1892. Serial No. 421,242. (No model.)



Claim.—1. In combination with a jar the throat of which is provided with a contracted continuous ring and which expands outwardly and downwardly therefrom with a uniform flare, and a closure therefor, comprising a disk provided upon its lower surface with a plurality of elastic oppositely-disposed arms normally conforming to the flare below the said continuous ring, whereby the cover is adapted to be drawn tightly upon its seat by the action of the arms upon the flaring surface of the throat of the jar and continue to operate with constant force after being seated, as set forth.

2. The cover herein described, consisting of the disk B, provided upon its lower surface with the spring-wire C, having the inward return-bend *d* and the outwardly-flaring grasping projection d^2 d^2, as specified.

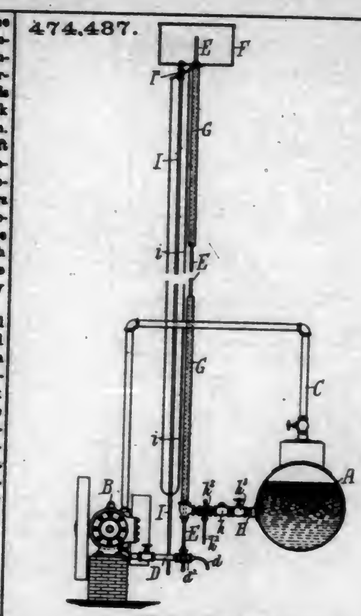
474,487. STEAM-LOOP CONNECTION FOR STEAM-ENGINES. WALTER BURNHAM, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,894. (No model.)

Claim.—1. In combination with a steam-engine and a steam-generator supplying said engine, a steam-loop connecting the exhaust of the engine with the generator, the whole forming a closed circuit embracing the engine and generator.

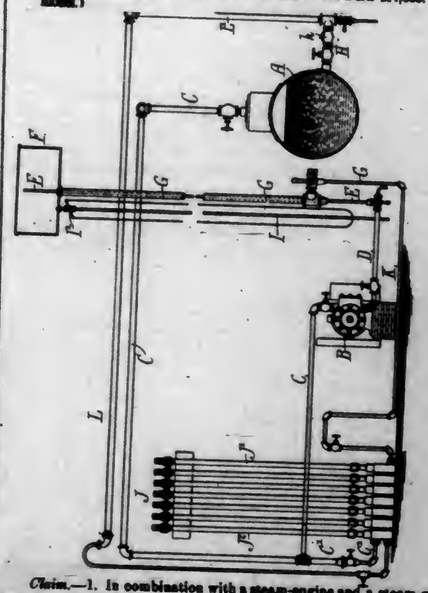
2. A steam-loop, constructed and operating substantially as shown and described, having one of its vertical members within the other.

3. The combination, with a steam-generator and an engine, of a steam-loop leading from the exhaust of the engine and having an elevated condensing space or chamber connected in the loop, and means whereby the pressure in said chamber may be reduced below atmospheric pressure.

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474,488. STEAM-LOOP CONNECTION FOR ENGINES. WALTER BURNHAM, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,895. (No model.)

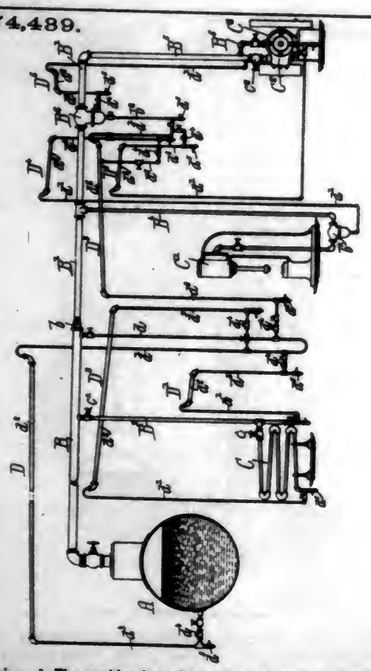


Claim.—1. In combination with a steam-engine and a steam-generator supplying said engine, a plurality of connected steam-loops under varying pressure connecting the exhaust-pipe of the engine with the generator.

2. In combination with a steam-engine and a generator supplying said engine, a steam-loop leading from the exhaust of the engine and having an elevated condensing-chamber provided with means for producing a more or less perfect vacuum therein and a series of combined loops under graduated pressures interposed between the exhaust-loop and the generator, substantially as described.

474,489. STEAM-LOOP SYSTEM. WALTER BURNHAM, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,896. (No model.)

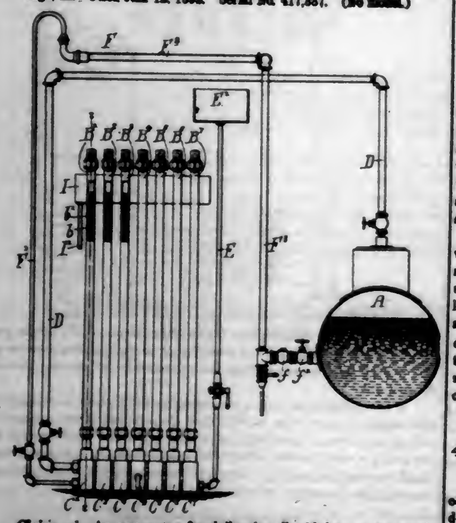
474,439.



Claim.—1. The combination, with a steam-generator and a pipe or pipes supplied from the generator, of a main steam-loop delivering water of condensation into the generator and one or more auxiliary loops delivering directly into the main loop.

2. The combination, with a steam-generator and a pipe or pipes supplied with steam from the generator, of a main steam-loop delivering water of condensation into the generator, and one or more auxiliary loops delivering into the main loop, and one or more other auxiliary loops delivering into a loop which delivers into the main loop each of said auxiliary loops having direct delivery into the loop into which it discharges.

474,440. COMBINED STEAM-LOOP. WALTER DURHAM, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,887. (No model.)



Claim.—1. An apparatus for delivering liquid from a space subject to one pressure into a space subject to a higher pressure, comprising a plurality of similar base-castings adapted for connection with each other and containing a pressure-reducing valve or valves, and pipes connected with the base-castings, said base-castings forming a plurality of chambers, in which different pressures are maintained by the action of the reducing valve or valves, and the pipes forming steam-loops by which water may be transferred from one to the other of said chambers, substantially as described.

2. An apparatus for delivering liquid from a space subject to one pressure into a space subject to a higher pressure, comprising a plurality of similar base-castings adapted for connection with each other and containing a pressure-reducing and check valve or valves, and pipes connected with the base-castings, said base-castings forming a plurality of chambers, in which different pressures are maintained by the action of the reducing valve or valves and the pipes forming steam-loops by which water may be transmitted from one to the other of said chambers through said check valve or valves, substantially as described.

3. An apparatus for delivering liquid from a space subject to one pressure into a space subject to a higher pressure, comprising a plurality of pipes forming steam-loops and base-castings, each of which is provided with upper and lower steam-chambers, an upwardly-opening pressure-regulating valve, a passage leading from the descending part of a steam-loop connected therewith to the lower chamber provided with a check-valve, and a passage leading from the said lower chamber to the riser of another steam-loop, the upper steam-chamber of each section being adapted for communication with the lower chamber of an adjacent section when the sections are secured together, substantially as described.

4. A loop-section comprising two pipes, one within the other and forming the riser and drop-leg of a steam-loop, and a base-casting provided with a pressure-reducing valve, substantially as described.

5. A loop-section comprising two pipes, one within the other and forming the riser and drop-leg of a steam-loop, and a base-casting provided with a pressure-reducing valve and a check-valve, substantially as described.

6. A loop-section comprising two pipes arranged one within the other and forming the riser and drop-leg of a steam-loop, and a base-casting containing upper and lower steam-chambers and in which the upper steam-chamber is adapted for connection with the lower chamber of a similar base-casting at one side of it and the lower chamber is adapted for connection with the upper steam-chamber of a similar base-casting at the other side of it, a pressure-reducing valve between said chambers, and passages in the said base casting for connecting the riser and drop-leg of said loop-section with the lower steam-chamber of that and adjacent loop-sections, substantially as described.

7. A loop-section comprising two pipes arranged one within the other and forming the riser and drop-leg of a steam-loop, and a base part or casting containing upper and lower chambers, of which the upper chamber is adapted for connection with the lower chamber of an adjacent loop upon one side of it and the lower chamber is adapted for connection with the upper chamber of an adjacent loop at the other side of it when the castings are secured together, a pressure-regulating valve between said chambers and containing, also, passages for connecting the riser and drop-leg of said loop-section with the lower steam-chambers of that and adjacent loop-sections, and a weight located in the upper chamber and acting upon the said regulating-valve, substantially as described.

8. The combination, with a steam-generator, means for delivering water to the same, comprising a plurality of chambers subject to different degrees of steam-pressure, steam-loops connecting said chambers with each other, and a water-return pipe having a valved outlet, of a steam pipe or passage leading to the chamber subject to greatest pressure, another steam pipe or passage leading to the chamber subject to the smallest pressure, and valves in said pipes, whereby steam may be allowed to flow through the several loops and outwardly through the said outlet, substantially as described.

9. The combination, with a steam-generator, means for delivering water to said generator, comprising a plurality of steam-chambers and a pipe supplying the steam to said chambers from the generator, pressure-reducing valves located between the said steam-chambers, steam-loops connecting the steam-chambers and provided with check-valves, and a water-return pipe provided with a valved outlet, of a separate or branch steam pipe or passage leading to the chamber subject to the lowest steam-pressure, and valves in the said steam-pipes, whereby steam may be allowed to flow through all of the said steam-loops and outwardly through said outlet, substantially as described.

474,441. STEAM-RADIATOR GOVERNOR. WALTER DURHAM, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,892. (No model.)

Claim.—1. The combination, with a steam-generator, a heating-coil, and a steam-loop for returning to the generator the water condensed in the coil, said coil containing a water column acting against the back-pressure in the loop, of means for controlling the escape of water from the lower end of the water column to the loop, substantially as described.

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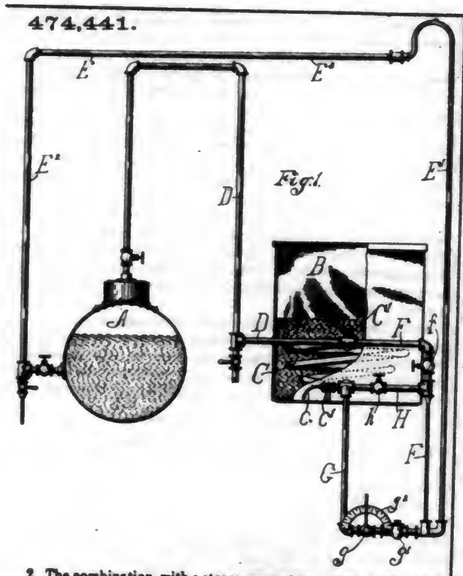


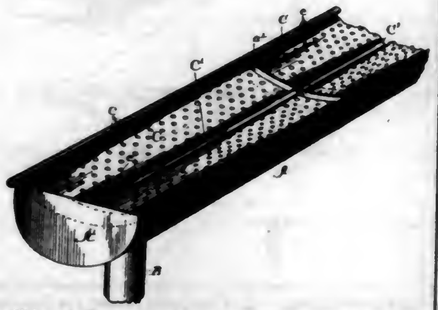
Fig. 1.

2. The combination, with a steam-generator, a steam-heating coil, and a steam-loop to return the water of condensation from the coil to the generator, of a depending pipe connected with the lower end of the coil to afford a water column adapted to overcome the difference in pressure between the coil and the steam-loop, substantially as described.

3. The combination, with a steam-generator, a heating-coil, and a steam-loop, of a depending pipe connected with the lower and discharging end of the coil and with the loop, said pipe to afford a water column of sufficient height to overcome an excess of pressure in the loop over that in the coil, and means for controlling the exit of water from said pipe into the loop, substantially as described.

4. The combination, with a steam-generator, a heating-coil, and a steam-loop for returning the water condensed in the coil to the generator, of a depending pipe connected with the lower and discharging end of the said coil and delivering into the loop, and a valve for controlling the flow of liquid from said pipe to the said loop, substantially as described.

474,442. EAVES-TROUGH. ANDREW C. BYERS and JOSEPH L. BYERS, Forreston, Ill. Filed Aug. 14, 1891. Serial No. 402,663. (No model.)



Claim.—1. The combination, with an eaves-trough provided with transverse ribs, of a series of strainer-sections supported by said ribs, substantially as shown and described.

2. The combination, with an eaves-trough having a series of transverse ribs, of a series of strainer-sections of perforated sheet metal supported by said ribs, substantially as shown and described.

3. The combination, with the trough A, having a series of transverse ribs, of the strainer-sections C, of sheet metal, formed with perforations *c*, the ends of said sections being supported by the ribs in the trough, each rib which supports the ends of two contiguous sections being formed with a vertical web and lateral flanges, substantially as shown and described.

4. The combination, with the trough A, having the transverse ribs *a a' a²*, of the perforated sections C, having their ends supported by the flanges a^3 and separated by the webs *a'*, substantially as shown and described.

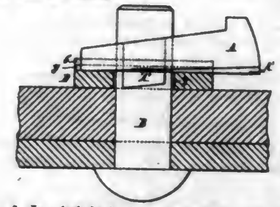
5. The combination, with an eaves-trough provided with transverse ribs, of strainer-sections C, resting in the trough and supported by said ribs, each of said sections being of perforated sheet metal longitudinally crimped to form a stiffening-web C, substantially as described.

474,448. ALLOY. ERNEST W. COOKE, Chicago, Ill. Filed Jan. 10, 1890. Serial No. 336,545. (No specimens.)

Claim.—1. An alloy comprising iron, aluminum, and copper, and in which the iron is in excess of the other ingredients, as set forth.

2. An alloy comprising iron, aluminum, and copper, the proportions of iron being at least seventy-five per cent. of the alloy, as set forth.

474,444. BOLT-LOCK. GEORGES COULON, Paris, France. Filed Jan. 13, 1892. Serial No. 417,948. (No model.) Patented in England Sept. 17, 1890. No. 14,718.



Claim.—1. In a bolt-lock, the combination, with the bolt having parallel slots in its sides near its end and a divided wedge co-operating therewith, of the base-plate or washer provided with a groove having the bottom surfaces thereof inclined away from the axis of the bolt, into which groove the divided wedge is adapted to fit, substantially as described.

2. In a bolt-lock, the combination, with the bolt having parallel slots in its sides near its end and a divided wedge co-operating therewith, the lower edges of the arms of the wedge being beveled for a portion of their length, of the base-plate or washer provided with a groove having beveled corners for the reception of the divided wedge, substantially as described.

474,445. BUTTON. CHARLES ERLANGER, Baltimore, Md. Filed Jan. 2, 1892. Serial No. 416,906. (No model.)



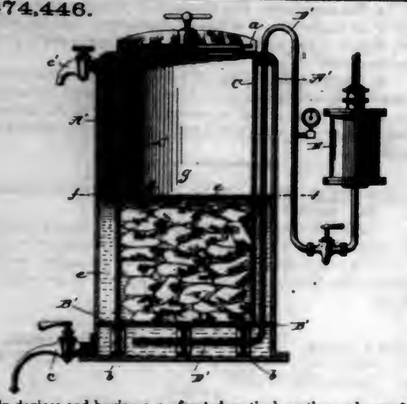
Claim.—1. A three-part button consisting of disk A, having integral downwardly-depending apertured hub, the edge of the aperture being upwardly overturned to compose peripheral flange thereto, hollow post B, composed of two integral sections, the upper one of a diameter to freely pass within aperture of the hub, the lower end of said section having outwardly-flaring circumferential flat abutment *x* at right angles to the tube column, thence continued to compose lower tubular section of larger diameter, having outwardly and downwardly flaring end, in combination with open-ended tubular rivet *c*, having lower terminal upwardly-inclined disk, substantially as described.

2. The within-described three-part button, having disk A, with depending apertured hub, the edge surrounding said aperture being upwardly overturned to form peripheral flange, post B, divided into two sections of different diameter, the upper section of said post being inserted within aperture of the hub of the disk and turned over the flange thereof, in combination with hollow rivet *c*, passed within said post and having its upper edge sprung over the conjoined flanges of the members A and B, whereby the several parts are permanently connected at their respective peripheries by curved lip-flanges, as and for the purpose intended, substantially as described.

474,446. APPARATUS FOR PICKLING MEAT. JOHANN FEY, Offenbach-on-the-Main, Germany. Filed Dec. 16, 1890. Serial No. 374,949. (No model.)

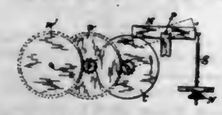
Claim.—The preserving apparatus for meats, &c., comprising the outer imperforate casing or cylinder having the removable cover adapted to be hermetically closed, the inner perforated cylinder whose perforated bottom is supported elevated above the bottom of the outer inclosing cylinder, and the air-inlet pipe having connection with air-

474,446.



supply devices and having a perforated vertical portion and a perforated horizontal portion, said perforated vertical portion arranged along the side of and within the outer cylinder and said perforated horizontal portion being arranged below the perforated bottom of said inner cylinder, substantially as described.

474,447. ELECTRIC SPEED-REGULATOR. JOHN W. GIBBONEY, Lynn, Mass. Filed Sept. 26, 1891. Serial No. 406,390. (No model.)



Claim.—1. The method of maintaining a practically constant speed in a motor mechanism, consisting in loading it with an electric generator and varying the effective magnetic field of said generator by changes in speed of its moving conductor.

2. The method of maintaining constancy of speed in a motor mechanism, which consists in controlling its movement by a brake or regulator, varying the relative position of the field-magnet and armature of an electric generator in correspondence with speed changes in said mechanism, and operating said brake or regulator by said electric generator upon the occurrence of a predetermined displacement of the field-magnet and armature of the latter.

3. The described manner of maintaining an approximately constant speed in a motor mechanism, consisting in loading it with an electric generator, increasing the effective magnetic field of said generator by the increase of speed of its moving conductor, and decreasing the effective magnetic field of said generator by the decrease in speed of its moving conductor.

4. The combination, with a motor mechanism whose speed it is desired to maintain constant, of an electric generator geared thereto and means, substantially as described, for varying the effective magnetic field of said generator in correspondence with changes of torque between its field and armature.

5. The combination, with a mechanical movement, of a brake or regulator therefor, an electric generator for governing the action of said brake or regulator, and connecting devices, substantially as described, whereby the armature for said generator is driven by said movement or responds to speed changes therein and the field-magnet for said generator is moved by changes in speed of said armature and operates said brake or regulator.

6. In a speed-regulator for mechanical movements, an electric generator the armature of which is driven by said movement or responds to speed changes therein and the field-magnet of which is adapted to approach or recede from said armature on the occurrence of a varying speed in the latter.

7. In a regulator for mechanical movements, an electric generator responsive to speed changes in said movement and a field-magnet and armature for said electric generator adapted to be automatically displaced with relation to each other upon the occurrence of a change of speed in said movement.

8. The combination, with a motor mechanism whose speed it is desired to maintain constant, of a regulator therefor, comprising an electric generator whose continually-moving portion is driven by said mechanism and the position of whose field-magnet with respect to said moving portion is dependent upon the speed of said moving portion.

9. In a regulator for motor mechanism, an electric generator whose revolving portion is propelled by said mechanism and whose field-magnet is supported so as to be displaced by changes of speed of said revolving portion.

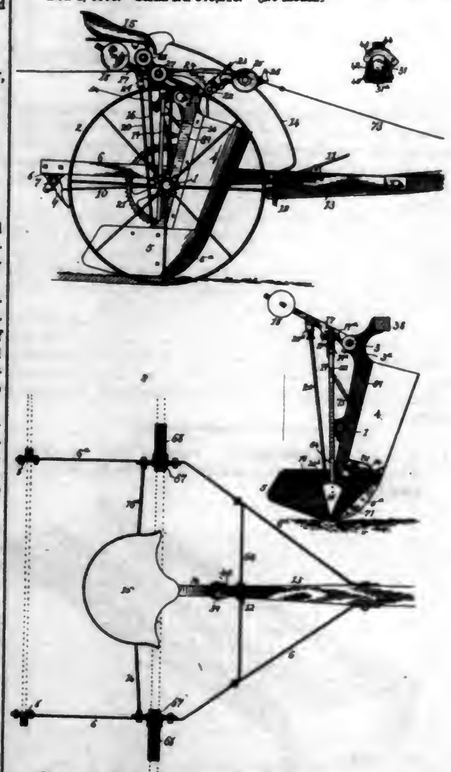
10. In a motor mechanism, a regulator therefor comprising a Foucault disk and a field-magnet in operative relation thereto and means for displacing the disk and field-magnet relatively by changes in speed of said mechanism.

11. The method of maintaining constancy of speed in a motor mechanism, which consists in varying the action of a regulator therefor by an electric generator and changing the relative position of the field-magnet and armature of said electric generator in correspondence with changes of speed in said mechanism.

12. The combination, with a mechanical movement, of a regulator therefor, an electric generator for governing the action of said regulator, mechanism for propelling the armature of said generator in correspondence with the speed of said mechanical movement, and an operating device connecting said regulator and the movable field-magnet of said generator.

13. The combination, with a motor, of a regulator controlling its relation with a power source, an electric generator for governing the action of said regulator, mechanism by which said motor propels the armature of said electric generator, and a connecting device between said regulator and the movable field-magnet of said generator.

474,448. CORN-PLANTER. LEVI P. GRAHAM, Decatur, Ill. Filed Dec. 1, 1890. Serial No. 373,213. (No model.)



Claim.—1. In check-row prod-planters, the combination of planting-prods held normally above the ground, a check-row line adapted to release the prods, and a prod-raising clutch adapted to be thrown in gear by the falling prods, as set forth.

2. The combination of the crank-shaft, the continuously-revolving clutch-pinion mounted loosely on the crank-shaft, the shiftable clutch member secured to the crank-shaft, the inclined surface to throw the shiftable clutch member in gear with the clutch-pinion, and the stop-pawl having the clutch-disengaging incline, whereby the crank-shaft is permitted to revolve when the pawl is raised and the clutch is disengaged and the motion of the crank-shaft is arrested when the pawl resumes its normal position.

3. The combination of the crank-shaft, the continuously-revolving clutch-pinion mounted loosely on the crank-shaft, the shiftable clutch member secured to the crank-shaft, the yielding incline that throws the shiftable clutch member in gear with the clutch-pinion without materially interfering with the motion of the crank-shaft, and the stop-pawl having the clutch-disengaging incline.

4. The combination, with the shiftable clutch member and the disengaging stop-pawl therefor, of the rock-arm 22ª and the rod 37, connecting the pawl with the rock-arm, the pivot of the arm and the point of connection of the rod lying normally in line and locking the pawl.

5. The combination, with a rock-shaft, of prod-carrying arms mounted loosely thereon, and studs or projections extending from the shaft below the arms, whereby the shaft acts forcibly to raise the arms and permissively to let them fall.

6. The combination of the crank-shaft, the prod-carrying rock-shaft, the arm 34, secured to the rock-shaft, and the rod 33, connecting the crank with the arm 34, and having adjustment on the arm in a circle drawn when the prods are raised with the swinging end of the crank as a center.

7. The combination of a rock-arm, a plunger suspended from the arm at some distance from the pivot thereof, and a prod-bucket suspended from the arm between the pivot thereof and the connection of the plunger and having adjustment on the arm in a circle drawn when the arm is raised with the prod-bucket for a center.

8. The combination of a seed-measuring disk, a shaft extended downward therefrom, a ratchet-wheel on the lower end of the shaft, a pawl-wheel mounted loosely on the shaft between the ratchet-wheel and the disk, and an inclined stop adapted to arrest the motion of the pawl-wheel and press the same in close contact with the ratchet-wheel.

9. The combination of plate 57, boss 58 on the under surface of plate 57, inclined surface 59 in boss 58, seed-measuring disk 54, resting on plate 57, shaft 55, extending through the boss and connecting at its upper end with the disk and at its lower end with the ratchet-wheel 56, and pawl-wheel 60, loosely encircling the shaft and having stop elevation 60ª, adapted to the incline of boss 58, as set forth.

10. The combination, with a rock-arm carrying a planting-prod and a hopper having seed-measuring mechanism, of a bell-crank lever connected with the seed-measuring mechanism and a strap or rod connecting the bell-crank lever with the rock-arm, as set forth.

11. A planting-prod consisting in the combination of link 19ª, bucket 48, and straps 19 19, connected with the link and with the sides of the bucket, as set forth.

12. The combination of the bucket 48, comprising the side and rear walls, and the valve 49, closing against the rear wall some distance above the lower end thereof, as set forth.

13. The combination of bucket 48, comprising the rear wall and the side walls having inverted apexes at the lower termination of the rear wall and the valve 49, closing against rear wall some distance above the lower end thereof, as set forth.

14. The combination of the sheet-metal bucket, the straps connected with the sides thereof, the pin extended and through the sides of the bucket, the valve pivoted on the pin, the spring-loop extended around the pin, caught over the sides of the bucket, and bearing against the valve.

15. The frame consisting in the combination of bars 6 6ª, brackets 67, and sleeves 68, as set forth.

16. The frame consisting in the combination of side bars 6 6ª, brackets 67, sleeves 68, cross-bar 66, seat-bar 14, rising from the cross-bar, and braces 16 16ª, connecting with bar 14 and the brackets 67, as set forth.

17. The combination, with a rock-arm, of a prod-bucket, a plunger, and a weight, all connected with the arm, the prod-bucket nearest the pivot and the weight nearest the swinging end, as set forth.

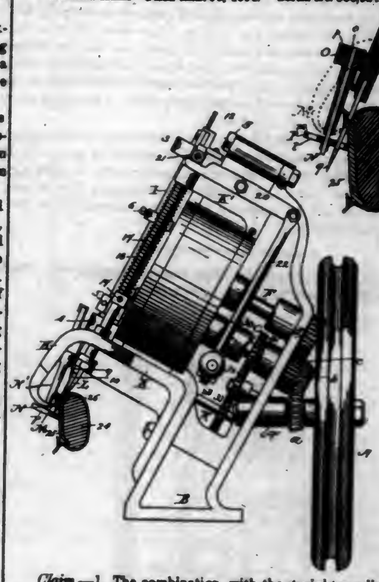
474,449. COMBINED CALENDAR AND DESK ARTICLE. JOHN T. HAWKINS, Taunton, Mass. Filed Dec. 28, 1891. Serial No. 416,498. (No model.)



Claim.—1. A new article of manufacture, consisting of the combination, with a hollow article of desk-furniture provided with a plurality of transparent or open panels, of an endless or annular strip of paper or other suitable material having printed or otherwise displayed on one or both sides, with or without advertising matter in conjunction therewith, calendar-tables in proper order and number, such that by folding said strip upon itself, substantially as described, and inserting it in said hollow article there may be displayed through said panels simultaneously with a table for a current month one or more calendar-tables for months last past or next ensuing, one or both, for every month of the year, substantially as and for the purpose set forth.

2. In a hollow article of desk-furniture provided with transparent or open panels through which printed matter is to be exhibited, ledges or lugs, as 2 2, projecting inward from their bottom edges, whereby printed matter inserted therein will be held in place, substantially as and for the purposes set forth.

474,450. SHOE-SEWING MACHINE. GEORGE HOOPER, 2d, Marblehead, Mass. Filed Mar. 30, 1891. Serial No. 386,927. (No model.)
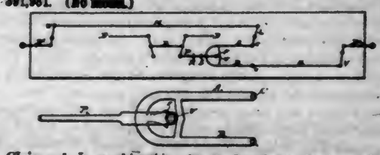


Claim.—1. The combination, with the straight needle and means for reciprocating said needle in a right line, of a work-supporting horn suspended from the machine and having the upturned end upon which the work is adapted to rest and said end being at one side of the course of the needle and in the line of feed, all as set forth.

2. The combination, with stitch-forming mechanism and the suspended horn M, having its upwardly-extending free end terminating in an edge for supporting the work and which is to one side of the course of the needle and in the line of feed, of the presser-foot L, terminating at its lower end in an edge which is parallel with and above the edge of the horn, as set forth.

3. The combination, with the reciprocating needle-bar and needle, of a downwardly-extending suspended shaft, the circular thread carrier or whirl P, secured to said shaft below its point of suspension and said carrier having the opening *l* and hole *n*, and means for reciprocally rotating said shaft and whirl, all as set forth.

4. The combination, with stitch-forming mechanism, of a thread carrier or whirl P, supported on a depending shaft, a pinion secured to the upper end of said shaft, the rack *p*, gearing with said pinion, the yoke *q q*, secured to said rack, and a rotary cam inclosed within said yoke and adapted to bear alternately on the opposite faces of the same and to give the yoke and rack a reciprocating motion, all as set forth.

474,451. BRAKE MECHANISM FOR CARS. JAMES HOWARD and HERBERT R. HOWARD, Englewood, N. J. Filed May 7, 1891. Serial No. 391,961. (No model.)



Claim.—1. In combination with the foundation-brakes and brake-rigging of a car, the yoke, substantially as described and shown, in operative relation to the pull-rod of the brake-rigging, and draft-rigging, substantially as described, for effecting the automatic engagement of said yoke and rod when both draw-bars are driven together and the automatic non-engagement of said parts when one draw-bar

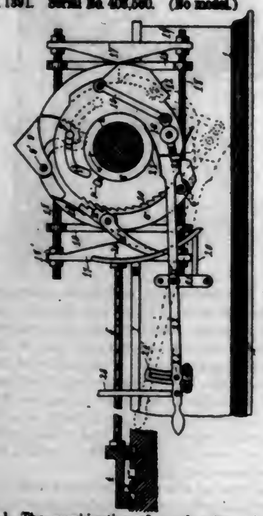
is driven in before the other, substantially as and for the purposes set forth.

2. In combination with the foundation-brakes of a car, the movable yoke, substantially as described, and connecting pull-rods coupling said yoke with the draw-bars and brake-rigging, the adjustment being such that when both draw-bars are driven in simultaneously, or substantially so, such yoke will automatically effect an engagement of the brakes and that when one draw-bar is driven in before the other said yoke will automatically effect a disengagement of the brakes, substantially as set forth.

3. In combination with the foundation-brakes of a car, a yoke, substantially as described, and the pull-rod connections coupling said yoke with the brake-rigging and forward followers of the draw-bar gear, the adjustment being such that when both draw-bars are driven in simultaneously, or substantially so, the yoke will automatically effect an engagement of the brakes and that when one draw-bar is driven in before the other said yoke will automatically effect a disengagement of the brakes, substantially as set forth.

4. In combination with the foundation-brakes and brake-rigging of a car, the yoke, substantially as described, carried by the pull-rod of the brake-rigging, the movable arm connected with the draft-rigging to engage said yoke, and the pull-rod connections intermediate said movable arm and the draw-bars of the car, substantially as and for the purposes described.

474,452. VALVE-GEAR. PETER JENNINGS, Menasha, Wis. Filed Aug. 24, 1891. Serial No. 403,560. (No model.)



Claim.—1. The combination of a valve, its rod, two stops connected therewith, a revoluble shaft having a cam-wheel secured thereon, said wheel having a cam, a pawl, and a swinging arm having a roller thereon, a disk mounted loosely on said shaft and being provided with a cam, a portion of the circumference of said disk having teeth adapted to be engaged by said pawl, a stationary trip for their disengagement during a portion of each revolution of said shaft, a link connecting said disk and the arm aforesaid, and a lever having a stationary fulcrum and being provided at one end with guiding-wings, between which the aforesaid roller is arranged to pass at each revolution of said disk, all arranged and operating substantially as described.

2. The combination of a valve, a rod, two stops connected therewith, a revoluble shaft having a cam-wheel secured thereon, said wheel having an adjustable cam, a pawl, and a swinging arm, the latter having a roller thereon, a disk provided with a cam mounted loosely on said shaft, a curved slot in said disk adapted to engage the adjustable cam aforesaid, teeth upon a portion of the circumference of said disk adapted to be engaged by said pawl, a stationary trip for their disengagement during a portion of each revolution of said shaft, a link connecting said disk and the arm aforesaid, and a lever having a stationary fulcrum and being provided at one end with guiding-wings, between which the aforesaid roller is arranged to pass at each revolution of said disk, its opposite end being adapted for connection to a governor for its movement thereby, substantially as set forth.

3. The combination of a valve, its rod, two stops connected therewith, a revoluble shaft, a cam-wheel having an adjustable cam secured upon said shaft, a disk provided with a cam mounted loosely on the shaft, said cam-wheel and disk being provided with devices for connecting one to the other and for their disconnection during each revolution of said shaft, and a governor arranged for moving the cam of said cam-wheel outward and inward from the shaft during a portion of said revolutions and for controlling the position of the cam of the disk relative to the cam of said wheel, substantially as described.

4. The combination of a revoluble shaft, two cams thereon, and a governor, one of said cams being provided with connections for its connection with and adjustment by said governor and being connected with and adapted by its movement for adjusting the other of said cams, substantially as described.

474,453. PNEUMATIC TIRE FOR WHEELS. OTTO LINDNER, Brussels, Belgium. Filed Apr. 13, 1891. Serial No. 388,807. (No model.) Patented in Belgium Dec. 15, 1890, No. 93,099; in England Dec. 31, 1890, No. 21,263, and in France Jan. 5, 1891, No. 210,657.

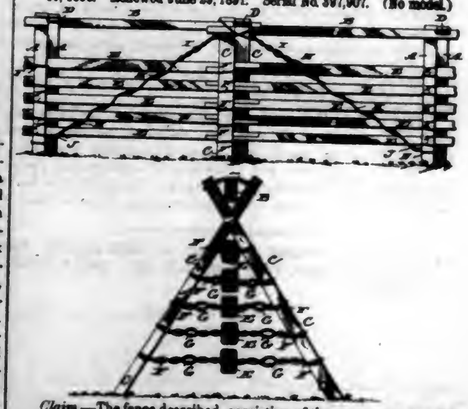


Claim.—In elastic bandages (or tires) and their respective supporting metal tires (or rims) for velocipede and invalid-chair wheels, the combination of an elastic (inflatable) bandage (or tire) A, (to be used as such or as an outer covering of such only,) bearing on its lower part on both its circumferential sides special-shaped lips or seams M M, which are drawn and kept into the grooves L L of the metal tire B by a wire, band, or other suitable material C, whereby the elastic bandage (or tire) A is secured to the metal tire B, and the special lips or seams M M in such secured position form a guard against the deterioration of the elastic bandage (or tire) A, all substantially as and for the purpose described.

474,454. EXCITING-FLUID FOR GALVANIC BATTERIES. CARL LÜTGER, Jr., Berlin, Germany. Filed Apr. 17, 1890. Serial No. 348,384. (No specimens.)

Claim.—In a galvanic battery, the exciting-fluid consisting of a concentrated solution of one or several chlorides, such as copper, iron, zinc, &c., in combination with from two to three parts, by weight, of nitrate of mercury, substantially as herein described.

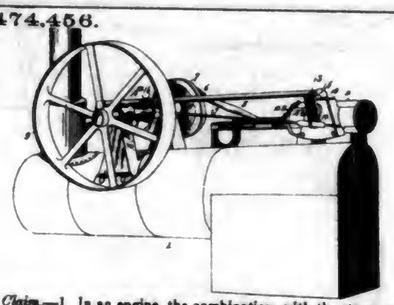
474,455. FENCE. GRANT MERRITT, Frankfort, Ind. Filed Mar. 19, 1890. Renewed June 29, 1891. Serial No. 397,907. (No model.)



Claim.—The fence described, consisting of the cross-posts A and C, the rails B and E, the wires holding the overlapped ends of the posts and rails B, and the horizontal wires F, connecting the posts and formed with loops G, and the diagonal brace-wires H, extending in opposite directions from the tops of the posts C to the bottoms of the posts A, twisted around the rails, and from the bottom rail extended horizontally and twisted and secured to the bottoms of the posts A and formed with loops J in the horizontal portions between the bottom rail and the posts, substantially as shown and described.

474,456. STEAM-ENGINE. FRANK P. OSHLVIE, Metropolis City, Ill. Filed Oct. 26, 1891. Serial No. 409,884. (No model.)

474,456.



Claim.—1. In an engine, the combination, with the steam-cylinder having the ports 3 3 4, of the rocking shaft 12, having the valve 11 secured on its inner end, the crank-bar 13, centrally secured on the outer end of said shaft and formed with the series of apertures 15, the shaft 8, revolved by the engine and having the cam 16, and the cam-rod 17, having the pin 21 at its movable end, substantially as set forth.

2. In an engine, the combination, with the steam-cylinder having the ports 3 3 4, of the rocking shaft 12, having the valve 11 secured on its inner end, the crank-bar 13, centrally secured on the outer end of said shaft and formed with the series of apertures 15, the shaft 8, revolved by the engine and having the cam 16, the cam-rod 17, having at one end the grooved annular casing 18 18ª and having at its other end the pin 21, and the spiral spring 23, arranged to hold the pin of the cam-rod in engagement with the apertured crank-bar, substantially as set forth.

474,457. VALANCE FOR VEHICLE-TOPS. THOMAS H. PARRY and CHARLES C. HULL, Indianapolis, Ind., assignors to the Parry Manufacturing Company, same place. Filed Feb. 20, 1892. Serial No. 422,944. (No model.)

Claim.—1. In a valance for vehicle-tops, the back strip C, against which the other parts are placed, the intermediate and narrower strip D, forming recessed corners when placed against the wider strip C, the edgings E, greater in diameter than the thickness of the intermediate strip D and adjusted in the notched corners, the covering F, and stitches around the raised edge border to connect the several parts and hold the covering in against the intermediate strip, substantially as described.

2. In a valance for vehicle-tops, the back strip C, intermediate and narrower strip D, forming notched or recessed edges with the strip C, the wires E, arranged in said recessed edges and projecting beyond the front face of the strip D, the covering F, and stitches, as described, inserted along the wires and the staples G and bow A, said staples being projected through the valance into the bow in line with and in the same line as the stitches near each edge, for the purposes described.

3. In a valance for vehicle-tops, the back strip C, intermediate and narrower strip D, forming notched or recessed edges when arranged with the strip C, raised edges E, arranged in said recessed edges and projecting beyond the front face of the strip D, the covering F, stitched, as described, along the raised border, and means, substantially as described, for securing the valance to the bow so that the fastenings will be inconspicuous.

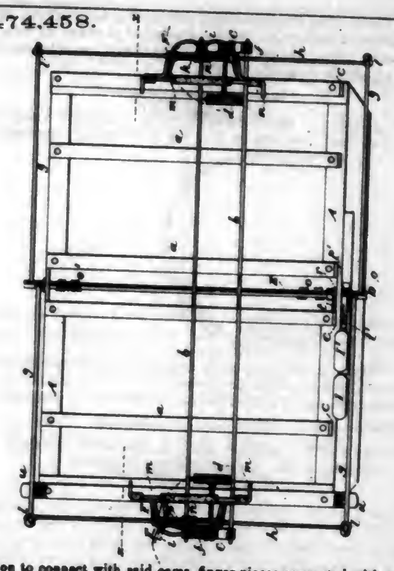
474,458. MUSIC-LEAF TURNER. THEODORE F. PETIT, Hudsondale, Pa. Filed May 14, 1891. Serial No. 392,661. (No model.)

Claim.—1. The combination, with a frame, of two parallel wires b, secured thereto, and two spring-clamps pivotally mounted on cross-bars, the ends of which are loosely connected with said parallel wires, each of said cross-bars being provided with an inclined surface, so that the clamping-arm becomes tightened as it is turned on a book placed on the frame, substantially as set forth and described.

2. The combination, with a frame, of two parallel shafts journaled therein, leaf-turners formed of wires connected with said shafts and movable therewith, springs connected severally with said shafts and adapted to partially rotate the same, spring-catches in position to act as detents for said shafts, and finger-pieces connected with said catches, whereby said shafts may be released, substantially as set forth and described.

3. The combination, with the frame, of the shafts D and E, provided with springs *e e'* and shouldered cams *p p'*, spring-catches *l l'* in

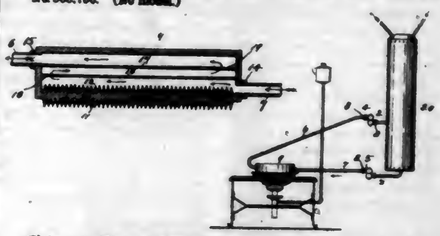
474,458.



position to connect with said cams, finger-pieces connected with said catches, wires *g*, extending from said shafts, wires *h*, connected with wires *g*, and spring-clamps carried by wires *h*, substantially as and for the purposes described.

4. The combination, with a frame and a shaft journaled therein, of two wires extending from said shaft, a wire *h*, made in two sections, which are loosely connected by a ferrule and are provided with eyes *k*, a leaf-holder having two pieces of wire, each of which is bent to form a finger-piece, wound on and attached to one of said sections, and extended forward and provided with a jaw, and a spring constructed to keep the jaws closed, substantially as and for the purposes described.

474,459. SEPARABLE WATER BACK OR HEATER FOR STOVES. CHARLES W. PURPLE, Minneapolis, Minn. Filed Mar. 20, 1891. Serial No. 385,733. (No model.)



Claim.—1. The combination, in a device of the class described, of the water back or drum, with the boiler-tank or reservoir pipes leading therefrom at points one above the other and to said drum and swivel-joints in said pipes at points near said tank, whereby said drum is adapted to swing laterally with said pipes as supports, substantially as described.

2. The combination, in a device of the class described, of a drum having its lower wall or bottom corrugated or spiked on both sides, inlet and outlet ports provided in the lower and upper portions of its walls, and jointed pipe connections therewith, whereby said drum is made movable with respect to its reservoir, substantially as described.

3. The combination, in a water-back, of the circular drum having the corrugated or spiked bottom, with inlet and outlet openings in the walls of said drum, and the diaphragms 16 and 17, provided with openings 18 and 19, substantially as described.

474,460. SAW SET AND CLAMP. RASMUS RASMUSSEN, Tacoma, Wash. Filed Mar. 26, 1891. Serial No. 386,386. (No model.)



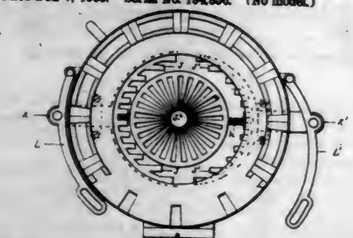
Claim.—The herein-described saw setting and clamping device, consisting of the jaws *g e*, the bar *d*, attached to one of the jaws and reversible lever *a*, and the setting jaw or button *b*, secured to said lever and adjustable, as shown.

474,461. SPRING HARROW-TOOTH. ANDREW V. RYDER, Unionport, Ohio. Filed Aug. 24, 1891. Serial No. 403,563. (No model.)



Claim.—A flat spring-tooth having its longitudinal edges of its lower end turned or bent and formed into a tube, in combination with an adjustable shovel secured thereon, substantially as described.

474,462. GRATE. ARIOEL A. SHEPARDSON, Worcester, Mass. Filed Dec. 7, 1885. Serial No. 184,836. (No model.)

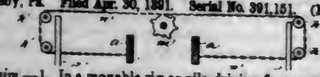


Claim.—1. In a fire-grate, the combination of the central circular section, the semi-annular sections arranged concentrically around said central section and provided with arms extending outward through the wall of the ash-box, whereby each of said semi-annular sections can be drawn away from said central section, substantially as described.

2. In a fire-grate, the combination of a central circular section provided with a conical or inclined upper surface, semi-annular sections arranged concentrically around said central section and provided with arms extending outward through the wall of the ash-box levers hinged to the rigid portion of the stove or furnace and pivoted to said arms, whereby said semi-annular sections are moved toward and away from said central section by the angular movement of said hinged levers, substantially as described.

3. In a fire-grate, the combination of a rocking bar *h*, having a spur or pivot *h'*, a central section J³, supported upon said spur or pivot, semi-annular sections arranged concentrically around said central section, arms K K', extending outwardly from said central section through the wall of the ash-box, levers hinged to the rigid portion of the stove or furnace and pivoted to said arms, substantially as described.

474,463. MOVABLE RIG OR DERRICK. THOMAS SMITH, Allegheny, Pa. Filed Apr. 30, 1891. Serial No. 391,161. (No model.)

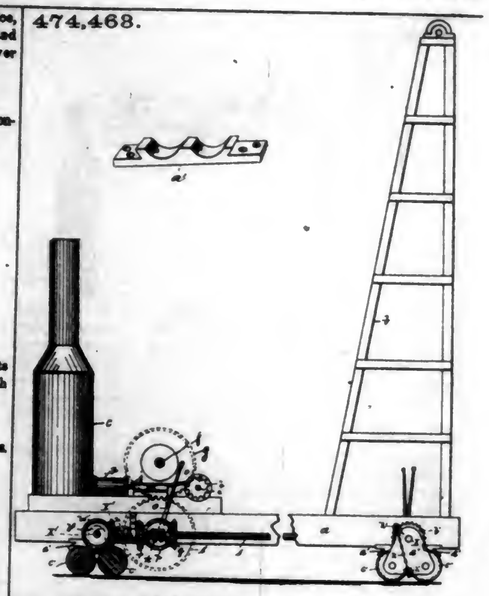


Claim.—1. In a movable rig or pile-driving frame-work, the combination of the rollers, means to rotate said rollers, a platform slidably mounted on said rollers, and means to slide or move said platform laterally thereon, substantially as and for the purpose herein set forth.

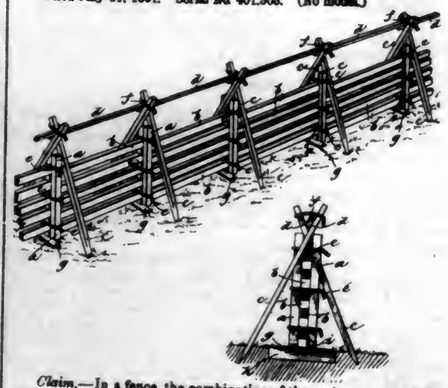
2. In a movable rig or pile-driving frame-work, the combination of the rollers, means to rotate said rollers, a platform slidably mounted on said rollers, means to slide or move said platform laterally thereon, and a vertical rig or frame-work mounted on said platform, substantially as herein set forth.

3. In a movable pile-driving frame-work, the combination of the rollers having spur-wheels at the ends thereof, the platform slidably mounted thereon, a longitudinally-extending shaft having a beveled gear-wheel at each end, transverse shafts, each having a central gear-wheel meshing with the said beveled wheels and also having spur-wheels meshing with said roller spur-wheels, an endless chain, a sprocket-wheel gearing with said chain, and means for operatively connecting said wheel with the longitudinal shaft, whereby said frame or platform may be moved sidewise upon said rollers, substantially as described.

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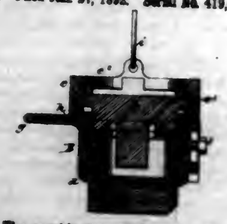


474,464. STOCK-FENCE. PHINEAS M. SPARKS, Zanesville, Ind. Filed July 31, 1891. Serial No. 401,303. (No model.)



Claim.—In a fence, the combination of the main rails, the inclined braces, the top rails or riders, a cross-piece at the foot of the posts, braces, and rails, and a series of double posts hinged at their feet, said hinges being oppositely arranged upon each pair of posts, whereby the latter are swung downwardly in opposite directions alongside of and in line with the tread of the fence.

474,465. STREET-SPRINKLER. EUGENE T. WHITEFIELD, New York, N. Y. Filed Jan. 27, 1892. Serial No. 419,331. (No model.)

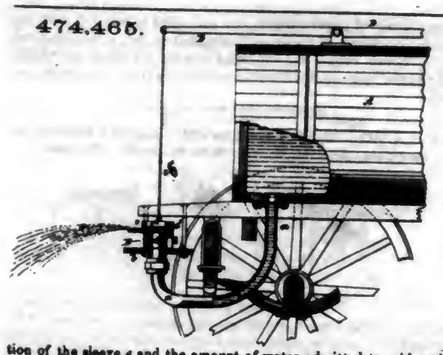


Claim.—1. The combination of the water-discharge pipe *a*, terminating in the tube *d*, with a sleeve *e*, means for vertically adjusting the said sleeve, and with an adjustable plug *f* within said sleeve, all arranged so that the size of the outlet-orifice is determined by the motion of the sleeve *e* and the amount of water admitted to said outlet-opening is determined by the plug *f*, substantially as herein shown and described.

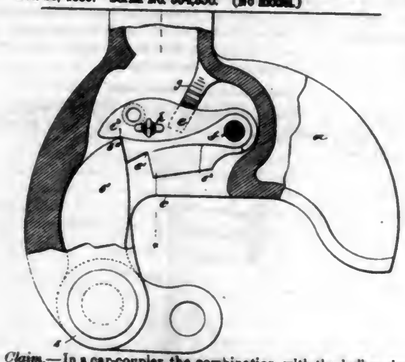
2. The combination of the tube *d* with the vertically-movable sleeve *e*, having long portion e^2 and short portion e^3, the short portion resting on the tube *d*, and with the vertically-movable plug *f* within said sleeve, substantially as and for the purpose specified.

3. The combination of the tube *d* and its projecting pin *l* with the sleeve *e* and means, substantially as described, for raising or lowering it, said sleeve having short portion e^3 and longer portion e^2, the pin *l* passing through a slot in said longer portion, and with the vertically-adjustable plug *f* within said sleeve, all as and for the purpose herein shown and described.

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474,466. CAR-COUPLING. LUCIEN BARNES, Syracuse, N. Y. Filed Dec. 30, 1889. Serial No. 334,350. (No model.)



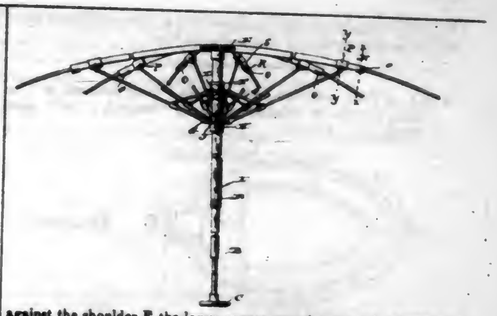
Claim.—In a car-coupler, the combination, with the hollow draw-head *a*, of the swinging hook having arms *b b'* and provided on its under side with the inclines *n p*, the rotating latch or locking-block *e*, fulcrumed to the draw-head and constructed with notches or steps $e' e^2$, adapted to successively engage with the swinging hook, said block being provided with a recess on its upper side within which the chain *h* is connected, and said draw-head being constructed with top and bottom arc-shaped inclines above and below the locking-block, whereby when the latter is swung it will be moved vertically by contact with such inclines, all as and for the purpose set forth.

474,467. FOLDING UMBRELLA. FRANK BATES, Riverside, N. J. Filed Aug. 19, 1891. Serial No. 403,079. (No model.)

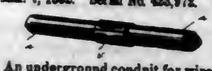


Claim.—1. In an umbrella, the ribs consisting of inner sections U-shaped in cross-section and provided with flanges at their outer ends, outer sections moving in the inner sections and provided at their inner ends with sleeves encircling the inner sections, and plates slipped on the flanges at the outer ends of the said inner sections.

2. The combination of the handle having the recesses G L, and an annular shoulder F about midway between the top notch and the recess G, the extensible ribs, the upper runner adapted to impinge against the shoulder F, the lower runner carrying a catch adapted to engage the recesses G L, the stretchers connecting the lower runner with the ribs, and the links connecting the upper runner with the stretchers at an intermediate point of the length of the same.



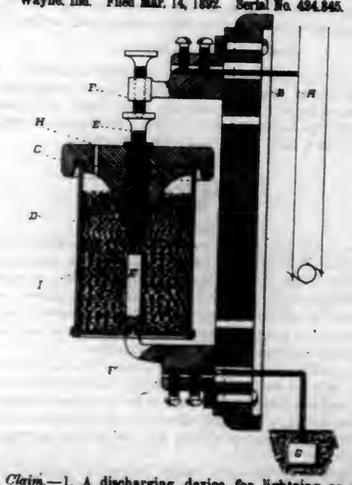
474,468. ELECTRIC CONDUIT. AUGUSTUS BRUNER, Indianapolis, Ind. Filed Mar. 7, 1892. Serial No. 423,972. (No model.)



Claim.—1. An underground conduit for wires or cables, composed of one or more series of clay pipes, their ends abutting and forming a joint, such joints closed by a flexible metallic band slit on one side and adapted to be sprung around the joint, such pipes surrounded by cement, all combined substantially as shown and described.

2. In a conduit for electrical conductors, the combination of a series of clay pipes, their ends abutting, forming joints, such joints closed by a flexible metallic band slit on one side and adapted to be sprung around the joint and retained thereon by its spring, such pipes and joints surrounded by a filling of water-proof material, substantially as shown and described.

474,469. LIGHTNING-ARRESTER. MALCOLM DICKERSON, Fort Wayne, Ind. Filed Mar. 14, 1892. Serial No. 424,845. (No model.)



Claim.—1. A discharging device for lightning or currents of extraordinary potential having separated points, between which is an interposed insulating-liquid, whereby the high-potential current may escape by disruptive discharge and an arc prevented or extinguished by the closing in of the liquid.

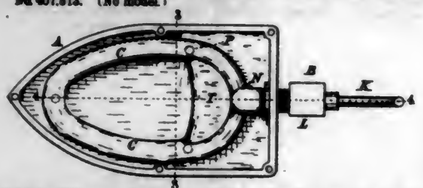
2. A discharging device for lightning or currents of extraordinary potential having a space between its discharge points or surfaces filled with oil, for the purpose described.

3. A discharging device for lightning or currents of extraordinary potential having adjustable electrodes or discharging-points, the space between the discharge-surfaces being filled with oil, for the purpose described.

4. The combination, with an electric-supply circuit, of a discharging device for currents of extraordinary potential having separated electrodes, and a cap or casing surrounding the electrodes at or near

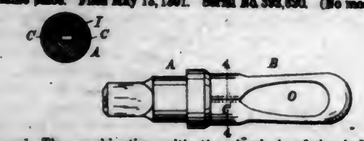
the point of separation, said cap containing an insulating-liquid which fills the space between the discharging-surfaces.

474,470. GAS SAD-IRON. GEORGE J. GRAY, Rochester, N. Y., assignor to Frank W. McGahan, same place. Filed Oct. 3, 1891. Serial No. 407,613. (No model.)



Claim.—The combination, with the perforated hollow body of a sad-iron, of the gas-supply pipe B, having the enlargement provided on one side with the air-inlet L, and the burner-tube comprising the branch pipes C C, said branch pipes being both in free communication with the gas-supply pipe and with its enlarged air-inlet and provided with openings R and air and gas mixing reservoir T, substantially as set forth.

474,471. STOVE-DOOR KNOB. JOHN W. HRAPEY, Jr., Rochester, N. Y., assignor, by direct and mesne assignments, to Frederick G. Kinman, same place. Filed May 13, 1891. Serial No. 392,630. (No model.)



Claim.—1. The combination, with the shank A, of the hollow sheet-metal hand-piece B, formed with air-circulation openings between its adjacent edges and attached to the shank by compression thereon with a projection fitting a recess, whereby the turning of the hand-piece on the shank is prevented, substantially as described.

2. The combination, with the slotted shank A, of the perforated sheet-metal hand-piece B, bent to suitable shape and having one or more flanges C engaging in the slot in the shank, substantially as described.

474,472. CLEANING-BRUSH FOR ELECTRIC RAILWAYS. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Original application filed Mar. 18, 1886, Serial No. 195,743. Divided and this application filed Feb. 8, 1889. Serial No. 299,100. (No model.)



Claim.—1. The combination, with an electric locomotive, of slotted conduit beneath the surface of the street or roadway, an insulated electric conductor therein carrying the supply of electricity, a constant electric connection between the locomotive and said conductor, and a broom carried by said locomotive and extending into said conduit through the slot to a point opposite the said conductor and having laterally-extended portions to sweep the conductor.

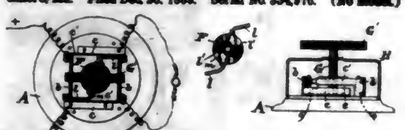
2. The combination, with an electric locomotive, of a slotted conduit and an insulated electric conductor therein carrying the main current-supply and with which the locomotive has a constant connection, and a broom having a flat shank carried by the locomotive and extending into said conduit through the slot and adapted to sweep the conductor.

3. In an electric railway, a slotted conduit, a conductor within said conduit, a traveling motor, and a brush carried by said motor and extending down into the conduit, located at a point beneath the axle of the motor and rigidly connected therewith.

4. In an electric railway, a slotted conduit, a conductor within said conduit, a traveling motor, and a brush carried by said motor and extending down into the conduit, located at a point beneath the axle of the motor, the said brush consisting of a flat shank extending from the motor down through the slot into the conduit and provided on its end with a transversely-expanded brush to sweep the conductors secured to the shank.

5. In an electric railway, the combination of a slotted conduit arranged along the railway, a working conductor arranged within the conduit, an electrically-propelled vehicle provided with a contact device extending down through the slot of the conduit and making a traveling contact with the conductor, a supply-conductor extending from a source of electric supply and connected at intervals with the working conductor to supply electricity thereto, and a cleaning-brush carried by said vehicle and extending through the slot of the conduit and adapted to sweep the working conductor but not the supply-conductor.

474,473. ELECTRIC SNAP-SWITCH. GEORGE K. HUTCHINS, Baltimore, Md. Filed Dec. 26, 1889. Serial No. 334,976. (No model.)



Claim.—1. The combination of a non-conducting brush-carrier capable of being rotated having pivoted contact-brushes, each brush actuated by a separate spring seated against said carrier and bearing against said brush, and a base with terminal plates capable of being opened or closed electrically by each brush independently.

2. The combination of two pairs of terminal conducting-plates, a revoluble brush-carrier composed of non-conducting material, two conducting contact-brushes pivoted to the said carrier, each to act at the same time on a different pair of the said terminal plates and each forming an electrical connection between the two members of each pair, and springs to actuate the brushes so as to open and close the circuit between said terminal plates.

3. The combination of a base having two opposite non-conducting walls, two pairs of terminal conducting-plates opposite each other and with said walls forming substantially a square compartment, a shaft centrally pivoted in said compartment, two pivoted circuit-closing brushes, and a separate spring acting on each brush.

4. The combination of a revolable brush-carrier composed of non-conducting material, two pairs of terminal conducting-plates *c d*, each plate insulated from the other and each pair of plates having position on an opposite side of the said carrier, two conducting-brushes *i*, pivoted to the carrier, and two springs, each seated against a carrier and bearing against a different one of the brushes.

474,474. AUTOMATIC SAFETY-SWITCH FOR RAILWAYS. JOHN W. KALBE, Franklinville, N. Y. Filed May 21, 1891. Serial No. 393,631. (No model.)



Claim.—1. In a railway-switch, the combination, with the sliding sleeve connected to the switch-rails and adapted to be actuated by mechanism released by the shoe on the engine or locomotive, of the switch-bar extending through said sleeve and having a stud interlocking with a stud on a pivoted spring-held plate carried by said sleeve, substantially as set forth.

2. The combination, with the switch-bar passing under the rails and operated by a switch-lever, of a sleeve on said bar, to which the rails are connected, and a plate pivoted upon said sleeve and having

therein at its sides slots, and rod connections movable in said slots, said plate and switch-bar having interlocking studs, and tripping devices on the outer ends of said rods adapted to be operated by suitable means attached to the forward truck of the engine or locomotive, substantially as set forth.

3. In combination with the switch-bar and sliding sleeve thereon, said bar having a stud and said sleeve a pivoted spring-held plate, provided with a stud adapted to interlock with the stud on the bar, and mechanism for automatically operating the switch, as set forth, a spring secured to the switch-bar, which operates, when the tripping mechanism has been moved by the approaching engine, to automatically move the switch.

4. In combination with the slotted sleeve and the bar having projecting beyond said slot a triangular stud, a plate pivoted upon said sleeve and having on its under side a triangular stud, said studs being adapted to be actuated to engage base to base and to be thus held under spring or other pressure, substantially as set forth.

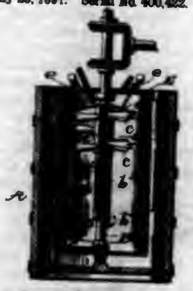
5. In a railway-switch, the combination, with the sliding sleeve and switch-bar carrying a stud projecting through a slot in said sleeve, of the plate pivoted to said sleeve and having a stud adapted to engage and stand base to base with the aforesaid stud, the bracket secured to said sleeve and carrying springs, between which is received and held a projection on the free end of said plate, substantially as set forth.

6. In a railway-switch, the combination of the switch-bar having a stud, the slotted sleeve sliding on said bar and connected to the switch-rails, the plate pivoted to said sleeve and having a stud interlocking with the stud on said bar, the bracket secured to said sleeve and carrying springs, between which is received a projection on said plate, and the angular lever adapted to be adjusted with relation to one of the main-track rails and having connected thereto rods having studs engaging slots in said plate, substantially as set forth.

7. The combination, with the switch-bar and sliding sleeve thereon, said bar having a stud and said sleeve a pivoted spring-held plate provided with a stud adapted to interlock with the stud on the bar, of mechanism for automatically operating the switch, comprising the rods arranged alongside of the track and having oblique slot-and-stud connection with said pivoted spring-held plate, and means for the actuation of said latter rods, and the spring abutting against a collar on said sleeve and resting against a fixed bracket, substantially as set forth.

8. The combination of the switch-bar, the sliding sleeve thereon, said bar having a stud and said sleeve having a pivoted spring-held plate provided with a stud adapted to interlock with the stud on the bar of the rods arranged alongside of the track and having oblique slot-and-stud connection with said spring-held plate, the spring encircling said switch-bar and abutting against a collar on said sleeve and resting against a fixed bracket, and the angle-levers connected to the latter rods, substantially as set forth.

474,475. ICE-CREAM FREEZER. THOMAS S. LEWIS, Wilmington, Del. Filed July 23, 1891. Serial No. 400,422. (No model.)



Claim.—1. In a receptacle, a dasher having movable paddles adapted to be thrown into and out of position without being removed from the receptacle.

2. A dasher having an axis, ribs integrally cast thereon, and movable paddles adapted to slide on said ribs, substantially as described.

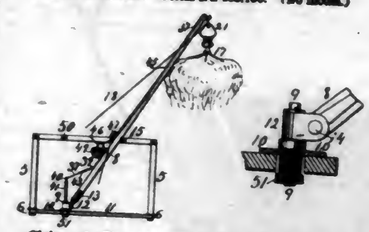
3. A dasher having an axis, ribs integrally cast thereon, movable paddles mounted thereon, and means for holding said movable paddles up out of position, substantially as described.

4. A dasher having an axis, movable paddles, means for holding said paddles, out of position, and a pin adapted to disengage said means from the paddles, thereby permitting them to drop into position, substantially as described.

5. In an ice-cream freezer, the combination, with a dasher having movable paddles and means for holding said paddles out of position, of a cover or lid having an opening and a pin adapted to pass through said opening, substantially as described.

6. A dasher having an axis, ribs integrally cast thereon, movable paddles adapted to engage said lugs, and means for holding said paddles out of position, and the pins b^3 for limiting the downward movement of said paddles, substantially as described.

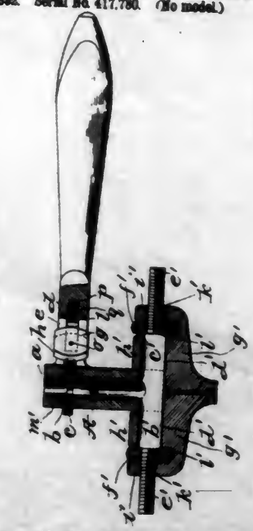
474,476. HAY-LOADER. THEODORE G. LIPPITT, Shenandoah, Iowa. Filed Nov. 17, 1891. Serial No. 412,135. (No model.)



Claim.—1. The combination, in hay-loaders, of a frame having a cross portion at its base, a stud adjustably fixed upon the said cross portion, a pole having a universal-joint connection with the said stud, and a beam fixed to the frame above the base in a line nearly at right angles with the line of the said cross portion, the said pole being fitted to slide upon the said beam, substantially as described

2. The combination, in hay-loaders, of a frame having a cross portion at its base, a stud adjustably fixed upon the said cross portion, two beams fixed to the frame as portions thereof above the base and in lines nearly at right angles to the said cross portion, and a pole having a universal-joint connection with the said stud and located between the said beams and adapted to slide upon either one thereof, substantially as described.

474,477. WRENCH. BRAXTON B. LOWE, Key West, Fla. Filed Jan. 12, 1892. Serial No. 417,780. (No model.)



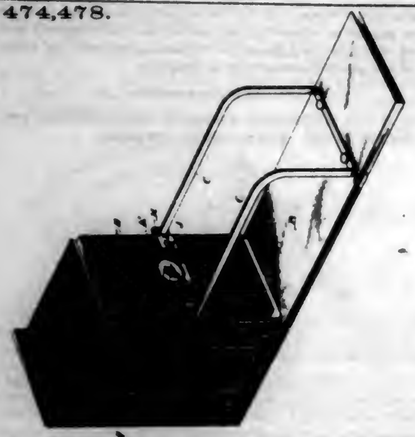
Claim.—The combination of a ratchet and a wrench, the latter provided with a bar having a vertical extension secured to the ratchet-wheel, lateral arms having angular portions and right and left screw-threaded extensions, jaws engaging said bar and provided with vertical lugs, and nuts between said lugs and shoulders on the jaws.

474,478. FILE-HOLDER. WILLIAM LOWLEY, Chicago, Ill. Filed Sept. 16, 1890. Serial No. 365,172. (No model.)

Claim.—1. In a file-holder, the combination, with the guide-rails and the follower, of fixed jaws and movable jaws, between which the said rails are clamped, and means for operating said movable jaws, substantially as described.

2. In a file-holder, the combination, with the guide-rails and the follower, of the fixed jaws and the movable jaws secured to the follower and the cam for operating said movable jaws, substantially as described.

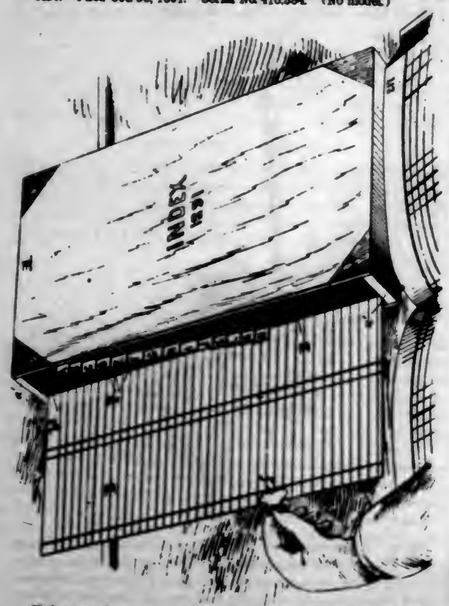
474,478.



3. In the file-holder, the combination, with the guide-rails and the follower, of the fixed and movable jaws secured to the follower and a rotatable cam for operating said movable jaws, substantially as described.

4. In a file-holder, the combination, with the guide-rails and the follower, of the bars E and G, provided, respectively, with the jaws F and H, the slotted connection I J between said bars, the rotatable cam K, and thumb-piece L, substantially as described.

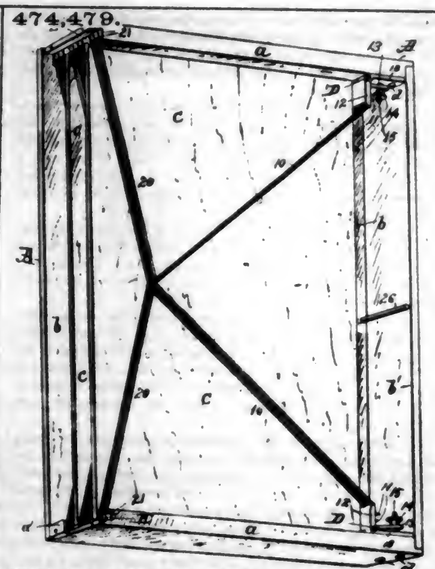
474,479. INDEX OR DIRECTORY. ARTHUR H. MARTIN, Toledo, Ohio. Filed Oct. 30, 1891. Serial No. 410,384. (No model.)



Claim.—1. In an index, the combination, with a supporting frame or casing and a series of index sheets or tablets supported and guided therein and adapted to be withdrawn for the exposure of the indications thereon, of a series of index-sheet-separating devices consisting of wire or cord-like sections connected to the casing at different points thereof, respectively, in the same plane and having portions which intermediately traverse said plane, and the said planes comprising said points of connection and disposition being parallel with the said index-sheets, substantially as described.

2. In an index, the combination, with a supporting frame or casing and a series of parallel index sheets or tablets supported and guided therein, of a series of index-sheet-separating devices consisting of wire or cord-like sections connected to the casing at different points thereof, respectively, in the same plane with portions thereof which intermediately traverse said plane, and one or more continuous and rigid partitions C, provided within the casing between series of said cord-formed separating devices, substantially as and for the purposes set forth.

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3. In an index, the combination, with a frame or casing and a series of parallel index sheets or tablets supported and guided therein, of a series of separating devices for the sheets, consisting of wire or cord-like sections connected to the casing at different points thereof, respectively, in the same plane with portions thereof which intermediately traverse said plane, and one or more continuous and rigid partitions C, provided within the casing between series of said cord-formed separating devices, substantially as and for the purposes set forth.

4. In an index, the combination, with a casing of the series of index-sheets supported and guided therein, of a series of cords 20, which by their ends are secured to different points of the casing, respectively, in the same plane, and another series of cords 10, which by their end portions are connected at suitable supporting parts therefor within the casing in planes respectively corresponding with the points of connection of the first set of cords and said sets of cords by intermediate portions thereof engaging each other, and means for effecting the tension on one set of the cords, substantially as described.

5. The combination, with the casing having the pins 21 and the set of cords 20 connected thereto, of the hinged members 12, applied on the casing and having the lug 13, and operating-screw and set-nut, and the set of cords 10, having their ends connected to the members 12 and arranged in the same planes as the cords 20 and by intermediate portions thereof engaging said latter cords, substantially as described and shown, and for the purposes set forth.

474,480. CORK-EXTRACTOR. LUCIAN C. MUMFORD, New York, N. Y. Filed Jan. 14, 1891. Serial No. 377,737. (No model.)

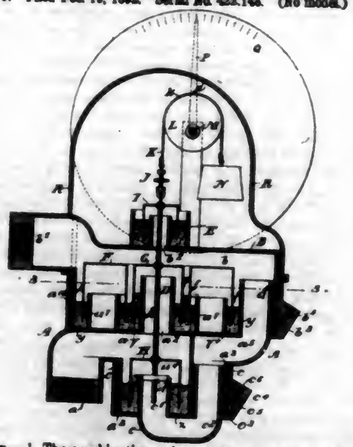


Claim.—1. In a cork-extractor, the combination of a ferrule inclosing a slotted stock, two prongs adapted to embrace the cork and provided at their upper ends with racks, and a spindle having a spur-gear meshing with said racks, substantially as shown and described.

2. In combination with the ferrule *f*, the slotted stock A, fitted therein, the prongs provided at their upper ends with racks *d*, fitted in said slotted stock, and a spindle carrying a spur-gear interposed between and meshing with said racks, substantially as shown and described.

3. In combination with the slotted stock A, the ferrule *f*, overlapping at its top said stock, two oppositely-arranged racks *d d* each having a downwardly-projecting prong, and a spindle loosely mounted in said stock and provided with a spur-gear adapted to mesh with said racks, substantially as shown and described.

474,481. GAS-REGULATOR. MICHAEL O'GORMAN, Jersey City, N. J. Filed Feb. 19, 1892. Serial No. 422,148. (No model.)



Claim.—1. The combination, substantially as set forth, of a casing having a gas-pressure chamber provided with an outlet to the service-pipe and having also a gas-receiving chamber provided with an inlet for connection with the source of gas-supply, a slotted cup-shaped valve working in a fluid seal interposed between said chambers, a similar valve in the receiving-chamber, controlling a passage-way connecting the valve-chamber of the latter valve with the pressure-chamber, a mechanical connection between the two valves, whereby they are caused to move together, a piston in the pressure-chamber connected with the former valve, whereby a relative increase of pressure in said chamber tends to depress both valves, and variable counterbalancing devices connected with the valves to compensate for variations in their effective weight, due to varying degrees of immersion in the fluid.

2. The combination, substantially as set forth, of a casing provided with a gas-pressure chamber having an outlet leading to the service-pipe, two valves controlling the supply of gas to the pressure-chamber, the areas of which are such that the pressure of gas upon them approximately balances them, a stiff rigid connection between the valve, moving bodily with them in a vertical direction only, a fluid seal or seat for each of said valves, and a piston in the pressure-chamber unconfined at its periphery, having a fluid seal or seat and connected with one of said balanced valves, so as to move bodily therewith.

3. The combination, substantially as set forth, of a casing provided with a gas pressure chamber having an outlet leading to the service-pipe and an inlet through which gas is admitted, a valve controlling said inlet, a fluid seal or seat for said valve, a counterbalancing-valve, a stiff rigid connection between the valves, moving bodily with them in a vertical direction only, a fluid seal or seat for the counterbalancing-valve, and a piston in the pressure-chamber unconfined at its periphery, having a fluid seal and rigidly connected with one of the valves, so as to move bodily therewith.

4. The combination, substantially as set forth, of a casing provided with a gas-pressure chamber having an outlet leading to the service-pipe, two valves controlling the entrance of gas to the pressure-chamber and each provided with a fluid seal or seat, the area of said valves being such that the pressure of gas thereupon approximately balances them, a stiff rigid connection between the valves, moving bodily with them in a vertical direction only, a piston in said chamber unconfined at its periphery, having a fluid seal and connected with one of said valves so as to move bodily therewith, and a mechanical counterbalancing device connected with the valve.

5. The combination of a casing having a gas-receiving chamber and a pressure-chamber into which gas is admitted and from which it is discharged, the valves G and H, having fluid seals and which open and close passages between the two chambers, the rod connecting the valves, the piston in the pressure-chamber unconfined at its periphery, having a fluid seal and connected with one of the valves so as to move bodily therewith, the fluid-receptacle E, arranged above the pressure-chamber, the sealing-cup I, immersed therein and carried by the valve-rod, a counterbalancing-weight N, a flexible connection between the weight and valve-rod, and a pivoted eccentric over which the flexible connection passes and with which it is adjustably connected.

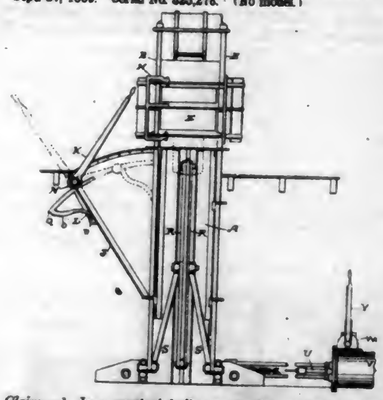
6. In a gas-regulator, the combination of a casing having a pressure-chamber provided with inlet and outlet ports, two cup-shaped balanced valves having fluid seals or seats and controlling the flow of gas to the pressure-chamber, a stiff rigid connection between the valves moving bodily with them in a vertical direction only, a piston in the chamber rigidly connected with one of the balanced valves, and variable counterbalancing devices connected with the valves and piston, substantially as and for the purpose set forth.

7. In a gas-regulating apparatus, the combination, substantially as set forth, of a casing provided with a pressure-chamber having entrance and exit ports, a slotted cup-shaped valve at the entrance-port extending into a fluid-seal recess in the casing, and devices for preventing the fluid adhering to the valve as it rises and falls.

8. The combination, substantially as set forth, of the casing A of the gas-receiving chamber, the casing B of the pressure-chamber, the fluid-seal recess in the casing A, in which the edge of the casing B is sealed, the fluid in said recess, which forms a gas-tight joint between said casings, a valve in the receiving-chamber controlling a passage for gas from the receiving-chamber to the pressure-chamber, and a valve in the pressure-chamber, controlling a second passage between the two chambers.

9. The combination, substantially as set forth, of the casings of the gas receiving and pressure chambers having inlet and outlet openings, a valve in the receiving-chamber controlling a passage from the receiving-chamber to the pressure-chamber, a valve in the pressure-chamber controlling a second passage from the receiving-chamber to the pressure- hamber, a stiff rigid connection between the valves moving bodily with them in a vertical direction only, a piston in the pressure-chamber rigidly connected with one of these valves, a counterbalancing-weight, an adjustable strap connected with the piston, a cam over which the strap passes, and a cover inclosing the cam and weight.

474,482. COTTON-PRESS. JACOB PRICE, San Leandro, Cal. Filed Sept. 27, 1889. Serial No. 325,278. (No model.)



Claim.—1. In a vertical baling-press, the vertical tension-rods connecting the top and bottom of the press and the doors hinged at one of their ends to said rods and having hooks at their opposite ends, which hook over the tension-rods, substantially as described.

2. In a baling-press, the vertical tension-rods uniting the top and bottom of the press, doors hinged upon each of said rods and having hooks that close and hook upon the next rods in succession around the press, and the links or yokes pivoted near the hinges of each of the doors, so as to swing over the ends of the following doors and lock them when closed, substantially as herein described.

3. In a baling-press, the doors having the angle metal cleats or braces upon the outside, those upon the adjacent doors being so placed as to allow the horizontal flanges to slide by and over each other, and links or yokes pivoted upon the horizontal flanges at the hinge ends of each of the doors and adapted to swing over the corresponding flanges of the adjacent door when the latter is closed against the hinge-rod of the preceding door, substantially as herein described.

4. In a baling-press, the inclined feed-door swinging between the triangular sides and having the curved brackets or plates fixed upon it, in combination with a hand-lever, a rock-shaft to which it is fixed, and arms upon said rock-shaft, having friction-rollers at the ends, which engage and travel upon the edge of the brackets, so as to close the door, substantially as herein described.

5. In a baling-press, the hinged swinging door moving between the triangular sides, a hand-lever fixed to a rock-shaft journaled to these sides, and anti-friction rollers journaled to arms that are fixed to the rock-shaft, and curved brackets or plates fixed upon the door so that the rollers engage the edges thereof to close the door and lock the same, substantially as herein described.

474,483. BOOKBINDING. HERRICK H. ROCHE, Brooklyn, N. Y., assignor of two-thirds to Mary Millie Roche, same place. Filed June 8, 1891. Serial No. 396,412. (No model.)



Claim.—1. The combination of a series of leaves, clamping-plates arranged longitudinally upon the top and bottom of the inner edges of the body of leaves, a cover provided with cloth extensions, said extensions passing first between the clamping-plates and leaves and thence around and between said plates and the adjacent side of the cover, to which they are finally secured, and transverse wires passing through the leaves, through the portions of the cloth extensions adjacent to the leaves, and through the clamping-plates, upon which they are bent down at right angles, substantially as set forth.

2. In a bookbinding, the combination of a series of leaves, strips arranged at intervals between the series of leaves for enabling the back or cover to contain a greater or less number of leaves, clamping-plates arranged longitudinally upon the top and bottom of the inner edges of the body of leaves, a cover provided with cloth extensions passing beneath the clamping-plates and over the same and having their inner ends secured to the stiff portions of the cover, and transverse wires passing through the leaves, through the cloth extensions of the cover, and finally through the clamping-plates, being bent down at right angles thereon, substantially as set forth.

474,484. MACHINE FOR ROLLING GLASS. SAMUEL SADLER, St. Louis, Mo. Filed Jan. 26, 1892. Serial No. 419,136. (No model.)



Claim.—1. A machine for rolling glass, &c., consisting of a bed, rack-bars movable to and from said bed, gear-wheels resting upon said rack-bars and adapted to support the roller, transverse shafts mounted upon each end of the table, over which endless ropes are adapted to pass for imparting motion to the said roller, and means for imparting motion to one of said shafts, substantially as set forth.

2. A machine for rolling glass, &c., consisting of an endless rope, such as 18, a pulley, such as 17, for imparting motion to said rope, a transverse shaft, such as 21, mounted in one end of the machine and having rope-wheels, such as 22, movably mounted upon the same, a clutch for locking either of the said wheels 22 against movement independent of said shaft, a transverse shaft 11, mounted in the opposite end of the machine and provided with rope-pulleys 12, pulleys, such as 36, mounted upon the ends of the said shaft 21, over which pulleys endless ropes 37 are adapted to be passed, and wheels, such as 42, over which the said ropes 37 also pass for imparting motion to the roller, substantially as described.

3. A machine for rolling glass, &c., consisting of a bed, such as 4, rack-bars, such as 6, movably secured upon the same, a roller, such as 38, a shaft, such as 39, keyed within the same and provided with gear-wheels, such as 44, which are adapted to rest upon the said rack-bars and mesh with the same, wheels, such as 42, also keyed to the said shaft, shafts, such as 11 and 21, mounted in the ends of the machine and provided with suitable pulleys, ropes, such as 37, passing over said pulleys and over the said wheels 42 for imparting motion to the said roller, triangular-shaped frames loosely mounted upon the ends of the said shaft, rollers, such as 43, loosely mounted upon the lower ends of the said frames and over which the said ropes 37 also pass, giving tension to the said ropes, and means for imparting motion to the said shaft 21, whereby the said roller 38 may be moved in either direction upon the bed of the machine, substantially as described.

4. A machine for rolling glass, &c., consisting of an endless rope, such as 18, a pulley, such as 17, mounted in suitable bearings and at a suitable distance from the machine for imparting motion to the said ropes, a pulley, such as 19, over which the rope also passes, a shaft, such as 21, mounted in one end of the machine, wheels, such as 22, loosely mounted upon the said shaft, over which the said rope 18 also passes, imparting motion to the same, hubs, such as 25, formed on the said wheel and provided with ratchet-teeth, a feather, such as 27, carried by the said shaft between said wheels 22, a clutch movably mounted upon said shaft 21 between said wheels and provided with ratchet-teeth, an operating-lever, such as 34, for moving said clutch, pulleys, such as 36, mounted upon the ends of the said shaft 21, a transverse shaft, such as 11, mounted in the opposite end of the machine and provided with pulleys, such as 12, and endless ropes, such as 37, for imparting motion to the roller 38, substantially as described.

474,485. PLOW-BEAM. HANS H. SAYER, Madison, Wis. Filed Dec. 5, 1891. Serial No. 414,095. (No model.)



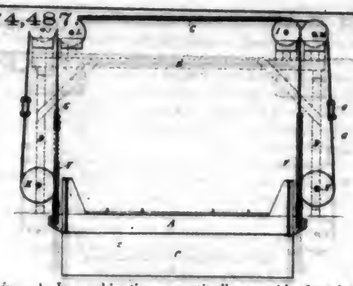
Claim.—As an improved article of manufacture, the plow-beam herein shown and described, comprising the curved wooden beam A, the metal strap B, secured to the under side and extending substantially throughout its length, and the metal strap C, secured to the upper face of the beam and extending from a point in advance of the curved portion of the beam to the rear end thereof.

474,486. APPARATUS FOR STRETCHING THE VERTEBRAL COLUMN. CARL SCHMID, Seeburg, Germany. Filed Aug. 25, 1890. Serial No. 363,006. (No model.)



Claim.—The combination, with the cruciform cap, of the bands depending from its front and rear arms and adapted to be passed under the chin and back of the head of a patient, the pulley at the crown of the cap, the rope passing under said pulley, and the suspended pulleys over which the ends of the rope pass, so as to permit the extremities of the rope to be grasped and operated by the patient, personally, substantially as specified.

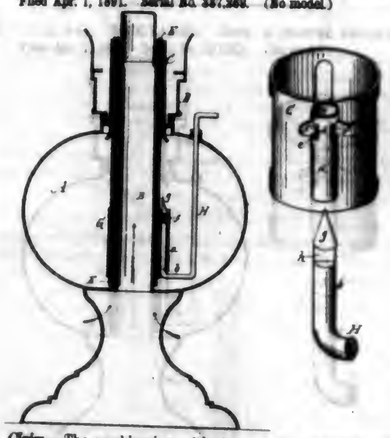
474,487. FLOAT BRIDGE OR PLATFORM. HENRY R. SEAMAN, New York, N. Y. Filed June 29, 1891. Serial No. 397,926. (No model.)



Claim.—1. In combination, a vertically-movable float bridge or platform buoyantly suspended in water and flexibly attached to land, a fixed ground-supported standard located adjacent the float, and power-transmitting mechanism mounted on said standard and operatively connecting the opposite sides of said float, whereby moving one side of the float vertically operates said mechanism and causes the other side of the float to be correspondingly elevated.

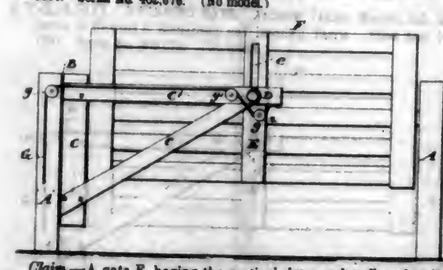
2. In combination, a vertically-movable float bridge or platform buoyantly suspended in water and flexibly attached to land, a fixed ground-standard located adjacent the float, and an endless cable carried on pivotal bearings mounted on said support and being attached to the bridge at opposite sides thereof, whereby the vertical movement of one side of the bridge operates the cable to cause the other side to be similarly moved.

474,488. WICK-RAISER. HENRY R. SHAFFER, Rochester, N. Y. Filed Apr. 1, 1891. Serial No. 387,268. (No model.)



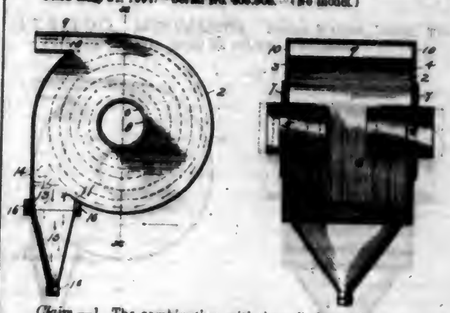
Claim.—The combination, with the socket *a*, provided with the slot *c* and neck *d*, of the handle-stem *b*, provided with the notch A and the spring *f*, attached to the wick-band and resting in the slot of the socket and supported thereby, as specified.

474,489. SWINGING GATE. ANDREW TARRIS, Marion, Ind., assignor to Newton C. Richardson and Lavina J. Tarris. Filed Aug. 14, 1891. Serial No. 402,676. (No model.)



Claim.—A gate E, having the vertical slot *e* and pulley g^3 at its middle, in combination with the swinging frame C e C', having the horizontal cross-bolt D at its front end and provided with the pulley *f* on its bar C', the rope G, fastened at one end under the front of said bar C', and the post A', having a pulley *g* near its upper end, said parts being constructed and arranged substantially as shown and described.

474,490. DUST-COLLECTOR. GEORGE WALTER, Duluth, Minn. Filed Aug. 21, 1891. Serial No. 403,308. (No model.)



Claim.—1. The combination, with the cylinder or drum, of a tangential inlet-spout, through which the dust-laden air enters the same, means for discharging the air, a dust-discharge slot 13, provided in the lower part of the cylinder, the vertical portion 14 of the wall, and a dust-receptacle arranged beneath the same, substantially as described.

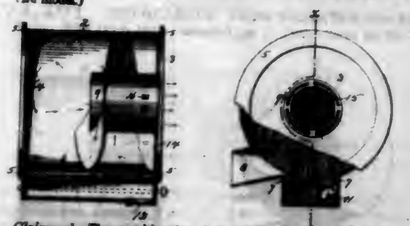
2. The combination, with the funnel-shaped dust-receptacle, of the spout 18, the sleeve 21, adapted to be inserted within the same and provided with the central flight 20, and the core 19, substantially as described, and for the purpose specified.

3. The combination, in a dust-collector, of the cylinder or drum having the walls 2 and ends 3 and 4, with a tangential inlet therefor, the vertical section 14 of the wall 2, the slot 13, the frame 16, the overlapping edge 17 of the wall 2, and the dust-receptacle depending from said frame, as described.

4. The combination, with a drum having vertical heads arranged at right angles with its cylindrical walls, of a tangential inlet entering the top of the drum, an opening arranged in the lower walls of the drum, the inner edge of said opening being arranged to one side of the center of the drum, the outer walls 14, vertically arranged, the tapering settling-chamber 15 for the dust, said tangential inlet-opening being arranged above the discharge-opening, and air-discharge openings arranged in the head or heads of the drum, substantially as described.

5. The combination, with the drum having the straight heads 3 and 4, provided with central openings, of adjustable sleeves arranged in said openings, the long and narrow tangential inlet-spout 9, arranged on top of the drum, said drum provided with the wider dust-discharge opening 13, and the perpendicular wall 14, whereby a dead-air space is created between the projecting edge 17 of the drum and the wall 14, substantially as described.

474,491. DUST-COLLECTOR. GEORGE WALTER, Thief River Falls, Minn. Filed Jan. 6, 1891. Renewed Apr. 12, 1892. Serial No. 428,779. (No model.)



Claim.—1. The combination, in a dust-collector, of the cylinder having ends 3 and 4, with the wide continuous slot 6 extending the entire length of the case, provided in the walls of said cylinder, a dust-receptacle arranged about the same, a tangential air-inlet, an axial outlet-spout extending through one end of said cylinder, the diameter of said outlet-spout and the width of said longitudinal slot and the space between the walls of said outlet-spout and the walls of said cylinder being substantially equal, as described.

2. The combination, with the cylinder or drum 2, having the longitudinal slot in its walls, of the heads or ends 3 and 4, the air-inlet spout 8, arranged to discharge the air across said slot or opening, the spout 9, having the openings 16, the sleeve 15, provided within said spout 9, and means whereby the air-currents are driven backwardly through the cylinder, substantially as described.

3. The combination, in a dust-collector, of the cylinder 2, with the heads 3 and 4, the wide slot 6, existing between the lower edges 7 of the cylinder-walls, the inlet 8, the spout 9, the deflecting-plate 14, the plate 10, the conveyor trough, and a conveyor 11, substantially as described.

4. The combination, in a dust-collector, of the cylinder 2, with the heads 3 and 4, the longitudinal slot arranged in the lower part of the cylinder, the axial spout 9, having openings 16, the sleeve 15, arranged in said spout, the inlet 8, the air-current deflector 14, the dust-hopper, and the slanting shelf arranged therein, substantially as described.

5. The combination, in a dust-collector, of the horizontal plane cylinder or drum having ends 3 and 4, with the axial discharge-spout 9, passing through the end 3 and extending back to the middle of the drum or cylinder, a dust-receptacle provided beneath said cylinder, and a longitudinal slot provided in said cylinder and extending between the ends thereof, said slot being of a width substantially equal to the width of said discharge-spout, a tangential inlet provided in the walls of the cylinder, and the edges of said slot or opening projected over the opening in the top of the dust-receptacle, whereby shoulders are provided beneath said edges to prevent the passage of the dust back into the cylinder, substantially as shown and described.

6. In a dust-collector, the combination, with the circular drum, of the tangential inlet-spout through which the dust-ladened air is discharged into the top of the said drum or cylinder, an axial air-discharge spout 9, extending through the cylinder end adjacent to said inlet, said spout extending longitudinally to about the middle of said cylinder, a spirally-inclined deflecting partition or guide placed transversely between said spout 9 and the walls of said cylinder, a dust-receptacle provided in connection with said cylinder, and the wide longitudinal opening 6, through which the dust falls into said receptacle, said slot being of a width substantially equal to the diameter of the said spout, substantially as described.

474,492. PLANING ATTACHMENT FOR SAWS. ISAAC S. WILSON, Cedar Gap, Mo. Filed July 2, 1891. Serial No. 398,233. (No model.)



Claim.—1. In a saw, the combination, with a planing-knife and an insertible saw-tooth, of a single key or semicircular piece engaging both parts, whereby they are jointly locked, substantially as set forth.

2. In a saw, the combination, with a planing-knife and an insertible tooth, of a single key or semicircular piece engaging both parts, whereby said parts are fastened one at each end of said key or piece, substantially as set forth.

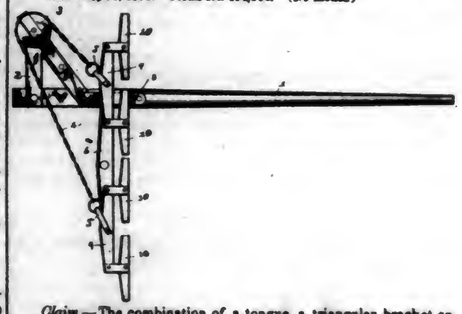
3. As a new article of manufacture, a planing-knife for circular saws, having a stem 6, recesses 8, formed in the opposite edges of the latter, said stem adapted to fit in a recess 14 formed in the saw, and means for holding said stem in said recess, substantially as set forth.

4. As a new article of manufacture, a planing-knife 5, having a stem 6, with recess 8 formed therein at its opposite edges, a blade 9, provided with a plane sharpened edge 10, and inclined sharpened edges 11, and means fitting in said recesses for securing said stem to the circular saw, substantially as set forth.

5. In a circular saw, the combination of insertible saw-teeth 2, thinner than the saw itself, a planing-knife 5, having a stem 6, with recesses 8 formed therein, a blade 9, provided with a plane sharpened edge 10, and inclined sharpened edges 11, said stem adapted to fit in a corresponding recess formed in the saw, and a semicircular metallic piece 3, provided with a rounded projection 13, adapted to fit in recess 8 for securing said insertible tooth and the said planing-knife to the saw, substantially as set forth.

6. In a saw, the combination of insertible saw-teeth, a planing-knife having a stem with recesses 8 formed therein at opposite edges, said stem being adapted to fit in a recess 14, formed in the saw, and a key or semicircular piece for each pair of adjacent knives and teeth, each piece and the saw being provided with projections fitting into the recesses of the planing-knives, substantially as set forth.

474,493. DRAFT-EQUALIZER. SAMUEL W. WOODS, Anita, Iowa. Filed Aug. 31, 1891. Serial No. 404,300. (No model.)



Claim.—The combination of a tongue, a triangular bracket extending from one side thereof and provided with a roller, a bracket 7, extending from the other side of the tongue in a direction opposite that of the triangular bracket and underneath the main whiffletree, said brackets being of the same length to prevent side draft, a main whiffletree pivotally mounted on the bracket 7, a chain having its ends attached to the ends of the main whiffletree and passing around the roller, and the doubletrees pivoted to the ends of the main whiffletree and carrying singletrees, substantially as as described.

474,494. HOISTING AND CONVEYING MACHINE. ALEXANDER B. BROWN, Cleveland, Ohio. Filed June 30, 1891. Serial No. 397,961. (No model.)



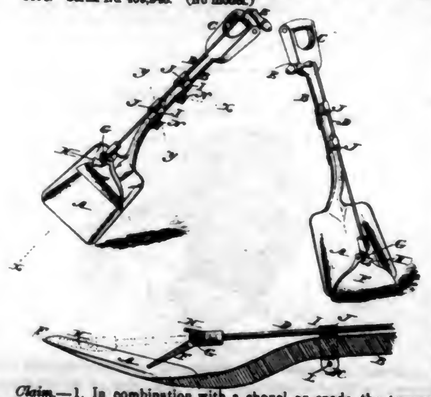
Claim.—1. In a cantalever-derrick or hoisting and conveying machine, the combination, with the trolley, of a counterbalancing-weight

which travels back and forth on the boom or centrally-supported tramway to about the same extent as, but in opposite directions to, the movements of the trolley, as specified, and suitable means operating to produce the said relative movements of the trolley and counterbalancing-weight, all substantially as and for the purposes hereinbefore set forth.

2. In a hoisting and conveying machine of the type shown and described, the combination, with a traveling counterbalancing-weight, of an auxiliary weight and means by which said auxiliary weight can be either held in a state of disuse or can be placed upon the traveling weight, so as to move therewith, all substantially in the manner and for the purposes hereinbefore set forth.

3. In combination with the double-tracked boom or tramway of a hoisting and conveying machine, the trolley, the traveling counterbalance, and means for moving the trolley and counterbalance corresponding distances, as specified, means for varying the path of travel of the counterbalance, so as to multiply its leverage over the opposing weight at the trolley, all substantially as set forth.

474,495. COMBINED TAMPER AND SHOVEL. ROBERT S. BROWNING, Jr., and BENJAMIN F. BATTERSBY, Philadelphia, Pa. Filed Oct. 20, 1891. Serial No. 409,243. (No model.)



Claim.—1. In combination with a shovel or spade, the tamper composed of rod D, provided at its lower end with the tamping-blade F, set above the carrying-face of the shovel and adapted, as shown, to push the mass to be packed off the shovel and tamp it at the point of deposit, said rod being loosely set longitudinally in holders I upon the haft of said shovel, whereby the tamping-blade F can be reciprocated by the rod, all operating substantially as described.

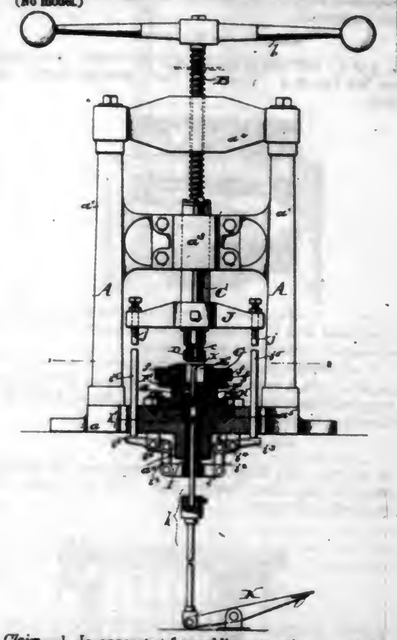
2. In combination with a shovel or spade, the tamper composed of rod D, provided at its lower end with the tamping-blade F, set above the carrying-face of the shovel and projecting by its lower part beyond the lower edge of said shovel, said rod being loosely set longitudinally in holders I upon the haft of said shovel, whereby the tamping-blade F can by the reciprocation of rod D be operated to tamp the mass which is carried by the shovel to the point of deposit, substantially as described.

3. In combination with a shovel or spade, the tamper composed of rod D, provided with a tamping-blade F, hinged to its lower end, the lower edge of said blade F resting upon the upper face of the shovel, above the lower edge of the latter, and adapted to follow said face in a forward thrust of said blade F, the rod D being loosely set longitudinally in clamps or holders I upon the haft of said shovel, all so arranged, as shown, that by the reciprocation of the rod D the blade F is operated to clear the shovel and tamp the mass to be packed at the point of its deposit, substantially as described.

4. In combination with a shovel or spade, the tamper composed of rod D, provided with a tamping-blade F, hinged to its lower end, the lower edge of said blade F resting upon the upper or carrying face of the shovel, the said rod being provided with a lip or check H for the purpose set forth and being also loosely set or secured longitudinally in clamps or holders I upon the haft of said shovel, whereby the tamper-blade F can by the reciprocation of rod D be operated to tamp and pack the mass carried by the shovel to the point of deposit, substantially as described.

5. In combination with a shovel or spade, the tamper composed of rod D, provided at its lower end with a tamping-blade F, setting above the upper face of the shovel-blade, said rod being set longitudinally in detachable jointed clamps I, whereby the tamping device can be removed or attached at will and by the reciprocation of the rod, when attached, the blade F can be used to tamp or pack the mass carried by the shovel to the point of deposit.

474,496. APPARATUS FOR MOLDING EARTHENWARE, &c. JOSEPH CROSLEY, Trenton, N. J. Filed Mar. 14, 1891. Serial No. 384,968. (No model.)



Claim.—1. In apparatus for molding ceramics, a mold, dies or platens, and mechanism for operating the same in opposite ends of the mold, in combination with lateral forming devices projected through the wall of the mold between the upper and lower dies.

2. In apparatus for molding ceramics, a mold, a die or platen within and forming the bottom of the mold, horizontal apertures in the wall of the mold and above said die, and a vertically-reciprocating die or platen above said mold, in combination with lateral forming devices supported in the horizontal apertures, means for operating the dies or platens toward each other synchronously, and means for projecting and retracting the lateral forming devices.

3. In apparatus for molding ceramics, a mold, horizontal apertures in the wall of the mold, lateral forming devices, and an annulus, connected thereto and supported by the mold, for projecting and retracting the same, in combination with a suitable die or platen.

4. In apparatus for molding ceramics, a mold, a vertically-movable bar, a die or platen supported by said bar, and a die or platen for the lower end of the mold, in combination with vertical slide-rods, connections between said rods and the latter die, and devices constructed to operate upon the slide-rods only as the bar is moved downward.

5. In apparatus for molding ceramics, a mold, a lower die or platen, and a vertically-movable sleeve for raising said die, in combination with an upper die and means for operating both dies in opposite directions synchronously, and a separate device operating in said sleeve for ejecting the cast from the mold.

6. In apparatus for molding ceramics, the combination of a mold, a lower die, a vertically-movable sleeve below said die, and an upper die, in combination with a vertically-movable bar to which the upper die is attached and supporting a cross-head, sliding rods and suitable connections between said rods, and the sleeve for raising the lower die.

7. In apparatus for molding ceramics, the combination of a supporting-frame, a mold thereon, a vertically-movable bar having a die or platen and a cross-head attached thereto, its operating devices, a die or platen for the lower end of the mold, a vertically-movable sleeve below said mold, vertical slide-rods and means for adjusting the movement thereof, a slide-piece within said sleeve, and a treadle for raising the lower die in the mold.

8. In apparatus for molding ceramics, a mold having horizontal apertures in its walls and lateral forming devices supported in said apertures and provided with studs or pins, in combination with an annulus having cam-grooves on one side and supported by the mold.

9. In apparatus for molding ceramics, a mold provided with a movable die or platen forming the bottom thereof and having pins or studs extending through the lower side of the mold-block, and a vertically-

movable sleeve having a collar to engage said pins and a cross-piece at its lower end, in combination with an upper die or platen and suitable connections whereby the lower die is raised proportionately as the upper die descends.

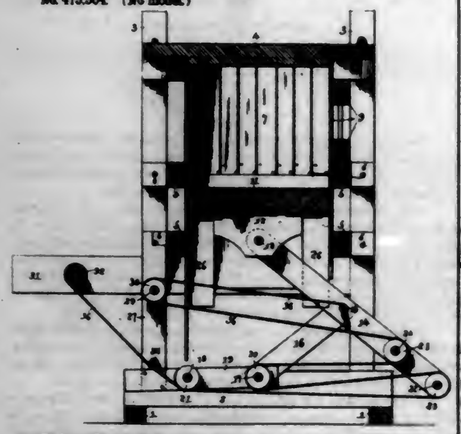
474,497. SUPPLEMENTAL TOP FOR GAS-STOVES. ALIDA DRESTFOUS, New York, N. Y. Filed Sept. 2, 1891. Serial No. 404,537. (No model.)



Claim.—1. A supplemental top for gas or other stoves, comprising a perforated plate 2, mounted on a box-like supporter 5, having flexible flanges 4, substantially as described.

2. A supplemental top for gas and other stoves, comprising a perforated plate, a rim 5, extending above the plate and forming a support for a cake-plate, and a support 4, having flexible flanges 5, all substantially as described and shown.

474,498. HAY-PRESS. THOMAS J. FINCH, Leona, Tex., assignor of one-half to John I. Finch, Union City, Tenn. Filed Dec. 18, 1891. Serial No. 415,504. (No model.)

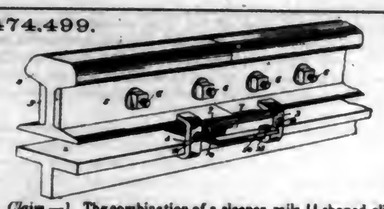


Claim.—In a baling-press, the combination, with the frame-work and the baling-chamber mounted therein, of the vertically-reciprocating plunger located in the chamber, a pair of operating-levers pivoted at their upper ends to the plunger, a pair of links pivoted to the frame-work below the plunger and having their upper ends pivoted to the plunger-operating levers near their centers, pulleys located at the lower ends of the operating-levers and at a point between the same and the point of connection with said levers and links, a pulley located in front of the frame-work, a winding device, and a cable connected with the plunger-operating levers and the links at their points of connection, passed forwardly over the front pulley, rearwardly over the intermediate pulley of the plunger-operating levers, again forwardly over a guide-pulley, thence rearwardly over the lower pulley of said operating-levers, and finally forwardly and connecting to the winding device, substantially as specified.

474,499. RAIL-JOINT. JAMES C. GENTRY, Monroe City, Mo. Filed Sept. 14, 1891. Serial No. 405,734. (No model.)



474,499.



Claim.—1. The combination of a sleeper, rails, U-shaped clips engaging the sleeper and the rails, bolts connecting the clips and holding the same in engagement with the rails and the sleeper, and wedges interposed between the rails and the sleeper, substantially as described.

2. The combination of a sleeper, rails, clips connecting the rails and the sleeper, the upper and lower wedges interposed between the rails and the sleeper and being oppositely disposed, the upper wedge being provided with ribs to engage the edges of the rails and the lower wedge being provided with perforations, and a key arranged to engage the perforations, substantially as described.

3. The combination of a T-shaped sleeper, rails, U-shaped clips having angular bends engaging the bottom flanges of the rails and the horizontal flanges of the sleeper, straining-bolts connecting the clips, and oppositely-disposed wedges interposed between the rails and the sleeper, substantially as described.

474,500. MASK FOR FIREMEN, &c. JOHN M. JACOBS, De Witt, Iowa. Filed Oct. 7, 1891. Serial No. 408,038. (No model.)



Claim.—1. In a mask, the combination, with the front and rear sections pivotally connected at their meeting edges, of the head-band pivotally connected at opposite sides to the sections, substantially as specified.

2. In a mask, the combination, with the front and rear sections pivotally connected at opposite sides, of the adjustable head-band pivotally connected to the sections, substantially as specified.

3. The combination, with the two inverted-U-shaped metal frames 3, having the reticulated coverings 4, approximating the head and face of a person and reduced at their lower ends to form the neck 7, of the bolts 5, passing through and pivotally connecting the sections, and the head-band 8, having the overlapping ends and the perforations formed at the center and at the ends of the band, the same receiving the pivoting-bolts 5, substantially as specified.

474,501. CHECK AND BILL FILE. CARL F. LOMB and MAJOR R. JEWELL, Rochester, N. Y., assignors to the Office Specialty Manufacturing Company, of New York. Filed Apr. 22, 1891. Serial No. 389,885. (No model.)

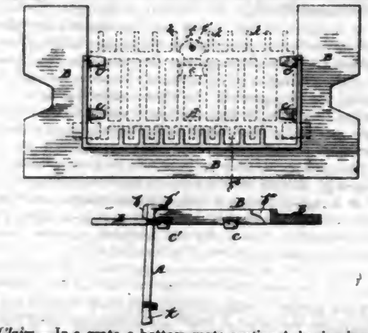


Claim.—1. In a file for grouped or classified sheets, the combination of a tray or receptacle, a longitudinal guide secured to the tray, a series of independent division-plates, each provided with a fastening device engaging beneath the guide, a follower, and a locking device for the latter arranged to engage the guide, substantially as described.

2. In a file, the combination of a tray or receptacle, a longitudinal guide-rail attached thereto, a series of independent division-plates, the wires E, secured to said plates and having their two ends engaging loosely beneath the elevated edges of the guide-plate, a follower, and the locking device for the same.

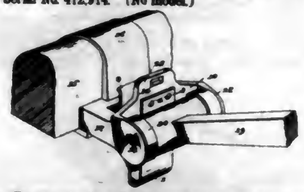
3. In a file, a tray provided with the side walls having longitudinal shoulders, in combination with a longitudinal guide fixed in the draw, the series of independent division-sheets, each engaging the guide to prevent disconnection, and each sustained in an upright position by the shoulders of the tray, the follower or pressure device also connected to the guide, and the clamp or locking device.

474,502. GRATE FOR COOK-STOVES OR RANGES. ALBERT S. NEWBY, Kansas City, Mo. Filed Nov. 4, 1890. Serial No. 370,287. (No model.)



Claim.—In a grate, a bottom-grate portion A, having lugs *b* projecting from its rear or inner end corners upon the frame portion B of the fire-box and having lugs *b'* projecting downwardly from the rear or inner corners, in combination with a frame portion B, provided with lugs *c c'*, projecting inwardly, upon which said grate portion rests and upon which it can be moved when drawn out to be dumped, substantially as and for the purpose set forth.

474,503. THILL-COUPLING. WILLIAM H. NEWTON, Decatur, Ill., assignor of one-half to Albert M. McGee, same place. Filed Nov. 24, 1891. Serial No. 412,914. (No model.)



Claim.—The herein-described improved anti-rattler, comprising a V-shaped spring bent near its center, as at 1, forming front and rear terminals, the front terminal being straight to near its middle and beyond the same provided with a curved portion 2, adapted to embrace the thill-eye, and beyond the curved portion extended to form a perforated securing-plate and the rear terminal being extended above the bend 1 for a short distance, as at 5, at an angle of about sixty degrees, above the same bent at a greater angle rearwardly, as at 6, and disposed at about forty-five degrees, beyond the same rebent to form a straight portion substantially in line with the lower portion 5, and finally terminating in a lip 8, and the transverse yoke consisting of the cross-bar 11 and forwardly-disposed pin-embracing ears, and rivets passed through the transverse bar and the perforated end of the front terminal of the spring, substantially as specified.

474,504. ADVERTISING-MACHINE. CARRICK P. OLDHAM, Knoxville, Tenn. Filed Apr. 30, 1891. Serial No. 391,100. (No model.)

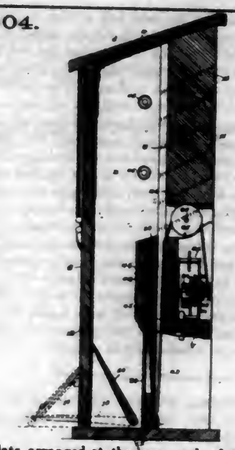
Claim.—1. In an advertising device, the combination of a casing provided with a vertical series of inclined compartments, a vertically-movable plate mounted in the casing and arranged at and closing the lower ends of the compartments when it is elevated, and means for regulating and producing a gradual descent of the plate, substantially as described.

2. In an advertising device, the combination of the casing provided with an inclined compartment, a vertically-movable plate arranged at the lower end of the compartment, time mechanism 21, provided with a drum 23, a pulley, and a cord passing over the pulley, and having one end attached to the plate and the other end connected to the drum, substantially as described.

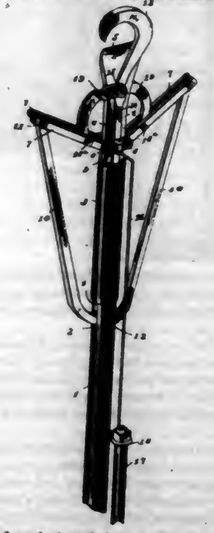
3. In an advertising device, the combination of the casing, the vertical partition 6, the inclined plates arranged between the partition 6 and the sides of the casing and forming a series of inclined compartments, the vertically-movable plate arranged at the lower ends of the compartments, the horizontal partition supporting the lower end of the vertical partition 6, the shaft 27, mounted in the casing, the pulley 25, mounted on the shaft 27, the cord passing over the pulley and connected to the movable plate, and the time mechanism provided with a drum to receive the cord, substantially as described.

4. In an advertising device, the combination of the casing provided with apertures 29 and having inclined compartments, the vertically-movable plate arranged at the lower ends of the compartments, the shaft journaled in the casing, the advertising-disks arranged on the ends of the shaft and disposed opposite the apertures of the casing, the pulley mounted on the shaft, the time mechanism, and the cord passing over the pulley and connected with the time mechanism and attached to the movable plate, substantially as described.

5. In an advertising device, the combination of the casing, the vertical partition 6, the inclined plates arranged between the partition and the sides of the casing and forming compartments, the horizontal partition, the vertical transparent plate 20, the vertically-movable plate, the hinged board 15, and means for controlling the descent of the plate, substantially as described.



474,505. PRUNING IMPLEMENT. STEPHEN A. O'NEIL, Burlington, Kans., assignor of one-half to Charles A. Japhet, same place. Filed Feb. 13, 1892. Serial No. 421,420. (No model.)



Claim.—1. In a device of the class described, the combination, with the handle, the knife having the shank mounted for reciprocation therein, and the slot formed in the knife, of the main links pivoted to the knife-shank, the levers pivotally connected to the main links at the outer ends of the latter and having their lower ends connected to the handle, the hook located at one side of the knife, a bolt passed through the same and into the slot of the knife, and links connected to the bolt of the hook and at their outer ends to the main links, substantially as specified.

2. In a device of the class described, the combination, with the handle and the reciprocating shank terminating at its outer end in a knife or blade, of the opposite links pivoted to the blade, the levers

pivoted to the outer ends of the links and at their lower ends to the handles, the hook mounted at one side of the blade, guides for the same, whereby the blade and hook are movable with relation to each other, and short links pivoted at their upper ends to the hook and at their lower ends to the main links, substantially as specified.

3. In a device of the class described, the combination, with the handle having the upper slotted end, the ferrule mounted on the slotted end and extending nearly the length of the slot, and the flat shank mounted for reciprocation in the slot and terminating at its upper end in a blade provided with a longitudinal slot, of opposite pairs of links 7, pivoted by bolts at their inner ends to the opposite sides and edges of the shank, levers pivotally bolted to the outer ends of the links and terminating in the lower end of the slot of the handle, a bolt passed therethrough, a keeper connecting the bolts at the inner ends of the links and forming a guide, a hook having a reduced shank mounted for movement in the guide, a bolt passed through the hook and slot of the knife and short links loosely connected to the ends of the bolt and loosely bolted between the pairs of main levers, the guides upon the handle, and the rod mounted in the guides and connected at its upper end to the keeper, substantially as specified.

474,506. VAGINAL SYRINGE. WILLIAM B. SPENCER, Chicago, Ill. Filed June 26, 1891. Serial No. 397,650. (No model.)



Claim.—1. In a vaginal syringe, a conico-elliptical back-receiving reservoir, a supply-pipe and nozzle communicating with the interior thereof, and a vertically-adjustable telescoping discharge-pipe, substantially as set forth.

2. In a vaginal syringe, the combination, with the conico-elliptical back-receiving reservoir and discharge-pipe, of a suitable support, a supply-pipe and nozzle communicating with the interior of said reservoir, and a return-pipe in connection with the discharge of the reservoir and in circuit with the syringe and supply-pipe, substantially as set forth.

3. In a vaginal syringe, a back-receiving reservoir provided with a lateral perforation and extended discharge-pipe, a supply-pipe and nozzle communicating with the interior of said reservoir through said perforation, and telescopic discharge-sections connecting said extended pipe with the receiving-receptacle, substantially as set forth.

4. In a vaginal syringe, a back-receiving reservoir provided with a lateral perforation and extended discharge-pipe, a supply-pipe and nozzle communicating with the interior of said reservoir through said perforation, telescopic discharge-sections connecting said extended pipe with the receiving-receptacle, and a spiral spring interposed between said sections to adjustably regulate the height of the instrument, substantially as set forth.

5. In a vaginal syringe, a back-receiving reservoir provided with a lateral perforation and extended discharge-pipe, a sliding-tube vertically adjustable in said discharge-pipe and reservoir and provided with lateral outlet-openings, a crown or shield secured to the upper end of said sliding tube, a supply-pipe and nozzle communicating with the interior of said reservoir through said lateral perforation and supported vertically upon said crown or shield, and spring-actuated telescopic sections connecting said discharge-pipe with the receiving-receptacle, substantially as set forth.

6. In a vaginal syringe, a back-receiving reservoir provided with a lateral perforation and extended discharge-pipe, a sliding tube vertically adjustable in said discharge-pipe and reservoir and provided with lateral outlet-openings, a crown or shield secured to the upper end of said sliding tube, a supply-pipe and nozzle communicating with the interior of said reservoir through said lateral perforation and supported vertically upon said crown or shield, a return circulating-pipe connected with the lower end of said extended discharge-pipe and the syringe-supply pipe, and spring-actuated telescopic sections connecting said discharge-pipe with the receiving-receptacle, substantially as set forth.

7. In a vaginal syringe, a back-receiving reservoir provided with a lateral perforation and extended discharge-pipe, a sliding support vertically adjustable in said pipe and reservoir, a convex crown or shield secured to the upper end of said sliding support and provided with a centrally-located perforation, a supply-pipe and nozzle communicating with the interior of said reservoir through said lateral perforation and passing through the perforated crown or shield and vertically supported thereupon, a return circulating-pipe connected with the lower end of said discharge-pipe, a perforated nipple joining said return-pipe with the syringe-supply pipe, and a suitable adjustable support for the instrument, substantially as set forth.

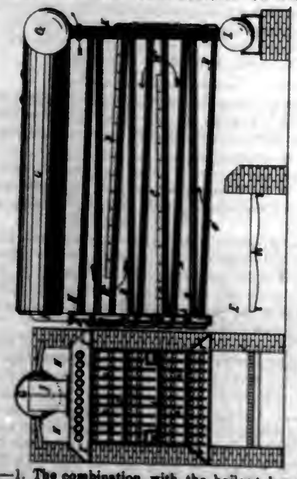
8. In a vaginal syringe, a back-receiving reservoir provided with a lateral perforation, a discharge-tube, a vertically-adjustable support passing through said tube and within the reservoir, a convex crown or shield secured to the top of said support and provided with a perforation, a supply-pipe and nozzle communicating with the interior of said reservoir through said lateral perforation and passing through the perforated crown or shield, and a return circulating-pipe connected with the discharge of the reservoir, substantially as set forth.

474,507. SPOUT FOR CANS. HENRY STILES, Cleveland, Ohio. Filed Dec. 15, 1891. Serial No. 415,195. (No model.)



Claim.—A can for oil or other liquids, having in its top the pouring-opening and the vent-opening, as described, in combination with the spout having the enlarged portion near its pouring-mouth and tapering therefrom, as described, arranged to cover both openings in the can, substantially as shown and described.

474,508. STEAM-GENERATOR. JOHN W. VAN DYKE, Brooklyn, N. Y. Filed Aug. 11, 1882. Serial No. 69,069. (No model.)

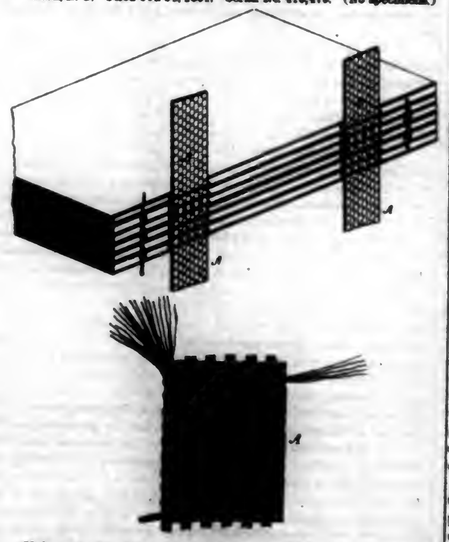


Claim.—1. The combination, with the boiler-tubes B, of transversely-continuous castings having the following features, viz: internal partitions dividing each casting into a series of chambers, a series of openings or sockets coincident with the said chambers for receiving the ends of the boiler-tubes, and a series of openings or hand holes provided at the opposite sides of the chambers and substantially coincident with the sockets aforesaid, all substantially as and for the purpose herein set forth.

2. The combination, with the boiler-tubes B, of superposed transversely-continuous castings A, constructed with internal partitions *a'*, which provide a series of chambers within each of the said castings, whereby communication is established between the pipes to insure circulation of water from one to another of said pipes, all substantially as and for the purpose herein set forth.

3. The combination, when arranged in substantially the relation herein described, with the boiler-tubes B, of the castings constructed with the partitions *a*, dividing each of said castings into a series of connected chambers, the casting H, devoid of partitions, the steam-drum or separating-chamber G, and the opening J, extended from the casting H and communicating with the interior of the drum G, above the normal water-level thereof, substantially as and for the purpose herein set forth.

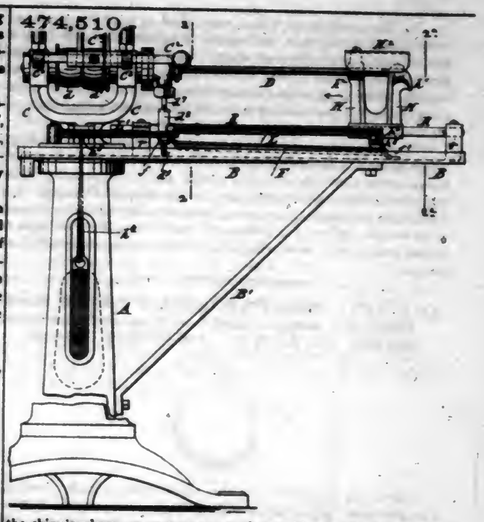
474,509. WEB FOR BOOKBINDING, &c. JOHN A. WAGLER, New York, N. Y. Filed Oct. 31, 1891. Serial No. 410,479. (No specimens.)



Claim.—1. A web for bookbinding and other purposes, composed of longitudinal warps, each warp being formed of numerous longitudinal threads grouped together and held by small interlaced weft-threads, substantially as set forth.

2. A web for bookbinding and other purposes, composed of longitudinal warps, each warp being formed of numerous longitudinal threads grouped together and held by small interlaced weft-threads and stiffened with a sizing, such as a solution of glue, that penetrates the warps uniformly, or nearly so, substantially as set forth.

474,510. BOTTLE-WASHING MACHINE. JACOB F. WITTEMANN, Fort Hamilton, N. Y. Filed June 22, 1891. Serial No. 397,131. (No model.)



Claim.—1. The combination of a rotary tubular spindle, a scraper connected to the front end of said spindle, and a reciprocating yoke-shaped slide-frame provided with a bottle-rest at its front end and a guide-sleeve for the spindle at its rear end, substantially as set forth.

2. The combination of a tubular rotary spindle, a scraper connected to the front end of the same, a supporting-rod, a reciprocating yoke-shaped slide-frame guided on said rod, said slide-frame being provided with a bottle-rest at its front end and a guide-sleeve at its rear end and with an open space between the bottle-rest and guide-sleeve, and a guard or hook extending over the open space between the bottle-rest and guide-sleeve, substantially as set forth.

3. The combination, with a tubular rotary spindle, of a scraper connected to the front end of said spindle, a reciprocating yoke-shaped slide-frame provided with a bottle-rest at its front end and a guide-sleeve at its rear end, a valve for controlling the supply of water to the spindle, a shipping-lever adapted to be depressed by the lower part of the slide-frame, and a water-supply connected with the rear end of the shipping-lever, so as to open or close said valve by the action of the slide-frame on the shipping-lever, substantially as set forth.

4. The combination of a hollow supporting-standard, a horizontal table supported on said standard, a fixed longitudinal guide-rail supported on said table, a tubular rotary spindle supported above said guide-rail, a reciprocating slide-frame guided on said longitudinal rail, toggle-levers connecting the slide-frame with the rear part of the table, and a counterbalancing-weight connected to the rear ends of the toggle-levers, substantially as set forth.

5. The combination of a hollow supporting-standard, a horizontal table attached to the upper end of said standard, a forked support attached to the upper part of the standard, a rotary shaft supported in bearings of said support, a tubular spindle attached to said rotary shaft, said spindle being provided with openings in its rear end, a valve-casing extending around the perforated rear part of the spindle, a water-supply pipe, a valve located in the valve-casing so as to open or close the water-supply pipe, a reciprocating and counterbalanced slide-frame guided on said spindle, and a shipping-lever connected to said water-supply valve and opened or closed by said slide-frame, substantially as set forth.

6. The combination of a rotary tubular spindle having perforations at its rear end, a valve-casing extending around the perforated portion of the spindle, a water-supply pipe connected with said valve-casing, a spring-valve in said valve-casing, a stirrup attached to the spindle of said valve, a shipping-lever pivoted to said stirrup, and a reciprocating slide-frame guided in line with said spindle, so as to actuate the shipping-lever and thereby the supply-valve, substantially as set forth.

7. The combination, with a rotary shaft, of a tubular spindle attached to said shaft, said spindle being provided with perforations in its rear end, a valve-casing extending around the perforated portion of the spindle, a water-supply pipe connected to said valve-casing, a spring-actuated valve in said valve-casing, a stirrup applied to the spindle of the valve, a shipping-lever pivoted to said stirrup, and a reciprocating and slide-frame guided in line with the tubular spindle, said slide-frame being provided with an anti-friction roller at its lower part, so as to engage or release the shipping-lever and open or close the supply-valve of the spindle, substantially as set forth.

8. The combination of a forked support having a disk-shaped flange at one end, a rotary driving-shaft supported in bearings of said support, a tubular spindle secured in line with said rotary shaft and provided with perforations at its rear portion, a valve-casing extending around the perforated portion and provided with a disk-shaped face that is attached to the disk-shaped flange of the said support, a water-supply pipe connected with said valve-casing, a spring-actuated valve opening and closing the water-supply, a shipping-lever connected with the spindle of said valve, and a reciprocating slide-frame adapted to operate the shipping-lever, substantially as set forth.

9. In a bottle-washing machine, an elastic scraper composed of a flexible tapering center portion having a flexible core and flat wings extending from the center portion, substantially as set forth.

10. In a bottle-washing machine, an elastic scraper formed of a tapering center portion, a flexible core in said center portion, and flat wings extending from said center portion and having raised circumferential rims at opposite sides of said wings, substantially as set forth.

11. The combination, with a rotary shaft, of a tubular spindle secured to said rotary shaft, said spindle being provided with holes at that portion next adjoining said shaft, a valve-casing inclosing the perforated portion of the spindle, said valve-casing being attached to the bearings of the shaft, a valve in said valve-casing, and means for tightening the connection between the valve and spindle, substantially as set forth.

12. The combination, with a rotary tubular spindle, of a tubular holder adapted to be inserted into the outer end of the spindle, a scraper connected by a pivot-joint to said holder, and a reciprocating slide-frame provided with a guide-sleeve that is adapted to engage said holder and the shank of the scraper when the slide-frame is returned to its normal position and release the shank when the slide-frame is moved backward so as to release the pivoted scraper, substantially as set forth.

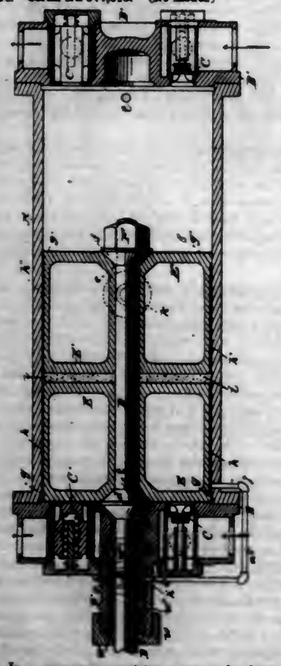
474,511. COLLAR FOR PIPES, RODS, &c. GEORGE W. ALDRICH, Brooklyn, N. Y., assignor to himself, James Clayton, and Thomas Hudson, same place. Filed May 20, 1891. Serial No. 393,432. (No model.)



Claim.—1. A collar for pipes or other round articles, consisting of an undivided ring or annular disk of flexible sheet metal cut or interrupted at one point only in its circumference and the opposite ends of which, formed by the cut or interruption, are adapted to lap over each other and are provided with lugs to be turned in reverse directions over and under and clamped upon the inner and outer edges of the ring or disk, substantially as herein set forth.

2. The collar consisting of the ring or annular disk of sheet metal, having the lugs a' a' a^3 a^4 and having near its ends the cut lips b b', one of which is turned outward and the other inward, substantially as herein set forth.

474,512. GAS-PUMP. LEICESTER ALLEN, New York, N. Y. Filed Jan. 15, 1891. Serial No. 377,813. (No model.)



Claim.—1. In a gas-pump, a piston composed of separate relatively-movable heads and intervening liquid which is a means of transmitting motion from one head to the other, substantially as described.

2. In a gas-pump, a piston composed of separate relatively-movable heads and an intervening compressed-liquid column which is a means of transmitting motion from one head to the other, substantially as and for the purpose set forth.

3. In a gas-pump, a piston which comprises separate relatively-movable heads with intervening liquid constantly compressed to a tension, substantially the same as that of the compressed gas discharged from the pump, and which is also a means of transmitting power from one head to the other, substantially as herein described, and for the purposes set forth.

4. In a gas-pump, the combination of a piston-rod with a piston comprising relatively-movable heads fitted to slide one toward the other on said rod and intermediate liquid which is a means of transmitting motion from one head to the other, substantially as and for the purposes specified.

5. The combination, with the cylinder of a gas-pump, of a piston composed of separate relatively-movable heads and interposed liquid which is contained within the cylinder and surrounds the said pistons and which is a means of transmitting motion from one of said heads to the other, substantially as and for the purposes herein explained.

6. The combination, substantially as herein described, with the cylinder of a gas-pump, of a piston composed of separate relatively-movable heads, and a column of liquid intervening between and surrounding said pistons, constantly compressed to a tension substantially the same as that at which the compressed gas is discharged from the pump.

7. The combination, with the piston having separate relatively-movable heads and an interposed stratum of liquid which is a transmitter of motion from one to the other, of a tank exterior to the pump-barrel in which a liquid is contained under pressure and a pipe connecting the interior of such tank with said interposed stratum of liquid, substantially as and for the purposes herein set forth.

8. The combination, with the piston having separate relatively-movable heads, an interposed stratum of liquid which is a transmitter of motion from one to the other, an exterior tank containing liquid, and a pipe connecting the interior of said tank with said interposed liquid stratum, of a check-valve in said pipe, substantially as described.

9. The combination, with a piston having separate relatively-movable heads, an interposed stratum or column of liquid which transmits motion from one head to the other, an exterior tank containing liquid, a pipe containing a check-valve and connecting the interior of said tank with the said interposed liquid stratum, and a pipe connecting the interior of said tank with the interior of the inclosure into which compressed gas is discharged from the pump, of a relief-valve chamber containing a relief-valve, a pipe or passage connecting the bottom of said chamber with the interposed liquid stratum, and a pipe or passage connecting the upper part of said chamber with the interior of the inclosure into which the gas is discharged after compression in the pump, all substantially as herein described, and for purposes specified.

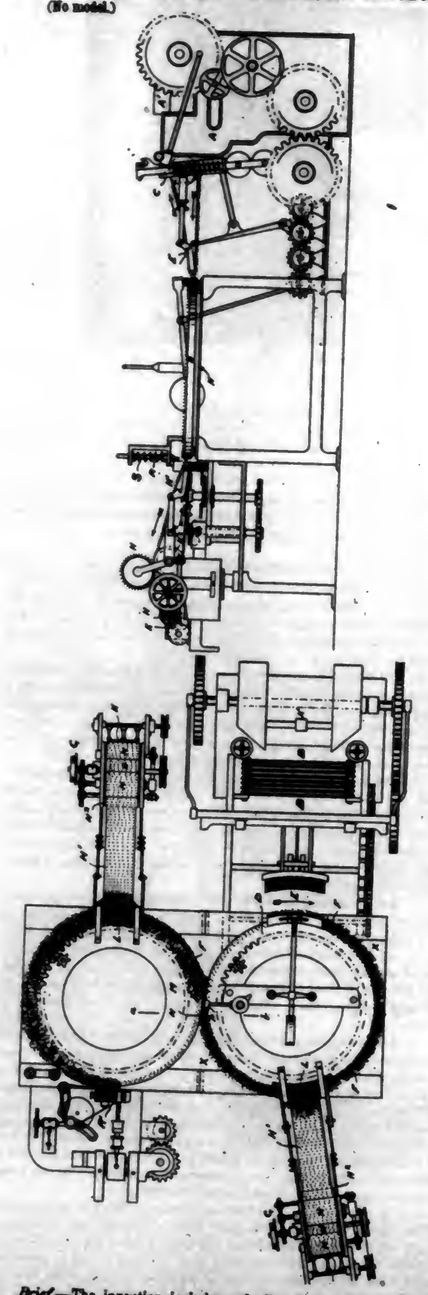
10. The combination, with the barrel of the pump, the piston constructed as described, the exterior tank containing a lubricating and packing liquid, a pipe containing a check-valve and connecting said tank with the liquid stratum forming part of the piston, and a pipe connecting the interior of said tank with the interior of the inclosure into which compressed gas is discharged from the pump, of branch pipes or passages, one connected with the pump-barrel at or near each end of the pump-barrel, substantially as and for the purposes herein set forth.

11. The combination, with the barrel of the pump, the piston constructed as described, the exterior tank containing liquid for lubrication and packing, a pipe l, containing a check-valve and connecting the interior of said tank with the liquid part of the piston, a pipe l', connecting said tank with the interior of the space for holding gas discharged by the pump, branch pipes u, the same being a continuation of a passage for the lubricating-liquid from said tank to the interior of the pump, and regulating valves or cocks v, placed in said pipes u, of a liquid-meter placed in the passage for the lubricating-liquid from the oil-tank to the pumps, all substantially as herein described, and for the purposes specified.

12. The combination, with the pump, its pistons, a separator M, and an oil-tank L, all connected by pipes, substantially as herein described, of a stuffing-box D', containing annular chambers c c', a connecting pipe or pipes between the tank L and the said chambers, and a connecting pipe or tube a^3, leading from the chambers in said stuffing-box and communicating within the interior of the pump-cylinder, all substantially as and for the purposes herein set forth.

13. The combination, with a pump-cylinder, its valves, and stuffing-box, of the piston-rod D, having formed thereon the boss d, the piston-heads E and E', movable each toward the other, an interposed stratum of liquid h h' i, a discharge-pipe l'', a separator M, connected with said discharge-pipe, a heater R, connected with the separator, an outlet-pipe l', connected with the separator, a tank L, connected with the pipe l', a cooler R', connected with the tank L, a pipe l, connected with the tank L and with the pump-cylinder A, a meter W and a check-valve N, both connected with the pipe l, a pipe o, connected with the pipe l, a relief-valve p, connected with the pipe l, branch pipes u, connected with the pipe l and with the pump-cylinder, regulating cocks or valves v, connected with the pipe u, the metallic ring A' in the stuffing-box, and a pipe connection c, connecting the pipes u with the stuffing-box, all substantially as herein described, and for the purposes specified.

474,513. MACHINE FOR COMBING FIBER. DAVID BARNETT and DAVID BLACK, Bradford, England. Filed Jan. 22, 1892. Serial No. 418,877. (No model.)



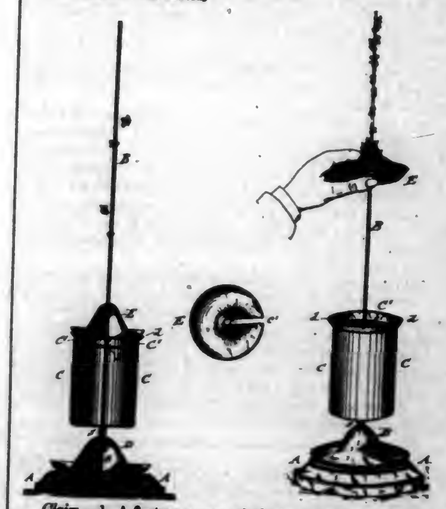
Brief.—The invention includes a feeding device, two combing-circles, and drawing-off mechanism, the transfer of the fiber from one circle to the other being aided by blasts of air. Adjacent to each circle is a "lashing-head" for combing the projecting ends of the fiber, and opposite each lashing-head are a number of plates fitting into grooves cut into the comb-circles between the rows of teeth, the fiber while being acted upon by the lashing-heads being held down by said plates.

Claim.—1. In a combing-machine, a comb-circle plate having grooves cut therein between the comb-pins, combined with press-plates L, springs S, and lashing-out endless aprons H', arranged substantially as specified.

2. The combination of comb-circles D and M with endless carding-aprons H', communicating therewith, and the vertical and horizontal blowpipes N and P, substantially as specified.

3. The combination of two adjoining grooved comb-circles with press-plates L, engaging the grooves, endless carding-aprons H', communicating with the comb-circles, and blowpipes for transferring the fiber from one comb-circle to the other, substantially as specified.

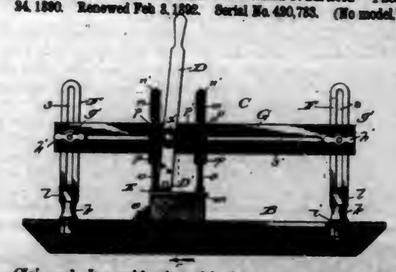
474,514. FLY-TRAP. CARL BRUNER, New York, N. Y., assignor of one-half to Jacob Moskowitz, same place. Filed Feb. 23, 1892. Serial No. 422,332. (No model.)



Claim.—1. A fly-trap composed of a base, a rod attached to said base, a reservoir for the adhesive substance, said reservoir being guided on the rod, a drip-cup below the reservoir, a cover for the reservoir, having a central opening, and a scraper supported on said cover and provided with a central opening, and a circumferential trough, substantially as set forth.

2. A fly-trap composed of a base, a rod attached to said base, a reservoir for the adhesive substance, guided on the rod by a bottom sleeve, a drip-cup below the reservoir, a cover for the reservoir, having a central opening and an outwardly-flaring flange, and a scraper supported on said cover and provided with a recess extending from the center to the circumference of the same, substantially as set forth.

474,515. TENONING-MACHINE. WILLIAM H. BENNETT, Chicago, Ill., assignor to Cornelia E. Bennett and Almin F. Bartlett. Filed Oct. 24, 1890. Renewed Feb 3, 1892. Serial No. 420,783. (No model.)



Claim.—1. In combination with the carriage of a tenoning-machine, a clamp comprising a support secured to the said carriage, and a clamping-tool secured to the support and formed with an elastically-

supported plate E to bear down upon and hold the work against the carriage and beveled on its upper side toward one end, and a lever D, fulcrumed to the support over the bearing-plate and carrying at its lower end an anti-friction roller D′ and adapted to be turned toward a perpendicular position with its roller against the upper side of the bearing-plate to force and wedge the plate down upon the work, substantially as described.

2. In a clamp for a tenoning-machine, the combination of a support to be secured to the carriage of the machine, and a clamping-tool adjustably secured to the support and comprising a bar *r*, having end bearing-bars *q*, supporting reciprocating rods *o*, sustained by springs *n* and carrying a bearing-plate E, and a lever D, fulcrumed on the bar *r* and carrying at its bearing end an anti-friction roller D′, substantially as described.

3. In a clamp for a tenoning-machine, the combination of a support to be secured to the carriage of the machine and comprising standards, and a cross-bar adjustably connected toward its opposite ends with the standards, and a clamping-tool secured to the cross-bar, the cross-bar being rigid in its adjusted position and the clamp being movable to operate it on the cross-bar, substantially as described.

4. In a clamp for a tenoning-machine, the combination of a support to be secured to the carriage of the machine and comprising standards F, and a cross-bar G, adjustably connected toward its opposite ends with the standards, and a clamping-tool secured to the cross-bar and having a lever D, carrying an anti-friction roller D′ at its bearing end, and a reciprocating bearing-plate E, controlled by the lever, substantially as described.

5. In a clamp for a tenoning-machine, the combination of a support to be secured to the carriage of the machine and comprising longitudinally-slotted standards F, and a longitudinally-slotted cross-bar G, adjustably connected at its opposite ends with the standards, and a clamping-tool comprising a bar *r*, adjustably connected with the cross-bar G and having end bearing-bars *q*, supporting reciprocating rods *o*, sustained by springs *n* and carrying a bearing-plate E, and a lever D, carrying at its bearing end an anti-friction roller D′, substantially as and for the purpose set forth.

6. A clamp C for a tenoning-machine, comprising, in combination, slotted standards F, to be secured to the carriage of the machine, a slotted cross-bar G, recessed near its opposite ends to admit the standards and adjustably secured thereto, and a clamping-tool comprising a bar *r*, adjustably supported at the slot of the bar G and having end bearing-bars *q*, supporting-rods *o*, sustained by springs *n*, a beveled plate E, secured to the rods *o*, and a lever D, carrying an anti-friction roller D′ at its bearing end, the whole being constructed and arranged to operate substantially as described.

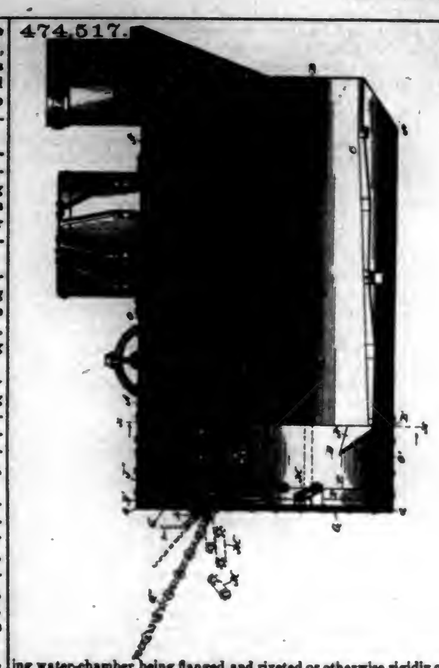
474,516. PAPER-HOLDER. MARCELLUS F. BERRY, Brooklyn, N. Y. Filed Mar. 30, 1892. Serial No. 427,026. (No model.)



A

Claim.—The combination, with the two leaves or boards constituting the cover of a paper-holder and provided with eyes, of spring-clamps inserted through said eyes for the purpose of clamping said leaves or boards, substantially as herein set forth.

474,517. STEAM-BOILER. THOMAS C. RENT, Chicago, Ill. Filed Oct. 13, 1890. Serial No. 367,922. (No model.)



Claim.—1. In a steam-boiler, the combination of a main boiler for the water and steam chamber and provided with flues therein with a furnace-chamber located within said main boiler-shell, the under side or edges of the shell of said furnace-chamber being rigidly attached throughout its entire length to the inner bottom of the main boiler-shell, said furnace-shell approximating to a cylindrical form down to the line or lines where it is thus rigidly attached to the main boiler-shell, whereby the water is excluded from passing immediately beneath said fire-chamber where it is thus rigidly connected, and said main boiler-shell extending beyond the front of the fire-chamber and, in connection with end plates, crown-sheet, and walls, forming a combustion-chamber and a water-space all around the periphery of said combustion-chamber, all substantially as shown.

2. A steam-boiler whose shell forms a water and steam chamber, through which pass longitudinal flues, having a combustion-chamber entirely surrounded in cross-section by a water-chamber, the flange-sheet of the crown-sheet and the front plate or plates of such surrounding water-chamber being flanged and riveted or otherwise rigidly connected with the shell of said boiler, said shell extending outwardly beyond the line of such connection and forming a hot-air chamber, all substantially as shown.

3. A steam-boiler provided with a combustion-chamber, the crown-sheet and peripheral walls of which are surrounded by a water-chamber, the main shell of said boiler extending beyond the limits of said combustion-chamber and water-chamber and being provided with a back hinged to said extension of said main shell and capable of being opened or removed, all substantially as shown.

4. A steam-boiler provided with a combustion-chamber, the crown-sheet and peripheral walls or plates of which are surrounded with a water-chamber as far as the combustion-chamber proper extends and having at the rear of such combustion-chamber a coil or continuous series of feed-water-heating pipes arranged closely together, with external connections, all substantially as shown.

5. A steam-boiler provided with a combustion-chamber, the crown-sheet and peripheral walls of which are surrounded with a water-chamber as far as the combustion-chamber proper extends and having at the rear of such combustion-chamber a series of feed-water-heating pipes arranged closely together, two or more of them connected at their ends, respectively, with a single inlet and outlet pipe, substantially as shown.

6. A steam-boiler provided with a combustion-chamber, the crown-sheet and peripheral walls or plates of such chamber being surrounded by a water-chamber and having at the rear of such combustion-chamber a series of feed-water-heating pipes, two or more of them connected at their ends, respectively, with a single inlet and outlet pipe, said series of feed-water-heating pipes being movably supported by bearings in the extension of the main boiler shell, all substantially as shown.

7. A steam-boiler provided with a furnace-chamber located within the main boiler-shell that forms the water and steam chamber and through which extend flues, the lower portion or part of the shell of such furnace-chamber being rigidly attached through its entire length with the inner bottom of the main boiler-shell, said boiler also being provided with a combustion-chamber, the crown-sheet and peripheral walls of which are surrounded by a water-chamber, and at the rear of which combustion-chamber is held by connections a coil or series of feed-water-heating pipes having external connections with the water feed and supply pipes, all substantially as shown.

8. A steam-boiler provided with a furnace-chamber, above whose crown-sheet and peripheral walls or plates is extended the water-chamber, a coil or series of feed-water and heating pipes held in said chamber by connections and extending from the line of the crown-sheet down to a point opposite the line of the lower opening of the furnace-chamber, and a back to said boiler supported upon hinges and attached to the shell of said boiler, all substantially as shown.

9. A steam-boiler provided with a furnace-chamber located within the main boiler-shell, a deflector at the rear end of such furnace-chamber, a combustion-chamber around which extends a water-chamber, and a series of pipes located at the rear of said combustion-chamber, the ends of two or more of said pipes respectively connected with a single inlet and outlet pipe, all substantially as shown.

474,518. CASE FOR RIBBONS. SARAH B. BISHOP, Springfield, Mass., administratrix of George W. Bishop, deceased. Filed Jan. 11, 1892. Serial No. 417,622. (No model.)

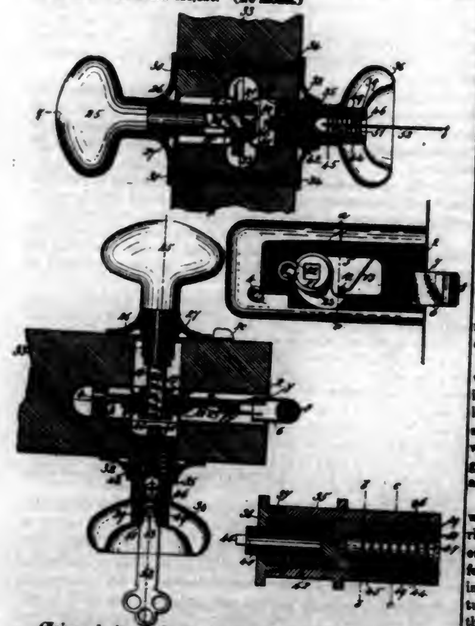


Claim.—1. A case for ribbons, consisting of two cup-shaped or flanged head-sections arranged axially coincident, with their flange edges in proximity, each having an axial internally-extended boss, a roller having its ends formed tubular, engaging said bosses, a surrounding strip circumferentially connected to said end flanges, and the slot through the circumferential wall of the so-formed case, which is parallel with its axis, substantially as described.

2. A cylindrical package-case for ribbons, having end-closing heads and an inclosed axially-journaled roller, a slot through the circumferential wall parallel with the axis, and a yielding lip supported by said circumferential wall for normally closing the slot, substantially as described.

3. A case or package for ribbons, consisting of two cup-shaped or flanged heads or sections arranged with their flange edges in proximity and both having matching slots, substantially as described, the inwardly-projecting hubs B, the tubular roller C, and the covering-strip D, peripherally connected to and uniting said cup-sections, and having its one terminal extended within the slot to constitute the yielding lip therefor, substantially as described.

474,519. LOCK. CHARLES H. CANDEE, Brooklyn, N. Y. Filed Jan. 9, 1892. Serial No. 418,120. (No model.)



Claim.—1. In a lock of the character herein specified, a bolt-plate mounted within a shell and provided with a projecting nose having a roller vertically pivoted therein, said plate extending at a right angle to the face-plate when the bolt is locked and turning slightly divergent from a right angle when free to move longitudinally, in combination with a stop fixed within the lock-shell, said stop being slotted upon two of its sides for the reception of the bolt-plate, a spring for normally throwing the bolt outward, and mechanism for raising the heel of the bolt-plate out of engagement with the above-mentioned stop, whereby the bolt-plate is freed for longitudinal movement, substantially as shown and described.

2. In a lock of the character herein specified, the combination, with the inclosing shell and bolt-plate, of a stop fixed in the shell, and an eccentric-ring mounted in the knob-spindle perforation, entering a longitudinal slot in the bolt-plate and being provided with means for turning the eccentric, substantially as and for the ends and purpose shown and described.

3. In a lock of the character herein specified, the combination, with the bolt-plate, a stop in the inclosing shell, and a stud upon the bolt-plate, of a hub for the reception of the knob-spindle, having one edge cut away to receive the stud upon the bolt-plate, whereby retraction of the bolt is prevented until the bolt-plate is raised, substantially as shown and described.

4. In a lock of the character herein specified, a stop in the inclosing shell, a stud upon the bolt-plate, and the bolt-plate, in combination with a hub for the reception of the knob-spindle, having one edge cut away to receive the stud upon the bolt-plate, said hub also bearing a finger for throwing the bolt-plate, substantially as shown and described.

5. In a lock of the character herein specified, a bolt-plate having a stud thereon, bearing a friction-roller, in combination with the inclosing shell, a stop fixed within said inclosing shell, and a hub for the reception of the knob-spindle, provided with a finger and having one edge cut away for the reception of the stud and friction-roller upon the bolt-plate, substantially as shown and described.

6. In a lock of the character herein specified, a divided spindle, one portion of which is fixed in engagement with a knob and with the mechanism for moving a bolt, the inner end of said spindle being slotted, the other portion of the divided spindle having a tongue upon its inner end, the outer extremity being fixed to or formed with a tube, wherein are located a series of tumblers and washers, said tumblers being adapted and arranged to engage with a notched feather fixed longitudinally in the outer knob, the outer portion of the spindle being free to revolve with the knob or adapted to move longitudinally and couple with the inner portion of the spindle, all combined and arranged substantially as shown and described.

7. In a lock of the character herein specified, a divided spindle, the inner portion of which is fixed in engagement with the knob and connected to the mechanism for moving the bolt, the outer portion of the spindle being adapted and arranged to be coupled with the inner portion and carrying a locking device located within the outer knob, said locking device consisting of a longitudinally-movable tube forming the outer portion of the spindle, which is normally thrown outward by a spring, a series of rotatable tumblers having notches in their peripheries, being mounted within the said tube and separated from each other by notched washers, and a notched feather projecting from the interior of the knob into a slot in the tube, the tube, spindle, tumblers, and washers being arranged to move bodily and together in a longitudinal direction when the key is passed into slots in the centers of the tumblers, the whole combined and arranged substantially as shown and described.

8. In a lock of the character herein specified, the combination, with the knob rotatably mounted in a rose, of a longitudinally-movable spindle, the outer portion of said spindle containing a series of tumblers having notches in their peripheries and key holes or slots in their centers, said tumblers being adapted and arranged to engage with a slotted feather at the side of the inclosing case or shell or be released therefrom and moved with the spindle bodily in a longitudinal direction and without rotation, substantially as shown and described.

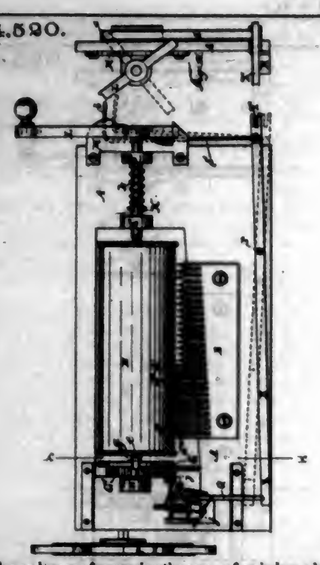
9. In a lock of the character herein specified, the combination, with the outer knob and its shank having an opening therethrough into which projects a notched feather, of a longitudinally-movable tube located in said opening and having a slot in its periphery into which said feather extends, a series of tumblers mounted in said tube, a series of washers separating said tumblers, and a spindle connected to the longitudinally-movable tube, the whole arranged to operate substantially as shown and described.

10. In a lock of the character herein specified, the combination, with a longitudinally-movable knob-spindle wherein are located a series of tumblers having central key-slots and notches at their peripheries placed at different angles to the key-slots, and with a notched feather fixed in the knob surrounding said tumblers, of a flat key having waves or curves in both of its faces, whereby the notches in the tumblers may be brought in line and the tumblers caused to move upon the feather without rotation, substantially as shown and as described.

474,520. MUSICAL BOX. SAMUEL CUENDET, Ste. Croix, Switzerland, assignor to Cuendet-Duvoisy Fils & Co., same place. Filed Dec. 12, 1891. Serial No. 414,807. (No model.) Patented in Switzerland Feb. 18, 1891, No. 2,946.

Claim.—1. In a music-box, the combination, with the vibrating

474,520.



comb-blades and means for moving the same, of an independent damper forked at the upper end, one prong of which comes in contact with the vibrating comb-blade and the other is formed as a projection acted upon by the pin of the cylinder, substantially as set forth.

2. The combination, with the changeable cylinder and its pin in a music-box, of the fixed stud F, the gear-wheel and notched disk, and the cap A^x having an outcut for the passage of the pin, substantially as specified.

3. The combination, with the changeable cylinder in a music-box, of the fixed stud F, the shifting rod K and its spring *k*, the lever L, and the cam-plate M for drawing back the rod K, the stopping-lever R, and its arm S, substantially as specified.

4. The combination, with the changeable cylinder, of the end caps E', forming flanges to such cylinder, and the name-ticket held in place by one of the caps, substantially as specified.

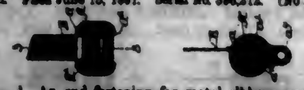
474,521. CLASP. MAGNUS ERNST, Augsburg, Bavaria, Germany. Filed May 9, 1891. Serial No. 392,136. (No model.)



Claim.—1. A clasp for ladies' garments, composed of two sections, a tongue-section formed of a plate provided with means for attaching it to one portion of the garment, and spring-tongues having forwardly-bent shanks and projections at their outer ends, and an overlapping section provided with a central depression having slotted side walls for guiding the tongues and a keeper at the rear side, and means for attaching the overlapping plate to the other portion of the garment, substantially as set forth.

2. The combination, with a clasp for ladies' garments, composed of a tongue-section having lateral spring-tongues and an overlapping section having a central slotted depression and a keeper at its rear side, of a detachable ornament provided with a retaining-spring fitting into the depression and extending over the spring-tongues, substantially as set forth.

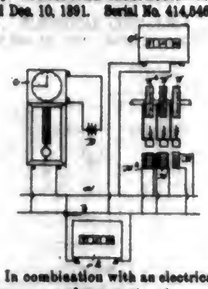
474,522. SASH-CORD FASTENER. GEORGE C. GARDNER, Hinsdale, Ill. Filed June 15, 1891. Serial No. 396,212. (No model.)



Claim.—1. An end fastening for metal ribbons, consisting of a block provided with two or more substantially parallel pins and a metal ribbon looped about one of said pins and wound about the other or others in such a manner that the free or short end of the ribbon shall lie between the main or supporting strand and one of the pins which sustains the draft of said supporting-strand, substantially as described.

2. An end fastening for metal ribbons, consisting of a block having the heads A A', depending ears a^4, pins *a a' a*^{3}, and a metal ribbon looped about the pin a^3 and wound about the pin *a'* and back between that and the pin *a* in such a manner that the short end of the ribbon shall lie between the main strand and the pin *a'*, substantially as described.

474,523. ELECTRICAL INDICATOR. JOHN W. GIBBONEY, Lynn, Mass. Filed Dec. 10, 1891. Serial No. 414,546. (No model.)



Claim.—1. In combination with an electrically-actuated mechanism, two or more magnets for operating the same, each provided with an inductive retarding-circuit, but of different retarding capacity.

2. The combination, with an electro-magnet having a retarding-circuit and an armature, of a controller for the retarding-circuit operated by the initial movement of said armature.

3. The combination, in an electrical apparatus, of a set of magnets for controlling its movement, a counter-magnetizing or retarding circuit for delaying the action of one of said magnets, and switch-contacts in said circuits controlled by the armature of this magnet.

4. The combination, with three or more parts of a mechanism to be operated successively, of three or more magnets for operating the same, of which magnets two or more have retarding-circuits co-operating therewith and of different retarding capacity.

5. The combination, in an electrical apparatus, of a set of magnets controlling its movement, independent armatures for said magnets, a counter-magnetizing circuit or retarding-circuit for one of said magnets, and switch-contacts in said circuit controlled by the armature of this magnet.

6. In combination with an electrically-actuated mechanism, two or more electro-magnets for operating the same, independent armatures for said magnets, and independent inductive retarding-circuits for said magnets of different retarding capacity, substantially as described.

7. The combination, with an electro-magnet having a retarding-circuit and an armature, of a switch for opening and closing said retarding-circuit operated by the initial movement of said armature.

8. The combination, with a magnet having magnetizing and counter-magnetizing circuits and an armature, of a switch controlling the counter-magnetizing circuit operated by the incipient movement of said armature.

9. In combination with an electrically-actuated mechanism operated by a set of magnets adapted to move their armatures sequentially, a contact-brush, and a series of spaced contact-plates for controlling the circuit of said magnets, said brush and plates connected to opposite poles of the circuit, respectively, a spring for moving said contact brush and plates relatively, so as to cause the desired make and break of said circuit, a key for winding said spring, a detent for preventing motion of the brush and contact-plates while the spring is winding, and engaging connections between said detent and key, whereby during the removal of the key said detent is momentarily disengaged and the brush and contact-plates are free to move under the influence of the wound spring.

10. The combination, with an electrically-actuated mechanism operated by timed makes and breaks in an electric circuit leading to the same, of a contact device controlling said circuit, consisting of a series of spaced contact plates or terminals attached to one pole of the circuit, a contact plate or terminal attached to the opposite pole of the circuit, a spring for moving said plates relatively while in contact with each other, a key for putting said spring under tension, and a detent for preventing movement of said plates or terminals while the key is in position for actuating the spring, but adapted to be relieved so as to allow movement of said plates or terminals when the key is removed from position, substantially as described.

11. The combination, with an electro-magnet having a counter-magnetizing circuit and an armature, of a switch in the counter-magnetizing circuit operated by said armature.

474,524. HORSE-COLLAR PAD. JOSEPH F. GLIDDEN, De Kalb, Ill. Filed Apr. 27, 1891. Serial No. 390,614. (No model.)



Claim.—A horse-collar pad of flattened tubular form, with open ends to receive the upper ends of the lobes of the collar, and provided with a welt longitudinally arranged upon its upper surface and forming a protuberance or projection having a core and a covering, said covering extended in the form of a skirt to provide a chafing-piece for the hame-strap, substantially as described.

474,525. SLIP-COVER FASTENER. THEODOR HERTWIG, New York, N. Y. Filed Nov. 2, 1891. Serial No. 411,318. (No model.)



Claim.—1. A slip-cover fastener composed of an exterior casing, a shank guided in the top plate of said casing, curved prongs pivoted to the inner end of said shank and guided in openings of said casing, and means for locking the prongs and shank when they are in an outwardly-drawn position, substantially as set forth.

2. A slip-cover fastener composed of an exterior casing, a shank guided in the top plate of said casing, curved prongs pivoted to the inner end of said shank and guided in openings of said casing, and a spring attached at one end to the shank and adapted to engage by its free end a recess in the top plate of the casing, so as to lock the shank and prongs in an outwardly-drawn position, substantially as set forth.

474,526. ATOMIZER-NOZZLE. WILLIAM HUGENSHOTT and FREDERICK LIPP, New York, N. Y. Filed Oct. 26, 1891. Serial No. 409,773. (No model.)



Claim.—A nozzle for atomizers, composed of a cap screwed to the end of the air-supply tube and of two curved sections, one section being connected to the end of the cap by means of a rounded-off collar and an annular groove adjacent to said collar, which collar and groove fit into a corresponding recess of the cap, so as to turn therein, while the second or outer section is provided with an annular recess and lip that fits over the rounded-off end, and an adjacent annular groove at the opposite end of the first or intermediate section, substantially as set forth.

474,527. SULPHURIC-ACID PAN AND PROCESS OF MAKING THE SAME. RICHARD KOCH, Hanau-on-the-Main, Germany, assignor to Wilhelm Carl Heraeus, Wilhelm Heraeus, and Heinrich Heraeus, same place. Filed Apr. 10, 1891. Serial No. 388,230. (No model.)



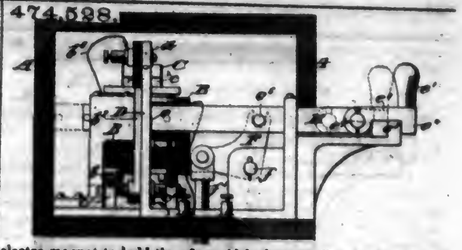
Claim.—1. The herein-described process of uniting gold to platinum sheets, which consists in first heating the platinum to a degree higher than the melting-point of gold and in then pouring molten gold upon said heated platinum, whereby a union of the metals is effected by the alloy formed upon cooling said metals, substantially as described.

2. As a new article of manufacture, a sulphuric-acid pan consisting of an exterior layer of platinum and an interior layer of gold joined by an intermediate substantial layer of alloy of platinum and gold.

474,528. LOCKING DEVICE FOR SWITCH AND SIGNAL OPERATING MECHANISM. THOMAS H. PATMALL, Rahway, N. J. Filed Jan. 2, 1892. Serial No. 416,770. (No model.)

Claim.—1. The combination, with switch and signal operating mechanism, of a device for controlling a positive lock in engagement with the said switch and signal operating mechanism, an electric circuit, including an electro-magnet, and a catch under the control of the

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electro-magnet to hold the aforesaid lock-controlling device released and under the control of the switch and signal operating mechanism to hold the lock-controlling device locked, substantially as set forth.

2. The combination, with a track, a treadle in position to be engaged by a passing train, and switch and signal operating mechanism, of a locking device for positively locking the switch and signal operating mechanism, the said locking device comprising an operating-bar, a catch for locking and releasing the bar, a local electric circuit, including an electro-magnet, for holding the catch out of engagement with the bar, and an electric circuit through the said electro-magnet and the aforesaid treadle for energizing the magnet and operating the catch by means of a passing train, substantially as set forth.

3. The locking device comprising the sliding operating-bar, means for connecting it with the lock-operating rod, the electro-magnet, the lever carrying the armature of the magnet and adapted to engage the sliding bar, and the electric circuit through the magnet and through a circuit maker and breaker controlled by the lever which carries the armature of the magnet, substantially as set forth.

4. The locking device comprising the sliding operating-bar, means for connecting it with a lock-rod, an electro-magnet, an angle-lever, one arm of which carries the armature of the magnet, the opposite one of which has an interlocking engagement with the sliding bar, a circuit maker and breaker insulated from and carried by an arm of said lever, and an electric circuit through the magnet and contact-pieces in position to be engaged by the said circuit maker and breaker, substantially as set forth.

5. The combination, with a movable part under the control of the switch and signal operating mechanism, of the locking device and a locking-piece under the control of said locking device, the said locking device comprising an operating-bar, an electro-magnet, a lever, a circuit maker and breaker carried by said lever, a circuit maker and breaker under the control of the aforesaid movable part, and an electric circuit complete through said magnet and the two circuit makers and breakers, substantially as set forth.

474,529. MANUFACTURE OF EXPLOSIVES. FRANK ROLLER, West Berkeley, assignor to the Giant Powder Company, San Francisco, Cal. Filed June 4, 1891. Serial No. 395,194. (No specimens.)

Claim.—1. The explosive compound consisting of grains or particles of nitrate coated with a compound of colophony dissolved in oil, substantially as described.

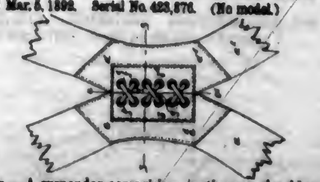
2. The coating for nitrates or other gas-producing materials of an explosive compound, consisting of a compound of colophony and an oil in which the colophony is dissolved, substantially as described.

3. The coating for nitrates or other gas-producing materials of an explosive compound, consisting of a compound of colophony, spermaceti, and an oil in which the colophony is dissolved, substantially as described.

4. The coating for nitrates or other gas-producing material of an explosive compound, consisting of a compound of colophony and cotton-seed oil, substantially as described.

5. The explosive compound consisting of nitrate of ammonia coated with a compound consisting of colophony, a vegetable oil, and a solid fatty substance, such as spermaceti or paraffine, substantially as described.

474,530. SUSPENDERS. MORITZ ROSENSTOCK, New York, N. Y. Filed Mar. 5, 1892. Serial No. 423,876. (No model.)



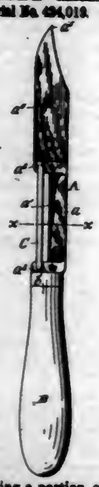
Claim.—A suspender comprising continuous shoulder-straps and two single plates of substantially the width and contour of the shoulder-

straps and stitched thereto at the back, the stitching surrounding the plates excepting at their adjacent meeting edges, where they are left unstitched to form flies, and provided at said unstitched edges with eyelets and a lacing, substantially as and for the purpose specified.

474,581. PROCESS OF ROASTING COFFEE. CARL SALOMON, Brunswick, Germany. Filed Nov. 30, 1891. Serial No. 413,816. (No specimens.)

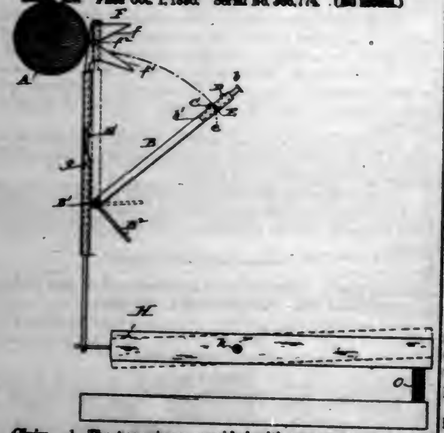
Claim.—The process of roasting coffee, consisting in first exposing it directly to contact with gases heated at a high temperature, whereby the empyreumatic matters are driven off but the aromatic qualities are developed, then on the development of the aromatic matters, as indicated by the alkaline reaction of the escaping gases, quickly cooling the roasted material, all substantially as herein set forth.

474,582. CAKE-KNIFE. ALBERT R. SCHOFIELD, Brooklyn, N. Y. Filed Mar. 7, 1892. Serial No. 424,019. (No model.)



Claim.—The knife having a portion of its blade cut away from the front toward the rear, the portion of the blade so narrowed being sharpened to a cutting-edge in the plane of the blade, a guard permanently fixed to the thickened portions of the blade at the ends and in front of the edge of the narrowed portion, and an extended cutting-blade contiguous to the guarded portion and terminating in a point, substantially as set forth.

474,583. TYPE-WRITING MACHINE. FREDERICK SHOLES, St. Louis, Mo. Filed Oct. 1, 1890. Serial No. 366,774. (No model.)



Claim.—1. The type-sleeve provided with two or more types and adjustable longitudinally upon the type-bar, so as to bring either type into position as said bar is operated, substantially as described.

2. In a type-writing machine, the combination of the platen and the type-bar, said type-bar being furnished with two or more types which are adjustable, as a set, longitudinally upon said type-bar, so as to bring either type into position as said bar is operated, substantially as described.

3. In a type-writing machine, the combination of the platen and the type-bar, said type-bar having a sleeve adjustable endwise thereon and provided with two or more types, so as to bring either type into position as said bar is operated, substantially as described.

4. In a type-writing machine, the combination of the platen and the type-bar, said type-bar being furnished with two or more types which are adjustable upon said type-bar in the direction of the length thereof to bring at the time of printing either one of said types, as desired, into position to coact with said platen.

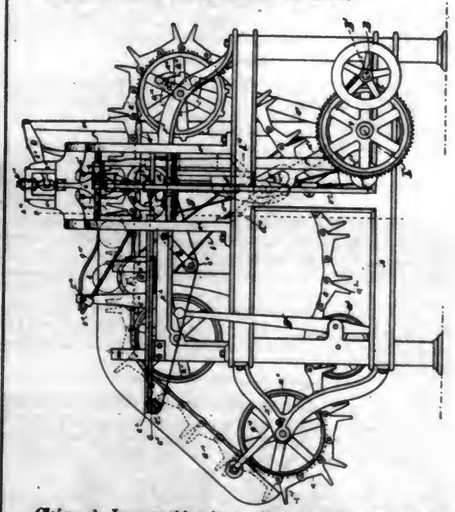
5. In a type-writing machine, the combination of the platen, the type-bar provided with the sleeve, and the adjustable cam, said sleeve being adjustable endwise upon said type-bar through its engagement with said cam, substantially as described.

6. In a type-writing machine, the combination of the platen, the vertically-adjustable cam, the type-bar, and the type-sleeve, said cam having the inclined converging surfaces leading to the recess, as described, and said type-sleeve being adjustable upon said type-bar and provided with a projection which in the operation of said type-bar engages with said cam, substantially as described.

7. In a type-writing machine, the combination of the platen, the vertically-adjustable cam, the upper-case lever, and the rod connecting said upper-case lever with said cam, substantially as described.

8. In a type-writing machine, the combination of the platen, the adjustable cam, the upper-case lever and the rod connecting it with said cam, the type-bar carrying the adjustable type-bearing sleeve and provided with the lateral extension, the frame-work, the extension-arm, and the cam-rod, substantially as described.

474,584. MACHINE FOR HEADING CANS. CHARLES W. SLEEPER, Island Pond, Vt., assignor to the Sleeper Machine Company, of Maine. Filed Nov. 7, 1891. Serial No. 411,176. (No model.)

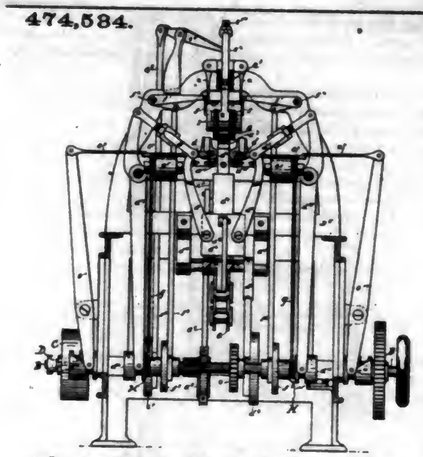


Claim.—1. In a machine for heading cans, an endless feeding-chain for the can-bodies composed of links pivoted in pairs, said pairs being pivoted to each other and the ends of said links opposite to the pivot connecting the links of each pair being provided with outwardly-projecting arms for holding a can-body between them, in combination with means for intermittently feeding said chain, all as and for the purposes set forth.

2. In a machine for heading cans, the endless feeding-chain for the can-bodies composed of the links *a a*, pivoted in pairs, and said pairs pivoted together and each link of a pair having the projection a^9 and the portion between said projections sloping downward toward the pivotal connection of the two links of each pair, all as and for the purposes set forth.

3. In a machine for heading cans, means for intermittently feeding can-bodies to the heading mechanism, means for feeding the heads on either side of the can-body feeder in planes parallel with said feeder, pivoted chocks arranged on each side of the can-feeder, and means for operating said chocks to attach the heads to the can-bodies, all as and for the purposes set forth.

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4. In a machine for heading cans, means for intermittently feeding can-bodies to the heading mechanism, means for feeding the heads along a rest or table on either side of the body-feeder and parallel with the same, the rock-shaft c^{13}, journaled above and transverse with the body-feeder, and the fingers c^{14} c^{15}, secured to said rock-shaft and arranged as described, all as and for the purposes set forth.

5. In a machine for heading cans, means for intermittently feeding can-bodies to the heading mechanism, in combination with two endless aprons, one arranged on either side of the body-feeder and traveling in the same direction and said aprons extending around pulleys and over a horizontal table, all as and for the purposes set forth.

6. In a machine for heading cans, means for intermittently feeding can-bodies to the heading mechanism, in combination with two endless aprons, one arranged on either side of the body-feeder and traveling in the same direction and said aprons extending around pulleys and over a horizontal table, the rock-shaft c^{13}, journaled above and transverse with the body-feeder, and the fingers c^{14} and c^{15}, secured to said rock-shaft and arranged as described, all as and for the purposes set forth.

7. The combination, with a support for holding the can-body in a horizontal position on its perimeter, of the two endless feed-aprons c^3, arranged one on each side of said support and having their upper surfaces horizontal, means for revolving said aprons, and means for carrying the heads from said aprons and attaching them to the ends of the body, all as and for the purposes set forth.

8. The combination, with a support for holding the can-body in a horizontal position on its perimeter, of a horizontally-supported feed-apron for can-heads situated on one side of the can-body support, a movable chuck for receiving and carrying said heads into engagement with the can-body and which in its lowest position is on the same plane with the head-support, the feeding-bar c^9, resting on the head-support and adapted to move toward and away from said chuck, lever c^{10}, and cam for operating said lever, all as set forth.

9. The combination, with an endless feeding-chain for the can-bodies, of the two endless aprons c^3 c^3, arranged one on each side of said feeding-chain and traveling in the same direction and having their upper surfaces horizontal, means for revolving said aprons, and means for carrying the heads from said aprons and attaching them to the ends of the body, all as and for the purposes described.

10. The combination, with means for holding the can-body while being headed, of a reciprocating vertical slide arranged above said holder, the elbow-arms d' d', pivoted to the lower portion of said slide, and the gripping-springs e e, secured to said arms, the spring d^3, bearing on the upper portion of the arms d' d', and a stationary pin or stud arranged below the upper portion of said arms, all as and for the purposes set forth.

11. The combination, with means for holding the can-body while being headed, of a vertically-movable slide situated above said means and having downwardly-projecting pivoted arms for embracing the can-body, means for drawing said arms together on the downward movement of the slide, and means for separating said arms on the upward movement of the slide, all as and for the purposes set forth.

12. The combination, with means for holding the can-body while being headed, of a vertically-movable slide situated above said means and having downwardly-projecting pivoted arms for embracing the can-body, means for drawing said arms together on the downward movement of the slide and for separating said arms on the upward movement of the slide, and the fingers 2, hung above the can-holder, all as and for the purposes set forth.

13. The combination, with means for intermittently feeding can-bodies to the heading mechanism, of the two rotary vertical disks dipping into a pan for holding liquid flux and arranged in the line of feed of the can-bodies and journaled below said line of feed, whereby the can-bodies in the course to be headed may rest and pass over the peripheries of said disks and be fluxed, all as and for the purposes set forth.

14. The combination, with a feeding-chain for conveying can-bodies to be headed, of two rotary disks arranged one on either side of said chain and dipping into a pan for containing liquid flux and journaled below the course of said bodies, whereby the latter may rest and pass over the peripheries of said disks and be fluxed, all as and for the purposes set forth.

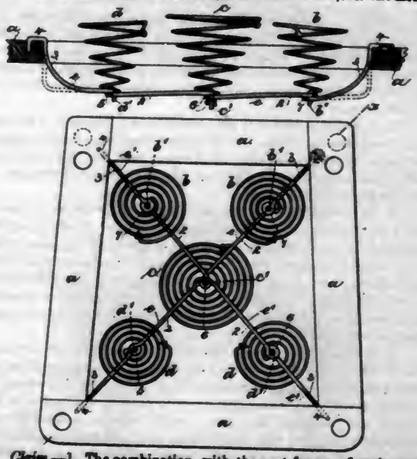
15. In combination with the vertical slide d^5, the arms or yokes d^6 d^6, pivoted horizontally to said slide, the chucks journaled by trunnions to said arms, pinion d^{10} and its shaft, arm d^{12}, secured to said shaft, link d^{11}, pivoted at one end to said arm and at its other end to slide d^5, a cam-rod provided with a rack for engaging with said pinion, and a cam for operating said cam-rod, all as and for the purposes set forth.

474,585. VEHICLE. JACQUES SORRER, Seattle, Wash., assignor of one-tenth to Dietrich Rohlfs and Herman Schoder, same place. Filed June 17, 1891. Serial No. 396,622. (No model.)



Claim.—In a vehicle, the combination of an oblong pointed body closed on all sides and provided with a front guide-wheel having a handle located within the body, observation-windows, a horizontal shaft through the body of the vehicle and provided with exterior traction-wheels, pinions fixed on the shaft within the body, a pair of large driving-gears meshing with said pinions, a pair of short inwardly-projecting pinions on which said drive-gears are centered, and a connecting-rod between the two for driving them in unison, all arranged and adapted to operate as specified.

474,586. SUPPORT FOR CHAIR-SEAT SPRINGS. JOHN A. STAPLES, Newburg, N. Y. Filed Oct. 19, 1891. Serial No. 409,112. (No model.)



Claim.—1. The combination, with the seat-frame, of spring-supports formed of wire, with horizontal portions of approximately the measurement of the opening of the seat-frame and having bends in the wire to receive the springs, and end portions extending upward and laterally to rest upon the upper surface of the seat-frame and adapted to be bent to fit various sizes of frames, and means for permanently attaching the ends of such spring-supports to the upper surfaces of the seat-frame, substantially as set forth.

2. The combination, with the seat-frame, of spring-supports formed of wire, with corrugated horizontal portions of approximately the measurement of the opening of the seat-frame to receive the springs,

and end portions extending upward and laterally to rest upon the upper surface of the seat-frame and adapted to be bent to fit various sizes of frames, and means for permanently attaching the ends of such spring-supports to the upper surfaces of the seat-frame, substantially as set forth.

3. The combination, with the seat-frame, of spring-supports formed of wire, with horizontal portions of approximately the measurement of the opening of the seat-frame and having bends in the wire to receive the springs, and end portions extending upward and laterally to rest upon the upper surface of the seat-frame and adapted to be bent to fit various sizes of frames, and downwardly-projecting ends to enter holes in the seat-frame, substantially as set forth.

474,537. CLASP. ELBRIDGE J. STEELE, Naugatuck, Conn., assignor of one-half to George A. Lewis, same place. Filed Oct. 21, 1891. Serial No. 409,492. (No model.)



Claim.—1. In a clasp, the frame having a longitudinal latch-recess and the latch pivoted to the frame within and fitted to said recess, the opposite sides of said longitudinal recess having projections 10, each extending inwardly toward the opposite side wall, the opposite side edges of said latch having the recesses 11 coinciding with said projections 10, while the seam or space between the confronting longitudinal side edges of said latch and its recess opens on the broad face of the clasp, substantially as described, and for the purpose specified.

2. The herein-described clasp, consisting of the frame having the flange 6, lugs 7 7, spring-seats 8 8, latch recess and opening, the latch hinged to said frame and fitted to shut into said latch-recess substantially flush with the face of said frame, and the spring 17 with one side of each of its ends resting on said spring-seats while the opposite side is held by said lugs, substantially as described, and for the purpose specified.

474,538. VEHICLE-STARTER. PETER D. VAN VRADENBURG, Binghamton, N. Y. Filed Aug. 28, 1891. Serial No. 404,029. (No model.)



Claim.—1. In a vehicle-starter, the combination, with an axle having a gear-wheel fixed thereon, of a pair of separate and independent cog bars adapted to engage the upper and lower parts of said gear-wheel together or separately, and mechanism, substantially as described, for throwing the racks in and out of engagement, substantially as and for the purpose set forth.

2. In a vehicle-starter, a gear-wheel fixed to the axle of the vehicle, in combination with a pair of separate and independent cog-bars arranged upon opposite sides of the gear, each bar being provided with a pair of springs to hold it out of engagement with the gear, as and for the purpose set forth.

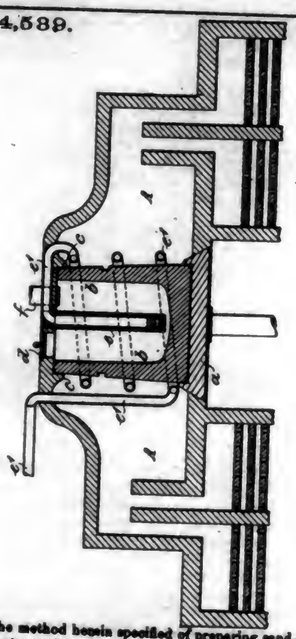
3. In a vehicle-starter, the combination of a gear-wheel fixed to the axle of the vehicle, a pair of separate and independent cog-bars located upon opposite sides of the gear, a pair of springs coiled about rods, a runner adapted to reciprocate upon the rods, hangers connected with the cog-bars, a pair of separate and independent rock-shafts provided with feather-keys, and angular slots in which said keys operate to raise and lower said bars, all arranged and adapted to operate substantially as specified.

4. The combination, in a vehicle-starter, of a gear-wheel fixed to one of the axles of the vehicle, a pair of separate and independent cog-bars adapted to engage opposite sides of the gear-wheel, springs for holding the bars out of engagement with said wheel, hangers for supporting and actuating the bars, a pair of separate and independent rock-shafts provided with feather-keys passing through angular slots, and mechanism for actuating the shafts, substantially as and for the purpose set forth.

474,539. PROCESS OF AND APPARATUS FOR MAKING SILICATES AND HYDROCHLORIC ACID. WALTER WALKER, London, England. Filed June 18, 1891. Serial No. 396,737. (No model.)

Claim.—1. The method herein specified of preparing sand for glass-making, consisting in mixing with the sand chloride of sodium and lime and subjecting the mass to a sufficient heat in the presence of moisture to form a silicate of soda and lime and to drive off the hydrochloric acid, substantially as specified.

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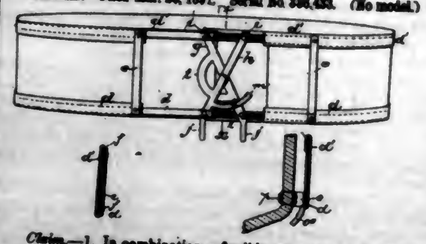
2. The method herein specified of preparing sand for glass-making, consisting in pulverizing the sand and washing the same with hydrochloric acid, mixing with the sand chloride of sodium and lime, and subjecting the mass to a sufficient heat in the presence of moisture to form a silicate of soda and lime and to drive off the hydrochloric acid, substantially as specified.

3. The herein-described method of preparing sand for glass-making, consisting in mixing with the sand chloride of sodium and lime, and injecting superheated steam into the materials, substantially as and for the purposes set forth.

4. In the process of preparing sand for glass-making, mixing with the sand chloride of sodium and driving off the hydrochloride acid by the action of heat in the presence of moisture and mixing with the material soda, substantially as specified.

5. In a furnace for preparing sand for glass-making, a crucible, a movable bottom for supporting the crucible, and means for raising and lowering the same, a stationary top to the furnace with a recess for the top of the crucible to form a cover to the latter, a steam-pipe coiled around the crucible within the furnace and opening into the crucible through the top of the furnace, an escape-pipe for the hydrochloric acid, and an opening and cover for allowing for the introduction of the sand and materials to be acted upon, substantially as specified.

474,540. SWEAT-BAND FOR HATS. HERBERT R. WARD, Newark, N. J. Filed Mar. 26, 1891. Serial No. 386,433. (No model.)



Claim.—1. In combination, a flexible sweat-band, a flexible frame carrying the same, the adjusting means, consisting of the cross-levers between the ends of the frame, the holding means for the levers, and the keepers, substantially as described.

2. In combination, the sweat-band, the supporting-frame extending from the upper to the lower edge of the band, the keepers, the said frame being in skeleton form and including the two parallel strips connected by cross-strips, and the adjusting means between the ends of the skeleton frame, the upper and lower edges of the band being secured about the parallel strips, substantially as described.

3. In combination, the hat-body, the hat-band with adjusting means therefor, and the keepers pivotally supported to swing toward and from the hat-body in the adjustment of the band, substantially as described.

4. In combination, the sweat-band, the flexible frame carrying the same, said frame adjustable with operating means therefor, and the keepers for connecting the band with the hat, said keepers having a sliding connection with the frame, substantially as described.

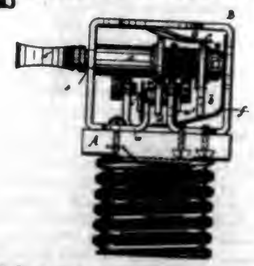
5. The combination of a sweat-band, a skeleton frame composed of strips d' and d^2, cross-strips c, connecting and holding the same substantially parallel with each other, an adjusting device consisting of the strips g and h, the rack and spring-actuated catch or detent, and means for securing the several parts to a hat-body, substantially as and for the purposes set forth.

6. The combination, with a hat-body, of a sweat-band, a frame secured to the band, an adjusting device secured to the ends of the frame and having finger-pieces projecting therefrom vertically and extending outside the hat-body, and means for securing the frame and band to the hat-body.

7. The combination, with a sweat-band, of the frame consisting of two strips secured to the band, the cross-pieces connecting the strips, the adjusting device connected to the ends of the strips and having finger-pieces, and the keepers for connecting the band to the hat-body.

8. The combination, with the sweat-band and the adjustable frame, of the keepers for securing the band and frame to the hat, consisting of the plate having the slot for the passage of the frame-strips and the pronged wire pivoted to the plate.

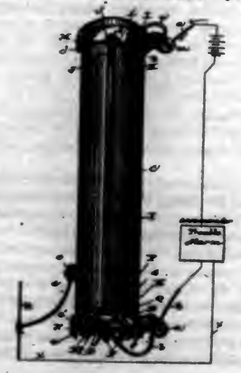
474,541. ELECTRIC SWITCH. CARL A. P. WILLMS and RICHARD J. G. VIOLET, Berlin, Germany. Filed May 26, 1891. Serial No. 394,207. (No model.)



Claim.—1. In an electric switch, the combination, with the rotative switch-pin s, of the contact-lever v d, mounted loosely thereon, the releasing-lever b, fixed on said switch-pin s and provided with arms b' and b^2, the spring O, bearing on said releasing-lever b, the retaining-spring f, and the spiral spring a, of which one end is connected with the closing-lever d and the other with the releasing-lever b, substantially as set forth.

2. In an electric switch, the combination, with the frame B, of the rotative switch-pin s, the contacts w w', the contact-lever d v, mounted loosely thereon, the releasing-lever b, provided with two arms and fixed rigidly on the pin s, the spring O, bearing on said releasing-lever, the retaining-spring f, the spiral spring a, connected with the levers b and d, and the contact-screw v, substantially as set forth.

474,542. THERMOSTAT. ARCHIBALD H. BRENNELL, Toronto, Canada. Filed Apr. 11, 1891. Serial No. 388,473. (No model.)



Claim.—1. In combination, the opposing spring contact-arms, the means for movably supporting said arms, consisting of the two opposing diaphragms, each of which is movable toward and from the other, the ring for holding the diaphragms together, and the adjusting means for said spring-contacts carried by and movable with the said diaphragms and bearing against the said springs to retain them in adjusted position, substantially as described.

2. In combination, the opposing contact arms, the means for inclosing and movably supporting each of said arms, consisting of the two opposing diaphragms, each of which is movable toward and from the other, and the means for holding the two diaphragms together and exposing both of them, consisting of the binding-ring engaging the edge of the diaphragms and retaining them against separating movement.

3. The spring-arms H and P, connected to and insulated from the diaphragm B, in combination with the interposed arm G, connected to and supported from the diaphragm A, substantially as and for the purpose specified.

4. The spring-arms H and P, connected to the diaphragm B by the binding screws F and O, which form terminals for the trouble-alarm and fire-alarm wires b and d, respectively, in combination with the interposed arm G, connected to and supported from the diaphragm A, and the binding-screw L, which forms the terminal for the battery-wire a, as specified.

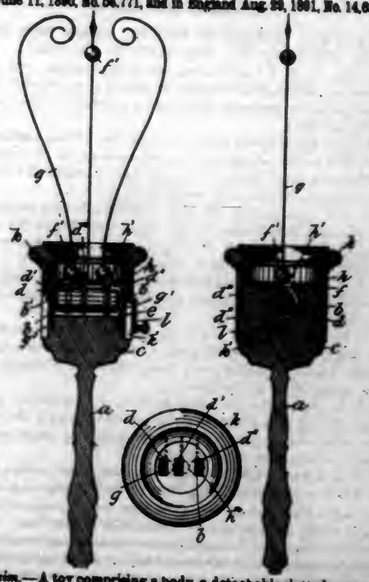
5. The spring-arms H and P, connected to the diaphragm B by the binding-screws F and O and insulated from the diaphragm by the plates D, and the set-screw Q for adjusting the arms H and P, in combination with the interposed arm G, connected to and supported from the diaphragm A, substantially as specified.

6. The arms H and P, connected to the diaphragm B by the binding-screws F and O and insulated from the diaphragm by the plate D, in combination with the interposed arm G, connected to and supported from the diaphragm A and adjusted by the set-screw J, substantially as specified.

7. The arms H and P, connected to the diaphragm B by the binding-screws F and O and insulated from the diaphragm by the plate D, and the set-screws Q and S for adjusting the arms H and P, in combination with the interposed arm G, connected to and supported from the diaphragm A and adjusted by the set-screw J, substantially as specified.

8. The arms H and P, connected to the diaphragm B by the binding-screws F and O and insulated from the diaphragm by the plate D, and the set-screw Q for adjusting the arms H and P, in combination with the interposed arm G, connected by the hollow rod I to the adjusting-screw J, and the plate K, insulated from the diaphragm A and extending from the rod I to the binding-screw L, as specified.

474,543. TOY. CARL J. J. BRACKER, Goslar, Germany. Filed Sept. 21, 1891. Serial No. 406,418. (No model.) Patented in Germany June 11, 1890, No. 56,771, and in England Aug. 29, 1891, No. 14,659.



Claim.—A toy comprising a body, a detachable slotted or recessed cap or cover fitted to said body, guide-wires connected with said body

and having balls adapted to slide along said wires, and a roller journaled in said recess and provided with springs having their free extremities adapted to work in said recess and successively penetrate the wall thereof to project said balls along said wires, substantially as and for the purposes set forth.

474,544. SHINGLE-PLANING MACHINE. EDWARD H. H. GLARNER, Baltimore, Md. Filed Aug. 3, 1891. Serial No. 402,004. (No model.)



Claim.—1. In a shingle-planing machine, the combination of endless belts carrying bars which traverse the bed of the machine, and a bar which is hinged to the bed of the machine and is adapted to fall to a certain distance from the said bed and also adapted for elevation, substantially as and for the purpose specified.

2. In a shingle-planing machine, a portion of the bed of the machine situated over the lower planer-stock depressed below the remaining portion, in order that the bars which convey the shingles longitudinally of the bed may pass the planer-stock without coming in contact therewith, substantially as specified.

474,545. BOX-MAKING MACHINE. ROLLIN L. COOMS, Honesdale, Pa. Filed Jan. 22, 1891. Serial No. 378,737. (No model.)

Claim.—1. In a box-machine and in combination with folding mechanism, a strip-holder consisting of pairs of posts, means for adjusting said pairs, and means for adjusting the posts of each pair, substantially as described.

2. In a box-machine and in combination, folding mechanism, a strip-holder having adjustable posts, and steam-supply pipes leading to the adjustable posts, whereby the strip may be subjected to steam at different points, substantially as described.

3. In a box-machine and in combination, folding mechanism, a strip-feed slide G and means for moving it, consisting of the rack-extension g, the gear-wheel H, the pinion, and the segmental gears meshing alternately with said pinion, substantially as described.

4. In a box-machine and in combination with folding mechanism, a strip-holder, and a steam-supply pipe leading thereto, substantially as described.

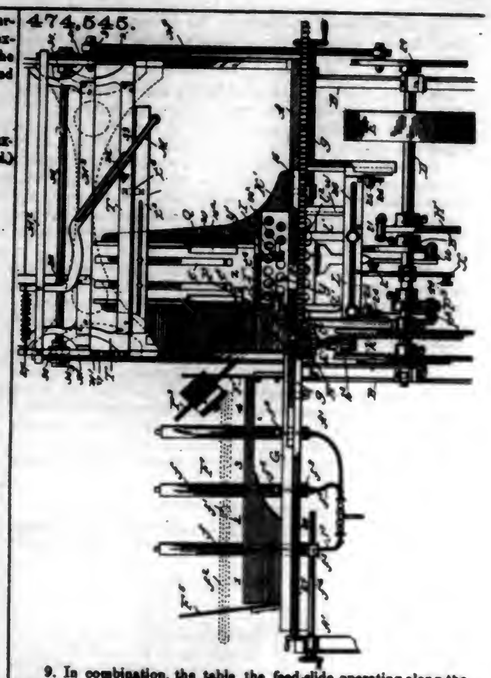
5. In a box-machine and in combination, folding mechanism, a strip-feed slide, the segmental gears A, having connections to the feed-slide for operating it, said gears being adjustable in relation to each other, substantially as described.

6. In combination, in a box-machine, a strip-holder, a table, a former, folding means operating through an opening in the table, the table, a feed-slide to push the strips over the folding means, and a folding-arm, substantially as described.

7. In a machine for making boxes from wooden strips, the combination of an adjustable folding-form, pivoted folding-wings, a folding-arm, and a driving-shaft, and connections between said driving-shaft, folding-wings, and folding-arm, substantially as described.

8. In a machine for making boxes, the combination of a laterally-adjustable folding-form, the pivoted folding-wings, one of which is adjustable, the driving-shaft, and connection between said driving-shaft and folding-wings, substantially as described.

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9. In combination, the table, the feed-slide operating along the table-surface to force the strip into place, the former above the table-surface to permit the strip to pass beneath, a folding mechanism in the line of movement of the strip, and a guide f^6 at the end of the former and to one side of the folding mechanism, against which the strip bears when moved by the feed-slide, substantially as described.

10. In combination, the table, the former, the feed-slide for moving the strip beneath the former, a guide f^6 for the strip at the end of the former, a presser-rod operating within the former, and the folding-wings operating about the former, substantially as described.

11. In combination, the table, the strip-feed slide and folding mechanism, a guide for the strip, an adjustable presser-rod Y, and a yielding connection x^4 in the operating means, substantially as described.

12. In combination, the table, the strip-feed slide and folding mechanism, a guide f^6 for the strip, a discharge-slide N, and means for retracting the guide, substantially as described.

13. In combination, the table, the strip-feed slide and folding mechanism, a vertically-movable guide, the lever u, connected thereto, the cam for depressing the guide, and the weight having the adjustable stop w^3, substantially as described.

14. In combination, the table, the strip-feed slide and folding mechanism, the discharge-slide, and means for operating the same, consisting of the lever x', the arms x^2 x^3, connected thereto below and above the pivot, and the cam-wheel X, having a stud, substantially as described.

15. In combination, the former adjustable laterally and the discharge-slide adjustable therewith, substantially as described.

16. In combination, the table, the strip-feed slide and folding mechanism, means for feeding the bottoms to the strips, and a guide f^6, against which the strip bears and which directs the bottom into place, substantially as described.

17. In combination, the table, the strip-holder, feed-slide and folding mechanism, the bottom-feeding means, the guide f^6, and the spring presser-bars y' to direct and hold the bottoms, substantially as described.

18. The combination of the holder for the box-bottoms, a vertically-moving arm for placing the box-bottoms successively in position, and a folding mechanism for folding the previously-grooved strip around the bottom, substantially as described.

19. The combination of a holder for the box-bottoms, a vertically-moving arm for placing the box-bottoms successively in position, folding mechanism for folding the previously-prepared grooved strip around the bottom, means for placing the folded box under the presser-bar P, and the presser-bar for uniting the free ends of the folded strips and thus completing the box, substantially as described.

20. In combination, the table, the former, the folding-wings K K',

one of which is adjustable toward and from the other, and means for operating the folding-wings, consisting of the cross-head L, with operating connections to the main shaft, substantially as described.

21. In combination, the former, the folding-arm M, and the wings, the presser-bar P in rear of the former, having connections to the main shaft, and the discharge-slide N, operating to move the folded box from the former to the presser-bar, substantially as described.

22. In combination, the table, the strip-feed slide, the former having a vertical and a horizontal pressure-surface and folding mechanism, a presser mechanism in rear of the former, and a discharge-slide to move the box from the former to the presser mechanism.

23. In combination, the table, the strip-feed slide, the former, the folding mechanism, and a presser-box consisting of the adjustable standards Q Q', a presser-bar P, and operating mechanism therefor.

24. In combination, the former, the folding mechanism, and an adjustable presser with operating means for pressing the box vertically and laterally.

25. In combination, the table, the strip-feed slide, the former and folding mechanism, a presser-bar P, operating vertically, and a second bar for pressing the box laterally, said bars being arranged to press at the corner of the box, substantially as described.

26. In combination, the table, the strip-feed slide, the former and folding mechanism, a presser mechanism, including the presser-bars P and P', and means for adjusting said bars laterally and vertically, substantially as described.

27. In combination, the former, the folding mechanism, the presser-box and presser mechanism, the spring-plate O in the presser-box, and a discharge-slide, substantially as described.

28. In a box-machine, the adjustable former, the folding-wings, one of which is adjustable, and an adjustable folding-arm, substantially as described.

29. In combination, the folding mechanism, with feeding mechanism for the strips and bottoms, the ways W, having an opening w' at their forward ends, and means for adjusting the ways, substantially as described.

30. In combination, the folding mechanism, with feeding mechanism for the strips and bottoms, the ways W, and the vertically-adjustable plates W', carrying said ways, substantially as described.

31. In a box-machine, the combination of the folding-wings, the upper folding-arm, ways W, forming a chute or holder for the box-bottom blanks, and a sliding cross-head, as T, for feeding the bottom-blanks singly downward, substantially as described.

32. In a machine for making boxes, the combination, with the folding-wings and folding-arm, of the ways W for the box-bottom blanks, and the cross-head T, having the feed-arms t' t' and the spring t^5, substantially as described.

33. In combination, the strip-feed slide, the folding-wings, the upper folding-arm, the cross-head M^3 for operating the same, the feed-arms for the bottoms, the cross-head T, and the racks and pinion connection between the cross-heads, substantially as described.

34. A machine for making boxes by folding grooved wooden strips around bottom-blanks, consisting, essentially, of the following elements: a holder for the strips, a pusher for placing the strips separately in position to be folded, mechanism for folding the grooved strips around the bottoms, and pressing devices for uniting the free ends, all substantially as described.

474,546. SHEET-METAL PULLEY. THOMAS CORSIADEN, New Britain, Conn. Filed Aug. 11, 1891. Serial No. 402,337. (No model.)

Claim.—1. A pulley having two sets of diametrically-opposing spokes, a radially-yielding connecting-web for each of said sets formed of one and the same piece of sheet metal with its spokes, and clamping-bolts for drawing together said webs, substantially as described, and for the purpose specified.

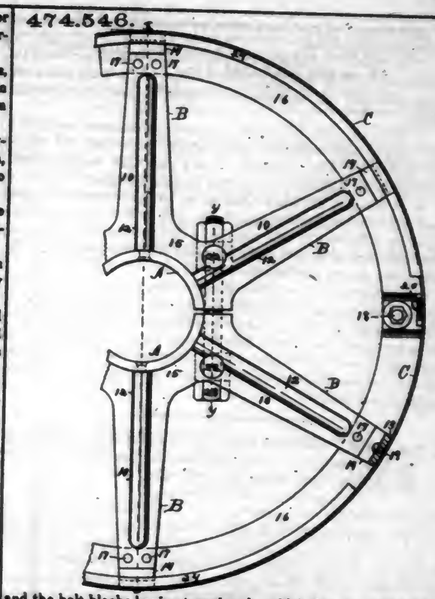


2. A rim-pulley provided with compound spokes formed of two arms having braces and lugs 13 at their outer ends by which they are secured to the rim, the connecting-rivets 17 at the inner ends of said braces, and the two arms of the hub being separated and spread apart at their inner ends, substantially as described, and for the purpose specified.

3. In a pulley, the radially-connecting web having two ends and a set of spoke-arms projecting from one edge of said web at points between said two ends, all formed of a single piece of sheet metal, substantially as described, and for the purpose specified.

4. In a pulley, the compound spokes and yielding connecting-webs

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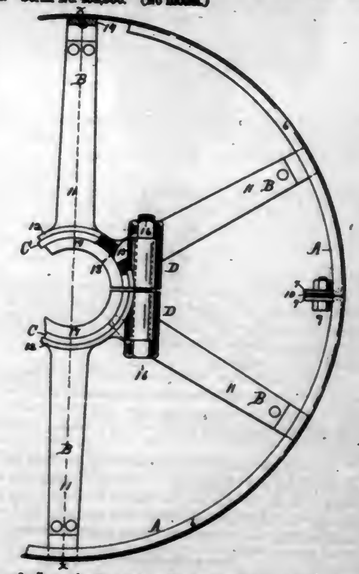


and the bolt-blocks having trunnions by which they are supported between the spoke-arms and the clamping-bolts, substantially as described, and for the purpose specified.

5. The herein-described sheet-metal pulley, consisting of the two-part rim, the compound spokes secured by their outer ends to said rim, the yielding central portion, the bolt-blocks, and bolts, substantially as described, and for the purpose specified.

6. In a pulley, the two sets of compound spokes and connecting-webs and the half-shells at the inner edge thereof, substantially as described, and for the purpose specified.

474,547. SHEET-METAL PULLEY AND THE MANUFACTURE THEREOF. THOMAS CORSIADEN, New Britain, Conn. Filed Aug. 11, 1891. Serial No. 402,336. (No model.)



Claim.—1. In a sheet-metal pulley, the sheet-metal rim having edge flanges 6, made in two parts, with the fastening-lugs 7, cut from the middle portion of the adjoining ends and bent inwardly for securing together, while the flanged edges outside of said lugs are cut off squarely

and abut directly against each other, substantially as described, and for the purpose specified.

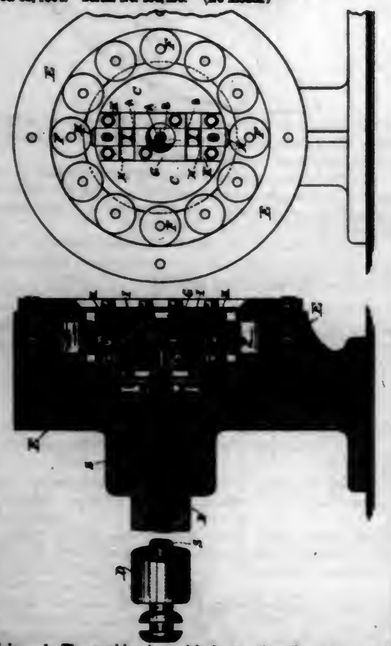
2. In a pulley, the semi-cylindrical yielding web 12 and the set of radiating spoke-arms extending from the edge of the metal at one end of said cylindrical web, substantially as described, and for the purpose specified.

3. In a pulley, the sets of spoke-arms and connected semi-cylindrical yielding web, from the edge of which at one end said spoke-arms extend, bolt-blocks secured to said webs, and clamping-bolts, substantially as described, and for the purpose specified.

4. In a pulley, the sets of spoke-arms and connected semi-cylindrical webs having perforations 13, the half-shells with perforations coinciding with those in said webs, the bolt-blocks having lugs for entering said perforations, and the clamping-bolts, substantially as described, and for the purpose specified.

5. In the manufacture of sheet-metal pulleys, the method of forming the spoke-arms and connecting-web, which consists of blanking out from a flat piece of sheet metal substantially parallel spoke-arm blanks with a connecting-web blank, then bending the web and spoke-arm blanks on lines at right angles to each other into the form of a semi-cylindrical connecting-web, and spoke-arms radiating therefrom, substantially as described.

474,548. SWAGING-MACHINE. WILLIAM H. DAYTON, Torrington, Conn., assignor to the Excelsior Needle Company, same place. Filed Oct. 13, 1891. Serial No. 408,432. (No model.)



Claim.—1. The combination, with the swaging-dies and means for closing the same, of inclined surfaces and mechanism for moving the inclines during the action of the dies for causing the dies to perform the swaging operation when either nearer together or farther apart, substantially as set forth.

2. The combination, with the swaging-dies and the revolving shaft and head carrying the same, of wedges, means for moving the wedges endwise during the swaging operation, and die-actuating mechanism controlled in its action on the dies by the wedges, substantially as set forth.

3. The combination, with the revolving shaft and its head, of dies and die-blocks and mechanism for closing the dies, and wedges intervening between the dies and die-blocks for varying the action of the dies, and the adjusting-tube within the revolving shaft, and the connections to the wedges for moving the same, substantially as set forth.

474,549. REGULATING HEAD-GATE. JAMES BUTLER, Utica, Mont. Filed Dec. 8, 1891. Serial No. 414,780. (No model.)

Claim.—1. In combination with a gate adapted to control the supply of water through a conduit, a catch which holds the gate, and a



trip operated by the flow of water through the conduit for operating the catch to release the gate, substantially as shown and described.

2. The combination of a sliding water-gate situated in a conduit, means which tend normally to close the gate, a catch for holding the gate open, and a trip operated by the flow of water through the conduit for releasing the catch and permitting the gate to close, substantially as shown and described.

3. The combination, with a water way or conduit, of a gate controlling the flow through the same, a catch for holding the gate, a trip for releasing the catch, a wheel operated by the flow of water, and a connection between the wheel and the trip, whereby the former operates the latter and frees the gate, substantially as shown and described.

4. The combination, with a water way or conduit, of a sliding gate which controls the passage of the water through it, a catch adapted to hold the gate open, a trip for the catch, a paddle-wheel situated in the conduit to be operated upon by the water, and a train of gearing operated by the paddle-wheel and adapted to operate the said trip, substantially as shown and described.

5. The combination, with a water way or conduit, of a sliding gate which controls the passage of the water through the conduit, a latch adapted to lie across the edge of the gate and hold it open, a notched lever upon which the latch catches, and by which it is held, a paddle-wheel situated in the conduit, and a train of gearing operated by the said paddle-wheel and provided with a projection which engages with and operates the said lever to trip the latch and permit the gate to shut off the water, substantially as shown and described.

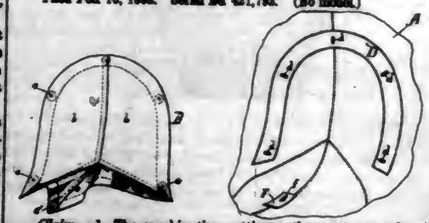
6. The combination, with a main and a branch or side water way or conduit, of two water-gates, one in each of the said water-ways, connected together so as to act alternately to open and close the respective water-ways, and a motor operated by the water passing through the branch water-way and controlling the movements of the said gates, substantially as shown and described.

7. The combination, with a main and a branch or side water way or conduit, of two sliding water-gates situated, respectively, in the said water-ways to control the flow of water through them, a lever connecting the two gates, whereby when one closes the other opens its water-way, and vice versa, a motor operated by the water flowing through the branch or side water-way, a latch for holding the gates in a certain position, and a trip operated by the said motor for releasing the said latch, substantially as shown and described.

8. The combination, with the ditch A and the sluice B, of a water-gate in the ditch, the weighted gate D in the sluice, the lever E, to the opposite ends of which the said gates are hung, the latch adapted to support the gate D, while the gate in the ditch remains closed, a trip for this latch, and a motor operated by the flow of water through the sluice to operate said trip, whereby the gate D closes and the other gate is opened, substantially as shown and described.

9. The combination, with a ditch or water-way having side walls flaring toward the top, of a water-gate fitting across the said ditch, the cleats H, against which the gate rests, inclined down the ditch—that is, in the direction of the current—and means for lifting the said gate, substantially as shown and described.

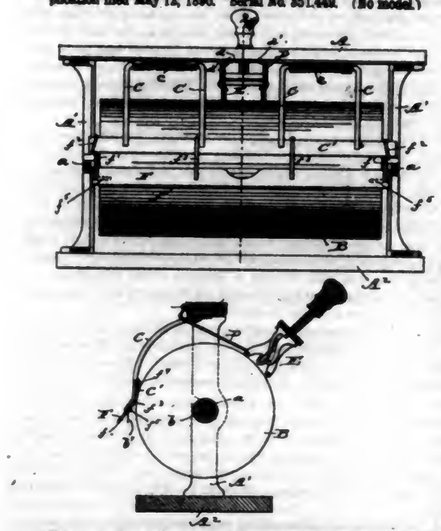
474,550. NETHER GARMENT. THOMAS FIELD, Brooklyn, N. Y. Filed Feb. 16, 1892. Serial No. 421,792. (No model.)



Claim.—1. The combination, with a nether garment, of a shield composed of a suitably-shaped seat-piece and a gusset set into the front of the seat-piece, and means for securing said shield detachably to the inside of the crotch of said garment, substantially as shown and described.

2. The combination, with a nether garment, of a shield composed of a suitably-shaped seat-piece and a gusset set into the front of the seat-piece, means for detachably fastening the seat-piece to the seat of the garment, and a tab secured near the front of the crotch of the garment, and a device to engage said tab with said gusset, substantially as shown and described.

474,551. ROLL-PAPER HOLDING AND SEVERING MACHINE. EDWARD C. FORD and GEORGE T. JACOBS, Washington, D. C. Original application filed May 13, 1889, Serial No. 310,507. Divided and this application filed May 13, 1890. Serial No. 351,449. (No model.)



Claim.—1. In a roll-paper holding and severing machine, the combination, with the longitudinal frame-piece A and means for supporting the axis of the roll, of the spring-actuated arms mounted upon said frame-piece, the bar carried by the free ends of said arms and adapted to engage the surface of the roll, an attachable knife adapted to be mounted upon said bar and held at a distance from the roll, arms D, mounted upon the frame-piece A, and the stamp carried by the latter arms and adapted to rest upon the surface of the roll, substantially as set forth.

2. The herein-described attachable severing-knife for a roll-paper-holding machine, adapted to be mounted upon the spring-actuated bar of the machine and held at a distance from the surface of the roll, substantially as set forth.

3. The herein-described attachable knife, having arms whereby it may be mounted upon the longitudinal bar of a roll-paper holding and severing machine and held at a distance from the surface of the roll, substantially as set forth.

4. The combination, with means for supporting the axis of the roll, of a pivoted bar against which the surface of the roll is adapted to bear and the attachable and removable knife carried by said pivoted bar, substantially as set forth.

5. The combination of the bar C, knife F, and fingers f'' f' f^3, adapted to engage the bar C and to support the paper, substantially as set forth.

6. A severing-knife adapted to be attachably and detachably mounted upon the ordinary cutter-bar of a roll-paper holder and cutter.

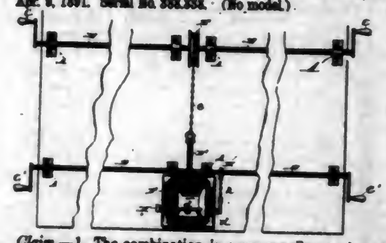
474,552. TROLLEY FOR ELECTRIC RAILWAYS. CHARLES E. PRIEL, Boston, Mass. Filed Mar. 19, 1892. Serial No. 425,597. (No model.)



Claim.—1. In a trolley for overhead railways, the combination of the arm, the plate mounted on the upper end of the said arm, the plate pivoted to the first-mentioned plate, the lower of the said plates having a portion of its periphery cut away and the upper plate having a projection registering with the slot formed in the edge of the lower plate, the wheel mounted on the upper plate, and the spring connecting the upper plate with the arm, substantially as described.

2. In a trolley for overhead railways, the combination of the arm, the plate secured to the upper end of the said arm, the plate pivoted on the first-mentioned plate, the wheel mounted upon the upper plate, the slotted arm projecting from the upper plate, and the spring secured at one end to the arm, and having at its other end a bearing registering with the slotted arm, substantially as described.

474,553. CAR-COUPLING. JOHN W. GARDNER, Atkins, Mich. Filed Apr. 9, 1891. Serial No. 388,333. (No model.)

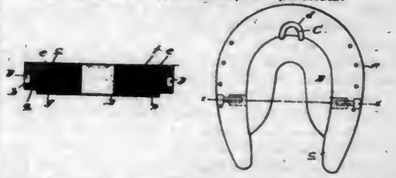


Claim.—1. The combination, in a car-coupling device, of a link, pin, and draw-head, with shaft B, pulley E, chain *c*, spring G, and cranks C for manipulation on pin F, all substantially as set forth.

2. The combination, in a car-coupling device, of a link, pin, and draw-head, with shaft D, cranks C, arm H, chain A, and shaft *d*, looped arm I, and counter-weight K for manipulating link J, all substantially as set forth.

3. The combination, in a car-coupling device, of a link, pin, and draw-head, with groove L, in which lies looped arm I when in its normal position, shaft D, crank C, arm H, chain A, and shaft *d*, looped arm I, and counter-weight K for manipulating link J, all substantially as set forth.

474,554. HORSESHOE. JACOB P. GILBERT, New York, N. Y. Filed Feb. 9, 1892. Serial No. 420,912. (No model.)



Claim.—1. The improved horseshoe having apertures in its sides, and an inwardly-directed flange in a plane above said apertures to form a continuous upper bearing for the marginal edge of a pad, substantially as specified.

2. The improved horseshoe having the continuous inwardly-directed flange on its upper side and provided with the recess at its toe portion, said shoe also having the apertures in its opposite sides, whereby said shoe is adapted to receive a suitable pad and seat the same continuously around its margin, substantially as specified.

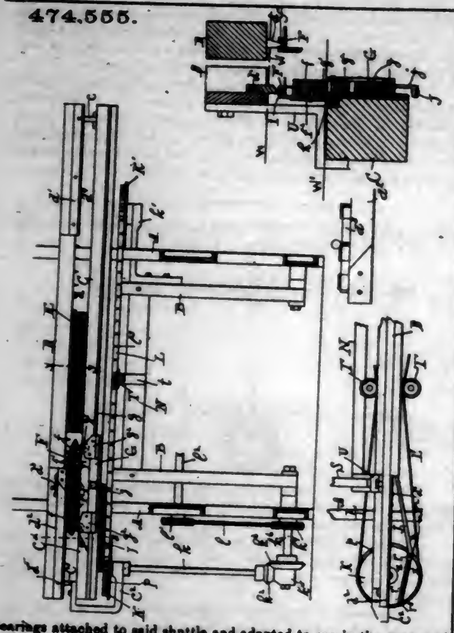
3. The pad formed from rubber or other elastic material, beveled, as shown, and having the hook or lug in its upper side adjacent to its toe portion, and also having the screw-tapped sockets in its opposite outer sides, in combination with the shoe having the inner flange on its upper side and also having the apertures in its opposite sides, and the screw or bolt for detachably securing the pad to the shoe, substantially as specified.

474,555. POSITIVE SHUTTLE-MOTION FOR LOOMS. EDMUND H. GRAHAM, Biddeford, Me., assignor of one-half to Levi Woodbury, Washington, D. C. Filed Aug. 6, 1891. Serial No. 401,822. (No model.)

Brief.—The shuttle-carriage is connected by a link to an endless band passing around two pulleys, one of which is the driving means. The shuttle is provided with a spur-wheel, the teeth of which, passing between the warps into a groove in the lay, serve as a guide. Small guiding-pins on the reed-cap project into the groove at the top of the shuttle.

Claim.—1. In a positive shuttle-motion for looms, the combination, with the lay, of two rails attached thereto, one above the other, pins in the upper rail, the lower rail being provided with a groove, of a shuttle adapted to reciprocate between said rails, having a groove in its upper side adapted to receive said pins, spur-wheels journaled in

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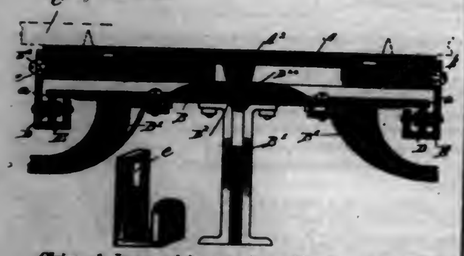
bearings attached to said shuttle and adapted to run in the groove of the lower rail, a reciprocating traveler for driving said shuttle, having anti-friction driving-rolls and anti-friction rolls on said shuttle in loose contact with the rolls of said traveler, and means for operating said traveler, substantially as described.

2. In a positive shuttle-motion for looms, the combination of a pair of rails between which the warp extends, with a shuttle reciprocating between and guided by said rails, one of said rails having a groove, and spur-wheels pivoted to said shuttle and running in said groove, substantially as shown.

3. In a positive shuttle-motion for looms, the combination, with a pair of rails, one above the other, the lower being provided with a groove, of a shuttle reciprocating between said rails and guided by them, spur-wheels pivoted to said shuttle and adapted to run in said groove, anti-friction rolls pivoted to said shuttle and resting on the top of the lower rail and extending out in front of said rail, a reciprocating traveler, and guides for supporting the same attached to the front of said lower rail and having pivoted thereto anti-friction driving-rolls which come in loose contact with the rolls on said shuttle, substantially as shown.

4. In a positive shuttle motion for looms, the combination, with the lay, of a reciprocating traveler, guides for supporting the same attached to the lay, a sprocket-wheel at each end of the lay, shafts to which said sprocket-wheels are secured, means for rotating said sprocket-wheels, a sprocket-chain passing over said sprocket-wheels, an extensible bar pivoted at each end to the sprocket-chain, and a link pivoted to one of the parts of said extensible bar and to the said traveler, substantially as shown.

474,556. REVOLVING BOOK-CASE. FRED H. HALEY, Manitowoc, Wis., assignor, by mesne assignments, to Ida M. Haley, Hamilton, Ill., and Chas. E. Darrow, Kirksville, Mo. Filed Sept. 7, 1891. Serial No. 404,904. (No model.)



Claim.—1. In a revolving case, in combination, a fixed base and a revolving base, the one having a short spindle and the other a socket or seat for the end of such spindle, such spindle and seat being, respectively, on the proximate faces of the two bases, the one base being provided with a track in a circle about the axis of the spindle on that side of such base which is remote from the other base and proximate to the plane of the seated end of the spindle, the radius of such track being large relatively to its distance from said seated end and the other base being provided with bearings for anti-friction rollers, and rollers journaled thereon adapted to roll on said track, substantially as set forth.

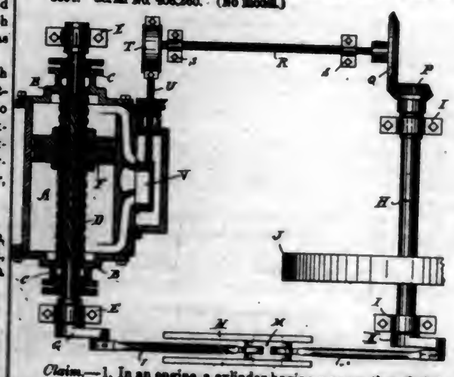
2. In a revolving case, in combination, a fixed base and a revolving base, the one having a short spindle and the other a socket or seat for the end of that spindle, such spindle and seat being, respectively, on the proximate faces of the two bases, the one being provided with a track in a circle about the axis of the spindle at that side of such base which is remote from the other base and the other base being provided with hangers or stirrups which extend outside the periphery of the base which has such track, and rollers journaled in such hangers or stirrups and adapted to roll in contact with the track, substantially as set forth.

3. In a revolving case, in combination, a fixed base and a revolving base, the one having a short spindle and the other a socket or seat for the end of that spindle, such seat and spindle being, respectively, on the proximate faces of the two bases, the one being provided with a track in a circle about the axis of the spindle on that side of such base which is remote from the other base and proximate to the plane of the seated end of the spindle, the radius of such track being large relatively to its distance from said seated end and the other base being provided with hangers or stirrups which extend through or across the plane of such track and are vertically adjustable with respect to the base to which they pertain.

4. In a revolving case, in combination, substantially as set forth, a fixed base having a central upwardly-open socket and a revolving base having a downwardly-projecting spindle stepped in such socket, one of said bases having a track in a circle about the axis of the spindle and socket on that side of such base which is remote from the other base and socket and proximate to the plane of the seated end of the spindle, the radius of such track being large relatively to its distance from said seated end, and the other base having hangers or stirrups which extend through or across the plane of such track, and rollers journaled in such hangers or stirrups and adapted to roll in contact with the track.

5. In combination, substantially as set forth, the fixed base having the central socket B^3 and the peripheral downwardly-facing track *a*, the revolving base having the spindle stepped in said socket, and the hangers D, depending rigidly from the revolving base outside the periphery of the fixed base and underhanging the same, and the rollers journaled in such hangers under the said track and adapted to roll in contact with the same.

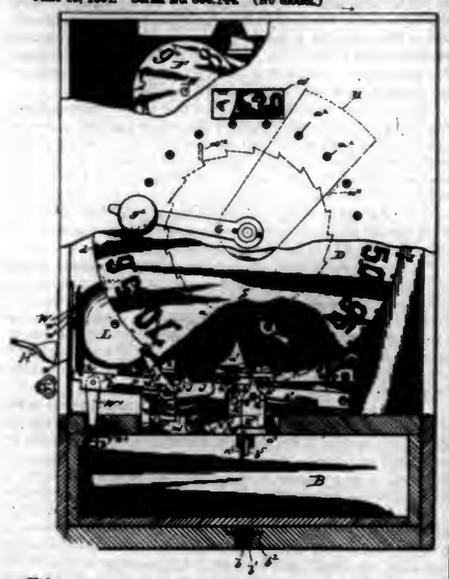
474,557. ENGINE. JOSEPH HARRIS, Boston, Mass. Filed Oct. 9, 1891. Serial No. 408,265. (No model.)



Claim.—1. In an engine, a cylinder having a screw-threaded shaft passing eccentrically through it and a nut or piston having a corresponding screw-thread and free to travel upon said shaft from end to end of the cylinder, but not turn therein, substantially as set forth.

2. In an engine, a cylinder having a screw-threaded shaft passing through it, a nut or piston having a corresponding screw-thread, whereby said shaft is caused to oscillate as the nut or piston travels, and a crank on the end of said shaft, in combination with a main shaft, a fly-wheel mounted thereon, and means for imparting a continuous rotary motion to said main shaft from the crank on the screw-shaft, and also means for operating the slide-valve from the main shaft, as set forth.

474,558. CASH INDICATOR AND REGISTER. THOMAS J. HUBE, Atchison, Kans., assignor to William F. Guthrie, same place. Filed June 13, 1891. Serial No. 396,144. (No model.)



Claim.—1. An improved cash indicator and register comprising a pair of cash-indicating disks, a revolvable operating-handle connected to one of said disks, a spring-pawl mechanism operating upon a ratchet-wheel carried by one of said disks and operated by a pin carried by the other disk, a returning-spring connected to the disk engaged by the pawl mechanism and operating to move the disk back into its normal position, a detent for the said ratchet-wheel, and tripping mechanism operated by the return of the handled disk to release the detent from the said ratchet-wheel, substantially as set forth.

2. An improved cash indicator and register comprising a number of cash indicating and registering disks, a pawl mechanism operating a ratchet-wheel carried by one of the indicating-disks, and a plurality of pins carried by and having different locations on another indicating-disk and engaging the said pawl mechanism in both forward and retrograde movements of said disk, whereby the said pawl mechanism will be differently operated by different pins, substantially as set forth.

3. In a cash register and indicator having a vertical revolvable disk mounted transversely of the machine and having an operating-handle and carrying numerals successively displayed through an aperture in the casing and indicating cents, and in combination therewith, a second vertical disk, also mounted transversely of the machine in front of the first-named disk, carrying numerals to indicate dollars, so located as to display its numerals to the left of the numerals on such cents-disk, such dollar-disk being fixed on a shaft carrying a spring-returned ratchet-wheel, and pins on such cents-disk so located as to come into operative connection with and cause a partial revolution of such ratchet-wheel on each complete revolution of such cents-disk, a detent for the said ratchet-wheel, and tripping mechanism operated by the return of the handled disk to release the detent from the said ratchet-wheel, substantially as and for the purpose described.

4. In a cash register and indicator having a vertical revolvable disk mounted transversely of the machine and having an operating-handle and carrying numerals successively displayed through an aperture in the casing and indicating cents, and in combination therewith, a second vertical disk carrying dollar-numerals to the left of the numerals on such cents-disk and mounted, also, transversely of the machine, such dollar-disk being fixed on an arbor carrying a ratchet-wheel in operative connection with pins on such cents-wheel, so as to cause such dollar-wheel to make a partial revolution upon each revolution of such cents-wheel and to be released to the action of a returning-spring connected with such ratchet-wheel or arbor upon the return movement of such cents-disk, a detent for the said ratchet-wheel, and tripping mechanism operated by the return of the handled disk to release the detent from the said ratchet-wheel, substantially as and for the purpose described.

5. In a cash register and indicator having a vertical revolvable disk mounted transversely of the machine and carrying numerals successively displayed through an aperture in the casing and indicating cents, and in combination therewith, a second vertical revolvable disk mounted transversely of the machine, overlapping the first-named disk, and carrying upon its face marginal numerals to indicate dollars, so located as to display its numerals to the left of the numerals on such cents-disk, such dollar-disk being fixed on a shaft or arbor carrying a spring-returned ratchet-wheel, a spring-actuated returning-pawl engaging said ratchet-wheel, a trip-plate engaging a catch which operates by contact with the said retaining-pawl, a trip-plate provided with a rib for releasing said retaining-pawl from engagement with said ratchet-wheel, a catch operating to hold said retaining-pawl out of such engagement, a spring-retained pawl engaging teeth on the periphery of the dollar-indicating disk, a carrying-pawl engaging the teeth of such ratchet-wheel, a plate engaging the carrying-pawl, and pins on such dollar-disk causing the operation of such parts, substantially as and for the purpose described.

6. In a cash indicator and register, the combination, with suitable registering mechanism and a rotary reciprocating indicator, of means for positively rotating said indicator in either direction and thereby operating the registering mechanism, and detents and controlling mechanism, substantially as described, for positively preventing a partial return and a second rotation of said indicator after a first motion, whereby is insured continuous motion of the indicator to the desired point of indication in one direction and a continuous motion back to the zero-point.

7. In a cash indicator and register having a reciprocating rotary indicator, a controlling device insuring in the indicator a continuous rotation to the desired point of indication and after indication insuring continuous rotation back to the zero-point, and means for preventing the operation of the controlling device to permit rotation toward the desired point of indication except when the indicator is at the zero-point.

8. In a cash indicator and register having a reciprocating rotary indicator, an automatically-returned device controlling the backward and forward rotation of such indicator and mechanism to prevent the actuation of the controlling device except at the zero-point.

9. In a cash indicator and register having a revolvable disk carrying numerals successively displayed through an aperture in the casing and having an automatically-returned lever to control and govern the backward and forward rotation of such disk, plates on such lever in engagement with pins or studs tripped from engagement therewith by a projection or bent arm on such disk when such disk is rotated backward to the zero point, substantially as and for the purpose described.

10. In a cash register and indicator having a revolvable disk carrying numerals successively displayed through an aperture in the casing and having an automatically-returned lever and pawls controlling and governing the backward and forward rotation of such disk, tripping mechanism to prevent the actuation of such lever after having been released to the action of its automatically-returning mechanism except when such disk shall be at the zero-point, substantially as and for the purpose described.

11. In a cash register and indicator having a revolvable disk carrying numerals successively displayed through an aperture in the casing, and in combination therewith, an automatically-returned lever, pawls to prevent backward and forward rotation of such disk when such lever is actuated or returned, respectively, a plate pivoted on such lever automatically held above a stud or pin and preventing the actuation of the lever, and another plate loosely hung on the same pivot as such last plate, so that when such disk is rotated back to the zero-point a projection on such disk will strike the projection on such last plate and will cause said first plate to move out of engagement with said first stud or pin, so that such lever may be depressed, substantially as and for the purpose described.

12. In a cash register and indicator having a revolvable disk carrying indicating-numerals successively displayed through an aperture in the casing, and in combination therewith, an automatically-returned lever, pawls engaging such disk against backward and forward rotation when such lever is actuated or automatically returned, respectively, a plate loosely pivoted on said lever above a stud or pin engaging in operative connection with such first plate and holding the same against the actuation of such lever carrying such plate, another plate loosely hung on the same pivot, a projection or bent arm on such disk engaging with such plate, and a stud on the first plate engaged by the last plate when moved by such bent arm and moving such first plate from engagement with such stud or pin, permitting the actuation of such lever carrying such first plate after such last plate has been engaged by such bent arm shortly before and at the zero-point, substantially as and for the purpose described.

13. In a cash register and indicator having a revolvable disk carrying indicating-numerals successively displayed through an aperture in the casing, and in combination therewith, a spring-returned depressible lever carrying a spring-actuated pawl engaging with peripheral recesses in such disk when such lever is at rest or in normal position, allowing such disk to ride freely over such pawl in the backward motion of such disk and engaging such disk against forward

motion until such lever is depressed, carrying such pawl with it out of engagement by the action of the stud or detent, substantially as and for the purpose described.

14. In a cash register and indicator having a revoluble disk carrying indicating-numerals successively displayed through an aperture in the casing, and in combination therewith, a spring-returned depressible lever, a pin or stud on such lever engaging with a pawl, a pawl engaging with the peripheral recesses in such disk when such lever is held in depressed position against the spring of such lever, allowing such disk to ride freely over said pawl in its forward motion, but engaging such disk against backward motion until such lever is released, carrying such pawl out of engagement with such disk against the action of a spring holding such pawl in connection with such disk until so thrown out of engagement by the action of such stud or pin, substantially as and for the purpose described.

15. In a cash register and indicator having a revoluble disk carrying indicating-numerals successively displayed through an aperture in the casing, and in combination therewith, a spring-returned depressible lever controlling by the engagement of pins or studs spring-actuated pawls engaging peripheral recesses in such disk against the forward-and-backward rotation of such disk when such lever is raised or depressed, respectively, pins on such lever, and pawls engaged by such pins, substantially as and for the purpose set forth.

16. In a cash indicator and register having a reciprocating rotary indicator, a controlling device insuring in the indicator a continuous rotation to the desired point of indication and after indication insuring continuous rotation back to the zero-point, and means operated by said controlling device for releasing an automatically-opened money-receptacle.

17. In a cash indicator and register having a reciprocating rotary indicator, a controlling device insuring in the indicator a continuous rotation to the desired point of indication and after indication insuring continuous rotation back to the zero-point, and means operated by said controlling device for releasing an automatically-opened money-receptacle, and connections whereby on the opening of said receptacle the indicator will be locked against a second indication.

18. An improved cash indicating and registering mechanism comprising a casing inclosing the operative mechanism, a drawer or till placed in the lower part of the casing, a vertically-movable plate located within the casing and having a number of shoulders or projections, a rod connected at its upper end to said plate, a releasing-lever for the drawer or till connected at one end to the rod, and a depressible arm having a stud or pin engaging the shoulders of the plate to raise the same, and thus elevate the drawer-releasing lever, substantially as set forth.

19. In a cash register and indicator having a vertical revoluble disk mounted transversely of the machine, carrying numerals successively displayed through an aperture in the casing, a spring-returned depressible lever pivoted at one end in one side of machine's casing, and in combination therewith, a spring-actuated plate having projections engaged by a stud or pin carried by said lever and by a pin on the supporting-standard of such mechanism, a cash-drawer located in the bottom of the casing, a locking-lever pivoted in the bottom of the casing and engaging the inner end of the drawer, and a rod connecting the free end of the lever with the said plate, substantially as and for the purpose described.

20. In a cash register and indicator having a revoluble disk carrying numerals displayed successively through an aperture in the casing and having a spring-returned depressible lever, and in combination therewith, a spring-actuated plate connected with a drawer-releasing lever and having projections engaged by a pin or stud on said first-named lever and by a pin or stud on the supporting-standard of such mechanism, substantially as and for the purpose described.

21. In a cash indicator and register having a reciprocating rotary indicator, a controlling-lever having connections, substantially as described, for insuring in the indicator a continuous rotation to the desired point of indication and after indication insuring continuous rotation back to the zero-point, and means for operating an alarm operated directly by said controlling-lever.

22. In a cash indicator and register having a reciprocating rotary indicator, a controlling-lever having connections, substantially as described, for insuring in the indicator a continuous rotation to the desired point of indication and after indication insuring continuous rotation back to the zero-point and means for operating an alarm operated directly by said controlling-lever, and connections whereby the alarm will be operated at the time when the controlling device locks the indicator against further indication.

23. In a cash register and indicator having a revoluble disk carrying numerals successively displayed through an aperture in the casing, and in combination therewith, a spring-actuated depressible lever carrying a stud or pin engaging a tripping-plate upon and connected with a spring-actuated-lever plate having a hammer adjusted to strike a gong when said plate is tripped, and a gong-hammer-lever plate, and a tripping-plate, substantially as set forth.

24. In a cash- egister and indicator having a revoluble disk carrying numerals successively displayed through an aperture in the casing, and in combination therewith, a spring-returned depressible lever carrying a stud or pin to trip a tripping-plate upon a spring-actuated lever or plate carrying a hammer, such tripping mechanism causing such hammer to strike a gong when such depressible lever is released after depression to the action of its spring and such tripping mechanism, substantially as and for the purpose described.

25. In a cash register and indicator having a revoluble disk carrying numerals successively displayed through an aperture in the casing and having a spring-returned depressible lever controlling the rotation of such disk, a tripping hammer-plate to strike a gong mechanism and release the cash-drawer and a downwardly-projecting arm pivoted upon said lever and frictionally held in register with an opening in a rod or flange on one side of such drawer or till when closed, but out of register with such opening when such drawer is opened to any extent, substantially as and for the purpose described.

26. An improved cash indicator and register comprising a number of revoluble cash indicating and registering disks, a revoluble operating-arm for the same, a depressible lever for releasing the disks, a pivoted arm operatively connected to said lever, a bell or gong, and a trip-plate operatively connected to the striker of the bell and engaged by a pin or stud carried by said lever for bringing the striker into contact with the bell or gong and sounding the same, substantially as set forth.

27. In a cash indicator and register having a reciprocating rotary indicator, a controlling-lever having connections, substantially as described, for insuring in the indicator a continuous rotation to the desired point of indication and after indication insuring continuous rotation back to the zero-point, a cash-drawer, and means for locking the said controlling-lever against operation when the cash-drawer is open.

28. In a cash indicator and register, the combination, with a revoluble indicating-disk, of a spring-returned depressible lever having connections with said disk, whereby the disk will be locked from operation when the lever is in one of its positions, and an arm projecting from said lever and operatively held in register with a drawer-recess when the drawer is closed, but out of such register when said drawer is opened to any extent, whereby the lever can be moved in one direction and the disk revolved only when the drawer is closed.

29. An improved cash indicating and registering mechanism comprising a drawer or till located in the lower part of the casing, a spring-actuated slide for opening the drawer, located beneath the drawer and working in a forwardly-extending groove in the drawer-casing, a gravity-arm pivoted upon the inner side of the vertical part of the casing and engaged by a stop on the side of the drawer, a gravity-dog pivoted upon the said arm and engaging a stud on the inner part of the vertical casing, and a depressible arm pivoted at one end in one side of the machine-casing and operatively connected to the cash indicating and registering mechanism and movable at its outer or free end portion across a recess in one side of the pivoted dog-carrying arm, substantially as set forth.

30. In a cash register and indicator having a revoluble disk carrying numerals successively displayed through an aperture in the casing inclosing a drawer or till and having a spring-returned depressible lever controlling the movements of such disk, a gravity-arm with a recess therein so placed as to engage such lever when hanging at rest, and a pin or stud on the side of the drawer engaging such arm to move the same backward out of engagement with such lever when such drawer is closed, preventing the operation of such controlling-lever except when such drawer is closed, and a dog engaging a stud to hold such gravity-arm out of operative position when desired, substantially as and for the purpose described.

31. In a cash indicator and register comprising a plurality of reciprocating rotary indicating-disks, one indicating-disk controlling the rotation of another, mechanism permitting a plurality of forward rotations of the first indicating-disk and stopping it at the zero-point on its first backward rotation, and mechanism controlled by the first disk for rotating the second disk back to its zero-point, substantially as described.

32. In a cash register and indicator having a revoluble disk provided with a projection or beat arm and carrying numerals successively displayed through an aperture in the casing, and in combination therewith, a spring-actuated stop engaging with the said projection or beat arm on such disk, preventing the backward rotation of such disk beyond the zero-point, but permitting the forward rotation of such disk indefinitely, substantially as and for the purpose described.

33. An improved cash indicating and registering mechanism comprising a revoluble cash-indicating disk, a depressible pivoted lever carrying spring-retained pivoted plates, a pivoted arm located above the depressible lever and extending across the path of movement of the upper end of one of said plates and provided, also, with an upwardly-curved inner or free end, and an arm carried by one of said indicating-disks and operatively passing above and below the curved end of the arm and tilting the plate, substantially as set forth.

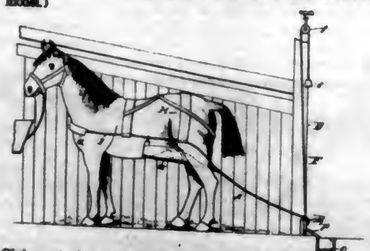
34. In a cash indicator and register, the combination, with a casing having a reading-opening, of a rotary indicator having numerals adapted to be read through said opening and a movable shutter frictionally held between the casing and the indicator and having no other connection with parts of the machine, whereby upon rotation of the indicator said shutter may be moved to open or close the reading-opening.

35. An improved cash indicator and register comprising a number of revoluble cash-indicating disks, each having a circular series of numerals upon its face, a face-plate secured to the casing in front of said disk, a vibratory arm interposed between the outer disk and the inner side of the face-plate and frictionally connected with the outer disk, an aperture in the face-plate past which the arm vibrates, and a pair of stops upon the inner side of the face-plate, arranged to limit the movements of the arms, substantially as set forth.

36. In a cash register and indicator having a revoluble disk carrying indicating-numerals successively displayed through an aperture in the casing, and in combination therewith, a vibratory arm journaled on the same shaft as such disk between such disk and the casing and movable across such aperture, a spring holding such vibratory arm in frictional contact with such disk, and stops limiting the motion of such disk, substantially as and for the purpose set forth.

37. In a cash register and indicator, a combination of revoluble disks having a forward and backward rotation, one for cents and one for dollars, the first loosely journaled on a shaft and the second fixed on an arbor, arranged so that the numerals on their respective faces near the peripheries will be exhibited in conjunction, one numeral for each disk, at a common point through an aperture in the case of the machine, the dollar-disk being moved forward by operative connection with the cents-disk and backward by a spring, with a handle carrying a spring-pressed retaining-pin moving the cents-disk backward and forward, and a spring-returned depressible controlling-lever carrying a spring-moved pawl engaging recesses in the periphery of the cents-disk against the forward motion of such disk and carrying a stud or pin operating upon a spring-actuated pawl engaging peripheral recesses in such cents-disk against backward motion when such lever and stud upon such lever engage with a trip upon a spring-moved plate carrying a hammer to strike a gong, and a plate with projections actuated by a spring and operated by a stud upon such lever to raise and lower through operative mechanism a catch or retaining-lever for a spring-pressed cash-drawer, so as to release the same to the action of such cash-drawer spring, means to prevent the operation of such lever except when such drawer is closed, studs or pins upon such controlling-lever, a spring catch or stop to prevent the backward rotation of such cents-disk beyond a fixed zero-point, movable, so as to permit the forward rotation of such disk beyond such zero-point, a stud-engaged plate with tripping mechanism preventing the depression of such controlling-lever until such cents-disk has been rotated backward to such zero-point, a stud engaging said last-described plate, pins on such cents-disk to set a spring-actuated retaining-pawl and moved into position, a spring-withdrawn carrying-pawl operating a ratchet-wheel fixed on the arbor of such dollar-disk at the point of complete revolution of such cents-disk and to trip from engagement and into a locked position such retaining-pawl on the backward motion of such cents-disk, a vibratory arm journaled on the same shaft with the cents-disk and frictionally connected with such cents-disk and moving to and fro with the movements of such cents-disk between the numbers on its face and such aperture, a ratchet-wheel on the arbor carrying such dollar-disk, a retaining-pawl on such ratchet-wheel, a spring-withdrawn carrying-pawl engaging with such ratchet-wheel, a lever carrying such spring-withdrawn carrying-pawl, a plate moving such lever, and a train of registering mechanism operated by the forward motion of such cents-disk, substantially as and for the purpose described.

474,559. DEVICE FOR KEEPING STALLS CLEAN. CHARLES S. KELLOGG, Chesterton, Ind. Filed Jan. 7, 1892. Serial No. 417,284. (No model.)



Claim.—1. In a device for catching the evacuations of domestic animals, the combination, with the flexible and extensible chute having its rear end carried by a support near the floor at rear of the stall, of the harness for application to the animal to hold the front end of the chute in place, substantially as described.

2. In a device for catching the evacuations of domestic animals, the combination, with the flexible chute and harness by which it is attached to the animal, of the roller to which the rear end of the chute is attached, journaled low down in rear of the stall, and means for turning said roller and taking up slack in the chute, substantially as described.

3. In a device for catching the evacuations of domestic animals, the combination, with the flexible chute and harness by which it is attached to the animal, of the roller on which the chute is wound, journaled low down in rear of the stall, the rope reversely wound on the roller, the pulley over which the rope passes, and the weight on the rope for turning the roller and taking up slack in the chute, substantially as described.

4. In a device of the character indicated, the combination, with the chute, of the movable gate at the rear of the stall upon which the rear end of the chute is carried, substantially as described.

5. In a device of the character indicated, the combination, with the flexible chute and harness, of the movable gate at the rear of the stall and the roller on said gate upon which the chute is wound, with means for turning the roller to take up slack in the chute, substantially as described.

6. In a device of the character indicated, the combination, with the flexible chute and the roller to which it is attached, of the urine-pouch having the tubular extension opening into the chute and the harness for supporting the pouch beneath the abdomen of the animal, substantially as described.

474,560. RAIL-BRACE. GEORGE H. MASON, Rochester, N. Y. Filed Nov. 30, 1891. Serial No. 413,569. (No model.)



Claim.—1. A rail-brace having a head adapted to engage the side of the railroad-rail, a plate or base adapted to be secured to a tie, and a laterally-extending rib on the under side of the base removed from the end thereof, adapted to engage a corresponding slot in the top of the tie, whereby the tie will be prevented from chipping beyond the slot, substantially as described.

2. A rail brace consisting of a head engaging the side of a railroad-rail beneath the head and fitting the upper side of the bottom flange thereof, a plate or base adapted to be secured to a tie, and a laterally-extending rib on the under side of the base removed from the end thereof, adapted to engage a corresponding slot in the top of the tie, whereby the tie will be prevented from chipping beyond the slot and the rail held securely in position, substantially as described.

474,561. APPARATUS FOR THE MANUFACTURE OF EXPLOSIVES. HIRAM S. MAXIM, London, England. Filed Feb. 6, 1891. Serial No. 380,449. (No model.) Patented in Spain July 23, 1890, No. 10,551.

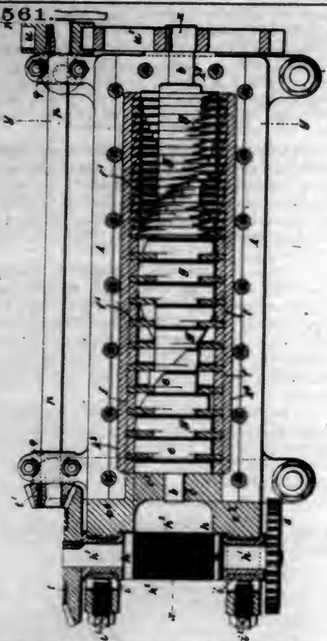
Claim.—1. In an apparatus for manufacturing explosives, the combination, with a chamber provided with a hopper for the introduction of the ingredients, helical mixing blades or knives working in the same, and a grooved roller at the outlet of the chamber and closing the same, except through said grooves, whereby the mixture will be forced out in threads or strings through the grooves, as set forth.

2. In an apparatus for manufacturing explosives, the combination, with a chamber provided with a hopper for the introduction of the ingredients, helical mixing blades or knives working in the same, a grooved roller placed at the outlet of said chamber and closing the same, except through the grooves, and a fixed plate or piece with serrations or teeth fitting into the grooves on one side of the roller and closing them against the passage of the material from the chamber, as set forth.

3. The combination, in a machine for manufacturing explosives, with the mixing-chamber having a feed-hopper at one end, of blades or knives working therein and adapted to mix the ingredients and force them through said chamber, of a grooved cylinder closing the outlet to the chamber, except through the grooves, whereby the mixture will issue from the chamber in threads or strings, and a rotating cutter acting on the threads or strings as they are formed and adapted to subdivide the same into grains, as set forth.

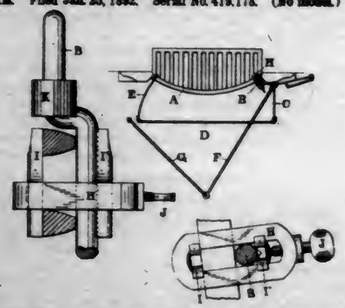
4. The combination, with a mixing or kneading apparatus having fixed knives or blades and rotary helical knives or blades, of a cylinder or roll having circumferential grooves and arranged at the discharge end of the said apparatus, a stationary grooved piece between which and the said cylinder the material will be forced in the form of

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strips or threads, and toothed disks or cutters for further dividing the strips into small pieces or grains, for the purpose above specified.

474,562. FIRE-GUARD FOR GRATES. JOHN J. MITCHELL, Avondale, Ala. Filed Jan. 25, 1892. Serial No. 419,173. (No model.)

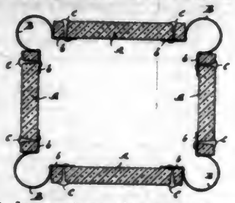


Claim.—1. In a fire-guard for grates, the combination of the U-shaped supporting-rod with folding or extensible fire-guard connected to the said supporting-rod by hinges, one end of each of the said hinges turning on the supporting-rod and the other end of each of the hinges turning on pintles secured on one of the sides of the angle-iron, forming the hanging-stiles of the guard and having a hook on the opposite angle-iron from the hinges to engage the grate-bar, substantially as described.

2. In a fire-guard for grates, the combination of the supporting-rod with folding or extensible fire-guard having on the upper end of the supporting-rod at right angles the rod F, on one end of which is an ornamental casting to form a pintle to swing freely on the end of the supporting-rod and on the other end is formed an eye or loop in which the second rod G, having on its end a reverse bend and being inserted in the eye aforesaid, forms a pintle, on which it also freely swings, said supporting-rod having on its end that is clamped against the grate-bars a collar with a hole in it to slip over the rod, and a recess on the under side to set on the bend of the rod, substantially as described.

3. In a fire-guard for grates, the combination of the supporting-rod with folding or extensible fire-guard having a link-shaped clamp securing the supporting-rod to the grate-bars, with a key on the inside of the bars and a key with a V-groove on the outside of the supporting-rod and all clamped together with a thumb-screw to secure the said supporting-rod to the grate-bars, substantially as described.

474,568. EXPANDING CONDUCTOR. FREDERIC H. MOORE, Boston, Mass. Filed Apr. 6, 1888. Serial No. 269,805. (No model.)

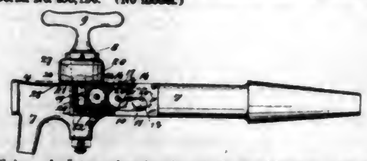


Claim.—1. In a conductor-pipe, the combination, with a series of longitudinal wooden pieces adapted to form the sides of the pipe, of longitudinal metallic beads for joining the edges of said pieces, each of said beads being arc-shaped in cross-section and having each edge flanged outward at an angle to the arc portion, and means, as nails, for securing the flanges to the wooden pieces, substantially as set forth.

2. In a conductor-pipe, the combination, with two longitudinal wooden pieces semi-cylindrical in cross-section, of two longitudinal metallic beads for joining the edges of said pieces, each bead being arc-shaped in cross-section and having each edge flanged outward at an angle to the cross-section, and means, as nails, for securing the flanges to the wooden pieces, substantially as set forth.

3. In a conductor-pipe, the combination, with a series of longitudinal wooden pieces, each piece having its edge provided with a longitudinal slot or kerf, of longitudinal metallic beads, each bead being arc-shaped in cross-section and having each edge flanged outward at an angle to the arc portion, said flanges being adapted to fit in the kerfs in the wooden pieces, and means, as nails, for securing the flanges within the kerfs, substantially as set forth.

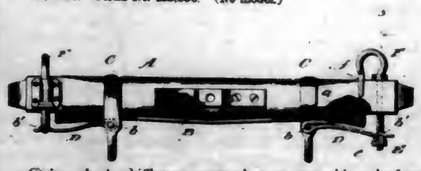
474,564. REGISTERING-FAUCET. ALMY LE G. PEIRCE, Grand Rapids, Mich., and CHARLES E. KING, Cincinnati, Ohio. Filed July 20, 1891. Serial No. 400,126. (No model.)



Claim.—1. In a registering-faucet, the combination, with the faucet, of a registering mechanism secured thereto in such a position as to bring its actuating push-rod in line with the spigot, a cone secured to the latter and with its base always completely covering the end of the push-rod as far as it projects out of the case of the mechanism, the base of the cone cut out interiorly, as illustrated, all for the purposes shown and described.

2. In a registering-faucet having the registering mechanism located against the body of the faucet, its actuating push-rod parallel with the spigot and part of the inclosing housing of the mechanism formed by the body of the faucet, the combination, with these parts, of a cone rigidly secured to the spigot and interiorly cut out, as shown, for the purpose of actuating the push-rod, the base of the cone also forming a means to completely hide the protruding end of the push-rod and close the opening in the housing through which the same passes to prevent tampering with the parts, all substantially as shown and described.

474,565. WHIFFLETREE. HENRY POTE, Crafton, Pa. Filed Feb. 20, 1892. Serial No. 422,230. (No model.)



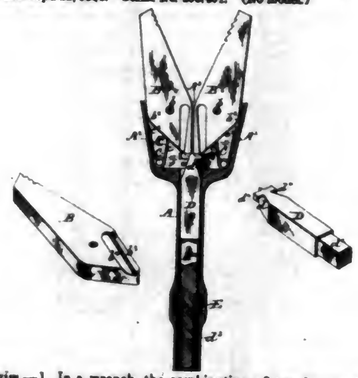
Claim.—1. A whiffletree recessed at its rear side, a leaf-spring confined in said recess, trace-hooks secured to said whiffletree, and the shanks of said hooks bearing against said spring at the ends thereof, substantially as described.

2. A whiffletree recessed at its rear side, a leaf-spring confined in said recess, rotatable trace-hooks secured to said whiffletree, and the shanks of said hooks bearing against said spring at the ends thereof, substantially as specified

3. The combination, with the body portion having a longitudinal groove, of a flat spring set on edge in said groove, trace-hooks, and interposed springs extending from the said spring to the said hooks and connected therewith, as set forth.

4. The combination, with the body portion and its longitudinal groove and spring set on edge therein, of the springs at the ends, the trace-hooks having their shanks engaged by said springs, and adjusting-nuts on said shanks and bearings on the springs, as set forth.

474,566. WRENCH. SILAS B. RITTENHOUSE, Liberty Mills, Ind. Filed Sept. 22, 1891. Serial No. 406,461. (No model.)



Claim.—1. In a wrench, the combination of two jaws and independent pivot-pins therefor with a frame inclosing the flat sides and outer edges of the lower portion of said jaws, and springs C, having one end resting against said edges and the other end against said frame and a wedge adapted to enter between said jaws, substantially as described.

2. In a wrench, the combination of two jaws and independent pivots therefor with a frame inclosing the lower portions of said jaws and a rod having a wedge at one end and hooked fingers extending laterally from said wedge, the lower portions of the jaws having flanges b^3 for engagement with the hooked fingers, substantially as described.

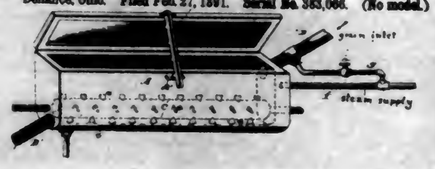
474,567. PROCESS OF GALVANIZING OR TINNING WIRE-CLOTH. CHARLES R. RUSSELL, Homer, N. Y., assignor to the Wire Fabric Company, same place. Filed Mar. 7, 1892. Serial No. 424,054. (No model.)



Claim.—1. That improvement in the art of coating or galvanizing metallic articles which consists in subjecting such articles to the action of a molten-metal bath and to the wiping action of floating particles of gas-carbon, substantially as described.

2. In the art of tinning or galvanizing wire, wire-cloth, netting, and similar articles, the combination, with the molten-metal bath in which the article is immersed and coated, of a wiper composed of gas-carbon in the form of comminuted particles floated in a layer or stratum upon the surface of the molten metal at the point when the article is withdrawn or emerges from the molten metal, substantially as described.

474,568. GRAIN DRIER OR MOISTENER. JAMES C. WELLER, Defiance, Ohio. Filed Feb. 27, 1891. Serial No. 383,066. (No model.)



Claim.—The combination, with a receptacle having a steam-space formed around it, pipe D for supplying material to be treated, pipe D′ for discharging the material, and a conveyer within the receptacle, of steam-pipe *f*, discharging into the steam-space around the receptacle, and a pipe *g*, leading from steam-pipe *f* and discharging into feed-pipe D, substantially as set forth.

474,569. INSULATING-COUPLING. ALBERT ANDERSON, Boston, Mass., assignor of one-half to Johan M. Anderson, same place. Filed Mar. 21, 1892. Serial No. 426,685. (No model.)



Claim.—1. In an insulating-coupling, the combination, with the member *a*, consisting of the ring a^3, provided with the substantially diametrically-opposite arms a^4 a^4, of the member *a′*, consisting of the shank extended through the ring and the head a^5, located between the arms a^4 a^4 and of a greater length than the opening in the ring a^3, and insulating material enveloping the said members, substantially as described.

2. In an insulating-coupling, the combination, with the member *a*, consisting of the ring a^3, provided with the substantially flat face 2 and having the arms a^4 a^4, integral with the ring and with the shank a^5, of the member *a′*, consisting of the shank extended through the ring a^3, and the head a^5, secured to the shank and made of a greater length than the diameter of the opening in the ring a^3 and provided with the substantially flat face or surface 3, and insulating material enveloping the said members and interposed between the same, substantially as described.

474,570. SASH-FASTENER. EMIL ASH, Chicago, Ill., assignor of one-half to James Steele Mackaye, New York, N. Y. Filed Mar. 16, 1892. Serial No. 425,114. (No model.)



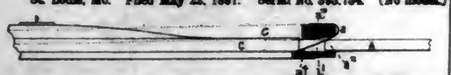
Claim.—1. The combination, substantially as hereinbefore described, with a suitable frame and a sash adapted to slide in grooves therein, of a spring-actuated and readily-controlled wedge-block carried by the sash, movable transversely to the sash and to its groove in the frame and adapted to engage with coincident guiding portions of the frame for holding the sash in any desired opened position, and whether closed or open for confining the sash against lateral rattling vibrations.

2. The combination, substantially as hereinbefore described, of a frame, a sash adapted to slide therein, a set of vertically-connected

spring-actuated wedge-blocks carried by the sash within the groove of the frame and operating transversely thereto, and a thumb-piece or lever operatively connected with said blocks for overcoming the spring by which they are actuated and rendering them inoperative.

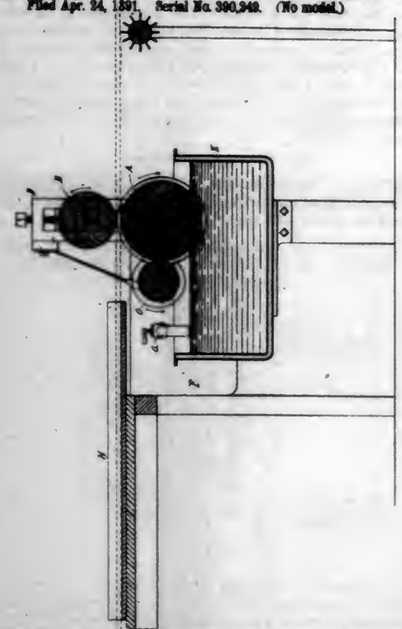
3. The combination, with a thin narrow metallic plate provided at its side with several inclined bearing-faces, of a set of wedge-blocks connected together, each in contact with an appropriate bearing-face, and a spring which couples said wedge-blocks to said plate, substantially as described, said several parts being adapted as a whole to be applied to the side rail of a sliding sash and to cause said wedge-blocks to operate transversely to the sash and in controlling contact with the frame in which the sash is intended to operate.

474,571. PHOTOGRAPHIC-PLATE HOLDER. JOHN H. BALLMAN, St. Louis, Mo. Filed May 22, 1891. Serial No. 393,734. (No model.)



Claim.—The combination of the ground glass, the plate-holder, and the frame for containing said ground glass and the plate-holder, said frame being provided with the spring-guides *a a*, substantially as described.

474,572. GLUING-MACHINE. WILLIAM R. BROCK, Plainfield, N. J. Filed Apr. 24, 1891. Serial No. 390,349. (No model.)

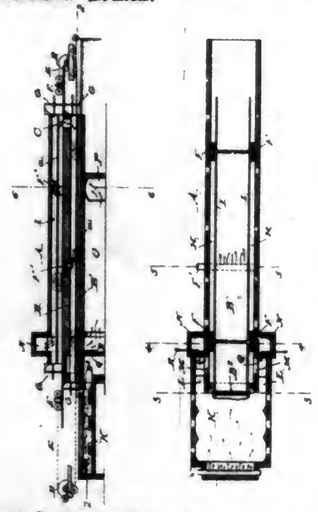


Claim.—1. A machine for gluing lumber, having, in combination, the gluing-roller with a portion thereof shaped to conform to one surface and the edges adjacent thereto of the board to be veneered, the remaining portion of said roller being cylindrical, the cylindrical pressure-roller above the gluing-roller, the wiper-roller in contact with the gluing-roller, and the glue-reservoir containing the gluing-roller, the whole adapted to operate substantially as herein described, for the purpose set forth.

2. A machine for gluing lumber, having, in combination, the gluing-roller with a portion shaped to conform to one surface and the edges adjacent thereto of the board to be veneered, the remaining portion of said roller being cylindrical, the brush at one end of and in contact with the gluing-roller, the cylindrical pressure-roller above the gluing-roller, the wiper-roller in contact with the gluing-roller, and the glue-reservoir containing the gluing-roller, the whole adapted to operate substantially as herein described, for the purpose set forth.

3. A machine for gluing lumber, having, in combination, the gluing-roller with a portion thereof shaped to conform to one surface and the edges adjacent thereto of the board to be veneered, the remaining portion of said roller being cylindrical, the transverse guide-trough opposite the gluing-roller, the cylindrical pressure-roller above the gluing-roller, the wiper-roller in contact with the gluing-roller, and the gluing-reservoir containing the gluing-roller, the whole adapted to operate substantially as herein described, for the purpose set forth.

474,573. ORE-ROASTING FURNACE. HORACE F. BROWN, Butte City, Mont., assignor to Mary C. Brown, same place. Filed Dec. 8, 1891. Serial No. 414,359. (No model.)



Claim.—1. In an ore-roasting furnace having upper and lower main hearths with an opening connecting them, a supplemental hearth for the fusing of the roasted ore, and flues or passages leading from the supplemental hearth and entering at different places through the sides of the main hearth, whereby the heat from the supplemental hearth enters the main hearth, substantially as herein described.

2. In an ore-roasting furnace, the upper and lower main hearths with an opening connecting them, in combination with a supplemental hearth upon which the roasted ore from the main hearth is received, means for advancing and agitating the ore in said main hearths, and flues or passages at the sides of the supplemental hearth leading from said hearth and entering through the sides of the main hearths at different places, substantially as herein described.

3. In an ore-roasting furnace, the main hearth, the main flue N, communicating with the interior thereof and connecting with the dust-flue leading to the stack, a supplemental hearth upon which the roasted ore from the main hearth is received, side flues leading from the supplemental hearth through the inner sides of the main hearths, and damper-controlled openings connecting the side flues with the main dust-flues from the roasting-hearth, substantially as herein described.

4. In an ore-roasting furnace having main hearths with dust-flues therefrom to the stack, a supplemental hearth upon which the roasted ore is delivered, flues or passages at the sides of the supplemental hearth and entering at different places through the sides of the main hearths, and damper-controlled openings or flues between the flues from the supplemental hearth and the dust-flues from the main hearths, whereby the heat from the supplemental hearth may be delivered directly to the main stack, substantially as herein described.

5. In an ore-roasting furnace having roasting-hearths, perforated boxes or pipes located at or near the arches or roofs of the hearths, said boxes or pipes connecting with a gas-supply and adapted to throw a series of flame-jets upon the ore at intervals, substantially as herein described.

6. In an ore-roasting furnace, the roasting-hearths, the supplemental hearth upon which the roasted ore is received, dust-flues from the main hearths and connecting with a dust-chamber leading to the stack, side flues connecting with the flue from the supplemental hearth and entering through the sides of the roasting-hearth, a horizontal flue extending centrally along the furnace, communicating at one end with the flue from the supplemental hearth, other side flues connecting with the central flue and leading to the inside of the roasting-hearth, and a safety-door and operating means for closing the end of the horizontal central flue and cutting off communication with the dust-chamber when desired, substantially as herein described.

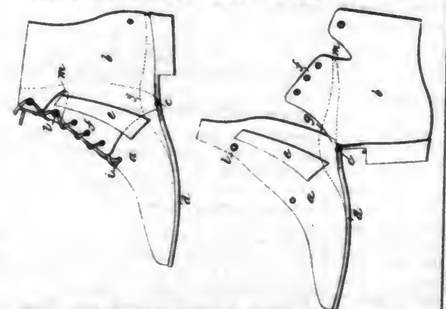
7. In an ore-roasting furnace having roasting-hearths, the means for stirring and advancing the ore therein, comprising wheeled carriages, hubs or sockets extending therefrom into the body of ore, parallel arms or rods extending from the hub or socket, stirrer-blades having wings bent in opposite directions and provided with holes through which the rods or arms pass, and sleeves or spreaders having square ends mounted on the arms or rods between the bent portions of the blades, substantially as herein described.

8. In an ore-roasting furnace, a stirrer composed of two parallel arms supported at one end upon movable carriages and blades inclined with relation to the arms and having oppositely-bent wings at right angles with the arms and provided with holes, through which the latter pass, substantially as herein described.

9. In an ore-roasting furnace, a stirrer-blade having a portion of each side cut away and bent at right angles in opposite directions, in combination with two parallel supporting-arms separated from each other and adapted to pass through the wings, and a movable support for the arms, substantially as herein described.

10. In an ore-roasting furnace, a stirrer consisting of two parallel arms, blades fitted at an angle between said arms and having wings through which the arms pass, and spreaders having square ends on said arms alternating with the blades and adapted to form a rigid support for the same, substantially as herein described.

474,574. BOOT OR SHOE. RICHARD BRUSH, London, England. Filed Jan. 9, 1892. Serial No. 417,466. (No model.)



Claim.—1. The combination, with the front part of a boot or shoe, of a detachable and depressible rear part, hinge-plates secured to the said front and rear parts and provided with a removable pivot-pin, and an insole secured to the front part and provided with an elevated curved portion over the said hinged plates, substantially as set forth.

2. The combination, with the front part of a boot or shoe, of a depressible rear part, pivoted hinge-plates connecting the said front and rear parts, and an insole secured to the front part and projecting the whole length of the rear part and provided with an elevated curved portion over the said pivoted plates, substantially as set forth.

3. The combination, with the front part of a boot or shoe provided with loops *c*, of a depressible rear part provided with tongues *f*, adapted to pass through the said loops, pivoted hinge-plates connecting the said front and rear parts, an insole secured to the front part and provided with an elevated curved portion over the said hinge-plates, and a lace for securing the said tongues, substantially as set forth.

474,575. MEASURING-FUNNEL. FRANK E. BUTTS, Winchester, Ind., assignor of one-half to Isaiah P. Watts, same place. Filed Jan. 22, 1892. Serial No. 418,878. (No model.)

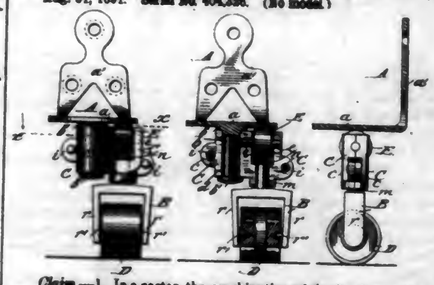


Claim.—1. A bottle-filler composed of a cylinder 1, having the spout 4 at its lower end, and a removable frame-work 8 therein, a valve-rod 9, journaled therein, provided with a valve 10, adapted to close the opening of the tip 4, a spring 16, coiled on the valve-rod for holding the valve normally closed, and a lever for lifting the valve, hinged to the top of the valve-rod and provided with a suitable thumb-piece for operating the same, substantially as shown and described.

2. A bottle-filling device comprising a cylinder 1, having a removable tip or spout 4 at its lower end for inserting into the neck of the bottle to be filled, a gaging-stop 5 at one side, a removable partition or frame-work 8 inside the cylinder, a spring-controlled valve-rod passing through the same and provided with a valve on its lower end closing the opening in the tip, and a lever connected to the valve-rod for lifting the valve against the tension of the spring, all combined substantially as shown and described.

3. A bottle-filling device comprising a cylinder 1, having a removable tip or spout 4 at its lower end for inserting in the neck of the bottle to be filled, a gaging-stop 5 at one side, a removable partition or frame-work 8 inside the cylinder, a spring-controlled valve-rod passing through the same and provided with a valve on its lower end closing the opening in the tip, and a lever connected to the valve-rod for lifting the valve against the tension of the spring, in combination with a rest for holding the filler when not in use.

474,576. CASTER. MARTIN A. CUTTER, Allegheny, Pa. Filed Aug. 31, 1891. Serial No. 404,326. (No model.)



Claim.—1. In a caster, the combination of the furniture-plate, the swivel projecting from the under side of the said plate, the saddle having a swivel projecting from its upper part and carrying a floor-wheel between the ends of its bifurcated lower portion, the coupling connecting the swivels, secured to the furniture-plate and to the saddle, and the anti-friction roller journaled in the upper part of the coupling and impinging upon the furniture-plate, substantially as described.

2. In a caster, the combination of the furniture-plate, the swivel projecting from the under side of the said plate, the saddle carrying the floor-wheel and having a swivel projecting from its upper part, the coupling formed in two pieces, each of which has formed in one side a vertical semi-bearing *d*, and in the upper part of the other side horizontal semi-bearings *e e*, and in the same side, immediately below the horizontal semi-bearings, a vertical semi-bearing *f*, each side being recessed between the bearings *e e*, the two parts being secured together, the semi-bearings *d d* and *f f*, forming, respectively, bearings for the swivels, secured to the furniture-plate and to the saddle, the said swivels being provided with annular flanges to retain them in place, and the anti-friction roller seated in the recess in the upper part of the coupling, with its journals in the bearings formed by the semi-bearings *e e*, substantially as described.

474,577. WIRE-SCREEN-CLOTH HOLDER. CHARLES FAGE, St. Louis, Mo., and FREDERICK HOTTES, Mascoutah, Ill. Filed Jan. 25, 1892. Serial No. 419,226. (No model.)



Claim.—1. The herein-described holder, consisting of the frame, the rollers, the tension-rods, and springs, said tension-rods being jour-

sailed in the uprights of the frame, and said springs at one end being fastened to and coiled around the rod-journals and the other end thereof riding upon a bearing, substantially as described.

2. The combination of the frame, the tension-rod shaped and journaled as described, the spring, and the bearing for said spring, one end of said spring being attached to and coiled around the end of said tension-rod and the other end of said spring being upheld by said bearing, substantially as described.

474,578. SIGNALING APPLIANCE FOR RAILWAY-TRAINS. WILLIAM GLASGOW, Chicago, Ill. Filed Sept. 21, 1889. Serial No. 324,575. (No model.)



Claim.—1. A train-signal-operating appliance comprising a local permanent cord-section in each car, a coupling for uniting such sections between the cars, lengths or sections of cord C, attached to the local cord-section and to the end walls of the car, and spring arms E, having eyes or pulleys at their free end to receive or engage the lengths of cord C, in manner substantially set forth.

2. A train-signal-operating appliance comprising a local permanent cord-section in each car, a coupling for uniting such sections between the cars, the bushing or orifice *f* in the car-hoods made of a diameter sufficient to admit of the passage of the coupling-heads, and the orifices in the car-wall made small enough to prevent the passage of such coupling-heads, substantially as described, and for the purpose set forth.

3. A train-signal-operating appliance comprising a local permanent cord-section in each car, a coupling for uniting such sections between the cars, and a spring-drum G, arranged at the rear end of the train and provided with a cord-section I, adapted to couple with the main local cord-section, so as to take up the main slack in the signal-cord, substantially as and for the purpose set forth.

4. A train-signal-operating appliance comprising a local independent cord-section permanently arranged in each car and an automatic pull-apart coupling for the adjacent ends of each pair of the same, consisting of a head L, having a recessed cap M for attachment of the cord-section, and cross-bar *l*, the curved fingers or latch-bars K, pivoted in the head L by elongated slots *k'*, and having their upper ends of a hooked shape, and the spring *k*, arranged to force the upper ends of the bars K outward, substantially as and for the purpose set forth.

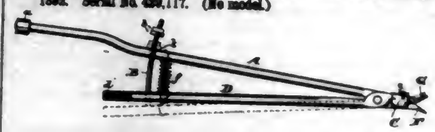
474,579. PUMP-VALVE. ANDREW J. HOPKINS, Beaver Falls, Pa. Filed June 5, 1890. Serial No. 354,328. (No model.)



Claim.—1. The combination, with the integral valve-frame consisting of the two diverging leaves having ports and leaves forming an acute angle and the perforated cross-webs at the outer ends of their inner edges, of the valves for said ports, formed of a single piece of flexible material bent and inserted between said leaves, having their free ends strengthened, and the rod passing through said webs and retaining the valves, as set forth.

2. In a pump, the combination of the valve-chamber having the inclined bottom wall provided with a port and the vertical side wall having a port, the valve-frame snugly fitting in said chamber, and the valves carried by said frame to alternately close and open said ports, substantially as described.

474,580. NIPPERS FOR TWINE-MAKING MACHINES. GEORGE A. LOWRY, Des Moines, Iowa. Filed July 14, 1890. Renewed Apr. 14, 1892. Serial No. 429,117. (No model.)



Claim.—1. Nippers having flaring jaws, a collar arranged thereon, and means for adjusting such collar, whereby the depth of the bite of the jaws is regulated.

2. Nippers having flaring or divergent jaws, and devices fo regulating the spread of the same, and means for regulating the de th of the bite of such jaws, substantially as and for the purpose set fo rth.

3. Nippers composed of a pair of pivoted rods having jaws, a collar, means for adjusting the collar upon the jaws, and a bolt having a nut, substantially as and for the purpose set forth.

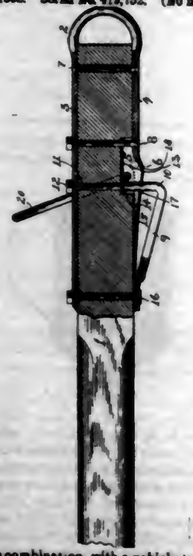
4. In an automatic feeder for a twine-making machine, nippers having flaring jaws, a collar, means for adjusting the collar upon the jaws, a bolt having a nut, and a retracting-spring, substantially as and for the purpose set forth.

474,581. PROCESS OF PRESERVING MEAT. JOSÉ MARIOSA, San Paulo, Brazil, assignor of one-half to José P. Tebyrica, same place. Filed Oct. 5, 1891. Serial No. 407,766. (No specimens.) Patented in Argentine Republic Oct. 16, 1886, No. 303, and in Brazil Sept. 23, 1890, No. 946.

Claim.—1. The herein-described process of preserving meat, which consists in applying to the surface of a piece of meat a mixture of saccharine matter, water, and bicarbonate of soda in about the proportions stated, and then subjecting the piece of meat thus coated to a drying atmosphere or air-current to form a coating to exclude air and other agents tending to produce fermentation or putrification.

2. The herein-described process of preserving meat, which consists in applying to a piece of meat a mixture consisting of about forty parts of bicarbonate of soda and about sixty parts of sugar and sufficient water to form a pasty mass, causing the mixture to penetrate the outer stratum only of the meat, and then subjecting the piece of meat thus coated to air-currents to thoroughly dry the coating and the surface of the meat in immediate contact therewith.

474,582. WAGON-TONGUE. JESSE W. MAXWELL, Fair River, Miss. Filed Jan. 30, 1892. Serial No. 419,752. (No model.)



Claim.—1. The combination, with a vehicle-tongue having a recess in the under side thereof, a nose extending along the upper side of the tongue, and a piece from the nose extending along the lower side of the tongue, terminating under the recess to partially close the same, of a spring secured to the lower side of the tongue and meeting the end of the lower extension from the nose to normally close the recess, substantially as described.

2. The combination, with a vehicle-tongue having a recess in the lower side of the same, a nose extending along the upper side of the tongue, and a piece from the nose extending along the lower side and terminating under the recess to partially close the same, of a spring secured to the lower side of the tongue and meeting the end of the extension from the nose to normally close the recess, and a piece of metal secured to the lower side of the tongue below the spring and bent upwardly to form a shoulder, substantially as described.

3. The combination, with a vehicle-tongue having a recess in the lower side of the same, a nose having an extension secured upon the top of the tongue, and a second extension from the nose extending along the lower side of the tongue and terminating under the recess to partially close the same, of a spring secured to the lower side of the tongue and meeting the end of the extension from the nose to normally close the said recess, a piece of metal secured to the tongue below the spring and bent upwardly to form a shoulder, 14 upon the upwardly-extending end of the piece 9 to hold the plate in place, substantially as described.

4. The combination, with a vehicle-tongue, a recess in the lower side of the same, a nose having an extension secured upon the top of the tongue, and a second extension from the nose extending along the lower side of the tongue and terminating under the recess to partially close the same, of a spring secured to the lower side of the tongue and meeting the end of the extension from the nose to normally close the said recess, a piece of metal secured to the tongue below the spring and bent upwardly to form a shoulder, a plate secured in the recess, a shoulder 14 upon the upwardly-extending end of the piece 9 to hold the plate in place, and a bolt 11, formed of the reduced upper end of the piece 9, substantially as described.

474,583. MEASURING-FAUCET. RUFUS A. PARISH, Yorkville, S. C. Filed July 9, 1891. Serial No. 398,871. (No model.)



Claim.—1. A measuring-vessel comprising a casing divided into measuring-chambers, a duct common to all said chambers, provided with an inlet and an outlet valve, independent valve-ports leading from the several chambers to the duct, and a valve for each of said ports, for the purpose set forth.

2. A measuring-vessel comprising a casing the lower portion of which is of triangular form in cross-section, said vessel being divided into a series of measuring-chambers, a duct extending along the apex of the angle, inlet and outlet valves for said duct, a valve-port for each of said chambers in communication with the duct, and a valve for each of said ports, for the purpose set forth.

3. A measuring-vessel comprising a casing divided into a plurality of measuring-chambers, a single duct for supplying the liquid to and discharging it from said chambers, and suitable valves for controlling the supply and discharge to and from any one of said chambers, for the purpose set forth.

4. In a measuring-vessel, a casing divided into a plurality of measuring-chambers, a duct for supplying the liquid to and discharging it from said chambers, suitable valves for controlling the supply and discharge to and from any one of said chambers, and an air-vent common to all the chambers, for the purpose set forth.

474,584. CONNECTION FOR ELECTRIC CONDUCTORS. CHARLES W. TOBEY, New Bedford, Mass. Filed Jan. 28, 1891. Serial No. 379,419. (No model.)

Claim.—1. In a device for use in connecting electric conductors, a metal clip adapted to be bent about the conductors and having its face provided with a coating of solder, substantially as and for the purpose described.

2. As an article of manufacture, a connection for electric conductors, consisting of a metal clip adapted to be clamped upon the conductors and having its surface prepared with solder and a flux therefor, substantially as and for the purpose specified.

474,584.



3. As an article of manufacture, a connection for electric conductors, consisting of a metal clip adapted to be clamped upon the conductors and having its face tinned and reined, substantially as and for the purpose shown.

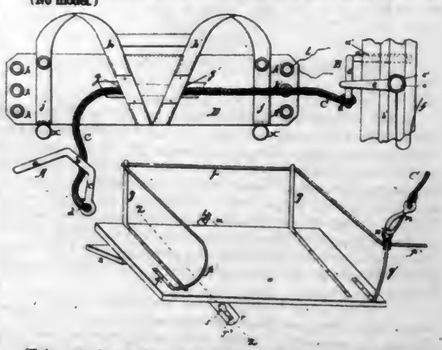
4. As an article of manufacture, a connection for electric conductors, having its several different conductor-receiving portions made with thin edges turned up and on the inner face of such portions a coating of solder and flux therefor, substantially as and for the purpose set forth.

474,585. ART OF CLEANING AND WASHING RAW SUGAR. MORIZ WEINRICH, St. Louis, Mo. Filed Jan. 5, 1891. Serial No. 376,776. (No model.) Patented in England Apr. 5, 1890, No. 5,283; in Germany May 24, 1890, No. 54,236, and in France Oct. 2, 1890, No. 206,606.



Claim.—The improvement in the art of cleaning and washing raw sugar or massé-cuite, which consists in mixing it with an indifferent, light, and porous material, as described, placing such mixed material in a vessel, and washing such mixture with sirup while contained in said vessel, substantially as described.

474,586. SAFETY APPARATUS FOR WINDOW-CLEANERS. HIRAM K. WHITNER, Chicago, Ill. Filed Sept. 28, 1891. Serial No. 407,062. (No model.)



Claim.—1. In a safety apparatus, the combination, with a rope sliding freely in a ropeway secured about the body of a window-cleaner, of the rope-terminal irons, and key-snap bolts adapted to interlock with a window-frame bored substantially as and for the purpose set forth.

2. In a safety apparatus for window-cleaners as herein shown and described, the body jacket or belt, the rope and its terminal irons, and the bolts and snaps, in combination with the balcony or foot-rest adapted to be secured to the window-frame and sill and connected to the opposite side of the window-frame by means of the sliding rope and its anchorage attachments, as set forth.

3. In a safety apparatus, the combination of a window-frame provided with a hole adapted to receive a rope-terminal iron, and a screw-eyebolt attached to the window-frame, adapted to engage with a key-snap mounted upon the shorter shank of said terminal iron, substantially as shown and described, as a means of anchorage for window-cleaners and portable fire-escapes.

4. In a safety apparatus, a stay-rope and means to secure said rope about the person of the window-cleaner, a rope-terminal iron, a key-snap and its bolt, and a foot-rest, in combination with a window-frame

bored and its sill provided with a screw or screws, substantially as and for the purpose set forth.

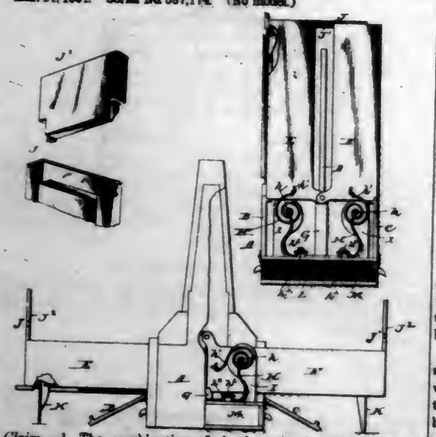
5. In a safety apparatus, the combination, with a rope-terminal iron, a key-snap and its bolt, a pail-hook *f*, jacket D, and stay-rope C, of a window-frame having holes *a'* and *c*, substantially as and for the purpose set forth.

6. In a safety apparatus, rope-terminal iron B, a key-snap *c*, mounted upon bolt *c'*, and a jacket having pockets, in combination with a window-frame having holes *a'* and *c*, substantially as and for the purpose set forth.

7. In a safety apparatus, a jacket having the following elements: a body D, ropeway *g* and *g'*, shoulder-straps *h* and *h'*, pockets *j* and *j'*, grommets *k k k* and *k' k' k'*, lacing-cord *l*, and key-snap holders *x* and *x'*, a stay-rope C, and rope-terminal irons A and B, and key-snaps, in combination with a window-frame having holes *a'* and *c*, substantially as and for the purpose set forth.

8. In a safety apparatus, a portable balcony having the following elements: a platform or foot-rest *o*, guard *p* and *p'*, bolt p^2, back braces *q q q*, foot *q'*, slot-plate *r*, clamping-board *s*, notched bar *t*, catch-plate *u*, and anchorage-link *n'*, rope C, jacket D, snap *n*, rope-terminal iron B, and key-snap *c*, in combination with a window-frame having holes and a screw r^2, substantially as and for the purpose set forth.

474,587. FOLDING BED. JAMES E. YEAGER, Waco, Tex. Filed Mar. 31, 1891. Serial No. 387,174. (No model.)



Claim.—1. The combination of the base having side standards and an intermediate screen, two beds pivotally connected together and to the said standards at their inner corners and adapted to fold on each other and against the said screen, two drop-doors to close the open sides of the base and adapted to extend beneath the outers corners of the beds and support and hold them in a closed position, and two twin springs, one for each side of the bed, each spring being approximately U-shaped, the parallel members having coils at their upper ends, from which extend arms that pass loosely through keepers on the sides of the said beds, substantially as and for the purpose described.

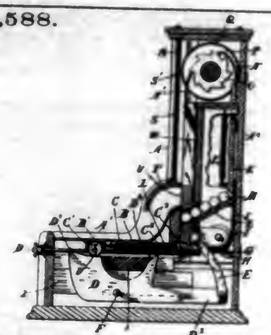
2. The combination, with the base, the folding beds, and the U-shaped twin springs, of the guards projected up from the bottom of the base and comprising the coils of the springs between their upper ends and the opposed sides of the base, substantially as specified.

474,588. COIN-OPERATED VENDING DEVICE. THOMAS H. BUDELL, Grand Rapids, Mich. Filed Feb. 19, 1892. Serial No. 422,108. (No model.)

Claim.—1. The combination, with a suitable case having a slot therein adapted to receive a coin, of a receptacle normally registering with the slot and carried by a slide provided with means for operating it from without the case, a pivoted lever having a part in position to be actuated by the coin when the slide is operated, and means whereby said lever is locked by the slide when the latter is in its normal position, but is free when the slide is operated sufficiently to throw the receptacle out of register with the slide, and a device actuated by said lever for delivering one of the articles through the case, substantially as described.

2. The combination, with a suitable case containing a slot, of a slide C, provided with a receptacle C', normally in register with the slot, a lever D, having a part D' in position to be engaged by the coin when the slide is operated, a part D^2, adapted to engage with the slide

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when the latter is in its normal position, but to be free therefrom when the slide is operated, and a sliding carrier V, operated by said lever, substantially as described.

474,589. VEHICLE-TIRE. ALEXANDER T. BROWN, Syracuse, N. Y. Filed Sept. 21, 1891. Serial No. 406,290. (No model.)



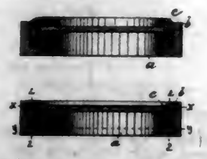
Claim.—1. In a vehicle-wheel, a plano-convex rim provided with edge-concavities and perforated and slotted, as shown, in combination with a band fitting around said rim and perforated at intervals, and a tire having thickened edges locked in the rim-concavities by said band, and a pneumatic sack inflated within said tire.

2. The combination, with a vehicle-tire crescent-shaped in cross-section and having thickened side edges, of a plano-convex rim formed with concave side edges for the reception of the thickened edges of the tire and a band fitting around the plane of the rim and adapted to be moved sidewise to lock both thickened edges in their respective seats.

3. In a vehicle-wheel, the combination, with a rim formed with concave edges, of a hollow tire having thickened edges adapted to be seated in said concave edges, a pneumatic sack within the tire, and a band fitting around said rim and adapted to be manipulated to lock said thickened edges in their respective seats and unlock the same through the medium of holes in the rim.

4. A vehicle-tire crescent-shaped in cross-section and having thickened edges adapted to be seated in the concave side edges of a rim, in combination with a continuous band adapted to be shifted sidewise to lock or fasten said thickened edges in their respective seats.

474,590. METHOD OF MAKING BIMETALLIC BALANCES FOR WATCHES. DUANE H. CHURCH, Newton, Mass. Filed Jan. 18, 1892. Serial No. 418,423. (No model.)



Claim.—That improvement in the method of making a bimetallic balance which consists in first making a capped or flanged blank, the bottom of which furnishes the material for the arms of the balance, while the flange constitutes the inner lamina of the balance-rim, then placing said capped blank in an inverted position in a capsule formed as shown, then applying a ring or blank for the outer lamina to the exterior of said flange and fusing or otherwise uniting said ring to the flange, and then removing or turning off the metal of the capsule and the surplus metal of the capped blank and ring, as set forth.

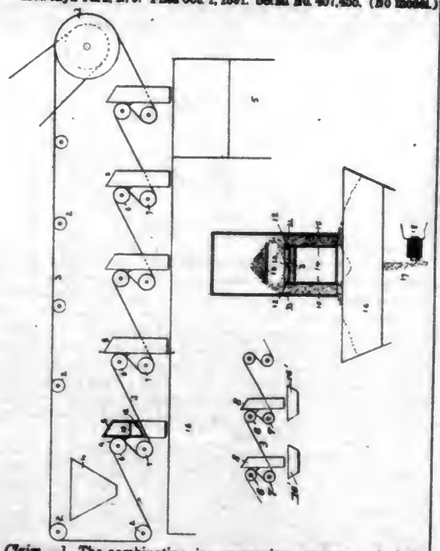
474,591. PROCESS OF EXTRACTING GOLD FROM SULPHIDE ORES. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Sept. 30, 1888. Serial No. 286,934. (No specimens.)

Claim.—1. The herein-described process of treating auriferous sulphurets, which consists in concentrating the sulphurets, acting upon them by an acid solution mixed with nitrate of mercury, removing and collecting the solution, and then amalgamating the gold.

2. The herein-described process of treating auriferous sulphurets, which consists in concentrating the sulphurets, acting upon them by a solution of nitric acid mixed with nitrate of mercury, removing and collecting the solution, and then amalgamating the gold.

3. The herein-described process of treating auriferous sulphurets, which consists in concentrating the sulphurets, acting upon them by a solution of nitric acid mixed with nitrate of mercury, removing the solution by centrifugal action, and then amalgamating the gold.

474,592. ORE-CONVEYING APPARATUS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 1, 1891. Serial No. 407,455. (No model.)



Claim.—1. The combination, in a conveying apparatus, of a belt conveyer, guide and driving pulleys therefor, a receptacle under the belt, means for loading the material being conveyed from the belt to said receptacle at one point, and means for guiding the material being conveyed onto the belt when the receptacle is full at said point, whereby succeeding material will be carried along to the next point of deposit, substantially as described.

2. The combination of a hopper or receptacle, a conveyer for ore or other material, means for unloading the same to fill the hopper or receptacle and for reloading a part of the material centrally on the conveyer when the hopper is full, whereby said hopper can be kept full without danger of running over, and an apparatus below said hopper for treating the ore or material, substantially as described.

3. The combination of a conveyer-belt, two or more receptacles having outlet-passages below said belt, whereby material in said receptacles may pass to a magnetic separator or other apparatus below said receptacle or receptacles, and means for unloading the ore or material into the receptacle or receptacles and for reloading a part of the material onto the belt, whereby when the receptacle is full over the first apparatus ore is carried along to the succeeding one, substantially as described.

4. The combination, in a conveyer, of a belt, supporting and driving pulleys over which the belt passes, a receptacle or receptacles below said belt, means at one or more points for depositing material being conveyed in said receptacle or receptacles, and means for reloading a part of the material being conveyed on the belt when the receptacle or receptacles nearest the loading-point is or are full, the receptacle or receptacles having outlets whereby material therein can be drawn off and passed to a magnetic separator or other apparatus, substantially as described.

5. The combination of a conveyer-belt, supporting and driving pulleys therefor, pulleys for changing the direction of the belt at intervals, means adjacent to said pulleys for unloading and reloading the material to be conveyed, a receptacle or receptacles into which said material is unloaded, said receptacles having outlets, and a series of separators in which said outlets may convey material, substantially as described.

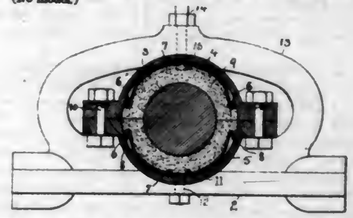
6. The combination of a conveyer-belt, two pulleys, one above the other, around which said belt passes, a box adjacent to said pulleys, into which material being conveyed is dropped from the upper pulley, a receptacle into which said material falls, and means for loading the material being conveyed on the belt when said receptacle is full, whereby material will be carried along to a succeeding point when a receptacle is full, substantially as described.

7. The combination of a conveyer-belt, two pulleys, one above the other, around which said belt passes, a box or shaft adjacent to said pulleys, into which material being conveyed is dropped from the upper pulley, a shelf onto which said material falls, a receptacle into which the material falls from said shelf, and a shelf between the first-mentioned shelf and the belt, having an opening centrally located over the belt, whereby as the receptacle becomes full and the material backs up into the box it is loaded onto the belt, substantially as described.

8. A reloading device for conveyers, consisting of a box or shaft having an opening near the top, a shelf below said opening, said shelf being narrower than the box, whereby openings are left at the sides of the box through which material being conveyed can fall, and a second shelf over the conveyer and having a central opening, substantially as described.

9. A reloading device for belt conveyers, consisting of a box or shaft having an opening near the top and spanning the belt, a shelf below said opening, said shelf being narrower than the box, whereby openings are left at the sides of the box through which material being conveyed can fall, a receptacle in position to receive the material, a second shelf over the conveyer and below the first shelf and having a central opening, and passages from the receptacle to said second shelf, whereby when the passages are filled material falling from the belt will pass again onto the same, substantially as described.

474,593. DUST-PROOF SWIVEL SHAFT-BEARING. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 8, 1891. Serial No. 408,116. (No model.)



Claim.—1. The combination, in a dust-proof bearing, of a holder at an end of the bearing, supporting-rods in the holder, springs, the ends of which engage and are supported by said rods, and packing material between the springs and shaft, substantially as described.

2. The combination, in a dust-proof bearing, of a sectional holder at an end of the bearing, supporting-rods in each section, springs, the ends of which are supported by said rods, and packing material between the springs and shaft, substantially as described.

3. The combination, in a dust-proof bearing, of a holder forming a part of the bearing-box, supporting-rods therein, springs having hooks or sockets at their ends engaging said rods, and packing material between the springs, and a shaft supported in the bearing, substantially as described.

474,594. NAIL-EXTRACTOR. ROBERT C. ELLERCH, Plantsville, Conn. Filed June 29, 1891. Serial No. 397,578. (No model.)

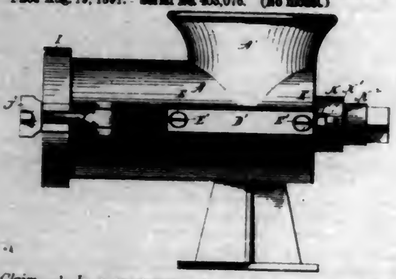


Claim.—1. In a nail-extractor, the combination, with a tube, of a head having a plug fitted into the lower end of the tube and also hav-

ing an offsetting finger and a shoulder located opposite to the same, a primary jaw rigidly secured to the said finger, a pivotal shoe pivoted to the finger, and a secondary jaw mounted in the said shoe so as to have its upper end stand under the said shoulder of the said head, substantially as set forth.

2. In a nail-extractor, the combination, with a tube, of a head having a plug entering the lower end of the said tube and formed with an annular shoulder against which the tube abuts, with an offsetting finger, and with a shoulder located opposite the same, a primary jaw secured in an open slot formed in the said finger, a curved shoe pivoted to the finger, and a secondary jaw secured in the upper end of the shoe and standing under the last-mentioned shoulder, substantially as described.

474,595. MEAT-CUTTER. ROBERT C. ELLRICH, Plantsville, Conn. Filed Aug. 19, 1891. Serial No. 403,076. (No model.)

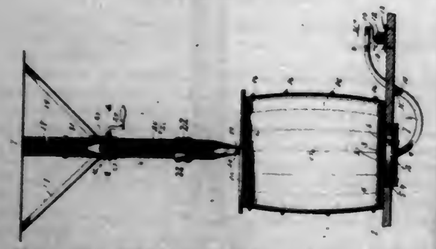


Claim.—1. In a meat-cutter, the combination, with a case provided with a hopper and constructed with a long horizontal slot located beneath the same, of a feed-screw having its inner end provided with radial knives, cutting devices located at the opposite end of the case, and a long block provided upon its inner face with a series of heavy rigid knives and applied to the outer face of the rear end of the case over the said slot for their projection into the case through the said slot for co-operation with the knives of the feed-screw, substantially as described.

2. In a meat-cutter, the combination, with a case provided with a hopper and constructed with a long horizontal slot located beneath the same, of a feed-screw having its inner end provided with radial knives, cutting devices located at the opposite end of the case, and a block provided upon its inner face with a series of heavy rigid knives, between which it is shorter than the said slot, and applied to the outer face of the case over the said slot, through which they project for co-operation with the knives of the feed-screw, and means for adjusting the block longitudinally to compensate for wear between the knives, substantially as described.

3. In a meat-cutter, the combination, with a case provided with a hopper constructed with a long slot located beneath the same and furnished with a perforated finger located at one end of said slot, of a feed-screw having its inner end provided with radial knives, cutting devices located at the opposite ends of the case, a block provided upon its inner face with a series of heavy rigid knives, between which it is shorter than the said slot, constructed at each end with an elongated slot and at one end with a threaded stem and applied to the outer face of the case over the said slot, through which its knives project, screws passing through the said elongated slots in the ends of the block for securing it to the case, and an adjusting-nut applied to the said stem which passes through the perforated finger of the case.

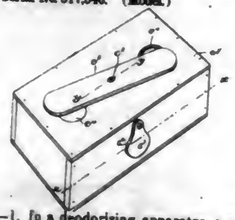
474,596. BARREL-HEADING MACHINE. FREDERICK EMMERT, Kansas City, Kans. Filed June 1, 1891. Serial No. 394,735. (No model.)



Claim.—1. An improved barrel-heading machine comprising a base-plate provided on its upper surface with a circular upwardly extending flange having an upwardly and inwardly inclined outer side and a number of holes extending vertically through the base-plate, a vertically-movable support for a barrel-head, provided with a number of upwardly-extending pins working through the openings in the base-plate, an S-shaped lever pivoted adjacent to the support and engaging at its lower end the under surface of said support and also extending at its upper end above its pivotal support, and an adjustable standard located beneath the upper end of the lever and serving to limit the upward movement of the support, substantially as set forth.

2. An improved barrel-heading machine comprising a pendent hanger, a vertical rack-bar carried by said hanger and carrying at its lower end a platen to rest upon the upper end of the barrel, a crank-shaft carried by the hanger and having a gear-pinion meshing with the teeth of the rack and also a pawl loosely mounted upon the crank-shaft and arranged to engage the rack, a vertically-movable support for a barrel-head, an S-shaped lever pivoted adjacent to the support and engaging at its under end said support, and a vertically-adjustable stop engaging the outer part of the said lever, substantially as set forth.

474,597. DISINFECTING DEVICE. SILAS H. FORBES, Clarendon Hill, assignor to Edward O. Hy, trustee, Boston, Mass. Filed July 15, 1889. Serial No. 317,546. (Model.)

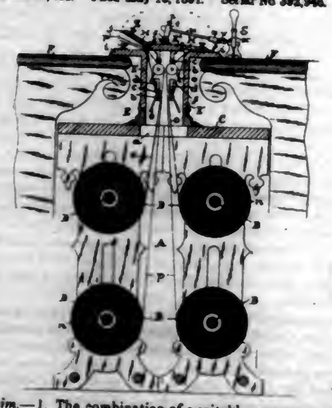


Claim.—1. In a deodorizing apparatus, a normally-porous body provided with a cavity and impregnated with a deodorizing-fluid and absorbent material placed in said cavity and saturated with the deodorizing-fluid, combined with an inclosing case provided with a vapor-outlet and a valve to control said outlet, substantially as described.

2. The combination, with a case provided with an air inlet and outlet orifice and valves to control said orifices, of a porous body inclosed in said case and provided with a cavity a and with an opening b^3, extended from said cavity to the outside of the said porous body, and an absorbent material in said cavity to hold a deodorizing material, substantially as described.

3. The combination, with a case provided with an air inlet and outlet orifice and valves to control said orifices, of a porous brick inclosed in said case and provided with a cavity a and with an opening b^3, communicating with the cavity a and registering with an orifice in the case, and an absorbent material in the cavity a to hold a deodorizing-fluid, substantially as described.

474,598. ROLL-PAPER HOLDER AND CUTTER. JACOB FRANKEL, Baltimore, Md. Filed May 16, 1891. Serial No. 392,946. (No model.)



Claim.—1. The combination of a suitable support, a roll of paper held thereby, a case located above the support and containing feed-rollers to which the paper is led from the roll, the paper thence extending vertically and carried over the upper edge of one side of the case, and a hinged cutter-bar to rest upon that portion of the paper which extends over the said upper edge of the side of the case and hold it upon a horizontal surface, in the manner and for the purpose described.

2. In a roll-paper holder and cutter, the combination of a stand supporting a number of rolls of paper, a case above said stand having sides hinged at the bottom to open outward, the paper from the rolls passing out over the upper edges of said sides, a number of sets of feed-rollers in said case, one set for each paper-roll, and each comprising a stationary roller and a movable roller having bearings in slots in the sides of the case and held by springs against the stationary roller, and a cutter to which the paper passes after leaving the feed-rollers.

3. In a roll-paper holder and cutter, the combination of a stand supporting a number of paper-rolls, a case above said stand having sides hinged at the bottom to open outward and provided with an outward-extending horizontal shelf at its upper part, a number of sets of feed-rollers in said case, one set for each roll of paper, and a cutter-bar hinged to bear with its cutting-edge upon the horizontal shelf of the feed-roller case, the paper to pass through the feed-rollers and out of the top of the case over the horizontal shelf and beneath the cutter-bar.

4. In a roll-paper holder and cutter, the combination of a case through which the paper is led, having a top, two parallel cutter-bars hinged to the opposite sides of said top, and a printing-stamp having jointed connections with said top and arranged to swing around to stamp the paper in front of either of said cutter-bars.

474,599. SUSPENDER-BUCKLE. JOSEPH FRITZ, Baltimore, Md. Filed Nov. 4, 1891. Serial No. 410,814. (No model.)



Claim.—1. A suspender-buckle comprising a plate having a toothed flange along one edge and inturned ears at opposite ends of said flange, a rock-bar extending lengthwise of said plate and journaled in the inturned ears, the central part of said rock-bar bent and forming a cam and the bar having cranks on its ends and a suitable handle for turning it, and a depending frame jointed to said cranks and constructed to connect with a suspender-end.

2. A suspender-buckle comprising a plate having a toothed flange along one edge and inturned ears at opposite ends of said flange, a hinged frame one side of which constitutes a rock-bar extending lengthwise of said plate and journaled in the inturned ears, the central part of said rock-bar bent and forming a cam and the frame having crank-loops at the opposite ends of the rock-bar, and a depending frame having trunnions engaging in the ends of said crank-loops and constructed to connect with a suspender-end.

3. A suspender-buckle comprising a plate having a toothed flange along one edge and inturned ears at opposite ends of said flange, a rock-bar extending lengthwise of said plate and journaled in the inturned ears, the central part of said rock-bar bent and forming a cam and the bar having cranks on its ends and a suitable handle for turning it, and a depending frame jointed to said cranks, two side pieces of said frame brought together to form a hook and held together by portions of the plate bent over them, a portion of said plate also forming a spring-tongue extending past the end of the hook, for the purpose described.

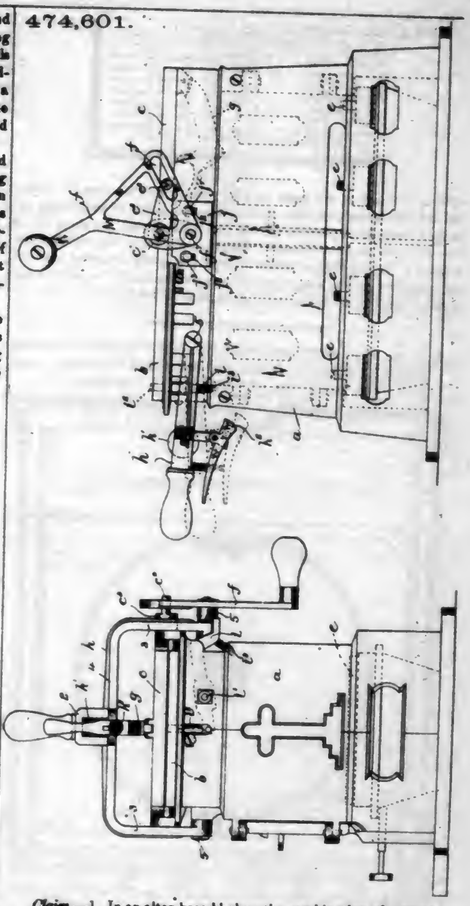
474,600. COMMUTATOR-BRUSH. ROBERT HIRSCH and HERMAN MEMINGER, Milwaukee, Wis. Filed Dec. 11, 1891. Serial No. 414,720. (No model.)

Claim.—1. The method of forming commutator-brushes, consisting in mixing together refined clay, graphite, and water into a stiff paste and compressing the same into bars, cutting the latter into sections of suitable lengths for brushes, drying and then baking or burning them in a suitable furnace or kiln protected from the outside air, then immersing the sections in oil or sugar solutions and absorbing the same, drying the brushes and burning them and letting them cool, then again heating them and saturating them with wax and absorbing the same, and then after the brushes are again cool covering them with a film of metal, substantially as set forth.

2. The herein-described commutator-brush, composed of a mixture of refined clay, graphite, carbonized oil or sugar, and wax covered with a metallic coating, substantially as set forth.

474,601. APPARATUS FOR BAKING ALTAR-BREAD. PATRICK H. HORAN, Boston, Mass. Filed Feb. 1, 1892. Serial No. 419,878. (No model.)

474,601.



Claim.—1. In an altar-bread baker, the combination of a supporting-frame having heating devices, a fixed baking-plate, a hinged baking-plate, an operating-lever engaged with said hinged plate and adapted to move it from one position to another, a locking-lever adapted to exert and maintain downward pressure on the hinged plate when the latter is in its baking position, and a plate lifting or starting device arranged to be operated by the depression of the locking-lever, whereby the hinged plate may be given its initial upward movement, as set forth.

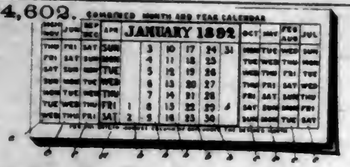
2. In an altar-bread baker, the combination of a supporting-frame having heating devices, a fixed baking-plate, a hinged baking-plate having a cam-shaped rib projecting from its outer side, said rib having ratchet-teeth, an operating-lever engaged with said hinged plate, and a locking-lever adapted to exert pressure on said rib and provided with a dog adapted to engage the teeth thereon, as set forth.

3. In an altar-bread baker, the combination of a supporting-frame having heating devices, a fixed baking-plate, a hinged baking-plate, an operating-lever engaged with said hinged plate and adapted to move it from one position to another, a locking-lever adapted to exert and maintain downward pressure on the hinged plate when the latter is in its baking position, a lever i, pivoted to the frame and having one end arranged to be depressed by the downward movement of said locking-lever, and a pin or plunger engaged with the other end of the lever i and adapted to force the hinged plate upward from its baking position, as set forth.

474,602. CALENDAR. CHARLES N. HOYT, Brooklyn, N. Y. Filed Sept. 2, 1891. Serial No. 404,493. (No model.)

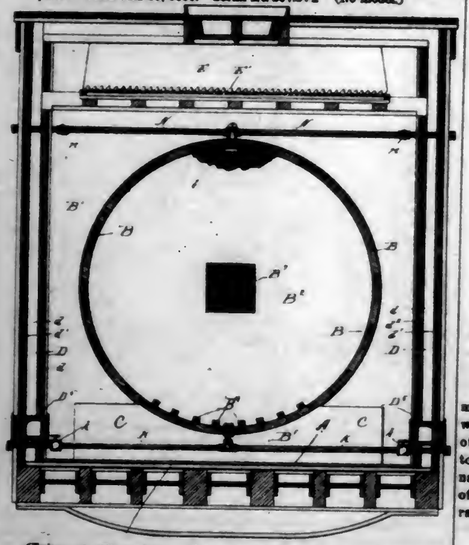
Claim.—A calendar comprising a monthly calendar having a row of names representing the days of the week and parallel with this row several rows of numerals representing the days of the month, whereby each name of a day of a week is in the same line with the numbers of the days of the month it falls on, and auxiliary rows of names repre-

474,602.



setting the days of the week parallel with that of the monthly calendar for the several months of the year, the names of days being arranged, respectively, in said rows in such manner that the name of the day on which the month begins shall be in the same line with the numeral "1" in the rows of numerals in the monthly calendar, each of said auxiliary rows having, also, the name of the month to which it appertains marked at the end or ends thereof, as set forth.

474,603. REFRIGERATOR-TANK CAR. EUGENE R. HUTCHINS, Chicago, Ill., assignor to the Hutchins Refrigerator Car Company, same place. Filed Jan. 25, 1889. Serial No. 297,574. (No model.)

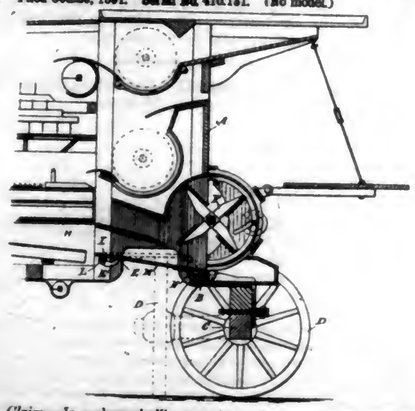


Claim.—1. The refrigerator-tank car herein shown and described, consisting in the combination, with an outer car-body having non-conducting walls composed of double walls with an insulating-packing between, an ice rack or chamber at the top, a refrigerating-chamber below said ice rack or chamber and having direct communication therewith, of an inner liquid-containing tank-car body mounted within said refrigerating-chamber and permanently fixed and supported above the floor or platform of the car, with a cold-air space between the bottom of said tank and said floor or platform, so that the cold air descending from the ice-chamber above down to and through said refrigerating-chamber may circulate all around said tank at top, bottom, and sides thereof, said tank being provided with inlet and outlet pipes, so that said car may be loaded and unloaded as a tank-car without removing the tank from its supports, and also furnished with a large inlet or manhole and a large exit or flushing-hole to permit the proper cleaning of the tank, substantially as specified.

2. The refrigerator-tank car herein shown and described, consisting in the combination, with an outer car-body having non-conducting walls composed of double walls with an insulating-packing between, an ice rack or chamber at the top, a refrigerating-chamber below said ice rack or chamber and having direct communication therewith, of an inner liquid-containing tank-car body mounted within said refrigerating-chamber and permanently fixed and supported above the floor or platform of the car, with a cold-air space between the bottom of said tank and said floor or platform, so that the cold air descending from the ice-chamber above down to and through said refrigerating-chamber may circulate all around said tank at top, bottom, and sides thereof, said tank being provided with inlet and outlet pipes, so that said car may be loaded and unloaded as a tank-car without removing the tank from its supports, and also furnished with a large inlet or manhole and a large exit or flushing-hole to permit the proper cleaning of the tank, said inlet and outlet pipes projecting through the double walls of said refrigerator-car, and the roof and floor or platform of said car having openings closed by doors registering with said large inlet and outlet holes, substantially as specified.

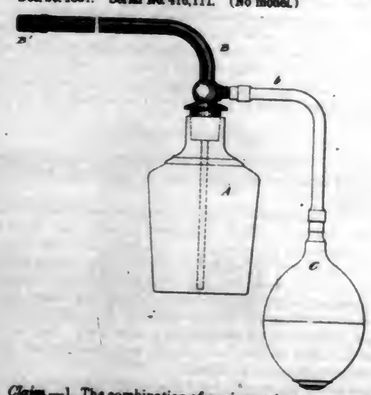
3. In a refrigerator-tank car, a refrigerator-car having non-conducting walls, floor, and roof composed of double walls with an insulating-packing between, an ice-chamber at the top thereof, and a refrigerating or cooling chamber below the ice-chamber, combined with an inner tank-shaped car-body for holding the liquid load of the car permanently fixed and mounted within said refrigerating-chamber, and saddles or supports for supporting said tank above the car-floor, there being an open air-space all around said tank at bottom, top, sides, and ends thereof, so that the air cooled by the ice may come in direct contact with said tank all around the same, said tank being provided with transverse partitions furnished with connecting-openings through the same, substantially as specified.

474,604. BLAST-BOARD FOR CLOVER-HULLING MACHINES. JOHN N. KAILOR, Columbus, Ind., assignor to Reeves & Co., same place. Filed Oct. 29, 1891. Serial No. 410,181. (No model.)



Claim.—In a clover-hulling machine, the combination, with the main frame, the air-passage formed thereon, and the front carrying-wheels arranged to intrude on said passage in turning from side to side, of the folding blast-board consisting of a wide and a narrow part hinged together edge to edge and forming the bottom of said passage, said narrow part being hinged to the main frame and arranged in the path of the wheels, whereby the bottom of the air-passage is adapted to be raised by the wheels, as set forth.

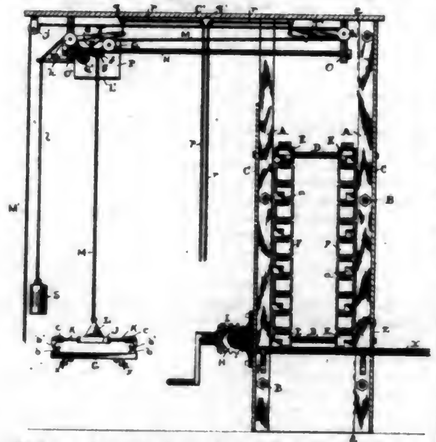
474,605. ATOMIZER. GEORGE LAUBENDORFER and FREDERICK LIPP, New York, N. Y., assignors to William Hugershoff, same place. Filed Dec. 26, 1891. Serial No. 416,111. (No model.)



Claim.—1. The combination of an air-supply tube, a nozzle screwed over the same, said nozzle having a conically-tapering opening, and a suction-tube provided with a tapering end that is adapted to fit tightly into the discharge-opening of the nozzle, said suction-tube being provided with a lateral aperture, through which the air has to pass on its way through the discharge-orifice of the nozzle, so as to produce an atomizing action, substantially as set forth.

2. The combination of the air-supply tube of an atomizer with a nozzle applied to the same, said nozzle having a discharge-opening, a suction-tube the end of which is fitted into the discharge-opening of the nozzle and provided with an air-aperture at some distance from the end, and a collar on the end of the suction-tube, which is adapted to be placed over the aperture in the same so as to prevent the atomizing action and to produce a jet action of the atomizer, substantially as set forth.

474,606. APPARATUS FOR CONVEYING MEAT THROUGH SMOKE-HOUSES. JEAN MÜLLER, Baltimore, Md. Filed Sept. 14, 1891. Serial No. 405,614. (No model.)



Claim.—1. In a smoke-house, the combination of a rectangular frame for holding the matter to be smoked, an elevator having four radial arms provided at their extremities with means of separable attachment to the four corners of the said frame, respectively, horizontal ways, a carriage thereon, a cord suspending the elevator and running through the said carriage and over a pulley at one end of said horizontal ways and thence to the opposite end of the latter, and a chain-carrier below one end of the horizontal ways and on which the rectangular frame is deposited to be conveyed through the smoke-house.

2. In a smoke-house, the combination of a rectangular frame for holding the matter to be smoked and having staples at the corners, an elevator having four radial arms provided at their extremities with pivoted overbalanced hooks for engaging in the staples of the rectangular frame, respectively, horizontal ways, a carriage thereon, a cord suspending the elevator and running through the said carriage and over a pulley at one end of said horizontal ways and thence to the opposite end of the latter, and a chain-carrier below one end of the horizontal ways and on which the rectangular frame is deposited to be conveyed through the smoke-house.

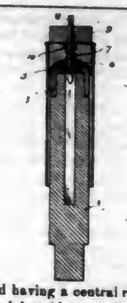
3. In a smoke-house, the combination of a frame for holding the matter to be smoked, an elevator having means of separable attachment to said frame, horizontal ways, a carriage thereon, a cord suspending the elevator and running through the said carriage and over a pulley at one end of said horizontal ways and thence to the opposite end of the latter, catches pivoted at opposite ends of the horizontal ways and arranged to automatically engage and hold the carriage from movement on said ways during the raising and lowering of the elevator, cords attached to said catches, and a chain-carrier below one end of the horizontal ways and on which the frame holding the matter to be smoked is deposited to be conveyed through the smoke-house.

4. In combination with a smoke-house having a chain-carrier, a carriage traveling on horizontal ways above said carrier and having a square opening in its under side, an elevator to take the frames which carry the matter to be smoked, said elevator having a projection on its upper side to engage the square hole in the under side of the carriage, a cord connected to said elevator and passing up through the said carriage and thence above the chain-carrier, and a suitable catch to engage and hold the carriage, as described.

474,607. CARTRIDGE-PRIMING PIN. JEROME ORCUTT, Bridgeport, Conn., assignor to the Union Metallic Cartridge Company, same place. Filed Feb. 8, 1892. Serial No. 420,718. (No model.)

Claim.—1. A cartridge-priming pin consisting of a body, a cap

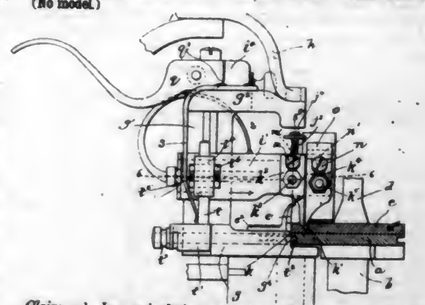
474,607.



engaging the body and having a central recess and an opening in the top, and a tubular head in said recess, the base of which rests upon the body, the upper end thereof extending through the opening in the cap, substantially as described.

2. A cartridge-priming pin having an opening in one side and threaded at its upper end, a cap threaded to engage the body and having an internal recess and an opening in its top, and a movable head having an opening through it adapted to register with the opening in the body, the base of said head resting upon the top of the body and the upper end thereof extending through the opening in the cap, so that in use the cartridge may be shifted upon the pin so that a descending punch must necessarily register with the movable head.

474,608. SOLE FITTING AND CHANNELING MACHINE. WILLIAM H. PAIGE, Brockton, Mass. Filed July 1, 1891. Serial No. 398,156. (No model.)



Claim.—1. In a sole fitting and channeling machine, the edge-trimming knife c, having a flange c^3 on its shank, combined with a bed or support for said knife, the adjusting-screw c^4, bearing on the outer side of said flange, and the adjustable bearing-screws c^5, arranged to bear on the inner side of said flange, as set forth.

2. In a sole fitting and channeling machine, the combination, with the supporting bed or plate g, having a standard g', of the arm i, vertically movable on said standard and normally depressed by a spring, and channeling devices supported by said arm, as set forth.

3. In a sole fitting and channeling machine, the combination, with the supporting bed and plate g, having a standard g', of the arm i, vertically movable on said standard and normally depressed by a spring, the gage j, the channeling-knife k, and the grooving-knife k', supported by said arm, and means, substantially as described, for vertically adjusting said gage and for laterally adjusting said knives, as set forth.

4. The combination, with the supporting-standard g' and the vertically-movable arm i, provided with channeling devices, of the curved spring p, having at one end a hub pivotally connected to said standard, and a pressure-adjusting screw p^3, supported by said standard and arranged to bear on an ear or projection on the spring, as set forth.

5. The combination, with a supporting-standard, the arm i vertically movable thereon and provided with channeling devices, the arm-depressing spring and the arm-raising lever, and connections between said lever and the arm, of a movable stop or button adapted to hold the arm in its raised position, as set forth.

6. The combination of the supporting bed or plate, the trimming-knife thereon, the vertical standard on said plate, an arm i, supported above said plate, a slide i', horizontally movable on said arm and provided with channeling devices, a spring arranged to normally hold the channeling devices at their maximum distance from the trimming-knife, a slide i^2, arranged to project beyond the pattern-supporting shoulder or surface on said bed or plate, and connections between said slide i^2 and the channeling-knife-carrying slide, whereby movement imparted to the slide i^2 by the edge of the pattern is caused to also move the knife-carrying slide, as set forth.

7. The combination of the knife-carrying slide i', the knives k k', supported thereby, the shank of each knife being mounted to swing on a pivot, and the eccentric headed screws engaged with recesses in the upper ends of said shanks, whereby the knives may be laterally adjusted, as set forth.

8. The combination of the knife-carrying slide i', the knives k k', supported thereby, the adjusting-slides i^6, the stud l, secured to said slide, the sleeve i^6, receiving the stud l, and the adjusting-screw i^5, engaged with the slide i' and with the sleeve i^6, whereby the slide i' and the knives thereon may be laterally adjusted, as set forth.

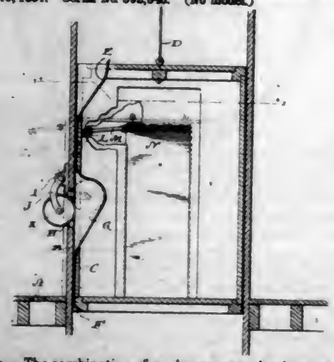
9. The combination of the knife-carrying slide i', the slide o, vertically movable on the slide i', means for vertically adjusting the slide o, the channeling-knife secured to the slide i', and the grooving-knife secured to the slide o and adapted to be vertically adjusted, as set forth.

10. The combination of the bed or plate g, the trimming-knife thereon, the slide i^6, movable in said bed or plate, the channeling-knife-carrying slide i', located above said bed, the block l', secured to the slide i^6, the stud l, connecting the block l' with the slide i', and the adjusting-nut i^5, engaged with the slide i^6 and with the block l', whereby said slide may be independently adjusted, as set forth.

11. In a sole fitting and channeling machine, the combination, with the pattern a, having grooves a' of varying depths formed in the edges of its shank portion, of means for clamping a sole to the pattern, knives for operating on the sole, a guide connected with the knives and adapted to enter said grooves, and means for normally pressing the guide toward the pattern, for the purpose set forth.

12. The combination of the pattern a, having grooves a' in the edges of its shank portion, the fixed trimming-knife, the channeling and grooving knives movable toward and from the trimming-knife, a slide i^6, formed to project below the trimming-knife and to enter the grooves a', connections between said slide and the channeling and grooving knives, and a spring whereby the slide and channeling and grooving knives are normally pressed in one direction to separate the said channeling and grooving knives from the trimming-knife, as set forth.

474,609. ELEVATOR. CHARLES ROSS, Milwaukee, Wis. Filed May 15, 1891. Serial No. 392,843. (No model.)



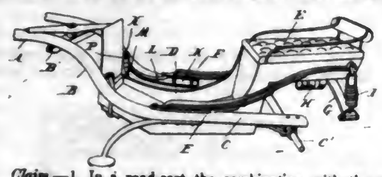
Claim.—The combination of an elevator-cage having cam-surfaces at the extremities thereof and provided with a pocket intermediate of the cam-surfaces, a well-casing provided with a slot in register with said pocket when the cage is on a level with an adjacent floor, a bell-crank having its bearing on the well-casing and one of its arms positioned to come in and out of engagement with the casing-slot and cage-pocket, a door, and a link connecting this door and other arm of the bell-crank, substantially as set forth.

474,610. KNOCKDOWN PAPER BOX. EBEN M. SCOTT, Shelton, Conn. Filed Nov. 23, 1891. Serial No. 412,716. (No model.)



Claim.—A knockdown paper box formed from a blank consisting of a central portion, side pieces, and end pieces, said side pieces being provided at each end with flaps 4, detached from the end pieces, and each flap being provided with an oblique slot 5, and said end pieces being provided with flaps 6, which are adapted to fold over flaps 4 when assembled and the corners of which are adapted to enter the oblique slots.

474,611. TWO-WHEELED VEHICLE. ROBERT D. SCOTT, Pontiac, Mich. Filed July 13, 1891. Serial No. 399,357. (No model.)



Claim.—1. In a road-cart, the combination, with the axle, the shafts secured directly to the axle, and the body, of vertically-disposed links pivotally secured to the front of the body and extending upwardly, their upper ends being formed with a series of perforations therein, springs secured to the shafts at a point between the front and rear of the body, their ends extending forwardly and upwardly and having an adjustable pivotal connection with the links, and springs for supporting the rear part of the body, substantially as described.

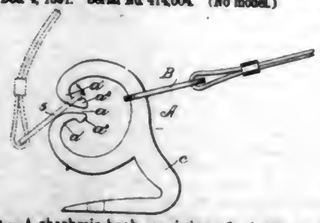
2. In a road-cart, the combination, with the axle, the shafts secured directly to the axle, and the body, of links secured to the body and connected at their lower ends, their upper ends being extended up beyond the base of the body, springs secured to the shafts and extending forward, their upper ends having a pivotal connection with the links, springs secured to the shafts and extending rearwardly to points adjacent to the rear of the body, links on the outer ends of said springs, and springs supporting the rear of the body, connected with the links, substantially as described.

3. In a road-cart, the combination, with the shafts and body, of forwardly and upwardly extending springs on the shafts, having a vertical end portion connected with the forward portion of the body, rearwardly-extending quarter-elliptical springs on the shafts, torsion-springs on the body, and spring link connections between the torsion-spring and quarter-elliptical springs, substantially as described.

4. In a road-cart, the combination, with the shafts having a rear horizontal extension upon a lower plane than the main portion thereof, of quarter-elliptic springs secured on said rear portion and extending rearwardly, independent coiled springs on each side of the body, a suspension device between the shaft and body springs, and means for adjusting the body vertically in relation to the shafts, substantially as described.

5. In a road-cart, the combination, with the shafts, of quarter-elliptic springs secured near the rear and extending rearwardly, independent coiled springs on each side of the body, a suspension device between the shaft and body springs, a swinging spring-support for the front of the body, and means for adjusting the body vertically in relation to the shafts, substantially as described.

474,612. CHECK-HOOK. CHARLES A. SQUIRE, Bradford, Mass. Filed Dec. 4, 1891. Serial No. 414,004. (No model.)



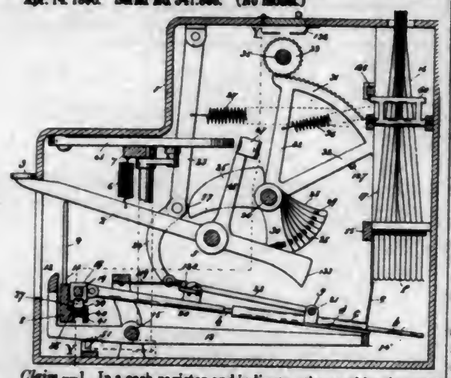
Claim.—A checkrein-hook consisting of a body portion having two inturned points with a clear opening between them to freely admit the checkrein and oppositely-turned knobs on the inside of the said points and a wall on the outer side of the points at the entrance of the opening, substantially as described.

474,618. CIGAR-CASE. MURTAGH J. STRAIN, New York, N. Y., assignor to Emma R. Strain, same place. Filed May 13, 1891. Serial No. 392,570. (No model.)



Claim.—The cigar-case composed of the two hollow sections adapted to fit one to the other and the spring-fingers contained within one section and having free open ends terminating at the open end of the section in which they are secured, the lower ends of the fingers being secured to the inside of the shell, substantially as and for the purposes described.

474,614. CASH-REGISTER. JOSEPH A. TREAT, Stuart, Iowa. Filed Apr. 14, 1890. Serial No. 347,866. (No model.)



Claim.—1. In a cash register and indicator, the combination, with a single group of keys and a series of groups of tablet-rods, of tablet-actuating mechanism connecting with a single tablet-rod, actuated by the keys and common to all of the rods, substantially as described.

2. In a cash register and indicator, the combination, with a series of keys and a series of tablet-rods, of a laterally-movable extensible connection between said keys and tablet-rods, substantially as described.

3. In a cash register and indicator, the combination, with a series of keys and a series of groups of tablet-rods, of a laterally-movable extensible connection between said keys and rods, substantially as described.

4. In a cash register and indicator, the combination, with a series of keys and a series of groups of tablet-rods, each group representing an increasing monetary denomination, of a movable connection between said keys and rods, and mechanism for moving said connection forward to a higher denomination at each successive operation, substantially as described.

5. In a cash register and indicator, the combination, with a series of keys and a series of tablet-rods adapted to be operated thereby, of an extensible tablet-operating arm, and mechanism for extending said arm proportionate to the value of the operated key and operating a tablet-rod of corresponding value, substantially as described.

6. In a cash register and indicator, the combination, with a series of keys and a series of groups of tablet-rods, of a movable and extensible tablet-operating arm forming a connection between said keys and rods, mechanism for extending said arm proportionate to the value of the operated key, and mechanism for moving said connection forward to a higher denomination at each successive operation, substantially as described.

7. In a cash register and indicator, the combination, with a series of keys and a series of tablet-rods adapted to be operated thereby, of an extensible connection between said keys and rods, a cam secured to a rock-shaft above said keys, a spring-actuated hanger connected to said extensible connection and bearing against said cam, and a tablet-operating lever for vertically reciprocating said connection, substantially as described.

8. In a cash register and indicator, the combination, with the keys and tablet-rods, of the pivotal arm 20, carrying the tablet-operating arm e, the rock-shaft 26, the cam 25, hangers 23, roller 57, and tablet-actuating lever 13, substantially as described.

9. In a cash register and indicator, the combination, with a series of keys and a series of tablet-rods, of the sliding extensible arm 20, consisting of the sleeve 18, the frame a, rod b, sleeve c, the plate d, the guide-bearing g, and lifting-arm e, substantially as described.

10. In a cash register and indicator, the combination, with a series of keys and a series of groups of tablets, of a movable connection between said keys and tablets, mechanism for moving said connection forward to a higher denomination at each successive operation, consisting of a horizontally-reciprocating bar below the keys, inclines on said bar, one for each key, a ratchet-bar on said reciprocating bar, a stationary ratchet-bar, and pawls on said movable connection connecting with both of said ratchet-bars, substantially as described.

11. In a cash register and indicator, the combination, with a series of keys and a series of groups of tablets, of a movable connection between said keys and tablets, mechanism for moving said connection forward to a higher denomination at each successive operation, consisting of a horizontally-reciprocating bar below the keys, inclines on said bar, one for each key, a rock-bar on said reciprocating bar, a stationary ratchet-bar, pawls on said movable connection connecting with both of said ratchet rock-bars, a tripping-bar for said pawls, and a spring to return said movable connection to its initial position, substantially as described.

12. In a cash register and indicator, the combination of a single series of keys, consisting of a bank of ten, comprising nine digits and a cipher-key, a series of tablet-rods correspondingly numbered, adapted to be operated thereby, and a single lifting-arm for said tablets, substantially as described.

13. In a cash register and indicator, the combination of a single series of keys consisting of a bank of ten, comprising nine digits and a cipher-key, and a series of groups of tablet-rods, each group containing a series of tablet-rods corresponding in number to the number of keys and adapted to be operated by said keys, substantially as described.

14. In a cash register and indicator, the combination, with a single series of keys consisting of a bank of ten, comprising nine digits and a cipher-key, of tablet-rods correspondingly numbered, and an extensible connection between said keys and rods, having a single lifting-arm and adapted upon the operation of a key to operate the tablet-rod of corresponding value, substantially as described.

15. In a cash register and indicator, the combination, with a single series of keys consisting of a bank of ten, comprising nine digits and a cipher-key, of a series of groups of tablet-rods, each group correspondingly numbered, consisting of separately-movable tablet-rods arranged in line one behind the other and representing successively higher denominations, and a sliding extensible connection between said keys and rods adapted upon the operation of a key to operate the tablet-rod of corresponding value and adapted at each successive operation to operate a tablet-rod of corresponding higher denomination, substantially as described.

16. In a cash register and indicator, the combination of a series of groups of tablet-rods, each group representing an increasing denomination, a series of operating-keys, a connection between said tablet-rods and keys, a single latch for each group, and mechanism for releasing the latch mechanism of all the groups simultaneously, substantially as described.

17. In a cash register and indicator, the combination of a bank of keys consisting of digits and a cipher-key, a connection between said digits and the registering and indicating actuating mechanism, a connection between said cipher-key and the tablet-operating mechanism, and a connection between the keys and the sliding bar 126, substantially as described.

18. In a cash-register, the combination, with the keys, of the sliding bar 8, the arms 9, having the inclined portion 10 and vertical portion 11, the connecting-bar 12 opposite the vertical portion, and the tablet-actuating lever 13, substantially as described.

19. In a cash-register, the combination of the keys, laterally-yielding wards thereon, a series of tumblers with which said wards engage, and locking mechanism connected with said tumblers for locking the operating mechanism upon the operation of more than one key, substantially as described.

20. In a cash-register, the combination of the keys and tablet-rods, a series of wards upon said keys, a series of tumblers with which said wards engage, a double-crank lever actuated by the terminal tumbler, and a sliding locking-bar having slots for the reception of the tablet-operating lever, all so arranged that upon the operation of more than one key said levers are stopped from entering said slots, substantially as described.

21. In a cash-register, the combination, with a series of keys and a series of groups of tablet-rods, of the laterally-movable connection 20, the tines 119, of different pitch, and the spring-latch 120, substantially as described.

22. In a cash-register, the combination, with a series of register-wheels marked with a series of numerals of successive higher denominations, such as units, tens, &c., and arranged so that upon the complete rotation of one wheel the wheel of the next higher denomination is turned one fractional part or notch, of a sliding locking connection engaging with one of said wheels, and mechanism for moving said connection to any of said wheels, substantially as described.

23. In a cash-register, the combination, with a series of coacting registering-wheels mounted on a shaft marked with a series of numerals of successive higher denomination, of a movable locking connection engaging with one of said wheels for locking the same to the shaft, and mechanism for moving said connection to engage with any of said wheels, substantially as described.

24. In a cash-register, the combination, with a series of keys and a series of coacting register-wheels marked with a series of numerals of successive higher denominations, of a movable locking connection with said wheels operated by said keys, and a register-actuating mechanism, all so arranged that each successive operation of a key moves

the connection to a wheel of higher denomination, substantially as described.

25. In a cash-register, the combination, with a series of keys, a shaft and a series of coacting register-wheels marked with a series of numerals of successively-higher denominations, of a movable locking connection between said wheels and shaft operated by said keys, whereby each successive operation of a key moves the connection to a wheel of higher denomination on the shaft, and a latch upon said movable connection to hold said connection in its adjusted position, substantially as described.

26. In a cash register and indicator, the combination, with a single series of keys, of a series of coacting registering-wheels marked with numerals of successive higher denominations, and register-actuating mechanism, and a movable locking connection between the registering-wheels and the keys, whereby upon the successive operation of the keys connection is made with a register-wheel of higher denomination, substantially as described.

27. In a cash register and indicator, the combination, with a series of keys, of a series of registering totalizing-wheels marked with a series of numerals of successively-higher denomination, and a sliding connection between the various registering-wheels, whereby upon the successive operation of a key or keys the connection is made with a register-wheel of higher denomination, substantially as described.

28. In a cash-register, the combination of the following elements: a key, the rock-shaft 26, having rock-arms arranged at varying distances from the keys, the segmental gear 31, gear-wheels 33, pawl 130, ratchet-wheel 131, fixed upon the shaft 35, the register-wheel sleeved upon said shaft, the traveling connection 129, and the mechanism for successively connecting said part with a register-wheel of higher denomination, substantially as described.

29. In a cash-register, the combination of the keys and register-actuating mechanism, the shaft 35, the register-wheels 34, having pins *l*, spring-latches *o*, and the arms *s* beside said wheels, substantially as described.

30. In a cash-register, the combination of the keys and register-actuating mechanism, the shaft 35, registering-wheel 34, sleeved upon the said shaft, having pins *l*, spring-latches *o*, teeth *i*, and pawl 124, substantially as described.

31. In a cash-register, the combination, with the keys and register-actuating mechanism, of the shaft 35, wheels 34, sleeve 88, rod 126, having lug 129, the movable ratchet 115, a stationary ratchet and pawl on said sleeve engaging said ratchet, the spring 124, and mechanism for moving said sleeve upon the operation of a key, substantially as described.

32. In a cash-register, the combination, with the keys and registering-wheels, of a movable connection therewith, actuating mechanism for said connection, consisting of the sleeve 88, stationary and movable ratchets, pawls on said sleeve engaging said ratchets, the lever 138, bar 8, and connection with the key for reciprocating said bar, the lifting-bar 123, and setting-bar 44, substantially as described.

33. In a cash register and indicator, the combination, with a casing having an opening therein, of a series of tablets, means for actuating the tablets, a lever, a hood on the lever between the tablets, and opening and connections between the lever, and actuating means for raising and lowering the hood, substantially as described.

34. In a cash register and indicator, the combination, with a series of groups of tablets and tablet-actuating mechanism, of a hood or slide, means for moving the same upon the operation of a key to hide the operated tablets, and mechanism controlled by the hood-operating parts for preventing the indication of an amount of lesser denomination than that previously operated until the hood has been lifted to expose the tablets, substantially as described.

35. In a cash register, indicator, and recorder, the combination, with the keys, of a recording figure-plate having a segmental face bearing figures of corresponding value with the keys and adapted to be rotated proportionally to the value of the digit to be recorded, and mechanism for moving said plate laterally at each successive operation of a key, substantially as described.

36. In a cash register, indicator, and recorder, the combination, with the keys, of a recording mechanism comprising a laterally-movable segmental figure-plate bearing figures of corresponding value with the keys, a cipher upon said plate normally in the path of the printing-hammer, and a cipher-key adapted to operate said hammer, substantially as described.

37. In a cash register, indicator, and recorder, the combination of the following elements: a series of keys, a shaft rotated upon the operation of a key proportionately to the value of the key, a figure-plate upon said shaft, a hammer, paper and ribbon strips, reels upon which said strips are wound, the bar 123, setting-bar 44, and pawl and ratchet connection between the bar 123 and said reels, substantially as described.

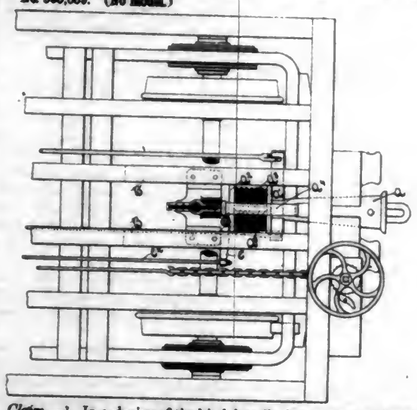
38. In a cash register and indicator, the combination of a series of keys, a series of tablet-rods, and registering mechanism, said keys having bearings connecting with the registering mechanism during the first part of its movement, and a locking-bearing for actuating means for locking the registering mechanism during the interval when a key is operating the tablet mechanism, substantially as described.

39. In a cash-register, the combination of the tablet-rods provided with a detent or shoulder, the spring-pawl adapted to engage therewith and hold them in their elevated position, and the latch 61, substantially as described.

40. In a cash-register, the combination of a series of groups of tablet-rods, each rod provided with a detent or shoulder, a pivoted pawl for each group, and actuating mechanism common to all the pawls, substantially as described.

41. In a cash-register, the combination of a series of groups of tablet-rods, each provided with a shoulder, a pivoted pawl for each group, connections between the pawls, and actuating mechanism common to all the pawls, substantially as described.

474,615. POWER-TRANSMITTING DEVICE FOR CAR-BRAKES. William B. Turner, Boston, Mass., assignor to the Turner-Beard Automatic Brake Company, New York, N. Y. Filed June 4, 1891. Serial No. 395,089. (No model.)

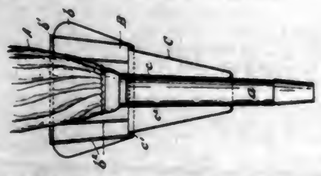


Claim.—1. In a device of the kind described, a support or frame, as A, a block thereon movable longitudinally by a draw-bar, an operating member connected to said longitudinally-movable block and rollers carried by it, a guide on the support having an inclined portion *f*, against which the rollers act, and a bell-crank lever, one arm of which is engaged or acted upon by said rollers, substantially as described.

2. In a device of the kind described, a support or frame, as A, a block c^4 thereon movable longitudinally by a draw-bar, an operating member pivoted to said longitudinally-movable block and rollers carried by it, a stationary guide having an inclined portion *f* located at one side of said operating member and with which the rollers co-operate, and a bell-crank lever, one arm of which is located at the other side of said operating member and is acted upon by the rollers, substantially as described.

3. In a device of the kind described, a support or frame, as A, a block c^4 thereon movable longitudinally by a draw-bar, a pivoted operating member and rollers carried by it, a guide located at one side of the operating member, having an inclined portion *f* and a straight portion *f'*, and a bell-crank lever, one arm of which is located at the other side of the said operating member which is acted upon by the rollers, substantially as described.

474,616. UMBRELLA DRIP-CUP. James R. Tyson, Reading, Pa. Filed Sept. 14, 1891. Serial No. 405,636. (No model.)



Claim.—A drip-cup having a lower portion C, adapted to inclose the umbrella-stick, and an upper portion B, formed with longitudinal ribs b^2, a beaded edge b', and webs *b*, all substantially as and for the purpose set forth.

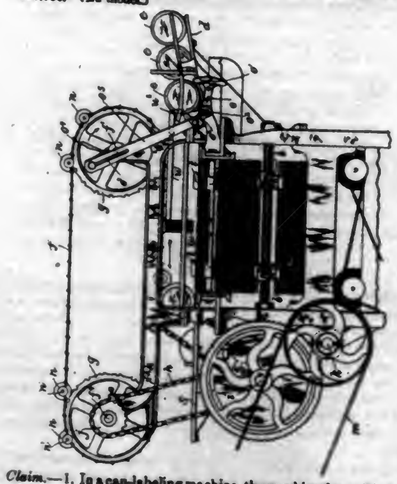
474,617. CHAMBER-VESSEL. Ernest Weissbarn, New York, N. Y. Filed Feb. 5, 1892. Serial No. 420,467. (No model.)



Claim.—1. The combination of vessel *a* with a seat *b* and with clasps *b'* for securing the seat to the vessel substantially as specified.

2. The combination of vessel *a* with a seat *b*, made of horseshoe shape, clasps *b'* for securing the seat to the vessel, and a cover *c*, hinged to the seat and having a thickened end *c'*, substantially as specified.

474,618. CAN-LABELING MACHINE. Rowell L. Wight, Bridgton, Me., and Henry F. Wight, Malden, Mass., assignors of one-third to William M. McDonald, Somerville, Mass. Filed Jan. 4, 1892. Serial No. 416,968. (No model.)



Claim.—1. In a can-labeling machine, the combination, with means for moving a series of labels progressively step by step, of can feeding and rolling devices comprising flexible chains or bands, means for supporting and impelling the same, and can-engaging trucks or pulleys carried by said chains or bands and arranged to move a can progressively and permit its free rotation, said chains or bands being arranged with their acting portions substantially parallel with the labels and extending substantially at a right angle to the direction of movement of the labels, as set forth.

2. In a can-labeling machine, the combination of means for moving a series of labels progressively step by step, the flexible chains or bands supported and driven by wheels or pulleys above the labels, can-engaging devices carried by said chains, and pressure-bars adapted to exert a downward yielding pressure on the acting portions of said chains and on the can-engaging devices thereon, as set forth.

3. In a can-labeling machine, the combination of means for moving a series of labels progressively step by step, belts or chains carrying laterally-extending rods or shafts having can-engaging pulleys, and movable pressure-bars arranged to exert downward pressure on said shafts, as set forth.

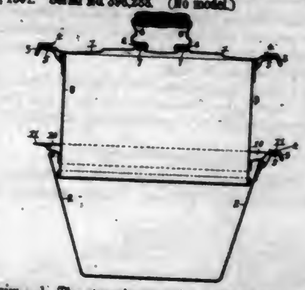
4. In a can-labeling machine, the combination of means for moving a series of labels progressively step by step, belts or chains carrying laterally-extending rods or shafts having can-engaging pulleys, vertically-movable pressure-bars having flanges arranged to bear on the pulleys on said shafts, and springs arranged to exert downward pressure on said bars, as set forth.

5. In a can-labeling machine, the combination of means for moving a series of labels progressively step by step, belts or chains carrying laterally-extending rods or shafts having can-engaging pulleys, a can-chute arranged to guide cans to a point contiguous to said belts or chains, oscillating fingers arranged to separate the lowest can from the procession of cans in the chute, and fixed stops or fingers arranged to co-operate with said oscillating fingers in raising the said can into engagement with the said pulleys, as set forth.

6. The combination of the series of label-supporting beds having upwardly-projecting label-engaging ears at their edges, the label-supporting table located above the plane of said beds, and the label-supporting fingers located below and at one side of said table, said fingers being separated by spaces which permit the passage of said ears between the fingers, as set forth.

7. The combination of the series of label-supporting beds having upwardly-projecting label-engaging ears at their edges, the label-supporting table located above the plane of said beds, the label supporting fingers located below and at one side of said table, and the label-gage located at opposite ends of the series of fingers, as set forth.

474,619. COOKING UTENSIL. Richard C. Andersen, Pawnee City, assignor of one-half to John L. Marshall, Lincoln, Nebr. Filed July 2, 1891. Serial No. 398,288. (No model.)

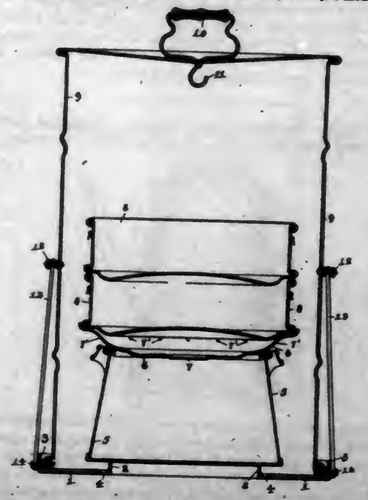


Claim.—1. The steaming-vessel provided with oppositely-placed hooks, each secured to said vessel at one end and having the outwardly-bent horizontal part 5 and the reversely-bent part 4, with a free end, said hooks being adapted to rest on a kettle and having a cover adapted to be slid laterally between the horizontal parts of the hooks, substantially as set forth.

2. The supplementary steaming-vessel having a notched horizontal flange 10, secured thereto on its exterior, combined with a vessel having the horizontal supplementary hooks 3, substantially as set forth.

3. The cover for a steaming-vessel, provided with grooves in its upper surface opening in opposite directions and provided with an elastic wire handle having the approximately S-shaped hooks adapted to be sprung into and out of said grooves, said hooks being also adapted to prevent the handle from falling upon the cover, substantially as set forth.

474,620. APPARATUS FOR COOKING BY STEAM. Richard C. Andersen, Pawnee City, assignor of one-half to John L. Marshall, Lincoln, Nebr. Filed July 8, 1891. Serial No. 398,816. (No model.)



Claim.—1. In a steam cooking apparatus, the base-plate having two rims and a central opening and perforations outside and near to the inner rim, in combination with the drum and the water-holder adapted to rest on the inner rim, substantially as set forth.

2. In a steam cooking apparatus, the base-plate having two rims and a central opening and perforations outside and near to the inner

rim, in combination with the drum, the water-holder, and the vessels having perforated bottoms, substantially as set forth.

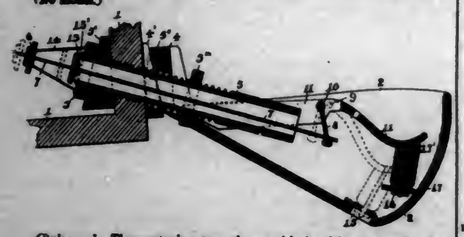
3. In a steam cooking apparatus, the base-plate having two rims and a central opening and perforations outside and near to the inner rim, in combination with the drum, the water-holder, and the vessels having perforated bottoms, the centrally-perforated cover having a series of holes near its periphery, substantially as set forth.

4. In a steam cooking apparatus, a base-plate adapted to rest on a stove and support a water-holder, the water-holder, the centrally-perforated cover having a series of perforations near its periphery, a steaming-vessel adapted to stand on the perforated cover, and an inclosing drum whereby water evaporated on the base-plate can pass as steam through said cover into the steaming-vessel, substantially as set forth.

5. The base-plate having lugs to engage the hooks, the steaming-vessels, the drum provided with knobs on its sides adapted to be used as handles and suitable for the attachment of hooks, and said hooks, all combined substantially as set forth.

6. In a steam cooking apparatus, the drum with a handle, the wire part of said handle being extended through the wall of the drum and bent into a hook adapted to suspend articles, substantially as set forth.

474,621. DEVICE FOR WATERING STOCK. RICHARD C. ANDERSEN, Pawnee City, Nebr. Filed Sept. 19, 1891. Serial No. 406,164. (No model.)

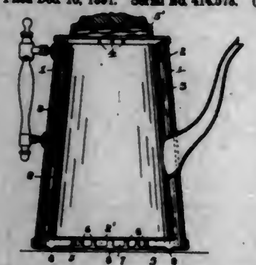


Claim.—1. The watering-trough provided with a movable platform, the tank, the pipe whereby they may communicate, the cut-off valve for said pipe adapted to be opened by a movement of the platform, and a cut-off valve in said pipe adapted to be closed by the same movement of the platform, all combined substantially as set forth.

2. A watering-trough provided with a movable platform and with an outlet in its bottom, a water-holding tank, a pipe by which the trough and tank may communicate, a valve for said pipe normally closed, and a valve adapted to be operated by the movement of the platform to close said outlet when the first-named valve is opened to permit water to flow into the trough, substantially as set forth.

3. A watering-trough having an outlet normally open, a movable platform located in said trough, and a valve adapted to be operated by the platform whereby the depression of said platform within the trough closes the outlet, substantially as set forth.

474,622. COOKING-VESSEL. RICHARD C. ANDERSEN, Pawnee City, Nebr. Filed Dec. 10, 1891. Serial No. 414,573. (No model.)

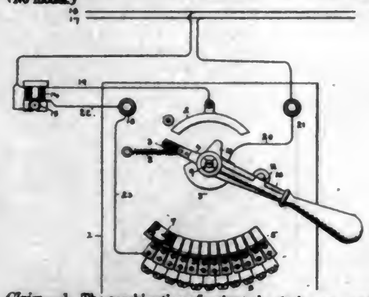


Claim.—1. The double-walled vessel provided with a tight cover and having its walls joined at their tops, the inner wall being perforated near its upper end and the outer wall having secured to its foot the annulus 5, extending under the bottom of the inner receptacle and provided with upward projections 6, bearing against the bottom of said inner receptacle at points approximately midway between the periphery and center of said bottom, substantially as set forth.

2. The cooking-vessel having an inner receptacle and provided with a steam-tight cover and with two walls 1 and 2, fixed together, the former extending below the latter and having for its bottom the horizontal plate 5, extending immediately under the said receptacle and provided with upturned lips 6, said plate being adapted to inclose a space above the foot of the outer wall and below the bottom of the inner receptacle in communication with that immediately below the said inner receptacle and also in free communication with the interior of the latter at its upper part, the central part of the bottom of said outer receptacle being cut away, all substantially as set forth.

3. The cooking-vessel provided with a steam-tight cover and with two walls 1 and 2, fixed together, the former extending below the latter and having for its bottom the plate 5, provided with the feet 8 and upturned lips 6 and adapted to support the utensil by resting on any part of a stove-top and to leave the center of the bottom of the inner receptacle exposed to direct radiation from said top, the space immediately under the plate 5 being in direct communication with the bottom of the inner receptacle and also in communication with the interior of said inner receptacle, substantially as set forth.

474,623. CIRCUIT-CONTROLLER FOR ELECTRIC MOTORS. WILLIAM S. ANDREWS, New York, N. Y., assignor to the Edison General Electric Company, same place. Filed May 27, 1891. Serial No. 394,266. (No model.)



Claim.—1. The combination of a pivoted switch-arm, a spring connected thereto and tending to move the arm to its open position, a separately-movable handle having a lug engaging the arm when moved toward the closed position and having a lug engaging the arm when the handle is near the end of its return movement, but not engaging said arm during the first part of such movement, and two contacts or sets of contacts in the path of said arm, one at one end and one at the other end, the contacts being so arranged that one end of the switch-arm makes contact therewith before the other, substantially as described.

2. The combination, in a switch, of a single switch-arm, an operating-spring therefor, contacts co-operating with said switch-arm and connected to different circuits or branches, said contacts being arranged so that one of the circuits will be closed before the other and said single switch-arm having two switch plates or faces, resistances thrown into the second circuit and then removed therefrom, and a handle movable through a part of its range independently of the switch-arm and of the spring, substantially as described.

3. The combination, in a switch, of a switch-arm having two switch plates or faces connected to one side of a circuit, a long contact in the path of movement of said switch-arm and connected to the opposite side of the circuit through one branch, and a series of contacts connected by resistances also in position to co-operate with the switch-arm after contact has been made with the long contact, said resistances being connected to the circuit through a second branch, substantially as described.

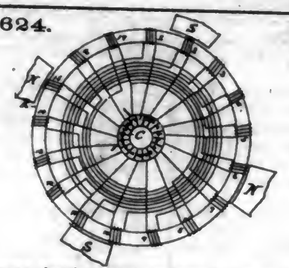
4. The combination of a switch-arm, a contact spring or plate at one end thereof, a contact co-operating with said spring or plate, and a contact spring or plate at the opposite end of the switch-arm, the latter spring bearing on a contact at each end, substantially as described.

474,624. DYNAMO-ELECTRIC MACHINE OR MOTOR. JOSEPH D. F. ANDREWS, London, England, assignor, by mesne assignments, to the Curtis Electric Manufacturing Company, of West Virginia. Filed Jan. 18, 1892. Serial No. 418,510. (No model.) Patented in England Dec. 24, 1884, No. 16,916.

Claim.—1. A dynamo-electric machine or motor provided with an armature having a ring-core and two or more pairs of field-magnet poles, the armature coils surrounding the core and connected together and to the commutator, so that all coils in approximately the same phase act together in series.

2. A dynamo-electric machine or motor provided with a ring-armature having a closed coil-winding and two or more pairs of field-magnet poles, the number of coils and commutator-segments differing by one from a multiple of half the number of field-magnet-poles, said coils being connected together and to the commutator, so that all coils in approximately the same phase act together in series.

474,624.

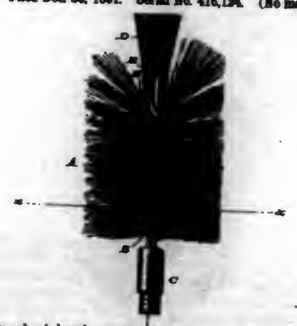


3. A dynamo-electric machine or motor provided with a ring-armature and two or more pairs of field-magnet poles, the armature coils or sections being connected together and to the commutator, so as to form a system of conductors comprising for any number of field-magnet poles two groups of coils in multiple arc, in which all the coils or sections in each group act in series relation.

4. A dynamo-electric machine or motor provided with a ring-armature and two or more pairs of field-magnet poles, each armature-coil being connected to a commutator-segment and to a coil on either side at a distance approximately equal to the space between two pole-pieces of like sign, so as to form a system of conductors comprising for any number of field-magnet poles two groups of coils in multiple arc, all of the coils in each group acting in series relation.

5. A dynamo-electric machine or motor provided with a ring-armature and two or more pairs of field-magnet poles, the armature coils or sections being connected together and to the commutator, so as to form a system of conductors comprising for any number of field-magnet poles two groups of coils in multiple arc, all of the coils in each group acting in series relation and successively connected coils being distant from each other on the ring twice the distance between adjacent field-magnet poles.

474,625. BOTTLE-WASHING BRUSH. JOHN BAHR, Philadelphia, Pa. Filed Dec. 26, 1891. Serial No. 416,194. (No model.)



Claim.—1. A bottle-washing brush consisting of twisted tubes, bristles secured to one end of said tubes by wires, other bristles held by said tubes, and a collar connecting the other end of said tubes, said parts being combined substantially as described.

2. In a bottle-washing brush, twisted tubes holding the bristles thereof and forming a conveyer for water, substantially as described.

474,626. CIGAR-CUTTER. JAMES H. BOWER, Philadelphia, Pa. Filed Aug. 27, 1891. Serial No. 403,845. (No model.)



Claim.—1. A cigar-cutter consisting of a casing having a horizontal division, the upper section being conical, and a blade-carrying head of conical form and rotatively mounted in said casing, the periphery of said head being presented at the said division and the parts of the casing peripherally connected, substantially as described.

2. A casing having a horizontal division and a conical section, and a blade carrying head of conical form and rotatively mounted in said conical section of the casing, the sections of said division being connected by separated plates or bars at the periphery thereof, thus supporting the upper section and presenting the head at the division of the sections, for the purpose of operation, substantially as described.

3. A divisional casing having an upper conical section and a lower section, a rotative head in the upper section thereof, and a blade on said head, a shaft carrying said head having its bearings in the upper and lower walls of the respective sections of the casing, and plates or bars uniting the sections of the casing and supporting the upper section thereof, said parts being combined substantially as described, forming an improvement in cigar-cutters.

474,627. PUZZLE. WILLIAM H. BURNETT, Danbury, Conn. Filed Mar. 5, 1892. Serial No. 423,811. (No model.)

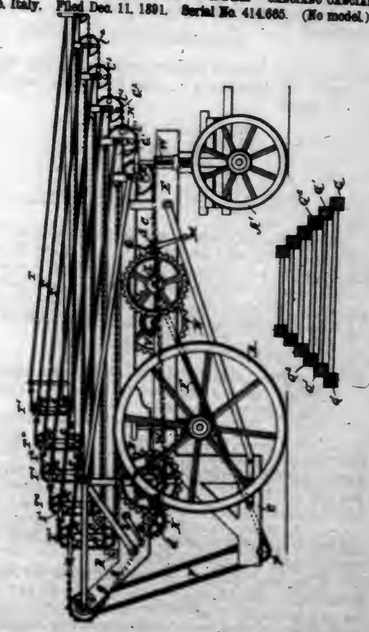


Claim.—1. A puzzle consisting, essentially, of a standard, a pin extending obliquely therefrom, a disk pivoted on said pin and having a groove in its edge and a stop, and a ball lying in said groove and adapted to be passed from one side of the stop to the other by rotation of the disk.

2. A puzzle consisting of a standard having oblique holes near its top, either of which is adapted to receive a pin, a disk pivoted on said pin and having in its edge a groove, a stop in said groove and on one side of said stop a depression, and a ball adapted to be placed on the opposite side of the stop from the depression and to be moved into the depression by rotation of the disk.

3. A puzzle consisting of a base, a standard having oblique holes, a pin adapted to engage either of said holes, a disk pivoted on said pin and having in its periphery a groove, a stop in said groove, a pivoted hand-piece by which the disk is rotated, and a ball lying in the groove and adapted to pass from one side of the stop to the other.

474,628. EXTENSION TRUCK-LADDER. CANCIANO CANCIANI, Udine, Italy. Filed Dec. 11, 1891. Serial No. 414,665. (No model.)

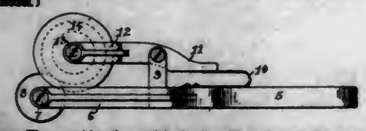


Claim.—1. In a shooting-ladder, the combination of a carriage, a plurality of telescoping ladder-sections mounted thereon, a pulley-wheel journaled on the upper end of each section, a bracket mounted on the lower end of each ladder-section and upon the upper side thereof, pulley-wheels mounted on each of said brackets, a windlass upon the first section, a chain which is fastened to the lower end of the second ladder-section, runs over the pulley journaled on the upper end of the first section, and winds upon the windlass, a second chain which runs from the upper end of the bracket on the second section of ladder, around the pulley on the bracket at the base of the first section, and also winds onto the windlass, but in the opposite direction from that of the first-mentioned chain, and means for winding up said windlass, substantially as described.

2. In a shooting-ladder, the combination of a carriage, a plurality of telescoping ladder-sections mounted thereon, a pulley-wheel journaled on the upper end of each section, a bracket mounted on the lower end of each ladder-section and upon the upper side thereof, pulley-wheels mounted on each of said brackets, a windlass upon the first ladder-section, a chain which is fastened to the lower end of the second ladder-section, runs over the pulley journaled on the upper end of the first section, and winds upon the windlass, a second chain which runs from the upper end of the bracket on the second section of the ladder, around the pulley on the bracket at the base of the first section, and also winds on the windlass, but in the opposite direction from that of the first-mentioned chain, and means for winding up said windlass, with a hinged connection between the carriage and the first ladder-section, and mechanism for tilting said first section at any angle to the horizontal plane from zero to ninety degrees, substantially as described.

3. In a shooting-ladder, the combination of a carriage, a plurality of telescoping ladder-sections mounted thereon, a pulley-wheel journaled on the upper end of each section, a bracket mounted on the lower end of each ladder-section and upon the upper side thereof, the braces which support said brackets, pulley-wheels mounted at the top and base of each bracket, a windlass upon the first ladder-section, a chain which is fastened to the lower end of the second ladder-section, runs over the pulley journaled on the upper end of the first section, and winds onto said windlass, a series of similar chains, each of which is fastened to a particular ladder-section near its lower end, runs over the pulley at the upper end of the next lower section, and is fastened to the upper end of the second lower section, a second chain which runs from the upper end of the bracket on the second section of the ladder, around the pulley on the bracket at the base of the first section, and also winds on the windlass, but in a direction opposite from that of the first-mentioned chain, and a series of similar chains, each of which is fastened to the bracket on one ladder-section, runs around the pulleys on the bracket at the base of the next lower section, and is fastened to the upper end of the second lower ladder-section, all substantially as described.

474,629. DEVICE FOR APPLYING DECORATIVE FILMS. WALTER H. COE, Providence, R. I. Filed Jan. 6, 1892. Serial No. 417,204. (No model.)

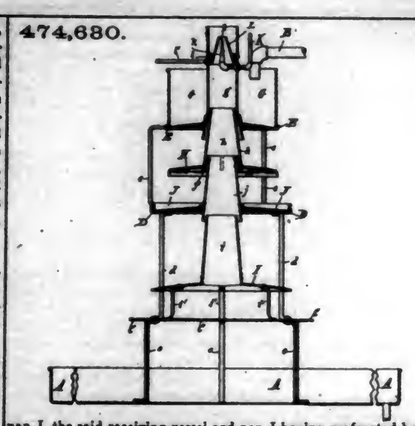


Claim.—The combination, with the handle 5, having the arms 6 6 and provided with the studs 9 9 and spring 10, and the delivery-roll 8, journaled on a shaft secured in the ends of said arms, of the shank 11, pivoted between the studs 9 9 and resting on said spring, the package-roll 15, journaled on a shaft secured in the ends of said arms, and the disks 14 14, independently rotatable on said shaft, as described.

474,680. APPARATUS FOR COOLING AND AERATING MALT LIQUORS. HENRY R. DUCKMANN, Cincinnati, Ohio. Filed Oct. 9, 1891. Serial No. 408,221. (No model.)

Claim.—1. The combination, in a beer-cooler, of a collecting-vessel, the stand resting therein, a series of distributers supported by the stand and having central openings, the pipe leading from the boiler and discharging into the upper receiving-distributer, having a central flue whereby the wort is divided into finely-divided streams which descend in a hollow column to the collecting-vessel, and the vapors arising from the interior of said column are carried off through the central flue in the upper receiving-distributer and openings in the deflectors, substantially as shown and described.

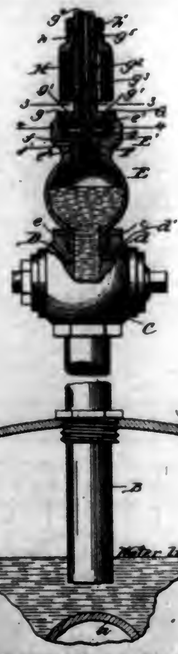
2. The combination of the collecting-vessel, the stand consisting of the disk C, flanged rings D E, the feet and rods *c d e*, the receiving-vessel G at the top of said stand, the deflector H below the said vessel G, the pan J below the said deflector, and the deflector I below the



pan J, the said receiving-vessel and pan J having perforated bottoms and central flues H J, substantially as shown and described.

3. The herein-described cooler, consisting of the stand and the removable perforated distributers and deflectors supported thereby, the said deflectors being arranged below the perforated distributers, both deflectors and distributers having central flues, the flaring lower ends of which overhang the tapered upper ends of those below them to provide a central flue to carry off the vapors arising from the liquor between the deflectors and distributers, substantially as shown and described.

474,681. LOW-WATER ALARM. THOMAS A. DELANEY and ROBERT E. HILLS, Chicago, Ill. Filed Feb. 18, 1892. Serial No. 421,927. (No model.)



Claim.—1. In a low-water alarm, a main pipe extending down into the boiler, in combination with a fusible-plug holder set in the upper end of the pipe and provided with lateral passages above the plug-opening for the escape of steam, and a passage directly over the plug to receive the latter when blown out, substantially as described.

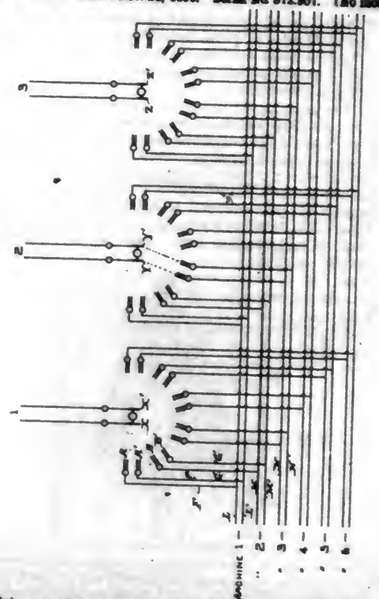
2. In a low-water alarm, a main pipe B, in combination with the cup E', the hollow head G, set in said cup, with an annular opening between them, the fusible-plug holder F on the lower end of said head and mounted at the upper end of the main steam-conduit, and the

hollow stem g^3, arranged immediately over the fusible plug, substantially as described.

3. In a low-water alarm, the main pipe B, in combination with the cup-shaped head E', the hollow head and plug-holder F G, set in said cup and closing the upper end of the steam-conduit, a fusible plug f', set in an opening in the holder just below the hollow head, a hollow stem g^3, surmounting the said head and arranged just over the fusible plug, and the bell H, detachably mounted on said stem, substantially as described.

4. In a low-water alarm, the main pipe B, in combination with the valve-case C, valve D, bulb E, cup-shaped head E', hollow head and plug-holder F G, fusible plug f', and hollow stem g^3, substantially as described.

474,682. ELECTRICAL SWITCHBOARD. LOUIS A. FERR, New York, N. Y. Filed Nov. 28, 1890. Serial No. 372,907. (No model.)



Claim.—1. The combination of a plurality of sources of electrical supply, a plurality of work-circuits, a pivoted switch connected to each work-circuit, and two sets of contact-pieces for each switch, one set of which contact-pieces are connected each to a terminal of a supply-circuit, the other set of contact-pieces being connected each to a terminal of a work-circuit, no contact-piece being connected with more than one such terminal, substantially as described.

2. The combination of a plurality of sources of electrical supply, a plurality of work-circuits, pivoted switches consisting of two bars insulated one from the other, but rigidly connected together, there being one such switch for each work-circuit, the two bars being connected to the terminals thereof, and a series of pairs of contact-pieces for each switch, each pair being connected to the terminals of a supply-circuit, no pair of contact-pieces being connected to more than one supply-circuit substantially as described.

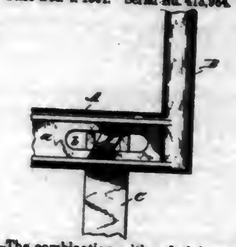
474,683. DOOR-GUARD. GEORGE W. GLAZIER, Salem, assignor of one-half to Hamilton Lockwood, Boston, and John B. Rollins, Lynn, Mass. Filed Nov. 24, 1891. Serial No. 413,002. (No model.)



Claim.—1. The improved door-guard, as described, consisting of a flexible sheet secured to the door and its frame or jamb for the purpose of covering the opening at the place where the door is hinged, substantially as specified.

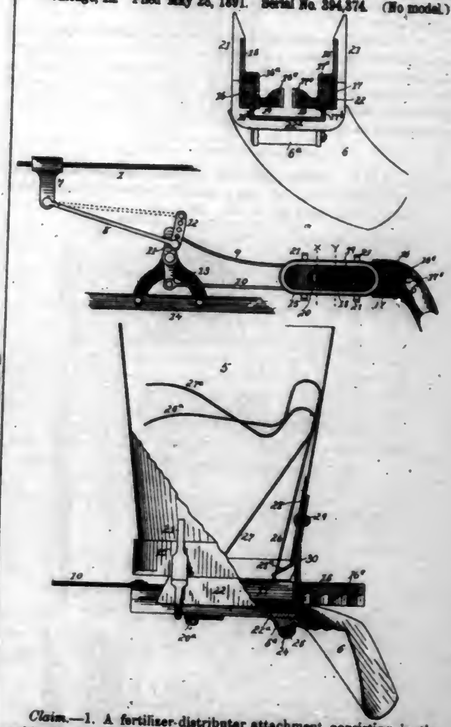
2. The door-guard, as described, consisting of a molded flexible sheet having lips or flanges provided with longitudinal stiffeners, substantially as and for the purpose set forth.

474,684. DASH FOR VEHICLES. WILLIAM LE R. HAWES, Cincinnati, Ohio, assignor to The Dash and Carriage Goods Company, same place. Filed Dec. 4, 1891. Serial No. 413,964. (No model.)



Claim.—The combination, with a dash having its lower rail channeled and provided with slots at each end, of retaining-bolts having rhomboidal heads D, arranged to be inserted through said slots and turned across the channels at an acute angle to the lower dash-rail and secured to the dash-feet by nuts, substantially as shown and described.

474,685. FERTILIZER-DISTRIBUTER. GEORGE D. HAWORTH, Chicago, Ill. Filed May 28, 1891. Serial No. 394,374. (No model.)



Claim.—1. A fertilizer-distributer attachment consisting in the combination of a hopper having a lateral discharge-vent and a drop-bar adapted to move longitudinally back and forth in the discharge-vent and having a set of teeth extending laterally along the bottom of the hopper, as set forth.

2. A fertilizer-distributer attachment consisting in the combination of a hopper having a lateral discharge-vent and two drop-bars adapted to move longitudinally and alternately back and forth in the discharge-vent and having on their inner or opposing edges sets of teeth extending along the bottom of the hopper, as set forth.

3. A fertilizer-distributer consisting in the combination of a hopper having a lateral discharge-vent, reciprocating drop-bars adapted to force the fertilizer through the opening, and stir-rods pivotally con-

nected with the drop-bars and extended upward into the hopper, as set forth.

4. A fertilizer-distributer consisting in the combination of a hopper having a lateral discharge-vent, reciprocating drop-bars adapted to force the fertilizer through the opening, and stir-rods pivotally connected with the drop-bars, extended upward into the hopper, and having at their upper ends lateral bends or extensions traversing the hopper, as set forth.

5. In fertilizer-distributers, the combination of the hopper having lugs 25, bolt 24, extending through the lugs, and spout 6, having extension 6*, adapted to be held by the bolt and the bottom of the hopper, as set forth.

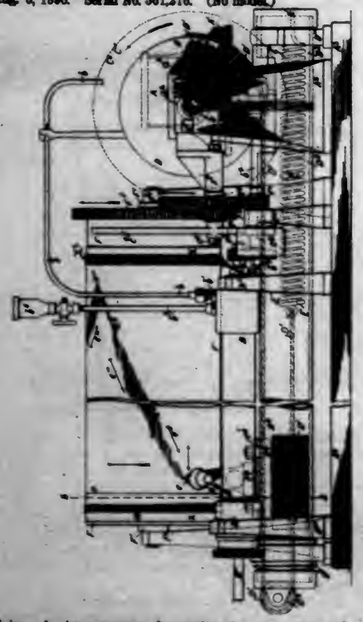
6. In fertilizer-distributers, the combination of a two-part hopper-bottom bolted or otherwise secured together and drop-bars incased between the walls of the parts and having teeth projecting inwardly beyond the same, as set forth.

7. In fertilizer-distributer attachments for planters, the combination of the fertilizer-boxes having dropping mechanism extended through one end of said boxes, a shake-bar, an arm 7 thereon, and a rod connecting the arm of the shake-bar with a pivoted lever having a series of holes, two drop-bars having teeth on their sides, connecting-rods uniting the drop-bars to the pivoted lever, and a connecting-rod 8, having one end attached to the arm 7 and the other end adjustably to the perforated lever, substantially as described.

8. In fertilizer-distributers for planters, the combination of hoppers 5 5*, having drop-bars, centrally-pivoted lever 11, rods 9 and 10, connecting the ends of the lever with the drop-bars of the hoppers, shake-bar 1 of the planter, rod 8, pivotally connected with the shake-bar, and arm 12 on the lever, having a set of holes describing an arc of a circle drawn by rod 8 when the shake-bar is at the middle of its stroke, as set forth.

9. In a fertilizer attachment for planters, the combination of seed-boxes and furrow-openers, a driver's seat in the rear of the seed-boxes, fertilizer-boxes having a discharge-vent in their ends and located at the rear inner corners of the seed-boxes, and spouts extended from the end of the fertilizer-boxes outwardly, downwardly, and rearwardly, substantially as shown and described.

474,686. MECHANISM FOR TESTING AND RECORDING THE PROPERTIES OF FLOUR. JAMES HOGARTH, Kirkcaldy, Scotland. Filed Aug. 6, 1890. Serial No. 361,316. (No model.)



Claim.—1. An apparatus for testing the properties of flour, consisting of a kneading-machine, in combination with dynamometrical devices for indicating and recording the power to work the kneading-machine, and means for automatically supplying water to the flour, substantially as and for the purposes set forth.

2. An appliance for testing and recording the properties of flour, comprising a dynamometer, a kneading-machine, a motive and driven shaft connected with the dynamometer, and a reacting spring E, in combination with a pencil-carrier, a diagram-cylinder, and a water-cylinder, substantially as and for the purposes set forth.

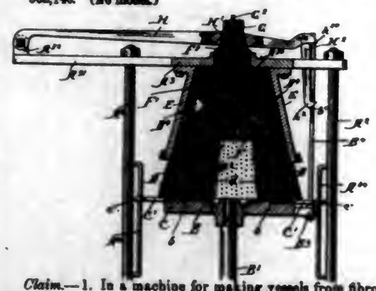
3. In an apparatus for testing and recording the properties of flour, the combination of a kneading-machine, a dynamometer, shafts C C', and indicating-cylinder for measuring the power or strain requisite to drive the kneading-machine in kneading a given sample of flour and liquid and show the consistency of the dough, substantially as set forth.

4. In an apparatus for testing and recording the properties of flour, the combination of a kneading-machine, with a dynamometer provided with spur-gearing, consisting of a central wheel on the driving-shaft, a large internally-toothed wheel on the driven shaft, and intermediate pinions on the dynamometer case, with a diagram-barrel, a pencil-carrier, and a spring E, substantially as and for the purposes set forth.

5. In an apparatus for testing and recording the properties of flour, the combination of a kneading-machine with a diagram-cylinder, and a water-cylinder provided with a piston, adapted to be moved at a speed proportionate to the speed of the diagram-cylinder, as and for the purposes set forth.

6. In an apparatus for testing the properties of flour, the combination of a kneading-machine, a dynamometer, a spring E, and a pencil-carrier, with a diagram-cylinder, and the diagram X, substantially as and for the purposes set forth.

474,687. MACHINE FOR MAKING VESSELS FROM FIBROUS PULP. REES HUBBARD, Chicago, Ill., assignor to the Standard Fiber-Ware Company, Mankato, Minn. Filed Aug. 16, 1890. Serial No. 362,146. (No model.)



Claim.—1. In a machine for making vessels from fibrous pulp, in combination with the form B^3, the jacket made up of the staves D, the bars E, supporting respectively the staves D and provided with longitudinal slide-bearings for the same, and the frame which supports the bars E, said form being adapted to be reciprocated in the direction of its axis to advance the latter into the jacket in the direction in which the bars E converge, the marginal table projecting around the form at its base and adapted to collide with the ends of the staves when the form is advanced, substantially as set forth.

2. In a machine for making vessels from fibrous pulp, in combination with the form B^3 and a jacket into which it is advanced, the frame in which said jacket is supported and the ring C, stops on said frame above the form, which arrest and support the ring, said ring having its inner diameter adapting it to fit about the base of the form, and the marginal table projecting around the base of the form and affording lodgment for the ring, whereby the form is protruded through the ring and the ring is lodged on the marginal table as the form rises and is left on the stops as the form descends, substantially as set forth.

3. In a machine for making vessels from fibrous pulp, in combination with the form B^3 and the means for reciprocating it, the converging bars E and the frame which supports them, the staves D, having slide-bearings on said converging bars, respectively, and the ring C, adapted to fit about the base of the form B^3, and supports for said ring on the frame, located at a horizontal plane above the upper end of the form B^3, substantially as set forth.

4. In combination with the form B^3 and its horizontal marginal base and the stem by which it is adapted to be reciprocated, the converging bars E and the frame which supports them, the jacket made up of the staves D, supported and guided longitudinally on the converging bars E, respectively, the follower or bottom disk F, located within the staves D at their upper ends, and the pulp-supply tube G, discharging through said follower and provided with a valve to close its discharge-mouth, substantially as set forth.

5. In combination with the jacket composed of staves, the longitudinally-converging slide-bearings of said staves, and the form B^3, having its marginal base or table adapted to collide with the staves and force them endwise as the form is advanced into the jacket, the follower or bottom disk F, adapted to be reciprocated in the same direction as the form, and a lever connected to and actuating the follower and actuated by connection with the form, the difference between the distance from the fulcrum to the point at which the lever is so actuated and the distance from the fulcrum to the point at which it actuates the follower bearing to the distance of the last-named point from the fulcrum the same ratio as the convergence of the slide-bearings of the staves toward the axis of the form for a given distance along that axis bears to such axial distance, whereby the follower is carried upward as much less than the form moves upward as the staves are forced inward during such upward movement of the form, substantially as set forth

6. In combination with the form B^3 and its marginal base and the means by which it is reciprocated in the direction of its axis, the converging bars E and the frame which supports them, and the jacket made up of the staves D, supported and having longitudinal slide-bearings on the converging bars, respectively, and having each the inwardly-inclined portion D^4 at the upper end, and the follower F, located within said inwardly-inclined portions of the staves and adapted to reciprocate in the direction of the axis of the form, the said inwardly-inclined portions of the staves being at an angle of forty-five degrees to the direction of reciprocation of the form and follower, substantially as set forth.

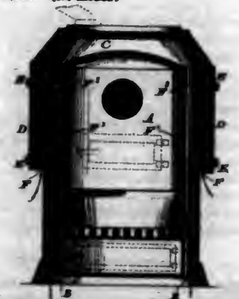
7. In combination with the jacket composed of staves, the longitudinally-converging slide-bearings of said staves, and the form B^3, having its marginal base or table adapted to collide with the staves and force them endwise as the form is advanced into the jacket, the follower or bottom disk F, adapted to be reciprocated in the same direction as the form, and a lever connected to and actuating the follower and actuated by connection with the form, the difference between the distances respectively from the fulcrum of the point at which the lever is so actuated and the point at which it actuates the follower being proportioned to the distance of the last-named point from the fulcrum as the converging of the slide-bearings of the staves toward the axis of the form for a given distance along that axis is to such axial distance, the staves having each an inwardly-inclined portion D^4, standing at an angle of forty-five degrees to the direction of reciprocation of the form and follower, and the follower being located within said inclined portions of the staves, substantially as set forth.

474,688. FINGER-RING. HARVEY HUBBTH, Providence, R. I. Filed Mar. 28, 1892. Serial No. 426,752. (No model.)



Claim.—In combination, a finger-ring provided with a raised central portion of precious metal provided with an aperture to receive a jewel, a filling-piece of inferior metal fitting the interior configuration of the raised portion and provided with a central aperture, and a backing-strip of precious metal provided with a tube extending into the central aperture of the filling-piece, as described.

474,689. NON-CONDUCTING CASING FOR HEATERS, FLUES, PIPES, &c. THOMAS W. JENKINS, Philadelphia, Pa. Filed Apr. 29, 1891. Serial No. 390,896. (No model.)



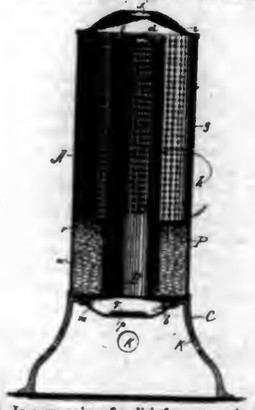
Claim.—1. A heater having a casing of non-heat-conducting material surrounding its exterior wall, forming a passage between the wall and the casing, the said wall having openings therein, whereby the chamber within the wall is in communication with the said passage, said parts being combined substantially as described.

2. A heater having a cold-air passage within an exterior wall, a casing of non-heat-conducting material surrounding said wall, forming a passage between it and the wall, the said wall having openings forming communications between the passages and the outer passage being open at the bottom, said parts being combined substantially as described.

3. A heater having chambered plates secured thereto and filled with non-heat-conducting material, said plates extending part way down the heater and having a chamber formed between the casing of the heater and the inner walls of the plates open at bottom for ingress of air, substantially as described.

4. A heater having a surrounding air-chamber with apertures in the upper part of the sides thereof, and a series of plates surrounding the upper part of the air-chamber and having chambers filled with non-conducting material, said chambered plates standing apart from the exterior wall of said air-chamber to form an air-ingress passage to the openings of said air-chamber, substantially as described.

474,640. VAPORIZER. LEROY S. LEWIS, East Hartford, Conn., assignor to the Sanitary Manufacturing Company, Catlettsburg, Ky. Filed Sept. 18, 1891. Serial No. 406,090. (No model.)

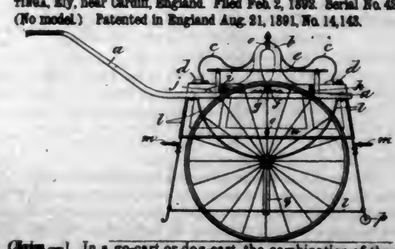


Claim.—1. In a vaporizer for disinfectants, a body, in combination with a draft-tube opening through the bottom thereof, the upper end of said tube being closed, a cap on said body provided with a filling-opening registering with the top of said tube, and a wick encircling said tube, the upper portion of said tube and body being foraminous, substantially as and for the purpose set forth.

2. In a vaporizer for disinfectants, a stand or support, in combination with a cylindrical vessel having the upper portion of its walls perforated, a draft-tube disposed within said vessel and opening through the bottom thereof, said tube being perforated in like manner with said body, a cap closing the top of said tube, a wick encircling said tube, and a cap closing the top of said body, said body-cap being provided with a filling-opening registering with said tube-cap, substantially as specified.

3. In a vaporizer for disinfectants, the body A, provided with the perforations *g* and cap *i*, in combination with the tube B, opening through the bottom of said body and provided with the perforations *h* and solid cap *d*, the wick *r*, disposed on said tube, and the cup *m*, provided with the opening *p*, registering with the mouth of said tube, and having the lip *q*, substantially as described.

474,641. CONVERTIBLE CHILD'S CARRIAGE. ELEANOR LOTINGA, Ely, near Cardiff, England. Filed Feb. 2, 1892. Serial No. 420,047. (No model.) Patented in England Aug. 21, 1891, No. 14,143.



Claim.—1. In a go-cart or dog-cart, the combination of the seats *d*, body *b*, plates *h*, thumb-screws *i*, blocks *j*, pivots *g'*, with bearings *f*, and nuts *g*, with the shafts and frame mounted on wheels, all substantially as set forth.

2. In a bassinet, the combination of the body *a*, plates *h*, thumb-screws *i*, blocks *j*, pivots *g'*, bearings *f*, and nuts *g*, with the shafts and frame mounted on wheels, substantially as described.

3. In a convertible vehicle, the combination of the body *b* and *a*, seats *d*, arm-rest *e*, pivot-pins *g'*, and nuts *g* to revolve in the bearings *f* for the purpose of rendering convertible from one form of vehicle into another, substantially as herein described, and for the purpose specified.

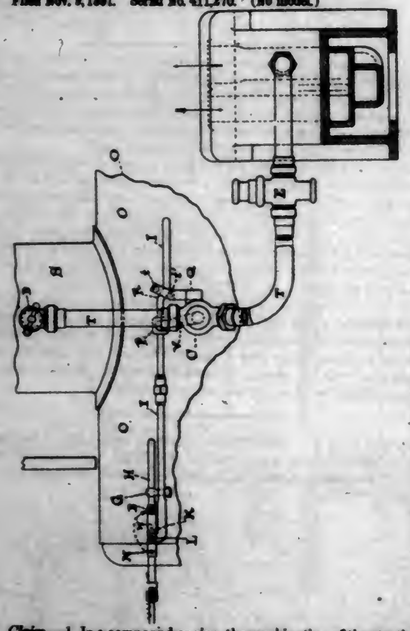
474,642. BOTTLE-STOPPER. EDWIN L. LLOYD, Philadelphia, Pa. Filed Feb. 5, 1892. Serial No. 420,422. (No model.)



Claim.—1. A bottle-stopper in which are combined the fastening-yoke, the tightening-lever therefor, the cap, its washer, and a stem free to turn and slide in the cap and constructed for the reception of the fastening-yoke, said stem having at its lower end a head or button, between which and the base of the cap a portion of the washer is confined, substantially as specified.

2. A bottle-stopper in which are combined the fastening-yoke, the tightening-lever therefor, a cap having a transverse groove and flat ledges in different horizontal planes on each side of the same, a washer, and a central stem free to slide and turn in the cap and constructed for the reception of the fastening-yoke, said stem having at its lower end a head or button, between which and the under side of the cap a portion of the washer is confined, substantially as specified.

474,643. COMPOUND ENGINE. JOHN F. MURPHY, Paterson, N. J. Filed Nov. 9, 1891. Serial No. 411,270. (No model.)



Claim.—1. In a compound engine, the combination of the starting-valve, throttle-lever, connections between said valve and lever, and means for lengthening and shortening said connections to the end that said starting-valve may or may not be operated by said lever, substantially as shown and described.

2. In a compound engine, the combination of the starting-valve, throttle-lever, connections between said valve and lever adapted to operate said valve according to the movements of said lever, and means for automatically disengaging said connections from the valve after the latter has been opened, substantially as shown and described.

3. The combination of the valve C, its lever-arm V, the throttle-lever A, a rod connecting said lever-arm V with the said throttle-lever, said rod being provided with a notch P and having its end bent downward, the bracket Q, and the rollers *l l*, substantially as shown and described.

4. The combination of the valve C, its lever-arm V, rod I, provided with the notch P, the lever W, and the starting-handle B, adapted to open and close said starting-valve independently of the movement of the throttle-lever, substantially as shown and described.

5. The combination of valve C, its lever-arm V, throttle-lever A, connecting-rods H and I, the lever W, the bracket Q, and the rollers *l l*, substantially as shown and described.

6. The combination of the receiver, valves C and E, the pipe T, lever-arm V, bracket Q, rollers *l l*, throttle-lever A, and the connecting-rods and lever I, H, and W, substantially as shown and described.

474,644. PEN-HOLDER. CHARLES T. MCCLINTOCK, Oil City, Pa. Filed Mar. 9, 1892. Serial No. 424,251. (No model.)



Claim.—1. A penholder provided with a cam swinging upon a cross-axis at right angles to the length of the holder and within the same, made elastic by a spring external to the holder, and attached firmly thereto, substantially as described.

2. A penholder provided with a pen-clamping device consisting of a swinging cam, a side lever attached thereto, and a locking-stud on said lever, substantially as described.

3. A penholder provided with a pen-clamping device consisting of a swinging cam, an elastic side lever attached thereto, and a locking-stud on said lever, substantially as described.

4. In a penholder provided at its lower end with a hollow barrel of thin metal, the combination of a cam of bent wire placed therein and swinging on a cross horizontal axis, an elastic side lever connected with said cam, adapted to swing and close the same, and means for locking the cam, when pressed upward, against the pen, substantially as described.

5. In a penholder having at its lower end a barrel of thin metal, the combination of a U-shaped cam of hard wire swinging in the barrel on short cross-returns of the same wire, with a side arm, also of the same wire, terminating in a stud adapted to enter a hole in the barrel, whereby the cam is held in elastic contact with the pen, substantially as described.

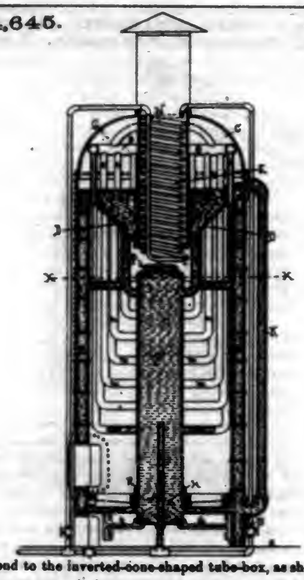
6. In a penholder provided at its lower end with a barrel of thin metal, the lever 22 on the side of the same acting as a depressing-lever and as a spring upward and inward, in combination with the cam 16, the stud 24, and the hole 26, substantially as described.

7. As an attachment for penholders, the clamping device consisting of a piece of hard wire bent to form in one piece the U-shaped cam 16, with returns 18 18, lever 22, and stud 24, substantially as described and shown.

474,645. WATER-TUBE BOILER. MICHAEL H. PLUNKETT, Baltimore, Md., assignor of fifty-one one-hundredths to Washington Bowie and Elijah J. Bond, same place. Filed Apr. 3, 1891. Serial No. 387,544. (No model.)

Claim.—1. A vertical centrally-located water column closed at both ends and free to expand and contract and having a space above it for the products of combustion to pass to the central chimney, connected by L-shaped pipes, with one end to said water column and with the other end to the inverted-cone-shaped tube-box, as shown and described.

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2. A closed water column free to expand and contract and a central chimney above it, in combination with an annular water-space connected by horizontal circulating-tubes to the water column and by L-shaped tubes to the cone tube-box and steam-drum, as set forth.

3. In combination with a central closed water column connected by horizontal tubes with the annular water-space and by L-shaped tubes to the tube-box, the superheating-tubes extending from the top of said tube-box into the steam-drum, and a central chimney, as and for the purpose specified.

4. The superheating-tubes extending from the top of the tube-box into the steam-drum, and a central chimney, in combination with a central closed water column connected by tubes with the annular water-space and the tube-box and supported from the wall of the boiler, all as shown and set forth.

5. In vertical boilers, a central closed water column connected by horizontal circulating-tubes with the annular water-space of the boiler and by L-shaped tubes with the cone tube-box, in combination with the outside circulating-tubes connected to top and bottom of said water-space, as shown and set forth.

6. A vertical water-tube boiler having therein an annular fire-box, in combination with a vertical centrally-located water column closed at both ends and supported at the base from the side walls or bottom of the boiler, with an opening around the top of the water column between the column and the tube-box to allow the products of combustion to escape around the tubes to the uptake, as shown and described.

7. A vertical water-tube boiler having therein an annular fire-box surrounded by water, in combination with a vertical centrally-located water column, a centrally-located smoke-flue, a cone-shaped tube-box, with the small end of cone placed downward next the fire, thus forming a deep recess upward and all around the top of the cone where it connects to the vertical water-leg of boiler for the purpose of absorbing heat detained there in passing out through the uptake, as shown and described.

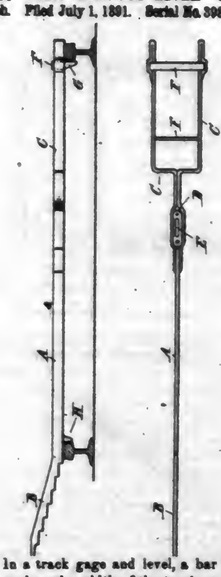
8. A vertical water-tube boiler having therein an annular fire-box surrounded by water, in combination with a cone-shaped tube-box, a vertical centrally-located water column closed at both ends and supported from the base, provided with inside horizontal circulating-tubes to maintain a circulation of water between water column and water-space around the boiler, a centrally-located smoke-flue with a feed-water heater at its base extending downward to check the rapid escape of heat that it may be utilized in heating the feed-water entering the boiler, as shown and described.

9. A vertical water-tube boiler having therein an annular fire-box surrounded by water, in combination with a centrally-located smoke-flue, a centrally-placed vertical water column closed at both ends and supported at the base with an opening around the top of the column, with a cone-shaped tube-box having a series of vertical water-tubes secured therein and extending downward and entering the vertical water column at right angles, connecting water column and cone-tube box and steam-drum of boiler, and also a series of steam-superheating tubes extending from the top recess of the tube-box into the steam-drum, with an outlet into the uptake to keep up a circulation of hot air in tubes and recess in tube-box, as shown and described.

10. A vertical water-tube boiler having therein an annular fire-box surrounded by water, in combination with a centrally-located smoke-flue, a cylindrical steam-drum having a convex top head and the lower head or tube-box cone-shaped, a vertical centrally-located water column closed at both ends and supported from base of boiler, and provided with protecting-plates where the fire rests against it to prevent injury by heat or corrosion, as shown and described.

11. A vertical water-tube boiler having therein an annular fire-box surrounded by water, in combination with a centrally-placed smoke-flue, a cone-shaped tube-box, a vertical centrally-located water column closed at both ends and supported at the base, and provided with circulating-pipes outside of the boiler to facilitate the circulation of water between the upper and lower parts of the boiler, as shown and described.

474,646. TRACK GAGE AND LEVEL. CYRUS ROBERTS, Three Rivers, Mich. Filed July 1, 1891. Serial No. 398,193. (No model.)



Claim.—1. In a track gage and level, a bar having a straight lower edge longer than the width of the track, gage-pins secured to the under side thereof at a distance from outside to outside equal to the gage of a track, an inclined longitudinal extension on one end of said bar, provided with a series of degrees on its under side, and a level secured to the bar, substantially as described.

2. In a track gage and level, the combination of the bar A, bifurcated at one end and formed at the other end with an inclined series of degrees, the gage-pins projecting from the under side of the bar, and the level set into the bar, substantially as described.

3. In a track gage and level, the combination of the bar A, having the upwardly-inclined end B, provided with a series of degrees, the gage-pin H, the bars C, secured to and forming the bifurcated end of the bar A, the aperture D, formed between the bars C, the level E, secured in said aperture, and the gage-pins G, secured to the bars C, substantially as described.

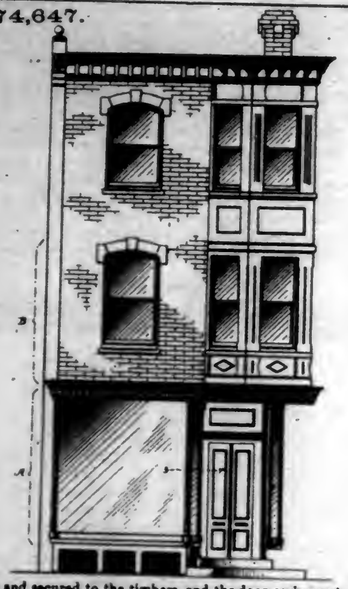
474,647. BUILDING. MATHEW SCHMID, Philadelphia, Pa. Filed Oct. 22, 1891. Serial No. 409,517. (No model.)

Claim.—1. The combination, in a corner-store-building structure having a doorway at the corner and show-windows on one or both sides, of columns on each side of the doorway and girders supported by said columns, said girders supporting the upper structure, with an overhanging corner extending out beyond the doorway and supported by the columns through the girders, substantially as set forth.

2. The combination, in a corner-building structure having a doorway at the corner and an overhanging corner bay-window above the doorway, of columns on each side of the doorway, girders supported by the columns, and said girders supporting the projecting corner bay-window, substantially as specified.

3. The combination, in a corner building having a corner doorway and a bulk window or windows, of a hollow channel-column at each side of said doorway, timbers in said columns, casings surrounding the

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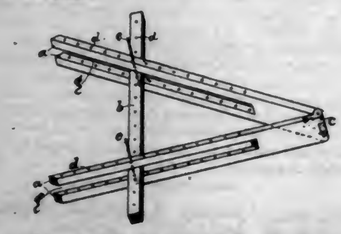
columns and secured to the timbers, and the door-casing and window-casing also secured to the timber, substantially as described.

474,648. CUFF-HOLDER. WILLIAM C. SHAW, Chicago, Ill. Filed Feb. 24, 1891. Serial No. 382,671. (No model.)



Claim.—A cuff-holder comprising the clasp members 1, 2, and 3, integrally formed and provided with the gap or recess 4, tooth or spur 5, bend or offset 8, and head or other attaching means formed on the rearwardly-projecting portions of the lower member, substantially as set forth.

474,649. ADJUSTABLE ANGULAR AND CIRCULAR COMPOSING-BAR. ALEXIUS H. ARNOLD, Chicago, Ill. Filed Feb. 16, 1892. Serial No. 421,665. (No model.)

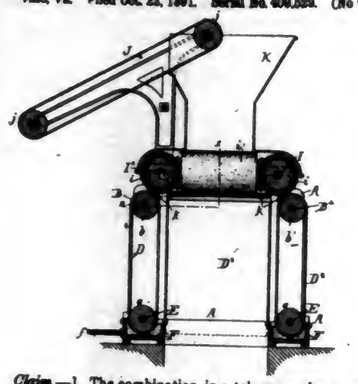


Claim.—1. Printers' composing-bars consisting of a pair of blades hinged together at one end and provided with suitable measuring-scales, in combination with an adjustable connecting-bar provided with a corresponding scale and mechanism to hold said several parts together, substantially as specified.

2. Printers' composing-bars consisting of a pair of longitudinally-slotted and adjustably-hinged blades provided with holes pitched to pica measuring-scales, in combination with an adjustable connecting-bar playing through said slots and provided with like pitched holes and pins to connect said parts through said holes, substantially as specified.

3. Printers' composing-bars consisting of a pair of hinged and longitudinally-slotted bars provided with holes pitched to pica measure, in combination with a curved and adjustable connecting-bar with like spaced holes and pegs to connect said parts through said holes, substantially as specified.

474,650. TOBACCO-CASING MACHINE. JOHN T. CARTER, Danville, Va. Filed Oct. 22, 1891. Serial No. 409,529. (No model.)



Claim.—1. The combination, in a tobacco casing or spraying machine, of two liquid-delivering belts arranged opposite each other, mechanism for driving said belts, and mechanism for removing the liquor carried by each belt and projecting it into the space between the belts, whereby when the tobacco-leaf is fed between the belts it will be sprayed on both sides, substantially as described.

2. The combination of the two vertical belts arranged opposite each other, mechanism for driving said belts, a liquid-trough for supplying the belts with liquor, and mechanism for removing the liquor from each belt and projecting it into the space between the belts, said belts being so arranged in respect to each other that the liquor sprayed from one belt which escapes the leaves will be caught by the opposite belt, substantially as described.

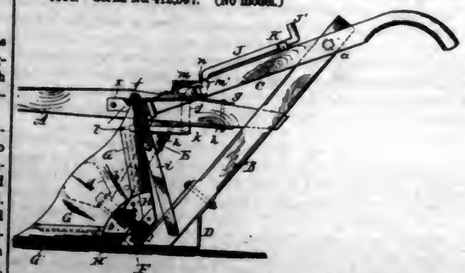
3. The combination of the frame, the shafts thereon, the vertical belts carried by said shafts, a trough for supplying the belts with liquor, spraying-brushes arranged above the belts, and a feed device for directing to the center of the machine the tobacco-leaves which are to be cased, substantially as described.

4. The combination of the frame, the four vertical belts, shafts on which said belts are mounted, said belts forming a quadrangular opening for the passage of the tobacco-leaves, a quadrangular trough into which the lower portions of the belts extend, gearing for driving the belts, spraying-brushes arranged above the belts and adapted to spray the liquor carried by the belts on the leaves as they pass through the machine, and gearing for driving said spraying device, substantially as described.

5. The combination, in a tobacco-spraying machine, of the frame, the four vertical belts forming a quadrangular opening for the passage of the leaves, shafts over which the belts pass, a quadrangular trough for the liquor at the base of the machine, from which the belts carry the liquor to the spraying mechanism, spraying-brushes arranged above each shaft, driving mechanism therefor, and an endless belt for feeding the leaves to the machine, the whole being so arranged that the leaves as they pass between the belts will be thoroughly cased with the liquor and the liquor that does not strike the leaves will be prevented from escaping, substantially as and for the purpose set forth.

6. The combination of the frame, the shafts thereon, the vertical belts carried by said shafts, a trough for supplying the belts with liquor, spraying-brushes arranged above said belts, and bars arranged in front of said belts and in contact with the brushes, substantially as set forth.

474,651. PLOW. JAMES A. COLE, San Jacinto, Cal. Filed Nov. 21, 1891. Serial No. 412,597. (No model.)



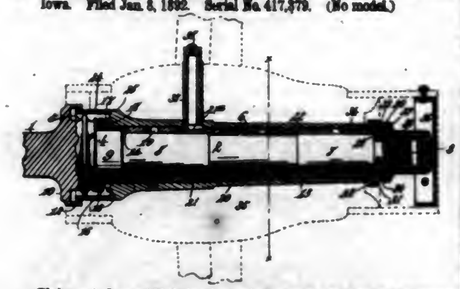
Claim.—1. In a plow, the combination, with a stock, a beam secured thereto, handles secured to the beam and stock, braces secured to the beam and lower end of the stock, and a depending bracket secured to the beam and the connecting-braces, of a reversible mold-board, guards secured to the side of the beam, and an arm for locking the mold-board, substantially as set forth.

2. The combination, with beam, stock, and handles, of a reversible mold-board, an arm loosely mounted in the beam and adapted to engage and lock the mold-board, a plate on the upper end of this arm, having a projection thereon, a hand-lever provided with an elongated slot adapted to receive this projection, and means for locking the hand-lever, substantially as set forth.

3. The combination, with a beam, stock, handles, bracket depending from the beam, braces secured to the beam, bracket, and stock, plates secured to the upper and lower faces of the beam, one of said plates also secured to the depending bracket, of a reversible mold-board, guards on the sides of the beam, and a locking-arm passed loosely through the beam and the plates thereon and adapted to lock the mold-board in position, substantially as set forth.

4. The combination, with a beam, stock, handles, a plate bent around the lower end of the stock, forming a shoe and secured to the front and rear of the stock, and a depending bracket, of a shaft supported in the shoe and depending bracket, a reversible mold-board secured to the shaft, and means for locking the mold-board, substantially as set forth.

474,652. AXLE-LUBRICATOR. JOSEPH C. CROPPER, Cedar Falls, Iowa. Filed Jan. 8, 1892. Serial No. 417,879. (No model.)



Claim.—1. In a self-lubricating axle for track-sulkies and other vehicles, the combination, with the journal having a thrust-collar at its inner end and a dust-collar provided with an outwardly-turned flange, of an anti-friction sleeve inclosing said journal and revolubly thereon, a series of friction-collars between the dust-collar and the sleeve, a series of friction-collars mounted on a prolongation of the nut between a peripheral collar on the same and the end of the sleeve, and an axle-box having a counterbore inclosing the collars at the inner end of the journal, the enlarged end of the box lying within the flange of the dust-collar and its outer end abutting against the collar, sustaining the thrust of the outer end of the sleeve, substantially as described.

2. In a self-lubricating axle for track-sulkies and other vehicles, the combination, with the journal, an axle-box, and an anti-friction sleeve arranged on said journal between the same and the box, of a series of friction-collars at each end of said sleeve, the contacting faces of two or more of said collars being of slightly-convex formation partly or entirely throughout the same to form oil-holding recesses, and collars arranged between the ends of the sleeve and the contacting collars and provided with oil-openings, substantially as described.

3. In a self-lubricating axle for track-sulkies and other vehicles, the combination, with a journal having a thrust-collar at its inner end and a dust-collar between the thrust-collar and the axle proper, of a series of anti-friction collars arranged upon an enlargement of the journal and abutting against the thrust-collar, an anti-friction sleeve inclosing the journal and having its counterbored end abutting against said washers, a nut turned upon the point of the axle and having a peripheral collar, and a series of anti-friction collars mounted on a prolongation of the nut and abutting against the peripheral collar and the outer end of the anti-friction sleeve, substantially as described.

4. In a self-lubricating axle for track-sulkies and other vehicles, the combination, with a journal, of an anti-friction sleeve fitting thereon, a series of collars at the inner end between the sleeve, and a thrust-collar on the axle, the contacting faces of said collars being slightly convex throughout the whole or a part of said surface, and a series of collars between a collar on the nut and the outer end of the anti-friction sleeve, substantially as described.

5. In a self-lubricating axle for track-sulkies and other vehicles, the combination, with a journal provided with a thrust-collar at its inner end, of an anti-friction sleeve, an axle-box fitting loosely on said sleeve, and an oil-cup communicating with its interior and discharging into a circumferential channel in the outer face of the sleeve, said channel provided with a single perforation and the sleeve having a series of perforations at intervals, substantially as described.

474,653. APPARATUS FOR ELEVATING BAGS, BARRELS, &c. JOHN B. DEFFLER, Johnstown, Pa. Filed Dec. 2, 1891. Serial No. 413,795. (No model.)



Claim.—1. The combination, with side beams or frames having foot-pieces and truck-wheels and longitudinal guideways at their adjacent edges, of a longitudinally-movable slide or bar having a rigidly-attached platform and pins which engage the guideways, a rack secured to the rear side of the slide or bar, a bracket or frame rigidly secured to the rear of the side beams or frames, a pinion journaled to the bracket or frame, meshing with the rack and rotating in a plane parallel with the rear surface of the slide or bar, and a shaft journaled to the bracket or frame, having a crank-handle and provided with a pinion for operating the pinion which meshes with the rack, substantially as described.

2. The combination, with the longitudinally-grooved side beams or frames having foot-pieces and truck-wheels at their lower extremities, of a cross-bar attached to the upper ends of the side beams or frames, a shaft secured to the latter in front of the cross-bar, a longitudinally-movable slide or bar interposed between the cross-bar and the shaft, and provided at its lower extremity with a platform and pins which engage the grooves in the side beams or frames, a rack secured to the rear side of the slide or bar, a bracket or frame rigidly secured to the rear of the side beams or frames, a pinion journaled to the bracket or frame, meshing with the rack and rotating in a plane parallel with the rear side of the slide or bar, and a shaft journaled to the bracket or frame, having a crank-handle and provided with a pinion for operating the pinion which meshes with the rack, substantially as described.

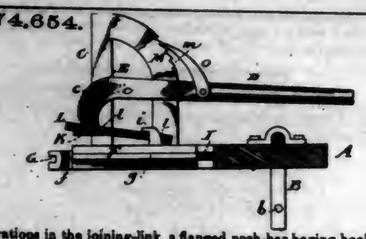
3. The combination, with the longitudinally-grooved side beams or frames having foot-pieces and truck-wheels at their lower extremities, of a cross-bar secured to the upper ends of the side beams or frames, a shaft attached to the latter in front of the cross-bar, a longitudinally-movable slide or bar arranged between the cross-bar and the shaft and having a platform and pins which engage the longitudinal grooves of the side beams or frames, a rack secured to the rear side of the slide or bar, a bracket or frame rigidly attached to the rear of the side beams or frames, a shaft journaled to the bracket or frame and provided with a gear-wheel and a pinion which meshes with the rack, a shaft journaled to the bracket or frame, having a crank-handle and provided with a pinion for operating the gear-wheel, and a locking-pawl for engaging the gear-wheel to prevent back motion thereof, substantially as described.

4. The combination, with the side beams or frames having longitudinal guideways and foot-pieces and truck-wheels at their lower extremities, of a slide or bar having a platform and pins which engage the longitudinal guideways, a rack secured to the rear side of the slide or bar, a bracket or frame connected with the rear of the side beams or frames, a pinion journaled to the bracket or frame and meshing with the rack, a friction-wheel journaled to the bracket or frame and bearing against the rack to hold it in mesh with the pinion, and a shaft journaled to the bracket or frame, having a crank-handle and provided with a pinion for operating the pinion which meshes with the rack, substantially as described.

474,654. FLOOR-LAYER. HENRY G. EPPS, Cameron, La. Filed Aug. 29, 1891. Serial No. 404,109. (No model.)

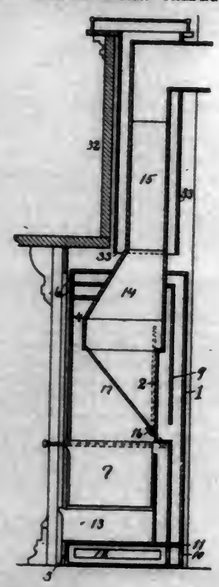
Claim.—In a floor-layer, the combination, with the grooved bed-piece, of a clamp journaled on said bed-piece, an operating-lever adjustably pivoted in the upright portions of the bed-piece and having one end curved and provided with hook to loosely engage one of the

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perforations in the joining-link, a flanged push-bar having hook *i* slidingly connected with the bed-piece and a joining-link loosely connected with the push-bar and with the operating-lever and having a perforation near each end, the rear faces of the upright of the bed-piece being toothed, and a pawl pivoted on the operating-lever to engage said teeth.

474,655. PORTABLE GRATE AND MANTEL. FRANK L. HART, Augusta, Wis. Filed Feb. 12, 1890. Serial No. 340,900. (No model.)



Claim.—1. In a grate or fireplace, a fire-receptacle having inclosing walls upon the sides, top, bottom and back thereof independent of the walls or masonry of the building in which the apparatus is set, a smoke-flue connecting said fire-receptacle with a chimney, a mantel forming a casing for the inclosing walls of the fire-receptacle and having its back recessed to form an inclosure for the smoke-flue, and a vertical jacket between the mantel and smoke-flue and arranged around and out of contact with said smoke-flue to form an air-space around the same, which air-space is open at top and bottom, whereby the entire apparatus is portable and may be connected to a chimney in the manner of a stove, substantially as and for the purpose described.

2. In a portable grate or fireplace, a fire-receptacle having the inner and outer walls and partitions around the back, sides, top, and bottom and forming between themselves a series of communicating air-chambers, said air-chambers being in communication with the outside air and the air of the room at the bottom of the fireplace and with the air of the room alone at the top, and a flue having its throat leading from the fire-receptacle through the concentric inner and outer walls at the top thereof, substantially as described.

3. In a portable grate or stove, a fire-receptacle having the inner wall 2 and the outer wall 1 extending around the same at the back, sides, top, and bottom, said walls forming air-chambers which entirely surround the fire-receptacle, except at the open front thereof, which air-chambers are in communication with the surrounding air at the front, sides, and back at the bottom and at the top only at the top, the dividing partitions in the air-chambers at the back, sides, and top of the fire-receptacle, and the smoke-flue having its throat passed through the walls or partitions at the top of the fire-receptacle, substantially as described.

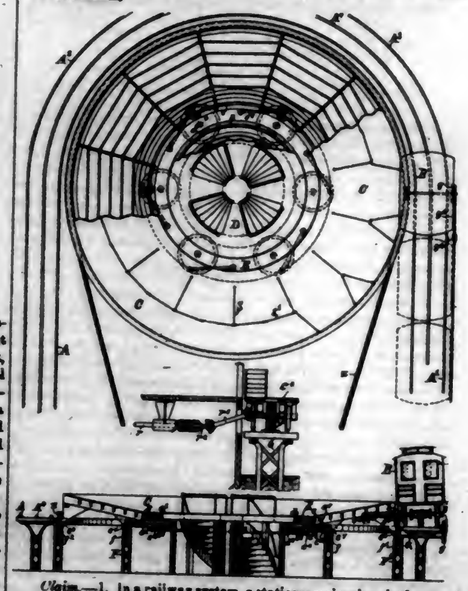
474,656. HEATING-DRUM. JULIUS H. HELD and WILLIS H. GRUENHAGEN, St. Paul, Minn. Filed Oct. 15, 1891. Serial No. 408,811. (No model.)



Claim.—1. The herein-described improved heating-drum, consisting of the drum, the upper and lower cap-plates, the pipe or flue engaging said cap-plates, the brace-bar secured to said pipe or flue, and the nutted bolt passed through said brace-bar and lower cap-plate, substantially as set forth.

2. The herein-described improved heating-drum, consisting of the drum, the removable cap-plates having openings therein, the pipe or flue having an upper flanged end bearing on the upper one of said cap-plates and fitting an opening in the lower one of said cap-plates, the brace-bar secured to said pipe or flue and having a horizontally-disposed deflecting-plate attached thereto, and the nutted bolt passed through said brace-bar and also through an aperture in said lower cap-plate, substantially as set forth.

474,657. PASSENGER-RAILWAY SYSTEM. CHARLES M. HOLLINGSWORTH, Cleveland, Ohio. Filed July 20, 1891. Serial No. 400,157. (No model.)



Claim.—1. In a railway system, a stationary circular platform and means for getting to and from the same, a revolving ring-shaped platform surrounding said stationary platform, and an intermittently-moving ring-shaped platform intermediate of said stationary and revolving platforms, with a fixed curved track outside of and extending partly around said revolving platform, and tracks A A', continuous with said curved track, substantially as and for the purpose specified.

2. In a railway system, as the means for making transfers to and from moving trains at the terminals of the line, a circular stationary platform, means for getting to and from the same, a revolving ring-shaped platform surrounding said stationary platform, and an intermittently-movable ring-shaped platform intermediate of said stationary platform and revolving platform, combined with a curved track outside of said revolving platform, a train moving thereon, and means connecting said train and revolving platform together, thereby holding them in fixed relation to each other during the time the train is on said curve, substantially as and for the purpose specified.

3. In a railway system, as the means for safely getting onto and from moving trains at the terminals of the line, a revolving circular platform, a curved track outside said platform connecting the up and down tracks, and a train moving on said curved track, combined with a spring-actuated bar and a socket adapted to receive its end, one of said parts being carried by the train and the other by the platform, substantially as and for the purpose specified.

4. The combination of a revolving circular platform, a curved track outside of said platform, and a track A, continuous with said curved track, with a movable signal and mechanism connecting said platform and signal, whereby the latter is moved and at a rate in definite relation to the rate of movement of said platform, substantially as and for the purpose specified.

5. The combination of a revolving platform, a fixed curved track outside of said platform, and a track A, from which trains may pass onto said curved track, with a signal movable alongside of said track toward said platform and mechanism connecting said platform and signal, whereby the latter is at the same velocity as that of the periphery of the platform, substantially as and for the purpose specified.

6. In a railway system, the combination of a revolving circular platform, a curved track outside said platform, and a track A, from which the trains may pass to said curved track, with an endless belt having visible signals secured thereto lying alongside of the track A, two pulleys over which the belt runs, one located near the platform, the other at a distance therefrom and alongside of the track A, and means for driving said belt at approximately the same velocity as the periphery of the platform, substantially as and for the purpose specified.

7. In a railway system, the combination of a revolving circular platform, a curved track outside of said platform, and a track A, from which trains may pass onto said curved track, with an endless belt equal in length to a multiple of the circumference of the platform, two pulleys over which said belt runs, one located near the platform, the other at a distance therefrom and alongside of the track A, a visible signal attached to said belt, and means for driving said belt at approximately the same velocity as the periphery of said platform, substantially as and for the purpose specified.

8. In a railway system, the combination of a revolving circular platform, a curved track outside said platform, and a track A, from which trains may pass onto said curved track, with a visible dial-and-pointer signaling device placed alongside the track A, an electro-magnet adapted to operate the same step by step, and means whereby the revolving platform completes the electrical circuit in which said electro-magnet is placed at suitable intervals, substantially as and for the purpose specified.

9. In a railway system, the combination of a revolving circular platform, a curved track outside said platform, and a track A, from which trains may pass to said curved track, with a series of dial-and-pointer signals alongside of the track A at suitable distances apart, an electro-magnet in connection with each signal and adapted to move the same step by step, an electrical circuit including all of said electro-magnets, and means whereby said circuit is closed at suitable intervals by said platform, substantially as and for the purpose specified.

10. The combination of a revolving circular platform, a curved track outside of said platform, and a track A, continuous with said curved track, with a series of dial-and-pointer signals placed at intervals alongside of said track A, an electro-magnet connected with each signal and adapted to move the same step by step, an electric circuit including all of said electro-magnets, means whereby the circuit is closed at suitable intervals by said platform, and means whereby each signal is independently reset to zero, substantially as and for the purpose specified.

11. In a railway system, the combination of a revolving circular platform, a curved track outside said platform, a track A, from which trains may pass to said curved track, and trains traveling on said tracks, with a series of dial-and-pointer signals, an electro-magnet connected with each signal and adapted to move the same step by step, an electric circuit including all of said electro-magnets, means whereby the circuit is closed at suitable intervals by said platform, and means whereby each signal is independently reset to zero by each passing train, substantially as and for the purpose specified.

474,658. ROUNDABOUT. CHARLES M. HOLLINGSWORTH, Cleveland, Ohio. Filed July 20, 1891. Serial No. 400,158. (No model.)



Claim.—1. The combination of a platform, a surrounding platform having a circular opening, one of said platforms being fixed and the other revolvable, and means for revolving the latter, with an intermittently-moving ring-shaped platform concentric with and intermediate of the other two platforms, substantially as and for the purpose specified.

2. The combination of a stationary circular platform and means for getting to and from the same, with an intermittently-movable ring-shaped platform surrounding the stationary platform and a revolving ring-shaped platform surrounding the intermittently-movable platform, substantially as and for the purpose specified.

3. The combination of a stationary circular platform, means for getting to and from the same, and a fixed flange, as c^3, with a revolving ring-shaped platform which surrounds the stationary platform and has an annular flange at its inner edge, as a^3, and a ring-shaped platform intermediate of the stationary and revolving platforms having two independent series of wheels at its outer and inner edges, respectively, which ride upon said flanges, substantially as and for the purpose specified.

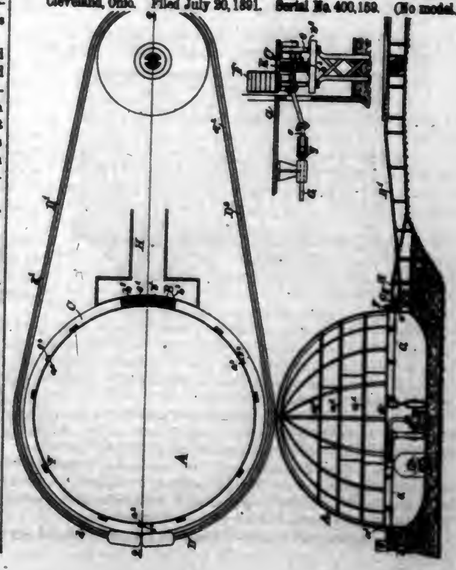
4. The combination of a stationary circular platform, a ring-shaped platform surrounding it, and a revolving ring-shaped platform surrounding both of the other platforms with a series of horizontal wheels which engage with the fixed platform and the revolving platform and suitable connections between said wheels and the intermediate platform, whereby the latter is moved intermittently, substantially as and for the purpose specified.

5. The combination of a stationary circular platform, a ring-shaped platform surrounding it, and a revolving ring-shaped platform surrounding both the others with a ring, as F, means for supporting said ring, a series of horizontal wheels journaled to said ring and engaging on opposite sides of their axes with the fixed platform and the revolving platform, respectively, and pitmen connecting said wheels with the intermediate platform, substantially as and for the purpose specified.

6. The combination of a stationary circular platform, a fixed annular flange, as c^3, a movable ring-shaped platform surrounding it, and a revolving ring-shaped platform surrounding both the other platforms and having an annular flange, as a^3, with a series of horizontal wheels each having a flange which rests upon the flanges a^3 and c^3, said wheels engaging with the fixed and revolving platforms, respectively, a ring, as F, to which said wheels are journaled, and pitmen connecting said wheels with the intermediate platform, substantially as and for the purpose specified.

7. The combination of a stationary circular platform, a movable ring-shaped platform surrounding it, a revolving ring-shaped platform surrounding both the others, and a driven cable engaging with said outer platform with a series of horizontal friction-wheels which lie between and engage with the outer platform and the fixed inner platform and suitable connections between said wheels and the intermediate platform, whereby the latter is moved intermittently, substantially as and for the purpose specified.

474,659. ROTARY PAVILION. CHARLES M. HOLLINGSWORTH, Cleveland, Ohio. Filed July 20, 1891. Serial No. 400,159. (No model.)



Claim.—1. The combination of a circular floating vessel and means for rotating the same about a vertical axis with the curved track *d*, the connecting-tracks d' d^2, and a car adapted to travel on said tracks, substantially as and for the purpose specified.

2. The combination of a circular floating vessel, a ring-shaped trestle or other equivalent platform-support surrounding it, a ring-shaped platform suitably connected with said vessel and adapted to ride on said support, with means for revolving said vessel and platform, substantially as and for the purpose specified.

3. The combination of a circular floating vessel, a ring-shaped platform-support surrounding it and having a track on its upper surface, a ring-shaped platform mounted on wheels which run on said tracks, and suitable connections between the platform and vessel with the curved tracks *d* in the described relation to said platform, and connecting-tracks d' d^2, placed on suitable supports, and means for revolving said platform and vessel, substantially as and for the purpose specified.

4. The combination of a circular floating vessel, a fixed ring-shaped trestle surrounding it, a ring-shaped platform mounted on wheels adapted to run on said trestle, and tongue-and-grooved connections between said vessel and platform, and means for revolving said platform and vessel, substantially as and for the purpose specified.

5. The combination of a circular floating vessel, a fixed ring-shaped trestle surrounding it, a ring-shaped platform adapted to ride on said trestle, and suitable connections between the platform and vessel with a curved rack on said trestle, a shaft journaled to said platform having secured to it a pinion which engages said rack, a shaft and means for revolving the same carried on said vessel, and suitable connections between said shaft and the pinion-shaft, substantially as and for the purpose specified.

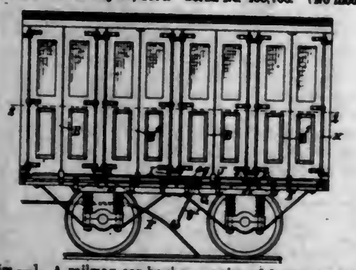
6. The combination of a circular floating vessel, a fixed ring-shaped trestle surrounding it, a ring-shaped platform mounted on wheels which ride on said trestle, and vertical tongue-and-groove connections between said platform and vessel, with a curved rack on said trestle, a pinion, the shaft of which is mounted on the platform, a shaft and means for revolving it carried by the vessel, and a universal joint connecting said shaft and the pinion-shaft, substantially as and for the purpose specified.

7. The combination of a circular floating vessel, a fixed ring-shaped platform-support surrounding it, a ring-shaped platform mounted on wheels which are adapted to travel on said platform-support, and tongue-and-groove connections between said platform and vessel with steps or their equivalent mounted on said platform, and means for revolving said platform and vessel about a fixed vertical axis, substantially as and for the purpose specified.

8. The combination of a circular floating vessel and a fixed ring-shaped trestle encircling it, with means for revolving said vessel about a vertical axis, substantially as and for the purpose specified.

9. The combination of a circular floating vessel, a fixed trestle outside said vessel and engaging therewith, and means for revolving said vessel about a vertical axis, with a fixed pier arranged, substantially as described, with reference to said vessel, for the purpose specified.

474,660. RAILWAY-CAR. CHARLES M. HOLLINGSWORTH, Cleveland, Ohio. Filed July 25, 1891. Serial No. 400,768. (No model.)



Claim.—1. A railway-car having a series of doors along its side, a part of which swing outward and the rest inward, combined with seats arranged upon the floor of said car in substantially the manner described, whereby transverse aisles leading to said doors are formed, for the purpose set forth.

2. A railway-car having along its side a series of doors arranged in pairs, of which every other pair swings outward and the alternating pairs swing inward, substantially as and for the purpose specified.

3. In a railway-car, a series of doors along its side, combined with folding seats placed in the car, substantially as described, whereby when said seats are folded transverse aisles are formed leading to said doors, for the purpose specified.

4. In a railway-car, a series of doors along the side thereof and a longitudinal seat along the other side thereof, combined with self-folding seats arranged on the floor of the car, substantially as and for the purpose specified.

5. A railway-car having doors along its side, combined with means whereby said doors are automatically opened and closed at predetermined points along the road, substantially as and for the purpose specified.

6. A railway-car having a series of doors along its side and mechanism for simultaneously opening all of said doors, combined with a tripping-piece extending alongside of the track and adapted to be engaged by the door-opening mechanism, whereby the said doors are simultaneously opened while the car is in motion and are held open so long as said engagement of the door-opening mechanism and tripping-piece continues, and means for automatically closing said doors when the said engagement terminates, substantially as set forth.

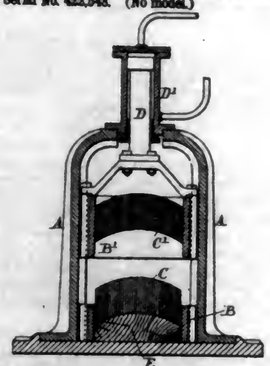
7. In a railway-car, a series of doors along its side and catches for holding said doors closed, combined with a longitudinal shaft, and suitable connections between said shaft and doors and shaft and catches whereby all of said doors may be simultaneously released and opened, substantially as and for the purpose specified.

8. In a railway-car, a door on the side of the car and a longitudinal shaft suitably connected with said door, combined with a transverse shaft adapted to operate the longitudinal shaft, an arm rigid with said transverse shaft, and a tripping-piece alongside of the track, substantially as and for the purpose specified.

9. A railway-car having a series of doors hinged along its side, hinge-pintles secured to the hinge-leaves which are fastened to the doors, a bevel-gear secured to each hinge-pintle, a longitudinal shaft having bevel-gears which mesh with the bevel-gears first named, a transverse shaft, bevel-gear connections between said two shafts, and an arm rigid with said transverse shaft, combined with a tripping-piece alongside of the track adapted to engage with said arm, substantially as and for the purpose specified.

10. In a railway-car, a series of doors hinged along its side, each having a tubular hinge-pintle rigid with the hinge-leaves which are fastened to the door, a torsion-spring rod extending through said tube and fastened thereto at its upper end, and a bevel-gear on the lower end of the rod, combined with a longitudinal shaft having bevel-gears which mesh with the bevel-gears on the torsion-rod, catches adapted to hold the doors closed, cams on said shaft engaging with said catches, and means for oscillating said shaft, substantially as and for the purpose specified.

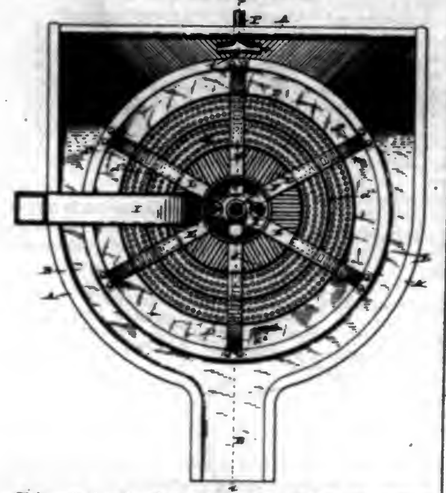
474,661. MACHINE FOR SHAPING AND FLANGING METAL PLATES. ALBERT C. A. HOLZAPFEL, London, England. Filed Feb. 23, 1892. Serial No. 422,543. (No model.)



Claim.—1. In a machine for shaping metal plates, the combination, with a mold or die adjustable to vary its contour, of a mold or die co-operating therewith and composed of a number of rods fitting closely together and surrounded by a frame, which can be loosened, so as to allow the rods to have their ends brought into such relative positions as to form a surface having the required curvature, the frame being then tightened, so as to press the rods firmly together and enable them to exert the requisite pressure for shaping the metal plate, substantially as described.

2. In a machine for shaping metal plates, the combination of a framing A, a frame B, embracing metal rods C, so that these can first be adjusted, collectively, to form a curved surface and then be securely held in such position, and a second frame B', with rods C', actuated by hydraulic or other pressure, so as first to adjust the ends of the rods to the configuration of the ends of the rods C and then to exert pressure upon a metal plate placed between the two sets of rods, substantially as described.

474,662. GRAVEL-SCREEN. FRED J. HOYT, Chicago, Ill. Filed July 15, 1891. Serial No. 399,634. (No model.)



Claim.—1. A series of connected gravel cleaning and screening machines, each machine composed of an outside stationary casing, an inside horizontal water-sieve secured to said casing, a vertical rotary shaft carrying a screen composed of bars, a divided inclined trough around and outside of said screen, a divided water-pipe conducting water both ways into said trough, a hopper conducting the gravel through an opening in said sieve, and a deflector on the shaft against which the gravel is thrown and deflected toward the periphery of the screen, in combination with a conduit leading from the said trough, a hoisting apparatus connecting said conduit with the next machine, and each machine successively provided with a gravel-screen of coarser mesh, substantially as and for the purpose described.

2. The combination, with a vertical rotary shaft and gravel-screen secured thereto, of the stationary water-sieve placed above said screen and provided with circular partitions to form compartments and an independent water-supply pipe for each of said compartments, substantially as described.

3. The combination, with a rotary shaft, of a screen composed of bars of different lengths and arranged in sections and having their upper surfaces flat and sides and bottoms curved, and supporting-arms for said sections converging to and connected with a hub, with which said shaft is provided, substantially as described.

4. In a gravel cleaning and screening machine, in combination with an outside casing and a vertical rotary shaft, an inside horizontal stationary water-sieve secured to said casing, a rotary screen secured to said shaft below said washer, a rotary deflector between the water sieve and screen, and an inclined conduit extending through an opening in said water-sieve to said deflector for conducting the gravel through said stationary sieve onto said deflector and screen, substantially as described.

5. The combination, with the funnel-shaped bottom casing, of the vertical rotary shaft having a bearing in a central hub of said casing, a water-sieve secured to supports rising from said bottom casing, and a spider frame, in which said sieve is supported, said spider frame affording a bearing for the upper portion of the said shaft, substantially as and for the purpose described.

6. The water-sieve and its supporting spider frame, in combination with the vertical rotary shaft and the gravel-screen carried by said shaft, said sieve cut away to form an open space about the said shaft for the conduct of gravel through said washer onto said screen, substantially as described.

474,663. SEWING-MACHINE. CHARLES B. HUNT, London, England. Filed June 12, 1891. Serial No. 396,031. (No model.) Patented in England Aug. 18, 1890, No. 12,959; in France Jan. 6, 1891, No. 210,601; in Belgium Jan. 8, 1891, No. 93,367; in Germany Jan. 16, 1891, No. 60,980; in Italy Jan. 28, 1891, XXV, 29,012, and LVII, 61, and in Austria-Hungary May 18, 1891, No. 4,544 and No. 16,860.

Claim.—1. The combination, with a pendent bracket 1, of a reel-case carrier pivoted to the bracket and provided with a lateral lug or shoulder 7, a spring acting to swing the reel-case carrier on its pivot, a dog 8, pivoted to the pendent bracket and movable into and out of the path of the lug or shoulder on the reel-case carrier, a spring acting on the dog to move it into the path of the lug or shoulder, and a vertically-movable pin 13, acting on the dog and provided with a finger-piece 14, substantially as described.

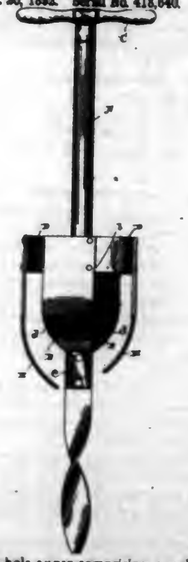
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2. The combination, with a pendent bracket 1, having a journal-bearing 3 and a pivoted dog 8, of a reel-case carrier having a lug or shoulder 7 and a journal or spindle 4, arranged in the journal-bearing, a spring acting on the journal or spindle to axially rotate the same, and a finger-piece for operating the dog to move it out of engagement with the lug or shoulder on the reel-case carrier, substantially as described.

3. The combination, with a reel-case carrier, of a reel-case for the under reel, composed of a cylindrical shell 16, fitting the reel-case carrier and provided with a thread-slot 17, a tension-roller 18, a pivoted lid 19, provided with a rounded portion 21ª in proximity to its pivoted point, and a leaf-spring 21, rigidly secured at one end to the cylindrical shell and having its free end portion bearing against the rounded portion of the pivoted lid to hold the latter open or closed, substantially as described.

474,664. POST-HOLE AUGER. CHRISTEN JOHNSEN, Audubon, Iowa. Filed Jan. 30, 1892. Serial No. 418,640. (No model.)



Claim.—1. A post-hole auger comprising a rod having a handle at its upper end, blades secured thereto at their lower ends, and blades supported by the said blades, substantially as described.

2. An earth-auger comprising a rod having a handle, blades secured at their lower ends to the said rod, supporting-plates secured to the said blades, and blades secured to the said supporting-plates, substantially as specified.

3. An earth-auger comprising a rod, blades secured at their lower ends to the said rod, supporting-plates secured to the upper ends of the said blades and extending beyond their edge, and blades secured to the projecting ends of the said supporting-plates, substantially as set forth.

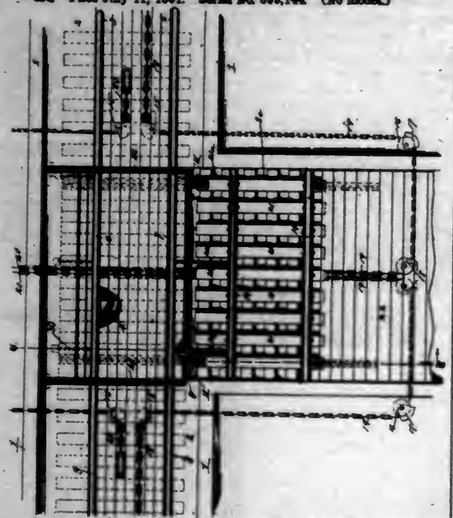
4. An earth-auger comprising a rod having a handle, blades secured at their lower ends to the said rod, supporting-blades secured to the inner edges of the said blades at their non-cutting edges, for the purpose described, and blades secured at their non-cutting edges to the opposite ends of the supporting-plates, substantially as shown.

5. An earth-auger comprising an operating-rod, blades secured at their lower ends thereto, and blades supported by and having their lower ends below the cutting-edges of the said blades, substantially as specified.

6. An earth-auger comprising an operating-rod, blades supported at their lower ends thereby, and blades supported by and having their lower ends below the cutting-edge of the said blades, one of the longer blades being longer than the other, substantially as set forth.

7. An earth-auger comprising an operating-rod having its lower end twisted and pointed, blades secured at their lower ends to the said rod above the twist, and blades supported from the upper ends of the said blades and a suitable distance therefrom, substantially as described.

474,665. RAILWAY-SIDING. WALLACE B. KIRK, Kansas City, Mo. Filed July 11, 1891. Serial No. 399,144. (No model.)



Claim.—1. An improved railway-siding comprising a main line having a movable rail-section, a pair of movable side-track rails, and a pair of chains connected to said movable rails and serving to effect the required movements of the same, substantially as set forth.

2. An improved railway-siding comprising a main line, a pair of movable side-track rails, a number of movable tie-bars, each permanently connected to one of said rails and having a projection to engage the opposite movable rail, a pair of movable main-line rails connected with one of the movable side-track rails, and a pair of chains connected each side of the movable main-line-rail-supporting frame, substantially as set forth.

3. An improved railway-siding comprising a main line having a movable track-section, a movable side track, and a hinged platform having a pair of rotating bars and a ratchet-gearing for operating said bars, substantially as set forth.

4. An improved railway-siding comprising a main line having a movable rail-section, movable ties supporting said movable rail-section, a pair of movable side-track rails, and stationary stringers 5, supporting said side-track rails and alternating with said movable ties, substantially as set forth.

5. An improved railway-siding comprising a pair of laterally-movable side-track rails, a pair of movable main-line rails connected by sliding ties, a flexible connection connecting the adjacent main-line rail and inner side-track rail, and a flexible connection connected to the outer movable side-track rail and to the ground, substantially as set forth.

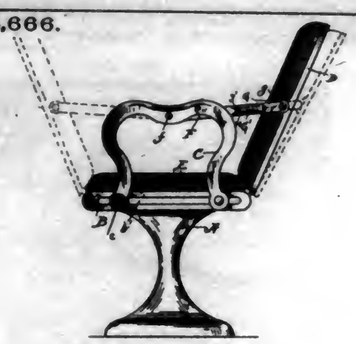
6. An improved railway-siding comprising a laterally-movable rail-section, a pair of movable side-track rails, and a pair of chains connected to the said movable rails and serving to effect the required lateral movements of the same, substantially as set forth.

474,666. CAR-SEAT. JOHN KRIMMEL, Cleveland, Ohio. Filed Apr. 20, 1891. Serial No. 389,690. (No model.)

Claim.—1. The combination, with a pedestal, a frame provided with slots, and arms adjustably connected with the frame through the medium of the slots, of a back and extensible links connecting the back with the arms, said links composed of sections overlapping at their ends and having an interposed spring connected with the overlapping ends, so as to permit the links to elongate and resume their normal lengths, substantially as set forth.

2. The combination, with a pedestal, a frame adjustably connected thereto, said frame having slots, and arms adjustably connected through the medium of the slots, of a back, and extensible links connecting the back and adjustable arms, said links composed of sections the ends of which overlap and provided with spiral springs, which permit them to elongate or contract, substantially as set forth.

474,666.



474,667. ELECTRIC-LAMP SOCKET. WILLIAM D. KIRK and HANS ANDERSON, La Crosse, Wis. Filed Sept. 26, 1891. Serial No. 406,934. (No model.)



Claim.—1. The combination, with a support and a series of electric contacts extending through the said support and in electrical connection on the reverse side thereof, of a series of sockets, each formed of a single coil of wire and placed concentric with one of the said contacts, the said sockets being in electrical connection, substantially as and for the purpose described.

2. The combination, with a support and a series of electric contacts extending through the said support and in electrical connection on the reverse side thereof, of a series of sockets, each socket formed of a single coil of wire and placed concentric with a contact and having an arm which terminates in an eye, and fastenings for securing the said arm to the said support, one set of the fastenings being in electrical connection, substantially as set forth.

3. The hereinbefore-specified lamp-socket, composed of a coil of wire having one end of the wire extended to form the arm *a*, by means of which the said socket is secured to the support and having the other end of the said wire extended to form the projection a^6 for the finger to obtain a purchase upon when removing or attaching the lamp, substantially as set forth.

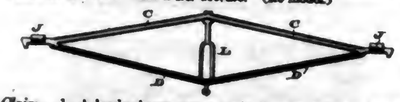
474,668. WINDOW-SCREEN. ALLAN G. MACDOWELL and WILLIAM Y. GARNER, New York, N. Y. Filed Dec. 8, 1891. Serial No. 414,435. (No model.)



Claim.—1. The combination of a window-frame having the usual sash, a receptacle on the sill open on its upper side, guides *b' b'*, secured to the inner sides of the frame in line with the opening in the receptacle, a screen having its upper end detachably secured to the lower end of the sash and its lower end resting in the receptacle, said screen consisting of a series of transverse pivotal sections whose ends work between the guides, and means for automatically folding the sections one upon the other within the receptacle when the sash is lowered, whereby when the sash is raised only so many sections as are needed will automatically unfold and pass into the guides, the unfolded sections being thereby kept in alignment with each other in the guides and the folded ones remaining in the receptacle, as and for the purposes described.

2. The combination of a window and sash, a folding sectional screen attached to the sash, a receptacle on the sill to receive the sections, and cams on the interior of the receptacle to automatically fold the sections one upon the other, substantially as described.

474,669. BRAKE-BEAM. REUEL T. MARKER, Philadelphia, Pa. Filed Oct. 31, 1891. Serial No. 410,423. (No model.)

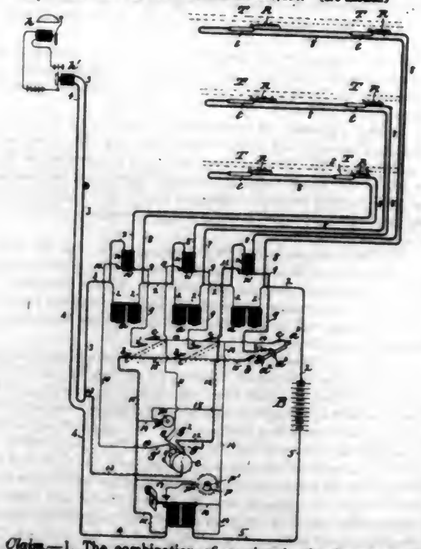


Claim.—1. A brake-beam composed of a single blank having a slit therein, forming integral pieces or bars, said pieces being bent outward in opposite directions, substantially as described.

2. A brake-beam constructed of pieces bent in opposite direction, producing the members of a truss, and shoe-receiving pockets at the ends integral with said members, substantially as described.

3. A brake-beam consisting of bent bars formed of a single blank, constituting a truss, and having at their ends pockets, and a brace connecting the crowns of the arches, said parts being combined substantially as described.

474,670. AUTOMATIC FIRE-ALARM. MORRIS MARTIN, Malden, Mass., assignor, by mesne assignments, to John F. Nielson, Elizabeth, N. J. Filed Feb. 21, 1887. Serial No. 228,410. (No model.)



Claim.—1. The combination of an electric circuit and circuit-changing instrument therein having a movable member or contact-piece which changes the circuit or path of the current without opening the said circuit and interrupting the current through said instrument, with a signal-producing instrument having a detent or starter controlled by said circuit and caused to operate by the change produced by said circuit-changing instrument, and comprising a break-wheel or signaling-surface connected with said circuit and a signaling-instrument operated by the said break-wheel when the said circuit is unbroken, substantially as described.

2. The combination of a visual indicating-instrument and circuit-controlling device governing said instrument normally operating to produce a change in the current which will cause the said indicating-instrument to operate, and an electro-magnetic switch in circuit with said controlling device adjusted to be unaffected by the change in current produced by the said device, with a signal-transmitting instrument the operation of which is governed by the said indicating-instrument, and a circuit by which said transmitting-instrument operates, which circuit is controlled both by the indicating-instrument and switch before mentioned, as described, the said transmitting-instrument being operative only when the indicating-instrument is operated without change in the switch, substantially as described.

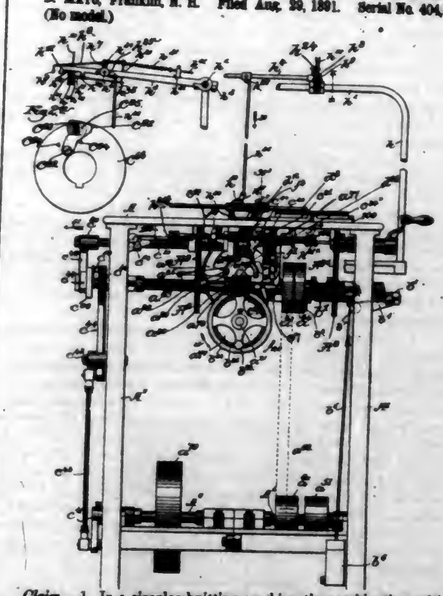
3. The combination of a normally-closed circuit and a circuit-controlling instrument therein which when operated makes a change in the current without interrupting it, and an electro-magnetic switch in the said circuit operated only by an interruption of the current, and a signal-transmitting instrument the operation of which is governed by the said circuit-controlling instrument, the circuit for said transmitting-instrument governed by said switch being rendered inoperative when the switch is changed by an interruption in the current, substantially as described.

4. A motor and electro-magnet controlling the operation thereof, and normally-closed electric circuit, including the said controlling electro-magnet, and a shunt for said magnet, closed by the armature thereof when retracted, and a circuit-breaker in said shunt operated by the said motor, substantially as described.

5. A motor and controlling electro-magnet therefor, and normally-closed electric circuit, including said magnet, and two normally-open shunts for said magnet, one of which is closed by the armature of said magnet when retracted and contains a circuit-breaker which is momentarily opened by the movement of the motor, the other shunt containing a circuit-breaker which is opened by the said motor and retained open when the motor ceases to operate, substantially as and for the purpose described.

6. A motor and electro-magnet controlling the operation thereof, and normally-closed electric circuit, including the said controlling electro-magnet, and a shunt for said magnet, closed by the armature thereof when retracted, and a circuit breaker in said shunt and weight operated by the motor, which in falling momentarily opens the said shunt, substantially as described.

474,671. KNITTING-MACHINE. WILLIAM H. MAYO and GEORGE D. MAYO, Franklin, N. H. Filed Aug. 29, 1891. Serial No. 404,096. (No model.)



Claim.—1. In a circular-knitting machine, the combination, with the shaft a^{80}, having a fast and a loose pulley, a driving-belt in engagement with one of said pulleys, a belt-shipper to move the said belt from one to the other of said pulleys, a locking device for said shipper to maintain the belt on the fast pulley while the said shaft is being rotated for circular work, and a pattern mechanism to automatically release the belt-shipper at a predetermined point or time, of devices to reciprocate the said shaft during heel and toe work, a locking device to co-operate with the devices for reciprocating the said shaft, and a pattern mechanism to automatically release the said locking device to stop the reciprocations of the said shaft at the proper time, substantially as described.

2. A knitting-machine containing the following instrumentalities,

vis: a needle-cylinder, a series of needles therein, a cam-ring to act upon the said needle-cylinder, a cam-cylinder having cams to actuate the said needles, a shaft, as a^{45}, and gearing between it and the cam-cylinder, and means to rotate the said shaft and to reciprocate the said shaft at suitable times, and a clutch to determine the periods of rotation and of reciprocation of the said shaft, and consequently the rotation and reciprocation of the cam-cylinder, a clutch-rod, and connecting devices between the said clutch-rod and the said cam-ring, whereby the engagement of the clutch to effect the reciprocating motion of the said shaft automatically raises the needle-cylinder to lengthen the stitch, substantially as described.

3. In a knitting-machine, the combination, with a shaft a^{45}, provided with a fast pulley and a loose pulley, a driving-belt in engagement with one of said pulleys, a belt-shipper to move the said belt from one to the other of said pulleys, a locking device for said shipper, consisting of a lever pivoted to the shipper bar or rod and having one arm provided with a latch or pawl b^{14}, and a dog b^{15}, pivoted to the other arm of the lever, of a pattern mechanism consisting of a disk a^{56}, provided with a pin or stud a^{62} to act on the dog b^{15}, and gearing to produce rotation of the said disk, substantially as described.

4. In a knitting-machine, the combination of the following instrumentalities, viz: a shaft a^{62}, provided with a worm, a gear in mesh with said worm, a shaft a^{75}, upon which the gear is mounted, a pinion a^{76}, and a pattern-shaft a^{21}, a gear a^{10}, fast on the shaft a^{21} and provided with a smooth or toothless portion and with a pin or stud a^{26}, and a gear a^{25}, loose on the shaft a^{21} and provided with a smooth or toothless portion and having a pin or stud a^{24} to co-operate with the pin or stud a^{26}, and an adjustable arm located between the said gears a^{10} a^{25}, substantially as described.

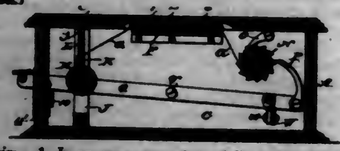
5. In a knitting-machine, the following instrumentalities, viz: a shaft a^{75}, having a worm-gear thereon, a worm to engage and rotate it, a pinion a^{76} on the said shaft, a shaft a^{21}, a gear thereon in mesh with the pinion a^{76}, a pattern disk or plate a^{56}, mounted on said shaft a^{21}, a pin or stud moved by the said disk to effect the stopping of the machine when circular knitting is to be suspended, a cam secured to the said disk or plate, a stitch-regulating cam-ring to regulate the length of the stitches, and a lever f' in operative connection with the said cam-ring and actuated by the said cam, substantially as described.

6. In a knitting-machine, the combination of the following instrumentalities, viz: a shaft a^{75}, a ratchet-wheel b^{54}, rotated therefrom, a pattern-wheel c^{62} to control the reciprocation of the machine, a pawl and ratchet-wheel c^{61} to rotate said pattern-wheel, a pawl in engagement with the said ratchet-wheel b^{54}, means to oscillate said ratchet-wheel, and intermediate mechanism operated by movement of the latter ratchet-wheel in its oscillation in one direction to actuate the pattern-wheel, substantially as described.

7. In a knitting-machine, the herein-described take-up mechanism, consisting, essentially, of a rod h^3, provided with a yarn-guide, a block h^7, to which the said rod is secured, a sleeve provided with an arm h^{34} to act on the said block and force the said rod h^3 downward, as when circular knitting is being done, a spring to move the said block h^7 in a direction opposite to that in which it is moved by the said arm h^{34}, a clamp to hold the yarn during reciprocating knitting, a lever upon which the said clamp is mounted, and a rod h^{38}, connecting the said take-up and the clamp-carrying lever and adapted to operate substantially as described.

8. In a knitting-machine, the herein-described take-up mechanism, consisting, essentially, of a rod h^3, provided with a yarn-guide, a block h^7, to which the said rod is secured, a sleeve provided with an arm h^{34}, a rock-shaft to which it is fastened, said arm acting on the said block and forcing the rod h^3 downward for circular knitting, a second arm h^{35}, fast on said rock-shaft, a slotted lever h^{37}, combined with a link connecting said slotted lever with the said arm h^{35}, a pin or stud extended into the slot of the said lever, a bar d^3, carrying said pin, and a pattern-surface to release the said bar at the proper time, whereby the movement of the said bar in one direction, as when the machine is started for reciprocating knitting, moves the said lever h^{37} to release the rod h^3 and effect the clamping of the thread on its way to the arm h^3, the combination being and operating substantially as described.

474,672. CASE-RECORDER. WOOSTER B. METCALFE and FRANK A. RIDDLE, Hanover, Pa. Filed Oct. 24, 1891. Serial No. 409,734. (No model.)



Claim.—1. In an apparatus substantially as described, the combination of the frame or casing, the drawer, the latch by which to hold such drawer closed, the cross-lever by which to release such latch, and the main lever arranged to operate such cross-lever, all substantially as and for the purposes set forth.

2. The combination, substantially as described, of the casing having a partially-glazed sight-opening, the guide-table below such opening, and the upwardly-projected side guides on said table, all substantially as described, and for the purposes set forth.

3. The combination, in an apparatus substantially as described, of the roller supporting the record-slip, the uprights having slots, the friction-bar fitted at its ends in said slots and over and partially around which the record-strip is passed, and the tension-bar fitted at its ends in said slots and bearing upon the record-strip passed over the friction-bar, all substantially as set forth.

4. In an apparatus substantially as described, the roller I, provided in its ends with notches *i*, the band sprung into said notches and extended across the roller, and the slip held by said band, all combined substantially as set forth.

5. The combination of the box or casing, the drawer movable into and out of the same and provided at its inner end with a bearing for engagement by the hook, the hook supported in the casing at the inner end of the drawer-recess and arranged to engage the bearing of the drawer, the cross-lever arranged to move said hook out of such engagement, and the hand-lever arranged to operate such cross-lever, substantially as set forth.

6. The combination of the box or casing, the drawer, the latch for holding the drawer closed, the cross-lever arranged to release said latch, a spring arranged to actuate said cross-lever, and the main lever connected with the cross-lever, whereby it may operate such cross-lever and be also actuated by the spring which actuates the cross-lever, substantially as set forth.

7. The combination, substantially as described, of the box or casing having a partially-glazed opening, the record-slip and its rollers, one of which has a ratchet-wheel, the main or hand lever pivoted between its ends and projecting at its front end through a slot in the casing, a pallet supported on the rear end of the main lever and arranged to engage the ratchet-wheel, the detent-pawl, the cross-lever pivoted between its ends and connected at one end with the inner arm of the main lever, the spring arranged to actuate said cross-lever, the drawer, and the latch by which to hold the drawer closed, said latch being arranged for operation by the cross-lever, all substantially as and for the purposes set forth.

8. In an apparatus substantially as described, the combination of the casing, a lock device, and a drawer provided with a lateral movable false front arranged and adapted to operate said lock device, substantially as set forth.

9. In an apparatus substantially as described, the combination of the box or casing, the record-slip, the drawer having a bearing-piece for engagement by its securing-latch, the latch movable into and out of engagement with said bearing-piece, the mechanism for advancing the slip, and the latch-releasing devices arranged for operation by the said mechanism, the said bearing-piece being adjustable, whereby it may be set to effect the release of the drawer at different points of movement of the releasing devices, all substantially as and for the purposes set forth.

10. In an apparatus substantially as described, the combination of the box or casing, the pivoted main lever, and intermediate operating and supporting devices whereby the said lever may operate to advance the record-slip, and the lock consisting of a bolt movable into and out of engagement with said main lever whereby to lock and unlock the same, substantially as and for the purposes set forth.

11. In a cash-recorder, the combination, substantially as described, of the casing, mechanism for supporting and advancing a record-strip, a locking device to lock said mechanism, and a drawer provided with a laterally-movable false front extending beyond the side of the drawer and adapted to conceal a portion of the said locking device located alongside such drawer, substantially as described, and for the purposes set forth.

12. The combination, substantially as herein described, of the box or casing, the main lever, the slide-bolt for locking said lever, and the drawer having a laterally-movable false front, the false front and slide-bolt being provided with intercngaging parts, whereby the lateral movement of the front may adjust the bolt into and out of engagement with the lever, substantially as and for the purposes set forth.

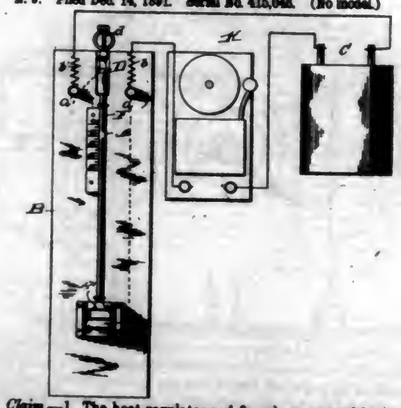
13. In an apparatus substantially as described, the combination, with the box or casing, the bolt, and the part to be locked by such bolt, of the drawer provided with a false front movable laterally and arranged to adjust the said bolt into and out of locked position, substantially as set forth.

14. The combination of the box or casing, the drawer, a latch within the casing by which to hold the drawer closed, mechanism by which such latch may be released to permit the drawer to open, and a bolt by which to lock such mechanism, substantially as set forth.

15. The combination, substantially as described, of the box or casing, a latch within said casing, mechanism by which said latch may be adjusted to unlatched position, said mechanism including a main or hand lever, the bolt by which said lever may be locked from movement, and the drawer arranged to be held closed by the said latch and provided with a laterally-sliding false front arranged to operate the bolt into and out of locked position, substantially as and for the purposes set forth.

16. In an apparatus substantially as described, the combination, with the box or casing and the sliding bolt having a forwardly-projected pin or stud, of the drawer having a laterally-sliding false front having in its inner face a socket or seat arranged to receive the end of said pin or stud, whereby the movement of the front may operate to set the bolt into and out of locked position, substantially as set forth.

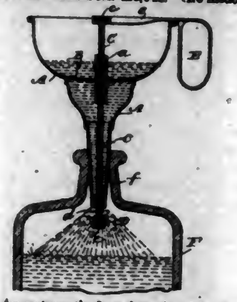
474,673. ELECTRIC HEAT-ALARM. JOSEPH MEYER, Jersey City, N. J. Filed Dec. 14, 1891. Serial No. 415,046. (No model.)



Claim.—1. The heat-regulator and fire-alarm, comprising a thermostatic tube and bulb charged with mercury, forming the terminal of one pole of a battery, the cap D on the other end of said tube an adjusting-screw *d*, projecting into said cap and carrying a needle at its lower end, extending into said tube, said cap being formed in two sections, having a screw-threaded connection, one of said sections having an apertured leg G, in which is a binding-screw *g*, electrically connected with the other pole of the battery and with said needle, and the alarm forming part of the circuit, substantially as specified.

2. In a thermostatic alarm, the support B, having therein a thermometric tube and bulb charged with mercury, the binding-posts *a a'* on said support, said posts being electrically connected with opposite poles of a battery, an electrical connection between one of said posts and the mercury, a cap on the upper end of said tube having therein an adjusting-screw carrying a needle depending into the tube, and an apertured leg on said cap having a binding-screw therein electrically connected with said needle and with the opposite pole of the battery, substantially as specified.

474,674. VALVED FUNNEL. THOMAS MILLER, Jersey City, N. J. Filed Feb. 2, 1892. Serial No. 420,041. (No model.)



Claim.—1. An automatic funnel made with a body, a rod or stem guided therein, a valve on said stem, adapted to open and close the funnel-outlet, and a handle rigidly connected to the valve-stem, but disconnected from the funnel-body and extended laterally to or beyond the body to form a stop thereat for the valve, substantially as described.

2. An automatic funnel made with a body, a tubular venting-stem guided therein, a valve on said stem, adapted to open and close the funnel-outlet, and a handle rigidly connected to the tubular valve-stem and extended laterally to or beyond the funnel-body, substantially as described, for the purposes set forth.

3. An automatic funnel made with a body, a tubular venting-stem guided therein, a valve on said stem, adapted to open and close the funnel-outlet, and a handle rigidly connected to the valve-stem and extended laterally beyond the perimeter of the funnel-body and formed outside of it into a vertically-elongated finger-receiving loop, substantially as described.

474,675. ROPE-HOOK. JAMES MILNE, Scotch Grove, Iowa, assignor of two-thirds to Joseph J. Milne, same place. Filed Mar. 3, 1892. Serial No. 423,660. (No model.)



Claim.—A rope-hook constructed substantially as shown and consisting of a body portion having sides which diverge from the eye and are bent or curled to form a circular portion adjacent to the eye and continued therefrom to the ends, the end of said hook opposite the eye being bent to have a convex bearing-surface, substantially as shown, whereby rounded bearing-surfaces at the point of engagement with the rope and at the eye are provided, for the purpose set forth.

474,676. VENTILATING APPARATUS FOR GRAIN-BINS. FRANK MORTON, St. Louis, Mo. Filed Apr. 23, 1890. Serial No. 349,150. (No model.)



Claim.—1. The combination, with a grain-bin, of an inverted air-receiver within the grain-bin having no means of discharge except beneath the lower edge, the said edge being substantially horizontal, so that the air will escape from all parts of the edge, an air-conveyer with a discharge-mouth beneath the receiver, and a blowing device connected to the said conveyer, substantially as and for the purpose set forth.

2. The combination, with a grain-bin, of an inverted trough within the grain-bin with a substantially horizontal edge, so as to insure

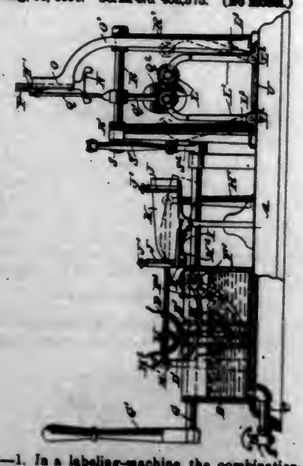
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an equal discharge of air beneath all parts of the edge, an air-conveyer with discharging-mouth centrally beneath the inverted trough, a blowing device adapted to force air into the conveyer, and suitable means to regulate the amount of air passing through the conveyer.

3. The combination, with a grain-bin, of an air-receiver within the bin having an inclined top with no orifice for escape of air and having a substantially horizontal lower edge, so that the air shall escape equally beneath all parts of the edge, an air-conveyer discharging beneath the receiver, and a blower connected with the air-conveyer, substantially as and for the purpose set forth.

474,677. LABELING-MACHINE. FRANK MUELLER, Albany, N. Y. Filed Aug. 11, 1891. Serial No. 402,373. (No model.)



Claim.—1. In a labeling-machine, the combination, with a box containing an adhesive substance, of a bottle-receiver of open-work construction fitted to slide in the said box and formed with a pad adapted to receive adhesive matter and arranged to support the receptacle to be labeled, substantially as shown and described.

2. In a labeling-machine, the combination, with a box containing adhesive substance, of a perforated bottle-receiver fitted to slide in the said box and formed with a pad adapted to receive adhesive matter and arranged to support the receptacle to be labeled, and means, substantially as described, for imparting a vertical sliding motion to the said receiver to cover the said pad with adhesive matter, substantially as set forth.

3. A labeling-machine provided with a label-table having a transverse recess and provided with transversely-extending gage-plates and a vertically-yielding end gage-plate, substantially as shown and described.

4. In a labeling-machine, the combination, with a bottle-receiver containing a pad adapted to be dipped into the adhesive matter, of a gage-bar held adjustably in the rear of the said bottle-receiver, substantially as shown and described.

5. In a labeling-machine, the combination, with a label-table provided with side guide-plates and an end guide-plate mounted to swing, of a gage-bar held adjustably in the rear of the said table, substantially as shown and described.

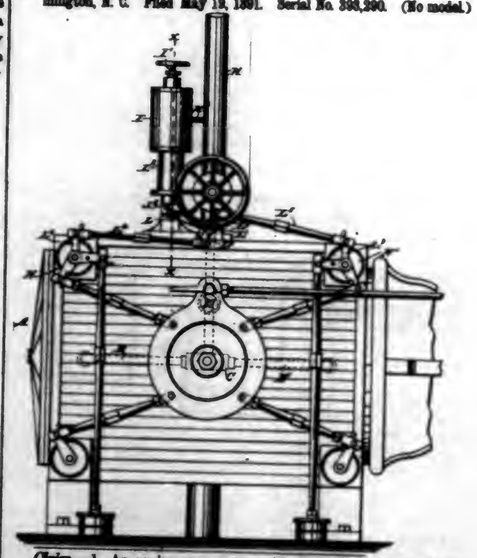
6. In a labeling-machine, the combination, with a base, of brushes mounted in yielding supports above the base and a reciprocating plunger above the brushes, whereby provision is made for forcing a bottle between and through the brushes onto the base, substantially as described.

7. In a labeling-machine, the combination, with a base, of arms pivoted to the base, springs pressing against the arms, brushes mounted in the upper ends of the arms, a plunger above the brushes and having its rod sliding in guideways, a rock-shaft provided with a weighted arm, a link connecting the arm to the plunger-rod, and means for operating said shaft, substantially as described.

8. In a labeling-machine, the combination, with yieldingly-mounted brushes, of a paste-box and a sliding bottle-receiver in said paste-box, a plunger above the brushes, and means for simultaneously operating the bottle-receiver and plunger, substantially as described.

9. In a labeling-machine, the combination, with a paste-box, of a bottle-receiver containing a pad and adapted to be dipped in the said paste-box, a label-table arranged next to the said paste-box, revolving brushes arranged next to the said label-table, a plunger for pressing a bottle between and through the said brushes, and means, substantially as described, for imparting simultaneously a vertical sliding motion to the said receiver and to the said plunger, as set forth.

474,678. ENGINE-GOVERNOR. RICHARD J. MCILHENNY, Wilmington, N. C. Filed May 19, 1891. Serial No. 393,290. (No model.)



Claim.—1. An engine-governor provided with a piston controlled from the initial pressure in the cylinder of the engine governed through an equalizing-valve and controlling the movements of an inlet valve or valves for the cylinder, substantially as shown and described.

2. An engine-governor provided with a piston having its reduced end pressed on by the motive agent and its larger end exposed to the initial pressure in the cylinder of the engine governed through an equalizing-valve, substantially as set forth.

3. In an engine-governor, the combination, with a piston having its reduced end pressed on by the motive agent and its larger end exposed to the initial pressure in the cylinder, of an equalizing-valve for controlling the flow of motive agent from the cylinder to the large end of the said piston, substantially as shown and described.

4. In an engine-governor, the combination, with an equalizing-valve controlled by the initial pressure in the cylinder, of a piston having its large end exposed to the cylinder-pressure controlled by the said equalizing-valve, the small end of the said piston being acted on by the motive power of the supply-pipe, substantially as shown and described.

5. In an engine-governor, the combination, with an equalizing-valve controlled by the initial pressure in the cylinder, of a piston having its large end exposed to the cylinder-pressure controlled by the said equalizing-valve, the small end of the said piston being acted on by the motive power of the supply-pipe, and means for connecting the reduced end of the said piston with the valves controlling the inlet of the steam to the cylinder, substantially as shown and described.

6. In an engine-governor, the combination, with a cylinder and an equalizing-valve fitted to slide therein, of a pipe leading from the said cylinder, a valve-casing into which opens the said pipe and provided with two valve-seats, a double valve fitted to slide in the said valve-casing, and pipes leading from the said valve-casing to the ends of the cylinder, substantially as shown and described.

7. In an engine-governor, the combination, with a cylinder having a reduced end in communication with the steam-supply pipe, of a piston fitted to slide in the said cylinder and provided with a piston-rod extending into the said reduced end of the cylinder, a pipe extending into the upper end of the said cylinder, a check-valve held in the said pipe, a cylinder connected with the said pipe, and an equalizing-valve held in the said last-named cylinder and adapted to control the movement of the said check-valve, substantially as shown and described.

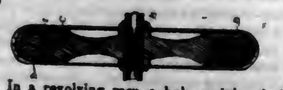
8. In an engine-governor, the combination, with a cylinder having a reduced end in communication with the steam-supply pipe, of a piston fitted to slide in the said cylinder and provided with a piston-rod extending into the said reduced end of the cylinder, a pipe extending into the upper end of the said cylinder, a check-valve held in the said pipe, a cylinder connected with the said pipe, an equalizing-valve held in the said last-named cylinder and adapted to control the movement of the said check-valve, and an equalizing-pipe connected with the last-mentioned cylinder and with the ends of the engine-cylinder, substantially as described.

474,679. UNDERWAIST. GEORGE D. MCKAY, Aurora, Ill. Filed Jan. 23, 1892. Serial No. 419,074. (No model.)



Claim.—The improved child's underwaist having a central longitudinal opening extending down the back, the portions of the garment on the sides of said opening being connected at the shoulder with corresponding front portions, one or more elastic bands crossing said opening transversely, a vertical elastic band *c*, which is attached to one of said cross-bands and connects with the lower portion of the body, and the elastic strap *d*, attached to the latter in alignment with the vertical back-band *c*, as shown and described.

474,680. REVOLVING WOOD-WORKING RASP. FRANK H. NIEMANN, Jefferson City, Mo. Filed Mar. 23, 1891. Serial No. 386,126. (No model.)



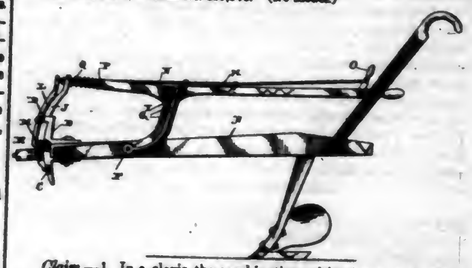
Claim.—1. In a revolving rasp, a hub, peripheral shoulders C, formed on opposite sides of the hub, a series of toothed plates which are adapted to fit around the hub, clamping-plates D, which fit around the said shoulders, and clamping-screws which extend through all the said plates, the parts being combined substantially as shown and described.

2. In a revolving rasp, a hub, peripheral right-angled shoulders C, formed on opposite sides of said hub, toothed plates G, having openings of sufficient diameter to fit around the said hub, clamping-plates D, having openings of less diameter than plates G and which are adapted to fit around the shoulders C, and clamping-screws which extend through the plates G and which connect the plates D, whereby all of the said plates are secured to the hub, the parts being combined substantially as shown and described.

3. In a revolving rasp, a circular hub the periphery of which is parallel with the axial line of the hub, the edges of the periphery being cut inward to form shoulders C, plates G and D, and clamping-screws, the parts being combined substantially as shown and described.

4. In a revolving rasp, a hub, and toothed plates secured to the periphery of the hub, the combined width of the said plates being the same as the greatest width of the hub, the parts being combined substantially as shown and described.

474,681. PLOW-CLEVIS. JAMES M. NORRIS, Pleroston, Ind. Filed Nov. 30, 1891. Serial No. 413,573. (No model.)



Claim.—1. In a clevis, the combination, with a beam and a clevis pivoted thereto, having its rear end upturned, of an operating-lever secured between its ends to said upturned clevis end, a connection between the forward ends of the lever and clevis, and a means for holding the clevis in the desired adjustment in relation to the beam, substantially as shown and described.

2. In a clevis, the combination, with the beam and a clevis pivoted thereto, having its rear end upturned, of an operating-lever adjustably secured to the said end, a plate which is secured at its lower end to the forward end of the clevis and loosely connected to the said lever at its upper end, and a means for holding the clevis in the desired adjustment in relation to the beam, substantially as shown and described.

3. In a clevis, the combination, with the beam and a forked clevis pivoted thereto, having its rear end upturned and provided with notches, of an operating-lever, trunnions on said lever which engage said notches, a connection between the forward end of the lever and the clevis, and a means for holding the clevis in the desired adjustment in relation to the beam, substantially as shown and described.

4. In a clevis, a gage attachment secured to the forward end thereof, a guide on said attachment, a clevis pivoted to the beam, having an upturned rear end, an operating-lever mounted in said end, a plate which connects the outer end of the clevis and the lever and which moves through said guide, and a means for securing the said plates to the gage attachment in the desired adjustment, substantially as shown and described.

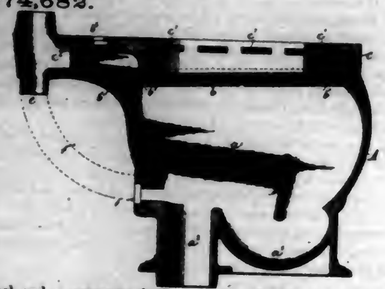
5. In a clevis, the combination, with the beam, gage attachment B, the pivoted clevis, and the lever mounted thereon, of a plate secured at its lower end to the forward end of the clevis and loosely connected to the lever at its upper end, a latch pivoted to the said plate, having an inturned lower end, and a rearwardly-extending operating-rod connected to said latch, substantially as shown and described.

6. In a clevis, the combination, with the beam, a gage attachment secured to its forward end, a clevis pivoted to the beam, having its rear end upturned, a lever adjustably mounted in said end, a plate secured at its lower end to the clevis and constructed with an opening in its upper end through which the forward end of the said lever extends, and a spring on said lever which bears against the said plate, pushing the lever rearwardly, and thus holding it securely in its bearings, substantially as shown and described.

474,682. WATER-CLOSET. ARTHUR O'BRIEN, Helena, Mont. Filed Oct. 22, 1891. Serial No. 409,467. (No model.)

Claim.—1. In a water-closet, the combination, with a bowl, of a channel formed integrally therewith and communicating with the interior of the bowl through a series of slots, a passage forming a continuation of said channel and arranged in a line coincident therewith, a vent, and an overflow forming a continuation of said passage, an overflow-pipe connected with the overflow, a flushing-rim below said

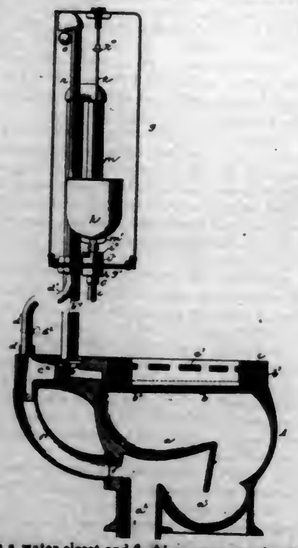
474,682.



channel, and a water-supply therefor, the combination permitting a ventilation of the bowl and soil-pipe and the carrying off of the overflow through the same channel.

2. In a water-closet adapted for prisons or the like, the combination, with a bowl, of a channel formed integrally therewith and communicating with the interior of the bowl through a series of slots, an opening leading from said channel and arranged in line coincident with the channel, a coupling adapted to be passed through a wall or other support and connected with said opening, openings in said coupling, having connections with a vent-pipe and an overflow-pipe, a flushing-rim, and a water-supply therefor, and an opening in the lower portion of the bowl for connection with the soil-pipe, substantially as and for the purposes set forth.

474,683. FLUSHING APPARATUS FOR WATER-CLOSETS. ARTHUR O'REILLY, Helena, Mont. Filed Oct. 26, 1891. Serial No. 409,866. (No model.)

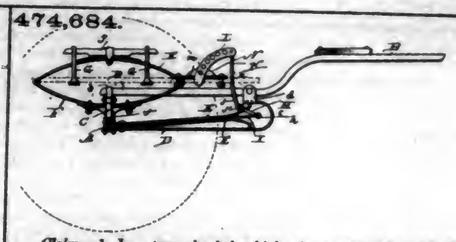


Claim.—1. In a water-closet and flushing apparatus therefor, the combination, with a bowl having a flushing-rim and air-passages above said rim, of a flushing apparatus comprising a water-supply, a water-discharge leading to the flushing-rim, an air-pipe leading to said air-passages, valves for said water supply and discharge, adapted to be simultaneously operated by a float and a valve in the air-pipe, the combination being and operating substantially as set forth.

2. In a water-closet and flushing apparatus, the combination, with a bowl having a flushing-rim and air-passages, as described, of a flushing apparatus consisting of a water-supply adapted to compress the air within the apparatus and be checked by the said compression, a water-discharge leading to the flushing-rim, an air-pipe leading from the apparatus to the air-channel and passages in the closet and having a stop-cock, as described, and valves for controlling said water supply and discharge and adapted to be simultaneously operated by a float, all substantially as and for the purposes set forth.

474,684. SULKY. ELIAS A. OLIVER, Belleville, Wis. Filed Jan. 16, 1892. Serial No. 418,906. (No model.)

474,684.



Claim.—1. In a two-wheeled vehicle, the combination, with the axle and the half-spring secured thereon, said spring having the shafts loosely connected thereto, of the coupling-bars for said shafts, and the springs for said bars, said coupling-bars and springs forming the support for the forward portion of the body, substantially as specified.

2. In a two-wheeled vehicle, the shaft couplings and supports comprising a half-spring secured on the axle and having a loose connection with the rear end portions of the shafts, the coupling-bars having the upwardly-bowed forward ends upon which the shafts are loosely supported, and the springs connected to said bars, said coupling-bars and springs forming the support for the forward portion of the body, substantially as specified.

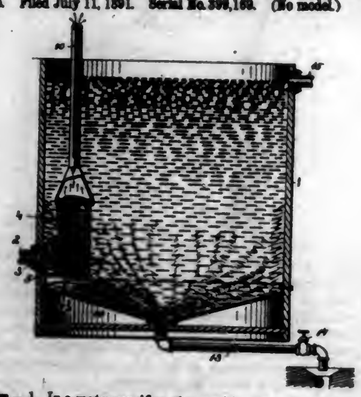
3. A road-cart having the rear portion of its body supported upon oscillating springs and its forward portion upon an adjustable bar carried by springs, substantially as specified.

4. The combination, with the axle and the springs having an oscillating support thereon, of the vehicle-body having its rear portion supported upon transverse bars connected to said springs and its forward portion upon a transverse bar having a vertical adjustment and having end bearings on springs, substantially as specified.

5. The combination, with the bar H, having the downwardly-bowed ends having loose bearings in spring-bars I, of the support K, having the downward-extending arms loosely connected to said bar and an upper horizontal looped portion in which the body rests, and an adjusting device, substantially as specified.

6. The road-cart comprising the axle and supporting-wheels, the half-spring on said axle, the shafts loosely connected to said spring, the forwardly-extended couplings on which the shafts are loosely supported, their springs, the elliptic springs having an oscillating support on the axle, the cross-bars connecting said springs, the body having its rear portion supported on said bars, and the adjustable spring-support for the forward portion of the body, substantially as specified.

474,685. WATER-PURIFIER. ARTHUR PENNELL, Kansas City, Mo. Filed July 11, 1891. Serial No. 399,169. (No model.)



Claim.—1. In a water-purifier, the combination of a suitable tank, a supply-pipe, and a baffle-box connected with said supply-pipe for thoroughly mixing chemicals with the water, said baffle-box consisting of chambers 7 8, having an intervening partition 6, an inlet, and an outlet, substantially as set forth.

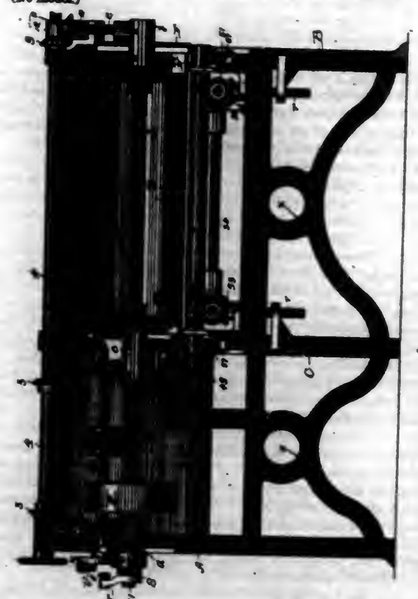
2. In a water-purifier, the combination of a suitable tank, a supply-pipe, a baffle-box 4, having chambers 7 8, an intervening partition 6, and an opening 11, so situated that the water is discharged from the baffle-box at right angles with the radius of the tank, substantially as and for the purpose set forth.

3. In a water-purifier, the combination of a suitable tank, a supply-pipe, a baffle-box 4 being suitably connected with said supply-pipe, a bracket for supporting the same, said baffle-box having chambers 7 8, with an intervening partition 6 and open at its top, a discharge-opening in said baffle-box, and a flue in connection with said baffle-box for conveying gases or air from the same, substantially as described, and for the purpose set forth.

4. In a water-purifier, the combination of a suitable tank, a supply-pipe, a discharge-pipe, a baffle-box connected with the supply-pipe, said baffle-box having chambers 7 8, with an intervening partition 6, a discharge-opening 11, a flue connected therewith, a funnel located near the bottom of said tank, and a discharge-pipe connected with said funnel, substantially as and for the purpose set forth.

5. In a water-purifier, the combination of a suitable tank, a supply-pipe entering said tank, and a distributing-chamber on the inside of said tank and connected with said supply-pipe and having an outlet into the tank extending at right angles to the radius of the tank, said outlet being a suitable distance above the bottom of the tank to obviate disturbing the sediment at the bottom, substantially as and for the purpose set forth.

474,686. SANDPAPERING-MACHINE. JAMES L. PERRY, Chicago, Ill., assignor, by direct and mesne assignments, to the J. L. Perry Machine Company, same place. Filed Mar. 20, 1891. Serial No. 385,725. (No model.)



Claim.—1. In a sandpapering-machine, a sand-paper cylinder having a long journal and three vertically-adjustable bearings, one of said bearings being adapted to be moved with its adjusting device endwise of the cylinder-journal and off the same, substantially as set forth.

2. The combination, with a sand-paper cylinder, of a bearing for the end of said cylinder removable from the cylinder-shaft, and an adjusting device supporting the bearing and made removable with the same, substantially as set forth.

3. In a sandpapering-machine, the combination of the cylinder with the uprights in which it is journaled, one of said uprights being provided with a removable portion adapted when removed to uncover the end of the cylinder, substantially as set forth.

4. In a sandpapering-machine, the combination of the cylinder with the uprights in which it is journaled, one of said uprights being provided with a removable portion adapted when removed to uncover the end of the cylinder, and a removable bearing at the same end of the cylinder, substantially as set forth.

5. In a sandpapering-machine, a cylinder provided with a vertically-adjustable bearing at one end removable at will to allow the sand-paper covering to be slipped endwise over the end of the cylinder, and with a vertically-adjustable support at the other end adapted to maintain the cylinder in position when the removable bearing is taken off, substantially as set forth.

6. The combination, with the cylinders, of removable bearings *b*, adjusting-screws for said bearings, boxes sustaining said screws, arms from said boxes to collars 12, and the extended shafts 4, upon which the collars are mounted, and said collars and shafts, substantially as set forth.

7. In a sandpapering-machine, the combination of a plurality of sandpapering-cylinders having their driving-pulleys at the same side of the machine and all having removable bearings at the other side of the machine, whereby all the cylinders are rendered accessible from the same end, substantially as set forth.

8. The sandpapering-machine provided with an upper and lower table confining the material while in transit from one pair of rolls or cylinders to the next pair, one of said tables being formed by the feet of partitions placed between the cylinders, substantially as set forth.

9. In a sandpapering-machine, the combination, with the cylinders and feed-rolls, of the feet N, placed between the cylinders and feed-rolls, and the partitions supporting said feet, substantially as set forth.

10. The combination, with sandpapering-cylinders, of the sleeves 8, confined on the cylinder-journals and having threaded engagement with stationary sockets, in combination with such sockets and means for rocking the sleeves upon the journals, substantially as specified.

11. In combination with the cylinders of the rocking threaded sleeves confined on the cylinder-journals, a stationary female screw with which said sleeves engage, and means for rocking said sleeve, substantially as set forth.

12. As a means for giving endwise movement to the cylinders, a rocking screw confined on the cylinder-journals, in combination with a stationary screw with which said rocking screw engages, substantially as set forth.

13. The sandpapering-machine, the cylinders whereof are inclosed and are all driven by pulleys located at one side of the machine, the inclosing frame at the other side of the machine being provided with removable portions whereby to uncover the ends of the cylinders, substantially as set forth.

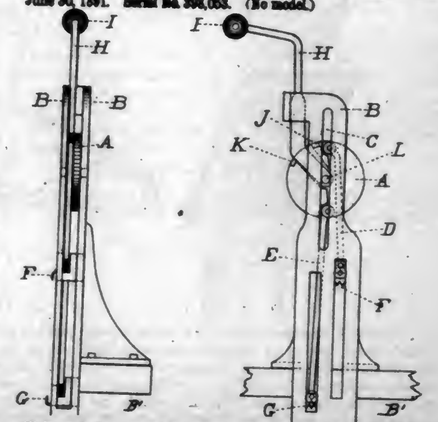
14. The combination, in a sandpapering-machine, of a cylinder and its bearings sustained by vertical screws, one of said screws being movably supported so as to permit a sliding movement by the bearing carried by it, substantially as set forth.

16. The combination, in a sandpapering-machine, of a cylinder and its bearings, vertical screws carrying said bearings, supports for said screws, and means for turning the screws to adjust the cylinder, the support for one of the screws being movable to permit the removal of the bearing carried by it from the cylinder, substantially as set forth.

16. In a sandpapering-machine, the combination of an adjustable cylinder with a supporting and inclosing frame, such frame having a removable and adjustable portion opposite one end of the cylinder and the cylinder having its bearing at the same end also removable, substantially as set forth.

17. In a sandpapering-machine, the combination of three upright frames and sand-paper cylinders, the journals whereof are provided, with adjustable bearings at each of such frames, all the cylinders being located between one of the end frames and the center frame and all their pulleys being located between the center frame and the other end frame, substantially as set forth.

474,687. SAWMILL-DOG. CLARENCE H. PITKIN, Berlin, Vt. Filed June 30, 1891. Serial No. 398,053. (No model.)

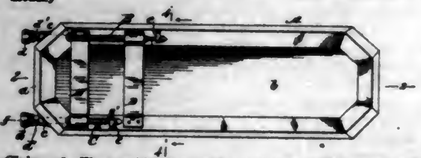


Claim.—1. In a sawmill-dog, the combination of a knee or upright, vertically-movable slides therein provided with dogging-teeth projecting in opposite directions, an oscillatory and vertically-movable plate pivoted in vertical slots in the upright, a weighted lever supported on the pivot-pin of said plate, which plate is provided with suitable shoulders to receive the blows of said weighted lever, together with the rods connecting the dogging-slides to the plate, substantially as described.

2. In a sawmill-dog, the combination of the upright or main support provided with vertical slots, an oscillatory and vertically-movable plate whose pivot or journal operates within said slots, a lever pivoted on the journal of said plate, and the dogging-slides connected to the plate, substantially as described.

3. The combination of the main support B, having vertical slot C, the oscillating and vertically-movable plate A, having pivot-pin L, the lever H, pivoted on said pin L, the shoulders J and K on the plate A, the dogging-slides F and G, and the connecting-rods D and E, pivoted to the plate A and carrying said slides, substantially as described.

474,688. HEAD AND SHOULDER REST. LEVI L. PLETCHER, Mechanicsville, Ohio. Filed Feb. 16, 1892. Serial No. 421,892. (No model.)



Claim.—1. The combination, with a casket or coffin, of two shafts rotatable therein, two bands on the shafts, secured at one end of each to the casket side, and means to rotate the shafts and lock them from rotation, substantially as shown and described.

2. The combination, with a coffin or casket having its head-wall perforated, of two shafts inserted and rotatably supported therein and having projected ends, bracket-boxes engaging with these ends and adapted to interlock therewith, and a band for each shaft, secured thereto at one end and upon the casket-wall at the other end, substantially as shown and described.

3. A head-and-shoulder-supporting device for a coffin or casket, comprising two oppositely and longitudinally supported shafts within the casket, projecting through the head-wall thereof, and adapted to be rotated and locked at any point of rotatable adjustment, a flexible band affixed at one end to the body of one shaft near the head-wall and oppositely at the other end to the casket-wall to support the head of a corpse, and another similar band attached in like manner to the other shaft and opposite side wall of the casket to support the shoulders of the corpse, substantially as described.

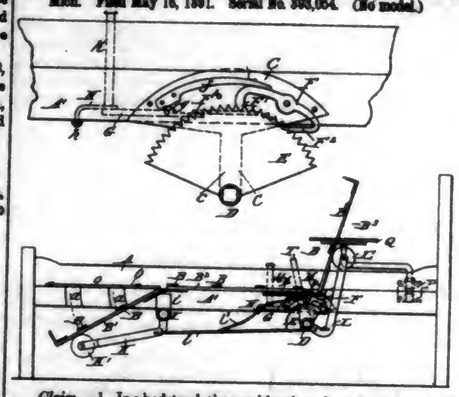
474,689. CHIMNEY-TOP. GEORGE W. POWERS and JAMES M. POWERS, Streator, Ill. Filed Jan. 21, 1892. Serial No. 418,835. (No model.)



Claim.—1. The combination, in a rotary chimney-cowl, of a stationary spindle having an outwardly-projecting lug *c* near the lower end thereof, a cowl having a socket and an arm, the end of the arm on a line with the socket, having a key-hole aperture, through which the lug C is adapted to pass to hold the spindle and cowl in positive engagement with each other, substantially as shown, and for the purpose set forth.

2. The combination, in a chimney-cowl, of a cowl having a socket with an inner conical bearing and an arm with a key-hole aperture on a line with said socket, an arched bar carried by a rim and provided with a rod, which extends upward and is provided with a conical upper end and an outwardly-projecting lug near its lower end, said lug being adapted to pass through the key-hole slot or aperture in the arm, substantially as shown, and for the purpose set forth.

474,690. INVALID-BEDSTEAD. CHARLES W. PRATT, Muskegon, Mich. Filed May 16, 1891. Serial No. 393,054. (No model.)



Claim.—1. In a bedstead, the combination of a sectional slat-frame whose sections are hinged together, the main bedstead-frame having the inside cleats on which the ends of the slats rest, said cleats being provided with slots *a a*, and the recessed slide-plates O O, arranged on the upper edge of the said cleats and adapted to regulate the position of the lower section of the bedstead, substantially as described.

2. The combination, with the bedstead-frame having the inside cleats A', provided with slots *a a*, of the sectional slat-frame and the horizontal recessed slides O O, having hand projections *o o*, said slides operating in connection with the slots *a a* to permit the lower section of the slat-frame to drop, substantially as described.

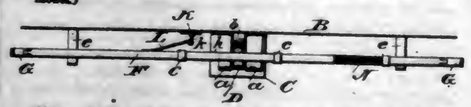
3. The combination, with the bedstead-frame A, having the inside horizontal cleats A', of the slat-frame consisting of the slats B, secured to parallel strips, which are hinged together, so as to provide a trisectional slat-frame, the horizontal shaft D, having rigid ratchet-segments E and carrying rigid arms L, provided with rollers L', operating beneath the upper section of the bed, the pawl-arms F, engaging the ratchet E and pivoted to the cleats A', the transverse shaft I, carrying the rigid arms K, provided with rollers K', operating beneath the lower section of the slat-frame, and links connecting the arms K and L, substantially as described.

4. The combination, with a sectional slat-frame and a bedstead having cleats which support the ends of the slats, of the plates C C, secured to the inside faces of said cleats, the horizontal transverse shaft D, the ratchet-segments E, secured rigidly thereon, the pivoted pawl-arms F, having ends F', that engage the teeth of the ratchets, and having curved ends F^2, the levers G, pivoted at *g* and operating beneath the ends F^3 of the pawl-arms, springs *f*, operating upon the pawl-arms, the shaft H, having the angular ends, and the stop-pins *h'*, substantially as described.

5. The combination of the bedstead having the supporting-cleats, sectional slat-frame, the shaft having rigid ratchets thereon, the pivoted pawl-arms F, having ends F', engaging the teeth of the ratchet, and having long curved ends F^2, the springs *f*, operating upon the pawl-arms, the levers G, pivoted at *g* and having one end beneath the end F^3 of each pawl-arm, the transverse shaft H, having angular ends which lie between the ends of the levers G and the lower ends of pins *h'*, the roller-carrying arms L on shaft D, and the roller-carrying arms K on the shaft I, all arranged to operate substantially as described.

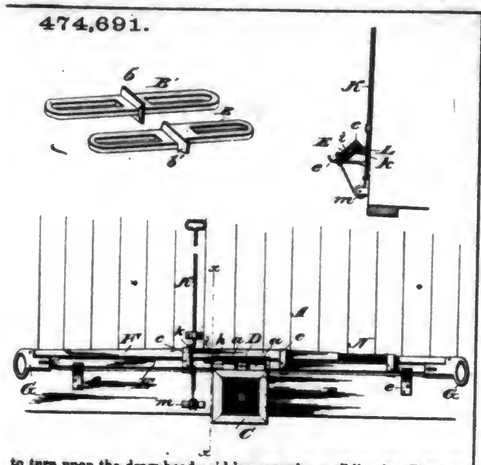
6. The combination of the sectional slat-frame, the sections being hinged together, and the upper and middle sections being provided with the connecting-hinge provided with slides M M, the shaft D, the stop-pins *h'*, the ratchet-and-pawl mechanism arranged in connection with shaft D and said stop-pins the shaft I, the slotted projections *m*, the roller-provided arms L, connected to the shaft D, the roller-provided arms K, connected to the shaft I, the links *l*, connecting the arms K and L, and the branch links or rods *l'*, having angular ends that enter slotted projections *m* on the slides M, substantially as described.

474,691. CAR-COUPLING. LEONARD E. PRESTON and OSWALD H. WIEBKE, Champion, Nebr. Filed July 2, 1891. Serial No. 398,251. (No model.)



Claim.—1. In combination with a draw-head having a swinging coupling-pin, a bar E, supported in a horizontal position and adapted

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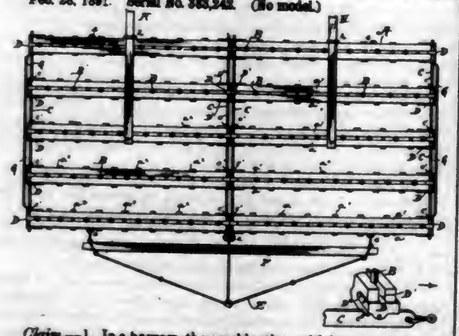
to turn upon the draw-head, said bar carrying a sliding bar F, having a lug *i*, which is adapted to engage with a catch A, carried by the draw-head, substantially as set forth.

2. The combination, in a car-coupling having a swinging pin, of a rock-bar E, sustained in a horizontal position above the draw-head and provided at its outer ends with movable end-grasping handles, and a bar F, sustained above the same and held in engagement therewith, said bar having a lug for engagement with a catch on the draw-head, substantially as set forth.

3. In combination with a car-coupling having a swinging pin, a rock-bar maintained in a horizontal position above the same, a sliding bar F, attached to the rock-bar, a vertical rod K, having a crank *k*, a bar engaging said crank and sliding bar, and a flexible connection attached to said rod and to the rock-bar for rocking said bar, substantially as set forth.

4. In combination with a draw-head C, having apertured lugs *a a* and a stop A, formed on one of the same, a rock-bar E, having bearing in the lugs and provided with movable handles G, a sliding bar secured to the bar E by bolts or loops, said bar carrying a spring and the ends thereof being rigidly attached to the handles G, a vertical rod extending to the top of the car and provided with a crank *k*, a bar for connecting the crank portion with the sliding bar F, and a flexible connection attached to the end of the bar K and passed therethrough beneath a guide-pulley and attached to the bar E, the parts being organized substantially as set forth.

474,692. HARROW. JAMES S. RAYL, Green Camp, Ohio. Filed Feb. 28, 1891. Serial No. 383,242. (No model.)



Claim.—1. In a harrow, the combination, with beams constructed in sections with provision for clamping the teeth between the sections, of metal caps connected with the ends of the respective beams, each cap having a tongue fitting between the beam-sections and having arms embracing the beams, the caps bearing lateral trunnions for engaging holes in the side bars that connect the different beams, substantially as set forth.

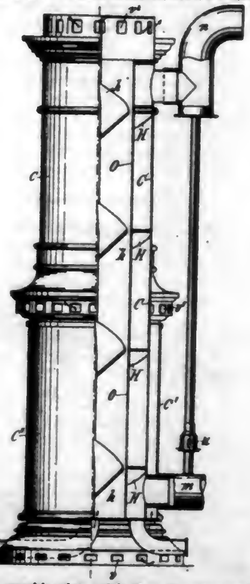
2. The combination of beams, caps, and side bars, substantially as indicated, the caps having lateral trunnions engaging holes in the side bars, the latter having notches to allow the caps and beams to tilt the limited distance in the one direction, substantially as set forth.

3. In a harrow, the combination of beams, caps, and side bars, a cap having a depending flange fitting next outside the side bars, each flange having a lateral trunnion adapted to engage a hole in the side bars, the beams being adapted to fit between the side bars, the latter being notched or cut away to allow the caps or beams to rock or tilt in the one direction, substantially as set forth.

474,693. PAINT. CHARLES H. KEARNY, Washington, D. C. Filed Oct. 19, 1891. Serial No. 408,136. (No specimens.)

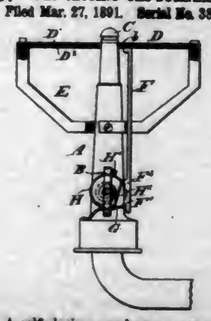
Claim.—The herein-described paint, consisting of zinc oxide, red lead, drop ivory-black, pulverized slate, raw linseed-oil, spirits of turpentine, oxide drier, bisulphide of carbon, and pure rubber in the proportions specified.

474,694. APPARATUS FOR HEATING, &c. KAREL RIVNÁČ and LADISLAV VOJÁČEK, Prague, Austria-Hungary, assignors to K. Rivnáč & Co., same place. Filed Mar. 28, 1890. Serial No. 345,792. (No model.) Patented in Austria-Hungary Oct. 30, 1888, No. 5,511 and No. 36,272, and June 14, 1890, No. 607 and No. 30,971; in England Jan. 29, 1889, No. 1,569; in France May 28, 1889, No. 196,571; in Belgium May 28, 1889, No. 86,419, and in Switzerland June 25, 1889, No. 1,218.



Claim.—The combination, with the two concentric cylinders O and C, of the helix arranged within the inner cylinder, the helicoidal partition in the space between the two cylinders, the outer wall or casing C', with openings at the top, the fresh-air tube at the lower end of the cylinder O, the tubes *m* and *n*, leading into the chimney, and a connection, said tubes and a ventilator in said connection, substantially as described.

474,695. SELF-CLOSING GAS-BURNER. WILLIAM M. ROBERTS, Joliet, Ill. Filed Mar. 27, 1891. Serial No. 386,646. (No model.)



Claim.—1. A self-closing gas-burner comprising a fixed bar arranged near the tip of the burner, a rod secured on the said bar and having a shoulder, a spring-pressed cock provided with a brake-wheel,

and a brake-spring engaging the said wheel and adapted to be engaged by the said rod to free the spring-pressed cock to permit the latter to close, substantially as shown and described.

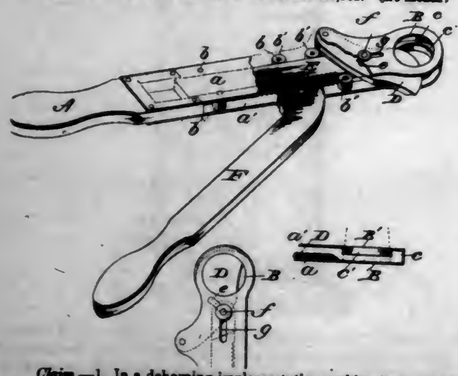
2. In a self-closing gas-burner, the combination, with a fixed bar or plate made of two strips of different metal, of a rod extending from the said bar or plate and formed with a shoulder, a spring-pressed self-closing cock held in the burner, and a brake-spring adapted to press on the said cock to overcome the force of its spring, the said brake-spring being adapted to be engaged by the shoulder on the said rod, substantially as shown and described.

3. In a self-closing burner, the combination, with the burner proper and a spring-pressed cock held therein, of a fixed metallic bar or plate arranged near the tip of the burner, a rod extending downward from the said plate and formed with a shoulder and a notch, and a brake-spring adapted to engage the said cock and adapted to be engaged by the shoulder on the said rod, substantially as shown and described.

4. In a self-closing burner, the combination, with the burner proper and a spring-pressed cock held therein, of a fixed metallic bar or plate arranged near the tip of the burner, a rod extending downward from the said plate and formed with a shoulder and a notch, a brake-spring adapted to engage the said cock and adapted to be engaged by the shoulder on the said rod, and a pin held on the said cock and adapted to engage the said shoulder on the rod, substantially as shown and described.

5. In a self-closing gas-burner, the combination, with the burner and a spring-pressed cock, of a metallic bar or plate held near the tip of the burner, a downwardly-extending rod secured to the bar or plate and provided with a shoulder and a lug, a brake-wheel carried by the cock, having a portion of its periphery cut away and provided with a pin, and a brake-spring adapted to engage the brake-wheel and to be engaged by the lug of the said rod, substantially as herein shown and described.

474,696. DEHORNING IMPLEMENT. ELWOOD M. SAMUEL, Marceline, Mo. Filed Feb. 25, 1892. Serial No. 422,902. (No model.)



Claim.—1. In a dehorning implement, the combination of a handle having apertured plates B and B', said apertures being of different diameters, the apertured plates B', having an inwardly-projecting flange *d'*, and a knife or blade adapted to be moved across said apertures, substantially as shown, and for the purpose set forth.

2. In an implement for dehorning cattle, the combination of a handle having parallel plates secured thereto and held apart by pins or rivets having friction-rollers mounted thereon, a rack-bar adapted to engage with said friction-rollers, the end of said rack-bar engaging with the pivoted blade pivoted between said plates, and a lever having a toothed end for reciprocating said rack-bar, substantially as shown, and for the purpose set forth.

3. In an implement for dehorning cattle, the combination of the plates *a* and *a'*, secured to a handle and to each other, said plates having apertures B and B', and a knife or blade pivoted between the plates and provided with means for connecting the same with a rack-bar, said rack-bar being engaged by a pivoted lever having a toothed portion, substantially as shown, and for the purpose set forth.

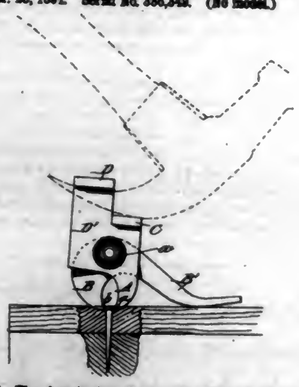
4. In a device for dehorning cattle, the combination of the parallel plates rigidly attached at one end to the handle of said plates, having at the end opposite the handle apertures B and B' of different diameters, the aperture B' having a projecting flange or rim, a blade having a flat portion and a beveled cutting-edge, a projection *d* being formed adjacent to the pivot on the side of the blade having the beveled edge, and a reciprocating rack-bar operated by a lever pivoted between the plates *a* and *a'*, the end of said rack-bar being reduced in thickness and provided with a pin which plays in a segmental slot formed in the blade, substantially as shown, and for the purpose set forth.

474,697. SPADE AND PICK. JOHN H. M. SHINER, Philadelphia, Pa. Filed Nov. 16, 1889. Serial No. 330,631. (No model.)



Claim.—As a new article of manufacture, an excavating-tool comprising a tubular metal handle and the tool proper, also of metal, said tool proper provided with a shank having a shoulder, said shank adapted to snugly fit within the tubular handle and its shoulder to abut against the same and the parts welded together, as described.

474,698. NAIL-PULLER. FREDERICK G. STARK, Manchester, N. H. Filed Mar. 26, 1891. Serial No. 386,349. (No model.)



Claim.—1. The herein-described nail-pulling device, consisting, essentially, in the interpivoted jaws, one of which is provided with an integral fulcrum and the other with a couple of steps or flat heads unequally distant from the jaw-point, said steps being flanged, substantially as and for the purpose specified.

2. The combination of the interpivoted jaws A and B, having pointed ends *a b*, one of said jaws B having an integral fulcrum B' and the other jaw A being integral with a metallic block having step C and step D, the intervening part D' of proper width to pass between the claws of a common hammer, and the lateral flanges *d d*, against which said claws bear when thus placed, substantially as described.

3. The combination of the interpivoted jaws A and B, having pointed ends *a b*, said jaws having an integral fulcrum B', the said jaw A being integral with the metallic block having the steps C and D unequally distant from the point *a* and between them the part D', adapted to pass between the claws of a hammer and also having the flanges *d d*, substantially as described.

4. A tool composed of two interpivoted jaws having pointed ends and having a bearing-surface and a projection respectively engaging the head and claw of a claw-hammer, and one of the jaws having a fulcrum-arm.

5. A nail-puller composed of nail-grasping jaws pivoted together, one lever having a nail-grasping jaw located on one side of the pivot-pin and a downturned lever-arm terminating in a fulcrum-foot on the opposite side of the pivot-pin, and the other lever having a nail-grasping jaw and on the upper surface of the lever a claw-engaging lug

projecting across the lever and at a point beyond this lug rests that project across the lever, whereby a support is afforded for the claws of a hammer, substantially as described.

474,699. REVEL-PROTRACTOR. LEROY S. STARRETT, Athol, Mass. Filed Aug. 29, 1889. Serial No. 322,360. (No model.)



Claim.—1. The parallel base-bars A B, united at one end only, and the cheeks E G, connected by a central stud, in combination with the disk I, having one edge flattened or cut off, and the blade D, held in edgewise contact only therewith, such disk and blade being of equal thickness and adapted to revolve together between said bars and cheeks, substantially as set forth.

2. The base-bars A B and their integral cheeks E G, separated by a space equal in width to the thickness of the blade, in combination with the semicircularly-graduated disk I, having one edge cut off flat on a line parallel to a line through the zero-points of such graduation, and with the blade D, bearing edgewise against and adjustably secured to said disk and projecting at each end therefrom, substantially as set forth.

3. The bars A B, formed in one with the cheeks E G and united only by the screw C and the stud H, with its clamp-screw J, one of said cheeks having the index-point or base-line *e* parallel to the bars and one cheek having its interior hollowed out to cause the clamp-pressure to bear marginally upon the interposed disk, in combination with the graduated disk I and the blade D, made adjustable with relation to said disk, substantially as set forth.

4. The bars A B and cheeks E G and the flanged washer F, forming a movable center for the cheek E, in combination with the rotatable disk and blade and with a fastening for said parts mounted on said washer, substantially as set forth.

5. The straight parallel bars A B, secured to each other at their outer ends, the cheeks E G, and independent washer F, in combination with the disk I, cut away at one edge, the blade D, bearing edgewise against the flattened edge of said disk, and a suitable fastening therefor, substantially as set forth.

6. The straight parallel bars A B, secured to each other at their outer ends, the cheeks E G, movable washer F, flattened rotating disk I, and grooved blade D *d*, in combination with the hooked plate K and clamping means L M N O, constructed and arranged substantially as set forth.

474,700. GRAIN-HARVESTER. JOHN F. STEWARD, Chicago, Ill. Filed Dec. 7, 1891. Serial No. 414,234. (No model.)

Claim.—1. In a harvesting-machine, a support overlying the space of grain-travel at the delivery end of the platform, a backboard adapted to slide thereon and also be folded upward thereon, and a detachable support at the outer end of said backboard that will permit said end to move fore and aft as the backboard is adjusted along the supporting-slide at the delivery end of grain-travel and will also permit it to be raised, all combined substantially as described.

2. In a harvesting-machine, a slide overlying the grain-delivering canvas at its delivery end and so supported that the grain may travel therebeneath, said support deflected downwardly at its rear end, a backboard supported and adapted to move on said slide and thus permit of fore-and-aft adjustment of the said backboard and also permit the latter to turn downwardly and form a rearward extension of the delivery-platform, also so supported that its outer end may be sustained, substantially as described.

3. In a harvesting-machine, a backboard-supporting guide, in

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combination with a backboard supported on said guide by means, substantially as described, that permit of a fore-and-aft movement of the said backboard and also permit the said backboard to be folded upward, substantially as set forth.

4. In a harvesting-machine, a backboard supporting and controlling device, consisting of the bar H, the backboard adapted to slide on the said supporting-bar by means of a corner-piece provided with an eye *i*, and a clutch J to engage the bar H and hold the backboard in adjustment, and said backboard supported at its outer end by means substantially such as described, whereby the said end may be free to move fore and aft simultaneously with the adjustment of the delivery end of the said backboard, all combined substantially as described.

5. In a harvesting-machine, a backboard supporting and controlling device, consisting of the bar H, the backboard adapted to slide on the said supporting-bar by means of a corner-piece provided with an eye *i*, and spring-pressed clutch J to hold the backboard in adjustment, said backboard being supported at its outer end by means substantially such as described, whereby said end may be free to move fore and aft simultaneously with the adjustment of the delivery end of the said backboard, all combined substantially as set forth.

474,701. MACHINE FOR DECORATING GLASS AND THE LIKE. MAX SUSS, Chicago, Ill. Filed Nov. 3, 1891. Serial No. 410,749. (No model.)

Claim.—1. In a machine for decorating glass and the like, the combination, with the horizontal main frame, of a section pivotally connected to the main frame and having a transverse ledge at its free end, a chain connected at one end to the pivotally-connected section and taking over a pulley above the plane of the horizontal main frame, and a counterbalance-weight connected to the opposite end of the chain and adapted to serve, in conjunction with said chain, to raise the pivotally-connected section into the same horizontal plane as the main frame, substantially as and for the purpose set forth.

2. In a machine for decorating glass and the like, the combination, with the main frame, the reservoir mounted thereon, the shafts journaled in said frame and carrying friction-disks, and a suitable means for rotating said shafts, of the sections pivotally connected to the main frame and having ledges at their free ends, the shafts journaled in said sections and having friction-disks, a suitable means for rotating one or more of the rotary shafts of the pivotally-connected sections, and a suitable means for raising and lowering said sections, substantially as and for the purpose set forth.

3. In a machine for decorating glass and the like, the combination, with the main frame embodying mechanism for feeding or moving the glass, of the reservoir mounted upon the main frame and having a perforated bottom, the bristles depending from said bottom, a coil of pipe arranged in the reservoir, and a suitable means for conveying a

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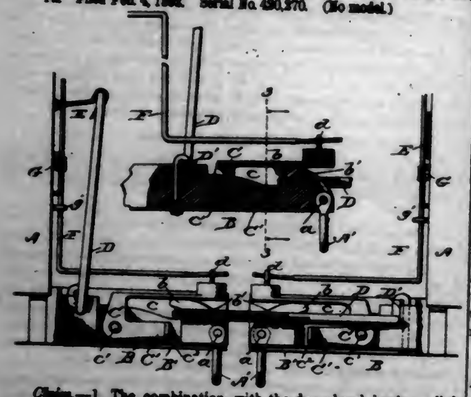
heating agent to said coil of pipe, substantially as and for the purpose set forth.

474,702. COMPOSITION FOR LEATHER-DRESSING. JAMES R. SWAIN, Baltimore, Md., assignor to Nicholas S. Hill, same place. Filed Sept. 24, 1891. Serial No. 406,722. (No specimens.)

Claim.—1. The herein-described composition for leather-dressing, which consists of shoemaker's wax, shoemaker's heel-wax, dubbing, shoemaker's black ink, and mutton-tallow.

2. The herein-described composition for leather-dressing, consisting of shoemaker's wax and shoemaker's heel-wax in the proportion of four to three, dubbing, three table-spoonfuls of shoe-maker's ink for a coloring ingredient, one gill, and a suitable quantity of mutton-tallow.

474,703. CAR-COUPLING. MILTON W. TREXLER, East Greenville, Pa. Filed Feb. 4, 1892. Serial No. 420,370. (No model.)



Claim.—1. The combination, with the draw-head having a link pivotally connected with its forward end, of a link pivoted at its rear end to said draw-head, and a lifting-link also pivoted to the draw-head, as set forth.

2. The combination, with the draw-head having pivoted link, of the lifting-link pivoted to the draw-head and having side arms, and the means engaging the lifting-link, as set forth.

3. The combination, with the hooked draw-head and the pivoted link, of the lifting-link and the means engaging the same, substantially as and for the purpose specified.

4. The combination, with the draw-head and its hook and pivoted link, of the pivoted lifting-link and the means engaging the same and adapted to be operated from either the side or top of the car, as set forth.

5. The combination, with the draw-head and the pivoted link, of the pivoted lifting-link having lateral arms with outturned ends, and the lifting means engaging said lifting-link, substantially as specified.

6. The combination, with the draw-head having hook and cut away, as described, of the pivoted lifting-link having side arms, the vertically-movable rod having horizontal portion engaging the lifting-link and adapted to be operated from either the side or top of the car, as set forth.

474,704. SAD-IRON. JACOB WAGNER, Brooklyn, N. Y. Filed Dec. 10, 1891. Serial No. 414,506. (No model.)



Claim.—A sad-iron having studs rising from its back and provided with removable and replaceable weights composed of flat plates having orifices, through which the studs extend, substantially as described.

474,705. RAILWAY-FROG. JOHN WALL and JOHN J. MAGE, Terre Haute, Ind. Filed July 7, 1891. Serial No. 398,668. (No model.)



Claim.—1. In a frog, the combination of the stationary frog-point, the movable wing-rails, the plates upon which said wing-rails move, braces secured to the wing-rails, provided with the outwardly-extending portions, and rigid guides on the plates, under which said portions slide.

2. In a frog, the combination of the frog-point and the movable wing-rails, means for holding the wing-rails in their normal position, and the rigid upwardly-extending braces to engage the outer sides of the wing-rails and prevent them tilting outwardly.

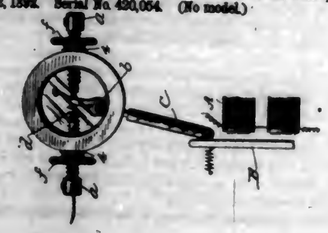
3. In combination, two rails in continuation of each other and the loose joint at the meeting ends of said rails, consisting of the two members partially embracing and rigidly secured to their respective rail ends, one member provided with a portion extending horizontally into the other member beneath the rail and provided with a vertical projection entering a bottom aperture in the other member, substantially as described.

4. In combination, a laterally-movable rail, a rigid upwardly-extending brace to engage the outer side of the head of the rail and prevent outward tilting thereof, a brace secured to the outer side of the rail, having an outwardly-extending horizontal base, and a rigidly-secured guide, under which said base slides, substantially as described.

5. The combination, with the switch-rails and means for throwing the same, of the stationary frog-point, the laterally-movable wing-rails on opposite sides thereof, a block separating said rails and against which they loosely bear, connections from said block to the switch-rails, constructed and arranged to throw the wing-rails, together with the switch-rails, as described, the springs yieldingly holding the wing-rails against said block, so that they can be separately forced out, and means to support said springs, substantially as described.

6. The combination of the switch-rails, a switch-rod to throw the same, a stationary frog-point, the laterally-movable wing-rails on opposite sides thereof, an interposed block separating said wing-rails, springs yieldingly holding them in position, an outwardly-extending rod rigid with said block, and levers and connecting-rods connecting the switch-rod and said outwardly-extending rod to swing the wing-rails with the switch-rails, substantially as described.

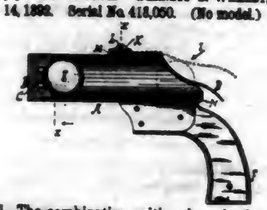
474,706. AUTOMATIC REPEATER. RICHARD WATKINS, Sacramento, Cal., assignor of one-half to William H. Devlin, same place. Filed Feb. 2, 1892. Serial No. 420,054. (No model.)



Claim.—1. A repeater for the secondary circuit, consisting of adjustable screws forming terminals of the circuit and extending within a casing, an interposed contact-lever between the terminals, a circuit-carrying spring in contact with said lever, and means of operating said lever by a moving part of the main circuit, substantially as described.

2. In combination, a casing, contact-screws forming terminals of the secondary circuit extending into said casing, a lever interposed between the terminals, a circuit-carrying spring in contact with said lever, and an insulating-lever connected with the first lever and in the path of the armature of the gong or other instrument in another circuit, substantially as described.

474,707. TOY PISTOL. BARNETT B. WHALEY, Brooklyn, N. Y. Filed Jan. 14, 1892. Serial No. 418,050. (No model.)



Claim.—1. The combination, with a barrel, of a spring adapted to clamp or hold a projectile at the rear end of said barrel and a removable stopper for the mouth of said barrel, said stopper being provided with a seat or holder for the explosive, substantially as described.

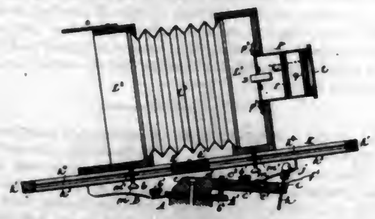
2. The combination, with a barrel, of a spring adapted to clamp or hold a projectile at the rear end of said barrel and a removable stopper for the mouth of the barrel, said stopper being provided with a movable perforated shield, substantially as described.

3. The combination, with a barrel, of a spring adapted to clamp or hold a projectile at the rear end of said barrel and a stopper for the mouth of said barrel, said barrel being split and being held together by arms K, said arms being recessed, so as to form a seat or holder for the spring, substantially as described.

4. The combination, with a barrel, of a spring adapted to clamp or hold a projectile at the rear end of said barrel and a stopper for the mouth of said barrel, said barrel being split and being held together by arms K, said arms having their lower portions recessed, so as to form a seat or holder for the spring, said spring having a lip at its forward end, and said barrel being notched to receive said lip, substantially as described.

5. The combination, with a gun-barrel A, having a handle F, of a projectile-holding leaf-spring D, secured at its front end to the barrel and having its rear free end exposed outside the barrel and located above the gun-handle to be forced downward by thumb-pressure of the user to force the projectile free from the spring, substantially as described.

474,708. SOLAR CAMERA. JOHN F. WIRT, Huntington, Ind. Filed Apr. 18, 1891. Serial No. 389,498. (No model.)

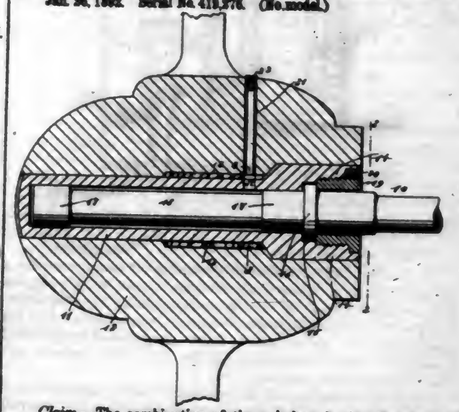


Claim.—1. In a solar camera, the combination, with a tripod or other suitable support, of a main frame pivotally secured thereon and having means for adjusting the angle of elevation, a second frame supported by the main frame and having grooves therein, a camera-box formed in two sections connected by a bellows and having ribs for the said grooves, and set-screws secured to the under portions of the box-sections and adapted to move therewith, whereby both boxes are permitted to be moved and secured at any desired position along the length of the frame.

2. In a solar camera, the combination, with a suitable support therefor, of a main frame for supporting the camera, having a cross-piece pivoted thereto and adapted to be pivotally connected to the support and be horizontally rotated thereon, an arm extending outward from said cross-piece provided with means for temporarily securing the frame in its horizontal adjustment, and a set-screw connecting the end of said arm with the end of the frame, whereby the adjustment of the angle of elevation is permitted, substantially as described.

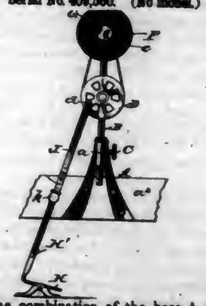
3. In a camera, the combination, with a tripod and a bearing-plate thereon formed with ratchet-teeth, as described, of a frame for supporting the camera, having a cross-piece secured centrally to the bearing-plate and having an arm extending outward therefrom provided with a spring-pawl adapted to engage the teeth in the bearing-plate, and a screw-threaded rod connecting the outer end of the arm with the forward part of the frame, all as and for the purpose set forth.

474,709. AXLE-BEARING. DAVID WIGGER, New York, N. Y. Filed Jan. 26, 1892. Serial No. 419,276. (No model.)



Claim.—The combination of the axle-box having its outer end closed and its inner end recessed and screw-threaded, an axle having enlarged bearing portions within the box and a collar to fit the recess of the box, a nut mounted on the axle and adapted to enter the threaded portion of the box, and a binding-screw held partly in the nut and partly in the box, substantially as described.

474,710. BED-PAN. WILLIAM H. WRIGLEY, New Orleans, La. Filed Oct. 22, 1891. Serial No. 409,560. (No model.)



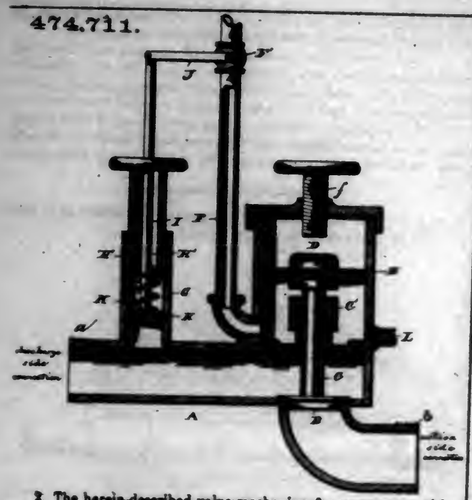
Claim.—1. The combination of the base A, the bar B, held for vertical and rotatable adjustment on said base, the shaft E, journaled in the upper end of the bar, provided with a fan at its inner end and a drive-wheel at its outer end, the wheel D, journaled on the bar B and belted with the wheel *e*, and the treadle and pitman connection for operating the wheel D, all arranged substantially as shown and described.

2. The combination, with the base A, the bar B, held for vertical and rotatable adjustment on the base A, the fan-carrying shaft E, journaled in the upper end of the bar B, and the drive-wheels D and *e*, arranged as shown, of the treadle H, the pitman J, connected with the wheel D and provided at its lower end with an extensible member I, said member and the treadle-arm having a universal joint, substantially as and for the purpose described.

474,711. RELIEF-VALVE. JOHN W. ALLAN, Minneapolis, Minn. Filed Nov. 30, 1891. Serial No. 413,584. (No model.)

Claim.—1. The herein-described valve mechanism, comprising the relief-valve, the steam-operated piston connected thereto, and means whereby an excess of pressure on the discharge side of the pump admits steam to said piston to open the valve and a reduction of pressure will cut off steam and close the valve, substantially as specified.

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2. The herein-described valve mechanism for pumps, comprising the valve closing the connection with the suction side of the pump, the stem connected thereto, and a steam-actuated piston, the piston-cylinder, and the valved steam-supply therefor, in combination with the piston actuated by the pressure on the discharge side of the pump and a connection between said piston and the valve of the steam-supply pipe, substantially as specified.

3. The combination, with the chamber or casing having a connection with the discharge and with the suction side of a pump, the valve normally held closed by the pressure of water from the discharge side and shutting off the connection with the suction side, and the steam-actuated piston connected to said valve, the piston actuated by the pressure from the discharge side and normally balanced thereagainst by a spring, of a connection between said piston and the valve of the steam-supply for actuating the first-named piston, substantially as specified.

4. The combination, with the chamber or casing having a connection with the discharge side of a pump, a valve closing the connection with the suction side and normally held closed by the pressure of the water from the discharge side, the stem of said valve, the piston-head connected thereto and designed to lift said valve, the piston-cylinder, and means for regulating the throw of said piston therein, of the piston actuated by an excess of pressure on the discharge side and normally balanced thereagainst by a spring, the cylinder for said piston and means for controlling the action of said spring to the desired pressure, the piston rod or stem, and the connection between said stem and the valve of the steam-supply for the first-named cylinder, substantially as specified.

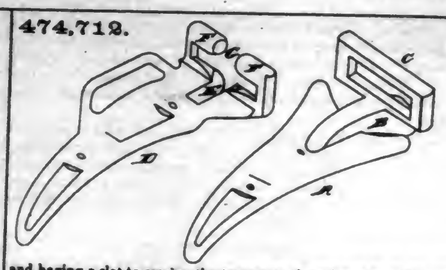
5. The relief-valve mechanism herein described, comprising a casing having a chamber therein and provided with couplings for connection with the suction and with the discharge side of a pump, a valve in one of said couplings closing the connection with the suction side and normally held closed by the pressure of the water in said chamber from the discharge side, the stem of said valve, the cylinder, and the piston-head on said stem working in said cylinder, a second cylinder having a piston therein actuated by an excess of pressure from the discharge side and balanced against a normal pressure therein, the rod or stem of said piston, a lever connected thereto, and a steam-inlet leading into the first cylinder and having a valve operated by said lever, substantially as specified.

474,712. HORSE-COLLAR FASTENER. EDWIN R. ARMSTRONG, Detroit, Mich. Filed Aug. 17, 1891. Serial No. 402,915. (No model.)



Claim.—1. A coupling consisting of a tang having thereon a tongue carrying a box-loop, another tang carrying thereon a split box-loop

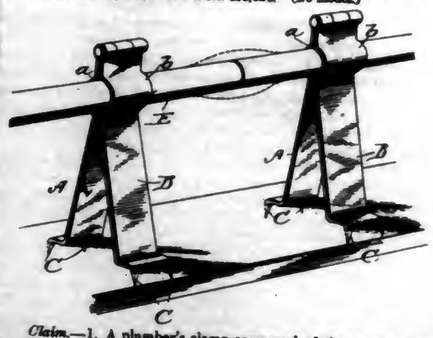
474,712.



and having a slot to receive the tongue on the other part of the coupling, said box-loops being adapted to receive a hame-strap, substantially as shown and described.

2. In a coupling for horse collars, the male member A, having thereon the tongue B, the box-loop C, and the female member D, having thereon the loop F, with the aperture G formed therein, and having therein a slot E to receive the tongue B, said loops being adapted to receive a hame-strap, substantially as shown and described.

474,718. PLUMBER'S CLAMP. JOSEPH H. ASH, Brooklyn, N. Y. Filed Mar. 15, 1892. Serial No. 425,031. (No model.)



Claim.—1. A plumber's clamp composed of the members which are constructed to be pivotally connected together, and having jaws to receive the pipe or fitting to be held, and having the footed ends spread and constructed to be fastened and form a support for the clamp, substantially as specified.

2. A plumber's clamp composed of the members which are constructed to be detachably connected together by a pivotal joint, and having jaws to receive the pipe or fitting to be held, and having the footed ends spread and constructed to be fastened and form a support for the clamp, substantially as specified.

3. The hereinbefore-specified plumber's clamp, composed of two members which are adapted to be pivotally connected together at one end, and having the opposite ends of the said members footed and provided with prongs, which are adapted to be driven into a plank to secure the said ends and fasten the clamp in a fixed position, and having jaws formed in the said members near the pivotal connection, substantially as set forth.

474,714. FIBER-MACHINE. LUIS BACALLADO Y SANCHEZ, Matanzas, Cuba. Filed Aug. 25, 1891. Serial No. 403,699. (No model.)

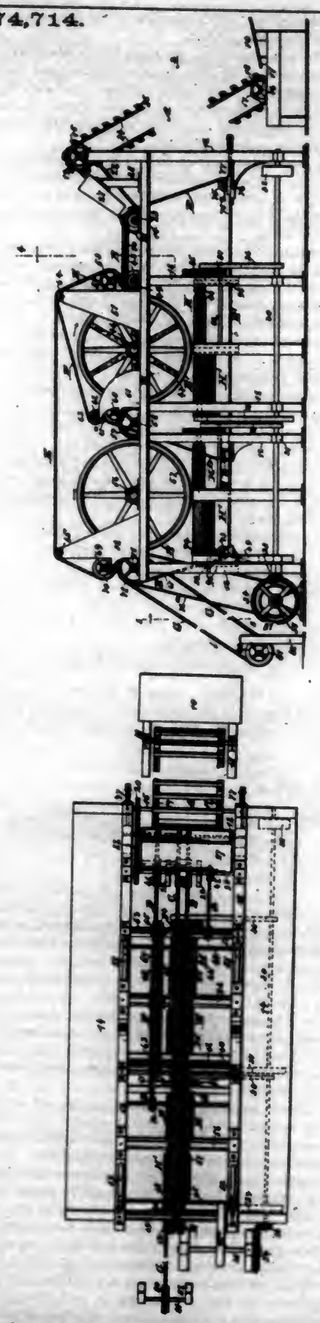
Claim.—1. In a fiber-machine, the combination, with carrying wheels or drums arranged one in advance of the other, and cables passing over said drums, of a reversing mechanism located between the carrying-drums and adapted to turn a leaf end for end, and cables acting in conjunction with the reversing mechanism and with the carrying-drums, whereby the leaves are held in engagement with the said reversing mechanism and in engagement with the said drums, as specified.

2. In a fiber-machine, the combination, with a set of carrying-drums, a single drum arranged at the rear of the set, and a smaller drum interposed between two aligning larger drums, of cables passed over the aligning large drums and the smaller interposed drums, a reversing mechanism located between the aligning drums, turning a leaf when submitted thereto end for end, the leaf being in transit from the first set of carrying-drums to the second or rear drums, cables engaging with the larger drums and with the reversing mechanism, and means for delivering the material to the drums and carrying it from the drums, substantially as shown as described.

3. In a fiber-machine, the combination, with carrying-drums arranged one in advance of the other, an intermediate drum, a reversing mechanism, and cables engaging with the drums and reversing mechanism, of cleaning rolls or cylinders located beneath the carrying-drums, the said rolls or cylinders being arranged in sets, one set beneath the front and the other beneath the rear carrying-drum, the said cleaning rolls or cylinders acting to strip of pulpy matter the fiber of the leaves clamped to the carrying-drums by the cables, substantially in the manner specified.

4. In a fiber-machine, the combination, with an elevator and a series of spar-receiving wheels located adjacent to the elevator, of a set of large carrying drums or wheels having grooved peripheries, endless

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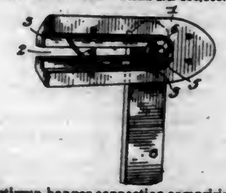
cables passed around the carrying wheels or drums, which cables are adapted to receive a leaf from the receiving-wheels and bind said leaf to the carrying-drum, cleaning rolls or cylinders located beneath the carrying-drum and adjacent thereto, a driving-shaft, and a connection between the driving-shaft and the cleaning rolls or cylinders, substantially as described.

5. In a fiber-machine, the combination, with an elevator and receiving spur-wheels fixed upon a shaft journaled adjacent to the elevator, and a series of carrying drums or cylinders held to revolve in front of the receiving-wheels, of endless cables passed over pulleys located upon the shaft carrying the receiving-wheels, and also engaging with the peripheries of the carrying-drums, and an endless cable located above the aforesaid cables and engaging with the periphery of one carrying-drum only, two sets of cleaning-cylinders located beneath the carrying-drum, one set being corrugated and the other set toothed, a drive-shaft, and a connection between the drive-shaft, the elevator, and the cleaning-cylinders, as and for the purpose specified.

6. In a fiber-cleaning machine, the combination, with an elevator, receiving spur-gears fixed upon a shaft journaled in front of the elevator, a conducting-funnel and conducting-belts located between the receiving-wheels and the elevator, and carrying drums or wheels held to revolve in front of the receiving-wheels, of endless carrying-cables passed over guide-pulleys, and pulleys located upon the shaft carrying the receiving-wheels, said carrying-cables also engaging with grooves in the peripheries of the carrying-drums, and an endless binding-cable engaging with the periphery of one of said drums between two of the carrying or delivery cables, and cleaning-cylinders arranged in two sets beneath one of the carrying-drums, one set consisting of two corrugated cylinders and the other set of two toothed cylinders, and a bed-cylinder, substantially as and for the purpose specified.

7. In a fiber-cleaning machine, the combination, with an elevator, receiving-wheels located in front of the elevator, carrying-drums held to revolve in front of the receiving-wheels, and a second series of carrying-drums located back of the first series, of delivery or carrying endless cables, one of which engages with the peripheral surface of one of the first set of carrying-drums and the others with the other carrying-drum of said set and with the rear carrying-drum, a pulley located between two carrying-drums in longitudinal alignment, which pulley also receives the carrying-cables engaging with said drums, a shifting-pulley located above the pulley interposed between the carrying-drums, two endless cables, both of which engage with the shifting-palley and with the first set of drums, said cables having independent movement, a delivery-belt located at the rear of the machine, and cleaning-cylinders arranged in two sets beneath each of the longitudinally-aligning carrying-drums, substantially as shown and described, whereby one end of a leaf is first cleaned, the other end being held fast, and when the leaf arrives between the two longitudinally-aligning carrying-drums the position of the leaf is shifted, the cleaned end being held fast and the uncleaned end treated, as set forth.

474,715. STIRRUP-STRAP CONNECTION. JOHN G. BAILEY, Rogers, Ark. Filed Oct. 29, 1891. Serial No. 410,163. (No model.)



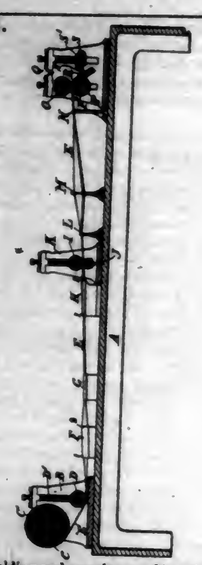
Claim.—A stirrup-hanger connection comprising a plate having a horizontal rearwardly-extending open slot therein and having in its inner face a depression around the said slot, a spring contained in the said depression having its forward end secured to the said plate and its rear end projecting across the said slot, and a stirrup-sustaining button passing through the said slot and provided with a head contained in the said depression, substantially as described.

474,716. MACHINE FOR CREASING POWDER-PAPERS. ALFRED G. BEALE and THOMAS NESBITT, Tunbridge Wells, England. Filed Sept. 9, 1891. Serial No. 404,990. (No model.)

Claim.—1. In an apparatus for marking paper for powders, the combination, with the series of folders for forming the paper into a tube, of the series of unfolders succeeding the folders for opening the paper out flat, substantially as described.

2. In an apparatus for marking paper for powders, the combination, with the series of folders for forming the paper into a tube and the series of unfolders succeeding the folders for opening the paper out flat, of the rolls between the series of folders and series of unfolders, between which the paper passes.

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3. In a paper folding and creasing machine, the combination, with the folders and unfolders, of the rollers having the cross-creasing projections located between the said folders and unfolders, substantially as described.

4. An apparatus for the creasing or marking of papers which have to be subsequently folded, consisting of a bed or stand, a bracket or head-stock for a roll of paper, and an adjustable tension-roller, the folders to fold and crease the paper, a head-stock provided with a resilient and a knife-edge roller to make the cross-creases or marks, the unfolders which unfold the paper and present it opened out, the drawing-rollers, and the separating-knives, substantially as specified.

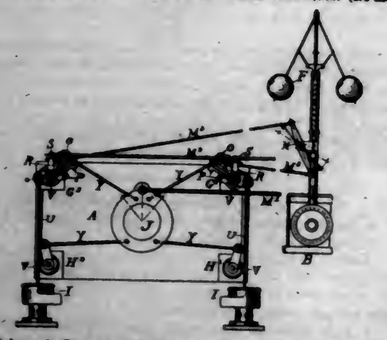
5. In a paper-folding machine, the combination, with the folders F, G, and H, of the unfolders L, M, and N for unfolding, respectively, the folds made by the folders F, G, and H, whereby the paper is delivered in its original unfolded condition, substantially as described.

6. In a paper folding and creasing machine, the combination, with the folders, the cross-crease rollers, and the unfolders, of the fixed and revolving knives whereby the strip is separated into the required lengths, substantially as specified.

7. In a paper folding and creasing machine, the combination, with the folder H, of the unfolder L for opening the fold formed by H and the cross-crease rollers between the folder and unfolder, substantially as described.

8. In a paper folding and creasing machine, the combination, with the two folders F and G, of the two unfolders N and M for unfolding successively the folds formed by the folders F and G, substantially as described.

474,717. STEAM-ENGINE VALVE-GEARING. HANS C. BERG, San Francisco, Cal. Filed Oct. 27, 1891. Serial No. 409,962. (No model.)



Claim.—1. In a steam-engine valve-gearing as herein described, the arms or cranks R and S, mounted on the axis of the valve-stem V, one laterally movable thereon, and thereby acting upon the claw-lever Q, as their relative positions, controlled by the governor F and cut-off eccentric E, respectively, may determine, in the manner substantially as and for the purposes specified.

2. In a steam-engine valve-gearing as herein described, the arms R and S, having on their adjacent faces beveled ledges *w* and *v*, so arranged as to produce by their relative angular positions and movements a lateral or axial movement of the arm or crank R, and consequent action of the hinged claw-lever Q, substantially as herein described, and for the purposes specified.

3. In a steam-engine valve-gearing as herein described, the oscillating cranks O, P, R, and S, eccentric E, and governor F, combined and operating so as to close the admission-valves at any point of the stroke, substantially in the manner and for the purposes herein described and set forth.

4. In a steam-valve gearing, the combination of the arms or cranks R and S, the valve-stem V, on which they are mounted, one being laterally movable thereon, the claw-lever Q, which is acted upon by the said laterally-movable arm, the governor F, cut-off eccentric E, and the claw-pieces *m* and *c*, substantially as described.

5. In a steam-engine valve-gearing, the combination of the oscillating cranks O P R S, the eccentric E, governor F, wrist-plate J, and connecting-links, substantially as described.

6. In a steam-engine valve-gearing, the combination of the rocking arm or crank P, provided with the claw-lever Q, mounted thereon and capable of oscillating at a right angle to the movement thereof, a forked extension *s*, provided with rollers fitting into a groove formed on the hub of a trip-crank R, said crank R being fitted loosely on the valve-stem V, so that any lateral or axial movement of the crank on the stem will change the position of the jaw *d* and catch-plate *m*, substantially as described.

7. In a steam-engine valve-gearing, the combination of the arm or crank P, the valve-stem V, the arms or cranks R S, mounted thereon, one being laterally movable, the claw-lever Q, pivoted to the crank P and having at its inner end a forked extension provided with rollers *u u*, that fit into the grooves *v*, formed on the hub of the trip-crank R, the plates *m* and *c*, and the jaws *b* and *d* to which they are attached, substantially as described.

474,718. TORPEDO. JAMES H. BEVINGTON, Peoria, assignor, by mesne assignments, to the Acme Railway Signal and Manufacturing Company, Galesburg, Ill. Filed Aug. 30, 1890. Serial No. 363,577. (No model.)



Claim.—1. A torpedo embodying in its construction, and in combination, substantially as hereinbefore described, a base or bottom part and a cover or top part of paper or other analogous material secured to each other to form a hollow shell, and a composition, explosible by concussion, contained in said case or shell.

2. A torpedo embodying in its construction, and in combination, substantially as hereinbefore described, a base or bottom part of metal and a cover or top part of paper secured to each other to form a hollow case or shell, and a composition contained in said shell, which is explosible by concussion.

3. A torpedo embodying in its construction, and in combination, substantially as hereinbefore described, a metallic base or bottom part and a waterproofed-paper cover or top part secured to each other to form a containing-case for the explosive composition.

4. A torpedo embodying in its construction, and in combination, substantially as hereinbefore described, a metallic base or bottom part, a waterproofed-paper cover or top part, and a lining or upper surface of waterproofed paper such as E, for the base part, all secured to each other to form a containing-case for the explosive composition.

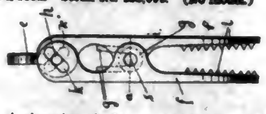
5. A torpedo embodying in its construction, and in combination, substantially as hereinbefore described, a metallic base or bottom part and a paper cover or top part secured to each other by an annular flange on the outer rim of said base part, which flange is turned over and onto the rim of the paper part to form a case or shell, and a composition explosible by concussion contained in said case or shell.

6. In combination with a torpedo for railway and other uses, having a bottom or base part formed of metal or other suitable material, with ears struck up from the material of said base and integral therewith, a holding-strap secured to the torpedo by clamping it between said ears and the main part of the base, substantially as described.

7. In combination with a torpedo for railway and other uses, having a bottom or base part formed of metal or other suitable material, with ears struck up from the material of said base part and integral therewith, a tread-strap secured to the torpedo to permit of endwise insertion and adjustment of said strap between the body part of the base and said ears, substantially as described.

8. In combination with a torpedo for railway and other uses, having a bottom or base part formed of metal or other suitable material, with ears struck up from the material of said base part and integral therewith, a tread-strap having shouldered ends secured to the torpedo to permit endwise movement thereof, limited by said shoulders between the body part of the base and said ears, substantially as described.

474,719. CLAMP. WILHELM H. E. BRANDS, Hamburg, Germany. Filed Feb. 24, 1892. Serial No. 422,698. (No model.)



Claim.—1. A clamping device comprising two pivoted parts *f*, the lower ends of which are normally pressed together and whose upper ends are formed with inclined slots, in which works a pin, from which the device is suspended, the arrangement being such that the weight of the articles clamped by the device aids the gripping action of the lower ends of the parts *f*, such as described and shown.

2. As a new article of manufacture, a clamp comprising two jaws pivotally connected intermediate of their ends and a hanger having a pin, which projects into inclined slots produced in the upper ends of the jaws, substantially as described.

474,720. TRANSOM-LIFTER. HENRY A. BRENNAN, Jersey City, N. J. Filed Mar. 3, 1892. Serial No. 423,606. (No model.)



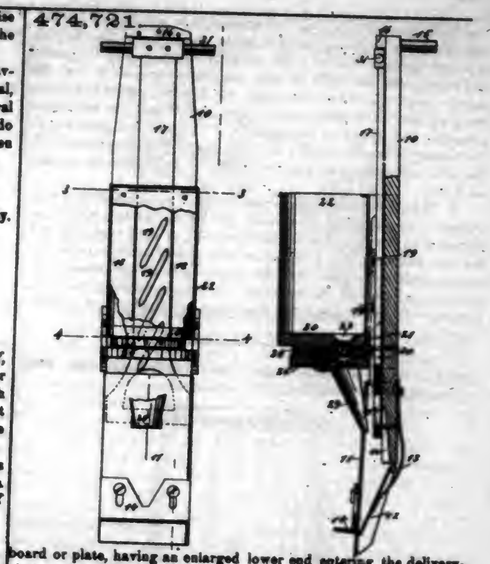
Claim.—1. The combination, with a plurality of windows arranged one above another, of a vertically-movable hollow shaft connecting with a portion of the windows, said shaft having a slot in one side, a vertically-movable rod held to slide in the hollow shaft, and a rod connection between the vertically-movable rod and a portion of the windows, the connecting-rod being made to extend through the slot in the hollow shaft, substantially as described.

2. The combination, with the several windows arranged one above another, of a vertically-movable shaft arranged adjacent to the windows and connected with a portion of them and a vertically-movable rod slidably secured to the shaft and pivotally connected with the remaining portion of the windows, substantially as described.

3. The combination, with the several windows arranged in series, as shown, of a sliding shaft arranged adjacent to the windows and at right angles to the window-pivots, said shafts being pivotally connected with a portion of the windows, a rod slidably secured to the shaft and connected with the remaining portion of the windows, and means for fastening the rod and shaft together, substantially as described.

4. The combination, with the several windows arranged one above another, of a hollow shaft held to slide at one end of the windows and provided with a handle, a rod held to slide in the hollow shaft and connected with the remaining portion of the windows, a fastening device to secure the shaft and rod together, and a fastening device to fix the position of the rod, substantially as described.

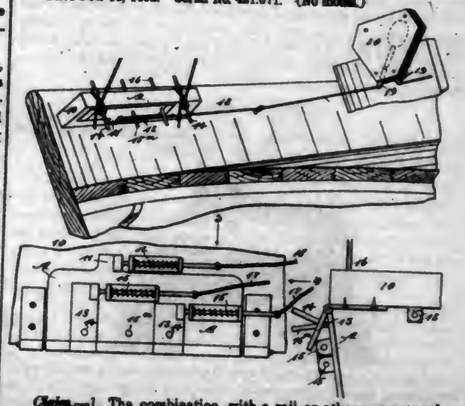
474,721. HAND CORN-PLANTER. JEREMIAH W. CHAMPION, Rochester, Mo. Filed July 13, 1891. Serial No. 399,898. (No model.)



Claim.—1. In a hand-planter, the combination, with a seed-receptacle provided with an elongated opening in its bottom, said opening being curved forwardly, a clearance-strip covering a portion of said opening, and a slide having movement at the rear of the receptacle and provided upon its outer face with a series of diagonal ribs, of a platform located beneath the bottom of the receptacle and provided with a discharge-opening out of registry with the uncovered portion of the opening in the seed-receptacle, and a feed-disk pivoted between the platform and the bottom of the seed-receptacle, provided with a seed-pocket, and teeth secured in the periphery of the disk and engaged by the ribs of the slide when the latter is manipulated, whereby the seed-pocket of the disk is made to register alternately with the uncovered portion of the opening in the seed-receptacle and the discharge-opening in the platform beneath said receptacle, substantially as described.

2. A hand-planter consisting of a body board or plate provided with a delivery-chute at its lower end and a spring-controlled gate normally closing said chute, a slide held to reciprocate upon the body board or plate, having an enlarged lower end entering the delivery-chute and provided upon its outer face with a series of diagonal ribs, a seed-receptacle attached to the body board or plate in front of the slide, the bottom of the receptacle being provided with a transverse opening partially covered by a clearance-strip, said opening having its inner end carved forwardly, a platform located beneath the bottom of the said receptacle, having a discharge-aperture out of registry with the uncovered portion of the receptacle-opening, a chute located beneath the discharge-opening and entering the delivery-chute, a feed-disk pivoted beneath the seed-receptacle and the platform and provided with a seed-pocket, and teeth attached to the periphery of the disk, adapted for engagement with the ribs of the slide as the latter is reciprocated, as and for the purpose set forth.

474,722. BELAYING-PIN. JOHN W. COLLINS, Ludington, Mich. Filed Feb. 16, 1892. Serial No. 421,671. (No model.)



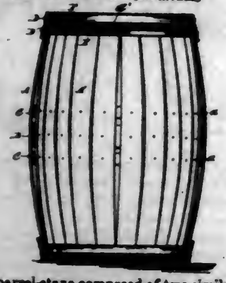
Claim.—1. The combination, with a rail or other support and a plate hinged upon the rail, the said plate being provided with pins, of a bolt adapted for engagement with the plate and to look it in engagement with the rail, a pendulum-lever and a connection between the pendulum-lever and the bolt, whereby when the lever is thrown in one direction the bolt will remain in locking engagement with the plate and when the lever is thrown in an opposite direction the bolt is withdrawn from engagement with the plate, substantially as and for the purpose set forth.

2. The combination, with the rail or like support, a plate hinged to the rail or support, pins attached to the plate, and a bolt held normally in engagement with the plate and binding said plate to the rail or support, of a pendulum-lever fulcrumed below its center and having its weight at its upper end and a connection between the lower end of the pendulum-lever and the bolt, as and for the purpose set forth.

3. The combination, with rails adapted to be attached to a vessel, said rails carrying pins, plates hinged to the rails and also carrying pins, and spring-controlled bolts normally engaging with the plates and maintaining the latter at their margins in engagement with the rails or supports, of levers fulcrumed near their lower ends, said levers being adapted for location over the keel of the vessel, the said levers extending in direction of opposite side of the vessel and provided at their upper ends with weights, their lower ends being connected with the bolts controlling the pin-carrying plates, as and for the purpose set forth.

4. The combination, with a rack having a hinge connection with a support, pins attached to the rack, and plates having a hinge connection with the rack and also carrying pins, of bolts engaging with the rack and the plates, a pendulum-lever, a connection between the bolt controlling the rack and the pendulum-lever, and means, substantially as described, for operating the bolts controlling the plates independently of the bolt controlling the rack, as and for the purpose described.

474,723. BARREL. JAMES P. COWDEN, Cedar Rapids, Iowa. Filed Apr. 30, 1891. Serial No. 391,041. (No model.)



Claim.—1. A barrel-stave composed of two similar pieces having their ends abutting and connected together and held spaced apart between such ends, whereby the stave is trussed and strengthened, substantially as and for the purpose described.

2. A barrel formed of staves composed each of an inner and an outer member, having their ends abutting and held together and interposed spacing members at or near the middle thereof, substantially as and for the purpose described.

3. A ventilated barrel formed of a series of staves held spaced apart, each stave formed of an outer and an inner member, the ends of which abut and are secured together, and one or more hoops interposed between the inner and outer members of the staves, whereby each stave is trussed and strengthened and whereby an outer elastic covering is provided to protect the contents of the barrel from shocks, substantially as shown and described.

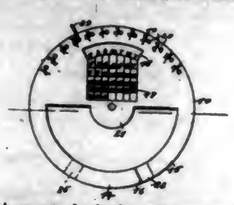
474,724. HAND-STAMP. LYONS H. DOLAN, Alexandria, Va. Filed May 11, 1889. Serial No. 310,447. (No model.)



Claim.—1. In a stamp, in combination with the pivoted striking-lever having the two arms, the ink-ribbon and the two rollers for winding the ribbon placed close to the lever, the two ratchet-wheels on the shafts of the respective rollers, the two pawls each pivoted to one of the arms on the striking-lever and adapted to be placed in or out of engagement with one of the ratchet-wheels, as desired, and the two pawls for preventing back movement of the ratchet-wheels, each adapted to be thrown at will into or out of engagement with its respective wheel, substantially as and for the purpose specified.

2. In a stamp, in combination with a suitable base or bed, the ink-ribbon, the two rollers for winding the ribbon, the two ratchet-wheels on the shafts of the respective rollers, the pivoted striking-lever having the two arms extending down on opposite sides of the base, and the two weighted pawls, each pivoted to one of such arms and adapted to be placed at will in or out of engagement with one of the ratchet-wheels, and the two pawls for preventing back movement of the ratchet-wheels, pivoted to the base and adapted to be thrown at will into or out of engagement with the respective wheels, substantially as and for the purpose specified.

474,725. PERPETUAL CALENDAR AND KEY-RING. ANDREW R. DWIGANS, Chicago, Ill. Filed Nov. 12, 1891. Serial No. 411,653. (No model.)



Claim.—1. A perpetual calendar and key-ring comprising a back plate having a cut-away portion and a slot extending from the cut-away portion to one edge, the said back plate having, also, letters indicative of the days of the week produced thereon, and a face-plate pivoted on the back plate, the face-plate having a cut-away portion and a slot extending from the cut-away portion to one edge, the face-plate having, also, a slot adapted to register with the letters on the back plate, the day-numbers of the month produced thereon adjacent to the slot, the names of the months produced thereon, and a fastening device for securing the two plates together, substantially as described.

2. A perpetual calendar and key-ring comprising a back plate having the letters indicative of the days of the week produced in a curved line thereon, and a face-plate pivoted on the back plate and having a slot adapted to register with the line of letters on the back plate, the face-plate having, also, the numbers of the days of the month arranged in their usual order adjacent to the slot and having the names of the months produced thereon, and a fastening device for securing the two plates together, substantially as described.

3. The combination, with the back plate having the letters indicative of the days of the week produced thereon and having a series of holes near one edge, of the face-plate pivoted on the back plate and having a slot adapted to register with the line of letters on the back plate, the face-plate having, also, the numbers of the days of the month produced thereon adjacent to the slot, the names of the months produced adjacent to one edge, a series of holes in one edge, adapted to register with the holes of the back plate, there being a hole for each month, and a fastening device adapted to extend through the holes of the two plates, substantially as described.

474,726. SPRING-RAIL FROG. HENRY ELLIOT, East St. Louis, Ill. Filed Dec. 16, 1891. Serial No. 415,278. (No model.)

Claim.—1. In a spring-frog, the combination of a base-plate, track-rails 1 and 8, and frog-point fixed to the plate, a moving rail forming in normal position a continuation of the rail 1 and adapted to move to and from the frog-point, a reinforce-rail 11, fixed to the moving rail and having hinge connection with the fixed rail 1, and a spring adapted to force the moving rail to the frog-point.

2. The moving rail 9 of a spring-frog, having an end 9^a, fitting the end 1^a of a track-rail 1 and forming a continuation of the rail 1, a base-plate 2, on which the moving rail slides and to which the end of the rail 1 is fixed, and a rail 11, fixed to the moving rail and having hinge connection to the fixed rail 1, substantially as set forth.

3. The combination, in a spring-frog, of a base-plate, a moving rail abutting at the end upon the end of a track-rail firmly secured to the base-plate, and a reinforce-rail 11, attached firmly to the moving rail and having hinge connection at 21 to the fixed rail, substantially as set forth.

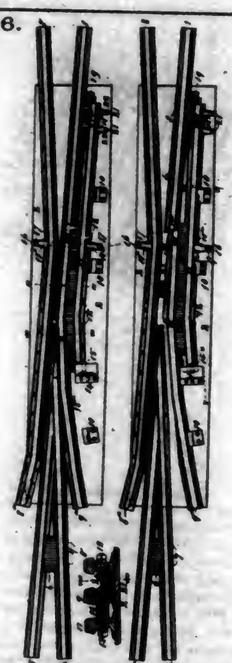
4. The combination, in a spring-frog, of the base-plate, the track-rails 1 and 8, and frog-point, all firmly fixed to the plate, the moving rail 9, abutting at the end against the end of the track-rail 1, the reinforce-rail 11, fixed to the moving rail and connected to the track-rail 1 by a hinge at 21, and a stop, as 10, limiting the outward movement of the moving rail.

5. The combination, in a spring-frog, of a base-plate, the track-rail 1, firmly fixed to the plate and having its end 1^a beveled, the moving rail 9, having its end 9^a beveled to fit the rail 1 and in line with the rail 1, rail 11, firmly fixed to the moving rail and having a hinge connection with the rail 1, the frog-point firmly fixed to the base-plate, and a spring forcing the moving rail to the frog-point.

6. The combination, in a spring-frog, of the plate, the moving rail 9, having a projecting plate 23, and the fixed rail 8, having a plate 24 above the plate 23, substantially as and for the purpose set forth.

7. The combination, in a spring-frog, of the base-plate, the rail 1, extending onto the base-plate and fixed to the plate, a moving rail 9, abutting end to end on the rail 1 when in normal position, a rail 11, and filling-piece 13, fixed to the side of the moving rail and extending past the abutting ends of the rails 1 and 9 and connected with the rail 1 by a filling-block 9 and a hinge at 21, substantially as set forth.

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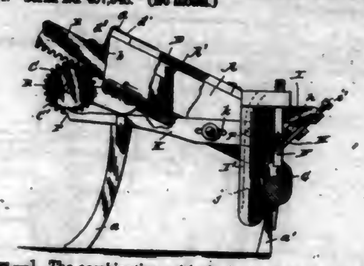
474,727. RAILWAY FROG, CROSSING, &c. HENRY ELLIOT, East St. Louis, Ill. Filed Dec. 16, 1891. Serial No. 415,279. (No model.)



Claim.—1. The combination, with a rail, of a base-plate 1, firmly secured to the rail and having cut or cuts extending from the edge inward, substantially as set forth.

2. The combination, with a railway-rail, of a base-plate fixedly attached to the rail and having cut 4 extending from the edge of the plate inward, substantially as and for the purpose set forth.

474,728. HAND BONE-CUTTER. CLARENCE H. FARRINGTON, Milford, Mass., assignor to Franklin W. Mann, same place. Filed Sept. 30, 1891. Serial No. 407,245. (No model.)



Claim.—1. The combination, with the inclined chute or hopper, the follower reciprocating therein, and the rack-bar carrying said follower, of the reciprocating cutter and a segmental arm carried by the cutter-frame or cutter, and pawl, lever, and ratchet mechanism operated by said arm for actuating said rack-bar to effect the feed when the cutter is reciprocated, substantially as specified.

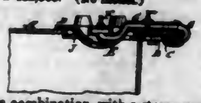
2. The combination, with the chute or hopper, the follower and its rack-bar reciprocating in said chute or hopper, the pinion engaging said rack, and means for holding said pinion in engagement with the rack-bar and to permit the disengagement of the same, of the reciprocating cutter-carrier and cutter, the segmental arm carried by said cutter-carrier, and the pawl, lever, and ratchet devices operated by said arm when the cutter is reciprocated, substantially as specified.

3. The inclined horizontal feed chute or hopper having a rack-bar and a follower carried by said bar reciprocating therein, the top plate of said chute being hinged thereto to form a cover and held closed by a spring-catch, which in closed position bears against the rack-bar to hold it in engagement with an operating-pinion, substantially as specified.

4. The combination, with the chute or hopper, of the reciprocating knife-carrier having a cutter adjustably held therein, said carrier having a segmental arm adapted to engage and actuate the feed-operating mechanism when said knife-carrier and knife are reciprocated, substantially as specified.

5. The combination, with the reciprocating carrier, its cutter, and the grooved segmental arm carried thereby, of the pivoted pawl-lever having a stud engaging the groove of said segmental arm, said lever at its upper end engaging a toothed wheel or ratchet arranged to operate the feed, substantially as specified.

474,729. STOVE OR RANGE. GEORGE A. FISHER, New York, N. Y., assignor to the Abendroth Brothers, same place. Filed Nov. 18, 1891. Serial No. 412,305. (No model.)



Claim.—1. The combination, with a stove or range having its top plate provided with a pot-hole, of brackets extending in a horizontal direction beyond the edge of the top plate and a swinging frame pivoted to the brackets and carrying a projecting burner-chamber containing a burner and entering the pot-hole of the top plate when the frame is swung downward upon the latter for use in heating or cooking, substantially as described.

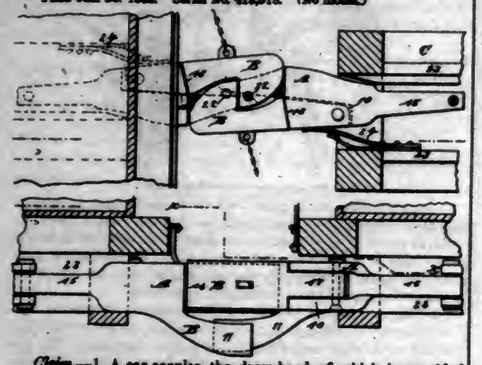
2. The combination, with a stove or range, of brackets extending outward from one end of the top plate of the stove or range, a gas-pipe C, mounted in said brackets, a frame D, carrying a burner-chamber E, and burner F, mounted on this gas-pipe and constructed to swing inward upon the top plate or upward to a perpendicular position, a catch for retaining said frame in its vertical position, and a suitable communication between the gas-pipe and the burner, substantially as described.

3. The combination, with a stove or range, of brackets extending from the top plate of the stove or range, a gas-pipe C, mounted in said brackets, a frame D, carrying a burner-chamber E, and burner F, mounted on this gas-pipe and constructed to swing inward upon the top plate or upward to a perpendicular position, a channel G, extending from the gas-pipe to the burner, and a catch for retaining the frame D in its upright position, substantially as described.

4. The combination, with a stove or range, of brackets extending from the top plate of the stove or range, a gas-pipe C, mounted loosely in said brackets, a frame D, carrying a burner-chamber E, and burner F, mounted firmly on said gas-pipe, a channel G, extending from the gas-pipe to the burner, a socket H, fitting the gas-pipe C and communicating with a gas-supply pipe I, and openings *b c*, respectively, in the

socket and in the gas-pipe, said openings being so situated that they register when the frame D is turned down upon the top plate, substantially as described.

474,780. CAR-COUPLING. SIMON J. FREEMAN, Bradford, Pa. Filed Jan. 26, 1892. Serial No. 419,513. (No model.)



Claim.—1. A car-coupler the draw-head of which is provided with a knuckle pivoted within it and extending beyond the front at one side and also provided at the lower portion of the opposite side with a finger which extends beneath the head and the knuckle when the latter is in a coupling position, as specified.

2. In a car-coupler, the combination, with a draw-head, of a knuckle pivotally connected therewith and a finger located upon the front of the draw-head at the opposite side from the knuckle and extending beneath the same, the inner face of which finger is beveled, as and for the purpose set forth.

3. The combination, with a draw-head, of a spring-pressed knuckle pivoted therein, the spring normally holding the knuckle in a coupling position, and a finger projected from the front of the draw-head opposite the knuckle, which finger extends outward below or beneath the knuckle, substantially as and for the purpose set forth.

4. In a car-coupler, the combination, with a draw-head, a spring-pressed knuckle pivoted therein and extending forwardly therefrom, and a finger attached to the front of the draw-head at the side opposite that at which the knuckle is pivoted, said finger extending forward below and beneath the knuckle, of a shifting-lever, and a connection, substantially as shown and described, between the shifting-lever and the knuckle, whereby the latter may be carried to an uncoupled position, as and for the purpose set forth.

474,781. RATCHET-WASHER FOR BOLT-NUTS. WILLIAM A. GALBRAITH, San Diego, Cal. Filed Feb. 9, 1891. Serial No. 380,742. (No model.)

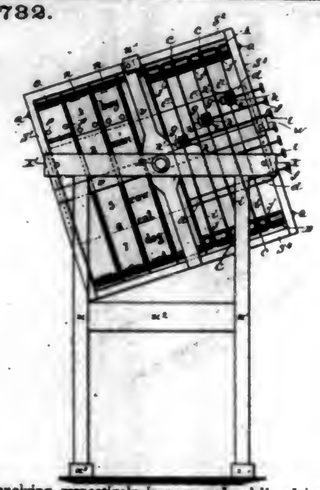


Claim.—As an improved article of manufacture, the flat washer described having points or projections struck up out of one of its sides, and the spring-tongue H, of less thickness than the thickness of the washer, cut or raised up out of its opposite side without cutting through the thickness of the washer, substantially as specified.

474,782. INTERCHANGING WORD OR NUMBER CHART. WILLIAM H. GILSDER, Valley Stream, N. Y. Filed Oct. 15, 1891. Serial No. 408,897. (No model.)

Claim.—1. The combination, in an interchanging word or number chart, of rollers in lines A and B, revolving on rods *a* and *a*, respectively, steadied by braces *c*, with pulleys A, fastened to rods *f*, revolving in blocks or brackets *g* on the back surface of the face-board *d*, supported by side pieces S' and S² and having its front surface adapted to strips *e*, said rods *f* extending through side piece S² and terminating in knobs *l* to operate said rollers by belts or endless chains

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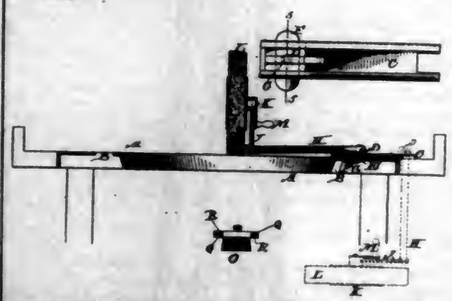


i and *i*, revolving, respectively, in grooves *j'* and *k'* and *j* and *k* in said rollers, and pulleys to revolve strips of carrying-belt *e*, extending around them and pressing lightly on the front surface of said face-board to carry strips *s*, buttoned thereon at *p p*, containing inscriptions to give instruction in reading or number, all substantially as described.

2. The combination, in an interchanging word or number chart, of side pieces S' S² S³ S⁴, two of which contain rectangular catches *w* and *w'*, respectively, adapted to a cross-piece *x x'*, supported by legs *u u'*, with cross-braces *v v*, connected at their center with the middle of said cross-piece by bolt *z*, all substantially as described, for the purpose specified.

3. The combination, in an interchanging word or number chart, of face-board *d*, with inclosures *r'* and *r*, supported by side pieces S' and S³ forward of said face-board, leaving spaces adapted to studs or buttons *p p* above and below it, respectively, with slides *m'* and *m*, moving in grooves in said side pieces and adjustable independently of each other by catches T and T, respectively, on inclosures *r'* and *r*, respectively, all substantially as described.

474,783. TYPE-CLEANING APPLIANCE FOR TYPE-WRITING MACHINES. GEORGE B. GRAFF, Williamsport, Pa., assignor to Seth T. McCormick, same place. Filed July 20, 1889. Serial No. 318,139. (No model.)

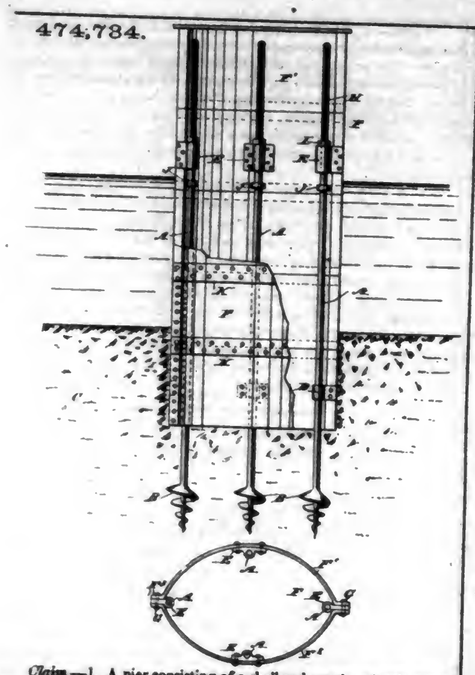


Claim.—1. The combination, with printing-types of a type-writing machine arranged in a circle and the frame of said machine provided at its top with a circular opening through which the types operate, of an attachment for cleaning the types, comprising a frame adapted to be secured to the top of the machine-frame and extending over the said central opening thereof, a brush mounted upon said frame at the center of said opening and over the point at which the type strike when lifted, and means for giving motion to said brush, substantially as set forth.

2. In a type-writing machine, the combination, with the sliding way C, removably secured thereto, of the slide D, arms H and J, brush L, and crank M, substantially as set forth.

474,784. PIER. OSMOND HARREN, Houston, Tex. Filed Nov. 6, 1891. Serial No. 411,094. (No model.)

474,784.



Claim.—1. A pier consisting of a shell and a series of rods engaging ears on the said shell and screwing into the ground or bed of the river, substantially as shown and described.

2. A pier comprising a shell provided at the inside with sets of ears and rods passing through the said ears and each provided at its lower end with an auger adapted to screw into the ground or bed of the river, substantially as shown and described.

3. A pier comprising a shell provided at the inside with sets of ears, rods passing through the said ears and each provided at its lower end with an auger adapted to screw into the ground or bed of the river, and nuts screwing on the upper threaded ends of the said rods to abut against the upper set of ears, substantially as shown and described.

4. A pier comprising a shell provided at the inside with sets of ears, rods passing through the said ears and each provided at its lower end with an auger adapted to screw into the ground or bed of the river, nuts screwing on the upper threaded ends of the said rods to bear against the upper set of ears, and collars held on the said rods below the upper set of ears to form a resting-place for the latter, substantially as shown and described.

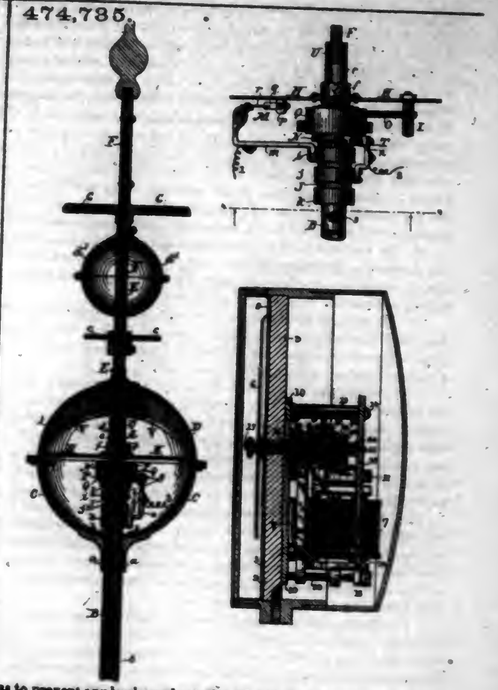
5. A pier provided with a metallic shell made in two vertical sections, each parabolic in shape, the vertical side edges of the two sections being fastened together and with their joints extending in line with the current of water of the river, substantially as shown and described.

6. In a pier, the combination, with a series of vertically-arranged rods secured in the ground or bed of the river, of a shell made of two vertical sections engaging at their inside the said rods and each being parabolic in shape, the vertical side edges of the two sections being fastened together and their joints extending in line with the current of water of the river, substantially as shown and described.

474,785. ELECTRIC WIND-VANE INDICATOR. HENRY J. HAIGHT, New York, N. Y. Filed Oct. 30, 1891. Serial No. 410,868. (No model.)

Claim.—1. In an electric indicating-instrument, a driven rotary spindle or shaft, a pinion carried by and rotating with said spindle or shaft and having an independent rotation on its own axis, and two gears concentric with said spindle or shaft, but free to rotate independently of said spindle or shaft, in combination with a ratchet-wheel capable of movement in one direction only, said ratchet-wheel being connected with one of said gears, a movable pawl co-operating with said ratchet-wheel and constantly engaging therewith, so as to prevent any backward rotation of the ratchet-wheel, a second ratchet-wheel capable of movement only in a direction opposite to that in which said first ratchet-wheel moves, said second ratchet-wheel being connected with the other of said gears, and a second movable pawl co-operating with said second ratchet-wheel and constantly engaging therewith, so

474,785.



as to prevent any backward rotation of said second ratchet-wheel, substantially as set forth.

2. In an electric indicating-instrument, the driven rotary index-carrying shaft or spindle, a collar fixed thereto so as to turn therewith, said collar having a radial stud, a bevel-pinion carried by and turning on said stud, and two bevel-gears loosely turning on said shaft or spindle on opposite sides of said collar, said bevel-gears both meshing at all times with said bevel-pinion, in combination with two oppositely-toothed ratchet-wheels secured fast to said bevel-gears, respectively, the two swinging armature-levers on opposite sides of said spindle or shaft having pawls which co-operate with said ratchets, respectively, to drive the same and which constantly engage with their respective ratchets to prevent backward rotation thereof, and two electro-magnets which respectively control the movements of said armature-levers, substantially as set forth.

3. The spindle or shaft 17, carrying index 6, the sleeve 16, and bridge 15, in which said spindle or shaft is journaled, fixed collar 19, fixed to said shaft and having radial stud 20, bevel-pinion 21 on said stud, bevel-gears 22 23, loosely mounted on said shaft on opposite sides of said bevel-pinion and meshing therewith, and a coiled spring 26, surrounding said shaft 17 and bearing against said bridge 15 and said pinion 23, in combination with ratchets 24 25, electro-magnets 7 8, armature-levers 28 33, and pawls 31 35, substantially as set forth.

4. The vertical rotary metallic shaft rotated by a wind-vane, in combination with the circuit-controlling metallic disk carried by said shaft and insulated therefrom, said metallic disk constituting one terminal of an electric circuit, said disk having a series of sections of alternating electro conductive and non-conductive material arranged in a circle concentric with the axis of said disk, the operative surfaces of said sections being all in the same plane and all of said electro-conductive sections being in constant communication with said disk, whereby they are all in circuit with one pole of an electric generator, and a single electrode co-operating with said sections and constituting the opposite terminal of said electric circuit, substantially as set forth.

5. The pipe or tube B, having the insulating-sleeve J, in combination with the three collars *i j k* and the metallic sleeve *l*, all carried by said insulating-sleeve J, and insulated thereby from each other, substantially as set forth.

6. The pipe or tube B, having the insulating-sleeve J and the metallic sleeve *l*, carried thereby, in combination with the rotary metallic sleeves N Q, rotating together around said sleeve *l* and insulated from each other by insulating-sleeve P, said sleeves N and Q carrying electrodes O R, respectively, substantially as set forth.

7. The pipe or tube B, having the insulating-sleeve J, the metallic sleeve *l*, carried thereby, the rotary metallic sleeves N Q, rotating together around said sleeve *l* and insulated from each other by insu-

lating-sleeve P, said sleeves N and Q carrying, respectively, electrodes O R, in combination with the circuit-making and circuit-breaking disk H, having pin or stud I, located between said electrodes O R and co-operating therewith; the three metallic collars *i j k*, carried by said sleeve J and insulated thereby from each other and from sleeve *l*, the three brackets *m n o*, carried by said collars respectively, the electrode M, carried by said bracket *m* and co-operating with said disk H, the contact-brushes S S, carried by bracket *o* and co-operating with metallic sleeve Q, the contact-brushes T T, carried by bracket *n* and co-operating with metallic sleeve N, the electric generator L, the conductor 1, connecting one pole of said generator with said bracket *m*, and the branch conductors 2 3, connecting the opposite pole of said generator with said brackets *o n*, respectively, substantially as set forth.

8. The wind-vane and its rotary shaft and electric-circuit-controlling mechanism controlled by said shaft, in combination with the inclosing casing surrounding said shaft and inclosing said circuit-controlling mechanism, substantially as set forth.

9. The support B, carrying the casing C D, in combination with the rotary wind-vane shaft F, passing into said casing, and electric-circuit-controlling mechanism controlled by said shaft and inclosed within said casing, substantially as set forth.

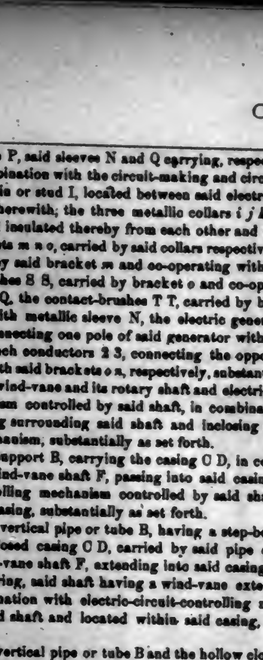
10. The vertical pipe or tube B, having a step-bearing *b* therein, the hollow closed casing C D, carried by said pipe or tube, and the vertical wind-vane shaft F, extending into said casing and turning on said step-bearing, said shaft having a wind-vane exterior to said casing, in combination with electric-circuit-controlling mechanism controlled by said shaft and located within said casing, substantially as set forth.

11. The vertical pipe or tube B and the hollow closed casing C D, carried by said shaft, said tube B having an aperture *s*, establishing communication between its interior and the interior of said casing, in combination with circuit-controlling mechanism within said casing, and electric conductors connected therewith and passing outwardly through said aperture *s*, substantially as set forth.

12. The vertical metallic pipe or tube B, having a step-bearing *b*, the hollow casing C D, carried by said tube B, and the vertical metallic wind-vane shaft F, extending into said casing and seating on said step-bearing, said wind-vane shaft carrying a wind-vane exterior to said casing, in combination with circuit-controlling mechanism located within said casing and carried by and insulated from said shaft F and tube B, substantially as set forth.

13. The casing C D, the shaft F, and the disk H, of electro-conductive material and constituting part of an electric circuit, in combination with the collar U of insulating material, substantially as set forth.

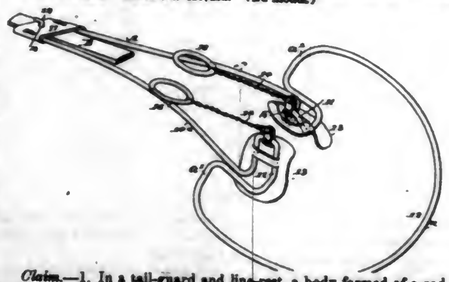
474,786. RAILWAY-CAR. JOHN HAMMOND, San Francisco, Cal. Filed Feb. 4, 1892. Serial No. 420,356. (No model.)



Claim.—1. A railway-car constructed with three compartments, the middle compartment being inclosed by windows on both sides and having a door at each end, and suitable adjoining entrances or passages, whereby the said middle compartment is readily accessible from the street, and the end compartments of the car being of open construction and consisting, simply, of the car-roof and its supports, said car being provided with a central aisle running the whole length of both open and closed compartments between the sides thereto, substantially as described.

2. A cable-railway car constructed of three compartments, the middle compartment A being closed and provided on its sides with windows and at each end with a sliding door *a*, and also with the interior seats *b b*, running lengthwise on each side of the car, there being adjacent to the said sliding doors transverse passages *d d*, by which access is had to said doors from the street, and the end compartments B and C being of open construction, without windows or doors, and consisting, simply, of the overhead roof and suitable supporting uprights, and said open compartments being provided with seats *c c*, running lengthwise of the car and placed back to back, with a sufficient space between their backs for the working of the cable-gripping mechanism, substantially as described.

474,787. REIN-SUPPORT. DAVID HARD, Hotherwood, N. J. Filed Jan. 27, 1892. Serial No. 419,422. (No model.)



Claim.—1. In a tail-guard and line-rest, a body formed of a rod or strap bent to form two forwardly and converging members having their ends connected, inwardly and outwardly extending link-like rest-arms, and a rearwardly-extending bow forming a tail-guard, substantially as described.

2. A tail-guard and line-rest consisting of a strap or rod of metal bent to form forward converging horizontal members connected at their converging ends, inwardly and upwardly curved rest-arms formed at the diverging ends of the horizontal members, and a bow-section emanating from the arms and extending rearwardly and forming a tail-guard, the extreme rear portion of the bow-section being upwardly curved and its forward portion curved in an opposite direction, as and for the purpose specified.

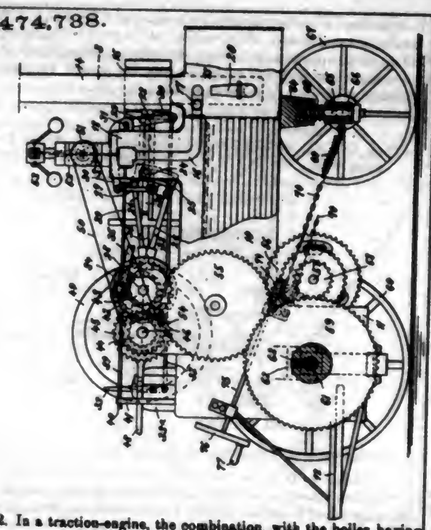
3. A tail-guard and line-rest consisting of a strap, bar, or rod shaped to form converging horizontal members connected at their converging ends and provided with inwardly-extending arms at their diverging ends, a bow projected sidewise and rearward from the arms, chains having a swivel connection with the arms, and rings or loops formed at the free ends of the chains, as and for the purpose specified.

4. A tail-guard and line-rest consisting of horizontal members converging at their forward ends and connected at said ends and diverging at their rear ends, inwardly and upwardly curved rest-arms formed at the inner or diverging ends of the horizontal members, pads carried by said arms, a bow-section extending sidewise from and rearwardly beyond the arms, said bow-section being upwardly curved at its rear portion and downwardly curved at its forward portion, and rings or loops having swivel connections with the rest-arms, substantially as and for the purpose set forth.

474,788. TRACTION-ENGINE. JOHN R. HATCH, Sugar Lake, Mo. Filed Sept. 30, 1891. Serial No. 407,263. (No model.)

Claim.—1. In a traction-engine, the combination, with the supporting-wheels, gear-wheels on the rear wheels, a boiler mounted on the wheels, the engine-cylinders on opposite sides of the boiler, the steam-chests, and the slide-valve of the said chests, of a counter-shaft above the boiler, connections between the said shaft and the engine-pistons and slide-valves, a drive-shaft parallel with the counter-shaft and provided with a gear-wheel at one end, a differential-gear connection between the said shafts, a gear-wheel at one side of the boiler and meshing with the gear-wheel on the drive-shaft, and a transverse shaft beneath the boiler and provided with a gear-wheel at each end meshing with the gear-wheels of the rear drive-wheels and with a gear-wheel near one end meshing with the gear-wheel on the side of the boiler, substantially as herein shown and described.

474,788.



2. In a traction-engine, the combination, with the boiler having a steam-dome near the front end, the engine-cylinders arranged on opposite sides of the boiler, the steam-pipe leading from the steam-dome to the engine-cylinders, and the governor mounted upon the steam-dome and adapted to control the engines, of a counter-shaft mounted transversely on the boiler and connected with the engine-pistons, a driving-shaft arranged parallel with the counter-shaft, gearing between the driving-shaft and the drive-wheels, a differential-gear connection between the driving-shaft and counter-shaft, and means for revolving the governor from the driving-shaft, substantially as described.

3. In a traction-engine, the combination, with the engine-cylinders, the steam-chests, and the slide-valves, of a drive-shaft, a counter-shaft driven from the drive-shaft and provided with eccentrics, a link connected to the eccentrics, a block sliding in the link and connected to the slide-valves, a pivoted elbow-lever, a rod connecting the elbow-lever to the link, and an operating-rod connected to the elbow-lever, substantially as herein shown and described.

4. In a traction-engine, the combination, with the boiler and front axle, of a head secured to the boiler and having a socket on the under side and provided with a king-bolt extending from the center of the socket through the axle, and a spiral spring in the socket and resting upon the axle, substantially as described.

5. In a traction-engine, the combination, with the main frame and the forward axle, of a transverse shaft mounted in the rear of the axle and provided with chains having a spring connection with the opposite ends of the axle, and a worm and gear mechanism for turning the transverse shaft, substantially as described.

474,789. BRIDLE APPLIANCE FOR SUBDUING HORSES. GIBSON R. HOLLINGSWORTH, Hagerstown, Md. Filed Mar. 5, 1892. Serial No. 423,892. (No model.)



Claim.—1. The combination, with a bit having rings at its ends and a yoke-shaped head-band having bearings at its ends and adapted to bear on an animal's head behind the ears, of a continuous line formed into a brace-loop to rest on the animal's neck back of the head-band, passing through both bit-rings and engaged with the bearings at the ends of the head-band, so that by pulling the free end of the line the opposite ends of the bit and head-band are uniformly drawn toward each other, substantially as described.

2. The combination, with a head-band having a pulley at each end and adapted to bear on an animal's head behind the ears and a bit or mouthpiece having rings at its ends, of a continuous line formed into a brace-loop to rest on the animal's neck back of the head-band, connected at one end with one bit-ring and loosely engaging the pulleys and the other bit-ring, so that by pulling the free end of the line the opposite ends of the bit and the head-band are uniformly drawn toward each other, substantially as described.

474,740. DRIVING MECHANISM FOR BICYCLES. DAVID J. HOOPER, Philadelphia, Pa. Filed July 29, 1891. Serial No. 401,084. (No model.)

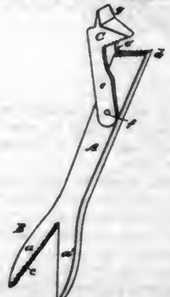


Claim.—1. In a driving mechanism, the combination, with the hub of a wheel mounted in bearings and provided with a pinion on one end, of a treadle-shaft extending through the hub and provided with an internal gear-wheel meshing with the pinion, substantially as described.

2. In a driving mechanism, the combination, with a hub of a wheel mounted in bearings and provided with a pinion on one end, of a treadle-shaft extending eccentrically through the hub and an internal gear-wheel on the said treadle-shaft and meshing with the pinion of the hub, substantially as herein shown and described.

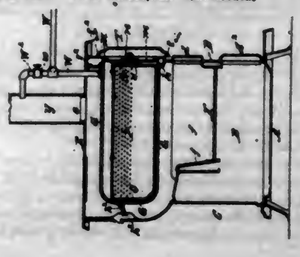
3. In a driving mechanism, the combination, with the frame E, provided with the bearings C E', of the hub B, mounted in the bearing C and provided with the pinion F on its end, the treadle-shaft H, extending eccentrically through the hub and mounted in the bearing E', and the internal gear-wheel G on the treadle-shaft and meshing with the pinion F, substantially as described.

474,741. WRENCH. LEWIS C. HURD, Durango, Colo. Filed July 8, 1891. Serial No. 398,634. (No model.)



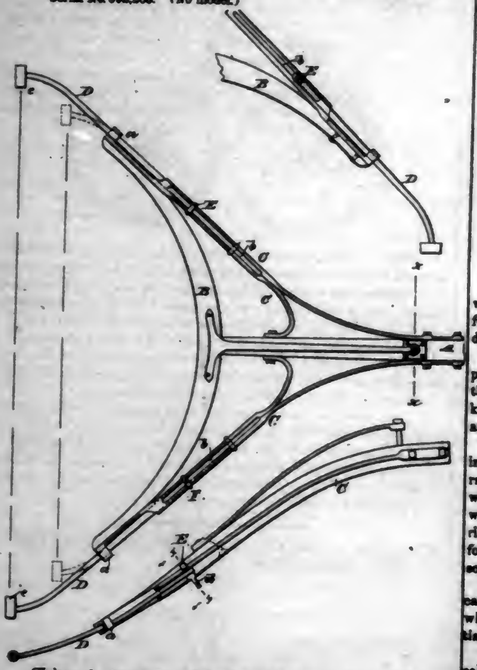
Claim.—As a new article of manufacture, a wrench consisting of the bar A, having the beveled and serrated end *d* and the forked end B, the inner surface of one member of which is serrated, and the beveled and serrated jaw C, having the arms *c c'*, extending down on opposite sides of the bar A and pivoted thereto, and provided with the screw-driver blade *g*, projecting from its upper surface, as set forth.

474,742. HEATING AND GAS-GENERATING STOVE. FLOYD JARRETT, Socorro, N. Mex., and LILBURN PETTON, Rich Hill, Mo. Filed Dec. 12, 1891. Serial No. 414,842. (No model.)



Claim.—In a gas-generator, the combination, with a stove-frame, of the retort-shell G, the cartridge O, fitted to and located therein, the door M, hinged to the stove-frame and locked against the mouth of the retort, and the outer door T, hinged away from the inner door and provided with intervening air-spaces between said doors, with perforations for allowing air circulation, substantially as specified.

474,743. VEHICLE-POLE. JOHN W. JEFFERY, Canton, N. Y., assignor to himself and Frank C. Gilbert, same place. Filed May 9, 1891. Serial No. 392,203. (No model.)

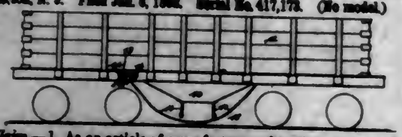


Claim.—1. As a new article of manufacture, a brace C for connecting a pole and cross-bar formed on its outer face at its rear end with a longitudinally-extending eye *a*, and having a slot *b* between its ends, substantially as set forth.

2. A pole attachment comprising the brace C, having the longitudinally-extending slot *b* and eye *a*, and the pole-iron D, extending through the eye *a* along the brace-slot, and the bolt extending through the slot and the iron D, and provided with a nut for clamping the parts, substantially as set forth.

3. The combination, with the pole and its cross-piece B, of the longitudinally-slotted braces C C, secured in the angles at the juncture of the pole and piece B, and each having an eye *a* at its rear end, the pole-irons D, extending through said eyes and provided with apertures, and the bolts extending through the slots and said apertures and provided with nuts, substantially as set forth.

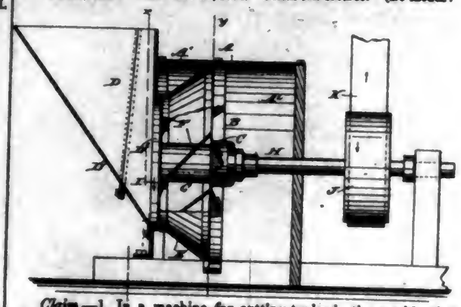
474,744. DUMPING FREIGHT-CAR. ROBERT M. JOHNSON, Plainfield, N. J. Filed Jan. 6, 1892. Serial No. 417,173. (No model.)



Claim.—1. As an article of manufacture, a dumping-car provided with a winding-shaft located below the bottom portion thereof, and a chain attached to the shaft and extending transversely across the dumping doors, the opposite end of the chain being secured, also, beneath the car, as and for the purpose set forth.

2. The combination, with a dumping freight-car, of a winding-shaft located below the bottom of the car, said shaft being provided with a locking mechanism, and a chain secured at one end beneath the car and passed transversely across the dumping-doors, the opposite end of the chain being secured to the winding-shaft, substantially as described, whereby the dumping mechanism of the car is protected against the inclemency of the weather and is not affected by the condition of the contents of the car, and whereby, also, the chain may be carried in a direction to disclose the full area of the discharge-opening of the car, as herein specified.

474,745. MACHINE FOR CUTTING TANBARK. ALBERT F. JONES, Salem, Mass. Filed July 21, 1891. Serial No. 400,215. (No model.)



Claim.—1. In a machine for cutting tanbark, the combination, with fixed knives, of a rotary wheel provided with angular wings forming a feed for the said fixed knives, substantially as shown and described.

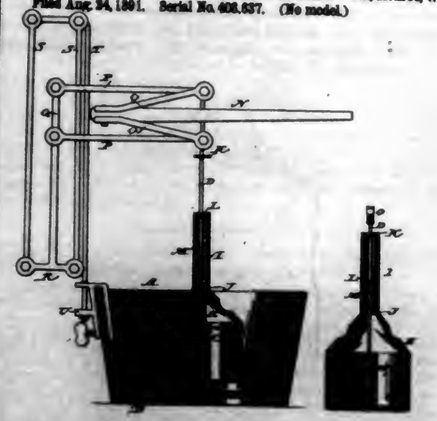
2. In a machine for cutting tanbark, the combination, with a hopper, of a rotary wheel provided with knives and into which discharges the said hopper, angular wings held on the said wheel, and fixed knives upon which discharge the said wings, substantially as shown and described.

3. In a machine for cutting tanbark, the combination, with a casing provided with transverse web-supporting knives, of a hopper arranged on the front end of the said casing, a wheel mounted to turn within the casing between the said hopper and the said web, the said wheel being provided at its front end with knives for cutting the material into strips, and wings held on the said wheel and forming a feed for the said fixed knives on the web, substantially as shown and described.

4. In a machine for cutting tanbark, a rotary wheel having a conical rim, angular wings arranged between the rim and hub of the said wheel, and knives secured to the front ends of the said wings, substantially as shown and described.

5. In a machine for cutting tanbark, a rotary wheel having a conical rim, angular wings arranged between the rim and hub of the said wheel, and knives secured to the front ends of the said wings, in combination with a hopper discharging onto the said knives, and fixed knives arranged at the rear end of the said wheel and onto which the strips are fed by the said wings, substantially as shown and described.

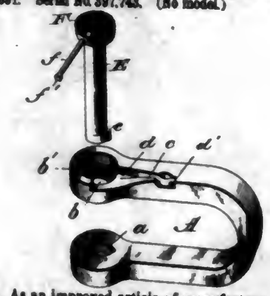
474,746. WASHING-MACHINE. BENJAMIN S. KEER, Monroe, Wis. Filed Aug. 24, 1891. Serial No. 403,637. (No model.)



Claim.—1. In combination, cylinder G, cone H, tube I, and plate J, attached together, and plate L, attached to the piston-rod D, and spiral spring M, encircling piston-rod D and resting above one end against plate L and at the other against plate J, and piston O O', arm F, tube E, and piston-rod D, attached together as described, all substantially as described.

2. In combination, clamp U, adjusted to be clamped tightly to tub A, standard T, swiveled to the same, parallel rods S S, bar R, and standard Q, attached to the same, parallel rods P P, converging rods O O, attached to piston-rod D, piston-rod D, and the handle-rod N, attached to the converging rods O O, all substantially as described.

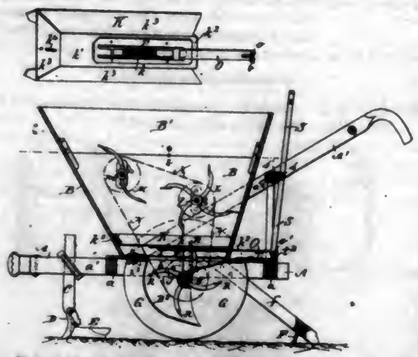
474,747. CLEVIS. REMEMBRANCE L. KIRBY, Pomeroy, Wash. Filed June 27, 1891. Serial No. 397,743. (No model.)



Claim.—1. As an improved article of manufacture, a clevis consisting of a bow and pin, the bow portion having at its lower end an aperture with an inclined shoulder and at its upper end a shouldered recess, a portion of the vertical wall of said recess being cut away to provide a groove *d* and an inclined portion *c*, a pin E, having a head F, from which extends a spring-arm, the lower end of the pin having a projection *e* at substantially right angles with the arm *f*, substantially as shown, and for the purpose set forth.

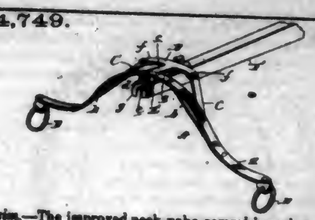
2. The improved clevis, consisting of a bow having a keyhole-opening *a*, the base of which has an inclined wall, the upper terminal portion of said bow having an aperture *b* with vertical walls which is intersected by a groove *d*, one side of which is formed by the upwardly-inclined portion *c*, a notch *d'*, formed adjacent to the terminal portion of the recess or groove, a coupling-pin E, having a leg *e*, formed on the lower end of the same, the head F, carrying a spring-arm, the outer end of which has a depending portion *f'*, which is adapted to engage with the recess *d'*, the parts being organized substantially as shown, so that when the pin and clevis are connected there will be no projecting parts above or below the upper and lower surfaces of the bow.

474,748. SEED-PLANTER AND FERTILIZER-DISTRIBUTER. JOSEPH LAUDE, Monticello, Ark. Filed May 8, 1890. Serial No. 350,967. (No model.)



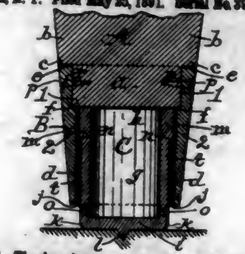
Claim.—In a seed-planter and fertilizer-distributer, the combination, with the frame, hopper, axle, wheels, and a feed-wheel, of a detachable auxiliary bottom fitted in the hopper and provided with a slot through which the feed-wheel is adapted to operate, an adjustable dropping slide fitted to the auxiliary bottom at its slot, a lever fulcrumed to the frame or hopper and connected to the dropping slide, and an adjustable gage held to the hopper or frame and provided with a flange or projection extending behind the slide and lever, substantially as herein set forth.

744,749. NECK-YOKE. JAMES MALLON, New Orleans, La. Filed Aug. 28, 1891. Serial No. 403,960. (No model.)



Claim.—The improved neck-yoke comprising a bar curved as described and having attaching devices at its opposite ends, the rearwardly-extending T-plate secured to said bar and having a depending branch at its forward end provided with an eye, in combination with a plate adapted to be secured to the forward end of the draft-tongue and having a hook to enter the eye of said T-plate, and the bolt also adapted to be secured to the tongue, and its upper end bent to overhang the T-plate, substantially as specified.

474,750. ADJUSTER AND LEVELER FOR BILLIARD AND POOL TABLES. WILLIAM D. LITTLE, SYRENUS, and EVVA W. BOGARDUS, Port Byron, N. Y. Filed May 25, 1891. Serial No. 393,992. (No model.)



Claim.—1. The herein-described adjuster and leveler for billiard and pool tables, comprising a sleeve adapted to be secured to the leg of a table, said sleeve having interior screw-threads extending to its lower extremity, and a rotatable lifting-screw, the upper end of which is screw-threaded and engages the threaded portion of the sleeve and the lower portion of which is smooth, of substantially the same diameter from end to end and in non-contact with the encircling wall of the sleeve, said screw also having a broad base on which it rests and turns, which base is always in contact with the floor and has rounded corners to prevent injury to the floor in turning.

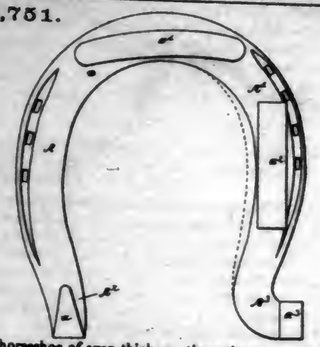
2. The herein-described adjuster and leveler for billiard and pool tables, comprising a sleeve adapted to be secured to the leg of a table and formed with a mortise 1, shoulder *f* at the lower end of said mortise, and screw-threads extending from said shoulder to the lower end of the sleeve, and a rotatable lifting-screw, the upper end of which is screw-threaded and engages the threaded portion of the sleeve and the lower portion of which is smooth, of substantially the same diameter from end to end and in non-contact with the encircling wall of the sleeve, said screw also having a broad base on which it rests and turns, which base is always in contact with the floor and has rounded corners to prevent injury to the floor in turning.

3. The combination, with the leg of a table having a tenon *a*, of the herein-described means for adjusting the leg, said means consisting of a sleeve immovably secured to said leg and formed with a mortise 1, adapted to receive said tenon, said sleeve being also formed with shoulders *e f* at the top and bottom, respectively, of said mortise, said shoulder *e* engaging the shoulder on the leg at the top of said tenon and the said shoulder *f* engaging the bottom of said tenon and interiorly screw-threaded below said tenon, said screw-threads extending to the bottom of said sleeve, and a rotatable lifting-screw having screw-threads at its upper end engaging those of said sleeve and a non-threaded portion below said threaded portion, said non-threaded portion extending from the lower end of said threaded portion to the base of said screw, of substantially the same diameter from end to end and in non-contact with the surrounding portion of the sleeve, and said base being broad and having rounded corners, whereby the necessity for an additional support or stop is obviated, substantially as specified.

474,751. HORSESHOE. NELSON LUNDWALL, Brooklyn, N. Y. Filed Feb. 11, 1890. Renewed Oct. 3, 1891. Serial No. 407,902. (No model.)

Claim.—1. A horseshoe of even thickness throughout, provided with an integral outwardly-flaring heel and with two longitudinal heel-calks and with a toe-calk and also with a central outer quarter-calk, the planes of the upper face of the shoe and the lower surface of the calks being parallel, substantially as described.

474,751.



2. A horseshoe of even thickness throughout, provided with two integral heel-calks and with an integral toe-calk and also with an integral central outer quarter-calk, the inner half of the shoe being thin and devoid of calks and the planes of the upper face of the shoe and the lower surface of the calks being parallel, substantially as described.

3. A horseshoe of even thickness throughout, provided with an integral outwardly-flaring heel and with a toe-calk and also with a central outer quarter-calk, the planes of the upper face of the shoe and the lower surface of the calks being parallel, substantially as described.

474,752. HARNESS-SADDLE. LOUIS A. MARCHY, Montclair, N. J. Filed July 23, 1891. Serial No. 400,475. (No model.)



Claim.—1. In a harness-saddle, a harness-saddle tree A, having its ends upturned and transversely slotted, as shown at 15 15, bolt-apertures through the curved end portions, side flanges 12 at its arched portion, turret-apertures between each pair of flanges, the cover-plate 13, and the turrets having screws extending through plate 13, substantially as set forth.

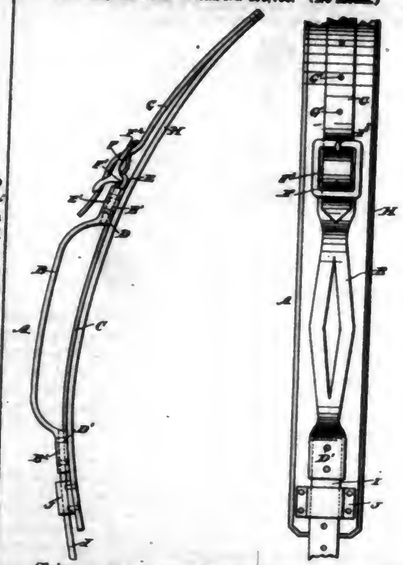
2. The combination, with the saddle-tree having the lower faces of its ends toothed or serrated and apertured, of the pads having slotted plates provided with toothed upper surfaces engaging those of the tree, and the securing-bolts passed through said apertures and slots, substantially as set forth.

3. In a harness-saddle, the combination, with the tree thereof arched at its central portion and provided with toothed surfaces on its under side near its ends, of pads, each consisting of a back plate having elongated slots therein surrounded by recesses, the base-walls of which are toothed, and said recesses being adapted to receive the toothed surfaces of the tree, a bowed shaping-plate, a soft strip, as of felt, covering the outer portion of the shaping-plate, the said shaping-plate and strip being rigidly attached to the back plate, and bolts passed through the tree and the openings in the back plates of the pads, substantially as shown and described, whereby the tree is not brought in engagement with the animal's back and the pads are adjustable upon the tree and open from end to end, as specified.

4. In a harness-saddle, a harness-pad plate B', having a central opening 18, slots 20 at opposite sides of the opening, and depending flanges 19, the upper surface of the plate being toothed at opposite sides of the slot, substantially as set forth.

5. In a harness-saddle, a harness-pad comprising an attaching-plate B', the shaping-plate 23 bowed, as shown, with its opposite ends brought toward each other beneath the ends of the plate B', the covering 22 on the outer face of the shaping-plate, and the bolts 26, extending through the ends of plates B 23 and the covering, substantially as set forth.

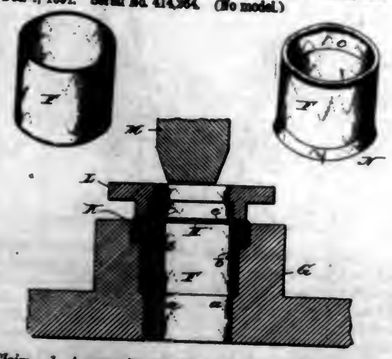
474,753. TRACE-SUPPORT. REMER W. MIHARD, Larned, Kans. Filed July 25, 1891. Serial No. 400,705. (No model.)



Claim.—1. A trace-support consisting of the metallic loop A, formed of the parts B C, the part B being curved and provided with the flanged ends B' B², secured to the ends of the part C, the eye E, having its shank secured between the upper ends of the parts of the loop, and the strap I, secured between the lower ends of the parts of the said loop, substantially as described.

2. In a trace-support, the combination, with the skirt H, provided with the loop J at its lower end, and the strap G, secured to the skirt, of the metallic loop A, provided with the eye E, projecting from its upper end, and with the strap I, projecting from its lower end and passing through the keeper of the skirt, and the buckle F, engaging the strap G and having its cross-bar engaged by the eye of the loop, substantially as herein shown and described.

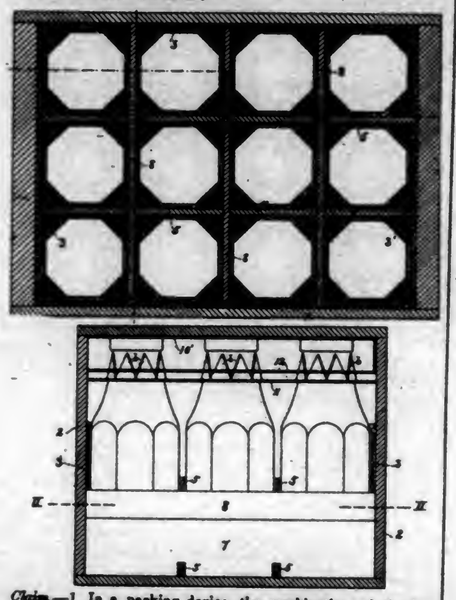
474,754. HUB-BAND. GEORGE MONTEITH, Cincinnati, Ohio. Filed Dec. 7, 1891. Serial No. 414,364. (No model.)



Claim.—1. A wrought-metal hub-band made of sheet metal and having the outer end turned over on itself to strengthen the point of the band, substantially as shown and described.

2. The process of forming a wrought-metal hub-band, having its outer end turned over on itself, which consists in first forming a shallow cup out of sheet metal, then pressing this cup wrong side out, reducing the diameter of the cup to the size of the finished band, and then turning in the bottom of the cup, substantially in the manner and for the purpose described.

474,755. PACKING-CASE. SEBASTIAN MUELLER, Sharpsburg, and ALBERT R. MATCHETT and WILLIAM BOEHME, Allegheny, assignors to the H. J. Heinz Company, Allegheny, Pa. Filed Nov. 7, 1891. Serial No. 411,188. (No model.)



Claim.—1. In a packing device, the combination of the box adapted to contain bottles, a sheet set within the box and having bottle-neck holes with vertically-projecting tongues, and a locking-sheet fitting around the bottle-necks and around the projecting tongues and adapted to confine the same, substantially as and for the purposes described.

2. In a packing device, the combination, with the box having an interior lining, of soft elastic granules adhesively secured to the box, a rack having compartments to receive the bottles to be packed, and a sheet set within the box and having holes for the bottle-necks, substantially as and for the purposes described.

3. In a packing device, the combination, with the box having an interior lining, of soft elastic granules adhesively secured to the box, a rack having compartments to receive the bottles to be packed, a sheet set within the box and having holes for the bottle-necks with vertically-projecting tongues, and a locking-sheet having holes fitting around the bottle-necks and around the projecting tongues and adapted to confine the same, substantially as and for the purposes described.

4. In a packing device, the combination, with a box, of a rack composed of parallel slotted strips, cross-strips set in the slots and secured by notches, and a second set of strips in the slots, substantially as and for the purposes described.

474,756. JAR-SEALING DEVICE. IRENAEUS P. NELSON, Muncie, Ind. Filed Dec. 30, 1891. Serial No. 416,555. (No model.)

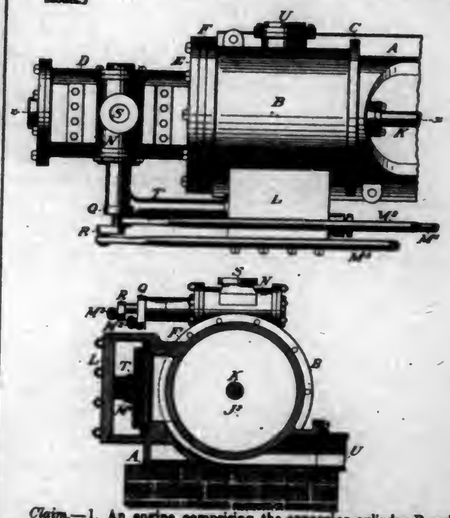


Claim.—1. The combination of a jar having flattened portions on opposite sides of its neck containing inclined grooves extending in the same direction from a central point, a cover, and a bail formed of a single piece of wire having inturned ends which enter said grooves, and bowed-out portions which provide an inherent spring force which extends up over and secures said cover in place, substantially as set forth.

2. The combination, in a jar-sealing device, of the jar having flattened opposite sides to its neck, inclined grooves therein extending in the same direction from a central point and substantially parallel with each other, with notches in the upper sides of the lower ends of said grooves, a cover, and a bail having inturned ends which enter said grooves and which is adapted to pass up over said cover.

3. The combination, in a jar-sealing device, of a jar having flattened portions on two opposite sides of its neck containing inclined grooves which extend in the same direction from diametrically-opposite points, and a bail having inturned ends which enter said grooves, and a cover having a rest on its top on which the central portion of said bail will rest when the parts are assembled together.

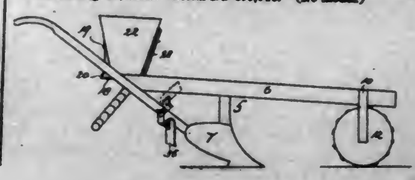
474,757. COMPOUND STEAM-ENGINE. WILLIAM H. ORMES, San Francisco, Cal. Filed July 27, 1891. Serial No. 400,854. (No model.)



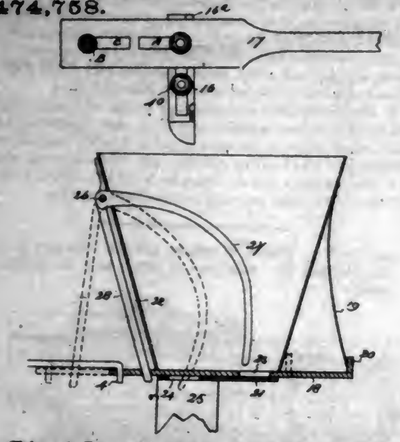
Claim.—1. An engine comprising the expansion-cylinder B and the high-pressure cylinder D, separated by a single intermediate head or diaphragm F, pistons J' J³, piston-rod K, carrying the two pistons, slide-valve box L, and valve arranged therein and on the side of the expansion-cylinder, valve-rod M' for operating said slide-valve, chamber N, distributing oscillating valve O, and oscillating steam cut-off and regulation valve P, both arranged in the chamber N, cranks Q and R, and valve-rods M² M³, the latter of which being passed over the top of the valve-box L, whereby the rods M' M² M³ can be arranged parallel in different horizontal planes and oscillating valves employed in conjunction with a slide-valve, and said rods can be extended without any interference resulting therefrom, substantially as described.

2. An engine comprising the expansion-cylinder B and the high-pressure cylinder D, separated by a single intermediate head or diaphragm F, pistons J' J³, piston-rod K, carrying the two pistons, slide-valve box L, and valve arranged therein and on the side of the expansion-cylinder, valve-rod M' for operating said slide-valve, chamber N, distributing oscillating valve O, and oscillating steam cut-off and regulation valve P, both arranged in the chamber N, cranks Q and R, valve-rods M' M², the latter of which is passed over the top of the valve-box L, entrance-passage S, pipe T, and nozzle U, whereby the rods M' M² M³ can be arranged parallel in different horizontal planes and oscillating valves employed in conjunction with a slide-valve, and said rods can be extended without any interference resulting therefrom, substantially as described.

474,758. SEEDING-MACHINE. GEORGE OSTEN, Denver, Colo. Filed Aug. 27, 1891. Serial No. 403,913. (No model.)



474,758.



Claim.—1. The combination, in a seeder, of a supporting-frame and a hopper provided with an opening in the bottom, a reciprocating slide supported upon the bottom of the hopper and projecting therefrom both in front and in the rear, said slide being provided with an opening normally retained at one side of the opening within the hopper-bottom, a spring having a tendency to retain the slide in its normal position, a bar connected to the slide in front of the hopper and extending forward, its forward extremity being provided with a slot, a bolt attached to the frame and passing through the slot, whereby the bar is slidingly supported upon the frame, a hanger 16, pivoted on the bar and provided with a rearward lug 16ª, projecting over the top of the bar and maintaining the hanger in a perpendicular position when acted upon from the rear, but permitting it to be turned upon its pivot by a backward thrust, and a rotating wheel pivoted to a hanger secured to the frame and provided with one or more pins or lugs adapted to engage hanger 16 and impart a forward movement to the slide 18, substantially as and for the purpose set forth.

2. In a seeder, the combination, with a plow having a wheel on the beam adapted to roll upon the ground and provided with one or more pins, of a movable rod supported and guided upon the plow-beam and moved forward by the pins as the wheel rotates, a hopper supported upon the plow-frame in the rear and provided with an opening in the bottom and a movable slide, also provided with an opening, but normally located to one side of the opening in the hopper-bottom, a spring having a tendency to retain this slide in the normal position, the slide being suitably connected with the movable rod in front, a spout leading from the hopper, through which the seed passes to the earth, and means connected with the plow-frame for partially refilling the furrow to properly regulate the depth of depositing the seed, said means consisting of an adjustable blade or shovel attached to one of the plow-handles in the rear of the share and in front of the seed-dropping mechanism, substantially as described.

3. The combination, with a plow, of a hopper and seed-dropping mechanism supported thereon in the rear of the share, said mechanism being provided with a movable slide, and a spring normally retaining the slide at its backward limit of movement, a rigid longitudinal bar having its rear extremity connected with said slide, its forward extremity being slidingly supported upon the plow-beam and provided with a hanger, a wheel supported upon the plow-beam and provided with pins or projections engaging the lower extremity of the hanger and moving the bar forward in a direct line until the extremity of the hanger passes out of the arc in which the engaging-pin moves when the hanger is released, the hanger when engaged by the actuating-pin having no movement on its supporting-bar, substantially as described.

4. The combination, with a plow, of seed-dropping mechanism supported thereon in the rear of the share and provided with suitable means for actuating the same, consisting of a rigid longitudinally-movable bar connected at its rear extremity with said mechanism and having its forward extremity slidingly supported upon the plow-beam and provided with a hanger adjustable longitudinally on said bar and consisting of two parts, the upper part consisting of a plate pivoted on the bar and provided at its upper extremity with a rearward lug extending over the top of the bar, the lower part being adjustably secured to the upper part, whereby the length of the hanger may be regulated at will, and a wheel mounted upon the plow-beam and provided with pins adapted to engage the hanger as the wheel rotates and impart a forward movement to the bar and the seed-dropping mechanism actuated thereby, substantially as described.

5. The combination, with a plow, of seed-dropping mechanism supported thereon in the rear of the share and provided with suitable means for actuating the same, consisting of a rigid longitudinally-movable bar connected at its rear extremity with said mechanism and having its forward extremity slidingly supported upon the plow-beam and provided with a hanger adjustable vertically on itself and adjustable longitudinally on said bar, and a wheel mounted upon the plow-beam and provided with pins adapted to engage the hanger as the wheel rotates and impart a forward movement to the bar and the seed-dropping mechanism actuated thereby, substantially as described.

474,759. BICYCLE-BRAKE. ALBERT PERKINS, Chicopee, Mass., assignor to the A. G. Spalding & Brothers, New York, N. Y., and the Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Filed Oct. 17, 1891. Serial No. 408,900. (No model.)



Claim.—1. The combination, with a bicycle-frame and a rear wheel capable of front to rear adjustment therein, of a brake-shoe mounted upon the frame and capable of like adjustment, whereby the action of the shoe upon the wheel may be invariable.

2. The combination, with the frame and rear wheel of a bicycle, of a shoe-bearing shaft mounted upon said frame to slide directly toward said wheel, devices attached to said shaft to slide it, and devices for changing the point of such attachment, substantially as and for the purpose set forth.

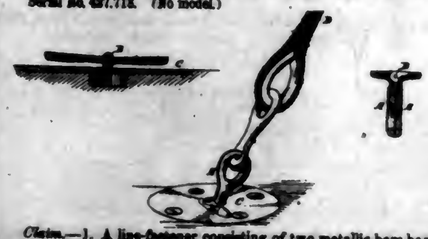
3. The combination, with the frame and rear wheel of a bicycle and a brake-lever at the handle-bar, of the sleeve secured to the frame, the shoe-bearing shaft sliding toward said wheel in said sleeve, a spring offering yielding resistance to such sliding, a lever centrally pivoted to the frame and jointed at one end to a collar or other suitable device adjustable upon said shaft, and suitable devices connecting the opposite end of said lever to the brake-lever, whereby the motion of the latter may actuate it.

4. The combination, with the power shaft bearing, of a sleeve secured upon said bearing, a brake-shaft adapted to slide in said sleeve, a shoe carried upon one end of the shaft, and an operating-lever connected with the other end of the shaft, substantially as shown and described.

5. The combination, with the power-shaft bearing, of the sleeve secured thereto, the brake-shaft arranged therein and carrying the shoe, an adjustable collar mounted upon the other end of shaft, a spring arranged between the end of sleeve and collar, and an operating-lever for moving the shaft toward the wheel, substantially as shown and described.

6. The combination, with the sleeve arranged as described, of the brake-shaft sliding therein, the adjustable collars arranged near each end of the shaft, the brake-shoe, coiled spring, and operating-lever, all arranged substantially as shown and described.

474,760. LINE-FASTENER FOR EXERCISING APPARATUS. THEODORE PETERSON, Akron, Ohio, assignor to the Schumacher Gymnasium Company, same place. Filed May 1, 1891. Renewed Apr. 4, 1892. Serial No. 427,713. (No model.)

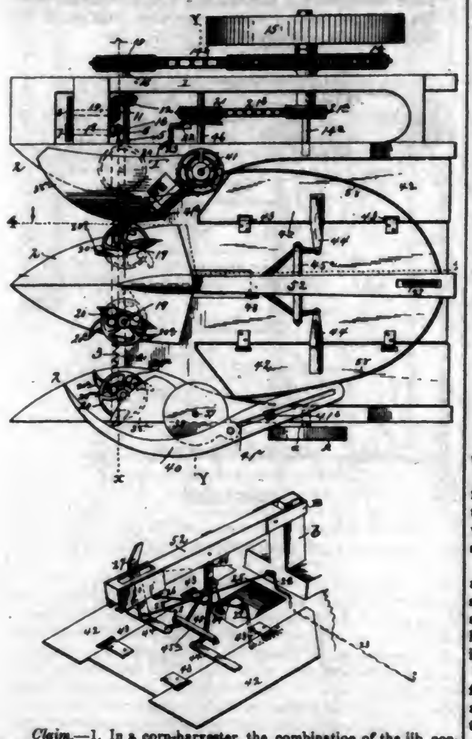


Claim.—1. A line-fastener consisting of two metallic bars having loops at one end and opposite outwardly-turned ends pivoted together at their angles, their bent ends being arranged to pass each other when the looped ends are swung apart, substantially as shown and described.

2. In a line-fastening device, the combination, with two bars looped at one end and bent outwardly at the other and pivotally connected at the angle, in combination with a metallic plate having an orifice

less in diameter than the combined lengths of the bent ends of the bars, substantially as shown, and for the purpose specified.

474,761. CORN-HARVESTER. WILLIAM M. PLATT, West Liberty, Ohio, assignor of one-third to Ben S. Leonard, same place. Filed Apr. 17, 1891. Serial No. 389,388. (No model.)



Claim.—1. In a corn-harvester, the combination of the jib constructed to have a vertical movement, means for actuating the said jib and the drop-doors, one on each side of the said jib, the arms 44, projected from the said drop-doors, the guide 45ª, and the cables 45, connected with the said arms at one end and with the said jib at the other end and deflected between their ends by the said guide 45ª, substantially as and for the purpose described.

2. In a corn-harvester, the combination of the binding mechanism, the jib 25, the shaft 46, the cam 30 on the shaft 46, connections between the jib and the said cam for actuating the jib, the sprocket-wheel 21, the clutch-wheel 22, the rock-shaft 23, having arm 24, and the compressor 27, connected with the arm 24, substantially as and for the purpose set forth.

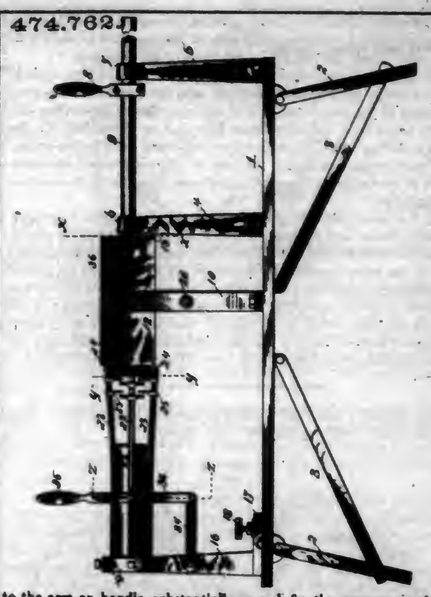
3. In a corn-harvester, the combination of the binding mechanism, the drop-door, the shaft 46, sprocket-wheel 21, clutch-wheel 22, rock-shaft 23, having arm 24, the compressor-finger connected with the arm 24, the sliding block 26, the bell-crank lever 29, connected with the sliding block, and the cam-wheel 30, having a cam-groove in its side to receive the bent end of the bell-crank lever 29, substantially as described, for the purpose specified.

4. The combination of the binding mechanism, the shaft 46 for actuating the binding mechanism, the wheel 21, clutch-wheel 22, rock-shaft 23, having arm 24, jib 52, compressor 27, connected with the arm 24, sliding block 26, bell-crank lever 29, having connection with the said sliding block, the drop-doors, the bell-crank lever 49, having connection with the drop-doors, and a cam-wheel on shaft 46, having cam-groove in its sides to actuate the said bell-crank levers, substantially as described.

474,762. MACHINE FOR PREPARING GREEN CORN FOR DOMESTIC USE. PETER S. RICE, Sparta, Wis. Filed Oct. 20, 1891. Serial No. 409,281. (No model.)

Claim.—1. A device for removing green corn from the cob, comprising an arm or handle, clamping-sections, removable cutting-blades located between the sections, means for securing the sections one to the other for fixing the blades, and relatively-fixed scrapers secured

474,762.



to the arm or handle, substantially as and for the purpose set forth.

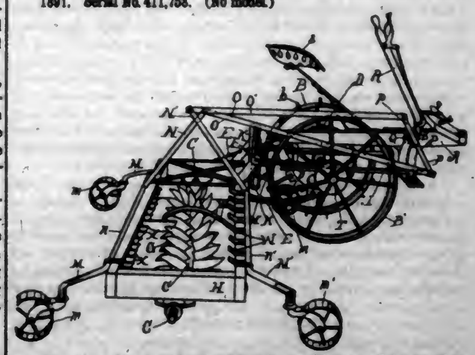
2. In a machine for preparing corn, the herein-described separator-frame, comprising a series of spring-arms, clamping-sections secured to the arms, and cutting-blades located between the sections and provided with serrated edges for engaging the sections, substantially as set forth.

3. In a machine for preparing corn, the combination of a base separator-frame, a hopper having side pieces which are supported by spring-bars rising from the base, said bars being normally separated, an adjusting-bolt connecting the spring-bars, whereby the bars, and hence the sides of the hopper, are drawn together, and a plunger working in the hopper, substantially as described.

4. In a machine for preparing corn, the herein-described separator-frame, comprising a series of spring-arms provided with cutting-blades, a sliding ring fitting around the arms, and a pivoted operating-handle to which said ring is pivoted, substantially as set forth.

5. In a machine for preparing corn, a base, a post or support thereon provided with an opening, a longitudinally-slotted expansible tube fixed to the post around the opening, and arms also fixed to the post around the tube and provided with cutters, substantially as and for the purpose set forth.

474,763. ORCHARD-CULTIVATOR. JOHN SCHAUMAN, Anaheim, assignor of one-half to Henry Giese, Los Angeles, Cal. Filed Nov. 12, 1891. Serial No. 411,758. (No model.)



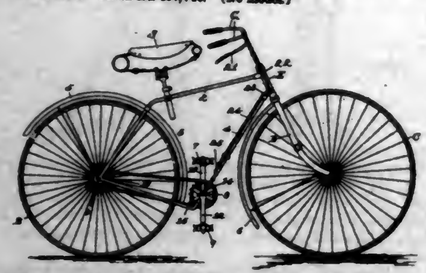
Claim.—1. The combination, in a wheel-cultivator, of the traction driving-wheel, a rotary cutter-shaft provided with cutters and mounted in a frame at one side of the path of the supporting-wheels of the cultivator, and operative means connecting the driving-wheel with the rotary cutter-shaft to rotate such shaft in the same direction as the traction driving-wheel and at such a rate as to cause the periphery of the cylinder generated by the rotation of the cutter to travel as fast or

faster than the periphery of the traction driving-wheels, so that the cutters will tend to advance their side of the machine as rapidly or more rapidly than the side supported by the driving-wheels.

2. In a wheel-cultivator, the combination of the traction driving-wheel, a rotary cutting-shaft provided with the cutters and mounted in a frame at one side of the path of the supporting-wheels of the cultivator, the driving sprocket-wheel arranged to be rotated by the traction driving-wheel, the driven sprocket-wheel fixed to the cutter-shaft, and the sprocket-chain arranged to connect the said sprocket-wheels to rotate the cutter-shaft in the same direction as the traction driving-wheel.

3. In a wheel-cultivator, the combination of the supporting-wheels, the sulky-frame and tongue, the guides secured to the sulky-frame, the cutter-frame, the cutter-shaft journaled therein, the attaching-arms fixed to the cutter-frame and secured to the sulky-frame by pivotal attachments arranged to slide in the guideways, the caster wheels and arms, the lever-bar carrying such caster-arms and journaled to the cutter-frame, the levers N N', secured thereto, the operating-lever, the T-lever secured thereto, and the connecting-rods connecting the opposite arms of the T-lever with their respective levers N N'.

474,764. BICYCLE. AUGUSTUS SIQUEIRA, Hartford, Conn. Filed Oct. 5, 1891. Serial No. 407,746. (No model.)



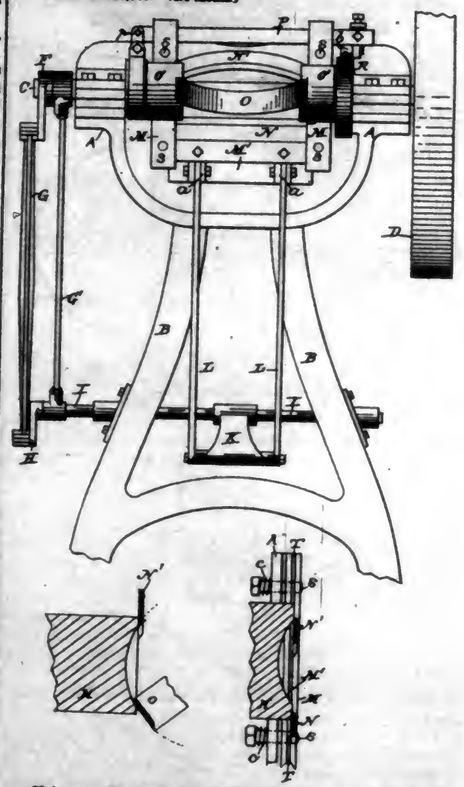
Claim.—1. In a bicycle, the combination, with a frame-work having bearings for the driving-shaft and for the shipper-rod, of the driving-shaft journaled in the frame-work and furnished with the pedal-cranks, a gear fixed on said shaft, the sprocket-wheel loosely mounted on the shaft and having a gear thereon and having a clutch, the carrier loosely mounted on the shaft and provided with a clutch, gearing carried on said carrier and actuating the sprocket-wheel gear from the shaft-gear, a clutch for locking said carrier against rotation with the shaft, a clutch for engaging and disengaging the sprocket-wheel with and from its shaft, and means, substantially as described, actuating said clutches from the clutch-rod, substantially as set forth.

2. In a back-geared bicycle, the combination, with the supporting frame-work, and with the pedal-shaft mounted therein, of the sprocket-wheel revolubly mounted on said shaft, the gear fixed on said shaft adjacent to the sprocket-wheel, a carrier revolubly mounted on said shaft and constructed to engage a clutch, back gearing carried by said carrier and intermediate to said fixed gear and sprocket-wheel, the rotating sprocket-wheel clutch splined to the pedal-shaft, the non-rotating carrier-clutch on said shaft, a shipper-rod, as 20, carried in the frame-work, an arm carried by said shipper-rod in fixed engagement with the carrier-clutch, an arm carried by the shipper-rod and in loose engagement with said rotating clutch, a spring normally holding the sprocket-wheel clutch in engagement with the sprocket-wheel, whereby said wheel is rotated uniformly with the pedal-shaft, and means for actuating the shipper-rod to disengage the sprocket-wheel clutch and engage the carrier-clutch with the carrier, whereby the sprocket-wheel is driven through said back gearing at a different speed from the pedal-shaft, substantially as described.

3. In a back-geared bicycle, the combination, with the frame-work and with the pedal-shaft having the gear 36 fixed thereon, of the sprocket-wheel revolubly mounted on said shaft and having the gear 46 fixed thereon and adapted to engage a clutch, the clutch 31 splined to said shaft and constructed to engage the sprocket-wheel, the carrier 37, back gears revolubly supported on said carrier and meshing with the gears 36 and 46, the clutch 40, fitted to slide over said shaft and engage the carrier 37, and a shipper-shaft rigidly connected with said clutch 40 and loosely connected with the clutch 30, all organized and coacting substantially as shown and described.

4. In a bicycle, the combination, with the frame-work carrying the driving-shaft, of the driving-shaft journaled in the frame-work and having the pedal-cranks, a sprocket-wheel loosely mounted on said shaft, the carrier loosely mounted on said shaft, gearing intermediate to said wheel and carrier, the clutch 31 splined to said shaft and engaging the sprocket-wheel, the non-rotating clutch 40 engaging the carrier, a shipper connected to said clutches, a spring normally holding the clutch 31 into engagement with the sprocket-wheel, and means adapted to be actuated by hand, operating to disengage the clutch 31 and engage the clutch 40, all organized and coacting substantially as shown and described.

474,765. PROCESS OF CUTTING PLATES, DISHES, OR BOWLS FROM WOOD. CHARLES SPOFFORD, New York, N. Y., assignor to William J. Hiss and William P. Sandford, same place. Filed Oct. 20, 1891. Serial No. 410,373. (No model.)



Claim.—1. The method of cutting concavo-convex utensils from a log, which consists in cutting out each utensil by a single continuous cut and facing over the log between each said cut by shaving off its surface by two successive cuts taken in opposite directions from the outside toward the center of the log, substantially as set forth.

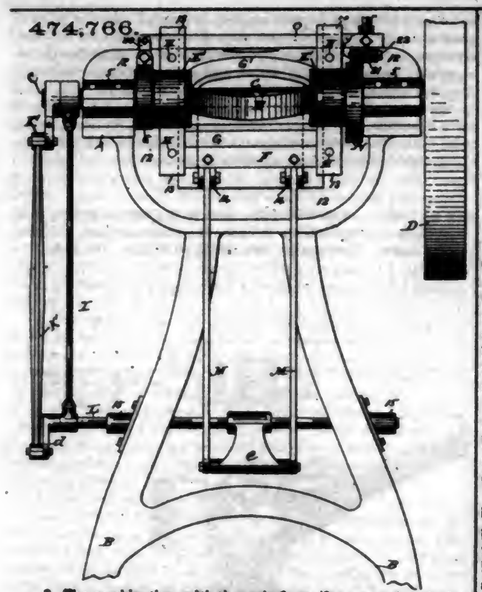
2. The method of cutting concavo-convex utensils from a log, which consists in first clamping the log, then cutting out the utensil by a single continuous cut, shaving off the surface of the log down to the center, and commencing to shave off the surface upward toward the center, then unclamping the log and feeding it forward and completing the upward facing-cut during the feeding movement, substantially as set forth.

474,766. MACHINE FOR CUTTING PLATES OR DISHES FROM WOOD. CHARLES SPOFFORD, New York, N. Y., assignor to William J. Hiss and William P. Sandford, same place. Filed Oct. 20, 1891. Serial No. 410,154. (No model.)

Claim.—1. The combination, with a revoluble knife for cutting concavo-convex utensils from a log, of a reciprocatory frame and two facing-knives secured to the said frame with their cutting-edges toward each other, and driving mechanism for operating the said knife and frame, substantially as set forth.

2. The combination, with a revoluble knife for cutting concavo-convex utensils from a log, of a main frame for supporting the log, guides supported by the frame, a reciprocatory frame sliding in the said guides, two facing-knives having opposed edges and secured to the reciprocatory frame, springs normally holding the said guides against the main frame, and feed mechanism operating to advance the log between the cutting strokes of the revoluble knife and during the cutting strokes of one of the facing-knives, substantially as set forth.

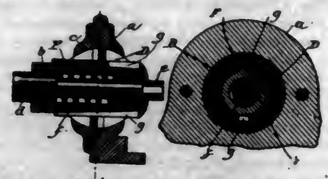
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3. The combination, with the main frame for supporting the log, of the guides 13, springs adapted to press the guides against the frame, and the frame and the two facing-knives having opposed edges and sliding in the said guides and which are pressed forward with the guides when the log is advanced and pressed back again by the springs on the completion of the facing of the end of the log, substantially as set forth.

4. The combination, with the main frame and the guides 13, carried by it, of the main shaft journaled in the frame, the cutting-off knife secured to the main shaft, the frame and the two facing-knives having opposed edges and sliding in the said guides, an oscillatory rock-shaft, an arm *e*, projecting from the rock-shaft, links pivotally connecting the said arm with the knife-frame, a crank secured on the main shaft, an arm *d*, secured on the rock-shaft, and a pitman connecting the arm *d* with the crank, whereby the cutting-off knife is revolved and the facing-knives are reciprocated, substantially as set forth.

474,767. PITMAN CONNECTION FOR MOWING-MACHINES. GEORGE H. SPAULDING, Chicago, Ill. Filed Dec. 7, 1889. Serial No. 333,955. (No model.)



Claim.—1. The combination, with pitman B, a tapering stud *b*, having a longitudinal wedge F thereon, and journal-contact plates D, fitting over said stud and having a spherical bearing-surface, of the knife-bar and a bearing at the end thereof having an interior surface made the obverse of the journal-surface of the plates D.

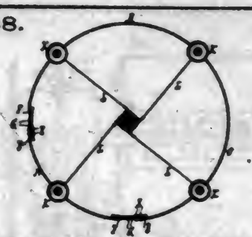
2. The combination, with a pitman B, a stud *b*, contact-plates D, fitting over the said stud, and the spring and bolt *d*, placed longitudinally in said stud, the said bolt having lateral projections on the outer end thereof, of the knife-bar C and a bearing for plates D thereon, as set forth.

3. The combination, with a pitman B, a stud *b*, having a longitudinal wedge F thereon, and journal-plates D, fitting over said stud, of the knife-bar and a bearing thereon for said contact-plates, as set forth.

474,768. CANDLE-HOLDER. JAMES F. YOUNG, Manhasset, N. Y. Filed Apr. 11, 1891. Serial No. 388,576. (No model.)

Claim.—1. A candle-holder for Christmas-trees, consisting of an elastic band and provided with a series of candle-holding sockets fixed thereto, and a catch-plate secured to one end of the band and having

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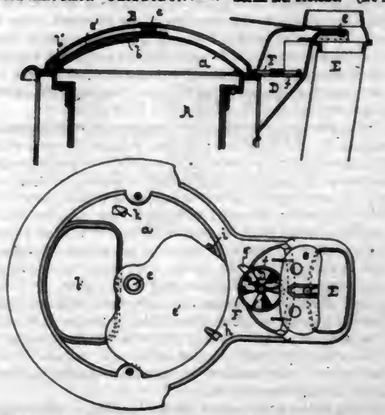
a slot H and a cross-bar I to receive and detachably engage the opposite end of the band, substantially as described.

2. A candle-holder for Christmas-trees, consisting of an elastic flat band having hooked extremities G and its sides arranged vertically and provided with a series of candle-holding sockets fixed thereupon, and a catch-plate D in hooked engagement with one extremity of the band and provided with a slot H and cross-bar I to receive and detachably engage the opposite hooked extremity of the band, substantially as described.

3. A candle-holder for Christmas-trees, consisting of an elastic band having its sides arranged vertically and provided with candle-holding sockets rigidly attached thereto, and a catch-plate having slots and cross-bars engaging the extremities of the band, substantially as described.

4. A candle-holder for Christmas-trees, consisting of an elastic flat band having hooked extremities and its sides arranged vertically and provided with a series of candle-holding sockets rigidly secured thereto, a catch-plate having slots and cross-bars receiving and engaging the hooked extremities of the band, one of such extremities being detachable from the catch-plate, and a ring E, surrounding the catch-plate for permanently securing one extremity of the band in engagement with the catch-plate, substantially as described.

474,769. MAGAZINE-STOVE. JOHN T. AUSTIN, Baltimore, Md., assignor to David L. Bartlett, Thomas J. Hayward, and Edward L. Bartlett, same place. Filed Dec. 17, 1891. Serial No. 415,236. (No model.)



Claim.—1. In a magazine-heater, a revolving cover having lugs, a revolving door provided with a lug, and a fixed top plate having stops, combined with a register or damper in the direct draft adapted to be opened and closed by the revolution of said cover, substantially as set forth.

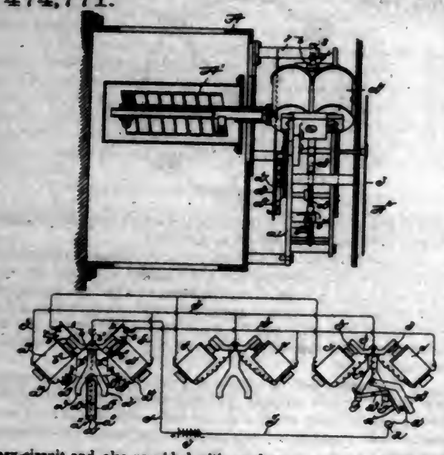
2. In a magazine-heater, a fixed plate having a feed-opening, a door adapted to revolve thereon to uncover said opening, and a cover concentric with said door, said door and cover being connected so that the revolution of the cover shall revolve the door, combined with a register in the direct draft connected with the cover and adapted to be opened thereby before the opening of the door begins, substantially as set forth.

474,770. WITHDRAWN.

474,771. TELESTHERMOMETER. FERNANDO J. DUBBS, Peabody, Mass., assignor to the Telemeter Company, of New York. Filed Jan. 24, 1890. Serial No. 337,206. (No model.)

Claim.—1. The combination, with a battery, of a transmitting apparatus provided with a pointer to automatically complete the bat-

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tery-circuit and also provided with an electro-magnet in circuit with said battery, a shunt-circuit through said magnet and around said circuit-closing pointer, a second or divided circuit around said magnet, a receiving apparatus having an electro-magnet placed in said divided circuit and which constitutes both a receiving-magnet and a circuit-breaking magnet as well, recording mechanism controlled by movement of the armature of said receiving and circuit-breaking magnet, and a circuit-breaker also operated by movement of said armature to break the battery-circuit, substantially as described.

2. The combination, with a battery, of a transmitting apparatus having a pointer connected to said battery, two contact-points, electro-magnets connected to said contact-points, armatures of said magnets connected together to move simultaneously in opposite directions with relation to their respective magnets, a shunt-circuit around said contact-points, completed by the attraction of the armature of the magnets, and a receiving-instrument having electro-magnets in the said shunt-circuits, and armatures for said magnets connected together to move simultaneously in opposite directions, a toothed surface, and a pallet-bar connected to said armatures and provided with pallets to engage said toothed surface, substantially as described.

3. In an electrical instrument, the combination, with two magnets, of armatures for said magnets, connected together to move simultaneously in opposite directions with relation to their respective magnets, a ratchet-wheel having the sides of its teeth oppositely inclined at substantially the same angle, a pallet-bar connected to said armatures and provided with pallets normally disengaged from said ratchet-wheel and a spring-actuated pawl to assist in moving the ratchet-wheel, and a centering device to restore the pallet-bar to its normal position with its pallets disengaged from the ratchet-wheel when the circuit of the operating-magnet is broken, substantially as described.

4. In an electrical instrument, the combination, with two magnets, of armatures for said magnets, connected together to move simultaneously in opposite directions with relation to their respective magnets, and auxiliary or winker armatures for said magnets, connected together to move simultaneously in opposite directions, substantially as and for the purpose specified.

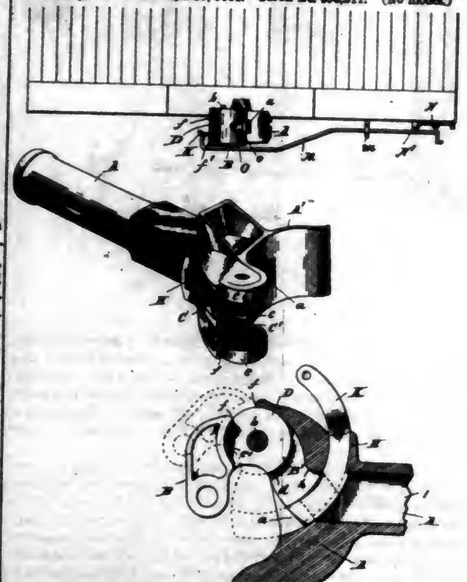
5. In an electrical instrument, the combination, with two magnets, of armatures for said magnets, connected together to move simultaneously in opposite directions with relation to their respective magnets, a pallet-bar provided with pawls, and a bar, as d^5, connected to the said pawls, whereby one arm or end of the said bar is moved positively in the same direction on the movement of the pallet-bar in either direction, substantially as described.

6. The combination, with an electrical receiving-instrument provided with electro-magnets and a pointer and an indicating ring or dial and a clock mechanism to move said pointer, of a recording-dial located in front of the receiving-instrument within the indicating-ring, a recording-instrument, the arm c^{54}, to which the recording-instrument is connected, and a segmental gear connected to said arm and actuated by the said electro-magnets to move said recording-instrument over the said dial, substantially as described.

7. The combination, with a pallet-bar having pawls, of a centering device therefor, consisting of the bar d^5, having arms to engage said pawls, substantially as described.

8. The combination, with a battery, of a transmitting apparatus having a pointer connected to said battery, two contact-points, electro-magnets connected to said contact-points, main armatures for said magnets, connected together to move simultaneously in opposite directions, and winker-armatures for said magnets, connected together to move simultaneously in opposite directions, a shunt-circuit around said contact-points, completed by the winker-armatures, and a divided circuit completed by the attraction of the main armatures of the said magnets, and a receiving-instrument having electro-magnets in the shunt or divided circuits, armatures for said magnets, connected together to move simultaneously in opposite directions, a toothed surface, and a pallet-bar connected to said armatures and provided with pallets to engage said toothed surface, substantially as described.

474,772. CAR-COUPLING. ROBERT H. DOWLING, Newark, Ohio, assignor of seven-twelfths to Charles H. Stimson and Edson B. Dennis, same place. Filed Sept. 19, 1891. Serial No. 406,211. (No model.)



Claim.—1. A draw-head having the concave bearing-recess for the axial portion of the knuckle, the concave parallel arc shoulders at the top and bottom of said recess, and the bearing-wall of said recess having a rounded convex shoulder *h*, in combination with the knuckle having the cylindric axial portion and the convex arc shoulders or bosses thereon, the inner face of the inner end of the tongue of said knuckle having a transverse concavity *g*, adapted to engage said rounded or convex shoulder under shock or concussion, said bearing-wall at the rear of said shoulder *h* having a slot or aperture cut therethrough, and a segmental arm engaging said knuckle-tongue at the rear of the concavity *g* and extending through said aperture, substantially as specified.

2. The draw-head having the bearing-wall of the knuckle-hub-receiving recess formed at its inner portion, with a rounded convex shoulder projecting forwardly into said recess, in combination with a knuckle having a transverse concavity in the rear face of its tongue adapted to engage said rounded convex shoulder under shock or concussion of coupling, such contact being destroyed under pulling strain, and a segmental arm or locking-lever having a loose connection with a lug on the inner end of said tongue at the rear of said concavity and working in a concave slot or aperture formed in said bearing-wall at the rear of the convex shoulder, substantially as specified.

3. The combination, with the draw-head having the curved slot or aperture extending through the rear wall of the knuckle-tongue-receiving chamber and the curved or segmental arm or locking-lever working in said aperture, of the knuckle having a lug or projection on the inner end of its tongue engaging an aperture in said arm or latch, substantially as specified.

4. The combination, with the draw-head having a curved slot or aperture extending through the rear wall of the knuckle-tongue-receiving chamber and the segmental arm or latch working in said slot, of the knuckle or coupling-hook having a lug or projection on the inner end of its contracted portion or tongue engaging an aperture in said arm or latch, said latch having a pivotal vertical play on said projection and in the aperture through which it passes, substantially as and for the purpose specified.

5. The combination, with the knuckle having a lug or projection on the inner end of its tongue, of the segmental arm or locking-lever having an aperture loosely engaging said lug or projection, said arm having a vertical pivotal movement on said lug and in an aperture in the wall of the tongue-receiving chamber of the draw-head, through which aperture said arm extends, said arm or latch also having a shoulder thereon for engagement with the outer edge of the wall of said aperture, substantially as specified.

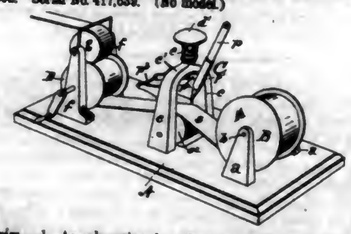
6. The combination, with the knuckle having a cylindric, axial, or hub portion and a lug or projection on the inner end of its tongue, of a segmental arm or lever of an arc concentric with the axis of said hub portion, said arm or lever having a limited vertical play on said lug or projection and projecting through an aperture formed in the wall of the tongue-receiving chamber of the draw-head, said arm or lever also having a shoulder adapted for engagement with the outer edge of the wall of said aperture when the parts come in coupled position, and means connected with said arm for its operation, substantially as specified.

7. The combination, with the draw-head having the rounded or convex portion *h* and the curved slot or aperture extending through the rear wall of the knuckle-tongue-receiving chamber below said portion *h*, of the knuckle having its tongue provided with a transverse concavity adapted to bear against said rounded portion, said tongue also having a lug or projection on the inner end thereof, a segmental arm having a pivotal play on said lug or projection at one end and projecting through said aperture, said arm or lever having a locking-shoulder, and means connected to said arm for its operation, substantially as specified.

8. The combination, with the knuckle having the inner end of its tongue provided with a lug or projection, of the segmental arm or lever concentric with the axis of said knuckle, the inner end of said arm being flush with the upper surface of the tongue to provide a bearing for the knuckle of the coupling of the opposing car, its outer end projecting through an aperture in the rear wall of the tongue-receiving chamber of the draw-head and provided with a locking-shoulder, and means connected with said outer end for its operation, substantially as specified.

9. The combination, with the knuckle and the segmental arm or locking-lever, of the rod or lever connected to the outer end of said segmental arm or locking-lever, and the cam-lever device for operating the rod to set the locking-lever at the desired adjustment, substantially as specified.

474,778. EDUCATIONAL APPLIANCE. JOHN H. RICKERSHOFF, JULIUS KNOST, and HERMANN KNOST, Cincinnati, Ohio. Filed Jan. 11, 1892. Serial No. 417,639. (No model.)



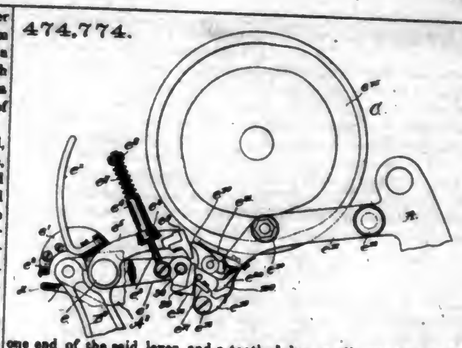
Claim.—1. An educational appliance embodying, substantially, a paper strip, feeding mechanism for the same, a marking-pencil, mechanism for carrying the pencil and enabling it to be impressed by the hand of the operator against the paper strip, and striking abutments limiting the operation of the pencil, whereby the manipulations of the pencil produce successive lines and dots upon the paper and simultaneously reproduce to the ear the characteristic sounds of telegraphic instruments corresponding with the marks upon the paper, substantially as and for the purpose set forth.

2. In an educational appliance of the character indicated, the combination, on a suitable base-frame, of a paper-reel carrying a paper strip, a marking table or roll, a feed-roll provided with winding mechanism, a pencil-carrier and pencil, and means, substantially as described, for operating the pencil-carrier by hand to impress the pencil against the paper roll upon the marking table or roll at proper intervals to produce dashes and dots thereon and for indicating the beginning and ending of the dashes and dots by sound, substantially as set forth.

474,774. SOLE-SEWING MACHINE. ZACHARY T. FRENCH and WILLIAM C. MEYER, Boston, Mass., assignors to the Goodyear Shoe Machinery Company, Hartford, Conn. Original application filed Oct. 4, 1890, Serial No. 367,066. Divided and this application filed Mar. 10, 1891. Serial No. 384,407. (No model.)

Claim.—1. The work-support, stud *c*, the presser-foot lever *c*, mounted thereon, the presser-foot c^2, rigidly and firmly attached to

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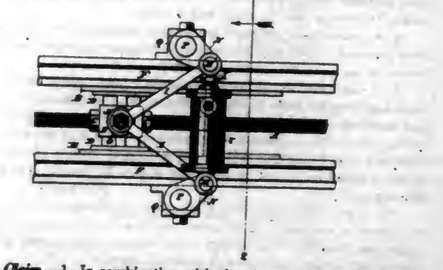


one end of the said lever, and a toothed dog, as c^{16}, attached to the other end of the said lever, combined with a locking-pawl c^{17}, mounted on a stationary stud and adapted to engage the said dog and lock the presser-foot in the position in which it may be left after having been forced down upon the material preparatory to making a stitch, substantially as described.

2. The work-support, the presser-foot, the lever to which it is secured, a toothed dog attached thereto, pawl c^{17}, combined with the loosely-mounted arm c^3, having a toothed dog, the rod c^3, and spring c^7, and with the lever c^{15} and pawl c^{16}, substantially as described.

3. The work-support, the presser-foot, a lever to which it is attached, and a connected rod, and a spring combined with an arm, as c^3, mounted to turn independently of the lever carrying the presser-foot and having a lug to be acted upon by the said spring, and dogs c^3 and c^{16} and pawls to engage them, substantially as described.

474,775. DIRECT-ACTING STEAM-ENGINE. JOHN A. GROSHON, New York, N. Y., assignor to the Groshon High Duty Pumping Engine Company, same place. Filed Feb. 21, 1890. Renewed Dec. 24, 1890. Again renewed Oct. 12, 1891. Serial No. 408,494. (No model.)



Claim.—1. In combination with the piston-rod A of the engine, the levers I I, pivotally secured at their inner end to a block connected with said rod, the cylinder in connection with the outer end of one of said levers and a source of pressure, the piston-rod in connection with the outer end of the other of said levers and carrying a piston within said cylinder, the pins M, supporting the outer ends of said levers I, and the arms N, adapted to rotate and carrying said pins M, substantially as set forth.

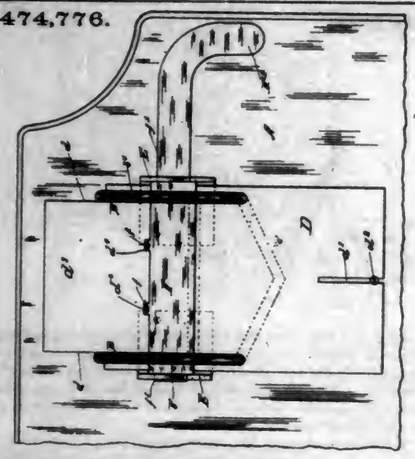
2. The main piston-rod A, carrying the block B, combined with the levers I at each side thereof, the inner ends of said levers being pivotally secured to said block, the cylinders T, in connection with the outer end of one set of said levers I and with a source of pressure, the piston-rods in connection with the outer end of the other set of said levers I and carrying pistons within said cylinders, and the arms N, mounted on the shafts P and carrying pins M, which support the outer ends of the levers I, substantially as set forth.

474,776. BILL AND LETTER FILE. JOSEPH W. HERRON, La Grange, Ill., assignor of one-half to Nahum Edward Jennison, same place. Filed Nov. 26, 1890. Serial No. 373,005. (No model.)

Claim.—1. A paper-file comprising a base board, transfer-wires, receiving-wires engaging the ends of said transfer-wires, and a movable support for said receiving-wires, having a compound movement for moving the receiving-wires to first separate their ends from the ends of the transfer-wires and then for moving said receiving-wires to one side of the ends of said transfer-wires.

2. A paper-file comprising a base-board, transfer and receiving wires having interfitting end portions, said receiving-wires being

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mounted upon a movable support having a compound movement for moving the receiving-wires to first separate their ends from the ends of the transfer-wires and then for moving said receiving-wires to one side of the ends of said transfer-wires.

3. A paper-file comprising a base-board, transfer-wires, and movable receiving-wires mounted upon a flexible support.

4. A paper-file comprising a base-board, transfer-wires, and movable receiving-wires mounted upon a resilient support.

5. A paper-file comprising a base-board, transfer-wires, and receiving-wires mounted upon a movable and flexible support.

6. A paper-file comprising a base-board, transfer-wires, and receiving-wires mounted upon a movable and resilient support.

7. A paper-file comprising a base-board, transfer-wires, receiving-wires mounted upon a movable and flexible support, and an operating device for moving and operating said support.

8. A paper-file comprising a base-board, transfer-wires, receiving-wires mounted upon a movable and resilient support, and an operating device for moving and operating said support.

9. A paper-file comprising a base-board, transfer-wires, receiving-wires engaging the ends of said transfer-wires, a movable support for said receiving-wires, having a compound movement for moving the receiving-wires to first separate their ends from the ends of the transfer-wires and then for moving said receiving-wires to one side of the ends of said transfer-wires, and an operating device for moving said movable support.

10. A paper-file comprising a base-board, upon which all the operative parts of the device are mounted, said base-board having grooves or recesses, transfer-wires having their base portions secured in said grooves or recesses, and movable receiving-wires.

11. A paper-file comprising a base-board, upon which all the operative parts of the device are mounted, said base-board having grooves or recesses, transfer-wires formed from one continuous piece bent to form a base portion and needles and having said base portion secured within said grooves or recesses, and movable receiving-wires.

12. A paper-file comprising a base-board, stationary transfer-wires, and movable receiving-wires constructed from a continuous piece bent to provide upright needles and a base portion connecting the same, said base portion being secured to a movable spring-support.

13. A paper-file comprising a base-board, transfer-wires, and receiving-wires carried by a sliding spring-support movable toward and away from said base-board.

14. A paper-file comprising a base-board, a plurality of upright stationary transfer-wires, and receiving-wires carried by a sliding support having a rearwardly-extending portion fitting between said transfer-wires, whereby said sliding support is guided.

15. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding spring-support for said receiving-wires, and devices arranged to depress and slide said spring-support and receiving-wires.

16. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding spring-support for said receiving-wires, movable toward and away from said base-board, and an operating-bar supported in bearings on said base-board and engaging said spring-support.

17. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding spring-support therefor, and a revolving operating-bar supported in bearings on said base-board and engaging said spring-support.

18. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding support for said receiving-wires, and an operating-bar supported in bearings on said base-board and pivoted to said sliding support.

19. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding support for said receiving-wires, and an operating bar or lever engaging said sliding support, said bar or lever being supported in bearings on said base-board and having a shifting fulcrum-point.

20. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding support for said receiving-wires, an operating bar or lever engaging said sliding support, and uprights E on said base-board, said uprights being formed with bearing-apertures e, in which the end portions of the operating bar or lever are supported, said bearing-apertures being provided with a plurality of fulcrum-points for said operating bar or lever.

21. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding-support for said receiving-wires, an operating bar or lever engaging said sliding support, and uprights E on said base-board, said uprights being formed with bearing-apertures e, having inwardly-curved sides e' and outwardly-curved sides e^2 and e^3, the fulcrum-points of said operating bar or lever being located at the points of junction of said side e' with said sides e^2 and e^3.

22. A paper-file comprising a base-board, transfer-wires, and receiving-wires carried by a sliding spring-plate movable toward and away from said base-board.

23. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding spring-plate upon which said receiving-wires are supported, resting at its end portions upon said base-board and having an uprising intermediate portion.

24. A paper-file comprising a base-board, transfer-wires, and receiving-wires carried by a sliding plate possessing inherent elasticity.

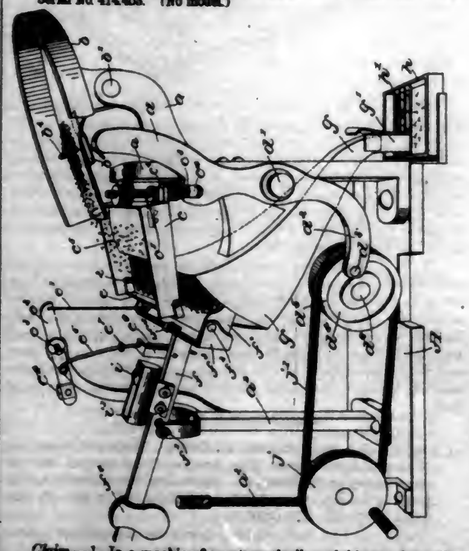
25. A paper-file comprising a base-board, transfer-wires, receiving-wires carried by a sliding support, and a revolving operating-bar provided with fingers engaging with apertures in said sliding support.

26. A paper-file comprising a base-board, transfer-wires, receiving-wires, a sliding spring-plate upon which said receiving-wires are supported, and a revolving operating-bar provided with fingers engaging with apertures in said spring-plate.

27. A paper-file comprising a base-board, transfer-wires, receiving-wires carried by a sliding spring-plate, said spring-plate resting at its end portions upon the base-board and provided at one end with a slot, and a pin passing through said slot and secured to said base-board.

28. A paper-file comprising a base-board, receiving-wires carried by a sliding support, an operating-bar for moving said support, bearing-uprights for said operating-bar, said uprights having base portions adapted to be secured to said base-board, and transfer-wires secured to said base-board by having their base portions located between the base portions of said uprights and the said base-board.

474,777. MACHINE FOR AUTOMATICALLY WEIGHING TACKS. JEREMIAH KEITH, North Middleborough, assignor of one-half to Charles B. Gardiner and David P. Ranney, Raynham, Mass. Filed Dec. 9, 1891. Serial No. 414,653. (No model.)



Claim.—1. In a machine for automatically weighing tacks, nails, &c., a tack-delivering hopper, combined with a tack-receiving pan and a weight for holding said pan in position to retain the tacks until overcome by the weight of the tacks deposited therein, and a discharging-weight to assist in retaining the tack-receiving pan in its abnormal position to discharge the tacks, substantially as described.

2. In a machine for automatically weighing tacks, nails, &c., a laterally-vibrating tack-delivering hopper, and means to vibrate it, combined with a tack-receiving pan having an open delivery end, and a weight for holding said pan in position to retain the tacks until overcome by the weight of the tacks deposited therein, substantially as described.

3. In a machine for automatically weighing tacks, nails, &c., a tack-delivering hopper, a gate therefor, combined with a tack-receiving pan and a weight for holding the said pan in position to retain the tacks until overcome by the weight of the tacks deposited therein, and a discharging-weight to assist in retaining the tack-receiving pan in its abnormal position, substantially as described.

4. In a machine for automatically weighing tacks, nails, &c., a tack-delivering hopper and an automatically-closed gate therefor, combined with a tilting tack-receiving pan having an open delivery end and a weight for holding said pan in position to retain the tacks until overcome by the weight of the tacks deposited therein, and connections between said pan and gate to maintain the latter open when the pan is in normal position, substantially as described.

5. In a machine for automatically weighing tacks, nails, &c., a vibrating hopper, combined with a tilting weighing-pan having an open delivery end, its pivoted supporting-beam, and a discharging-weight movable between its pivot and the pan, substantially as described.

6. In a machine for automatically weighing tacks, nails, &c., a vibrating hopper, combined with a weighing-pan which receives the articles from said hopper, a pivoted pan-support beam, a weight adjustable thereon, and a discharging-weight or equivalent device moved in one direction by the weight of the contents of the pan and in the opposite direction by the weight on the beam, substantially as described.

7. In a machine for automatically weighing tacks, nails, &c., a vibrating hopper, a gate therefor, combined with a tilting weighing-pan, and connections between said gate and pan, whereby the latter is adapted to operate the former, substantially as described.

8. In a machine for automatically weighing tacks, nails, &c., a vibrating hopper, a gate for said hopper, combined with a weighing-pan which receives the articles from said hopper, a pivoted pan-supporting beam, a weight adjustable thereon, and a discharging-weight or equivalent device moved in one direction by the weight of the contents of the pan and in the opposite direction by the weight on the beam, substantially as described.

9. In a machine for automatically weighing tacks, nails, &c., a hopper consisting of two movable tack-receivers, one arranged to receive tacks from the other, combined with a tack-receiving pan, and means for holding it in its normal position until a certain quantity of tacks have been deposited therein, substantially as described.

10. In a machine for automatically weighing tacks, nails, &c., the hopper consisting of two pivoted tack-receivers, the axes of the pivots being at right angles with relation to each other, and means for moving said receivers on their pivots, combined with a tack-receiving pan, and means for holding it in its normal position until a certain quantity of tacks have been deposited therein, substantially as described.

11. In a machine for automatically weighing tacks, nails, &c., a hopper consisting of two vibrating receivers, one arranged to receive tacks from the other, and a spreader contained in the second receiver, combined with a tack-receiving pan, and means for holding it in its normal position until overbalanced by the weight of the tacks contained in said pan, substantially as described.

12. In a machine for automatically weighing tacks, nails, &c., a hopper, and a gate for it, combined with a tack-receiving pan, a pivoted beam supporting it, a weight adjustably arranged on said beam, a discharging-weight, as i, and a trough arranged on said beam containing said discharging-weight, substantially as described.

13. In a machine for automatically weighing tacks, nails, &c., a vibrating hopper, an automatically-movable gate, and an automatically-movable tack-receiving pan and a freely-movable discharging-weight for said pan, combined with a delivery-chute contracted at its end, and the pan h, substantially as described.

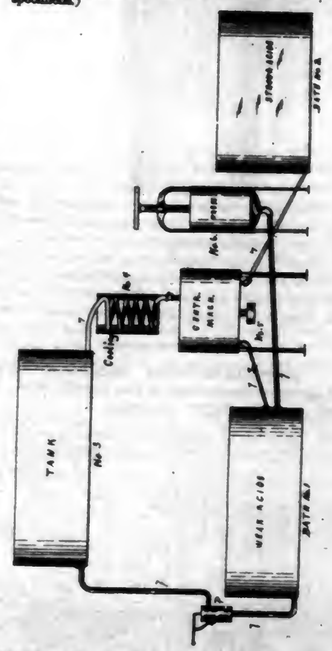
14. In a machine for automatically weighing tacks, nails, &c., a vibrating hopper, a gate therefor, and means to automatically close said gate, combined with an automatically-movable tack-receiving pan having an open delivery end and which controls the opening of said gate, and a delivery-chute, substantially as described.

15. In a machine for automatically weighing tacks, nails, &c., a tack-delivering hopper, combined with a pivoted beam having a yoke at one end, a tack-receiving pan having an open delivery end and pivoted to said yoke and provided with a limiting-stop, as shown, a weight, as f^4, adjustably arranged on said beam, and a discharging-weight carried by said beam and movable between its pivot and the pan, substantially as described.

16. In a machine for automatically weighing tacks, nails, &c., a tack-delivering hopper, a substantially vertical exit therefor, and a gate controlling the said exit and pivotally connected to said hopper and normally occupying a position beneath said hopper, or substantially so, to open the exit, and when ascending to move upwardly across the edge of and to close said exit, substantially as described.

17. In a machine for automatically weighing tacks, nails, &c., a vibrating hopper, a gate therefor, and operative mechanism for said gate having as a component part of it a loosely-connected link, whereby the gate may be moved unrestrained by the vibrating hopper, substantially as described.

474,778. PROCESS OF MAKING NITRO-CELLULOSE. HUDSON MAXIM, New York, N. Y., assignor to the Columbia Powder Manufacturing Company, same place. Filed May 14, 1891. Serial No. 392,701. (No specimens.)



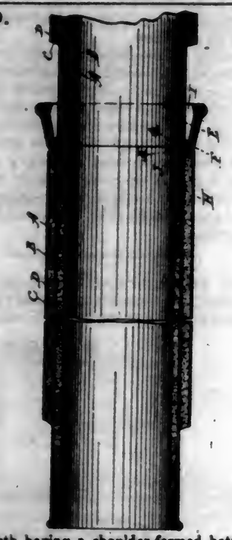
Claim.—1. The improvement in the manufacture of pyroxyline, which consists in converting cellulose into a lower nitro compound in a bath of comparatively weak acids mixture, then expressing or removing the excess of the acids from the material and converting the material into a higher nitro compound in a bath of a stronger acids mixture, then withdrawing the materials from the second bath and washing the adherent strong acids therefrom into the first bath by passing the weaker acids mixture through it and back into the bath, substantially as described.

2. In the manufacture of pyroxyline, the process of first converting the cellulose into a lower nitro compound, such as dinitro-cellulose, in a preliminary bath of suitable acids, then removing the excess of acids from the cellulose material by suitable mechanical means, then washing out the balance of acids with water, then drying the cellulose material, and immersing it in a stronger bath of acids of a strength and character suitable to convert it into trinitro-cellulose or pyroxyline, substantially as described.

474,779. BELL-AND-SPIGOT JOINT FOR CEMENT-LINED PIPES. EDWARD R. PHIPPS, New Haven, assignor to the Connecticut Pipe Manufacturing Company, West Haven, Conn. Filed July 6, 1891. Serial No. 398,452. (No model.)

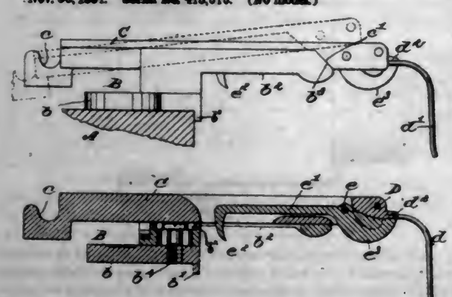
Claim.—In a cement-lined pipe, the combination, with a pipe-shell, of a spigot member comprising a ring the exterior surface whereof is adapted to fit closely within one end of said shell and two beads respectively located upon the outer and inner faces of said ring at the outer edge thereof, another pipe-shell, a bell member comprising a ring the exterior surface whereof is adapted to fit closely within the said

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shell, a flaring mouth having a shoulder formed between it and the said ring and an inwardly-projecting bead located at the base of said mouth, and coatings of cement enveloping the exterior surface of the said shells, that on the shell containing the bell member abutting against the shoulder thereof and that on the shell containing the spigot member being constructed to give clearance to the mouth of the bell when the two spigot members are brought together, substantially as described.

474,780. WEFT FORK OR FEELER. RICHARD RIGBY, Fall River, assignor of one-half to George Draper & Sons, Hopedale, Mass. Filed Nov. 30, 1891. Serial No. 413,616. (No model.)



Brief.—An incline on the slide-bar abuts an incline on the stand, whereby when the shuttle accidentally strikes the bar the bar is thrown up and avoids smashing of parts. The weft-fork is also made in two parts, the tine-carrying part being separately pivoted from the hammer-engaging part.

Claim.—1. A weft-fork composed of a stand, a slide-bar resting upon the top of and movable longitudinally thereon, a lever pivoted on said bar and having a hook, and a tine-carrying head pivoted independently of and beyond the said lever and having a toe or projection to engage and turn the said lever, substantially as described.

2. A stand having a beveled or inclined end or surface, combined with a slide-bar movable on said stand and having a beveled or inclined surface adjacent to the beveled end of the stand and on which it normally rests, substantially as described.

3. The slide-bar provided with a fork and the flanged foot of the stand, combined with a slotted arm carrying the slide-bar and mounted adjustably on the said foot, and a screw in said slot to hold the arm in adjusted position, substantially as described.

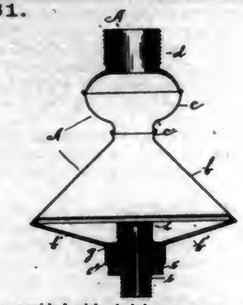
474,781. GAS-MIXER. JAMES G. STEPHENS and HARRY W. HOLMES, Pittsburg, Pa., assignors to the Welsbach Incandescent Gas Light Company, Gloucester City, N. J. Filed Mar. 14, 1891. Serial No. 385,128. (No model.)

Claim.—1. A gas-mixer comprising a receiving-chamber having the base-plate provided with air inlets or ports and a socket adapted for connection with a gas-supply pipe, an expanding-chamber communicating with the receiving-chamber by a contracted passage or neck and provided with a nipple adapted for the reception of a burner, a thimble extending into said receiving-chamber and connected with said socket, and a perforated diaphragm in said thimble, substantially as and for the purposes set forth.

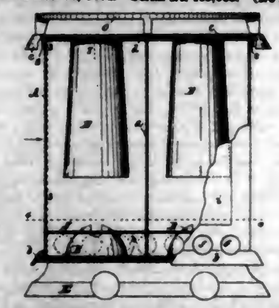
2. A gas-mixer comprising a receiving-chamber having the base-plate provided with air inlets or ports and a socket, an expanding-chamber communicating with the receiving-chamber by a contracted passage or neck and adapted for connection with a burner, a thimble extending into said receiving-chamber and adjustably connected with the upper portion of said socket, a perforated diaphragm in said thimble, and a nipple connected with the lower portion of said socket and adapted for insertion into the arm of a gas bracket or fixture, substantially as and for the purposes set forth.

3. A gas-mixer comprising a receiving-chamber having the base-plate thereof provided with air inlets or ports and an internally-tapped socket, an expanding-chamber communicating with the receiving-chamber by a contracted passage or neck and provided with an externally-threaded nipple adapted for the reception of a burner, an externally-threaded thimble extending into said receiving-chamber and engaging in the upper portion of said socket to permit of the adjustment of the point of discharge of said thimble toward and away from the center of the receiving-chamber, a perforated diaphragm in said thimble, and an externally-threaded nipple secured into the lower portion of said socket and adapted for insertion into the gas-pipe of a bracket or gas-fixture, substantially as and for the purposes set forth.

474,781.



474,782. DRUM AND CHIMNEY FOR OIL-STOVES. JOHN M. STOUGH, Canandaigua, N. Y., assignor of one-half to Charles B. Hill, same place. Filed Dec. 14, 1891. Serial No. 415,005. (No model.)



Claim.—In combination with the cones of a stove, a drum formed with side walls and air-tight top and bottom plates, and an imperforate vertical partition and pendent chimneys within the drum over the cones, the drum being further formed with a horizontal partition or floor near the tips of the cones, with openings over the latter forming air-passages around the tips of the cones and draft-openings through the sides of the drum beneath said horizontal partition, substantially as shown and described.

474,788. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed May 7, 1891. Serial No. 391,903. (No model.)

Claim.—1. The combination, in the same escutcheon or case, of two key-plugs or roll-backs, each controlled by independent tumbler mechanism and each independently operating a lock-bolt or latch, substantially as described.

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2. The combination, in the same escutcheon or case, of two key-plugs or roll-backs, each controlled by independent tumbler mechanism and each detachably connected with the bolt or latch actuating mechanism, substantially as described.

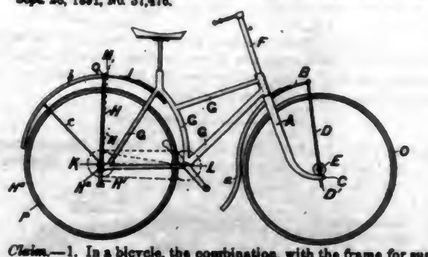
3. In a lock, the combination of two key-plugs or roll-backs with a cam-cylinder, either one of which when revolved by the key will engage with said cam-cylinder independently of the other, substantially as described.

4. In a tumbler escutcheon or case, the combination of a plug or roll-back, a bolt or latch operating mechanism, and a guide or stop which prevents the rotation of said key-plug after it has been released by the insertion of a key until it is moved endwise sufficiently to engage with the bolt or latch actuating mechanism, substantially as set forth.

5. In a lock, the combination of a longitudinally movable and revoluble plug or roll-back, bolt or latch actuating mechanism, a gear upon the plug and latch actuating mechanism, respectively, and a pin upon the plug, whereby the rotation of the plug will cause the operation of the bolt or latch operating mechanism when the former by its longitudinal movement is brought into engagement therewith, substantially as set forth.

6. A tumbler-case or escutcheon provided with a single bolt or latch operating arm or cam, and a series of plugs or roll-backs which may be brought into operative engagement with said arm or cam, substantially as described.

474,784. BICYCLE. THOMAS J. THOMPSON, Greystones, Ireland, assignor to Rose Thompson, Port Arthur, Canada. Filed Oct. 21, 1891. Serial No. 409,429. (No model.) Patented in England Aug. 19, 1890, No. 12,966; in Germany Oct. 19, 1890, No. 58,226; in France Oct. 21, 1890, No. 206,880; in Belgium Oct. 22, 1890, No. 92,838, and in Canada Sept. 26, 1891, No. 37,476.



Claim.—1. In a bicycle, the combination, with the frame for supporting the seat and the treadle-axle, of a fork for the rear wheel, having its lower ends sliding in guides on the frame, and a spring projecting upwardly and rearwardly from the frame and having its free end pivoted to the upper end of the said fork, substantially as set forth.

2. In a bicycle, the combination, with the frame for supporting the seat and the treadle-axle, of a fork for the rear wheel, having its lower ends curved concentric with the treadle-axle and sliding in guides on the frame, and a spring projecting upwardly and rearwardly from the frame and having its free end pivoted to the upper end of the said fork, substantially as set forth.

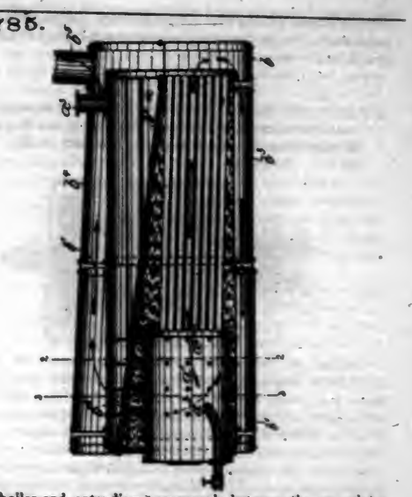
3. The combination, with the ends C of the steering-fork, of the ends D' of the fork D, sliding through holes in the said ends C, packing-rings encircling the ends D', and screw-threaded nuts for compressing the said rings in chambers in the ends C and causing them to bear against the ends D', substantially as and for the purpose set forth.

4. The combination, with the frame G of the spring I, secured thereto, the fork secured to the said spring and provided with ends H', the guides pivoted to the said frame for the ends H' to slide in, and the rear wheel of the bicycle journaled between the said fork and sliding with it, substantially as and for the purpose set forth.

474,785. STEAM-BOILER. JOHN J. TOBIN, Philadelphia, Pa., assignor to William G. Warden, same place. Filed Oct. 3, 1891. Serial No. 406,999. (No model.)

Claim.—1. In combination, an internally-fired tubular boiler, an exterior casing or mounting surrounding the side walls and rear end plate of the boiler, and a partition in alignment with the normal water-

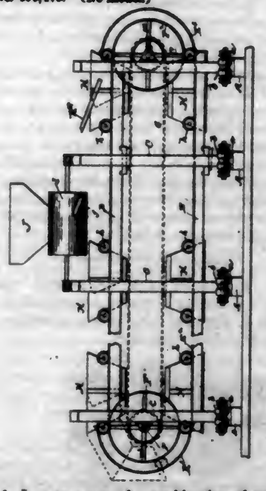
474,785.



line in the boiler and extending transversely between the rear plates and side walls of the boiler and casing to a point near the front of the boiler to form two flues communicating at or near the front of the boiler and connected, respectively, at the rear of the boiler to the fire-tubes and offtake, substantially as and for the purposes set forth.

2. In combination, an internally-fired tubular boiler, an external casing or mounting surrounding the side walls and end plate of the boiler, and a partition in alignment with the normal water-line and ranging transversely between the side walls and end plates of the boiler and casing to a point near the front of the boiler to form two communicating flues, and the axis of said casing disposed parallel with but above the axis of the boiler to equalize the cross-sectional area of said flues, substantially as and for the purposes set forth.

474,786. CONVEYER. JOSIAH H. L. TUNE, San Francisco, assignor of one-half to E. H. Tucker, Stockton, Cal. Filed Sept. 22, 1891. Serial No. 406,472. (No model.)



Claim.—1. In a conveyer, the combination of uprights or standards on which the cars are supported, transversely-movable timbers to which the bottoms of said uprights are secured, a portable beam on which said timbers rest, rollers which are carried by said timbers, a rack supported upon the beams, and a lever pivoted to the timbers, carrying a ratchet and pawl for engagement with the rack, substantially as and for the purpose set forth.

2. In a conveyer, the combination of uprights or supports, an upper track secured thereon, wheels or pulleys projecting beyond the ends of the frame or supports and having their peripheries coinciding with the upper track, and a lower track held in said supports below said pulleys and having extensions or guards surrounding the projecting

portions of said pulleys, with a space between said pulleys and guards, and a series of hinged traveling buckets or cars having wheels thereon, as and for the purpose set forth.

474,787. ELECTRIC MACHINE. HERBERT A. WAGNER and FERDINAND SCHWEDTMANN, St. Louis, Mo., assignors to the Wagner Electric Manufacturing Company, same place. Filed May 15, 1891. Serial No. 392,531. (No model.)



Claim.—1. The combination, in a magneto-electrical machine, of a cylindrical field-magnet, an armature surrounded thereby, and cap-pieces supporting said armature and its shaft from said cylindrical field-magnet and with said field-magnet completely incasing said armature, one of said cap-pieces being provided with sockets containing longitudinally-movable commutator rods or brushes, a commutator upon which said brushes bear in a plane at right angles to the axis of the armature, spiral springs carried by the latter-mentioned cap-pieces for holding said commutator-brushes against the segments of the commutator, and binding-screws, also carried by said cap-pieces, bearing against said spiral springs for adjusting the commutator-rods against the commutator-segments and forming the terminal connections of the armature-coils.

2. In a magneto-electric machine, the combination of an armature, a cylindrical field-magnet surrounding same, cap-pieces at the ends of said armature for supporting the armature-shaft from the field-magnet, socket-pieces formed in one of said caps, an insulating-tube in each of said sockets, a tube of conducting material incased by each of said insulating-tubes and extending at one end slightly beyond the same, a brush or rod of carbon or other conducting material free to move longitudinally in each of said conducting-tubes, spiral springs contained in said conducting-tubes, bearing at one end upon said carbon rod, blind-nuts carried by the extended end of said conducting-tubes and bearing upon the other end of the said spiral springs, forming thereby an adjustment for the tension of the aforementioned springs, whereby the force of the brush against the commutator may be adjusted, and washers placed between said blind-nuts and said insulating-tubes and adapted to grasp between them and the said blind-nuts the conducting-wires.

3. A magneto-electrical machine comprising a cylindrical field-magnet, longitudinal cut-away places therein for the field-coils, that part of the field-coils which ordinarily passes over the ends of the armature being bent to one side of the armature and lying in a plane at right angles to the armature-shaft, and cap-pieces forming bearings for said armature-shaft at each side thereof and secured to the cylindrical field-magnet and together therewith completely incasing the said armature, whereby upon removing one of the cap-pieces the armature may be withdrawn longitudinally from the cylindrical field-magnet without disturbing the field-coils.

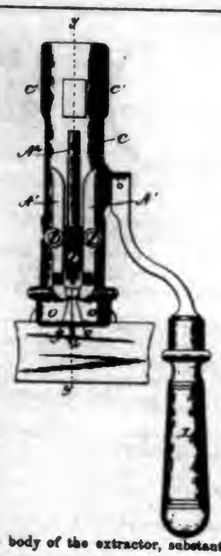
474,788. DEVICE FOR EXTRACTING CORKS. SAMUEL D. WEBB, Washington, D. C., assignor of nineteen twenty-fourths to Andrew R. Webb, Martin V. Webb, and P. A. Darnaille, same place. Filed Feb. 9, 1892. Serial No. 420,889. (No model.)



Claim.—1. In a cork-extractor, the pivoted spring clamping-jaws adapted to grasp the neck of the bottle, levers pivoted to the main body of the extractor to engage the jaws, and a reciprocating plunger carrying a leg to engage the levers and cause the same to close the clamping-jaws, substantially as described, whereby the neck of the bottle is grasped during the operation of engaging and drawing the cork and released at the completion of the operation, as set forth.

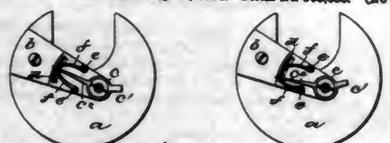
2. In a cork-extractor, the pivoted spring clamping-jaws, the lugs projecting therefrom, the levers pivoted centrally to the main body of the machine and with the lower ends to engage the lugs of the clamping-jaws, and a wedge-shaped lug carried by the plunger through

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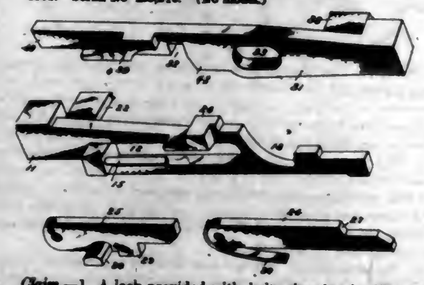
a guide-slot in the main body of the extractor, substantially as and for the purpose set forth.

474,789. WATCH-REGULATOR INDICATOR. WILLIAM A. ALLEN, Hartford, Conn. Filed May 23, 1891. Serial No. 393,536. (No model.)



Claim.—In a watch-regulator, the combination, with the regulator-arm and its indicating-scale, of two auxiliary pointers pivoted one on each side of said arm, and between the fulcrum of said arm and the said scale, substantially as described.

474,790. LOCK. CHARLES A. BERRY, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Feb. 29, 1892. Serial No. 423,219. (No model.)



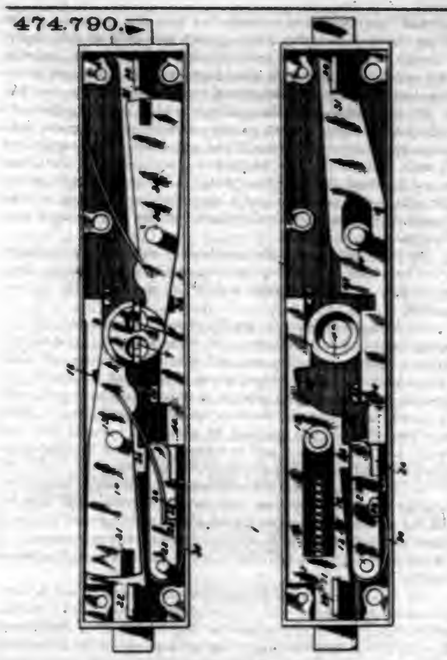
Claim.—1. A lock provided with bolts shooting in different directions, each actuated by a separate key, the locking mechanism of one bolt acting also to dog the other, substantially as set forth.

2. In a lock, the combination, with two different keys, of two bolts each adapted to be retracted by its proper key and both adapted to be cast by only one of said keys, substantially as described.

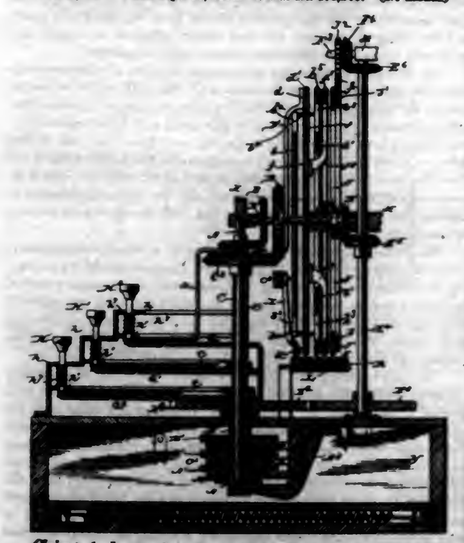
3. In a lock, the combination of two bolts, and a primary and a secondary dog, whereby when one bolt has been retracted and caught by the primary dog the retraction of the other bolt disengages the primary dog from the bolt and forces the secondary dog in its place, substantially as described.

4. In a lock, the combination of two bolts with a primary and secondary dog, one of the bolts being adapted to engage with the dogs and the other being provided with a tail-piece adapted to shift the position of the primary and secondary dogs and lock the secondary dog in place, so as to prevent the casting of the dogged bolt before the other, substantially as set forth.

474,790.



474,791. CASH REGISTER, INDICATOR, AND RECORDER. CHAS. F. BROWN, Yonkers, N. Y., assignor to the Royal Machine Company, same place. Filed Sept. 18, 1891. Serial No. 406,205. (No model.)



Claim.—1. In a cash-register, the combination of an indicating-dial having type characters on its perimeter and a dial beside the indicating-dial, having a series of time-indicating type characters on its periphery operated by clock-work, a sliding drawer, and mechanism controlled by the movement of the drawer adapted to take an impression from one of the type on each dial at each opening and closing of the drawer, substantially as and for the purposes set forth.

2. In a cash-register, the combination of a revoluble dial having type attached to its periphery and a sliding drawer below the same with a movable platen lying between the drawer and edge of dial and having depending fingers adapted to engage lugs on the drawer and be operated thereby during the movement of the drawer, substantially as described.

3. In a cash-register, the combination of a pair of independently-revoluble dials mounted on a common shaft, having type characters attached to their peripheries, and means for independently operating said dials, a platen lying below said dials, a record-strip, and means for feeding said strip between the dials and platen, a sliding drawer below the platen, and beveled lugs and fingers respectively connected to the platen and drawer for operating said platen to produce an impression on the strip from the type on the dials when the drawer is moved, substantially as set forth.

4. The combination of a revoluble dial having type time characters attached to its periphery, a sliding drawer, a platen underlying said dial, and the beveled finger and lug for moving said platen toward the adjoining type on the dial when the drawer moves in one direction with means for feeding a record-strip between the dial and platen, substantially as described.

5. In a cash-register, the combination of an indicating-dial and a time-dial having type characters attached to their peripheries, and a sliding drawer, and a platen having a finger depending into the drawer, and a lug on the drawer engaging said finger, whereby the platen is operated by the movement of said drawer to take an impression from the proper type on the said dials, substantially as and for the purpose described.

6. The combination, in a cash-register, of a revoluble dial having type characters on its face, clock-work for revolving said dial, a sliding drawer, a latch therefor, a platen underlying said dial and operated by the movement of said drawer, a record-strip, and an inking-ribbon, and means operated by the movement of the latch for feeding the record-strip between the dial and platen at each opening or closing of the drawer, substantially as described.

7. In a cash-register, the combination of a revoluble indicating-dial with a tire connected to said dial by spokes and revoluble therewith, having on its periphery type characters corresponding to those on the dial, substantially as set forth.

8. In a cash-register, the combination of a revoluble indicating-dial with a tire connected to said dial by spokes and revoluble therewith, having on its periphery type characters corresponding to those on the dial, and mechanism for taking an impression from the type on said tire upon a record-strip at each opening or closing of the drawer, substantially as described.

9. In a cash-register, the combination of a dial having type characters on its periphery, a second indicating-dial, a tire attached to the second dial by spoke-arms and having type characters on its periphery corresponding to the indicating characters on the second dial, means for independently revolving said dials, and means for printing on a record from the type on said dial and tire, substantially as described.

10. The combination of an indicating-dial having type characters on its periphery corresponding to the indicating characters on its face, a smaller dial having indicating characters on its face, and a tire corresponding in diameter to the first dial connected to the second dial and having type characters on its perimeter corresponding to the characters on the small dial, both said dials being mounted on a common shaft, with a sliding drawer, a platen operated from said drawer, and inking-ribbon and record-strip feeding devices, substantially as and for the purpose specified.

11. The combination of a large indicating-dial having type characters on its periphery, a small indicating-dial, a tire attached thereto having type characters on its periphery, and a time-dial having type characters on its periphery, a record-strip, and means, substantially as described, for independently operating said dials and for taking a record from the type characters thereof upon the strip, substantially as described.

12. In a cash-register, the combination of a revoluble dial mounted on a horizontal shaft and having type characters on its periphery, a horizontally-sliding drawer below the dial, a pivoted platen-strip lying between said dial and drawer and having a depending beveled finger on its end adapted to engage a lug on the side of the drawer and be raised thereby as the drawer slides, and means for feeding a record-strip and ink-ribbon between the disk and platen, substantially as described.

13. The combination, in a cash-register, of a sliding drawer, a record-strip-feeding device, and pivoted sector having type characters on its periphery, a rod directly connecting this segment to a movable finger-piece projecting through the casing of the machine and adapted to be shifted by hand, and means for taking an impression from the type on the sector after it is shifted upon a record-strip during the opening or closing of the drawer, substantially as set forth.

14. The combination, in a cash-register, of a dial having type on its periphery and a sector pivoted beside the dial having type characters on its periphery and means for automatically revolving said dial and the pull-rod and finger-piece for shifting said sector with a sliding drawer, a record-strip-feeding mechanism, and means for taking an impression from the type on said dial and sector upon a record-strip during the opening or closing of the drawer, substantially as and for the purpose specified.

15. The combination, with a rotatable dial-plate, a vertical shaft, means for rotating the same, gearing between said shaft and dial, and an arm attached to said shaft, of a sliding drawer, a latch-bar for locking the same, a pivoted lever underlying said arm and adapted to engage said arm and hold the parts normally locked and to lift the latch-bar and release the drawer when depressed, and a key-stem adapted to depress said lever, substantially as described.

16. In a cash-register, the combination of the drawer, a latch-bar for locking the same, and a series of rows of key-stems with curved pivoted levers, each underlying a row of said key-stems and having their ends so arranged that they will independently lift the latch-bar when a key in the corresponding row is depressed, substantially as specified.

17. The combination of the rotatable dial, the rotatable shaft geared thereto, having a radially-projecting arm, the pivoted key-lever underlying said arm and adapted to normally lock the same, and the key-stems for operating said lever with the drawer and the latch-bar operated by said lever, the gear on the lower end of said shaft, and the rack-bar engaging said gear operated by the drawer, substantially as described.

18. The combination of the rotatable dial-plate having type characters secured to its periphery, a revoluble shaft and gearing for operating said dial, and an arm on said shaft with a pivoted lever underlying said arm adapted to engage said arm and hold the parts normally locked, and mechanism, substantially as described, for taking an impression from the type on the dial upon a record-strip, substantially as set forth.

19. In a cash-register, the combination of a rotatable dial, a shaft and gearing for operating the same, a gear on the lower end of said shaft, a sliding rack engaging the gear and adapted to turn the shaft in one direction when shifted, a movable drawer, and a stud therein adapted to engage and move said rack, and a spring for turning the shaft in the opposite direction when the rack is released, substantially as set forth.

20. In a cash-register, the combination of the indicating devices and the shaft for operating the same, the gear on the lower end of said shaft, and a sliding rack engaging said gear with a sliding drawer and a pivoted or yielding stud therein adapted to engage said rack and move it as the drawer moves in one direction, substantially as specified.

21. In a cash-register, the combination, with the indicating devices and a shaft for operating the same, having a gear on its lower end within the drawer-space, and a sliding rack engaging said gear, of the sliding drawer, the stud adapted to engage said rack and move it in one direction during either the opening or closing of the drawer, and the spring for revolving the shaft and gear in the opposite direction when the stud disengages the rack, substantially as specified.

22. In a cash-register, the combination of a rotatable dial-plate, a vertical shaft geared thereto, a second vertical shaft or sleeve depending into the drawer-space, having a gear upon its upper end meshing with a pinion on the first shaft, and mechanism for independently and positively rotating the shaft and sleeve during either the opening or closing of the drawer, and springs for rotating the shaft and sleeve in the opposite direction during the reverse movement of the drawer, substantially as described.

23. In a cash-registering machine, the combination of a rotatable dial-plate, a vertical shaft geared thereto, a second vertical shaft or sleeve depending into the drawer-space, having a gear on its upper end meshing with a pinion on the first shaft, and mechanism for positively rotating the sleeve during either the opening or closing of the drawer, and springs for rotating the sleeve in the opposite direction during the reverse movement of the drawer, and a registering mechanism operated by gearing from the first-mentioned shaft to calculate the total sales indicated by said dial, substantially as set forth.

24. The combination, with a rotatable dial plate, a revoluble shaft having a radially-projecting arm provided with a pivoted end piece, and gearing between said shaft and dial, of a pivoted lever underlying the end piece of said arm adapted to engage the same and hold the parts normally locked, and a series of key-stems adapted to depress said lever, substantially as described.

25. The combination, in a cash-register, of a rotatable vertical shaft, tube, or sleeve, substantially as described, an indicating-dial geared thereto, and a series of key-stems with a horizontal arm attached to said shaft, tube, or sleeve and projecting radially therefrom and having a pivoted spring-controlled piece attached to its end adapted to contact with the ends of the key-stems, substantially as described.

26. The combination, in a cash-register, of the indicating devices, the shaft for operating the same, having a radially-projecting arm, with a series of key-stems adapted to engage and stop the movement of said arms when depressed, and each having a tongue on its lower end adapted to catch beneath the arm and hold the key down until the arm is moved backward, substantially as described.

27. In a cash-register, the combination, with a sweeping arm and a pivoted lever adapted to normally lock said arm, of a series of slotted key-stems, each having a spring-catch secured in its slot adapted to engage the edge of the guide-opening through which the stem passes and hold the key down when depressed until it is struck by the sweeping arm and forced back into the slot, substantially as specified.

28. In a cash-register, the combination of an indicating-dial and a revoluble shaft geared thereto, having a radially-projecting arm and a pivoted key-lever underlying said arm and adapted to normally lock the same, with the key-stem adapted to depress said lever and release the arm but limit the movement thereof, and the shouldered spring-catch attached to said stem, and a projecting piece adapted to catch beneath the arm and hold the key down until the arm is moved back, all substantially as specified.

29. In a cash-register, the combination, with the longitudinally-slotted key-stem, of the spring-catch secured in the slot, having shoulder H^3 and projecting angular end H^2, all as and for the purpose specified.

30. In a cash-register, the combination of the indicating-dial, having type attached to its periphery, the revoluble shaft geared thereto, having a radially-projecting arm, and means for rotating said shaft, a pivoted key-lever underlying said arm and adapted to normally lock the same, and the key-stem adapted to depress said lever with a sliding drawer, a latch-bar for the same operated by said lever, a platen underlying said dial and operated by mechanism actuated from said drawer, and a record-strip and an inking-ribbon feed mechanism operated by said latch-bar, substantially as described.

31. In a cash-register, the combination of the sliding drawer, the latch-bar therefor, a key-lever, and stem for operating said latch-bar with the type-bearing devices, the ink-ribbon reels operated by spring-fingers attached to said latch-bar, and a record-strip reel operated by a finger attached to the latch-bar, and a platen, substantially as herein specified.

32. In a cash-register, the combination of a drawer and its vertically-movable latch-bar with ribbon-spools mounted above the bar, ratchets attached to said spools, the dogs mounted on spring-arms attached to said latch-bar, and a rod and connections for shifting the dogs, all constructed and arranged to operate substantially as described.

33. In a cash-register, the combination of a pair of independently-revoluble dials mounted on the same shaft, the shaft and tube geared to said dials, respectively, for independently revolving the same, and the spring-controlled gears mounted on the lower end of said shaft and tube, respectively, the independent sliding rack engaging said gears, and the sliding drawer and the stud therein adapted to engage and move said racks in one direction, substantially as specified.

34. In a cash register, the combination of a pair of independently-revoluble dials mounted on the same shaft, the shaft and tube geared thereto for independently revolving the same, and the spring-controlled gears mounted on the lower end of said shaft and tube, respectively, the independent sliding racks engaging said gears, and the sliding drawer and stud therein adapted to engage and move said racks in one direction, the radial arms attached to said shaft and tube, the key-levers underlying and locking said arms, and the key-stems adapted to depress said levers, release the arms, and limit the movement thereof, substantially as described.

35. In a cash-register, the combination of a pair of independently-revoluble dials mounted on the same shaft, the shaft and tube and gearing for independently revolving said dials, and the spring-controlled gears mounted on the lower ends of said shaft and tube, respectively, the independent sliding racks engaging said gears, means for moving said racks to wind the springs, and the independent registering devices respectively operated from said dials, all substantially as specified.

36. In a cash-register, the combination of the pair of independently-revoluble dials mounted on the same shaft, the shaft and tube geared to said dials for independently revolving the same, and the spring-controlled gears mounted on the lower ends of said shaft and tube, respectively, the independent sliding racks engaging said gears, and the sliding drawer and stud therein adapted to engage and move said racks in one direction, the radial arms attached to said shaft and tube, key-levers underlying and locking said arms, key-stems adapted to depress said levers, the locking device for the drawer operated by said levers, and independent registering devices respectively operated from said dials, substantially as described.

37. In a cash-register, the combination of the dial *b*, keyed to shaft B', the larger dial *f*, loosely mounted on said shaft, the annular dial *b'*, lying opposite dial *b* and connected thereto by spoke-arms, substantially as described, and mechanism for independently revolving dials *b* and *f*, substantially as set forth.

38. In a cash-register, the combination of the shaft B', dial *b*, fixed thereon, larger dial *f*, loosely mounted thereon in rear of dial *b*, the gear D, loosely mounted thereon in front of dial *b*, and a large annular dial *d*, connected to gear D by spoke-arms, substantially as described.

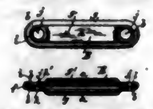
39. In a cash-register, the combination of the shaft B', dial *b*, fixed thereon, larger dial *f*, loosely mounted thereon in rear of dial *b*, the gear D, loosely mounted thereon in front of dial *b*, and a large annular dial *d*, connected to gear D by spoke-arms, and the tires b^4 and f', respectively connected with dials *b* and *f*, all substantially as and for the purpose specified.

40. In a cash-register, the combination, with the indicating-dials and the type attached to their peripheries, and pivoted platen-strips underlying said dials and having fingers on their ends depending into the drawer-space, of the sliding drawer having lugs on its side adapted to engage said fingers and operate said platens, substantially as described.

41. The combination of the indicating-dial, the shaft and gearing for operating the same, the gear on said shaft, and the sliding rack engaging said gear with a sliding drawer, the stud connected thereto adapted to engage said rack during the movement of the drawer in one direction, and the cam arranged to disengage said stud from the rack, substantially as specified.

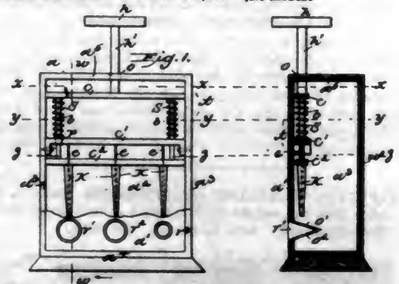
42. The combination of the revoluble dial-plate, a vertical shaft geared thereto, and mechanism for operating said shaft to shift the dial with a horizontal shaft lying above said dial and driven by gearing from said vertical shaft, a sleeve on the front end of said shaft, a ratchet on the inner end of said sleeve engaged by dogs on said horizontal shaft, the indicating-disk fixed to said ratchet, and the train of registering-wheels operated from said sleeve, substantially as and for the purpose described.

474,792. ORNAMENTAL CHAIN LINK OR TIP. EDWIN B. BULLOCK, Attleborough, Mass. Filed Dec. 26, 1891. Serial No. 416,227. (No model.)



Claim.—The improved chain link or tip formed of the two parts *g* and *g'*, provided with the eye-opening *j*, having the raised rim *b*, the part *g* being formed similar to the part *g'* and secured to the said part *g'*, substantially as described.

474,793. CIGAR-PERFORATOR. DAMASO CASTRO, Brooklyn, N. Y. Filed Oct. 30, 1891. Serial No. 410,343. (No model.)

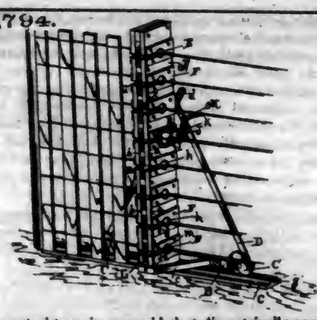


Claim.—The described cigar cutter or perforator for shop use, consisting of the casing or frame *a*, having front receptacles *r*, *r'*, and r^2, of dissimilar capacity, vertical end grooves *g g*, fixed cross-bar *c'*, carrying vertical ejecting-rods *e e e*, springs *s s*, seated upon the fixed cross-bar, and slidable cross-bars *c* and c^2, moving in the grooves *g g*, connected by the rods *b b*, carrying the knives *k k k*, and actuated by the handle *h h'* and by the springs *s s*, as shown and set forth.

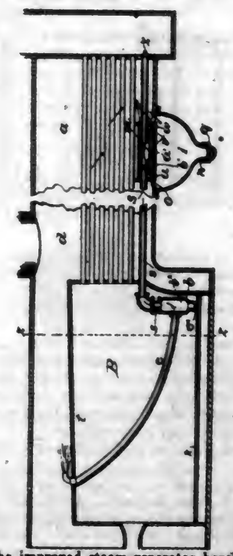
474,794. FENCE-MACHINE. JOSEPH CHAPLIN, North Manchester, Ind., assignor of one-half to William Voght, same place. Filed Nov. 23, 1891. Serial No. 412,798. (No model.)



Claim.—In a fence-machine, substantially as described, the combination, with the uprights having the transverse openings and the radial horizontal slots leading from said openings to their vertical edge, and the bearing-plates attached to the sides of said uprights and having the circular opening, the transversely-disposed radial slot, and the inwardly-extending flange partly surrounding said circular opening, of the peripherally-toothed twisting-wheels meshing with each other and having the transversely-disposed radial slots, and the solid laterally-extending central trunnions provided at diametrically-opposite points with the grooves *w'*, and a suitable means for rotating the said twisting-wheels, substantially as specified.



474,795. STEAM BOILER AND GENERATING APPLIANCE. HENRY HORTON, Dundee, and FRANCIS E. FITCH, Elmira, N. Y.; said Horton assignor to said Fitch. Filed June 4, 1891. Serial No. 395,052. (No model.)



Claim.—1. The improved steam-generator herein described, in which are combined a boiler having a water-leg, a transverse generating-head arranged within the fire-chamber and connecting the side walls thereof, one or more generating-pipes connecting said head and crown-sheet, one or more supply-pipes leading to said head, and a separator connected to said supply pipe or pipes, substantially as described.

2. The improved steam-generator combining therein a generating-head connecting the side walls of the boiler, and a supply-pipe leading from said head through the flue-sheet to the front of the boiler, and one or more generating-pipes leading from said head to the crown-sheet of the fire-chamber, substantially as described.

3. A sediment-separator, in combination with steam-generating appliances providing for upward-reciprocating water-currents, and a supply-pipe extending from the sediment-separator within the boiler to the generator-head and to which the water-currents lead, substantially as described.

4. In generating appliances for steam-boilers, a supply-pipe located within the barrel of the boiler and parallel therewith, the rear end of said pipe passing through the flue-sheet and connecting the water-chamber with the chamber of the generating-head, substantially as described.

5. In generating appliances for steam-boilers, the combination, with the boiler having an opening through the barrel-sheet thereof to the water-chamber, of the supply-pipe within the barrels of the mud-receiver, attached to the boiler over said opening, said supply-pipe having an opening opposite said barrel-opening, substantially as described.

6. In steam-generating appliances and boilers, the combination of the supply-pipe S and a separator located within the chamber of the boiler and connected to said pipe, and a mud-receiver connected to the chamber of the boiler, substantially as described.

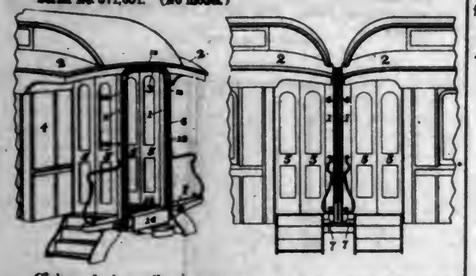
7. The combination, with the supply-pipe having the mouth *m*, of the separator connected thereon and the concave disk connected therein within the boiler-chamber, substantially as described.

8. A sediment-separator provided with a deflecting-disk, a supply-pipe connecting the separator with a generating-head, said disk causing upward reciprocating water-currents which lead to the supply-pipe, substantially as described.

9. The combination, in generating appliances for steam-boilers, of a supply-pipe located within the boiler, said pipe connecting the water-chamber, the boiler, and the generating-head, substantially as specified.

10. The combination, with the supply-pipe having the opening *m*, of the separator covering said opening, the concave disk below said opening to the supply-pipe, and the opening to the separator covered by said disk and opening into the mud-receiver, substantially as described.

474,796. VESTIBULE CONNECTION FOR CARS. ARTHUR M. KITTREDGE and JOHN KIRBY, Jr., Dayton, Ohio. Filed Nov. 17, 1890. Serial No. 371,651. (No model.)



Claim.—1. In a railway-car having a vestibule upon the platform, an inherently-elastic extension always projecting beyond the outer end of the vestibule adapted, when two such vestibule-cars are coupled together, to produce a practically close connection under all conditions of a moving train.

2. In a railway-car, the combination, with a vestibule on the platform of the car, of an inherently-elastic extension, said extension always projecting beyond the outer end of the vestibule, and a spring-actuated buffer, whereby when two such vestibule-cars are coupled together a practically close connection between the vestibules will be maintained while the cars are in motion.

3. In a railway-car, the combination, with a vestibule on the platform of the car, of an inherently-elastic extension, said extension always projecting beyond the outer end of the vestibule, a spring-actuated buffer, and a foot-plate, whereby when two such vestibule-cars are coupled together and in motion the spaces between them will be kept practically closed.

4. In a railway-car, the combination, with a vestibule on the platform of the car, of an inherently-elastic tubular extension projecting beyond the outer end of the vestibule adapted, when two such vestibule cars are coupled together and in motion, to preserve a practically close connection between the vestibules.

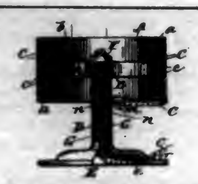
5. In a railway-car, the combination, with a vestibule on the platform of the car, of an inherently-elastic tubular extension, a metal strip within the extension, and screws or other fastening devices passed through the strip and extension for securing the latter to the outer end of the vestibule.

6. In a railway-car, the combination, with a vestibule on the platform of the car, of an inherently-elastic tubular extension provided with interior elastic strengthening-webs, said extension projecting forward of the outer end of the vestibule.

7. In a railway-car, the combination, with a vestibule on the platform of the car, of an inherently-elastic tubular extension having integral interior strengthening-webs, said extension projecting forward of the outer end of the vestibule.

8. In a railway-car, the combination, with a vestibule on the platform of the car, of a tubular rubber extension having interior rubber strengthening-webs, a metal strip within the extension, and screws or other fastening devices passed through the strip and extension for securing the latter to the outer end of the vestibule.

474,797. ELECTRICAL HEATER. WILLIS MITCHELL, Malden, assignor to the Butterfield-Mitchell Electric Heating Company, Boston, Mass. Filed Dec. 14, 1891. Serial No. 414,960. (No model.)

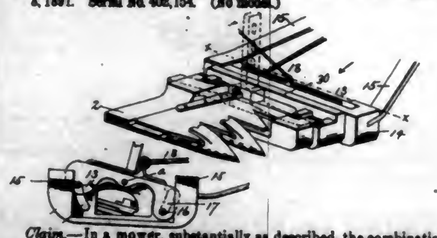


Claim.—1. In combination with a tubular electric heater having a spider within it, a stand connected detachably to the said spider, substantially as set forth.

2. In combination with an electric heater, a stand provided with a tubular standard which supports the said heater, an arm or arms to which the said heater is attached, and a base having openings, the wire of said heater passing through the said standard and base, substantially as set forth.

3. In combination with a base having openings, as described, a tubular standard detachably secured thereto, a spacing-sleeve arranged outside of the said standard on the said base, a nut turning on the upper threaded end of said standard, a spider clamped on said standard between the said nut and the said sleeve, and a tubular electric heater surrounding and attached to the said standard, substantially as set forth.

474,798. MOWER. KNUT S. NYGAARD, Kelly's, N. D. Filed Aug. 3, 1891. Serial No. 402,154. (No model.)



Claim.—In a mower, substantially as described, the combination, with the main frame, the shoe 14, having the curvilinear slots 17 in its side wall, and the bracket-arms 15, pivotally connected to the main frame, and a suitable means for raising and lowering said shoe, of the rock-lever 13, fulcrumed at its middle on a bolt *a*, extending through the side wall of the shoe, the rock-lever 30, also fulcrumed at its middle upon the bolt *a*, the transverse bolts 16, taking through the curvilinear slots of the shoe and connecting the rock-levers 13 and 30, and the finger-bar connected to the shoe 30, substantially as and for the purpose set forth.

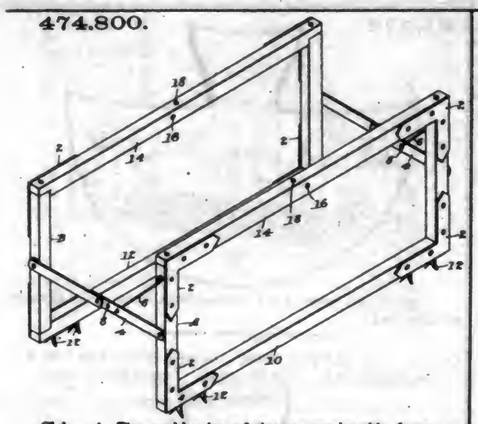
474,799. CONDENSER FOR COTTON-GINS. DAVID A. SAILOR, Little Rock, Ark., assignor to the Dudley E. Jones Company, same place. Filed Apr. 30, 1891. Serial No. 391,060. (No model.)



Claim.—The combination of a chamber and means for discharging lint-cotton therein, an endless screen-conveyer in the said chamber and shafts or rollers for supporting this conveyer, sprocket-wheels on these shafts, and a sprocket-chain connecting the respective sprocket-wheels, said sprocket-chains being connected to the edges of the said screen-conveyer, substantially as and for the purpose described.

474,800. SHINGLE-BASKET. LUDWIG THOMSEN, St. Paul, Minn., assignor of one-half to Gustav Hougard, same place. Filed June 6, 1891. Serial No. 395,495. (No model.)

474,800.



Claim.—1. The combination of the rectangular side frames arranged side by side and flexibly connected together, and spurs or teeth upon their lower bars, substantially as and for the purposes set forth.

2. The combination of the rectangular frame-pieces A and B, having the jointed end connections 4 and the teeth 12, substantially as and for the purposes set forth.

3. The combination of the rectangular side frames, having a jointed end connection, teeth upon the bottom of the frames, and means for adjusting the frames at an angle with each other, substantially as and for the purposes set forth.

4. The combination of the frames A and B, having the flexible connection 4, the adjustable brace-rods 6, and the teeth 12, substantially as and for the purposes set forth.

5. The combination of the frame-pieces A and B, having the teeth 12, the jointed-link connection 4, the adjustable braces 6, engaging said links, the holes 16 and 18 in the upper bars of the frame, and the pins 20, adapted to be inserted into said holes to hold the frames at substantially a right angle with each other, substantially as and for the purposes set forth.

DESIGNS.

21,519. SPOON. BENAGH S. JOSSELYN, Denver, Colo. Filed Mar. 28, 1892. Serial No. 426,836. Term of patent 3½ years.



Claim.—The design for a spoon, herein shown and described.

21,520. COOKING-STOVE. FRANCIS RITCHIE, Troy, N. Y., assignor to Isaac A. Sheppard, Franklin L. Sheppard, and Howard R. Sheppard, Philadelphia, Pa. Filed Apr. 4, 1892. Serial No. 427,752. Term of patent 14 years.



Claim.—1. In the design for a cooking-stove, the base, as herein described, and as shown in the accompanying drawing.

2. In the design for a cooking-stove, the oven-door, as herein described, and as shown in the accompanying drawing.

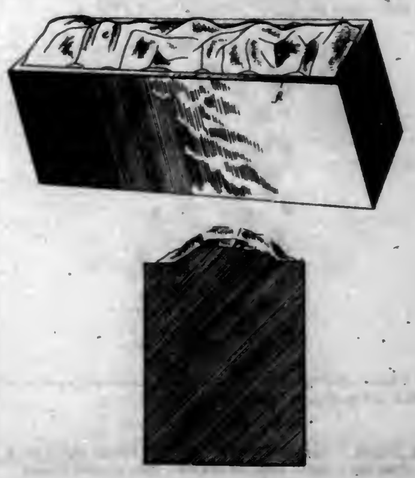
3. The design for a cooking-stove, as herein described, and shown in the accompanying drawing.

21,521. LAMP-BURNER. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Feb. 8, 1892. Serial No. 420,793. Term of patent 14 years.



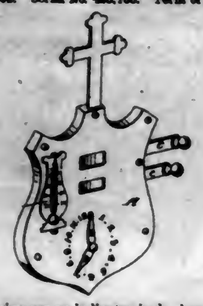
Claim.—The design for a lamp-burner, herein shown and described, the same comprising a low convex cone, a burner-gallery from which the larger lower end of the said cone rises at a point well within its edge, a convex band located below the said gallery and extending at its larger upper end beyond the lines of the lower end of the cone, and a concave band located below the said convex band, as set forth.

21,522. BUILDING-BLOCK. EUGENE H. LEWIS, St. Joseph, Mich., assignor to the Michigan Sand Brick Company, same place, and Chicago, Ill. Filed Dec. 26, 1890. Serial No. 375,899. Term of patent 14 years.



Claim.—The design for a quadrangular brick or building-block, herein shown and described, the same comprising the oblong marginal border A, the series of irregular projections B C D, having their inclined sides terminating within said border, said inclined sides being joined at varying distances from said border and forming the irregular ridge or prow E, which extends longitudinally of the brick or block, as set forth.

21,523. INDICATOR-BODY. WILLIAM D. KAIN, Amesbury, Mass. Filed Mar. 16, 1892. Serial No. 425,163. Term of patent 3½ years.



Claim.—The design for an indicator-body, herein shown and described.

21,524. BOTTLE. GEORGE O. SANBORN, Petaluma, Cal. Filed Mar. 7, 1892. Serial No. 424,063. Term of patent 14 years.



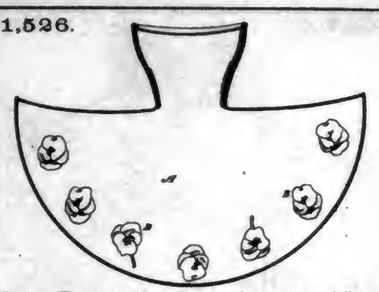
Claim.—The design for a bottle, as herein described and shown.

21,525. TEXTILE FABRIC. ANNIE G. THYNG, New York, N. Y., assignor to Cheney Brothers, South Manchester, Conn. Filed Apr. 7, 1892. Serial No. 428,268. Term of patent 3½ years.



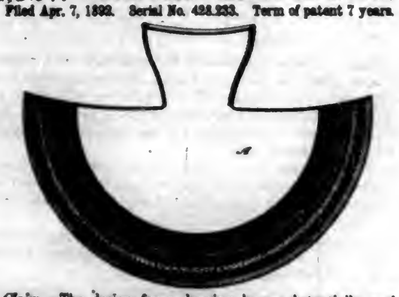
Claim.—The design for a textile fabric, substantially as herein described, and as shown in the accompanying drawing.

21,526. DANCING-DRESS. MARIE L. FULLER, New York, N. Y. Filed Apr. 7, 1892. Serial No. 428,232. Term of patent 7 years.



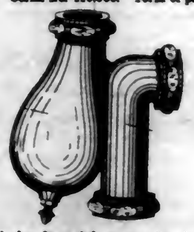
Claim.—The design for a dancing-dress, substantially as shown and described.

21,527. DANCING-DRESS. MARIE L. FULLER, New York, N. Y. Filed Apr. 7, 1892. Serial No. 428,233. Term of patent 7 years.



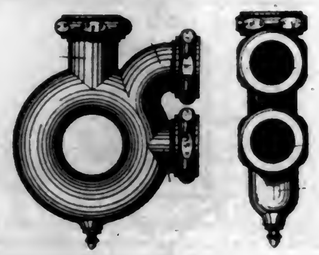
Claim.—The design for a dancing-dress, substantially as shown and described.

21,528. SINK-TRAP. WILLIAM H. GRAHAM, St. Louis, Mo. Filed Dec. 28, 1891. Serial No. 416,380. Term of patent 14 years.



Claim.—The design for a sink-trap, as herein described and shown.

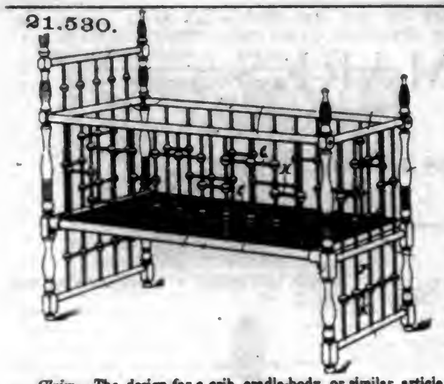
21,529. SINK-TRAP. WILLIAM H. GRAHAM, St. Louis, Mo. Filed Dec. 28, 1891. Serial No. 416,379. Term of patent 14 years.



Claim.—The design for a sink-trap, as herein described and shown.

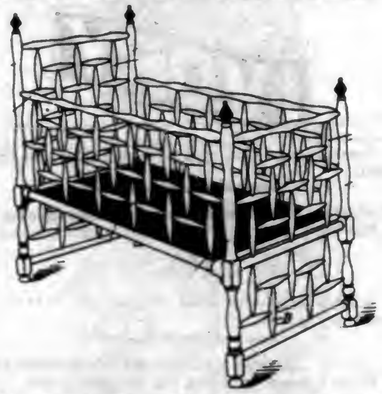
21,530. CRIB OR CRADLE-BODY. FRED G. HANHAM, Kenosha, Wis., assignor of one-half to Johnson A. Jackson, same place. Filed Mar. 18, 1892. Serial No. 426,462. Term of patent 7 years.

21,530.



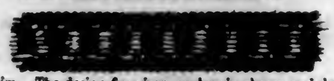
Claim.—The design for a crib, cradle-body, or similar article of furniture, substantially as herein shown and described.

21,531. CRIB OR CRADLE-BODY. FRED G. HANHAM, Kenosha, Wis., assignor of one-half to Johnson A. Jackson, same place. Filed Mar. 18, 1892. Serial No. 426,461. Term of patent 7 years.



Claim.—The design for a crib, cradle-body, or similar article of furniture, substantially as herein shown and described.

21,532. GIMP. ISAAC H. LEITER, New York, N. Y. Filed Mar. 31, 1892. Serial No. 427,575. Term of patent 3½ years.



Claim.—The design for gimp, as herein shown and described.

21,533. STATUE. JACOB W. MEISE, Harrisburg, Pa. Filed Sept. 9, 1891. Serial No. 405,341. Term of patent 3½ years.



Claim.—The design for a statue or statuette, herein shown and described.

21,534. LAMP-BURNER. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Apr. 18, 1892. Serial No. 430,678. Term of patent 14 years.

Claim.—The design for a lamp-burner, as herein shown and described.

21,534.



21,535. BEDSPREAD OR SIMILAR ARTICLE. FRANCIS R. HEALD, Nottingham, England, assignor to W. E. & F. Dobson, New York, N. Y. Filed Apr. 11, 1892. Serial No. 428,715. Term of patent 7 years.



Claim.—The design for a bedspread or similar fabric, herein shown and described.

21,536. MONUMENT. WILLIAM H. PERRY, Concord, N. H. Filed Apr. 18, 1892. Serial No. 429,677. Term of patent 3½ years.



Claim.—The design for a monument, substantially as herein described and shown.

21,537. PIANO-PEDAL. ALANSON H. REED, Chicago, Ill. Filed Mar. 9, 1892. Serial No. 424,845. Term of patent 7 years.



Claim.—The design for a piano-pedal, substantially as herein shown and described.

TRADE-MARKS

REGISTERED MAY 10, 1892.

21,081. OARS, HANDSPIKES, AND CAPSTAN-BARS. DE GRAUW, ATHEAR & Co., New York, N. Y. Filed Mar. 23, 1892.



Essential feature.—The representation of a five-pointed star. Used since January 1, 1882.

21,082. CAN-OPENERS. A. F. MEISSELBACH & BRO., Newark, N. J. Filed Apr. 12, 1892.

COLUMBIA

Essential feature.—The word "COLUMBIA." Used since January 28, 1892.

21,083. LAUNDRY STARCH. THE NATIONAL STARCH MANUFACTURING COMPANY, Covington, Ky., and New York, N. Y. Filed Apr. 6, 1892.



Essential feature.—The representation of a dragon with the word "DRAGON." Used since January 16, 1892.

21,084. PLAYING-CARDS. THE NATIONAL CARD COMPANY, Indianapolis, Ind., Jersey City, N. J., and New York, N. Y. Filed Apr. 12, 1892.

Essential feature.—The word "ALUMINUM." Used since April 4, 1892.

21,085. COSMETICS, SALVES, AND OINTMENTS. BLONDEAU ET CIE., New York, N. Y. Filed Apr. 12, 1892.

LYPSYL

Essential feature.—The word "LYPSYL." Used since May, 1891.

21,086. BUTTONS AND BEADS. F. RAPTHORSEN & CIE., Paris, France. Filed Jan. 30, 1892.



Essential feature.—The letters F. B. on an escutcheon and the words "CONCORDIA CRESCENT." Used since 1877.

21,087. MIXED PAINT AND WHITE LEAD. WILTON A. BAILIE, Shreveport, La. Filed Apr. 9, 1892.



Essential feature.—The word "IVORY." Used since February 1, 1892.

21,088. WHITE MUSLIN. JACOBS & BRENBERG, Wheeling, W. Va. Filed Mar. 4, 1892.



Essential feature.—The words "MOUNTAIN STATE." Used since January 1, 1890.

21,089. MEDICINE FOR THE BLOOD AND DIGESTIVE SYSTEM. MILLER & NEWTON, South Bend, Ind. Filed Mar. 16, 1892.

W-A-K-A-U

Essential feature.—The word "W-A-K-A-U." Used since June 1, 1891.

21,090. A CERTAIN PERFUMERY. EUGÈNE MOULIÉ, Jacksonville, Fla. Filed Apr. 8, 1892.

Maiden's Dream

Essential feature.—The words "MAIDEN'S DREAM." Used since December 1, 1880.

21,091. CANNED FRUITS, VEGETABLES, FISH, AND MEATS, CATSUPS, PICKLES, SAUCES, AND OLIVES. ROCKWOOD BROTHERS, Chicago, Ill. Filed Apr. 6, 1892.



Essential feature.—The letters "H R P Co.," in monogrammatic arrangement. Used since January, 1886.

21,092. CANNED FRUITS, VEGETABLES, FISH, AND MEATS, AND BOTTLED CATSUPS, SAUCES, PICKLES, AND OLIVES. ROCKWOOD BROTHERS, Chicago, Ill. Filed Apr. 6, 1892.



Essential feature.—A broad white bar extending substantially between two corners of a label and dividing a rectangular field of contrasting shades, said bar being met at either side by an arc or curved bar of contrasting shades, whereby the field is divided substantially into four conspicuous parts of contrasting shades, of which parts the white diagonal bar is one. Used since January, 1886.

21,093. PLAYING-CARDS. THE NEW YORK CONSOLIDATED CARD COMPANY, New York, N. Y. Filed Apr. 4, 1892.



Essential feature.—A series of squares formed by a series of intersecting lines and a series of dots arranged at the intersections of said lines or in the corners of said squares. Used since 1849.

21,094. BAKING-POWDERS. THE VIRGINIA CHEMICAL & MANUFACTURING COMPANY, Portsmouth, Va. Filed Dec. 31, 1891.



Essential feature.—The picture of a child in a defiant attitude and grasping a flag-staff, to which is attached a flag or streamer. Used since March 1, 1891.

21,095. CATARRHAL AND LIKE REMEDIES. BURNEY CATARRHAL POWDER COMPANY, Omaha, Nebr. Filed Apr. 12, 1892.



Essential feature.—The representation of a human head, showing the application of a powder-ejecting tube. Used since February 15, 1892.

21,096. LEATHER OF ALL KINDS. F. BLUMENTHAL & Co., New York, N. Y. Filed Mar. 4, 1892.



Essential feature.—The representation of a shield surmounted by a helmet with visor. Used since December, 1887.

21,097. MEN'S AND BOYS' CLOTHING, INCLUDING COATS, PANTS, VESTS, AND OVERCOATS. AMERICAN TAILORING Co., St. Louis, Mo. Filed Mar. 8, 1892.



Essential feature.—The word "AMERICAN" and the representation of an eagle. Used since February 1, 1892.

21,098. MEDICAL CAPSULES. ALLAN KIRKHAM, Virginia City, Nev. Filed Apr. 14, 1892.



Essential feature.—The words "DR. EMILE ZAPP'S" and "SILVER STATE MEDICAL Co." Used since July 1, 1889.

21,099. CLOTHING FOR MEN, WOMEN, AND BOYS, AND FOR HATS, CAPS, AND FLANNEL SHIRTS. J. J. & W. WILSON, Limited, Kendal, England. Filed Apr. 12, 1892.



Essential feature.—The half-length representation of a robed king with royal regalia inclosed in an ornamental oval-shaped border. Used since 1770.

21,100. PIECE-GOODS OF WOOLEN, SILK, LINEN, COTTON, JUTE, AND MIXED MATERIALS, RUGS, HORSE CLOTHING, WOOLS, WORSTEDS, YARNS, AND THREADS. J. J. & W. WILSON, Limited, Kendal, England. Filed Apr. 12, 1892.



Essential feature.—The half-length representation of a robed king with royal regalia inclosed in an ornamental oval-shaped border. Used since 1770.

21,101. BICYCLE SADDLES OR SEATS. BRETT & CURTIS MANUFACTURING COMPANY, Philadelphia, Pa. Filed Mar. 24, 1892.

COMFORT

Essential feature.—The word "COMFORT." Used since January 1, 1892.

21,102. BOOTS AND SHOES. JAMES CHAMBERS, Limited, New York, N. Y. Filed Mar. 31, 1892.

Emily

Essential feature.—The word "EMILY." Used since January 1, 1890.

21,103. A LINE OF PROPRIETARY MEDICINES. KOSMIC MEDICINE COMPANY, Chicago, Ill. Filed Feb. 12, 1892.



Essential feature.—The representation of an intersecting anchor and cross with radiating lines as a background. Used since 1887.

21,104. CORSET-SPRINGS. PHILLIPP LIPPMANN, New York, N. Y. Filed Apr. 7, 1892.

END TO END.

Essential feature.—The words "END TO END" with the representation of a pair of crossed corset-springs. Used since June 3, 1890.

21,105. WOOL-COLORING MATTER. READ HOLLIDAY & SONS, Limited, New York, N. Y. Filed Apr. 15, 1892.

CAMBINE

Essential feature.—The word "CAMBINE." Used since April 1, 1890.

21,106. COD-LIVER OIL AND PREPARATIONS OF COD-LIVER OIL. SOUTHALL BROS. & BARCLAY, Birmingham, England. Filed Dec. 9, 1891.

A1

Essential feature.—The representation of a black disk bearing the letter "A" and the figure "1." Used since 1870.

21,107. COD-LIVER OIL AND PREPARATIONS OF COD-LIVER OIL. SOUTHALL BROS. & BARCLAY, Birmingham, England. Filed Dec. 9, 1891.



Essential feature.—The representation of a boat at sea with three fishermen therein. Used since 1881.

21,108. COD-LIVER OIL AND PREPARATIONS OF COD-LIVER OIL. SOUTHALL BROS. & BARCLAY, Birmingham, England. Filed Dec. 9, 1891.



Essential feature.—The representation of a fisherman standing on the shore and supporting a grapple. Used since 1881.

21,109. MINERAL-SPRING WATER. BEDFORD MINERAL SPRINGS COMPANY, Bedford, Pa. Filed Dec. 12, 1891.



Essential feature.—The representation of an annular serrated figure. Used since November 15, 1890.

21,110. STOVE-POLISH. DOUGLAS & KINSLAND, Middletown, Conn. Filed Apr. 16, 1892.

IRON-CLAD

Essential feature.—The word "IRON-CLAD." Used since April 1, 1892.

21,111. VINEGAR. HOWARD BROS., Chester, Pa. Filed Apr. 12, 1892.

OLD ORCHARD

Essential feature.—The words "OLD ORCHARD." Used since January 1, 1885.

21,112. CHEWING-GUM. JONES & HILL COMPANY, Elkhart, Ind. Filed Apr. 12, 1892.

COLUMBIAN

Essential feature.—The word "COLUMBIAN." Used since March 24, 1892.

21,113. PLAYING-CARDS. THE UNITED STATES PRINTING COMPANY, Cincinnati, Ohio. Filed Apr. 16, 1892.



Essential feature.—A frame inclosing a landscape, with four chickens in the foreground and apple-tree branches in bloom and extending beyond the margin of the frame. Used since December 15, 1891.

21,114. PLAYING-CARDS. THE UNITED STATES PRINTING COMPANY, Cincinnati, Ohio. Filed Apr. 16, 1892.



Essential feature.—A frame inclosing a landscape, with wild roses in bloom laid across it, the stalks of which roses extend beyond the lower right-hand corner. Used since December 15, 1891.

21,115. PLAYING-CARDS. THE UNITED STATES PRINTING COMPANY, Cincinnati, Ohio. Filed Apr. 16, 1892.



Essential feature.—A frame inclosing the representation of a flowering shrub, the stalks and sprays of which extend beyond the margin of the frame, and a bird engaged in building its nest therein. Used since December 15, 1891.

21,116. WHEAT-FLOUR. M. FORCHHEIMER & CO., Mobile, Ala. Filed Apr. 15, 1892.

MIRIAM

Essential feature.—The word "MIRIAM." Used since January, 1877.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE POLLOK *et al.*

Decided May 4, 1892.

PRACTICE—SECTION 4902 OF THE REVISED STATUTES—CAVEAT.

Section 4902 of the Revised Statutes provides for the filing of caveats and limits their operative term to one year, but it does not limit the condition of secrecy on the part of the Office to that term.

IN the matter of the petition of Pollok and Mauro to be allowed to have access to and obtain copies of a caveat filed by another person.

SIMONDS, *Commissioner:*

This is a petition to inspect and have copies of a caveat filed by another person than the petitioners upon the following showing:

That Letters Patent of the United States No. 195,115 were granted to E. L. Ford September 11, 1877, for improvements in printing-machines, upon which patent suit has been brought against certain defendants, on whose behalf your petitioners have been requested to make investigation of the records of the Patent Office touching said patent of Ford; that an interference was declared between said Ford, Scott, and others in the year 1877, and it was given in evidence therein by said Ford that he had filed a caveat describing said invention in October, 1872.

Section 4902 provides for the filing of caveats, and says that—

such caveat shall be filed in the confidential archives of the Office and preserved in secrecy. * * *

The statute also says that the caveat—

shall be operative for the term of one year from the filing thereof.

The uniform practice of the Office is to refuse inspection of a caveat filed by another person upon such a showing as petitioners present. The statute by no means says that the condition of secrecy shall terminate at the end of such year.

In view of the practice of the Office and of the direction of the statute the petition is denied.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

SESSIONS *v.* ROMADKA *et al.* ROMADKA *et al. v.* SESSIONS.

Decided April 25, 1892.

1. PATENT—INFRINGEMENT—TRUNK-FASTENERS.

Claim 3 of Letters Patent No. 128,925, issued July 9, 1872, to Charles A. Taylor, for an improvement in trunks, the claim being for a trunk-catch, *Held* valid and infringed by the defendant's device.

2. BANKRUPT—UNPRODUCTIVE PROPERTY LEFT OUT OF SCHEDULE OF ASSETS.

Where a bankrupt purposely leaves out of his schedule of assets certain property which he regards as unproductive and valueless, and his assignee in bankruptcy is a whole year winding up the estate and gives no sign of his wish to assume the property, *Held*, in view of all the facts, a plain election within the discretion of the assignee not to accept the property, and that a transfer by the party himself some time subsequent to the winding up of his affairs vests a good and valid title in the purchaser.

3. PATENT—DISCLAIMER—SECTION 4917 OF THE REVISED STATUTES CONSTRUED.

Section 4917 of the Revised Statutes, relating to disclaimers, is broad enough to cover disclaimers made to avoid the effect of having included in the patent more devices than could properly be made the subject of a single patent.

4. SAME—EFFECT OF DELAY UNTIL AFTER COMMENCEMENT OF SUIT.

Section 4917 of the Revised Statutes must be construed with reference to section 4922, and when so read the only effect of delaying a disclaimer until after the commencement of a suit upon the patent containing the disclaimed subject-matter is to prevent the recovery of costs.

5. INFRINGEMENT—MEASURE OF DAMAGES.

Where an infringer has not sold the infringed device as a separate article, but has manufactured and used it upon certain articles sold by him, the proper measure of damages is not the profits on the entire article sold, but the defendant's savings from the use of the infringed device over what was known and open to the public before, and in such a case the question of defendant's profit or loss in the sale of the entire article is immaterial.

6. NOTICE TO THE PUBLIC—SECTION 4900 OF THE REVISED STATUTES—PRESUMPTION.

Where there is any question under section 4900 of sufficiency of notice to the public that the device sued upon was a patented article, the presumption against the public arising from the record of the Letters Patent in the United States Patent Office requires the averment of want of knowledge on the part of the defendant in his answer to the bill.

7. STATUTE OF LIMITATIONS UNDER SECTION 5057 OF THE REVISED STATUTES—EFFECT OF ABANDONMENT OF A CLAIM BY BANKRUPT'S ASSIGNEE UPON.

Where an assignee in bankruptcy elects to abandon property to the bankrupt before the expiration of the period of limitation within which he may bring suit under section 5057, the effect is as if the property abandoned had never been included in the assignment, and the statute of limitations is not pleadable in bar of a subsequent action for infringement by the owner of the patent.

APPEALS from the Circuit Court of the United States for the Eastern District of Wisconsin.

STATEMENT OF THE CASE.

This was a bill in equity by the appellant Sessions for the infringement of Letters Patent No. 128,925, issued July 9, 1872, to Charles A. Taylor, for an improvement in trunks.

The patent included several devices used in the manufacture of trunks: first, a yielding roller to be applied to the outside of the trunk; second, in spring-catches to hold the trunk shut; third, in a brace of peculiar construction applied to the outside of the trunk for the purpose of holding up the lid; and, fourth, in a spring-arm for supporting the tray when turned up. In the specification the patentee made the following statement with regard to the spring-catch, which was the only feature of the invention claimed to have been infringed in this suit:

Instead of providing the top of the trunk with the usual straps for fastening it down I attach to its front two spring-catches, I, and to the top two tangs or plates, J, which lock into and are held by the catches. Each catch consists of a metal socket, *e*, provided with a hinged latch or hook, *f*, and with a flat spring, *g*, which bears against the lower end of the latch and keeps its upper end pressed inward against the socket. The upper end of the latch or hook is provided with a prong, *i*, which extends through into the socket, as shown in Fig. 4, the upper side of the prong being beveled off, as shown. The tangs on the top or lid are provided with beveled ends and with holes or openings, as shown. When the top is pressed down the tangs slide down into the sockets, and the prongs *i* of the latches lock through them, in the manner shown in Fig. 4, so as to hold the top or lid down securely. In order to unlock latches it is only necessary to turn back the upper ends of the hooks or latches so as to draw the prongs out of the tangs. After the latches are turned back a certain distance the springs hold them in position, as shown in Fig. 1, and in dotted lines in Fig. 4, so that it is only necessary to attend to one of them at a time.

The only claim which was alleged to have been infringed was the third, which reads as follows:

3. The spring-catches I, constructed and applied to the front of the body, as described, in combination with the tongues or hasps J, on the top, when arranged to operate as set forth.

The answer denied the validity of the patent and infringement of the same. After the testimony had been taken, the plaintiff entered with the Commissioner of Patents a disclaimer of all the claims of the patent except the one in suit, and upon the hearing upon pleadings and proofs the court adjudged the patent to be valid, and that the defendants had infringed, and referred the case to a master to ascertain and report to the court the number of trunk-fasteners made, used, and sold by defendants, and the profits which they had received and which had accrued to them since December 12, 1874, from their infringement, together with all damages in excess of such profits sustained by plaintiff and his assignor since that date. Subsequent to the entry of the interlocutory decree, which was opened for that purpose, and pending proceedings before the master, the defendants by leave of the court amended their answer, by alleging that the title to the patent was in the assignee in bankruptcy of one Poinier, who assigned the patent to the plaintiff subsequent to his adjudication in bankruptcy. The bill was also amended by averring that the assignee never accepted title to the patent, but neglected and refused to assert any claim thereto, and that he is now estopped from claiming any title or exercising any dominion over such patent, or the invention thereby secured; and is also barred by the provisions of the bankruptcy act requiring suit to be brought within two years after the accruing of any cause of action. In his report, made under the order of the court, the master found that the testimony left no doubt that—

at the date of the granting of the patent to Taylor the only known device for accomplishing the results produced by the trunk-fastener was the ordinary trunk-strap used in conjunction with the simple dowel-pin. It seems, therefore, that the profits for which the defendants must account to complainant under the decree of this case are to be found by arriving at the cost of making and applying the strap and dowels and deducting therefrom the cost of making and applying the infringing trunk-fastener manufactured and sold by the defendants.

Figuring upon this basis, the master found that the sum of $11,455.03 had been saved by the defendants by the manufacture and use of 2,500 gross of fasteners admitted to have been made and used by them, over what it would have cost them to have made and applied the straps and dowels necessary and proper to have been used for the same purpose in lieu of such infringing fasteners. No computation was made of damages for the reason that the testimony showed that the profits allowed by him largely exceeded any actual damage sustained by the plaintiff. Exceptions were filed by both parties to this report, and a final decree was entered sustaining the exceptions filed by the defendants to the master's report, vacating and setting aside such report, and decreeing nominal damages for the infringement. (21 Fed. Rep., 124.) Both parties appealed from this decree to this Court.

Mr. Charles E. Mitchell for Sessions.

Mr. F. C. Winkler and *Mr. J. G. Flanders* contra.

Mr. Justice BROWN delivered the opinion of the Court.

1. Defendants attack the title of the plaintiff to this patent upon the ground that Poinier, who bought the patent of Taylor in 1872, and subsequently, in 1878, sold it to Sessions, had, prior to such sale, and in September, 1876, been duly adjudicated a bankrupt in the District Court of the United States for the District of New Jersey, and an assignee appointed, in whom, it is claimed, the legal title to the patent vested. It seems, however, that Poinier did not include this patent in his schedule of assets, upon the ground, as he said, of its being unproductive property and of no value. Indeed, all that he seems to have done with the patent was to make a lot of trunk-fasteners in 1872, which proved to be failures, and which appear to have been the cause of his insolvency. He made no others for the three years before he went into bankruptcy. On May 15, 1877, he received his discharge, and on November 27 of the same year his assignee was discharged. On June 12, 1878, thirteen months after Poinier had received his discharge, and six months after his assignee had been discharged, Sessions bought a shop-right of Poinier, for which he paid him $500, and in the same year purchased the patent itself, for which he paid him $1,000 additional. Mr. Shepard, who acted as the agent of the plaintiff in making this purchase, testifies that he went to Newark on the morning of June 6, 1878, and inquired for Henry W. Poinier.

I was informed that one Mr. Miller was his assignee, and that I could learn of his affairs by seeing him. I then went to the office of Mr. Miller and found him there, introduced myself, and told him that I had come to see him about a patent for a trunk-fastener which was owned by Henry W. Poinier, and under which said Poinier had been making trunk-fasteners, and I asked Mr. Miller if he would sell me said patent, or give me a shop-right thereunder, as the assignee of Mr. Poinier. Mr. Miller replied that he could not do so; that the estate was all settled up; he had made his return to the court, and had been discharged as assignee, and he had no power to do anything in the matter. I asked him what I could do, and he said the only thing was to go to Mr. Poinier; that Poinier was the only one who could give me any title. * * * I learned that Mr. Poinier was in Rochester.

While the assignee does not recollect the conversation, there is nothing to disprove Mr. Sessions's version of it; nor is it strange that Miller did not recollect it, as he acted as assignee in some six or seven hundred cases, and could hardly be expected to remember all the transactions connected with them. It is undisputed that Shepard went to Newark to find Poinier, and subsequently went to Rochester and found him there. The first assignment from Poinier was executed August 16, 1878, and conveyed only the title to the patent itself; but a second assignment, bearing date September 24, included also all rights of action for infringement from the date that Poinier himself acquired the title to it.

While, under the provisions of the bankrupt law, the title to this patent undoubtedly passed to the assignee in bankruptcy of Poinier, it passed subject to an election on his part not to accept it, if, in his opinion, it was worthless, or would prove to be burdensome and unprofitable. And he was entitled to a reasonable time to elect whether he would accept it or not. (*American File Co.* v. *Garrett*, 110 U. S., 288, 295; *Sparhawk* v. *Yerkes*, 142 U. S., 1; *Amory* v. *Lawrence*, 3 Cliff., 523, 535.)

In this case the assignee had taken a year to wind

up the estate, and had given no sign of his wish to assume this property, if indeed he knew of its existence. On being asked with reference to it by the proposed purchaser, he replied that the estate was all settled up, that he had no power to do anything in the matter, and that Poinier was the only one who could give a title. A plainer election not to accept can hardly be imagined. Granting that up to that time he had known nothing about the patent, it was his duty to inquire into the matter if he had any thought of accepting it, and not to mislead the plaintiff's agent by referring him to the bankrupt as the proper person to apply to. Under the circumstances, plaintiff could do nothing but purchase of Poinier. Bearing in mind that no claim to this property is now made by the assignee, but that his alleged title to it is set up by a third person, who confessedly has no interest in it himself, it is entirely clear that the defendants ought not to prevail as against a purchaser who bought it of the bankrupt after the assignee had disclaimed any interest in it.

Had the existence of this patent been concealed by the bankrupt, or the assignee had discovered it subsequently—after his discharge—and desired to take possession of it for the benefit of the estate, it is possible the bankruptcy court might reopen the case and vacate the discharge for that purpose. (*Clark* v. *Clark*, 17 How., 315.) But it does not lie in the mouth of an alleged infringer to set up the right of the assignee as against a title from the bankrupt acquired with the consent of such assignee.

It is quite evident from the facts stated that this patent, which seems to have been the cause of Poinier's insolvency, was thought to be of little or no value, that the assignee so regarded it, and that its real value was only discovered when the plaintiff had brought to bear upon the manufacture of the device his own skill and enterprise.

2. Defendants are charged with infringing the third claim of the Taylor patent, which was for a spring-fastener, modifications of which are now in almost universal use, as a substitute for the old-fashioned strap and buckle. Upon the hearing in the court below, it was claimed the patent was invalid by reason of the joinder of distinct inventions in the same patent—inventions, which though applicable to the same article, viz., a trunk, do not co-operate in the use of such article. The court below was evidently inclined to this opinion, but permitted the plaintiff to enter a disclaimer of all the claims but the one in suit. Whether these different devices were properly embodied in the same patent or not, we think this was a proper case for a disclaimer under section 4917. While the language of this section provides for disclaimers—

whenever, through inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, a patentee has claimed more than that of which he was the original or first inventor or discoverer,

it allows the patentee to—

make disclaimer of such parts of the thing patented as he shall not choose to claim or hold by virtue of the patent or assignment, stating therein the extent of his interest in such patent.

We think this section broad enough to cover disclaimers made to avoid the effect of having included in the patent more devices than could properly be made the subject of a single patent. The power to disclaim is a beneficial one, and ought not to be denied except where it is resorted to for a fraudulent and deceptive purpose. In *Tuck* v. *Bramhill* (6 Blatchf., 95) a disclaimer was allowed by Mr. Justice Blatchford where two or more inventions were covered by a single claim. In *Hailes* v. *Albany Stove Co.* (24 O. G., 391; 123 U. S., 582, 587) it was said by Mr. Justice Bradley to be—

usually and properly employed for the surrender of a separate claim in a patent, or some other distinct and separable matter, which can be excinded without mutilating or changing what is left standing.

The only difficulty connected with the question of the disclaimer in this case arises from the final sentence of section 4917, that—

no such disclaimer shall affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing it.

There is an unfortunate choice of language here which has rendered this sentence very ambiguous and difficult of construction. It was held by Mr. Justice Story in *Reed* v. *Cutter* (1 Story, 590, 600) that if the disclaimer were filed during the pendency of the suit, the plaintiff would not be entitled to the benefit thereof in that suit—a ruling which had also been made in *Wyeth* v. *Stone*, (1 Story, 273, 294.) It was held in *Tuck* v. *Bramhill* (6 Blatchf., 95) that the provision meant that a suit pending when a disclaimer is filed is not to be affected by such filing, so as to prevent the plaintiff from recovering in it, unless it appears that the plaintiff unreasonably neglected or delayed to file the disclaimer. And such was also the ruling of Mr. Justice Nelson in *Guyon* v. *Serrell*, (1 Blatchf., 244,) and in *Hall* v. *Wiles*, (2 Blatchf., 194, 198.) We think that section 4917 ought to be read in connection with section 4922, providing that the patentee may maintain a suit at law or in equity for the infringement of any part of the thing patented, notwithstanding the specifications may embrace more than that of which the patentee was the first inventor or discoverer; but in every such case in which a judgment or decree shall be rendered for the plaintiff, no costs shall be recovered, unless the proper disclaimer has been entered at the Patent Office before the commencement of the suit. This was practically the construction given to corresponding sections of the act of 1837 by this Court in *Smith* v. *Nichols*, (21 Wall., 112,) and of the Revised Statutes in *Dunbar* v. *Myers*, (11 O. G., 35; 94 U. S., 187, 193.) Under section 4922 the effect of delaying a disclaimer until after the commencement of the suit goes only to the recovery of costs. We adhere to that construction. Congress having in the Revised Statutes adopted the language used in the act of 1837, must be considered to have adopted also the construction given by this Court to this sentence, and made it a part of the enactment.

3. The essential feature of the Taylor patent consists of a plate attached to the body of the trunk, which contains a socket and hinged catch, and a double-acting spring whose function is to hold the catch either open or shut; and a tang fastened to the lid, which, as the lid is closed, drops into the socket holding the catch, which, when closed, holds the lid firmly in place. It also acts as a dowel to keep the cover from racking.

Of the alleged anticipating devices the patent to Gaylord of 1861 is a trunk-lock, not, as in this case, a fastener, designed to supplement the lock, and differing from the old-fashioned and well-known trunk-lock principally in discarding the hinged hasp and using a rigid tang attached to the cover which sinks into the socket in the body of the trunk prepared to receive it, and is there self-locked, but is unlocked only with an ordinary key. It was not designed at all to supersede the buckle and strap, but was only a substituto for, and an improvement upon, the ordinary lock. In short, it is a modification of the spring-lock previously used upon trunks.

The Roulstone patent of 1866 is for an improvement in traveling-bags, and shows a spring-locking device for securing the two parts of the bag firmly together. It has no features in common with the trunk-fastener of Taylor, and is not adapted to hold the lid of a trunk firmly to the body. It has no means for holding the catch out of engagement when desired, and is wholly unlike the modern trunk-fastener.

The patent to Semple of 1868 covers an angle-plate upon the trunk-cover provided at the end side with a dowel in combination with a small plate upon the box provided with a loop into which the dowel enters, and at the front side with a hasp and staple to be used with a padlock. The object was to fasten and hold together the box and the cover of the trunk, but the means provided for accomplishing this are so different from those employed by Taylor that they can hardly be compared. Besides the device is evidently of no utility.

The patent to Cutter of 1868 was also for an improvement in trunk-locks, especially adapted for security against an unauthorized opening of the trunk, and operated only by an independent and detachable key. It appears to be self-locking and does not differ materially from the ordinary spring-lock. It is not a trunk-fastener, as distinguished from a lock, and is not designed to be used as a substitute for the strap and buckle.

The patent to Locke of 1871 consists of straps made of hoop-iron, steel, or brass, or other metals which yield readily, their upper ends resting loosely in caps or escutcheons, so as to have a slight degree of lateral play, the lower ends being formed dovetailed and adapted to engage with catches attached to the body of the trunk. The lower end of the strap rides over the lugs of the catches until the cover is fully closed, when the inclines of the strap and the lugs coincide, and the straps then drop into place and remain locked. This device is undoubtedly a fastener, as distinguished from a lock, but it lacks the rigid tang, the hinged catch, the spring—in short, all the essential features of the Taylor invention.

The Hillebrand patent is also for a trunk-lock, and, like the others, is operated by an independent key, and also lacks the features of the Taylor patent.

The Ransom patent is for a trunk-fastener, consisting of two parts, one of which is attached to the body of the trunk and the other to the lid. It does not, however, contain the socket open at the top and designed to receive a rigid tang, nor does it contain the other mechanism of the Taylor patent. While intended to accomplish the same purpose, the means used are so different that it is far from being an anticipation.

There are none of these patents which contain the peculiar combination of the Taylor device; none which, had Taylor known of them, would have suggested his own invention. While his device is somewhat crude, as compared with the improved styles of trunk-fasteners now in use, it contains the underlying principle of all of them. In short, we find no difficulty in holding that there is patentable novelty in the Taylor fastener, and that it is not anticipated by any of the devices put in evidence. If there were any doubt of this, in view of the fact that Taylor seems to have been the first to invent a practical trunk-fastener to take the place of the old-fashioned strap and buckle, and that, improved upon, as it undoubtedly has been, it has completely taken the place of the earlier devices, we should be inclined to resolve this doubt in favor of the patentee.

4. The question of infringement is not so easy, as the Romadka patent, under which the defendants manufacture, approximates more closely to the ordinary form of the spring-lock than does the Taylor patent. The difference between the two patents, however, is more in their outward appearance than in their substantial features. Both resemble the spring-lock in having a rigid tang with a notch in it to receive a catch actuated by a spring, and in being self-locking, it the catch be closed when the tang enters the socket; both differ from it in the fact that the device may be unlocked without the aid of a key by a simple motion of the finger, and hence is not designed to protect against unauthorized opening. The essential features of each are the same. Both have a rigid tang attached to the cover of the trunk—in the Taylor patent with a hole in it, and in the Romadka patent with a notch to receive the catch; both have a socket attached to the body of the trunk containing a hinged catch actuated by a spring which fits into the hole or notch in the tang. In the Taylor patent the catch is held open and shut by a flat spring, and operates at right angles to the plane of the trunk; in the Romadka device the catch is held by a wire spring, and is moved sidewise or parallel with the plane of the trunk by a slight projection at the side of the socket. Both are identical in principle, operation, and design, though the trunk-fasteners now in ordinary use resemble the Taylor more than the Romadka patent. In view of the fact that Taylor was a pioneer in the art of making a practical metallic trunk-fastener, and invented a principle which has gone into almost universal use in this country, we think he is entitled to a liberal construction of his claim, and that the Romadka device, containing as it does all the elements of his combination, should be held an infringement, though there are superficial dissimilarities in their construction.

5. It only remains to consider the question of damages. Before the invention of these fasteners, straps and buckles were universally used to hold the lid of the trunk fast to the body, in aid of the lock, and dowels appear to have been in common use to prevent a lateral movement of the lid. Trunks with straps to support the lock were considered imperfect and unserviceable, and the dowels had become a recognized necessity, except where strength and durability were of no consequence. In this connection the master allowed the difference between the cost of trunk-fasteners and the straps, buckles, and dowels previously in use for the same purpose, and the court overruled the measure of damages thus adopted, and entered a decree for nominal damages only.

It seems the defendants did not manufacture these fasteners for sale, but did manufacture them for use on the trunks made and sold by them. Obviously their profits upon the entire trunk would not be a proper measure of damages, since the fasteners were only an inconsiderable part of the trunk, and profits upon the entire article are only allowable where such article is wholly the invention of the patentee, or where its entire value is properly and legally attributable to the patented feature. (*Seymour* v. *McCormick*, 16 How., 480; *Mowry* v. *Whitney*, 1 O. G., 492; 14 Wall., 620; *Littlefield* v. *Perry*, 7 O. G., 964; 21 Wall., 205; *Garretson* v. *Clark*, 14 O. G., 485; 111 U. S., 120.) This Court has, however, repeatedly held that, in estimating damages in the absence of a royalty, it is proper to consider the savings of the defendant in the use of the patented device over what was known and in general use for the same purpose anterior to the date of the patent. Thus, in *Mowry* v. *Whitney*, (1 O. G., 492; 14 Wall., 620, 649,) it was said by Mr. Justice Strong, that—

> it is the additional advantage the defendant derives from the process—advantage beyond what he had without it—for which he must account.

In that case the master reported the difference between the cost of certain car-wheels and the price for which they were sold as the profits realized by the defendant, thus charging him the profit obtained from the entire wheel, instead of that resulting from the use of the patentee's invention in a part of the manufacture. It was held not to be a legitimate construction of the findings that the benefit which the defendant derived from the use of the complainant's invention was equal to the aggregate of profits he obtained from the manufacture and sale of the wheels as entireties, after they had been completed; but that the question to be determined was what advantage did the defendant derive from using the complainant's invention over what he had in using other processes then open to the public and adequate to enable him to obtain an equally-beneficial result. The same principle was applied in the case of the *Cawood Patent*, (12 O. G., 709; 94 U. S., 695, 710,) in which the defendant made use of an infringing swage-block for the purpose of re-forming the ends of railroad-rails which had become exfoliated by wear, and it was held that the gain in mending these rails by the use of the plaintiff's device, compared with the cost of mending on the common anvil, and the saving in fuel and labor, were the proper measure of damages.

> They had the choice of repairing them on the common anvil or on the complainant's machine. By selecting the latter, they saved a large part of what they must have expended in the use of the former. To that extent they had a positive advantage, growing out of their invasion of complainant's patent.

The subject is also fully considered in the case of *Tilghman* v. *Proctor*, (43 O. G., 628; 125 U. S., 136,) in which it was held that the plaintiff may, instead of damages, recover the amount of gains and profits the defendants have made by the use of his invention, over what they would have had in using other means then open to the public and adequate to enable them to obtain an equally-beneficial result. The patent in this case was for a process of manufacturing fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure. In his report of damages the master found that the complainant derived no profit from the invention otherwise than by granting licenses to others to use the same; but that the defendant had derived large profits and savings by the use of the plaintiff's patented process, which plaintiff sought to recover in the suit. It was held by this Court that when a bill in equity is filed by the owner against the infringers of a patent, the plaintiff is entitled to recover the amount of gains and profits the defendant has made by the use of his invention, not those he might reasonably have made, but those which he did make, or, in other words, the fruits of the advantage which he derived from the use of that invention, over what he would have had in using other means then open to the public and adequate to enable him to obtain an equally-beneficial result.

An analogous rule was applied in *Williams* v. *Railroad Company*, (17 O. G., 1447; 18 Blatchf., 181, 185,) wherein the patent was for an improvement in locomotive-lamps, which enabled the burning of kerosene instead of lard-oil in locomotive head-lights. The defendant used a number of the patented lamps on its locomotives, and it was held that its profits were the difference between the cost of the kerosene which it burned and the lard-oil which it would have had to burn in lieu thereof but for the use of the plaintiff's lamps.

> The statute, [said Mr. Justice Blatchford,] (Revised Statutes, section 4921,) expressly gives to the plaintiff, on a recovery in a suit in equity for an infringement, "the profits" to be accounted for by the defendant * * *. The defendant made its election when it infringed and subjected itself to a suit in equity, and the plaintiff is entitled to the result of the choice he made of suing in equity and not at law. The plaintiff made his inventions for the purpose of enabling any one using them to successfully burn kerosene-oil in lamps for locomotive head-lights, and to obtain the full advantage of its great light-producing capacity. The defendant used them for that purpose and with that result, and must pay the profits or savings made thereby.

We see no reason why this measure of damages should not be applied to this case. The only argument to the contrary is, that the instances in which this Court has applied this rule are confined to those wherein the defendant has made use of the complainant's invention in the operation and conduct of his business, and that it ought not to be extended to cases in which the defendant manufactures and sells the devices. Without questioning at this time the soundness of this contention, we think this case falls within the former rather than within the latter category. The defendant does not manufacture and sell trunk-fasteners as such, but he does make and use them in the business of manufacturing trunks, and the difference between such use of them and the use of the old-fashioned strap and buckle represents his profits. If the defendant manufactured and sold trunk-fasteners to be attached to trunks by his vendees, it might be justly claimed that he did not use them; but if he manufactures them solely to be attached to trunks made and sold by himself, it is none the less a use of them than if he had used the trunk to which they were attached for his own purposes. If, to put an analogous case, a person made a business of manufacturing and selling steam-engines to which he attached a patent lubricator, it could hardly be claimed that he was a manufacturer and seller of lubricators, but he would clearly be liable as a user of them.

In such case it makes no difference whether his general business has been conducted at a profit or loss, or whether he has derived an additional profit from the sale of trunks equipped with this device over

those not so equipped, although the presumption would be, from the saving made by him in the use of this device, that an additional profit upon the sale of the trunks was made, unless it were shown that the use of this device in some way resulted in a diminution of profits upon the entire manufacture. As was said in the *Cawood Patent*, (12 O. G., 709; 94 U. S., 695, 710:)

> If their general business was unprofitable, it was the less so in consequence of their use of the plaintiff's property. They gained, therefore, to the extent that they saved themselves from loss. In settling an account between a patentee and an infringer of the patent the question is not what profits the latter has made in his business, or from his manner of conducting it, but what advantage has he derived from his use of the patented invention.

(See also *Tilghman* v. *Proctor*, 43 O. G., 628; 125 U. S., 136.)

The master apparently computed the profits received by the defendants from the infringement upon the basis of the interlocutory decree referring the case to him to ascertain and report the number of fasteners made and used by the defendants, and the gains, profits, and advantages they received from the infringement, etc.; and as, in the view we have taken of this case, there was nothing inequitable in this measure of damages, we see no reason for disturbing the report of the master in that particular.

6. Further objection is made to a recovery of profits in this case upon the ground of a non-compliance with the requirements of Revised Statutes, section 4900, in failing—

> to give sufficient notice to the public that the same [that is, the article] is patented, either by affixing thereon the word "patented," together with the day and year the patent was granted, or when, from the character of the article, this cannot be done, by fixing to it, or to the package wherein one or more of them is inclosed, a label containing the like notice; and in any suit for infringement, by the party failing so to mark, no damages shall be recovered by the plaintiff, except on proof that the defendant was duly notified of the infringement, and continued, after such notice, to make, use, or vend the article so patented.

The averment of the bill in this connection is—

> that great numbers of trunk-catches containing and embodying the said invention * * * have been manufactured by your orator and the previous owners of said Letters Patent, which said catches were marked with the word "patent" and with the year and day of the month of the date of said Letters Patent; that the public generally have acknowledged the validity of said Letters Patent and have generally acquiesced in the right aforesaid of your orator.

It appears that the plaintiff did stamp upon the larger sizes the fact and the date of the patent, but that he failed to affix such stamp to the smaller sizes, on account of the difficulty of marking them in such way that the mark would be legible when the catches were japanned or tinned. It is not altogether clear that the stamp could not have been made upon the smaller sizes, but, in a doubtful case, something must be left to the judgment of the patentee, who appears in this case to have complied with the alternative provision of the act, in affixing a label to the packages in which the fasteners were shipped and sold. He testified in this connection that, with the two small sizes, it was impracticable to cast the stamp upon the castings; but that he always marked the packages "patented." The fact that this device was patented could hardly have escaped the notice of Romadka, since the earliest fasteners made under the patent, which were manufactured and sold by Poinier, were duly stamped, and Romadka had dealt with him, bought bags of him, and said to Sessions that he could have bought the patent for a low price. Although there is an averment in the answer that the defendants have no knowledge or information save from said bill of complaint, whether the catches were marked with the word "patented," etc., and therefore deny the same, there is no denial of their knowledge that the Taylor device was patented; and in view of the fact that all Letters Patent are recorded, with their specifications, in the Patent Office, a record which is notice to all the world, it is not an unreasonable requirement that the defendant, who relies upon a want of knowledge upon his part of the actual existence of the patent, should aver the same in his answer, that the plaintiff may be duly advised of the defense. (*Rubber Co.* v. *Goodyear*, 9 Wall., 788, 801; *Allen* v. *Deacon*, 10 Saw., 210.)

7. A further point is made that the plaintiff is not entitled to recover for any profits accrued prior to September 12, 1876, when Poinier was adjudicated a bankrupt, that any right of action which he then possessed passed to his assignee and, so long as it remained in his hands, became subject to the statutory limitation of two years within which, by Revised Statutes, section 5057, the assignee is bound to institute suit. It is insisted that if he abandoned the claims against third parties for infringement he abandoned them subject to the limitation of two years within which he was himself obliged to bring suit, and that Poinier himself, and the plaintiff, his assignee, took them subject to that limitation. In this connection the defendant relies upon the case of *Kenyon* v. *Wrisley*, (147 Mass., 476.) In this case the assignee abandoned to the bankrupt the right to sue upon a promissory note which he considered worthless, and the plaintiff brought suit upon the same nine years after the adjudication and assignment. It was held that the plaintiff had no right to recover; but the decision was placed upon the express ground that the assignee did not elect to abandon the claim, and did not consent to a suit upon it by the plaintiff, until after his right of action was barred by the statute; and it was held that, as the right of suit upon the note was barred while in the hands of the assignee, it was not revived by the election of the assignee to abandon it to the plaintiff. In *Gifford* v. *Helms*, (98 U. S., 248,) and in *Wisner* v. *Brown*, (122 U. S., 214,) it was held by this Court that purchasers of property from an assignee in bankruptcy could not maintain a suit in equity against third persons claiming adverse interests in such property, if, at the time of the purchase from the assignee, his right of action was, under the bankruptcy act, barred by the lapse of time.

In *Greene* v. *Taylor* (132 U. S., 415, 443) the Court went a step further, and held that if, at the time of the purchase from the assignee, the statute had begun to run against the claim or right in the hands of such assignee, the purchaser took the right subject to the statutory limitation, and to the consequence that when sufficient additional time should have run against it in the hands of the purchaser to make up the entire two years, the claim or right would be wholly barred.

> No initiation of a new period of limitation, under any statute, begins to run in favor of the purchaser at the time of his purchase, whether the two years wholly elapsed, or only a part thereof elapsed, while the claim was owned by the assignee.

We are of opinion, however, that this rule does not apply where the assignee, before the expiration of the statutory time, elects to abandon the property to the bankrupt. In such case the abandonment relates to the commencement of the proceedings in bankruptcy, and the title stands as if no assignment had been made. Such abandonment is not so much a transfer of an existing interest in the assignee, as an election on his part to treat the assignment as having never included that claim. We do not find it necessary to express an opinion whether the same rule would apply if, as held in *Kenyon* v. *Wrisley*, the statutory limitation were a bar to an action by the assignee when the abandonment was made.

In the case under consideration, Poinier was adjudicated a bankrupt September 12, 1876, the assignee was appointed October 17, 1876, and the abandonment took place, according to the testimony of Mr. Shepard, early in June, 1878, less than two years from the time the cause of action accrued to the assignee. As Poinier recovered the right to sue infringers by abandonment from the assignee before that right had become barred by the statute in his hands, we think he should be considered as receiving it unaffected by the statute, and that he and the plaintiff, his assignee, were entitled to bring this suit as if the assignment had not been made.

The decree of the court below is, therefore, reversed, and the case remanded with directions to enter a decree upon the basis of the master's report.

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World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete models properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the developement of American invention.

W. E. SIMONDS,
Commissioner.

Copies of Decisions Furnished.

Hereafter an uncertified copy of every decision or action by any tribunal in this Office will be furnished by such tribunal to the interested party or parties without charge.

This order does not include the written statements of the grounds of decisions made by Examiners to the appellate tribunal in *ex parte* cases.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

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When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Issue of May 17, 1892.

Patents	457	No. 474,801 to No. 475,367, inclusive.
Designs	15	No. 21,538 to No. 21,552, inclusive.
Trade-Marks	45	No. 21,117 to No. 21,161, inclusive.
Labels	None.	
Reissue	1	No. 11,239.
Total issue	548	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire	5	
Arkansas	5		New Jersey	18	1
California	28		New Mexico Territ'y		
Colorado	6		New York	81	23
Connecticut	13	3	North Carolina	4	
Delaware	1		North Dakota		
District of Columbia	6		Ohio	30	
Florida	1		Oregon	1	
Georgia	3		Pennsylvania	45	2
Idaho			Rhode Island	2	
Illinois	43	1	South Carolina	2	
Indian Territory			South Dakota		
Indiana	13	2	Tennessee	2	
Iowa	14		Texas	4	
Kansas	6		Utah Territory	3	
Kentucky	7		Vermont		
Louisiana	4		Virginia	2	
Maine	2	1	Washington	2	
Maryland	7	2	West Virginia	3	
Massachusetts	56	3	Wisconsin	9	
Michigan	18	1	Wyoming		
Minnesota	7	1	U. S. Army	1	
Mississippi	1		U. S. Navy	1	
Missouri	15	2	Total to citizens of the United States	476	42
Montana					
Nebraska	5				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	2		Netherlands		
Barbadoes			Newfoundland		
Belgium	1		New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	4		Queensland		
Chile, Republic of			Roumania		
Cuba			Russia	1	
Denmark			Scotland		1
Egypt			South Australia		
Ecuador			Spain		
England	7	1	Sweden		
France	2		Switzerland		
Germany	7	1	Victoria	1	
Guatemala			West Australia		
Italy			Total to citizens of foreign countries	26	3
Ireland					
Mexico	1				

APPLICATIONS UNDER EXAMINATION.

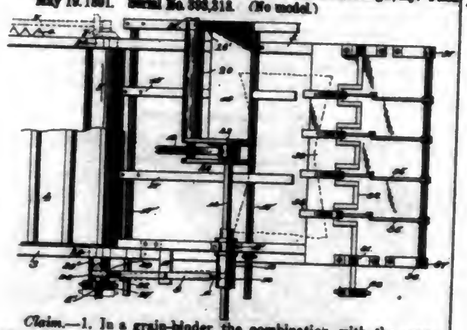
Condition at Close of Business May 10, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Mar. 28	May 9	190
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Mar. 19	May 6	90
12	Mechanical Engineering, Stores-Service, etc.	Mar. 21	May 4	208
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Mar. 23	May 3	152
7	Harvesters, Games and Toys	Mar. 21	May 3	225
8	Furniture, Toilet, Umbrellas and Canes, etc.	Mar. 12	May 2	236
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Mar. 28	Apr. 28	172
2	Farm Stock, Products, etc	Mar. 12	Apr. 28	222
23	Instruments of Precision, Acoustics, Optics, etc.	Mar. 10	Apr. 28	255
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Mar. 14	Apr. 25	227
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Apr. 2	Apr. 15	155
	Between two and three months in arrears.			
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Feb. 11	May 3	247
21	Textiles, etc.	Feb. 24	May 2	200
24	Sewing-Machines and Apparel	Feb. 15	May 2	143
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Mar. 7	Apr. 30	276
18	Steam-Engineering, etc	Mar. 2	Apr. 30	273
13	Metal-Working, Arms and Projectiles, etc.	Feb. 11	Apr. 30	263
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Feb. 24	Apr. 29	236
10	Carriages and Wagons and Railway-Cars.	Mar. 1	Apr. 22	580
22	Fire-Arms, Navigation, Signals, etc.	Feb. 23	Apr. 16	229
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Feb. 16	Apr. 16	278
17	Paper-Manufactures and Printing.	Feb. 29	Apr. 15	204
9	Hydraulics, Fire-Extinguishers, etc.	Feb. 11	Apr. 15	209
4	Civil Engineering, etc	Feb. 18	Apr. 7	424
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Feb. 15	Mar. 21	280
1	Tillage and Fences	Mar. 5	Mar. 16	368
	Between three and four months in arrears.			
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Jan. 30	Apr. 15	235
19	Stoves and Furnaces	Jan. 27	Mar. 22	415
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Jan. 11	Mar. 9	300
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Dec. 22	Apr. 15	429
26	Electricity, Generation, Distribution, etc.	Dec. 19	Apr. 11	362
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Dec. 26	Apr. 1	367
	Total number of applications awaiting action			8,530
	Under one month in arrears.			
	Designs	May 4	May 4	34
	Trade-Marks	May 7	May 7	8

PATENTS

GRANTED MAY 17, 1892.

474,801. GRAIN-BINDER. WILLIAM G. ADAMS, Sturgis, Ky. Filed May 19, 1891. Serial No. 393,213. (No model.)



Claim.—1. In a grain-binder, the combination, with the apron-roller shaft having a fixed clutch member, and a sprocket-wheel sliding thereon and having a clutch member, of the lever having a forked arm engaging an annular groove in the hub of said sprocket-wheel, a sleeve having a cam-groove engaging a finger at the opposite end of said lever, and a needle-shaft square in cross-section, having one end journaled in a sliding dock and its other end passing loosely through a square hole in said sleeve, substantially as described.

2. In a grain-binder, the combination, with the apron-roller provided with a clutch, driving mechanism to be engaged by said clutch, and the needle-shaft, of the clutch-operating lever, and the sleeve on said shaft having a cam-groove for operating said lever, as and for the purpose set forth.

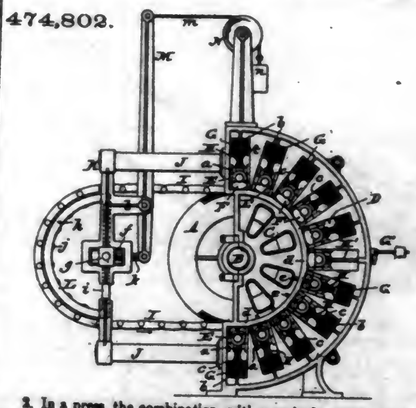
3. In a grain-binder, the combination, with the frame-work and an apron delivering thereinto at one end, of transverse rods sliding through said frame-work, arms rising from the inner rod, parallel inclined straps connecting the upper ends of said arms with the outer rod and forming the deck, a plate carried by said deck, a needle-shaft journaled in said plate and projecting to the rear across the deck, the projecting portion being square, a sleeve mounted in a bearing on the frame-work and having a square hole, through which said shaft passes loosely, a cam on said sleeve, driving mechanism for said apron, a clutch between said mechanism and the apron-roller, and connections between said cam and clutch for opening the latter when the needle rises, substantially as described.

4. In a grain-binder, the combination, with a frame-work, an apron delivering thereinto at its outer end, a table at the inner end of the frame-work standing over a supporting-wheel, a bearing on the frame-work, a sleeve journaled therein, and a lever actuated by the oscillation of said sleeve, of a clutch member on the apron-roller, a driven clutch member adapted to engage the same or to be disengaged therefrom by said lever, a deck inclining from said roller to the lower edge of said table and movable transversely of the frame-work, a needle-shaft journaled in said deck and having an angular projection passing through a hole in said sleeve, ejector-arms operating above and sliding longitudinally with said deck, a needle, and discharge-arms moving over said table, as set forth.

474,802. PRESS. VALENTIN D. ANDERSON, Cleveland, Ohio. Filed Nov. 26, 1891. Serial No. 413,498. (No model.)

Claim.—1. In a press, the combination, with a drum or cylinder, of a lag-chain passing thereabout and adapted to hold the underlying material against the outer face of the drum, and a series of rollers bearing against the back of the lag-chain throughout its contact with the drum and adjustable toward and from the drum, and a yielding-pressure mechanism for the rollers.

474,802.



2. In a press, the combination, with a main frame, of a drum A, journaled therein, a lag-chain I, passing thereabout and adapted to hold the underlying material against the outer face of the drum, a series of pressure-rollers F, journaled in sliding bearings E and adapted to bear upon the chain, adjusting mechanism substantially such as shown for the rollers, whereby they are set away from the chain at the upgoing side of the drum to form a gradually-contracted throat or feed-opening, and a yielding-pressure mechanism for the rollers.

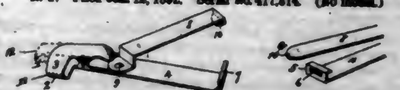
3. In a press, the combination, with a drum or cylinder and the lag-chain passing thereabout, of the frame C, having the radial openings D, the cross-heads and rollers mounted therein, the adjustable stops *e* for limiting the inward movement of the rollers and cross-heads, and means tending to urge the latter inward.

4. In a press, the combination, with a main frame, of a drum A, journaled therein, a semicircular non-rotating supporting-frame L of approximately the same diameter as the drum, a lag-chain passing about the drum and frame, and a weighted lever connected with the frame and tending to urge it away from the drum, and thereby keep the chain taut, all substantially as shown and described.

5. In combination with a main frame and the drum mounted therein, arms J, projecting from the main frame, bars K, connecting the arms and provided with arms *l* and ways *f*, frame L, provided with blocks *g*, supported in the ways, a weighted lever M, pivoted to arm *l* and connected with the frame by rod *k*, and a lag-chain passing about frame L and the drum.

6. In a press, the combination, with a main frame having the separated plates C, provided with radial openings D, of boxes or bearings E, mounted within the openings, rollers F, journaled in the boxes, stops or screws *e* at the inner ends of the openings, screws H and springs G at their outer ends, a drum, and a lag-chain passing between the drum and rollers, all substantially as shown and described.

474,808. CUFF-HOLDER. WILLIAM W. ANDERSON, New York, N. Y. Filed Jan. 12, 1892. Serial No. 417,814. (No model.)



Claim.—1. The combination, with means for engaging the sleeve or other article, of a plate having an arm 5, in which is formed a recess 6, and an arm 8, pivoted and movable laterally on the plate and having a longitudinal cam projection 10, adapted to look into said recess and

hold thereby from movement in either direction, said arm 5 having a spring movement in the direction of the length of the device, substantially as set forth.

2. The combination, with means for engaging the sleeve or other article, of a plate having an arm 5, in which is formed a recess 6, and which carries a lip 7, and an arm 8, pivoted and movable laterally on the plate and having a longitudinal inwardly-extending cam projection 10, adapted to lock over the lip and into said recess and hold thereby from movement in either direction, said arm 5 having a spring movement in the direction of the length of the device, substantially as set forth.

474,804. LAWN-MOWER GRASS RECEPTACLE. SAMUEL B. ABNEY, Bloomsburg, Pa. Filed Oct. 19, 1891. Serial No. 409,171. (No model.)



Claim.—1. An attachment for lawn-mowers, consisting of a scoop-shaped receptacle, a bracket detachably connected with the handle of the mower, a pivotal connection between said bracket and the rear end of the receptacle, and spurs on the mower-head with which the mouth of said receptacle contacts.

2. An attachment for lawn-mowers, comprising a scoop-shaped receptacle, a bracket connected with the handle of the mower, a pivotal connection between said bracket and the rear end of the receptacle, a spring turning the receptacle forward around its pivot, and spurs on the mower-head against whose under sides the front end of the receptacle normally rests.

3. An attachment for lawn-mowers, comprising a scoop-shaped receptacle consisting of a wire frame having fabric sides and bottom and open at its front and top, the frame rising above the rear end of the receptacle and extending thence forward and terminating in eyes, a pivotal connection between said eyes and the handle of the mower, a spring turning the receptacle forward around its pivot, and spurs on the ends of the mower-head projecting to the rear and against whose under sides the mouth of the receptacle normally rests.

4. An attachment for lawn-mowers, comprising a scoop-shaped receptacle having eyes at its rear end, a bracket connected with the handle of the mower and having eyes at its ends, a shaft through the eyes of both members, a pin through said shaft, a spring coiled on the shaft with its center behind the pin and its ends bearing the lower member forward around said shaft, spurs on the mower-head against whose under sides the front end of the receptacle rests, and cords secured to the receptacle and extending in the rear.

5. The combination, with a scoop-shaped receptacle having eyes at the rear end of its body, a bracket detachably secured to a lawn-mower handle and having depending eyes standing outside those of the receptacle, one of said depending eyes being double, spurs on the mower-head against which the lower end of the receptacle abuts, and cords on this receptacle leading to the rear, of a shaft through the aligned eyes, one end of the shaft being squared, a ratchet-wheel fast on the shaft within said double eye, a pivoted pawl adapted to engage said ratchet-wheel, and a spring secured to the shaft and to the receptacle.

6. An attachment for lawn-mowers, consisting of a scoop-shaped lower member, a bracket detachably connected with the handle of the mower, a pivotal connection between said bracket and the rear end of the receptacle.

7. An attachment for lawn-mowers, comprising a scoop-shaped lower member, a bracket connected with the handle of the mower, a pivotal connection between said bracket and the rear end of the receptacle, and a spring turning the receptacle forward around its pivot.

474,805. DIE-STOCK. CHARLES H. BEELY, Chicago, Ill. Filed Nov. 14, 1891. Serial No. 411,945. (No model.)

Claim.—1. A struck-up sheet-metal die-stock formed with oppositely-arranged side flanges and provided between its handle ends with

474,805.



a seating portion whereon the die is held, substantially as and for the purpose set forth.

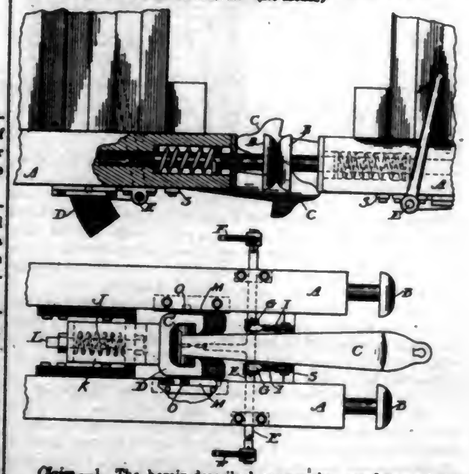
2. A struck-up sheet-metal die-stock formed with oppositely-arranged flanges providing abutments for a die confined between them, substantially as and for the purpose set forth.

3. A struck-up flanged sheet-metal die-stock provided with tubular sheet-metal handles or handle-sockets and having between its said handles a seating portion for the die, substantially as set forth.

4. A struck-up sheet-metal die-stock formed with side flanges, which at the ends of the stock are prolonged and bent to form tubular portions adapted for service as handle-sockets or handles, according to their length, substantially as set forth.

5. A struck-up sheet-metal die-stock formed with oppositely-arranged side flanges and provided with a die confined between its flanges and one or more die-holding devices applied to tie together and brace said oppositely-arranged side flanges of the die-stock, substantially as set forth.

474,806. CAR-COUPLING. WILLIAM R. REYNAM, Chicago, Ill. Filed Feb. 3, 1890. Serial No. 338,905. (No model.)



Claim.—1. The herein-described car-coupler, consisting of the combination of the hooked draw-bar, the draw-spring, and the socket attached thereto, into which the tail-piece of the draw-bar fits, all substantially as shown and described.

2. The herein-described car-coupler, consisting of the combination of the hooked draw-bar, the draw-spring, the socket attached to said spring, into which the tail-piece of the draw-bar fits, and the lever by means of which said draw-bar is raised or lowered, all substantially as shown and described.

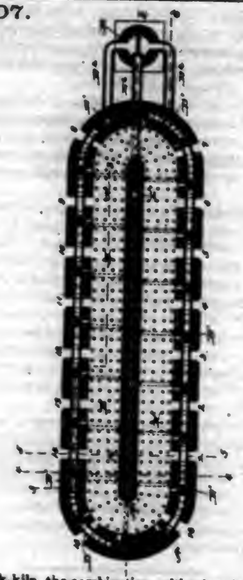
3. The herein-described car-coupler, consisting of the combination of the hooked draw-bar, the draw-spring, the socket attached to said spring, into which the tail-piece of said draw-bar fits, the lever by means of which said draw-bar is raised or lowered, and the buffers, all substantially as shown and described.

4. The herein-described car-coupler, consisting of the combination of the draw-bar C, having the flanges T T and the tail-piece C', the curved socket D, the draw-spring J, attached thereto, the shaft E, having the lever F, and the arms G G, and the arm H, attached thereto, and the chains I I, and the chain I', all substantially as shown and described.

474,807. CONTINUOUS KILN. MAX A. TH. BOSENICKE, Centralia, Cal. Filed July 11, 1891. Serial No. 398,234. (No model.)

Claim.—1. In a brick-kiln, the combination, with a continuous chamber divided into a series of sub-chambers, of horizontal down-draft-flues having communication with the chimney, vertical down-draft-flues communicating with the respective sub-chambers and with the exterior of the kiln, the exterior openings being normally closed, said vertical flues intersecting the horizontal flues, and dampers adapted to interrupt communication between the individual vertical flues, substantially as set forth.

474,807.



2. In a brick-kiln, the combination, with a burning-chamber provided with vertical downdraft-flues, vertical updraft-flues, and with a chimney, of main horizontal downdraft-flues and a main horizontal updraft-flue, said horizontal flues each having independent communication with the chimney, substantially as and for the purpose set forth.

3. In a brick-kiln, the combination, with a chamber provided with combined feed-chutes and updraft-flues arranged in rows and provided at their exterior ends with a projecting annular flange adapted to be normally inclosed by sealing-caps, and a horizontal updraft-flue communicating with the chimney and provided with flanged openings in alignment with the rows of feed-chutes and normally closed by caps, of a portable conductor provided at its lower side with pipes coinciding with and adapted to receive the flanges of the feed-chutes and the flange of the respective opening in the updraft-flue, substantially as set forth.

4. In a brick-kiln, the combination, with a chamber provided with combined feed-chutes and updraft-flues arranged in rows and provided at their exterior openings with an annular flange surrounded by a recess adapted for the reception of a sealing medium, said openings being provided with caps normally inclosing the flanges, and a horizontal updraft-flue communicating with the chimney and provided with flanged openings in alignment with the feed-chutes and having a recess surrounding the flange and adapted for the reception of a sealing medium, said flanges being normally inclosed by sealing-caps, of a portable conductor closed upon all sides and provided at its under side with pipes coinciding with the feed-chute and respective horizontal flue-openings and adapted to be seated in the recesses surrounding said openings, substantially as and for the purpose set forth.

5. In a brick-kiln, the combination, with a continuous chamber divided into a series of sub-chambers, main horizontal downdraft-flues, and a main horizontal updraft-flue, all of said flues having independent communication with a chimney, of vertical downdraft-flues extending from the exterior of the kiln to the bottom of each sub-chamber and having its exterior end normally closed, said vertical flues intersecting the main downdraft-flue and being provided with a damper adapted to interrupt communication with the latter, vertical updraft-flues arranged in rows in the top of each sub-chamber and in alignment with openings in the main updraft-flue, said flues being normally closed, and a portable conductor for connecting the vertical updraft-flues with the respective opening in the main updraft-flue, substantially as and for the purpose set forth.

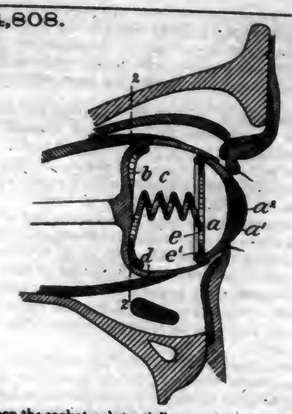
474,808. ARTIFICIAL EYE. JOHN L. BOSSON, Philadelphia, Pa. Filed Mar. 4, 1892. Serial No. 423,704. (No model.)

Claim.—1. An artificial eye provided with a support adapted to rest upon the socket of the natural eye, substantially as and for the purposes set forth.

2. An artificial eye provided with a support adapted to rest upon the socket and having a flexible connection interposed between the eye and socket, substantially as and for the purposes set forth.

3. An artificial eye provided with an adjustable support adapted

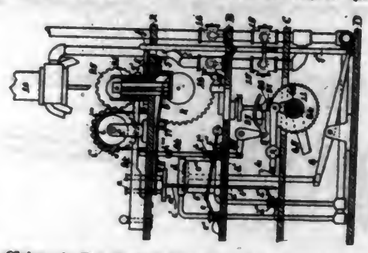
474,808.



to rest upon the socket, substantially as and for the purposes set forth.

4. An artificial eye provided with a detachable support adapted to rest upon the socket, substantially as and for the purposes set forth.

474,809. MATRIX-MAKING MACHINE. GEORGE CALDER, Jr., Lancaster, Pa. Filed Mar. 4, 1891. Serial No. 383,699. (No model.)



Claim.—1. The combination of a key-bar, a pipe for compressed air, having a waste-cock, a rod adapted to be moved by a key-bar and connected to the cock and adapted to turn it, the weighted lever connected to the said cock and adapted to turn and close the same, a cylinder adapted to be put in communication with the pipe by turning said cock, a piston in said cylinder, a piston-rod, and a lever for operating other cocks to move the type-holder and a hammer, substantially as set forth.

2. In combination, a cylinder, the key-rods, the movable table located in their path, the bars secured to the table and adapted to operate the cock that controls admission of compressed air to the cylinder, the pistons and piston-rods provided each with a cam, and mechanism actuated by said cams to move the matrix-bed, and an independent cylinder-key rod, cock-operating bar, and piston-rod provided with a cam of larger size to actuate said mechanism, substantially as set forth.

3. The combination of a key-bar, a spring-lever, a type-holder, mechanism between said bar and holder to move the latter, and a stop arranged in the path of the holder, whereby the spring lever is enabled to return the key and permit the reversal of said mechanism for an instant while the holder is against the stop, substantially as set forth.

4. The combination of cocks 15 and 16 in pipes adapted to supply air to move the hammer and piston, a rod connected with said cocks to open and close them, a lug on said rod, and the stop-box provided with a latch normally in the path of said lug and adapted to be moved out of the path of said lug by the movement of the box, whereby the type-holder may be moved to the end of its path before the rod moves the cock to operate the hammer, said cock being connected to be opened after the other cock, substantially as set forth.

5. The combination of the type-holder, the stop-box, and hammer, and mechanism for suitably moving these parts, the bumper and spring to arrest the box, a lug on the box, and a latch provided with a part located in the path of the type-holder shaft, said latch being adapted to engage the lug and lock the box at the end of its movement and when in contact with said bumper and to be disengaged by the return movement of the type-holder shaft, substantially as set forth.

6. In combination with the matrix-bed, the ratchet 11, and intermediate devices whereby the movement of the ratchet moves the bed, the regulating-bar 54, provided with a returning-spring, and the key K^{iv}, whereby the extent of the movement of the ratchet 11 and the bed may be changed at will, substantially as set forth.

7. The combination of the slotted floor provided with ribs, gears extending through the slot in the floor, and the matrix bed provided with racks engaging said gears and with flanges embracing the sides of the gears, and mechanism for moving the gears, substantially as set forth.

8. The combination of the rack 13 for moving the matrix-bed-supporting gears with a cylinder having a piston adapted to return said gears, a cock adapted to supply air to move the cylinder-piston, a weighted lever held under a stop and in position to keep the cock closed to the air-supply, and a trip operated by the rack to withdraw the stop and open the valve, substantially as set forth.

9. The combination of the rack 13 for moving the matrix-bed-supporting gears with a cylinder having a piston adapted to return said gears, a cock adapted to supply air to move the cylinder-piston, a weighted lever held under a stop and in position to keep the cock closed to the air-supply, a trip operated by the rack to withdraw the stop and open the valve, and a cam-face on the rack adapted to move the lever below the stop upon the reverse movement of the rack, substantially as set forth.

10. In combination with the matrix-bed and its supporting gear-wheels, the gear-cylinder meshing with said wheels, the spring-pawl to hinder circumferential movement of the cylinder, and mechanism for moving the gear-wheels endwise of the cylinder, substantially as set forth.

11. The combination of the type-holder, the indicated cylinder *i* for turning said holder on its axis, and intermediate gearing to turn said cylinder with the holder, substantially as set forth.

12. The type-holder having an angular opening *o'*, in combination with the type and the nut having an angular form fitted to said opening and screwed upon the stem of said type, substantially as set forth.

474,810. WRENCH. ADDISON R. CARLL, Jersey City, N. J. Filed June 19, 1891. Serial No. 396,815. (No model.)



Claim.—In a wrench, the combination, with the shank having a reduced handle portion 2 and the stationary jaw, of the sliding jaw arranged on the shank and provided at each end with loops to receive the shank, the intermediate portion between the loop being arranged parallel with the shank and provided on its inner face with teeth, and the lever having its inner end bifurcated so as to embrace the shank to which it is pivoted and forming rigid integral lugs which are arranged on opposite faces of the shank and are provided at their edges with teeth adapted to engage the teeth of the sliding jaw, substantially as described.

474,811. BAKING-POWDER. CHARLES A. CATLIN, Providence, R. I., assignor to the Rumford Chemical Works, same place. Filed Oct. 13, 1891. Serial No. 408,502. (No specimens.)

Claim.—1. A baking preparation containing phosphoric acid or its compounds in granular condition essentially free from pulverulent phosphatic material, substantially as described.

2. A baking preparation composed of a phosphoric-acid element in granular form essentially free from pulverulent phosphatic material, in admixture with a carbonate or bicarbonate, as set forth.

474,812. PORTABLE DEVICE FOR MOISTENING THE FINGERS OR ADHESIVE SURFACES. JAMES CRAIG, Rochester, N. Y. Filed Sept. 12, 1891. Serial No. 405,490. (No model.)



Claim.—1. The combination of a water-holding cup or reservoir, an elastic bulb having a water-delivery orifice at its top portion and an opening in its lower portion through which the water flows from the cup or reservoir into the bulb, and a check-valve which admits water from the cup or reservoir through the opening in the lower portion thereof and prevents the return of such water from the bulb into the cup or reservoir, substantially as described.

2. The combination of a water-holding cup or reservoir, a support therein, an elastic bulb connected with the support in the cup or reservoir and having a water-delivery orifice in its top portion, and a check-valve at the bottom portion of the bulb which governs the flow of water from the cup or reservoir into the said bulb, substantially as described.

3. The combination of a water-holding cup or reservoir, a hollow support therein, a tube rising from the support and having a valve-seat, an elastic bulb connected with the support and having a water-delivery orifice in its top portion, and a check-valve seating on the valve-seat of the tube to admit water into the bulb and prevent its return therefrom into the cup or reservoir, substantially as described.

4. The combination of a water-holding cup or reservoir, a support therein, an elastic bulb connected with the support, having a water-delivery orifice in its top portion and provided with an absorbent layer or pad on its exterior, and a check-valve at the bottom portion of the bulb, which governs the flow of water from the cup or reservoir into the said bulb, substantially as described.

5. The combination of a water-holding cup or reservoir, a flanged hollow support secured to the bottom portion of the cup or reservoir and communicating with the interior of the latter, a tube rising from the support and having a valve-seat at its upper end, an elastic bulb secured to the tube and having an absorbent layer or pad on its exterior, and a check-valve seating on the valve-seat of the tube to admit water into the bulb and prevent its return therefrom into the cup or reservoir, substantially as described.

474,818. WIRE FENCE. MARTIN L. CLEMENTS, Indianapolis, Ind. Filed June 25, 1891. Serial No. 397,594. (No model.)



Fig. 2.

Claim.—1. The combination, in a fence, with the posts having openings *a'* and wires secured at their ends to the corner-posts and passing through the openings in the intermediate posts, of clips provided with dowels, a horizontal tubular rail connecting each pair of posts and engaging the dowels thereon, and a key cranked upwardly at the end next the post and having its end inserted through the side of the post made tapering to act as a wedge between the clip and the post, the outer end of the key being bent up to form a spur and projected through the side of the tubular rail, and a movable sleeve to envelop the key, thereby securing it and hiding the joist, said key forming a lock to secure the tubular rail to the lug and to fasten the clip to the post, as described.

2. In a fence, the two-part cap *B*, having an enlarged lower end forming a socket to receive the top of the post and having the inside spurs *b'*, adapted to enter corresponding recesses in the post, the two parts of said cap being held together by the transverse bolt B^4 and from displacement by the spur b^3 and detent b^2, substantially as described and shown.

474,814. PROCESS OF PREPARING CELLULOID AND SIMILAR MATERIALS FOR PRINTING. ARTHUR A. C. DE CORTHOUSE, Paris, France. Filed Feb. 26, 1892. Serial No. 422,939. (Specimens.) Patented in France Mar. 28, 1891, No. 212,433; in England Mar. 31, 1891, No. 5,586; in Belgium Apr. 2, 1891, No. 94,363, and in Germany Apr. 16, 1891, No. 61,044.

Claim.—1. The improved process of preparing celluloid or similar substances for printing, which consists in first producing on the surface to be printed upon a multitude of minute grains or pores, and then applying to such surface a coating adapted to receive the printed impression.

2. The improved process of preparing celluloid or similar substances for printing, which consists in first producing on the surface to be printed upon a multitude of minute grains or pores, then washing said surface to clean said grains or pores, then varnishing said surface, then applying an impalpable powder thereto, and then producing a satin finish on said surface.

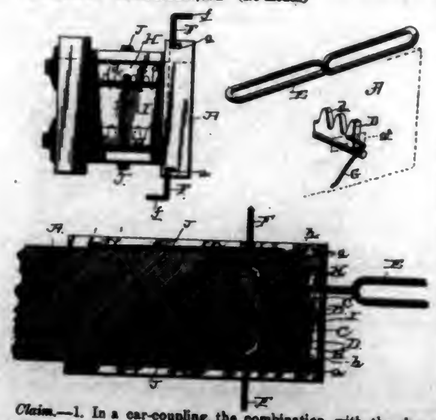
3. The improved process of preparing celluloid or similar substances for printing, which consists in first producing on the surface to be printed upon a multitude of minute grains or pores, then washing said surface, then covering the same with a varnish consisting of fat-varnish, white copal varnish, rectified essence of turpentine or other equivalent in substantially the proportions named, subsequently covering said surface with an impalpable powder consisting of sulphate of magnesia and sulphate of baryta, and then producing on said surface a calender finish.

4. As an article of manufacture, a piece of celluloid or similar substance adapted to be printed upon, having a printing-surface provided with a multitude of minute grains or pores and a coating adapted to absorb the ink when printed upon.

5. As an article of manufacture, a piece of celluloid or similar substance adapted to be printed upon, having a printing-surface provided with a coating adapted to absorb the ink when printed upon, consisting of varnish and an impalpable powder.

6. As an article of manufacture, a piece of celluloid or similar substance adapted to be printed upon, having a printing-surface provided with a coating adapted to absorb the ink when printed upon, consisting of varnish and an impalpable powder composed of sulphate of magnesia and sulphate of baryta.

474,815. CAR-COUPLING. RICHARD CONDON, Lyons, Iowa. Filed Jan. 29, 1889. Serial No. 298,094. (No model.)

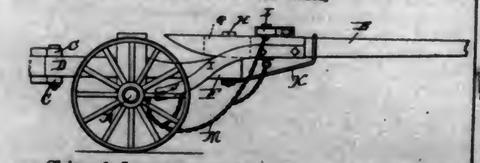


Claim.—1. In a car-coupling, the combination, with the draw-head, of the locking-jaw mounted therein and provided with a series of projections, a link in engagement therewith and extending beyond the draw-head, and a spring bearing on the locking jaw and retaining it in position, substantially as described.

2. In a car-coupling, the spring flaps or doors, in combination with a cross-bar for guiding the link and a locking-jaw having a series of projections for engaging the link, substantially as described.

3. The combination, in a car-coupling, of the locking-jaw provided with the projections and with the operating-lever, the spring operating to hold the locking-jaw in normal position, and the spring flaps or doors, substantially as described.

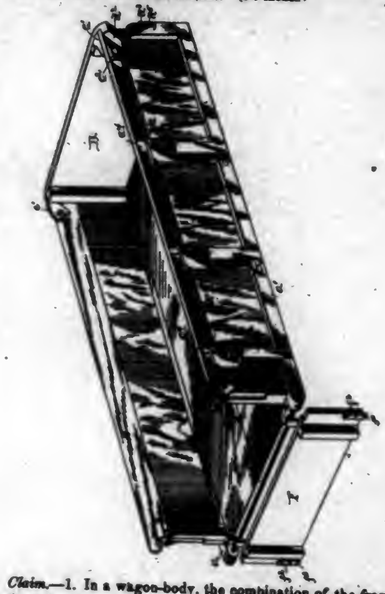
474,816. WAGON-TONGUE. RICHARD CONDON, Lyons, Iowa. Filed Jan. 29, 1889. Serial No. 298,095. (No model.)



Claim.—1. In a vehicle, a bolster and a reach extending in front of the bolster, in combination with a pole having a slot near its rear end, a bolt passing through the slot and reach, and a spring-support secured at one end to the bolt and at the other end loosely engaging the pole.

2. In a vehicle, a bolster and a reach extending in front of the bolster, in combination with a pole movably connected with the reach, supplemental hounds secured to the pole and carrying a cross-piece adapted to engage the reach, a spring-support secured to the reach and loosely engaging the pole, a whiffletree on the pole, and chains connecting the pole, whiffletree, and supplemental hounds with the axle.

474,817. WAGON-BODY. RICHARD CONDON, Lyons, Iowa. Filed Jan. 29, 1889. Serial No. 298,093. (No model.)



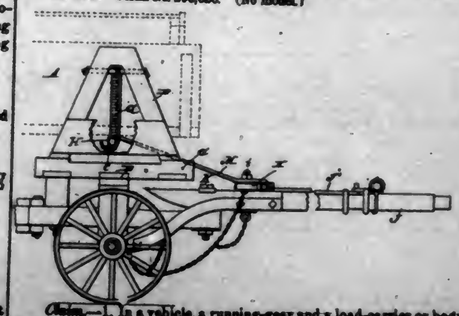
Claim.—1. In a wagon-body, the combination of the frame, the side pieces having the eyes or loops, the top pieces having the eyes or loops, and the arms or braces provided with the bent ends, substantially as described.

2. In a wagon-body, the combination of the frame provided with the upright arms and the sockets, the side pieces provided with the eyes or loops, the top pieces pivoted as described, and the arms or braces, substantially as described.

3. In a wagon-body, the combination of the pivoted top pieces, the head-board provided with the cleats, and the swinging wedges attached to the top pieces, substantially as described.

4. In a wagon-body, the combination of the frame provided with upright arms, the top pieces pivoted in the head and tail boards, the head-board provided with cleats, the swinging wedges connected to the top pieces, and the arms or braces having bent ends.

474,818. VEHICLE. RICHARD CONDON, Lyons, Iowa. Filed Jan. 29, 1889. Serial No. 298,023. (No model.)



Claim.—1. In a vehicle, a running-gear and a load-carrier or body suspended above the running-gear in a manner to allow of its swinging, in combination with a longitudinally-movable tongue connected with the load-carrier, substantially as described.

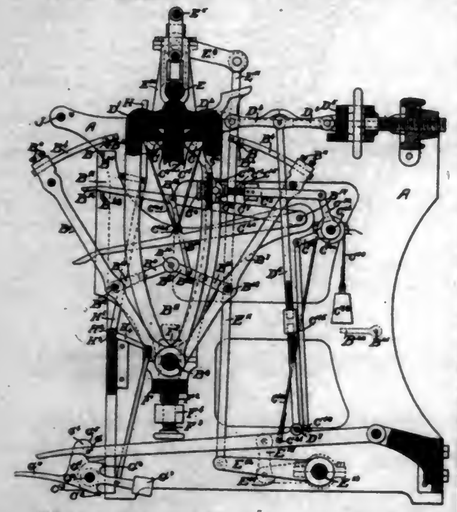
2. In a vehicle, the combination, with the frame, of uprights, rods

suspended from the frame, springs carried by the rods, cross-pieces carried by the springs, and the wagon-body supported on the cross-pieces, substantially as described.

3. In a vehicle, the combination, with the frame, of uprights, rods suspended from the uprights and having hooks at their lower ends, springs carried by the rods, cross-pieces carried by the springs, a wagon-body supported on the cross-pieces, and a longitudinally-movable tongue connected to the cross-pieces, substantially as described.

474,819. MECHANISM FOR ROUNDING AND BACKING BOOKS.

EDWIN CRAWLEY, Sr., Newport, Ky. Filed Oct. 27, 1891. Serial No. 409,951. (No model.)



Claim.—1. In a machine for rounding and backing books, the double guides B B, composed of two opposing complementary pieces, said complementary pieces being approximated when in their operative position and against which the back of the book impinges while they are in this position and separated during the subsequent operations of rounding and backing, substantially as and for the purpose specified.

2. The combination of the double guides when approximated, constituting a stop against which the back of the book impinges and otherwise separated, each guide supported on the swinging frames B^7, pivoted at their lower ends on a common shaft B^8, substantially as and for the purpose specified.

3. The combination of the double guides approximated when in operation and then constituting a guide-stop against which the back of the book rests before being carried between the jaws and at other times separated, each guide supported on the swinging frames B^7, pivoted at their lower ends on a common shaft B^8 and hand-lever B^{16}, and mechanism, substantially as set forth, connected to the hand-lever B^{16} and guide frames B^7 B^7 for separating the same, substantially as and for the purposes specified.

4. The combination of the double guides approximated when in operation and otherwise separated, each guide supported on the swinging frames B^7, pivoted at their lower ends on a common shaft B^8, and the toggles B^9 B^{13} and bar $B^{\prime 3}$ B^{15}, connected thereto, and lever B^{16} for operating the bar B^{15}, substantially as and for the purposes specified.

5. The opposing reciprocating complementary guides B B and their supporting-arms B^4 B^4, in combination with the rounding-rollers C, provided with recesses C^{20} for the reception and passage of their respective guides, substantially as and for the purposes specified.

6. In a rounding and backing machine, the combination of the reciprocating guide-frames B^7, in combination with the rounding-rollers C, and the pulleys B^{25} B^{26}, weight-pulley B^{24}, and pulley-belt B^{23}, the pulleys B^{26} being respectively attached to their adjacent guide-frames B^7, substantially as and for the purposes specified.

7. In a machine for rounding and backing books, the combination of the two co-operative rounding-rollers, the rear roller supported on the swinging frame C^3, pivoted to a shaft, as B^3, substantially as and for the purposes specified.

8. In a machine for rounding and backing books, the two co-operative rounding-rollers, the rear one supported on a swinging frame, as C^3, pivoted to a shaft, as B^3, in combination with the jaws located beyond the back of the book and receiving the book after the operation of rounding has been completed, substantially as and for the purposes specified.

9. In a machine for rounding and backing books, the rear roller supported on the swinging frame C^3, pivoted to a shaft, as B^3, and the reciprocating bar C^5, in combination with adjusting devices for regulating the length of the bar C^5, substantially as and for the purposes specified.

10. In a machine for rounding and backing books, one of the rounding-rollers supported on the swinging frame C^3, pivoted to the shaft, and foot-lever C^{17}, connected to said bar by means of intermediate devices, and a latch G′ for locking down the lever, substantially as and for the purposes specified.

11. In a machine for rounding and backing books, one of the rounding-rollers supported on the swinging frame C^3, pivoted to the shaft, and foot-lever C^{17}, connected to said bar by means of intermediate devices, and a latch G′ for locking down the lever, and the hand-lever H′, provided with arm H^4, adapted to move the said latch and unlock the latter from the foot-lever C^{17}, substantially as and for the purposes specified.

12. In a machine for backing books, provided with jaws, substantially as D′ D^6, a support E^{16}, rigidly connected to the rear jaw, in combination with the swinging backing-roller frame, substantially as and for the purposes specified.

13. In a machine for backing books, having jaws for holding the book during the operation of backing, the forward movable jaw, in combination with the rods D^6, connecting the jaws to a fixed support, the rods being provided with devices for regulating the length of the rods between the support and the jaw, substantially as and for the purposes specified.

14. In a machine for backing books, having jaws for holding the book during the operation of backing, the movable jaw, in combination with a device for advancing and retracting the same, and the adjusting-screw B^{12}, engaging a fixed support and connected with the sliding cross-bar D^6, substantially as and for the purposes specified.

15. In a machine for backing books, having jaws for holding the book during the operation of backing, the movable rear jaw and the toggle D^3 D^4, reciprocated by suitable mechanism connected at one end to the jaw and at the other end to the sliding bar D^6, and a device for regulating the distance between the rear end of the toggle and a given fixed support, substantially as and for the purposes specified.

16. In a machine for backing books, having jaws for holding the book during the operation of backing, the movable rear jaw and the toggle D^3 D^4, reciprocated by suitable mechanism connected at one end to the jaw and at the other end to the sliding bar D^6, screw D^{16}, engaging a fixed support and connected to the bar D^6, substantially as and for the purposes specified.

17. In a machine for backing books, the movable jaws for holding the book during the operation of backing, and the rods D^6, connecting the front jaw D′ and the rear bar D^{12} by means of adjustable devices for regulating the distance between the said jaw and said bar, and the rear jaw provided with the toggle D^3 D^4 and the sliding bar D^6, connected to the rear end of the said toggle, and a device for regulating the distance of the rear jaw from the bar, said devices being connected to the said bar D^6 and also to the bar D^{12}, substantially as and for the purposes specified.

18. In a machine for backing books, the movable jaws for holding the book during the operation of backing, both connected to a common bar D^{12} by means of independent devices provided with means for regulating the distance that the jaws shall occupy from the said bar D^{12}, and consequently from a vertical plane passing through the center of the rounding-roller when the latter is in place vertically over the book, substantially as and for the purposes specified.

19. In a rounding and backing machine having the jaws and rounding-rollers, and swinging frames for respectively supporting the said jaws and rollers, the reciprocally-adjustable shaft B^9, to which said swinging frames are pivoted, and the screws F^9 for advancing the said shaft B^9, substantially as and for the purposes specified.

20. In a rounding and backing machine having the jaws and rounding-rollers, and swinging frames for respectively supporting the said jaws and rollers, the reciprocally-adjustable shaft B^9, to which said swinging frames are pivoted, and bar F, carrying said shaft, and plate B″, connected to said bar F, and the levers B^{10} C^{20} for respectively operating the rollers and the guide-frames, and the devices for locking the levers, upheld by said plate B^{11}, and devices for advancing the bar F at one or both ends, as desired, substantially as and for the purposes specified.

21. In a rounding and backing machine having the jaws and rounding-rollers, and swinging frames for respectively supporting the said jaws and rollers, the reciprocally-adjustable shaft B^9, to which said swinging frames are pivoted, and bar F, carrying said shaft, and plate B^{11}, connected to said bar F, and the levers B^{10} C^{20} for respectively operating the rollers and the guide-frames, and the devices for locking the levers, upheld by said plate B^{11}, and screws F^9 for advancing the bar F, substantially as and for the purposes specified.

22. In a machine for rounding and backing books, the lever H′, provided with a latch-arm H^7, in combination with the triggers B^{20} and C^{20}, substantially as and for the purposes specified.

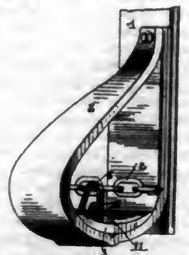
23. In a machine for rounding and backing books, the lever H′, provided with latch-arm H^7, having the recess H^8 and beveled end H^9, in combination with the triggers B^{20} and C^{20}, substantially as and for the purposes specified.

24. In a machine for rounding and backing books, the lever H′, provided with latch-arm H^7, in combination with the triggers B^{20} and C^{20}, and plate B^{21}, supporting said triggers, and the guides of the latch-arm, substantially as and for the purpose specified.

25. The combination of jaws and a backing-roller, and the swinging frame swung on the pivot P, fixed to the arm E^7 of the lever E^7 E^8, connected by intermediate connection to the arms E^{12} and torsion-shaft E^{13}, to which latter said arms E^{12} are rigidly fixed, and arm or lever E^{14}, fixed to said shaft E^{13} and operated through the agency of the lever E^{14}, substantially as and for the purposes specified.

474,820. TRACE-CARRIER.

THOMAS A. CROSS, Bardwell, Ky., assignor of four-fifths to William L. Mosby, Steve Politvisk, Wallace Webb, and Robert J. Young, same place. Filed July 2, 1891. Serial No. 398,266. (No model.)



Claim.—1. The herein-described improved trace-carrier, the same consisting of the leather loop, a concavo-convex metal securing-plate having a pair of perforations, a wire hook rising from the plate and having its terminals forming the shank passed through the perforations of the plate and laterally and oppositely disposed thereunder, and means for securing the terminals of the shank and the plate in position, substantially as specified.

2. The herein-described improved trace-carrier, the same consisting of a leather loop, a concavo-convex metal securing-plate having a central pair and opposite end pairs of perforations, the wire hook consisting of the double vertical shank, the same bent to form the main hook which at its end is bent to form a safety-hook, the shank or terminals of the wire being passed through the central perforations of the securing-plate and laterally bent under said plate, and the opposite staples passed through the pairs of perforations in the securing-plate and through the leather loop and having their terminals clinched upon the under side of the loop, substantially as specified.

474,821. COMBINED WASHER AND NUT-LOCK.

LESLIE EDGERTON, Bangor, Pa. Filed Mar. 14, 1892. Serial No. 424,910. (No model.)



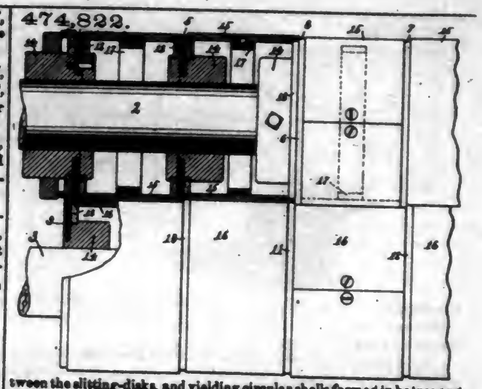
Claim.—The combination of one or more bolts passing through a curved spring-washer, a flexible washer and square or polygon nut thereon, the flexible washer being between the base of the nut and the spring-washer and having one edge turned down over the edge of the spring-washer and another edge turned up against the side of the nut, substantially as set forth.

474,822. SHEARING-MACHINE.

JOHN R. FOOTE, Hamilton, Ohio. Filed Feb. 12, 1892. Serial No. 421,156. (No model.)

Claim.—1. In a rotary shearing-machine, the combination, substantially as set forth, of two slitter-shafts, slitting-disks mounted thereon and arranged for shearing coaction in pairs, and radially-yielding circular shells, of rigid inelastic material, disposed on the shafts and fitting endwise between the slitting-disks.

2. In a rotary shearing-machine, the combination, substantially as set forth, of a pair of shafts, slitting-disks mounted thereon and arranged for shearing coaction in pairs, rings surrounding the shafts between the slitting-disks, and yielding circular shells formed in halves and secured to said rings and having their ends in engagement with the faces of the slitting-disks.



3. In a rotary shearing-machine, the combination, substantially as set forth, of a pair of slitter-shafts, slitting-disks mounted thereon and arranged for shearing coaction in pairs, shells surrounding the shafts between the slitting-disks and having their ends engaging the faces of the disks, and radially-acting springs arranged within the shells.

4. In a rotary shearing-machine, the combination, substantially as set forth, of two shafts, slitting-disks mounted thereon and arranged for shearing coaction in pairs, shells surrounding the shafts between the slitting-disks and having their ends in engagement with the faces of the disks, and annular elastic rings disposed within the ends of the shells and inwardly abutting on the hubs of the disks.

474,823. TUBE-CUTTER.

ALEXANDER C. FORBES, Corry, Pa., assignor of three-sevenths to George T. Hanning, New York, N. Y. Filed Mar. 23, 1889. Renewed June 6 1890. Serial No. 354,496. (No model.)



Claim.—1. The combination, in a tube-cutter, of a centrally-chambered and radially-slotted cutter-head, wedge-shaped levers mounted in the slots in said head, so that one end of each of said levers can be moved radially, and rotary cutters mounted on bearings on the movable ends of said levers, with a longitudinally-moving screw-actuated collar in the central chamber of said head between said wedge-shaped levers, adapted when moved longitudinally to force the free ends of said radially-moving levers and the rotating cutters thereon outward, substantially as and for the purpose set forth.

2. The combination, in a tube-cutter, of a longitudinally-slotted head A, having a longitudinal chamber C therein and a hollow stem B, and the levers E, secured at their outer ends in the slots D by a ring G and having rotary cutters F mounted on bearings E on their inner ends, with a collar J in the chamber C, secured to a screw-threaded rod I, extending through the opening in the stem B and engaging with a screw therein, whereby the collar J may be moved longitudinally in said chamber, substantially as and for the purpose set forth.

474,824. GUARD ATTACHMENT FOR PENHOLDERS.

JOHN R. GRYMES, Danville, Va. Filed Feb. 12, 1892. Serial No. 421,308. (No model.)

Claim.—1. As an improved article of manufacture, a guard attachment for penholders, consisting of a clasp, and a bar rigidly secured to the latter and at right angles thereto, said bar projecting at each side of the clasp, substantially as set forth.

2. As an improved article of manufacture, a guard attachment for penholders, consisting of a clasp constructed of sheet metal bent into approximately cylindrical form and having its opposing ends unsecured to provide spring members, and a bar rigidly secured at its center to the clasp and at right angles thereto, substantially as and for the purpose set forth.

3. As an improved article of manufacture, a guard attachment for penholders, consisting of a spring-clasp provided at its outer edge with

474,824.



an extension or tongue bent upon itself to form an eye at right angles to the clasp, and a bar rigidly secured at its center in said eye, substantially as and for the purpose set forth.

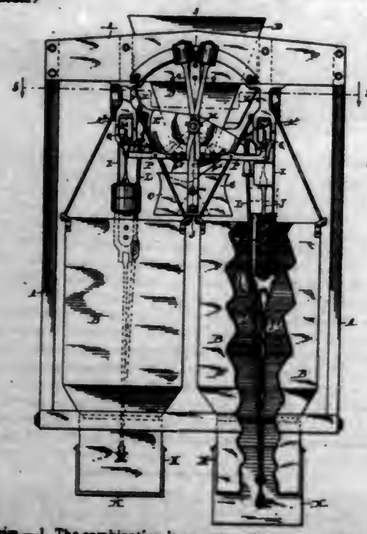
4. As an improved article of manufacture, a guard attachment for penholders, consisting of a clasp constructed from a sheet-metal blank bent upon itself to form two curved spring members and provided at its outer edge with an extension curved inwardly to form an eye at right angles to the clasp, and a bar rigidly secured at its center in said eye, substantially as and for the purpose set forth.

5. As an improved article of manufacture, a guard attachment for penholders, consisting of a bar, and means for detachably securing the same to a penholder and at right angles to the same, substantially as and for the purpose set forth.

6. The combination, with a penholder, of a bar carried thereby at its end adjacent to the pen, said bar projecting from each side of and at right angles to the holder, substantially as and for the purpose set forth.

7. The combination, with a penholder, of a bar detachably connected thereto at its end adjacent to the pen and projecting from each side of the holder and at right angles thereto, substantially as and for the purpose set forth.

474,825. AUTOMATIC GRAIN-WEIGHING SCALE. JAMES H. GUNDER, Homer, Ill. Filed Aug. 11, 1891. Serial No. 402,346. (No model.)



Claim.—1. The combination, in an automatic grain-weighing scale, of the grain-receptacles, discharging-gates thereto, a supporting and locking mechanism for said gates, a trip-rod for said supporting and locking mechanism, a toggle connected to said trip-rod, a rock-shaft, a spring connected to and adapted to rotate said rock-shaft, an arm connecting said rock-shaft and said toggle, the scale-beam, and a link connecting said toggle and said scale-beam, whereby when the scale-beam is caused to rise by the weight the toggle is broken and the spring freed therefrom and permitted through the trip-rod to operate said holding and locking mechanism for the gates.

2. The combination, in an automatic grain-weighing scale, with the supporting and locking mechanism for the discharging-gates, of a tripping mechanism consisting, essentially, of a rock-shaft actuated by a spring, an arm on said rock-shaft, a toggle connected with said arm, and a connection from said toggle to the scale-beam, whereby the scale-beam in rising is enabled to break the toggle and set off the tripping mechanism, substantially as set forth.

3. The combination, in an automatic grain-weighing scale, of two grain-receptacles, the discharging-gates, mechanism for operating the same, a shifting chute whereby the grain is directed first into one and then the other of said grain-receptacles, and rods running from said discharging-gates to the sides of said shifting chute, whereby the gates in opening are enabled to effect the shifting of said chute, said rods being formed in two pieces, which are connected together by a sliding joint, whereby said connection is rendered loose or free, thus obviating any stiffness in the operation of the machine which would interfere with the accuracy of the weighing, substantially as set forth.

4. The combination, in an automatic grain-weighing scale, of the hopper, two reducing-gates for said hopper, two shafts for said reducing-gates, located at a central point, one of which is hollow and sleeved upon the other, and mechanism for operating said shafts, substantially as set forth.

5. The combination, in an automatic grain-weighing scale, of the hopper, reducing-gates connected to said hopper, two shafts for said reducing-gates, one of which is hollow and sleeved upon the other, said shafts being located at a central point, weighted arms rigidly connected to said shafts, weighted catches pivoted to the hangers, through which the ends of the scale-beams pass and which act as stops or holding-supports for said weighted arms, and the scale-beams which operate in connection with said weighted catches, whereby said weighted catches are moved to periodically release said weighted arms and then to support them in raised position, substantially as set forth.

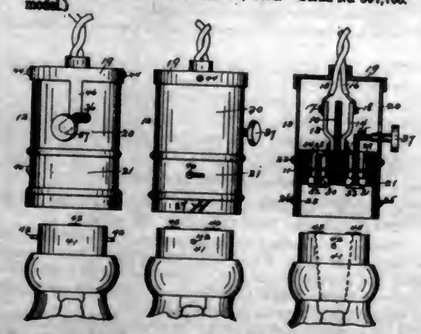
6. The combination, in an automatic grain-weighing scale, of a supporting and locking mechanism for the discharging-gates, consisting of a bell-crank lever pivoted at the angle in a bearing in the upper part of the grain-receptacle, a rod running from the discharging-gate to one arm of said bell-crank lever and the other arm of said bell-crank lever being large and heavy and containing a spring-catch, and a latch, with which said catch will engage, substantially as set forth.

7. The combination, in an automatic grain-weighing scale, of the bell-crank lever J, to which the discharging-gate of the scale is connected, a spring-catch j therein, a small bell-crank lever J^2, also therein, by which said spring-catch is operated, and a latch J', with which said spring-catch engages, substantially as set forth.

8. The combination, in an automatic grain-weighing scale, of two rock-shafts located at a central point, one sleeved upon the other, reducing-gates independently mounted upon said rock-shafts, weighted arms also mounted upon said rock-shafts, a shifting chute loosely mounted upon said rock-shafts, slots in the end of said shifting chute, and pins extending from said reducing-gates out through said slots, whereby as said shifting chute is moved it will, by means of the contact between the slot therein and the corresponding pin, open the reducing-gate which has been closed and elevate the corresponding weight and weighted arm.

9. The combination, in an automatic grain-weighing scale, of two reducing-gates, two shafts therefor, weighted arms for operating said reducing-gates, a shifting chute having slots, and pins on said reducing-gates, which enter said slots, whereby the movement of said shifting chute is enabled to alternately open first one and then the other of said reducing-gates as it is shifted from one position to the other, thus restoring them to position for the succeeding operations, substantially as set forth.

474,826. INCANDESCENT-LAMP SOCKET. HARRY J. GUTMAN, Des Moines, Iowa. Filed June 29, 1891. Serial No. 397,763. (No model.)



Claim.—1. The combination, with the base of an incandescent lamp having projecting lugs and contact-plates fixed thereto, of a socket

comprising an exterior casing formed in sections, which latter are independent of one another in movement, interior insulating-pieces, contact-pins acted upon by yielding pressure devices, an approximately angular slot in one of said sections of casing, an actuator held by and traveling within said angular slot, approximately vertical slots in a stationary portion of the socket, raceways in the rotating section of casing disposed angularly relatively to said vertical slots, and a groove for receiving the lugs on the base, together with yielding pressure devices acting upon the rotatable section of casing.

2. The combination, with a base of an incandescent lamp having projecting lugs and contact-plates, of a socket comprising interior insulating portions, an exterior casing formed in sections having independent movements, contact-plugs acted upon by yielding pressure devices, approximately vertical slots in a fixed portion of the socket, raceways in the rotatable section of casing disposed angularly relatively to the said vertical slots, and a groove to receive and hold the lugs of the base, together with yielding pressure devices acting upon said rotatable section of casing when the socket is coupled to the lamp.

3. The combination, with the base of an incandescent lamp having lugs or pins projecting therefrom, contact-plates secured thereto, and leads from said contact-plates to the filament, of a socket comprising interior insulating-partitions, conducting-pieces to which the main leads of the exterior circuit are connected, an outer casing formed of two independent sections, one of which sections has a movement of rotation, contact plugs or pins electrically connected with the conducting-pieces and acted upon by yielding pressure devices, approximately vertical slots formed in a fixed portion of the socket, raceways formed in the rotatable section of casing and disposed approximately angularly relative to the vertical slots, and yielding pressure devices held upon a stationary portion of the socket acting upon the movable section of casing in the act of joining the base to the socket, together with a groove adapted to receive and hold the lugs on the base when the latter is joined to the socket.

4. The combination, with the base of an incandescent lamp having lugs or pins projecting therefrom, contact-plates secured thereto, and leads from said contact-plates to the filament, of a socket comprising interior insulating-partitions, conducting-pieces to which the main leads of the exterior circuit are connected, an outer casing formed of two independent sections, one of which sections has a movement of rotation, contact plugs or pins electrically connected with the conducting-pieces and acted upon by yielding pressure devices, an approximately angular slot in a stationary portion of the socket, an actuator attached to one of the contact-pins traveling within and held by said angular slot, approximately vertical slots formed in a fixed portion of the socket, raceways formed in the rotatable section and disposed approximately angularly relative to the vertical slots, and yielding pressure devices held upon a stationary portion of the socket acting upon the rotatable section of casing in the act of joining the base to the socket, together with a groove adapted to receive and hold the lugs on the base when the latter is joined to the socket.

5. Means for joining and holding the base of an incandescent lamp, consisting of a rotatable section of casing on the socket, vertical slots in a stationary portion of the socket, raceways formed on said section of rotatable casing, arranged approximately angularly relative to the vertical slots, together with yielding pressure devices held upon a stationary part of the socket acting upon the rotatable section of casing, and a groove adapted to receive and hold lugs on the base portion when the latter is joined to the socket.

6. The combination, with the base of an incandescent lamp having contact-plates fixed thereto, of a socket comprising interior insulating-partitions, vertical bores in one of said partitions, in which are located contact-plugs, conducting-pieces to which the main leads are attached, yielding pressure devices attached to said conducting pieces and adapted to conduct the current, acting upon the contact-plugs, an approximately angular slot formed in the casing, and an actuator secured to one of the said plugs, traveling within and held by said angular slot, together with means for detachably joining the base to the socket.

474,827. PIANO-FORTE. FRANCIS W. HALE, Boston, Mass. Filed May 21, 1891. Serial No. 393,590. (No model.)

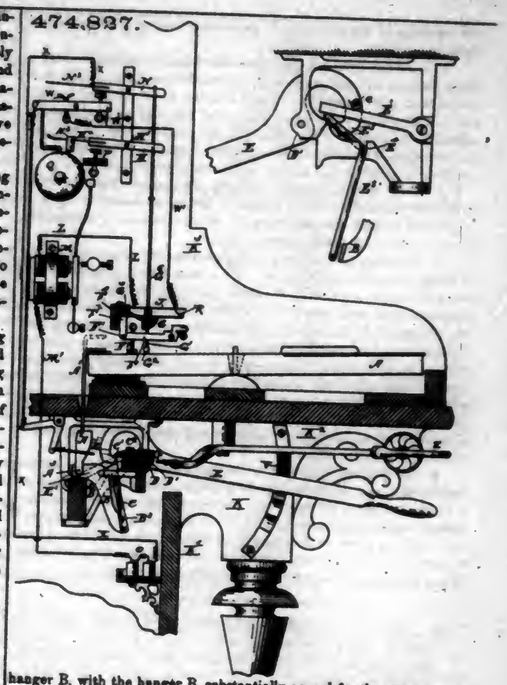
Claim.—1. In a piano-forte, the combination of the key A and the hooked rod $A' A^2$, with the hanger B, having a spring C, adapted to hold said hanger under tension, substantially as and for the purpose set forth.

2. In a piano, the combination of the key A, the hooked rod $A A^2$, hanger B, and spring C, adjustably connected to the tension-plate D, with the tension-plate D, substantially as and for the purpose set forth.

3. In a piano-forte, the combination of the hand-lever E with the tension-plate D and the ratchet V, substantially as and for the purpose set forth.

4. In a piano-forte, the combination of the lever E, having a projection e, adapted to act through intermediate mechanism upon the

474,827.



hanger B, with the hanger B, substantially as and for the purpose set forth.

5. The combination of the key A and the continuous rail G, whereby said rail is adapted to operate the levers N and H, with said levers N and H, substantially as and for the purpose set forth.

6. The combination of the key A, screw-button G', continuous rail G, link G^4, contact-lever N, and bell-lever H, adapted to operate as described, substantially as and for the purpose set forth.

7. The combination of the key A, swing F, line-wire R, contact-spring W, and lever N, having a metal stem N^3, with an electric circuit, connected sounder, and contact-spring J, substantially as and for the purpose set forth.

8. The combination of the key A, rail G, link G^4, contact-lever $N N^3$, switch W, line-wire R, and swing F with electric circuit and bell, substantially as and for the purpose set forth.

9. The combination of the key A, rail G, link G^4, contact-lever $N N^3$, switch W, line-wire R, swing F, and contact-spring J with electric circuit and bell, substantially as and for the purpose set forth.

474,828. MEDICAL BATTERY. PHILIP HATHAWAY, New York, N. Y. Filed Apr. 2, 1891. Serial No. 387,570. (No model.)



Claim.—1. The combination of a close-sealed electric battery held in position between two spring-contacts, an induction-coil electrically connected with said battery, a vibrator adapted to be actuated by said coil, a container to hold said battery and coil, and two metal electrodes in the circuit affixed to the outside of said container, substantially as set forth.

2. The combination of a close-sealed electric battery held in position between two spring-contacts, an induction-coil electrically connected with said battery, a vibrator adapted to be actuated by said coil, a container to hold said battery and coil, and two metal electrodes affixed to the outside of the container and provided with sockets for

the reception of the terminals of conducting cords or wires, substantially as set forth.

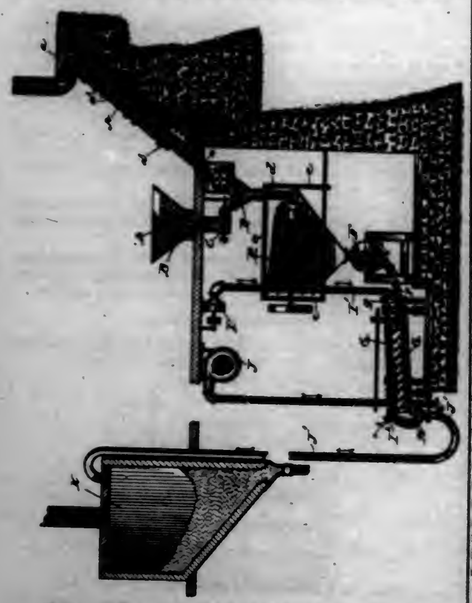
3. The combination of a dry close-sealed electric battery held in position between two spring-contacts, an induction-coil electrically connected with said battery, a vibrator adapted to be actuated by said coil, a container to hold said battery and coil, two metal electrodes affixed to the outside of the container and provided with sockets for the reception of the terminals of conducting cords or wires, and a circuit-closing device in the circuit, substantially as set forth.

4. In an electric battery designed for medical purposes, two metal electrodes affixed to the outside of the box or container and provided with sockets for the reception of the terminals of conducting cords or wires, substantially as set forth.

5. The combination, with a close-sealed electric battery the casing of which comprises one electrode and a wire which protrudes from one end thereof comprising the other electrode, of an induction-coil separated from said battery by a frame of insulating material, from which frame both the battery and induction-coil are supported, said battery being held in position between two spring-contacts, a vibrator adapted to be actuated by said induction-coil, all of said parts being securely fastened within a common container, two metal electrodes affixed to the outside of said container and provided with sockets for the reception of the terminals of conducting cords or wires, suitable connecting-wires, and a circuit opening and closing device in the circuit, substantially as set forth.

6. The combination, with a close-sealed electric battery and induction-coil, of a supporting-frame therefor, consisting of side pieces *b c* and cross-bar *d*, the side piece *c* being cut out, as shown and described, and the side piece *b* having the spring contact-plate F secured to it, and the screws S S', which pass through the cross-bar *d*, said screws being provided with sockets for the reception of the terminals of conducting cords or wires, substantially as set forth.

474,829. PROCESS OF CONCENTRATING ORES. CHARLES B. HERBOS, Denver, Colo., assignor of five-sevenths to Carrie J. Everson, same place, Mamie W. Hutchinson, Topeka, Kans., and Charles T. Brown, Chicago, Ill. Filed July 22, 1891. Serial No. 400,354. (No model.)



Claim.—1. The herein-described process for concentrating ore, consisting of producing a vacuumed condition in the mineral and metallic particles of properly-pulverized ore, of presenting to such ore while in such vacuumed condition and by movement and pressure mechanically joining with the mineral and metallic particles thereof particles of buoyant material, of aerating such buoyed mineral and metallic particles, and of subjecting such prepared and aerated ore stock to controllable stratifying agencies, whereby the rock matrix of the ore stock is caused to settle away from the buoyed mineral and metallic particles thereof and is thereby separated from such buoyed mineral and metallic particles, substantially as described.

2. The herein-described process for concentrating ore, consisting of producing by heat a vacuumed and expanded condition in the mineral and metallic particles of properly-pulverized ore, of presenting to such ore while in a heated, vacuumed, and expanded condition and by movement and pressure mechanically joining with the mineral and metallic particles thereof particles of buoyant material, of cooling and aerating such buoyed mineral and metallic particles, and of subjecting such prepared ore stock to controllable stratifying agencies, whereby the rock matrix of the ore stock is caused to settle away from the buoyed mineral and metallic particles thereof and is thereby separated from such buoyed mineral and metallic particles, substantially as described.

3. The herein-described process for concentrating ore, consisting of producing by heat a vacuumed and expanded condition in the mineral and metallic particles of the ore, of presenting to such ore while in a heated, vacuumed, and expanded condition and by movement and pressure mechanically joining with the mineral and metallic particles thereof particles of buoyant material, of cooling and aerating such buoyed mineral and metallic particles, and of presenting such prepared ore stock to the surface of liquid, so that the buoyed mineral and metallic particles of the ore stock are maintained upon the surface of such liquid for a greater length of time than the rock matrix of the ore stock and thereby for such time separated therefrom, substantially as described.

4. The herein-described process for concentrating ore, consisting of producing by heat a vacuumed and expanded condition in the mineral and metallic particles of the ore, of presenting to such ore while in a heated, vacuumed, and expanded condition and by movement and pressure mechanically joining with the mineral and metallic particles thereof particles of buoyant material, of cooling and aerating such buoyed mineral and metallic particles, of obtaining a tremulous movement on the surface of a body of liquid by producing an effervescing condition therein below and at the surface thereof, and of presenting such prepared ore stock to the tremulous surface of such liquid, so that the buoyed mineral and metallic particles of the ore stock are maintained upon such surface for a greater length of time than the rock matrix of the ore stock, and thereby for such time separated therefrom, substantially as described.

5. The herein-described process for concentrating ore, consisting of producing by heat a vacuumed and expanded condition in the mineral and metallic particles of the ore, of presenting to such ore while in a heated, vacuumed, and expanded condition and by movement and pressure mechanically joining with the mineral and metallic particles thereof particles of buoyant material, of cooling and aerating such buoyed mineral and metallic particles, of presenting such prepared ore stock to the surface of liquid so that the buoyed mineral and metallic particles of the ore stock are maintained upon the surface of such liquid for a greater length of time than the rock matrix of the ore stock, and of producing a current of gas moving in relation to the surface of the liquid and in a direction from the place of presentation of the prepared ore stock to the surface thereof, whereby the buoyant mineral and metallic particles of the ore stock are separated from the rock matrix thereof for such time, and particles of the ore stock floating upon the surface of the liquid are moved over and on the surface of such liquid by such current of gas, substantially as described.

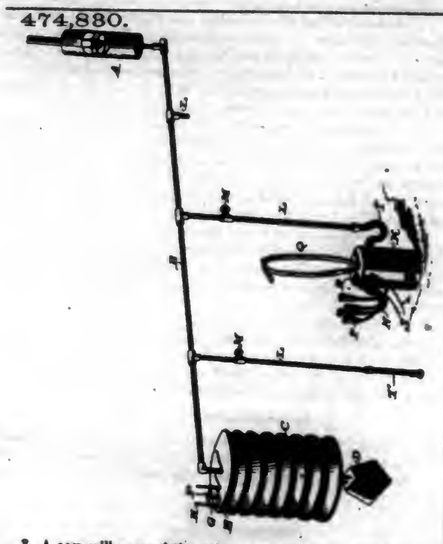
6. The herein-described process for concentrating ore, consisting of producing by heat a vacuumed and expanded condition in the mineral and metallic particles of properly-pulverized ore, of presenting to such ore while in a heated, vacuumed, and expanded condition and by movement and pressure mechanically joining with the mineral and metallic particles thereof buoyant material, of cooling and aerating such buoyed mineral and metallic particles, of obtaining a tremulous and wavy movement on the surface of a body or liquid contained in a receptacle having stalling-partitions by producing an effervescing condition in the liquid below and at its surface and a current of gas moving over and on such surface, and of presenting such prepared ore stock to the surface of the liquid, so that the buoyed mineral and metallic particles of ore are maintained on the surface of such liquid for a greater length of time than the rock matrix of the ore stock, and thereby for such time separated therefrom and the particles of ore stock floating on the surface of the liquid moved on and over such surface, substantially as described.

474,830. COW-MILKER. JOSEPH HOOVER and ALLEN W. JAY, Minerva, Iowa. Filed Sept. 29, 1891. Serial No. 407,144. (No model.)

Claim.—1. A cow-milker consisting of an air-exhauster having a main pipe connected therewith, a milk-receptacle connected with said main pipe provided with teat-cups adapted to be connected with the teats of an animal to be milked, and an air-reservoir connected with said main pipe, said parts being combined substantially as described.

2. A cow-milker consisting of an air-exhauster, a main pipe connected with said air-exhauster, a milk-receptacle connected with said main pipe and adapted to be connected with the teats of an animal to be milked, and a collapsible air-reservoir connected with said main pipe, said parts being combined substantially as described.

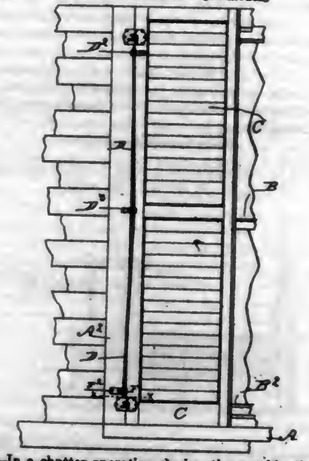
474,830.



3. A cow-milker consisting of an air-exhauster, a main pipe connected therewith, a milk-receptacle connected with said pipe and having tubing with teat-cups, and a collapsible air-reservoir connected with said main pipe and having an air-inlet valve controlled by the movement of said reservoir, said parts being combined substantially as described.

4. In a cow-milker, a collapsible air-reservoir having a weighted lower end and provided with an opening in its upper wall, and a rising-and-falling valve seated on the walls of said opening and provided with a stem adapted to be engaged by said bottom, said parts being combined substantially as described.

474,831. SHUTTER-WORKER. ARIAN H. HULL, Odebolt, Iowa. Filed Aug. 5, 1891. Serial No. 401,763. (No model.)

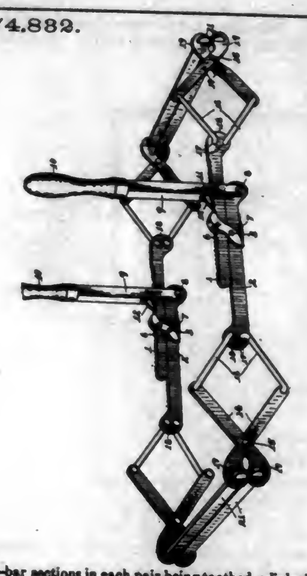


Claim.—In a shutter-operating device, the combination, with a hinged shutter-blind, of a spring-rod one end of which is secured to the shutter-blind and the other end is confined in a clip that is secured to the window-casing, and a stop placed on the end of the spring-rod to engage a shoulder on the clip, to operate in the manner set forth, for the purposes stated.

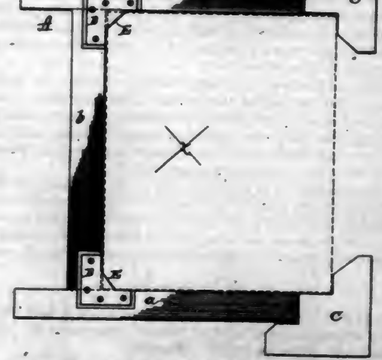
474,832. BELT-STRETCHER. ANDREW J. HUMPHREYS, Pomeroy, Ohio. Filed June 19, 1891. Serial No. 396,806. (No model.)

Claim.—In a belt-clamp, the combination, with the opposite toggle-levers, the members of which terminate in jaws, and clamping-bars connecting the jaws, of opposite pairs of side-bar sections, links connecting the outer ends of the same with the toggle members, one of said side-bar sections in each pair being toothed, a link-shaped locking pawl pivoted upon the untoothed section and loosely embracing the toothed section, a spring for pressing the end of the same into engagement with the teeth of the opposite section, the levers 9, pivoted to the outer ends of the untoothed sections, the pawls 12, pivoted on the levers, and the springs 13, secured to the levers and bearing on the rear ends of the pawls, substantially as specified.

474,832.



474,888. PHOTOGRAPHIC KIT. JOHN H. IDEN, Bourbon, Ind. Filed Apr. 13, 1891. Serial No. 388,621. (No model.)



Claim.—1. A kit or inside holder for photographic cameras, comprising a frame composed of parallel strips or arms and a connecting-strip secured to the parallel strips or arms at a point between their ends and centers, substantially as set forth.

2. A kit or inside holder for photographic cameras, comprising top and bottom strips and side strips secured to the top and bottom strips at a point between the ends and centers of said top and bottom strips, substantially as set forth.

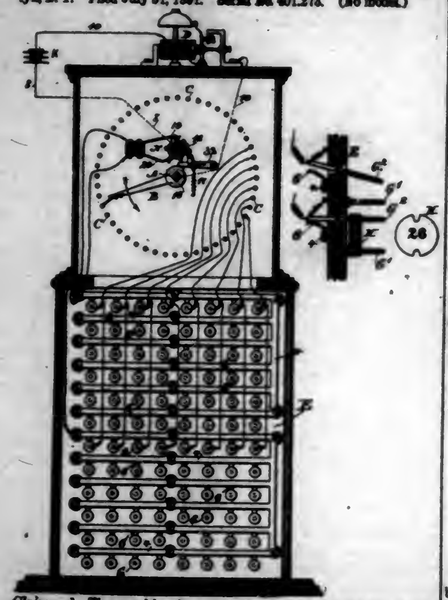
474,884. NON-CONDUCTING MATERIAL. HENRY W. JOHNS, New York, N. Y. Filed Jan. 29, 1892. Serial No. 419,702. (No specimens.)

Claim.—1. Non-conducting material composed, essentially, of hair, asbestos, and sponge, substantially as set forth.

2. Non-conducting material composed, essentially, of hair, asbestos, and sponge, and an adhesive material, substantially as set forth.

3. Non-conducting material composed, essentially, of hair, asbestos, and sponge, and disinfecting or insect-destroying material, substantially as set forth.

474,885. TIME-CALL. JAMES JOHNS and JAMES JOHNS, Jr., Brooklyn, N. Y. Filed July 31, 1891. Serial No. 401,273. (No model.)



Claim.—1. The combination, with the time-circuit-closing mechanism, alarm, and electric circuits in a call apparatus, of removable checks and movable circuit-closing check-holders, each having a projection for receiving one or more checks, and upon which such checks cannot be placed until the motion necessary for closing the circuit has been given to such holder, substantially as specified.

2. The combination, in an electric call, of a time mechanism and circuit-closer revolving once each twelve hours, an annunciator or check-board with circuit-connections in two sections, an electric call or alarm and battery, and an electric switch and mechanism for moving the same at the end of each twelve hours to change the circuit-connections to the respective sections of the annunciator or check-board, substantially as set forth.

3. The combination, in an electric-alarm mechanism, of a spring connected to one part of the alarm-circuit, a movable circuit-closer connected to the other part of the electric circuit and having a check-holding projection that is not adapted to receive the checks until such circuit-closer and check-holder have been moved to close the electric circuit to the spring, substantially as set forth.

4. The combination, in an electric call, of a circuit-closer revolved once in twelve hours, a switch for changing the circuit connections, a spring and pawl for moving the switch progressively, and a cam rotated each twelve hours and acting upon the pawl to give motion to the same and to cause the movement of the switch, substantially as set forth.

474,886. CAR WHEEL AND AXLE. WALLACE B. KIRK, Kansas City, assignor of one-half to John P. Jackson, Independence, Mo. Filed Dec. 7, 1891. Serial No. 414,907. (No model.)



Claim.—1. A combined car axle and wheel comprising a tubular outer axle member having one end inserted into the hub of one of the wheels, an inner solid axle member extending longitudinally through the tubular member, and a ring or annular shoulder carried by one end of the solid axle member and abutting against that end of the tubular member which passes through the wheel-hub and also against the outer end of said wheel-hub, substantially as set forth.

2. A combined car axle and wheel comprising a wheel having an oil-cavity in its center, an outer tubular axle member inserted at one end into the hub of the wheel and having a longitudinal bore or channel, and a number of oil-conduit tubes connected each at its outer end to the wall of the wheel-cavity and at its inner end communicating with the bore of said axle member, substantially as set forth.

3. A combined car axle and wheel comprising a wheel, a tubular outer axle member having one end inserted into the hub of the wheel, and an inner solid member extending longitudinally within the tubular member and provided at its outer end with a frusto-conical portion, and a ring or collar surrounding said portion and abutting against the outer end of the hub of the adjacent wheel, substantially as set forth.

4. A combined car axle and wheels comprising a tubular outer axle-section having an external oil reservoir and an internal bore or channel and provided with a number of radial channels communicating with the bore of the tubular section and with said reservoir, substantially as set forth.

5. A combined car axle and wheels comprising a solid axle-section and an outer tubular axle-section, the inner solid section being of such length as to extend through the hubs of both wheels, and dust-guards secured to the webs of said wheels and surrounding the ends of the solid and tubular axle-sections, substantially as set forth.

474,887. NUT-LOCK. JOHN P. KOONTZ, Newark, Ohio, assignor of one-half to Ezra H. Smith and Robert M. Davidson, same place. Filed Dec. 26, 1891. Serial No. 416,341. (No model.)

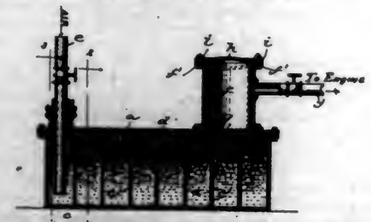


Claim.—1. The combination, with the bolt and the nut, the said bolt being provided with a screw-thread and grooved annularly immediately in rear of the nut, of the sheet-metal locking-plate having a bolt-receiving opening adapted to be threaded on the bolt, substantially as specified.

2. The combination, with the bolt and the nut, the said bolt being provided with a thread grooved annularly immediately in rear of the nut, said groove combining with the adjacent space between the threads to form an annular groove encircling the bolt of the sheet-metal locking-plate having an opening for the reception of the bolt and having one edge of its opening provided with a radiating slot, substantially as specified.

3. The combination, with the bolt and the nut, the said bolt being provided with a thread grooved annularly immediately in rear of the nut, said groove combining with the adjacent space between the thread to form an annular groove encircling the bolt, of the sheet-metal locking-plate having an opening for the reception of the bolt and having one edge of its opening provided with a radiating keyhole-slot, substantially as specified.

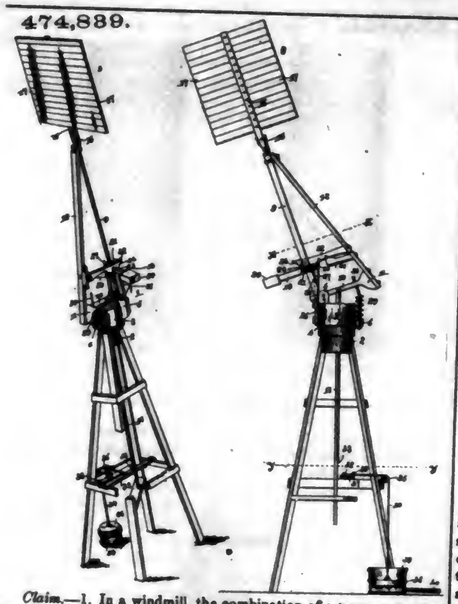
474,888. CARBURETOR. JOHN W. LAMBERT, Ohio City, Ohio. Filed Nov. 12, 1891. Serial No. 411,697. (No model.)



Claim.—In a carburetor, the combination of a reservoir, transverse partitions in said reservoir provided with a vertical series of apertures at alternate ends of each partition, a valved air-inlet pipe entering the reservoir through the cover and extending below the level of the liquid in said reservoir, said pipe being adjustable vertically through the stuffing-box secured to the cover of the reservoir, a dome secured to the cover of the reservoir at the opposite end from the inlet-pipe, its lower end opening into the reservoir, a flexible head closing the upper end of said dome, and a valved outlet-pipe entering the dome between the gauze and the flexible head, substantially as described.

474,889. WINDMILL. BROOM LAMPHEAR, New Almelo, Kans. Filed June 26, 1891. Serial No. 397,049. (No model.)

474,889.



Claim.—1. In a windmill, the combination of a tower, a rocking frame mounted on the tower and having a rod journaled in suitable bearings, a blade secured to the upper end of the rod, a weight for returning the rocking frame, a weighted arm rigidly secured to the rod, a latch secured to the frame and arranged to engage the weighted arm, a spring arranged to engage the weighted arm and throw the same into engagement with the latch, and means for lifting the latch and releasing the weighted arm, substantially as described.

2. The combination of the rocking frame, a turn-table carrying the frame, a rod journaled in the frame, a blade secured to the upper end of the rod, a weighted arm rigidly attached to the rod, a latch arranged to engage the weighted arm, and means for throwing the weighted arm into engagement with the latch and releasing it therefrom, substantially as described.

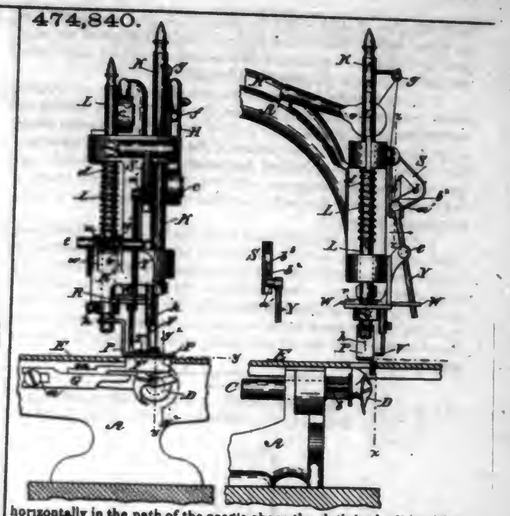
3. In a windmill, the combination of a tower, a rocking frame mounted on the tower and having a rod journaled in suitable bearings, a blade secured to the upper end of the rod, a weight for returning the rocking frame, the weighted arm rigidly secured to the rod, a latch arranged to engage the arm, a spring arranged to throw the arm into engagement with the latch, and a bar arranged to lift the latch out of engagement, substantially as described.

4. In a windmill, the combination of a tower, a rocking frame mounted on the tower and having a rod journaled in suitable bearings, a blade secured to the upper end of the rod, a weight for returning the frame, a weighted arm rigidly secured to the rod, a latch, a spring arranged to engage the weighted arm and to throw the same into engagement with the latch, the bar adapted to lift the latch, and a stop disposed below the latch and adapted to hold the same in position to be engaged by the weighted arm, substantially as described.

5. In a windmill, the combination of a tower, a rocking frame mounted on the tower, a pump-rod connected with the rocking frame, a blade carried by the rocking frame, means for turning the blade and returning the rocking frame, and a spring arranged on the tower and adapted to be engaged by the rocking frame and forming a cushion, substantially as described.

6. In a windmill, the combination of the rocking frame and the blade consisting of the spring and a series of slats secured to the spring, substantially as described.

474,840.



474,840. SEWING-MACHINE. ALBERT LEOO and CHARLES W. WESTON, Milton, N. Y. Filed Mar. 18, 1890. Serial No. 344,301. (No model.)

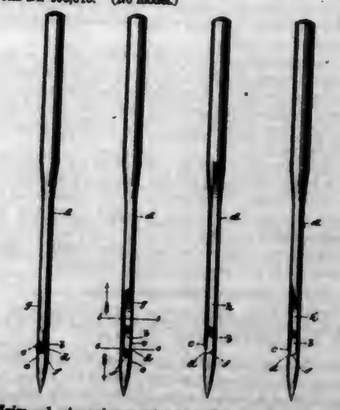
Claim.—1. In a sewing-machine, the combination of a needle having a recess or open eye and means for reciprocating the same, with means for threading said needle upon each downward stroke thereof, consisting of a guide at one side of the path of said needle and a thread-carrier moving in an angular path across the path of said needle and means for operating the same, and complemental stitch-forming mechanism, substantially as and for the purposes described.

2. In a sewing-machine, the combination of a vertically-reciprocating needle having a spur, a thread-carrier for distending the thread horizontally in the path of the needle above the cloth in the line of descent of the spur, and actuating mechanism for said carrier, consisting of a horizontal plate upon the presser-foot bar bearing an angular slot, through which the shank of the carrier projects, a transversely-movable slide bearing the carrier, and a longitudinally-moving slide bearing the transversely-moving slide, whereby the said shank is moved through the path of the longitudinally-moving slide, substantially as shown and described.

3. In a sewing-machine, the combination, with the needle-bar, the needle having a spur on its side, the thread-carrier, the angularly-slotted plate, and the slides for moving the carrier in the path of the slot, of the three-way cam attached to the needle-bar, and the lever engaging at its upper end with the said cam and at its lower end with the slide, moving endwise relative to the machine, substantially as described.

4. In a sewing-machine, the combination, with the needle-bar, the needle having a spur on its side, the thread-carrier, the angularly-slotted plate, and the slides for moving the carrier in the path of the slot, of the three-way cam and the lever connected, substantially as described, movable about its fulcrum and also in the line of the axis of its fulcrum in response to the direction given by the inclined portion of the slot of the cam, said cam having a vertical slide engaging the lever when the needle ascends, and the angular slot engaging the lever when the needle descends, adapted to move the thread-carrier through an advance and return stroke transversely to the path of the needle, for the purpose set forth.

474,841. SEWING-MACHINE NEEDLE. ALBERT LEOO, Milton, and CHARLES W. WESTON, New York, N. Y. Filed Oct. 15, 1891. Serial No. 408,815. (No model.)



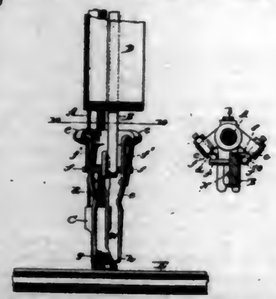
Claim.—1. A sewing-machine needle having a recess for engaging the thread, which consists of a notch in the front of said needle and running up toward the butt of the same, the point of the spur of said

notch being on all sides within the normal surface of the needle, and the lower surface of said notch being inclined downward all the way from the long-groove side to the short-groove side of said needle, substantially as and for the purposes described.

2. In a sewing-machine needle, the device for engaging the thread, which consists of a notch in the front of said needle and running up toward the butt of the same, the point of the spur of said notch being on all sides within the normal surface of the needle, and the lower surface of said notch being inclined downward all the way from the long-groove side to the short-groove side of said needle, and also outward and downward from the back of said notch, substantially as and for the purposes described.

3. In a sewing-machine needle, the device for engaging the thread, which consists of a notch in the front of said needle and running up toward the butt of the same, the point of the spur of said notch being on all sides within the normal surface of the needle and on the long-groove side of the longitudinal center line thereof, and the lower surface of said notch being inclined downward from the long-groove side to the short-groove side of said needle, substantially as and for the purposes described.

474,842. SEWING-MACHINE. ALBERT LEOG, Milton, and CHARLES W. WESTON, New York, N. Y. Filed Oct. 15, 1891. Serial No. 408,816. (No model.)



Claim.—1. In a sewing-machine, the combination of a needle having a recess or open eye for engaging the thread, with means for operating said needle, means for feeding thread to the same, which consists of a guide and finger movable simultaneously in straight divergent lines from in front of the path of said needle toward and to opposite sides of said path, whereby the thread is carried and distended partially around the needle as it descends, means for operating said guide and finger, and with complemental stitch-forming mechanism below the cloth-plate, substantially as described.

2. In a sewing-machine, the combination of a needle having a recess or open eye for engaging the thread, with means for operating said needle, means for feeding thread to the same, which consists of a guide and finger movable simultaneously in straight divergent lines from in front of the path of said needle toward and to opposite sides of said path, said guide being adapted to remain in its advanced position during a part of the time of each stitch, whereby the thread is carried and distended partially around the needle as it descends and is fed to the long groove thereof, means for operating said guide and finger, and with complemental stitch-forming mechanism below the cloth-plate, substantially as described.

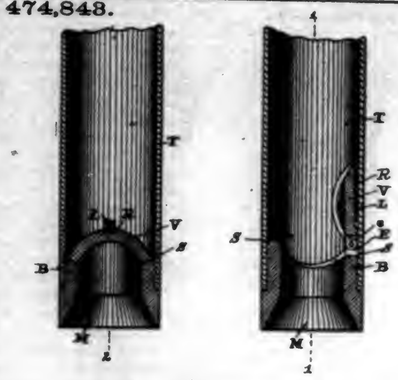
3. In a sewing-machine having a needle with a recess or open eye for engaging the thread, the device for operating the thread-feeding mechanism of said needle, which consists of the combination of lugs on the presser-bar, cam-shaped arms journaled in said lugs, and means for swinging said arms on their axes as said needle-bar reciprocates, substantially as described.

4. In a sewing-machine having a needle with a recess or open eye for engaging the thread, the device for operating the thread-feeding mechanism of said needle, which consists of the combination of lugs on the presser-bar, cam-shaped arms journaled in said lugs, pins on the needle-bar adapted to swing said arms in one direction on their axes as said needle-bar reciprocates, and springs adapted to swing said arms in opposition to said pins, substantially as described.

474,843. SAND-PUMP. THOMAS F. MAHAR, Phillips, Wis. Filed May 13, 1891. Serial No. 392,300. (No model.)

Claim.—The herein-described sand-pump, the same consisting of the body secured to the lower end of the tubing and having a curved valve-seat at its upper end, a valve pivoted thereto and having a curved upper face with a recess therein, and a spring attached at one end to the bottom of said recess with its other end projecting normally beyond said upper face, as and for the purpose set forth.

474,848.



474,844. ADJUSTABLE MANDREL FOR WABBLING SAWS. HENRY L. MANN, Minneapolis, Minn. Filed May 29, 1891. Serial No. 394,516. (No model.)



Claim.—1. The combination, in a wabbling-saw mandrel, of a threaded part arranged on the arbor and provided with slots or grooves 7 with a disk 9, fixed on said threaded part, and a wabbling disk 10, having lugs projecting into said grooves, and set-screws arranged in the fixed disk 9 and adapted to engage a saw held upon the disk 10, substantially as described.

2. The combination, in a wabbling-saw mandrel, of the sleeve having the threaded and unthreaded portions and provided with diametrically-opposite slots 7 with a disk 10, having a central opening 12 of a greater diameter than the end of said sleeve, lugs 13, projecting from said disk 10 into said groove, an annular shoulder 15, provided on said disk 10, and a disk 9, provided with set-screws 17, substantially as and for the purpose specified.

3. The combination, in a wabbling-saw mandrel, of the sleeve 3, having the slots or grooves 7 and the unthreaded portion 4, with means for securing the same on the saw-arbor, a wabbling disk 10, having lugs extending into said grooves, and means for securing the circular saw thereon, the disk 9, threaded to engage the sleeve 3 and held perpendicular to the saw-arbor, shoulders 16 on the inner surface of the disk 9, and set-screws 17, extending through the same and adapted to engage the saw, substantially as described.

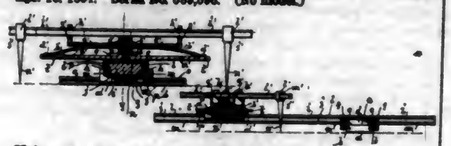
474,845. SAFETY-LOOP FOR HARNESS-CHECKS. TENBROCK B. MAYELL, Albany, N. Y. Filed Feb. 3, 1892. Serial No. 420,190. (No model.)



Claim.—1. As an improved article of manufacture, the checkrein-loop consisting of the loops A and A', furnished with a flexible covering and constructed with the springs *s s'*, and the spring S, secured to said springs *s s'* by a band or loop L and provided with a plate P, attached to the buckle D by means of the rivet B, as hereinbefore described and set forth.

2. The combination, with a checkrein R, of the loops A and A', furnished with a flexible covering and constructed with the laterally-acting springs *s s'*, the spring S, to which said springs *s s'* are connected by means of the band or loop L, and the buckle D, as hereinbefore described and set forth.

474,846. NAUTICAL COURSE-INDICATOR. JOHN A. MILLER, THOMAS S. LESTER, and HENRY G. LESTER, Marine City, Mich. Filed Apr. 18, 1891. Serial No. 389,266. (No model.)



Claim.—1. In a course-indicator, the combination of the base-bar, a saddle mounted to slide on the bar and provided with a centrally-located upwardly-projecting spindle and with an upwardly-projecting stud *s*, located at one side of the spindle, the disk having a central opening passed over said spindle and provided on its upper surface with a dial and having openings *a'* for engaging with said stud *s*, and a spring *b'*, having a central opening passed over the spindle and with its ends bearing upon the dial, with the frame *d'*, having a central opening mounted upon the spindle and having its ends upturned and provided with openings *h'*, and the bar *i'*, passed through said openings and provided with downwardly-extending movable pointers, substantially as set forth.

2. In a nautical course-indicator, the combination of a base-bar and a saddle mounted for sliding upon the base-bar with a transverse bar mounted for sliding upon the said saddle, a disk mounted for sliding on the said transverse bar and provided on its upper surface with a compass-dial, and means for retaining the disk against revolution, and a radial indicator pivotally mounted upon the center of the disk and capable of rotation and of longitudinal movement and provided with indicator-points for reaching to the chart, substantially as set forth.

3. The combination, in a nautical course-indicator, of the base-bar, the saddle for sliding on the base-bar, the transverse bar for sliding upon the said saddle at a right angle with the base-bar, the disk mounted for sliding upon the said transverse bar and provided on its surface with a compass-dial, and device for engaging the disk against revolution with the frame *d'*, pivotally mounted upon the center of the disk and provided with upturned ends *g'*, having openings *k'*, the spring *b'* beneath the frame *d'* and provided with the points *d'*, and the bar *i'*, passed through the openings *k'* and provided with indicators *j'* and with a scale of miles upon its upper surface, substantially as set forth.

4. The combination, in a nautical course-indicator, of the base-bar, the saddle mounted for sliding on the bar, the transverse bar mounted for sliding on the said saddle, the saddle *n*, mounted on the transverse bar and provided with a centrally-located upwardly-projecting spindle *q* and the stud *s*, a disk provided with a central opening passed over the spindle *q* and with the openings *a'* for engaging the stud *s*, a spring for retaining the disk in engagement with the stud *s*, a frame *d'*, provided with a central opening passed over the spindle, and devices for securing the frame upon the spindle, and the bar *i'*, passed through openings *k'* on the said frame and provided with indicators *j'*, substantially as and for the purpose set forth.

474,847. STANDARD FOR ELECTRIC WIRES. EDMUND G. MORGAN, Chicago, Ill. Filed Oct. 19, 1891. Serial No. 408,940. (No model.)

Claim.—1. An extensible standard for supporting electric wires and similar purposes, comprising a supporting-post, an independent frame provided with a holder or clamp for the device to be supported, and a screw-threaded rod resting loosely against one of the above-mentioned parts and carrying a nut which supports the other of such parts, substantially as and for the purpose set forth.

2. An extensible support for electric wires and similar purposes, comprising a post, an independent frame provided with a clamp or holder for the wire or similar device, and an intermediate section resting loosely upon the post and supporting the frame, and mechanism for adjusting or extending the intermediate section in the direction of its length, all substantially as and for the purpose set forth.

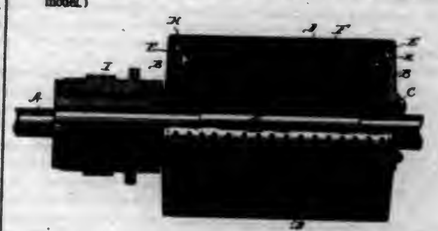
3. An extensible standard for electric wires and similar purposes, comprising a post, a superposed frame for carrying the wire or similar device and guided by the post, an intermediate section resting loosely on the post and composed of a screw-threaded rod and a nut, upon which is supported the frame, and mechanism for revolving such rod, substantially as and for the purpose set forth.

4. An extensible standard for electric wires and similar purposes, comprising a post pointed at its lower end and carrying a guiding lug or collar provided with a set-screw near its upper end, an angular frame provided with a holder for the wire or similar device and guided and fixed in its position by the lug and set-screw, an intermediate section composed of a screw-threaded rod and a nut resting loosely against the upper end of the post and the horizontal arm of the frame, and



bevel-gearing carried by the nut and arranged to rotate the screw-threaded rod, substantially as and for the purpose set forth.

474,848. ARMATURE FOR ELECTRIC MOTORS. EDMUND G. MORGAN, Chicago, Ill. Filed Dec. 12, 1891. Serial No. 414,787. (No model.)



Claim.—1. An armature comprising a shaft, end plates or heads, a cylindrical sleeve clamped between said end plates or heads, soft-iron cores, and coils surrounding the same inclosed within the sleeve and end plates and supported by the latter, substantially as and for the purpose set forth.

2. An armature comprising a shaft, end plates or heads, cylindrical outer sleeve clamped between the end plates or heads, soft-iron cores, coils wrapped around such cores, a frame for supporting the cores and coils, and lugs projecting from the frame and resting in recesses in the end plates, substantially as and for the purpose set forth.

3. An armature comprising end plates or heads provided with recesses, a frame arranged between the end plates and provided with lugs adapted to be supported in the said recesses, and soft-iron cores and coils supported by such frame, substantially as and for the purpose set forth.

4. An armature comprising end plates, a cylindrical sleeve clamped between the end plates, and soft-iron cores and coils wrapped around such cores, both being inclosed by the end plates and sleeve, substantially as and for the purpose set forth.

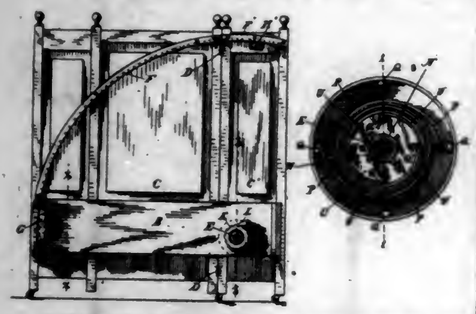
5. An armature comprising end plates, a perforated sleeve clamped between the end plates and soft-iron cores, and coils wrapped around such cores, both being inclosed by the end plates and sleeve, substantially as and for the purpose set forth.

6. An armature comprising a shaft, end plates or heads provided with recesses, a frame provided with lugs adapted to be supported in such recesses, said frame consisting of two rings, coils wrapped around such rings and the soft-iron disks or cores, and clamping devices for securing the rings and cores together, substantially as and for the purpose set forth.

7. An armature comprising a shaft, end plates or heads provided with recesses, a frame provided with lugs adapted to be supported in such recesses, soft-iron disks clamped between the sides of the frame and having grooves formed across the peripheries of such disks, and coils passing through the grooves and around the disks and frame and supported thereby, substantially as and for the purpose set forth.

8. An armature comprising a shaft, end plates or heads, and a frame supporting soft-iron cores and coils and itself arranged between and supported by the end plates, substantially as and for the purpose set forth.

474,849. FOLDING BED. LUTHER V. MOULTON, Grand Rapids, Mich. Filed Feb. 24, 1891. Serial No. 382,620. (No model.)



Claim.—1. In combination, a frame adapted to contain a bed, head and foot boards to which the said frame is pivoted near one side, curved guide-plates attached to the said frame near its opposite side, and curved tracks engaging said guide-plates and attached to said head and foot boards, substantially as described.

2. The combination, with a frame adapted to contain a bed and head and foot boards vertically divided and hinged, one part of each board pivoted to the end of said frame and covering the end thereof when closed, the other parts of said boards swinging inward and covering the bottom of said frame when closed, of curved tracks attached to said boards, concentric to said pivots and divided opposite the hinges of said boards, and guide-plates attached to said bed-frame and engaging said tracks, substantially as described.

3. In a folding bed, the combination of a frame adapted to contain a bed and a case having stationary sides pivoted to said frame, and a front hinged to said sides opening in line with said sides and permitting said frame to open between the same, curved tracks attached to the inner surface of said case, concentric to said pivots, and guide-plates secured to said frame and engaging said tracks, substantially as described.

4. In a folding bed, a frame adapted to contain a bed, head and foot boards pivoted thereto, curved tracks attached to said boards concentric with said pivot, guide-plates attached to said frame and engaging said tracks, inclined hooks on said guide-plates, and oppositely-inclined hooks on said boards, engaging the hooks on said guide-plates, substantially as described.

5. In a folding bed, a cylindrical spring-case having a central stud, a hub journaled on said stud and supporting the bed-frame, a ring surrounding said hub and detachably secured to the same, and a series of convolute springs attached to said ring at one end and to said case at the other end, substantially as described.

6. In a folding bed, in combination with a frame adapted to contain a bed and a case to inclose the same, a cylindrical spring-case, a hub journaled therein and supporting said frame, a ring detachably secured to said hub and having eccentric faces forming portions of involute curves, and a series of convolute springs attached to said ring and case, substantially as described.

7. In a folding bed, in combination with a frame adapted to contain a bed and a case to inclose the same, a cylindrical spring-case attached to said case, having an annular bearing-surface engaging the surface of said frame and a central stud having an axial bolt, a hub journaled on said stud, said hub passing through said frame and having a ratchet engaging the inner surface of the same, a pawl on the frame engaging said ratchet, a washer surrounding said bolt and securing the hub in place, and adjusting-washers between said washer and the end of said stud, substantially as described.

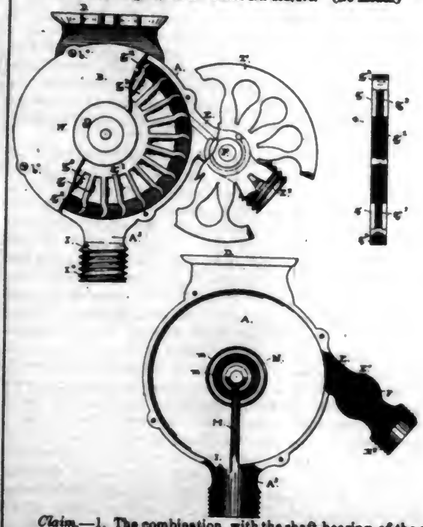
8. In a spring-balancing mechanism for folding beds, a cylindrical case having a central stud and oppositely-inclined hooks on its inner surface, a hub journaled on said stud, a detachable and reversible ring on said hub, and a series of flat convolute springs attached at their inner ends to said ring and at their outer ends detachably and reversibly attached to said hooks, substantially as described.

474,850. PROCESS OF PRODUCING PHOTOGRAPHS ON HARD SURFACES. ARMAND MÜLLER-JACOBS, New York, N. Y., assignor to the Heliocaustic Art Company, same place. Filed Aug. 23, 1890. Renewed Sept. 12, 1891. Serial No. 405,566. (No specimens.)

Claim.—1. The process of producing photographs, images, and pictures on hard surfaces, which consists in coating the surfaces with a solution of guaiaretic acid or of the guaiaretate of a metal or organic base, subjecting the so-coated surface under a negative or transparent positive to the action of the light, and after developing the same subjecting the surface to a suitable acid, by which the photograph or image is etched into the surface, substantially as set forth.

2. In the art of photography, the process which consists in coating a surface with a guaiaretic acid or its metal or organic salts as the essential sensitizing medium, substantially as set forth.

474,851. WATER-MOTOR. ARCHIBALD B. MURRAY, San Rafael, Cal. Filed Aug. 12, 1891. Serial No. 402,476. (No model.)



Claim.—1. The combination, with the shaft-bearing, of the casing having concentric water-grooves and a perpendicular water-channel terminating in the waste-outlet, substantially as set forth.

2. The herein-described water-motor, consisting of the two-part wheel-chamber having the inclined neck with inlet-passage, valve-chamber, and the plug-valve, a waste-outlet at the bottom, the wheel having radial arms terminating in curved buckets and united by a web between the arms, and the shaft-bearings having chamfered inner faces, said wheel-chamber having the water-grooves around the shaft and the perpendicular water-channel running into the waste-outlet, substantially as set forth.

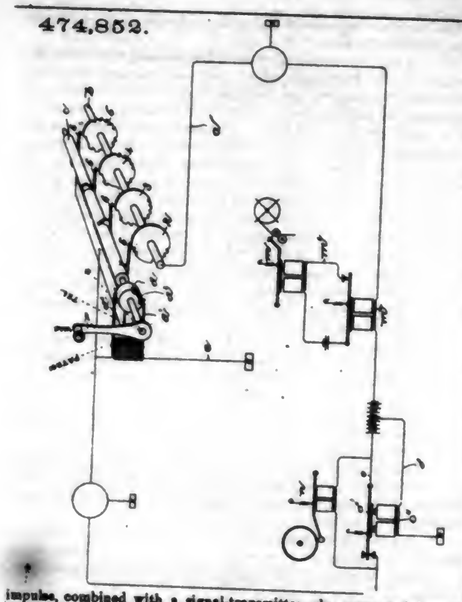
474,852. SIGNALING APPARATUS. BERNICE J. NOYES, Boston, Mass. Filed Sept. 17, 1889. Serial No. 324,130. (No model.)

Claim.—1. In an electric circuit, a signal-receiving station containing a register and a bell operatively connected with the said circuit and responsive to the signal impulses, a controlling device for rendering said bell non-responsive, and an electro-magnet controlling the action of said controlling device and responsive to a distinguishing impulse, combined with a signal-transmitter, also connected in said circuit and contained in a box, and a circuit-changer for transmitting the said distinguishing impulse to effect the operation of said electro-magnet, substantially as described.

2. In an electric circuit, a signal-receiving station containing a register and a bell operatively connected with the said circuit and responsive to the signal impulses, a shunt-switch, as o, for rendering said bell non-responsive, and an electro-magnet controlling the action of said shunt-switch and responsive to a distinguishing impulse, combined with a signal-transmitter, also connected in said circuit and contained in a box, and a circuit-changer for transmitting the said distinguishing impulse to effect the operation of said electro-magnet, substantially as described.

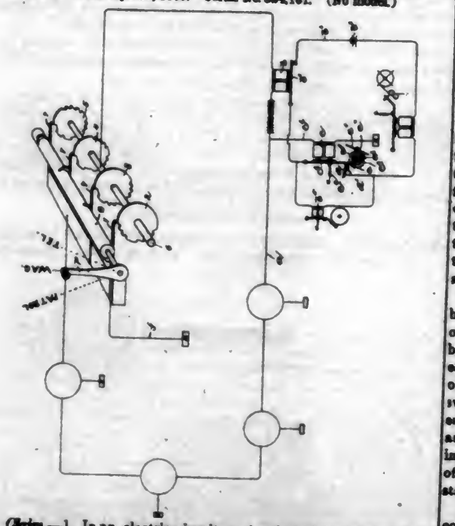
3. In an electric circuit, a signal-receiving station containing a register and a bell operatively connected with the said circuit and responsive to the signal impulses, a controlling device for rendering said bell non-responsive, and an electro-magnet in another circuit controlling the action of said controlling device and responsive to a distinguishing

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impulse, combined with a signal-transmitter, also connected in said circuit and contained in a box for transmitting the signals, and a circuit-changer in another circuit for transmitting the said distinguishing impulse to effect the operation of said electro-magnet, substantially as described.

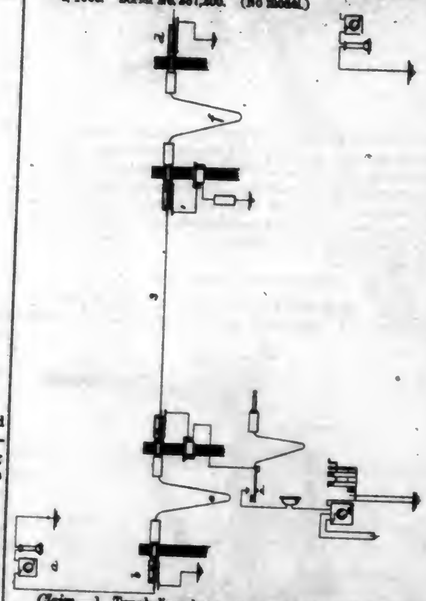
474,853. SIGNALING APPARATUS. BERNICE J. NOYES, Boston, Mass. Filed Sept. 17, 1889. Serial No. 324,131. (No model.)



Claim.—1. In an electric circuit, a signal-receiving station containing a register and a bell operatively connected with the said circuit and normally responsive to the signal impulses, a controlling device for rendering said bell non-responsive, consisting of a shunt-switch and retarding device for it, and an electro-magnet for said shunt-switch responsive to a distinguishing impulse, combined with a signal-transmitter, also connected with said circuit and contained in a box, and a circuit-changer for transmitting said distinguishing impulse to effect the operation of said electro-magnet, substantially as described.

2. In an electric circuit, a signal-receiving station containing a register and a bell operatively connected with the said circuit and normally responsive to the signal impulses, a controlling device for rendering said bell non-responsive, consisting of a shunt-switch, a retarding device for it, and an electro-magnet in another circuit for said shunt-switch responsive to a distinguishing impulse, combined with a signal-transmitter, also connected in said circuit and contained in a box, and a circuit-changer in another circuit for transmitting said distinguishing impulse to effect the operation of said electro-magnet, substantially as described.

474,854. TRUNK-LINE SYSTEM. JOSEPH J. O'CONNELL, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 4, 1888. Serial No. 287,266. (No model.)



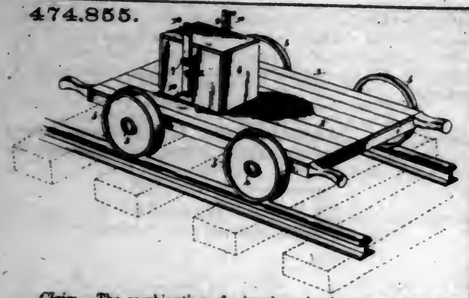
Claim.—1. Trunk-lines between two switchboards or sub-stations divided into two divisions, one division extending from a common ground-wire including resistance at one station, each through a different spring-jack switch, and thence each to the other sub-station and each through a different spring-jack switch, and thence to a common line including an operator's telephone, the other division extending from a common line including resistance at the last sub-station, each through a different spring-jack switch, and thence each to the other or first sub-station, and thence to a common line including the listening operator's telephone, in combination with switching apparatus whereby the operators may communicate over the different trunk-lines, said trunk-lines being adapted in making the connections between different telephone-lines terminating at the different stations, substantially as and for the purpose specified.

2. The combination, with two groups of telephone-lines, each group being connected with different switchboards at the same central office or at different sub-offices, of trunk-lines extending between the switchboards, said trunk-lines being in different sets or divisions, the lines of each division extending from spring-jack switches and annunciators of one switchboard to spring-jack switches and annunciators at the other switchboard, and each division being provided reciprocally at different stations or boards with a common ground branch of high resistance and a common wire including an operator's telephone, and switching apparatus for connecting the telephone at either station with one of the trunk-lines of the division extending to the other station, substantially as and for the purpose specified.

3. The trunk-line system, substantially as hereinbefore described, consisting in two divisions of lines, one division being connected from a common ground-wire including resistance, each through a different annunciator and spring-jack switch at sub-station A and extending to sub-station B, and being there connected each through a different spring-jack switch and annunciator to a common line *s*, including a listening operator's telephone, the other division being connected from a common line *t* at station B, each through a different annunciator and spring-jack switch and extending to station A and being there connected each through a different spring-jack switch and annunciator to a wire *s*, including the listening operator's telephone at station A.

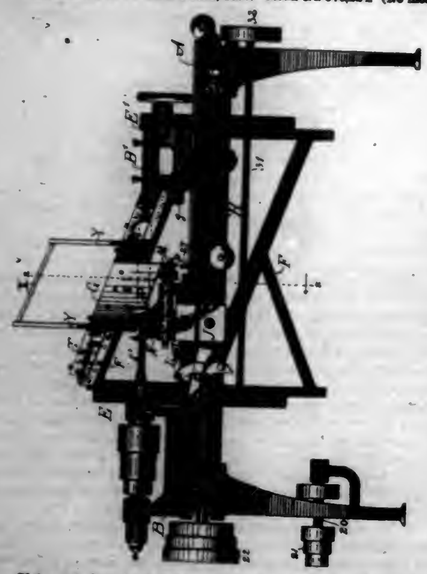
474,855. HAND-CAR. JOSEPH R. PARKER, Milford, Tex., assignor of one-half to A. M. Horton, same place. Filed Aug. 12, 1891. Serial No. 402,461. (No model.)

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Claim.—The combination of a hand-car having an opening in its platform disposed over one of the axles, a rectangular casing arranged over the opening, a drive-shaft journaled in the sides of the casing, a train of gears consisting of cog-wheels and pinions connecting the drive-shaft and the axle, and the crank-handles arranged at the ends of the drive-shaft and composed of bars centrally secured to the drive-shaft, and laterally-extending handles arranged at the ends of the bars, substantially as described.

474,856. BACK-KNIFE GAGE-LATHE. CHARLES F. E. PETERLEIN, Binghamton, N. Y. Filed Nov. 3, 1890. Serial No. 370,234. (No model.)



Claim.—1. In a back-knife gage-lathe, a traveling carriage, two feed-screws which move said carriage forward and back, respectively, a sizing or scoring cutter mounted on said carriage in position to operate on the stock during the backward travel of the carriage, and a roughing-cutter pivotally connected to the carriage so that it may be brought into position to operate on the stock during the forward travel of the carriage, in combination with a back-knife frame movable vertically, a back-knife section carrying the back-knife, which is movable to and from the stock, said back-knife operating upon the stock during the forward movement of the carriage, and a parting-tool for cutting a square shoulder on the stock, which is carried by said back-knife frame and is movable thereon to and from the stock, substantially as set forth.

2. In a lathe, the spindles between which the stock is mounted, the traveling carriage which moves parallel with the axis of said spindles, the feed-screws which move said carriage forward and back, respectively, and means for coupling said carriage to said screws, respectively, in combination with the pattern, the roughing-cutter, which is carried by the carriage, being pivotally mounted thereon, and which follows said pattern, said roughing-cutter being located at one side of the axis of said spindles, and said roughing-cutter operating on the stock during the forward travel of the carriage, and a sizing or scoring cutter, which is carried by the carriage, located on the side of the axis of the spindles opposite to that on which the said roughing-cutter is located, so that it operates on the stock during the backward travel of the carriage, substantially as set forth.

3. In a lathe, the spindles between which the stock is mounted, the carriage, the two feed-screws which move said carriage back and forth, means for coupling said carriage to said screws, respectively, the pattern, the roughing-cutter carried by the carriage being pivotally mounted thereon, which follows said pattern and operates on the stock during the forward travel of the carriage, the die or sizing-ring, and the forward-feed sizing or scoring cutter which is located on the carriage forward of the die or sizing-ring so as to operate on the stock during the forward travel of the carriage, in combination with the backward-feed sizing or scoring cutter which is located on the carriage back of the die or sizing-ring and on the side of the axis of the spindles opposite to that on which the forward-feed sizing or scoring cutter is located, said backward-feed sizing or scoring cutter operating on the stock during the backward travel of the carriage, each of said two sizing or scoring cutters being unused and idle when the other is used, substantially as set forth.

4. In a back-knife gage-lathe, the vertically-movable back-knife frame, in combination with a movable back-knife section carrying the back-knife, which section is movable laterally on said frame to and from the stock, substantially as set forth.

5. In a back-knife gage-lathe, the back-knife frame, in combination with the parting-tool *p*, carried by said frame, for cutting a square shoulder on the stock, substantially as set forth.

6. In a back-knife gage-lathe, the back-knife frame, in combination with the parting-tool *p*, carried by said frame, for cutting a square shoulder on the stock, said tool being movable to and from the stock, substantially as set forth.

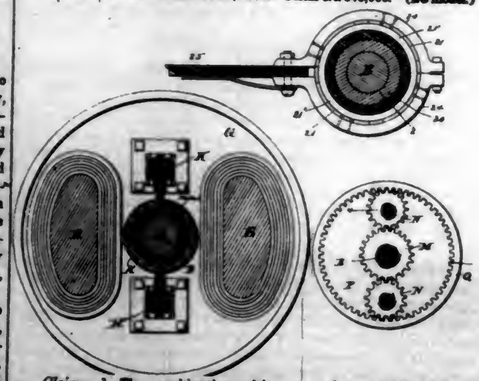
7. In a back-knife gage-lathe, the back-knife frame, in combination with the parting-tool *p*, which is carried by said frame and which is adjustable laterally, longitudinally, and vertically, substantially as set forth.

8. In a back-knife gage-lathe, the back-knife frame and section G, carrying the back-knife *b*, said section being movable laterally and said section having longitudinal groove *o*, in combination with the post M, having guide-flange 6, fitting and movable in said groove *o*, set-screw 5 for locking said post M in said groove, said post M having also vertical groove 7, the holder or strap 8, having threaded stem 10 located in said groove 7 and vertically movable therein, the thumb-screw 9, locking said holder or strap to said post M, and the tool *p*, movable laterally in said holder or strap 8, and the set-screw 11 for locking said tool to said holder or strap, substantially as set forth.

9. The back-knife frame and the movable section G, carrying the back-knife, in combination with the lever and cam mechanism X Y Y for operating said section G, substantially as set forth.

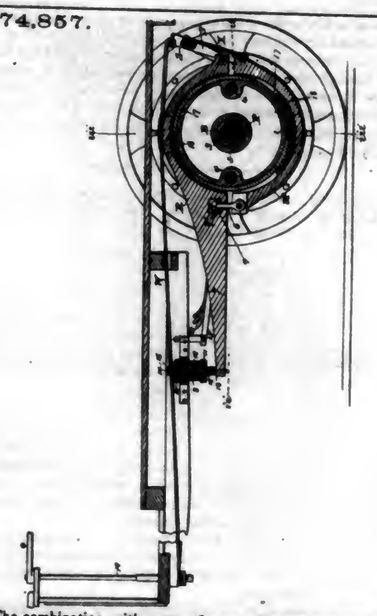
10. The back-knife frame having guideways *u u* and brackets *r r* and the movable section G, carrying the back-knife and having guide-flanges *i i* sliding in said grooves *u u*, said flanges carrying pins *n n*, in combination with the lever cam-plates Y Y, pivoted to said brackets *r r* and having cam-slots *m m* engaging, respectively, with said pins *n n*, and the bar X, connecting said lever-plates Y Y, substantially as set forth.

474,857. ELECTRIC-MOTOR MECHANISM. ELBERT B. PHILLIPS, Cleveland, Ohio. Filed Dec. 24, 1890. Serial No. 375,680. (No model.)



Claim.—1. The combination, with a car, of a propelling-motor connected with the driving-axle by means of sun-and-planet gearing adapted to be engaged or allowed to run idly by arresting or freeing a movable part, and an adjustable gripper for said part having a spring or buffer through which the said gripper is held from rotation, so that when the gripper is applied it arrests the said part with yielding resistance, substantially as set forth.

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2. The combination, with a car, of a propelling-motor connected with a driving-axle through gearing, such as sun-and-planet gear, adapted to be engaged or allowed to run idly by arresting or freeing a movable part, and a gripper for said part composed of jaws one at least of which has a projection by which it is secured to a part of the car-body adapted to prevent the rotation of the gripper, and a spring or yielding connection by which said projection is held, substantially as described.

3. A gripper composed of jaws one at least of which has a projection by which it is held from rotation, and a spring or buffer through which said projection is held, substantially as described.

474,858. COMB-STRIP OF HEEL-NAILS. FREDERIC F. RAYMOND, 2d, Newton, Mass. Original application filed May 15, 1885, Serial No. 165,574. Divided and this application filed Feb. 11, 1889. Serial No. 299,519. (No model.)



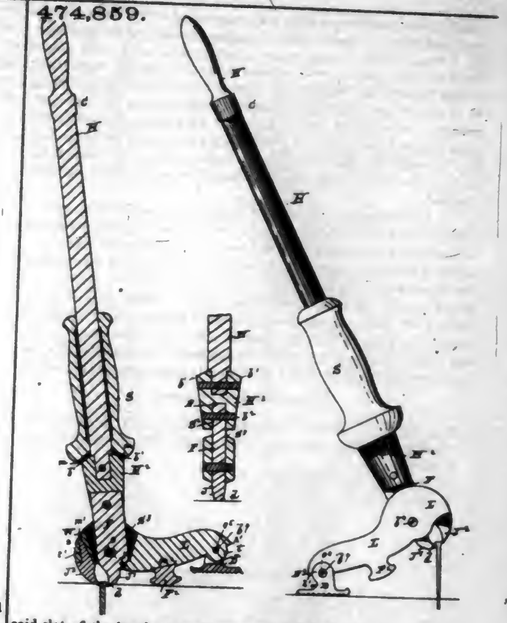
Claim.—As an improved article of manufacture, a comb-strip of shoe-nails or fastenings comprising a series of starts or projections of about the same length as an ordinary heeling-nail and alternately arranged therewith, a single shorter start between each two of the longer ones, said starts being cut from said strip, as shown, to form wedge-shaped headless blunt-pointed nails for alternate individual driving of a long and a short nail, substantially as described.

474,859. NAIL-DRAWING IMPLEMENT. JAMES REID, Jr., West Troy, assignor to Hagen & Reid, Troy, N. Y. Filed July 6, 1891. Serial No. 398,457. (No model.)

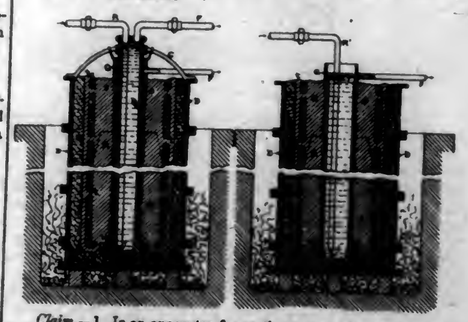
Claim.—1. In a nail-drawing implement provided with a sleeve-form hammer arranged on its handle, and a beak-form jaw upon the lower end of the latter, substantially as described, of a jaw-lever provided with a beak-form jaw that is adjustably pivoted to the handle-jaw, said jaw-lever being provided with an end fulcrum pivoted to its outer end and having a short fulcrum upon its under side between said end fulcrum, and the pivotal connection made with the handle-jaw, substantially in the manner as and for the purposes set forth.

2. In a nail-drawing implement, the combination, with the handle H, made with the socket part H^2 and the jaw part J', of the jaw-lever L, having a jaw part J^2, made with a removable beak, and having a slot S^2, with said jaw-lever, pivoted to the main fulcrum D, and having a short fulcrum F^2, with said jaw part J', adjustably pivoted within said slot of the jaw-lever part, substantially in the manner as and for the purposes set forth.

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474,860. APPARATUS FOR CASTING CANNON. RICHARD A. ROBERTSON, Jr., Providence, R. I. Filed Jan. 14, 1891. Serial No. 377,774. (No model.)



Claim.—1. In an apparatus for casting cannon, the combination, with a mold, of a hollow core extending entirely through the mold-cavity, and a metal-receiver provided with a core-seat at the bottom of the mold, the rim or edge of said receiver projecting upward into the mold-cavity, the receiver and core being concentric with the mold-cavity, substantially as described.

2. In an apparatus for casting cannon, the combination, with a mold, of a hollow core and a metal cylinder, the latter depending into the mold-cavity so that the lower end of the cylinder will come in contact with the surface of the casting or be submerged in the casting when the mold is full, the diameter of said cylinder where it touches the casting slightly exceeding that of the bore, and pipes or equivalent means for obtaining a continuous flow of cooling-fluid through the bore, all arranged substantially as described.

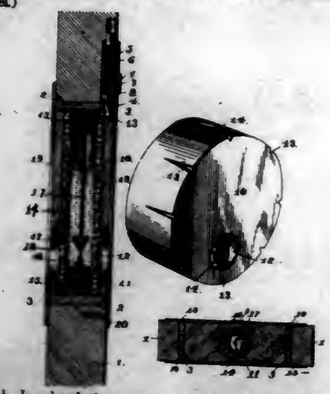
3. In an apparatus for casting cannon, the combination, with a mold, of a hollow core extending entirely through the mold-cavity, and a metal cylinder, the latter depending into the mold-cavity so that the lower end of the cylinder will come in contact with the surface of the casting or be submerged in the casting when the mold is full, the diameter of said cylinder where it touches the casting slightly exceeding the bore of the casting, and pipes or equivalent means to secure a continuous flow of cooling-fluid through the bore, all arranged substantially as described.

4. In an apparatus for casting cannon, the combination, with a mold, of a hollow core extending entirely through the mold-cavity, a

metal pot or receiver provided with a core-seat at the bottom of the mold and having a rim or edge projecting upward into the mold-cavity, a metal cylinder whose diameter is slightly greater than that of the core of the casting, said cylinder depending into the mold-cavity so that its lower end will be in contact with the surface of the casting or be submerged in the liquid metal when the mold is full, said core, receiver, and cylinder being concentric with the mold-cavity, and pipes or equivalent means for obtaining a continuous flow of cooling-fluid through the core and after the core is withdrawn through the bore, all arranged substantially as described, and for the purposes specified.

5. In an apparatus for casting cannon, the combination, with a mold, of the hollow core B, having a pipe E inserted therein, said core extending entirely through the mold-cavity, a metal pot or receiver K, provided with a core-seat at the bottom of and having a projecting rim H extending upward into the mold-cavity, a frame C at the top of the pit, a metal cylinder G, depending into the mold-cavity from the frame C and having an escape-pipe inserted therein above the top of the molding-pit, and the pipe E', preferably of such a length as to extend entirely through the mold-cavity or bore of the casting after the core is withdrawn, all arranged substantially as set forth and described.

474,861. LEVEL. WILLIAM RISK, Tyrone, Pa., assignor of one-half to S. L. Smith, same place. Filed Jan. 22, 1892. Serial No. 418,990. (No model.)



Claim.—1. In a level, the combination, with the level-bar having a transverse annular opening, of a disk mounted for rotation in the opening and provided with a transverse recess and at one side with a sight-opening communicating therewith, a plumb-bob tube located in the recess, a centrally-located pointer at the lower end and within the tube, and a plummet loosely suspended from the opposite end within the tube, substantially as specified.

2. In a level, the combination, with the level-bar having a transverse annular opening, of a disk mounted for rotation in the opening and provided with a transverse recess and at one side with a sight-opening communicating therewith, said disk being provided with notches at its periphery in accordance with the degrees of a circle, a spring-detent located at one side of a disk and adapted to engage the notches, a bob-tube located in the recess of the disk, a pin or pointer located centrally at one end of and within the tube opposite the sight-opening, and a plummet suspended from the opposite end of and within the tube coincident with the pin or pointer, substantially as specified.

3. In a level, the combination, with the level-bar having the annular opening and the metal bushing snugly fitting the same, of the disk mounted for rotation within the bushing, said disk being provided with a transverse recess, and a communicating sight-opening in its face, a bob-tube fitted in the recess opposite the sight-opening, plugs located in the opposite ends of the tube, a centrally-located pin projecting upwardly within the tube from the lower plug, and a plummet loosely hung from the opposite plug within the tube, substantially as specified.

4. In a level, the combination, with the level-bar having the annular transverse opening and the metal bushing fitting snugly within the opening and provided at one side with a recess communicating with a cavity formed in the level-bar, of a metal disk fitting the bushing, said disk having its face provided with the degrees of a circle terminating at the periphery of the disk in notches, and the disk being further provided with a radial recess or passage and opposite sight-openings communicating with the lower end of the passage, a spirit-tube located in the passage, plugs in the opposite ends of the tube, a point projecting upwardly within the tube from the bottom plug, a thread passed through the center of the upper plug, a plummet secured thereto and depending into the tube, a metal housing located in the cavity of the level-bar and secured to said bar and provided with a slot, a thumb-lug mounted for movement in the slot, a bolt or detent secured to the inner end of the thumb-lug and having its free end projected through the notch in the bushing and adapted to engage the notches of the disk, a coiled spring arranged in rear of the bolt, and the retaining-rings secured to the opposite sides of the level-bar and overlapping the joints between the bushing, level-bar, and disk, substantially as specified.

474,862. DRAW-BAR. JAMES B. SAFFORD, Chicago, Ill., and FRANK W. PARSONS, Boston, Mass. Filed July 16, 1891. Serial No. 399,727. (No model.)



Claim.—1. A draw-head provided with an upwardly-extending buffing-face, an upwardly-extending face adapted to bear against the end timber of the car, of substantially the same dimensions with the buffing-face, and a vertical web connecting the two and binding them together, whereby the buffing shock is communicated to such end timber and taken up thereby and any breaking of the buffing-face or lug is prevented, substantially as described.

2. A draw-bar provided with a downwardly-extending lug adapted to engage with the link of an opposing draw-head to prevent such heads from passing by each other when the cars are brought together, substantially as described.

3. In a draw-head, the combination of a buffing-face extending upwardly from the opening in the face of the draw-head, a face extending upwardly in a position to engage or rest against the end car-timber, of dimensions substantially equal to those of the buffing-face, and a web formed integral with these two faces, whereby they are bound together, such web being provided with an orifice to receive and afford a bearing-surface for the coupling-pin, substantially as described.

4. A draw-head provided with an upwardly-extending buffing-face, an upwardly-extending face adapted to bear against the end timber of the car, of substantially the same dimensions with the buffing-face, and one or more horizontal webs connecting the two and binding them together, whereby the buffing shock is communicated to such end timber and taken up thereby and any breaking of the buffing-face is prevented, substantially as described.

5. A draw-head provided with an upwardly-extending buffing-face, an upwardly-extending face adapted to bear against the end timber of the car, of substantially the same dimensions with the buffing-face, a vertical web, and one or more horizontal webs connecting the two and binding them together, whereby the buffing shock is communicated to such end timber and taken up thereby and any breaking of the buffing-face is prevented, substantially as described.

474,868. FISHWAY. SAMUEL SANDERSON, Barton, Canada. Filed Mar. 19, 1891. Serial No. 385,679. (No model.)

Claim.—1. In a fishway, the combination, with a tank provided at each end with an opening, of gates for closing said opening, a spout projecting from the downstream end of the tank and inclosing the opening in said end, and a light of glass disposed in the top of the tank and in alignment with the spout, substantially as set forth.

2. In a fishway, the combination of a tank provided at both its ends with gates, the upstream gate having an opening therein affording communication between the exterior and interior of the tank when said gate is closed, a perforated cage provided with an entrance-opening and surrounding the downstream gate, and a spout inclosing the latter gate and projecting from the tank, substantially as set forth.

3. In a fishway, the combination, with a tank provided at each end with an opening, of gates for closing said openings, a spout inclosing the downstream opening and projecting from the tank, and a trap-door provided in the top of the tank, substantially as set forth.

4. In a fishway, the combination, with a tank provided with an opening at each end, of gates for closing said openings, a spout inclosing the downstream opening and projecting from the tank, a light of glass or equivalent material provided in the top of the tank in alignment with the spout, and a trap-door in the tank, substantially as set forth.

5. In a fishway, the combination, with a tank provided at its ends with inlet and outlet openings, respectively, and gates for closing said openings, of a spout projecting from the tank and inclosing the outlet-opening, and a light of glass or equivalent material arranged in the

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top of the tank and in alignment with the spout, substantially as set forth.

474,864. PROCESS OF TREATING COTTON-SEED OIL. GEORGE W. SCOLLAY, New York, N. Y. Filed July 12, 1887. Serial No. 244,112. (No specimens.)

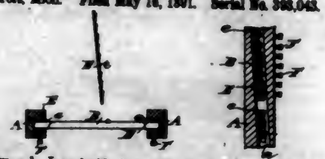
Claim.—1. The process of refining cotton-seed and analogous oils, consisting in bringing the oil in intimate contact with ocher and then separating the refined oil and the ocher carrying the impurities.

2. The process of refining cotton-seed and analogous oils, which consists in drying ocher and bringing the dried ocher and oil in intimate contact and then separating the refined oil and the ocher carrying the impurities.

474,865. COMPOSITION FOR USE AS ORNAMENTAL MOLDINGS, &c. OSCAR VON SLAHA, Jersey City, N. J. Filed Aug. 18, 1891. Serial No. 402,966. (No specimens.)

Claim.—The plastic composition herein described, composed of dextrine, sulphate of lime, silicate of soda, and vegetable fibers, mixed in about the proportions set forth.

474,866. EXCELSIOR-CUTTING MACHINE. CHARLES G. SMITH, Detroit, Mich. Filed May 14, 1891. Serial No. 393,043. (No model.)

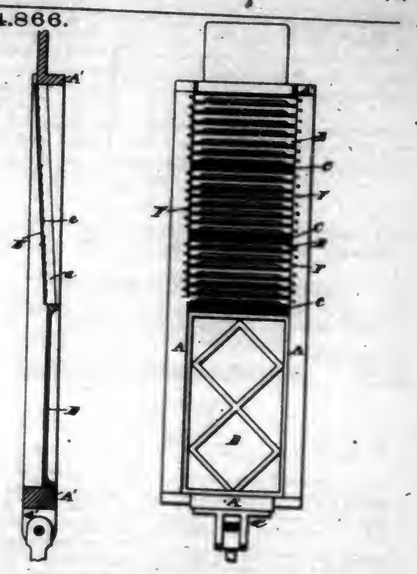


Claim.—1. In a knife-frame of an excelsior-cutting machine, the combination of the posts provided with the grooves for the reception of the ends of the knives, with the key-bar provided with keys to hold the knives in position, the knives inserted in the grooves in the posts, and the means to lock them against the keys of the key-bar, all substantially as described.

2. In a knife-frame of an excelsior-cutting machine, the combination of the posts A A, provided with the inclined groove *a* for the reception of the ends of the knives, with the key-bar having the inclined keys to support the knives, the knives inserted in the grooves, and the means to retain the knives against the keys, all substantially as described.

3. In the knife-frame of an excelsior-cutting machine, the combination of the posts for supporting the knives, having the inclined planes for guiding the set of the knives, the locking-key to hold the knife-blade in a perpendicular plane, the knives resting against the locking-key, and the means for locking the knives against the locking-key, all substantially as set forth.

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474,867. FEED-TROUGH. CORA B. SHELLENBERGER and JOSHUA THAN SHELLENBERGER, Paulding, Ohio. Filed Dec. 24, 1891. Serial No. 416,077. (No model.)



Claim.—1. In a feed-trough, the combination, with the base or floor, the opposite end walls, and the intermediate longitudinally-disposed trough, of the post 6, the bar 7, surmounting the same, extending above the center of the trough and parallel therewith, the outer series of pairs of bars 8, having their upper ends nailed to the bar 7 and their lower ends to the edge of the trough, the opposite series of single bars 9, nailed at their upper ends to the bar 7 and at their lower ends to the opposite edge of the trough and alternating with the pairs of bars 8, and the series of strands of wire connected to the post 6 and passed successively around the single bars 9 and pairs of bars 8, substantially as specified.

2. In a hog-trough, the combination, with the base, the series of vertical partitions rising therefrom and forming compartments, and the trough arranged in rear of the compartments, of the front wall hinged to the base, means for locking the same in a vertical position, and doors formed in the wall opposite each of the compartments, substantially as specified.

3. In a hog-trough, the combination, with the base and the series of vertical partitions arranged in rear of the same, of the front wall, doors for each of the compartments formed in the wall, a roof mounted on the partitions and opposite each compartment provided with a pair of perforations, and a series of rope sections having their terminals passed through the perforations, so as to form a noose within the compartments, one terminal of each rope section being knotted above the roof and terminating in a hand-pull, substantially as specified.

4. In a hog-trough, the combination, with the base or floor and the vertical partitions rising therefrom and forming a series of compartments, of a trough arranged in rear of the compartments, a hog-holder arranged in each compartment, a hingedfront wall, and doors located in said wall opposite each of the compartments, substantially as specified.

474,868. FOLDING BEDSTEAD. WILLIAM D. SNYDER, Chicago Ill. Filed Jan. 22, 1891. Serial No. 378,640. (No model.)

Claim.—1. The combination, with the standard provided with rests *a* and bed-frame, of links *a'*, provided with a rocker-base adapted

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to work upon said rests *a* on the standard and pivoted at their upper ends to the bed-frame, and links C, pivoted at one end near the front edge of the standard at a point in front of links *a'* and at the other end to the bed-frame at a point behind the links *a'*, so as to play across and alongside of the same, as specified.

2. The combination, with the standard and bed-frame, of links *a'*, supported at the base of the standard and connected with the bed-frame, as shown, cross-links C, pivoted to the standard and bed-frame, as shown, a slot *c*⁴ being provided at one end to allow slight play of the pivot-pin therein, and projecting notched pieces and pins on the standard and bed-frame adapted to interlock when the bed-frame is let down, as specified.

474,869. WARDROBE-BEDSTEAD. WILLIAM D. SNYDER, Chicago, Ill. Filed Apr. 3, 1891. Serial No. 387,569. (No model.)



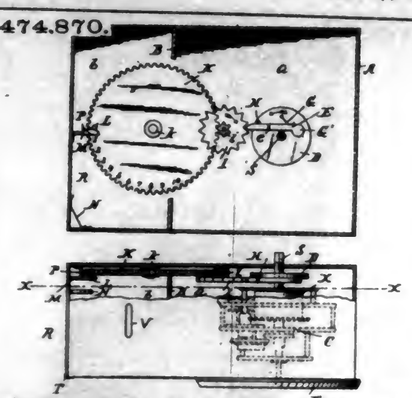
Claim.—1. In a wardrobe-bedstead, and in combination, the standard, the bed-frame pivoted to the standard, an elastic bed-bottom secured at the foot to a cross-rail *c*, attached to the bed-frame and at the head to a rail *c'*, pieces *c*⁴, attached at each end to the rail *c'* and provided with a slot *c*⁵, adapted to engage pins *a'*, secured to the side rails of the bed-frame, pins *c*, projecting from the ends of said rail *c'*, and plates E, provided with slots *d'*, secured to the sides of the standard, all arranged, as shown, relatively to one another.

2. In a folding bed of the class described, the combination, with the bed-frame, of the rail *c'*, provided with end pieces *c*⁴, having slots *c*⁵, engaging over pins on the side rails, and an elastic bed-bottom connected to the bed-frame and to said rail *c'*, and a stop on the standard adapted to check the motion of the end pieces *c*⁴ for stretching the bed-bottom and holding it in place while the bed is open, substantially as specified.

474,870. TIME-LOCK FOR SAVINGS-BANKS. WILLIAM G. SPIEGEL, New York, N. Y., assignor to Leroy W. Baldwin, same place. Filed June 16, 1891. Serial No. 396,620. (No model.)

Claim.—1. The combination of a clock having its face exposed to view so as to tell time, a coin-receptacle in the clock-case, a door for said receptacle, a lock on said door, and mechanism whereby motion

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may be transmitted at the expiration of a predetermined period from a member of the clock-train to the lock, and the catch thereby automatically disengaged, substantially as described.

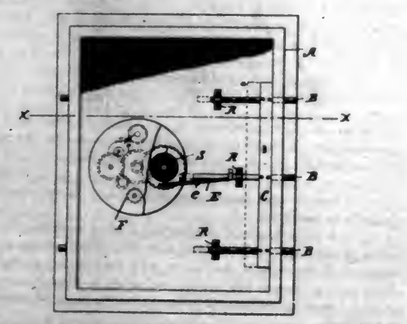
2. The combination of a closed receptacle, a door for said receptacle, a lock on said door, a clock-train, and an adjustable train of mechanism conveying motion from the shaft of the mainspring to the lock, whereby after the mainspring has run down a certain number of times or fraction of a time a further winding up of the spring will release the lock, substantially as described.

3. The combination of a coin-receptacle, a door for said receptacle, a lock on said door, an adjustable dial-plate inclosed in the same casing with said receptacle, a projection on said dial plate which operates the lock, a clock-train, and gearing conveying motion directly from the mainspring-shaft of said clock-train to said dial, substantially as described.

4. The combination of a coin-receptacle, a door for said receptacle, a lock on said door, an adjustable dial-plate inclosed in the same casing with said receptacle, a projection on said dial-plate which operates the lock, a clock-train, and gearing conveying motion from the mainspring-shaft of said clock-train to said dial, two members of said gearing having a pawl-and-ratchet connection, whereby the dial is moved when the main shaft is turned backward to wind up the clock, but not when the shaft is turned forward to drive the clock-train, substantially as described.

5. The combination of a closed receptacle, a door for said receptacle, a lock on said door, a clock-train, and an adjustable train of gearing conveying motion from the mainspring-shaft of said clock-train to said lock, two members of said train of gearing having a pawl-and-ratchet connection, whereby the gearing is moved when the mainspring-shaft is turned backward to wind up the clock, but not when the shaft is turned forward to drive the clock-train, so that after the mainspring has run down a certain number of times a further winding up of the spring will release the lock, substantially as described

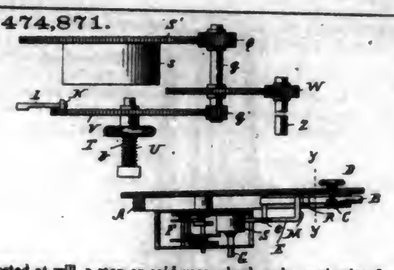
474,871. TIME-LOCK. WILLIAM G. SPIEGEL, New York, N. Y., assignor to Leroy W. Baldwin, same place. Filed June 16, 1891. Serial No. 396,630. (No model.)



Claim.—1. The combination of the mainspring of a clock-train, a winding apparatus connected therewith, and an adjustable stop on said winding attachment, substantially as described.

2. The combination of the mainspring of a clock-train, a train of gear-wheels for winding said mainspring, an idle gear-wheel which may be temporarily drawn from mesh with said train of gearing and

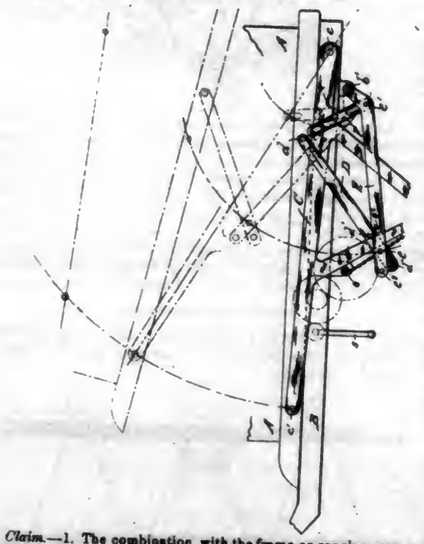
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adjusted at will, a stop on said gear-wheel, and a projection from the clock-frame coacting with said stop, substantially as described.

3. The combination, with a receptacle, a door for said receptacle, and a lock on said door, of a clock-train and spiral mainspring for operating said clock-train, a detent for said lock, a lever which is connected to said detent, and an adjustable extension on said lever, which presents a contact to the mainspring which is under control of the operator, whereby the point of expansion of the spring at which the detent will be withdrawn is under control, substantially as described.

474,872. DUMPING-WAGON. WALTER G. STEWART, Reading, Pa. Filed June 29, 1891. Serial No. 397,772. (No model.)



Claim.—1. The combination, with the frame or running-gear and the movable body, of main elevating-arms pivoted to the frame and arranged to lift directly one end of the body, and elevating mechanism for the opposite portion of the body, operatively connected to said elevating-arms at a point intermediate between the connections of said arms with the frame and body, respectively, substantially as set forth.

2. The combination, with the frame or running-gear and the movable body, of main elevating-arms pivoted to the frame and arranged to lift directly one end of the body, the opposite portion of the body being linked to supplemental arms pivoted to the frame and operatively connected to said elevating-arms at a point intermediate between the connections of said arms with the frame and body, respectively, substantially as set forth.

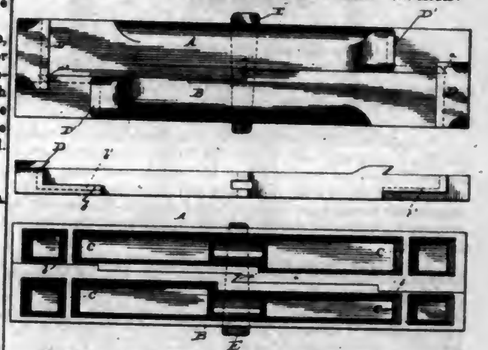
3. The combination, with the frame or running-gear and the movable body, of main elevating-arms pivoted to the frame and arranged to lift directly one end of the body, the opposite portion of the body being linked to supplemental arms pivoted to the frame and operatively connected by slotted bars to said elevating-arms, substantially as set forth.

4. The combination, with the frame or running-gear and the movable body, of main elevating-arms pivoted to the frame and arranged to lift directly one end of the body, the opposite portion of the body being linked to supplemental arms pivoted to the frame at a point nearer its center than the pivotal connection of the elevating-arms and operatively connected intermediately of their lengths to said elevating-arms, substantially as set forth.

5. The combination, with the frame or running-gear and the movable body, of main elevating-arms pivoted to the frame and arranged to lift directly one end of the body, the opposite portion of the body being adjustably linked to the supplemental arms pivoted to the frame and operatively connected to said elevating-arms, whereby the automatic elevation of said portion of the body may be varied, substantially as set forth.

6. A dumping-wagon consisting of a frame or running-gear, a movable body, elevating-arms C, supplemental arms E, links D, connecting-bars F, and an operating-gear, all arranged and adapted to operate substantially as set forth.

474,878. METAL RAILROAD-TIE. ALEXANDER STORY, Washington, Iowa. Filed Feb. 17, 1890. Serial No. 340,816. (No model.)



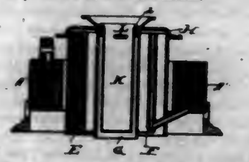
Claim.—1. The half-tie provided with inclined shoulders on the inner edge to dovetail into similar catches on its companion half-tie, also provided with a projection on the wide end to dovetail with that part of its companion half-tie meeting it, and all as substantially described above.

2. A metal tie consisting of two like sections having inclined rail-securing braces on their ends, their adjacent edges formed with oppositely-inclined shoulders arranged to engage with each other and interlocking connections on the lower inner portion of their ends, substantially as described.

3. A metal tie consisting of two like parts having one end reduced in width and formed with interlocking shoulders on their inner edges, and a key passing through the sections for securing them in place, substantially as described.

4. A metal tie formed of two like parts formed with interlocking shoulders and inclined rail-braces, flanges on one end of the section extending beneath the adjacent end of the other section into a groove formed therein, substantially as described.

474,874. OIL-STOVE. SAMUEL D. STROUP, Chelsea, Mich. Filed Dec. 1, 1891. Serial No. 413,727. (No model.)



Claim.—1. In an oil-stove, the combination, with the oil-reservoir, wick-tube, cylinder within said tube, and inside annular deflector supported on the upper end of the cylinder, of the water-reservoir held within the cylinder, substantially as described.

2. In an oil-stove, the combination, with the oil-reservoir, wick-tube, and annular inside deflector held within the circle of the wick-tube, of the water-reservoir located below and removable through the central opening in the deflector, substantially as described.

3. In an oil-stove, the combination, with the oil-reservoir, wick-tube, and cylinders on both the outside and inside of said tube, of the annular outside and annular inside deflectors supported, respectively, on said cylinders, and the water-reservoir located below and removable through the opening in the inside deflector, substantially as described.

4. In an oil-stove, the combination, with the oil-reservoir, wick-tube, cylinder within the wick-tube, and annular inside deflector supported on said cylinder, of the removable water-reservoir in the cylinder removable through the central opening in the deflector, substantially as described.

5. In an oil-stove, the combination, with the oil-reservoir, wick-

tube, and annular inside deflector, of the water-reservoir having a projection at the top co-operating with the inner edge of the deflector, whereby the water-reservoir is supported, substantially as described.

474,875. CABLE-RAILWAY GRIP. JOHN C. H. STUT, San Francisco, Cal. Filed Sept. 13, 1891. Serial No. 405,149. (No model.)



Claim.—1. In a cable-grip, the combination of a stationary jaw, a movable jaw fulcrumed at one side thereof and having a grooved surface in one side, and a rolling contact engaging the grooved portion to close the movable jaw in a horizontal plane and with increasing pressure, substantially as herein described.

2. In a cable-railway grip, a fixed or stationary jaw, a movable jaw hinged at its upper end at one side thereof in an approximately horizontal plane, and a mechanism comprising a rolling contact and a cam-groove in the jaw for connecting said jaw with the grip-lever, whereby the movable jaw may be turned about its fulcrum-shaft to open or close with relation to the stationary jaw, substantially as herein described.

3. In a cable-railway grip, a fixed or stationary jaw, the movable jaw having a fulcrum-shaft at one side of the stationary jaw, a groove or channel formed in the opposite side of the movable jaw from the gripping-surface, a vertically-sliding plate connected with the grip-lever, whereby it is moved up and down, and a roller journaled in said plate and extending through the groove or channel in the movable jaw, whereby the latter is moved about its fulcrum-shaft by the movements of the roller, substantially as herein described.

4. In a cable-railway grip, the stationary jaw, the movable jaw turning about a fulcrum-shaft at one side of the stationary jaw, a horizontal groove or channel formed in the side of the movable jaw opposite to the gripping-surface, and a roller connected with the vertically-sliding plate and the actuating-lever and extending through said channel so that pressure is exerted upon the bottom lug of the channel in the same radial line during the full movement of closing the jaws, substantially as herein described.

5. In a cable-railway grip, the crotch-frame having guiding-channels for the center plate made in the bottom of its opposite sides, one of the sides of said channels serving as a thrust-bearing for the center plate and roller in its action upon the movable jaw of the grip, substantially as herein described.

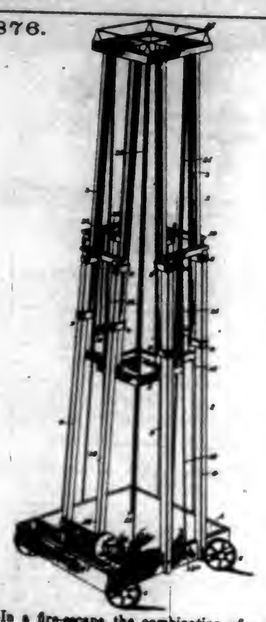
6. In a cable-railway grip, the crotch-frame with guiding-channels for the center plate made in the lower ends of its opposite sides, and concave channels in the projecting sides thereof in the vertical plane of travel of the cable and of the meeting faces of the grip-jaws, substantially as herein described.

7. In a cable-railway grip, the stationary crotch-frame, the fixed jaw, a hinged jaw movable in an approximately horizontal plane with reference thereto, a center plate sliding vertically with relation to the crotch-frame, and an intermediate mechanism by which the movable grip-jaw is actuated therefrom, a lever fulcrumed to the top of the center plate, a cross-head movable in a slot in the lower part of the lever, links connecting the cross-head with the stationary frame, a T-headed screw turning in screw-threads in the cross-head, a shaft extending along the lever-handle, having its lower end forked, and vertical slots made in each arm of the fork, into which the ends of the T-head of the screw extend, so that the screw may be turned and a change of direction of motion is effected between the screw and the turning rod, substantially as herein described.

474,876. FIRE-ESCAPE. WILLARD TALBOTT, Oakdale, Wash. Filed Sept. 16, 1891. Serial No. 405,904. (No model.)

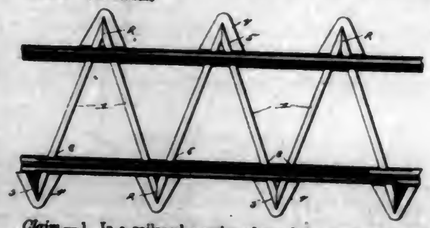


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Claim.—In a fire-escape, the combination of a tower provided with a base and having a platform and composed of sections sliding on each other and forming an elevator-shaft, a windlass, a car arranged in the elevator-shaft and provided at each corner with an opening, pulleys depending from the platform, and cables 25, each having one end secured to the elevator-car and its other end wound around a windlass, said cables extending from the elevator-car to the platform and passing over said pulleys and through the openings of the car to the base, the portions of the cables extending from the platform to the base serving as guides to steady the car, substantially as described.

474,877. METAL RAILROAD-TIE. BERKEL F. TAYLOR, Washington, Ky. Filed Jan. 25, 1890. Renewed Apr. 16, 1892. Serial No. 429,466. (No model.)



Claim.—1. In a railroad, a series of metal ties, each alternate tie being similarly disposed and each intermediate tie oppositely disposed, the meeting-ends of each pair of ties being beveled at their adjacent corners to form a miter-joint, substantially as specified.

2. In a railroad, a series of ties arranged zigzag and having their meeting ends mitered and secured together, in combination with supporting-plates mounted under each joint and means for securing the ends of the ties to the plates, substantially as specified.

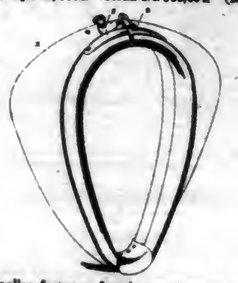
3. In a railroad, a series of cross-ties arranged zigzag or in alternate directions and at an angle to each other, the meeting ends of each pair of ties being mitered and connected, in combination with a metal plate seated under each joint and having an angular recess agreeing with and for the reception of the miter-joints of the ties, substantially as specified.

4. In a railroad, a series of ties arranged zigzag or at an angle to each other and having their adjacent ends beveled to form a miter-joint, the upper surfaces of the ties being provided with undercut recesses, a series of rail-sections slid longitudinally in the recesses, and metal plates seated under each of the joints of the ties and having recesses for the reception of the same, substantially as specified.

5. In a railroad, the combination, with a series of ties arranged at an angle to each other in alternately-opposite directions and having their meeting ends beveled to form a miter-joint, of metal plates seated under each of said joints and having a recess for the reception of the same, a series of rails mounted on the ties, and means for securing the rails thereto, substantially as specified.

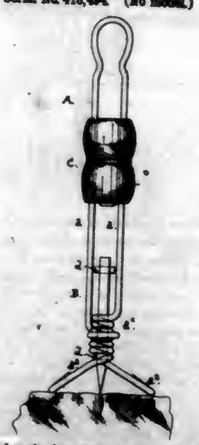
6. In a railroad, the series of ties arranged zigzag and having their meeting ends secured together by a joint-plate having a recess fitting the meeting ends of the ties, which plate is seated under and also serves the purpose of a support for the ties, substantially as specified.

474,878. HORSE-COLLAR FASTENER. JOHN THIELEN, Fremont, Nebr. Filed Apr. 15, 1891. Serial No. 389,054. (No model.)



Claim.—A collar-fastener forming casings to cover and protect the meeting faces of the ends of a collar and adapted to receive various sizes of collars and comprising two plates or sections 2 and 3 in the shape of elongated horns of concavo-convex form and having curved extensions 4 in the form of thin metal plates projecting from the meeting portions of the said sections and at right angles thereto, and smooth unbroken flanges 6 at right angles to and extending throughout the transverse length of the extensions 4 and the meeting portions of the sections, said extensions 4 of the section 3 carrying a stationary integral socket extending over from the end thereof, and the extension 4 of the section 2 supporting the block, and locking mechanism with which the said socket engages, substantially as described.

474,879. ICE-PICK. GEORGE W. TOPPING, San Mateo, Cal. Filed Nov. 30, 1891. Serial No. 413,494. (No model.)

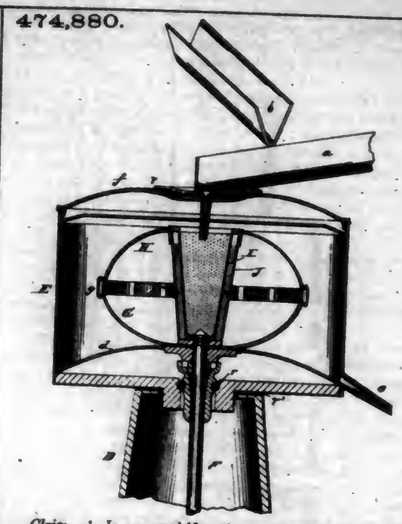


Claim.—1. The herein-described ice-pick, consisting of the frame A, produced from a single piece of wire having the spring-coil socket a^x, the parallel guides for the sliding hammer, and the divergent base and support at the foot of the frame, the pick-point loosely confined in the spring-socket and the sliding hammer confined between but sliding freely upon the guides, as set forth.

2. In an ice-pick of the kind or description having a sliding hammer, the frame A, composed of the parallel hammer-guides, the spring-coil socket a^x for the pick-point, and the base or support below the socket, adapted to rest on the block of ice at points around the line of action of the pick-point and to confine the pieces of ice as they are split or broken from the block, as herein set forth.

474,880. CENTRIFUGAL MACHINE FOR EMULSIFYING LIQUIDS. GEORGE W. TOWAR, Jr., Detroit, Mich. Filed Dec. 1, 1890. Serial No. 373,168. (No model.)

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Claim.—1. In an emulsifier, the combination of a fixed casing having an outlet-pipe, a spherical bowl adapted to rotate within said casing and provided with an annular opening around its circumference horizontally, and a perforated cup or cups within said bowl and arranged to rotate with said bowl, and a conduit adapted to conduct oil and milk into said inner cup, substantially as and for the purpose described.

2. In an emulsifier, the combination of a fixed casing having an outlet-pipe, a spherical bowl adapted to rotate within said casing and provided with an annular opening around its circumference horizontally, a perforated cup or cups centrally located in said bowl and adapted to rotate therewith, a cone-shaped bottom to said case, and a conduit leading into said inner cup, adapted to receive oil and milk from separate tanks and deliver them to said cup partially mixed, substantially as described.

3. The combination of a milk-tank, a butter-oil tank, conduits leading from said tanks into an emulsifier, consisting of an outer casing, a spherical bowl adapted to rotate in said casing and provided with an annular opening around the circumference of said bowl horizontally, and a perforated cup centrally located in said bowl and adapted to rotate therewith and receive the supply of butter-oil and milk, substantially as described.

4. In an emulsifier, the combination of an outer casing, a spherical bowl adapted to rotate within said casing and provided with an annular opening around its circumference horizontally, said opening fitted with a wire screen, a cup or cups centrally located in said bowl and adapted to rotate therewith, and a conduit adapted to supply milk and butter-oil to said inner cup, substantially as described.

474,881. STOP-ACTION FOR ORGANS. JOHN W. TRAINER, Fort Wayne, Ind., assignor to the Fort Wayne Organ Company, same place. Filed Oct. 26, 1891. Serial No. 410,063. (No model.)

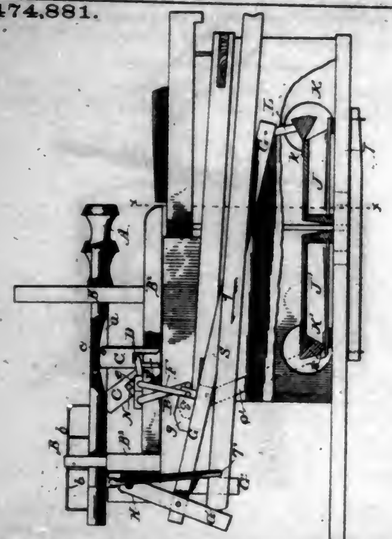
Claim.—1. A mute, a link pivoted at its front end to the mute, a pivoted hanger at the opposite end of the link, a rock-shaft having a crank engaging at its lower end with the link, a pull, a tumbler connecting the pull with the link, a second rock-shaft having a crank engaging with the pivoted hanger, and means for actuating the second rock-shaft independently of the pull, substantially as described.

2. A series of mutes, a series of links, each pivoted at one end to a mute and at its opposite end to a pivoted hanger, the hanger being in a common plane, and a swinging arm engaging with the series of hangers, substantially as set forth.

3. A series of mutes, a series of links, each pivoted at one end to a mute and at its opposite end to a pivoted hanger, the hanger being in a common plane, a series of rock-shafts arranged side by side and each having a crank engaging at its lower end with one of the links, a rock-shaft having a crank engaging with the series of pivoted hangers, and means for actuating the last-named rock-shaft, substantially as described.

4. A series of mutes at one end of an organ, a series of mutes at the opposite end of the organ, two series of links, each pivoted at one end of the mute, two series of pivoted hangers, each connected to one of the links, pulls for actuating the links each independently of the other, a rock-shaft having a crank engaging with one series of pivoted hangers and a crank engaging with the other series of pivoted hangers.

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and means for actuating said rock-shaft independently of the pulls which move the mutes separately, substantially as described.

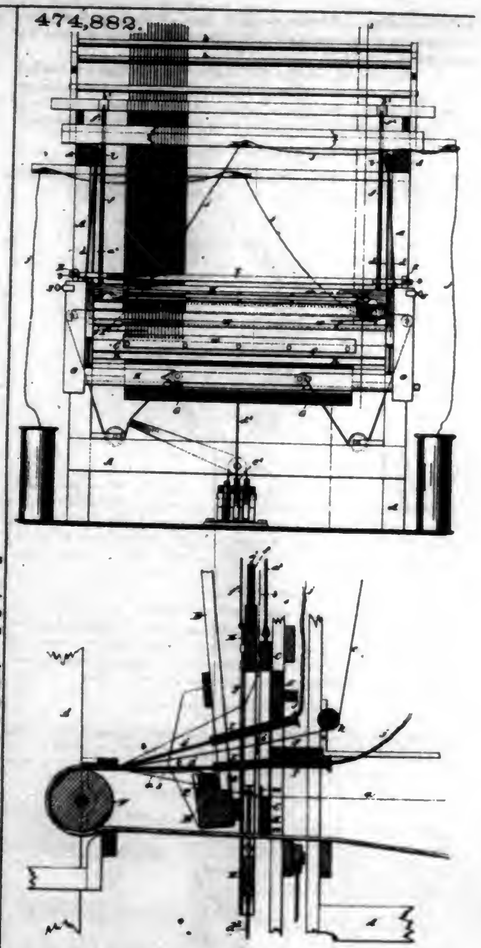
5. The combination, with the rock-shafts, the pulls, and the tumblers pivoted to the pulls and engaging with the rock-shafts, of the loops on the pulls and rib B, provided with the open-bottomed seats for the pulls, substantially as described.

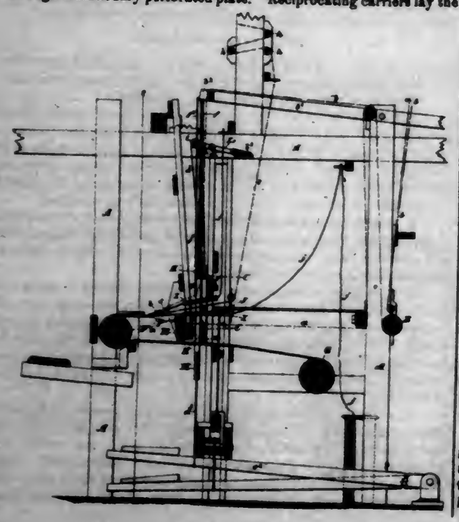
6. The combination, with the rock-shafts, the pulls, and the tumblers pivoted to the pulls and engaging with the rock-shafts, of the loops on the pulls and a removable notched rib adapted to be thrust endwise through the loops into its notched face at a right angle to the plane of the pulls and to be afterward turned upward to receive the horizontal bars of the loops, whereby the loops and the rib serve to prevent rotation of the pulls and to limit their endwise movement, substantially as described.

474,882. LOOM FOR WEAVING ORNAMENTAL FABRICS. ALWILL URBAHN, Brooklyn, N. Y., assignor to the American Loop Fabric Company, same place. Filed May 20, 1891. Serial No. 393,333. (No model.)

Brief.—The weighted heddle C is provided with a perforated plate and the heddle H, which is connected to the heddle C by means of cords passing over pulleys carried by weighted levers, is provided with needle-heddles for the ordinary warp-threads. The dead-warps pass through a stationary perforated plate. Reciprocating carriers lay the

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ornamental cords upon each side of the dead-warps. By moving the heddle H longitudinally the crossing of the warps is effected.

Claim.—1. In a loom, the combination of the heddle C, having perforated plate *w*, heddle H, having perforated needles *g*, and cords a^3, connecting the upper ends of said heddles with the weighted levers L and pulleys *l*, over which said cords a^3 pass, the weighted levers b^3, and cords f^3, connecting said lever b^3 with the heddle H, treadle connection to the lower end of heddle H, and with the reed-loops *e*, substantially as herein shown and described.

2. In a loom, the combination of the reed-loops *e* with the heddle H, having perforated needles *g*, with the heddle C, having perforated plate *w*, with means, substantially as described, for changing the position of said heddles, and with ornamental cord-guides I, substantially as specified.

3. In a loom, the combination of the reed-loops *e* with the heddle H, having perforated needles *g*, with the heddle C, having perforated plate *w*, with means, substantially as described, for changing the position of said heddles, and with the stationary warp-thread guide *i*, and ornamental cord-guides I, substantially as specified.

4. The combination, in a loom, of vertically-movable heddles C and H, with reed-loops *e*, the heddle H, having perforated needles *g* and the heddle C, having perforated thread-guide *w*, with means, substantially as described, for moving the heddle H laterally, and also with means, substantially as described, for moving both heddles vertically, as specified.

5. The combination, in a loom, of the heddles C H, connected together by cord a^3, and means, substantially as described, for raising and lowering the same alternately, with the levers R bearing against the ends of the heddle H, cords N, and lever M, said cords connecting said lever M with the levers R, all as and for the purpose specified.

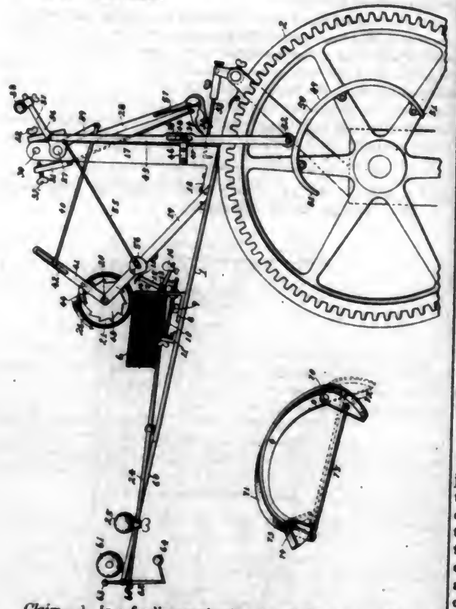
474,888. WOVEN FABRIC. ALWILL URBAHN, Brooklyn, N. Y., assignor to the American Loop Fabric Company, same place. Filed May 23, 1891. Serial No. 393,906. (Specimens.)



Brief.—In order to lock the threads firmly into the fabric, the warp *a* passes under the weft *s* on opposite sides of the intermediate warp *c*, alternately, and over the face-cord *j*.

Claim.—A fabric consisting of two main warp-threads *a b*, an intermediate warp-thread *c*, face-cords $j\,j^3$, and the weft-thread *s*, the warp *a* being placed under the weft-thread *s* on opposite sides of the warp *c* alternately and being laid over the cords *j* and under the weft *s*, the warp *b* passing over the weft *s* and under the cords j^3, all substantially as and for the purpose specified.

474,884. FEEDING MECHANISM FOR PRINTING-PRESSES. FRED H. VAN LOOKEN, Cleveland, Ohio. Filed May 20, 1891. Serial No. 393,383. (No model.)



Claim.—1. In a feeding mechanism for printing presses, the combination of a pivoted and counterbalanced sheet-holding leaf, a longitudinally-adjustable end plate located in front of said leaf and forming a rest for the front edges of the sheets upon the leaf, a separating or intercepting plate secured to said end plate, means for operating said separating or intercepting plate at intervals, feeding-rollers located above said table, and means for carrying the separated sheets from said supporting-leaf to the cylinder of the press, substantially as set forth.

2. In a feeding mechanism for printing-presses, the combination of a pivoted and counterbalanced sheet-holding table, a longitudinally-adjustable end plate located in front of said leaf or table, the supplemental intercepting or separating plate secured to the front of said end plate and adapted to work over the top edge thereof, feeding-rollers located directly above said end plate and pivoted leaf, means for simultaneously actuating said rollers and separating-plate, sheet-carrying devices connected with the feeding and separating devices, and means for operating the carriers and separating devices by the revolution of the cylinder, substantially as set forth.

3. In a feeding mechanism for printing-presses, the combination of a counterbalanced paper-support, a series of parallel rubber-tired disks mounted upon a single shaft 20, journaled directly above said paper-support, a ratchet-disk upon one end of said shaft 20, a slotted lever 41, loosely mounted upon one end of said shaft and provided with a pivoted pawl adapted to engage the teeth upon said ratchet-disk, an operating link-rod 40, adjustably connected with said slotted lever, and means for reciprocating said rod by the revolutions of the cylinder, substantially as set forth.

4. In a feeding mechanism for printing-presses, the combination of a paper-holding leaf secured to the feeding-table of the press and provided with a weighted extension-arm, a longitudinally-adjustable end plate located in front of said leaf and adapted to form a rest for the front edges of the sheets, a supplemental intercepting and separating plate pivotally mounted upon said end plate and provided with an upper curved edge adapted to pass over the top of said end plate and under the top sheet of paper and intercept the second and also provided with a weighted crank at one end to hold the same normally away from the paper, friction-disks located above the paper-receptacle and adapted to feed the same over the top of the end plate and the intercepter, means for simultaneously actuating said rollers and weighted cranks, and means for carrying the separated sheets to the cylinder of the press, substantially as set forth.

5. In a feeding mechanism for printing-presses, the combination of the counterbalanced sheet-holding leaf, a longitudinally-adjustable end plate located at the front edge of said leaf and provided with a series of notches along its upper edge, a rock-shaft journaled transversely upon said end plate, a series of separating and intercepting knives having an upper curved end and adjustably secured to said shaft, the upper curved ends adapted to enter the said notches and to pass under the top sheet of paper and intercept the second sheet, and means for feeding said sheets of paper over the top edge of said end plate and intercepter to the press-cylinder, substantially as set forth.

6. In a feeding mechanism for printing-presses, the combination, with an automatic table-feed for feeding sheets one at a time, of swinging feeding-arms mounted upon a shaft journaled above the feeding-table of the press, spring-actuated jaws or grippers at the lower ends of said arms, U-shaped frames pivotally connected to the upper end of each feeding-arm, the transverse-rod mounted above said shaft and adapted to limit the movement of the U-shaped frames, a link connecting said U-shaped frames with the spring-actuated jaws to operate the same, a weighted lever mounted upon the outer end of said arm-shaft, an operating-bar connected to said weighted lever, and a cam-casting upon the cylinder to actuate said bar, substantially as set forth.

7. In a feeding mechanism for printing-presses, the combination, with a feed-table and cylinder, of the paper-holding leaf pivotally mounted upon said table, rubber-tired feeding-disks mounted upon a shaft located above said paper-leaf, means for intermittently rotating said disks, a weighted arm projecting from said leaf and provided at its outer end with a projecting pin, an alarm-bell upon the feeding-table, a hammer-lever pivoted to the outer end of said feeding-table and provided with a weighted bent lower end, the said pin being adapted to normally engage said alarm-lever and override the lower weighted end of the same when the paper is exhausted and allow the alarm to be rung, and means for removing the separated sheets from the feeding devices to the cylinder of the press, substantially as set forth.

8. In a feeding mechanism for printing-presses, the combination, with a counterbalanced feeding-table or supplemental leaf, of an adjustable end plate located at the forward end of said leaf and adapted to inclose the paper, a separating and intercepting plate pivotally secured to said end plate and provided with an upper curved end adapted to pass over the top of said end plate and under the top sheet of paper, the same being also provided with a weighted bell-crank lever at one end, having a contact-roller, rubber-tired feeding-disks mounted upon a shaft journaled above said feeding-leaf, a ratchet-disk upon one end of said shaft, a longitudinally-slotted lever pivotally mounted upon said shaft and provided with a pawl adapted to engage the teeth of said ratchet-disk, an oscillating shaft journaled above the cylinder to the press, a cam-disk pivoted upon the frame of the press and adapted to engage said contact-roller upon the intercepting-plate lever, actuating rods or levers connected with said oscillating shaft and with the cam-disk and the slotted swinging lever, and means for actuating said oscillating shaft and carrying the separated sheets to the cylinder, substantially as set forth.

9. In a feeding mechanism for printing-presses, the combination of a paper-support, feeding-disks mounted upon a shaft 20, journaled above the paper-receptacle and having a pawl-and-ratchet attachment for rotating the disks at the proper times, swinging feeding-arms mounted upon a shaft 27, journaled above the feeding-table of the press, a bell-crank lever mounted upon one end of the shaft 27, one arm of which is connected with a pawl-and-ratchet attachment to rotate the feeding-disks, a weight 38 upon the horizontal arm of said bell-crank lever, a bar 45, connected with the same arm of said lever, guides for said bar, and a cam-casting upon the cylinder to actuate said bar and operate the feeding mechanism at the proper moment, substantially as set forth.

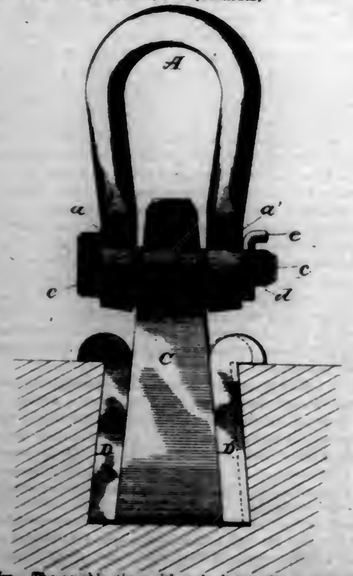
10. In a feeding mechanism for printing-presses, the combination of a paper-support, feeding-disks mounted upon a shaft 20, journaled above the paper-receptacle and having a pawl-and-ratchet attachment

for rotating the disks at the proper times, feeding-arms mounted upon an oscillating shaft 27, journaled upon the feeding-table of the press, jaws 33 upon the extreme lower end of said feeding-arms, spring-actuated jaws pivoted to said arms and facing the lowermost jaws, U-shaped frames pivoted to the upper ends of the feeding-arms, a rod mounted above the shaft 27 within said U-shaped frames and adapted to limit the movement of the same, a link-rod 35, connecting the U-shaped frames with the spring-actuated jaws, so that the latter may be operated by the former, a bell-crank lever secured to the end of the shaft 27, one arm of which is connected with the pawl-and-ratchet attachment to operate the disks, a bar 45, connected with the other arm of the bell-crank lever, a suitable guide upon the frame of the press, a weight 38, mounted upon one arm of said bell-crank lever, and a cam-casting upon the cylinder to raise the bar 45 to operate the feeding mechanism, substantially as set forth.

11. In a feeding mechanism for printing-presses, the combination, with a flanged cam-casting secured upon the cylinder of the press, a double flanged extension pivoted on the extreme front end of said cam, adapted to form a continuation of the top and under sides, respectively, of the flange comprising said cam, a pivoted and flanged extension pivoted on the rear end of the cam and also forming a continuation of the flange thereof, a link connecting said extensions, and a bar having a roller at the lower end adapted to rotate over the top of the flange of said cam to operate the feeding mechanism and to change the position of the extensions as it passes from the top of the same, so that at the next revolution of the cylinder the said roller will be guided by the rear end extensions beneath the flange of the cam, and vice versa, substantially as set forth.

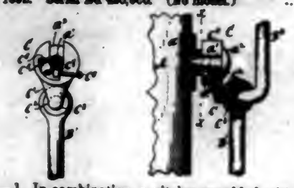
12. In a feeding mechanism for printing-presses, the combination of a paper-receptacle, an intercepter pivotally secured to said receptacle and adapted to separate the top sheet of paper, means for actuating said intercepter, swinging feeding-arms mounted upon a shaft 27, journaled upon the feeding-table of the press, jaws 33 upon the extreme lower ends of the said feeding-arms, spring-actuated jaws pivoted to said arms directly above said lower jaws, U-shaped frames pivoted to the upper ends of the feeding-arms, a rod mounted above the shaft 27 to limit the movement of said arms, a link-rod 35, connecting the U-shaped arms with the spring-actuated jaws, so that the latter may be operated by the frame, a bell-crank lever secured to the end of the shaft 27, a bar 45, connected with the bell-crank lever and suitably guided upon the frame of the press, a weight 38, mounted upon the arm of the bell-crank lever, and a flanged casting upon the cylinder to raise the bar 45 to operate the feeding mechanism, substantially as set forth.

474,885. STONE-LIFTER. EMILE T. VIETT, Charleston, S. C. Filed Dec. 11, 1891. Serial No. 414,697. (No model.)



Claim.—The combination, with a single tapering tenon and coupling devices connected with its smaller end, of keys independent of and disconnected from the tenon and provided with approximately parallel faces, as shown, substantially as set forth.

474,886. SUPPORT FOR TILTING VESSELS. THOMAS F. WALTERS, Brooklyn, assignor to Stix & L'Allemand, New York, N. Y. Filed Feb. 3, 1892. Serial No. 420,660. (No model.)

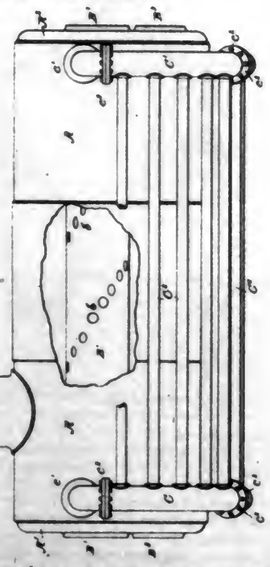


Claim.—1. In combination, a pitcher provided with pivots, each having a pin projecting radially therefrom, supports attached to standards, each notched on its upper edge to receive and support a pivot and having an arc-shaped recess to receive the projecting pin of the pivot and adapted to limit the motion thereof in either direction, and means to prevent lateral motion of the pivots within the supports, substantially as described.

2. The combination, with a pitcher provided with pivots, each having a pin projecting radially therefrom and a head portion, of supports attached to standards, each notched on its upper edge to receive and support a pivot and having the head portion thereof abutting on one side, and an arc-shaped recess on its opposite side adapted to receive the projecting pin of the pivot and limit its motion in either direction, substantially as described.

3. In combination, a pitcher provided with pivots, each having a pin a^4 projecting radially therefrom, supports C, attached to standards, each of said supports being notched on its upper edge to receive and support a pivot and having an arc-shaped recess c^5 on one of its sides, adapted to receive the radial pin a^4 of the pivot and limiting the tilting motion of the pitcher, and the adjustable screw-threaded stop c^6 extending through each support into the recess c^5 to limit the motion of the pitcher when in its normal position, substantially as described.

474,887. BOILER. JOHN WAYMAN, Ford City, Pa. Filed Dec. 15, 1891. Serial No. 415,160. (No model.)



Claim.—1. A stationary horizontal border provided with large transversely-arranged semicircular water-tubes extending around beneath said boiler and concentric therewith and communicating with the interior thereof at points near the horizontal plane of the axial center of said boiler, in combination with straight horizontal tubes, also located beneath the boiler and connecting said semicircular tubes, substantially as and for the purpose set forth.

2. The combination, with a stationary horizontal steam-boiler provided with the horizontal flues passing through the interior of said boiler and connecting the heads thereof, of the spirally-arranged water-tubes extending transversely through said flues, for the purpose described.

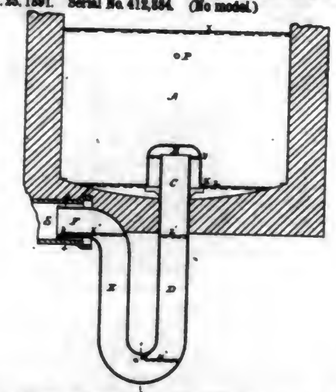
3. In a stationary horizontal steam-boiler, the combination of the through-flues B, B', B^2, and B^3, the transverse spirally-arranged water-tubes b, extending through said flues, the semicircular tubes underlying said boiler and communicating with the interior thereof, and the horizontal tubes interposed between and connecting said semicircular tubes, and arranged as and for the purpose specified.

4. The combination, with the main body portion of a steam-boiler, of semicircular water-tubes underlying said boiler and concentric therewith, made up of sections coupled together, and the interposed horizontal tubes connecting said semicircular tubes, all substantially as described.

474,888. FAC-SIMILE OF ENGRAVED STEEL PLATES. WILLIAM WELLSTOOD, Jersey City, N. J., and FREDERIC B. NICHOLS, New York, N. Y.; said Nichols assignor to said Wellstood. Filed July 15, 1891. Serial No. 399,563. (Specimens.)

Claim.—A fac-simile of an engraved steel plate, consisting of an electrotype of the engraved plate, the copper service of which is covered with nickel-plating, and the lines in the copy of the engraving being filled with ink or its equivalent, which is allowed to harden to produce a pictorial effect.

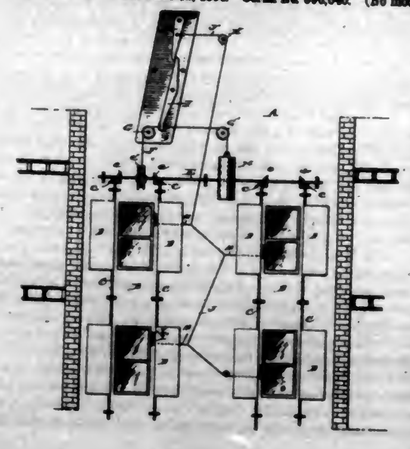
474,889. SIPHON. HOLLAND WHEELER, Lawrence, Kans. Filed Nov. 23, 1891. Serial No. 412,884. (No model.)



Claim.—1. The combination of the siphon B C, having its receiving-limb properly adjusted for capacity and its discharge-limb level on top, the deep-sealed trap D E, provided with the level weir a, and the outlet-pipe F, provided with the level section or weir b, constructed and operating as specified.

2. The combination of the trap D E, provided with the weir a, and the outlet-pipe F, having level section or weir b, constructed and operating as specified.

474,890. FIRE-SHUTTER FOR VENTILATING-SHAFTS OF BUILDINGS. LUDWIG WIELAND, New York, N. Y., assignor to Fritz Strosberg and the Air Shaft Protector and Manufacturing Company, Newark, N. J. Filed June 12, 1891. Serial No. 396,040. (No model.)



Claim.—1. In combination, shutters, mechanism for automatically closing the shutters when released, a rope attached at one end to the releasing devices of said closing mechanism and to a fixed point at its other end and having a length greater than the distance between its points of attachment, and heat-releasing devices connected to said rope intermediate its ends and normally holding it in an irregular line, whereby when said heat-releasing devices are released the rope will tend to straighten and thereby release the shutter-closing mechanism, substantially as described.

2. In combination, the blinds or shutters, the mechanism for operating them and the means for normally holding said shutters open, consisting of a rope extending from said operating mechanism to a fixed point, and the short-rope sections attaching said rope at intermediate points to heat-operated connections, substantially as described.

3. In combination, the blinds or shutters, the vertical shafts carrying them, the transverse shaft gearing between the latter and the former, the weight to operate said mechanism, the pivoted lever and pivoted arm for holding said weight in a raised position, the rope connected to said pivoted arm, and suitable heat-operated devices connected to said rope, substantially as described.

4. In combination, the blinds or shutters, the mechanism for operating them, and the means for normally holding said blinds open, consisting of a latch mechanism, a flexible device, as a rope, extending therefrom to a fixed point, and the heat-operative devices holding the rope in a zigzag or irregular line between such points, substantially as described.

5. In combination, the blinds or shutters, the vertical shafts carrying them, the transverse shaft, gearing between the latter and the former, the pulley on the transverse shaft, the weight connected to such pulley by suitable belting, the pivoted lever connected to the latter, the pivoted arm engaging such lever, and the heat-operating device or devices connected to said arm, substantially as described.

6. In combination, two vertical series of connected shutters, mechanism for closing the shutters simultaneously when released, a rope connected at one end to the releasing devices of said closing mechanism and extending between the two series of shutters, said rope being fixed at its other end, and heat-releasing devices connected to the rope at different points between the two series of windows and normally holding the rope in an irregular line, whereby when one of the heat-releasing devices is released the rope will be permitted to straighten and thereby release the closing mechanism, substantially as described.

474,891. BLIND-STOP. JAMES WILSON, Columbia, Mo. Filed Sept. 21, 1891. Serial No. 406,285. (No model.)



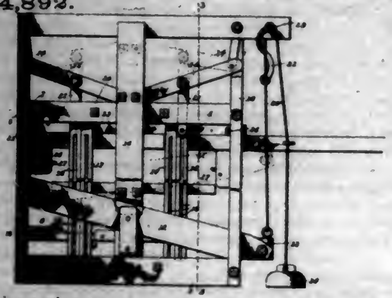
Claim.—1. A blind-stop consisting of right-angular pieces or braces 4, secured to the lower cross-piece of the blind, a bar 6, pivotally mounted at its lower end between the same, perforations 7, formed in the said bar and out of alignment with the edge of the bar, and a plate adapted to be attached to the slat-operating rod, having mounted thereon a pivoted catch or lock 10 for engagement with the said perforations, substantially as set forth.

2. As a new article of manufacture, a lock for blind-slat rods, consisting of right-angular braces 4, provided with perforated ears 5, a bar 6, provided with a series of perforations 7, out of alignment, pivotally mounted between said ears, a plate 8, provided with perforated ears 9 and with a perforation 12, and a pivoted catch or lock 10, provided with a lug 11, substantially as set forth.

474,892. ELEVATING MECHANISM FOR FRUIT-EVAPORATORS. JOHN M. WITTROW, Bentonville, Ark. Filed May 19, 1891. Serial No. 393,330. (No model.)

Claim.—1. In a device of the class described, the combination of the frame having the horizontal side cleats provided with stops at their rear ends, the vertically-slotted uprights having pivoted dogs or latches, the vertically-movable slotted slides having dogs or latches arranged between those of the slotted uprights, the horizontal cleats or tracks arranged near the upper end of the frame and extended in front of the latter, and the carriage mounted to ride upon said tracks

474,892.

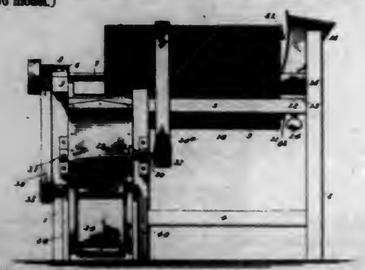


and having pendent hangers provided with dogs or latches at right angles to those in the uprights and the vertically-movable slides of the frame, and suitable operating mechanism, substantially as and for the purpose set forth.

2. In a device of the class described, the combination of the frame having the vertically-slotted uprights located at opposite sides and provided with pivoted dogs or latches, the oppositely-located vertically-movable slides having pivoted dogs or latches, the weighted opposite levers pivoted at their rear ends to the frame-work 12, the guides 16, located between the vertically-slotted uprights, connecting-rods 15, pivoted at their inner ends to the guides, links 14, pivoted at their lower ends to the rods 15 and at their upper ends to the frame-work, links 21, connecting the rods 15 with the upper ends of the vertically-movable slides, a transverse shaft journaled at the upper front corners of the frame, the ropes or chains coiled upon said shaft and having their ends connected with the free ends of the weighted levers, and balance-weights at the free ends of said ropes or chains, substantially as and for the purpose set forth.

3. In a device of the class described, the combination, with the frame having uprights and vertically-movable slides provided with inwardly-extending pivoted dogs or latches and provided with horizontal tracks extended in front of the frame, of a carriage mounted to ride upon said tracks and having depending hangers provided with dogs or latches, pivoted at right angles to those in the uprights, and vertically-movable slides of the frame, substantially as and for the purpose set forth.

474,893. PEANUT-CLEANER. JESSE H. WOOLARD and JOSEPHUS L. WOOLARD, Williamston, N. C. Filed Sept. 30, 1891. Serial No. 407,302. (No model.)



Claim.—1. In a machine of the class described, the combination, with the frame-work, the shaft journaled therein, the wheels upon the shaft, the reticulated cylinder mounted on the wheels, said cylinder being open at its rear end and at its front end provided with a central opening, of a hopper mounted in the frame-work and terminating adjacent to the opening in the head, a vibratory lever secured at one end to the frame-work, a set-screw mounted in the frame-work and supporting the opposite end of the lever, and means for vibrating the same, and a pan located under the hopper and mounted upon the lever and adapted to discharge into the opening in the head of the cylinder, substantially as specified.

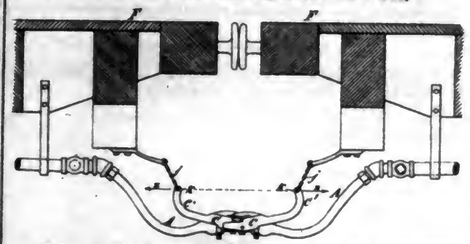
2. In a machine of the class described, the combination, with the frame-work, the reticulated cylinder mounted therein, and means for supporting and rotating the same, of an inclined discharge-table located below the rear end of the cylinder, a blower located at one side of the frame-work in front of the table and having its shaft extended at one side of its casing and provided with a pulley, and a belt passing around the pulley and the cylinder, the former receiving motion from the latter, substantially as specified.

3. In a machine of the class described, the combination, with the frame, the cylinder open at one end and provided with a head at the opposite end having a central opening, of a hopper, a bar thereunder, a feed-pan on the same, and pins on the head for tripping the bar, substantially as specified.

4. In a machine of the class described, the combination, with the frame, the cylinder open at one end and provided with a head at the opposite end having a central opening, of a hopper, a resilient lever thereunder, provided at opposite sides with recesses, a feed-pan on the lever, pins on the head for tripping the bar, said pins being adapted to pass downwardly through one recess and to strike against the inner edge of the other, and a set-screw for adjusting one end of the bar, substantially as specified.

5. In a machine of the class described, the combination, with the screen, of a hopper located at one end thereof, a vibratory lever located under the hopper and provided with a pan leading over the screen, and means for intermittingly operating the lever, substantially as specified.

474,894. HOSE-COUPLING. FREDERIC W. WRIGHT, Great Neck, N. Y. Filed June 15, 1891. Serial No. 396,390. (No model.)



Claim.—1. In a hose-coupling for railway-cars, the combination, with the respective car-bodies and hose-lengths, of coupling-heads formed with reciprocally-engaging wedging projections adapted to lock together by gravity, having each a rearwardly-extended lever arm or tail, and means independent of the hose for suspending these tails from the respective car-bodies at such height relatively to the lengths of the hose-sections that the entire weight of the couplings shall be suspended from the car-bodies and the hose-lengths relieved of strain, substantially in the manner specified.

2. In a hose-coupling for railway-cars, the combination, with the respective car-bodies and hose-lengths, of coupling-heads having reciprocally-engaging locking projections and formed each with a rearwardly-extended lever arm or tail, and a suspending device for suspending each such tail from the respective car-body, these suspending devices being of such length relatively to the length of the hose-sections that as the cars are moved apart they will be drawn into line and exert an endwise pull against the tails of the coupling-heads before both sections are pulled taut, whereby the coupling-heads will be drawn apart and automatically uncoupled without subjecting the hose to strain, in substantially the manner specified.

3. In a hose-coupling for railway-cars, the combination, with the respective car-bodies and hose-lengths, of coupling-heads formed with reciprocally-engaging locking projections and having each a rearwardly-projecting lever arm or tail, and means for suspending these tails from the respective car-bodies, said lever-arms being turned upwardly at their point of attachment to said depending means relatively to the plane of engagement of the locking projections in such manner that as the cars are moved apart the pull exerted through the suspending means upon the tails of the respective coupling-heads will act to pull the heads angularly relatively to one another in direction to disengage said locking projections, and such disengagement will be effected before the horizontal plane of the engaging faces of the locking projections is lifted into coincidence with the line of strain.

4. In a hose-coupling for railway-cars, the combination, with the car-body and hose, of a seat fastened to the end of the hose, a coupling-head engaging said seat, movable angularly relatively thereto, formed with locking projections adapted to engage a reciprocal coupling-head and having a rearwardly-extended lever arm or tail independent of the hose, and a chain for suspending this tail from the car-body at such height as to sustain the weight of the coupling and relieve the hose from strain, to the effect substantially as specified.

5. In a hose-coupling, the combination, with the hose, of a seat fastened to the end thereof, a coupling-head connected to said seat so as to be movable angularly relatively thereto, and formed with locking-faces adapted to engage similar faces on a reciprocal coupling-head, and wedging or eccentric surfaces interposed between said seat and head and adapted by the angular movement of the head in the act of coupling to force the seat forwardly relatively to the head.

6. In a hose-coupling, the combination, with the hose, of a seat fastened to the end thereof, a coupling-head connected to said seat so as to be movable angularly relatively thereto, and formed with locking-faces adapted to engage similar faces on a reciprocal coupling-head, eccentric surfaces *m m* in connection with said seat, and bearing projections *p p*, formed on said head and acting against said eccentric surfaces, whereby by the angular movement of the head in the act of coupling the seat is forced forwardly relatively to the coupling-head by the engagement of said projections against said eccentric surfaces.

7. In a hose-coupling, the combination, with the hose, of a seat B, fastened to the end thereof, a distributing-ring D, engaging said seat, and a coupling-head C, pivotally connected to said ring, with eccentric wedging-surfaces *m* and bearing projections *p*, formed on the ring and head, respectively, and adapted by the angular movement of the head to thrust the ring and thereby, also, the seat forwardly relatively to the head.

8. In a hose-coupling, the combination of the hose, a seat B, fastened to the end thereof, an equalizing-ring D behind said seat and pivotally connected thereto at diametrically-opposite points by means of pivotal lugs formed on the one part entering notches in the other, projections *f* for retaining said lugs and notches in pivotal engagement, and a coupling-head C, pivotally connected to said ring on an axis at right angles to the axis of the pivotal connection between said ring and seat by means of pins on the one part entering sockets in the other.

474,895. GAS-BURNING HEATER. MATTIE ATCHISON, Oakland, Cal., administratrix of Charles W. Watson, deceased. Filed Nov. 6, 1891. Serial No. 411,081. (No model.)



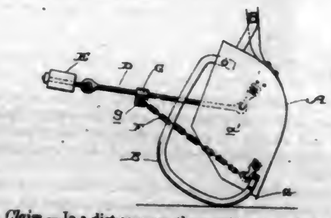
Claim.—1. In a gas-burning heater, the combination, with a front plate adapted to fit a fireplace and having a central opening, of a reflector secured within said central opening by having its side and bottom edges turned over the edges of said central opening, substantially as set forth.

2. In combination with the front plate adapted to fit a fireplace, a reflector connected to said front plate by having its side and bottom edges turned over the edges of said central opening and formed into tubes, substantially as described.

3. The combination, in a gas-burning heater, of a front plate adapted to fit a fireplace, a reflector secured thereto, upper and lower burner-tubes, a double gas-cock, and a gas-supply pipe, all constructed and arranged so that gas may be admitted to either or both of said burners, substantially as described.

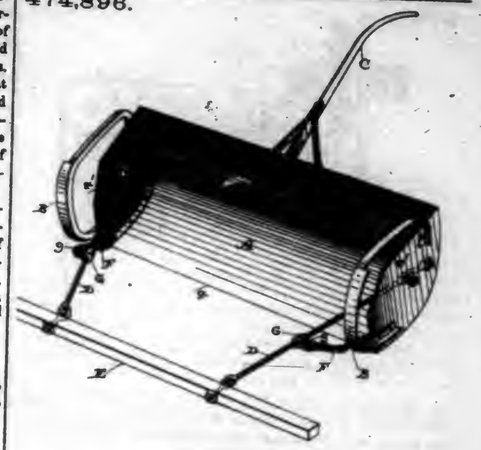
4. In combination, the front plate, the reflector comprising the side *c*, the bottom portion *d*, and the back *b*, extending upwardly therefrom, the transverse burners extending across the upper and lower portions of said back plate and in close proximity thereto, and a covering for said back plate arranged in close proximity to the same and extending in front of the transverse burners, substantially as described.

474,896. DIRT-SCRAPER. WILLIAM P. BALL, Fresno, assignor to Truman Hooker & Co., San Francisco, Cal. Filed Dec. 1, 1891. Serial No. 413,710. (No model.)

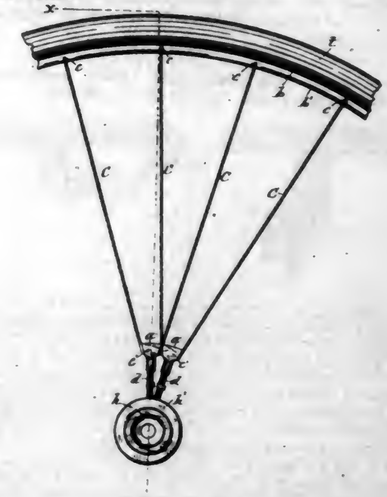


Claim.—In a dirt-scraper, the combination of the turnable bowl, the draft rods or links secured thereto, the chains secured at their rear ends to the bowl, and the adjustable or sliding clips mounted upon the rods or links and to which the forward ends of the chains are secured, substantially as herein described.

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474,897. BICYCLE-WHEEL. CHARLES O. BARNES and LOUREN BARNES, Sr., Syracuse, N. Y. Filed Jan. 25, 1892. Serial No. 419,108. (No model.)



Claim.—1. A bicycle-wheel comprising a felly formed with a concave seat for the tire and with a perforated circumferential rib in the center of its inner side, wire spokes secured in the perforations of said rib and terminating with hooks on their inner ends, blocks hung on said hooks, and screws connecting said blocks to the hub of the wheel, substantially as set forth and shown.

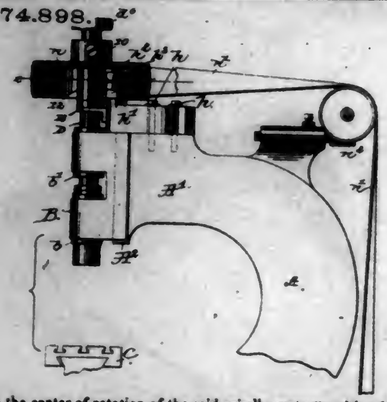
2. In combination with two wire spokes tied to the felly and terminating with hooks extending from their adjacent sides, a metal block formed with inclined sockets in two opposite sides and holding therein the hook ends of the spokes, and a screw connecting said block to the hub, as set forth.

474,898. MILLING-MACHINE. JOHN BECKER, Newton, Mass. Filed June 25, 1891. Serial No. 397,510. (No model.)

Claim.—1. In a milling-machine, a rotating spindle having an attached pulley, combined with bearings for the main part of the spindle and rolling bearings located in or adjacent to the line of and adapted to resist lateral strain of the belt used to rotate the pulley and spindle, substantially as and for the purpose described.

2. In a milling-machine, a rotating spindle having an attached pulley, combined with bearings for the main part of the spindle and rolling bearings located in or adjacent to the line of belt-pull, the said roller-bearings being made adjustable longitudinally with relation to the bearings which receive the main part of the spindle to thereby

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place the center of rotation of the said spindle centrally with relation to the bearings in which it rotates, the said roller-bearings acting to resist lateral strain of the belt used to rotate the pulley and spindle, substantially as and for the purpose described.

3. In a milling-machine, a spindle, bearings for the body portion thereof, and a pulley attached to said spindle and cut away at one side to leave a central sleeve, and a flange or rim at its periphery for the reception of a belt, combined with roller-bearings located within said pulley-rim and serving to resist lateral strain due to the belt, substantially as described.

474,899. WALL-PAPER CUTTER. THOMAS BERNET, Tiffinville, Pa. Filed Sept. 30, 1890. Serial No. 366,473. (No model.)



Claim.—1. A cutting apparatus for wall-paper and the like, comprising a straight-edge having a projecting cutting-edge and connected by spring-hinges with a suitable supporting-strip, against which the said projecting cutting-edge may be folded, substantially as set forth.

2. In a wall-paper cutter, the combination of a pasting-board, a supporting strip-hinge, connections between the supporting-strip and the pasting-board, and a straight-edge hinged to the supporting-strip and having a knife or cutter, the cutting-edge of which projects beyond the said straight-edge, substantially as set forth.

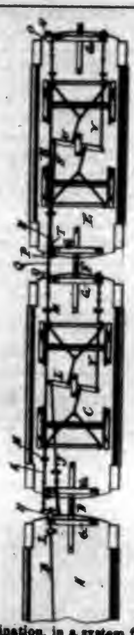
3. In a wall-paper cutter, the combination of a pasting-board, the supporting-blocks upon the under side of the latter, the supporting-strip hinged to said blocks and the straight-edge connected by spring-hinges to said supporting-strip and having a projecting cutting-edge, and hangers to engage the edge of the pasting-board, substantially as set forth.

4. In a wall-paper cutter, the combination of the pasting-board having a rabbeted edge, a supporting-strip hinged to blocks upon the under side of the pasting-board, a straight-edge connected by spring-hinges with the said supporting-strip and a knife or cutter secured to the latter by means of clamps, and hangers adapted to engage the rabbeted edge of the pasting-board, substantially as and for the purpose set forth.

474,900. GRIP-CAR BRAKE. WILLIAM BYRNES, Chicago, Ill., assignor of one-half to Anthony Byrnes, same place. Filed Aug. 8, 1891. Serial No. 402,096. (No model.)

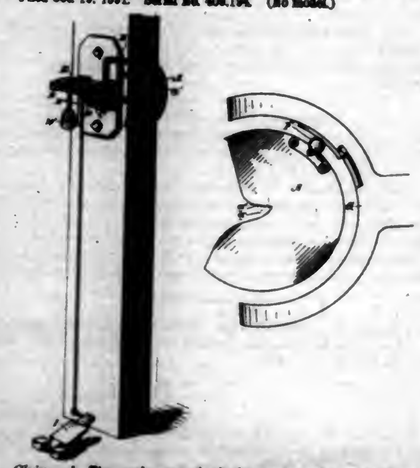


474,900.



Claim.—The combination, in a system for braking cable-railway street-cars, of the coupling-rod B, attached to the brake-lever of the grip-car, the eveser H, the brake-rods K and R, the coupling chains O and P, the coupling-hook Q, having the broad-open loop and the point of the hook bent down within the loop, and the brake-levers J and S, operating the brakes under their respective cars, all substantially arranged and operating as specified and shown.

474,901. FRUIT-PITTER. ALEXANDER G. CARTER, Fresno, Cal. Filed Oct. 19, 1891. Serial No. 408,194. (No model.)



Claim.—1. The mode or method of removing pits or stones from fruit, which consists in placing the fruit in a holder which engages the pit or stone, then holding the flesh, and finally separating the flesh from the pit or stone by twisting the one from the other, substantially as herein described.

2. The mode or method of removing pits or stones from fruit, which consists in placing the fruit in a holder which engages the pit or stone, turning said pit or stone by a rotary movement of the holder, and holding the flesh of the fruit stationary during the turning of the pit or stone, whereby the latter is twisted from the flesh, substantially as herein described.

3. In a fruit-pitter, the rotatable pit or stone engaging and holding plate having a receiving-slot for the fruit, substantially as herein described.

4. In a fruit-pitter, the pit or stone engaging and holding plate having a receiving-slot for the fruit, said slot being formed with holding prongs or projections at its inner portion, substantially as herein described.

5. In a fruit-pitter, the rotatable pit or stone engaging and holding plate having a receiving-slot for the fruit, said slot being formed with cutting-sides to cut the flesh of the fruit, substantially as herein described.

6. In a fruit-pitter, the pit or stone engaging and holding plate having a receiving-slot for the fruit, said slot being formed with cutting-sides to cut the flesh and with prongs or projections at its inner portion to better hold the pit, substantially as herein described.

7. In a fruit-pitter, the rotary holding-plate having a receiving-slot for holding the fruit in the axis of rotation, substantially as herein described.

8. In a fruit-pitter, the rotary holding-plate having a receiving-slot for holding the fruit in the axis of rotation and provided with sharp edges to cut the flesh of the fruit, substantially as herein described.

9. In a fruit-pitter, the rotary holding-plate having a receiving-slot for holding the fruit in the axis of rotation and a connection with said plate outside of its center to rotate it, substantially as herein described.

10. In a fruit-pitter, the combination of the plate having the receiving-slot for engaging the pit of the fruit and holding the latter in the axis of rotation, and the rotary shaft having the crank connected with the plate outside of its center, substantially as herein described.

11. In a fruit-pitter, the combination of the plate having the radially-disposed receiving-slot with wide mouth, sharp sides, and prongs or projections at its inner portion, and the rotary shaft having the crank connected with and carrying the plate, substantially as herein described.

474,902. STREET-CAR CURTAIN. ARTHUR D. COCHRAN, Indianapolis, Ind. Filed Feb. 15, 1892. Serial No. 421,547. (No model.)



Claim.—1. In a street-car curtain, suitable uprights having vertical grooves on their opposing faces, vertical rods removably seated at the base of such grooves, a curtain supported from a spring-roller above such rods, the sides of such curtain hemmed around the vertical rods, the bottom of such curtain attached to a horizontal wire having loops fitting around the upright rods, such rods held in a vertical position at their top by means of guide-wheels, which bear on the curtain, substantially as shown and described.

2. A street-car curtain suspended from a suitable roller, its two sides hemmed, and its lower edge secured to a wire having rings at either end, such rings and the hem of the curtain adapted to work upon vertical rods within the grooved faces of suitable uprights, such rods retained in their vertical position by means of guide-wheels, which bear on opposite sides of the curtain outside of the rods, such wheels mounted in brackets connected to the uprights and a guide-wheel at the top of such rods, and a catch at the lower end for holding the curtain in a lowered position, substantially as shown and described.

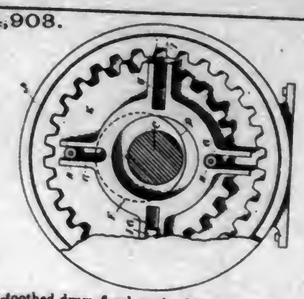
3. A curtain suspended from a suitable roller, the sides of such curtain hemmed, its lower edge attached to a stiffening-wire having rings or loops on its outer ends, such rings and the hem of the curtain adapted to work up and down on vertical rods suitably connected to the frame-work of a car at their base, their upper ends retained in a vertical position by guide-wheels, which bear against the curtain outside of the rods, substantially as shown and described.

4. A street-car curtain suspended from a suitable roller, the sides of such curtain hemmed, a stiffening-wire attached to its lower edge, rings formed on the ends of such wire having grooves in their faces, the side hems of the curtain fitting over such rings and retained in position by suitable locking-wires, such rings and hems adapted to work over vertical rods suitably supported at their base in grooves formed in uprights, the tops of such rods retained in position by bearing-wheels, which contact with the curtain outside of the rods, a guide-roller above the top of such rods, and a rubber catch near the bottom pivoted to one of the uprights and adapted to contact with the stiffening-wire of the curtain, whereby the curtain is retained in a lowered position, substantially as shown and described.

474,903. DIFFERENTIAL GEAR. GEORGE COTTRELL, San Francisco, Cal., assignor to the Joseph Wagner Manufacturing Company, same place. Filed Dec. 30, 1891. Serial No. 416,586. (No model.)

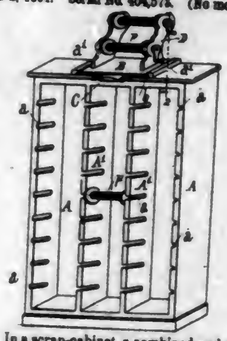
Claim.—A differential gear consisting of the combination of the

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internally-toothed drum fixed to the driven shaft, an eccentric fixed to the driving-shaft, a spur-gear bored to fit the exterior of the eccentric loosely and turning within the internal gear of the drum, the throw of the eccentric being equal to the difference in the diameters of the engaging toothed faces, a disk having a central opening larger than the diameter of the shaft, whereby the disk may move sidewise, and having its opposite sides slotted to form guides and anti-friction rollers on the spur-gear, and working within the slots of the disk, substantially as herein described.

474,904. SCRAP-CABINET. GARRETT H. CRUMAN, Edinburg, Ill. Filed Sept. 2, 1891. Serial No. 404,573. (No model.)



Claim.—1. In a scrap-cabinet, a combined reel and reading-frame consisting of parallel spools supported on channeled standards secured to a base, said base being provided with a handle and being adapted to rest in guides on the cabinet, said spools being provided with cranks having winged gudgeons which enter slots in the spindles of the spools and being adapted to reel on one spool a strip of reading-matter as the same is unwound from the other spool, as set forth, and for the purpose stated.

2. In a scrap-cabinet, the combination of the partitioned filing-case having compartments provided with inclined slots, in which the spindles of the spools are supported, and the reel consisting of parallel spools supported on channeled standards secured to a base detachably connected with the filing-case and provided with cranks having winged gudgeons, which enter slots in the spindles of the spools, substantially as set forth, and for the purpose stated.

3. In a scrap-cabinet, the combination of the partitioned filing-case having compartments provided with inclined slots, in which the spindles of the spools are supported and having at its top cleats adapted to guide the reel-base, detachably supported on top of said case, the standards secured to the reel-base and having inclined slots, in which the spindles of the spools are supported, the spools having slotted spindles, the journal-boxes on the standards, the gudgeons having wings which enter slots in the spool-spindles, the cranks secured to the gudgeons, and the handles secured to the base, substantially as set forth, and for the purpose stated.

474,905. TEA-POT OR COFFEE-POT HANDLE. BENJAMIN V. GIFFE, Akron, Ohio. Filed July 10, 1891. Serial No. 399,001. (No model.)

Claim.—1. In a tea-pot or coffee-pot handle, the combination, with a hand-piece and posts extending therefrom, having the ends opposite said handle enlarged, of metallic annular flanges arranged to fit the enlarged ends of said posts to retain and unite them with the vessel, substantially as shown and described.

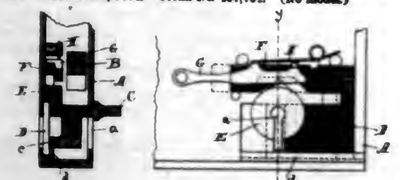
2. In a tea-pot or coffee-pot handle, a hand-piece having plain

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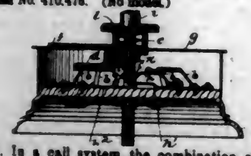
faces and posts having square ends to abut against said plain faces, and enlarged opposite ends to abut against the vessel, combined with double-pointed screws to unite the posts and hand-piece, and annular metallic disks to fit said enlarged heads and unite them with the vessel, substantially as shown and described.

474,906. KEYHOLE-GUARD. CHARLES L. GOODRIDGE, Portland, Me. Filed Oct. 6, 1891. Serial No. 407,761. (No model.)



Claim.—In a lock, a sliding bolt on one side of said lock, a tumbler for locking the same, a plate attached to said bolt for closing the keyhole, and a boss around the inside of said keyhole for offsetting the ward of the key, combined with the key having a projection on its ward for throwing the bolt and lifting the tumbler, substantially as described.

474,907. HOTEL CALL SYSTEM. GRANT P. GREENE, Chicago, Ill., assignor of one-half to Myron A. Knapp, same place. Filed Oct. 31, 1891. Serial No. 410,476. (No model.)

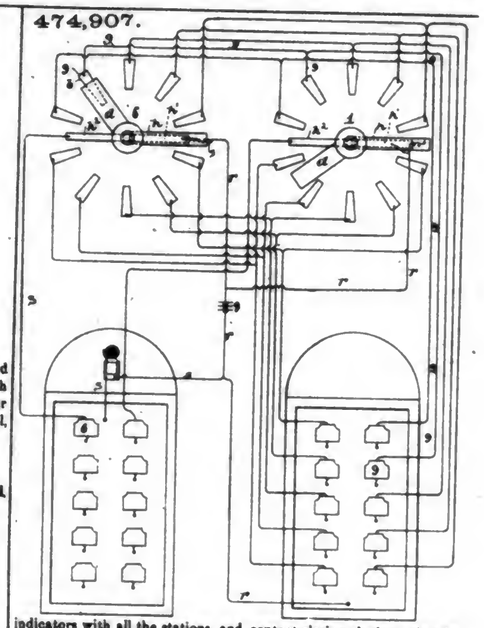


Claim.—1. In a call system, the combination of indicators arranged in two groups, one indicating the location from which a call is sent, the other the service required at such location, with a battery-wire leading to each of said locations from each of the two groups of indicators, and a call-wire leading to each of said locations from one of the annunciators, and service-wires connecting the indicators of the service-group with corresponding contact-closing devices in each of the rooms, and contact-closing devices by which circuit is closed from any one of the points indicating the service required first through the annunciator indicating a service and then through the annunciator indicating the location, substantially as and for the purpose specified.

2. In a call system, the combination, with indicators arranged in two groups, one group indicating the location from which the call is sent, the other the service required, of conductors whereby connections are made between the said groups of indicators, battery whereby the said indicators are operated, and contact-closing devices located at the points from which signals are to be sent, said contact devices consisting of a lever bearing upon contacts corresponding to the services required, and a push-button located in said lever adapted to close two circuits successively.

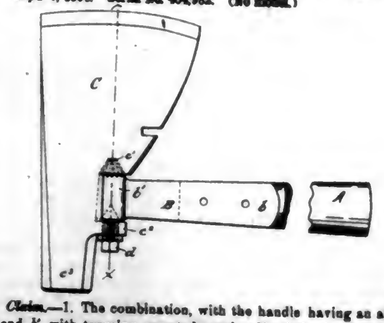
3. In a call system, the combination, with two groups of indicators, one group representing the location from which the call is sent, the other the service required, of a circuit extending from each of the indicators of the service-group to a contact-point at each signaling-station, a circuit from each indicator of the location-group to each signaling-station, a common battery-wire connecting both groups of

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indicators with all the stations, and contact-closing devices whereby circuit is closed through indicators of the two groups successively.

474,908. HATCHET. MILTON O. HEICKMAN, Reading, Pa. Filed Sept. 7, 1891. Serial No. 404,962. (No model.)



Claim.—1. The combination, with the handle having an attaching end b', with tapering serrated portion b^3, of the head C, formed with a recess c to receive said attaching end, a socket c' for said serrated portion, and a set-screw to tighten said attaching end in the recess and socket, substantially as set forth.

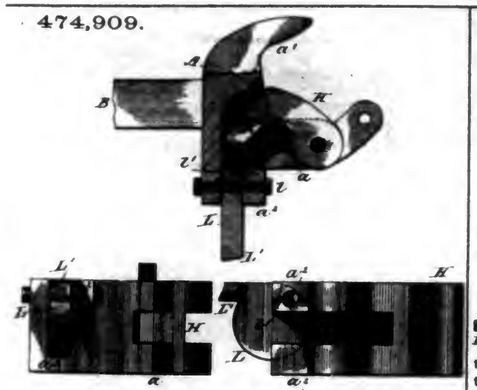
2. The combination, with the handle having an attaching end b', with tapering serrated portion b^3, of the head C, formed with a socketed recess c' for said end on line with the center of the cutting-edge and a butt c^3 out of center therewith, and the set-screw passing through a lug c^3 on said head for tightening the attachment, all substantially as set forth.

474,909. CAR-COUPLING. QUIFTON J. HOKE, Yorkville, S. C., assignor of one-half to Samuel L. Miller, same place, and Joseph W. Rodley, Rock Hill, S. C. Filed Jan. 15, 1892. Serial No. 418,139. (No model.)

Claim.—1. A twin-jaw coupler comprising a jaw-head provided with a lateral slot or recess in rear of one of its twin jaws, a coupling-hook of substantially Z shape pivoted to said jaw, the tail of which is adapted to swing into said slot or recess, a gravital locking-lever located therein and actuated by the tail of the jaw and arranged to drop between the same and the rear wall of the draw-head when the said tail has cleared the locking device, for the purpose set forth.

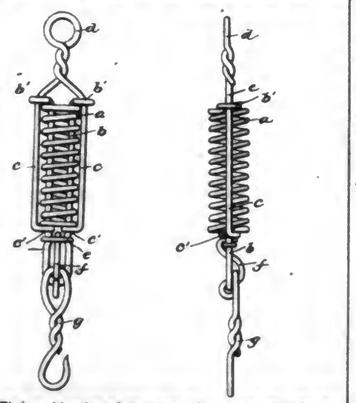
2. In a twin-jaw car-coupler, the combination, with the draw-head A and the Z-shaped coupling-hook H, pivoted to one of the jaws of said draw-head and whose tail h is adapted to enter a lateral slot

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or recess in rear of the hook-supporting jaw, of the cam-shaped gravital locking-lever L, arranged relatively to the coupling-hook for co-operation therewith, substantially as and for the purpose set forth.

474,910. DRAFT-SPRING. JOHN C. JOHNSON and WILLIAM SMITH, Drake's Creek, Ark. Filed Feb. 11, 1892. Serial No. 421,123. (No model.)



Claim.—1. The combination of the piece of wire c, having the forward eye d and the rear eyes c', the arms of said wire passing through the eyes b', piece b, passing through the eyes c', through the spring a, and having the eyes b', and spring a, coiled around the arms b and working between the eyes b' and c', substantially as shown and described, and for the purposes set forth.

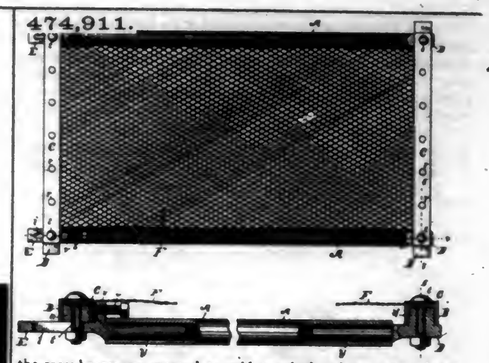
2. The combination of the piece of wire c, having the forward eye d and the rear eye c', the arms of said wire passing through the eyes b', piece b, passing through the eyes c', through the spring a, and having the eyes b', spring a, coiled around the arms b and working between the eyes b' and c', link e, secured around the neck of the piece b, and hook f, secured in the bight of said piece b, its free end working against said link, substantially as shown and described, and for the purposes set forth.

3. The combination of the piece of wire c, having the forward eye d and the rear eyes c', the said arms of said wire passing through the eyes b', piece b, passing through the eyes c', through the spring a, and having the eyes b', spring a, coiled around the arms b and working between the eyes b' and c', link e, secured around the neck of the piece b, hook f, secured in the bight of said piece b, its free end working against said link, and hook g, secured between said hook and the U end of the wire b, substantially as shown and described, and for the purposes set forth.

474,911. SPRING BED-BOTTOM. JOHN B. JONES, Chicago, Ill., assignor of one-half to Geo. M. Illingworth, same place. Filed Aug. 6, 1891. Serial No. 401,927. (No model.)

Claim.—1. In a spring bed-bottom, the combination of channeled terminal cross-beams, metallic tubular side rails, the terminal end supports having the lugs n' raised from their upper face integral thereto, fitting the channel of said cross-beams, the doweled portions adapted to be inserted in the ends of said side rails, and clamping-bolts whereby

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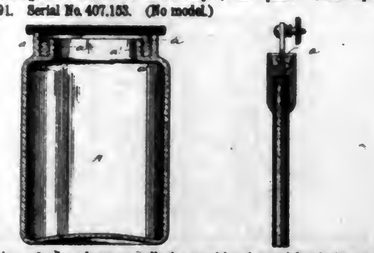


the cross-beams are secured to said terminal end supports, substantially as shown and specified.

2. In a spring bed-bottom, the combination, of channeled terminal cross-beams, tubular side rails, the terminal end supports provided with the doweled portions inserted in the ends of said rails, the lugs n', with the screw s screwed thereto, the slide M, gibbed thereto and adapted to be moved longitudinally by the screw s, having the lug n' integral thereto and fitting the channel of said cross-beams, and the bolts t, whereby the cross-beams are secured to the slide M, substantially as shown and specified.

3. In a spring bed-bottom, the combination, with a metallic rectangular frame composed of the tubular side rails A and their terminal end supports provided with the lugs n', of the channeled terminal cross-beams B, the clamping-bolts t, a woven-wire fabric having its terminal ends soldered to the battens C, said battens secured to said cross-beams, and the means for maintaining a proper tension to said fabric, substantially as shown and specified.

474,912. ELECTRIC BATTERY. ALPHONSO S. KEATING, Corry, Pa., assignor of one-half to H. W. Thayer, same place. Filed Sept. 30, 1891. Serial No. 407,153. (No model.)



Claim.—1. In a battery-cell, the combination, with a battery element, of an oil-receptacle attached to said element or formed thereupon at a point above the surface of the solution.

2. The combination of a containing vessel or cell for batteries and an annular oil-receptacle around the inside of the neck of the same, for the purpose set forth.

3. In a battery-cell, the combination, with a battery element, of an oil-receptacle attached thereto or formed thereupon at a point between the solution and the outside of the cell.

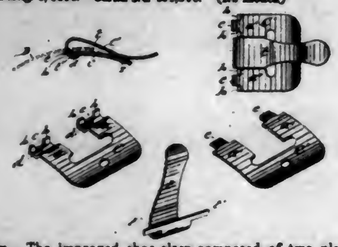
474,913. INSULATED GEAR-WHEEL. GEORGE F. LOCKWOOD, Saginaw, Mich., assignor of one-half to John F. Barrows, same place. Filed Dec. 10, 1891. Serial No. 414,596. (No model.)



Claim.—1. In an insulated gear-wheel, the combination, with a metal nave having longitudinal transverse lugs and the metal rim having longitudinal transverse lugs upon its inner circumference, of a non-conducting material between and separating the rim and nave and provided with grooves for engaging the lugs on the rim and nave, and plates secured to the ends of the nave for holding the non-conducting material in place, said plates being separated from the rim by the non-conducting material, substantially as described.

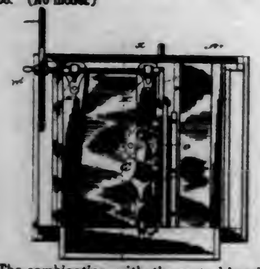
2. An insulated gear-wheel consisting of the metal nave 1, having lugs 1' 1' and a plate 2 cast to one end thereof, the other end screw-threaded, the non-conductor 3, the metal rim 4, having lugs 4' 4', the plate 5, screwing upon the threaded end of the nave, and the pin 7, passing through the plate 5 into the non-conductor, substantially as described.

474,914. SHOE-CLASP. GEORGE MAFFGANG, Syracuse, N. Y., assignor to the Syracuse Specialty Manufacturing Company, same place. Filed Aug. 1, 1891. Serial No. 401,390. (No model.)



Claim.—The improved shoe-clasp composed of two plates C C', placed one upon the other and secured to each other at their rear ends, one of said plates having its free end formed with two arms *a a*, each terminating with two fingers *b b*, projecting at an angle from the plane of the plate and with a recess *c* between said fingers, and the other of said plates formed with similar arms *a' a'*, terminating with fingers *c c*, extending forward through the recesses *c c*, in combination with the tongue *l*, having the angular pintles *l' l'* inserted between the aforesaid arms of the two plates immediately back of the fingers *b b*, substantially as described and shown.

474,915. MECHANISM FOR OPERATING WASHING-MACHINES, &c. ALLEN MENDENHALL, Bariham, Iowa. Filed June 9, 1891. Serial No. 395,663. (No model.)



Claim.—The combination, with the central bearing G, the short vertical shaft mounted in said bearing, and the gear H, secured to the upper end of said shaft, of the reciprocating rack I, engaging said gear, the horizontal shaft L, mounted in suitable bearings and provided with a crank N, and the pitman O, connecting said crank and rack, substantially as shown and described.

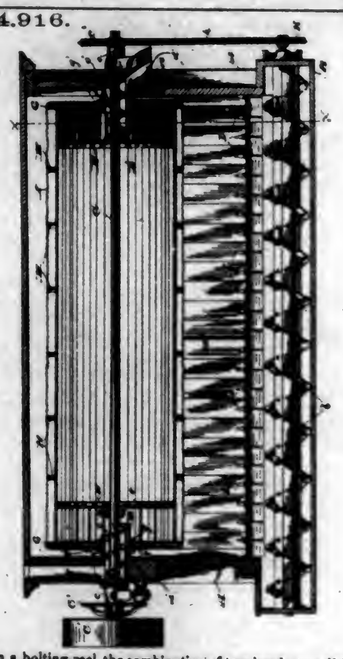
474,916. BOLTING-REEL. JONATHAN MILLS, Cleveland, Ohio. Filed Sept. 23, 1885. Serial No. 177,905. (No model.)

Claim.—1. In a bolting-reel, the combination, with a reel-core the periphery of which is made up of a series of longitudinal V-shaped ridges constructed to cast off the material onto the ascending side of the bolting-cloth, of the bolting-cloth encircling the core in cylindrical form and located in near proximity to the apices of the ridges, substantially as set forth.

2. In a bolting-reel, the combination of the heads, disks located between the heads, slats secured on the disks and extending to the heads and forming a closed core or cylinder between the disks, the said slats being set at an angle to deflect or cast off the material onto the ascending side of the bolting-cloth, and a feeding-spout adapted to discharge the material into the space between the head and disk at the feeding end of the machine, substantially as set forth.

3. In a bolting-reel, the combination of the heads, disks, and slats secured on the disks and extending to the heads and forming a closed core or cylinder between the disks, and a feeding-spout arranged to feed the material to the reel, the said slats being separated near the feeding end of the reel for the escape of the material and arranged obliquely with the line of motion, the direction of such obliquity on the ascending side of the reel being downward and outward, substantially as set forth.

474,916.



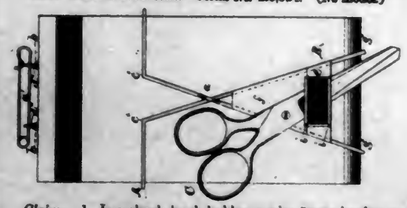
4. In a bolting-reel, the combination of two heads, two disks, slats secured on the disks and extending to the heads and forming a closed core or cylinder between the disks, a bolting-cloth encircling the slats, mechanism for feeding the material to the interior of the reel, and the angular deflecting-boards located within the reel for discharging the tailings.

5. In a bolting-reel, the combination of two heads, two disks, oblique deflecting-slats secured on the disks and extending to the heads and forming a closed core or cylinder between the disks, the said slats being separated near opposite ends of the machine for the escape of the material onto the bolting-cloth and for the discharge of the tailings, respectively, and the bolting-cloth encircling the slats.

6. In a bolting-reel, the combination, with reel-heads having central openings and feed-spouts extending through said openings, of annular external ribs or flanges on the respective spouts, and the saucer-shaped rings *g'* of packing, located between the respective ribs and the respective reel-heads, substantially as set forth.

7. The combination, with a reel and two conveyers located below the same, of the inverted-V-shaped bridges L, having upwardly-bent ends forming ways for the slides, and the slides having the angular or double-inclined bottom and provided with flanges or lips adapted to overlap the bent ends of the bridges, substantially as set forth.

474,917. CHECK-BOOK HOLDER. JAMES L. MCGERVEY, Xenia, Ohio. Filed Mar. 19, 1892. Serial No. 425,521. (No model.)



Claim.—1. In a check-book holder, a wire frame having an open top end and members extending from the latter diagonally downward and across the plane of said frame, said members crossing each other on the front and rear sides of said frame and secured together and to the mouth-wire, substantially as set forth.

2. In a check-book holder, the combination of an oblong open-mouth wire and integral diagonal members extending therefrom and crossing each other upon the front and rear sides and continuous across from side to side at their lowest points to form the bottom end of a wire frame and having their upper ends crossing the rear side of said

mouth-wire and secured thereto and ending in ring-terminals above the latter, said members being united to each other at the crossing-points.

3. In a check-book holder, a wire frame having an open-mouth end and wires depending from the latter and crossing each other to form the sides and bottom of said frame, the upper member of said crossed wires being formed with a bend or curve to conform to the shape of the under member and to bring it in line with the latter, said members being united together at their points of intersection, substantially as set forth.

4. In a check-book holder, a rigid wire frame having an oblong open-mouth end and adapted for holding and carrying a check-book in an upright position, said frame being provided with a number plate or card with the number thereon of the salesman or saleswoman using said check-book holder.

5. In a check-book holder, an inclosing wire frame having an open-mouth end adapted to be suspended uprightly for holding and carrying a book, means for suspending said frame to the person, and a holder for scissors in combination therewith, substantially as hereinbefore set forth.

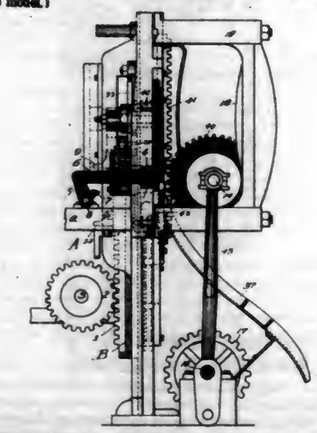
6. The combination, in a check-book holder, of a holder for scissors and a number plate or card having a number thereon indicative of the number of the salesman with means for suspending said check-book holder to the clothing of the latter, substantially as set forth.

7. In a check-book holder, a wire frame having an open-mouth end, diagonal members depending therefrom crossing each other on the sides and extending across the lower end, said members being secured together at their crossing-points and to the mouth-wire on the rear side, and a sheet-metal plate of triangular shape fastened to said diagonal members on the front side, having attached thereto a number plate or card with the number thereon of the salesman using said check-book holder.

8. In a check-book holder, a wire frame having an open-mouth end, members depending therefrom crossing each other on the front and rear sides, said members being continuous across the plane of said frame to form the lower end and united together at their crossing-points and to the mouth-wire on the rear or suspending side of said frame, a sheet-metal plate connecting said members on the front side, a loop on said plate having incurvated flanges or bent edges *i i*, and a removable number plate or card having thereon the number of the salesman using said check-book holder.

9. In a check-book holder, the combination, with the frame A, having ring-terminals *d' d'*, of chains *b b* and safety-pin *a'*, having rings *d' d'* immovably secured thereto.

474,918. HORSESHOE-MACHINE. HENRY NICOL and GUSTAF LJUNG, San Francisco, Cal. Filed Sept. 26, 1891. Serial No. 406,917. (No model.)



Claim.—1. In a horseshoe-machine, the combination of a vertically-sliding frame, a vertically-moving bending-die operated thereby, and transversely-sliding forming-dies connected to said vertically-moving frame, substantially as set forth.

2. In a horseshoe machine, the combination of a vertically-sliding frame, a bending-die moving vertically therewith, shaping-dies having a transverse movement toward and from one another and connected to the vertically-moving frame, and a vertically-moving pressure-roller, substantially as set forth.

3. In a horseshoe-machine, the combination of a vertically-moving frame, a sliding holder for horseshoe-blanks, shaping and bending dies operated by the vertically-moving frame, and projections on said frame and said holder, whereby the descent of the frame moves the holder forward and its ascent retracts each holder, substantially as set forth.

4. In a horseshoe-machine, the combination of a vertically-moving frame, a pair of longitudinally-sliding dies connected to and operated thereby, and a bending-die carried by said sliding frame and connected thereto so as to permit said frame a slight vertical movement independently of said bending-die, substantially as set forth.

5. In a horseshoe-machine, the combination of a main frame, a vertically-moving frame operated by a rack and pinion, a pair of transversely-sliding dies connected to the vertically-moving frame by a system of toggle-arms, and a vertically-moving bending-die operated by the vertically-moving frame, substantially as set forth.

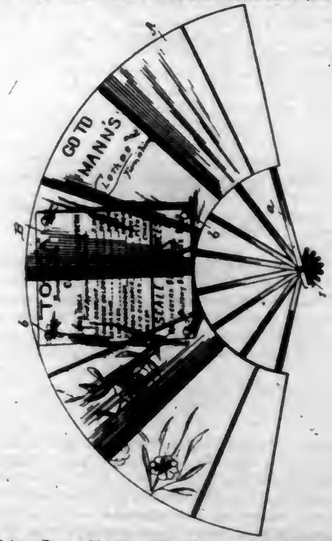
6. In a horseshoe-machine, the combination, with mechanism for bending a horseshoe-blank, of a vertically-moving pressure-roller, and a fixed die or projection for forming the concave, substantially as set forth.

7. In a horseshoe-machine, the combination, with bending and forming dies, of a vertically-moving pressure-roller mounted on a transverse shaft and carrying crossing-dies at one portion of its periphery and a plain pressing-surface for the remainder of its periphery, and a vertically-reciprocating rack for giving said roller a partial turn at the upper and lower limits of its vertical movement, substantially as set forth.

8. The combination, with the vertically-movable pressure-roller D, having crossing-dies 26, and a plain pressing-surface, of the cam 18, and the yielding rack 41, substantially as set forth.

9. In a horseshoe-machine, the combination, with the crescent-shaped die *f*, of the vertically-moving bending-die 13, and the vertically-moving pressure-roller D, substantially as and for the purposes set forth.

474,919. ADVERTISING-PROGRAM HOLDER. JOHN F. O'BRIEN, Montreal, Canada. Filed Feb. 12, 1891. Serial No. 381,206. (No model.)



Claim.—In combination with a fan, a pocket and a movable card or sheet within said pocket with elastic connections to the fan, substantially as described.

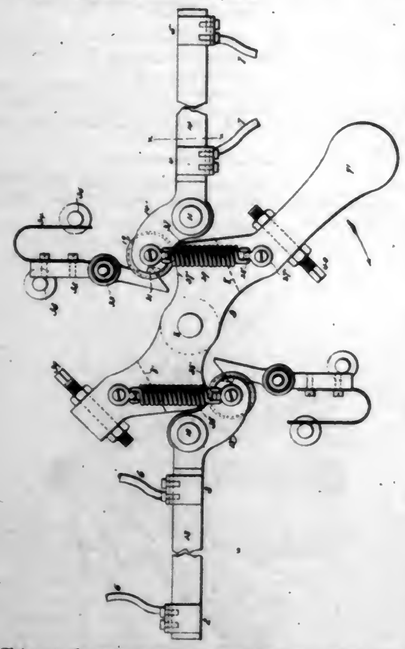
474,920. AUTOMATIC WEATHER-STRIP. WILLIAM H. ORTON, JAMES D. HAMM, and GEORGE H. ORTON, Glens Falls, N. Y. Filed Oct. 21, 1891. Serial No. 409,378. (No model.)



Claim.—1. The combination, with a hinged window or door A, having a groove formed in its lower edge, of the vertically and endwise movable strip E, seated within said groove, springs C, having their upper ends secured within the slot, as described, formed between their ends with coils C^3, located in recesses in the lower edge of the door and their opposite ends inclined and provided with loops C^4, adapted to engage substantially circular recesses in the upper edge of the strip E, and the dog H, seated within a recess in one end of the strip with its outer end adapted to normally extend beyond the side edge of the door, substantially as and for the purpose described.

2. The combination, with a hinged door having a groove at its lower edge, of a vertically and endwise movable spring-actuated weather-strip having near one end a horizontal recess, having at its inner end a substantially circular enlargement, and a dog H fitted in said recess with its outer end extended beyond the end of the strip and its inner end formed with a circular enlargement, which, in conjunction with the enlargement of the recess, provides for pivotal movement of the dog, substantially as shown and described.

474,921. ELECTRIC SWITCH. GUSTAV PFANNKUCHE, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Mar. 1, 1890. Serial No. 342,196. (No model.)



Claim.—1. In an electrical snap-switch, the combination, with a switch-lever pivoted between its ends, of switch-arms, springs connecting one end of each of said switch-arms to the switch-lever, a trigger for each switch-arm, springs for retaining triggers normally in engagement with said switch-arms, and trigger-pins carried by said switch-lever at opposite sides of its fulcrum and adapted to strike said switch-arms simultaneously when the switch-lever is operated, substantially as set forth.

2. An electric snap-switch comprising a switch-arm, a switch-lever, a spring connecting the switch-lever and the switch-arm, a trigger for said arm, and an adjustable trigger-pin on the said switch-lever, substantially as described.

3. A quick-acting snap-switch, consisting, essentially, of a metallic arm or arms for closing and opening a circuit, a switch-lever having protuberances thereon for forcing said arms in position to close the circuit, detents for locking the arms in their closed position, and a normally-relaxed spring for each arm, connecting the latter with the switch-lever, and a trigger for each detent carried by the lever, whereby each spring is put under tension before the arms are unlocked, substantially as described.

4. In an electric snap-switch, the combination of one or more pivoted switch-arms for closing and opening a circuit or circuits, and a switch-lever in operative relation to the arms, protuberances on said switch-lever, adapted to engage said switch-arms and move the same positively in one direction to close the circuit with detents for locking the arms in their closed position, normally-relaxed springs connecting each arm with the lever, so that the springs may be put under tension without moving the arms, and triggers for unlocking the arms after the springs have been put under tension, substantially as described.

5. A quick-acting snap-switch comprising one or more pivoted metallic switch-arms, a switch-lever, protuberances on said switch-lever, adapted to engage the switch-arms and positively actuate them for closing the circuit, detents adapted to engage said arms for locking the arms in the closed position, normally-relaxed springs connected with the arms and lever, and triggers on the lever for operating the detents to release the arms when the springs are placed under tension, substantially as described.

6. A quick-acting snap-switch comprising one or more metallic switch-arms, a switch-lever having cam protuberances for engaging the switch-arms to move them to the closed position, detents for locking the switch-arms in the closed position, normally-relaxed springs connecting the arms and levers, and triggers on the lever for operating the detents to release the arms when the springs are placed under tension, substantially as described.

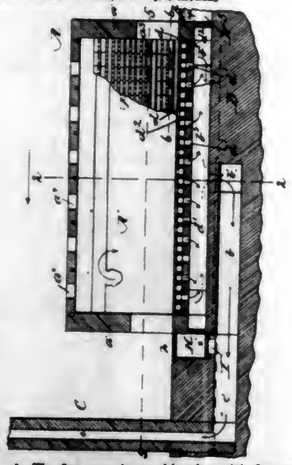
7. In an electric switch, the combination, with a pivoted switch-arm provided with an insulating anti-friction roller, of a switch-lever provided with a cam protuberance for engaging said roller, substantially as described.

8. In an electric switch, the combination, with a switch-arm mounted on a screw-threaded pivot, of an electrical contact having a contact-surface on the side of the arm toward which the said arm is moved by the screw-thread in turning the same to close the switch, substantially as described.

9. The combination of the switch-lever, the switch-arm pivoted on an independent axis parallel with the axis of the switch-lever, a spring connecting the shorter branch of the switch-arm with the switch-lever, and a trigger and detent for said switch-arm, substantially as described.

10. An electric snap-switch comprising a switch-lever, separate switch-arms mounted independently of said lever and of each other and provided each with its own contacts, springs connecting the said arms, respectively, with the switch-lever, and triggers and detents for said arms, substantially as described.

474,922. BRICK-KILN. STEPHEN J. PLANT, Momence, assignor of one-half to the Tiffany Pressed Brick Company, Chicago, Ill. Filed Jan. 25, 1892. Serial No. 419,152. (No model.)



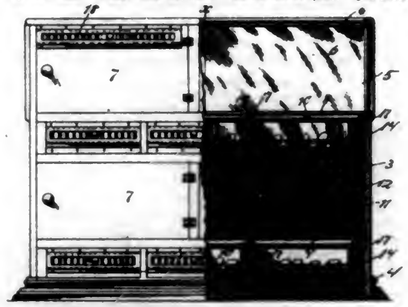
Claim.—1. The furnaces, in combination with flues to conduct the heated gases directly into the interior of the kiln, the kiln-floor freely perforated for the passage of gases down through the same, underground passages b^1 b^2 below the kiln-floor and connecting with the apertures therein, and the lower sub-flues b b', the former connecting with the stack and the latter with the sub-flues b^2 b^3, substantially as described.

2. In a brick-kiln in which the hot gases are delivered into the upper part of the interior of the kiln, the kiln-floor G, composed of perforated bricks g and entire bricks g^2 in alternate rows, in combination with the shallow chamber D, divided by partitions d d^3 with openings or passages at their alternate ends, and a sub flue or passage b^2, arranged below said chamber and provided with openings d', connecting with alternate spaces in the partitioned chamber above and also connected suitably with the stack, whereby the draft is down, through the material piled in the kiln and the kiln-floor into the said sub-flue and through this to the stack, substantially as described.

3. In a brick-kiln, the underground flue-passage b, connecting with the stack, in combination with the cross-passage b' on the same level, the upper sub flue or passage b^2, extending around the four sides of the kiln on a plane just above the passages b b' and connecting with the latter at two opposite sides, the central sub-flue b^3, running lengthwise of the kiln and connecting at each end with the flue b^2, and a perforated kiln-floor connected by suitable passages with said central flue b^3, substantially as described.

4. In a brick-kiln, the underground flue b, connected with the stack, in combination with the cross-flue b', the rectangular flue b^2, central flue b^3, chamber D, provided with partitions d, the floor G, constructed of alternate rows of perforated and entire brick g g^2, the false side walls A', whereby upward side flues are provided, and the furnaces F, provided with flues connecting directly with said side flues, the several parts constructed and connected for operation substantially as described.

474,923. CIGAR-REFRIGERATOR. CHARLES L. PRATT, Minneapolis, Minn. Filed June 22, 1891. Serial No. 397,029. (No model.)



Claim.—1. The combination, in a cigar-refrigerator, of the refrigerator-case having imperforate walls at top and bottom with a wire floor arranged in the lower part of the case, a drawer adapted to contain water and ice and arranged beneath said wire floor, and a ventilator arranged in the outer panel of said drawer, whereby fresh air is admitted above the water and ice, from thence passing to cool the cigars, substantially as described.

2. The combination, in a cigar-refrigerator, of upper and lower compartments with glass walls and tops for the upper compartment, wire floors for each compartment, ice and water drawers arranged beneath the same, and slide-ventilators provided in the outer panels of said drawers and in the walls of the case, whereby fresh, cool, and moist air is constantly circulated through said compartments, substantially as described.

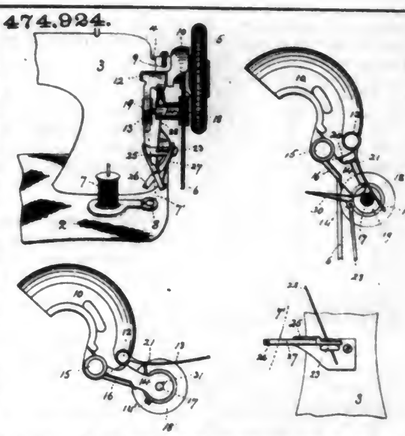
3. The combination, in a cigar-refrigerator, of a case having upper and lower compartments with doors for the same, a wire floor for each compartment, secondary wire walls arranged about the walls of the lower compartment, a space being left between the same, a drawer or drawers arranged beneath the lower wire floor and adapted to contain water and ice, and ventilators arranged in said drawers and in the walls of the case and having slides whereby the volume of air passing through the same may be regulated, substantially as and for the purpose specified.

4. The combination, in a cigar-refrigerator, of upper and lower compartments with glass walls for the upper compartment, doors for each compartment, wire floors arranged in each, and a drawer or drawers provided beneath each of said floors, transverse slides therefor, ventilators 16 in said drawers, and a ventilator 18, substantially as described.

5. The combination, with a case having upper and lower compartments, of wire floors therein, water and ice drawers arranged beneath the same, ventilators 16 therein, doors 7, ventilators 18, arranged in the tops thereof, ventilators 19, provided in the front walls of the case and concealed from view, and means for regulating the flow of air through said ventilators, substantially as and for the purpose specified.

474,924. BOBBIN-WINDER. GEORGE W. RANDALL and GILBERT H. RANDALL, Plympton, Mass. Filed Oct. 26, 1891. Serial No. 409,844. (No model.)

Brief.—To the shield 10 is pivoted a hanger-arm 14 bearing the bobbin-spindle and pressed upward by a spring 16. The lever 13 is pivoted on the shield and bears upon the barrel of the bobbin. As



the bobbin fills, the lever 13 is forced outward until the lug 21 escapes from the shoulder 20, when the spring throws the arm 14 upward, thus stopping the rotation of the bobbin. Simultaneously the rod 28 is drawn upward, its cam escapes from the slot 24 in plate 23, and the cutting implement 25 26 is forced shut by the spring 27, thus severing the thread 7.

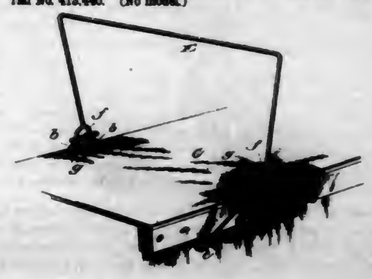
Claim.—1. In a bobbin-winder, the combination, with an oscillating hanger arm or lever and a revoluble bobbin-spindle mounted thereupon, of a locking-lever engaging with said hanger arm or lever and actuated by the accumulating thread, a cutting implement through which said thread passes, and a rod through which the action of said implement is controlled, the said rod being operatively connected with the hanger arm or lever and actuated thereby to release the cutting implement at the time the bobbin is filled, substantially as and for the purposes specified.

2. In a bobbin-winder, a stationary shield, an oscillating hanger arm or lever affixed thereto and carrying a bobbin-spindle with a grooved wheel, and a locking-lever likewise pivoted upon said shield adapted to engage said hanger-arm and operated by the accumulating thread upon the bobbin to release the hanger-arm, combined with a cutting implement and an operating-rod connected with the hanger-arm and actuated by the movement of the latter to release the cutting implement at the time of oscillation of said hanger-arm consequent upon the filling of the bobbin, substantially as explained.

3. The combination, with a sewing-machine, a driving-bolt, its stationary shield, an oscillating spring-actuated hanger-arm carrying the bobbin-spindle and driving-wheel, and locking-lever pivoted upon said shield and controlled by the thread accumulating on the bobbin, of the cutting implement and interconnecting means between said implement and the oscillating hanger-arm whereby the cutting implement is caused to act to sever the thread simultaneously with the completion of the filling of the bobbin and the release of the hanger-arm, substantially as stated.

4. The combination, with an oscillating hanger-arm, the revoluble bobbin-spindle at its free end and furnished with a driving-wheel, and the locking-lever released by the accumulating thread, of a cutting implement having a movable member, its actuating-rod pivoted upon the hanger-arm, an apertured lip in which said rod is adapted to reciprocate, and the offset upon said rod to engage the movable member of the cutting implement, substantially as set forth and stated.

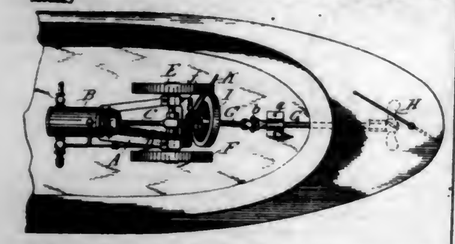
474,925. FRUIT-BASKET HANDLE AND COVER-FASTENER. FRANK A. RAPPLEYE, Farmer Village, N. Y. Filed Nov. 28, 1891. Serial No. 413,440. (No model.)



Claim.—1. The combination, with the side hooks with arms arranged at an angle to each other and formed at the angle with handle-engaging portions, of the handle removably engaged therewith and having portions arranged to bear upon the upper face of a basket-cover, as set forth.

2. A combined basket-handle and cover-fastener consisting of side hooks with hooked ends and at the angle formed with inwardly-extending flat loops, and a removable handle having its ends formed with loops to engage the loops of the side hooks, substantially as shown and described.

474,926. TRANSMITTING POWER TO PROPELLERS. DANIEL S. REGAN, San Francisco, Cal., assignor to the Regan Vapor Engine Company, same place. Filed May 19, 1891. Serial No. 393,292. (No model.)



Claim.—1. In combination, the crank-shaft, a jointed propeller-shaft, and driving connections from the crank-shaft to the propeller-shaft, comprising a friction-disk on the laterally-movable propeller-shaft and the wheels on the crank-shaft on each side thereof, said wheels being the fly-wheels of the engine, substantially as described.

2. In combination with the crank-shaft of an engine having two fly-wheels, a two-part propeller-shaft universally jointed, means for operating and sustaining said shaft, consisting of a pivoted lever in which one end of said shaft is journaled, and a friction-disk fixed on said propeller-shaft, substantially as and for the purposes set forth.

3. In combination, an engine-shaft and fly-wheel, a two-part propeller-shaft universally jointed, a friction-disk fixed thereto, means for moving the shaft laterally to disengage the disks from the fly-wheels, and a spring for maintaining said disk in frictional contact with the fly-wheel, substantially as set forth.

4. In combination, an engine-shaft and fly-wheel, a two-part universally-jointed propeller-shaft, a friction-disk secured to said propeller-shaft, and a pivoted lever for operating the shaft laterally, having a gimbal-joint containing a bearing for the end of said propeller-shaft, substantially as set forth.

5. In combination, the crank-shaft, the fly-wheel thereon, a propeller-shaft, a friction-disk on the same engaging directly with the fly-wheel, said disk having a peripheral flange, a removable flange secured to said disk, forming a groove or channel, and a band held in said groove, substantially as described.

474,927. PEACH CUTTER AND STONER. JAMES H. SMITH, Little Rock, Ark. Filed Aug. 13, 1891. Serial No. 402,504. (No model.)



Claim.—1. The combination of the table, the frame having a guiding-sleeve, the punch, the bent levers 11, arranged in planes at about right angles to each other, said levers being pivotally supported between studs on the table, the pivot passing above the lever and within a bend therein and having each a horizontally-arranged arm 14, curved upwardly from the fulcrum of the lever, and a curved blade at the extremity of its opposite arm, and the springs, each having one end secured directly to the table and the other to the lever-arm and adapted to permit a horizontal movement, adapted to lift said arms and hold the blades in proximity to each other, substantially as set forth.

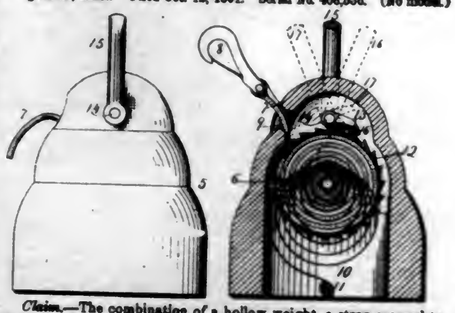
2. In combination, the table provided with studs 13, the levers 11, having each an approximately vertical arm provided with a stripping-blade and an arm 14, curved upwardly from the foot of the said vertical arm and having its main part horizontally disposed, and a spring having one end secured directly to the table and the other end to the lever-arm, being free to move horizontally and adapted to lift the arm 14, said curved portion between the arms being located between the studs and adapted to receive above itself within its curved part a securing-pin passing through said stud, substantially as set forth.

3. In combination, the plunger, the lever 17", pivoted to said plunger and provided with blades, the wedge-shaped strippers, the bars 11, and the fruit-support, adapted to rest on said bars, substantially as set forth.

4. In combination with a fruit-stoning machine, the detachable strippers 22, having form of a wedge with an obliquely-disposed edge and levers 17, substantially as set forth.

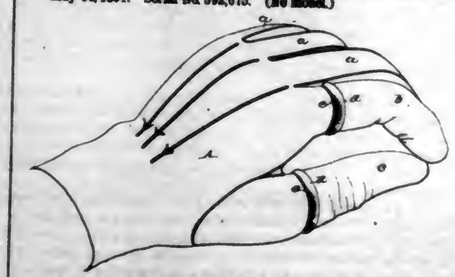
5. In combination with a fruit-stoning machine, the detachable strippers 22, having the form of a wedge with an obliquely-disposed edge and with the bars 11 and the headed peg 23, adapted to be supported by the bars and levers 17, substantially as set forth.

474,928. HORSE-HITCHING DEVICE. MARLIN E. STEELE, Argentine, Kans. Filed Oct. 12, 1891. Serial No. 408,536. (No model.)



Claim.—The combination of a hollow weight, a strap secured to a shaft journaled in the weight, a spring for winding the strap, a ratchet-wheel upon the said shaft, and a detent journaled to the block to engage the ratchet and having a handle extending out of the block, adapted to swing past the center of balance either forward or backward to serve as a weight, whereby the detent may be held out of or into engagement with the said ratchet, substantially as described.

474,929. GLOVE. LEVI L. TABOR and ADOLF SEDMIHRADSKY, Milwaukee, Wis.; said Sedmihradsky assignor to said Tabor. Filed May 14, 1891. Serial No. 392,675. (No model.)

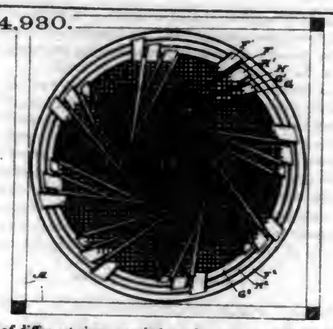


Claim.—A glove or mitten having a thumb or finger composed of two parts, one of which is made integral with the hand and the other is wholly severable therefrom, and a fastening consisting of two rings attached to the meeting edges of said parts and adapted to engage with each other, substantially as and for the purposes set forth.

474,930. SEPARATOR. FAIRFAX H. WHEELAN, Santa Barbara, Cal. Filed Apr. 16, 1891. Serial No. 389,318. (No model.)

Claim.—1. An apparatus for separating materials composed of

474,930.



474,931.



particles of different sizes, consisting of a moving surface upon which the material is fed, and guides above said surface having graduated openings to permit the passage as the material is drawn through them by the moving surface of different particles, according to their several sizes, substantially as herein described.

2. An apparatus for separating materials composed of particles of different sizes, consisting of a moving surface upon which the material is fed, guides above said surface having graduated openings to permit the passage as the material is drawn through them by the moving surface of different particles, according to their several sizes, and a separate guide behind and in communication with each opening to receive and maintain separate the different-sized particles, substantially as herein described.

3. An apparatus for separating materials composed of particles of different sizes, consisting of the rotating table and the series of guides above said table in sets of three, composed of the guides F, having the graduated openings *f f'*, the guides G in communication with the openings *f*, and the guides H in communication with the openings *f'*, substantially as herein described.

4. An apparatus for separating materials composed of particles of different sizes, consisting of the rotating table having the central feed-chamber, the sets of guides, each composed of the guides F, having the graduated openings *f* and *f'* and the guides G and H in communication with said openings, the spouts at the ends of the guides, and the troughs in communication with said spouts, substantially as herein described.

5. An apparatus for separating materials composed of particles of different sizes, consisting of the rotating table having the central feed-chamber, the sets of guides, each composed of the guides F, having the graduated openings *f* and *f'*, and the guides G and H in communication with said openings, the spouts at the ends of the guides, the troughs in communication with said spouts, and the scrapers connected with the rotating table and operating in the troughs, substantially as herein described.

474,931. FURNACE-GRATE. ROBERT WHELAN and ROBERT A. WHELAN, Chicago, Ill. Filed Aug. 15, 1890. Renewed Apr. 20, 1892. Serial No. 429,847. (No model.)

Claim.—1. In a furnace, the combination of a frame, with chambered cross-bars respectively provided with a flap or bottom held by hinges, each cross-bar provided with a lug or ear, and the flap or bottom of each cross-bar provided with a lug or ear, horizontal rods pivotally connected with each series of said ears or lugs, the rod connected with the lugs or ears of said cross-bars being pivotally connected with an operating rod and lever, and grate-bars with vertical openings supported and held on said cross-bars, all substantially as shown.

2. In a furnace, a frame, chambered cross-bars supported in said frame, with an opening in the trunnion or journal of each leading into the chambers thereof, said cross-bars provided with flaps or bottoms held by hinges, each cross-bar and each flap or bottom provided with its respective lug or ear, horizontal rods pivotally connected with each series of lugs or ears, an operating rod or lever pivotally connected with said rod, connecting the ears and lugs of the cross-bars, and a pipe with small openings along its side and having sections or branches connecting with the openings in the trunnions or journals of the cross-bars, with means for sending a blast of air through said pipe and grates, all substantially as shown.

3. In a furnace, a frame, chambered cross-bars supported in said frames, with an opening in the trunnion or journal of each cross-bar leading into the chamber, said cross-bar provided with flaps or bottoms held by hinges, each cross-bar and each flap or bottom provided with its respective lug or ear, horizontal rods pivotally connected with each series of lugs or ears, the rod connected with the lugs or ears of said flaps or bottoms, provided with a collar and spring to hold the same in position, the rod connected with said cross-chambers being connected with an operating rod and lever, and grate-bars with vertical openings supported on said cross-bars, all substantially as shown.

4. In a furnace, a frame composed of two longitudinal sides provided with interior lugs at each end, cross-plates resting on and pivoted or bolted to said respective lugs, said mullion or center bar being hollow for the introduction of air-pipes, provided with openings or bearings in the depressed surfaces of the upper edges of its sides, and with plates having vertical openings held or riveted upon said depressed surfaces to hold and retain the journals or trunnions of the cross-bars in said openings or bearings, in combination with cross-bars provided with trunnions having openings to receive the air from the mullion or center bar, all substantially as shown.

5. In a furnace, a chambered cross-bar and ledges along its upper longitudinal sides, provided with trunnions or journals at each end and an ear or lug, also with a flap or bottom hinged to the under side of said cross-bar, said flap or bottom being provided with an ear or lug whereby said chamber of said cross-bar may be opened or closed at the bottom thereof, in combination with one or more grate-bars supported thereon, all substantially as shown.

6. In a furnace, a chambered cross-bar with ledges along its upper longitudinal sides, provided with trunnions or journals at each end, one of which has an opening into said chamber, also with an ear or lug also provided with a flap or bottom held to said cross-bar by hinges, said flap or bottom having an ear or lug, whereby said flap or bottom can be made to open or close said chamber at the bottom, in combination with one or more grate-bars supported thereon, all substantially as shown.

7. In a furnace, a grate-bar B, with vertical openings and recessed upon one side to form in connection with another grate-bar B' a vertical opening between the two, the under side of said grate-bar B recessed and each of the walls of such recess provided with a transverse lug 5, leaving space for the introduction of a cross-bar A, provided with ledges or flanges A', whereby the two may be locked together, all substantially as shown.

8. In a furnace, a grate-bar B, having vertical openings, one side recessed to form in connection with another grate-bar B' a vertical opening between them, the lower side of said grate-bar B recessed, the opposite walls of said recess being provided with transverse lugs 5, so as to form a space for the introduction of the flanges or ledges A' of the cross-bar A, whereby the same may be locked, said grate-bar B having its edges serrated and the faces of said edges inwardly inclined, all substantially as shown.

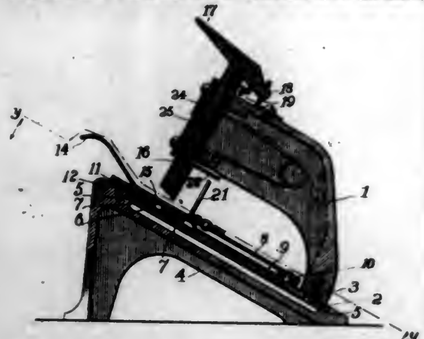
9. In a furnace, a grate-bar B, with vertical openings, one side recessed to form in connection with another grate-bar B' a vertical opening between them, its lower side recessed and each of the walls of such recess provided with a transverse lug 5, leaving a space for the introduction of the cross-bar A with its ledges or flanges A', whereby the two may be locked together, in combination with a chambered cross-bar A, provided with flanges or ledges A', adapted to be received by the recess in said grate-bar B and to hold and support the same, all substantially as shown.

10. In a furnace, a series of grate-bars respectively provided with vertical openings and interior ledges, in combination with a series of chambered cross-bars, each cross-bar provided with a flap or bottom

and with ledges adapted to carry and support said series of grate-bars, all substantially as shown.

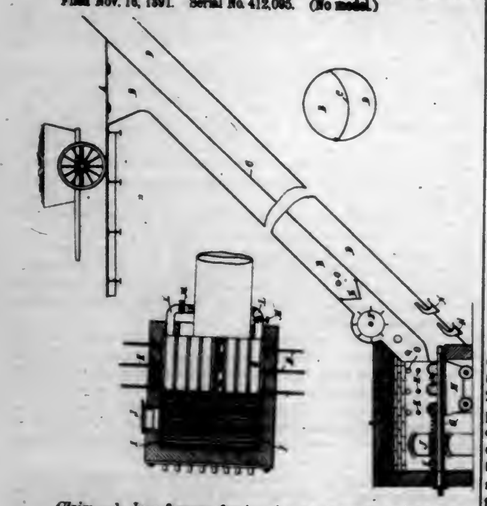
11. In a furnace, a series of grate-bars B, with vertical openings, a series of chambered cross-bars A, adapted to carry and support such grate-bars, said cross-bars being provided with trunnions or journals 1 2, set in bearings, one of said trunnions 2 being hollow for the reception of the terminal of an air-pipe D, and means for rocking said cross-bars and tilting said grate-bars, in combination with an air-pipe C, and branches D, connected with the chambers of said cross-bars through said hollow trunnions and connecting pipes and branches in and through the chambers of said cross-bars and the vertical openings of said grate-bars, all substantially as shown.

474,932. PUNCH FOR BANK-CHECKS. SAMUEL S. WILLIAMSON, Bridgeport, Conn. Filed June 24, 1891. Serial No. 397,375. (No model.)



Claim.—In a check-punch, the combination, with a sliding series of punches and their dies, of a stationary check-clamp between said punches and dies, vertical guide-fingers extending from said clamp, and rigid extensions from said punches, adapted to co-operate with said fingers to center the punches, substantially as set forth.

474,933. FURNACE FOR THE INCINERATION OF GARBAGE. JOHN WILSON, New York, N. Y., assignor to Roman Debes, same place. Filed Nov. 16, 1891. Serial No. 412,095. (No model.)



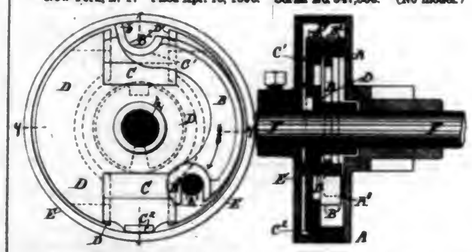
Claim.—1. In a furnace for burning garbage, the combination, with the fire-chamber, of an exterior cylinder or tube leading from the fire-chamber and set in an inclined position, a metallic partition dividing the tube into two longitudinal compartments or passages, the upper passage being provided with a hopper for the delivery of garbage to the furnace, the lower compartment being adapted to serve as a flue for carrying off the products of combustion, as set forth.

2. In a furnace for burning garbage, the combination, with the fire-chamber, of an exterior cylinder or tube leading from the said cylinder and set in an inclined position, a metallic partition dividing the tube into two longitudinal compartments or passages, a feed-drum located in the upper passage near the fire-chamber, and valves or dampers for closing such passage and preventing the escape through the same of the products of combustion, as set forth.

3. In a furnace for burning garbage, the combination, with the fire-chamber, of a chute for the delivery of garbage into the rear of the chamber, a grate for a coal fire in the forward part of the fire-chamber, and a series of jets or nozzles for oil-blasts arranged at opposite sides of said chamber and at the rear thereof, as set forth.

4. The combination, with the fire-chamber of a garbage-furnace, of a metallic tube divided longitudinally by a partition C, concave on its upper side and forming a chute for the delivery of garbage into the fire-chamber, and a flue below the chute, passages from the fire-chamber into said flue, and dampers for regulating the same, as set forth.

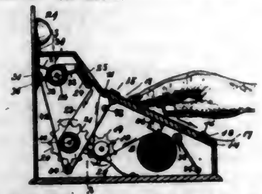
474,934. POWER-TRANSMITTING CLUTCH. EDWIN WINANS, New York, N. Y. Filed Apr. 10, 1890. Serial No. 347,336. (No model.)



Claim.—1. In combination with the motion-receiving and motion-delivering portions of a friction-coupling, an operating-lever connected with and actuated by said motion-receiving portion and engaging by frictional contact the interior of the motion-delivering portion, a sliding grip actuated by said operating-lever, and a carrying-disk upon which the said sliding grip moves, substantially as and for the purposes set forth.

2. In combination with the motion-receiving and the motion-delivering portions of a friction-coupling, an operating-lever connected with and actuated by said motion-receiving portion and engaging by frictional contact the interior of the motion-delivering portion, a sliding grip actuated by said operating-lever, a carrying-disk upon which said sliding grip moves, and a shaft to which the motion-delivering portion of the coupling is attached, substantially as and for the purposes set forth.

474,935. BARBER'S REGISTER. FRANK WITTE, Cincinnati, Ohio, assignor, by direct and mesne assignments, of two-thirds to Joseph Peare, Covington, Ky., and Joseph Preis, Chicago, Ill. Filed Dec. 21, 1891. Serial No. 415,776. (No model.)



Claim.—1. In a register of the kind described, the combination of a case, a paper roll suspended within it and capable of being drawn therefrom for the purpose of being used piecewise, a strip or ribbon 23, covered on one side with numbers consecutively arranged and placed so that with reference to the specifically-constructed case only one of these numbers may be seen at a time, two rollers to which the ends of this ribbon are connected, an operating-roller 10, rotated by the paper which passes around it while leaving the roll, and suitable mechanism to cause this roller to revolve one of the rollers to which the numbered ribbon is connected, all as substantially shown and described.

2. In a register of the kind described, the combination of a case, a paper roll suspended within it and capable of being drawn therefrom for the purpose of being detached piecewise, a strip or ribbon 23, covered on one side with numbers consecutively arranged and placed so that with reference to the specifically-constructed case only one of these numbers may be seen at a time, two rollers to which the ends of this ribbon are connected, an operating-roller 10, rotated by the paper which passes around it while leaving the roll, suitable intermediate mechanism to cause this roller to revolve one of the rollers to which the numbered ribbon is connected, a trigger also connected to one of these rollers, a bell, and bell-hammer, the latter so located as to be capable of actuation by the said trigger, all as substantially shown and described.

3. In a register of the kind described, the combination of a case, a paper roll suspended within it and capable to be drawn therefrom for the purpose of being used piecewise, a strip or ribbon 23, provided on one side with numbers consecutively arranged and placed so that with reference to a specifically-constructed case only one of the numbers may be seen at a time, two rollers to which the ends of this ribbon are connected, an operating-roller 10, rotated by the paper which passes around it while leaving the roll, suitable intermediate mechanism to cause this roller to revolve one of the rollers to which the numbered ribbon is connected, a trigger also connected to one of these rollers, a bell, and bell-hammer, the latter located within the rotary path of the trigger, and a stop 36, which serves as a means to lock the device against being turned back, all as substantially shown and described.

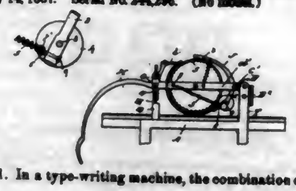
4. In a register of the kind described, the combination of a case, a paper roll suspended within it and capable of extraction therefrom for the purpose of being used piecewise, a strip or ribbon 23, arranged and used for the purpose described, two rollers to which the ends of this ribbon connect, an operating-roller 10, rotated by the paper while it leaves the roll, suitable intermediate mechanism to cause this roller to revolve one of the rollers to which strip 23 connects, a trigger affixed to one of these rollers, a bell, and bell-hammer, the latter located within the rotary path of the trigger, a stop 36, which serves as a means to lock the device against being turned back, and a pliable connection between the inside of the lid of the case and the bell-hammer, whereby this latter is drawn out of the reach of the trigger when the case is unlocked, and thereby permitting the indicator-ribbon being reset, all as substantially shown and described.

5. In a register of the kind described, the combination of a tablet or top of a case, a paper roll suspended adjacently to it and capable of having its free end drawn over the tablet for the purpose of being used piecewise, guides 15 and 16 to hold the paper down on the case, a knife 18 to aid in the detachment of portions of the paper roll, a strip or ribbon 23, covered on one side with numbers consecutively arranged and used as explained, two rollers to which the ends of this ribbon connect, an operating-roller 10, rotated by the paper while passing around it from the roll, and suitable intermediate mechanism to enable roller 10 to revolve one of the rollers to which the numbered ribbon is connected, all as substantially shown and described.

6. In a register of the kind described, the combination of a tablet or top of a case, a paper-roll suspended adjacently to it and capable of being extracted from the case and drawn over its top, guides 15 and 16, by which the paper is held down on the case, a knife 18, by which portions of the paper may be detached after having been drawn clear of the case, said paper being covered with advertising matter, a strip 23, arranged and used as explained, two rollers to which the ends of this strip are connected, an operating-roller 10, rotated by the paper while passing around it from the roll, and suitable intermediate mechanism by which roller 10 is enabled to advance the numbered strip 23, all as substantially shown and described.

7. In a register of the kind described, the combination of a tablet or top of a case, a paper roll suspended adjacently to it and capable of being extracted from the latter and drawn over its top, guides to hold the paper down on the case, and a knife by which portions of it may be detached after having been drawn clear of the case, this paper also carrying advertisements so arranged in their length as to correspond with the length of the sheets which are detached, which length also corresponds approximately with the distance between the guides and knife, so that after detachment of one sheet the advertisement on the succeeding sheet remains in plain view on the top of the case, a strip 23, arranged and used as explained, two rollers to which the ends of this strip are connected, an operating-roller 10, rotated by the paper while passing around it from the roll, and suitable intermediate mechanism by which roller 10 is enabled to advance the numbered strip 23, all as substantially shown and described.

474,936. TYPE-WRITING MACHINE. GEORGE W. N. YOST, New York, N. Y., assignor to the Yost Writing Machine Company, same place. Filed July 14, 1887. Serial No. 244,296. (No model.)



Claim.—1. In a type-writing machine, the combination of an open hinged frame having side bars, the platen journaled within said open frame, arms pivoted to said frame and depending within the opening therein, the pressure-roller journaled at its ends in said depending pivoted arms, and spring connected to the free ends of said arms and to the side bars of the open frame, as set forth.

2. In a type-writing machine, the combination of an open hinged frame composed of a front rail, a hind rail, and side bars, all rigidly connected together, a platen journaled in said side bars with said open frame, arms pivoted to said hind rail and depending within the opening in said frame, the pressure-roller journaled at its ends in said depending arms, and a spring attached to each of said arms and to each of the side bars of said open frame, as set forth.

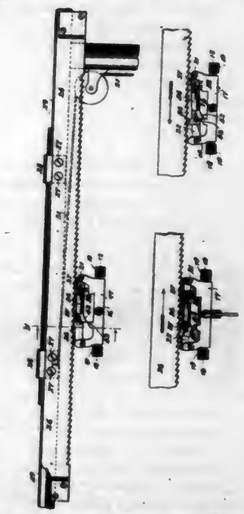
3. In a type-writing machine, the combination of the paper-carriage, the platen journaled therein, the depending arms pivoted to the hind rail of the carriage-frame, the pressure-roller journaled at its ends in said pivoted arms, the coiled springs attached to the said arms and the carriage-frame, and the pegs formed or provided with cross-pins, whereby the pressure of the roller against the platen or the paper thereon may be increased or diminished at pleasure, as set forth.

4. In a type-writing machine, the combination of the paper-carriage, the platen journaled in the carriage-frame, the arms depending from the rear side of the carriage-frame, the pressure-roller journaled in said depending arms and arranged in rear of the platen, and the paper-guides 16, connected at their rear ends to the pressure-roller shaft or axis and extending forward beneath and to the front of the platen, substantially as set forth.

5. In a type-writing machine, the combination of the paper-carriage, the platen, the arms depending from the carriage-frame, the pressure-roller journaled therein, and the paper-guides 16, connected at their rear ends to the pressure-roller shaft or axis and at their front portions to slide upon a pin projecting from the front rail of the carriage-frame, as set forth.

6. In a type-writing machine, the combination of the paper-carriage, the platen journaled in the carriage-frame, consisting of the bars *c c d d*, the depending arms, the pressure-roller journaled in said arms, and the paper-guides 16, connected at their front portions to the bar *c* and at their rear portions to the shaft or axis of the pressure-roller, as set forth.

474,937. TYPE-WRITING MACHINE. GEORGE W. N. YOST, New York, N. Y., assignor, by mesne assignments, to the Yost Writing Machine Company, same place. Filed July 8, 1891. Serial No. 398,773. (No model.)



Claim.—1. The combination, with a power-driven paper-carriage having a vertical feed-rack, of a trunnion arranged below said feed-rack and pivoted to rock in a plane at right angles to the path of travel of the feed-rack, an arm pivoted to said rocking trunnion to move in and out of the plane of the feed-rack and to also move up and down on said trunnion, a holding-dog arranged on said arm, and a spring-propelled feeding-dog mounted on said pivoted arm so as to be depressible by the feed-rack on its return movements.

2. The combination, with a power-driven paper-carriage having a feed-rack, of a rocking frame or trunnion, an arm pivoted thereto at one end and provided at its other end with means to limit its vibra-

tory movements, a holding-dog arranged on said arm, and a loose spring-actuated feeding-dog also mounted on said arm, substantially as set forth.

3. The combination, with a power-driven paper-carriage having a feed-rack, of a rocking frame or trunnion, an arm pivoted thereto and provided with a holding-dog and with a cavity or depression, a loose feeding-dog having a bar or shank connected to said arm by means of slots and screws and provided with a cavity or depression, and a spring for moving said loose dog, arranged within the housing formed by said cavities and connected at one end to said arm and at the other end to the bar or shank of said loose feeding-dog, substantially as described.

4. The combination, with a power-driven paper-carriage having a feed-rack, of a rocking frame or trunnion, an arm pivoted at one end to said frame and provided at the other end with a slot embracing a pin in said frame or trunnion, a holding-dog on said arm, a spring for returning said arm, a cavity in said arm, a loose feeding-dog having a bar or shank provided with slots and with a cavity, screws passing through said slots to connect said dog to said arm, and a spring arranged within the housing formed by said cavities and connected at one end to said arm and at the other end to said bar or shank, substantially as described.

5. The combination, with a power-driven paper-carriage having a rack, of a pivoted holding-dog, a sliding spring-propelled feeding-dog connected to said pivoted holding-dog, and means, substantially as described, for preventing endwise movement of the feeding-dog when the latter is depressed or moved down out of engagement with the feed-rack, substantially as described.

6. The combination, with a power-driven paper-carriage, of a pivoted holding-dog, a sliding spring-propelled feeding-dog connected to said pivoted holding-dog and provided with a projection, and a stop for engaging said projection when said dog is depressed or moved down out of engagement with said rack, substantially as described.

7. The combination, with a power-driven paper-carriage having a feed-rack, of a rocking frame or trunnion having a stop or abutment, an arm carrying a holding-dog and pivoted to said rocking frame or trunnion, and a loose spring-actuated feeding-dog connected to said arm and provided with a projection to engage said stop or abutment when said feeding-dog is depressed, substantially as described.

8. The combination, with a power-driven paper-carriage having a feed-rack, a rocking frame or trunnion having a stop or abutment, a spring-actuated arm having a holding-dog and pivoted to said rocking frame or trunnion, and a loose spring-propelled feeding-dog having a bar or shank and connected by slots and screws to said arm and provided with a projection to engage said stop or abutment when said feeding-dog is depressed, substantially as described.

9. The combination, with a power-driven paper-carriage, a feed-rack, a holding-dog, and a reciprocatory feeding-dog, of a stop to prevent an independent letter-space movement of the feeding-dog when the carriage is moved to the right or when the carriage is freed or released from both said dogs, substantially as set forth.

474,938. TYPE-WRITING MACHINE. GEORGE W. N. YOST, New York, N. Y., assignor, by mesne assignments, to the Yost Writing Machine Company, same place. Filed July 8, 1891. Serial No. 398,774. (No model.)



Claim.—1. In a type-writing machine, the combination, with a paper-carriage having a feed rack, of a pair of letter-spacing dogs having a vibratory movement at right angles to the path of travel of the paper-carriage and having, also, an independent lateral vibratory movement, a release-rod, and a pair of links suspending said release-rod from said feed-rack, substantially as described.

2. In a type-writing machine, the combination, with a paper-carriage having a feed-rack, of a pair of letter-spacing dogs having a vibratory movement at right angles to the path of travel of the paper-carriage and having, also, an independent lateral vibratory movement, a release-rod suspended from said rack, a frame having a slot, and a key or stem passing through said slot and provided with a returning-spring, substantially as described.

3. In a type-writing machine, the combination, with a paper-carriage having a feed-rack, of a pair of letter-spacing dogs having a vibratory movement at right angles to the path of travel of the paper-carriage and having, also, an independent lateral vibratory movement, a release-rod suspended by obliquely-arranged links from said feed-rack, a frame or support having a vertical slot, a key or stem at one end of said release-rod passing through said slot, and a returning-spring.

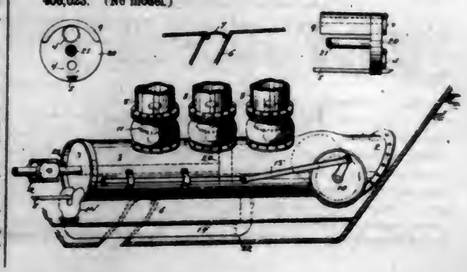
4. In a type-writing machine, the combination, with a paper-carriage having a feed-rack, of a pair of letter-spacing dogs having a vibratory movement at right angles to the path of travel of the paper-carriage and having, also, an independent lateral vibratory movement, a release-rod, a pair of links, each pivoted at one end to said rod and at the other end to said feed-rack, a stem or key having a head and provided with a spring, and a frame or support having a vertical slot, the ends of which are adapted to limit the movements of the release-rod, substantially as described.

5. In a type-writing machine, the combination, with a paper-carriage having a vertically-arranged feed-rack, of a rocking frame or trunnion, an arm pivoted to said trunnion and having a holding-dog, a loose spring-propelled feeding-dog mounted on said arm, and a release-rod pivotally suspended from and parallel with said feed-rack, substantially as described.

6. In a type-writing machine, the combination, with a paper-carriage having a vertically-arranged feed-rack, of a rocking frame or trunnion, an arm pivoted to said trunnion and having a holding-dog, a loose spring-propelled feeding-dog mounted on said arm, a release-rod pivotally suspended from and parallel with said feed-rack and having a stem or key and a returning-spring, and a frame or support provided with a vertical slot.

7. In a type-writing machine, the combination, with a paper-carriage having a vertically-arranged feed-rack, of a rocking frame or trunnion, a spring-actuated arm pivoted to said trunnion and having a rigid holding-dog, a spring-propelled feeding-dog mounted on said arm and provided with a projection, a stop or abutment on the rocking frame or trunnion, a release-rod, a pair of links pivoted each at one end to said rod and at the other end to said feed-rack, means, substantially as described, for actuating and limiting the movements of said release-rod, and a returning-spring, substantially as described.

474,939. MACHINE FOR PROPELLING VESSELS. ISAAC CARRILLO DE ALBORNOZ, New York, N. Y. Filed Sept. 17, 1891. Serial No. 406,023. (No model.)



Claim.—1. The combination, in a boat-propelling machine, of a cylinder open at one end, a valve at the open end thereof, and means by which the valve is opened and closed as the piston advances and recedes, an air-pipe provided with a valve by which air enters and leaves the cylinder, and a piston adapted to move back and forth in the cylinder, substantially as described.

2. The combination, in a boat-propelling machine, of a cylinder open at one end, a valve at the open end thereof, and means whereby the valve is opened and closed as the piston advances and recedes, an air-pipe on the cylinder provided with a valve actuated by the rise and fall of the water in the cylinder, and a piston arranged to move back and forth in the cylinder, substantially as described.

3. The combination, in a boat-propelling machine, of a cylinder open at one end, a valve at the open end thereof, and means whereby the valve is opened and closed as the piston advances and recedes, an air-pipe on the cylinder, provided with a valve actuated by the rise and fall of the water in the cylinder, and a piston arranged to move back and forth in the cylinder and provided with valves whereby the air can pass through the piston, substantially as described.

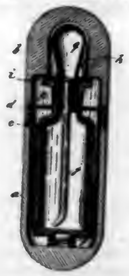
4. The combination, in a boat-propelling machine, of a cylinder open at one end, a valve at the open end thereof, and means whereby the valve is opened and closed as the piston advances and recedes, an air-pipe on the cylinder, provided with a valve actuated by the rise and fall of the water in the cylinder, an inlet-pipe in the cylinder communicating with the water outside of the vessel and having an upwardly-opening valve and a piston arranged to move back and forth in the cylinder, provided with a valve whereby the air can pass through the piston and having a rearwardly-projecting shield by which the mouth of the air-pipe is closed as the piston passes under the same, and a rearwardly-projecting rod adapted to pass over and hold down the valve in the inlet-pipe, substantially as described.

5. The combination, in a boat-propelling machine, of a cylinder open at one end, a valve at the open end thereof, and means whereby the valve is opened and closed, a series of air-pipes arranged longitudinally on the cylinder and provided with valves actuated by the rise and fall of the water in the cylinder, and a piston arranged to move back and forth in the cylinder, substantially as described.

6. The combination, in a boat-propelling machine, of a cylinder open at one end, a piston therein, said cylinder being provided with an air-opening intermediate its open end and the piston at the opposite end of its stroke, whereby a vacuum is prevented on the return stroke, a valve in said air-opening, and means whereby said valve is closed on the advance stroke of the piston, substantially as described.

7. The combination, in a boat-propelling machine, of a cylinder open at one end, a piston therein, said cylinder being provided with an air-opening passed by the piston on its stroke in each direction, a valve in said opening, and means whereby said valve is opened for the return stroke and closed for the advance stroke, substantially as described.

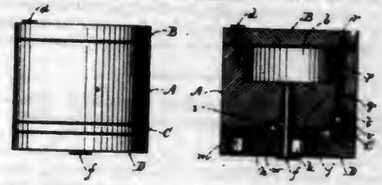
474,940. POCKET-CASE FOR BOTTLES. JOSHUA BARNES, Green Lawn, N. Y. Filed June 8, 1891. Serial No. 395,440. (No model.)



Claim.—1. A pocket-case for bottles having an elastic flange of the stopper adapted to bear on the top of the bottle, the said case consisting of the two chambered parts *a b*, having the screw-joint connecting the open ends, and one of said parts having the counterbored chamber surrounding the head of the stopper and containing the bearing resting on the elastic shoulder or flange of the stopper, substantially as described.

2. The combination of the pocket-case consisting of the two chambered parts, one of which has the counterbore and the shoulder at the bottom thereof, and said parts connected by the screw-joint, the elastic presser secured in the chamber of one of the parts, and a stoppered bottle having the elastic flange of the stopper adapted to be pressed on the top of the bottle and said bottle inserted in said case and subject to pressure on the bottom and on the elastic shoulder of the stopper by the said parts of the case, substantially as described.

474,941. PUZZLE. ALBERT W. BARTHOLOMEW, Boston, Mass., assignor of one-half to Thomas B. Kennedy, same place. Filed Jan. 18, 1892. Serial No. 418,395. (No model.)



Claim.—1. A puzzle comprising a box, a cover pivoted thereon, a bolt concealed in said body and locking said cover, a disk pivoted to the bottom of said body, a ball disposed in a countersink in said body and supporting said bolt, said ball rolling on the inner face of said disk, an extension to the pivot-opening of said disk, whereby it may be moved laterally, and an opening in said disk adapted to register with said countersink upon said lateral movement, substantially as described.

2. A puzzle comprising a body, a cover pivoted thereon, a concealed bolt normally locking said cover, a disk pivoted to the bottom of said body, a ball disposed in a chamber formed by an extension of the pivot-opening of said disk and a countersink in said body, a countersink for the head of said bolt in said body, a ball disposed in said countersink and resting on said disk, an opening in the disk on a different arc from said countersink, a bottom disk mounted on the first disk-pivot, and provided with a chamber registering with the pivot extensions and with a second chamber on the same arc as the bolt-countersink, all being arranged to operate substantially as described.

3. A puzzle comprising the body A and pivoted cover B, the locking-disk C, pivoted on said body and provided with the openings *h j*, the countersinks *i k* in said body, the balls *w v*, normally disposed in said countersinks, the bolt *g*, normally supported on the ball *v* and locking said cover, the bottom D, fitted to rotate on the pivot of said disk, and provided with the chambers *k m*, adapted, respectively, to register with the openings *h j* of said disk, all being arranged to operate substantially as specified.

474,942. MANUFACTURE OF YEAST. JACOB BLUMER, Brooklyn, and CHARLES SCHLAGENHAUFER, New York, N. Y. Filed Aug. 25, 1891. Serial No. 403,706. (No specimens.)

Claim.—1. The method of making yeast, which consists in extracting the soluble parts of unmalted starch-bearing materials with a suitable liquid and at a temperature below 50° centigrade, thereby leaving the starch in said materials intact, separating such extract from the solid material, sterilizing the extract and coagulating albuminous substances by raising its temperature above mashing temperature, preferably to 100° centigrade, separating the coagulated albuminous substances before fermentation of the extract, fermenting such extract with the assistance of a small amount of malted grain at a temperature of about 30° centigrade, thereby forming yeast, and separating the yeast, substantially as described.

2. The method of making yeast, which consists in extracting the soluble parts of unmalted starch-bearing materials with a suitable liquid at a temperature below 50° centigrade, separating such extract from the solid material, combining the extract with the more or less solid residues which are left after the starch-bearing material has served the purpose of starch-manufacturing, sterilizing the mixture, adding malted grain, fermenting it, thereby forming yeast, and separating the yeast, substantially as described.

3. The method of making yeast, which consists in extracting the soluble parts of unmalted starch-bearing materials with a suitable liquid at a temperature below 50° centigrade, separating such extract from the solid material, combining the extract with the more or less solid residues which are left after the starch-bearing material has served the purpose of starch-manufacturing, sterilizing the mixture, adding malted grain, separating the clear wort, fermenting it, thereby forming yeast, and separating the yeast from the wort, substantially as described.

474,943. METHOD OF MAKING YEAST. JACOB BLUMER, Brooklyn, and CHARLES SCHLAGENHAUFER, New York, N. Y. Filed Oct. 2, 1891. Serial No. 407,490. (No specimens.)

Claim.—1. The method of making yeast, which consists in extracting the soluble parts of unmalted starch-bearing materials with a suitable liquid and at a temperature lower than 50° centigrade, thereby leaving the starch intact, separating such extract from the solid material, fermenting the clear wort by itself, thereby forming yeast, and separating the yeast, substantially as described.

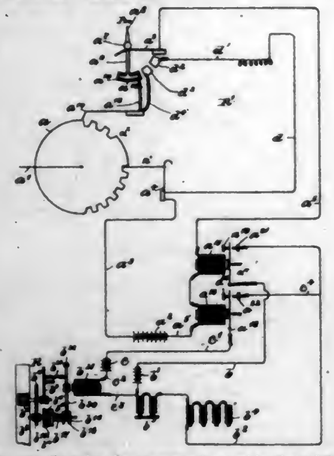
2. The method of making yeast, which consists in extracting the soluble parts of unmalted starch-bearing materials with a suitable liquid and at a temperature lower than 50° centigrade, thereby leaving the starch intact, separating such extract from the solid material, sterilizing the extract, separating the coagulum, fermenting the clear wort, thereby forming yeast, and separating the yeast, substantially as described.

474,944. PROCESS OF MAKING PAPER-PULP. NORMAN H. BROKAW, Kaukauna, Wis. Filed Apr. 11, 1891. Serial No. 388,589. (No specimens.)

Claim.—1. The herein-described process of making paper-pulp from resinous woods, which consists in steaming or steeping sticks of wood to remove the resin therefrom, cutting the sticks into disks or chips, and subjecting them to the action of a sulphite liquor in a digester.

2. The herein-described process of making paper-pulp from resinous woods, which consists in steaming or steeping sticks of wood to remove the resin therefrom, then cooling and drying the sticks, then cutting them into disks or chips, and then charging them into a digester and treating them with a sulphite solution.

474,945. SYSTEM OF SIGNALING. HENRY A. CHASE, Boston, Mass., assignor to Albert Watts, same place. Filed Dec. 18, 1891. Serial No. 415,472. (No model.)



Claim.—1. In a signaling system, the combination of the following instrumentalities, viz: a signal-transmitting mechanism, a signal receiving or recording mechanism, an electric circuit connecting said mechanisms, a motor mechanism to operate the receiving or recording mechanism, a speed-changing device to positively vary the rate of movement of the said motor mechanism, and thereby the rate of movement of the receiving or recording mechanism, and means in the electric circuit to effect the operation of the speed-changing device, substantially as described.

2. In a signaling system, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein and having a uniform or constant rate of movement, a signal-recording mechanism or register included in said circuit and upon which is received the signal transmitted by the transmitting mechanism, a positively-acting speed-changing device for changing the speed of the recording mechanism, and an electro-magnet to operate the speed-changing device to effect a change of speed in the recording mechanism, whereby the signal-transmitting mechanism may have its signal recorded in two different characters, substantially as described.

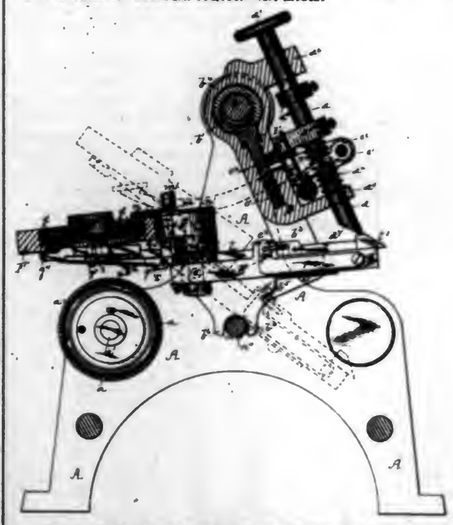
3. In a signaling system, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, two relays in said circuit, one of which is responsive to changes in current strength and the other of which is responsive to total interruptions in the circuit, two independent local circuits controlled by said relays, a recording mechanism or register provided with a starting-magnet and a pen-magnet included in the local circuit controlled by the relay responsive to changes in current strength, a speed-changing device to vary the rate of movement of the recording mechanism or register, and an electro-magnet to operate said speed-changing device included in the local circuit, controlled by the relay, responsive to total interruptions in the circuit, substantially as described.

4. In a signaling system, the combination of the following instrumentalities, viz: an electric circuit, a signal-transmitting mechanism included therein, a signal-recording mechanism, a motor mechanism to operate it, and a speed-changing device for the motor mechanism, controlled in its operation by the transmitting mechanism to positively vary the rate of movement of the recording mechanism, substantially as described.

5. In a signaling system, the combination of the following instrumentalities, viz: a main electric circuit, a signal-transmitting mechanism included therein and consisting of a break-wheel a, a pen or brush a^{14}, co-operating therewith, circuit-terminals a^{15} a^{9}, to which the said pen is connected, an independent circuit-terminal a^{8}, a pointer and a contact-brush movable with said pointer and co-operating with the said circuit-terminals, a resistance R', connected to the circuit-terminal a^{8}, a relay a^{16} in the main electric circuit responsive to total interruptions in the said circuit, a second relay a^{18}, responsive to changes in current strength, a local circuit controlled by the relay a^{18}, a recording mechanism or register having a starting-magnet and its pen-magnet included in said local circuit, a speed-changing device to vary the rate of movement of the said register, an electro-magnet to operate said speed-changing device, and a local circuit in which the said electro-magnet is located and controlled by the relay a^{16}, substantially as described.

6. In a signaling system, the combination of the following instrumentalities, viz: a signal-transmitting mechanism, an electric circuit provided with two paths for the transmission of the signal indicated by the said transmitting mechanism, a signal receiving or recording mechanism controlled by the transmitting mechanism, and a speed-changing device to effect the record of the signal indicated by the transmitting mechanism in one set of characters when the said signal is transmitted over one path and to effect the record of the said signal in a different set of characters when transmitted over the other path, substantially as described.

474,946. PHONOGRAPH. LOUIS S. CLARKE, Pittsburg, Pa. Filed Dec. 23, 1889. Serial No. 334,050. (No model.)



Claim.—1. In a phonograph, the combination, with the recording-surface, of a diaphragm and a pivoted lever below the same and connected thereto and carrying the recording-stylus at one end and the reproducing-stylus at the other end, substantially as and for the purposes set forth.

2. In a phonograph, the combination, with the reproducing-cylinder, of a diaphragm above the same, and a lever pivoted below the diaphragm and having one end connected by a link to the diaphragm and provided with a recording-stylus at the end connected to said link and a reproducing-stylus at the opposite or free end, substantially as and for the purposes set forth.

3. In a phonograph, the combination of a pivoted frame carrying a diaphragm at its forward end and supported at its forward end by a bridge resting upon the recording-cylinder, and a lever pivoted under the diaphragm and having a recording-stylus at one end thereof and that end connected to the diaphragm and a reproducing-stylus at the opposite or free end, substantially as and for the purposes set forth.

4. In a phonograph, the combination of the diaphragm, the weight g, pivoted to the frame thereof and having the bearing k', and the lever h, pivoted in said bearing and having the recording-stylus at one end thereof and that end connected to the diaphragm and the reproducing-stylus at the other or free end thereof, substantially as and for the purposes set forth.

5. In a phonograph, the combination of the diaphragm, the weight g, pivoted to the frame thereof and having the bearing k', the lever h, pivoted in said bearing and having the recording-stylus at one end thereof and that end connected to the diaphragm and the reproducing-stylus at the other or free end thereof, and means for holding said weight rigid or permitting the free movement thereof, substantially as and for the purposes set forth.

6. In a phonograph, the combination of the diaphragm, the weight g, pivoted to the frame thereof and having the bearing k', the lever h, pivoted in said bearing and having the recording-stylus at one end thereof and that end connected to the diaphragm and the reproducing-stylus at the other or free end thereof, and the spring g^6 and sliding bar l, having an inclined forward end engaging with said spring, substantially as and for the purposes set forth.

7. In a phonograph, the combination of the diaphragm-frame carrying the weight g, provided with the bridge g^5 and having the bearing k', and the lever h, pivoted in said bearing and connected at one end to the diaphragm and having the recording-stylus at that end and having the reproducing-stylus at the opposite or free end, substantially as and for the purposes set forth.

8. In a phonograph, the combination, with the pivoted lever h, connected to the diaphragm and having the reproducing-stylus at its free end, of the sliding bar l, having a notch k to receive the reproducing-stylus when not in use, substantially as and for the purposes set forth.

9. In a phonograph, the combination of the frame B, the frame E, pivoted therein, and the sliding bar on the frame E, adapted to engage with the frame B and to press down the rear end of the diaphragm-frame E and so raise the diaphragm, substantially as and for the purposes set forth.

10. In a phonograph, the combination of the frame E, pivoted in the frame B, the reversing-lever m, and the sliding reversing-bar l, engaging at its forward end with the lever and having the inclined face l^5 to engage with the frame B and so depress the rear end of the diaphragm-frame, substantially as and for the purposes set forth.

11. In a phonograph, the combination of the frame E, carrying the diaphragm at its forward end, the weight g, pivoted to the diaphragm-frame, and the reversing-bar l, having the inclined face l', acting to raise the weight g, substantially as and for the purposes set forth.

12. In a phonograph, the combination of the pivoted diaphragm-frame E, the sliding reversing-bar l, having seat e^4 therein, and the spring-clip p, engaging with said seat e^4, substantially as and for the purposes set forth.

13. In a phonograph, the combination of a diaphragm-frame carrying thereon an indicating-plate, and a reversing-lever provided with a plate extending over said indicating-plate and acting in its movement to cover part thereof and expose part thereof, and the reversing-bar l, operated by said lever, substantially as and for the purposes set forth.

14. In a phonograph, the combination of the feeding-screw b, the nut c, engaging therewith and having the arm c^3, and the frame B, having the sliding bar d, provided with a collar d^3, engaging with said arm c^3, substantially as and for the purposes set forth.

15. In a phonograph, the combination of the frame B, carrying the sliding bar d, having an inclined lower end, and the diaphragm-frame E, pivoted in the frame B and carrying the sliding reversing-bar l, having the inclined rear end l^5, substantially as and for the purposes set forth.

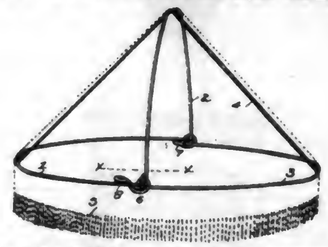
16. In a phonograph-machine, the combination of the receding screw r, the frame B, and the lever S, pivoted therein and having the arm s^3 rigid therewith and carrying the sectional nut s, engaging with said receding screw r, substantially as and for the purposes set forth.

17. In a phonograph, the combination of the feeding-screw b and its nut c, engaging therewith, the receding screw r, the frame B, and the lever S, pivoted therein and having an arm s^3, carrying the nut s and carrying the finger-bar t, engaging with and acting to withdraw the nut c when the nut s is thrown into engagement with the screw-bar r, substantially as and for the purposes set forth.

18. In a phonograph, the combination of the receding screw r, the frame B, carrying the sliding bar d, engaging at its base with the diaphragm-frame, and the lever S, pivoted in the frame B and having the arm s^3, carrying the nut s, engaging with the screw-bar r and having the finger-bar t, provided with the finger engaging with the collar d^3 on said sliding bar d, substantially as and for the purposes set forth.

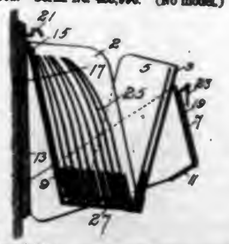
19. In a phonograph, the combination of the machine-frame A, having the shaft a^4, the frame B, and the diaphragm-frame E, pivoted in the frame B and carrying the spring d', engaging with said shaft a^4, substantially as and for the purposes set forth.

474,947. MOSQUITO OR FLY NET. VARNUM D. COLLINS, Princeton, N. J. Filed Jan. 7, 1892. Serial No. 417,808. (No model.)



Claim.—A canopy-frame consisting of three bows pivoted by their interlocking ends, two of which are horizontal and the other vertical, the wire of one of the horizontal bows being extended at the joint on one side below the other horizontal bow to limit the outward movement of the opposite outer bows and having also the spring extension at the other joint to be pressed over the other horizontal bow to retain the two outer bows in open horizontal position, and the flexible connection from the outer bows to the central vertical bow for holding it centrally and vertically over the horizontal bows, substantially as described.

474,948. BLANK-CABINET. FRED W. COOLEY, Minneapolis, Minn. Filed Mar. 7, 1892. Serial No. 423,996. (No model.)



Claim.—1. A portfolio or cabinet comprising a cabinet having an open front and top, a hinged front plate, and a pivoted hood arranged to engage and close over said plate as said hood is closed and to cover the top of the casing.

2. The combination, with the casing 2, provided with an open front and top and having an inclined bottom, of a front portion hinged to the lower part of said casing, and a hood pivoted to said casing and arranged to engage the front portion as said hood is being closed and to hold said front portion in a closed position and to cover the top of the casing.

3. The combination, with the casing provided with an open front and top, of a front portion hinged to said casing, a hood pivoted to the casing and arranged to engage the front and to close the same as said hood is being closed, and a spring-catch for holding said hood.

4. The combination, with the casing provided with an open top and front, of a front portion hinged to said casing, and a hood pivoted to said casing, the distance from the lower end of the hood to the pivot being greater than the distance from the pivot to the back of the casing, whereby when the hood is thrown forward the lower end of the casing is moved out from its support.

474,949. HOUSE-DOOR LETTER-BOX. CHARLES A. CUMMINGS and WILLIAM H. HILL, Worcester, Mass. Filed Feb. 26, 1891. Serial No. 382,918. (No model.)

Claim.—1. In a letter-box, the combination, with a box provided with a transparent disk in its front portion, of two open front receptacles in the box for the reception of mail, said disk extending over a portion of the open front of each receptacle, whereby the interior of each receptacle may be seen through the disk, substantially as set forth.

2. In a letter-box, the combination, with a box provided with a transparent disk in its front portion, of two open front receptacles within the box, said disk extending over a portion of the open front of each receptacle, whereby the interior of said receptacles may be seen through the disk, and a signal attached to the box, said signal being movable from a point within the outline of the box to a point beyond the outline of the box and adapted to be operated independently of the box, substantially as set forth.

3. In a letter-box, the combination, with the box or casing, of two compartments or inclosed receptacles made independently of said box

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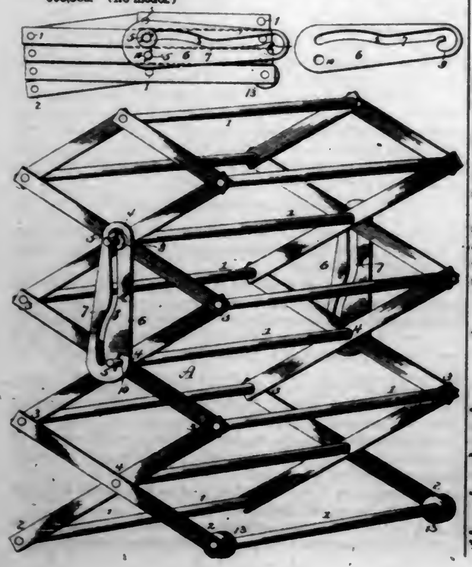


or casing and adapted to be raised or lowered and locked therein and each of said compartments having a receiving-slot therein in its upper end extending in a direction from the back to the front of the compartment, substantially as set forth.

4. In a letter-box, the combination, with the box or casing open at its upper end and provided with a hinged cover, of two compartments or inclosed receptacles extending within said box and placed side by side and provided with slots in their upper ends extending in a direction from the back to the front of said receptacles and provided with an opening in their front sides, substantially as set forth.

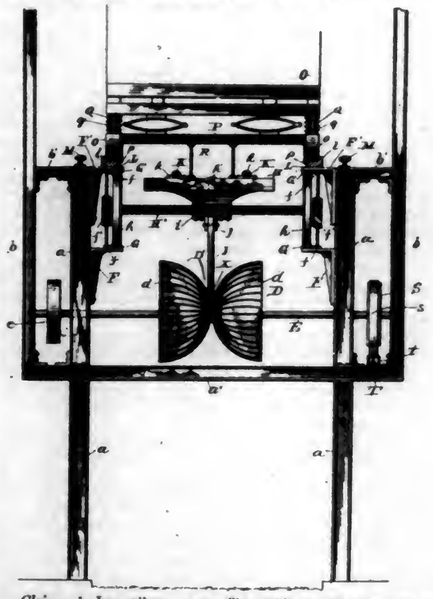
5. In a letter-box, the combination, with a box having its cover hinged thereto at the rear, of receptacles in the box for the reception of mail-matter, and a signal hinged to the cover intermediate its hinge and the front, said signal being extended just beyond the front edge of the cover, whereby it may be engaged and raised to project above the top of the box to indicate to the postman the presence of mail-matter within the box, substantially as set forth.

474,950. CLOTHES-DRIER. CHARLES E. DODD, Williamsport, Pa., assignor to George Stiger, same place. Filed May 19, 1891. Serial No. 393,308. (No model.)



Claim.—The combination, with a frame of the lazy-tongs variety and bearings on said frame, of locking-plates permanently pivoted at one end and at one side of the longitudinal center to bearings on the frame, said plates having each a curved slot formed therein, said slot terminating at the free edd of the plate in a lateral downwardly-extending bearing-recess adapted to receive a bearing of the frame as the frame is extended, substantially as set forth.

474,951. RAILWAY SYSTEM. HUGH T. DUNNE, New York, N. Y. Filed May 18, 1891. Serial No. 393,167. (No model.)



Claim.—1. In a railway, a propelling-cable, spaced trains, and an intermediate series of connected trucks connected with the cable and trains below and above, respectively, substantially as set forth.

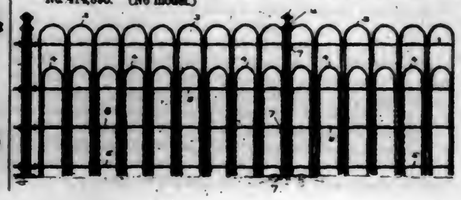
2. In a railway, a propelling-cable, an upper and lower pair of track-rails, and connected wheeled trucks running on the lower rails, connected with the cable, and with which a train or trains may be connected, said cables being guided in a path outside of that in which the trucks travel, as set forth.

3. In a railway, a propelling-cable, wheeled trucks running on suitable rails, and cables connecting the trucks, separate from the propelling-cable, and hangers depending from the trucks, said hangers being connected to the propelling-cable located below the trucks, substantially as set forth.

4. In a railway, a propelling-cable, shafts provided with sheaves for moving the cable, and brake mechanism comprising brake-wheels on the shafts, straps fixed at one end and passing around the brake-wheels, and a cable connected at the other ends of the straps, substantially as and for the purpose set forth.

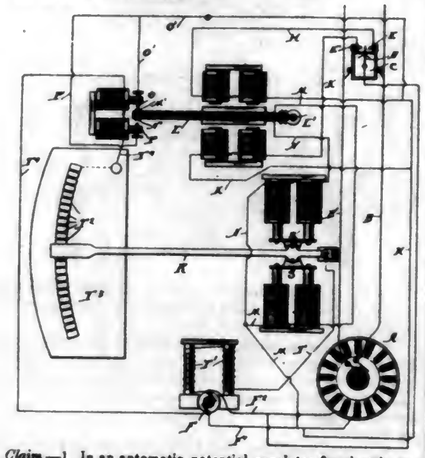
5. A railway system comprising an endless track or road, cars, separate trucks on separate tracks, with which said cars are connected, and three cables, two for securing the trucks together and keeping them in position, and the other for propelling the cars and stopping them, substantially as set forth.

474,952. WIRE FENCE. JOHN W. DWIGGINS, Frankton, assignor of one-half to James V. Kook, Arcadia, Ind. Filed Dec. 12, 1891. Serial No. 414,895. (No model.)



Claim.—A wire fence having long vertical loops 3 and shorter vertical loops 4 set one within the other, the ends of such loops extending downward to a line with the surface of the ground, the whole connected by horizontal brace-wires 5, in combination with end posts 1 and intermediate posts 2, all substantially as shown and described.

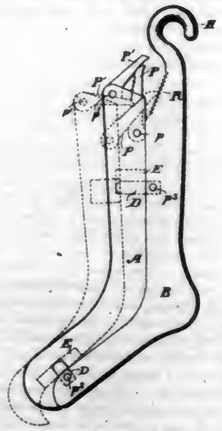
474,953. AUTOMATIC POTENTIAL REGULATOR FOR ELECTRIC CURRENTS. ALVINS I. ELLIS, Chicago, Ill. Filed Mar. 9, 1891. Serial No. 384,249. (No model.)



Claim.—1. In an automatic potential regulator for electric currents, the combination of a voltmeter in the main circuit with a needle projecting therefrom, opposed contacts on the opposite sides of such needle, circuits connected with each of said contacts, and motors, one in each of said circuits, and an exciter-dynamo, said motors adapted one to set in operation mechanism to increase the other to diminish the strength of the field of the exciting-dynamo, and a resistance in series with the field-magnets of the exciter included in such mechanism.

2. In an automatic potential regulator for electric currents, the combination of a voltmeter in the main circuit, a needle projecting therefrom, contacts on opposite sides thereof, circuits adapted to be made by the engagement of such needle with such contacts, electro-magnets, one in each of said circuits, two circuits controlled each by one of said magnets and containing each a solenoid, a resistance-box provided with an arm the movement of which varies the resistance in circuit, such movement controlled by said solenoids, a main dynamo supplying current to the main circuit, and an exciting-dynamo for the field-magnets of the main dynamo, said resistance-box in series with the field-magnet of the exciting-dynamo.

474,954. STOCKING-STRETCHER. LARS G. ERICSON, New York, N. Y. Filed Dec. 16, 1891. Serial No. 415,247. (No model.)



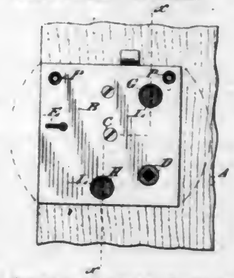
Claim.—1. As a new article of manufacture, a stocking-stretcher composing two separable parts A and B, said angled parts, as shown, being held together by dowels secured to the part B and grooves in the part A, one dowel and its corresponding groove being near the toe, so as to constitute a pivot, about which the parts turn and the other like parts at a point near the center of the leg portion of the stretcher, in combination with means at the top of the two parts for holding them in spread position, all substantially as shown and described.

2. A stocking-stretcher made of two separable parts united by means of dowels and elongated grooves, the upper part having a curved-toe portion, whereby a stocking may be stretched in the direction of its length, substantially as described.

3. A stocking-stretcher made of two separable parts united by means of dowels and elongated grooves, the upper part having a curved-toe portion, whereby a stocking may be stretched in the direction of its length, in combination with means for holding said parts in locked position when spread, substantially as described.

4. A stocking-stretcher made of two separable parts A and B, pivoted together by dowels D and grooves E, and provided with pawls P and P' and ratchet-teeth R on the upper end of the part B, with additional ratchet-teeth upon the upper side of the pawl P, said parts being all connected together, substantially as described.

474,955. LOCK. HENRY FLYER, Leavenworth, Kans. Filed Jan. 26, 1892. Serial No. 419,204. (No model.)



Claim.—1. As a new article of manufacture, a lock-casing having key and spindle holes and provided with a gage-hole or gage-holes for determining and gaging the points of boring the spindle and key holes in the door, substantially as and for the purposes described.

2. The combination of the door, a casing, and means for securing the casing so that it can be turned to bring two of its edges flush with the edge of the door, the said casing being provided with gage-holes for boring spindle and key holes in the door, said gage-holes being the same distance from the pivotal point that the spindle and key holes, respectively, are from said point, substantially as described.

3. The combination of the door, the casing provided with gage-holes, and the covers for said gage-holes, substantially as described.

474,956. PIPE OR FLUE BEADER AND EXPANDER. CHARLES A. FRAYER, Keithsburg, Ill. Filed Aug. 3, 1891. Serial No. 401,542. (No model.)



Claim.—1. In a tube or pipe beader and expander, the combination of rolls arranged radially in pairs and so that the inner rolls are exposed on the side and the outer can be made to project beyond the edge of the containing-frame, and a central tapering operating pin or stem adapted to impinge upon and move the inner rolls.

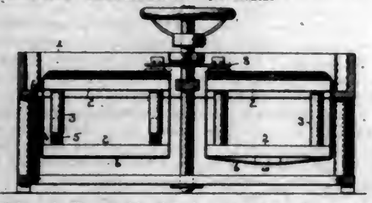
2. In a device as described, the combination of the rolls arranged in pairs, one of each pair being beaded and the other grooved, and said beads fitting into said grooves, with a central tapering operating-pin impinging on the inner and grooved roll of each pair, substantially as set forth.

3. In a beading and expanding tool, the frame A, made of parts a and a', suitably held together, and the rolls B, held in the cavities or sockets of part a' and arranged radially in said socket and com-

bined with the central tapering operating-pin, in the manner and for the purposes set forth.

4. In a beading and expanding tool, as described, the parts *a* and *a'*, held together, as set forth, the part *a'* having radial sockets, each open at the inside and outside, and the rolls arranged in pairs in said sockets, the outer roll of each pair being beaded, and a central operating pin or stem, substantially as described.

474,957. RHEOSTAT. ALBERT B. HERRICK, Bayonne, N. J. Filed Oct. 12, 1891. Serial No. 408,413. (No model.)



Claim.—1. The combination, in a rheostat, of two stationary insulating-frames or open structures, a resistance-conductor wound on each frame, and a switch device the opposite ends of which are movable over the resistance-conductors, said conductors being uninsulated in the path of movement of the switch device, substantially as described.

2. The combination, in a rheostat, of a stationary body, a resistance-conductor wound thereon, and a switch device movable in an arc over the resistance-conductor, said conductor being uninsulated in the path of movement of the switch-arm, whereby contact is made directly with the successive turns of the conductor, substantially as described.

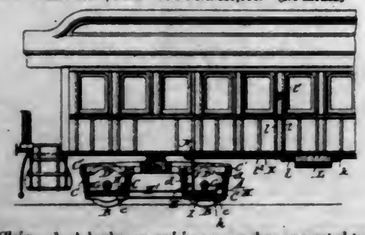
3. The combination, in a rheostat, of a stationary body consisting of an insulating-frame or open structure, a resistance-conductor wound thereon, whereby the outer surface and a large part of the inner surface of the conductor will be open to the air, and a switch device movable over the resistance-conductor, said conductor being uninsulated in the path of movement of the switch-arm, whereby contact is made directly with the successive turns of the conductor, substantially as described.

4. The combination, in a rheostat, of a stationary body consisting of an insulating fire-proof open structure, a resistance-conductor wound thereon, and a switch device movable over the resistance-conductor, said conductor being uninsulated in the path of movement of the switch-arm, whereby contact is made directly with the successive turns of the conductor, substantially as described.

5. The combination, in a rheostat, of a stationary fire-proof body, an insulated resistance-conductor thereon, and a switch device movable over the resistance-conductor, said conductor being uninsulated in the path of movement of the switch-arm, the supporting-body being constructed as an open frame or structure to allow air to circulate around the conductor through a large part of its length, substantially as described.

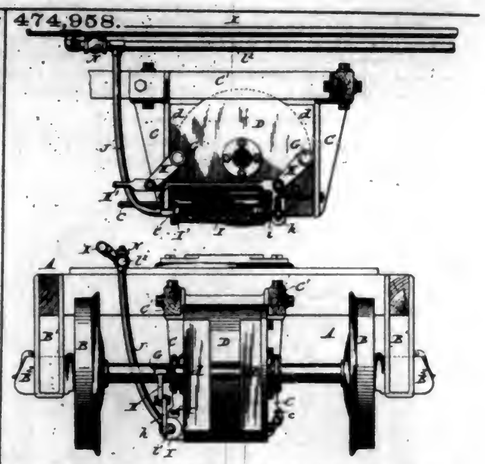
6. The combination, in a rheostat, of a resistance in two connected sections and connected or adapted to be connected to a circuit, and a movable-switch device the opposite ends of which make contact with the two sections of resistance-conductor, whereby as the switch is moved resistance is cut in or out, but the circuit is not opened by accidental failure of contact between the switch-arm and conductor, substantially as described.

474,958. CAR-BRAKE. SIDNEY P. HOLLINGSWORTH, Washington D. C. Filed Feb. 1, 1892. Serial No. 419,935. (No model.)



Claim.—1. A brake comprising a member connected to rotate with an axle, a stationary or non-rotary member, a liquid interposed between the two members of the brake, and means for controlling the flow or movement of the liquid.

2. A brake comprising a member adapted to rotate with the wheels and axle, a stationary or non-rotary member, a liquid confined between



the two brake members, means carried by the rotary brake member to move the liquid, and valve mechanism for impeding the flow or movement of the liquid.

3. A brake comprising a member adapted to rotate with the wheels and axle, a stationary or non-rotary member, a liquid interposed between the two brake members, radially-moving blocks carried by the inner brake member and adapted to move the liquid relatively to the stationary brake member, and valves for impeding the movement of the liquid.

4. A brake comprising a member adapted to rotate with the wheels and axle and a stationary or non-rotary member, brackets for preventing the rotation of the stationary brake member, but in which the brake members are free to move vertically, means carried by the rotary brake member for moving a liquid interposed between the two brake members, and valves for impeding or controlling the movement of the liquid.

5. A brake comprising a member adapted to move with the wheels and axle, a stationary or non-rotary member inclosing the rotary member, a liquid confined between the two brake members, radially-sliding blocks, means for operating them, valves for controlling the movement of the liquid, and means for operating the valves.

6. A brake comprising a member adapted to move with the wheels and axle, a stationary or non-rotary member, a liquid confined between the two members of the brake, means for moving the liquid relatively to the stationary brake member, a normally-open valve for impeding the movement of the liquid, an air-cylinder having its piston connected with the valve, and a compressed air-pipe connected with the cylinder.

7. A brake comprising a member adapted to move with the wheels and axle, a stationary or non-rotary member, a liquid confined between the two members of the brake, means for moving the liquid relatively to the stationary brake member, a normally-open valve for impeding the movement of the liquid, an air-cylinder having its piston operatively connected with the valve, a compressed-air pipe connecting the cylinder with the engine of a train, and a pipe connecting the cylinder with a reservoir on the car to which the brake is applied.

8. The combination of a series of brakes, each comprising two members connected and disconnected by a liquid and a series of air-cylinders, an air-pipe leading to the engine, to which all the cylinders are connected, a reservoir on each car of a train of cars, and connections between the reservoir and the air-cylinders of each set of brakes on said car.

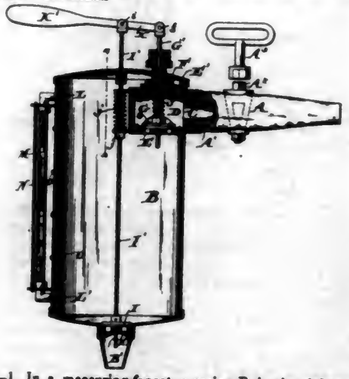
9. The combination, in a train of cars, of a series of brakes, each comprising a member connected to rotate with an axle and a stationary or non-rotary member, a liquid interposed between the two members of the brake and means for controlling the flow or movement of the liquid, simultaneously-operated fluid-pressure devices for applying the brakes to the several cars of the train, independent fluid-pressure devices for each car, and devices on each car for controlling said independent fluid-pressure devices, whereby when a car is separated from a train the brakes may be applied to the detached car.

10. A brake comprising a member connected to rotate with an axle, a stationary or non-rotary member, a liquid interposed between the two members of the brake, devices for controlling the flow or movement of the liquid, and adjusting devices whereby the brake mechanism may be applied more or less gradually.

11. A brake comprising a rotary and a stationary or non-rotary member connected and disconnected by means of an interposed liquid, valves for controlling the flow or movement of the liquid, means for operating the valves, and adjusting devices to vary the movement of the valves, so that they may be operated more or less gradually.

12. A brake comprising a member adapted to rotate with the wheels and axle, a stationary or non-rotary member, a liquid confined between the two brake-members, means for moving the liquid relatively to the stationary member, valves for impeding or controlling the movement of the liquid, an air-cylinder having its piston operatively connected with the valves, and devices for adjusting the connection between the piston and the valves, for the purpose specified.

474,959. MEASURING-VESSEL. ALBERT D. HOLLIS, Philadelphia, Pa.; Annie Mary Hollis, administratrix of said Albert D. Hollis, deceased, assignor to Charles L. Cahall, same place. Filed Nov. 10, 1891. Serial No. 411,494. (No model.)



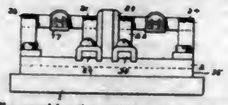
Claim.—1. In a measuring-faucet, a casing B, having inlet and outlet openings at its opposite ends, in combination with valves, as G I, normally seated on said openings, valve-operating rods, as G' I', connected to said valves, and a lever-handle K K', pivotally connected with the rods, so that the connection with either rod will form a fulcrum for the other, substantially as described.

2. In a measuring-faucet, a casing B, having inlet and outlet openings at its opposite ends, in combination with valves, as G I, normally seated on said openings, sliding-valve-operating rods, as G' I', connected to said valves, springs, as J J', arranged in the upper part of said casing and encircling the valve-rods G' I', respectively, and a lever-handle K K', arranged on top of the casing and pivotally connected with the rods, so that the connection with either rod will form a fulcrum for the other, substantially as described.

3. In a measuring-faucet, a casing or vessel having inlet and outlet openings at its opposite ends, in combination with spring-seated valves normally closing said openings, sliding valve-operating rods connected to said valves, and an outside lever-handle pivotally connected with the valve-rods, so that the connection with either rod will form a fulcrum upon which the handle may be rocked to operate the other, substantially as described.

4. In a measuring-faucet, a casing B, having an opening H at its bottom, in combination with a chamber D, secured to and projecting into the casing B, said chamber having an inlet-opening C and a bottom outlet E, valves G and I, normally seated on openings E and H, valve-rods G' and I', extending upward from said valves, and a handle-lever K K', pivotally secured to the rods G' I', all substantially as and for the purpose specified.

474,960. TERMINAL AND SAFETY-CATCH CONNECTION. JOSEPH HUTCHINSON, New York, N. Y., and ALBERT B. HERRICK, Bayonne, N. J. Filed Oct. 12, 1891. Serial No. 408,414. (No model.)



Claim.—1. The combination, with main and branch terminals, of an insulating-screen, the positive main and branch terminals being on one side of said screen and the negative main and branch terminals being on the opposite side of said screen, substantially as described.

2. The combination, with main and branch terminals, of an insulating-screen, the main positive and branch positive terminals being on one side of said screen and the negative main and branch terminals being on the opposite side of said screen, there being an opening or passage through which one branch wire may be passed, so as to extend from the same side as the other branch wire without danger of cross connection, substantially as described.

3. The combination of a base, an insulating-block thereon, said block having grooves or passages through or under it, a positive main terminal and a positive branch terminal on the block on one side of the screen and a negative main and branch terminal on the opposite side of the screen, a branch conductor connected to one branch terminal, and a second branch conductor connected to the other branch terminal and passing through said opening, substantially as described.

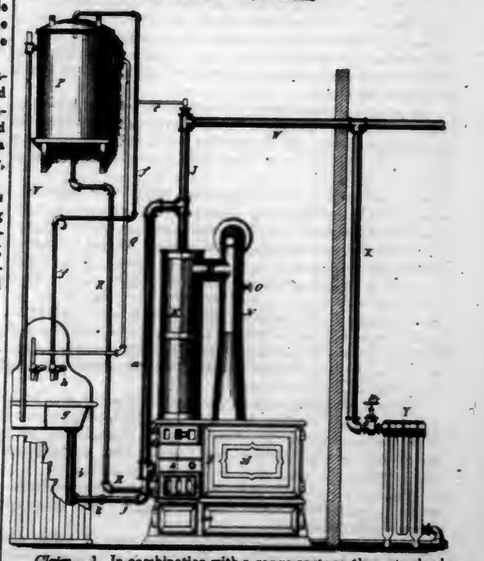
4. The combination of an insulating-block having one or more grooves or passages through or under it, a screen thereon, one or more positive main and positive branch terminals on the block on one side of the screen and one or more negative main and branch terminals on the opposite side of the screen, a branch conductor or branch conductors connected to the first-mentioned branch terminal or terminals, and a branch conductor or branch conductors connected to the other branch terminal or terminals and passing through said groove or grooves, said main and branch terminals being connected by fusible conductors, substantially as described.

5. The combination of an insulating-block having grooves or passages through or under it, a screen, a positive main terminal and a positive branch terminal on the block on one side of the screen and a negative main and branch terminal on the opposite side of the screen, a branch conductor connected to one branch terminal and a branch conductor connected to the other branch terminal and passing through said opening, said main and branch terminals being connected by connecting devices consisting of blades adapted to fit suitable clips and connected by an intermediate insulating box or support and a fusible wire carried thereby, substantially as described.

6. The combination, in a connecting-board for three-wire systems, of insulating plates or blocks, said plates or blocks having grooves or passages, as described, positive and negative terminal bars and connecting devices on said blocks, insulating-screens, and a neutral terminal bar and connecting device between the screens, branch terminals supported on said blocks outside of the screens, and other branch terminals supported between the screens, substantially as described.

7. A connecting device consisting of metal blades, an intermediate insulating-box or hollow block to which the adjacent ends of the blades are connected and by which they are mechanically united, and a fusible conductor within said box or hollow block electrically uniting the blades, substantially as described.

474,961. APPARATUS FOR HEATING AND CIRCULATING WATER. HENRY A. JOHNS and JOSEPH R. MARCY, New York, N. Y. Filed Dec. 3, 1891. Serial No. 413,851. (No model.)



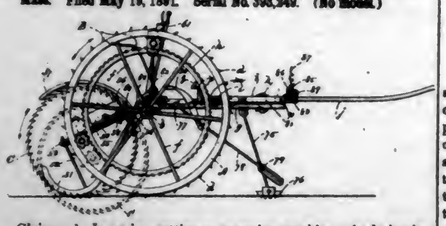
Claim.—1. In combination with a range or stove, the water-back therein, the boiler connected with said water-back and composed of the main tubular portion and exterior tubes, the casing inclosing said boiler and being in the path of the products of combustion from said range, the circulating-pipe leading from said boiler to the radiators, the return-pipe leading from said radiators to the water-back, the

supply-pipe leading to and feeding the water-back, and the hot-water pipe provided with the faucet by which the hot water may be drawn for domestic use, substantially as set forth.

2. In combination with a range or stove, the water-back therein, the boiler connected with said water-back and composed of the main tubular portion and exterior tubes, the circulating-pipe leading from said boiler to the radiators, the return-pipe leading from said radiators to the water-back the supply-pipe leading to and feeding the water-back, the short circulation-pipe extending around said boiler, and the hot-water pipe provided with the faucet for drawing the hot water for domestic purposes, substantially as set forth.

3. In combination with a range or stove, the water-back therein, the expansion-tank supplying said water-back, the boiler connected with said water-back and composed of the main tubular portion and exterior tubes, the circulating-pipe leading from said boiler to the radiators, the return-pipe leading from said radiators to the water-back, and the short circulation-pipe around said boiler, substantially as set forth.

474,962. ICE-CUTTING MACHINE. THOMAS F. LANGLEY, East Kingston, N. H., assignor of one-fourth to James P. Busfield, Haverhill, Mass. Filed May 19, 1891. Serial No. 393,249. (No model.)



Claim.—1. In an ice cutting or grooving machine, a body having wheels provided with gears, in combination with a rotary saw mounted on a shaft in a frame pivoted to the axle and having its journals geared to said wheels, segments on said frame, a rock-shaft having segments engaging with those on the frame, and a lever for oscillating said shaft, substantially as described.

2. In an ice cutting or grooving machine, the combination of a body mounted on wheels, a rotary saw carried by said body, a horizontally-pivoted pole provided with a segment-gear, and a foot-lever pivoted on said body and provided with a gear meshing with the pole-gear, substantially as described.

3. In an ice cutting or grooving machine, the body, combined with a rod pivoted to swing vertically thereon, guide-plates on said rod, a lifting-rod pivoted to the body at an angle to the other rod and having a slot loosely engaging a pin on said rod, and a foot-lever pivoted to said body and supporting said lifting-rod, substantially as and for the purpose set forth.

4. In an ice cutting or grooving machine, the body, in combination with a horizontally-swinging pole, means for turning it, a vertically-pivoted rod provided with guide-plates, and a foot-lever pivoted to said body for lifting said rod, substantially as and for the purpose set forth.

5. In a device of the character described, a body mounted on spurred wheels provided with gears, combined with a rotary saw mounted in a sled pivoted to swing vertically on the axle and a counter-shaft in the sled provided with pinions meshing with the wheel-gears, said pinions being mounted on said shaft, substantially as described.

6. In an ice-cutting machine, the vehicle-body mounted on wheels A, provided with gears A, in combination with the arms 50, the runners 51, pivoted at their upper ends thereto, the extension-bars 52, adjustably connecting said runners and arms, the counter-shaft journaled in said arms and provided with pinions 64, meshing with said gears, the saw on said shaft, and lever-actuated mechanism for elevating said arms, substantially as described.

7. In an ice-cutting machine, the vehicle-body mounted on wheels A, in combination with the sled-arms 50, the runners 51, pivoted at their upper ends thereto, the extension-bars 52, adjustably connecting said runners and arms, the saw carried by said arms, and lever-actuated mechanism for elevating them, substantially as described.

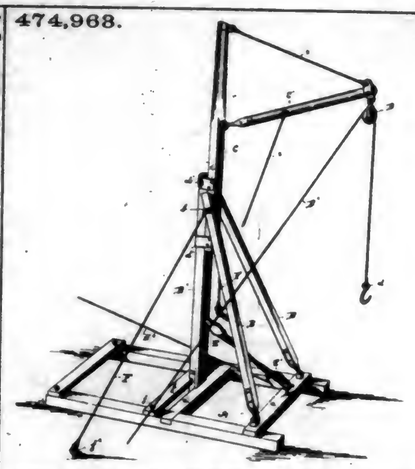
8. In an ice-cutting machine, stuffing-boxes mounted on the saw-frame, and a lubricator in said boxes engaging the faces of the saw, substantially as described.

9. The sled H, provided with the slotted brace 55, having stuffing-boxes 56, in combination with the rotary saw working between said boxes.

474,963. PORTABLE STACKER. LAFFUS R. MARSHALL, Martinez, Cal. Filed June 10, 1891. Serial No. 395,766. (No model.)

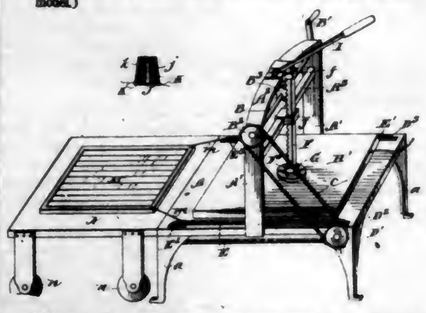
Claim.—In a hay-stacker, the combination of a base-frame having

474,968.



a central cross-strip, a mast consisting of two sections, the lower end of the lower section resting against the central cross-strip and the upper section provided with clamps or collars embracing the upper end of the lower section, a beam having its inner end pivoted to the upper section of the mast and provided with a guy-rope, a chain or cord attached to the outer end of the pivoted beam and to the upper end of the upper section of the mast, a sheave secured to the outer end of the beam, a hoisting-rope passing over said sheave, guy-braces having their upper ends pivoted to the lower end of the upper section of the mast and their lower end secured to the base-frame, guy-ropes having their opposite ends, respectively, secured to the guy-braces and to the ground, and means for raising and lowering the mast, substantially as set forth.

474,964. ELECTRICALLY-HEATED MATRIX-PRESS. WILLIS MITCHELL, Malden, assignor to the Butterfield-Mitchell Electric Heating Company, Boston, Mass. Filed Dec. 4, 1891. Serial No. 414,021. (No model.)



Claim.—1. In a matrix-press, the combination of a platen having studs formed on it with electric heaters fitting on the said studs, each of the said heaters being formed of a wire wound on successive cylindrical or conoidal walls, and the said wire being in an electric circuit, substantially as set forth.

2. In a matrix-press, the combination of a hollow platen with a series of electrical heaters arranged within it, each heater consisting of several concentric layers, and a wire wound thereon in successive helices, the same wire extending throughout the series and forming part of an electric circuit, substantially as set forth.

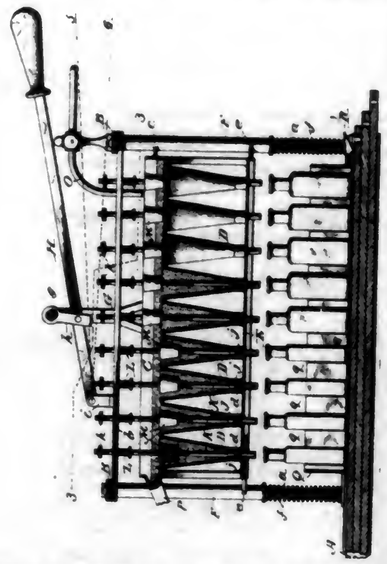
3. In combination with a shaft, pinion, and rack, a platen raised and lowered thereby, a lever arranged to apply additional pressure to the said platen, a matrix-supporting bed, and electrical-heating devices arranged within the said platen, for the purposes set forth.

4. In combination with a platen having studs *h* raised within it, a series of electrical-heating devices formed of a wire which is in an electric circuit, the said wire being wound on successive concentric cylindrical or conoidal layers of asbestus and properly incased for each electric heater, the said heaters fitting on the said studs and all being in the same electric circuit, substantially as set forth.

5. A platen provided with a raised stud, in combination with an electric-heating device adapted to fit on the said stud, the said device

consisting of a concentric series of insulating partitions properly incased, and a wire which forms part of an electric circuit and is wound successively on these partitions, substantially as set forth.

474,965. BOTTLE-FILLING MACHINE. WILLOUGHBY M. MCCORMICK, Baltimore, Md. Filed June 13, 1891. Serial No. 396,140. (No model.)



Claim.—1. The combination of the vertically-moving filling-tube the valve-stem entering said tube, a stop on the stem above the tube, and a fixed arresting device above the tube engaged by said stop, and means for depressing said tube, substantially as described.

2. In a filling-machine, the combination of a vertically movable filling-tube, a vertically-movable valve and valve-stem independently suspended therein and movable therewith, the end of the stem projecting above the tube, and a fixed arresting device above the tube engaging the upper end of the valve-stem and limiting the downward movement of said valve, so that it will be opened before the tube reaches its lowest position, and means for raising and lowering said tube, substantially as specified.

3. The combination of the vertically-movable pan, the filling-tubes connected thereto and depending therefrom, and fixed bars above said tubes, the valve-stems playing through said bars and entering the tubes, and the stop-nuts on said stems, and means for depressing said tubes, substantially as specified.

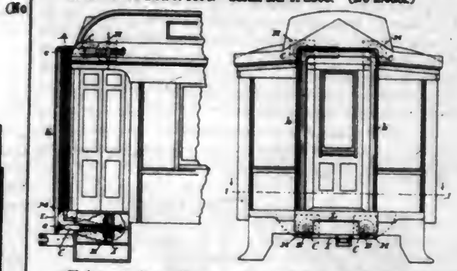
4. The combination of the vertically-movable filling-tubes, the stationary bars above the same, the valves therein connected to vertically-movable stems playing through openings in said bars, the adjustable nuts on said stems for limiting their downward movement, and means for lowering and raising said tubes simultaneously, substantially as and for the purpose set forth.

5. The combination of the upright rods, the horizontal bars supported thereon, the vertically-movable spring-supported pan guided by said rods, and means for depressing said pan, with the filling-tubes suspended from said pan, the mouthpieces on the lower ends thereof, the valves therein, the vertically-movable valve-stems playing through said bars, and the nuts for limiting the downward movement of the stems, substantially as described.

6. The combination of the vertically-movable pan, the filling-tubes connected thereto and suspended therefrom, the fixed bars above said tubes, the valve-stems playing through said bars and entering the tubes, and the stop-nuts on said stems, and means for depressing said tubes, the springs for raising the same, and filling and overflow tubes, substantially as specified.

7. The combination of the uprights, the horizontal bars supported thereby, the vertically-movable spring-supported sleeves on said rods, the pan connected to and supported by said sleeves, the filling-tubes suspended from the pan, and the lever and connections for depressing said pan and tubes, with the vertically-movable valve-stems playing through openings in said bars and entering the tubes, the valves on the lower ends of said stems, closing said tubes, and the adjustable nuts on the upper ends of said stems for regulating their vertical movement, substantially as shown and described.

474,966. VESTIBULE FOR CARS. JAMES F. MCELROY, Albany, N. Y. Filed Dec. 9, 1891. Serial No. 414,506. (No model.)



Claim.—1. In a railway-car vestibule composed of two like halves or portions, each part located at the end of a car, the combination of the body of a car, a flexible vestibule-covering attached thereto, intermeshing face-plates attached to said vestibule-covering at the end thereof, a plunger connected with ball-and-socket joint at top and bottom of each face-plate on each side of the car, said plunger reciprocating upon a piston, a spring operating said plunger placed about said piston, a disk at the end of said piston, and a bearing in said disk for the head of a rod, forming a ball-and-socket joint with the rod, said disk held by a spring placed on the rod in connection with a supporting-beam attached to the body of the car, substantially as described, and for the purpose set forth.

2. In a railway-car vestibule composed of two like halves or portions, each part located at the end of a car, the combination of the body of a car, a flexible vestibule-covering attached thereto, intermeshing face-plates attached to said vestibule-covering at the end thereof, a plunger connected with ball-and-socket joint at top and bottom of each face-plate on each side of the car, said plunger reciprocating upon a piston, a spring operating said plunger placed about said piston, a disk at the end of said piston, a bearing in said disk for the head of a rod, forming a ball-and-socket joint with the rod, said disk held by a spring placed on the rod in connection with a supporting-beam attached to the body of the car, with a movable plate hinged to the face-plate nearly on a level with the platform, forming a bridge between the cars, substantially as described, and for the purpose set forth.

3. In a railway-car vestibule composed of two like halves or portions, each part located at the end of a car, the combination of the body of a car, a flexible vestibule-covering attached thereto, intermeshing face-plates attached to said vestibule-covering at the end thereof, a plunger, and a ball-and-socket joint connecting said plunger with each of the face-plates top and bottom, said plunger operated by a spring and supported to the body of the car, substantially as described, and for the purpose set forth.

4. In a railway-car vestibule composed of two like halves or portions, each part located at the end of a car, the combination of the body of a car, a flexible vestibule-covering attached thereto, intermeshing face-plates attached to said vestibule-covering at the end thereof, a plunger in contact with the top and bottom of each face-plate, said plunger reciprocating upon a piston, and a spring operating said plunger placed about said piston, substantially as described, and for the purpose set forth.

474,967. DENTAL PROCESS. JOSEPH PAYNE, Dwight, Ill. Filed Feb. 9, 1891. Serial No. 380,733. (No model.)



Claim.—1. The method or process herein described, consisting, essentially, in the following-named steps, to wit: first, by the aid of the casts M N and an articulator obtaining and noting a complete registry of the patient's mouth; second, removing the natural teeth, allowing the gums to shrink, and then making a plaster cast O, conforming to the shrunken gums; third, constructing and adjusting the guide-plate P to supplement cast M; fourth, transferring guide P from cast M to cast O, and, fifth, using the combined structure O P as a

guide for the construction and adjustment of an artificial set of teeth and gums, substantially as described.

2. As a further improvement, adapted more particularly for the perfecting of a full set of upper and lower artificial teeth and gums, the method or process herein described, consisting, essentially, in the following steps, to wit: first, constructing the two sets and preliminarily adjusting them to each other; second, placing them both in the patient's mouth in their normal positions and temporarily fastening them together; third, removing them from the mouth and attaching them while still fastened together to the appropriate jaw-plates of the machine, and, fourth, severing their connection to each other and grinding them to a complete fit, substantially as described.

474,968. DENTAL ARTICULATOR. JOSEPH PAYNE, Dwight, Ill. Filed Feb. 9, 1891. Serial No. 380,734. (No model.)



Claim.—1. In an articulator, a mechanical jaw constructed in the form of a plate flat and imperforate on its inner surface and provided with a notched projection adapted to form in the surface of the cast a depression to receive the eyelet and with a hole to accommodate a locking-bolt, substantially as described.

2. In an articulator, a mechanical jaw constructed in the form of a plate flat and imperforate on its inner surface and provided with a longitudinal ridge or ridges K, having notches *k* and with a hole to accommodate a locking-bolt L, substantially as described.

3. In an articulator, a mechanical jaw constructed in the form of a plate flat and imperforate on its inner surface and provided with a transverse flange or stop J, and a longitudinal ridge or ridges K, bored and notched, substantially as described.

4. In an articulator, the combination of a jaw provided with a vertical post and a graduated scale *b*, a feathered sleeve capable of sliding vertically on said post, another jaw pivoted to the sleeve so as to be capable of rocking thereon in a vertical plane of movement, and a screw D for vertically adjusting the position of the sleeve on the post, substantially as described.

5. In an articulator, the combination of a jaw provided with a vertical post, a feathered sleeve capable of sliding vertically on said post, another jaw pivoted to the sleeve so as to be capable of rocking thereon in a vertical plane of movement, a screw F to rock and adjust the pivoted jaw, and a graduated scale c^4 to indicate the degree of inclination at which the pivoted jaw may at any time be adjusted substantially as described.

6. In an articulator, the combination of the rocking plate E, the sliding bar G, the jaw-plate A, pivoted to the bar G, so as to swing laterally thereon, the adjusting-screw H, and a graduated scale *a'* to indicate the extent to which the plate A and bar G may be at any time adjusted forward or back upon the plate E, substantially as described.

7. In an articulator, the combination of the rocking plate E, the jaw-plate A, supported by said rocking plate and adapted to be moved forward and backward and to swing laterally thereon, means for locking it in its forward and backward adjustment, and a graduated scale *a'* to indicate the degree of such adjustment, substantially as described.

8. In an articulator, the combination of the rocking plate E, the jaw-plate A, supported by said rocking plate and adapted to be moved forward and backward and swing laterally thereon, the screws I I' for laterally adjusting and locking the jaw-plate, and a graduated scale a^2 to indicate the degree of such lateral adjustment, substantially as described.

9. The improved machine herein described, consisting, essentially, of two flat surfaced imperforate jaw-plates provided with means for detachably locking the casts thereto, a post and sleeve to connect the jaws and enable them to be adjusted in parallel planes at greater and less distances apart, a plate pivoted to the movable element of the post-and-sleeve device, so as to be capable of rocking thereon in a vertical plane of movement and supporting the movable jaw-plate, means for moving the movable jaw-plate back and forth longitudinally and swinging it laterally upon its said pivoted supporting-plate, adjusting-screws to effect the described adjustments of the movable jaw-plate, and graduated scales to mark the degrees of the several adjustments, said parts being combined to operate substantially as described.

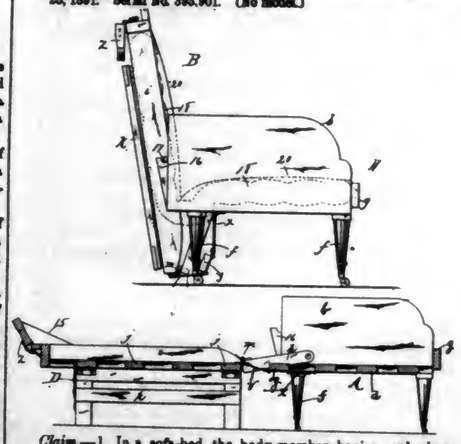
474,969.



Claim.—1. In a button, the combination of a shoe and a flat and spirally-twisted post, the twisted portion of said post being within the hub and provided with oppositely-projecting arms above said twisted portion arranged across the slot in the hub, substantially as and for the purposes set forth.

2. As an improved article of manufacture, the herein-described metallic button, consisting of a face-plate *a* and a back-plate *b*, provided with a hub *b'*, having an inwardly-curved portion b^3 and a slot b^4 therein, and a shoe provided with a flat post formed integral therewith, having oppositely-projecting arms c^3 and a flat portion c^4, adapted to be inserted through said slot, and said arms c^3 being turned at right angles, or approximately so, across said slot and engaging with the inner edges thereof, substantially as and for the purposes set forth.

474,970. SOFA-BED. JOSEPH RIMMER, Malden, Mass. Filed May 23, 1891. Serial No. 393,901. (No model.)



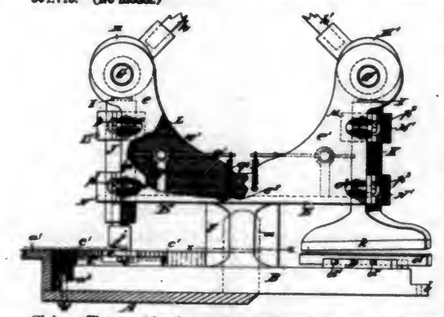
Claim.—1. In a sofa-bed, the body member having end pieces and a bottom composed of slats, the rearmost one of which is some distance forward of the rear edge of said end pieces, in combination with the swinging member comprising side pieces and a slatted body, links pivoted to the inner faces of said end pieces, swinging in vertical planes below said bottom, and hinged to the front ends of said side pieces, folding legs adapted to support the swinging member when horizontal, a mattress connecting the two members and folding between the adjacent slats therein when the device forms a sofa, and means for connecting the swinging member to the body member when the former is vertical, substantially as described.

2. In a sofa-bed, the body member having end pieces and a bottom composed of slats, the rearmost one of which is some distance forward of the rear edge of said end pieces, in combination with the swinging member comprising side pieces and a slatted body, links pivoted to the inner faces of said end pieces, swinging in vertical planes below said bottom, and hinged to the front ends of said side pieces, folding legs adapted to support the swinging member when horizontal, a short slat between said links, arms hinged to this slat and to the adjacent slats of the two members, a mattress connecting the members resting on said short slat when the device forms a sofa, and means for connecting the swinging member to the body member when the former is vertical, substantially as described.

3. In a sofa-bed, the body member having end pieces and a bottom composed of slats, the rearmost one of which is some distance forward of the rear edge of said end pieces, in combination with the swinging member comprising side pieces and a slatted body, links pivoted to the inner faces of said end pieces, swinging in vertical planes below said bottom, and hinged to the front ends of said side pieces, folding legs adapted to support the swinging member when horizontal, a short slat between said links, arms hinged to this slat and to the adjacent slats of the two members, and means for connecting the swinging member to the body member when the former is vertical, substantially as described.

4. In a sofa-bed, the body member having end pieces and a bottom composed of slats, the rearmost one of which is some distance forward of the rear edge of said end pieces, in combination with the swinging member comprising side pieces and a slatted body, links pivoted to the inner faces of said end pieces, swinging in vertical planes below said bottom, and hinged to the front ends of said side pieces, folding legs adapted to support the swinging member when horizontal, a short slat between said links, arms loosely connecting said slat with the adjacent slats of the two members, notched lugs on the rear edges of said end pieces, and studs projecting outward from said side pieces at about the centers of their lengths and adapted to engage said lugs when the swinging member is vertical, substantially as described.

474,971. PUNCHING AND SHEARING MACHINE. GEORGE W. ROCKENFIELD, Parkersburg, W. Va. Filed May 6, 1891. Serial No. 391,715. (No model.)



Claim.—The combination, with a bed-plate having an elevated flange adapted for forming the work-support, of a punching and shearing machine pivotally secured to the bed-plate and having the cutting-faces of its tools substantially in the plane of the elevated flange of the bed-plate, and means for adjusting the punching and shearing machine in rotary adjustment, substantially as set forth.

474,972. CAUTERIZING-POINT HOLDER. CARL SACK, Berlin, Germany. Filed Apr. 1, 1892. Serial No. 427,339. (No model.)

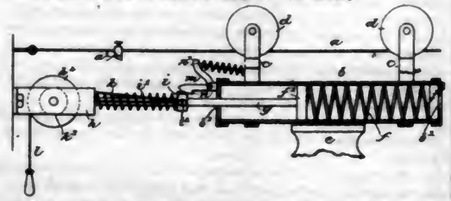


Claim.—1. The combination, with a canterizing-point having a ribbed shank, of a chuck provided with jaws having ribbed working faces for engaging the shank of the point, substantially as and for the purposes set forth.

2. The combination, with a canterizing-point having a ribbed shank of elliptical cross-section, of a chuck provided with jaws having ribbed working faces corresponding in contour with the shank of the point, substantially as and for the purposes set forth.

3. A device for detachably supporting canterizing-points, comprising a stock, a chuck working in said stock and provided with spring-jaws having ribbed working surfaces for engaging the corresponding surfaces of the shanks of the points, and a handle connected with said chuck and working in a slot in said stock, substantially as and for the purposes set forth.

474,973. CASH-CARRIER. CLARENCE R. SADD, Ellington, Conn. Filed Mar. 16, 1891. Serial No. 385,215. (No model.)



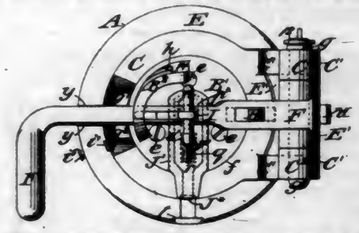
Claim.—1. In a store-service apparatus, in combination with a supporting-way, a wheeled carriage supported on and adapted to travel along said way, the tube forming part of the carriage and provided with openings at each end, the inclosed spring provided at each end with unperforated heads, the plunger adapted to enter the openings in the tube, the sliding collar supported and held against rotation on the plunger and adapted to engage the catch, the means for sliding the collar, and the adjustable trip device, all substantially as described.

2. In a store-service apparatus, in combination with a supporting-way, a carriage adapted to travel along said way, the tube forming part of the carriage, provided at each end with removable caps having openings therethrough, the spring located within the tube, the plunger adapted to enter said tube and to engage the spring, the sliding collar borne on the plunger and held against rotation thereon, the spring tending to hold the collar at the outward limit of its play, the catch device borne on the carriage and adapted to engage the collar, the adjustable trip device, and the means for sliding the collar, all substantially as described.

3. In a store-service apparatus, in combination with a supporting-way, the wheels *d*, the supports depending from said wheels and bearing the tube, forming part of the carriage, the spring located within the carriage, the plunger adapted to enter the tube and engage the inclosed spring, the sliding collar borne on the plunger, the yielding catch borne on the carriage and adapted to engage the collar, the adjustable trip device, and the means for sliding the collar, all substantially as described.

4. In a store-service apparatus, in combination with a supporting-way, the carriage mounted and adapted to travel thereon, the tube forming part of the carriage, having an opening at each end, the inclosed spring with disk-shaped heads, the receptacle supported on the carriage, the catch device borne on the carriage, the plunger provided with the slot and adapted to enter the opening in the tube, the sliding collar arranged on the plunger and having the screw engaging the slot in the plunger, the spring tending to keep the collar in a certain position, the trip device located in the path of movement of the catch, and the means for sliding the collar, substantially as described.

474,974. BREECH-LOADING CANNON. SAMUEL SEABURY, U. S. Navy. Filed Oct. 21, 1891. Serial No. 415,708. (No model.)



Claim.—1. The combination, with the gun, the breech-block carrier hinged thereto, and the breech-block fitted to turn within the carrier and the gun, of a yoke affixed to and projecting rearward from the said block and a lever having its fulcrum in the carrier and arranged to move backward and forward relatively to the breech and operating within said yoke to turn the said block, substantially as herein described.

2. The combination, with the gun, the breech-block carrier hinged thereto, and the breech-block fitted to turn within the gun and the carrier, of a curved yoke projecting rearward from said block and a lever having its fulcrum on the carrier to move backward and forward relatively to the breech of the gun and within the said yoke for turning the block and having an engagement with the breech to make it serve as an abutment to the yoke for locking the breech, substantially as herein set forth.

3. The combination, with the gun, the breech-block carrier hinged thereto, and the breech-block fitted both to turn and to move lengthwise within both said carrier and the gun, of a lever having its fulcrum in said carrier and having a yoke connection with the said block for the purposes of producing said turning and lengthwise movements, substantially as herein set forth.

4. The combination, with the gun, the breech-block carrier hinged thereto, and the breech-block fitted both to turn and to move lengthwise within both said carrier and the gun, of a lever having its fulcrum in said carrier and having a yoke connection with said block for the purpose of producing said turning and lengthwise movements, and a stop for limiting the lengthwise movement of the block within the barrier and for engaging the block with the carrier to make operative connection between the carrier and the lever, substantially as herein set forth.

5. The combination, with the gun, the breech-block carrier hinged thereto, and the breech-block fitted to turn within the gun and the carrier, of a curved yoke projecting rearward from said block, a lever having its fulcrum in the carrier to move backward and forward relatively to the breech and within said yoke for turning the block, and a guide on the opposite side of the carrier to the fulcrum-pin for sustaining said lever, substantially as herein set forth.

6. The combination, with the gun, the breech-block carrier hinged

thereto, the breech-block fitted to turn within the gun and the carrier, and the firing-pin passing through the breech-block, of a lever having its fulcrum in the carrier and having a yoke connection with the block for turning it and having an engagement with the firing-pin for the purpose of cocking it during the turning of the block, substantially as herein set forth.

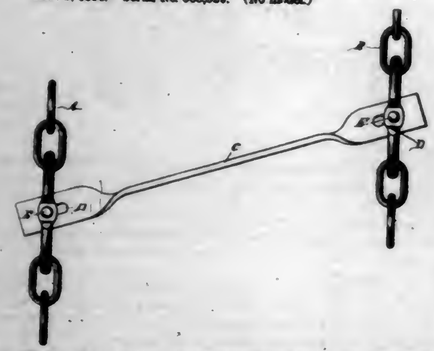
7. The combination of the gun, the breech-block carrier hinged thereto, the breech-block fitted both to turn and move lengthwise within the gun and the carrier, a locking device for locking the block in the carrier to cause them to move together on the hinge, a firing-pin passing through the block, and a lever hinged to the carrier and having a yoke connection with the block for turning it and moving it lengthwise and swinging the carrier on the hinge and having an engagement with the firing-pin, said lever serving the several purposes of turning the block and moving it lengthwise, swinging aside the carrier and block to open the breech, and cocking the firing-pin, substantially as herein set forth.

8. The combination, with the breech-block and the firing-pin passing through it, of a sliding sear having an opening in it through which the firing-pin passes and a sear-spring pressing against the sear to push its tooth toward the firing-pin, substantially as herein set forth.

9. The combination, with the breech-block and the firing-pin passing through it, of a sliding sear having two openings, one of said openings having the firing-pin passing through it and one end of said opening constituting the sear-tooth and the other of said openings containing both the sear-spring and an abutment between which and the sear the said spring operates with a pushing action, substantially as herein set forth.

10. The combination, with the gun, the hinged swinging breech-block carrier and the extractor, of the extractor-lever M, arranged in the hinge of the carrier with its fulcrum-pin in the breech in front of the hinge-pin D and to be operated upon by a portion of the carrier, substantially as herein set forth.

474,975. CARRIER. WILLIAM E. SELLECK, Chicago, Ill. Filed Mar. 2, 1891. Serial No. 383,329. (No model.)



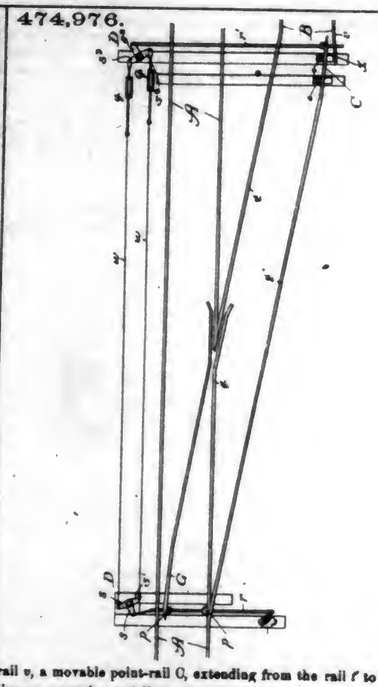
Claim.—In a carrier, the combination, with a pair of parallel chains, of a series of conveyers provided with elongated slots in the ends thereof and bolts working through said slots and directly attached to said chains, substantially as described.

474,976. DERAILING-SWITCH. AXEL A. STROM, Austin, Ill., assignor to the Strom Manufacturing Company, Chicago, Ill. Filed Dec. 31, 1891. Serial No. 415,736. (No model.)

Claim.—1. In a derailing-switch, the combination, with the main line A, side track B, and transfer-rails t t', of a split switch G between the rails of the main line, a deflected extension x at the end of the siding-rail v, a movable point-rail C, extending from the rail t' to the extension x and connected with the switch G, to be operated by throwing the latter, and a switch-operating appliance connected with the said split switch, substantially as and for the purpose set forth.

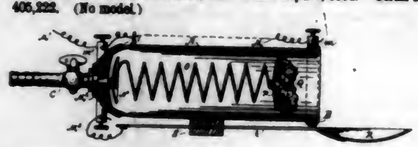
2. In a derailing-switch, the combination, with the main line A, side track B, and transfer-rails t t', of a split switch G between the rails of the main line, a deflected extension x at the end of the siding-rail v, a movable point-rail C, extending from the rail t' to the extension x and connected with the switch G to be operated by throwing the latter, a rigid stop o at the end of the inner throw of the point-rail C, and a switch-operating appliance connected with the said split switch, substantially as and for the purpose set forth.

3. A derailing-switch comprising, in combination with the main line A, side track B, and transfer-rails t t', a split switch G between the rails of the main line, a deflected extension x at the end of the siding-



rail v, a movable point-rail C, extending from the rail t' to the extension x, a switch-stand F, connected with the split switch, a bell-crank lever D, connected with the said split switch, a bell-crank lever D', connected by a rod r' with the point-rail C, and wires w, provided with turnbuckles q and connecting the two bell-cranks at their arms d^3 d^4, the whole being constructed and arranged to operate substantially as described.

474,977. CUPPING-GLASS WITH ELECTRICAL ATTACHMENT. FRANCIS THOMAS, San Francisco, Cal. Filed Sept. 9, 1891. Serial No. 405,222. (No model.)



Claim.—1. A surgical instrument consisting of a cupping device having means to electrify the parts to which it is applied, substantially as set forth.

2. In a surgical instrument, the combination of a cupping-glass provided with a metallic rim and means to convey an electric current to said rim, substantially as set forth.

3. In a surgical instrument, the combination of a cupping-glass, a spring therein, said spring terminating by an electrode, and means to convey an electric current therethrough, substantially as set forth.

4. In a surgical instrument, the combination of a cupping-glass, a slitted block thereunder, a concave disk, said disk provided with a handle held by and longitudinally adjustable in said block, and means to convey an electric current to said handle and disk, substantially as set forth.

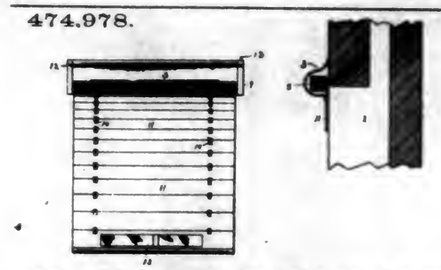
5. A surgical instrument composed of a syringe-like cupping device and means to charge said device with electricity, substantially as set forth.

6. A surgical instrument composed of a cupping device and means for the application of electricity in connection with a partial vacuum, substantially as set forth.

474,978. ROLLING BLOWER FOR FIREPLACES AND GRATES. DORIA TRACY, Toledo, Ohio. Filed Feb. 23, 1892. Serial No. 422,963. (No model.)

Claim.—1. In a rolling blower for fireplaces and grates, a casing, a shaft journaled therein formed with rectangular portions, a slatted

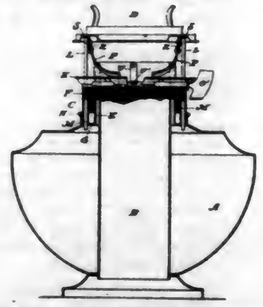
474,978.



screen suspended from the angle of the shaft, the slats of the screen being of graduated sizes in series to allow each series to fold in rectangular laminated order when rolled upon the shaft.

2. In a rolling blower, a casing, a shaft journaled therein having a rectangular formation, a slatted screen suspended from the angles of the shaft, the slats of the screen being of graduated sizes in series to allow each series to fold in rectangular laminated order when rolled upon the shaft, a multi-cam stop-wheel upon the shaft, the square faces of each of which are in alignment with a rectangular side of the shaft, and a stop pivoted to the casing and engaging the cam.

474,979. LAMP. CHARLES S. UPTON, New York, N. Y. Filed June 12, 1890. Serial No. 355,147. (No model.)

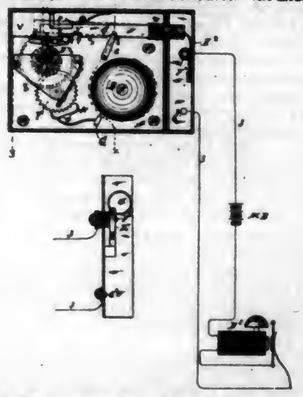


Claim.—1. The combination, with a central-draft lamp, of a removable burner consisting of two parts, one of which is vertically adjustable with reference to the other part and removable therefrom, the non-adjustable part being provided with a tube which forms the outer wall of the wick-chamber and with guide-tubes and the adjustable part being provided with downwardly-extending rods which fit movably within said guide-tubes, the rods being located within the outer walls of the burner, devices for raising and lowering the adjustable part, and means for connecting said devices with the non-adjustable part and by operating which the adjustable part, together with the devices for raising and lowering the same, may be separated from the other part, substantially as shown and described.

2. The combination, with a central-draft lamp, of a removable burner consisting of two parts, one of which is vertically adjustable with reference to the other part and removable therefrom, the non-adjustable part being provided with a tube which forms the outer wall of the wick-chamber when the burner is in position and an upwardly-extending portion on which the adjustable part rests and also with guide-tubes within the upwardly-extending portion which register with perforations in the base thereof and the adjustable part being provided with rods which are adapted to enter said guide-tubes, devices for raising and lowering the adjustable part, and means for connecting said devices with the other part and by operating which the adjustable part, together with the devices for raising or lowering the same, may be separated from the other part, substantially as shown and described.

3. The combination, with a central-draft lamp, of a removable burner consisting of two parts, one of which is vertically adjustable with reference to the other part and removable therefrom, the non-adjustable part being provided with a tube which forms the outer wall of the wick-chamber when the burner is in position and an upwardly-extending portion on which the adjustable part rests and also with guide-tubes within the upwardly-extending portion which register with perforations in the base thereof and the adjustable part being provided with rods, which are adapted to enter said guide-tubes, the bar O, provided with levers P and links R for raising and lowering the adjustable part, and a locking device for connecting the bar O and the adjustable part with the other part, substantially as shown and described.

474,980. BURGLAR-ALARM. ROBERT G. VAMAR, New York, N. Y., assignor to the Vamar Burglar Alarm Manufacturing Company, of New Jersey. Filed Apr. 11, 1887. Serial No. 234,338. (No model.)

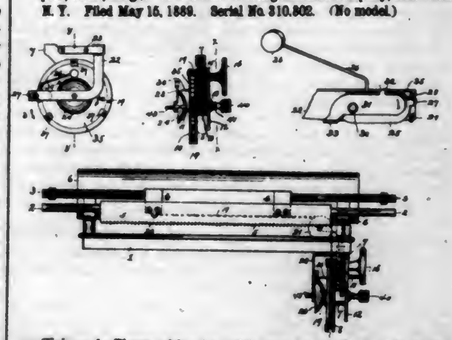


Claim.—1. The combination, with a laterally-movable bolt, an alarm mechanism, and mechanical releasing devices for the latter arranged in the path of the laterally-movable bolt, of an electric-circuit controller arranged in the path of the laterally-movable bolt and an electric circuit connecting the same with an electro-magnetic alarm or indicator, as and for the purpose described.

2. The combination of a bolt having a lateral movement, so that it will be moved sidewise by pressure upon the bolt itself or upon the door when the bolt is shot, an electric-circuit controller brought into action by said bolt when moved laterally, as described, and a circuit governed thereby and containing the magnet of an alarm or indicator

3. The combination, with a bolt and an alarm mechanism having detent devices arranged in proper relation to said bolt, as described, so as to be operated by a lateral or longitudinal movement of said bolt, of an electric-circuit controller placed in proper relation to said bolt, as described, so as to be released or operated both by a lateral and by longitudinal movement of the same, and an electric circuit connecting said circuit-controller with an electrical indicator or alarm.

474,981. TYPE-WRITING MACHINE. CASPER D. WALLACE, Bridgeport, Conn., assignor to the Yost Writing Machine Company, New York, N. Y. Filed May 16, 1889. Serial No. 310,802. (No model.)



Claim.—1. The combination, with a rotatory bell-trip, of a bell, a pivoted arm carrying a bell-hammer, and a lever pivoted to said arm, adapted to be actuated by the bell-trip and in turn to actuate the pivoted bell-hammer arm.

2. The combination, with a rotatory bell-trip, of a bell, a pivoted arm carrying a bell-hammer, a lever pivoted to said arm, and a spring for returning the parts to their normal positions.

3. The combination, with a rotatory bell-trip, of a bell, a pivoted arm having a bell-hammer and a lug, a stop 28 for said lug, and a returning-spring.

4. The combination, with a rotatory bell-trip, of a bell, a pivoted arm, a bell-hammer, and a lever pivoted to and parallel with said arm and provided with a finger for moving said arm, and a projection for engagement with said bell-trip.

5. The combination, with a rotatory bell-trip, of a bell, an arm pivoted at one end and carrying a bell-hammer, and a lever pivoted at the other free end of said arm and constructed to carry the arm when the bell-trip rotates in one direction and to vibrate independently thereof when the bell-trip rotates in the opposite direction.

6. The combination, with a rotatory bell-trip, of a bell, a bracket, a bell-hammer arm pivoted to said bracket, a lever pivoted or fulcrumed on said arm, a finger engaging the latter, a projection in the path of the bell-trip, a spring, and a stop or abutment 28.

7. The combination of the paper-carriage, a spring-drum, a driving-belt connected at one end to the paper-carriage and at the other end to the spring-drum, a hollow stud or arbor for said spring-drum to turn upon, a toothed wheel secured to said stud or arbor, a pinion or cog for turning said toothed wheel and the stud or arbor and winding said spring, a disk fitted upon said spring-drum, having a bell-trip adapted to turn with said drum during the movements of the carriage, a spindle having at its outer end a hand-piece passing through said stud or arbor and engaging said disk in a manner such that the bell-trip thereon may be adjusted to different positions independently of the rotation of said spring-drum, and a bell mechanism adapted to be actuated by said bell-trip.

8. The combination of a paper-carriage, a spring-drum, a flexible connection between the two, a circular disk frictionally attached to the side of said drum, a spindle passing axially through said drum and engaging said disk and provided with a knob, a bell-trip on said disk, and a bell mechanism.

9. The combination of a paper-carriage, a spring-drum, a flexible connection between the two, a circular disk frictionally attached to the side of said drum, a spindle passing axially through said drum and engaging said disk and provided with a knob, a bell-trip on said disk, a bell, a bell-hammer, an arm pivoted at one end and carrying said bell-hammer, a lever pivoted at the opposite free end of said arm and provided with a finger to move the bell-hammer arm, and a projection to be encountered by the bell-trip.

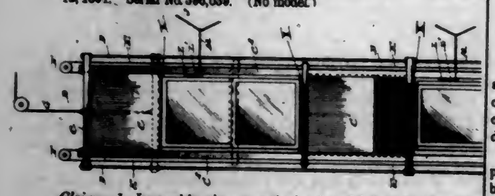
10. The combination of a paper-carriage, a driving-belt, a spring-drum, a circular disk fitted to the side of said drum, a series of fingers for holding said disk frictionally to said drum, a spindle for turning said disk independently of said drum, a bell-trip on said disk, and a bell mechanism.

11. The combination of a paper-carriage, a driving-belt, a pulley, a spring-drum arranged at right angles to the travel of the carriage and at the side of the machine, a depending bracket for supporting said drum, a disk fitted to said drum, a spindle passing through the drum for turning said disk independently of the drum and having a knob at the side of the machine, a bell-trip on said disk, and a bell mechanism.

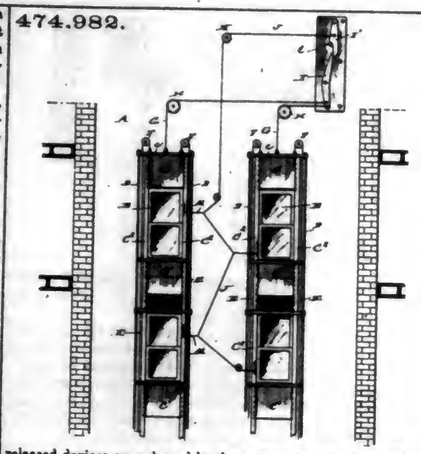
12. The combination of a paper-carriage, a driving-belt, a pulley, a spring-drum arranged at right angles to the travel of the carriage and at the side of the machine, a depending bracket for supporting said drum, a disk fitted to said drum, a spindle passing through the drum for turning said disk independently of the drum and having a knob at the side of the machine, a bell-trip on said disk, and a rigid supporting-arm extending from said bracket and having a stop 28, a bell mounted on said supporting-arm, an arm carrying a hammer, pivoted at one end to said supporting-arm and provided with a lug, a lever pivoted to the opposite free end of said pivoted arm and having a finger and a projection, and a returning-spring.

13. The combination, with a rotatory bell-trip, of a supporting-arm having a stop 28, a bell, a pivoted arm 25, carrying a bell-hammer and having a lug, a lever pivoted to the arm 25 eccentrically of its pivot and having an overlapping finger to move the pivoted arm 25, and a projection to be encountered by the bell-trip.

474,982. FIRE-SHUTTER FOR VENTILATING-SHAFTS OF BUILDINGS. LUDWIG WIELAND, New York, N. Y., assignor to the Air Shaft Protector and Manufacturing Company, Newark, N. J. Filed June 12, 1891. Serial No. 396,039. (No model.)



Claim.—1. In combination, a vertical series of sliding shutters connected together so as to automatically close when released, a releasing mechanism normally holding said series of shutters open, a rope attached at one end to said releasing mechanism and fixed at its other end, and heat-released devices connected to this rope between its ends and adapted to hold it in an irregular line, whereby when said heat-



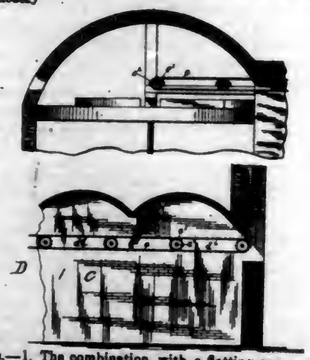
released devices are released by the temperature the rope will be permitted to straighten, and thereby release the releasing mechanism, substantially as described.

2. In combination, the sliding shutter composed of an upper and a lower part and connections between them, whereby the descent of the former will raise the latter to close them together, substantially as described.

3. In combination, the series of two-part sliding shutters, the rod connecting all of the upper ones of the series, and the cords connecting all of the lower ones together and to the upper ones, substantially as described.

4. In combination, the series of automatically-closing two-part sliding shutters consisting each of an upper and a lower part, all of the upper being connected together and all of the lower being connected together and to the upper, the means to normally hold them open, consisting of a latch device connected to the upper shutter part of the upper series, a flexible device, as a rope, extending from said latch to a fixed point, being of greater length than the distance between, and the heat-operative device or devices attached to said rope to take up the slack, substantially as described.

474,983. CARRIER FOR CONVEYING GLASS FROM FLATTING-OVENS. THEODOR A. ZELLERS, Ottawa, Ill., assignor to the Ottawa Glass Company, same place. Filed Dec. 22, 1891. Serial No. 415,858. (No model.)

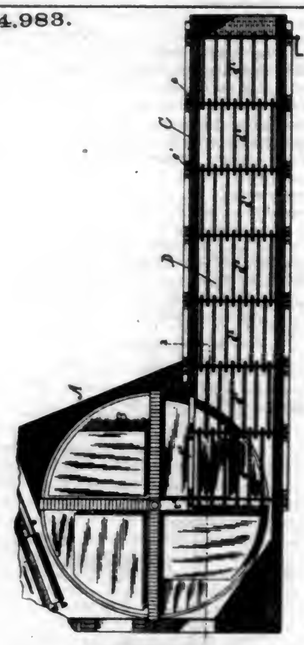


Claim.—1. The combination, with a flatting-oven and tunnel, of a carrier for transporting the glass from the oven through the tunnel, composed of a series of relatively short sections placed end to end and consisting each of a transverse series of endless belts, substantially as described.

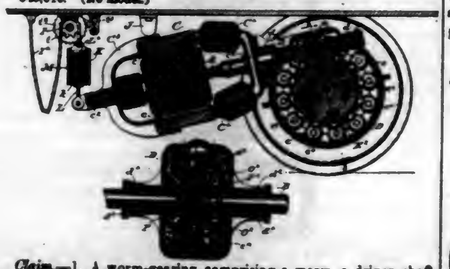
2. In combination with a flatting-oven and tunnel, a carrier composed of sections severally made up of a transverse series of endless belts and transverse pulley-shafts, of which the intermediate shafts carry the pulleys for the two adjacent sections.

3. In combination with the tunnel leading from a flatting-oven and a belt-carrier within the tunnel, composed of short endless belts arranged end to end, shafts for the carrier, which project through the side walls of the tunnel, and journal-bearings for said shaft exterior to said side walls.

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474,984. ELECTRIC LOCOMOTIVE. CHARLES BROWN, Naples, Italy, and GUSTAV J. MELMS, Chicago, Ill. Filed Mar. 7, 1890. Serial No. 343,016. (No model.)



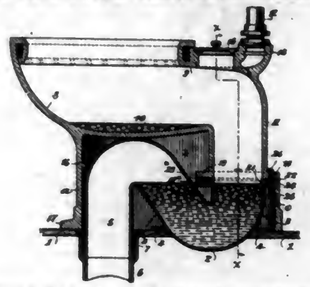
Claim.—1. A worm-gearing comprising a worm, a driven shaft provided with two disks, each having a plurality of anti-friction rollers engaging the worm, said disks being adapted to turn or oscillate upon the shaft, and means connecting the disks with the shaft, affording an equilibrium of strain upon the disks, substantially as described.

2. The combination, with the driven shaft and worm thereon, of a shaft or axle provided with a flange or ring, two disks mounted loosely upon the axle at either side of said disk or ring, said disks being provided each with a plurality of anti-friction rollers engaging the said worm, and one or more bars or levers engaging the said ring or flange of the shaft and the said disks, substantially as described.

3. The combination, with a driven and a driving shaft, of a suitable driving connection between said shafts, a motor actuating the driving-shaft, a frame supporting the motor and affording bearings for the driving-shaft, said frame being supported at the end adjacent to the driven shaft by means of bearings adapted to engage said driven shaft, the other end of said frame being supported by means of a connection with the car-body or other adjacent part, adapted to permit angular movement of said motor frame, and means for securing said frame in any desired angular position relative to said shaft within determined limits, substantially as described.

4. The combination, with a car frame and axle, of a driving-shaft, a worm-gear connecting the driving-shaft with the axle, a motor actuating the driving-shaft, a frame supporting the motor and affording bearings for the driving-shaft, said frame being supported on bearings concentric with said axle, and a connection between the motor-frame and a car-body, comprising a shaft provided with a sprocket-wheel, and a chain connected with the said frame and engaging the sprocket-wheel, substantially as described.

474,985. WATER-CLOSET APPARATUS. WILLIAM BUSTING, Jr., Flushing, assignor to The Meyer-Sniffen Company, Limited, New York, N. Y. Filed Jan. 8, 1892. Serial No. 417,431. (No model.)

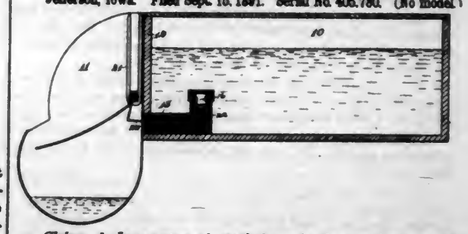


Claim.—1. In a water-closet apparatus, the combination, with a metal trap having a horizontal outwardly-extending flange, of a bowl, outlet, and hollow pedestal, all made from a single piece of earthenware, the pedestal completely surrounding the said trap on all sides and constructed to form a horizontal outwardly-extending flange at its junction with the outlet, and means for securing together said flanges, substantially as described.

2. In a water-closet apparatus, the combination, with a metal trap having a horizontal outwardly-extending perforated flange, of a bowl, outlet, and hollow pedestal, all made from a single piece of earthenware, the pedestal having four sides, all extending down to a common base-level, so as to completely incase the trap, the outlet having a depending neck at its lower end, and a perforated outwardly-extending flange adjoining the pedestal to form a recess, a packing-ring, bolts or screws projecting upwardly through the flange and packing-ring from the interior of the pedestal, and exteriorly-arranged nuts engaging with the protruding threaded ends of the bolts or screws, substantially as described.

3. A water-closet bowl, outlet, and hollow pedestal, all made from a single piece of earthenware, the walls of the pedestal all extending down to a common base-level, and the pedestal and outlet being constructed to form at their junction a horizontal outwardly-extending perforated flange, substantially as and for the purpose set forth.

474,986. AUTOMATIC STOCK-FOUNTAIN. CHAUNCEY I. BURT, Jefferson, Iowa. Filed Sept. 15, 1891. Serial No. 405,780. (No model.)



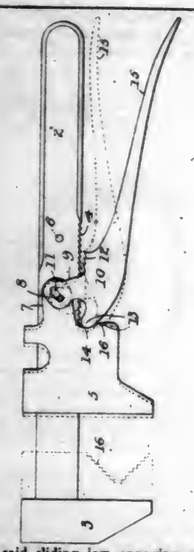
Claim.—1. In an automatic stock-fountain, the combination, with a reservoir and drinking-trough adjacent thereto, of an elbow-shaped duct located within the reservoir, one of the open ends of which communicates with the drinking-trough and the other with the reservoir, a gate pivoted within the drinking-trough, a valve located in or upon the duct and normally held upon its seat, and a double elbow-shaped lever-rod so connected and positioned that when the gate is acted upon the valve may be opened.

2. The combination, with a drinking-trough and reservoir adjacent thereto, of an elbow-shaped duct located within the reservoir, the ends of which open, respectively, into said reservoir and into the drinking-trough, a double elbow-shaped lever, a gate disposed within the drinking-trough, secured to a transverse shaft, a valve located within the duct and normally held upon its seat by the pressure of the water within the reservoir, said double elbow-shaped lever being fixed at one end to the gate-shaft and its other end being adapted to impinge directly against the under side of the valve, and guideways positioned within the drinking-trough, within which the gate-shaft rests and whereby the gate and lever may be removed.

474,987. WRENCH. WILLIAM CHURCH, St. Paul, Minn. Filed Aug. 4, 1891. Serial No. 401,689. (No model.)

Claim.—1. In a wrench having a jaw fixed to the handle and another slidable thereon, the combination therewith of a clamp-lever

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loosely connected to said sliding jaw, engaging with and fulcrumed upon the wrench-handle and having its fulcrum end bearing against said slidable jaw, substantially as and for the purposes set forth.

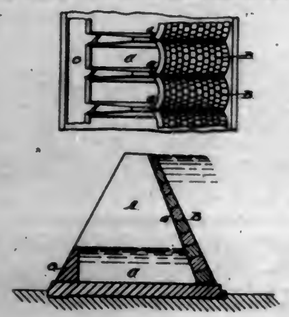
2. In a wrench having a fixed jaw and a movable jaw sliding on its handle, the combination of a series of notches upon said handle, a clamp-lever loosely connected to said movable jaw, and a fulcrum-point upon said clamp, adapted to engage a notch upon said handle, the fulcrum end of said clamp-lever being adapted when the clamp is operated to bear against said movable jaw and to thrust the same forward, substantially as and for the purposes set forth.

3. In a wrench having a straight handle provided with a fixed jaw, the combination of an adjustable jaw sliding on said handle, a clamp-lever having its fulcrum end bearing against said adjustable jaw, a fulcrum-point on said lever adapted to bear upon said handle, notches upon said handle to receive said fulcrum, and a loose connection between said clamp and said adjustable jaw, consisting of pivots upon one entering curved grooves or slots in the other, the center of the curve of said grooves or slots being the fulcrum-point of said lever, substantially as and for the purposes set forth.

4. In a wrench having a fixed and a sliding jaw, the combination, with the sliding jaw, of a cam-lever loosely connected to and bearing against it, a series of notches upon the wrench-handle, and a projection upon said cam-lever adapted to engage one of said notches and to serve as the pivot for said cam, substantially as and for the purposes set forth.

5. In a wrench having laterally-extending jaws, one fixed and the other adjustable along the handle, the combination of a cam-lever loosely connected to said adjustable jaw and adapted to bear against it near its point, a series of notches upon the wrench-handle, and a projection upon the cam-lever adapted to engage with said notches and serve as the pivot for said cam, substantially as and for the purposes set forth.

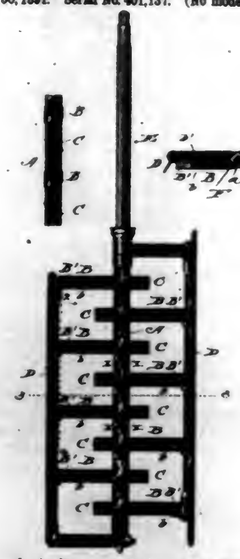
474,988. DAM, WEIR, OR RETAINING-WALL. JOHN D. DERRY, Horsham, Victoria. Filed Nov. 12, 1891. Serial No. 411,713. (No model.)



Claim.—1. A dam, weir, or retaining-wall consisting, essentially, of a number of piers or buttresses, such as A, having their front edges or ends reclined away from the retained material and having correspondingly-reclined arches, such as B, springing from said front edges and arranged at such an angle that the vertical weight or pressure of the structure and the water or other material retained by it, together with the horizontal pressure of such water or other material, gives a resultant at right angles to the reclining extrados of said arches, and thereby throws the center of pressure within the bases of said piers or buttresses, substantially as and for the purposes specified, and as illustrated in my drawings.

2. In a dam, weir, or retaining-wall, the combination, with a series of piers or buttresses, such as A, supporting reclined arches, such as B, of reservoirs or cisterns formed behind said reclined arches and between said piers or buttresses, so as to form a cushion for the water falling over the crest of the dam, weir, or wall, the whole being constructed and arranged substantially as and for the purposes specified, and as illustrated in the accompanying drawings.

474,989. ICE-CREAM DASHER. CHARLES HAMMILL, Chicago, Ill., assignor to the M. E. Page Confectionery Company, same place. Filed July 30, 1891. Serial No. 401,137. (No model.)

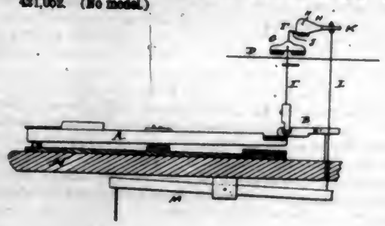


Claim.—1. An ice-cream dasher comprising a spindle having its exterior flattened and beveled and radial arms springing from the bases of said flattened portions, said arms having portions angularly disposed with reference to each other, substantially as described.

2. An ice-cream dasher comprising a central vertical spindle whose sides have triangularly-shaped flattened and beveled or inclined portions and radial arms projecting from the bases of said triangular portions of the spindle, said arms having their bases and outer ends angularly disposed with reference to each other, substantially as described.

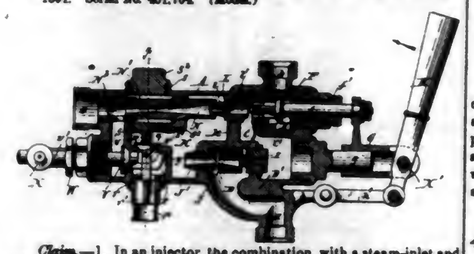
3. An ice-cream dasher comprising a central spindle having projected from opposite sides thereof arms of unequal lengths alternately arranged, substantially as described.

474,990. TONE-SUSTAINING ATTACHMENT FOR PIANOS. SIEGFRIED HASSING, New York, N. Y. Filed Feb. 10, 1892. Serial No. 421,052. (No model.)



Claim.—The combination of a tone-producing mechanism of a grand or square piano, with hooks on the dampers located above the strings, a weighted rail pivoted above the dampers and provided with a projecting strip for engaging the hooks on the dampers, and a pedal for operating said pivoted rail, substantially as set forth.

474,991. INJECTOR. THOMAS J. HART, Buffalo, N. Y., assignor to the Sherwood Manufacturing Company, same place. Filed Aug. 5, 1891. Serial No. 401,764. (Model.)

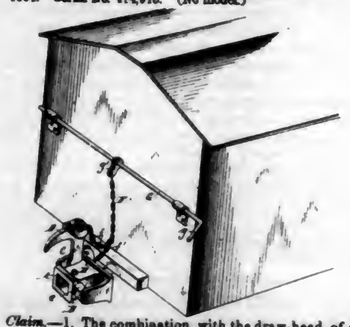


Claim.—1. In an injector, the combination, with a steam-inlet and water lifting and forcing devices, of a water-inlet and a water-chamber, an overflow passage or chamber connected with the water-chamber, an overflow-valve applied to said overflow-passage and closed by the fluid-pressure in the water-chamber, and a cam or lifting-finger whereby the overflow-valve is opened, substantially as set forth.

2. In an injector, the combination, with a steam-inlet, a steam-jet, and a water-delivery device, of a steam-valve controlling the supply of steam to the steam-jet, a hand-lever for operating said valve, a water-inlet and a water-chamber, an overflow passage or chamber connected with the water-chamber, a valve applied to said overflow-passage and closed by the fluid-pressure in the water-chamber, and a cam holding the valve in an open position and operated from the hand-lever of the steam-valve, substantially as set forth.

3. In an injector, the combination, with the primary and secondary steam-chambers and a passage connecting the same, of a water-inlet and a primary water-chamber having a primary steam-jet and a delivery device, a secondary water-chamber having a secondary steam-jet and a delivery device, connected primary and secondary steam-valves applied, respectively, to the secondary steam-jet and the connecting-passage of the steam-chambers, a hand-lever for operating said valves, an overflow-chamber having passages whereby it communicates with the secondary water-chamber and the delivery device of said chamber, a primary overflow-valve applied to one of said passages and closed by the fluid-pressure in the secondary water-chamber, a secondary overflow-valve applied to the other passage and operated from the hand-lever of the steam-valve, and a cam or finger connected with said secondary overflow-valve and closing the primary overflow-valve, substantially as set forth.

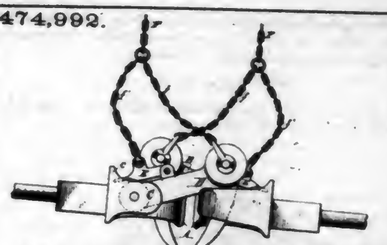
474,992. CAR-COUPLING. EDWARD S. HAWKINS, Buffalo, N. Y., assignor of one-half to Edwin G. S. Miller, same place. Filed Dec. 14 1891. Serial No. 414,913. (No model.)



Claim.—1. The combination, with the draw-head, of a vertically-swinging coupling-hook pivoted to the draw-head, and a dog or pawl pivoted to the coupling-hook and adapted to abut against the draw-head when the hook is in its coupled position, substantially as set forth.

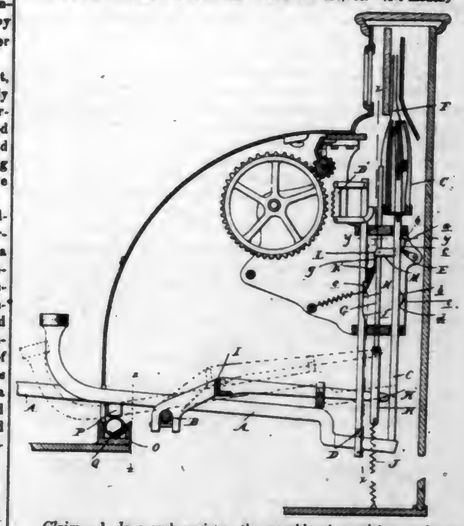
2. The combination, with the draw-head, of a vertically-swinging coupling-hook pivoted to the draw-head and adapted to engage with a cross-bar or loop arranged on an opposing draw-head, and a dog or pawl pivoted to the coupling-hook and abutting with its free end against a shoulder on the draw-head, substantially as set forth.

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3. The combination, with the draw-head, of a vertically-swinging coupling-hook pivoted to the draw-head and adapted to engage with a cross-bar or loop arranged on an opposing draw-head, a locking-pawl pivoted to the coupling-hook for holding it in a coupled position, a rock-shaft supported on the car, and an uncoupling-chain connected with the hook and the locking-pawl and operated from the rock-shaft, substantially as set forth.

474,993. CASH REGISTER AND INDICATOR. WILLIAM G. LATIMER, Detroit, Mich., assignor to the Latimer Cash Register Company, same place. Filed Jan. 21, 1892. Serial No. 418,741. (No model.)



Claim.—1. In a cash-register, the combination, with a series of independent groups of indicating devices and independent means for elevating the same, of a shield for each group and means for obscuring an elevating-indicator upon the actuation of a key of another group, substantially as described.

2. In a cash-register, the combination, with a series of groups of keys and corresponding groups of tablets actuated thereby, and means for retaining the tablets in an actuated position, of a shield for each group and means arranged to obscure the actuated tablets in groups in which a key is not operated, substantially as described.

3. In a cash-register, the combination, with a series of groups of keys and corresponding groups of tablets actuated thereby, of independent holding-up mechanism for each group of tablets, and a shield for each group adapted to obscure the actuated tablets in groups in which a key is not operated, substantially as described.

4. In a cash-register, the combination, with a series of groups of keys and a corresponding group of tablets actuated thereby, of a shield for each group, elevating means common to all the shields, a holding-up latch for each shield, and means for holding the latch of any shield inoperative upon the actuation of a key in that group, substantially as described.

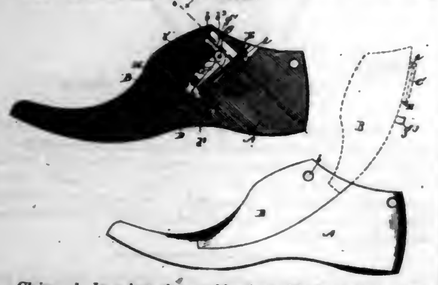
5. In a cash-register, the combination, with a series of groups of indicating devices and actuating devices therefor, of a shield for each group, a connection between the actuating devices of each group and all of the shields, a latch for each shield, and a tripping device for each latch operated by the actuating mechanism of each group, substantially as described.

6. In a cash-register, the combination, with the keys, the tablet-rods, and registering-rods, of a shield, a supporting-rod therefor be-

tween the registering-rods and tablet-rods, and a latch normally in operative position, but moved into inoperative position by a shoulder on the registering-rod, substantially as described.

474,994. LAST.

LARS LINDERG, Galesburg, Ill. Filed Jan. 28, 1892. Serial No. 419,522. (No model.)

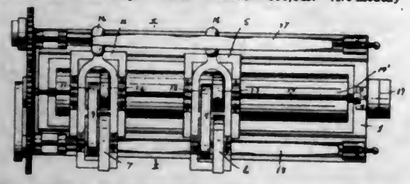


Claim.—1. In a last, the combination, with the body having a channel formed therein, and a plate on the body above the channel, having an elongated longitudinal slot of a width less than the width of the channel, of an instep-block having a chamber therein, a plate on the instep, a depending elongated lug on the instep-plate of a width substantially the width of the slot in the body-plate, side flanges on the outer edge of the lug extending the entire length thereof and engaging below the edge of the slotted portion of the body-plate, and a locking-lever mounted in the chamber of the instep-block engaging the plate on the body when the parts are forced together, substantially as described.

2. In a last, the combination, with the body having a channel formed thereon, and a plate on the upper face of the body over the channel, formed with an elongated longitudinal opening and a lateral opening near its forward end, of a chambered instep-block, a perforated plate on the instep below the chamber, a depending lug on the perforated plate, flanges on the side of the lug at the outer end thereof, an angular locking-lever pivotally secured to the perforated plate, having a locking-lug located in the perforation of the plate, a spring for normally forcing the locking-lug through the perforation, and an arm on the lever having a curved upper end arranged in the hook-hole of the instep-block, substantially as described.

474,995. LATHE FOR TURNING WAGON-AXLES.

CHARLES F. MILBURN and GEORGE E. BYRKIT, Toledo, and JOHN C. CRANE, Auburndale, Ohio. Filed July 18, 1890. Serial No. 359,143. (No model.)



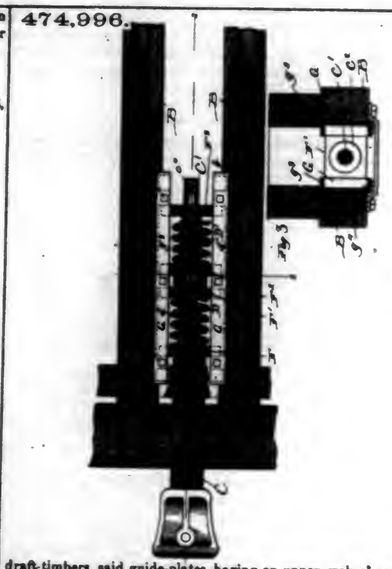
Claim.—In a lathe for turning wagon-axles, the combination, with a screw-shaft and mechanism for revolving the same, of a former of the contour of a completed axle, and a plurality of independent cutter-heads, each carrying a cutter, and a tracer for engaging the said former, one of said heads being located at or near one end of said shaft and the other at or near its center, whereby when the shaft is revolved one of the cutters will cut from the center to the end of the axle while the other is cutting from the end to the center, thus completing an axle in one operation.

474,996. DRAFT-RIGGING FOR CARS.

WILLIAM H. MINER, Chicago, Ill. Filed Nov. 9, 1891. Serial No. 411,278. (No model.)

Claim.—1. In a draft-rigging for railway-cars, the combination, with the draft-timbers B B, of the draw-bar C, secured thereto, draw-stem C', secured to said draw-bar, followers F F' F³ F⁴, tandem-arranged springs D d D' d', and guide-plates G, furnished with integral stop projections g g' g^3 for said followers to abut against, said guide-plates being secured to said draft-timbers, substantially as specified.

2. In a draft-rigging for railway-cars, the combination, with the draft-timbers B B, of the draw-bar C, draw-stem C', secured to said draw-bar, followers F F' F³ F⁴, tandem-arranged springs D d D' d', guide-plates G G, furnished with integral stop projections g g' g^3 for said followers to abut against, said guide-plates being secured to said draft-timbers, substantially as specified.



3. In a draft-rigging for railway-cars, the combination, with the draft-timbers B B, of the draw-bar C, draw-stem C', secured to said draw-bar, followers F F' F³ F⁴, tandem-arranged springs D d D' d', guide-plates G, furnished with integral stop projections g g' g^3 for said follower to abut against, said guide-plates being secured to said draft-timbers, said guide-plates having an upper web g^2 and a lower guide-bar g^4 bolted thereto, said stop projections g g' g^3 having holes through them for the bolts to pass through, substantially as specified.

4. In a draft-rigging for railway-cars, the combination, with the draft-timbers B B, of the draw-bar C, draw-stem C', secured to said draw-bar, followers F F' F³ F⁴, tandem-arranged springs D d D' d', and guide-plates G, furnished with integral stop projections g g' g^3 for said followers to abut against, said guide-plates being secured to said draft-timbers, said guide-plates having an upper web g^2 and a lower guide-bar g^4 bolted thereto, substantially as specified.

5. In a draft-rigging for railway-cars, the combination, with the draft-timbers B B, of draw-bar C, having socket c, stem C', fitting in said socket in said draw-bar and secured therein by a key, of followers F F' F³ F⁴, tandem-arranged springs between said followers F F' and F³ F⁴, a collar C³, secured to said draw-stem between said followers F' F³, and a key c^4, secured to said draw-stem at the end thereof, and stops secured to said draw-timbers for said followers to abut against, substantially as specified.

6. In a draft-rigging for railway-cars, the combination, with the draft-timbers B B, of the draw-bar C, having socket c, stem C', fitting in said socket in said draw-bar and secured therein by a key, of followers F F' F³ F⁴, tandem-arranged springs between said followers F F' and F³ F⁴, a collar C³, secured to said draw-stem between said followers F' F³, a key c^4, secured to said draw-stem at the end thereof, and stops secured to said draw-timbers for said followers to abut against, said draw-bar having a squared end, against which said follower F abuts, substantially as specified.

7. The combination, with the draft-timbers B, having guide-plates G secured thereto furnished with stops g g' g^3, of draw-bar C, draw-stem C', fitting in a socket in the end of said draw-bar and secured therein by a key, followers F F' F³ F⁴, tandem-arranged springs D d D' d', said draw-stem having a collar C³ keyed thereto, and a key c^4, substantially as specified.

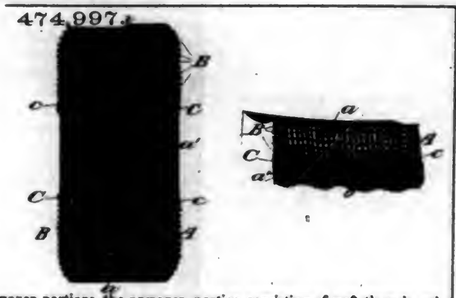
474,997. WOVEN VALANCE FOR HAMMOCKS.

ISAAC R. PALMER, Middletown, Conn. Filed Dec. 21, 1891. Serial No. 415,709. (No model.)

Brief.—By weaving one selvage of the body portion shorter than the other the fringe is caused to hang in fulled form. Additional weft-threads are inserted in the fringe portion to make the fringe heavier.

Claim.—1. A blank for forming valances, comprising woven portions extending from the opposite edges of the blank toward the central portion, the edges being woven shorter than the body portions at a distance from the edges, and an unwoven portion between the

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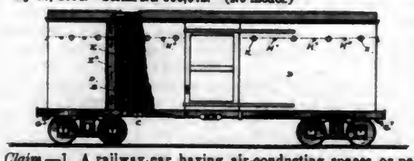
woven portions, the unwoven portion consisting of weft-threads, substantially as set forth.

2. A blank for forming valances, comprising woven portions extending from the opposite edges of the blank toward the central portion, the edges being woven shorter than the body portions at a distance from the edges, and an unwoven portion between the woven portions, the unwoven portions consisting of weft-threads which enter regularly into the weaving at the opposite sides of the blank, and additional weft-threads which engage a portion only of the warp-threads at the opposite sides of the unwoven portions, substantially as set forth.

3. A valance formed of woven fabric and having a fringe composed of weft-threads which enter regularly into the weaving of the woven portion of the valance, and of additional weft-threads which engage a portion only of the warp-threads at the fringe edge of the woven portion, substantially as set forth.

474,998. FRUIT-CAR.

ALFRED T. PERKINS, Alameda, Cal. Filed July 10, 1891. Serial No. 399,072. (No model.)



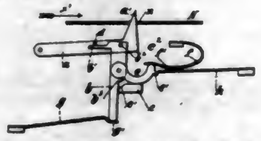
Claim.—1. A railway-car having air-conducting spaces or passages in its walls, with apertures opening into the interior space or chamber of the car, an air-conducting pipe extending across the bottom space of the car, adapted to deliver into the said spaces or passages currents of air under pressure when connected with a source of supply, and an outer casing or covering arranged to inclose between it and the sides or walls of the chamber a channel or passage, which is open to the atmosphere at the ends, and apertures connecting said outer channel or passage with the inner spaces or passages in the walls of the chamber, substantially as hereinbefore described.

2. The combination, with a fruit-storing chamber or compartment, of two sets of air spaces, channels, or passages, of which one set is in direct communication with the interior of the chamber at or near the bottom thereof and is connected with a source of supply of air under pressure and the other set is open to the outer atmosphere and is connected with the upper part of the chamber and the outer atmosphere, substantially as described, for operation as set forth.

3. In combination with a railway-car having air spaces or passages in its walls and apertures connecting the interior of the car with said passages, an outer casing covering the sides and top of the car, but open to the atmosphere at the ends, for operation as hereinbefore described.

474,999. MECHANICAL MUSICAL INSTRUMENT.

FERDINAND PIETSCHMANN, Berlin, Germany. Filed Oct. 29, 1891. Serial No. 410,246. (No model.) Patented in Austria-Hungary Aug. 1, 1891, No. 36,656 and No. 61,711; in England Aug. 18, 1891, No. 13,903, and in France Aug. 19, 1891, No. 202,271.



Claim.—1. In a mechanical instrument, the combination, with a push-point lever, of a tongue or reed actuating arm operated from the push-point lever, a fixed bar forming an abutment for the tongue or reed actuating arm, and a spring bearing on the tongue or reed actuating arm, substantially as set forth.

2. In a mechanical musical instrument, the combination, with a swinging push-point lever, of a tongue or reed actuating arm movably connected with said push-point lever, a fixed bar or rail forming an abutment for the tongue or reed actuating arm, and a spring acting on said tongue or reed actuating arm, substantially as set forth.

3. In a mechanical instrument, the combination, with a swinging push-point lever, of a tongue or reed actuating arm connected movably with the push-point lever and adapted to move toward and from the end of the tongue or reed that it actuates, a fixed bar or ledge forming an abutment for the tongue or reed actuating arm, and a spring acting on said tongue or reed actuating arm, substantially as set forth.

4. In a mechanical musical instrument, the combination, with a swinging push-point lever, of a tongue or reed actuating arm movably connected with and operated from the push-point lever, which reed or tongue actuating arm is adapted to move toward and from the end of the reed or tongue, a fixed bar or ledge forming an abutment for the reed or tongue actuating arm, a spring acting on said arm, and a damper operated by said reed or tongue actuating arm, substantially as set forth.

5. In a mechanical musical instrument, the combination, with a series of push-point levers and reed or tongue actuating arms connected therewith, of a hollow retaining-bar, into which the push-points of the levers can pass, a rotative locking-stem for said retaining-bar, a cam on said rotating stem, and a bar extending across the push-point levers and adapted to be actuated by said arm, substantially as set forth.

6. In a mechanical instrument, the combination, with a series of push-point levers and reed or tongue actuating arms connected therewith, of a grooved retaining-bar into which the push-points can pass, said retaining-bar being provided with a longitudinal slot, a rotating stem having a flat head adapted to pass through the slot in the retaining-bar, which stem serves for locking the retaining-bar in place, a cam-face formed on said rotative stem, and a bar extending across the push-point levers and having an arm on which the cam on the rotative stem can act, substantially as set forth.

475,000. LOCK-STRIKE.

FRED. E. RANNEY, Belding, Mich., assignor to the Belding Manufacturing Company, Chicago, Ill. Filed June 23, 1891. Serial No. 397,204. (No model.)



Claim.—1. The hereinbefore-described keeper for locks or latches, comprising a casing, a keeper proper movable in said casing in the direction of motion of the door, and an adjusting device accessible at the exterior of the casing when the latch is in engagement with the said keeper, said adjusting device extending into the casing and positively engaging the keeper proper to adjust the same in either direction, substantially as and for the purpose specified.

2. The hereinbefore-described keeper for locks or latches, comprising a casing provided with guideways extending in the direction of the motion of the door, a keeper proper mounted on said casing and adapted to slide in said guideways, said keeper having stops to limit its movement in each direction, and an adjusting-screw mounted to revolve in the casing and engaging the keeper proper, substantially as described.

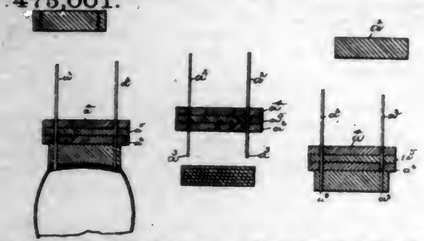
3. The combination, with a casing having guideways c c', the latter cut away at c^3 to form a tongue c^4, of a keeper proper D, having a shank D^2 to fit between the ways c c', an upwardly-extending body D' at the front end of said shank and a downward extension D^3 at the rear end thereof, and an adjusting-screw mounted to revolve in the casing and engaging a threaded aperture in the said downward extension D^3, substantially as described.

475,001. METHOD OF ATTACHING HEELS.

FREDERIC F. RAYMOND, 2d, Newton, Mass. Filed July 18, 1889. Serial No. 317,398. (No model.)

Claim.—The art or method of loading and securing a shoe-heel, substantially as set forth, which consists in, assembling or grouping

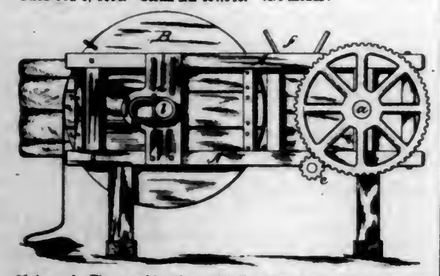
475,001.



several continuous strands of wire in the form desired, firmly holding said strands in such position and simultaneously forcing the ends of said wire through the heel, and finally severing said wires.

475,002. BALING-PRESS. CHARLES B. SELOVER, OWASCO, N. Y.

Filed Oct. 3, 1891. Serial No. 407,613. (No model.)

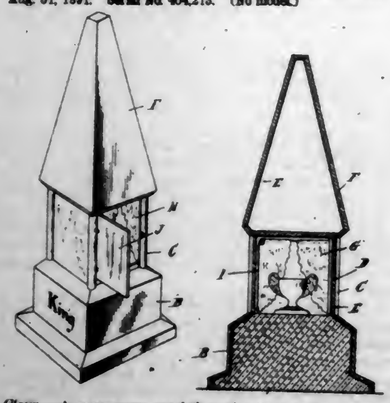


Claim.—1. The combination, with the chamber and the trunnions supporting it, of the elongated bearings upon the main frame and the pins through them.

2. The combination, with a baling-chamber having open ends mounted and adapted to be rotated, of a traveling head within said chamber, a piston adapted to travel within the chamber, and means for imparting a reciprocating movement to said piston, as set forth.

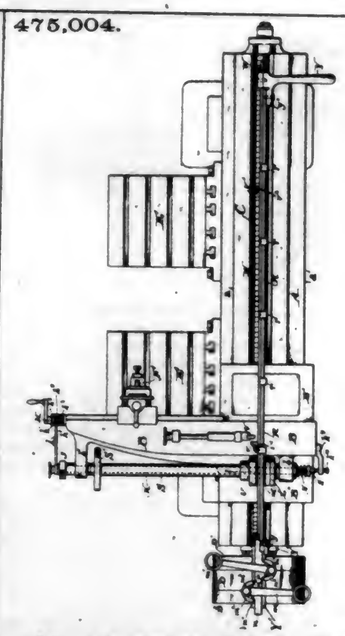
3. The combination, with a baling-chamber having open ends and horizontal grooves in its inner vertical walls, said chamber being mounted and adapted to be rotated, of a traveling head within said chamber provided with tongues adapted to travel in the aforesaid grooves, a piston adapted to travel in said chamber, and means for imparting a reciprocating movement to said piston, as set forth.

475,008. MONUMENT. JOSEPH A. TREAT, Stuart, Iowa. Filed Aug. 31, 1891. Serial No. 404,213. (No model.)



Claim.—A monument consisting of a base having a composite covering and incased in glass, a central chambered portion having a transparent side and a door, forming one side of the chamber, and a cap formed of a composite material sheathed in glass, substantially as described.

475,004. PLANING-MACHINE. EDWARD A. WALKER, Philadelphia, Pa. Filed Apr. 18, 1891. Serial No. 389,422. (No model.)

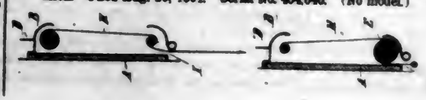


Claim.—1. In a planer, the combination, with the tool-carrying carriage, of the feed-shaft K, a gear-wheel M, journaled thereon, friction-plates fixed radially to shaft K and arranged to clasp wheel M between them with resilient pressure, a stop or stops connected with shaft K, another stop or stops attached to some relatively-fixed part of the machine and arranged to engage the stop or stops aforesaid and arrest the motion of shaft K, but without relaxing the pressure of the plates aforesaid upon wheel M, and a stationary rack R, directly engaged with the gear M, so as to rotate it as the carriage aforesaid moves over the bed of the planer, substantially as and for the purpose described.

2. In a planing-machine having a fixed bed, as A, a movable tool-carrying carriage, as B, and mechanism for feeding the tool and reciprocating the carriage, as described, the combination of a sliding shifter-bar W for controlling said reciprocating mechanism, a fixed rack R, the said shifter-bar and rack being suspended contiguously above said bed, as by brackets Y Y', and adapted to mutually support each other, as by clips *r*, and a pinion, as M, operatively connected with said rack and operative to impart motion to said feed mechanism upon the reciprocation of said carriage, substantially as and for the purposes hereinbefore described.

3. In a planing-machine having a fixed bed, as A, a movable tool-carrying carriage, as B, and mechanism for feeding the tool and reciprocating the carriage, as described, the combination of a slide shifter-bar, as W, provided with rack-work of a length as described, a fixed rack R, the said shifter-bar and fixed rack being above said bed, a pinion M, rotatably journaled upon a main feed-motion drive-shaft K, said pinion being so located thereon as to mesh its teeth with the fixed rack R aforesaid, the said shaft K, a gear U, and hand-wheel S', rigidly fixed together, as by sleeve S, and rotatably mounted upon said shaft K, the said gear U being adapted to mesh with the rack-work upon the shifter-bar W aforesaid, clamps radially fixed to shaft K, and means for applying said clamps as resilient friction-clutches to the gear M aforesaid, a stop device consisting of a member or members fixed to the shaft upon one hand and upon the other to some relatively-fixed part of the machine, the said device being operative to limit said shaft's rotative movement to a limited degree, and means, as cross-head J, link I, rock-arm A^3, pawl A^2, and a ratchet *k'*, for transmitting the rocking movement of the shaft K to said feed mechanism of the planer, substantially as and for the purpose specified.

475,005. EXHIBITING DEVICE. WILLIAM H. WINFIELD, Detroit, Mich. Filed Aug. 29, 1891. Serial No. 404,040. (No model.)



Claim.—1. In an exhibiting device for advertising, &c., the combination, with a supporting-frame having an apertured casing, of a spring-roller at the lower edge of said frame, two belts concentrically wound upon said roller, one belt extending below and the other above said roller, and a spring-roller at the upper edge of the frame, to which the upper belt is attached, to take up the slack in the said upper belt, substantially as described.

2. In an exhibiting device, the combination, with a casing having a display opening therein, of a spring-roller above the opening, a spring-roller below the opening, the tension of the spring in one roller being greater than that of the other roller, a sheet connecting the rollers, and a sheet on one roller extending to the outside of the casing, substantially as described.

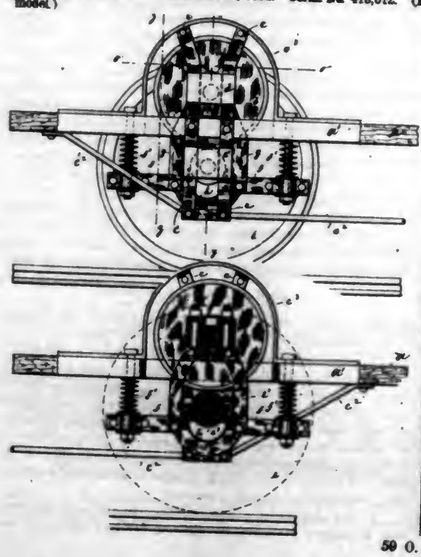
475,006. PIPE-HANGER. GEORGE C. BLACKMORE, Newark, N. J., assignor to the Blackmore Heating Company, same place. Filed June 27, 1891. Serial No. 397,688. (No model.)



Claim.—1. In a pipe-hanger, the combination, with a head having pins projected at opposite sides, of the jointed stirrup-links fitted to hang upon the pins, and the sleeve *h*, fitted to pass over the collar *g* upon the head, and having the downwardly-projecting flange *i*, adapted to fit over the ends of the links, the collar and head being provided with interlocking parts to retain the collar in its operative position, as and for the purpose set forth.

2. In a pipe-hanger, the combination, with a head having pins projected at opposite sides, and a collar flattened, as described, of the jointed stirrup-links fitted to hang upon the pins, and the sleeve *h*, fitted to pass over the collar *g*, and provided with one or more internal seats *l* and having the downwardly-projecting flange *i* to fit over the ends of the links, as and for the purpose set forth.

475,007. ANTI-FRICTION BEARING FOR CARS. CARL F. BURCHHER, New York, N. Y. Filed Jan. 14, 1892. Serial No. 418,012. (No model.)



Claim.—1. The combination of guide-bars *c* with a friction-disk *b* and car-wheel *c*, having boxes *d d'* engaged by such bars, spring-bolts *f'*, depending from the car-body, a cross-arm *f*, connected therewith, and upwardly-extending bars *g*, connected to the cross-arm and supporting the box *d*, substantially as specified.

2. The combination of a vertically-movable car-body with guide-bars *c*, projecting above and below the car-bottom, guards c^4, that connect the upper ends of such bars, friction-disk *b* and car-wheel *c*, having boxes *d d'* engaged by the bars and with spring-bolts *f'*, depending from the car-body, and a cross-arm connected therewith and supporting the box *d*, substantially as specified.

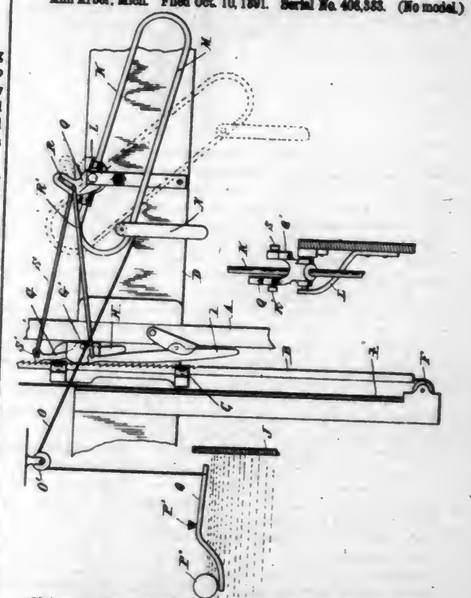
3. The combination of friction-disk *b* with a collar c^4, engaged thereby and consisting of rubber packing *i* and tube c^4, having slotted flange c^4, and with wheel *c* bolted to said flange, substantially as specified.

475,008. CARTRIDGE. WILLIAM C. BUSH, Wilmington, Del. Filed Dec. 26, 1891. Serial No. 416,127. (No model.)



Claim.—A cartridge having a shell consisting of a main and a breech section, the latter being provided with a flanged rim, a block in said breech-section having a conical chamber in one end, a threaded periphery, and a flange on one end within the flange of the shell, and a primer-plug secured in said block, said parts being combined substantially as described.

475,009. ATTACHMENT FOR WINDMILLS. ALBERT M. CLARK, Ann Arbor, Mich. Filed Oct. 10, 1891. Serial No. 408,383. (No model.)



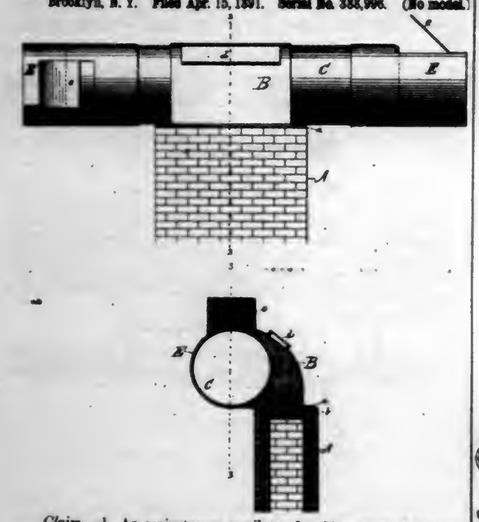
Claim.—1. In a windmill-regulator, the combination of the throwing-out cord, a movable ratchet-bar connected thereto, the pump-rod, a pawl on the pump-rod and a pawl pivoted to a fixed part of the frame, both pawls adapted to engage with said ratchet-bar, a pivoted frame having connections with both of said pawls, an inclined rail on said frame, and a weight movable thereon, controlled by the float or similar device, substantially as described.

2. In a windmill-regulator, the combination, with the pump-rod, of the ratchet-bar beside the rod, a pawl on the pump-rod adapted to engage the ratchet-bar, a pawl pivoted to a fixed portion of the frame and adapted to engage said bar, a pivoted frame, rods connecting both pawls with said frame, slotted bearings for the connecting-rods, an inclined rail on the frame, a weight movable on said rail, and a float or similar device for moving said weight to rock the frame, substantially as described.

3. In a windmill-regulator, the combination, with the pump-rod

and throwing-out cord, of a ratchet-bar on the throwing-out cord, a stationary pawl on the mill-frame engaging with the ratchet-bar, a pawl on the pump-rod engaging with the ratchet-bar, a link-shaped frame K, a rail M, formed at the lower end thereof, a bracket on the mill-frame L, upon which said frame is pivoted, the arms Q and Q' on the frame K, the rods S and R', connecting the arms Q' and Q with the stationary and movable pawls, respectively, a weight N, sliding on the rail M, a tank having a float therein, and a suitable connection between the weight and a float in the tank, substantially as described.

475,010. ASPIRATOR OR VENTILATOR. SALVATORE COSTA, Brooklyn, N. Y. Filed Apr. 15, 1891. Serial No. 388,906. (No model.)



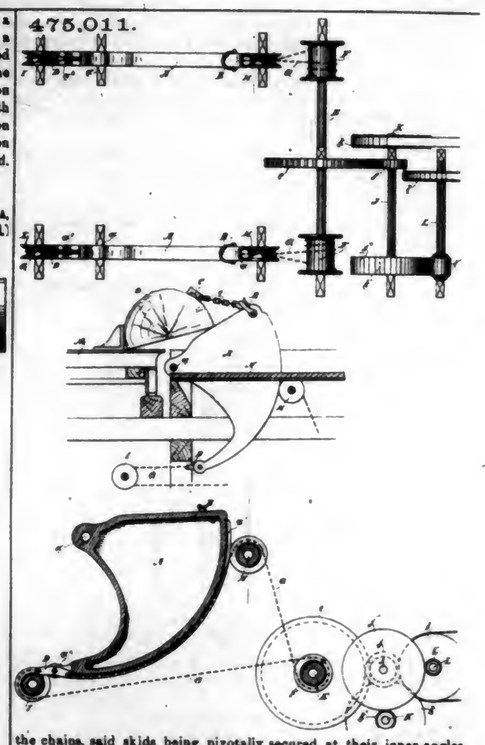
Claim.—1. An aspirator or ventilator for chimneys or flues, consisting of a hood adapted to be connected to the top of the chimney or flue and curved or offset to one side thereof and a horizontal tube open at both ends and having a central opening in communication with said offset hood, said tube being at right angles to said hood and of such length that its open ends will be sufficiently distant from its central communication to prevent the wind from blowing directly through either end and thence down the flue, substantially as described.

2. An aspirator or ventilator for chimneys or flues, consisting of a hood flanged at its lower end to fit and be secured to the top of the chimney or flue and curved or offset to one side at its upper end and a horizontal tube connected at right angles so as to be at one side of such hood, with an opening between them situated above the center of such tube, substantially as and for the purpose specified.

3. In an aspirator or ventilator, the combination, with the curved or offset hood and the main horizontal open-ended tube connected thereto, as described, of the deflecting devices consisting of open tubes E, rotatively adjustable upon the ends of said main tube and having side openings and projecting pieces *c*, substantially as described.

4. An aspirator or ventilator consisting of the hood B, provided with the flanges *a* and *b* and curved at its upper end, as shown, the tube C, attached to the upper end of the hood, so as to be supported at one side of the hood, the opening from the hood into the tube at upper side of the tube, the tube C, projecting at each end beyond the said opening for a distance about one-third greater than the diameter of the tube, and the deflectors E E, rotatively adjustable around the tube C, substantially as shown and described.

475,011. SKID FOR LOADING AND HANDLING LOGS. DAVID EVANS, EDWIN H. PERCY, and BETHUNE PERRY, Eureka, Cal. Filed Oct. 30, 1891. Serial No. 410,398. (No model.)



Claim.—1. In a machine for the general handling, loading, or turning of logs, the pivotally-secured sector-shaped skids, a winding mechanism, and an endless chain therefrom passing along the curved face of the skid and connected with the lower corner of the same, whereby said skids are turned about their pivotal centers in either direction of the winding mechanism, substantially as herein described.

2. In a machine for the general handling, loading, or turning of logs, the sector-shaped skids and the guide-pulleys, in combination with a winding mechanism including endless chains passing over said pulleys and along the curved faces of the skids and winding-drums for the chains, said skids being pivotally secured at their inner angles, whereby they may be turned about their pivotal centers by the movement of the chains in either direction, substantially as herein described.

3. In a machine for the general handling, loading, or turning of logs, a winding mechanism including endless chains connected with a winding-drum and sector-shaped skids pivotally secured at their inner angles, whereby the skids turn about their pivotal centers in either direction of the chains, said skids having their curved faces provided with guiding-grooves for the chains, substantially as herein described.

4. In a machine for the general handling, loading, or turning of logs, the sector-shaped skids pivotally secured at their inner angles, having clevises secured to their lower angles, a winding-drum, and endless chains therefrom connected with opposite ends of the clevises, and suitable guides for the chains, substantially as herein described.

5. In a machine for the general handling, loading, or turning of logs, the combination of the sector-shaped skids pivoted at their inner angles, the chains connected with the lower corner of said skids, the guide-pulleys for directing said chains along the faces of the skids, and the winding-drums about which said chains pass and whereby they are operated in either direction, substantially as herein described.

6. In a machine for the general handling, loading, or turning of logs, the combination of the sector-shaped skids pivoted at their inner angles, the balls secured to the upper corners of said skids for receiving the engaging devices for the logs, the chains connected with the lower corner of said skids, the guide-pulleys for directing the chains along the faces of said skids, the winding-drums about which said chains pass, whereby they are operated in either direction, and mechanism for operating said drums, substantially as herein described.

475,012. GAS-BURNER. GEORGE I. EWERS, San Francisco, Cal. Filed Sept. 5, 1891. Serial No. 405,121. (No model.)

Claim.—1. In a gas-burner, the hollow extension or casing having a burner at its upper end, a base to which said casing is secured, having an upwardly-extending standard at one side, said standard having a gas-port opening through its inner side, a two-part pivotally-secured arm suspended from the top of the standard and having its lower member adapted to open and close the gas-port, a spring-retracted pin for forcing the lower member of the arm away from the port to open the same, and a latch by which said member is maintained away from the port, substantially as herein described.

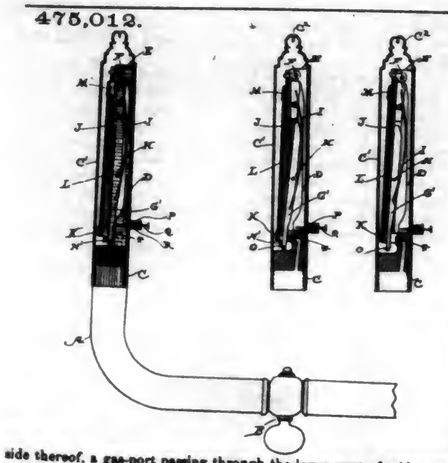
2. In a gas-burner, a hollow casing or extension attached to a base, a standard extending upwardly within said casing and near one side thereof, a gas-port passing through the lower part of said standard to the interior of the casing, a hinged arm G G', having its upper end pivoted to swing in the upper part of the standard and its lower end provided with a valve by which the gas-port is closed, a spring I, uniting the two parts of arm G G', acting to close the valve and yielding to allow the part G' to be pressed backward when the valve is open, a tube L, made of expansible material, having its lower end supported from the standard and its upper end movable, a rod or tube N, of less-expansible material, fixed to the upper end of the tube L, extending downwardly and having a catch at its lower end, and a projection upon the hinged arm G', adapted to engage said catch and retain the valve open, substantially as herein described.

3. In a gas-burner, a hollow casing having a burner-tip at its upper end, a standard extending upwardly within the casing near one side, having a port through its lower part, whereby gas is admitted into the casing and to the burner-tip, an arm G, having its upper end pivoted to swing from the upper part of the standard, and a hinged extension G', pivoted to said arm, having a valve at its lower end which closes the gas-port, and a spring I, connecting the two parts G and G', an expansible tube L, having its lower end fixed and its upper end free to move by expansion, a rod or tube N, of less expansible material, secured to the upper end of the tube L, having a catch at the lower end which projects through the bottom of the tube and support, a projection from the hinge-arm G', adapted to engage said catch and retain the valve open when the parts are cold, said catch being released to allow the arm to spring backward when the parts are expanded by the heat, and a connection between the upper part of the expanding tube L and the pivoted head about which the arm G swings, whereby the latter is turned and the valve at the lower end of the part G is prevented from closing when the catch is released and as long as the parts are in a heated condition, substantially as herein described.

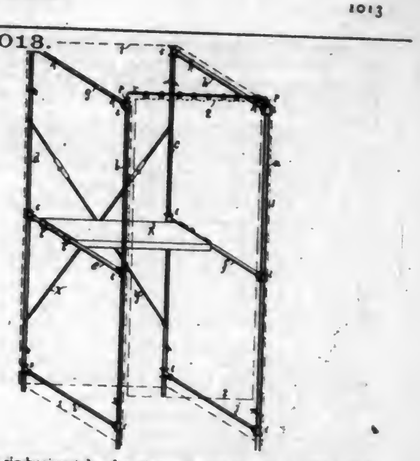
4. In a gas-burner, the exterior casing having a burner at its top, a fixed standard projecting upwardly within the casing, having a gas-passage opening through its side, the stop-lug J, and a two-part arm consisting of an upper member pivotally hung from the top of the standard and a lower member pivotally secured to the upper member, so that it may turn about its pivot in one direction and be arrested by said stop and prevented from turning in the opposite direction beyond a line parallel with the upper member, substantially as herein described.

5. In a gas-burner, the exterior casing connected with the gas-supply, an expansion-tube supported in said casing and composed of vulcanite, and a metal bar inclosed by the vulcanite tube and serving as a stay or reinforce therefor, said metal bar being movable by the expansion and contraction of the encircling vulcanite tube, substantially as herein described.

475,012.



475,013.



together by six horizontal and stationary braces *e*, *f*, *g*, *h*, *i*, and *j*, and by two knuckle-jointed braces *x* and *y*, which cross each other and the back side of the frame-work diagonally, the opposite ends of the same being pivoted to the opposite rear standards, with the enveloping-curtain 1, the rod *r*, and the curtain 2, which is suspended from the rod *r*, all substantially as described, and for the purpose set forth.

2. In a folding booth, the combination of the frame-work consisting of the four standards *a*, *b*, *c*, and *d*, the horizontal connecting-braces *e*, *f*, *g*, *h*, *i*, and *j*, and the knuckle-joint braces *x* and *y*, with a writing-shelf *k*, which is suspended between the braces *c* and *f*, and upon the iron bars *l l*, and enveloping-curtain 1, a curtain-rod *r*, and a curtain 2, as described, and for the purposes set forth.

3. The combination, in a folding booth, of a frame-work consisting of two upright side frames *a j c h* and *b i d g*, respectively, which are connected by two knuckle-joint braces *x* and *y*, which cross the back of the frame-work diagonally, in which position they are fastened by pivots to the standards *c* and *d*, said knuckle-joint braces being so situated that when the joints are sprung open the two side frames may be folded or closed up close together, and a swinging shelf *k*, with an enveloping-curtain 1, a curtain-rod *r*, and a curtain 2, all as and for the purpose specified and set forth.

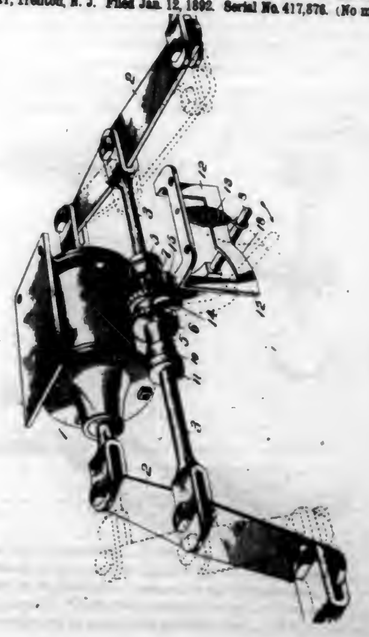
475,018. FOLDING ELECTION-BOOTH. JOHN HANLEY, Terre Haute, Ind. Filed Nov. 2, 1891. Serial No. 410,679. (No model.)



Claim.—1. The combination, in a folding booth, of a frame-work consisting of four strong standards *a*, *b*, *c*, and *d*, which are fastened

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475,014. SLACK-TAKE-UP FOR CAR-BRAKES. HOWARD HINCKLEY, Trenton, N. J. Filed Jan. 12, 1892. Serial No. 417,876. (No model.)



Claim.—1. In a brake system, the combination of a connecting-rod, a turnbuckle connected therewith, a pivoted operating-arm for the turnbuckle, a cam acting on the arm to move it in one direction, and a spring to move the arm in the opposite direction, substantially as described.

2. In a brake system, the combination of a connecting-rod, a turnbuckle connected therewith, and a pivoted operating-arm connected with the turnbuckle, so that it may be operated to turn the latter in either direction at will, substantially as described.

3. In a brake system, the combination of a connecting-rod, a turnbuckle connected therewith, a pivoted operating-arm for the turnbuckle, a cam acting on the arm to move it in one direction, a spring to move it in the opposite direction, and a ratchet or clutch connection between the arm and the turnbuckle, whereby when the arm is in operative position with relation to the cam its action will be to screw the turnbuckle in one direction, but when released from the cam it may be actuated to reverse the turnbuckle, substantially as described.

4. In a brake system, the combination of the two-part rod having reversely-threaded ends, the connecting-sleeve with correspondingly-threaded portions, and a pivoted arm adapted to operate the sleeve in either direction, substantially as described.

5. In a brake system, the combination of the two-part rod having reversely-threaded ends, the connecting-sleeve with correspondingly-threaded portions, the reversely-set ratchets fixed on the sleeve, and the pivoted operating-arm carrying oppositely-disposed pawls, substantially as described.

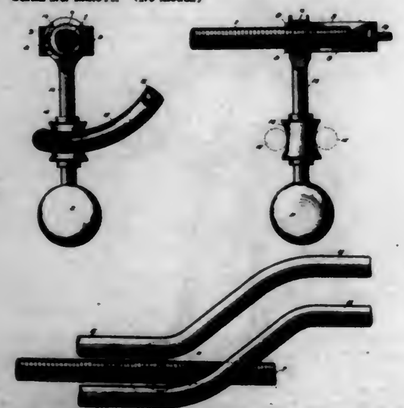
6. In a brake system, the combination of the two-part rod having reversely-threaded ends, the connecting-sleeve with correspondingly-threaded portions, the reversely-set ratchets fixed on the sleeve, and the pivoted operating-arm carrying oppositely-disposed pawls, the pawls being weighted, so that only one ratchet is engaged at a time, substantially as described.

7. In a brake system, the combination of the two-part rod having reversely-threaded ends, the connecting-sleeve with correspondingly-threaded portions, the reversely-set ratchets fixed on the sleeve, the pivoted operating-arm carrying oppositely-disposed pawls, and a cam acting on the arm, the pawls being weighted, as described, so that when the arm is in operative position with relation to the cam the ratchet acting to screw up the sleeve shall be engaged, the reversing-pawl being meanwhile normally out of engagement, as and for the purpose set forth.

8. The combination of the two-part rod having reversely-threaded ends, the connecting-sleeve, with correspondingly-threaded portions, and reversely-set ratchets, the pivoted operating-arm carrying oppositely-disposed pawls, the cam, and the spring for releasably holding the arm up to the cam, substantially as described.

9. The combination of the connecting-sleeve having reversely-threaded ends, the screw-threaded rods working therein, the protecting-collars on the ends of the sleeve, the centrally-perforated caps on the collars, and the washers, the latter being held in place by the collars or caps and fitting the rods, substantially as described.

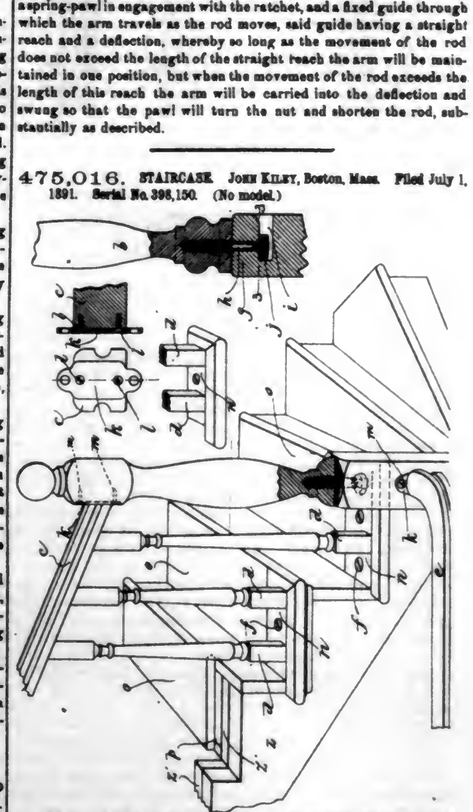
475,015. AUTOMATIC CAR-BRAKE ATTACHMENT. HOWARD HINCKLEY, Trenton, N. J. Filed Oct. 17, 1889. Renewed Feb. 23, 1892. Serial No. 422,511. (No model.)



Claim.—1. In a car-brake system, the combination of the actuating mechanism, a rod or link through which power is communicated from said mechanism to the brake-shoes, a turnbuckle connected with said rod, an arm or lever pivoted to turn on the rod and connected with the turnbuckle, and a fixed guide acting on the arm to cause the latter to oscillate on the rod transversely of its length, so as to turn the buckle and shorten the rod as the latter moves, substantially as described.

2. In a car-brake system, the combination of the actuating mechanism, a rod or link through which power is communicated from said mechanism to the brake-shoe, said rod having a threaded end, a turnbuckle connected with the rod and comprising a screw-nut having a ratcheted periphery, an arm or lever swinging on the rod and carrying a spring-pawl in engagement with the ratchet, and a fixed guide through which the arm travels as the rod moves, said guide having a straight reach and a deflection, whereby so long as the movement of the rod does not exceed the length of the straight reach the arm will be maintained in one position, but when the movement of the rod exceeds the length of this reach the arm will be carried into the deflection and swung so that the pawl will turn the nut and shorten the rod, substantially as described.

475,016. STAIRCASE. JOHN KILEY, Boston, Mass. Filed July 1, 1891. Serial No. 398,150. (No model.)



Claim.—1. The combination, with a stair-tread provided at one end with a removable section *n*, of a removable stair-rail and balusters secured to the rail and removable section of the tread, as set forth.

2. The combination, with a stair-tread provided at one end with a removable section *n*, of a removable newel-post, and removable stair-rail connected with the newel-post, and balusters secured to the rail and removable section of the tread, as set forth.

3. The combination of a removable stair-rail and balusters and newel-post with which the stair-rail is connected, its base *g*, provided with a mortise *i*, the bolt *h*, connected with the foot of the post and extending into the base and mortise, and a nut *j* on the lower screw-threaded end of the bolt, as set forth.

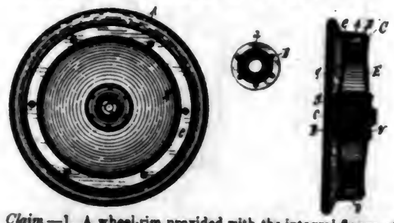
4. The combination of a stair-tread provided at one end with a removable section *n*, a removable stair-rail, balusters secured to the rail and removable section of the tread, a newel-post with which the rail is connected, its base *g*, provided with a mortise *i*, the bolt *h*, connected with the foot of the post and extending into the said base and mortise, and a nut *j* on the lower screw-threaded end of said bolt, as set forth.

475,017. SAFETY WATCH-POCKET. HENRY A. LIEBEL, Haywards, Cal. Filed Sept. 26, 1891. Serial No. 406,929. (No model.)



Claim.—An improved safety-pocket for watches, consisting of an approximately U-shaped open-mouthed casing of flexible material, a spring-plate therein having an approximately U shape to fill the interior of the casing and having its upper ends bent outwardly to facilitate the entrance of the watch, and a spring-hook having a vertical extension passing down along the inner wall of one side of the casing and secured to the base of the spring-plate and having its hook end extending over the upper edge of the casing, substantially as herein described.

475,018. CAR-WHEEL. GEORGE W. MILLER, Kalamazoo, Mich. Filed Feb. 12, 1892. Serial No. 421,275. (No model.)

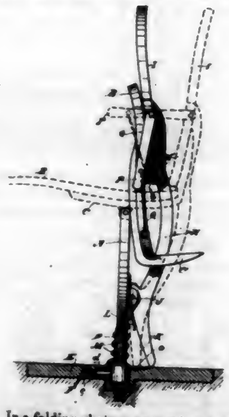


Claim.—1. A wheel-rim provided with the integral flange at the outside, in combination with the two separated disks, the ring which separates said disks, and a suitable hub, substantially as set forth.

2. The combination of the rim, the separated disks, the cup-shaped casting between the disks at the center, the cap or washer having the integral tubular projection passing through the disks and central casting, the cap or washer tightly fitting on the end of said tubular extension, and the binding-bolts, substantially as set forth.

3. The combination of the rim, the separated disks, the cup-shaped casting between the disks at the center, said cup-shaped casting being provided with the open grooves in its interior periphery, the cap or washer having the tubular projection passing through the disks and central casting, the cap or washer tightly fitting on the end of said tubular extension, and the binding-bolts passing through the open grooves in said cup-like casting, substantially as set forth.

475,019. OPERA-CHAIR. JOHN T. MCKEAN, Santa Cruz, Cal. Filed Apr. 13, 1891. Serial No. 388,760. (No model.)



Claim.—1. In a folding chair, a seat and seat-support, a single centrally-located standard, to the top of which the seat-support is hinged, a vertical extension of the lower end of the standard and a socket in which it turns, a spring connected with the socket-piece and the standard, whereby the latter is turned in one direction automatically when free, a seat-back having a support hinged to the standard and an extension below the hinge, and a slot in the socket-piece which is engaged by the extension to lock the chair when it is opened in line with the slot, substantially as herein described.

2. In a folding chair, a single standard, a socket in which the lower end of the standard turns about a vertical axis, a seat hinged to the top of the standard and capable of turning from a horizontal to a vertical position, a back having a support hinged to the standard below the seat, said support being engaged by the rear edge of the seat when the latter is turned to a horizontal position, whereby the support and back are forced backward, and a spring L, by which the back and its support are forced forward when the seat is turned to a vertical position, substantially as herein described.

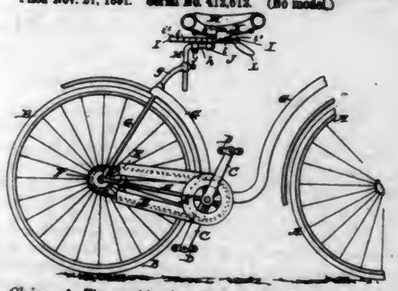
3. In a folding chair, a central standard having a seat hinged to its upper end, a socket in which the lower end of the standard turns about a vertical axis, stops by which it is allowed one-quarter of a revolution, and a spring M, by which it is automatically turned to one of its positions, a seat-back with a support hinged to the standard below the seat, said support being forced back by contact of the rear edge of the seat when the latter is turned down, a spring L, by which it is thrown forward when the seat is turned up, an extension of the back-support below its hinge, which acts as a stop against the socket-piece to prevent the seat being turned down until the standard has been rotated so as to present the seat to the front, and a slot in the socket-piece which admits the extension and allows the seat to be opened when presented toward the front and which locks the standard to prevent the spring M from turning it about while the seat is turned down, substantially as herein described.

4. In a folding chair, a central standard rotatable in a socket-piece about a vertical axis, a seat hinged to the top of the standard, a spring M, by which the standard is turned one-quarter of a revolution, whereby when the seat is turned up it is retained in a position at right angles with that occupied when turned down, a seat-back with a support hinged to the standard below the seat and engaged by the rear of the seat and forced back about its hinge when the seat is turned down, an extension of the back-support below the hinge which acts as a stop against the socket-piece to prevent the seat being turned down until the standard has been turned a quarter of a revolution, and a slot in the socket-piece which admits the extension when the standard has been turned to its second position and which serves as a lock to maintain the standard in this position until the seat has been turned up, substantially as herein described.

5. In a folding chair, a central standard rotatable in a socket-piece about a vertical axis, a back with a support hinged to the standard to swing forward and back about its hinges, a seat-support hinged to the top of the standard and having a seat secured to it which engages the back-support and forces it backward when the seat is turned down, and upturned ends at the rear of the seat-support against which the lower part of the back rests when opened, substantially as herein described.

6. In a folding chair, a central rotatable standard, a seat hinged to the top of the standard and capable of turning to a horizontal or a vertical position about its hinges, a back with a curved support hinged to the standard below the seat so that the rear edge of the seat follows the curvature of the support and forces the back and its support backward when the seat is turned down, a spring L, acting to force the back and its support into an approximately vertical position parallel with the seat when the latter is turned up, an arm hinged to the side of the back, and a link connecting the arm with the seat behind its hinge-line, whereby the arm and the top of the link are drawn backward with the back and the bottom of the link is carried upward and forward with relation thereto when the seat is turned down and both are folded parallel with the back and seat when the latter is turned up, substantially as herein described.

475,020. ADJUSTABLE SADDLE-BAR FOR BICYCLES. GEORGE E. PERRY, WILLIAM H. PERRY, and CURTIS K. GEORGE, Concord, N. H. Filed Nov. 21, 1891. Serial No. 412,612. (No model.)

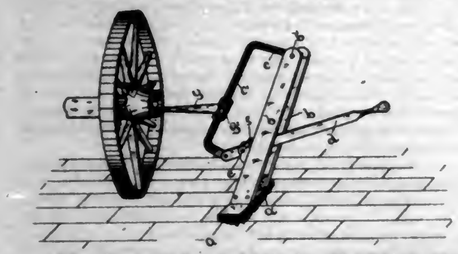


Claim.—1. The combination, with a horizontal portion of a saddle-bar the sides of which are inclined and one of them provided with perforations, of a recessed saddle-clamp formed from a single piece of material thereon, the walls of the recess being inclined to correspond with the sides of the bar, and a lever pivotally secured to the clamp, one end of which projects laterally therefrom beyond the outline of the saddle and the other end provided with a pin for engaging with the holes in the side of the saddle-bar, substantially as set forth.

2. The combination, with a saddle-bar angular in cross section and the lower side of which is provided with perforated ears, of a sad-

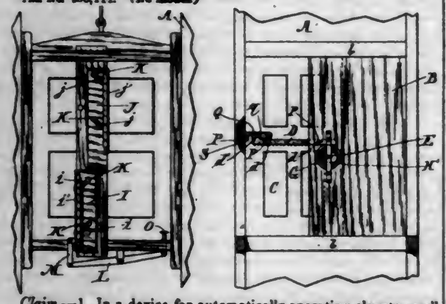
die-clamp formed from a single piece of material, the lower side of which is provided with an angular recess to fit upon the bar, and the upper portion provided with an opening for the reception of the saddle, substantially as set forth.

475,021. WAGON-JACK. LEVI B. REAMS, Cassopolis, Mich. Filed Mar. 2, 1892. Serial No. 423,537. (No model.)



Claim.—In a wagon-jack, in combination with suitable uprights, a bar hinged therein having a laterally-projecting arm *g* with cupped end and an operating-handle connected with the free end of said bar, as set forth, and blocks *f*, located and arranged to slide upon the uprights in which said handle is fulcrumed, as and for the purpose specified.

475,022. DEVICE FOR OPERATING DOORS TO ELEVATOR-WELLS. JOHN P. RUSSEL, Milwaukee, Wis. Filed Oct. 8, 1891. Serial No. 408,111. (No model.)



Claim.—1. In a device for automatically operating elevator-well doors, the combination of a movable plate provided with an angular bearing-surface, means for throwing said plate laterally, a horizontally-moving elevator-well door, a rack-bar secured thereto, and a rotatable shaft carrying upon its outer end a gear-wheel meshing with the rack and upon its inner end an anti-frictional roller adapted to be engaged in the ascent or descent of the elevator-cage by the laterally-moving plate as the same is moved inwardly, substantially as set forth.

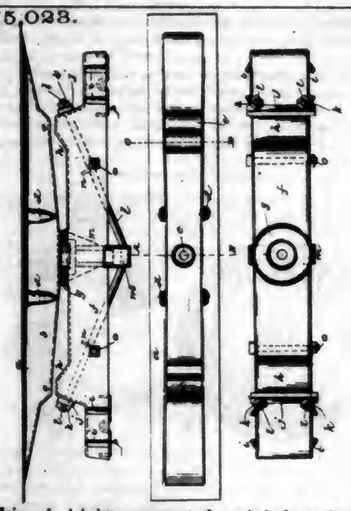
2. The combination of a horizontally-moving elevator-well door, a bar secured thereto, a latch having its inner end pivoted to the door and its outer end hooked to engage a catch, and mechanism engaging the bar so as to first throw it into contact with the latch and release the same and then subsequently move the door horizontally in its slides or ways, substantially as set forth.

3. The combination of a horizontally-moving elevator-well door, a bar secured thereto having the upper edge of its outer end beveled and also provided with elongated slots, guide-pins passing through said slots, a latch having its inner end pivoted to the door, its outer end hooked to engage a catch and its under edge beveled to register with the beveled surface of the bar, and mechanism engaging the bar so as to give it a horizontal movement, substantially as set forth.

4. The combination of a horizontally-moving elevator-well door, a rack-bar secured thereto having the upper edge of its outer end beveled and also provided with elongated slots, guide-pins passing through said slots, a latch having its inner end pivoted to the door, its outer end hooked to engage the catch and its under edge beveled to register with the beveled surface of the bar, a rotatable shaft carrying upon its outer end a gear-wheel engaging the rack-bar and upon its inner end an anti-frictional roller, movable plates adapted to be thrown into engagement with said roller, and means for operating the plates, substantially as set forth.

475,028. CAR-BOLSTER. CHARLES T. SCHOEN, Philadelphia, Pa. Filed Mar. 18, 1890. Serial No. 344,421. (No model.)

475,028.



Claim.—1. A bolster composed of a main body portion and side bearings and a center bearing projecting from the plane of the top and all constructed integrally and of pressed steel or equivalent material, substantially as described.

2. A body-bolster having a base-flange and a trough-like elevation therefrom constructed in one piece and of pressed steel or equivalent material, with the side bearings and center bearings which project from the plane of the top and are integral therewith, substantially as described.

3. A body-bolster having a base-flange and a trough-like elevation therefrom constructed in one piece and of pressed steel or equivalent material and integrally with the side bearings and center bearing and with vertical strengthening or stiffening ribs, substantially as described.

4. A truck-bolster having a center bearing and side bearings thereon projecting from the plane of the top and all struck up in a single piece from wrought metal, substantially as described.

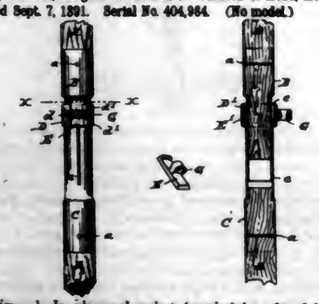
5. A truck-bolster comprising the body, side bearing and center bearings all in one piece, a saddle, and truss-rods co-operating with the saddle and with the ends of the bolster from which the side bearings are struck, substantially as described.

6. A hollow truck-bolster constructed substantially as described, combined with a saddle, truss-rods, and distance-pieces, substantially as described.

7. A truck-bolster formed of pressed steel or equivalent material and integral with guides for the bolster guide-bars, substantially as described.

8. A bolster truss-rods saddle struck up from wrought metal, preferably plate steel, and having stirrups at its ends to receive the truss-rods and to engage the bolster, substantially as described.

475,024. JOINT-CLAMP FOR FISHING-RODS. JAMES B. THURSTON, Concord, assignor of one-half to Winfield S. Head, Hooksett, N. H. Filed Sept. 7, 1891. Serial No. 404,984. (No model.)



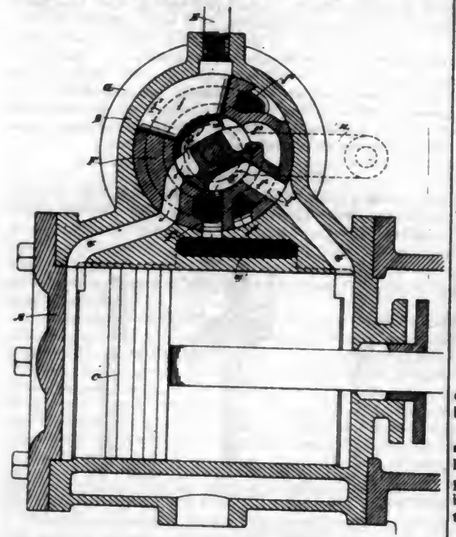
Claim.—1. In plug-and-socket ferrule-joints for fishing-rods, a socket-ferrule provided with a slot, a tapering slide, and a tapering way provided upon said socket-ferrule for mounting said slide, substantially for the purpose set forth.

2. In plug-and-socket ferrules, a slotted socket-ferrule and a tapered sliding clamp capable of securing the outer to the inner ferrule.

475,025. PURIFYING AND MANUFACTURING SACCHARINE SOLUTIONS. MORIZ WEINRICH, St. Louis, Mo. Filed Nov. 20, 1890. Serial No. 372,066. (No specimens.)

Claim.—The described process of filtering and purifying saccharine solutions and at the same time increasing their density, consisting in mixing the hot solution with meal of sugar-containing cane or beets and passing the mixture through filtering-presses, as and for the purposes set forth.

475,026. REVERSING-GEAR. JOHN F. M. WOODS, Oakland, Cal. Filed Nov. 16, 1891. Serial No. 412,063. (No model.)



Claim.—1. In an engine, and in combination with its cylinder having its end inlet-ports and exhaust-port and an oscillatory valve, an oscillatory cylindrical valve-seat in which the valve is mounted, having the main port, the through ports, and the outwardly and inwardly opening ports and connecting-passages, said ports adapted by the movement of said seat to be brought alternately into such relation with the valve-ports and the cylinder-ports as to reverse the engine, substantially as herein described.

2. In an engine, the oscillatory valve-seat for reversing the engine, consisting of the hollow shell or cylinder having the main port *f*, the through ports f', f^3, and f^5, the outwardly-opening ports f^4 and f^6, the inwardly-opening port f^8, the passages f^9, connecting the port f^4 with the port f^8, and the passages f^7, connecting the ports f^4 and f^6, substantially as herein described.

3. In a steam-engine, and in combination with its cylinder having a valve-chest and inlet and exhaust ports and an oscillatory valve, an oscillatory valve-seat fitted in the valve-chest and carrying the valve, said seat consisting of a hollow shell or cylinder provided with the main port *f*, the through ports f', f^3, and f^5, the outwardly-opening ports f^6 and f^6, the inwardly-opening port f^8, the passages f^9, connecting the port f^8 with the port f^4, and the passages f^7, connecting the ports f^4 and f^6, substantially as herein described.

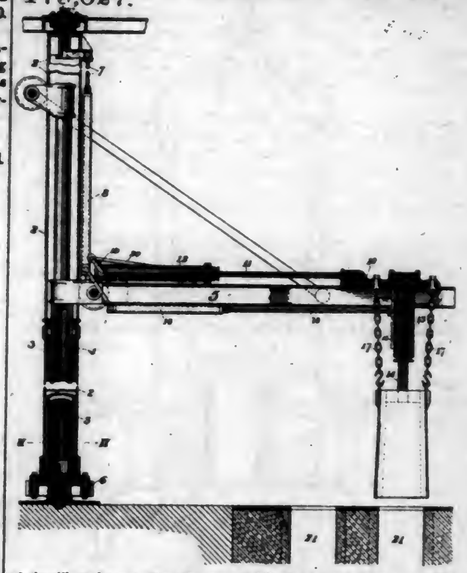
4. In a steam-engine, and in combination with the valve-chest and oscillatory valve therein, the oscillatory cylindrical valve-seat in said chest having suitable ports adapted by its movement to effect the reversal of the engine, as described, and a hole f^{10} in one end to obtain a pressure in said seat to hold it in place and to relieve it of said pressure, substantially as herein described.

475,027. APPARATUS FOR EXTRACTING INGOTS. HENRY AIKEN, Pittsburg, Pa. Filed Oct. 1, 1890. Serial No. 366,717. (No model.)

Claim.—1. In an apparatus for removing ingots from their molds, the combination, with an overhanging support, of means for firmly suspending the mold thereto with its included ingot and a power ejector device carried on the support for applying force positively to the ingot, and thereby expelling the same from the mold, substantially as set forth.

2. In combination with a vertically-movable jib, a hydraulic cylinder, piston, and ejector carried thereon, and independent appliances for lifting and sustaining the mold and its contained ingot by means

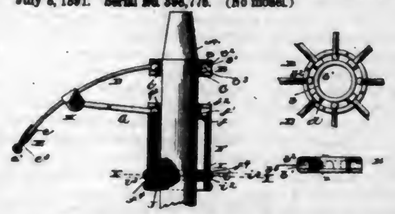
475,027.



of the jib and supporting the same while the ingot is being expelled by the ejector, as set forth.

3. In combination with the vertically and laterally movable jib of a crane, a carriage movable longitudinally thereon carrying a hydraulic cylinder, piston, and ejector, and also provided with means for suspending and carrying the mold and included ingot and positively holding the same while power is applied through the ejector for expelling the ingot, substantially as set forth.

475,028. UMBRELLA. BENJAMIN F. AULD, Phoenixville, Pa., Emily M. Auld administratrix of said Benjamin F. Auld, deceased. Filed July 8, 1891. Serial No. 398,776. (No model.)



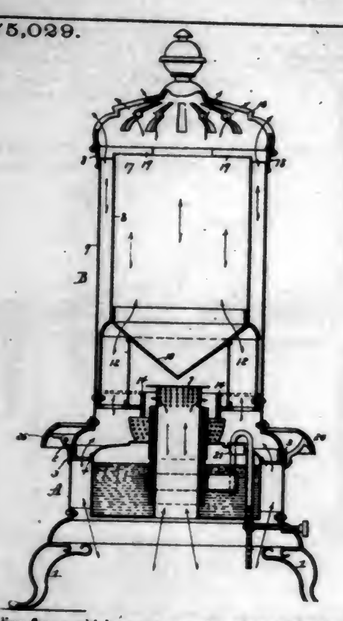
Claim.—1. In an umbrella or parasol, the combination, with the stick provided with longitudinally-arranged lugs or projections, of a collar carried by the stick and having an annular groove, slots radiating therefrom, and a radially-slotted cap, ribs provided with heads bearing in said collar, a runner consisting of a cylinder provided with horizontal slots, and an adjustable ring provided with interior slots adapted to register with the lugs or projections, said ring having arms projecting through the horizontal slots in the cylinder, and stretchers connected with the ribs and provided with heads bearing in recesses therefor in the runner, substantially as set forth.

2. In an umbrella or parasol, the combination, with the stick provided with lugs, of the ribs and stretchers, a runner consisting of a cylinder provided with horizontal slots, and a rotating ring provided with interior slots adapted to register with said lugs and having arms projecting through said horizontal slots, substantially as shown and described.

475,029. STOVE OR HEATER. AUGUSTUS C. BARLER, Fremont, Nebr., assignor to the Huette-Barler Manufacturing Company, Chicago, Ill. Filed Apr. 8, 1891. Serial No. 388,068. (No model.)

Claim.—1. The combination, with concentric drums, the inner one having a flaring bottom, of a skeleton top located at the upper end of the drums, having a portion fitted between the drums and adapted to hold them apart, said top having inwardly-extending projections adapted to form a support for articles to be heated and provided with

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an encircling flange which engages an edge of one of the drums, substantially as set forth.

2. The combination, with a body comprising concentric drums and a base, of an oil-reservoir located in the base and having an air-space formed around it, and air-tubes leading from said air-space into the inner drum, substantially as set forth.

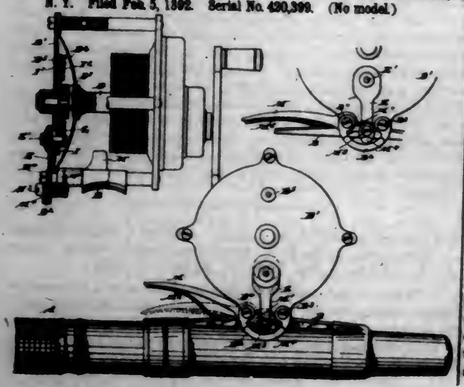
3. The combination, with a body comprising concentric drums and base, of an oil-reservoir located in the base, said reservoir having an air-opening through it and one surrounding it, and air-tubes leading from the surrounding air-space into the body, substantially as set forth.

4. The combination, with a body comprising concentric drums and combustion-chamber, of a base, an oil-reservoir located in the latter and provided with a central air-passage and surrounding air-space, the former in communication with the combustion-chamber and the latter in communication with the inside drum, substantially as set forth.

5. The combination, with a body comprising concentric drums and a combustion-chamber and burner, of a base and an oil-reservoir located in the latter and provided with a central air-passage and a surrounding air-space, the former in communication with the combustion-chamber through the burner and the latter in communication with the inside drum, substantially as set forth.

6. The combination, with a pair of concentric drums, the inner one having a tapering bottom, and air-tubes leading into this bottom, of a burner located immediately below the tapering bottom in position to deflect the flame and cause it to impinge against the air-tubes, substantially as set forth.

475,030. FISHING-REEL. ALPHONSO F. BOARDMAN, Brooklyn, N. Y. Filed Feb. 5, 1892. Serial No. 420,399. (No model.)

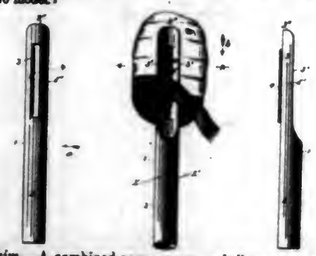


Claim.—1. In a fishing-reel, the sliding plate I, guided as shown on the inner face of one of the side plates B', in combination therewith and with the spring H and the pivot F for the click G, the spring set in the upper and the pivot set in the lower part of said plate and extending through a sufficient aperture in the side plate B', allowing it to be operated from the outside and arranged to serve as herein specified.

2. In a fishing-reel, the sliding plate I, guided as shown on the inner face of one of the side plates B', in combination therewith and with the spring H and pivot F for the click G, the first set in the upper and the latter in the lower part of said plate, and with the lever M M' and spring M^3 and a connection E between these parts, all arranged for joint operation substantially as herein specified.

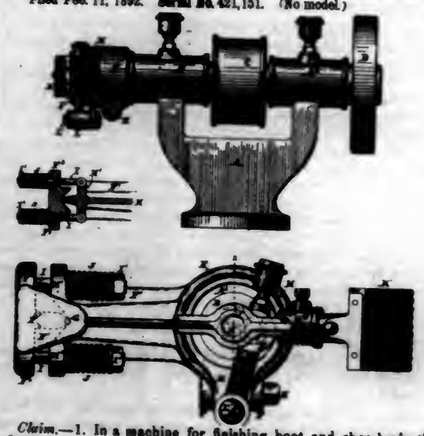
3. In a fishing-reel, the sliding plate I, guided as shown on the inner face of one of the side plates B', in combination therewith and with the spring H and pivot F for the click G, the first set in the upper and the latter in the lower part of said plate, means, as the lever M M', for conveniently controlling said plate at will, and the adjustable check M^4, adapted to hold said click engaged for any period when desired, all arranged to serve as herein specified.

475,031. COMBINED CORER, PARER, AND SLICER. ARTHUR R. BRUSELL, Worcester, Mass. Filed Oct. 17, 1890. Serial No. 368,416. (No model.)



Claim.—A combined corer, parer, and slicer consisting of a single piece of sheet metal, one end of which is cylindrical to form a handle and the other end is semi-cylindrical and is sharpened at the point and is provided with a cutting-blade along its central portion, said blade being severed from the main portion along one edge and at each end and pressed outwardly beyond the plane of the main portion, thereby forming a narrow open slot between its free edge and the main portion, the ends of the blade being free, and the outer face of the blade being ground away or sharpened, substantially as set forth.

475,032. BURNISHING-MACHINE. JAMES H. BUSELL, Boston, and EUGENE H. TAYLOR, Lynn, Mass., assignors, by direct and mesne assignments, to the J. H. Busell Manufacturing Company, Nashua, N. H. Filed Feb. 11, 1892. Serial No. 421,151. (No model.)



Claim.—1. In a machine for finishing boot and shoe heels, the combination of a revolving shaft, an outwardly-extending arm secured to the head, a tool-carrier fulcrumed upon said arm near its outer end, an operating-tool mounted in the outer or free end of said carrier, a crank-pin set in said shaft and connected to said carrier and adapted to produce a vibratory movement of said carrier about its fulcrum, and a pair of springs arranged upon opposite sides of said fulcrum-bearing surfaces and adapted to hold said bearing-surfaces in contact with each other, thereby forming a fulcrum about which said carrier may be vibrated against the tension of said springs, an operating-tool mounted in said socket in said carrier, a crank-pin set in said revolving shaft, and a rod connecting said pin and said carrier, whereby the revolution of said shaft will produce a vibratory movement of said carrier.

3. In a machine for finishing boot and shoe heels, the combination of a revolving shaft, an outwardly-extending arm secured to the head, a tool-carrier provided at one end with a tool-holding socket and connected at its other end to said arm by V-shaped male and female bearing-surfaces, a steel pin reinforcing the bearing-edge of the male bearing-surface, a pair of springs arranged upon opposite sides of said fulcrum-bearing surfaces and adapted to hold said bearing-surfaces in contact with each other, thereby forming a fulcrum about which said carrier may be vibrated against the tension of said springs, an operating-tool mounted in said socket in said carrier, a crank-pin set in said revolving shaft, and a rod or link connecting said pin and said carrier, whereby the revolution of said shaft will produce a vibratory movement of said carrier.

4. In a machine for finishing boot and shoe heels, the combination of a revolving shaft, an outwardly-extending arm secured to the head, a tool-carrier provided at one end with a suitable tool-holding socket provided with an opening opposite the end of said shaft and connected at its other end to said arm by V-shaped male and female bearing-surfaces, a pair of springs arranged upon opposite sides of said fulcrum-bearing surfaces and adapted to hold said V-shaped bearing-surfaces in contact with each other and to serve as yielding stops or cushions during the vibratory movement of said tool-carrier, a finishing-tool mounted in said socket, a crank-pin set in said revolving shaft and extending through the opening in said tool-carrier, and a rod connecting said pin with said carrier.

5. In a machine for finishing boot and shoe heels, the combination of a revolving shaft mounted in suitably-fixed bearings, a crank-pin set in or carried by said shaft, an outwardly-projecting arm mounted upon and adjustable about one of said bearings, a tool-carrier fulcrumed at one end to the movable end of said arm and provided with a socket at its other end, springs arranged upon opposite sides of said fulcrum and adapted to serve as cushions to relieve the shock of the reversal of the motion, an operating-tool mounted in said socket, and a link connecting said tool-carrier to said crank-pin, whereby the rotation of said shaft will cause a vibratory movement of said carrier-arm and operating-tool vertically, horizontally, or at any desired angle, according to the position to which said carrier-supporting arm is adjusted about the axis of said shaft.

6. In a machine for finishing boot and shoe heels, the combination of a revolving shaft, a crank-pin set therein, an outwardly-extending arm adjustably secured about the bearing for said shaft at any desired angle and provided near its outer end with a V-shaped rib or projection and two inwardly-projecting studs, each having a nut, head, or shoulder at its inner end, a tool-carrier provided with a central opening to permit the free movement of said crank-pin and also provided at one end with a V-shaped bearing-surface and suitable slotted ears surrounding said studs, a spring interposed between the nut or shoulder of each of said studs and one of said ears, an operating-tool secured to the end of said carrier farthest from its pivotal connection, and a rod connecting said crank-pin with said carrier.

475,033. PENHOLDER. HENRY CAMPBELL, Baltimore, Md. Filed Oct. 16, 1891. Serial No. 408,885. (No model.)



Claim.—1. The herein-described folding pen or pencil holder, consisting of the combination of the case, the slide adapted to move therein, and a holder pivoted in said slide, substantially as set forth.

2. The combination of a cylindrical case, a slide within the same, and a holder pivoted in said slide and having cylindrical portions adapted to fit tightly in the forward end of said case, substantially as set forth.

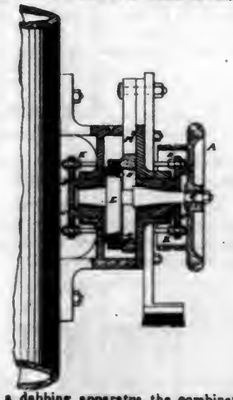
3. The combination of a case open at its rear end, a slide adapted to move therein and to project from said end, and a holder pivotally mounted in the forward end of the slide, substantially as set forth.

4. The combination of the case having an internal projection, a slide adapted to fit therein and having a groove or slot engaging said projection, and a holder pivotally mounted in said slide, substantially as set forth.

5. The combination, with the cylindrical case, of the slide, and the holder pivoted in said slide and provided with the segments *a b*, substantially as set forth.

6. The combination, with a case, of a slide mounted therein and having an opening 7 and an opposite closed side 11, and a holder pivoted in said slide and adapted to pass through said opening, substantially as set forth.

475,034. APPARATUS FOR ACTUATING DABBING-BRUSHES FOR COMBING-MACHINES. JOHN CAMPBELL and ARTHUR J. BRANNA, Bradford, England. Filed Feb. 3, 1892. Serial No. 420,173. (No model.)



Claim.—1. In a dabbing apparatus, the combination, with the conical eccentric and the oscillatory plate adapted to be operated thereby, of a block surrounding said eccentric and secured in said plate, substantially as set forth.

2. In a dabbing apparatus, the combination, with an eccentric having a conical circumference and a block provided with a conical hole adapted to fit the circumference of said eccentric, of shaft G, having conical bearings, and the plate M^2, having projections M and M', between which the edges of the block fit, substantially as set forth.

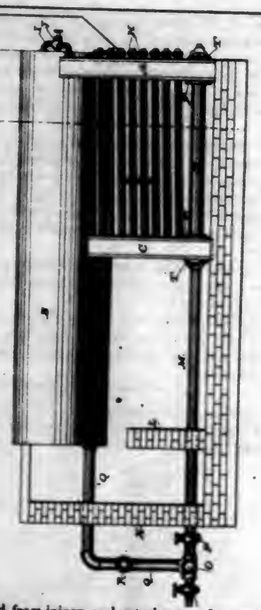
475,035. WATER-FRONT AND FIRE-BOX FOR BOILERS. JOHN T. CHARNEY, Red Bluff, Cal. Filed June 24, 1891. Serial No. 397,385. (No model.)

Claim.—1. A boiler-furnace having the surrounding walls, the independent hollow front having front and rear walls separated from each other to form a water-space, a hollow bridge-wall having separated front and rear walls, the pipes D, connecting the hollow front and bridge-wall, and the lower tubes E, having a larger diameter than the tubes D and having their ends threaded and fitted to collars on the inner walls of the hollow front and bridge-wall, said tubes E being below the level of the grates, substantially as herein described.

2. A boiler-furnace having the surrounding walls and the independent hollow front and hollow bridge-wall, with the side connecting-pipes, as shown, in combination with the feed-pipe and hollow blow-off cock connecting with the bottom of the bridge-wall and the supplemental pipe Q, connecting said pipes with the rear of the boiler and having the cocks, substantially as herein described.

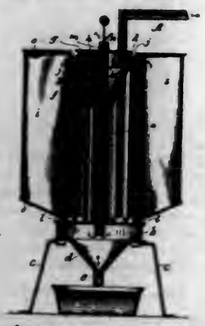
3. A boiler-furnace having the surrounding walls, independent hollow iron front and hollow bridge-wall, with the side connecting-tubes within the outer side walls of the furnace, said tubes having the rear ends thickened and screw-threaded so as to screw into the front wall of the hollow bridge-wall, the front ends of the tubes being expanded within the rear wall of the hollow front, holes made in the front wall of the front in line with said tubes, having thimbles of larger diameter than the tubes screw-threaded and fitting into said holes, whereby the tubes may be removed through the thimbles and the

475,085.



screw-threads protected from injury, and exterior caps fitting over the thimbles and closing the ends thereof, substantially as herein described.

475,086. FRESH-WATER CONDENSER. JOHN P. CHASE, Augusta, Me., assignor of one-half to Eugene W. Whitehouse, same place. Filed Feb. 3, 1892. Serial No. 420,730. (No model.)

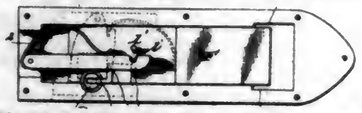


Claim.—1. In a fresh-water condenser, the combination, with a central steam-chamber, a chamber for receiving and discharging the water of condensation, and a central vertical tube connecting said chambers for conveying off the water of condensation from said steam-chamber, of a series of condensing-chambers connected at their upper ends to and extending radially from said steam-chamber and emptying into said discharge-chamber at their lower ends, substantially as described.

2. In a fresh-water condenser, the combination, with a central steam-receiving chamber, a water receiving and discharging chamber, a central vertical tube connecting said chamber for conveying off the water of condensation from said steam-chamber, and a series of condensing-chambers extending radially from said steam-chamber and forming a connecting-passage between said chambers, of an air-pipe passing through said steam-chamber and vertical tube and into said discharging-chamber, substantially as described.

3. The combination, in a fresh-water condenser, of a cylindrical steam-receiving chamber having a funnel-shaped bottom, a discharging-chamber, a tube connecting said chambers, a series of narrow condensing-chambers radiating from and communicating with said steam-chamber and discharge-chamber, said condensing-chambers being formed with inclined bottoms, an air-pipe having a gauze-covered end, extending centrally through the steam-chamber and its connecting-tube and into the discharging-chamber, and a pipe connecting said steam-chamber with a steam-generator, substantially as described.

475,087. BAG-LOCK. FREDERICK P. COSHAM, Watson, Pa., assignor of one-half to Fred R. Windsor, same place. Filed Jan. 30, 1892. Serial No. 419,731. (No model.)



Claim.—1. In a lock, the combination, with a spring-bolt, of a revolving barrel having a slot at one side for the reception of a key, a key provided with a projection adapted to engage the bolt, and a tumbler engaging said barrel and adapted to be engaged and released by said key, substantially as described.

2. In a lock, the combination, with a spring-bolt, of the slotted barrel, and the tumbler adapted to engage the slot of the barrel, substantially as described.

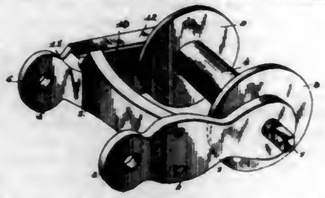
3. In a lock, the combination, with the bolt, of the slotted barrel, the tumbler adapted to engage the barrel and to be disengaged by the direct contact of the key, and the tumbler adapted to engage the bolt, substantially as described.

4. In a lock, the combination, with a spring-bolt, of the slotted barrel, the tumbler having arms extending on opposite sides of the barrel, said arms having projections, one adapted to engage the slot of the barrel and the other adapted to engage a recess therein, substantially as described.

5. In a lock, the combination, with the main frame and side plates, of a bolt, a slotted barrel provided with an annular groove and having a recess in said groove, as set forth, and a tumbler provided with arms having inward projections adapted to travel in said groove when the barrel is rotated, substantially as described.

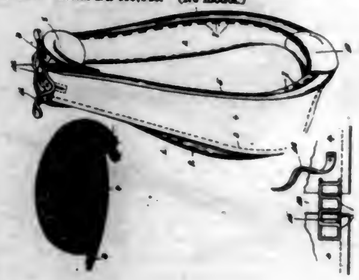
6. In a lock, the combination, with the main frame and side plates, of a bolt, a barrel provided with an annular groove and with a recess therein, a tumbler provided with arms having inward projections adapted to travel in said groove when the barrel is rotated, and a spring adapted to force one of said arms into the key-slot of the barrel and the other arm adapted to engage the recess of the said groove, substantially as described.

475,088. CLOTHES-LINE REEL. GEORGE H. COPELAND, Rich Hill, Mo. Filed Jan. 28, 1892. Serial No. 419,562. (No model.)



Claim.—In a clothes-line reel, the combination of the frame comprising the cross-bar having one of its ends recessed, the side bars secured to the cross-bar and projecting rearwardly therefrom and having their rear ends perforated, one of the sides having at its upper edge a longitudinal flange projecting inward, a drum journaled between the front ends of the side bars and provided at one end with ratchet-teeth, and a gravity-pawl arranged on the side having the flange and having its rear end pivoted in the recess of the cross-bar and its front end arranged to engage the ratchet-teeth, substantially as described.

475,089. HORSE-COLLAR. HERMAN C. STEKOBE, Fort Madison, Iowa, assignor of one-half to John R. Schulte, same place. Filed Dec. 15, 1891. Serial No. 415,146. (No model.)

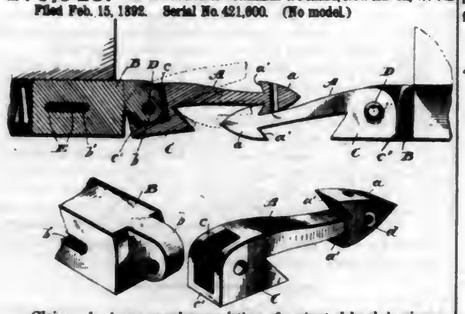


Claim.—1. The herein-described collar, each of the sections of which consists of the front facing, the rear facing secured at its outer edge to the front facing and having its inner edge folded upon itself and overlapping the inner edge of the front facing, the flexible rim consisting of the strip of leather doubled upon itself longitudinally, interposed between the two facings, securing devices passed through the inner and outer facing and rim, the buckles having their frames secured between the upper meeting edges of the front and rear facings of the opposite sections, the pad located under the collar below the buckle-frames, the leather section stitched thereto and provided at each side of its center with a transverse slot forming an intermediate loop, the billet passed through the loop, secured at its center thereto and having its ends projecting through the slots and connected with the buckle, the wire frame secured to the lower end of one of the collar-sections and consisting of the opposite terminals laterally bent in alternately-opposite directions and combining to form transverse openings, the staple secured to the opposite section and engaging the openings, and the locking-strap secured to one of the sections and adapted to be passed through the staple, substantially as specified.

2. The herein-described collar, comprising the opposite sections, each consisting of a front facing, a rear facing secured at its outer edge to the front facing and having its inner edge brought around and overlapping the inner edge of the front facing, the flexible rim interposed between the two, the stiff spacing-strip 6, and securing devices passed through the inner and outer facing strip and rim, substantially as specified.

3. The herein-described collar, comprising the opposite sections, each of which consists of a front facing, rear facings secured at their outer edges to those of each of the front facings and having their inner edges doubled upon themselves and bent around upon the front facings, the longitudinally-doubled strips of leather forming the rims, interposed between the overlapped portions of the front and rear facings, the sections of stiff leather interposed between each front facing and its rim, and the staples driven through each of the two front and rear facings, rims, and sections of stiff leather and having their points clinched, substantially as specified.

475,040. CAR-COUPLING. CHARLES C. FIELDS, New Haven, W. Va. Filed Feb. 15, 1892. Serial No. 421,600. (No model.)



Claim.—1. A car-coupler consisting of a pivoted hook having an arrow-shaped head and having in the rear of said head an abutting surface for a similarly-shaped head conforming in shape thereto, substantially as described.

2. The combination of a coupling-hook having an arrow-shaped head at its front end and an enlargement at its rear end with an inclined front side that forms with the adjacent surface of the hook an impact surface for the similarly-shaped head of another coupling-hook, the recess in such rear end of the hook extending partially into the said enlargement but not through its bottom, thereby forming a shoulder or stop, the draw-bar having a reduced portion to enter such recess, and the pivot-pin connecting the draw-bar and coupling-hook.

475,041. PAPER-PULP SCREEN. EDWARD W. GOODRICH, Appleton, Wis., assignor to the Appleton Machine Company and S. R. Wagg, same place. Filed Nov. 9, 1891. Serial No. 411,304. (No model.)

Claim.—1. In a pulp-screen, a vat provided with one or more rotary disks, each disk being provided with an internal passage receiving at the vertical sides of the disk and discharging at its periphery, in the manner and for the purpose specified.

2. In a pulp-screen, a vat provided with a rotary disk having an internal arc-shaped passage eccentric to receive at the side and discharge at the periphery of the disk, in the manner and for the purpose set forth.

3. In a pulp-screen, a disk provided with an open internal eccentric passage discharging at the periphery, as and for the purpose set forth.

475,041.



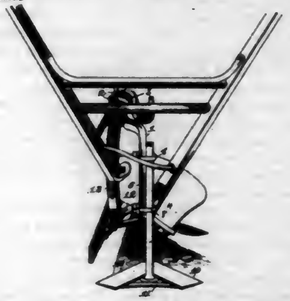
4. In a pulp-screen, a rotary disk located in a vat and provided with an internal passage, in combination with a vertical partition fitting around the disk and forming separate compartments upon opposite sides thereof, said passage being adapted to extend from one compartment to the other, as and for the purpose specified.

5. The combination, with a screen and vat containing compartments, of a rotary disk having its opposite sides revolving in the compartments and provided with a fluid-passage extending through the disk from one compartment to the other, in the manner and for the purpose substantially as described.

6. In a pulp-screen, the combination of a vat, hopper, and screen, a horizontal rotary shaft carrying disks provided with arc-shaped eccentric passages receiving at the sides of the disk and discharging at the periphery, and one or more vertical partitions dividing the vat into compartments, in the manner and for the purpose substantially as set forth.

7. In a pulp-screen, the combination of a vat, a screen and hopper above the vat, a horizontal shaft extending through the vat, a vertical partition, and a series of disks diametrically embraced by the partition, said disks being provided with arc-shaped open passages extending from one compartment to the other, as and for the purpose described.

475,042. SUBSOIL ATTACHMENT. JOHN M. HURLEY and JOHN R. WESTING, Lancaster, Wis. Filed Sept. 4, 1891. Serial No. 404,712. (No model.)

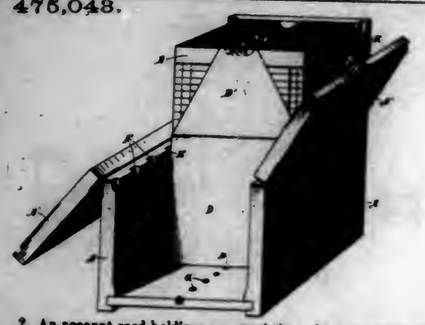


Claim.—In a subsoil attachment, the combination of the subsoil-beam having an approximately horizontal portion curved upward at 2 and laterally at 14 to enable it to be secured to the ordinary construction of plow-beam and having a vertical portion 5, the subsoil-standard 6, clips 7 and 8, adjustably securing the subsoil-standard 6 to the vertical portion 5, a brace supporting the subsoil-beam and the subsoil standard and having its rear end formed into a tie-plate for the lower clip 7 and designed to have its front end secured to the plow, and a horizontally-disposed blade arranged at the lower end of the standard, substantially as described.

475,043. COMBINED CARD LEDGER AND INDEX. JOHN A. LAPSTROTH, San Francisco, Cal. Filed Feb. 20, 1891. Serial No. 382,248. (No model.)

Claim.—1. An account-card-holding case consisting of a box having channels in the bottom and in the central lower portion of the sides, transverse partitions with projecting lugs to fit these channels, and movable continuations of the sides of the box above the side channels, whereby the partitions may be locked in place in either set of channels, substantially as herein described.

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2. An account-card-holding case consisting of a rectangular box having channels in transverse places in the bottom and the lower portion of the sides and movable continuations of the side channels, transverse partitions with a lower rigid section and an upper flexible continuation, and lugs upon the rigid portion to fit the channels in the lower part of the case and hold that part of the partition firm while the upper part is free and movable, substantially as herein described.

3. A combined ledger and index consisting of the account and guide cards and fixed partitions interspersed between them, a box, and means whereby said partitions are locked at any point within the lower part of the box, hinged sides extending upwardly from this point, and a means for closing said sides automatically against the edges of the cards or allowing them to be opened outwardly therefrom, substantially as herein described.

4. A ledger and index consisting of the account and guide cards arranged with relation to each other, as shown, partitions interspersed between the cards having the lower portion adapted to be fixed within the lower portion of a containing box or case, and the upper portion made flexible to correspond with the cards, a containing box or case having the upper portions of the sides hinged, a finger or blade fitted to travel upon the upper edge of the box from end to end, so that it may be introduced between the cards at any point, and a weight or spring whereby the sides may be automatically closed, so as to hold the finger in position, substantially as herein described.

5. In conjunction with an account-card-holding case, the vertically-disposed adjustable partitions with rigid lower part and flexible extensions at the top, combined ledger and index cards fitting the case, with their upper edges flush with the flexible tops of the partitions and movable from side to side therewith, substantially as herein described.

6. In conjunction with an account-card-holding case, the vertically-disposed adjustable partitions with rigid lower part and flexible extensions at the top, ledger and index cards fitting the case, with their upper edges flush with the flexible tops of the partitions and movable therewith, central segmental slots made in the tops of the cards, intermediate guide-cards having their tops continuous and flush with the tops of the ledger-cards, and distinguishing guiding-marks upon that portion which is exposed by the segmental slots or the ledger-cards, substantially as herein described.

7. In conjunction with an account-card-holding case having adjustable flexible partitions and intermediate cards with flush upper edges and centrally-disposed guiding-marks, a series of reversible combined ledger and index cards, each having an individual name and account upon it, and segmental slots made in the center of the tops of these cards within which the marks upon the interspersed guide-cards are exposed, substantially as herein described.

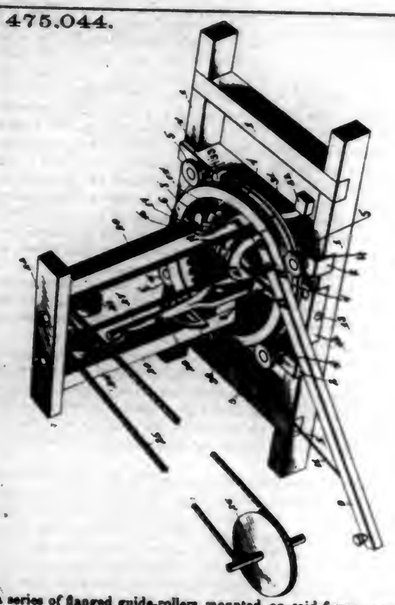
8. A series of ledger and index cards having centrally-located segmental slots made in one of their edges, forming a continuous channel when the cards are supported on edge in the containing-case, transverse guide-cards interspersed among the account-cards, having their upper edges continuous and crossing the channel, with distinguishing-marks upon the portion exposed within the channel, whereby the account-cards may be reversed without obscuring the marks upon the guide-cards, substantially as herein described.

9. A combined ledger and index consisting of a series of cards, each of which serves the double purpose of account and index card, and has a central segmental slot in the exposed margin, guide-cards interspersed between them, in conjunction with a containing-box, with transverse adjustable partitions having the lower end rigid and the upper end flexible, and means whereby said partitions can be readily locked in any desired position in the box, substantially as herein described.

475,044. HORSE-POWER. RUFUS B. MILLER, Sprague, Wash. Filed Oct. 6, 1891. Serial No. 407,894. (No model.)

Claim.—1. In a horse-power, the combination, with a bed-frame,

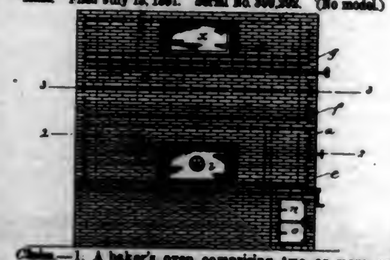
475,044.



of a series of flanged guide-rollers mounted on said frame, a master-wheel having an encircling flange traveling beneath the flanges of said guide-rollers, a stationary shaft secured in said frame, opposite clutch-pinions or cog-wheels loosely mounted on each end of said shaft and meshing continuously with the master-wheel, and a sliding and revolving drive drum or sleeve intermediate of said pinions and provided with opposite clutch-faces on each end adapted to engage either one of said clutch-pinions or cog-wheels, and with an integral grooved drive-disk centrally located thereon, substantially as set forth.

2. In a horse-power, the combination, with the bed-frame and the master-wheel revolving thereover, of a stationary shaft, clutch-pinions or cog-wheels loosely mounted on each end of said shaft, a sliding and revolving drive-sleeve intermediate of said pinions and provided with clutch-faces at each end, and a central grooved drive disk or flange, an upright frame detachably secured to said bed-frame directly over said shaft and within said master-wheel, idler-pulleys secured to said frame, a reversing-lever pivoted to one side of said frame and provided with outwardly-extending arms engaging either side of said grooved disk or flange, and a brake-lever pivoted to one side of the bed-frame and provided with a flanged grip taking over and engaging the flange of the master-wheel, substantially as set forth.

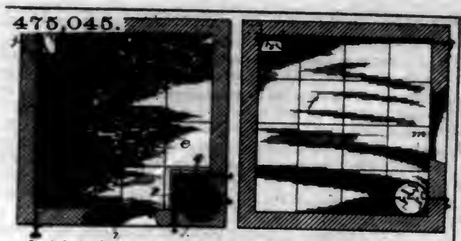
475,045. BAKER'S OVEN. ARTHUR D. ORDWAY, Newburyport, Mass. Filed July 13, 1891. Serial No. 399,392. (No model.)



Claim.—1. A baker's oven comprising two or more compartments, one above the other, a single grate for a fire in the lower compartment, means for shutting off or admitting heat from the fire to the lower compartment, and means for shutting off and admitting heat from the fire to the compartment next above the lower compartment, as set forth.

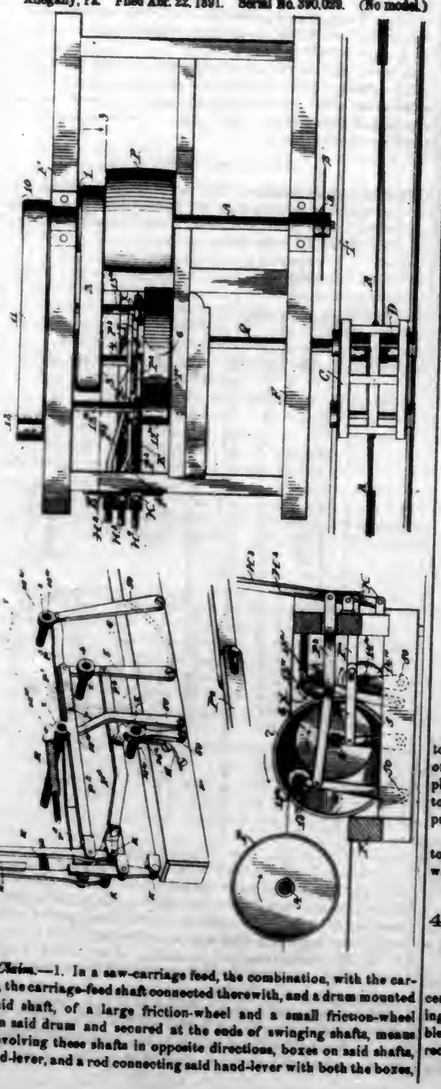
2. A baker's oven provided with a compartment *b*, a grate for a fire on one corner of the said compartment, an exit-flue in the wall opposite said grate, an aperture above the grate, and a damper to control the same, and removable partitions or dampers *p q* for shutting off communication between the grate and the said compartment, as set forth.

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3. A baker's oven comprising three compartments, one above another, a single grate for a fire in the lower compartment, means for shutting off or admitting communication between the grate and the said compartment, means for shutting off or admitting communication between the grate and the intermediate compartment, and the top compartment heated by the heat in the intermediate compartment, as set forth.

475,046. SAWMILL-CARRIAGE FEED. AMOS B. PALMER, Port Allegany, Pa. Filed Aug. 22, 1891. Serial No. 403,020. (No model.)



Claim.—1. In a saw-carriage feed, the combination, with the carriage, the carriage-feed shaft connected therewith, and a drum mounted on said shaft, of a large friction-wheel and a small friction-wheel within said drum and secured at the ends of swinging shafts, means for revolving these shafts in opposite directions, boxes on said shafts, a hand-lever, and a rod connecting said hand-lever with both the boxes, one friction-wheel being out of contact when the other is in contact with the drum, as and for the purpose set forth.

2. In a saw-carriage feed, the combination, with the carriage, the carriage-feed shaft connected therewith, and a drum mounted on said shaft, of a large friction-wheel and several small friction-wheels of different sizes adjacent said drum, swinging shafts upon which said friction-wheels are mounted, said shafts having pulleys on their opposite ends, belting revolving the shaft of the large wheel in one direction and of the smaller wheels in the opposite direction, and means, substantially as described, for moving the free ends of the oppositely-revolving shafts in opposite directions simultaneously at will, as and for the purpose set forth.

3. In a saw-carriage feed, the combination, with the carriage, the carriage-feed shaft connected therewith, a drum mounted on said shaft, a large friction-wheel within said drum, mounted on a swinging shaft, and belting revolving said shaft in a direction to return the carriage when the wheel is in contact with the drum, of a small friction-wheel mounted on a swinging shaft outside the drum, belting revolving this wheel in the same direction as the large friction-wheel, a pivoted hand-lever, and a rod in two sections loosely connected, the outer section extending from said hand-lever and connected with the free end of the shaft of the smaller wheel and the inner section extending farther and connected with the shaft of the other wheel, as and for the purpose set forth.

4. In a saw-carriage feed, the combination, with the carriage, the carriage-feed shaft connected therewith, a drum mounted on said shaft, a large friction-wheel within said drum mounted on a swinging shaft, and belting revolving said shaft in a direction to return the carriage when the wheel is in contact with the drum, of a small friction-wheel mounted on a swinging shaft outside the drum, belting revolving this wheel in the same direction as the large friction-wheel, a still smaller friction-wheel mounted on a swinging shaft inside the drum, belting revolving this shaft in the direction opposite to the others, a pivoted hand-lever, a rod connected to the shafts of the two larger friction-wheels and having a pin, another hand-lever, another rod connecting this hand-lever with the remaining swinging shaft, and a link connected to this rod and having a slot loosely engaging said pin, as and for the purpose hereinbefore set forth.

475,047. PROCESS OF PRODUCING METALLIC RELIEF-PLATES FOR PICTORIALLY BURNING OR SEARING WOOD. JOHN W. ROBBINS, Boston, Mass. Filed Jan. 21, 1891. Serial No. 378,584. (No model.)



Claim.—1. The process of producing metallic relief-plates for pictorially searing or burning wood, consisting in first reducing portions of the surface of the plate to leave irregular lines or surfaces in one plane and then further reducing portions of the surface first reduced to leave irregular lines or surfaces of a height varying from those first produced, substantially as described.

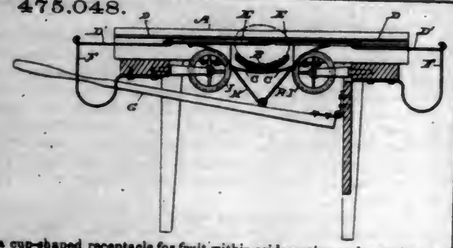
2. A metallic plate adapted to be heated and provided with pictorial relief or raised lines and surfaces of varying heights, the lines which are in the same plane being irregular, substantially as described.

475,048. FRUIT-PITTING MACHINE. FRANK C. STANIFORD, Gilroy, assignor of one-half to De Witt C. Riddell, Santa Cruz, Cal. Filed Aug. 1, 1891. Serial No. 401,416. (No model.)

Claim.—1. A fruit-pitting machine comprising a table having a central opening, a cup-shaped receptacle within said opening, a yielding support therefor, knives or cutters movable in guides upon the table and having V-shaped edges overlapping each other, and means for reciprocating the knives, substantially as herein described.

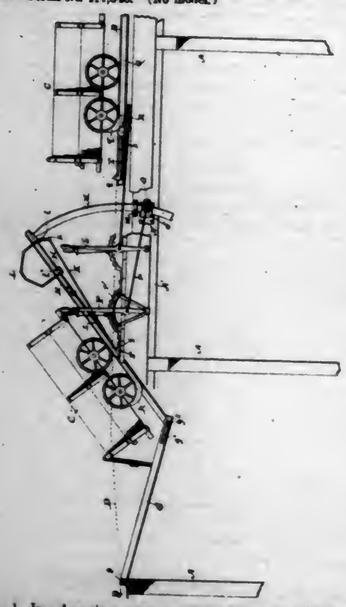
2. In a fruit-pitting machine, the table having a central opening,

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a cup-shaped receptacle for fruit within said opening and movable vertically therein, springs by which it is elevated after having been depressed by pressure, reciprocating knives moving in guides upon the surface of the table, so that their meeting and cutting edges pass each other above the fruit-receptacle, flexible cords or straps connected with the cutters, guide-pulleys over which they pass toward the center, a lever fulcrumed beneath the table, to which said cords are connected and by which the knives are moved toward each other above the fruit-receptacle, and springs and connecting-rods by which the knives are separated and the parts returned to their normal position when the lever is released, substantially as herein described.

475,049. DUMPING APPARATUS. JOHN R. WILSON, Pittsburg, Pa., assignor of one-half to Nathan P. Hyndman, same place. Filed Jan. 9, 1892. Serial No. 417,540. (No model.)



Claim.—1. In a dumping apparatus, the combination of a tilting-track section, a supplemental dropping-track section pivotally connected at its dropping end directly with said tilting track and adapted to form a continuation thereof when both sections are aligned, and means for holding the truck upon, and means for automatically releasing the same from, said tilting track, substantially as set forth.

2. In a dumping apparatus, a tilting-track section, a supplemental drop-track section pivoted at one end to the main track and provided at the other dropping end with longitudinally-disposed slots formed in the rails thereof, a coupling-rod projecting beyond the sides of the rails of said tilting-tract portion and engaging said slot in the rails of said drop-track to directly pivot the same thereto, and means for holding the truck upon, and means for automatically releasing the same from, said tilting track, substantially as set forth.

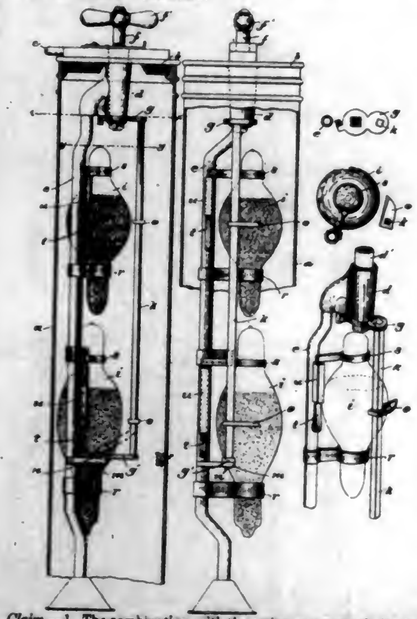
3. In a dumping apparatus, a tilting-track section, longitudinally-disposed horn-stops pivoted to the sides of said track, a spreading-lever pivoted to said track-section and connected with the ends of the opposite stops, and an elevated press-lever pivoted between the rails of said track-section near one end thereof and connected with said spreading-lever, said press-lever projecting normally above the plane of the track-section and provided at its free or swinging end with a flange-stop engaging said track-section, substantially as set forth.

4. In a dumping apparatus, a tilting-track section, means for holding the truck upon and automatically releasing the same from said track-section, a curved flat depending friction-bar secured to one end of said track-section and working in a guide secured to the bed or frame supporting the track, a stationary brake-plate beneath the bar-guide, a brake-lever pivoted at one end centrally between the rails and provided with a projecting arm near said end, a brake-shoe pivotally connected to said lever-arm parallel with the stationary brake-plate, over which works said bar, and an operating-lever connected with said brake-lever, substantially as set forth.

5. In a dumping apparatus, the combination, with the main and tilting track sections, of opposite horn-stops pivotally secured to the sides of the main track, a T-lever located adjacent to said main-track portion, spreading-rods connected to opposite ends of said levers and the opposite ends of said horn-stops, one of said spreading-rods being provided with a locking-notch, a controlling or operating lever connected with said T-lever, a horizontal latch pivoted to one of the rails and adapted to engage said locking-notch, and a closing-spring connecting the ends of said horn-stops to close the same against the rails after the disengagement of said latch from said notch, substantially as set forth.

6. In a dumping apparatus, the combination, with the main track, of a tilting-track section, opposite horn-stops pivotally connected with the opposite sides of said tilting section, a spreading and locking cross-lever, spreading-rods connected to opposite arms of the cross-lever and said horn-stops, a sliding locking-bolt pivotally connected to the end of one of the arms of said lever and adapted to be thrown into and out of a suitable adjacent support, and means for automatically controlling said lever, substantially as set forth.

475,050. CHEMICAL FIRE-EXTINGUISHER. RUSSELL A. BALLOU, Boston, Mass., assignor to the Chemical Hand Fire Extinguisher Company, same place. Filed Dec. 10, 1888. Renewed Oct. 12, 1891. Serial No. 408,417. (No model.)



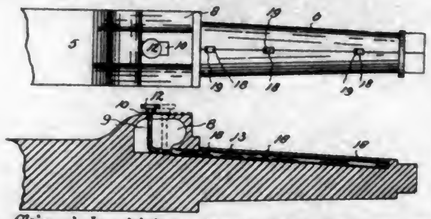
Claim.—1. The combination, with the casing or receptacle having the valve *d*, discharge-nozzle *c*, discharge-tube *e*, and suitable bottle-holding devices, of the arm *g* on the plug of said valve, the bottle-breaking rod *k*, secured to said arm and having a pivotal connection at its lower end with a fixed support, as set forth.

2. The combination, with the casings, of the holders *r*, rigidly secured within the casing, the sockets *u*, affixed above said holders to a rigid support, and the holders *s*, having the spring pieces or slides *t*, adapted to enter said sockets and by their frictional contact therewith to hold said holders *s* at any desired position, as set forth.

3. The combination of the casing, the tube or support *s* within the same, provided with sockets *u*, the holders *r*, affixed to said support,

the holders *s*, having the spring pieces or slides *t*, adapted to enter said sockets and by their frictional contact therewith to hold said holders *s* at any desired position, and a suitable device operated from the outside of the casing, adapted to break bottles or other fragile vessels supported by said holders *s* and *r*, as set forth.

475,051. AXLE-LUBRICATOR. GEORGE W. BEAL, Highlands, Colo. Filed Jan. 6, 1892. Serial No. 417,221. (No model.)



Claim.—1. In a lubricator, the combination, with the axle and the spindle, of an oil-cup formed or located within the axle in proximity to the spindle, an apertured oil tube or conduit leading from said cup to the spindle, which is provided with a longitudinal opening for its reception, the spindle being further provided with openings leading from said longitudinal opening to the surface of the journal, a spring normally retaining the oil-tube in such a position that its apertures shall lie to one side of the openings in the spindle leading to the journal-bearing, and means connected with the tube, whereby the same may be adjusted from the outside of the axle to allow the lubricant to flow to the journal, substantially as described.

2. In a lubricator, the combination, with an axle and the spindle formed thereon, of an oil cup or receptacle formed or located in the axle in proximity to the spindle, a movable oil tube or conduit leading from said cup to the spindle, a sleeve located in the spindle for the reception of the tube, which is provided with openings 16 at intervals, the sleeve and the spindle being provided with openings 14 and 18, communicating with the journal, opening 16 in the tube lying normally to one side of openings 14 and 18, a spring located in the sleeve and adapted to retain the tube in the normal position, and means connected with the oil-tube and projecting through an opening in the oil-cup, whereby the tube may be so adjusted as to allow the oil to flow to the journal, substantially as described.

3. In a lubricator, the combination, with an axle and the spindle, of an oil-receptacle formed or located in the axle in proximity to the spindle and provided with an opening in the top, an apertured spring-actuated oil tube or conduit leading from said receptacle to the spindle, an apertured sleeve located in the spindle for the reception of the tube, the spindle being provided with openings communicating with those in the sleeve and leading to the face of the journal, and a projection connected with the tube and passing through the opening in the top of the oil-cup and provided with a plate normally covering said opening, substantially as described.

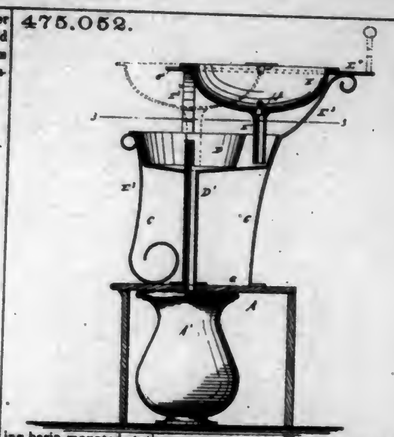
4. In a lubricator, the combination, with an axle and a spindle formed thereon, of an oil-receptacle located in proximity to the spindle, an apertured spring-actuated oil-tube leading therefrom into the journal, which is provided with a suitable longitudinal opening therefor, the spindle being provided with openings leading from the longitudinal opening to the journal-bearing, projections secured to the oil-tube and protruding through the openings leading to the face of the bearing, and means for adjusting the oil-tube, whereby said last-named openings are cleared and the oil permitted to flow therethrough to the bearing, substantially as described.

5. In a lubricator, the combination, with the axle and spindle, of an oil-receptacle located in proximity to the spindle, an apertured adjustable spring-actuated oil-tube leading therefrom into the spindle, which is provided with a suitable longitudinal opening for its reception, and outlets therefrom to the face of the bearing, substantially as described.

6. In a lubricator, the combination, with the axle and spindle, of an oil-receptacle located in proximity to the spindle, an apertured adjustable spring-actuated tube leading therefrom into an opening formed in the spindle, which is provided with outlets from the longitudinal opening, and projections secured to the oil-tube and protruding through the openings leading to the face of the spindle-bearing, substantially as described.

475,052. COMBINED WASH-STAND AND CHAMBER-PAIL. FREDERICK H. BRANE, Chicago, Ill. Filed Sept. 5, 1891. Serial No. 404,801. (No model.)

Claim.—1. The combination of a base or casing open at the bottom and closed at the top and adapted to inclose a slop-jar, a receiving-basin mounted stationary upon said base or casing and provided with an extension, a connecting-pipe between the receiving-basin and the top of the casing, a sliding or movable wash-basin supported above the receiving-basin and adapted to slide in said extension, and a discharge-pipe extending from the bottom of the wash-basin into the receiving-basin, substantially as described.



2. The combination of a base or casing open at the bottom and closed at the top and adapted to inclose a slop-jar, a receiving-basin mounted stationary upon said base or casing and provided with an extension, a connecting-pipe between the receiving-basin and top of the casing, horizontal guides extending above the receiving-basin, a wash-basin supported by and movable in said guides and in said extension, and a discharge-pipe extending from the bottom of the wash-basin into the receiving-basin, substantially as described

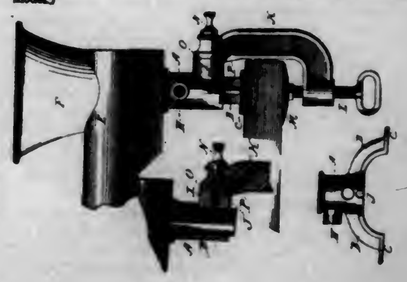
3. The combination of a casing extending around the slop-jar and resting by its top on the same, a receiving-basin supported above said casing and provided with an extension, a connecting-pipe between the bottom of the basin and the top of the casing, a semicircular upward extension or abutment which serves as a stop for the sliding basin, a wash-basin supported above the receiving-basin and adapted to be moved in forward or backward direction in said extension, and a discharge-pipe extending from the bottom of the wash-basin into the receiving-basin, substantially as set forth.

475,053. LEATHER WASHER. LEON M. CARANA, Buffalo, N. Y. Filed Dec. 14, 1891. Serial No. 414,906. (No model.)



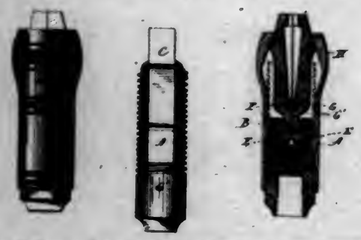
Claim.—A washer consisting of a strip of leather bent into circular form with its ends abutting and connected by means of a barbed wire inserted into perforations in said ends and curved concentrically with the leather, the whole being compressed to embed the fibers of the leather into the barbs of the connecting-wire, as set forth.

475,054. COMBINED STANDARD AND CLAMP. ROBERT C. ELLRICH, Plantsville, Conn. Filed Oct. 2, 1891. Serial No. 407,588 (No model.)



Claim.—A standard having a vertical sleeve formed with a threaded horizontal boss and two feet offsetting from the lower end of said sleeve and each adapted to be permanently attached to a table or bench, in combination with a clamp having the lower end of its body turned inward and furnished with a vertical clamping-screw and its upper end provided with a horizontal coupling-screw, the faces of the upper end of the clamp and of the boss of the standard being constructed to be interlocked when drawn together by the said coupling-screw, substantially as described.

475,055. TOOL-CHUCK. ROBERT C. ELLRICH, Plantsville, Conn. Filed June 29, 1891. Renewed Mar. 31, 1892. Serial No. 427,172. (No model.)



Claim.—1. In a tool-chuck, the combination, with the socket and sleeve thereof, of an independent seat located in the socket and having a transverse cylindrical opening leading into its outer end formed in it, and two jaws having transverse semi-cylindrical bearings formed at their inner ends which are inserted into the opening in the said seat, the inner faces of the said bearings being beveled for clearance, substantially as described, and whereby the jaws are held against longitudinal movement by the said seat, which also prevents their inner ends from separating.

2. In a tool-chuck, the combination, with the socket and sleeve thereof, of an independent seat mounted in the socket and having a transverse cylindrical opening leading into its outer end formed in it, two jaws having semi-cylindrical transverse bearings formed at their inner ends which are inserted into the opening in the said seat and provided with corresponding pockets in their inner faces, and a spring having its ends inserted into the said pockets for automatically separating the jaws, substantially as described, and whereby the jaws are held against longitudinal movement by the said seat which also prevents their inner ends from separating.

475,056. ADJUSTABLE BRACKET FOR SUPPORTING INKSTANDS. GEORGE F. HALL, Newark, N. J. Filed Apr. 17, 1891. Serial No. 389,262. (No model.)

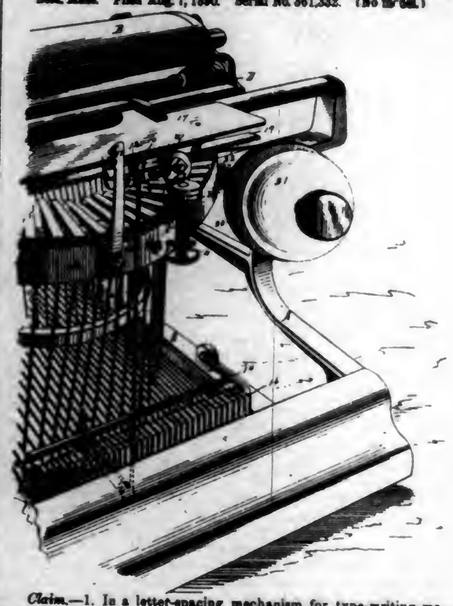


Claim.—1. As a new article of manufacture, a bracket consisting of a set of lazy-tongs secured at one end to a support and at the other connected by means of a vertical rod to which the one free end of the tongs is fastened and upon which the other end is free to slide, arms g and g', pivotally and adjustably secured on said vertical rod connecting the ends of the tongs, a rod g^2, to which said arms g and g' are pivoted, a shelf secured to said rod g^2, and means on said rod g^2, connected with said arm g', whereby said parts are capable of adjustment, as and for the purposes set forth.

2. In a bracket, the combination, with two sets of lazy-tongs A and A', secured to a support c and a rod e, and means on said rod for permitting the rotation of said sets of lazy-tongs at an angle to each other and securing them in such position and provided with a rod c', of an inkstand or lamp-supporting shelf g^4, secured to an arm g^3, arms g and g', pivotally attached to said rod c' and arm g^2, and means on said arm g^3 for holding said shelf in its vertically-adjusted position, as and for the purposes set forth.

3. The herein-described bracket for supporting an inkstand, consisting of two sets of lazy-tongs A and A', adjustably secured to a support c and rods e and c' by means of sleeves, substantially as set forth, arms g and g', pivotally attached to rod c', and an arm g^3, provided with a shelf and a segment and holding-screw for adjusting said shelf vertically, and springs h and h' on said shelf adapted to engage with the inkstand, substantially as and for the purposes set forth.

475,057. TYPE-WRITING MACHINE. GEORGE S. HEATH, Springfield, Mass. Filed Aug. 7, 1890. Serial No. 361,332. (No model.)



Claim.—1. In a letter-spacing mechanism for type-writing machines, the combination, with the ratchet-bar for the carriage, of an arm 8, having the hook o and the spacing-stop consisting of a plate-like portion provided with longitudinal slots and the hook v, the screws passing through said slots into said arm, the spring applied relative to the arm and stop for sliding the stop longitudinally on the bar in one direction, a supporting-bracket on which the said arm is pivotally hung for a swinging movement in a vertical plane, and a vertical post on which said bracket is mounted and which in turn is mounted for a rotational movement on a fixed axis, whereby the bracket may be swung in a horizontal plane, the spring applied on said post for turning it to keep the bracket and said hooked parts in engagement with the said ratchet-bar, the key-levers, and a medium of connection between the same and the arm 8, substantially as and for the purposes set forth.

2. In combination, the post 4, supported to rock on the machine, the bracket 23, fixed on one end of said post, the spring 5 to rock said post, the escapement-arm 8, pivoted to said bracket and having a pin w thereon entering a slot therein, and a stud 10, fixed thereto, the escapement-stop 9, having a sliding connection with said arm, a spring 12 to slide said stop, the universal bar 14, extending over the type-levers, the type-levers each having a hook engaging with said bar, and a connecting-rod between said bar and the stud on said escapement-arm 8, substantially as set forth.

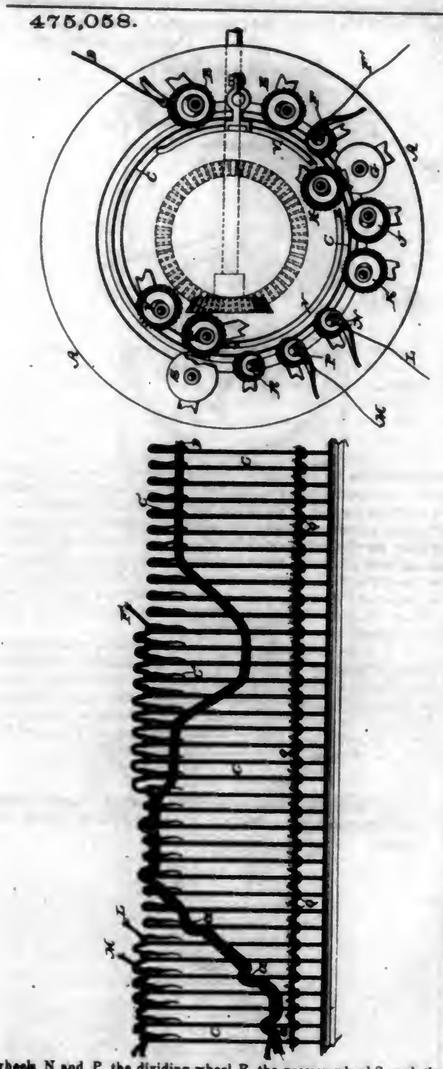
475,058. CIRCULAR-KNITTING MACHINE. DAVID H. HILL, Philadelphia, Pa. Filed Dec. 30, 1891. Serial No. 416,585. (No model.)

Claim.—1. A circular-knitting machine for the purpose described, having the extra knocking-over wheel J on the outside of the needle-cylinder and the adjacent clearing-wheel K, said parts being combined substantially as and for the purpose set forth.

2. In a circular-knitting machine, the combination of a rotary needle-cylinder with needles thereon, mechanism, substantially as described, consisting of backing, clearing, loop-presser, and inside landing wheels for placing a backing-thread behind some of said needles and in front of the others, and for placing a tying-in thread under the beards of said needles, an outside knocking-over wheel for lifting the portion of the backing-thread in front of the needle over the same and the tying-in thread, and a clearing-wheel for lowering said threads on the said needles, said parts being combined substantially as described.

3. A circular-knitting machine having a needle-cylinder with needles thereon, the backing-wheel B, the clearing-wheel E, the loop-wheel F, the presser-wheel G, the inside landing-wheel H, the knocking-over wheel J, outside of said needle-cylinder, the clearing-wheel K, the loop-wheels N and P, the dividing-wheel R, the presser-wheel S, and the inside landing-wheel T and knocking-over wheel U, said parts being combined substantially as described.

475,058.



475,059. SHIFTING-SEAT VEHICLE. GEORGE W. KERR, New Haven, Conn. Filed Aug. 3, 1891. Serial No. 401,467. (No model.)



Claim.—1. In a vehicle, the combination, with the front seat, of a longitudinally-sliding rear seat and ways whereon said seat is supported, a locking-frame having two parallel portions, whose ends are pivoted beneath the forward portion of the rear seat and a bowed portion connecting the two parallel portions, hooks extending under the rails, and a cam engaging the bowed portion of the frame and adapted to raise the latter, substantially as specified.

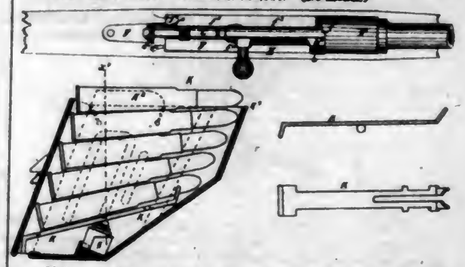
2. The combination, with the sliding rear seat and the rails whereon the latter is supported, of a locking-frame having parallel portions 13 fulcrumed, as at 16, to the seat, a curved bar 14, connecting the parts 13, hooks 15, depending from the parts 13 and engaging the rails from beneath, and a cam secured in the back of the seat and engaging and adapted to operate against the center of the frame, substantially as described.

475,060. REVOLVING ROASTER. RUDOLPH KÖHLER, Lipine, Germany. Filed Jan. 6, 1891. Serial No. 376,892. (No model.)



Claim.—In a revolving roaster, the combination of a hollow rotating cylinder having longitudinal air and gas passages in its walls, doors K and L, closing the ends of said cylinder, door K being provided with air inlet and exhaust chambers p i, arranged to communicate with the air-passages in the cylinder, and gas inlet and exhaust chambers arranged to communicate with the gas-passages in the cylinder, door L, provided with passages arranged to connect the air and gas passages, respectively, means for conveying the heated air from the exhaust-chamber i to the interior of the cylinder, and an escape-flue leading from the cylinder, substantially as set forth.

475,061. MAGAZINE-GUN. KARL KRNKA, London, England, assignor to the Krnka Repeating Rifle Company, Limited, same place. Filed Mar. 31, 1890. Serial No. 346,196. (No model.)



Claim.—1. In a repeating rifle with a cylindrical breech-bolt A, sear A, provided with undercut top edges and provided at the back edge with a second oblique face A^3 of opposite direction, in combination with the recessed cupped edge of the firing-pin cylinder e and the groove b^4 of the breech-bolt, so that in the securing of the lock by the withdrawal and rotation of the firing-pin and the action of the trigger-spring the sear enters the groove b^4 of the handle B to lock the breech-bolt, while by the pressure of the readvanced firing-pin on the oblique face A^3 the sear is again automatically pressed down from the groove b^4.

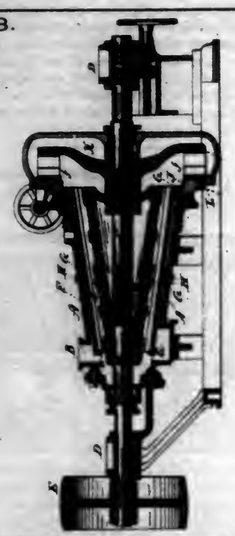
2. In a repeating rifle with a cylindrical breech-bolt A, cartridge-magazine, and a cartridge-carrying plate K, located therein, the front end of which is split to produce two elastic arms, which can be pressed together when it is desired to remove the cartridge-carrier.

475,062. CARBON PRODUCT. LOUIS S. LANGVILLE, Troy, N. Y. Filed Sept. 26, 1891. Serial No. 406,930. (Specimens.)

Claim.—As a new article of manufacture, a carbon product made from the wood-cellulose and resinoid residuum of wood-pulp manufacture, and in which the bulk of the silica of the wood-cellulose has been removed and the lighter carbon produced from the resinoids, combined with the denser carbon of the wood-cellulose, as and for the purposes set forth.

475,063. PULP BEATING AND REFINING ENGINE. EDWARD E. MARSHALL, Turner's Falls, Mass., assignor of one-half to Frank J. Marshall, same place. Filed May 25, 1891. Serial No. 393,973. (No model.)

475,068.



Claim.—In a pulp-beating engine consisting of a conical case and a revolving shaft arranged longitudinally through the said case and carrying a corresponding cone, the cone constructed or provided on its surface with a series of cutters or beaters, the combination therewith of a correspondingly conical-shaped shell arranged within the case and around the said cone, removably secured to said case, and the said shell provided with a series of longitudinal cutters or beaters adapted to co-operate with the beaters or cutters on the surface of said cone, substantially as described.

475,064. WATCH-CASE PENDANT. NORMAN T. MILLS, Boston, Mass. Filed Nov. 16, 1891. Serial No. 411,964. (No model.)



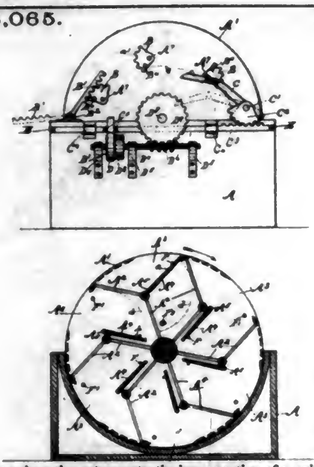
Claim.—1. In a watch, a case having a pendant, a winding-spindle having a collar a^3 near its inner end, an enlarged part a, having an annular groove, a crown attached to the spindle, a tapered locking-sleeve having a shoulder and a series of springs and located at the inner end of the pendant, said springs engaging said groove and locking the spindle in winding position, and an adjusting-sleeve screwed into said pendant and having a contracted inner end extended nearly through the said pendant and acting as a fixed stop for the said locking-sleeve, the spring-arms of the locking-sleeve supporting the spindle firmly when drawn outwardly into hand-setting position, substantially as described.

2. In a watch, a case having a pendant, a winding-spindle having a collar a^3 near its inner end, an enlarged part a, having an annular groove, a crown attached to the spindle, a tapered locking-sleeve having a shoulder and a series of springs and located at the inner end of the pendant, said springs engaging said groove and locking the spindle in winding position, and an adjusting-sleeve screwed into said pendant and having a contracted inner end extended nearly through the said pendant and acting as a fixed stop for the said locking-sleeve, the spring-arms of the locking-sleeve supporting the spindle firmly when drawn outwardly into hand-setting position, and headed pivot-pins held in place by the outer sides of the said adjusting-sleeve, substantially as described.

475,065. DYEING APPARATUS. ANDREW REID, Amsterdam, N. Y., assignor of one-half to Cornelius Dwyer, same place. Filed July 27, 1891. Serial No. 400,846. (No model.)

Claim.—1. In a dyeing apparatus, the combination, with a rotary dipping-cylinder provided with a plurality of pockets, each having an inner and an outer portion, of a plurality of oscillatory gates, each arranged to close the entrance to the inner portion of a cylinder-pocket, a gate lever attached to each gate, and a lever-actuating stop movable to and from the path of the gate-levers, substantially as described.

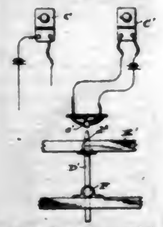
475,065.



2. In a dyeing apparatus, the combination, with a rotary dipping-cylinder provided with a plurality of pockets, each having an inner and an outer portion, of a plurality of oscillatory gates, each arranged to close the entrance to the inner portion of a cylinder-pocket, means for operating the gates, a spring-lock for securing each gate in a closed position, and means for detachably holding each gate in an open position, substantially as described.

3. In a dyeing apparatus, the combination, with a rotary dipping-cylinder, a drive-belt for imparting rotary movements to the cylinder, a belt-shipper, a shipper-lever, and connections between the shipper and shipper-lever, of a series of lever-actuated stops supported by the cylinder and movable relatively thereto, and means for successively moving the stops into a position on the rotary cylinder to operatively engage the shipping-lever, substantially as described.

475,066. ELECTRIC SIGNAL FOR ENGINES. JAMES C. RICKETSON, Milwaukee, Wis. Filed Aug. 31, 1885. Serial No. 175,744. (No model.)



Claim.—1. The combination of a revolving shaft having a spur attached thereto, a pair of distant signals each electrically connected to push-buttons, a pair of movable push-rods, one located on each side of said shaft adjacent to said push-buttons and bearing lugs normally located in the path of motion of said spur, a hanger supported midway between said push-rods, and a lever pivoted to said hanger and provided with cords at each end, whereby the said lever may be brought to a horizontal position, when required, so as to force the push-rods apart out of contact with the said spur, substantially as and for the purpose set forth.

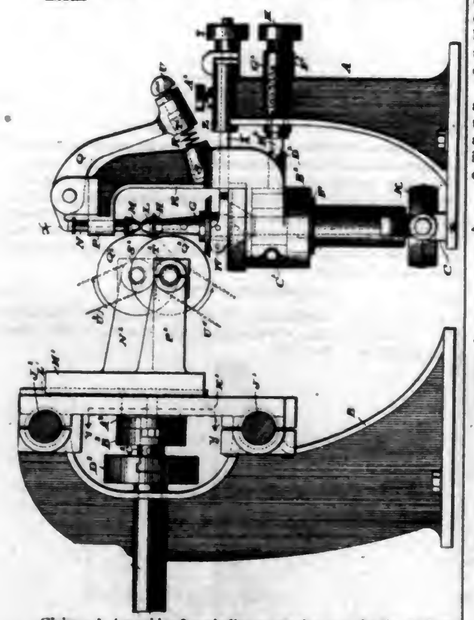
2. The combination of a revolving shaft having a spur attached thereto, a pair of distant signals electrically connected to push-buttons, a pair of movable push-rods located on each side of the said shaft adjacent to said push-buttons and bearing lugs with horizontal and inclined surfaces located normally in the path of motion of said spur, and springs bearing against each push-rod, whereby the said spur in its movement will first bear against the horizontal surface of the lug on one push-rod and thereby force said rod against its adjacent push-button to actuate the corresponding signal, and then bear against the inclined surface of the lug on the other push-rod and thus force it out of the way, while the said springs serve to restore the rods to their normal positions after the said spur has passed from contact with their said lugs, substantially as set forth.

475,067. GAME APPARATUS. HUGH C. RISDON, Philadelphia, Pa., assignor to John H. Risdon, same place. Filed May 27, 1891. Serial No. 394,593. (No model.)



Claim.—A game apparatus having a frame closed on two sides, with an exit-throat, and open on the remaining sides, a series of alternating zigzag inclined chutes abutting against the said closed sides and located over a closed portion of each successive chute, wheels suspended over said chutes and also in the throat of one of the closed sides, and a base having a field on which said frame and its appurtenances are supported, said base being formed with a rim within which the frame may be fitted and packed, said parts being combined substantially as described.

475,068. MACHINE FOR GRINDING SPECTACLE AND EYE-GLASS LENSES. EDWARD B. TEMPLE, Philadelphia, and JOHN W. MEIER, Reading, Pa. Filed Aug. 31, 1891. Serial No. 404,270. (No model.)



Claim.—1. A machine for grinding spectacle or eyeglass lenses, having rotatable holders for the glass, mechanism for imparting an elliptical motion to said holders, and grinders for beveling both edges of said lens, substantially as described.

2. A machine for grinding spectacle or eyeglass lenses, having an oscillating frame carrying a spindle with a holder, a second spindle journaled in said frame and having a holder, a spring-pressed lever pivoted to said frame and bearing against said second spindle, mechanism, substantially as described, for imparting an elliptical motion to said spindles and holders, and rotary grinders adapted to bevel the opposite edges of the lens at the same time, said parts being combined substantially as described.

3. In a machine for grinding spectacle or eyeglass lenses, a standard, a bracket pivotally connected therewith, spindles journaled in said bracket and having lens-holders at their adjacent ends, a spring-controlled lever bearing against one of said spindles, mechanism, substantially as described, connected with the other spindle for imparting an elliptical motion thereto, a spring-slide bearing against said bracket, and rotary grinders, said parts being combined substantially as described.

4. In a machine for grinding spectacle or eyeglass lenses, a standard, an oscillating bracket on said standard, a spindle journaled in said bracket and having a holder thereon, a bar adjustable in said standard and having a yoke in which a cam on said spindle rotates, grinders, and a spring-slide working in said standard for keeping the lens on the holder against the grinders, substantially as described.

5. A standard having bearings for a rotary spindle carrying an eyeglass or lens holder, a spindle with holder, and a spring-slide working in a boss on the standard and bearing against the bearing for the rotary spindle, said parts being combined substantially as described.

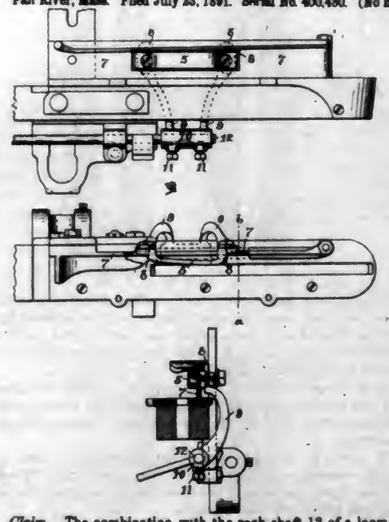
6. In a machine for grinding spectacle or eyeglass lenses, a standard, an oscillating bracket thereon, a rotary spindle journaled in said bracket and having a lens-holder thereon, a second spindle mounted on said bracket above said first spindle at its upper end, and an adjustable spring bearing against the lower end of said lever and having a holder on its lower end, a lever pivoted to the bracket and bearing against said upper spindle, said parts being combined substantially as described.

7. In a machine for grinding spectacle and eyeglass lenses, a standard, a bracket mounted in bearings thereon, a rotary spindle journaled in said bracket, a cam on said spindle, a bar adjustable on said standard and having a yoke surrounding said cam, an arm connected with said bracket, and a spring connected with the standard and bearing against the said arm, said parts being combined substantially as described.

8. In a machine for grinding spectacle-lenses, a standard, a bracket pivotally mounted thereon, a rotary spindle journaled in said bracket, a lens-holder carried by said spindle, a cam on said spindle, a bar secured to said standard, having a yoke on its end surrounding the said cam, a shaft journaled in the upper part of the bracket, having a lens-holder on its lower end, a lever having an end bearing on the last-named shaft, and a spring bearing against said lever, said parts being combined substantially as described.

9. In a machine for grinding spectacle and eyeglass lenses, rotatable lens-holders, a standard with horizontal shafts, a frame freely mounted on said shafts, frames vertically movable on said first frame and having arms forming bearings for grinders, and mechanism for imparting a horizontal motion to said first frame, said parts being combined substantially as described.

475,069. SHUTTLE-BINDER FOR LOOMS. VINCENT THORPE, Fall River, Mass. Filed July 23, 1891. Serial No. 400,490. (No model.)



Claim.—The combination, with the rock-shaft 12 of a loom, of a sleeve 10, provided with securing-screws 11 11, the upwardly-extending swell-fingers 9 9, formed integral with said sleeve, the slotted stops 8 8, forming the upper ends of said fingers, and a swell 5, adjustably secured at its ends by bolts to the slotted stops 8 8 and extending through the opening 6 into the shuttle-box, as and for the purpose described.

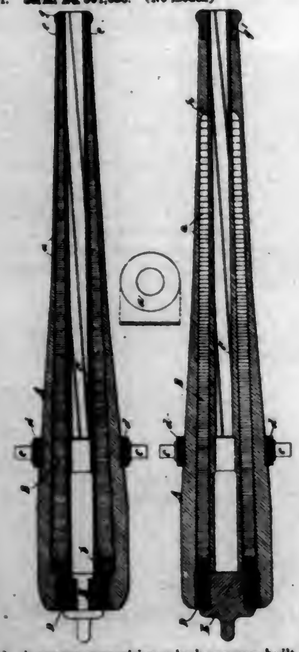
475,070. MELTING-FURNACE. CLARENCE L. WHEELER, Marion, Ind., assignor of one-half to Jay Willard Clark, same place. Filed Feb. 14, 1891. Serial No. 381,513. (No model.)



Claim.—1. In a melting-furnace, the combination of a fire-box, means substantially such as described for the supply of gas and air to said fire-box as the fuel, the hearth or melting-chamber distant from said fire-box, and a combustion-chamber between said hearth and fire-box, through which the flames pass from the fire-box to the said hearth, substantially as described.

2. In a melting-furnace, the combination of a fire-box, means substantially such as described for the supply of gas and air to said fire-box as the fuel, the hearth or melting-chamber distant from the said fire-box, a combustion-chamber between said hearth and fire-box, through which the flames pass from the fire-box to the said hearth, with a receptacle or chamber in the bottom of said combustion-chamber, but opening into the said combustion-chamber, substantially as and for the purpose described.

475,071. CANNON. THOMAS L. WILLSON, Brooklyn, N. Y. Filed May 5, 1891. Serial No. 391,625. (No model.)



Claim.—1. A cannon comprising a body portion built up of juxtaposed disks, and a shell or jacket inclosing and closely embracing the individual disks of such body portion and receiving the reaction of the breech thereof, whereby it resists longitudinal strains and holds the disks together longitudinally.

2. A cannon comprising a body portion built up of juxtaposed disks, and a shell or jacket shrunk upon such body portion, whereby by its contraction it forces the disks intimately together in longitudinal direction.

3. A cannon comprising a body portion built up of disks, a shell or jacket inclosing such body portion, closely embracing the individual disks thereof and holding the disks together longitudinally, and a lining-tube within said body portion.

475,072. DETACHABLE UMBRELLA-COVER. JULIUS F. WITT, Chicago, Ill. Filed Aug. 17, 1891. Serial No. 403,235. (No model.)

Claim.—1. In an umbrella, the combination, with the ribs or bows thereof having projections or enlargements thereon toward their outer ends, of a detachable cover and means for securing the margins of the

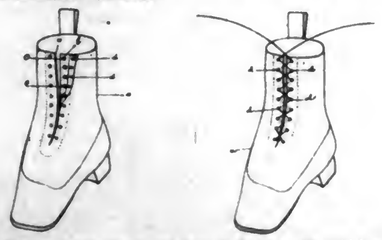
475,072.



cover to the ends of the bows, said means comprising a metallic fastening constructed from sheet metal and having a body portion bent to engage the bow, and perforations in the ends of said body for attaching the cover and an integral extension beyond said perforations, said extension being downwardly bent and having an aperture therein to receive the end of the bow, whereby the pull of the material causes the body to be clamped upon the bow, substantially as described.

2. In an umbrella, the combination, with the ribs or bows thereof having enlargements toward their outer ends, of a detachable cover and means for securing the margins of the cover to the ends of the bows, which comprise a metallic fastening constructed from sheet metal and having a body portion bent to engage the bow and perforated for attachment to the cover, an integral extension narrower than the body and downwardly bent, and an expanded end portion having an aperture to receive the end of the bow, substantially as described.

475,073. SHOE. EDWARD C. ANDERSON, Boston, Mass., assignor to the Invisible Eyelet Company, Portland, Me. Filed Nov. 25, 1891. Serial No. 413,068. (No model.)



Claim.—A laced boot or shoe provided with eyelets which are inserted in the under portion only of the different thicknesses of material composing the boot or shoe at that part and are covered by the outer portion of the shoe, through which outer portion are holes placed substantially opposite to the eyelets, so that the lacings may be put through the eyelets and the opposite holes and when the boot or shoe is laced no portion of the eyelets will appear, substantially as and for the purpose above described.

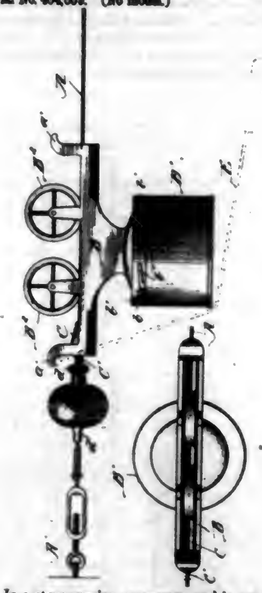
475,074. UMBRELLA-RUNNER. ROBERT ARDREY, Philadelphia, Pa., assignor to Dilwyn Wistar, same place. Filed Aug. 8, 1891. Serial No. 402,145. (No model.)



Claim.—1. An umbrella-runner having a collar provided with a slot on the inner periphery thereof and a lug, and a runner-tube which is freely rotatable in said collar, said tube having a vertical slot adapted to be placed in and out of register with the slot of the collar, and also having a slot for engagement with said lug, a pin on the stick being movable through the slots of said parts when in alignment, said parts all being combined substantially as described.

2. An umbrella-runner tube having a flange and bead thereon and a notched collar on said runner between the said flange and bead, said runner-tube being rotatable within said collar and having a slot adapted to register with a slot in the collar, and the collar having a lug projecting into another slot in the runner-tube as a stop, said parts being combined substantially as described.

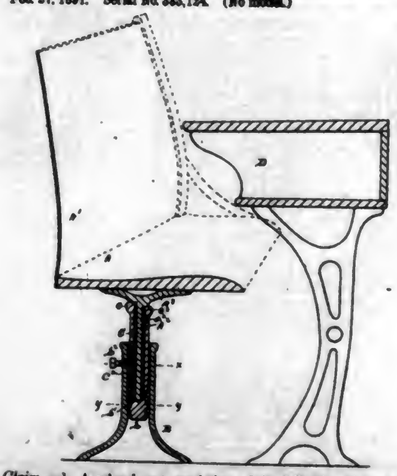
475,075. CASH-CARRIER. JAMES F. BARTLETT, Chicago, Ill., assignor to the Chicago Cash Carrier Company, same place. Filed Aug. 28, 1891. Serial No. 404,059. (No model.)



Claim.—1. In a store-service apparatus, and in combination, the track having a head C with shoulder *c*, the car having the end frame adapted to pass over said heads and engage the shoulders thereof, substantially as shown, and provided with a projection *c'*, and a rod E, provided with a handle, and a loop E^2, adapted to engage said projection *c'* for releasing and propelling the car, substantially as specified.

2. In a store-service apparatus, and in combination, the track-wire, an elastic bulb buffer having an axial opening through which said track-wire is extended, said opening being closed tight upon the wire at the rear end and left loose upon the wire to admit air at the other end, and a catch secured to said buffer and adapted to operate substantially as specified.

475,076. SCHOOL-SEAT. FRANCIS R. SEAL, Northville, Mich. Filed Feb. 27, 1891. Serial No. 383,124. (No model.)



Claim.—1. A school-seat consisting of the following elements, in combination: a seat, a base provided with a vertical socket *b*, a supporting-shaft A^2, engaged with the seat, and an intermediate socket C, having a direct adjustable engagement with the base in said socket *b*, said socket C directly receiving said supporting-shaft, said shaft rotatable in the socket C and interlocked therewith to prevent their disengagement when the seat is in normal position, and the socket C and shaft A^2, formed the one with a recess and the other with a shoulder to enter said recess, whereby the shaft has a limited rotation in said socket, substantially as set forth.

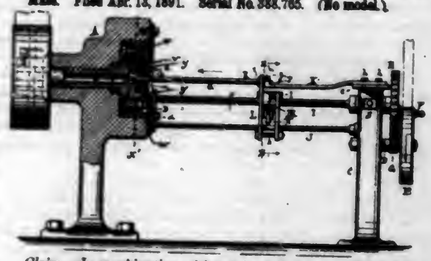
2. The combination, with a seat provided with a supporting-shaft, of a base, an intermediate socket C, having a screw-threaded engagement with the base and supporting said shaft, said socket interlocked at its upper end with said shaft to prevent their disengagement when the chair is in normal position and provided with a shoulder *c* and a recess *c'* between the ends of the shoulder, and said shaft provided with a shoulder *a* to engage in said recess to limit the rotation of the shaft in the socket, substantially as described.

3. The combination, with a seat, of a supporting-shaft, a base, an intermediate socket having a vertically-adjustable engagement with said base and supporting said shaft, said socket formed with a shoulder *c* and groove c^3, both located on the same side of the socket, and the base provided with a set-screw to engage said groove and hold the socket in a desired position, substantially as described.

4. The combination, with a seat, of a supporting-shaft rigidly engaged therewith, a base and an intermediate socket adjustably engaged with the base, said shaft and socket interlocking one with the other to prevent both their disengagement and also an independent vertical movement of the shaft when the seat is in normal position, said shaft and socket constructed the one with a recess and the other with a shoulder entering said recess, said shaft thereby having a limited rotation in said socket, substantially as described.

5. The combination, with a seat, of a supporting-shaft engaged therewith and provided with a shoulder a^3, a base, and an intermediate socket adjustably engaged with the base, said socket formed with a groove c^3 and with an inwardly-extended flange c^4 to receive and engage said shoulder to prevent an independent vertical movement of said shaft when the seat is in normal position, said shaft and socket the one formed with a recess and the other with a shoulder entering said recess, the shaft thereby having a limited rotation in said socket, substantially as described.

475,077. SWAGING-MACHINE. SIDNEY O. BIGNEY, Attleborough, Mass. Filed Apr. 13, 1891. Serial No. 388,765. (No model.)



Claim.—In combination with a tube-reducing machine having a central aperture and swaging dies, an arbor extending through said aperture and adapted to support the tube which is to be reduced, a traveler suitably supported and movable on said arbor and placed to abut the rear end of the tube, a screw-threaded shaft with means of rotating the said shaft, and a nut or clamp connected with the traveler and capable of engaging with or disengaging from said screw-threaded shaft, substantially as specified.

475,078. JAR, JUG, OR CAN. WILLIAM E. CLARK and CHARLES W. CLARK, McLuney, Ohio. Filed Feb. 11, 1892. Serial No. 421,079. (No model.)



Claim.—1. As a new article of manufacture, a jug, jar, or can of uniform size throughout, having a concaved top and bottom, lugs or ears formed integral with the flange in the top on the inner face and with their upper edges flush with the edge of said flange, and a bail or handle secured to said lugs or ears and adapted to fold within the concaved top, for the purpose described.

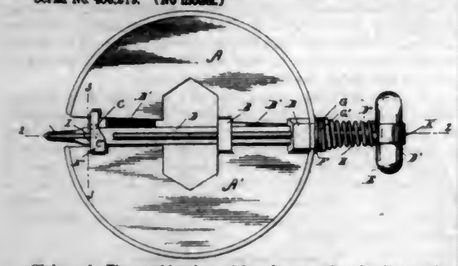
2. As a new article of manufacture, a jug, jar, or can constructed

of earthenware and uniform in size throughout, having a concaved top and bottom, lugs or ears on the inner face of the flange of the top, an opening or openings in said top, and a bail having the ends engaging said lugs or ears and adapted to fold into the space in top of vessel, for the purpose described.

3. As a new article of manufacture, a vessel formed of earthenware and having an opening or openings surrounded by flanges in the top thereof, a cover or covers for said openings, a projecting flange inclosing the flanges of the opening or openings, lugs or ears formed on the inner face of the surrounding flange, and a handle or bail having the ends engaging said lugs or ears, substantially as described.

4. As a new article of manufacture, a vessel of uniform size throughout, having a concaved top and bottom, an opening or openings surrounded by a flange or flanges in the top of the vessel, a cover or covers for said openings, lugs or ears formed on the inner face of the top flange, and a bail having the ends secured to said ears, for the purpose described.

475,079. DAMPER. LEVI M. DEVORE, Freeport, Ill., assignor of one-half to Mitchell H. Wilcoxon, same place. Filed Sept. 19, 1891. Serial No. 406,219. (No model.)



Claim.—1. The combination, with a damper-plate having a spindle-way formed by integral opposite bridges in planes whose separation is substantially equal to the thickness of the spindle, of a spindle narrower than the span of the bridges and adapted to slide between them and means for detachably securing the spindle to the plate to prevent its motion between the bridges, substantially as set forth.

2. The combination, with the plate consisting of segments connected by integrally-formed opposite bridges, of the non-revoluble spindle sliding closely between the bridges and having a width less than the span of the latter, both said plate and spindle being provided with suitable catches to mutually engage when the spindle is swung laterally in the proper direction, substantially as set forth.

3. The combination, with the non-cylindrical spindle and the damper-plate having a spindle-way adapted to hold the spindle against motion away from the plane of the plate while permitting its lateral movement parallel to that plane, of catches upon both plate and spindle and a spring coiled about the outer end of the spindle to draw the same longitudinally, and thus hold the catches in engagement.

4. The combination, with a damper-plate provided with a spindle-way, of a spindle sliding in said way and having near its outer end a spiral groove to receive the end turns of a coil, a spring coiled about the spindle and screwing into said groove, and a washer sliding but not rotating upon the spindle and provided with a shoulder to receive the end of the coil-wire and prevent the coil's rotation.

475,080. SPRING-HINGE. LEVI M. DEVORE, Freeport, Ill., assignor of one-half to M. H. Wilcoxon, same place. Filed Feb. 12, 1892. Serial No. 421,288. (No model.)



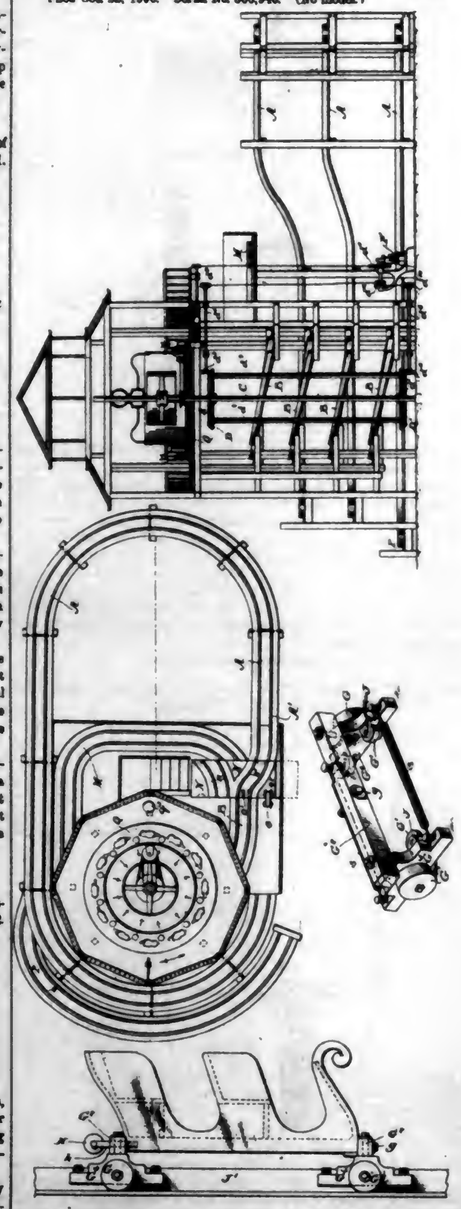
Claim.—1. The combination, with the leaves hinged at their ears, of a spring pivoted at one end to one of the leaves and adapted to bear at its opposite end upon the ear of the opposite leaf, said spring being adapted to turn upon its pivot transversely to the pintle-line, substantially as shown and described.

2. The combination, with a hinge-leaf and a spring pivotally mounted thereon to rotate about an axis approximately perpendicular to the plane of the leaf, of a hood concealing said spring and rotating therewith about the pivotal axis.

3. The combination, with two suitably-pivoted hinge-leaves, of a spring-concealing hood pivotally secured upon one of said leaves and rotating about an axis approximately perpendicular to the plane of the leaf, and a spring mounted in said hood and having an arm engaging the opposite leaf at one side of the pintle-line, substantially as set forth.

4. The combination, with two suitably-connected hinge-leaves, of a spring-coil pivotally mounted transversely to the pintle-line upon one of said leaves and having an arm approximately parallel to the pintle-line engaging an ear of the opposite leaf at one side of that line.

475,081. TOBOGGAN-SLIDE. ASTERIO GUERRA, Philadelphia, Pa. Filed Oct. 22, 1890. Serial No. 368,946. (No model.)



Claim.—1. In an elevating apparatus, in combination, heads, a rod or bar extending from head to head and projecting beyond said heads, a helical or spiral track winding around the space between said heads, said track being adapted to support a car, and means, substantially as described, to rotate said heads, consisting of a gear in the surface of one of said heads, a gear-wheel working in said gear on the head, a pulley on the shaft of said gear-wheel, a source of power, a shaft operated by said source of power, and a pulley-wheel on said shaft, and a belt connecting said pulley-wheel on the shaft of the gear-wheel.

2. In an elevating apparatus, in combination, heads, as D D′, an upright rod, as E, extending from head to head and extending outward beyond said heads, a helical or spiral track, as B, winding around said heads and the space between said heads, a car adapted to travel on said track, gears d d' upon the heads D D′, gears d^9 d^{10}, working in said gears d d', respectively, pulleys d^9 d^{10} on the shafts of said gears d^9 d^{10}, a source of power, a shaft operated by said power, a pulley upon said shaft, a crossed belt extending from said pulley d^{10} to said pulley d^{12}, and a straight belt extending from said pulley d^{12} to said pulley d^9.

3. In an elevating apparatus, in combination, heads, as D D′, an upright rod extending from head to head and extending outward beyond said heads, a helical or spiral track winding around said heads, the lowermost portion of said track inclining downward, a car adapted to travel on said track, a projecting portion near the under surface of the head D′, an arm which rests against the under surface of said head D′, a catch adapted to rest against the wheel of the car when said car is at the beginning of the track B, and connection, substantially as described, between said catch and said arm.

4. In combination, a helical elevating-track, as B, a toboggan-track, as A, a side track, a switch-block adapted to slide, said switch-block being provided with tracks adapted to connect track B and side tracks, and tracks adapted to connect track B and track M.

5. In combination, a helical elevating-track, as B, a toboggan-track, as A, a side track, a switch-block adapted to slide, said switch-block being provided with tracks adapted to connect track B and side track, and tracks adapted to connect track B and track A, and means, substantially as described, to secure said switch-block.

6. In combination, a helical elevating-track, as B, a toboggan-track, as A, a side track, a switch-block adapted to slide, said switch-block being provided with tracks adapted to connect track B and side track, and tracks adapted to connect track B and track A, lugs, as o' o' and o^3 o^3, and a rod o, pivoted to a fixed portion of the frame and adapted to rest between lugs o' o' or o^3 o^3.

7. A truck for a toboggan-car, constructed of a beam, as G^3, and wheel-frames pivotally connected to said beam, and a spring connecting said wheel-frames.

8. In a toboggan-car, in combination, a body forming a car, trucks constructed of beams, and wheel-frames pivotally connected to said beams, one of the beams being pivotally connected to the body of the car, whereby said beam is adapted to move vertically.

9. In a toboggan-car, in combination, a body forming a car, trucks constructed of beams, as G^3, and wheel-frames pivotally connected to said beams, the front beam being pivotally connected to the body of said car, so as to be adapted to move vertically, the rear truck being fixedly attached to the body of the car.

10. In combination, a toboggan-car provided with a truck-beam, as G^3, an arm, as A, which rests on the surface of said beam and projects through a roller, as H, provided with a taper end connected to said arm, and a spring connected to said arm and beam.

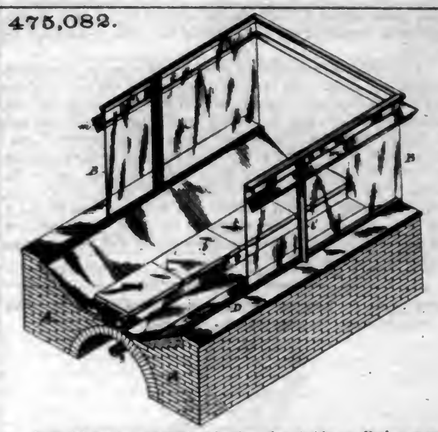
11. In combination, a toboggan-car provided with a truck-beam, as G^3, an arm, as A, which rests on the surface of said beam and projects through a roller and provided with a taper end connected to said arm, and a spring connected to said arm and beam-heads, a bar extending from head to head and projecting beyond said heads, and a helical or spiral track winding around the space between said heads, said track being adapted to support said car and said bar projecting sufficiently to strike said roller H.

475,082. FISH-TANK OR AQUARIUM. GEORGE P. A. GUNTHER, New York, N. Y. Filed Dec. 14, 1891. Serial No. 414,981. (No model.)



Claim.—1. A fish-tank or aquarium having a discharge-passage, with inlet-opening at or near the bottom of the tank, and a perforated pipe located near one of the walls of the tank and having its perforations so located as to direct jets of water across the bottom of the tank and toward the inlet-opening of the discharge-passage, substantially as specified.

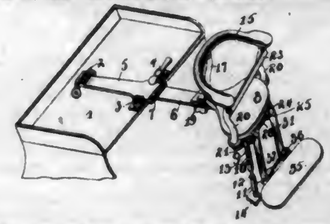
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2. A fish-tank or aquarium having glazed sides, a discharge-passage with inlet-openings at or near the bottom of the tank, and a series of overflow-pipes communicating with said discharge-passage and rising adjacent to the sides of the tank, substantially as specified.

3. A fish-tank or aquarium having glazed sides, a discharge-passage with inlet-openings at or near the bottom of the tank, and overflow-pipes communicating with said discharge-passage, and located within the suture-bars between the plates of glass forming the walls of the aquarium, substantially as specified.

475,083. VEHICLE-SEAT. JOHN P. HUBER, St. Louis, Mo. Filed Feb. 11, 1892. Serial No. 421,103. (No model.)



Claim.—1. A vehicle-seat adapted to be folded upon itself and a back or rest adapted to be removably attached to the same, substantially as described.

2. A vehicle-seat mounted upon a folding support, a back or rest removably secured to the same, and a foot-rest also removably secured to said seat and adapted to be folded, substantially as described.

3. A vehicle-seat comprising a back or rest, a brace 15 of suitable shape, supports hinged to the same, the opposite ends of which are adapted to be removably secured to said seat, and a folding step also attached to the said seat, substantially as described.

4. A vehicle-seat consisting of a back or rest, supports hinged to the same, the center one of which is secured to the said seat by means of a suitable bolt, hooks formed on the ends of the end supports for said brace and adapted to be inserted in suitable openings formed in the casting 24, secured to said seat, and a foot-rest adapted to be secured to said casting by means of a removable bolt or shaft by properly manipulating the same, substantially as described.

5. A vehicle-seat consisting of a back or rest adapted to be removably attached to the same, a foot-rest having arms 31, a casting 24, secured to the under surface of said seat and provided with ears 25, a bolt, such as 28 adapted to be passed through said ears and arms, and slots, such as 33 formed in the extension 32 of said arms for allowing the same to be moved in a horizontal direction for folding, substantially as described.

6. A vehicle-seat having a foot-rest and a bolt, such as 28, provided with cut-away portions 39 and lugs 30 for locking said bolt and allowing the said rest to be turned or folded, substantially as described.

7. A vehicle-seat having a casting 24 attached to the under surface of the seat, ears 25, formed with the same, holes formed in the said ears, arms, such as 31, provided with horizontal extensions 32, slots 33, formed in the said extensions, the terminations of which are enlarged, a shaft, such as 28, provided with cut-away portions 39 and lugs 30, adapted to be passed through said openings formed in the ears and through the said slots 33, and a foot-rest, such as 35, hinged

to the lower ends of the said arms and adapted to rest upon suitable supports 34, formed on the lower ends of said arms, substantially as described.

8. A vehicle-seat consisting of a back or rest, a casting 24, adapted to be secured to the under surface of the said seat, the ends of which extend beyond the same, openings, such as 26, formed in the said extensions, providing means for securing the said back to the seat, ears 25, formed with the said casting and provided with openings 27, extensions, such as 29, formed in two of the said ears, supports, such as 31, having horizontal extensions 32, elongated openings, such as 33, formed in the said extension, the terminations of which are enlarged, a shaft 28, having cut-away portions, such as 39, and legs 30, and a foot-rest, such as 35, movably secured to the lower end of said arm and adapted to rest upon suitable supports formed with the said arms, substantially as described.

475,084. CAMERA. FREDERIC E. IVES, Philadelphia, Pa. Filed Feb. 12, 1892. Serial No. 421,328. (No model.)



Claim.—1. In a camera for producing or superposing a number of images which are in the same plane and show the same perspective, reflecting devices comprising a series of inclined reflectors located one behind the other in the axial line of the incident or undivided rays, said reflectors facing in different directions and some of them being transparent, and secondary inclined reflectors combined with the necessarily transparent axial reflectors, the whole being arranged substantially as and for the purpose set forth.

2. In a camera for producing or superposing a number of images which are in the same plane and show the same perspective, reflecting devices comprising a series of inclined reflectors located one behind the other in the axial line of the incident or undivided rays, said reflectors facing in different directions and some of them being transparent, secondary inclined reflectors combined with the necessarily transparent axial reflectors and arranged in respect thereto substantially as set forth, and an apertured diaphragm for the reflecting devices for each image, substantially as specified.

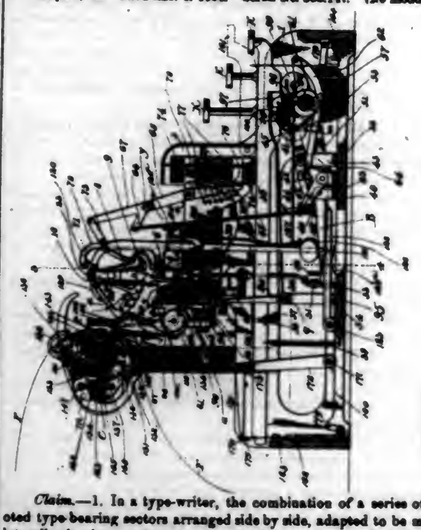
3. In a camera for producing or superposing a number of images which are in the same plane and show the same perspective, reflecting devices comprising a series of inclined reflectors, located one behind the other in the axial line of the incident or undivided rays, said reflectors facing in different directions and some of them being transparent, secondary inclined reflectors combined with the necessarily transparent axial reflectors, and an apertured diaphragm for the reflecting devices for each image, the apertures of some of said diaphragms being in planes inclined in respect to the axial line of the incident or undivided rays, substantially as specified.

4. In a camera for producing or superposing a number of images which are in the same plane and show the same perspective, reflecting devices comprising a series of inclined reflectors located one behind the other in the axial line of the incident or undivided rays, said reflectors facing in different directions and some of them being transparent, secondary inclined reflectors combined with the necessarily transparent axial reflectors and arranged in respect thereto as set forth, and an apertured diaphragm for the reflecting devices for each image, some of said diaphragms being movable in planes inclined in respect to the axial line of the incident or undivided rays, substantially as specified.

5. In a camera for producing or superposing a number of images which are in the same plane and show the same perspective, reflecting devices comprising a series of reflectors located one behind the other in the axial line of the incident or undivided rays, said reflectors facing in different directions and some of them being transparent, secondary inclined reflectors combined with the necessarily transparent axial reflectors and arranged in respect thereto as set forth, and a supplementary reflector in advance of the main reflectors, whereby the incident or undivided rays are deflected at a right angle, substantially as specified.

6. In a camera for producing or superposing a number of images which are in the same plane and show the same perspective, reflecting devices comprising a series of reflectors located one behind the other in the axial line of the incident or undivided rays, said reflectors facing in different directions and some of them being transparent, secondary inclined reflectors combined with the necessarily transparent axial reflectors and arranged in respect thereto as set forth, and an apertured box or casing supplementary to the camera-box inclosing said reflecting devices, substantially as specified.

475,085. TYPE-WRITING MACHINE. GEORGE S. JONES, Philadelphia, Pa. Filed Apr. 6, 1891. Serial No. 388,147. (No model.)



Claim.—1. In a type-writer, the combination of a series of pivoted type-bearing sectors arranged side by side, adapted to be moved laterally simultaneously, and adapted to be moved vertically independently of each other, mechanism for laterally moving said sectors so as to bring any one of the series to a given or central point, a mechanism for upthrowing the adjusted or central sector so that a predetermined character thereon may be brought into active position, and a mechanism for imparting the impression movement to said sector, together with the series of keys connected with said mechanisms and adapted relatively to actuate the same, substantially as described.

2. In a type-writer, the combination of two independent series of pivoted type-bearing sectors arranged side by side, a mechanism for shifting the same into and out of action, respectively, a mechanism for laterally moving said sectors so as to bring any one of the active series to a given or central point, a mechanism for upthrowing the adjusted or central sector so that a predetermined character thereon may be brought into active position, and a mechanism for imparting the impression movement to said sector, together with the series of keys connected with said mechanisms and adapted relatively to actuate the same, substantially as described.

3. In a type-writer, the combination of a series of pivoted type-bearing sectors arranged side by side, adapted to be moved laterally simultaneously, and adapted to be moved vertically independently of each other, mechanism for laterally moving said sectors so as to bring any one of the series to a given or central point, a mechanism for upthrowing the adjusted or central sector so that a predetermined character thereon may be brought into active position, a mechanism for locking said carrier in this position, and a mechanism for imparting the impression movement to said carrier, together with a series of keys connected with said mechanisms and adapted relatively to actuate the same, substantially as described.

4. In a type-writer, the combination, with the series of laterally-movable type-carriers, of the impact-levers mounted in relation to said carriers, the longitudinal levers with which said impact-levers are connected, and the series of transverse levers disposed in respect to said longitudinal levers and adapted each to be acted upon by a predetermined series of key-bars, the keys of which correspond to the characters on the particular type characters, respectively, together with said key-bars, substantially as described.

5. In a type-writer, the combination, with two independent series of laterally-movable type-carriers and a mechanism for shifting the same into and out of active position, respectively, of the impact-levers mounted in relation to said carriers, the longitudinal carriers with which said impact-levers are connected, the intermediate pivoted arms jointed with the connections between said impact and longitudinal levers, and the series of transverse levers disposed in respect to said longitudinal levers and adapted each to be acted upon by a predetermined series of key-bars, the keys of which correspond to the characters on the particular type-sectors, respectively, together with said key-bars, substantially as described.

6. In a type-writer, the combination, with the key-bars, of a frame pivoted below the same, the transverse lever fulcrumed in relation to said frame, and the frictional brake connection between said frame and lever, substantially as described.

7. In a type-writer, the combination, with the central type-bearing sector, of the upthrowing mechanism therefor, said mechanism comprising a pivoted arm mounted rearward of the sector and adapted to act against the same, a toggle-lever connected with said arm and pivoted to a suitable support, and operative devices intermediate the toggle-lever and the key-bars for actuating said pivoted arm, substantially as described.

8. In a type-writer, the combination, with the central type-bearing sector, of the upthrowing mechanism therefor, said mechanism comprising a pivoted arm mounted in the rear of the sector and adapted to act against the same, a toggle-lever connected with said arm and pivoted to a suitable support, and operative devices intermediate the toggle-lever and the key-bars for actuating said pivoted arm, together with stop devices for determining the range of movement of the latter, substantially as described.

9. In a type-writer, the combination, with the type-carriers and the central upthrowing toggle mechanism therefor, of the vertical lever with which said mechanism is connected, the longitudinally-movable slats or bars, the stop-rods extending longitudinally therefrom in vertical series in respect to the path of said vertical lever, and the cam connections between said slats and the key-bars, substantially as described.

10. In a type-writer, the combination, with the type-carriers, of the central impression-lever, the forward rock-shaft adapted to be operated by the action of the key-bars, and the spring connection between said rock-shaft and lever, together with means for regulating the tension of said spring connection, substantially as described.

11. In a type-writer, the combination, with the type-carriers provided with the lateral notches or recesses, of the bolt adapted to be engaged with said notches to lock the carriers in their various positions of vertical adjustment, and the link-and-lever connections between the bolt and the key-bars, adapted to be actuated by the latter in order to operate said bolt, substantially as described.

12. In a type-writer, the combination, with the series of laterally and vertically movable type-carriers and mechanism for operating the same, of a reciprocative pad-carrying frame pivotally mounted in respect to said carriers and adapted to be moved into and out of the path of the central carrier at predetermined intervals, and mechanism operatively connecting said pad-frame with the key-bars, substantially as described.

13. The combination of a reciprocative inking device, a bell-crank lever disposed in reference to and adapted to operate upon the same, a forward rock-shaft, a cam device thereon adapted to operate the arm on said lever, and key-bars connected with said rock-shaft and adapted to actuate the same, substantially as described.

14. In a type-writer, the combination, with the type-carriers and mechanism for operating the same, of an inking-pad arranged in respect to said carriers and a brush device interposed between said pad and the point of impression, whereby the inked type is brushed immediately before the impression is made, substantially as described.

15. In a type-writer, the inking device comprising a box or frame with a pivoted pad-block and a ribbon-holder mounted therein in respect to each other, substantially as described.

16. In a type-writer, the combination, with the longitudinal supporting-bar and the longitudinally-movable paper-carriage supported thereon, of the horizontal roller pivoted upon said bar and provided with a yielding or elastic periphery, the said roller being so disposed that the paper comes into frictional contact therewith during the longitudinal traverse of the carriage, thereby rotating said roller, substantially as described.

17. In a type-writer, the paper-carriage consisting of the combination of the end heads and their connecting parts, the depending end arms, their connecting-bar, the shaft mounted in said arms, the fingers on said shaft, the stud fixed on one end of said shaft, and the lateral hand-lever fulcrumed on one of the end heads and adapted to act upon said stud, substantially as described.

18. In a type-writer, the paper-carriage consisting of the combination of the end heads, the forward connecting-plates therefor, the spring-controlled clamping-bar provided with fingers 146, the shaft provided with recesses with which said fingers engage, the end arm on said shaft, and the lateral hand-lever for operating said arm, substantially as described.

19. In a type-writer, the combination, with a longitudinally-movable paper-carriage, of a frictional clutch device connected with and adapted to impart a step-by-step movement to said carriage and provisions intermediate the clutch device and the keys for actuating said clutch device when the keys are manipulated, substantially as described.

20. In a type-writer, the combination, with a longitudinally-movable paper-carriage, of a clutch device connected therewith and a pivoted frame mounted in the paths of the respective key-bars and operatively connected with said clutch device, substantially as described.

21. In a type-writer, the combination, with a paper-carriage provided with the rear longitudinal bar, of a clutch-device on the bar, said device comprising a frame with a clamping-plate and a lever mounted therein, said lever adapted to be actuated through the medium of the key-bars, substantially as described.

22. In a type-writer, the combination, with a longitudinally-movable paper-carriage, of a clutch device connected therewith and a pivoted frame mounted in respect to the key-bars and connected with said clutch device, the ends of said key-bars being notched or recessed and adapted to act against the frame, substantially as described.

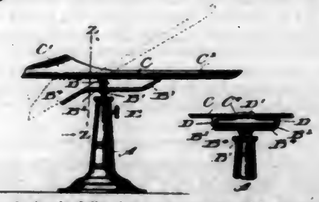
23. In a type-writer, the combination, with a paper-carriage provided with a rear longitudinal bar, of a clutch device on the bar, said device comprising a frame with a clamping-plate and a lever mounted therein, said lever adapted to be actuated through the medium of the key-bars, together with a permanent back-stop for said clutch device, substantially as described.

24. In a type-writer, the combination, with a longitudinally-movable paper-carriage, of a clutch device connected therewith, a frame pivotally mounted in respect to the key-bars of the machine and connected with said clutch device, a shaft supporting said frame, and means for operating said shaft to change the position of the frame in respect to the ends of the key-bars, substantially as described.

25. In a type-writer, the combination of the sector-bearing frame, the series of independent type-sectors pivoted therein, the rod upon which said frame is mounted so that the frame may be tilted forward or moved endwise on the rod, the key-bars, and mechanism adapted to be actuated thereby to effect the adjustment of said frame and to operate the sectors, substantially as described.

26. The combination, with the rod 7 and its supporting parts, of the two-part sector-bearing frame, one of its parts being pivotally mounted upon the said shaft and the other or sector-carrying part being attachable to or detachable from said pivotal part, together with means for connecting said parts, substantially as described.

475,086. COIN-DELIVERING APPARATUS. GEORGE M. LOCKWOOD, Washington, D. C. Filed Feb. 5, 1892. Serial No. 420,463. (No model.)



Claim.—1. A coin-delivering apparatus comprising a stand or pedestal and a tray pivoted thereto in a normally-horizontal position and having a delivery-mouth at its front end and a body provided with longitudinal corrugations converging toward said mouth, said front end being adapted to be depressed and then returned to its normal position by gravity, substantially as described.

2. A coin-delivering apparatus comprising a stand or pedestal and a vertically-adjustable tray pivoted thereto in a normally-horizontal position and having a delivery-mouth at its front end and a body provided with longitudinal corrugations converging toward said mouth, said front end being adapted to be depressed and then returned to its normal position by gravity, substantially as described.

3. A coin-delivering apparatus comprising a stand or pedestal and a vertically-adjustable tray pivoted thereto in a normally-horizontal position and having raised edges, a funnel-shaped delivery-mouth at its front end, and a body provided with longitudinal corrugations converging toward said mouth, said front end being adapted to be depressed and then returned to its normal position by gravity, substantially as described.

4. A coin-delivering apparatus comprising a stand or pedestal, a tray pivoted thereto in a normally-horizontal position, but adapted to be depressed at its front end and then returned to its normal position by gravity, and having a delivery-mouth and a body provided with

longitudinal corrugations converging toward said mouth and a stop for limiting the downward movement of said front end, substantially as described.

5. A coin-delivering apparatus comprising a stand or pedestal, a trunnioned support mounted thereon and carrying front and rear stops, the latter stopping the tray in a horizontal position, and a tray pivoted in the trunnions of said support and held in a normally-horizontal position by said rear stop, but adapted to have a downward movement at its front end limited by the front stop, and having a delivery-mouth and a body provided with longitudinal corrugations converging toward said mouth, substantially as described.

6. A coin-delivering apparatus comprising a stand or pedestal, a trunnioned support mounted thereon and carrying front and rear stops, the latter stopping the tray in a horizontal position, and a tray pivoted in the trunnions of said support and held in a normally-horizontal position by said rear stop, but adapted to have a downward movement at its front end limited by the front stop, and having a funnel-shaped delivery-mouth and a body provided with longitudinal corrugations converging toward said mouth, substantially as described.

7. A coin-delivering apparatus comprising a stand or pedestal, a vertically-adjustable trunnioned support mounted thereon and carrying front and rear stops, the latter stopping the tray in a horizontal position, and a tray pivoted in the trunnions of said support and held in a normally-horizontal position by said rear stop, but adapted to have a downward movement at its front end limited by the front stop, and having a delivery-mouth and a body provided with longitudinal corrugations converging toward said mouth, substantially as described.

8. A coin-delivering apparatus comprising a stand or pedestal, a vertically-adjustable trunnioned support mounted thereon and carrying front and rear stops, the latter stopping the tray in a horizontal position, and a tray pivoted in the trunnions of said support and held in a normally-horizontal position by said rear stop, but adapted to have a downward movement at its front end limited by the front stop, and having a funnel-shaped delivery-mouth and a body provided with longitudinal corrugations converging toward said mouth, substantially as described.

9. A support for a coin-tray, having ears, a bar or plate constituting front and rear stops, and a stem-support, all for attachment to said tray and formed integral with each other from sheet metal.

10. A support for a coin-tray, having a bar or plate constituting front and rear stops and a split stem-support, all formed integral with each other from sheet metal, in combination with a stand for the reception of said support.

11. In a coin-delivering apparatus, the combination, with a coin-tray and its stand or pedestal, of a support upon which said tray is pivotally mounted, said support having divergent spring-arms adapted to enter and fill a corresponding recess in said stand and bind tightly against the walls thereof, whereby vertical adjustment of said tray and support may be effected with relation to said stand and accidental separation of said parts prevented, substantially as described.

12. A coin-delivering apparatus comprising a stand or pedestal and a tray pivoted thereto in a normally-horizontal position and having a funnel-shaped delivery-mouth, said tray being formed from a single piece of sheet material and preponderating in the rear of its horizontal axis, but pivoted in front of said axis, whereby when the tray is depressed at its front end it returns to its normal position by gravity, substantially as described.

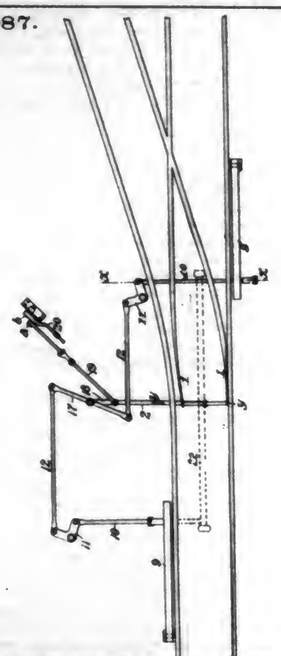
475,087. SWITCH MECHANISM. THOMAS S. MITCHELL, Pittsburg, Pa. Filed Feb. 25, 1891. Serial No. 382,732. (No model.)

Claim.—1. In a switch mechanism, the combination of movable switch-rails, shifting rails arranged alongside of the main track at a distance from the switch, a main lever 17, having its ends connected by rods and bell-cranks to the shifting rails and provided with an arm pivotally connected with the switch-rod, the arm being arranged at such an angle to the main lever that the switch-rod, arm, and pivotal point of the main lever will form a straight connection with the switch-rails when the latter are set for the siding, substantially as set forth.

2. In a switch mechanism, the combination of movable switch-rails, shifting rails arranged alongside of the track at a distance from the switch, and a main lever having its ends connected to the shifting rails and provided with an arm pivotally connected to the switch-rods, said arm being arranged at such an angle to the lever as to lock the switch-rails as against accidental movement when open to the siding, and a hand-operated mechanism connected to the arm on the main lever and adapted to shift the switch-rails and lock them at clear main line, substantially as set forth.

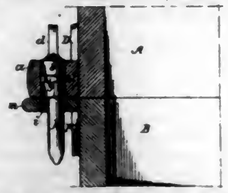
3. In a switch mechanism, the combination of movable switch-rails, shifting rails arranged alongside of the track at a distance from the switch, a main lever 17, having its ends connected to the shifting rails and provided with an arm pivotally connected to the switch-rods, said arm being arranged at such an angle to the lever as to lock the

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switch-rails as against accidental movement when open to the siding, a movable projection on an engine, adapted to engage the shifting rails when the switch-rails are open to siding, and a hand-operated mechanism connected to the arm on the main lever and adapted to shift the switch-rails and lock them to clear main line, substantially as set forth.

475,088. ADJUSTING-PIN FOR MOLDING-FLASKS. ARCHIBALD MONTGOMERY, Philadelphia, Pa. Filed Nov. 20, 1891. Serial No. 412,554. (No model.)



Claim.—1. The within-described adjusting device for molding-flasks, said device comprising a pin having one portion eccentric in respect to the other, a boss in which one portion of the pin is free to turn, and a socket-plate having an opening for the reception of the other portion of the pin, substantially as specified.

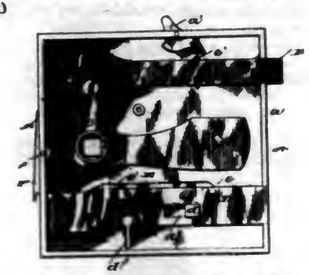
2. The within-described adjusting device for molding-flasks, said device consisting of a pin having one portion eccentric in respect to the other, a boss in which one portion of the pin is free to turn, a socket-plate having an opening for the reception of the other portion of the pin, and brackets whereby said socket-plate and boss may be secured to the drag and the cope of the flask, substantially as specified.

3. The within-described adjusting device for molding-flasks, said device comprising a pin having one portion eccentric in respect to the other, a boss in which one portion of the pin is free to turn, a socket-plate having an opening for the reception of the other portion of the pin, and a transverse key passing through the boss and engaging with a groove in that portion of the pin which turns in said boss, so as to confine the pin vertically thereto, substantially as specified.

4. The within-described adjusting device for molding-flasks, said device comprising a pin, a boss adapted for the reception of one portion of said pin, and a socket-plate having an opening beveled or flared from top to bottom in all parts and adapted for the reception of the other portion of the pin, substantially as specified.

5. The within-described adjusting device for molding-flasks, said device comprising a pin having one portion eccentric in respect to the other, a boss in which one portion of the pin is free to turn, and a socket-plate having a double-V-shaped opening for the reception of the other portion of the pin, substantially as specified.

475,089. LATCH AND LOCK. ARTHUR F. NIXON and LEVI L. GIBSON, Everton, Mo. Filed Oct. 1, 1891. Serial No. 407,405. (No model.)



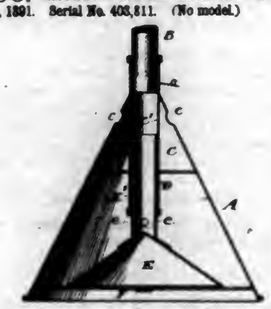
Claim.—1. In combination with the casing, the bolt having a lug thereon, the pivoted lever having a lug adapted to engage the lug on the bolt, means for raising the lever and sliding the bolt, and means for locking the lever, consisting of a lever pivoted in the flange of the casing, having one end terminating in a finger and the other end formed in the shape of a lug adapted to engage the free end of the lever, the latch-bolt having a recess on the under side, and the weighted angular lever having a lug engaging said recess of the latch-bolt, substantially as described.

2. In a combined latch and lock, the combination of the latch-bolt, the weighted lever engaging said bolt, the locking-bolt having a slot, a pin or lug arranged in said slot, the lug on the locking-bolt, the pivoted lever having the lug acting in conjunction with the lug on the bolt, and a key adapted to lift the lever and move the bolt, and the catch for securing the pivoted lever when desired, as and for the purpose described.

3. In a combined latch and lock, the combination of the casing, the bolt having the lug, the catch for engaging the lug, the angular weighted lever having one end engaging the said bolt, the sliding bolt, the pivoted lever acting in conjunction therewith, and the catch for securing the pivoted lever.

4. In a combined lock and latch, the combination of a casing; a sliding bolt, an angular weighted lever engaging said bolt, a pivoted lever having the under side recessed, a sliding bolt acting in conjunction with the lever and having a recess on the under side, a key operating on the lever and bolt, and a catch for securing said lever.

475,090. CLOTHES-POUNDER. HENRY STOVER, Lanark, Ill. Filed Aug. 26, 1891. Serial No. 403,811. (No model.)

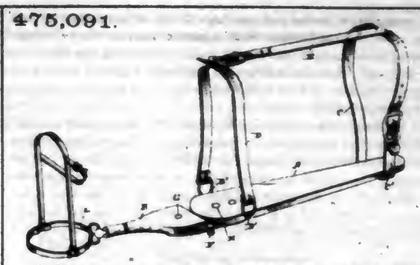


Claim.—A washing-machine pounder consisting of the conical vessel A, with handle-socket *a* and cross-bars F F, the air-chamber C, with air-inlets *c* on the outer side, the interior bottom-open tube D, with air-holes *c'*, and the valve E, with tubular shank having air-holes *e*, all substantially as shown and described.

475,091. ANIMAL-POKE. UPTON W. STRACKNER, Bettie, Tex., assignor of one-half to T. J. Nelson, same place. Filed Sept. 21, 1891. Serial No. 406,414. (No model.)

Claim.—1. In a poke, the combination, with bar A and a means for suspending it beneath the animal's body and the bar B, which is secured at its outer end to the animal's head, of a hinge to the opposite side of which the adjacent ends of the said bars are pivoted, substantially as shown and described.

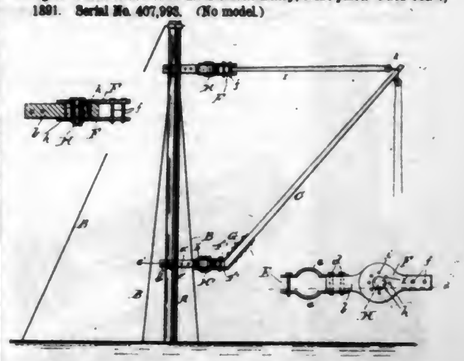
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2. In a poke, the combination, with bar A, which is suspended beneath the animal's body, of a hinge pivoted to the forward end of the said bar and which is formed with a curved slot extending around its pivotal point, a stop on bar A, which passes through said slot, and bar B, secured to the projecting end of the hinge and which is secured at its outer end to the animal's head, substantially as shown and described.

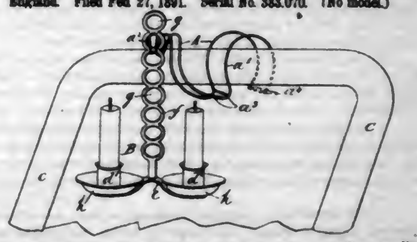
3. In a poke, the combination, with the bar A, adapted to be suspended beneath an animal's body, and the bar B, which is adapted to be supported at its outer end by the animal's head, of a hinge, pivots H G, which connect the adjacent ends of the bars to the opposite sides of the hinge, and strips K, secured at their outer ends to the bars A B, respectively, and extending inward over the hinge sides and secured to the said pivots H G, substantially as shown and described.

475,092. CRANE. WILLIAM G. STRINGER, New Orleans, La., assignor of one-fourth to William Gibson Henry, same place. Filed Oct. 7, 1891. Serial No. 407,993. (No model.)



Claim.—The combination, with a mast and the arm C and rope I, of the strips secured to said mast at suitable points from its upper and lower ends, respectively, the brackets secured at one end to the respective strips and each bracket having an eye at its outer end, the plates adapted to be connected at one end to the arm C and rope I, respectively, and having an eye at their inner ends, friction-rollers arranged within the eyes of the bracket and confined in position by the plates on opposite sides thereof, and a pivot-bolt passing through the respective eyes so as to pivotally connect the plates and brackets, and consequently the arm C and rope I to the mast, substantially as specified.

475,093. PORTABLE APPLIANCE FOR SUPPORTING AND SUSPENDING CANDLES, LAMPS, OR FLOWERS. JAMES SYDNEY, London, England. Filed Feb. 27, 1891. Serial No. 383,070. (No model.)



Claim.—1. An appliance for supporting and suspending candles, lamps, or flowers before a mirror or picture or the front of a piano-

forte, consisting of a bracket formed as a C-clip at one end and a hook at the other, in combination with a candle, lamp, or flower holder, consisting of an upright part having two or more holes one above the other, adapted to engage with and be suspended from the hooked end of the said bracket and furnished with sockets or rings, for the purposes and substantially as set forth.

2. In combination with a bracket adapted to be attached to a mirror or picture or the front of a piano-forte for supporting candles, lamps, or flowers in front thereof, a candle, lamp, or flower holder, consisting of an upright part having two or more holes one above the other, adapted to engage with and be suspended from the hooked end of the said bracket and furnished with sockets or rings, for the purposes and substantially as set forth.

475,094. NUT-LOCK. EDWARD W. TAYLOR, Salt Lake City, Utah. Filed Feb. 24, 1891. Serial No. 382,501. (No model.)



Claim.—The combination, with a bolt, of a nut provided with two beveled grooves in its threaded bore on opposite faces thereof, each having its cam-face arranged reversely to the other, and pins or keys adapted to be inserted in said grooves to engage said faces and lock the nut from movement on the bolt in either direction, substantially as specified.

475,095. HOUSE-DOOR LETTER-BOX. WILLIAM C. THORNTON, Jefferson City, Mo. Filed June 10, 1891. Serial No. 395,774. (No model.)



Claim.—1. The combination, with a letter-box, of the semi-cylindrical sections journaled therein, having a slot or opening between them to receive the letter and each having a limited movement upon the other, whereby the letters are deposited, substantially as shown and described.

2. The combination of the letter-box and the semi-cylindrical sections journaled therein, their flat faces adjacent and apart, said sections being arranged to move in unison with each other and also upon each other, substantially as and for the purpose described.

3. The combination, with the letter-box, of the lower sections journaled therein, the upper sections journaled upon the journals of lower section, the slotted head-pieces, and the stop-pins, all arranged and adapted to operate substantially as shown and described.

4. The combination, with the letter-box, of the semi-cylindrical sections journaled therein, the device for revolving the sections, and an alarm-plunger arranged in the path of said revolving device and communicating with an alarm, substantially as and for the purpose described.

5. The combination, with the letter-box, of the semi-cylindrical sections journaled therein, the revolving device, the slotted head-pieces and stop-pins, and the alarm-plunger communicating with an alarm, substantially as shown and described.

6. The combination, with a letter-box having an opening, of the semi-cylindrical sections journaled in the box opposite to said opening, and the guiding-plates arranged upon opposite sides of the opening to guide the letters between the sections, substantially as shown and described.

7. The combination, with a letter-box having an opening, of the semi-cylindrical sections journaled therein, the revolving device, guiding-plates, and an alarm-plunger communicating with an alarm, all arranged substantially as set forth.

8. The combination, with a letter-box, of a paper-box hinged to the top of the same, said paper-box being adapted to be turned down upon the letter-box to receive the papers, substantially as shown and described.

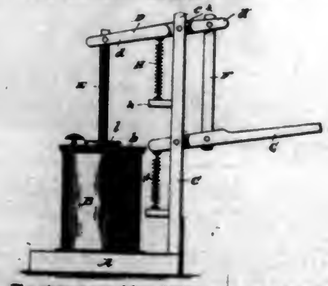
475,096. HOUSE-DOOR LETTER-BOX. WILLIAM C. THORNTON, Jefferson City, Mo. Filed June 10, 1891. Serial No. 395,775. (No model.)



Claim.—1. The combination, with a letter-box provided at its upper end with an opening, of a delivery device normally closing said opening and adapted to deposit mail-matter in the box, and a plate journaled in the box and adapted to be adjusted to deflect deposits into either a collection or delivery compartment, substantially as set forth.

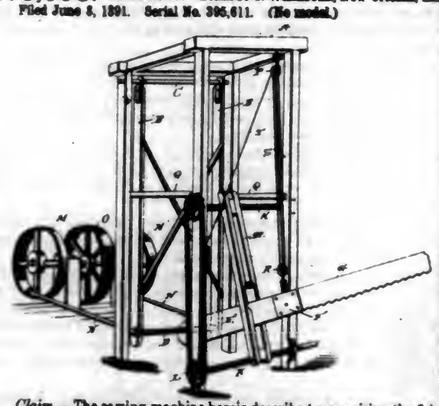
2. The combination, with a letter-box provided with an opening at its upper end and with apertures in its side closed by a slide, of a delivery device normally closing said opening and adapted to deposit mail-matter into the box, and a plate journaled in the box and adapted to be adjusted to deflect deposits into either a collection or delivery compartment, one of the journals for said plate having an angular end for the engagement of a key and a slide for covering the same, substantially as set forth.

475,097. CHURN. WILLIAM WALTER, Saltsburg, Pa. Filed July 31, 1891. Serial No. 401,308. (No model.)



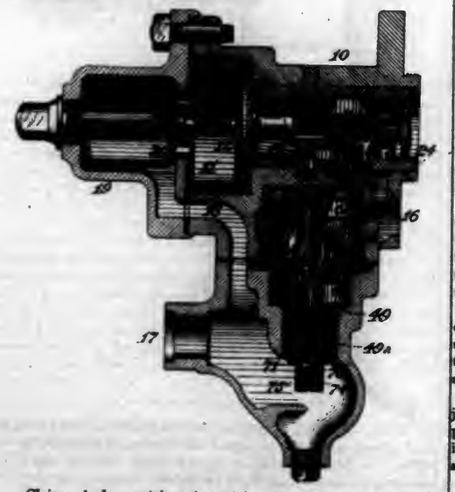
Claim.—The churn comprising the base or support having the receptacle supported thereon, an upright rising therefrom, a lever D, pivoted intermediate of its ends in a fork at the upper portion of said upright, the dasher-rod pivoted to the longer arm of said lever, the rod or link F, connected to the short arm of said lever at the rear of the upright, the operating-lever G, pivoted at its forward end to said upright and having said link connected thereto at the rear of its pivot, and the springs H and H', connected, respectively, to the levers D and G forward of their pivots and to lugs on the upright, whereby each lever is acted upon by a spring directly connected thereto, substantially as and for the purpose specified.

475,098. DRAG-SAW. LORENZO S. WASHBURN, New Orleans, La. Filed June 8, 1891. Serial No. 395,611. (No model.)



Claim.—The sawing-machine herein described, comprising the following instrumentalities, in combination: the main frame, the rod C, secured to the rear upper portion thereof, the arms B, depending therefrom, the rod D, connecting the lower ends of said arms, the drive-pulleys, the rods N, connected eccentrically to said pulleys at one end and connected to the rod D at their opposite ends, the reciprocating saw having its pitman E connected to the rod D, the transversely-arranged threaded rods having sprocket-wheels at one end, the sprocket-chain connecting said wheels, the saw-guide comprising two arms with threaded nuts interposed at opposite ends and bearing on the transversely-threaded rods, a block and tackle for vertically adjusting the saw, and suitable means for imparting motion to the pulleys, substantially as specified.

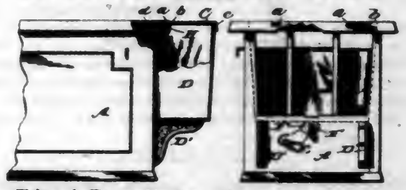
475,099. TRIPLE VALVE FOR AUTOMATIC AIR-BRAKES. HENRY H. WESTINGHOUSE, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Filed Aug. 31, 1891. Serial No. 404,308. (No model.)



Claim.—1. In a quick-action triple valve, the combination of a leakage-port opening into a passage leading to the train-pipe connection, a valve controlling the flow of air from the quick-action-valve chamber to said port, and a closing-spring acting to hold said valve normally to its seat, substantially as set forth.

2. In a quick-action triple valve, the combination of a check-valve controlling the flow of air from the quick-action-valve chamber to the train-pipe connection, a hollow stem fixed to said check-valve, a chamber connected to said valve-stem, a valve controlling a passage from the bore of the stem to said chamber, a closing-spring acting to hold said valve normally to its seat, and a leakage-port leading from said chamber to a passage communicating with the train-pipe connection, substantially as set forth.

475,100. RESERVOIR COOKING-STOVE. JOHN WHITE, Memphis, Tenn. Filed Jan. 14, 1892. Serial No. 418,364. (No model.)



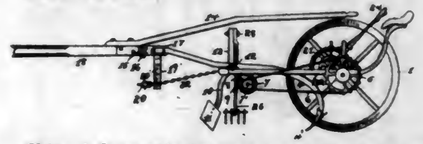
Claim.—1. The combination, with a stove having a flange at its rear end, of a reservoir having notches to receive said flange and means for supporting the reservoir, substantially as and for the purpose specified.

2. The combination, with a stove having a flange at its rear end, provided with openings, of a reservoir supported at the rear of the same and provided with notches to receive said flange, and a cover to said reservoir, having lugs engaging said openings, substantially as specified.

3. The combination, with a stove having a flange with openings, of a reservoir having notches to receive said flange, means for supporting the reservoir, and a flanged cover having lugs to engage said openings, substantially as specified.

4. The combination, with a stove having open rear end and a lug and flange with openings, of a reservoir having legs to embrace the lug on the stove, and notches to receive the flange, and a cover having depending flange and lugs, substantially as and for the purpose specified.

475,101. COTTON-CULTIVATOR. JAMES H. WILLIAMS and HORACE R. WILLIAMS, Fayetteville, Ark. Filed July 13, 1891. Serial No. 399,365. (No model.)



Claim.—1. In a combined cotton chopper and scraper, the combination of the main frame, the carrying-wheels, the tongue composed of two sections suitably hinged together, the supplemental frame pivotally supported in the main frame and secured at its forward end to the rear section of the tongue, a lever secured to said rear section, the depending feet on the supplemental frame, the plows, the scrapers arranged on the front portion of the main frame, and the chopping mechanism intermediate of the plows and scrapers, substantially as described.

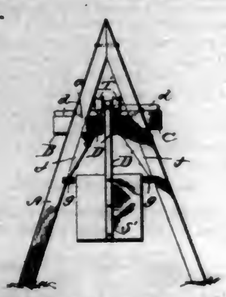
2. In a combined cotton chopper and scraper, a tongue composed of two sections 17 and 18, having the interlocking projections 15, a bolt passing through said projections to pivotally connect the sections together, the rear section being made of cast-iron or other suitable material, and the lever rigidly secured to the front section, substantially as described.

3. In a combined cotton chopper and scraper, a tongue composed of two sections suitably hinged together, a lever secured to the front section, a transverse piece 19, secured to the rear section and having the depending end pieces 19', and the singletree, substantially as described.

4. In a cotton-cultivator, the main frame having the parallel adjacent side pieces on either side of the frame and consisting of tubular pieces all connected together, the depending arms 10, and an angular iron 31, secured on said feet and carrying the plow and harrows, substantially as described.

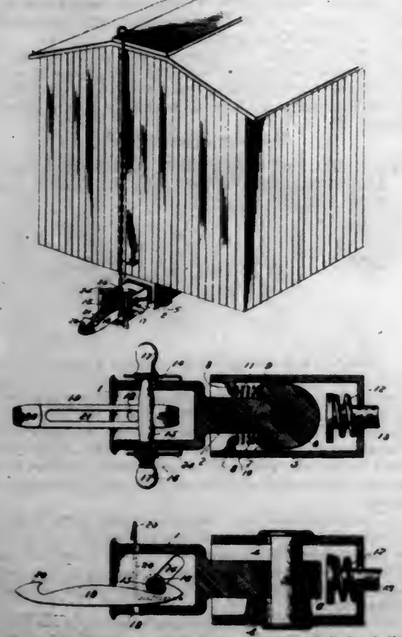
475,102. TRAMWAY. ELI J. WOLFSON, Maysville, Ohio. Filed Nov. 28, 1891. Serial No. 413,421. (No model.)

475,102.



Claim.—The combination, with the approximately triangular-shaped supports A, of the sills D, the bolts *a*, the blocks *f*, the rails *d*, secured to the said sills, the guard-rails *g*, and the car suspended from the said rails and held in a vertical position by means of the guard-rails *g*, substantially as set forth.

475,103. CAR-COUPLING. THEODORE A. BECKWITH, Haverhill, Mass., assignor of part to Rufus P. Tapley, Jr., Charles E. Clogston, Frank R. Hilliard, George H. Leighton, John Callahan, Frank Callahan, Clarence L. Hoyt, Alfred McLeod, Gayton C. Greely, William H. Raddock, Charles M. Hoyt, Thomas J. Neagle, George A. Tuxbury, Randall B. Day, James J. Vaughn, James McDonald, Daniel W. Hopkinson, Michael J. Kiley, Michael F. Brady, Hargreaves Tattersall, Gilbert A. Sampson, Chester P. Brown, and Theodore P. Dutra, same place, John J. Molloy, Frank Molloy, Michael J. Shea, and Milton G. Tenney, Georgetown, Maurice J. Walsh, Lawrence, and Dennis P. McCarthy, Danvers, Mass. Filed Oct. 26, 1891. Serial No. 409,897. (No model.)



Claim.—1. In a car-coupler, the combination, with the shell provided with inclined slots, of a pin tapering at its ends, mounted in said slots, and guides on said pin outside the shell of a diameter larger than that of the slots, substantially as described.

2. In a car-coupler provided with inclined slots in its sides, a gravitating pin tapering at each end, a knob integral therewith, and a knob secured on the free end of the pin, the said knobs being of greater diameter than the width of the slot, substantially as described.

3. In a car-coupler, the combination, with a gravitating pin loosely mounted in the slots in the sides of the shell, of a bail pivoted to the shell at the rear of the slots, said bail having a horizontal portion and a vertical portion, said vertical portion being connected by cross-bar, a ring on said cross-bar, and a chain secured in said ring, whereby upon the pull of the chain the pin is carried upward through the medium of the junction of the horizontal and vertical portions of the bail, substantially as described.

4. In a car-coupler, the combination, with the shell and shank, of a sleeve and a yielding connection between the shank and sleeve and means for exerting equal pressure on both sides of the shank, whereby it is retained in position, substantially as described.

5. In a car-coupler, the combination, with the shell and shank, of an enlarged bearing in the rear of the shank, a pivot-pin passing through said bearing, and a sleeve provided with slots in which said pivot-pin plays, substantially as described.

6. In a car-coupler, the combination, with the shank, of an enlarged bearing at its rear end, a sleeve provided with internal lugs, and springs interposed between said bearing and lugs, substantially as described.

7. In a car-coupler, the combination, with the shank provided with an enlarged bearing at its rear end, of a sleeve having internal lugs in advance of the bearing, springs interposed between said lugs and bearing, and a slotted pivotal connection between said shank and sleeve, substantially as described.

8. In a car-coupler, the combination, with the shank, of a sleeve yieldingly and pivotally connected to said shank and a tail-bolt and compression-spring supported at the rear of the sleeve, substantially as described.

9. In a car-coupler, the combination, with the shell, of a yielding separable shank and a pivotal connection between the different parts of the shank, substantially as described.

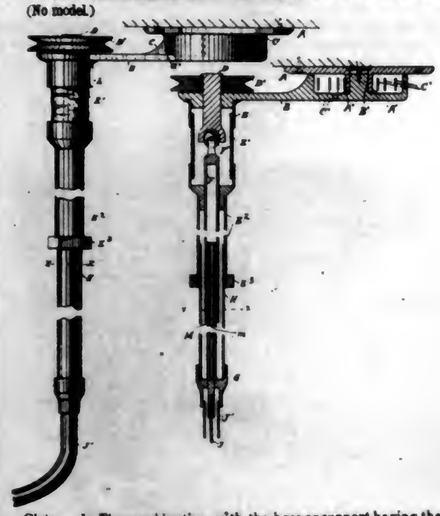
10. An arrow-head for car-couplers, consisting of a slotted body portion tapering at each end and noses on the ends of said body portion, substantially as described.

11. An arrow-head for car-couplers, consisting of a slotted body portion and a nose at each end of said body portion, said nose being formed with a convexed inner bearing-surface, substantially as described.

12. In a car-coupler, the combination, with the shell, of a gravitating horizontally-disposed transversely-arranged pin loosely mounted in inclined slots in the sides of the shell, means for raising said pin, a shank extending rearwardly from the shell, a sleeve, and a pivotal and yielding connection between said sleeve and shank, substantially as described.

13. A car-coupler provided with a rearwardly-extending shank, a sleeve surrounding said shank, a pivotal and slotted connection between said shank and sleeve, and means for yieldingly retaining the sleeve in a direct line of draft, substantially as described.

475,104. FLEXIBLE SHAFTING AND HANGER THEREFOR. JAMES H. BEEBER, Rochester, N. Y. Filed Aug. 3, 1891. Serial No. 401,568. (No model.)



Claim.—1. The combination, with the base or support having the boss, of the arm having the pivot-stud entering the boss and the casing secured thereto, the pulley carried by the arm, and the spring connected to the boss and casing for moving the arm in one direction, substantially as described.

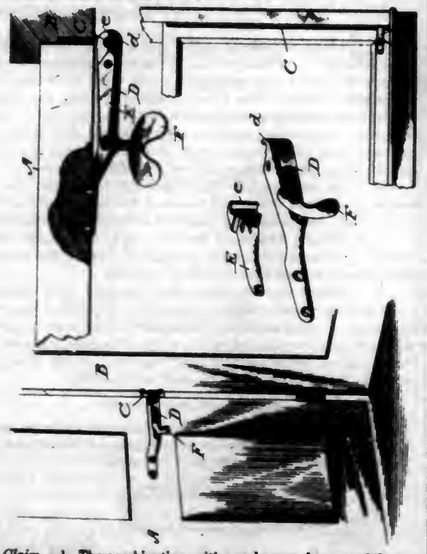
2. The combination, with the base or support, the arm pivoted thereto, and the spring for turning said arm, of the pulley and stud-shaft on the arm, the extensible shaft adjustably supported on the arm, and the universal connection between said two shafts, substantially as described.

3. The combination, with a pulley-support, a pulley mounted thereon, and one section of a telescoping rotary shaft connected thereto by a universal-joint connection, of another telescoping shaft-section cooperating with the first-mentioned one, and an adjustable support therefor connected to the pulley-support by a flexible connection, but independent of the first-mentioned shaft, substantially as described.

4. The combination, with a pulley-support, a pulley mounted thereon, one section of a telescoping rotary shaft connected thereto by a universal-joint connection, and a tube or sleeve inclosing said shaft and secured to the pulley-support by a flexible connection, of a second tube or sleeve telescoping with the first-mentioned one and arranged to be rigidly secured thereto, and another shaft-section supported by the said tube and telescoping with the other shaft-section, substantially as described.

5. The combination, with the movable spring-operated support, the pulley mounted thereon, and the shaft connected to the pulley by a universal-joint connection, of the telescoping shaft-casing connected to the support by a flexible connection and carrying a shaft adjustably connected with the first-mentioned one, substantially as described.

475,105. DOOR-CHECK. CHARLES BEW, Angola, Ind. Filed Mar 12, 1892. Serial No. 424,695. (No model.)



Claim.—1. The combination, with a rod secured to one of the two parts to be relatively secured in a fixed relation, of a holder fastened to the other part and composed of a bar which is recessed on its inner side, a lever pivoted to the bar and located within the said recess, the jaws of the said bar and the lever being constructed to grip the aforesaid rod, and a tension device carried by the said bar and adapted to effect a gripping of the jaws on the said rod, substantially as and for the purpose described.

2. The combination, with a rod secured to one of the two parts to be relatively secured in a fixed relation, of a holder applied to the other part and composed of a bar which is recessed on its inner side and having one end extended and deflected and fastened to the said part, a lever pivoted to the said bar near the free end thereof and having its rear end extended within the said recess, the jaws of the said bar and the lever being grooved to receive the said rod, and a tension device carried by the said bar and adapted to engage with the inner end of the said lever to cause the jaws to grip the aforesaid rod, substantially as described.

475,106. APPARATUS FOR TREATING WOOL OR LIKE SUBSTANCES. GEORGE L. P. EYRE, London, and THOMAS J. HOPKINS, Trowbridge, England. Filed Dec. 10, 1888. Serial No. 333,297. (No model.) Patented in England Dec. 27, 1888, No. 18,907.

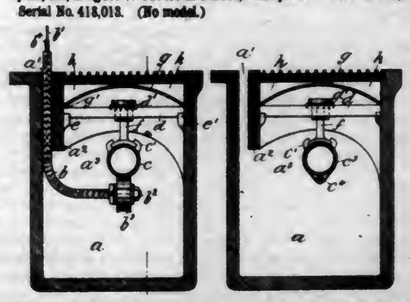
Claim.—1. In a machine or apparatus for the treating of wool and like substances, the combination of a centrifugal device consisting of a revolving perforated cage or basket, the surrounding casing having the outlet K, and the collecting-plate J for directing the air thrown off by the centrifugal action of the revolving cage or basket into such outlet, substantially as described.

2. In a machine or apparatus for the treating of wool and like substances, the combination, with a centrifugal device, of a casing therefor having a cover provided with a valved air-opening, a baffling-plate H, surrounding such opening, a spray-producing device arranged outside of and adjacent to the said baffling-plate, and a fluid-supply pipe leading to the said spray-producing device, substantially as described.

3. In a machine or apparatus for treating wool and the like, the combination, with a centrifugal device, of a casing surrounding it, a cover therefor, a hollow liquid-tight hinge for the cover, a liquid-supply pipe leading to this hinge, and a liquid-pipe leading from the hinge into the said casing substantially as described.

4. In an apparatus for the treating of wool and the like with a solvent agent, the combination of a closed casing in which the wool is treated, an exit-pipe therefrom for the liquid with which the wool is treated, the intermediate tank B, into which the said exit-pipe enters above the level of its bottom to facilitate the settling therein of the agent, the pipe W, leading from the bottom of such tank, through which the settled agent may be drawn off, and another pipe *c*, leading from the upper portion of the said tank to a condensing apparatus, substantially as described.

475,107. ELECTRIC RAILWAY. JOHN W. GRANTLAND, Philadelphia, Pa., assignor to Gilbert L. Parker, same place. Filed Jan. 14, 1892. Serial No. 418,013. (No model.)



Claim.—1. In an electric railway, an overhanging slotted underground conduit, a vehicle provided with an arm carrying a trolley or sled, a hollow electrified conductor having a stream or blast of an absorbing or drying medium conveyed through said conductor, and relay-stations connected with said conductor for reheating the medium conveyed through said conductor, substantially as and for the purposes set forth.

2. In an electric railway, the combination of an overhanging slotted conduit, a hollow conductor supported beneath the overhanging portion of said conduit, a heating or drying medium introduced at suitable distances apart into and conducted through said conductor, means for electrifying the exterior surface of the conductor, and a vehicle provided with a depending curved arm having a trolley or sled attached thereto and contacting with the electrified surface of said conductor, substantially as and for the purposes described.

3. In an electric railway, the combination of an underground slotted conduit provided with an overhanging part, a tubular hollow conductor supported beneath the overhanging portion of said conduit, means arranged at suitable distances apart for permitting of the introduction and passage of a blast or stream of a drying medium into and through said conductor for drying the electrified exterior surface of said conductor and by radiation preventing the deposition or collection of moisture around or about the internal surface of the overhanging portion of the conduit, and a moving vehicle provided with a depending arm extending through the slotted portion of the conduit and carrying a trolley or sled contacting with the electrified surface of the conductor, substantially as and for the purposes described.

4. In an electric railway, a subway or conduit, a hollow conductor, means for forcing a heating medium through said conductor, and relay heating-stations connected with said conductor, substantially as and for the purposes described.

5. In an electric railway, an overhanging subway or conduit, flues or passages in the overhanging portion thereof, a hollow conductor located adjacent to said flues or passages and having its external walls included in circuit and accessible to a trolley or sled, and means for forcing heated blasts or streams through said conductor to heat the same and produce a circulation of gaseous vapor in said flues or passages, substantially as and for the purposes described.

6. In an electric railway, a hollow conductor, means for forcing a drying medium through said hollow electrified conductor, relay-stations interposed in branch circuits from said conductor for revivifying said drying medium, and shunt-conductors for short-circuiting or cutting out said relay-stations, substantially as and for the purposes described.

7. In an electric railway, an overhanging conduit or subway, bridge-pieces ranging transversely of the space formed by the overhanging portion of the conduit or subway, a shield supported on said bridge-pieces and forming ducts or passages, carriers depending from said bridge-pieces and insulated therefrom, a hollow conductor supported by said carriers, and means for forcing a heating medium through said hollow conductor, substantially as and for the purposes described.

8. In an electric railway, an overhanging conduit, bridge-pieces ranging transversely of the space formed by the overhanging portion of the conduit or subway, T-arms depending from said bridge-pieces and insulated therefrom, a hollow conductor provided with cleats engaging the heads of said T-arms and adapted to compensate for expansion and contraction of the conductor, and means for forcing a heating medium through said conductor, substantially as and for the purposes described.

9. In an electric railway, an overhanging conduit, a hollow electrified conductor located within the space formed by the overhanging portion of the conduit, a shield disposed above the conductor and provided with deep apertures at the edges thereof, means located at suitable distances apart for causing a heating and drying medium to be conveyed through said conductor, and a vehicle provided with a depending curved arm carrying a trolley or sled engaging the electrified surface of said conductor, substantially as and for the purposes described.

10. In an electric railway, an overhanging and slotted conduit supporting a tubular conductor having a heating and drying medium conveyed through the same and having the exterior surface electrified, a vehicle provided with an arm consisting of a copper conductor embedded in insulating material, a two-part surrounding casing, solid bars applied to the exterior wall of said casing, and a trolley or sled attached to said arm and contacting with the electrified surface of said hollow conductor, substantially as and for the purposes described.

11. In an electric railway, an overhanging and slotted conduit, a conductor supported beneath the overhanging portion of said conduit having a drying medium passed through the same, relay-stations connected with said conductor at determinate points, a trolley-arm provided with a flat or sheet copper conductor embedded in insulating material, a casing inclosing the copper conductor and its complemental insulating material, and bars suitably connected with said casing, substantially as and for the purposes described.

12. An electric railway comprising a subway or conduit, a hollow conductor suitably supported therein, means for forcing a heating medium through said conductor, relay heating-stations connected with said conductor, and a vehicle provided with an arm carrying a trolley or sled and contacting with the electrified exterior surface of said conductor, substantially as and for the purposes described.

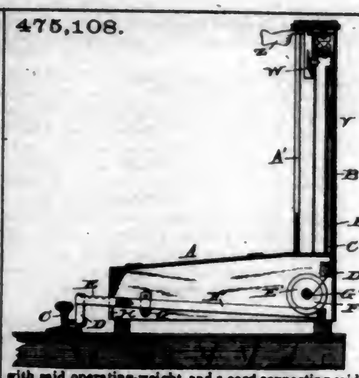
475,108. RAILWAY TIME-SIGNAL. JOHN A. GUINN, Perry, Iowa. Filed Jan. 21, 1892. Serial No. 418,516. (No model.)

Claim.—1. A railroad time-signal consisting of an operating-blade, a pivoted track connected with said blade, a time mechanism having an operating-weight connected with a roller on said track, said parts being combined substantially as described

2. A railroad time-signal having an operating-blade adapted to be pivoted to a railroad-rail, a tilting track having one end connected with said blade, a time mechanism with an index attached to the operating-weight thereof, a standard in which said time mechanism is supported, and a weight on said tilting track having means, substantially as described, connected with it and the operating-weight for raising the latter, said parts being combined substantially as described.

3. A railroad time-signal having an operating-blade, a tilting track, a train of time mechanism provided with an operating-weight, sprocket-wheel loosely mounted on a shaft in said train and connected with a ratchet-wheel on the same shaft by a spring-pawl carried by the said sprocket-wheel, a sprocket-chain on said sprocket-wheel connected

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with said operating-weight, and a cord connecting said sprocket-chain and roller, said parts being combined substantially as described.

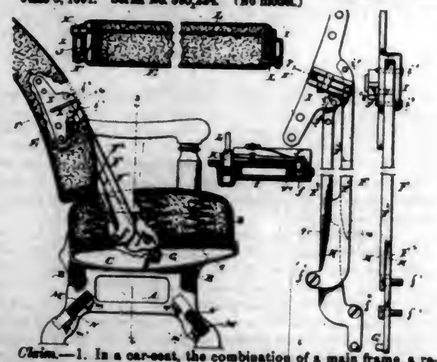
4. A railroad time-signal having a time mechanism with an index, an operating-blade, a tilting track, a weight on said track, and means, substantially as described, connected with said weight and said time mechanism for resetting said index to its initial point without affecting the time mechanism, said parts being combined substantially as described.

5. A railroad time-signal consisting of an operating-blade adapted to be pivoted to a railroad-track, a tilting track connected with said blade, a standard, a time mechanism in the upper part of said standard, having a ratchet-wheel keyed on one of its shafts, and sprocket-wheel loosely mounted on the same shaft and carrying a pawl engaged with said ratchet-wheel, an index projecting from said standard and connected with the operating-weight of the time mechanism, a roller on said tilting track, and a sprocket-chain on the sprocket-wheel, connected at one end with the operating-weight and at the other by a cord with the said roller, said standard having time-gradations on its faces, and said parts being combined substantially as described.

6. A railroad time-signal having a track with a roller thereon for tilting the same and a swinging trigger for locking said track, said parts being combined substantially as described.

7. A railway time and danger signal having a clock mechanism, a tilting-lever, a roller having a cross-bar of reduced diameter, a weight for operating said clock mechanism having an index connected therewith, and a cord and chain for raising said weight, said cord being secured to said roller and said roller operating on said tilting-lever, said parts being combined substantially as described.

475,109. CAR-SEAT. HENRY S. HALE, Philadelphia, Pa., assignor to the Hale & Kilburn Manufacturing Company, of Pennsylvania. Filed June 5, 1891. Serial No. 395,294. (No model.)



Claim.—1. In a car-seat, the combination of a main frame, a reversible seat-back, hinge-arms for securing the seat-back to the main frame, a locking-bolt for locking one end of the seat-back extending through to the opposite end of the seat-back so as to be operated from said opposite end, a locking-bolt for said opposite end of the seat-back, and a connection between this bolt and the first-mentioned bolt, whereby the seat-back may be locked at both of its ends, and the locking-bolts may be simultaneously operated from one end of the seat-back.

2. In a car-seat, the combination of the main frame, a reversible seat-back, hinge-arms at each end of the seat-back, each composed of two bars hinged to the seat-back and to the main frame, but in which the hinge-points of the said bars at one end are reversed with respect

to the hinge-points at the other end, each of said bars being provided with a locking-recess and a common locking device for simultaneously locking and unlocking the seat-back with respect to the locking recesses upon the corresponding bars of the hinge arms at each end of the said seat-back.

3. In a car-seat, the combination of the main frame, a reversible seat-back, and a hinge-arm between the main frame and seat-back; consisting of two bars hinged at one end to the seat-back and having their other ends bent at an angle and crossed below the surface of the seat-cushion and hinged to the main frame and arranged at a distance apart throughout the distance above the seat-cushion, so that the said bars have a clearance between them at their upper portions, the hinge connections of the said bars with the main frame being reversed with respect to their hinge connections with the seat-back.

4. In a car-seat, the combination of the main frame and the reversible seat-back with hinge-arms F, consisting of two bars F' and F^2, respectively, hinged to the seat-back by hinges $f' f^2$ and to the main frame by hinges $f'' f^3$, respectively, the said bars having their upper portions above the seat-cushion at all times separated by a space F^6 and having their lower portions adjacent to the main frame bent at an angle to cross each other below the surface of the seat-cushion, so as to bring the hinges $f'' f^3$ in the reversed order with respect to the hinges $f' f^2$.

5. In a car-seat, the combination of the main frame, the reversible seat-back, and the hinge-arms connecting the seat-back to the main frame, said hinge-arms consisting of two cross-bars hinged to the seat-back and also to the main frame and in which the said bars are provided with webs or flattened portions which lap over each other, so as to prevent apertures being formed between the said bars in reversing the seat-back.

475,110. BRIDLE-BIT. ALLEN W. HELMS, Aylesworth, Ind. Filed Feb. 12, 1892. Serial No. 421,311. (No model.)



Claim.—1. A bridle-bit composed of a frame having the side and the nose bars integrally formed, slides removably attached to the said side bars, and a bit secured to the said slides, substantially as described.

2. A bridle-bit composed of a frame having the side and the nose bars integrally formed and having spring-loops *a*, slides removably attached to the said side bars of the frame, and a bit attached to the said slides, substantially as described.

3. The hereinbefore shown and described bridle-bit, composed of a frame having the side bars A and the nose-bar B integrally formed and having spring-loops *a* at the corners of the frame, the rings C, removably attached to the free ends of the side bars A, the slides D, removably connected with the said side bars, and the bit supported by the said slides D, substantially as and for the purpose set forth.

475,111. HYDRAULIC AIR-COMPRESSOR. JOHN H. HENDERSON and EMILE SCHUTZ, Sierra City, Cal. Filed July 22, 1891. Serial No. 400,307. (No model.)

Claim.—1. An air-compressor comprising two upright cylinders, an inlet-valve for automatically controlling the alternate filling of the said cylinders with a mixture of water and air, and a supply-pipe connected with the said valve and provided with an air-nozzle and a water-supply pipe, substantially as shown and described.

2. An air-compressor comprising two upright cylinders, an inlet-valve for automatically controlling the alternate filling of the said cylinders with a mixture of water and air, a supply-pipe connected with the said valve and provided with an air-nozzle and a water-supply pipe, and a discharge-valve for controlling the discharge of water from the said cylinders, substantially as shown and described.

3. An air-compressor comprising two upright cylinders, an inlet-valve for automatically controlling the alternate filling of the said cylinders with a mixture of water and air, a supply-pipe connected with the said valve and provided with an air-nozzle and a water-supply pipe, a discharge-valve for controlling the discharge of water from the said cylinders, and air-pipes for carrying off the air from the said cylinders, substantially as shown and described.

4. An air-compressor comprising two upright cylinders, an inlet-valve for automatically controlling the alternate filling of the said cylinders with a mixture of water and air, a supply-pipe connected with the said valve and provided with an air-nozzle and a water-supply pipe, and a motor actuated from the accumulating water in the said cylinders and controlling the said inlet-valve, substantially as shown and described.

5. An air-compressor comprising two upright cylinders, an inlet-valve for automatically controlling the alternate filling of the said cylinders with a mixture of water and air, a supply-pipe connected with the said valve and provided with an air-nozzle and a water-supply pipe, a discharge-valve for controlling the discharge of water from the said cylinders, and a motor actuated from the accumulating water in the said cylinders and actuating simultaneously both the said inlet and discharge valves, substantially as shown and described.

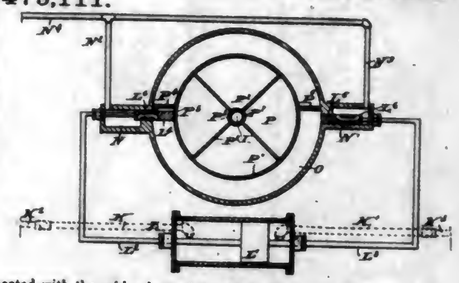
6. An air-compressor comprising two upright cylinders having air-discharge pipes, a motor connected with and alternately actuated from the accumulating water on the said cylinders, inlet and outlet valves for the said cylinders and actuated simultaneously from the said motor, and a piston fitted to slide in the upper end of each of the said cylinders and arranged to control the water passing from the respective cylinder to the said motor, substantially as shown and described.

7. A hydraulic air-compressor provided with a motor for actuating the inlet and outlet valves and comprising a cylinder, water-chests connected with a water-supply, slide-valves arranged in the said chests to alternately connect the latter with the cylinder, and a wheel secured on the valve-stem and within the said cylinder and provided with wings, substantially as shown and described.

8. A hydraulic air-compressor provided with a motor for actuating the inlet and outlet valves and comprising a cylinder, water-chests connected with a water-supply, slide-valves arranged in the said chests to alternately connect the latter with the cylinder, a wheel secured on the valve-stem and within the said cylinder and provided with wings, a cylinder containing a piston controlled by the water of the compressor-cylinders, and piston-rods connecting the said pistons with the said slide-valves, substantially as shown and described.

9. An air-compressor provided with a nozzle comprising a casing having a central funnel, side arms leading to the said funnel and each provided with a valve, and a water-spout opening into the said casing on top opposite the said central funnel, substantially as shown and described.

475,111.

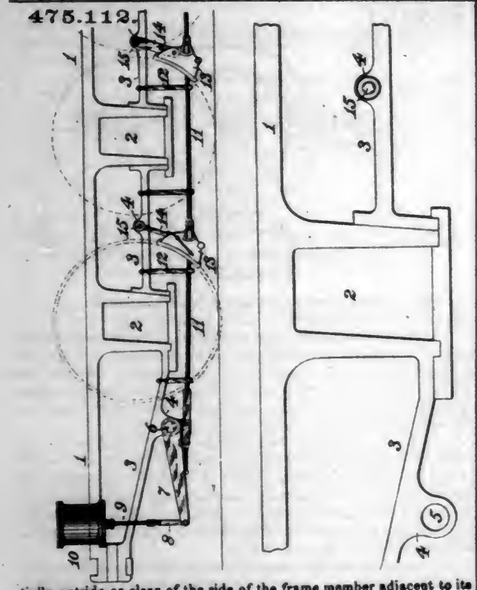


475,112. LOCOMOTIVE-ENGINE FRAME. CHARLES C. HIGHAM, St. Louis, Mo., assignor to the Westinghouse Air Brake Company, Pittsburg, Pa. Filed Dec. 24, 1891. Serial No. 416,072. (No model.)

Claim.—1. The combination of a locomotive-engine frame, a series of bearings formed integral therewith, and a driver-brake mechanism having brake-shoes, and a bell-crank supported in said bearings, substantially as set forth.

2. The combination of a locomotive-engine-frame member and a bearing formed integral therewith for the support of a member of a driver-brake mechanism, said bearing having an eye, which is substan-

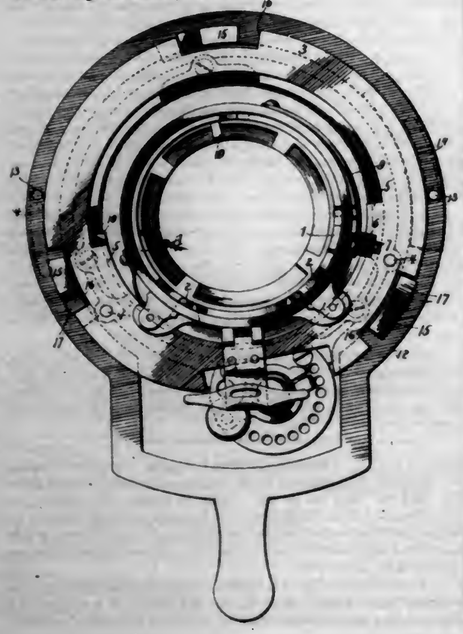
475,112.



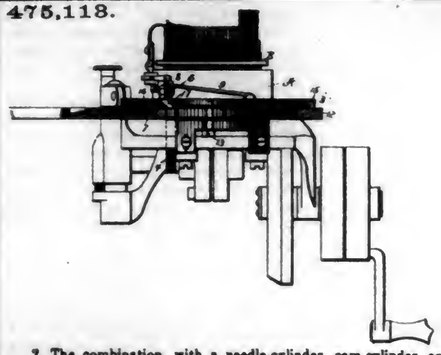
tially outside or clear of the side of the frame member adjacent to its axis, substantially as set forth.

475,113. ATTACHMENT FOR KNITTING-MACHINES. THOMAS H. HOLLINGSWORTH, Scotland Neck, N. C., assignor of two-thirds to Napoleon B. Josey and Archibald McDowell, same place. Filed July 17, 1891. Serial No. 399,639. (No model.)

Claim.—1. The combination, with a needle-cylinder and cam-cylinder, of a movable cam supported by the cam-cylinder and adapted to operate against the needles in the needle-cylinder, and a reciprocating ring having cam-surfaces, said ring located in position to operate the movable cam when reciprocated, whereby the latter is thrown into position to operate upon the needles; and means for reciprocating the cam-ring, substantially as set forth.



475,118.

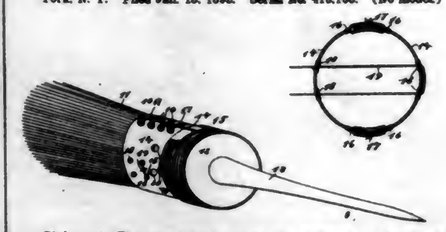


2. The combination, with a needle-cylinder, cam-cylinder, and movable cam, of cam mechanism located in proximity to the movable cam and comprising a pair of rings having cam-surfaces thereon, one adapted to be turned and the other adapted to be raised and lowered by the turning of the former, whereby to operate the movable cam, substantially as set forth.

3. The combination, with a needle-cylinder, needles, and cam-cylinder, of a cam pivoted in the latter, a turn-ring having cams thereon, and a reciprocating ring provided with cam-surfaces, said reciprocating ring resting loosely on the turn-ring and located in position to bear against the pivoted cam, whereby to raise the latter, substantially as set forth.

4. The combination, with a frame, a stationary needle-cylinder having needles therein, and a rotary cam-cylinder, of a cam pivoted in the latter and having a projection extending laterally therefrom, and cam mechanism comprising a turn-ring and a reciprocating ring, each having cam-surfaces thereon, and the latter located to move in the path of the projection on the pivoted cam, substantially as set forth.

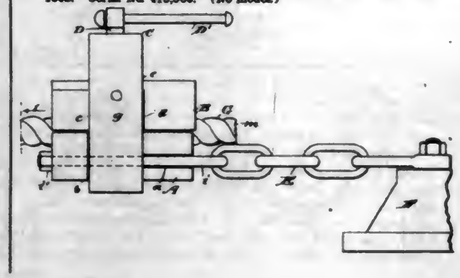
475,114. PAINT-BRUSH BRIDLE. WILLIAM H. HUMPHREY, New York, N. Y. Filed Jan. 15, 1892. Serial No. 418,163. (No model.)



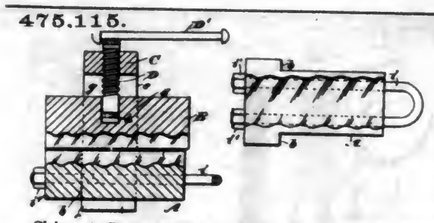
Claim.—1. The combination, with the brush, of a flexible split bridle embracing the butt-end thereof and held at the butt between the brush-plug and the ferrule, the bridle having its adjacent edges perforated and connected by independent cords held in the perforations, and cords extending transversely through the brush and bridle and secured to the latter, substantially as described.

2. The brush-bridle comprising two similar flexible flaps having their meeting edges perforated and connected by cords, said flaps having also perforations near their butt-ends and having central perforations carrying a transverse cord, substantially as described.

475,115. ROPE CLAMP AND STOPPER. THOMAS P. INGLESBY, St. Louis, Mo., and THOMAS J. DAVIS, Richmond, Va. Filed Jan. 19, 1892. Serial No. 418,589. (No model.)



475,115.



Claim.—1. The combination, with two longitudinally-grooved grip-blocks and means to anchor one block to a stable object, of a bail-clamp loosely secured to the other block and adapted to slide endwise upon and removably hook fast to the anchored block and an adjusting-screw engaging the clamp and one of the grip-blocks, substantially as described.

2. The combination, with two longitudinally-grooved oblong grip-blocks having shoulders on their sides, a staple-link engaging one block, and an anchor-chain fast to the staple-link, of a bail-clamp adapted to slide upon and hook fast to the grip-block that is engaged by the staple-link and an adjusting screw having threaded engagement with the yoke-clamp through its bow portion and loosely secured in the other grip-block, substantially as described.

3. The combination, with a lower grip-block having opposite shoulders on the sides and a longitudinal groove on its top face, which groove is V-shaped in cross-section and diagonally ribbed in series, a staple-link engaging its limbs, with grooves longitudinally and oppositely extended in the sides of the lower block, and an anchor-chain fast by one end to the link, of an upper grip-block also shouldered on the sides and longitudinally grooved on its lower surface, which groove is diagonally ribbed in series, an adjusting-screw having threaded engagement with the bow portion of the bail-clamp and loosely secured in a socket-hole in the top grip-block, and a handle-bar to rotate the screw, substantially as described.

475,116. WIRE FENCING. THOMAS J. INGRAHAM, Hornellsville, N. Y., assignor of one-half to Francis G. Babcock, same place. Filed May 26, 1891. Serial No. 394,173. (No model.)



Claim.—A fencing-strip composed of two outer or border twisted strands of two wires each and two intermediate wires crossing each other in passing from one outer strand to the other and twisted or interwoven continuously with the wires of said outer strands and at the same pitch, the outer strands being twisted one to the right and the other to the left, as shown and described.

475,117. APPARATUS FOR BALING COTTON. EDMUND M. IVERS, New Orleans, La. Filed July 30, 1891. Serial No. 400,166. (No model.)

Claim.—1. In a baling apparatus of the class described, the combination, with a continuously-operated folder or lapping-device and a compressing-platen, of a rotatable press-box having dual chambers arranged to alternately receive the cotton from the lapper and carry it over the compressing-platen, and means for temporarily receiving the cotton from the folder when the cotton-box is from under said folder, substantially as and for the purposes described.

2. The combination, with the main frame and the rotatable cotton-box held thereon, of a rotatable auxiliary platen held on the main frame normally above the said cotton-box and adapted to be lowered therein onto the cotton and to swing with said box under the fixed platen or cross-head of the main frame, substantially as and for the purpose described.

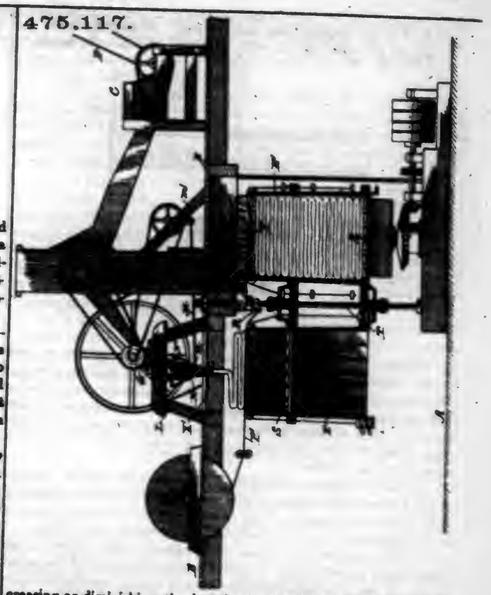
3. In a baling mechanism essentially as described, the auxiliary platen consisting of the main casting U, the bars W, hinged thereto, the platen-frame Y, suspended from said bars, and the counterbalance devices, substantially as and for the purposes described.

4. In a baling mechanism of the class described, an oscillating lapper or folder frame formed with extensible side sections, substantially as and for the purpose described.

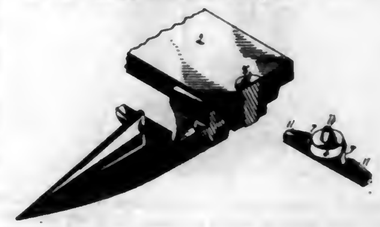
5. In a baling mechanism of the class described, a folding or lapping frame consisting of the fixed end pieces pivotally connected at their tops to a supporting-frame, slatted telescopic side sections, and means for oscillating said frame and alternately and automatically increasing or diminishing the length of said side sections as the frame is oscillated, substantially as and for the purpose described.

6. In a mechanism for the purpose stated, a lapper or folding device consisting of an oscillating frame formed of the pivoted end pieces, the slatted sides, the telescopic slatted extensions J^3 J^4, the frame-supports for said lapper-frame, fixed gears held on said frame, the laterally-projected arms pivoted to the said end pieces, pitman connections between said arms and the telescopic sections J^3 J^4, gear connections between said arms and the fixed gears on the frame, and means for oscillating the said lapper-frame, whereby the lateral arms will be swung and serve to move the sections J^3 and J^4, as stated, and for the purpose specified.

475,117.



475,118. GUARD-FINGER. JAMES H. JOHNS, Rockford, Ill., assignor to The Emerson, Talcott & Company, same place. Filed Mar. 26, 1889. Serial No. 304,836. (No model.)



Claim.—1. The combination of a guard-finger and a reversible sickle-rest, the guard having a concave seat crosswise of segmental form and the sickle-rest having a portion of its lower edge of convex segmental form to fit the guard-finger.

2. The combination of a finger-bar, a guard-finger, and a sickle-rest, the guard-finger having upper beveled edges on its opposite shoulders and the sickle-rest having beveled edges on its under side.

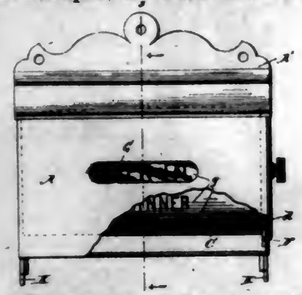
3. The combination of a guard-finger and a detachable sickle-rest, the sickle-rest having nicks or notches in its lower edge on each side of the central disk or lip.

4. A guard-finger having a concave seat crosswise of segmental form which receives a sickle-rest having a portion of its lower edge of convex segmental form.

5. A sickle-rest for a guard-finger, having transverse wings extending from a central hub, said hub adapted to enter a recess in the guard-finger and also enabling the finger-bar to hold the rest in position by resting on the hub.

6. A guard-finger having a central depression which receives a hub on a sickle-rest, having wings extending crosswise from the depression which receive wings of the sickle-rest.

475,119. HOUSE-DOOR LETTER-BOX. FOLKERT KAMPEN, Jr., Quincy, Ill. Filed Sept. 30, 1891. Serial No. 407,332. (No model.)



Claim.—1. The combination, with the outer receptacle or case having the slot in one end portion and a cylindrical opening at its opposite end, of the hollow cylinder in said case, its outer end closing said opening, said cylinder being provided with a locking device and bearing a series of indications thereon, any one of which, by the operation of said cylinder, may be exposed at a sight-slot of said casing, substantially as specified.

2. The combination, with the outer casing having the lock therein, of the hollow cylinder open at one end, removably held in said casing and provided with a series of cogs or teeth, any one of which is adapted to be engaged by the bolt of said lock, substantially as specified.

3. The combination, with an outer casing having secured to its under side a paper-holding clamp and formed with a cylindrical opening in one end, of a hollow cylinder in said casing, open at its inner end, its outer end closing said cylindric opening, said cylinder having a locking device and its surface bearing a series of longitudinally-arranged indicators, any one of which, by the operation of said cylinder, may be exposed at a sight-slot in the case, substantially as specified.

475,120. STAND OR RACK FOR HAND-STAMPS. ERNEST J. KLINGENBERG, Eau Claire, Wis. Filed Sept. 17, 1891. Serial No. 406,080. (No model.)

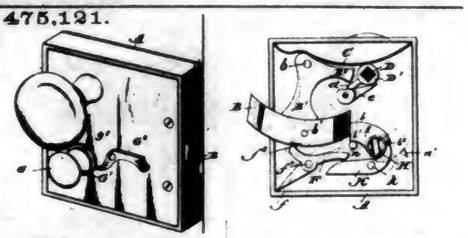


Claim.—1. A stand or rack for hand-stamps, consisting of a base provided with a drawer to receive an inking-pad, a body mounted on said base and provided with a series of flat faces, each of said faces being provided with a label-receiving recess or slot, and a hook adapted to support a hand-stamp and keep the type face thereof in contact with the face of the stand, substantially as described.

2. A stand or rack for hand-stamps, consisting of a base and a body mounted and adapted to turn freely on the base and provided with the flat surfaces, which are coated with any suitable non-absorbent substance, each of said faces being provided with a hook adapted to receive an eye secured in one end of a hand-stamp, so as to support said stamp and keep the type-face thereof in contact with the face of the stand, substantially as described.

3. The combination, with a hand-stamp having an eye secured in one end, of a base, a body mounted and adapted to turn freely on the base and provided with the flat surfaces, which are coated with any suitable non-absorbent substance, and a hook secured in each of said faces and adapted to receive the eye in the end of the stamp and keep the type-face thereof in contact with the face of the stand, substantially as shown and described.

475,121. LOCK AND LATCH. JOHN W. KOONS, Lehighton, Pa. Filed Jan. 14, 1892. Serial No. 418,065. (No model.)



Claim.—1. In a combined lock and latch, a curved latch-bar having beveled ends and reversibly secured to an arm B', having an extended portion B^3, together with a spindle carrying a sleeve having a lug which is adapted to operate said arm, and a spring adapted to throw the arm in one direction, substantially as shown, and for the purpose set forth.

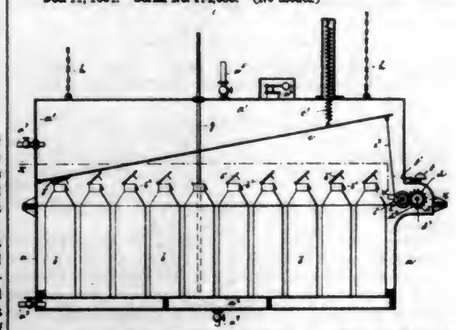
2. In a combined lock and latch, the combination of a curved latch-bar B, carried by a pivoted arm B', having an extended member with which a lug carried by a sleeve engages, a spindle for turning said sleeve, a weighted pawl adapted to engage with the latch, a locking-dog mounted on a spindle g, having a lug g', and a pawl K, adapted to be actuated by said lug and the cam-face of the locking-dog, so as to operate the pawl F to release the latch, substantially as shown, and for the purpose set forth.

3. In combination with a movable latch-bar B, a spindle g, having a lug g', a sleeve H, located within the casing, upon which is mounted a locking-dog, said sleeve having a slot h and an intersecting slot h' for the reception of a key h^2 for retaining the spindle and locking-dog in connection with each other, a pawl K, and a pawl F, said latter pawl being adapted to enter a notch in the latch-bar, substantially as shown, and for the purpose set forth.

4. In combination with a lock constructed substantially as shown and provided with a swinging latch-bar, and a locking-dog I, adapted to be held and locked in contact with one end of a latch-bar, said locking-dog having a sleeve, through which passes a spindle having a lug for releasing the locking means and turning the locking-dog, so that said locking means will be turned upon its pivot to operate the weighted pawl F to release the latch-bar, substantially as shown.

5. In combination with a lock constructed substantially as shown and provided with a knob-spindle carrying a sleeve having a lug for retracting the locking-bolt, and a knob G, carrying a spindle which actuates a locking-dog to release locking-pawls, the knob having a flange with a notch g^3, in which a pawl G^3 is adapted to enter to hold the locking-dog in a fixed position against the locking-bolt, for the purpose set forth.

475,122. APPARATUS FOR STERILIZING MILK. FRANZ KRIMER, New York, N. Y., assignor to Ludwig Merklein, same place. Filed Dec. 11, 1891. Serial No. 414,655. (No model.)

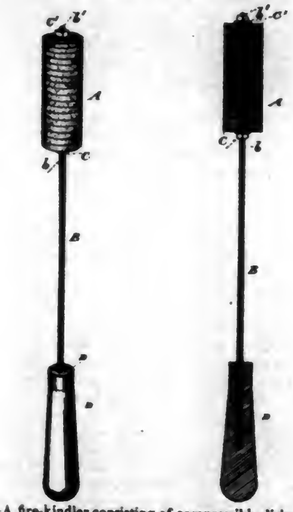


Claim.—1. The combination of vessel a, having cover a', with perforated false bottom a^3, an inner perforated lid c, hinged at one end, a revolving shaft e, pulleys e^2, and chains e^3, connected to the free end of the lid to draw the lid down on its hinge, substantially as specified.

2. The combination of vessel a, having cover a', with hinged lid c, a tube d, a worm within said tube, pulleys e^2, operated by the worm and with chains e^3, connecting the pulleys with the hinged lid, substantially as specified.

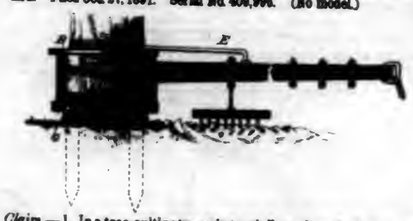
3. The combination of vessel a, having cover a', with hinged lid c, tube d, worm d', gear-wheel d^2, shaft e, gear-wheel f, pulleys e^2, and with the chains e^3, connecting the pulleys with the hinged lid, substantially as specified.

475,123. FIRE-KINDLER. EDWARD C. LAMBUR and GEORGE BURDETT, Waukesha, Wis. Filed Aug. 3, 1891. Serial No. 401,564. (No model.)



Claim.—A fire-kindler consisting of compressible disks of absorbent matter strung on a wire or metallic rod and provided with means of adjustment, as and for the purpose shown and described.

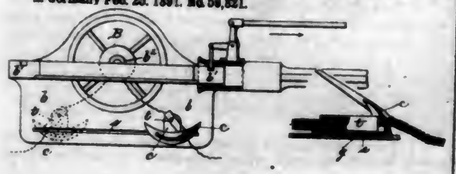
475,124. TREE-CULTIVATOR. WILLIAM W. LEACH, Springtown, Ark. Filed Oct. 27, 1891. Serial No. 409,996. (No model.)



Claim.—1. In a tree-cultivator, substantially as described, the combination, with a collar adapted to be clasped about a tree and having a rectangular flange, and a suitable means for fixing said collar with respect to the tree, of a sweep carrying a shoe at its inner end bearing against the collar, a link-arm pivotally connected to the sweep and having an angular hook adapted to engage the flange of the collar, and a cultivator connected to the sweep, substantially as and for the purpose set forth.

2. In a tree-cultivator, the combination, with a collar adapted to be clasped about the trunk of a tree and having a rectangular flange at its upper edge, and stakes connected to the collar and adapted to take into the ground to fix said collar with respect to the tree, of a sweep, a shoe connected to the inner end of the sweep and bearing against the fixed collar, a link-arm connected at one end to the sweep and having a hook at its opposite end in engagement with the flange of the shield or collar, and a cultivator connected to the sweep, substantially as specified.

475,125. LOOM-SHUTTLE. LÉON LETALLE, Beauvais, France. Original application filed Mar. 20, 1891, Serial No. 385,954. Divided and this application filed Mar. 25, 1892. Serial No. 426,406. (No model.) Patented in France Jan. 13, 1890, No. 203,116; in England Jan. 20, 1891, No. 1,005; in Austria-Hungary Feb. 7, 1891, No. 7,591 and No. 23,371, and in Germany Feb. 25, 1891, No. 56,821.



Brief.—A sliding guide delivers the weft from the rear end of the shuttle as it is passed back and forth through the warps. The V-shaped pivoted delivery-tube carried by the said slide folds the pile of the chenille weft upward.

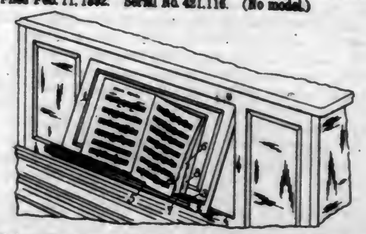
Claim.—1. A shuttle for delivering chenille weft, having a movable guide for the chenille delivered therefrom and a tube moving with said guide through which the chenille passes, the tube being constructed with a V-shaped groove which folds the chenille upon itself in its passage therethrough.

2. In a loom, a shuttle having a movable guide for the material carried thereby and a tube pivotally attached to the said guide for delivering the material thereto, said tube swinging on its pivot at each change of position of the guide.

3. In a loom, a shuttle having a movable guide for the material carried thereby, said guide having a convex face for lifting the laying threads during the passage of the shuttle, and a pivoted tube for delivering the material to the guide.

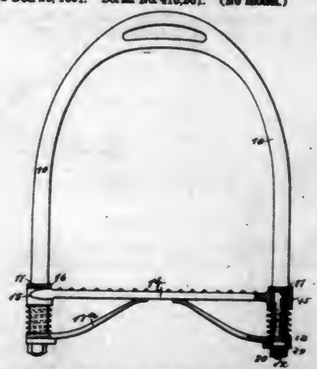
4. A shuttle for chenille-looms, having a bobbin upon which the chenille weft is wound, a guide for delivering the chenille from said bobbin to its position between the warp-threads, and a tube pivotally attached to said guide and having a substantially-V-shaped groove which folds the chenille upon itself in its passage therethrough, the guide being formed with a semicircular and inclined face for raising the warp-threads in advance of its delivery-orifice.

475,126. MUSIC-DESK. WILLIAM A. LORENZ, Hartford, Conn. Filed Feb. 11, 1892. Serial No. 421,116. (No model.)



Claim.—The base-piece of a music-desk, having elastic projections thereon, between which the several leaves of the music can independently embed themselves, substantially as described.

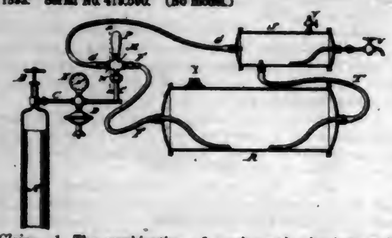
475,127. STIRRUP. ALAIN J. DE LOTBINIÈRE, Quebec, Canada. Filed Dec. 26, 1891. Serial No. 416,261. (No model.)



Claim.—1. In a stirrup, the combination, with the bow section having the lower ends of its members rounded and provided with collars at the upper ends of the rounded portions, of a foot-rest provided with sleeves at its ends fitting loosely upon the rounded portions of the bow section, and a spring having its end secured to the lower ends of the said rounded portions and bearing against the under side of the middle portion of the foot-rest, substantially as described.

2. The combination, with the bow section of a stirrup, provided with collars 11 and rounded portions below the collars, said rounded portions having the reduced threaded section 12 and the square or polygonal section 13, of the foot-rest 14, provided with the sleeves 15, fitting loosely on the said rounded portions, the spring 17, having rectangular or polygonal openings 18, fitting on the sections 13, and the nuts 20 on the reduced ends 12, substantially as herein shown and described.

475,128. APPARATUS FOR CARBONATING AND DISPENSING BEVERAGES. PETER R. MALMSTRÖM, New York, N. Y. Filed Jan. 28, 1892. Serial No. 419,500. (No model.)

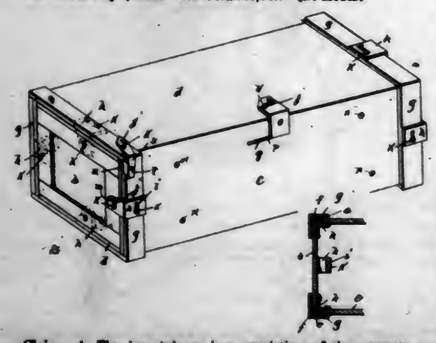


Claim.—1. The combination of a valve-casing having a pair of valves provided with stems, a tube opening into the valve-chamber at a point between the two valves and adapted to connect with a carbonic-acid vessel, a pair of tubes leading, respectively, from the valve-chambers and adapted to connect with a pair of communicating vessels for the purpose of causing liquid therein to flow from one to the other, and a movable head mounted on the valve-casing and having means to alternately open one valve and close the other, substantially as described.

2. The combination of a valve-casing having a pair of valves provided with stems, a tube opening into the valve-casing at a point between the two valves and adapted to connect with a carbonic-acid vessel, a pair of tubes leading, respectively, from the valve-chambers and adapted to connect, respectively, with a pair of communicating vessels for causing liquid therein to flow from one to the other, and an oscillating head mounted on the valve-casing between the valves and having a depressed portion and an elevated portion, so that whenever one valve is opened by the elevated portion the depressed portion permits the other valve to close, substantially as described.

3. The combination of a valve casing having a pair of valves provided with stems, a tube opening into the valve-casing at a point between the two valves and adapted to connect with a carbonic-acid vessel, an equalizing-valve D, arranged on said tube between the valve-casing and the carbonic-acid vessel, a pair of tubes leading, respectively, from the valve-chambers and adapted to connect with a pair of communicating vessels for causing liquid therein to flow from one to the other, and an oscillating head mounted on the valve-casing between the valves and provided with an elevation and a depression, so that whenever the elevation opens one valve the depression permits the other valve to close, substantially as described.

475,129. BOX AND FASTENING. CHARLES W. MANNING, Graham, Va. Filed July 7, 1891. Serial No. 398,649. (No model.)



Claim.—1. The knockdown box consisting of the separate sections, locking means to unite such sections, comprising a fastening-plate having the inclined slot with the corrugated edge, the rivet passing through said slot and rigid with the box-section and loosely confining said plate to the section, said plate being bent at an angle to fit the opposite side of the box and having the inturned bitting-edge *p*, substantially as set forth.

2. The corner-fastener consisting of the plate bent at an angle to fit two sides of a box at a corner, one end of the plate having a side wing or edge extending at an angle to fit the third side at the corner, as set forth, one end of the plate having the inclined locking-slot, substantially as set forth, and the rivet or pin passing through such slot to hold the plate, as described.

3. A fastening device consisting of the plate, a transverse slot near one end thereof to receive the rivet rigid with a section, and an inclined locking-slot near the opposite end of such plate opening through one edge of the plate, as and for the purpose set forth.

4. The combination, with two separate sections, of the knockdown structure, rivets passing through such sections and having the washers, and a fastening-plate having a slot through which one of the rivets passes, and a locking-slot to receive the other rivet and corrugated or formed irregular at one of its longitudinal edges, said slots having their inner ends nearer together than their outer ends, as and for the purpose set forth.

5. The knockdown box consisting of the separate heads and sides, the ends of the sides and the heads being so formed that the heads removably fit in the inner faces of the sides and all the parts of the box can be separated and packed parallel and tied, the angular corner-fastening plates having the inclined slots, and the rivets on the sides and heads to enter said slots, as set forth.

6. The knockdown box consisting of the separate heads and sides removably fitted together, the angular fastening-plates loosely confined to the sides and extending over the heads and provided with the open inclined locking-slots, and the rivets or pins secured on the heads to enter said slots and lock the parts together, as set forth.

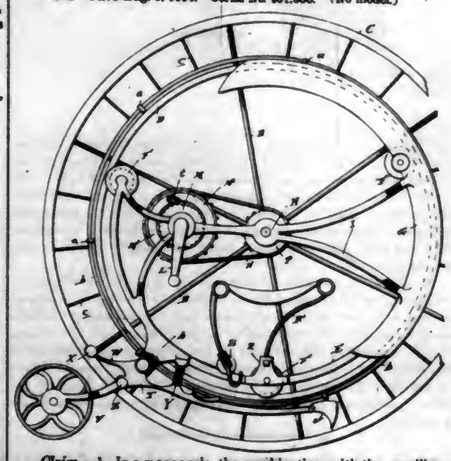
7. The fastener-plate having a closed slot for movably securing the plate, and an inclined locking-slot opening through an edge of the plate and corrugated along its outer edge, substantially as described.

8. A knockdown box consisting of separable heads and sides, the exterior angular corner-fastening plates provided with the inclined slots and pins secured to the heads and sides to enter said slots, and the interior angular corner-fastening plates having the inclined slots and inwardly-projecting pins to enter said slots, whereby the box is exteriorly and internally braced and fastened.

9. A fastening-plate having the transverse slots nearer together at their inner than at their outer ends, and rivets secured to two sections to enter said slots, having the shoulders at their ends on which the washers fit and are secured to lie against the outer faces of the plate.

10. The herein-described metal fastening-plate provided with the slots nearer together at their inner ends than at their outer ends, the outer end of one of said slots opening through an edge of the plate and said slot having its longitudinal side edge provided with a series of adjacent recesses or notches, as described, and for the purposes set forth.

475,130. ONE-WHEELED CYCLE. JAMES D. MATTISON, Saginaw, Mich. Filed Aug. 6, 1891. Serial No. 401,855. (No model.)

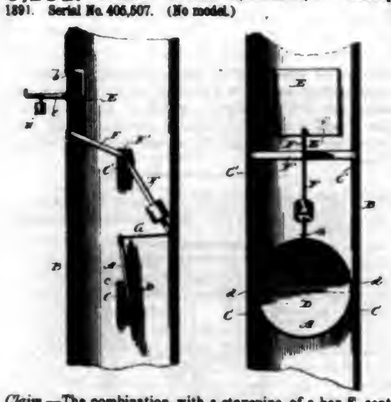


Claim.—1. In a monocycle, the combination, with the curvilinear bar of the carriage-frame, of the saddle-frame fixedly connected at one end to the said curvilinear bar and carrying a friction-wheel at its opposite end adapted to bear and play upon the curvilinear bar, substantially as and for the purpose specified.

2. In a monocycle, substantially as described, the combination, with the traveling wheel, of the seat and gearing supporting frame hung from the hub of the wheel and bearing upon the inner rim of the wheel, the lever pivotally connected to the curvilinear bar of the supporting-frame and carrying a wheel at its forward end and a drag device at its rear end, and a coiled spring interposed between the rear portion of the lever and the curvilinear bar of the frame, all substantially as specified.

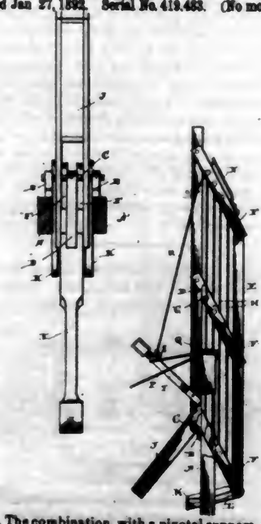
3. In a monocycle, the combination, with the traveling wheel comprising the hub, the radial spokes connected to the hub and having their outer portions curved laterally, the tire connected to the outer ends of the spokes, the inner circular rim of a less diameter than the tire and connected thereto, and the sprocket-pinion fixed on the hub of the wheel, of the carriage-frame comprising the hub connected to the hub of the wheel, the radial bars and the curvilinear bar connected to the outer ends of the radial bars and carrying friction-wheels adapted to bear upon the inner circular rim of the wheel, a transverse shaft-bearing in the forward radial bar of the frame and carrying a crank-arm at one end, a sprocket-gear fixed on said shaft, and a chain belt connecting the sprocket-gear of the shaft and the pinion on the axle, substantially as and for the purpose specified.

475,131. DAMPER. JAMES MAYO, Pottstown, Pa. Filed Sept. 12, 1891. Serial No. 405,507. (No model.)



Claim.—The combination, with a stovepipe, of a bar F, centrally pivoted therein, the opposite ends of the said bar being near opposite sides of the pipe, a plate projecting upwardly from the upper end of the bar and closing an aperture in the pipe, means for normally holding the said plate in the said position, a damper centrally pivoted on the said pipe below the said bar, a connection between the lower end of the said bar and one side of the damper, and a counterpoise upon the said lower end of the bar, substantially as described.

475,132. TILTING GATE. SAMUEL H. MEREDITH, West Liberty, Iowa. Filed Jan 27, 1892. Serial No. 419,483. (No model.)



Claim.—1. The combination, with a pivotal support, a gate mounted thereon, and weighted diverging arms secured to the gate near its pivotal point, of an operating-rope extending through the forwardly-projecting weighted arm and connected at its outer end to a locking mechanism, and a stop on said rope in front of the said arm, which it engages when the rope is drawn upon, substantially as shown and described.

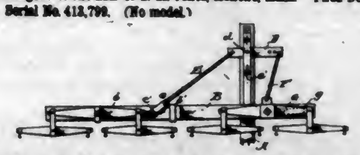
2. The combination, with a vertical support and a weighted folding gate pivoted thereto, of slotted plates secured to the base of said support, a guide-pin at the rear end of the gate, which moves in said slotted plates when the gate is tilted, and means for operating the gate, substantially as shown and described.

3. The combination, with a post, of the top rail D, pivotally supported thereon, weighted arms secured to said rail, bottom rail E and battens pivotally connecting it with rail D, parallel plates having slots secured to the base of the post, a guide-pin extending across the rear end of rail E, which moves in the said slots, and a means for raising the gate, substantially as shown and described.

4. The combination, with a vertical support, of rail D, pivoted thereto, diverging weighted arms secured to the rear end of said rail, rail E, and double battens connecting the said rails, pivoted perforated heads between said battens, rods supported in said heads, and a means for tilting the gate, substantially as shown and described.

5. In combination with a vertical support, rail D, pivoted thereto, diverging weighted arms secured to said rail near its pivotal point, the said arms being so connected thereto as to form spaces on opposite sides thereof, rail E and pivoted battens connecting the said rails at their centers and ends, guides slotted, as shown, which are secured to the base of said support, a guide-pin extending through the rear end of rail E and the lower ends of the rear battens and which moves in the said slotted guides, the upper ends of the last-named battens being free from the rail D, but held in position thereto by extending into the inclosed spaces above described, and a means for tilting the gate, substantially as set forth.

475,133. DRAFT-EQUALIZER. LAWRENCE B. MILLER, Enterprise, assignor of one-half to T. M. Jones, Abilene, Kans. Filed Dec. 2, 1891. Serial No. 413,799. (No model.)



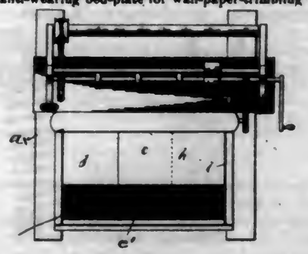
Claim.—1. The combination, with a tongue, of a draft-lever B, eccentrically pivoted thereon and carrying the doubletrees, the main lever D, eccentrically pivoted on the tongue in rear of the draft-lever, the swivel *c*, carried by the long arm of the draft-lever between the fulcrum of the lever and the doubletree on the long arm thereof, the rod E, connecting the short arm of the main lever to said swivel, the crank-bar *g*, pivoted at one end on the short arm of the draft-lever and carrying a doubletree G at its other end, whereby the singletrees attached to said doubletree are on opposite sides of the tongue, and the rod F, connecting the doubletree with the short arm of the main lever, substantially as described.

2. The combination, with a tongue, of an extensible draft-lever eccentrically pivoted thereon and having its piece *b* adjustably secured on the long arm of said lever by the keeper *b*, which fits snugly over the inner end of the adjustable piece *b* to rigidly hold the same, the main lever having a long and a short arm, the rod E, connecting the short arm of the main lever and the long arm of the draft-lever, the crank-bar *g*, pivoted at one end on the short arm of the draft-lever and carrying a doubletree G on its other end, and the rod F, connecting said doubletree and the long arm of the main lever, substantially as described.

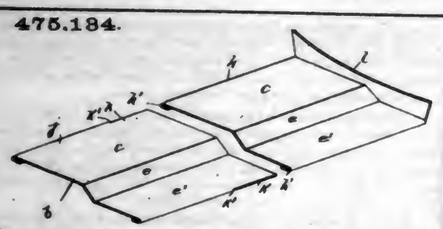
475,134. WALL-PAPER-TRIMMING MACHINE. FREDERICK W. MOELLER, Washington, D. C. Filed Dec. 14, 1891. Serial No. 415,094. (No model.)

Claim.—1. A wall-paper-trimming machine having a bed and a guiding-edge at one side thereof, and a metallic wearing-plate removably fitting said bed and provided with an upwardly-extending edge at one side to fit said guiding-edge, substantially as described.

2. An anti-wearing bed-plate for wall-paper-trimming machines,



475,184.



made in sections, one section having its front and rear edges turned under to form grooves or guideways, an end piece secured thereto, the other section being formed with its edges bent under to form guideways or grooves for part of its length, the cut-off portion of said last-mentioned section serving as a stop for section A when the two sections slide together, as set forth.

3. An anti-wearing bed-plate for wall-paper-trimming machines, made in sections, having their front and rear edges bent under the upper surface of the plate to serve as guideways or grooves, the sections being formed to slide one on the other, and an end piece having arms projecting from its sides at its end to enter such guideways or grooves at an end of one section, substantially as described.

4. As a new article of manufacture, a bed-plate for the bed or work-table of wall-paper-trimming machines, made in sections having their front and rear edges bent under for part of their length, the other section being formed with similar bent-under portions for its entire length to form grooves or guideways in which the first-named section is adapted to slide, and an upwardly-extending end piece having arms or projections integral therewith to slide in the grooves or guideways in the end of one of said sections, as set forth.

5. The herein-described wearing-plate for wall-paper-trimming machines, made in sections, one of said sections being provided with a right-angular end piece, and means, substantially as described, for uniting said sections, as set forth.

6. A wall-paper-trimming machine having a bed and a guiding-edge at one end thereof, and a metallic adjustable extensible wearing-plate removably fitting said bed and provided with an upwardly-extending edge at one side to fit said guiding-edge, substantially as described.

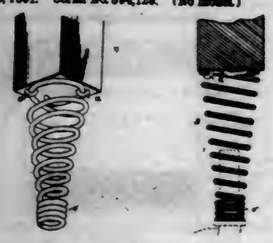
475,185. BOX-CLOSURE. HEINRICH MOLT, Westerrade, Germany. Filed Dec. 7, 1891. Serial No. 414,396. (No model.)



Claim.—1. A cover for a box or containing-vessel, having an interior lip and a circumferential notched lip or flange, said cover consisting of a plate having a central rising screw, a nut turning upon said screw, and a yoke having an opening through which the screw passes loosely, the ends of said yoke having lugs adapted to lie beneath the outer notched flange, substantially as described.

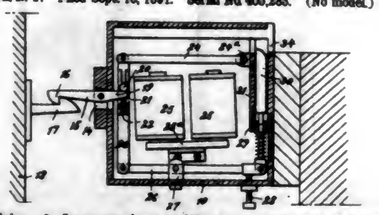
2. The combination, with a vessel or box having an interior lip and an external notched lip or flange, of a cover adapted to enter the mouth of said vessel and rest on the inner lip, the margin of said cover being provided with a rabbet to receive a packing-ring, a nut turning upon a screw rising from said cover, and a yoke arranged above the nut and having an opening to receive said screw, the ends of the yoke having lugs which lie beneath the outer flange or lip on the vessel, substantially as described.

475,186. CASTER ATTACHMENT. JOHN H. MORAN, Licking, Mo. Filed May 26, 1891. Serial No. 394,129. (No model.)



Claim.—An attachment for casters, consisting of a tapering spirally-coiled spring designed to have its upper end secured to the leg of a bedstead and having its lower end reduced and closely coiled and adapted to receive within it the stem of an ordinary caster, said spring serving as the means for securing a caster to a leg, substantially as described.

475,187. ELECTRIC LOCK. FREDERICK MORGENTHALER, Brooklyn, N. Y. Filed Sept. 10, 1891. Serial No. 405,283. (No model.)

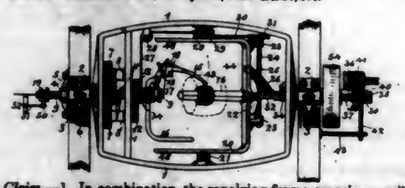


Claim.—1. In an attachment of the character described, the combination, with the lock-case and the magnet and armature arranged therein, of a laterally-extending latch pivoted on the case and having one end projecting into the case and a movable bar connected with the armature and adjustably connected with the latch, so that the throw of the latter may be regulated, substantially as described.

2. A locking attachment for doors, comprising a case adapted to be secured to a door, electro-magnets arranged within the case and provided with a swinging armature, a movable bar pivoted to the free end of the armature and provided with an adjustable pin, a laterally-extending latch pivoted in one wall of the case and having its free end arranged in the path of the pin, and a catch secured to an adjacent support and adapted to engage the latch, substantially as described.

3. An electric locking attachment for doors, comprising a case adapted to be secured to a door, electro-magnets secured within the case and provided with a swinging armature, a movable bar pivoted to the free end of the armature and adapted to move parallel to one side of the case, a plate adjustably secured to the movable bar and provided with a projecting pin, a latch pivoted in the adjacent wall of the case and having one end arranged in the path of the pin, and a catch secured to an adjacent support and adapted to engage the latch, substantially as described.

475,188. SPINNING-MACHINE. DANIEL MUNRO and WALTER H. AVIS, Toronto, Canada. Filed Feb. 16, 1891. Serial No. 381,977. (No model.) Patented in Canada Apr. 24, 1891. No. 36,476.



Claim.—1. In combination, the revolving frame carrying a roller or rollers, a sleeve securely fixed at one end of the main frame and having a wheel on its opposite end connected to operate the roller or rollers carried in the revolving frame and drawing the twine, with the hollow shaft having a mortise and revolving with said sleeve, the guide in the frame to engage said mortise, the jointed laying-arm carried loosely on said shaft, means for actuating the laying-arm, the grooved collar on the end of said shaft, the said collar being engaged by said laying-arm, the stop-lever, and the grooved collar on the opposite end of said shaft to operate the stop-lever, substantially as described.

2. The combination of the main frame, a roller or rollers, the sleeve secured fixedly at one end to the main frame and having a wheel on its opposite end connected to operate said roller or rollers to draw the twine, the laying-frame wheels 7, the hollow shaft having a mortise therethrough and revolving with said sleeve, the mandrel, the guide to engage said mortise in the shaft and revolving the same in conjunction with the frame, the pulley on said shaft, mechanism intermediate said pulley and the wheel on said sleeve, a belt to operate the pulley on the axle of the laying frame, and a belt and intermediate parts from said pulley on the laying-frame to operate the mandrel, as set forth.

3. The combination, with the flier-frame and the curved sector secured to said frame and having a slot, of the guide, the guide-shank, the wheel 26, its shaft 24, and the vibrating frame, all arranged and operating substantially as set forth.

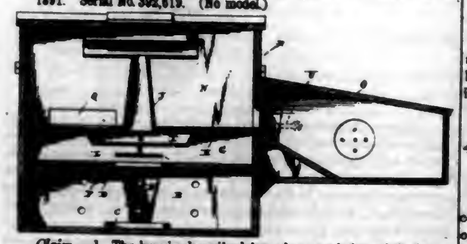
4. In combination, the flier-frame, the inclining curved sector having a slot therein and secured to the flier-frame, the guide secured in said slot, the friction-wheel having a key therein to engage a channel in the shaft carrying it, the shaft carrying said friction-wheel, the actuating mechanism for the shaft, the fixed sleeve, the pulley on said shaft driven by interposed mechanism specified from the fixed sleeve, and the wheel on the mandrel operated by said friction-wheel, substantially as shown and described.

5. In combination, the vibrating frame, the mandrel journaled therein, the wheel on the end of said mandrel, the friction-roller operating against said wheel and having a key-groove therein, the shaft supporting said roller and having a key journaled therein and supported in bearings on the vibrating frame, the pulley on said shaft, the fixed sleeve, mechanism intermediate the fixed sleeve and pulley, a wheel on the fixed sleeve, and mechanism between said wheel and the shaft, substantially as described.

6. In combination, the revolving frame, toothed sector, and rear hollow journal, the vibrating frame securely journaled in the revolving frame, the connecting-rod attached to the revolving frame, the arm supported to vibrate in the revolving frame and having a toothed sector thereon, the rack on the end of the shaft through the rear hollow journal and engaging said sector, the shaft having the rack thereon at one end, and means on its opposite end to engage a cam, as specified, and the cam provided to operate said shaft reciprocally through said hollow journal, substantially as shown and described.

7. In combination, the revolving frame supported centrally at its ends by hollow journals thereon, the fixed sleeve through one of said journals, the shaft through said fixed sleeve and secured to revolve with the frame, as described, the laying-arm carried on the shaft, means to operate said arm from the fixed sleeve to cause the rotation of the laying-arm about its axis, as specified, a grooved collar on each end of said shaft, whereby the stop-lever is operated, the vibrating frame journaled in the revolving frame, the mandrel operated by prescribed mechanism from the said sleeve, the inclining curved sector to regulate the speed of the mandrel, as described, a pulley on the rear hollow journal to drive the flier-frame, a cam supported to operate the vibrating frame by specified mechanism, and mechanism intermediate the mandrel and sector, substantially as shown and described.

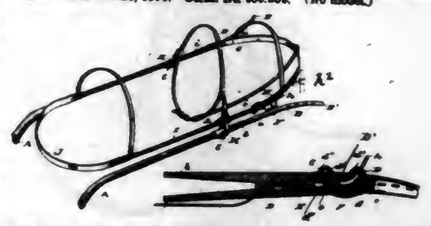
475,189. BROODER. JOHN MYERS, Welsh Run, Pa. Filed May 13, 1891. Serial No. 392,619. (No model.)



Claim.—1. The herein-described brooder, consisting of the lower lamp-chamber having the top opening for the lamp chimney, the brooding-chamber, the floor of said brooding-chamber located a distance above the top of the lamp-chamber forming the interposed heating-chamber G, the air-heating reservoir I on the under side of the brooding-chamber floor directly above the chimney-opening in the lamp-chamber, the fender L on the bottom of and a distance below said reservoir above the chimney, and the hot-air pipe extending upwardly from said reservoir into the top of the brooding-chamber provided with the distributing-pipe, as described.

2. The combination, in a brooder, of the lower lamp chamber having perforated top wall, the plate D at said opening to receive the lamp-chimney, the drop-door E, provided with plate F to coact with plate D, as described, the upper brooding-chamber having its floor H a distance above the top of the lamp-chamber, forming the intermediate heating-chamber, and the air-reservoir on the under side of floor H, provided with the bottom fender above said chimney-opening and having the air-pipe extending up into the brooding-chamber and provided with the distributing-top, substantially as shown and described.

475,140. HORSE-DETACHER. EDWARD H. MCBRIDE, Springfield, Mo. Filed Oct. 20, 1891. Serial No. 409,269. (No model.)



Claim.—1. The combination, with thills provided with plates secured thereto and forming shoulders or stops at their front ends and with detachable draft devices located in advance of said plates, of harness comprising draft-tugs adapted to be connected to said devices, straps formed at their lower ends, with thill-tugs embracing and supporting the thills and adapted to engage the shouldered plates, breeching, and holdback-straps connecting the same with the draft-tugs, said holdback-straps being permanently connected with the thill-tugs, substantially as and for the purpose set forth.

2. The combination, with the thills provided with detachable draft devices located near their forward ends and with plates secured to the thills in rear of said devices and forming shoulders or stops at their front ends, of harness comprising draft-tugs connected with the draft devices, thill-tugs embracing and supporting the thills and adapted to engage the shouldered plates, breeching, and holdback-straps secured to the latter and to the thill-tugs and connected with the draft-tugs, substantially as and for the purpose set forth

3. The herein-described harness, comprising draft-tugs adapted to be connected with draft devices carried at the forward ends of the thills, straps formed at their lower ends with thill-tugs for the purpose described, breeching, holdback-straps connecting the same with the draft-tugs and passing through the thill-tugs, and straps disposed outside the latter and secured to the holdback-straps at each side of said thill-tugs, substantially as and for the purpose set forth.

475,141. ARTIFICIAL TOOTH. DAVID R. MCHENRY, Grenada, Miss. Filed Dec. 21, 1891. Serial No. 415,759. (No model.)



Claim.—A partial dental plate formed of a strip of rubber or analogous material, conforming to the general contour of the jaw, having ends adapted to spring inwardly, and fastening-studs inserted in the natural teeth, substantially as specified.

475,142. STEERING MECHANISM FOR BICYCLES. DONALD H. MCPHERSON, Le Roy, N. Y. Filed Nov. 14, 1891. Serial No. 411,897. (No model.)

Claim.—1. The herein-described steering mechanism for vehicles, consisting of the standard, the handle having the horizontal extension on its lower end, which is pivotally secured on the standard, the rack-bar, the worm-gear on the standard, and devices intermediate of the rack-bar and gear to operate the latter, substantially as described.

2. The herein-described steering mechanism for vehicles, consisting of the standard, the angular handle loosely secured thereon and carrying a rack-bar, the worm-gear on said standard, and the horizontal shaft having a pinion on one end to engage with said rack-bar and a worm on the other end to mesh with the worm-gear, substantially as described.

3. In steering mechanism for vehicles, the combination of a standard, the head *a*, the worm-gear rigidly secured thereon, the sleeve loose on said standard above the gear, the angular handle rigid on said sleeve and having a rack-bar on its horizontal portion, a bracket secured on the head, and a horizontal shaft on said bracket and pro-

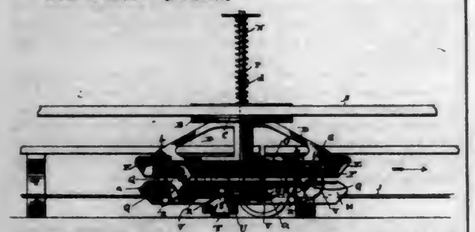
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vided with a bevel-pinion which meshes with the rack-bar and with a worm on the other end to engage with the worm-gear, substantially as described.

4. In steering mechanism for vehicles, the combination of a handle having a horizontal integral extension at its lower end, a standard extending upward through said extension at its juncture with the vertical shank of the handle, and connections, substantially as described, intermediate of the horizontal extension and the standard to turn the latter as the handle is operated, substantially as described.

475,148. CABLE-CAR GRIP. DAVID D. NOLLEY, Wilson, N. C., assignor of one-half to Amos J. Hines, same place. Filed Dec. 23, 1891. Serial No. 415,887. (No model.)



Claim.—1. A grip comprising a standard, a plate carrying a grip, hooked levers pivoted between their ends for connecting the plate and standard, and a means at the cross-cable which operates the hooks, substantially as described.

2. A cable-grip comprising a standard, a plate carrying a grip, several hooked levers arranged one in front of the other for connecting the plate and standard, and a means at the cross-cable which alternately engage directly the hooked levers for operating them.

3. A grip comprising a revoluble standard upon the car, a plate carrying a grip, hooks pivoted upon the plate which incline away from the direction of travel, and a stationary incline which engage and operate the hooks, substantially as and for the purpose described.

4. A grip comprising a revoluble standard, a plate carrying a grip, a clamp for the grip at the center of rotation, a vertically-moving device at the center of rotation for operating the grip-clamp, and automatically-operating devices for connecting and disconnecting the plate and standard, as and for the purpose described.

5. A grip comprising a revoluble standard, a plate carrying a grip, hooks which automatically connect and disconnect the plate and the standard, and a vertically-moving device at the center of the standard to operate the grip, substantially as set forth.

6. A grip comprising a car-standard having pins or rollers, a plate carrying a grip, hooked levers pivoted to the said plate and catching over the said rollers, and an operating device held stationary for operating the hooks and disengaging them alternately from the said car-standard, substantially as specified.

7. A grip comprising a car-standard having a laterally-extending portion provided with sockets, pins or rollers in the sockets, a plate carrying a grip, hooked levers pivoted upon the plate, which engage the said rollers, and a means for turning the hooks upon their pivots and alternately disengaging them from the standard, substantially as set forth.

8. A grip comprising a car-standard having projections or pins, a plate carrying a grip, hooked levers pivoted between their ends upon the plate for engaging the pins or projections, and a stationary incline which engages the lower ends of the hooks and turns them upon their pivots, for the purpose described.

9. A grip comprising a car-standard having pins or rollers, hooked levers, a plate to which the levers are pivoted, shoulders upon the levers, and stops upon the standard, which the shoulders engage, and a means for automatically operating the levers, substantially as specified.

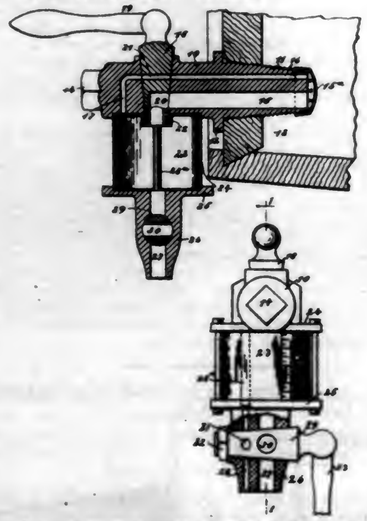
10. A grip comprising a car-standard having sockets provided with projections or pins, a plate carrying a grip, levers pivoted between their ends upon the plate, which have their upper ends provided with hooks to engage the pins or projections, springs for holding the hooked ends in engagement therewith, and a stationary incline which engages the lower ends of the levers automatically and disengages them from the standard, substantially as set forth.

11. A grip comprising a car-standard, a plate carrying a grip, hooked levers pivoted between their ends to the said plate, which engage with the standard, the levers having laterally-extending rollers, and an incline which engages the rollers for operating the hooks, substantially as specified.

12. A grip comprising a car-standard, a plate carrying a grip, hooked pivoted levers for connecting the plate and the standard, and an operating device having an incline for engaging and operating the levers and a straight portion for holding the levers in this operated position for a prescribed distance, substantially as shown.

13. A grip comprising a car-standard, a plate carrying a grip, hooked levers which connect the standard and the plate, which are pivoted between their ends, and inclines in front of the cross-cable, which engage the lower ends of the levers and automatically detach the same from the standard.

475,144. MEASURING-FAUCET. HERMAN M. NYE, Avoca, Nebr., assignor to himself and Fredrick Buesching, same place. Filed Aug. 19, 1891. Serial No. 403,100. (No model.)



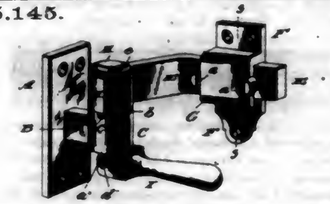
Claim.—A measuring-faucet for air-tight barrels or other air-tight receptacles, consisting in the faucet having longitudinally-extending air and liquid bores extending through it from its inner or attaching end, the liquid-bore being the larger, a transverse plug having bores corresponding in size to those of the faucet to simultaneously register therewith, an air-tight measuring-vessel into the top of which both faucet-bores open, a nozzle in the bottom of said vessel having a large and a small bore, a pipe or passage leading from the latter bore to the upper part of the interior of the measuring-vessel, and a transverse plug in the nozzle provided with a large and small bore to simultaneously register with the nozzle-bores, substantially as set forth.

475,145. LOCK-HINGE. GEORGE OBERBECK, Hoboken, N. J. Filed Mar. 2, 1892. Serial No. 423,474. (No model.)

Claim.—1. The combination, with the interlocking knuckles of a hinge, of a clamp whereby said parts are drawn or pressed and positively held and locked together in their engaged position, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the interlocking knuckles of a hinge

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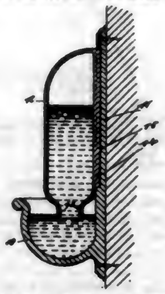
and the pintle therefor, of a cam-lever pivoted or hinged to and carried by the pintle and adapted to bear at its cam end upon or against one of the knuckles, substantially as and for the purposes hereinbefore set forth.

3. The knuckle D, provided with bar E, having lugs *a*, in combination with the base-plate F, having hook G, adapted to fit on the bar and between the lugs *a*, as and for the purposes hereinbefore set forth.

4. The combination of the two interlocking parts of the hinge, the pintle therefor, the spring washer or washers *c*, and the cam-lever I, pivoted to and carried by the pintle, substantially as and for the purposes hereinbefore set forth.

5. The combination of the two interlocking hinge parts, the headed pintle therefor capable of independent axial and rotary movement, and the clamp or cam-lever pivoted to and carried by the pintle, under the arrangement and for joint operation as hereinbefore shown and set forth.

475,146. FOUNTAIN. FRIDOLIN PASCALAR, Rochester, N. Y. Filed Mar. 21, 1892. Serial No. 425,744. (No model.)



Claim.—A fountain for the purpose described, consisting of a bracket having a dovetail slot formed therein and a vase located at the lower end of the bracket, said vase being provided with an open top, in combination with a storage-receptacle closed at its top and open at its lower end and provided with a rib adapted to enter the dovetail slot in the bracket and corresponding in cross-sectional shape therewith, the lower open end of the storage-receptacle being entered into the vase some distance below the top thereof, as and for the purpose set forth.

475,147. AXLE-LUBRICATOR. JAMES S. PATTEN, Baltimore, Md. Filed Oct. 22, 1891. Serial No. 409,466. (No model.)

Claim.—1. An improved axle-lubricator, substantially as described, comprising the axle chambered to form an oil-reservoir and having along said chambered portion external threads and the cover consisting of a band having internal threads meshing those of the axle and provided with an opening movable into and out of register with the reservoir, all substantially as and for the purposes set forth.

2. The improvement in axle-lubricators, substantially as described, consisting of the axle having a spindle portion and provided with an oil-reservoir and an opening or passage leading from said reservoir to the spindle, the box fitted on the spindle of the axle, and the cover-sleeve placed on the axle over the reservoir and having an opening which may be set into or out of register with the said reservoir, the outer end of the cover-sleeve being fitted over the inner end of the box, all substantially as and for the purposes set forth.

3. In an axle-lubricator, the combination, substantially as described, of the axle having a reservoir, the box fitted on said axle, and the cover-sleeve or band fitted on the axle over said reservoir and also fitting at its outer end over the inner end of the box, such sleeve or band being provided with an opening movable into and out of register with the reservoir, all substantially as and for the purposes set forth.

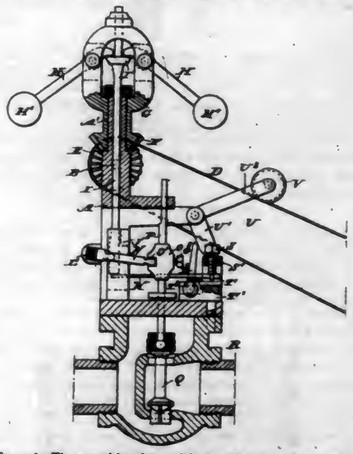
4. In an axle-lubricator, the combination of the axle having a reservoir and provided with threads, the cover-sleeve or band threaded on the axle over the reservoir and having an opening movable into

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and out of register with the reservoir, and the box fitted on the axle and fitted at its inner end within the outer end of the cover-sleeve or band, substantially as set forth.

475,148. STEAM-ENGINE GOVERNOR. RICHARD H. PAYNE, Aquone, N. C. Filed July 30, 1891. Serial No. 401,133. (No model.)



Claim.—1. The combination, with the downward-closing valve having an upward-projecting stem P, provided with an adjustable slide O, having a notch O', of the governor-stem I, parallel with the stem P and projecting at its lower end past the upper end of the valve-stem and having a notch at its lower end, a spring supporting the governor-stem, a transverse rock-shaft having two parallel arms L N, extending in the same direction and engaging the respective notches, and the rotary governor-frame provided with the pivoted weighted arms engaging the governor-stem at their inner ends, substantially as shown and described.

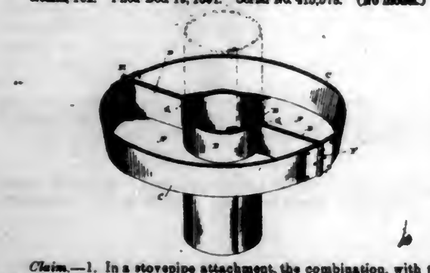
2. The combination, with the valve-stem, vertical governor-stem, and governor-arms, of a spring-arm extending under the lower end of the stem to support it in operative connection with the valve-stem and governor-arms, a bearing against which the outer end of the spring rests, a transverse shaft having a projection or cam engaging the under side of the spring between its ends to hold it in position, an upward-projecting arm, and a bell-crank lever adapted to engage the governor-operating belt at one end and having its downward-extending end adjacent to said upward-projecting arm to throw it and re-

lease the spring-arm upon the breakage of the belt, substantially as shown and described.

3. A governor comprising the frame A, the parallel governor and valve stems I P, mounted to slide vertically thereon, a transverse rock-shaft L', having a short arm L, loosely engaging the lower end of stem I, and a longer arm N, loosely engaging the stem P, the rotary governor-frame G, having arms provided with balls and resting at their inner ends on a collar I' of the stem I, the vertical screw S, the spring-arm K, extending from the lower end of the screw under the lower end of stem P, the transverse shaft T', having a cam or lug T, holding the spring-arm up to the stem P and lower end of the screw and an arm T^2, and the angle-lever U, having a pulley or roller V to rest on the belt and having its lower arm U' engaging the arm T^2, substantially as shown and described.

4. The combination, with the vertical governor-stem loosely connected with a valve-stem, of a vertical screw S, a transverse shaft T between the screw and governor-stem, provided on its upper side with a cam or projection T and having an upward-projecting arm T^2, and the horizontal spring-arm K, crossing the projection and having its ends held thereby under the lower ends of the governor-stem and screw S, and the bell-crank lever U, having its upper arm provided with a pulley or roller to rest on the belt and its lower arm to engage the shaft-arm T^2 upon the breaking of the belt, substantially as shown and described.

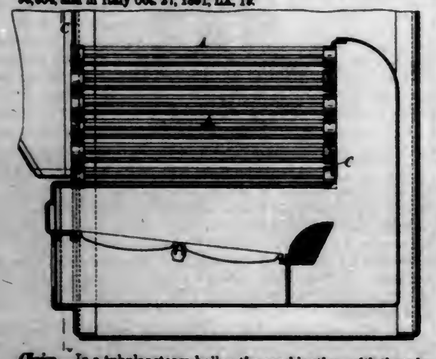
475,149. STOVEPIPE ATTACHMENT. HARRIET N. PEARSON, Corsicana, Tex. Filed Dec. 19, 1891. Serial No. 415,573. (No model.)



Claim.—1. In a stovepipe attachment, the combination, with the pipe, of a receptacle formed of two sections hinged together at one end, their inner edges being formed concave, flanges extending entirely around the said sections, and a means for securing them at their free ends, substantially as shown and described.

2. In a stovepipe attachment, the combination, with the pipe and the receptacle-sections having flanges on their meeting edges, of clasps adapted to engage the said flanges, for the purpose substantially as shown and described.

475,150. TUBULAR STEAM-BOILER. ERNST PETERSEN, Kertch, Russia. Filed Oct. 3, 1891. Serial No. 408,170. (No model.) Patented in England Aug. 22, 1890, No. 13,238; in France June 18, 1891, No. 214,267; in Germany June 19, 1891, No. 60,378; in Belgium Sept. 30, 1891, No. 96,804, and in Italy Oct. 27, 1891, LX. 19.



Claim.—In a tubular steam-boiler, the combination, with the tube-plates, of compound fire-tubes consisting of cups of large diameter fixed by expanding into corresponding holes in the tube-plates and projecting with their closed end a certain distance into the water-space of the boiler, in the closed ends of which cups are fixed the ends of a number of fire-tubes of small diameter, substantially as and for the purpose set forth.

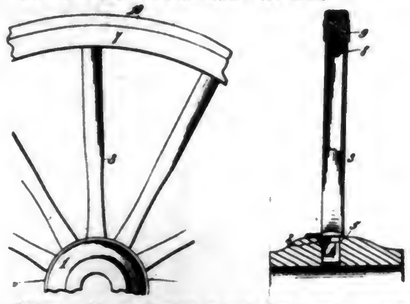
475,151. OIL-CAN. NOAH G. POMEROY, New Haven, Conn. Filed Aug. 1, 1891. Serial No. 401,365. (No model.)



Claim.—1. A tubular oil-can having an internally-threaded collar 10 in its outer end, a threaded discharge-tube screwed thereto, a disk 15 within the can and having a rod 20 projecting out through the tube, a spiral spring 11, bearing against the bottom of the tube and against the under side of the disk, and the removable cover B, inclosing the discharge-nozzle, substantially as set forth.

2. In an oil-can, the combination, with the body thereof adapted to contain the oil, a nozzle, and a spring-pressed valve located below and adapted to close the nozzle-opening, of a rod attached to the valve and extending loosely through and beyond the outer end of the nozzle, and a cap adapted to close the nozzle end of the body, provided with a plug or filling channeled to receive the projecting end of the valve-rod and the outer extremity of the nozzle, as and for the purpose set forth.

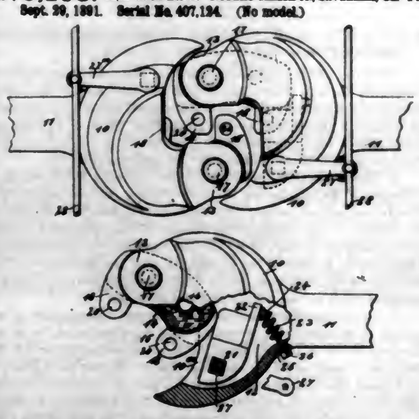
475,152. VEHICLE-WHEEL. GEORGE W. PRICKETT, Waverly, Ill. Filed Jan. 14, 1892. Serial No. 418,065. (No model.)



Claim.—1. The combination, in a wheel, of a hub 1, a metallic felly 7, a metallic button 8 at the inner side of the felly, a rivet 9, extending through the felly and centrally through the button, a tubular spoke 3, resting against the felly and into which the button projects, and a metal tire applied to the felly over the rivet, substantially as described.

2. The combination, in a wheel, of a mortised hub 1, a metallic felly 7, a button 8 at the inner side of the felly, a rivet 9, extending through the felly and centrally through the button, a tubular spoke 3, resting at one end against the felly and receiving the button and provided at the opposite end with an angular tenon 4 entering the hub and formed with a lateral lug 5, and a hub-band 6, secured to the hub and extending over the lateral lug, substantially as described.

475,153. CAR-COUPLING. ROBERT REARDON, Savannah, Ga. Filed Sept. 29, 1891. Serial No. 407,124. (No model.)



Claim.—1. In a coupling of the character described, a coupling hook or knuckle hooked at both ends and provided with two pivotal points between its ends to render it readily reversible, substantially as set forth.

2. In a coupling of the character described, a reversible coupling hook or knuckle provided with a transversely-recessed hook at each end and with a pivot-aperture adjacent to each hook, substantially as set forth.

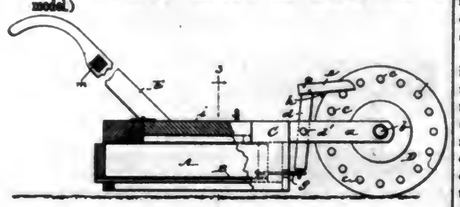
3. A car-coupling comprising a horizontally-recessed draw-head, a reversible locking hook or knuckle pivoted in one side of the draw-head, and a locking device to engage the hook, substantially as described.

4. A car-coupling comprising a horizontally-recessed draw-head, a double coupling hook or knuckle pivoted in one side of the draw-head, the rear end of the hook being adapted to swing in the draw-head, a spring-pressed dog held to swing horizontally in the draw-head and adapted to engage the coupling-hook, and a lever mechanism for moving the dog against the spring, substantially as described.

5. In a car-coupling, the combination, with the recessed draw-head having a locking device therein, of a double coupling hook or knuckle, said hook comprising a reduced central portion having a pivot-hole near each end and having a coupling-hook at each end, substantially as described.

6. The combination, with the locking-dog and the draw-head, of a spring having one end secured to the dog and having the other end formed into a bolt, which is attached to the draw-head, substantially as described.

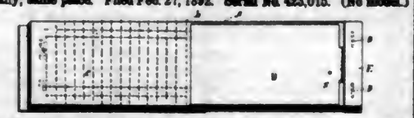
475,154. LAWN-TENNIS-COURT MARKER. HERMAN REICHWEIN, Spring Lake, N. J. Filed Jan. 27, 1892. Serial No. 419,436. (No model.)



Claim.—1. A lawn-tennis-court marker comprising a casing open at its base, a dust-box reciprocating in the casing and provided with a lid and a foraminated bottom, a supporting-wheel journaled at the front of the casing and having a circularly-arranged series of pins on one face, a vertical arm pivoted at the rear of said wheel and having a spring-pressed finger at the upper end in the path of said pins, and a link-bar connecting the dust-box with said arm, substantially as described.

2. In a lawn-tennis-court marker, the combination, with a casing open at its base and provided with a lid and handle-bars and a supporting-wheel journaled at the front of the casing and having a circularly-arranged series of pins on one face, of a dust-box reciprocable in the casing and having a foraminated bottom, a vertical arm pivoted at the rear of the supporting-wheel, having a spring-pressed finger at its upper end in the path of said pins, and a link-bar connecting the dust-box with the lower end of said arm, substantially as described.

475,155. MANIFOLD-COPYING DEVICE. LEWIS G. REYNOLDS, Dayton, Ohio, assignor to The Dayton Printing and Manufacturing Company, same place. Filed Feb. 27, 1892. Serial No. 423,015. (No model.)



Claim.—1. A memorandum-pad consisting of a series of leaves firmly bound at one end and having a slit *s* outside of the binding portion, and the carbon-paper B, provided with the tongue *e*, passing through said slit, the lower half of said series of leaves being longer than the carbon and adapted to fold over the same, substantially as specified.

2. A memorandum-pad consisting of a series of leaves firmly bound at one end to the rigid back C and having a slit *s* outside of the binding portion, and the carbon-paper B, provided with a tongue *e*, passing through said slit, the lower half of said leaves being longer than the carbon and adapted to fold over the same, substantially as specified.

3. A memorandum-pad consisting of a series of leaves bound at one end to a rigid cover C and having a slit *s* outside of the binding-line, and the carbon-paper B, provided with the tongue *e*, passing through said slit and under the binding, the outer end of the series of leaves being supported upon a flexible cover C', adapted to fold over the leaves supported upon the rigid cover, substantially as specified.

4. A memorandum pad composed, substantially, of the rigid cover or back C, the series of copying and memorandum slips A, bound to one end of said cover and pierced with the slit *s* outside of the binding, and the carbon-paper B, provided with a tongue *e*, passing through said slit, all securely bound together and covered by the thin binding-strip E, substantially as specified.

475,156. PERPETUAL CALENDAR FOR WATCH-CHARMS. FAYETTE W. ROE, U. S. Army. Filed Apr. 4, 1892. Serial No. 427,709. (No model.)



Claim.—1. A perpetual calendar formed of two parts, the one adapted to slip over the other, the one part being marked with two series each of seven equidistant groups of figures corresponding to the days of the month and the other part being provided with seven equidistant screens, with the days of the week indicated between said screens, and the said screens being adapted to cover one of said series of seven groups of figures and to expose the other series of groups, as and for the purposes described.

2. In a perpetual calendar, the combination, with a body having its upper portion cylindrical and the surface of said cylindrical portion marked with two series each of seven equidistant groups of figures corresponding to the days of the month, of a dentated cap having seven equidistant teeth, the said cap being adapted to fit snugly over the said cylindrical portion and the said teeth being adapted to hide one of said series of seven groups of figures and to expose the other series of groups, and the said cap having the days of the week indicated thereon between the said teeth, substantially as and for the purposes described.

475,157. REVOLVING SHIELD FOR CARS. JOHN E. SHANAFELT, Lawrence, Kans. Filed Nov. 13, 1891. Serial No. 411,834. (No model.)



Claim.—1. The combination, with a turret or shield closed at the top and bottom, of the sliding door arranged upon the interior of the same, the said door and turret being formed with port-holes and the blinds for closing the same, substantially as shown and described.

2. The combination, with a turret closed at the top and bottom, of the sliding door arranged upon the interior of the turret, which door and turret have port-holes, and the vertically-sliding blinds arranged upon the interior of the turret and door and the stops to limit their motion, substantially as shown and described.

3. The combination, with a revolving turret having port and air holes in the side and a central draft-opening in the top, of a tubular journal inserted in said opening and projecting above the top, substantially as and for the purpose described.

4. The combination, with a turret adapted to be arranged in a room or car, of a guard attached to the end of turret, substantially as and for the purpose described.

5. The combination, with a turret adapted to be arranged in a room, of the guards attached to the upper and lower portions of the turret and adapted to prevent anything being inserted above or below the turret to overturn the same, substantially as shown and described.

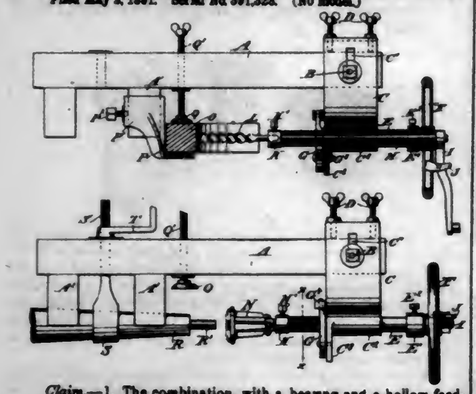
6. The combination, with a turret having a central draft-opening, of a tubular journal inserted therein, the central pivot or stud, and a motor arranged in the turret to revolve the same, substantially as shown and described.

7. The combination, with a turret having a central draft-opening in the top and a slot in the bottom, of a tubular journal inserted in the draft-opening, the central pivot, and the revolving motor-wheel ex-

tending through the slot in the floor, substantially as shown and described.

8. The combination, with the car, of the turret, the tubular journal, the circular track secured to the floor of car, and the mechanical motor attached to one side of the turret and adapted to operate substantially as described.

475,158. BORING AND TENONING MACHINE. ADEL. B. SHARP, Durango, Colo., assignor to himself and Charles Naegin, same place. Filed May 3, 1891. Serial No. 391,323. (No model.)



Claim.—1. The combination, with a bearing and a hollow feed-screw turning in and sliding freely through said bearing, of a nut mounted on the bearing engaging the said screw and movable out of engagement therewith, and a tool-shaft extending through the feed-screw and provided with means for connecting it with and disconnecting it from the feed-screw, substantially as set forth.

2. In a boring and tenoning machine, the combination, with a bracket formed with a bearing, of a feed-screw mounted to turn and to slide in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a tool-shaft mounted to turn in the said feed-screw, and a handle held on the said shaft and provided with a pawl adapted to engage a wheel on the said feed-screw, substantially as shown and described.

3. In a boring and tenoning machine, the combination, with a vertically-adjustable bracket formed with a bearing, of a feed-screw mounted to turn and to slide in the said bearing, a nut made in two parts pivoted on the said bearing and movable into and out of engagement with the feed-screw, a link for locking the said pivoted parts of the nut together when in engagement with the screw, and gear-teeth formed on the said pivoted nut parts and in mesh with each other, substantially as shown and described.

4. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and adapted to engage the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, and a sleeve held adjustably on the said block and provided with a foot for supporting the felly, substantially as shown and described.

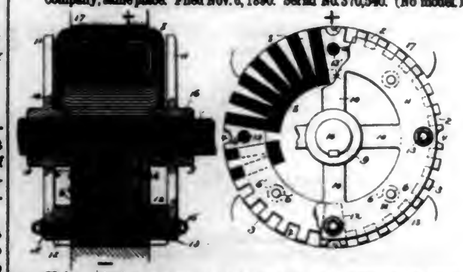
5. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, a sleeve held adjustably on the said block and provided with a foot for supporting the felly, and a screw-rod screwing in the said beam and carrying a disk adapted to engage the felly supported on the said foot, substantially as shown and described.

6. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, a sleeve held adjustably on the said block and provided with a foot for supporting the felly, and a collar held on the said feed-screw for regulating the depth of the aperture bored in the felly, substantially as shown and described.

7. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, and a keeper held vertically adjustable in the said beam and adapted to support the spoke in line with the said shaft, substantially as shown and described.

8. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, a keeper held vertically adjustable in the said beam and adapted to support the spoke in line with the said shaft, and a collar held adjustably on the said feed-screw and adapted to regulate the depth of the tenon to be formed on the spoke, substantially as shown and described.

475,159. ARMATURE FOR DYNAMO-ELECTRIC MACHINES. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Nov. 6, 1890. Serial No. 370,540. (No model.)



Claim.—A ring-armature consisting of a core composed of magnetically-independent laminæ, rivets extending through the laminæ, and insulating washers encircling the rivets and separating the laminæ, in combination with end pieces, each consisting of an annulus and a hub joined by radial arms, spacing-blocks interposed between the end pieces and core, bolts passing through the end pieces, spacing-blocks and laminæ, and insulating-washers encircling the bolts and separating the laminæ, substantially as set forth.

475,160. ELECTRIC-RAILWAY MOTOR. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Dec. 4, 1890. Serial No. 373,540. (No model.)

Claim.—1. In an electric-motor car, the combination, with two electric motors having rotatable armatures and field-magnets, of two clutches, one for each field-magnet, for impeding and arresting the rotation of the latter and mechanism for operating both clutches simultaneously, substantially as described.

2. In an electric-motor car, the combination of an electric motor having its armature directly connected with a car-axle and rotatable field-magnets projecting from two connected circular yokes, with a clutch-band encircling one of the yokes and mechanism for operating the clutch, substantially as described.

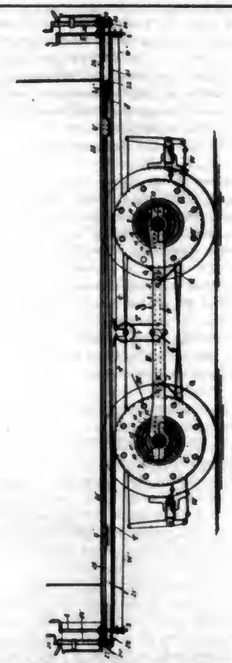
3. In an electric-motor car, the combination, with two electric motors, each having its armature directly connected with a car-axle, and rotatable field-magnets, of two clutches, one for each field-magnet, brakes for the car-wheels, and a single mechanism for applying the clutches and releasing the brakes or releasing the clutches on applying the brakes simultaneously, substantially as described.

4. In an electric-motor car, the combination of an electric motor having its armature directly connected with a car-axle, rotatable field-magnets projecting from two connected circular yokes, and a clutch-band encircling one of the yokes, with brakes for the car-wheels, and a single mechanism for operating the clutch and brakes simultaneously, substantially as described.

5. In an electric-motor car, the combination, with two electric motors having rotatable armatures and rotatable field-magnets projecting from circular yokes, of two clutch-bands, each encircling one of the yokes, and a single mechanism for operating the two clutches simultaneously, substantially as described.

6. The combination, with an electric motor, of an inclosing shell or cover the ends of which are formed by the field-magnet yokes, substantially as described.

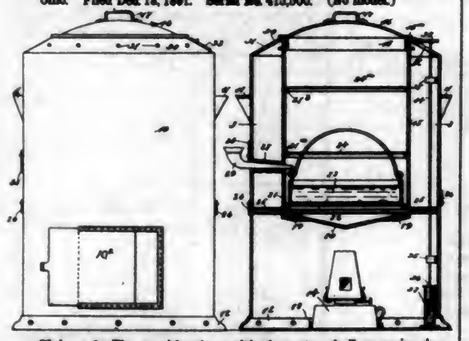
475,160.



7. The combination of an electric motor having rotatable field-magnets projecting from connected yokes with an enveloping shell or cover secured to and revolving with the yokes, substantially as described.

8. The combination, with a car-axle, an armature arranged to rotate therewith, and field-magnets mounted to revolve on the axle in a direction reverse to that of the armature, said field-magnets being provided with end yokes and an inclosing covering, of a clutch constructed to engage one of the yokes of the field-magnets and impede and arrest the rotation of the latter, substantially as set forth.

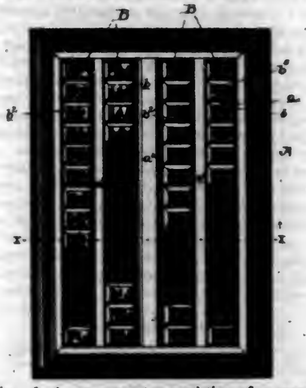
475,161. PORTABLE OVEN. WILLIAM O. SILVEY, Middleport, Ohio. Filed Dec. 12, 1891. Serial No. 415,500. (No model.)



Claim.—1. The combination, with the outer shell or casing having a concentric chamber in its upper portion, an annular chamber separating the two, and a cover for the upper end of the inner chamber, of plates or partitions in the lower end of the inner chamber, cold-air tubes leading therein, and a heater in the lower part of the main shell or casing beneath the bottom of the inner chamber, substantially as set forth.

2. The combination, with the outer shell or casing having a depending concentric open-ended chamber 15, provided with a cover, an annular chamber being formed between the two, having openings in its top and at its lower end opening into the lower half of the main shell or casing, of the removable deflector 20, closing the lower end of chamber 15, the apertured plate thereabove, the water-vessel on said plate, air-tubes leading between the deflector and apertured plate, a water-funnel to supply said vessel, and a heater under the said deflector, substantially as set forth.

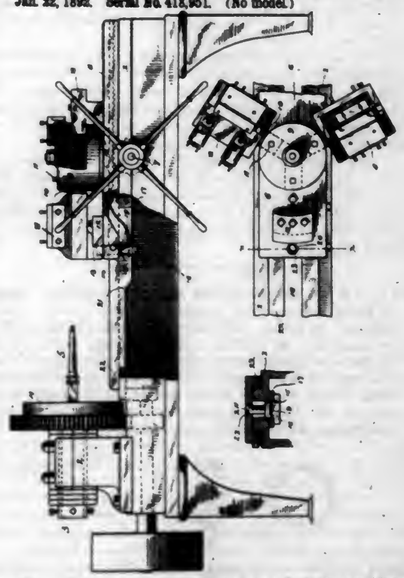
475,162. GAME-COUNTER. ALBION SMITH, Richmond, Ind. Filed Jan. 26, 1892. Serial No. 419,211. (No model.)



Claim.—1. A game-counter consisting of a receptacle having grooves or guideways and sets of movable bodies placed in the guideways, one set bearing numbers corresponding to the lowest number of points made in the game and the other bearing numbers of a larger denomination, such as five and multiples thereof, substantially as described.

2. A game-counter consisting of a frame having guideways or grooves therein and receiving sets of movable blocks or other bodies, each set consisting of two series of blocks, one series bearing numbers corresponding to the lowest number of points possible to be made and the other bearing numbers of a larger denomination, such as five and multiples thereof, each set being indicated by a different color, substantially as described.

475,163. LATHE FOR TURNING AXLES. RALPH R. SPEARE, Wheeling W. Va., assignor to Frank W. Beers, Bridgeport, Conn. Filed Jan. 22, 1892. Serial No. 418,951. (No model.)



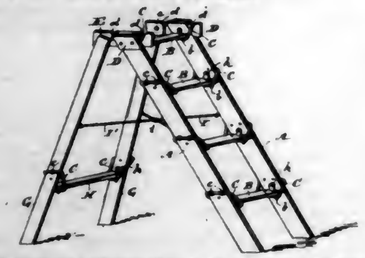
Claim.—1. In a machine of the class described, the combination, with the carriage and the tool-holders, each of which is provided with a backwardly-extending tongue and in its under side with a socket, of a stop-block upon the carriage, the forward end of which is undercut to correspond with the tongue, and a spring-actuated bolt upon the carriage adapted to engage the sockets in the tool-holders, so that the

tool-holder in use is held against lateral movement and the back-pressure is taken up, thereby preventing looseness of the parts.

2. The combination, with the bed having a central slot and on opposite sides thereof ribs made highest at their rear ends and reduced at their forward ends, the carriage and tool-holders, each of which is provided with a backwardly-extending tongue, and a socket in its under side, of a stop-block upon the carriage, the forward end of which is an arc of a circle and is undercut to receive the tongue, a bolt carried by a T-shaped block, the ends of which engage the ribs, and a spring secured to the block and the carriage, by which the bolt is moved upward toward the locking position, so that when the carriage is retracted the ends of the block will engage the rear ends of the ribs, holding the bolt out of locking position, and when the carriage is moved forward the reduced forward ends of the ribs will permit the spring to raise the bolt into engagement with the socket.

3. The bed having a central slot and ribs on opposite sides thereof, the forward ends of said ribs being reduced, as shown, in combination with the carriage having a stop-block undercut in its forward side, a spring-actuated bolt carried by a block, the ends of which engage the ribs, and the tool-holders, each of which is provided with a backwardly-extending tongue adapted to engage the stop-block, and a socket adapted to receive the bolt when the carriage is moved forward and the ends of the block ride down upon the reduced portion of the ribs.

475,164. LADDER. FRANCIS S. SPRAGUE, Federal Point, Fla. Filed Nov. 3, 1891. Serial No. 410,752. (No model.)

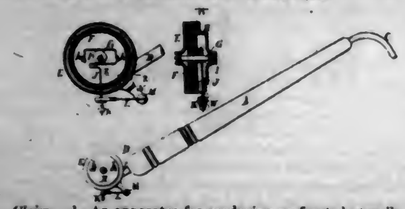


Claim.—1. The combination, with the side pieces of a ladder, of swinging stirrup-like straps or loops connected therewith and loose steps provided with pins or projections on their under sides arranged to engage with the free or swinging lower ends or portion of said straps or loops, substantially as specified.

2. The combination, with the side pieces A A of the ladder and the legs or standards G G, of the metal connections D, secured to the tops of said side pieces, provided with swinging straps or loop-holding notches *d*, and the metal top or facing pieces E, applied to the legs G and provided each with a pin *e*, adapted to enter loosely within, as a pivot, each metal connection D, essentially as described.

3. In a step-ladder, the combination, with the side pieces A and legs G, of the swinging straps or loops C, applied to said side pieces and legs, the loose steps B, the brace H, connecting the legs G together, and the braces I I', having a loop connection i at their inner ends and hinged at their outer ends to the legs and side pieces, respectively, substantially as specified.

475,165. APPARATUS FOR PRODUCING STENCILS. HERBERT F. STANDING, Bournemouth, England. Filed Aug. 17, 1891. Serial No. 402,914. (No model.) Patented in England Dec. 16, 1890, No. 20,517; in France July 16, 1891, No. 214,908; in Belgium July 16, 1891, No. 95,654; in Switzerland July 25, 1891, No. 3,873; in Norway Aug. 4, 1891, No. 2,381; in Victoria Sept. 10, 1891, No. 9,035; in New South Wales Sept. 14, 1891, No. 3,256; in Spain Sept. 17, 1891, No. 12,363; in Italy Sept. 28, 1891, LIX, 364; in Canada Nov. 7, 1891, No. 37,747, and in Austria-Hungary Nov. 24, 1891, No. 36,084 and No. 61,876.



Claim.—1. An apparatus for producing perforated stencils, consisting of a tubular holder A, having an air-duct and provided at its lower end with an air-delivery nozzle, a wheel-supporting frame or casing attached to the lower end of the tubular holder, a needle supported by and reciprocating on the wheel-supporting frame or casing, and a notched wheel journaled on the supporting frame or casing and arranged in juxtaposition to the air-delivery nozzle at the lower end of the tubular holder, so that the currents of air forced through the tubular holder and through the air-delivery nozzle at the lower end thereof impinge on the notches of the wheel, and a connection between the wheel and the needle for reciprocating the latter, substantially as described.

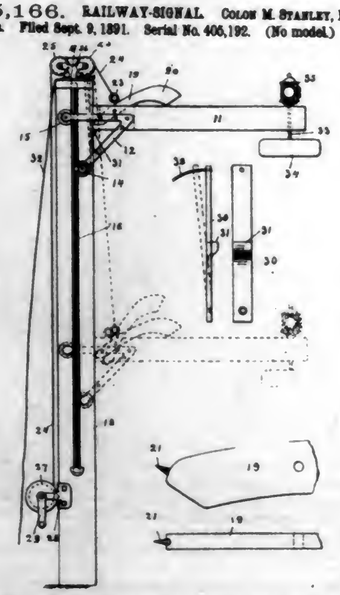
2. In apparatus for producing perforated stencils, the combination of a revolving disk or wheel having a large number of small notches or recesses on its periphery, a frame or casing carrying said wheel, a tubular holder, to the lower end of which said frame or casing is attached and which constitutes a duct for an air-jet made to impinge on the notches of the wheel, an eccentric or crank-pin attached to the said wheel, a perforating-needle arranged in guides wholly outside of the tubular holder and having a loop embracing the said eccentric or crank-pin, so as to be vertically reciprocated thereby, and a spring-support attached to the casing or holder, having a guide through which the needle reciprocates and adapted to rest upon the stencil to enable thick and thin lines to be produced by the needle, substantially as described.

3. In an apparatus for producing perforated stencils, the combination of a tubular holder having an air-duct and provided at its lower end with an air-delivery nozzle, a wheel-supporting frame or casing connected with the lower end of the tubular holder, a needle supported by and reciprocating on the wheel-supporting frame or casing, a notched wheel journaled on the frame or casing and arranged in juxtaposition to the air-delivery nozzle at the lower end of the tubular holder, and a spring connected with the wheel-supporting frame or casing and provided at its free extremity with a guide, through which the needle reciprocates, substantially as described.

4. In apparatus for producing perforated stencils, the combination of a tubular holder A, casing E H, air-tube D, notched wheel F, eccentric I, needle J, and a spring L, having a nozzle K, through which the needle reciprocates, all arranged and operating substantially as described with reference to Figs. 1 to 10 of the drawings.

5. In an apparatus for producing perforated stencils, a reciprocating needle, the upper part of which is bent to form a rectangular loop, in which works the eccentric or crank pin that imparts motion thereto, the vertical portions of such loop being arranged to move between guides on the casing of the apparatus, substantially as described.

475,166. RAILWAY-SIGNAL. COLON M. STANLEY, Montezuma, Ga. Filed Sept. 9, 1891. Serial No. 405,192. (No model.)



Claim.—1. A railroad-signal comprising a vertical post, a projecting arm mounted on the post and held to move vertically thereon, a signaling device carried by the arm, and a drum-and-cable mechanism for hoisting the arm, substantially as described.

2. A railroad-signal comprising a vertical post, a projecting arm held to move vertically on the post and adapted to carry a signaling device, a drum-and-cable mechanism for raising the arm, a spring-catch for supporting the arm, and a device for releasing the catch, substantially as described.

3. A railroad-signal comprising a vertical post having vertical track-rods thereon, a projecting arm mounted on the post and adapted to carry a signaling device, a frame secured to the arm and having wheels adapted to run upon the track-rods, a crank-operated drum mounted on the post near the base, and a cable connecting with the drum and arm and extending over guide-pulleys on the top of the post, substantially as described.

4. The combination, with the post and the sliding arm held to move vertically thereon, of a spring secured in the recess of the post and provided with a shoulder to slip beneath the arm, and a cord secured to the free end of the spring and extending downward to the ground, substantially as described.

5. The combination, with the post and the sliding arm thereon, of a weighted lever pivoted in the arm and having a brad at one end adapted to enter the post, substantially as described.

6. The combination, with the vertical post, the sliding arm thereon, and the crank-operated drum mounted on the post, of a weighted lever pivoted in the arm and having at one end a brad to engage the post, and a cable connecting the drum and weighted lever, said cable extending over the guide-pulleys on the top of the post, substantially as described.

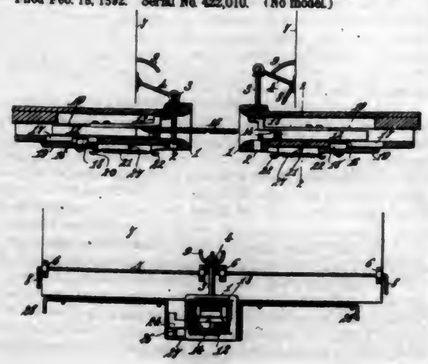
475,167. ELEVATED KETTLE-CARRIER. EMANUEL STERNER and WESLEY R. AMPCHER, Glenville, Pa. Filed Jan. 21, 1892. Serial No. 418,744. (No model.)



Claim.—1. An elevated carrier for fireplaces, comprising a track-bar having its rear end secured in the rear wall of a fireplace and having its front end extended out beyond the fireplace and bent upward to be secured above the fire-place, and a hanger depending from the track-bar and adapted to carry a kettle and provided with a pulley arranged on the track-bar, substantially as described.

2. An elevated carrier for fireplaces, comprising a horizontal track-bar designed to have its inner end secured to a rear wall of a fireplace and having its front or outer end extending and bent upward to be secured above the fireplace, a hanger depending from the track-bar and provided with a bar having a series of hooks adapted for the reception of the bail of a vessel, and a pulley journaled in the hanger and mounted on the track-bar, substantially as described.

475,168. CAR-COUPLING. EDWARD SURPRENANT, Cohoes, N. Y. Filed Feb. 18, 1892. Serial No. 422,010. (No model.)



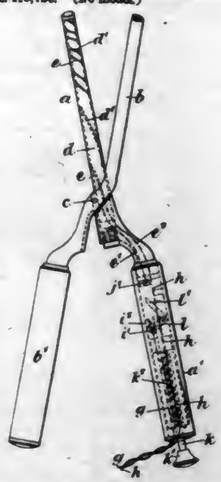
Claim.—1. The combination, with a draw-head having a vertical pin-hole, a spring-pressed slide having a lateral shoulder, and link-engaging jaws at its front end and normally held by its spring in position to support a coupling-pin, of a locking-bolt carried by the draw-head and movable into engagement with the lateral shoulder of the slide when a link is engaged therewith to enter another draw-head, substantially as described.

2. The combination, with a draw-head having a vertical pin-hole, a spring-pressed slide having a lateral shoulder, and link-engaging jaws at its front end and normally held by its spring in position to support a coupling-pin, of a locking-bolt carried by the draw-head and movable into engagement with the lateral shoulder of the slide when a link is engaged therewith, and a lengthwise-movable rod extending transversely of the car and having an arm engaging the locking-bolt for moving the latter back and forth, substantially as described.

3. The combination, with a draw-head having a vertical pin-hole, a longitudinal slot in its bottom wall, and a hook secured to the outside of the latter, of a lengthwise-movable pin-supporting slide having a hook and link-engaging jaws at its front end, a sliding plate connected with the rear end of the pin-supporting slide through the slot in the bottom wall of the draw-head and provided with a hook, and a spring detachably engaged with the hook on the draw-head and the hook on the sliding plate, substantially as described.

4. The combination, with a draw-head having a vertical pin-hole, and a pin-supporting slide normally held by its spring in position to support a coupling-pin, of a rock-shaft journaled on the car and having a crank-arm engaged with the eye of a coupling-pin, and a stop-arm secured to the car above the crank-arm of the rock-shaft for preventing the complete withdrawal of the coupling-pin from the pin-hole, substantially as described.

475,169. ELECTRICALLY-HEATED CURLING-IRON. ARTHUR H. WATSON and FRANK E. ANTONINI, London, England. Filed Dec. 1, 1891. Serial No. 413,736. (No model.)



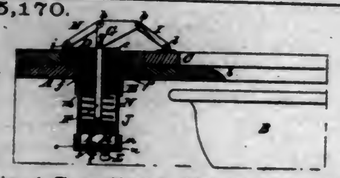
Claim.—1. The combination, with tongs or irons for curling, goffering, &c., of an electrical heater, conductors, insulators, a switch placed inside the curling or goffering jaws and handles for the purpose of imparting heat to them while in use, and a push-rod arranged longitudinally of one of the handles for actuating said switch, substantially as herein shown and described.

2. The combination, with tongs or irons for curling, goffering, &c., heated by electricity, of a switch arrangement in the handle of heating-jaw and a movable rod arranged within and longitudinally of said handle for actuating said switch, substantially as herein shown and described, for the purpose of controlling the supply of electricity.

3. The combination, with tongs or irons for curling, goffering, &c., of insulator placed inside the curling or goffering jaw and the electrical heater intertwined around or threaded through said insulator, whereby it is carried and supported by the insulator, substantially as herein shown and described.

475,170. DEVICE FOR AUTOMATICALLY CLOSING THE COVERS OF WATER-CLOSETS OR OTHER RECEPTACLES. WALTER R. WEBSTER, Pine Grove, Cal. Filed May 16, 1891. Serial No. 392,001. (No model.)

475,170.



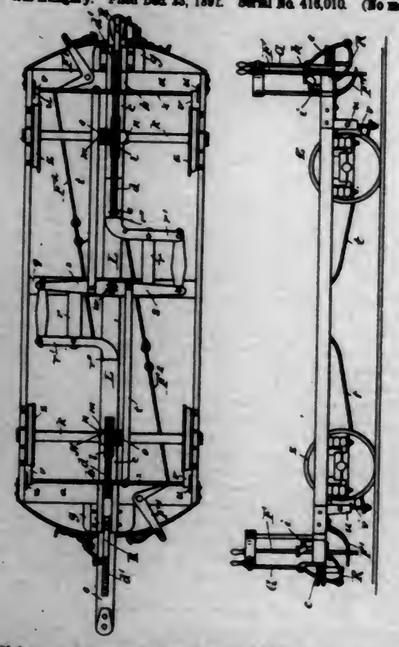
Claim.—1. The combination, with the tubular stationary attaching-cap having means for securing it in place, of the adjustable cylinder screwed at its upper end into the said cap, an apertured head or cross-plate in the upper end of the cylinder and a head at its lower end having a valved inlet and outlet, the piston in the cylinder, the rod extending therefrom through said apertured head or plate and the cap, the spring between said piston and the said upper apertured head or plate, and a lever mechanism for connecting the upper end of the piston-rod with the part to be operated, substantially as set forth.

2. The combination, with the lever mechanism, the piston, its rod and the cylinder having its outer end or head provided with two apertures, one of which is threaded, of a screw L, projecting upward into the threaded aperture and having one side cut away or inclined to form a vent, and an upward-opening inlet-valve closing the inner end of the other aperture and having its stem extending downward therethrough and provided at its outer portion with a seating-spring and an adjusting-screw, whereby both valves may be adjusted from the exterior of the cylinder, substantially as set forth.

3. The combination, with the vertically-swinging cover, of a stationary cylinder below and in rear thereof, the vertically-reciprocating piston in the cylinder and having a rod projecting upward, a spring between the upper side of the piston and its upper cylinder-head, and a bell-crank lever pivotally connected at its inner or lower end with the upper end of the piston-rod and also with the rear side of the cover, and whereby a dead-center is prevented and the cover will always be closed whenever released, with the seat-frame in rear of the piston-rod, substantially as set forth.

4. In devices of the character described, the combination, with the hinged rising and falling cover, of the bell-crank G, the levers or rods I H, the piston-rod F, the piston M, and the air-cushioning cylinder J, substantially as specified.

475,171. TRAMWAY-BRAKE. FRIEDRICH ADLER, Prague, Austria-Hungary. Filed Dec. 23, 1891. Serial No. 416,010. (No model.)



Claim.—1. A car-starter comprising a sliding draw-bar provided with a rack, a gear-wheel mounted loosely on the axle and with which the rack engages, and a mechanism for locking the gear-wheel to the axle when the draw-bar is pulled out in the act of starting the car, whereby the wheels of the car will be revolved by the engagement of the teeth of the rack with the gear-wheel, substantially as described.

2. The combination, with a brake-lever, of a sliding draw-bar provided with a rack and adapted to operate the brake-lever when moved inward, a gear-wheel loose on the axle and with which the rack engages, and mechanism for locking the gear-wheel to the axle when the draw-bar is pulled out in the act of starting the car, substantially as described.

3. In apparatus for starting tram-cars or vehicles, a movable draw-bar *c*, having teeth gearing with a toothed wheel on or connected with the driving wheel or axle, and teeth, in connection with which is a pawl *k*, operated by the foot, substantially as described.

4. Apparatus or mechanism for starting and braking tram-car and other vehicles, consisting of a rack-moving draw-bar and toothed gearing, in combination with the brake-levers arranged as set forth, all as herein described, and shown in the drawings.

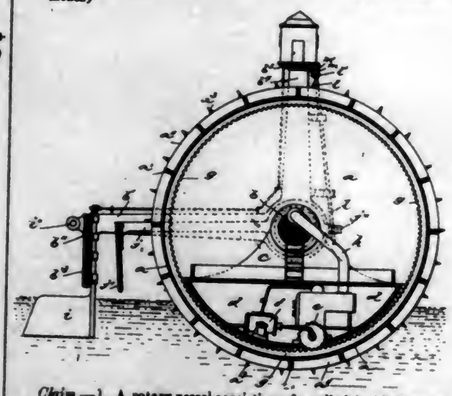
5. In apparatus for starting tram-cars or vehicles, the combination, with a movable draw-bar operated as herein described, of a ratchet mechanism operated by hand, by which the movement inward of said bar can be effected by hand, substantially as described.

6. The combination, with the moving rack draw-bar *c*, of the tooth-wheel *l*, mounted loosely on the shaft *k* and having a boss with teeth *n*, working in connection with a pin N, fixed on the shaft *k*, and a spring *o*, said teeth *n*, pin, and spring constituting a clutch, as set forth with reference to the drawings.

7. A car-starter comprising a gear-wheel mounted loosely on the car-axle, a ratchet mechanism to lock the gear-wheel to the axle, a sliding draw-bar mounted on the car-frame and provided with a rack to engage the gear-wheel, and a foot-operated pawl to lock the draw-bar, substantially as shown and described.

8. The combination, with the sliding draw-bars and the brake-rods, of a pivoted cross-beam mounted centrally beneath the car and levers carried by the cross-beam, said levers being connected with the brake-rods and having buffers extending into the path of the draw-bars during the back-stroke of the latter, substantially as shown and described.

475,172. MARINE VESSEL. GEORGE G. AIREY and WILLIAM W. URE, Mount Savage, Md. Filed Dec. 1, 1891. Serial No. 413,673. (No model.)

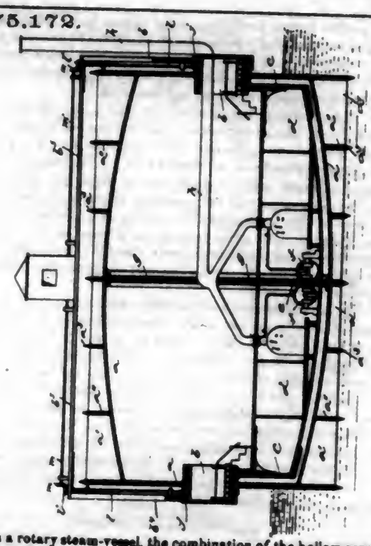


Claim.—1. A rotary vessel consisting of a cylindrical hull tapered from its center to its ends, longitudinal paddles secured to its outer surface, their outer edges being straight, as described, annular flanges secured to the exterior of the hull and connecting said paddles, and means for supporting and revolving said hull, substantially as described, and for the purpose set forth.

2. A rotary vessel consisting of a cylindrical hull tapered from its center to its ends, longitudinal paddles secured to its outer surface, their outer edges being straight, as described, annular radial flanges secured to the outer surface of the hull and connecting the paddles, their outer edges being flush with the outer edges of the paddles, radial spikes secured to the edges of said flanges, stationary hollow hubs or shafts supporting the hull, and means for revolving said hull on said shafts, substantially as described, and for the purpose set forth.

3. A rotary vessel consisting of the cylindrical hull tapered, as described, and provided with the longitudinal paddles, stationary hollow hubs or shafts supporting said hull, downwardly-depending hangers secured to or formed integral with the inner ends of the shafts, the stationary hull supported by the hangers, the pinion *e*, carried by the stationary hull, and gear-wheel *g*, secured to the interior of the revolving hull, and suitable driving mechanism, substantially as described.

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4. In a rotary steam-vessel, the combination of the hollow revolving hull, paddles secured to its outer surface, stationary hollow shafts supporting said hull, and means for revolving said hull with a brake, said brake consisting of the arms *j*, mounted in bearings on the hollow shafts, a brake-board connecting their rear ends in the rear of the vessel, and means for raising and lowering said brake-board, substantially as described, and for the purpose set forth.

5. In a rotary steam-vessel, the combination of the hull *a*, provided with the paddles *a'* and flanges *a''* and spikes *a³*, the hollow shafts *b*, the hangers *c*, secured to the inner ends of the shafts, the hull *d*, supported by said hangers, the pinion *e*, gear *g*, and suitable driving mechanism, the brake, and means for raising and lowering said brake, the arms *b'* and cross-bar *b²*, supporting the rudder, the rudder and means for operating it, the arms *b⁴* and cross-bar *b⁵*, supporting the pilot-house, substantially as described.

475,173. AUTOMATIC TWINE-HOLDER. EDWARD B. ANDROS, Brockport, N. Y. Filed Apr. 14, 1890. Serial No. 347,903. (No model.)



Claim.—1. In a twine-holder, the combination of a frame provided with vertical ways, a cylinder having projecting journals resting in said ways, cords attached at one end to the frame above the cylinder and at the other to the journals, and other cords attached to the frame below the journals and also to the journals, said cords winding reversely to the upper cords, as shown and described, and for the purpose specified.

2. In a twine-holder, the combination of the vertical ways B B', the cylinder C, with journals running in said ways, the cords D D and D' D', attached to the journals and winding reversely thereon, the cam A on one end of the cylinder, the bell H above the cylinder, and the spring-wire I', provided with the hammer I, said spring-wire having an offset which intersects the passage of the cam, as shown and described, and for the purpose specified.

475,174. LUGGAGE-CARRIER FOR BICYCLES. FRED E. BARBOUR, Washington, D. C. Filed Sept. 14, 1891. Serial No. 405,648. (No model.)

Claim.—1. A luggage-carrier for bicycles and similar vehicles, consisting of a bag detachably and adjustably secured at one end to the seat, at its opposite end to the handle-bar, and near its base to the frame of the vehicle.

2. A luggage-carrier for bicycles, consisting of a detachable bag secured at its rear end to the saddle, in combination with spring-clips near its front end and base, securing it to the handle-bar and frame of the bicycle, respectively.

3. A detachable luggage-carrier for bicycles, consisting of a bag secured at one end to the saddle, in combination with a spring-clip in form of a double hook for securing its opposite end to the handle-bar

475,174.

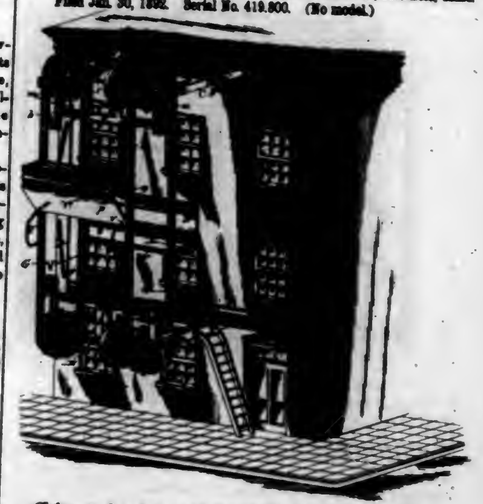


and a spring-clip near its base for encircling the steering-post and engaging the frame of the bicycle.

4. As an article of manufacture, a detachable luggage-carrier consisting of a bag, one end thereof being secured to a case adapted to receive said carrier when not in use.

5. As an article of manufacture, a detachable luggage-carrier consisting of a bag, one end thereof being secured within a case adapted to receive the carrier when not in use, a lid for said case attached to the opposite end of the carrier, and a clip secured to the lid affording a support for same when in use.

475,175. FIRE-ESCAPE. GEORGE A. RIDWELL, Pittsfield, Mass. Filed Jan. 30, 1892. Serial No. 419,800. (No model.)



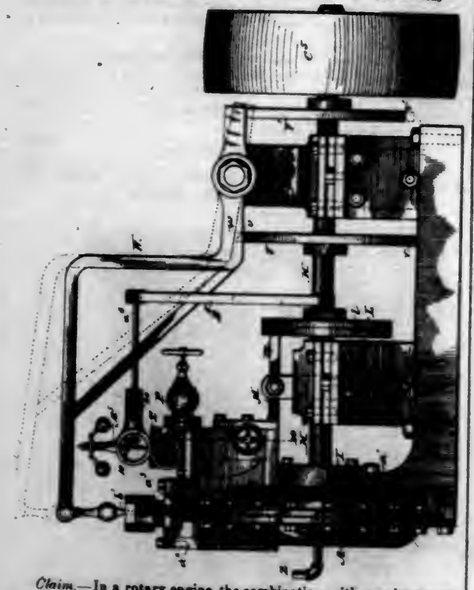
Claim.—1. In a fire-escape substantially as described, the combination, with the upper and lower hangers, the upper and lower rotary shafts carrying sprocket-wheels, the endless belts taking around the sprocket-wheels and carrying carriages, the brake-wheels fixed on the rotary shafts, and a suitable means for rotating one of said shafts, of the upper brake-lever pivotally connected at one end to an arm depending from one of the upper hangers, a shoe carried by said brake-lever and adapted to bear against the upper brake-wheel, the lower brake-lever fulcrumed at an intermediate point in its length and guided in standards rising from the lower hangers, a shoe carried by said lever and adapted to bear against the lower brake-wheel, a link connecting the free ends of the upper and lower brake-levers, and a suitable means for applying and releasing one of said levers, substantially as specified.

2. In a fire-escape substantially as described, the combination, with the upper and lower hangers, the upper and lower rotary shafts carrying sprocket-wheels, the endless belts taking around the sprocket-wheels and carrying carriages, the brake-wheels fixed on the rotary shafts, and a suitable means for rotating one of said shafts, of the upper brake-lever pivotally connected at one end to an arm depending from one of the upper hangers, a shoe carried by said brake-lever and adapted to bear against the upper brake-wheel, the lower brake-lever fulcrumed at an intermediate point in its length and guided in standards rising from the lower hangers, a shoe carried by said lever and adapted to bear against the lower brake-wheel, a link connecting the free end of the upper and lower brake-levers, the lever Q, pivotally connected to one of the upper hangers, a link connecting the forward end of said lever and the upper brake-lever, an operating-rod connected to the rear end of the lever Q and depending to a point adjacent to the

ground, the depending rod V, and the chain or cord taking loosely over the upper shaft and having one end connected to the upper brake-lever and its opposite end connected to the upper end of the rod V, substantially as specified.

3. In a fire-escape substantially as described, the combination, with the endless chains, of a carriage comprising the lower wall *q*, pivotally connected to the chain belts, the upper wall *p*, arranged at an approximate right angle to the lower wall and having eyes at its upper edge, and the angular plate X, connected to the under side of the bottom wall and the chain or rope taking through the eyes carried by the wall *p* and having their ends connected to the chain belts, substantially as and for the purpose set forth.

475,176. ROTARY ENGINE. STEPHEN H. BLOOMER, East Portland, Oreg. Filed June 5, 1891. Serial No. 395,274. (No model.)



Claim.—In a rotary engine, the combination, with annular steam-chamber, a shaft operating centrally thereof and extended rearward, the concentric piston secured thereto, the steam-chest, the inlet and outlet ports, the sliding abutment, and the cut-off devices in the steam-chest, of a tilting lever W, connected with the gate, a similar lever M, connected with the cut-off devices, the cam-disk L, secured upon the shaft for operating the lever M, and the oppositely-operating cam-disks V V' upon the line-shaft adapted to engage the lever W, all arranged in the manner shown, and for the purpose described.

475,177. CALCULATOR. JOSÉ HERRAN Y BOLADO, Aguas Calientes, Mexico. Filed June 13, 1891. Serial No. 396,151. (No model.)



Claim.—1. In a calculator, a series of cylinders fitted one upon the other and each provided with an enlarged portion having apertures, and a reduced portion having a set of numerals appearing through the apertures of the next following cylinder, substantially as shown and described.

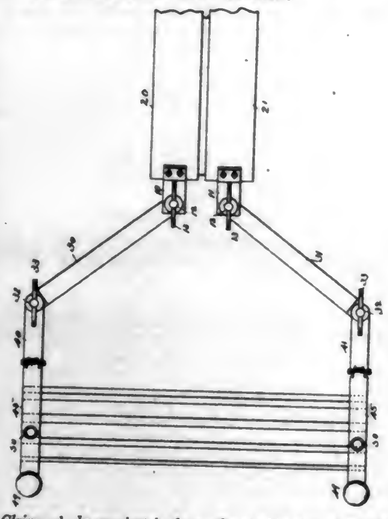
2. In a calculator, the combination, with a lead-pencil having a hollow stem and carrying movable leads, of cylinders fitted to slide on the said hollow stem and one fitted upon the other, each cylinder being provided with an enlarged portion having apertures and a reduced portion having a set of numerals, the latter appearing through the apertures of the next following cylinder, substantially as shown and described.

3. In a calculator, the combination, with a stem formed with a key and a head having two sets of numerals, one for division and the other for multiplication, the said head being also provided with a reduced portion having a set of numerals, of a series of cylinders, each having an enlarged and a reduced part, of which the enlarged part fits on the reduced part of the preceding cylinder, the reduced part being formed with longitudinally-extending grooves engaging the key on the said stem, substantially as shown and described.

4. In a calculator, the combination, with a stem formed with a key and a head having two sets of numerals, one for division and the other for multiplication, the said head being also provided with a reduced portion having a set of numerals, of a series of cylinders, each having an enlarged and a reduced part, of which the enlarged part fits on the reduced part of the preceding cylinder, the reduced part being formed with longitudinally-extending grooves engaging the key on the said stem, each of the reduced parts being also provided with a large numeral and the enlarged part with a large opening, through which appears the large numeral of the preceding cylinder, substantially as shown and described.

5. In a calculator, the combination, with a stem formed with a key and a head having two sets of numerals, one for division and the other for multiplication, the said head being also provided with a reduced portion having a set of numerals, of a series of cylinders, each having an enlarged and a reduced part, of which the enlarged part fits on the reduced part of the preceding cylinder, the reduced part being formed with longitudinally-extending grooves engaging the key on the said stem, each of the reduced parts being also provided with a large numeral and the enlarged part with a large opening, through which appears the large numeral of the preceding cylinder, and a cap for holding the several cylinders in place on the said stem, substantially as shown and described.

475,178. ELECTRICAL FORGE. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed May 6, 1891. Serial No. 391,705. (No model.)



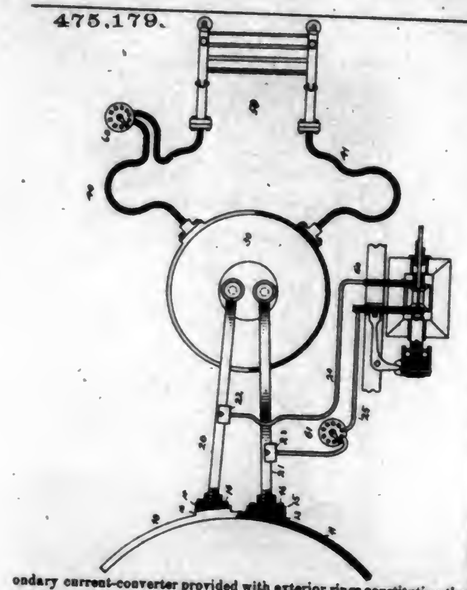
Claim.—1. In an electric forge, the combination of an electric-current converter, two pivoted intermediate arms separately connected with opposite terminals thereof, means for adjusting said arms on their pivots, a second intermediate arm pivotally connected with one of the first intermediate arms, an electrode-arm connected to the outer end of said second intermediate arm by a universal joint, and an electrode-arm connected with the outer end of one of the first intermediate arms.

2. In an electric forge, the combination of an electric-current converter provided with two rings constituting the positive and negative poles thereof, two pivoted intermediate arms mounted, respectively, on said rings, means for adjusting said arms on their pivots, two electrode-arms pivoted to said intermediate arms, and means for adjusting said arms on their pivots.

475,179. DISTRIBUTING APPARATUS FOR HEATING-CURRENTS. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed May 14, 1891. Serial No. 392,705. (No model.)

Claim.—1. In an apparatus for distributing electric currents for heating purposes, the combination of a current-converter provided with exterior rings constituting the positive and negative poles, a secondary current-converter provided with exterior rings constituting the positive and negative poles, conductors connecting the primary with the secondary converter, an electric heater, and conductors connecting the rings of the secondary converter with said heater.

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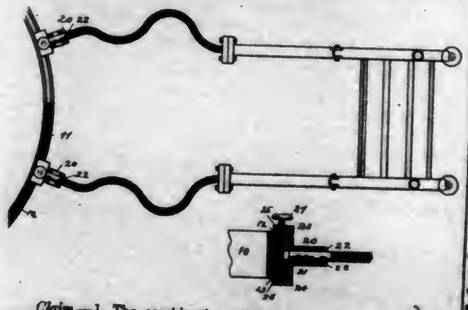


2. In an apparatus for distributing electric currents for heating purposes, the combination of a current converter provided with exterior rings constituting the positive and negative poles, a secondary current-converter provided with exterior rings constituting the positive and negative poles, conductors connecting the primary with the secondary converter, an electric heater, and flexible conductors connecting the rings of the secondary converter with said heater.

3. In an apparatus for distributing electric currents for heating purposes, the combination of a current-converter provided with exterior rings constituting the positive and negative poles, a secondary current-converter provided with exterior rings constituting the positive and negative poles, conductors connecting the primary and secondary converters, clamps adjustable on said conductors, an electric heater, and conductors connecting said heater with said clamps.

4. In an apparatus for distributing electric currents for heating purposes, the combination of a current converter provided with exterior rings constituting the positive and negative poles, a secondary current-converter provided with exterior rings constituting the positive and negative poles, conductors connecting the primary with the secondary converter, an electric heater, clamps adjustable on said conductors, a second electric heater, and conductors connecting said heaters with said clamps.

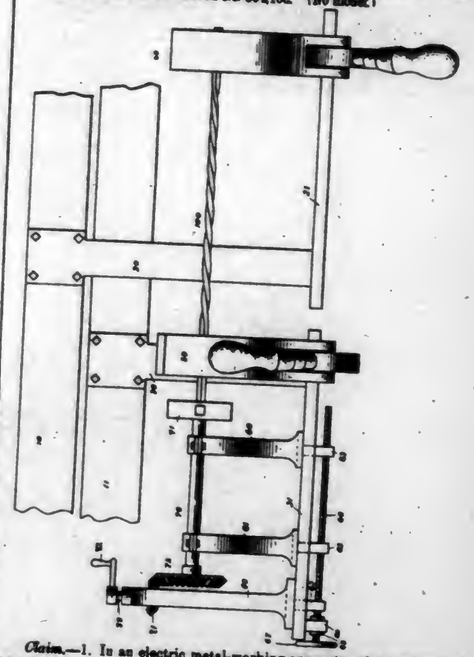
475,180. ELECTRIC CONNECTOR FOR CONVERTERS. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed May 14, 1891. Serial No. 392,707. (No model.)



Claim.—1. The combination, with a converter-ring, of a connector consisting of a clamp provided with a binding post or socket and with hooks engaging said ring.

2. The combination, with a converter-ring provided with grooves on its upper and lower faces, of a connector consisting of a clamp provided with a binding post or socket and with hooks engaging said ring.

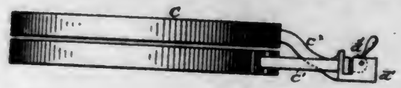
475,181. ELECTRICAL METAL-HEATER. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed May 26, 1891. Serial No. 394,106. (No model.)



Claim.—1. In an electric metal-working apparatus, the combination of two converter-rings constituting the positive and negative poles, two conductive brackets connected, respectively, to said rings and provided with horizontal arms, two clamps adjustable toward and from each other on said arms, two standards on one of said arms, a shaft journaled in said standards and provided with a clamp at one end, and means for rotating said shaft.

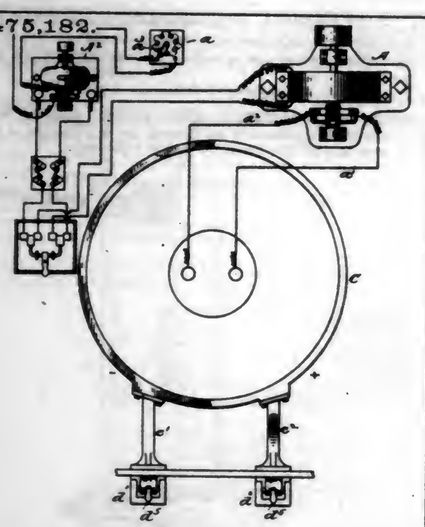
2. In an electric metal-working apparatus, the combination of two converter-rings constituting the positive and negative poles, two conductive brackets connected, respectively, to said rings and provided with horizontal arms, two clamps adjustable toward and from each other on said arms, two standards on one of said arms, a shaft journaled in said standards and provided with a clamp at one end, means for rotating said shaft, and means for adjusting said standards on said arm.

475,182. METHOD OF ELECTRICAL METAL-WORKING. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed June 29, 1891. Serial No. 397,822. (No model.)

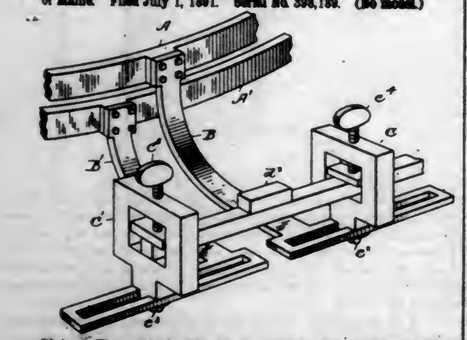


Claim.—The method of making a metal forging, which consists in subjecting a rolled or drawn bar or sheet to be forged to the action of an electric heating current until its interior is raised to a plastic forging heat and maintaining the temperature of its exterior so far below that of the interior as to preserve its form and homogeneous character, said heating operation being performed within a period which will avoid the destruction of the external skin of the metal by oxidation, and then forging or shaping the bar or sheet into the desired irregular shape or article by bending or shaping the external skin of the bar over the internal plastic metal to form the surface of the finished article or forged part thereof without breaking or destroying said skin, substantially as set forth.

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475,183. METHOD OF ELECTRIC METAL-WORKING. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed July 1, 1891. Serial No. 398,189. (No model.)



Claim.—The method of heating desired portions of a bar of metal spanning the space between electrodes of opposite polarity, which consists in passing a heating current of electricity through the bar and applying to a portion of the bar between the electrodes while the current is passing therethrough a conductor which diminishes the resistance of the part of the bar which it bridges over and retards or prevents its being heated there, substantially as described.

475,184. ELECTRICAL CONVERTER. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed Oct. 31, 1891. Serial No. 409,390. (No model.)

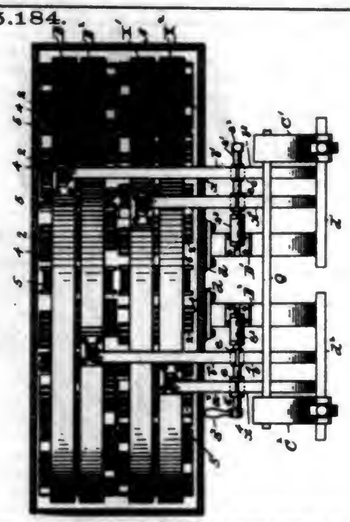
Claim.—1. The combination, in an apparatus for electric heating, of metal-holders arranged to hold the metal to be heated, with two converters arranged to furnish electric currents of different potential, and intervening connecting mechanism arranged to connect and disconnect either of said converters from the metal-holders at the will of the operator, substantially as described.

2. The method of heating metal by the electric currents, which consists in commencing the heating process with a current of lower potential and when the resistance of the metal is increased by the heat in employing a current of higher potential to complete the heating process, substantially as described.

3. The combination of two converters, divided arms or conductors x^6 x^4 and b^3 b^4 and b' b^3 and x' x^3, respectively, having movable conducting-blocks of metal interposed between their parts, and metal-holders arranged to hold the metal to be heated by the electric currents flowing through them from said converters, substantially as described.

4. The combination of two converters, divided arms or conductors x^6 x^4 and b^3 b^4 and b' b^3 and x' x^3, connected thereto and respectively having rotating conducting-blocks of metal interposed between their parts, and metal-holders arranged to hold the metal to be heated and connected to said conductors, substantially as described.

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5. The combination of the metal-holder C', the two converters, the divided conductors b' b^3 and x' x^3, connecting the metal-holder with the converters, and the shaft d', carrying metal blocks arranged to partially or wholly disconnect the parts of one conductor when it connects the parts of the other one, substantially as described.

6. In an electric-current converter, the combination of positive and negative rings arranged on the exterior of the converter and connected to the secondary circuit of the converter and detachable electric conductors composed of bars of metal, and metal-holding devices adjustable on said conductors.

7. An electric converter for converting electric currents by induction from a higher to a lower potential, provided with two continuous rings of different polarity disposed on the outside of the converter and connected with opposite terminals of the secondary coils thereof.

8. In an electric metal-heating apparatus, a combination of a converter for converting electric currents from a higher to a lower potential, provided with rings of opposite polarity connected to opposite terminals of the secondary coils and disposed on the exterior of the converter, and metal-holders connected with said rings for holding the metal to be heated.

475,185. ELECTRIC METAL-HEATER. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Feb. 14, 1891. Serial No. 382,127. (No model.)

Claim.—1. In a machine for heating metal, the combination of an upper series of adjustable arms bearing electrodes all of the same polarity, a lower series of similar arms of opposite polarity to the upper series and disposed in alignment therewith, an electric circuit, and mechanism for adjusting said upper arms, substantially as described.

2. In a machine for heating metal, two series of electrodes disposed in an electric circuit, in combination with mechanism for automatically reciprocating the metal to be heated between said electrodes, substantially as described.

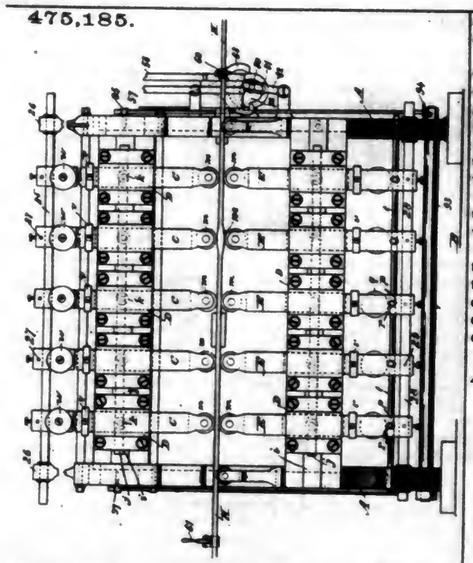
3. In a machine for heating metal, two series of spring or weight tensioned electrodes disposed in an electric circuit and adapted to contact with the metal to be heated, in combination with a resistance-coil and mechanism for shunting the electric current through said coil, substantially as and for the purpose set forth.

4. In a machine for heating metal, the combination of an electric circuit, adjustable arms and bearing electrode-rolls, mechanism for reciprocating a metal bar between said rolls, a current-switch, a resistance-coil in said circuit, and mechanism for shunting the current thereto, substantially as described.

5. The weight-tensioned arms C E, mounted to slide on the machine-frame and disposed in an electric circuit, in combination with electrode-rolls, as m, and a treadle-actuated mechanism for elevating the arms C, substantially as and for the purpose set forth.

6. In a machine for heating metal, the frame and adjustable electrodes mounted in an electric circuit, in combination, a shaft belted to a power-supply, a belt-shipping mechanism for reciprocating said shaft,

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and conjunctive mechanism actuated thereby for reciprocating the metal between said electrodes, substantially as described.

7. In a machine for heating metal, two series of adjustable electrodes disposed in alignment and an electric circuit, in combination with mechanism for automatically reciprocating the metal to be heated between said electrodes and mechanism for shunting the current therefrom, substantially as described.

8. In a machine for heating metal, the frame and tensioned electrodes, in combination with an electric circuit, a screw-shaft mounted in said frame, mechanism for automatically reciprocating said shaft, a head traveling on said screw, a rod secured to the head, and insulated arms on said rod for engaging opposite ends of the metal to be heated, whereby it may be reciprocated between said electrodes, substantially as described.

9. In a machine of the character described, the combination of heating electrodes and a feed mechanism for reciprocating the metal between the heating-electrodes comprising a screw-shaft belted to a power source, a head traveling on said shaft, a rod on said head provided with clamps or arms for moving the metal, a companion rod on said head, and a belt-shipping mechanism actuated by said rod, whereby the screw-shaft may be reciprocated, substantially as set forth.

10. In a machine for heating metal by electricity, the combination of two or more pairs of electrodes disposed in proximity in succession and adapted to engage the metal to be heated, the electrodes of each pair being of opposite polarity, electric conductors connected with said electrodes for conveying the heating-current, and means for reciprocating the metal to be heated between two or more pairs of electrodes.

11. In a machine for heating metal by electricity, the combination of two series of adjustable electrode-arms adapted to receive the metal between them, the arms of each series being disposed in succession, the contact ends of the arms of one series being disposed opposite the contact ends of the arms of the other series, and electric conductors connecting all the arms of one series with one electric pole and all the arms of the other series with the other electric pole.

12. In a machine for heating metal by electricity, two series of weight-tensioned electrodes mounted in the same vertical plane, mechanism for elevating the upper series, an electric circuit, mechanism for reciprocating the metal between said electrodes, an electric switch, a resistance-coil, and mechanism for shunting the current into said coil, all being arranged to operate substantially as described.

13. In a machine for heating metal by electricity, the combination of a series of movable electrode-arms adapted for contact with one side of the metal to be heated, a series of supports therefor adjustable in a direction at right angles to the movement of the arms, a series of electrodes adapted for contact with the other side of said metal, and electric conductors connected with said arms.

14. In a machine for heating metal by electricity, the combination of a frame, a series of horizontally-adjustable guideways supported thereon, a series of electrode-arms vertically movable in said guideways and adapted for contact with one side of the metal to be heated, a series of electrodes adapted for contact with the other side of said metal, and electric conductors in connection with said electrodes and electrode-arms.

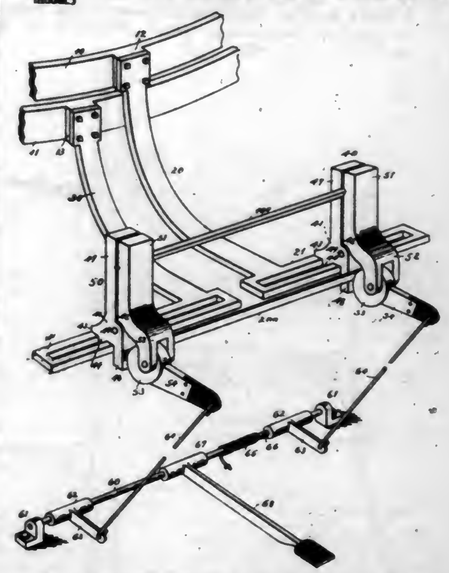
15. In a machine for heating metal by electricity, the combination of two series of horizontally-adjustable guideways supported on said frame, two series of electrode-arms vertically movable in said guideways and adapted to receive between them the metal to be heated, and electric conductors in connection with said electrode-arms.

16. In a machine for heating metal by electricity, the combination of a series of vertically-movable electrode-arms, a series of guideways therefor, and a series of weighted lifting-levers engaging said arms.

17. In a machine for heating metal by electricity, the combination of a series of vertically-movable electrode-arms, a series of guideways therefor, and adjustable stop-collars on said arms.

18. In a machine for heating metal by electricity, the combination of two series of electrodes adapted to receive the metal between them, the electrodes of each series being disposed in succession, and electric conductors connecting all the electrodes of one series with one electric pole and all the electrodes of the other series with the other electric pole.

475,186. ELECTRIC FORGE. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed May 26, 1891. Serial No. 393,962. (No model.)



Claim.—1. In an electric forge, the combination of two conductive arms connected with opposite electric poles and clamps disposed on said arms, each of said clamps being composed of a fixed member and an oscillating member pivoted thereto, said members having clamping-jaws above and below the pivot and one jaw of each clamp having a cam, and means for actuating the cams.

2. In an electric forge, the combination of two conductive arms connected with opposite electric poles and clamps disposed on said arms, each of said clamps being composed of a fixed member and an oscillating member pivoted thereto, said members having clamping-jaws above and below the pivot and one jaw of each clamp having a cam, and insulated arms attached to said cams.

3. In an electric forge, the combination of two conductive arms connected with opposite electric poles and clamps disposed on said arms, each of said clamps being composed of a fixed member and an oscillating member pivoted thereto, said members having clamping-jaws above and below the pivot and one jaw of each clamp having a cam, insulated arms attached to said cams, and a treadle mechanism connected with said arms for oscillating said cams.

4. In an electric forge, the combination of two duplex clamps connected with opposite electric poles, each clamp comprising a stationary member and an oscillating member pivoted thereto, said members being provided with two sets of clamping-jaws disposed on opposite sides of the pivot, one jaw of each set being in the form of a cam provided with an actuating arm or handle.

5. In an electric heater, the combination of two converter-rings constituting opposite electric poles, two conductive brackets attached,

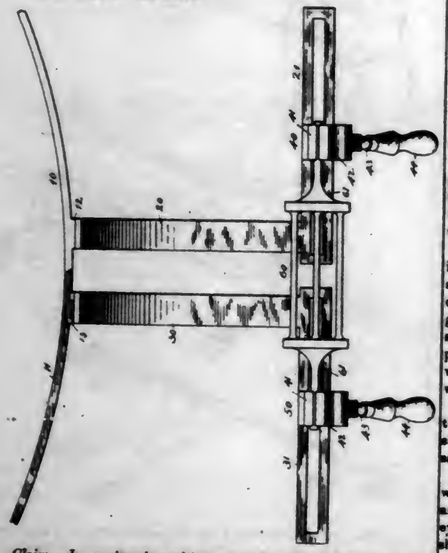
respectively, to said rings and provided with horizontal arms, and two clamps or holders adjustable on said arms and adapted to receive a bar to be heated.

6. In an electric forge, the combination of two conductive downwardly-projecting bracket-arms provided with horizontally-slotted arms, composed of conductive material and disposed apart from and in endwise relation to each other and at right angles to said downwardly-projecting arms, and two holders for holding the bar to be heated disposed on said slotted arms.

7. In an electric forge, the combination of two downwardly-projecting bracket-arms adapted for attachment to an electric converter and provided with horizontally-slotted arms disposed apart from and in endwise relation to each other and at right angles to said downwardly-projecting arms, and two holders adjustable on said arms toward and from each other for holding the bar to be heated.

8. In an electric forge, the combination of two downwardly-projecting bracket-arms and two horizontally-slotted arms disposed apart from and in endwise relation to each other and at right angles to said downwardly-projecting arms, and two clamps on said slotted arms, each of said clamps being provided with two sets of jaws for grasping the end of the bars to be heated.

475,187. APPARATUS FOR COOKING BY ELECTRICITY. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed May 28, 1891. Serial No. 394,412. (No model.)



Claim.—In an electric cooking apparatus, the combination of two converter-rings constituting opposite electric poles, two conductive brackets attached, respectively, to said rings and provided with horizontal arms, two clamps or holders adjustable on said arms and provided with clamping-jaws, and a grate supported by said clamps and serving to close the circuit between them.

475,188. METAL-HEATING APPARATUS. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed May 23, 1891. Serial No. 394,450. (No model.)

Claim.—1. In an electric forge, the combination of two electrodes connected with opposite electric poles and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, and holders for said blocks.

2. In an electric forge, the combination of two electrodes connected with opposite electric poles and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, holders for said electrodes, and means for adjusting said blocks in said holders.

3. In an electric forge, the combination of two electrodes connected with opposite electric poles and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, and a lifter for separating the electrodes.

4. In an electric forge, the combination of two electrodes connected with opposite electric poles of the same circuit and consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, and a treadle mechanism for separating one of said electrodes from the other.

5. In an electric forge, the combination of two standards, brackets supported in said standards and insulated therefrom, said brackets being connected with opposite electric poles, electrode-holders connected with said brackets, and electrodes consisting of carbon blocks adapted to receive a bar of metal to be heated between their adjacent ends.

6. In an electric forge, the combination of an angular bracket, an insulated support therefor, a sliding sleeve on the dependent arm of said bracket, provided with an insulated lug and with a lateral arm carrying an electrode-holder, a lifting-rod provided with a lug for engaging the lug of said sleeve, a lever for actuating said lifting-rod, a second bracket provided with an electrode-holder, an insulated support for said bracket, electrodes disposed in said holders in alignment with each other, and conductors connected with said brackets for conveying the electric current thereto.

7. In an electric forge, the combination of two converter-rings, two electrodes consisting of carbon blocks having their adjacent ends shaped to fit a bar of metal to be clamped between them, holders for said blocks, and conductors connecting said blocks with said rings.

8. In an electric forge, the combination of a tall standard provided with an insulated eye, a bracket comprising a dependent arm, and an arm disposed in said eye, a short standard provided with an insulated eye, a bracket comprising a horizontal arm disposed in the eye of the short standard, and an upwardly-inclined arm provided with a clamp, an arm adjustable on the dependent arm and provided with a clamp, and electrodes adjustable in said clamps, substantially as described.

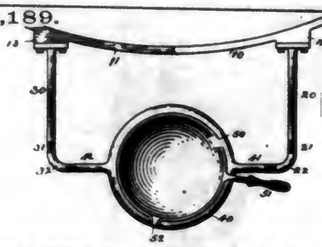
9. In an electric forge, the combination of a tall standard provided with an insulated eye, a bracket comprising a dependent arm and an arm disposed in said eye, a short standard provided with an insulated eye, a bracket comprising a horizontal arm disposed in the eye of the short standard, and an upwardly-inclined arm provided with a clamp, an arm adjustable on the dependent arm and provided with a clamp, and electrodes adjustable in said clamp, substantially as described.

475,189. ELECTRIC HEATER. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed May 29, 1891. Serial No. 394,521. (No model.)

Claim.—1. In an electric heater, the combination of a heating-pot composed of material having a comparatively high-current resistance and provided with laterally-projecting arms, and conductors for a heating-current connected with said arms and with opposite electric poles.

2. A heating-pot for an electric heater, composed of a carbon composition and provided with copper arms adapted for connection with an electric circuit.

3. In an electric heater, the combination of conductive brackets connected with opposite electric poles and provided with horizontal arms having screw-threaded sockets of opposite pitch, and a heating-



pot composed of material of a greater resistance than the conductive arms and provided with arms having screw-threaded ends adapted to fit said sockets, substantially as set forth.

4. In an electric heater, the combination of two conductors connected with opposite electric poles and adapted to convey a heating-current and a concave heating-pot connected with the conductors and serving to close the circuit between them, said heating-pot being composed of a carbon composition, which becomes incandescent under the influence of the current, and a pot for containing the article to be heated, adapted to fit within said heating-pot.

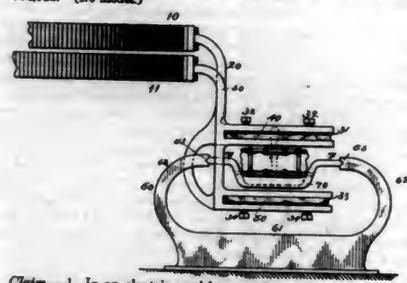
5. The combination of two converter-rings, the brackets 30 and 20, connected therewith and provided with arms 31 and 21, the elbows 32 and 22, and the heating-pot 40, provided with the arms 42 and 41, connected with said elbows, substantially as described.

6. The combination of two converter-rings, conductive brackets mounted thereon, and a concave heating-pot connected with said brackets and composed of material of comparatively high resistance, which becomes incandescent on the passage of the electric current.

7. In an electric heater, the combination of a heating-pot composed of material having a comparatively high-current resistance and provided with laterally-projecting arms of high-current conductivity, and conductors for a heating-current connected with said arms and with opposite electric poles.

8. In an electric heater, the combination of a heating-pot composed of material having comparatively high-current resistance and provided with laterally-projecting arms of high-current conductivity, conductors for a heating-current connected with said arms and with opposite electric poles, and a melting-pot for containing the articles to be heated, adapted to fit within said heating-pot.

475,190. ELECTRIC COOKING APPARATUS. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed May 29, 1891. Serial No. 394,522. (No model.)



Claim.—1. In an electric cooking apparatus, the combination of two conductive clamps or holders connected with opposite electric poles, a radiating-plate, of greater resistance than the holders, serving to close the circuit between them, and a holder for a cooking utensil disposed adjacent to said plate for holding said utensil within the heating influence thereof, said holder for the cooking utensil comprising a base provided with upward and inwardly extending arms having notches to be engaged by the cooking utensil.

2. In an electric cooking apparatus, the combination of two heating-plates, conductors connected with opposite electric poles and with said plates for passing a current therethrough sufficient to heat said plates to an incandescent heat, and a holder for suspending a cooking utensil between said plates.

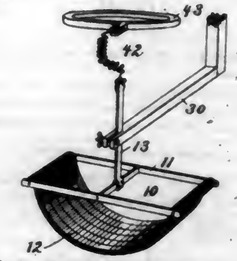
3. In an electric cooking apparatus, the combination of two converter-rings constituting opposite electric poles, two holders mounted, respectively, thereon, and a radiating-plate of greater resistance than the holders and serving to close the circuit between them, substantially as described.

4. In an electric cooking apparatus, the combination of two converter-rings constituting opposite electric poles, two holders mounted respectively, thereon, and an incandescent radiating-plate of greater resistance than the holders and serving to close the circuit between them, substantially as described.

5. In an electric cooking apparatus, the combination of two pairs of arms or holders connected, respectively, to opposite electric poles, and horizontal radiating-plates, of greater resistance than said holders, disposed one above the other in said holders and serving to close the circuit between opposite arms of each pair, said plates being adapted to receive between them articles to be cooked, substantially as described.

6. In an electric cooking apparatus, the combination of two converter-rings, brackets connected, respectively, thereto, two pairs of slotted horizontal arms extending from said brackets and disposed in different planes, a heating-plate connecting the arms of one pair and serving to close the circuit between them, and a heating-plate disposed in the slotted arms of the other pair and serving to close the circuit between them, substantially as described.

475,191. FLEXIBLE ELECTRODE. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed June 26, 1891. Serial No. 397,645. (No model.)



Claim.—1. An electrode for an electric heater, consisting of a frame and a series of superposed flexible elastic bowed contact-plates connected at their opposite ends to said frame.

2. An electrode for an electric heater, consisting of a frame and a series of elastic bowed contact-plates connected at their opposite ends to said frame and disposed side by side therein.

3. An electrode for an electric heater, consisting of a frame and a series of superposed elastic bowed contact-plates connected at their opposite ends to said frame.

4. An electrode for an electric heater, composed of a frame and two or more sets of elastic bowed contact-plates connected at their opposite ends to said frame, said sets being disposed side by side in the frame.

5. In an electric heater, the combination of an electrode connected with one electric pole, a free electrode consisting of a frame and a series of elastic bowed contact-plates connected at their opposite ends to said frame, and a flexible conductor for connecting said free electrode with the other electric pole.

6. In an electric heater, the combination of an electrode connected with one electric pole, a free electrode consisting of a frame and a series of superposed elastic bowed contact-plates connected at their opposite ends to said frame, and a flexible conductor for connecting said free electrode with the other electric pole.

475,192. ELECTRIC METAL-HEATER. GEORGE D. BURTON, Boston, and EDWIN R. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Aug. 3, 1891. Serial No. 401,516. (No model.)

Claim.—1. An electric-current converter having angular positive and negative rings for distributing the induced current and a number of electric heaters attached to the straight portions of said rings.

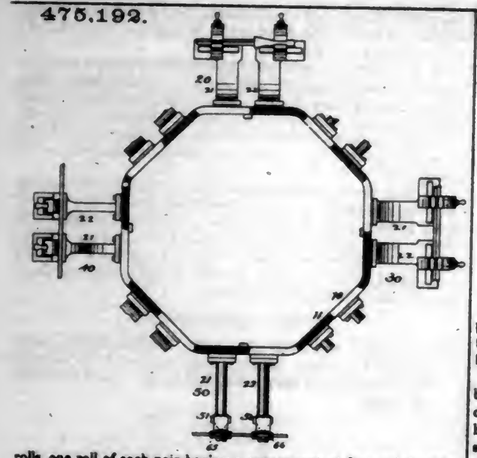
2. In an electric heater, the combination of the positive and negative converter-rings, brackets connected, respectively, to said rings, vertical standards supported by said brackets, and two pairs of contact-rolls supported on said standards.

3. In an electric heater, the combination of the positive and negative converter-rings, brackets connected, respectively, to said rings, vertical standards supported by said brackets and provided with slots, rolls supported on said standards, sliding blocks in said slots, rolls supported on said blocks, and springs for regulating the movements of said blocks.

4. In an electric heater, the combination of two pairs of contact-rolls, one roll of each pair being composed of copper and the other of carbon.

5. In an electric heater, the combination of two pairs of contact-

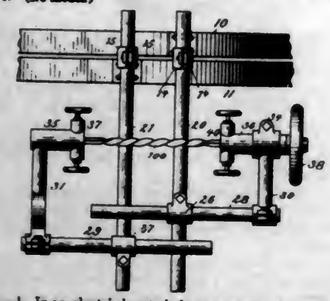
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rolls, one roll of each pair having a copper contact-face and the other a carbon contact-face.

6. In an electric heater, the combination of two pairs of contact-rolls, one roll of each pair having a carbon face and the other a copper face, each pair of rolls being connected with opposite electric poles.

475,193. ELECTRIC WIRE-TWISTER. GEORGE D. BURTON, Boston, and EDWIN E. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Aug. 22, 1891. Serial No. 403,453. (No model.)



Claim.—1. In an electric bar-twisting apparatus, the combination of two standards or supports connected with opposite electric poles, two tubular bar-holders disposed in alignment in said supports, each of said holders being open at both ends for the free passage of a bar to be heated and having a conductive bar-clamp for grasping the bar, and means for rotating one of said tubular bar-holders.

2. In an electric bar-twisting apparatus, the combination of two converter-rings constituting opposite electric poles, a fixed clamp, a rotary clamp, and conductors mounted on said rings and supporting said clamps.

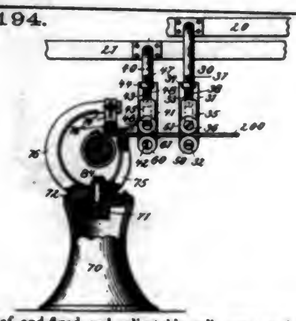
3. In an electric bar-twisting apparatus, the combination of a current-converter, brackets connected with the positive and negative poles thereof, bars adjustable in said brackets, arms connected with said bars, standards supported on said arms, a shaft provided with a bar-holder and supported in one of said standards, a tubular arm attached to the other standard and provided with a bar-holder, and means for rotating said shaft.

475,194. ELECTRIC METAL-BENDING APPARATUS. GEORGE D. BURTON, Boston, and EDWIN E. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Aug. 24, 1891. Serial No. 403,564. (No model.)

Claim.—1. In an electric metal-working apparatus, the combination of an electric converter, electrodes connected with the positive and negative poles thereof, slotted standards attached to said electrodes, journal-boxes sliding in the slots of said standards, adjustable rolls journaled on fixed studs of said standards, rolls journaled on said journal-boxes, and springs for regulating the tension of the adjustable rolls.

2. In an electric metal-working apparatus, the combination of an electric converter, electrodes attached to the positive and negative

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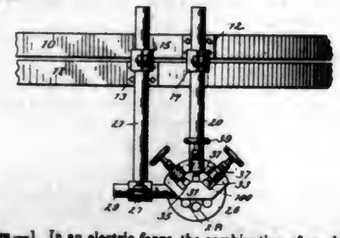


poles thereof, and fixed and adjustable rolls supported on said electrodes, one or more of said rolls being provided with a grooved carbon tire.

3. In an electric metal-working apparatus, the combination of a base, a swiveled plate thereon, curved arms attached to said plate, one of said arms being provided with a pivoted lug and the other with a hinged cap, a shaft journaled in said standard, and a mandrel on said shaft.

4. In a metal-working apparatus, the combination of the plate 72, standard 75, provided with guide-rolls at its upper end, an elliptical standard 76, the arm 76', adjustable thereon, and the guide-roll 76" on said adjustable arm.

475,195. ELECTRICAL FORGE. GEORGE D. BURTON, Boston, and EDWIN E. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Aug. 25, 1891. Serial No. 403,754. (No model.)



Claim.—1. In an electric forge, the combination of an electrode-head provided with a number of sockets for receiving the ends of the bars to be heated, another electrode consisting of a slotted head provided with a number of cheeks and with adjustable clamping-screws opposite said cheeks for clamping said bars therein, and conductors connecting said electrodes with the source of a heating-current.

2. In an electric forge, the combination of an electric converter, brackets attached to the positive and negative poles thereof, vertical bars supported in said brackets, a short horizontal arm adjustable in one of said bars and provided with an electrode-disk at its outer end having sockets for receiving the ends of the bars to be heated, a long horizontal arm connected with the other vertical bar, and a third horizontal arm adjustable in said long arm at right angles thereto and provided with a clamping-head for holding the opposite ends of the bar, substantially as described.

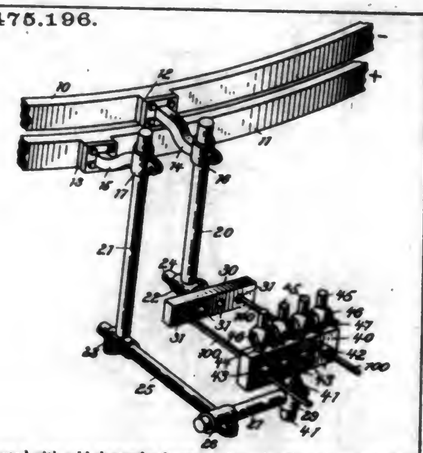
475,196. AUTOMATIC ELECTRIC FORGE. GEORGE D. BURTON, Boston, and EDWIN E. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Sept. 16, 1891. Serial No. 405,853. (No model.)

Claim.—1. In an electric forge, the combination of a positive electrode for contact with a bar to be heated, a negative electrode also for contact with said bar, one of said electrodes being provided with an opening and with a latching contact-pin, and electric conductors connected with said electrodes for conveying a heating-current of electricity.

2. In an electric forge, the combination of an electrode provided with a socket for receiving the end of a bar to be heated, an electrode provided with an opening for receiving said bar, and with a latching contact-pin, and conductors connected with said electrodes for conveying a heating-current.

3. In an electric forge, the combination of a positive electrode for contact with a bar to be heated, a negative electrode also for contact with said bar, one of said electrodes being provided with an automatic latching contact-pin having a weight, and electric conductors

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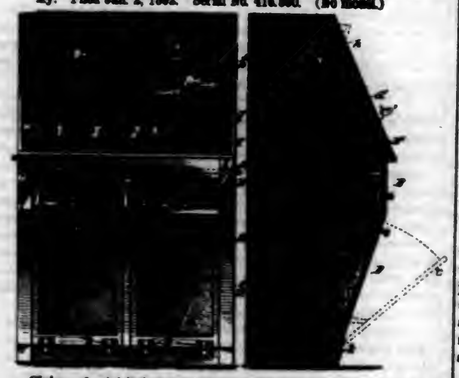
connected with said electrodes for conveying a heating-current of electricity.

4. In an electric forge, the combination of an electrode provided with a number of sockets for receiving the ends of the bars to be heated, an electrode provided with a number of eyes for receiving the other portions of said bars and with latching contact-pins for contact therewith, and conductors connected with said electrodes for conveying a heating-current.

5. In an electric forge, the combination of an electrode for contact with a bar to be heated, and an electrode provided with an opening for receiving said bar, with a slot opening into said eye, and with a beveled contact-pin adapted to slide in said slot and extend into said eye, and conductors connected with said electrodes for conveying a heating electric current.

6. In an electric forge, the combination of a positive electrode for contact with a bar to be heated, a negative electrode also for contact with said bar, one of said electrodes being provided with an eye and with a latching contact-pin and one of said electrodes being adjustable in relation to the other, and conductors connected with said electrodes for conveying a heating-current of electricity.

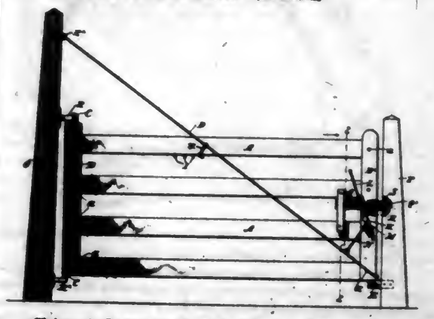
475,197. KITCHEN-CABINET. ALBERT C. CARR, Middleborough, Ky. Filed Jan. 2, 1892. Serial No. 416,880. (No model.)



Claim.—1. A kitchen-cabinet comprising a main frame having an upper compartment C, formed with a cupboard c, the guide-cleats *g*, disposed under the cupboard and projected beyond the front edge, the beveled strip *g'*, disposed on the upper front edge of the cupboard, and the removable board G, having its upper edge beveled, all arranged substantially as shown, and for the purpose described.

2. A kitchen-cabinet comprising an upper compartment C, a central drawer-compartment E, and a lower bin-compartment D, a cupboard c, disposed in the upper end of the compartment C, hinged bins H, disposed to each end of such cupboard, the guide-cleats *g* under the cupboard, having their front edges projected beyond the bottom of the cupboard, the beveled strip *g'* at the upper front edge of the cupboard, the removable board G, formed with a beveled outer edge G', and the bin I, formed with a series of compartments disposed at the inner lower edge of the upper compartment C, all arranged substantially as and for the purpose described.

475,198. GATE. WILLIAM CHAMBERS, St. Clairsville, Ohio. Filed Feb. 16, 1892. Serial No. 421,790. (No model.)



Claim.—1. In a gate, a latch-post having a pillow whose ends are beveled, a hinge-post, and a folding gate hinged thereto, combined with a truss-rod linked to the upper end of the hinge-post in rear of the hinge-line and connected to the free end of the gate, and means for deflecting this truss-rod from a straight line, as and for the purpose set forth.

2. In a gate, a latch-post having a pillow, a hinge-post, a gate hinged thereto, and a bevel-faced latch on the gate engaging said latch-post, combined with a truss-rod linked to the upper end of the hinge-post and connected to the free end of the gate, connections between said latch and truss-rod for locking the latch, a clevis on the truss-rod, and pins on the gate, with which said clevis adjustably engages, substantially as described.

3. In a gate, a double-membered latch-post, a hinge-post, a folding gate hinged thereto, a truss-rod in two members connected to the lower outer corner of the gate, passing up alongside its panels, and engaging an eye at the upper end of the hinge-post, and means for adjusting the distance between the ends of this truss-rod, combined with the latch having a double-beveled face adapted to engage between said members of the latch-post, and connections between the truss-rod and latch, whereby the tension of the former normally shoots the latter, as and for the purpose set forth.

4. In a gate, a latch-post, a hinge-post, a folding gate hinged thereto, and a truss-rod linked to the upper end of the hinge-post and connected to the free end of the gate, combined with a latch on the gate adapted to engage the latch-post, connections between truss-rod and latch for automatically shooting the latter, and means for deflecting the truss-rod independently of said connections, substantially as described.

5. In a gate, a double latch-post, a hinge-post, and a gate comprising double inner battens hinged to the hinge-post, double outer battens, and panels pivotally connecting said battens, combined with a latch sliding between the outer battens and adapted to pass between the members of the latch-post, a rock-shaft journaled through the gate, operating-levers on the ends of said shaft, a tongue also on said shaft engaging a notch in the latch, and means for throwing the latch forward by the weight of the gate, substantially as described.

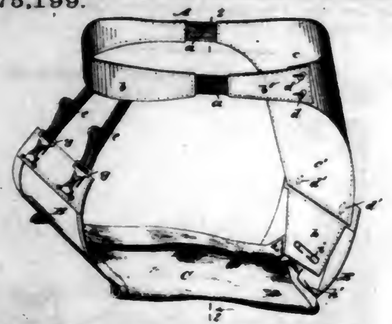
6. In a gate, a double latch-post, a hinge-post, a folding gate hinged thereto, and a truss-rod supporting the outer end of the gate, combined with a latch moving through the outer batten of the gate, a rock-shaft journaled through said batten and having operating-levers, a tongue on said shaft engaging a notch in the latch, an arm on said shaft, and a link connecting the arm with the truss-rod, whereby the latch is normally thrown forward by the weight of the gate, substantially as described.

7. In a gate, a latch-post, a hinge-post, a folding gate hinged thereto, a truss-rod supporting the outer end of the gate, a pillow on the latch-post on which said outer end rests, and means for shortening the distance between the ends of said truss-rod, combined with a latch moving through the outer batten, a rock-shaft for operating said latch, an arm on said shaft, and a link connecting the arm with the truss-rod, as and for the purpose set forth.

475,199. CATAMENIAL BANDAGE. ANNA CHAPMAN, Jersey City, N. J. Filed Mar. 29, 1892. Serial No. 426,939. (No model.)

Claim.—1. The combination, with a two-part waistband, elastic pieces connecting said parts, and a pendent flap on the rear part thereof, of two elastic straps pendent from the front of the waistband, an elongated bandage detachably secured to the flap and elastic straps, tabs

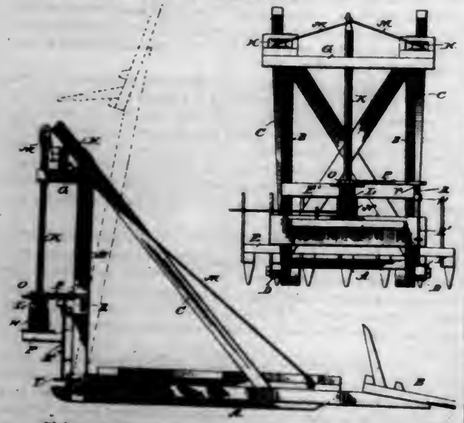
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on the bandage near its ends, and a pad detachably secured to the flaps of the bandage, substantially as described.

2. The combination, with a two-part waistband, elastic pieces between said parts oppositely secured, and a pendent flap on the rear part thereof, of two elastic straps on the front of the waistband, an elongated bandage buttoned to the tab and attached by removable keeper-pins to the elastic straps, two pendent tabs on the inner surface of the bandage near its ends, a lap-folded absorbent pad, tabs oppositely secured on the edges of the pad, and safety-pins which secure the tabs of the pad and bandage together, substantially as described.

475,200. HAY-RICKER. MASON CHASE, Lucerne, Mo. Filed June 26, 1891. Serial No. 397,858. (No model.)



Claim.—1. In a stacker or ricker, the combination, with the base and upright frames, arms, and fork or head, of a revoluble shaft, the elevating-ropes, operating-rope, the pawl, and automatic locking and unlocking devices, arranged and operated substantially as shown and described.

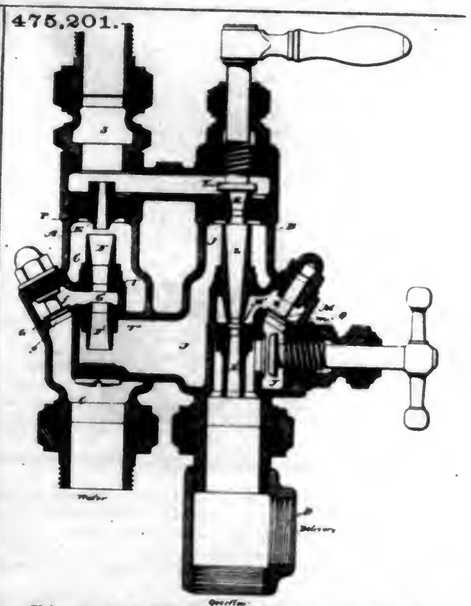
2. In a stacker, the combination, with the arms and fork, of a revoluble vertical shaft, the elevating-ropes, a ratchet-wheel mounted on said shaft, a spring-actuated pawl, a locking device to hold said pawl, an unlocking bolt, and a tripping-arm for operating said unlocking-bolt, substantially as shown and described.

3. In a stacker, the combination, with the arms and fork, of a revoluble shaft, the elevating-ropes, a ratchet-disk, a spring-actuated pawl having a hooked end, a combined locking and guiding plate, a releasing-bolt working in said guide-plate, and a tripping-arm attached to the stacker-arm, substantially as shown and described.

4. In a stacker, the combination, with the arms and fork, of the revoluble vertical shaft, the elevating-ropes, the winding-drum, the operating-rope, the ratchet-wheel, spring-actuated pawl having a hooked end, the plate having a locking-shoulder and guiding-loop, the releasing-bolt working in said loop, and the tripping-arm attached to one of the stacker-arms to operate the releasing-bolt, substantially as shown and described.

475,201. INJECTOR. CHARLES E. CHURCH, Boston, Mass., assignor to the Hancock Inspirator Company, same place. Filed Apr. 23, 1890. Serial No. 348,962. (Model.)

475,201.



Claim.—1. In an injector, a forcer the combining and delivery tube of which is provided at its mouth with the usual inlet from the water-supply chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with said supply-chamber, with a valve adapted to close said supplemental inlet automatically when the pressure within said tube at said openings therein is about equal to or is greater than the pressure in said supply-chamber, substantially as and for the purpose described.

2. In an injector, a forcer the combining and delivery tube of which is provided at its mouth with the usual inlet from its water-supply chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with said supply-chamber, with a valve adapted to close said supplemental inlet automatically when the pressure within said tube at said openings therein is about equal to or is greater than the pressure in said supply-chamber, and a lifter which is suitably adapted and arranged to deliver water or other fluid continuously to the supply-chamber of said forcer, substantially as and for the purpose described.

3. In an injector, a forcer the combining and delivery tube of which is provided at its mouth with the usual inlet from its water-supply chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with said supply-chamber, and a lifter the combining and delivery tube of which is provided at its mouth with the usual inlet from the suction-chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of the tube through one or more openings therein and with the suction-chamber, such lifter being suitably adapted and arranged to deliver water or other fluid continuously to the supply-chamber of the said forcer, substantially as and for the purpose described.

4. In an injector, a forcer the combining and delivery tube of which is provided at its mouth with the usual inlet from its water-supply chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with said supply-chamber, with a valve adapted to close the said supplemental inlet automatically when the pressure within said tube at said openings therein is about equal to or is greater than the pressure in said supply-chamber, and a lifter the combining and delivery tube of which is provided at its mouth with the usual inlet from the suction-chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of the tube through one or more openings therein and with the suction-chamber, such lifter being suitably adapted and arranged to deliver water or other fluid continuously to the supply-chamber of the said forcer, substantially as and for the purpose described.

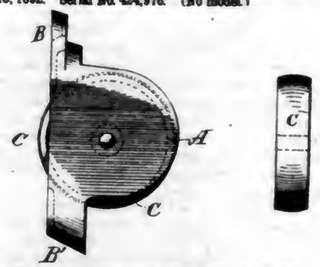
5. In an injector, a forcer the combining and delivery tube of

which is provided at its mouth with the usual inlet from its water-supply chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with said supply-chamber, and a lifter the combining and delivery tube of which is provided at its mouth with the usual inlet from the suction-chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of the tube through one or more openings therein and with the suction-chamber, with a valve adapted to close the said supplemental inlet automatically when the pressure within this tube at the said openings therein is about equal to or greater than the pressure in the suction-chamber, such lifter being suitably adapted and arranged to deliver water or other fluid continuously to the supply-chamber of the said forcer, substantially as and for the purpose described.

6. In an injector, a forcer the combining and delivery tube of which is provided at its mouth with the usual inlet from its water-supply chamber and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with said supply-chamber, with a valve to close said supplemental inlet automatically when the pressure within said tube at said openings therein is about equal to or is greater than the pressure in said supply-chamber, and a lifter the combining and delivery tube of which is provided at its mouth with the usual inlet from the suction-chamber, and is provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of the tube through one or more openings therein and with the suction-chamber, with a valve adapted to close the said supplemental inlet automatically when the pressure within this tube at said openings therein is about equal to or greater than the pressure in the suction-chamber, such lifter being suitably adapted and arranged to deliver water or other fluid continuously to the supply-chamber of the said forcer, substantially as and for the purpose described.

7. In an injector, a forcer and a lifter, the combining and delivery tube of the latter being provided at its mouth with the usual inlet from the suction-chamber and provided, also, with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with the suction-chamber, with a valve adapted to close said supplemental inlet and prevent reflux of the fluid from the interior of said tube through the supplemental inlet into the suction-chamber, such lifter being adapted and arranged to deliver water or other fluid continuously to the supply-chamber of the said forcer, substantially as and for the purpose described.

475,202. SASH-CORD GUIDE. FRANK S. CLARKSON, Baltimore, Md., assignor of three-fourths to Frank B. Sloan, same place. Filed Mar. 15, 1892. Serial No. 424,976. (No model.)



Claim.—1. A sash-ribbon guide consisting, essentially, of a casing and a sheave, the periphery of the latter being curved or convex, as shown, substantially as set forth.

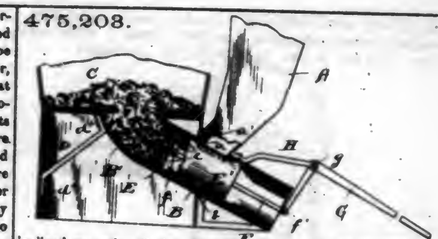
2. The sash-ribbon guide herein described, consisting of the sheave and casing, the latter having rounded ends, of which the upper one is perforated and the lower one beveled, the sheave having a curved or convex periphery, substantially as shown.

475,203. FUEL-FEEDING DEVICE. GEORGE H. COLTON, Hiram, Ohio. Filed Dec. 26, 1891. Serial No. 416,145. (No model.)

Claim.—1. In a fuel-feeding device for a stove, grate, or furnace, the combination, with the fuel-chamber of the stove, grate, or furnace, of a magazine discharging upward into said fuel-chamber, a fuel-hopper adapted to discharge fuel into said magazine, and suitable mechanism located within the magazine and adapted to feed the fuel into the fuel-chamber of the stove, grate, or furnace, the discharging-opening of the fuel-hopper being gradually reduced or tapering at the forward side, substantially as and for the purpose set forth.

2. In a fuel-feeding device for a stove, grate, or furnace, the combination, with the fuel-chamber of the stove, grate, or furnace, of an

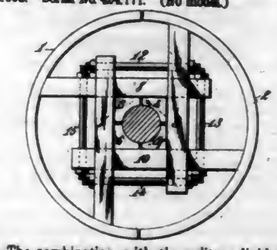
475,203.



inclined magazine discharging upward into said fuel-chamber, a fuel-hopper adapted to discharge fuel into said magazine, and suitable mechanism located within the magazine and adapted to feed the fuel into the fuel-chamber of the stove, grate, or furnace, the discharging-opening of the fuel-hopper being gradually reduced or tapering to a point at the forward side, as at *a a'*, substantially as and for the purpose set forth.

3. In a fuel-feeding device for a stove, grate, or furnace, the combination, with the fuel-chamber of the stove, grate, or furnace, of a magazine discharging upward into the bottom of said fuel-chamber, a fuel-hopper adapted to discharge fuel into said magazine, and suitable mechanism comprising a piston provided with a tube or trunk adapted to close or open the discharging-opening of the hopper, said piston being adapted to feed fuel to the fuel-chamber of the stove, grate, or furnace and being provided with perforations, as at *e*, substantially as and for the purpose set forth.

475,204. SPLIT PULLEY. HARRY COMSTOCK, Fulton, N. Y. Filed Mar. 8, 1892. Serial No. 424,171. (No model.)



Claim.—The combination, with the split or divided rim and the box or bush composed of four similar sections, of two pairs of arms secured, respectively, to the rim-sections bearing against the box or bush sections and each arm having its free extremity crossing another arm and adapted to move along the length thereof, and a tension-bolt connecting the free extremity of each arm with the base of another arm in juxtaposition to one of the pulley-rim sections, so that by tightening the tension-bolts the free end portion of each arm is moved along the length of the arm which it crosses to compensate for shrinkage and uniformly press the four box or bush sections upon a shaft, substantially as described.

475,205. SMOKE-CONSUMING FURNACE. WILLIAM COULSON, Spring Valley, Ill. Filed Dec. 28, 1891. Serial No. 416,315. (No model.)



Claim.—1. In a furnace having a revolving flexible endless grate, the hopper, the rear wall of which is formed by the furnace-door and the forward wall by an inclined plate I, pivotally hung at its lower portion and having an adjustable support A, carried by a shaft K', having loose bearings and provided with an operating handle, substantially as specified.

2. In a furnace having a flexible endless grate, the hopper having its rear wall angularly adjustable and its forward wall formed by the furnace-door, said door having slots therein receiving the sides of the frame, the racks L thereon, the pinions in engagement with said racks, and the worm-gear actuating said pinions, substantially as specified.

475,206. SAW COTTON-GIN. ALFRED M. CROCKER, Boston, Mass., assignor, by mesne assignments, of one-half to Dennis J. Griffin, same place. Filed Sept. 29, 1891. Serial No. 407,166. (No model.)



Claim.—1. The combination, with a gin casing, a gang of gin-saws, a brush, and a gin-breast, of a fan or blower arranged to produce a current of air through the gin-casing to convey material to the saws, substantially as described.

2. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of an air-trunk and means for producing a current of air through the trunk and gin-casing for conveying material to the saws, substantially as described.

3. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of a fan or blower for producing an ascending current of air through the casing for lifting the material from the base portion of the casing to the saws, substantially as described.

4. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of a trunk and a fan or blower connected therewith and communicating with the interior of the gin-casing for producing an ascending current of air therethrough to lift the material to the saws, substantially as described.

5. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of a conveyer for moving the material through the casing and discharging the refuse of foreign matter therefrom, a beater mechanism arranged in juxtaposition to the conveyer, and means for producing a current of air through the gin-casing for moving the material to the saws, substantially as described.

6. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of a conveyer located in the gin-casing for conducting the material into and out of the same, a beater mechanism arranged in juxtaposition to the conveyer for beating and separating the stock and facilitating its progress toward the delivery end of the casing, and a fan or blower for producing a current of air through the gin-casing to move the material to the saws, substantially as described.

7. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of a traveling conveyer arranged in the base portion of the gin-casing for conducting the material thereinto at one end and therefrom at the opposite end, a pair of co-operating beater-cylinders rotated in juxtaposition to the conveyer, and an air-draft-producing mechanism for causing a column of air to flow through the gin-casing and move the material to the saws, substantially as described.

8. The combination, with a gin-casing, a gang of saws, and a brush, of a breast composed of breast-bars interposed between the sides of the saws, and having guard-flanges projecting outwardly beyond the peripheries of the saws to shield the saw-teeth from refuse or foreign matter, substantially as described.

9. The combination, with a gin-casing, a gang of saws, and a brush, of a breast composed of breast-bars substantially T-shaped in cross-section to produce guard-flanges, which project beyond the periphery of the saws to guard them from heavy refuse or foreign matter, substantially as described.

10. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of an endless conveyer for carrying the material through the gin-casing and beater-cylinders arranged above the conveyer and having flattened angularly set arms or flukes for advancing the material from the receiving end toward the delivery end of the gin-casing, substantially as described.

11. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of a traveling conveyer arranged in the base portion of the gin-casing and a pair of beater-cylinders having flattened angularly set arms or flukes increasing in number from the receiving to the delivery end of the casing, substantially as described.

12. The combination, with a gin-casing, a gang of saws, a brush, and a breast, of a pair of co-operating beater-cylinders provided with flattened angularly set arms or flukes, which increase in number from the receiving to the delivery end of the casing for the purpose of effectually beating and separating the stock, substantially as described.

13. The method herein described of ginning cotton, which consists in subjecting the material to the action of a forced air-current moving through the gin-casing, separating the lint or fiber from the seed and pods or bolls, and causing the heavier matter to descend by gravity while the separated lint or fiber follows the forced air-current, substantially as described.

475,207. VELOCIPEDE. WILLIAM J. EDWARDS, Chicago, Ill., assignor to the Union Manufacturing and Plating Company, same place. Filed Mar. 10, 1891. Serial No. 384,436. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, in a velocipede, of an arm rigid with an axle and pivotally connected with the body-frame, and a couple of springs interposed between the body-frame and said arm, respectively, at opposite sides of the pivotal connection between the arm and body-frame, substantially as set forth.

2. The combination, substantially as hereinbefore set forth, in a velocipede, of a couple of arms rigid with an axle and pivotally connected with the body-frame, so as to form between the two a couple of rocking jointed connections, respectively, at opposite sides of the wheel, and springs arranged, respectively, at opposite sides of the pivotal connection between the arm and the frame to oppose the rocking movements of said jointed connections, substantially as set forth.

3. The combination, substantially as hereinbefore set forth, with the front axle in a velocipede, of an arm rigid with said axle and pivoted to the steering-fork, so as to provide in effect a rocking connection between the front axle and the reach or body-frame, and a couple of balance-springs located between the arm and fork on opposite sides of the pivot, arranged to oppose a relative rocking action between said arm and steering-fork, substantially as set forth.

4. The combination, substantially as hereinbefore set forth, with the front axle in a velocipede, of a couple of arms rigid with the axle and pivotally connected with the prongs of the steering-fork, springs arranged between the axle and forwardly-projecting portions of the steering-fork prongs at points forward of the pivotal connections between the arms and prongs, and springs arranged between said arms and prongs at points back of the pivotal connections between the arms and steering-fork prongs, substantially as set forth.

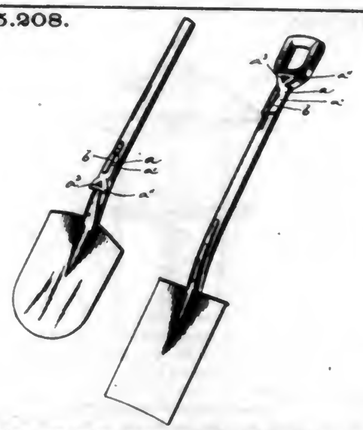
5. The combination, substantially as hereinbefore set forth, in a velocipede, of the steering-fork having its prongs provided with forwardly-extending arms 4, arms F, fixed upon the front axle and pivoted between their ends to the steering-fork prongs, and springs G and H, arranged substantially as described, to oppose a relative rocking action between the steering-fork and said arms.

475,208. SCRAPER ATTACHMENT FOR SHOVELS. RICHARD J. EDWARDS, Galena, Ill. Filed Jan. 2, 1892. Serial No. 416,877. (No model.)

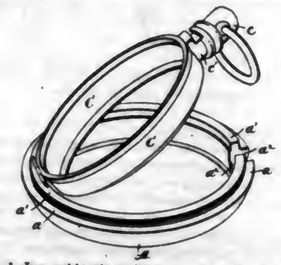
Claim.—1. The combination of a soil-working implement, a leaf-spring *b* secured thereon and provided with a lug on its free end, and an independent scraper-plate *a*, detachably clamped to said implement by said spring and provided with an opening for the reception of the lug on the free end of the spring, substantially as described.

2. The combination, with a hand soil-working implement provided with a spade-handle and carrying on its handle a device for detachably holding a hand-scraper, of an independent hand-scraper, detachably secured to the handle by said device, said scraper consisting of a plate bent at one end to embrace the handle of the implement and flattened at its other end to rest on the flat side of the spade-handle, substantially as described.

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475,209. WATCH-CASE. WALTER H. FITZ GERALD and AUGUST BECKER, Newark, N. J. Filed Mar. 20, 1892. Serial No. 426,259. (No model.)



Claim.—1. In combination with a screw-bezel watch-case, a movement-holding ring which has attached to one side the pendant of the case, substantially as and for the purpose specified.

2. In combination with a screw-bezel watch-case, a movement-holding ring which at one side has attached thereto a pendant and at its opposite side is hinged to or upon the body of the case, substantially as and for the purpose shown.

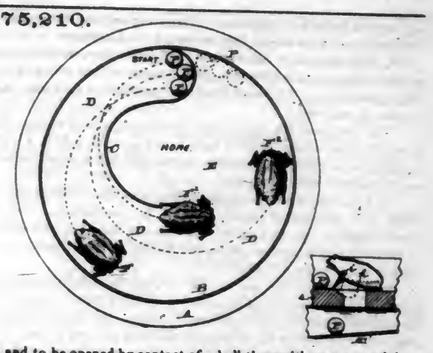
3. A watch-case in which are combined a body and a bezel that are united by means of a threaded portion of each part, a movement-holding ring which is hinged to or upon such case-body, and a pendant that is secured at its inner end to the movement-holding ring, and from thence projects radially through an opening which is formed in the edge of said case-body, substantially as and for the purpose set forth.

4. A watch-case in which the body and bezel are united by means of oppositely-threaded portions that are provided upon said parts, in combination with a movement-holding ring which is hinged to each body and carries a pendant and is locked in place by the union of said body and bezel, substantially as and for the purpose shown and described.

475,210. PUZZLE. MICHAEL FLANNERY, North Towanda, Pa. Filed June 1, 1891. Serial No. 394,686. (No model.)

Claim.—In a toy of the character herein described, provided with balls, in combination with a base, a vertical wall on said base, a winding S-shaped wall extending from the vertical wall and terminating near the center of the space inclosed by said vertical wall, thereby forming a tortuous road between said S-shaped and vertical wall and leaving a large open space or field at the termination of said road, traps located on said road, each trap provided with a plate forming an under jaw and base and said plate pivoted so as to normally close the trap and to be opened by contact of a ball therewith, and a receiving-trough beneath said traps, substantially as described.

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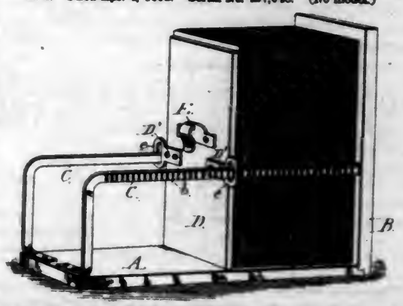


475,211. CAR-SEAL PRESS. LEWIS A. FOOTE, Austin, Minn., assignor to the Buckeye Car Seal and Manufacturing Company, Cleveland, Ohio. Filed July 27, 1891. Serial No. 400,790. (No model.)



Claim.—In a seal-press, the combination of the stock or handle having an enlarged head provided with opposite guard-walls, and a rear wall forming a front pocket inclosed by said walls and open at the front of the seal, and an integral base-die within said pocket, shackle receiving and holding guide-slots cut horizontal in said guard-walls from the front thereof and of a size to accommodate and hold tightly together the lapped ends of the shackle-strips, which are adapted to be inserted edgewise into the slots from the front open ends thereof, and a vertically-reciprocating die adapted to work within said inclosed pocket over the integral base-die, substantially as set forth.

475,212. DOCUMENT-FILE. THOMAS W. FOWLER, Washington, D. C. Filed Apr. 4, 1892. Serial No. 427,648. (No model.)



Claim.—1. A document-file having a follower adapted to be released from a locked position by a lateral compression of the sides of the box or case.

2. A document file box or case having compressible sides, in combination with a follower engaging said sides and adapted to be released by an inward compression of said sides.

3. A document-file having compressible sides, in combination with a follower adapted to slide on said sides and to be secured in a locked position by the lateral expansion of the sides.

4. A document-file having compressible sides, in combination with a follower adapted to slide on said sides and to be automatically secured in a locked position and released by a lateral movement of the sides.

5. A document-file having a follower and having its box or case provided with side bars adapted to be moved inward under the infla-

ence of the follower as the latter is forced against the file papers or documents and to hold said follower in a locked position.

6. A document file box or case having side bars of spring metal, in combination with a follower guided on and held in a locked position on said bars and released from said position by an inward compression of said bars.

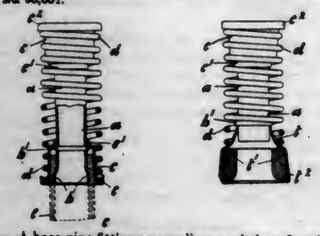
7. A document file box or case having side bars of spring metal, in combination with a follower guided on said bars, held in a locked position by the outward expansion of the bars and released by an inward compression of the same.

8. A document file box or case having laterally-yielding sides provided with grooved or ratchet surfaces, in combination with a follower guided on and embracing said sides and engaging said surfaces to secure it in a locked position, said follower being released by the inward compression of said sides.

9. A document file box or case having the side bars of spring metal, with their outer sides provided with grooved or ratchet surfaces, in combination with a follower having slots for receiving said sides and with their walls binding against said grooved or ratchet surfaces thereof to lock the follower in position, said follower being released the by inward compression of said sides.

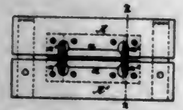
10. A document file box or case having the laterally-yielding grooved or ratchet-formed side bars of spring metal, in combination with a follower having plates extending laterally therefrom and provided with vertical slots adapted to receive and be guided by said bars, said slots each having one of their inner walls provided with pawls or surfaces adapted to engage said grooves or ratchets to lock the follower to said bars and to be released from contact with said bars by the inward compression of the latter.

475,213. HOSE-PIPE FITTING. WILLIAM FRASER, Sparkbrook, near Birmingham, assignor of one-half to John Goldie Chapman, Birkenhead, England. Filed July 30, 1891. Serial No. 401,120. (No model.) Patented in France May 30, 1891, No. 213,804, and in Belgium May 30, 1891, No. 95,051.



Claim.—A hose-pipe fitting or coupling consisting of a tube *a*, having a bulbous end *b*, a sliding collar *c* thereon, and a spring *d* by which said collar is pressed outward, and when the hose is put on the bulbous end an automatic coupling and water-tight joint is effected without screwing, turning, or other manipulation, substantially as described.

475,214. APPARATUS FOR CUTTING OFF ANGLE-IRON. MARTIN GILGENBERG, Cologne, Germany. Filed May 29, 1891. Serial No. 394,491. (No model.) Patented in Germany July 31, 1889, No. 51,264, and in Belgium May 19, 1890, No. 90,621.



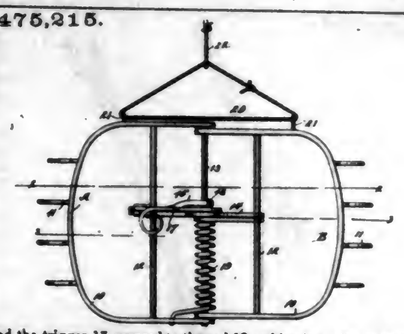
Claim.—1. Dies for cutting off angle-bars, consisting of central knives *a*, having front and side edges, and knives *a'* a^2, having side edges and cutting-points, substantially as described.

2. In combination, two dies, each consisting of knives having three blades *a a'* a^2, arranged side by side, the knives *a* having front and side cutting-edges, and the knives *a'* a^2 having side cutting-edges only, substantially as set forth.

475,215. TRAP. HUBBARD R. GOFF, Arch Beach, Cal. Filed Dec. 26, 1891. Serial No. 416,253. (No model.)

Claim.—1. A trap comprising two spring-closed jaws having a connecting pivot-rod 13 at their inner ends, a cross-bar 12 on both jaws parallel with rod 13, a bridge-bar 14, secured to one bar 12 and the rod 13 and extending when the trap is set across the outer side of the other bar 12, a dog 15, pivoted to the free end of the bridge and notched or forked at its pivoted end to embrace the latter cross-bar,

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and the trigger 17, secured to the rod 13 and having a lug or shoulder 18 to engage the free end of the dog 15, substantially as set forth.

2. The combination, with two opposed jaws having a hinge connection and provided with cross-bars and a spring normally maintaining the jaws in a closed position, of a bridge projected from the cross-bar of one jaw and extending beyond that of the opposite jaw, a locking-jaw pivoted upon the free end of the bridge and provided with a fork at its pivotal end, a bait-trigger adapted for engagement with the dog, and an endless cord or strand 20, having a sliding connection with both jaws, substantially as described.

475,216. HANDLE FOR VESSELS. FREDERICK HABERMAN, New York, and ERNEST SUTTERLIN, Maspeth, assignors to the Haberman Manufacturing Company, Berlin, N. Y. Filed Jan. 7, 1892. Serial No. 417,297. (No model.)



Claim.—1. A handle composed of two sections formed integral with a connecting-rib F, located at the back of the handle-shank to form a smooth seamless rear portion and also formed integral above the connecting-rib with the sections of a thumb-rest, substantially as described.

2. A handle composed of two sections formed integral with a connecting-rib F, and comprising the lower branches C and the upper branches D, each branch having a wing H at its extremity and the upper branches formed integral with the thumb-rest sections E, substantially as described.

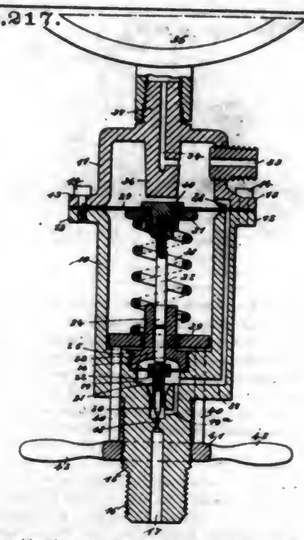
3. The combination, with a vessel A and a handle therefor, of a cover P, having an attached tongue O provided with a pivot portion N, the links M, pivotally engaged at one end with the pivot portion of the tongue, and a pivot L, pivotally connecting the opposite ends of the links to the handle, substantially as described.

4. The combination, with a vessel and a handle formed with laterally-projecting side stops or shoulders Q, of a cover P, having an attached tongue O provided with a pivot portion N, the links M, pivotally engaged at one end with the pivot portion of the tongue, and a pivot L, pivotally connecting the opposite ends of the links with the handle in proximity to the side shoulders of the handle, said links being arranged between the side shoulders and the vessel, substantially as described.

475,217. PRESSURE-REGULATING VALVE. AUGUST HEITEBOKER, Long Island City, N. Y. Filed Feb. 8, 1892. Serial No. 420,749. (No model.)

Claim.—1. A pressure-regulating valve comprising a valve-casing having an inlet at the bottom and an outlet at the top, a flexible diaphragm extending horizontally across the casing, a chamber 19, produced in the lower portion of the casing and connected with the inlet, a bore leading from the chamber and entering the casing above its diaphragm, a lower diaphragm extending across the chamber 19, a valve carried by the lower diaphragm and adapted to close the inlet, the valve having a downwardly-extending stem, a depending rod secured to the upper diaphragm and adapted to contact with the valve-stem, and an adjustable spring held to press upward upon the upper diaphragm, substantially as described.

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2. The combination, with the valve-casing having a threaded stem at its lower end and the equalizing-diaphragm 29, extending across the casing, of a collar 39, held in the lower portion of the casing and provided with depending arms to project through the bottom of the casing, a nut screwed to the stem and adapted to contact with the arms, and a spring held between the collar 39 and the diaphragm, substantially as described.

3. The combination of the valve-casing, the flexible diaphragm 29, extending across the casing, the chamber 19, produced in the lower portion of the casing, an inlet leading to the chamber, a bore leading from the chamber to a point above the diaphragm 29, a plug adapted to close the top of the chamber 19 and having a hollow wrench-head thereon, the lower diaphragm extending across the chamber 19, the valve secured to the lower diaphragm and adapted to close the inlet, the valve having a stem extending into the bore of the plug-head, and a rod secured to the under side of the upper diaphragm and extending into the bore of the plug-head, substantially as described.

4. A pressure-regulating valve comprising a two-part casing having a flexible diaphragm 29, extending across it, and having an outlet above the diaphragm, a threaded stem on the lower portion of the casing, a chamber 19, produced in the lower part of the casing, an inlet-bore entering the chamber 19, a bore leading from the chamber 19 to the part of the casing above the diaphragm 29, a hollow plug screwed into the upper portion of the chamber 19, a diaphragm 26, extending across the chamber 19 above its outlet, a valve secured to the diaphragm 26 and adapted to close the inlet-bore, a stem secured to the diaphragm 26 and extending into the hollow plug, a rod secured to the diaphragm 29 and extending downward into the hollow plug, a longitudinally-adjustable collar arranged in the lower end of the casing, and a spiral spring held between the collar and the diaphragm 29, substantially as described.

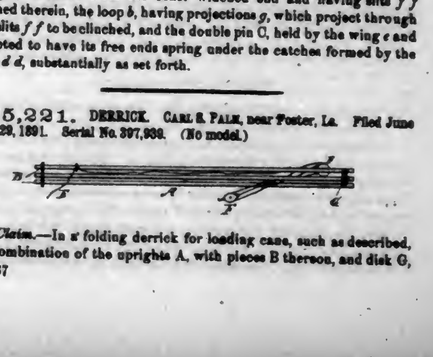
475,218. DEVICE FOR ADJUSTING THE PITCH OF SULKY-BODIES. JAMES HEMMONS, Chillicothe, Ohio. Filed Aug. 10, 1891. Serial No. 402,189. (No model.)



Claim.—1. A device for regulating the position of a tilting vehicle-body, consisting of two plates of substantially the same length hinged to each other at one end, the upper plate being rigidly fastened directly to the body and the lower plate being in like manner fastened to springs directly under the body, and a bolt passing through both plates, a nut on said bolt to secure the upper plate to the body, and two adjusting-outs, one on each side of the lower plate, said plate being provided with an enlarged bolt-hole, all substantially as set forth.

2. A device for regulating the position of a tilting vehicle-body, consisting of plates hinged to each other at one end, the upper plate being secured directly to the vehicle by a screw-bolt passing through an opening in each plate, the lower one having a diameter greater than that of the bolt and provided with a nut to fasten the upper plate to the body, and other nuts, one on each side of the lower plate, to hold it in any desired position, and the lower plate connected to the cross-bar joining the vehicle-springs, provided with an offset 5 to afford room for the nuts on said bolt and for manipulating the same between the plates, substantially as set forth.

475,219. CAR-COUPLING. JOHN LA BURT, New York, assignor of one-half to William H. Agricola, Brooklyn, N. Y. Filed Aug. 11, 1891. Serial No. 402,874. (No model.)



Claim.—In a car-coupling, the draw-head 10, having a horizontal recess 12 and a recess 16, leading therefrom through the upper side of the draw-head, the locking-arm 13, pivoted at its angle or bend in the front corner of the recess 12 to swing horizontally, the tumbler 11, pivoted at its upper forward portion in the recesses 16 and having its front and rear edges inclined, as shown, to co-operate with the rear end 15 of the arm 13, and a rearwardly-projecting handle 19, secured to the rear upper portion of the tumbler 11 above the draw-head, substantially as set forth.

475,220. BOUQUET-HOLDER. JOHN M. LUCAS, Cadiz, Ohio. Filed Aug. 6, 1891. Serial No. 401,846. (No model.)



Claim.—1. A bouquet-holder composed of the approximately parallel members A and B, constructed to spring apart at their free ends, the member B having a loop *b* and a catch-pin and the member A having opening *a* to receive the said loop *b*, substantially as and for the purpose described.

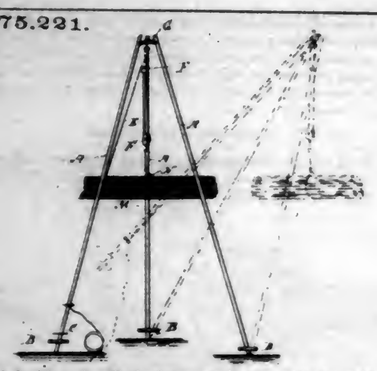
2. A bouquet-holder consisting of blank A B, having its ends widened and the intermediate portion contracted and having an opening in one of the widened ends, the blank being doubled on itself to form two approximately parallel members which spring apart at their free ends, a loop attached to one member to extend through the said opening in the other member, and a catch-pin to secure the device to the clothing, substantially as described.

3. A bouquet-holder composed of a blank having widened ends and an intermediate contracted portion and having opening *a* in one of the widened ends, ears turned down upon the contracted portion, wing *c*, extended from the other widened end and having slits *f f* formed therein, the loop *b*, having projections *g*, which project through the slits *f f* to be clinched, and the double pin C, held by the wing *c* and adapted to have its free ends spring under the catches formed by the ears *d d*, substantially as set forth.

475,221. DERRICK. CARL S. PALM, near Foster, La. Filed June 29, 1891. Serial No. 397,939. (No model.)

Claim.—In a folding derrick for loading cane, such as described, the combination of the uprights A, with pieces B thereon, and disk C,

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provided with a ring H, the latter passing through the ends of uprights A, and disk G, having flanges K thereon, as set forth.

475,222. CAN-OPENER. WILLIAM G. BROWNE and JOHN L. BENTON, Meriden, Conn. Filed Jan. 11, 1892. Serial No. 417,762. (No model.)

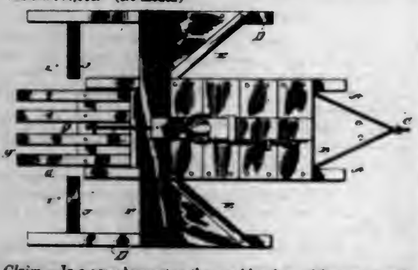


Claim.—1. A can-opener consisting of a cutting-edge and a fulcrum formed by carving a strip of metal laterally in a plane perpendicular to the plane of the blade and then inward across the face of the blade, substantially as described.

2. A can-opener consisting of a cutting-edge and a fulcrum formed by carving a strip of metal laterally and then inward across the face of the blade, said fulcrum being beveled or sharpened on both sides of the cutting-edge, as and for the purpose set forth.

3. A can-opener consisting of a cutting-edge and a fulcrum struck up from the same sheet of metal as the blade and lying above the cutting-edge at right angles thereto and in a plane perpendicular to the plane of the blade, said fulcrum having a notch opposite to the cutting-edge, which engages the edge of a can to prevent the blade from running inward or downward in cutting.

475,223. CORN-HARVESTER. CHARNEL F. STUBBLEFIELD, Wood River, Nebr., assignor to himself, Robert N. Stubblefield, Edward L. Stubblefield, and Edward Stubblefield, same place. Filed Jan. 15, 1891. Serial No. 377,883. (No model.)

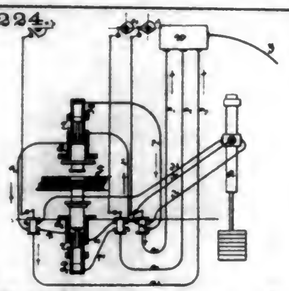


Claim.—In a corn-harvester, the combination, with a rearwardly-tilting table or dropper having its outer end inclined upwardly, of the rearwardly-convergent knives located in advance of the latter and at opposite sides thereof, and the inverted-V-shaped guides disposed in rear of the knives and adapted to deflect the stalks to a position at an angle to the table, substantially as and for the purpose set forth.

475,224. HYDRAULIC PRESS. HERMANN VON MITKLAFF, Berlin, Germany. Filed Sept. 12, 1891. Serial No. 405,537. (No model.)

Claim.—1. A hydraulic brick-press consisting of the upper connected plungers P' Q', the latter having a stamp K', the lower connected plungers P^2 Q^2, the latter having the stamp K, the cylinders for the respective plungers, the dies F, arranged between the upper and lower stamps, the accumulator A, the tank W, arranged at a level above the press, the piston-valve v', connected with the tank and the accumulator and with opposite ends of the cylinder for the plunger P', a piston-valve v^2, connected with the tank and the accumulator and

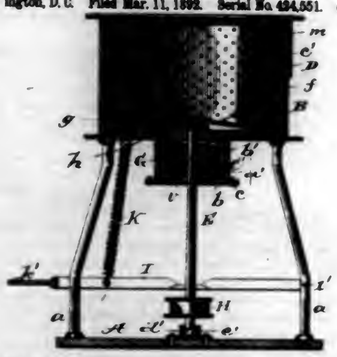
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with opposite ends of the cylinder for the plunger P^2, a piston-valve v^2, connected with the accumulator and with the cylinders for the plungers Q' Q^2, and rotating cams for operating the several piston-valves, substantially as and for the purposes described.

2. A hydraulic brick-press consisting of the plunger P' Q', a connecting-stem Z' for said plungers, the plungers P^2 Q^2, and a connecting-stem Z^2 for said last-named plungers, stamps K K', and cylinders for each of said plunger pairs, in combination with the accumulator A and tank W for receiving the water from the plunger-cylinders, cams c' c^2, and piston-valves v' v^2, actuated by said cams, the cams c c^2 being formed with a branch for actuating the valves for preliminary pressure, said first-named cam branch being divided by an intermediate cam portion for actuating the valve to secure a period of release during the preliminary pressure, and the cam c^2 effecting the final pressure, substantially as described.

475,225. CENTRIFUGAL MACHINE. ROBERT D. WEAVER, Washington, D. C. Filed Mar. 11, 1892. Serial No. 424,551. (No model.)



Claim.—1. In a centrifugal machine, a stationary outer casing having a vertical extension on its under side, and a revoluble basket, in combination with a resilient and elastic device for neutralizing the vibrations of the basket supported in said extension and adjacent to the casing.

2. In a centrifugal machine, a device for neutralizing the vibrations of the basket, consisting of a separate metallic cylinder, an elastic cushion within and filling said cylinder, and a sleeve embedded in and entirely surrounded by the cushion, in combination with a fixed outer casing having a chamber on its under side, the wall of which incloses said metallic cylinder.

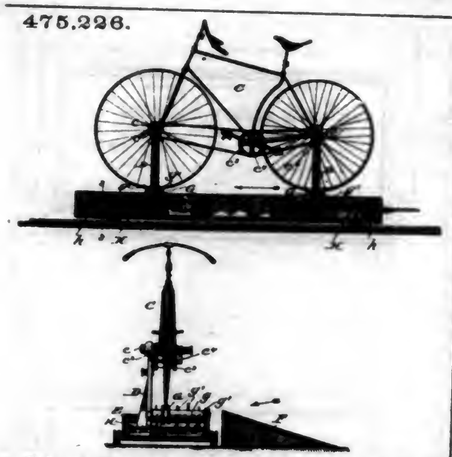
3. A centrifugal machine having a stationary outer casing provided with a chamber on its under side having a removable bottom, in combination with a device for neutralizing the vibrations of the basket supported in said chamber, a revoluble basket, and a shaft passing through said neutralizing device.

4. In a centrifugal machine, a device for neutralizing the vibrations of the basket, consisting of a metallic cylinder, a sleeve for the shaft of the basket, provided with a recess in its upper end and a vertical flange surrounding the recess, and an elastic cushion between said cylinder and sleeve.

5. In a centrifugal machine, a device for neutralizing the vibrations of a revoluble basket, consisting of a cylinder having ribs on its inner surface, an elastic cushion provided with grooves in its periphery, and a sleeve embedded in said cushion.

475,226. THEATRICAL APPLIANCE. FREDERICK WOELSENUTH, Philadelphia, Pa. Filed Nov. 9, 1891. Serial No. 411,402. (No model.)

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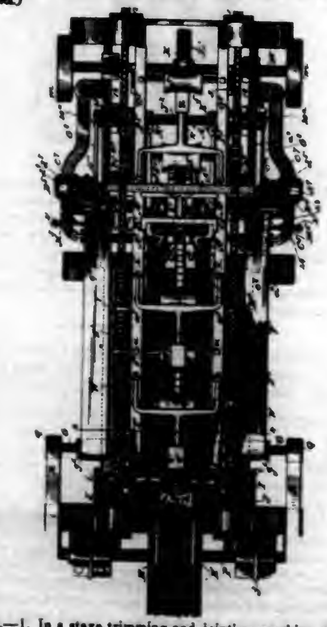


Claim.—1. The combination, with the stage and the movable carriage provided with standards D D, as shown, of a bicycle of the kind shown, having its axles journaled and supported in the said standards, its front axle being geared to the pedal-shaft, all arranged substantially as shown, and for the purpose described.

2. In combination with a stage, a movable carriage, a bicycle operatively held thereon, and dust-producing devices carried by the carriage, arranged to be operated when the bicycle-wheels are revolved, substantially as and for the purpose described.

3. The combination, with the stage, the movable carriage, the bicycle mounted thereon for independent movement, of the shafts mounted in the carriage under the bicycle-wheels and held for frictional contact therewith, such shafts having radial fingers, and flexible dust-making flaps adapted to be engaged by said fingers, all arranged substantially in the manner and for the purpose described.

475,227. STAVE TRIMMING AND JOINTING MACHINE. WILLIAM J. WRIGHT, Cooperstown, assignor to the Stave Jointer and Planer Company, Oil City, Pa. Filed Apr. 11, 1891. Serial No. 388,466. (No model.)



Claim.—1. In a stave trimming and jointing machine, the combination, with the main frame, the stave-carrier operating to carry the stave longitudinally through the machine, and means for operating such carrier, of a transverse shaft I, journaled above the carrier, trimmer-arms F, laterally adjustable thereon, the said shaft I formed with right and left threads, the boxes H, the gage-arms E, connected therewith and to the saw-arbors, their front ends projected forward of the front end of the machine, the gears i on the shaft I, and the geared disks J, engaging said gears i and formed with operating-handles, whereby said disk J is moved in either direction to turn the shaft I in reverse directions to set the saws, as and for the purposes described.

2. In a stave trimming and jointing machine, the combination, with the main frame, main drive-shaft mounted thereon, a stave-carrier arranged to carry the stave longitudinally through the machine, and adjustable cutters journaled at right angles to the said carrier and adapted to cut the bevel of the stave, the shafts of said cutters provided with belt-pulleys c^2, of the shaft G, journaled transversely over the stave-carrier and in advance of the cutters, trimmer-saws mounted on said shaft to turn therewith, and said shaft provided with belt-pulleys Q and g^4, the belt connections between said pulley g^4 and the pulleys c^2, and belt connections between the pulleys Q and the main drive-shaft, substantially as and for the purpose described.

3. The combination, with the main frame formed with a longitudinal bed-rail B, an endless carrier traveling in said rail, and means for operating such carrier, of the transversely-movable cutters B^6, mounted to each side of the carrier, the supporting-frames of said cutters mounted upon rock-shafts journaled parallel to the carrier, counter-weights secured to said shafts for normally holding the cutter-frames to their innermost positions, stops secured to said frames, adapted to engage the main-frame beams a^6 for limiting such inward movement, said cutter-frames adapted to be adjustably set in relation to the passing stave, and means for holding them in adjusted positions and operating them, substantially as and for the purposes described.

4. In a stave-jointing machine, the combination, with the main frame and the longitudinal stave-carrier, of laterally-movable cutter-frames, a vertically-movable cross-head arranged to be lifted by the passing stave, the movable head-blocks D^5, the plunger-rods D^4, connecting such blocks with the cutter-frames, cams for holding the plunger-rods D^4 to their adjusted positions during the cutting of the stave, and the cam-operating devices, consisting of the rods d^{13}, connected with the cross-head, the weighted levers d^9, and the link-arms d^7, connected with the said cams, all arranged substantially as shown, and for the purpose described.

5. In a stave-jointing machine, the combination, with the main frame, the longitudinal stave-carrier, and means for operating it, of the laterally-movable swinging cutter-frames C^5 C^6, supported on weighted rock-shafts C^4 and provided with lateral extensions C^{14}, the head-blocks D^5, the plunger-rods D^4, pivoted to the frames C^5 and operating in the head-blocks D^5, the cross-head F^6, arranged to be operated by the moving billet, and locking devices carried and operated by the movement of the cross-head F^6, the bilge-formers G^7, arranged to reciprocate in guideways on the frame, the swinging lever-arms I^2, connected to the head-blocks D^5 and pivoted at their rear ends to the frame A, their forward ends adapted to be moved inward and outward by the formers G^7, and devices intermediate the rock-shafts and the front ends of said levers I^2, whereby said levers are automatically set to a starting position to be operated by the formers G^7, said devices operated by the rocking of the shafts C^4 of the frame C^5, said frames arranged to be spread apart by the passing stave, substantially as and for the purpose described.

6. In a stave-jointing machine, the combination, with the main frame and the longitudinally-movable stave-carrier, of the transversely-movable cutter-carrying frame C^5, connected at their lower ends to rock-shafts C^4, the spreaders A^5, pivoted to the main frame and connected to the frame C^5, as shown, the vertically-movable cross-head F^6, arranged to be lifted by the passing stave, the head-blocks D^5, the plunger-rods connected to the cutter-frames and operating in the head-blocks, the cams E^3 for holding said rods to their adjusted positions during the cutting of the stave, and devices connected to the cross-heads, and the cams E^3 for locking such cams when the cross-heads are elevated, said devices adapted to retain a semi-rigid condition when ordinary strain is applied to the cam and to become a link connection when too great a lift is imparted to the cross-head by a stave of more than ordinary thickness, all arranged substantially as and for the purpose described.

7. In a stave-jointing machine, essentially as described, the combination of stave-carrying devices mounted in the main frame, the cross-head F^6, operated by the passing stave, the transversely-adjustable cutter-frames C^5, and cutters B^5, having rocking bearings at their lower ends, said frames C^5 adapted to be spread by the moving stave, the cross-heads D^5, the plunger-rods operating therein, the cam-lever E^3, the weighted lever d^9, the link d^7, connecting said lever and the cam-lever, the rods d^{13}, having a pivotal connection with the weighted lever and formed with downward and outward extensions d^{12}, and the adjusting-screws d^{13}, adapted to engage said extensions d^{12}, said rods d^{13} connected to and operated by the cross-heads F^6, substantially as and for the purpose described.

8. In a stave-jointing machine, the combination, with the main frame, the stave-carrying devices arranged as shown, the transversely-movable cutters mounted in frames carrying rock-shafts C^3 at their lower ends journaled in the main frame, the plunger-rods connected to such frames, the transversely-movable head-blocks D^3, and means for holding the pistons to the head-blocks when the cutters are spread apart, of the horizontally-swinging levers I^3, pivoted at their rear ends to the frame, connected to the head-blocks at a point near their front ends, and connections between the front ends of said levers and the rock-shafts C^3, whereby the rocking movement of such shafts will adjust said levers, head-blocks, and cutters relatively to the width of the stave, substantially as and for the purpose described.

9. In a stave-jointing machine, essentially as described, the combination, with the stave carrying devices, the rock-shafts C^3, journaled parallel to said devices, the frames C^3, supported thereon, the cutters journaled therein transversely to the stave-carrier, said cutter-frames C^3 arranged to be spread by the passing stave, means for holding them locked to their adjusted positions, the head-blocks D^3, and the plunger-rods D^4, connecting such blocks with swinging frames C^3, of the levers I^3, the reciprocating formers G^7, the diagonally-disposed swinging plates H^3, arranged to swing out by the movement of the formers G^7, the arms C^{13}, projected from the shafts C^3, the wedge-plates J^5, connected with the free ends of said arms C^{13} and arranged to be moved vertically between the diagonal plates H^3 and the free ends of the levers I^3, whereby as the shafts C^3 are rocked outward the plates J^5 will be drawn down to adjust the levers I^3 outward, and means for operating the formers G^7, all arranged substantially as and for the purpose described.

10. In a stave-jointing machine, essentially as described, the combination of the longitudinal stave-carrying devices and the transversely-movable cutters journaled in frames supported upon rock-shafts journaled in the main frame, the head-blocks connected with such frames and the levers I^3, pivoted at one end to the main frame and connected with the head-blocks of the drive-shaft M, provided with a fixed gear m^4, a second shaft $J^\times$, provided with a loose gear, and clutch mechanism connected therewith, and cranks j^3, the reciprocating formers G^7, arranged when moved to engage the levers I^3 and swing them outward, pitman-arms connecting said formers with the cranks on the shaft $J^\times$, the cross-heads F^6, and shifting devices connecting the clutch mechanism with the cross-head, whereby said mechanism is thrown into engagement when the cross-head is lifted and released when the cross-heads fall, as and for the purposes described.

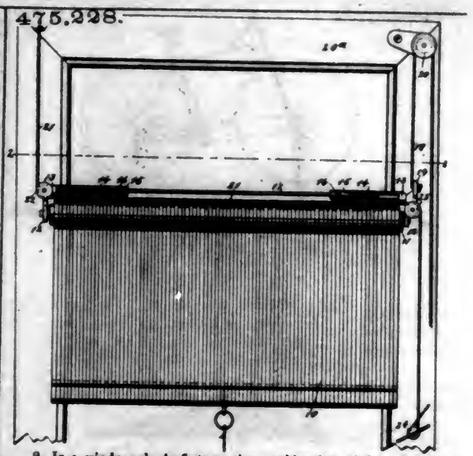
11. The combination, with the stave-carrier devices, the transversely-movable cutters, the head-blocks D^3, connected therewith, and the rock-shafts C^3, forming the pivotal supports for the cutter-supporting frames, of the swinging lever-arms I^3, the reciprocating former-plates G^7, the supporting-guides G^3, the swinging outwardly-inclined plates H^3, the weighted connections between the front ends of the levers I^3 and the guides G^3, the vertically-movable wedge-plates J^5, operating between the ends of the levers I^3 and the plates H^3, said weighted connections serving to automatically hold the ends of the levers I^3 against the plates J^5, and means for reciprocating the formers G^7, substantially as and for the purposes described.

12. The combination, with the stave-carrying devices, the cross-head F^6, the transversely-movable cutters B^3, the rock-frames C^3, supporting such cutters, the head-blocks D^3, connected therewith, and the swinging levers I^3, pivoted at one end to the main frame and near their front ends to the head-blocks, of the drive-shaft M, provided with a fixed gear m^4, the shaft $J^\times$, carrying a loose gear J^6, meshing with the gear m^4 and with disks o^3, having alternately-curved and flat faces o^3 o^3 o^6 o^6, leaf-springs P^6, arranged to normally engage the flat faces o^6 when the shaft $J^\times$ is at rest, clutch mechanism connected to said gear J^6, shifting devices connected with said clutch mechanism and cross-head F^6 and operated to set and release the clutches by the rise and fall of the said cross-head, cranks j^3, formed on the shafts, the formers G^7, held to reciprocate in guides on the main frame and to engage the front ends of the levers I^3, and the pitman connections between such formers and the shaft J^7, said formers, shaft J^3, and gear mechanism and the disks O arranged relatively so that said shaft will be intermittently revolved a half-revolution during the passage of each stave and held to such movement by the springs P^6 engaging the flat faces of the disks O^3, all arranged substantially as and for the purpose stated.

475,228. WINDOW-SHADE FIXTURE. WILLIAM W. WITHER, Orange, assignor to the L. L. F. Fixture Company, of New Jersey. Filed July 14, 1891. Serial No. 399,490. (No model.)

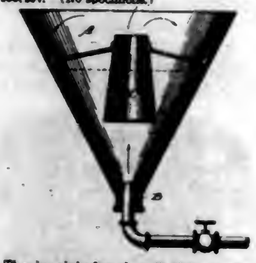
Claim.—1. In a window-shade fixture, the combination of two adjustably-connected brackets adapted to hold a shade-roller, a guiding-cord extending over pulleys secured to the brackets, the cord being secured to the opposite sides of a window-frame at points above and below the brackets, and an adjustable suspending-cord secured to one of the brackets and to the window-frame, substantially as described.

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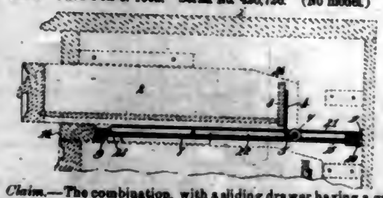
2. In a window-shade fixture, the combination of the roller-supporting brackets adjustably connected together and having pulleys pivoted thereon, a guiding-cord extending over one pulley and under the other, said cord having one end secured to the upper part of the window-frame on one side and the other end secured to the lower opposite side of the window-frame, the cord acting as a support for one of the brackets, and an adjustable suspending-cord secured to the opposite bracket and running over a pulley on the window-frame, substantially as described.

475,229. ART OF DYEING WOOL. JAMES A. YOUNG, Boston, Mass., assignor, by direct and mesne assignments, to the Young Coloring Company, same place. Filed Dec. 27, 1890. Renewed Aug. 22, 1891. Serial No. 403,407. (No specimens.)



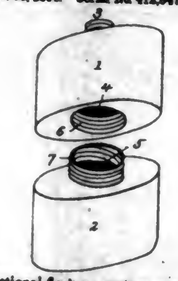
Claim.—The hereinbefore-described improvement in the art of dyeing wool and other substances, consisting in immersing the goods to be dyed into the dye-liquor and then subjecting the same to the action of a jet of heated and highly-compressed air introduced from below into the liquor, whereby the dye-liquor is heated to a predetermined degree and maintained at that heat, the goods are continuously agitated and kept in movement, and the dye-liquor and goods are continually supplied with the needed oxygen, substantially as and for the purposes hereinbefore set forth.

475,230. GUIDE FOR FURNITURE-DRAWERS. JOHN B. ZUMDICK, Covington, Ky., assignor of one-half to John Henry Zumdick, same place. Filed Feb. 3, 1892. Serial No. 420,736. (No model.)



Claim.—The combination, with a sliding drawer having a grooved roller-bearing, of a horizontal guide-rail provided at each extremity with a bracket-plate, one of which is formed with a screw-socket adapted to screw along the length of the rail, and an elastic roller-retaining guide rigidly attached at one extremity to one of the bracket-plates and terminating at the opposite extremity in proximity to the other bracket-plate to provide an exit-passage for the roller-bearing, substantially as described.

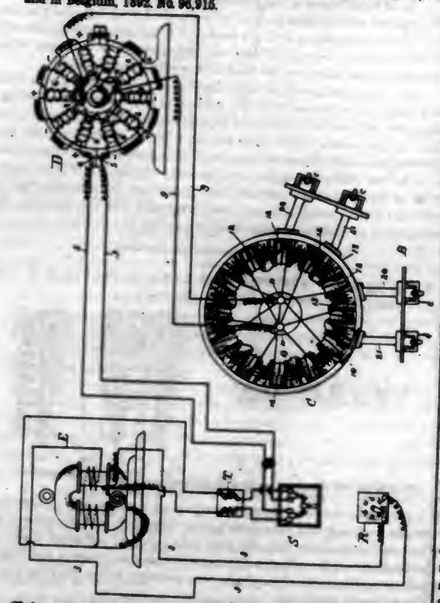
475,231. SECTIONAL CANTEEN OR COFFEE-FLASK. WILLIAM A. ANDERSON, Chicago, Ill., assignor of one-third to Robert Burns, same place. Filed Nov. 18, 1891. Serial No. 412,347. (No model.)



Claim.—1. A sectional flask or canteen comprising the flattened sections 1 and 2, having heads at each end and provided with annular necks 6 and 7 on the adjacent heads that are adapted to connect the two sections together, substantially as set forth.

2. A sectional flask or canteen comprising the flattened sections 1 and 2, having heads at each end and provided with annular screw-threaded necks 6 and 7 on the adjacent heads that are adapted to screw together to unite the two sections together, substantially as set forth.

475,232. CONVERTING SYSTEM FOR ELECTRIC METAL-HEATING. GEORGE D. BURTON, Boston, Mass., and ARTHUR H. EDDY, Hartford, and GEORGE T. BRIGGS, Windsor, Conn., assignors to the Electrical Forging Company, of Maine. Filed Sept. 15, 1891. Serial No. 405,751. (No model.) Patented in France Oct. 23, 1891, No. 216,934; in Italy Nov. 28, 1891, XXVI, 30,704, and LX, 216; in Spain Mar. 4, 1892, No. 12,661, and in Belgium, 1892. No. 96,915.



Claim.—1. The combination of an electric converter for converting electric currents of high potential into those of low potential by induction, provided with metal-holders in its secondary circuit arranged to hold therein the article to be heated, an alternating-current dynamo connected to the primary circuit of said converter, an exciter-dynamo connected to the field-coils of said first dynamo and arranged to energize the field-magnets thereof, and a rheostat interposed in the electric field-circuit of said exciter-dynamo and adapted to regulate the current of excitation of the fields of said first dynamo, substantially as described.

2. The combination of an electric converter for converting electric currents of high potential into those of low potential by induction, provided with metal-holders in its secondary circuit arranged to hold therein the article to be heated, an alternating dynamo connected to the primary circuit of said converter, an exciter-dynamo connected to the field-coils of said first dynamo arranged to energize the field-magnets thereof and having a shunt-circuit from its armature-brushes through its own field-coils, and a rheostat interposed in said last-named shunt-circuit adapted to regulate the excitation of the fields of the exciter-dynamo, substantially as described.

3. The combination of an electric converter for converting electric currents of high potential into those of low potential by induction, provided with metal-holders in its secondary circuit arranged to hold the article to be heated, an alternating-current dynamo connected to the primary circuit of said converter, an exciter-dynamo connected to the field-coils of said first dynamo and arranged to energize them, and a rheostat located within reach of the operator engaged in heating the metal in said metal-holders and connected in the field-circuit of said exciter-dynamo and arranged to regulate the current in the same, substantially as described.

4. The combination of an electric converter for converting electric currents of high potential into those of low potential by induction, provided with metal-holders in its secondary circuit arranged to hold the article to be heated, and an alternating-current dynamo connected to the primary circuit of said converter and constructed with a series of field-coils upon its field-magnets and with coils upon every alternate pole of the armature, whereby the latter coils are respectively located on the opposite side of the armature from poles having no coils, and a source of electrical energy connected to said field-coils and arranged to excite the same, substantially as described

5. The combination of an electric converter for converting electric currents of high potential into those of low potential by induction, provided with a pair of metal-holders in its secondary circuit arranged to hold therein the metal to be heated, an alternating-current dynamo connected for supplying current to the primary circuit of the said converter, and a source of electrical energy connected for supplying an energizing-current to the field-magnets of the alternating-current dynamo, with means operative in connection with and through the said energizing agency for regulating and maintaining the due proportion of amprage to voltage in the alternating current during the heating process by variations produced at will in the said energizing-current, whereby the temperature of the metal between the holders may be first raised to a predetermined working heat at one or more points and then successively raised in all other parts to the desired working heat, substantially as specified.

6. In an apparatus for heating metals by electricity for working or shaping said metals, the combination of an alternating-current dynamo, a source of electrical energy connected to the circuit of the field-coils thereof, means for regulating and maintaining the proportion of voltage to amprage in the alternating current of said dynamo during the heating operation, substantially as described, an electric-current converter for converting a current of high potential into a current of low potential by induction, having a core 13, primary coils 12, connected in circuit with said alternating dynamo by conductors 9, secondary coils 14, composed of spiral plates, rings 18 and 19, surrounding said core, the opposite terminals of the secondary coils being connected, respectively, to said rings, so that one of said rings forms a positive terminal of the induced current and the other ring forms a negative terminal of said current, a metal-holder having electrode terminals, and conductors connecting the terminals of said metal-holder with said rings, respectively, for passing the current through the metal to be heated, substantially as set forth.

7. The combination, in an electric converter for converting electric currents from one potential to another by induction, of an annular core formed of lengths of uninsulated or partially-insulated wire arranged side by side and breaking joints at various intervals in the circuit of the core, primary circuit-coils surrounding segments of said core, and secondary circuit-coils surrounding segments of said core between the primary coils, substantially as described.

8. The combination, in an electric converter for converting an electric current from a high to a low potential by induction, of an annular core, primary circuit-coils surrounding segments of said core, and secondary coils composed of plates of metal of greater diameter transversely to the core than in the direction of its length and disposed radially around segments of said core between the primary coils and with their broader faces adjacent to the latter, substantially as described.

9. The combination, in an electric converter for converting electric currents from one potential to another by induction, of the primary circuit-coils 12, the annular core 13, and the series of secondary coils 14, having their positive and negative terminals respectively connected to curved conductors 18 and 19, surrounding said core externally and lying substantially parallel thereto, and having metal-holders for holding the work and completing the circuit connected thereto, respectively, substantially as described.

10. The combination, in an electric converter for converting electric currents from one potential to another by induction, of the primary circuit-coils 12, the annular core 13, and the series of secondary coils 14, having their positive and negative terminals respectively connected to ring-conductors 18 and 19, lying substantially parallel to each other and respectively having metal-holders for holding the work and completing the circuit connected thereto, substantially as described.

11. The combination, in an electric converter for converting electric currents from one potential to another by induction, of the primary circuit-coils 12, the annular core 13, and the series of secondary coils 14, having their positive and negative terminals respectively connected to ring-shaped conductors 18 and 19, surrounding said core externally and lying substantially parallel to each other, and respectively having clamps for holding the work and completing the circuit connected thereto, substantially as described.

12. The combination, in an electric converter for converting electric currents from one potential to another by induction, of the primary circuit-coils 12, arranged with two coils forming each pair in series and with each series pair in multiple arc in the primary circuit, such coils surrounding the core or some part thereof, the secondary coils also surrounding the core between the primary coils and connected in the secondary circuit in multiple arc, and the terminals of the secondary circuit provided with metal-holders for holding the work to be heated in the circuit.

13. The combination, in an electric converter for converting an electric current from a higher potential to a lower one by induction, of an annular core, a primary coil or coils disposed around a segment or segments of said core, and a series of coils surrounding segments of said core and connected in multiple arc to the secondary circuit, each of said last-named coils consisting of a plate of metal disposed radially and surrounding a segment of said core and presenting its thin edge thereto, substantially as described.

14. The combination, in an electric converter for converting electric currents from a higher potential to a lower one, of the primary circuit-coils 12, the core 13, the secondary coils 14, and the ring-shaped conductors 18 and 19, respectively connected to the terminals of the secondary coils and respectively carrying the metal arms 20 and 21, rigidly projecting therefrom and supported thereby and provided with metal-holders for holding the bar to be heated, substantially as described.

15. The combination, in an electric converter for converting electric currents from a higher potential to a lower one by induction, of the outer rings 18 19, forming positive and negative electrical conductors, the secondary coils 14, having their terminals respectively attached thereto and surrounding and sustaining the core 13 by interposed insulating material, and the insulated primary circuit-coils also surrounding and sustained by the core, forming a complete inductorium, substantially as described.

16. The combination, in an electric converter for converting electric currents by induction from a higher to a lower potential, of the annular core 13, the primary and secondary coils surrounding the same, and the central plate of non-conducting material arranged within the core to receive the terminals 11 11 of the primary circuit and the connections thereto of the primary coils 12 12, substantially as described.

17. An electric converter for converting electric currents by induction from a higher to a lower potential, provided with two continuous rings of different polarity disposed on the outside of the converter and connected with opposite terminals of the secondary coils thereof.

18. In an electric metal-heating apparatus, the combination of a converter for converting electric currents from a higher to a lower potential, provided with rings of opposite polarity connected to opposite terminals of the secondary coils and disposed on the exterior of the converter, and metal-holders connected with said rings for holding the metal to be heated.

19. The combination, in an electric converter for converting electric currents from a higher potential to a lower one, of the primary circuit-coils 12, the core 13, the secondary coils 14, and the ring-shaped conductors 18 and 19, respectively connected to the terminals of the secondary coils and respectively carrying metal arms on different sides thereof rigidly projecting therefrom, each pair of which arms on a different side is provided with metal-holders arranged to receive the metal to be heated and to permit the same to be handled without interfering with the work being done in any other pair on a different side, substantially as described.

475,288. CATTLE-GUARD. GEORGE W. CAMELL, Nevada, Mo., assignor of one-half to Solomon Myers, same place. Filed Oct. 20, 1891. Serial No. 409,267. (No model.)

Claim.—1. In a cattle guard, the combination, with the rails and the cross-ties, of the chairs under the rails and the central and side sections, each consisting of sills pivoted to the said chairs and provided with bars adapted to prevent cattle from passing over them, substantially as set forth.

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2. In a cattle-guard, the combination, with the cross-ties and the chairs for the rails secured to the cross-ties and provided with lugs, of the sills resting on the cross-ties and provided with lugs at their ends, the pivot-pins passing through holes in the said lugs, a series of hollow prismatic bars secured to the sills, and a series of sharp serrated bars also secured to the sills and alternating with the said hollow bars, substantially as set forth.

3. In a cattle-guard, the combination, with the chairs for the rails, of a central section consisting of sills provided with bars for preventing cattle from passing over the section, and the pins pivoting the ends of the section to the said chairs and permitting it to be raised when the pins on one side are removed, substantially as set forth.

4. In a cattle-guard, the combination, with the chairs for the rails, of a side section consisting of sills extending beyond the cross-ties and provided with shoulders abutting against the ends of the cross-ties, and bars for preventing cattle from passing over the section, and the pins pivoting the said side section to the chairs, substantially as set forth.

5. In a cattle-guard, the combination, with the sills of the side section, of the wing-fence provided with end pieces, the pins pivoting the said end pieces to the sills, and the removable pins for retaining the wing-fence in position, substantially as set forth.

475,284. PAVEMENT. JOHN A. CHANLER, New York, N. Y. Filed Mar. 4, 1892. Serial No. 423,689. (No model.)



Claim.—1. The roadway constructed, substantially as described, of flat iron rails laid with their top surfaces flush with the general surface of the roadway, said flat iron rails being of sufficient width and so located as to be adapted to wheels of common vehicles and filled in between with macadam or similar composition, substantially as and for the purposes described.

2. The improved roadway consisting of the flat iron rails A, laid with their top surface flush with the general surface of the roadway, the macadam or composition B, and stone filling C, all combined together substantially as and for the purposes described.

475,285. PAVEMENT. JOHN A. CHANLER, New York, N. Y. Original application filed Mar. 4, 1892, Serial No. 423,689. Divided and this application filed Apr. 4, 1892. Serial No. 427,906. (No model.)

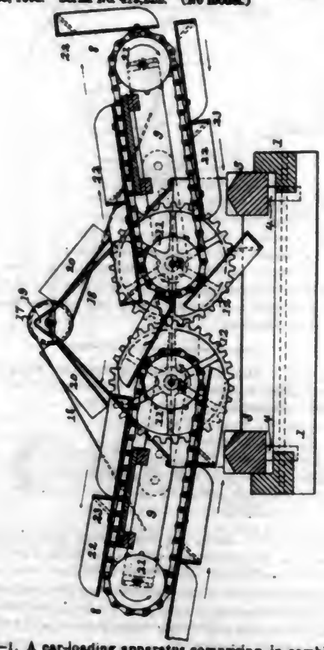
Claim.—In a roadway, the tracks or ways for the wheels of vehicles, which consist of flat iron rails laid with their top surfaces flush

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with the general surface of the pavement and broad enough to accommodate the wheels of vehicles throughout the ordinary deviations of the horses between said rails, substantially as and for the purposes described.

475,286. CAR-LOADING APPARATUS. RICHARD W. COMPTON, Moberly, assignor of one-half to Benjamin F. Heirs, St. Louis, Mo. Filed Jan. 25, 1892. Serial No. 419,222. (No model.)



Claim.—1. A car-loading apparatus comprising, in combination, a stationary overhanging slideway, a carriage adjustable thereon, and a pair of counterpart conveyers arranged to project laterally in a pivotal manner on said carriage, a pair of gears for connecting the driving-shafts of the conveyers together to move in unison, and means for effecting an adjustment of the conveyers, consisting of a centrally-arranged windlass, the ropes or chains from which are connected to the conveyer-frames, substantially as set forth.

2. A car-loading apparatus comprising, in combination, a stationary overhanging slideway, a carriage adjustable thereon, and a pair of counterpart conveyers arranged to project laterally in a pivotal manner on said carriage, and a centrally-arranged inverted-V-shaped divider, substantially as set forth.

3. A car-loading apparatus comprising, in combination, a stationary overhanging slideway, a carriage adjustable thereon, and a pair of counterpart conveyers arranged to project laterally in a pivotal manner on said carriage, and a centrally-arranged inverted-V-shaped divider having laterally-arranged wings or pans pivoted to its sides, substantially as set forth.

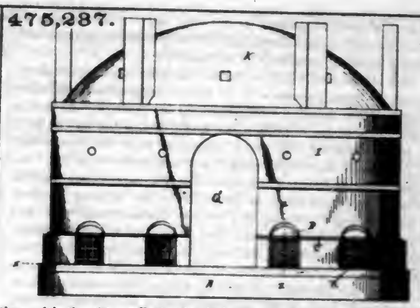
4. A car-loading apparatus comprising, in combination, a stationary overhanging slideway 1, a carriage 3, arranged to slide thereon, a pair of counterpart conveyers mounted on said carriage, and means for imparting motion to the carriage, consisting of a windlass 5, mounted on the carriage, with the rope ends 6 and 7 connected to the slideway, substantially as set forth.

5. A car-loading apparatus comprising, in combination, a stationary overhanging slideway 1, a carriage 3, arranged to slide thereon, a pair of counterpart conveyers mounted on said carriage by means of cross-shafts 10, the gears 12, shaft 13, having keyway 14, and the gear-wheels 15 and 16, substantially as set forth.

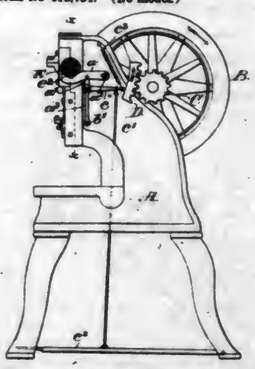
475,287. BRICK-KILN. WILLIAM CROMLIC, Decatur, Ill., assignor of one-half to J. T. Shea, same place. Filed Dec. 12, 1891. Serial No. 414,854. (No model.)

Claim.—In a brick-kiln, substantially as described, the combination, with the side wall, the fire-holes arranged at intervals in the side walls, the cross-bars R, arranged in the fire-holes adjacent to the back and bottom thereof, and the bar U, extending around the outside of the side wall and across the fire-holes, of the grates resting on the lower cross-bars R and having hooks at their upper ends to engage the bar U, all substantially as and for the purpose described.

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475,288. CLUTCH. GEORGE H. EATON and EARL F. BARBER, Boston, Mass., assignors to Geo. H. Eaton & Co., same place. Filed Jan. 2, 1892. Serial No. 416,751. (No model.)



Claim.—1. The clutch mechanism herein described, comprising, in combination, the following elements, viz: a rotating member loose on a shaft and having one or more recesses, as *d*, a longitudinally-movable spring-controlled clutch-dog c^3, supported by the shaft and adapted to be moved by the spring into the recess *d*, said clutch-dog having a recess c^4 with an inclined side wall c^7, the bevel-ended latch *a*, normally held in said recess c^4 to restrain the dog from entering the recess *d*, the toggle a^2 a^3 for said latch, and means for moving the members thereof to move the latch into normal position to release the dog, substantially as described.

2. In a clutch mechanism, a rotating member loose on the shaft and having one or more recesses *d* in its hub, a longitudinally-movable spring-controlled clutch-dog c^3, supported on the shaft and adapted to be moved by the spring into the recess *d*, and means, including a latch, for withdrawing said clutch-dog from said recess when actuated by the rotating member, combined with a spring for moving said latch longitudinally, and thereby the clutch-dog, as the rotating member ceases to move it, substantially as described.

3. In a clutch mechanism, a rotating member loose on the shaft and having one or more recesses *d* in its hub, a longitudinally-movable spring-controlled clutch-dog c^3, supported on the shaft and adapted to be moved by the spring into the recess *d*, and means, including a latch, normally engaging with and for withdrawing said clutch-dog from said recess when actuated by the rotating member, combined with a spring operated by said rotating member to store up energy, which is released to give the clutch-dog an additional movement as the rotating member ceases to move it, and connections between said spring and rotating member, substantially as described.

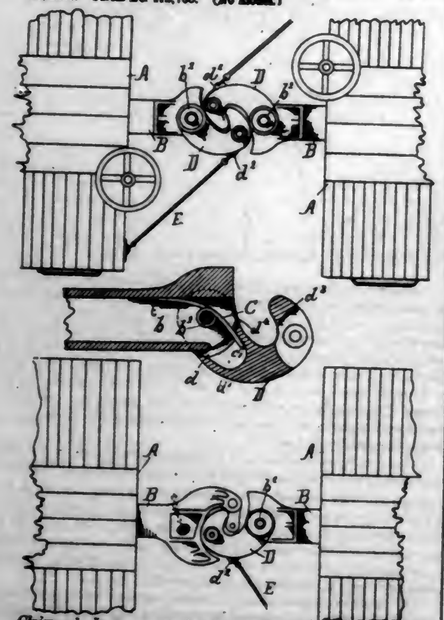
4. In a clutch mechanism, a rotating member loose on the shaft, having one or more recesses *d* in its hub, a longitudinally-movable spring-controlled clutch-dog c^3, supported by the shaft and adapted to be moved to enter the recess *d*, combined with a longitudinally-movable latch for withdrawing said clutch-dog from the recess when the latter is actuated by the rotating member, and a spring actuated by said latch when moved at such time in one direction to store up energy

and which is thereafter released to move the latch in the opposite direction and thereby further move the clutch-dog from engagement with the rotating member, substantially as described.

5. In a clutch mechanism, a rotating member loose on the shaft, having one or more recesses *d* in its hub, a longitudinally-movable spring-controlled clutch-dog d^4, supported by the shaft and adapted to be moved by the spring into the recess *d*, said clutch-dog having a recess d^5, with an inclined side wall d^6, combined with the bevel-ended latch *a*, adapted to enter said recess d^5 and to withdraw the dog from the recess *d* as the inclined portion of said dog is brought to bear against the beveled end of the latch by the action of the rotating member, means for raising and lowering said latch to thereby bring it into and out of position to engage the clutch-dog, a slot a^{10} in said latch, which receives the pivot a', thereby permitting longitudinal movement of the latch, and a spring which is operated by the longitudinal movement of the latch in one direction to store up energy, and which when released moves said latch in the opposite direction to further move the clutch-dog as the rotating member ceases to move it, substantially as described.

6. In a clutch mechanism, a rotating member loose on the shaft and having one or more recesses *d* in its hub, a longitudinally-movable spring-controlled dog d^4, supported on the shaft and adapted to be moved by the spring into the recess *d*, and a latch normally in engagement with and for withdrawing said clutch-dog, combined with a prop or latch-support for said latch to retain it in normal position, and a treadle and treadle-rod connected to said prop or latch-support to move it, and thereby the latch, into abnormal position out of engagement with the clutch-dog, substantially as described.

475,239. CAR-COUPLING. SAMUEL P. HEATH, Saginaw, and THEODORE BURR, Detroit, Mich.; said Burr assignor to said Heath. Filed Nov. 23, 1891. Serial No. 412,785. (No model.)

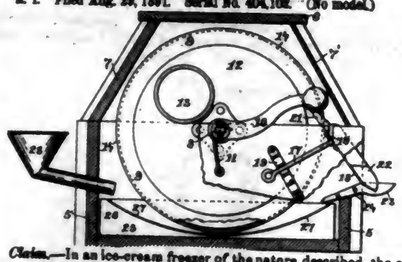


Claim.—1. In a car-coupler, the combination of a draw-bar, a hooked head pivoted thereto, a side extension on said draw-bar, and a spring adapted to throw the point of said hook toward said side extension and beyond the draft-line, the knuckle part of said hook being double and adapted to receive the perforated end of the draw-bar between the two parts and the knuckle part also being formed with a mortise *d'*, within which is received the forward end of said spring, substantially as and for the purpose described.

2. In a car-coupler, the combination of a swinging spring-actuated hooked head, a hollow draw-bar, and an actuating-spring inclosed in and protected by said hollow draw-bar, the knuckle part of said hook being double and adapted to receive the end of the draw-bar between its two parts, substantially as and for the purpose specified.

3. In a car-coupler, the combination of a swinging spring-actuated hooked head, a swinging lever provided with ratchet-teeth, pivoted to the car-body, a pawl also pivoted to the car-body and adapted to engage with said ratchet-teeth, and a link connection between said lever and said coupler-head, substantially as and for the purpose described.

475,240. ICE-CREAM FREEZER. PORTUS M. HIRMAN, Rochester, N. Y., and JOSEPH B. THOMPSON, Providence, assignors, by direct and mesne assignments, to said Thompson and Wilbur F. Smith, Providence, R. I. Filed Aug. 29, 1891. Serial No. 404,102. (No model.)



Claim.—In an ice-cream freezer of the nature described, the combination, with a cylinder containing a freezing compound and revolving through a mixture to be frozen and a pan for containing such mixture, of a scraper pressing against and adapted to remove the frozen mixture from the surface of the cylinder and a return-apron secured immediately below the scraper, over which any unfrozen mixture may be returned to a point where it can again be taken up by the cylinder, as described.

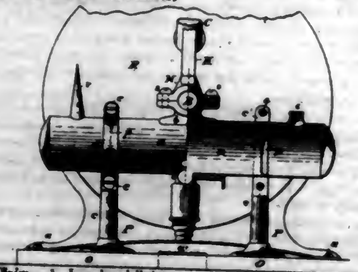
475,241. SKATE. CHRISTOPH HIRSCHMANN, Newark, N. J., assignor to Henry Foerster, same place. Filed Dec. 21, 1891. Serial No. 415,698. (No model.)



Claim.—1. In a skate, the combination, with the foot or toe clamps and the movable heel-clamps, of the plates *h* and *i*, the inner ends of which overlap and are movable upon each other, a cam-plate pivotally secured to one of the plates and engaging with and adapted to move the other plate longitudinally on the first-mentioned plate, and means for moving said plates relatively to one of the clamps of the skate, substantially as described.

2. In a skate, the combination, with the toe and heel clamps movably secured to the body of the skate, of a lever *g*, pivotally secured to one of the clamps, two plates *h* and *i*, secured, respectively, to the remaining clamp and to the lever, the adjacent ends of said plates being slotted and overlapping each other, a cam-plate *k*, pivotally secured to one of the plates and provided with a spiral slot, and a pin *n*, secured to the other plate and passing through the slot of the cam-plate, substantially as set forth.

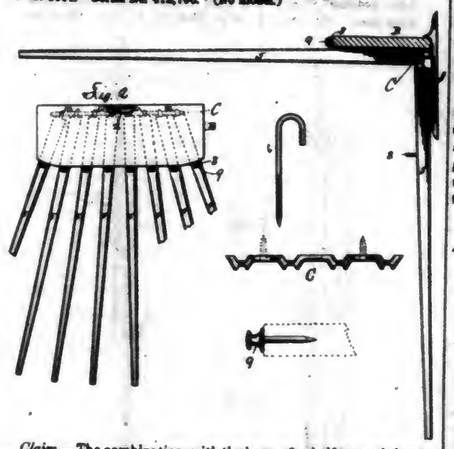
475,242. LOCOMOTIVE HEAD-LIGHT. LANCE I. JOSLIN, Houston, assignor to J. L. Deegan, Galveston, Tex. Filed June 15, 1891. Serial No. 396,400. (No model.)



Claim.—1. In a head-light apparatus, the combination of a lamp or burner, the reflector, the straight reservoir circular in cross-section, detachably mounted in rear of the reflector, and means for securing the reservoir from turning in its supports, substantially as set forth.

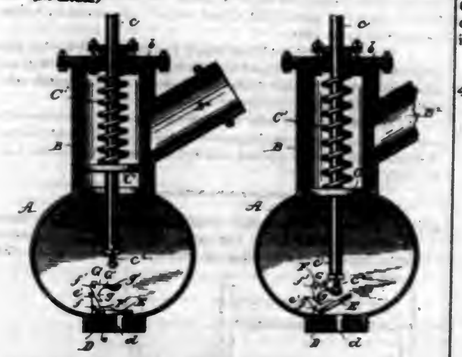
2. In a headlight apparatus, the combination of the burner, the reflector, the reservoir, the standards *c*, having their upper ends formed into bearings shaped to fit the reservoir, and the removable bands adapted to be secured to the standards and, together with the said bearing portions thereof, to form encircling bearings for the reservoir, from which it may be removed at pleasure by removing the said bands, substantially as set forth.

475,243. CLOTHES-DRIER. GEORGE W. LANGDON, Greene, N. Y., assignor of one-half to Randolph K. Atwater, same place. Filed Nov. 23, 1891. Serial No. 412,766. (No model.)



Claim.—The combination, with the base, of a shelf secured thereto, a strap secured to the lower side of said shelf and adapted to maintain the inner ends of the arms equidistant from each other, the arms eyes elongated longitudinally and secured adjustably in the arms and fitting over and adapted to traverse said trap, eyes 8, projecting above said arms, and hooks secured in and projecting from the outer edge of said shelf, with which the eyes 8 come into detachable engagement with the longitudinal traverse of each arm and the eye in the end thereof upon said strap.

475,244. SPRINKLER-HEAD AND VALVE THEREFOR. WILLIAM H. MILLER, South Bend, Ind., assignor to the Miller-Knoblock Wagon Company, same place. Filed Feb. 2, 1892. Serial No. 420,057. (No model.)



Claim.—1. The combination of the supply-tube, the sprinkler-head, the main valve between said tube and head, the hinged waste-valve in said head, having an upstanding finger, and the rod connected to the main valve and adapted to cause the opening of the waste-valve when the main valve closes, substantially as described.

2. The combination of the supply-tube, the sprinkler-head, the main valve between said tube and head and the adjustable rod connected thereto, and the waste-valve for said head, arranged substantially as described, so that it is opened by said rod when the main valve closes, substantially as described.

3. The combination of the tube, the sprinkler-head connected thereto, the main valve between said head and tube and the waste-valve in said head below the tube, and mechanism, substantially as described, whereby the waste-valve is opened when the main valve closes, and vice versa, substantially as specified.

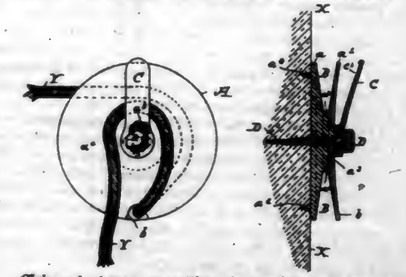
4. The combination of the tube, the sprinkler-head connected thereto, the waste-valve removably connected to said head, the main valve in said tube, and the rod connected to said main valve, adapted to cause the opening of the waste-valve when the main valve closes, substantially as described.

5. The combination of the tube, a perforated sprinkler-head connected to the lower end thereof, the water-inlet, the main inlet-valve, and a waste-valve in said head, substantially as specified.

6. The combination of the sprinkler-head, a hinged waste-valve therein having an upstanding finger and a lever pivoted above the valve and engaging said finger, with the reciprocating main valve and a rod connected thereto adapted to engage said lever and open the waste-valve when the main valve closes, all substantially as specified.

7. The combination of the sprinkler-head, the bushing secured in an opening therein and having a waste-opening and lugs rising beside said opening, a waste-valve having an ear hinged between said lugs and an upstanding finger and a lever hinged between said lugs and engaging said finger and adapted to open the valve when depressed, and means, substantially as described, for depressing said lever, substantially as and for the purpose described.

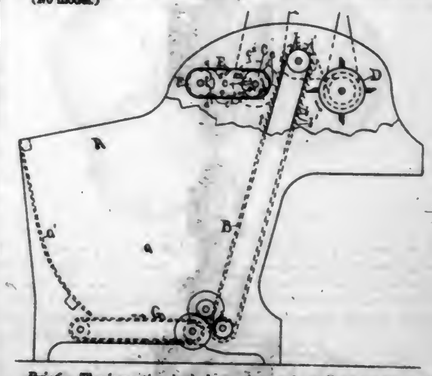
475,245. ROPE OR CORD FASTENING. BENJAMIN F. MOONEY, Olean, N. Y., assignor of one-half to I. F. Pratt and Edward Troy, same place. Filed Sept. 17, 1891. Serial No. 405,971. (No model.)



Claim.—1. A rope or cord fastening consisting of a circular block provided with an annular tapering groove, a slot in the outer edge of said block, an arm or hook, a retaining-screw for securing one end of said arm or hook to said block and the said block to its support, and prongs upon the back of said block penetrating its support.

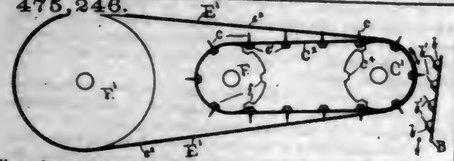
2. As a rope or cord fastening, a holding-block formed of two disks, the space between their outer edges forming an annular groove to receive a rope, an arm or hook having serrations on its inner side operating in conjunction with the outer of said disks having a slot in its edge, and means for securing said device to a suitable support.

475,246. CLEARER FOR SPIKE-CYLINDERS AND SPIKE-APRONS. ALBERT H. MORTON, Lowell, Mass., assignor to the Kitson Machine Company, same place. Filed Nov. 27, 1891. Serial No. 413,267. (No model.)



Brief.—The invention includes a clearer for spike aprons or cylinders, such, for example as are used in machines for feeding fiber to carding-machines, &c., and embraces the spike apron or cylinder and a perforated flexible apron whose path of travel is at times coincident with that of the spike apron or cylinder and at other times divergent therefrom, and through whose perforations the spikes protrude while the surfaces are in contact, the said spikes being cleared from adhering

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fiber when withdrawn from the holes, which is accomplished at the time when the paths of travel of the two surfaces diverge.

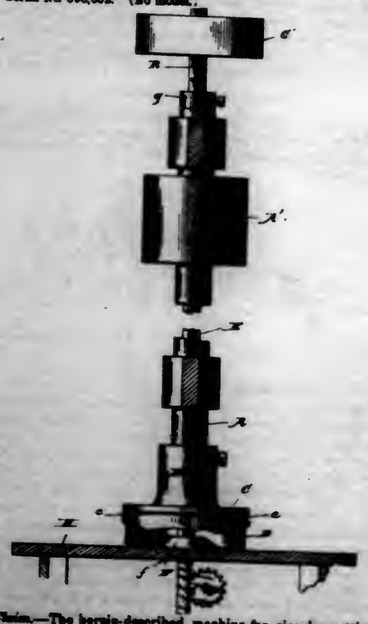
Claim.—1. A cleaner for spike-cylinders and spike-aprons, consisting of a flexible belt perforated to admit the spikes of such cylinder or apron and arranged to move during a portion of its travel in the path of the spike-carrying surface of such cylinder or apron and during another portion of its travel to run at an angle with said path to clear said spikes, as and for the purpose specified.

2. The combination of a traveling surface provided with spikes and a flexible belt driven by said traveling surface and provided with perforations to admit said spikes, said belt being arranged to move during a portion of its travel in the path of said spike-carrying surface and during another portion of its travel to run at an angle with said path to clear said spikes, as and for the purpose specified.

3. The combination of a spike-apron and its rolls, one of said rolls having a positive motion, a flexible belt perforated to receive the spikes of said spike-apron and running on said positively-driven roll outside of said apron and on an idle-roll larger than the idle-roll of said spike-apron, and said idle-roll of said belt to move said belt during a portion of its travel in the path of said spike-apron and during another portion of its travel at an angle with said path to clear said spikes, as and for the purpose specified.

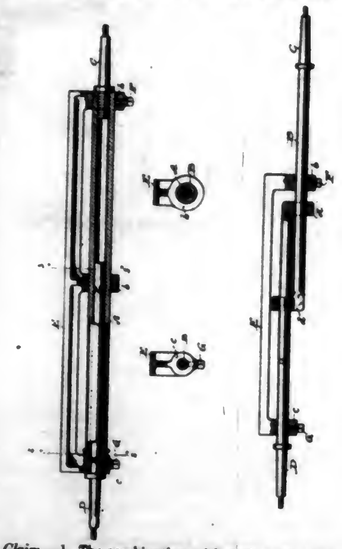
4. A cleaner for spike-cylinders and spike-aprons, consisting of a flexible endless belt provided with perforations to admit the spikes of such cylinder or apron and arranged to move during a portion of its travel in the path of the spike-carrying surface of such cylinder or apron and during another portion of its travel to run at an angle with said path, said perforations being of a suitable width to receive and fit said spikes and of sufficient length to allow said spikes to enter and leave said perforations at the angles between said cylinder or apron and said belt, as and for the purpose specified.

475,247. MACHINE FOR CUTTING CIRCULAR PIECES FROM LUMBER OR OTHER MATERIALS. JAMES S. PIPER, Louisville, Ky., assignor of one-half to C. H. Jenkins, same place. Filed June 30, 1891. Serial No. 398,052. (No model.)



Claim.—The herein-described machine for circular cutting, said machine comprising a vertically-movable table, a hollow rotary shaft mounted in bearings above said table, a hub or wheel B, secured to the lower portion of said shaft, one or more circular saws carried by said hub or wheel, a shaft E within said hollow shaft and also capable of a vertically-reciprocating movement thereon, and an independent weight-shaft R, supported above the upper end of said shaft E and designed to contact therewith, substantially as specified.

475,248. EXTENSIBLE AXLE. WILLIAM R. POORLEY, Lincoln, Nebr., assignor to the Lincoln Road Grader Manufacturing Company, same place. Filed Nov. 14, 1891. Serial No. 411,865. (No model.)



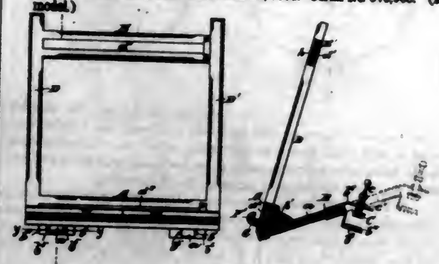
Claim.—1. The combination, with stationary guides, of an extensible axle comprising two sections supported by the guides and adjustable one upon the other independent of a central longitudinal coupling, substantially as set forth.

2. The combination, with stationary guides, of an extensible axle comprising two sections supported by the guides, but adjustable one upon the other independently of a central longitudinal coupling, and suitable means for locking each axle-section in its adjusted position, substantially as set forth.

3. The combination, with stationary guides, of an extensible axle comprising two loosely-engaged sections supported by the guides, and set-screws arranged in said guides in opposition to the adjacent axle-sections, substantially as set forth.

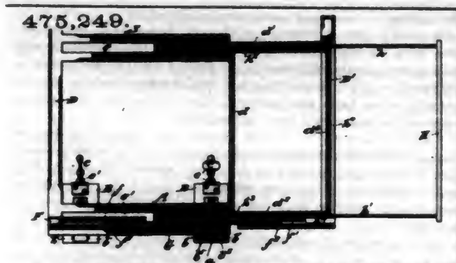
4. The combination, with stationary guides, of an extensible axle comprising two loosely-engaging sections capable of independent lateral adjustment and wholly supported each by the other and said guides, substantially as set forth.

475,249. DETACHABLE MUSIC REST OR HOLDER. ISAAC ROTHSCHILD and EDWARD F. VAN COTT, New York, N. Y., assignors to Simon Adler, same place. Filed Jan. 24, 1891. Serial No. 378,905. (No model.)



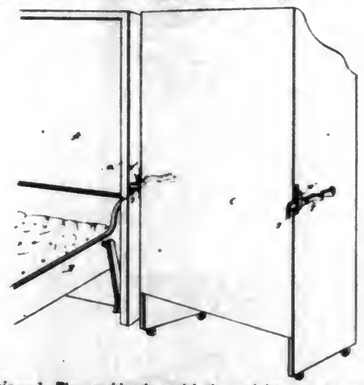
Claim.—1. The music-holder comprising a holding-frame having one of its sides extensible, holding lip-sections secured, respectively, to the stationary and extensible sections of the holder, a supporting-rod having a telescopic engagement with the lip-sections, and arms for securing the frame to the desired support, substantially as set forth.

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2. The music-holder comprising the holding-frame having an extensible side, an auxiliary extensible frame engaged with the extensible side, the extensible side being provided with recesses for the reception of a portion of the main frame and the side of the auxiliary extension-frame, and arms for securing the frame to the desired support, substantially as set forth.

475,250. ATTACHMENT FOR FOLDING BEDS. HIRAM W. RUTOR, Goshen, Ind., assignor to the Goshen Folding Bed Company, same place. Filed Jan. 14, 1892. Serial No. 418,060. (No model.)



Claim.—1. The combination, with the upright or stationary section of a folding bed, of the castings D, secured one to each outer side of the vertical walls of said section and having the bevels *c* and the vertical eyes *b*, the case or swinging section and the pivoted latches, arranged one on each outer side of said swinging section and adapted to engage the eyes in said castings, whereby the two sections may be secured together in a closed position when the bed has been folded and the movable section may swing to either side in a hinged manner, substantially as specified.

2. The combination, with the upright or stationary section of a folding bed, of castings having vertically-disposed eyes secured one to each outer side of said section, and a movable case or section carrying pivoted latches, one on each of its vertical outer sides, and adapted to respectively engage the eyes in the castings on the stationary section, whereby the sections may be secured together in a closed position and the movable section may be swung from either side of the stationary section in a hinged manner, substantially as specified.

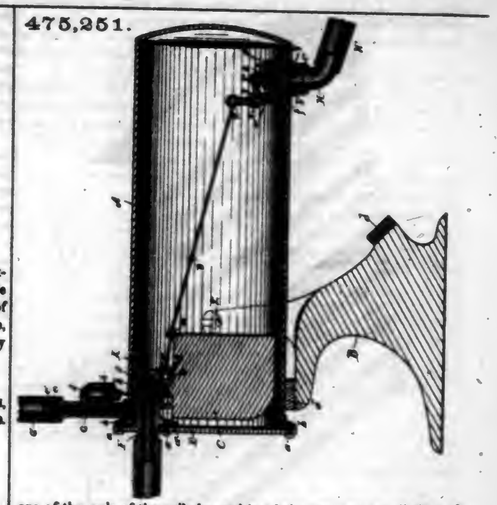
475,251. HYDRAULIC AIR-COMPRESSOR. GEORGE H. SHERMAN, Detroit, Mich., assignor of one-half to Paul C. Dulitz, same place. Filed Jan. 24, 1890. Serial No. 338,040. (No model.)

Claim.—1. In a device for the purpose specified, the combination, with the oscillating vessel, of a water-induct cock projecting into said vessel, a valve in said cock, and a weight pivotally suspended within the vessel and adapted to actuate said valve, said vessel being provided with a valve-controlled air-discharge water-educt and an air-vent.

2. In combination with the base, the vessel pivotally mounted thereon, the removable head of said vessel, the water-induct cock projecting through said head, having a valve and discharge port at the inner end, the weight pivotally coupled to said cock and having a lug projecting from its upper face, said lug adapted to engage with the valve of the cock, and the air-discharge tube passing though the upper wall of the vessel, said vessel having the water-educt port and air-vent, substantially as specified.

3. In combination with the vessel pivotally supported at one side of its longitudinal center, the water-induct cock projecting through

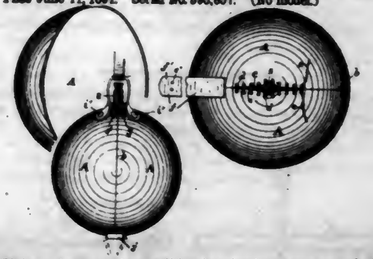
475,251.



one of the ends of the cylinder and just below the upper wall thereof, a valve and discharge-port at the inner end of the cock, the weight suspended on said cock and adapted to engage with the valve thereof when the cylinder is in a horizontal position, the water-discharge port in the bottom of said cylinder and near the end of the cylinder farthest from the weight, a valve in said discharge-port, and means coupling said valve with the weight in said cylinder, said valves and their operating parts being located within the cylinder, and the air-tube passing through the upper wall of the cylinder being located outside thereof, substantially as and for the purposes specified.

4. In combination with the cylinder pivotally supported at one side of its longitudinal center upon the base B, having the buffers *d d*, the water induct-cock located in the end of the cylinder, the valve and port in said cock, the weight coupled to the cock, the valve-case and valve located in the lower wall of the cylinder, the water-port in said valve, the plunger closing said port, the elbow-lever *f*, coupled to the plunger and valve-case, the jointed rod coupled to the elbow-lever and to the pivotal support of the weight, said valves and their operating parts being located entirely within the cylinder, the air-tube passing through the upper wall of the cylinder being outside of the cylinder, said tube having a valve in its upper end and air-chamber at one side, and a valve in said chamber, as and for the purposes set forth.

475,252. GYMNASTIC STRIKING-BAG. HENRY SENGER, Baltimore, Md., assignor of one-third to Thomas H. Musgrave, same place. Filed June 11, 1891. Serial No. 396,857. (No model.)

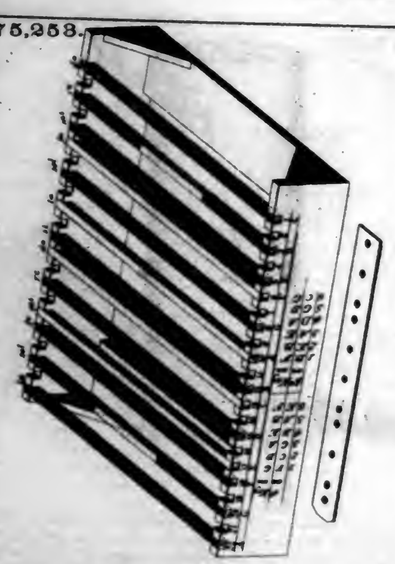


Claim.—A gymnasium striking-bag having a cover made in two hemispherical parts with a single connecting-seam extending in a straight line around its circumference, and a slit or opening closed by lacing and having a flap secured at one end to the said cover and concealing said lacing, the ends of the latter extending through the flap and tied over the same.

475,258. METAPHONE OR TRANSPOSITION-INDICATOR. WILLIAM B. SMITH, Savannah, Tenn. Filed Oct. 12, 1891. Serial No. 408,553. (No model.)

Claim.—The device for indicating musical transpositions, consisting of the frame provided with the notches and the series of bars colored and arranged to represent the lines and spaces of the staff and in the proper order to indicate the intervals of the tones and half-tones.

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475,254. HOSE-COUPLING. OSWILL P. SNYDER, Bangor, Pa., assignor of two-thirds to Oliver W. Houck and Franklin Rasner, same place. Filed Feb. 23, 1892. Serial No. 423,537. (No model.)

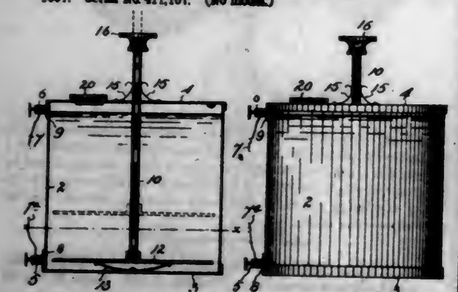


Claim.—1. In a coupling-joint, the combination of the sleeve having a conical bore and a screw-threaded constriction in the bore with a tube shorter than the sleeve and fitted therein, having a screw-threaded end adapted to engage the threaded constriction and an enlarged head on its other end, substantially as described.

2. The combination of the inclosing sleeve having its bore conical at one end and constricted at the inner extremity of the conical portion, said constriction being internally threaded, with a tube having one end threaded to engage the threads of the constriction and its other end formed with an enlarged head angular in cross-section, substantially as specified.

3. A pipe-joint consisting of the sleeve A, having screw-threaded constriction *f* and a convexo-conical bore at one side of said constriction, with a tube B, having a threaded end engaging the constriction and an enlarged head on its other end angular in cross-section, said tube being entirely confined and concealed in the sleeve when connected therewith, substantially as set forth.

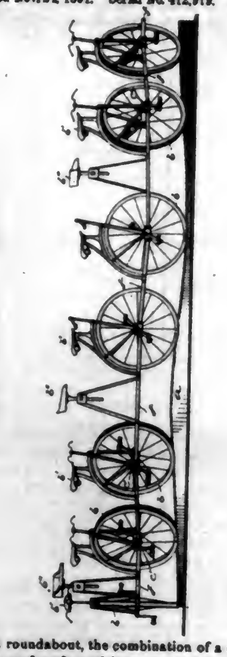
475,255. RHEOSTAT. WALTER A. STERLING, Denver, Colo., assignor of one-half to George H. Campbell, same place. Filed Nov. 6, 1891. Serial No. 411,107. (No model.)



Claim.—1. The combination, with an incandescent-electric-lamp circuit, of means interposed therein for controlling the brilliancy of the light, said means consisting of a vessel containing a suitable acid solution, said vessel consisting of a body composed of glass or other suitable non-conductor of the electric current, having a metallic top and bottom, a metal stem terminating at its bottom in a suitable metallic contact-plate and passing up through the top of the vessel, said stem being adjustable and the top of the vessel being provided with means for supporting the same in any desired position, the bottom of the vessel being provided with a leaf contact-spring, and the metallic top and bottom parts, each provided with a binding-post to which the circuit-wires respectively lead, substantially as described.

2. The combination, with an electric-lamp circuit, of a rheostat interposed therein and consisting of a liquid-containing vessel provided with two stationary metallic parts suitably insulated from each other and to which the circuit-wires respectively lead, a movable metallic plate located between these parts, a metal stem connected with said movable part and passing through one of the stationary metal parts with which it is electrically connected, the other stationary metal part being provided with a contact-spring, and a solution possessing a suitable degree of electrical conductivity, whereby as the metallic circuit is broken the power of the light is diminished by the increased resistance of the intervening liquid, substantially as described.

475,256. ROUNDABOUT. FRANK STUTZMAN, Williamsport, Pa., assignor of one-half to Bingham H. Coryell and John G. Coryell, same place. Filed Nov. 24, 1891. Serial No. 412,919. (No model.)



Claim.—In a roundabout, the combination of a continuous track having its bearing-surface formed into a series of gradual elevations and depressions, a series of grooved wheels running on this track and each having a projecting axle, operating-cranks secured on the extreme ends of the axle and provided with pedals, journal-boxes *d'*, embracing the axles between the cranks and the wheels and each being provided with a forwardly and a rearwardly projecting ear *d''*, pairs of disks *e* on the axle and embracing the boxes *d'* and holding them in place, anti-friction rollers inclosed in the boxes and journaled between each pair of disks, a flexible frame composed of curved bars *f*, arranged on each side of the wheels and connecting the ears *d''* of the boxes, and riding-seats supported over the wheels, substantially as described.

475,257. TEMPORARY HOLDER. JONAH A. THUGE, Chicago, Ill., assignor, by direct and mesne assignments, to Charles R. Hadley and William A. Vawter, same place. Filed July 21, 1891. Serial No. 400,249. (No model.)



Claim.—1. In a holder, the backs having a portion of their inner adjacent faces beveled along their rear portions, in combination with a spring-clamp bearing on the outer faces of the backs and movable transversely thereon, substantially as described.

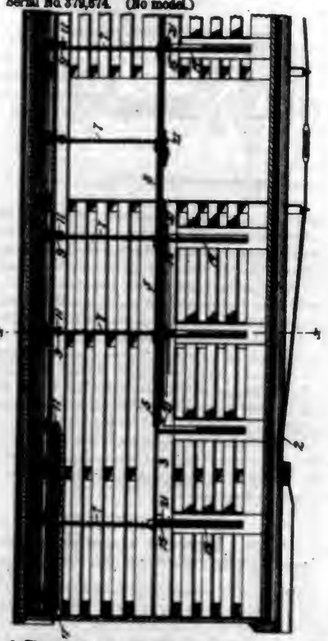
2. In a holder, the backs provided with enlarged apertures and having their inner adjacent faces beveled along their rear portions, in combination with pins located in said apertures, and a spring-clamp bearing on the outer faces of the backs and movable transversely, substantially as described.

3. In a holder, the backs provided on their outer faces with guide-plates and having a portion of their inner adjacent faces beveled along their rear portions, in combination with a spring-clamp bearing on said guides and movable transversely with relation to the backs, substantially as described.

4. In a holder, the backs provided on their outer faces with guide-plates having stops, said backs having their inner adjacent faces beveled along their rear portions, in combination with a spring-clamp bearing on said guide-plates, movable transversely of the backs and adapted to engage the stops at its outward limit of motion, substantially as described.

5. In a holder, the combination, with the backs having their inner adjacent faces beveled along their rear portions, of guide-plates C, secured on the outer faces of the backs and provided with lateral guide-flanges *c* and rear stop-flanges *c'*, and a spring-clamp having marginal flanges d^3 to fit between the guide-flanges *c* and engage the stop-flanges *c'*, substantially as described.

475,258. STOCK-CAR. CHARLES L. TRAVIS, Minneapolis, Minn., assignor to the Union Stock Car Company, same place. Filed Jan. 30, 1891. Serial No. 379,674. (No model.)



Claim.—1. The combination, with a suitable car, of transverse deck-sections, longitudinal rails upon the walls of the car supporting the end of said sections, suitable chains connected to said sections near one edge thereof and to the top of the car and of suitable length to support said sections when turned to an upright position, means for supporting the sections in a reversed horizontal position beneath the car-roof, and means for holding the sections in an upright position for dividing the car into suitable stalls or compartments.

2. The combination, with a suitable car provided with longitudinal supporting-rails upon its inner walls and a series of transverse deck-sections extending entirely across the car and arranged to be supported by said rails, of suitable chains connected to said sections near one edge thereof and detachably secured to suitable hooks in the top of the car, whereby the sections may be supported upon said rails or may be supported in an upright position against the lower portion of the walls of the car for the purpose of closing the openings between the slats.

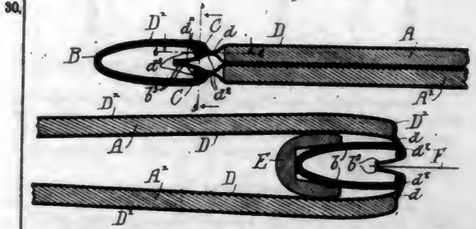
3. The combination, in a car, of the transverse deck-sections, supporting-chains secured near one edge of each section and to the upper part of the car, and means upon one section adjacent to the doorway of the car for supporting the free edge of the adjacent section, substantially as described.

4. The combination, with the car, of the transverse deck-sections, longitudinal deck-supporting rails provided with openings 15, communicating with recesses 19 upon the walls of the car and adapted to receive the sections when turned into a vertical position for the purpose of dividing the car into stalls or compartments.

5. The combination, with the car provided with the rails 3, having the openings 15 and 21, and the recesses 19, of the transverse deck-sections, and the chains 7, connected to said sections near one edge thereof, whereby the deck-sections may rest in a horizontal position upon said rails or to be placed in a vertical position with one section in the recesses 19 and the other section having its lower edge in the recesses 21, and means for securing the upper section, substantially as described.

6. The combination, with a suitable car provided with longitudinal supporting-rails upon its inner walls, of transverse deck-sections arranged upon said rails, chains secured to said sections, and adjustable hooks arranged above said sections and to which said chains are connected, and means for supporting the sections in a reversed horizontal position beneath the roof of the car, substantially as described.

475,259. TEMPORARY HOLDER. FREDERICK M. TURCK, Chicago, Ill., assignor, by direct and mesne assignments, to Charles R. Hadley and William A. Vawter, same place. Filed July 24, 1891. Serial No. 400,563. (No model.)



Claim.—1. In a temporary holder, the combination, with a spring-back having grooved margins cut away at intervals, of front and back boards connected by a piece of canvas or the like passing around the back and apertured or slit at intervals corresponding with those of the cut-away portions of the margins of the back to form loops, and rods located in said grooved margins of the back and passing through the loops of the connecting-piece, substantially as described.

2. In a temporary holder, the combination, with a spring-back having grooved margins cut away at intervals, of front and back boards connected by an outer piece of canvas or the like passing around the said back, an inner piece of canvas or the like also passing around the back secured to the front and back boards and apertured or slit at intervals corresponding with those of the cut-away portions of the margins of the back to form loops, and rods located in said grooved margins of the back and passing through the said loops, substantially as described.

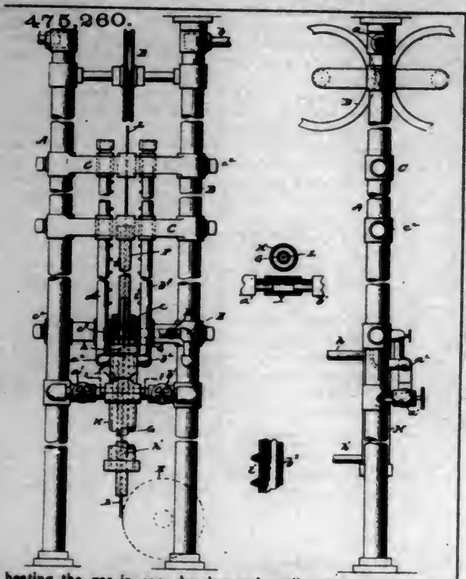
3. In a temporary holder, the combination, with the front and back boards, of a spring metallic back U-shaped in cross-section, having its longitudinal edges bent at intervals to extend reversely inward toward and to each other to form clamping-pieces, a piece of canvas or the like passing around the said front and back boards and the spring-back, and means, substantially as set forth, for holding said canvas in place, whereby said front and back boards and the said spring-back are joined together, substantially as described.

475,260. METHOD OF AND APPARATUS FOR DEOXIDIZING METALS. MONTGOMERY WADDELL and JOSHUA B. RUTZ, New York, and WILLIAM A. PHILLIPS, Brooklyn, N. Y. Filed Nov. 5, 1890. Serial No. 370,796. (No model.)

Claim.—1. In an apparatus for deoxidizing metals, the combination of two chambers communicating with each other and open at opposite ends, with a gas-inlet placed between the chambers and adapted to fill each chamber with gas, and means for heating the gas in one chamber and means for cooling the gas in the other, for the purpose set forth.

2. In an apparatus for deoxidizing metal, the combination of the chamber F, chamber G, said two chambers being in line with each other and open at the ends nearest each other, an intermediate gas-supply pipe K, leading to the space *e* between the chambers F and G, all arranged so that the gas from the space *e* is adapted to enter both chambers F and G to serve as an air-excluding medium, and means for

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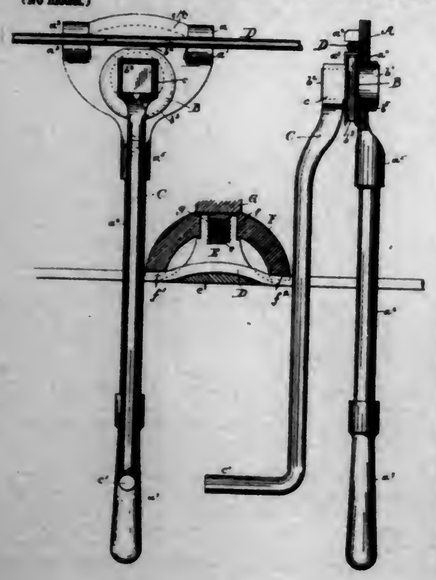


heating the gas in one chamber and cooling the gas in the other chamber, substantially as and for the purpose set forth.

3. The method of deoxidizing metal, which consists in exposing the same while in motion to a body of gas, cooling one portion and heating the other portion of said body of gas, and causing the two portions to pass in opposite directions in contact with the metal, substantially as described.

4. The combination of the chamber F and chamber G, intermediate space e, communicating with both said chambers, gas-pipe K, leading to said space e to direct a divided body of gas into each of the chambers F and G, with pipes a^3 and b^3 and gas-burners i thereon, arranged to heat the exterior of the chamber F and to heat the wire before it enters chamber F, and means for cooling the chamber G, substantially as herein shown and described.

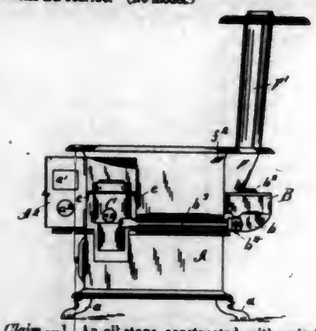
475,261. DEVICE FOR BENDING ELECTRIC TROLLEY-WIRES. HENRY D. WIRTON, Wellesley, Mass., assignor to the Hersey Manufacturing Company, Portland, Me. Filed Oct. 26, 1891. Serial No. 409,837. (No model.)



Claim.—1. As a new article of manufacture, a kinking-machine for trolley-wires, composed of a body portion provided with ears to span the wire and hold it in place, an eccentric cam having a bearing in the body portion in such relation to the wire that when it is turned it will engage with it and force it between the ears and cause a kink or bend in the wire suitable to receive a trolley-clamping ear, a handle forming part of the body portion to hold it in position upon the wire, and a wrench for turning the cam, substantially as and for the purpose set forth and described.

2. As a new article of manufacture, a kinking-machine for trolley-wires, composed of a body portion provided with ears to span the wire and hold it in place, an eccentric cam provided with a groove to conform to the wire and having a bearing in the body portion in such relation to the wire that when it is turned it will engage with it and force it between the ears and cause a kink or bend in the wire suitable to receive a trolley-clamping ear, a handle forming part of the body portion by which it may be held upon the suspended wire, and a wrench or handle forming part of the cam, whereby it may be turned in its bearing, substantially as and for the purpose set forth and described.

475,262. OIL-STOVE. CHARLES H. BOSOK, Jackson, Mich., assignor to the Central Oligas Stove Company, of Maine. Filed May 9, 1891. Serial No. 392,150. (No model.)



Claim.—1. An oil-stove constructed with suitable heating-passages, an internal chamber or chambers adapted to receive a removable burner or burners, an external detachable oil-tank, suitable burners connected with said oil-tank by a pipe having a rotatable connection, all constructed and arranged in such manner that the removal of the burners from the burner-chamber permits the detachment of the burners and oil-tank from the stove, substantially as described.

2. In an oil-stove, the combination of a suitable casing inclosing heating-passages, and an interior burner-chamber adapted to be closed with suitable doors, with a detachable oil tank and burner connected by a rotatable connection, whereby when said tank is attached to said casing said burner is adapted to be inclosed in said burner-chamber, substantially as described.

3. In an oil-stove, the combination of a casing inclosing heating-chambers, and a burner-chamber with a detachable oil-chamber permanently connected by flexible connections with a removable burner, substantially as described.

475,268. METHOD OF MAKING STOCKINGS. JOSEPH A. BURLINGS, Gilford, N. H. Filed Nov. 26, 1891. Serial No. 413,021. (No model.)

Claim.—1. The method of knitting a stocking, which consists in knitting in straight courses a foot-blank and attaching margins at the top of the heel and instep portions thereof, transferring said foot-blank on determined lines of transfer near the opposite ends thereof, raveling said attaching margins down to the determined lines of transfer, and knitting a leg onto said foot-blank in complete circular courses, substantially as set forth.

2. The method of knitting a stocking, which consists in knitting in straight courses two selvaged flat webs constituting the upper and lower foot portions, a seamless toe connecting said foot portions, a seamless heel connected to the lower foot portion, and attaching margins at the top of the heel and instep, transferring said foot portions on determined lines of transfer, raveling said attaching margins down to the lines of transfer, and knitting a leg onto said foot portions in complete circular courses, substantially as described.

3. The method of knitting a stocking, which consists in knitting in straight courses a foot-blank and attaching margins at the top of the heel and instep portions thereof, forming a loose course near the top of the instep, transferring said foot-blank on a determined line of transfer at the top of the heel and on the line of said course at the top

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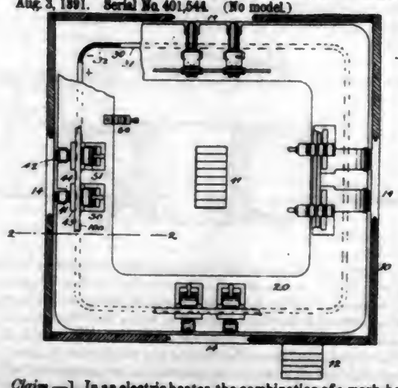


of the instep, raveling said attaching margins down to said determined lines of transfer, and knitting a leg onto said foot-blank in complete circular courses, substantially as set forth.

4. The method of knitting a stocking, which consists in knitting in straight courses a foot-blank and attaching margins at the top of the heel and instep portions thereof, forming loose courses in the fabric at the top of the heel and instep, transferring said foot-blank on the lines of said loose courses, raveling said attaching margins down to the determined line of transfer, and knitting a leg onto said foot-blank in complete circular courses, substantially as set forth.

5. The method of knitting a stocking, which consists in knitting in straight courses two selvaged flat webs constituting the upper and lower foot portions, a seamless toe connecting said portions, and a seamless heel connected to the lower foot portion, transferring said foot portions, and overlapping in the transfer the upper foot portion and rear heel portion, and knitting a leg onto said foot portions in complete circular courses, substantially as set forth.

475,264. ELECTRIC METAL-HEATER. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed Aug. 3, 1891. Serial No. 401,544. (No model.)

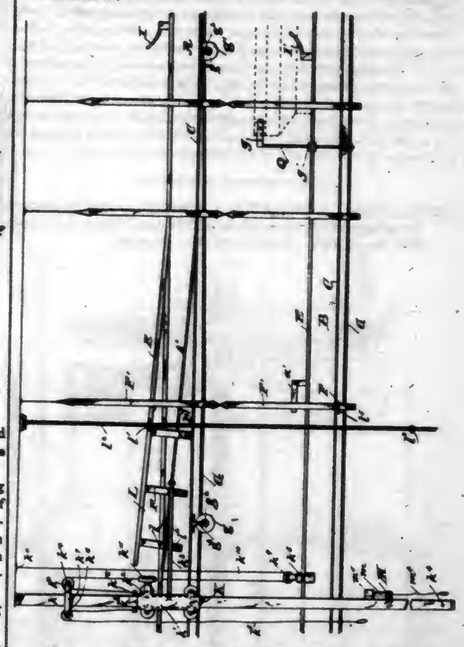


Claim.—1. In an electric heater, the combination of a work-bench, an endless electric converter disposed beneath said bench and having positive and negative rings for distributing the electric current, and a number of heaters proper connected with said rings and disposed over said bench.

2. In an electric heater, the combination of a current-converter having positive and negative rings, upwardly-extending brackets connected with said rings, and a work-holder connected with said brackets.

3. In an electric heater, the combination of an annular work-bench, an endless electric converter disposed adjacent to said work-bench, and means for utilizing the current induced in said converter, disposed at intervals over said bench and connected with said converter.

475,265. CASH AND PACKAGE CARRIER APPARATUS. DAVID R. CAMPBELL, Cincinnati, Ohio. Filed Apr. 2, 1891. Serial No. 387,456. (No model.)



Claim.—1. The combination, in a package and cash carrier apparatus, of a pair of tracks, a guide-rail, a station, an opening in the guide-rail at the station, a second opening in one of the tracks, a car traveling on the tracks, guided by the rails and adapted to tilt at the station, an inclined way at the station taking under one end of the car beyond the line of wheels on the tilting side thereof, a second inclined way for the other end of the car, broken away to allow the wheels on the tilting side thereof to pass, and a bracket between the tracks, forming a continuation of the second inclined way, constructed and arranged substantially as and for the purpose specified.

2. The combination, in a package and cash carrier apparatus, of a pair of tracks, a guide-rail, a station, an opening in the guide-rail at the station, a second opening in one of the tracks, a car traveling on the tracks, guided by the rail and adapted to tilt at the station, an inclined way at the station taking under one end of the car beyond the line of wheels on the tilting side thereof, a second inclined way for the other end of the car, broken away to allow the wheels on the tilting side thereof to pass, a bracket between the tracks, forming a continuation of the second inclined way, and rolls in the inclined ways, constructed and arranged substantially as and for the purpose specified.

3. The combination, in a package and cash carrier apparatus, of a pair of tracks, a guide-rail, a station, an opening in the guide-rail at the station, a second opening in one of the tracks, a car traveling on the tracks, guided by the rail and adapted to tilt at the station, an inclined way at the station taking under one end of the car beyond the line of wheels on the tilting side thereof, a second inclined way for the other end of the car, broken away to allow the wheels on the tilting side thereof to pass, a standard between the tracks, forming a continuation of the second inclined way, and guides adapted to direct the car in its descent on the inclined way, constructed and arranged substantially as and for the purpose specified.

4. The combination, in a package and cash carrier apparatus, of the tracks C C, the guide-rails E E, parallel therewith, a station on the line of tracks, an opening in one of the guide-rails E at such station, the depressions c^{11} c^{11} in one of the tracks, the car D, and inclined ways adapted to take under the car, substantially as and for the purpose specified.

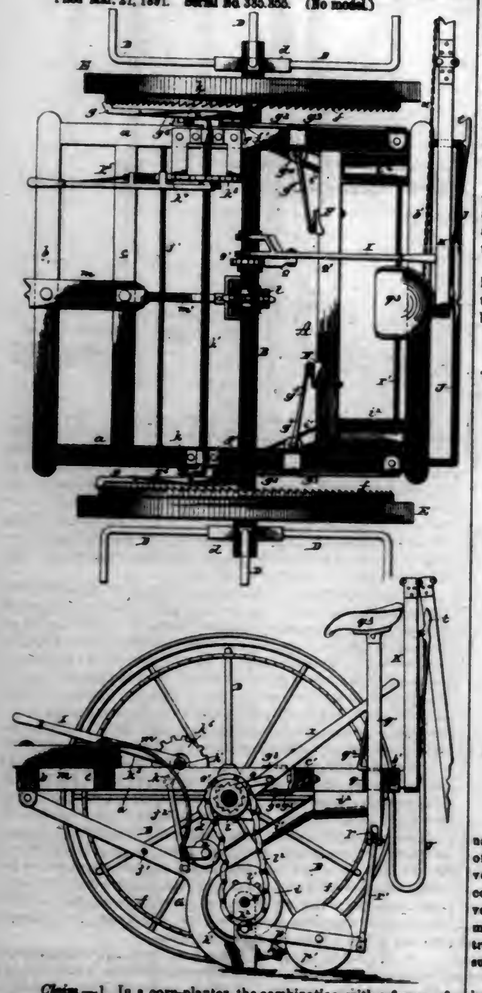
5. The combination, in a package and cash carrier apparatus, of

the track C C, the guide-rails E E, parallel therewith, a station on the line of tracks, an opening in one of the guide-rails at such station, a second opening in the track on the same side of the road, a car traveling on the tracks, the inclined ways O O′, the rolls *o*, the bracket o^3, and the roller o^2, mounted thereon, substantially as and for the purpose specified.

6. The combination, in a package and cash carrier apparatus, of a line of track, a car traveling thereon, the inclined ways O O′, extending from the line of track, the signal P, the battery *p*, connecting therewith, the contact-plate p^3, and the contact-arm p^2, adapted to be depressed by the car, thereby forming a connection through the battery and operating the signal, substantially as and for the purpose specified.

7. The combination, in a package and cash carrier apparatus, of the lever-arm A, attached to the car, the pair of levers A^2 A^3, the projection A^4, to which the levers are pivoted, the gripping-jaws A^5, adapted to clamp the cable, the lugs A^6, the slots A^7, in which the lugs are adapted to slide, and the spring A^8, adapted normally to close the gripping-jaws, substantially as and for the purpose specified.

475,266. CORN-PLANTER. BENTON DEARDORFF, Hagerstown, Ind., assignor of two-thirds to John H. Kidwell and William G. Mathews. Filed Mar. 21, 1891. Serial No. 385,855. (No model.)



Claim.—1. In a corn-planter, the combination, with a frame, of a hoe connected thereto, said hoe having a curved rear edge, ears projecting from said hoe, a feed-wheel having sockets therein mounted in said ears, means for supplying grain to said feed-wheel, and means for rotating said feed-wheel, substantially as set forth.

2. In a corn-planter, the combination, with a frame, an axle, and wheels thereon, of a series of markers secured to the ends of said axle, hoes connected to said frame, feeding-wheels carried by said hoes, and means for rotating said feeding-wheels, said feeding-wheels being provided with a series of sockets corresponding with the number of markers on the respective ends of the axle, substantially as set forth.

3. In a corn-planter, the combination, with a frame, an axle, and carrying wheels, of hoes connected to said frame, feeding-wheels carried by said hoes and having sockets for the reception and delivery of corn, a shaft connecting said feeding-wheels, and a sprocket-chain connecting said shaft and axle for communicating motion from one to the other, substantially as set forth.

4. In a corn-planter, the combination, with a frame, of hoes connected thereto, feeding-wheels carried by said hoes, and covering-wheels carried by said hoes in rear of the feeding-wheels, substantially as set forth.

5. In a corn-planter, the combination, with a frame, of hoes connected thereto, feeding-wheels carried by said hoes, frames detachably connected to said hoes, and covering-wheels carried by said detachable frames, substantially as set forth.

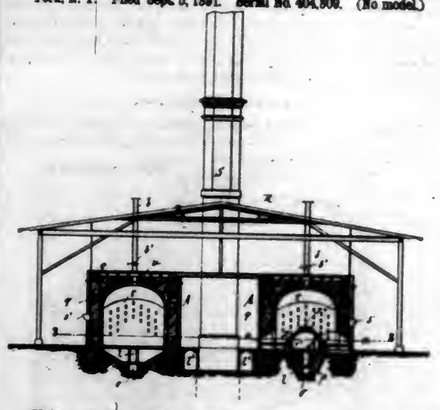
6. In a corn-planter, the combination, with a frame, of hoes connected thereto, covering-frames carried by said hoes, covering-wheels carried by said frames, a seat-post carrying a seat, an adjustable support for said seat-post, and a spring-rod connecting the truck-frames and adapted to bear against the seat-post, whereby the weight of the driver may be brought to bear on the covering-wheels, substantially as set forth.

7. The combination, with a corn-planter, of a gage pivoted at one end to the planter, said gage being made in sections and connected together by means of a pin capable of being easily broken, and a flexible connection by which the gage may be raised and lowered, substantially as and for the purpose set forth.

8. The combination, with the axle having a sprocket-wheel thereon, pivoted hoes, feed-wheels, sprocket-wheel connected with the latter, and a sprocket-chain passing around these sprocket-wheels, of a spring-arm having a roller thereon adapted to bear on the sprocket-chains to keep them taut, substantially as set forth.

9. The combination, with main frame, tongue, and axle, of hinged hoes, feed-wheels, sprocket-wheels, chain, and a spring-arm secured to the rear end of the tongue and provided with a roller adapted to bear on the sprocket-chain, substantially as set forth.

475,267. BRICK-KILN. ANTON DIMPFL, Munich, Germany, assignor to Amedee Poletti, West Hoboken, N. J., and Jacob Kohn, New York, N. Y. Filed Sept. 5, 1891. Serial No. 404,809. (No model.)

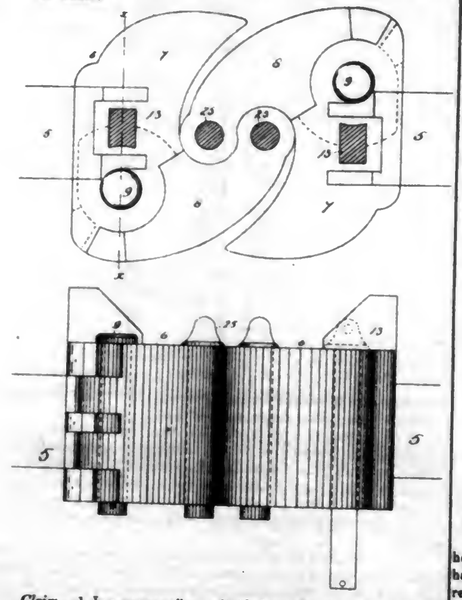


Claim.—1. In a kiln for burning artificial stoneware, the combination, with the combustion-chamber having fireplaces at each corner of the same, of a large fire-bridge connecting two end fireplaces, transverse perforated partitions extending above said fireplaces, air-flues communicating with the spaces below the grates and fire-places, transverse slotted openings in the floor of the combustion chamber, and a main flue for the products of combustion communicating with said transverse channels, said main flue being connected to the smoke-stack, substantially as set forth.

2. In a kiln for burning stoneware, the combination, with the combustion-chamber, of a fireplace arranged at each corner of the kiln, transverse fire-bridges between two end fireplaces, arched water-reservoirs in said fire-bridges, and outlet-pipes at the top of said arched bridges provided with spring-nozzles, substantially as set forth.

3. In a kiln for burning artificial stoneware, the combination, with the combustion-chamber of the kiln, of fireplaces arranged in each corner of the same, transverse fire-bridges connecting two end fireplaces, a water-reservoir arranged in said fire-bridges, supply-troughs located at the side wall of the kiln, connecting-pipes leading from said troughs to the interior of the reservoir, and outlet-pipes in the top part of the arched reservoirs provided with spray-nozzles for the steam, substantially as set forth.

475,268. CAR-COUPLING. CLAUDIUS A. DUER, Denver, Colo., assignor of three-sixths to William Smith, William A. C. McDonald, and Benjamin Griffith, same place. Filed Oct. 26, 1891. Serial No. 409,917. (No model.)



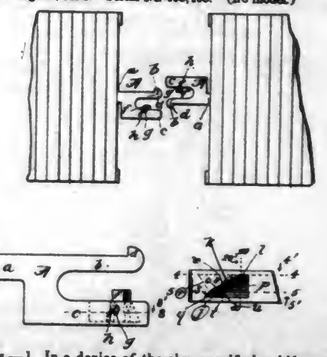
Claim.—1. In a car-coupling, a divided coupling-head consisting of a stationary part provided with a concave buffer-face and a laterally-movable hook-shaped jaw pivoted thereto in the rear of the buffer-face, said jaw being provided with vertical shoulders engaging corresponding shoulders formed on the stationary part and limiting the jaw's lateral movement in both directions, the body portion of the jaw having the same vertical depth as the stationary part of the head, the outer vertical shoulder of the stationary part being located in the rear of the hook's axis, whereby said jaw forms the entire side of the head in front of the outer vertical shoulder of the stationary part, substantially as described.

2. In a car-coupler, a divided coupling-head consisting of a stationary curve-faced buffer-head provided with a vertical opening located in the rear of the buffer-face, and outer and inner vertical shoulders, the outer shoulder being located in the rear of the vertical opening, and the hook-shaped coupling-jaw having arc-shaped tongues engaging counterpart recesses formed in the buffer-head, a vertical pin forming the axis of the jaw and passing through apertures formed in its tongues and coinciding with apertures formed in the adjacent parts of the buffer-head, the jaw being provided with vertical shoulders engaging the adjacent shoulders of the buffer-head, the body of the coupling-jaw having the same vertical depth as the buffer-head and forming the entire side of the coupling-head forward of the outer vertical shoulder of the buffer-head, and a shouldered locking-pin engaging the vertical opening in the buffer-head, its shoulder resting upon the upper tongue of the coupling-jaw when the latter is open or in the uncoupled position, while when the jaw is moved inward to the coupled position the shouldered part of the pin falls into recesses formed in the tongues of the jaw, locking the latter in place, substantially as described.

3. In a car-coupler, a divided coupling-head consisting of a stationary curve-faced buffer-head and an oscillating hook-shaped coupling-arm pivoted to the buffer-head in the rear of the buffer-face, the buffer-head being provided with an outer vertical shoulder located in the rear of the jaw's axis and adapted to engage a similar shoulder formed on the oscillating jaw, the body of said jaw having the same vertical depth as the buffer-head and forming the entire side of the coupling-head forward of the outer vertical shoulder of the buffer, substantially as described.

4. In a car-coupler, a divided coupling-head consisting of a curve-faced buffer provided with a vertical opening located in the rear of the buffer-face and in line with the longitudinal center of the draw-bar, the buffer having outer and inner vertical shoulders, the former being located in the rear and the latter forward of the vertical opening, and a horizontal oscillating coupling-jaw having two arc-shaped tongues provided with recesses vertically coinciding, the tongues being provided with apertures for the reception of a pin which passes through corresponding apertures formed in the buffer, said pin forming the axis of the coupling-jaw and located in a plane passed through the vertical opening in the buffer and parallel with the end of the car, and a shouldered locking-pin engaging the vertical opening in the buffer, its shoulder resting upon the upper tongue of the jaw when the latter is open, its shouldered part engaging the recesses in the tongues when the jaw is closed, the jaw having the same vertical depth as the buffer and forming the entire side of the head forward of its axis, the jaw being provided with shoulders engaging the vertical shoulders of the buffer, substantially as described.

475,269. CAR-COUPLING. WILLIS M. EDWARDS, Atlanta, Ga. Filed Aug. 22, 1891. Serial No. 403,465. (No model.)



Claim.—1. In a device of the class specified, a bifurcated draw-head, one arm carrying an outwardly-projecting barb and the other having an inwardly-opening recess, and a latch arranged to partially revolve therein and adapted when projected outwardly to engage said barb, substantially as and for the purpose specified.

2. In a device of the class specified, the bifurcated draw-head, one arm carrying an outwardly-projecting barb and the other having an inwardly-opening recess having sides *j*, *q*, *r*, and *s*, arranged as specified, and a latch adapted to fit said recess, substantially as and for the purpose specified.

3. In a device of the class specified, the bifurcated draw-head, one arm carrying a barb and the other having a recess therein, said recess having side *j*, side *q*, parallel thereto, and extension thereof, sides *s* and *t*, forming a series reversed in position from the series comprising the sides *j* and *q* aforesaid, and a block of rhomboidal form on its inner end, its outer end being also of rhomboidal form for a desired distance to fit the sides *s* and *t*, for the purpose specified.

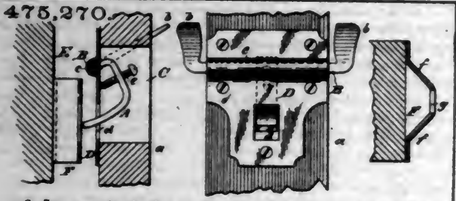
4. In a device of the class specified, a bifurcated draw-head, one arm carrying an outwardly-projecting barb and the other having an inwardly-opening recess, said recess being provided with means for holding the inner end of a gravity-latch when said latch is depressed and being provided with inclined sides *i* and *t*, forming by their incidence the inclined corner *u*, down which the latch may slide, and a latch, substantially as and for the purpose specified.

5. In a device of the class specified, the bifurcated draw-head, one arm thereof having a recess therein and being provided with a flange projecting downwardly partly over the mouth of said recess, said flange having an inclined lower edge, and a latch pivoted within said recess and projecting when depressed under said flange and the other arm of said draw-head carrying a barb adapted to engage the latch of the correlative draw-head, substantially as and for the purpose specified.

475,270. GATE-LATCH. CHARLES J. ERICSON, Salt Lake City, Utah. Filed July 25, 1891. Serial No. 400,686. (No model.)

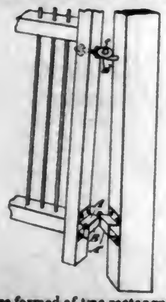
Claim.—1. In a gate-latch, the combination of the bar A, attached to or formed upon the rock-shaft B, bent rearwardly and downwardly and curved outwardly, the hand-lever *b*, attached to or formed upon the rock-shaft B, the apertured plate D, furnished with the hollow head *c*, supporting the rock-shaft, and the adjusting-screw *e*, inserted in the bar A and bearing against the inner face of the plate D, substantially as specified.

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2. In a gate-latch, the combination of the bar A, attached to or formed upon the rock-shaft B, bent rearwardly and downwardly and curved outwardly, the hand-levers *b*, attached to or formed upon the rock-shaft B, the apertured plate D, furnished with the hollow bead *c*, supporting the rock-shaft, the adjusting-screw *e*, inserted in the bar A and bearing against the inner face of the plate D, and the apertured offset-plate F, substantially as specified.

475,271. GATE-HINGE. CHARLES J. ERICSON, Salt Lake City, Utah. Filed July 30, 1891. Serial No. 401,118. (No model.)



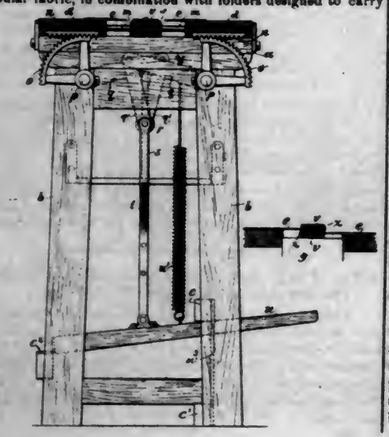
Claim.—1. A hinge formed of two rectangular tubular parts A A', formed alike and oppositely arranged with respect to each other and each provided at one end with a pair of perforated ears *a*, and a link B, pivoted between the ears, substantially as specified.

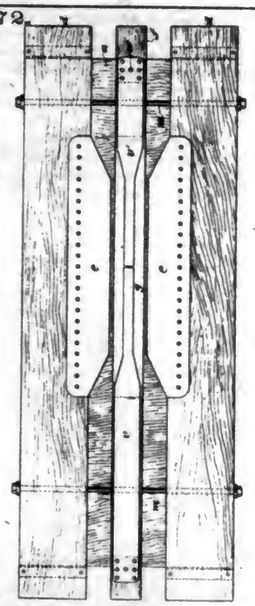
2. A hinge-blank consisting of a flat plate formed on its upper edge at opposite sides of its center with two apertured ears *a a*, projecting toward each other in the same plane with the plate, substantially as set forth.

3. A hinge consisting of two similar but oppositely-arranged parts A A', each formed of the blank C, bent twice at right angles, with its ends bent outwardly to form feet for attachment to the gate and gate-post, the link B, and pivotal rivets or bolts *b*, substantially as specified.

475,272. MACHINE FOR FOLDING TUBULAR FABRICS. WILLIAM B. ERSKINE, New York, N. Y., assignor to John Erstine & Co., same place. Filed Aug. 17, 1891. Serial No. 402,836. (No model.)

Claim.—1. In a machine for folding tubular fabrics, a shaper divided longitudinally into two adjacent plates adapted to be sprung apart from each other and serving as an internal support and guide for the tubular fabric, in combination with folders designed to carry





the folds of the fabric into the space between the plates of the shaper, substantially as and for the purpose set forth.

2. In a machine for folding tubular fabrics, the combination, with a frame or table having a longitudinal rib upon its upper face for supporting the work, of a detachable shaper divided longitudinally into two plates or portions and adapted to be inserted within and to support the tubular fabric, and movable folders adapted to form the fabric into folds within and around the divided shaper, substantially as set forth.

3. In a machine for folding tubular fabrics, the combination of a slotted shaper adapted to be inserted in the tubular fabric and to support the same, and reciprocating folders adapted to enter the slot of the shaper to form the material into folds, and a reciprocating heating-chamber adapted to be moved against and away from the shaper for pressing and ironing the fabric when folded, substantially as set forth.

4. In a machine for folding tubular fabrics, the combination of a slotted shaper adapted to be inserted in the tubular fabric and to support the same, a supporting-table, a longitudinal rib thereon to hold and support the shaper and provided with an opening near its middle portion to receive the heating-chamber, suitable folders reciprocating upon the said table upon opposite sides of the said rib and adapted to enter the slot of the shaper to form the material into folds, and a reciprocating heating-chamber adapted to be moved into the opening in the longitudinal rib and to form when in that position a continuation of the rib for giving complete support to the shaper, substantially as set forth.

5. In a machine for folding tubular fabrics, a two-part shaper composed of flexible material having broad outer ends and a narrow middle portion, each part slotted through a portion of its length, substantially as set forth.

6. In a machine for folding tubular fabrics, a removable slotted two-part shaper composed of flexible material having broad outer ends and a narrow middle portion, each part slotted through a portion of its length, in combination with a supporting-table and sliding folders thereon and means for operating said folders, substantially as set forth.

7. In a machine for folding tubular fabrics, a removable slotted two-part shaper composed of flexible material having broad outer ends and a narrow middle portion, each part slotted through a portion of its length, in combination with a table, a longitudinal rib thereon, supporting the removable shaper, suitable folders, sliding pieces carrying the folders, and means for operating said folders and sliding pieces, substantially as set forth.

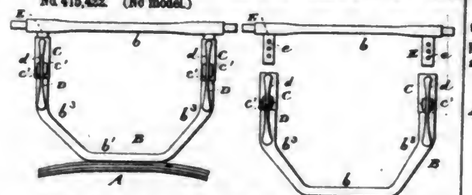
8. In a machine for folding tubular fabrics, a removable slotted two-part shaper composed of flexible material having broad outer ends and a narrow middle portion, each part slotted through a portion of its length, in combination with a table, a longitudinal rib thereon, supporting the removable shaper and provided with an opening near its middle portion to receive the heating-chamber, suitable folders, sliding pieces carrying the folders and means for operating the folders and

sliding pieces, and a reciprocating heating-chamber adapted to be moved into the opening in the longitudinal rib and to form when in that position a continuation of the rib for giving complete support to the shaper, and means for reciprocating the heating-chamber, substantially as set forth.

9. A machine for folding tubular fabrics, consisting of a suitable slotted shaper and the supporting-table, in combination with the folders *e e*, the sliding pieces *d d*, the racks *n n*, the segmental gears *o o*, the rock-shafts *p p*, arms *q q*, connecting-rods *q' q'*, sliding cross-head *r*, and guide *s*, bifurcated rod *t*, treadle *u*, and spring *u'*, substantially as set forth.

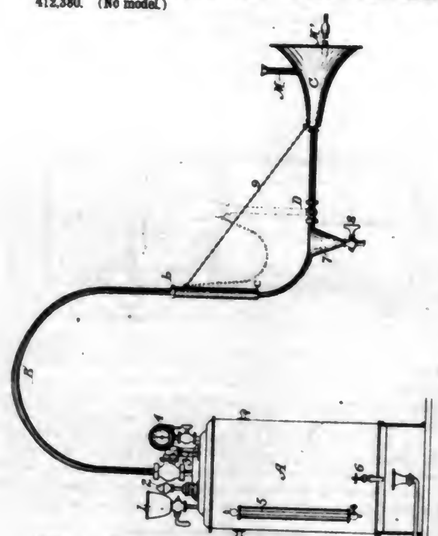
10. In a machine for folding tubular fabrics, the combination of the heating-chamber *g*, guides *i i*, arms *l l*, rocking frame *k*, rod *j'*, treadle *j*, and spring *j*^{3}, substantially as set forth.

475,278. ROAD-CART. JAMES FARREN, Roxbury, Conn., assignor of one-half to Robert T. Blades, same place. Filed Dec. 17, 1891. Serial No. 415,422. (No model.)



Claim.—The brace or side support of a dog-cart, consisting of the two sections *b b'*, the former having under each end a stud with several side holes and the latter provided with the sockets C C, with spring-detents, all substantially as shown and described.

475,274. COMBINED VAPORIZER, INHALER, AND ATOMIZER. WILLIAM G. FLANDERS, New York, N. Y. Filed Nov. 19, 1891. Serial No. 412,380. (No model.)



Claim.—1. The combination of a vapor-generator, an adjustable vapor-tube connected therewith, and a bell-mouth carried by the end of said tube, said tube being provided with a drain cup and cock, and said bell-mouth being provided with an internal diaphragm at its lower edge and with a drain-tube for the escape of the water of condensation from said tube and bell-mouth, substantially as shown and described.

2. The combination of a vapor-generator, a vapor-tube connected therewith, a bell-mouth carried at the end of said vapor-tube and adapted to cover the face of the person treated, a tube carried by said bell-mouth and opening to the external air, and a mouth-piece having a flexible connection with said tube, substantially as shown and described.

3. The combination of a vapor-generator, a vapor-tube connected therewith, a bell-mouth carried at the end of said tube, a cup fitted within said bell-mouth, and a hook carried by said cup and adapted to support a bag, substantially as shown and described.

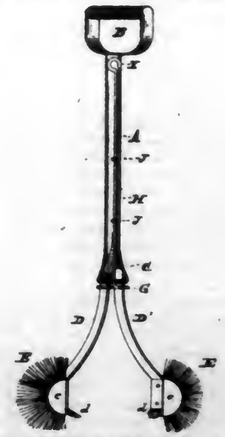
4. The combination of a vapor-generator, a vapor-tube carried therewith, a bell-mouth carried by the end of said tube, a diaphragm closing said bell-mouth and perforated at its lower edge, and a shield secured within the lower portion of said bell-mouth and to said diaphragm above its perforated portion, substantially as shown and described.

5. The combination of a vapor-generator, a vapor-tube connected therewith, a bell-mouth carrried at the end of said tube, a cup having a perforated end, and a perforated diaphragm adapted to engage with lugs on the inner surface of said bell-mouth and to retain said cup in position, substantially as shown and described.

6. The combination of a vapor-generator, a vapor-tube connected therewith, a cup fitted within the bell-mouth and having a perforated end or bottom, a flange secured within said bell-mouth and perforated at its lower edge, and a cover engaging said flange and closing the opening within the same, substantially as shown and described.

7. The combination of a vapor-generator, a vapor-tube connected therewith and jointed to permit movement in vertical and horizontal planes, and a bell-mouth carried by the end of said tube, substantially as shown and described.

475,275. COMBINED SPITTOON LIFTER AND CLEANER. ANDREW FULLER, Buffalo, N. Y. Filed July 25, 1891. Serial No. 400,670. (No model.)



Claim.—1. As an improved article of manufacture, a combined spittoon carrier and cleaner, consisting of a rod having a handle on its upper end and converging blade-springs on its lower extremity, brushes secured to the lower ends of said blade-springs, hooks formed on the extremities of said blade-springs, and suitable means for contracting said springs, as and for the purpose set forth.

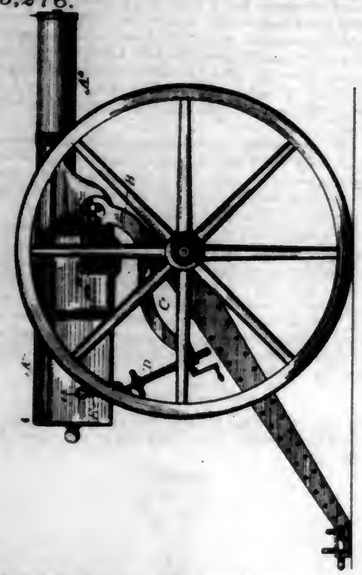
2. In a spittoon lifter and cleaner, the lower socket C, in combination with the handle-rod A, said socket terminating in the plate C', having the ribs *c c'* on each side and a pin centrally between said ribs, and the blade-springs D D', said blade-springs being clamped in position by the overlapping edges of the ribs, as and for the object stated.

475,276. MACHINE-GUN. FRANK M. GARLAND, New Haven, Conn. Filed Apr. 29, 1891. Serial No. 390,893. (No model.)

Claim.—1. In a machine-gun, in combination, a feed-chain connected with the driving-shaft, movable transversely of the gun, pushers normally in front of and adjacent to the feed-chain, connected with and adapted to be reciprocated across the path of the feed-chain by the driving-shaft for passing the cartridges rearward from the feed-chain into the path of lifting-chains, spoons *c* and *c'* for receiving the cartridges thus pushed, chains with carrying-arms back of the feed-chain, connected with and intermittently moved vertically by the driving-shaft for raising cartridges to the level of the barrels, and spindles bearing hammers and firing-pins connected with and reciprocated by the driving-shaft in line with the barrels, adapted to receive the cartridges from the lifting-chains, substantially as specified.

2. In a machine-gun, in combination, a feed-chain connected with the driving-shaft, movable transversely of the gun, pushers normally in front of and adjacent to the feed-chain, connected with and adapted to be reciprocated across the path of the feed-chain by the driving-shaft for passing the cartridges rearward from the feed-chain into the

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path of lifting-chains, spoons *c* and *c'* for receiving the cartridges thus pushed, chains with carrying-arms back of the feed-chains, connected with and intermittently moved vertically by the driving-shaft for raising the cartridges to the level of the barrels, aligners connected with and transversely moved by the driving-shaft on the level barrels adjacent to the lifting-chains for straightening the cartridges in line with the barrels, and spindles having hammers and firing-pins connected with and reciprocated by the driving-shaft in line with the barrels, adapted to receive the cartridges from the lifting-chains, substantially as specified.

3. In a machine-gun, in combination with a transversely-moving feed-chain connected with the driving-shaft and receiving-spoons back of said chain, pushers normally in front of and adjacent to the feed-chain, said pushers consisting of rods for passing the cartridges rearward from the feed-chain into the path of lifting-chains, the rods being borne by a slide supported by an independent slide connected with and reciprocated by the driving-shaft, substantially as specified.

4. In a machine-gun, in combination with a transversely-moving feed-chain connected with the driving-shaft and receiving-spoons back of said chain, pushers normally in front of and adjacent to the feed-chain, said pushers consisting of rods for passing the cartridges rearward from the feed-chain into the path of lifting-chains, the rods being borne by a slide supported by and independently movable in a slide that is reciprocated by a cam on the driving-shaft and bears a lever that is connected with the rod-slide, whereby an independent movement is given to this slide by the lever while carried by the main slide, substantially as specified.

5. In a machine-gun, in combination with a transversely-movable feed-chain connected with the driving-shaft and receiving-spoons back of said chain, pushers normally in front of and adjacent to the feed-chain, said pushers consisting of rods for passing the cartridges rearward from the feed-chain into the path of lifting-chains, the rods being borne by a slide supported by and independently movable in a slide that is reciprocated by a cam on the driving-shaft and bears a lever that at one end is in connection with the rod-slide, while its other end terminates between two posts projecting from the casing, whereby an independent movement is given to the rod-slide by the contact of the lever with the posts when carried by the main slide, substantially as specified.

6. In a machine-gun, in combination with a pair of lifting-chains connected with and moved vertically by the driving-shaft and a firing mechanism reciprocated by the driving-shaft in line with the barrels, a feed mechanism consisting of a pair of rolls bearing sprocket-teeth, a chain passing around the said rolls, a ratchet connected with one of the rolls and a pawl in contact with the ratchet, a slide for oscillating the pawl, and a cam for reciprocating the slide, said cam being revolved by the rotation of the driving-shaft, substantially as specified.

7. In a machine-gun, in combination with a transversely-moved feed-chain connected with the driving-shaft, lifting-chains with projecting arms back of the feed-chains, connected with and intermittently moved vertically by the driving-shaft, and pushers connected with and reciprocated by the driving-shaft, and a spoon in the rear of the feed-chain, connected with and oscillated by the driving-shaft from the path of a pusher into the path of a lifting-chain to carry a cartridge pushed from the feed-chain in one line to a lifting-chain in another line, substantially as specified.

8. In a machine-gun, in combination with a feed-chain and firing-spindles, lifting mechanism consisting of disks bearing chains upon each side of the barrels, ratchets secured to the disks, pawls in contact with the ratchets, a slide for oscillating the pawls, and a cam rotated by a crank for oscillating the slide, substantially as specified.

9. In a machine-gun, in combination with a feed-chain and firing-spindles, lifting mechanism consisting of disks bearing chains upon each side of the barrels, ratchets having oppositely-turned teeth secured to the disks, pawls in contact with the ratchets, levers connected with leaves bearing the pawls, a slide connected with the levers, and a cam rotated by the crank for oscillating the slide, substantially as specified.

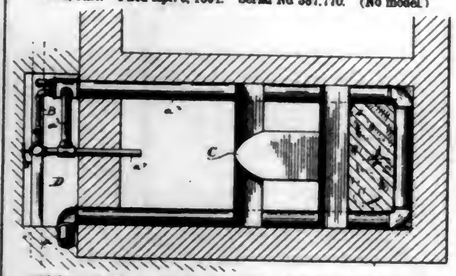
10. In a machine-gun, in combination with the lifting-chains and firing-spindles, aligners for delivering the cartridges from the lifting-chains to the firing spindles, and a reciprocating mechanism for alternately moving the aligners, substantially as specified.

11. In a machine-gun, in combination with the lifting-chains and firing-spindles, the aligners having legs fitting the ends of the cartridges for delivering the cartridges from the lifting-chains to the firing-spindles, levers connected with the slides, and cams rotated by the crank for oscillating the levers, substantially as specified.

12. In a machine-gun, in combination with the transversely-moving feeding and vertically-moving lifting mechanisms operated by the driving-shaft, reciprocating spindles bearing firing-pins, said spindles at the front end having a mortise-opening of a size to receive a cartridge-head, and reciprocating mechanism connected with the driving-shaft for moving the spindles, substantially as specified.

13. In a machine-gun, in combination with the transversely-moving feeding and vertically-moving lifting mechanisms operated by the driving-shaft, reciprocating spindles bearing firing-pins, and supporting-plates with hammers, pivoted levers having studs in the path of the hammers, and studs in the path of a cam rotated by the driving-shaft, substantially as specified.

475,277. HYDROCARBON-OIL BURNER. FRANK HAGELIN, Cleveland, Ohio. Filed Apr. 6, 1891. Serial No. 387,770. (No model.)



Claim.—1. The combination, with a furnace, of an injector having a hot-air blast-pipe and an oil-supply pipe, a deflector, and an air-passage each side of the same leading from the outside to the inside of said furnace and arranged to discharge therein an upward current of air each side of said deflector, substantially as described.

2. The combination of a furnace, an injector formed with a hot-air blast-pipe and an oil-supply pipe, a part of said air-pipe being located within and on each side of said furnace, and a deflector located in the back part of the furnace and having inclined sides at its front end and facing toward said injector, substantially as described.

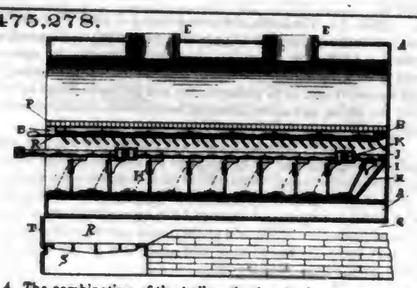
475,278. BITUMINOUS-ROCK-DISINTEGRATING STEAM-BOILER. ALFONSO HASKINS, ALBERT R. SCHULENBURG, and CHARLES T. CHADWICK, San Diego, Cal.; said Haskins assignor of one-eighth to Charles C. Loomis, same place. Filed Jan. 10, 1890. Renewed June 13, 1891. Again renewed Mar. 28, 1892. Serial No. 426,798. (No model.)

Claim.—1. A boiler for disintegrating bituminous rock, provided in its lower portion with a longitudinal series of vertically-disposed vibrating shovels, substantially as and for the purposes set forth.

2. The combination of the circular boiler and the series of vibrating shovels in the lower portion thereof, said shovels having convex lower edges, as set forth.

3. The combination of the boiler, the transverse rods therein, the longitudinal reciprocating bars having slotted portions engaging said rods, and the series of vibrating shovels carried by said longitudinal bars, as set forth.

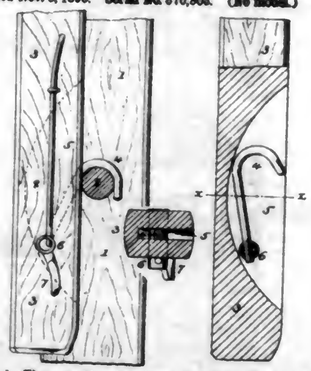
475,278.



4. The combination of the boiler, the longitudinal reciprocating bars mounted therein, the brackets secured to said bars and having vertical front faces, and the shovels pivoted to the front sides of said brackets, as set forth.

5. The combination of the boiler, the stationary grate-bars arranged transversely therein, the return steam-pipes arranged below the said grate-bars, the vibratory grate-bars below said pipes, and the series of vibratory shovels below the vibratory grate-bars, as set forth.

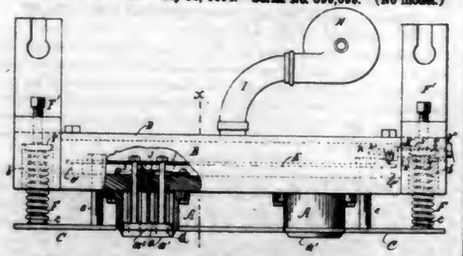
475,279. EXTENSION-LADDER. VICTOR HOLMQVIST, Chicago, Ill. Filed Nov. 8, 1890. Serial No. 370,903. (No model.)



Claim.—1. The combination, in an extension-ladder, of the adjustable ladder-section provided with a vertical closed-top recess in its side bar or stile and a holding hook located in said recess and having a cross-rod or trunnion by which it is pivoted in said side bar or stile, substantially as set forth.

2. The combination, in an extension-ladder, of the adjustable ladder-section provided with a vertical recess in its side bar or stile, a holding-hook pivotally arranged in said recess, a pivotal cross-rod or trunnion to which the shank of the holding-hook is secured, and a spring attached to the side of the ladder-stile, with its free end engaging a socket in the trunnion, substantially as set forth.

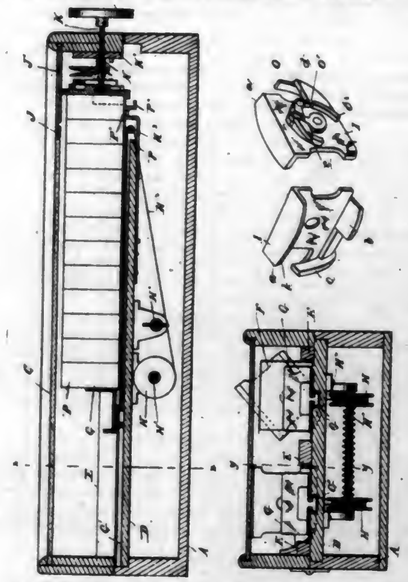
475,280. MACHINE FOR CUTTING AND SHAPING CRACKERS OR OTHER PLASTIC MATERIAL. EDMUND JORDAN, Brooklyn, assignor, by mesne assignments, to the Pneumatic Press Company, New York, N. Y. Filed July 16, 1891. Serial No. 399,699. (No model.)



Claim.—1. In a machine for shaping plastic material, the combination of a reciprocating cross-head or carrier, a cutter, shaper, or former composed of two sections, one of which cuts or defines the circumference of the articles to be shaped and is attached to said cross-head or carrier and the second section or clearer of which is movable independently of the cross-head or carrier, a stripper-plate operating independently of the main section of the cutter, shaper, or former and correspondingly to the second section or clearer of the cutter, shaper, or former, the said cross-head being provided with a chamber for air or other gas communicating with the cutter, shaper, or former, a valve controlling the communication of these parts, and a pin, whereby said valve will be forcibly opened, substantially as specified.

2. In a machine for shaping plastic material, the combination of a reciprocating cross-head or carrier, a cutter, shaper, or former composed of two sections, one of which cuts or defines the circumference of the articles to be shaped and is attached to said cross-head or carrier and the second section or clearer of which is movable independently of the cross-head or carrier, a stripper-plate operating independently of the main section of the cutter, shaper, or former and correspondingly to the second section or clearer of the cutter, shaper, or former, the said cross-head or carrier being provided with a chamber for air or other gas communicating with the cutter, shaper, or former, a valve controlling the communication of these parts, a pin whereby said valve will be forcibly opened, and a relief-valve which on the rising of the cross-head or carrier will be opened to reduce the pressure of gas in said chamber, substantially as specified.

475,281. VENDING-MACHINE. WILLIAM G. LATIMER, Detroit, Mich., assignor to the National Match Selling Machine Company, same place. Filed Aug. 29, 1891. Serial No. 404,047. (No model.)



Claim.—1. In a merchandise-vending apparatus, the combination, with a delivery-feed trough, of a chute registering therewith, means for actuating the chute, and a spring governed by the movement of the chute for forcibly ejecting the merchandise from and free of the apparatus and chute, substantially as described.

2. In a merchandise vending apparatus, the combination, with the casing having a coin and delivery opening therein, of a feed-trough arranged to receive a number of separate articles of merchandise, a delivery-chute registering therewith, means for actuating the delivery-chute, and a spring for forcibly and separately ejecting the merchandise through the delivery-opening free of the apparatus as the chute is actuated, substantially as described.

3. In a merchandise-vending apparatus, the combination of the casing having a delivery-opening therein, a delivery chute normally closing the opening, means for actuating the chute, a coin-receiver, a lock actuated by a coin in the receiver, and a spring compressed by the chute for forcibly ejecting the merchandise from and free of the chute and said delivery-opening, substantially as described.

4. In a merchandise-vending apparatus, the combination, with a casing having a delivery-opening therein, of a delivery-chute for normally closing the opening, a feed-trough with which the chute communicates, a shaft having a coin-receptacle thereon, a clutch connection between the coin-receptacle and chute, and a spring compressed by the movement of the chute and arranged to engage and forcibly

eject the merchandise on the chute through the delivery-opening, substantially as described.

5. In a merchandise-vending apparatus, the combination, with the casing having a delivery-opening therein, the mouth of which is presented upwardly, of a delivery-chute, means for actuating the chute upon the presence of a coin, and a spring for forcibly ejecting the merchandise from the chute through the delivery-opening upon the actuation of the chute, substantially as described.

6. In a merchandise-vending apparatus, the combination of the rotary delivery-chute, a lock therefor, an actuating-shaft adapted to release said lock through the medium of a coin, and mechanism to connect said shaft and chute upon the release of said lock, substantially as described

7. In a merchandise-vending apparatus, the combination of a throwing-out mechanism, the rotary delivery-chute comprising the plate I, having a flange *a*, forming the support for the package in its normal position, and the flange *b*, adapted to actuate the throwing-out mechanism, substantially as described.

8. The delivery-chute I, the shaft K, upon which it is journaled, the coin-holder M thereon, the hinged arm *e*, forming one member of a clutch and having the slotted bearing *e* on its inner face, and the lug *f* on the shaft adapted to engage in said bearing and forming the other member of the clutch, substantially as described.

9. In a merchandise-vending apparatus, the combination of the shaft K, the chute I, journaled thereon, the arm *e*, hinged thereto and having bearing *e*, and standard *g*, normally supporting said arm, and the lug *f*, adapted to engage in the bearing *a* in the rotation of the chute to couple the shaft and chute, substantially as described.

10. In a merchandise-vending apparatus, the combination, with a rotary chute, a feed-trough leading thereto, and a shaft on which the chute is loosely mounted, of a coin-receiver, a lock for the chute, actuated by a coin in the receiver, and a clutch between the chute and coin-receptacle, substantially as described.

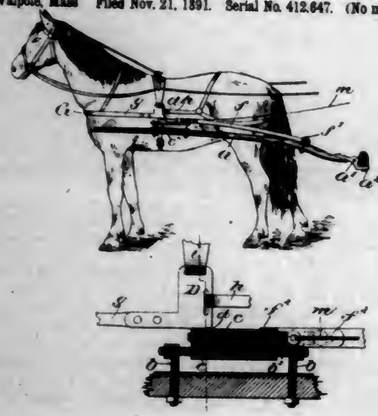
11. In a merchandise-vending apparatus, the combination of the rotary chute I, the curved arm thereon, the spring P, and the curved arm acting to strike said spring and put the same under tension and release it to throw the package from the casing when the chute is turned to its open position, substantially as described.

12. In a merchandise-vending apparatus, the combination, with the case having a delivery-opening therein normally closed, the mouth of which is presented upward, of a delivery-chute, means for opening the delivery-opening by the presence of a coin, and a spring for forcibly ejecting the merchandise from the chute and through the delivery-opening, substantially as described.

13. In a merchandise-vending apparatus, the combination, with the casing having a delivery-opening therein, and a storage-compartment for a quantity of separate articles of merchandise, of means for successively presenting the articles of merchandise to the opening, a spring for forcibly ejecting the articles through the opening and free of the apparatus, and means for compressing the spring, substantially as described.

14. In a merchandise-vending apparatus, the combination, with the casing having a storage-compartment for the merchandise and a delivery-opening therein, of a spring for forcibly ejecting the merchandise through the opening and free of the apparatus, means for compressing the spring, and a lock actuated by a coin for controlling the compressing movement of the spring-compressing means, substantially as described.

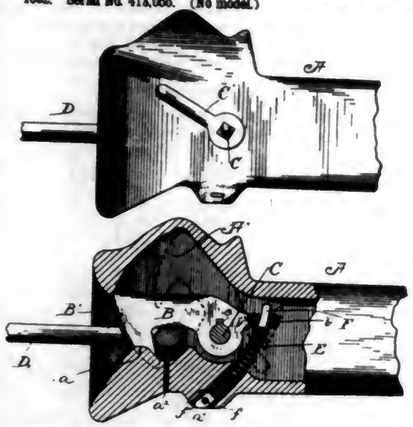
475,282. HARNESS ATTACHMENT. THOMAS S. MOODIE, South Walpole, Mass. Filed Nov. 21, 1891. Serial No. 412,647. (No model.)



Claim.—1. The shafts, the sliding sleeves *c*, offset from said shafts and permanently secured thereto and having the spring-controlled bolts *c*, a whiffletree, and independent tugs connecting the same with each of said sleeves, combined with plates detachably connected with said sleeves by said bolts, pulling-straps and pullback-straps connected with the plates, and a cord attached to said bolts, to operate substantially as described.

2. The shafts, the sliding sleeves *c*, permanently secured thereto and provided with the ear-guiding lips c^x, a recess in each sleeve and spring-controlled bolts *c* extended across said recess, a whiffletree, and independent tugs connecting the same with said sleeves, combined with plates having ears to enter said recesses and through which said bolts are passed to attach said plates to said sleeves, pulling-straps and pullback-straps connected with said plates, and a cord to move said bolts, substantially as described.

475,283. CAR-COUPLING. ROBERT T. MORRISON, Jr., Cleveland, Ohio, assignor of one-half to Dan P. Bells, same place. Filed Jan. 14, 1892. Serial No. 418,056. (No model.)



Claim.—1. In a car-coupling, the combination, with a closed draw-head constructed with a vertical and horizontal chamber opening into each other, the horizontal chamber being constructed with approaching rounded ridges at the top and bottom, said ridges adapted to form bearings for the link to support and prevent its rising above a certain point and prevent the hook from lateral movement and the vertical chamber extending above and below the bearings, of a hook pivoted in the cavity of the draw-head in position to be embraced at all times by the inner walls of the cavity, and a rod connected with the hook and having a spring thereon which bears on the hook so as to normally depress its free end, substantially as set forth.

2. In a draw-head, the combination, with an internal tilting hook having lateral axis and an upwardly-projecting arm or rod secured to the bottom wall of the draw-head, said tilting hook having a rearwardly-projecting arm, of a spring mounted on the first-mentioned arm or rod, said spring engaging the rearwardly-projecting arm of the hook and acting in the direction to depress the free end of the hook, substantially as set forth.

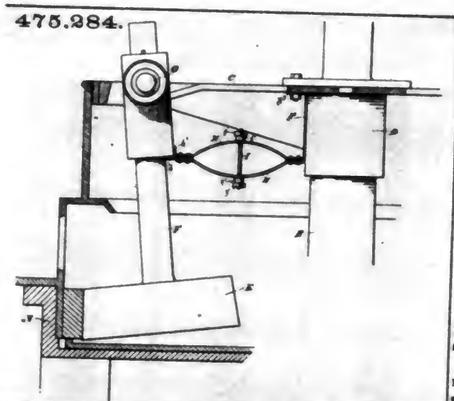
475,284. CRUSHING-MILL. CHARLES E. PHILBE, Stockton, Cal., assignor of one-half to James Jerome Smith, same place. Filed Dec. 1, 1891. Serial No. 413,706. (No model.)

Claim.—1. In a crushing-mill having centrifugally-swinging rollers and a central driving connection therefor, the horizontal springs for holding the rollers outwardly, consisting of the reversely-curved bowed separated leaves or members connected at their inner ends with the driving connection of the rollers and bearing at their outer ends on the suspending connections thereof, substantially as herein described.

2. In a crushing-mill having centrifugally-swinging rollers and a central driving connection therefor, the horizontal springs for holding the rollers outwardly, consisting of the reversely-bowed separated leaves or members connected at their inner ends with the driving connection of the rollers and bearing at their outer ends on the suspending connections thereof, and the transverse central bolt and nuts for regulating the tension of the spring, substantially as herein described.

3. In a crushing-mill having centrifugally-swinging rollers and a central driving connection therefor, the horizontally-disposed springs for holding the rollers outwardly, consisting of the connected reversely-

475,284.



bowed separated leaves or members connected at their inner ends with the driving connection of the rollers and bearing at their outer ends on the suspended connections thereof, the transverse central bolt having extended ends and nuts on said ends for regulating the tension of the spring, and the cushions on the ends of the bolt between the leaves of said springs and the nuts, substantially as herein described.

4. In a crushing-mill, the roller having the shaft and swinging sleeve-journal and the central drive-shaft and connected driver with sleeve-hub, in combination with the two-part or bowed spring having secured at its inner end the arm bearing on the sleeve-hub and bolted to the driver and at its outer end the straight lip bearing under the sleeve-journal and the upturned lip bearing against it, substantially as herein described.

5. In a crushing-mill, the roller having the shaft and swinging sleeve-journal and the central drive-shaft and connected driver with sleeve-hub, in combination with the two-part or bowed spring having secured at its inner end the arm bearing against the sleeve-hub and bolted to the driver and at its outer end the straight lip bearing under the sleeve-journal and the upturned lip bearing against it, and the transverse adjusting-bolt, with nuts for regulating the tension of the spring, substantially as herein described.

6. In a crushing-mill, the roller having the shaft and swinging sleeve-journal and the central drive-shaft and connected driver with sleeve-hub, in combination with the two-part or bowed spring having secured at its inner end the arm bearing against the sleeve-hub and bolted to the driver and at its outer end the straight lip bearing under the sleeve-journal and the upturned lip bearing against it, and the transverse adjusting-bolt, with nuts for regulating the tension of the spring, and the cushions on the bolt ends between the spring and the nuts, substantially as herein described.

475,285. FOUNTAIN ATTACHMENT FOR PENS. GEORGE W. PRICE, Baltimore, Md., assignor of one-half to William Albert, same place. Filed Nov. 19, 1891. Serial No. 412,404. (No model.)



Claim.—1. The combination, with a pen, of a hollow coil or spiral held in the concave face thereof and serving as an ink-reservoir, the free end of said spring being extended through the slot of the pen and looped on the back thereof, substantially as specified.

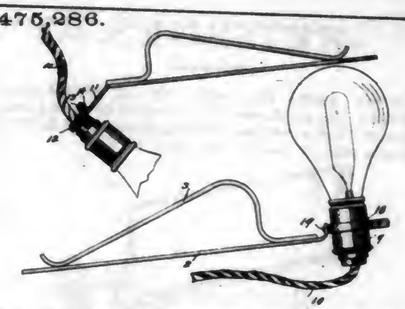
2. The fountain attachment for pens, comprising the wire having the hollow coil *a* and the spring-loop *b*, said loop being formed integral with the coil and adapted to pass through the slot of the pen, substantially as specified.

475,286. ELECTRIC-LAMP HOLDER. JOSEPH B. MOORE, Minneapolis, Minn. Filed Jan. 19, 1891. Serial No. 378,232. (No model.)

Claim.—1. The combination, in a device of the class described, of the plate 2 and the spring 3, with a portion swiveled upon the forward end of said plate, and means for securing the lamp thereto, said swivel and lamp adapted to rotate about the end of said plate, substantially as described.

2. The combination of the plate 2 and the spring 3, secured thereon, with the bent end of said plate provided with the apertured

475,286.

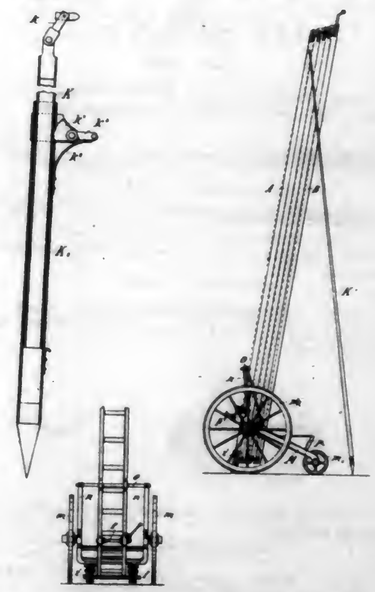


portion 12, pivoted thereon by the swivel-pin 14, substantially as described.

3. The combination, with the plate 2 and the spring, of the clamp-ring 18, swiveled thereon, said ring being provided with the feet 21, secured by the screw 22, substantially as described.

4. The combination, in a lamp-support adapted for use in connection with the plate 2 and the spring 3, of the mortised or slotted bracket 30, having the mortise or slot 31, the openings 33 in the back of the bracket, having the slot extensions 34, adapted to receive the shanks of the screws 32, secured in a permanent support, substantially as described, and for the purpose specified.

475,287. SLIDING LADDER. RICHARD EITNER, Vienna, Austria-Hungary, assignor to Hermann Eitbogen, Moritz Eitbogen, and Wilhelm Eitbogen, same place. Filed Aug. 19, 1889. Serial No. 321,269. (No model.)



Claim.—1. In ladders and ladder-scaffolding of the kind herein described, extensible stays attached to the uprights and consisting of telescopic tubes K K', whereby the said stay can be rendered stationary or fixed at any desired height by means of a sector *k'* with lever-arm for releasing same and attached to the exterior tube K', substantially as and for the purpose set forth and shown on the accompanying drawings.

2. In extensible single ladders of the kind herein described, a carriage consisting of a frame M with two large and two small wheels *m m'*, supporting two bearings *n*, carrying the axle *o*, on which the forward part A of the ladder turns, and a trestle *p*, which during transport is attached to the ladder, so that the small wheels *m'* are kept out of operation, substantially as and for the purpose set forth and shown on the accompanying drawings.

REISSUES.

11,289. DESIGN FOR A WICK-TUBE AND BURNER-PLATE. WILLIAM H. CLEMM, Cleveland, Ohio, assignor to the Taylor & Boggis Foundry Company, same place. Filed Apr. 19, 1892. Serial No. 429,985. Original No. 21,442, dated Mar. 29, 1892, for 14 years.



Claim.—A design for an oblong combined wick-tube and burner-plate, comprising the following outlines, viz: downwardly-diverging outlines for the sides of the oblong wick-tube and substantially horizontal outlines for the oblong burner-plate, substantially as set forth.

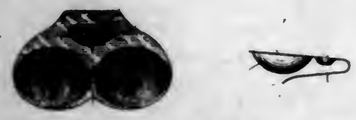
DESIGNS.

21,538. PENHOLDER. JOHN CRAWFORD, Brooklyn, N. Y. Filed Apr. 20, 1892. Serial No. 429,964. Term of patent 7 years.



Claim.—The design for a penholder, substantially as herein shown and described.

21,539. CONDIMENT-HOLDER FOR PLATES. FRANK C. GRIFFITH, Boston, Mass. Filed Nov. 4, 1890. Serial No. 370,354. Term of patent 3½ years.



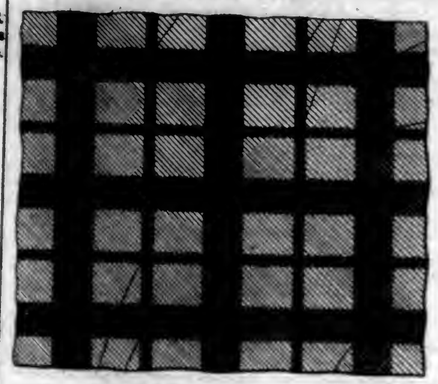
Claim.—The design for a condiment-holder for a plate, as herein shown and described.

21,540. SPOON. JACOB C. SCHMIDT, Reading, Pa. Filed Mar. 21, 1892. Serial No. 426,860. Term of patent 7 years.



Claim.—The design for a spoon, substantially as herein shown and described.

21,541. PRINTED FABRIC. CHARLES W. BROWN, Troy, N. H., assignor to L. C. Chase & Co., Boston, Mass. Filed Nov. 27, 1891. Serial No. 413,351. Term of patent 7 years.



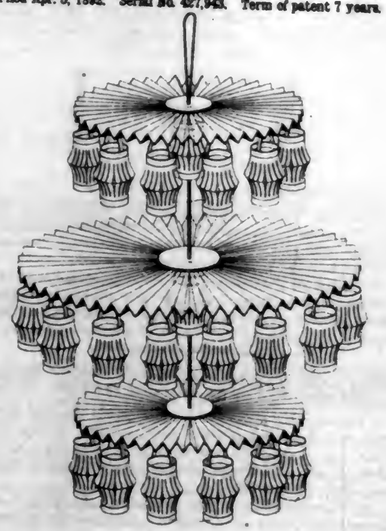
Claim.—The design for a printed fabric, as herein shown and described.

21,542. POCKET-BOOK. JOHN HENKEL, Hoboken, N. J., assignor to John Mehl & Co., New York, N. Y. Filed Mar. 17, 1892. Serial No. 425,359. Term of patent 7 years.



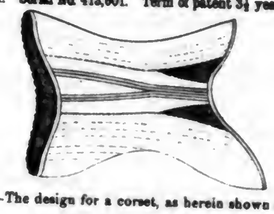
Claim.—The design for a pocket-book, substantially as shown and described.

21,543. CHANDELIER-PENDANT. MARY A. SMAIL, Dime, Pa. Filed Apr. 5, 1892. Serial No. 427,943. Term of patent 7 years.



Claim.—The design for a pendent ornament for chandeliers, as herein shown and described.

21,544. CORSET. SOLON BRYANT, Worcester, Mass. Filed Nov. 30, 1891. Serial No. 413,601. Term of patent 3½ years.



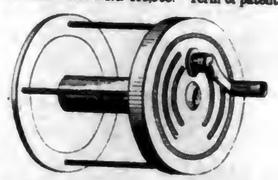
Claim.—The design for a corset, as herein shown and described.

21,545. ENGINE-FRAME. DANIEL BEST, San Leandro, Cal. Filed Apr. 13, 1892. Serial No. 429,053. Term of patent 14 years.



Claim.—The design for an engine bed and cylinder, substantially as herein described and shown.

21,546. FISHING-REEL. ANDREW B. HENDRYX, New Haven, Conn. Filed Jan 18, 1892. Serial No. 418,505. Term of patent 14 years.



Claim.—The design for the ornamentation of fishing-reels, as herein shown and described.

21,547. FUR TRIMMING. ALEXANDER HART, New York, N. Y. Filed Mar. 22, 1892. Serial No. 425,999. Term of patent 14 years.



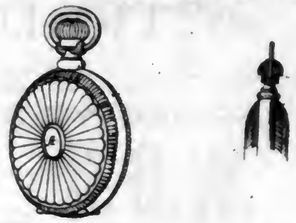
Claim.—The design for fur trimming, herein shown and described.

21,548. WATCH-CASE. JOHN C. DUEBER, Canton, Ohio. Filed Mar. 21, 1892. Serial No. 425,861. Term of patent 14 years.



Claim.—The design for a watch-case, herein shown and described.

21,549. WATCH-CASE. JOHN C. DUEBER, Canton, Ohio. Filed Mar. 21, 1892. Serial No. 425,862. Term of patent 14 years.



Claim.—The design for a watch-case, herein shown and described.

21,550. SPOON. JUSTUS VERSCHUUR, Jersey City, N. J. Filed Apr. 14, 1892. Serial No. 429,221. Term of patent 3½ years.



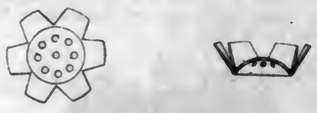
Claim.—The design for a spoon, herein shown and described.

21,551. RECTAL DILATOR. FRANK E. YOUNG, Canton, Ohio. Filed Apr. 20, 1892. Serial No. 429,955. Term of patent 7 years.



Claim.—The design for a rectal dilator, as herein shown and described, the same consisting of the smooth olive-shaped end portion A, the cylindrical body portion B, and the annular flange C, as set forth.

21,552. DIAPHRAGM FOR TOBACCO-PIPES. EMILE HOUTAIN, Brussels, Belgium. Filed Dec. 11, 1891. Serial No. 414,736. Term of patent 14 years. Patented in Belgium Nov. 21, 1890, No. 92,806; in France Apr. 7, 1891, No. 212,602, and in England Apr. 13, 1891, No. 6,807.



Claim.—The design for a diaphragm or separator for tobacco-pipes, substantially as herein described and shown.

TRADE-MARKS

REGISTERED MAY 17, 1892.

21,117. WATER FILTERS AND COOLERS. IMPROVED NATURAL STONE FILTER COMPANY, Newark, N. J., and New York, N. Y. Filed Apr. 9, 1892.



Essential feature.—The representation of an eagle with wings outspread and the words "STONE FILTER." Used since January 1, 1892.

21,118. DRESS-SHIELDS. THE CANFIELD RUBBER COMPANY, Bridgeport, Conn., and New York, N. Y. Filed Mar. 15, 1892.

SYSTEM CANFIELD

Essential feature.—The words "SYSTEM CANFIELD." Used since July 1, 1882.

21,119. DRESS-SHIELDS. THE CANFIELD RUBBER COMPANY, Bridgeport, Conn., and New York, N. Y. Filed Mar. 15, 1892.

Canfield

Essential feature.—The word "CANFIELD." Used since November 1, 1882.

21,120. DISHES AND PLATES. GEO. BORGFELDT & Co., New York, N. Y. Filed Apr. 13, 1892.



Essential feature.—A representation of the United States Government building at Chicago. Used since February 23, 1892.

21,121. DISHES AND PLATES. GEO. BORGFELDT & Co., New York, N. Y. Filed Apr. 13, 1892.



Essential feature.—A representation of the Electrical building at Chicago. Used since February 23, 1892.

21,122. DISHES AND PLATES. GEO. BORGFELDT & Co., New York, N. Y. Filed Apr. 13, 1892.



Essential feature.—A representation of the Agricultural building at Chicago. Used since February 23, 1892.

21,123. DISHES AND PLATES. GEO. BORGFELDT & Co., New York, N. Y. Filed Apr. 13, 1892.



Essential feature.—A representation of the Administration building at Chicago. Used since February 23, 1892.

21,124. DISHES AND PLATES. GEO. BORGFELDT & Co., New York, N. Y. Filed Apr. 13, 1892.



Essential feature.—A representation of the Machinery building at Chicago. Used since February 23, 1892.

21,125. DISHES AND PLATES. GEO. BORGFELDT & Co., New York, N. Y. Filed Apr. 13, 1892.



Essential feature.—A representation of the Horticultural building at Chicago. Used since February 23, 1892.

21,126. CHILDREN'S SCHOOL-SHOES. CARLETON & HUCKINS, Danvers, Mass. Filed Mar. 26, 1892.

OAK-- --KNOLL

Essential feature.—The words "OAK KNOLL." Used since September 1, 1891.

21,127. EXTRACT OR COLORING MATERIAL FOR PASTRY. THE CONFECTIONERS' VEGETABLE COLOURS AND FRUIT ESSENCES COMPANY, Limited, London, England. Filed Dec. 1, 1891.

YOLKINE

Essential feature.—The word "YOLKINE." Used since March 17, 1890.

21,128. COMPOUND FOR REMOVING GREASE-SPOTS AND STAINS FROM FABRICS, WOOD, GLASS, OR MARBLE. LEWIS B. SUTTON, New Canaan, Conn. Filed Apr. 13, 1892.

SPOTINE

Essential feature.—The word "SPOTINE." Used since October 1, 1891.

21,129. WASH-BLUE IN BALLS. THE HELLER & MERZ COMPANY, New York, N. Y., and Newark, N. J. Filed Apr. 13, 1892.



Essential feature.—The representation of an eagle on a ball. Used since June, 1870.

21,130. SHOE-DRESSING. THE HELLER & MERZ COMPANY, New York, N. Y., and Newark, N. J. Filed Apr. 13, 1892.



Essential feature.—The word "OUR" and the representation of a negro girl. Used since February 26, 1892.

21,131. PAPER SHOT-SHELLS. VON LENGERKE & DETMOLD, New York, N. Y. Filed Apr. 19, 1892.

LIGHTNING

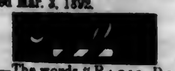
Essential feature.—The word "LIGHTNING." Used since March 1, 1892.

21,132. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Jan. 25, 1892.

Royal Vellum.

Essential feature.—The words "ROYAL VELLUM." Used since January 1, 1892.

21,133. MEN'S SHIRTS. BURT SHIRT MANUFACTURING Co., Poughkeepsie, N. Y. Filed Mar. 3, 1892.



Essential feature.—The words "PARIS DRESS" and the representation of a striped bar. Used since October 1, 1887.

21,134. SHOES AND SHOE-LASTS. HEYWOOD BOOT AND SHOE COMPANY, Worcester, Mass. Filed Apr. 18, 1892.

BUNION

Essential feature.—The word "BUNION." Used since April 1, 1892.

21,135. CIGARS. SAMUEL ARNSTEIN, New York, N. Y. Filed Apr. 22, 1892.

Lakewood Bouquet

Essential feature.—The words "LAKEWOOD BOUQUET." Used since April 2, 1892.

21,136. STOVE-POLISH. JOHN D. BUTZ, Wilkes-Barré, Pa. Filed Apr. 14, 1892.



Essential feature.—The representation of a dog carrying a basket in his mouth. Used since March 10, 1892.

21,137. CIGARS. CHARLES S. FINE, Salamanca, N. Y. Filed Apr. 18, 1892.

H. O. W.

Essential feature.—The letters "H. O. W." Used since July 15, 1886.

21,138. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Mar. 26, 1892.

BANK NOTE BOND

Essential feature.—The words "BANK NOTE BOND." Used since January 1, 1892.

21,139. SUGAR, SIRUP, AND MOLASSES. STRAMBERG & JARDER, Chicago, Ill. Filed Apr. 21, 1892.

CHAMPION AMERICAN



Essential feature.—The words "CHAMPION AMERICAN," and a representation of two female heads. Used since January, 1891.

21,140. WHISKY. EDWARD Nelson MONROE, Uniontville, Mo., and Lexington, Ky. Filed Apr. 21, 1892.



Essential feature.—The letters "E N M" arranged in monogram. Used since July 1, 1891.

21,141. DYE-STUFFS FOR DYEING TEXTILE FABRICS. AUGUST W. NEUMANN, New York, N. Y. Filed Apr. 14, 1892.

Eagle



Essential feature.—The word "EAGLE" and the representation of an eagle. Used since March 25, 1892.

21,142. PERFUMERY. WINKELMANN & BROWN DRUG COMPANY, Baltimore, Md. Filed Mar. 21, 1892.

JAPONITA

Essential feature.—The word "JAPONITA." Used since January 14, 1892.

21,143. PAINTS, STAINS, AND VARNISHES. WOLFF & RANDOLPH, Philadelphia, Pa. Filed Apr. 18, 1892.

PIK-RON

Essential feature.—The word "PIK-RON." Used since November, 1889.

21,144. CANNED OYSTERS, FRUITS, AND VEGETABLES. HENRY J. MCGRATH, Baltimore, Md. Filed Mar. 22, 1892.

WHITE SWAN



Essential feature.—The representation of a white swan and the words "WHITE SWAN." Used since 1887.

21,145. LINEN THREAD. FIELAYSON, BOOSFIELD & Co., Johnstone, Scotland, and Grafton and Boston, Mass. Filed Apr. 23, 1892.

EPPLER

Essential feature.—The word "EPPLER." Used since June 1, 1891.

21,146. ETHYL NITRITE. MEYER BROTHERS DRUG COMPANY, St. Louis and Kansas City, Mo., and Dallas, Tex. Filed Mar. 14, 1892.

COLUMBIA CHEMICAL CO.

Essential feature.—The words "COLUMBIA CHEMICAL COMPANY." Used since July, 1887.

21,147. GLOVES AND MITTENS. J. I. MCMARTIN'S SONS, Johnstown, N. Y. Filed Apr. 23, 1892.

M

Essential feature.—The representation of a diamond figure inclosing the letter "M." Used since 1886.

21,148. TRIPLE EXTRACTS. THE ESTATE OF DANIEL STEWART, Indianapolis, Ind. Filed Apr. 14, 1892.

SYLVAN LILY

Essential feature.—The words "SYLVAN LILY." Used since October 1, 1891.

21,149. TRIPLE EXTRACTS. THE ESTATE OF DANIEL STEWART, Indianapolis, Ind. Filed Apr. 14, 1892.

MOLLY BAWN.

Essential feature.—The words "MOLLY BAWN." Used since October 1, 1891.

21,150. REMEDY FOR ASTHMA, HAY FEVER, BRONCHITIS, CROUP, AND NASAL CATARRH. CAPITAL DRUG COMPANY, Augusta, Me. Filed Apr. 9, 1892.

ASTHMA CONES

Essential feature.—The words "ASTHMA CONES" and the representation of a sprig of pine containing four bunches of needle-shaped leaves and three pine-cones. Used since December 31, 1891.

21,151. LIQUID CEMENT. C. L. HAUTHAWAY & SONS, Boston, Mass. Filed Apr. 23, 1892.

FLINTSTONE

Essential feature.—The word "FLINTSTONE." Used since March 28, 1892.

21,152. OIL FOR TOILET AND MEDICINAL USE BY EXTERNAL APPLICATION. SYLVAN TOILET CO., Port Huron, Mich. Filed Apr. 11, 1892.

MASSAGEO

Essential feature.—The word "MASSAGEO." Used since February 1, 1892.

21,153. HARVESTERS AND HARVESTER-BINDERS. THE WALTER A. WOOD HARVESTER COMPANY, St. Paul and Minneapolis, Minn. Filed Apr. 25, 1892.

MINNIE

Essential feature.—The word "MINNIE." Used since April, 1881.

21,154. ART LITHOGRAPHS. THE ART LITHOGRAPHIC PUBLISHING COMPANY, Munich, Bavaria, Germany. Filed Apr. 23, 1892.



Essential feature.—The representation of a diadem. Used since February 15, 1892.

21,155. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

ROYAL WHITE

Essential feature.—The words "ROYAL WHITE." Used since January 1, 1892.

21,156. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

ROYAL CREAM

Essential feature.—The words "ROYAL CREAM." Used since January 1, 1892.

21,157. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

RUSSIAN BLUE

Essential feature.—The words "RUSSIAN BLUE." Used since January 1, 1892.

21,158. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

ROYAL BROWN

Essential feature.—The words "ROYAL BROWN." Used since January 1, 1892.

21,159. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

ROYAL ROSE

Essential feature.—The words "ROYAL ROSE." Used since January 1, 1892.

21,160. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

ROYAL RED

Essential feature.—The words "ROYAL RED." Used since January 1, 1892.

21,161. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

ROYAL GRAY

Essential feature.—The words "ROYAL GRAY." Used since January 1, 1892.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

SCRIBNER AND WARNER *v.* CHILDS *v.* BALSLEY.

Decided April 29, 1892.

1. PRACTICE—RULE 122—TIME WITHIN WHICH A MOTION TO DISSOLVE INTERFERENCE SHOULD BE MADE.
The twenty days within which, under Rule 122, a motion to dissolve an interference for certain specified causes should be made runs from the day when the original preliminary statements are received and approved, and a subsequent amendment of a preliminary statement does not of itself operate to extend this time.

2. SAME—TRANSMISSION OF MOTION TO PRIMARY EXAMINER.
The transmission of such a motion to the Primary Examiner is discretionary with the Examiner of Interferences.

APPEAL on motion.

TELEPHONE APPARATUS.

Application of Charles E. Scribner and Ernest P. Warner filed February 7, 1890, No. 339,599. Application of William A. Childs filed May 3, 1889, No. 309,458. Application of Upton H. Balsley filed April 29, 1889, No. 308,904.

Mr. George P. Barton for Scribner and Warner.
Mr. W. J. Johnston and *Mr. William A. Rosenbaum* for Childs.
Mr. R. M. Hunter and *Mr. E. H. Hunter* for Balsley.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Examiner of Interferences refusing to transmit to the Primary Examiner a motion to dissolve this interference upon grounds stated in the motion, as follows:

First. That there has been such irregularity in declaring the interference as will preclude a proper determination of the question of priority.
Second. Because the issues involved are uncertain and indefinite and do not properly describe the invention in controversy.
Third. Because no interference in fact exists between the party Childs and the other parties.
Fourth. Because the issues are not patentable.
Fifth. Because the party Childs has no right to make the claims in interference.

That part of the rule which is pertinent to be considered in this connection is the following:

122. Motions to dissolve an interference upon the ground that no interference in fact exists, or that there has been such irregularity in declaring the same as will preclude a proper determination of the question of priority, or which deny the patentability of an applicant's claim, or his right to make the claim, should, if possible, be made not later than the twentieth day after the statements of the parties have been received and approved. Such motions, when in proper form, will be transmitted by the Examiner of Interferences, with the files and papers, to the proper Primary Examiner for his determination.

The statements of the parties to which this rule refers were received prior to and approved January 9, 1892. Then testimony was taken in behalf of one of the parties. An amendment to Childs's preliminary statement was allowed by the Examiner of Interferences on the 29th of March, 1892. This motion was filed April 8, 1892.

Two points are urged in Balsley's behalf. One is that the motion to dissolve being regular in form, the Examiner of Interferences has no discretion as to whether he shall transmit the same to the Primary Examiner, and that it is his duty to so transmit the motion, whether or not the twenty days mentioned in the rule have elapsed. The negative of this proposition is well settled in the practice of the Office. (See *Adams v. House and House, Jr.*, 40 MS. Dec. 226; *Reynolds v. Haberman*, C. D., 1889, 195.) The other point urged is that the twenty days in question run from the date of the amendment to the preliminary statement and that this motion was made within such twenty days. If that proposition be sound and applicable to some possible case, it is not so in the present case. It would be productive of inconvenience, expense, and delay in a high degree to hold that an amendment of a preliminary statement in all cases puts the parties back to the point where the motions contemplated in Rule 122 can be made as a matter of right. The time specified in the rule within which the motions contemplated by Rule 122 must be made has no special relation to the filing of the preliminary statements. The time allowed would logically begin to run from the first declaration of interference, for it can only be on rare occasions that any disclosure made in the preliminary statements can have any bearing on the allowance or denial of those motions. The filing of the preliminary statements is only considered within the time limit out of abundant caution and because they might possibly in some rare and exceptional case have some bearing on the allowance or denial of the motions. The discretion vested in the Examiner of Interferences attaches at the expiration of twenty days from and after the day when the original preliminary statements are received and approved.

The real ground which Balsley urges in argument is that the amendment which Childs has made to his preliminary statement shows that he gives a different meaning to the interference issue from that given it by Balsley. The view which Childs may take of the meaning of the interference issue is a matter which chiefly concerns Childs. The Office will determine that matter for itself. It furnishes no ground for dissolution of the interference.

The appeal is dismissed.

EX PARTE GALLATIN.

Decided May 3, 1892.

PRACTICE—QUESTIONS OVER WHICH THE COMMISSIONER HAS NO JURISDICTION.

The Commissioner of Patents has no judicial authority to take action in disputed questions of title under an assignment, nor is it ordinarily within his discretion to interfere to prevent the revocation of a power of attorney by an applicant.

IN the matter of the protest of D. B. Gallatin against the revocation of his power of attorney by H. C. Stewart.

Application for patent for electric vehicles, Serial No. 418,349.

SIMONDS, *Commissioner:*

This is a protest against permitting an applicant for patent to revoke a certain power of attorney, the letter presenting the protest being as follows:

Hon. Commissioner of Patents:

Sir: I am just in receipt of a communication from the Chief Clerk of your Office informing me of the revocation of my power of attorney in the matter of the application of H. C. Stewart, electric vehicles, filed ——, Serial No. 418,349.

I hereby protest against such revocation and request your Honor not to recognize or permit the same, and in support of this request submit the following statement of facts: Under and by virtue of an agreement entered into on the 8th day of December, 1891, (submitted herewith,) between Mr. Stewart, B. W. Lacy, and myself, he, the said Stewart, agreed, in consideration of certain specified services to be rendered by the said Lacy and myself, to give us each an equal interest with himself in the said invention. Relying upon this agreement, as well as upon verbal promises made by the said Stewart, I prepared the application above referred to and prosecuted the same to an allowance.

Notwithstanding his agreements, written and verbal, the said Stewart has assigned to one Dexter, of this city, an undivided one-half (½) interest, without consulting with the said Lacy or myself and without accounting to us or either of us for any part of the interest so disposed of.

I have never received one cent as compensation for my services in the matter, and in order that my interests under the agreement may be protected I file this protest and request.

The agreement on which the protest is based is as follows:

Agreed this 8th December, 1891, between Capt. Hal C. Stewart, D. B. Gallatin, and B. W. Lacy, all of Washington, D. C., as follows: Capt. H. C. Stewart, being the inventor of an "Electric Tricycle," not yet patented, desiring to secure the services of said Gallatin and Lacy, hereby enters into agreement with them to the following effect, to wit:

Said Gallatin to draw all necessary drafts and specifications for obtaining Letters Patent and to render all mechanical work and service which he can in the premises, and said Lacy to render all necessary professional service he may be called on to perform and to further the enterprise of building and putting on the market said tricycles in all reasonable ways. Said Stewart to provide means for defraying expenses for constructing a sample bicycle, and all profits arising from said invention shall be divided share and share alike between the parties hereto.

(Signed) HAL CLAY STEWART.
D. B. GALLATIN.
B. W. LACY.

It is further understood and agreed that if Capt. Stewart is obliged to surrender a portion of his interest in said invention to defray expenses necessary to carry through the enterprise contemplated in the within agreement, that said Gallatin and Lacy shall share in said surrender so that the interest of the parties hereto shall be and remain equalized—*i. e.*, each to have the same interest.

(Signed) HAL CLAY STEWART.
D. B. GALLATIN.
B. W. LACY.

This is only a sample of the kind of communication that is made to this Office with considerable frequency, the object of which in each case is to induce this Office to adjudicate upon the private rights of the parties concerned. It does not appear on the surface of things that this Office has judicial functions as to such private rights. It is true that the Commissioner of Patents may sometimes with propriety so act as to prevent the commission of a perfectly palpable and outrageous fraud; but such action must of necessity be an exception to his general rule of conduct and be warranted by the executive discretion which the law reposes in him. All that large class of questions which pertains to the ownership of an invention or a patent is for the courts to settle. It is not even mandatory on the Commissioner of Patents to issue a patent to the assignee of an inventor. The statute is merely permissive in that regard. Under the decisions of the courts it is not seen how the Commissioner of Patents can take any practical notice of any paper purporting to be an assignment of an interest in a patent or an application for a patent which does not specifically designate the patent or the application. In almost all cases it is possible for those who desire to acquire an interest in an invention or patent to so carefully frame their agreement with respect thereto that this Office can take notice thereof and act thereupon. In those cases where the intending assignee does not do this, or where, from the nature of the case it is not possible to have it done, it is not, as a rule, possible for the Commissioner of Patents to interfere in his behalf in any way. The Office is not furnished with the judicial machinery for trying such questions properly. The statute does not seem to intend that it shall try them, and the patent system is quite large enough, when this Office attends strictly to the duties which the law has imposed upon it, without adding unnecessarily to its work and its jurisdiction. In all ordinary cases it is the right of an applicant for patent to appoint whom he chooses as his attorney and to revoke that power at his will and pleasure.

It follows from the considerations already expressed that this protest cannot be heeded nor practical action taken thereupon.

EX PARTE WYCKOFF.

Decided May 4, 1892.

ABANDONED APPLICATION—FILES OF NOT OPEN TO THE PUBLIC.

Abandoned applications on file in the Patent Office are not open to public inspection.

IN the matter of the petition of George D. Wyckoff to be permitted to inspect and be furnished with copies of a certain abandoned application.

SIMONDS, *Commissioner:*

This is a petition for the inspection of an abandoned application by another person than the petitioner upon the following showing:

First. That on March 18, 1867, he filed in the United States Patent Office an application for patent for an improvement in self-reaming screws.

Second. That on May 13, 1867, his said application was rejected upon the patent to George Freeman, September 11, 1860, and the rejected application of George H. Smith for combined countersink and screw, rejected January 17, 1862.

Third. That on March 25, 1879, Letters Patent were granted to C. C. Doten, No. 213,551, upon a screw almost identical with that embodied in the petitioner's former application.

Fourth. Your petitioner desires and thinks that in view of the premises he is entitled to know the exact nature of the invention contained in the said abandoned application of George H. Smith, on which his said case was rejected.

Fifth. Your petitioner therefore requests that he or Fred. C. Taaker, in his behalf and as his attorney, be permitted to inspect and be furnished copies of all or any portion of such files.

No good reason is suggested in this showing for permitting the desired inspection. That the rejection of the petitioner's application filed in 1867 upon an abandoned application was a mistaken action on the part of the Office is now well settled.

The petition is denied.

VOLLRATH *v.* COMSTOCK.

Decided May 5, 1892.

PATENTABLE DISCOVERY—WHAT IS.

Whoever discovers a previously-unknown mode of action in the world of physical things and reduces it to practice, getting a novel product or process within the range of patentable subject-matter, distinctly useful and lying outside the range of experience and skill, makes a patentable discovery, even though the discovery be entirely accidental.

MOTION for rehearing.

ENAMELED IRON WARE.

Application of Carl A. W. Vollrath filed March 6, 1890, No. 342,883. Patent granted to Chester Comstock November 12, 1889, No. 415,161.

Messrs. Dyrenforth & Dyrenforth for Vollrath.
Mr. E. C. Webb, Mr. William C. McIntire, and *Mr. M. Bailey* for Comstock.

SIMONDS, *Commissioner:*

This is a motion for a rehearing of a decision in the above-entitled interference rendered by the Acting Commissioner February 27, 1892, awarding priority to Comstock.

The interference issue is in the words of the first claim of Vollrath's application for patent, as follows:

As a new article of manufacture, enameled iron ware having incorporated in the enamel throughout the entire coating specks contrasting in color with the remainder of the enamel, substantially as described.

The second claim of Comstock's patent, the one in interference, is this:

As a new article of manufacture, peppered enameled iron ware having the properties and characteristics substantially as hereinbefore set forth.

The process by which Vollrath produces his product is not identical with the process described in Comstock's patent. Vollrath blends two enameling-mixtures of different degrees of fineness, and his theory is that all the constituents thereof enter into one common fusion. Comstock sets forth in his patent that he—

leaves the comminuted or granular oxide in its natural or substantially natural condition in practically mechanical suspension within the body of the glaze,

and, further,

I intend and mean enameled iron ware having mechanically suspended or held in and throughout the glaze a granular or comminuted material in color contrasting with that of the body of the enameled coating and comparatively infusible as compared with the glaze.

Comstock negatives the idea of a common fusion. Taking this descriptive matter in Comstock's specification in connection with his claim, a question at once becomes apparent as to whether Comstock's claim has the breadth of the interference issue; but neither party has ever moved to dissolve the interference upon that ground. All of their proceedings have gone upon the basis that the interference issue and Comstock's second claim are practically identical in meaning and extent. Therefore they are now to be treated as identical in meaning and extent for the purposes of a determination of the question of priority of invention. It follows that in considering what the respective parties have done in the way of conception and reduction to practice any process made use of by either which produces the proper result must be taken into account.

Comstock has produced in evidence, as Comstock's Exhibits 1, 2, 3, and 4, certain basins made by him in February, 1887, which have a certain kind of enamel upon them. Is it the kind of enamel meant by the interference issue? This is the crucial question of the interference. Vollrath does not unconditionally deny that these basins exhibit the invention. The Examiner of Interferences and the Board of Examiners-in-Chief held the affirmative of this question. It cannot be held that the speckled appearance is entirely absent. It must be held that these basins embody the improvement now in dispute. This was Comstock's first reduction to practice. It was known to persons who were under no obligation of secrecy. In other words, it was a reduction to practice in public. Comstock put upon the market in March, 1889, articles clearly embodying the interference issue, and he made the application for the patent involved in this interference June 11, 1889.

Vollrath does not claim to have made the invention until April, 1887. It follows that priority of invention must be awarded to Comstock. He having reduced the invention in controversy to practice in public prior to the date when Vollrath claims to have made the invention, Comstock's right to a patent cannot be defeated, except by satisfactory evidence either that he has abandoned the invention to the public or that it was in public use or on sale for more than two years prior to such application. If either of such findings be made, the benefit thereof cannot inure to Vollrath, but to the public. It is a settled rule of law that abandonment of an invention is not to be presumed. All positive evidence of abandonment is absent from this case. Neither can two years' public use or sale be presumed. All positive evidence thereof is absent from this case.

Vollrath makes the point that Comstock's production of a speckled enamel upon these basins in February, 1887, was accidental. If such were the fact, it would be immaterial, unless it were coupled with another fact—to wit, that Comstock did not know how he produced that speckled enamel and could not produce it again. All pretense of such lack of knowledge on the part of Comstock is absent. Patentable things are sometimes "discovered." The statute, section 4886, says:

Any person who has invented or *discovered* any new and useful art, machine, manufacture, or composition of matter * * * may * * * obtain a patent therefor.

He who discovers a previously-unkown mode of action in the world of physical things and reduces it to practice, getting a novel product or process within the range of patentable subject-matter, distinctly useful and lying outside the range of experience and skill, makes a patentable discovery, even though that discovery be entirely accidental. The present trier holds that to be one meaning of the word "discovered" in the statute.

Vollrath makes the further point that Comstock's basins of February, 1887, were not produced by the process described in Comstock's specification. That contention has no standing, because—

in considering what the respective parties have done in the way of conception and reduction to practice any process made use of by either which produces the proper result must be taken into account.

The motion for rehearing is denied.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

GANDY *et al. v.* MAIN BELTING COMPANY *et al.*

Decided March 7, 1892.

1. PATENT—INFRINGEMENT—BELT FOR MACHINERY.
   Letters Patent No. 228,186, issued June 1, 1880, to Maurice Gandy, for an improved non-elastic canvas or duck belt for driving machinery, *Held* valid and infringed.
2. TWO YEARS' PUBLIC USE OR SALE—SECTION 4886 OF THE REVISED STATUTES.
   Sections 4886 and 4887 of the Revised Statutes must be construed together, and when this is done the two years' prior public use or sale, which under section 4886 operates as a bar to the grant of a patent, is such a use or sale within the United States and has no reference to foreign countries.
3. ESTOPPEL—AN INFRINGER CANNOT DENY THE UTILITY OF THE INFRINGED INVENTION.
   One who has adopted and used in the manufacture of an article some feature covered by a patent is estopped from afterward denying the utility of the invention.
4. PUBLIC FAVOR AS EVIDENCE OF NOVELTY AND UTILITY.
   Where there had been several unsuccessful attempts to produce a satisfactory article in the trade, and the plaintiff, who had been experimenting with the subject for years, finally produced a device which when patented was at once largely adopted and went into and remains in general use, *Held* sufficient evidence of novelty and utility.

APPEAL from the Circuit Court of the United States for the Eastern District of Pennsylvania.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of Letters Patent No. 228,186, issued June 1, 1880, to Maurice Gandy, for an improved belt or band for driving machinery, and an improved mechanical process of manufacturing the same. In his application the patentee stated that his invention consisted—first, of an improved cotton belt; second, of an improved mechanical process for making cotton belts.

The belt consists, first, of cotton canvas or duck composed of warp stouter than the weft, both warp and weft being hard-spun and the canvas hard and tight woven; second, of cotton canvas or duck thus made, folded and united by longitudinal rows of stitching, and stitched under tension; third, of cotton canvas thus made, folded, and stitched, saturated with linseed-oil; fourth, of cotton canvas thus made, folded, stitched, and saturated with linseed-oil, pressed and stretched until it is hard, even, and rigid, by which the belt is rendered insensible to the atmospheric changes, and non-elastic.

The machinery for manufacturing the belting is also set forth in the specification, but the only claim alleged to be infringed in this case was the second, which read as follows:

2. The improved article of manufacture consisting of a hard, even-surfaced, rigid, impervious, non-elastic belt composed of cotton canvas or duck having its warp-thread larger than the weft, both warp and weft being hard-spun, the fabric tight-woven and folded, stitched, and saturated with linseed-oil.

The bill was in the ordinary form, and prayed for an injunction and an accounting. The answer denied that the invention was new or patentable, and also denied infringement. From a decree dismissing the bill (28 Fed. Rep., 570) the plaintiff appealed to this Court.

Mr. Amos Broadnax and *Mr. J. Edgar Bull* for appellants.

Mr. E. Cooper Shapley for appellees.

Mr. Justice BROWN, after stating the facts in the foregoing language, delivered the opinion of the Court.

The bill in this case was dismissed by the court below upon the ground either that the second claim of the patent was anticipated by a provisional specification of Robert B. Jones, filed in the office of the British Commissioner of Patents, July 31, 1878; or, if Gandy made the invention before the date of Jones's specification, that there had been a public use and sale of the invention for more than two years prior to the application for the patent in suit; in other words, that the same testimony which showed priority of invention on the part of Gandy showed a public use or sale by him of such invention more than two years prior to his application.

On May 9, 1877, plaintiff Gandy, who is an alien, and a subject of Her Britannic Majesty, deposited at the office of the British Commissioner of Patents a provisional specification, upon which a patent was subsequently issued for an improvement in machinery-belts. He stated the object of his invention to be the manufacture of belts of cotton canvas that would not give out by stretching, or be detrimentally affected by variations in the atmosphere, and at the same time to be sufficiently pliable to allow of their running around small pulleys without cracking. To accomplish this, he manufactured his belts of cotton canvas or duck, "hard-woven," put together either by hand or by folders, and formed into a belt of the desired width and thickness, stitched with rows of stitching, and then soaked or saturated in linseed-oil. After the saturation, the canvas is formed into a belt by folding and stitching. After this it is passed through rolls to squeeze out the superfluous oil, and it is then dried and painted, and lastly stitched. The claim of this patent was for—

constructing belts or bands for driving machinery of cotton canvas or duck, "woven hard," and stitched, and saturated or soaked with oil, such as linseed-oil, or any combination thereof, as herein described or set forth, or any modification thereof.

In 1883 this patent became the subject of litigation in the chancery division of the High Court of Justice, and was held to be invalid. In delivering the opinion of the court, Mr. Justice Pearson expressed a serious doubt whether the patentee could claim as a new invention a belt made of hard-woven canvas, when belts made of other descriptions of canvas and saturated with oil were well known and manufactured years before. He did not, however, decide the case upon this point, but upon the ground that Gandy had not taken out his patent for his real invention.

I think [he said] he has described something in his patent which was not his invention, and he has not described in his patent that which was really his invention. * * * It appears that in the beginning of the year 1877 Mr. Gandy was making various experiments in order to perfect a belt which he was intending to patent, and, having made those various experiments with different kinds of canvas, he at last discovered that a canvas of a particular strength in the warp was the best canvas that could be used for making these belts. * * * But in the patent which he took out there is not a single word to indicate that the warp ought to be stouter than the weft; least of all is there any indication that one particular strength in the warp and one particular strength in the weft would make the best canvas.

The learned judge held the patent to be bad because it did not disclose the very best way of making the manufacture, remarking that in a patent subsequently obtained by him, in 1879, he did describe the mode in which the belt was to be made, by saying that the canvas in the warp was to be stouter than in the weft.

On appeal to the Court of Appeals, the master of the rolls expressed regret at the misfortune of the patentee in not describing his discovery, "because," said he, "I think Mr. Gandy did make a discovery." He held that the evidence showed that Gandy's belts could only be made out of a particular class of hard-woven canvas, and, as his claim was for the whole class, it was too large. In short, he held the patent to be invalid because it did not properly describe the invention, and closed his opinion by again expressing his regret that, from the way in which the specification had been drawn up, that which was a real and valuable invention in itself did not seem to have been claimed. Lord Justices Cotton and Lindley expressed practically the same opinion. (*Gandy* v. *Reddaway*, 2 Cutl. Pat. Cas., 49.)

Prior to this decision, however, and on December 1, 1877, Gandy filed a substantial copy of his British specification with the Commissioner of Patents, and made a similar claim for—

a belt or band for driving machinery, constructed of hard-woven cotton canvas or duck, stitched, and saturated and interlarded with oil, such as linseed-oil, or any combination thereof, as herein described or set forth.

A patent was refused, however, upon the ground that the alleged invention was substantially anticipated by certain English patents issued in 1858 and 1861.

Subsequently, and on September 10, 1879, he filed the present application, and, after some correspondence and amendments of his original claims, this patent was issued. With his application he also filed a specimen of his belt, which was the same in all respects as the specimen filed with his prior application of December 1, 1877, and was, in fact, the identical specimen.

1. The defense to this patent is that on the 31st day of July, 1878, one Jones filed a provisional specification with the British Commissioner of Patents for an improvement in belts, which consisted in increasing the strength of the warp or longitudinal fibers or yarns over the weft or cross-fibers; in other words, precisely the same specification as that contained in the second claim of the plaintiff's patent, or, at least, for the only element of such claim which is novel. Plaintiff's reply to this is that while Jones's application antedates his own in point of time, his own invention was prior in point of fact, and in proof of this he produces the three small pieces of belt attached to his application of December 1, 1877, which the Commissioner of Patents has certified were filed in the Patent Office by Gandy at that date, and more than six months before the Jones specification was filed in the British Patent Office. This canvas is really the only one for which the patentee has sought to obtain a patent, although his first application was refused because he neglected to describe his real invention. Each of these belts is made of canvas, with warp obviously larger than the weft, and containing every other element of the second claim of the patent. In relation to this Mr. Gandy also testifies that he was acquainted with Jones, who was a member of the firm of Garnock, Bibby & Co., of Liverpool, and were customers of his.

They also [said he] made a stitched sail cloth belting, and, when they found I had taken a patent for a belting that was a success they also applied for a patent; seeing which in the papers, I asked Mr. Jones to tell me what he was patenting, as he need have no hesitation in doing so, seeing he had filed his provisional specification. He at once told me that it was for a belt made with the warp stouter than the weft. I told him if he would walk along to my factory I would show him that I had been using for some time before his application a cloth to make my belts in which the warp was stouter than the weft. He went with me, and saw the cloth and the belts, and was satisfied that such was the case, and hence went no farther with his patent, but abandoned the application.

The fact that no patent appears ever to have been issued upon Jones's application makes the truth of this statement seem quite probable. The canvas of which Gandy made use in England, it seems, was manufactured by the Mount Vernon Company of Baltimore; and, in further proof of the date of his invention, he produced the testimony of the shipping-clerk of that firm, who swore that as early as 1876 the firm shipped to Gandy belting-canvas having the warp-threads stouter than the weft; there being six plies in the warp and only four in the weft. Mr. Gandy also swears that since 1875 all the canvas ordered by him was made with the warp stouter than the weft. As there is no testimony to contradict this, it must be accepted as a fact in the case.

2. The court below, however, found that, conceding that his invention was made as early at 1876, antedating the filing of Jones's specification by some two years, the same testimony also proved that it had been in public use more than two years before filing his application, and that under Revised Statutes, section 4886, the patent was therefore void. All that the evidence upon this point shows is that Gandy ordered all his canvas made by the Mount Vernon Company, and shipped to him at Liverpool. There is no direct testimony to show whether this canvas was made up into belting, or when the belts were first publicly used or sold abroad; indeed, nothing to show that it was in public use or on sale before the application for the patent in this suit was filed. Even if we were authorized to presume that such canvas was manufactured into belting and sold or used in England, there is not a particle of testimony tending to show that it was publicly used or put on sale in this country. Conceding that there was sufficient evidence of the use of such belting in England, we think that this does not vitiate the patent. Section 4886 declares that—

any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, and not in public use or on sale for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceedings had, obtain a patent therefor.

It is true that the language of this section contains no restriction as to the place or country wherein the public use is made of the invention; but taken in connection with section 4887, providing that no person shall be debarred from receiving a patent by reason of the invention being first patented abroad,

unless the same has been introduced into public use in the United States for more than two years prior to the application,

we think that the public use or sale contemplated by section 4886 must be limited to a use or sale in this country. That this was the intent of Congress is also manifest from section 4923, providing that whenever it appears the patentee believed himself to be the original and first inventor of the thing patented his patent shall not be held void—

on account of the invention or discovery, or any part thereof, having been known or used in a foreign country before his invention or discovery thereof, if it had not been patented or described in a printed publication.

So, also, in section 4920, providing what the defendant may plead under the general issue in actions for infringement, there is included the defense—

that it had been in public use or on sale in this country for more than two years before his application for a patent, or had been abandoned to the public.

Taking all these provisions of the patent law together, we think it was manifestly the intention of Congress that the right of the patentee to his invention should not be denied by reason of the fact that he had made use of it, or put it on sale, abroad more than two years before the application, provided it were not so used or sold in this country.

3. The questions of novelty and utility may properly be considered together. There is much testimony tending to show that Gandy believed himself to be the inventor of a belting made of hard-woven canvas, stitched, and saturated with oil, and that the importance of having the warp stouter than the weft was not fully appreciated by him, and hence was not made an element of the claim of his original British patent. The testimony, however, shows that the canvas or duck ordinarily used for sails is made with the weft as stout, if not stouter, than the warp, and that such canvas was found to be impracticable for belting on account of its liability to stretch or to crack in passing around the smaller pulleys. His first belts, made of ordinary soft canvas, proved to be wholly impracticable, owing to their apparently endless capacity for stretching. He next experimented with hard-spun and tight-woven canvas, specially manufactured for this purpose. This did not stretch, but developed another fault, of wrinkling and cracking when running around pulleys. This he obviated by saturating it with linseed-oil; but found another objection in the unequal strain on the several thicknesses when passing around the pulleys, which tended to break the stitching and permitted the plies to separate. He then conceived the idea that by decreasing the thickness of the belt, without diminishing its tensile strength, he would bring the diameter of the exterior plies more nearly level with the inner plies next the pulley, and thus more nearly equalize the strain on all parts of the belt, increasing its effective strength, and diminishing the tendency of the plies to separate or wrinkle. It is obvious, even to a non-expert, that, if the belting be made very thick, there is a much greater strain upon the exterior plies, when passing around a small pulley, than upon the inner plies, and that the effect must be both to unduly strain the exterior plies, rendering them liable to break, and to wrinkle the inner ones, subjecting them to the danger of cracking; and that the ideal belting would be made as thin as would be consistent with the requisite strength and inflexibility. In view of the fact that previous attempts, of which there appear to have been several, to make a practical canvas belt had been failures, and that Gandy had been experimenting with the subject for several years before he discovered that a change was necessary in the structure of the canvas itself, we do not think his improvement is a change in degree only, or such a one as would have occurred to an ordinary mechanic, and our opinion is that it does involve an exercise of the inventive faculty. The change is such as would only have occurred to one familiar, not alone with the impossibility of making a practical belt out of the ordinary canvas, but to one who had bestowed considerable thought upon the method of overcoming the difficulty. While some of the testimony would seem to indicate that there is no great advantage in this method of construction, we think the fact that it has been largely adopted by manufacturers, and that all the modern improved belting ordered or made by Gandy, and in general use both in this country and in Europe, is made in this way, is, for the purposes of this case, sufficient evidence of its utility. (*Magowan* v. *Packing Co.*, 57 O. G., 845; 141 U. S., 332; 12 Sup. Ct. Rep., 71.)

4. We have no doubt upon the subject of infringement. While, as claimed by the defendant Plummer, there may be as many plies or individual threads in the weft of his canvas as in the warp, the most casual observer of the relative strength of the warp and the weft cannot fail to notice that the former is much thicker and stouter than the latter,—in fact, that the Gandy belting and the defendants' in this particular are identical. The defendant Plummer, having adopted Gandy's idea of making warp stouter than his weft, is not in a favorable position to claim that it is useless. Indeed, Plummer appears to have been formerly in business with Gandy, and was sent by him to America in 1879 to confer with his solicitor in reference to his pending application for a patent. Gandy subsequently decided to start the manufacture of belting in America, and to give Plummer employment, and for that purpose took him into his factory in Liverpool, so as to give him an insight into the business In 1880 he came to America, was met by Plummer, leased a building for a factory, and took him into his employ. Plummer seems, however, to have failed to give satisfaction, and Gandy subsequently dismissed him from his service, whereupon Plummer proceeded to organize a company upon his own account for the manufacture of the infringing belting. In pursuance of this intention he states himself that he came to Washington, examined the Gandy patents, and took legal advice with regard to making a belt which would not infringe them. He also suggested to plaintiff the danger of his marking an unpatented article with words importing that it is patented, and called his attention to Revised Statutes; section 4901, making this a penal offense.

The language of Mr. Justice Woods, in delivering the opinion of this Court in *Lehnbeuter* v. *Holthaus*, (21 O. G., 1783; 105 U. S., 94, 96,) is equally pertinent to this branch of the case:

> The patent is *prima facie* evidence both of novelty and utility, and neither of these presumptions has been rebutted by the evidence. On the contrary, they are strengthened. No anticipation of the design is shown, although the attempt has been made to prove anticipation. The fact that it has been infringed by defendants is sufficient to establish its utility, at least as against them.

The decree of the circuit court is therefore reversed and the case remanded, with directions to enter an interlocutory decree for the plaintiff, and for further proceedings in conformity with this opinion.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 8. TUESDAY, MAY 24, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the developement of American invention.

W. E. SIMONDS,
Commissioner.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

DISCLAIMER.

259,550.—*Martin H. Kenega*, Momence, Ill. IMPROVEMENT IN HORSE HAY-RAKES. Patent dated June 13, 1882. Disclaimer filed May 14, 1892, by the assignee, the *Acme Harvester Company*.

Enters its disclaimer to the following matter occurring between lines 67 and 77 of the specification of said patent, viz:

"If preferred, a pair of thills may be connected with each of the arms B B in which the horse is hitched in the usual way, which construction would be the equivalent of that shown in the drawing. When thills are used, however, it will be advisable to employ the poles B, by which to hitch the horses' heads as an aid in guiding them, in which case said poles may be relatively light."

Also, to "a horse-rake having the horses independently attached at the ends of the rake and having the projecting draft-bars, in combination with forwardly-projecting poles except when such projecting poles are arranged so that the free front end of each is brought forward, upward, and outward from the ends of the rake-head."

Issue of May 24, 1892.

Patents	456	No. 475,288 to No. 475,743, inclusive.
Designs	31	No. 21,553 to No. 21,583, inclusive.
Trade-Marks	41	No. 21,161 to No. 21,202, inclusive.
Labels	None.	
Reissues	2	No. 11,240 to No. 11,241, inclusive.
Total issue	530	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire	1	
Arkansas			New Jersey	24	1
California	12		New Mexico Territ'y		
Colorado	2		New York	94	13
Connecticut	16		North Carolina	2	
Delaware	2		North Dakota		
District of Columbia	7	1	Ohio	37	1
Florida			Oregon	1	
Georgia	3		Pennsylvania	41	4
Idaho	1		Rhode Island	5	
Illinois	52	4	South Carolina		
Indian Territory			South Dakota	1	
Indiana	12	1	Tennessee		
Iowa	9		Texas	9	
Kansas	4	1	Utah Territory	1	
Kentucky	6	4	Vermont		
Louisiana		1	Virginia	4	
Maine			Washington	1	
Maryland	8		West Virginia	1	
Massachusetts	35	2	Wisconsin	8	
Michigan	10		Wyoming	1	
Minnesota	8	2	U. S. Army		
Mississippi	2		U. S. Navy	2	
Missouri	15	1			
Montana	1		Total to citizens of the United States	443	36
Nebraska	5				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Mexico		
Austria-Hungary			Netherlands	1	1
Belgium	1		Newfoundland		
Bermuda			New South Wales		
British Guiana	1		New Zealand		
Canada	5		Norway		
Chile, Republic of			Peru		
Colombia			Russia	1	
Cuba			Scotland	2	
Ecuador			South Australia		
England	17	3	Spain		
France	6	1	Sweden	1	
Germany	8		Switzerland	1	
Hawaii			Victoria		
Ireland					
Italy			Total to citizens of foreign countries	44	5
Japan					

APPLICATIONS UNDER EXAMINATION.

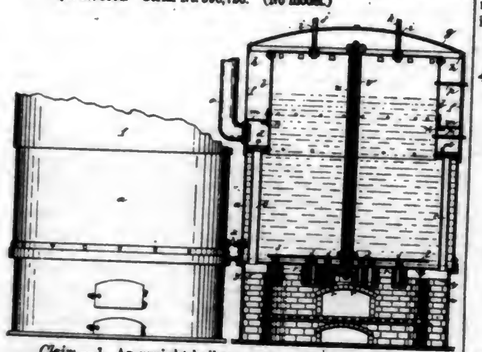
Condition at Close of Business May 17, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Apr. 2	May 14	84
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Apr. 5	May 13	200
7	Harvesters, Games and Toys	Mar. 28	May 10	218
2	Farm Stock, Products, etc	Mar. 24	May 10	219
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Apr. 4	May 7	166
8	Furniture, Toilet, Umbrellas and Canes, etc.	Mar. 19	May 7	244
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Mar. 31	May 5	150
12	Mechanical Engineering, Stores-Service, etc.	Mar. 18	May 4	202
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Mar. 21	May 2	236
23	Instruments of Precision, Acoustics, Optics, etc.	Mar. 19	May 2	265
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Apr. 2	Apr. 15	184
1	Tillage and Fences	Mar. 17	Mar. 23	263
	Between two and three months in arrears.			
24	Sewing-Machines and Apparel	Feb. 18	May 12	117
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Feb. 27	May 11	241
21	Textiles, etc	Mar. 5	May 9	197
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Mar. 2	May 9	253
18	Steam-Engineering, etc	Mar. 2	May 2	294
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Mar. 11	Apr. 30	281
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Mar. 2	Apr. 28	243
10	Carriages and Wagons and Railway-Cars.	Mar. 1	Apr. 22	597
22	Fire-Arms, Navigation, Signals, etc.	Mar. 2	Apr. 20	218
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Feb. 23	Apr. 18	268
4	Civil Engineering, etc	Feb. 24	Apr. 16	426
17	Paper-Manufactures and Printing.	Mar. 10	Apr. 15	234
9	Hydraulics, Fire-Extinguishers, etc.	Feb. 23	Apr. 15	349
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Feb. 18	Apr. 9	272
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Feb. 18	Apr. 1	385
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Feb. 11	May 3	245
19	Stoves and Furnaces	Feb. 8	Mar. 22	410
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Jan. 4	Apr. 27	407
26	Electricity, Generation, Distribution, etc.	Dec. 21	Apr. 27	363
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Jan. 14	Mar. 14	418
	Total number of applications awaiting action			8,675
	Under one month in arrears.			
	Designs	May 13	May 14	13
	Trade-Marks	May 13	May 13	11

PATENTS

GRANTED MAY 24, 1892.

475,288. STEAM-BOILER. AXEL I. BLADHOLM, Chicago, Ill. Filed Apr. 28, 1891. Serial No. 390,726. (No model.)



Claim.—1. An upright boiler constructed in two sections, as *a b*, of different diameters, joined by the intermediate annular tube-sheet and having a circle of fire-tubes in the larger lower portion discharging into an annular space *d* above said tubes connected with the smoke-pipe, also having drop-tubes in the bottom, substantially as described.

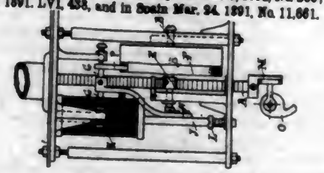
2. The combination, with an upright boiler constructed in two sections, as *a b*, of different diameters, joined by the intermediate annular tube-sheet and having a circle of fire-tubes in the larger lower portion discharging through said tube-sheet, of the cylinder *f*, joining the lower section and extending upward about the height of section *b*, the flanges separating the smoke-receiving space *d* from the space above, the cover seated on the top of said cylinder, and the smoke-pipe connected with said space *d*, substantially as described.

3. The combination, with the boiler having the drop-tubes in the lower head over the fire-box, of the circulating disks and tubes thereof suspended above said head, with the circulating-tubes extended into the drop-tubes for the downflow of the water and with open space at the outer portion of the disk for the upflow of the water, substantially as described.

4. The combination, with the boiler having the drop-tubes in the lower head over the fire-box, of the circulating disk and tubes thereof suspended above said head, with the circulating-tubes extended into the drop-tubes and the central strut-tube extended to and connected with the heads of the boiler, said disk supported on said tube, substantially as described.

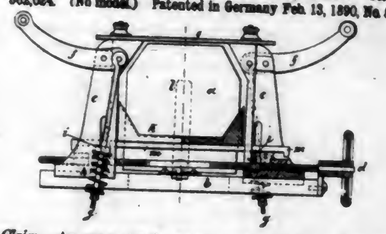
5. The combination, with the boiler having the drop-tubes in the lower head and the circle of fire-tubes in the outer portion, of the bridge-wall under said fire-tubes and confining the heat on the drop-tubes, substantially as described.

475,289. ELECTRIC-ARC LAMP. LUCIEN BRIANNE, Paris, France. Filed July 28, 1891. Serial No. 401,021. (No model.) Patented in France July 12, 1890, No. 206,963; in Germany Aug. 1, 1890, No. 56,345; in Austria-Hungary Nov. 14, 1890, No. 32,479 and No. 56,900; in Belgium Jan. 3, 1891, No. 93,327; in England Jan. 5, 1891, No. 200; in Italy Jan. 23, 1891, LVI, 438, and in Spain Mar. 24, 1891, No. 11,661.



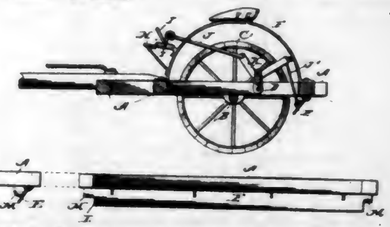
Claim.—The combination, with the solenoid K, traversed by a derived current, of the movable armature J, sector P, fly-wheel F, pinion E, and rack, substantially as set forth.

475,290. MACHINE FOR PRESSING AND BUNDLING CIGARS. JOSEPH BRODA, Mannheim, Germany. Filed Aug. 14, 1890. Serial No. 362,024. (No model.) Patented in Germany Feb. 13, 1890, No. 55,804.



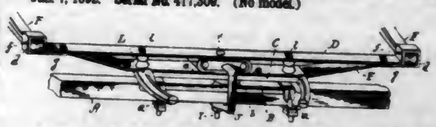
Claim.—An apparatus for use in pressing and bundling cigars, comprising longitudinally-movable side cheeks, vertically-movable bars arranged between the cheeks, a bottom resting on the bars, levers mounted in the cheeks and connected with the bars, a cover, and a back plate attached to an adjustable rod sliding in a way in the bed-plate, substantially as described.

475,291. LAND-ROLLER ATTACHMENT. GEORGE S. BURR and JOHN M. CUMMINGS, Schochoh, Ky. Filed Mar. 19, 1891. Serial No. 385,647. (No model.)



Claim.—The combination, with the frame and roller mounted therein, of the scraper-plate hinged at one edge to the frame, cut partially across near its ends and having the end segments thus formed bent upward to strike the side bars of the frame when the plate is swung toward the roller, substantially as and for the purpose set forth.

475,292. WAGON-BOLSTER. LEWIS BURG, Dallas City, Ill. Filed Jan. 7, 1892. Serial No. 417,309. (No model.)



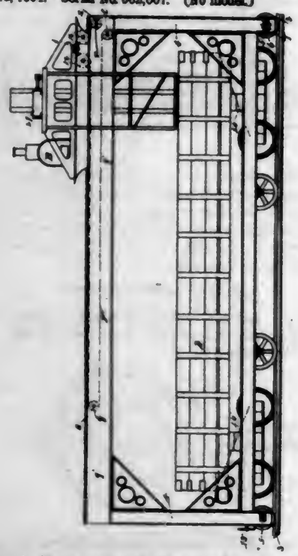
Claim.—1. The combination, with an axle and the lower plate of a fifth-wheel secured thereto, of the upper plate of the fifth-wheel having upwardly-projecting flanges, a bolster formed of a single piece of metal, consisting of upper and lower plates, the lower plate being supported on the upper plate of the fifth-wheel between the flanges, a center block of malleable iron interposed between the upper plate and

the ends of the lower plate of the bolster and between the flanges on the upper plate of the fifth-wheel, substantially as described.

2. The combination, with the upper plate of a fifth-wheel provided with upwardly-projecting flanges, of a bolster consisting of a single piece of metal bent to form an upper and a lower plate, a malleable-iron center block interposed between the said upper and lower plates and provided with a projection, which extends downward between the ends of the plate from which the bolster is formed and rests on the top plate of the fifth-wheel between its flanges, between which flanges the said ends also rest on the said plate, malleable thimbles interposed between the upper and lower plates of the bolster, and bolts passing through the said thimbles, the upper and lower bolster-plates, and the upper plate of the fifth-wheel, substantially as described.

3. The combination, with an axle, a fifth-wheel, and the upper and lower plates of a bolster, of a malleable-iron center block interposed between the upper and lower bolster-plates and supported on the fifth-wheel, said block having wooden plugs inserted in holes bored for their reception, a yoke whose lower portion abuts against the under side of the axle and whose ends are provided with plate portions adapted to fit against opposite sides of the center block, and bolts passing through holes in said plate portions and through holes bored in the wooden plugs, substantially as described.

475,293. APPARATUS FOR LOADING CARS. CHARLES H. CAMPBELL, New York, N. Y., and WILLIAM WHIGHAM, Pittsburg, Pa. Filed Feb. 18, 1891. Serial No. 382,007. (No model.)



Claim.—1. In an apparatus for unloading cars, substantially as described, the combination of a vertically-movable lever, means to oscillate the same, a shovel pivotally connected with the lower end of said lever, and means to depress and elevate the rear end of said shovel, whereby said shovel may be given a vibrating or searching motion when being forced into earth or other substances, as set forth.

2. In an apparatus for unloading cars, substantially as described, the combination of a vertically-movable lever, means to rotate the same, a shovel pivotally connected with said lever, and means to depress and elevate the rear end of said shovel, whereby said shovel is given a vibrating motion and turned, substantially as and for the purpose herein set forth.

3. In an apparatus for unloading cars, substantially as described, the combination of a vertical cylinder trunnioned in the sides of an annular ring and having a piston-rod adapted to operate therein, means to actuate said piston, a vertically-movable mast the lower end of which is rigidly secured to the lower end of said piston and adapted to operate in grooves in the sides of said cylinder, and a shovel pivotally connected to the lower end of said mast, substantially as described.

4. In a hydraulic unloader, substantially as described, the combination of a carriage mounted on ways, a cylinder trunnioned in the sides of an annular ring suitably secured thereon, said cylinder having a piston-rod adapted to operate therein and means to actuate the same, a vertically-movable mast the lower end of which is rigidly secured to the lower end of said piston and having on its interior sides slides adapted to operate in grooves on the exterior of said trunnioned cylinder, and a shovel pivotally connected with the lower end of said mast, whereby the said mast and the shovel connected thereto are elevated and lowered, substantially as and for the purpose herein described.

5. In a hydraulic unloading device, substantially as described, the combination of a carriage mounted on ways and having a cylinder trunnioned in the sides of an annular ring suitably secured thereon, means to rotate said ring, said cylinder having a piston-rod adapted to operate therein, means to actuate the same, an elevating device rigidly connected at its lower end with the lower end of said piston-rod and having on its interior sides slides adapted to operate in grooves on the exterior of said trunnioned cylinder, and a shovel pivotally connected with the lower end of said elevating device, whereby said elevating device and the shovel secured thereto are elevated, lowered, and turned around, substantially as and for the purpose herein set forth.

6. In a hydraulic unloader, substantially as described, the combination of a cylinder-carriage mounted on ways and having a cylinder trunnioned in the sides of an annular ring mounted thereon, said cylinder having a piston-rod adapted to operate therein and means to actuate the same, an elevating device the lower end of which is rigidly connected with the lower end of said piston-rod and having on its interior sides slides adapted to operate in grooves on the sides of said trunnioned cylinder, a shovel pivotally connected to the lower end of said elevating device, and a cylinder or cylinders suitably secured on an annular plate adapted to rotate, said cylinders having piston-rods adapted to operate therein and means to actuate the same, the outer ends of said pistons being suitably connected by a strap, to which are suitably secured arms, the inner ends of which are pivotally connected on either side said trunnioned cylinder near the top thereof, whereby the shovel connected to said elevating device may be advanced or forced into a mass of earth, ore, or other substance and lifted, substantially as herein set forth.

7. In a hydraulic unloader, substantially as described, the combination of a cylinder-carriage mounted on ways and having a cylinder trunnioned in the sides of an annular ring mounted thereon and means to rotate said ring, said cylinder having a piston-rod adapted to operate therein and means to actuate the same, an elevating device the lower end of which is rigidly connected with the lower end of said piston-rod and having on its interior sides slides adapted to operate in grooves on the sides of said trunnioned cylinder, a shovel pivotally connected to the lower end of said elevating device, and a cylinder or cylinders suitably secured on an annular plate, said cylinders having piston-rods adapted to operate therein and means to actuate the same, the outer ends being suitably connected by a strap, to which are suitably secured arms, the inner ends of which are pivotally connected on either side said trunnioned cylinder near the top thereof, whereby the shovel connected to said elevating device may be advanced or forced into a mass of earth, ore, or other substance, elevated, and turned in a circle, substantially as and for the purpose herein set forth.

8. In a hydraulic unloader, substantially as described, the combination of a cylinder-carriage mounted on ways and having a cylinder trunnioned in the sides of an annular ring mounted thereon, said cylinder having a piston-rod adapted to operate therein and means to actuate the same, an elevating device the lower end of which is rigidly connected with the lower end of said piston-rod and having on its interior sides slides adapted to operate in grooves on the sides of said trunnioned cylinder, a shovel pivotally connected to the lower end of said elevating device, and a cylinder or cylinders suitably secured on an annular plate adapted to rotate, said cylinders having piston-rods adapted to operate therein and means to actuate the same, the outer ends of said piston-rods being suitably connected by a strap, to which are suitably secured arms, the inner ends of which are pivotally connected on either side said trunnioned cylinder, near the top thereof, and a cylinder suitably secured upon one side said elevating device and having a piston-rod adapted to operate therein and means to actuate the same, the lower end of said piston-rod being suitably connected to the rear end of said shovel, whereby said shovel may be advanced or forced into a mass of earth or other substance with a vibrating or searching motion and elevated, substantially as and for the purpose herein set forth.

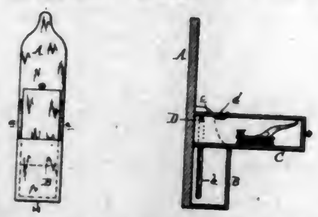
9. In a hydraulic unloader, substantially as described, the combination of a cylinder-carriage mounted on ways and having a cylinder trunnioned in the sides of an annular ring mounted thereon and means to rotate said ring, said cylinder having a piston-rod adapted to operate therein and means to actuate the same, an elevating device the lower end of which is rigidly connected with the lower end of said piston-rod and having on its interior sides slides adapted to operate in grooves on the sides of said trunnioned cylinder, a shovel pivotally connected to the lower end of said elevating device, and a cylinder or cylinders suitably secured on an annular plate adapted to rotate, said cylinders having piston-rods adapted to operate therein and means to actuate the same, the outer ends being suitably connected by a strap, to which are suitably secured arms, the inner ends of which are pivotally connected on either side said trunnioned cylinder near the top thereof,

and a cylinder suitably secured upon one side said elevating device and having a piston-rod adapted to operate therein and means to actuate the same, the lower end of said piston-rod being suitably connected to rear end of said shovel, whereby said shovel may be advanced or forced into a mass of ore or other substance with a vibrating or searching motion, elevated, and turned in a circle, substantially as and for the purpose set forth.

10. In a hydraulic unloader, substantially as described, the combination of a cylinder-carriage mounted on ways and having a cylinder trunnioned in the sides of an annular ring mounted thereon and means to rotate the same, said cylinder having a piston-rod adapted to operate therein and means to actuate the same, an elevating device the lower end of which is rigidly connected to the lower end of said piston-rod and having on its interior sides slides adapted to operate in grooves on the sides of said trunnioned cylinder, a shovel pivotally connected to the lower end of said elevating device, and cylinder or cylinders suitably secured on an annular plate mounted on slides and adapted to rotate thereon, said cylinders having piston-rods adapted to operate therein and means to actuate the same, the outer ends of said pistons being suitably connected by a strap, to which are suitably secured arms, the inner ends of which are pivotally connected on either side said trunnioned cylinder near the top thereof, a cylinder having a piston-rod extending through both heads of said cylinder and means to actuate the same, and a platform or carriage mounted on slides and adapted to move thereon, and means to connect either end, respectively, of said platform with either end, respectively, of said piston-rod, whereby said shovel may be advanced, lifted, and turned and said device moved laterally, substantially as herein set forth.

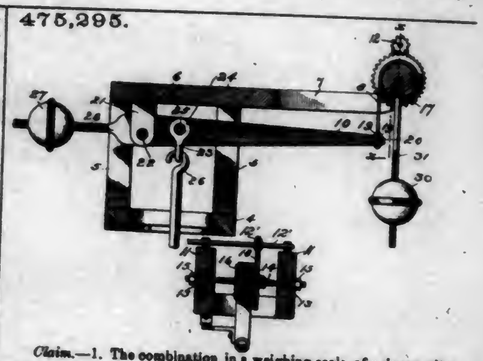
11. In a hydraulic unloader, substantially as described, the combination of a cylinder-carriage mounted on ways and having a cylinder trunnioned in the sides of an annular ring mounted thereon and means to rotate the same, said cylinder having a piston-rod adapted to operate therein and means to actuate the same, an elevating device, the lower end of which is rigidly connected to the lower end of said piston-rod and having on its interior sides slides adapted to operate in grooves on the sides of said trunnioned cylinder, a shovel pivotally connected to the lower end of said elevating device, and cylinder or cylinders suitably secured on an annular plate mounted on slides and adapted to rotate thereon, said cylinders having piston-rods adapted to operate therein and means to actuate the same, the outer ends of said pistons being suitably connected by a strap, to which are suitably secured arms, the inner ends of which are pivotally connected on either side said trunnioned cylinder near the top thereof, a cylinder suitably secured upon one side said elevating device and having a piston-rod adapted to operate therein and means to actuate the same, the lower end of said piston-rod being suitably connected to the rear end of said shovel, and a cylinder having a piston-rod extending through both heads of said cylinder and means to actuate the same, a platform or carriage mounted on slides and adapted to move thereon, and means to connect either end, respectively, of said platform with either end, respectively, of said piston-rod, whereby said shovel may be advanced or forced into a mass of ore or other substance with a vibrating or searching motion, elevated, turned in a circle, and said device moved laterally in either direction, substantially as and for the purpose herein set forth.

475,294. BLACKING-CASE. EZRA G. CAMERON, Cleveland, Ohio, assignor of one-half to David M. Foote, Eaton Rapids, Mich. Filed Dec. 5, 1891. Serial No. 414,077. (No model.)



Claim.—In a device of the character described, in combination, a back A, having a pocket B, the inner faces of the side pieces of which are provided with vertical grooves or slots *b* near their edges, with a box C, provided with a cover E, and a pin or rod D, passing transversely through said box C and slidingly engaging the grooves or slots *b*, whereby the box is horizontally supported upon the front of the pocket when in use and is adapted to be slid into the pocket when not in use, substantially in the manner and for the purpose set forth.

475,295. PENDULUM SCALE. ELI S. CHASE and CALVIN E. SHOOK, Minneapolis, Minn. Filed Oct. 15, 1891. Serial No. 408,778. (No model.)



Claim.—1. The combination, in a weighing-scale, of a drum, with a pendulum-rod rigidly connected therewith, a weight thereon, a dial and a pointer adapted to be operated by the movement of said drum, a strap wound upon and secured to said drum, a lever having one end secured thereto and the other end pivoted, a counter-balance for the same, and a draw-rod connected with said lever between said pivot-point and the strap end thereof, substantially as described.

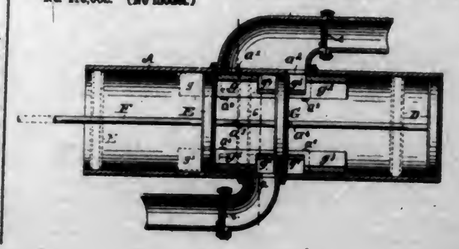
2. The combination, in a weighing-scale, of a drum having a shaft, with supports for said shaft, a pendulum-rod having its upper end secured in said drum, an adjustable weight on said pendulum-rod, a flexible strap wound upon and secured to said drum, a lever having one end secured to the free end of said strap and its other end pivotally fixed, a draw-rod connected between the ends of the lever, and gear fixed on said drum-shaft and dial, a pointer-shaft and pointer thereon to move with respect to the dial, and a pinion arranged on the pointer-shaft and meshing with said gear, whereby as a downward pull is exerted upon the draw-rod connected with said lever said pointer is advanced upon the dial.

3. The combination, with the frame having the bifurcated arms, of a shaft supported on said arms, a drum fixed on said shaft, a pendulum-rod depending from said drum, a weight arranged on the lower end of said rod, a flexible strap wound upon said drum, means for applying the weight to the free end of said strap, a dial and pointer, a pointer-shaft, and means for communicating the rotary movement of the drum to said pointer-shaft to advance the pointer upon the dial as the pull upon the flexible strap is exerted and increased.

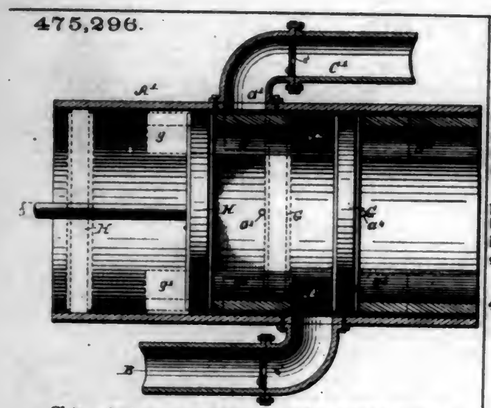
4. The combination, with the plate 6, provided with the arms 7 and with the standards 5, of the base 4, provided with the central opening, depending lugs 21, the lever 10, pivoted in said lugs, bearings 25 and loop 23, the draw-rod 26, extending down through the opening in the base 4, a counter-balance for the lever, the shaft pivoted in the outer ends of the arms 7, the drum arranged on said shaft, the flexible strap 8, wound upon the drum and having its lower end secured on the end of the lever 10, a pendulum-rod depending from said drum and weighted thereon, a dial and pointer, and means for communicating and reducing the movement of the drum and drum shaft and said pointer and advancing the same on the dial when the pull is exerted upon the draw-rod.

5. The combination, with the frame having the arms 7, of the lever 10, the counter-balance in connection with the lever 10, pivoted in said frame, a draw-rod connected with said lever at an intermediate point between its ends, a drum and drum-shaft adapted to revolve, bearings therefor on said arms, a weighted pendulum-rod depending therefrom, a flexible strap wound on the drum and fixed on the end of the lever 10, and fixed pins arranged upon the frame and one of the movable parts of the device, respectively, and whereby a correct adjustment of the parts may be attained.

475,296. PUMP. CHARLES CHAMBERLIN, Kansas City, assignor of one-half to Walton J. Conkle, Jackson, Mo. Filed Dec. 30, 1891. Serial No. 416,602. (No model.)



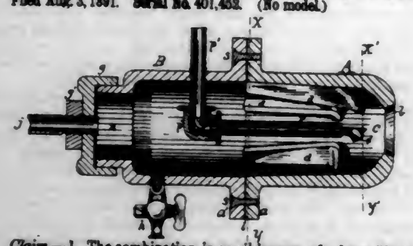
475,296.



Claim.—1. A pump consisting of a hollow cylinder having open ends, a piston and an automatically-sliding cut-off within said cylinder, said cylinder having a chamber between said cut-off and piston, induction and eduction pipes connected with said chamber and opened and closed alternately by means of said automatic cut-off, and a check-valve in said pipes, substantially as and for the purpose described.

2. In a double-acting pump consisting of a hollow cylinder having open ends and a piston in each end, an automatic sliding cut-off between said pistons, said cylinder having chambers between said cut-off and said pistons, an induction-pipe connected with each chamber, and a discharge-pipe connected with both chambers and opened and closed alternately by means of said automatic sliding cut-off, and means for checking the backflow of the liquid in said induction-pipe, substantially as described.

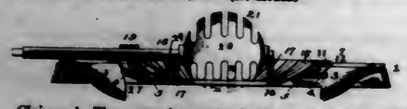
475,297. OIL-BURNER. CLINTON T. COATES and WALTER R. HELTON, Terre Haute, assignors to Isaac Fechheimer, Vigo County, Ind. Filed Aug. 3, 1891. Serial No. 401,462. (No model.)



Claim.—1. The combination, in an oil-burner, of a dome-like body A furnished with the ribs *d*, the cavity *c*, the nozzle *b*, and a flange *a*, the oil-pipe *p*, said pipe *p* being open at its forward end and connected with the supply-oil pipe *p'* at the opposite end by means of the elbow *p''* with the cylinder B, said cylinder being furnished with a flange *a'*, a neck or throat *n*, and a drain-cock *h*, a cap *g*, and a blast-pipe *j*, all substantially as set forth and described.

2. The combination, in an oil-burner, of a dome-like body A furnished with the ribs *d*, which are situated at equal intervals around the inner wall of the body A in planes which pass through the axis of the burner and are curved laterally at their front ends, the cavity *c* and the nozzle *b*, situated at the forward end, and the flange *a* at the opposite end, with a cylinder B, said cylinder B being furnished at its forward end with a flange *a'*, which is screwed firmly to the flange *a*, and at the other end with a cap *g* and a blast-pipe *j*, the oil-pipe *p'*, extending through the wall of B and connected with the oil-pipe *p*, which extends forward between the ribs *d* of A, all substantially as and for the purpose set forth and specified.

475,298. STOVE-GRATE. FRANK W. COLLINS, Cortland, N. Y. Filed Nov. 9, 1891. Serial No. 411,303. (No model.)

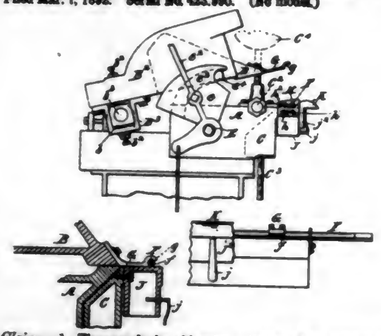


Claim.—1. The grate rim or ring having an open center and bars extending inwardly and inclined downwardly toward said central opening, the bearings extending upwardly from said ring, the rock-shaft supported in said bearings and having a segment of a sphere attached thereto and extending upward, (except when in dumped position, when the sphere extends but slightly below the grate-bars,) combined with a suitable support for said grate-rim, all substantially as described.

2. The combination, with the casting having a central opening and downwardly-inclined rim, of ball-bearing brackets open at the bottom and supported on arms projecting from said rim, leaving an open space between the rim and bracket, balls in said bracket, and a grate resting on said balls, substantially as described.

3. The combination, with the outer and inner rings of the grate proper, of the shaft having a close bearing on the outer ring and open bearing above the inner ring, a lug at one side of the shaft, and stops in the line of movement of said lug in rotating, substantially as described.

475,299. MACHINE FOR BENDING SHEET METAL. CHARLES J. COLLINS, Cincinnati, Ohio, assignor to J. M. Robinson & Co., same place. Filed Mar. 7, 1892. Serial No. 423,995. (No model.)



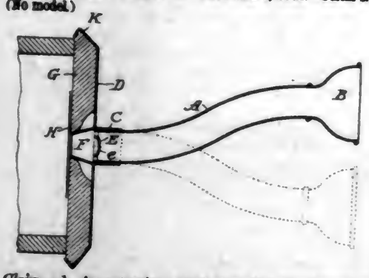
Claim.—1. The mandrel-rod having a longitudinal groove therein, in combination with a movable brake B, suitably journaled in frame-supports, clamps G, rigidly connected to said brake, the free end portions of said clamps being adapted to engage and rest over said mandrel-rod, and suitable means for supporting and rotating the latter, substantially as set forth.

2. The combination of movable brake B, clamps G, rigidly connected thereto, detachable base J, mandrel-rod F, having a groove *f* therein, said rod being suitably supported on said detachable base, and means for operating said brake and mandrel-rod, substantially as set forth.

3. The mandrel-rod F, having a groove *f* therein, said rod being supported in bearing-plates H, adjustably connected to a base J, in combination with movable brake B and clamps G, connected thereto, the lower outer face of said clamps being formed concave, and suitable means for operating said brake and mandrel-rod, for the purposes specified.

4. In combination with a brake-machine having a horizontal movable brake B, suitably journaled in the end frames thereof, the clamps G, connected to said brake, detachable base J, mandrel-rod F, having a groove *f* therein, and mandrel K, connected to said base, and suitable means for operating said brake and mandrel-rod, substantially as specified.

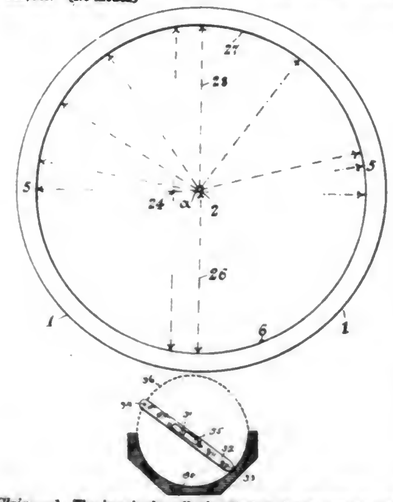
475,300. EXTENSION-TRANSMITTER FOR TELEPHONES. VICTOR A. COOK, New York, N. Y. Filed Jan. 5, 1892. Serial No. 417,408. (No model.)



Claim.—1. An extension-mouthpiece for telephone-transmitters, consisting of a tube, a disk of smaller diameter supported centrally within the tube, a spring-plate for securing the tube in front of the transmitter, and a conical flange supported by the clip and adapted to enter the aperture in the casing over the transmitter, substantially as shown and described.

2. An extension-mouthpiece for telephone-transmitters, consisting of a tube having a double bend, substantially as shown, a disk of smaller diameter, arms attached to the tube and disk and supporting the latter centrally within the former, and a supporting-plate having a sleeve to receive the end of the tube and wherein the tube is rotatable, substantially as shown and described.

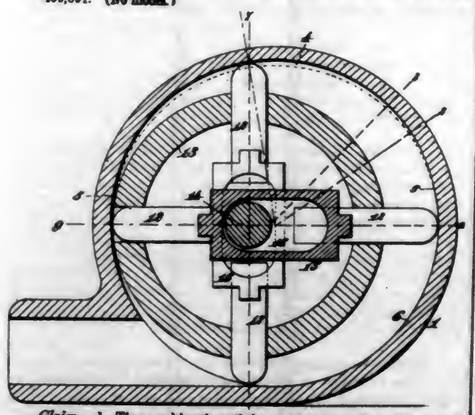
475,301. CYLINDER FOR ROTARY BLOWERS OR ENGINES. GILMER CROWELL, Brooklyn, N. Y. Filed Apr. 11, 1891. Serial No. 388,448. (No model.)



Claim.—1. The herein-described cylinder, the internal periphery of substantially one-half of which is semi-cylindrical and the other portion of which is on a curve formed by a plurality of arcs with a gradually-changing radius from the center of rotation of the piston, substantially as set forth.

2. The herein-described cylinder, the internal periphery of one-half of which is semi-cylindrical and the other portion of which is on a curve formed by a plurality of arcs with a gradually-changing radius from the center of rotation of the piston, the bounding chord of the semi-cylindrical portion being situated substantially on a line drawn through said center of rotation, substantially as set forth.

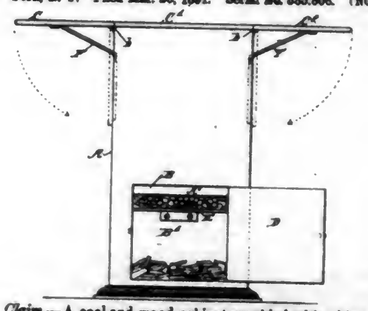
475,302. ROTARY BLOWER OR ENGINE. GILMER CROWELL, Brooklyn, N. Y. Filed Apr. 3, 1890. Renewed Oct. 19, 1891. Serial No. 409,091. (No model.)



Claim.—1. The combination of the stationary cylinder having its internal caliber struck from two different centers only to form the single crescent-shaped concavity and leave the remainder of the caliber truly circular with the drum eccentrically journaled in the cylinder, and a fan or piston blade sliding radially and having its opposite extremities superficially bearing against the inside of the cylinder, substantially as described.

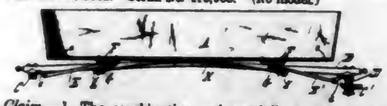
2. The combination of the stationary cylinder having its internal caliber struck from two different centers only to form the single crescent-shaped concavity and leave the remainder of the caliber truly circular with the drum, the through-shaft journaled eccentrically in the cylinder-heads, and the slotted yokes carrying the fan or piston blades and sliding on the shaft, with the fan or piston blades having their extremities in superficial contact with the internal caliber described, substantially as set forth.

475,303. CABINET FOR COAL AND WOOD. JOHN R. EGAN, New York, N. Y. Filed Mar. 20, 1891. Serial No. 385,906. (No model.)



Claim.—A coal and wood cabinet provided with a hinged lid and with two folding side lids constructed and arranged to occupy substantially the same plane when in a raised position, the cabinet being also provided with an interior inclined shelf and with an outlet-opening and door adjacent to the same, substantially as described.

475,304. SPRING-GEAR FOR VEHICLES. JOSEPH FASER, Cincinnati, Ohio, assignor to the National Hardware Company, same place. Filed Jan. 2, 1892. Serial No. 416,905. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with the body and gear, of the U-shaped bars E E', shackled, respectively, to the rear axle and head-block, the boxes coupling the transverse portions of said bars to the body, the coupling G, rigidly secured upon the bars, and the arched spring H, having its opposite ends secured rigidly to the couplings.

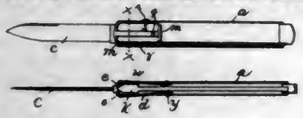
2. The combination, with the body and gear, of the U-shaped bars shackled to the rear axle and head-block, the boxes F for coupling the bars to the body and having projections *f* bear against the arms of said bars and prevent lateral motion of the body, the couplings G, rigidly secured to the central transverse portions of the coupling-bars, and the arched flat spring H, secured at its ends to the couplings G, substantially as shown and described.

475,305. COMPOSITE METAL WHEEL. JOSEPH L. POLLETT, New York, N. Y. Filed July 13, 1891. Serial No. 399,289. (No model.)



Claim.—As an improved article of manufacture, a cast-metal wheel having a rim *a*; hub *a'*, and connecting spokes or web, and having embedded in its mass a skeleton of wrought-iron or steel wire, said skeleton comprising a rim-ring *b*, composed of a coil of several strands of wire, a hub-ring *b'*, composed of several strands of wire, and ties b^3, composed of strands of wire, said ties connecting the said rings *b* and *b'*, substantially as set forth.

475,306. POCKET-KNIFE. RHODOLPH H. FRANKLIN, Brooklyn, N. Y. Filed Sept. 15, 1891. Serial No. 405,812. (No model.)

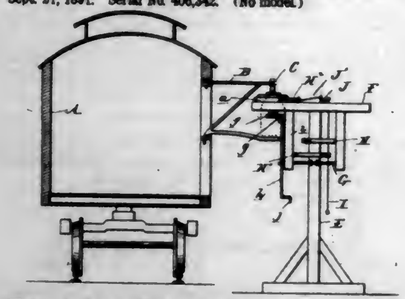


Claim.—1. The combination, in a sheath-knife, of the hollow handle, the blade sliding lengthwise therein, fastening devices at one end of the handle to secure the blade, and an actuator for said fastening devices, consisting of the push-rod, substantially as described.

2. The combination, in a sheath-knife, of the hollow handle, the blade sliding lengthwise therein and having notches in the sides, a pair of spring-jaws to secure the blade, and an actuator for the jaws, consisting of the taper-headed push-rod adapted to be forced between the jaws, substantially as described.

3. The combination, in a sheath-knife, of the hollow handle, the blade sliding lengthwise therein and having notches in the sides, a pair of spring-jaws to secure the blade, the keeper having the spring-jaws connected to it and being secured in the handle, and an actuator for opening the spring-jaws, substantially as described.

475,307. MAIL-BAG CATCHER. JOHN GLEASON, Dearborn, Mich.; Marcellus Gleason administrator of said John Gleason, deceased. Filed Sept. 21, 1891. Serial No. 406,342. (No model.)



Claim.—1. In a mail-bag catcher, the combination, with a standard, of a frame pivoted thereon, a yielding connection between the frame and standard, a rotating catching device on the frame, and means for retaining the catching device in an adjusted position, substantially as described.

2. In a mail-bag catcher, the combination of a standard secured beside a railway-track, a spring-backed frame pivoted to said standard, a catching device on said frame, and means for turning said catching device to receive from either direction, substantially as described.

3. In a mail-bag catcher, the combination of the following elements: a standard, a frame pivoted to the top thereof, check-springs applied to said frame, a turn-table on said frame, spring-actuated jaws on said turn-table, and means for turning said turn-table to receive mail from either direction, substantially as described.

4. In a mail-bag catcher, the combination of the following elements: a standard, a frame pivoted to the top thereof, check-springs applied to said frame, a turn-table on said frame, jaws pivoted to said turn-table, a trigger adapted to be released by the reception of a mail-bag for holding said jaws open, and a spring for closing said jaws when said trigger is released, substantially as described.

5. In a mail-bag catcher, the frame F, platform *a*, circular rail *b*, turn-table *c*, arms *k*, hinged thereto, spring *m*, having the arm *o* and eye *p*, and the trigger *g*, the parts being arranged and adapted to operate substantially as and for the purpose described.

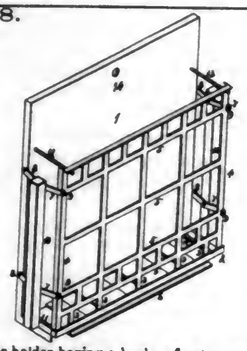
6. In a mail-bag catcher, the combination, with the jaws pivoted to a turn-table, of means for rotating said turn-table, a trigger for holding the jaws apart, and a spring for compressing said jaws, substantially as described.

475,308. PAPER-HOLDER. GEORGE S. GRAY, Beloit, Wis. Filed Mar. 12, 1892. Serial No. 424,727. (No model.)

Claim.—1. A paper-holder having a back, a front, and a support for the front extending from the back, the front capable of a bodily-sliding movement on the support to and from the back.

2. A paper-holder having a back, a front, a support for the front extending from the back, the front capable of a bodily-sliding movement on the support to and from the back, and a link connection between the front and the back.

475,308.



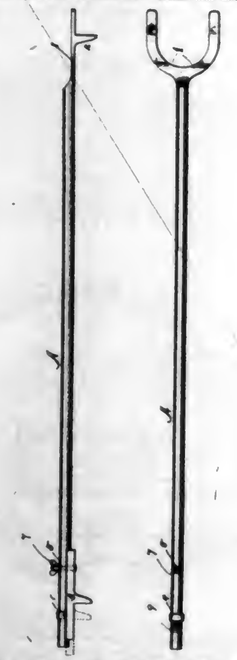
3. A paper-holder having a back, a front, a support for the front extending from the back, the front capable of a bodily-sliding movement on the support to and from the back, a link connection between the front and the back, and means for moving the front.

4. A paper-holder having a back, a front, a support for the front extending from the back, the front capable of a movement on the support to and from the back, a link connection between the front and the back, and a weight for moving the front.

5. A paper-holder having a back, a front, a support for the front extending from the back, the front capable of a movement on the support to and from the back, links pivoted to the front, and links pivoted to the back, said links pivotally joined in pairs to a connecting-bar.

6. A paper-holder having a back, a sectional bottom affixed thereto, a front resting on the bottom having a double-jointed link connection with the back, an arm connecting the pairs of links, bars from the front extending through openings in the bottom, a connecting-rod for the lower ends of the bars, and guide-bars extending from the back through openings in movable front.

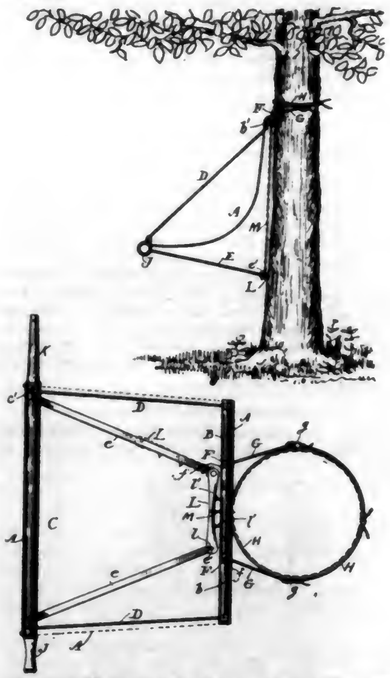
475,309. ADJUSTABLE TRACK-GAGE. MICHAEL GURNETT, Binghamton, N. Y. Filed Feb. 11, 1892. Serial No. 421,092. (No model.)



Claim.—1. A railroad-track gage comprising a body having a fork at one end, a downwardly-extending lug thereon, a plate adapted to fit and travel the lower side of the opposite end of the body, having a lug upon its lower side and an eye upon its upper outer end, and a bolt passing through the body and engaging with a slotway upon the inner end of the plate, as set forth.

2. A railroad-track gage comprising a tubular body having a fork at one end, a downwardly-extending lug thereon, a plate adapted to fit and travel the lower side of the opposite end of the body and having a lug upon its lower side, an eye upon its upper outer end, a bolt passing through the body and provided with a thumb-nut upon its upper end, and its lower end provided with a head engaging with the elongated slotway in the inner end of the plate, as set forth.

475,310. FOLDING SEAT. MARIUS H. HANSEN and WILLIAM J. HANSEN, Chicago, Ill. Filed Aug. 20, 1891. Serial No. 403,191. (No model.)



Claim.—1. The combination of the stretcher C, hangers suspending it, a continuous flexible seat and back secured at the front end to the stretcher, means for supporting the rear end thereof, and the prop-strips *e e*, each having one end hinged to the stretcher, one near each of its ends, so that when not in use they may be folded up against the stretcher, substantially as set forth.

2. The combination of the stretcher C, hangers suspending it, a flexible seat secured at its front end to the stretcher, means for supporting the rear end of the seat, a prop extending from the stretcher to the support, but forming no part of the direct support for the seat, and a chain supporting the free end of said prop, substantially as set forth.

3. The combination of the stretcher C, hangers suspending it, a seat secured at its front end to the stretcher, means for supporting the rear end of the seat, a prop hinged to the stretcher and extending from the stretcher to the support, but forming no part of the direct support for the seat, and a spur at the engaging end of the prop, substantially as set forth.

4. The combination of the stretcher C, consisting of a strip of metal curved longitudinally, hangers suspending it, a seat secured at its front end to the stretcher, means for supporting the rear end of the seat, and a prop consisting of the stripe *e e*, hinged to the concave side of the stretcher C and adapted to be folded thereinto, substantially as set forth.

5. The combination of the stretcher C, hangers suspending it, a seat secured at its front end to said stretcher, means for supporting the rear end of the seat, and a prop consisting of the stripe *e e*, hinged to the stretcher, and the cross-head L, connecting the ends of said strip, substantially as set forth.

6. The combination of the stretcher C, hangers suspending it, a seat secured at its front end to said stretcher, means for supporting the rear end of the seat, a prop consisting of stripe *e e*, connected to the stretcher and cross-head L, connecting said stripe, and a spur on said cross-head, substantially as set forth.

7. The combination of the stretcher C, hangers suspending it, a seat secured at its front end to said stretcher, means for supporting the rear end of the seat, and a prop consisting of stripe *e e*, hinged to the stretcher and the cross-head L, hinged to one of said stripe and detachably engaging the other, substantially as set forth.

8. The combination of the stretcher C, hangers suspending it, a seat secured at its front end to said stretcher, means for supporting the rear end of the seat, and a prop consisting of the stripe *e e*, hinged to the stretcher, and the cross-head L, of U-shape cross-section, hinged to one of said strips and having means for detachably engaging the other, substantially as set forth.

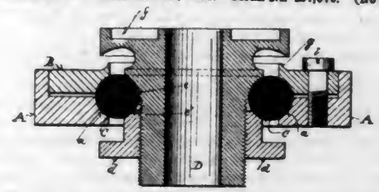
9. The combination of the stretcher C, formed of a strip of metal curved longitudinally, the blocks I, secured in the ends of said stretcher and having the perforated ears *i' i'*, the stripe *e e*, hinged between said ears, hangers suspending the stretcher, a seat secured at its front end to said stretcher, and means for supporting the rear end of the seat, substantially as set forth.

10. The combination, with the sheet A, of the front and back stretchers formed of stripe of sheet metal curved longitudinally and having their outer edges doubled over onto themselves, the edges of the sheet being doubled over with the metal and clamped between the folds thereof, substantially as set forth.

11. The combination of the stretcher B, having the eyes *b'*, the stretcher C, hangers D D, secured to the stretcher C, and having hooks *d d*, engaging the eyes *b'*, the sheet A, secured at its ends to said stretchers, so as to be suspended between and supported wholly by them, and a prop for sustaining the stretcher C, substantially as set forth.

12. The combination of the stretcher C, consisting of a sheet-metal strip curved longitudinally, the stretcher B, hangers depending from stretcher B and secured to the convex side of the stretcher C, a flexible sheet secured to and suspended between the stretchers, passing over the upper rounded side of stretcher C, and a prop secured to the stretcher C and adapted to engage the support, substantially as set forth.

475,311. ADJUSTABLE BEARING. FREDERICK HART, Poughkeepsie, N. Y. Filed Mar. 30, 1892. Serial No. 427,079. (No model.)



Claim.—In combination with a bearing-support constructed with an inner annular recess and an elastic ring held in such recess, a bearing having an outer annular recess, and an outer nut adjustable upon such bearing to reduce the size of said recess and tighten the elastic ring therein, substantially as set forth.

475,312. DUMPING-WAGON. CLEMENT F. HINMAN and MORTON G. BUSHELL, Chicago, Ill., assignors to Frederick C. Austin, same place. Filed Feb. 24, 1891. Serial No. 382,356. (No model.)

Claim.—1. A four-wheeled dumping-wagon having a body provided with an inclined tilting bottom pivotally supported between its ends, substantially as set forth.

2. A four-wheeled dumping-wagon having a body provided with an inclined tilting bottom pivotally supported between its ends, and a swinging end-gate, substantially as set forth.

3. A four-wheeled dumping-wagon having a body provided with an inclined tilting bottom pivotally supported between its ends, a swinging end-gate, and mechanism for simultaneously operating the tilting bottom and end-gate.

4. The combination, in a dumping-wagon, of a four-wheeled body adapted to increase in depth from front to rear and provided with a normally-inclined tilting bottom pivotally supported between its ends and end-gate, substantially as set forth.

5. The combination, in a dumping-wagon, of a four-wheeled body A, provided with a normally-inclined tilting bottom pivotally supported between its ends, a swinging end-gate C, a vibratory lever connected with both the end-gate and the tilting bottom, and a hand-lever connected with the vibratory lever, substantially as set forth.

6. The combination, in a dumping-wagon, of the four-wheeled body A, provided with a tilting bottom, an end-gate C, a hand-lever 11, and a vibratory lever 13, fulcrumed upon the wagon-body, a rod 15, connecting the hand-lever with the vibratory lever, and links 16 and 17, connecting the end-gate and tilting bottom with the vibratory lever, substantially as set forth.

475,812.

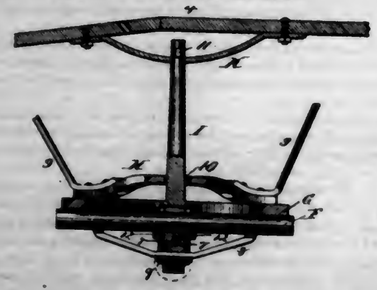


7. A dumping-wagon comprising, in combination, a four-wheeled body-frame provided with longitudinally-arranged sides with rise proportionally to the carrying capacity of the wagon, an end-gate, and a tilting pan pivotally supported at a point between the front and rear wheels and forming a bottom which when closed lies between said sides of the body-frame and which extends substantially over the space between the front and rear axles, said pan being pivotally supported at a point between its ends and arranged so that it can tilt independently of the said body-frame and discharge over the rear axle, substantially as set forth.

8. The combination, in a dumping-wagon, of a tilting receptacle pivotally supported upon the body-frame of the wagon, a hand-lever connected with the tilting receptacle for operating the same and locked when swung down by passing below the dead-center, and a movable stop within control of the driver and arranged for raising the lever above the dead-center, so as to unlock the same, substantially as set forth.

9. The combination of the wagon-body supported by rear and front wheels and having its sides formed with substantially horizontal top edges and inclined lower edges which incline upwardly from rear to front, the front wheels being adapted to run under the body in turning, and a tilting bottom B, pivoted midway of its ends and arranged to operate between said sides of the body, substantially as set forth.

475,813. FIFTH-WHEEL. CLEMENT F. HINMAN and MORTON G. BURNELL, Chicago, Ill., assignors to Frederick C. Austin, same place. Filed July 3, 1891. Serial No. 398,434. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the front axle, the vibratory king-bolt pivotally supported at its lower end upon the front axle, the circle arranged to turn upon a bearing rigid with the front axle and rigidly connected with the body-frame, and a spider rigid with the circle and providing a bearing through which the king-bolt extends.

2. The combination of the front axle, the vibratory king-bolt pivotally supported at its lower end upon the front axle, the circle rigidly connected with the body-frame and supported to turn upon a bearing rigid with the front axle, a bearing for the king-bolt rigid with the circle, and an upper bearing K for the king-bolt secured to the raised forward end portion of the body-frame, substantially as set forth.

3. The combination of the front axle, the bearing F, rigid with the front axle, clips 7 and a brace 8, arranged to secure said bearing to the front axle, and the vibratory king-bolt pivotally supported on said bearing, substantially as set forth.

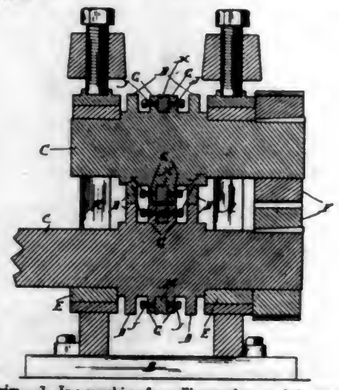
4. The combination, in a fifth-wheel, of a rod or bar F, supported upon the axle, the vibratory king-bolt I, having its lower end provided with a fork arranged to straddle said rod or bar, which extends through cheeks 12, formed by the sides of the fork, and the circle arranged to turn the said rod or bar and connected with the body-frame, substantially as described.

475,814. PROCESS OF MANUFACTURING CUTLERY. ISAAC HIRSCH, Chicago, Ill. Filed June 8, 1891. Serial No. 396,448. (No specimens.)

Claim.—1. The process of manufacturing cutlery, which consists in subjecting the metal bars, plates, or rods by a single heating to a uniform heat throughout and then before they have materially cooled stamping from such rods by rolls, dies, or stamps the articles of cutlery, each with a single operation, so as to avoid reheating.

2. The process of manufacturing articles of cutlery, which consists in heating the bars, plates, or rods by a single heating to a uniform heat throughout, then before they have materially cooled cleaning or scaling the surface of such metal plate, rod, or bar, and then before cooling stamping by a single operation of the rolls, dies, or stamps from such metal the finished blanks for the cutlery to avoid reheating and surface imperfections.

475,815. DIE AND MACHINE FOR ROLLING CUTLERY. ISAAC HIRSCH, Chicago, Ill. Filed June 8, 1891. Serial No. 396,450. (No model.)



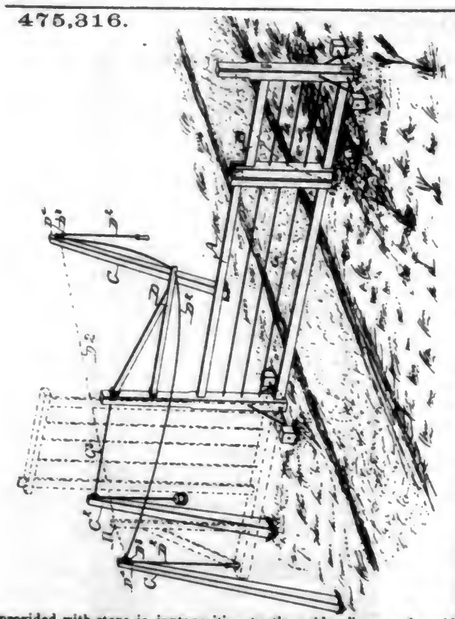
Claim.—1. In a machine for rolling cutlery and the like, the combination of two rolls with outer bearing-flanges which are in contact with each other, inner flanges of slightly less diameter than the bearing-flanges, and removable sectional dies secured between the inner flanges and projecting slightly from them.

2. In a machine for rolling cutlery and the like, the combination of two rolls with outer bearing-flanges which are in contact with each other, inner flanges of slightly less diameter than the bearing-flanges, removable sectional dies secured between the inner flanges and projecting slightly from them, and a series of set-screws threaded into and passing through the inner flanges, whereby the sections of the dies are each independently and adjustably secured between the inner flanges.

475,816. FARM-GATE. CHRISTIAN C. HOLTER, Roland, Iowa. Filed Sept. 25, 1891. Serial No. 406,775. (No model.)

Claim.—1. An improved farm-gate hinged at its rear lower corner to tilt backward, an arm extending from the front face of its rear upright and hinged to swing in a plane approximately at right angles thereto, two posts situated on opposite sides of the gate, having their tops above the said arm and in alignment with the rear upright post of the gate, and a rope passing through pulleys in the tops of the said posts and attached to the free end of the aforesaid hinged arm and

475,816.



provided with stops in juxtaposition to the said pulleys on the said posts, all constructed and combined substantially in the manner set forth, and for the purposes stated.

2. In combination with a farm-gate which opens by being tilted backward, an arm extending from the front face of its rear upright and hinged to swing in a plane approximately at right angles thereto, for the purposes stated.

3. An improved farm-gate comprising a gate hinged at its rear lower corner to posts driven into the ground, an arm extending from the front face of its rear upright and hinged to swing in a plane approximately at right angles thereto, two posts situated on opposite sides of the gate and having their tops above the said arms and in alignment with the rear end of the gate, a rope passing through pulleys in the tops of the posts, attached to the free end of the aforesaid arm and provided with stops in juxtaposition to the pulleys, for the purposes stated, and an auxiliary gate hinged at its rear lower corner to posts driven into the ground and having the top of its post, which is in juxtaposition to the main gate, provided with a forked portion to admit a projecting end of the top bar of the gate, in the manner set forth, and for the purposes stated.

475,817. MUSIC-LEAF TURNER. CHARLES H. HUFF, Tropico, Cal. Filed Aug. 15, 1891. Serial No. 402,732. (No model.)



Claim.—1. In a leaf-turner, the combination, with the casing, the turning mechanism therein, and means for operating said mechanism, of a rack depending from said casing, a foot-piece vertically adjustable on said rack, pins in the sides of the casing, cleats on the piano, and arms detachably inserted between said cleats and having eyes pivotally embracing said pins, substantially as described.

2. In a leaf-turner, the combination, with the casing, the turning mechanism therein projecting below the lower end of the casing, sheet-holding arms carried by said mechanism, and means for operating the mechanism, of a rack depending from the casing below said arms, a vertically-adjustable foot-piece on said rack, pins in the sides of the casing, and eyes supported by the piano, with which said pins detachably engage, as and for the purpose set forth.

3. The herein-described rack, the same comprising a body, a foot-piece along the lower edge thereof, a block at each side of the body, a vertical spring projecting from said block, a lug adjacent the block, a lever pivoted to said lug, and a roller in the inner end of the lever adapted to be borne against the spring, as and for the purpose set forth.

4. In a leaf-turner, the combination, with the casing, the turning mechanism therein projecting below the lower end of the casing, sheet-holding arms carried by said mechanism, and means for operating the mechanism, of a rack depending from the casing, a foot-piece at the lower end of said rack, and holders mounted on the edges of the rack, each comprising a spring having one free end and a pivoted lever having a roller adapted to bear said free end against the sheet, as and for the purpose set forth.

5. In a leaf-turner, the combination, with the casing, the cranked rods therein, their lower ends projecting below the casing, laterally-projecting plates at said lower ends of inverted-U-shape, bent rods projecting from the outer ends of said plates and having U-shaped depressions, and means for operating the cranked rods, of sheet-turning arms, substantially as described, whose inner ends are detachably engaged with the bent plates and the depressions in the rods, as set forth.

6. In a leaf-turner, the combination, with the casing having blocks therein, a number of cranked rods journaled in said blocks with their cranks between them, sleeves on each rod preventing its vertical displacement, and sheet-turning arms carried by the lower ends of said rods, the upper end of each rod being bent laterally, of contractile springs connecting said laterally-bent ends with the left side of the casing, an escapement in the casing to the right of said blocks, adapted to release the cranks of said rods one by one, and means for operating said escapement, substantially as described.

7. In a leaf-turner, the combination, with the casing, vertical rods journaled therein and having laterally-bent upper ends, and sheet-turning arms carried by the lower ends of said rods, of contractile springs connecting said laterally-bent ends with the left side of the casing, fingers projecting from said rods, an escapement in the casing to the right of the rods, adapted to release the fingers of the rods one by one, and means for operating said escapement, substantially as described.

8. In a leaf-turner, the combination, with the casing, upright rods journaled therein, sheet-turning arms carried by their lower ends, and springs normally throwing said arms to the left, of fingers projecting from said rods, a plate on every alternate finger for holding the fingers separated, an escapement in the casing to the right of the rods, having two heads alternately engaging said fingers, and means for operating said escapement, substantially as described.

9. In a leaf-turner, the combination, with the casing, upright rods journaled therein, sheet-turning arms carried by their lower ends, and springs normally throwing said arms to the left, of fingers projecting from said rods, a plate on every alternate finger for holding the fingers separated, an L-shaped arm having a spring-body and a depending front end, another spring-arm having a T-shaped head, these arms being secured in the casing to the right of the rods with their lower ends adapted to engage alternate fingers, and means, substantially as described, for moving said arms in opposite directions, as and for the purpose set forth.

10. In a leaf-turner, the combination, with the casing, an upright rod journaled therein, a sheet-turning arm carried by its lower end, a spring normally throwing said arm to the left, and a finger projecting from the rod approximately parallel with the arm, of a spring-arm projecting from the casing at the right of said rod, a T-head at its front end whose vertical portion normally engages said finger, a block having a forked and rearwardly-inclined front end engaging the horizontal portion of said head, and means for operating said block, substantially as described.

11. In a leaf-turner, the combination, with the casing, upright rods journaled therein, sheet-turning arms carried by their lower ends, springs normally throwing said arms to the left, fingers projecting from said rods, and a plate on every alternate finger for normally holding the fingers separated, of a spring-arm projecting from the casing at the right of said rods, a T-head at its front end whose vertical portion normally engages one of the fingers, an upwardly-rising spring-arm also projecting from the casing and having a depending front end or head adjacent, slightly in rear of and its lower end standing normally slightly above that of the T-head, a block having a forked and rearwardly-inclined front end engaging the horizontal portion of the T-

head, a lug on said block engaging the upper side of said upwardly-rising spring-arm, and means for operating said block, as and for the purpose set forth.

12. In a leaf-turner, the combination, with the casing, the cranked rods journaled therein, the sheet-turning arms carried by the rods, and the fingers projecting from said rods, of an escapement adapted to release said fingers one by one, a foot-lever, an operating-cord connecting said lever with the escapement, and a spring in the escapement opposing the tension of said cord, substantially as described.

13. In a leaf-turner, the combination, with the casing, an upright rod journaled therein, a sheet-turning arm carried by its lower end, a spring normally throwing said arm to the left, and a finger projecting from the rod, of a spring-arm projecting from the casing, a T-head at its front end whose lower end normally engages said finger when the sheet-turning arm is moved to the right, an upwardly and forwardly inclined guide projecting from the lower end of said head, a block having a forked and rearwardly-inclined front end engaging the horizontal portion of said head, and means for operating said block, as and for the purpose set forth.

14. In a leaf-turner, the combination, with the casing, an upright rod journaled therein, a sheet-turning arm carried by its lower end, a spring normally throwing said arm to the left, a finger projecting from the rod, and means for turning said arm to the right when desired, of a spring-actuated escapement having an inclined guide at its front end and automatically engaging said finger when the arm is turned to the right, and means for tripping said escapement, as and for the purpose set forth.

15. In a leaf-turner, the combination, with the casing, upright rods journaled therein, sheet-turning arms carried by their lower ends, springs normally throwing said arms to the left, and an escapement, substantially as described, engaging the rods for holding the arms to the right and releasing them one by one when desired, of an arm projecting from the last rod of the series and standing parallel with its sheet-turning arm, a cord leading from said arm over a pulley in the casing at the right of the arms, and means for drawing on said cord, as and for the purpose set forth.

16. In a leaf-turner, the combination, with the oscillating rods, the sheet-turning arms carried thereby, springs normally throwing said arms in one direction, an escapement retaining them against the tension of said springs, and means for operating the escapement, of an arm projecting from the last rod of the series, a cord leading from said arm over pulleys, a block sliding in guides, to which block the cord is connected, and a heel-socket projecting from said block, substantially as described.

17. In a leaf-turner, the combination, with the casing, the cranked rods journaled therein, the sheet-turning arms carried by their lower ends, springs normally throwing said arms to the left, an escapement holding the arms to the right, and means for operating the escapement, of loops projecting from the cranks of said rods and of variable lengths, a spring having a hook at one end engaging the loop on the last rod which has been released by the escapement, and means for moving said spring bodily to the right, as and for the purpose set forth.

18. In a device of the character described, the combination, with the parallel guides, of a block between said guides and having anti-friction wheels at its corners engaging them, a spring connecting the block with one of the guides for drawing said block in one direction, and means for moving said block manually in the opposite direction, as and for the purpose set forth.

19. In a leaf-turner, the combination, with the spring-actuated cranked rods carrying the sheet-turning arms at their lower ends, of an escapement holding said arms to the right and adapted to release them one by one, means for returning the last one and other means for returning all of the arms which have been released, cords leading from the escapement and the returning devices to the exterior of the casing, and pedals independently connected to said cords, whereby the player may operate the turner without the use of his hands, all substantially as hereinbefore set forth.

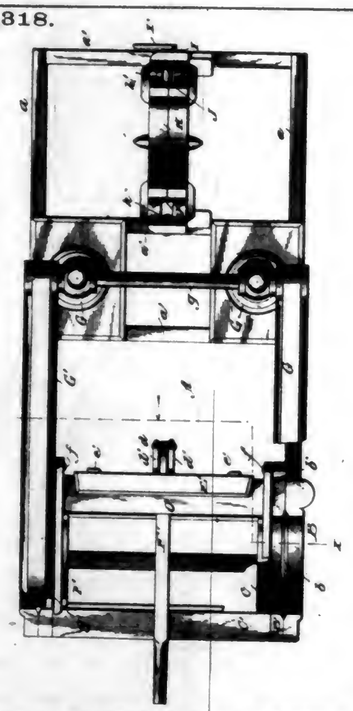
475,318. GUTTER-FORMER. MAURICE C. HUNGERFORD, Huntington, W. Va. Filed July 22, 1891. Serial No. 400,330. (No model.)

Claim.—1. The combination, with the frame, of the clamp having horizontal and vertical portions, the operating-lever formed upon a compound curve and passed through an opening in the vertical portion of said clamp, the former, and the end levers for forming the crimp in the ends of the gutter-section, as set forth.

2. The combination, with the frame and the semicircular supports, with their V-shaped recesses, of the clamp and its operating-lever, the guides for the clamp, and the former pivoted in ears of the semicircular supports, as set forth.

3. The combination, with the frame and the semicircular supports, of the clamp, the operating-lever therefor passed through a hole in the vertical portion thereof, the former, the guide-bars for the said lever, and the end levers carrying semicircular plates with V-shaped edges, as set forth.

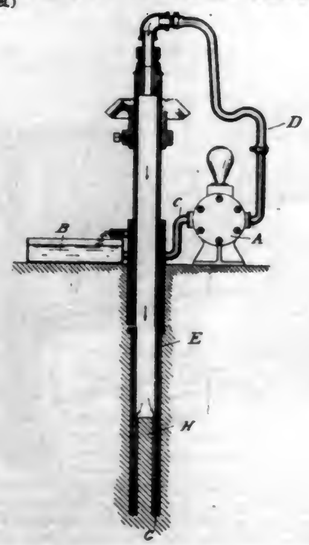
475,318.



4. The combination, with the frame and the substantially semicircular clamp-plates, one of which is pivoted and each provided with depending recessed portion, of the cam working in the said recesses to actuate the plates, as set forth.

5. The combination, with the frame and the substantially semicircular clamp-plates, one of which is provided with offsets and the other pivoted thereto and each provided with depending portion having recesses, of the shaft at right angles to the depending portions and a cam on said shaft working in said recesses, as set forth.

475,319. METHOD OF DRILLING FOR MINERALS. GEORGE R. JARVIS, Chicago, Ill. Filed Feb. 6, 1891. Serial No. 380,491. (No model.)



Claim.—1. In mining through a soluble geological stratum with core-drills requiring a stream of liquid to lift the cuttings of the drill, the process of lifting the cuttings by directing into the cavity made by the drill and withdrawing therefrom a fluid medicated or saturated to prevent erosion of the core or cuttings.

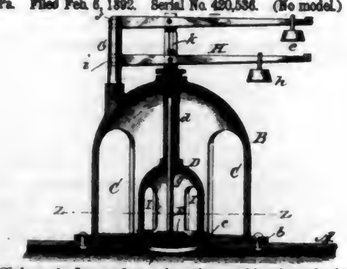
2. In prospecting with core-drills through a soluble mineral deposit, the process of directing into the cavity made by the drill and withdrawing therefrom an impregnated fluid to remove the drill-cuttings, said fluid being impregnated, charged, or saturated to prevent the erosion by the fluid of the core or cuttings, substantially as described, and for the purposes specified.

3. In mining with core-drills through a soluble geological stratum, the process of moving the drill-cuttings by directing into the cavity made by the drill and withdrawing therefrom a saturated fluid holding in solution the mineral which is being perforated to prevent erosion of the core.

4. The process described of preserving the integrity of the core or cuttings produced by a drill in mining through a soluble mineral deposit from being dissolved by the action of the water applied to move the chips or cuttings, consisting of applying at the point of contact of the drill with the mineral a saturated fluid charged or saturated with the mineral in solution which is being perforated.

5. The process described of preserving the integrity of the core or cuttings produced by a drill in mining through a soluble mineral deposit or stratum from being dissolved by the action of the water applied to cool the drill, consisting of applying at the point of contact of the drill with the mineral a saturated fluid saturated with the mineral in solution which is being perforated.

475,320. SAFETY-VALVE. ALEXANDER M. JOHNSTON, Homestead, Pa. Filed Feb. 6, 1892. Serial No. 420,536. (No model.)



Claim.—1. In a safety-valve, the combination of a large valve, a small valve seated upon the large valve and each opening in the same direction, and means for independently loading each valve, substantially as and for the purpose set forth.

2. In a safety-valve, the combination of a large valve provided with a hollow stem, a small valve provided with a stem that passes through the hollow stem and each opening in the same direction, and means for loading each valve independently, substantially as and for the purpose described.

3. In a safety-valve, the combination of a large valve provided with a hollow stem, a small valve seated on the large valve and provided with a stem which passes through the hollow stem and each opening in the same direction, and means for loading each valve independently, as and for the purpose described.

4. In a safety-valve, the combination of the dome-shaped large valve provided with openings in its sides and a seat in its lower end with a small valve resting on the large valve, and means for loading each valve independently, substantially as and for the purpose set forth.

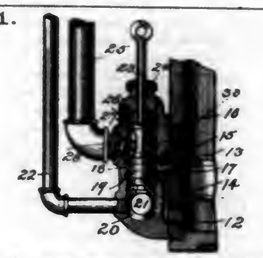
5. In a safety-valve, the combination of a large valve with a small valve seated thereon, the dome forming a seat for the large valve, and a guide for the valve-stem, substantially as and for the purpose specified.

6. In a safety-valve, the combination of a large valve with a small valve seated thereon, the dome forming the seat for the large valve and guide for the valve-stem, and means for loading each valve independently, substantially as and for the purpose set forth.

7. In a safety-valve, the combination of a dome having openings in its side, a fulcrum-standard having levers connected thereto and carrying weights adjustable thereon, a dome-shaped valve having its seat in the dome and provided with a hollow stem and openings in the side of said valve, a smaller valve having its seat in the dome-shaped valve and its stem extending through the hollow stem thereof, and a connection between the stems and the weighted levers, substantially as and for the purpose set forth.

475,321. STEAM-CYLINDER VALVE. GEORGE A. KELLY, Stillwater, Minn. Filed July 16, 1891. Serial No. 399,757. (No model.)

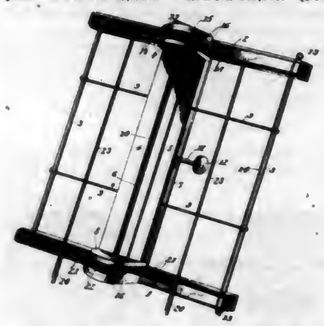
475,321.



Claim.—1. The combination, with the cylinder, of the valve-casing thereon, the annular ports 17 and 18 for the admission and discharge of steam, respectively, the solid cylindrical valve or plug 19, arranged in said casing and provided with the stem 28 and the balancing-disk 27, provided with openings for the free passage of steam into the closed end of the valve-casing, thereby preventing a vacuum, the chamber 20, the live-steam-pipe connection therewith, the exhaust-pipe connection and the annular groove 33, and a piston or valve-rod 23, by means of which said valve is operated, said stem 28 being of small diameter, whereby a large balancing-surface is gained on the inner side of the disk 27, substantially as and for the purpose specified.

2. The combination, with the upright cylinder 4, of the valve-casings 2 and 3, each provided with ports 17 and 18 for the admission and exhaust of steam, respectively, the live-steam pipe 21, the pipe 22, connecting the lower chamber 20 of the casing 3 with a similar chamber in the top of the chamber 2, whereby an equalized steam-pressure exists at both points, reciprocating valves or plugs arranged in said casings, packing-boxes for said casings, valve-rods passing through the same and connected with a shifting-rod 32, the exhaust-pipe connecting with the other ends of said casings, the plugs 19, arranged between the inlet and exhaust of each casing, the stem 28 in the exhaust-chamber, and the balancing-disk 27, the inlet and exhaust ports and the port 33 being extended to form annular grooves about the walls of the casings, whereby said valves are exactly and at all times balanced, substantially as and for the purpose specified.

475,322. MUSIC-LEAF TURNER. JOHN S. KNOWLES and GEORGE S. KNOWLES, Buffalo, Mo., assignors of one-fourth to Peter S. Keller, same place. Filed Jan. 28, 1892. Serial No. 419,575. (No model.)



Claim.—1. In a music-leaf turner, the combination, with a framework having a vertical recess, of a clamping-bar mounted loosely for movement and extending throughout the length of the recess and adapted to clamp sheet-music, means for operating the clamping-bar and leaf-turning devices, substantially as specified.

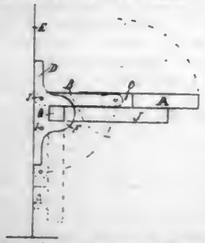
2. In a music-leaf turner, the combination, with the upper and lower transverse bars, and the pair of connecting-bars located near the center of the transverse bars and combining to form an intermediate space, of a clamping-bar mounted for sliding in the space, and a set-screw passing through one of the bars and into the clamping-bar and provided with a milled disk, substantially as specified.

3. In a music-leaf turner, the combination, with the transverse base and head-bars, the vertical supporting-bars spaced apart and connected by a back-piece, of the upper and lower semicircular rests located at the juncture of the base and head-bars and the supporting-bars and having their rear edges recessed to conform to the space between the supporting-bars, a clamping-bar mounted in the space and having its ends located in the recesses of the rests, whereby the latter constitute keepers, a clamping-screw for operating the clamping-bar, and leaf-turning frames pivoted above and below the rest, substantially as specified.

4. In a music-leaf turner, the combination, with the upper and lower brackets, the adjacent faces of which are inclined and provided with a series of pairs of offsets or steps rearwardly diverging from the center of the brackets and provided at the centers with bearing-perforations, of a series of wire frames graduated in length and mounted in the perforations, each frame consisting of the intermediate vertical portion 23, the horizontal branches 18 and 21, terminating in the bearing ends 19 and 22, respectively, and the arm 20, formed at the juncture of the branch 21 and the straight portion 22, substantially as specified.

5. In a music-leaf turner, the combination, with the upper and lower brackets, the adjacent faces of which are inclined and provided with a series of pairs of offsets or steps rearwardly diverging from the center of the brackets and provided at the centers with bearing-perforations, of the series of rectangular frames terminating in bearing ends mounted in the perforations and provided with a series of handles or arms graduated in length, substantially as specified.

475,823. FOLDING SHELF. HENRY KORELL, Hamilton, Ohio. Filed Aug. 17, 1891. Serial No. 402,830. (No model.)

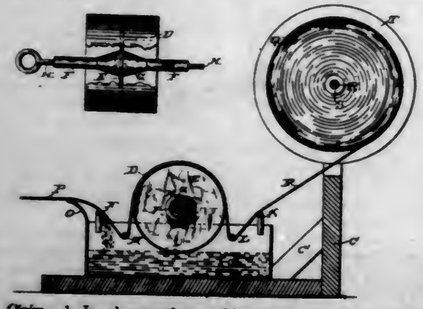


Claim.—1. In combination, a bracket to be fastened to a wall, an arm removably connected to said bracket, a shelf supported at one end by said arm, and a strap connecting the end of said shelf to said bracket.

2. In combination, a bracket to be fastened to a wall, a rectangular mortise in said bracket, an arm with a rectangular foot to removably enter said mortise to extend outwardly, a shelf supported at one end by said arm, and a strap connecting the end of said shelf to said bracket.

3. In combination, a shelf, a strap pivoted to each end thereof, a bracket pivoted to each of said straps, said brackets being each provided with a rectangular mortise, and arms adapted to support the respective ends of said shelf, said arms being each constructed with a foot adapted to enter into either of said mortises, whereby said arms are secured in a horizontal or a vertical position.

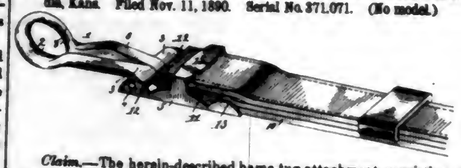
475,824. BOX-COVERING MACHINE. DANIEL F. LAFRAN and FRANK X. DEVLIN, York, Pa. Filed Apr. 27, 1891. Serial No. 390,529. (No model.)



Claim.—1. In a box-pasting machine, the combination, with the trough for containing the paste, of the hollow rotatable drum for transferring the paste, composed of a spindle or shaft having a centrally-disposed partition-plate, and a sheet-metal shell mounted upon said plate and projecting beyond both sides thereof, whereby access may be had to the interior of the drum to repair damages to the shell without separation of the shell and said partition, substantially as described.

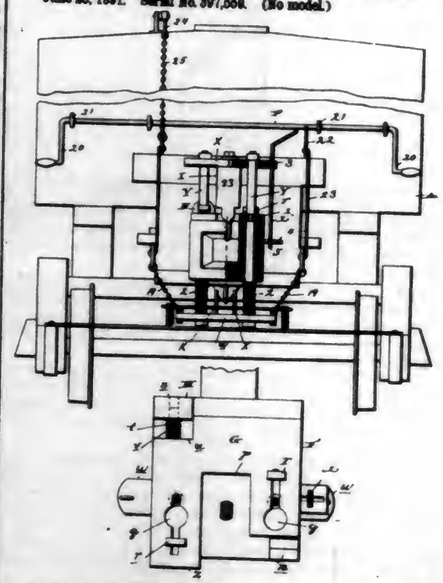
2. In a box-pasting machine, the combination, with the trough for containing the paste, of the hollow rotatable drum for transferring the paste, composed of a spindle or shaft having a centrally-disposed partition-plate and a sheet-metal shell mounted upon said plate and projecting beyond both sides thereof, and the cone-shaped caps inclosed within said drum and bearing against opposite sides of the said centrally-disposed partition to brace the single partition on both sides, substantially as described.

475,825. HAME-TUG ATTACHMENT. BENJAMIN LAKE, Concordia, Kans. Filed Nov. 11, 1890. Serial No. 371,071. (No model.)



Claim.—The herein-described hame-tug attachment, consisting of a clip-plate of rectangular form and having a flat bottom, open ends, and side flanges 11 at right angles to said bottom plate and extending beyond the plate at the opposite ends thereof to form ears 12 and 13, the ears 13 being connected by a transverse bar 14, to which the tug is attached, and a centrally-arranged keeper 15, integrally formed with said side flanges and projecting transversely over and parallel with the bottom plate above the line of the said side flanges, and a snap-hook formed with bearings through the ends of its shank and tongue and removably secured to ears 12 by a removable pintle, the openings or spaces at the ends of the bottom plate between the ears 12 and 13 of said clip-plate allowing the snap-hook and end of tug secured to said clip-plate between said ears to have free yielding movement, and thereby rendered adjustable without wear on said parts, the said parts being adapted to be independently constructed and attached and detached, as set forth.

475,826. CAR-COUPLING. JOSHUA W. LATTA, Sherman, Wyo. Filed June 26, 1891. Serial No. 397,559. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head having the pin-aperture and the vertical apertures on opposite sides thereof, of the yoke carrying the coupling-pin and having the rods movable in the apertures of the draw-head surrounded by springs beneath the draw-head and also shouldered, and the spring-backed slotted slide on the upper side of the draw-head adapted to engage the shoulders in the rods of the yoke, so as to hold the pin elevated, substantially as specified.

2. The combination, with the draw-head having the pin-aperture and the vertical apertures on opposite sides thereof and also having the guide-lug eye and the stop on its upper side, of the slide having the key-hole-slots and the rod surrounded by a spring adapted to enter the lug-eye, the spring for advancing the forward edge of the slide beyond the draw-head, and the spring-pressed yoke carrying the coupling-pin and adapted to be engaged by the slide, so as to hold the same elevated, substantially as specified.

3. In a car-coupling, the combination, with the frame secured to the under side of a car and having its opposite side walls recessed and its forward end provided with an aperture to receive the stem of the draw-head, of a draw-head passing into said frame, the lug secured to the stem of the draw-head, and means carried by a truck for contacting with the lug to raise the draw-head in the frame, substantially as specified.

4. In a car-coupling, the combination, with the frame adapted to be secured to the under side of a car and having its opposite side walls recessed, of the oscillating frame arranged within the recesses and having its side walls slotted, the frame arranged within the oscillating frame and having corresponding slots, the transverse pivot bolt or rod having a horizontally-disposed eye and passing through the side walls of the respective frames, and the draw-head having its stem passing through the oscillating frame and frame therein and also through the eye in the pivot-bolt, substantially as specified.

5. In a car-coupling, the combination, with the frame B, of the frame C, arranged in the recessed walls thereof and having the elongated slots in the sides, the frame D, arranged within the frame C and having corresponding slots in its sides, the pivot-bolt passing through said slotted sides and sides of the frame B and having an eye *g*, and the draw-head having its stem passing through the eye of the pivot-bolt and yieldingly secured in the frame D, substantially as specified.

6. In a car-coupling, the combination, with the frame B, having its side walls recessed, of the frame C, having its side walls slotted and arranged in the recessed walls of said frame B, the frame D, having its sides correspondingly slotted and arranged within the frame C, the draw-head having its stem passing through the frame D, the transverse rod E, passing through the respective frames and also receiving the stem of the draw-head, the springs surrounding said stem within the frame D and on opposite sides of the eye of the pivot-rod E, and plates backing said springs, substantially as specified.

7. A draw-head having its stem secured in a rocking or oscillating frame, in combination with a lug secured to the stem in advance of said frame, whereby the draw-head may be raised by devices contacting with said lug, substantially as specified.

8. In a car-coupling, the combination, with a frame secured to the under side of a car and adapted to receive the stem of the draw-head, of the draw-head, the yoke adapted to move vertically in said head and carrying the coupling-pin, the levers pivoted to the frame at one end and connected by means of chains at their opposite ends to the lower part of the yoke, the operating-shaft journaled in the car-body, and rods or links connecting said levers at an intermediate point of their length with fixed arms on the operating-shaft, substantially as specified.

9. The combination, with a draw-head, of a yoke passing vertically through the same and having springs interposed between the lower part of the frame and the under side of the draw-head and also carrying the coupling-pin, the levers pivoted at one end to a frame secured to the car and connected at their opposite end by means of chains with the lower part of the yoke, the operating-shaft journaled in the car-body, links connecting said shaft with said levers, and a lever pivoted to the top of the car and connecting with the operating-shaft by means of a chain, substantially as specified.

10. The combination, with a car-truck, of a transverse frame secured to the forward end of the truck-frame, a draw-head secured in a frame and adapted to move vertically therein, and the lug secured to the stem of the draw-head to be engaged by the frame carried by the truck, so as to elevate said draw-head when the car-body has been depressed, substantially as specified.

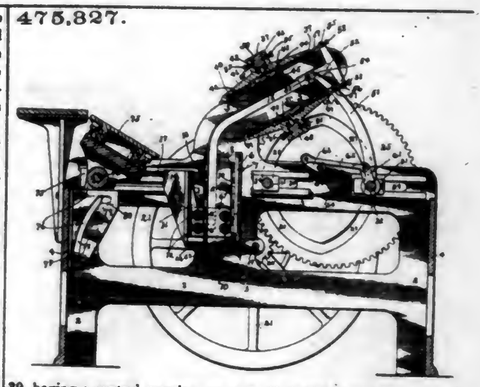
11. The combination, with a car and a truck thereof, of a transverse frame secured to the forward end of the truck-frame, a draw-head secured to the car-frame and adapted to move vertically, and the lug on the stem of the draw-head carrying the pin passing through a hole in the frame through which said stem passes, substantially as specified.

12. The combination, with the truck, of the transverse frame secured to the forward end thereof, the plate or strip arranged on the frame, the springs sustaining said plate or strip vertically and the draw-head adapted to be moved vertically and the lug receiving the draw head to be moved vertically therewith and adapted to be engaged by the yieldingly-sustained plate of the frame carried by the truck, substantially as specified.

13. The improved coupling-pin having the enlarged portion 33, the reduced depending portion 34, the rear projection or shoulder 35, and the lateral projections or shoulders 36, the whole formed entire and adapted to operate in a draw-head, substantially as specified.

475,827. PRINTING-PRESS. WILLIAM R. LAWRENCE, Columbus, Ohio. Filed Apr. 20, 1891. Serial No. 389,732. (No model.)

Claim.—1. In a printing-press, the combination, with the main frame 1, frame-arms 5, projecting therefrom, and arms 37, bridging said frame-arms and having keyways 38 therein, of an inking-plate



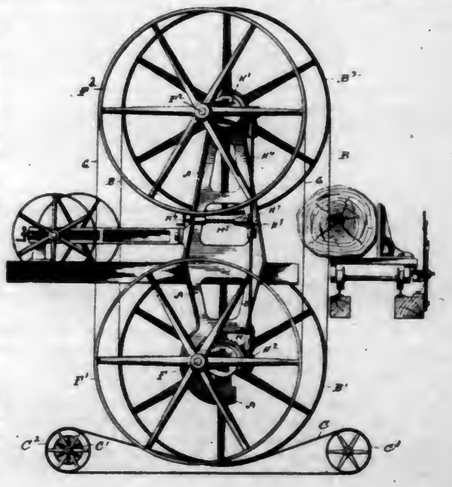
39, having a central opening, an arm 41, bridging said opening and having central lugs 42, set-screws 85, passing through said lugs and engaging with said keyways of the arms 37, and rotating ink-disk suspended from arm 37 within the inking-plate opening, substantially as specified.

2. In a printing-press, the combination, with the frame and parallel frame-arms 5, having slots 18, as described, fixed vertical bed-plate 6 between said frame sides, the movable printing-plate, connected roller-bearing blocks 67 opposite said slot 18, pins 68, projecting loosely through said slots, inking-rollers pivoted between said roller-bearing blocks, an inking plate or disk for each set of rollers, and a ratchet-wheel formed therewith, of the rotating gear-wheel 25 and disk 26, camways therein, formed, as described, of concentric and eccentric grooves, cross-heads 34 31, sliding in slots 29 and 30 of the press-frame, connected by shafts 35 32, arms 51, extending from shaft 32, T-shaped bodies 52, jointedly connected with arms 51 and sliding in frame-grooves 18, rods 55 56, connecting the outer arms of bodies 52, pawls or fingers 57, supported from said rods and engaging with the teeth of the inking-disk ratchet-wheel, arm 61, projecting from shaft 32, shaft 64 and arm 63, projecting therefrom, rod 62, connecting said lugs 61 63, and slotted arms 65, connecting, as described, the shaft 64 and roller-bearing block-pins 68, substantially as described.

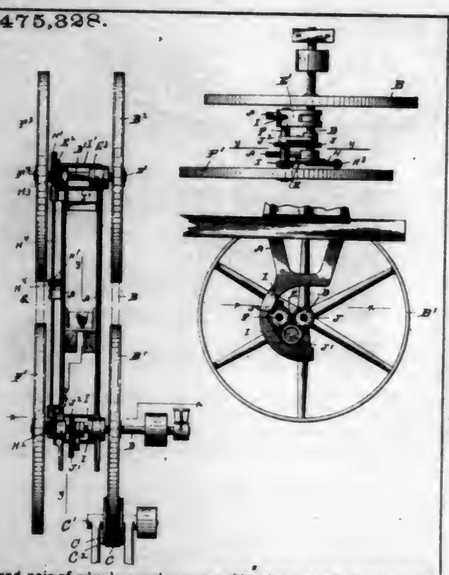
475,828. BAND-SAW MILL. CHARLES B. LONG, Shrewsbury, Mass. Filed Mar. 26, 1890. Serial No. 345,444. (No model.)

Claim.—1. In a band-saw mill, the combination, with a pair of wheels carrying a band-saw and journaled in fixed bearings, of a second pair of wheels carrying a second band-saw, each of said second pair of wheels being journaled in separate frame-works, said frame-works being capable of a concentric movement about the axes of the first pair of saw-carrying wheels, whereby the distance between the saws is varied, substantially as described.

2. In a band-saw mill, the combination of a pair of wheels carrying a band-saw and having their shafts journaled in fixed bearings, a



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second pair of wheels carrying a second band-saw, each of said second pair of wheels having their shafts journaled in separate frame-works having a concentric movement around the axes of the first pair of wheels, whereby the distance between the saws is varied, and connecting operating mechanism between one of the shafts held in a fixed bearing and one of the shafts held in a movable frame-work, by which rotary motion is imparted to the variable saw from the saw-carrying mechanism by which the first or fixed saw is carried, substantially as described.

3. In a sawing-machine, the combination of a pair of wheels journaled in fixed bearings and carrying a saw, a pair of wheels journaled in bearings capable of being moved concentrically around the axes of the wheels journaled in the fixed bearings, toothed sectors attached to the frame-work of the movable bearings, and a shaft having worms engaging said toothed sectors, by which the position of the movable wheels is varied relatively to said fixed wheels, substantially as described.

4. In a sawing-machine, the combination of a pair of wheels journaled in fixed bearings and carrying a saw, a pair of wheels journaled in the free ends of arms capable of being moved concentrically around the axes of the fixed wheels, driving-gears upon the shafts of said fixed wheels, driven gears upon the shafts of said movable wheels, and intermediate gears engaging said driving and said driven gears and turning upon studs held in said movable arms, whereby said movable wheels are driven from the shafts of said fixed wheels, and saws carried upon said fixed and movable wheels, substantially as described.

5. In a band-sawing machine, the combination of the shafts D and D′, journaled in fixed bearings, wheels B′ and B², carried upon said shafts, a saw B, carried upon said wheels, arms E E², capable of an angular movement about the shafts D D′ and having their free ends united by the frame-work 1 1′, shafts F and F², journaled in said arms and carrying the wheels F′ F², saw G, carried upon said wheels F′ F², connecting mechanism by which the rotation of the shafts D D′ is communicated to the shafts F F², and connected mechanism by which the arms E E′ are moved about the shafts D D′, substantially as described.

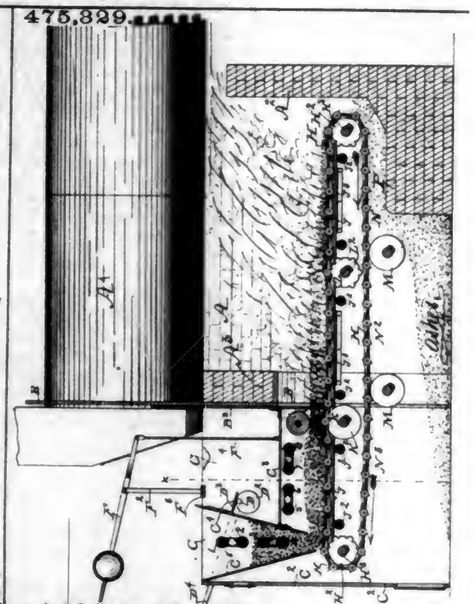
475,329. BOILER-FURNACE. STEPHEN J. LOUGHRAN, Des Moines, Iowa. Filed Jan. 9, 1892. Serial No. 417,526. (No model.)

Claim.—1. In a furnace, an adjustable metal plate B^6, in combination with an arched metal plate B, fixed to an arched wall A^2, a plate C^3, extending forward from the plate B^6 to a hopper, and an endless grate adapted to move horizontally and rearwardly relative to the adjustable plate, for the purposes stated.

2. The roller B^4, in combination with the vertically-adjustable plate and cut-off B^2, and an endless fuel-carrying grate, and a fuel-magazine, to operate in the manner set forth, for the purposes stated.

3. The plate C^3, fitted between the inner side walls C and hinged to the adjustable plate B^2 and fixed to the vertically-adjustable plate C^4 to produce a hopper and feed device, and an adjustable fuel-cover, and means for raising and lowering the plate C^4, arranged and combined in a furnace relative to an endless fuel-carrying grate, to operate in the manner set forth, for the purposes stated.

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4. A fuel-magazine having a hopper consisting of an adjustable plate C^4, a fixed plate C^5, a plate C^6, fixed to the plate C^4 to extend horizontally, means for raising and lowering the plates C^4 and C^4, arranged and combined in a furnace with tubes extended through the magazine to heat and moisten fuel, and an endless grate under the magazine to carry fuel, substantially as shown and described.

5. In a furnace, the fuel and ash chamber composed of parallel walls C and a front wall C^2 and a wall B, fixed to an arched front wall under a boiler, a vertically-adjustable plate and cut-off B^2, connected with the wall B and the plate C^3, the plate C^4, fixed to the front end of the plate C^3, the fixed plate C^5, the pipes 1 2 3 4 5 6 7 8, and means for raising and lowering the plates B^2, C^3, and C^4, and an endless grate extended under the plate C^3 to carry fuel to a combustion-chamber, all arranged and combined to operate in the manner set forth, for the purposes stated.

6. A lever F, fulcrumed to a suitable support and provided with an adjustable weight on its free end portion, in combination with the plates B^2 and C^3, for the purposes stated.

7. The shaft D, having cams or projections D^2 and an arm D^4, in combination with the plate C^4, having a fixed flange D^3 and a hopper, to operate in the manner set forth, for the purposes stated.

8. In a furnace, an endless grate having projections on the under side of its sections extending downward and adapted to engage and move coal-dust and fine ashes on a plate, and a plate in a plane close to the said projections to receive and support coal-dust and fine ashes to be engaged and moved by the said projections on the under side of the grate-sections, arranged and combined relative to a fuel-chamber and a combustion-chamber, for the purposes stated.

9. The shaft K, having fixed wheels K^2, in combination with an endless grate and a vertically-adjustable plate and cut-off B^2, to operate in the manner set forth, for the purposes stated.

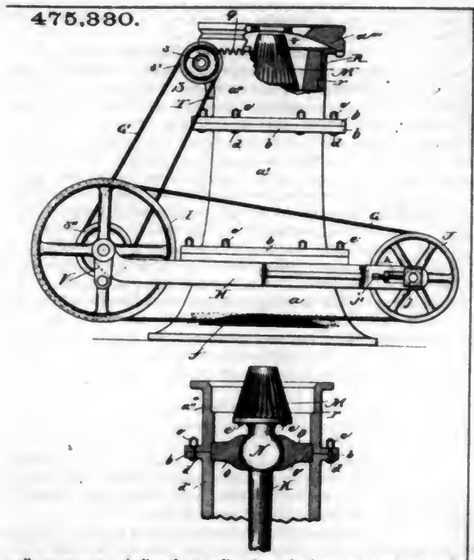
10. The shaft L, having fixed wheels L^2, arranged as shown, in combination with a jointed endless grate to break and stir fuel on the grate in the manner set forth, for the purposes stated.

11. In a furnace, an endless grate composed of bars or sections having hinged connections at their ends, supports at the doubled end portions of the grate, adapted to be rotated to move the grate, rollers K^2 and L^2, and a pair of rollers M, arranged and combined relative to each other and the grate and the end supports of the grate, substantially as shown and described, to operate in the manner set forth, for the purposes stated.

475,330. STONE-CRUSHER. GEORGE LOWRY, Northampton, England. Filed May 25, 1891. Serial No. 393,943. (No model.)

Claim.—1. The combination, with a shell having a belt-passage, of a horizontal beam or frame secured to the casing in juxtaposition to the belt-passage and having a belt-pulley at each end thereof, a gyrating crusher-shaft fulcrumed in the shell, a horizontally-rotating belt-pulley mounted in the lower portion of the shell and eccentrically connected with the gyrating crusher-shaft, and a drive belt encircling the

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pulley within the shell and extending from the latter through the belt-passage to the pulleys carried by the horizontal beam or frame outside the shell, substantially as described.

2. The combination, with a shell and a gyrating shaft fulcrumed therein, of a horizontal pulley mounted in the lower portion of said shell, said pulley having an eccentric bearing adapted to receive the lower end of the shaft, an opening *f* in the lower portion of said shell, pulleys I and J, mounted at the exterior of said shell, and rope-gearing for driving the horizontal pulley from one of the drive-pulleys I or J, the wheels I and J being so arranged that the rope will enter and pass out of the opening *f* on different levels, substantially as and for the purpose specified.

3. The combination, with a shell and a gyrating shaft fulcrumed therein and mechanism for gyrating said shaft, of pulleys I and J, mounted at the exterior of said shell, one of said pulleys being adjustable to and from the other, and a belt or rope for operating the shaft-driving mechanism from the pulleys I and J, substantially as described.

4. In a stone-crusher, the combination of an exterior shell A, composed of flanged sections *a a′ a″*, adapted to be secured together, an opening *m* in the section *a′*, and an inclined diaphragm D in said section and extending through said opening *m*, whereby the crushed stone may be delivered at any point without moving the driving mechanism, with a gyrating shaft mounted in said shell, and devices for gyrating said shaft, substantially as and for the purpose specified.

5. The combination, with an exterior shell, a crusher-head, and a gyrating shaft mounted in said shell and having a spherical portion N underneath the crusher-head, of a bearing O, composed of two or more sections supported in the interior of the shell beneath the crusher-head, and mechanism for gyrating the shaft, substantially as and for the purpose specified.

6. In a stone-crusher, the combination, with an exterior shell composed of sections *a a′ a″*, removably secured together, and a gyrating shaft mounted in said shell, said shaft having a spherical portion N near its upper end, of a removable bearing adapted to receive the spherical portion N of the shaft, said bearing being composed of two or more sections adapted to be supported in the shell at the meeting-point of the sections *a′ a″*, substantially as and for the purpose specified.

7. The combination, with an exterior shell, of a gyrating shaft fulcrumed at its upper portion, devices engaging the lower portion of the shaft for gyrating the shaft, a crown-cap resting upon the top of the shell and having an opening for the passage of unbroken stone, and means for rotating the cap, substantially as described.

8. The combination, with an exterior shell, of a gyrating shaft fulcrumed at its upper portion, devices engaging the lower portion of the shaft for gyrating the same, a crown-cap resting upon the top of the shell, having cogs and provided with an opening for the passage of unbroken stone, and a worm engaging the cogs to rotate the crown-cap, substantially as described.

9. The combination, with an exterior shell, of a gyrating shaft fulcrumed at its upper portion, devices engaging the lower portion of the shaft for gyrating the same, a crown-cap resting upon the shell and having cogs, a worm for rotating the crown-cap, and belt-and-pulley mechanism for operating the gyrating shaft and rotating the worm, substantially as described.

10. The combination, with a shell, of a gyrating shaft fulcrumed at its upper portion in the shell, mechanism for gyrating the shaft, a revolving crown-cap mounted upon the upper portion of the shell and having cogs on the under portion of its periphery, a worm journaled on the upper portion of the shell and engaging the cogs of the crown-cap, and means for rotating the worm, substantially as described.

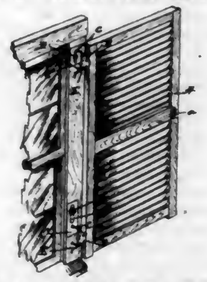
11. The combination, with an exterior shell, of a gyrating shaft mounted in the shell, a crushing-head on the shaft, mechanism for gyrating the shaft, a rotating crown-cap mounted upon the upper end of the shell, means for rotating the crown-cap, and a removable and replaceable triple-arm bearing supported by the rotating crown-cap and in which the upper end of the crushing-head is fulcrumed, substantially as described.

475,331. CAR-COUPLING. ALBERT MAILMAN, Liverpool, Canada. Filed Aug. 17, 1891. Serial No. 402,831. (No model.)



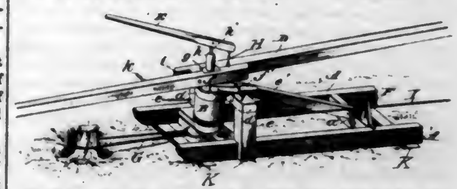
Claim.—In a car-coupler, the combination, with the draw-bar head having the cross-pin *f*, the pin C, and a suitable recess, of the block or tumbler B, having the slotted hole *b*, the groove *d*, the tongue D, having the slotted hole *e*, and a suitable pin made one with the block B, which retains the tongue D to slide in the groove *d*, substantially as and for the purposes set forth.

475,332. BLIND-HINGE. WALTER E. MAYO, Gloucester, Mass. Filed Sept. 12, 1891. Serial No. 405,503. (No model.)



Claim.—The improved blind-hanging and safety device, as described, consisting, in combination, of a blind, hinge-leaves thereon, pintles or spindles secured to the wall, jamb, or window-frame, and an adjustable face-plate adapted to be secured to said wall, jamb, or window-frame and having a spindle adapted to enter one of the hinge-leaves, substantially as and for the purpose set forth.

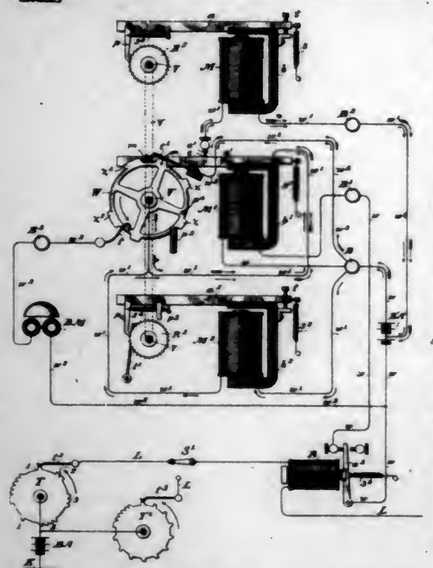
475,333. STUMP-PULLER. JAMES MILNE, Scotch Grove, Iowa, assignor of two-thirds to Joseph J. Milne, same place. Filed Mar. 3, 1892. Serial No. 423,661. (No model.)



Claim.—In a stump-puller, the combination, with a frame consisting of longitudinal beams connected to each other by transverse beams *a a′*, and a transverse bar *a″*, supported by uprights and braced to the beam *a′*, of a drum B, carrying ratchet-teeth, a pawl pivoted to the bar *a″*, the drum having a rectangular portion above the ratchet-wheel and a projecting portion *k*, forming a fulcrum for a lever, which is pivoted thereto and connected to a sweep D, said sweep having a rect-

angular aperture for engagement with the drum, and a horizontally-projecting pin *k*, substantially as shown, and for the purpose set forth.

475,384. ELECTRIC SIGNALING APPARATUS. WILLIAM C. MOORE, Kansas City, Mo., assignor to the Electric Secret Service Company, New York, N. Y. Filed June 19, 1891. Serial No. 396,836. (No model.)



Claim.—1. An individual-call apparatus having a movable circuit-closing device operatively connected with the armatures of two electro-magnets, adapted each to give to it a forward step-by-step movement, a mechanical retarding device for preventing one of said magnets from acting for simple closures of the signaling-circuit, and a signal-receiver in circuit with the circuit-closing device, one of the propelling electro-magnets acting to advance the circuit-closer for simple current impulses and the other only for abnormal breaks of the circuit, substantially as described.

2. An individual-call apparatus provided with a movable circuit-closing device, an electro-magnet for controlling the direction of its motion, and two additional electro-magnets for controlling its forward advancement, in combination with a source of energy, as a weight, for returning the circuit-closing device to normal position, one of the propelling electro-magnets having its armature attached to a retarding mechanism, which permits said armature to impart to the circuit-closing device a forward motion only on an abnormal break of the current, substantially as described.

3. An individual-call apparatus provided with a movable circuit-closing device operatively connected with a local signaling-instrument and electro-magnetic means for giving to said circuit-closing device positive forward motion and simultaneously storing up energy for moving it in the reverse direction, and additional electro-magnetic means for releasing it at the end of its journey or at intermediate points, and thereby allowing it to be returned to normal position, the operating electro-magnets and signaling-instrument being controlled by a single local battery, substantially as described.

4. An individual-call apparatus having a movable circuit-closing device electrically connected to a local signal or alarm mechanism, electro-magnetic step-by-step apparatus adapted to give to the circuit-closing device a positive step-by-step advancement, a source of energy operatively connected to the circuit-closing device and adapted to be brought into play as the latter advances, an additional electro-magnet, and intermediate mechanism which releases the step-by-step mechanism at the end of its phase or at intermediate points and permits the circuit-closing device to be restored to normal position, all of the local connections being through a single local battery, substantially as described.

5. An individual-call apparatus provided with a movable circuit-closing device operatively connected to a local signal mechanism, electro-magnetic means for giving to the circuit-closing device forward advancement either one or two steps, as desired, and additional electro-magnetic means for controlling the application of the first-named electro-magnetic means, all of the electro-magnets and the local signaling mechanism being under the control of a single local battery, substantially as described.

6. An individual-call apparatus provided with a local signal or alarm mechanism, a movable circuit-closing device connected through a local battery with said alarm mechanism, two electro-magnets having ratchet-and-pawl mechanism adapted to give to the circuit-closing device forward advancement, and a third or controlling electro-magnet having mechanical and electrical connections, whereby the circuit-closing device is positively advanced step by step, one of the propelling electro-magnets having retarding mechanism operatively connected with its armature-lever for preventing the advancement of the circuit-closing device for simple current impulses and permitting it to act only on abnormal ruptures of the circuit, substantially as described.

7. The described electro-magnetic means for giving forward advancement to a circuit-closing device, consisting of two electro-magnets electrically united in one circuit and having armatures provided with pawls adapted to act upon ratchet-wheels carried by the same shaft which carries the circuit-closing device, one of said armatures being connected to an escapement-retarding mechanism, whereby either one or two steps may be imparted to the ratchet-wheels either for a single electrical impulse or an abnormal break, substantially as described.

8. A step-by-step mechanism consisting of a rotary shaft carrying a pair of ratchet-wheels, two electro-magnets provided with armature-levers, which carry pawls adapted to actuate said ratchet-wheels, one of said armature-levers being connected to a mechanical retarding device, and both magnets being included in a single circuit, whereby the circuit-closing device is advanced either by current impulses or abnormal breaks, substantially as described.

9. In an individual-call system, a transmitter adapted to transmit a prearranged order of electrical impulses followed by spaced breaks, in combination with an electro-magnet adapted to respond to said impulses and a pair of electro-magnets which respond only for the breaks, the armatures thereof being operatively connected to a movable circuit-closer and adapted to impart to it a positive forward motion of either one or two steps at each break dependent upon the length thereof, all of said magnets being controlled by the same local battery, substantially as described.

10. In an individual-call system, a transmitter adapted to transmit a prearranged code in the nature of makes and breaks in an electrical circuit, including a relay-magnet, a local electro-magnet included in a local circuit controlled by said relay, and a pair of electro-magnets operatively connected to the same local circuit through step-by-step mechanism with a movable circuit-closer and electrically connected through contacts with the armature of the first-named magnet, in combination with a retarding device for the armature of one of said electro-magnets, and a source of power, as a weight, connected to the shaft which carries the circuit-closer, substantially as described.

11. In an individual-call system, one or more main-line relays located in a single main line, local electro-magnets, one for each relay, a pair of electro-magnets having electrical-circuit connections through the armature of the first-named local electro-magnet and mechanical and electrical connection between all of said electro-magnets, and a movable circuit-closing device operatively connected to a local signaling-instrument, all of the local electro-magnets being controlled by a single local battery, substantially as described.

12. In an individual-call system, a local alarm apparatus or signaling-instrument at each of a series of stations, provided with mechanism adapted to actuate it, in combination with a series of individual transmitters adapted to actuate each its own signaling-instrument only, and an additional transmitter provided with a series of make-and-break contacts adapted to actuate all of said alarm or signaling instruments simultaneously, the transmitters and receivers being operatively connected in a single circuit and the additional transmitter normally out of circuit therewith, substantially as described.

13. In an individual-call system, a series of alarm or signaling instruments located one at each of a series of outlying stations connected by a single electrical circuit, a movable circuit-closing device operatively connected with each alarm-signaling instrument, and mechanism for causing it to complete a local circuit through the signaling or alarm mechanism, in combination with a multiple transmitter provided with a transmitting-disk for each alarm mechanism, and an additional transmitting-disk having a series of make-and-break contacts adapted to cause all of the alarm mechanisms to be actuated simultaneously, substantially as described.

14. A signal-receiving instrument responsive only to a prearranged call, in combination with an answer-back signaling-transmitter operatively connected with the receiving-instrument and located directly in the main line, and circuit connections whereby the receiving-instrument is actuated to the completion of its phase, after which an answer-back or return signal is automatically transmitted to the transmitting-station, substantially as described.

15. In an individual-call system, an alarm mechanism or signal-receiving apparatus located one at each of a series of outlying stations and each responsive only to a prearranged call or signal, in combination with an answer-back signaling mechanism located at each station directly in the main line and adapted to automatically transmit a signal over the line after the alarm mechanism has been actuated, thereby indicating to the transmitting operator that his signal has been correctly received, substantially as described.

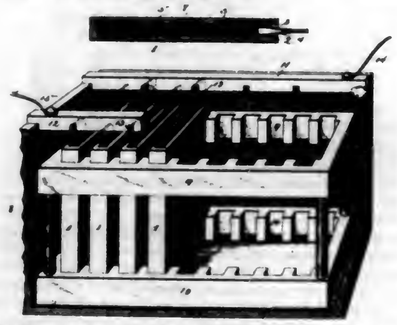
16. In an individual-call system, a signal-receiving instrument or alarm mechanism located in a normally-open local circuit, electro-magnetic means adapted to close said local circuit for a prearranged call or signal, in combination with an answer back transmitting-instrument controlled by the same local circuit, but located directly in the main line, and adapted to automatically indicate to the transmitting operator that his signal has been received, substantially as described.

17. In an individual-call system, a series of relays located in the main line, a series of movable circuit-closing devices provided with electro-magnetic means for causing them to close local circuits through alarm mechanism, and an answer-back signaling mechanism for each relay, provided with an electro-magnet for bringing it into operation, the transmitter of each answer-back mechanism being located directly in the main circuit, substantially as described.

18. In an individual-call system, a series of relays located in a main line, an individual-call apparatus for each relay, a movable circuit-closing device operatively connected in a local circuit with each call apparatus, electro-magnetic means for advancing the circuit-closing devices through their complete or operative phases, and an answer-back signal for each call apparatus, located directly in the main-line circuit and operatively connected through a local circuit with the circuit-closing device, whereby as each individual call is received its answer-back signaling mechanism automatically indicates the fact by transmitting a return signal, substantially as described.

19. In an individual-call apparatus, the combination of the following elements: a movable circuit-closing device carried by a rotary shaft, which carries, also, a weight suspended by a cord and a pair of ratchet-wheels, an electro-magnet provided with an armature having circuit connections through two additional electro-magnets, each provided with an armature and a propelling-pawl and adapted to impart to the rotary shaft forward motion, a releasing device in the nature of a pin on the free end of the first-named armature, and a rock-shaft carrying three arms and adapted to release the pawls from the ratchet-wheels when the first-named armature is drawn through its full stroke.

475,335. MANUFACTURE OF ELECTRODES FOR SECONDARY BATTERIES. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Jan. 31, 1890. Serial No. 338,728. (No model.)



Claim.—1. The improvement in the art of making secondary-battery electrodes, which consists in packing against a suitable conductor-support in a non-conducting mold dry powdered active material and then solidifying and joining said material to its support by electrolytic action, substantially as described.

2. The improvement in the art of making secondary-battery electrodes, which consists in packing against a metallic support in a non-conducting mold dry powdered active material and then subjecting the same to the action of a current of electricity within an electrolytic bath, substantially as described.

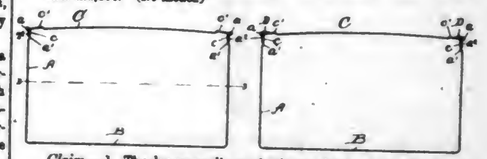
3. The improvement in the art of making secondary-battery electrodes, which consists in placing a suitable electrode-support in a porous non-conducting mold and packing dry powdered active material against the support within the mold and then solidifying and joining said material to its support by electrolytic action, substantially as described.

4. The improvement in the art of making secondary-battery electrodes, which consists in placing a suitable electrode-support of lead in a porous non-conducting mold and packing a dry powdered mixture of oxide of lead and plaster-of-paris against the support within the mold and then subjecting the whole to the action of a forming-current within a bath of dilute sulphuric acid, substantially as described.

5. An apparatus for making secondary-battery electrodes, consisting, essentially, of a mold of porous non-conducting material for the reception of the electrode-support and the active material for the same, and an electrolytic bath for the reception of a number of said molds, and circuit connections as described, substantially as described.

6. An apparatus for making secondary-battery electrodes, consisting, essentially, of a mold of porous non-conducting material for the reception of the electrode-support and the active material for the same, an electrolytic bath adapted for the reception of a number of said molds, and means for spacing the latter within the bath, substantially as described.

475,336. TIN CAN. EDWIN NORTON, Maywood, assignor to himself and Oliver W. Norton, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 422,196. (No model.)



Claim.—1. The drawn or die-made tin can for hermetically-sealed goods herein shown and described, and consisting of a seamless cylindrical body A and bottom head B, both said parts being drawn up out of one and the same piece or blank of tin-plate, and a die-made cover C, having a cylindrical flange *c* fitting the cylindrical body A at the mouth or end thereof and soldered or adapted to be soldered thereto, substantially as specified.

2. The drawn or die-made tin can for hermetically-sealed goods herein shown and described, and consisting of a seamless cylindrical body A and bottom B, both said parts being drawn up out of one and the same piece or blank of tin-plate, and a die-made cover C, having a cylindrical flange *c* fitting the cylindrical body A at the mouth or end thereof and soldered or adapted to be soldered thereto, said seamless body A having a rolled edge *a* at its end or mouth to facilitate the application of said cover-head C to the body, substantially as specified.

3. The drawn or die-made tin can for hermetically-sealed goods herein shown and described, and consisting of a seamless cylindrical body A and bottom B, both said parts being drawn up out of one and the same piece or blank of tin-plate, and a die-made cover C, having a cylindrical flange *c* fitting the cylindrical body A at the mouth or end thereof and soldered or adapted to be soldered thereto, said seamless body A having an externally-rolled edge *a* at the end or mouth thereof, and an internal bead *a'* to form a stop for the seamless flange *c* of said cover to fit against, substantially as specified.

4. The drawn or die-made tin can for hermetically-sealed goods herein shown and described, and consisting of a seamless cylindrical body A and bottom head B, both said parts being drawn up out of one and the same piece or blank of tin-plate, and a die-made cover C, having a cylindrical flange *c* fitting the cylindrical body A at the mouth or end thereof and soldered or adapted to be soldered thereto, said seamless body A having an externally turned or rolled edge *a* and said cover C having a slightly-inclined or flaring rim *c'* to form a guide or channel for the solder in soldering the cover-head C upon the body, substantially as specified.

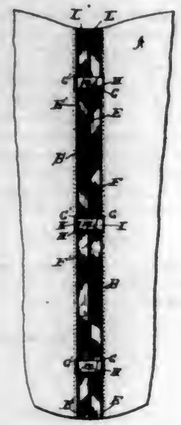
5. The drawn or die-made tin can for hermetically-sealed goods herein shown and described, and consisting of a seamless cylindrical body A and bottom head B, both said parts being drawn up out of one and the same piece or blank of tin-plate, and a die-made cover C, having a cylindrical flange *c* fitting the cylindrical body A at the mouth or end thereof and soldered or adapted to be soldered thereto, said seamless body A having an externally turned or rolled edge *a* and said cover C having a slightly-inclined or flaring rim *c'* to form a guide or channel for the solder in soldering the cover-head C upon the body, and said body A being also provided with an internal bead or shoulder *a'* to form a stop for said flange *c* of the cover to fit against, substantially as specified.

475,337. CORSET. VIRGINIA H. OBERLY, Washington, D. C. Filed Oct. 14, 1889. Renewed Oct. 27, 1891. Serial No. 409,954. (No model.)

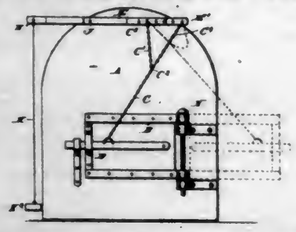


Claim.—The combination, with a corset-body having front casings E E', of a pair of front fastening steels or stays fitting said casings and a series of fastenings, each removable and replaceable independently and so arranged as to fasten the corset in front by each clasping around the inside edge of each of said steels or stays ouside of said casings, substantially as set forth.

475,887.



475,888. FURNACE-DOOR OPENER. CHARLES H. OLIVER, Sedalia, Mo. Filed Oct. 23, 1891. Serial No. 409,637. (No model.)



Claim.—1. A device for opening and closing side-swinging fire-doors of steam-boilers and furnaces, comprising lever E, pivotally supported above the door, having the upper end of a rod, chain, or cable attached to lever E at or near a lateral vertical line above the door-hinge rod or pin N, the lower end of said rod, chain, or cable attached to the fire-door or to the latch thereof, substantially as specified.

2. The within-described device for opening and closing fire-doors of steam-boilers and furnaces, comprising a pivoted lever fulcrumed above the door, having a rod, chain, or cable attached to one end of said lever and to the fire-door and provided with a rod or chain connecting the other end of said lever with a foot-treadle at or near the base of the furnace, substantially as specified.

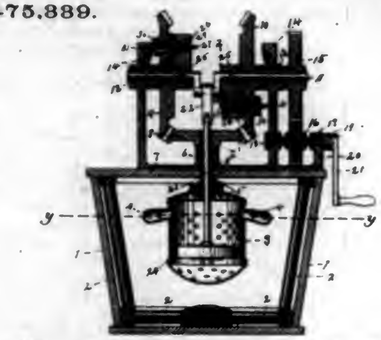
3. The combination, with a side-swinging fire-door of steam-boilers and furnaces, of lever E, having side or lateral bends on either side of its pivotal support above the door, said pivot located at a suitable distance forward of the furnace front and having a rod, chain, or cable attached to lever E and to the fire-door, substantially as specified.

4. A boiler or furnace front provided with a side-swinging fire-door B, having a pivoted latch D, in combination with a rod, chain, or cable C, connected to the door-latch and to a pivoted lever E, fulcrumed above the door, and a rod or chain connecting lever E with a treadle K^3, substantially as specified.

5. A device for opening and closing the doors of steam-boilers and furnaces, comprising chain C, the lower end thereof attached to the front portion of the door, said chain extending in an oblique direction upward and rearwardly, connected to a pivoted lever fulcrumed above the door, the upper part of chain C having an additional chain C′ attached thereto and connected with said lever at any suitable point between its end and the fulcrum-pivot J thereof, substantially as specified.

6. The within-described device for opening and closing side-swinging fire-doors of steam-boilers and furnaces, comprising a chain or cable, one end thereof attached to the door and the other end of said chain or cable extending from its point of connection with said door in an oblique direction rearwardly and engaging with an operating mechanism, the lower hinge of said door made longer, placing its pivot out of vertical alignment with the pivot of the upper hinge, substantially as and for the purpose specified.

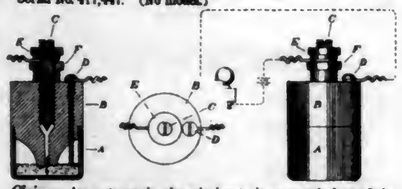
475,889. WASHING-MACHINE. JOHAN J. OTTO, Altoona, Pa. Filed Nov. 26, 1891. Serial No. 413,446. (No model.)



Claim.—1. In a washing-machine, substantially as described, the combination of a vessel, a perforated cylinder suspended therein upon a hollow vertical shaft, means to rotate said shaft alternately to the right and left, and a piston having a plunger secured to the lower end thereof adapted to be vertically reciprocated in said cylinder simultaneously said cylinder is rotated, substantially as and for the purpose herein set forth.

2. In a washing-machine, substantially as described, the combination of a vessel, a perforated cylinder, a hollow vertical shaft carrying a beveled wheel provided with an orifice through the center of the same, a crank-shaft suitably secured in bearings, a vertical piston-rod suitably secured thereto and adapted to be vertically reciprocated in said hollow shaft and said cylinder, arms rigidly secured on said crank-shaft at either side of said crank and projecting in opposite directions therefrom and provided with recessed pins carrying spiral springs mounted thereon, and a pair of beveled gear-wheels secured upon said shaft in close juxtaposition with said arms and having similar recessed pins with said arms and adapted to be thrown into clutch with said arms alternately, substantially as and for the purpose herein set forth.

475,340. AUTOMATIC ELECTRIC HEAT-ALARM. FRED S. PALMER, Boston, Mass., and LEONARD H. DEMBLE, Lamoine, Me., assignors to the Electric Heat Alarm Company, Bangor, Me. Filed Jan. 9, 1892. Serial No. 417,447. (No model.)



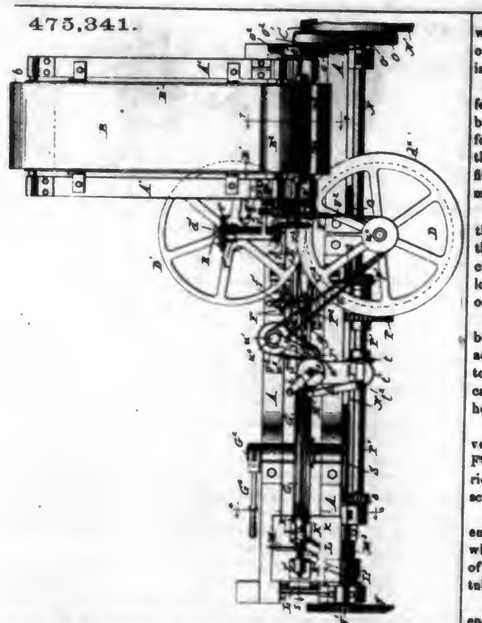
Claim.—An automatic electric heat-alarm consisting of the combination of a hollow metallic reservoir, a quantity of mercury within said reservoir, a plug constructed of material which is a non-conductor of electricity partially filling said reservoir and having a small downwardly-extending tubular bore, a conductor-wire or spindle supported within and surrounded by said non-conducting plug and extending to such point as that it may be reached by said mercury when expanded and risen in said tube, a second conductor-wire or spindle supported within said plug and in contact with said mercury before said mercury is expanded, the whole in combination with an electric battery having its poles connected with said spindles, respectively, and a bell or other alarm or indicator connected with and operated by said electric battery.

475,341. CIGARETTE-MACHINE. JAMES B. POLLARD, Roanoke, Va., assignor to the International Cigarette Machine Company, same place. Filed Oct. 6, 1891. Serial No. 407,897. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, in a cigarette-machine, of an endless apron which carries the tobacco, a vertically-arranged endless band extending past the end of the apron and mounted to move in close proximity thereto to deliver the tobacco at a regulated speed, a combing-roll below the lower end of the endless band and below the end of the apron to draw the tobacco away from the apron and band, a concave between which and the combing-roll the tobacco passes, and gearing which drives the combing-roll faster than the band and apron to comb out and arrange the tobacco.

2. The combination, substantially as hereinbefore set forth, in a cigarette-machine, of a retarding device through which the tobacco passes at a regulated speed, a combing-roll which draws the tobacco away from the retarding device, a concave between which and the roll the tobacco passes, a second combing-roll upon which the tobacco is deposited from the first roll, smooth rollers close to the second combing-roll, a third combing-roll close to the second, a concave close to which it works to draw out and discharge the tobacco, and gearing actuating the moving parts of these devices.

475,341.



away from the retarding device, a concave between which and the roll the tobacco passes, a second combing-roll upon which the tobacco is deposited from the first one, smooth rollers close to the second combing-roll, and gearing which drives both combing-rolls in the same direction and faster than the retarding device, so that the tobacco combed out by the first roll is still further drawn on in passing between the second combing-roll and its adjacent smooth rolls.

3. The combination, substantially as hereinbefore set forth, of a retarding device through which the tobacco passes at a regulated speed, a combing-roll which draws the tobacco away from the retarding device, a concave between which and the roll the tobacco passes, a second combing-roll upon which the tobacco is deposited from the first roll, smooth rollers close to the second combing-roll, a third combing-roll close to the second, a concave close to which it works to draw out and discharge the tobacco, and gearing actuating the moving parts of these devices.

4. The combination, substantially as hereinbefore set forth, of means for delivering the tobacco in regulated quantities, a combing-roll which receives the tobacco therefrom, smooth rolls between which and the combing-roll the tobacco is drawn, another combing-roll upon which the tobacco is delivered from the first, a concave close to which it turns and between which and it the tobacco is discharged, and gearing actuating the moving parts of these devices.

5. The combination, substantially as hereinbefore set forth, of a supporting-frame, combing-rolls turning in bearings therein, end plates adjustable to and from the ends of the rolls, and means for setting the plates close to the ends of the rolls.

6. The combination, substantially as hereinbefore set forth, of a supporting-frame, combing-rolls carried thereby, a casing inclosing the sides of the rolls, end plates adjustable lengthwise of the rolls, and set-screws interposed between the frame and end plates to set them close to the ends of the combing-rolls.

7. The combination, substantially as hereinbefore set forth, of an endless filler-carrying belt, annularly-grooved horizontal filler-forming wheels revolving close together above the filler-carrying belt and in the same horizontal plane, and an endless pressing-belt leading to and terminating near the contiguous portions of the filler-forming wheels and working over the filler-carrying belt, for the purpose specified.

8. The combination, substantially as hereinbefore set forth, of annularly-grooved horizontal filler-forming wheels revolving in the same plane with their edges in contact, an endless pressing-belt leading to and terminating near the contiguous portions of the wheels, and means beneath the wheels for supporting and carrying the filler while passing beneath the pressing-belt and between the wheels to form a continuous cigarette-rod.

9. The combination, substantially as hereinbefore set forth, of an endless filler-carrying belt, an annularly-grooved filler-forming wheel revolving over this belt in a plane parallel therewith, another similarly-grooved wheel revolving in the same plane with its edge in contact with the former one, a flange on the upper wheel overlapping the other one to aid in forming the filler, a pressing-belt overhanging the carrying-belt and filler-forming wheels, and means for driving these parts.

10. The combination, substantially as hereinbefore set forth, of a feed-hopper having a discharge-opening in its rear wall, a filler-carrying belt traveling close to the open bottom of the hopper, horizontal filler-forming wheels revolving over the belt, a pressing-belt extending from the discharge-opening in the hopper to the contiguous portions of the filler-forming wheels and working above the filler-carrying belt, and means for driving the moving parts.

11. The combination, substantially as hereinbefore set forth, with the wrapping-tube of a cigarette-machine, of a holding device applied thereto intermediate of its length, said holding device comprising a clamp, means carried by the clamp for adjusting the wrapping-tube longitudinally, a bracket or support, and means for adjusting the clamp on its support laterally relatively to the wrapping-tube.

12. The combination, in a cigarette-machine, of a supporting-bracket, an arm mounted thereon, means whereby said arm may be adjusted vertically on the bracket, a clamp adapted both to slide and to swing on the arm, a holder carried by the clamp, a wrapping-tube carried thereby, and means for securing the wrapping-tube in the holder, as set forth.

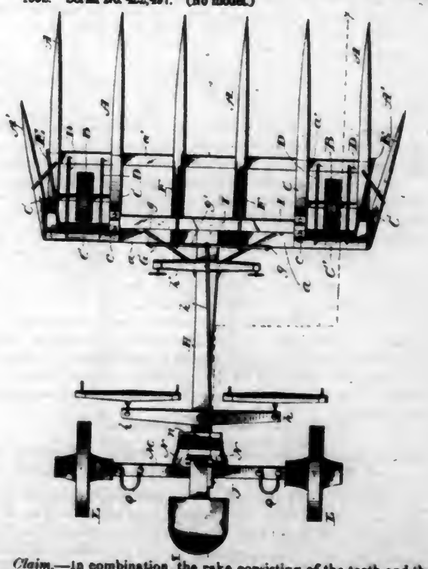
13. The combination, substantially as hereinbefore set forth, of a vertically-slotted supporting-bracket F, an arm F^r held therein, a clamp F^s, adapted both to slide and to swing thereon, a split holder F^o, carried by the clamp, a wrapping-tube carried thereby, and a securing-screw f^3, which holds the tube in its adjusted position.

14. The combination, substantially as hereinbefore set forth, of an endless filler-carrying belt, annularly-grooved horizontal filler-forming wheels revolving thereover in the same plane, a wrapping-tube in rear of these wheels, and an endless wrapping-belt traveling through this tube, to which the filler-rod is fed by the wheels, as described.

15. The combination, substantially as hereinbefore set forth, of an endless horizontal filler-carrying belt, filler-forming wheels revolving over it, an endless pressing-belt over the filler-belt and terminating near the contiguous portions of the filler-forming wheels, a wrapping-tube in rear of the wheels, and an endless wrapping-belt traveling through this tube, as described.

16. The combination, substantially as hereinbefore set forth, of a paste-reservoir, its piston, its actuating-screw, its ratchet-feed, an upright paste-receiving wheel having an annular groove in its edge or periphery which traverses the outlet of the paste-reservoir, and a paste-applying roller or wheel revolving with its edge in contact with said grooved periphery of the paste-receiving wheel, for the purpose described.

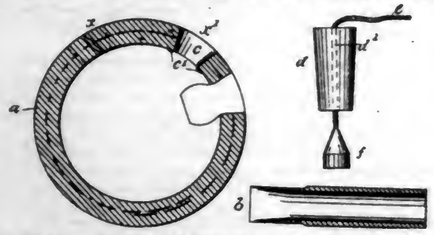
475,342. HORSE HAY-RAKE. HENRY S. POWELL, Yates Centre, Kans., assignor of one-half to S. J. Minaker, same place. Filed Feb. 23, 1892. Serial No. 422,497. (No model.)



Claim.—In combination, the rake consisting of the teeth and the two transverse bars at the rear end thereof, the blocks upon the two outer teeth upon each side, the supporting-wheels between said teeth,

the bar C, connecting the blocks C, adjacent to each other, the curved guard-rods D, extending to the latter from the front of the two transverse bars, the fender at the center of the rake consisting of the upwardly and rearwardly inclined rods connected to the bar G, the pole, the transverse bar at the front end of the pole having its opposite ends pivoted to the inner two of the blocks C, the rake-rocking lever pivoted to the pole and connected to the fender-bar G, and the support for the rear end of the pole consisting of the wheels, the axle, the two uprights connected to and rising upward from the latter, the transverse bars connecting said uprights, on one of which the pole rests, the pivot-rod passing through the latter and its supporting-bar and through an eye in a transverse bar below, and the brace-rod extending rearwardly and downwardly from the under side of the pole and attached by an eye to the pivot-rod, substantially as described.

475,343. METHOD OF REPAIRING PNEUMATIC TIRES. CHAS. D. RICE, Hartford, Conn., assignor to the Pope Manufacturing Company, Boston, Mass. Filed Feb. 11, 1892. Serial No. 421,140. (No model.)



Claim.—1. The method of repairing pneumatic tires, that consists, first, in forming a plug-socket through the wall of the tire and embracing a punctured part; second, inserting in said hole a plug having an expander-socket, and, third, forcing an expander into the body of the plug and securing the plug in place by means of an adhesive material, as cement, all substantially as described.

2. The method of repairing pneumatic tires for bicycles, that consists, first, in cutting a tapered hole through the wall of the tire and embracing a punctured part; second, smearing the walls of the hole with adhesive material, as rubber cement; third, placing a tapered perforated plug in the plug-socket in the tire; fourth, drawing an expander from within the tire into the substance of the plug by means of a string extending therethrough, and, fifth, trimming off the projecting end of the plug, all substantially as described.

475,344. DEVICE FOR REPAIRING TIRES. CHARLES D. RICE, Hartford, Conn., assignor to the Pope Manufacturing Company, Boston, Mass. Filed Feb. 11, 1892. Serial No. 421,141. (No model.)



Claim.—1. The improved pneumatic-tire-repairing means, consisting of an elastic plug having an expander-socket and an expander adapted to be forced into said socket, all substantially as described.

2. In combination with a tapered elastic plug having an opening therethrough, an expander having a pointed end and widened body part, and a string or like flexible connection extending from the expander through the hole in the plug, all substantially as described.

3. In combination with a pneumatic tire having a plug-socket through the wall thereof, an expansible elastic plug fitted into the socket and held therein in part by means of an expander held within the body of the plug, all substantially as described.

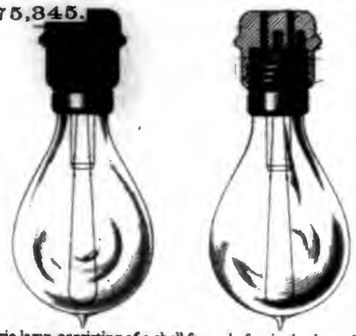
4. In combination with a pneumatic tire, a repairing means comprising a tapered elastic plug having an opening therethrough located in an opening cut through the wall of the tire, an expander held within the body of the plug, and adhesive material, as cement, whereby the leaking of air through the plug-socket is prevented, all substantially as described.

475,345. INCANDESCENT-LAMP SOCKET. FREDERICK C. ROCKWELL, Hartford, Conn. Filed Feb. 24, 1892. Serial No. 422,603. (No model.)

Claim.—1. As a new article of manufacture, a socket for an incandescent electric lamp, consisting of a shell having a recess for the reception of a lamp end with perforations through the shell, and binding-contacts on the interior adjacent to the perforations adapted to make contact between the circuit-wires and the terminals of the filament on the lamp, substantially as specified.

2. As a new article of manufacture, a socket for an incandescent

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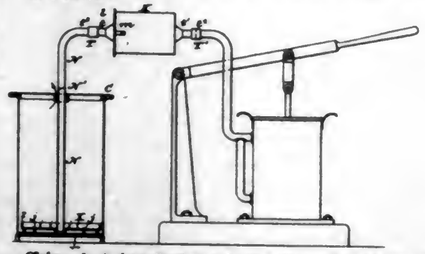


electric lamp, consisting of a shell formed of a single piece of insulating material having a recess for the reception of a lamp end with perforations through the shell, and binding-contacts on the interior adjacent to the perforations adapted to make contact between the circuit-wires and the terminals of the filament on the lamp, substantially as specified.

3. As a new article of manufacture, a socket for an incandescent electric lamp, consisting of a shell having a recess for the reception of a lamp end with perforations through the shell, and binding-screws on the interior adjacent to the perforations, one of which is adapted to make contact between one circuit-wire and the center of the lamp-base and the other between the other circuit-wire and the edge of the lamp-base, substantially as specified.

4. As a new article of manufacture, a socket for an incandescent electric lamp, consisting of a shell having a recess for the reception of a lamp end with perforations through the shell, tubes molded into the shell, with pins fitting said tubes and adapted to make contact between the circuit-wires and the terminals of the filament on the lamp, substantially as specified.

475,346. CHURN. NESTOR ROLLAND and HECTOR FRANÇOIS, Brussels, Belgium. Filed Nov. 30, 1891. Serial No. 413,633. (No model.) Patented in Belgium Jan. 19, 1891, No. 93,483, and Aug. 24, 1891, No. 96,028; in Switzerland Feb. 26, 1891, No. 3,563; in France Mar. 7, 1891, No. 211,955; in Italy Mar. 31, 1891, No. 131, and in Luxemburg Sept. 8, 1891, No. 1,497.



Claim.—1. A churn for the production of butter by agitation with air-currents, consisting of a cylindrical body, a tubular dasher provided at its lower end with an imperforate plate, and an annular extension above said plate, the inner cylinder of said extension and the upper plate of the aerator being perforated to cause both vertical and horizontal jets, the parts being united and combined as shown, and said dasher connected at its upper portion with an air-forcing device.

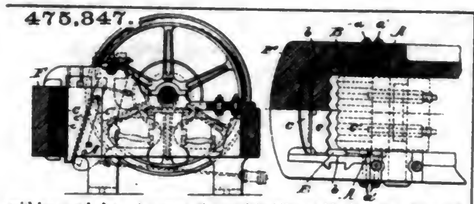
2. A device for the agitation of cream, consisting of an air-forcing device, an air-filter, a cylindrical churn-body, a distributer composed of a tubular dasher provided at its lower end with an imperforate plate, and an annular extension above said plate, the inner cylinder of said extension and the upper plate of the aerator being perforated to cause both vertical and horizontal jets, the parts being united as shown.

475,347. ORE-CRUSHER. FRANK A. ROSS, Chicago, Ill., assignor to Fraser & Chalmers, same place. Filed Oct. 9, 1891. Serial No. 408,233. (No model.)

Claim.—1. In a crusher for ores and other materials, the combination of the frame, a stationary jaw carried thereby, renewable side plates, and renewable supplemental side plates or shoes on which said first-mentioned side plates rest and by which they are held in place, substantially as set forth.

2. In a crusher, the combination of the frame having recesses *b*, a stationary jaw, side plates in said recesses and engaging the plate of

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said jaw, and shoes A, supporting and holding said plates in place and protecting the frame, substantially as set forth.

475,348. BOOK-MARK. SAMUEL I. SAUNDERS and CHARLES A. L. SAUNDERS, Lynn, Mass. Filed Feb. 23, 1892. Serial No. 422,500. (No model.)



Claim.—1. The combination, with a book, of the marker *a*, the bar 2, and its supporting-prongs, constructed substantially as described.

2. As an article of manufacture, the herein-described book-marker, composed of marker *a*, wire *c*, bent to form the bar 2, adapted for extension across the edge of the book, and the prongs 4 4, adapted for combination with a book, substantially as described.

3. The combination of the marker *a* and wire *c*, formed of spring material and having bar 2, the prongs 4 4, and angles *f f*, as and for the purposes described.

475,349. APPARATUS FOR FORMING SAND MOLDS FOR PIPES, &c. PHILIP H. SHARP, Philadelphia, Pa. Filed Apr. 30, 1891. Serial No. 391,088. (No model.)

Claim.—1. The flask and the stationary screw-shaft placed centrally within the flask and extending above and below the same, the lower end of said screw-shaft being stepped below an annular bead-ring and its upper end extending through an upper bearing, in combination with said bead-ring, a tubular shaft, a nut carried by the tubular shaft and receiving the screw-shaft, the pattern supported by said nut, and means, such as described, for rotating the tubular shaft, substantially as and for the purpose set forth.

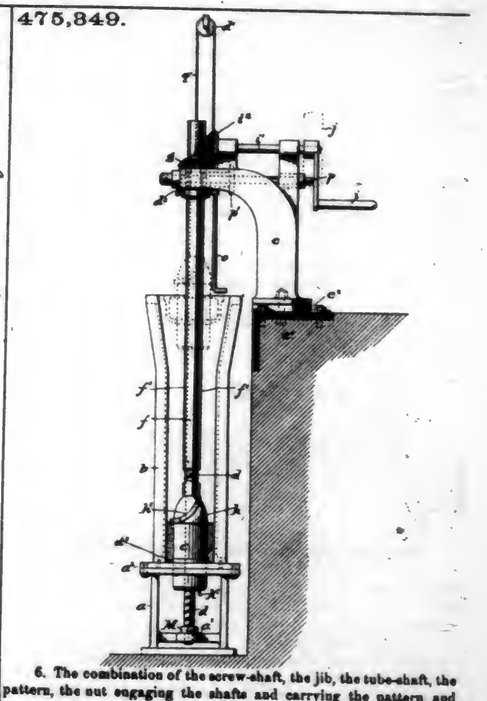
2. The tubular shaft provided with one or more longitudinal feathers, the gear-wheel having grooves to receive the feathers, the stationary screw-shaft fitted within said tubular shaft, the packer attached to the lower end of the tubular shaft, and the ridge-blade with which the packer is provided, in combination with a loose or non-rotating pattern located below the packer and the nut carried by the said tubular shaft to engage the screw-shaft and to support the pattern, substantially as and for the purpose set forth.

3. A split nut connected with a tubular shaft, a pattern supported by the nut, a stationary screw-shaft placed centrally within said tubular shaft, the stationary flask, and means, such as described, for rotating the said tubular shaft, substantially as and for the purpose set forth.

4. A stand-bracket having an opening to receive a pattern, an annular bead-ring secured thereto, and a step for the reception of a stationary screw-shaft, in combination with said screw-shaft, the tubular shaft, the packer attached thereto, the nut located upon said tubular shaft and carrying the pattern, and means, such as described, for rotating the tubular shaft, substantially as and for the purpose set forth.

5. The screw-shaft, the pattern, the feathered tube-shaft encircling said screw-shaft, the nut carried by the tube-shaft and supporting the pattern, and the jib provided with a tubular grooved collar adapted to rotate in a fixed bearing on the jib, substantially as and for the purpose set forth.

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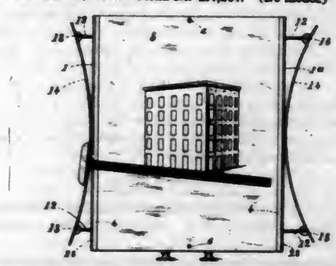


6. The combination of the screw-shaft, the jib, the tube-shaft, the pattern, the nut engaging the shafts and carrying the pattern, and means for hoisting said screw and tube shafts, nut, and pattern, consisting of the chain *g*, the shaft *p*, and the spool *p'*, located upon the shaft *p*, substantially as shown and described.

7. In a pipe-molding machine, the flask, the stationary screw-shaft, the divided nut fitted thereto, the pattern carried by the nut, said screw-shaft being centrally located within and extending through the upper and lower ends of the flask, and the feathered tube-shaft engaged by the divided nut, in combination with an upper bearing, such as described, for supporting the feathered shaft, the grooved gear-wheel receiving the feathers of said shaft, and the connected mechanism for rotating the grooved gear-wheel, substantially as and for the purpose set forth.

8. In a molding-machine, the flask, the bead-ring, the pattern, the step-bearing below the pattern, the stationary screw-shaft fitted at its lower end into said step, and the divided nut upon which the pattern rests, the nut being fitted on said screw-shaft and attached to a hollow shaft, in combination with said hollow shaft and means, substantially as described, for rotating it, for the purpose set forth.

475,350. DRAWING-BOARD. RICHARD G. SHILEY, Marietta, Ohio. Filed Mar. 31, 1892. Serial No. 427,287. (No model.)



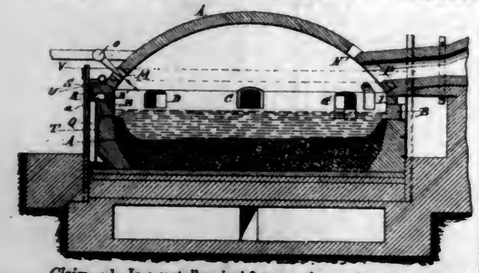
Claim.—1. In a drawing-board, the combination, with the board, of two carved side springs located at opposite sides of the board, two double arms pivoted to stationary supports on each inner side of the frame-pieces 1 and 1a, connecting-rods pivotally connecting the ends of the longer portions of said arms with the ends of the springs, rods mounted on the frame having right and left hand screw portions which pass through correspondingly-screw-threaded blocks pivoted to the ends of the shorter portions of said arms, a means for turning said

rods, and a means, substantially as above set forth, for preventing the rods from moving longitudinally, for the purposes described.

2. In a drawing-board, the combination, with the board, of a removable portion 24, an adjustable sliding piece 25ª, carrying the point 25, and a means, substantially as above described, for adjusting it to any desired point on the side of the board and securing it thereto, for the purposes described.

3. In a drawing-board, the combination of the board, its side springs 14, the operating-arms pivotally connected with said springs, a means, substantially as above set forth, for giving them their necessary movements, and a curved graduated index-bar for indicating the point of sight, substantially as described.

475,351. METALLURGICAL FURNACE. CARL SIEMENS, St. Petersburg, Russia. Filed Dec. 17, 1890. Serial No. 375,013. (No model.)



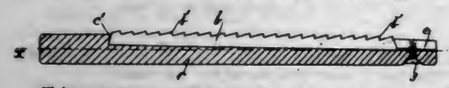
Claim.—1. In a metallurgical furnace, the combination, with supporting-columns for the roof, of angle-irons carried by said columns, skewback-blocks on said angle-irons, and two independent roofs, both of which are supported by said blocks and columns.

2. In a metallurgical furnace, the combination, with supporting-columns for the roof, of angle-irons carried by said columns, and furnace-blocks and skewback-blocks carried on said angle-irons and of such configuration as to leave an air-space between them and the angle-irons.

3. In a metallurgical furnace, the combination, with supporting-columns for the roof, of angle-irons carried by said columns, skewback-blocks on said angle-irons, two independent roofs, both of which are carried by said blocks and columns, vertical tie-rods, and a binding-ring surrounding said tie-rods in the plane from which the second or outer roof is sprung.

4. In a metallurgical furnace, the combination, with the furnace-bed, of the supporting-columns arranged around said bed, the angle-irons carried by said columns, furnace-blocks on said angle-irons, and a removable zone of furnace-blocks between the top of the walls of the furnace-bed and the furnace-blocks carried by the angle-irons.

475,352. TOOL FOR CUTTING KEYWAYS IN WHEEL-HUBS. WILLIAM SMITH, DAVID MARER, and ROBERT WATSON, Keighley, England. Filed Oct. 23, 1890. Serial No. 369,570. (No model.)

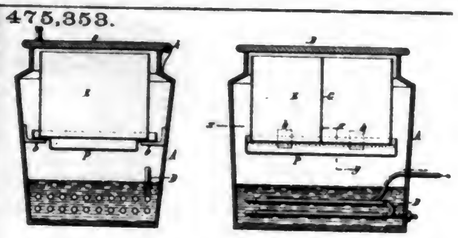


Claim.—As an improved article of manufacture, the key-seat cutter herein described, comprising a cutter-carrier *c*, having a groove therein of gradually-tapering depth and undercut at one end, a fastening-piece *e*, fitting in said groove, and a cutter-blade *b*, secured by a screw passing into said fastening-piece and through said cutter-carrier and having the cutting-edges of its teeth in a line parallel with the back of the cutter-blade and its ends fitting under the undercut end of the groove in the cutter-carrier, and the fastening-piece, all substantially as herein shown and described.

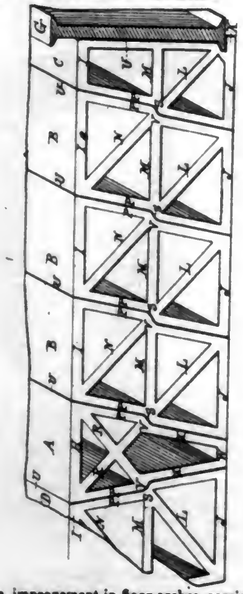
475,353. APPARATUS FOR STEAMING CLAMS, OYSTERS, &c. JOHN H. STARIN, Fultonville, N. Y. Filed Dec. 10, 1891. Serial No. 414,556. (No model.)

Claim.—In apparatus for steaming clams and similar articles of food, the combination of a closed vessel having a suitable lid and provided on its inner sides with suitable supporting-lugs, a drip-pan resting upon said lugs and formed with the dished or sunken portion, and a perforated receptacle resting upon or supported within the pan and being of a diameter or area smaller than that of said pan, so as to leave a space around the receptacle for the purposes described, and a coil of pipe located in the bottom of the vessel, substantially as shown, and for the purposes set forth.

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475,354. FLOOR-ARCH. RICHARD L. STONE, Chicago, Ill. Filed Feb. 8, 1892. Serial No. 420,727. (No model.)



Claim.—An improvement in floor-arches, consisting of the main sections B I J, formed on their inclined uniting sides with seats V S, and the skewback C I J, formed with one seat S, the key-section formed on each side with one seat V, the sections B I J and the sections C I J being provided with lower diagonal braces extending from their outer lower corners inwardly to the middle portions of the opposite sides, and the sections B I J and A H W provided with upper braces extending from their middle portions to the opposite upper angles, the seats V S, located between the upper and lower braces, and the sections D I J on the opposite side of the key-section constructed as reverse counterparts of the sections named, the upper and lower braces in line with each other, in combination with two I-beams, as specified and shown.

475,355. WELDING COMPOUND. HOOPER B. STRAUT, Lincoln, Nebr., assignor of one-fourth to J. W. Hitchcock, same place. Filed Aug. 31, 1891. Serial No. 404,263. (No specimens.)

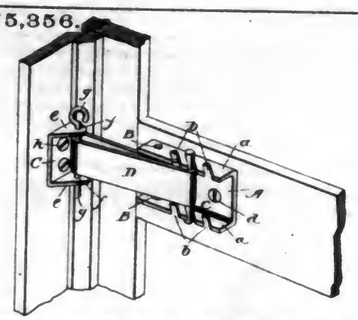
Claim.—A welding compound consisting in the combination of borax, one pound; tripoli, one pound; muriate of ammonia, four ounces; prussiate of potassa, one ounce; soda-ash, five ounces; white sand, five ounces; soft water, one quart, substantially as described.

475,356. DOOR-SPRING. HOOPER B. STRAUT, Lincoln, Nebr., assignor of one-fourth to Jennie T. Vought, same place. Filed Dec. 29, 1891. Serial No. 416,480. (No model.)



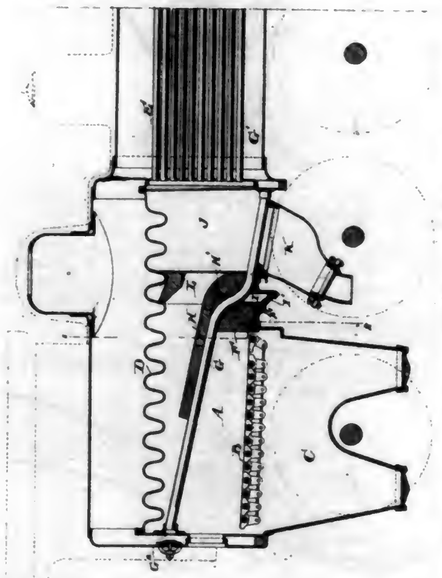
Claim.—In a door-closer, the combination of a bracket C, having

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a pin *g* removably attached thereto, a bracket A, adapted to carry a pin *c*, a roller B, also carried by said bracket, and an endless elastic band D, the parts being organized substantially as shown, and for the purpose set forth.

475,357. BOILER-FURNACE. GEORGE S. STRONG, New York, N. Y., assignor to James N. Gamble, Cincinnati, Ohio. Filed May 19, 1891. Serial No. 393,251. (No model.)



Claim.—1. In a boiler-furnace, a fire-chamber A, having a bridge-wall at its rear end, in combination with a combustion-chamber J in the rear of the bridge, said combustion and fire chambers communicating only over the top of said bridge, boiler-flues extending from the rear of the said chamber, a spark-arresting chamber K at the bottom of the combustion-chamber, and a downwardly-inclined deflector arranged above the bridge-wall, substantially as described, and so as to give the products of combustion a downward movement on entering the combustion-chamber.

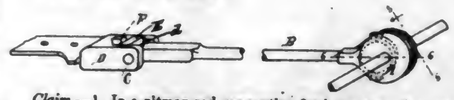
2. In a boiler-furnace, a fire-chamber A, having a bridge-wall at its rear end, in combination with a combustion-chamber J in the rear of the bridge, said combustion and fire chambers communicating only over the top of said bridge, a deflecting-arch L at the front of the combustion-chamber, and a spark-arresting chamber K at the bottom thereof.

3. In a boiler-furnace, a fire-chamber A, having a bridge-wall at its rear with downwardly-inclined rear surface, a deflecting-arch L, situated over the bridge-wall and having a correspondingly-inclined face, a combustion-chamber J behind the bridge and arch and having boiler-tubes leading therefrom, and a spark-receiver K, situated at bottom of chamber J, all substantially as and for the purpose specified.

4. In a boiler-furnace, a fire-chamber A, having a bridge-wall at its rear, in combination with water-tubes G, extending over the bridge and forward through the fire-chamber, a deflector H, supported on said tubes and extending over and to the front of the bridge-wall, air-passages I, entering the fire-box at the top of the bridge-wall and back of the edge of the deflector, a deflecting-arch L, arranged above the back of deflector H and having a downwardly and backwardly inclined face, a combustion-chamber J in the rear of arch L, and a spark-arresting chamber K at the bottom of chamber J.

5. In a boiler-furnace, the combination of the casting F', having a valve I' in its under side, the bridge-wall F, supported on casting F', the water-tubes G, extending over the bridge-wall, as described, the deflector H, supported on tubes G, and the air-flues I, extending to the fire-box at the top of the bridge-wall and beneath the deflector, said air-flues leading to valve I' in casting F', substantially as and for the purpose specified.

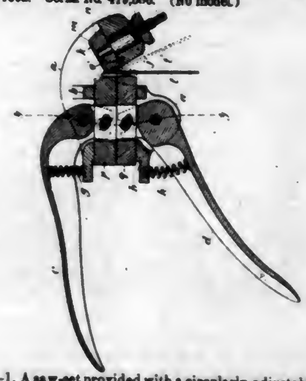
475,358. PITMAN-ROD CONNECTION FOR HARVESTERS. LAFAYETTE C. SWEET, Loami, Ill., assignor of two-thirds to William G. Miller, same place, and Edward R. Thayer, Chatham, Ill. Filed Feb. 1, 1892. Serial No. 419,974. (No model.)



Claim.—1. In a pitman-rod connection for harvesters, the combination of a head provided with a keyway and a longitudinal opening, a box having a concave face conforming to the rounded end of the pitman-rod and movable in said longitudinal opening, a bolt pivotally connecting the pitman-rod with the head, a key fitting in the keyway and engaging with the box, a set-screw clamping the key in position, and a pitman-rod connected with and driven by an eccentric, as set forth, and for the purpose stated.

2. In a pitman-rod connection for harvesters, the combination of a head provided with a longitudinal opening and a keyway, a box adjustable in said opening, a key moving in said way and engaging with said box, a pitman-rod, a bolt pivotally connecting said rod with the head, and a perforated strip on said head adapted to turn up and lock the nut on said bolt, as set forth, and for the purpose stated.

475,359. SAW-SET. CHARLES C. TAINTOR, Elizabeth, N. J., assignor to the Taintor Manufacturing Company, New York, N. Y. Filed Jan. 28, 1892. Serial No. 419,556. (No model.)



Claim.—1. A saw-set provided with a circularly-adjustably setting-die having a series of facets *m* of different lengths and at the same angle with the axis of the die and a series of adjacent bending-seats *n* at different angles with the said facets, as herein set forth.

2. A saw-set provided with a circularly-adjustable setting-die having facets *m*, with adjacent seats *n*, constructed and arranged as described, and the top of the die being divided by lines into spaces corresponding with the groups of facets, letters inserted between such lines to distinguish the groups, and similar series of numbers inserted between such lines over the facets in each group, substantially as herein set forth.

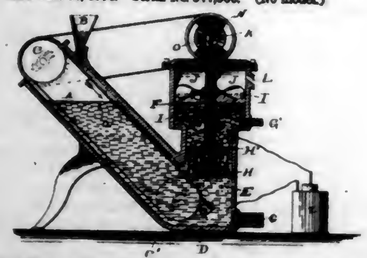
3. A saw-set provided with a circularly-adjustable setting-die having a series of facets *m* of different lengths and at the same angle with the axis of the die, the saw-set being formed with a seat to sustain the die adjustably and the under side of the die being provided with a series of holes corresponding with the said facets, and a pin being projected from the seat to fit the said holes and the die having means for turning it and securing it when adjusted, substantially as set forth.

4. In a saw-set, the combination, with an adjustable die adapted for bending saw-teeth at different angles, of a suitable setting-punch and a bending-punch movable parallel to one another toward the die, and separate handles for simultaneously actuating the punches, as herein set forth.

5. In a saw-set, the combination, with an adjustable die adapted for bending saw-teeth at different angles, of a suitable setting-punch and a bending-punch movable parallel to one another toward the die, separate handles for actuating the punches, and springs of different strength applied to the handles to secure the movement of one punch in advance of the other, as herein set forth.

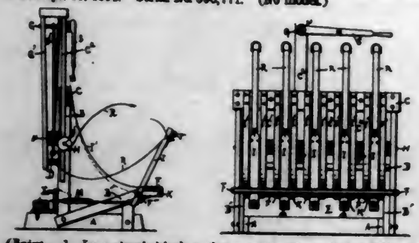
6. The combination, in a saw-set, of a circular die having a series of facets around its upper corner and a series of bending-seats of different inclinations upon the edge of the die adjacent to the facets, a setting-punch and bending-punch movable parallel with one another toward the said facets and bending-seats, and means for actuating the punches, substantially as set forth.

475,860. AMALGAMATOR. JAMES M. THOMPSON, San Francisco, Cal. Filed Jan. 12, 1891. Serial No. 377,580. (No model.)



Claim.—The combination of an angular vessel having a vertical and an inclined chamber communicating at the bottom, an endless belt in the inclined chamber, a scraper in juxtaposition to the belt, pulleys upon which the belt runs, a vertical sleeve in the vertical chamber carrying a disk at the bottom provided with downwardly-projecting agitators and above said disk a series of radial paddles, a shaft within said sleeve, having a rotary disk at the bottom provided with upwardly-projecting agitators, a gear upon both sleeve and shaft, means for driving said sleeve, shaft, and endless belt, a battery, wire connections with said battery to the interior of the vessel above and below the agitators, and a mercury bath in said vessel, substantially as set forth.

475,861. SHRUB-BINDER. HENRY O. THOMAS, Fremont, Nebr. Filed Apr. 28, 1891. Serial No. 390,771. (No model.)



Claim.—1. In a shrub-binder, the combination of the following instrumentalities, to wit: a suitable supporting frame or cradle, bed-straps disposed within said cradle, a series of spring-actuated cradle-arms pivoted to said supporting-frame, and a series of binding-straps connected at one end to said cradle-arms, the free end passing over a vertically reciprocating equalizing-harness and below a series of rolls, the end being detachably secured to the upper end of said cradle-arms, said equalizing-harness reciprocating vertically, so as to force said cradle-arms toward the bed-straps, all substantially as and for the purpose set forth.

2. In a shrub-binder, the combination of the following instrumentalities, to wit: a suitable supporting frame or cradle, bed-straps disposed transversely within said cradle, a series of pivoted cradle-arms within said cradle, springs attached to said arms to keep them in an open position, a series of detachable binding-straps passing below a series of rolls and over an equalizing-harness and connected to said cradle-arms, and a windlass for raising and lowering said harness, all substantially as and for the purpose set forth.

3. In a shrub-binder, the combination of the following instrumentalities, to wit: a suitable supporting frame or cradle, a series of bed-straps transversely disposed within said cradle, a series of pivoted spring-actuated cradle-arms pivoted between said bed-straps and within said cradle, a series of binding-straps secured at one end to said cradle-arms and looping over an equalizing-harness and below a set of guide-rolls, the free end being secured to said cradle-arms, said harness comprising a double and two unequal-length singletrees, and a windlass for raising and lowering said harness to operate said cradle-arms, substantially as and for the purpose set forth.

475,862. COMPOUND MICROSCOPE. LANCASTER THOMAS, Philadelphia, Pa. Filed Mar. 31, 1892. Serial No. 426,707. (No model.)



Claim.—In compound microscopes, the combination of one or more hollow shafts provided with pinions and means for rotating the same, a compound slide provided with one or more racks adapted to be actuated by the pinion or pinions on said shaft or shafts, a pinion-rod supported from the under side of said compound slide, and a centrally-threaded shaft passing through the longitudinal axis of said hollow shaft or shafts, the thread of which engages with said pinion-rod, with means for rotating said central shaft, combined and arranged for the purposes and substantially as described.

475,863. PLATE-LIFTER. JOHN H. TRAYLOR, Richmond, Va. Filed Mar. 23, 1892. Serial No. 426,949. (No model.)

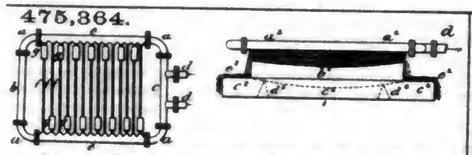


Claim.—1. In a device for lifting heated plates and other articles, in combination, a fixed lever having one of its ends flattened as described and its opposite ends forming one of the handles of the tool, the walls or uprights G, rising from the outer edges of the said lever A and provided with a series of holes *g*, the lever D, having arms D^3, provided with downwardly-extending lugs and the lug D^4 at the point at which the arms are united, and the lever E, pivotally connected at its end with the inner end of the lever D and its opposite end serving as an operating-handle, said levers D and E being pivoted between the walls or uprights G upon pivots passed through holes in said uprights, adjustment being effected by changing the pivots from one set of holes *g* to another, substantially as described.

2. The combination, with the fixed lever provided with flattened portion B and uprights G, apertured as described, of the levers D and E, each pivoted between the uprights G and pivotally connected at their ends, the depending lugs D^3 and D^4 upon the lever D, and the spring H, having one of its ends attached to one of said levers and its opposite end passed loosely through a loop or keeper upon the other lever, substantially as described, and for the purpose specified.

475,864. MANUFACTURE OF ARMOR-PLATES. TOLMIE J. TREDINNICK, Sheffield, England. Filed Sept. 5, 1891. Serial No. 405,097. (No model.) Patented in France Sept. 3, 1891, No. 215,836, and in Italy Sept. 30, 1891, No. 30,234.

475,864.

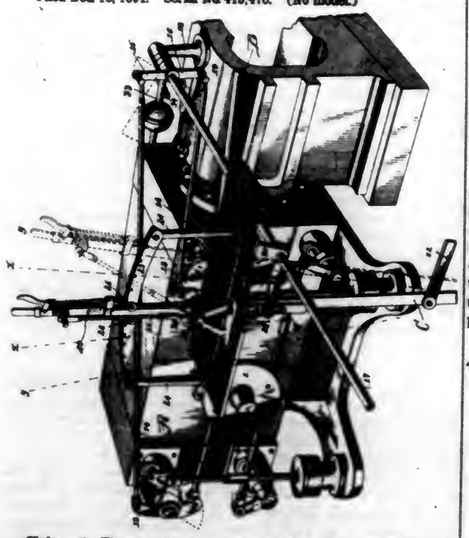


Claim.—1. The herein-described method for the manufacture of armor-plates, which consists in making and machining the plate, plugging the holes and keyways, protecting the edges and corners by shoes or guards, heating the plate to a hardening heat, and then subjecting it to sprays of a chilling fluid acting downwardly upon its front or shot-receiving sides.

2. The herein-described method for the manufacture of armor-plates, which consists in making and finishing the plate to a shape indicated by a false templet different from the designer's templet, heating the pate to a hardening heat, and subjecting the steel or shot-receiving side of the plate to sprays of a chilling fluid to harden said shot-receiving side and bend the plate to the form required for use.

3. The herein-described method for the manufacture of armor-plates, which consists in forming a plate to a shape indicated by a false templet different from the designer's templet, heating the plate to a hardening heat, and simultaneously subjecting both the shot-receiving side and the rear side of the plate to sprays of a chilling fluid to harden and bend it to the form required for use.

475,865. STEAM-ENGINE. HERMANN UHRICKER, Chicago, Ill. Filed Dec. 18, 1891. Serial No. 415,470. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with the operating-lever of a steam-engine, of a connection between said operating-lever and the cut-offs, practically as described, so that said cut-offs will be operated simultaneously with and by the movement of said operating-lever.

2. The combination, substantially as hereinbefore set forth, with the operating-lever of a steam-engine, of cut-offs intermittently connected therewith to be moved in one direction by said lever, and devices for moving said cut-offs in the opposite direction.

3. The combination, substantially as hereinbefore set forth, with the operating-lever of a steam-engine, of a connection between said operating-lever and the cut-offs embracing a lost motion and adapted to move said cut-offs in one direction, and devices for moving said cut-offs in the opposite direction.

4. The combination, substantially as hereinbefore set forth, with the operating-lever of a steam-engine, of a connection between said operating-lever and the cut-offs, practically as described, so that said cut-offs will be operated by said operating-lever during only a portion of their stroke and moved in one direction thereby, and devices for moving said cut-offs in the opposite direction.

5. The combination, substantially as hereinbefore set forth, with the operating-lever and the cut-offs, of a connection between said operating-levers and cut-offs for moving said cut-offs in one direction and a weight for moving them in an opposite direction.

6. The combination, with the cut-offs of a steam-engine, of a rock-shaft having arms connected therewith, an operating-lever, and a connection between said lever and rock shaft, embracing a lost motion for moving said cut-offs in one direction and devices for moving said cut-offs in the opposite direction.

7. The combination, with the cut-offs of a steam-engine, of a rock-shaft having arms connected therewith, an operating-lever, and a connection between said lever and rock-shaft embracing a lost motion, whereby the shaft is moved in one direction and a weight for moving said shaft in an opposite direction.

8. The combination, substantially as hereinbefore set forth, with the cut-offs of a steam-engine, of a rock-shaft having arms connected therewith, a pivoted operating-lever, a flexible connection between said operating-lever and a longitudinally-movable rod having a yielding connection with an arm upon said rock-shaft, whereby said cut-offs are moved in one direction, and devices for moving said cut-offs in the opposite direction.

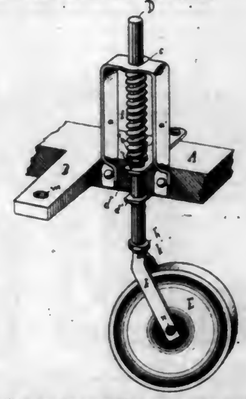
9. The combination, substantially as hereinbefore set forth, with the cut-offs of a steam-engine, of a rock-shaft having arms connected therewith, an operating-lever, a flexible connection between said operating-lever and a longitudinally-movable rod having a connection with an arm upon said rock-shaft embracing a lost motion, whereby said cut-offs will be moved in one direction, and devices for moving said cut-offs in an opposite direction.

10. The combination, substantially as hereinbefore set forth, with the cut-offs of a steam-engine, of a rock-shaft having arms connected therewith, an operating-lever, a flexible connection between said operating-lever and a longitudinally-movable rod having a slot to receive a pin upon an arm upon said rock-shaft, whereby said cut-offs will be moved in one direction, and devices for moving said cut-offs in an opposite direction.

11. The combination, substantially as hereinbefore set forth, with the cut-offs of a steam-engine, of a rock-shaft having arms connected therewith, an operating-lever, a longitudinally-movable rod having a connection with an arm upon said rock-shaft embracing a lost motion and located between guides, a flexible connecting-piece connecting said lever and rod and confined between guides located adjacent said rod, whereby said cut-offs will be moved in one direction, and devices for moving said cut-offs in an opposite direction.

12. The combination, substantially as hereinbefore set forth, with the cut-offs of a steam-engine, of a rock-shaft having arms connected therewith, an operating-lever, a longitudinally-movable rod having a connection with an arm upon said rock-shaft embracing a lost motion and located between guides, a pivoted arm upon said lever, a flexible connecting-piece connecting said arm with said rod and confined between guides located adjacent said rod, whereby said cut-offs will be moved in one direction, and devices for moving said cut-offs in an opposite direction.

475,866. TONGUE-SUPPORT. DANIEL WARD, Peoria, Ill. Filed Sept. 7, 1891. Serial No. 404,948. (No model.)



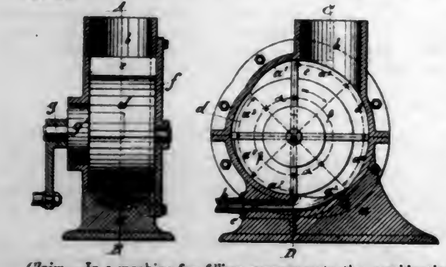
Claim.—1. In a tongue-rest, the combination, with the tongue, of the upright frame *a a'*, perforated at the top, the perforated bar D, projecting upward through the perforated plates *d d'* and through the perforation in the top of frame-work *a a'*, the spiral spring *f*, surrounding the said rod, the bifurcated arms *k k'* of the bar D, the wheel E, and the collar *h*, loose upon the bar D and provided with the pin *i*, all substantially as described and set forth.

2. The combination, with the tongue A, of the upright frame *a a'*, the upright rod D, carried through a perforation in the top of the frame-work and through a perforation in each of the projecting plates

d d' and provided with a series of perforations to receive the pin *i*, the bifurcated arms *k k'*, the collar *h*, wheel E, and spring *f*, all substantially as described and set forth.

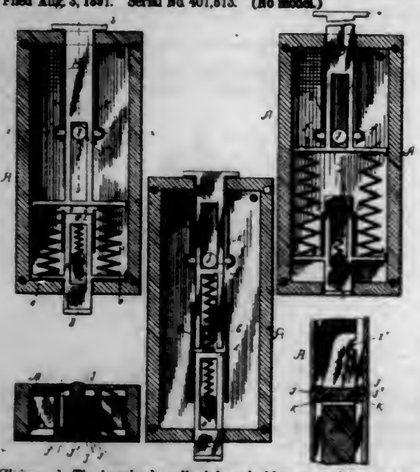
3. The combination, in a tongue-supporter, of the upright frame *a a'*, secured to the top of the tongue A and having opening *c* in the top, the upright rod D, carried through the opening *c* and through perforations in each of the projecting plates *d d'* and formed at its lower part with bifurcated arms *k k'* and provided with a series of openings or depressions along its body or the part thereof that bears within the upright frame to receive the pin *i*, the collar *h* and spring *f* upon the rod, and the wheel E, journaled upon the arms *k k'*, all substantially as described and set forth.

475,367. MACHINE FOR FILLING SAUSAGE-GUTS. GEORG WARNERMANN, Hottingen, assignor to G. Bauerlein-Germann, Unterstrass, Zurich, Switzerland. Filed Jan. 29, 1890. Serial No. 338,469. (No model.)



Claim.—In a machine for filling sausage-guts, the combination, with a pressing rotating body *d*, having pressing-blades sliding in slits of the body *d*, of a casing *a*, provided with a filling-funnel and stuffing-tube and having an inner wall divided into segments, the one a^7 of these segments having a small radius and being opposite to a segment a^2 of greater radius, each of them being neighbor to a transition-segment a' and a^3, respectively, and to a sloping segment a^5 and a^4, respectively, this latter being for the purpose of readjusting the increase of volume when the pressing-blade is passing over the transition-segment a^3, substantially as hereinbefore described and set forth.

475,368. DOOR-CHECK. FRANK E. WELCH, Trinity College, N. C. Filed Aug. 3, 1891. Serial No. 401,613. (No model.)



Claim.—1. The herein-described door-holder, comprising a casing, a vertically-movable presser-bar having an opening and notches on its opposite sides, ways within said casing for said presser-bar, having recesses, a spring-pressed catch received by said opening in the presser-bar and having projections located within said recesses in the ways, as described, whereby said projections will be caused to automatically engage said notches in the presser when the same are opposite thereto, said catch also having a horizontal stem adapted to project through the door and by inward pressure thereon to release the projections from the notches in the presser-bar, a bolt beneath said presser-bar, and means for raising said presser-bar and bolt when said projections of the catch are disengaged from the notches of the presser-bar.

2. The herein-described door-holder, comprising the casing, a presser-bar located within said casing, having its upper end projecting above the top thereof and its lower end provided with laterally-extending projections, a bolt beneath said presser-bar, having its lower end projecting through the bottom of said casing and formed within said casing with a longitudinal opening and with outwardly-extending projections in alignment with those of said presser-bar, projections extending from the casing for guiding said bolt in its movements, springs located on opposite sides of said bolt, having their ends secured to said projections of the presser-bar and bolt, a spring of less power than those connecting the presser-bar and bolt, located within said opening in the bolt and having its abutment formed by the top of the wall of said opening and a stationary projection in said opening, and a means for holding said presser and bolt in their lowered position.

3. The herein-described door-holder, comprising a casing, a vertically-movable presser-bar having an opening, notches on opposite sides, and lateral projections, ways for said presser-bar, having recesses, a spring-pressed catch received by said opening in the presser-bar and having projections located within said recesses in the ways, said catch also having a horizontal stem, a bolt beneath said presser-bar, having its lower end projected through the bottom of said casing and formed within said casing with a longitudinal opening and with outwardly-extending projections in alignment with those of said presser-bar, projections extending from the casing for guiding said presser-bar in its movements, springs located on opposite sides of said bolt and having their opposite ends secured to said projections of the presser-bar and bolt, and a spring of less power than those connecting the presser-bar and bolt, located within said opening in the bolt and having its abutments formed by the top of the wall of said opening and a stationary projection in said opening, all substantially as shown, and for the purposes specified.

475,369. MUSIC-RACK FOR MUSICAL-INSTRUMENT CASES. JOHN A. WEBER, New York, N. Y. Filed July 23, 1891. Serial No. 400,412. (No model.)



Claim.—1. The combination, with a musical-instrument case having a front opening and with grooves formed in its inner surface extending vertically upward from the opposite sides of said opening, of a music-desk adapted to close said opening, mounted to swing out and slide down, and constructed of a board passing up behind the front of the case above said opening and high enough to leave no gap when drawn down, a bottom bar on said board, and side bars on its front side, the upper ends of which side bars enter said grooves, whereby in either position of the desk its board appears as a panel inclosed by the side bars, the bottom bar, and the top molding of said opening, said panel differing only in being of greater height when the desk is open than when closed.

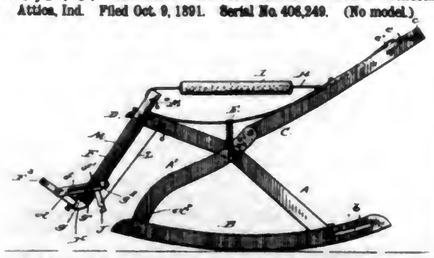
2. The combination, with a musical-instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out and slide down, and having its upper part extending behind the case above said opening, rearward guides applied to the case adjacent to the upper part of the opening and forming a sliding connection engaging the upper part of the desk, and a spring arranged to exert a rearward tension against the upper part of the desk, whereby it is pressed back against said guides and its finished front surface is kept out of contact with the case to prevent its being marred by the sliding movement of the desk.

3. The combination, with a musical-instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out and slide down, and means for exerting a rearward tension against said desk, adapted to prevent abrasion of its upper portion by contact with the case.

4. The combination, with a musical-instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out and slide down, having at its upper part a sliding connection with the case, and having means for guiding its lower part in its swinging and downward movements, a spring arranged behind the desk and exerting a tension in a rearward direction, and a loose connection between said spring and the back of the desk for transmitting the rearward tension of the spring to the desk, arranged to extend obliquely upward when the desk is open and communicate an upward pressure tending to close it and to extend obliquely downward when the desk is closed and communicate a downward and rearward pressure tending to hold it closed.

5. The combination, with a musical-instrument case having a front opening and grooves in its rear side above said opening, of a music-desk adapted to close said opening and constructed with side bars entering said grooves, rearward guides engaging the upper part of the desk, and a spring arranged to exert a rearward tension upon the desk to draw it against said guides and thereby keep its finished front surface out of contact with the case at the upper side of the opening.

475,370. RECLINING ROCKING-CHAIR. JOSEPH G. WHITTLER, Attica, Ind. Filed Oct. 9, 1891. Serial No. 408,249. (No model.)



Claim.—1. In a reclining-chair, the combination of a base, a leg-rest pivotally depending from its front end, a back hinged to the rear of the base, a foot-rest F^2, hinged to the lower end of the leg-rest and adapted to be adjusted in alignment thereto and at an angle therewith, as the exigencies of the case may require, means for holding it in its adjusted positions, a spring for normally folding it in against the leg-rest, and cords connecting the foot-rest and leg-rest and hinged back, whereby when the back is pressed backwardly the cords will throw the lower end of the leg-rest outwardly and extend the foot-rest against the action of the spring, substantially as described.

2. The combination of a base, a back hinged thereto, a leg-rest F, pivotally depending from the front end of the base, the upper end of this leg-rest extending above its pivotal point, a foot-rest F^2, hinged to the lower end of the leg-rest and adapted to normally fold up against the leg-rest and be adjusted out at an angle thereto, and cords secured to the foot-rest and extending up and loosely connected to the leg-rest above its pivotal point and from thence extending rearwardly and connected to the hinged back, whereby when the back is pressed backwardly the leg-rest will be swung outwardly and the foot-rest adjusted out at an angle thereto, and means for holding the parts in their adjusted positions, substantially as described.

3. In a reclining-chair, the combination of a base, a back hinged thereto, and a leg-rest depending from its front end and having its side bars extending a suitable distance above the seat, cords connecting the upper ends of the side bars of the leg-rest to the back, whereby when the back is thrown backwardly the leg-rest is thrown outwardly at its lower end, and chair-arms I, suspended upon the cords between the leg-rest and back, substantially as described.

4. In a chair, the combination of a base with a back and leg-rest hinged thereto, the foot-rest hinged to the leg-rest, the contracting spring secured to the leg-rest and to the foot-rest, slotted bars pivoted to the foot-rest, pins projecting from the side bars of the leg-rest through the slotted side bars pivoted to the foot-rest and adapted to engage a notch in the edge of the slot in said bars, and a cord secured to the slotted side bars and carried to a convenient position to be grasped by the occupant of the chair, substantially as described.

5. In a chair, the combination of a base, a back and leg-rest hinged thereto, a foot-rest hinged to the lower end of the leg-rest, a cord connecting said back-rest, leg-rest, and foot-rest, a slotted bar *f*, pivoted to the foot-rest, a pin on the side bars of the leg-rest projecting through the slot in bar *f* and engaging a notch in the edge of said slot, a pin projecting from the side bars of the chair to be engaged by a notch in the under side of the bar *f*, and a cord secured to said bar and carried to a point in convenient reach of the occupant of the chair, substantially as described.

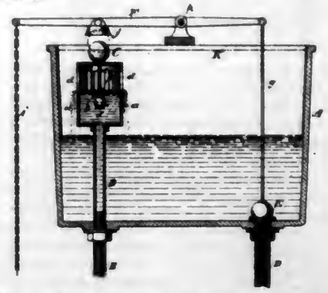
6. In a chair, in combination with a base, a pivoted back, a pivoted leg-rest, a foot-rest hinged to the lower end of the leg-rest, a cord connecting said back-rest, leg-rest, and foot-rest, a contracting spring for normally folding the foot-rest in against the leg-rest, a catch pivoted to the foot-rest, a pin on the base engaged by the catch on the foot-rest, and means for locking the leg-rest in against the base, substantially as described.

7. In a chair, the combination of a base, a hinged back, a bar D, pivoted in the forward part of the chair-frame, a flexible body-support secured at one of its ends to the back-rest and at its other end to the rear edge of the bar D, contracting coil-springs for drawing the flexible body-support taut, the upper ends of said springs being secured to the seat portion of said support, their other ends being secured to the chair-frame below the said support, substantially as described.

8. In a chair, the combination of a base, a back and leg-rest hinged thereto, a foot-rest hinged to the leg-rest, the cords attached to the rear edge of the foot-rest and running thence up along the rear sides of the frame-bars of the leg-rest, passing through openings therein above their pivots and emerging on their front sides, and thence passing to said hinged back, and means for adjustably securing said cords to the hinged back, substantially as described.

9. In a chair, the combination of a base, a hinged back, a pivoted leg-rest having its side bars extending to a suitable point above the seat, cords connecting the upper ends of the side bars of the leg-rest to the back, rotatable arms loosely mounted on the cords, said cords passing through longitudinal openings in said arms, substantially as described.

475,371. WATER-CLOSET CISTERN. GEORGE W. ALDRICH and JAMES HUBSTON, Brooklyn, N. Y. Filed July 14, 1891. Serial No. 399,501. (No model.)



Claim.—1. The combination of the tank A and inlet-pipe B, having enlargement or chamber *a*, provided with an aperture *b*, with the valve *f*, contained within said enlargement or chamber *a*, its stem *e* passing through the aperture *b*, the float C on the upper end of said stem, and the perforated cage *d* between the chamber *a* and float C, said cage serving as a rest for said float, substantially as and for the purpose specified.

2. The combination of the tank A, its inlet-pipe B and outlet-pipe D, valve E, arranged for closing the outlet-pipe, lever F, connected with said valve E, pull *i*, connected with said lever, and block or projection *j* on said lever, with the float C, carrying downwardly-projecting stem *e* and valve *f*, water-inlet chamber *a* on pipe B, said inlet-chamber *a* having an aperture *b*, through which the stem *e* passes, all arranged for operation substantially as herein shown and described.

3. The combination of the tank A, its inlet-pipe B and outlet-pipe D, valve E, arranged for closing the outlet-pipe, lever F, connected with said valve E, pull *i*, connected with said lever, and block or projection *j* on said lever, with the float C, carrying downwardly-projecting stem *e* and valve *f*, water-inlet chamber *a* on pipe B, and cage *d* on said chamber *a*, said inlet-chamber *a* having an aperture *b*, through which the stem *e* passes, all arranged for operation substantially as herein shown and described.

475,372. PROCESS OF DEVELOPING PHOTOGRAPHIC PICTURES. MOHNE ANDRÉSEN, Berlin, Germany. Filed Apr. 15, 1889. Serial No. 307,326. (No specimens.) Patented in Germany Feb. 10, 1889, No. 50,265; in Belgium Mar. 26, 1889, No. 85,553; in France Mar. 26, 1889, No. 196,980; in England Mar. 26, 1889, No. 5,207; in Norway Mar. 26, 1889, No. 1,233; in Sweden Mar. 26, 1889, No. 2,026; in Italy Mar. 31, 1889, XXIII, 25,190, I, 27; in Spain June 4, 1889, No. 9,403, and in Austria-Hungary Feb. 20, 1890, No. 39,968 and No. 79.

Claim.—1. In the art of photography, the improvement which consists in subjecting sensitized and exposed surfaces to the developing action of a solution of a derivative of naphthaline, substantially as set forth.

2. In the art of photography, the improvement which consists in subjecting sensitized and exposed surfaces to the developing action of an alkaline solutive of a derivative of naphthaline, substantially as set forth.

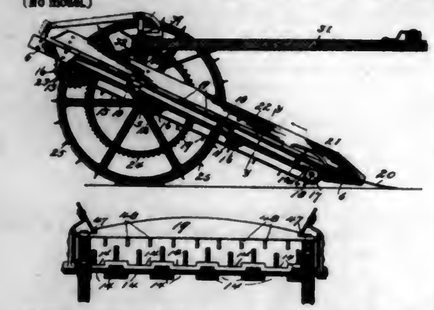
3. In the art of photography, the improvement which consists in subjecting sensitized and exposed surfaces to the developing action of a solution of diamido-naphthaline, substantially as set forth.

4. In the art of photography, the improvement which consists in

subjecting sensitized and exposed surfaces to the action of an alkaline solution of diamido-naphthaline, substantially as set forth.

5. A developing agent consisting of a solution of diamido-naphthaline and carbonate of potash and sulphite of soda, substantially as set forth.

475,878. POTATO-DIGGER. GEORGE R. ANDERSON and MARTIN J. ANDERSON, Grantsburg, Wis. Filed June 23, 1891. Serial No. 397,175. (No model.)



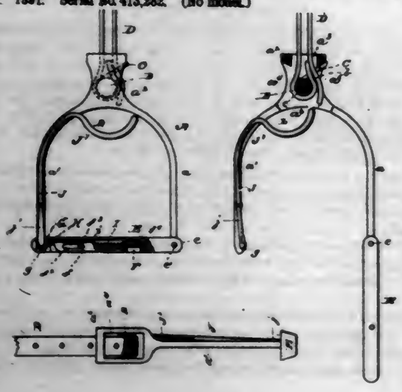
Claim.—1. The combination, in a potato-digger, of supporting and driving wheels, with the inclined bed provided at its lower end with a prow or share, tiers of longitudinal vibrator-slats, shafts 11, 12, and 13, having notches 14 and adapted to operate said slats, and a conveyer adapted to carry the potatoes, &c., upward on said bed, substantially as described.

2. The combination, in a potato-digger, of the sills and the supporting-wheels, with the prow 20 arranged between the lower ends of said sills, the notched vibrator-shafts 11, 12, and 13 and the shaft 17, the sprockets arranged thereon, the sprocket-chains passing over the same, shafts or rods 10, extending between said sills, means for driving said sprocket-chains, flights or cross-bars 19, arranged thereon, and the longitudinal slats 7, 8, and 9, arranged, respectively, in banks or tiers and adapted to be operated by the revolution of said shafts 11, 12, and 13, respectively, substantially as described.

3. The combination, with the sills 6, of the wheels 2 and 4, arranged on the axle to support said sills, a prow or share 20, notched shafts 11, 12, and 13, bearings provided therefor in said sills, the longitudinal slats 7, 8, and 9, loosely pivoted on rods 10, the extended ends 46 of the slats 7, the shaft 18, sprockets arranged on all of said shafts, prongs 21, gear-wheels upon said wheels 2 and 4, and pinions 23, adapted to mesh therewith and secured upon the shaft 13 by suitable clutch devices, substantially as described.

4. The combination, with inclined sills, of wheels 2 and 4, the axle supporting the same, the prow 20, the vibrator-shaft and the shaft 18, sprocket-wheels arranged on the same, sprocket-chains and flights 19, adapted to operate over said sprocket-wheels, slats 7, 8, and 9, loosely pivoted on rods 10 and having their upper ends resting upon said vibrator-shafts and adapted to be operated thereby, means for driving said sprocket-chains by the forward movement of said wheels 2 and 4, a tongue 31, arranged in connection with said axle, and means for raising and lowering the lower end of the machine, substantially as described.

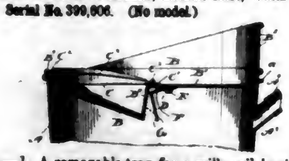
475,374. STIRRUP. LEE ANDERSON, Paris, Tex. Filed Nov. 27, 1891. Serial No. 413,282. (No model.)



Claim.—1. In a stirrup, the combination of the hanger constructed as described, the foot-rest pivoted to one leg of the hanger at one end and adapted to engage the opposite leg of said hanger by a sliding catch carried by the foot-rest, and a lever fulcrumed on the hanger and adapted to release the catch and foot-rest, substantially as described.

2. In a stirrup, the combination of the hanger constructed substantially as shown, the foot-rest pivoted at one end to one leg of the hanger, its opposite end engaging a stop formed on the hanger through the medium of a slotted spring-controlled catch carried by the foot-rest, and a lever fulcrumed on the hanger and adapted to release the catch and foot-rest, substantially as described.

475,875. COMBINED MILK PAIL AND STRAINER. FRANK ASHLEY and GEORGE W. ASHLEY, Medical Lake, Wash. Filed July 15, 1891. Serial No. 399,606. (No model.)

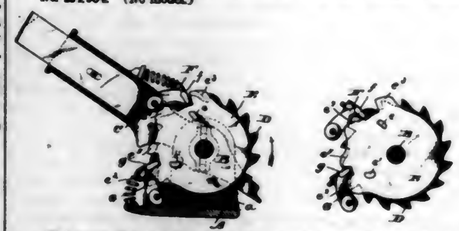


Claim.—1. A removable tray for a milk-pail, having one portion substantially flat and its other portion concaved, with a substantially-vertical part connecting said portions, a strainer in said vertical part, an angular plate pivoted to the under side of the straight horizontal portion and adapted to close with its vertical portion against said strainer, and a strainer over the said concaved portion, substantially as and for the purpose described.

2. The herein-described improvement in a combined milk pail and strainer, the same consisting of a pail, a tray fitted within the top of the pail, said tray having a semicircular horizontal portion B' and concave portion B², vertical wall B³, provided with a gauze-covered opening B⁴, a pivoted angular plate attached to the bottom of the tray and adapted when the pail is tilted to close the passage to the opening B⁴, an outlet-tube communicating with the pail below the tray, and a handle adapted for use in tilting the pail, all substantially as shown and described, and for the purpose specified.

3. The combination, with the pail having lateral pins C², of a tray having its bottom with one half horizontal and the other half concave, with a vertical connecting portion having a gauze opening, the outer edge having lateral projection *a*, a strainer above the concave portion, and an angular plate hinged to the horizontal portion, with its vertical portion bearing on the vertical portion of the bottom of the tray, substantially as described.

475,876. WINCH. JOHN F. APPLEBY, Chicago, Ill., assignor to William Deering & Company, same place. Filed Mar. 14, 1892. Serial No. 424,934. (No model.)



Claim.—1. The combination of the ratchet-wheel, the pawl-controlling plate, the stationary pawl G, and the pawl F on the lifting-lever, substantially as described.

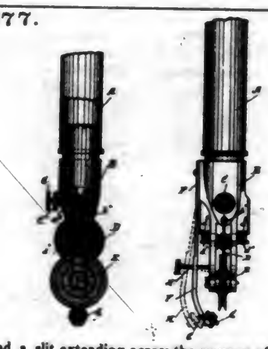
2. The combination of the base-plate having the lugs *a* and *a'*, the shaft B, journaled therein and having secured thereto the ratchet-wheel D, the pawl-controlling plate E, loosely supported upon the said shaft, the lever having the pawl F, and the stationary pawl G, all arranged substantially as described.

3. The slotted lever loosely pivoted on the shaft B, the ratchet D and pawl-controlling plate located within said slot, the said ratchet-wheel firmly secured to the said shaft and the pawl-controlling plate loosely pivoted to said shaft, the stationary pawl G, and the pawl F, mounted on the said lever, all arranged and combined substantially as described.

475,377. SOLE-INKING TOOL. WILLIAM W. ATWOOD and WILLIAM C. OROUTT, San Francisco, Cal. Filed June 17, 1891. Serial No. 396,622. (No model.)

Claim.—1. The herein-described tool for inking the soles of boots and shoes, consisting of a handle having an ink-reservoir with a nozzle

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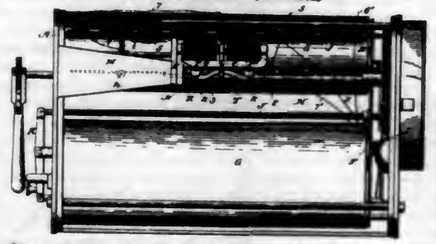
at the end and a slit extending across the passage of said nozzle and intersecting it transversely, a disk mounted for rotation in said slit, an inking-wheel below the disk having a rim or edge with a circumferential slit, into which the edge of the disk is set to run, and a regulating-valve in the passage above the feeding-disk, for operation as set forth.

2. The combination of the ink-reservoir having a nozzle with an ink-discharging passage and a transverse slit extending across the said passage, a feeding-disk rotatable in said slit, an inking-wheel mounted for rotation below said disk, having a grooved or slotted rim to take the disk, and a feed-regulating valve in said passage, substantially as described.

3. The combination, with an ink-reservoir having an ink-discharging passage, of the feeding-disk having its rim setting across and rotatable in the discharge-passage, and an inking-wheel having a circumferential slit or groove to take the edge of the feeding-disk, extending from the bottom outward to an acute edge at the rim all around, the said feeding-disk being rotated by frictional contact with the inking-wheel, substantially as hereinbefore described.

4. In a tool for inking soles of boots and shoes, the inking-wheel having a circumferential slit or groove with beveled inner sides or faces terminating in acute edges at the rim of the wheel, in combination with the ink-feeding disk mounted for rotation partly within an ink-holding chamber or reservoir and adapted to travel in the slit or groove of said wheel, as hereinbefore described.

475,378. STATION-INDICATOR. RUBEN B. AYRES, New York, N. Y. Filed Dec. 3, 1891. Serial No. 413,928. (No model.)



Claim.—1. In an electrical street or station indicator, the combination of a duplicate set of electro-magnets, an intermediate armature, a tongue movably connected to said armature and working back and forth longitudinally, and a suitable battery and wire connections for energizing the magnets, substantially as described.

2. In an electrical street or station indicator, the combination of a duplicate set of electro-magnets, an intermediate armature, a movable tongue operated by said armature, a pair of rollers, a speed-regulator normally arrested or engaged by the tongue, and a suitable battery and wire connections for energizing the magnets, substantially as described.

3. In an electrical street or station indicator, the combination of a duplicate set of electro-magnets, an intermediate armature, a tongue movably connected to said armature and working back and forth longitudinally, a pair of rollers, a speed-regulator for said rollers normally arrested by the tongue, a lever carried by said armature, electrical points with which the ends of the lever alternately come into contact, and a suitable battery and wire connections for energizing the magnets, substantially as described.

4. In an electrical street or station indicator, the combination, with the casing A, having the brackets extending therein and supporting at their ends a disk or plate, of a duplicate set of magnets supported by said disk, an intermediate armature, a movable tongue operated by said armature and working through the disk, an automatic regulator sustained between the brackets and normally arrested in its motion by contact with the tongue, and a suitable battery and wire connections, substantially as described.

5. In an electrical street or station indicator, the combination, with the casing A and the brackets extending into the same from one end thereof and supporting a disk or plate, of a duplicate set of magnets, an intermediate armature, a movable tongue operated by said armature and working through the disk, an automatic regulator normally arrested by engagement with the tongue, a lever carried by the armature, electric contacts with which the ends of the lever alternately come into engagement, and a suitable battery and wire connections, substantially as described.

6. In an electrical street or station indicator, the combination, with the trail-wheel and vertical or upright shaft, of a helically-grooved revolving drum, intermediate rotary mechanism between said shaft and drum, means for reversing said rotary mechanism, a vertically-movable frame working in the groove of the drum, and an electro-magnet carried by said frame, substantially as described.

7. In an electrical street or station indicator, the combination of a revolving drum having a continuous spiral groove and formed or provided intermediate of said groove with a series of points or projections, a vertically-movable frame, a magnet carried by said frame, a pivoted armature, and electric-contact devices operated by the projections of the drum, substantially as described.

8. In an electrical street or station indicator, the combination of the grooved drum provided with the projecting contacts, the vertically-movable magnet-frame, its magnet and swinging armature, the contact-point $c^{\times}$, carried by said armature, and the vibrating contact-needle, substantially as described.

9. In an electrical street or station indicator, the combination, with the grooved drum having the projections thereon and the pivoted armature carried by the vertically-movable magnet-frame, of the U-shaped contact attached to said armature and the vibrating contact-needle, substantially as described.

10. In an electrical street or station indicator, the combination of a rotating drum having a series of projections surrounding its periphery or circumference, a vertically-moving electro-magnet, an armature, an electrical contact-point carried by said armature, and a vibrating needle operated by the projections on the drum to complete an electric circuit with said contact, substantially as described.

11. In an electrical street or station indicator, the combination of the spirally-grooved drum, the upright rod, and the magnet-frame vertically movable on said rod and formed to partly fit the groove of the drum, substantially as described.

12. In an electrical street or station indicator, the combination of the rotating drum formed with the spiral groove on its circumference and provided intermediate of said groove with a series of projections, the upright rod, the magnet-frame vertically movable on said rod and formed to partly fit said groove, the magnet and armature carried by said frame, and the electrical contacts, substantially as described.

13. In an electric street or station indicator, the combination of the magnet P and armature Q, the points or contacts *k k'*, the grooved revolving drum, the movable magnet-frame and its magnet, automatic electric contacts supported by said frame, the electric circuit comprised by conductors 3, 4, and 5, and an electric battery, substantially as described.

14. In an electric street or station indicator, the combination of the duplicate sets of magnets, the intermediate armature and its lever, the contacts *k k'*, the movable ribbon having the contact-pieces, the contact-points *d d'* for engaging said pieces, the lower magnet and its movable frame, the circuit comprised by conductors 5' 6' 7 7', and a suitable battery, substantially as described.

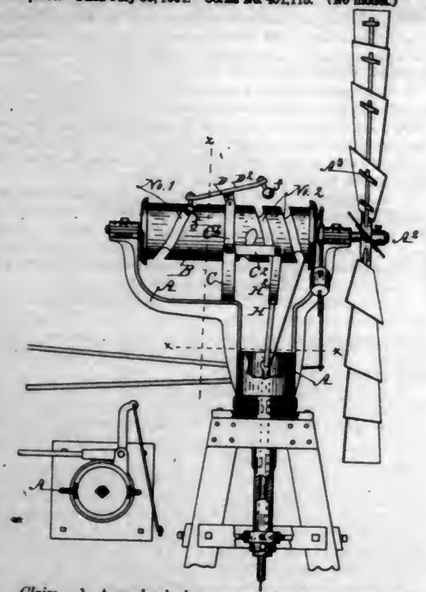
15. In an electrical street or station indicator, the combination of the duplicate sets of magnets, their armature and its lever, the traveling indicator-band having the series of contacts, the stationary contacts *d d'*, the switch or cut-off, a battery, and the circuit comprised by these parts and the conductors 7 7', substantially as described.

16. The combination of the indicator mechanism proper, the stopping and releasing magnets and the circuits including the same, the indicator-detent connected to and operated by an armature-lever common to both of said magnets, the two sets of contacts $c^{\times}$ $d^{\times}$ and c' d' included, the former in the releasing-circuit, the latter in the stopping-circuit, the contacts *k* in the releasing-circuit, the contact *k'* in the stopping-circuit, the movable contact T, common to both of the last-named contacts, and the mechanically-actuated rotating contact-closer for operating the set of contacts $c^{\times}$ $d^{\times}$ of the releasing-circuit, substantially as and for the purposes hereinbefore set forth.

17. The combination, with the indicating mechanism proper, the stopping and releasing magnets, the circuits therefor, and the two sets of contacts included in each circuit, and the indicator-detent actuated from the armature-lever of the said magnets, of the circuit-breaking magnet N², included in a circuit containing contacts operated and controlled by and from the releasing and stopping magnets, an armature-lever for said magnet N², which carries the contacts $c^{\times}$ $d^{\times}$ of the

releasing-circuit, and a mechanically-actuated rotating contact-closer which operates to intermittently close the last-named contacts, the combination being and acting substantially as set forth.

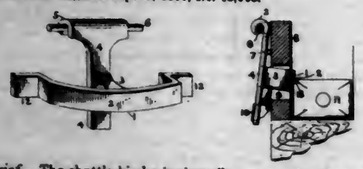
475,879. MECHANICAL MOVEMENT. WILLIAM H. BAKER, Des Moines, Iowa, assignor to the Pioneer Manufacturing Company, same place. Filed July 30, 1891. Serial No. 401,115. (No model.)



Claim.—1. A mechanical movement for converting rotary motion into reciprocating rectilinear motion, and that motion quicker in one direction than the other, comprising a rotating cylinder having spiral grooves in its surface differing in length and extending in reverse ways from the central portion of the cylinder toward the ends, a frame adapted to support the cylinder, elbow-shaped levers pivoted to the frame to vibrate vertically on the opposite sides of the cylinder, a cross-bar pivoted to the top of the elbow-shaped levers, a bar fixed across the center of said cross-bar and at right angles thereto, and studs projecting downward at its ends to alternately traverse the grooves in the cylinder, in the manner set forth.

2. A rotating shaft having a fixed cylinder B, grooves Nos. 1 and 2 in the surface of the cylinder and extending in reverse ways from the central portion thereof, a frame having bearings to support the cylinder, elbow-shaped levers C^3, pivotally connected with said frame to vibrate vertically on the opposite sides of the cylinder, a cross-bar D, pivotally connected with the arms of the levers extending vertically, a bar D^3, fixed across the top and center of the bar D, and studs *f*, extending downward therefrom to enter and traverse the grooves in the cylinder, and a rod pivotally connected with the ends of the elbow-shaped levers that extend horizontally, all arranged and combined to operate in the manner set forth, for the purposes stated.

475,880. SHUTTLE-BINDER FOR LOOMS. FREDERICK BAYNES and JOSHUA WHALLEY, Blackburn, England; said Baynes assignor to said Whalley. Filed May 15, 1891. Serial No. 392,861. (No model.) Patented in England Sept. 5, 1889, No. 13,965.



Brief.—The shuttle-binder is pivotally supported at the top of the box, so that it bears upon the corner of the shuttle, pressing the same against the side and bottom of the box.

Claim.—1. The combination, with the shuttle-box, of the swell 1, provided with the hanger-arm 4, having a hook-shaped upper end, a supporting pivotal pin upon which the upper end of said arm is removably hooked or hung, and a spring for pressing the swell inwardly toward the shuttle, substantially as and for the purposes specified.

2. The combination, with the shuttle-box, of the swell 1, having the hanger-arm 4, a supporting-pin upon which said arm is pivoted so that the swell swings bodily in a plane transversely of the shuttle-box, as described, and a spring for pressing the swell toward the shuttle, the swell being arranged with relation to the shuttle, as described, so that when the shuttle is boxed the upper edge of the swell will overhang the shuttle, and thereby hold it to the bottom of the box, substantially as set forth.

3. The combination, with the shuttle-box, of the swell 1, provided with a hanger-arm 4, having a hook-shaped upper end, a supporting-pin 6, upon which the upper end of said arm is hooked or hung so that the swell will swing bodily in a plane transversely of the shuttle-box, as described, and a spring for pressing the swell toward the shuttle, the said swell being arranged with relation to the shuttle, as described, so that when the shuttle is boxed the upper edge of the swell will overhang the shuttle, and thereby hold it to the bottom of the box, substantially as described.

4. The combination, with the shuttle and the shuttle-box back board 8, provided with the slot 9, of the swell 1, having a convex-faced member 2, provided with laterally-projecting ends 12 to engage the box back and limit the inward movement of the swell, the hanger-arm 4, integral with the swell and having a hook-shaped upper end, the supporting-pin 6, upon which said hanger-arm is removably hooked, and a spring 10 for pressing the swell inward toward the shuttle, substantially as described.

475,881. CARBURETED-HYDROGEN-GAS GENERATOR AND BURNER. JOHN W. BLAKE and JOSEPH T. SACKETT, Kansas City, Mo., assignors of one-third to Frank St. Aubyn, same place. Filed Apr. 4, 1891. Serial No. 387,635. (No model.)



Claim.—1. An improved carbureted-hydrogen-gas generator and burner comprising a circular burner having a depressed bottom and a raised circular margin, a pair of oppositely-disposed vertical bosses formed on the inner side of said margin and having each a vertical passage or channel, a horizontal boss formed upon the bottom of the burner and having a longitudinal channel communicating at its outer end with the channel of one of the vertical bosses and extending radially inward from said boss to and beyond the center of the burner, a cavity at the inner end of the horizontal boss and communicating through a short vertical channel with the inner end of the horizontal channel of the boss, a generator also of circular form and located immediately above the burner and provided with a central vertical hollow boss, the channel of which is in vertical alignment with that at the inner end of the horizontal boss of the burner, a feed-pipe entering the bottom of the burner and passing through the channel of the second burner-boss and also detachably connected at its upper end to the bottom of the generator, a set-screw for retaining the burner upon the feed-pipe, and a supply-pipe leading downward from the opposite side of the bottom of the generator and entering the channel of the first burner-boss, and a removable cover for said generator, substantially as described.

2. An improved carbureted-hydrogen-gas generator and burner comprising a circular burner having a depressed bottom and a raised circular margin, a pair of oppositely-disposed vertical bosses formed on the inner side of said margin and having each a vertical passage or channel, a horizontal boss formed upon the bottom of the burner and having a longitudinal channel communicating at its outer end with the channel of one of the vertical bosses and extending radially inward from said boss to and beyond the center of the burner, a cavity at the inner end of the horizontal boss and communicating through a short vertical channel with the inner end of the channel of the horizontal boss, a generator also of circular form and located immediately above the burner and provided with a central vertical hollow boss, the channel of which is in vertical alignment with that at the inner end of the horizontal boss of the burner, a feed-pipe entering the bottom of the burner and passing through the channel of the second burner-boss and also detachably connected at its upper end to the bottom of the generator, a set-screw for retaining the burner upon the feed-pipe, a supply-pipe leading downward from the opposite side of the bottom of the generator and entering the channel of the first burner-boss, a removable cover for said generator, and a ring having inwardly-extending radial studs

to rest removably upon the generator-cover, said ring being of such length as to extend downward below the bottom of the generator, substantially as set forth.

475,882. COMPOSITION OF MATTER AND METHOD OF PRODUCING THE SAME. CRAFT C. CARROLL, New York, N. Y. Filed June 20, 1891. Serial No. 396,973. (No specimens.)

Claim.—1. The method of producing an amalgam for dental and other purposes, which consists in forming an alloy in which aluminum constitutes an element and then adding mercury to the alloy, as and for the purposes set forth.

2. The method herein described of producing an amalgam for dental and other purposes, which consists in forming an aluminum alloy, reducing the same to powder, and dissolving the powder with mercury, substantially as shown and described.

3. An alloy composed of silver, tin, copper, and aluminum in the proportions specified.

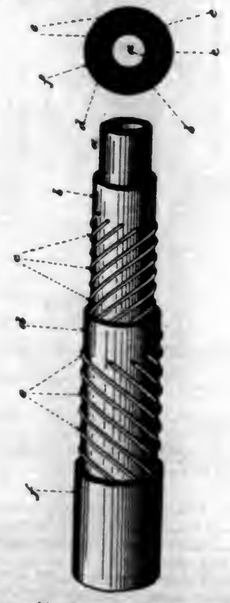
4. An alloy composed of silver, tin, copper, and aluminum in the proportions specified and reduced to a powder, as and for the purposes set forth.

475,883. WIRE-STRETCHER AND TENSION DEVICE. JOHN R. CLEAVELAND, Indianapolis, Ind. Filed Mar. 12, 1891. Serial No. 384,712. (No model.)



Claim.—The combination of a windlass mounted in bearings upon a fence-post, a coiled spring mounted upon said windlass and arranged to be wound thereon and thereby put in tension, and a fence-wire secured to the free end of said spring, all substantially as and for the purpose set forth.

475,884. FLEXIBLE HOSE OR TUBING. JOHN COCKBURN, Edinburgh, Scotland, assignor to the North British Rubber Company, Limited, same place. Filed Jan. 12, 1892. Serial No. 417,786. (No model.) Patented in England July 14, 1890, No. 10,958.



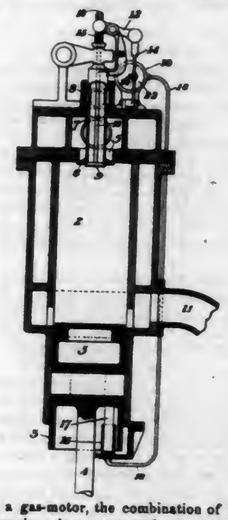
Claim.—1. The combination, with a hose or pipe, of a reinforcing-covering consisting, essentially, of two oppositely-wound systems of strengthening-wires, each of which systems is composed of a multiplicity of wires wound in spirals of rapid pitch with their convolutions respectively interplaced and separated from each other by cloth or canvas rubber-coated on both sides and interposed between the said two systems of strengthening-wires.

2. A vulcanized india-rubber hose or pipe formed integrally with a reinforcing-covering containing two systems of wires, the members of which wind in rapid spirals in respectively opposite directions and are embedded in layers of rubber-coated cloth or canvas, substantially as set forth.

3. A woven hose or pipe coated exteriorly with india-rubber and with a reinforcing-covering containing two systems of wires, the members of which wind in rapid spirals in respectively opposite directions and are embedded in interposed layers of rubber coated cloth or canvas, the rubber components of the structure being vulcanized together, substantially as described.

4. The reinforcing-covering herein described, capable of being used separately as a hose or as a covering for a hose or pipe drawn within it, the same consisting, essentially, of two systems of wires, the members of which wind in rapid spirals in relatively opposite directions with their convolutions respectively interplaced and embedded in rubber coatings respectively covering the interior and exterior of a woven fabric interposed between the said systems of wires.

475,885. SPEED-GOVERNOR FOR GAS-ENGINES. JOHN S. CONNELLY, Plainfield, N. J. Filed Mar. 16, 1891. Serial No. 385,151. (No model.)



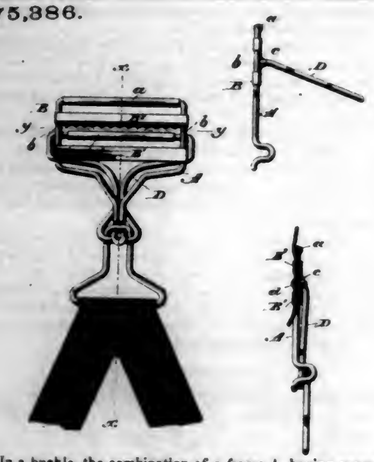
Claim.—1. In a gas-motor, the combination of the air-valve, a gas-valve carried thereby, a lever connected with said gas-valve, a post with which said lever engages to cause the opening of the valve, a diaphragm-chamber the diaphragm of which is connected with said post and adapted to move the same, substantially as described, and a fluid-compressor driven by the moving parts of the engine and adapted to compress fluid with pressure varying with the rate of speed, said compressor being connected with said chamber, substantially as and for the purposes described.

2. In a gas-motor, the combination of a hollow cylindrical air-valve, a gas-valve located within the hollow air-valve, a lever connected with said gas valve, a post with which said lever engages to cause the opening of the valve, a diaphragm-chamber the diaphragm of which is connected with said post and is adapted to move the same, substantially as described, and an air-compressor driven by the moving parts of the engine and adapted to compress air with pressure varying with the rate of speed, said compressor being connected with said chamber, substantially as and for the purposes described.

475,886. SUSPENDER-BUCKLE. SHELDON E. COOK, Chicago, Ill. Filed Nov. 12, 1891. Serial No. 411,733. (No model.)

Claim.—1. In a buckle for the purpose set forth, the combination of a frame A, having parallel side pieces, a plate B, consisting of a member B^3, having inwardly-projecting teeth formed on its lower edge, and a member B', the edges of which are plain, said members being connected to each other by end straps *c c*, which are bent to form bearings for a pivoted frame, and a pivoted frame D, having a cross-bar *d* bent out of line or to one side of the portions which lie in the bearings, the lower ends of the frames being adapted to engage with each other, substantially as set forth.

475,886.

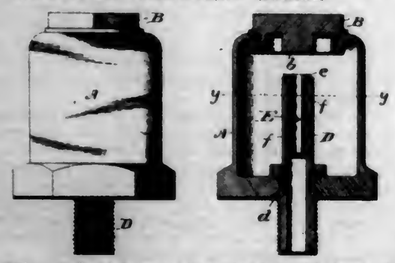


2. In a buckle, the combination of a frame A, having cross-bars B^3 and B′ attached to the side pieces thereof, the upper cross-bar having teeth on its lower edge, a swinging frame pivotally secured to the parallel side pieces of the frame A between the cross-bars B^3 and B′, the swinging frame having a depending portion, and means for holding the frames in engagement with each other, substantially as shown, and for the purpose set forth.

3. In a buckle for the purpose set forth, the combination of a frame A, having parallel side pieces, a plate B, having its end members bent to embrace the side pieces, and a pivoted frame secured to the frame A between the bars B^3 and B′ by straps or connecting portions *c*, the frames A and D being adapted to be held in engagement with each other at their lower ends, substantially as shown, and for the purpose set forth.

4. In a buckle, the combination of a wire frame having parallel side pieces, a cross-bar at its upper end, and converging lower ends which unite to form a hook, a plate B, having a central opening or space between the upper and lower edges of said plate, and inwardly-projecting teeth formed on the lower edge of the upper portion of said plate, the ends of said plate being bent to embrace the parallel side bars of the frame A and secure thereto a swinging frame having a depending portion looped for engagement with the hook on the frame A, said frame being pivotally attached to the center portion of the parallel side bars, so that the cross-bar thereof will be located between the upper and lower edges of the opening in the plate B, substantially as shown, and for the purpose set forth.

475,887. OIL-CUP. JOSEPH M. DAUGHERTY, Urichsville, Ohio. Filed Jan. 13, 1892. Serial No. 418,469. (No model.)

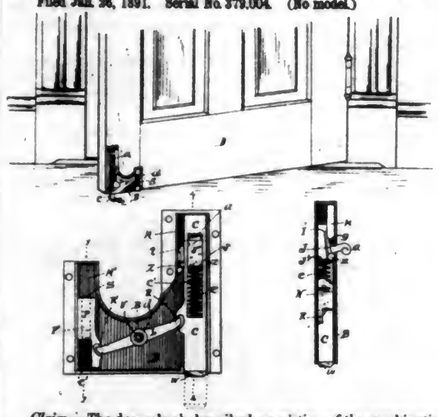


Claim.— 1. In a lubricator, the combination, with the vessel having a tubular stem projected up from the bottom thereof to within a short distance of the top, of a tubular cap placed within the open end of the said stem and adapted to slide therein and having holes in its sides, substantially as and for the purpose described.

2. In a lubricator, the combination, with the vessel having a tubular stem projected within the same from the bottom, the top of the stem having a flaring seat, of a tubular cup located within the upper end of the stem and having a head which corresponds to the shape of the seat formed at the upper end of the said stem and having holes in its sides, substantially as and for the purpose described.

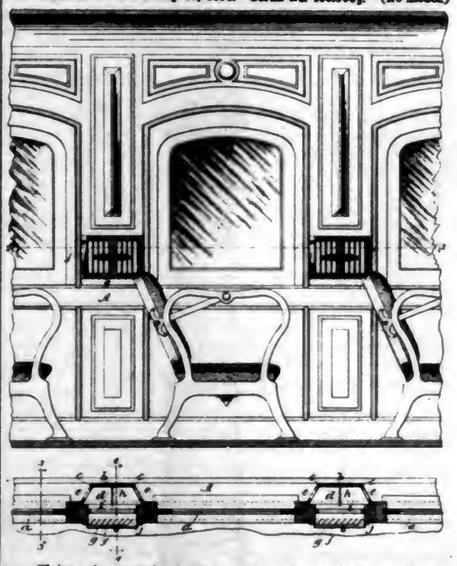
3. The hereinbefore shown and described lubricator, comprising vessel A, tubular stem D, screwed into the base of the vessel and having tapering flange *d*, which enters a correspondingly-shaped recess in the base of the vessel and having a flaring seat at its upper end, the tubular cup E, having head *e*, by means of which the said cup is supported within the said stem, and having openings in its sides, and the plug B to close the upper end of the vessel and limit the upward movement of the said cup E, substantially as described.

475,888. DOOR-CHECK. BENJAMIN DEITZENBAUGH, Wichita, Kans. Filed Jan. 26, 1891. Serial No. 379,004. (No model.)



Claim.—The door-check described, consisting of the combination, with the chambered case, of the sliding spring head-block provided with a pin or knob extending therefrom through a face-slot of the case, the sliding spring-bolt provided with the latch-retaining offsets, the intermediate lever arranged connecting said head-block and bolt, and the spring-retaining latch, substantially as set forth.

475,889. VENTILATOR FOR CARS. HENRY A. DERBY, New York, N. Y. Filed July 22, 1891. Serial No. 400,360½. (No model.)



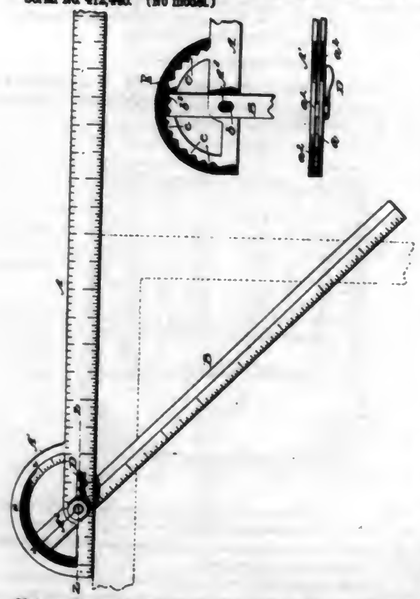
Claim.—1. A car having an upright hollow raised panel *b* on its side, which panel forms a part of the car-body and projects out somewhat from the adjacent surface of the side of the car, said panel having in its upright edge, which faces toward the end of the car, an aperture *e*, whereat the air enters the hollow within the panel when the car is in motion, and an opening *f* from said hollow into the car, substantially as set forth.

2. A car having an upright hollow raised panel *b* on its side between adjacent windows, said panel forming a part of the side of the car and having apertures *e* in its opposite upright edges, which face toward the respective ends of the car, an opening *f* from the hollow of the panel into the car, and a partition within the hollow of the panel between said apertures *e*, substantially as set forth.

3. The combination, with a car having an upright hollow raised panel *b* on its side, which panel forms a part of the side of the car and projects out beyond the adjacent surface of the same and has apertures *e* in its upright edges facing toward the respective ends of the car, of a dust-arrester arranged in the hollow of said panel between said apertures *e*, an air-inlet *f*, whereat the air enters the car from said hollow in the panel, and a register which controls said inlet *f*, substantially as set forth.

4. The combination, with a car having an upright hollow raised panel *b* on its side, which panel forms a part of the side of the car, projects beyond the adjacent surface of the same, and has apertures *e* in its opposite edges, which face toward the respective ends of the car, and an air-inlet *f*, leading from the hollow of the panel into the car, of a shifting dust-arrester and air-deflector arranged within the hollow of the panel between the apertures *e*, and a register controlling the air-inlet *f*, substantially as set forth.

475,890. BEVEL AND TRY SQUARE. SILAS C. DOWNEY, Chicago, Ill., assignor of one-half to Richards & Ruthhauser. Filed Nov. 19, 1891. Serial No. 412,440. (No model.)



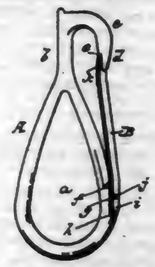
Claim.—The combination, with the graduated arm and its arc, of a second arm pivoted to said arm and having an elongated slot, in which the pivot works, and at its inner end provided with notches, a binding-nut, and a strip encircling the arc and provided upon its inner edge with a plurality of teeth to engage the notches of the arm, substantially as and for the purpose specified.

475,891. WEATHER-STRIP. EDWIN G. DURYEA, Riverhead, N. Y. Filed Nov. 11, 1891. Serial No. 411,567. (No model.)



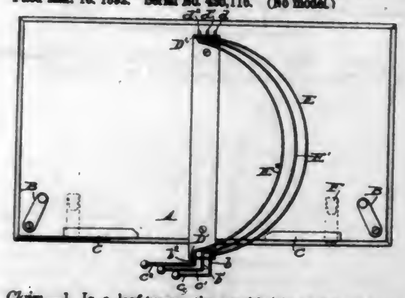
Claim.—An improved weather-strip consisting of a door having its under surface formed or provided with a groove having a vertical and a curved wall, a saddle or strip secured to the door-sill and provided with a beveled or inclined front edge, and an angle-iron plate composed of two arms, one of which normally lies against the inclined edge of the sill or saddle and the other remains in the groove, said plate being hinged at its angular corner to the lower edge of the vertical wall of the groove and adapted to be lifted and enter the groove when the door is opened, substantially as herein described.

475,892. GAG-RUNNER. EDWARD PEIRCE and FRANK S. DULL, Montgomery Station, Pa. Filed Dec. 11, 1891. Serial No. 414,604. (No model.)



Claim.—The improved gag-runner described, comprising the loop portion *a*, neck *b*, hook *c*, and spring B, which latter is firmly secured at *j* to the runner and its free end engaging the inner face of the hook *c*, substantially as described.

475,893. LEAF-TURNER. ALEXANDER C. FRANCIS, Newark, N. J. Filed Mar. 16, 1892. Serial No. 425,116. (No model.)



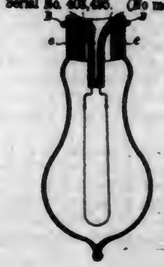
Claim.—1. In a leaf-turner, the combination, with a board or frame A, of a block or bearing D, provided with a series of holes or openings in different horizontal planes, and a series of rods journaled in said bearing-block, all substantially as shown and described.

2. In combination with a board or frame A and a block or bearing secured thereto, a series of arms or turning-rods journaled therein out of line with one another, said arms being adapted to be inserted between the leaves to be turned and having their lower ends extended below the bearing-block and fashioned into handles or levers by which to turn them.

3. In combination with a board or frame A and a bearing-block secured thereto, a series of turning rods or arms journaled therein out of line with one another and each comprising a journal or axis *b*, a lateral handle or lever on one side of the block, and a laterally-extending leaf-turning portion on the other side of said block.

4. In combination with a board, the metallic strip applied to the face thereof and having its ends turned upward and perforated to form bearings, and a series of bent or bowed rods journaled in the upturned ends and provided each with an actuating handle or lever.

475,894. INCANDESCENT ELECTRIC LAMP. HENRY GREEN, Hartford, Conn., assignor of one-half to Geo. S. Miller, same place. Filed Aug. 22, 1891. Serial No. 403,495. (No model.)



Claim.—1. In an incandescent lamp made entirely of glass, a pair of circuit wires or conductors attached in the usual manner to the platinum wires and trained up the sides of the hollow recess in the center of the neck of the lamp and fastened thereto by the fusion of a small portion of glass, substantially as specified.

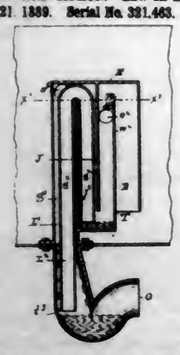
2. In combination with an incandescent lamp made entirely of glass, a pair of circuit wires or conductors attached in the usual manner to the platinum wires and trained up the sides of a hollow recess in the neck of the lamp and secured thereto by the fusion of a small portion of glass, and a number of bead-like projections or spurs round the outer portion of the neck of the lamp for the purpose of retaining said bulb in the holder or socket, substantially as specified.

475,395. PROCESS OF RECOVERING GREASE, &c., FROM WOOL-WASHINGS. ROGER B. GRIFFIN, Auburndale, Mass. Filed July 16, 1889. Serial No. 317,728. (No specimens.)

Claim.—1. The improvement in the art of recovering wool-grease from the waste waters of wool-washings, which consists in concentrating the waste wash-waters by evaporation, mixing the residue with an acid absorbent or filler, preferably acid phosphate of lime, heating the mixture to throw off the water, and then separating the grease from the remaining solid materials, substantially as described.

2. The combined process of recovering wool-grease from the waste waters of wool-washings and forming plant-food from the remainder, which consists in concentrating the waste wash-waters by evaporation mixing the residue with an acid absorbent or filler, preferably acid phosphate of lime, heating the mixture to throw off the water, and then separating the grease and the residue by mechanical straining, substantially as described.

475,396. TRAP AND SIPHON. LEW M. HAWLEY, Schenectady, N. Y. Filed Aug. 21, 1889. Serial No. 321,463. (No model.)



Claim.—1. In a flushing apparatus, the combination, with a cistern or tank provided with an accessory trap, substantially as described, of a siphon arranged at the side of said trap and connected thereto within said tank and an accessory siphon arranged within said principal siphon, said accessory siphon having the top of the bend between its uptake and downtake legs at a lower level than the same parts of the principal siphon and provided with a trap in the downtake-leg of the principal siphon, substantially in the manner as and for the purposes set forth.

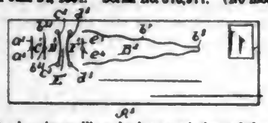
2. The combination, with a siphon having a connected trap and an interiorly-arranged accessory trap, substantially as described, of a conduit arranged within and upon the inner face of the outer wall of the principal trap and constructed to direct the water first passing over the division between the uptake and downtake legs of the principal trap into the accessory trap before filling the principal trap, substantially in the manner as and for the purposes set forth.

3. In a flushing apparatus, the combination of a trap having its uptake-leg arranged to take water from a tank or cistern, a siphon proper constructed to receive from said trap, an accessory trap arranged to be filled by the overflow from the uptake-leg of said trap proper before the latter is filled, with the discharge end of said accessory trap horizontally in a line with the lower surface of the bend between the long and short legs of the latter, substantially as and for the purposes set forth.

4. The combination, with a trap having an accessory trap made with an air-retaining area at the upper surface of the bend between the intake and uptake legs of the accessory trap, of a conduit made at the overflow between the uptake and downtake legs of the principal trap to direct the overflow into the accessory trap to fill the latter before filling the trap proper, substantially in the manner as and for the purposes set forth.

5. The combination, with the inclosure E, made with the offset A, of the trap proper T, the principal siphon S', and the accessory siphon S^2, arranged within said inclosure, substantially as described, and the accessory trap T^2, arranged within the said offset A and constructed to connect at O^4 with the downtake-leg of the trap proper and at O' with the top of the principal siphon, substantially in the manner as and for the purposes set forth.

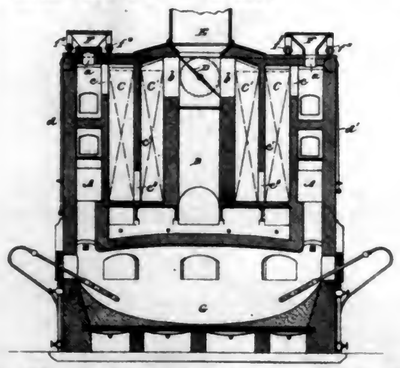
475,397. COIN-MAILING GRIP. MILEY HAZARD, Kansas City, Mo. Filed Jan. 24, 1891. Serial No. 378,977. (No model.)



Claim.—1. A coin-mailing device consisting of the piece or card formed with a series of transverse slits for the reception of the coin and the locking-tongue and provided with the locking-tongue and adapted to be engaged in said slits, substantially as set forth.

2. A coin-mailing device consisting of the piece or card formed with a series of slits for the reception of the coin and the locking-tongue and provided with the corrugated locking-tongue adapted to be inserted in said slits, substantially as set forth.

475,398. FURNACE FOR IRON-WORKING. WILLIAM HECKERT, WILLIAM J. THOMAS, and FRANK L. HECKERT, Findlay, Ohio. Filed June 24, 1891. Serial No. 397,271. (No model.)



Claim.—1. In combination with the furnace having the charge-opening therein, the bottomless receptacle or hopper, having a suitable cover and an extension or cover for the charge-opening connected therewith, substantially as described.

2. In combination with the furnace, the vertical roasting and reducing chamber, the charge-opening at the top thereof, and the bottomless receptacle or hopper having a suitable extension which forms a cover for said charge-opening when the hopper is drawn from over the same, substantially as described.

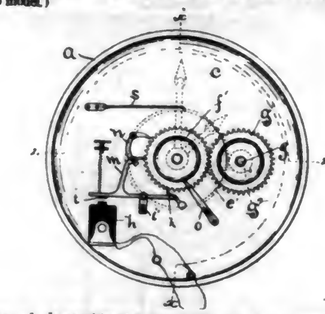
3. In combination with the furnace having the charge-opening at the top thereof, the road bed or track, and the bottomless receptacle mounted upon suitable rollers arranged to slide back and forth upon said track connecting with the charge-opening in the furnace, said hopper being provided with a suitable refractory cover, and a sliding extension which forms a cover for the charge-opening when the hopper is moved from over the same, substantially as described.

4. In a furnace, the combination of the roasting-chamber having the charge-opening at the top thereof, the road-bed arranged above said charge-opening, and a sliding receptacle or bottomless hopper mounted on said road-bed and having a hinged cover and a recessed extension having a filling of refractory material adapted to form a cover for the charge-opening, substantially as described.

5. In a furnace, the combination of the stack, the two roasting and regenerating chambers, a smelting-chamber arranged below said roasting-chambers and connecting the lower portions thereof, the intermediate hot-air chamber arranged above the smelting-chamber, flues arranged above the smelting-chamber between the roasting-chamber and the hot-air chamber and forming conduits connecting the roasting-chambers with the stack, and suitable valve mechanism controlling said conduits, substantially as described.

6. In a furnace, the combination of the stack, the two roasting-chambers, the smelting-chamber arranged below said roasting-chambers and connecting the lower portions thereof, the intermediate hot-air chamber arranged above the smelting-chamber, the flues arranged above the smelting-chamber at the sides of the hot-air chamber and having checker-work therein, conduits connecting the roasting-chambers with the stack, and valve mechanism controlling said conduits, substantially as described.

475,399. ELECTRIC ACTUATOR FOR REGISTERING MECHANISMS. CHARLES F. HOLT, New London, Conn., assignor of one-half to William S. Starr, same place. Filed June 22, 1891. Serial No. 397,144. (No model.)



Claim.—1. In combination with a train of gearing controlling the movements of two pointers, as set forth, and an electro-magnet, an armature of lever form having an actuating-pawl and a locking-pawl, as described, and an independently-pivoted locking-pawl connected with said armature-locking pawl, substantially as and for the purpose specified.

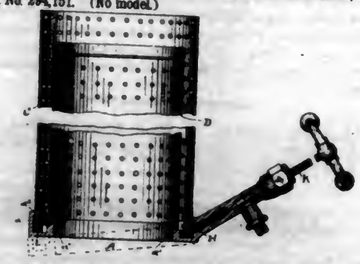
2. In combination with a toothed wheel, an angle-lever having an actuating-pawl at one end and a locking-pawl at the other end and an independently-pivoted locking-pawl connected with said angle-lever in manner and for the purpose specified.

475,400. IDENTITY-INDICATOR. THOMAS HOUGHTON and ANGELO D. DICK, Philadelphia, Pa. Filed May 2, 1891. Serial No. 391,356. (No model.)



Claim.—An identity-indicator consisting of a transparent tube, separate caps having grooves therein, in which the ends of the transparent tube is seated, a rod within said tube, having screw-threaded ends engaging in openings in said caps, cement in said grooves, hermetically sealing said tube and caps, and a record-piece in said transparent tube, substantially as described.

475,401. OIL-BURNER. WILLIAM R. JEAVONS, Cleveland, Ohio, assignor of one-half to John A. Lannert, same place. Filed Dec. 30, 1888. Serial No. 294,151. (No model.)



Claim.—1. A hydrocarbon-vapor burner consisting of a vapor-holder constructed for the free and uniform distribution of the vapor therein by gravity and having a free opening for the escape of vapor, in combination with perforated combustion-walls having a flame-space between them in communication with the said holder, substantially as described.

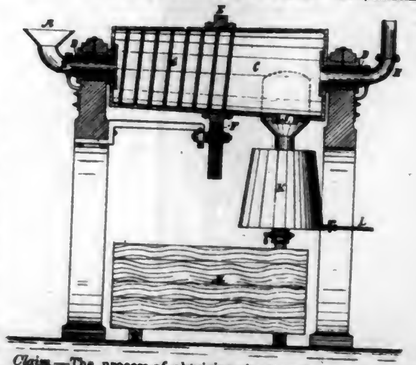
2. A vapor-burner having the channel in which the vapor is distributed or conveyed by gravity, substantially as described.

3. A vapor-burner having a vapor receiving and conveying channel or chamber provided with a free opening of relatively small area communicating with the combustion-chamber, in combination with a combustion-chamber having openings for the admission of air to support combustion, substantially as described.

4. The process herein described, consisting first in converting the oil into vapor and then conveying the vapor by gravity to the place where it is oxygenized, substantially as described.

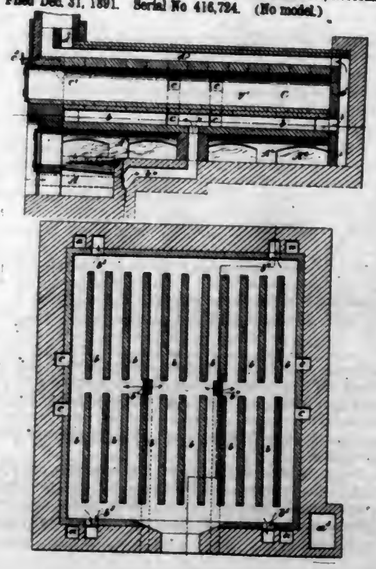
5. The process herein described of converting liquid hydrocarbon into vapor and conveying and burning the vapor, which consists first in vaporizing the oil by exposure to a heated surface, then conveying the vapor by gravity to the points where it is to be burned, and then supplying air to the vapor in limited quantities to meet the demands of combustion, substantially as described.

475,402. PROCESS OF OBTAINING METALLIC ZINC FROM SULPHITE OF ZINC BY ELECTROLYSIS. THEODOR LANGE, Brieg, Germany. Filed June 24, 1890. Serial No. 356,566. (No specimens.)



Claim.—The process of obtaining zinc from its ores, which consists in disintegrating and roasting the ore, mixing it with hot water, moving the body of ore and water through a closed vessel, causing the hot sulphurous gases from the ore-roasting process to move in the opposite direction through the ore, delivering the treated ore and water to a filter, drawing off the resulting solution of zinc sulphite, and throwing down the zinc by passing an electric current through the solution, as set forth.

475,408. BAKER'S OVEN. WILLIAM LENDEROTH, Rosebank, N. Y. Filed Dec. 31, 1891. Serial No. 416,724. (No model.)

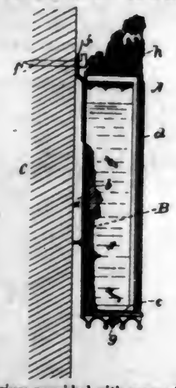


Claim.—1. The combination of the baking-chamber C, fire-room A^3, and series of air-flues *b* with one or more flues b^4 for conducting air from the exterior of the oven into said flues *b*, said air-flues *b* being interposed between the baking-chamber C and fire-room A^3, substantially as and for the purposes described.

2. The combination of the fire-room A^3, baking-chamber C, and air-flues *b*, interposed between said fire-room A^3 and baking-chamber C, with air-flues b^4 and flues *c c* leading from said air-flues *b* into the baking-chamber C, substantially as described.

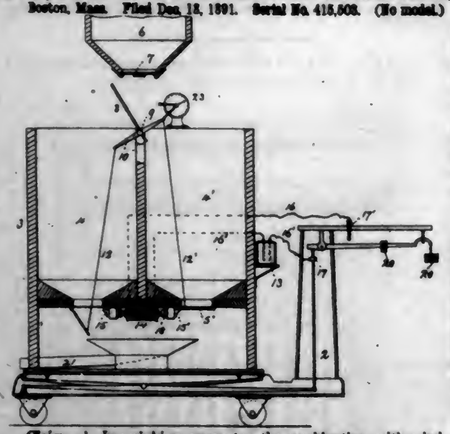
3. The combination of the fire-room A^3, baking-chamber C, and air-flues *b*, interposed between said fire-room A^3 and baking-chamber C, with air-flues b^4 and flues *c c*, leading from said air-flues *b* into the baking-chamber C, and with outside dampers b^5, flue c^3, damper c^5, and chimney a^3, said flue c^3 leading from said baking-chamber C direct to said chimney a^3, substantially as described.

475,404. PICTURE-AQUARIUM. ERNST G. LOCHMANN, Gohlis-Leipsic, Germany. Filed Aug. 13, 1891. Serial No. 402,557. (No model.)



Claim.—An aquarium provided with means for securing the same to a wall in the manner of a picture and having a perforated plate arranged in front of and secured to the rear wall, and a pictorial representation built up of stones, shells, or other material cemented to said plate, substantially as described.

475,405. AUTOMATIC WEIGHING-SCALE. NATHANIEL LOMBARD, Boston, Mass. Filed Dec. 18, 1891. Serial No. 415,503. (No model.)

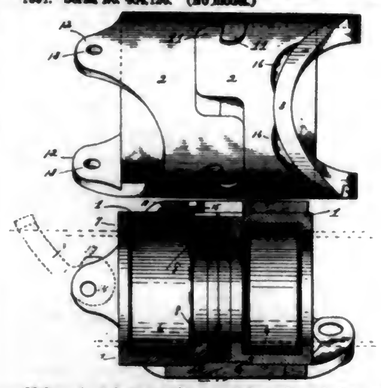


Claim.—1. In weighing apparatus, the combination, with a balanced beam and a receptacle provided with two compartments, of two gates, locking mechanism therefor, a deflector operated by said gates, and electric communication between said locking mechanism and the beam to open the gates alternately and shift the deflector, substantially as specified.

2. The combination, with a platform, a balanced beam, the binding-posts, and a two-chambered receptacle supported upon said platform, of two oppositely-moving gates, holding-latches, and their operating mechanism electrically connected with the balanced beam, substantially as explained.

3. A weighing-machine, the two-chambered receptacle thereupon, and the binding-posts, one of which is adjustable with respect to the balanced beam, combined with an oscillating deflector, the pivotal gates connected with said deflector, gate-locking mechanism, and an electro-magnet in circuit with the balanced beam, all operating substantially as stated and described.

475,406. HOSE-COUPLING. JOHN R. LOUTHAN, Riverside, assignor of two-fifths to Robert York, San Bernardino, Cal. Filed Aug. 20, 1891. Serial No. 404,126. (No model.)



Claim.—1. A hose-coupling consisting of two halves, each being the duplicate of the other, comprising a head adapted to be connected with the end of a section of hose, a sleeve encircling the head and having a smooth exterior, and a ball pivotally secured to the sleeve and adapted to engage with the head and move it longitudinally of the sleeve independently of the connection with or movement of the other half of the coupling, substantially as described.

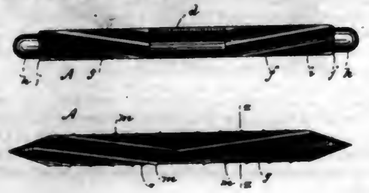
2. In a hose-coupling, a head provided with a washer and adapted to be connected with the end of a section of hose, a sleeve encircling the head and having hooks at one end and ears at the other end, and a ball pivotally secured to the ears and provided with cams for engaging with the head, substantially as described.

3. In a hose-coupling, a head provided with a washer and adapted to be connected with the end of a section of hose and provided with an exterior shoulder, a sleeve encircling the head and provided with an interior shoulder adapted to engage with the shoulder of the head, said sleeve being also provided with hooks at one end and with ears at the other end, a semi-elliptical ball pivotally secured within the ears and having its ends provided with cams for engaging with the end of the head, substantially as described.

4. In a hose-coupling, a head provided with a forwardly-projecting rim and an interior flange near its front end, a washer within the rim and secured to the flange, a sleeve encircling the head, having hooks projecting beyond the front of the rim and of the washer, the inner surface and the ends of which are rounding, a ball pivotally secured to the rear end of the sleeve and adapted to be turned down even with the surface of the sleeve, each end of the ball being provided with a cam, substantially as described.

5. In a hose-coupling, a head adapted to be connected with the end of a section of hose, a sleeve encircling the head, one end of which is provided with forwardly-projecting hooks and the opposite end is provided with ears, a ball pivotally secured to the ears, provided with cams for engaging with the end of the head, and a key adapted to be slipped longitudinally of the coupling and to engage with the hooks thereof and prevent the unclasping of the hooks, substantially as described.

475,407. DOWEL. HARVEY S. MARSH, Bass River, Canada, assignor of one-half to Dawson Johnson, Boston, Mass. Filed July 6, 1891. Serial No. 398,521. (No model.)



Claim.—1. A metallic dowel having a portion of its body toothed peripherally, the ends of said body at opposite sides of said tooth portion being respectively provided with longitudinally oblique grooves running in opposite directions, substantially as and for the purpose set forth.

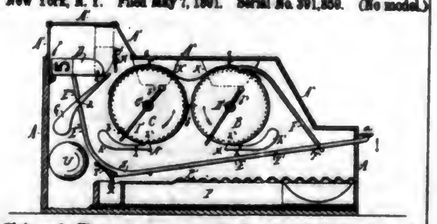
2. A metallic dowel having a portion of its body toothed peripherally, the remainder of said body being provided with longitudinally-oblique grooves, substantially as specified.

3. A metallic dowel having its body provided with longitudinally-oblique grooves running in opposite directions from the center thereof, the walls of said grooves being notched or serrated, substantially as described.

4. The dowel A, provided with the serrated portion *d* and grooved portions *f g*, arranged to operate substantially as described.

5. The dowel A, having the serrated portion *d*, grooved portions *f g*, beveled at *j*, and the guide-points *k*, arranged to operate substantially as specified.

475,408. CASH REGISTER AND INDICATOR. RALPH MILLS, New York, N. Y. Filed May 7, 1891. Serial No. 391,859. (No model.)



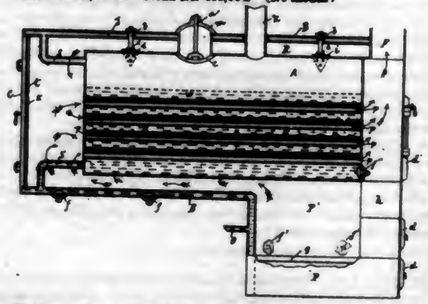
Claim.—1. The cash register and indicator comprising the operative mechanism consisting of key-lever E, pawl F, wheels B and C, yokes I and I', indicator-tablets D, tripper G, cross-bar H, cross-bar R, and drawer P, all combined and arranged to operate essentially as herein set forth.

2. In a cash register and indicator, the combination of key-lever E, pivoted at E', pawl F, wheels B and C, yokes I and I', levers M and N, indicator-tablets D, tripper G, and cross-bar H, all constructed and arranged to operate as herein set forth.

3. In a cash register and indicator, the combination of key-lever E, pivoted at E', pawl F, wheels B and C, yokes I and I', indicator-tablets D, tripper G, and cross-bar H, all constructed and arranged to operate as herein set forth.

4. In a cash register and indicator, the combination of key-lever E, pivoted at E', indicator-tablets D, tripper G, and cross-bar H, all constructed and arranged to operate as herein set forth.

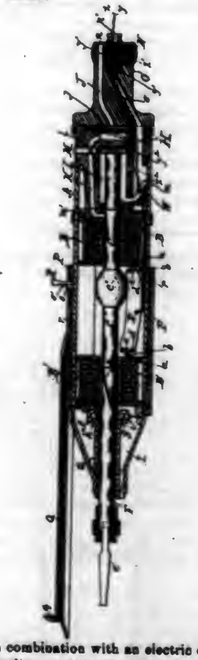
475,409. STEAM-BOILER. WILLIAM J. MCALENEAN, Peoria, Ill. Filed Jan. 19, 1892. Serial No. 418,604. (No model.)



Claim.—1. In a steam-boiler, the combination, with the boiler A, having the flues *p p*, &c., and the hand-hole *f''*, of the water-jacket B, formed by two walls with the hollow space J and formed with the vertical walls at the sides of the fire-box and meeting to form an arch above, and with the backward end thereof constructed in a circular form and with the said water-jacket provided with the doors C *d* and with the hand-holes *f f f' f''* and with the stay-bolts *v v*, &c., the circulating-pipe S, connecting the water-jacket B and boiler A at points below the water-line, and the equalizing-pipe *s*, connecting the boiler and water-jacket above the water-line and provided with smoke-flue F, steam-outlet pipe *k*, and man-hole closed by plates *c m*, all substantially as described and set forth.

2. In a steam-boiler, the combination, with the water-jacket B, formed of two walls with hollow space J and formed with the vertical walls at the sides of the fire-box, which meet in the form of an arch above, and with the rear end thereof constructed in a circular form, of the said water-jacket being provided at the forward and rear end with the doors *d* C, as shown, and having the hand-holes *f f f' f''*, with the boiler A suspended within the said water-jacket by means of the bolts *b b* and provided with the flues *p p*, &c., and hand-hole *f''*, the water-jacket B and boiler A being connected at points below the water-line by means of the circulating-pipe S' and being connected at points above the water-line by means of the equalizing-pipe *s*, there being further provided the smoke-flue F, the steam-outlet pipe *k*, and with a suitable manhole opening out from boiler through the water-jacket and closed by means of the plates *c m* and suitable bolt, all substantially as described and set forth.

475,410. ELECTRIC MECHANISM FOR RECIPROCATING MOTION. HENRY S. MCKAY, Boston, Mass. Filed Aug. 20, 1891. Serial No. 403,198. (No model.)



Claim.—1. In combination with an electric circuit, two or more electro-magnetic devices, an armature adapted to be reciprocated by the magnetic devices, and a non-circuit-breaking commutator adapted to be actuated directly by the reciprocating armature to alternately change the course of the current to alternately energize the magnets, and thereby cause the armature to reciprocate without breaking the circuit and without said armature losing its magnetism.

2. In combination with an electric circuit, two or more electro-magnetic devices, an armature and rod connected to said armature and said armature and rod adapted to be reciprocated by the magnetic devices, and a non-circuit-breaking commutator adapted to be actuated directly by the reciprocating part of the apparatus to alternately change the course of the current to alternately energize the magnets, and thereby cause the armature and rod to reciprocate without breaking the circuit and without said armature losing its magnetism.

3. An electro-magnetic engine composed of electro-magnetic devices, an armature and rod connected with said armature, said armature and rod adapted to be reciprocated by the magnetic devices, and a non-circuit-breaking commutator for changing the course of the current from one magnet to the other, and the entire mechanism above named inclosed in a casing, and means for making the electrical connections between the electrical parts in the casing and an outside electric circuit.

4. An electro-magnetic engine composed of electro-magnetic devices, an armature and rod connected with said armature, said armature and rod adapted to be reciprocated by the magnetic devices, and a non-circuit-breaking commutator for changing the course of the current from one magnet to the other and actuated directly by the reciprocating part of the engine, and the entire mechanism above named inclosed within a casing, and means for making the electric connec-

tions between the electric parts in the casing and an outside electric circuit.

5. An electro-magnetic engine composed of electro-magnetic devices, an armature and rod connected with said armature, said armature and rod adapted to be reciprocated by the magnetic devices, and a non-circuit-breaking commutator for changing the course of the current from one magnet to the other, and a pneumatic speed-regulator for said reciprocating parts, and the entire mechanism above named inclosed within a casing, and means for making the electric connections between the electric parts within the casing and an outside electric circuit, and means by which air is admitted to and allowed to escape from the pneumatic regulator.

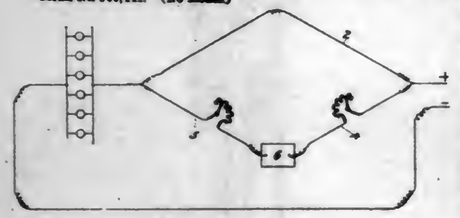
6. In combination with two or more electro-magnetic devices, a reciprocating armature, a rod connected with said armature and having a spiral groove, the ratchet *g*, loosely journaled on said rod, inclosed in the casing *f*, and having a spline engaging with said groove, and a spring-dog extending inwardly from said casing and engaging with the teeth of the ratchet *g*, all as and for the purpose set forth.

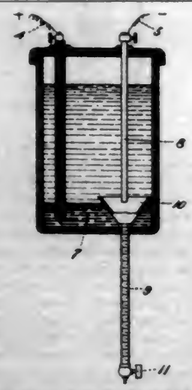
7. In combination with two or more electro-magnetic devices, a reciprocating armature, a piston connected with the same, the piston-cylinder, a pneumatic speed-regulator for said piston, and means for controlling the passage of air through the regulator, all as and for the purpose set forth.

8. In combination with two or more electro-magnetic devices, a reciprocating armature, a piston connected with the same, the piston-cylinder, and an air-passage leading from said cylinder to the tool end of the machine, all as and for the purposes set forth.

9. In combination with an electro-magnetic engine, the casing A, having the screw-thread *r*, the sleeve P, and leg Q, the handle R, spring-dog *s*, and trigger *s'*, all arranged and adapted for the purposes set forth.

475,411. ELECTRIC METER. ALEXANDER G. MCKENNA, Allegheny, Pa., and HENRY T. WEED, Brooklyn, N. Y. Filed July 14, 1891. Serial No. 399,441. (No model.)





Claim.—1. In an electric meter, an electrolytic cell containing a mercurial salt and having suitable electrodes and a receptacle for catching the deposited mercury, substantially as and for the purposes described.

2. In an electric meter, an electrolytic cell containing a mercurial salt and having suitable electrodes, one of which is a body of metallic mercury, and a receptacle for catching the deposited mercury, substantially as and for the purposes described.

3. In an electric meter, an electrolytic cell containing a mercurial salt and having suitable electrodes, of which the cathode is of carbon, and a receptacle for catching the deposited mercury, substantially as and for the purposes described.

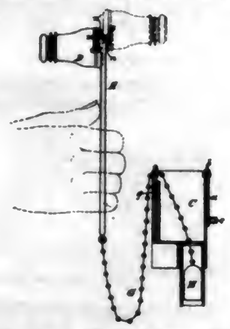
4. In an electric meter, an electrolytic cell containing a mercurial salt and having suitable electrodes and a glass receptacle for catching the deposited mercury, substantially as and for the purposes described.

5. In an electric meter, an electrolytic cell containing an electrolyte and having suitable electrodes and a measuring-receptacle for catching the deposited cation, substantially as and for the purposes described.

6. In an electric meter, an electrolytic cell containing a mercurial salt and having suitable electrodes and a receptacle for the cation, substantially as and for the purposes described.

7. In an electric meter, an electrolytic cell containing a mercurial salt and having suitable electrodes, one of which is a body of metallic mercury, and a receptacle for the cation, substantially as and for the purposes described.

475,412. OPERA-GLASS-RENTAL APPARATUS. JAMES W. PATTERSON, New York, N. Y. Filed Dec. 5, 1889. Serial No. 332,710. (No model.)



Claim.—1. In an opera-glass-rental apparatus, the combination of a tubular supporting-standard, an opera-glass holder thereon, an opera-glass, a chain for attaching the glass to the standard, and a weight to which said chain is fastened, adapted to slide within said standard and thereby to draw the chain into the standard when the glass is put in place in the holder.

2. In an opera-glass-rental apparatus, the combination of a tubular standard, an opera-glass holder on the top thereof formed with a contracted opening communicating with the interior of the standard, a weight adapted to slide within the standard, but incapable of passing out through said opening, an opera-glass, and a chain connected at one end to said glass and at the other end to said weight, whereby the weight acts to draw the chain into the standard when the glass is placed in the holder.

3. In an opera-glass-rental apparatus, the combination, with an opera-glass and a holder having a tubular socket, of a handle pivoted to the opera-glass, so that the glass may be turned in line with the handle when in place in the holder or may be turned at right angles thereto when in use.

4. The combination, with an opera-glass, of a handle constructed with a pivoted section fastened to the glass and adapted to turn through approximately half a circle, whereby the glass may be turned from a position at right angles to the handle on one side to a position at right angles thereto on the opposite side, and with the pivotal axis arranged out of the axial plane of the opera-glass, whereby the glass when turned to one side shall stand at a higher level than when turned to the other.

5. In an opera-glass-rental apparatus, a box for holding the opera-glass open at its top and a cover for closing its top, pivoted to it on one side by means of a spring-hinge, the axis of which is exterior to the side of the box, so that the cover when released is thrown by the spring against the side of the box, and a coin-released lock for holding the cover closed.

475,413. COMPOUND FOR CLEANING AND SCOURING. CHAS. H. PETERSON and ORLANDO C. ROSE, St. Louis, Mo. Filed Aug. 20, 1891. Serial No. 403,166. (No specimens.)

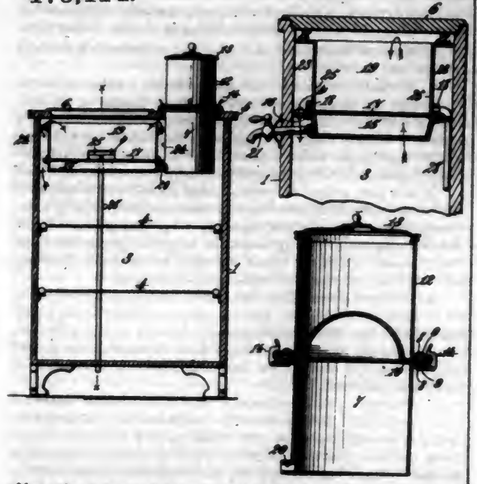
Claim.—1. The herein-described detergent compound, consisting of water, aqua-ammonia, alcohol, sulphuric ether, glycerine, and cocoanut-oil soap in the proportions substantially as specified.

2. The herein-described detergent compound, consisting of water, aqua-ammonia, alcohol, sulphuric ether, glycerine, cocoanut-oil soap, and quillaia bark in the proportions substantially as specified.

475,414. WATER-COOLING REFRIGERATOR. WILLIAM H. PICKETT, Warren, Pa. Filed Aug. 12, 1891. Serial No. 402,462. (No model.)

Claim.—1. The combination, with a refrigerator having a provision-chamber and an ice-chamber, of a water-filter supported at the top portion of the refrigerator, a hollow water-cooling box composed of imperforate top and bottom walls constituting the bottom of the ice-chamber for supporting the ice and provided with a discharge-faucet and a tube connection with the filter, and a removable and replaceable casing resting upon the hollow box and adapted to be removed through the top of the refrigerator, substantially as described.

475,414.



2. The combination, with a refrigerator having a provision-chamber and an ice-chamber, and a top wall provided with a lid or cover and an orifice at one side thereof, of a water-filter suspended in said orifice and comprising a detachable section rising above the top wall of the refrigerator, fastening devices for detachably connecting the said section with the base of the filter, and a hollow water-cooling box constituting the bottom of the ice-chamber for supporting the ice, and provided with a discharge-faucet and a tube connection with the filter inside the refrigerator, substantially as described.

3. The combination, with a refrigerator having a provision-chamber and an ice-chamber, of a water-filter supported at the top portion of the refrigerator and a hollow water-cooling box provided with a detachable top wall, a discharge-faucet, and a tube connection with the filter, substantially as described.

4. The combination, with a refrigerator having a provision-chamber and an ice-chamber, of a water-filter supported at the top portion of the refrigerator, a hollow water-cooling box constituting the bottom of the ice-chamber for sustaining the ice, and provided with a surrounding vertically-projecting rim, a discharge-faucet and a tube connection with the filter, and a removable and replaceable casing resting upon the water-cooling box against the vertically-projecting rim thereof and provided in its sides with air-circulating recesses or notches, substantially as described.

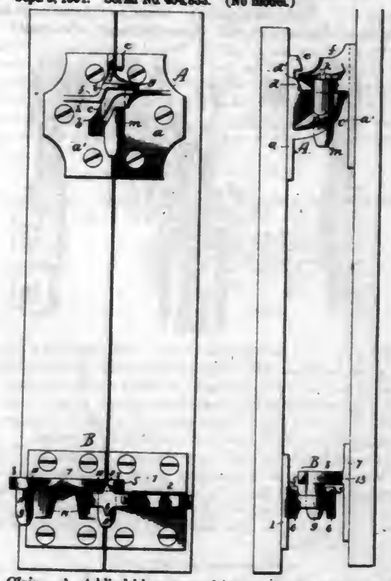
5. The combination, with a refrigerator having a provision-chamber and an ice-chamber, of a water-filter supported at the top portion of the refrigerator, a hollow water-cooling box constituting the bottom of the ice-chamber for supporting the ice and provided with a surrounding vertically-projecting rim, a discharge-faucet and a tube connection with the filter, and a removable and replaceable casing resting upon the water-cooling box and having its side walls provided with air-circulating recesses or notches, and lateral flanges to bear against opposite walls of the refrigerator, substantially as described.

6. The combination, with a refrigerator having a provision-chamber and an ice-chamber, of a water-filter supported at the top portion of the refrigerator, a hollow water-cooling box composed of detachably-connected sections and constituting the bottom of the ice-chamber for supporting the ice, a tube connection between the hollow box and the filter, a discharge-faucet for the box, and a removable and replaceable casing resting upon the water-cooling box, substantially as described.

7. The combination, with a refrigerator having a provision-chamber and an ice-chamber, of a water-filter supported at the top portion of the refrigerator, a hollow water-cooling box composed of detachably-connected upper and lower sections, one of which is provided with lateral flanges having air-circulating recesses or notches, a tube connection between the hollow box and the filter, a discharge-faucet for the box, and a removable and replaceable casing resting upon the box and provided with air-circulating recesses or notches in its side walls, and laterally-projecting flanges to bear against opposite sides of the refrigerator, substantially as described.

8. The combination, with a refrigerator having a provision-chamber, an ice-chamber, and a top wall provided with an orifice, of a water-filter composed of detachably-connected upper and lower sections having an interposed removable and replaceable filtering plate or disk and the lower section provided with flanges resting against the top wall of the refrigerator for the purpose of suspending the filter therein, a water-cooler constituting the bottom of an ice-chamber and having a tube connection with the filter inside the refrigerator, and a discharge-faucet for the water-cooler, substantially as described.

475,415. LOCK-HINGE. LANSING PORTER, Auburn, N. Y. Filed Sept. 5, 1891. Serial No. 404,833. (No model.)

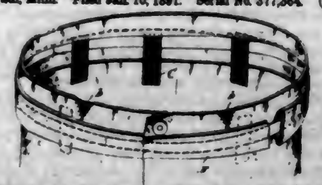


Claim.—1. A blind-hinge comprising a pair of leaves, one leaf provided with a socket-piece having an inclined face and a shoulder located opposite said inclined face, said shoulder provided with an inclined face, and the other leaf constructed with an arm having opposite inclines adapted to ride upon the inclines on the first-mentioned leaf, whereby the second leaf is raised when the blind is open, substantially as set forth.

2. The combination, with a window-frame and window or analogous devices, of upper and lower hinges, said upper hinge-plates having inclined faces adapted to bear against each other to maintain said blind closed, said lower hinge being also provided with inclined faces adapted to assist in maintaining the blind closed, the degree of said inclined faces being such as to cause the blind to rise when it is opened, said lower hinge being constructed and arranged to lock the blind in an opened position, substantially as set forth.

3. A hinge for a blind or analogous device, consisting of two leaves, one leaf having an arm provided with a curved slot and a hooked arm, and projections having inclined faces on said slotted arm, and the other leaf having arms thereon provided with inclined faces to engage the inclined faces of the first-mentioned leaf and maintain the blind closed, and pintles depending from said arms, one of said pintles being adapted to enter the socketed piece and the other pintle being adapted to engage the hooked arm to lock the blind open, substantially as set forth.

475,416. TROUSERS. MAX RACHELMAN and SAMUEL RACHELMAN, St. Paul, Minn. Filed Jan. 10, 1891. Serial No. 377,264. (No model.)



Claim.—1. A pair of trousers having a plait formed in its body just below the waistband, an elastic strip for normally holding the plait in a closed position and affording expansion lengthwise of the garment,

and the elastic strips inserted in the band to allow lateral expansion or expansion around the body, substantially as specified.

2. A pair of trousers having a plait formed in its body just below the waistband and extending the width of the rear portion of the trousers, an elastic strip for normally holding the plait in a closed position extending from the middle of the rear portion of the trousers to points adjacent the sides thereof, a series of vertically-disposed plaits or puckers formed in the waistband adjacent to the ends of the elastic strip, and the elastic strip *b'* interposed between the strips of material forming the waistband, substantially as and for the purpose specified.

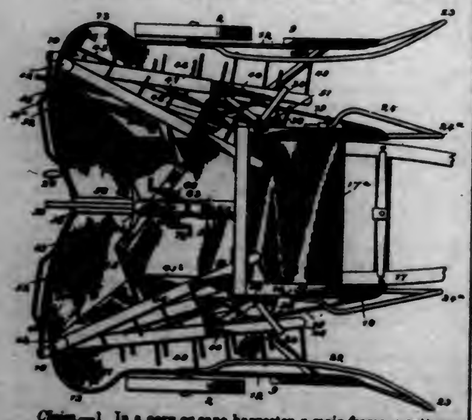
475,417. NAILING-MACHINE. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed July 27, 1889. Serial No. 318,946. (No model.)



Claim.—1. In a nailing-machine, the combination of a throat-plate having one or more holes through which nails are driven from a nail-carrier, a reciprocating nail-carrier having one or more holes to register with the holes of the throat-plate, enlarged at its or their upper ends, with one or more drivers and a driver-guide controlled as to its position by said nail-carrier, substantially as described.

2. The combination of a nail carrier having holes *c* enlarged at their upper ends, the gang of reciprocating drivers *d'*, the independently-movable guide-plate d^3, having holes for the drivers and one or more teats or extensions for centering the guide-plate and the ends of the drivers in relation to the upper ends of the holes of the carrier, substantially as described.

475,418. CORN OR CANE HARVESTER. RICHARD B. ROBBINS, Adrian, Mich. Filed Apr. 22, 1891. Serial No. 390,008. (No model.)



Claim.—1. In a corn or cane harvester, a main frame, a cutter secured to the forward end of the frame, a stalk-receptacle located on said frame and having a stationary side, and an adjustable side consisting of a pivoted or hinged frame adapted to compress the stalks within the receptacle and to be moved to enlarge the receptacle as the stalks accumulate, substantially as shown and described.

2. In a corn or cane harvester, a main frame, a cutter secured to the forward end of the frame, a stalk-receptacle located on the main frame and having a stationary side, and an automatically-adjustable side consisting of a pivoted or hinged frame adapted to compress the stalks within the receptacle and to be automatically moved by said stalks as they accumulate to enlarge the receptacle, substantially as shown and described.

3. In a corn or cane harvester, a main frame, a cutter secured to the forward end of the frame, a stalk-receptacle located on the main frame and having a laterally-adjustable side consisting of a pivoted or hinged frame, and means for locking said side at any desired point of adjustment, all constructed, arranged, and operating substantially as shown and described.

4. In a corn or cane harvester, a main frame, a cutter secured to the forward end of the frame, a stalk-receptacle located on the main frame and having a stationary side, an adjustable side consisting of a pivoted or hinged frame, and gathering mechanism or conveyers adapted to carry the stalks from the cutter to the receptacle, all constructed, arranged, and operating substantially as shown and described.

5. In a corn or cane harvester, a main frame, a cutter secured to the forward end of the main frame, a stalk-receptacle having a stationary side, an adjustable side consisting of a pivoted or hinged frame, and gathering and conveying mechanism adapted to engage the stalks, force the same against the cutter, and carry said stalks to the receptacle when cut, substantially as shown and described.

6. In a corn or cane harvester, a main frame, a cutter secured to the forward end of the main frame, a stalk-receptacle having an adjustable side, and gathering mechanism mounted on said adjustable side and adapted to engage the stalks, force the same against the cutter, and carry said stalks to the receptacle when cut, substantially as shown and described.

7. In a corn or cane harvester, a main frame, a cutter located at the forward end of the frame, a stalk-receptacle located on the frame, having a laterably-adjustable side consisting of a pivoted or hinged frame, and rear gates adapted to be opened to permit the removal of the stalks when a sufficient quantity has accumulated, substantially as shown and described.

8. In a corn or cane harvester, the combination, with a main frame, and a cutter located at the forward end of the frame, of a stalk-receptacle located on the frame and having an adjustable side pivoted at its forward end to the main frame, a vertical shaft mounted in bearings at the forward portion of the frame, means for operating said shaft, said shaft having upper and lower double cranks, upper and lower pairs of guides or ways pivoted at their rear ends to the rear ends of the pivoted adjustable side, and reciprocating gathering-arms mounted in said guides and pivotally connected to the double cranks of the vertical shaft and having gathering-fingers projecting from said gathering-arms and adapted to engage the stalks, force them against the cutters, and carry said stalks to the receptacles when cut, substantially as shown and described.

9. In a corn or cane harvester, a main frame, a cutter secured to the forward end of the frame, a stalk-receptacle formed on the frame and having a laterally-adjustable side provided with a laterally-adjustable member adapted to compress the stalks, and gathering mechanism or conveyers adapted to carry the stalks from the cutters to the receptacle, all constructed, arranged, and operating substantially as shown and described.

10. In a corn or cane harvester, the combination of a main frame, a cutter secured to the forward end of the frame, a stalk-receptacle formed on said frame and having an adjustable side, provided with an upper adjustable member pivoted at its forward end and having a catch at its rear end adapted to engage a rack on the rear of the adjustable side, gathering mechanism adapted to engage the stalks and carry the same to the receptacle, and means for operating said gathering mechanism, all constructed, arranged, and operating substantially as shown and described, whereby the adjustable side may be moved to enlarge the receptacle as the stalks accumulate, compress said stalks in the receptacle, and the adjustable upper member of said side may be moved to further aid in the compression of the stalks.

11. In a corn or cane harvester, the combination of a main frame, cutters secured at the forward end of and on each side of the center of the frame, stalk-receptacles formed on said frame on each side of its center and having adjustable sides connected by a compound lever, whereby they may be moved simultaneously, and gathering mechanism or conveyers adapted to carry the stalks from the cutters to the receptacles, all constructed, arranged, and operating substantially as shown and described.

12. In a corn or cane harvester, the combination of a main frame, a cutter secured to the forward end of the frame, a stalk-receptacle formed on the frame, having a laterally-adjustable side, and a stationary side having a downwardly-inclined beveled forward end projecting in front of and on one side of the cutter, shields secured to the frame on the opposite side of the cutter from the stationary side, gathering mechanism adapted to carry the stalks from the cutter to the receptacles, and means for operating said gathering mechanism, substantially as shown and described.

13. In a corn or cane harvester, the combination, with a main frame, a support projecting from said frame, and a diagonal cutter secured to said support so as to leave a space or opening between the rear end of the cutter and the front of said main frame, of a plate or disk located above and covering said space or opening, substantially as shown and described, for the purpose specified.

14. In a corn or cane harvester, the combination, with a main frame, a support projecting from said frame, and a diagonal cutter secured to said support so as to leave a space or opening between the rear end of the cutter and the front of said main frame, of a pivoted plate or disk located above and covering said space or opening, substantially as shown and described, for the purpose specified.

15. In a corn or cane harvester, the combination of a main frame having stalk-receptacles located thereon, a longitudinal way or guide formed upon said frame, and an adjustable bar mounted in said way, having a cross-bar and adapted to be withdrawn at the rear of the machine to form a horse upon which to form the shocks, substantially as shown and described.

16. In a corn or cane harvester, the combination of a main frame having stalk-receptacles thereon, a longitudinal way or guide on said frame, and an adjustable bar mounted on said way and adapted to be withdrawn at the rear of the machine and provided with a cross-arm forming, in connection with the adjustable bar, a horse for shocking the stalks, all constructed, arranged, and operated substantially as shown and described.

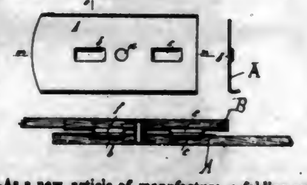
17. In a corn or cane harvester, the combination of a main frame having stalk-receptacles thereon, a longitudinal way or guide on said frame, an adjustable bar mounted on said way and having a cross-arm forming with said frame a horse for shocking the stalks, and an adjustable compressor for compressing said stalks, all constructed, arranged, and operating substantially as shown and described.

18. In a corn or cane harvester, the combination of a main frame, an adjustable horse, a compressing device comprising a sliding bracket mounted upon a suitable way, an arm pivoted to said bracket and carrying a shaft having a crank-handle, a cord or chain attached to said shaft and adapted to surround the shock of corn, and a compressing cross-arm attached to the outer end of the pivoted arm, said cross-arm being adapted to co-operate with the cord or chain to compress the stalks, all constructed, arranged, and operating substantially as shown and described.

19. In a corn or cane harvester, the combination, with a main frame having stalk-receptacles located thereon, of an adjustable bar mounted on said frame and adapted to be withdrawn rearwardly, so as to project beyond the rear of the machine to form a horse upon which to form shocks, substantially as shown and described.

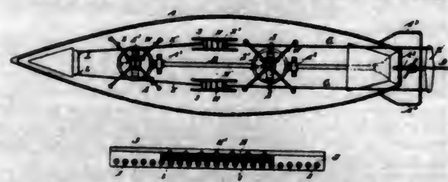
20. A corn or cane harvester having a main frame, stalk-receptacles located thereon, and a bar secured to said frame and projecting from the rear of the machine to form a horse upon which the shocks are formed, substantially as shown and described.

475,419. FOLDING RULE. JAKOB SATTER, Arnweiler, Germany. Filed Mar. 7, 1892. Serial No. 424,094. (No model.) Patented in Germany Sept. 10, 1885, No. 41,417.



Claim.—As a new article of manufacture, a folding rule having its sections provided at adjoining ends with spring-catches arranged on both sides of the pivot and at unequal distances from the same to come opposite each other and to interlock only when the rule is fully opened, substantially as and for the purpose set forth.

475,420. STEERING MECHANISM FOR BOATS. JAMES SAVAGE, Canarsie, N. Y. Filed Oct. 22, 1891. Serial No. 409,474. (No model.)



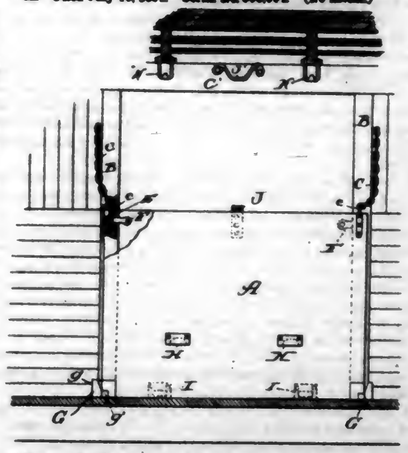
Claim.—The hull A, in combination with the rudder D and with the ribbed slides H H', capable of traversing fore and aft, anti-friction rollers I, supporting the same, flexible connection K, connecting and extending forward around the pulley or pulleys L, and connections rearward from said slides to the rudder, all arranged for joint operation as herein specified.

475,421. HORSE-BOOT. CORNELIUS I. SCHOONMAKER, Kingston, N. Y. Filed Aug. 29, 1891. Serial No. 404,182. (No model.)



Claim.—The combination of a horse-boot provided with a strap, and an approximately-V-shaped clip having one arm to be interposed between a shoe and a hoof and having its other arm forming a spring, and provided at its upper end with a hook 10 to engage the boot and prevent the same rising, and provided intermediate its ends with a projection arranged on the inner face of the arm to enable the boot to be adjusted to a higher or lower position on a hoof, substantially as described.

475,422. GRAIN-CAR DOOR. WILLIAM S. SCHROEDER, Chicago, Ill. Filed July 10, 1891. Serial No. 398,994. (No model.)



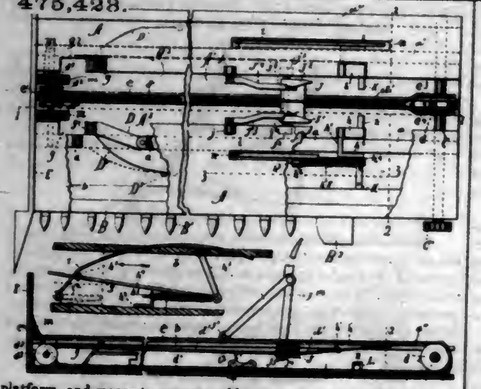
Claim.—1. The combination of a grain-door, swinging hooks adapted to engage with and support the lower edge of such door when the same is raised, and a hook in the upper edge of such door adapted to engage with a suitable loop, the door when raised being supported by such hook and loop at a point substantially at the middle of its upper edge, the door hanging with that face downward which is toward the outside of the car when the door is closed, whereby the weight of the door tends to cause it to bend in the opposite direction from which it is bent in use, thereby counteracting the bending of the door caused by the load, substantially as described.

2. The combination of a grain-car door connected to the car by chains or ropes, plates attached to such door to which the chains are fastened, such plates extending out from the edge of the door and adapted to bear against the side of the car when the door is raised into a position for non-use, a hook and loop, the hook being attached to the upper edge of the door between the plates for supporting the upper edge of the door when so raised, and swinging hooks for supporting the lower edge, the plates preventing any sidewise movement of the door that would tend to disengage the same from the swinging hooks, the door hanging with that face downward which is toward the outside of the car when the door is closed, substantially as described.

475,428. GRAIN-CONVEYER FOR BINDERS, &c. GEORGE SCHUBERT, Walnut, Tex. Filed Mar. 6, 1891. Serial No. 384,012. (No model.)

Claim.—1. In a grain-conveyer for self binding harvesters, the combination of a conveyer head or block J, having a shaft j^3, provided with anti-friction rollers j^5 and j^3 on its projecting ends, arms or arms J' and J^3, secured to said shaft j^3 and provided with shoulders or projections j^3 and j^3, arms or rods J^2 and J^4, pivoted to said arms J' and J^3 beneath the shoulders j^3 and j^3, anti-friction rollers *j'* and *j'* on the lower or free ends of the arms J^2 and J^4, as shown, a platform provided with a slot A', having inwardly-projecting edges A^2 A^2, having traps formed in said inwardly-projecting edges, springs K K in said

475,428.



platform, and means to operate said conveyer, substantially as shown and described.

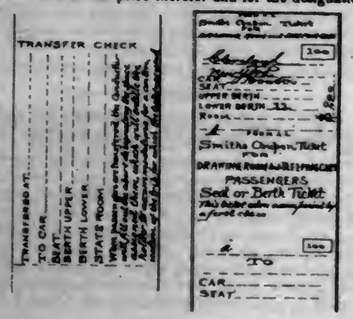
2. In a grain-conveyer for self-binding harvesters, the combination of a platform provided with a slot A', having inwardly-projecting edges A^3 A^3, a conveyer-block provided with an arm or arms and anti-friction rollers, as shown, a trap or traps *h h*, formed in the inwardly-projecting edges A^3 A^3 and secured to a shaft or shafts *h' h'*, having cranks A^3 A^3 provided with rod or rods A^3 A^3, springs on said rods, as shown, the free ends of the rods A^3 A^3, extending through brackets secured in the platform-springs K K, as shown, and switches and guides near the grain end of the platform, as shown, and for the purposes described.

3. In a grain-conveyer for self-binding harvesters, the combination of a platform provided with a slot A', having inwardly-projecting edges A^3 A^3, a conveyer-block provided with an arm or arms and anti-friction rollers, as shown, a trap or traps *h h*, formed in the inwardly-projecting edges A^3 A^3 and secured to a shaft or shafts *h' h'*, having cranks A^3 A^3 provided with rods A^4, shoulders or projections A^7 on said rods, as shown, and projecting with their free ends through eyes in the rods *i i*, said rods or wires *i i* secured to shafts *i' i'*, dogs pivoted to the free ends of the cranks on the shafts *i' i'* and projecting in the passage-way of the conveyer, rods A^3 A^3 on the cranks A^3 A^3, springs on said rods, as shown, springs K K, as shown, and switches and guides near the grain end of the platform, as shown, and for the purpose described.

4. In a grain-conveyer for self-binding harvesters, the combination of a platform provided with a slot A', having inwardly-projecting edges A^3 A^3, a conveyer-block J, provided with arms and anti-friction rollers, as shown and described, guides hinged to the stripe *a* and *a''* and pressed in the passage-way of the conveyer by suitable springs, as shown, guides *m m*, secured in the platform, as shown, and for the purposes described, traps *g g*, hinged to the plate *b* and resting with their free ends on or against the free ends of the guides D D, traps *h h* in the tracks or inwardly-projecting edges A^3 A^3, and means to operate said conveyer, substantially as described.

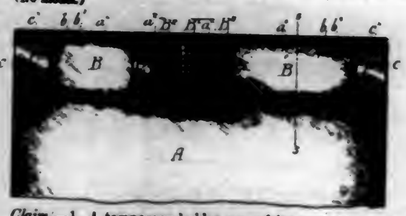
475,424. SLEEPING AND PARLOR CAR COUPON-TICKET. ISAAC R. SMITH, St. Johnsville, N. Y. Filed Feb. 4, 1892. Serial No. 420,359. (No model.)

Claim.—A ticket for use in sleeping-car and parlor-car service for a continuous trip in several cars, which consists in a slip having a main portion and coupons, one for each car to be occupied, the main portion and each coupon containing spaces for the names of the termini of the entire ticket and for the price therefor and for the designation of the



car and space therein to be occupied, and the coupons also containing spaces for the names of the termini of the coupons, and said slip having a transfer-check on the back, as set forth.

475,425. TEMPORARY HOLDER. WILLIAM A. VAWTER and ROBERT J. COPELAND, Chicago, Ill. Filed Dec. 14, 1891. Serial No. 415,040 (No model.)



Claim.—1. A temporary holder comprising two sides, a back to which the sides are hinged, and a clamping-spring, said back being constructed of a firm but yielding material and being adapted to receive and hold the inclosure, and said clamping-spring being permanently mounted upon the outside of said back to force the forward edges thereof toward each other, substantially as specified.

2. A temporary holder comprising two sides, a back to which the sides are hinged, said back being adapted to receive and clamp the inclosure and being of a firm but yielding material, the rear portion forming a fulcrum for the sides when reversed to open the holder, and a clamping-spring permanently mounted upon the outside of the back to force the forward edges thereof toward each other, substantially as specified.

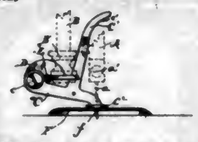
3. In a temporary holder, the combination, with the two sides, of a back to which said sides are hinged, said back being of a firm but yielding material and comprising flat side pieces connected at their rear edges by a comparatively short transverse back piece forming a fulcrum for the sides where the latter are reversed to open the holder, and a clamping-spring permanently mounted and bearing upon the outside of the back to normally hold the front edges of the side pieces toward each other, substantially as described.

4. In a temporary holder, the combination of two sides with a back proper of relatively stiff but yielding material, a clamping-spring outside of and bearing upon the back, a strip of canvas or the like secured to the inner surfaces of the sides and back, and a second strip of canvas or the like secured to the outer surfaces of the sides and extending around the back outside of the spring thereon, substantially as described.

5. In a temporary holder, the combination of a back proper composed of a central strip of perforated metal and strips or sheets of pasteboard secured to the surfaces of said central strip, and a clamping-spring permanently mounted outside of and bearing upon said back proper, substantially as described.

6. In a temporary holder, the combination of a back proper composed of a central strip of perforated sheet metal and strips or sheets of pasteboard secured to the surfaces thereof, of a clamping-spring permanently mounted outside of and bearing upon said back proper to force the forward edges thereof together, said back proper being covered without and within by canvas or the like, substantially as described.

475,426. EMBROIDERING ATTACHMENT FOR SEWING-MACHINES. RUEL W. WHITNEY, Cleveland, Ohio, assignor to the Standard Sewing Machine Company, same place. Filed Feb. 23, 1891. Serial No. 383,248. (No model.)



Claim.—The combination, with an angle-plate, the opposite ends of which are approximately at right angles to each other, one end adapted to be adjustably connected to the presser-bar of a sewing-machine, of a spring-actuated vibrating lever pivoted at one end to the free end of the angle-plate, this lever having a presser-foot of considerable size to allow for adjustment, and an arm integral with the body of the lever and located between the foot and pivotal point, substantially as set forth.

475,427. SINGLE-CYLINDER COMPOUND ENGINE. ELLIS J. WOOLF, Minneapolis, Minn. Filed July 14, 1891. Serial No. 399,491. (No model.)



Claim.—1. In a single-cylinder compound engine, a valve provided with a cavity for the passage of the steam from the high to the low pressure end of the cylinder and having on the inner wall of the valve-cavity a lap covering the low-pressure port for delaying admission to the low-pressure end after the exhaust begins from the high-pressure end into the valve-cavity, substantially as described.

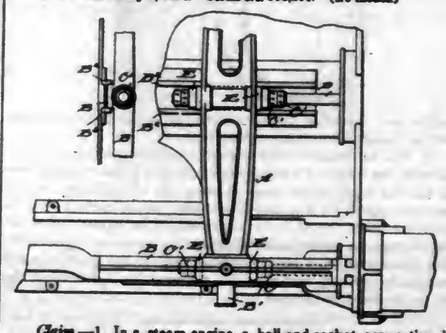
2. In a single-cylinder compound engine, a piston-rod recessed to constitute an extra clearance or steam-space chamber at the high-pressure end and provided with openings to the said chamber for the inlet and outlet of the steam, substantially as and for the purpose set forth.

3. In a single-cylinder compound engine, the combination, with the cylinder having an excess of clearance in the high-pressure end without increase in the piston area in the same, substantially as and for the purpose set forth, of a supplementary port from the steam-chest for filling the said extra clearance or steam-space chamber.

4. In a single-cylinder compound engine, the combination, with a piston-rod recessed to constitute an extra clearance or steam-space chamber at the high-pressure end and having openings to the said chamber, of a supplementary port from the steam-chest for filling the said chamber, substantially as described.

5. In a single-cylinder compound engine, the combination, with the piston-rod recessed to provide an extra clearance or steam-space chamber, of a supplementary port from the steam-chest and openings from said chamber through the wall of the piston-rod located at a point on the same back of the piston-head and so as to be central with the said port when the crank is on the center, and a packing-ring seated in the bridge-wall between the said port and the cylinder proper, substantially as and for the purpose set forth.

475,428. ENGINE CROSS-HEAD. WILLIAM WRIGHT, Newburg, N. Y. Filed July 2, 1891. Serial No. 398,236. (No model.)



Claim.—1. In a steam-engine, a ball-and-socket connection between the piston-rod and cross-head, the rod passing through said connection, as set forth.

2. In a steam-engine, the cross-head and piston-rod connected by ball-and-socket connection, the rod passing through the said connection, combined with adjusting means, as set forth.

3. In a steam-engine, the combination, with the piston-rod and the cross-head having an opening to receive said piston-rod of greater diameter than the said rod, of jam-nuts on the rod and interposed washers, as and for the purpose specified.

4. In a steam-engine, the combination, with the piston-rod and the cross-head having bore of greater diameter than said rod with outer spherical surfaces, of the washers having engaging spherical surfaces and means for retaining the washers in position, as set forth.

5. In a steam-engine, the combination, with the piston-rod and cross-head having bore of greater diameter than said rod with outer spherical surfaces, of the washers having engaging spherical surfaces, and jam-nuts on the rod and engaging said washers, as and for the purpose specified.

475,429. SCRUBBING-PAIL. JENNIE R. ZEISER, Schenectady, N. Y. Filed July 7, 1891. Serial No. 398,714. (No model.)

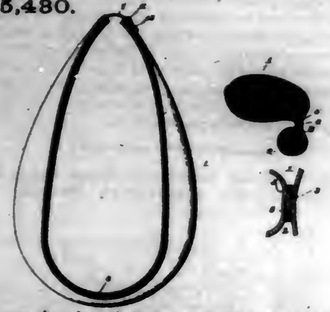


Claim.—The within-described improved bucket, having a body A and a vertical partition connected at its edges with the sides of the body, and a bail connected with ears arranged opposite the edges of the partition, substantially as set forth.

475,480. HORSE-COLLAR. CHARLES F. ALLEN, North St. Paul, Minn. Filed Dec. 5, 1891. Serial No. 414,156. (No model.)

Claim.—1. The herein-described horse-collar, consisting of the front and rear rolls, the covers of which are independent, and the intermediate flexible belt, the edges of the covers abutting and being stitched

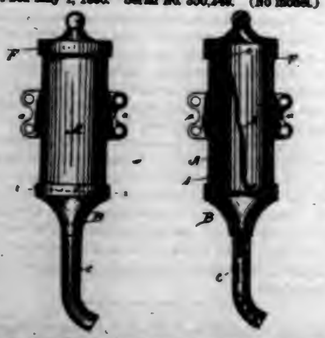
475,480.



thereto near the edges thereof at each side of the point of contact with the hames, substantially as described.

2. The herein-described horse-collar, consisting of the front and rear rolls, the covers of which are independent, the intermediate flexible belt, the edges of the cover abutting and being stitched thereto near the edges thereof at each side of the point of contact with the hames, the billet riveted to the upper end of one section and to the belt, the loop, the buckle located therein and adapted for engaging the billet, the integrally-formed eye receiving the loop, and the rivet passed through the eye, loop, and remaining section and opposite end of the belt, substantially as specified.

475,481. DISINFECTING DEVICE. ALBERT P. BECK, Cleveland, Ohio. Filed May 1, 1890. Serial No. 350,249. (No model.)



Claim.—1. In a disinfecting device, the combination, with a fluid-containing chamber A, having a tube or channel *b*, of a wick *d*, a means for compressing said wick, receiving-chamber B, closed to the external air and into which the wick-channel opens, a conducting-tube *e*, connected to said chamber for conveying the fluid therefrom to the point of application, and a means in said conducting-tube to regulate or suppress the flow of fluid therefrom, substantially as shown and described.

2. In a disinfecting device, the combination of a fluid-containing chamber A, having lugs *a*, tube or channel *b*, wick *d*, spring-clip *e* for compressing said wick, receiving-chamber D, and a conducting-tube *e*, connected to said chamber and provided with a stop-cock *g* to regulate or suppress the flow of fluid, substantially as shown and described.

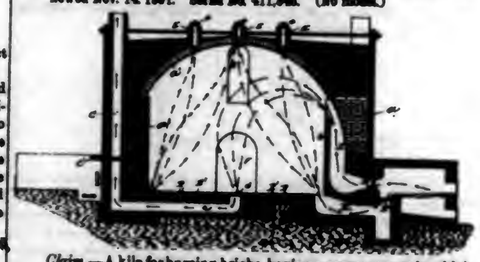
475,482. BASE-BALL APPARATUS. WILLIAM C. BRADEN, Brooklyn, N. Y. Filed Jan. 28, 1892. Serial No. 419,515. (No model.)



Claim.—1. The improved appliance for base-ball players, composed of a cuff for the forearm, provided with an extension adapted to match on the elbow of the wearer, in combination with the chest-band and a contractile connection between these parts, arranged for joint operation substantially as herein specified.

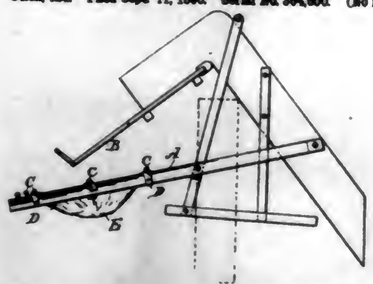
2. The apparatus composed of the chest-band B, the cuff A, having the extension A', and the rubber cord D, extended through guides on the chest-band and having its ends adjustably secured to the cuff, adapted to draw the arm forward when thrown back and to arrest the forward motion when extended forward, substantially as herein specified.

475,488. BRICK-KILN. MAX A. TH. BOSENICK, Centinela, Cal., and DONALD D. MCLEAN, Underwood, Canada. Filed Nov. 7, 1889. Renewed Nov. 14, 1891. Serial No. 411,848. (No model.)



Claim.—A kiln for burning bricks, having a compartment in which the brick are stacked, a series of independent furnaces, two series of independent damper-controlled flues leading from the furnaces to the lower and upper portions of the brick compartment, respectively, a series of updraft-flues in the top of the kiln, the series of downdraft-flues opening along the central line at the bottom of the compartment, and the series of chimneys, one for each downdraft-flue, substantially as described.

475,484. ATTACHMENT FOR HARVESTERS. PETER H. BOTOF, Utica, Ind. Filed Sept. 11, 1890. Serial No. 364,650. (No model.)



Claim.—1. An attachment for harvesters, consisting of rods or bars adapted to be secured beneath the deck of a harvester, a series of buttons or projections on said rods or bars, an apron between said rods or bars, and straps for connecting the apron with the buttons on the rods or bars, substantially as set forth.

2. An attachment for harvesters, consisting of rods or bars adapted to be secured beneath the deck of a harvester, an apron, and straps for connecting the apron with the rods or bars, substantially as set forth.

475,485. STEAM COOKING UTENSIL. CHARLES F. BURNAP, Warren, Ohio. Filed Dec. 31, 1891. Serial No. 416,660. (No model.)



Claim.—1. The combination, in a steam cooking utensil, of a steam-generating vessel, a perforated cooking-vessel fitting thereon, a hollow perforated partition removably inserted in the cooking-vessel, and a cover closing the apparatus to confine the steam therein, substantially as described.

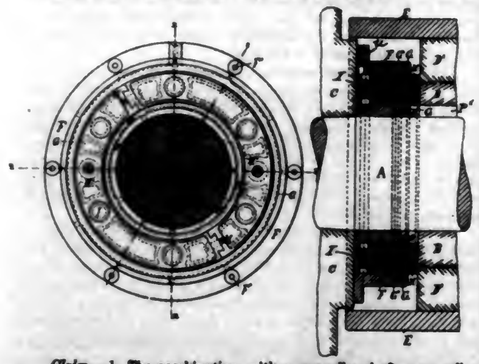
2. The combination, in a steam cooking utensil, of a perforated cooking-vessel adapted to fit upon a steam-generating vessel, a cover to confine the steam therein, and a removable perforated hollow partition fitting in the cooking-vessel, substantially as described.

3. The combination, in a steam cooking utensil, of a perforated cooking-vessel adapted to fit upon a steam-generating vessel, a cover to confine the steam therein, and the removable perforated partition adapted to fit into the cooking-vessel and having a flange whereby a steam-space may be formed and maintained between the partitions, substantially as described.

4. The combination, in a steam cooking utensil, of a perforated cooking-vessel adapted to fit upon a steam-generating vessel with a steam-space between the sides of the two vessels, a cover to confine the steam, and a hollow removable perforated partition fitting in the cooking-vessel, substantially as described.

5. The combination, in a steam cooking utensil, of the imperforate sleeve fitting upon a steam-generating vessel, the perforated cooking-vessel fitted within said sleeve, with a steam-space between the sides of the two, the cover closing the apparatus to confine the steam, and the removable hollow perforated partition fitting in said cooking-vessel, substantially as described.

475,486. LUBRICATOR FOR PROPELLER-SHAFTS. FRANS R. CEDERVALL, Gothenburg, Sweden. Filed Oct. 10, 1891. Serial No. 408,341. (No model.) Patented in Sweden Dec. 17, 1886, No. 839; in Norway July 12, 1887, No. 590; in England July 13, 1887, No. 9,854; in Germany July 13, 1887, No. 42,226, and in Denmark Nov. 16, 1887.



Claim.—1. The combination, with a propeller-shaft, a propeller thereon, and a box B, inclosing said shaft and furnishing the bearings therefor, of a protecting-box embracing the shaft and arranged between the propeller boss or hub and the after end of the box B, said protecting-box comprising a ring F, having an annular recess to receive the ring H, the said ring H, arranged in said recess, the rings G, which screw into said ring F and bear on the packing, the said packing, and springs I, which tend to press the ring H from the recess in ring F, substantially as set forth.

2. The combination, with a propeller-shaft and propeller, of a box B, inclosing said shaft and having an oil-recess B' and channels P and P' at its after bearing, the protecting-box arranged between the propeller-boss and the after end of the box B and provided with an inclosed annular oil-receptacle O, open to the channels P P', and the cock-controlled pipes Q, R, and S, which open into the space B' within the box B, substantially as set forth.

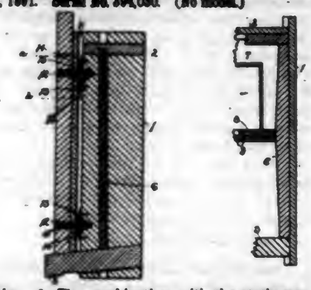
475,487. EXTRACTING PERFUMES. ROBERT A. CRESSBROOKE, New York, N. Y. Filed Oct. 17, 1891. Serial No. 409,032. (No model.)



Claim.—1. The method of extracting perfume from flowers or other odoriferous substances, consisting in forcing the perfume-laden air surrounding the flowers or other odoriferous substance directly into cologne spirits or similar absorbent, substantially as set forth.

2. The method of extracting perfume from flowers, consisting of inclosing growing plants and subsequently forcing the perfume-laden air surrounding said growing plants into an absorbent, substantially as set forth.

475,488. WINDOW-FRAME. EDWARD C. CONWAY, Rochester, N. Y., assignor of one-third to William C. Walker, same place. Filed May 25, 1891. Serial No. 394,090. (No model.)



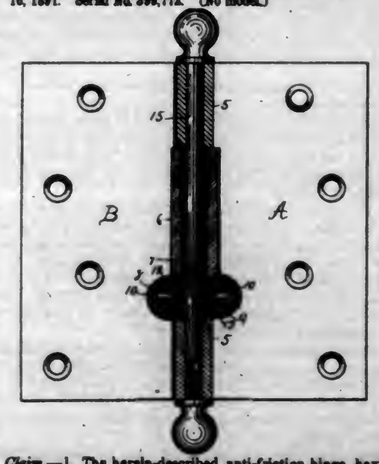
Claim.—1. The combination, with the stationary window-frame having the sash-stop thereon beveled on one side, of the movable frame adjustably secured to the window-frame, one of the edges constituting a sash-stop, and a sash movable in the window-frame, having a beveled face co-operating with the one on the stationary stop, substantially as described.

2. The combination, with the stationary window-frame and the parting sash-stop thereon beveled on opposite sides, of the frame adjustably secured to the stationary frame, one of its edges constituting one of the sash-stops, and the sashes provided with the beveled inner sides co-operating with the sides of the parting sash-stop, substantially as described.

3. The combination, with the stationary window-frame and the parting sash-stop thereon beveled on one side, of the movable frame adjustably connected with said stationary frame having the groove for receiving the edge of the latter, one side of said movable frame constituting a sash-stop or guide, and a sash operating therein, substantially as described.

4. In a window-frame, a parting strip or stop having the face inclined from the center toward each end and having the sides inclined in opposite directions, in combination with the upper and lower sashes correspondingly inclined on the sides next the parting-strip and having the shoulders on the meeting-rails engaging the face of the parting-strip, substantially as described.

475,489. ANTI-FRICTION HINGE. THOMAS CORSCADEN, New Britain, Conn., assignor to the Stanley Works, same place. Filed July 16, 1891. Serial No. 399,772. (No model.)



Claim.—1. The herein-described anti-friction hinge, having two adjoining short knuckles forming a space for receiving washers between the confronting ends of said short knuckles, a pair of anti-friction washers chambered on their confronting faces and secured with

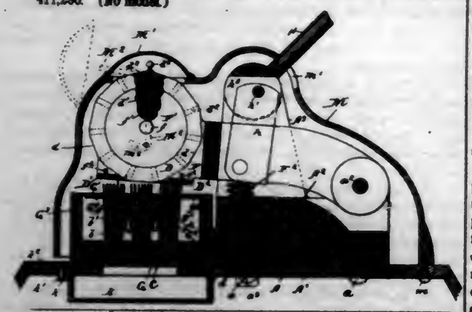
the end of one short knuckle resting on the broad face of one washer, while the end of the confronting short knuckle is in engagement with the broad face of the other washer, and a series of friction-rollers within the chambered faces of said washers, substantially as described, and for the purpose specified.

2. In an anti-friction hinge, the combination of a pair of hinge-leaves, a pair of anti-friction washers, and the headed tubular sleeve on which said washers are mounted and held at the end of a knuckle of one of said leaves, substantially as described, and for the purpose specified.

3. The combination of a pair of hinge-leaves having a washer-space between the ends of two adjoining knuckles and notches or recesses at the inner edges of said leaves with a corner projecting into the plane of said washer-space on that side of the notch or recess which is nearest the knuckle of the particular leaf to which such corner belongs, and a pair of round anti-friction washers of a diameter to enter said notches or recesses and provided with a slot for engagement with the corner of said notched or recessed leaves, substantially as described, and for the purpose specified.

4. In an anti-friction hinge, the combination of the two washers chambered on their confronting faces, a series of rollers inclosed thereby, and the sleeve for holding said washers and rollers together, substantially as described, and for the purpose specified.

475,440. PERFORATING, DATING, AND RECEIPTING STAMP. BENJAMIN F. CUMMINS and JOHN STEWALL, Jr., Chicago, Ill., assignors to the B. F. Cummins Company, same place. Filed Nov. 9, 1891. Serial No. 411,230. (No model.)



Claim.—1. In a perforating-stamp, the combination, with two or more sets or groups of independently-movable perforating-punches and their corresponding single female die, of a single matrix-carrying lever furnished with one or more fixed matrix or plunger faces, and one or more many-faced revoluble or adjustable matrices for operating said groups of perforating-punches by one and the same stroke, substantially as specified.

2. In a perforating-stamp, the combination, with two or more sets or groups of independently-movable perforating-punches and their corresponding single female die, of a single matrix-carrying lever having two or more revoluble many-faced matrix-rings mounted to revolve upon said lever and simultaneously operated thereby, substantially as specified.

3. In a perforating-stamp, the combination, with a series of sets of independently-movable perforating-punches and their corresponding single female die, of the single operating-lever F, having fixed shaft or stud F', a series of revoluble many-faced matrix-rings D, mounted on said shaft F', and fixed matrix or plunger faces D' D² on said lever F, operating conjointly with the matrix-faces of said revoluble rings D, substantially as specified.

4. The dating and receipting or canceling perforating-stamp comprising, in combination, six groups *b* of independently-movable perforating-punches B and two additional groups *b'* *b²* of perforating-punches, a female die for all said punches, guides for all said punches, a common operating-lever F, six many-faced revoluble matrix-rings D, carried by said lever, and two matrix or plunger faces D' D², also carried by said lever, and a secondary or handle lever H for operating said lever F, substantially as specified.

5. The combination, in a perforating-stamp, with a series of groups of independently-movable punches and their corresponding female die, of a guide for said punches, a bifurcated matrix-carrying lever F, having shaft F', and a series of independently-revolubie matrix-rings D, mounted upon said lever for operating said groups of punches, substantially as specified.

6. The combination, in a perforating-stamp, with a series of groups of independently-movable punches and their corresponding female die, of a guide for said punches, a matrix-carrying lever F, having shaft F', and a series of independently-revolubie matrix-rings D, mounted upon said lever for operating said groups of punches, and a series of locking-pins *d'*, passing through holes in said rings and entering registering slots in said shaft F', substantially as specified.

7. The combination, in a perforating-stamp, with a series of groups of independently-movable punches and their corresponding female die, of a guide for said punches, a matrix-carrying lever F, having shaft F', and a series of independently-revoluble matrix-rings D, mounted upon said lever for operating said groups of punches, and a series of locking-pins *d'*, passing through holes in said rings and entering registering openings in said shaft F', and a handle-lever H, connected to said lever F by a pivoted link *h*, substantially as specified.

8. In a perforating-stamp, the combination, with a group of independently-movable punches and their corresponding female die, of a guide for said punches, a reciprocating stripper or guide plate for retracting said punches, a movable plunger or matrix for operating said punches, and devices positively connecting said stripper-plate with said matrix or plunger, whereby said stripper-plate is positively operated in both directions by said matrix or plunger, substantially as specified.

9. The combination, in a perforating-stamp, of a group of independently-movable punches B, their female die C, a guide for said punches, a matrix and matrix-lever for operating said punches, a movable stripper-plate G⁴ for withdrawing said punches, and links *g* and cross-bars *g' g'*, connecting said stripper-plate directly with said lever F, substantially as specified.

10. The combination, in a perforating-stamp, of punches and female die, with a bed-plate A, to which the female die is secured, a frame plate or block A, carrying the guides for the punches, and a separate frame plate or block A², having ears *a²*, to which the operating-lever is pivoted, and the operating-lever and the matrix-disks carried thereby, substantially as shown and described.

11. The dating and receipting or canceling perforating-stamp comprising, in combination, six groups *b* of independently-movable perforating-punches B, a single or common female die for all said punches, guides for all said punches formed in a common guide-block G², a common operating-lever F, six many-faced revoluble matrix-rings D, carried by said lever, and a secondary or handle lever H for operating said lever F, substantially as specified.

12. The dating and receipting or canceling perforating-stamp comprising, in combination, six groups *b* of independently-movable perforating-punches B and two intermediate groups *b²* *b⁴* of perforating-punches, a single or common female die for all said punches, guides for all said punches formed in a common guide-block G², a common operating-lever F, and six many-faced revoluble matrix-rings D, carried by said lever, said intermediate group of punches *b²* and *b⁴* being each in part operated by the matrix-faces of two adjoining rings, substantially as specified.

13. In a perforating-stamp, the combination, with bed-plate A, having female die C secured thereto, of frame-plate A', furnished with guide-case G², soft-metal guide G² therein and upper and lower guides G G' secured thereto, matrix-lever F, and a matrix or plunger carried thereby for operating said punches, frame-block A², having ears *a²*, to which said lever F is pivoted, and said frame-block A², having standard A², and handle-lever H, pivoted thereto, for operating said lever F, substantially as specified.

14. In a perforating-stamp, the combination, with bed-plate A' having female die C secured thereto, of frame-plate A', furnished with guide case G², soft-metal guide G² therein and upper and lower guide-plates G G' secured thereto, matrix-lever F, and a matrix or plunger carried thereby for operating said punches, frame-block A², having ears *a²*, to which said lever F is pivoted, said frame-block A² having standard A², and a handle-lever H, pivoted thereto for operating said lever F, said handle-lever H being connected to said lever F by a link *h* and an eccentric pivot *h'*, substantially as specified.

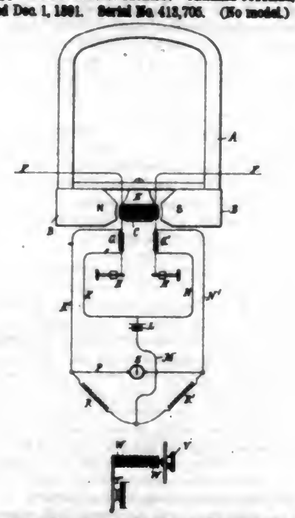
15. In a perforating-stamp, the combination, with bed-plate A, having female die C secured thereto, of frame-plate A', furnished with guide-case G², soft-metal guide G² therein, and upper and lower guide-plates G G', secured thereto, a movable stripper-plate G, reciprocating in said guide-case G², matrix-lever F, and a matrix or plunger carried thereby for operating said punches, and links *g*, and cross-bars *g'*, connecting said stripper-plate with said lever F, substantially as specified.

16. The combination, in a perforating-stamp, of a series of groups *b b b b b b' b² b² b⁴*, of independently-movable perforating-punches B and their corresponding female die C, a guide for all said punches, a matrix-carrying lever F, furnished with fixed matrix or plunger faces D' D², and a series of revoluble matrix-rings D, having each a series of matrix-faces, said intermediate groups of punches *b²* *b⁴* being each in part operated by two adjoining matrix-rings D D, substantially as specified.

17. In a perforating-stamp, the combination, with two or more groups, of independently-movable perforating-punches, with a single guide for all said punches, a common die-plate for all said punches, two or more adjustable reversely-socketed matrices for operating said groups of punches, and a common operating-lever for operating said matrices, substantially as specified.

18. In a perforating-stamp, the combination, with two or more sets or groups of independently-movable perforating-punches *b b*, of an intermediate group of perforating-punches *b²*, a common corresponding female die for all of said punches, and a single matrix-carrying lever having two or more revoluble many-faced matrix-rings mounted upon said lever, said intermediate group of punches *b²* being part operated by each of two adjoining matrix-rings, substantially as specified.

475,441. TELEGRAPHIC RELAY. CHARLES CUTTRISS, New York, N. Y. Filed Dec. 1, 1891. Serial No. 413,705. (No model.)



Claim.—1. A sensitive rheostat or device for varying the resistance of an electric circuit, composed of an attenuated resilient resistant conducting-strip included in the circuit to be varied and wound or bent in symmetrical convolutions or spires, in combination with a stationary support and a body movable in response to current or other waves, the ends of said conducting-strip being respectively connected to the stationary support and movable body, as set forth.

2. The combination, with a device, such as a coil, adapted to be moved in response to current waves or impulses in an electric circuit, of a local circuit, a receiving-instrument therein, and one or more attenuated resilient resistant conductors included in the local circuit and connected to the said coil and to a stationary support, respectively, said strip being bent or wound in spiral form, as herein set forth.

3. A relay-instrument comprising, in combination, a coil or device to be moved by currents in the main line, and a carbon strip wound spirally upon itself and adapted to be distended or compressed by the moving coil and included in the local circuit for varying the resistance in the same, as set forth.

4. The combination, with a coil movable in response to currents in a main circuit, of a divided local circuit, a distensible carbon spiral in each branch of the same, connected with the movable coil on opposite sides of the axis of the same, and a receiving-instrument in a bridge between the divisions of the local circuit.

5. In a relay-instrument, the combination, with a permanent magnet and a suspended coil movable on an axis between the poles of said magnet, of two spirally-wound carbon strips connected at opposite ends to adjustable supports and to the coils on opposite sides of its axis, respectively, and included in branches of a local circuit, and a receiving-instrument in a bridge between the same, as set forth.

475,442. SEALING DEVICE. CHARLES CUTTRISS, New York, N. Y. Filed Mar. 5, 1892. Serial No. 423,817. (No model.)

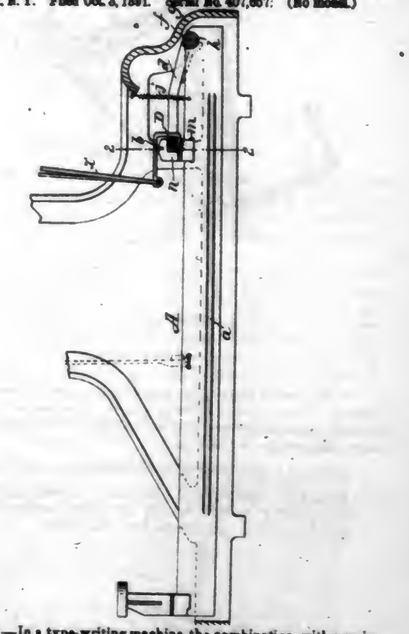


Claim.—1. A sealing device consisting of a tube or holder for containing a stick or piece of sealing-wax or like material, a refractory wire or grating at the end of said tube, and means for directing an electric current through said wire, combined and arranged as set forth.

2. In a device for applying sealing-wax, the combination, with a tube or holder for containing a stick of sealing-wax, of pins set in the end of said tube, a refractory wire stretched over said pins across the opening of the tube, and a circuit-controller and conducting wires for passing a current through the refractory wire.

3. The combination, with the tubular holder provided with lugs K near its end, the pins H, set in the end of the holder, the refractory wire stretched across the holder on said pins, and means for passing a current through said wire, as set forth.

475,448. TYPE-WRITING MACHINE. ANGE DEMMORE, New York, N. Y. Filed Oct. 3, 1891. Serial No. 407,667. (No model.)



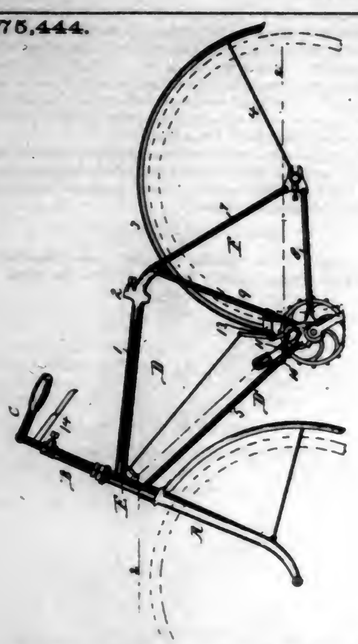
Claim.—In a type-writing machine, the combination, with a series of key or operating levers, each having at its upper portion a hook-like member, of the universal bar ranged across the key-levers and having its top next below and engaged by said hook-like members of the key-levers and mounted for the proper movements for actuating the letter-spacing mechanism, there being an unobstructed space below each key-lever hook member of greater vertical extent than the height of the universal bar, substantially as described, for the purpose set forth.

475,444. SAFETY BICYCLE. WILLIAM J. EDWARDS, Chicago, Ill., assignor to the Union Manufacturing and Plating Company, same place. Filed June 22, 1891. Serial No. 397,018. (No model.)

Claim.—1. A Safety bicycle comprising the seat-supporting backbone rigid at its forward end with the socket for the steering rod or head and at its rear end terminating over the single rear wheel, the two rigid triangular frames F, arranged at opposite sides of the rear wheel and having their lower rear corner portions supported by the rear axle, their respective upper corner portions secured to the rear end portion of the backbone and their forward lower corner portions rigid with hangers or bearings for the sprocket-axle, the lower frame portion having sides 5 rigid with and diverging rearwardly from the socket for the steering-head and also rigid with the hangers or bearings for the sprocket-axle, the sprocket being arranged between said hangers or bearings, substantially as described.

2. The combination, with a longitudinally and vertically divided bicycle-frame constructed with members 5, 8, and 9 of its side portions converging at oppositely-arranged hangers or bearings for the sprocket-axle, substantially as described, and carrying a sprocket-wheel between said hangers or bearings, of the horizontally-arranged cross-brace and stay G, rigidly secured to the rearwardly-diverging members 5 of the lower side portions of the divided body-frame just forward of the sprocket-wheel, substantially as and for the purpose set forth.

475,444.



3. In a Safety bicycle, the combination of the diamond-shaped frame D, having a divided lower portion, the cross-brace G, applied as set forth, the brake, and a spring for the brake attached to said cross-brace, substantially as described.

475,445. VELOCIPEDE. WILLIAM J. EDWARDS, Chicago, Ill., assignor to the Union Manufacturing and Plating Company, same place. Filed Nov. 5, 1891. Serial No. 411,014. (No model.)



Claim.—1. In a longitudinally-divided bicycle-frame such as set forth, the two-part hangers for the sprocket-axle bearings, each comprising an upper semicircular portion 29, forming a direct and permanently rigid arch-shaped connection between the forwardly and upwardly extending main side members 3, 5, and 6 of a side of the frame and to each end united at one of its ends with one of the lower forwardly-extending side members 3 and at its middle and opposite end portions, respectively, united with one of the upwardly-extending middle members 5 and with one of the rearwardly-extending members 6, and a lower semicircular portion movably applied to the upper semicircular portion of the hanger, so as to permit the same to be opened, substantially as and for the purpose described.

2. In a longitudinally-divided bicycle-frame such as set forth, a two-part hanger I for one of the sprocket-axle bearings, comprising the upper semicircular portion 29, having an extended end portion 33 and forming a direct and rigid arch-shaped connection between the forwardly, rearwardly, and upwardly extending side members 3, 5, and 6 of one side of the frame and to such end directly united at its extended end portion 33 with the side member 3 and at its middle and opposite end portions united, respectively, with the side members 5 and 6, and the lower semicircular portion 30, hinged at one end to one end of the semicircular upper portion of the hanger and at its opposite end bolted to the under side of the end extension of said upper semicircular portion which united with the frame member 3, substantially as and for the purpose described.

3. The combination, with a set of anti-friction balls arranged about a velocipede-axle and an outer externally-threaded two-part bearing for the anti-friction balls, of an internally-threaded elastic sleeve 36, into which the parts of the bearing are screwed, said sleeve being provided with and rendered elastic by reason of a series of transversely-arranged slits 47, extending from its edge portions part way only across the sleeve, and a hanger within which the sleeve is clamped, substantially as and for the purpose described.

4. The combination of the axle provided with an annular groove and a two-part bearing providing about the axle an annular divided bearing-surface surrounding the groove in the axle and adapted for a set of anti-friction balls arranged in said groove, and a sleeve into which the divisions of the two-part bearing are screwed, said sleeve being provided with an opening 46, through which the balls can pass when the divisions of the two-part bearing are separated for such purpose, but still held within the sleeve, substantially as described.

5. In a velocipede, the hinged brake-spoon A, constructed and arranged to form a continuation of the mud-guard B and to shield the sprocket wheel and chain, substantially as set forth.

6. The combination, with the hinged brake-spoon A, of the lever K, fulcrumed upon a cross-bar G in the body-frame and connected with the hinged brake-spoon, substantially as set forth.

7. The combination, with the hinged brake-spoon A, of the lever K, spring 7, connecting one end of the lever with the brake-spoon, and an adjustable link forming a connection between the brake-spoon and the other end of said lever, substantially as described.

8. The mud-guard B, arranged over wheel C and between the two frame portions F^3 of the body-frame, and a cross bar or plate L, secured to the lower forward end of the mud-guard and supported by the rods 5 of said frame portions, substantially as set forth.

9. The combination, with the mud-guard B, of the plate L, secured to the lower forward end of the mud-guard and held by rods 5 of the body-frame, and the brake-spoon A, hinged to said plate, substantially as set forth.

10. In a brake-operating mechanism having points of support upon the handle-bar and body-frame, an automatically-separable joint arranged to part of its own accord when the handle-bar is swung round to an undue extent, substantially as set forth.

11. The combination of the lever M, supported on the body-frame, and a connecting-rod connected with a hand-lever upon the steering-handle and having an automatically-separable connection with the lever M, arranged so as to part of its own accord when the handle-bar is swung round to an undue extent, substantially as described.

12. The combination, with the rear wheel C, of the hinged brake-spoon A, the lever K, connected with the brake-spoon, the lever M, connected with the lever K by a rod 19, a hand-lever 25 on the steering-handle, and rod 24, connecting said hand-lever with the lever M, substantially as set forth.

13. The portion 49 of the backbone, provided with laterally-projecting arms 52, combined with the triangular frame portions F^3, having their upper forward corner portions formed by the couplings N, secured against the ends of said arms of the backbone, substantially as described.

14. The rear portion of the backbone, combined with frame portions F^3, having their upper forward corners formed by couplings N, a tube 55, extending through said couplings and rear end of said rear portion of the backbone, and screws P, engaging in the ends of said tube, substantially as set forth.

15. The backbone having its rear end portion provided with seats 53 and a transversely-arranged bore, the frame portions F, having their forward upper corners formed by couplings N, provided with portions 54, fitted to seats 53, and a tube 55, extending through the couplings and the said bore in the backbone, substantially as described.

16. The combination, in a velocipede, of an outer bearing for the anti-friction balls, an internally-threaded sleeve receiving and engaging with said bearing and having a reduced middle portion 36ª and thickened slitted edge portions 36ᵇ, and a hanger or clamp within which the sleeve is held and which bears upon said thickened slitted edge portions of the sleeve, substantially as and for the purpose described.

475,446. CAN-HOLDING FRAME FOR USE WITH CAN-TESTING MACHINES. CHARLES H. BERRY, Chicago, Ill., assignor to himself and Charles P. Libby, same place. Filed Feb. 23, 1892. Serial No. 422,982. (No model.)



Claim.—1. The combination, with a can-testing machine of the class described, of a frame adapted to receive and hold a can, said frame being adapted to fit around said can to support the sides of the can against internal pressure, substantially as described.

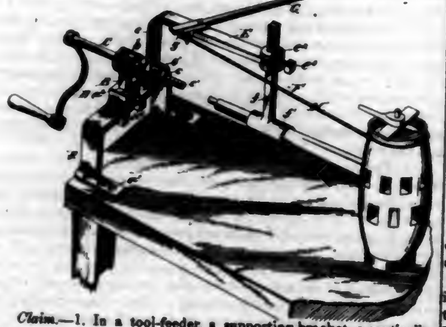
2. The combination, with a can-testing machine of the class described, of a frame adapted to receive and support a can, said frame having sides adapted to fit around the sides of the can, and perforations in said sides, substantially as and for the purpose specified.

3. The combination, with a can-testing machine of the class described, of a frame adapted to receive and support a can, said frame having sides adapted to fit around the sides of the can, and an opening in said frame adapted to expose the side seam of the can, substantially as described.

4. The combination, with a can-testing machine of the class described, of parallel rods 10 and 11, and a frame adjustably pivoted between said rods, said frame being adapted to receive and support a can, substantially as described.

5. The combination, with a can-testing machine of the class described, of a frame 14, having perforations 15, cross-bars 17, and opening 16, substantially as described.

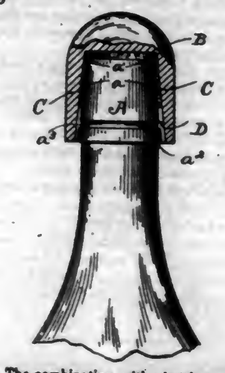
475,447. TENONING-MACHINE. ABRAHAM GIDDENS, Gypsum, Kans. Filed Sept. 2, 1891. Serial No. 404,547. (No model.)



Claim.—1. In a tool-feeder, a supporting-bracket, a vertically-adjustable gage and bearing mounted in said bracket, a sliding tool-operating shaft or spindle loosely mounted in said bearing and provided with a crank-handle, a screw-threaded tool-receiving end and a retaining-collar adjacent thereto, a forwardly-extending feeding-bracket provided with a depending perforated boxing engaging said shaft behind the collar thereon and with an enlarged end having a perforation therein, a vertically-adjustable rest and gage mounted in said squared perforation and conforming in shape to the object upon which the same rests and slides, and a feeding-lever pivotally mounted upon said feeding-bracket and connected with a suitable point of attachment to draw the feeding-bracket toward the object, substantially as set forth.

2. In a tool-feeder, a supporting-bracket, a vertically-adjustable gage and bearing mounted in said bracket, a sliding tool-operating shaft or spindle loosely mounted to slide in said bearing and provided with a crank-handle, a screw-threaded tool-receiving end and a retaining-collar adjacent thereto, a forwardly-extending feeding-bracket provided with a depending perforated boxing engaging said shaft behind the collar thereon and with an enlarged end having a squared perforation therein, a vertically-adjustable rest and gage mounted in said squared perforation and provided with a semicircular clamp at its lower end and adapted to rest and slide upon the object being operated upon, and a feeding-lever pivotally mounted upon said feeding-bracket and connected with a suitable point of attachment to draw the feeding-bracket toward the object, substantially as set forth.

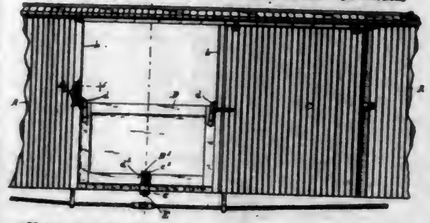
475,448. BOTTLE AND STOPPER-CAP FOR THE SAME. JAMES GILBERNE, Jamestown, N. Y. Filed Sept. 24, 1891. Serial No. 406,730. (No model.)



Claim.—1. The combination, with a bottle-neck, of a cap adapted to embrace such bottle-neck, the cap having a lining of yielding material, such as cork, and an annular chamber located between the bottle-neck and cap outside the lining for sealing purposes, substantially as and for the purpose set forth.

2. The combination, with a bottle-neck terminating at the mouth of the bottle in a beveled or chamfered end, of a cap having a lining of yielding material, such as cork, such lining being compressed, substantially as indicated, and cemented to the interior of the cap, an annular chamber between the cap and the neck of the bottle outside the lining, and the bottle-neck having an annular groove communicating with said chamber, substantially as and for the purpose set forth.

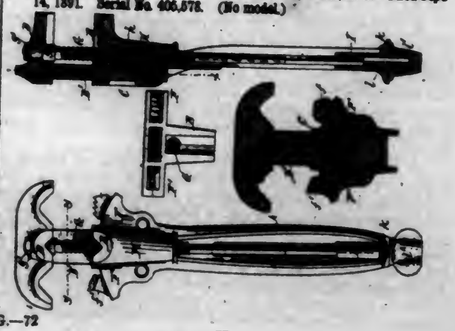
475,449. GRAIN-DOOR FOR CARS. ROBERT O. HIXSON, Russellville, Ind. Filed May 9, 1891. Serial No. 392,183. (No model.)



Claim.—1. The combination, with a grain-car door, of a fastening device consisting of the bolt E, having a notch, and the loop-bolt E', adapted to engage in said notch, and provided with a thumb-screw.

2. The combination of a car provided with a door-opening, grooves in said facing sides of the door-jambs, a grain-door having hangers entering said grooves, a fastening device consisting of two parts E and E', one adjustably mounted in the sill of the car and the other adjustably mounted upon the lower edge of the door, and a suspending hook secured in the roof of the car, said door being adapted to both slide and swing upon its hangers, substantially as and for the purpose set forth.

475,450. WRENCH. SILVANUS HUSSEY, Brant, N. Y. Filed Sept. 14, 1891. Serial No. 405,578. (No model.)

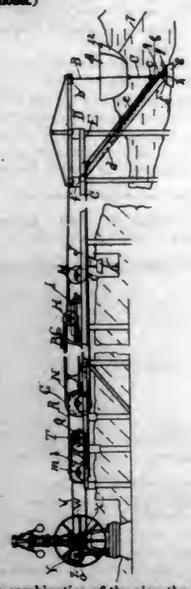


Claim.—1. The combination, with the handle and a fixed jaw arranged at the inner end thereof, of a socket formed in the handle in a plane parallel therewith, a movable jaw having a shank guided in the socket of the handle, and an adjusting-screw carrying the movable jaw and arranged in a threaded opening formed in the inner portion of the handle, substantially as set forth.

2. The combination, with the handle having a fixed jaw at its inner end and a socket or loop arranged in a plane parallel with the handle, of a movable jaw having a shank guided in said socket or loop, a rotary sleeve or socket journaled in the outer portion of the handle, and a rotary adjusting-screw carrying the movable jaw, engaging in a threaded opening in the inner portion of the handle and connected with said rotary socket, substantially as set forth.

3. The combination, with the handle having a fixed jaw at its inner end and a socket or loop arranged in a plane parallel with the handle, of a movable jaw having a shank guided in said socket or loop, a sleeve journaled in the outer portion of the handle and having an angular bore, and a rotary adjusting-screw carrying the movable jaw, engaging in a threaded opening in the inner portion of the handle and having an angular portion which slides lengthwise in the bore of said sleeve, substantially as set forth.

475,451. MACHINE FOR UTILIZING OCEAN-POWER, &c. RUDOLPH L. JOHANSEN, Los Angeles, Cal. Filed May 21, 1891. Serial No. 393,645. (No model.)



Claim.—1. The combination of the pier, the truss projecting from such pier and provided at its outer end with the supporting-pulley, such pulley, the masonry at the bottom of the ocean, the depression-pulley secured to such masonry vertically beneath the supporting-pulley, the friction-drum operatively connected with motion-converting mechanism, and the cable passing around the friction-drum and having its end members respectively passed about the supporting and depression pulleys and secured to the top and bottom of the float.

2. The combination of the float, the supporting and depression pulleys arranged, respectively, above and below the float, the friction-drum operatively connected with motion-converting mechanism, the tension-carriage provided with the tension-pulley, means for drawing such pulley away from the drum, and the cable passing around the friction-drum and tension-pulley and having its end members respectively passed about the supporting and depression pulleys and secured to the top and bottom of the float.

3. The combination of the float, the supporting and depression pulleys, the friction-drum, the cable passing around the friction-drum and having its end members respectively passed about the supporting and depression pulleys and secured to the top and bottom of the float, the drum-supporting shaft N, the driving sprocket-wheel O, mounted thereon and connected with the friction-drum, the sprocket-wheels Q and S, fixed to each other and journaled to revolve, the sprocket-chain R, connecting the driving sprocket-wheel O with the sprocket-wheels Q and S, the power-shaft W, the reciprocating motion-receiving sprocket-wheel U, journaled thereon and connected therewith by the positive ratchet arranged to rotate the shaft in one direction, the driving cog-wheel X, fixed to the sprocket-wheel U and journaled upon the power-shaft, the reversing cog-wheel Y, meshing with the driving cog-wheel X, the reversing sprocket-wheel *o*, fixed to the reversing cog-wheel, the shaft-driving sprocket-wheel *q*, journaled upon the power-shaft and connected therewith by the reversing-ratchet, arranged to drive the shaft in the same direction it is driven by the positive ratchet *n*, and such reversing-ratchet.

4. The combination of the power-shaft, the reciprocating motion-receiving wheel journaled thereon and connected therewith by the positive ratchet arranged to rotate the shaft in one direction, the driving cog-wheel, fixed to such motion-receiving wheel and journaled upon the power-shaft, the reversing cog-wheel meshing with the driving cog-wheel, the reversing sprocket-wheel fixed to the reversing cog-wheel, the shaft-driving sprocket-wheel journaled upon the power-shaft and connected therewith by the reversing-ratchet, arranged to drive the shaft in the same direction it is driven by the positive ratchet, and such reversing-ratchet.

5. The combination of the float, the supporting and depression pulleys, the friction-drum, the cable passing around the friction-drum and having its end members respectively passed about the supporting and depression pulleys and secured to the top and bottom of the float, the drum-supporting shaft N, the driving sprocket-wheel O, mounted thereon and connected with the friction-drum, the sprocket-wheels Q and S, fixed to each other and journaled to revolve, the sprocket-chain R, connecting the driving sprocket-wheel O with the sprocket-wheels Q and S, the power-shaft W, the reciprocating motion-receiving sprocket-wheel U, journaled thereon and connected therewith by the positive ratchet arranged to rotate the shaft in one direction, the driving cog-wheel X, fixed to the sprocket-wheel U and journaled upon the power-shaft, the reversing cog-wheel Y, meshing with the driving cog-wheel X, the reversing sprocket-wheel *o*, fixed to the reversing cog-wheel, the shaft-driving sprocket-wheel *q*, journaled upon the power-shaft and connected therewith by the reversing-ratchet, arranged to drive the shaft in the same direction it is driven by the positive ratchet *n*, such reversing-ratchet, and a governor.

6. The combination of the power-shaft, the governor-rod provided with the centrifugal balls and geared to the power-shaft, the friction-hub fixed to the power-shaft, the pivoted brake-band-operating levers, the brake-band arranged around the friction-hub and connected by its ends, respectively, to such levers, the vertically-moving sleeve operatively connected with the centrifugal balls, the lever-operating rods connecting the sleeve with levers, the friction-drum, operative mechanism connecting the power-shaft with such friction-drum, the float, the cable secured to the top and bottom of such float and passing respectively over and under the supporting and depression pulleys and around the friction-drum and having the loop passed around the tension-pulley secured to the tension-carriage, such pulley and carriage, and the weight.

7. The combination of the float, the sustaining-pulley, the friction-drum, the tension carriage and pulley and means for operating the same, the inclined track provided with the retaining-grooves, the anchoring-eye fixed beneath the float, the traveling carriage arranged to travel up and down such track and provided with suitable retaining devices arranged to project into such grooves, the anchoring-hook secured to the carriage and arranged to engage the anchoring-eye when the carriage is at the bottom of the track, the depression-pulley fixed to the hook, the carriage cable-pulleys *f f'*, the carriage-operating cable *e*, and the machine-operating cable, arranged as set forth.

8. In an ocean-motor in which a float-operated cable is employed to transmit power, the combination, with the lower member of the cable, of an inclined track, a carriage arranged to travel up and down such track, a fixed anchor-eye, a hook provided with a depression-pulley and arranged to engage the eye when the carriage is at the bottom of the track, and means for moving the carriage up and down the track.

9. In an ocean-motor such as set forth, the float A, provided with the side prow 12, arranged at the middle of the float.

475,452. DEVICE FOR ATOMIZING OR SPRAYING LIQUIDS. EDWIN R. KEES, Chicago, Ill., assignor to the Western Publishing House, same place. Filed June 22, 1891. Serial No. 397,043. (No model.)



Claim.—1. An atomizer or spraying device composed of a liquid-supply pipe and a rotatable body having a practically-continuous impinging surface at the point of impact of the water, supported in line with the discharge end of said pipe to receive the impact of the liquid issuing from said pipe, whereby said body is caused to rotate and the liquid is converted into a spray or vapor, substantially as and for the purposes described.

2. An atomizer or spraying device composed of a liquid-supply pipe, a rotatable body having a practically-continuous impinging surface at the point of impact of the water supported in line with the discharge end of said pipe to receive the impact of the liquid issuing from said pipe to spray or vaporize the liquid, and means for adjusting said pipe and body relatively to each other to increase or decrease the space between them and regulate the fineness of the spray of the liquid, substantially as and for the purposes described.

3. An atomizer or spraying device composed of a liquid-supply pipe, a rotatable body having a practically-continuous impinging surface at the point of impact of the water supported in line with the discharge end of said pipe to receive the impact of the liquid issuing from said pipe to spray or vaporize the liquid, and means for adjusting the position of said pipe and body relatively to each other in a horizontally-curved line, whereby the liquid from said supply-pipe may be projected against said body to one side of a vertical line drawn through the center of said body, substantially as and for the purposes described.

4. An atomizer or spraying device composed of a liquid-supply pipe, a rotatable body having a practically-continuous impinging surface at the point of impact of the water supported in line with the discharge end of said pipe to receive the impact of the liquid issuing from the pipe to spray or vaporize the liquid, and means for changing the relative vertical position of said pipe and body to each other to a point above or below a line drawn centrally and horizontally through said rotatable body, whereby the liquid may be projected against the upper or lower portion of said body to deflect the spray upward or downward, as desired, substantially as and for the purposes described.

5. An atomizer or spraying device composed of a liquid-supply pipe, the stem extending laterally therefrom, the arm through which said stem passes, the rotatable body supported by said arm in line with the discharge end of said supply-pipe, and means for securing said arm and supply-pipe together, substantially as and for the purposes described.

6. An atomizer or spraying device composed of the liquid-supply pipe, the adjustable shaft carrying the rotatable body in line with the discharge end of said supply-pipe, a support to said shaft, and means for holding said shaft to its adjustment, substantially as and for the purposes described.

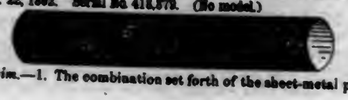
7. An atomizer or spraying device composed of a liquid-supply pipe, a supporting-arm connected therewith and having both a longitudinal and lateral adjustment, and a rotatable body supported by said arm in line of the discharge end of said pipe, substantially as and for the purposes described.

475,458. PESSARY. ELIZA KIRWIN, Indianapolis, Ind. Filed Mar. 3, 1892. Serial No. 423,568. (No model.)



Claim.—A uterine-supporter consisting of a hollow ball or bulb of soft material, said bulb being attached to a stem which is doubled and inserted through adjacent perforations in opposite sides of said bulb or ball, a tube being mounted on the projecting ends of said stem and adjusted against the under side of said ball or bulb to secure the desired depression in its top side, said stem being attached to suitable supporting-braces, all substantially as set forth.

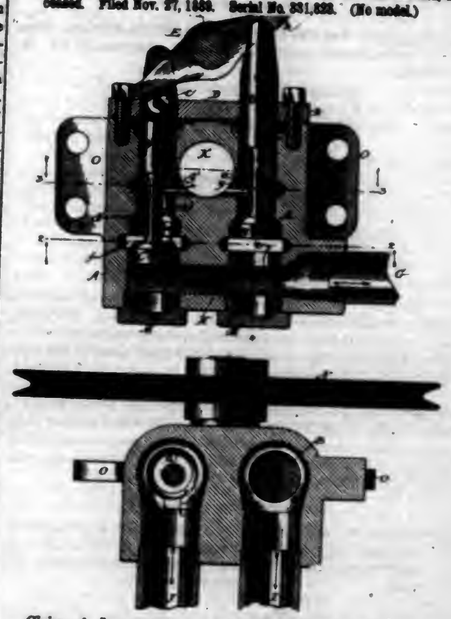
475,454. COATED METAL PIPE AND METHOD OF MANUFACTURING THE SAME. WILLIAM LAGY, Jr., Los Angeles, Cal. Filed Jan. 22, 1892. Serial No. 418,572. (No model.)



Claim.—1. The combination set forth of the sheet-metal pipe, the inner coating of preservative gum, the intermediate coating of fibrous material, and the exterior coating of preservative gum, substantially as and for the purpose set forth.

2. The method set forth of manufacturing coated metal pipes, consisting in first dipping sheet-metal pipes in a bath of hot preservative gum; second, rolling the coated pipe in suitable disintegrated fibrous material while the coating of gum is hot and viscid; third, cooling the pipe and its coating, and, fourth, dipping the pipe thus coated in a bath of hot preservative gum.

475,455. SECONDARY VALVE. WILLIAM H. LAVINIA, Chicago, Ill.; Mary B. Lavinia administratrix of said William H. Lavinia, deceased. Filed Nov. 27, 1888. Serial No. 331,828. (No model.)



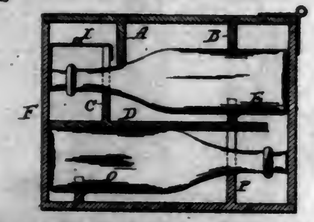
Claim.—1. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing, and a vibrating lever disconnected from said stems and having a fixed pivot and located practically as described to engage the said stems, substantially as described.

2. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing, and a vibrating lever disconnected from said stems and having a fixed pivot and located practically as described to intermittently engage said stems, substantially as described.

3. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing, and a lever pivoted between its ends upon a fixed pivot and having its end portions disconnected from said stems and located practically as described to respectively engage said stems, substantially as described.

4. In a secondary valve, the combination, with a casing having two valve-chambers, each communicating at one end and at all times with an inlet-chamber H, a discharge-outlet K, communicating with the other ends of said valve-chambers, valve-seats located between the ends of said valve-chambers, and outlet-passages *e* and *f*, communicating with said valve-chambers between the said valve-seats and the said inlet-chamber H, of two freely and independently movable and disconnected valves located within said valve-chambers, stems connected with said valves and extending outside of said casing and provided with anti-friction rollers, and a lever disconnected from said stem and having a fixed pivot and located practically as described to engage the said anti-friction rollers of said stems, substantially as described.

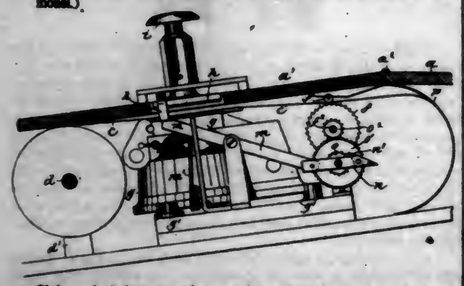
475,456. BOX FOR PACKING AND SHIPPING BOTTLES. PETER C. LEIDICH, Ashland, Pa. Filed July 27, 1891. Serial No. 400,798. (No model.)



Claim.—1. The combination of a box having seats to receive the bodies and necks of a series of bottles, a movable frame, also having seats to receive the bodies and necks of a series of bottles, and a cover having depending strips to engage the bodies and necks of the upper tier of bottles, substantially as set forth.

2. The combination of a box having seats to receive the bodies of the bottles and grooved strips to receive the necks of said bottles, a frame adapted to rest loosely on the bottles and on the grooved strips and provided with seats, and a grooved strip for another series of bottles, and a cover having depending strips to engage the bodies and necks of the upper series of bottles, substantially as set forth.

475,457. WORKMAN'S TIME-RECORDER. MORRIS MARTIN, Malden, Mass., assignor to the Automatic Time Stamp and Register Company, Portland, Me. Filed July 19, 1888. Serial No. 280,368. (No model.)



Claim.—1. A time-recorder containing the following instrumentalities, viz: an inclosing case having a signature-opening, a support opposite the said opening for a recording-strip, a time-stamp including a die for imprinting time on the said strip and having a co-operating spring-supported platen provided with a hand-piece or striker extended outwardly through the said casing, means to engage and move the recording-strip and actuating devices therefor, adapted to be operated in one direction by or through the movement of the platen in printing, and a spring to move the said devices in the opposite direction to feed the strip as the platen rises, the feeding of the strip being made to follow the printing thereon, substantially as described.

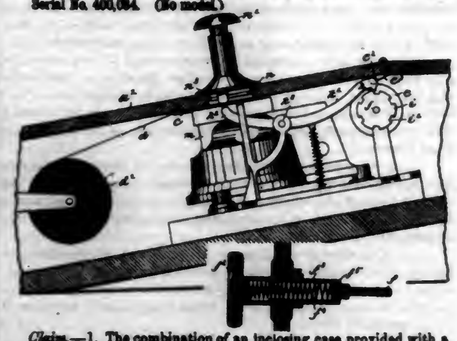
2. In a time-recorder, the following instrumentalities, viz: a time-stamp having a die for imprinting time and having a normally-elevated platen, devices to engage and feed a recording-strip, connections between the said platen and the devices for engaging and moving the said strip, and a spring, the said devices being moved by the said platen and against the said spring while the platen is being moved to cause the same to imprint upon the said strip, the said devices being actuated by the said spring to feed the strip during the recoil of the platen, substantially as described.

3. The inclosing case provided with a signature-opening, combined with a recording-strip contained within said case and movable below said opening, and a time-stamp having a die for imprinting said recording-strip, said time-stamp being set the distance of one paper-feed in advance of the signature-opening or toward that side from which the paper is fed to the opening, as described, whereby the imprint is made before arriving in line with the opening and is subsequently fed into line with the opening, substantially as and for the purpose described.

4. A stamp, including a printing-die and a hand-actuated normally-elevated platen, combined with devices to engage and move a recording-strip and with connections intermediate between the said strip-engaging devices and the said platen, whereby the descent of the platen to stamp the strip places the actuating devices into position to effect the feed of the strip during the return movement of the platen, substantially as described.

5. In a time-registering apparatus, the combination, with an inclosing case provided with a slot or signature-opening, of a recording-strip inclosed in said case and movable beneath the said opening, a printing-die and a support for said strip underneath said recording-strip, and a movable platen above said recording-strip, whereby the strip is pressed against the printing-die and the imprint made upon the under surface of said strip, substantially as described.

475,458. WORKMAN'S TIME-RECORDER. MORRIS MARTIN, Malden, Mass., assignor to the Automatic Time Stamp and Register Company, Portland, Me. Filed Jan. 15, 1889. Renewed July 30, 1891. Serial No. 400,084. (No model.)



Claim.—1. The combination of an inclosing case provided with a signature-opening, with a recording-strip inclosed in said case and movable below said opening, a feed-shaft for the said strip, provided with a handle outside the case and a lock and detent for said shaft, and an independently-operated time-stamp inclosed in said case, the platen or part by which the impression of said time-stamp is made co-operating with the said detent to release without actuating the paper-feeding shaft when the impression is made, substantially as described.

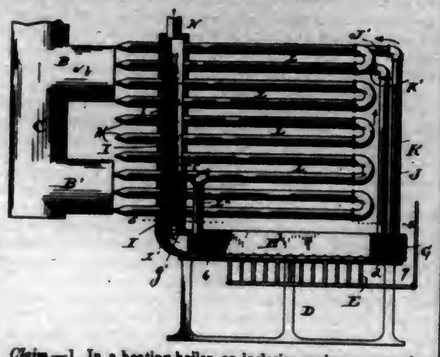
2. The combination of an inclosing case provided with a signature-opening, with a recording-strip inclosed in said case and movable below said opening, a feed-shaft for the said strip and handle outside of the case frictionally connected with the said shaft and a lock and detent for said shaft, and an independently-operated time-stamp inclosed in said case, the platen or part by which the impression of said time-stamp is made co-operating with the said detent to release without actuating the paper-feeding shaft when the impression is made, substantially as described.

3. The combination of an inclosing case provided with a signature-opening, with a recording-strip inclosed in said case and movable below said opening, a feed-shaft for said strip, provided with a cam-plate and yielding projection co-operating therewith, and a locking-disk provided with shoulders, a detent co-operating with said shoulders, and a time-stamp the platen of which is provided with a part that engages the detent, substantially as described.

4. The combination of an inclosing case provided with a signature-opening, with a recording-strip inclosed in said case and movable below said opening, a feed-shaft for said strip, provided with a cam-plate and yielding projection co-operating therewith and also provided with a ratchet and pawl, a handle outside the case frictionally connected with said shaft, and a time-stamp having an operating-handle outside the case by which an imprint is made independently of the movement of the shaft, substantially as described.

5. The combination of an inclosing case provided with a signature-opening, with a recording-strip inclosed in said case and movable below said opening, a feed-shaft for the said strip, provided with a handle outside the case and a time-stamp inclosed in said case, and an operating-handle for the platen of said time-stamp outside of the case and independent of the handle by which the feed-shaft is operated, substantially as described.

475,459. HEATING-BOILER. THOMAS MEIKLE, Cleveland, Ohio. Filed Jan. 14, 1892. Serial No. 418,047. (No model.)



Claim.—1. In a heating-boiler, an inclosing casing, a water box or chamber arranged about the grate or fuel-chamber, a water-bridge in open relation with the rear portion of said water box or chamber, heating and circulating tubes connecting said water box or chamber and water-bridge, and one or more distributing-pipes connected with the water-bridge, substantially as set forth.

2. In a heating-boiler, an inclosing casing, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge located at the rear portion of and in open relation with said water box or chamber, heating and circulating tubes connecting said water box or chamber and water-bridge, heating and circulating coils located above the fuel-chamber within the inclosing casing and in open relation with said water-bridge, and one or more distributing-pipes connected with said water-bridge, substantially as set forth.

3. In a heating-boiler, an inclosing casing, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge located at the rear portion of and in open relation with said water box or chamber, heating and circulating tubes connecting said water box or chamber and water-bridge, heating and circulating tubes located at the rear of and in open relation with the water-bridge and divided longitudinally to near the rear end thereof, and one or more distributing-pipes connected with said water-bridge, substantially as set forth.

4. In a heating-boiler, an inclosing casing, a water box or chamber surrounding the grate or fuel chamber, a water-bridge at the rear portion and in open relation with said water box or chamber, upright heating and circulating tubes connected with the forward portion of the water box or chamber and connected with the upper portion of the latter, heating and circulating coils located above the fuel-chamber within the inclosing casing and in open relation with the water-bridge and heating and circulating tubes located at the rear of and in open relation with the water-bridge, and one or more distributing-pipes connected with the water-bridge, substantially as set forth.

5. In a heating-boiler, an inclosing casing, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge at the rear portion and in open relation with said water box or chamber, heating and circulating tubes connected with the front and rear portions of said water box or chamber and in open relation with the water-bridge at different elevations, respectively, horizontal heating and circulating coils located forward of and in open relation with said water-bridge, and one or more distributing-pipes connected with said water-bridge, substantially as set forth.

6. In a heating-boiler, an inclosing casing, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge located at the rear portion and in open relation with said water box or chamber, upright heating and circulating tubes connected with the forward portion of said water box or chamber and connected with the upper portion of the water-bridge, horizontal or approximately horizontal heating and circulating coils located forward of and in open relation with said water-bridge, one or more of said coils connecting with the water box or chamber aforesaid, and one or more distributing-pipes connected with said water-bridge, substantially as set forth.

7. In a heating-boiler, an inclosing casing, two flues in open relation with the interior of the boiler at the rear thereof and located in different horizontal planes relative to each other, the upper flue being provided with a damper, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge at the rear portion of and in open relation with said water box or chamber and heating and circulating tubes connected with the forward portion of said water box or chamber and connected with the upper portion of the water-bridge, horizontal or approximately horizontal heating and circulating coils located forward of and in open relation with the water-bridge, one or more of said coils being connected with the rear portion of the water box or chamber aforesaid, heating and circulating tubes located at the rear of and in open relation with the water-bridge, and one or more distributing-pipes connected with said water-bridge, substantially as set forth.

8. In a heating-boiler, an inclosing casing, two flues in open relation with the interior of the boiler at the rear thereof and located the one above the other, the upper flue being provided with a damper, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge at the rear portion of and in open relation with said water box or chamber, heating and circulating tubes connected with the forward portion of said water box or chamber and connected with the upper portion of the water-bridge, horizontal or approximately horizontal heating and circulating coils located forward of and in open relation with the water-bridge, one or more of said coils located immediately above the fuel-chamber and being connected with the rear portion of the water box or chamber aforesaid, heating and circulating tubes located at the rear of and in open relation with the water-bridge, one or more distributing-pipes connected with said water-bridge, and one or more return-pipes connecting with the water box or chamber aforesaid, substantially as set forth.

9. In a heating-boiler, an inclosing casing, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge at the rear portion of and in open relation with said water box or chamber, upright heating or circulating tubes connected with the forward portion of said water box or chamber and connected with the upper portion of the water-bridge, vertical tiers of horizontal or approximately horizontal heating and circulating coils located forward of the water-bridge above the grate or fuel-chamber, one or more of said coils connecting with the water-bridge and water box or chamber, and the remainder of said coils being in open relation with said water-bridge at different elevations, heating and circulating tubes located at the rear of and in open relation with said water-bridge and being divided longitudinally by horizontal or approximately horizontal diaphragms that extend to near the rear end of said tubes, one or more distributing-pipes connected with the water-bridge, and one or more return-pipes connecting with the water box or chamber aforesaid, substantially as set forth.

10. In a heating-boiler, an inclosing casing, a water box or chamber surrounding the grate or fuel-chamber, a water-bridge located at the rear portion of said water box or chamber, heating and circulating tubes connected with the forward portion of the water box or chamber and connected with the upper portion of the water-bridge, heating and circulating coils located forward of and in open relation with the water-bridge, one or more of said coils being in open relation with the water box or chamber, the water box or chamber having a rearwardly-projecting member, and the water-bridge having a flanged opening, the flange being externally screw-threaded for screwing into a correspondingly and internally screw-threaded hole in the rearwardly-projecting member aforesaid of the water box or chamber, and one or more distributing-pipes connected with the water-bridge, substantially as set forth.

475,460. COMBINED NEWSPAPER-HOLDER AND DOOR-PLATE. HENRY MAYS, Philadelphia, Pa. Filed Mar. 3, 1892. Serial No. 423,576. (No model.)



Claim.—1. In a newspaper-holder for front doors, a rear securing-plate B, provided with depending lugs *b* and orifices *c* for securing-screws, front hinged plate A, provided with depending lugs *a*, pivotally hinged to the plate B by the pin *p*, passing through said lugs, and horizontal spiral spring S, secured circumferentially upon the pin *p*, having its respective ends engaging against the bottom of the said plates A and B for forcing the plate A normally against the plate B, and handle or hook *h*, provided upon the plate A, substantially as described.

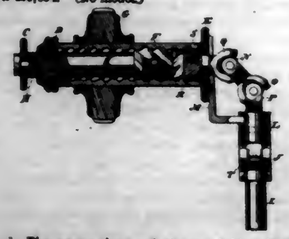
2. In a combined newspaper-holder and door-plate, a front hinged ornamental door-plate with space provided for the reception of the name of the occupant of the house, depending lugs *a*, secured to the bottom of said door-plate A, rear securing-plate B, provided at its base with depending lugs *b*, and countersunk orifices provided therein for the reception of securing-screws, said door-plate A, hinged to said rear plate B by pin *p*, engaging in and through the respective lugs *a* and *b* of the respective plates, spiral spring S, circumferentially disposed upon said pin *p*, having one end *s* of said spring engaging against said rear plate B and the other end *s'* at a desired tension engaging against the under side of the plate A, tending to force the same normally against the plate B, and the securing-hook or handle A, provided on the plate A, substantially as described.

475,461. SWEEP-PLOW. AMANUEL M. MILLER, Fairfield, Tex. Filed Sept. 22, 1891. Serial No. 406,509. (No model.)



Claim.—The combination, with the sweep curved in cross-section to form the central shovel-receiving seat, which is slotted opposite the rearwardly-disposed triangular sides or flanges, which latter are perforated near their lower ends and provided at their upper ends with curved slots, with which the perforations are concentric, of a pair of opposite rearwardly-disposed diverging wings and pivoting-bolts passed through the perforations of the wings and flanges and adjusting-bolts passed through the slots of the wings and flanges, substantially as specified.

475,462. OPERA-GLASS ATTACHMENT. PAUL MOEWS, Newark, N. J., assignor to John S. Spencer, New York, N. Y. Filed Feb. 29, 1892. Serial No. 423,134. (No model.)

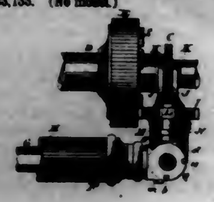


Claim.—1. The opera-glass and the revoluble adjusting-cylinder thereof, combined with the axially-revoluble holder and a revoluble connection secured at one end to the upper end of said holder and at the other end locked to the front end of said revoluble adjusting-cylinder, substantially as and for the purposes set forth.

2. The opera-glass and the focus-adjusting mechanism thereof, combined with the axially-revoluble holder applied, to the cross-bar thereof, the hinged joint J in said holder, the notches T, formed in one section of said hinge, the pawl K within said holder, the spring *d*, also within the holder and engaging said pawl, and a revoluble connection between the upper end of said holder and said adjusting mechanism of the glass, substantially as and for the purposes set forth.

3. The opera-glass having the revoluble screw-cylinder, combined with the holder and the universal-joint connection between said holder and said screw-cylinder, substantially as and for the purposes set forth.

475,463. OPERA-GLASS ATTACHMENT. PAUL MOEWS, Newark, N. J., assignor, by direct and mesne assignments, to John S. Spencer, New York, and James R. Spencer, Brooklyn, N. Y. Filed Feb 29, 1892. Serial No. 423,133. (No model.)



Claim.—1. The opera-glass, the adjusting revoluble cylinder thereof, and the gear-wheel on said cylinder, combined with the handle, means for securing the handle to the cross-bar of the glass and the gear-wheel on said handle and engaging the said gear-wheel on the adjusting-cylinder of the glass, said handle being swiveled at its upper end, axially revoluble throughout, and capable from any part on being turned to set the gear-wheels in motion, substantially as and for the purposes set forth.

2. The opera-glass, the adjusting revoluble cylinder thereof, and the gear-wheel on said cylinder, combined with the handle axially revoluble throughout, the gear-wheel on said handle, means for attaching said handle to the cross-bar of the glass, and the hinge-joint in said handle, the latter being adapted to be folded lengthwise of the barrels of the glass and capable from any part on being turned to set said gear-wheels in motion, substantially as and for the purposes set forth.

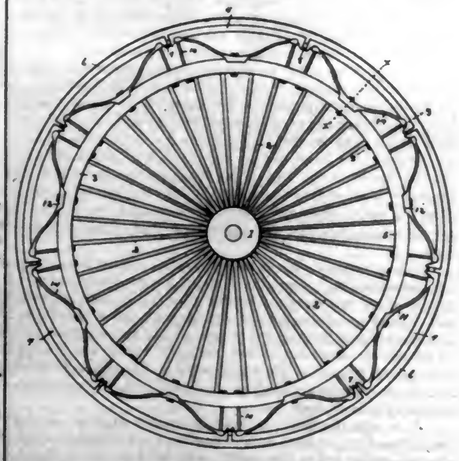
3. The opera-glass, combined with the axially-revoluble handle applied thereto, the hinge-joint in said handle, whereby the same may be folded lengthwise of the barrels of the opera-glass, means for locking said handle in its open position, and gearing in engagement with said axially-revoluble folding handle and the glass for adjusting the focus of the latter, substantially as and for the purposes set forth.

4. The opera-glass, combined with the telescopic handle applied thereto and gearing in engagement with the said handle and glass for adjusting the focus of the latter, the sections of said handle being locked against axial revolution one upon the other, substantially as and for the purposes set forth.

5. The opera-glass, combined with the telescopic folding handle applied thereto and gearing in engagement with the said handle and glass for adjusting the focus of the latter, the sections of said handle being locked against axial revolution one upon the other, substantially as and for the purposes set forth.

6. The opera-glass having the gear-wheel connected with its lens-adjusting devices, combined with the folding handle, the gear-wheel thereon, the plug seated in and affording a bearing for said last-mentioned gear-wheel, and the arms extending upward from said plug on opposite sides of the cross-bar of the opera-glass, substantially as set forth.

475,464. WHEEL. CHARLES J. MOORE, Toledo, Ohio. Filed Nov. 26, 1890. Serial No. 372,744. (No model.)



Claim.—1. In a wheel, the combination, with an inner rim, of a supplemental spring-actuated outer rim concentric therewith and composed of a series of segmental sections.

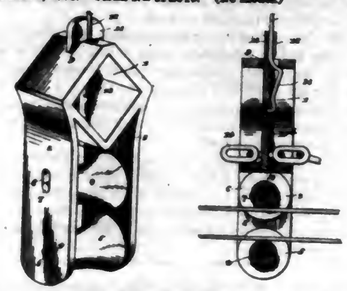
2. In a wheel, a rim, a segmental rim concentric thereto, yielding connections interposed between the rims, rigidly secured to the inner rim, and supporting the outer rim.

3. In a wheel, an inner rim, a series of segments forming an outer rim, a series of semi-elliptical springs connected with the inner rim and yieldingly controlling the segments.

4. In a wheel, a rim, a supplemental segmental rim connected therewith by radial bolts, a series of semi-elliptical springs rigidly connected to the inner rims and slotted at their outer ends to embrace the bolts.

5. In a wheel, a supplemental rim secured thereon formed of segmental sections held yieldingly in place, each section having a projecting pin at one end and a perforation formed in the opposite end.

475,465. REIN-SUPPORT. SHERIDAN J. MYERS, Hebron, Miss. Filed Dec. 7, 1891. Serial No. 414,319. (No model.)



Claim.—1. The herein-described rein-support, the same consisting of the upper trace-chain-receiving eye, adapted to be supported on the trace-chain and having a locking-bolt for engaging one of the links of the chain, a rein-supporting loop or frame depending from the eye, and rollers located in the loop or frame, substantially as specified.

2. The herein-described combined rein guide and support, the same consisting of the chain-receiving loop and means for securing the chain therein, the depending hangers having bearing-perforations near their lower ends and above the same provided with slots, and rollers mounted in the perforations and slots, substantially as specified.

3. The herein-described combined rein guide and support, the same consisting of the diamond-shaped loop having vertically-opposite openings, the trace-engaging bolt mounted therein, the spring-shoulder mounted on the bolt and adapted to engage the eye, hangers depending from the eye and provided with bearings, and rollers mounted in the bearings, substantially as specified.

475,466. WOVEN FABRIC. IRVING MCCALLUM, Philadelphia, Pa. Filed Dec. 1, 1891. Serial No. 413,643. (No specimens.)

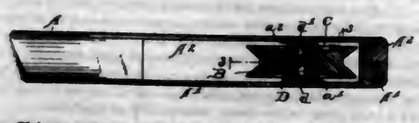


Brief.—An additional plane of wefts is superposed upon certain portions of the face of the fabric. By raising all of the warps at the margin at the time of shedding the warps for the insertion of the additional wefts the selvages of such additional weft-plane are thrown to the back of the fabric.

Claim.—1. A woven fabric or rug having one or more underlying weft-planes and having an additional weft-plane superposed on certain portions of the face of said underlying weft-planes, and with warps disposed uniformly throughout the fabric, and with the respective wefts appertaining to the additional weft-plane disposed singly in separate sheds, and having the selvage portions thereof at the back of the fabric, substantially as and for the purposes set forth.

2. A woven fabric or rug having one or more underlying weft-planes and having an additional figured or ingrained weft-plane incorporated with certain portions of the face of said underlying weft-plane, and having warps disposed uniformly throughout the fabric, and having the respective wefts of the additional weft-plane in separate sheds, with the selvage portions thereof disposed at the back of the fabric, substantially as described, and for the purposes set forth.

475,467. TROLLEY FOR ELECTRIC RAILWAYS. JOHN W. NEWHOUSE, Indianapolis, Ind. Filed Nov. 14, 1891. Serial No. 411,854. (No model.)



Claim.—1. The combination, in a trolley for electric railways, of two side pieces having recesses on the surfaces which face each other, adapted to receive and hold the ends of the shaft of the wheel, said wheel, and said shaft, substantially as shown and described.

2. The combination, in a trolley for electric railways, of a housing the sides whereof approach close to the sides of the trolley-wheel, thus excluding the wire, and provided with internal flanges a^3, which form supports for the trolley-wheel shaft, said shaft mounted therein and the trolley-wheel mounted on said shaft, said shaft being thus completely inclosed and protected from external contact, substantially as shown and described.

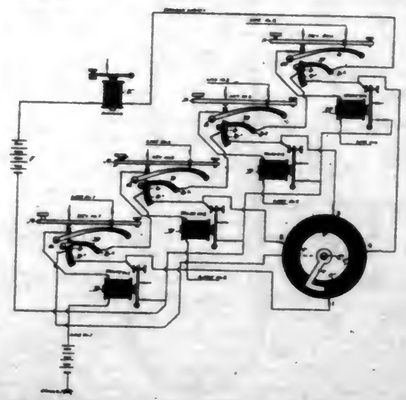
3. The combination, in a trolley for electric railways, of a trolley-wheel, boxes fitted therein, a hollow shaft within said boxings, the end of the perforation being closed by a screw-plug, thus forming a cavity for the lubricant, and a perforation through the housing over the end of the shaft where the screw-plug is located, whereby access is had to the screw-plug from the outside and whereby said screw-plug is also inclosed and protected, substantially as set forth.

4. The combination, in a trolley for electric railways, of two side pieces secured to the upper end of the trolley-arm and provided with recesses in the surfaces which face each other for receiving a trolley-wheel shaft, said trolley-wheel shaft, the trolley-wheel having boxings therein which fit on said shaft, said side pieces being secured together by countersunk bolts or rivets, the whole external surface being thereby rendered smooth and free from projections with the working parts all inclosed, substantially as shown and described, and for the purpose as specified.

5. The combination, in a trolley for electric railways, of a housing embodying internal supports for the trolley-wheel shaft and continued around and brought together in front of the trolley-wheel, said shaft and said wheel, and countersunk bolts securing the two sides of the housing together, substantially as set forth.

6. The combination, in a trolley for electric railways, with the trolley-wheel shaft and trolley, of side pieces inclosing and supporting the same, said side pieces having countersunk holes to receive the bolts, and said bolts sunk flush with the surfaces of said side pieces, whereby the whole external surface is rendered smooth and free from projections, substantially as and for the purpose set forth.

475,468. ELECTRICAL TRANSMITTING SYSTEM. FREDERICK E. NOW, Cleveland, Ohio. Filed Dec. 4, 1891. Serial No. 413,968. (No model.)



Claim.—1. In an electrical transmitting system, separate lines, sending and receiving devices in circuit with each of said lines, a distinctly separate and single local translating device, means in circuit with said receiving devices adapted to automatically connect said local mechanism with the several receivers in periodic succession, and other means auxiliary to said sending devices adapted to automatically connect the local device with the receiving mechanism corresponding to the sending device actuated, substantially as set forth.

2. In an electrical transmitting system, separate communicating lines, a key and relay in each of said lines at a home station, a separate local device, and means auxiliary to said key adapted to automatically connect the local device with a home relay corresponding to any home key to be operated, substantially as set forth.

3. In an electrical transmitting system, separate communicating lines, a sending or signaling device and relay in circuit with each of said lines at a home station, a separate local device, and means actuated by said home sending devices at or about the moment a signal is sent to line, said means adapted to connect said local device to any of said relays corresponding to the home sending device being operated, substantially as set forth.

4. In an electrical transmitting system, separate lines, sending and receiving devices in each of said lines, a regulating mechanism in common for all of said lines, and a local sounder or the like, with suitable connections whereby the regulating mechanism periodically connects said sounder to the several receivers in succession during the receiving of signals, and other means adapted to connect the sounder to a receiving-instrument corresponding to a sending device being operated

in sending out signals and also disconnect said regulating mechanism therefrom, substantially as set forth.

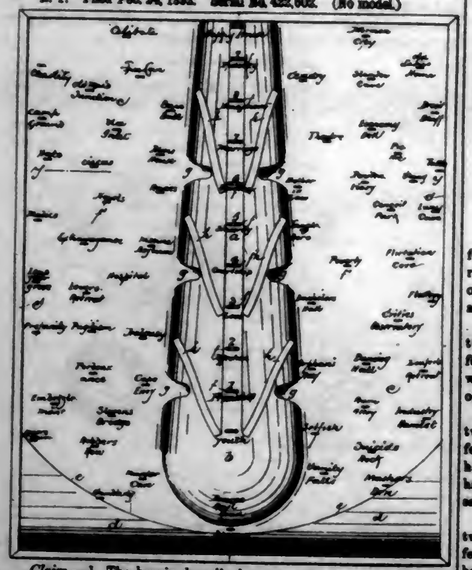
5. In an electrical transmitting system, separate lines, sending and receiving devices in circuit with each of said lines, a local interpreting device serving for all the separate lines, and a regulating mechanism adapted to automatically connect in periodic succession said local device to the separate receivers, substantially as set forth.

6. In an electrical transmitting system, separate lines, a key and relay in circuit with each of said lines, a sounder, and a clock mechanism adapted to automatically switch said sounder periodically into circuit with the different relays, substantially as set forth.

7. In an electrical transmitting system, separate lines, a key and relay in each of said lines, a sounder, a clock to periodically connect said sounder to the different relays, and auxiliary key connections whereby when signals are to be sent said sounder is automatically connected to the relay corresponding to the key being operated and the clock mechanism during such operation to be out of circuit, and upon the completion of the signaling the clock is again connected in circuit by the key mechanism, substantially as set forth.

8. In an electrical transmitting system, a signaling-key, a circuit-controller thereon, an auxiliary circuit-controlling device adjacent thereto and adapted to be moved by the first of said controllers, substantially as set forth.

475,469. GAME APPARATUS. GEORGE L. REYNOLDS, Auburn, N. Y. Filed Feb. 24, 1892. Serial No. 422,602. (No model.)



Claim.—1. The herein-described game apparatus, consisting of a board or table having thereon an elevated track or way, a series of stations indicated by appropriate or arbitrary names or marks along said track or way, a plain situated below said elevated way, and a series of stations thereon indicated by appropriate or arbitrary names or marks and each having an obstruction thereat, arranged and adapted to be operated as described, and for the purposes set forth.

2. The herein-described game apparatus, consisting of a board or table having thereon an elevated track or way, a series of stations indicated by appropriate or arbitrary names or marks along said way, a plain situated below and on each side of said elevated way, and a series of stations indicated by appropriate or arbitrary names or marks on said plain, and each station having an obstruction thereat, arranged to operate as described, and for the purposes set forth.

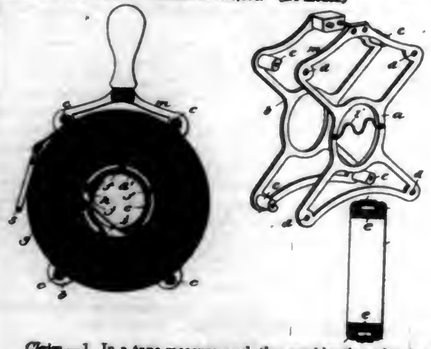
3. The herein-described game apparatus, consisting of a board or table having thereon an elevated track or way, a series of stations along said way indicated by appropriate or arbitrary names or marks and provided with wickets, and a plain situated below said elevated way terminating at or bound by a hill curved at its base and having a series of stations thereon indicated by appropriate or arbitrary names or marks, and each station having an obstruction thereat, as described, and for the purposes set forth.

4. The herein-described game apparatus, consisting of a board or table having thereon an elevated track or way, a series of stations indicated by appropriate or arbitrary names or marks along said way, a plain situated below said elevated way having a series of stations thereon and each station having an obstruction thereat, and side tracks or ways leading from said elevated way to the plain below, as described, and for the purposes set forth.

5. The herein-described game apparatus, consisting of a board or table having thereon an elevated track or way, a series of stations indicated by appropriate or arbitrary names or marks along said way, a plain situated below said elevated way having a series of stations thereon and each station having an obstruction thereat, and coves or passages transversely beneath the elevated track or way, as described, and for the purposes set forth.

6. In a game apparatus, the combination of a board or table having thereon an elevated track or way, a series of stations thereon indicated by appropriate or arbitrary names or marks, a plain situated below said elevated way, and a series of stations thereon indicated by appropriate or arbitrary names or marks, substantially as and for the purposes set forth.

475,470. TAPE-MEASURE REEL. JUSTUS ROE, Patchogue, N. Y. Filed Feb. 19, 1892. Serial No. 422,098. (No model.)



Claim.—1. In a tape-measure reel, the combination of a frame formed of two like side parts, each having a central opening, with a ring-reel circumferentially seated in and upon the walls of said frame-opening and having a circumferential web between the frame parts, and a handle for rotating said ring-reel, substantially as described.

2. In a tape-measure reel, the combination of a frame formed of two like parts, each having a central opening and a ring-reel circumferentially seated within and upon the walls of said frame-opening, with a tape having its end fastened to said ring-reel within the central opening of said frame, substantially as described.

3. In a tape measure reel, the combination of a frame formed of two like parts, each having a central opening, with a ring-reel circumferentially seated within and upon the walls of said frame-opening and having circumferential projections between the frame parts, and a tape having its end fastened to said ring-reel within the central opening of said frame, substantially as described.

4. In a tape-measure reel, the combination of a frame formed of two like parts, each having a central opening, with a ring-reel circumferentially seated within and upon the walls of said frame-opening, a handle for rotating said reel, and a hand-grasp for the frame, consisting of the finger-grip across the central opening and the projecting frame part, substantially as described.

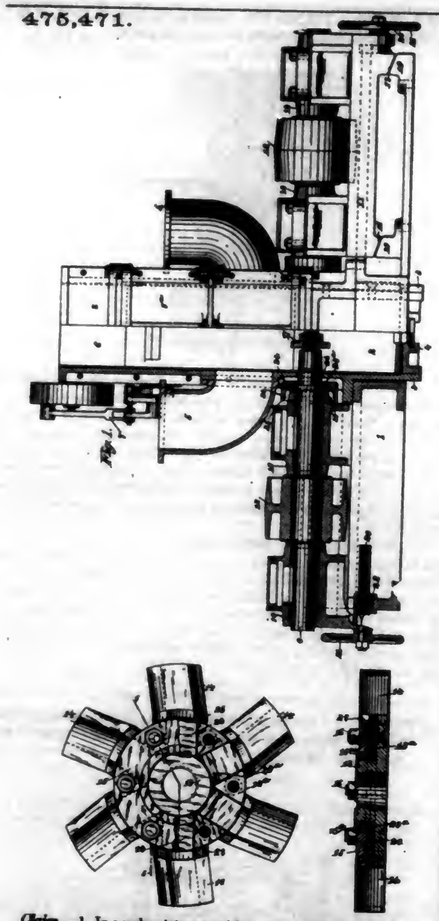
5. In a tape-measure reel, the combination of a frame formed of two like parts, each having a central opening, with a reel-ring circumferentially seated within and upon the walls of said frame-opening, having a circumferential opening and a recess on its inner wall, a tape passed through said ring-opening and seated in said recess, and a button pivoted upon the inner wall of the ring for securing said tape thereto, substantially as described.

6. In a tape-measure reel, a frame formed of two riveted spider parts, each having a central opening, in combination with a ring-reel having a circumferential web and circumferential projections on said web and circumferentially seated within and upon the walls of said frame-opening, a handle for rotating said ring-reel, a tape having its end fastened to said ring-reel within the central opening of said frame, and a hand-grasp for the frame, substantially as described.

7. In a tape-measure reel, the combination, with a frame having a central opening, of a ring-reel circumferentially seated within and upon the walls of said opening, and a tape having its end fastened to said ring within the central opening of said frame, substantially as described.

475,471. PULVERIZING-MACHINE. AXEL SAHLIN, New Brighton, assignor to the Cyclone Pulverizer Company, New York, N. Y. Filed Aug. 14, 1891. Serial No. 402,617. (No model.)

475,471.



Claim.—1. In a pulverizing-machine, the combination of the shaft, the two journal-bearings for said shaft cast in one piece, the horizontal bearing for said casting, the oblique counter-bearings, and the screw which gives an endwise motion to said casting, substantially as described.

2. In a pulverizing-machine, the combination of a narrow pulverizing-chamber, two sets of beaters oppositely placed in and almost filling said chamber, two oppositely-rotating shafts upon which the said beaters are mounted, the two journal-bearings for each of said shafts, which are cast in one piece, the horizontal bearing for each of said castings, the oblique counter-bearings, and the screws which give endwise motion to said castings, substantially as described.

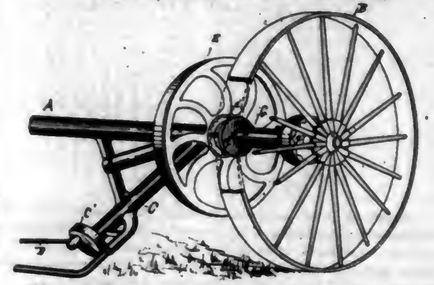
3. In a pulverizing-machine, the combination of the pulverizing-chamber, an opening in said chamber, a horizontal shaft which projects through said opening, but does not fill the same, a journal-bearing for said shaft outside of the chamber, and a cup-shaped collar on said shaft which overhangs and surrounds the end of said journal-bearings nearest to said pulverizing-chamber, substantially as described.

4. In a pulverizing-machine, the combination of a hub which has recesses formed in its face, beaters whose shanks fit into said recesses, and a follower-plate which is held against the face of the hub by bolts which pass through the spaces intermediate between the recesses, substantially as described.

5. In a pulverizing-machine, the combination of a hub which has recesses formed in its face, two or more beaters whose blades are set at an angle to their plane of rotation and which are bent forward at an angle to the radii of the hub, and a follower-plate which is held against the face of the hub by bolts which pass through the spaces intermediate between the recesses, substantially as described.

6. In a pulverizing-machine, a reversible beater composed of two parts set at an angle one to the other and each part provided with a recess by which it may be gripped in the hub when used as a shank, substantially as described.

475,472. MOWING-MACHINE. WALTER SCOTT, Hoosick Falls, N. Y. Filed Oct. 14, 1891. Serial No. 408,691. (No model.)



Claim.—1. The combination, in a mowing-machine, of the axle and an extension for the axle removably secured thereto, substantially as and for the purpose specified.

2. The combination, in a mowing-machine, of the axle, a driving-gear on the axle, an extension for the axle removably secured thereto, the driving-wheel carried on the extension, and clutching mechanism connecting the driving-wheel with the extension, substantially as and for the purpose specified.

3. The combination, in a mowing-machine, of its axle, an internal ratchet secured thereto, an extension for the axle fitting over the latter and provided with a toothed hub taking into the internal ratchet, the driving-wheel carrier on the extension, and clutching mechanism connecting the wheel and extension, substantially as and for the purpose specified.

4. In a mowing-machine, an extension for the axle removably secured thereto intermediate the two parts of the ratchet mechanism for communicating motion from the wheel to the axle, and clutching mechanism on the extension adapted to engage with clutching mechanism on the drive-wheel, substantially as and for the purpose specified.

475,473. HOUSE-DOOR LETTER-BOX. GEORGE D. SIDMAN, Washington, D. C. Filed June 2, 1891. Serial No. 394,853. (No model.)



Claim.—1. A letter-box having its body formed from a single piece A of sheet metal or other suitable material cut so as to form the central portion a for the front of the box, two leaves at opposite sides of said portion a, each having section a' for the sides of the box and section a^2 to form its back, and the top piece a^3, provided with an opening or openings for the insertion of letters, &c., the whole being bent and secured together, substantially as shown and described.

2. A letter-box having its body formed from a single piece A of sheet metal or other suitable material cut so as to form the central portion a for the front of the box, two leaves at opposite sides of said portion a, each having section a' to form the sides of the box and section a^2 to form its back, the section a' having inclined edges a^4 and a^5, and the top piece a^3, provided with an opening or openings for the insertion of letters, &c., the whole being bent and secured together, substantially as shown and described.

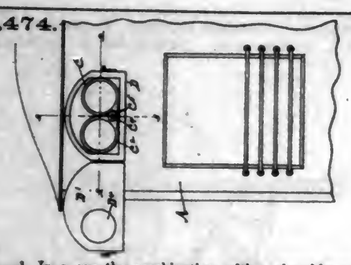
3. A letter-box comprising the piece A of sheet metal or other suitable material cut so as to form the central portion a, sections a' a^2 a' a^2, and the top piece a^3, provided with the openings a^6 a^7 and notches c' c', the lid C, having notches c c, the piece D, having slot d, the bottom cover E, and the partition B, all constructed and combined substantially as shown and described.

4. In a letter-box, the plate A, of sheet metal or other suitable material, cut so as to form the central portion a, sections a' a^2 a' a^2, and the top piece a^3, having openings a^6 a^7 a^6, bent and secured together to form the body of the box, partition B and partition B' to form with the front of the box a closed receiving-compartment, and the door L for said compartment, substantially as shown and described.

5. In a letter-box, the combination, with the top of the box a^3, having the openings a^6 and a^7, of the hinged partition B, hinged near one of said openings, and the inwardly-projecting flange or strip b', arranged to prevent access to the hinges of the partition, substantially as shown and described.

475,474. SIGNAL FOR STREET-CARS. CHARLES H. SMITH, Lansingburg, N. Y. Filed May 6, 1891. Serial No. 392,048. (No model.)

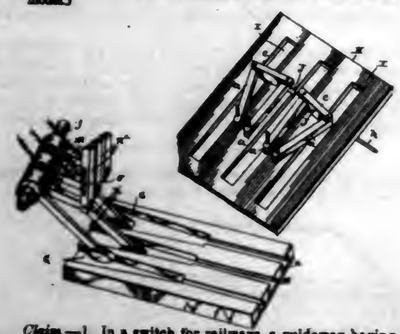
475,474.



Claim.—1. In a car, the combination, with a signal-lamp, of a plurality of different-colored signal-panes, a device for clamping all the panes whatever be their relative position, and a case having its bottom and side walls adapted to bear on the frames or panes either in the position of use or rest, substantially as set forth.

2. In a car, the combination, with a signal-lamp, of a plurality of different-colored signal-panes severally pivoted near the edge on a common pivot, a clamping-nut, and a case having a bottom arranged to act as a stop and as a support for each pane either in the position of use or rest and having its ends also arranged to bear upon the panes or their frames in both of said positions, whereby they are held against vertical or horizontal movement, substantially as set forth.

475,475. SWITCH FOR STREET-RAILWAYS. RUSSELL H SHIVELY, Louisville, Ky. Filed July 13, 1891. Serial No. 399,397. (No model.)



Claim.—1. In a switch for railways, a guideway having a transverse slot, two levers pivoted to one side of the guideway, a cross-piece connecting the lever which is longer than the distance between their pivotal points, having a projection extending through the said slot, the main and side tracks, the pivoted rail, and a rod connecting the said cross-piece projection and the free end of the pivoted rail, all combined substantially as specified.

2. In a switch, a guideway, a wedge-shaped pivoted device at one side of the guideway, the side and main tracks, a pivoted rail, and a normally-contracting connection between the said wedge-shaped device and the pivoted rail, the parts combined substantially as set forth.

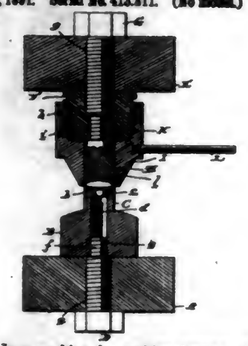
3. In a switch, a guideway having three ways, two wedge-shaped devices pivoted, respectively, at opposite sides of the central way, levers upon the car to move in the said guideways, side and main tracks, two pivoted rails, and connections between the pivoted rails and the said wedge-shaped devices, the parts combined to operate substantially as specified.

4. In a switch, a guideway having three ways, two wedge-shaped devices pivoted, respectively, at opposite sides of the central way, side and main tracks, two pivoted rails, connections between the pivoted rails and the said wedge-shaped devices, and three levers upon the cars to move in the said guideways, one of the levers being in advance of the other two, the parts combined substantially as shown and described.

5. In a switch, guideways, wedge-shaped devices pivoted at one side thereof, side and main tracks, pivoted rails, connections between the pivoted rails and the said wedge-shaped devices, and levers upon the car having wedge-shaped lower ends which move in the said guideways, the parts combined substantially as specified.

6. A mechanism for operating a railway-switch, consisting of a pivotal rod secured to the under side of the platform, the platform having vertical openings, bell-crank levers journaled upon the said pivotal rod which have their lower ends shaped to operate the switch mechanism, an operating-rod loosely connected to the upper ends of the said levers and having vertical slots, and pins in the platform which pass through the said vertical slots, the parts combined substantially as specified.

475,476. BUTTON-DIE. CHARLES WASHBURN, Brooklyn, N. Y. Filed Dec. 2, 1891. Serial No. 413,811. (No model.)

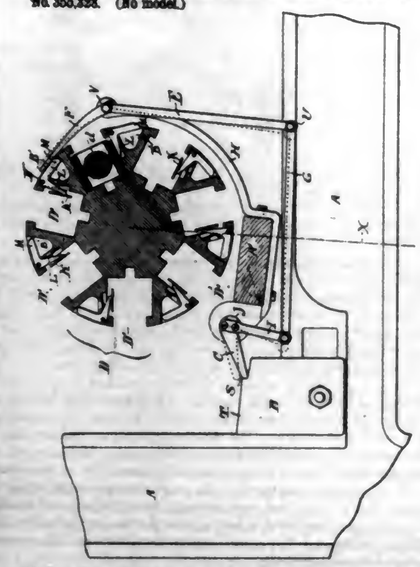


Claim.—1. In a machine for making buttons, the combination, with an upper and a lower die, of a spirally-movable sleeve surrounding one of the dies and adapted to move back and forth or up and down over the meeting edges of both dies, substantially as specified.

2. In a machine for making buttons, the combination, with the upper die and a lower die, of a body or holder having an externally-spiral groove or projection and a sleeve or collar for said upper die engaging said groove or projection, so as to receive a spiral motion, substantially as specified.

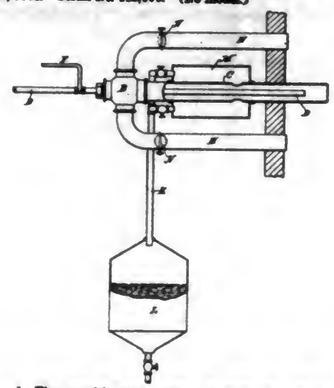
3. The combination, with a lower die, of the upper die having the threaded shank, the body or holder having an internally-threaded aperture to receive said shank and an external spiral groove or projection, and the sleeve or collar having an internally-planed aperture to receive the die and an internally-spiral groove or projection to engage and co-operate with a corresponding surface on the holder or body, so as to impart a spiral motion to said sleeve when turned on the die, substantially as specified.

475,477. STOP-MOTION DEVICE FOR REVOLVING-BOX LOOMS. THOMAS F. WARRINGTON, Philadelphia, Pa. Filed June 13, 1890. Serial No. 355,228. (No model.)



Claim.—The combination of the rotating shuttle-box, the bell-cranks arranged within the periphery of the shuttle-box between the shuttle-seats, the movable strips arranged within the shuttle-seats and in contact with one arm of each of said bell-cranks, the oscillating frame carrying said box, the rocking dagger mounted upon said frame, the frog having a shoulder adapted to engage with said dagger, the stop-motion lever having one arm arranged in proximity to the periphery of the shuttle-box and within the range of movement of the bell-cranks, and means, substantially as described, whereby the other end of said stop-motion lever is connected with the rocking dagger.

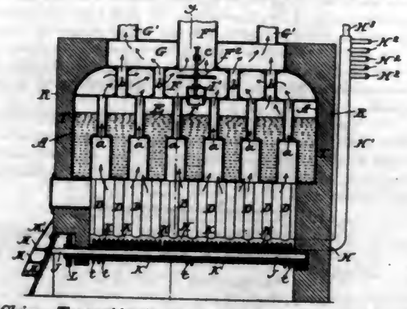
475,478. HYDROCARBON-OIL BURNER FOR FURNACES. JOHN WILSON, New York, N. Y., assignor to Roman Debes, same place. Filed Nov. 16, 1891. Serial No. 412,096. (No model.)



Claim.—1. The combination, with a furnace, of a four-way fixture or coupling B, a pipe C from one port or branch of the same and opening into the furnace, a steam-pipe entering the opposite port and extending into the pipe C, an oil-pipe from an elevated oil-reservoir connecting with the steam-pipe, and hot-air pipes leading from the interior of the furnace to the remaining ports or branches of the coupling, as herein set forth.

2. The combination, with a furnace, of the pipe C, entering the same, a steam-pipe of smaller diameter extending into the pipe C, an oil-supply pipe connected with the steam-pipe, hot-air pipes leading from the furnace and communicating with the pipe C in the rear of the orifice of the steam-pipe therein, a jacket or casing surrounding the pipe C and communicating with the interior of the same in the rear of the orifice of the steam-pipe, said casing being connected or adapted for connection with a chamber containing noxious or disagreeable gases, and dampers in the hot-air pipes and those connecting the casing with the gas-chamber, whereby the relative amounts of air or gas entering the furnace may be regulated, as set forth.

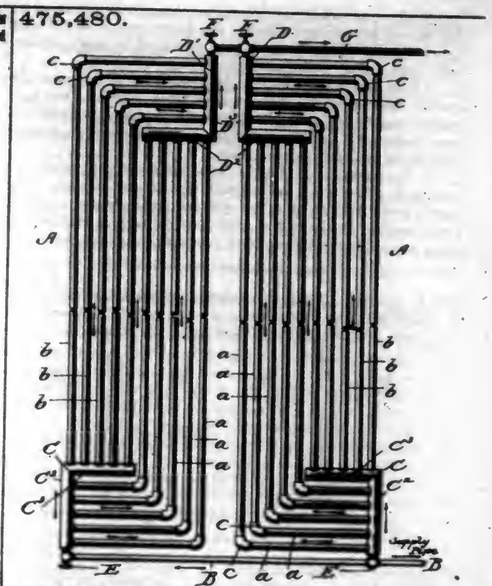
475,479. LOW-PRESSURE STEAM-BOILER. HENRY ABEL, Carlstadt, N. J. Filed Mar. 19, 1891. Serial No. 385,614. (No model.)



Claim.—The combination, in a low-down low-pressure boiler, with its fire box or furnace and its outer walls, of a water-box having lateral water-legs inclosing the fire-box and intermediate tubular water-legs dividing the fire-box from front to rear into sections, a combustion-chamber above the water-box, vertical flues enlarged at their lower ends and contracted at their upper ends, extending through the water-box from the fire-box to the combustion-chamber, a steam-chest above the combustion-chamber, vertical flues extending through the combustion-chamber and connecting the water-box with the steam-chest, a smoke-flue extending through the steam-chest and communicating with the combustion-chamber, a manifold pipe at the rear of the furnace communicating with the lower ends of the several water-legs, and a system of circulating-pipes connected with said manifold and with the steam-chest, all substantially in the manner and for the purpose herein set forth.

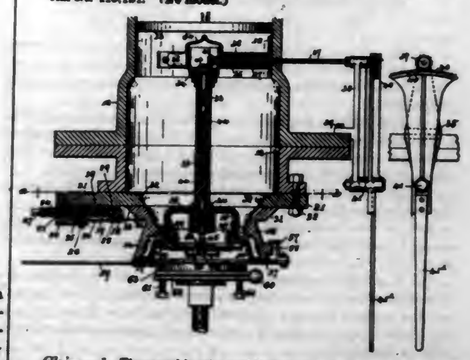
475,480. SYSTEM OF PIPES FOR HEATING LUMBER-KILNS. ALBERT T. BOHN, Louisville, Ky. Filed Aug. 31, 1891. Serial No. 404,394. (No model.)

475,480.



Claim.—The combination, with the manifolds C and D, consisting of the body portions C^3 and D^2 and the arms C^2 and D^2, arranged at right angles to the body portions, of the short and long pipes *a*, having portions at right angles to other portions and connected by elbow-couplings arranged in the same horizontal plane with the manifolds and connecting the body portion C^3 of the manifold C with the arm D^2 of the manifold B, the pipes *b*, connecting the arm C^2 of the manifold C with the body portion D^2 of the manifold D, and the supply and exhaust pipes B and G, the manifolds at one end being arranged adjacent to each other in the center and the other manifolds arranged upon the outside, all arranged substantially as and for the purpose described.

475,481. MACHINE FOR MOLDING EARTHENWARE PIPES, &c. EDWARD B. BROOKE, Huddersfield, England. Filed Dec. 15, 1891. Serial No. 415,121. (No model.)



Claim.—1. The combination, with a clay-cylinder provided with a plate at its lower end, of a removable die, blocks sliding in horizontal dies on the said plate and adapted to secure the said die in position, and screws for moving the said blocks back and forth in their guides, substantially as set forth.

2. The combination, with a clay-cylinder provided with a plate at its lower end, of a removable die, blocks sliding in dovetailed guides on the said plate and adapted to secure the said die in position, removable nuts secured in bosses on the said plate, and screws engaging with the said nuts and adapted to move the said blocks back and forth in their guides, substantially as set forth.

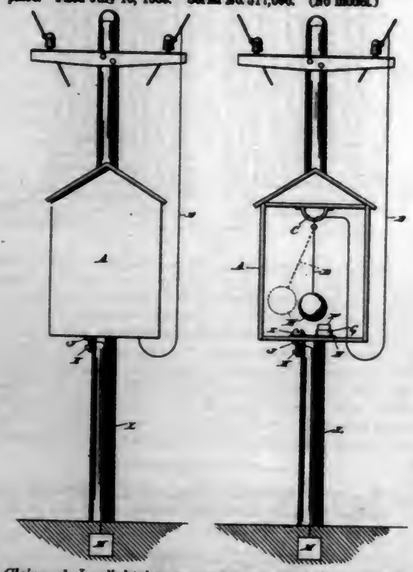
3. The combination, with the outer die and the bell-core provided with a hollow stem, of an operating-rod passing through the said stem, a circular box mounted on the end of the said rod inside the bell-core, toothed bars provided with knives sliding in guides in the said box, and a toothed pinion secured to the said rod and gearing

into the said toothed bars, whereby the knives may be moved back and forth in the said box and revolved to cut off the pipes, substantially as set forth.

4. The combination, with the stationary die, of the vertically-movable table under the die, said table being formed of two horizontally-hinged parts and provided with adjusting-screws, whereby the upper surface of the table may be held horizontal or at an angle under the said die, substantially as set forth.

5. The combination, with the die provided with the inclined projections 58, of the table provided with slots 65, and the bent fingers provided with bolts sliding in the said slots, whereby the position of the fingers may be adjusted to adapt them to engage with the said projections on dies of different sizes, substantially as set forth.

475,482. LIGHTNING-ARRESTER. JAMES R. BROWNE and FREDERICK H. TIDMAN, Elizabeth, N. J., assignors to James R. Browne, same place. Filed July 10, 1889. Serial No. 317,096. (No model.)



Claim.—1. In a lightning-arrester, a swinging ball or pendant suspended by a universally-jointed rod or device and divided by a space from a grounding device, for the purpose and operating substantially as described.

2. In a lightning arrester, the combination of the box or envelope A, the main-line connection B, the support C, the looped or linked rod D, the ball or pendant E, suspended over a grounding device F by means of said rod D, and operating substantially as described.

3. In a lightning-arrester, the universally-jointed rod D, suspending the pendant E, (said pendant E being capable of moving in any direction,) in combination with the grounding device F, said grounding device F being electrically connected by suitable means with ground-wire L, for the purpose and operating substantially as described.

4. In a lightning-arrester, the combination, with an electrical circuit, of the box or envelope A, main-line connection B, the support C, and the pendant E, suspended over grounding device F, said grounding device F being electrically connected with ground-wire L, substantially as described.

475,488. CLAY-REDUCER. WALFRID BURKHAN, San Francisco, Cal. Filed June 4, 1891. Serial No. 395,104. (No model.)

Claim.—1. In a clay-reducer, the combination of the toothed rolls F F, having intermeshing gears f, the conical rolls H H', the shaft G, with pulley g', the pinions g and f', by which the power of shaft G is transmitted to one of the rolls F, the shaft I, having pulley i, the pinion A^2, idler A^3, and gear k', connecting shaft I with conical roll H', whereby said roll is driven at one rate of speed, the pulley A on the other conical roll H, the driving-pulley S below, and the single belt R, passing around pulleys i, A, and g', whereby all the rolls are driven and the conical roll H has imparted to it a higher speed than that given the conical roll H', substantially as herein described.

2. In a clay-reducer, the opposing plates J K, with intermediate overlapping pins, said plate K having the hub with feed-apertures around it, the crushing-rollers, a funnel projecting outwardly from the

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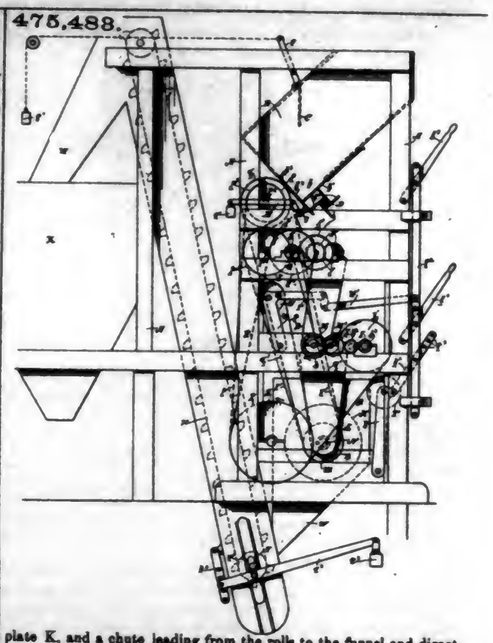


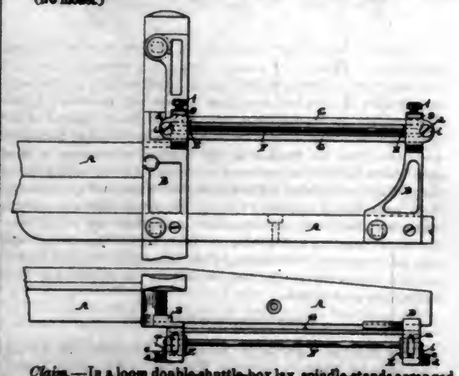
plate K, and a chute leading from the rolls to the funnel and directing the material to the apertures, substantially as herein described.

3. In a clay-reducer, the opposing plates J K, with intermediate overlapping pins, the plate K, having the hub provided with feed-apertures around it, the concentric shafts upon which the plates are separately mounted, said shafts having pulleys, and the means for driving said shafts in opposite directions, consisting of the independent countershafts above, the belt p, driving said shafts in opposite directions, and the belts q' and r' from said shafts to the pulleys of the concentric shafts, substantially as herein described.

4. In a clay-reducer, the combination of the crushing-rollers, the direction-chute therefrom, the opposing plates J and K, provided with concentric rows of overlapping pins, and each plate having upon its inner surface concentric rows of flanges, which overlap the spaces between the ends of the pins and the plates to prevent the escape of the material at these points, and a funnel projecting from the plate K and communicating with apertures therein, substantially as herein described.

5. In a clay-reducer, the combination of the elevator having its lower shaft mounted in sliding bearings, the tightening-lever connected with said shaft, and the swinging link adjustably connecting one end of the lever and the weight on its other end, substantially as herein described.

475,484. PICKER-SPINDLE STAND. JOHN T. BYRNE and WILLIAM J. LAFFERTY, Philadelphia, Pa. Filed Nov. 6, 1891. Serial No. 411,117. (No model.)



Claim.—In a loom double-shuttle-box lay, spindle-stands arranged at the end thereof and provided with elongated slots P, in combination

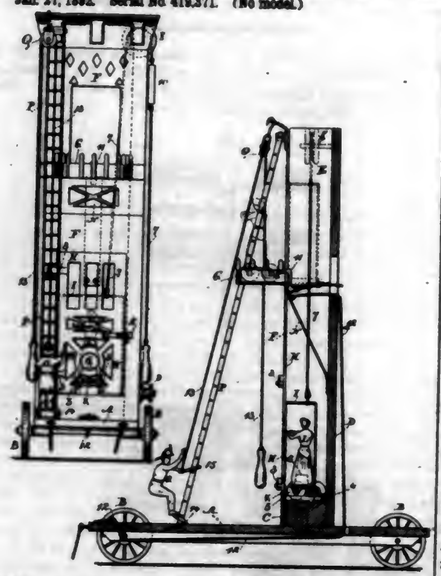
with the spindle-socket pieces E, adapted to slide in said slots, the adjusting-screws i i for moving the pieces E, set-screws for fastening the same in position, guide-bars G G, supported in said stands, and the picker-spindle carried by said pieces E, substantially as described.

475,485. COMBINED PENCIL HOLDER, SHARPENER, AND ERASER. CYRUS B. CAMPBELL, Glouster, Ohio, assignor of two-thirds to David S. Beverly and J. M. Allen, same place. Filed Oct. 20, 1891. Serial No. 409,353. (No model.)



Claim.—A combined pencil-holder, pencil-sharpener, and eraser consisting of a block having a slot near its center and a notch at each side of said slot, the clamp consisting of a piece of spring-wire bent upon itself and having its ends secured to the holder, a cutting-blade located in said slot, and the erasers in the ends of the block, substantially as described.

475,486. TOY. FRANCIS W. CARPENTER, Harrison, N. Y. Filed Jan. 27, 1892. Serial No. 419,371. (No model.)



Claim.—1. The combination, in a toy elevator, of an inclosing case, a door for giving access to the elevator, a pulley and a cord or chain passing over the pulley and connected with the elevator, a toy figure and a rolling base for supporting the same, and means for projecting the base and figure from the elevator when raised, substantially as set forth.

2. The combination, in a toy elevator, of a vertical frame or support, an elevator guided by the frame or support, a pulley, and a cord or chain over the pulley for raising the elevator, a figure-base, and wheels for supporting the same adapted to be received in the elevator, and a device for projecting the base from the elevator upon the floor or support to which the elevator is raised, substantially as set forth.

3. The combination, with a toy elevator and its inclosing case, of a door or opening to admit a toy figure near the bottom of the case, a toy figure adapted to be placed within the elevator, a pulley and cord or chain for raising the elevator, and a spring to discharge the figure from the elevator, substantially as set forth.

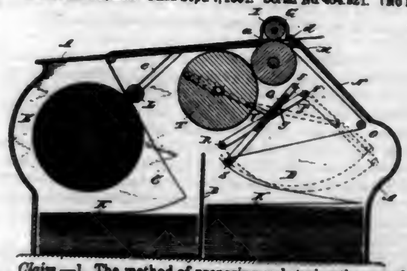
4. The combination, in a toy elevator, of a vertical frame or support, a pulley, and a cord or chain passing over the pulley and connected with the elevator, a toy figure and a base for supporting the same, and means for projecting the base and figure from the elevator when raised, substantially as set forth.

5. The combination, in a toy, of a carriage and wheels, a case resting upon the carriage, a connecting device for holding the case in position upon the carriage, an elevator within the case, a pulley and cord over the pulley for raising or lowering the elevator, a door near the lower portion of the case to give access to the elevator, a floor and a balcony at the level to which the elevator is raised, and a toy figure adapted to be moved out of the elevator, substantially as set forth.

6. The combination, in a toy, of a carriage and wheels, a base-block permanently fastened upon the carriage, a case resting upon the carriage and held in position by the base-block, an elevator within the case, a pulley and cord over the pulley for raising or lowering the elevator, a door near the lower portion of the case to give access to the elevator, a floor and a balcony at the level to which the elevator is raised, a spring within the case pressed back by the elevator as it is raised, a finger upon the spring, and a toy adapted to be placed within the elevator and to be projected therefrom by the finger, substantially as set forth.

7. The combination, in a toy, of a carriage and wheels, a base-block permanently fastened upon the carriage, a case resting upon the carriage and held in position by the base-block, an elevator within the case, a pulley and cord over the pulley for raising or lowering the elevator, a door near the lower portion of the case to give access to the elevator, a floor and a balcony at the level to which the elevator is raised, a spring within the case pressed back by the elevator as it is raised, a finger upon the spring, a toy adapted to be placed within the elevator, a base with rollers to support the toy, a ladder connected at its upper end with the upper part of the case and resting at its lower end upon the carriage, a figure adapted to be moved up or down the ladder, and a cord connected with such figure and a pulley over which the same passes, substantially as set forth.

475,487. AUTOGRAPHIC REGISTER. SAMUEL D. COCHRAN, Wyoming, Ohio, assignor, by mesne assignments, to Albert H. Walton, trustee, same place. Filed Sept. 7, 1891. Serial No. 404,921. (No model.)



Claim.—1. The method of preparing and storing the record-strip of autographic registers, consisting in folding it back and forth in bellows folds before it is placed within the register and then placing it in the register and passing it up out over the writing-tablet and back into the register, where it automatically resumes its folded position.

2. In an autographic register, the combination, with the tablet-face and the feed-rollers, of the record-strip K, previously folded into bellows folds and placed in the machine at one side of the tablet-face, said strip being led over the tablet-face and between the feed-rollers and deposited upon the opposite side thereof, whereby the supply of record-strip is carried in the machine in the folded form described and automatically resumes such folded form after having been passed over the writing-tablet and between the feed-rollers.

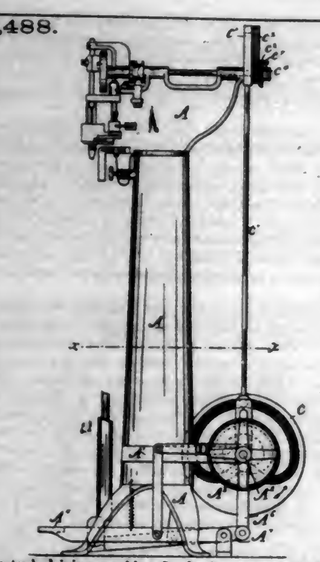
3. In an autographic register, the combination, with the tablet-face and feed-rollers, of means for supporting the check strip or strips carried in the form of a roll E and the record-strip K, previously folded into bellows folds and placed in the machine at one side of the tablet-face, said strip being led over said tablet-face and between the feed-rollers with the check strip or strips from the roll E and thence deposited in the machine, where it resumes its folded position, substantially as described.

4. In an autographic register, the combination, with the feed-roll H, of the roll I in frictional contact therewith, the crank U, carried by said roll H, the pitman V, arms P Q, and the guiding-fingers R S, substantially as described, and for the purpose specified.

475,488. TACK-DRIVING MACHINE. GEORGE W. COPELAND, Malden, assignor to the Boston Lasting Machine Company, Boston, Mass. Filed Feb. 16, 1891. Serial No. 381,644. (No model.)

Claim.—1. In a tack-driving machine for lasting boots and shoes of the class described, the combination of suitable tack-driving mechanism with the jack-post B^2, the spring B^3, the sleeve B', the lever A^7, provided with the link connection A^6, the cam A^5, mounted upon the shaft A^4, and treadle and clutch machine starting and stopping mechanism, all operating substantially as shown and described.

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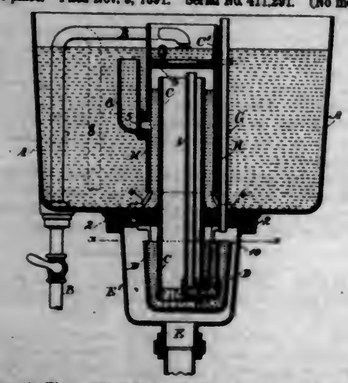
2. In a tack-driving machine for lasting boots and shoes of the class described, suitable tack-driving mechanism, in combination with the jack B, the cam A^3 for raising, holding, and lowering said jack, the connecting and jack-supporting lever A^7, and suitable operating and connecting mechanism for said cam, substantially as shown and described.

3. In a tack-driving machine for lasting boots and shoes of the class described, in combination with suitable tack-driving mechanism, the hub C^4, the pinion C^5, provided with connecting mechanism, substantially as described, to the cam C, the cam C, and suitable operating mechanism for said cam, substantially as shown and described.

4. In a tack-driving machine for lasting boots and shoes of the class described, the combination, with suitable tack-driving mechanism, of the cams A^2 and C, mounted upon the shaft A^2, combined with proper clutch-pulley mechanism and provided with the starting-treadle A^6, substantially as described, and a jack and intermediate connecting mechanism, for the purpose set forth.

5. In combination with a tack-driving machine for lasting boots and shoes, a pivotally-mounted jack, and mechanism for raising and supporting the same and operating substantially as described, tack-driving mechanism of the class described operating automatically in combination with the jack raising and supporting mechanism, and treadle and clutch machine starting mechanism, and intermediate connections between the jack-raising and tack-driving mechanisms, all operating substantially as shown and described.

475,489. FLUSHING CISTERN OR TANK FOR WATER-CLOSETS. JOHN DEMAREST, New York, N. Y., assignor to The J. L. Mott Iron Works, same place. Filed Nov. 9, 1891. Serial No. 411,291. (No model.)

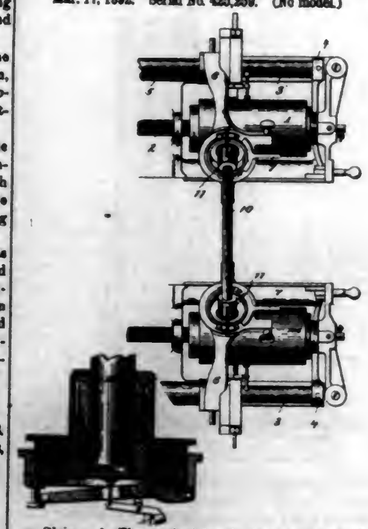


Claim.—1. The combination, with the cistern and flushing-pipe, of a flushing-cup within the flushing-pipe, a standing siphon-pipe with the open lower end within the flushing-cup and rising within the cistern, a siphon-pipe with a closed upper end and open lower end surrounding the standing pipe, a tubular shield 6, connected with the siphon-pipe at one side thereof, there being a hole in such siphon-pipe at the lower end of the shield, and an inverted siphon-pipe having a long leg within the standing siphon-pipe and the short leg opening at the water-level, or nearly so, in the flushing-cup, substantially as set forth.

2. The combination, with the cistern and flushing-pipe, of a flushing-cup within the enlarged upper end of the flushing-pipe, a standing siphon-pipe with the open lower end within the flushing-cup and rising within the cistern, a siphon-pipe with a closed upper end and open lower end surrounding the standing pipe, there being a hole in such siphon-pipe, and an inverted siphon air-pipe having the long leg within the standing siphon-pipe and the short leg opening at the water-level, or nearly so, in the flushing-cup, the tubular shield 6, surrounding and rising above the hole 5 in the siphon-pipe, the cup C at the upper end of the siphon-pipe H, into which the water is discharged by the supply-pipe, and the deflector 7 at the opening in the side of such supply-cup, substantially as set forth.

3. The combination, with the cistern and the supply-pipe and the flushing-pipe, of the flushing-cup, the standing pipe of the siphon opening at its lower end within the flushing-cup, the siphon-pipe closed at its upper end, open at its lower end, and surrounding the standing pipe of the siphon, an inverted siphon-pipe, the long leg of which is within the standing pipe and the upper end of the shorter leg at or near the water-level in the flushing-cup, there being an air-inlet opening into the siphon-pipe below the upper end of the standing pipe, and an air-pipe passing through the bottom of the cistern into the flushing-pipe and rising above the water in the cistern, substantially as set forth.

475,490. METHOD OF AND MEANS FOR DUPLICATING OR TRANSFERRING PHONOGRAPHIC RECORDS. LEON F. DOUGLASS, Washington, D. C., assignor to Edward D. Easton, same place. Filed Mar. 17, 1892. Serial No. 425,259. (No model.)



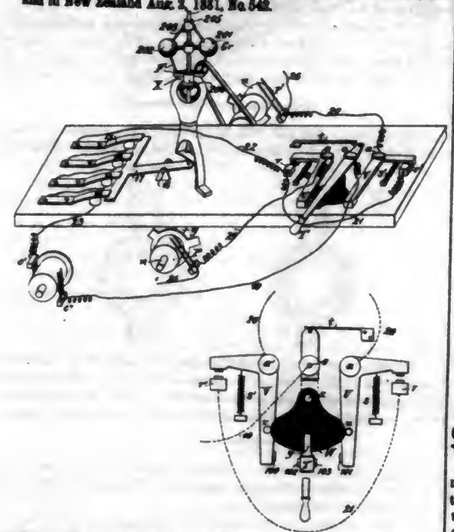
Claim.—1. The method herein described of duplicating or transferring phonographic records, which consists in delivering the sound-waves emitted by the reproducing-diaphragm in contact with the record-phonogram to a receiving-diaphragm, which actuates the cutting-stylus in contact with the receiving-phonogram blank, thereby making a copy of said sound-waves upon the receiving phonogram-blank, substantially as and for the purposes described.

2. The combination, with the record-phonogram, of a receiving-blank phonogram, a diaphragm for receiving vibrations from the record-phonogram, and a diaphragm for transmitting vibrations or sound-wave forms on the receiving-blank phonogram, substantially as and for the purposes described.

3. The combination, with the record-phonogram, of a diaphragm adapted to be vibrated thereby, a diaphragm adapted to be vibrated by the sound-waves emitted by the first diaphragm, and a receiving-blank phonogram for receiving the vibrations from the latter diaphragm, substantially as and for the purposes described.

4. The combination, with the record and receiving-blank phonograms, of diaphragms in juxtaposition thereto, provided with reproducing and cutting styli, and a conduit of rarefied air connecting the two diaphragms, substantially as and for the purposes described.

475,491. ELECTRIC LOCOMOTIVE. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Original application filed June 3, 1880, Serial No. 11,243. Divided and application filed May 20, 1882, Serial No. 61,955. Again divided and this application filed June 9, 1891. Serial No. 396,701. (No model.) Patented in England Sept. 25, 1880, No. 3,894; in Canada Mar. 31, 1881, No. 12,568; in India May 3, 1881, No. 341; in Victoria May 12, 1881, No. 3,012; in France May 27, 1881, No. 141,752; in New South Wales June 25, 1881, No. 948; in Queensland June 30, 1881, No. 21/290, and in New Zealand Aug. 2, 1881, No. 542.



Claim.—1. An electric railway having, in combination, the following elements, to wit: a stationary dynamo-electric generator, a wheeled vehicle traveling upon rails, an electro-dynamic motor mounted upon such wheeled vehicle, having its field and armature coils in separate circuits, electrical connections between the motor upon the vehicle and said generator, and controlling devices mounted upon said wheeled vehicle for starting, stopping, and reversing its movement, whereby the movement of the wheeled vehicle can be completely controlled by a person riding thereon, substantially as set forth.

2. In an electric railway, the combination of a stationary dynamo-electric machine, a wheeled vehicle traveling upon rails, an electro-dynamic motor upon said vehicle, electrical connections between said motor and said dynamo-machine, a manually-operated controlling device upon the vehicle for starting, stopping, or reversing the movement of the motor, whereby the movement of said vehicle may be controlled by a person riding thereon, and an automatic circuit breaker in the motor circuit, operated by variations in the speed to reduce the speed of the car whenever it exceeds a predetermined maximum, substantially as described.

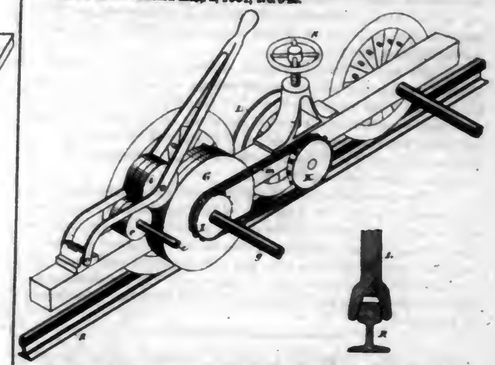
3. In an electric railway, the combination of a stationary dynamo-electric machine, a wheeled vehicle traveling upon rails, an electro-dynamic motor located upon said vehicle, by which it is propelled, electrical connections between said motor and said dynamo, a switch for reversing the direction of current in said motor, and a circuit-breaker to vary the current in said motor, automatically operated by a mechanical connection between a rotating part of the vehicle and a rotating part of the circuit-breaker, substantially as described.

4. In an electric railway, the combination of a stationary dynamo-electric machine, a wheeled vehicle traveling upon rails, an electro-dynamic motor located upon said vehicle, by which it is propelled, electrical connections between said motor and said dynamo, and a circuit-breaker in the motor-circuit located on the car, having a number of contact-points connected in series with each other, whereby sparking at the break-points is obviated, substantially as described.

5. In an electric railway, the combination of a stationary dynamo-electric machine, a wheeled vehicle traveling upon rails, an electric motor on the vehicle, electrical connections between said motor and said dynamo, a controlling device on the vehicle for starting, stopping, and reversing its movement, and means for automatically varying the speed of movement, all arranged substantially as described.

6. The combination, with an electric motor mounted upon and actuating the car, of the main driver-axle, a governor receiving motion from the latter, and a circuit-breaker arranged to break or close the circuit at a number of points controlled by the governor, all operating to break the circuit of the motor simultaneously at several points upon the attainment of a predetermined rate of speed and avoid or reduce sparks in so doing, substantially as set forth.

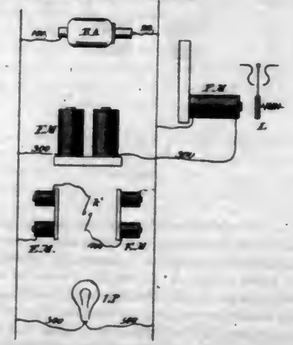
475,492. ELECTRIC LOCOMOTIVE. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Original application filed June 3, 1880, Serial No. 11,243. Divided and application filed May 20, 1882, Serial No. 61,955. Again divided and this application filed June 9, 1891. Serial No. 396,702. (No model.) Patented in England Sept. 25, 1880, No. 3,894; in Canada Mar. 31, 1881, No. 12,568; in India May 3, 1881, No. 341; in Victoria May 12, 1881, No. 3,012; in France May 27, 1881, No. 141,752; in New South Wales June 25, 1881, No. 948; in Queensland June 30, 1881, No. 21/290, and in New Zealand Aug. 2, 1881, No. 542.



Claim.—1. The combination of a wheeled vehicle, an electric motor located thereon mechanically connected with a wheel or axle thereof, a source of electricity, a circuit including said source of electricity and motor, a track composed of rails upon which said vehicle travels, and a supplemental grooved traction-wheel upon said vehicle rotated by the same source of power as the motor, adapted to grasp or grip the track, substantially as described.

2. The combination of a wheeled vehicle, an electric motor located thereon mechanically connected with a wheel or axle thereof, a source of electricity, a circuit including the source of electricity and motor, a track composed of rails upon which said vehicle travels, a supplemental traction-wheel upon said vehicle rotated by the same source of power as the motor, and means for mechanically connecting and disconnecting said wheel with respect to the track, whereby said wheel may be used as necessity requires, substantially as described.

475,498. ELECTRIC LOCOMOTIVE. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Original application filed June 3, 1880, Serial No. 11,243. Divided and application filed May 20, 1882, Serial No. 61,955. Again divided and this application filed June 9, 1891. Serial No. 396,703. (No model.) Patented in England Sept. 25, 1880, No. 3,894; in Canada Mar. 31, 1881, No. 12,568; in India May 3, 1881, No. 341; in Victoria May 12, 1881, No. 3,012; in France May 27, 1881, No. 141,752; in New South Wales June 25, 1881, No. 948; in Queensland June 30, 1881, No. 21/290, and in New Zealand Aug. 2, 1881, No. 542.



Claim.—1. In an electric railway having a suitable source of current and supply conductors, the combination, with a car, of an electric motor mounted thereon and two derived or multiple-arc circuits, one

including the rotating armature of the motor, the other including the coils of the field-magnets, substantially as set forth.

2. The combination, with the track-rails used as conductors, wheels having insulated flanges, and means for conveying current therefrom, of several multiple-arc circuits across from rail to rail upon the same car, each containing a device used in running, controlling, or lighting the car, substantially as set forth.

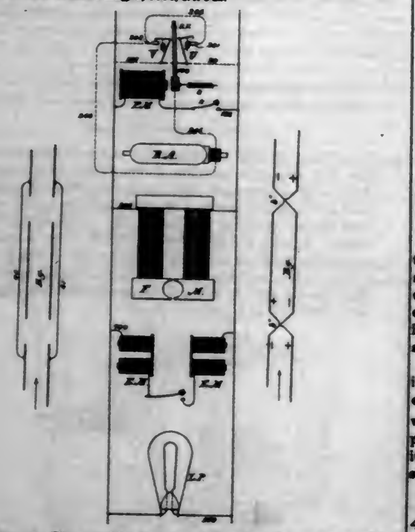
3. The combination, in an electric-railway system, of a source of current and supply conductors, a car, an electro-dynamic motor on the car and having connection with the supply-conductors, and other electrical devices also on the car and in separate multiple-arc branches, substantially as described.

4. The combination, in an electric-railway system, of a source of current and supply conductors, a car, an electro-dynamic motor on the car and having connection with the supply-conductors, and other electrical devices also on the car and in separate multiple-arc branches, substantially as described.

5. The combination, in an electric-railway system, of a stationary dynamo-electric machine, a moving vehicle, an electro-dynamic motor located on the vehicle by which it is propelled, a circuit, including the dynamo-machine at the station, the motor on the car and a visible indicating device, such as a lamp, the field-coils of the motor, the armature-coils, and the indicating device being in separate parallel branches, substantially as described.

6. The combination, in an electric-railway system, of a stationary dynamo-electric machine, a moving vehicle, an electro-dynamic motor located on the vehicle by which it is propelled, a circuit, including the stationary dynamo-machine, the motor on the car and an electro-magnetic traction device so arranged with respect to each other that the field-coils of the motor, the armature-coils, and the electro-magnetic traction device are in separate parallel branches, substantially as described.

475,494. ELECTRIC RAILWAY. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Original application filed June 3, 1880, Serial No. 11,343. Divided and application filed May 20, 1882, Serial No. 61,955. Again divided and this application filed June 9, 1891. Serial No. 396,704. (No model.) Patented in England Sept. 20, 1880, No. 3,994; in Canada Mar. 31, 1881, No. 12,569; in India May 3, 1881, No. 341; in Victoria May 13, 1881, No. 3,012; in France May 27, 1881, No. 141,753; in New South Wales June 25, 1881, No. 943; in Queensland June 30, 1881, No. 21/296, and in New Zealand Aug. 3, 1881, No. 542.



Claim.—1. The combination, in an electric-railway system, of a stationary source of electricity, a moving vehicle, an electric motor on the vehicle, mechanical connections between the rotating part of the motor and a wheel or axle of the vehicle, a main line of conductors extending from the source of electricity to the vehicle, having a section thereof isolated from adjacent sections in the same line, and traveling contacts connecting the circuit on the vehicle with said main line or circuit or a section thereof, whereby the variation due to the described arrangement of the main line is automatically imparted to the motor to produce a corresponding variation in the movement of the vehicle, substantially as described.

2. The combination, in an electric-railway system, of a stationary source of electricity, a moving vehicle, an electric motor on the vehicle, a mechanical connection between the driving part of the motor and the driven part of the vehicle, conductors extending from the source of electricity to the motor, one or more sections of said conductors being arranged to present a predetermined variation in the electrical condition thereof, substantially as described, and traveling contacts for connecting the motor-circuit on the car with said conductors, whereby the movement of the vehicle is made to correspond with the condition of the track or rails.

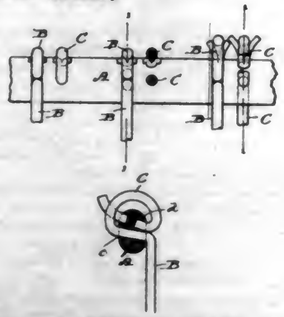
3. In an electric railway, the combination, with a section of main conductors, of a short section thereof cut out of the main section and connected reversely thereto by conductors arranged to reverse the direction of the current in such short section, substantially as set forth.

475,495. SINKER FOR SYRINGE-TUBES. ANTON C. BOOERS, Brooklyn, N. Y. Filed Mar. 19, 1892. Serial No. 426,539. (No model.)



Claim.—A sinker for syringe-tubes, composed of a ring-shaped body having tubular ends and a channel extending along one side of the ring-shaped sinker and connecting with the tubular ends, while the remaining portion of the sinker is solid, substantially as set forth.

475,496. FLY-NET. WILLIAM J. REDMANN, Milwaukee, Wis., assignor to Victor D. Fischbeck, same place. Filed Sept. 17, 1891. Serial No. 406,945. (No model.)



Claim.—1. In a fly-net, a longitudinal leather bar provided at intervals of its length with transverse openings and a perforation at an angle to each of these openings, and a series of leather lash-sections, each of which latter has a small portion of itself extending from an extremity of one of the perforations, is looped on the bar, has the loop impinged upon said small portion of itself, and is passed through the adjacent transverse opening, substantially as set forth.

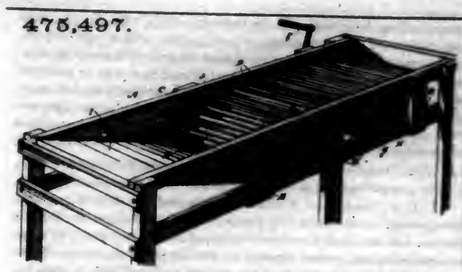
2. In a fly-net, a longitudinal leather bar provided at intervals of its length with transverse openings and a perforation at an angle to each of these openings, and a series of leather lash-sections, each of which latter has a split end extending from an extremity of one of the perforations and is looped on the bar, engaged with said split end of itself, and passed through the adjacent transverse opening in said bar, substantially as set forth.

475,497. FRUIT-GRADER. GEORGE A. FLEMING and CHARLES F. FLEMING, San José, Cal. Filed July 16, 1891. Serial No. 399,743. (No model.)

Claim.—1. In a fruit-grader, a traveling table upon which the fruit is carried, said table having a drop-bottom, and an underlying inclined or graduated guide upon which said bottom rests, whereby it may drop to different distances to discharge fruit of different sizes, substantially as herein described.

2. In a fruit-grader, a traveling table for carrying the fruit, consisting of the series of swinging drop-flaps forming the table-bottom, and means for separately controlling the drop of each flap to different angles to effect the discharge therefrom of different-sized fruit, substantially as herein described.

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3. In a fruit-grader, a traveling table for carrying the fruit, consisting of a series of swinging drop-flaps forming the table-bottom and underlying inclined or graduated guides upon which said flaps rest and travel, whereby they are allowed to drop to different angles to discharge fruit of different sizes, substantially as herein described.

4. In a fruit-grader, the combination of endless traveling side chains, a series of parallel transverse drop-flaps carried by said chains and forming therewith a table for the reception and carrying of the fruit, and a means for controlling the drop of said flaps to different angles to discharge fruit of different sizes, substantially as herein described.

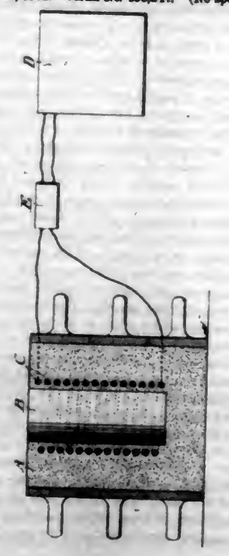
5. In a fruit-grader, the combination of endless traveling side chains, a series of parallel transverse drop-flaps carried by said chains and forming therewith a table for the reception and carrying of the fruit, and a means for controlling the drop of said flaps to different angles to discharge fruit of different sizes, consisting of inclined or graduated guides over and upon which the flaps travel and rest, substantially as herein described.

6. In a fruit-grader, the combination of endless traveling side chains, a series of parallel cross-cleats secured to said chains, a series of parallel transverse drop-flaps hinged to the cross-cleats and adapted to receive and carry the fruit, and means for controlling the drop of said flaps to different angles to discharge fruit of different sizes, substantially as herein described.

7. In a fruit-grader, the combination of the endless traveling side chains, the series of drop flaps carried thereby, the inclined or graduated guides over and upon which said flaps travel and rest, and the underlying series of hoppers, substantially as herein described.

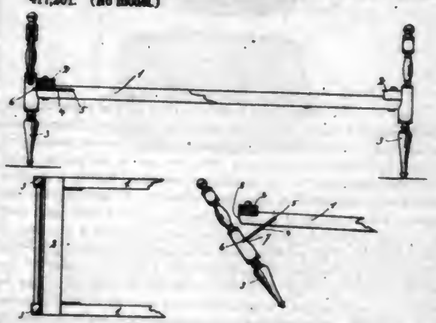
8. A fruit-grader consisting of the frame, the endless traveling side chains mounted therein, the series of drop-flaps carried by the chains, the front guides for holding the uprising flaps in position, the feed-chute for supplying the fruit to the flaps, the inclined or graduated guides over and upon which the flaps travel and rest, and the underlying hoppers, substantially as herein described.

475,498. PROCESS OF RENDERING IRON, STEEL AND OTHER SIMILAR METALS HOMOGENEOUS. JOSEPH C. FRALEY, Philadelphia, Pa. Filed July 21, 1891. Serial No. 400,247. (No specimens.)



Claim.—The hereinbefore-described process of rendering iron, steel, and similar metals homogeneous, which consists in exposing the metal while in a heated condition within a magnetic field and repeatedly varying such magnetic field during the cooling of the exposed metal, substantially as specified.

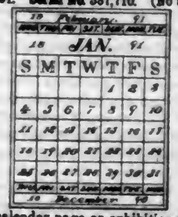
475,499. FOLDING BED. WILLIAM P. GRIFFITH, Rome, N. Y., assignor to Carpenter & Dyett, same place. Filed Jan. 6, 1892. Serial No. 417,201. (No model.)



Claim.—1. The combination, in a folding cot or bed, of side rails and cross-bars secured on the top thereof at the ends and forming a frame, a folding leg, a link pivoted at one end to the leg and at the other to the side rail, and an inclined shoulder on the leg adapted to receive the beveled end of the side rail, substantially as set forth.

2. The combination, in a folding cot or bed, of side rails 1, cross-bars 2, secured on the top and ends thereof, forming a frame, a folding leg provided with an inclined shoulder or offset, and a link pivoted to the side rail and to the leg adjacent to the shoulder and adapted to bind the leg against the end of the side rail and support the frame on the shoulder, substantially as set forth.

475,500. CALENDAR. WILLIAM C. HAWKINS, Taunton, Mass. Filed Apr. 4, 1891. Serial No. 387,710. (No model.)

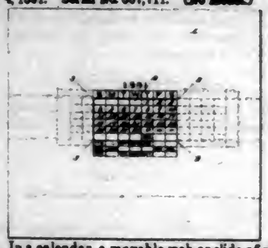


Claim.—1. A calendar page or exhibition-face containing one or more columns or rows of names or abbreviations of names of the days of the week for the month or months last past and one or more columns or rows of names or abbreviations of names of the days of the week for the month or months next ensuing, one or both sets of said names, in addition to a table of dates and a corresponding column or row of names or abbreviations of names of the days of the week for the current month, said additional columns or rows being arranged to conform in position to the columns or rows of date-figures of the current month, so as to indicate the proper day of the week for the proper dates of the said past or coming months, substantially as set forth.

2. A calendar consisting of pages or exhibition-faces containing each a table of dates consisting of thirty-one date-numbers arranged in seven rows or columns corresponding to the days of the week and two or more rows or columns of names or abbreviations of names of the days of the week, one of said columns or rows of names being placed with reference to said table of date-numbers to suit the current month and the others placed to suit a month or months last past and a month or months next ensuing, one or both, substantially as set forth.

3. In a calendar, pages or exhibition faces containing each a table of date-numbers with thirty-one numbers thereon and one or more columns or rows of names or abbreviations of the names of the days of the week arranged in suitable order for reference to said table of date-numbers for the given months, each page or face having printed or otherwise displayed thereon the last three date-numbers distinguished in color, form, size, or otherwise from the other date-numbers, substantially as set forth.

475,501. CALENDAR. WILLIAM C. HAWKINS, Taunton, Mass. Filed Apr. 4, 1891. Serial No. 387,711. (No model.)



Claim.—1. In a calendar, a movable web or slide of paper or other suitable material having printed or otherwise displayed thereon thirteen columns of date-numbers disposed so that any seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar-table for one month, in combination with a card or mount having displayed on one or both sides one or more rows of the names or abbreviations of names of the days of the week, said card also having displayed thereon or conjoined therewith a plurality of series of names of the months, each series containing seven groups of said months and having displayed thereon, also, the number of the year for which the series is to serve, whereby said calendar may be made to serve for as many years as there are separate series of month-groups and their accompanying year-numbers provided, substantially as set forth.

2. In a calendar, the combination of a slotted or recessed card or mount having displayed on one or both sides or conjoined therewith one or more series of seven groups of the names or abbreviations of names of the months and one or more rows of the names or abbreviations of names of the days of the week, and an endless web of paper or other suitable material passing through said slots or recesses in said card, having displayed thereon thirteen columns of date-numbers disposed so that any group of seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar-table for one month, substantially as set forth.

3. In a calendar, a movable web or slide of paper or other suitable material having displayed thereon thirteen columns of date-numbers disposed so that any group of seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar-table for one month, and having also displayed thereon one or more series of seven groups of the names or abbreviations of names of the months, in combination with a card or mount having displayed thereon one or more rows of names or abbreviations of names of the days of the week, said card being constructed to expose to view any seven consecutive columns of figures on said web or slide, and containing one or more openings of proper dimensions and suitably placed to expose to view through each of said openings one of each of said month-groups for each of the seven positions of said slide or web, substantially as set forth.

4. In a calendar, a strip of paper or other suitable material having displayed thereon a table of date-numbers in thirteen vertical columns or rows and in six or more horizontal rows, said date-numbers in each vertical column or row increasing downward by sevens and in the horizontal rows increasing to the right by units from any given number, said slip also having displayed thereon a series of seven groups of the names or abbreviations of names of the months arranged so that the months having corresponding dates falling on the same day of the week for any given year shall be in the same group, substantially as and for the purposes set forth.

5. In a calendar, a movable web or slide of paper or other suitable material having printed or otherwise displayed thereon thirteen columns of date-numbers disposed so that any group of seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar of one month, said slide also having displayed thereon a series of seven groups of the names or abbreviations of names of the months set opposite or in line with the central seven of said thirteen date-columns, said month-groups being arranged so that the months having corresponding dates falling on the same day of the week shall be in the same group, in combination with a card or mount having displayed thereon a row of the names or abbreviations of names of the days of the week set to fall in line with any seven of said date-columns upon said movable web or slide, substantially as and for the purposes set forth.

6. In a calendar, a movable web or slide of paper or other suitable material having printed or otherwise displayed thereon thirteen columns of date-numbers disposed so that any group of seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar of one month, and having displayed thereon a series of seven groups of the names or abbreviations of names of the months, said month-groups being arranged so that the months having corresponding dates falling on the same day of the week for any given year shall be in the same group, in combination with a card or other suitable mount having an opening therein of proper dimensions to expose to view seven of said date-columns of said date web or slide and having displayed thereon a row of the names or abbreviations of names of the days of the week set opposite the places of said seven date-columns, and a covering-strip secured at the ends to said card or mount set to cover all seven of said month-groups displayed on said movable date slide, except one, and having a suitable opening therein to expose to view a month-group, substantially as and for the purposes set forth.

7. In a calendar, an endless movable web or slide of paper or other suitable material having printed or otherwise displayed thereon thirteen columns of date-numbers disposed so that any group of seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar of one month, said web also having displayed thereon a series of seven groups of the names or abbreviations of names of the months arranged so that the months having corresponding dates falling on the same day of the week shall be in the same group, in combination with a card or mount having slots cut therein for the reception of said web at the proper distance apart to expose to view at the front of said card seven of said thirteen columns and conceal at the back of said card the remaining six, and a covering-strip secured to said card at its ends, arranged to conceal all said month-groups, except one, and having an opening therein of proper dimensions to expose to view one only of the said month groups, said covering-slip having displayed thereon a row of the names or abbreviations of names of the days of the week set in line with the seven date-columns exposed, substantially as and for the purposes set forth.

8. In a calendar, a movable web or slide of paper or other suitable material having printed or otherwise displayed thereon thirteen columns of date-numbers disposed so that any group of seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar of one month, said date-slide having an opening where the numbers "29," "30," and "31" would otherwise appear in regular order, in combination with a card or other suitable mount arranged with an opening to expose to view seven of said date-columns, and an auxiliary slide made to move at right angles to said date-slide, having displayed thereon four rows, one blank row, one row containing at the left hand the number "29," one row with the numbers "29" and "30," beginning at the left hand, and one row with the numbers "29," "30," and "31," all placed on said auxiliary slide, so that by properly placing said slide for the several months the proper terminal numbers for a given month will appear at the opening in said date-slide, substantially as and for the purposes set forth.

9. In a calendar, an endless movable web or slide of paper or other suitable material having printed or otherwise displayed thereon thirteen columns of date-numbers disposed so that any group of seven consecutive columns shall contain all the dates necessary and in the proper order for a calendar of one month, and having an opening therein, where the numbers "29," "30," and "31" would otherwise come in regular order, and vertical and horizontal pointers on its upper edge, in combination with a card having two parallel slots cut therein to receive said endless web at the proper distance apart to expose to view on the front of said card seven of said date-columns, said card having displayed thereon a row of names or abbreviations of names of the days of the week, a series of seven groups of the names or abbreviations of names of the months arranged to come in line with the seven date-columns exposed to view, a second series of month-groups, and suitable groups or partial groups of the numbers "29," "30," and "31," substantially as and for the purposes set forth.

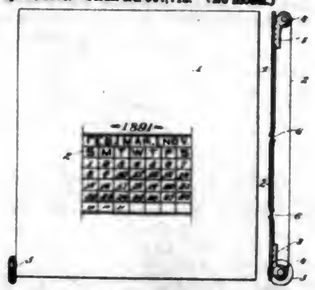
10. In a calendar designed to serve for a plurality of years, a movable date-slide having date-numbers displayed thereon mounted to move upon one member of any separate article of use or ornament suitable therefor, said member having displayed thereon a fixed row of the names or abbreviations of names of the days of the week set opposite the place of exposure of said dates, and the other member of said separable article having displayed thereon a corresponding plurality of series of seven groups of the names or abbreviations of names of the months and year-numbers, so that by changing the position of one member of said separable article upon the other member for each year the calendar mounted thereon may serve for as many years as there are separate series of seven month-groups and year-numbers, substantially as and for the purposes set forth.

11. In a calendar designed to serve for a plurality of years, a movable endless date web or slip having date-numbers displayed thereon and mounted upon and passing through two parallel slots in a card or mount, said card or mount having a fixed row of the names or abbreviations of names of the days of the week displayed thereon and set opposite the area of exposure of said dates, in combination with a slip or slips of paper or other suitable material mounted upon said card and having displayed thereon a corresponding plurality of series of seven groups of the names or abbreviations of names of the months and the year-numbers, substantially as and for the purposes set forth.

12. In a calendar designed to serve for a plurality of years, a movable endless date web or slip having date-numbers displayed thereon and mounted upon and passing through two parallel slots in a card or mount, said card or mount having a fixed row of the names or abbreviations of names of the days of the week displayed thereon and set opposite the area of exposure of said dates, in combination with slips of paper or other suitable material, each having displayed thereon a series of seven groups of the names or abbreviations of names of the months and the year-numbers, said slips being superimposed upon said card or mount opposite said area of exposure, so as to permit of their being changed or removed as required for a change of year, substantially as and for the purposes set forth.

13. In a calendar designed to serve for a plurality of years, a movable date-slide having displayed thereon date-numbers and mounted to slide upon the back of a card or mount having an opening therein of the proper dimensions to expose to view the dates for one month, said card or mount having displayed thereon a fixed row of the names, initials, or abbreviations of names of the days of the week set opposite the place of exposure of said dates, in combination with a slip or slips of paper or other suitable material mounted upon said card and having displayed thereon a corresponding plurality of series of seven groups of the names or abbreviations of names of the months and the year-numbers, substantially as and for the purposes set forth.

475,502. CALENDAR. WILLIAM C. HAWKINS, Taunton, Mass. Filed Apr. 4, 1891. Serial No. 387,712. (No model.)



Claim.—1. In a calendar, a series of seven date-tables with the dates thereon arranged in seven different orders, each of said tables having displayed thereon or conjoined therewith, in addition to the names, initials, or abbreviations of names of the days of the week, the names or abbreviations of names of the month or months whose corresponding dates fall upon the same day of the week, said names or abbreviations of names of the week-days being always displayed in their natural order from the first week-day, preferably Sunday, placed in line with the left-hand column of dates, whereby seven of said date-tables will suffice for a calendar for one year, substantially as set forth.

2. In a calendar, a series of seven date-tables with the dates thereon arranged in seven different orders, each of said tables having displayed thereon or conjoined therewith, in addition to the names, initials, or abbreviations of names of the days of the week, the names or abbreviations of names of the month or groups of months whose corresponding dates fall upon the same day of the week, said names or abbreviations of names of the week-days being always displayed in their natural order from the first week-day, preferably Sunday, placed in line with the left-hand column of dates, in combination with means, substantially as shown and described, for bringing into view, one at a time, said tables with their accompanying month-group headings, as desired, substantially as set forth.

3. In a calendar, the combination of an endless web of paper or other suitable material, as 2, having displayed thereon seven calendar date-tables arranged in seven different orders, each of said tables having also displayed thereon or conjoined therewith, in addition to the names, initials, or abbreviations of names of the days of the week, the names or abbreviations of names of the month or months whose corresponding dates fall upon the same days of the week, a perforated card or mount, as 1, and rollers, as 4, journaled on the back of said card or mount, said names or abbreviations of names of the week-days being always displayed in their natural order from the first week-day, preferably Sunday, placed in line with the left-hand column of dates, and said web being mounted to run upon said rollers and exhibit, one at a time, said tables with their accompanying month-group headings at the front of said card, substantially as set forth.

475,503. SAFETY ATTACHMENT FOR PURSES. HENRY W. HOEK, Philadelphia, Pa., assignor of one-half to William S. McManus, same place. Filed Feb. 9, 1892. Serial No. 420,873. (No model.)

Claim.—In a safety-purse, pocket-book, or the like, the combination of the hinge-pintle *a*, the extension *b* thereof formed into an eye, and a ring or chain connected to the eye, substantially as described.

475,508.



475,504. SWITCH FOR OVERHEAD WIRES. ALPHONSO O. HOYT and PAUL W. LEFFLER, Minneapolis, Minn., assignors of one-third to Albert W. Hoyt, same place. Filed Sept. 10, 1891. Serial No. 405,253. (No model.)



Claim.—1. A trolley-guide for use on crossing and switch pans, consisting of an arm having lateral flanges curving upward substantially continuous from the edge of the pan and having means at its outer end for holding the conductor at a point below the level of the outermost tip of the said flanges equal to or greater than the depth of the trolley-wheel flanges, substantially as and for the purpose set forth.

2. A trolley-guide for use on crossing and switch pans, consisting of an arm having a longitudinal rib or ridge on its under side of less depth at its inner end than the depth of the wheel-flanges and increasing toward its outer end and having lateral flanges extended from the base of the ridge, both the said ridge and the said flanges being upwardly curved, and the said arm being provided with a wire-passage through its outer end substantially continuous with the crown of the ridge, substantially as and for the purpose set forth.

3. The combination, with the guiding-arm having the wire seat or passage through its outer end open at its top, of the removable retaining-piece for securing the wire and arm together by a clamping action, substantially as described.

4. The crossing comprising a pair of disks pivotally and detachably connected together and each bearing a pair of opposite radial arms constituting the trolley-guide, substantially as and for the purpose set forth.

5. The combination, with the disk F, having the radial notches *f*, the pivot-post *g*, and a pair of guiding-arms B C, of the disk G, having a central seat for the said pivot-post, and a pair of guiding-arms B C with the rib portions of the same extended inward underneath and engaging with the margin of the disk F, substantially as and for the purpose set forth.

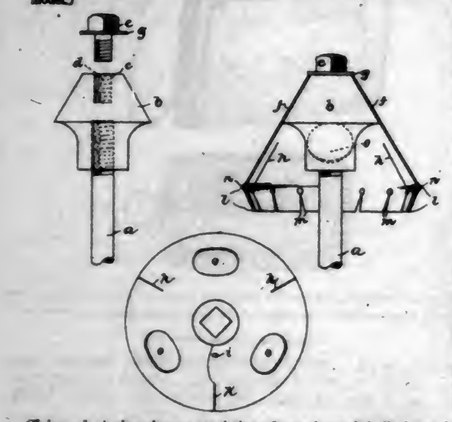
475,505. COMBINED TABLE AND CHAIR. GEORGE HUSEMODER, New York, N. Y. Filed Feb. 25, 1892. Serial No. 422,752. (No model.)



Claim.—1. The combination, with the table-top and its legs, of drawers near the respective corners of the top and the drawer slides or supports connected with the table top and legs, and chairs with seats adapted to pass in beneath the table and having backs corresponding to the fronts of the drawers and adjacent to the same at the respective sides of the table, substantially as set forth.

2. The quadrilateral table having cross-legs and drawer-slides, in combination with drawers passing in beneath the table-top and at right angles to each other, and chairs adapted to be placed beneath the table and having backs corresponding to the respective drawer-fronts and passing in beneath the table-top, substantially as set forth.

475,506. FLUE-CLEANER. PHILIP S. KIPPERLAND, Chicago, Ill. Filed Feb. 4, 1892. Serial No. 420,296. (No model.)



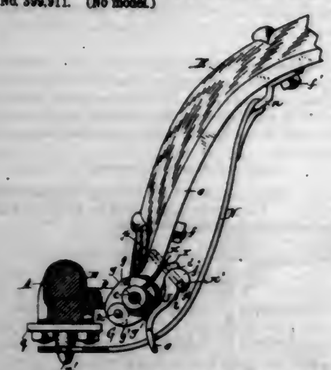
Claim.—1. A pipe-cleaner consisting of a perforated shell of metal formed in the shape of a cone, at the base of which is a frustum of a reverse cone, the bases of the cone and the frustum of the cone forming an angle which acts as the scraper, whereby the scraper may be driven into and withdrawn from the pipe or flue which is to be cleaned, substantially as described.

2. In a flue-cleaner, the combination, with a perforated shell in the shape of a cone and a reversed frustum of a cone, of a conical block conforming to the interior conical surface of said shell, to which said shell is adapted to be attached by means of bolts or rivets, substantially as described.

3. In a boiler-flue cleaner, the perforated shell *f*, in the form of a cone, and a reverse frustum of a cone made from one piece of metal, the edges of which are adapted to overlap, in combination with the block *b*, to which said perforated shell is attached by the rivet *i*, whereby the perforated shell *f* is made compressible by circumferential pressure.

4. In a boiler-flue cleaner, the combination of the block *b*, the bolt *e*, and the shell *f*, said shell having the slots *m m* and *h h*, the perforations *o o*, the seam *k*, and the reverse frustum of a cone *l*, substantially as described.

475,507. THILL-COUPLING. THOMAS D. LEWIS, Syracuse, N. Y., assignor to Charles A. Denison, same place. Filed July 18, 1891. Serial No. 399,911. (No model.)



Claim.—1. The combination, with the thill-iron provided with a rigid eye-section and a movable eye-section hinged thereto, of a link attached to the thill-iron and a lever having its fulcrum on said link and provided near its fulcrum with a cam-face which bears against the movable eye-section, substantially as set forth.

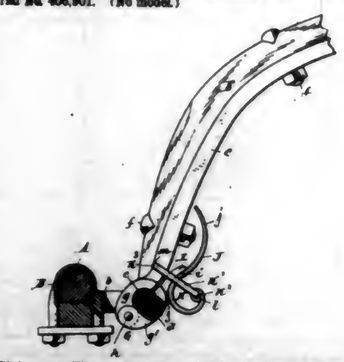
2. The combination, with the thill-iron provided with a rigid eye-section and a movable eye-section hinged thereto and having a bifurcated lip at its front end, of a link attached to the thill-iron and extending through said bifurcated lip, and a lever having its fulcrum on said link and provided near the fulcrum with a bifurcated cam-face which bears against the bifurcated lip, substantially as set forth.

3. The combination, with a thill-iron provided with sockets in its upper side and a longitudinal slot, of a rearwardly-projecting rigid eye-section formed on the thill-iron, a movable eye-section hinged to the rear end of the rigid section and provided at its front end with a bifurcated lip, a link arranged in the slot of the thill-iron and having cross-heads at its ends, the upper of which rests in the sockets of the thill-iron, and a lever having its fulcrum on the lower cross-head of said link and having near said fulcrum a cam-face which bears against the bifurcated lip of the movable eye-section, substantially as set forth.

4. The combination, with the axle provided with a button, of a thill having a divided eye, a locking-lever provided with a loop, and a safety-strap attached to the thill and passing through the loop of the locking-lever to the button on the axle, substantially as set forth.

5. The combination, with the clip provided on its front side with ears and a coupling-bolt and the clip cross-bar provided with a button, of a thill-iron provided with a rearwardly-extending rigid eye-section, a movable eye-section hinged with its rear end to the rear end of said rigid eye-section, a cam-lever provided with a cam at one end which bears against the front end of the movable eye-section, a loop formed at the opposite end of the cam-lever, a link connecting the cam-lever with the thill-iron, and a safety-strap passing through said loop and provided at its rear end with a hole engaging over said button, while its front end is secured to the thill-iron, substantially as set forth.

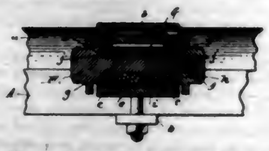
475,508. THILL-COUPLING. THOMAS D. LEWIS, Syracuse, N. Y., assignor to Charles A. Denison, same place. Filed Sept. 26, 1891. Serial No. 406,901. (No model.)



Claim.—1. The combination, with the draft-eye, of an elastic lever curved about its fulcrum and gradually receding therefrom, forming an elastic cam which bears against the draft-eye, and a link which forms the fulcrum of the elastic cam-lever, substantially as set forth.

2. The combination, with the thill-iron provided with a rearwardly-projecting rigid eye-section and the movable eye-section hinged thereto, of a spring-lever having near its fulcrum a cam-surface which bears against said movable section, and a link or loop connected with the thill-iron and forming the fulcrum of the spring-lever, substantially as set forth.

475,509. THILL-COUPLING. THOMAS D. LEWIS, Syracuse, N. Y., assignor to Charles A. Denison, same place. Filed Sept. 26, 1891. Serial No. 406,902. (No model.)



Claim.—The combination, with the eye, of a yielding bushing arranged in said eye, a bolt passing through said bushing and having a square shoulder on its head which bears against one end of said bushing, a screw-nut applied to said bolt and having a shoulder which bears against the opposite end of the bushing, and a split metallic bushing interposed between the yielding bushing and the eye, substantially as set forth.

475,510. WHEEL. FREDERIC S. MILLER, Mendota, Ill. Filed Oct. 14, 1891. Serial No. 408,671. (No model.)

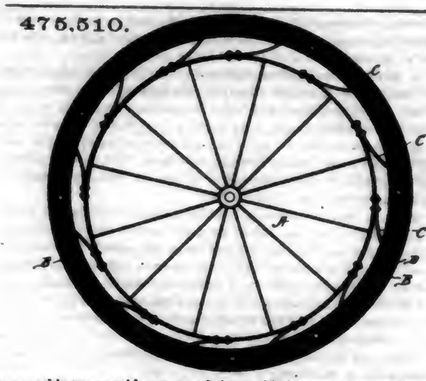
Claim.—1. The combination, in a wheel, of a center and rim, springs interposed between said center and rim, and links connecting said springs to said center, substantially as described.

2. The combination, in a wheel, of a center and rim, springs interposed between said center and rim, and links connecting said springs to said rim, substantially as described.

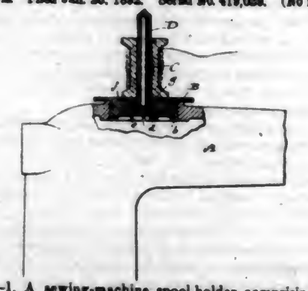
3. The combination, in a wheel, of a center and rim, and springs forming a connection between said rim and center, attached rigidly at one end, having a yielding connection at the other through links pivoted to said springs and to said rim or center, substantially as described.

4. The combination, in a wheel, of a center and rim, and springs interposed between said rim and center, each spring being rigidly secured at one end to said rim or center and having at the other a link by which it is yieldingly connected to the center or rim, said spring extending diagonally across the annular space between said center and rim, substantially as described.

475,510.



475,511. SPOOL-HOLDER FOR SEWING-MACHINES. LEE A. MILLER, Milwaukee, assignor of one-half to Samuel B. Fuller, Watertown, Wis. Filed Jan. 23, 1892. Serial No. 419,089. (No model.)



Claim.—1. A sewing-machine spool-holder comprising a plate having a shouldered and screw-threaded opening therein, a sleeve loosely engaging the plate-opening and provided with a flange in opposition to the shouldered portion of the same, and a pin that supports the sleeve and is provided with a screw-threaded enlargement engaging the correspondingly-threaded portion of said plate-opening, substantially as set forth.

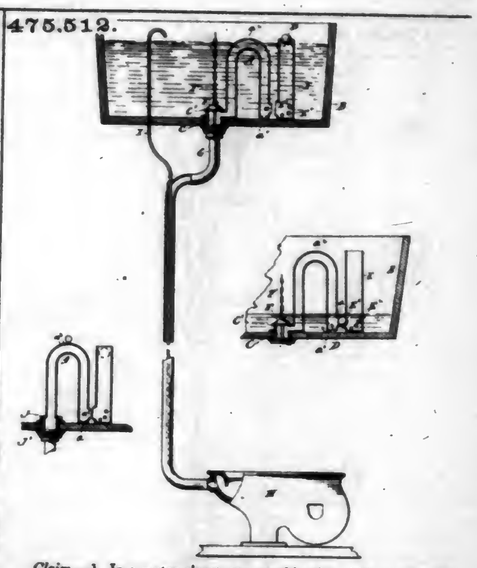
2. A spool-holder comprising a plate having a screw-threaded boss that, with said plate, is provided with a screw-threaded and shouldered opening, a sleeve loosely engaging the smaller portion of said opening and provided with a flange opposed to the shouldered portion of the same, and a pin that supports the sleeve and is provided with a screw-threaded enlargement engaging the correspondingly-threaded portion of the aforesaid opening, in combination with a sewing-machine arm having a screw-threaded opening engaging the plate-boss, substantially as set forth.

3. A sewing-machine spool-holder comprising a stationary horizontal plate, a vertical pin fast to the plate, and a loose sleeve that extends below the upper surface of the plate and has a closed upper end in opposition to the corresponding end of the pin, substantially as set forth.

4. A sewing-machine arm, in combination with a stationary horizontal plate detachably connected thereto, a vertical pin fast to the plate, and a loose sleeve that extends below the upper surface of the plate and has a closed outer end in opposition to the corresponding end of the pin, substantially as set forth.

475,512. SIPHON FOR WATER-CLOSET TANKS. ROBERT MORGAN, New Haven, Conn. Filed May 18, 1891. Serial No. 393,138. (No model.)

475,512.



Claim.—1. In a water-closet, the combination, with a tank and a bowl, of a siphon located in part in said tank, having its long leg or branch extended in the form of a pipe connecting the tank and bowl and constructed with a large lateral water-inlet opening and a small water-inlet opening located below the level of the same and a valve controlled by the water in the tank and moving laterally or virtually laterally in closing the said large opening when the water in the tank has been nearly drawn off, one of the said parts having a small air-inlet opening for breaking the siphon in opposition to the small water-inlet opening, substantially as set forth, and whereby the valve is relieved from the direct downward suction of the water and the siphon is fed at the end of its operation through the small water-inlet opening.

2. In a water-closet, the combination, with a tank and a bowl, of a siphon located in part in the said tank, having its long leg or branch extended in the form of a pipe connecting the tank and bowl and constructed with a large lateral water-inlet opening standing in a vertical or substantially vertical plane and a small water-inlet opening located below the level of the said large opening, a free valve floating in the water for closing the said lateral opening, and a cage located within the tank, adapted to receive the said valve and having a lateral opening which is aligned with the lateral opening of the siphon, one of the said parts having an air-inlet opening for breaking the siphon in opposition to the said small water-inlet opening, substantially as described.

3. In a water-closet, the combination, with a tank and a bowl, of a siphon located in part in said tank, having its long leg or branch extended in the form of a pipe to connect the tank and bowl and constructed with a large and a small water-inlet opening, a valve controlled by the water in the tank and adapted to close the said large inlet-opening when the water in the tank has been nearly drawn off, and an air-pipe extending above the level of the water in the tank when the same is filled and down into the said pipe and nearly to the bowl, one of the said parts having a small air-inlet opening to break the siphon in opposition to the small water-inlet opening, substantially as set forth.

475,518. TEMPERATURE-REGULATOR. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car Heating Company, Wheeling, W. Va. Filed May 1, 1891. Serial No. 391,275. (No model.)



Claim.—1. In a temperature-regulator, the combination, with a thermostat, of a lever actuated thereby, a hinged extension on said lever, a connecting-rod arranged at right angles to said lever and secured to said extension, and a valve connected with the rod, substantially as described.

2. In a temperature-regulator, the combination of the thermostat, the valve, the connecting-rod, the lever D, the block E, pivoted in said

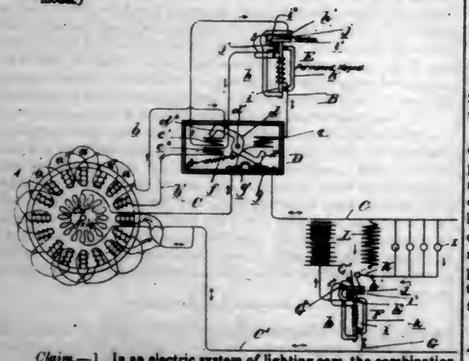
475,518.



lever, the screw-threaded engagement between the rod and block, and the ball-and-socket joint in the rod at or near the valve, substantially as described.

3. In a temperature-regulator, the combination, with the thermostat, the valve, and the connecting-rod, of the ball L, formed on the end of the rod, and the coupling K, engaging with the valve-stem at one end and having a socket at the other end in which the ball is secured, substantially as described.

475,514. ELECTRIC CAR-LIGHTING SYSTEM. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car Heating Company, Wheeling, W. Va. Filed Dec. 19, 1891. Serial No. 415,599. (No model.)



Claim.—1. In an electric system of lighting cars, the combination of a generator of alternating currents provided with two sets of field-coils, two main leads extending through the cars, a shunt-circuit divided into two branches connected to alternate field-coils, and a current-director operated by the passage of the current through said shunt-circuit to divert the current-waves of one direction to one branch of said shunt-circuit and those of the opposite direction to the other branch of said circuit, substantially as described.

2. In an electric system of lighting cars, the combination of a generator of alternating currents provided with two sets of field-coils, two main leads extending through the cars, a shunt-circuit divided into two branches, one for each set of field-coils, a current-director operated by the passage of the current through said shunt-circuit to divert the current impulses of one direction to one branch and those of the opposite direction to the other branch of said shunt-circuit, and current-regulating devices comprising a choke-coil in the shunt-circuit, whose iron core is immersed or withdrawn from the coil by the operation of a controlling-magnet in the branches of the shunt-circuit, substantially as described.

3. In an electric-light equipment for cars, the combination of two main conductors, means for supplying the same with an alternating current, a storage-battery and lamps respectively in circuit with one of the main conductors and with separate branches of a feeder from the other main conductor, and a current-director in said feeder operated by the current passing through said feeder to divert the current impulses of like direction alternately to one and the other branch of said feeder, substantially as described.

4. In an electric-light equipment for a car, the combination of two main conductors forming part of the main leads of an alternating-current generator, a storage-battery and lamps respectively in circuit with one of the main conductors and with separate branches on a feeder from the other main conductor, a current-director in the feeder, operated by the current passing through said feeder to divert the current impulses alternately over one or the other branch of the feeder, a resistance in a shunt-circuit with the lamps, and a switch in the lamp-circuit for cutting out the lamps and closing the circuit through the resistance, substantially as described.

5. In an electric-light equipment for a car, the combination of two main conductors of an alternating-current generator, a storage-battery in circuit with one of said main conductors and with one branch of a feeder from the other main conductor, lamps in multiple with the same main conductor and with another branch of said feeder, carbon disks or like bodies having their conductivity increased or decreased by an increase or decrease in pressure included in each branch of said feeder, and a magnetic device operated by the current impulses passing in opposite directions through the feeder to alternately compress the carbon disks in the branches thereof, substantially as described.

6. In an electric system of lighting cars, the combination, with a supply-circuit including translating devices in two separate branches thereof, of two piles of carbon disks, one in each branch of said circuit, an electro-magnet in said circuit, arranged to compress with its core one or the other of said piles of carbon disks by a contraction or expansion in its length, respectively, and a permanent magnet extending with its poles in proximity to the poles of the electro-magnet, whereby upon the passage of an alternating current through said circuit the core of said electro-magnet is alternately lengthened and shortened, and thereby correspondingly compresses one or the other pile of carbon disks to divert the current impulses of one direction to one branch and those of the opposite direction to the other branch, substantially as described.

7. In an electric system of lighting cars, comprising a generator of alternating currents, provided with two sets of field-coils, two main leads extending through the cars, a shunt-circuit divided in two branches, one for each of the field-coils, and a current-director in said shunt-circuit, a combined regulator and switch consisting of a choke-coil in the shunt-circuit, a controlling-magnet formed of two oppositely-wound helices included, respectively, in the two branches of the shunt-circuit, a tilting bar carrying wires for the choke-coils and controlling-magnet, respectively, a spring for retracting the same, and a switch for cutting out the main leads, operated by said tilting bar in its retracted position, substantially as described.

8. In an electric system of lighting cars, the combination of a generator of alternating currents, provided with two sets of field-coils placed on the locomotive, two main leads extending through the cars, a shunt-circuit divided into two branches connected to alternate field-coils, a current-director in said shunt-circuit, storage-batteries and lamps placed in each car and included, respectively, in circuit between one of the main leads and separate branches of a feeder from the other main lead, a current-director in said feeder, operated by the current passing through the same to divert the current impulses of like direction alternately to one and the other branches of said feeder, substantially as described.

475,515. ADJUSTING-STRAP FOR GARMENTS. JOSEPH A. PHILLIPS, Baltimore, Md. Filed Feb. 27, 1892. Serial No. 422,961. (No model.)

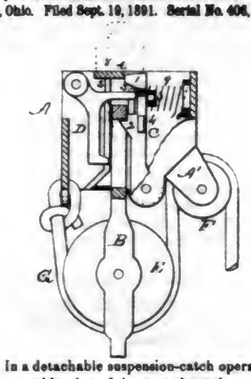


Claim.—1. An adjusting-strap for garments, comprising a wire formed into a loop at one end and the two ends of the wire being bent into a flat double spiral coil, each wire being provided at its tip or end with an eye for attaching it to the garment and the loop being provided with a shank and a fastening device, substantially as set forth.

2. An adjusting-strap for garments, consisting of a single piece of wire formed into a shank, one end of which is provided with means for attaching it to the garment and the opposite end is formed into a flat double spiral coil, the tip of each end of the wire being formed into an eye, substantially as set forth.

3. An adjusting-strap for garments, consisting of a single piece of wire doubled upon itself and twisted into a shank at one end and into a flat double spiral coil at the other, the tip ends of the wire being provided with means for attaching it to the garment and the other end of the shank being formed into an eye and a button secured in said eye, substantially as set forth.

475,516. DETACHABLE SUSPENSION-CATCH. BARTON PICKERING, Dayton, Ohio. Filed Sept. 19, 1891. Serial No. 406,175. (No model.)



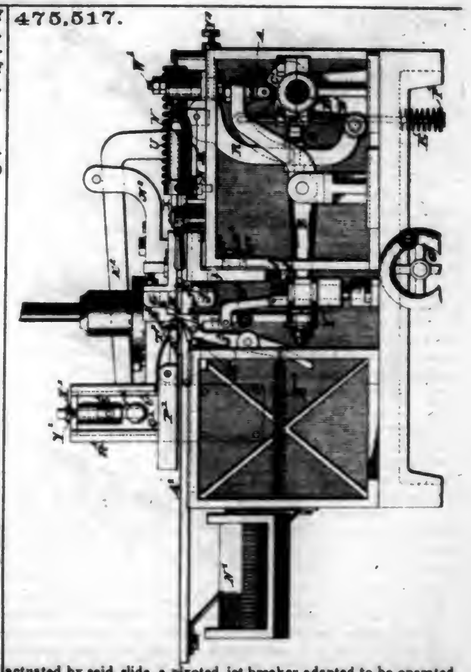
Claim.—1. In a detachable suspension-catch operated by a single hoisting-rope, the combination of the case, the spring-actuated pivotal supporting-catch with angular engaging projection and incline at the top, the detaching-bar to carry back and hold said catch out of engagement and to release the same, and the open-ended hanger with pulley pivoted thereto, substantially as set forth.

2. In a detachable suspension-catch, the combination of the case A, provided with the inner guides *s s*, arresting-plate *t* and lugs A' for the pulley F, the spring-actuated supporting-catch C, pivoted in said case and provided with an engaging projection and an incline at the top, the two-legged detaching arm D, and the hanger B, with an opening in the top and holding the pulley E, and the hoisting-rope G to attach and detach said hanger by the raising and lowering of the same, substantially as set forth.

3. In combination with the supporting-catch C and the open-ended hanger B, the detachable arm D, pivoted to the case, said arm comprising two legs, the horizontal leg to engage the incline of the said catch and to carry the same back against the yielding spring, and the projection of the vertical leg to engage the inner surface of the head of the said hanger to release said catch, substantially as set forth.

4. The case A, the catch C, and the disengaging-arm D, in combination with the hanger provided with an oblong square orifice in its top end, the upper surface to carry up said arm and thereby force back said catch, and the under surface to release said catch, that it may resume its normal position, substantially as set forth.

475,517. TYPE-CASTING MACHINE. HERMANN S. POPP, Philadelphia, Pa. Filed July 6, 1891. Serial No. 397,499. (No model.)



Claim.—1. In a machine for making quads and spaces, a frame, a mold having separate top and bottom pieces, a horizontally-movable body-piece and a rising and falling end piece or slide opposite said body-piece, and a sliding arm with a spring-stud bearing against said body-piece, said parts being combined substantially as described.

2. A mold having a movable body-piece, a slide adapted to contact with and move said body-piece, and an adjustable stop rotatably mounted on a vertical stud on the frame and normally in the path of said body-piece, but removable therefrom without being detached from the frame, said parts being combined substantially as described.

3. In a type-casting machine, a frame, a mold having a lower wall, and an angular arm with projecting stud arranged in a slot in said frame, a clamping device for said arm, and a screw supporting said arm and bearing on a projection on said frame, said parts being combined substantially as described.

4. In a machine for making quads and spaces, a frame, a mold with a horizontally-movable body-piece, a spindle rotatably mounted on said frame, a sleeve on said spindle adapted to abut against said body-piece, and a cam-lever pivoted to the frame and bearing against the said spindle, said parts being combined substantially as described.

5. A mold having a rising and falling slide covering the discharge end of the recess thereof, an arm bearing against said slide, and a pivoted jet-breaker adapted to be operated by the movement of said arm, said parts being combined substantially as described.

6. A mold having a rising and falling slide covering the discharge end of the recess thereof, a pivoted arm arranged in position to be actuated by said slide, a pivoted jet-breaker adapted to be operated by the movement of said arm, and a stop for said arm, said parts being combined substantially as described.

7. A dresser-frame and a mold with a horizontally-movable body-piece adapted to discharge a quad therefrom, a jet-breaker at the end and on one side of said mold, guiding-pieces the upper of which is vertically adjustable on the dresser-frame at the end of the mold, and means, substantially as described, for actuating the jet-breaker, said parts being combined as stated.

8. The guiding-piece P' with arm Q', the upright R', a hinged arm S on said guiding-piece, and the spring T', rotatably attached to the frame at one end and bearing at the other end on the arm S', and clamping-nut W', said parts being combined substantially as described

9. The guiding-piece P', having an arm Q' with a threaded stud U', the upright R' with a slot V', the clamping-nut W' on said stud U', the threaded stud X' in the arm Q', and the collar Y' on said stud X' and adapted to bear against the top of said upright R', said parts being combined substantially as described.

10. In a type-casting machine, a mold with movable body-piece, a separate arm having a spring-stud against which said body-piece abuts, mechanism for imparting motion to said arm, a rotatable spindle with a stop for said arm, and a cam-clamping lever for said spindle and stop, said parts being combined substantially as described.

11. In a type-casting machine, a mold with a movable body-piece, an operating-arm with a spring-stud against which said body-piece abuts, and an adjustable stop for the arm, said parts being combined substantially as described.

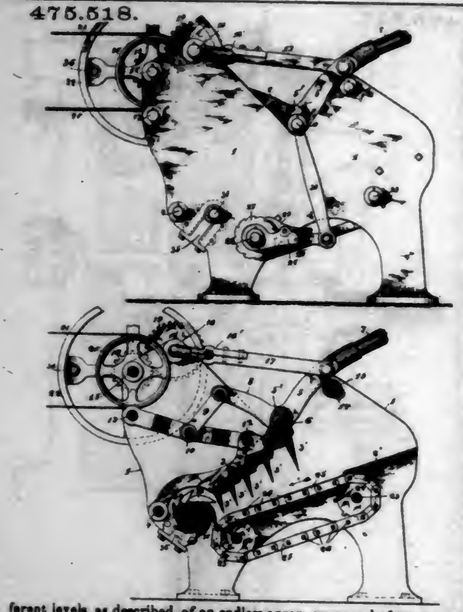
12. In a type-casting machine, a mold having a sliding piece at its discharge end, an oscillating lever, a vertical stud, a block vertically movable on said stud and having recesses therein, and oscillating plates in said recesses having the end of the lever fitted therein, said sliding piece being connected with said movable block, said parts being combined substantially as described.

475,518. MACHINE FOR CRACKING ICE. JEAN E. RICHARD, New York, N. Y., assignor to John Scott. Filed Aug. 17, 1891. Serial No. 402,931. (No model.)

Claim.—1. In a machine for cracking ice, the combination, with a supporting-frame, and a bed therein to receive the block of ice, of a toothed jaw arranged over said bed and pivoted in the frame, the lever 5, fulcrumed in bearings in said jaw and provided with an arm 8, a toggle 11, coupled at one end to the frame and at the other to said jaw, and a link 9, which couples the arm 8 of the lever to the knuckle of said toggle, as set forth.

2. In an ice-cracking machine, the combination, with a supporting-frame, and the inclined stationary beds 2 and 2', arranged at dif-

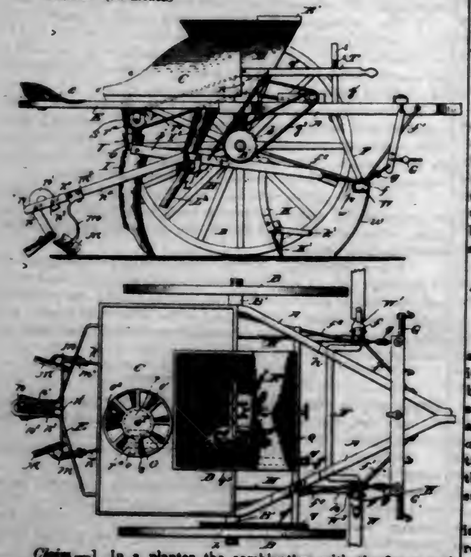
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ferent levels, as described, of an endless apron, composed of transverse bars with spaces between them, arranged to travel intermittently over the bed 2, the pivoted cracking-jaw over said bed 2, and the apron, and means, substantially as described, for actuating said apron when the jaw is raised, as set forth.

3. In a machine for cracking ice, the combination, with the supporting-frame, the bed arranged therein to receive the ice, the intermittently-moving apron which travels over said bed, and the vibrating cracking-jaw arranged over said apron and bed, of the shaft 31 at the delivering end of the machine, provided with teeth for reducing the cracked ice, and means for rotating said shaft, as set forth.

475,519. POTATO-PLANTER AND FERTILIZER-DISTRIBUTER. JONAH S. ROBBINS, Allentown, N. J. Filed Feb. 10, 1892. Serial No. 420,976. (No model.)



Claim.—1. In a planter, the combination, with the frame and seed-hopper having a discharge-opening in its bottom, of a dropping-wheel having a series of radially-arranged pockets therein, adapted to pass over the discharge-opening in the bottom of the hopper, a downwardly-extending U-shaped frame secured to the front of the frame, a cultivator-frame hinged to the lower ends of the U-shaped frame and extending rearwardly, a wide cultivator-tooth secured to the forward end of the cultivator-frame, a drill-tube secured to the cultivator-frame in the rear of the cultivator-tooth, a pipe below the discharge-opening in the hopper, having its lower end discharging into the drill-tube, coverers on the frame in the rear of the drill-tube, and a row-smoother adjustably secured to the cultivator-frame of the coverers, substantially as described.

2. In a planter, the combination, with the frame, a seed-hopper having a discharge-opening in its bottom, and a fertilizer-hopper having a discharge-pipe connected with its lower end, of means for dropping the seed through the discharge-opening in the hopper, a downwardly-extending U-shaped frame secured to the front end of the frame, a cultivator-frame hinged to the lower ends of the U-shaped frame and extending rearwardly, a wide cultivator-tooth secured to the cultivator-frame at its forward end, a fan-shaped fertilizer-spreader secured to the cultivator-frame in the rear of the tooth, a drill-tube secured to the cultivator-frame in the rear of the fertilizer-spreader, a pipe below the discharge-opening in the hopper, having its lower end discharging into the drill-tube, coverers on the cultivator-frame in the rear of the drill-tube, and a row-smoother on the cultivator-frame in the rear of the coverers, substantially as described.

475,520. PERMUTATION-LOCK. JAMES ROCHE, Terryville, Conn., assignor to the Eagle Lock Company, same place. Filed Feb 23, 1892. Serial No. 422,433. (No model.)



Claim.—1. In a permutation-lock, the combination, with a dial provided upon its inner face with a disk carrying an eccentric-pin and constructed with a centrally-threaded opening entering the inner face of the said disk, of a dial-plate furnished with a perforated rotatable disk carrying an inwardly-projecting longitudinally-perforated coupling-bar, a locking mechanism having a hollow spindle open at both ends, wheel-tumblers mounted thereon, couplers between said tumblers, a bolt connected with the said tumblers, and a roll-back or coupling-head adapted at one end to receive the said post and at its other end to receive the coupling-bar, and a coupling-screw entered through the outer end of the said spindle into the roll-back, its shank passing through the coupling-bar into the dial, whereby the dial and dial-plate are coupled together and prevented from being disconnected from the locking mechanism, substantially as set forth.

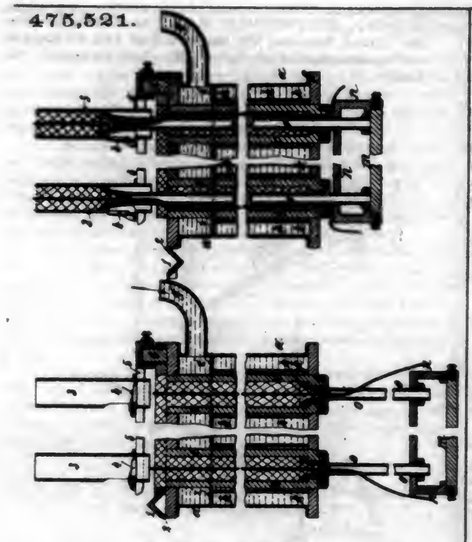
2. In a permutation-lock, the combination, with a bolt carrying a pivotal spring-actuated dog, of a hollow spindle, two or more perforated rotatable wheel-tumblers mounted thereon, each having its edge notched, one or more couplers combined with the said tumblers, each having one or more fingers bent at a right angle to it, washers combined with the said tumblers and couplers, as shown, a coupling-head fitting over the said spindle and co-operating with the said tumblers, a rotatable dial, and a dial-plate carrying a coupling-bar adapted to enter the said coupling-head and constructed to be coupled with the said dial, whereby the rotation of the same turns the coupling-bar, and hence the coupling-head and tumblers, substantially as described.

475,521. CANDLE-MOLDING MACHINE. ALEXANDRE A. ROYAU, Châtillon-Sous-Bagneux, near Paris, France. Filed Sept. 10, 1891. Serial No. 405,360. (No model.)

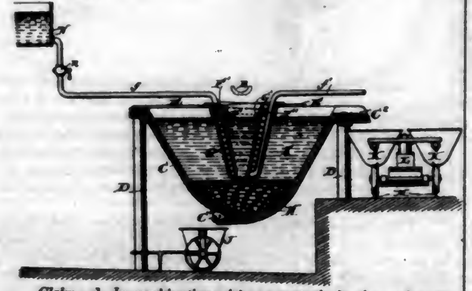
Claim.—1. In a candle-molding machine, a heating and cooling apparatus combining therein a candle-mold chest, candle-molds secured in said chest, tubes surrounding said molds and adapted to form a chamber between said tubes and molds, a chamber *a* around and above said tube-chambers and connected therewith, water-tanks arranged above said chamber *a*, pipes connecting said tanks with said chamber *a* and the top of said tube-chambers and adapted to instantly fill said tube-chambers, and means for discharging the water from and out of the mold-chest, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

2. In a candle-molding machine, the combination, with the molding and discharging mechanism, of a holding mechanism consisting of receiving sheaths or tubes 3, secured to the top of the molding-machine, and a spring holding-flap 4, pivoted to one side of said sheaths and adapted to hold the candle as it passes from the mold, substantially as described, and for the purposes set forth.

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475,522. APPARATUS FOR SEPARATING MATTE FROM SLAG. DENNIS SHEEDY, Denver, Colo. Filed Dec. 1, 1891. Serial No. 413,653. (No model.)



Claim.—1. In combination with a receptacle for slag and matte, a slag-conduit arranged to receive the slag and deliver it to the receptacle, said conduit being supported in said receptacle and opening near the bottom thereof, a furnace, and a slag-spout leading from the furnace with its mouth arranged over the slag-conduit aforesaid, substantially as and for the purpose specified.

2. In combination with a receptacle for slag and matte, a conical slag-conduit arranged to receive the slag and deliver it to the receptacle, said conduit being supported in said receptacle and opening near the bottom thereof, a furnace, and a slag-spout leading from the furnace with its mouth arranged over the slag-conduit aforesaid, substantially as and for the purpose specified.

3. In combination with a receptacle for slag and matte, a conduit formed of spirally-wound tubing suitably protected, supported in said receptacle, and opening near the bottom thereof, substantially as and for the purpose specified.

4. In combination with a receptacle for slag and matte, a conical conduit formed of spirally-wound tubing suitably supported in said receptacle and opening near the bottom thereof, substantially as and for the purpose specified.

5. A receptacle C, having a matte-opening C' at its bottom and a slag-spout C^2 at its top, in combination with a conical slag-conduit F, arranged to receive the slag and deliver it to the receptacle, said conduit being supported in said receptacle, a furnace, and a slag-spout leading from the furnace, with its mouth arranged over the slag-conduit aforesaid, as and for the purpose specified.

475,523. SAND-MOLDING MACHINE. CHARLES S. SNEAD, Louisville, Ky., assignor to the Snead & Co. Iron Works, same place. Filed May 16, 1891. Serial No. 393,088. (No model.)

Claim.—1. The combination, with a frame having depressions or seats at its ends, of blocks removably secured in said seats or depressions, a movable board or platform located within the frame, the ends of the board or platform being in close proximity to the blocks, and means for elevating and lowering the said board or platform.

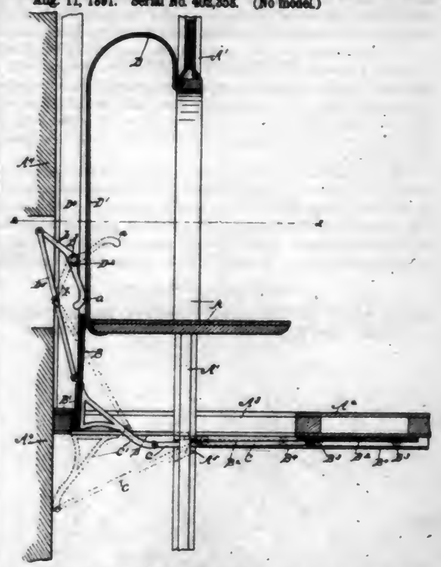
2. The combination, with an open frame and a movable board located in position to move in and out of the frame, of removable blocks connected with the ends of the frame and adapted to limit the endwise movement of the board, and means for raising and lowering the board, substantially as set forth.

3. The combination, with a frame and a board located in position to move in and out of the frame, of blocks connected with the ends of the frame and adapted to limit the endwise movement of the board, rocking shafts having cams thereon, said shafts connected to move in unison, adjustable wearing-plates on the board, and strengthening-rib on the inner face of the board adapted to bear on the shafts when the board is lowered, substantially as set forth.

4. The combination, with a rectangular frame for supporting a cope or drag, the said frame having removable bearing-blocks at its ends, shafts journaled in said frame and coupled up to move in unison, cams on the shafts, means for limiting the movements of the shafts, and cams rigidly mounted on said shafts, of a board or platform resting on and carried by said cams, substantially as set forth.

5. The combination, with a frame, shafts therein, means connecting said shafts, whereby they are caused to move in unison, cams on said shafts, and an arm on one of said shafts, of a board or platform resting on the cams and a plate adjustably secured to the frame and provided with stops adapted to engage the arm on the shaft, substantially as set forth.

475,524. ELEVATOR. SAMUEL T. TEACHOUT, Cohoes, N. Y. Filed Aug. 11, 1891. Serial No. 402,358. (No model.)

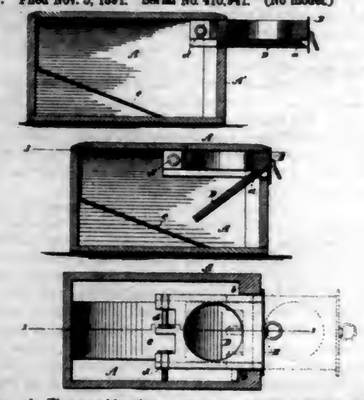


Claim.—1. The combination of a hinged hatchway-door adapted to close a part of a hatchway, a slidable door adapted to close the other part of the hatchway, a slideway for said slidable door, and a link connecting the hinged and slidable doors, whereby the opening or closing of one of said doors operates to open or close the other door, substantially as described.

2. The combination of a hinged hatchway-door adapted to close a part of an elevator-hatchway, a slidable door adapted to close the other part of the hatchway, a slideway for said slidable door, a link connecting the hinged and slidable doors, whereby the opening or closing of one of said doors operates to open or close the other door, and means for automatically operating the doors upon the approach of the elevator-car, substantially as described.

3. The combination of a hinged hatchway-door adapted to close a part of an elevator-hatchway, a slidable door adapted to close the other part of the hatchway, a slideway for said slidable door, a bracket-arm projecting at right angles from the under side of the hinged door, a link connecting such bracket-arm with the slidable door, a lever pivotally secured in the path of the elevator-car and linked to the upper side of the hinged door, and a lifting-bow secured to the elevator-car in a position to engage and open the hinged door, substantially as described.

475,525. TRICK SAVINGS-BANK. CHARLES TOLLNER, Pulaski, N. Y. Filed Nov. 3, 1891. Serial No. 410,941. (No model.)



Claim.—1. The combination, with a box or receptacle which is closed, excepting an aperture to receive a drawer, of a drawer fitting the aperture, a shoulder or shoulders within the receptacle near the aperture, and a locking pin or pins sliding in guides in the drawer and movable into and out of position to engage the shoulders, said pins being moved by manipulating the receptacle, substantially as described.

2. The combination, with a box or receptacle having an aperture to receive a drawer and shoulders within the receptacle at each side of said aperture, of a drawer fitting the aperture and provided with two independent sliding locking-pins, one upon each side of the drawer, said pins being adapted to project in opposite directions from the drawer and arranged to engage with the shoulders when so projected, substantially as described.

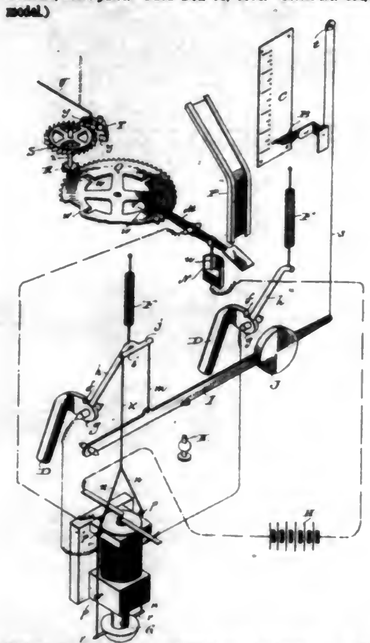
3. The combination, with a box or receptacle which is closed, excepting an aperture to receive a drawer and provided with a shoulder or shoulders within the receptacle near the aperture, of a drawer fitting the aperture, a locking pin or pins sliding in guides in the drawer, and a movable bottom in said drawer arranged to permit the contents to fall from the drawer when it is closed, substantially as described.

475,526. BOTTLE-ALARM. JOSEPH A. TROTTIER, Valleyfield, Canada. Filed May 21, 1891. Serial No. 393,584. (No model.)



Claim.—The combination, with a bottle, of a bell and tapper, a drum, a weighted cord attached to the drum, a spring for winding the cord upon the drum when the cord is relieved of its weight, a pinion, a ratchet-and-pawl mechanism connecting the drum and pinion in such manner that the latter will be turned only when the cord is unwound, and suitable connections between the pinion and the tapper for actuating the latter when the pinion is turned, whereby the weight acts both to set the spring under tension and to cause the alarm to sound, thereby enabling the reaction of the spring to be applied wholly in winding the cord upon the drum.

475,527. COIN-CONTROLLED ELECTRICAL APPARATUS. HORACE WICKHAM, Milwaukee, Wis., assignor to Hugh Ryan and Henry D. Goodwin, same place. Filed Dec. 11, 1891. Serial No. 414,696. (No model.)

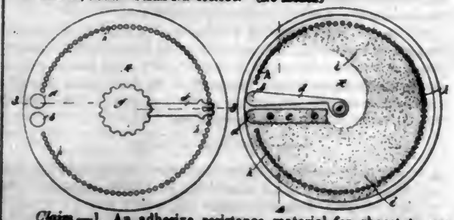


Claim.—1. In a coin-controlled electric apparatus, a circuit making and breaking lever having one end thereof in the path of a deposited coin, a spur-wheel provided with notches for successive engagement with the other end of the lever, a driving-pinion in mesh with the spur-wheel, a scape-wheel on an arbor to which the driving-pinion is made fast, a vibratory arm having pallets for alternate engagement with the scape-wheel, and a flexible governor-rod attached to said arm, substantially as set forth.

2. In a coin-controlled electric apparatus, a source of electric generation in circuit with an induction-coil, tilt-lever and contact opposed to the lever, a pair of pivotal handles wired to the induction-coil, the loose core-sheath of said coil controlled by one of the handles, a spur-wheel provided with notches for successive engagement with one end of said tilt-lever, a driving-pinion in mesh with the spur-wheel, a scape-wheel on an arbor to which the driving-pinion is made fast, a vibratory arm having pallets for alternate engagement with the scape-wheel, and a flexible governor-rod attached to said arm, substantially as set forth.

3. In a coin-controlled electric apparatus, a circuit making and breaking lever having one end thereof in the path of a deposited coin, a spur-wheel provided with notches for successive engagement with the other end of the lever, and a driving-pinion in mesh with the spur-wheel, a source of electric generation and induction-coil in circuit with said lever, a pair of pivotal handles also in circuit with the aforesaid lever, source of electric generation, and induction-coil, the core-sheath of said coil controlled by one of the handles, a lever connected to the handle controlling the core-sheath, and an indicator controlled by the lever, substantially as set forth.

475,528. RHEOSTAT. CHARLES WILLIS, Baltimore, Md. Filed Jan. 14, 1892. Serial No. 418,036. (No model.)



Claim.—1. An adhesive resistance material for rheostats, containing adhesive material, finely-divided conductive material, and metal filings or similar particles of high conductivity, substantially as described.

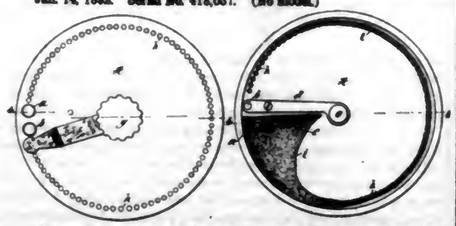
2. The method of forming the body of resistance material in rheostats, which consists in forming an adhesive base of the form of the body of resistance material desired, sifting thereon particles of conducting material, and combining the conducting material with the adhesive base by pressure, substantially as described.

3. The method of forming the body of resistance material in rheostats, which consists in applying a mixture of adhesive material and finely-divided conducting material to form a base of the form of the body of resistance material desired, sifting thereon metal filings or similar particles of high conductivity, and combining these particles with the adhesive base by pressure, substantially as described.

4. The method of forming the body of resistance material in rheostats, which consists in applying a mixture of sugar-water or equivalent material and finely-divided conducting material to form a base of the form of the body of resistance material desired, sifting thereon larger particles of conducting material, and combining the conducting material with the adhesive base by pressure, substantially as described.

5. A rheostat having a supporting-block of non-conducting material and a body of resistance material secured to the face thereof by adhesive material and containing finely-divided conducting material and larger particles of metal or other material of high conductivity, substantially as described.

475,529. RHEOSTAT. CHARLES WILLIS, Baltimore, Md. Filed Jan. 14, 1892. Serial No. 418,037. (No model.)



Claim.—1. In a rheostat, the combination, with a supporting-block provided with grooves, of a conducting-plate with which one conductor of the circuit connects, one or more series of conductors arranged in said grooves and extending through the block, a movable contact-piece with which the other conductor of the circuit connects and which is adapted to form contact with any one of each series of conductors, and resistance material applied to the conductors within the grooves and forming a path or paths for the current between the conducting-plate and successive conductors, substantially as described.

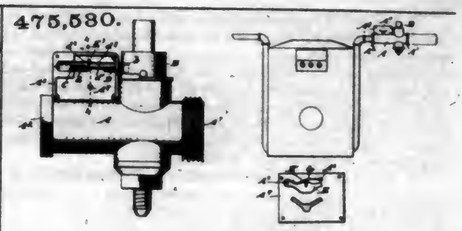
2. The combination, with insulating-block A, of conducting-plate *c* on one side of the block, with which one conductor of the circuit connects, contact-piece *f* on the other side of the block, mounted to move in the arc of a circle and with which the other conductor of the circuit connects, one or more series of conducting-pins *k*, extending through the block and arranged on the circle traversed by the contact-arm *f* to form contact therewith, and resistance material on the same side of the block as conducting-piece *c* and forming a path or paths for the current of substantially the same width as the conducting-pins *k*, substantially as described.

3. The combination, with insulating-block A, having grooves on one face, of conducting-piece *c* on one side of the block, with which one conductor of the circuit connects, contact-piece *f* on the other side of the block mounted to move in the arc of a circle and with which the other conductor of the circuit connects, one or more series of conducting-pins *k*, extending through the block and arranged on the circle traversed by the contact-arm *f* to form contact therewith, and resistance material applied within the grooves on the same side of the block as conducting-piece *c* and forming a path or paths for the current, substantially as described.

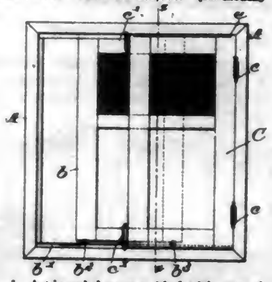
475,530. STOP-COCK OR ANALOGOUS VALVE. PETER ZIMMERMANN, Jr., New York, N. Y., assignor, by direct and mesne assignments, to himself, Augustus M. Miller, and William R. Miller, same place, and Robert H. Cunningham, Paterson, N. J. Filed Jan. 4, 1892. Serial No. 416,981. (No model.)

Claim.—In a cock for gas or other fluids, the bolt D, provided with a split *d* and notches d' d^2 d^3, in combination with the tumbler E, carrying the dog E' and the spring G and permanently closed in the lock-case A^2, made integral with the body of the cock and having the permanently-closed front A^6 with the V-shaped keyhole, and the transverse pin O, engaged in the split *d* of the bolt, all arranged for joint operation as herein specified.

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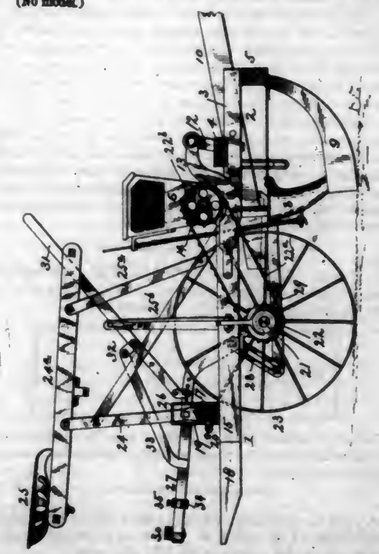
475,531. DOUBLE DOOR. GEORGE A. ANDERSON, Greenwood, Mass. Filed Jan. 27, 1892. Serial No. 419,390. (No model.)



Claim.—1. A hinged door provided with a track, combined with a sliding door adapted to run off and on the track of the hinged door, substantially as described.

2. A door-casing having a track at its threshold and a hinged door closing part of said casing and having a track; combined with a sliding door having rollers and adapted to run along over one and the other of said tracks as the sliding door is opened or closed, the sliding door when open being wholly supported on the hinged door, substantially as described.

475,532. GRAIN-DRILL. JOHN L. ASHURST, Havana, assignor to Louis R. Ashurst, Kilbourn, Ill. Filed Apr. 14, 1891. Serial No. 388,852. (No model.)

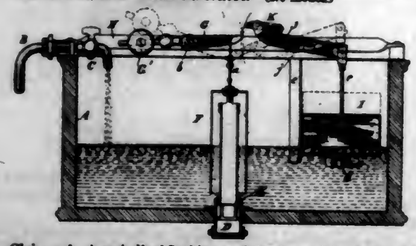


Claim.—1. In a grain-drill, the combination, with the front section carrying the feed-box, feed-shaft, feed-spouts, runners, and tongue, and the rear sections carrying the press-wheels, of the foot-lever pivoted to the rear transverse bar, the slotted link connected with said lever, the longitudinal arm or bar pivoted to said link and to the tongue extension, and the curved arms connecting the front and rear sections, substantially as described.

2. In a grain-drill, the combination, with the front horizontal side bars and transverse bar connecting the same, the tongue, the feed-box, and shaft, the runners, and the tongue, of the rear horizontal side bars, the intermediate bars having their rear ends formed or provided with foot-rests, the rear transverse bar, the stirrups and clamps and brackets for loosely securing the said transverse bars to the horizontal bars, the curved arms secured to said horizontal side bars and pivotally connected with one of the front transverse bars, and the press-wheel shaft and press-wheels, substantially as described.

3. In a grain-drill, the combination, with the front and rear sections and the tongue having a rear extension secured to said front extension, of the foot-lever pivotally connected with the rear transverse bar and having an adjustable collar thereon, the longitudinal bar and link connecting said lever with the tongue, a hand-lever pivoted to said foot-lever, an arm pivoted to said hand-lever, having a bifurcated end engaging with the foot-lever and slidable thereon, and the press-wheels and shaft, substantially as described.

475,583. PERIODICAL FLUSHING-TANK. THOMAS C. BEAUMONT, New York, N. Y., assignor to the Henry Huber Company, same place. Filed Feb. 18, 1892. Serial No. 421,956. (No model.)

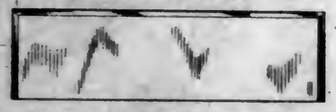


Claim.—1. A periodical flushing-tank having an inlet-faucet, a discharge-siphon, and an outlet-valve for starting the siphon, a counterweighted lever connected to said valve, a float, and mechanism adapted by the ascent of the float to tilt said lever and lift its counter-weight and comprising a trip device for freeing said lever to permit it to fall back and lift said valve, thereby permitting an outflow of water to start the siphon.

2. A periodical flushing-tank having an inlet-faucet, a discharge-siphon, and an outlet-valve for starting the siphon, a counterweighted lever connected to said valve, a float, a lever connected to said float, and a pawl carried by said lever adapted as the float ascends to engage said counterweighted lever and tilt it to lift its counter-weight and arranged to free itself therefrom when the float ascends to a certain height, thereby permitting the counterweighted lever to fall back and lift said valve, thereby causing an outflow which starts the siphon.

3. A periodical flushing-tank having an inlet-faucet, a siphon outlet-valve, a counterweighted lever connected to said siphon-valve, a float, a lever connected to said float, and a pawl carried by said lever and adapted by the ascent of the float to move downwardly and encounter and carry with it the end of the counterweighted lever and arranged to free itself therefrom and permit the counterweighted lever to fall back and lift the siphon-valve.

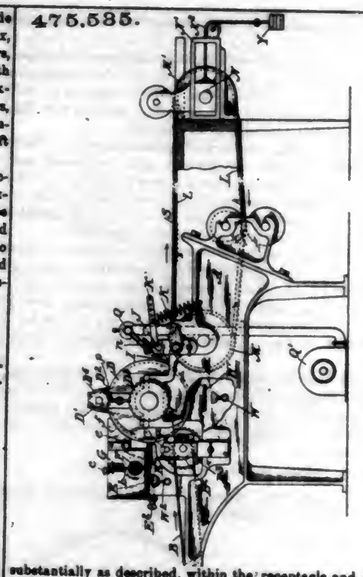
475,584. MEANS FOR SURFACE-PRINTING. EDWARD S. BOTTOS, Brooklyn, N. Y., assignor to Edward T. Wilkinson, same place. Filed Feb. 20, 1890. Serial No. 341,136. (No model.)



Claim.—A porous printing block or plate for surface-printing, composed of an alloy of zinc and aluminum, substantially as and for the purposes set forth.

475,585. MACHINE FOR APPLYING ADHESIVE MATERIAL TO THE SURFACE OF PAPER, &c. JAMES M. CAREW, New York, N. Y. Filed Apr. 24, 1891. Serial No. 390,235. (No model.)

Claim.—1. The combination, with a revolving drum for receiving and transferring a coating of adhesive material to the surface of paper or other fabric, of a receptacle to contain the adhesive material, having a discharging lip or ledge projecting horizontally from the upper edge of one side thereof at a lower level than its remaining sides and into close proximity to the periphery of the drum, means for adjusting the receptacle and its lip with reference to the drum, and means,



substantially as described, within the receptacle and below the level of said lip for producing a delivery of the material from within the receptacle outward upon said discharging-lip, substantially in the manner and for the purpose herein set forth.

2. The combination, with the receptacle for adhesive material in a paper-gumming machine, of a lip or ledge projecting outwardly horizontally from the upper edge of one of its walls at a lower level than the remaining top edges thereof, and a roller revolving in the receptacle at a level below said lip parallel therewith, whereby a discharge of the material within the receptacle is produced from said lip, substantially in the manner and for the purpose herein set forth.

3. The combination, with the receptacle for adhesive material in a paper-gumming machine, of a lip or ledge projecting outwardly from the upper edge of one of its walls at a lower level than the remaining top edges thereof, a roller revolving in the receptacle at a level below said lip parallel therewith, and a metallic blade mounted over the roller in contact therewith, whereby a return flow of the adhesive material over the roller as it revolves is prevented and the material is made to rise and overflow the lip, substantially in the manner and for the purpose herein set forth.

4. The combination, with the revolving drum for receiving and transferring a coating of adhesive material, and means for delivering the paper to and against the under side of the drum, of a rocking bar mounted parallel with the axis of said drum, stripping-fingers loosely secured to said bar to bear with their lower ends against the periphery of the drum, an arm secured to said bar, and a spring adapted to engage the arm at different points to actuate the bar to swing the fingers toward the drum with adjustable pressure, substantially in the manner and for the purpose herein set forth.

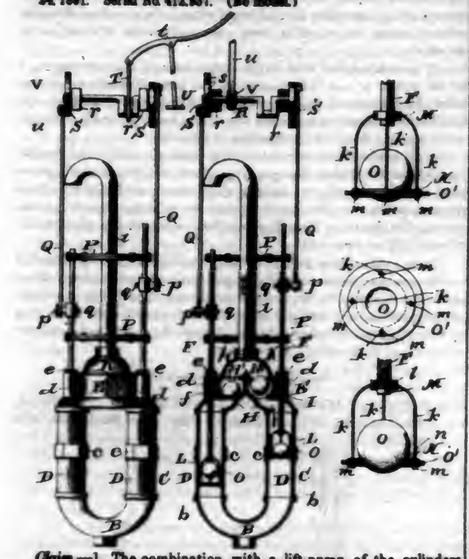
5. The combination, in a paper-gumming machine, with its stripping-fingers and a rocking bar supporting the same, having transverse grooves or notches therein to receive the fingers, of the elastic bands looped over the fingers on each side of the bar and carried under it, substantially in the manner and for the purpose herein set forth.

6. The combination, with an endless belt S, of a longitudinal series of rings secured to the inner side of said belt, a cord passed loosely through said rings, and carrying-rollers having peripheral grooves adapted to receive said cord and prevent thereby a lateral displacement of the belt in its movement over the rollers, substantially in the manner and for the purpose herein set forth.

7. The combination, with the revolving drum for receiving and transferring a coating of adhesive material to the surface of paper or other fabric, means for carrying and delivering the paper to and against the drum on one side, and a series of fingers for detaching the paper from the drum on the opposite side, of an air-jet pipe mounted above said fingers to deliver a blast of air against the paper as it leaves the drum, and thereby facilitate its separation and delivery therefrom, substantially in the manner and for the purpose herein set forth.

8. The combination, with a revolving drum in a paper-gumming machine, of a longitudinally-reciprocating gum-smoothing roller revolving in contact therewith, and a blade for scraping the gum from said roller, substantially in the manner and for the purpose herein set forth.

475,586. PUMP. ANDREW CARLSON, Gilbert, Mich. Filed Nov. 24, 1891. Serial No. 412,937. (No model.)

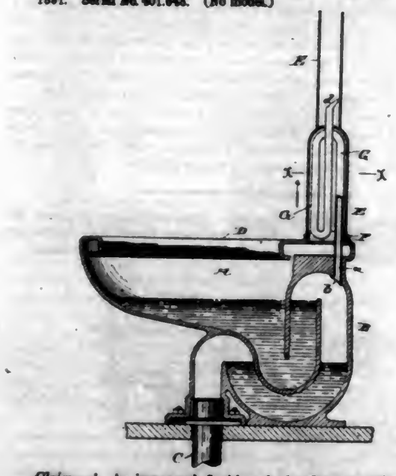


Claim.—1. The combination, with a lift-pump, of the cylinders having their top portions curved toward each other to form valve-seats, of the plug inserted at the juncture of the cylinders above the said valve-seats, and the globe-valves surrounded by the plug to protect them when raised from the seats, substantially as set forth.

2. The combination, with a lift-pump, of the cylinders having their top portions curved toward each other to form valve-seats, of the plug I, inserted at the juncture of the cylinders above said seats, the globes H, and the pump-cap K, having prongs projecting below the plane of the top of the plug, whereby the globes are confined in the said plug, substantially as and for the purpose set forth.

3. In a lift-pump, the combination, with the cylinders having their top portions curved toward each other to form valve-seats, of the plug I, inserted at the juncture of the cylinders above the said seats, with the cap K, the discharge-pipe i, and the guide-plates P, clamped to the said pipe, substantially as shown and described, and for the purpose set forth.

475,587. FLUSHING DEVICE FOR WATER-CLOSET BOWLS. ANDREW COCHRAN and EDWARD C. STOVER, Trenton, N. J. Filed Aug. 4, 1891. Serial No. 401,648. (No model.)

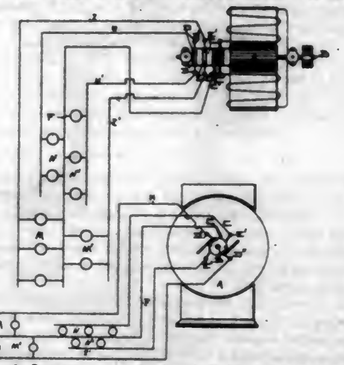


Claim.—1. An improved flushing device for water-closet bowls, which consists of a flushing-pipe connecting the flushing-tank with the flushing-rim of the bowl, and a second or auxiliary pipe the upper end of which is set inside the flushing-pipe and taps the water descending therein and conveys a portion thereof to the siphon-trap of the bowl, into which the lower end of said auxiliary pipe enters, substantially as shown and described.

2. An improved flushing device for water-closet bowls, which consists of a flushing-pipe connecting the flushing-tank with the flushing-rim of the bowl, and a second or auxiliary trapped pipe the upper end of which is set inside the flushing-pipe and taps the water descending therein and conveys a portion thereof to the siphon-trap of the bowl, into which the lower end of said auxiliary pipe enters, and devices for revealing said auxiliary trapped pipe, substantially as shown and described.

3. An improved flushing device for water-closet bowls, which consists of a flushing-pipe connecting the flushing-tank with the flushing-rim of the bowl and containing an auxiliary trapped pipe situated within the flushing-pipe and with its lower end projecting therefrom into the trap of the bowl, substantially as shown and described.

475,588. SYSTEM OF ELECTRIC LIGHTING. MILO J. COWELL, Omaha, Nebr. Filed Oct. 22, 1891. Serial No. 409,486. (No model.)



Claim.—1. In an apparatus for electric lighting, the combination, with a high-voltage dynamo, of a commutator-sleeve of non conducting material mounted upon the armature-shaft, said sleeve being provided with a series of inlaid peripheral segments of copper, a common return-collar, all in electric connection with the armature-coils, a series of brushes mounted in the path of said segments and return-collar, there being two brushes for each segment, and a multiple system of circuits extending from said brushes and common return-collar, so that as the armature revolves the current passes over the circuits intermittently and but during the fractional part of the time of each revolution of the armature, thus making it possible to use a low-voltage lamp on a high-voltage circuit, substantially as and for the purpose set forth.

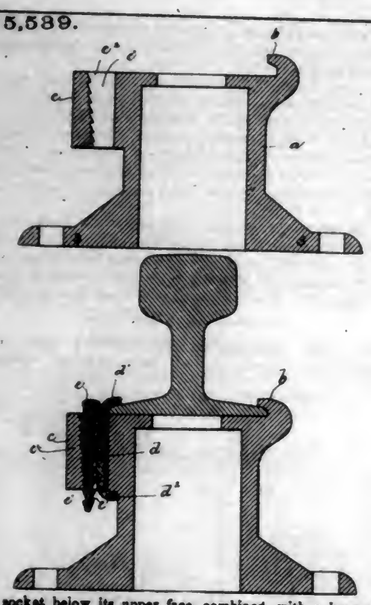
2. In an apparatus for electric lighting, the combination, with a high-voltage dynamo, of a commutator-sleeve of non-conducting material forming part of the armature-shaft, two inlaid peripheral segments of a suitable length and a common return-collar, all in electric connection with the armature-coils, said segments being mounted opposite one another but not in the same vertical plane, a series of brushes mounted opposite one another and in the path of said segments and collar, and a multiple system of circuits extending from said brushes adapted to receive a current which is intermittently and successively forced through said circuits, so that the current is never in two systems at the same instant, but is successively directed over the several circuits, substantially as set forth.

3. In an apparatus for electric lighting, providing a multiple system of circuits and embracing the use of a current of greater voltage than that required for the lamp within said systems, the combination, with the dynamos, of an accumulator-sleeve provided with a series of peripheral inlaid segments of copper, said segments being of such length that there would be a period of rest representing the current excess of voltage over that of the lamps, a common return-collar, brushes within the paths of said segments and collar, a common return-wire extending from the collar-brush, and a set of circuit-wires, and a system of lamps within said circuits, all substantially as and for the purpose set forth.

475,589. CHAIR FOR RAILWAY-RAILS. MAYNARD P. CLEMONS, Attleborough, Mass. Filed Aug. 14, 1891. Serial No. 402,660. (No model.)

Claim.—1. In a rail-chair, the body *a*, having at its upper end a rail-seat, a flat rail-engaging clip, as *b*, at one edge of said seat, and an offset or projection at the opposite edge of said seat, provided with a

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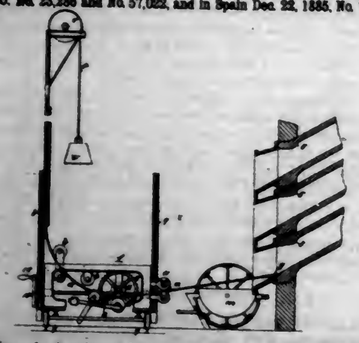


tapered socket below its upper face, combined with a loose plate adapted to enter said socket and provided with a rail-engaging ear or clip at its upper end, and a wedge adapted to enter the socket beside said plate, as set forth.

2. In a rail-chair, the body *a*, having at its upper end a rail-seat, a rail-engaging clip, as *b*, at one edge of said seat, and an offset or projection at the opposite edge of said seat, provided with a tapered socket, combined with a curved plate having a rail-engaging ear or clip at its upper end and another ear at its lower end formed to engage the under side of the projection, and a wedge adapted to enter the socket beside said plate, as set forth.

3. In a rail-chair, the body *a*, having at its upper end a rail-seat, a rail-engaging clip, as *b*, at one edge of said seat, and an offset or projection at the opposite edge of said seat, provided with a tapered socket having a serrated outer side, combined with a curved plate having a rail-engaging ear or clip at its upper end and another ear at its lower end formed to engage the under side of the projection, and a wedge adapted to enter the socket beside said plate, said wedge having serrated sides, as set forth.

475,540. APPARATUS FOR DISCHARGING GAS-RETORTS. ANDRÉ COEZ, Paris, France, assignor, by direct and mesne assignments, to Socrates Newman and James Green, St. Louis, Mo. Filed Nov. 28, 1890. Renewed Mar. 30, 1892. Serial No. 427,013. (No model.) Patented in France Feb. 14, 1885, No. 167,044; in Germany Mar. 27, 1885, No. 33,959; in Belgium June 17, 1885, No. 69,316; in England June 20, 1885, No. 7,563; in Italy June 30, 1886, No. 483; in Austria-Hungary Oct. 30, 1885, No. 23,386 and No. 57,022, and in Spain Dec. 22, 1885, No. 7,837.



Claim.—1. A rake and a rake-handle, consisting of a flexible metallic band having a T-head and adapted to be curved or bent, as shown, in combination with suitable guide-rollers and mechanism for propelling such rake and handle into and out of the retort

2. In combination with a suitable traveling carriage and the rake and handle consisting of a flexible band or rod adapted to be curved upward, the guide-rollers for guiding the handle in a vertical direction and mechanism for propelling such rake and handle into and out of the retort.

3. In combination with a traveling carriage, the rake having a flexible handle or rod, rollers arranged on suitable shafts above and below the rake-handle for gripping such handle between them, and suitable power-gearing operating the rollers to propel the handle and rake back and forth for discharging the retort.

4. In combination with a traveling carriage, a rake and flexible handle mounted therein, the gripping-rollers mounted on shafts above and below such handle, the counter-weights connected with one of the gripping-rollers for pressing it against the rake-handle, and power-gearing for operating the gripping-rollers to propel the rake-handle, substantially as described.

5. In combination with a traveling carriage, a rake and flexible handle mounted therein, the gripping-rollers mounted on shafts above and below such handle, the counter-weights connected with one of the gripping-rollers for pressing it against the rake-handle, power-gearing for operating the gripping-rollers to propel the rake-handle and the guide-rollers, substantially as described.

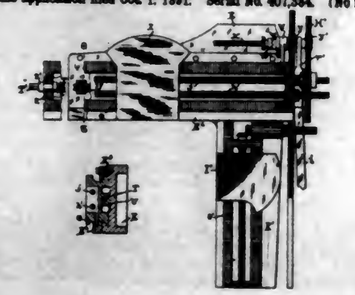
475,541. STRINGED MUSICAL INSTRUMENT. FREDRICK A. CROSS, Cincinnati, Ohio. Filed Jan. 23, 1892. Serial No. 419,009. (No model.)



Claim.—1. In a stringed musical instrument, a shallow body pear-shaped in plan and having a swell therein and its greatest depth and width two-thirds the distance between its fore and rear ends, and a shortened neck whose junction with said body is at a point in line with the twelfth fret from the nut or head, the distance between said twelfth fret and nut corresponding with that between said fret and the bridge, whereby a compact and convenient instrument of great resonance and sweetness is produced, substantially as herein set forth.

2. In a stringed musical instrument, a shallow body A, pear-shaped in plan and having a swell therein and its greatest depth and width at a point *x x*, which is two-thirds the distance rearwardly between its fore and rear ends, substantially as herein set forth.

475,542. METAL-PLANER. JACOB S. DETRICK, Baltimore, Md. Original application filed Feb. 5, 1891, Serial No. 380,264. Divided and this application filed Oct. 1, 1891. Serial No. 407,384. (No model.)



Claim.—1. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway, a laterally-adjustable extension-slide fitting said slideway and itself having a horizontal slideway, said extension-slide to occupy a fixed position during the operation of the machine while planing, a tool-head on the extension-slideway, and driving mechanism connected with said tool-head to move it over the said extension-slideway.

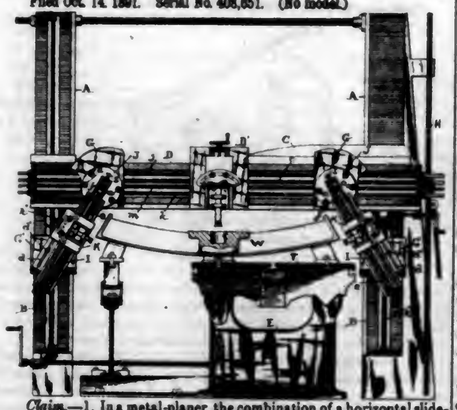
2. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway, a separate extension-slide fitting said slideway and provided with a horizontal tool-head slideway, a screw-shaft for adjusting the extension-slide on the cross-beam and holding it thereon in a fixed position during the operation of the machine while planing, a tool-head on the extension-slideway, and driving mechanism connected with said tool-head to move it over said extension-slideway.

3. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway, a laterally-adjustable extension-slide fitting said slideway and itself having a slideway, a tool-head on said latter slideway, screw-shafts carried by the slide for actuating the said tool-head, a supplemental rack, also carried by the slide, for directly actuating said screw-shafts, and a vertically-reciprocating main rack connected by gearing with the said auxiliary rack and imparting motion thereto.

4. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway, a laterally-adjustable extension-slide fitting said slideway and itself having a slideway, a tool-head on said latter slideway, screw-shafts carried by the slide for actuating the said tool-head, a supplemental rack, also carried by the slide, for directly actuating said screw-shafts, a vertically-reciprocating main rack, and a spline-shaft extending through a sleeve which carries a pinion meshing with the main rack and itself carrying a pinion meshing with the auxiliary rack.

5. In a metal-planer, the combination of a fixed post having a vertical slideway, a cross-beam fitting the latter and adjustable thereon and provided with a horizontal slideway, a laterally-adjustable extension-slide fitting said slideway and itself having a slideway, a tool-head on said latter slideway, screw-shafts carried by the slide for actuating the said tool-head, a supplemental rack, also carried by the slide, for directly actuating said screw-shafts, a vertically-reciprocating main rack, a spline-shaft extending loosely through a sleeve which carries a pinion meshing with the supplemental rack, and a sliding clutch on the said spline-shaft for engaging the said loose sleeve.

475,543. METAL-PLANER. JACOB S. DETRICK, Baltimore, Md. Filed Oct. 14, 1891. Serial No. 408,651. (No model.)



Claim.—1. In a metal-planer, the combination of a horizontal slideway, a vertical slideway, a slideway having its ends suitably connected with the horizontal and vertical slideways, respectively, so as to admit of its adjustment to different inclined positions, and a tool-head on said latter slideway.

2. In a metal-planer, the combination of a horizontal slideway, a vertical slideway, a head on said horizontal slideway, a head on said vertical slideway, an inclined slideway carried by said two heads and adjustable to different angles by moving the heads on their respective slideways, and a tool-head on the inclined slideway.

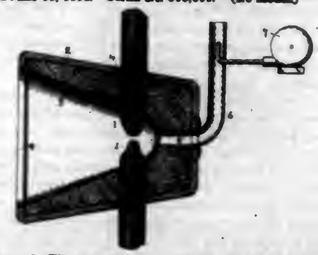
3. In a metal-planer, the combination of a horizontal slideway, a vertical slideway, a head on said horizontal slideway, a head on said vertical slideway, an inclined slideway carried by said two heads and adjustable to different angles by moving the heads on their respective slideways, said inclined slideway connected to said heads by means of bolts which engage suitable slots, whereby such adjustment may be had, and a tool-head on the inclined slideway.

4. In a metal-planer, the combination of a horizontal slideway, a vertical slideway, a head on said horizontal slideway, a head on said vertical slideway, an inclined slideway carried by said two heads and adjustable to different angles by moving the heads on their respective slideways, the upper end of said inclined slideway being connected to the head on the horizontal slideway by bolts which engage in a circular slot in the said head and the lower end being connected to the head on the vertical slideway by a bolt which projects from said head and engages a slot in the inclined slideway, and a tool-head on the inclined slideway.

5. In a metal-planer, the combination of a horizontal slideway, a vertical slideway, a head on said horizontal slideway, a head on said vertical slideway, an inclined slideway carried by said two heads and adjustable to different angles by moving the heads on their respective slideways, a tool-head on the inclined slideway, a spline-shaft in the horizontal slideway, a screw-shaft in the inclined slideway engaging the tool-head thereon, and suitable connecting-gear between the two, whereby the screw-shaft is actuated by the turning of the spline-shaft.

6. In a metal-planer, the combination of a horizontal slideway, a vertical slideway, a head on said horizontal slideway, a head on said vertical slideway, an inclined slideway carried by said two heads and adjustable to different angles by moving the heads on their respective slideways, a tool-head on the inclined slideway, a spline-shaft in the horizontal slideway, a screw-shaft in the inclined slideway engaging the tool-head thereon, a pinion on the spline-shaft carried by the head on the horizontal slideway, a pinion on the screw-shaft, and a stud extending through said head and having pinions on its opposite ends which gear into the two pinions aforesaid, respectively.

475,544. ELECTRIC-ARC LAMP. ROBERT S. DOBBIE, Brooklyn, assignor to the Edison General Electric Company, New York, N. Y. Filed June 11, 1891. Serial No. 396,869. (No model.)



Claim.—1. The combination, with the electrodes of an arc lamp, of an inclosing device around the arc for conserving the heat and intensifying the light thereof, the body having an escape-passage and a draft-inducing device for diverting gases through said passage from the space in front of the arc, substantially as described.

2. The combination, with the electrodes of an arc lamp, of a refractory inclosing device around the arc for conserving the heat and intensifying the light thereof, but having a suitable opening or transparent side for the passage of light, there being a gas-passage in addition to the light-opening, and means for inducing a draft, whereby gases are diverted from the space around the arc, substantially as described.

3. The combination, with the electrodes of an arc lamp, of an inclosing device around the arc and adapted to direct the light-rays in the desired direction, the body having an escape-passage for the gases and vapors formed by the arc, and means for creating a draft through said passage for diverting said gases and vapors from the space in front of the arc, substantially as described.

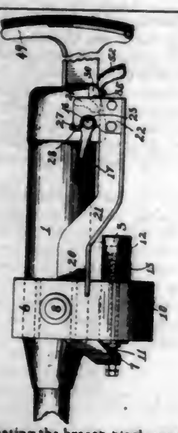
4. The combination of an electric-arc lamp, a refractory heat-retaining device surrounding the arc, an opaque shield partly closing the open end of said device, and means for drawing the gases from the space between the arc and shield, substantially as described.

475,545. BREECH-LOADING ORDNANCE. WILLIAM H. DRIGGS, U. S. Navy. Filed Jan. 16, 1892. Serial No. 418,291. (No model.)

Claim.—1. In a breech-loading gun, the combination, with a trunnioned rocking frame having a bar protruding to the rear of and rigidly attached to said frame, of a cam attached to said bar, a rock-shaft set transversely across the breech of the gun and actuating the breech-block, an arm on said rock-shaft, and a spring-plunger attached to said arm and adapted to engage said cam and so turn said rock-shaft, substantially as and for the purposes described.

2. In a breech-loading gun, the combination, with a trunnioned rocking frame having a bar protruding to the rear of and rigidly attached to said frame, of a cam attached to said bar, with cam-surface toward the breech of the gun, a rock-shaft set transversely across the

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breech of the gun and actuating the breech-block, an arm on said rock-shaft, and a spring-plunger attached to said arm and adapted to engage said cam as the gun moves forward from the end of the recoil and so turn said rock-shaft, substantially as and for the purposes described.

3. In a breech-loading gun, the combination, with a trunnioned rocking frame and a device for returning the gun to the initial position after it has been fired, of a bar rigidly attached to said rocking frame and protruding to the rear, a cam attached to said bar with cam-surface toward the breech of the gun, a rock-shaft set transversely across the breech of the gun and actuating the breech-block, an arm on said rock-shaft, and a spring-plunger attached to said arm and adapted to engage said cam as the gun moves forward on the counter-recoil, substantially as and for the purposes described.

4. In a breech-loading gun, the combination, with a trunnioned rocking frame having a bar protruding to the rear of and rigidly attached to said frame, of a flat plate attached to said bar, said plate having a curved groove cut in its interior face, the said groove being open to the rear of the plate and having an incline at its lower front portion, a rock-shaft set in the breech of the gun and actuating the breech-block, an arm on said rock-shaft, and a spring-plunger on said arm whose head normally presses against the interior surface of said flat plate and engages in said curved groove as the gun recoils, passing out of the same by the incline upon the counter-recoil, and thus turning said rock-shaft and opening said breech-block, substantially as described.

5. In a breech-loading gun whose breech-block is opened or closed by turning a rock-shaft, a device for turning said rock-shaft and for locking said rock-shaft and breech-block in any desired position, which consists of a slotted arm keyed on said rock-shaft, a spring-plunger adapted to engage in said slotted arm, the said spring-plunger having a shoulder thereon, and a cam-lever fitting loosely on said rock-shaft and adapted to, first, engage said shoulder and withdraw said spring-plunger, and, second, engage said slotted arm and turn said rock-shaft, substantially as and for the purposes described.

6. In a breech-loading gun of the character described, a device for locking, unlocking, opening, and closing the breech-block, which consists of a rock-shaft 16, an arm 40, keyed thereon and having slot 43 and lugs 47 and 48, a spring-plunger 33, adapted to engage in said slot and having a shoulder 36, a hand-lever 17, fitting loosely on said rock-shaft, and an arm 45, attached to said hand-lever, moving freely between and adapted to engage either of the lugs 47 or 48, the said arm 45 having a cam-face at its rear adapted to engage the shoulder 36 and release the spring-plunger 33, substantially as and for the purposes described.

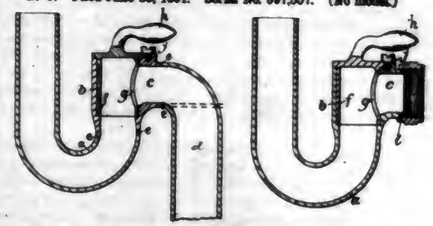
7. In a device for locking, unlocking, opening, and closing the breech-block of a breech-loading gun of the character described, the combination, with the rock-shaft 16, of the arm 40, keyed thereon and having lugs 47 and 48, slot 43, and cam 44, the spring-plunger 33, attached to the breech of the gun and having shoulder 36, the hand-lever 17, and the arm 45, moving freely between said lugs 47 and 48 and adapted to engage either of them and having a cam at its outer end adapted to engage the said shoulder 36 of the plunger 33, substantially as described.

8. In a recoil-mount for a breech-loading gun of the character described, the combination, with the rock-shaft for actuating the breech-block, of a hand-lever mounted on said rock-shaft, two arms attached to said hand-lever, the one arm carrying a spring-plunger and the other a cam, a third arm rigidly attached to said rock-shaft and having a cam-face and a slot therein, a cam attached to said recoil-mount and adapted to engage said spring-plunger, and a locking-plunger attached to the breech of the gun and having a shoulder adapted to be engaged by the cam on the arm attached to said hand-lever, the head of said plunger being adapted to be raised by said cam on said rock-shaft arm and to fit in said slot therein, substantially as described.

9. In a recoil-mount for breech-loading guns, the combination, with a trigger attached to the mount, of a rock-shaft attached to said trigger and having a toe at its opposite end, a second rock-shaft mounted in the breech of the gun and having a tripping device for the firing-pin connected thereto, with a lifting-toe adapted to press against and to rear of said toe on the trigger rock-shaft when the gun is run out, substantially as and for the purposes described.

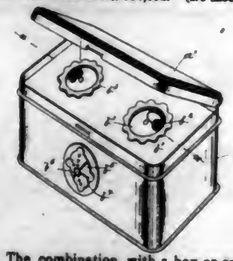
10. In a recoil-mount for breech-loading guns, the combination, with a rocking slide having the bar 50 attached thereto and protruding to the rear thereof, of the rock-shaft 53, mounted in said bar and having trigger 54 and toe 55 at either end thereof, and the rock-shaft 57, mounted in the breech of the gun and having the lifting-toe 56 at one end, adapted to bear against the rear face of the toe 55, and a device for tripping the firing-pin of the gun at the other, substantially as described.

475,546. WASTE-PIPE TRAP. FREDERICK H. DU BOIS, New York, N. Y. Filed June 26, 1891. Serial No. 397,557. (No model.)



Claim.—As an improved article of manufacture, a waste-pipe trap of uniform bore throughout, the delivery-bend of which is formed by a cylindrical open bottom and lateral-delivery turn cock or valve and its casing placed in the axial line of the trap and extended above the level of the discharge-opening, substantially as described.

475,547. DEODORIZING DEVICE. EDWARD O. ELY, Boston, Mass. Filed Jan. 21, 1890. Serial No. 337,652. (No model.)



Claim.—1. The combination, with a box or case having a lid or cover and provided with an air-inlet, of an upper and lower layer or block of pulp placed in said box, a layer of oakum or loose absorbent material interposed between said layers or blocks, and a false cover provided with a vapor-outlet valve, substantially as described.

2. The combination, with a box or case having a lid or cover and provided with an air-inlet, of a lower layer or block of pulp placed in said box, a layer of oakum placed on the said layer of pulp, a second layer or block of pulp provided with a distributing-channel and openings a^2, and a false top or cover provided with a valve, substantially as described.

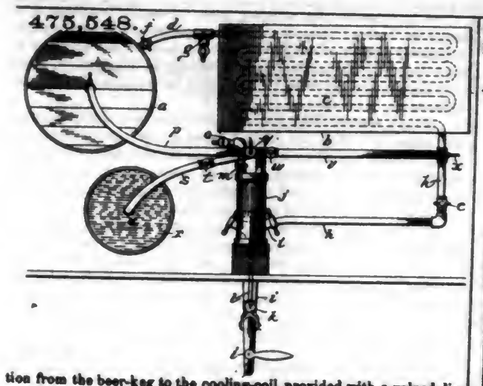
3. The combination, with a box or case provided with an air-inlet and a vapor-outlet, of layers or blocks of pulp in said box, and a layer of oakum or loose absorbent interposed between said layers, substantially as described.

4. The combination, with a box or case having a lid or cover provided with an air-inlet and an adjustable valve therefor, of a layer or block of pulp placed within said box or case and impregnated with a deodorizing fluid or medicament, and a false top or cover provided with a vapor-outlet valve, substantially as described.

475,548. BEER-COOLER. WILLIAM W. FERGUSON, Bloomdale, Ohio. Filed July 7, 1891. Serial No. 398,640. (No model.)

Claim.—1. In combination, a beer-keg, a cooling-coil, a connection from the beer-keg to the cooling-coil, provided with a valved discharge and with a stop-cock, a connection from the other end of the cooling-coil to the faucet, a pump, connections from the pump to the beer-keg, provided with a stop-cock, a valved air-inlet for said pump, a water-vessel and connections from the water-vessel to the pump, having a check-valve, a stop-cock and connection from the pump to the end of the cooling-coil connected with the faucet, and a stop-cock in such connection, said connections and valves and stop-cocks being arranged to operate substantially as described, as and for the purposes set forth.

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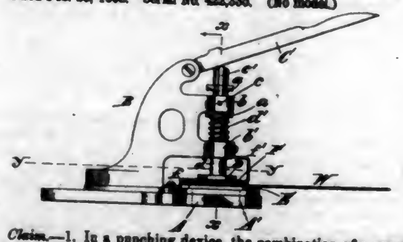


2. In combination, a beer discharge or faucet, a beer-supply vessel, a cooling-coil, an air-pump having an air-supply and means for cutting off the air, an air connection from the pump to said vessel, provided with closing means, beer connections from said vessel through said coils to the faucet, provided with means for shutting said coils out from said connections, a water-discharge from one end of said coils, provided with closing means, a water connection provided with closing means from the pump to the opposite end of the coil, and a water-supply pipe for the pump, having a check-valve.

3. In a beer-cooler, the combination of a beer-supply vessel, a cooling-coil having a beer-discharge from one end, a beer connection from said vessel, provided with cut-off means and with a discharge-faucet, the air-pump having an air connection to said vessel and provided with cut-off means, a water-supply connection for said pump, and a water-discharge connection from said pump to the end of said coil opposite said faucet and provided with cut-off means, substantially as described.

4. In a beer-cooler, the combination of a beer-vessel, a cooling-coil, beer connections from the vessel to said coil, said coil being capable of disconnection from the beer-vessel, the air-pump having an air connection to said vessel capable of being cut off, a water connection from the pump to the end of the coil opposite the discharge connection therefrom, said water connection capable of being cut off, and the water-supply pipe for the pump, having a check-valve, substantially as described.

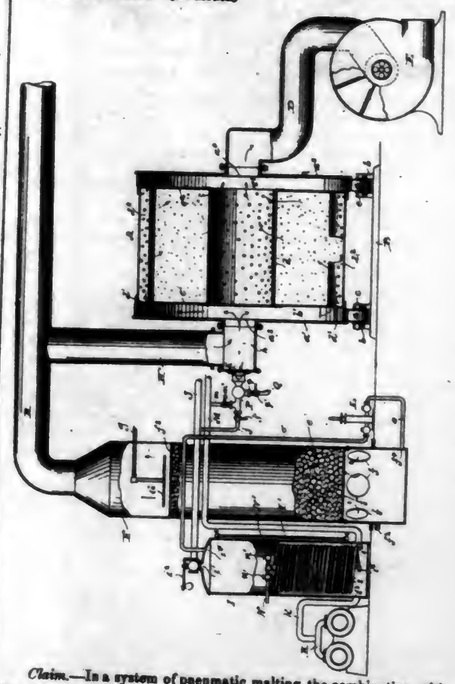
475,549. PUNCH FOR CUTTING OUT SHAPES FROM SHEETS OF PLASTIC MATERIAL. GEORGE A. FERGUSON, Cincinnati, Ohio. Filed Feb. 23, 1892. Serial No. 422,835. (No model.)



Claim.—1. In a punching device, the combination of a punch, a suitable supporting standard or frame therefor, a die, a suitable bed-plate or base for said die, and a stripper-plate having a central opening in a vertical line with said punch and die, and a transverse gage or stop on which such plate is mounted, the gage being mounted in turn on said bed-plate and supporting said stripper-plate so that it projects forwardly between said punch and die, substantially in the manner and for the purpose specified.

2. In a punching device, the combination of a punch, a die, suitable supporting means therefor, a stripper-plate intervening between said punch and die, and a rigid transverse stop or gage constructed at the rear end of said stripper-plate and forming a support for said rear end of the stripper-plate on the bed-plate, substantially as and for the purpose specified.

475,550. SYSTEM OF PNEUMATIC MALTING. FRANKLIN B. GIESLER, Milwaukee, Wis., assignor to the Galland-Henning Pneumatic Malting Drum Manufacturing Company, same place. Filed Mar. 9, 1891. Serial No. 384,946. (No model.)



Claim.—In a system of pneumatic malting, the combination, with the series of malt or grain receptacles, a suction-fan, and a coke-tower containing a sprinkler, all connected together by suitable air-pipes, of a chamber provided with air and water inlet and outlet pipes, a coil within said chamber connected with temperature-regulating-fluid pipes, pumps connected with said inlet-pipes, and mixing-chambers for the air and water connected with the outlet-pipes and with the air-pipes leading to said malt or grain receptacles, injectors within said mixing-chambers, and steam-pipes leading into said mixing-chambers, substantially as set forth.

475,551. PROCESS OF UNGUMMING AND DECORTICATING TEXTILE MATERIAL. CHARLES GIRARD, Paris, France. Filed Aug. 4, 1891. Serial No. 401,634. (No specimens.) Patented in France May 20, 1890, No. 206,775.

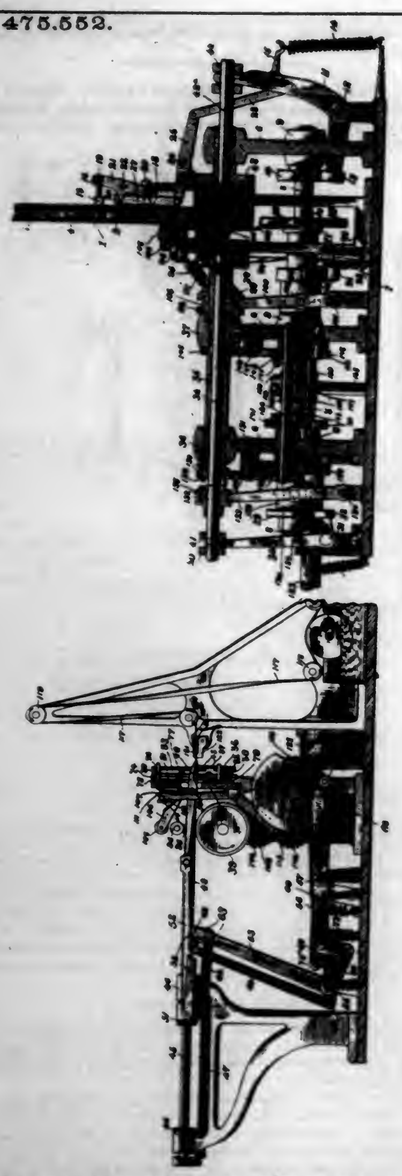
Claim.—1. The process of decorticating and ungumming textile plants, which consists in, first, treating plants with a basic salt of a polyatomic acid to dissolve the gumming substances in said plants; second, washing the fibers thus treated in water to remove a portion of the gumming substances and oxides; third, passing said fibers through a bath of sulphurous acid, and finally cleansing the fiber with water, substantially in the manner herein described.

2. The process of decorticating and ungumming textile plants, which consists in treating said plants with manganate of potash to dissolve the gumming substance of said plant, then washing the fiber so treated with water, and then passing said fiber into a bath of sulphurous acid to remove the gum and oxides, and finally in washing and bleaching said fibers, substantially as described.

475,552. MACHINE FOR STRIPPING PASTE OR STRAW BOARD BOXES. JONATHAN GODFREY, Bridgeport, Conn., assignor of one-half to William E. Baffin, same place. Filed Aug. 31, 1891. Serial No. 404,906. (No model.)

Claim.—1. In a machine for automatically stripping the sides of paper boxes, the combination of mechanism for feeding a mass of boxes in regular succession, active instrumentalities for grasping the boxes and separating them from succeeding boxes and for presenting the latter to the stripping devices, means for delivering the pasted strip

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to the boxes, and instrumentalities for winding said strip around the boxes, substantially as set forth.

2. In a machine for automatically stripping the sides of paper boxes, the combination of means, as a chute, for feeding the boxes, active instrumentalities for successively grasping said boxes without contact with said sides and conveying them separately to the proper position relative to the stripping devices, instrumentalities for delivering the strip to the boxes, instrumentalities for initially clamping the strip to the boxes, instrumentalities for revolving the boxes, and instrumentalities for depressing said strip against said boxes during their revolution, substantially as set forth.

3. In a machine of the character described, the combination of means for feeding the boxes, a reciprocatory and rotary plunger-block whereby the boxes are selected and delivered to the stripping devices, reciprocatory pinchers whereby the strip is delivered to the boxes, a clamping-roll for depressing the strip against the boxes, means for revolving said plunger-block, and a calender-roll whereby said strip is firmly united to the boxes, substantially as set forth.

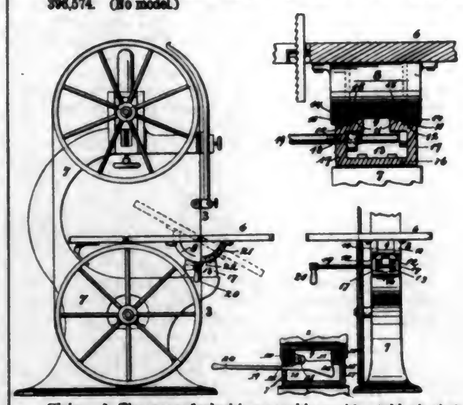
4. In a machine for stripping paper boxes, the combination of means for feeding a mass of said boxes successively, a reciprocatory and rotary plunger whereby the boxes are selected and delivered to the stripping devices, and instrumentalities for securing a pasted paper strip around the sides of said boxes during the rotation of the latter, substantially as set forth.

5. In a machine of the character described, the combination, with the means for feeding the finished boxes, of the plunger-block, the casing wherein said block is normally housed, and means for projecting and retracting said block, whereby a box is selected and delivered to the stripping devices and then after the stripping is cast off from said block, substantially as shown and described.

6. The combination of the chute, means for feeding the boxes therein one at a time to the devices for selecting and delivering the boxes to the stripping devices, a plunger-block conforming closely to the interiors of the boxes, means for projecting and retracting said plunger, whereby a box is grasped and presented to the stripping devices, instrumentalities for delivering the strip to the box, means for initially clamping said strip to the box, means for revolving the plunger-block, whereby said strip is wound around the box, and means for calendering the strip throughout its length upon the box during the revolution thereof, substantially as shown and described.

7. In a machine for automatically stripping the sides of paper boxes, the combination, with the devices for delivering the paper strip, of active instrumentalities for successively selecting, grasping, and delivering the boxes separately in proper position relative to said strip, and appliances for securing the strip around said boxes with an intervening application of paste, substantially as set forth.

475,553. LOCK FOR ADJUSTABLE MACHINE-TABLES. WILLIAM A. GREAVES, Cincinnati, Ohio. Filed June 17, 1891. Serial No. 396,574. (No model.)



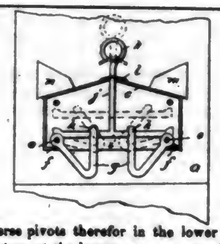
Claim.—1. The means for locking movable machine-tables in their adjusted positions on the general machine-frame, which means consist of a convex segmental frame and concave segmental frame, both fitting on each other and one secured to the under side of the table, the other secured to the general machine-frame, one of said segmental frames being recessed, which recess is occupied by parts of the other frame and whereby the two frames are confined on each other, the lateral distance between the upright parts of one of the segmental frames being slightly variable, whereby one of these frames impinges laterally against the other one, causing them to become locked on each other, all as substantially shown and described.

2. The means for locking adjustable machine-tables in their adjusted positions on the general machine-frame, which means consist of two segmental frames, one secured to the under side of the machine-table, the other to the main frame immediately below the other, their curved surfaces fitting and resting on each other and provided with dovetails, as shown, whereby they are confined on each other, one of these frames consisting of a base, from the ends of which two wings rise at right angles and parallel to each other, their upper ends carrying dovetails, means, as a screw, for instance, whereby the distance between these wings may be slightly varied, so as to cause their dovetails to impinge laterally against dovetails on the other frame, and whereby the two segmental frames become locked on each other, all as substantially shown and described.

475,554. GATE-LATCH. MORTS HAGGAR, Marshall, Tex. Filed Sept. 21, 1891. Serial No. 406,345. (No model.)

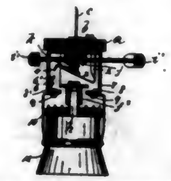
Claim.—The latch consisting of the case, the two triangular

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catches, the transverse pivots therefor in the lower outer corners of the case, the rigid stops at the lower outer corners of the case to prevent outward swing of said catches, the inwardly and laterally extending arms at the upper inner end of said catches, and the horizontal lifting-bar normally resting on said pivots and on which said arms loosely rest and provided with the raising-rod, substantially as described.

475,555. INCANDESCENT-LAMP SOCKET. CROMWELL A. B. HALVORSEN, Saugus, Mass. Filed Aug. 5, 1891. Serial No. 401,761. (No model.)



Claim.—1. In an electric circuit, the combination of a fixed contact, such as 6', a spring affixed to a support which is fixed relatively to said contact and has its free end formed as a contact, which is normally separated from the contact 6' by the stress of the spring, a block or cam of insulating material journaled in fixed bearings and bearing on said spring, said block having pinion-teeth, a slide having a rack arranged to engage said teeth, and means for limiting the motion of the slide, as set forth.

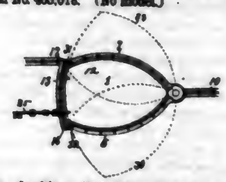
2. In an incandescent-lamp socket having suitable electrical connections and a switch, the combination, with the insulating-block *a*, of a metallic bracket comprising the central portion 5, secured to the block *a*, and two arms 6, projecting downwardly therefrom and having lugs or flanges 8 8', provided with screw-holes, and the flanged bracket *f*, also secured to the block *a* and having the threaded stud f^3 provided with socket f^4, whereby the said lamp-socket is adapted for use in connection with different constructions of lamps, substantially as set forth.

3. An incandescent-lamp socket comprising in its construction an insulating-block, a contact-spring attached to said block and adapted to be connected with one of the circuit-wires, the free end of said spring constituting a contact piece or lip which is normally held in an operative position by the stress of the spring, a metallic arm or bracket affixed to the block and insulated by the latter from said spring, said arm being adapted to be connected with the other circuit-wire and provided with a contact, such as the stud f^3, constituting a part of the electrical connection between one circuit-wire and one end of the lamp-filament, another metallic arm attached to the insulating-block and arranged to constitute a part of the electrical connection between the other circuit-wire and the other end of the lamp-filament, said arm being formed to make contact with the spring when the latter is moved from its normal position, a spring-moving cam of insulating material journaled in bearings affixed to said block and provided with pinion-teeth, a slide having a rack engaged with said teeth, and means for limiting the motion of the slide, as set forth.

4. A lamp-socket comprising in its construction the insulating-block *a*, the contact-spring affixed to said block, the arms 6 7, affixed to the block and having the flanges 8 8', the bracket *f*, also affixed to the block and having the stud f^3, and means for moving the contact-spring to close the circuit, as set forth.

5. A lamp-socket comprising in its construction the insulating-block *a*, the contact-spring affixed to said block and connected with the circuit-wire *c*, the arms 6 7, affixed to said block and having the perforated flanges 8 8', one of said arms having also a contact-lip 6', the bracket *f*, also affixed to the block *a* and having the externally-screw-threaded hollow or socketed stud f^3, the block or cam of insulating material journaled in bearings in said bracket and bearing on the contact-spring, the rack engaged with teeth on said cam, and the slide projecting from opposite sides of the socket and engaged with said rack, said slide having curved push-pieces at its ends, as set forth.

475,556. SAFETY-DOOR FOR JAIL-CORRIDORS. PERLEY HALE, Chicago, Ill., assignor to Charles H. Sparks, St. Louis, Mo. Filed Sept. 7, 1891. Serial No. 405,018. (No model.)



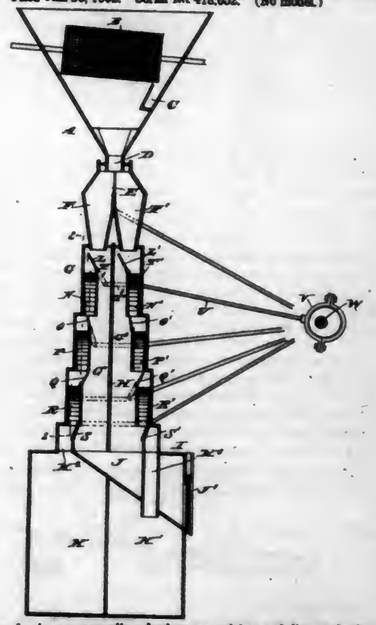
Claim.—1. The double-walled safety-door for jails, consisting of hinged wings 6 and 7, separated at one edge to form a space and having projecting lugs 31 32 on the free edges of said wings, in combination with a wall 13, arranged concentrically with respect to the hinges of said wings, and the stop-bars 16 and 17, having recesses 18 19, substantially as set forth.

2. The combination of the safety-gate 1, provided with bars 20, having recesses 21 and hinged to swing back and forth, locking-dogs 22, arranged to engage the notches in said bars 20, the vertical rod 24, connecting a dog at the top of the door with a dog at the bottom thereof, and means for operating said rod 24, substantially as set forth.

3. In combination with a gate for jails, constructed with wings, said wings being united at one edge, the opposite edges thereof being separated to form a space between the wings adapted to receive a person, said space being open only on the side of the gate opposite the united edges of the wings, a vertical wall to which the gate is hinged at its united edges, an opposite wall concentric with the hinge-joint of the gate, said gate being thereby arranged to oscillate adjacent to the concentric wall, which closes the entrance-passage to said space when the gate is in its normal position, and means for limiting the inward and outward movement of the gate, substantially as set forth.

4. In combination with a gate for jails, constructed with two wings, said wings being united at one edge and separated at the opposite edges to provide a space between them, and projections at the outer separated edges of the gate, means for hinging the united edges of the gate, a wall concentric with the hinge-joint and adapted to close the entrance-passage of the space between the wings, and devices engaged by said projections for limiting the inward and outward movement of the gate, substantially as set forth.

475,557. ORE-SAMPLING DEVICE. ROBERT C. HAWLEY, Pueblo, Colo. Filed Jan. 30, 1892. Serial No. 418,652. (No model.)



Claim.—1. An ore-sampling device comprising a delivery device for the ore, a dividing or oscillating wing arranged under the said delivery device, branch hoppers into which the ore divided by the said

wing passes, and a casing having a transverse partition to form two compartments, each provided with hoppers arranged one above the other and also with oscillating wings arranged alternately with the hoppers in each compartment, the wings of the two compartments oscillating simultaneously, substantially as described.

2. An ore-sampling device comprising a main hopper, a dividing or oscillating wing arranged under the said main hopper, branch hoppers into which the ore divided by the said wing passes, a casing having a transverse partition to form two compartments, each provided with hoppers arranged one above the other and also with oscillating wings arranged alternately with the hoppers in each compartment, and a base formed with an outlet into which the said compartments discharge and provided with sampling compartments into which the lowermost set of wings discharge, substantially as shown and described.

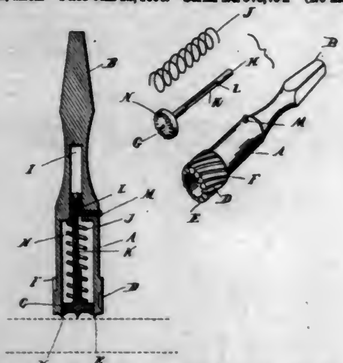
475,558. PROCESS OF TREATING MATTES AND ORES. HENRI L. HERRENSCHMIDT, Petit Quevilly, near Rouen, France. Filed Sept. 5, 1891. Serial No. 404,881. (No specimens.)

Claim.—1. The herein-described process of precipitating copper in metallic form from cobalt, nickel, and copper acid solutions, which consists in adding to said acid solutions the ore of the metals to remain in solution, substantially as described.

2. The herein-described process of precipitating copper in metallic form from nickel and copper acid solutions, which consists in adding to said solution protosulphide ore of copper and nickel, substantially as described.

3. The herein-described process of separating copper from cupriferous ores containing cobalt or nickel, which consists in, first, crushing and roasting the ore to be treated; second, sulphating or acidifying said roasted ore; third, adding water to form an acid solution of said roasted ore, and, finally, adding to said solution a portion of the original ore to precipitate the copper, substantially as described.

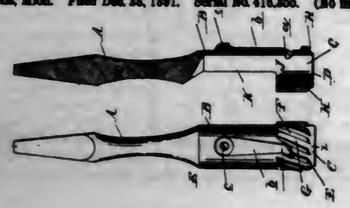
475,559. PLUG-CUTTER. ERNST C. HEYDENREICH, Mount Clemens, Mich. Filed Jan. 22, 1891. Serial No. 378,734. (No model.)



Claim.—1. In a plug-cutter, the combination, with the body having an enlarged head formed with a series of longitudinally-inclined grooves on its outer face, a hollow center, and cutting-teeth on its lower edge, of a sliding head within the head, having a series of teeth on its outer face, a stem supporting said sliding head, and a spring surrounding the stem within the body, substantially as described.

2. In a plug-cutter, the combination, with a hollow body having a series of spiral grooves on its lower end and a series of teeth on the lower edge of the groove portion, of a sliding head within the body formed with a series of radial teeth on its outer face, a stem supporting the sliding head, and a spring for normally forcing the head out, substantially as described.

475,560. PLUG-CUTTER. ERNST C. HEYDENREICH, Mount Clemens, Mich. Filed Dec. 28, 1891. Serial No. 416,356. (No model.)



Claim.—1. In a plug-cutter, the combination, with a shank, of a cylindrical cutting-head on the lower end thereof having an unbroken knife-edge on its extreme lower end, a series of inclined ribs on the outer face of the cylindrical portion having inclined cutting-teeth on their lower ends and formed with intervening spaces, the said ribs extending from a point adjacent but beyond the cutting-edge to a point at or near the upper end of the cylindrical portion, and an inclined chamfering-knife yieldingly supported in a recess in the cutting-head, substantially as described.

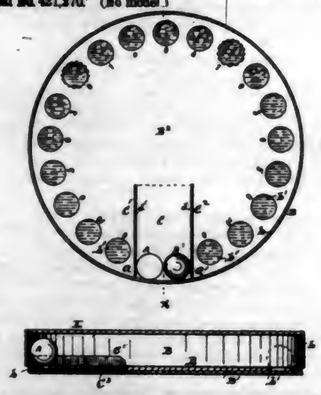
2. In a plug-cutter, the combination, with a hollow cutting-head having a recess therein, of a yielding chamfering-knife located within the head to one side of the center thereof, and means on the knife for forcing the same back into the recess upon the continued movement of the plug in the head, substantially as described.

3. In a plug-cutter, the combination, with a cylindrical cutting-head having an aperture in its side, of a spring secured on the outer face of the head, a cutter on the lower end of the spring projecting through the aperture and into the head beyond the inner walls thereof, and a series of inclined ribs in the outer face of the head having cutting-teeth on their lower ends, substantially as described.

4. In a plug-cutter, the combination, with the shank A, the cylindrical extension B, the cylindrical head C at the lower end thereof, and the spirally-arranged ribs F upon the outside of said head, having grooves between the same, of the teeth E, formed at the lower end of said ribs, having the inclined cutting-edges H, the annular knife D, formed at the lower inner edge of said head, and the beveled spring-supported cutter *a* within said head, the parts arranged and operated substantially as and for the purpose described.

5. In a plug-cutter, the combination of the cylindrical cutting-head and a chamfering-cutter in the head, consisting of a yieldingly-supported cutter arranged to one side of the center and extending inwardly and having an engaging edge to chamfer the edge of the plug and to cause it to recede when the plug is advanced into the cutting-head, substantially as described.

475,561. GAME APPARATUS. WILLIS F. HOOD, Detroit, Mich., assignor of one-half to J. W. Brunkert, same place. Filed Feb. 12, 1892. Serial No. 421,270. (No model.)



Claim.—1. In a game apparatus, the combination of an annular receptacle formed with a marginal upwardly-projecting rim and a slip formed with side walls extending from the marginal rim inward to the center of the receptacle, said receptacle provided with an annular series of pockets located adjacent to said marginal rim, the central portion of the receptacle within the annular series of pockets being a level unobstructed surface, substantially as described.

2. In a game apparatus, the combination of an annular receptacle provided with a marginal upwardly-projecting rim, a corresponding cover, and a slip formed with side walls extending from the marginal rim inward toward the center of the receptacle and inclosed with the receptacle under said cover, said receptacle provided with an annular series of pockets located adjacent to said rim, extending from one side of said slip around to the opposite side thereof, substantially as described.

3. In a game apparatus, the combination of an annular receptacle formed with a marginal upwardly-projecting rim and a slip formed with side walls extending from the marginal rim inward toward the center of the receptacle, said receptacle constructed of a box having a base secured upon its inner surface, said base constructed with an annular series of perforations, constituting pockets, located adjacent to the margin of the receptacle, the central portion of the base forming a level unobstructed surface, substantially as described.

4. In a game apparatus, the combination of a box, a perforated base formed with slits *d d'*, extending from its margin inward, and a flanged slide having its flanges projecting into said slits, forming an inwardly-extending slip, said perforated base and flanged slide secured upon the inner face of the box, substantially as described.

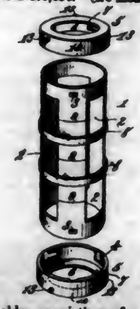
475,562. CORSET-BONING IMPLEMENT. JAMES A. HOUSE, Bridgeport, Conn. Filed Dec. 14, 1891. Serial No. 414,932. (No model.)



Claim.—1. In an implement for boning corsets, the combination, with a suitable handle A, of a tubular body projecting outward from said handle and having a slotted casing at its rear end, a pair of wires extending through the body and having protrudable jaws closed by the outer end thereof, a wire-actuating lever engaging the rear ends of the wires and projecting laterally outward through the slot in said casing, and a spring located within the casing and operating against the lever to withdraw the wires and close the jaws, substantially as specified.

2. In an implement of the character described, the handle A and the slotted casing 1, combined with the tubular body 2, the wires 3, having jaws 4 and extending the whole length of the body and projecting rearwardly into the casing, the block whereby the rear ends of the wires are secured, the lever having operative engagement with the block and extending outward through the casing, and the retracting-spring 9, adapted to withdraw the wires inward and so close the jaws, the whole arranged as described, and for the purpose specified.

475,563. COIN-HOLDER. HENRY R. HOWE, Merrill, Wis. Filed Sept. 14, 1891. Serial No. 406,630. (No model.)



Claim.—1. A coin-holder consisting of a slotted or perforated cylinder open at both ends, provided at or near said ends with exterior locking-lugs and detachable caps or heads having openings therein and provided with rims 14, having grooves or recesses to interlock with said lugs, substantially as described.

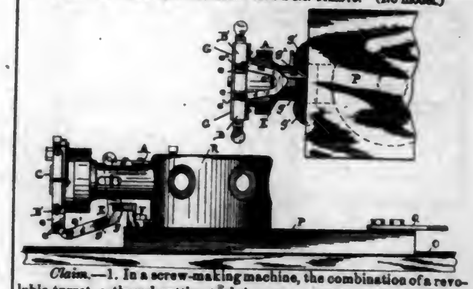
2. A coin-holder consisting of a cylinder open at both ends and provided with series of slots or openings and intervening ribs, said cylinder having locking-lugs on its outer side at both ends and detachable caps or heads formed with the inspecting-openings 6, and rims 14, provided with grooves or recesses to interlock with said lugs, substantially as described.

3. A coin-holder consisting of a cylinder provided with series of slots and intervening strengthening-ribs separating said slots and having detachable caps or covers at both ends, substantially as described.

4. The combination, with a cylindrical coin-holder having a detachable cap at each end, of a tray having a socket or pocket to temporarily receive said coin-holder, and means for detachably locking it therein in an upright position, substantially as described.

5. The combination, with a cylindrical coin-holder having at both ends detachable caps provided on their exterior with locking lugs or pins, of a tray having a socket or pocket adapted to receive either end of said coin-holder and provided with slots or recesses to interlock with the lugs on the caps thereof and secure the holder in an upright position, substantially as described.

475,564. SCREW-CUTTING TOOL. WILLIAM HUTCHESON, Baltimore, Md. Filed Nov. 18, 1891. Serial No. 412,279. (No model.)



Claim.—1. In a screw-making machine, the combination of a revolubie turret, a thread-cutting tool thereon comprising spring-jaws carrying the cutting-dies, and means for holding and releasing said jaws, and a stationary cam to automatically close the jaws, substantially as described.

2. In a screw-making machine, the combination of a revolubie turret, a thread-cutting tool thereon comprising spring-jaws carrying the cutting-dies, a lever having a forked end to hold said jaws together, and means for releasing said lever and jaws, and a cam to engage said lever and thereby close the jaws upon the turning of the turret.

3. In a screw-making machine, the combination of a bed-piece, a revolubie turret thereon, a thread-cutting tool carried by said turret and comprising spring-jaws holding cutting-dies, a lever to engage and hold together said jaws, and means to release said lever and jaws, and a block on said bed-piece comprising two cams with a recess between them to receive the said lever, as set forth.

4. In a screw-making machine, the combination of a bed-piece, a revolubie turret thereon, a thread-cutting tool carried by said turret and comprising spring-jaws holding cutting-dies, a bent or curved lever having a forked end to engage and hold together said jaws, and means to release said lever and jaws, and a block on said bed-piece comprising two cams with a recess between them to receive the said lever, as set forth.

5. In a screw-making machine, the combination of a revolubie turret, a thread-cutting tool projecting radially therefrom, said tool comprising jaws which carry the cutting-dies and a holder which closes the jaws and holds them closed and is movable to release the jaws, and means which act on said jaw-holder when the turret is turned, substantially as and for the purpose described.

6. In a screw-making machine, the combination of a slideway, a head or bed-piece thereon, a revolubie turret carried by said head, a thread-cutting tool projecting radially from said turret, said tool comprising jaws which carry the cutting-dies, and a holder which closes the jaws and holds them closed and is movable to release the jaws, and a cam on the head or bed-piece which acts on said jaw-holder when the turret is turned, in the manner and for the purpose substantially as described.

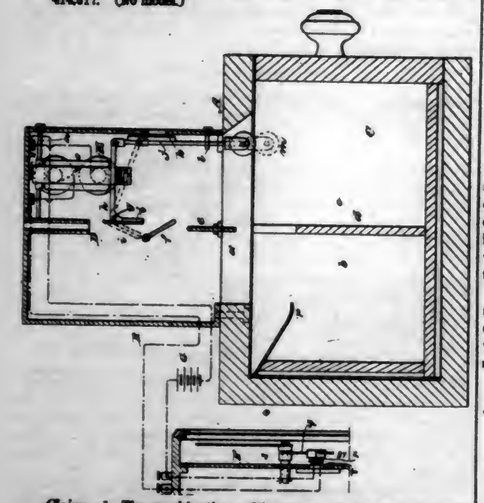
475,565. DUMPING APPARATUS. PHILIP IRIS, Minier, Ill. Filed Feb. 11, 1892. Serial No. 421,113. (No model.)



Claim.—1. An apparatus of the character described, comprising a track adapted to support a wagon, a movable inclined platform adapted to be mounted upon the track, and a chute to fit upon the track behind and under the wagon-box, substantially as described.

2. An apparatus of the character described, comprising a track having an inclined end and adapted to support a wagon, an inclined movable platform having rails which form a continuation of the track-rails, and a chute adapted to straddle the track and fit beneath the rear end of the wagon-box, substantially as described.

475,566. AUTOMATIC ELECTRIC TIME-CHECK. CHARLES K. JARDINE, Georgetown, British Guiana. Filed Dec. 10, 1891. Serial No. 414,617. (No model.)



Claim.—1. The combination, with a comparted receptacle and a single stationary tube delivering into one compartment thereof, of a movable normally-stationary deflector beneath the said tube and normally out of the path from it to said compartment, and a clock mechanism electrically connected with the deflector to release it at a predetermined time and permit it to move across said path and direct the check into another compartment, substantially as set forth.

2. The combination, with a comparted receptacle and a single stationary tube delivering into one compartment thereof, of a movable normally-stationary deflector beneath the said tube and normally out of the path from it to said compartment, an indicator connected with the deflector, and a clock mechanism electrically connected with the deflector to release it at a predetermined time and permit it to move across said path, direct the check into another compartment, and operate the indicator, substantially as set forth.

3. In an automatic electric time-check, the combination, with the deflector, of an electro-magnet for operating the same and a clock provided with a circuit-closer for operating the magnet, substantially as specified.

4. In an automatic electric time-check, the combination of the comparted drawer C, the case B, provided with the tube D, the electro-magnet E, the armature-catch *o*, the deflector *f*, and the indicating-plate *k*, substantially as specified.

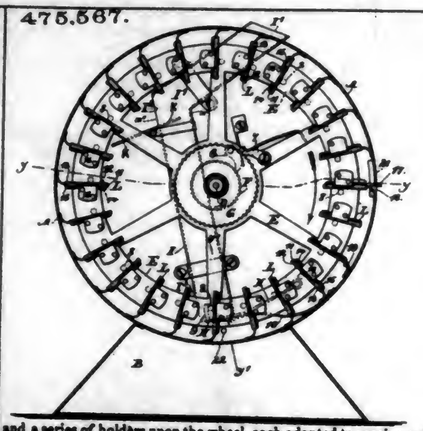
5. The combination, with the deflector-lever *h* and the catch-armature *o*, of the rod *j*, provided with the ball *m*, and the inclined plate *p*, attached to the drawer, substantially as specified.

475,567. COIN-ACTUATED VENDING APPARATUS. GOTTLIEB JEBLE, Long Island City, assignor to the Manhattan Brass Company, New York, N. Y. Filed Sept. 16, 1891. Serial No. 405,834. (No model.)

Claim.—1. The combination, in a coin-actuated vending apparatus, of a wheel, a spring to actuate the same, a retaining-lever and coin-chute for causing the wheel to be liberated by the coin, a series of holders upon the wheel, each adapted to receive a stamp or similar article, and an inclosing case, against which the ends of the stamps or similar articles are in contact and bent forwardly, there being a slot through the case with a lip at the opposite edge to the stamp, so that the end thereof will pass through the opening by coming into contact with the lip, substantially as specified.

2. The combination, with an inclosing case having an opening and a lip at one side, of a wheel, a spring to actuate the same, a retaining-lever and coin-chute for causing the wheel to be liberated by the coin,

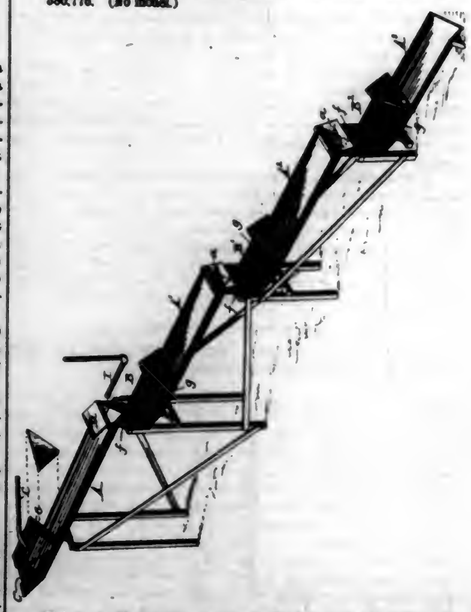
475,567.



and a series of holders upon the wheel, each adapted to receive a stamp or similar article, with its projecting end against the interior of the case, so as to be presented through the opening by the end coming into contact with the lip, and a flange upon the wheel to arrest the wheel after one rotation by coming into contact with the lip, substantially as specified.

3. The combination, with the wheel in a coin-actuated vending apparatus, of a series of holders for postage-stamps or similar articles, each formed of a plate of sheet metal, with a flange fastened to the wheel, lips 11, 12, and 13, and tongues 14 and 15 above the stamp, substantially as specified.

475,568. APPARATUS FOR CLEANING AND GRADING GRAVEL, ORE, &c. NATHAN JEWETT, Chicago, Ill. Filed Feb. 9, 1891. Serial No. 380,776. (No model.)



Claim.—1. The combination of inclined imperforate chutes discharging one into another, means for supplying a constant and heavy volume of water to the uppermost chute, and a stationary screen located between one chute and the next and having a sharp lateral inclination, whereby the entire volume of water entering the head of the apparatus is caused to pass through all of the chutes and screens, carrying before it the material under treatment and causing the screens to separate and deliver the coarse materials without the use of movable parts or the employment of a motor.

2. The combination of a sharply-inclined chute, a fixed inclined screen to which it delivers, means for delivering a constant volume of

water to the chute to advance the material through the chute and over the screen, and a deflector located between the chute and the screen to spread the falling material and water over the latter.

3. In combination with the chute, means for supplying the water thereto, and the screen inclined to deliver the coarse material automatically, the gravitating deflector hinged at the delivery end of the chute.

4. In an apparatus for washing and grading gravel, &c., two V-shaped chutes discharging one into the end of the next, in combination with the stationary screen arranged over the upper end of the lower chute and laterally inclined to discharge the coarse material, and means for delivering water into the upper chute.

475,569. BROOM-HOLDER. ALBERT E. JOHNSON, Samantha, Ohio. Filed Jan. 22, 1892. Serial No. 418,905. (No model.)



Claim.—1. In a holder of the character described, the combination of a vertically-movable bar with a substantially horizontal gripping-lever pivotally connected to the side of the bar and movable therewith and having its outer end loosely confined, so that it is oscillated as the bar reciprocates, substantially as described.

2. In combination with a vertically-movable bar, an oscillating gripping-lever pivoted thereon, having its inner end bent outwardly at right angles and its outer end loosely confined, so that the lever is oscillated as the bar reciprocates, substantially as and for the purpose described.

3. The combination of a vertically-movable bar, a pair of opposite gripping-levers lying about at right angles to the bar, pivoted thereto, and movable therewith, adapted to grasp an object between their adjoining ends and having their outer ends loosely confined, so that the levers must oscillate when the bar moves, substantially as set forth.

4. The combination of a vertically-movable bar with a pair of opposite gripping-levers pivotally connected to and movable with the bar, having their inner ends bent outward, substantially as described, and their outer ends loosely confined, so that the levers must oscillate when the bar reciprocates, substantially as and for the purpose specified.

5. The combination of the vertically-movable bar having opposite lateral arms, the oscillating levers pivoted on said arms, having their inner ends bent outwardly and adapted to grip an object, substantially as described, and the devices loosely engaging the outer ends of said levers, whereby as the bar reciprocates the levers are caused to oscillate, substantially as described.

6. The combination of the vertically-movable bar having a lateral extension, guide-loops for said bar, an oscillating lever pivoted on said extension and having its inner end bent outwardly, substantially as described, and the guide-loop engaging the outer end of the lever, substantially as specified.

7. The combination of the vertically-movable bar having opposite arms, the opposite similar oscillating levers pivoted on said arms and having their inner ends bent outwardly at right angles, substantially as described, the guide-loops for said bar, and the guide-loops for the outer ends of said levers, substantially as and for the purpose set forth.

475,570. FLOW-LINE. GREEN H. JORDAN, Talbotton, Ga. Filed Oct. 6, 1891. Serial No. 407,961. (No model.)

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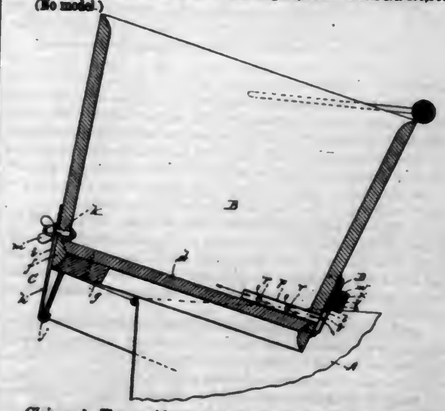


Claim.—1. As an article of manufacture, a plow-line constructed of short sections of straight wires loosely articulated together, and means for adjusting the same as to length, and provided with a snap-hook at one end and a hand or arm loop of a fibrous material at the other end, as set forth.

2. As an article of manufacture, a plow-line constructed of short sections of straight wires, of like form and of different lengths, loosely articulated together, having a snap-hook at one end and a hand or arm loop at the other end of the line, as set forth.

3. As an article of manufacture, a plow-line constructed of short sections of straight wires loosely articulated together, provided with a snap-hook at one end and with an arm or hand loop at the other, and means for adjusting said loop to lengthen or shorten the same, substantially as and for the purpose set forth.

475,571. DRAINING-BUCKET FOR WASH-BOILERS. GEORGE K. KNOWLTON, Hamilton, Mass. Filed Aug. 24, 1891. Serial No. 403,518. (No model.)



Claim.—1. The combination of a bucket with a drain-tube opening through a side thereof, a shut-off for said tube, and an adjustable clamp on said bucket, adapted to detachably secure it to the handle of a wash-boiler, substantially as described.

2. In a bucket, a drain-tube opening through the side thereof, in

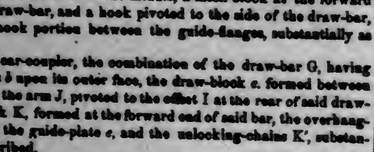
combination with ways on the outside of said bucket at the tube-mouth, a gate fitted to slide in said ways and close said mouth, and mechanism for securing the bucket in inclined position on a wash-boiler, substantially as set forth.

3. The bucket provided with the drain-tube and shut-off, in combination with the slotted clamp C, having the hook end *j* and the bolt *k* and nut *m*, arranged substantially as described.

4. The bucket provided with the drain-opening and shut-off, in combination with the hooked clamp C and adjusting mechanism, and the bearing-block *g*, secured to the bucket-bottom adjacent said clamp, substantially as described.

5. The bucket B, in combination with the perforated drain-tube *p*, the ways *t*, the gate H, fitted to slide therein and provided with the stuffing *x*, the hooked clamp C, adjustable on said bucket, and the bearing-block *g*, all being arranged to operate substantially as described.

475,572. FASTENER FOR THE MEETING-RAILS OF SASHES. WILLIAM KOEHRE, Cleveland, Ohio. Filed May 23, 1891. Serial No. 393,967. (No model.)



Claim.—In a sash-lock, in combination, the base A, with guiding-strip *b* projecting upon its face, latch B, having an angular recess *e* and lug *f* in and at opposite sides thereof, the operating-lever C, and keeper D, constructed substantially as and for the purpose described.

475,573. CAR-COUPLING. JOHN KREHBIEL, Cleveland, Ohio. Filed Aug. 18, 1891. Serial No. 402,966. (No model.)

Claim.—1. A car-coupler comprising a draft-rod, a draw-bar hinged thereto free to oscillate laterally, and a hook secured to the draw-bar and extending beside the same, substantially as described.

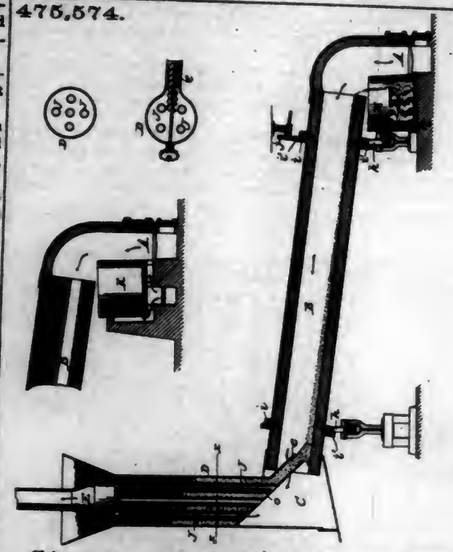
2. In a car-coupler, the combination, with the draft-rod, of a draw-bar hinged thereto free to oscillate laterally, an offset at the rear of the draw-bar, a hook hinged to said offset, and a latch-block at the forward end of the draw-bar, substantially as described.

3. In a car-coupler, the combination, with the draft-rod, of the draw-bar hinged thereto by a vertical pivot, guide-flanges on the side of the draw-bar at or near the middle, a latch-block at the forward end of the draw-bar, and a hook pivoted to the side of the draw-bar, having its hook portion between the guide-flanges, substantially as described.

4. In a car-coupler, the combination of the draw-bar G, having the flanges *a b* upon its outer face, the draw-block *c*, formed between said flanges, the arm J, pivoted to the offset I at the rear of said draw-bar, the hook K, formed at the forward end of said bar, the overhanging flange *d*, the guide-plate *e*, and the unlocking-chains K', substantially as described.

475,574. APPARATUS FOR MANUFACTURING SALT. CHARLES F. LAWTON, ARTHUR W. LAWTON, and ALBERT I. LAWTON, Rochester, N. Y. Filed Mar. 10, 1891. Serial No. 384,691. (No model.)

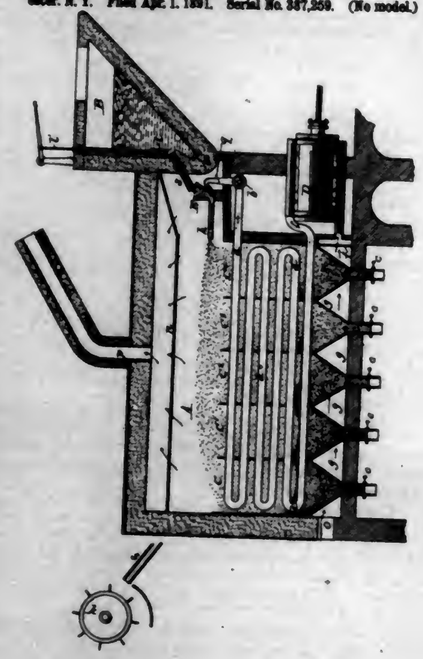
475,574.



Claim.—1. In an apparatus for melting or purifying rock or mined salt, the combination, with a tube or cylinder B, of the furnace A, a molten-salt receptacle K, and a shell or casing D at the upper end of the cylinder, said shell or casing being provided with a series of flues extending vertically through the salt-space.

2. In combination with a tube or cylinder B, a furnace, and a receptacle K at one end of said tube or cylinder and a shell or casing at the opposite end of said tube or cylinder, provided with a dust-collecting chamber C, a funnel-shaped mouth, and a series of flues J, opening at their lower ends into the dust-collecting chamber, but formed at their upper ends into a chimney E.

475,575. APPARATUS FOR THE MANUFACTURE OF SALT. CHARLES F. LAWTON, ALBERT I. LAWTON, and ARTHUR W. LAWTON, Rochester, N. Y. Filed Apr. 1, 1891. Serial No. 387,259. (No model.)



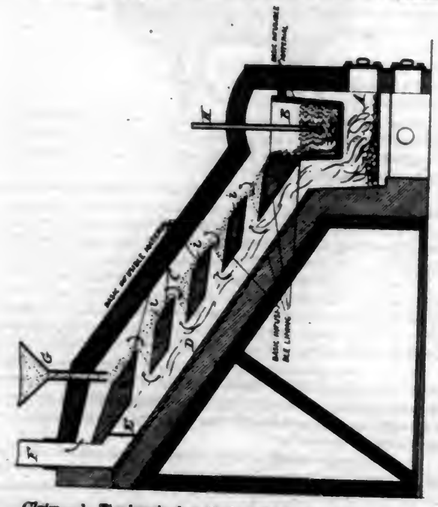
Claim.—1. In an apparatus for the manufacture of salt, the combination, with a chamber A, of a vessel B, adapted to contain fused or melted salt, an atomizer located within the chamber A, adapted to receive melted salt from the vessel B, a blowing-engine, and a coil or manifold connected therewith and with the atomizer.

2. In an apparatus for the manufacture of salt, the combination, with a chamber A, provided with a series of salt-receptacles, of a vessel B, adapted to contain fused or melted salt, an atomizer located within the chamber A, adapted to receive melted salt from vessel B, a blowing-engine, a coil or manifold connected therewith and with the atomizer, a series of passages around the bases of the salt-receptacles, an air-inlet O, communicating with the passages *g*, and a filter or screen *f*, separating the passages *g* from the air-inlet pipe of the blowing-engine.

3. In an apparatus for the manufacture of salt, the combination with a vessel or chamber A, provided with a series of salt-receptacles, of a receptacle B, adapted to contain the fused salt and to discharge the same into the interior of the chamber A, means for transforming the fused salt into globular form, and an asbestus air-filter located in the upper portion of the chamber A, as and for the purpose set forth.

4. In an apparatus for the manufacture of salt, the combination, with a chamber A, provided with a series of receptacles C C', &c., of a molten-salt vessel B, and an atomizer adapted to receive the molten salt from vessel B and to discharge the same into the respective compartments, substantially as shown and described.

475,576. PROCESS OF MANUFACTURING SALT. CHARLES F. LAWTON, ARTHUR W. LAWTON, and ALBERT I. LAWTON, Rochester, N. Y. Original application filed Feb. 9, 1891, Serial No. 380,753. Divided and this application filed Jan. 2, 1892. Serial No. 416,837. (No specimens.)



Claim.—1. The herein-described method of purifying salt, (chloride of sodium,) which consists in first lining a receptacle with a basic infusible material, such as described, next placing salt therein, and finally fusing the salt in said receptacle, whereby the salt is purified and the formation of silicates is prevented.

2. The method of purifying salt, (chloride of sodium,) which consists in the following steps, viz: lining a receptacle with a basic infusible material, as lime and clay, which will, by reason of its inert chemical qualities, prevent the formation of soda silicate and the destruction of the receptacle, placing salt in said receptacle, fusing the salt therein, and adding to the salt before or after fusion an alkaline material.

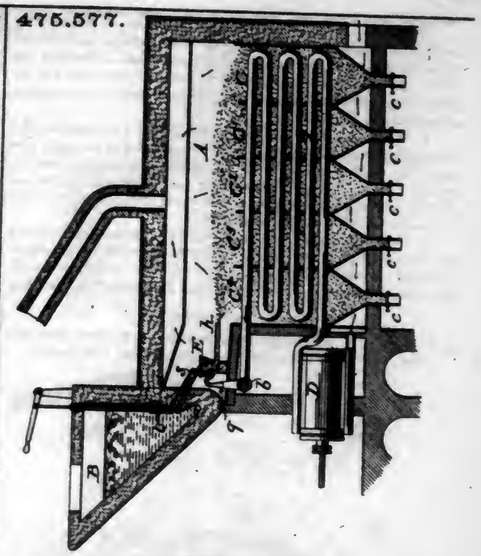
475,577. SALT. CHARLES F. LAWTON, ARTHUR W. LAWTON, and ALBERT I. LAWTON, Rochester, N. Y. Filed Mar. 29, 1892. Serial No. 426,900. (No specimens.)



Claim.—1. As an improved article of manufacture, salt in globular form.

2. As an improved article of manufacture, salt composed of hollow globular bodies.

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475,578. RUNNING-GEAR FOR VEHICLES. JOHN W. LEEK, Cincinnati, Ohio. Filed Nov. 18, 1891. Serial No. 412,314. (No model.)

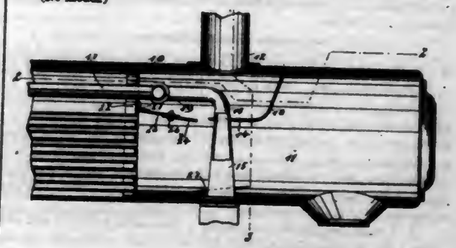


Claim.—1. In a vehicle running-gear, the combination, with an axle, a coupling-bar, and a fifth-wheel, of the spider-arms 4 5, crossing each other and secured at their ends to the fifth-wheel, side springs secured at their front ends to the axle and at their rear ends secured to the fifth-wheel and the rear ends of the spider-arms 4 and 5, the arms 11 11, secured to the spider-arms, and the center spring secured to the axle and at its rear end to the arms 11 11, and a king-bolt 6, passing through holes therefor in the spider-arms and the center spring, substantially as described.

2. In a vehicle running-gear, the combination, with the coupling-bar, of the bracket B, connected to the coupling-bar and provided with a stirrup, of the fifth-wheel supported in said stirrup and a friction-bearing on the front of said fifth-wheel, side springs connected to the periphery of said fifth-wheel and to the axle, and cross spider-arms connecting with the periphery of said fifth-wheel and having a center bearing for the king-bolt in the center, substantially as described.

3. In a vehicle running-gear, the combination, with the coupling-bar provided with a rear stirrup and a front friction-bearing, of a fifth-wheel supported in said stirrup and bearing against said friction-bearing, an axle, springs connected to the extremities of said axle and to the fifth-wheel, cross-bars the front ends of which are connected to the fifth-wheel and the rear ends of which are connected to the said springs, and a central spring connected to said axle and to the coupling-bar, substantially as described.

475,579. SPARK-ARRESTER AND DRAFT-REGULATOR. WALTER M. LETTS, Sedalia, Mo. Filed Sept. 10, 1891. Serial No. 405,280. (No model.)

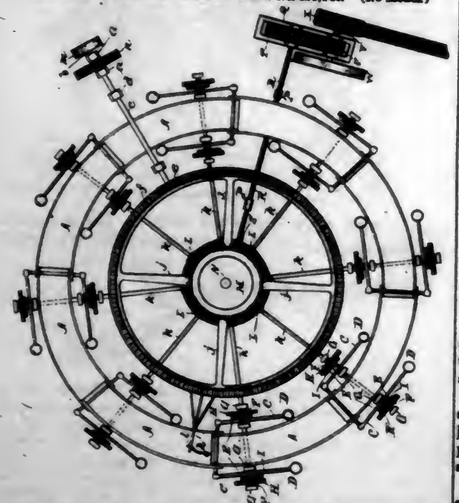


Claim.—1. The combination, with the smoke-box of a locomotive having a steam-draft nozzle therein, of an imperforate partition arranged in the upper portion of the smoke-box and embracing the nozzle, and a deflector secured to the flue-sheet of the boiler and extending forward above the flues to a point adjacent to the partition, substantially as described.

2. The combination, with the smoke-box of a locomotive, of a rearwardly curved and imperforate partition secured to the upper portion of the smoke-box in front of the stack, a steam-draft nozzle extending upwardly through the partition, and an adjustable deflector-plate secured to the flue-sheet of the boiler and extending forward into the smoke-box, substantially as described.

3. The combination, with the smoke-box of a locomotive having deflector-plates in its upper portion beneath the stack, of the steam-pipes and exhaust-nozzle arranged within the box, said pipes and exhaust-nozzle being of angular cross-section, substantially as described.

475,580. MECHANICAL MOTOR. William M. Lewis, New Hartford, Iowa. Filed Feb. 29, 1892. Serial No. 423,148. (No model.)



Claim.—1. The combination, with a mechanical motor, of a sectional track, each section of which is pivoted at one end and the other end having attached thereto a weighted lever, substantially as described.

2. The combination, with a mechanical motor, of a sectional track, each section of which is pivoted at one end and its other end located normally above the pivoted end of its neighbor, substantially as described.

3. The combination, with a sectional track, of a series of levers, each having one of its arms connected to a section of the track, a ratchet-wheel secured to each lever and forming its fulcrum, gear-wheels beside the ratchets, said gear-wheels having pawls fixed to its sides and adapted to engage the ratchets, and means for collecting the power, substantially as described.

4. The combination of a series of pivoted overlapping sections having weighted levers attached to their free ends, pawl-and-ratchet mechanism operated by said levers, and trains of gearing for collecting the power from the ratchets, substantially as described.

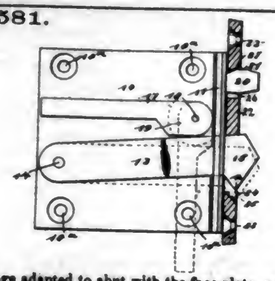
5. The combination of a sectional track, a series of levers adapted to actuate pawl-and-ratchet mechanism, spur-gears rotated by the same, and pinions meshing with the spur-gears, whereby the shafts K are rotated and a continuous motion imparted to the platen M, substantially as described.

475,581. FASTENING DEVICE. Charles Liebe, New York, N. Y. Filed Mar. 26, 1892. Serial No. 426,563. (No model.)

Claim.—1. A fastening device comprising a face-plate having a slot and mortise therein, the slot and mortise having oppositely-inclined end walls, a bed-plate having a swinging latch thereon adapted to enter the face-plate slot and an inclined head to fit the slot, a projecting tenon with an inclined face to fit the inclined wall of the mortise, and a locking cam-lever pivoted above the latch and adapted to swing upon the same, substantially as described.

2. A fastening device comprising a face-plate having a slot and mortise therein with oppositely-inclined end walls, a bed-plate having

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an end flange adapted to abut with the face-plate, a latch pivoted on the bed-plate and extending through a slot in its flange, said latch having an inclined head to enter the slot in the face-plate, a projecting tenon fixed to the bed-plate flange and having an inclined face to register with the inclined wall of the face-plate mortise, and a locking cam-lever pivoted upon the bed-plate and adapted to swing against the top side of the latch, substantially as described.

475,582. METAL WHEEL. James R. Little, Quincy, Ill. Filed May 18, 1891. Serial No. 393,207. (No model.)



Claim.—1. As an improvement in metal wheels, in combination, a spoke or spokes and the two-part device compressed upon the same, the parts of said device being suitably held together, substantially as and for the purpose described.

2. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings having adjoining faces between which said spokes are placed and have compressed upon them the contiguous metal thereof, said rings being suitably held together, substantially as and for the purpose set forth.

3. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings, one inclosing the other, between adjoining faces of which said spokes are placed and have compressed upon them the contiguous metal thereof, substantially as and for the purpose specified.

4. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings having parallel annular flanges between which said spokes are placed and have compressed upon them the contiguous metal thereof, substantially as and for the purpose shown.

5. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings, one having an outwardly-projecting flange and the other an inwardly-projecting flange, which flanges are compressed upon said spokes, substantially as and for the purpose set forth.

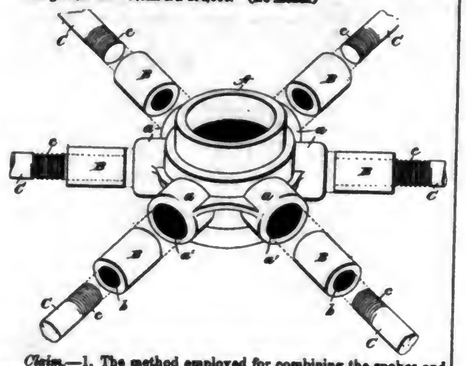
6. As an improvement in metal wheels, in combination with the spokes, the spoke-attaching device consisting of two rings, an inner and outer, the former having an outwardly-projecting annular flange, the latter an inwardly-projecting annular flange, and the outer ring having spoke-openings through which said spokes are passed, so as to be placed between said flanges, which are compressed upon them, substantially as and for the purpose described.

7. As an improvement in wheels, a metal hub having two ring parts compressed upon the spokes and held together by having the edge of one ring part turned over against the other part, substantially as and for the purpose shown.

8. As an improvement in wheels, a metal hub having a spoke-holding part consisting of two rings, one of which incloses the other, the said rings being held together by having one edge of the inner ring upset over the adjacent portion of the outer ring and one edge of the outer ring upset over the adjacent portion of the inner ring, substantially as and for the purpose specified.

9. As an improvement in metal wheels, in combination, an axle-box, spoke-attaching devices thereon consisting of two-part rings compressed upon the spokes, and suitable means to hold said devices upon said box, substantially as and for the purpose set forth.

475,583. METAL WHEEL. James R. Little, Quincy, Ill. Filed Aug. 28, 1891. Serial No. 404,006. (No model.)



Claim.—1. The method employed for combining the spokes and hub of a metal wheel, which consists in inserting a metal thimble between each of the spoke-mortises of a hub and the tenon of its spoke and compressing such thimble until it closely fills its mortise and embraces the tenon, substantially as and for the purpose specified.

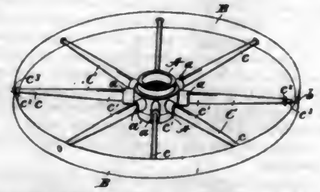
2. The method employed for combining the spokes and hub of a metal wheel, which consists in providing within a hub a series of straight radial mortises, inserting within each mortise a correspondingly-shaped thimble that contains the threaded tenon of a spoke, and finally compressing longitudinally such thimble to cause it to closely fill said mortise and to embrace said spoke-tenon, substantially as and for the purpose shown.

3. The method employed for combining the spokes and hub of a metal wheel, which consists in providing a hub with a number of radial mortises for receiving and containing spokes which throughout their length are of greater diameter than the portion of spoke to be placed therein, inserting in each mortise a portion of a spoke entirely inclosed by a thimble, and finally subjecting said thimble to compression to cause it to closely fit the mortise and tightly embrace the spoke, substantially as and for the purpose specified.

4. A metal wheel in which each spoke is secured within the hub by means of a thimble that is interposed between and closely embraces the spoke mortise and tenon, the latter being in contact only with the thimble, substantially as and for the purpose set forth.

5. A metal wheel in which the inner ends of the spokes are threaded or grooved and are each secured within the hub by means of a thimble that is interposed between and caused to closely embrace said grooved tenon and its mortise, the tenon being in contact only with the thimble, substantially as and for the purpose shown and described.

475,584. METHOD OF CONSTRUCTING METAL WHEELS. James R. Little, Quincy, Ill. Filed Nov. 14, 1891. Serial No. 411,893. (No model.)

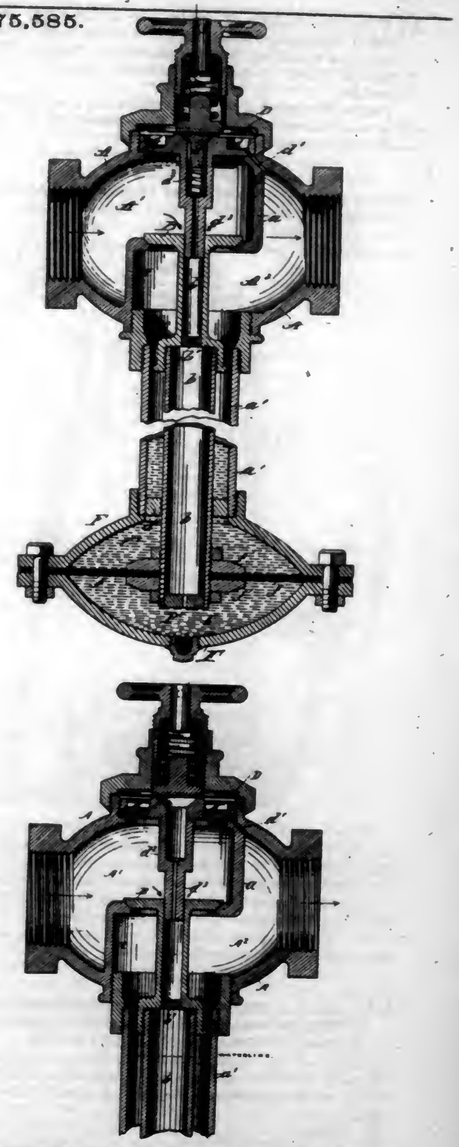


Claim.—As an improvement in the construction of metal wheels, the method employed, which consists in forming upon each of the spokes an enlargement, constituting the shoulder for the inner end of the rim-tenon, then inserting the inner end of each spoke into and moving the same longitudinally within a hub-mortise, then moving the spoke longitudinally outward until its outer end or tenon is contained within a rim-mortise, and, lastly, securing the ends of tenons of each spoke within their mortises, substantially as and for the purpose specified.

475,585. REDUCING-VALVE. Nathaniel C. Locke, Salem, Mass. Filed Mar. 27, 1891. Serial No. 386,661. (No model.)

Claim.—1. In combination, a casing divided into a high-pressure chamber and a low-pressure chamber by a controlling-valve and its seat, that valve and its seat, a second casing divided into a high-pressure chamber and a low-pressure chamber by a diaphragm, that diaphragm, a connection between the controlling-valve and the diaphragm in the second casing, a conduit connecting the two high-pressure chambers, a second conduit connecting the two low-pressure chambers, a third conduit whose outlet is controlled by a second diaphragm and forming an exhaust-port from the second high-pressure chamber, and a second diaphragm controlling that third conduit, all combined and operating substantially as described.

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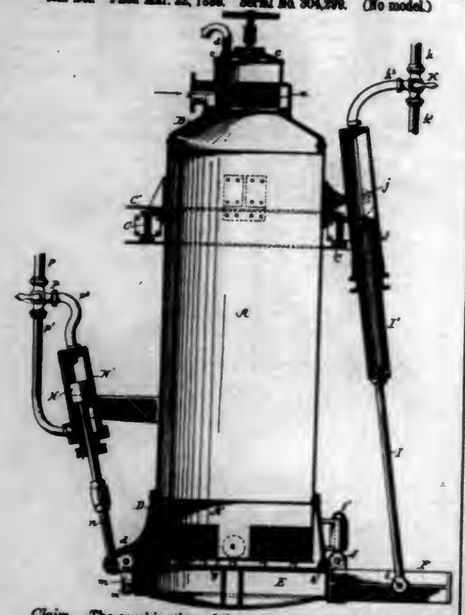


2. In combination, a casing divided into a high-pressure chamber and a low-pressure chamber by a controlling-valve and its seat, that valve and its seat, a second casing divided into a high-pressure chamber and a low-pressure chamber by a diaphragm, that diaphragm, a connection between the controlling-valve and the diaphragm in the second casing, a conduit through the controlling-valve and connecting the two high-pressure chambers, a second conduit connecting the low-pressure chambers, a third conduit connecting the conduit through the controlling-valve with the low-pressure chamber of the first casing, and a diaphragm controlling that third conduit, all combined and operating substantially as described.

475,586. PROCESS OF SOLIDIFYING LIQUID ACIDS. PHILIP MASSO, Washington, D. C., administrator of William White, deceased, assignor to Helen White, Woodside Villa, England. Filed Jan. 4, 1892. Serial No. 417,356. (No specimens.) Patented in England Dec. 12, 1887, No. 17,095.

Claim.—The process of solidifying liquid acids, which consists in adding thereto a soluble salt adapted to crystallize with the water, substantially as herein described.

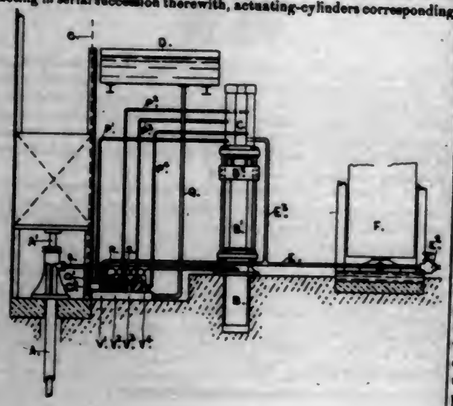
475,587. DIFFUSION-BATTERY. GEORGE A. MESSICK, Wilmington, Del. Filed Mar. 22, 1890. Serial No. 304,999. (No model.)



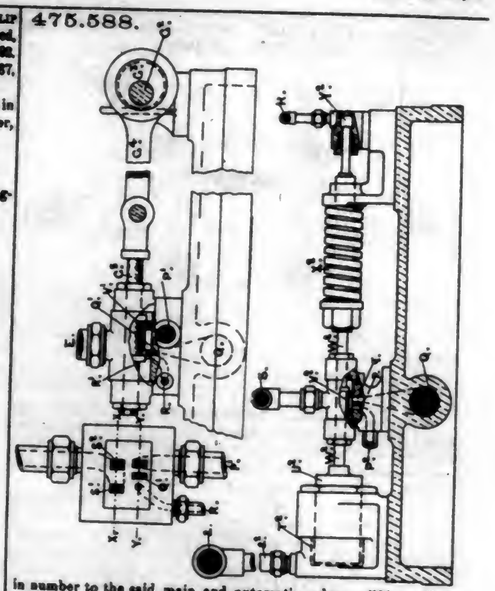
Claim.—The combination of the casing of a diffusion-battery cell, a pivoted bottom E, provided with a lip *m*, a counter-balance F for said pivoted bottom, a pivoted pressure-cylinder, a piston therein, a piston-rod connecting the piston to the counter-balance F, a bifurcated locking lever for engaging with the lip and locking said pivoted bottom, and means for operating said locking-lever, comprising a pivoted pressure-cylinder, a piston therein, and a rod connected to said locking-lever, substantially as specified.

475,588. HYDRAULIC APPARATUS FOR MOVING LOADS. ROBERT MIDDLETON, Leeds, England. Filed June 9, 1891. Serial No. 395,713. (No model.) Patented in England Oct. 3, 1888. No. 14,300.

Claim.—1. In hydraulic apparatus for varying loads, the combination of a controlling main valve with one or more automatic valves acting in serial succession therewith, actuating-cylinders corresponding



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in number to the said main and automatic valves, a lifting-cylinder, and communicating pipe connections between the said valves and the said cylinders, substantially as and for the purpose described.

2. In hydraulic apparatus for varying loads, the combination of a series of actuating hydraulic cylinders operated by a controlling main valve and automatic valves in series therewith, with an open tank, water-pressure mains, or hydraulic accumulator, a lifting-cylinder A, equal-capacity cylinder B, balancing-cylinder C, and pipe connections, substantially as and for the purpose described.

3. In hydraulic apparatus for varying loads, the combination of a controlling main valve with a series of automatic valves having corresponding balancing-cylinders and pressure-springs tensioned to act upon said automatic valves in serial succession, an equal number of actuating hydraulic cylinders to said valves correspondingly operated in serial succession by the said automatic valves, a main lifting-cylinder, and pipe connections between the said valves and the said cylinders, substantially as and for the purpose described.

4. In hydraulic apparatus for varying loads, the combination of a controlling main valve with one or more automatic valves acting in serial succession therewith, the said main valve consisting, essentially, of a valve-seat having two separate lines of ports, one line of two ports S′ and S² leading to the said automatic valves, the other line of three ports R′, Q′, and P′ leading to a counterbalancing-cylinder, to the tank, and to the actuating-cylinder, respectively, a valve-rod and valve operating over and controlling said lines of port during each full stroke, an outer casing having a suitable stuffing-box for said valve-rod, and pipe connections, substantially as and for the purpose described.

5. In hydraulic apparatus for varying loads, the combination of a controlling main valve with a series of automatic valves having pressure-springs tensioned to act in serial succession, actuating-cylinders corresponding in number to said valves and controlled thereby, counterbalancing-cylinders acting upon said pressure-springs, a main lifting-cylinder, waste-tank, and pipe connections, substantially as and for the purpose described.

6. In hydraulic apparatus for varying loads, the combination of a controlling main valve with one or more automatic valves acting in serial succession therewith, an elevator-actuating cylinder corresponding to each valve, a waste-tank situated above said actuating-cylinders, and pipe connections between said cylinders and said automatic valves, between the tank and the main valve, and between said main valve and water-pressure mains, substantially as and for the purpose herein described.

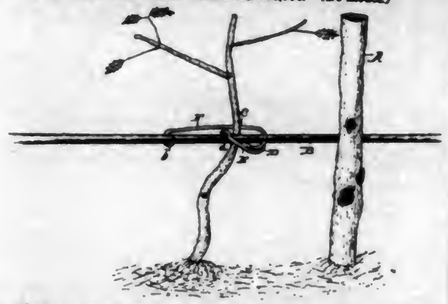
7. In hydraulic apparatus for varying loads, an automatic valve, gear comprising the combination of a balancing-cylinder and ram connected to and operated by the pressure within the main lifting-cylinder, a valve chest and seat with ports to an actuating-cylinder and to a tank, respectively, an actuating valve-rod extending through each end of said valve-chest and connected at one end to said ram and at the other end prolonged and reduced to serve as a ram, an auxiliary cylinder for said reduced end of the valve-rod, a pressure-spring acting upon said valve-rod, and pipe connections, substantially as and for the purpose herein described.

8. In hydraulic apparatus for varying loads, the combination of a controlling main valve with an automatic valve-gear comprising a balancing-cylinder, an auxiliary cylinder, distributing-valve, pipe connections, and pressure-spring, an elevator-actuating cylinder, a main lifting-cylinder, a tank, and pipe connections, substantially as and for the purpose herein described.

9. In hydraulic apparatus for varying loads, the combination of a series of actuating-cylinders with a main and a corresponding series of automatic control-valves, a lifting-cylinder A, an equal-capacity cylinder B, a balancing-cylinder C, and pipe connections, substantially as and for the purpose set forth.

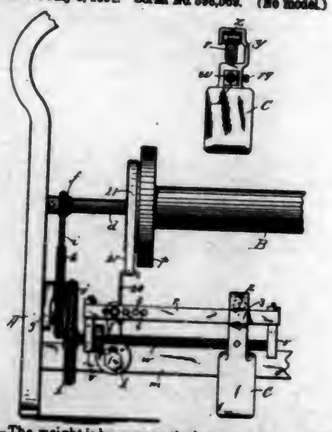
10. In hydraulic apparatus for varying loads, the combination of a main lifting-cylinder A with a series of actuating cylinders I II III IV, a main and automatic controlling valves equal in number to the said series of actuating-cylinders, balancing-cylinders T², cylinder B, equal in capacity to A, cylinder C, a tank D, situated above said actuating-cylinders, and pipe connections, substantially as and for the purpose herein described.

475,589. GRAPE-VINE CLAMP. WILLIAM H. MILLS, Portland, N. Y. Filed May 4, 1891. Serial No. 391,500. (No model.)



Claim.—As an improved article of manufacture, the grape-vine clamp or keeper formed from spring-wire and consisting, essentially, of the coiled body D, the short arm E, merging into said body and having the approximately right-angular upwardly and downwardly bent hook at its free end, and the long arm F, merging into the coiled body D and having the approximately right-angular downwardly and upwardly bent hook at its free end, substantially as and for the purpose described.

475,590. LET-OFF FOR LOOMS. WILLIAM H. MILEY, Fall River, Mass. Filed July 6, 1891. Serial No. 398,569. (No model.)



Brief.—The weight is hung upon the lever and engages the screw by means of the separable nut, whereby when desired to adjust the weight on the lever the separable nut is parted, thus permitting free sliding motion of the weight.

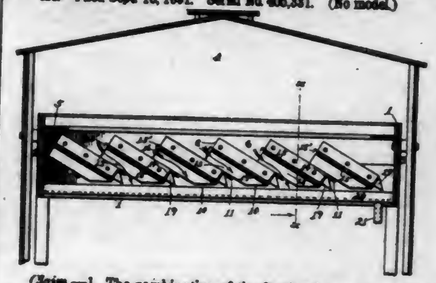
Claim.—1. In a let-off mechanism for looms, the combination of the frame, a vertically-adjustable bracket secured thereto, a warp-beam, a horizontally-adjustable lever pivoted to said bracket, a worm mounted in bearings on said lever, a friction-belt on the warp-beam, connected to one arm of said lever, a balance-weight provided with a hooked arm, carrying a roller adapted to travel on the balance-lever, said arm engaging the worm and being operated thereby, sprocket-wheels on the warp-beam, and one end of the worm and a double sprocket-wheel mounted on the frame intermediate said sprocket-wheels, and drive-chains passing over said sprocket-wheels, whereby the worm is driven by the beam, substantially as described.

2. In a let-off mechanism, the combination of the loom-frame, a bracket secured thereto, a warp-beam, a balance-lever adjustably pivoted to said bracket, a worm mounted in bearings on said lever, a friction-belt connecting one arm of said lever with the warp-beam, a balance-weight provided with a perforated hook-shaped arm engaging the lever, a separable nut fitted within the perforated portion of the hook-shaped arm and engaging the worm, and gearing connected with the worm and warp-beam for driving the worm, substantially as described.

3. The loom-frame, in combination with the balance-lever, worm and actuating mechanism, the weight C, provided with the roll z, working on said lever, and the separable nut D, secured in said weight and working on said worm.

4. In a let-off mechanism for looms, the combination of the loom-frame, a bracket secured thereto, a warp-beam, a balance-lever adjustably pivoted to said bracket, a worm mounted in bearings on said lever, a friction-belt connecting one arm of said lever with the warp-beam, a balance-weight provided with a perforated hook-shaped arm engaging the lever, a separable nut fitted within the perforated portion of the hook-shaped arm and engaging the worm, a set-screw for adjusting the nut, and gearing connected with the worm and warp-beam for driving the worm, substantially as described.

475,591. REFRIGERATOR. MARTIN S. MILLARD, Kansas City, Mo. Filed Sept. 10, 1891. Serial No. 405,331. (No model.)



Claim.—1. The combination of the fixed stringers having the inclined seats, the vertically-inclined blocks fitted in said seats, a series of overlapping inclined pans supported by the blocks and each provided with an independent discharge-spout, and a trough common to the spouts of the series of pans, substantially as and for the purpose described.

2. In a refrigerator, the combination, with the stringers, of the inclined supporting-blocks having the aligned grooves in their opposing faces, the reinforce fitted in said grooves of the blocks, and a pan having its bottom resting on the reinforce and secured thereto and to the blocks, substantially as and for the purpose described.

3. In a refrigerator, the combination, with the stringers, of the inclined grooved supporting-blocks, the metallic pan having the depending flange at its upper edge and the upturned flange and the spouts at its lower edge, the reinforce applied to the bottom of the pan and secured in the grooves of the blocks and to the lower flange, and the troughs, substantially as and for the purpose described.

4. In a refrigerator, the combination, with the stringers, of the pan provided with the bottom lead flange and the side exit-spouts, and the blocks to which the pan is rigidly secured, the blocks being detachably connected to the stringers, as and for the purpose set forth.

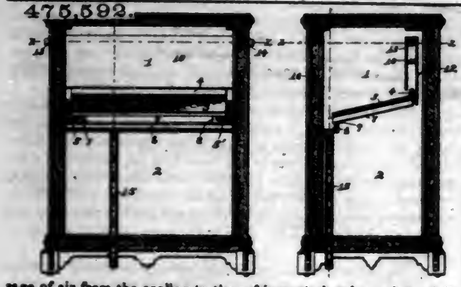
5. In a refrigerator, the pan having a reinforce at the bottom thereof and the upturned lead flange which is doubled or bent to lap the lower edge of the reinforce and is fastened or secured thereto, substantially as and for the purpose set forth.

6. In a refrigerator, the combination, with the stringers having the inclined seats, of the vertically-inclined blocks fitted in said seats and arranged to overlap each other, and the inclined pans secured to the blocks to overlap each other to form the ventilating-openings and each provided with side exits which lie between the overlapping edges of the pans, substantially as and for the purpose described.

475,592. REFRIGERATOR. MARTIN S. MILLARD, Kansas City, Mo. Filed Sept. 10, 1891. Serial No. 405,332. (No model.)

Claim.—1. In a refrigerator, the combination, with a removable bottom or pan, of a hollow vertical partition which receives one edge of the pan and forms a flue in rear of the pan or bottom for the pas-

475,592.



sage of air from the cooling to the refrigerant chamber, substantially as and for the purpose set forth.

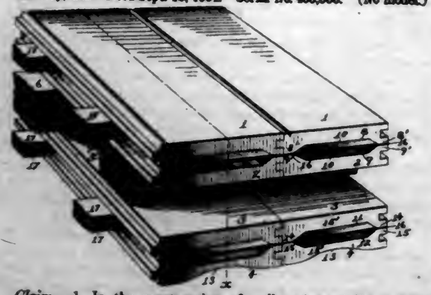
2. In a refrigerator, the combination of the inclined side troughs and the horizontal front trough which receives from the side troughs and the inclined bottom or pan supported by the side troughs and having its front end elevated above and extended over the front trough, the arrangement of the bottom relatively to the front trough being such as to discharge the drippings in the trough and to form an air-passage between said trough and the lower edge of the bottom, substantially as described.

3. In a refrigerator, the combination, with a bottom having the vertical flange at its upper end, of a vertical hollow partition extending transversely across the rear side of the refrigerant-chamber and out of contact with the rear wall thereof, said partition receiving the flange of the bottom and forming a flue 12 in rear of the bottom, and a separate passage for the warm air, and exits or passages leading from the hollow partition to the outside of the refrigerator, substantially as and for the purpose described.

4. The combination of a bottom and a hollow partition containing an air-passage within itself and forming an air-flue in rear of the bottom and exits for the air from said passage within the partition, substantially as described.

5. In a refrigerator, the combination of a bottom and a vertical hollow partition forming flues and spaces for the circulation of air and a separate passage for the escape of hot air and vapors, substantially as described.

475,593. CONSTRUCTION OF WALLS. MARTIN S. MILLARD, Kansas City, Mo. Filed Sept. 10, 1891. Serial No. 405,333. (No model.)



Claim.—1. In the construction of walls, substantially as herein shown and described, the wall comprising two series of planks or boards laid upon or placed one against the other, and one series of boards having each of its individual members provided with a longitudinal channel on its inner face and the transverse grooves, and the parting-strips seated in the transverse grooves of the planks or boards and extending substantially at right angles to the length of the boards and to the longitudinal channels therein, as and for the purpose described.

2. In the construction of walls, substantially as herein shown and described, the wall comprising the two series of planks or boards placed one upon or against the other and each series having its individual boards provided on its inner face with a longitudinal central channel, which coincides with the similar channel in the fellow member or board of the other series, and the inner series of planks provided on its exposed surface with grooves or channels, the longitudinal partitions common to a number of planks of each series and extending through the dead-air spaces or cells formed by said two series of planks, and the parting-strips extending across the longitudinal dead-air cells on both sides of the longitudinal partitions therein, as and for the purpose described.

3. In the construction of walls, the boards or planks having the interior dead-air spaces, combined with the longitudinal partitions common to a series of boards and arranged centrally and longitudinally in the cells, and the transverse parting-strips, which divide the spaces into a multiplicity of isolated cells or narrow spaces, as set forth.

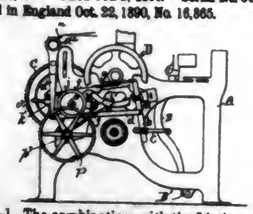
475,594. WHIRLIGIG. ALFRED MOE, Jersey City, N. J. Filed Apr. 18, 1891. Serial No. 389,409. (No model.)



Claim.—1. An advertising device comprising a wind-wheel, a series of figures carried by the wheel, and means for imparting a rotary movement to the figures independent of the movement of the wheel, substantially as described.

2. An advertising device consisting of a windmill, a central stationary hub secured in the rear of the wind-wheel, a series of pulleys carried by the ribs of the wind-wheel and provided with axles which extend through to the face of the latter, figures secured to the axles, and a belt connection between the pulleys on the ribs and the central pulley, substantially as described.

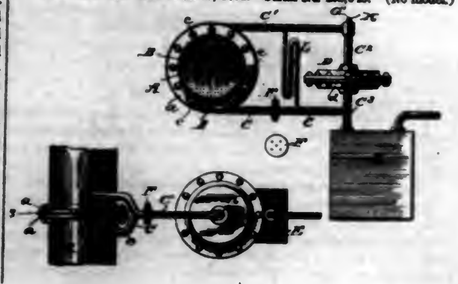
475,595. LET-OFF MECHANISM FOR LOOMS. JAMES MORTON, Valley Falls, assignor to the Geo. W. Stafford Manufacturing Company, Providence, R. I. Filed Oct. 2, 1890. Serial No. 366,809. (No model.) Patented in England Oct. 22, 1890, No. 16,865.



Claim.—1. The combination, with the friction-pulley *j* and pinion *o* connected therewith, a train of gears adapted to be placed in gear connection with the warp-beam of a loom, the whip-roll having an arm *a'*, the lay-sword, and the link *c*, connected with the lay-sword, of the lever *b*, the rod *d*, connecting the arm *a'* and the lever *b*, the strap or band *f*, passing partly around the friction-pulley and connected at its ends with the said lever *b* and rod *d*, respectively, the stud *n*, serving as a pivot for lever *b*, and the spring *r*, surrounding the stud *n* and having one end thereof connected therewith, all substantially as and for the purposes set forth.

2. The combination, with the friction-pulley *j* and pinion *o* connected therewith, a train of gears adapted to be placed in gear connection with the warp-beam of a loom, the whip-roll having an arm *a'*, the lay-sword, and the link *c*, connected with the lay-sword, of the lever *b*, the rod *d*, connecting the arm *a'* and the lever *b*, the band or strap *f*, passing partly around the friction-pulley and connected at its ends with the said lever *b* and the said rod *d*, respectively, the stud *n*, serving as a pivot for lever *b*, the spring *r*, surrounding said stud and having one end connected therewith, and the adjustable bolster *t*, with which the other end of the said spring is connected, the said bolster having provisions for holding it in set position, substantially as and for the purposes described.

475,596. PROPORTIONAL FLUID-METER. DONALD MCDONALD, Louisville, Ky. Filed Feb. 18, 1892. Serial No. 422,043. (No model.)

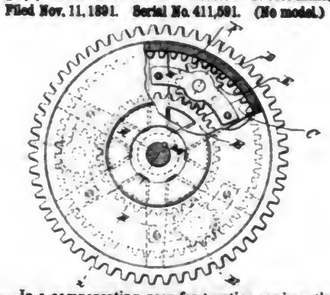


Claim.—1. In a proportional gas-meter, the combination, with the meter proper and the main gas-conductor A, of the perforated diaphragm B, fixed in the latter, the lateral conductors C and C', leading off from such main conductor on opposite sides of its diaphragm, the smaller diaphragm F, fixed in the lateral conductor C, said diaphragms having perforations that correspond in size but differ in number, and a gas-regulator proper connected with the lateral conductors C C', as shown and described.

2. In a proportional fluid-meter, the combination, with the meter proper, the main conductor, the lateral conductors C and C', and the proportional diaphragms located as specified, of the governor having a flexible diaphragm and a valve connected therewith, and the liquid-gage connected at its respective ends with the said laterals, all substantially as shown, and for the purposes described.

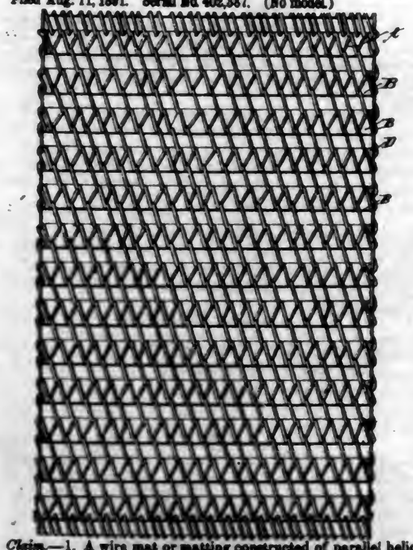
3. In a proportional fluid-meter, the combination, with the meter, the main and lateral conductors, and differential perforated diaphragms, of the valve H, the rod connected with the latter and the governor-diaphragm, the spring I, and the rod G', and adjusting-nut K, all arranged as shown and described, and for the purposes specified.

475,597. TRACTION-ENGINE. JULIUS J. D. MCNAMAR, Newark, Ohio. Filed Nov. 11, 1891. Serial No. 411,591. (No model.)



Claim.—In a compensating gear for traction-engines, the combination, with the shaft, the spur-gear secured thereto, having an elongated hub, the master-wheel loosely mounted on said hub and having radial arms and ribs cast therewith, the pinions, the caps secured to the master-wheel, having tongues, the interposed blocks having grooves to receive said tongues, and the journals for said pinions secured to said caps and ribs, of the road-wheel loosely mounted on said shaft, and the internal gear connected therewith, substantially as described.

475,598. WIRE MAT. THOMAS C. MCPHERSON, Beaver Falls, Pa. Filed Aug. 11, 1891. Serial No. 402,357. (No model.)

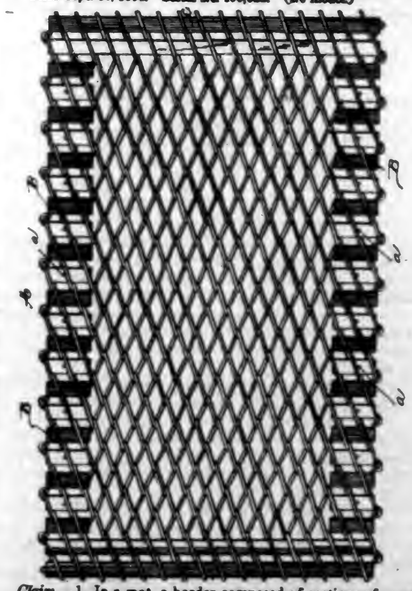


Claim.—1. A wire mat or matting constructed of parallel helices of wire connected together and having extending through the helices in the direction of their length bars of suitable material, having a cross-section corresponding in shape to the form of coil composing said helices and of a size sufficient to fill the interior thereof, substantially as described, whereby the helices are rendered firm and rigid and the flexibility of the connections of the helices preserved, so that the mat may be rolled or folded.

2. A wire mat or matting composed of parallel helices interlocked, and having the interior of every alternate helix provided with a bar of suitable material, having a cross-section corresponding to the form of coil composing said helices, the said bars being of approximately the size of the helices, substantially as described, whereby to fill the same and render the coils so provided firm, while by its alternate open helix the flexibility of the mat is preserved and accumulations permitted to go through the same.

3. A wire mat or matting composed of parallel helices interlocked, each or every alternate helix provided with a bar extending therethrough, having a cross-section corresponding to the form of the coil composing said helices and filling the same, and the terminals of each helix bent in substantially hooked form and connected with its adjacent terminal thereby, substantially as described, whereby the free ends are disposed of and the bars secured within the helices.

475,599. WIRE MAT. THOMAS C. MCPHERSON, Beaver Falls, Pa. Filed Sept. 17, 1891. Serial No. 406,022. (No model.)



Claim.—1. In a mat, a border composed of sections of wood or other material inserted in the coils of the mat at its sides and ends, those forming the side border extending into the coils but a short distance, while those forming the end border extend the entire width of the mat, substantially as described.

2. A border frame for flexible wire mats composed of short sections of wood or other material inserted in the coils of the mat on each side and sections inserted in the end coils of a length corresponding to the width of the mat, substantially as described.

3. A wire mat provided with a border composed of sections of wood or other suitable material inserted in the coils of the mat around the side and ends, the said section being provided with pins for holding the sections in place, substantially as described.

475,600. CABLE-HANGER. JOHN J. HATZ, Chicago, Ill. Filed Mar. 24, 1892. Serial No. 426,233. (No model.)

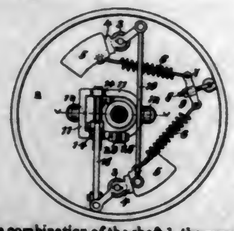


Claim.—1. A cable-hanger consisting of a hook mounted upon a base *b*, openings *d d c c* through said base, said openings *d d* being parallel to each other and inclined at an angle to openings *c c*, which are parallel to each other, and the wire *g*, adapted to surround and support the cable and to pass through the openings *d d c c* and to be fastened to said base, substantially as described.

2. In a cable-hanger, the combination, with a hook, of a metallic base to which said hook is attached, said base being provided with four openings adapted to receive a wire or wires, and said wire or wires adapted to be fastened to said base and to surround and support the cable at two points, substantially as described.

3. A cable-hanger consisting of a hook *a*, mounted upon a base *b*, openings *d d c c* through said base, two of said openings being parallel to each other and inclined at an angle to the other two, the channels *h h*, connecting the said openings, and the wire *g*, adapted to surround and support the cable and to be fastened to said base through said openings, substantially as described.

475,601. **REVERSIBLE VALVE-GEAR.** JAMES C. NICHOLSON, Litchfield, Ill., assignor of one-half to William C. Beindorf and Frederick Beindorf, same place. Filed Nov. 24, 1891. Serial No. 412,911. (No model.)



Claim.—1. The combination of the shaft 1, the revolving weighted arms 4 in operative connection with the shaft, springs 6, drawing in the weighted arms, rod 10, connecting the weighted arms, a rod 15, connected with the weighted arm 4, an eccentric adapted to rock on the shaft and connected to the engine-valve and to the rod 15, a rocking frame 11, connected to the reversing-lever, and a bar 13, pivoted to the rod 15 and working endwise in the rocking frame, substantially as set forth.

2. The combination, with a rocking eccentric connected with a revolving weighted arm and a reversing-lever, in manner substantially as set forth, of the hub 19 upon the shaft, having an oblique circumferential groove, a trunnion-ring 20, adjustable in such groove, and an eccentric 23, supported on the trunnions 22 and carrying a loose ring 24, connected with the engine-valve stem, all substantially as and for the purpose set forth.

3. The combination of the shaft 1, the hub 19 with an oblique circumferential groove, the trunnion-ring in said groove, and an eccentric 23, supported on said trunnions and having a loose ring connected to the engine-valve stem, substantially as set forth.

4. The combination, in a reversing and governing device for steam-engines, of a shaft 1, the reversing-lever 33, sliding collar 30, connecting-rod 29, rocking frame 11, bar 13, sliding in the frame, revolubie weighted arms 4, spring 6, rod 18, connected to the weighted arm, to the sliding bar 13, and to an eccentric supported on trunnions 22, and the said eccentric connected to the stem of the engine-valve, substantially as set forth.

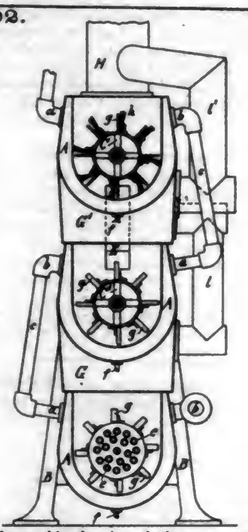
5. The combination, with an engine-valve, of an eccentric capable of rocking on the shaft 1 of the engine and having a ring or yoke, carrying arms 25, connected with the valve, a rod connected with revolving governor-arm 4 and with a slide-bar 13, and a rocking frame in which the slide-bar has bearing connected with a reversing-lever 33, all constructed and adapted to operate substantially as set forth.

6. The combination, with a shaft 1 and eccentric 23, supported on trunnions and having loose ring 24, and means for rocking the eccentric on the trunnions, of arms 38, having ball-joint connection to the eccentric-ring 24 and having connection with swinging frames 39, carrying arms 40, connected with the stems of the engine-valve, substantially as set forth.

7. The combination, with a shaft 1 and eccentric 23, supported on said shaft by trunnions 22 and having a loose ring 24, and means for rocking the eccentric on the trunnions, of arms 38, composed of parts 38* 38*, jointed together and having connection with the swinging frames 39, carrying arms 40, connected to the stems of the steam-engine valves, substantially as set forth.

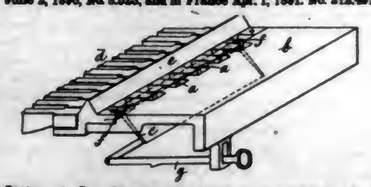
475,602. **APPARATUS FOR DRYING SPENT GRAIN AND THE LIKE.** FRIEDRICH R. OTTO, Dortmund, Germany. Filed Aug. 25, 1891. Serial No. 403,745. (No model.)

475,602.



Claim.—The combination, in a drying apparatus consisting of a number of double-walled troughs A, of steam or hot-air supplies *a b a*, a funnel D, connecting-pipes E for conducting the material to be dried into the next succeeding troughs, and an agitator C', provided with blades *g* and with central heating-pipes *c* of a conical or tapering form, substantially as described.

475,603. **FURNACE.** ERWIN F. PADDON, London, England. Filed Aug. 31, 1891. Serial No. 404,261. (No model.) Patented in England June 2, 1890, No. 8,523, and in France Apr. 1, 1891. No. 212,491.



Claim.—1. In a furnace, the air space or channel *a* through the dead-plate *b*, having its side notched or serrated or curved to receive corresponding projections upon the opposite side, the air-space being left between them, substantially as described, and shown in the drawings.

2. In a furnace, in a device for admitting air in front of the grate-bars, the combination, with a dead-plate *b*, having a serrated aperture *a* therein, and rib *c* beyond said aperture *a*, of a pivoted plate *c*, with means for altering the position of the same, the said pivoted plate *c* being adapted to control the supply of air admitted through the aperture *a*, substantially as described.

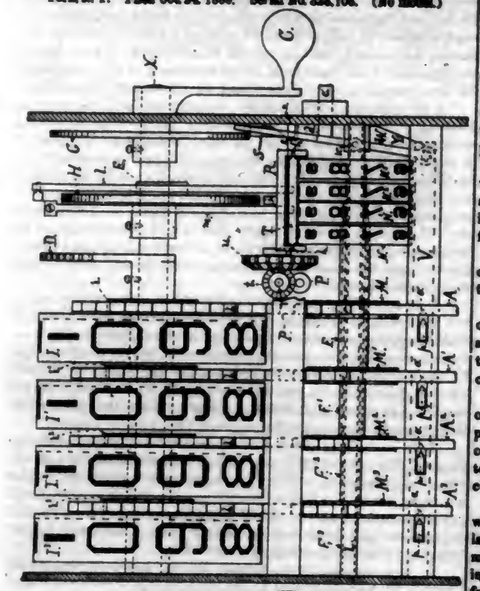
3. In a furnace, in a device for admitting a regulated supply of air in front of the grate-bars, the combination, with a dead-plate having a serrated aperture therein and an inclined rib in the rear of said aperture, of a pivoted plate adapted to wholly or partially close said aperture, and a hand-rod connected to said pivoted plate, substantially as described.

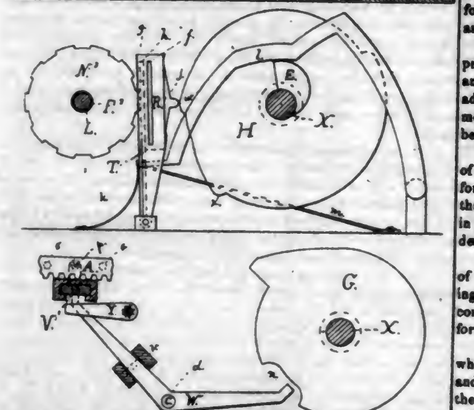
475,604. **PLOW.** PHILIP C. PAGETT, Wilmington, Ohio. Filed Jan. 2, 1892. Serial No. 416,874. (No model.)



Claim.—In a plow, the combination, with the plow-beam and the standard having a transversely-extended and slotted head, of the handle-plate having a socket or flanged seat for the handles and a laterally-slotted seat for the plow-beam, substantially as described.

475,605. **CHECK-PRINTING MACHINE.** CHARLES PAINE, New York, N. Y. Filed Oct. 24, 1889. Serial No. 328,108. (No model.)





Claim.—1. In a check-printing mechanism, a shaft, a pinion, and a printing-wheel upon said shaft, a rack engaging said pinion to set the printing-wheel, printing-actuating mechanism, a lock applied to the setting mechanism during the movement of the printing mechanism, and a connection between said lock and the printing-actuating mechanism, substantially as described.

2. In a check-printing mechanism, a shaft, a pinion, and a printing-wheel on said shaft, a rack engaging said pinion to set the printing-wheel, printing-actuating mechanism, a lock in engagement with the setting mechanism during the movement of the printing mechanism, means for disengaging said lock at the completion of said movement, and the connection between the lock and the printing-actuating mechanism, substantially as described.

3. In a check-printing mechanism, a shaft, a pinion, and a printing-wheel on said shaft, a rack engaging said pinion to set the printing-wheel, printing mechanism, a lock in engagement with the setting mechanism during the movement of the printing mechanism, and actuating mechanism therefor, means for disengaging the lock at the completion of such movement, and a stop for the printing-actuating mechanism actuated by the releasing movement of the lock for the setting mechanism, substantially as described.

4. In a check printing and indicating machine, the combination of the indicating-wheels I I' I², the pinions *i i' i²*, the racks A A' A², the pinions M M' M², the printing-wheel sleeves F F' F², and the printing-wheels N N' N², substantially as described.

5. In a check-printing mechanism, a shaft, a series of totalizing printing-wheels, a pinion for each wheel, a series of racks engaging with the pinions and forming the setting mechanism, printing-actuating mechanism, a lock applied to each setting mechanism during the operation of printing and released upon the completion of such operation, and a connection between said printing-actuating mechanism and the lock, substantially as described.

6. In a check-printing machine, the combination, with the type, of an oscillating platen, a reciprocating inking-pad sliding in guides therein, means for reciprocating the pad, and means for oscillating the platen, substantially as described.

7. In a check-printing machine, the combination, with a type-wheel, a pinion on said wheel, and a rack engaging with said pinion and adapted to set the same, of an oscillating platen, a reciprocating inking-pad on said platen, means for reciprocating the pad, and means for oscillating the platen, substantially as described.

8. In a check-printing machine, the combination, with the type, of the intermittently-oscillating platen carrying the check-strip, and the reciprocating inking-pad on the platen, substantially as described.

9. In a check-printing machine, the combination, with the type, of the intermittently-oscillating platen having guides for the check-strip, and a reciprocating inking-pad sliding in bearings therein, of intermittently-actuated feed mechanism for the check-strip, and a cut-off, substantially as described.

10. In a check-printing machine, the combination, with the type, of an oscillating platen across which a check-strip is fed, an inking-pad sliding in bearings therein, means for sliding the pad, means for oscillating the platen to ink the type, means for oscillating the platen to print the check, a cut-off, and feed mechanism to discharge the check, substantially as described.

11. In a check-printing machine, the combination, with the type-wheel, setting mechanism for the type-wheels, the intermittently-oscillating platen carrying the check-strip, and a reciprocating inking-pad moving in guides in said platen crossing the path of the check-strip, intermittent feed mechanism for the check-strip, a cut-off, and a shaft forming the actuating means for inking, printing, feed, and cut-off mechanism, substantially as described.

12. In a check-printing machine, the combination, with the casing, printing, and setting mechanism, of an arm actuating the setting mechanism, a numbered index, beside which said arm moves, a spring-pawl adapted to hold said arm at the numbers, and a lock for the setting mechanism held inoperative during the movement of the index-arm between the numbers on the index, substantially as described.

13. In a check-printing machine, the combination, with the type, of the oscillating platen formed with side flanges, of guide-bearings formed in said flanges at the base, a check-strip adapted to be fed through such guide-bearings, and a reciprocating inking-pad moving in guide-grooves in said flanges above the check-strip, substantially as described.

14. In a check-printing machine, the combination, with the type, of an oscillating platen formed with side flanges, an inking-pad slidingly secured in guide-grooves in said flanges, an actuating-shaft, and connection for reciprocating said pad in one direction, and a spring for reciprocating it in the other direction, substantially as described.

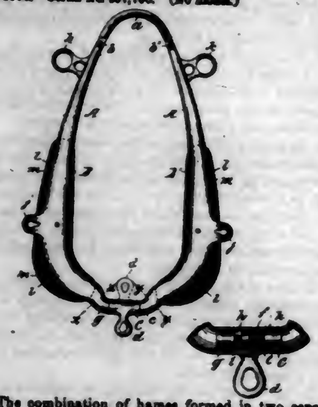
15. In a check-printing machine, the combination, with the type-wheel and its setting mechanism, of the actuating-shaft, the cams H and E thereon, the spring-actuated platen R, oscillated by the cam H, the inking-pad T, sliding in ways on said platen, the arm *l*, secured to said pad and actuated by the cam E, and the spring, substantially as described.

16. In a check printing and indicating machine, the combination of a printing-wheel, an indicating-wheel, pinions on said wheels, a rack engaging said pinions and adapted to move them synchronously, printing mechanism, a shaft for actuating said printing mechanism, a stop for said shaft during the actuating of the setting mechanism, and a lock for the setting mechanism during the movement of the actuating mechanism, substantially as described.

17. In a check-printing machine, a platen R, pivoted to vibrate between a double cam-wheel H on the rotating shaft *x* and the face of a printing-wheel and having projecting sides with the guide-slots to hold a strip of paper carried across the platen, and the grooved ways A A, with an inking-pad freely sliding therein between the strip of paper and the printing-wheel, in combination with an arm pivoted to the frame of the machine and extending over the shaft X and having its free end attached to the inking-pad, a cam on the shaft X to operate the arm and cause it to bring the inking-pad into a position for inking the type-wheel at a certain part of the revolution of X, a cam on the shaft X to cause the platen to press the inking-pad against the type-wheel, a cam to cause the platen to carry the strip of paper against the type-wheel, and the rotating shaft X, substantially as shown, and for the purpose specified.

18. In a check printing and indicating machine, a locking-rod V, having the locking-bolts *p* to engage with the racks A A', &c., in combination with the lever W to move the locking-rod longitudinally to engage its locking-bolts, the cam G, having the slot *n* to permit the movement of the free end of the lever from one side of the cam to the other, the arm *c* of the lever projecting through the case of the machine to form a stop for the crank C, and the spring Y to release the locking-rod from the rack, substantially as described.

475,606. HORSE-COLLAR. CHARLES A. PETTIT, Brooklyn, N. Y. Filed Oct. 5, 1891. Serial No. 407,760. (No model.)



Claim.—1. The combination of hames formed in two separate parts, a yoke attached to said parts at their upper ends by means of pivotal screws, pads mounted upon the lower parts of the same, and a locking device formed on the lower ends of said hames, said locking device being composed of grooves *h* and slot *f*, formed on the ends of said hames, and lock C, consisting of a cylindrical piece of metal adapted to fit over said hame ends and having screw-holes with screws *i e* for engaging in the grooves *h* to lock the ends together, substantially as described and shown.

2. A locking device for hames, composed of grooves *h* and slot *f*, formed on the ends of said hames, and lock C, consisting of a cylindrical piece of metal adapted to fit over said hame ends and having screw-holes with screws *i e* for engaging in the grooves *h* to lock the ends together, substantially as described and shown.

475,607. REVOLVING DOUGH-DIVIDER. EDWARD A. C. PETERSEN, Chicago, Ill. Filed Jan. 16, 1892. Serial No. 418,321. (No model.)



Claim.—1. In a revolving dough-divider, the main table 2, the rollers 10, mounted in the ends of the table, and the endless apron 11, mounted on said rollers, in combination with adjustable breaking-rollers 21 and 27, and the rotary cutting-wheel 60, all arranged between the ends of said apron, breaking-roller 27 and cutting-wheel 60 being located above the top of the apron, and breaking-roller 21 being arranged below the top thereof, whereby the same is upheld under said roller 27, substantially as and for the purpose set forth.

2. In a revolving dough divider, the combination of the main table that supports the device, the friction-rolls that run in bearings at the ends of said table, the revolving apron mounted on said rollers, the adjustable journal-bearer blocks 39, the moorage-washers 44, secured to said blocks, the set-screws 40, that hold said bearer-blocks captive and adjust the same, the shaft 47, that journals in said bearer-blocks, and the tension-roller 46, that applies tension to said apron, substantially as described.

3. In a revolving dough-divider, the combination of the main table that supports the device, said table having the side top frames 9, the rollers 7, journaled in the ends of said table, the adjustable tension-roller 46, that tightens said apron, the frame-pedestals 22, secured to said side top frames, the shaft 20, journaled in said side frames, the lower breaking-roller 21, mounted on said shaft, the spiral springs 23, mounted in said pedestal-frames, the bearer-blocks 24, mounted on said springs, the shaft 25, mounted in said blocks, the upper-breaking-roller 27, mounted on said shaft, and the set-screws 28, that adjust said roller 27 to the required thickness of the rolled dough, substantially as described.

4. In a revolving dough-divider, the combination of the side top frames 9, the journal-box bearer-frame 37, the journal-box bearer-frame 38, the said frames respectively attached to said side frames 9, the captive adjustable bearer-blocks 39, that are housed and slide in said frames, the moorage-washers secured to said blocks, the set-screws that hold said blocks captive and adjust the same, and the cutter-wheel 60, that journals in said frames 37 and 38, substantially as described.

5. In a revolving dough-divider, the combination of the side top frames 9 of the main table, the journal-box bearer-frame 37, having the surmounting journal-box 48, the short journal-shaft 52, mounted in said journal-box and having the boss-hub 57 on its inner end, the said boss-hub being provided with the countersunk box 58, the journal-box bearer-frame 38, the journal-block 50, housed in said frame, the set-screw 51, that fastens said block in said frame, the cutter-wheel shaft 59, whose inner end is rigidly held in said countersunk box 58 in the short journal-shaft 52 and whose journal end is mounted in said block 50, and the rotary cutter-wheel mounted on said shaft 59, substantially as described.

6. In a revolving dough-divider, the combination of the journal-box bearer-frames 37 and 38, the union-shafts 52 and 59, mounted in said frames, the hub-cylinder 61, mounted on said shaft 59, the said hub-cylinder provided with the channel-grooves 66 and the perforate lugs 67, the end disk cutters 62, the intermediate ring cutters 63, the sectional radial cutters 64, and the tie-bolts 65, which tie-bolts secure together and to said shaft 59 the constituent parts of the cutter-wheel 60, substantially as described.

7. In a revolving dough-divider, the combination of the side top frames 9, the roller-shafts 7, mounted in journal-bearings in near the ends of said frames, the rollers 10, mounted on said shafts, the revolving apron mounted on said rollers, the power pulley 16 and the hand-crank 14, mounted on one of said shafts, the sprocket-wheels 6, fast mounted on said shafts, and the endless chain 3, mounted on said sprocket-wheels, substantially as described.

8. In a revolving dough-divider, the combination of the side top frames 9, the pedestal-frames 22, the spiral springs 23, mounted in said frames, the bearer-blocks 24, mounted on said springs, the set-screws 28, that adjust and set said blocks, the roller and sprocket-wheel-bearer shaft 25, mounted in said blocks, the breaking-roller 27, mounted on said shaft, the sprocket-wheel 31, mounted on said shaft, and the endless revolving chain 3, which engages with said sprocket-wheel to turn the same and to turn the breaking-roller 27, substantially as described.

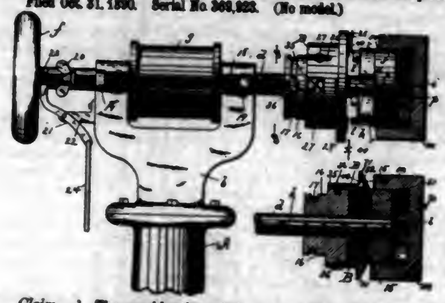
9. In a revolving dough-divider, the combination of the main table 2, having the side frames 9, the journal-box bearer-frames 37 and 38, integral with said side frames, the union-shafts 52 and 59, journaled in said pedestal-frames, the rotary cutter-wheel mounted on said shaft 59, the large sprocket-wheel mounted on said shaft 52, and the endless revolving sprocket-chain that engages with said sprocket-wheel and turns said cutter-wheel, substantially as described.

10. In a revolving dough-divider, the combination of the main table having the side frames 9, the pedestal-frames 22, the roller-shafts 7, mounted in said side frames, the rollers 10, mounted on said shafts, the revolving apron mounted on said rollers, the power-pulley 16 and hand-crank 14, mounted on one of said shafts, the sprocket-wheels 6, mounted on said shafts, the revolving endless chain that engages with said sprocket-wheels, the breaking-roller 21, journaled in said side frames, the spiral springs 23, mounted in said pedestal frames, the adjustable bearer-block 24, mounted on said springs, the set-screws 28, that adjust said block, the roller-shaft 25, journaled in said blocks, the upper breaking-roller 27, mounted on said shaft, the sprocket-wheels 31, that engage with said revolving chain 3, the pedestal-frames 37 and 38, the union-shafts 52 and 59, journaled in said pedestal-frames, the rotary cutter-wheel mounted on said shaft 59, and the large sprocket-wheel 31, mounted on said shaft 52 and that is engaged and turned by said revolving chain 3, substantially as described.

11. In a revolving dough-divider, the combination of the main table 2, having the side frames 9, the box-flanged beds 32, that are countersunk from the top of said table, the spiral springs 33, that are seated in said beds, the yielding cutter-table 34, that rests on said springs, and the pendent legs from said table that pass through said springs and through perforations in said bed-bottom, substantially as described.

12. In a revolving dough-divider, the combination of the main table 2, having the side frames 9, the roller-shafts 7, the rollers mounted on said shafts, the power-pulley 16, and the crank-handle 14, mounted on one of said shafts, the revolving apron 11, that is mounted on said rollers and carries the dough, the breaker-rollers between which the dough passes, the rotary cutter-wheel that divides said dough, and the spring-yielding cutter-table beneath said cutter-wheel, substantially as described.

475,608. SOLE-TRIMMING MACHINE. JAMES H. REED, Lynn, Mass., assignor to Amaziah M. Preble and Josiah H. Preble, same place. Filed Oct. 31, 1890. Serial No. 369,922. (No model.)

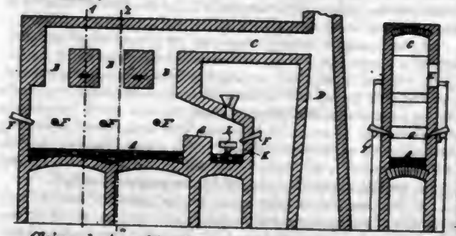


Claim.—1. The combination of the rotary shaft with the head *j* fixed thereon, the adjustable gage-cap *m*, adjustable on said shaft and overlapping said head from its outer face, and the eccentrically-arranged curved knives *r*, clamped on the inner face of said head and adjustable longitudinally, substantially as described.

2. The rotary shaft and guide-head fast thereon, in combination with the sliding head 16 on said shaft, a treadle mechanism for moving said head longitudinally, the stock B, adjustable on said sliding head and provided at its inner end with the beveled flange having blade-openings 41, and the adjustable knives 35 on said stock, provided with vertically-inclined cutting-edges projecting through said openings, substantially as described.

3. In a sole cutting and beveling machine, the rotary shaft, notched guide-head fast thereon, and adjustable gage-cap overlapping said head, in combination with the shaping-knives *r* on said head, the sliding head 16 on said shaft, and actuating mechanism, the detachable knives 35, secured to said sliding head, and the adjustable flanged stock B on said sliding head, having blade-openings 41, 28, and 29, arranged substantially as described.

475,609. COPPER-SMELTING FURNACE. BENJAMIN RICHARDS, Middle Bank, Swansea, England. Filed Nov. 3, 1891. Serial No. 410,751. (No model.)

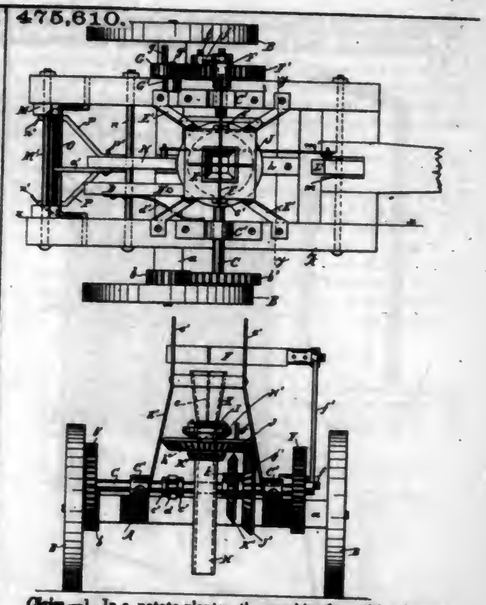


Claim.—1. A smelting-furnace with a bridge at one end dividing it into two compartments and over which slag flows directly from the larger compartment to the smaller compartment, the larger compartment of said furnace being provided with means for drawing off metal and the second compartment being provided with means for drawing off separately metal and slag, both compartments having tuyeres for directing blasts of air into them, substantially as described.

2. A copola smelting-furnace divided at the bottom into two compartments by a bridge, one for smelting ore, the other for recovering copper from the slag, said furnace being formed with an outlet to the chimney at the top of the smelting-chamber, an opening above the bridge for gases from the second compartment to pass to the chimney-opening, tuyeres for directing blasts of air into both chambers, openings for drawing off metal from the lower part of both compartments, and a passage at the bridge for slag produced in the first compartment to flow to the second compartment, and a slag-outlet for this compartment, substantially as described.

3. A smelting-furnace comprising two compartments separated by a bridge, the larger of said compartments being provided with an outlet-flue and charging-openings at intervals along the top and having an outlet J for drawing off metal, the smaller of said compartments having an outlet for slag and an outlet for metal and having also a charging-opening, both of said compartments being provided with tuyeres for directing blasts of air, substantially as described.

475,610. POTATO-PLANTER. FRANK ROBINSON, Sand Lake, Mich. Filed July 31, 1891. Serial No. 401,268. (No model.)



Claim.—1. In a potato-planter, the combination, with a hopper and a feed-spout provided with horizontal valves and supported under the hopper, of a reciprocating knife above the hopper, a shaft passing through the feed-spout, a beveled toothed wheel secured on the said shaft, a beveled toothed wheel journaled on the upper end of the spout and provided with a pin for operating the valves, and a connecting-rod and a crank secured to the said shaft and adapted to reciprocate the said knife, substantially as set forth.

2. In a potato-planter, the combination, with the frame, of the hopper, the supports securing the hopper above the frame, the feed-spout provided with brackets and secured to the frame, the driving-shaft passing through the feed-spout, a beveled toothed wheel secured on the said shaft, a beveled toothed wheel journaled on the upper end of the feed-spout and provided with a projecting pin, and the horizontal valves pivoted at the top of the feed-spout and provided with arms projecting into the path of the said pin and operated thereby, substantially as set forth.

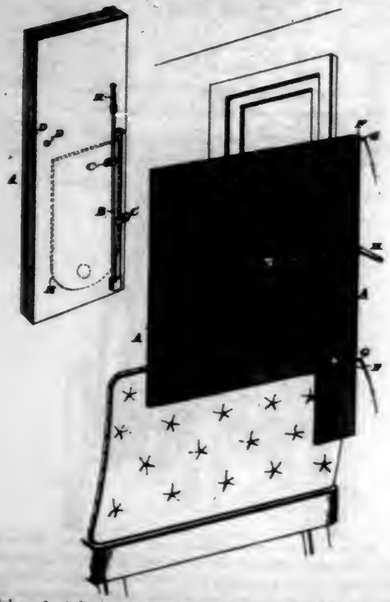
3. The combination, with the hopper and the knife above the hopper, of the feed-spout and the spring-actuated valves below the hopper, the toothed wheels J and K, journaled on the upper part of the spout and provided with a pin for opening the valves, the main driving-shaft passing through the said spout, the sliding wheels J' and K', adapted to be secured thereon, the intergearing toothed wheels F and G, driven by the said main shaft and each provided with a crank-pin, and a connecting-rod pivoted to one end of the knife and adapted to be coupled to either crank-pin, substantially as and for the purpose set forth.

4. The combination, with the two pivoted standards provided with covering-up blades and the cranked rod pivoted to the frame and adapted to hold the said standards in position, of a pivoted hand-lever, a rod pivotally connecting the said cranked rod and hand-lever, and the arms pivoted to the said two standards and provided with slots engaging with pins projecting from the hand-lever, whereby the said two standards may first be released and then turned on their pivots, substantially as set forth.

5. The combination, with the two pivoted standards provided with covering-up blades, of the pivoted standard provided with a furrow-opening blade, the hand-lever arranged between the said standards, a flexible connection pivotally connecting the upper end of the hand-lever with the front standard, and the arms pivotally connecting the lower end of the hand-lever with the two standards at the rear, substantially as and for the purpose set forth.

6. The combination, with the stationary hopper, of the stationary spout provided with a flange at its upper end and arranged below the hopper, the horizontal spring-actuated valves provided with projecting arms and pivoted on vertical pins projecting from the said flange, and a wheel journaled on the upper part of the spout below the said flange and provided with a projecting pin for opening the valves at intervals as the wheel is revolved, substantially as and for the purpose set forth.

475,611. DRAFT-GUARD FOR CARS. GUSTAVE F. C. ROSENTHAL, Philadelphia, Pa. Filed Nov. 5, 1891. Serial No. 410,946. (No model.)



Claim.—1. A draft-guard consisting of leaves hinged together side by side and a rod for holding said leaves in opened-out condition, said rod having a pivoted connection intermediate of its length, so that it can be folded, substantially as described.

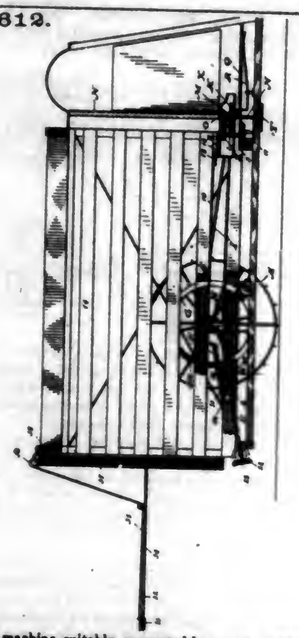
2. A draft-guard consisting of a number of parallel leaves and a sectional rod for securing said leaves in opened-out condition, said rod having a pivoted connection intermediate of its length, so that it can be folded, substantially as described.

3. A draft-guard consisting of folding leaves which may be placed side by side and are provided with studs, and a folding rod which is connected with either leaf and adapted to engage with said studs of the other leaves for holding the several leaves in extended positions, substantially as described.

4. A draft-guard consisting of leaves and a rod for holding the same in extended positions, said rod having feet connected therewith for preventing turning of the guard when supported, substantially as described.

5. A draft-guard consisting of leaves hinged together side by side and an auxiliary leaf which is pivoted upon one of the main leaves and adapted to be turned to bear on said main leaf, and a rod pivoted intermediate of its length, so that it can be folded and adapted for holding the main leaves in extended position, said rod being connectible with said leaves, substantially as described.

475,612. MACHINE FOR SHOCKING GRAIN. WILLIAM RUSSELL, Hamilton, Canada, assignor of one-half to Samuel Mariatt Kenney, same place. Filed Mar. 19, 1891. Serial No. 385,662. (No model.)



Claim.—1. In a machine suitably supported by ground-wheels and connected to a harvester, a sheaf-receptacle having a movable bottom, the swinging partition X, arranged to hold the sheaf in a vertical position as it falls on said bottom, and means, substantially as described, for automatically vibrating said partition as each sheaf drops onto said movable bottom, substantially as and for the purpose specified.

2. In a machine suitably supported by ground-wheels and connected to a harvester, a sheaf-receptacle having a movable bottom connected with mechanism automatically put into action as each sheaf drops onto the bottom of the receptacle, in combination with a pivoted partition operated by the said mechanism and arranged to sweep each sheaf out of the receptacle before the next sheaf is deposited in it, substantially as and for the purpose specified.

3. In a machine suitably supported by ground-wheels and connected to a harvester, a sheaf-receptacle located at one end of the machine, which is divided into two shock-collecting receptacles communicating with the sheaf-receptacle, in combination with automatically-operating mechanism by which the sheaves deposited in the sheaf-receptacle are automatically swept alternately into the shock-collecting receptacles, substantially as and for the purpose specified.

4. In a machine suitably supported by ground-wheels and connected to a harvester, a sheaf-receptacle located at one end of the machine, which is divided into two shock-collecting receptacles communicating with the sheaf-receptacle, each shock-collecting receptacle having an intermittently-moving bottom and into which the sheaves are alternately swept, in combination with automatically-operating mechanism by which both bottoms of both shock-collecting receptacles are simultaneously moved sufficiently to deposit all the sheaves on the ground, substantially as and for the purpose specified.

6. In a machine suitably supported by ground-wheels and connected to a harvester, a sheaf-receptacle located at one end of the machine, which is divided into two shock-collecting receptacles communicating with the sheaf-receptacle, each shock-collecting receptacle having an intermittently-moving bottom and into which the sheaves are alternately swept, in combination with automatically-operating mechanism by which both bottoms of both shock-collecting receptacles are simultaneously moved sufficiently to deposit all the sheaves on the ground, and with means to support the sheaves while they are being so deposited, substantially as and for the purpose specified.

7. A spur-wheel geared to and deriving motion from the movement of the ground-wheels, two pitmen connected, respectively, at one end to two oppositely-placed cranks fixed to the spindle of the spur-wheel, two racks, each connected to one of the said pitmen and designed to mesh with a pinion loosely journaled on a spindle, in combination with pivoted levers designed to support the loose pinion at one end and the loose bottom of the grain-receptacle at the other in such a manner that any weight falling onto the bottom of the grain-receptacle will throw the loose pinion into gear with the grain-handling mechanism of the machine, substantially as and for the purpose specified.

8. The combination of a sheaf-receptacle constructed and arranged to receive a sheaf in a vertical position, with a spindle N, a vertical partition X, fixed to the same and swinging horizontally over said receptacle, and means, substantially as described, for automatically putting the partition in motion by the weight of the sheaf as it drops into said receptacle, substantially as set forth.

9. A crank V, formed on the end of the bar W, to which the door for closing the side aperture in the receptacle is fixed, in combination with the rod U, cam T, and spindle N, arranged and operating substantially as and for the purpose specified.

10. The spindle to which the belt-rollers 8 and 9, respectively, are fixed and on which the bevel-pinions 4 are loosely journaled, the said bevel-pinions 4 meshing with the bevel-wheel 3, which derives motion, as described, alternately in opposite directions, in combination with the two pairs of clutches 6 and 7, alternately engaged according as the wheel 3 rotates in one direction or the other, substantially as and for the purpose specified.

11. The bevel-pinion 11, fixed to the spindle 5 and meshing with the pinion 12, fixed to the roller 13, on which the side canvas is carried, a bevel-pinion 4, connected by clutch mechanism to the spindle 5, as described, in combination with the bevel-wheel 3, meshing with the bevel-pinion 4 and geared, as described, to the pinion O, substantially as and for the purpose specified.

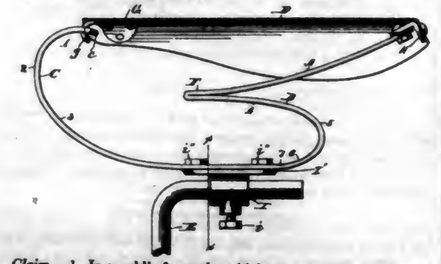
12. A rod 19, connected, as described, at one end to the shaft 21, geared to the rear shaft 24 and at the other end to the crank-shaft 18, in combination with the ratchet-wheel 16, pin 17, and spring-catch 15, connected to the spindle 2, substantially as and for the purpose specified.

13. A rod 19, operated as described and having a head 20, designed to rest upon the shaft 21 in proximity to the screw b, formed thereon, in combination with a pinion 26, meshing with the spur-wheel G and having a ratchet clutch formed on its face to engage with the clutch 29, designed to move longitudinally upon the shaft 21 by the action of the head 30, carried on the rod 19 and held by the springs 31, substantially as and for the purpose specified.

14. The arms 32, pivoted on the cross-head 33, movably supported on the rod 34, and means, substantially as described, for holding said arms at right angles to said rod, in combination with the rope 35 and weight 38, substantially as and for the purpose specified.

15. The arms 32, pivoted on the cross-head 33, movably supported on the rod 34 and held by the rope 35 and weight 38, in combination with the edge 46, engaging with projections on the arms 32, block 40, spring 39, and projection 41, substantially as and for the purpose specified.

475,618. SADDLE FOR CYCLES. CYRUS W. SALADEE, Cleveland, Ohio, assignor to John W. Heaney, Freeport, Ill. Filed Jan. 11, 1892. Serial No. 417,652. (No model.)



Claim.—1. In a saddle for cycle-vehicles, a spring adapted to support the seat or top suspended at its opposite ends from the terminals of said spring, the latter consisting of the flection members A B C, the two rear members A B being so carved and arranged as to insure an automatic adjustment between their forward portions, thereby adjusting said spring to the weight of the rider and affording a downward and rearward movement to the rear end of the saddle, as set forth.

2. In a saddle for cycle-vehicles, a spring having the reversely-curved rear members arranged relatively to each other to secure an automatic adjustment between themselves under the stress or weight of the load on the saddle seat or top, as and for the purpose described.

3. In a saddle for cycle-vehicles, a spring having its front and rear members arranged to be connected to opposite ends of the saddle seat or top, and the lower member curved reversely to said upper member and affording a bearing for the upper rear member and securing an automatic adjustment between the upper and lower rear members, as and for the purpose set forth.

4. In a saddle for cycle-vehicles, a spring adapted to suspend the saddle-seat from its ends and between the terminal ends of such spring, comprising the downwardly-curved member A, extended forward from the hind end of the seat to a point between the ends of the same, the member B, curved reversely to said member A and extended rearward and downward to afford a bearing therefor, said lower member B being thence extended forward to the clamp of the saddle-post, and the forward and downward curved member C, extended beyond the pommel of the seat and joined to the rear member of either of them, as and for the purpose described.

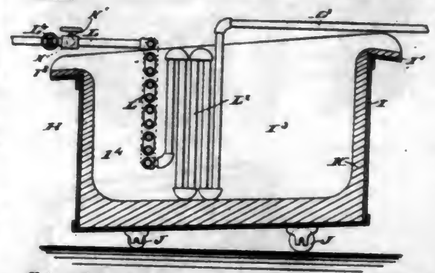
5. In a saddle for cycle-vehicles, a spring adapted to suspend the saddle-seat from its ends between the terminal ends of said spring, having its rear members A B curved in reverse planes to afford a bearing for one another, and the meeting ends of said members connected by an open joint, as and for the purpose described.

6. In a saddle for cycle-vehicles, a spring comprising the front member C and the rear members A B, said rear members having their meeting ends joined by the open joint K, which lies below the seat and in proximity to its vertical axis, the member A being carved rearward and upward from said joint and the member B carved rearward and downward from the joint and thence extended forward to the saddle-post, as and for the purpose described.

7. In a saddle for cycle-vehicles, a spring bent from a single piece of metal to form the member A, which curves forward and downward from the saddle-seat, thence carried rearward and downward beneath the member A, forming the member B, thence reversed and extended forward beyond the saddle-post, and finally turned upward and rearward at C to connect with the pommel of the saddle, as set forth.

8. A spring for cycle-vehicles, having the front member C made in one piece with one of the rear members, and the said rear members curved reversely and arranged one below the other to afford a bearing and secure an automatic adjustment between said rear members, as and for the purpose described.

475,614. FORE-HEARTH. ADAM J. SCHUMACHER, Butte City, Mont. Original application filed Mar. 4, 1891, Serial No. 383,657. Divided and this application filed Oct. 14, 1891. Serial No. 408,867. (No model.)



Claim.—A fore-hearth consisting in a tank having its rear end higher than its forward end and provided, respectively, with outlet-spouts I^2 I^3 in the upper edges of said ends, a lining of refractory material, and a transverse water-partition dividing the tank above its bottom and forward of its center into two communicating compartments, whereby a continuous discharge of slag and bullion through the spouts I^2 I^3 is provided for, substantially as set forth.

475,615. FRAME FOR EYEGLASSES AND SPECTACLES. JAMES E. SEARING, Mount Vernon, N. Y. Filed Feb. 27, 1892. Serial No. 423,050. (No model.)



Claim.—1. In a spectacle or eyeglass frame, the combination, with the divided lens-rim, of the nut and co-operating screw for adjusting the sides of the rim toward each other, held in operative engagement when at the outward limit of their movement, whereby the accidental loss of the same is prevented.

2. In the herein-described spectacle or eyeglass frame, the combination, with the divided lens-rim having a screw-threaded projection at one end and an opening near the other end through which said screw-threaded projection passes, of an adjusting-nut applied to said screw-threaded projection and having the opening through it enlarged at one end to accommodate a head or flange formed upon the end of the screw-threaded projection, substantially as described.

3. The lens-rim consisting of the integral piece of metal bent to inclose a lens and further bent to form the loop or handle, as described, and having the offsets *a b* and screw-threaded projection *a* passing through an opening in the portion *b*, in combination with the screw-nut having a portion of its opening enlarged to receive the flanged or upset end of the screw-threaded projection, substantially as described, and for the purpose specified.

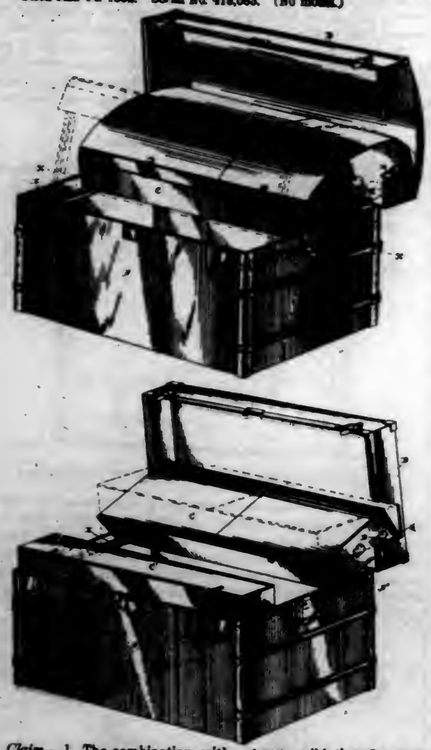
475,616. INDULINE DYE. ROBERT SENOUR, New York, N. Y. Filed Nov. 21, 1891. Serial No. 412,061. (Specimens.)

Claim.—1. As a new article of manufacture, the black dye-stuff (trioleate of induline) which has the following characteristics: it is an intensely-black liquid which at the ordinary temperature has the con-

sistency of castor-oil, insoluble in water, but easily soluble in alcohol and in benzine.

2. The within-described process for preparing the new dye-stuff, (triolcate of indoline,) which consists in mixing one molecule of indoline with three molecules of oleic acid and then heating the mixture to about 100° to 120° centigrade, substantially as described.

475,617. TRUNK. SIMON P. V. SEWARD and FREDERICK W. LEIMBERGER, Petersburg, Va.; said Leimberger assignor to said Seward. Filed Jan. 14, 1892. Serial No. 418,063. (No model.)



Claim.—1. The combination, with a trunk, a lid therefor, tray-sticks, and a tray supported thereon, of a pivotal connection between the tray and top, the said point of connection being sufficiently forward from the rear side of the tray to enable the latter to be lifted over the rear side of the trunk when the said lid is elevated and swung into the lid, drawing the front side of the tray rearward on the tray-sticks, substantially as shown and described.

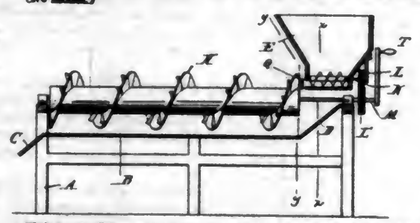
2. The combination, with a trunk, a lid therefor, and a tray supported within the trunk, upwardly-slotted plates secured to the tray ends, and inwardly-projecting studs on the lid ends, upon which the rear side of the tray is pivotally supported by means of the said plates, whereby when the lid is raised the rear side of the tray is raised also and slid backward within the trunk-top, substantially as shown and described.

3. The combination, with a trunk, a top therefor, and a tray pivotally connected to the top, of grooved sticks secured within the trunk, and strips on the bottom of the tray which slide in the grooves of the said sticks, substantially as shown and described.

4. The combination, with a trunk, a top therefor, and inwardly-projecting studs on the top ends which are grooved on their peripheries, of a tray, upwardly-slotted plates secured to the tray ends which fit the grooves of the said studs, and sticks within the trunk for supporting the forward side of the tray when the top of the trunk is raised, substantially as shown and described.

5. The combination, with a trunk and a lid therefor, of a tray formed of two parts, the rear portion of the tray being pivotally connected to the lid and its rear side adapted to be raised and swung backward thereby, and tray-sticks within the trunk, the front portion of the tray being adapted to be pushed backward on said stick to hold the front side of the rear portion of the tray in an elevated position, substantially as shown and described.

475,618. MIXING-MACHINE FOR CONCRETE, MORTAR, &c. JOHN SKINNER, Flint, Mich. Filed Oct. 16, 1891. Serial No. 408,869. (No model.)

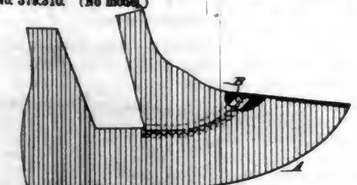


Claim.—1. The combination, with the trough B, the hoppers H and I, the inclined apron D beneath said hoppers, the troughs O O', the conveyers J therein, the conveyer N, shaft M, the crank-handle T, and the gear-wheels L and L', substantially as described.

2. In a cement-mixer, the combination, with the frame A, the trough B, the conveyer N therein, the shaft M for driving said conveyer, the hoppers H and I, the troughs O O' at the base of said hoppers, the conveyers J in said troughs, the valves Q, the shafts Q', and adjusting-levers R, substantially as and for the purpose described.

3. In a cement-mixing machine, the combination, with the feed mechanism, of a conveyer consisting of the trough, the shaft, the conveyer-wings consisting of the blades *a*, having the flange *b* and pin *c*, substantially as described.

475,619. UPPER. GEORGE W. SLEEPER, North Adams, Mass., assignor to Norman L. Millard, same place. Filed Jan. 27, 1891. Serial No. 379,310. (No model.)



Claim.—A blank for a shoe or gaiter, comprising the rear quarters and the vamp, and the crimped front quarters secured to the vamp over the instep and having on the inside a stay-piece attached to the crimped and front quarters for the purpose of holding the shape, substantially as and for the purpose herein described.

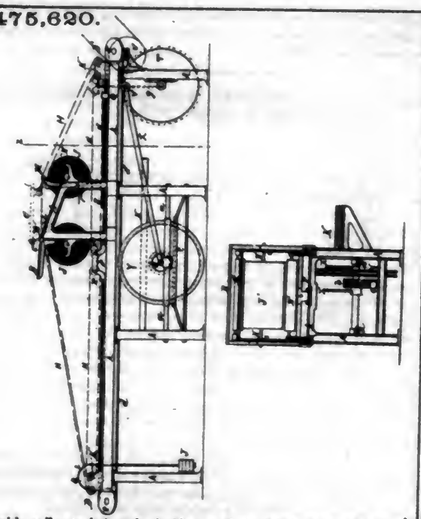
475,620. APPARATUS FOR CUTTING PILE FABRICS. JAMES H. SMITH, Longsight, ANDREW GODDARD, Stockport, and LLOYD HIGGINBOTTOM and THOMAS MARNOCK, Longsight, assignors to the Fustian Cutting Machine Company, Limited, Salford, England. Filed May 29, 1891. Serial No. 394,618. (No model.) Patented in Germany Sept. 21, 1887, No. 46,156; in France Sept. 22, 1887, No. 186,080; in England Dec. 10, 1887, No. 16,996; in Belgium Nov. 13, 1888, No. 83,936; in Italy Sept. 29, 1890, No. 28,397, and in Austria-Hungary Jan 11, 1891, No. 38,956.

Brief.—Upon a suitable frame-work are placed two cloth-rolls J and J', the fabric whose pile is to be cut being unrolled from one roll and rolled on the other at suitable times. The fabric in its course from the roller J' passes to the split roller K', over the rollers E' and D', smaller roll M, rollers L, D, and E, to the split roller K, and thence to the roll J. Between the roller M and the roller L the cloth is acted upon by the knife. The rolls E and E' are attached to a carriage F, reciprocated by means of ropes *d* and *d'*, wheel Y, rack *c*, pinion *b*, connecting-rod X, and crank-wheel T, and by the above-mentioned arrangement of rollers the cloth travels twice the distance traversed by the carriage F. The roller M is moved a slight distance back at each traverse of the carriage, thus causing the knife to completely clear the fabric. By means of the pawl *f*, acting on a ratchet-wheel on split roller K', the cloth is unrolled from roller J' slightly at each traverse of the carriage, thus making the going-out line diagonal.

Claim.—1. The combination, with a reciprocating carriage provided with two rollers, of a pair of tightening-rollers mounted one at each end of the frame and a pair of pulley-rollers, also mounted one at each end of the frame, the cloth passing from the tightening-rollers around the rollers upon the reciprocating carriage, and then around the pulley-rollers, between and above which is arranged a suitable cutting-table, substantially as and for the purposes hereinbefore described.

2. In a machine for cutting pile fabrics, the combination of a knife-supporting table and mechanism for traversing the fabric, with a movable guide-roller, and means, substantially as described, for moving the

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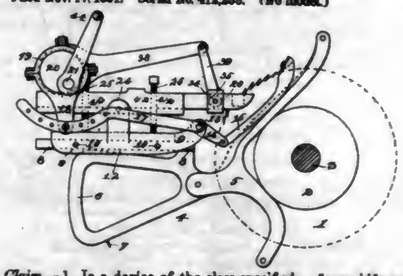
said guide-roller to bring the knife out of the fabric at the end of the cut, substantially as described.

3. In a machine for cutting pile fabrics, the combination of a knife-supporting table and a traveling carriage to traverse the fabric, with levers carrying a guide-roller to support the fabric at the table, the said levers being adapted to be operated by the carriage as it reaches the end of its traverse to bring the knife out of the fabric at the end of the cut, substantially as described.

4. In a machine for cutting pile fabrics, the combination of a knife-supporting table with mechanism for traversing the fabric backward and forward, and devices, substantially as described, for moving the material slightly as the cutting progresses to give a diagonal going-out line.

5. In a machine for cutting pile fabrics, the combination of a knife-supporting table, mechanism for traversing the fabric backward and forward and split rollers to hold the fabric, with a brake for the split roller on the delivery side of the fabric, and means, substantially as described, for automatically turning the other split roller slightly as the cutting progresses, as and for the purpose set forth.

475,621. GIN-SAW GUMMER. JEREMIAH W. SMITH, Athens, Ga. Filed Nov. 17, 1891. Serial No. 412,238. (No model.)



Claim.—1. In a device of the class specified, a frame bifurcated and slitted in the forward end to fit over the space-blocks and saws, a bed sliding thereon, movable to and from the saws, a second bed pivoted near its middle portion to said sliding bed, so that each end has vertical movement, and two arms pivoted thereon and movable laterally and carrying, respectively, a punch and correlative die, for the purpose specified.

2. In a device of the class specified, a frame adapted to be applied to a saw-mandrel, correlatively-vibratable levers pivoted thereon, normally held apart and carrying dies in their ends and having inclined lugs thereon, a housing inclosing said levers, a shaft passing through said housing and levers and carrying wipers in contact with said inclines, and means for causing an oscillation of said wipers, for the purpose specified.

475,622. TRICYCLE. WALDO V. SNYDER, Canton, Ohio. Filed Oct. 26, 1891. Serial No. 409,906. (No model.)

475,622.

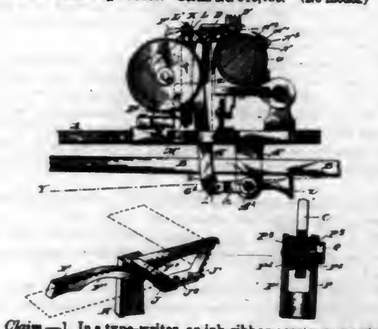


Claim.—1. The combination of a body A, provided with the pivoted legs *e* and *e'*, the shaft B, provided with the sprocket-wheel C, the drive-chain D, the sprocket-wheel D', the bell-crank I, the pitman H, and the guide-bar K, substantially as and for the purpose specified.

2. The combination of the body A, provided with the pivoted head M, the connecting-bar *e*, provided with the cross-pin *h*, the rods *h'*, and the guide-bar K, provided with the bar *k*, substantially as and for the purpose specified.

3. The combination of the body A, provided with the pivoted legs *e* and *e'*, the leg-bars O, provided with the adjustable brackets P and the foot-plates P', substantially as and for the purpose specified.

475,623. TYPE-WRITING MACHINE. CHARLES SPIRO, New York, N. Y. Filed Aug. 5, 1889. Serial No. 319,736. (No model.)



Claim.—1. In a type-writer, an ink-ribbon carrier connected with an operative part of the type-writer, to be reciprocated in a plane extending from the platen to the ribbon-spools and arranged to pass into and out of the path of the type and over and adjacent to the printing-point of the machine, and means for conducting the unused portions of the ink-ribbon in directions at right angles to the used portions, whereby a maximum of printed matter on the platen is constantly in view, as set forth.

2. A movable ink-ribbon carrier for type-writers, having provisions for holding a portion of the ribbon parallel with the platen and portions at right angles thereto, and connections whereby the carrier is adapted to be reciprocated in a horizontal plane to move the parallel portion to and from the platen in lines parallel thereto, as set forth.

3. A pivoted ink-ribbon carrier directly and adjustably connected with the bail and moving between the platen and ribbon-spools, as set forth.

4. A movable ink-ribbon carrier directly connected with the bail and carrying the ribbon-spool ratchet-pawls, as set forth.

5. A movable ink-ribbon carrier adjustably connected with a bail, whereby different portions transversely of the ribbon are presented at the printing-point, substantially as specified.

6. A movable ink-ribbon carrier, in combination with a bail and connected directly thereto to the side of the pivot opposite the key-engaging portion of the bail, as set forth.

7. A pivoted ink-ribbon carrier, combined with a bail and connected thereto to the side of the pivot opposite the key-engaging portion of the bail, as set forth.

8. An ink-ribbon carrier provided with diagonally-disposed turning-bars and pawls, substantially as specified.

9. An ink-ribbon carrier provided with turning-bars arranged diagonally to change the direction of the ink-ribbon right angularly on either side of the printing-point and pawls beneath said carrier, substantially as specified.

10. An ink-ribbon carrier provided with turning-bars and with tension-bars beneath the turning-bars, substantially as specified.

11. The combination of a movable ink-ribbon carrier, a platen, and ribbon-spools, the carrier being arranged between the platen and spools and provided with tension devices, substantially as specified.

12. A movable ink-ribbon carrier provided with pawls, in combination with ribbon-spools provided with ratchets operatively connected with the carrier-pawls, substantially as specified.

13. The combination of a platen, a movable ink-ribbon carrier arranged adjacent to the printing-point on the platen and provided with ribbon-turning bars and adjustable ribbon-tension bars, substantially as specified.

14. A movable ink-ribbon carrier, in combination with a step-by-step feed mechanism and a bar, rod, or wire arranged in the path of the ribbon adjacent to its spools and operatively connected with the ribbon-feed mechanism, substantially as specified.

15. The combination of a movable ink-ribbon carrier, a ribbon, and its step-by-step feed mechanism comprising pawls, and a bar arranged in the path of the ribbon and beneath the pawls, substantially as specified.

16. The combination, with the ribbon and its feed mechanism, comprising pawls having cut-away portions, of a movable ribbon-carrier and a bar arranged beneath the pawls and ribbons, whereby said bar is inoperatively connected with one of the pawls for the purpose of permitting said pawl to perform the feed function, substantially as specified.

17. A guide for a ribbon, provided with a pivoted tension-bar and with an adjusting-screw for regulating the tension.

18. The combination, with the key-levers and universal bail of a type-writer, of a ribbon-carrier connected with the bail to the side of the pivot opposite the key-engaging portion thereof to partake of the motion of the bail produced by depressing the key-levers, substantially as specified.

19. In a type-writer, an ink-ribbon carrier provided with diagonal turning-bars and means for maintaining a constant tension in the ribbon between the turning-bars, as set forth.

*20. A type-bar bracket having firmly secured therein bearings, one of which is thicker than the other, substantially as specified.

21. The combination, in a type-writer and with the carriage and platen thereof, of a shield running across the entire length of said carriage and fastened to the risers D^{ax}, and extending to the front edge of the ribbon and at its mid-length curved to conform to the contour of the platen, with which it is nearly in contact, substantially as specified.

22. In a type-writer, an ink-ribbon carrier provided with turning-bars and spring tension-bars, substantially as described.

23. In a type-writer, an ink-ribbon carrier provided with oppositely-disposed diagonal turning-bars and adjustable tension-bars, as set forth.

24. In a type-writer, an ink-ribbon carrier formed with oppositely-disposed diagonal turning-bars and with pivoted tension-bars, as set forth.

25. In a type-writer, an ink-ribbon carrier provided with oppositely-disposed diagonal turning-bars and tension-bars pivotally connected therewith and adjustable thereon to regulate the tension of the ribbon, as set forth.

26. In a type-writer, a ribbon-carrier, mounted directly on the universal bail, substantially as described.

27. In a ribbon-carrier, standards having tables and tension-bars secured to the tables, substantially as specified.

28. In a ribbon-carrier, two standards having oppositely-disposed tables, each provided with oppositely-disposed diagonal guiding-bars and tension bars secured one to each table and constructed and arranged to yieldingly rest against the same, substantially as specified.

29. In a ribbon-carrier and in combination with the tables thereof, yielding tension-bars and means for regulating the pressure thereof against the table and an interposed ribbon, substantially as specified.

30. The combination, with the ribbon-spools and pawl-and-ratchet mechanism thereof, of an oscillating shaft having radial arms extending beneath the pawl, and a ribbon-carrier, substantially as specified.

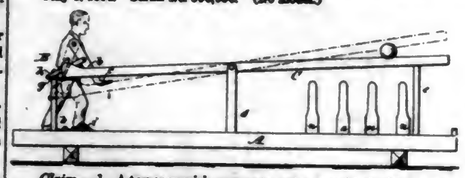
31. The combination, with the ribbon-carrier and ribbon-spools, of an oscillating shaft having radial arms extending beneath the pawl of the spool-rotating mechanism and beneath the ribbon between the spools and the carrier, substantially as specified.

32. The combination, with the pawl-and-ratchet mechanism, of the ribbon-spools, detents having projections formed with inclined faces, and an oscillating shaft having arms adapted to bear on the detents, and means connected with said shaft for oscillating the same so as to alternately disconnect said detents from the ratchet of the ribbon-spools, substantially as specified.

33. In a type-writer, a ribbon-carrier connected directly to a universal bail and extended to and movable over the printing point of the platen, substantially as specified.

34. The combination of a movable ink-ribbon carrier, a ribbon, and its step-by-step feed mechanism comprising gravitating pawls, a bar arranged in the path of the ribbon and beneath the pawls, substantially as specified.

475,624. GAME-BOARD. GEORGE STACKHOUSE, Pittsburg, Pa. Filed July 8, 1891. Serial No. 398,536. (No model.)



Claim.—1. A toy comprising an automaton provided with a swinging arm, a tilting trough adjacent to the automaton and delivering to the hand thereof, and a connection between the trough and arm for operating the latter from the former, substantially as described.

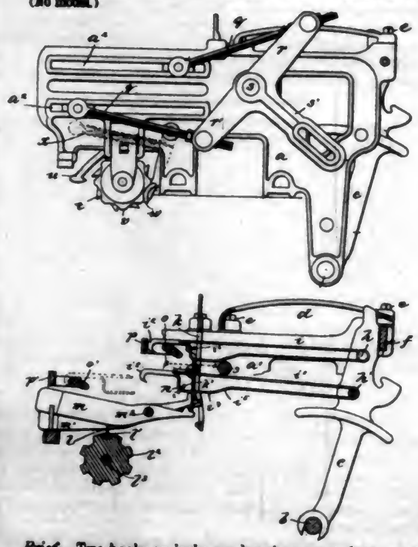
2. A toy comprising an alley, an automaton at one end of the alley and provided with a swinging arm, a longitudinally-extending and tilting delivery-trough on the alley and delivering to the hand of the automaton, and a link connecting the trough with the arm of the automaton, substantially as described.

3. The combination of the alley A, the tilting trough C, provided with the spout *f*, having a lateral angled rod *g*, the automaton B, provided with the swinging arm *b*, having the hand *c*, and the link A, connecting the rod *g* and arm *b*, substantially as described.

4. A toy comprising an alley, an automaton having a swinging arm at the front of the alley, a tilting trough delivering to the hand of the automaton, a connection between the tilting trough and arm of automaton, a graduated plate at the rear of the alley, and an index mounted to turn on the said graduated plate, substantially as described.

5. In a toy, the combination, with an alley, of an automaton having a swinging arm, a tilting trough delivering to the hand of the automaton, a connection between the arm of the automaton and the tilting trough, and an inclined plate secured to the alley in front of the automaton, substantially as herein shown and described.

475,625. SHEDDING MECHANISM FOR LOOMS. GEORGE W. STAFFORD, Providence, R. I. Filed Nov. 16, 1891. Serial No. 412,063. (No model.)



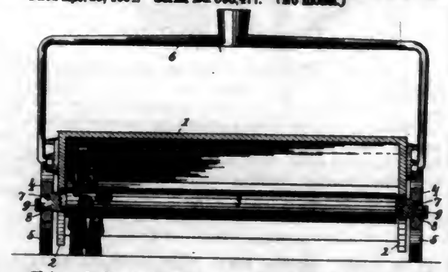
Brief.—Two hooks or jacks are loosely connected to each harness-lever and are acted on by lifters or draw-bars, the upper one of which has a greater range of movement than the lower one, and each of said lifters or draw-bars has a greater range of movement at one end than at the other. The hooks or jacks are positioned properly respecting endwise movement by the diagonal wires i^3 i^3 contained in the loops of the hooks or jacks.

Claim.—1. The combination, with the harness-levers, each having studs *h h'*, and the upper and lower hooks or jacks having loose or sliding connection with said studs, of the lifters or draw-bars, the returning-bars moving with the lifters or draw-bars, the inclined back-stop bar, means for operating the lifters or draw-bars with a proportionately greater range of movement of the upper one thereof than of the lower one and with a greater range of movement at the rear ends thereof than at the forward ends thereof, and pattern-controlling devices for determining the engagement of the hooks or jacks with the lifters or draw-bars, substantially as described.

2. The combination, with the harness-levers, each having studs *h h'*, and the upper and lower hooks or jacks having loose or sliding connection with the studs, of the lifters or draw-bars, the returning-bars moving with the lifters or draw-bars, the rock-shaft having arms *r r'* at opposite ends thereof, the rods connecting the lifters or draw-bars with the said arms, the said rods at one side of the dobby being connected with the said arms at points which are proportionately farther from the axis of the shaft than are the points of connection at the other side and those pertaining to the upper lifter or draw-bar being connected with the upper arms at points which are proportionately farther from the said axis than are the points of connection between the lower lifter or draw-bar and the lower arms, the inclined back-stop bar, and pattern-controlling devices determining the engagement of the hooks with the lifters or draw-bars, substantially as described.

3. The combination, with the inclined back-stop bar *f*, the harness-levers, the studs *h h'* thereon, and the hooks or jacks *i i'*, having loose or sliding connection with said studs, of the angularly-placed cross-wires i^3 i^3, acting to determine the position of the hooks or jacks, the lifters or draw-bars, and means for operating the said lifters or draw-bars with a greater range of movement at the rear ends thereof than at the former ends thereof, substantially as described.

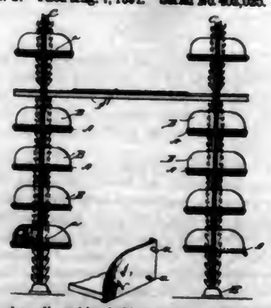
475,626. CARPET-SWEEPER. CHARLES K. STIBSON, Chelsea, Mass., assignor to The Bissell Carpet Sweeper Company, Grand Rapids, Mich. Filed Apr. 25, 1891. Serial No. 390,477. (No model.)



Claim.—1. In combination with a carpet-sweeper having a non-rotary pintle, a self-adjusting brush-shaft having a rigidly-attached pulley loosely mounted on the pintle and rising and falling with the brush-shaft independent of any movement of such pintle and of any vertical movement of the sweeper-case, substantially as described.

2. In a carpet-sweeper, the combination, with a sweeper-case, of a self-adjusting brush-shaft having an enlarged circular bearing, a non-rotary pintle, of a diameter less than the bearing, which permits the brush-shaft to rise and fall independent of any movement of the pintle to adjust itself automatically to the surface traversed, and means for operating the brush-shaft, substantially as described.

475,627. ADJUSTABLE BOOK-SHELVING. GEORGE STIKEMAN, Brooklyn, N. Y. Filed Aug. 7, 1891. Serial No. 402,095. (No model.)

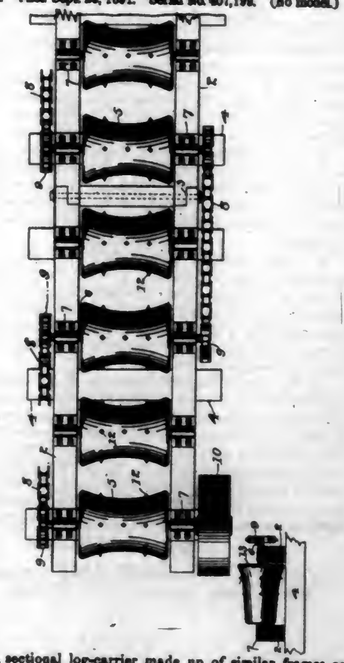


Claim.—1. An adjustable shelf structure comprising the upright posts C C, having upturned teeth or hooks on their edges, the shelf-supporting brackets B B, consisting of metallic plates having their lower horizontal edges flanged to receive the shelves and having each two vertically-aligned laterally-projecting pins *a a* at or near its rear edge, said pins being parallel with the line of shelves and adapted to enter said hooks, substantially as described.

2. The posts C, formed each of two T-shaped iron plates *d d* and two plates *e e*, secured between and bolted to said T-plates, said posts being formed with upturned teeth or hooks to support shelf-brackets, in combination with the shelf-supporting brackets B B, consisting of metallic plates having their lower horizontal edges flanged to receive the shelves and having each two vertically-aligned laterally-projecting pins *a a* at or near its rear edge, which are designed and adapted to enter the teeth or hooks of the posts C, substantially as described.

3. In a shelf-supporting structure, the shelf-supporting posts C, consisting of the T-plates *d d* and the plates *e e*, secured between the plates *d*, the plates *e e* being formed with upturned teeth or hooks, substantially as described.

475,628. PORTABLE LOG-CARRIER. DANIEL S. STORER, Stillwater, Minn. Filed Sept. 29, 1891. Serial No. 407,199. (No model.)



Claim.—A sectional log-carrier made up of similar frames arranged end to end, means for detachably connecting them together, the concave rollers journaled transversely on said frames, having spurs upon their concave surfaces, the conical end roller having its reduced end free of spurs, sprocket-wheels upon the roller-shafts, the link belts connecting the alternate rollers, and means for applying power to drive said belts, substantially as described.

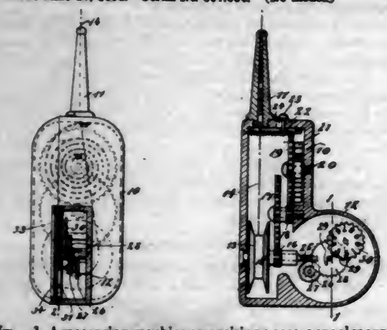
475,629. ICE-CAN. CHARLES E. STRUCK, New York, N. Y., assignor of one-half to John H. Fischer, same place. Filed Sept. 25, 1890. Serial No. 366,068. (No model.)



Claim.—1. As a new article of manufacture, an ice-making can or vessel having its bottom and two of its adjacent sides jacketed or insulated and its two remaining adjacent sides non-jacketed or non-insulated, as and for the purpose set forth.

2. As a new article of manufacture, an ice-making can or vessel consisting of a substantially rectangular can having its bottom and two of its adjacent sides jacketed or insulated throughout their whole areas of exposed surfaces and having its two remaining adjacent sides not jacketed or insulated throughout their exposed areas or surfaces, the areas of the jacketed sides equaling the areas of the opposite unjacketed sides, substantially as herein shown and described.

475,630. MEASURING-REEL. HERBERT L. STULL, Stoddartsville, Pa. Filed June 27, 1891. Serial No. 397,686. (No model.)



Claim.—1. A measuring-machine comprising a case, a spool mounted in the case and having a measuring-cord, an indicating-wheel 30, driven from the spool, a dial parallel with said wheel, having an aperture through which the numbers on the wheel are successively visible and having its face provided with a spiral line having a scale, as described, and an indicating-hand, substantially as set forth.

2. A cloth-measuring machine comprising a case, a spool mounted therein and carrying a measuring-cord which extends outward through the case, an indicating-register driven by the spool, and a spring-propelled shaft parallel with the axis of the spool and geared thereto by a train of multiplying gearing for rewinding the spool, substantially as described.

3. A cloth-measuring machine comprising a case, a spool mounted therein and carrying a measuring-cord which extends outward through the case, an indicating-register driven by the spool, a spring-propelled gear mechanism for rewinding the spool, and a lock for the gear mechanism, consisting in the transversely-sliding bolt 22, engaging one of the gear-wheels and having a finger-piece projecting through a slot in the case, substantially as described.

4. The combination, with a case having a numbered and apertured dial thereon, the said numbers being arranged upon a spiral line proceeding about the axis of the dial, and a measuring-spool mounted in the case, of an indicating-hand held to revolve on the dial, a gear mechanism for driving the hand by the movement of the spool, and a numbered registering-wheel driven by the gear mechanism and having its numbers adapted to register with the aperture in the dial, said wheel being arranged to move the distance of a space between its figures at every revolution of the indicating-hand, substantially as described.

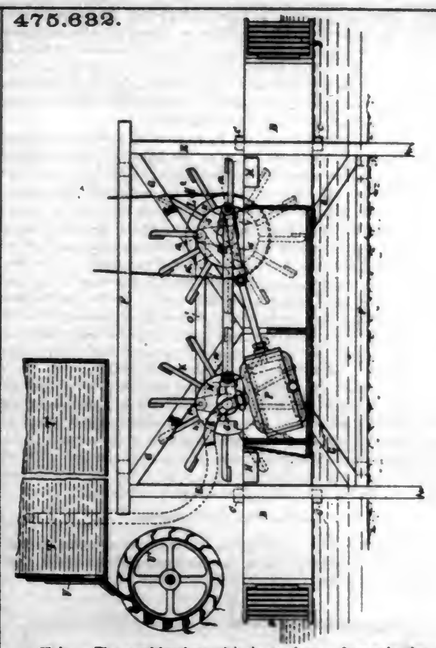
475,631. BOTTLE-STOPPER. JOSEPH A. STUKEY, Columbus, Ohio. Filed Jan. 8, 1892. Serial No. 417,397. (No model.)



Claim.—In a bottle-stopper, the combination, with the doubled spring-wire stem a', integrally-formed disk-holding buttons b b', surrounding, as described, the adjoining portions of said spring-wire arms, and a ball-shaped shell b^4, formed integral with said buttons and incasing, as shown and described, the doubling-point of said stem-wire, substantially as and for the purpose specified.

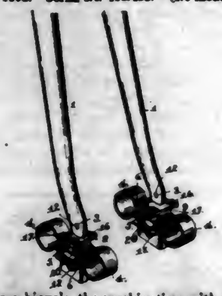
475,632. TIDE AND CURRENT WHEEL. JOSEPH SUTTER, New York, N. Y. Filed Nov. 24, 1890. Serial No. 372,403. (No model.)

475,632.



Claim.—The combination, with the stationary frames having vertical posts E, of two floats between the frames and guided by such posts as the water may rise or fall, connections between such floats and fenders at the ends of the water-channel between the floats, two water-wheels in such channel and their shafts and bearings upon such floats, and pumps within the floats actuated by the water-wheels, and an elevated reservoir receiving water from the pumps, and a motor actuated by the water from the reservoir for obtaining power when the tide or water wheels are quiescent, substantially as specified.

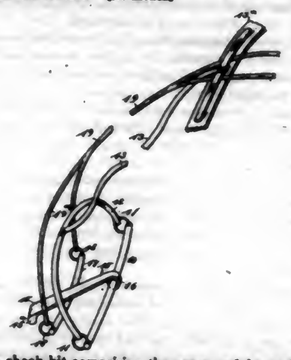
475,633. BICYCLE-FORK. FRANK SWEETLAND, Angola, N. Y. Filed Jan. 18, 1892. Serial No. 418,486. (No model.)



Claim.—1. In a bicycle, the combination, with the axle and fork, of the interposed spring herein described, the same consisting of the opposite end eyes or portions 4, the intermediate oppositely-bowed portion 5, and the contracted portions 6, located at the juncture of the portions 4 and 5 and of a less width than the eyes or bolts, substantially as specified.

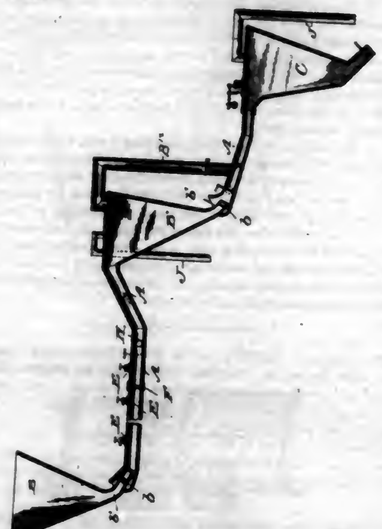
2. In a bicycle, the combination, with the fork having the socket and transverse perforation, the fork-block having the tenon upon its upper side transversely perforated to fit the socket and provided at opposite sides of its tenon with pairs of perforations, a bolt passed through the perforations of the fork and tenon, a stud upon the under side of the block, and a nut for the same, of a spring having an opening for the reception of the stud, clips connecting the spring and block and provided with nuts, the axle-block having bearing-openings for the reception of an axle and provided upon its upper side with a stud passed through a perforation in the spring and notted, and the clips embracing the spring and passed through perforations in the axle-block at each side of the tenon and provided with nuts, substantially as described.

475,634. CHECK-BIT. LESTER C. SWIFT, Piano, Ill. Filed Jan. 5, 1892. Serial No. 417,110. (No model.)



Claim.—A check-bit comprising the upper and lower bits and a strip having an eye loosely embracing the upper bit and extending therefrom across the lower bit and rigidly secured thereto, and the bit-rings, substantially as set forth.

475,635. APPARATUS FOR ELEVATING AND MOVING GRAIN. DANIEL B. TAYLOR, St. Louis, Mo. Filed Dec. 4, 1891. Serial No. 414,017. (No model.)



Claim.—A conveying apparatus comprising a receiving-hopper having an elongated neck provided with a valve, a discharge-receptacle, means for exhausting the air therefrom, an auxiliary receptacle, a conveying-tube between the hopper and the auxiliary receptacle and provided with an enlarged mouth surrounding the elongated neck of said hopper, an air-pump attachment J, having tight connection with the auxiliary receptacle, a second conveying-tube between the said receptacle and the discharge-receptacle and having an enlarged space around the outlet of the auxiliary receptacle, and a tube B^x, provided with a valve and connecting the auxiliary receptacle with the second conveyer-tube, substantially as shown and described.

475,636. NUT-LOCK. DAVID G. THRIFT and WILLIAM J. MALPHY, Baird, Tex. Filed Aug. 19, 1889. Serial No. 321,321. (No model.)



Claim.—1. A nut-locking plate or washer having a bolt-opening a formed with a single round of thread which has its opposite ends terminating in blunted shoulders a' a', lying within the faces of the plate or washer, for the purpose described, substantially as set forth.

2. As a new article of manufacture, a flat nut-locking plate or washer having its bolt-opening a formed with a single round of thread to engage with the threads of the bolt, the ends of said thread being cut short or blunted within the faces of the plate to form the shoulders a', which lie radially to the axis of the bolt-opening and are adapted to wedge between the threads of the bolt and the face of the nut to be locked, substantially as described.

3. The combination, with a bolt and nut, of the metallic plate or washer arranged flat against the face of the nut and having its bolt-opening formed with a single round of thread which terminates in abrupt radial shoulders a' a', which lie within the parallel faces of the plate and are wedged or forced between the threads of the bolt and the face of the nut, substantially as described.

475,637. APPARATUS FOR EVAPORATING BRINE. THEODORE R. TIMBY, Washington, D. C. Filed Oct. 20, 1891. Serial No. 409,284. (No model.)



Claim.—1. The herein-described apparatus for obtaining salt, comprising an open frame or support and two or more superposed vats spaced apart for the passage of air between them, gradually increasing in size upward and arranged so that the sides of each vat above the first project beyond the sides of the vat immediately below it.

2. The apparatus for evaporating brine by atmospheric action, which consists in a suitable frame, a series of superposed vats mounted in said frame, and a cover for the upper vat, said frame being open and said vats being arranged in a vertical series with spaces between them communicating with the outer atmosphere and the sides of each vat above the first being made to project beyond those of the one below it for excluding rain and deflecting air, as explained.

3. In apparatus for evaporating brine by atmospheric action, the combination of the frame or support, the vertical series of vats arranged in said frame or support and gradually increasing in size upward, and a cover for the top vat, said vats being arranged with unobstructed air-spaces between them and said frame being open on its sides, having tracks upon which the vats are mounted and having an open space into which the vats may be slid individually, substantially in the manner and for the purpose explained.

4. In an apparatus for evaporating brine by atmospheric action, the combination of an open frame having tracks or ways and a series of superposed vats mounted upon the tracks or ways in said frame, exposed at the sides to the outer atmosphere, each having overhanging sides and forming a cover for the one below it, with spaces for horizontal circulation of air between them, said tracks or ways being in the horizontal planes of the sides of the vats, whereby they do not obstruct the passage of air between the vats, as explained.

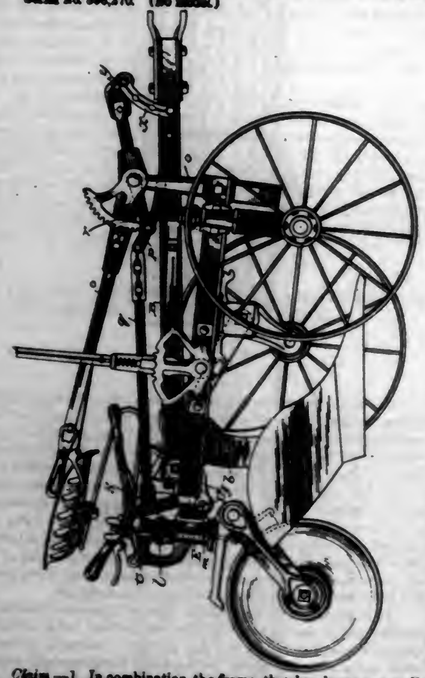
5. An apparatus for evaporating salt by natural atmospheric action, consisting of an exposed vat having a suitable cover with overhanging sides supported above it and having air-deflectors at the sides for guiding the air between the vat and cover, said vat and cover being spaced apart and open at the sides, substantially as and for the purpose set forth.

6. In an apparatus for producing salt by natural atmospheric action, the combination of an exposed evaporating-vat provided on its sides with air-deflecting boards and having wheels or rollers in the horizontal plane of the sides of the vats and beneath the deflecting-boards, and a cover for said vat spaced above and overhanging said vat, whereby the air is received from the deflector and guided down into the vat, substantially as and for the purpose set forth.

7. In an apparatus for evaporating brine by natural atmospheric action, the combination of an open frame or support, and a vertical series of vats for containing brine, having vertical spaces between them open to the outer atmosphere and in which the bottom of one overhangs and forms a cover for the one below it and is movable for the purpose of uncovering the one beneath it, substantially as and for the purpose set forth.

8. A brine-evaporating plant consisting of a number of ranges of superposed vats sliding in supporting-frames disposed in pairs, with interposed driveways and slideways alternately arranged, the driveways between the pairs of frames or ranges and the slideways between the members of each pair, all as herein described, permitting the sliding of the vats successively from opposite sides into the open space between the members of each pair of frames and giving access of teams to the sides of the vats opposite that toward which they slide for the purpose of unloading each vat as it is uncovered by the successive sliding off of the superposed vats, as explained.

475,688. SULKY-PLOW. CALEB B. TOWER, South Bend, Ind., assignor to the Economist Plow Company, same place. Filed July 2, 1891. Serial No. 396,370. (No model.)



Claim.—1. In combination, the frame, the plow-beam, suspending devices at its front and rear ends, an operating-lever connected to the beam, and operating connections extending from the suspending device at the front to that at the rear and independent of the operating-lever, whereby the operation of one end of the beam will be communicated to the other, substantially as described.

2. In combination with the main frame of a sulky-plow and with the plow-beam, a pivoted lever connecting the rear end of said beam to the main frame, a lever connected to the front end of the plow-beam, and toggle-joint connections between the front end of the beam and the lever at the rear end of the beam, substantially as described.

3. In combination with the main frame of a sulky-plow and with the beam, a bell-crank lever at the rear end of said beam, connecting it to the frame, a toggle-joint connection between said bell-crank lever and the front end of the beam, and a lever connected also to the front end of the beam, substantially as described.

4. In combination, the frame, the plow-beam in connection therewith and vertically movable in relation thereto, the lifting-lever for the plow-beam, supported on the frame and having fastening devices for fixing the lever rigidly in any position in which it may be adjusted, and the slotted connection between the lifting end of the lever and the forward end of the plow-beam, arranged to permit slight vertical movement of the plow-beam while the lever is rigidly held, substantially as described.

5. In combination, the supporting-frame, the vertically-movable plow-beam in connection therewith, the lifting-lever supported on the frame and having fastening devices to hold it in adjusted position, the link x, pivoted to the front end of the beam, and the slot-and-pin connection between said link and the lifting end of the lever, substantially as described.

6. In combination, the frame having the standard O at its forward end, the plow-beam, the suspending device at the rear of the beam, the operating-lever pivoted to the standard and connected to the front end of the beam, and the connection between the front end of the beam and the rear suspending device, consisting of the toggle-arms p q and the link r, substantially as described.

7. In combination with the supporting-frame and the plow-beam, the bell-crank lever journaled on the frame and connected to one end of the beam, the operating-lever pivotally connected to the frame and connected, also, to the beam, and the operating connections extending longitudinally of the plow-beam from the bell-crank lever at one end and connected to the beam at the other end, said connections being sustained by the frame, substantially as described.

8. In combination, the supporting-frame, the vertically-movable beam with the lever mechanism supported by the frame for raising and lowering said beam, the furrow-wheel journaled at the rear of the frame, the brake supported adjacent to the said wheel, and the operating means for the brake, consisting of the brake-lever pivoted to the frame and extending over the plow-beam to be operated when the same is raised and the connecting-rod from the brake-lever to the brake, substantially as described.

9. In combination, the frame carrying a seat, the vertically-movable beam with operating means therefor, the rear furrow-wheel, the brake to act thereon, the brake-lever extending into proximity to the driver's seat for hand operation and over the beam for automatic operation through the raising of the beam, substantially as described.

10. In combination, the frame, the beam, the bell-crank lever at the rear end for suspending said beam, the operating-lever, and the connections to the bell-crank lever for moving it, the brake, and the brake-lever connected thereto, said brake-lever engaging the bell-crank lever, substantially as described.

475,689. SAFETY-CATCH FOR MINING-CARS. CHARLES R. TREW, Dunbar, Pa. Filed Mar. 1, 1892. Serial No. 423,422. (No model.)



Claim.—The combination, with a mining-car, of a safety-drag pivoted to the bottom wall of the car in rear of one of the axles thereof and having an extension beyond the pivot-point to bear against the axle, a lever pivoted to the rear of the car-body and having a horizontal and a vertical arm, a flexible connection between the horizontal arm and the safety-drag, and a device for engaging the vertical arm of the lever to hold the drag in an elevated position, substantially as described.

475,640. GUN-REST. CHARLES W. UPDEN, Salt Lake City, Utah, assignor of one-half to Jennie H. Banks, same place. Filed Aug. 17, 1891. Serial No. 402,840. (No model.)

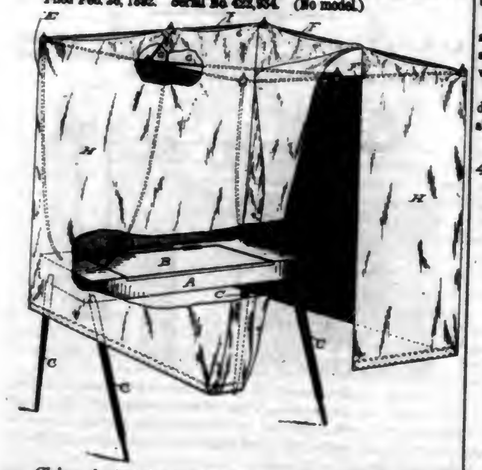


Claim.—1. In a gun-rest, the combination, with a base-plate adapted to be secured to the person or apparel of the wearer, of a bracket-shaped rest for the barrel of the gun, hinged to the outer face of said base-plate, and a securing device whereby said bracket may be locked firmly to said base-plate when in position for use, substantially as and for the purposes set forth.

2. In a gun rest, the combination, with a base-plate adapted to be secured to the person or apparel of the wearer, of a bracket-shaped rest C for the barrel of the gun, secured to the outer face of said base-piece, a spring-plunger D, mounted on said rest C, and a socket $b^{\times}$ in the said base-plate, said plunger adapted to engage said socket when the rest is set at the proper angle to the base-plate, as and for the purposes set forth.

3. In a gun-rest, the combination, with the base-plate A, adapted to be secured to the person or apparel of the wearer, of a bracket-shaped rest C, secured to the outer face of the base-plate, said rest C having a concave padded upper face $C^{\times}$, adapted to receive the barrel of the gun, as and for the purposes set forth.

475,641. VOTING-BOOTH. ISRAEL D. VANDEGAR, Stockton, Cal. Filed Feb. 26, 1892. Serial No. 422,934. (No model.)



Claim.—1. A voting-booth consisting of a desk, removable legs fitted into the bottom of the desk, removable uprights fitted into the upper corners thereof, a frame consisting of the folding angle-iron plates F F', fitting the upper ends of the uprights, and a cover adapted to surround and inclose the structure, substantially as herein described.

2. A voting-booth consisting of a desk having the hinged cover made shorter than the length of the desk, removable legs fitted into the lower corners of the desk, removable standards fitting the upper corners of the desk outside the hinged cover, a top consisting of the folding angle-plates F, with the diagonal braces G and the single angle-bar F', the frame F F', fitting the upper ends of the standards and the braces extending diagonally between them, and a flexible cover adapted to surround the structure with its upper edge attached thereto, substantially as herein described.

475,642. PROCESS OF MANUFACTURING SHEET-METAL ARTICLES. FREDERICK VOEHRINGER, Louisville, Ky. Filed Feb. 10, 1892. Serial No. 420,974. (No specimens.)



Claim.—The herein-described process of painting sheet-metal articles of the described class, consisting of the following steps in the order named: first, joining the short unpainted sections into proper lengths by a longitudinal lap-joint, sliding one section into the next for a sufficient distance to insure a union, next dipping said joined sections into a bath of suitable paint and revolving the same in said bath, next removing said lengths from said bath and standing said painted lengths in a vertical position on suitable draining-racks, with the inner lap of the joint at the upper end to insure filling said joints with paint, substantially as and for the purpose set forth.

475,643. RECORDING MONEY-TILL. JOSEPH J. WALKER, WILLIAM H. WALKER, and FRANK WALKER, St. Helier's, England. Filed Aug. 4, 1891. Serial No. 401,650. (No model.)

475,648.



Claim.—1. The combination, in a money till, of the box e, hinged lid or cover c, sliding frame and hanging partitions g g' g^3, cams k, levers i i, guides k, money-slot l, and coin-receptacles o, substantially as set forth and shown.

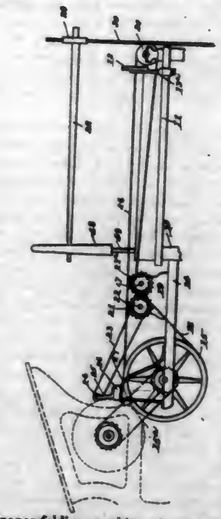
2. In combination with the hinged lid or cover c, sliding frame, and levers i i, the toothed racks w w', pawls x x', and pivoted guides or cams y y', arranged and operating substantially as set forth and shown.

3. The combination, with the hinged lid or cover c, sliding frame, levers i, and hanging partitions g g' g^3, and money-slot l, the movable board or plate p, and spring r, substantially as set forth and shown.

4. In combination with the hinged lid or cover c, sliding frame and hanging partitions g g' g^3, levers i, toothed racks w w', pawls x x', and cams y y', the rollers or drums A B, paper P, opening E, ratchet-wheel F, lever and pawl H, and pin G, as set forth and shown.

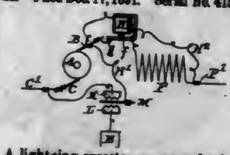
5. In combination with the hinged lid or cover c, operating as described, the suspended hook t, lever u, and bell v, as set forth and shown.

475,644. FEEDING ATTACHMENT FOR PAPER-FOLDERS. ORRIN H. WALLS, Taylorville, Ill. Filed Aug. 26, 1891. Serial No. 403,764. (No model.)



Claim.—In a paper-folding machine, the combination, with the slotted folding-table, of a series of movable carrying-tapes extending over pulleys at one end of the table and over large wheels at the opposite end thereof and a series of guide-tapes having their lower ends carried by rollers arranged within the loops of the carrying-tapes, the said guide-tapes extending diagonally upward from between the carrying-tapes, substantially as described.

475,645. LIGHTNING-ARRESTER. ADDISON G. WATERHOUSE, Hartford, Conn. Filed Dec. 17, 1891. Serial No. 415,419. (No model.)



Claim.—1. A lightning-arrester composed of three flash-plates, one of which is electrically connected to the earth and the other two connected to an electrical conductor at two places, which would include work on said conductor between said two places of connection, said three flash-plates being adjusted in relation to each other so as to cause a flame produced by an electrical flash in crossing between

two plates to include or envelop the third, substantially as and for the purposes set forth.

2. A lightning-arrester composed of three stationary flash-plates, two of which are connected to the main circuit of a dynamo-electric machine at different points on the line and the third being electrically connected to the earth, substantially as described, and for the purposes set forth.

3. A lightning-arrester composed of three flash-plates, one of which is electrically connected to the earth and the other two connected to an electrical conductor at two places, which would include work on said conductor between said two places of connection, said three flash-plates being adjusted in relation to each other so as to cause a flame produced by an electrical flash in crossing between two plates to include or envelop the third, said third plate being connected to said electrical conductor by means of a conductor, automatic switch, or circuit-breaking devices in said conductor, adapted for interrupting or diverting the current in the main conductor, substantially as and for the purposes set forth.

4. A lightning-arrester composed of three flash-plates adjusted in relation to each other, substantially as described, one of said plates being electrically connected to the earth, a second being directly connected to an electrical conductor, and the third being electrically connected to the same conductor at a different point on its circuit, with switches or circuit-breaking devices in the conductor leading from the third plate, being adapted for interrupting or diverting the main-circuit current upon the passage of a current leading from said third plate, substantially as and for the purposes set forth.

5. A lightning-arrester composed of three flash-plates adjusted in relation to each other, as described, one of which is connected to the earth, the second to a main-circuit conductor, and the third to the same main conductor at a different point by means of a conductor which would form a separate circuit or shunt around the parts of said main conductor between the points at which the second and third plate is connected, said third plate and its conductor being located so as to be brought in circuit by the flame caused by a current passing from the second to the first plate, substantially as and for the purposes set forth.

6. A lightning-arrester composed of two main flash-plates and one or more intermediate flash-plates, one of said main flash-plates being electrically connected to the earth, the other main flash-plate and the intermediate flash plate or plates each being electrically connected to an electric conductor at different points on said conductor, which would include work, distance, or resistance between said points of connection, said main and intermediate flash-plates being so adjusted in relation to each other as to cause a flame produced by an electrical flash in crossing between two of said plates to include or envelop one or all of the rest, substantially as and for the purposes set forth.

7. A lightning-arrester composed of two main flash-plates and an intermediate flash-plate, one of said main flash-plates being connected to the earth, the other main flash-plate and the intermediate flash-plate each being connected to an electrical conductor forming the field-magnet coil or coils of a dynamo-electric machine at two points, which would include all or part of said field-magnet coil or coils between them, said main and intermediate flash-plates being permanently adjusted in relation to each other, so as to cause a flame produced by an electrical flash in crossing between two plates to include or envelop the third in a way adapted for establishing a path between the said two flash-plates, which would form a short circuit around the said field-magnet coil or coils included between said two points of contact, substantially as and for the purposes set forth.

475,646. LANTERN. FREDERICK L. WELLS, Aurora, Ill. Filed Aug. 25, 1891. Serial No. 403,650. (No model.)

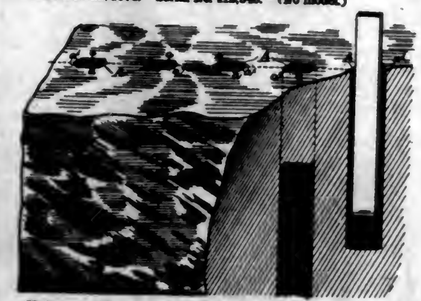


Claim.—1. A lantern provided with an uncolored lens, a frame pivotally supported within the lantern and carrying a colored glass, means for moving this frame from a position of non-use to a position where it is interposed between the light and the lens, and vice versa, and means in the path of the frame for turning the frame to the desired angle as it is being swung from one position to the other, substantially as described.

2. The combination of a lantern provided with an uncolored lens, a frame pivotally supported within such lantern and carrying a colored glass, means for swinging this frame from a position of non-use into a position between the light and the lens, and vice versa, and a barrer or leg with which the frame contacts as it is moved in one direction or the other, and whereby it is set at the desired angle, substantially as described.

3. In a lantern, the combination of an uncolored lens, a frame carrying a colored glass, pivotally attached to the inside of the lantern, an operating-handle attached to such frame and extending outside of the lantern, a locking-plate attached to the outside of the lantern, and means contacting with the frame as it is moved to set it to the desired angle, whereby the colored glass may be moved from a position of non-use into a position where it is interposed between the light and the lens, and vice versa, and locked in either of such positions, substantially as described.

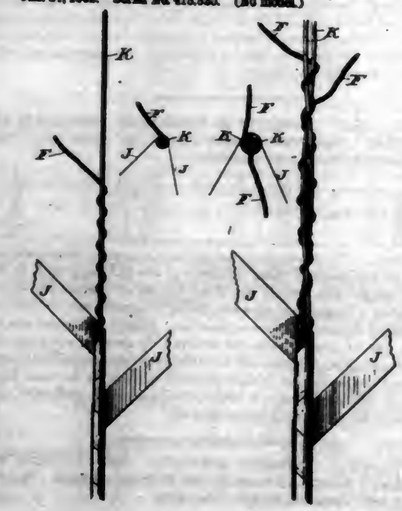
475,647. METHOD OF SPLITTING ROCK. GEORGE I. WELLER, Myrtle, Ohio, assignor to Parks Foster and Eugene K. Mussey, same place. Filed Nov. 23, 1891. Serial No. 412,848. (No model.)



Claim.—1. The method of splitting rock, which consists in forming in said rock a hole having V-shaped ends and straight sides, which are parallel to each other and to a plane passing through the points of said V-shaped ends, and then firing a blast in said hole, for the purpose specified.

2. The method of splitting rock, which consists in forming in said rock in alignment a series of holes, each having V-shaped ends and sides which are parallel to and equidistant from a plane passing through the points of all of said V-shaped ends, and simultaneously exploding a blast in all of said holes, for the purpose specified.

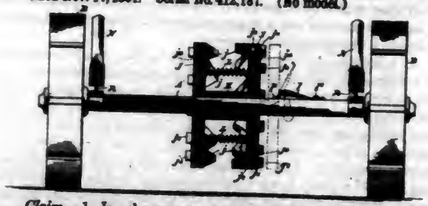
475,648. ANTI-INDUCTIVE CONDUCTOR. BROR H. WEBSLAU, Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Filed Jan. 21, 1892. Serial No. 418,895. (No model.)



Claim.—1. An anti-inductive conductor having an open net-work of threads of insulating material wound or plaited thereon, with air-spaces between said threads, and an outer envelope of insulating material wound around the exterior of said threads and inclosing said threads and said air-spaces, substantially as and for the purposes described.

2. In an anti-inductive circuit, the combination, with a direct and a return conductor, of an open net-work of threads of insulating material wound or plaited around each of said conductors and between said conductors, leaving air-spaces between said threads, and an outer envelope of insulating material wound around the exterior of said threads and conductors and leaving said air-spaces between and around said conductors, substantially as and for the purposes described.

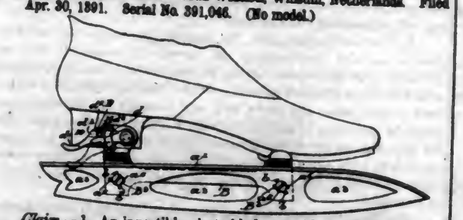
475,649. LAWN-MOWER. CHARLES WIBERG, North Platte, Nebr. Filed Nov. 17, 1891. Serial No. 412,187. (No model.)



Claim.—1. In a lawn-mower, the combination, with a revolving axle, of a forwardly-extending cutter-bar loosely connected to said axle, a vibrating lever having an enlarged inner flattened end pivoted upon said frame and connected at its other end to the cutter-bar, a stationary and an opposing spring-actuated sliding disk mounted centrally upon said axle, a series of independent alternately-disposed triangular blocks having integral bolts detachably clamped through said disks near the rims thereof, and inwardly-projecting teats engaging said disks to prevent the turning of said blocks, said blocks being disposed so as to alternately engage the inner flattened end of said lever, and means for clamping said sliding disk in an operative position opposite the stationary disk, substantially as set forth.

2. In a lawn-mower, the combination, with a revolving axle, of a forwardly-extending cutter-bar frame loosely connected to said axle, a vibrating lever pivotally secured to said frame and connected at one end to the cutter-bar, a stationary and an opposing sliding disk mounted centrally upon said axle and spaced from each other, the same being provided with a series of alternately disposed blocks engaging the inner end of said lever and vibrating the same, a series of outwardly-pressing springs interposed between said disks, and a clamping-lever pivoted upon said axle adjacent to the sliding disk and having an inner forked end adapted to engage the sliding disk on each side of the axle, substantially as set forth.

475,650. SKATE. UBEL WIERDA, Winsum, Netherlands. Filed Apr. 30, 1891. Serial No. 391,046. (No model.)



Claim.—1. An invertible skate-blade provided with the pivoted end piece A', having a rounded edge, substantially as set forth.

2. The combination, with the flat plate B, set vertically edgewise and provided on its upper edge at its ends with rigidly-attached heel and foot plates, and studs on one side of the said flat plate, of a blade resting flatwise against one face of the plate B throughout the entire length of said plate and having apertures through which said studs pass, and means for securing the blades on the studs, substantially as set forth.

3. The combination, with the flat plate B, set vertically edgewise and having heel and foot plates rigidly secured on its upper edge and provided with transverse headed studs, the said heads being provided with peripheral projections *b b*, of the blade resting flatwise against one face of plate B throughout the entire length thereof and having transverse apertures to receive the studs, and recesses a^5 to register with the projections *b b* and hold the blade on the studs when the projections and recesses are out of register, substantially as set forth.

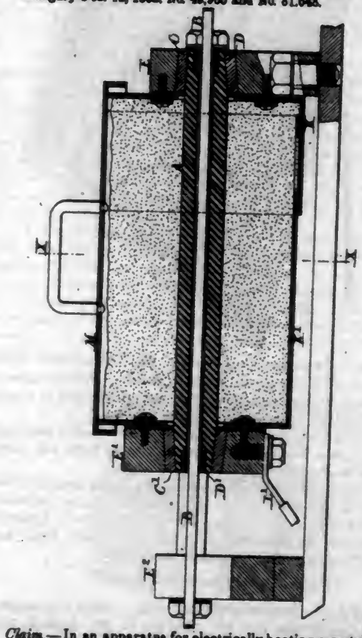
4. The combination, with the flat plate B, having heel and foot plates on its upper edge, and transverse rotary studs provided with heads having projections, of the reversible blade resting flatwise against one face of plate B throughout the entire length thereof and having transverse apertures a^4 and communicating recesses a^5 to register with the stud-heads and their projections, whereby by turning the studs their projections may be thrown out of register with the recesses to lock the blade on the studs, substantially as set forth.

5. A skate provided with rigid heel and foot plates having the heel and sole engaging lugs on opposite sides, inclined as shown, of a spring-latch secured to one of the heel-lugs and having an aperture to receive a projection inserted in the heel of a boot or shoe, substantially as set forth.

6. A skate having opposite heel-engaging lugs b^4 b^4, in combination with a latch D, pivoted to the outer face of one of the lugs and apertured between its ends at the rear end of said lug to receive a projection secured on the boot or shoe heel and having a handle portion d', substantially as set forth.

7. The combination, with a skate having heel-receiving lugs at its opposite sides, of a transverse wing-screw E, projecting through one of said lugs and longitudinally bored at its inner end to receive a pin projecting from the boot or shoe heel, substantially as set forth.

475,651. DEVICE FOR HEATING METAL RODS. ALFRED D. WILLIAMSON, London, England, assignor to the Siemens Brothers & Company, Limited, same place. Filed Oct. 31, 1891. Serial No. 409,418. (No model.) Patented in England May 12, 1891, No. 8,132; in France Oct. 12, 1891, No. 216,679; in Belgium Oct. 12, 1891, No. 96,767; in Switzerland Oct. 15, 1891, No. 4,153; in Norway Oct. 19, 1891, No. 2,456, and in Austria-Hungary Feb. 12, 1892, No. 49,965 and No. 51,648.



Claim.—In an apparatus for electrically heating a metal rod, bar, or wire, the combination of a stationary and a movable frame, interiorly-coned conductors carried by said stationary and movable frames, a carbon tube provided with exteriorly-coned ends to engage the interiorly-coned sleeves carried by the stationary and movable frames, and springs connected with said stationary and movable frames to retain the coned conductors and carbon tube in close contact, substantially as described.

475,652. MOLD FOR CASTING. FREDERICK J. WOOSTER, Waterbury, Conn., assignor to the Waterbury Brass Company, same place. Filed Oct. 26, 1891. Serial No. 409,794. (No model.)



Claim.—A mold for casting ingots, consisting of the part A, having the flange 1 around three sides and an opening across the top, the part B, having the flange 2 around three sides, adapted to overlap the flange of the part A and provided at its upper end with the rearwardly-projecting ears 5, and the pouring-cup D, having lugs 6, fitting between the ears 5 and hinged upon the removable rod 7, said cup being formed to rest upon the top of the mold and having a relatively-narrow bottom provided with a series of holes 9 of a diameter smaller than the width of the mold-cavity C and in line with the middle thereof, substantially as described.

475,653. GAME APPARATUS. CHARLES EISENBLIND, Philadelphia, Pa. Filed May 27, 1891. Serial No. 394,286. (No model.)

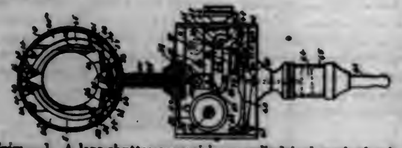


Claim.—1. In a game apparatus, a base formed with channels and a figure with connecting devices projecting laterally therefrom, said channels having inlets and outlets and terminating in a central well, substantially as and for the purpose set forth.

2. In a game apparatus, substantially as described, a base having channels therein, the same being tortuous, as set forth, and communicating with a central well.

3. A game apparatus consisting of a base having channels therein, each with an inlet at or near the side of the base and an outlet at the center thereof, a central well common to said channels, figures with projecting pins on their under sides and slots in their fronts, and a hook and line with pole, substantially as described.

475,654. PHOTOGRAPHIC SHUTTER. JULIUS R. ALBRECHT and REIL OSTHAUS, New York, N. Y. Filed Nov. 27, 1891. Serial No. 413,269. (No model.)



Claim.—1. A lens-shutter comprising a cylindrical carrier having openings therein, oppositely-arranged shutters pivoted in the carrier and adapted to close the opening, a case connected with the carrier by a hollow spindle, a spring-barrel mounted within the case, a lever mechanism operated by the spring-barrel and adapted to work the shutters, a tripping-lever adapted to engage a spur of the spring-barrel, and a pneumatically-operated piston adapted to release the tripping-lever, substantially as described.

2. The combination, with the shutter-carrier having a threaded supporting-spindle and having shutters mounted within it, of spring-arms, and a jam-nut mounted on the spindle and adapted to abut with the inner and outer portions of the lens-tube, substantially as described.

3. The combination, with the shutter-carrier having exposure-openings therein, of a pair of base-shutters pivoted therein and provided with a central opening, a pair of shutters pivoted on and near the free ends of the base-shutters and adapted to close the exposure-opening, a reciprocating rod held to enter the lower portion of the carrier, a lever-and-crank mechanism for opening the shutters by the movement of the rod, and a spring-actuated lever mechanism for moving the rod, substantially as described.

4. The combination, with the carrier having exposure-openings and a supporting-spindle, of a pair of base-shutters pivoted in the carrier and provided with a central opening, a reciprocating rod mounted in the spindle and connected with the base-shutters by a lever-and-crank mechanism, whereby the shutters may be opened and closed, a pair of inner shutters pivoted on the base-shutters and adapted to close the exposure-opening, and a cam mechanism for throwing open the inner shutters, substantially as described.

5. A lens-shutter comprising a carrier having exposure-openings and a supporting hollow spindle, a pair of oppositely-swinging base-shutters pivoted within the carrier and having a central opening, a reciprocating rod mounted in the spindle and connected by a lever-and-crank mechanism with the base-shutters, whereby the latter may be opened and closed, a pair of inner shutters pivoted on the base-shutters and adapted to close the exposure-opening, said inner shutters being pivoted at their lower inner corners and having at their outer corners depending cams, and bearing-surfaces arranged within the carrier and adapted to engage the cams of the inner shutters, substantially as described.

6. In a lens-shutter, the combination, with the carrier having exposure-openings and the oppositely-swinging base-shutters mounted within the carrier, of inner shutters pivoted to the base-shutters near their free ends and adapted to close the exposure-opening, one shutter having a flange to overlap the adjacent shutter, and a cam mechanism for moving the inner shutters in relation to the base-shutters, substantially as described.

7. In a lens-shutter, the combination, with the carrier having exposure-openings, the hollow spindle supporting the carrier, and the reciprocating rod mounted in the spindle, of base-shutters pivoted in the upper portion of the carrier and adapted to swing therein, curved crank-arms mounted within the carrier, said crank-arms being pivoted at their lower ends and having their upper ends connected with the base-shutters, a lever connection between the cranks of the arms and the reciprocating rod, and inner shutters mounted on the base-shutters and adapted to close the exposure-opening, said inner shutters having a movement independent of the base-shutters, substantially as described.

8. In a lens-shutter, the combination, with the swinging shutters and the reciprocating rod operatively connected with the shutters, of a spring-barrel mounted adjacent to the lower end of the rod, a spur produced on the spring-barrel and adapted to raise the rod, a tripping-lever to engage the spur and trip the barrel, pneumatic mechanism for operating the tripping-lever, movable studs for effecting the return of the spring-barrel, and a lever mechanism for returning the reciprocating rod, substantially as described.

9. The combination, with the lens-carrier, the shutters mounted therein, and the reciprocating rod operatively connected with the shutters, of an elbow-lever having its longer arm pivotally connected with the rod and its shorter arm provided with a projection, a forked lever pivoted below the elbow-lever and having a leg thereon to engage the short arm of the elbow-lever, a spring-barrel mounted near the free ends of the levers, the said barrel having a spur to engage the forked lever and a spur to strike the free end of the elbow-lever, and pneumatic tripping mechanism for the spring-barrel, substantially as described.

10. The combination, with the lens-carrier having shutters therein, the hollow spindle supporting the carrier, the case connected with the spindle, and the reciprocating rod extending through the spindle and operatively connected with the shutters, of a spring-barrel pivoted in the case and provided with knobs adapted to oscillate in grooved slots in the case, a spur produced on the spring-barrel and adapted to raise the reciprocating rod, a lever mechanism adapted to engage another spur on the barrel and effect the return of the rod, and pneumatic tripping mechanism for the barrel, substantially as described.

11. The combination, with the case which supports the shutter-carrier and the spring-barrel mounted within the case and adapted to operate the shutter mechanism, of a scale produced exteriorly on the case, a worm mounted adjacent to the scale, an indicating-hand carried by the worm and adapted to move over the scale, and a worm-wheel secured to the shaft of the spring-barrel and adapted to engage the worm, substantially as described.

12. The combination, with the spring-barrel, its tripping-lever, the reciprocating shutter-rod, and the lever mechanism connecting said rod with the spring-barrel, of the spring-pressed locking-levers adapted to engage and lock the tripping-lever and the lever mechanism connecting with the shutter-rod, and a crank mechanism for adjusting the locking-levers, substantially as described.

13. The combination of the spring-barrel having projecting spurs, the reciprocating shutter-rod, the elbow-lever connected with the rod, the forked lever arranged between the elbow-lever and the spring-barrel spurs, the tripping-lever adapted to engage one of the spurs of the spring-barrel, the spring-pressed locking-levers adapted to engage the tripping-lever, and a crank-arm adapted to press upon one of the locking-levers, the locking-levers being adapted to hold the shutter open, substantially as described.

475,655. CRUPPER-STRAP FASTENER. FABRICIO L. ARMAS, Pescadero, Cal. Filed Feb. 10, 1892. Serial No. 421,014. (No model.)



Claim.—A fastening for the meeting ends of straps, consisting of the part B, having a flattened inner end adapted to be secured to one end of the strap and having a hole made longitudinally in its outer end, a slot extending across said hole transversely, and a chamber at the inner end concentric with the hole and having locking-slots made in it at right angles with the entering slots, in combination with the shank A, having a flattened inner end adapted to be secured to the opposite end of the strap, having its outer end adapted to enter the hole in the part B and provided with the radial wings *b*, adapted to slide into the radial slots and subsequently turn within the chambers at the inner end, where they are locked, substantially as herein described.

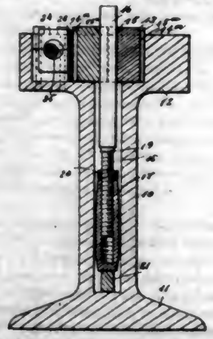
475,656. SEAM FOR SHEET METAL. CHARLES R. BERTELS, Wilkes-Barré, Pa. Filed Dec. 28, 1891. Serial No. 416,314. (No model.)



Claim.—1. A three-ply seam for uniting two pieces of sheet metal, having the edges of the metal joined by bending or folding one edge over the other and said connected edges being coiled upon part of one piece of metal, said coiled edges being flattened substantially at right angles to one of the pieces of sheet metal, for the purpose described, as set forth.

2. The method of uniting two pieces of sheet metal by a three-ply seam, which consists, first, in bending or lapping the edge of one sheet over the edge of the other sheet; second, coiling the connected edges of the two sheets upon themselves, and, finally, flattening the coiled edges at right angles to one of the pieces of sheet metal, for the purpose described, substantially as set forth.

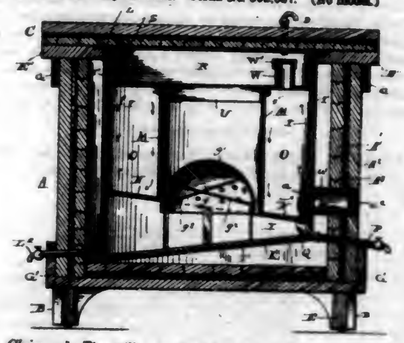
475,657. BOLT-HEADING MACHINE. WILLIAM H. BETTS, Brooklyn, N. Y. Filed Dec. 23, 1891. Serial No. 415,956. (No model.)



Claim.—1. A bolt-heading machine comprising a hollow body having a box at its upper end, bolt-holding dies in the box, a cam-shaft extending transversely through the box near one end thereof and provided with a handle on one end, a binding-block mounted on the cam-shaft and adapted to engage one of the dies, an ejecting-plunger in the hollow body, and a treadle pivoted to the body and engaging the ejecting-plunger, substantially as described.

2. A bolt-heading machine comprising a hollow column having a box at its upper end, bolt-holding dies in the box, a transverse cam-shaft mounted in the box and provided with a handle at one end, a binding-block mounted upon the said shaft, an adjustable ejecting-plunger in the column, and a treadle pivoted to the column and having one end projecting into the column under the said plunger, substantially as herein shown and described.

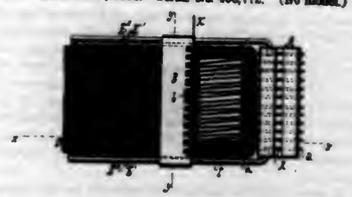
475,658. MILK-CREAMER. VIRGIL W. BLANCHARD, New York, N. Y. Filed May 15, 1891. Serial No. 392,837. (No model.)



Claim.—1. The milk-creamer described and shown, consisting of an outer casing, a can suspended therein, an annular false bottom for the can, secured thereto above the bottom thereof, whereby a lower chamber is formed, a central vertical tube open at both ends and secured to and supported by the said bottom, forming an ice-well, an ice-rack at the bottom of the well having a convex upper surface, a depressed cover for the annular space between the well and the can, said cover having a turned-down flange leading into the well, and a pouring-in tube and a suitable cover for the casing, substantially as and for the purpose set forth.

2. The milk-creamer described and shown, consisting, essentially, of an outer casing having a can suspended therein provided with an inclined false annular bottom secured in the can, an open-ended tube or ice-well in the can attached to and supported on said false bottom, an ice-rack in the well, a depressed cover for the annular space between the well and the can, said cover having a turned-down flange leading to the ice-well, and a suitable cover for the casing, substantially as and for the purpose set forth.

475,659. DARNING IMPLEMENT. ADAM BOEHER, New York, N. Y. Filed Oct. 15, 1891. Serial No. 408,772. (No model.)

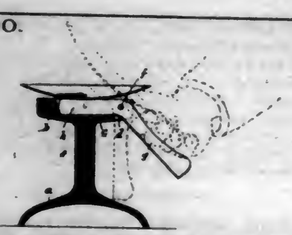


Claim.—1. The combination, in a darning implement, of a clamp composed of a strip of metal bent to form a pair of elastic gripping-arms, and a pair of supporting-arms, a head A, engaged with the supporting-arms and having oscillatory hooks *a*, and the head B, provided with attaching devices *b*, and having its opposite ends engaged with and slidable along the supporting-arms of the clamp, substantially as described.

2. The combination, in a darning implement, of a support C, a clamp composed of a strip of metal bent to form a pair of elastic gripping-arms, and a pair of supporting-arms arranged in a plane above the gripping-arms, a head A, engaged with the extremities of the supporting-arms and having oscillatory hooks *a*, and a head B, provided with attaching devices *b*, and having its opposite ends engaged with and slidable along the supporting-arms, substantially as described.

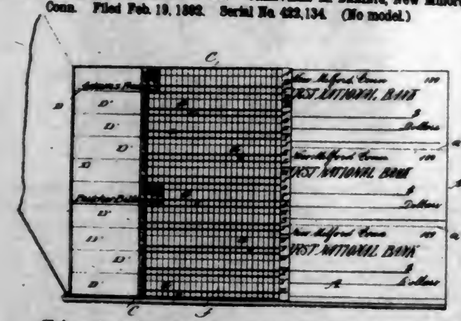
475,660. COIN-HANDLING FACILITATOR. JOSEPH O. BOGGS, Fayetteville, Pa., assignor of one-half to George W. Bothwell, Jersey City, N. J. Filed Mar. 14, 1892. Serial No. 424,841. (No model.)

475,660.



Claim.—As an improved article of manufacture, the coin-handling facilitator described, comprising the stand having the slotted head, the angular lever pivoted in said head and having one branch arranged to enter the slot and normally assume a horizontal position and its opposite branch arranged to normally assume an oblique position depending from the head, and the plate or receiver secured to the horizontal branch of the arm or lever to serve, substantially as specified.

475,661. CHECK-BOOK. GRANVILLE M. BREINIG, New Milford, Conn. Filed Feb. 19, 1892. Serial No. 422,134. (No model.)



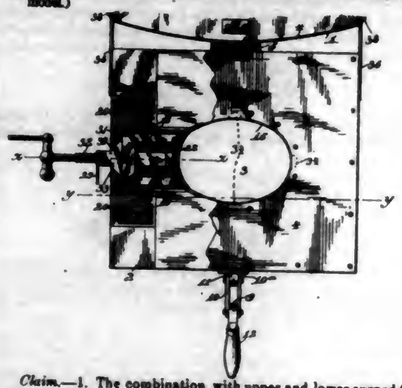
Claim.—1. A check-book having a combined index and account, said index and account having at one side index characters and ruled to form a space opposite each of said index characters and columns opposite each of said spaces, each of said spaces being designed to be filled with a heading or headings corresponding to the index character directly opposite thereto and respectively representing the drawees and purposes of the checks, and said columns being for the numbers and amounts of the checks, substantially as described, whereby separate accounts may be kept of checks paid out to certain persons and for certain things, as specified.

2. A check-book having stubs provided with spaces, whereby they may be consecutively numbered, each of said stubs also having spaces for the names of the party to whom the check represented by the stub is drawn, what the check is drawn for, and the amount thereof, said check-book also having a combined index and account, said index and account having index characters at one side and ruled to form a space D opposite each of said index characters and one or more sets of columns *c d* opposite each of said spaces D, said spaces D being designed to receive headings respectively representing the drawees and purposes of the checks, said headings being respectively arranged therein to correspond with the index character directly opposite thereto and said columns *c d* being designed to be filled respectively with the numbers and amounts of the checks, substantially as described, and for the purposes specified.

3. A combined index and account for check-books, consisting of a series of pages, each having thereon at one side one or more letters of the alphabet, said letters being arranged consecutively, each of said pages also being ruled to form spaces D and the sets of spaces *c d* opposite said spaces D, said spaces D corresponding in number with the number of letters at the side of the page and being designed to be filled with a heading or headings commencing with said letter or letters of the alphabet and representing the party or parties to whom the check or checks were drawn or the purpose or purposes of said check or checks, and said spaces *c d* being respectively for the numbers and amounts of the checks, substantially as described. and for the purposes specified.

4. A check-book having stubs provided with spaces, whereby they may be numbered consecutively, each of said stubs also having spaces for the names of the party to whom the check represented by the stub is drawn, what the check is drawn for, and the amount thereof, said check-book also having a combined index and account consisting of a series of pages consecutively lettered, each of said pages being ruled to form spaces D for the alphabetical arrangement of headings representing the parties for whom and for what purpose the checks are drawn and also ruled to form spaces *c d* opposite each of said spaces D for the numbers and amounts of the checks, all substantially as shown and described.

475,662. MACHINE FOR BLOCKING AND BANDING HATS. GEO. E. BRIGG, Danbury, Conn. Filed Oct. 5, 1891. Serial No. 407,768. (No model.)



Claim.—1. The combination, with upper and lower curved forms, between which the brim is held and which has block-openings, of a flexible band-former passing from one point of said openings around the same and to a point in proximity to the first-mentioned point, and curved on its upper edge, the sides of the band being lower than the ends, and means connected with the ends of said band for contracting the same, substantially as set forth.

2. The combination, with upper and lower forms, of a bent or angle spring having one arm substantially parallel with and attached to one of the forms, and a hinge attached to the other arm of said spring and to the other form, so that when said forms are closed together the spring will yield sufficiently to cause the forms to register perfectly without regard to the thickness of the hat-brim.

3. The combination, with a lower form made concave on its upper surface and an upper form made convex on its lower surface, of a spring attached to the lower form and a hinge attached to the free end of said spring and to the upper form, whereby said forms may be caused to register accurately when closed together.

4. The combination, with upper and lower forms, of a flexible band-former passing partly around the form-openings, inwardly-movable guides 22, through which the ends of the band pass, and means for drawing the said ends outward through the guides, substantially as set forth.

5. The combination, with the lower form having recesses 35, of the band-former passing around the form-opening with its ends at the same end of the said opening, having ears adapted to engage said recesses, whereby the band-former is held in position.

6. The combination, with the upper and lower forms and the flexible band-former, of levers 16, to which the ends of the band-former are attached, and a beveled cross-piece between said levers and having means whereby it is adapted to be moved inward to contract the band-former about the hat.

7. The combination, with the upper and lower forms and the flexible band-former, of levers 16, to which the ends of the band-former are secured, springs acting to move the rear ends of said levers inward to expand the band-former, a beveled cross-piece adapted to move the rear ends of said levers outward, whereby the band-former is contracted about a hat, and means for actuating said cross-piece.

8. The combination, with the upper and lower forms, the flexible band-former, and suitable means for contracting said former about a hat, of a sliding block and wings 22, pivoted thereto, the inner sides of said wings being curved to correspond with the curvature of a hat and having slots at their outer ends which serve as guides for the band-former.

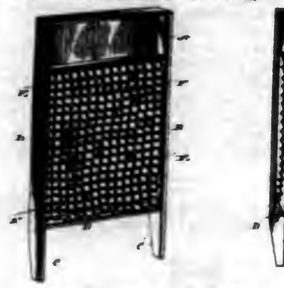
9. The combination, with the upper and lower forms, a band-former, and suitable means for contracting said band-former about a hat, of sliding block 24, wings or guides 22, pivoted thereto, rods by which said block is carried, means for retracting said block, and a cam 28, by which said guides are forced inward in contact with the hat-body against the power of said retracting means.

10. The combination, with the upper and lower forms, the flexible band-former, and suitable means for contracting said former about a hat, of sliding block 24, wings 22, pivoted upon said block, rods by which said block is carried, springs acting to move said rods and block outward, plate 27 at the outer ends of the said rods, and a cam acting to force said parts inward against the power of the springs.

11. The combination, with the upper and lower forms and the flexible band-former, of a sliding block having wings adapted to engage the hat and provided with slots serving as guides for the band-former, suitable means by which the block and wings are moved in or out, levers 16, to which the ends of the band former are connected, and a sliding cross-piece and actuating means therefor, whereby the levers are operated to contract the band-former.

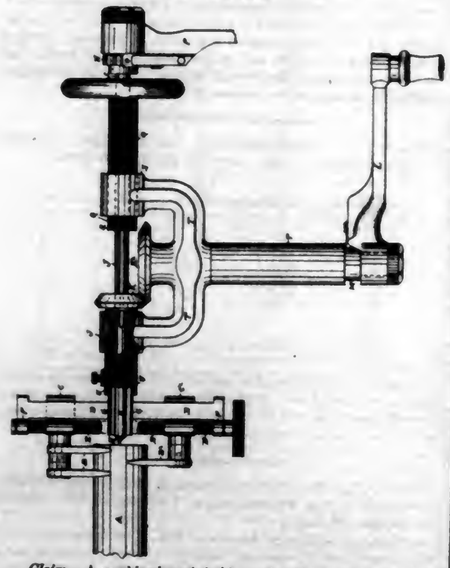
12. The combination, with the upper and lower forms, the flexible band-former, the sliding block, and actuating means therefor, and the wings, of levers 16, to which the ends of the band-former are connected, beveled cross-piece 31, by which said levers are operated, and a screw 32, engaging block 33, by which the cross-piece is carried.

475,663. WASH-BOARD. MARY C. BURKE, Montpelier, Idaho. Filed Feb. 27, 1891. Serial No. 383,075. (No model.)



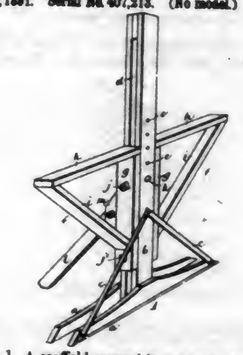
Claim.—As an improved article of manufacture, the herein-described wash-board having the rubbing-surface formed by the flexible wire-chain fabric, substantially as set forth, stretched within the frame of the wash-board and secured thereto at its four sides, the fabric being relatively mounted above the bottom plane of the wash-board, so that the entire fabric is unsupported at the back, whereby the connected links composing the flexible metallic fabric are adapted to individually move under pressure of the articles of clothing rubbed against the same in the operation of washing, while the fabric as an entirety offers flexible resistance against pressure inwardly in the operation of washing, substantially as set forth.

475,664. COMBINED WORK-HOLDER AND DRILL. JOSEPH A. CHABOT, Somerville, and JOSEPH JACOBS, Boston, Mass. Filed June 3, 1889. Serial No. 312,953. (No model.)



Claim.—A combined work-holder and drill composed of opposed jaws B B^3, slide-blocks C C^3, carrying said jaws, a slotted bar D, on which said blocks slide, a screw-threaded rod E, suitably held on said bar and adapted to operate said blocks in opposite directions, and a tubular nose-piece G, held on said bar, in combination with a drill H, turning in suitable bearings, one of which is adapted to be entered into and fastened on said nose-piece, and means adapted to rotate said drill, all as described, for the purposes specified.

475,665. SCAFFOLD. LEVI CHALFANT, Alexandria, Ind. Filed Sept. 30, 1891. Serial No. 407,213. (No model.)



Claim.—1. A scaffold comprising an upright suitably supported and having a slot therein, supports arranged on each side of the upright and connected by bolts passing through the slot, and means, substantially as described, for adjustably securing the supports at any desired height.

2. In a scaffold, the combination, with a standard having a slot therein and a supporting-base, of supports arranged at each side of the standards and constituted of the pieces *g h i*, and connected by bolts passing through and arranged to move with the slot, and a pin adapted to be inserted in any one of a series of holes to hold the supports at the desired height.

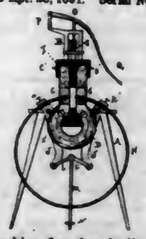
475,666. CORN-POPPER. THOMAS CLARK, Quincy, Ill. Filed Jan. 14, 1892. Serial No. 418,077. (No model.)



Claim.—1. In combination, the receptacle, the handle having the guiding-wires extending therefrom and engaging the receptacle, the operating-rod connected to the receptacle at one end, the pinion journaled on the handle and connected to said rod, and the driving-gear journaled on the handle meshing with the pinion and the handle on the driving-gear, substantially as described.

2. In combination, the receptacle, the handle, the means for reciprocating the receptacle, and the guiding means, consisting of the wires extending from the handle passing through the receptacle and having their ends bent at the rear of the receptacle, substantially as described.

475,667. HOOP-WELDING APPARATUS. CHARLES L. COFFIN, Detroit, Mich. Filed Apr. 25, 1891. Serial No. 390,447. (No model.)

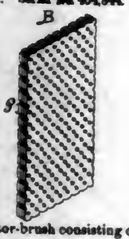


Claim.—1. In a machine for electrically welding, working, or forging hoops, the combination of pivoted clamps for holding the ends of the hoop, a toggle-joint for moving said clamps, a stationary bridg-

ing-conductor, and a movable frame carrying two conductors insulated from each other and respectively connected with the opposite poles of a generator of electricity, substantially as shown and described.

2. In a machine for electrically working, welding, or forging hoops, the combination, with two conductors connected with the poles of a generator of electricity and adapted to make contact with the ends of the hoop, of a conductor connecting the ends of the hoop and approximately parallel with the hoop, substantially as shown and described.

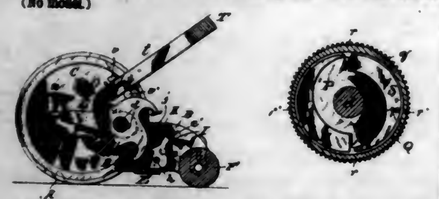
475,668. COMMUTATOR-BRUSH. CHARLES L. COFFIN, Detroit, Mich. Filed Sept. 5, 1891. Serial No. 404,844. (No model.)



Claim.—1. A commutator-brush consisting of a strip of perforated sheet metal.

2. A commutator-brush consisting of strips of perforated sheet metal.

475,669. LAWN-MOWER. THOMAS COLDWELL and WILLIAM H. COLDWELL, Newburg, N. Y. Filed Sept. 15, 1891. Serial No. 405,802. (No model.)



Claim.—1. The combination, with a knife or cutter pivotally supported, of an arm connected therewith, an extensible adjusting-screw engaging with such arm, and the lugs or abutments between which the said extensible screw is situated, substantially as described.

2. The combination, with a pivoted knife or cutter, of the adjusting means thereof, consisting of an arm connected with the cutter, an adjusting-screw engaging with the said arm, a lock-nut upon one end of the screw, and the lugs or abutments between which the screw is situated and against one of which the lock-nut can be made to bear, substantially as described.

3. In a lawn-mower, the combination, with the driving-wheels and the side frames, of the revolving cutter, the plates or bars in which the cutter is mounted, supported upon pivots arranged in line with the axis of the driving-wheels, the means for adjusting the position of the said plates or bars which support the revolving cutter, and the stationary knife or cutter carried by the side frame, substantially as described.

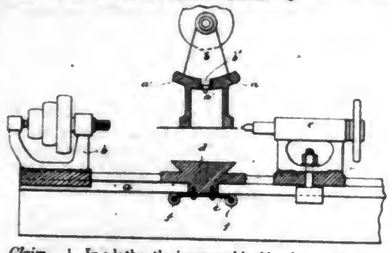
4. In a lawn-mower the combination, with the driving-wheel and the revolving cutter, of the pinion which the driving-wheel operates, and the clutch situated between the pinion and the revolving cutter-shaft and consisting of the cam, the shell having the eccentric inner wall, and the tapering segment situated between the cam and the eccentric wall of the shell, substantially as described.

5. A lawn-mower the side frames of which are provided with lugs *u*, *v*, and *v'*, the lug *u* being adapted to receive the handle and being situated in front of and between the other lugs which serve to steady the handle, one of the other lugs being also adapted to receive the handle which when held thereby is free to turn thereon, substantially as set forth.

475,670. PROCESS OF PURIFYING SEWAGE. FRANCIS R. CONDER, Guilford, England. Filed May 21, 1889. Serial No. 311,623. (No specimens.)

Claim.—The method of arresting putrefaction in sewage, which consists in first treating a solution of a ferrous salt, such as the sulphate of iron, with a small quantity of putrescible organic matter, such as raw meat or fruit skin, whereby the usual rapid oxidation of the salt when mixed with an excess of water is retarded, and then mixing the prepared solution with the sewage in the absence of light, substantially as and in the proportions hereinbefore set forth.

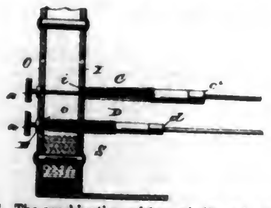
475,671. LATHE. EUGENE CONRADY, Keighley, England. Filed Aug. 8, 1891. Serial No. 402,116. (No model.)



Claim.—1. In a lathe, the improved bed having a guiding or bearing surface which is curved in cross-section, the curve of said surface being an arc of a circle of which the center is the axial line of the spindle thereof, as set forth.

2. In a lathe, the combination of a bed having a guiding or bearing surface which is curved in cross-section, the curve of said surface being an arc of a circle of which the center is the axial line of the spindle thereof, and sliding parts, such as the head-stock, tail-stock, and tool-carriage, provided with a corresponding bearing-surface, as set forth.

475,672. DEVICE FOR TAPPING STAY-BOLT HOLES. JAMES T. CONNELLY, Milton, Pa. Filed Dec. 28, 1891. Serial No. 416,321. (No model.)

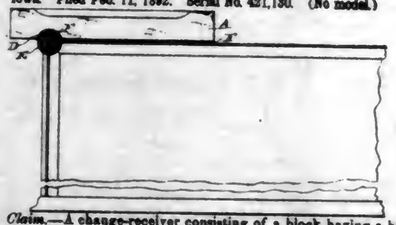


Claim.—1. The combination, with a spindle and a cylindrical nut adjustably and removably mounted thereon, of a screw-tap provided with a central longitudinal bore adapted to receive said spindle, substantially as set forth.

2. The combination, with a spindle and an adjustable nut carried thereby, of a screw-tap having its threaded portion of a corresponding diameter throughout its length, the free end only of the threaded portion being channeled, substantially as and for the purpose set forth.

3. The combination, with a spindle having a cylindrical nut adjustably and removably mounted thereon, of a screw-tap having a channeled-threaded portion and an unbroken threaded portion and provided with a central longitudinal bore for receiving the spindle, substantially as and for the purpose set forth.

475,673. CHANGE-RECEIVER. DAVID B. CONWAY, Moorland, Iowa. Filed Feb. 11, 1892. Serial No. 421,130. (No model.)

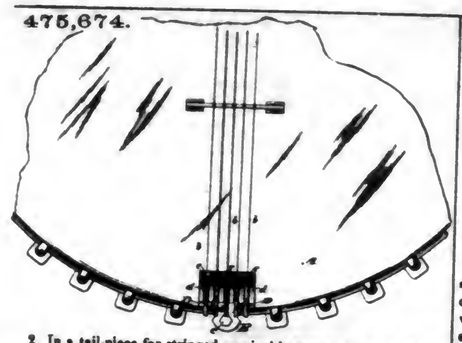


Claim.—A change-receiver consisting of a block having a bowl-like space formed therein, a channel leading therefrom, and a groove formed on the under side of the block, by which the receiver is held on the case or counter-rail, substantially as described.

475,674. TAIL-PIECE FOR STRINGED MUSICAL INSTRUMENTS. CHARLES J. COOK, Montreal, Canada. Filed Mar. 9, 1892. Serial No. 424,338. (No model.)

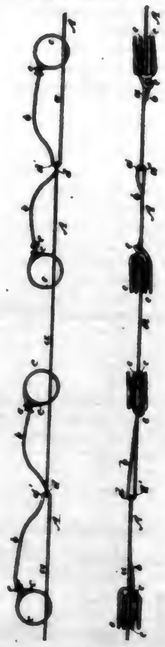
Claim.—1. A tail-piece for stringed musical instruments, composed of a frame divided by ribs into a series of channels adapted to receive the strings of the instrument within or through them, and of independent cam-shaped holders or levers pivoted to said ribs and adapted to grip or hold said strings within the channels of the frame, substantially as specified.

475,674.



2. In a tail-piece for stringed musical instruments, the combination, with the frame divided by ribs into a series of channels for the reception of the strings of the instrument within or through them and with independent cam-shaped holders or levers pivoted to said ribs and adapted to grip or hold the strings within said channels, of cushions arranged within the channels between the latter and the cam-shaped holders or levers, essentially as described.

475,675. CLOTHES-LINE. DAVID F. COVERT, Rapid City, S. D. Filed June 13, 1891. Serial No. 396,163. (No model.)

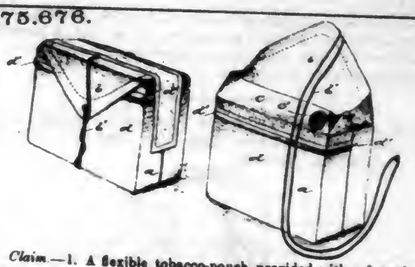


Claim.—1. A wire clothes-line composed of a series of engaging links, each of which is made up of a main body part bent over and upward and backward at its ends and forming opposing spring-loops over the main body part and terminating at their free ends in a series of coils adapted to shut over or receive within them the main body part of the links, essentially as described.

2. In a wire clothes-line, the links A A, each composed of a main body *a*, bent upward and backward at its ends to form spring-loops, which terminate in open coils *c c*, that embrace the body of the line, all the parts being integral with one another and the ends of the loops of each link at the interlocking point being at a right angle to the plane of the ends of the loops of adjacent links, substantially as shown and described.

475,676. TOBACCO-POUCH. WILLIAM J. CORBIN, Richmond, Va. Filed Feb. 17, 1892. Serial No. 421,793. (No model.)

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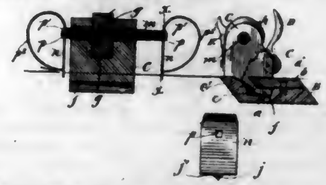
Claim.—1. A flexible tobacco-pouch provided with a fastening-string and having embodied in it a flexible match-receptacle, said receptacle extending across one side of the pouch, so that the matches will extend lengthwise across the same, whereby the matches will be entirely inclosed and prevented from being displaced, while at the same time the pouch and the receptacle will be capable of folding as the contents of the former are consumed, substantially as described.

2. A flexible tobacco-pouch provided with a fastening-string adapted to extend lengthwise around the same and a flexible match-receptacle extending across it, whereby the matches will extend lengthwise across the pouch and be securely held in place by the string, substantially as described.

3. A combined pouch for smoking-tobacco, chewing-tobacco, and matches, the same consisting of a main flexible pouch *a*, provided with a closing-string, a flexible match-receptacle *c*, extending across one side of the main pouch and formed by securing to the interior of the main pouch a piece of fabric, and a pocket *d* for plug-tobacco, formed of flexible fabric stitched to the main pouch, substantially as described.

4. The combination of a main pouch *a* for smoking-tobacco, provided with a fastening-string, a flexible pouch *d* for plug-tobacco, formed on one side of the main pouch, and a flexible match-receptacle formed across the main pouch above the pouch *d*, substantially as described.

475,677. SIDE GUIDE FOR PRINTING AND LITHOGRAPHIC PRESSES. FREDERICK C. DAVIS, Austin, Tex. Filed Nov. 28, 1891. Serial No. 413,413. (No model.)



Claim.—1. The combination, with a feed board or base of a printing-press, of a grooved guiding-track formed of plates extending entirely across the board, a single block having an angular guiding and retaining tongue, means for holding the block after it is adjusted, and right and left hand adjustable side guide-plates, which, with the block, are capable of being moved entirely across the feed-board, and when each adjustment is made the guide is at once ready for use, substantially as described.

2. In combination with a feeding board or base having a grooved track extended entirely across the board, a single block having right and left hand adjustable side guide-plates, said block having an angular guiding and retaining tongue and said plates having, respectively, an approximately-V-shaped guiding and guarding tongue, a screw-rod, means for operating said screw-rod, means for holding the rod after it has been operated, and means for holding the guide at any position on the feed-board, substantially as described.

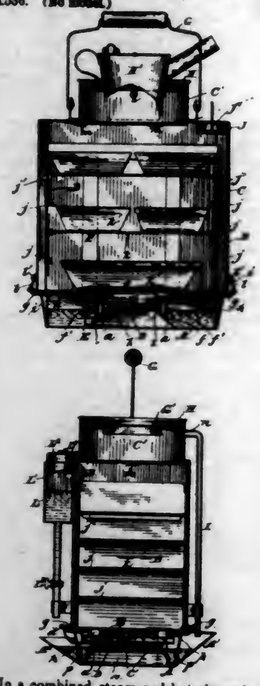
3. The side guide consisting of a block having an angular guiding and retaining tongue, right and left hand guarding and guiding plates, an adjusting screw-rod to which the plates are attached and which is held by said plates from turning, and means for operating said screw-rod for adjusting the plates *n*, means for holding the screw from moving after the adjustment is made, and means for holding the guide in any desired position, substantially as described.

4. The combination of the feed-board and its track-plates and the side guide consisting of the block having an angular guiding and retaining tongue, a guarding and guiding plate *n*, the screw-rod, the ratchet-wheel, the pawl, and the locking-lever, substantially as described.

5. The combination of the feed-board, a guide-track having its plate *a* curved, as at *c'*, and a block having an angular guiding and retaining tongue, and a side guide-plate having a guiding-tongue curved, as at *f'*, substantially as described.

6. The side guide comprising a block, a screw-rod, a guiding-plate, a ratchet-wheel, a pawl, and a locking-lever, all operating in combination with one another and with the feeding-board or feeding-base of a press, substantially as described.

475,678. COMBINED STEAM AND HOT-AIR COOKING APPARATUS. CHARLES H. DEXTER, Annapolis, Md. Filed Sept. 2, 1891. Serial No. 404,536. (No model.)



Claim.—1. In a combined steam and hot-air cooker, the combination of the steam-generating base-section A, provided with a gutter-shaped flange for forming a water-valve and with a downwardly-flared hollow open-ended elevation *a*, against the interior of which the flame strikes, an open-work damper applied on the top of the elevation, a shelf-support B of less width, length, and height than the outer case and resting upon the base-section, and an outer inclosing case C, arranged to slide up and down and have its lower edge inserted into the gutter of the flange and sealed with water, substantially as described.

2. The combination, with the steam-generating base-section A, having a gutter-shaped flange and a downwardly-flared hollow open-ended elevation *a*, against the interior of which the flame strikes, the open-work hot-air damper, and the upwardly-flared movable plate E, the shelf-support, and the outer inclosing case, substantially as described.

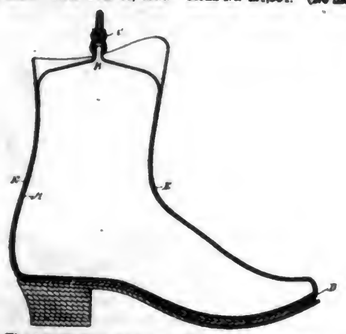
3. The combination of the outer case, shelved support, steam-generating section, and the external cooking-chamber C', having a removable bottom, a removable centrally-perforated cover portion H, and a closing-cover G', substantially as and for the purpose described.

4. The combination of the pipe I, chamber C', outer case, shelf-support, steam-generating base-section having extension A', gutter-shaped flange and hollow open-ended and downwardly-flared elevation *a*, against the interior of which the flame strikes, open-work damper, and removable upwardly-flared plate, substantially as described.

5. The combination of the condensing-chamber L, having pipe and cock, as L^2, and cap, as L^3, outer inclosing case, shelf-support and steam-generating base-section having extension A^3, passage *p*, and hollow open-ended and downwardly-flared elevation *a*, and open-work damper D, substantially as described.

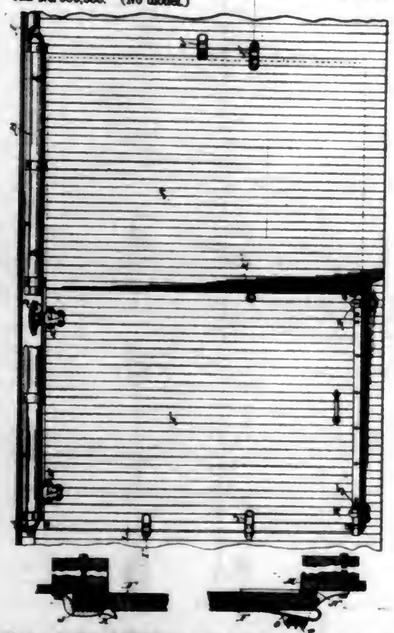
6. The combined steam and hot-air cooker, comprising, in combination, the steam-generating base-section A, having gutter-shaped flange, extensions A' A^3, passages *p p'* and hollow open-ended and downwardly-flared elevation *a*, open-work damper D, upwardly-flared removable plate E, shelf-support B, having V-shaped shelf-brackets, vertically-sliding outer case C, condensing-chamber L, having pipe, cock, and cap, the odor-return pipe I, chamber C', and safety-valve J J', substantially as described.

475,679. BOOT OR SHOE SHAPING DEVICE. JOHN H. DRAKE, Quincy, Mass. Filed Feb. 15, 1892. Serial No. 421,561. (No model.)



Claim.—The herein-described boot or shoe shaping device, consisting of an inflatable expansive hollow former A, having the general shape of the interior of a boot or shoe, and having attached to its under side a reinforcing-plate or sole-portion stiffener D, substantially as and for the purpose set forth.

475,680. SLIDING CAR-DOOR. CHARLES H. DUNHAM, Chicago, Ill.; Dorothy T. Dunham, administratrix of said Charles H. Dunham, deceased, assignor to Irwin Veeder, trustee, same place. Filed July 25, 1890. Serial No. 359,855. (No model.)



Claim.—1. The combination, with a sliding door, of suspending-hangers the brackets of which are secured at their lower ends to the outside of the door, extending across its top and upward flush with the inner face of said door, and a semi-tubular trackway attached at its upper edge to the car and extending outside and beneath the rollers of said hangers and leaving a slot or space between the lower edge of said trackway and the side of the car for the passage of the hanger-bracket, substantially as described.

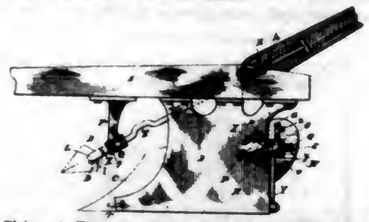
2. The combination, with a car-door and its supporting-hangers, said hangers being secured at their lower ends to the outside of the door, extending across its top and upward flush with the inner face of said door, of a semi-tubular trackway attached at its upper edge to the car-body and extending outside of and beneath the rollers of said hangers and offset in the direction of its length, so that its rear or outer end is farther removed from the car-body than the front end or portion over the doorway, substantially as and for the purpose set forth.

3. The combination, with a sliding door and its suspending-hangers, of a supporting structure comprising, in combination, a semi-tubular trackway B, made of plate metal, stirrups or braces H, conforming to the exterior thereof, and sheet-metal cap-pieces at the end of said semi-tubular trackway formed at one end to the trackway and tapered toward the other end to meet the side of the car, substantially as shown and described.

4. The combination, with a sliding door, of battens M N, formed of rubber or other flexible material and attached, respectively, to the inner edge of the door-opening and to the inner face of the door at its rear edge, in combination with devices adapted to wedge the door against the car-side, substantially as described.

5. The combination, with a sliding door, of a spring-wedge, as O, attached to the outer face and rear edge thereof, and a guide P, coacting with said wedge, as and for the purpose set forth.

475,681. PLOW. JAMES DU SHANE, South Bend, Ind. Filed Nov. 4, 1891. Serial No. 410,894. (No model.)



Claim.—1. The combination of the plow-standard, and mold-board pivoted thereto, substantially as described, with a latch adapted to lock the mold-board and pivoted on a stud projecting from the rear of the standard, said stud having laterally-projecting ears and a curved lip, and the shank of the latch which is pivoted on the stud having a projecting lip, as and for the purpose set forth.

2. The combination of the standard having a stud at its heel formed with lateral ears and a curved lip between the ears, with the mold-board pivoted to the standard, the locking-latch therefor having its shank journaled on said stud and formed with an inwardly-projecting lip adapted to engage the lip and ears of said stud, and a spring for forcing said shank inward, substantially as described.

3. The combination of the standard, a reversible or swinging mold-board connected thereto, with an adjustable colter, a longitudinally-movable spring-controlled rotatable rod carrying said colter, and locking devices for said rod, substantially as specified.

4. The combination of the beam, the standard, and mold-board, with a rotatable longitudinally-movable rod journaled in said beam and standard, a colter on the end of said rod, the teeth and notches for locking said rod, and the spring controlling the same, substantially as described.

5. The combination of the standard having a stud at its heel formed with lateral ears and curved lip between the ears, with the mold-board pivoted to the standard, the locking-latch therefor having its shank journaled on said stud and formed with an inwardly-projecting lip adapted to engage the lip and ears of said stud, and a spring for forcing said shank inward, and an adjustable colter, substantially as and for the purpose set forth.

475,682. CAR-COUPLING. EDWARD P. EASTWICK, Jr., New York, N. Y. Filed July 7, 1891. Serial No. 398,641. (No model.)

Claim.—1. In a car-coupler of the vertical-plane type, a draw-bar provided with an interior movable buffing plate or surface located in the line of buffing force and adapted to be engaged by the knuckle of the draw-bar, substantially as described.

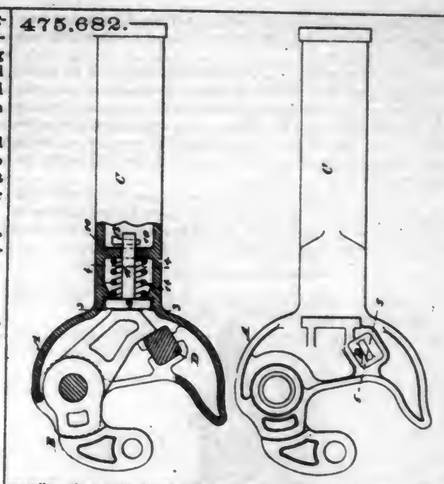
2. In a car-coupler of the vertical-plane type, a draw-bar provided with a spring-controlled movable buffing plate or surface adapted for engagement by the knuckle of the coupler, as and for the purpose set forth.

3. In a car-coupler of the vertical-plane type, the combination, with a fixed buffing-surface located within the shank, of a movable buffing plate or surface overlying the fixed surface, as and for the purpose set forth.

4. In a car-coupling of the vertical-plane type, the combination, with the draw-bar provided with a fixed buffing-surface located within its shank, of a cushioned movable buffing plate or surface overlying the fixed buffing-surface and adapted to be engaged by the knuckle of the coupler, as set forth.

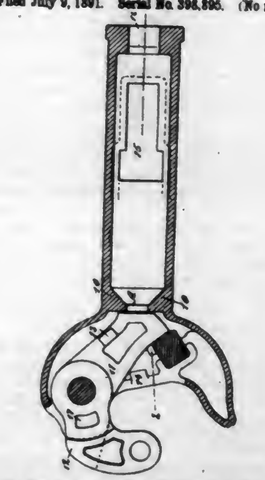
5. In a car-coupler of the vertical-plane type, the combination, with a draw-bar and its pin-openings, the said bar being provided with a recess near the upper margin of the lower pin-opening, of a headless

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coupling-pin provided with a shoulder entering the said recess, whereby a solid bearing for the pin is obtained and its downward movement limited, the pin being also provided with projections above its shoulder, limiting its upward movement, substantially as described.

475,683. CAR-COUPLING. EDWARD P. EASTWICK, Jr., New York, N. Y. Filed July 9, 1891. Serial No. 398,895. (No model.)



Claim.—1. In a car-coupler of the vertical-plane type, the combination, with the draw-head and a single buffing-surface only formed on the interior of the draw-head and at right angles to the line of buffing force and located at or near the union of the head with the shank, of a knuckle pivoted in the draw-head, the inner end of which is in engagement with the buffing-surface at the point on the line of buffing force when the knuckle is in its coupled position, as and for the purpose specified.

2. In a car-coupler of the type described, the combination, with a draw-head and a knuckle pivoted therein, of a lug or projecting surface formed upon the knuckle and a surface formed in the draw-head adapted to receive the knuckle, lug, or projecting surface, substantially as described.

3. In a car-coupler of the type described, the combination, with a draw-head and a knuckle provided with an inwardly-extending wing pivoted in said draw-head, of lugs or projecting surfaces formed upon the wing of the knuckle and special surfaces formed within the draw-head and adapted to receive the lugs or projecting surfaces of the knuckle, as and for the purpose set forth.

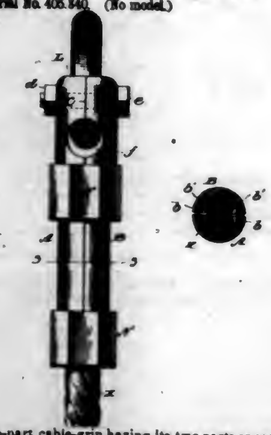
4. In a car-coupler of the type described, the combination, with a head, of a shank having an elongated opening in its face to receive the tail-bolt of the coupler, and a round opening in the end beveled

from its edges inwardly and outwardly in contrary directions on diagonally-opposite sides of said end opening, through which said tail-bolt is adapted to project.

5. In a car-coupling of the character described, a shank having an elongated opening in one side to receive the tail-bolt of the draft-rigging and a round opening in its end beveled from the edges inwardly and outwardly in contrary directions on diagonally-opposite sides, the tail-bolt being adapted to project through this end opening, and a washer adapted to be located at the head of the tail-bolt, as and for the purpose set forth.

6. In a car-coupler of the type described, a knuckle provided with an opening extending through from top to bottom located between its front end and its pivot-point and provided with a wing, which wing has formed thereon lugs, as and for the purpose set forth.

475,684. CABLE-GRIP. GEORGE F. ELLIOTT, U. S. Navy. Filed Sept. 16, 1891. Serial No. 405,840. (No model.)



Claim.—1. A two-part cable-grip having its two parts or sections formed each with a grasping-surface to fit upon the part of the cable with which it is brought into contact, and a longitudinal recess along each outer edge of said grasping-surface, substantially as hereinbefore set forth.

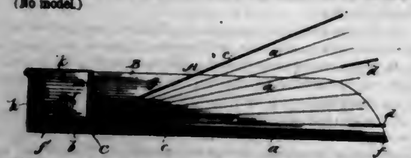
2. The two-part cable-grip consisting of the two substantially semicircular sections A B, provided each with an interior grasping-surface *a*, bounded by longitudinal recesses *b*, external tapering screw-threaded seats *c* to receive taper binding-nuts N, having bases *e*, with flat abutting faces held together by a bolt and nut or the like and formed so that when put together they will provide an eye *f*, substantially as and for the purpose hereinbefore set forth.

3. A two-part cable-grip the sections of which are each provided along each edge with an internal recess *b*, which bounds the grasping-surface of the section, substantially as hereinbefore set forth.

4. A two-part cable-grip provided with grasping-surfaces to fit upon the part of the cable with which they are brought in contact and with a rear enlargement or chamber *h* to receive the served end of the cable, substantially as set forth.

5. A two-part cable-grip having sections provided each along each edge with an internal recess *b*, which bounds the grasping-surface of the sections, and having the rear enlargement or chamber *h* for receiving the served end of the cable, substantially as set forth.

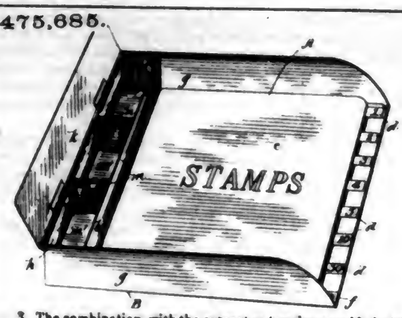
475,685. CABINET FOR HOLDING POSTAGE-STAMPS, &c. MARCUS P. EVLINE, Galveston, Tex. Filed June 5, 1891. Serial No. 395,280. (No model.)



Claim.—1. As an improved article of manufacture, the stamp holding and preserving book applied and confined in a cabinet or housing, all substantially as described.

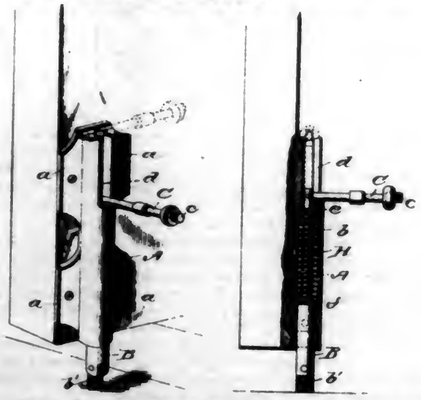
2. As an improved article of manufacture, the stamp holding and preserving book applied and confined in a cabinet or housing having compartments for pens and other articles, substantially as described.

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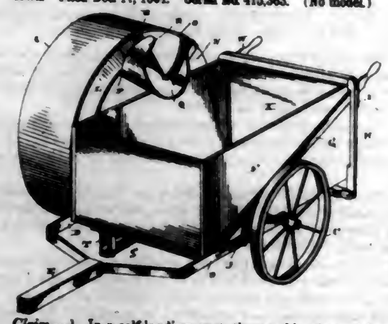
3. The combination, with the cabinet or housing provided with the bottom portions *f f'* and inverted-V-shaped strip, of the stamp holding and preserving book, substantially as described.

475,686. DOOR-STOP. ALBERT HAUCK, Jewett, Ohio. Filed Oct. 15, 1891. Serial No. 408,789. (No model.)



Claim.—The hereinbefore shown and described combined door stop and check, consisting of case A, having ears *a*, which are apertured to receive the fastening devices, the bore of the case being reduced at its upper end to form the shoulder *e* and slotted at *d* and having the upper end of the case inclined downwardly from the sides of the slot *d*, the stop B, having shoulder *f* and adapted to press upon the floor, the spring mounted on the stop and adapted to be held between the shoulders *e* and *f*, and the handle C, provided to manipulate the stop B and adapted to strike against the wall and prevent injurious contact of the key or knob with the said wall, substantially as set forth.

475,687. SELF-LOADING CART. CALVIN G. HAYES, Sioux City, Iowa. Filed Dec. 17, 1891. Serial No. 415,363. (No model.)



Claim.—1. In a self-loading cart, the combination, with a cart-body, a support therefor, and a plow, of a conveyer-wheel adjacent said plow, a curved plate N, adjacent the inner side of the wheel, outwardly-extending plates secured to the respective edges of the plate

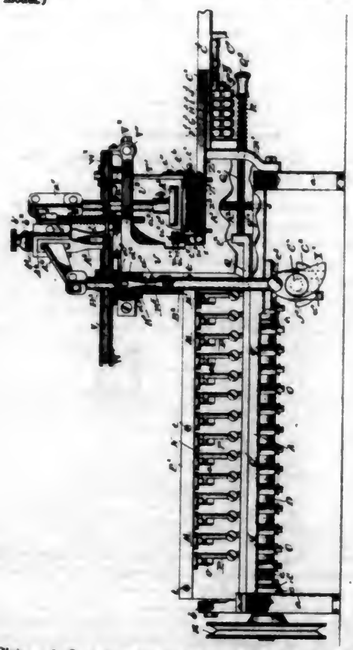
N and which conform to the curvature of the conveyer-wheel, and a spout, substantially as shown and described.

2. In a self-loading cart, a body, an axle having an upturned portion A', curved plate N, supported by said upturned portion, a conveyer-wheel, a plow, and a chute, the parts being combined to operate substantially as shown and described.

3. In a cart, the combination, with the axle and the arms D, of the body loosely mounted on said axle, a lever pivoted to the body, a connection between the lever and one of the arms D, and a means for securing the rear end of the lever to the body, for the purpose substantially as shown and described.

4. In a self-loading cart, the combination, with the body, a support therefor, and a conveyer-wheel, of a plow loosely connected at its forward end to the under side of the body, depending support H, bar U, pivoted thereto and to which the rear end of the plow-beam is connected, an operating-lever on the side of the cart-body, and a connection between the said lever and the bar U, substantially as shown and described.

475,688. NUMBERING AND MARKING MACHINE. JAMES D. HUMPHREY, Towanda, Pa. Filed Apr. 25, 1891. Serial No. 390,365. (No model.)



Claim.—1. In a stamping or marking machine, the combination, with the spring-pressed indicator-keys adapted to directly engage the marking-wheel shaft and projecting through a slotted plate of the machine, of the adjustable horizontal bar applied to said slotted plate and against which rest said indicator-keys, substantially as specified.

2. In a stamping or marking machine, the combination, with a loose fractional marking wheel or disk and its shaft, of the fractional indicator-key having between its outer and its pivoted inner end a horizontal lateral arm, having its free end arranged between parallel studs or pins on said fractional indicator-key, whereby the marking wheel or disk is directly actuated by the indicator-key, substantially as set forth.

3. In a stamping or marking machine, the combination of the inking-roll, the right-angled bracket or carriage carrying said roll, the lower and upper rails or rods, upon the lower one of which travels a slide or sleeve having a flexible connection with the horizontal arm of said bracket, the upper end of the upright arm of said bracket being held to a sliding sleeve upon the other rail or rod, and means for actuating said inking-roll carrying bracket or carriage, substantially as specified.

4. In a stamping or marking machine, the combination of the pulleys or wheels, the inking-roll bracket or carriage mounted to travel upon rails or rods, the chain or cable encompassing said pulleys or wheels and connected to a sleeve sliding upon one of said rails and connected to said bracket or carriage, the shaft carrying one of said wheels or pulleys and having upon one end a two-faced toe, the pressure-plate and its actuating-lever having connected to it a forked flexible jointed rod, and the transverse shaft meshing with the driving-shaft and provided at one end with a cam having a semicircular or segmental projection or shoulder and a stud or pin and provided at its other end with a second cam, said cams being adapted to engage the toe of the pulley or wheel shaft, and a stud or roll on the forked flexible jointed rod, respectively, substantially as specified.

5. In a marking or stamping machine, the combination, with the pressure-plate lever, of the yielding bearing, comprising the standard having an opening through which said lever passes, the yoke fitting upon said standard and having secured to it the pivot of said lever, and the spring-pressed nut engaging a fixed screw of said standard passing through an aperture in said yoke, said standard having slots in the side walls of its opening, through which passes said pivot, substantially as set forth.

475,689. STAPLE-EXTRACTOR. THOMAS M. HUNT, Caldwell, Tex. Filed Aug. 15, 1891. Serial No. 402,787. (No model.)



Claim.—1. The combination of a suitable extracting-lever formed with a fulcrum-foot, upon which it is adapted to be rocked, and a staple extractor hook pivoted to said lever adjacent to the fulcrum-foot and adapted to move transversely of the face of the fulcrum-foot, substantially as and for the purpose set forth.

2. The combination of the staple-extractor hook formed with a single pointed end and provided with a pin D, extending from one of its sides, and the extracting-lever having a perforation f^4 in its upper edge, into which the pin D is adapted to be inserted for pivoting the hook to the said lever, so that it will extend transversely thereto, all substantially as and for the purpose set forth.

3. The combination of a suitable extracting-lever having a perforation f^4, an extractor-hook provided with a screw-threaded perforation *b*, and a screw-threaded pivot-pin adapted to be inserted in said screw-threaded perforation and be seated in said perforation f^4, substantially as set forth.

4. The combination of a suitable extracting-lever, a staple-extractor hook pivoted thereto, and a rigid arm or guard extending up from said extractor-hook and adapted to prevent the wire from coming in contact with and injuring the operator, substantially as set forth.

5. The combination of a suitable extracting-lever, a staple-extractor hook pivoted thereto, and a curved arm or wire guard rigidly secured to said hook and extending therefrom toward the hook end of the implement, substantially as set forth.

6. The combination of a suitable lever having a perforation f^4 and an extractor-hook provided with a combined pivot-pin D and wire-guard D^2, substantially as set forth.

7. The combination of a suitable lever having a perforation f^4 and an extractor-hook provided with a combined pivot-pin D and curved wire-guard D^2, substantially as set forth.

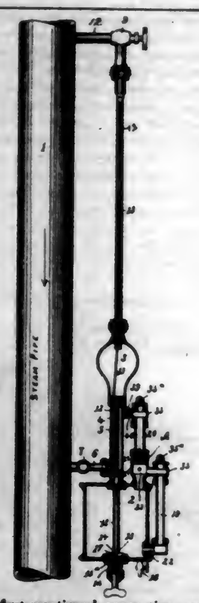
8. The combination of the staple-extractor hook A, provided with a handle B, a head C, and a pin D, extending from its side, with an extracting-lever provided with a suitable perforation f^4 in its upper edge, a fulcrum-foot f', a head f, and an operating-handle f^3, substantially as herein set forth.

475,690. LUBRICATOR. JAMES P. KEALY, New Haven, Conn. Filed Apr. 10, 1890. Serial No. 347,350. (No model.)

Claim.—1. The combination, with the main steam-pipe 1, of a lubricant-reservoir, a water-pipe 12, having the valve 9 and a connection at its upper end with the steam-pipe and extending to the bottom of the reservoir, the circulating-pipe 13 within and opening into the pipe 12, a connection 6 between the bottom of the circulating-pipe and the steam-pipe 1 and entering the latter below the first-mentioned connection, a valve 7 in the latter connection, and an oil-delivery conduit leading from the reservoir, substantially as set forth.

2. The combination, with the steam-pipe 1, of the hollow standard 4, an oil-reservoir attached thereto, a water-pipe having a connection with the steam-pipe, passing through said standard, and leading to the bottom of the reservoir, a circulating-pipe within and opening into the water-pipe and also opening into said standard, a connection between said standard and the steam-pipe and entering the latter

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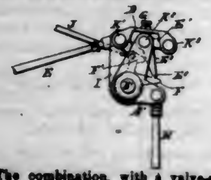


at a point below the first-mentioned connection, and an oil-delivery conduit leading from the lubricator, substantially as set forth.

3. The combination, with the lubricant-reservoir, of the water-pipe leading therefrom, the steam-circulating pipe within said water-pipe, connections whereby said pipes may be connected with a steam-pipe, an oil-delivery conduit leading from the reservoir, a valve-seat and valve in and adapted to close said conduit, a spring engaging the valve, a regulating-stem engaging the valve from one side to limit its movement, and an operating-stem engaging the valve from the opposite side and adapted to move the valve against the pressure of the spring, substantially as set forth.

4. A lubricator consisting, essentially, of a standard having a chamber within it, a lubricant-reservoir connected thereto, a pipe 6, leading from the chamber to the main steam-pipe, a pipe 12, leading to the main steam-pipe above the lubricator and above said pipe 6, and having an enlargement 3, serving as a water-reservoir, a pipe 12, extending from enlargement 3 down through the chamber and to the bottom of the lubricant-reservoir, a circulating-pipe extending from the chamber up through enlargement 3 and a distance into the pipe leading therefrom to the steam-pipe, connections leading from the lubricant-reservoir into the chamber, and a regulating-valve between the lubricant-reservoir and the chamber, whereby the flow of lubricant may be regulated.

475,691. VALVE-GEARING. ALVARO S. KROTZ, Defiance, Ohio, assignor of one-half to Henry John Smith, same place. Filed July 21, 1891. Serial No. 400,255. (No model.)



Claim.—1. The combination, with a valve-stem, an arm rigid thereon, an arm loosely mounted on said stem, means connecting said arms whereby they are caused to move in unison, and a trip-block actuated by the governor and adapted to break the connection between said arms, whereby the loose arm is permitted to move independent of the rigid arm, substantially as set forth.

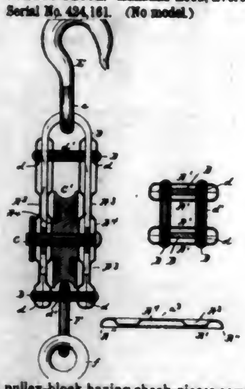
2. The combination, with a valve-stem, an arm or lever rigidly secured thereon, an oscillating arm loosely mounted on said stem, and a link and lever loosely connecting said arm and arm or lever and adapted when in one position to lock them, whereby they are caused to move in unison, of a trip-block loosely mounted on the valve-stem and actuated by the governor, the said trip-block adapted to engage an arm of the bell-crank lever and break the connection between the oscillating lever and the arm or lever rigidly secured on the valve-stem, substantially as set forth.

3. The combination, with a valve-stem, a bell-crank lever rigidly secured thereon, an oscillating arm loosely mounted on said stem, a link loosely connected to said arm, a bell-crank lever connecting the opposite end of said link to one end of the bell-crank lever rigid on the valve-stem, of a movable trip-block adapted to engage the long arm of the bell-crank lever connecting the link to the bell-crank lever on the valve-stem, and a rod-piston and dash-pot for closing the valve as soon as the connection between the oscillating arm and the bell-crank lever on the stem has been broken, substantially as set forth.

4. The combination, with a valve-stem, an arm loose thereon, means for oscillating said arm, a bell-crank lever rigidly secured to said stem, a link pivoted to said arm, and a bell-crank lever connecting said link, and the lever rigidly secured to the valve-stem, the said parts being so arranged that when the pivots of the link, bell-cranks, and arm are in line, or approximately so, the parts are locked so that the oscillations of the arm are transmitted to the bell-crank lever fast on the valve-stem, of a trip-block actuated by the governor and adapted to throw said pivots out of line, thereby permitting the loose arm to move independently of the bell-crank lever on the valve-stem, substantially as set forth.

5. The combination, with a valve-stem, the bell-crank lever rigid thereon, the arm loose thereon, means for oscillating the arm, the link and bell-crank lever connecting the bell-crank lever and arm on the valve-stem, and an adjusting-screw carried by the link, of a trip-block actuated by the governor and adapted to engage the bell-crank lever connecting the link and bell-crank lever on the shaft, substantially as set forth.

475,692. PULLEY-BLOCK. HERBERT LOUD, Everett, Mass. Filed Mar. 8, 1892. Serial No. 424,161. (No model.)



Claim.—1. A pulley-block having cheek-pieces composed each of a pair of molded sheet-metal plates, longitudinally abutting and secured together, substantially as and for the purpose set forth.

2. A pulley-block having cheek-pieces composed each of a pair of molded sheet-metal plates, longitudinally abutting and secured together, as described, combined with a bow strap or straps, sheave, and sheave-spindle, substantially as and for the purpose set forth.

3. A pulley-block having cheek-pieces composed each of a pair of molded sheet-metal plates, longitudinally abutting, combined with rivets and intermediate divider-pipes for securing said cheek-piece parts together and to the opposite cheek-piece of the block, substantially as and for the purpose set forth.

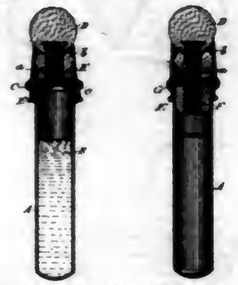
4. A pulley-block having cheek-pieces composed each of a pair of molded sheet-metal plates having rounded or turned-over peripheral abutting edges and means for securing said cheek-pieces together at a proper distance apart, substantially as specified.

5. A pulley-block having cheek-pieces composed each of a pair of molded sheet-metal plates having rounded or turned-over peripheral abutting edges and having annular depressions concentric to the sheave-spindle perforations, substantially as and for the purpose set forth.

6. A pulley-block having cheek-pieces composed each of a pair of molded sheet-metal plates secured together, combined with a metal bow strap or straps having a loose or swinging hook attached to it and a sheave mounted on a spindle journaled in said cheek-pieces, substantially as and for the purpose set forth.

7. A pulley-block having cheek-pieces composed each of a pair of molded sheet-metal plates secured together, combined with a metal bow-strap having a loose or swinging hook attached to it, a sheave mounted on a spindle journaled in said cheek-pieces, and a becket-link and thimble connected to the lower end of the pulley-block, substantially as and for the purpose set forth.

475,693. ENVELOPE-GUM MOISTENER. NEIL MAUCHAIL, Glasgow, Scotland, assignor to Andrew C. Whyte, same place. Filed Dec. 26, 1891. Serial No. 416,189. (No model.) Patented in England Sept. 30, 1890, No. 21,182.



Claim.—1. As a new article of manufacture, an envelope-moistener consisting, essentially, of a tubular body having a contracted neck, a sponge or other absorbent material secured to said neck, an opening through said neck for the passage of water, and a cap surrounding said neck and a portion of the sponge, substantially as set forth.

2. As a new article of manufacture, an envelope-moistener consisting, essentially, of a tubular body formed with a neck having an enlarged outer end, a sponge or other suitable absorbent material surrounding and secured to the enlarged portion of the neck, and a cap surrounding the neck and a portion of said absorbent material, substantially as set forth.

3. As a new article of manufacture, an envelope-moistener consisting of a tubular body having an open interiorly-screw-threaded outer end, a neck portion screw-threaded into the open end of the body portion and having an enlarged outer end, perforations through said neck portion adjacent to the outer end, an opening through the neck portion for the passage of the water, a sponge or other suitable absorbent material surrounding the enlarged end of the neck portion and secured thereto by threads passing through the perforations, and a cap surrounding a portion of the absorbent material and attached to the body portion, substantially as and for the purpose set forth.

475,694. LETTER-BOX. JOSEPH W. MANLOVE, Foster, Mo. Filed Aug. 15, 1891. Serial No. 402,736. (No model.)



Claim.—1. The herein-described box, the same comprising a central partition, two halves, each sliding through said partition, and a hinged floor in each half, as and for the purpose set forth.

2. The herein-described box, the same comprising a central longitudinal partition, two halves telescoping into each other and sliding through said partition, and hinged to each side of the partition an outwardly-opening floor of a size to close the bottom box of the half-box on that side when open, as and for the purpose set forth.

3. The herein-described box, the same comprising two sides, inwardly-projecting cross-bars extending from the sides out of alignment with each other and lapping at their inner ends, and stop-bars connecting said inner ends and having notches engaging the bodies of the cross-bars of the other half, as and for the purpose set forth.

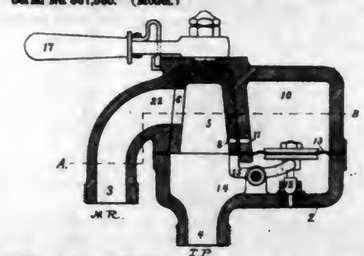
4. The herein-described box, the same comprising two sides, inwardly-projecting cross-bars extending from the sides out of alignment with each other and lapping at their inner ends, stop-bars connecting said inner ends, and a partition whose vertical bars each stand between two adjacent cross-bars of opposite halves and between the stop-bars, as and for the purpose set forth.

5. The herein-described box, the same comprising two sides, cross-bars extending from the lower edges of the sides inwardly out of alignment with each other and lapping at their inner ends, a stop-bar connecting the inner ends of the cross-bars of each half, double braces extending inwardly from one end of the sides and lapping at their inner ends, and a block secured in each brace and having a notched body sliding between the members of the other brace, as and for the purpose set forth.

6. The herein-described box, the same comprising two sides, cross-bars extending inwardly from the lower edges thereof out of alignment with each other, a stop-bar connecting the inner ends of the cross-bars of each half, double braces extending inwardly from an upper corner of the sides and lapping at their inner ends, a block secured in each brace and sliding between the members of the other brace, and a partition, each of whose vertical bars stands between two adjacent cross-bars of opposite halves and between the stop-bars and one of whose vertical bars also stands between the double braces and their blocks, all as and for the purpose set forth.

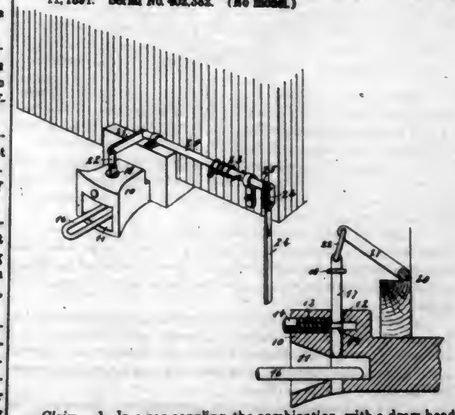
7. The herein-described box, the same comprising two sides, cross-bars extending inwardly from the lower edges thereof and lapping, a stop-bar connecting the inner ends of the cross-bars of each half, braces extending inwardly from the upper front corners of the sides and lapping, a block on each brace having a notched body sliding on the body of the other brace, a partition, each of whose vertical bars stands between two adjacent cross-bars of opposite halves and between the stop-bars and one of whose vertical bars also stands between the braces and their blocks, and floors hinged to the sides of said partition above the cross-bars, the front outer corners of the floors being notched, all as and for the purpose hereinbefore set forth.

475,695. ENGINEER'S VALVE. ALBERT P. MASSEY, Watertown, N. Y., assignor to the New York Air Brake Company. Filed Apr. 2, 1891. Serial No. 387,385. (Model.)



Claim.—In an engineer's valve for regulating the flow of fluid-pressure, the combination of a brake-pipe chamber, a discharge-valve 12, controlling the exhaust of air from the brake-pipe chamber, an auxiliary chamber separated from the brake-pipe chamber by a piston or flexible diaphragm attached to said discharge-valve 12 and adapted to hold valve 12 open when there is an excess of fluid-pressure on the brake-pipe side of the diaphragm and to close said valve when there is an excess in the auxiliary chamber, a valve 5, controlling a port 11 between the brake-pipe chamber and the auxiliary chamber, and a positive mechanical means connecting valve 5 and valve 12 for opening said valve 12 when valve 5 is rotated in one direction, but which will not close valve 12 when valve 5 is rotated in the other direction, substantially as set forth.

475,696. CAR-COUPLING. WILLIAM A. MAYHALL, Gloster, Miss., assignor of one-half to Hiram L. Van Norman, same place. Filed Aug. 11, 1891. Serial No. 402,382. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head provided with a link-opening, a pin-opening, and a chamber above the link-opening and crossing the pin-opening, of a coupling-pin pro-

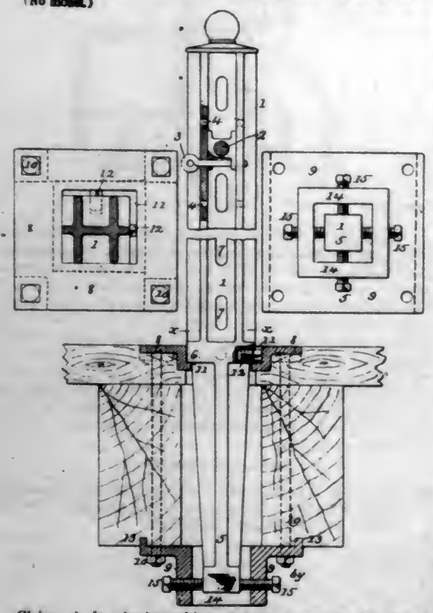
vided with a recess in its rear edge and a spring-actuated bolt arranged in the said chamber with its outer end projecting beyond the draw-head and provided at its inner end with a hook engaging the coupling-pin, substantially as described.

2. In car-coupling, the combination, with a draw-head provided with a link-opening, a rectangular pin-opening, and a chamber above the link-opening and crossing the pin-opening, of a rectangular coupling-pin provided with a recess in its rear edge and a spring-actuated bolt in the chamber and having a hook-shaped inner end engaging the coupling-pin, substantially as described.

3. In a car-coupling, the combination, with a draw-head provided with a link-opening, a pin-opening, and a chamber above the link-opening and crossing the pin-opening, of a coupling-pin having a recess in its rear edge, a spring-actuated bolt in the chamber and provided with a hook-shaped inner end engaging the pin, a rock-shaft provided with an arm at right angles thereto, and a link connecting the arm to the coupling-pin, substantially as herein shown and described.

4. In a car-coupling, the combination, with a rock-shaft connected with the coupling-pin, of spaced plates attached to one end of the rock-shaft and provided with a stop-pin, and a lever pivoted between the plates and having a lug extension adapted for connection with the rock-shaft, substantially as and for the purpose set forth.

475,697. HORIZONTAL-BAR EXERCISING APPARATUS. FREDERICK MEDART, St. Louis, Mo. Filed Aug. 10, 1891. Serial No. 402,397. (No model.)



Claim.—1. In a horizontal-bar exercising apparatus for gymnasiums, the combination of a post or upright 1, having horizontal screws 12, and the floor-socket provided with a surface recess 11 to receive the same, substantially as set forth.

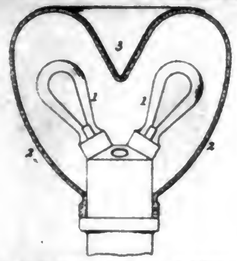
2. In a horizontal-bar exercising apparatus for gymnasiums, the combination of a post or upright 1 and a floor-socket therefor formed of an upper and lower member bolted together and to the floor by tie-bolts, substantially as set forth.

3. In a horizontal-bar exercising apparatus for gymnasiums, the combination of a post or upright 1 and the floor-socket provided with a series of radial horizontally-arranged screws 15, adapted to engage and adjust the extreme lower end of the post or upright, substantially as set forth.

4. In a horizontal-bar exercising apparatus for gymnasiums, the combination, with the floor-socket, of a post or upright having a ribbed letter H formation, the flanges of which are formed with a vertical series of holes 4 for effecting an adjustment of the end of the horizontal bar, substantially as set forth.

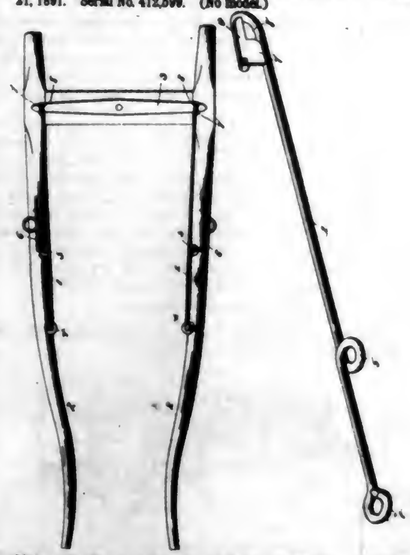
5. In a horizontal-bar exercising apparatus for gymnasiums, the combination, with the floor-socket, of a post or upright having a ribbed letter H formation, the web of which is formed with a vertical series of apertures 7, substantially as set forth.

475,698. INCANDESCENT ELECTRIC LAMP. HARRISON B. MEEDS, Chicago, Ill. Filed Nov. 10, 1890. Serial No. 370,975. (No model.)



Claim.—An electric lamp comprising, in combination, a series of electric lights 1, an inclosing glass globe 2 therefor, having an inverted-cone-shaped top 3, and a reflective covering for such cone, as described, and for the purpose set forth.

475,699. WHIFFLETREE. CHARLES H. MCBRIDE, Champlain, assignor of one-half to Millard Fillmore Stowe, Mooers, N. Y. Filed Nov. 21, 1891. Serial No. 412,599. (No model.)



Claim.—1. The combination, with the shafts and a whiffletree, of the bars arranged on the shafts and extending longitudinally thereof and having their rear ends connected to the whiffletree and their front ends provided with draft-hooks, and springs secured to the shafts and engaging the bars, substantially as described.

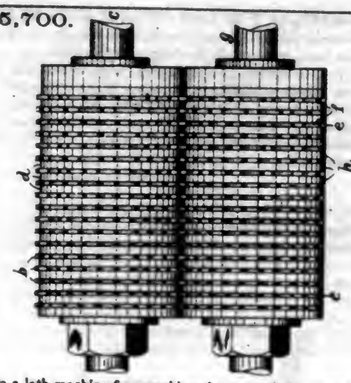
2. The combination, with a pair of shafts and a whiffletree, of bars arranged on the shafts and having their rear ends connected to the whiffletree and provided at their front ends with draft-hooks and having intermediate their ends eyes, and the springs provided at their ends with coils and each having one end secured to a shaft and its other end engaging an eye, substantially as described.

3. The combination of the shafts, the whiffletree, the bars arranged on the shafts and provided at their front ends with draft-hooks and having their rear ends bent upon themselves to form hooks, and the plates pivoted to the hooks and closing the mouths of the same, and provided with recesses to receive and engage the whiffletree, substantially as described.

475,700. MACHINE FOR MAKING METAL LATHING. GEORGE A. ORR, Newark, N. J., assignor, by mesne assignments, to the Bostwick Metal Lath Company, of New York. Filed Apr. 9, 1890. Serial No. 347,281. (No model.)

Claim.—1. In a lath-machine for punching sheet metal, the combination, with a punching-roll having a series of toothed disks, of a die-roll comprising a series of recessed disks and intermediate shearing-collars, substantially as herein set forth.

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2. In a lath-machine for punching sheet metal, the combination, with a punching-roll having a series of toothed disks, of a die-roll comprising a series of recessed disks and intermediate shearing-collars beveled at their edges adjacent to the recesses, as and for the purpose set forth.

3. In a lath-machine for punching sheet metal, the combination, with a die-roll consisting in a series of beveled collars *h* and an intermediate series of recessed sections *e* of the same diameter, of a punching-roll consisting in a series of toothed disks *a*, with intermediate collars *d*, adapted to press the sheet metal upon the collars *h*, as and for the purpose set forth.

4. In a lath-machine for punching sheet metal, the combination, with a punching-roll having a series of toothed disks with intermediate collars and a die-roll having a series of recessed disks with intermediate collars, of a series of strippers applied to the die-roll and a series of strippers applied to the punching-roll, the whole arranged and operated substantially as herein set forth.

5. A lath-machine for punching sheet metal, comprising a punching-roll having a series of toothed disks with intermediate collars, a die-roll having a series of recessed disks with intermediate collars, strippers applied to the die-roll and punching-roll, a suitable frame with bearings for one of the rolls, and bearings for the other roll attached to the frame by bolts, with intermediate packing-plates *r*, the whole arranged and operated substantially as herein set forth.

475,701. ANDIRON. EZEKIEL F. PASCHAL, High Point, N. C., assignor of one-half to Eliza A. Devenish, same place. Filed Jan. 18, 1892. Serial No. 418,484. (No model.)



Claim.—1. The combination, with an andiron, of a universally-adjustable plate attached to the andiron, substantially as described.

2. The combination, with an andiron, of a metallic plate, and means, substantially as described, for securing said plate to the andiron in a horizontal or a vertical position, as set forth.

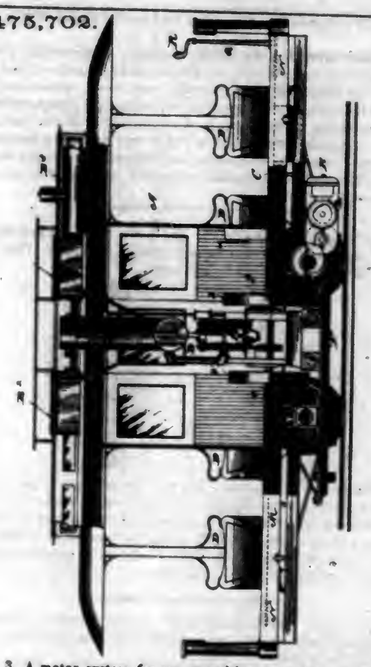
3. The combination, with an andiron having its vertical portion C formed with a vertical dovetailed groove F and with a horizontal dovetailed groove G, of the plate D, having the beveled block E, adapted to be fitted in said grooves, substantially as described.

475,702. ELECTRIC-MOTOR CAR. WILLIAM H. PATTON, Chicago, Ill., assignor to the Patton Motor Company, Pueblo, Colo. Filed Sept. 7, 1891. Serial No. 404,962. (No model.)

Claim.—1. A motor system for car propulsion, comprising a dynamo operated by a suitable engine, an electric motor, and a storage-battery in multiple circuit, so as to permit the dynamo to supply both the electric motor and the storage-battery and also permit the storage-battery to supply the electric motor as auxiliary and an adjunct to the dynamo, substantially as and for the purpose set forth.

2. A motor system for car propulsion, comprising a gas-engine or analogous primary source of power, a dynamo operated by the engine, an electric motor supplied by the dynamo, and a storage-battery supplied from the dynamo and connected therewith in circuit, so that it can be employed as a source of supply for temporarily running the dynamo as a motor, operating to start up the engine, substantially as set forth.

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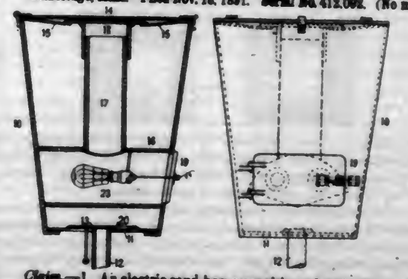


3. A motor system for car propulsion, comprising a dynamo, a storage-battery in circuit with the dynamo, an electric motor in circuit with both the dynamo and the storage-battery and applied for driving the running-gear of the car, a gas-engine or analogous primary driving-power for operating the dynamo, and suitable means for opening and closing the dynamo and electric-motor circuits, so that as a means for starting up the gas-engine or analogous primary driving power the dynamo can be supplied from the storage-battery and temporarily used as a motor for operating said gas-engine or analogous primary driving-power, substantially as set forth.

4. A motor-car provided with a gas-engine or analogous motive power, a dynamo connected with and driven from a balance-wheel of said engine by friction-gearing, a storage-battery supplied from the dynamo, an electric motor supplied from the dynamo and storage-battery and applied for operating the running-gear of the car, and circuit connection permitting the dynamo to be temporarily supplied from the storage-battery and run as a motor for starting up the engine, substantially as described.

5. A motor-car comprising a centrally-arranged cab A, a gas-engine supported upon a frame below the car-platform and arranged to rise within the centrally-located cab, a dynamo arranged alongside the gas-engine and operated from the same, a storage-battery supplied by the dynamo, and an electric motor for the purpose set forth, supported on said frame and supplied from the dynamo and storage-battery, substantially as described.

475,703. ELECTRICALLY-HEATED SAND-BOX. LEWIS E. PEARE, Cambridge, Mass. Filed Nov. 16, 1891. Serial No. 412,092. (No model.)



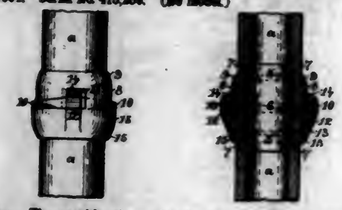
Claim.—1. An electric sand-box comprising a box having a cover, a sand-pipe provided with a valve, mechanism for operating said valve, braces projecting from the top of the box, a hood supported on said

braces, and a heating-pipe fitting into said hood, substantially as described.

2. The combination of a box for containing sand provided with a valved outlet-pipe, a pillar supported within said box, and a resistance-coil disposed on said pillar and provided with electric connections.

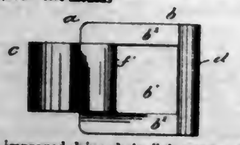
3. The combination of a box for containing sand provided with a valved outlet-pipe, a detachable hood supported in said box near the top thereof, brackets within said box at or near the bottom thereof, a pillar supported on said brackets and engaging said hood, and a resistance coil disposed spirally on said pillar and provided with electric connections.

475,704. HOSE-COUPLING. CHARLES E. PETTIBONE, Providence, R. I., assignor to himself and Henry B. Audette, same place. Filed Dec. 16, 1891. Serial No. 415,259. (No model.)



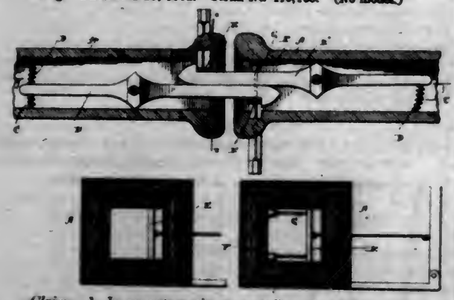
Claim.—The combination, with the interior sleeve 5, having the central flange 6 and the shoulders 7 7, of the coupler-collar 8, having the contracted edge 9 and the cam-flanges 10 10, provided with stops 11 11, and the clamping-collar 13, having the contracted portion 15, arms 12, provided with shoulders 14 14, adapted to engage said cam-flanges, as and for the purpose described.

475,705. DRIVE-CHAIN LINK. ARTHUR J. REYNOLDS, New Britain, Conn., assignor to the Stanley Works, same place. Filed Feb. 1, 1892. Serial No. 419,564. (No model.)



Claim.—The improved drive chain link composed of the pintle-section *b* and the knuckle-section *c*, the said pintle-section being formed of a piece of flat plate metal with a central opening, and a pintle *d*, formed at one end of the section and having a flat bar *e* at the opposite end, the knuckle-section made of a strip of plate metal having one end rolled up to form a knuckle and secured to the pintle-section by the end of the knuckle-section folded down upon the flat bar *e*, all substantially as described.

475,706. CAR-COUPLING. SAMUEL G. SAUNDERS, New Bridge, Oreg. Filed Jan. 25, 1892. Serial No. 419,185. (No model.)



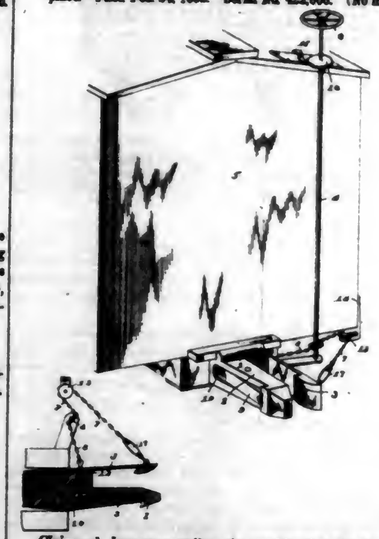
Claim.—1. In an automatic car-coupling, the combination, with the draw-head, of a projecting hook pivoted therein, a means for holding the hook normally in a line with the draw-head, and a laterally-moving catch, substantially as shown and described.

2. In an automatic car-coupling, the combination, with the draw-head, of a hook pivoted therein, having a rearwardly-extending end, a guide secured within the draw-head, upon which the said end moves, springs mounted on said guide, and a laterally-moving spring-actuated catch, substantially as shown and described.

3. In an automatic car-coupling, the combination, with the draw-head and a hook pivoted therein, of a laterally-moving catch moving in recesses formed in the upper and lower walls of the draw-head, and springs which hold the said catch extended toward the center of the draw-head, substantially as shown and described.

4. In an automatic car-coupling, the combination, with the draw-head and a hook pivoted therein, of a laterally-moving catch, horizontal rods extending from the upper and lower ends of said catch, springs mounted on the said rods, and stationary bearings against which the rear ends of the springs rest and through which bearings the rods freely pass, substantially as shown and described.

475,707. CAR-COUPLING. MATTHEW T. SCOTT and JAMES L. BRADFIELD, Blue Springs, Mo., assignors of one-third to William G. Gore, same place. Filed Feb. 24, 1892. Serial No. 422,666. (No model.)

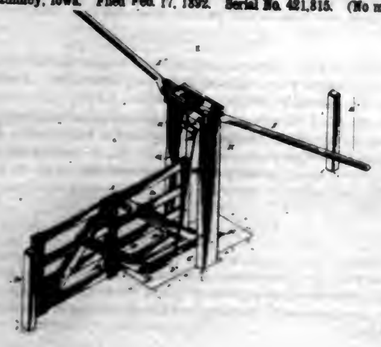


Claim.—1. In a car-coupling, the combination of a draw-head having a stationary jaw at one side, a spring-jaw arranged at the other side, a lever arranged on the stationary jaw, and means for moving the lever and the spring-jaw laterally, whereby cars may be uncoupled, substantially as described.

2. In a car-coupling, the combination of a draw-head having a stationary jaw at one side shouldered on its outer face and provided with a longitudinal groove, a lever arranged in the groove and fulcrumed on the stationary jaw, a spring-jaw arranged at the other side of the draw-head and shouldered on its inner face, a shaft, and chains connected with the lever and the spring-jaw and attached to the shaft and adapted to be wound on the latter, substantially as described.

3. The combination, in a car-coupling, of a draw-head having a stationary jaw at one side, a spring-jaw arranged at the other side, and a pin-and-link attachment having a slot conforming to the configuration of the stationary jaw and having one side conforming to the configuration of the spring-jaw, substantially as described.

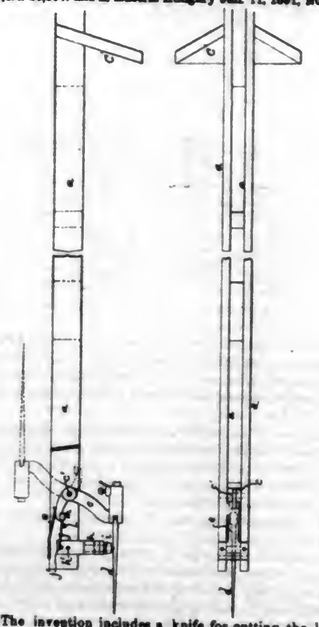
475,708. GATE. FREDERICK I. SELLERS and JOHN G. SCHIBEL, Quimby, Iowa. Filed Feb. 17, 1892. Serial No. 421,815. (No model.)



Claim.—1. The combination, with a gate, of the swinging supporting-arms B B, pivotally connected to the gate, a connecting-bar between these arms, and the gate-operating devices connected with the said connecting-bar, substantially as set forth.

2. The combination, with a gate, of the swinging supporting-arms B B, pivotally connected with the gate near their upper ends, the connecting-bars F, uniting the arms B, the links G, connected with the bars F, the cross-piece H above the gate, connecting the upper ends of the links, and the gate-operating levers connected with the bar H, substantially as set forth.

475,709. KNIFE FOR CUTTING PILE FABRICS. JAMES H. SMITH, Longsight, ANDREW GODDARD, Stockport, and LLOYD HIGGINBOTTOM and THOMAS MANNOCK, Longsight, assignors to the Fustian Cutting Machine Company, Limited, Salford, England. Filed May 20, 1891. Serial No. 394,619. (No model.) Patented in England Aug. 22, 1887, No. 11,437, and Dec. 10, 1887, No. 16,996; in Belgium Sept. 19, 1887, No. 73,936; in Germany Sept. 21, 1887, No. 46,156; in France Sept. 22, 1887, No. 186,080; in Italy Sept. 29, 1890, No. 26,897, and in Austria-Hungary Jan. 11, 1891, No. 38,959.



Brief.—The invention includes a knife for cutting the loops of weft pile fabrics, the knife being held stationary while the fabric is moved underneath. The knife is normally held in operative position by means of an arm *j*, attached to a trigger *h*; but if it penetrates the fabric the trigger is turned about on its pivot *h* by pressure of the fabric, the arm *j* is withdrawn from the knife, and the latter, pressed by the spring *e*, is turned on its pivot *c*, thus making only a small puncture in the cloth.

Claim.—1. A device for cutting pile fabrics, consisting of a handle having a movable knife, in combination with a trigger normally holding the knife in position, but adapted to be moved to release the knife, the latter when released being free to be automatically withdrawn from the fabric, substantially as described.

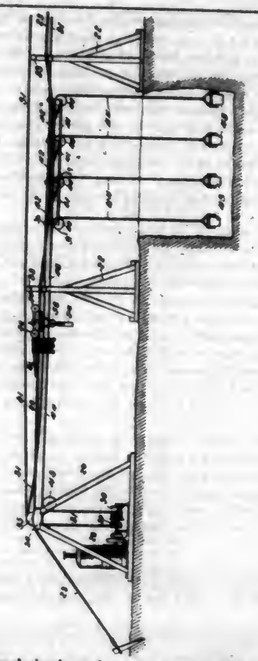
2. A device for cutting pile fabrics, consisting of a handle having a movable knife, in combination with a trigger normally holding the knife in position, but adapted to be moved to release it, and a spring to start the knife when released, substantially as described.

3. A device for cutting pile fabrics, consisting of a handle having a knife pivoted thereto, in combination with a trigger normally holding the knife in position, but adapted to be moved to release the knife, the latter when released being free to swing round and be withdrawn from the fabric as the latter moves, substantially as described.

475,710. HOISTING AND CONVEYING DEVICE. EDMUND G. SPILSBURY and SAMUEL S. WEBBER, Trenton, N. J. Filed Oct. 15, 1891. Serial No. 408,843. (No model.)

Claim.—1. An aerial tramway comprising a track way supported along the line by a series of standards, the standards intermediate of

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the terminal standards having a free space between the track way-supports for the passage of the tramway-carriage, a hauling-rope connected to the tramway-carriage, a hoisting-rope depending from the carriage, and supports for preventing the sagging of the hoisting-rope, said hoisting rope supports spanning the free space between the track-way-supports and adapted to rest in open bearings, and a projection moving with the hauling-rope in front of the carriage, so as to engage with and successively remove the rope-supports from their bearings as the carriage moves toward them, substantially as described.

2. An aerial tramway comprising a track way supported along the line by a series of standards, the standards intermediate of the terminal standards having a free space between the track way-supports for the passage of the tramway-carriage, a hauling-rope connected to the tramway-carriage, a hoisting-rope depending from the carriage, and supports for preventing the sagging of the hoisting-rope, said hoisting-rope supports spanning the free space between the track way-supports and having journals of unequal lengths adapted to rest in open bearing spaced at increasing distance apart in the path of the carriage, and a projection moving with the hauling-rope in front of said carriage, so as to engage with and successively remove the rope-supports from the open bearings as the carriage moves toward them and also to successively deposit them within the appropriate bearings as the carriage moves away, substantially as described.

3. An aerial tramway comprising a track way supported along the line by a series of standards, the standards intermediate of the terminal standards having a free space between the track way-supports for the passage of the tramway-carriage, a hauling-rope connected to the tramway-carriage, a hoisting-rope depending from the carriage, and supports for preventing the sagging of the hoisting-rope, said hoisting-rope supports spanning the free space between the track way-supports and having journals of unequal lengths adapted to rest in open bearings spaced at increasing distances apart in the path of the carriage, and a projection moving with the hauling-rope in front of said carriage, so as to engage with and successively remove the rope-supports from the open bearings as the carriage moves toward them and also to successively deposit them within the appropriate bearings as the carriage moves away, said hauling-rope supports being further provided with rollers for the reception of the hoisting-rope and being of unequal lengths, so as to arrange themselves the more compactly upon the gathering projection, substantially as described.

4. In an aerial tramway, the combination, with the track way, the main carriage, the hauling-rope, the hoisting-rope, and its removable supports, of a gathering device therefor, consisting of an auxiliary carriage mounted upon the track way in front of the main carriage and connected to the hauling-rope, said auxiliary carriage having a gathering-horn adapted to engage with and take up the removable supports in advance of the main carriage, and standards having open bear-

lags, within which the supports are deposited or from which they are removed as the carriage passes, substantially as described.

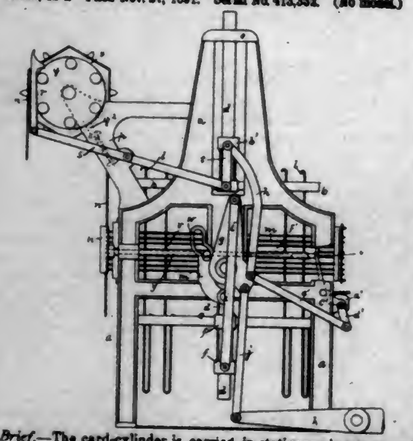
5. In an aerial tramway, the combination, with the trackway, the main carriage, the hauling-rope, the hoisting-rope, and its removable supports, of a gathering device therefor, consisting of an auxiliary carriage mounted upon the trackway in front of the main carriage and connected to the hauling-rope, said auxiliary carriage having a gathering-horn adapted to engage with and take up the removable supports in advance of the main carriage, the auxiliary carriage being provided with a latch and actuating-cord and the hoisting-rope being provided with a catch adapted to engage said latch, substantially as described.

6. In an aerial tramway, a tramway-carriage made up of independent frames having their proximate ends jointed to each other, so as to adapt their outer ends to swing toward each other in a vertical plane, supporting-wheels on opposite sides of the joint, and additional supporting-wheels directly at the joint, substantially as described.

7. In an aerial tramway, a tramway-carriage made up of independent frames having their proximate ends jointed to each other, so as to adapt their outer ends to swing toward each other in a vertical plane, supporting-wheels on opposite sides of the joint, additional supporting-wheels directly at the joint, and hoisting-sheaves suspended from the carriage below the supporting-wheels, substantially as described.

8. In an aerial tramway, the removable supports for the hauling-rope, consisting of a cross-bar, a sheave or pulley, arms for suspending the sheave from said cross-bar, said arms being separated by an intervening space, open bearings for the cross-bar, and a tramway-carriage provided with a removing horn adapted to engage the removable supports between the suspending-arms, substantially as described.

475,711. JACQUARD MECHANISM. GEORGE W. STAFFORD, Providence, R. I. Filed Nov. 27, 1891. Serial No. 413,332. (No model.)



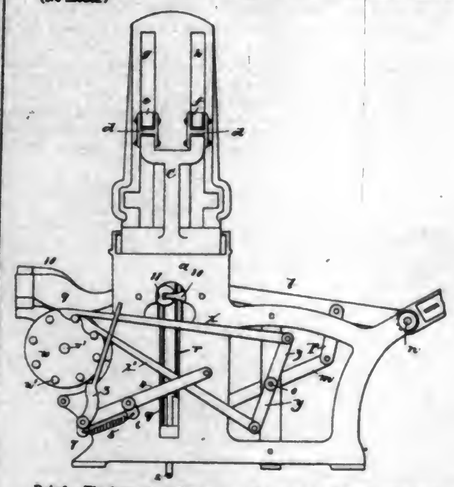
Brief.—The card-cylinder is carried in stationary bearings, and the cards are presented to the needles by a press-board having just sufficient movement from the needles to clear the cards therefrom as the cylinder is rotated. The truing-rods act upon the cards to position the same. Greater speed is possible with this structure and less injury results from the slight movement of the press-board than from the usual vibrating cylinder.

Claim.—1. The combination, with the needles of a jacquard mechanism, of a card cylinder or prism, stationary bearings in which the said cylinder or prism is mounted, means for rotating the said cylinder or prism, a press-board located adjacent to the needles, means for moving the same toward and from the needles, truing-rods adapted to act upon the card located in front of the press-board and to bring the same into correct position, and means for operating the said truing-rods, substantially as described.

2. The combination, with the needles of a Jacquard mechanism, the hooks, a movable griff or griffs, and means for actuating the latter, of a cylinder or prism, stationary bearings in which the said cylinder or prism is mounted, means for rotating the said cylinder or prism, a press-board, a rod by which the same is supported, a stud or roller on the said rod, an arm connected with the griff or one of the griffs and having a cam-slot therein, a truing-rod adapted to bring the card located in front of the press-board into correct position, a spring for retracting the said rod, a bell-crank lever, a cam, and means for operating the said cam, substantially as described.

3. The combination, with the needles of a Jacquard mechanism, the hooks, and a griff or griffs acting on the said hooks, of a cylinder or prism, stationary bearings in which the said cylinder or prism is mounted, means for rotating the cylinder or prism, a press-board, a rod by which the said press-board is carried, a stud or roller on the said rod, and a bar connected with the said griff or one of the griffs and having a cam-slot, substantially as described.

475,712. SHEDDING MECHANISM FOR LOOMS. GEORGE W. STAFFORD, Providence, R. I. Filed Dec. 14, 1891. Serial No. 414,963. (No model.)



Brief.—The invention dispenses with one of the pattern-cylinders in a double-acting dobbie by forming the indicator-fingers as simple and compound bell-crank levers in pairs to act upon the upright needles or hooks to throw them toward each other and in the path of the knives or lifters.

Claim.—1. The combination, with the knives, means for operating the same alternately, the pattern-cylinder, and means for rotating the same, of the hooks arranged in pairs, as described, and the indicator-levers formed of alternately-arranged simple levers and compound levers, substantially as described.

2. The combination, with the side frames *a b*, the bracket *c*, the links *d*, pivoted to the said bracket, the knives *e f*, pivotally connected to the said links, the rods *i k*, pivotally connected with the free ends of the said knives, the levers *l m*, with which the lower ends of said rods are pivotally connected, the rock-shaft *o*, the link *p*, connecting the levers *l m*, the lever *y*, carried by the rock-shaft *o*, the pawls *x x'*, connected with opposite arms of the said lever *y*, the pattern-cylinder, the pin-wheel mounted on the shaft thereof, the levers 9, 10, and 11, acted upon by the indicators of the pattern, and the hooks *q r*, acted upon by the said levers 9, 10, and 11 and arranged in pairs, all substantially as and for the purposes set forth.

3. The combination, with the levers *l m*, the link *p*, connecting the lever *l* to the lever *m*, the rock-shaft *o*, on which the said lever *m* is mounted, the knives *e f*, operating connections between the levers and the knives, and the hooks *q r*, arranged in pairs, of a single pattern-cylinder located at one side of the series of hooks, devices intermediate the cylinder and hooks for determining the position of the latter and their engagement with the knives in accordance with the dictates of the pattern-indicators, and devices intermediate the pattern-cylinder and the rock-shaft, whereby the former is actuated from the latter, substantially as described.

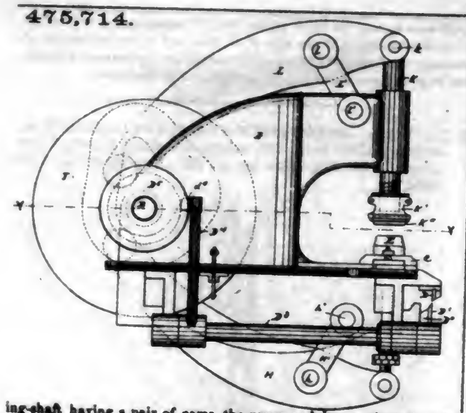
475,718. COMPOUND FOR WATERPROOFING. JAMES STEWART, Philadelphia, Pa., assignor to Matthew McVickar and Robert S. Galbraith, same place. Filed Feb. 24, 1891. Serial No. 382,603. (No model.)

Claim.—A composition of matter for waterproofing purposes, consisting of ground leather, paper-pulp, whiting, rosin-oil, linseed-oil, naphtha, dissolved hair, china-clay, and glue or gelatine, in the proportions stated.

475,714. HEEL-MAKING MACHINE. EUGENE H. TAYLOR, Lynn, assignor to John G. A. Wittemore, Boston, Mass. Filed Feb. 18, 1892. Serial No. 422,013. (No model.)

Claim.—1. In a heel-machine, the combination of the rotary driving-shaft having a pair of cams, the upper and lower pivoted rock-levers respectively operated on at one end by the two cams, the upper and lower plungers pivoted, respectively, to the other ends of the rock-levers and both positively reciprocated thereby, the drivers operated by the lower plunger, a clinching-block on the upper plunger, a cutting-die, and a perforated follower located in the die above the lower plunger, substantially as described.

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2. In a heel-machine, the combination of a rotary driving-shaft having a pair of cams, the upper and lower pivoted rock-levers respectively operated on at one end by the two cams, the upper and lower plungers pivoted, respectively, to the other ends of the rock-levers and both positively reciprocated thereby, the drivers operated by the lower plunger, a clinching-block on the upper plunger, a cutting-die, a perforated follower located in the die above the lower plunger, and two clutches having means to independently operate them for throwing either one of the two cams into gear with the main driving-shaft, substantially as described.

3. The combination of the rotary driving-shaft B, having a pair of cams I and M, the upper and lower rock-levers L and H respectively operated on at one end by the two cams, the upper and lower links L' and H', pivoted, respectively, to the rock-levers and to the frame of the machine, the upper and lower plungers K and G, pivoted, respectively, to the rock-levers and both positively reciprocated thereby, the drivers *f*, operated by the lower plunger, a clinching-block K'' on the upper plunger, a cutting-die E, a perforated follower F, located in the die above the lower plunger, and means for throwing either one of the cams into gear with the rotary driving-shaft, substantially as described.

4. In a heel-machine, the combination, with the main driving-shaft B, having a grooved cam D^3, of the stationary knife D and the rock-shaft D^3, having at one end a lateral arm D'', carrying a knife D', and at the other end a lateral arm D^4, engaging the grooved cam of the main driving-shaft, substantially as described.

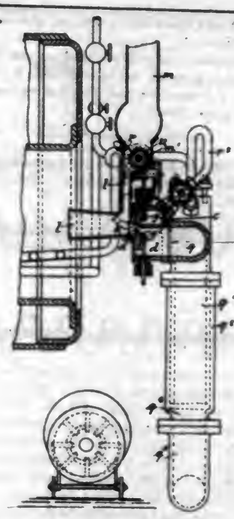
475,715. FIRING APPARATUS FOR USE WITH COAL-DUST. CARL WEGENER, Berlin, Germany, assignor of one-half to Paul Baumert, same place. Filed Jan. 22, 1892. Serial No. 418,940. (No model.)

Claim.—1. The combination, with a furnace, of a supply-pipe for the blast, pivoted vertically at one side of the furnace, and provided with a part *q*, extending laterally in front of the furnace, a receptacle for fine fuel, a disintegrator below the receptacle, and a nozzle adapted to receive the blast and the fuel and project them into the furnace, the said receptacle, disintegrator, and nozzle all being supported by the said part *q* and adapted to be swung around clear of the front of the furnace, substantially as set forth.

2. The combination, with a supply-pipe for air and a supply-pipe for steam, both pivoted vertically and concentrically and provided, respectively, with the laterally-extending parts *q* and r^2, of a nozzle supported by the said part *q* and adapted to project the blast and the fine fuel within a furnace, a receptacle for the fuel, supported above the said nozzle, and means for regulating the issue of air and steam into the nozzle behind the fuel, substantially as described and shown.

3. The combination, with the supply-pipe for the blast pivoted vertically and provided with a laterally-extending part *q*, of a receptacle for fine fuel, a disintegrator below the receptacle, and a nozzle adapted to receive the blast and the fuel and project them within a furnace, all the said devices being carried by the said part *q*, a motor-wheel provided with a casing and projecting into the said part *q*, so that the wheel may be revolved by the blast, and driving devices operatively connecting the said motor-wheel with the said disintegrator, substantially as set forth.

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475,716. STEAM-JET PUMP. JAMES A. BILLS, Chicago, Ill., assignor to himself and John Varty, same place. Filed Aug. 13, 1891. Serial No. 402,560. (No model.)

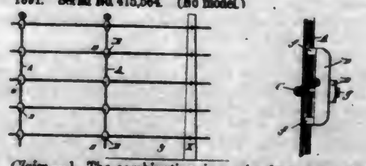


Claim.—1. The combination, with a closed chamber having a supply-pipe at one point and a delivery-pipe, of a steam-pipe extending into the chamber and cylindrical outlet-pipes communicating at one end with the delivery-pipe and opening at the opposite end into the closed chamber, said cylindrical pipes being concentric with each other and the innermost pipe being arranged at the greatest distance from the steam-pipe, substantially as described.

2. The combination, with the closed chamber having a supply-pipe 2 and a delivery-pipe 15, of a steam-pipe 6, extending into the closed chamber, and cylindrical outlet-pipes 9, 10, and 11, extending successively farther into the closed chamber and terminating at a short distance from the inner end of the steam-pipe, said cylindrical pipes being concentric with each other and having their axes in line with the axes of the steam-pipe and delivery-pipe and the innermost cylindrical pipe arranged at the greatest distance from the inner end of the steam-pipe, substantially as described.

3. The combination, with the closed chamber having a supply-pipe 2 and a delivery-pipe 15, of a steam-pipe 6, extending into the closed chamber at one side thereof, and a series of cylindrical concentric pipes 9, 10, and 11, supported by the opposite side of the casing and interposed between the steam-pipe and the delivery-pipe, the innermost cylindrical pipe being arranged at the greatest distance from the inner end of the steam-pipe, substantially as described.

475,717. WIRE-FENCE STAY. JOHN H. BROWER, Waupun, Wis., assignor of one-half to Richard S. Sargent, same place. Filed Dec. 14, 1891. Serial No. 415,564. (No model.)



Claim.—1. The combination, in a wire-fence stay, of the rod A, as described, with the clamping device B C D, having channels *j j*,

notched flanges *f e*, and clamp-bolt C, with nut and screw D *g*, all substantially as set forth.

2. The combination, in a lock or clamp, as and for the purposes shown, of the flanged, grooved, and notched plate B *f e j* with the bolt C, half-hooked on the inner side and provided with screw and nut D on the outer side, as set forth.

475,718. FENCE-WIRE. JOHN B. CLEAVELAND, Indianapolis, Ind., assignor to Mary E. Cleaveland, same place. Filed Sept. 22, 1890. Serial No. 365,859. (No model.)
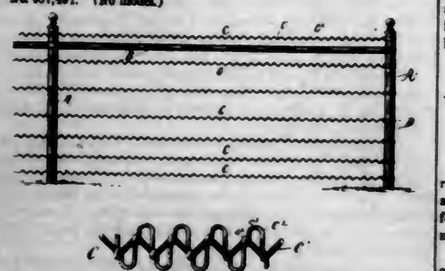


Claim.—1. As a new article of manufacture, an ornamental wire composed of single central wire A, with a single continuous wire B bent around said core to form the spirals *b'*, and the U or other shaped ornamental projections b^3, connecting said spirals and integral therewith, the direction of winding the wire for every alternate one of the said spirals to be from right to left and for the others in the opposite direction, or from left to right, so as to arrange the stems of the projections b^3 all on the same side of the central wire.

2. In a wire fence, the combination, with the fence-posts, of a series of wire strands, each consisting of a wire B, fastened to the posts and bent into a pattern having a series of spirals throughout its length, each of said spirals being wound in an opposite direction from the one immediately preceding it, and a single straight wire A, passing through the spirals in the wire B and forming a core or stiffening to prevent the displacement of the bends in the wire B, substantially as described and specified.

3. As an improved article of manufacture, a single wire forming a central body and transverse U or other shaped projections formed from one or more separate continuous wires wound around the core or body wire in such a manner as to arrange the stems of the projections all on the same side of the central wire.

4. That improvement in the art of making fence-wire which consists in bending or twisting a single separate continuous wire around a single central core-wire to form a fastening coil or spiral *b'* and subsequently bending said wire outward and inward and around said core to form a series of alternate loops or projections and spaces along said core, the said spirals *b'* being bent substantially in the manner as described, whereby the stems of the loops will all be arranged upon the same side of the central wire.

475,719. WIRE FENCE. JOHN B. CLEAVELAND, Indianapolis, Ind., assignor to Mary E. Cleaveland, same place. Filed Oct. 2, 1891. Serial No. 407,491. (No model.)



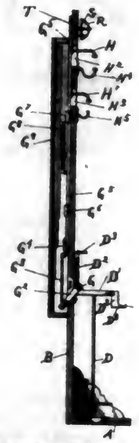
Claim.—1. In a fence, the combination, with the posts, of a series of wires attached thereto, each of said series of wires being constructed from a single horizontal core-wire C, bent as described, with a single continuous wire C^3 bent around said core to form the spirals c^3 and the U or other shaped ornamental projections c^3, connecting said spirals and integral therewith, substantially as described.

2. An ornamental wire composed of a main wire bent into a series of curves or zigzag shapes forming a wave-like pattern, and one or a series of secondary wires wound around it and bent into U-shaped loops between the windings, substantially as described.

3. The combination of the wires C and C^3, bent so as to form a continuous spring, the loops of the wire C^3 engaging the side of the wave-like curvatures of the wire C, so that both act together in resisting and giving when subjected to pressure.

4. The combination of the wires C and C^3, bent so as to form a continuous spring, the loops of the wire C^3 engaging the side of the wave-like curvatures of the wire C, so that both wires act together in retaining the original form and placement when expansion or contraction from any cause takes place, substantially as described.

475,720. LOCKING-RACK FOR UMBRELLAS, COATS, HATS, &c. EDWARD J. COLBY, Chicago, Ill., assignor to the Colby Specialty Supply Company, same place. Filed June 25, 1891. Serial No. 397,442. (No model.)



Claim.—1. The combination of fixed hat and coat hooks with opposed arms or hooks, a slide to which the latter are secured, a spring to normally elevate such slide and separate the hooks, and a lever to move the slide down and lock the hooks together to secure the hat and coat, and an umbrella-securing part operatively connected with such slide.

2. The combination of fixed hat and coat hooks with opposed arms or hooks, a slide to which the latter are secured, a spring to normally elevate such slide and separate the hooks, and a lever to move the slide down and lock the hooks together to secure the hat and coat, and an umbrella-securing part operatively connected with such slide, and a hook to automatically secure the umbrella-catch when the same is turned into position to hold the umbrella.

3. The combination of fixed hat and coat hooks with opposed arms or hooks, a slide to which the latter are secured, a spring to normally elevate such slide and separate the hooks, and a lever to move the slide down and lock the hooks together to secure the hat and coat, and an umbrella-securing part operatively connected with such slide, and a hook to automatically secure the umbrella-catch when the same is turned into position to hold the umbrella, and a releasing mechanism in such lock adapted to be operated by the key.

475,721. MACHINE FOR MAKING PAPER TUBES. JOHN C. CORAN and FRANK D. HUNTOON, Lowell, Mass., assignors, by direct and mesne assignments, to the Amaryteon Paper Tube Company, same place. Filed Sept. 4, 1889. Serial No. 322,944. (No model.)

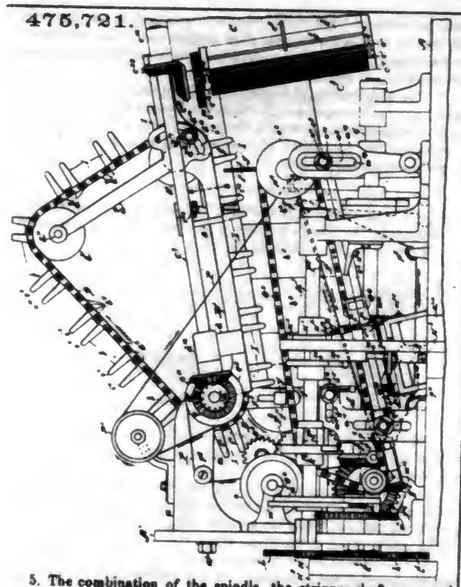
Claim.—1. The combination of the paste-box having a slit and feed-rolls arranged partly within said paste-box opposite said slit and parallel therewith, the feed-chain, and means, substantially as described, for giving to said feed-rolls and feed-chain a simultaneous intermittent motion, as and for the purpose specified.

2. The combination of the spindle, the dividing-shears consisting of a fixed blade and a movable blade, and the bender secured to said movable blade above the same to push the lower edge of a paper blank under said spindle, as and for the purpose specified.

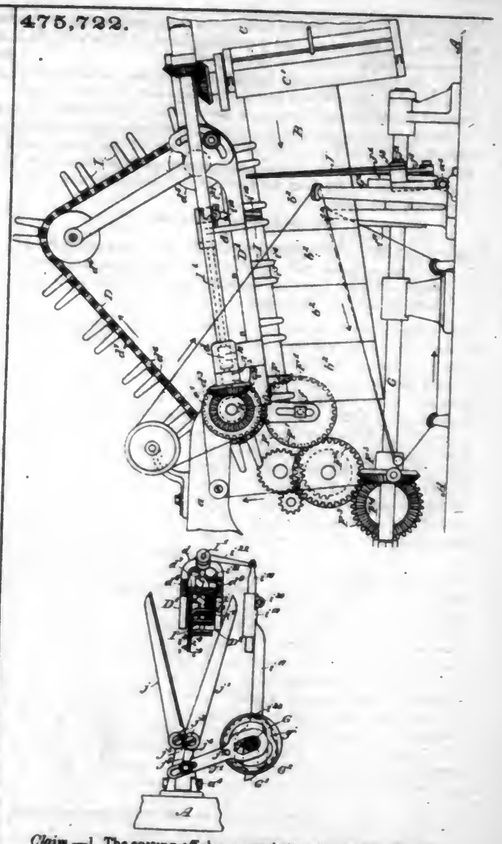
3. The combination of the spindle, the feed-chain and grippers having an intermittent motion, the dividing-shears, the bender movable with said shears and arranged to push the edge of a paper blank under the spindle, and the slicker having a flexible edge, and means, substantially as described, for raising said slicker to raise the lower edge of said blank against said spindle, as and for the purpose specified.

4. The combination of the spindle, the stripper-shaft arranged substantially parallel with said spindle, a sleeve sliding on said shaft, strippers provided with arms pivoted to each other and supported on said sleeve, springs to close said strippers, toggle-levers connecting the arms of said strippers, and means, substantially as described, for bringing said toggle-levers in line with each other to close said strippers on said spindle, as and for the purpose specified.

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5. The combination of the spindle, the stripper-shaft arranged substantially parallel with said spindle, a sleeve sliding on said shaft, strippers provided with arms pivoted to each other and supported on said sleeve, springs to close said strippers, toggle-levers connecting the arms of said strippers, one of said toggle-levers being provided with an arm, the vertically-reciprocating closing-rod having a projection adapted to strike said arm of said toggle-lever and to close said strippers, the frame, an incline on said frame adapted to be struck by said arm of said toggle-lever to open said strippers, and means, substantially as described, for giving to said sleeve a reciprocating motion on said stripper-shaft, as and for the purpose specified.

6. The combination of the spindle provided with a pinion, a gear engaging said pinion, a stop-wheel having a concave face and concentric with said gear and rotating therewith, another pinion concentric with and secured to said gear, a mutilated gear provided with an arc-shaped flange adapted to fit the concave face of said stop-wheel when the latter is at rest, and means for causing a constant rotation of said mutilated gear to give said spindle an intermittent rotary motion to hold said spindle at intervals from rotation, as and for the purpose specified.

7. The combination of the spindle provided with a pinion, a gear having lateral projections and engaging said pinion, another pinion concentric with and secured to said gear, a mutilated gear engaging said last-named pinion at intervals and provided with a laterally-extending pin arranged to strike the projections on said first-named gear and to rotate the same in advance of the engagement of said mutilated gear with said last-named pinion, and means for causing the constant rotation of said mutilated gear to give said spindle an intermittent rotary motion slowly at first and then more rapidly, as and for the purpose specified.

8. The combination of two concentric mutilated gears of different diameters secured to each other, means for giving the same a constant rotation in the same direction, an intermediate gear engaging one of said mutilated gears, a pinion engaging the other of said mutilated gears, said intermediate gear and pinion being in constant engagement with each other, but only one of said mutilated gears being in engagement at the same time, a pulley concentric with said pinion and rotating therewith, the stripper-shaft, a sleeve movable thereon, a stripper on said sleeve, and chains connecting said sleeve to said pulley to give said sleeve and stripper a reciprocating motion on said stripper-shaft, as and for the purpose specified.

9. The combination of the spindle, a gripper, the dividing-shears, a bender arranged to push the edge of a paper blank toward the spindle and the slicker, and means for moving the same to carry said blank against said spindle, as and for the purpose specified.

475,722. PAPER-CUTTING DEVICE. JOHN C. CORAN and FRANK D. HUNTOON, Lowell, Mass., assignors, by direct and mesne assignments, to the Amaryteon Paper Tube Company, same place. Original application filed Sept. 4, 1889, Serial No. 322,944. Divided and this application filed Jan. 31, 1891. Serial No. 379,771. (No model.)

Claim.—1. The cutting-off shears consisting of two pivoted blades, each having a segment of a gear concentric with its pivot and engaging a segment of the other blade, whereby the movement of one blade will cause a movement of the other blade in the opposite direction, as and for the purpose specified.

2. The cutting-off shears consisting of two pivoted blades, each having a segment of a gear concentric with its pivot and engaging a segment of the other blade, whereby the movement of one blade will cause a movement of the other blade in the opposite direction, a rotary shaft, and a cam fast on said shaft and adapted to cause a reciprocating movement of one of said blades upon its pivot, as and for the purpose specified.

3. The cutting-off shears consisting of two pivoted blades, each having a segment of a gear concentric with its pivot and engaging a segment of the other blade, whereby the movement of one blade will cause a movement of the other blade in the opposite direction, a rotary shaft, a cam fast thereon, and a rod pivoted to one of said blades and caused to reciprocate longitudinally by the rotation of said cam, as and for the purpose specified.

4. The cutting-off shears consisting of two pivoted blades, each having a segment of a gear concentric with its pivot and engaging the gear-segment of the other blade, one of said blades being provided with an arm, a rotary shaft, a cam fast thereon, and a rod pivoted to said arm and provided with a slot to receive said shaft to guide said rod, said rod being caused to reciprocate by the rotation of said cam, as and for the purpose specified.

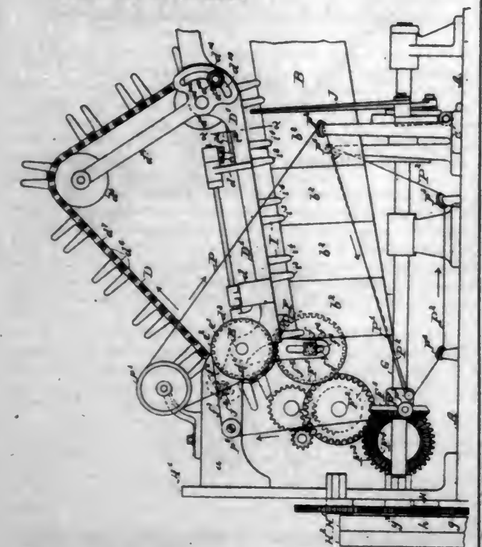
5. The cutting-off shears consisting of two pivoted blades, each having a segment of a gear concentric with its pivot and engaging the gear-segment of the other blade, one of said blades being provided with an arm, a rotary shaft, a cam fast thereon and provided with a cam-groove, and a rod pivoted to said arm and provided with a slot to receive said shaft to guide said rod, said rod being provided with a laterally-projecting pin, which enters said cam-groove and causes said rod to have a longitudinal reciprocating motion when said cam is rotated, as and for the purpose specified.

6. The combination of the intermittently-traveling feed-chain, the grippers carried thereby and adapted to hold a strip of paper by its

upper edge, the cutting-off shears, and means, substantially as described, of closing said shears upon said paper when said feed-chain and grippers are at rest, as and for the purpose specified.

7. The combination of the intermittently-traveling feed-chain, and grippers carried thereby and adapted to hold a strip of paper by its upper edge, the cutting-off shears, and means, substantially as described, of closing said shears upon said paper between two closed grippers, when said grippers are at rest, whereby the end of the paper from which the cut is made is at all times supported and in readiness to be drawn forward by the next movement of the feed-chain, as and for the purpose specified.

475,723. **PAPER-FEEDING DEVICE.** JOHN C. CORAN and FRANK D. HURTOON, Lowell, Mass., assignors, by direct and mesne assignments, to the Amraytoon Paper Tube Company, same place. Filed Jan. 31, 1891. Serial No. 379,773. (No model.)



Claim.—1. The combination of the traveling feed-chain and the grippers secured thereto, said grippers being arranged to open and close in planes at right angles to the path of travel of said chain and adapted to hold a strip of pasted paper by its upper edge and to carry said paper edgewise and to allow said paper to hang by its own weight in a vertical position, as and for the purpose specified.

2. The combination of the traveling gripper, adapted to hold a strip of paper by its upper edge, and guide-cords arranged on opposite sides of said paper and traveling therewith to guide said paper and to hold the same in a vertical position, as and for the purpose specified.

3. The combination of the traveling feed-chain, the grippers secured thereto and adapted to hold a strip of paper by its upper edge, and guide-cords arranged on opposite sides of said paper and traveling therewith to guide said paper and to hold the same in a vertical position, as and for the purpose specified.

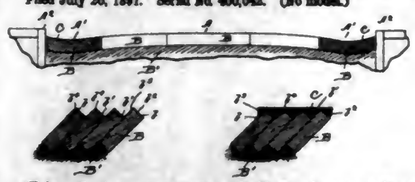
4. The gripper consisting of two plates, each provided with one or more fingers, said plates being hinged to each other, and a spring arranged between said plates to press a finger of one plate against a finger of the other plate, and a latch pivoted to one of said plates and having an incline adapted and arranged to ride over a portion of the other of said plates in one direction to open said gripper and in the other direction to allow said gripper to be closed by the expansion of said spring, as and for the purpose specified.

5. The gripper consisting of two plates, each provided with one or more fingers, one of said plates being hinged to the other, and a spring arranged between said plates to press a finger of one plate against a finger of the other plate, and a latch pivoted to one of said plates and having a notch to engage a projection with which the other of said plates is provided, said latch having also an incline above said notch, adapted and arranged to ride over said projection in one direction to open said gripper and to engage said notch with said projection to hold said gripper open and to be drawn over said projection in the other direction when said notch is disengaged from said projection and the gripper is closed by the action of said spring, as and for the purpose specified.

6. The combination of feeding devices adapted to carry a paper blank by its upper edge, and guide-cords arranged to travel below said feeding devices on opposite sides of said blank and in contact therewith and substantially parallel with each other laterally to hold said blank flat, as and for the purpose specified.

7. The combination of feeding devices adapted to carry a paper blank by one of its edges, and guide-cords arranged to travel on opposite sides of said blank in contact therewith and in a direction which diverges from the path of the edge so held to hold said blank flat, as and for the purpose specified.

475,724. **STREET-PAVEMENT.** GEORGE S. CURTIS, Chicago, Ill., assignor to the Chicago Foundation Pavement Company, same place. Filed July 20, 1891. Serial No. 400,042. (No model.)



Claim.—1. A pavement composed of long, edgewise-inclined, and parallel planks lapping over and resting on one another; substantially as specified.

2. A pavement composed of long, edgewise-inclined, and parallel planks lapping over and resting on one another, in combination with a surfacing material filling the grooves along the upper edges of the planks, substantially as specified.

3. In a pavement, the combination of the roadway composed of edgewise-parallel strips lapping over and resting upon one another, with the drain or gutter consisting of removable sections, each composed of edgewise-parallel strips lapping over and resting upon one another, substantially as set forth.

475,725. **PROCESS OF TEMPERING AND HARDENING METALS.** JOSEPH S. DURNING, Emsworth, Pa. Filed Aug. 13, 1891. Serial No. 402,519. (No specimens.)

Claim.—1. The herein-described process of tempering and hardening metals, consisting in coating the surface of the metals with a mixture composed of flour, prussiate of potash, and a liquid concoction from the laurel-plant, heating said metal, and plunging it when highly heated into liquid, substantially as described.

2. The herein-described process of tempering and hardening metals, consisting in coating the surface of the metal with a mixture composed of flour, prussiate of potash, and a liquid concoction from the laurel-plant, heating the metal, and plunging it when highly heated into such liquid concoction, substantially as described.

3. A composition for tempering and hardening metals, containing a liquid concoction from the laurel-plant, substantially as described.

4. A composition for tempering and hardening metals, containing flour, prussiate of potash, and a liquid concoction from the laurel-plant, substantially as described.

475,726. **ADVERTISING-CARD RACK.** DELAVAN S. FOOTE, Chicago, Ill., assignor of one-half to the Chicago Street Indicator and Advertising Company, same place. Filed Jan. 19, 1892. Serial No. 418,542. (No model.)

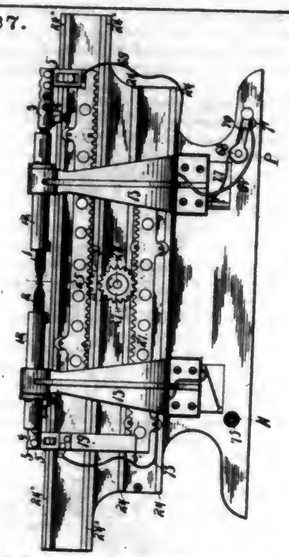


Claim.—An advertising-rack adapted to be secured to the walls of vehicles or rooms and to hold cards, consisting of a plate or sheet of material crimped and curved transversely of its body, and having integral marginal lips or flanges to retain the cards and apertures for the passage of fastenings, substantially as described.

475,727. **ELECTRIC-ARC LAMP.** JAMES R. GASTON, Sparta, Ill., assignor to the Gaston Electric Head Light Company, same place. Filed Sept. 4, 1891. Serial No. 404,729. (No model.)

Claim.—1. In an electric-arc lamp, a carbon-holder having a tubular socket 3, fitted near one end with a housing 6, having a screw-threaded perforation 7, and a set-screw mounted in said perforation, and a broad thin shank 5, located at the opposite end of said socket,

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so as to be held at right angles thereto and in alignment with said housing, whereby both the housing and the shank are adapted to slide within the slot of a slotted carbon-steadying device, substantially as set forth.

2. In an electric head-light fitted with an arc lamp, a reciprocating frame 20, having a rack 21 cut upon the edge thereof, a series of pins 22, projecting from one side of said frame and a series of rollers 23, having in the peripheral face thereof V-shaped grooves, in combination with the frame of the lamp comprising the base-plate 15, and vertical frame-plate 14, arising from said base-plate and having V-shaped guides or tracks 24 formed integral with said vertical plate and extending therein in a horizontal direction and adapted to hold and guide said reciprocating frames, substantially as set forth.

3. In an electric-arc lamp, the combination of a suitably-impelled shaft adapted to control the carbons by its rotation, a clutch-wheel 32, mounted on said shaft and having a flange or rim 33, a spring, a stop-pin, a swinging lever 34, having a biting-slot 35 near its upper end, which slot is adapted to engage said flange on said wheel and lock said wheel in a fixed position when said lever is moved in a given direction, and solenoids or magnets adapted to control the movement of said lever, substantially as set forth.

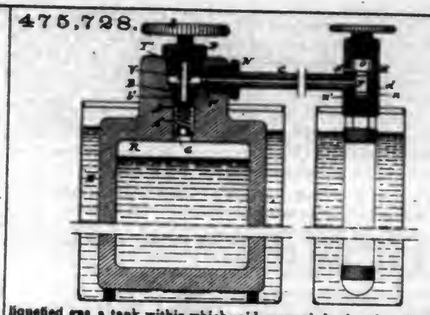
4. In an electric-arc lamp, the combination of a frictional brake mechanism, a clock-work mechanism, and a dogging mechanism for said clock-work mechanism, the same adapted to operate in conjunction with said frictional brake mechanism and comprising a swinging lever having a dog upon its free end adapted to engage the teeth of the gear-wheel forming a portion of said clock-work mechanism, and thereby instantaneously interrupt the feeding movement of the carbons of the lamp, substantially as set forth.

5. In an electric-arc focusing-lamp, the combination of a frame-plate carrying two separate reciprocating frames for carrying the carbons and provided with carbon-holders, all horizontally arranged and parallel to each other, horizontally-arranged carbons, a clock-train provided with a coil-spring motor adapted to operate the reciprocating frames and feed the carbons together, horizontally-arranged main and shunt solenoids with connected armatures which act electrically and automatically on a clutch-lever-wheel device attached to the feed-shaft to arrest or rotate said shaft in a reverse direction to produce the arc and maintain it by regulating the feed of the carbons, a lever with a pawl or a dog device that engages automatically with the teeth of a gear-wheel in the clock-work and interrupts the feeding movement of the lamp, and a differential and a positive or forced feed of carbons automatically controlled by the electric current, substantially as set forth.

475,728. **APPARATUS FOR CHARGING MAGAZINES WITH LIQUEFIED GAS.** PAUL GIFFARD, Paris, France, assignor to the International (Giffard) Gun and Ordnance Company, Limited, London, England. Filed Aug. 2, 1890. Serial No. 360,736. (No model.) Patented in France May 31, 1890, No. 206,020; in Belgium July 3, 1890, No. 91,125, and in England July 3, 1890, No. 10,306.

Claim.—1. The herein-described apparatus for charging magazines for guns with liquefied gas, consisting of a reservoir adapted to contain

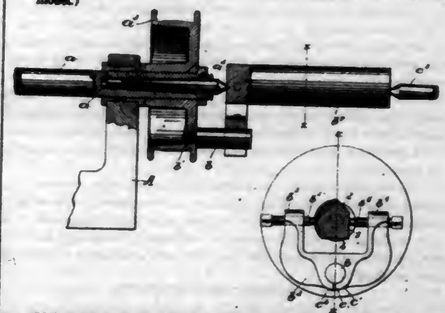
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liquefied gas, a tank within which said reservoir is placed, and a heating medium in said tank around the reservoir, the temperature of which medium is 45° to 50° centigrade, combined with a second tank, a cooling medium in said tank at a temperature of about 15° centigrade, a head over said second tank, a conductor leading from the gas-reservoir to the head over said second tank, a valve between the said head and the gas-reservoir, whereby communication from the gas-reservoir through the conductor may be opened or closed with the magazine to be charged, the head and magazine constructed for removably attaching the magazine to the head, the communication through the conductor and head opening into the magazine so attached, and the arrangement of the head with relation to the said second or cooling tank being such that the magazine is held by the head suspended in said tank, substantially as described.

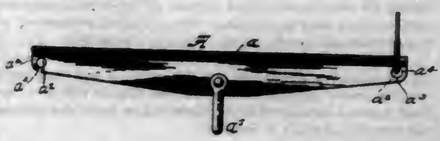
2. The herein-described apparatus for charging magazines with liquefied gas, consisting of a reservoir adapted to contain liquefied gas, and a tank within which the said reservoir is placed, the tank being filled around the reservoir with a heating medium at a temperature of 45° to 50° centigrade, provided with a valve in the reservoir adapted to open and close the passage thereto or therefrom, combined with a second tank adapted to receive the magazine, the said second tank containing a cooling medium surrounding the magazine at a temperature of about 15° centigrade, a head to which the said magazine may be attached with a connection between the said head and the said reservoir above the valve of the reservoir, with a valve in a head above the passage through which communication is made from the reservoir, and an outlet through the head above the valve, substantially as described.

475,729. **WORK-HOLDING DEVICE.** LOUIS GODDU, Winchester, assignor to James W. Brooks, Cambridge, and Frank F. Stanley, Swampscott, Mass., trustees. Filed Nov. 16, 1891. Serial No. 412,075. (No model.)



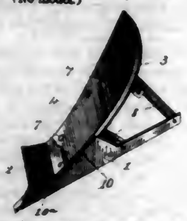
Claim.—A clamp or work-holding device consisting, essentially, of a yoke split to form binding-jaws and having set-screws to engage the work, combined with a stud or projection on which the said jaws are clamped by the movements of the said set-screws, substantially as described.

475,730. **WHIFFLETREE.** ELIAS HAIMAN, Atlanta, Ga., assignor to Sigmund Landauer, same place. Filed Oct. 12, 1891. Serial No. 408,509. (No model.)



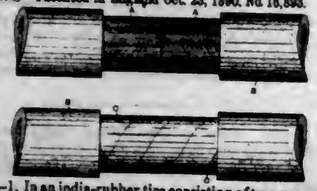
Claim.—As an improved article of manufacture, a whiffletree consisting of a flat metallic strip and the beads formed on each side of its forward edge, the said metallic strip being pierced near its ends immediately back of the said beads and slotted from the perforations backward through the strip, the portions separated by the perforations and slots from the main portion of the strip being curved upwardly at their rear ends, and the hooks carried in the said perforations, substantially as described.

475,731. PLOW. LUTHER C. JACKSON, Wolfe City, and JOHN F. REIGER, Dallas, Tex.; said Reiger assignor to Geo. B. Willcox, and said Jackson and Willcox assignors of five-twelfths to L. R. Wade, A. M. Keller, J. R. Moore, A. F. Bentley, and J. B. Nunneley. Filed June 30, 1891. Serial No. 398,073. (No model.)



Claim.—In a plow, the combination of the share having at its upper edge a flange projecting below and in rear of said upper edge, a metallic supporting-base having a wooden mold-board thereon and resting at its front end upon said flange-seat flush with the upper edge of the share, and the landside provided with an upwardly-extending flange 10, facing the exposed edge of the mold-board, and a shouldered seat in front of said flange to receive the landside edge of the share, substantially as set forth.

475,732. INDIA-RUBBER TIRE. JOSEPH MOSELEY and BENJAMIN BLUNDSTONE, Manchester, England. Filed Dec. 7, 1891. Serial No. 414,297. (No model.) Patented in England Oct. 23, 1890, No. 16,893.



Claim.—1. In an india-rubber tire consisting of two or more layers, a joint constructed by stopping or stripping the outer layer or layers at the ends, serving the contiguous ends with fabric, and surrounding the serving with india-rubber flush with the remainder of the tire, substantially as described.

2. A tire consisting of one or more successive layers of seamless fabric and of india-rubber upon a core or tube of india-rubber, the outer layers being stripped or stopped at the ends, which are joined by a serving of fabric and a surrounding of india-rubber, substantially as described.

3. An india-rubber tire consisting of one or more successive layers of seamless fabric and india-rubber upon a core or tube of india-rubber, the outer layers being stripped or stopped at the ends of the tire, which are joined by successive servings of fabric and india-rubber until the joint is flush with the remainder of the tire, substantially as described.

475,733. FLUE-CLEANER. JOHN P. MCNUTT and HIRAM F. GRIMESEY, Warren, Ohio, assignors of one-third to O. R. Grimmesey, same place. Filed Aug. 31, 1891. Serial No. 404,219. (No model.)

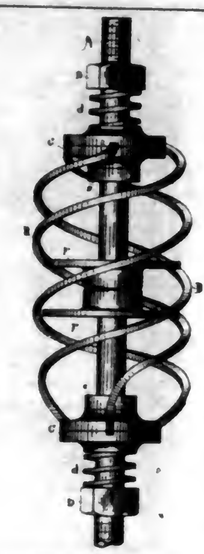


Claim.—1. In a flue-cleaner, a central rod having one or more disks thereon, and spiral wires secured at their ends on said rod on opposite sides of said disks, substantially as described.

2. In a flue-cleaner, the central rod, movable heads on said rod having the cleaning-wires fixed thereon, springs bearing against the outside of said head, and a disk or disks on said rod substantially midway between said heads, as and for the purpose set forth.

3. In a flue-cleaner, a central rod having fixed stops thereon, sliding heads bearing normally against the outside of said stops, and the cleaning-wires secured in said heads, in combination with one or more disks mounted on said rod between said collars and within the cleaning-wires, substantially as described.

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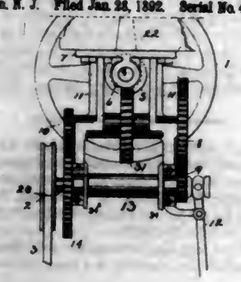


475,734. KNIT NETHER GARMENT. SIMON T. SUTTON, Chicago, Ill. Filed Oct. 17, 1887. Renewed Feb. 6, 1892. Serial No. 420,510. (No specimens.)



Claim.—A nether garment formed of two parts, each consisting of a leg of shaped knitted tubular fabric having continuous therewith a portion of flat knitted fabric forming one half of the body, edge portions of the flat part of each half being united to corresponding edge portions of the other half to form the complete garment.

475,735. SPEED-CHANGING MECHANISM. WILLIAM A. WRIGHT, Centerton, N. J. Filed Jan. 28, 1892. Serial No. 419,548. (No model.)



Claim.—1. The combination, in a speed-changing mechanism, of a longitudinally-movable shaft provided with two pins, two sleeves with projecting ends, a longitudinally-slotted sleeve, and means for moving said shaft longitudinally in either direction, as and for the purpose specified.

2. The combination, in a speed-changing mechanism, of a longitudinally-movable shaft, a sleeve inclosing one end of said shaft and forming a journal therefor, a pinion secured to said sleeve, a sleeve inclosing the opposite end of said shaft and forming a journal therefor, a gear-wheel secured to this sleeve, means for engaging the said shaft to the one sleeve when moved in one direction, and means for engaging the said shaft to the other sleeve when moved in the opposite direction, said gear and pinion remaining stationary as to longitudinal movement independently of the longitudinal movement of the shaft.

3. The combination, in a speed-changing mechanism, of a longitudinally-movable shaft, a sleeve inclosing one end of said shaft and forming a journal therefor, a pinion secured to the outer end of this sleeve, a sleeve inclosing the opposite end of said shaft and forming a journal therefor, a gear-wheel secured to the outer end of this sleeve, a chain-supporting drum or sleeve inclosing the said sleeves, means for operatively connecting the said shaft with the said inclosing drum or sleeve, means for engaging the said shaft with the said pinion-supporting sleeve when moved in one direction, and means for engaging the said shaft with the gear-wheel-supporting sleeve when shifted in the opposite direction, substantially as set forth.

475,736. UMBRELLA-LOCK. DANIEL M. WYATT, Covington, Ohio, assignor of one-half to Elijah W. Hill, same place. Filed Sept. 30, 1891. Serial No. 407,332. (No model.)



Claim.—1. An umbrella-lock consisting of a detent for securing the runner, a locking-pawl adapted to engage said detent, a lever engaging said pawl to cause it to engage the detent, and means for disengaging said locking-pawl from the detent, substantially as described.

2. An umbrella-lock consisting of a detent for securing the runner, a locking-pawl for locking the detent in its outer position, a pivoted lever to close the locking-pawl to engage the detent, and a key adapted to engage the locking-pawl to disengage it from the detent, substantially as described.

3. An umbrella-lock consisting of a detent for securing the runner, a locking-pawl adapted to engage said detent and lock it in its outer position, and means for engaging and disengaging the said pawl from the detent, in combination with a casing to contain said mechanism and adapted to be secured in a recess in the umbrella-stick, substantially as described.

4. An umbrella-lock consisting of a detent, a locking-pawl provided with a recess to receive a projection on the detent, and a pivoted lever to cause the locking-pawl to engage the detent, in combination with a key for disengaging the locking-pawl from the detent, substantially as described.

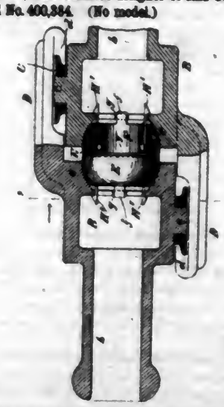
5. An umbrella-lock consisting of a detent, a right-angled locking-pawl, one arm of said pawl adapted to engage the detent, a pivoted lever adapted to engage the other arm of said pawl, and a key-guide arranged across the face of one arm of the locking-pawl, in combination with a key adapted to engage the said key-guide and one arm of the locking-pawl to release the detent, substantially as described, and for the purpose set forth.

6. In combination with an umbrella stick and runner, a lock secured to said stick and consisting of a suitable casing, a spring-actuated detent, a right-angled locking-pawl pivoted at its angle, one of its arms provided with a recess to receive a projection on the detent, a right-angled lever pivoted at its angle, one of its arms projecting to the inner side of one arm of the locking-pawl, its other arm projecting through a slot in the face-plate of the casing and slightly beyond the outer surface of the umbrella-stick, a key-guide arranged across the surface of one arm of the locking-pawl, and a key to engage said key-guide and adapted to bear on the outer edge of the locking-pawl, substantially as described.

475,737. CHEMICAL COMPOUND FOR TREATING TOBACCO. GEORGE R. YINGLING, Tiffin, Ohio, assignor of one-half to J. K. Philtzgraff & Co., York, Pa. Filed Nov. 23, 1891. Serial No. 412,845. (No model.)

Claim.—A compound to be applied to smoking-tobacco, consisting of the following ingredients: gallic acid, tannic acid, extract of geranium, and extract of licorice in about the proportions set forth, whereby the alkaloid of the tobacco and the ammonia produced in burning the same are neutralized and the deleterious effects of the tobacco lessened, substantially as specified.

475,738. HOSE-COUPLING. JOHN BALMORE and EDWARD R. GOLD, New York, N. Y.; said Balmore assignor to said Gold. Filed July 23, 1891. Serial No. 400,344. (No model.)



Claim.—1. In a pipe-coupling, the combination of a coupling head or section having a hemispherical socket, a seat consisting of a segment of a sphere fitting in said socket, and a fastening engaging the seat and head to hold the seat in place in said socket and pivotally connected to the seat to permit of a rocking movement of the latter.

2. In a pipe-coupling, the combination of a coupling head or section having a semi-spherical socket, a seat consisting of a segment of a sphere fitting in said socket, and a spring-fastening engaging said seat, formed to make elastic engagement with the interior of said head, whereby to hold the seat in place in said socket and adapted to yield sufficiently to enable it to be withdrawn to remove the seat.

3. In a pipe-coupling, the combination of a coupling-head B, having socket *e* and grooves *i i*, rocking seat E and fastener H, consisting of pivotal ends engaging said seat, and outwardly-springing portions *h h*, engaging said grooves.

4. In a pipe-coupling, the combination of a coupling-head B, having a socket *e*, rocking seat E and fastener H, consisting of pivotal ends engaging said seat, outward loops *h h*, engaging the interior of the head, and intervening loop *j* for facilitating the pulling out of the fastener.

5. In a pipe-coupling, the combination of a coupling head or section having a semi-spherical socket and stops *g g*, with a seat consisting of a segment of a sphere fitting in said socket, and stop projections *f f*, engaging said stops to limit the movement of the seat.

6. In a pipe-coupling, the combination of a coupling head or section having a hemispherical socket, and notches *g g* back of said socket, with a seat consisting of a segment of a sphere fitting in said socket, and having projections *f f*, entering said notches, whereby the rotative displacement of the seat is prevented.

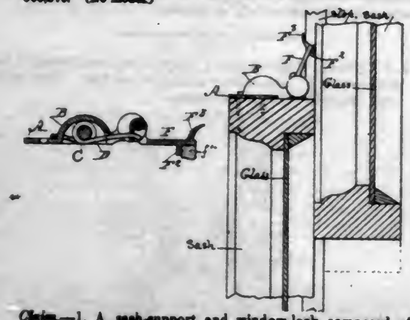
7. In a pipe-coupling, the combination of a coupling-head having a direct longitudinal passage through it terminating in a seat at its end, a locking-arm on one side projecting beyond the plane of the seat, and a locking projection on the other side, said locking-arm having a wedging-face *d*, formed in an eccentric curve extending to the middle line of the coupler at *d'* and continued beyond said line in a

curve of smaller radius to form an inclined step for limiting the extent of angular engagement of the respective coupling-heads.

8. In a pipe-coupling, the coupling-head having a hemispherical socket, in combination with a self-adjusting seat, consisting of a ring of yielding material formed externally as a segment of a sphere, having a central opening, a longitudinal passage therethrough, and a flat outer seating-face around said central opening, and a thimble or sleeve of rigid material within said ring, lining said longitudinal passage and preventing the inward expansion of said ring by pressure applied to said seating-face, substantially as set forth.

9. A seat for a pipe-coupling, consisting of a ring of yielding material formed externally as a segment of a sphere, having a central opening, a longitudinal passage therethrough, a flat seating-face around said central opening, and a thimble or sleeve of rigid material within said ring, lining said longitudinal passage and preventing the inward expansion of said ring, substantially as set forth.

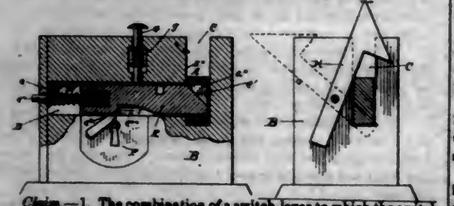
475,739. FASTENER FOR THE MEETING-RAILS OF SASHES. MILTON L. DUDLEY, Des Moines, Iowa. Filed Oct. 25, 1890. Serial No. 369,379. (No model.)



Claim.—1. A sash-support and window-lock composed of the plate A, adapted to be fastened on the flat top surface and end portion of the lower sash of a window, a spring-actuated plate F, hinged to the plate A and provided with integral lugs F^3 and F^4, an elastic cushion fixed to the lug F^3 and adapted to engage the face of the upper sash at different points of elevation in the manner set forth, for the purposes stated.

2. A sash-support and window-lock consisting of a flat-bottomed plate adapted to be fixed on the top of a vertically-movable sash and a spring-actuated plate hinged to the said flat-bottomed plate and provided with a finger hold adapted for manipulating the hinged plate relative to another movable sash and also provided with a cushion adapted to engage the vertical face of a sash, in combination with two vertically-sliding sashes in a window, to operate in the manner set forth, for the purposes stated.

475,740. AUTOMATIC SWITCH-LOCK. SAMUEL GROVE, Coalport, Pa. Filed Nov. 26, 1891. Serial No. 413,395. (No model.)



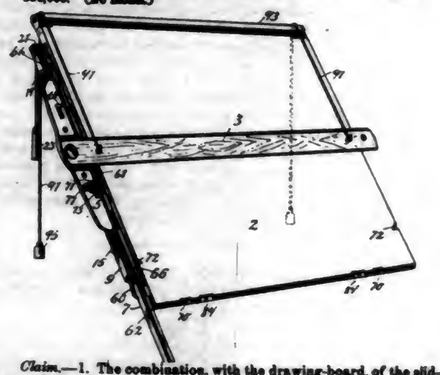
Claim.—1. The combination of a switch-lever to which the switch-rod is attached with a locking-stand having a vertical slot open at the top to receive said lever, a transverse slot or channel meeting said vertical slot, and a lock beneath said transverse slot, and a spring-actuated locking-bolt working in said transverse slot and provided with a notch or shoulder to be operated upon for withdrawing said bolt by a key inserted in the lock of said stand, as set forth.

2. The combination, with a switch-lever to which the switch-rod is attached, of a switch-stand having a vertical slot open at the top for receiving said lever, an automatic bolt for engaging said lever, and a check-bolt for holding said automatic bolt out of action when desired, as set forth.

3. A switch-stand having a vertical open slot and a transverse opening provided with a spring-actuated bolt having a rear guide and a key-recess, as described, in combination with a pivoted swinging switch-lever, as set forth.

4. In a device of the kind described, the combination of a switch-stand having a slot open at the top, an automatical locking-bolt projecting into said slot, and a safety-hook pivoted to the face of said stand, and a foot-block having a vertical open slot and provided with a safety-hook pivoted to the face of said foot-block, with a switch-lever to which the switch-rod is attached, pivoted between said stand and foot-block, and adapted to rest in the open slot of either of said parts, as set forth.

475,741. T-SQUARE AND DRAWING-BOARD ATTACHMENT. ARTHUR T. PAGE, Minneapolis, Minn. Filed July 8, 1890. Serial No. 358,093. (No model.)



Claim.—1. The combination, with the drawing-board, of the sliding guide-bar 7, adapted to be drawn out beyond either edge of the board, and a support for said bar extending across the end of the board, all substantially as described, and for the purpose set forth.

2. The combination, with the drawing-board, of the grooved plate 9, secured thereto, the sliding guide-bar arranged in said groove, and the set-screws adapted to secure said bar in said grooved plate, substantially as described, and for the purpose set forth.

3. The combination, with the drawing-board, of the guide-bar 7, the grooved plate 9, in which said bar slides, the cord 19, attached to said bar and passing over the rolls 15, and the weight 23 on said cord, substantially as described.

4. The combination, with the board and the T-square having the swivel-blade, of the sliding bar 7, adapted to be drawn out beyond either edge of the board.

5. The combination of the T-square head, with the blade, the sleeve passing through said head and blade, the pivot-screw, and the screw 49, passing through the flange of the sleeve into the head of the square, with a portion of its head fitting into a notch in the head of the pivot-screw, all substantially as described.

6. The combination, with the head and blade, of the friction-washer arranged between said head and blade, the sleeve 41, washer 43, screw 45, and nut 47, all substantially as described.

7. The combination, in a T-square, of the head, the blade swiveled thereto, and a friction-washer upon the swivel-screw between said head and blade, all substantially as described.

8. The combination, with the board and the sliding guide-bar 7, of the T-square, the slide 71, secured to said head and having the lip adapted to engage said bar, and the clamping-screw 75, for the purpose set forth.

9. The combination, with the T-square, of the sliding clamp 71, having the downwardly-projecting lip, the strap securing said clamp to the head of the square, and the set-screw 75, all substantially as described.

10. The combination, in a T-square, of a brace-rod pivoted to its blade, a swiveled block or post on the head, through which said rod passes, and a clamp for securing said rod to said post, substantially as described.

11. In a T-square, a head having a series of parallel lines at right angles to its straight edge and extending substantially across the head, as described, and for the purpose set forth.

12. In a T-square, the combination of a head, a reversible blade having a swivel-hole in each end, and a round swivel securing said blade to said end, whereby the blade may be reversed and either end pivoted to the head.

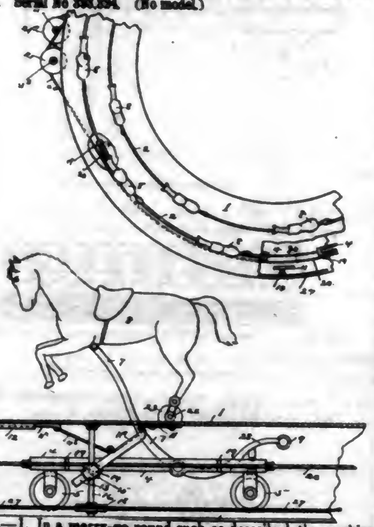
13. In a T-square, the combination of a head, a reversible blade having a bar 33 secured to its upper surface and having a round swivel-hole in each end, for the purpose set forth.

14. The combination, with the board having roll 23 extending along its edge, of the T-square blade, the tapes attached to the ends of said blade and passing over said rolls, and the weights on said tapes, for the purpose set forth.

15. The combination, with the drawing-board, of the buttons pivoted upon the lower edge of said board, as and for the purpose set forth.

16. The combination, with the guide-bar, of the plate 9, provided with the inclined keyhole-slots 11, adapted to engage the screws on the bottom of the board, substantially as described.

475,742. MERRY-GO-ROUND. ARTHUR PALMER, Pittsburg, Pa., assignor of two-thirds to Alwin Hamold, same place. Filed May 19, 1891. Serial No. 393,234. (No model.)



Claim.—1. In a merry-go-round such as described, the combination consisting of the truck 4 and a means for carrying the same about a circle, an upwardly-projecting lever 7, pivoted therein, a model of a horse connected thereto, the rear extension of the said lever and a roller mounted therein, and a series of adjustable inclined surfaces arranged in the path of the same, whereby the said horse in moving about the circle will be given a rocking or galloping motion, as described.

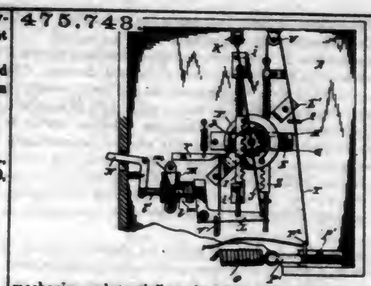
2. In a merry-go-round, the combination consisting of a series of trucks coupled together, an endless rope for operating the same, a model of a horse mounted on the said trucks, a series of inclined surfaces arranged about the apparatus to give the horses a rocking or galloping motion, and a device whereby the inclination of the same may be changed, and a roller attached to the hind legs of the horse, adapted to follow a slot formed in the apparatus and to prevent any side motion of the same, substantially as and for the purpose set forth.

3. In a merry-go-round, the combination, with the truck and a means for carrying the same about a circle, of a model of an animal, a bent lever pivotally attached between its ends to the truck at one end to said model and at its opposite end supporting a roller, and a series of inclined surfaces arranged in the path of said roller and adapted to be engaged thereby to give the horse a rocking or galloping motion.

4. In a merry-go-round, the combination, with the moving pivotally-supported model, of the sliding plate 11^a, inclined plate 11^b, pivotally secured at its upper end to said plate 11^a, an oppositely-inclined plate 11^c, to the lower end of which the lower end of said plate 11^b is pivoted, a rigid plate 11, to which the upper end of said plate 11^c is pivoted, an extension 13 from one of said inclined plates, a swivel-plate 14, through which said extension passes, a block 15, formed with a screw-thread, a threaded shaft 16, engaging the same, means for operating said shaft, and a device connected with said model and adapted to engage said inclined plates, substantially as described, and for the purpose specified.

475,748. COIN-CONTROLLED APPARATUS. GUSTAV F. W. SCHULTZE, San Francisco, Cal. Filed Nov. 9, 1891. Serial No. 411,337. (No model.)

Claim.—1. The combination of a design-bearing disk, a shaft therefor, a pawl-carrying wheel adapted to rotate the same, a ratchet-wheel and pinion connected with said pawl-carrying wheel, but backwardly movable independently of said shaft, a spring-controlled rack engaging said pinion, a string fastened to said rack, and a coin-actuated mechanism, substantially as described, to first pull said string and afterward release the same, substantially as set forth.



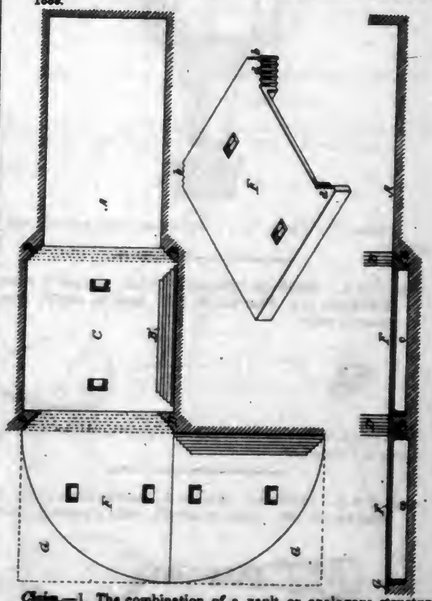
2. The combination of a spring, levers adapted to pull on each end thereof, a registering-dial, an index movable over the face of said dial, an index-shaft, a string fastened to one of said levers and loosely connected with the other, and intermediate connections enabling said string to move said index, substantially as set forth.

3. The combination of a spring, levers acting thereupon, a registering-dial, a hand movable over said dial, a shaft-supported sleeve to move said hand, a pinion on said sleeve, a normally-depressed rack engaged with said pinion, a ratchet-wheel moved by said rack and pinion, and a catch engaged with said ratchet-wheel and adapted to keep up said rack when once raised and permanently register the tension of said spring upon said dial, substantially as set forth.

4. The combination of a spring, levers acting thereupon, a registering-dial, a hand movable over said dial, a shaft-supported sleeve to move said hand, a pinion on said sleeve, a spring-controlled rack engaged with said pinion, a ratchet-wheel moved by said rack, together with said pinion, a catch engaging said ratchet-wheel to keep said rack raised and the spring thereof compressed, a hook depending from said catch, and a coin-actuated mechanism adapted to release said rack by pulling on said hook, substantially as set forth.

REISSUES.

11,240. SAFETY-VAULT. GEORGE S. CLARK, Philadelphia, Pa. Filed Feb. 4, 1892. Serial No. 420,847. Original No. 417,904, dated Dec. 24, 1889.



Claim.—1. The combination of a vault or analogous structure having a floor level with the floor of the apartment with which it communicates, a raised sill or obstruction between the vault-door and the floor of the apartment, and a depression beyond said sill, with a mov-

able floor or filling-piece covering said depression and fitting to said sill or obstruction, substantially as specified.

2. The combination of a vault or analogous structure having a raised sill or obstruction and a sunken door-pit beyond the same, with a movable floor or filling-piece covering said pit and fitting snugly to the sill or obstruction and to the open door, substantially as specified.

3. The combination of a vault or analogous structure having its floor level with the floor of the apartment with which it communicates, inner and outer doorways with raised sills or obstructions, and one or more intervening vestibules, with a movable floor or filling-piece extending from the inner to the outer sill or obstruction, whereby the floor of the vestibule is flush with that of the vault, substantially as specified.

4. The combination of a vault or analogous structure having its floor level with the floor of the apartment with which it communicates, inner and outer doorways with raised sills or obstructions, one or more intervening vestibules, and a door-pit beyond the outer sill or obstruction, with movable floors or filling-pieces applied to said door-pit and vestibule or vestibules and forming a flush passage-way into and out of the vault, substantially as specified.

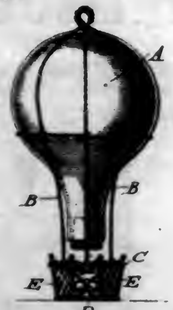
11,241. ZINC-FOIL AND METHOD OF MANUFACTURING THE SAME. ALBERT SICHEL, New York, N. Y. Filed Apr. 30, 1892. Serial No. 431,804. Original No. 473,790, dated Apr. 26, 1892.

Claim.—1. As a new article of manufacture, zinc-foil thin, flexible, and pliable enough to be used as a wrapper, substantially as hereinbefore set forth.

2. The method of manufacturing zinc-foil, consisting in placing sheet-zinc in packs and subjecting the packs to successive cross-rollings and cross-foldings in the manner hereinbefore set forth.

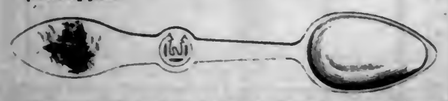
DESIGNS.

21,553. BOTTLE. GEORGE W. BEAN, Philadelphia, Pa., assignor to Bean & Vail Bros., same place. Filed Apr. 18, 1892. Serial No. 429,673. Term of patent 3½ years.



Claim.—The design for a bottle, substantially as shown and described.

21,554. SPOON OR SIMILAR ARTICLE. EDWARD T. PENWICK, Washington, D. C. Filed Mar. 26, 1892. Serial No. 426,690. Term of patent 3½ years.



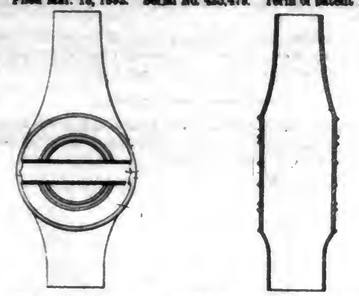
Claim.—The design for a spoon or similar article, substantially as shown and described.

21,555. SPOON, &c. WILLIAM A. JAMESON, Niagara Falls, N. Y. Filed Apr. 27, 1892. Serial No. 430,916. Term of patent 3½ years.



Claim.—The design for the handle of a spoon or fork, herein shown and described.

21,556. LAMP-CHIMNEY. JAMES H. LA MEAT, East Troy, Pa. Filed Mar. 18, 1892. Serial No. 425,479. Term of patent 14 years.



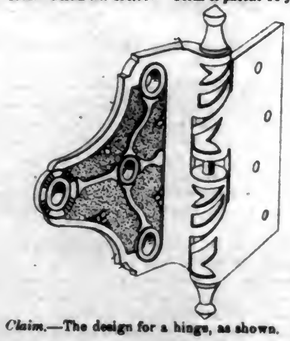
Claim.—The design for a lamp-chimney, as herein described and shown.

21,557. WATCH-CHAIN. AUGUST RICKERT, Newark, N. J. Filed Apr. 26, 1892. Serial No. 430,635. Term of patent 7 years.



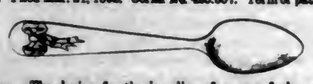
Claim.—The design for a watch-chain or similar article, herein shown and described.

21,558. HINGE. SIDNEY L. STILES, Watseka, Ill. Filed Apr. 26, 1892. Serial No. 430,781. Term of patent 14 years.



Claim.—The design for a hinge, as shown.

21,559. SPOON, &c. FRANK M. WHITING, North Attleborough, Mass. Filed Mar. 21, 1892. Serial No. 425,857. Term of patent 3½ years.



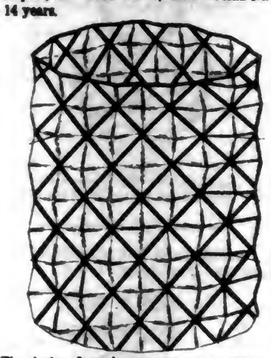
Claim.—The design for the handles of spoons, forks, and the like, herein shown and described.

21,560. SPOON OR SIMILAR ARTICLE. GILBERT L. CROWELL, Jr., Arlington, N. J., assignor to Damon Greenleaf and Joseph Hayden Crosby, Jr., both of Jacksonville, Fla. Filed Apr. 13, 1892. Serial No. 429,070. Term of patent 7 years.



Claim.—The design for handles of spoons or similar articles, substantially as herein shown and described.

21,561. HEATER, WATER, OR STEAM PIPE. WILLIAM WILKINSON, Philadelphia, Pa. Filed Feb. 8, 1892. Serial No. 420,788. Term of patent 14 years.



Claim.—The design for a heater, water, or steam pipe, substantially as herein shown and described.

21,562. RUFFLING AND RUCHING. JOHN WIGHTMAN, Nottingham, England. Filed Apr. 20, 1892. Serial No. 429,966. Term of patent 3½ years.



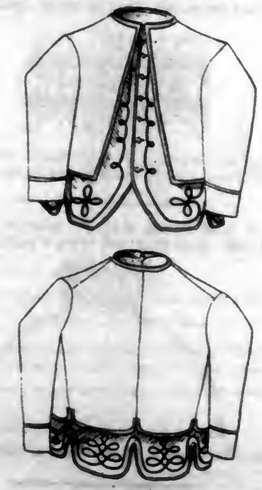
Claim.—The design for ruffling and ruching, as herein shown and described.

21,563. RUFFLING AND RUCHING. JOHN WIGHTMAN, Nottingham, England. Filed Apr. 20, 1892. Serial No. 429,967. Term of patent 3½ years.



Claim.—The design for ruffling and ruching, as herein shown and described.

21,564. GARMENT. EDEN YOUNG, New York, N. Y. Filed Mar. 31, 1892. Serial No. 427,281. Term of patent 3½ years.



Claim.—The design for a jacket and vest, herein shown and described.

21,565. SPOON OR SIMILAR ARTICLE. EDWARD T. PENWICK, Washington, D. C. Filed Apr. 20, 1892. Serial No. 431,221. Term of patent 3½ years.



Claim.—The design for a spoon or similar article, substantially as shown and described.

21,566. SPOON, &c. GEORGE P. TILTON, Newburyport, Mass., assignor to the Towle Manufacturing Company, same place. Filed Apr. 16, 1892. Serial No. 429,452. Term of patent 7 years.



Claim.—1. The design for the handles of spoons and similar articles, as herein shown and described.

2. In a design for the handles of spoons, &c., the obverse thereof, as shown and described.

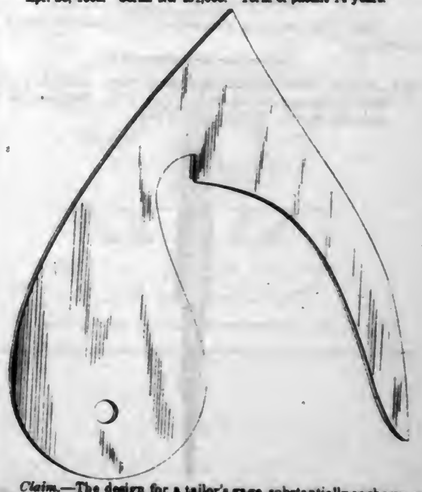
3. In a design for the handles of spoons, &c., the reverse thereof, as shown and described.

21,567. BUCKET-EAR. LEANDER D. BERGER, Philadelphia, Pa. Filed Apr. 8, 1892. Serial No. 428,391. Term of patent 14 years.



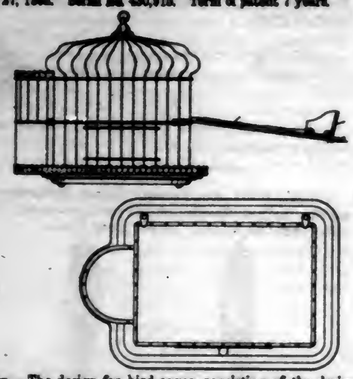
Claim.—The design for a bucket-ear, as shown and described.

21,568. TAILOR'S GAGE. IGNATIUS GERACI, Baltimore, Md. Filed Apr. 28, 1892. Serial No. 431,063. Term of patent 14 years.



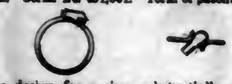
Claim.—The design for a tailor's gage, substantially as shown and described.

21,569. BIRD-CAGE. JOHN H. ANDREWS, New York, N. Y. Filed Apr. 27, 1892. Serial No. 430,915. Term of patent 7 years.



Claim.—The design for bird-cages, consisting of the design substantially as shown.

21,570. FINGER-RING. PAUL VERPILLIER, Newark, N. J. Filed Apr. 28, 1892. Serial No. 431,061. Term of patent 3½ years.



Claim.—The design for a ring, substantially as shown and described.

21,571. MONUMENT. WILLIAM H. PERRY, Concord, N. H. Filed Apr. 28, 1892. Serial No. 431,062. Term of patent 3½ years.



Claim.—The design for a monument, substantially as shown and described.

21,572. PENCIL-CASE. CHARLES S. PEERS, Brooklyn, N. Y., assignor to Edward Todd & Co., New York, N. Y. Filed Apr. 28, 1892. Serial No. 430,653. Term of patent 7 years.



Claim.—The design for a pencil-case, as herein shown and described.

21,573. BADGE. WILLIAM K. KEBER, New York, N. Y. Filed Jan. 7, 1892. Serial No. 417,312. Term of patent 7 years.



Claim.—The design for a badge, as herein shown and described.

21,574. BADGE. DAVID HERR, Philadelphia, Pa. Filed Apr. 26, 1892. Serial No. 430,772. Term of patent 7 years.



Claim.—The design for a badge, having the essential features described and shown in the accompanying drawing.

21,575. DRESS-TRIMMING. BENJAMIN LIPPER, Philadelphia, Pa., assignor to himself, Augustus A. Lazarus, and Isaac A. Schwarz, same place. Filed Apr. 30, 1892. Serial No. 431,361. Term of patent 3½ years.



Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawing.

21,576. DRESS-TRIMMING. BENJAMIN LIPPER, Philadelphia, Pa., assignor to himself, Augustus A. Lazarus, and Isaac A. Schwarz, same place. Filed Apr. 30, 1892. Serial No. 431,360. Term of patent 3½ years.



Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawings.

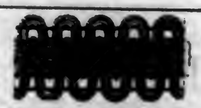
21,577. LAMP-SHADE. WILLIAM S. MCLEWEE, Trenton, N. J. Filed Apr. 30, 1892. Serial No. 431,358. Term of patent 7 years.



Claim.—The design for a lamp-shade, as herein shown and described.

21,578. DRESS-TRIMMING. ISAAC A. SCHWARZ, Philadelphia, Pa., assignor to himself, Augustus A. Lazarus, and Benjamin Lipper, same place. Filed Apr. 30, 1892. Serial No. 431,363. Term of patent 3½ years.

21,178.



Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawing.

21,579. CORNICE. AUGUST CARLEWITZ, Newark, N. J. Filed Feb. 4, 1892. Serial No. 420,365. Term of patent 7 years.



Claim.—The design for a cornice, substantially as shown and described.

21,580. CORNICE. AUGUST CARLEWITZ, Newark, N. J. Filed Apr. 2, 1892. Serial No. 427,568. Term of patent 7 years.



Claim.—The design for a cornice, herein shown and described.

21,581. LAMP-SHADE. WILLIAM S. MCLEWEE, Trenton, N. J. Filed Apr. 30, 1892. Serial No. 431,357. Term of patent 7 years.

21,181.



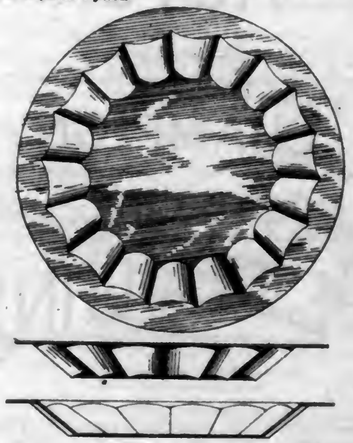
Claim.—The design for a lamp-shade, as herein shown and described.

21,582. BURIAL-CASKET. LEVI K. SHERMAN, New York, N. Y., assignor to the Taylor Company, same place. Filed Apr. 7, 1892. Serial No. 428,234. Term of patent 3½ years.



Claim.—The design for a casket, substantially as herein shown and described.

21,583. DISH. CHARLES H. TREAT, Georgetown, Del., and ANDREW B. BARNHART, Baltimore, Md. Filed Mar. 31, 1892. Serial No. 427,301. Term of patent 7 years.



Claim.—The design for a dish, as herein shown and described.

TRADE-MARKS

REGISTERED MAY 24, 1892.

21,162. WHISKY. BOLDRICK, CALLAGHAN COMPANY, Lebanon and Calvary, Ky. Filed Apr. 27, 1892.

CALLAGHAN



Essential feature.—The word "CALLAGHAN" and the representatioe of a hand. Used since 1880.

21,163. WHISKY. BOLDRICK, CALLAGHAN COMPANY, Lebanon and Calvary, Ky. Filed Apr. 27, 1892.

BELLE of MARION

Essential feature.—The words "BELLE OF MARION." Used since 1881.

21,164. COFFEE-POLISHERS. MARCUS MASON & Co., New York, N. Y. Filed Apr. 25, 1892.

VICTOR

Essential feature.—The word "VICTOR." Used since 1877.

21,165. COFFEE-HULLERS. MARCUS MASON & Co., New York, N. Y. Filed Apr. 25, 1892.

CHAMPION

Essential feature.—The word "CHAMPION." Used since 1877.

21,166. ROLLED WHEAT. PETTIJOHN CALIFORNIA BREAKFAST FOOD COMPANY, Minneapolis, Minn. Filed Apr. 25, 1892.

PETTIJOHN'S

Essential feature.—The word "PETTIJOHN'S." Used since October 28, 1890.

21,167. RYE WHISKY. JAMES SIMMS & Co., Philadelphia, Pa. Filed Apr. 25, 1892.

COLUMBIAN

Essential feature.—The word "COLUMBIAN." Used since April 21, 1892.

21,168. CYPRESS SHINGLES. AUGUIN, BREAUX & RENOUDET, New Iberia, La. Filed Apr. 18, 1892.

PELICAN

Essential feature.—The word "PELICAN." Used since January 1, 1884.

21,169. WATCHES AND PORTABLE CLOCKS. WEBSTER C. BALL, Cleveland, Ohio. Filed Apr. 11, 1892.

Railway Queen

Essential feature.—The words "RAILWAY QUEEN." Used since April 2, 1892.

21,170. GENEVA, CORDIALS, BRANDIES, GINS, AND WHISKIES. BLANKENHEYM & NOLET, Rotterdam, Netherlands. Filed Apr. 18, 1892.



Essential feature.—The representation of a key. Used since 1790.

21,171. LEATHER SHOE-LACES. PHILIP GOLDSTEIN, Newark, N. J. Filed Apr. 19, 1892.



Essential feature.—The representation of a porpoise. Used since September, 1891.

21,172. PREPARATION OF CORN FOR CULINARY PURPOSES. EDWARD C. NAPHEYS, Philadelphia, Pa. Filed Apr. 18, 1892.

CORNLENE.

Essential feature.—The word "CORNLENE." Used since March 21, 1892.

21,173. MEDICATED PLASTERS. RAYMOND & Co., Brooklyn, N. Y. Filed Apr. 16, 1892.



Essential feature.—The representation of two youths, one having in his hand a spoon and bottle and the other having a plaster upon his breast, the youths having different expressions upon their countenances. Used since March 1, 1889.

21,174. CANNED VEGETABLES AND FRUITS. STRASSHEIM & JAEGER, Chicago, Ill. Filed Apr. 18, 1892.

CHAMPION AMERICAN



Essential feature.—The words "CHAMPION AMERICAN" and the representation of two female heads. Used since August, 1890.

21,175. FLOUR, CEREALS, AND FARINACEOUS GOODS IN BARRELS, KEGS, AND SACKS. STRASSHEIM & JAEGER, Chicago, Ill. Filed Apr. 18, 1892.

CHAMPION AMERICAN



Essential feature.—The words "CHAMPION AMERICAN" and the representation of two female heads. Used since January, 1891.

21,176. REMEDY FOR RHEUMATISM. THE ESTATE OF WILLIAM P. DOLLOFF, New York, N. Y. Filed Apr. 7, 1890.

WONDERFUL

W R W

WINTERGREEN

Essential feature.—The representation of a diamond-shaped panel and the words "WONDERFUL" and "WINTERGREEN" arranged above and below it. Used since January 1, 1889.

21,177. WOMEN'S, MISSES', AND CHILDREN'S LACE AND BUTTON SHOES. GEO. F. DANIELS & Co., Boston, Mass. Filed Apr. 28, 1892.

THE LITTLE SPARTAN

Essential feature.—The words "THE LITTLE SPARTAN." Used since February 1, 1892.

21,178. WHEAT-FLOUR. FRANCIS H. LEGGETT & Co., New York, N. Y. Filed Apr. 28, 1892.

PRIDE OF BERMUDA

Essential feature.—The words "PRIDE OF BERMUDA." Used since November 15, 1891.

21,179. WRITING-PENS. ISAAC MACOWSKY, New York, N. Y. Filed Apr. 28, 1892.

ZINICKEL

Essential feature.—The word "ZINICKEL." Used since April 23, 1892.

21,180. NATURAL MINERAL WATER. J. H. PETERSON, & Co., Albion, N. Y. Filed Apr. 20, 1892.

MINERAL KING

Essential feature.—The words "MINERAL KING." Used since January 1, 1892.

21,181. PREPARATION FOR HEALING WOUNDS, CHAPS, OR OTHER EXCORIATIONS BY EXTERNAL APPLICATION. CHARLES RYAN, Springfield, Ill. Filed Feb. 23, 1892.

Sozoline

Essential feature.—The word "SOZOLINE." Used since January 1, 1883.

21,182. STEEL IN BARS, RODS, AND SHEETS FOR TOOLS, DIES, AND OTHER PURPOSES. FRANCIS HOBSON, SEAMAN & Co., Sheffield, England. Filed Apr. 26, 1892.



COMPETITION

Essential feature.—The representation of two pugilists and the word "COMPETITION." Used since December 11, 1891.

21,183. REMEDIES FOR ALCOHOLISM, MORPHINE, OPIUM, AND TOBACCO HABIT, CONSUMPTION, AND FOR DISEASES OF THE THROAT AND LUNGS. THE HUMANITAS COMPANY, Lakewood, N. Y. Filed Apr. 16, 1892.

Humanitas

Essential feature.—The word "HUMANITAS." Used since November 23, 1891.

21,184. HAIR-PINS. S. BEAUMONT & Co., Roubaix, France. Filed Apr. 29, 1892.

LA PERLÉE

Essential feature.—The words "LA PERLÉE." Used since March 22, 1889.

21,185. CLOTHES-SPRINKLERS. BERRY, GOSS & Co., Boston, Mass. Filed Apr. 18, 1892.



Essential feature.—The letters "B. G." and the representation of a sprinkler. Used since February 20, 1892.

21,186. COTTON GOODS, INCLUDING TICKINGS, CHEVIOTS, GINGHAMS, AND SHEETINGS. JOHN FARNUM & Co., Philadelphia, Pa. Filed Apr. 28, 1892.

CONESTOGO



Essential feature.—The word "CONESTOGO" and the pictorial representation of a Conestogo wagon. Used since 1852.

21,187. WRITING-PAPER AND ENVELOPES. GEO. R. HURD & Co., New York, N. Y. Filed Apr. 4, 1892.

ROYAL BLUE

Essential feature.—The words "ROYAL BLUE." Used since January 1, 1892.

21,188. WASHING-POWDER. HURD & LAWRIE, Brooklyn, N. Y. Filed Apr. 23, 1892.

BOSS

Essential feature.—The word "BOSS." Used since January 1, 1892.

21,189. CIGARS. REINER LAHANN, Monmouth, Ill. Filed Dec. 21, 1891.



Essential feature.—The words "LAHANN'S FLOR DE AUGUSTO" and the monogram "R L" appearing in an elliptical space flanked on either side by a cupid, all of which rest upon a background of light color. Used since April 10, 1891.

21,190. COTTON-SEED OIL FOR CULINARY PURPOSES AND FOR FOOD. OCCIDENTAL OIL COMPANY, Brooklyn and New York, N. Y. Filed Apr. 12, 1892.



Essential feature.—The representation of an ace of clubs. Used since December 1, 1891.

21,191. WHEAT, CORN, BARLEY, AND RYE. F. H. PEAVEY & CO., Minneapolis, Minn. Filed Apr. 5, 1892.



Essential feature.—The letters "PV." Used since March 1, 1890.

21,192. ANTISEPTIC, ANTIZYMOTIC, DEODORIZING, AND PARASITICIDE COMPOUNDS. BUNTIN DRUG CO., Terre Haute, Ind. Filed Mar. 1, 1892.

SAL-LISTER

Essential feature.—The word "SAL-LISTER." Used since May 25, 1889.

21,193. LIQUID DRESSING FOR CURLING, CRIMPING, AND FRIZZING THE HAIR. ADOLF L. GOETTING, New York, N. Y. Filed July 15, 1891.

CURLETTE

Essential feature.—The word "CURLETTE." Used since August 14, 1886.

21,194. CANDIES, LICORICE, AND CHEWING-GUM. HALL & HAYWARD COMPANY, Louisville, Ky. Filed Apr. 30, 1892.

GOOBERINES

Essential feature.—The word "GOOBERINES." Used since December, 1891.

21,195. SALT FOR TABLE AND OTHER USE. KANSAS SALT COMPANY, Hutchinson, Kans. Filed Apr. 26, 1892.



Essential feature.—The representation of a female figure in drapery with one arm uplifted and bearing in the hand a package. Used since January 1, 1891.

21,196. PILLOW-SHAMS. WILKES-BARRE LACE MANUFACTURING COMPANY. Wilkes-Barre, Pa. Filed Apr. 30, 1892.

COLUMBUS

Essential feature.—The word "COLUMBUS." Used since April 21, 1892.

21,197. AERATED PHOSPHATED BEVERAGE. JOSEPH T. BRIGHT and WILLIAM D. HOWE, Lexington, Ky. Filed Aug. 19, 1891.



Essential feature.—The representation of the mouth of a cave, before which is an old man, and the words "WATER OF LIFE" and "AQUE-VI..E." Used since July 5, 1891.

21,198. SALT. GENESEE SALT COMPANY, New York, N. Y. Filed Oct. 20, 1891.



Essential feature.—The representation of a red star. Used since September, 1891.

21,199. MAT GOLD FOR GILDING AND THE PORCELAIN TO WHICH IT IS APPLIED. MARY HEALEY and EMILY HEALEY, Washington, D. C. Filed Mar. 28, 1892.



Chryso-Ceramics

Essential feature.—A monogram of the letters and character "M & E H" and the word "CHRYSO CERAMICS." Used since May, 1890.

21,200. GIN. J. & W. NICHOLSON & CO., London, England. Filed Jan 2, 1892.



Essential feature.—The representation of a lion's head supported by or resting on a crown. Used since July 11, 1850.

21,201. BICYCLES. THE COVENTRY MACHINISTS' COMPANY, Limited, Coventry, England. Filed Apr. 28, 1892.

SWIFT

Essential feature.—The word "SWIFT." Used since December 31, 1886.

21,202. LIVER-REGULATOR AND BLOOD-PURIFIER. THE A. H. LEWIS MEDICINE CO., Bolivar, Mo. Filed Mar. 19, 1892.



Essential feature.—The portrait of A. H. Lewis and the words "NATURE'S REMEDY." Used since May, 1891.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE WILLSON.

Decided May 7, 1892.

PRACTICE—CONFLICTING APPLICATIONS UNDER RULE 106.

Action should not be suspended on an application under Rule 106 when it appears that its claims are patentable over all the disclosures of a prior application by the same applicant in interference and over all the disclosures of the interfering applications.

ON petition.

ELECTRIC REDUCTION OF ALUMINIUM, ETC., AND THE PRODUCTION OF ALLOYS THEREOF.

Application of Thomas E. Willson filed March 25, 1891, No. 386,301.

Messrs. A. C. Fraser & Co., for the applicant.

SIMONDS, *Commissioner:*

This is a petition from the decision of the Primary Examiner suspending action on this application for patent, practically for the reason that the thing claimed in the present application is disclosed in a prior application of the same applicant, which prior application is involved in a pending interference with other applications. That prior application discloses a genus and two species, claiming the genus and one species, but disclaiming the species claimed in the later application. The applications of the other parties do not disclose the thing claimed in the present application of the petitioner, wherefore the other parties could not make the claims which this petitioner makes in his present application. Petitioner's later application disclaims what is claimed in the prior application. Applicant's later application contains matter which is not in the prior application.

The Examiner bases his decision upon the proviso of the following rule:

Rule 106. When a part only of an application is involved in an interference, the applicant may withdraw from his application the subject-matter adjudged not to interfere, and file a new application therefor, or he may file a divisional application for the subject-matter involved, if the invention can be legitimately divided: *Provided*, That no claim shall be made in either application broad enough to include matter claimed in the other.

The Examiner cites *ex parte Neiswanger* (50 O. G., 1132) and *ex parte Woodward*, (58 O. G., 1554.)

As the opponents of this petitioner in said interference cannot claim the thing which applicant claims in his present application, the existence of that interference is not cause for the suspension of action upon the present application. Neither Rule 106 nor the decisions cited by the Examiner have such meaning.

This application cannot go to allowance and issue unless the thing it claims is patentable over all the disclosures of the interfering applications of the other parties to the interference, for any one of them is liable to become a part of the prior art by prevailing over this applicant's earlier application on the question of priority.

The petition is granted.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

TOPLIFF *v.* TOPLIFF *et al.* TOPLIFF *et al. v.* TOPLIFF.

Decided April 25, 1892.

1. PATENT—REISSUE—INFRINGEMENT—CARRIAGE-SPRING

Letters Patent No. 108,085, issued October 11, 1870, to John B. Augur, for an improvement in gearing for wagons, and Letters Patent No. 122,079, issued December 19, 1871, to John A. Topliff and George H. Ely, for an improvement in connecting carriage-springs, (reissued March 23, 1876, No. 7,017,) sustained and the reissue upheld.

2. PUBLIC FAVOR WILL SOMETIMES RESOLVE A DOUBT AS TO PATENTABILITY IN FAVOR OF THE PATENT.

Where the question of patentable novelty in a device sued upon is not free from doubt, a general and extensive use by the public will incline the court to resolve the doubt in favor of the patent.

3. ANTICIPATION—WHAT IS NOT

It is not sufficient to constitute anticipation that the device relied upon might by modification be made to accomplish the function performed by the patent in question if it were not designed by its maker nor adapted nor actually used for the performance of such functions.

4. A REISSUE MAY BE HAD FOR AN ENLARGED CLAIM.

It is the obvious intent of the statute that a reissue may be had for an enlarged claim, provided it is evident that there has been a mistake and that the applicant has been guilty of no want of reasonable diligence in discovering it and that no third persons have meanwhile acquired rights to manufacture or sell what he had failed to claim.

5. PRESUMPTION ARISING FROM TWO YEARS' DELAY IN APPLYING FOR REISSUE.

If a reissue be sought to enlarge a claim, a delay of two years from the original grant in applying therefor will ordinarily, though not always, be treated as evidence of abandonment of the new matter to the public.

6. EXCEPTIONS TO MASTER'S REPORT MUST BE TAKEN IN LOWER COURT.

The Supreme Court will not review a master's report upon objections first taken before it, the proper place for exceptions being in the court below.

APPEALS from the Circuit Court of the United States for the Northern District of Ohio.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of three patents, namely: (1) Patent No. 108,085, issued October 11, 1870, to John B. Augur, for an improvement in gearing for wagons. (2) Patent No. 123,937, issued February 20, 1872, to Cyrus W. Saladee, for an improvement in carriage-springs and mode of attachment. (3) Patent No. 122,079, issued December 19,

1871, to John A. Topliff and George H. Ely, for an improvement in connecting carriage-springs; reissued March 28, 1876, No. 7,017.

The patent to Augur consisted in a mode of equalizing the pressure upon two carriage-springs by—

connecting together by a rigid rod the two pivoted links upon the clips employed on the hind axle, so that when the weight is upon one spring, both springs, by reason of the connecting-rod, shall be caused to work together, thus preventing the roll.

The effect of this device is such that if a heavy weight is thrown upon one spring, as for instance by a person getting into a buggy at one side, the pressure is borne equally by both springs. The claims alleged to be infringed were the following:

1. The herein-described method of equalizing the action of springs of vehicles and distributing the weight of the load.
2. The combination of the pivoted links with a rod connecting the same, the rod compelling both links to move in unison, as and for the purpose described.

The reissued patent to Topliff and Ely, as stated by the patentees—

relates to side half-elliptic spring vehicles, and has for its object suspending the front and rear ends of the springs directly to the rear axle and front bolster of the running-gear by means of two separate connecting-rods, the outer ends of which have formed upon them, as a part of the same, and at right angles with the rod, short arms, between which the ends of the springs, respectively, are secured and operated, the connecting rod receiving the rear ends of the springs, being hinged to the rear axle, while the rod receiving the front ends of the springs is, in like manner, connected to the front bolster in such manner that the vibration of the springs will impart a corresponding rotation to the connecting-rods front and back, and so that the depression of either spring will, by the rotary action imparted to the connecting-rod, compel a corresponding depression of the other, and thus compel both springs to vibrate together, and move in unison one with the other, equalizing their action and the weight imposed upon them, as well to prevent side motion to the body of the vehicle

There were but two claims to this patent, which read as follows:

1. The combination of two connecting-rods located at the front and rear ends of a wagon-body, and arranged to turn in their bearings, with a pair of half-elliptic springs, whereby the springs are caused to yield in unison with each other, substantially as and for the purpose set forth.
2. The combination of the connecting-rods B B′, provided with arms at their ends, with the half-elliptic springs A A′, substantially as and for the purpose set forth.

The answer admitted that the defendant had manufactured and sold connecting-rods for carriages substantially like those manufactured by the plaintiffs, and claimed the right so to do, alleging that plaintiffs' patents were both void for want of novelty; and that the reissued patent of Topliff and Ely was not for the same invention as the original; and denied that his manufacture infringed in any way upon any right which plaintiffs had to the invention.

The case was heard in the court below upon pleadings and proofs, the court holding that the Augur patent and the Topliff and Ely reissue were good and valid; and that the defendant was guilty of infringement. An injunction was allowed and the case was referred to a master to take an account of profits and damages. The master reported the sum of $8,480.54 to be due the plaintiffs from the defendant as damages for the infringement, and a final decree was entered for that amount, from which both parties appealed to this court.

Mr. Henry S. Sherman for John A. Topliff *et al.*
Mr. W. W. Boynton, *Mr. John C. Hale*, and *Mr. L. L. Leggett* for Isaac N. Topliff.

Mr. Justice BROWN delivered the opinion of the Court.

As the court below failed to pass upon the Saladee patent in its decree, and as neither party has assigned this omission as error, it is unnecessary to take it into consideration upon this appeal. There are really but two questions involved in this case: (1) the validity of the Augur patent, in view of the state of the art; (2) the validity of the Topliff and Ely reissue.

(1) In the Augur patent the device described consists of a rod attached to the rear axle of a side-spring buggy or other vehicle, having two links rigidly attached to the rod, one at each end thereof, upon which the rear ends of such side springs are pivoted. The result is that when one spring is depressed, as by a person stepping into the vehicle on one side, the spring upon the other side is also depressed, through the action of the rod connecting the two, so that the body of the vehicle is kept approximately upon a level.

The patents to Stowe of 1868 and to Sexton of 1868 were also for a method of equalizing the action of side springs by so connecting, as stated in the Stowe patent—

the two side springs of a carriage that a weight placed on any portion of the carriage will depress each side equally, and prevent the strain to the springs occasioned by the frequent wrenching they are subjected to in getting in and out of the carriage.

But the means for accomplishing this in both cases are so wholly dissimilar to those described in the patents in suit that a comparison can hardly be made of them.

Indeed, the patent to Stringfellow and Surles of 1861 approximates so much more nearly to the patents in suit that it is the only one worthy of serious consideration. If this patent does not anticipate the Augur patent, none of the others do; if it does anticipate it, it is of no consequence whether the others do or not. This patent is for—

a novel improvement in hanging carriage-bodies on springs and from C-shaped jacks or supports, whereby the body is allowed a free and easy vibration longitudinally, and it is relieved from sudden and disagreeable jolts and jerks in traveling on rough roads or from the sudden starting of the horse. The parts are also so braced and strengthened that all liability to twist the carriage-body is effectively prevented. The invention consists of a combination of transverse tie-rods with the side springs, which are hung by shackle-bars or jointed links from C-shaped supports.

The patentee further states:

It will thus be seen that the springs D D are suspended in such a manner from the four supports C C C′ C′ that the body of the carriage, which is mounted on said springs, will be allowed to have a free, swinging motion backward or forward, and in consequence of the springs being hung by the shackle-bars E E E E the springs will also have an upward movement. * * * In uniting the shackle-bars to the ends of the springs D D and the supports C C C′ C′ two tie-bars, G G, with forked ends, one of which is shown in Fig. 2 of the drawings, are used for the purpose of bracing the supports C C′, and also the ends of the springs D D, so as to prevent the swaying of the carriage-body from twisting or bending the supports C C′ laterally.

The claim was for—

the transverse ties G G, arranged and operated substantially as and for the purposes specified.

If there be anything in this patent which anticipates the connecting-rods of the Augur device it is the transverse tie-bars G G, upon which the springs are hung, which the specification states are used for bracing the supports C C′ and also the ends of the springs D D, so as to prevent the swaying of the carriage-body from twisting or bending the supports C C′ laterally. An inspection of the models of this patent put in evidence shows at once that the object of these tie-bars is not an equalization of the pressure upon the springs, but to secure an equality in the backward and forward swinging movement in the body of the vehicle. Indeed, this was obviously necessary, as the patentee states, to prevent the body of the carriage and the supports C C′ from being twisted, the entire object of the patent being to secure a free and easy vibration longitudinally. It is true that one of the models of the patent put in evidence (Exhibit M) does, by its peculiar construction in shortening the links and strengthening

and stiffening the entire structure, show an equalization of the pressure upon the springs, but it is accomplished by sacrificing the swinging movement backward and forward, which it was the object of the patent to secure. The duplicate of the model from the Patent Office contains no suggestion of this kind, nor do the other models of the same patent offered in evidence. While it is possible that the Stringfellow and Surles patent might, by a slight modification, be made to perform the function of equalizing the springs, which it was the object of the Augur patent to secure, that was evidently not in the mind of the patentees, and the patent is inoperative for that purpose Their device evidently approached very near the idea of an equalizer; but this idea did not apparently dawn upon them, nor was there anything in their patent which would have suggested it to a mechanic of ordinary intelligence, unless he were examining it for that purpose. It is not sufficient to constitute an anticipation that the device relied upon might, by modification, be made to accomplish the function performed by the patent in question, if it were not designed by its maker, nor adapted, nor actually used, for the performance of such functions.

(2) The Topliff and Ely patent is claimed to be fully anticipated by the Augur device. In their specification the patentees admit that the connecting-rods placed at right angles across the front and rear of the running-gear of vehicles, and hinged to the front bolster and rear axle, are an old device. The better to illustrate the distinction between their own invention and all others pertaining to the use of connecting-rods, they cite several patents, among which is that of Augur, of which they state as follows:

In this patent side springs are used, the front ends of which are hinged upon fixed and rigid standards secured upon the top of the front bolster, and where the front ends of the spring are firmly held in a central position over said bolster, while the rear ends are hinged to hinges secured to the outer ends of a single connecting-rod placed over the top of the rear axle in such a manner that, as the springs are lengthened by depression, a corresponding rotation is imparted to the connecting-rod. In this case provision for the lengthening of the springs when depressed or in motion is only made for the rear ends of the springs, the front ends being firmly held over the center of the bolster; and hence, as the load upon the springs is increased, and as only their rear ends, in combination with said links and connecting-rod, are permitted to accommodate their vibration, the rear end of the body is caused to have a backward tipping motion—that is, the back end of the body is thrown lower than the front end, when the springs are depressed to their full capacity—which is an objectionable feature in this device for equalizing the action of springs; besides, as only the rear ends of the springs are allowed to act, that easy and natural motion of the springs which is only had by allowing both ends to act freely is in a great measure lost.

The radical difference of our invention from each and all of the cases above cited is, first, in the construction of the connecting-rod, [which is in reality precisely the same as that employed by Augur;] and, secondly, in suspending both ends of the springs upon separate connecting-rods, and thus allow both ends of the springs to act freely and in harmony with their vibrating motion, to which is added the other important advantage, viz.: that arrangement of connecting rods admits of their application to side-spring vehicles of the ordinary kind now in use as readily as to those built expressly for the purpose—an advantage not attained by any other previously-known combination of connecting-rods with the springs or bodies of vehicles.

It is quite evident from an examination of this patent that "the connecting-rods B B′, provided with arms at their ends," are precisely the same in structure, design, and operation as "the pivoted links with a rod connecting the same," described in the second claim of the Augur patent; and that the only substantial difference in the construction of the two devices is in the duplication of this rod by applying it to the front bolster as well as to the rear axle, and thereby enabling it to be applied to side-spring vehicles of the ordinary kind, as readily as to those built expressly for the purpose. It is true there are introduced into the claims of the Topliff and Ely patent the half-elliptic springs A A′, which, by means of the connecting-rods, are caused to yield in unison with each other; but the same springs are evidently to be read into the Augur patent, since the whole object of the device, as stated by him, is to equalize the action of the springs by compelling both links to move in unison. If this patent differed from the other merely in duplicating the rod and applying it to the front bolster as well as to the rear axle, it is conceded that it would not, under the cases of *Dunbar* v. *Myers* (11 O. G., 95; 94 U. S., 187, 195) and *Slawson* v. *Grand Street R. R. Co.*, (24 O. G., 99; 107 U. S., 649, 653,) involve invention.

But there is a further distinction between the two devices which ought not to be overlooked. Under the Augur patent, the front ends of the springs are supported upon standards rising from the bolster, and the rear ends upon the links of the connecting-rod, rising perpendicularly above the rear axle. In other words, the links are turned upward, instead of down. This arrangement would evidently be inoperative if the springs were hung at both ends upon links, so placed, since the body of the vehicle would fall down at once upon the axles. In the Topliff and Ely patent, to obviate this, and to enable the device to be applied at both ends of the springs, the links are turned horizontally, or somewhat dependent, so that the springs can rest upon them at both ends, and thus secure a more perfect equalization. Trifling as this deviation seems to be, it renders it possible to adapt the Augur device to any side-spring wagon of ordinary construction.

While the question of patentable novelty in this device is by no means free from doubt, we are inclined, in view of the extensive use to which these springs have been put by manufacturers of wagons, to resolve that doubt in favor of the patentees, and sustain the patent.

(3) With regard to the reissue of this patent, the record shows that on April 9, 1872, within four months from the date of the original patent, a reissue was granted, in which the specification was largely reframed, the drawings changed in form, though apparently not in substance, but the claim was changed only by providing that the connecting-rods should be "secured directly to the hind axle and front bolster," instead of "to the front and rear axles," as provided in the claim of the original patent. The claim of the original and first reissue are as follows:

Original.	*First Reissue.*
The arms C C C′ C′ arranged upon separate *rock-rods* B B′ secured directly to the *front and rear axles* to cause both ends of *each spring* to yield simultaneously and in unison with each other, *and also to be laterally braced by said rock-rods*, as described.	The arms C C C′ C′ arranged upon separate *connecting-rods* B B′ secured directly to the *hind axle* and *front bolster*, to cause both ends of *the side springs* to yield simultaneously and in unison with each other, *in the manner shown* and described.

The original claim was, in the particular above mentioned, a clear mistake, since affixing the connecting-rod and springs to the front axle would render it impossible to be turned, and in addition to this, the original drawing shows it affixed to the bolster. The

correction of a mistake so clear, made within so short time after the issue of the original patent, was undoubtedly within the power of the Commissioner, as defined by Revised Statutes, section 4916. The lateral bracing by the rock-rods mentioned in the claim of the original patent was a merely incidental function to the operation of the rock-rod in securing the axle to the spring, and their omission cannot be considered an enlargement of the claim.

The second reissue was applied for a little more than a month after the first was granted, although the patent was not granted upon this application until March 28, 1876, nearly four years after the application was filed. No change from the first reissue was made in the drawings or specification in this reissue, but the claim was divided and changed so as to read as follows:

1. The combination of two connecting-rods located at the front and rear ends of a wagon-body, and arranged to turn in their bearings, with a pair of half-elliptic springs, whereby the springs are caused to yield in unison with each other, substantially as and for the purpose set forth.
2. The combination of the connecting-rods B B′, provided with arms at their ends, with the half-elliptic springs A A′, substantially as and for the purpose set forth.

The first claim of this reissue is not insisted upon in this case, so that the question of its validity need not now be considered. The second claim is to some extent a change of the claim of the first reissue. It omits the requirement that the connecting-rod shall be secured directly to the axle and bolster, so as to cause both ends of the side springs to yield simultaneously, and introduces the half-elliptic springs A A′ as a new element of the combination. Whether this be an enlargement of the original claim or not, it is for substantially the same invention, and in view of the fact that the reissue was applied for as soon as the mistake was discovered, and before any rights in favor of third parties could be reasonably expected to have attached, or had in fact attached, we think this reissue is not open to the objections which have proved fatal to so many since the case of *Miller* v. *Brass Company*, (21 O. G., 201; 104 U. S., 350) was decided.

It is a mistake to suppose that that case was intended to settle the principle that, under no circumstances, would a reissue containing a broader claim than the original be supported. We have no desire to modify in any respect the views expressed in that and subsequent cases with regard to the validity of reissues. There is no doubt, as was said by this Court in *Powder Company* v. *Powder Works*, (15 O. G., 289; 98 U. S., 126, 137, 138,) that a reissue can only be granted for the same invention which formed the subject for the original patent of which it is a reissue, since, as was said by the Court in that case, the express words of the act are "a new patent for the same invention."

The specification may be amended so as to make it more clear and distinct; the claim may be modified so as to make it more conformable to the exact rights of the patentee; but the invention must be the same. * * * This prohibition is general, relating to all patents; and by "new matter" we suppose to be meant new substantive matter, such as would have the effect of changing the invention, or of introducing what might be the subject of another application for a patent. The danger to be provided against was the temptation to amend a patent so as to cover improvements which might have come into use, or might have been invented by others, after its issue.

In the case of *Miller* v. *Brass Company*, (21 O. G., 201; 104 U. S., 350,) a reissue with expanded claims was applied for *fifteen years* after the original patent was granted. It was held to be manifest upon the face of the patent that the suggestion of inadvertence and mistake was a mere pretense, or, if not a pretense, that the mistake was so obvious as to be instantly discernible on the opening of the patent, and the right to have it corrected was abandoned and lost by unreasonable delay.

The only mistake suggested [said Mr. Justice Bradley] is, that the claim was not as broad as it might have been. This mistake, if it was a mistake, was apparent upon the first inspection of the patent, and if any correction was desired, it should have been applied for immediately.

It was intimated in that case, page 352, although the facts did not call for an adjudication upon the point, that—

if two years' public enjoyment of an invention with the consent and allowance of the inventor is evidence of abandonment and a bar to an application for a patent, a public disclaimer in the patent itself should be construed equally favorable to the public. Nothing but a clear mistake or inadvertence, and a speedy application for its correction, is admissible when it is sought merely to enlarge the claim.

It was further said that the section of the Revised Statutes does not in terms authorize a reissue to enable a patentee to expand his claim, and that it was natural to conclude that the reissue of a patent for such purposes was not in the mind of Congress when it passed the laws in question.

At all events, [said the Court, page 354,] we think it clear that it was not the special purpose of the legislation on this subject to authorize the surrender of patents for the purpose of reissuing them with broader and more comprehensive claims, although, under the general terms of the law, such a reissue may be made when it clearly appears that an actual mistake has inadvertently been made. * * * Now, whilst, as before stated, we do not deny that a claim may be enlarged in a reissued patent, we are of the opinion that this can only be done when an actual mistake has occurred; not from a mere error of judgment, (for that may be rectified by appeal,) but a real *bona fide* mistake, inadvertently committed; such as a court of chancery, in cases within its ordinary jurisdiction, would correct. * * * The granting of a reissue for such a purpose, after an unreasonable delay, is clearly an abuse of the power to grant reissues, and may justly be declared illegal and void.

So, in the case of *Johnson* v. *Railroad Company*, (22 O. G., 329; 105 U. S., 539,) the patent was issued in 1857, and at the expiration of the original term of fourteen years an extension of seven years was granted, and a reissue was applied for after a lapse of fifteen years, and it was held, upon the authority of *Miller* v. *Brass Company*, that if the patentee had the right to a reissue if applied for in reasonable time, he had lost it by his unreasonable delay. Said the Court, speaking by Mr. Justice Woods:

He has rested supinely until the use of the fish-plate joint has become universal, and then, after a lapse of fifteen years, has attempted by a reissue to extend his patent to cover it. We think it is perfectly clear that the original patent could not be fairly construed to embrace the device used by the appellee, which appellants insist is covered by their reissue. If the reissued patent covers it, it is broader than the original, and is, therefore, void.

In the case of *Mahn* v. *Harwood* (30 O. G., 657; 112 U. S., 354) a patent reissued nearly four years after the date of the original patent was held to be invalid as to the new claims, upon the ground of unreasonable delay in applying for it, the only object of the reissue being to enlarge the claims. Nothing was changed, but to multiply the claims and make them broader, and this was done, not for the benefit of the original patentee, but for that of his assignee.

It was not intended then, [said Mr. Justice Bradley, referring to *Miller* v. *Brass Co.*,] and is not now, to question the conclusiveness, in suits for infringements of patents, of the decisions of the Commissioner on questions of fact necessary to be decided before issuing such patents, except as the statute gives specific defenses in that regard.

He repeated substantially what had been said in *Miller* v. *Brass Co.*, that—

a patent for an invention cannot lawfully be reissued for the mere purpose of enlarging the claim, unless there has been a clear mistake inadvertently committed in the wording of the

claim, and the application for a reissue is made within a reasonably short period after the original patent was granted. The granting of such reissues after the lapse of long periods of time is an abuse of power, and is founded on a total misconception of the law.

It was held that while lapses of time might be of small consequence where the original claim was too broad, and the patentee sought to restrict it, there were substantial reasons why the claim could not be enlarged unless the patentee used due diligence to ascertain his mistake.

The rights of the public here intervene, which are totally inconsistent with such tardy reissues; and the great opportunity and temptation to commit fraud after any considerable lapse of time, when the circumstances of the original application have passed out of mind, and the monopoly has proved to be of great value, make it imperative on the courts, as a dictate of justice and public policy, to hold the patentees strictly to the rule of reasonable diligence in making applications for this kind of reissues.

It was further held that while it was for the Commissioner of Patents to determine the question of inadvertence, accident, or mistake, the question of reasonable time was one which the Court could determine as one of law, by comparing the patent itself with the original patent, and, if necessary, with the record of its inception.

In speaking of the case of *Miller* v. *Brass Co.*, Mr. Justice Bradley observed:

We suggested that a delay of two years in applying for such correction should be construed equally favorable to the public. But this was a mere suggestion by the way, and was not intended to lay down any general rule. Nevertheless, the analogy is an apposite one, and we think that excuse for any longer delay than that should be made manifest by the special circumstances of the case.

In the large number of cases which have come up to this Court since that of *Mahn* v. *Harwood* was decided, in which reissues have been held to be invalid, it will be found that the opinion of the Court was put upon the ground, either that the patentee had been guilty of inexcusable laches, usually of from four to sixteen years, or that circumstances had occurred since the granting of the original patent which made the reissue operate harshly or unjustly to the defendant in the case.

Thus, in *Mathews* v. *Machine Co.*, (21 O. G., 1349; 105 U. S., 54,) there was a delay of fourteen years; in *Bantz* v. *Frantz*, (21 O. G., 2037; 105 U. S., 160,) a delay of fourteen years and six months; in *Wing* v. *Anthony*, (106 U. S., 142,) of over five years; in *Moffitt* v. *Rogers*, (23 O. G., 270; 106 U. S., 423,) of two years and seven months; in *Gage* v. *Herring*, (23 O. G., 2119; 107 U. S., 640,) of fourteen years; in *Clements* v. *Odorless Apparatus Co.*, (26 O. G., 353; 109 U. S., 641,) of nearly five years; in *McMurray* v. *Mallory*, (27 O. G., 915; 111 U. S., 97,) of nine years; in *White* v. *Dunbar*, (26 O. G., 353; 119 U. S., 47,) of five years. In *Parker and Whipple Co.* v. *Yale Clock Co.*, (41 O. G., 811; 123 U. S., 87,) there was a delay of one year and eight months, but it appeared that the improvements not covered by the original patent had been brought into use by others than the patentee before the reissue was applied for. In *Coon* v. *Wilson*, (30 O. G., 889; 113 U. S., 268,) a reissue was applied for only a little over three months after the original patent was granted; but the patentee waited until the defendants produced their device and then applied for such enlarged claims as to embrace this device, which was not covered by the claim of the original patent, and it was apparent from a comparison of the two patents that the application for a reissue was made merely to enlarge the scope of the original. In *Wollensak* v. *Reiher*, (31 O. G., 1301; 115 U. S., 96,) there was a delay of more than five years, Mr. Justice Matthews observing that—

the settled rule of decision is, that if it appears, in cases where the claim is merely expanded, that the delay has been for two years, or more, it is adjudged to invalidate the reissue, unless the delay is accounted for and excused by special circumstances, which show it to have been not unreasonable.

In the very latest case decided by this Court, viz., *Electric-Gas Lighting Co.* v. *Boston Electric Co.*, (55 O. G., 429; 139 U. S., 481,) there was a delay of eight and one-half years, and the sole object of the reissue was to expand the claims. In *Newton* v. *Furst and Bradley Co.*, (119 U. S., 373,) there was a delay of more than thirteen years, and the defendant had begun in the meantime to make machines of the pattern complained of. In *Ives* v. *Sargent*, (119 U. S., 652,) there was a delay of three years, and in the meantime the patent was infringed by a construction manufactured and sold without infringing the patent as originally granted. In *Worden* v. *Searls*, (121 U. S., 14,) there was a delay of six years; and in *Matthews* v. *Ironclad Manufacturing Co.*, (29 O. G., 693; 124 U. S., 347,) one of seven years.

From this summary of the authorities it may be regarded as the settled rule of this Court that the power to reissue may be exercised when the patent is inoperative by reason of the fact that the specification as originally drawn was defective or insufficient, or the claims were narrower than the actual invention of the patentee, provided the error has arisen from inadvertence or mistake, and the patentee is guilty of no fraud or deception; but that such reissues are subject to the following qualifications:

First. That it shall be for the same invention as the original patent, as such invention appears from the specification and claims of such original.

Second. That due diligence must be exercised in discovering the mistake in the original patent, and that, if it be sought for the purpose of enlarging the claim, the lapse of two years will ordinarily, though not always, be treated as evidence of an abandonment of the new matter to the public to the same extent that a failure by the inventor to apply for a patent within two years from the public use or sale of his invention is regarded by the statute as conclusive evidence of an abandonment of the patent to the public.

Third. That this Court will not review the decision of the Commissioner upon the question of inadvertence, accident, or mistake, unless the matter is manifest from the record; but that the question whether the application was made within a reasonable time is, in most, if not in all such cases, a question of law for the Court.

To hold that a patent can never be reissued for an enlarged claim would be not only to override the obvious intent of the statute, but would operate in many cases with great hardship upon the patentee. The specification and claims of a patent, particularly if the invention be at all complicated, constitute one of the most difficult legal instruments to draw with accuracy, and in view of the fact that valuable inventions are often placed in the hands of inexperienced persons to prepare such specifications and claims, it is no matter of surprise that the latter frequently fail to de-

scribe with requisite certainty the exact invention of the patentee, and err either in claiming that which the patentee had not in fact invented, or in omitting some element which was a valuable or essential part of his actual invention. Under such circumstances, it would be manifestly unjust to deny him the benefit of a reissue to secure to him his actual invention, provided it is evident that there has been a mistake and he has been guilty of no want of reasonable diligence in discovering it, and no third persons have in the meantime acquired the right to manufacture or sell what he had failed to claim. The object of the patent law is to secure to inventors a monopoly of what they have actually invented or discovered, and it ought not to be defeated by a too strict and technical adherence to the letter of the statute, or by the application of artificial rules of interpretation. The evidence in this case shows that plaintiffs were conceded by manufacturers a monopoly of this invention; that defendant was the only one who had infringed their patents; and that he did not begin to manufacture the infringing device until 1882, six years after the second reissue was granted. In view of this and the fact that the second reissue was applied for within five months from the time the original patent was granted, and within thirty-seven days after the first reissue, and that it covers no more than the actual invention of the patentee, so far as the same is an improvement upon the Augur patent, we think it should be upheld.

(4) Defendant also assigns as error the allowance by the master of damages for the infringement of the Augur patent prior to April 9, 1884, when the plaintiffs first took title to it. It appears from the record that the patentee assigned the patent to one Atwater, on February 4, 1873, subject to the condition that if he paid a certain note of $3,000 and interest the assignment was to be void. This vested the real title in the assignee. (*Waterman* v. *McKenzie*, 54 O. G., 1562; 138 U. S., 252.) The assignment made no mention of past infringements. On April 9, 1883, Atwater assigned to Saladee all the interest which he had acquired, together with all claims and demands for the past use of such patents, and on April 9, 1884, Saladee made a similar assignment to the plaintiffs.

It is claimed in this connection, first, that the bill did not make the assignment of the claim for damages for prior infringements of the Augur patent a basis or ground of recovery, and asked no recovery therefor; and, second, that, if the plaintiffs were entitled to recover the damages which Atwater sustained by reason of the infringement of this patent prior to April 9, 1883, and those which Saladee sustained from April 9, 1883, to April 9, 1884, the date of the assignment to the plaintiffs, there was no evidence that either Atwater or Saladee suffered any damages by reason of the infringement, nor any evidence that they could have supplied the trade during those years.

It is sufficient to say in reply to this, that no such exception was taken in the court below to the master's report, the only exception being that, in view of the Stringfellow and Surles patent, the master should have reported only nominal damages. It was held by this Court, in *Story* v. *Livingston*, (13 Pet., 359, 366,) that proper practice in chancery requires that no exceptions to a master's report be made which were not taken before the master, the object being to save time and give him an opportunity to correct his errors or reconsider his opinion. A party neglecting to bring in objections cannot afterward except to the report, unless the court, upon motion, see reason to be dissatisfied with the report and refer it to the master for review, with liberty to the party to take objection to it. And in *McMicken* v. *Perin* (18 How., 507) it was held directly that this Court will not review a master's report upon objections taken here for the first time. In affirmance of this principle, Rule 21 (Sub. 2) requires that—

> when the error alleged is to a ruling upon the report of a master, the specification shall state the exception to the report and the action of the court upon it.

This presupposes that the particular exception relied upon was taken in the court below, and was passed upon by the court adversely to the appellant. Proper practice requires that objections to a master's report shall be taken in that court, that any errors discovered therein may be rectified by the court itself, or by a reference to the master for a correction of his report, without putting parties to the delay and expense of an appeal to this Court. It would be manifestly unjust if this Court, after having affirmed the action of the court below in every other particular, should take up an error in a master's report, which was not called to its attention, and reverse the case upon that ground, when, if exception had been duly taken, the error could have been at once corrected. There is nothing in this case to indicate that this point was ever made before the master, nor is it noticed in the eight exceptions taken to his first report, which was set aside upon other grounds, or, as already observed, in the exception to his final report.

(5) For the same reason, that no exceptions were taken at all by the plaintiffs to the master's report, we must decline to notice their first two assignments of error based upon the inadequacy of the damages awarded.

There is much force in the third assignment, that the court erred in overruling plaintiffs' motion to increase the damages, and in refusing to give a decree for such increase. The master finds that for some years before the defendant began to manufacture, he was the traveling sales agent of the plaintiffs; that while so associated in the manufacture of carriage hardware and appliances, they established a large trade in certain parts of the country; and that during this period, the defendant, while traveling for the firm, became acquainted with their trade, and the location, extent of purchase, and solvency of their customers. His connection with the firm having terminated, defendant went to Cleveland, and in 1882 opened a rival establishment, and began the infringement of these patents. Before that time, plaintiffs were the exclusive manufacturers of these equalizers, and had equipped their establishment with sufficient machinery to enable them to supply the market; but they neither issued licenses nor established a royalty for the manufacture or use of their improvement. The defendant, knowing all their customers and plaintiffs' facilities for the manufacture of equalizers, made serious inroads upon their business, and sold almost exclusively to those who had formerly been customers of the plaintiffs. Under these circumstances, we should not have disturbed the decree of the court below, if it had seen fit to increase the damages; but in view of the fact that the defendant carried on the business apparently without profit to himself, and that a decree passed against him for the sum of $8,480.51 actual damages, we are not inclined to reverse it upon that ground. The allowance of an increase of damages under the statute is a matter which rests somewhat in the discretion of the court, and we should not be inclined to disturb its finding upon this point, unless the evidence clearly demanded it.

The decree of the court below is, therefore, affirmed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 9. TUESDAY, MAY 31, 1892. PRICE—$5 per year.

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Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

Women Inventors.

The Patent Office has published and has for sale a volume, containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the developement of American invention.

W. E. SIMONDS,
Commissioner.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Issue of May 31, 1892.

Patents	402	No. 475,744 to No. 476,235, inclusive.
Designs	17	No. 21,594 to No. 21,600, inclusive.
Trade-Marks	45	No. 21,203 to No. 21,247, inclusive.
Labels	None.	
Reissues	None.	
Total issue	554	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nevada	....	....
Arizona Territory	....	....	New Hampshire	2	....
Arkansas	4	....	New Jersey	12	3
California	13	1	New Mexico Territory	1	....
Colorado	3	....	New York	98	8
Connecticut	19	1	North Carolina	1	....
Delaware	1	....	North Dakota	1	....
District of Columbia	4	....	Ohio	31	2
Florida	....	....	Oregon	1	....
Georgia	2	....	Pennsylvania	55	4
Idaho	1	....	Rhode Island	1	....
Illinois	49	3	South Carolina	1	....
Indian Territory	....	....	South Dakota	1	....
Indiana	17	....	Tennessee	3	....
Iowa	10	....	Texas	8	....
Kansas	5	....	Utah Territory	1	....
Kentucky	5	1	Vermont	1	....
Louisiana	3	1	Virginia	4	....
Maine	3	....	Washington	5	....
Maryland	6	1	West Virginia	2	....
Massachusetts	39	7	Wisconsin	5	....
Michigan	36	1	Wyoming	....	....
Minnesota	8	4	U. S. Army	....	....
Mississippi	....	....	U. S. Navy	....	....
Missouri	14	3			
Montana	3	....	Total to citizens of the United States	481	40
Nebraska	1	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1	....	Netherlands	....	....
Barbadoes	....	....	Newfoundland	....	....
Belgium	....	....	New South Wales	1	....
Bermuda	....	....	New Zealand	....	....
Brazil	....	....	Norway	....	....
Canada	4	1	Queensland	....	....
Chile, Republic of	....	....	Roumania	....	....
Cuba	....	....	Russia	....	....
Denmark	....	....	Scotland	....	....
Egypt	....	....	South Australia	....	....
Ecuador	....	....	Spain	1	....
England	12	3	Sweden	....	....
France	1	....	Switzerland	....	....
Germany	6	1	Victoria	....	....
Guatemala	....	....	West Australia	....	....
Italy	....	....			
Ireland	1	....	Total to citizens of foreign countries	28	5
Japan	1	....			

APPLICATIONS UNDER EXAMINATION.

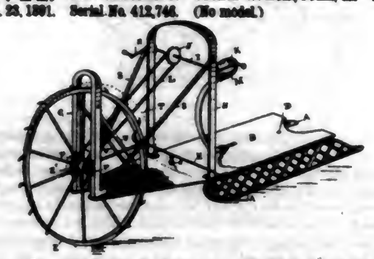
Condition at Close of Business May 24, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Apr. 12	May 23	176
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Apr. 4	May 21	81
7	Harvesters, Games and Toys	Apr. 4	May 17	191
2	Farm Stock, Products, etc	Mar. 25	May 17	270
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Apr. 4	May 18	144
8	Furniture, Toilet, Umbrellas and Canes, etc.	Apr. 2	May 12	252
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Mar. 28	May 9	255
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Apr. 7	May 7	164
12	Mechanical Engineering, Stove-Service, etc.	Mar. 26	May 4	221
23	Instruments of Precision, Acoustics, Optics, etc.	Mar. 24	May 4	209
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Apr. 7	Apr. 25	193
	Between two and three months in arrears.			
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Mar. 14	May 16	225
24	Sewing-Machines and Apparel	Mar. 31	May 16	89
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Feb. 29	May 14	245
21	Textiles, etc.	Mar. 7	May 12	237
18	Steam-Engineering, etc	Mar. 4	May 11	295
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Mar. 2	May 4	232
13	Metal-Working, Arms and Projectiles, etc.	Feb. 24	May 3	283
33	Advertising, Baggage, Packing and Storing Vessels, etc.	Mar. 18	Apr. 30	296
10	Carriages and Wagons and Railway-Cars.	Mar. 15	Apr. 30	580
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Mar. 8	Apr. 28	241
22	Fire-Arms, Navigation, Signals, etc.	Mar. 19	Apr. 27	210
4	Civil Engineering, etc.	Feb. 27	Apr. 27	443
17	Paper-Manufactures and Printing.	Mar. 16	Apr. 25	221
1	Tillage and Fences	Mar. 21	Apr. 15	277
9	Hydraulics, Fire-Extinguishers, etc.	Mar. 1	Apr. 15	309
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Feb. 26	Apr. 9	319
	Between three and four months in arrears.			
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Feb. 20	Apr. 8	346
19	Stoves and Furnaces	Feb. 12	Mar. 22	386
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Jan. 4	Apr. 27	434
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Jan. 14	Mar. 14	432
	Between five and six months in arrears.			
26	Electricity, Generation, Distribution, etc.	Dec. 21	May 5	334
	Total number of applications awaiting action			8,640
	Under one month in arrears.			
	Designs	May 19	May 20	32
	Trade-Marks	May 21	May 30	9

PATENTS

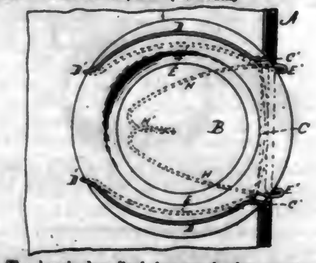
GRANTED MAY 31, 1892.

475,744. ICE-VELOCIPEDE. Orsmus W. Ames, Pekin, Ill. Filed Nov. 23, 1891. Serial No. 412,748. (No model.)



Claim.—In a velocipede for winter use, a sled composed of the runners A A, with the rear and forward cross-pieces C and C', respectively, in combination with a supporting-board B, pivoted at its rear end to the rear cross-piece C, a steering-rod N, secured at right angles to a perpendicular rod O, a slotted plate P, attached at right angles to the rod O and engaging with a pin R in the forward cross-piece C', and a toothed wheel E, having bearings in a yoke G, secured to the forward end of said supporting-board, and a sprocket-wheel F, mounted on the hub or axle of said wheel E, and a sprocket-chain L, in connection with a sprocket-wheel J on the shaft I, mounted on a yoke H, bolted to the supporting-board, for the purposes herein described and shown.

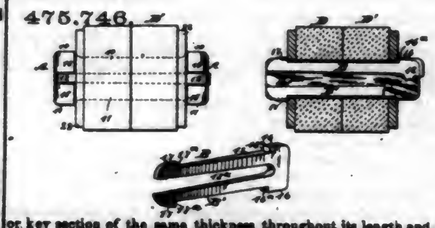
475,745. PLATE-SECURING DEVICE. John A. Anderson, Waltham, Mass., assignor of one-half to Donald Mackenzie, same place. Filed Nov. 18, 1891. Serial No. 412,249. (No model.)



Claim.—The herein-described improved plate-securing device, consisting of a single integral wire bent into the following portions, viz: the central portion C, extending under the front edge of the plate, the inwardly-springing portions D E, extending rearward from said portion C and over and under, respectively, the side edges of the plate, the substantially vertical and widely-curved portions E', and the spring portions H, extending rearward under the table from said curved portions E', the curved portions F making a broad sweep downward below and out of contact with the under surface of the table, so that the portions H only bear against said under surface, whereby the device is adapted to tables of different thicknesses, substantially as set forth.

475,746. BOLT. Antonio Arnoldi, New York, assignor, by direct and mesne assignments, to himself, and Edward L. Devereaux, Passaic, N. Y. Filed Sept. 21, 1891. Serial No. 406,326. (No model.)

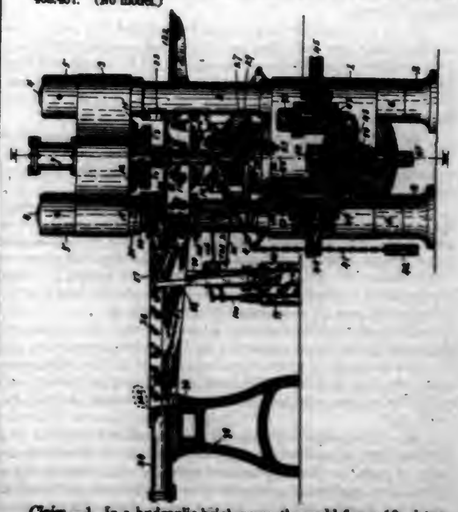
Claim.—1. As an improved article of manufacture, a lock-bolt consisting of two clamping members having flat straight inner faces and heads formed at their ends upon their outer surfaces, and a locking or key section of the same thickness throughout its length and provided at one end with contractile and expansible sections and shoulders at both ends, as and for the purpose specified.



2. A lock-bolt consisting of two clamping members semicircular in cross-section and provided upon their cylindrical faces with a head at each end, and a locking or key member adapted to pass between the flat faces of the clamping members, said key member being also provided with offsets upon opposite edges at both ends, the offsets at one end being capable of converging under pressure and diverging when free from pressure, substantially as specified.

3. A lock-bolt consisting of two clamping members semicircular in cross-section and provided upon their cylindrical faces with heads, one at each end, and a locking or key member constructed of spring metal and comprising a head and legs emanating therefrom in substantially parallel lines, the head and legs being provided with offsets upon their outer edges, and said key being adapted to enter between the clamping members and engage therewith throughout their length, substantially as described.

475,747. HYDRAULIC BRICK-MACHINE. Johnston Boggs and Thomas A. Gordon, St. Louis, Mo. Filed Aug. 12, 1891. Serial No. 402,487. (No model.)



Claim.—1. In a hydraulic brick-press, the mold-frame 10, piston-rods 9, pistons 8, cylinders 7, and a stationary upper and movable lower plunger-head.

2. In a hydraulic brick-press, the hand-wheel 30, shaft 29, screw-gearing 27 31, pinions 26, pinion-nuts 25, screw-bolts 24, the mold-plate 10, and lower plunger 17, as above described, and shown in drawings.

3. In a hydraulic brick-press, the movable mold-plate and lower plunger-heads in connection with the hooks 22 22.

4. In a hydraulic brick-press, the movable mold-plate, lower plunger, and hooks 22 22, in connection with wedge-blocks 57 57 on the charger-box 36.

5. In a hydraulic brick-press, the mold-frame 10, rods 9, pistons 8, and cylinders 7, in connection with the rods 24, nuts 25, and plunger-head 17.

6. In a hydraulic brick-press, the movable mold-frame 10, and plunger-head 17, in connection with the rods 24 and nuts 25.

7. In a hydraulic brick-press, the movable mold-frame 10, rods 24, adjusting-nuts 25, the plunger-heads 17 16, and the hooks 22, substantially as described, and shown on drawings.

8. In a hydraulic brick-press, the stationary upper plunger-heads, movable mold-plate, and lower plunger-head, rods and nuts for adjusting the amount of clay used, and hooks adapted to suspend the lower plunger-head with the face level with the top of the mold-plate.

9. In a hydraulic brick-press, the movable lower plunger-head and hooks 22, in connection with the mold-frame, and guides and stops for the same.

10. In a hydraulic brick-press, the stationary upper plunger-heads, movable lower plunger-heads, hooks 22, and movable mold-plate having guides 33 and stops 34 and 35.

11. In a hydraulic brick-press, the movable lower plunger, adjusting-screws 24 and nuts 25, and the movable mold-plates provided with suitable guides and stops.

12. In a hydraulic brick-press, the stationary upper plunger-heads, movable lower plunger-hooks 22, adjusting-screws 24 and nuts 25, and the movable mold-frame having suitable guides and stops.

13. In a hydraulic brick-press, the cylinder 1, plungers 18 17, plungers 21, and cylinder 20.

14. In a hydraulic brick-press, the main cylinder, movable plunger, return-cylinders, and plungers, in connection with the hooks and movable mold-frame.

15. In a hydraulic brick-press, the stationary plunger-heads, movable mold-frame, movable plunger, adjusting-screws 24 and nuts 25, hooks 22, and the charger and wedge-blocks thereon.

16. In a hydraulic brick-press, the stationary plunger-heads, movable mold-frame, engines connected therewith, movable plunger, adjusting-screws 24 and nuts 25, hooks 22, charger with wedge-blocks thereon, and return-cylinders and plungers.

17. In a hydraulic brick-press, the box supplied with valves, rock-shaft for operating the charger-valves, downwardly-projecting crank on said shaft, lever operating said crank, the charger-box, and pin inside of charger-box for operating said lever.

18. In a hydraulic brick-press, the box supplied with valves, rock-shaft for operating said valves, crank and lever to rock said shaft in one direction, latch for retaining it in position when so rocked, and the connecting-rod and bell-crank to release said latch by contact with the mold-frame.

19. In a hydraulic brick-press, the box supplied with valves, lever for operating valves controlling main high-pressure valve, hook for operating said lever, bell-cranks and connecting-rod for raising such hook by contact of main plunger when partly up, and bell-crank and connecting-rod for releasing said hook by main plunger at the end of its stroke.

20. In a hydraulic brick-press, the box supplied with valves, shaft for operating valves controlling the main exhaust-valves, upwardly-projecting crank on said shaft, lever operating such shaft, and latch on the charger-box moving said lever.

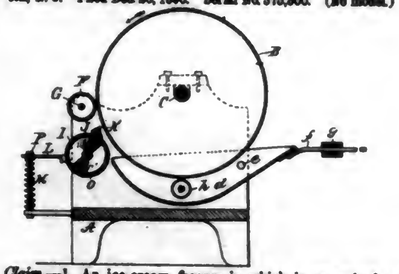
21. In a hydraulic brick-press, the box supplied with valves, shaft for operating valves controlling the main exhaust-valve, crank and lever for operating said shaft, latch on the charger-box for moving said lever, pin for releasing said latch, spring for holding said pin out of engagement with said latch, bell-crank for operating said pin, lever for operating said bell-crank, and connecting rods and levers for operating such lever by the closing of the hooks 22 22.

22. In a hydraulic brick-press, the box supplied with valves, lever for operating the valves controlling the main low-pressure valve, arm on shaft for operating valves controlling the main exhaust-valves, hook connecting said arm with said lever, and connecting-rod and bell-crank for releasing said hook by the contact of the main plunger when partly up.

23. In a hydraulic brick-press, the box supplied with valves, lever for operating the valves controlling the movement of the mold-frame, arm on shaft for operating valves controlling main exhaust-valves, hook connecting said arm with said lever, and connecting-rod and bell-crank for releasing said hook by the contact of the main plunger at the end of its stroke.

24. In a hydraulic brick-press, a box supplied with valves, shaft for operating valves controlling the main exhaust-valve, crank and lever for operating said shaft, latch on charger-box for operating said lever, levers for operating valves controlling main low-pressure valve and those controlling the movement of the mold-frame, arms on said shaft and hooks connecting them to the last-named levers, and connections for releasing said hooks by the movement of the main plunger, the one when it is part way up and the other at the end of its stroke, also connections for releasing said latch by the closing of the hooks 22.

475,748. ICE-CREAM FREEZER. CHARLES I. BELLAMY, Arlington, N. J. Filed Dec. 20, 1890. Serial No. 375,300. (No model.)



Claim.—1. An ice-cream freezer in which is comprised a main frame, a cylindrical revolvable receptacle for the freezing mixture and means for rotating the same, a holder for the cream to be frozen, pivoted at one side of its center and arranged to be automatically forced upward beneath the cylinder by a counter-balance, a scraper bearing against the receptacle for the freezing mixture, and a conveyer located beneath said scraper, the whole combined and arranged substantially as shown and described.

2. In an ice-cream freezer of the character herein specified, the combination, with a freezing-cylinder, of a mixing-roller mounted in close proximity thereto and arranged to revolve at a speed different from said cylinder, substantially as shown and described.

3. In an ice-cream freezer of the character herein specified, the combination, with the freezing-cylinder, of a pivoted milk or cream holder, and an adjustable weight applied to an extension from said holder, substantially as and for the uses and purpose shown and described.

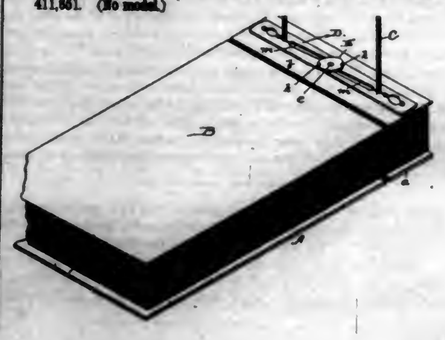
4. In an ice-cream freezer of the character herein specified, the combination, with the freezing-cylinder, of the adjustable receiving-cylinder, and the scraper mounted thereon, substantially as shown and described.

475,749. TROUSERS-PROTECTOR. EDGAR P. BENJAMIN, Boston, Mass. Filed July 11, 1891. Serial No. 399,143. (No model.)



Claim.—A trousers-protector consisting of a curved spring-band having ankle-straps secured to the concave surface thereof near its central portion, for the purpose set forth.

475,750. FILE-BINDER. JOHN F. BROWN, Indianapolis, Ind., assignor to Albert B. Baker, same place. Filed Nov. 12, 1891. Serial No. 411,861. (No model.)



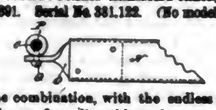
Claim.—1. The combination, in a file or binder, of a slotted clamping-bar, upright rods passing through the slot of the bar, and a device adapted to press the sides of the bar together, thus narrowing the slot and producing a clamping action upon the rods, substantially as set forth.

2. The combination, with the upright rods, of the bar having the slot *m* and a rotating device carrying the projections *g* for causing the clamping action by the sides of the bar upon the uprights, substantially as set forth.

3. The combination, with the uprights, of the clamping-bar having slot *m* and the rotating device having projections *g*, said bar being recessed at *h*, substantially as set forth.

4. The combination of the clamping-bar having slot *m*, embracing a right-angled portion *n*, and a rotating clamp-producing device having an axis *c*, located in said right-angled portion *n* of the slot *m*, substantially as set forth.

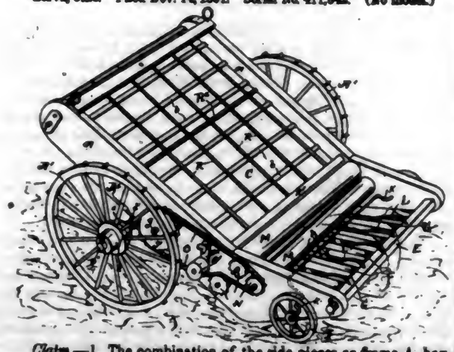
475,751. CLOTHES-DRIER. ARENDTZ CARON, Minneapolis, Minn. Filed Feb. 12, 1891. Serial No. 381,122. (No model.)



Claim.—1. The combination, with the endless cables and transverse holders, of clamps for adjustably and removably securing the holders to the cables.

2. A device for securing slats to cables, consisting of a ring, a lug, and a clamp-screw, the ring fitting over the cable, the lug being attachable to the slat, and the screw working through threaded holes in the ring and the lug against the cable, substantially as described.

475,752. HAY RAKE AND LOADER. DAVID C. CHADDOCK, Minerva, Ohio. Filed Nov. 14, 1891. Serial No. 411,842. (No model.)



Claim.—1. The combination of the side pieces or frame A, having journaled thereto the rollers B, B', and M, the elevating-web provided with the cleats *b*, the axle D, the ratchets *e d*, the traveling wheels A', the cog-wheel *c*, the pinion *f*, the shaft *g*, the sprocket-wheels *g'* and N, the drive-chain O, the pivoted rake-teeth F, provided with the bent or curved arms H, located behind the roller B, the springs L, and means for adjusting the rake-teeth.

2. The combination of the side pieces A, having journaled thereto the rollers B, B', and M, the elevating-web C, and means for communicating motion to said web, the rake-teeth F, pivoted to the bar E, the bent or curved axle K, having journaled thereto the traveling wheels I below the pivotal point of said axle K in the frame A, the chains A, connected to said axle K and to the rake-teeth F, and the lever or arm K', substantially as and for the purpose specified.

3. The combination of the side pieces A, an elevating-web, the pivoted rake-teeth F, provided with the arms H, the springs L, the bent or curved axle K, provided with the traveling wheels I and the lever or arm K', the notched rack K^3, and the chains A, or their equivalents, substantially as and for the purpose specified.

4. In a hay rake and loader, the combination of the pivoted teeth F, provided with the arms H and the grooves H', the springs L, the bent or curved axle K, and the chains A, or their equivalents, substantially as and for the purpose specified.

475,753.



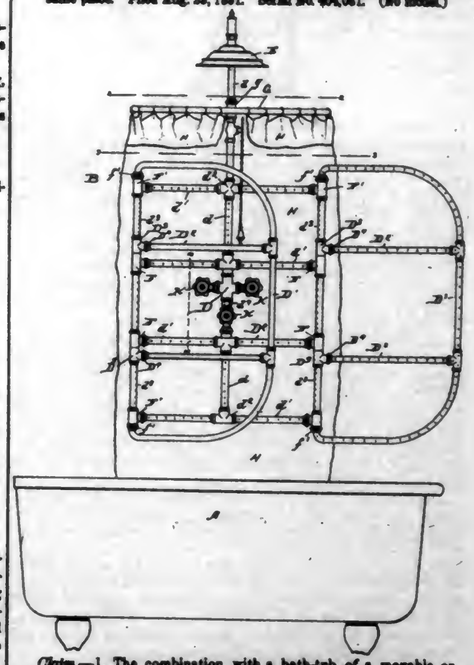
in and a perforated erasing-covering thereover, substantially as described.

3. A blackboard-eraser consisting of a body having an air-vent and an elongated spring-actuated valve mounted in said body, substantially as described.

4. In a blackboard-eraser, the combination of a body having an air vent therein, a spring-actuated V-shaped piece of metal forming a valve, and a perforated erasing-covering, substantially as described.

5. In a blackboard-eraser, the combination of a body having an air-vent, a spring-actuated dust-suction valve mounted in said body having flanges, and a perforated covering for erasing purposes, substantially as described.

475,754. NEEDLE-BATH APPARATUS. JOHN CLIFFORD and JOHN H. GAVIN, Chicago, Ill., assignors to the L. Wolff Manufacturing Company, same place. Filed Aug. 29, 1891. Serial No. 404,061. (No model.)



Claim.—1. The combination, with a bath-tub, of a movable or folding needle-spray apparatus supported over the tub and adapted to be moved or folded out of the way when the needle-spray is not in use, and thus not interfere with the convenient use of the bath-tub for bathing therein, substantially as specified.

2. The needle-bath apparatus comprising a stationary portion mounted upon suitable brackets affixed to the wall and one or more swinging or folding portions hinged to said stationary portion, substantially as specified.

3. The combination, with bath-tub A, of bracket C, having adjustable section *c*, needle-spray apparatus having a stationary portion D, secured to the adjustable section of said bracket, folding or swinging portions D', and a curtain and curtain-supporting rod, substantially as specified.

4. The combined bathing apparatus consisting of bath-tub A, needle-spray apparatus D, having folding arms or members D' D', and shower E, substantially as specified.

5. The combination, with supply-pipe *d*, having T-couplings *g*, furnished with closed arms *g'*, of ring-shaped curtain-rod G, having its adjoining ends g^6 connected to the arms of said T-coupling *g* by coupling-nuts g^5, the abutting ends being furnished with tongues and grooves, substantially as specified.

6. In a needle-bath apparatus, the combination, with a stationary portion, of one or more hinged or folding portions having two joints or hinges to the stationary portion, one of said joints being a liquid-

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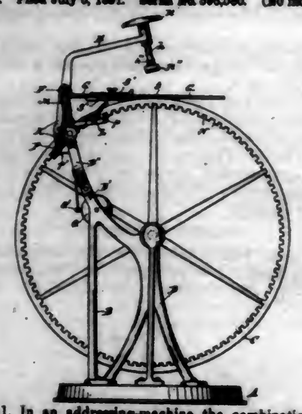
475,755. BLACKBOARD-ERASER. LEWIS W. CRANE, Kirksville, Mo. Filed Jan. 5, 1892. Serial No. 417,120. (No model.)

Claim.—1. A blackboard-eraser having a suction-valve located therein and extending throughout the length thereof, substantially as described.

2. A blackboard-eraser having a dust-suction valve located there-

tight packed joint and the other being simply a supporting or bearing joint to relieve said packed joint from weight and wear, substantially as specified.

475,755. ADDRESSING-MACHINE. GEORGE S. COOK, Minneapolis, Minn. Filed July 6, 1891. Serial No. 398,580. (No model.)



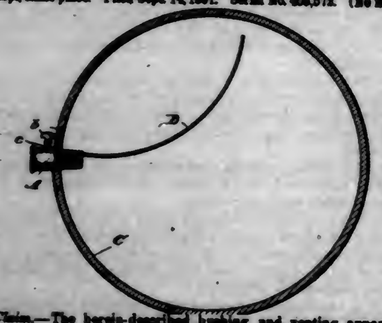
Claim.—1. In an addressing-machine, the combination, with a rotatable cylinder having cells for the type-bars on its periphery arranged parallel with its axis, of a stamper pivoted to a support independent of the cylinder and having its platen pivotally connected to the shank of the stamper, so as to swing in a plane parallel with the type-bars, whereby the platen will follow and cover the type regardless of the surface of the cells, substantially as described.

2. The combination, with a type-wheel having an annular rack, of a pivoted driving-pawl, a spring applied to place both the stamper and the driving-pawl under a common tension, and a spring-held locking-dog, whereby the operation of the stamper will operate the pawl and dog to effect the feed, substantially as described.

3. The combination, with a type-wheel having an annular rack, of a pivoted stamper and a pivoted driving-pawl engaging the said rack operated by the stamper, a spring applied so as to place both the stamper and the pawl under a common tension, and a pivoted spring-held locking-dog normally engaging the rack and having its free end projecting into the path of the driving pawl, whereby the operation of the stamper operates the driving-pawl and the movement of the driving-pawl to engage a new notch will unlock the dog, substantially as and for the purpose set forth.

4. In an addressing-machine, the combination, with the type-wheel having an annular rack, of a supporting-bracket, the shaft F, supported from the said bracket and projecting over the wheel, the stamp-lever H, carried by the said shaft, the crank-arm K, fixed to the said shaft, the spring-held driving-pawl lever L, pivoted to said crank-arm, the spring-held locking-dog P, pivoted to the bracket, normally engaging the said rack, and having its forward or free end in the path of the driving-pawl, and the spring M, having its active end applied to the free end of the said pawl-lever, the said parts being arranged and operating substantially as and for the purpose set forth.

475,756. BUSHING AND VENTING APPARATUS FOR BARRELS. SAMUEL G. DUNBAR, Cincinnati, Ohio, assignor of one-half to Dennis Wainright, same place. Filed Sept. 14, 1891. Serial No. 406,572. (No model.)



Claim.—The herein-described bushing and venting apparatus, consisting of the tapering bushing A, having the perforated legs *a* on its interior, and the adjustable curved vent-tube B, inserted through the legs *a* and clamped by the screw *b*, substantially as and for the purpose specified.

475,757. PROCESS OF RECOVERING GLYCERINE AND SALT FROM SPENT SOAP-LYE. ALBERT DOMMER and OTTO C. HAGMANN, London, England, assignors, by mesne assignments, to James S. Kirk & Co., Chicago, Ill. Filed Mar. 1, 1889. Serial No. 301,676. (No specimens.)

Claim.—1. In the process of recovering glycerine and salt from spent soap-lye, the herein-described improvement, which consists, first, in adding lime or its equivalent earthy or metallic oxide or hydrate to the lye to precipitate all the impurities in suspension and partly those in solution, then filtering and decanting from the precipitate, then adding acid to precipitate the remainder of the fatty impurities in solution and filtering the liquor therefrom, then adding alkali to neutralize the acid and precipitate albuminous matters, and finally concentrating the clear liquor, as set forth.

2. In the process of recovering glycerine and salt from spent soap-lye, the herein-described improvement, which consists, first, in adding lime or its equivalent to the lye and filtering or decanting the liquor therefrom, then applying heat and evaporating the lye until it becomes saturated with salt, then adding acid and filtering, then adding alkali and again filtering or decanting, and finally concentrating to about 302° Fahrenheit and removing the salt, as set forth.

3. The herein-described process of recovering glycerine and salt from spent soap-lye, which consists, first, in adding lime or equivalent earthy or metallic oxide or hydrate to the lye and decanting and filtering from the precipitate thus produced, then adding acid to the filtered or decanted liquor, with or without previous concentration of such liquor, then filtering the liquor from any precipitate formed by the acid, then adding alkali to neutralize any excess of acid and precipitate any albuminous matters, and finally concentrating the liquor and removing salt therefrom as it crystallizes.

475,758. PROCESS OF RECOVERING CRUDE GLYCERINE FROM SPENT SOAP-LYE. ALBERT DOMMER and OTTO C. HAGMANN, London, England, assignors, by mesne assignments, to James S. Kirk & Co., Chicago, Ill. Filed Aug. 7, 1889. Serial No. 320,081. (No specimens.)

Claim.—1. In the process of extracting crude glycerine and salt from spent soap-lye, the improvement which consists in first treating the spent lye with lime and allowing the precipitate thus formed to settle and drawing off or filtering the clear liquor therefrom, then boiling the said liquor with fat, fatty acids, or rosin to remove the free alkali therefrom, and then adding to the liquor alum or a suitable metallic chloride or a mixture of alum and a metallic chloride to precipitate fatty and resinous acids, substantially as described.

2. In the process of extracting crude glycerine and salt from spent soap-lye, the improvement which consists in first treating the spent lye with lime and allowing the precipitate thus formed to settle and drawing off or filtering the clear liquor therefrom, next reducing the bulk by evaporation up to the point at which it is saturated with salt and boiling it with fat, fatty acids, or rosin to remove the free alkali, and then adding to the liquor alum or a suitable metallic chloride or a mixture of alum and a metallic chloride to precipitate fatty and resinous acids, substantially as described.

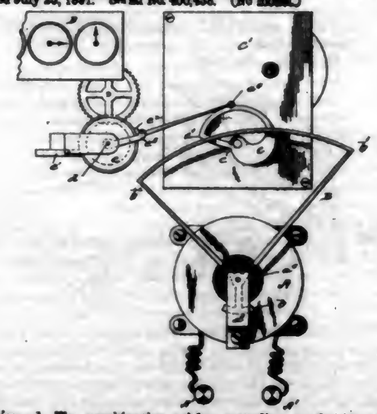
3. In the process of extracting crude glycerine from spent soap-lye, the improvement which consists in first treating the lye with lime and allowing the precipitate thus formed to settle and drawing off or filtering the clear liquor therefrom, then boiling the said liquor with fat, fatty acids, or rosin to remove the free alkali therefrom, and then adding to the liquor alum or a suitable metallic chloride or a mixture of alum and a metallic chloride to precipitate fatty and resinous acids, removing the precipitate thus formed, and then adding caustic or carbonated alkali to precipitate albuminous matters and any remaining alum or metallic chlorides, substantially as described.

4. In the process of extracting crude glycerine from spent soap-lye, the improvement which consists in first treating the lye with lime and allowing the precipitate to settle and drawing off or filtering the clear liquor therefrom, next reducing the bulk by evaporation up to the point at which it is saturated with salt and boiling it with fat, fatty acid, or rosin to remove the free alkali and then adding to the liquor alum or a suitable metallic chloride or a mixture of alum and a metallic chloride to precipitate fatty and resinous acids, removing the precipitate thus formed, and then adding caustic or carbonated alkali to precipitate albuminous matters and any remaining alum or metallic chlorides, substantially as set forth.

5. In the process of extracting crude glycerine from spent soap-lye, the improvement which consists in first treating the lye with lime and allowing the precipitate thus formed to settle and drawing off or filtering the clear liquor therefrom, then boiling the said liquor with fat, fatty acid, or rosin to remove the free alkali therefrom and then adding to the liquor alum or a suitable metallic chloride or a mixture of alum and a metallic chloride to precipitate fatty and resinous acids, removing the precipitate thus formed, and then adding caustic or carbonated alkali to precipitate albuminous matters and any remaining alum or metallic chlorides, again removing the precipitate, and finally concentrating the clear liquor by evaporation to produce crude glycerine and salt, substantially as specified.

6. In the process of extracting crude glycerine and salt from spent soap-lye, the improvement which consists in first treating the lye with lime and allowing the precipitate to settle and drawing off or filtering the clear liquor therefrom, next reducing the bulk by evaporation up to the point at which it is saturated with salt and boiling it with fat, fatty acid, or rosin to remove the free alkali, and then adding to the liquor alum or a suitable metallic chloride or a mixture of alum and a metallic chloride to precipitate fatty and resinous acids, removing the precipitate thus formed, and then adding caustic or carbonated alkali to precipitate albuminous matters and any remaining alum or metallic chlorides, again removing the precipitate, and finally concentrating the clear liquor by evaporation to produce crude glycerine and salt, substantially as described.

475,759. ELECTRIC METER. OSCAR REICHOW, Sioux Falls, S. D. Filed July 23, 1891. Serial No. 400,436. (No model.)

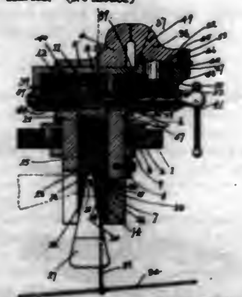


Claim.—1. The combination, with a recording mechanism, of a lever or pawl through which motion is transmitted to the same, a continuously-rotating cam adapted to move said lever, and another cam or sector controlled by the current to be measured, regulating the distance which said cam moves said lever, substantially as described.

2. The combination, with a recording mechanism and a wheel, as *c*, in gear therewith, of a pawl bearing upon said wheel, a continuously-rotated cam imparting a stroke to said pawl, an eccentric sector determining the length of stroke imparted to the pawl by the cam, and an electro-magnetic apparatus controlling the sector, substantially as described.

3. In an electric meter, the combination, with a recording mechanism and a lever through which motion is transmitted to the same, of two cams, one driven by a constant motor and the other by the current measured, and one imparting the effective movement to the lever and the other regulating the extent of such movement, as set forth.

475,760. VISE. CLARE ERNST, Bay City, Mich. Filed Nov. 20, 1891. Serial No. 412,465. (No model.)



Claim.—1. In a vise, the combination of the jaw 4, having a lower portion 7, provided with a vertical opening 10 and with a transverse opening 5, with the nut-section 12 within said opening 5 and having a portion 14 extending into said opening 10 and provided on its lower portion with opening 15 and with a shoulder 23, the upper nut-section 16 in the opening 5 and having a portion 18 extending into the opening 15 and provided with an opening 19 on its lower portion, with the lever 24 pivoted to the inner side of the portion 18 and having an arm 26 extending upward to contact with said shoulder 23 and with a weighted opposite arm, and means for oscillating the lever to free the arm from said shoulder and for moving the nut-sections in opposite directions, the screw between the nut-sections, and the transverse arm for carrying the screw and passed into said opening 5 and provided on its outer end with a jaw 38, substantially as set forth.

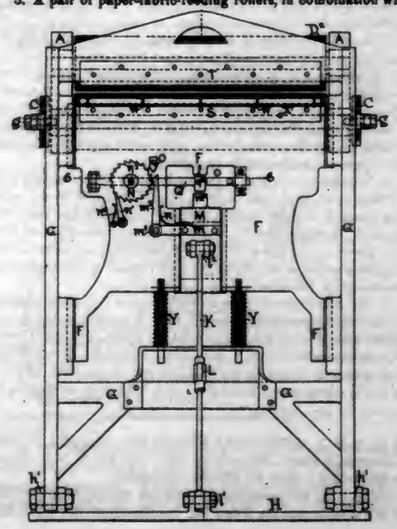
2. The combination, in a vise, of the stationary jaw provided with a transverse opening 5 and with a vertical opening 10 in its lower portion, a hollow arm 37, passed into the opening 5 and carrying a jaw 38 on its outer end and a screw 40 extending through the arm, a sectional nut 11 for engaging the screw within the opening and composed of the lower section 12, having a portion 14 extending into said opening 10 and provided with a shoulder 23 and with an opening 15, the upper section 16, provided with a downwardly-extending portion 18, having an opening 19, the lever 24 between said portions 14 and 18 and pivoted to the portion 18 and having an upwardly-extending arm 26 in contact with shoulder 23, and with an oppositely-extending weighted arm 27 and with a forwardly-extending lug 28, with the transverse lever 29, having its inner end passed through the openings 15 and 19 and pivoted at 36 to the wall of the opening 10, and a rod 33, pivotally secured by its one end to the outwardly-extending arm of lever 29 and a foot-lever pivoted to the opposite end of the rod, substantially as set forth.

475,761. PAPER-CUTTING MACHINE. GEORGE W. EVANS, Brooklyn, N. Y. Filed Jan. 6, 1891. Serial No. 376,897. (No model.)

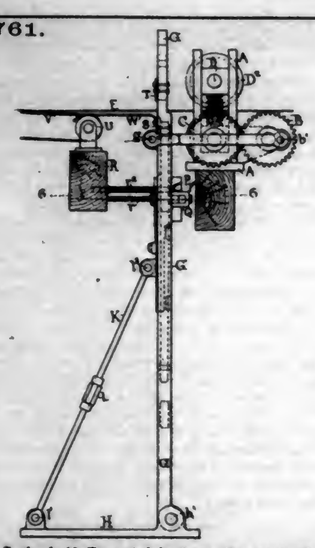
Claim.—1. A pair of rotating rollers to feed the fabric between them, in combination with one of the cutting-knives and an outer frame to which it is attached, said frame being hinged at the bottom to a fixed base, rods pivoted to said frame at its upper end, a rotating wheel to which said rods are pivoted at their opposite ends, the second knife, an inner frame to which it is attached, said frame sliding endwise within grooves in the outer frame, a radius-rod pivoted at its lower end to the fixed base, a block sliding endwise within said inner frame and having the radius-rod pivoted thereto at its opposite end, and means for connecting the sliding block to the inner frame at intervals to give a cutting motion to said second knife.

2. The knife T, the outer frame G, to which it is attached, the fixed base H, to which said frame is hinged at the bottom, connecting-rods I, pivoted to said frame at its upper end, and a rotating wheel B, to which said rods are pivoted at their opposite ends, in combination with the knife S, the inner frame F, to which it is attached, the radius-rod K, the base H, to which it is attached at its lower end, the block M, to which said rod K is attached at its upper end, block M being adapted to slide endwise within frame F, and bar Q, arranged to intervene at intervals between block M and frame F, whereby cutting motion is imparted to knife S at the desired intervals, substantially as described.

3. A pair of paper-fabric-feeding rollers, in combination with an



475,761.



outer frame G, the knife T, carried by frame G, a connecting-rod I, pivoted at one end to frame G, a rotating wheel R, to which the other end of the connecting-rod I is pivoted, another knife S, an inner frame F, to which the knife S is attached, said frame G having grooves wherein the frame F may slide endwise, together with a block M, grooved on its sides, with corresponding tongues upon frame F, as described, a radius-rod K, pivoted at its upper end to block M and at its lower end to a fixed base H, and a bar Q, arranged to intervene at intervals between block M and frame F, whereby the frame F is carried upward with the block M by radius-rod K and the knife S is brought into active contact with the paper fabric, substantially as described.

4. In combination with a pair of paper-fabric-feeding rollers, an outer frame G, a knife T, attached thereto, said frame G receiving vibrating motion of its upper part in unison with said rollers, as described, an inner frame F, arranged to slide endwise within the outer frame G, a block M, tongued and grooved to frame F, a radius-rod K, arranged to reciprocate block M, as described, a bar Q, adapted to be interposed between the frame F and the block M, whereby they are made to move upwardly in unison, together with the mechanism for so interposing bar Q periodically, to wit: the pawl m^3, with its pivot m' fixedly attached to block M, the ratchet-wheel N, actuated by pawl m^3, disk P, with notch P' formed upon the same, together with spring r and detent r^4, which cause bar Q to register and to unregister with the notch P' in disk P, whereby the knives are brought into cutting contact as often as a notch P' is made to register with bar Q, substantially as described.

5. In combination with the vibrating frame G, and knife T, attached thereto, and the frame F, with the knife S attached thereto, the block M, arranged to be reciprocated within frame F, bar Q, adapted to be periodically interposed between block M and frame F, as and for the purpose named, radius-rod K, which is arranged to reciprocate said block M, and sleeve-nut L upon rod K, whereby the length of rod K is made adjustable and the relative positions of said knives is thereby made adjustable, substantially as described.

6. In combination with a pair of rotating paper-feeding rollers, the vibrating frame G, and knife T, carried by frame G, the reciprocating frame F, and the knife S, carried by frame F, the block M, radius-rod K, ratchet-wheel N, with its appurtenances, notched disk P, bar Q, spring r, and detent r^4, through which the knives are brought into cutting action at the desired time, the whole operating conjointly, substantially as described.

7. The combination of the vibrating frame G, knife T, carried by frame G, the reciprocating frame F, knife S, carried by the frame F, together with the block M, radius-rod K, interposing-bar Q, with its attachments, ratchet-wheel N, with its appurtenances, the notched disk P, and means for throwing bar Q in and out of gear with notch P' in disk P, the whole operating conjointly, substantially as described.

475,762. ADJUSTABLE SPINDLE-NUT. WALTER L. FRASER and WALTER B. BROWN, National City, Cal. Filed Nov. 26, 1890. Renewed Apr. 4, 1892. Serial No. 427,998. (No model.)

Claim.—1. The combination, with the spindle formed at its end with the L-shaped recess B and the opening B', of the nut C, having

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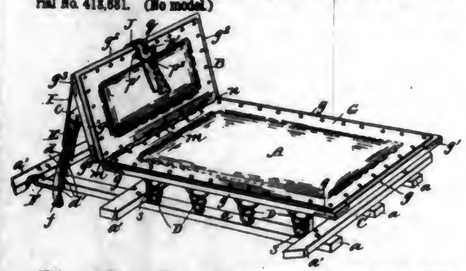
the inner projection C', and the locking-bolt D, arranged in the outer end of the nut, substantially as set forth.

2. The combination of the spindle formed at its outer end with the L-shaped recess B and the opening B', the nut C, having the inner projection C' and the openings c c^2, the L-shaped locking-bolt B, and the spiral spring E, substantially as set forth.

3. The combination, with the removable nut, of the flanged collar F, having the adjusting-slots F', and the set-screws G, substantially as set forth.

4. The combination of the spindle having the L-shaped recess B and the opening B' at its outer end, the nut having the inner projection C', the openings c c^2, and the angular outer end, the spring-actuated L-shaped locking-bolt D, having the head D', the flanged collar F, having the adjusting-slots F', and the set-screws G, substantially as set forth.

475,763. SPRING-BED. LOUIS A. FRIGON, Baltimore, Md., assignor of one-half to Ferdinand C. Smith, same place. Filed Jan. 20, 1892. Serial No. 418,681. (No model.)

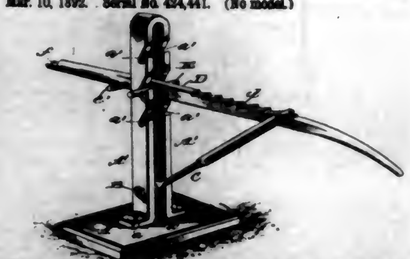


Claim.—1. The combination of the supporting-frame, the frames of the bed proper and head-rest, ticking material applied to the last-mentioned frames, so as to form thereof the joint between the head-rest and bed proper, springs arranged upon the supporting-frame and connected to the bed proper, limitation-straps attached to the supporting-frame and bed proper, and suitable adjustable supports attached to the supporting-frame and the head-rest, substantially as described.

2. The combination of the supporting-frame, the frames of the bed proper and head-rest, ticking material applied to the last-mentioned frames, so as to form thereof the joint between the head-rest and bed proper, springs arranged upon the supporting-frame and connected to the bed proper, the pendent pivoted ratchet-toothed bars attached to the head-rest, the open loops attached to the supporting-frame, the cords connected to the ratchet-toothed bars and passed through the head-rest and united at the center thereof, and the perforated retaining-strap attached to the supporting-frame, and the button for said strap attached to the head-rest, substantially as described.

3. In a spring-bed, the combination of the bed proper, the adjustable head-rest jointed to said bed proper, the supporting-frame, springs on said frame and connected to the said bed proper, the pendent pivoted ratchet-toothed bars attached to the head-rest, the open loops attached to the sides of the supporting-frame, and the springs arranged on said frame between it and the bed proper, substantially as described.

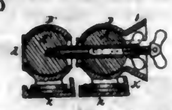
475,764. LIFTING-JACK. EDWARD GARREN, Glenwood, Ill. Filed Mar. 10, 1892. Serial No. 424,441. (No model.)



Claim.—The lifting-jack described, consisting of a base, uprights formed of a single piece of metal having a bend at its center and the ends flanged and secured to the base, with the edge provided with

notches, a removable lever with cross-pins and tapered portion to receive the hub of a wheel and notched upon its upper face, and a bar C, pivoted between the uprights near the base and having an elongated loop embracing the lever and engaging its notches, the lever being formed with concave end portion to engage the threaded end of an axle and provided with a coating of soft metal, substantially as and for the purpose specified.

475,765. FASTENER FOR MEETING-RAILS OF SASHES. JAMES P. H. GASTRELL, Wiesbaden, Germany. Filed June 13, 1891. Serial No. 396,117. (No model.)



Claim.—1. A fastening or securing device comprising the spherical blocks having passages therein for the reception of a bolt, a bolt adapted to said passages, and bearings for said blocks, substantially as specified.

2. The combination, in a fastening device, of the spherical blocks, universal circular bearings therefor, passages in said blocks, and a bolt adapted to such passages, substantially as specified.

3. The combination, in a fastening device, of the spherical blocks, universal bearings therefor, passages in said blocks for the locking-bolt, the passage in one of said blocks being provided with a screw-thread, and a locking-bolt having a screw-thread adapted to engage with the screw-thread in said block, substantially as specified.

4. The combination, in a fastening device, of the blocks or spheres, bearings therefor, passages in said blocks or spheres for the locking-bolt, the passage in one of said blocks or spheres being provided with a screw-thread, and a locking-bolt having a screw-thread adapted to engage with the screw-thread in said block or sphere, said blocks or spheres having stops and said bearings having lips which control the extent of movement of the blocks or spheres, substantially as specified.

5. The combination, in a fastening device, of the blocks or spheres, bearings therefor, passages in said blocks or spheres for the locking-bolt, the passage in one of said spheres being provided with a screw-thread, a locking-bolt having a screw-thread adapted to engage with the screw-thread in said sphere, and an adjusting-nut on said locking-bolt, substantially as specified.

6. The combination, in a fastening device, of the blocks or spheres, bearings therefor, passages in said blocks or spheres for the locking-bolt, the passage in one of said spheres being provided with a screw-thread, the locking-bolt having a screw-thread adapted to engage with the screw-thread in said sphere, an adjusting-nut on said locking-bolt, said locking-bolt having a reduced shank, and a stop on one of said spheres to prevent the withdrawal of the bolt, substantially as specified.

7. The combination, in a fastening device, of the blocks or spheres, bearings therefor, passages in said blocks or spheres for the locking-bolt, the locking-bolt, and a grooved or recessed portion in one of the said bearings to permit the turning of the bolt at an angle to the line of bolting, substantially as specified.

8. The combination, in a fastening device, of the blocks or spheres, passages therein for the reception of the bolt, a locking-bolt, bearings for said blocks or spheres, and a conical shield projecting from one of said bearings and adapted to protect the end of the bolt, substantially as specified.

9. The combination, in a fastening device, of the blocks or spheres, passages therein for the reception of a bolt, a locking-bolt, bearings for said blocks or spheres, hinged foot-plates on which said bearings are mounted, said foot-plates being free to rotate, substantially as specified.

475,766. WIRE ROPEWAY. WILLIAM S. HALL, Tokio, Japan. Filed July 21, 1891. Serial No. 400,258. (No model.)

Claim.—1. The herein-described rope-clip or saddle, consisting of a plurality of opposed gripping-surfaces arranged to alternate with one another.

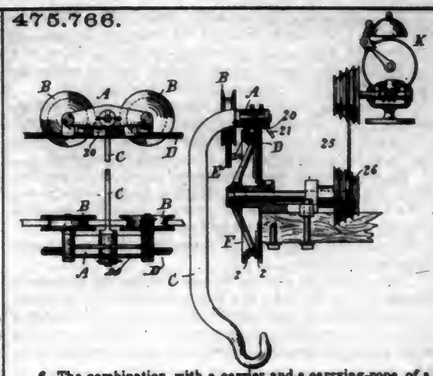
2. The herein-described rope-clip or saddle, consisting of a plurality of opposed gripping-surfaces forming a A-shaped groove and alternating with one another upon opposite sides of the groove.

3. The herein-described rope-clip or saddle of A form, consisting of a plurality of separated gripping-surfaces, a gripping-surface upon one side of the A being opposite the space between the gripping-surfaces on the other side.

4. The combination, with the trolley-frame, of a rope-clip or saddle on said frame, composed of a plurality of opposed gripping-surfaces alternating with one another, substantially as described.

5. The combination, with a rope-clip or saddle composed of oppositely and alternately arranged gripping-surfaces, of a rope-carrying pulley provided with supplementary grooves for the ends of the gripping-surfaces, substantially as described.

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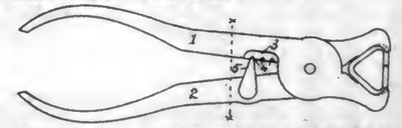


6. The combination, with a carrier and a carrying-rope, of a permanent rail for the carrier, having a stop or detent, and mechanism for actuating the stop, substantially as described.

7. The combination, with a carrier and a carrying-rope, of a permanent rail for the carrier, a stop or detent forming part of such rail, and mechanism for actuating the stop, substantially as described.

8. The combination, with a carrier and a carrying-rope, of a permanent rail for the carrier, a pivoted stop or detent forming part of such rail, a toe or lever for locking the stop, and mechanism for moving the toe, substantially as described.

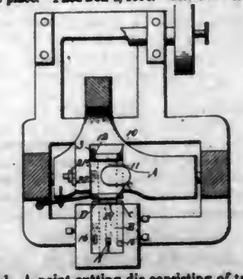
475,767. HOG-RING PINCHERS. HUGH W. HILL, Decatur, Ill. Filed Nov. 11, 1891. Serial No. 411,547. (No model.)



Claim.—1. Hog-ring pinchers composed of two handles pivotally connected and terminating in jaws capable of grasping and closing rings of different sizes, a threaded shank extending through a hole in one handle parallel with the pivot, and a nut on one end of the shank and a rigid stop on the other end adapted to bear against the opposite handle and regulate the approach of the jaws, substantially as set forth.

2. In hog-ring pinchers, the combination of the handles 1 and 2, the notched ledge 3 on handle 1, the threaded shank 6, extending through a hole in handle 2, the nut 7 on one end of the shank, and the pointed stop 5 on the opposite end of the shank, adapted to engage the notches of the ledge, as set forth.

475,768. DIE FOR CUT-NAIL MACHINES. CHARLES E. HOUSTON, Northumberland, Pa., assignor to one-half to Horace Rufus Johnson, same place. Filed Dec. 1, 1891. Serial No. 413,718. (No model.)



Claim.—1. A point-cutting die consisting of two sections jointed together, the rear section being broader than the forward and point-cutting section, substantially as described.

2. A point-cutting die consisting of two sections jointed together by a lapped joint and a pin fixed in one leaf of the joint and loosely projecting through the other leaf, substantially as and for the purpose specified.

3. A point-cutting die consisting of two sections, the rear section being broader than the forward or point-cutting portion and connected by a lapped joint and a pin fixed in one leaf of the joint and projected through the other leaf, substantially as described.

4. The combination of the die-casing formed with a side flange provided with a longitudinally-arranged slot therein, and a point-cutting die arranged in the casing under the flange and consisting of a rear portion and a front portion hinged together, the front portion being narrower than the rear portion, substantially as described.

5. The die-casing for the moving dies of a nail-cutting machine, consisting of a body formed with a channel in its side to take a gripping-die, a seat in the bottom for the nipper, and a seat for a point-cutting die adjoining the nipper-seat, substantially as described.

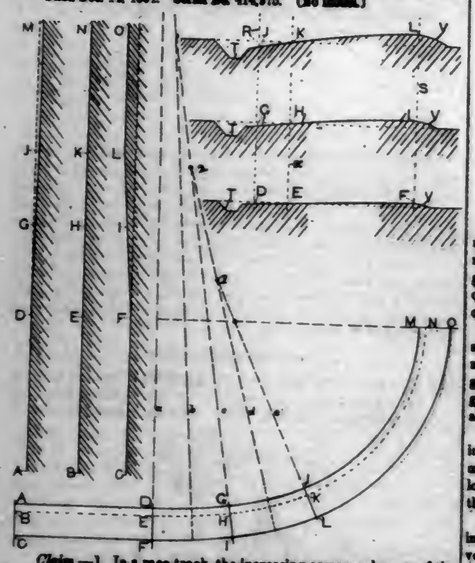
6. The die-casing for the moving dies of a nail-cutting machine, consisting of a body formed with a transverse groove across its face end and a back piece secured in the groove, a channel in its side to take the gripping-die, a seat in the bottom for the nipper, and a seat for a point-cutting die adjoining the nipper-seat, substantially as and for the purpose specified.

7. The combination, with the die-casing having dies arranged in its opposite sides and formed with a longitudinal groove in its bottom face, of a nail-ejector having a stem in the groove of the bottom of the casing and a head-piece on the outer end of the stem extending across the end face of the casing between the dies, substantially as described.

8. The combination, with the die-case having a groove in its bottom face, of a spring-actuated nail-ejector consisting of a stem to fit the groove in the case, and an ejector-head arranged to substantially cover and set against the exterior of the end of the die-case, substantially as described.

9. The improved point-cutting die herein described, consisting of a rear broad portion and a front narrower portion united by a lapped joint and a pin, and the lap of the front part being curved inwardly on the outer face, substantially as described.

475,769. RACE-TRACK. ROBERT A. HOWARD, Richmond, Ind. Filed Dec. 14, 1891. Serial No. 414,975. (No model.)



Claim.—1. In a race-track, the increasing compound curve of the track D G J, in the manner and for the purpose as herein set forth.

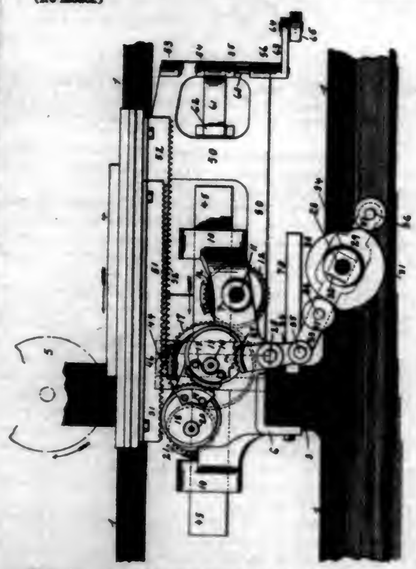
2. In a race-track, the combination of the ditch T, the dip or pitch D I, and the compound curve D J, constructed and operating in the manner and for the purpose substantially as described.

475,770. LEVER FOR STARTING CARS. ARTHUR HUBBARD, Buffalo, N. Y. Filed Sept. 30, 1891. Serial No. 407,164. (No model.)



Claim.—A lever for starting cars, having a hardened steel-pointed end, a guiding-piece having flanges to keep it in line upon the rail, and an upwardly-projecting shank which projects through an opening in the end and is pivoted thereto, so as to act as a fulcrum for the lever, and a spring mounted upon a rod pivoted to the guide-piece and having its opposite end secured by a lug on the handle for keeping the guide-piece forward when in its normal position, substantially as described.

475,771. MECHANICAL MOVEMENT. WINFIELD S. HIXON, Taunton, Mass., assignor to the Campbell Printing Press and Manufacturing Company, New York, N. Y. Filed Apr. 6, 1892. Serial No. 428,016. (No model.)



Claim.—1. In a mechanical movement, the combination, with the moving member having gearing on the same, of two gears, means for rotating said gears in opposite directions, and means for moving said gears oppositely up and down to alternately mesh with the gearing on the moving member, whereby the moving member will be reciprocated, substantially as described.

2. In a mechanical movement, the combination, with the moving member having gearing on the same, of the two intermeshed gears, means for raising and lowering said gears oppositely to alternately engage the gearing on the moving member, and means for rotating said gears, whereby the moving member will be reciprocated, substantially as described.

3. In a mechanical movement, the combination of the bed 4, having the racks 51 and 52, the two intermeshed gears, as 21 and 17, means for rotating said gears, and means for alternately raising and lowering each of said gears oppositely to engage its rack, whereby the bed will be reciprocated, substantially as described.

4. In a mechanical movement, the combination, with the bed having the gearing on the same, of the two intermeshed gears, and a reversing mechanism adapted to carry the bed beyond the limits by which the same will be moved by said gears in either direction and to reverse the movement of the bed and present the same again so that the particular gear and gearing on the bed will engage, and means for causing said gears to alternately engage the gearing on the bed, substantially as described.

5. The combination, in a mechanical movement, with the moving member having the gearing on the same, the two intermeshed gears and means for rotating the same, of a reversing mechanism adapted to reverse the movement of the moving member beyond the point by which the same would be carried in either direction by said gears, and means acting at the same time with the reversing mechanism to change the gear that meshes with the gearing on the bed, substantially as described.

6. The combination, with bed 4, having the gearing on the under side of the same, of the intermeshed gears 17 and 21 and means for rotating the same, the shafts 16 and 20, on which the gears 17 and 21 are mounted, eccentric bushings in which said shafts are mounted, and means for oscillating said bushings so that the gears will be alternately

oppositely raised and lowered to engage the gearing on the bed, substantially as described.

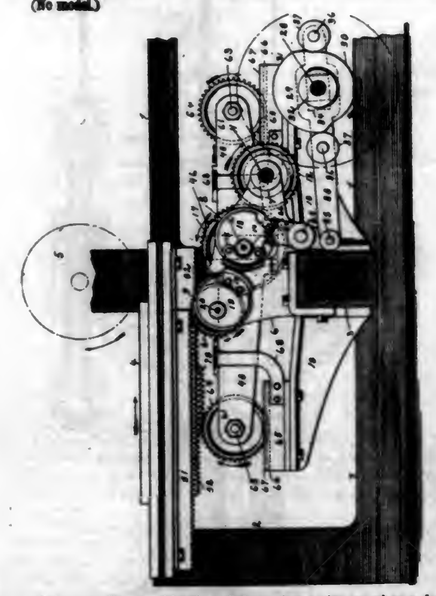
7. The combination of bed 4, having racks 51 and 52, the intermeshed gears 17 and 21, the shafts 16 and 20, on which said gears are mounted, the eccentric bushings in which said shafts are mounted, said bushings being geared together, and means for oscillating said bushings, whereby the gears 17 and 21 will be alternately raised and lowered to engage the racks on the bed, substantially as described.

8. The combination, with bed 4, having racks 51 and 52, of shafts 16 and 20, carrying intermeshed gears 17 and 21, said shafts being mounted in eccentric bushings 13 and 18, said bushings being geared together, the cam 29, and connections between said cam and bushings, whereby they will be oscillated and the gears alternately oppositely raised and lowered to engage said racks, substantially as described.

9. The combination of bed 4, having gearing on the under side of the same, the two intermeshed gears 17 and 21, and means for causing the same to alternately engage the gearing on the bed, means for rotating said gears, a wrist-pin attached to the gear 17, and a reversing mechanism actuated from said wrist-pin adapted to reverse the movement of the bed, substantially as described.

10. In the device described, the bracket 6, having the bearings 7, 8, and 9, and the extending arms 10, having holes for the slider, substantially as described.

475,772. MECHANICAL MOVEMENT. WINFIELD S. HIXON, Taunton, Mass., assignor to the Campbell Printing Press and Manufacturing Company, New York, N. Y. Filed Apr. 6, 1892. Serial No. 428,017. (No model.)



Claim.—1. The combination of the reciprocating member or bed and means for reciprocating the same, a reversing mechanism adapted to reverse the movement of the bed independent of the means for reciprocating the same, said reversing mechanism comprising a traveling gear and connections to move the same, a stationary rack on which said gear rides, and a rack attached to the bed, with which said gear is adapted to mesh, substantially as described.

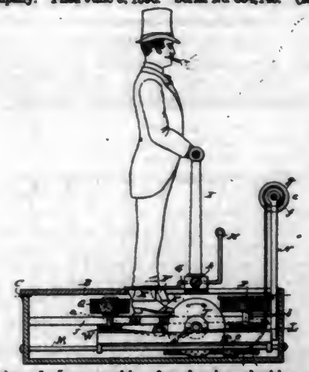
2. The combination, with the reciprocating member or bed, of the gearing for giving the same a direct forward-and-backward movement, of the reversing mechanism adapted to reverse the movement of the bed, comprising the revolving wrist-pin, a frame connected to be vibrated by said wrist-pin, gears carried at the ends of said frame, stationary racks on which said gears ride, and a rack mounted on said bed, with which the gears are adapted to engage to reverse the movement of the bed, substantially as described.

3. The combination, with bed 4, the gear 17, and means whereby said gear is adapted to give a direct forward-and-backward movement to said bed, of a reversing mechanism adapted to reverse the movement of the bed, comprising a wrist-pin carried by the gear 17, the yoke 46, which said wrist-pin is adapted to reciprocate, the gears 64, carried or vibrated by said yoke, stationary racks 66, on which the gears 64 ride, and a rack 70, attached to the bed, with which said gears 64 are adapted to engage to reverse the movement of the bed, substantially as described.

4. The combination, with bed 4, having racks 51 and 52, of intermeshed gears 17 and 21, means for alternately oppositely raising and lowering said gears, whereby a direct reciprocating movement may be imparted to the bed, of a yoke 46, having arms 45, a wrist-pin carried by gear 17 and engaging said yoke, and thereby imparting a reciprocating movement to the same, the gears 64, mounted in said arms 45, and the stationary racks 66, on which said gears ride, and the racks 70, mounted on the bed, with which said gears 64 are adapted to engage to reverse the movement of the bed, substantially as described.

5. The combination, with bed 4, having racks 51 and 52, of the intermeshed gears 17 and 21, means for alternately oppositely raising and lowering said gears, whereby a direct reciprocating movement may be imparted to the bed of a yoke 46, having arms 45, a wrist-pin carried by gear 17 and engaging said yoke, and thereby imparting a reciprocating movement to the same, the gears 64, mounted in said arms 45, and the stationary racks 66, on which said gears ride, the side guide 67, adapted to keep the gears 64 in mesh with said racks 66, and the rack 70, fastened to the bed, with which said gears are adapted to engage to reverse the movement of the bed, substantially as described.

475,773. BLACKING-MACHINE. CHARLES G. HUTCHINSON, New York, N. Y., assignor to the C. G. Hutchinson Shoe Blacking Machine Company. Filed June 3, 1890. Serial No. 354,145. (No model.)



Claim.—1. In a machine for cleaning, daubing, and polishing shoes, a support for the person, in combination with a series of rotatable brushes provided with rigid backs, adapted and arranged to be brought in contact with all parts of the shoes, substantially as shown and described.

2. In a machine for cleaning, daubing, and polishing shoes, supports for both feet, in combination with a series of revolvable brushes mounted on a movable frame, whereby the entire series of brushes may be caused to approach or recede from the shoes, substantially as shown and described.

3. In a machine of the character herein specified, the combination, with the movable frame and the means for applying blacking, of a single series of rotatable brushes adapted and arranged to successively clean, daub, and polish shoes while on the feet, substantially as shown and described.

4. In a machine of the character herein specified, a case having two openings in the top thereof for the reception of the feet of the person, and supports for the feet within the case, in combination with a series of rotatable brushes mounted upon a movable frame within the case, substantially as shown and described.

5. In a machine of the character herein specified, the combination, with the inclosing case, the supports for the feet, and the movable brushes, of the connections to the steam-supply, consisting of a pipe passing into the inclosing case and having an open termination within the case for directing steam around the brushes or the shoes being operated upon, substantially as shown and described.

6. In a machine of the character herein specified, a frame carrying a series of rigid-backed rotatable brushes, the frame and brushes being arranged to move by the shoes in a fixed course, substantially as shown and described.

7. In a machine of the character described, the combination, with a series of rotary brushes, of a series of movable blacking-boxes, each of said boxes being connected to a common operating device, whereby their contents may be simultaneously applied to the brushes, substantially as shown and described.

8. In a machine of the character herein specified, the combination,

with the supports for the feet, of guides and shields for surrounding the upper of the shoe, said guides and shields extending to a point substantially midway of the instep of a shoe, as shown and described.

9. In a machine of the character herein specified, the combination, with the inclosing case, of a reciprocating frame on which the rotatable brushes are mounted, substantially as shown and described.

10. In a machine of the character herein specified, the combination, with the inclosing case, of the transverse bars bearing the supports for the feet, and the sliding frame carrying the rotatable brushes, said frame being located below the transverse bars, substantially as shown and described.

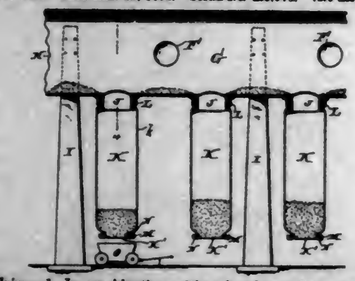
11. A machine for cleaning, daubing, and polishing shoes in which is comprised a series of rotary brushes mounted on a common reciprocating frame, and means for imparting motion to said brushes, substantially as shown and described.

12. In a machine of the character herein specified, the combination, with the support for the feet, of the four vertical brushes mounted upon a common shaft and arranged to pass at both sides of the shoes, substantially as shown and described.

13. In a machine of the character herein specified, the horizontal heel-brushes, vertical side brushes, and horizontal toe-brushes, all provided with rigid backs and revolubly mounted on a common movable frame, substantially as shown and described.

14. In a machine of the character herein specified, a support for the feet, in combination with a series of rotatable brushes mounted in a frame and arranged to move continuously at a distance from the shoes or be brought in contact therewith, substantially as shown and described.

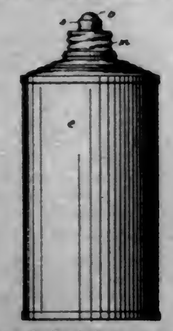
475,774. APPARATUS FOR CONDUCTING AND SCREENING GASES FROM METALLURGICAL FURNACES. MALVERN W. ILES, Denver, Colo. Filed Mar. 22, 1892. Serial No. 426,971. (No model.)



Claim.—1. In combination with a bag-house for screening the gases driven off from metallurgical furnaces, a main delivery-pipe H G, leading thereto and elevated above the ground, a series of thimbles J, extending down at intervals from the bottom of the delivery-pipe, and a series of fabric bags K, secured at top to thimbles J.

2. In combination with a bag-house for screening the gases driven off from metallurgical furnaces, a main delivery-pipe H G, leading thereto and elevated above the ground, a series of thimbles J, extending down at intervals from the bottom of the delivery-pipe, and a series of fabric bags K, secured at top to thimbles J and having bars M M secured on each side of their depending mouths.

475,775. AUTOMATICALLY-CLOSING CAN, BOTTLE, &c. HENRY JOHNSON, New York, N. Y. Filed July 6, 1891. Serial No. 398,562. (No model.)

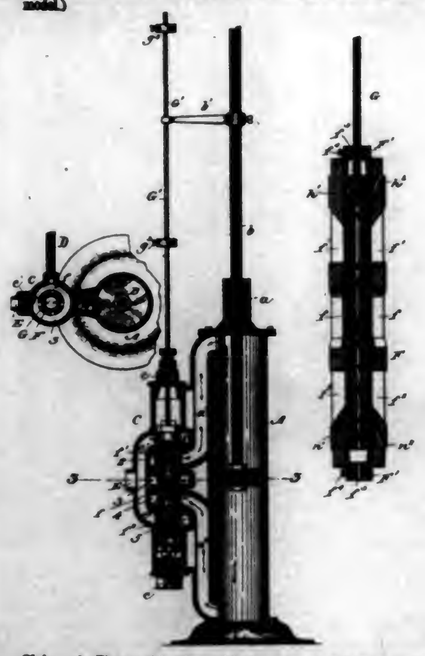


Claim.—1. In automatically-closing cans, a can provided with an outlet or mouth having a stopper-seat at its outer end, in combination with two rigidly-connected stoppers arranged to co-operate one with the stopper-seat in the outer end of the mouth and the other with the inner end of the mouth and with a weighted lever extension rigidly connected with the stoppers, extending within the can, and co-operating with the stoppers, as and for the purpose set forth.

2. In automatically-closing cans, a can provided with a screw-cap having an outlet or mouth with a stopper-seat at its outer end and a washer-packing between the top of the can proper and its screw-cap and with which the screw-cap makes sealing contact, in combination with two rigidly-connected stoppers arranged to co-operate one with the stopper-seat in the outer end of the outlet or mouth and the other with the washer-packing at the inner end of the outlet or mouth and with a weighted lever extension rigidly connected with the stoppers, extending within the can, and co-operating with the stoppers, as and for the purpose set forth.

3. In automatically-closing cans, a can provided with an outlet or mouth having a stopper-seat at its outer end, in combination with two rigidly-connected stoppers arranged to co-operate one with the stopper-seat in the outer end of the mouth and the other with the inner end of the mouth and with a weighted lever extension rigidly connected therewith, extending within the can, and co-operating with the stoppers in their coaction, as shown and described, with the outer and inner ends of the outlet or mouth, for the purposes set forth.

475,776. HYDRAULIC MOTOR FOR ORGANS. JOHN W. JOHNSON, Leavenworth, Kans. Filed July 16, 1891. Serial No. 399,745. (No model.)



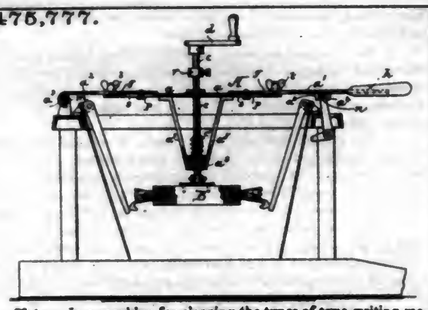
Claim.—1. The combination, with the valve-chest having the annular grooves 1 2 3 4 5, of the hollow valve F, having supply and exhaust ports and passages k' k^3 n' n^3, and the tube G, sliding in the valve F and having openings h i k l m n, substantially as described.

2. The combination, with the valve-chest having the annular grooves 1 2 3 4 5, of the hollow valve F, having supply and exhaust ports, passages k^3 n^3, and ducts f^3, and the tube G, reciprocating inside the hollow valve and having the holes g' g^3 and the openings h i k l m n, substantially as described.

3. The combination, with a cylinder, of a piston and piston-rod, a valve composed of a hollow cylinder containing supply and exhaust ports, an annular groove K, and passage k^3 near each end, and an adjustable duct f^3 in each end, a tube G, having the diaphragm g, the holes g' g^3, and the openings h i k l m n, and a valve-rod G', attached to said tube and provided with tappets adapted to be engaged by an arm on the piston-rod, substantially as described.

475,777. TYPE-CLEANER FOR TYPE-WRITING MACHINES. JOHN B. KEATINGE, Brooklyn, N. Y. Filed Dec. 12, 1891. Serial No. 414,819. (No model.)

475,777.



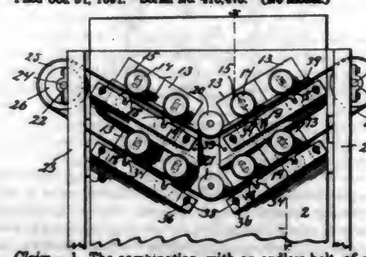
Claim.—In a machine for cleaning the types of type-writing machines, a frame guided and supported by the parallel guide-rods of the type-writing machine and provided with bearings and brackets for a vertical shaft, in combination with a brush mounted upon a vertical shaft and capable of receiving a spiral reciprocating motion, as and for the purposes herein shown and set forth.

475,778. MEANS FOR SETTING DIAMONDS AND OTHER STONES FOR CUTTING PURPOSES. FRITZ KNOEL, Breslau, Germany. Filed Jan. 5, 1892. Serial No. 417,091. (No model.)



Claim.—My improved means of setting diamonds and other cutting-stones in tools or cutters a, by means of conical bolts f, caps e, and surface-plates n, substantially as and for the purpose specified.

475,779. GRAIN-SEPARATOR. JAMES M. KING, Rochester, Minn. Filed Oct. 31, 1891. Serial No. 410,475. (No model.)



Claim.—1. The combination, with an endless belt, of pulleys for driving, idlers or carriers arranged for said belt to rest upon, screen-shafts arranged above the same, and weighted pulleys thereon bearing upon said belt and driven thereby, substantially as and for the purpose specified.

2. The combination, in a grain-separating machine, of rotary sieves with shafts attached, supporting-walls and bearings for said shafts, large pulleys 25, a belt 27, arranged upon the same, means for driving said belt, pulleys arranged on said shafts and bearing upon said belt, and carrier-pulleys arranged under the same, and said belt passing between said carriers and shaft-pulleys, substantially as described.

3. The combination, in a grain-separating machine, of rotary screens and the shafts thereof provided with pulleys, with the walls of said machine, slotted blocks wherein the shafts are supported, pulleys 25, the belt 27, and carriers 18, arranged under said shaft-pulleys and adjustably arranged with respect to the same, substantially as described.

4. The combination, with the rotary screen and the shafts thereof, of the walls of the machine, large rectangular openings therein, the blocks 13, secured in said openings and provided with slotted bearings for said shafts, large pulleys 25, means for driving the same, a belt 27, passing over the same, idlers 20 and 21, carrier-boxes 19 and carriers arranged therein, and iron pulleys 14, provided with rubber tires 15 and arranged above said carriers 18, said boxes being adjustable, substantially as described.

475,780. COMBINATION-TOOL FOR BICYCLISTS. WILLIAM E. KING and WILLIAM R. WALPOLE, Chicago, Ill. Filed Feb. 23, 1892. Serial No. 422,408. (No model.)

Claim.—1. The combination, with a longitudinally-movable jaw, said jaw being provided upon the under surface with an angular recess forming a shoulder, a handle carrying said longitudinally-movable jaw, and devices for moving said jaw longitudinally, of a bar adapted to be removably pivoted upon said handle and with said shoulder to form a wrench, substantially as described.

2. The combination, with a longitudinally-movable jaw, said jaw being provided upon its under surface with an angular recess forming a transversely-edged shoulder, a handle carrying said jaw, and devices for moving said jaw longitudinally, said handle being provided with a rigid pin opposite said angular recess, of a bar adapted to be removably hung upon said pin and provided with a transverse notch at its upper end, adapted with said shoulder to form a wrench, substantially as described.

3. The combination, with a longitudinally-movable shank B, carrying at its outer end a jaw B' and jaw B'' and provided upon its lower end with a screw-thread b, said jaw B'' being provided upon its under side with an angular recess H, forming a transversely-edged shoulder I, a handle A, carrying said shank B and provided with a jaw A' opposite said jaw B', said handle being provided with a rigid pin K, extending upward and outward under said recess H, and a milled nut C, carried by said handle A and adapted to engage with said screw-threaded end b, of a bar D, adapted to be removably hung upon said pin K, said bar being provided with a transverse notch d, adapted with said shoulder I to form a wrench, substantially as described.

4. The combination, with a longitudinally-movable shank B, carrying at its outer end a jaw B' and jaw B'' and provided upon its lower end with a screw-thread b, said jaw B'' being provided upon its under side with an angular recess H, forming a transversely-edged shoulder I, a handle A, carrying said shank B and provided with a jaw A' opposite said jaw B', said handle being provided with a rigid pin K, extending upward and outward under said recess H, and a milled nut C, carried by said handle A and adapted to engage with said screw-threaded end b, of a bar D, provided with a transverse notch d at one end and with a hole d' near said notched end, said hole d' being adapted to fit over said pin K, said bar D being adapted with said shoulder I to form a wrench.

5. The combination, with a handle A, divided by a partition a'' into two longitudinal compartments a a', a longitudinally-movable shank B, carrying at its outer end a jaw B' and adapted to be carried in said compartment a, and devices for moving said jaw longitudinally, of a flat bar D, shaped at one end to form a screw-driver and adapted to loosely fit into said compartment a', said bar being provided with two holes d' d'', a lever E, pivoted within the lower portion of said compartment a and bearing at its inner end a pin e, adapted to pass through a suitable opening in said partition a'' and engage with said holes d' d'' in said bar D, and a spring G, adapted to hold the inner end of said lever against said partition, whereby said bar D may be removably secured wholly within said compartment a' or held with its screw-driver end extending outside of said compartment to form a screw-driver, substantially as described.

475,780.



475,781. ELECTRIC-WIRE HOLDER. EDWIN L. LLOYD, Philadelphia, Pa. Filed Aug. 6, 1891. Serial No. 401,871. (No model.)

Claim.—1. The within-described line-wire holder for insulators, the same consisting of a wire bent to embrace the insulator, but free to turn thereon, and having its ends interlocked and bent so as to form open supports for the line-wire, substantially as specified.

475,781.

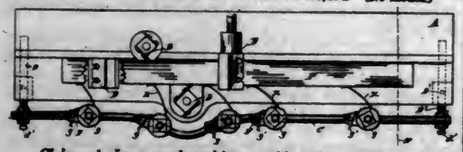


2. A line-wire holder for insulators, having line-wire supports, and an engaging hook and loop whereby the holder is clasped upon the insulator, substantially as specified.

3. The within-described line-wire holder for insulators, the same consisting of a wire bent to embrace the insulator and having supports for the line-wire, and an engaging hook and loop for securing the meeting portions of the holder together, substantially as specified.

4. The within-described line-wire holder for insulators, the same consisting of a wire bent to embrace the insulator and having an engaging hook and loop at the meeting portion, each end of the wire beyond said meeting portion forming a loop for laterally retaining the line-wire, and a hook for receiving said line-wire, substantially as specified.

475,782. WOOD-WORKING MACHINE. LOUIS LOEBE, North St. Paul, Minn. Filed Aug. 3, 1891. Serial No. 401,474. (No model.)



Claim.—1. In a wood-working machine, the combination, with the bed-plate and cutters, of a laterally and vertically adjustable support, one or more head-blocks mounted on the said support with pivotal adjustment in a plane transverse to the line of feed, and spring-fingers carried by the said heads with pivotal adjustment in a plane parallel to the said line of feed, for the purpose set forth.

2. In a wood-working machine, the combination, with the bed-plate and cutters, of a laterally and vertically adjustable guide arranged lengthwise of the line of feed and a series of heads provided with spring-fingers for holding the material under tension, pivotally mounted on said guide and adjustable lengthwise of the same.

3. A tension-head comprising a head-block provided with a stud projecting therefrom, a hub sleeved on the said stud and having an annular ratchet formed therewith, a spring-finger secured to the said hub at one end, a locking-pawl engaging the said annular ratchet, means for setting the said hub under a frictional tension with the said head-block, and means for turning the same against the said friction to set the said ratchet against the said locking-pawl.

4. The tension-head comprising the swiveled head-block with screw-threaded stud, the hub sleeved on the said stud and having the annular ratchet formed therewith, the spring-finger secured to the said hub at one end, the jam-nuts for tightening the said hub on the said head, the spring-held locking-pawl engaging the said annular ratchet, and means for setting the said ratchet and hub against the said pawl, substantially as and for the purpose set forth.

5. The tension-head comprising the swiveled head-block with screw-threaded stud, the hub sleeved on the said stud and having angular faces, the annular ratchet formed on the said hub, the spring-finger wound about the shank of the said hub and fixed thereto at one end, the angular-faced wrench-nut fitting over the shank of the said hub, the jam-nuts for tightening the said hub on the head, and the spring-held locking-pawl engaging the said ratchet for holding the hub in whatever position it may be set relative to the swiveled head, substantially as and for the purpose set forth.

475,783. CONTACT-POST FOR ELECTRIC BELLS. FREDERICK W. MARSEN and OTTO H. HUSEN, Brooklyn, N. Y. Filed Feb. 20, 1892. Serial No. 422,214. (No model.)



Claim.—1. The combination, with a base-plate and conducting-post, of an intervening insulation and means for preventing the post from turning, consisting of angular shoulders on the base-plate and post engaging the intervening insulation.

2. The combination, with a base-plate and conducting-post, of an intervening insulation and means for preventing the post from turning, consisting of opposite shoulders on the base engaging the sides of the insulation and opposite shoulders on the post engaged by the sides of the insulation.

3. The combination, with a base-plate, of a raised boss formed with an angular groove or channel, a conducting-post formed at its bottom with angular shoulders, and an intervening insulation having angular sides engaged by said channel in the boss and said shoulders on the post, respectively, in order to prevent the post from turning.

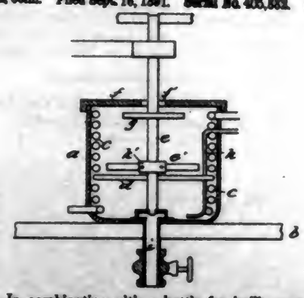
4. The combination, with a base-plate having a raised boss formed with an angular channel, of a conducting-post having a square base entering said channel and an intervening insulation having angularly upturned edges embraced by the sides of the channel and embracing the base of the post.

5. The combination, with a base-plate, of a bifurcated contact-post fastened to said plate and a contact-screw screwing through the two limbs of the post.

6. The combination, with a base-plate, of a bifurcated contact-post fastened to said plate, a contact-screw screwing through the two limbs of the post, and a set-nut engaging the screw and arranged in the bifurcation of the post.

7. In an electric bell, a vibrating armature, a leaf-spring *c*, on which it is mounted, a base-plate having a post *b*, formed with an angular recess *b'*, and a fastening-plate *d*, entering said recess and clamping said spring into the angular space between.

475,784. APPARATUS FOR BOILING SOAP. JOEL W. MARTIN, Hartford, Conn. Filed Sept. 16, 1891. Serial No. 405,882. (No model.)



Claim.—In combination with a kettle for boiling soap, coils of steam-pipes horizontally arranged within the kettle, a rotary beater-spindle extending upward through the cover, beater-arms adjustably secured to said spindle, mechanism for rotating the spindle, a cover having an opening therethrough larger than the diameter of the beater-spindle, and a disk located on the spindle underlying the opening in the cover and larger in diameter than said opening, all substantially as described.

475,785. BICYCLE-TIRE. FRANK H. MASON, Akron, Ohio. Filed Nov. 28, 1890. Serial No. 372,965. (No model.)



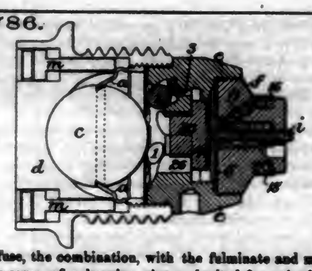
Claim.—A tire for bicycles, consisting of an endless closed rubber tube filled with hollow rubber balls of the same diameter as the inside diameter of the tube, substantially as shown and described.

475,786. FUSE. HENRY P. MERRIAM, New York, N. Y. Filed Jan. 12, 1892. Serial No. 417,936. (No model.)

Claim.—1. In a fuse, the combination, with the fulminate and means for exploding the same, and a burning charge ignited from the fulminate, of an automatically-operative controller or valve interposed between the fulminate and the burning charge for delaying the ignition of or retarding the free burning of said charge, substantially as described.

2. In a fuse, the combination, with the fulminate and means for exploding the same, of a delay burning charge ignited from the fulminate, a main burning charge, and a controller or valve regulating the time of ignition of said main charge, substantially as described.

475,786.



3. In a fuse, the combination, with the fulminate and means for exploding the same, of a burning charge ignited from the fulminate and a longitudinally-movable controller or valve adapted to retard the burning of said burning charge, substantially as described.

4. In a fuse, the combination, with the fulminate and means for exploding the same, of a burning charge ignited from the fulminate and a movable controller or valve carrying said burning charge into contact with an opposed seat to retard its free burning, substantially as described.

5. In a fuse, the combination, with the fulminate and means for exploding the same, of a delay burning charge ignited from the fulminate, a movable controller or valve supporting said delay charge, and a main burning charge, the spread of the flame from the delay charge to the other charge being retarded by the movement of the controller, substantially as described.

6. In a fuse, the combination, with the fulminate and means for exploding the same, of a burning charge ignited from the fulminate, and a movable controller or valve for retarding the burning of said charge and adapted to move into retarding position by its momentum at the time of impact and to move from such position by the pressure of the gases generated by the burning charge, substantially as described.

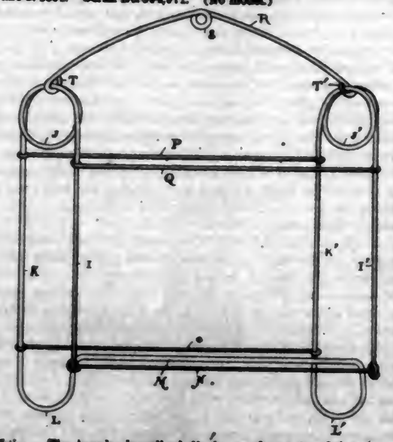
7. The combination, with a fuse-case having supports for a hammer and a fulminate, and a main burning charge, of a movable controller or valve supported in said fuse-case in the path of the flame from the fulminate to the main burning charge and carrying on its forward face a delay charge for ignition from the fulminate, substantially as described.

8. In a fuse, the combination, with the fulminate and means for exploding it, of a burning charge ignited from the fulminate, a movable controller or valve for retarding the burning of said charge, and a corrugated seat for the controller or valve, substantially as described.

9. In a fuse-case, the combination of the body containing the hammer, the head containing the fulminate and the controller or valve, and the auxiliary head containing the burning charge, substantially as described.

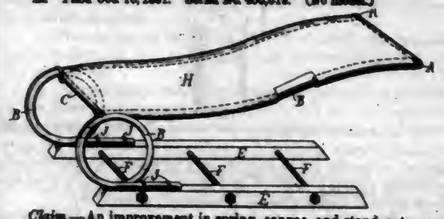
10. In a fuse, the combination, with the fulminate and means for exploding the same, of a burning charge ignited from the fulminate, a movable controller or valve for retarding the burning of said charge, and an adjustable stop for preventing the movement of the controller, substantially as described.

475,787. DISPLAY-RACK. PETER MEYER, Metamora, Ill. Filed June 3, 1891. Serial No. 394,971. (No model.)



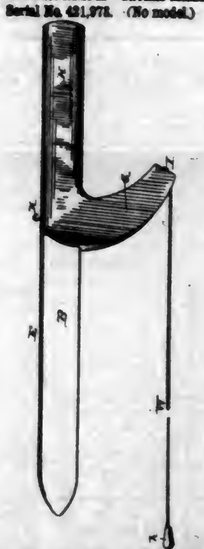
Claim.—The herein described display-rack, made of the piece of spring-wire bent to form the curved rests L L' and front rod M, the back K K', spirals J J', front portions I I', and furnished with the ball B, back braces P and O, and front braces Q and N, and made substantially as herein set forth and described.

475,788. SPRING AND CANVAS COT. WEBB MILLER, Chicago, Ill. Filed Oct. 10, 1891. Serial No. 408,319. (No model.)



Claim.—An improvement in spring, canvas, and stand cots, consisting of a canvas provided on its four edges with elongated loops in the form of wide hems, in combination with a detachable brace at the free ends of the spring-supports and a brace which is provided with open eyes at its ends, said spring-supports inserted, respectively, within the eyes, the braces respectively inserted within the hems at the ends of the canvas and the spring side supports inserted within the side hems of the canvas, and the brace C, secured to said supports by set-screws, as specified and shown.

475,789. BUTTER-KNIFE. THOMAS MILLER, Tyrone, Pa. Filed Feb. 18, 1892. Serial No. 421,978. (No model.)



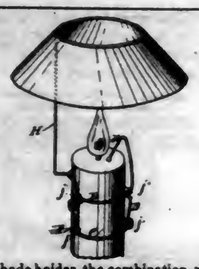
Claim.—1. The herein-described butter-knife, the same comprising a blade, a handle in alignment therewith and having a depending guard, the lower edge of the blade and the face of the guard being broad, a hook in the handle opposite the guard, and a spring silver-plated wire secured to the end of the guard and passed removably through said hook, as and for the purpose set forth.

2. The herein-described butter-knife, the same comprising a handle having a depending guard with a broad face, a blade in alignment with the handle and having a sharp upper edge, all these parts being of hard wood, an eye in the lower end of the guard, a hook in the handle opposite the guard, a spring-wire secured to said eye and removably passed through said hook, and a small handle on the end of the wire, all as and for the purpose set forth.

475,790. CANDLE-SHADE HOLDER. CHARLES A. MORAN, New York, N. Y. Filed Feb. 19, 1891. Serial No. 382,057. (No model.)

Claim.—1. A candle-shade holder provided with two candle-engaging parts movably connected together and adapted to be forced together upon the candle by gravity, and a supporting-rest secured to one part, substantially as described.

475,790.



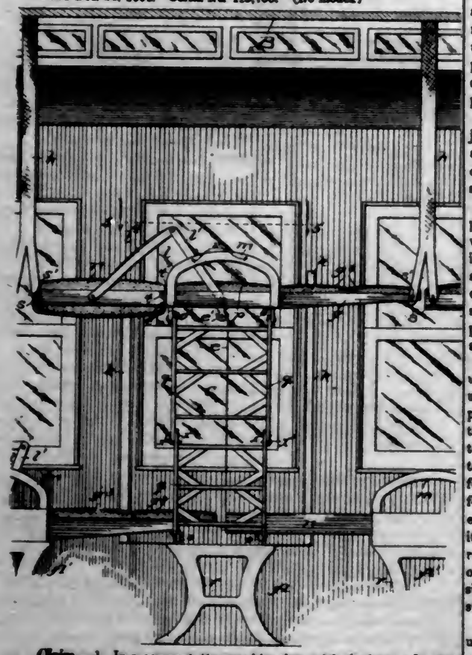
2. In a candle-shade holder, the combination, with a part adapted to engage vertical portions of a candle and provided with a supporting-rest, of another candle-engaging part movably connected with said supported part, the weight of said latter part tending to force said parts together upon the candle, substantially as described.

3. In a candle-shade holder, the combination, with a part adapted to engage a vertical portion of the candle and provided with a supporting-rest, of another candle-engaging part movably connected with said supported part by pivotal connections, the weight of the said latter part tending to force said parts together upon the candle, substantially as described.

4. The combination, in a candle-shade holder, of two half-sleeves movably connected with one another, so that they are parallel in all positions, one provided with a rest, the support of which will cause the half-sleeves to approach one another, as specified and set forth.

5. The combination, in a candle-shade holder, of the half-sleeve A and half-sleeve B C, pivoted thereto and having pivoted to them the connection D and rest *d*, substantially as specified.

475,791. RAILWAY-CAR. JAMES D. MORRISON, Rutnbeck, Iowa. Filed Dec. 21, 1891. Serial No. 415,755. (No model.)



Claim.—1. In a car-seat, the combination, with the base, of a seat portion separably supported thereon, and a connection between the seat portion and base formed in sections folding lengthwise along the base and extensible upward to elevate the seat portion into and support it in position for an upper sleeping-berth, substantially as described.

2. In a car-seat, a connection between the seat portion and base, comprising a frame formed in folding sections extensible upward to elevate the seat portion into and support it in position for an upper berth and forming when so extended a ladder, substantially as described.

3. In a car-seat, the combination, with the base, of a seat portion separably supported thereon, a connection between the seat portion and base formed in sections folding lengthwise along the base and extensible upward to elevate the seat portion into and support it in position for an upper sleeping-berth, and a back on the seat portion adjustable into alignment therewith to form part of the said berth, substantially as described.

4. A car-seat provided with an upward-extensible support for elevating the seat portion into and supporting it in position for an upper sleeping-berth, a back supported in bearings on the seat portion and connected therewith by jointed links, rendering the back reversible and adjustable into alignment with the seat portion to form part of the said berth, substantially as described.

5. In combination with a car, a seat comprising the base and seat portion, having a folding and extensible connection between them and a reversible back adjustable into alignment with the seat portion, guides on the car-wall, provided with adjustable bearings, and a bar secured to the said seat portion and extending at opposite ends into said guides to be raised thereon and supported on said bearings in converting the seat into an upper sleeping-berth, substantially as described.

6. In combination with a car, a seat provided with an upward-extensible support for elevating its seat portion into and supporting it in position for an upper sleeping-berth, a back on the seat portion adjustable into alignment therewith to form part of said berth, side rails removably connected with the seat portion to extend the length of the berth at the end thereof opposite that formed with the back and supporting an extension of the couch, and means for sustaining the said back and rails at their free ends, substantially as described.

7. In combination with a car, a seat comprising a base *r*, a seat portion *p*, a frame C, formed of pivotal sections *q*, connecting the seat portion with the base at the aisle end of the seat and adapted to be folded under the seat portion on the base and to be extended vertically to elevate the seat portion into position for an upper sleeping-berth, a back *n*, reversibly supported on the seat portion and fastened thereto by pivotally-connected links *l'* and *l²*, slotted arms at opposite ends of the seat portion and through which the links *l'* extend, guides *k* on the car-wall, provided with dogs *f'*, a bar *i*, secured to the wall end of the said seat portion and extending at opposite ends into the guides to be raised therein and supported by the dogs in converting the seat into an upper sleeping-berth, side rails *g*, separably connected with the seat portion *p* to extend the said berth and support an extension of the couch, and suspended straps *h*, supporting the free ends of the seat portion *n*, and rails *g*, substantially as and for the purpose set forth.

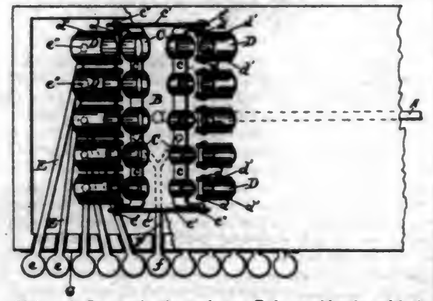
8. In combination, a car-seat provided with a swinging back adjustable into alignment with the seat portion in converting the seat into a sleeping-berth, and a removable extension of the berth at the side of the seat portion opposite that on which the back is so adjusted, substantially as described.

9. In combination with a car, seats A and A', convertible into upper and lower sleeping-berths, each seat A being provided with an upward-extensible support for elevating its seat portion into and supporting it in position for an upper sleeping-berth and each seat A' having a back *n* adjustable into alignment with it to extend the couch at one end in forming a lower sleeping-berth and provided with removable side rails *g* to extend the said berth toward the opposite end and support an extension of the couch portion thereof, substantially as described.

10. In combination with a car, seats A and A', convertible into upper and lower sleeping-berths, each seat A being provided with an upward-extensible support for elevating its seat portion into and supporting it in position for an upper sleeping-berth and with a back on the seat portion adjustable into alignment therewith to form part of the said berth, side rails removably connected with the seat portion to extend the length of the berth at the end thereof opposite that formed with the back and supporting an extension of the couch, means for sustaining the adjusted back and rails at the ends of the berth, and each seat A' having a swinging back adjustable into alignment with its seat portion to convert said seat into a lower sleeping-berth, and a removable extension of the said berth at the side of the seat portion opposite that on which the back is so adjusted, the backs and extensions on the lower berths being supported on the bases of seats A, substantially as described.

11. In combination with a car, seats A and A', convertible into upper and lower sleeping-berths, each seat A comprising a base *r*, a seat portion *p*, a frame C, formed of pivotal sections *q*, connecting the seat portion with the base at the aisle end of the seat and adapted to be folded under the seat portion on the said base and to be extended vertically to elevate the seat portion into position for an upper berth, a back *n*, reversibly supported on the seat portion and fastened thereto by pivotally-connected links *l'* and *l²*, and slotted arms *m* at opposite ends of the seat portion and through which the links *l'* extend, guides *k* on the car-wall, provided with bearings *f'*, a bar *i*, secured to the wall end of the said seat portion and extending at opposite ends into the guides to be raised therein and supported by said bearings in converting the seat into an upper sleeping-berth, side rails *g*, separably connected with the seat portion *p* to extend the said berth and support an extension *g²* of the couch, and suspended supporting-straps *h* for the opposite ends of the said berth, and each seat A' comprising a seat portion *p*, a swinging back *n*, adjustable into alignment with its seat portion to convert said seat into a lower sleeping-berth and connected with the seat portion by pivotally-connected links *l'* and *l²*, and slotted arms *m* on the said seat portions through which the links *l'* extend, and side rails *g*, separably connected with the seat portion to extend the said berth and support an extension *g²* of the couch, the backs and side rails on the lower berths being supported on the bases of seats A, substantially as described.

475,792. BALANCE-SCALE. ROBERT R. MCLELLAND, Williamsville, Ill. Filed Nov. 23, 1891. Serial No. 412,718. (No model.)



Claim.—1. In a scale, the scale-pan B, in combination with the weight-pockets D D, the bars E E, the plate G, and the bar F, substantially as and for the purposes set forth.

2. The combination, in a balance-scale, of a scale-pan B, the weight-pockets D D, the bars E E, the plate G, and the bar F, all substantially as shown, and for the purposes set forth.

475,793. ADJUSTABLE PIPE-CLOSER. WILLIAM P. O'BRIEN, St. Paul, Minn. Filed Aug. 3, 1891. Serial No. 401,546. (No model.)



Claim.—1. In a pipe-closer, the combination, with the bridge for fitting over the end of the pipe having the set-screw working through each end thereof and the set-screw at the center, of the cap-plate co-operating with said last-mentioned screw and having the relatively-wide flat under surface with the central projection, the wide annular packing fitting around said projection, and the cotter passing through the projection to hold the packing in place, substantially as described.

2. In a pipe-closer, the combination, with the bridge having the set-screws working through the ends thereof and the set-screw at the center thereof, of the cap-plate co-operating with said last-mentioned screw and having the diametrically-opposite recesses or depressions for the inner sides of the ends of the bridge, whereby the plate is guided and held in place, substantially as described.

475,794. MACHINE FOR DECORTICATING FIBER-BEARING PLANTS. JOHN VON OVEN and CHARLES F. PARKEN, Charleston, S. C. Filed Oct. 30, 1890. Serial No. 369,821. (No model.)



Claim.—1. In a machine for decorticating fibrous plants, the combination, with a stationary slotted abutment and a reciprocating brake located adjacent thereto and acting to bend the stalk to and fro, of a supporting-roll adjacent to the reciprocating brake, and drawing-rolls for advancing the stalk, located beyond the supporting-roll, whereby the woody matter loosened by the brake is discharged between the same and the supporting-roll, the stalk supported while being advanced and vertical movement of the stalk permitted between the abutment and the drawing-rolls.

2. The combination of the crushing-rolls, the feed-rolls, the slotted guide or abutment, the reciprocating head, the sustaining-roll G, and the delivery-rolls.

3. In combination with the reciprocating slotted head or brake F, the guide or abutment E E', provided with a slot, with means for changing the width of its slot, substantially as described and shown.

475,795. APPARATUS FOR CONDENSING STEAM. WILLIAM R. PEALL, Washington, D. C. Filed Aug. 3, 1891. Serial No. 401,571. (No model.)

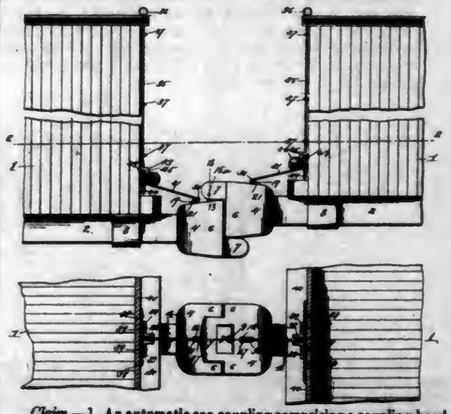


Claim.—1. A steam-condenser having an exit in direct communication with the external air, combined with a heating device in proximity to said exit and adapted to raise the temperature of the air and exhaust after the latter has been discharged and mingled with air, the condenser-exit and the heating device having free communication with the atmosphere, substantially as set forth.

2. The steam-condenser consisting of a primary coil or part adapted to receive exhaust-steam and deliver it to a secondary coil or part, and said secondary coil having an exit in communication with the atmosphere and adapted to discharge vapor mingled with air in proximity to the primary coil, substantially as set forth.

3. The combination of a steam-condenser consisting of a primary coil or part adapted to receive exhaust-steam and deliver it to a secondary coil or part, and said secondary coil having an exit in communication with the air and adapted to discharge vapor mingled with air in proximity to the primary coil, with an inclosing case having an air inlet and outlet, substantially as set forth.

475,796. CAR-COUPLING. JACOB T. RATHBACK, Kansas City, Kans. Filed Feb. 19, 1892. Serial No. 422,074. (No model.)



Claim.—1. An automatic car-coupling comprising a coupling-head having a horizontal lower jaw extending transversely of the head and projecting horizontally outward therefrom, and a horizontal upper jaw also extending transversely of the head and projecting horizontally outward therefrom, substantially as set forth.

2. An automatic car-coupling comprising a coupling-head having a horizontal lower jaw extending transversely of the head and projecting horizontally outward therefrom, a horizontal upper jaw also extending transversely of the head and projecting horizontally outward therefrom, and provided, further, with two vertical side walls, substantially as set forth.

3. An automatic car-coupling comprising a coupling-head, a catch pivotally secured in the upper part of the mouth or cavity of the head, and a lifting-bar pivotally connected to the said catch and extending

upwardly and rearwardly through the coupling-head, substantially as set forth.

4. An automatic car-coupling comprising a coupling-head, a pivoted catch secured in the upper part of the mouth or cavity of said head, a lifting-bar secured pivotally to said catch and extending upwardly and rearwardly through the head, and a dog also pivoted within the upper part of the head and connected pivotally and eccentrically to the said lifting-bar, substantially as set forth.

5. An automatic car-coupling comprising a coupling-head, a catch pivoted in the upper part of the mouth or cavity of the head, a lifting-bar pivotally connected to said catch and extending upwardly and rearwardly through the head and also longitudinally slotted at its free end, a dog also pivoted within the upper part of the cavity or mouth of the coupling-head and connected pivotally and eccentrically to the lifting-bar, and a lifting-link also pivoted within the upper part of the mouth of the coupling-head and having at its free end a cross-pin extending through the slot of the lifting-bar, substantially as set forth.

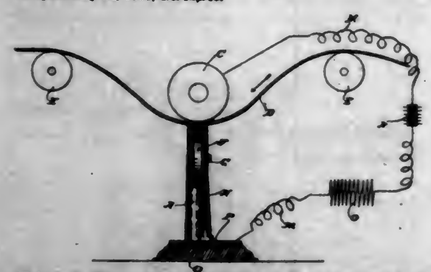
6. An automatic car-coupling comprising a coupling-head having horizontal upper and lower jaws extending transversely of the head and provided on their upper sides with depressions or cavities, the bottoms of which are inclined downwardly and outwardly, substantially as set forth.

7. An automatic car-coupling comprising a coupling-head provided with horizontal upper and lower jaws extending transversely of the head and projecting outwardly therefrom and provided on their upper sides with cavities or depressions having forwardly and downwardly extending bottoms, and provided, also, with vertical channels leading from said cavities and through the jaws, substantially as set forth.

8. An automatic car-coupling comprising a coupling-head having horizontal upper and lower jaws extending transversely of the head and projecting outwardly therefrom, depressions or cavities formed in the upper sides of said jaws and having forwardly and downwardly inclined bottoms, vertical channels extending through said jaws, and a catch pivoted in the upper part of the mouth of the head, and having, also, an opening to register with said channels, substantially as set forth.

9. An automatic car-coupling comprising a coupling-head, a catch pivoted within said head, a lifting-bar pivotally connected to said catch and extending upwardly and rearwardly through the head, brackets secured to the end of the car-body and carrying pulleys or wheels, and flexible connections leading from said lifting-bar over said pulleys and to the top and sides of the car, substantially as set forth.

475,797. SECONDARY-BATTERY ELECTRODE AND PROCESS OF MAKING THE SAME. ANTHONY REICHENAUER, London, England. Filed Sept. 13, 1890. Serial No. 365,120. (No model.) Patented in England Nov. 22, 1888, No. 14,755; in France July 30, 1890, No. 207,332; in Belgium July 30, 1890, No. 91,462; in Germany Aug. 7, 1890, No. 57,085; in Victoria Oct. 11, 1890, No. 8,155; in Italy July 8, 1891, No. 409, and in Spain July 24, 1891, No. 12,213.



Claim.—1. The method of forming a battery-plate, which consists in progressively subjecting its surface to the action of the electric arc or spark, whereby said surface will become oxidized or physically changed, substantially as set forth.

2. The method of forming a battery-plate, which consists in progressively subjecting its surface to the action of the electric arc or spark in the presence of a suitable material with which it is desired to have the substance of the plate combined, substantially as set forth.

3. The method of forming a battery-plate, which consists in placing it in contact with one pole of a dynamo or other source of electricity and causing an electric arc or spark to be produced between successive portions of the surface of the plate, and a contact-point connected to the opposite pole of the source of electricity, whereby the said surface is progressively subjected to the action of the arc, substantially as set forth.

4. As an article of manufacture, a battery-plate having its surface formed by burning the material of the plate.

5. As an article of manufacture, a battery-plate having its surface burned by subjecting the material of the plate to the action of an electric arc.

475,798. BRACKET-LAMP FOR VEHICLES. SOLOMON L. REESY, Edinburg, Ill. Filed Nov. 20, 1891. Serial No. 412,567. (No model.)



Claim.—1. In a bracket-lamp for vehicles, the combination of a vertical arm provided with an annular head and abutting on the upper end of said arm and hinged thereto a slotted arm having adjustable jaws, substantially as set forth, and for the purpose stated.

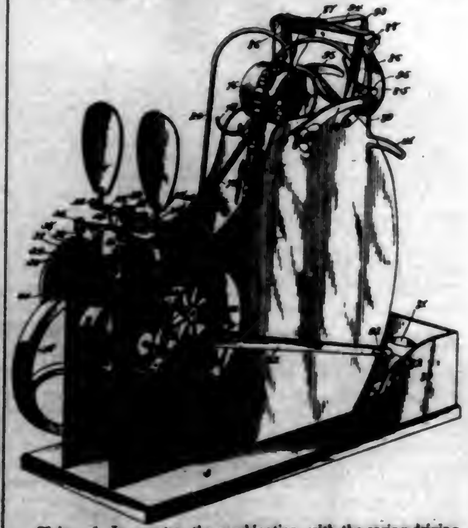
2. In a bracket-lamp for vehicles, the combination of the vertical arm having notches and having at its upper end an annular head, the horizontal arm hinged at and abutting on the upper end of said vertical arm and having at one end a slot in which the annular head moves, the fixed jaw on the under side of the horizontal arm, the spring-jaw on the upper side of said arm, the bolt passing through both jaws, and the nut on said bolt, as set forth, and for the purpose stated.

3. In a bracket-lamp for vehicles, the combination of the slotted arm having adjustable jaws, the notched arm having an annular head, the strap connecting said head with the vehicle-body, the hinge connecting said arms, and the hanger attachable to the vehicle, as set forth, and for the purpose stated.

4. In a bracket-lamp for vehicles, the combination of the hinged arms, the adjustable jaws on one of said arms, the annular head, the strap connecting said head with the vehicle, the hanger secured to the vehicle, the lantern provided with a bail supported on the horizontal arm and lying between said arm and said annular head, and the spring secured to said lantern and engaging with notches in the vertical arm, as set forth, and for the purpose stated.

5. In a bracket-lamp for vehicles, the combination of arms at right angles to each other, the adjustable jaws on the horizontal arm, the hanger attachable to the vehicle, the lantern supported by its bail on the horizontal arm, the spring secured to the lantern and inclosing the vertical arm, and the cushion between the lantern and the arm, as set forth, and for the purpose stated.

475,799. MOTOR. JOHN C. REUTER, Savannah, Ga., assignor of one-eighth to Moses S. Byck, same place. Filed Aug. 15, 1891. Serial No. 402,734. (No model.)



Claim.—1. In a motor, the combination, with the spring-driving mechanism and a ratchet-wheel connected with the winding-arbor thereof, of a lever carrying a cup, a pawl on the lever engaging said

wheel, a ball, devices for moving the lever to raise the cup, devices for raising the ball and lodging it in the cup when elevated, and connections between both said devices and the driving mechanism, the whole operating substantially as described.

2. In a motor, the combination, with the spring-driving mechanism having a gear on its winding-arbor, a shaft having a gear meshing therewith and also having a ratchet-wheel, and a retaining-pawl for said ratchet, of a lever pivoted at one end on said shaft and having a cup at its other end, a pawl on the lever engaging the ratchet, devices for turning the lever on its pivot to raise the cup, devices for raising the ball to lodge it in the cup when elevated, and connections between both said devices and the driving mechanism, the whole operating substantially as described.

3. In a motor, the combination, with the spring-driving mechanism, ratchets connected with the winding-arbor thereof, a shaft connected by gearing with said arbor, and cranks on said shafts, of levers having cups, pawls on the levers engaging said ratchets, weighted balls, devices for raising the balls and lodging them in the cups when elevated, connections between said devices and the driving mechanism, and arms on the levers which are struck by said cranks to raise the cups alternately, the whole operating substantially as described.

4. In a motor, the combination, with the spring-driving mechanism having a gear on its winding-arbor, a shaft having a gear meshing therewith and also having a ratchet-wheel, a lever pivoted at one end on said shaft and having a cup at its other end, raising devices for said lever driven by the winding-arbor, a pawl on the lever engaging the ratchet, and a ball, of an upright endless belt having a bucket, a chute at the lower end and a basket at the upper end of said belt, a shaft connected by gearing with the winding-arbor, and a wheel on this shaft connected by a belt with one of the drums of said upright belt, as and for the purpose set forth.

5. In a motor, the combination, with the spring-driving mechanism and winding-levers connected with the winding-arbor thereof and having cups, of an upright endless belt driven from said arbor, buckets on said belt, weighted balls, a chute at the lower end of the belt receiving the balls from said cups, a basket at the upper end of the belt receiving the balls from the buckets, said basket having open ends adapted to deliver into the cups when raised, retaining-arms normally closing said ends, and means for moving an arm when a cup rises, so as to deliver a ball thereinto and for returning it on the descent of the cup, as and for the purpose set forth.

6. In a motor, the combination, with a lever moving in an upright plane and having a cup whose bottom is open, a receptacle into which the cup descends, and a discharge-finger in said receptacle over which the cup passes, of a weighted ball resting in said cup, and means for raising the ball and delivering it into the cup when elevated, substantially as described.

7. In a motor, the combination, with two levers moving in upright planes and carrying cups, weighted balls resting in said cups, and means for elevating the balls, of a basket receiving the balls when raised and having open ends adapted to deliver into the cups when elevated, a rocking arm having retaining-arms normally closing the ends of the basket, and rods connected to the ends of said rocking arm sliding through guiding-eyes and having cams adapted to be struck by studs on the levers as the latter rise, as and for the purpose set forth.

8. In a motor, the combination, with two levers moving in upright planes and carrying cups, weighted balls resting in said cups, a basket standing between said planes and having open ends, and means for elevating the balls and delivering them into the center of the basket, of retaining-arms normally closing the ends of the basket, and means for moving one of said arms outwardly on the ascent of the levers, as and for the purpose set forth.

9. In a motor, the combination, with two levers moving in upright planes and carrying cups, weighted balls fitting said cups, a basket standing between said planes and having open ends, and means for elevating the balls and delivering them into the center of the basket, of an oscillating shaft above the basket, a rocking arm on said shaft, a leaf-spring bearing the ends of said arm downwardly, retaining-arms depending from said rocking arm and normally closing the ends of the basket, rods linked to the ends of said rocking arm, and studs on the levers adapted to raise said rods as the levers are elevated, as and for the purpose set forth.

10. In a motor, the combination, with an upright endless moving belt having buckets, of an inclined chute at the lower end of said belt for holding the weights which are to be elevated by the buckets, opposite uprights, guides parallel with the belt adjacent the ascending side thereof on each side of the buckets and carring over the upper end of the belt and diverging at such point to the discharging-point of the buckets, and a basket to which the buckets deliver, said guides being so disposed that the buckets always project through and beyond the same to hold the weights in position from the chute to the basket, substantially as set forth.

11. In a motor, the combination, with a drum having a toothed ring and means for revolving said drum, of a fly-wheel connected by gearing with said ring, a fan-governor also driven by said ring, a brake adjacent said fly-wheel, and connections between said governor and brake for operating the latter from the former, substantially as described.

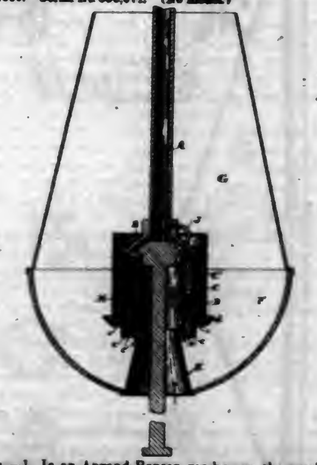
12. In a motor, the combination, with a power-driven drum, a fly-wheel connected therewith, a brake adjacent said fly-wheel, and a lever connected at one end with the brace, pivoted between its ends to a support and having its other end forked, of an upright shaft driven by said drum, a hub on said shaft having radially-projecting arms with upturned perforated ears, bell-cranks, each pivoted in one ear and the hub, a fan-blade rising from one arm of each crank, and a spool sliding on said upright shaft within the forked end of said lever and connected with the other arm of each crank, as and for the purpose set forth.

13. In a motor, the combination, with the driving-drum, a wheel connected therewith, a brake adjacent to said wheel, a vertically-movable spool, connections between said spool and brake, and a spring normally raising the latter, of an upright shaft driven by the drum, a hub on said shaft, cranks extending radially from and pivoted in said hub, fan-blades rising from the outer ends of said cranks, links depending from their inner ends, and transverse rods projecting from said spool and connected with the links, substantially as described.

14. In a motor, the combination, with the driving-drum, a fly-wheel connected therewith, a brake-block sliding in a frame, and a short lever connected at one end with said brake-block and having an outturned tip at its other end, of a hand-lever pivoted in and projecting to the outside of the casing, the inner end of said lever being forked and loosely engaging the tip of the short lever, and a catch for holding one lever, substantially as described.

15. In a motor, the combination, with the driving-drum, a fly-wheel connected therewith, a brake-block adjacent said fly-wheel, and a governor driven by the drum and operating said block, of a pin in the brake-block, a sliding block having a slot loosely embracing said pin, and a lever for operating said sliding block, substantially as hereinbefore set forth.

475,800. GAS-BURNER. FRANK REED, Meriden, Conn., assignor of one-half to the Edward Miller & Company, same place. Filed Nov. 12, 1889. Serial No. 330,071. (No model.)



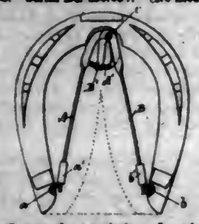
Claim.—1. In an Argand-Bunsen gas-burner, the combination of a burner-body consisting of interior and exterior walls, means for the admission of gas to the space between said walls, and a tube within the inner wall of said burner-body, adapted to convey air to the space between said walls, substantially as described.

2. In a gas-burner, the combination of a gas-inlet pipe screw-threaded near its end, a burner portion screw-threaded to engage with said pipe, a seat in said burner portion adapted to close the end of said pipe, and means for rotating said burner portion on said pipe, whereby the supply of gas to the burner may be regulated, substantially as described.

3. In a gas-burner, the combination of a gas-inlet pipe screw-threaded near its end, an aperture in the wall of said pipe also near its end, a burner portion screw-threaded to engage with said pipe, a hole in said burner portion adapted to register with the aperture in said pipe when the end of said pipe is closed by said burner portion, and an auxiliary gas-tube leading from said hole to or nearly to the gas-emission orifices of said burner, substantially as described.

4. In an Argand gas-burner, the combination of a gas-inlet pipe, a burner portion adapted to rotate on said pipe, and an auxiliary gas-tube adapted to rotate with said burner portion, substantially as described.

475,801. HOOF-EXPANDER. JAMES G. RIPLEY, Boston, Mass. Filed Mar. 28, 1892. Serial No. 426,067. (No model.)

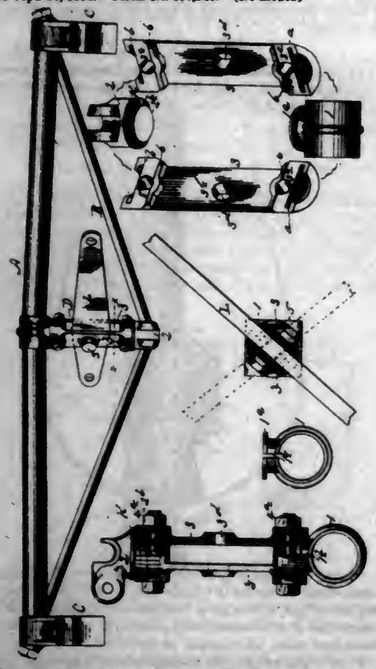


Claim.—1. A hoof-expander consisting of a pair of pronged spring-arms pivoted together, combined with a ratchet and a pawl on said arms for the purpose of adjusting the position of the spring-arms according to the width of the hoof, substantially as specified.

2. A hoof-expander consisting of a pair of spring-arms, combined with prongs, adapted to be adjusted on said arms relative to the size of the hoof from toe to heel, substantially as specified.

3. A hoof-expander consisting of a pair of spring-arms pivoted together, combined with a pawl and ratchet on said arms and longitudinally-adjustable prongs on the latter, substantially as and for the purpose set forth.

475,802. BRAKE-BEAM. HENRY R. ROSENCRUNS, Kalamazoo, Mich., assignor to the National Hollow Brake Beam Company, Chicago, Ill. Filed Sept. 28, 1891. Serial No. 407,043. (No model.)



Claim.—1. A strut or post for trussed brake-beams, composed of lateral members or sections, interposed end members, and means for causing the lateral members to clamp and bind on the interposed end members, substantially as and for the purposes specified.

2. A strut or post for trussed brake-beams, composed of end members having projecting flanges, lateral members having recesses to receive the projecting flanges of the end members, and means for clamping the several members together, substantially as and for the purposes specified.

3. A strut or post for trussed brake-beams, composed of lateral members, one of which is provided on its inner face with transverse ribs or equivalent projections, interposed end members, and means for causing the lateral members to bind on the interposed end members, substantially as and for the purposes specified.

4. A strut or post for trussed brake-beams, composed of end members, each provided with an annular flange, lateral members, each of which is provided with semicircular recesses adapted to receive the annular flanges of the end members, and means for clamping the parts together, substantially as and for the purposes specified.

5. A strut or post for trussed brake-beams, composed of end members, each of which is provided with an annular flange, lateral members, each of which is provided with a semicircular recess adapted to receive the annular flanges of the end pieces and one of which has transverse ribs on its inner face, and means for clamping the parts together, substantially as and for the purposes specified.

6. In a trussed brake-beam, the combination, with the tension and compression members, of an interposed strut or post, and a clamp-beam collar for connecting the strut and compression member, substantially as and for the purposes specified.

475,808. DRESS SHIELD OR PROTECTOR. BENJAMIN SCARLES, Clinton, Mass. Filed Sept. 5, 1891. Serial No. 404,830. (No model.)



Claim.—1. A dress-protector comprising a series of wires substantially horseshoe in shape, lying in different horizontal planes, secured together at their ends, and supported by a suitable brace or stay, the whole adapted to be attached to the heel of a shoe, substantially as described.

2. A dress-protector consisting of wires bent in the shape of a horseshoe, adapted to clasp the heel of a boot or shoe, and the piece *f*, to which the wires are fastened, said piece *f* being adapted to rest against the rear of the heel and to hold the wires apart, substantially as described.

3. A dress-protector consisting of the wires bent in the shape of a horseshoe, adapted to clasp the heel of a boot or shoe, and the piece *f*, to which the wires are fastened, said piece *f* having spur-points *g* and being adapted to rest against the rear of the heel and to hold the wires apart, substantially as described.

4. A dress-protector consisting of the wires bent as described, said wires being fastened at their ends, an eye also fastened or formed at the ends of said wires, and an elastic cord *h*, held by said eyes, the whole adapted to be fastened to the heel of a boot or shoe, substantially as described.

475,804. MATRIX-MAKING MACHINE. CHARLES SEARS, South Evanston, Ill. Filed Jan. 25, 1889. Serial No. 297,592. (No model.)

Claim.—1. In a matrix-making machine, the combination of the type-wheel, a series of radially-movable type-dies carried thereby, and a type-writer wheel mounted on the same axis rigidly connected with said type-die wheel and having a corresponding row of type projecting from its periphery, with a matrix-carrier, a swinging paper-carrier, suitable connections between the paper-carrier and the matrix-carrier to cause their simultaneous and equal feed movement, and mechanism for simultaneously moving, first, one die outward against the matrix, and, second, the paper-carrier toward a corresponding type on the type-wheel, substantially as specified.

2. In a matrix-machine, the combination of a type-die wheel having a plurality of rows of radially-movable dies, a type-wheel having corresponding rows of types, a revoluble shaft upon which both of said wheels are mounted, a spline connection between said shaft and one of said wheels, and a rigid connection between said wheels, whereby they move in unison both in their rotary movement and in their movement on the shaft, substantially as set forth.

3. The combination, with the type-die wheel, of the dies, carried thereby, having yielding bushings, the actual devices of such dies, and the funnel-guide for directing them to the matrix, substantially as specified.

4. The combination, with a rotating type-wheel, a row of laterally-yielding and radially-movable rectangular type-dies carried thereby, and the matrix holding and feeding devices, of automatic mechanism for actuating said dies radially outward to make an impression on the matrix and a rectangular guide having a funnel-shaped opening interposed between the matrix and die for guiding and centering the latter, substantially as set forth.

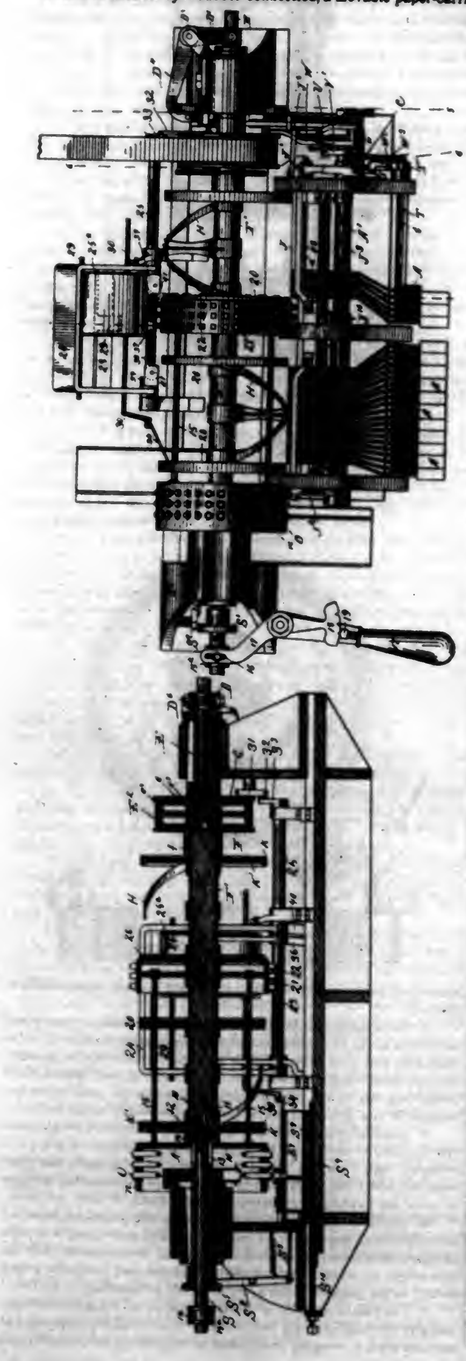
5. The combination, with the type-die wheel and the dies, of the yielding or rubber bushings whereby the dies are held in the wheel, substantially as set forth.

6. The combination, with the type-die wheel having circular openings for the dies, of the square dies and the rubber bushings encircling the latter and filling the openings, substantially as set forth.

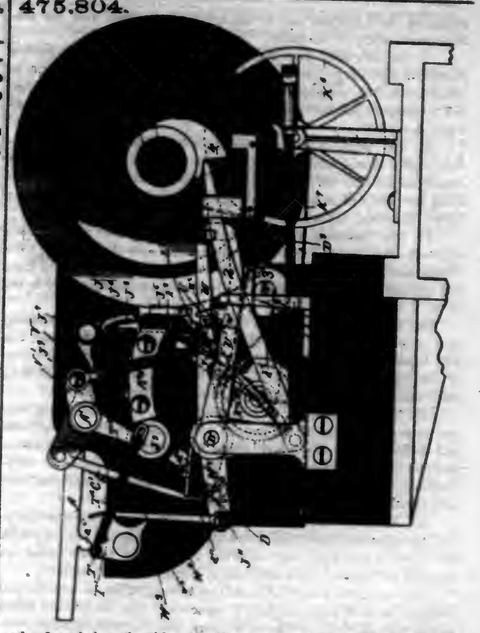
7. The combination, with the die-wheel and the dies, of the rubber bushings and the anti-friction plates between the dies and the bushings, substantially as set forth.

8. In a matrix-machine, a type-wheel having type projecting radially therefrom, with a movable platen having a funnel-shaped type-guide and means for moving said platen toward and forcing said guide over the end of one of the types, substantially as and for the purpose specified.

9. A type-writer wheel having type projecting radially therefrom and secured thereto by a rubber connection, a movable paper-carrier,



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and a funnel-shaped guide movable toward and from said type-wheel and interposed between said wheel and paper-carrier, combined with means whereby said paper-carrier is moved toward the type-wheel and the funnel-shaped guide thereby moved toward and forced over the type to position the same and a spring for retracting said guide, substantially as set forth.

10. The combination, with a rotating die-wheel and a series of radially-movable dies carried thereby, of a radially-movable plunger operating within the rim of said wheel, gripping devices carried by said plunger and adapted to engage with and release the inner ends of said dies, and a rotatable cam on the axis of the type-wheel engaging with said plunger, substantially as described.

11. The combination of the rotatable type-wheel and radially-movable type-dies carried thereby, each having an inner head c^3, with a plunger operating within the rim of said wheel, gripping-fingers pivoted thereto, mechanism for operating said fingers, and a cam engaging with said plunger and finger-operating mechanism, substantially as set forth.

12. The combination of a rotatable type-wheel and radially-movable type-dies carried thereby, each having an inner head c^3, with a radially-movable plunger, a pair of gripping-fingers pivoted to its outer end, a strap P^4 and spring P^5, carried by said plunger, and a cam having a recess *m*, whereby said plunger and gripping-fingers are operated, substantially as set forth.

13. The keys having arms *a'*, the bar J under said arms, the shifting mechanism actuated by said bar in its descent, and the driving-pulley, in combination with the toothed spiral for actuating said bar, substantially as set forth.

14. The keys having arms *a'*, the bar J under said arms, the toothed spiral actuating said bar, the shifting mechanism actuated by said bar in its descent, and the driving-pulley, in combination with the disk G and the die-actuating cam on the same shaft with said disk, substantially as set forth.

15. In a matrix-machine, a rotating type-die wheel, dies radially disposed in the periphery of said wheel and supported in yielding bushings, and an automatic actuating device for said dies, in combination with a guide for directing the dies down upon the matrix, substantially as specified.

16. A type-die wheel adjustable along its axis and having a lateral flange carrying the dies, in combination with a rotating cam stationarily located within the flange of the wheel and mechanism for shifting the wheel at will, substantially as set forth.

17. The die-wheel having a lateral flange *n* and openings in said flange for the type-dies, in combination with said dies and their yielding bushings, substantially as set forth.

18. The rotatable die-wheel having a lateral flange and the type-dies carried in said flange, in combination with a separately-rotatable cam located inside the flange and a plunger operated by said cam and

actuating the die which may at the time be in position over the matrix, substantially as set forth.

19. The rotatable die-wheel having a lateral flange, the type-dies carried in said flange, and means for locking said wheel in position, in combination with a separately-rotatable cam located inside the flange and a plunger operated by said cam and actuating the dies, substantially as set forth.

20. The rotatable die-wheel having a lateral flange and the type-dies carried in said flange, in combination with a separately-rotatable cam located inside the flange, a plunger operated by the cam and actuating the dies, and means for locking said cam during the positioning of the die-wheel, substantially as set forth.

21. The rotatable die-wheel, the type-dies carried thereby, and the brake locking said wheel, in combination with the separately-rotatable cam, the plunger operated by the cam and actuating the dies, and devices whereby said cam may also be locked, substantially as set forth.

22. The combination, with the type-die wheel and die-actuating cam, of the disk F and sleeve F', whereby said wheel is rotated, the disk G and main shaft E, whereby the die-actuating cam on the axis of the type-wheel is rotated, and the driving-pulley and its shifting mechanism for actuating said disks, substantially as set forth.

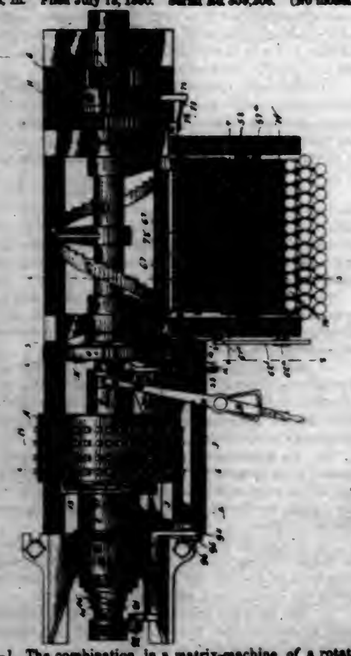
23. The die-wheel and its actuating-disk F, the die-actuating cam and its actuating-disk G, the driving-pulley located between said disks and shiftable into contact with either of them or to an intermediate position out of contact with either, and shifting mechanism for automatically moving the pulley into these several positions, all combined and operating substantially as set forth.

24. The combination, in a matrix-machine, of the type-dies carrying gaging-bosses d^4 near their operating-faces, and funnel-shaped guides for directing the dies truly upon the matrix, said guides being cut away at the side to admit said bosses, substantially as set forth.

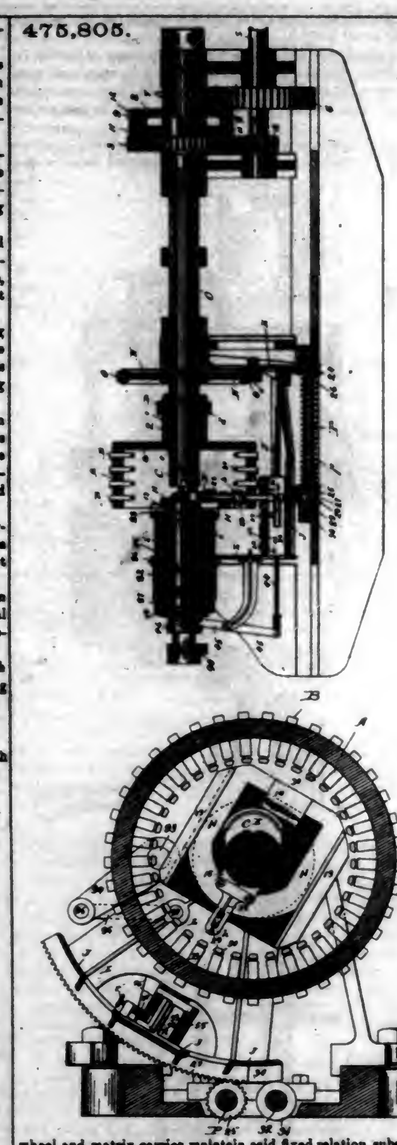
25. In a matrix-machine, a shifting driving-pulley, in combination with the series of keys, the bars J under the keys, the toothed spiral acting with the keys to depress said bar, and the mechanical connections between said bar and the pulley, substantially as set forth.

26. The combination, with the bar J, of the series of keys, each key having an arm a', and the rotating tooth-carrying device striking against said arms and depressing said bar, substantially as set forth.

475,805. MATRIX-MAKING MACHINE. CHARLES SEARS, South Evanston, Ill. Filed July 14, 1890. Serial No. 359,208. (No model.)



Claim.—1. The combination, in a matrix-machine, of a rotating type-wheel carrying a series of radially-movable type-dies with a swinging matrix-carrier pivoted concentric with said wheel, means for moving said matrix-carrier intermittently in fixed relation to said type-wheel, and means for actuating the type-dies during the time the type-wheel and matrix-carrier maintain said fixed relation, substantially as set forth.



2. The combination, in a matrix-machine, of a rotating type-wheel carrying a series of radial type-dies, a swinging matrix-carrier pivoted concentric with said wheel, means for moving said carrier intermittently in fixed relation to said type-wheel and with any desired die in proper relation to the matrix-block, and means for making an impression of said die in the matrix-block, substantially as set forth.

3. The combination, in a matrix-machine, of a rotating type-wheel carrying one or more fonts of radially disposed and movable type, a swinging matrix-carrier, means for locking said carrier to the type-wheel so that it will move therewith, and means for actuating the type to make the impression, substantially as set forth.

4. The combination, in a matrix-machine, of a rotating type-wheel carrying one or more fonts of radially disposed and movable type, a swinging matrix-carrier adapted to be locked to and moved with the type-wheel, an eccentric for actuating the type, and means for giving motion to the eccentric when a key is struck, substantially as set forth.

5. The combination, in a matrix-machine, of a continuously-rotating type-wheel carrying one or more fonts of radially disposed and movable type, a swinging matrix-carrier adapted to be locked to and moved with the type-wheel, an eccentric for actuating the type, and means for giving motion to the eccentric when a key is struck, substantially as set forth.

6. In a matrix-machine, a continuously-rotating type-wheel and an eccentric for actuating the type borne by the wheel, said eccentric being given a single revolution with each stroke imparted to the operator's key, in combination with said keys and mechanism connecting them with and controlling said eccentric, substantially as set forth.

7. In a matrix-machine, a continuously-rotating type-wheel, an eccentric for actuating the type borne by the wheel and traveling through a single revolution at each impression, a matrix-carrier adapted to be locked to and move with the type-wheel during the making of the impression, mechanism for controlling the movements of the eccentric, and mechanism for locking the carrier to the wheel, substantially as set forth.

8. In a matrix-machine, the combination, with a rotating type-wheel, a swinging matrix-carrier, and the series of keys to be struck by the operator, each provided with a slide 67, of the bar 70, mechanism for locking said matrix-carrier to the type-wheel, and the toothed spiral on the type-wheel shaft, said bar yielding to allow the spiral to pass the slides, substantially as set forth.

9. In a matrix-machine, the combination, with a rotating type-wheel, a swinging matrix-carrier, and a rotatable type-impressing device, of a clutch for actuating the latter and a brake for locking the carrier to the wheel, both the clutch and brake being set in service by the striking of the key corresponding to the type impressed, substantially as set forth.

10. In a matrix-machine, the combination, with the clutch for actuating the type-impressing eccentric and the brake for locking the matrix-carrier to the type-wheel, of the bar 70, serving to put both the clutch and the brake into operation, said eccentric, said carrier, and said wheel, substantially as set forth.

11. In a matrix-machine, the combination, with the clutch for actuating the type-impressing eccentric and the brake for locking the matrix-carrier to the type-wheel, of the bar 70, serving to put both the clutch and the brake into operation, said eccentric, said carrier, said wheel, the slides 67, moved into position by the key-levers, and the rotating toothed spiral, substantially as set forth.

12. In a matrix-machine, the combination, with the clutch for actuating the type-impressing eccentric and the brake for locking the matrix-carrier to the type-wheel, of the bar 70, supported upon inclined parallel radius-bars and serving to put both clutch and brake into operation, said eccentric, said carrier, and said wheel, substantially as set forth.

13. In a matrix-machine, the combination, with the type-wheel and matrix-carrier, of the devices for locking them together, consisting of a friction-wheel upon the type-wheel shaft, a friction-band encircling said wheel and secured to the matrix-carrier, and a device for tightening said band set in operation preparatory to the making of each impression, substantially as set forth.

14. In a matrix-machine, the combination, with the type-wheel and the matrix-carrier, of the devices for locking them together, consisting of a friction-wheel upon the type-wheel shaft, a friction-band encircling said wheel and secured to the matrix-carrier, and a pin for tightening said band, and a device set in operation by the striking of the keys for actuating said pin, substantially as set forth.

15. The combination, with the friction-wheel and the friction-band surrounding the same, of the tapering pin for tightening said band, the endwise-moving bar 70, acting upon said pin, and a cam for releasing said pin, substantially as set forth.

16. In a matrix-machine, the combination, with the series of keys to be struck by the operator, each having a slide 67, of the bar 70, supported so as to yield with a downward and endwise movement, the toothed spiral striking said slides and depressing said bar, and a pin 16, actuated by said bar and controlling the devices for locking the matrix-carrier and the type-wheel together, substantially as set forth.

17. In a matrix-machine, the combination, with the type-wheel and the type-impressing eccentric, of a friction-clutch for carrying power to the latter and mechanism set in operation by the striking of the operator's key for closing said clutch, such mechanism consisting of the slide 67, the toothed spiral, the bar 70, and the connections between said bar and the clutch, substantially as set forth.

18. In a matrix-machine, the combination, with the type-wheel and the type-impressing eccentric, of a friction-clutch for carrying power to the latter, the bar 70, and the connections between said clutch and said bar, substantially as set forth.

19. In a matrix-machine, the combination, with the type-wheel and the type-impressing eccentric, of a friction-clutch for carrying power to the latter, the bar 70, the link 72, and lever 73, engaging boss 75 upon the clutch, substantially as set forth.

20. The combination, with the clutch for actuating the eccentric having the boss 75, of the endwise-moving bar 70, acting with each impression, the link 72, lever 73, and means for returning the bar to its normal position, substantially as set forth.

21. The swinging matrix-carrier having two segmental racks at a remove from each other, in combination with shaft P and the pinions thereon meshing with said racks, substantially as set forth.

22. The swinging matrix-carrier having two segmental racks at a remove from each other, in combination with shaft P and the pinions thereon meshing with said racks, and a retracting-spring p, substantially as set forth.

23. The swinging matrix-carrier having two segmental racks at a remove from each other, in combination with shaft P and the flanged pinions thereon meshing with said racks, substantially as set forth.

24. The swinging matrix-carrier having two segmental racks at a remove from each other, in combination with shaft P and the pinions thereon meshing with said racks, and the flanged roller 28, substantially as set forth.

25. In a matrix-machine, the combination, with a rotating type-die wheel, a swinging matrix-carrier, and mechanism for connecting said matrix-carrier and the type-die wheel, of a supporting roller or rollers supporting the matrix-carrier in the part of its movement when the impression is made, substantially as set forth.

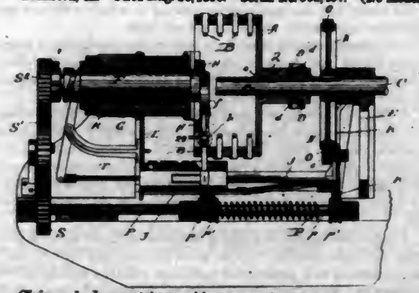
26. In a matrix-machine, a font of movable type arranged with their final points in one common plane and a supporting-carrier for said type, in combination with a matrix-carrier, means for feeding said matrix, and means for forcing said type upon the matrix, substantially as set forth.

27. In a matrix-machine, a font of movable type arranged with their final points in one common plane and each carrying a spacing gage or projection and a supporting-carrier for said type, in combination with a matrix-carrier having a cam-surface connected to and feeding the matrix and actuated by the spacing-gage upon the type, and means for forcing the type upon the matrix, substantially as set forth.

28. In a matrix-machine, a font of movable type arranged with their final points in one common plane, substantially as set forth.

29. In a matrix-machine, the combination, with a supporting wheel or carrier, of a font of type movably supported in said wheel and arranged therein with their final or rearmost parts lying in the same vertical plane, substantially as set forth.

475,806. MATRIX-MAKING MACHINE. CHARLES SEARS, South Evanston, Ill. Filed Aug. 20, 1890. Serial No. 362,467. (No model.)



Claim.—1. In a matrix-machine, a rotating type-wheel, a swinging matrix-carrier, and means for moving said matrix-carrier in fixed relation with said type-wheel during a part of the latter's revolution, combined with means for impressing a die upon the matrix, and mechanism connecting said impressing mechanism with the swinging matrix-carrier, whereby the impressing mechanism is actuated by the matrix-carrier, substantially as set forth.

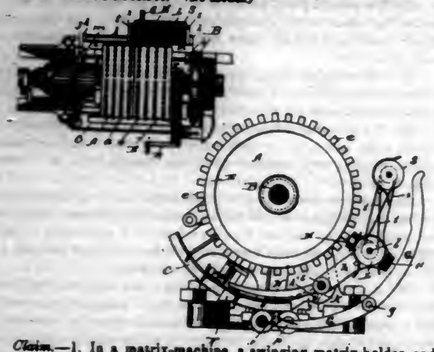
2. In a matrix-machine, the combination of the continuously-rotating type-wheel, a matrix-carrier frame adapted to be locked to and move with said type-wheel during a part of the latter's revolution, means for actuating the type to make the impression, and mechanism connecting said type-actuating means with the swinging frame, substantially as set forth.

3. In a matrix-machine, the combination of a continuously-rotating type-wheel, a swinging matrix-carrier adapted to be locked to said type-wheel intermittently, an intermittently-operated eccentric for impressing the type, and mechanical connections carrying power to said eccentric from the matrix-carrier, substantially as set forth.

4. The combination of the type-wheel, the swinging matrix-carrier, means for locking the matrix-carrier to the type-wheel, the shaft P, actuated by the matrix-carrier, the train of gears carrying motion to the shaft F, the impression device, and said shaft F, substantially as set forth.

5. In a matrix-machine, the combination of a swinging matrix-carrier, with a type-die wheel moving over the matrix, and mechanism for impressing the type, receiving its power from said swinging carrier, substantially as set forth.

475,807. TYPE-WRITING ATTACHMENT FOR MATRIX-MAKING MACHINES. CHARLES SEARS, South Evanston, Ill. Filed Aug. 28, 1890. Serial No. 363,310. (No model.)



Claim.—1. In a matrix-machine, a swinging matrix-holder and a paper-carrying attachment, in combination with a type-writer wheel and a die-wheel to which the matrix-carrier is intermittently locked, substantially as set forth.

2. In a matrix-machine, a continuously-rotated die-wheel, a swinging matrix-carrier movable with said wheel, a paper-holder mounted on said matrix-carrier, and a type-writer wheel rotating with said die-wheel, all combined and operating substantially as set forth.

3. A rotating die-wheel, means for actuating the dies carried by said wheel, a matrix-carrier adapted to move with said die-wheel during the making of the impression, the type-writer wheel moving with said type-wheel, and paper-carrying devices supported from said matrix-carrier, all combined and operating substantially as set forth.

4. The combination, with a matrix-machine having a continuously-rotating die-wheel and a swinging matrix-carrier moving with said die-wheel during the making of the impression, of a type-writer attachment, the type-wheel of said attachment moving in unison with said die-wheel, and the paper-carrier thereof in unison with said matrix-carrier, substantially in the manner set forth.

5. In a matrix-making machine, a type-writer attachment, a paper-carrying device, and means for imprinting on the paper carried thereby, combined with a copy-holder secured to said paper-carrying device, substantially as and for the purpose specified.

6. The combination, in a matrix-machine, of a rotating die-wheel, a type-wheel moving in unison therewith, and a swinging matrix-carrier adapted to move in fixed relation to said die-wheel during a part of the latter's revolution with a paper-carrying device mounted on said matrix-carrier and movable toward and from the type-wheel, and a copy-holder secured to said paper-carrying device, substantially as set forth.

7. The combination, in a matrix-machine, of the swinging matrix-carrier, the paper-holding devices mounted upon said carrier, and a lever connecting said paper-holding devices with the matrix, so that the paper and matrix will be fed in unison, substantially as set forth.

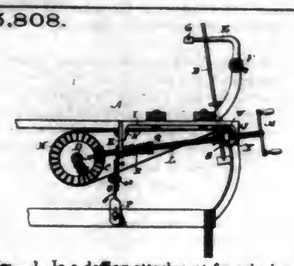
8. The combination, in a matrix-machine, of the swinging matrix-carrier, the paper-holding devices mounted upon said carrier, and a lever connecting said paper-holding devices with the matrix, so that the paper and matrix will be fed in unison, said lever having the inclined face *n*, and said matrix-carrier having a cam O, adapted to throw out said lever, substantially as set forth.

9. The combination of a revolving type-wheel, a swinging frame moving in fixed relation to said type-wheel during a part of the latter's revolution, a paper-carrying device carried by said swinging frame and movable toward and from said type-wheel, and mechanism whereby the said movement of the swinging frame actuates the paper-carrying device, substantially as set forth.

10. The combination of a rotating type-wheel, a swinging frame adapted to move in fixed relation to said wheel during a part of the latter's revolution, and a paper-carrying device pivoted to said swinging frame with a pivoted lever, as G, adapted to be rocked by the swinging frame, substantially as set forth.

11. The combination of a rotating type-wheel, a swinging frame adapted to move in fixed relation to said wheel during a part of the latter's revolution, and a paper-carrying device pivoted to said swinging frame with a cam-surface on the swinging frame and a pivoted lever adapted to be engaged by said cam-surface and to engage said paper-carrying device, substantially as set forth.

475,808. DOFFING ATTACHMENT FOR SPINNING-MULES. GEO. D. SIMON, South Bend, Ind. Filed Jan. 18, 1892. Serial No. 418,491. (No model.)



Claim.—1. In a doffing attachment for spinning-mules, the combination, with the carriage and the spindle-driving drum carrying a gear-wheel, of a doffing-shaft journaled in said carriage and provided with a pinion adapted to be thrown in and out of gear with said drum gear-wheel, substantially as set forth.

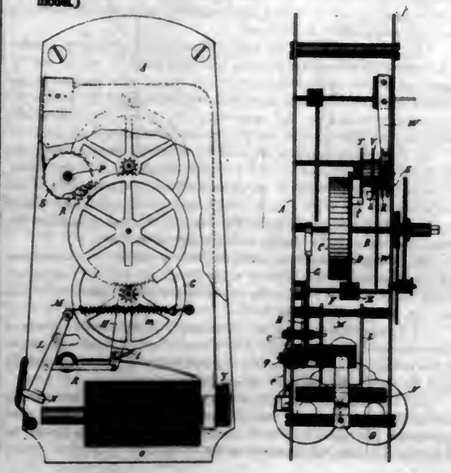
2. In a doffing attachment for spinning-mules, the combination, with the carriage and the spindle-driving drum carrying a gear-wheel, of a spring-pressed and sliding doffing-shaft journaled in said carriage and provided with a pinion at one end, normally held out of gear with said gear-wheel, and means for throwing said pinion into engagement with said gear-wheel, substantially as set forth.

3. In a doffing attachment for spinning-mules, the combination, with the carriage and the spindle-driving drum carrying the bevel gear-wheel, of an adjustable bearing-bracket secured to said carriage, a spring-pressed and sliding doffing-shaft journaled in said adjustable bracket and provided at one end with a bevel-pinion normally held out of gear with said gear-wheel, and means for throwing said pinion into engagement with said gear-wheel, substantially as set forth.

4. In a doffing attachment for spinning-mules, the combination, with the carriage and the spindle-driving drum carrying a bevel gear-wheel, of a bearing-bracket secured to said carriage-frame and provided with a fixed and a vertically-adjustable bearing-arm at opposite ends thereof, a spring-pressed doffing-shaft mounted in said arms and provided at one end with a bevel-pinion normally held out of gear with said gear-wheel, a sectional adjustable brace mounted on the pinion end of said shaft and connected with a suitable point of attachment, and means for throwing said pinion into engagement with said gear-wheel, substantially as set forth.

5. In a doffing attachment for spinning-mules, the combination, with the carriage and the spindle-driving drum carrying a bevel gear-wheel, of a bearing-bracket secured to said carriage and provided with depending bearing-arms, a doffing-shaft mounted in said arms and provided with a bevel-pinion at one end, an operating crank or handle at the opposite end and intermediate collars, a coiled spring mounted on said shaft and bearing against one of said collars to normally hold said bevel-pinion out of gear with said gear-wheel, and a cam-casting mounted on said shaft and working against the inner face of one of said bearing-arms and one of said collars to throw said pinion into engagement with said gear-wheel, substantially as set forth.

475,809. ELECTRIC SELF-WINDING CLOCK. FREDERICK M. SCHMIDT, Brooklyn, N. Y. Filed Oct. 9, 1891. Serial No. 408,219. (No model.)



Claim.—1. In a self-winding clock, the combination, with a winding-motor and the train operated thereby of a circuit-controller for the motor-circuit, having alternate insulating and conducting sections and a contact bearing thereon, the said circuit-controller being independent of the train, but adapted to be moved step-by-step by the alternate engagement therewith of one of the wheels of the train and a part connected with the going-barrel, as set forth.

2. In a self-winding clock, the combination, with the winding-motor and the train, of two star-wheels and two ratchet wheels or disks, all fixed to the same rotary support, with their teeth alternately disposed and one ratchet-wheel being insulated, a spring-contact bearing at all times on one or the other of said ratchet-disks, according to their position, a pin or projection on one of the wheels of the train in position to engage with the teeth of one of the star-wheels, and a pin on a wheel moving with the going-barrel for engaging with the other star-wheel, as herein set forth.

3. The combination, in a self-winding clock, with the winding-motor and train, of the star-wheels T V and the ratchet-disks R S, carried by the same sleeve, with their teeth alternately disposed and mounted on a stud independently of the train, the contact strip or spring *w*, bearing on the disks R S alternately as the latter are revolved, a projection or tooth on a wheel W on the hour-arbor, adapted to engage with the star-wheel V and by each revolution of the wheel W to shift the spring *w* from a tooth on disk R, which is insulated, to a tooth on disk S, which is connected with the circuit of the motor, and a tooth or projection on wheel D, connected with the going-barrel and adapted to engage with the star-wheel T and by each revolution of the wheel D to shift the contact *w* from disk S to disk R, as set forth.

4. In a self-winding clock, the combination, with the main spring and barrel, of a reciprocating motor consisting of an electro-magnet, a vibrating armature-lever, and means for transmitting the movement of the same to the barrel, a pivoted contact-lever engaged and oscillated by the armature-lever, and a contact-plate in the circuit with the motor-magnet and contact-lever and formed or bent, as described, whereby the contact-lever will be brought into engagement therewith by the withdrawal of the armature from the magnet and out of engagement by the approach of the armature to the magnet, as set forth.

5. The combination, with a clock-train and a circuit-controller arranged to be brought to position by the running down of the train to close the circuit of a winding-motor and by the winding up of the mainspring to break said circuit, of a reciprocating motor composed of a magnet, an oscillating armature connected by a pawl and ratchet-wheel with the barrel, the insulated contact-lever *e*, having a bifurcated end engaged by an insulated stud on the armature-lever, and the contact-strip *h*, with which the lever *e* is adapted to engage, the strip being bent or formed in such manner that the lever *e* will be carried out of contact therewith by the movement of the armature-lever and before the said lever has reached its forward limit of movement, as herein set forth.

475,810. HOUSE-DOOR LETTER-BOX. CHARLES H. SCOFIELD, Utica, N. Y., assignor of one-half to Judson T. Stevens and William M. Philleo, same place. Filed May 15, 1891. Serial No. 392,891. (No model.)



Claim.—1. The combination, with a letter-box having a door, of a bolt for securing the door, an alarm device, and a lever for securing the bolt, and means for operating the lever in connection with or from the alarm device, substantially as set forth.

2. The combination, with a letter-box having a door, of a locking-bar for securing the door, an alarm device, a lever adapted to engage the locking-bar and extending to and operated with the alarm device, and two or more movable tumblers for engaging the locking-bar, substantially as set forth.

3. The combination, with a letter-box having a door, of a locking-bar for securing the door, capable of endwise movement, having a longitudinal slot with notches or recesses therefrom, movable tumblers having studs adapted to engage in the slot and notches or recesses, and projections projecting to the outside of the case, whereby the tumblers may be operated, an alarm device, and a lever adapted to secure and engage the locking-bar and extending to and operated with the alarm device, substantially as set forth.

4. The combination, with a letter-box having a letter-opening, of a shaft journaled in the box adjacent to the opening, a swinging guard for the letter-opening on the shaft, and a ratchet engaging with a rotary alarm-striking device, substantially as set forth.

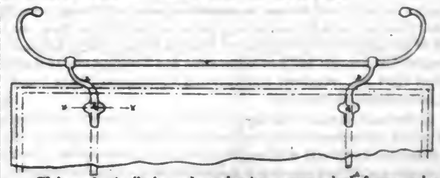
5. The combination, with a letter-box having a letter-opening, of a shaft journaled in the box adjacent to the letter-opening, carrying a guard-plate for said opening, a lever connected to the shaft on the outside of the box and carrying an arm projecting across the face of the box, a rotary ratchet-plate mounted loosely on the shaft, a dog or pawl connected to the shaft engaging with the ratchet-plate, the tripper engaging with the ratchet-teeth, and a gong and hammer, substantially as set forth.

6. The combination, with a letter-box having a door, of a locking-bar for securing the door, a locking-lever engaging the bar, a shaft journaled in the top of the box, a projection on the shaft for engaging the locking-lever, an alarm mechanism connecting with the shaft, and a lever for operating the shaft, substantially as set forth.

7. The combination, with a letter-box having a letter-opening, of a ball or paper-holder mounted on a shaft journaled in the top of the box, a swinging latch-piece for closing the opening, a guard-plate mounted on the shaft, a gong, and gong-striker, substantially as set forth.

8. The combination, with a letter-box, of a shaft journaled in the top of the box, an alarm device operating from the shaft, and a bail or paper-holder mounted on the shaft and passing across the front of the box, substantially as set forth.

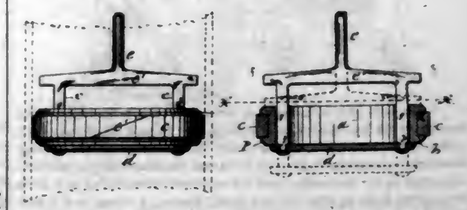
475,811. CLIP FOR DASH-BARS. AMBON SEARLS, Newark, N. J. Filed Feb. 1, 1892. Serial No. 419,914. (No model.)



Claim.—1. A clip-bar adapted to bear upon a dash-frame and provided with a recess on its inner side, a slotted recess extending therefrom adapted to inclose and conceal a bolt-head, one or more re-entrant wings adapted to inclose and hold the flange of the bolt-head, and means for securing the same, all substantially as set forth.

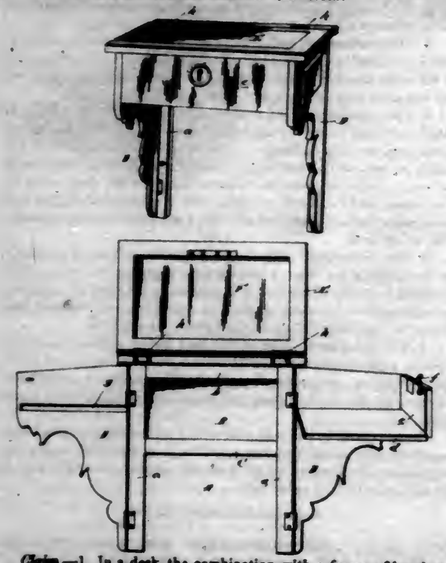
2. A clip-bar adapted to bear upon a dash-frame and provided with a recess on its inner side, a slotted recess extending therefrom adapted to inclose and conceal a bolt-head having one or more re-entrant wings adapted to inclose and hold the flange of the bolt-head, means for securing the same, and a stop arranged substantially as described, whereby the movement of the clip-bar will be limited, all substantially as set forth.

475,812. PUMP-PISTON. HENRY J. SEYMOUR, Niagara, Canada. Filed Apr. 25, 1891. Serial No. 390,493. (No model.)



Claim.—The improved lift-pump piston consisting of the ring P, formed rigid with a plain horizontal annular valve-seat on its under side and provided with the vertical guide-grooves *i i* on its inner side, in combination with the piston-rod *c*, terminating in the cross-bar *c'* above said ring, said cross bar extending across the top of the ring and formed with rigid pendent arms *c'' c''*, extending through the grooves *i i* and leaving the central and main portion of the ring P free from obstructions to the passage of the water, and the valve-plate *d*, fixed to the lower ends of the arms *c'' c''* and carried beneath the ring R and lapping onto the horizontal valve-seat thereof and free from frictional contact therewith, all constructed and combined substantially as described and shown.

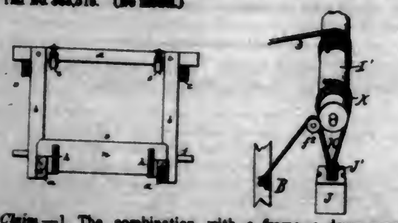
475,813. WRITING-DESK. ADAM R. SHANNON, Findlay, Ohio. Filed Feb. 8, 1892. Serial No. 420,711. (No model.)



Claim.—1. In a desk, the combination, with a frame, of brackets arranged vertically and hinged to opposite sides of said frame, one of the brackets having a horizontal strip and a vertical strip to form two walls of a receptacle and the opposite bracket having a ledge adapted to receive and support the horizontal strip, and a hinged top adapted to close upon the receptacle and carrying a blackboard in its under side, substantially as specified.

2. The combination, with the frame having the panel in its upper part, of the two laterally-swinging brackets hinged to the uprights of the frame, the horizontal strip and the vertical strip secured to one of the brackets, and the horizontal ledge secured to the opposite bracket, so as to form with the parts named a box or receptacle for the desk, and the top carrying in its under side a blackboard and hinged to the main frame, so as to form a top for the desk, the parts being so arranged that the bracket attachments may be swung laterally and out of the way when the blackboard is to be used, substantially as specified.

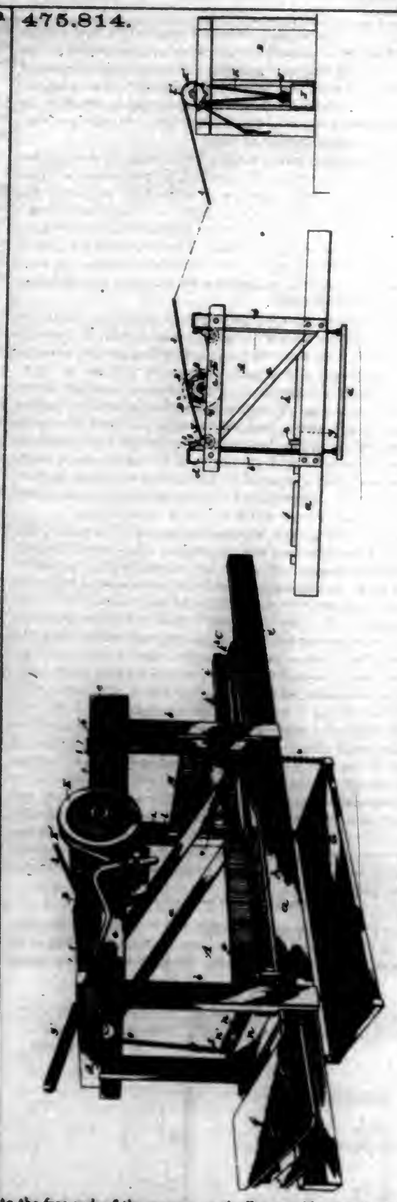
475,814. APPARATUS FOR LOADING VESSELS. DAVID C. SHEPHERD and LORING C. BALLARD, Gardiner, Me. Filed Aug. 30, 1890. Serial No. 363,516. (No model.)



Claim.—1. The combination, with a frame, a drum mounted thereon at the top thereof, and pulleys, one located at or near each corner of the frame, of a rope for each pulley, the several ropes being attached to the drum, so as to wind thereon simultaneously, a platform connected to the free ends of said ropes, means connected to said drum for turning same to wind all the ropes thereon, a chute, and a gate located between the chute and platform, the said gate adapted to be automatically actuated to close the end of the chute when the platform is lowered, substantially as set forth.

2. The combination, with a frame, of a drum journaled thereon, ropes wound around said drum, a platform supported by said ropes, a hopper carried by said frame, a chute, and a vertically-moving gate supported at its ends in guides and automatically actuated by the platform-supporting ropes for regulating the feed of material from the chute to the platform, substantially as set forth.

3. The combination, with a frame, pulleys located at or near the four corners thereof, and a drum mounted on said frame, of ropes secured to the drum, each rope passing over a pulley, a platform secured



to the free ends of the ropes, a vertically-movable gate having devices adapted to be engaged by a device carried by two of the platform-supporting ropes, whereby the gate is elevated and lowered, a frame carrying a roller, a rope wound on said roller and drum and so arranged that when it unwinds from the drum it turns the latter in a direction to wind the platform-supporting ropes thereon, and a weighted rope wound around said roller, substantially as set forth.

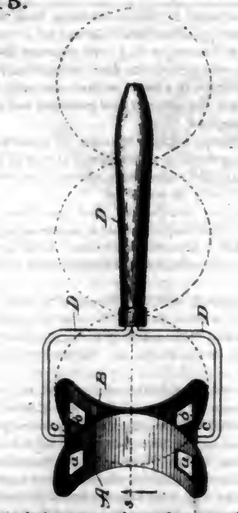
475,815. BISCUIT-CUTTER. HENRY T. SIDWAY, Chicago, Ill. Filed Sept. 9, 1891. Serial No. 405,196. (No model.)

Claim.—1. A biscuit-cutter comprising two curved elliptical plates rotatably supported, substantially as described.

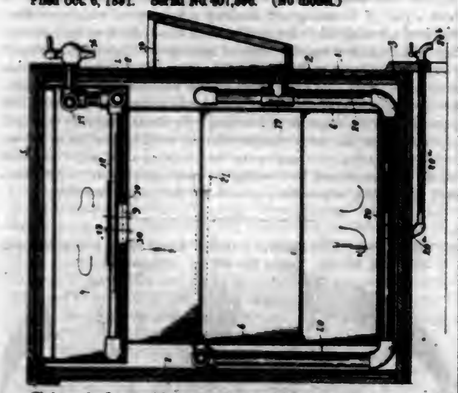
2. A cutter comprising two curved elliptical plates fastened together on their convex sides and rotatably supported in a suitable frame, substantially as described.

3. The combination of a handle provided with arms, a cutter consisting of two curved plates secured together, a portion of such plates being partially cut away and bent inward, and journal-plates rigidly secured to such portions and rotatably secured to the arms of the handle, substantially as described.

475,815.



475,816. REFRIGERATOR. ROSS C. SIMMONS, East Tawas, Mich. Filed Oct. 6, 1891. Serial No. 407,996. (No model.)

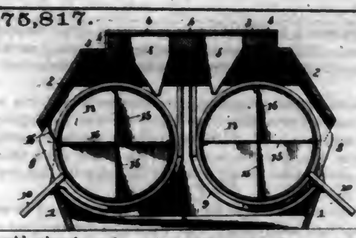


Claim.—1. In a refrigerator, the combination, with a casing, the internal metal lining, the ice-tank supported above the same, the water-coil located in the ice-tank, a supply-pipe leading thereto, and a faucet connected to and extending through the wall of the casing, of a waste-coil located between the metal lining and the wall of the casing, connections between one end of the coil and a drip-opening in the ice-tank, the opposite end of said coil passing through the casing and terminating in a discharge, a drip-pan located upon the exterior of the casing above the drip-coil and under the faucet of the water-coil, and a connection between said drip-pan and the drip-water coil, substantially as specified.

2. In a refrigerator, the combination, with the outer casing, the internal metal lining spaced therefrom, and the water-coil located above the same and provided with inlet and outlet passages, of a drip-pan located upon the exterior of the casing below the outlet of the coil and a drip-coil arranged between the casing and lining, one end of the coil being connected with the drip-pan and the other end extending through the casing to form a drip-discharge, and a drain-pipe connected to a lower intermediate point of the coil and terminating in a discharge-faucet, substantially as specified.

475,817. ICE-CREAM FREEZER. JOHN SERBIN, Trumansburg, N. Y. Filed Sept. 7, 1891. Serial No. 404,997. (No model.)

Claim.—1. In an ice-cream freezer, the combination, with the casing, of the movable internal casing, the opposite cylinders mounted re-

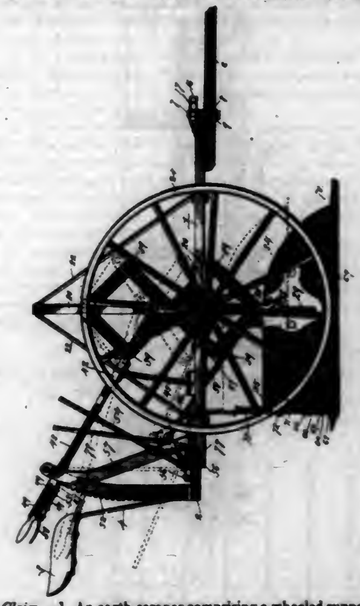


movably therein and provided with axial pulleys, endless belts connecting the pulleys, a crank for rotating one of the cylinders, and creaming-pans located under the cylinders and having their inner ends upwardly extended between the cylinders, substantially as specified.

2. In an ice-cream freezer, the combination, with a casing consisting of a bottom and a covering-section, of internal freezing-cylinders, a frame located upon the covering-section and provided with openings and opposite ways, hoppers depending through the openings at points above the cylinders, and a cover removably mounted in the ways, substantially as specified.

3. In an ice-cream freezer, the combination, with the outer casing and the inner casing removably mounted therein and comprising opposite side walls having pairs of oppositely-inclined slots terminating at their lower ends in bearings, of the pans located below the bearings, the delivery-blades extending from the front edges of the pans and one located at the upper corners of the sides of the inner casing, the pair of freezing-cylinders having removable heads and pulleys at their opposite sides provided with axial trunnions bearing in the slots of the inner frame, one of said trunnions being extended, belts connecting the pulleys, and hoppers located above the cylinders in the outer casing, substantially as specified.

475,818. EARTH-SCRAPER. THOMAS O. O. STILLWATON, Independence, Mo. Filed Nov. 27, 1891. Serial No. 413,360. (No model.)



Claim.—1. An earth-scraper comprising a wheeled supporting and carrying frame, a vertically-movable and tilting shovel, and lazy-tong bars connecting the shovel with the supporting frame-work, substantially as set forth.

2. An earth-scraper comprising a wheeled supporting frame-work, a vertically-movable and tilting shovel, and two sets of lazy-tong bars connecting the shovel with the supporting frame-work, substantially as set forth.

3. An earth-scraper comprising a wheeled supporting or carrying frame, a vertically-movable shovel, two sets of lazy-tong bars connecting the shovel with the frame-work, and a lifting-lever connected to the shovel and supported upon the frame-work, substantially as set forth.

4. An earth-scraper comprising a wheeled carrying-frame, a ver-

tically-movable shovel, two sets of lazy-tong bars connecting the shovel with the frame, a lifting-lever connected to the shovel, and a movable pivotal support for the lever mounted upon the frame, substantially as set forth.

5. An earth-scraper comprising a vertically-movable shovel, two sets of lazy- ong bars connecting the shovel to the frame, a lifting-lever connected to the shovel, a pivotal tilting support for the lever, mounted upon the frame, a rack also mounted upon the frame, and a spring-pressed grip-pawl carried by said lever and engaging the rack-teeth, substantially as set forth.

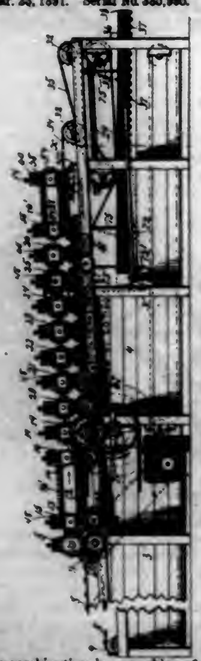
6. An earth-scraper comprising a tilting shovel having a pivoted end-gate, a spring-pressed locking-bolt carried by the end-gate and engaging a socket in the bottom of the shovel, a supporting-frame for the shovel, a rock-shaft mounted upon the frame and having a lever-arm, and a pair of links connecting a rock-arm of the shaft with the bolt, substantially as set forth.

7. An earth-scraper comprising a wheeled frame composed of a horizontal U-shaped portion, a pair of vertical standards located at the sides of the U-shaped frame and carrying the spindles for the carrying-wheels, a pair of U-shaped braces extending each beneath one of the spindles and bolted to the arms of the U-shaped frame, and a pair of vertical bolts passing each through one of the spindles, the middle of the brace, and through the adjacent portion of the frame-arm, substantially as set forth.

8. An earth-scraper comprising a shovel having bearing-plates secured to its sides and connected by a cross-bar and provided also each with a vertical slot, substantially as set forth.

9. An earth-scraper comprising a U-shaped frame portion, a tongue connected to the bend of said frame portion, and a number of braces extending forwardly and upwardly and forwardly and laterally and connecting the inner end of the tongue to the bend, substantially as set forth.

475,819. **FLAX AND HEMP BRAKE.** JOHN T. SMITH, Heron Lake, Minn. Filed Mar. 23, 1891. Serial No. 385,995. (No model.)



Claim.—1. The combination, in a machine of the class described, of the frame with the long conveyer 8, as described, smooth thrashing-rolls 10, and a series of brake-rolls, the corrugations of which rolls increase in number toward the front of the machine, the rolls having the largest and fewest corrugations being nearest the rolls 10, substantially as described.

2. The combination, in a machine of the class described, of a series of pairs of longitudinally-corrugated brake-rolls with means for feeding the stock into the first pair of brake-rolls, the carding-rolls 26, the pair of smooth rolls 25, interposed between the last pair of brake-rolls and said carding-rolls to gather the stock from the brake-rolls and feed the same to the carding-rolls in a thin compact sheet, the rattle device 27, arranged to receive the stock from the carding-rolls, and means for revolving said several rolls and for revolving said rattle device more rapidly than the carding-rolls, whereby the same is caused to strip or peel the shives from the fiber, substantially as described.

3. The combination, in a brake, of the brake-rolls with the smooth rolls 25, carding-rolls, the rattle 27, and pounding and shaking devices, substantially as described.

4. The combination, with the conveyer, of thrashing-rolls, a rattle, the pounding device made up of longitudinal rods 28 and 29, a shaker 36, provided beneath the same, and a conveyer provided in a trough thereunder, substantially as described.

5. In a brake, the combination, with the frame provided upon suitable supports, of the long conveyer 8, the thrashing-rolls, the rattle 12, a series of graded brake-rolls, flattening-rolls 25, cards 26, the rattle device 27, and the pounding and shaking devices, substantially as described.

6. The combination, with the frame, of a long conveyer 8, the graduated pairs of brake-rolls, smooth rolls 25, carding-rolls 26, the rattle 27, the pounding-racks made up of longitudinal rods 28 and 29, arranged upon the crank-shafts, and the shaker 37, substantially as described.

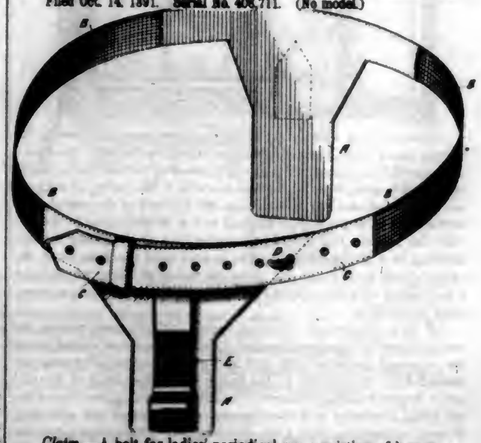
7. The combination, with the standard 48, adapted to be bolted upon the sill or frame, of the block 54, slidably secured between the upright sides of said standards, the jack-screw arranged beneath said block, the coiled spring 58, provided above the same, and means for adjusting the tension thereof, substantially as described.

8. The combination, with the sill-beams and supports therefor, of thrashing and brake rolls, a feed-conveyer, the power-shaft, fly-wheels in connection therewith, the trough arranged beneath said rolls, and the conveyer 39, provided therein, substantially as described.

9. The process of preparing flax or hemp fiber, which consists in first crushing the stock, then transversely breaking the same, but maintaining the fiber, then carding the fiber to remove the shives, then subjecting the fiber to a longitudinal pounding, and finally to a longitudinal shaking, substantially as described.

10. The combination, in a flax or hemp brake, of a feeding device with a pair of thrashing and crushing rolls between which said feeding device is adapted to deliver the stock, the surfaces of said rolls being cylindrical and smooth, pairs of corrugated brake-rolls arranged one pair in advance of the other and to receive the crushed stock from said smooth rolls, said pairs of brake-rolls being three or more in number and the corrugations of each pair being closer or finer than of the preceding pair, a single pair of carding-rolls, the carding-rolls arranged in front of the last pair of brake-rolls, the stock thereof being fed between the carding-rolls, and means for revolving all of said brake-rolls at the same speed and for rotating the carding-rolls more rapidly than said brake-rolls, substantially as and for the purpose specified.

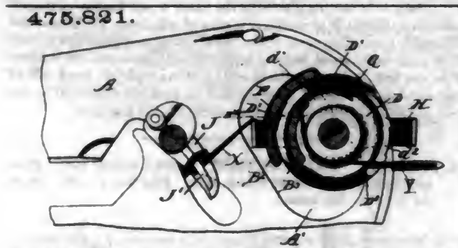
475,820. **CATAMENIAL SACK.** HENRY SMITH, London, England. Filed Oct. 14, 1891. Serial No. 408,711. (No model.)



Claim.—A belt for ladies' periodical use, consisting of lappets A, elastic part B, band part C, with eyelets, hook D, and elastic tags E, with buckle with close teeth, substantially as described and set forth.

475,821. **CORD-KNOTTER FOR GRAIN-BINDERS.** ANDREW STARK, Chicago, Ill., assignor of one-half to the Warder, Bushnell & Glessner Company, Springfield, Ohio. Filed Oct. 17, 1891. Serial No. 409,062. (No model.)

475,821.



Claim.—1. In combination, substantially as set forth, a crown disk or segmental cord holder, a co-operating cord-clamp fixed with relation to said holder where the cord is received and adapted to yield to the pressure of the cord at the part adjacent to which the advance portion of the holder-flange stands at rest in the intervals between complete knotting operations.

2. In combination, substantially as set forth, a cord-holder having upstanding segmental flanges, a cord-clamp adapted to co-operate with such flanges in driving and holding the cord, a cord-driver H, rigid with the cord-holder and revolving with it outside the clamp, and a knife rigid with the holder-bearing, having its cutting-edge between the clamp and the path of said cord-driver, substantially as set forth.

3. In a cord-knotter, in combination, substantially as set forth, the knotter-frame, the holder-saddle rigid with said frame, and the holder adapted to be revolved through the saddle, and an elastically-yielding clamp operating against the holder after its emergence from the saddle.

4. In a cord-knotter, in combination, substantially as set forth, the knotter-frame, the crown disk or cup holder having its shaft journaled therein and the saddle rigid with the shaft bearing at the end thereof and integral therewith and adapted to receive the holder-flange between its wings as the latter revolves, and an elastically-yielding clamp secured to the frame in position to press upon the outer surface of the holder-flange after its emergence from the saddle.

5. In a cord-knotter, in combination, substantially as set forth, the knotter-bill, and the crown disk or cup holder revolving in the same direction about their respective axes, the saddle rigid with the bearing of the holder-shaft at the side toward the knotter-bill, the holder-flange adapted to revolve through such saddle, the knife rigid with the bearings of the holder-shaft outside the saddle, and the arm H, rigid with the holder and having the cord-engaging finger H' upstanding outside the knife.

6. In a cord-knotter, in combination, substantially as set forth, the knotter-bill and the crown disk or cord holder revolving in the same direction about their respective axes, the saddle rigid with the holder-shaft bearing on the side toward the knotter-bill, having its outer wing or rib provided with the cord-arresting notch B^{20}, located on the side of the plane of the axes of the bill and holder opposite to the plane of the path of the needle, and the mechanism which rotates the knotter-bill timed to bring it to rest at the completion of the knot with its jaws on the oppposite side of the plane of said axes from said notch and pointing away from said plane.

7. In a cord-knotter, in combination, substantially as set forth, the knotter-bill and the crown disk or cup holder revolving in the same direction about their respective axes, a clamp rigid with the bearings of the holder-shaft on the side thereof toward the knotter-bill, mechanism which revolves the knotter-bill timed to bring it to rest after its jaws have passed the position of greatest proximity to the holder, and the holder having a rigid arm H, extending across the clamp and provided with the upstanding finger outside the latter in position to engage the cord running from the bill to the holder, whereby it forces such cord into the knotter-jaws as the latter complete their rotation.

8. In a cord-knotter, in combination, substantially as set forth, the knotter-bill and the crown disk or cup holder, mechanism which revolves them in the same direction about their respective axes, the saddle rigid with the holder-spindle bearings on the side thereof toward the knotter-bill, and the knife also rigid with said bearings outside the saddle, the holder having the arm H rigid with it and provided with the finger H', upstanding in position to revolve outside the knife, the knotter-bill-driving mechanism being timed to cause the bill to finish its rotation after passing the point of greatest proximity to the holder-axis, whereby the upstanding finger H' folds the cord over the knife and strains it away from the knotter-bill.

9. In combination, substantially as set forth, the crown disk or cup holder, the saddle rigid with the bearings of the holder-spindle in position to permit the holder-flange to revolve through it, and the plate F G, also rigid with the holder-spindle bearings, having the knife-edge near to the point of its rigid fastening and having the part G remote from said fastening and beyond the saddle, whereby it is adapted to press elastically upon the holder-flange after the latter emerges from the saddle.

475,822. **CORD-KNOTTER FOR GRAIN-BINDERS.** ANDREW STARK, Chicago, Ill., assignor of one-half to the Warder, Bushnell & Glessner Company, Springfield, Ohio. Filed Oct. 17, 1891. Serial No. 409,063. (No model.)



Claim.—1. In a cord-knotter, in combination with a knotter-actuating wheel, the knotter-frame, the holder-shaft journaled thereon and having a beveled pinion rigid with it engaged and actuated by suitable teeth on the knotter-actuated wheel, the holder-saddle rigid with the frame and the crown-disk holder feathered on the holder-shaft at the opposite end of the bearing of the latter from said beveled pinion, and the spring which yieldingly forces the holder toward said bearing and into the saddle, whereby the movement of the holder as the spring yields and reacts is effected without affecting the relation of the pinion to said actuating-wheel, substantially as set forth.

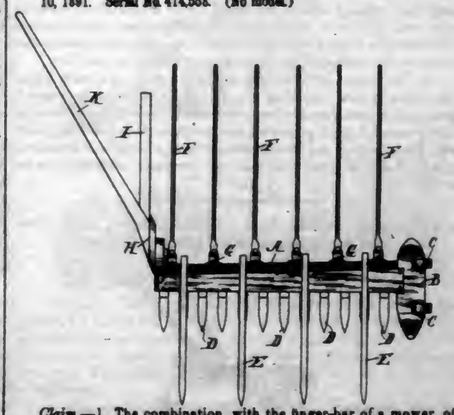
2. In a cord-knotter, in combination, substantially as set forth, the rigidly-fixed saddle, the crown-disk holder movable in the direction of its axis and having its upstanding flange adapted to pass through the saddle as the holder revolves and having also the horizontal or flaring flange E^2, the saddle having its outer wing or flange B^3 shaped at the lower edge to conform substantially to the flange E^2 of the holder, and the spring which tends to cause the cord to be yieldingly grasped between the flanges B^3 and E^2.

3. In a cord-knotter, in combination, a cord-holder having upstanding segmental flanges to engage the cord and having recesses E^{20} on the outer face of the flanges in position to allow the release of the cord, as and for the purpose set forth.

4. In a cord-knotter, in combination, substantially as set forth, a rigidly-fixed saddle, a crown-disk holder and the spring which forces it yieldingly toward the saddle, the holder having the notch E^{20}, and the saddle having its outer wing B^3 extending through an arc not less than that from the advance edge of one of the segments E^{10} of the holder to the more remote side of said notch, measuring in the direction of rotation of the holder.

5. In a cord-knotter, in combination, substantially as set forth, a revolving cord-holder disk having an upstanding flange to receive and carry the cord and an outwardly-extending flange at the base of the upstanding flange adapted to assist in holding the cord, and a cord-clamp adapted to co-operate with said flanges.

475,828. **MOWER.** JOHN STEPHANI, Manitowoc, Wis. Filed Dec. 10, 1891. Serial No. 414,558. (No model.)

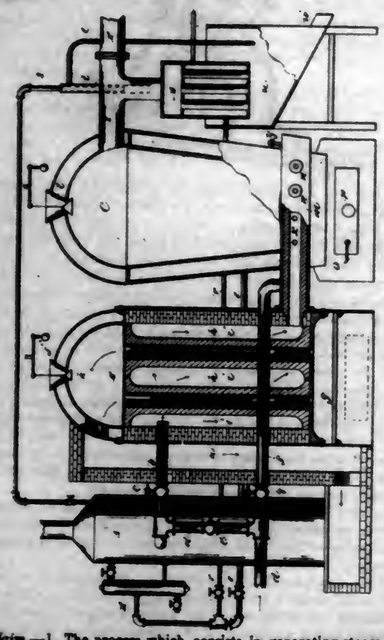


Claim.—1. The combination, with the finger-bar of a mower, of a series of rearwardly-extending and upwardly-curved fingers attached

to the finger-bar pivotally, so as to be capable of independent lateral movement, substantially as described.

2. The combination, with the finger-bar of a mower, of rearwardly-extending and upwardly-curved fingers and hooks to which the fingers are severally pivoted, so as to have lateral motion therein, the hooks being adapted to engage the finger-bar in suitable apertures therefor, substantially as described.

475,824. PROCESS OF ROASTING ORES. CHARLES W. STICKNEY, Butte City, Mont. Filed Dec. 29, 1890. Serial No. 376,165. (No specimens.)



Claim.—1. The process which consists in generating steam in a boiler, passing it into a chamber maintained at a red or higher heat, and thence through suitable ducts into a separate furnace containing ore, and conducting the resulting gases into a cloud of atomized water holding sulphate of alumina in solution, substantially as described.

2. The process which consists in generating steam in a boiler, passing it into a chamber maintained at a red or higher heat, and thence through suitable ducts into a furnace containing ore, and mingling the resulting gases in contact with a solution of sulphate of alumina, substantially as described.

3. The process which consists in injecting steam at a red or higher heat into a furnace containing ore, whereby sulphureted hydrogen is generated, roasting another portion of ore by means of air, whereby sulphurous-acid gas is generated, and mingling these gases in contact with a solution of sulphate of alumina, whereby the sulphur precipitates in coarse and ready-settling particles, substantially as described.

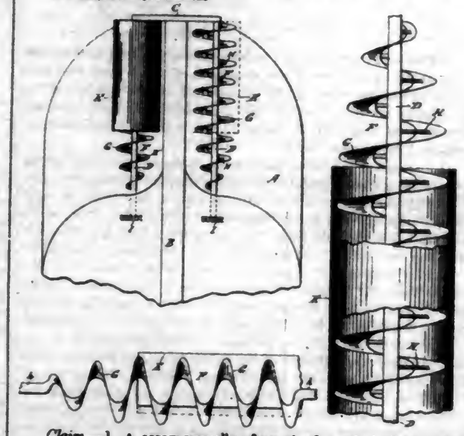
4. The process which consists in injecting steam at a red or higher heat into a furnace containing ore, whereby sulphureted hydrogen is generated, and roasting another portion of ore by means of air, whereby sulphurous-acid gas is generated, and mingling these gases in contact with water holding clay in suspension, whereby sulphate of alumina is generated and its solution mingled with the gases, substantially as described.

475,825. DOUBLE PLOW. JAMES A. STOCKTON, Cherry Grove, Ark. Filed Nov. 7, 1891. Serial No. 411,183. (No model.)



Claim.—In combination with the beam A and handles *a*, the adjustable standards B, pivoted to the sides of said beam, the slotted and adjustable braces C, secured to the lower face of said beam and having their outer ends turned, forming seats *c* for said standards, the washers b^3 on the bolts b^2 between the faces of said beam and the front ends of said standards, wedges c^2 in seats *c*, and the plow-points carried on the feet of said standards, substantially as shown and described.

475,826. SCREW-PROPELLER. JOSEPH C. STREET, Boston, Mass., and HARLAN P. NORTON, St. Joseph, Mich. Filed Nov. 26, 1891. Serial No. 413,110. (No model.)



Claim.—1. A screw-propeller formed of a spiral ribbon which gradually increases in diameter from its forward end for a suitable distance of the length and continues therefrom of uniform diameter to its rearward extremity, and suitable supports for its revolution, substantially as described.

2. A screw-propeller formed of a spiral ribbon which gradually increases in diameter from its forward end for a suitable distance of its length and continues therefrom of uniform diameter to its rearward extremity, in combination with a cylinder surrounding a portion of the same and in which it is adapted to revolve, substantially as and for the purpose set forth.

3. A screw-propeller which gradually increases in diameter from its forward end and continues therefrom of equal diameter to its rearward extremity, in combination with a cylinder inclosing that portion of the propeller which is of equal diameter and having its forward portion extending beyond said cylinder and in front thereof, substantially as and for the purpose described.

4. The combination, with a screw-propeller which gradually increases in diameter from its forward end for a portion of its length, of a tapering or conical tube partly inclosing said screw-propeller, substantially as described.

5. A screw-propeller formed of a spiral ribbon which gradually increases in diameter from its forward end for a portion of its length, a shaft therefor, and means for connecting said ribbon to said shaft, substantially as described.

6. A screw-propeller formed of a spiral ribbon which gradually increases in diameter from its forward end for a suitable distance of its length and continues therefrom of uniform diameter to its rear end, in combination with a tube having an open bottom surrounding the main or body portion of the screw, substantially as described.

7. A screw-propeller formed of a spiral ribbon which gradually increases in diameter from its forward end for a suitable distance of its length and continues therefrom of a uniform diameter to its rear end, a shaft passing through said ribbon, and spokes connecting said ribbon and shaft, said ribbon having its end directly secured to said shaft, in combination with a tube partly surrounding a portion of said screw, substantially as described.

475,827. HORSE-BOOT. JOHN SUMMERS, San Francisco, Cal. Filed Dec. 24, 1891. Serial No. 416,057. (No model.)

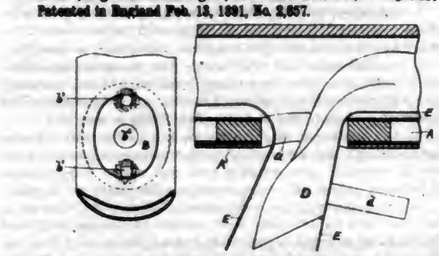
Claim.—1. The herein-described horse-boot, the same consisting of the adjustable strap, the rubber pin extending therefrom and provided at its inner end or base with an annular flange, and the metal securing-plate having a central opening fitting the pin above the flange and bearing on the latter and secured to the strap, substantially as specified.

2. The herein-described horse-boot, the same consisting of the adjustable strap, the rubber pin extending therefrom and provided at its inner end or base with an annular flange, and the metal securing-plate having a central opening fitting the pin above the flange, the inner pad arranged opposite the rear end of the pin, and rivets passed through the pad, adjustable strap, and metal plates, substantially as specified.

475,827.



475,828. WHEEL FOR VELOCIPEDES. HARRY J. SWINDLEY, Barnes, England. Filed Aug. 20, 1891. Serial No. 403,176. (No model.) Patented in England Feb. 13, 1891, No. 2,657.



Claim.—1. In a wheel for velocipedes and other road-vehicles, the combination, with a hollow tire permanently fixed to the rim and having an air-tube within it, of one or more holes or slots in the rim capable of allowing the air-tube to be withdrawn from the hollow tire, and one or more plugs or plates adapted to close the said holes or slots in the rim, as and for the purpose set forth.

2. In a wheel for velocipedes and other road-vehicles, the combination, with a hollow tire permanently fixed to the rim of the wheel, of one or more air-tubes, each made in the form of a bag—*i. e.*, with closed ends—one or more holes or slots in the rim capable of allowing the air tube or tubes to be inserted in and withdrawn from the hollow tire, and one or more plugs or plates adapted to close the said holes or slots in the rim of the wheel, as set forth.

3. In a wheel for velocipedes and other road-vehicles, the combination, with a hollow tire permanently fixed to the rim of the wheel, of one or more air-tubes, each made in the form of a bag—*i. e.*, with closed ends—and having an inflation-tube located at or near one end thereof, one or more holes or slots in the rim capable of allowing the air tube or tubes to be inserted in and withdrawn from the hollow tire, and one or more plugs or plates adapted to close the said holes or slots in the rim of the wheel and each having a hole for the passage of the inflation-tube, as set forth.

4. In a wheel for velocipedes and other road-vehicles, the combination, with a hollow tire permanently fixed to the rim of the wheel, of one or more air-tubes, each having closed ends, and a continuous tape of non-stretchable material fixed along its under side and an inflation-tube located at or near one end thereof, one or more holes or slots in the rim capable of allowing the air tube or tubes to be inserted in and withdrawn from the hollow tire, and one or more plugs or plates adapted to close the said holes or slots in the rim of the wheel and each having a hole for the passage of the inflation-tube, as set forth.

5. In a pneumatic air-inflated tire for the wheels of velocipedes and other road-vehicles, the combination, with the rim of the wheel, of an outer cover or covers of canvas or rubber, either combined or separate, one or more bag-shaped air-tubes having closed ends and adapted to be placed within the hollow tire formed by the outer cover or covers, one or more holes or slots in the rim of the wheel, and one or more plugs or plates adapted to close the said holes or slots, all combined and arranged and operating as and for the purpose set forth.

6. In a pneumatic or air-inflated tire for the wheels of velocipedes and other road-vehicles, the combination, with the rim of the wheel, of an outer cover or covers of canvas and rubber, either combined or separate, one or more bag-shaped air-tubes having closed and beveled or chamfered ends, and a continuous tape of non-stretchable material fixed to that part of it adapted to come in contact with the concave face of the rim, one or more holes or slots in the rim of the wheel, and one or more plugs or plates adapted to close the said holes or slots, all combined, arranged, and operating as and for the purpose set forth.

7. In a pneumatic or air-inflated tire for the wheels of velocipedes and other road-vehicles, the combination, with an outer cover or covers of canvas and rubber, either combined or separate, of a rim having one or more slots therein, one or more plugs or plates adapted to close the said holes or slots, and two or more air-tubes, each having closed ends and each connected to the other by a junction-pipe, all combined, arranged, and operating as and for the purpose set forth.

8. In a wheel for velocipedes and other road-vehicles, the combination, with a hollow tire permanently fixed to the rim of the wheel, of one or more air-tubes made in the form of bags—*i. e.*, with closed ends—and each having an inflation-tube located at or near one end thereof, two or more holes or slots in the rim of the wheel capable of allowing the said air-tubes to be inserted in and withdrawn from the hollow tire, and a continuous internal or external plate or second rim adapted to close the said holes or slots in the rim, as set forth.

9. In a wheel for velocipedes and other road-vehicles, the combination, with the rim of the wheel, of a hollow tire mounted on a second rim or continuous plate having one or more slots therein and adapted to be fixed to the rim of the wheel, and one or more air-tubes having closed ends, all combined, arranged, and operating as set forth.

10. In a pneumatic or air-inflated tire giving access to the air tube or tubes without disturbing the outer cover or covers or removing them from the rim by forming in the rim carrying the tire one or more holes or slots, each of a sufficient size to allow the air tube or tubes when either partially or wholly deflated to pass therethrough and each provided with a closing plug or plate, as and for the purpose hereinbefore described, and illustrated by the accompanying drawings.

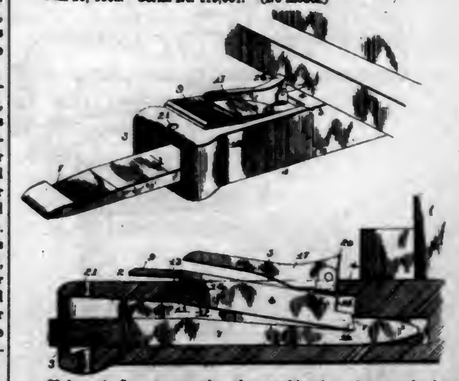
11. In a pneumatic or air-inflated tire attaching to that part of the air-tube which comes in contact with the concave face of the rim, a tape or strip of canvas or other unstretchable material to prevent the said air-tube from stretching and so facilitates its withdrawal from the hollow tire, as set forth.

12. In a pneumatic or air-inflated tire, one or more air-tubes adapted to be placed within the said hollow tire end to end and each having sealed or closed ends beveled or chamfered so that the closing walls are not at right angles to the tread of the wheel and a tape or strip of canvas or other non-stretchable material fixed to its under side, as and for the purposes set forth.

13. In a pneumatic or air-inflated tire having an air-tube made in two or more lengths placed end to end in the said tire, connecting these lengths of tubes to one another, so that the pressure may be the same in each length by means of small pipes or tubes passing out through holes in the rim and connected together by a junction-pipe, as set forth.

14. In wheels for velocipedes and other road-vehicles, having pneumatic or air-inflated tires the air-tubes of which are adapted to be withdrawn through holes in the rims, connecting the air-tubes to the plugs or plates adapted to close the holes in the rims of the wheels by means of tubular bolts having flanged heads adapted to fit within the air-tubes and bind them to the closing plugs or plates, as set forth.

475,829. CAR-COUPLING. JOSEPH TEEL, Kunkletown, Pa. Filed Jan. 29, 1892. Serial No. 419,651. (No model.)

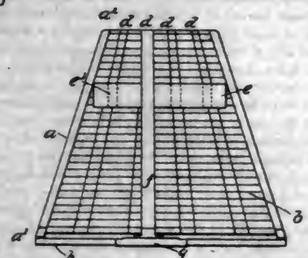


Claim.—1. In a car-coupler, the combination of a coupler-head provided in its top with an opening, a catch pivoted in the opening and provided with an extension foot-plate adapted to be depressed to raise the catch, and a latch-lever pivotally mounted on the catch and adapted to engage the coupler-head to hold the catch elevated, substantially as described.

2. In a car-coupler, the combination of a coupler-head provided in its top with an opening 5 and having a recess 13 at the front of the

opening and provided with bearing-grooves on opposite sides of the recess, a catch arranged in the opening and having its front end reduced and forming a foot-plate and provided with bearing-grooves 10 and having an extension 11, which is provided with an opening registering with the grooves 10, and a pivot passing through the coupler-head and arranged in said grooves and in the opening of the extension, substantially as described.

475,880. BAND-MARKER FOR BACKS OF BOOKS. HUGH TRUMBULL, Hartford, Conn. Filed Mar. 3, 1892. Serial No. 423,584. (No model.)



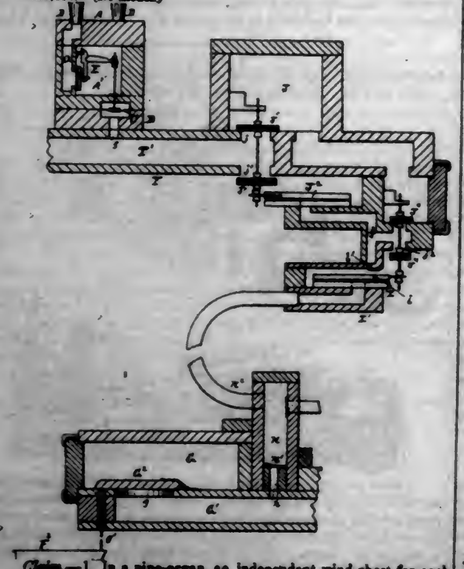
Claim.—1. A marking-table having on its surface a series of parallel lines drawn in one direction, and a series of tapered lines drawn transversely of the first set and dividing the parallel lines into proportional spaces, all substantially as described.

2. A marking-table having tapered edges, each provided with a raised shoulder or flange, and a series of parallel lines drawn transversely of the table between the raised edges, and a series of tapering lines drawn transversely of the table across the parallel lines and dividing them into proportional spaces, all substantially as described.

3. A marking-table having shoulders along two edges, a series of parallel lines extending between said edges, a series of tapered lines arranged in pairs and drawn transversely of the parallel lines and dividing them into proportional lengths, and a T-square movably attached to the edge of the table, all substantially as described.

4. A marking-table having on each side a series of parallel lines extending from edge to edge, a series of tapering lines arranged in pairs and dividing the parallel lines into proportional lengths, and a rod extending along one edge of the table and supporting a T-square movable and rotary upon the said rod, all substantially as described.

475,881. WIND-CHEST FOR PIPE-ORGANS. EDWIN S. VOTEY and WILLIAM D. WOOD, Detroit, Mich. Filed July 20, 1891. Serial No. 400,137. (No model.)



Claim.—1. In a pipe-organ, an independent wind-chest for each set of pipes, controlled by a given stop, said wind-chest made in sections, substantially as described.

2. In a pipe-organ, an independent wind-chest for a set of pipes, controlled by a given stop, and a stop-actuated valve to admit air into said chest, substantially as described.

3. In a pipe-organ, an independent sectional wind-chest for a set of pipes, controlled by a given stop, and a stop-actuated valve to admit air into the sections of said chest, substantially as described.

4. In a pipe-organ, an independent wind-chest for each set of pipes, a valve to control communication of air from the chest to each pipe, a pneumatic to control said valve, and a channel-board to supply air to operate said pneumatic, substantially as described.

5. In a pipe-organ, an independent wind-chest for each set of pipes, a channel-board communicating with said wind-chest, valve mechanism controlling the admission of air from the wind-chest to the pipes, and valve mechanism to control admission of air to the channel-board, substantially as described.

6. In a pipe-organ, a series of independent wind-chests, each corresponding to a set of pipes, valves controlling the admission of air from said chests to the corresponding pipes, and a series of channel-boards to supply air to operate said valves, substantially as described.

7. In a pipe-organ, the combination, with an independent wind-chest, of a stop-box communicating therewith, an air-trunk communicating with said stop-box, and a valve to control the communication of the trunk with said box, substantially as described.

8. In a pipe-organ, the combination, with a stop-box, of an independent wind-chest for each set of pipes, and a valve to control the communication of said box with said chest, substantially as described.

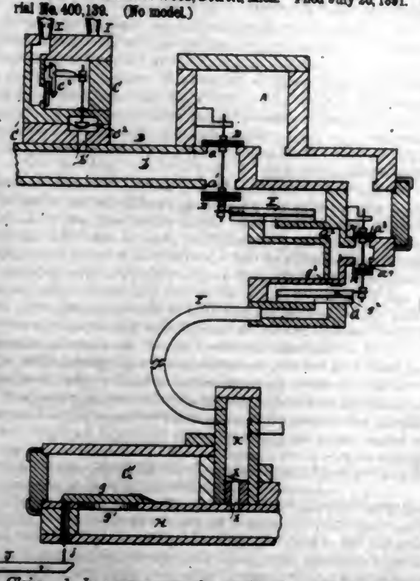
9. In a pipe-organ, the combination, with an independent wind-chest for each set of pipes, constructed in sections, of a box communicating with said sections to admit air thereto, and a valve controlling the admission of air to said sections, substantially as described.

10. In a pipe-organ, the combination, with a series of wind-chests, of a stop-box provided with compartments corresponding to each wind-chest, an air-trunk communicating with each of said compartments, and valves to control said communication, substantially as described.

11. In a pipe-organ, an independent wind-chest for each set of pipes, a series of valves located upon opposite sides of the wind-chest and alternately arranged to govern the communication of air from the wind-chest to each of said pipes, said pipes arranged on opposite sides of said chest, substantially as described.

12. In a pipe-organ, an independent wind-chest for each set of pipes, provided with a base B, having in combination therewith a channel-board located beneath said base, valve mechanism for controlling the passage of air from said chest to each of said pipes, said base provided with a pneumatic to operate the valve mechanism and said channel-board constructed with an air-passage leading to said pneumatic, substantially as described.

475,882. FRESH-WIND BOX FOR PIPE-ORGANS. EDWIN S. VOTEY and WILLIAM D. WOOD, Detroit, Mich. Filed July 20, 1891. Serial No. 400,139. (No model.)



Claim.—1. In a pipe-organ, the combination, with a wind-chest provided with mechanism to control the passage of wind therefrom to the pipes, of a fresh-wind box to supply air to operate said mechanism, substantially as described.

2. In a pipe-organ, the combination, with one or more separate wind-chests corresponding to a set of pipes and provided with mechanism to control the passage of wind therefrom to the pipes, of a fresh-wind box to supply air to operate said mechanism, substantially as described.

3. In a pipe-organ, the combination, with a wind-chest having air-ducts leading thereto, of a fresh-wind box communicating with said ducts, substantially as and for the purpose described.

4. The combination, with a wind-chest having air-ducts leading thereto, of a fresh-wind box communicating with said ducts and key-operated valves to control the communication of said box with said ducts, substantially as described.

5. The combination, with a wind-chest provided with an air-conduit leading thereto, having an exhaust-port, of a fresh-wind box communicating with said duct and a key-operated valve to control said communication and said exhaust-port, substantially as described.

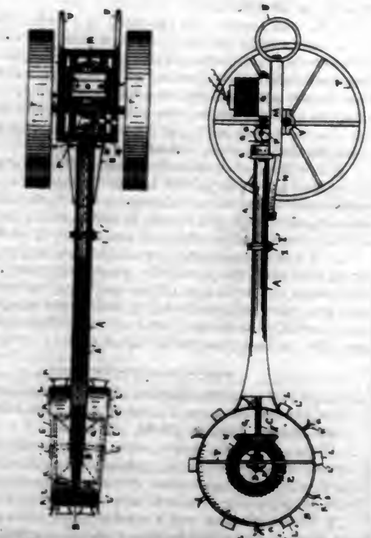
6. In an organ, the combination of a wind-chest provided with mechanism to control the passage of wind therefrom to the pipes, a fresh-wind box communicating with the wind-chest to supply air to operate said wind-chest mechanism, a valve to control said communication, a pneumatic engaged with said valve, a duct leading from said fresh-wind box to said pneumatic, and a valve to control the communication of said box with said duct, substantially as described.

7. In an organ, the combination of a wind-chest provided with mechanism to control the passage of wind therefrom to the pipes, a fresh-wind box communicating with the wind-chest to supply air to operate said wind-chest mechanism, a valve to control said communication, a pneumatic engaged with said valve, a duct leading from said box to said pneumatic, a valve to control the communication of said box with said duct, a pneumatic to operate said latter valve, and a key-controlled air-duct leading to said latter pneumatic, substantially as described.

8. In an organ, the combination, with wind-chests arranged in separate divisions, of a fresh-wind box for each of said divisions, substantially as described.

9. In an organ, the pneumatic G, constructed with one of its wings perforated, as at g^3, to allow the pneumatic to exhaust, having in combination therewith a cushion g^3, located adjacent thereto, to close said orifice when the pneumatic is inflated, substantially as described.

475,888. COAL-CUTTING MACHINE. ISAAC WAFFLING and JAMES T. JOHNSON, Peoria, Ill. Filed Nov. 26, 1891. Serial No. 413,113. (No model.)

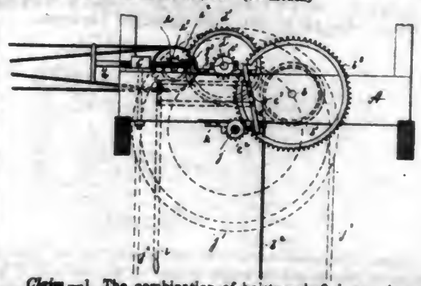


Claim.—1. The combination, in a coal-mining machine, of the cutting-wheels C C, provided with the cutting-tools K K, L L, L′ L′, &c., upon their outer surfaces and with the internal miter gear-wheels E E′ and journaled upon the axle D, with the miter gear-wheel G, meshing with the miter gear-wheels E E′ and carried upon the shaft A′, the frame-work B, provided with the perpendicular frame-piece F, which supports the axle D by means of the box D′ and the end of the shaft A′ by means of the socket H, the tube A, which incloses and provides a journal-bearing for the shaft A′, and the rims I I′, which unite the sections of the two, all connected with any suitable power, all substantially as described and set forth.

2. The combination, in a coal-cutting machine, of the obliquely-adjusted cutting-wheels C C, provided with the cutting-tools K L and the internal gear or cogs E E′, with the frame-work B, having the extension-tube A integral therewith, and the shaft A′, journaled in the cross-piece F of the frame-work B and in the tube A, and having keyed thereon the pinion-wheel G, adjusted to mesh with the gear-cogs E E′ on the cutting-wheels C C to rotate them in opposite directions, all substantially as described and set forth.

3. In a coal-cutting machine, the combination, with the shaft D, carried in the cross-piece F and angled at its extremities, of the cutting-wheels C C to give the wedge shape to the cutting-head by the wheels being carried upon the angles of the shaft, the pinion G, carried upon the shaft A′ and meshing with the cogs of the gear E E′ to rotate the wheels in opposite directions, and the frame-work B, provided with the tube extension A, all substantially as described and set forth.

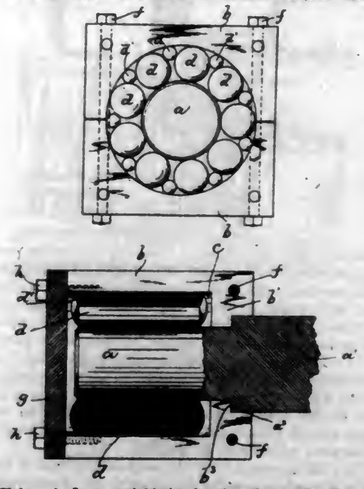
475,884. ELEVATOR. ARTHUR P. WEBB, Hoboken, N. J. Filed Mar. 2, 1892. Serial No. 423,463. (No model.)



Claim.—1. The combination of hoisting-shaft *b*, carrying gear-wheel b^2, with a power-shaft *c*, an intermediate vibrating shaft *d*, a vibrating hand-shaft *j*, a pair of gear-wheels c' c^2, a connecting-arm *e*, and an operating-screw, substantially as specified.

2. The combination of hoisting-shaft *b*, carrying gear-wheel b^2, with power-shaft *c*, intermediate vibrating shaft *d*, sliding bearing *g*, vibrating hand-shaft *j*, sliding bearing *k*, a pair of gear-wheels c' c^2, a connecting-arm *e*, and an operating-screw, substantially as specified.

475,885. ANTI-FRICTION BEARING. WILLARD P. WELLMAN, Belfast, Me., assignor to Frank C. Pitcher, Medford, Mass. Filed June 25, 1891. Renewed Mar. 12, 1892. Serial No. 424,632. (No model.)

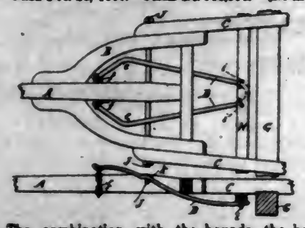


Claim.—1. In an anti-friction bearing, the combination, substantially as hereinbefore set forth, of the following elements, viz: first, a journal having a shoulder a^2; secondly, a box composed of separable sections *b b*, each having a semicircular cavity terminating in an end wall having a semicircular recess, and a cap or plate *g*, attached to the outer ends of said sections, said cavities forming a circular roller-holding chamber surrounding the outer portion of the journal, while

the end walls bear against the shoulder a^2, thus sustaining the end-thrust of the journal, the journal being shorter than the chamber, so that its outer end cannot bear on the cap g, and, thirdly, a series of loose anti-friction rollers d and smaller loose anti-friction rollers d', inserted in said chamber, said rollers being freely movable endwise and having reduced ends, whereby the area of their bearing on the ends of the chamber is reduced to the minimum.

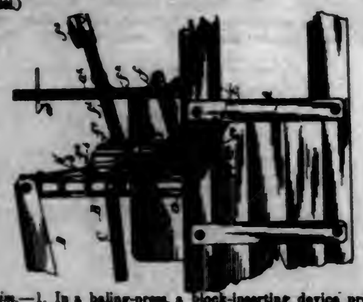
2. As an improvement in anti-friction bearings, a box composed of two separably-connected sections b b, each having a semicircular cavity c, and an end wall b', having a shouldered recess b^2, and a cap g, attached to the outer ends of the sections, said cavities c forming a circular chamber while the recesses in the end wall constitute a shouldered orifice, combined with a journal having a shoulder formed to fit said shouldered orifice and abut against the shoulder therein, said journal being of uniform diameter from its shoulder to its outer end, and a series of anti-friction rollers d and smaller intermediate rollers d', located in the annular space surrounding the journal, said rollers being shorter than the cavity or chamber which contains them, as set forth.

475,886. WAGON-TONGUE SUPPORT. JEROME W. WETMORE, Erie, Pa. Filed Feb. 23, 1889. Serial No. 301,560. (No model.)



Claim.—The combination, with the hounds, the bolt passing through the hounds, and the tongue pivoted on the said bolt, of the upwardly and forwardly inclined fork and spring having its looped rear end secured under the hounds and its middle portions resting on the said bolt, and a looped flexible support passing under the tongue and attached to the front ends of the spring above the tongue and permitting the tongue to be raised between the ends of the spring, substantially as and for the purpose set forth.

475,887. BLOCK-DROPPER FOR BALING-PRESSES. EDWARD W. WICKEY, Chicago, Ill. Filed Oct. 1, 1891. Serial No. 407,370. (No model.)

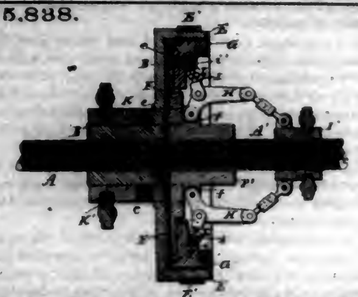


Claim.—1. In a baling-press, a block-inserting device provided with suitable connections, with the driving mechanism for operating it, a block-carrier provided with means for normally holding it and the block out of the reach of the inserting device, and a tripping device, the operation of which advances the carrier and block in position for the inserter to force the latter into place, substantially as described.

2. In a baling-press having a vertically-reciprocating feeder, a pivoted block-carrier provided with means for normally holding it out of the way, a tripping device, the operation of which swings the carrier over the feed-opening, and a projection upon the feeder, adapted to engage with the block in the latter position of the carrier and force it into the press, substantially as described.

3. In a baling-press, a vertically-reciprocating feeder B, having a projection b, a balanced carrier F, pivoted so that it may swing into one position where it will be out of the way and into another where it will present the block in the way of the projection b, and a stop a^2, adapted to retain the carrier in the first position, substantially as described.

475,888. CLUTCH. LEANDER J. WISE, Lexington, Mass. Filed July 15, 1891. Serial No. 399,649. (No model.)



Claim.—1. The combination, with two shafts, of a hub mounted on one of said shafts and adapted to rotate therewith, a disk carried by one of the shafts and having openings therein, a flange projecting from said disk, a jaw or sleeve mounted to slide on said hub, teeth projecting from said jaw or sleeve and through the openings in the disk, a spider carried by one shaft, having openings therein for the reception of the teeth of the jaw or sleeve, and an expansible friction-clutch carried by said spider, substantially as set forth.

2. The combination, with two shafts, of a hub carried by one of said shafts, a jaw or sleeve mounted to slide on said hub, teeth projecting from said jaw or sleeve, a disk carried by one of the shafts and having openings for the accommodation of the teeth, a flange projecting from said disk, a spider carried by the other shaft, friction-shoes carried by said spider, bent levers connecting said shoes and spider, and means for operating said levers to slide the friction-shoes, said spider being provided with openings for the reception of the said teeth, substantially as set forth.

3. The combination, with two shafts which align, of a hub carried by one of said shafts, a disk carried by said hub and having openings therein, a flange projecting from said disk, a jaw or sleeve mounted to slide on said hub, teeth projecting from said hub and through the openings in the disk, a spider carried by the other shaft, friction-shoes carried by said spider, bent levers connected at one end to said spider, an adjustable connection between said levers and the friction-shoes, a sleeve mounted on one of the shafts, and connections between said sleeve and the bent levers, whereby said levers may be operated to force the friction-shoes into contact with the flanged disk, said spider being provided with openings for the reception of the said teeth, substantially as set forth.

4. The combination, with two shafts, of a positive clutch carried by one shaft, a spider carried by the other shaft, with which the teeth are adapted to engage, a flanged disk adapted to rotate with the first-mentioned shaft, friction-shoes carried by said spider and adapted to make contact with the flanged disk, bent levers pivoted to said spider, an adjustable connection between said levers and the friction-shoes, a sleeve carried by one shaft, and adjustable connections between said sleeve and the bent levers, substantially as set forth.

5. In a clutch mechanism, the combination, with a spider carried by one shaft and a disk carried by another shaft, of a jaw or sleeve having teeth to pass through aligned openings in the spider and disk, cams adapted to engage said teeth to facilitate the releasing thereof, and means for operating said cams, substantially as set forth.

6. In a clutch mechanism, the combination, with a spider carried by one shaft and a disk carried by another shaft, of a jaw or sleeve having teeth to pass through aligned openings in the spider and disk, cams adapted to engage said teeth to facilitate the releasing thereof, a sleeve carried by one of said shafts, and rods or links connecting said cams with the sleeve, substantially as set forth.

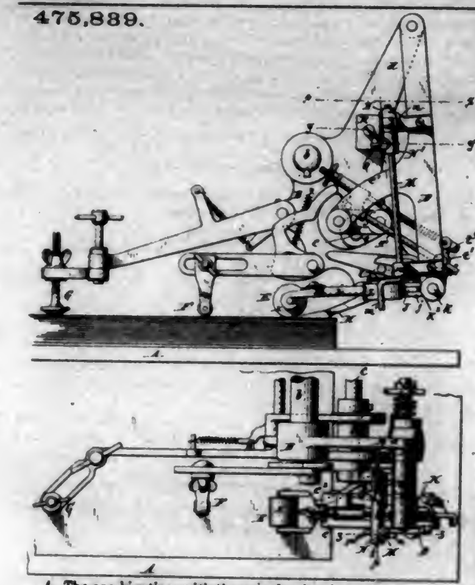
475,889. PAPER-FEEDING MACHINE. WILLIAM WOOLSLEY, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Filed Aug. 13, 1891. Serial No. 402,963. (No model.)

Claim.—1. The combination, with a support having a forward-and-backward movement, of a buckling-finger capable of lateral movement on said support and mechanism whereby the buckling-finger is deflected laterally during its forward movement, substantially as set forth.

2. The combination, with a support having a forward-and-backward movement, of a buckling-finger pivoted vertically on said support, and a rock-shaft journaled on said support and provided with a crank which bears against the buckling-finger and whereby the buckling-finger is laterally deflected, substantially as set forth.

3. The combination, with a support having a forward-and-backward movement, of a buckling-finger pivoted on said support, a rock-shaft mounted on said support and provided with a crank bearing against said buckling-finger, a trip-arm secured to said rock-shaft, and a stop which arrests the trip-arm and whereby the rock-shaft is actuated, substantially as set forth.

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4. The combination, with the carrying-head provided with a stop and an oscillating supporting-arm pivoted on said head, of a buckling-finger pivoted to said supporting-arm, a rock-shaft mounted on said supporting-arm and provided with a crank bearing against said buckling-finger, and a trip-arm secured to said rock-shaft and provided with a spring-bolt adapted to strike against said stop, substantially as set forth.

5. The combination, with the carrying-head provided with a stop and an oscillating supporting-arm pivoted on said head, of a buckling-finger pivoted on said supporting-arm, a rock-shaft mounted on said supporting-arm and provided with a crank bearing against said buckling-finger, a hollow trip-arm secured to said rock-shaft and provided with a slot at its rear end, a spring-bolt arranged in said trip-arm and adapted to bear against said stop, and a pin secured to said spring-bolt and arranged in said slot, substantially as set forth.

6. The combination, with a support having a forward-and-backward movement, of a buckling-finger capable of lateral movement on said support, a crank-shaft whereby said buckling-finger is deflected laterally, and a spring whereby the buckling-finger is returned to its straight position, substantially as set forth.

7. The combination, with a support having a forward-and-backward movement, of a buckling-finger capable of lateral movement on said support, mechanism whereby the buckling-finger can be deflected laterally during its forward movement, and a locking device whereby said mechanism can be rendered inoperative, thereby causing the buckling-finger to move in a straight course, substantially as set forth.

8. The combination, with the carrying-head provided with a stop and an oscillating supporting-arm pivoted on said head, of a buckling-finger capable of lateral movement on said arm, a crank-shaft mounted on said arm and bearing against the buckling-finger, a spring-bolt connected with said crank-shaft and adapted to strike said stop, and a locking device whereby the spring-bolt can be held in a retracted position, substantially as set forth.

9. The combination, with the carrying-head provided with a stop and an oscillating supporting-arm pivoted on said head, of a buckling-finger pivoted to said supporting-arm, a rock-shaft mounted on said supporting-arm and provided with a crank bearing against said buckling-finger, a hollow trip-arm provided with a slot in its rear end, and a spring-bolt arranged in said trip-arm and provided with a pin which is arranged in said slot, whereby the spring-bolt can be retracted and turned in the trip-arm, so as to be held out of engagement with the stop, substantially as set forth.

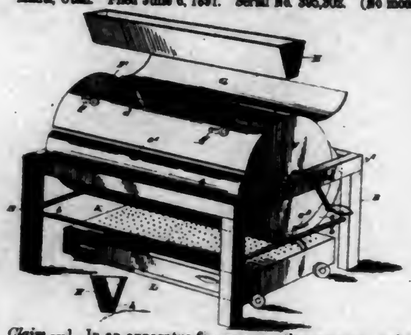
10. The combination, with the movable supporting-arm, of an eye journaled horizontally on said arm and a buckling-finger pivoted vertically on said eye, substantially as set forth.

11. The combination, with the movable supporting-arm, of an eye journaled horizontally on said arm, a buckling-finger pivoted vertically on said eye and provided with a bearing-plate, and a crank-shaft journaled on said supporting-arm and bearing against said bearing-plate, substantially as set forth.

12. The combination, with the movable supporting-arm and the buckling-finger, of an eye journaled horizontally on said supporting-arm and provided with a lug, a hinge-plate formed on said buckling-finger and pivoted vertically to said lug, a bearing-plate formed on said hinge-plate and adapted to bear against said lug, a spring connecting the buckling-finger with the eye, and a rock-shaft journaled on said supporting-arm and provided with a crank bearing against said bearing-plate, substantially as set forth.

13. The combination, with the support having a forward-and-backward movement and the buckling-finger capable of lateral movement thereon, of a crank-shaft mounted on said support and bearing against the buckling-finger and a stop which is secured to said crank-shaft and whereby the turning movement of the latter is arrested when the buckling-finger has reached its straight position, substantially as set forth.

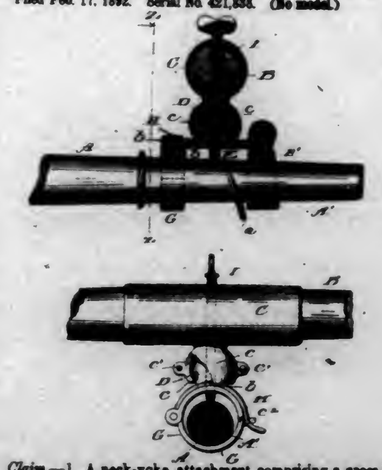
475,840. MACHINE FOR COATING POP-CORN. JAMES T. WOODS, Manti, Utah. Filed June 6, 1891. Serial No. 395,302. (No model.)



Claim.—1. In an apparatus for sugar-coating pop-corn, a frame, a jacketed revolving cylinder, an agitator-shaft mounted within said cylinder and journaled in the said frame, and means for detachably securing said revolving cylinder to said frame jointly with a drying-screen beneath said cylinder, substantially as set forth.

2. In an apparatus for sugar-coating pop-corn, a rectangular frame, a revolving cylinder located within said frame and provided with a jacket inclosing the lower half of said cylinder and a longitudinal opening and cover therefor, an agitator-shaft provided with a series of independent bowed agitator arms or fingers mounted within said cylinder and journaled in the ends of said rectangular frame, and suitable fastening means securing said cylinder to said frame jointly with a drying-screen and tray located directly beneath said cylinder and adapted to receive the discharged contents of the same and separate the superfluous sugar and defective corn from the good material, substantially as set forth.

475,841. NECK-YOKE. GEORGE H. YOUNG, Davenport, Iowa. Filed Feb. 17, 1892. Serial No. 421,838. (No model.)



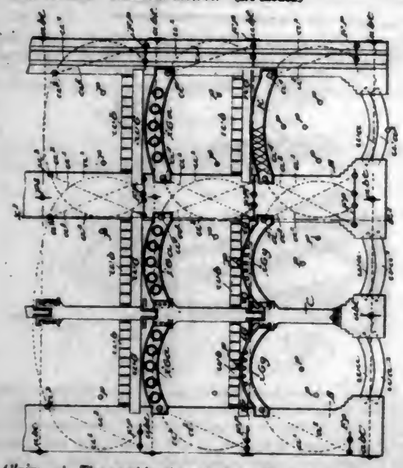
Claim.—1. A neck-yoke attachment comprising a cross-T, with hinged ring and spring-held ring to embrace the pole in front and rear of the holdback-lug thereof, and a ball-and-socket connection between said T and the yoke, as set forth.

2. A neck-yoke attachment comprising a cross-T, with hinged

ring and spring-held ring and ball, a clasp to embrace the yoke and said ball, and a tension device for engagement with the pole and holding the said parts against separation, as set forth.

3. The combination, with the pole and yoke, of the cross-T having ring at one end and a two-part ring at the other, with spring to hold it closed, the ball on said cross-T, the two-part clasp to embrace the yoke and ball, and the set-screw passed through the yoke, ball, and cross-T and adjustably held against the pole, substantially as specified.

475,842. BUILDING. HENRY ZOSHAIN, New York, N. Y. Filed Aug. 28, 1890. Serial No. 363,376. (No model.)



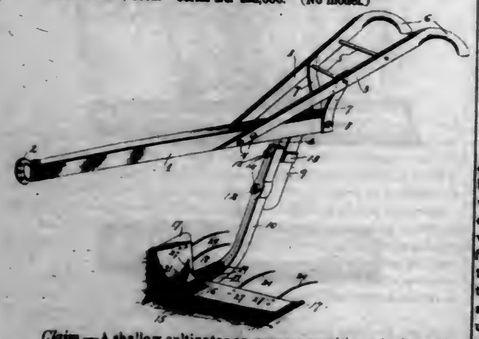
Claim.—1. The combination of the walls or piers and the iron girders iG of the anchors a' and a^3 secured thereto, substantially as described.

2. The combination, with the walls and piers, of the parallel arched iron girders and the brick arches arranged between and fitted to them and having a like curvature, as set forth.

3. The combination, with the walls of the building and the floors thereof, of the belt-ties *abt*, surrounding the building at the levels of the girders supporting the floor sand embedded in the interior of the walls and at intervals anchored thereto, as set forth.

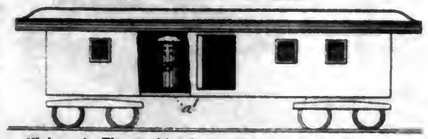
4. The combination, with the walls and the piers constructed in courses of headers and stretchers, as set forth, of the inverted arches ia and ia', arches iG_g, iG_a, and X, and the wrought-metal plates and brackets P*l*, *b*, *ba*, as and for the purposes set forth.

475,848. CULTIVATOR. ROBERT P. ASBURST, Blackburn, Mo. Filed Feb. 19, 1892. Serial No. 422,080. (No model.)



Claim.—A shallow cultivator or sweep comprising a body portion or shoe composed of two integral portions, each of concavo-convex form in cross-section and each extending obliquely outward and rearward from each other, and each, furthermore, turned obliquely upward and outward at its outer end, a longitudinal rib or ridge located midway of the length of the shoe, and an integral extension projecting rearwardly from the rear margin of the shoe midway of the length thereof, a number of teeth or prongs secured to the rear margin of the shoe and rounded and pointed and also curved, so as to extend obliquely rearward and upward, a standard curved downward and forward at its lower end and extending beneath the rearward projection and bolted thereto, and a spur of approximately triangular form having a rearwardly and upwardly extending upper edge, a number of bolt-like projections formed upon the under side of the tooth or spur and extending downwardly through the rib or ridge of the shoe, and retaining-nuts screwed upon the lower ends of said projections, substantially as set forth.

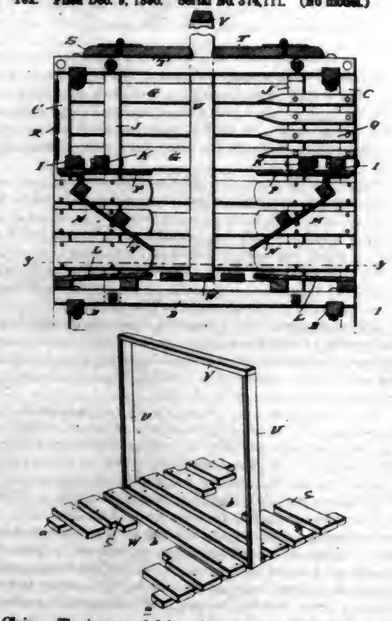
475,844. RAILWAY-CAR. GEORGE BAYHA, St. Louis, Mo. Filed Feb. 5, 1892. Serial No. 420,449. (No model.)



Claim.—1. The combination, with a car, of a fort having the roof raised above its wall, the loop-holes, the sight-holes, and the flange beneath the loop-holes, substantially as described.

2. The combination, with a car, of a fort, said fort having the loop-holes, the sight-holes, and the flange, said flange being beneath the loop-holes, and said sight-holes being below the loop-holes.

475,845. FISH AND GAME TRAP. ALLEN G. BOLLING, Denison, Tex. Filed Dec. 9, 1890. Serial No. 374,111. (No model.)

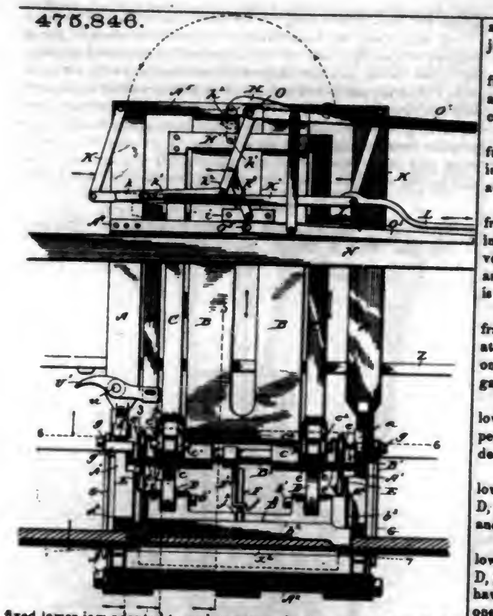


Claim.—The improved fish and game trap described, consisting, essentially, of the rectangular frame composed of slats and bars and having the two lower oppositely-arranged entrances formed from slats, with their inner ends pointed, and also having the hinged or pivoted doors N formed from slats and arranged so as to fall on an incline within said entrances, the upper entrance having its side walls formed from slats and converging inwardly, the hinged tops T T and the vertically-movable slatted bottom W, formed as shown, so as to surround the respective entrances on their inner sides and composed of the parallel bars *a a*, the long center slats *b*, and the cut-out slats *c*, and the uprights U U, connected at their lower ends to the bars *a* and connected at their upper ends by a cross-bar, all arranged to operate substantially as and for the purpose specified.

475,846. GRIP MECHANISM FOR DUPLEX CABLES. ANDREW BURTON, Jr., New York, and JOHN H. PENDLETON and ALFRED R. BENN, Brooklyn, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed May 11, 1891. Serial No. 392,396. (No model.)

Claim.—1. In a cable-grip, the combination of a grip-frame, a

475,846.



fixed lower jaw adapted to rock transversely through an upward arc, an upper jaw adapted to swing transversely through a downward arc, and means for rocking the lower and swinging the upper jaws, substantially as described.

2. In a cable-grip, the combination of a grip-frame, a fixed lower jaw adapted to rock transversely through an upward arc, an upper jaw adapted to swing transversely through a downward arc, means actuated by the upper jaw for rocking the lower jaw, and means for swinging the upper jaw, substantially as described.

3. In a cable-grip, the combination of a grip-frame, a vertically-fixed lower jaw having two gripping edges, an upper jaw adapted to swing transversely over either edge of the lower jaw, means for swinging the upper jaw, and means for imparting a vertical motion to the upper jaw, substantially as described.

4. In a cable-grip, the combination of a grip-frame, a vertically-fixed lower jaw having two gripping edges, an upper jaw adapted to swing transversely over either gripping edge of the lower jaw, means for swinging the upper jaw, and means for locking the upper jaw in a fixed relation to the under jaw, as described.

5. In a cable-grip, the combination of a grip-frame, a vertically-fixed lower jaw having two gripping edges, an upper jaw adapted to swing transversely over either gripping edge of the lower jaw, means for swinging the upper jaw, means for locking the upper jaw in a fixed relation to the under jaw, and means for imparting a vertical motion to the upper jaw, as described.

6. In a cable-grip, the combination of a grip-frame, a fixed lower jaw adapted to rock transversely through an upward arc, an upper jaw adapted to swing transversely through a downward arc, means actuated by the upper jaw to rock and look the lower jaw in position, means for swinging the upper jaw, and means for locking the upper jaw in a fixed relation to the lower jaw, substantially as described.

7. In a cable-grip, the combination of a grip-frame, a fixed lower jaw adapted to rock transversely through an upward arc, an upper jaw adapted to swing transversely through a downward arc, means actuated by the upper jaw to rock and lock the lower jaw in position, means for swinging the upper jaw, means for locking the upper jaw in a fixed relation to the under jaw, and means for imparting a vertical motion to the upper jaw, substantially as described.

8. In a cable-grip, the combination of a grip-frame, a vertically-fixed lower jaw, a transversely-swinging upper jaw, means for swinging the upper jaw, and means for maintaining a parallel transverse motion in swinging said upper jaw, substantially as described.

9. In a cable-grip, the combination of a grip-frame, a vertically-fixed lower jaw having two parallel sets of gripping-dies, an upper jaw adapted to swing transversely and having a single gripping-die, and means for bringing the single gripping-die on the upper jaw and either of the gripping-dies on the lower jaw into the same vertical plane, substantially as described.

10. The combination, with a cable-grip having a vertically-moving upper jaw, of a cable-ejector pivoted to the frame of the grip and adapted to be swung transversely by the upward movement of said jaw to eject the cable, substantially as described.

11. The combination, with a bell-crank lever pivoted to the car-frame, of the grip suspended from the horizontal arm of the lever and an intermediate spring connection between the vertical arm and the car, substantially as described.

12. The combination, with a bell-crank lever pivoted to the car-frame, of the grip suspended from the horizontal arm of the lever, an intermediate spring connection between the vertical arm and the car, and means for rocking the bell-crank, substantially as described.

13. The combination, with a bell-crank lever pivoted to the car-frame, of the grip suspended from the horizontal arm of the lever, an intermediate spring connection in constant compression between the vertical arm and the car, and a connecting device between said spring and the car to compress or release the spring, whereby the bell-crank is rocked, substantially as described.

14. The combination, with a bell-crank lever pivoted to the car-frame, of the grip suspended from one arm of the lever, an intermediate spring connection between the other arm and the car, and a stop on the grip frame in the trench below the slot-irons, adapted to engage with the slot-rail heads, substantially as described.

15. The combination of the tension-standards A, recessed at *a*, the lower jaw A^2, its shaft A^3, the upper jaw B^2, its shaft B', means for suspending it from said shaft, and pressure-standards B, substantially as described.

16. The combination of the tension-standards A, recessed at *a*, the lower jaw A^2, its shaft A^3, the upper jaw B^2, its shaft B', the bell-crank D, pivoted at *b'* and *c'*, and the reversing standard C, having the forked and slotted ends *c*, with the ears c^2, substantially as described.

17. The combination of the tension-standards A, recessed at *a*, the lower jaw A^2, its shaft A^3, the upper jaw B^2, its shaft B', the bell-crank D, pivoted as described, the reversing standard C, and the links E, having transverse slots for the passage of the shaft B' and pivoted at one end to the jaw B^2 and at *e* to the lug e', projecting from and keyed to shaft B', substantially as described.

18. The combination of the tension-standards A, recessed at *a*, the lower jaw A^2, having the guide-slot f', the arm F, pivoted therein, the shaft A^3, the upper jaw B^2, having the transverse slot f^3, its shaft B', the bell-crank D, pivoted as described, the reversing standard C, the links E, having the transverse slots and pivoted as described, the lug e', and the sector F', having the side lugs f^5 and keyed to the shaft B', substantially as described.

19. The combination of the tension-standards A, recessed at *a*, the lower jaw A^2, having the guide-slot f', the arm F, pivoted therein, the shaft A^3, the upper jaw B^2, having the transverse slot f^3, its shaft B', the bell-crank D, the reversing standard C, the links E, the lug e', the sector F', and the pressure-standard B, substantially as described.

20. In a cable-grip, the combination of the shaft B', the upper jaw B^2, suspended therefrom, the reversing standard C, adapted to move vertically on shaft B', and the link connection between the standard C, the jaw B^2, and the shaft B', whereby when standard C is raised or depressed the jaw B^2 is swung from one side to the other.

21. In a cable-grip, the combination of the shaft B', the pressure-standard B, secured thereto, the upper jaw B^2, suspended therefrom, the reversing standard C, adapted to move vertically on the shaft B', the link connection between the standard C, the jaw B^2, and the shaft B', and means for lifting and lowering the standard C in respect to the standard B and locking it in such position, substantially as described.

22. In a cable-grip, the combination of the shaft B', the pressure-standard B, secured thereto, the upper jaw B^2, suspended therefrom, the reversing standard C, adapted to move vertically on the shaft B', the link connection between the standard C, the jaw B^2, and the shaft B', and the reversing-lever H, pivoted to the pressure-standard B and through the link H' and suitable connections to the reversing standards C, substantially as described.

23. The combination of the tension-standards A, recessed at *a*, the lower jaw A^2, its shaft A^3, the shaft B', the pressure-standard B, secured thereto, the upper jaw B^2, suspended therefrom, the reversing standard C, adapted to move vertically on the shaft B', the link connection between the standard C, the jaw B^2, and the shaft B', and the reversing-lever H, pivoted to the pressure-standard B and through the link H' and suitable connections to the reversing standards C, substantially as described.

24. The combination of the tension-standards A A, having a fixed lower jaw, the pressure-standard B, having a vertically-moving upper jaw, and the spring I, having one leaf secured to the grip-frame and the other to the pressure-standard, substantially as described.

25. The combination of the tension-standards A A, having a fixed lower jaw, the pressure-standard B, having a vertically-moving upper jaw, the spring I, secured as described, and means for depressing the pressure-standard against the stress of the spring, substantially as described.

26. The combination of the tension-standards A A, having a fixed lower jaw, the pressure-standard B, having a vertically-moving upper

jaw, the spring I, secured as described, the links l^2 l^3, pivoted, respectively, to the tension-standards A, the pressure-standard B, and to each other, and suitable connections to the short arm of the link l^2, substantially as described.

27. The combination of the tension-standards A A, having a fixed lower jaw, the pressure-standard B, having a vertically-moving upper jaw, the spring I, secured as described, the links l^2 l^3, pivoted, respectively, to the tension-standards A, the pressure-standard B, and to each other, the toggle joints k k', pivoted to the short arm of the link l^2, and means for first straightening and then pushing on the toggle-joint, substantially as described.

28. The combination of the tension-standards A A, having a fixed lower jaw, the pressure-standard B, having a vertically-moving upper jaw, the spring I, secured as described, the link connections k k' l^2 l^3, means for straightening the link connection k' l^3, and the automatic trip consisting of the trip-lever U', pivoted at u to the standard A in the trench below the slot-irons, and the trip-shaft U, pivoted to one arm of the lever and projecting up under the toggle-joint, substantially as described.

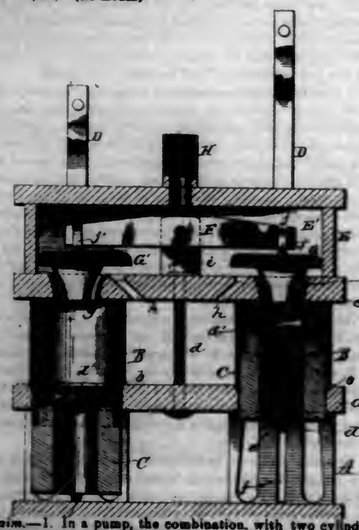
29. The combination of the tension-standards A, their enlarged ends or plates A', recessed at a and having the shoulders a^2 a^3, a fixed lower jaw, the vertically-moving shaft B', the upper jaw B^2, suspended therefrom and having the shoulder b^3, and the cable-ejecting pendulum G, pivoted to the plate A' at g and having the inwardly-extending arms g', adapted to engage with shoulder b^3 of the upper jaw and with shoulders a^2 of plate A', as described.

30. The combination of the tension-standards A, their enlarged ends or plates A', recessed at a, having the shoulders a^2 a^3, a fixed lower jaw, the vertically-moving shaft B', the upper jaw B^2, suspended therefrom and having the shoulder b^3, the pressure-standard B, and the bell-cranks D and links E and their connections, substantially as described.

31. The combination of the tension-standards A, their enlarged ends or plates A', recessed at a, having the shoulders a^2 a^3, a fixed lower jaw, the shaft B', the upper jaw B^2, suspended therefrom and having the shoulders b^2 b^3, the pressure-standard B, the bell-cranks D and links E and their connections, and the reversing standards C, substantially as set forth.

32. The combination of the bell-crank levers O O' O^2, pivoted to the car-frame at N, the grip suspended from the arm O', the springs P, connected to the segmental end of arm O^2, head-plates P' P^2, rods p' p^2 p^3, cross-head Q, cable q, and means for winding and unwinding the cable, substantially as described.

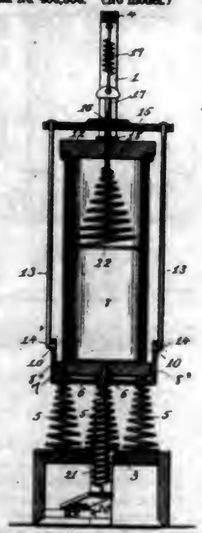
475,847. PUMP. JOHN BURKHOLDER, Centreburg, Ohio, assignor of one-half to Daniel Jennings, same place. Filed Jan. 26, 1892. Serial No. 419,225. (No model.)



Claim.—1. In a pump, the combination, with two cylinders and pistons adapted to operate therein, of a chamber located over the outlet of said cylinders and provided with openings communicating with the cylinders and also having discharge-openings for draining the chamber, a pivoted lever or walking-beam supported by said plate, and check-valves connected to the ends of said pivoted lever or walking-beam, said check-valves being provided with conical projections adapted to enter said openings in the plate, substantially as set forth.

2. In a pump, the combination, with two cylinders and pistons adapted to operate therein, of a plate adapted to cover said cylinders, said plate having openings adapted to communicate with the cylinders, a chamber above said plate, a pivoted lever or walking-beam in said chamber, check-valves carried by the ends of said pivoted lever or walking-beam, and outlets in the said plate to permit the discharge of water from the chamber to the well after the operation of the pump stops, said valves being constructed and adapted to alternately cover said outlets when the pump is in operation, substantially as set forth.

475,848. CHURN. JOHN M. CRITCHER, Bolivar, Mo. Filed Sept. 25, 1891. Serial No. 406,806. (No model.)



Claim.—1. The combination of the uprights, the cross-bar connecting the upper end of the uprights, the base arranged near the lower ends of the same, the spirally-coiled springs secured to the base, a churn-body supported on the springs and having its upper end connected with the cross-bar, and a lever fulcrumed on the upright and connected with the churn-body, substantially as described.

2. The combination of the uprights, the cross-bar connecting their upper ends, the base secured near the lower ends of the same, the spiral springs mounted on the base, a disk forming a seat, the crossed bars secured to the disk and engaging the upper coils of the springs and attaching the same to the disk, a churn-body seated on the disk and provided with a cover, a yoke engaging the crossed bars and securing the cover to the churn-body, and a spring connecting the yoke with the cross-bar, substantially as described.

3. The combination of a frame, spiral springs supported on the frame, the crossed bars engaging the coils of the springs and having their ends 8° and 9 bent upward, a disk forming a seat secured to the said bars, a yoke composed of side bars engaging the ends 8°, and a connecting-bar secured to the upper end of the side bars and provided with a central threaded opening, a thumb-screw arranged in the threaded opening, a spring having its upper end connected to the frame and its lower end secured to the thumb-screw, a churn-body secured upon the disk by the yoke, and a lever fulcrumed on the frame and connected with the churn-body, substantially as described.

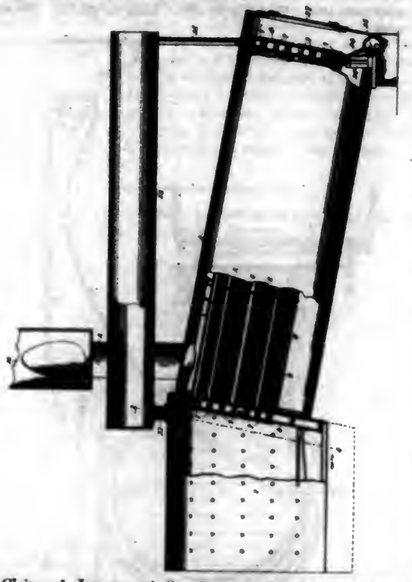
475,849. RADIATOR. ALBERT M. DUNNICK and JESSE T. MORGAN, Wilkes-Barré, Pa. Filed June 3, 1891. Serial No. 394,932. (No model.)



Claim.—1. In a radiator, the combination, with the loops having the vertical steam-pipes and the air-ducts extending through said steam-pipes, of the feet or supports having upward-extending nipples vertically perforated to engage the lower ends of the air-ducts, substantially as and for the purpose set forth.

2. In a radiator, the combination of the loops having the steam-pipes provided with interior pipes or air-ducts open at their upper and lower ends, and the transverse perforations having side openings communicating with said steam-pipes, the vertical air-ducts extending through said steam-pipes and having open upper and lower ends, and the connecting-rods and nuts, and the removable feet fitted in the lower ends of the air-ducts, substantially as set forth.

475,850. STEAM-BOILER. ALBERT M. DENNICK, Wilkes-Barré, Pa., assignor of one-half to Jesse T. Morgan, same place. Filed Mar. 31, 1891. Serial No. 387,128. (No model.)



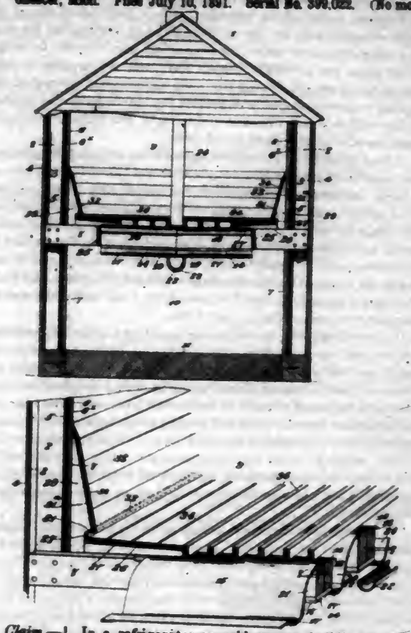
Claim.—1. In a steam-boiler, the combination of the fire-box, the boiler-casing, the header forming one of the walls of the fire-box and continued around to form a water-jacket for the same, a header arranged at the opposite end of the boiler-casing, the water-pipes connecting said headers, the fire-flues extending through said water-pipes and connecting the outer sides of the headers, the said fire-flues serving as the direct and sole escape for the smoke and products of combustion from the fire-box, the baffle-plates arranged within the boiler-casing, and the smoke-exit attached to said boiler-casing at the inner end of the latter, adjacent to the fire-box, substantially as set forth.

2. In a steam-boiler, the combination of the fire-box, the downwardly-inclined boiler casing extending from the fire-box and independent of the same, the header forming one of the walls of the fire-box and continued around to provide a water-jacket for the same, a header arranged at the opposite end of the boiler-casing, the water-pipes connecting the inner walls of said headers, the fire-flues extending through said water-pipes and connecting the outer sides of the headers, said fire-flues serving as the sole and direct escape for the smoke and products of combustion from the fire-box, the pipes extending upwardly from the headers, and the steam-drums supported by said pipes outside the boiler-casing, substantially as set forth.

3. The combination of the fire-box, the boiler-casing, the header forming the rear wall of the fire-box, a header arranged near the rear end of the boiler-casing, the water-pipes connecting said headers, the fire-flues connecting the outer walls of the headers and extending through said water-pipes, the pipes extending upwardly from the headers, the steam-drums supported by said pipes, and the smoke-pipes attached to opposite sides of the boiler-casing and connected with a stack above the steam-drum, substantially as and for the purpose set forth.

4. The combination of the fire-box, the lower casing, the header forming the rear wall of the fire-box and continued around to form a water-jacket for the latter, a header arranged near the rear end of the boiler-casing, the water-pipes connecting said headers, the fire-flues extending through the water-pipes, the steam-drum supported upon pipes extending upwardly from the headers, the mud-drum connected with a pipe extending downwardly from the rear header, and oppositely-arranged smoke-stacks communicating with each other, and a common exhaust above said steam-drum, substantially as set forth.

475,851. REFRIGERATOR-BUILDING. DENNIS P. EDGAR, Manchester, Mich. Filed July 10, 1891. Serial No. 399,022. (No model.)



Claim.—1. In a refrigerator or cold-storage building, horizontally-arranged joists secured to both sides of the side vertical studding and provided on their top portions with central beveled edges, drip-plates and troughs arranged over and between the said joists, surrounding inclined drip plates encircling the ice-chamber and communicating with said drip-plates and troughs arranged over the joists, and longitudinal ice-sills arranged on the top of said joists and at right angles thereto, substantially as set forth.

2. In a refrigerator or cold-storage building, horizontally-arranged joists secured in pairs at their centers to form an incline to the center of the same, curved drip-plates and troughs arranged over and between said joists, inclined drip-plates encircling the ice-chamber above said joists and communicating with the longitudinally-arranged plates and troughs, a conducting-trough arranged under said plates and troughs, and ice-sills arranged over the same at right angles to said joists, substantially as set forth.

3. In a refrigerator or cold-storage building, horizontally-arranged joists, curved drip-plates and troughs arranged thereover and between the same, a continuous drip-plate encircling the ice-chamber and inclined above the plane of the joist and overlapping said curved plates and troughs, vertically-arranged drip-plates encircling the chamber and inclined from the side walls of the same outward and communicating with said horizontally-arranged inclined drip-plate, and ice-sills arranged upon and at right angles to said joists, substantially as set forth.

4. In a refrigerator or cold-storage building, the combination, with hollow non-conducting walls, of horizontally-arranged joists secured in pairs at their centers to form an incline toward the center of the chamber and provided on their top portions with central beveled edges, curved drip-plates and troughs curved over said beveled portions and between said joists, a continuous horizontal drip-plate encircling the ice-chamber and inclined above the plane of the joists toward and over said curved plates and troughs, vertically-arranged drip-plates encircling the chamber and vertically inclined over said horizontal plate, ice-sills arranged at right angles to the joists, and an escape tube or spout communicating with the spaces between the joists and the outer air, substantially as set forth.

5. In a refrigerator or cold-storage building, the combination, with hollow non-conducting walls, of horizontally-arranged joists secured in pairs at their centers to form an incline toward the center, curved plates arranged over the top of said joists and overlapping the same and passing down and under the succeeding pairs of joists, forming a cold-air space and a trough between said joists, surrounding inclined drip-plates encircling the ice-chamber and communicating with said curved plates, and right-angularly arranged ice-sills, substantially as set forth.

6. In a refrigerator or cold-storage building, the combination, with

the hollow non-conducting walls, of horizontally-arranged joists secured in pairs at their centers to form an incline toward the center of the chamber, curved plates provided with a longitudinal flange and trough arranged over the top of said joists and overlapping the same and passing down and under the succeeding pair of joists, forming a cold-air space and a trough between said joists, sliding gates working between the joists and closing the open ends of said air-spaces, surrounding inclined drip-plates encircling the ice-chamber and communicating with said curved plates and troughs, and right-angularly-arranged ice-sills, substantially as set forth.

7. In a refrigerator or cold-storage building, horizontally-arranged joists, curved drip-plates and troughs arranged thereover and between the same, horizontally-arranged and continuous drip-plates provided with a continuous flange and inclined toward and over said drip-plates and troughs, vertically-arranged drip-plates encircling the chamber and secured to inclined and shouldered blocks surrounding the walls of the ice-chamber, said vertically-arranged and continuous drip-plates overlapping the flange of said horizontally-arranged drip-plate, and facing covering and protecting both horizontally and vertically arranged and inclined plates, substantially as set forth.

8. In a refrigerator or cold-storage building, horizontally-arranged joists secured in pairs at their centers to form an incline toward the center and provided with beveled top edges and on their under sides with a series of blocks, curved plates provided with a longitudinal flange and trough arranged abreast of each other over said joists, the same overlapping each pair of joists and passing down between the same, the flange of which is secured to the under sides of the blocks on said joists, forming openings under the joists, communicating with the cold-air space formed between the same, and inclined drip-plates encircling the ice-chamber and communicating with said plates and troughs, substantially as set forth.

9. In a refrigerator or cold-storage building, horizontally-arranged joists secured in pairs at their centers to form an incline toward the center, a series of blocks secured to the under side of said joists, curved plates arranged over and overlapping each pair of joists and passing down between the same and secured to the blocks to the under side of the succeeding pair of joists, forming a cold-air space and a longitudinal trough between the same, and communicating openings between said space and the under storage-chamber, sliding gates closing the open ends of said air-spaces between the joists, an escape-trough arranged under the drip of said curved plates, a gas-escape tube or pipe, and lateral and encircling drip-plates communicating with the troughs, substantially as set forth.

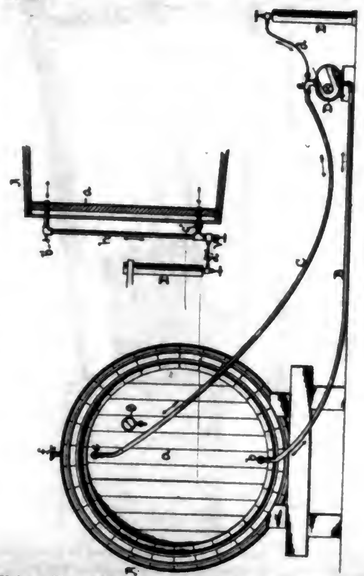
10. In a refrigerator or cold-storage building, the combination, with non-conducting inclosing walls, of horizontal joists arranged in pairs, curved plates arranged longitudinally thereon between and under the same, forming horizontal troughs and cold-air spaces, horizontally-inclined drip-plates continuously encircling the ice-chamber and provided with a surrounding flange, the same overlapping said drip-plates, inclined blocks arranged vertically around the inner walls of the ice-chamber and provided with notches in which said flange rests, vertically-inclined drip-plates secured to said blocks and overlapping and communicating with the horizontally-arranged drip-plates, and ice-sills arranged at right angles over said joists within the encircling horizontal drip-plates, substantially as set forth.

475,852. COMBINED FISHING-ROD AND CANE. JOSEPH H. EDGERLY, Merrilton, Ark. Filed Feb. 17, 1892. Serial No. 421,807. (No model.)



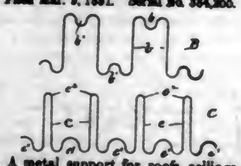
Claim.—A combined fishing-rod and walking-stick comprising the section 1, having its end threaded, the telescoping sections 2, adapted to fold into the section 1, a ferrule engaging the lower threaded end of the section 1, guide-rings, a reel ring or seat, and a tapering handle-cap engaging the butt-end of the section 1 and adapted when the sections are telescoped to receive the guide-rings and reel ring or seat and provided with a removable outer end whereby access may be had to the interior of the handle-cap without removing the latter, substantially as described.

475,853. PROCESS OF MANUFACTURING BEER. CHRISTIAN FEIGENSPAN, Newark, N. J., assignor to the Universal Carbonating Company, same place. Filed Aug. 29, 1891. Serial No. 404,121. (No specimens.)



Claim.—The within-described method of preparing rub-beer for the market, which consists in confining the beer in a closed cask filled substantially to its capacity, causing repeated forced external circulation of the whole of the contents from and to the cask, and injecting carbonic acid into the external current, substantially as described.

475,854. ROOF, FLOOR, OR CEILING. GODFREY FUSMAN, Cleveland, Ohio. Filed Mar. 9, 1891. Serial No. 384,265. (No model.)



Claim.—1. A metal support for roofs, ceilings, floors, &c., comprising sheets of metal bent into a series of folds having an arched connection at one end, said arched ends being reversely curved, substantially as set forth.

2. A metal suppprt for roofs, ceilings, floors, &c., comprising sheets of metal bent into a series of folds, the sides approximately vertical and the ends arched and reversely curved, substantially as set forth.

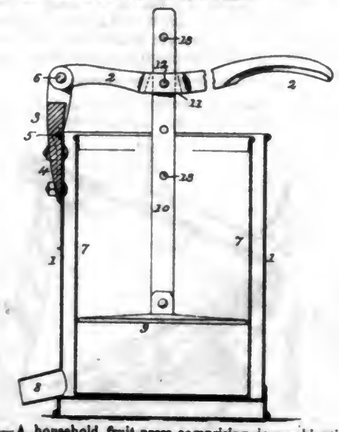
475,855. FLOOR-CLAMP. ORPHEUS J. GRAHAM, Farwell, Mich. Filed June 9, 1891. Serial No. 396,708. (No model.)



Claim.—1. In a floor-clamp, the combination, with a frame, opposite bell-cranks pivoted thereon and terminating at their lower ends in spurs adapted to embrace the opposite sides of joists, and springs for normally spreading the lower ends of the bell-cranks, of a floor-clamping plunger mounted for reciprocation in the frame and having cam-surfaces taking under and adapted to elevate the inner ends of the bell-cranks, and means for operating the plunger, substantially as specified.

2. In a floor-clamp, the combination, with the base, the opposite side walls having openings and pairs of perforated lugs, a cross-bar connecting the walls, bell-crank clamps loosely mounted therein, terminating at their lower ends in spurs and provided at their upper ends with loose rollers, the toothed bar mounted upon the base and provided with opposite cam-plates S, and the springs connected to the cross-bar and at their free ends bearing on the inner ends of bell-cranks, of the shaft 10, journaled in the side walls, the toothed wheel 11, having the notched hub 12, the socket mounted on the shaft and having an opening, the lever loosely mounted in the socket and having a lug passed through the opening and adapted to engage the notches of the hub, the cross-bar 3, having the lugs, and the spring-pressed pawl 25, mounted in the lugs and engaging the ratchet-wheel, substantially as specified.

475,856. FRUIT-PRESS. SAMUEL GROSSMAN, Chicago, Ill. Filed Feb. 24, 1891. Serial No. 382,648. (No model.)



Claim.—A household fruit-press comprising, in combination, an outer imperforate sheet-metal vessel or casing 1, having an open top, a closed bottom, and an outlet-spout 8, a fulcrum-bracket 3, having pendent and lateral attaching ears by which it is attached to the top rim of the casing 1, a head-lever 2, having its fulcrum in the bracket 3, connecting-bar 10, platen 9, and removable inner perforate casing 7, as described, and for the purpose set forth.

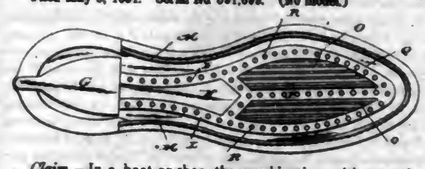
475,857. STEP-LADDER. THOMAS F. GROVER, Kokomo, Ind., assignor of one-half to Sylvanus A. Gardner, same place. Filed Jan. 9, 1892. Serial No. 417,571. (No model.)



Claim.—1. The combination of the main or ladder portion having the way or guide A' secured thereto, the legs B, hinged thereto, and a brace C, having the clips C' engaging with said guide A', and a clamping bolt or screw for securing said clips at the desired position on said guide, substantially as set forth.

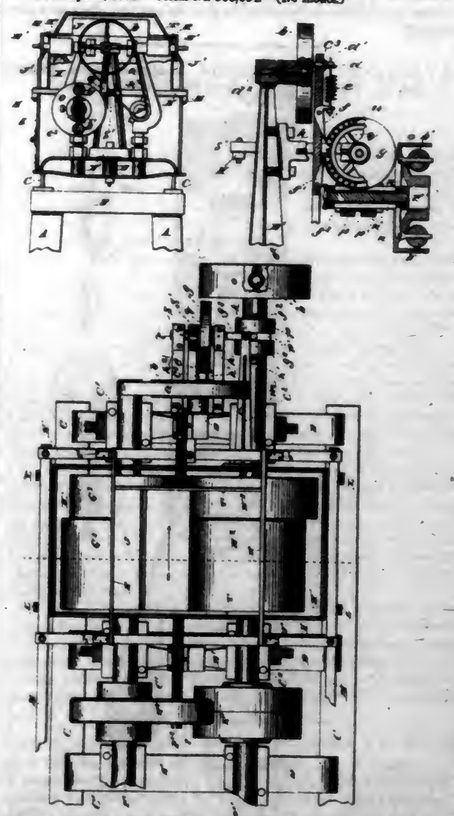
2. In a step-ladder, the combination of the main portion, the legs hinged thereto, and a brace adjustably secured to the ladder portion at one end and hinged to said legs at the other end by means of the rod b, passing through said leg structure and embedded in the upper edge of a cross-bar in which notches are cut to receive the ends of said brace, all substantially as set forth.

475,858. BOOT OR SHOE. GUSTAF R. HADLUND, Portland, Oreg. Filed May 5, 1891. Serial No. 391,699. (No model.)



Claim.—In a boot or shoe, the combination, with a perforated insole, of the elastic corrugated pads O O, arranged between the soles and spaced apart to form a central longitudinal passage P between themselves, said pads being arranged relatively to the sides of the shoe to form the passages Q, extending around the toe, the strip K, arranged between the soles in rear of the elastic pads and separated from the sides of the boot or shoe to form passages L, which communicate with the passages P Q, and an air-tube extending through the counter of the boot or shoe and having its inner end G enlarged, flattened, and terminating at a point in rear of the strip K, substantially as described.

475,859. GRINDING-MILL. LEGRAND D. HARDING, Colfax, Wash. Filed Apr. 8, 1891. Serial No. 388,064. (No model.)



Claim.—1. In a roller grinding-mill, the combination, with a grinding-roller having an annular offset in its periphery at one end, of a second grinding-roller held in frictional contact with the stock passing between it and the said first-named grinding-roller and provided on its periphery with an annular enlargement at one end fitting into the annular offset on the end of the said first-named grinding-roller.

substantially as herein described, and for the uses and purposes herein set forth.

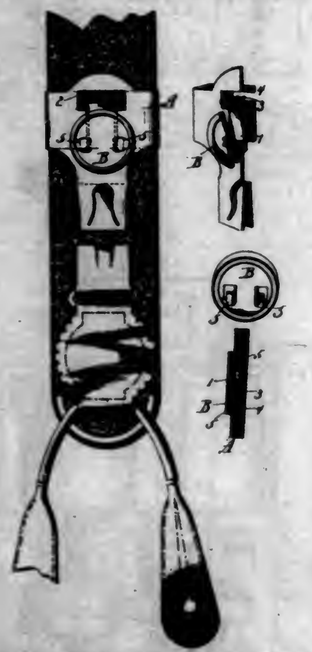
2. In a grinding-mill of the character described, the combination, with the rolls and their respective offsets and enlargements and the intervening stock, of longitudinally-movable feed-boxes J J and automatic means for moving them and the stock in either direction in a line parallel with the axes of the two lines of rolls, substantially as and for the purposes herein set forth.

3. In a grinding-mill of the character described, the combination, with the supports J' J' J' J' for the feed-boxes J J, of the movable cross-bars N and N, and automatic means for moving them and the feed-boxes in either direction in a line parallel with the axes of the two lines of rolls, substantially as and for the purpose herein set forth.

4. In a grinding-mill of the character described, the combination, with the supports J' J' J' J' for the feed-boxes J J, of movable cross-bars N and N, longitudinally-movable bars M and M, attached thereto, and automatic means for moving them in either direction in a line parallel with the axes of the two lines of rolls, substantially as and for the purposes herein set forth.

5. In a roller grinding-mill of the character described, the combination, with the two lines of rolls having offsets and arranged as described and supports J' J' J' J' for the feed-boxes J J, of movable cross-bars N and N, longitudinally-movable bars M and M, attached thereto and forming one or more rectangular frames, and the connecting-rod S' and the herein-described automatic means for actuating the same and thereby moving the feed-boxes J J in either direction in a line parallel with the axes of the two lines of rolls and carrying the stock (when necessary) in either direction in a line parallel with the axes of the two lines of rolls to the proper point over the rolls and their respective offsets and enlargements and causing it to fall between the rolls and their respective offsets and enlargements at the proper points, substantially as herein described, and for the uses and purposes herein set forth.

475,860. SUSPENDER-BUCKLE. CHARLES R. HARRIS, Williamsport, Pa. Filed Feb. 1, 1892. Serial No. 419,936. (No model.)



Claim.—1. In a suspender-buckle, the combination, with a flat metal sleeve and a clamping-tongue connected with the sleeve, its clamping portion extending inward, of a slide having sliding connection with the sleeve and constructed to bear on the tongue, whereby the clamping portion of the latter is forced inward with one movement of the slide, substantially as set forth.

2. In a suspender-buckle, the combination of a flat metal sleeve, and a spring clamping-tongue connected therewith, the clamping portion of the tongue projecting inward, and a slide having shanks extending through the spaces between the tongue and the adjacent edges of the sleeve and bearing upon the inner face of the sleeve and outer face of the tongue, substantially as set forth.

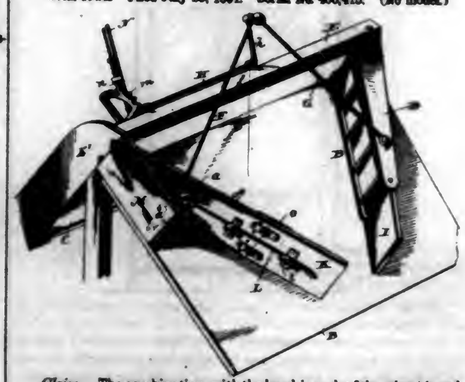
3. The combination, with a slotted sleeve and a tongue connected therewith, said tongue curving outward gradually from its point of connection to its free end and having a clamping-edge at its free end, of a slide bearing on the inner face of the sleeve and the outer face of the tongue, substantially as set forth.

4. The combination, with a flat metal sleeve having a slot formed in one face and a tongue integral with the plate and lying within the slot, said tongue curved outwardly gradually from its point of connection with the sleeve to its free end, so that its free end projects outward beyond the outer face of the sleeve, of a slide extending between the inner face of the sleeve and outer face of the tongue, whereby when it is slid toward the free end of the tongue the latter is forced inward, substantially as set forth.

5. The combination, with a flat metal sleeve having a slot in one side, and a spring clamping-tongue having a clamping-edge opposite the slot, of a slide having shanks passing between the tongue and adjacent edges of the sleeve bearing between the inner face of the sleeve and outer face of the tongue and adapted to force the tongue inward as it is slid in one direction, substantially as set forth.

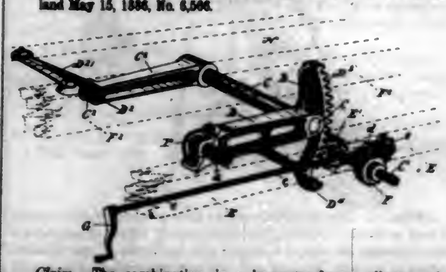
6. The combination, with a flat metal sleeve having a slot in one face enlarged at one end, and a tongue formed in the slot and corresponding in shape with the slot, the enlarged end of the tongue bent inward and the tongue curved outward, so that the enlarged end of the tongue forms shoulders, of a slide having shanks which pass between the edges of the tongue and the slot and adapted to be stopped by the shoulders on the tongue, and projections on the outer face of the sleeve adapted to hold the slide in place, substantially as set forth.

475,861. GRAIN-ADJUSTER. THEODORE H. HENDERSHOT, Griswold, Iowa. Filed July 23, 1891. Serial No. 400,415. (No model.)



Claim.—The combination, with the head-board, of the wing hinged to the outer end thereof, a board M, secured at its inner end to the head-board at the angle formed by the wing, the stay-rods interposed between the board M and wing near the outer end of the board M, the shaft H, lever N, and the brace rod connecting said shaft with the board M, all substantially as shown and described.

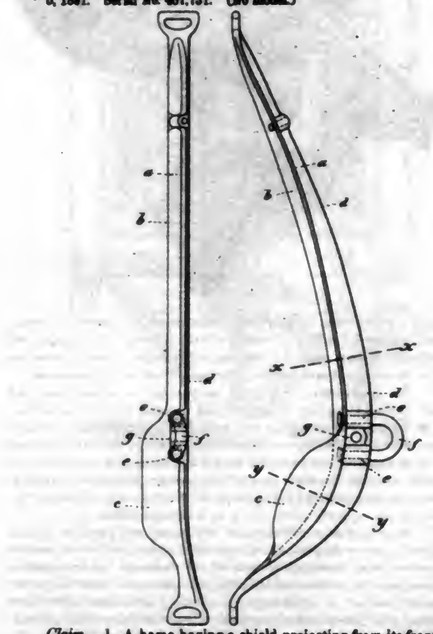
475,862. APPARATUS FOR RAISING AND LOWERING HARVESTER-PLATFORMS. WATSON M. HOLMES, Hoosick Falls, N. Y. Filed Apr. 27, 1887. Serial No. 236,277. (No model.) Patented in England May 15, 1886, No. 6,506.



Claim.—The combination, in a harvester-frame adjuster, of a driving-wheel, two swinging arms, each pivoted at one end to a stationary journal-stud on the main frame and rigidly united at their outer ends by a spindle on which the driving-wheel revolves, one only

of said arms being provided with a toothed segment having a guard at its bottom end to prevent its co-operating pinion from running out of mesh therewith, a pinion-shaft mounted on the main frame and carrying a pinion-gear which engages with said segment, and a worm-gear which is actuated by a worm on a crank-shaft which is attached to the frame or other convenient support therefor, constructed and arranged to operate substantially in the manner described, and for the purposes specified.

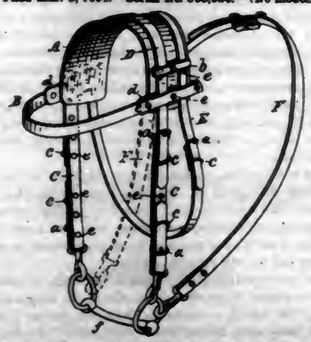
475,868. HAME. EUGENE L. HOWE, Cleveland, Ohio. Filed Oct. 5, 1891. Serial No. 407,731. (No model.)



Claim.—1. A hame having a shield projecting from its front face and arranged to cover the front portion of the collar at the point where the breast strap or chain crosses, and means projecting from the rear face for the attachment of the tug, substantially as and for the purposes described.

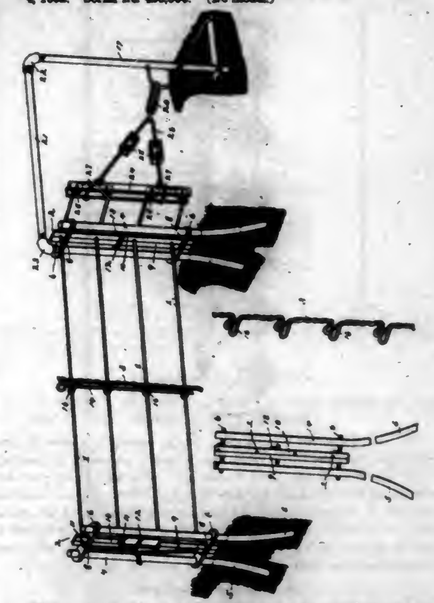
2. A hame substantially V-shaped in cross-section, having a breast-chain shield formed by an enlargement of the front flange for protection from the holdback, and means projecting from the rear flange for attachment of the tug, substantially as and for the purpose specified.

475,864. DRAFT-BRIDLE. WILLIAM R. HUDSON, Washington, D. C. Filed Mar. 5, 1891. Serial No. 383,926. (No model.)



Claim.—A bridle provided with a crown piece A, loops b, secured to said crown-piece, straps D and E, independent of each other and extending over said crown-piece and through said loops, the strap D being connected with the check-pieces and the strap E forming a throat-latch, and a brow-band connected with straps D and E, the parts being constructed and arranged substantially as herein shown and described.

475,865. FENCE. WILLIAM B. HUDSON, Orwell, Ohio. Filed Feb 4, 1892. Serial No. 420,330. (No model.)



Claim.—1. In a fence, the combination of horizontal wires and fence-posts, each composed of vertical parallel rods, vertical bars arranged between the rods, one of the bars being provided with a series of notches to receive the horizontal wires and the other bar securing the wires in the notches, and the tie-plate connecting the rods and the bars, substantially as described.

2. In a fence, the combination of horizontal wires and fence-posts, each composed of vertical parallel rods, vertical bars arranged between the rods, one of the bars being provided with a series of notches to receive the horizontal wires, and the tie-plates arranged horizontally and provided with openings to receive the rods and having slots in which are arranged the vertical bars, substantially as described.

3. In a fence, the combination of horizontal wires and fence-posts, each composed of vertically-disposed rods having their lower ends diverging, horizontal tie-plates connecting the rods and provided with slots, vertical bars arranged in the slots, one of the bars being provided with notches to receive the horizontal wires, and a link and key for securing the vertical bars together, substantially as described.

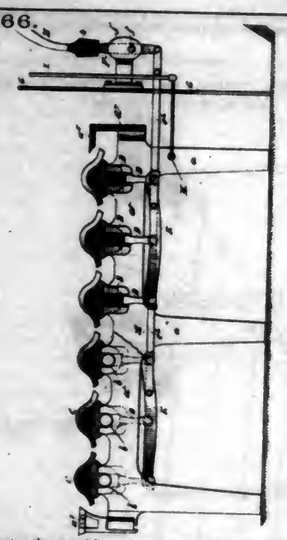
4. The combination, with horizontal fence wires, of a stay constructed of two wires twisted together, each wire being provided with horizontal bends arranged at intervals, the bends of the wires being arranged in pairs and diverging from each other and receiving the horizontal wires in them, and a vertical locking-rod arranged in the crotches formed by the diverging bends and interposed between the horizontal wires and the twisted or body portion of the stay, substantially as described.

5. In a fence, the combination of the horizontal wires, fence-posts supporting the wires, the vertical side bars having pulleys journaled between them, over which the horizontal wires pass, a tension-spring connected with one of the posts, a V-shaped piece connected to the spring, hooks engaging the vertical side bars, and turnbuckles connecting the V-shaped piece and the hooks, substantially as described.

475,866. GRATE. ANDREW J. HULL, Newark, N. J. Filed July 25, 1891. Serial No. 400,099. (No model.)

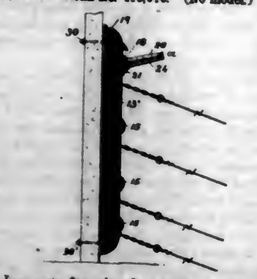
Claim.—1. In a grate, the combination of the grate-bars supported in suitable bearings in the side bars of the main frame of the grate, the levers having the bifurcated supports straddling the bars, the cranked projections on the bars, a connecting-rod which connects the cranks belonging to the bars that compose the forward half of the grate, another connecting-rod which connects the cranks on the bars composing the rear half of the grate, the pitmen c^4, connected to the side rods, the double-recessed operating-handle, and the levers F, connected thereto and also to the pitmen c^4, substantially as described.

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2. In a grate, the combination of the operating-handle H, provided with recesses A, the grate-bars movably journaled in bearings in the side bars of the main frame, said grate-bars being provided with cranked projections, the rods E and E', which connect together, respectively, the members of the forward and rear parts of the grate-bars, the pitmen e^2, connected to the rods E and E' and elongated at their forward ends, and the levers F, which are fulcrumed at f upon a support secured upon the front of the furnace.

475,867. WIRE-FENCE GATE. JOHN HULT, Burlington, Iowa. Filed Jan. 22, 1892. Serial No. 418,916. (No model.)



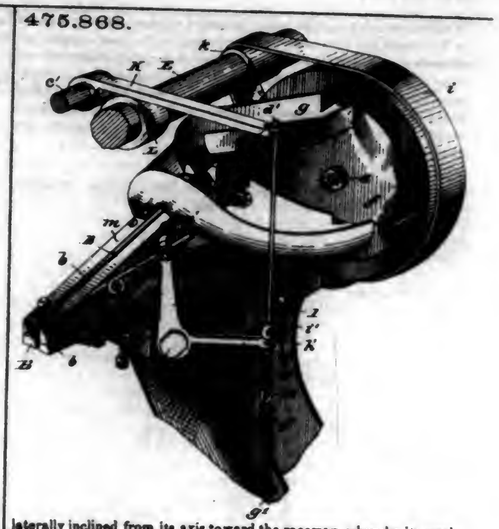
Claim.—1. In a gate for wire fences, the combination of a supporting-frame capable of being detachably attached to a gate-post, a wire stretcher and holder consisting, essentially, of a rock-shaft having an attached pulley and ratchet, a pawl and lever for actuating the rock-shaft, and fence-wires having chain ends attached to the stretcher and bearing against pulleys in the supporting-frame, as and for the purposes specified.

2. In a gate for wire fences, a supporting-frame capable of being detachably attached to a gate-post, in combination with the herein-described wire stretcher, consisting of a rock-shaft having bearings in the side plates of the frame, ratchet-pulley 21, ratchet 18, pawl 19, and levers 20, and with fence-wires having chain ends, the bottom wire being attached by its chain end to a ratchet-pulley upon the rock-shaft, and the wires above the bottom one being attached by their chain ends to the chain end of the lower wire after passing under and engaging with pulleys located in the supporting-frame, as and for the purposes specified.

475,868. FEEDING MECHANISM FOR PEGGING-MACHINES. JOHN HYSLOP, Jr., Abington, Mass. Filed Nov. 4, 1891. Serial No. 410,850. (No model.)

Claim.—1. The combination, with a track or raceway, of a pusher or ejector at one end thereof, a horizontal axis at one end of the pusher or ejector, and mechanism, substantially as described, for imparting to it a lateral movement whereby the opposite end of the pusher or ejector may move in horizontal and vertical planes, said pusher being

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laterally inclined from its axis toward the raceway, whereby its working end may move over the surface of said raceway and engage and periodically operate upon the portions of the nails or loose articles extending to or above said surface, substantially as herein described.

2. The combination of a track or raceway, a laterally-inclined pusher or ejector having its forward end movable over the upper surface of the raceway to engage and periodically operate upon portions of the nails or loose articles extending to or above said surface and having its opposite end mounted upon a horizontal transversely-moving axis, whereby the front end of the pusher may move in vertical and horizontal planes, a rocking support for said axis, and means for operating the support, substantially as herein described.

3. The combination, with a track or raceway, of a pusher or ejector mounted at one end upon a horizontal axis and adapted to reciprocate at a lateral angle upon the surface of the raceway and arranged to operate upon the portions of the nails or loose articles extending to or above said surface, an actuating-lever carrying said pusher, and a loose or spring joint between the lever and outer end of the pusher, substantially as set forth.

4. The combination, with a track or raceway, of a reciprocating yielding pusher or ejector, an actuating-lever for said pusher, loosely connected therewith by a horizontally-disposed yielding spring-joint, and a spring for holding the pusher in contact with the surface of the raceway, said pusher being out of contact with the line of nails or loose articles at the commencement of its forward movement and completing the said movement in contact with the said nails or loose articles, whereby they are pushed forward and ejected from the raceway, substantially as set forth.

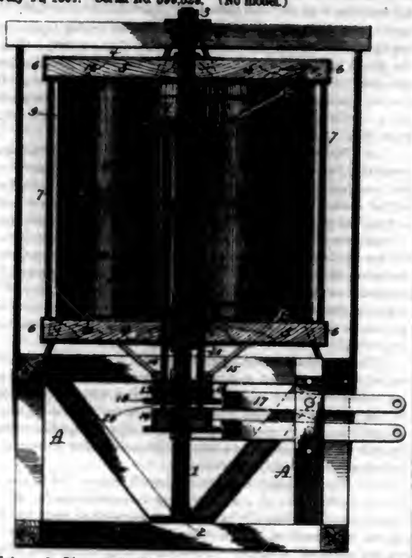
5. The combination, with a track or raceway, of a pusher or ejector adapted to reciprocate upon the surface of the raceway at an angle thereto and push forward and eject the nails or loose articles by contact therewith at or above the surface of the raceway, a lever carrying said pusher and connected therewith, a horizontal laterally-yielding spring-joint whereby the pusher is caused to advance at an angle to the line of nails or loose articles and after contact therewith complete its forward movement in a direction substantially parallel with the raceway in the direction of its length, a spring for holding the pusher down upon the raceway, and a device for actuating the pusher-lever, said device having a yielding connection therewith, substantially as herein described.

6. The combination, with a track or raceway, of the angle-lever H, the pusher or ejector G, loosely connected with the lever H by means of the stud n and spring t, the spring w, the connecting-rod I, having a spring or yielding connection with the angle-lever H, the spring f', the lever K, and the cam L, all constructed to operate substantially as and for the purpose set forth.

7. The combination, with a track or raceway, of the angle-lever H, pusher or ejector G, connected therewith by means of the stud n and spring t, the spring w, connected with the pusher G and adapted to hold the same upon the surface of the raceway, the connecting-rod I, sliding through the end of the arm b' of the lever H and provided with the collar k' and spring l', arranged on opposite sides of the arm b', the spring f', connected with the lower end of the rod I, the lever K, provided with an open slot 10 and a concavity or depression d' for the reception of the ball d' at the upper end of the rod I, and the

cam L on the shaft E, all operating substantially in the manner and for the purpose set forth.

475,869. WINDMILL. ANDREW JOHNSON, Calliope, Iowa. Filed July 14, 1891. Serial No. 399,528. (No model.)



Claim.—1. In a windmill, the combination, with a rotary shaft and heads secured thereon, of two or more sets of blades pivoted between the heads, and means for operating these sets singly or together, substantially as set forth.

2. The combination, with a rotary shaft and double set of curved blades or fans, of sliding disks loosely mounted on the shaft and connected with the blades, and levers for sliding these disks positively in either direction simultaneously or independently of each other, substantially as set forth.

3. The combination, with a frame, a rotary shaft having heads thereon with rods extending from one head to the other, and curved blades connected with these rods, of sliding disks connected with the blades or fans, and means for sliding the disks independently or together, whereby the blades are operated, substantially as set forth.

475,870. PACKING. JOHN C. F. JOHNS, Braddock, Pa. Filed Sept. 23, 1891. Serial No. 407,063. (No model.)



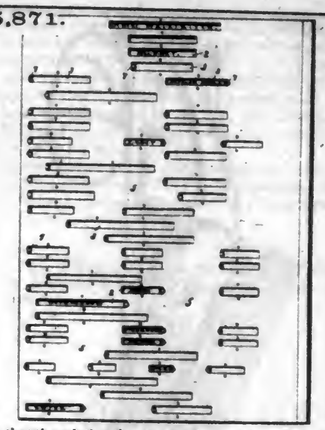
Claim.—The herein-described packing, consisting of a suitable core composed of leather, rubber, or other suitable substance, the cotton wick braided or twisted and arranged about the said core, pegs or other means for attaching the said core and wick together, and the whole surrounded by braided cotton, substantially as herein shown and described.

475,871. BILL-OF-FARE INDICATOR. FRANK H. KEIFER and GEORGE H. THOMPSON, Howard, Kans. Filed Feb. 29, 1892. Serial No. 423,243. (No model.)



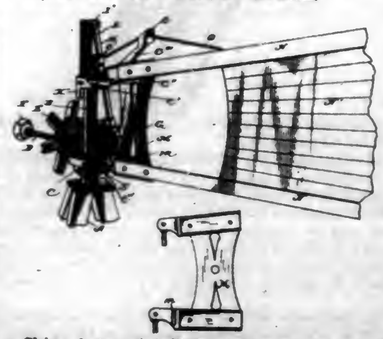
Claim.—A bill-of-fare indicator consisting, essentially, of a series of three equal-sized plates, the rear plate being imperforate and serving as a backing and the two other plates having series of registering slots of varying lengths, a series of slides mounted between the two plates and of a length to cover the slots and having operating-knobs, the bill of fare being inserted between the backing-plate and the slotted

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plates, so that the printing thereon may be seen through the slots thereof, substantially as described.

475,872. WINDMILL. WILMER S. LANE, Freeport, Ill. Filed Aug. 14, 1890. Serial No. 361,965. (No model.)



Claim.—1. In a windmill, the combination, with a pumping-rod, of a suitably-mounted vertical guiding-bar, a cross-bar connecting the pumping-rod to the guiding-bar and holding the former in a path parallel to the latter, and a pitman connecting said cross-bar with the actuating parts of the mill.

2. The combination, with the wind-wheel shaft bearing the crank-plate with crank-pin thereon, of a pitman carried by the crank-pin, a pumping-rod at one side of the line of said shaft, a cross-bar substantially parallel to the plane of the crank-plate and connecting the pumping-rod and pitman, and guiding devices confining the cross-bar to a vertical path.

3. The combination, with the windmill-head having rigid lugs at top and bottom, of the vane resting upon said lugs and connected with each by a vertical pivot hinged upon a horizontal axis, the upper of said pivots being at the greater distance from the axis of the head, whereby the vane swinging upon the vertical pivots must rise at the outer end and swing upon the horizontal hinge-axes.

475,873. LOCK AND EJECTOR MECHANISM FOR BREAKDOWN GUNS. DANIEL M. LEFEVER, Syracuse, N. Y. Filed Feb. 16, 1891. Serial No. 381,613. (No model.)

Claim.—1. The combination, with the barrel and frame of a breech-loading gun, of an extractor movable lengthwise of the barrel for ejecting the shell from the barrel, a spring for operating the extractor, a stop for preventing the movement of the extractor, the hammer of the gun, and an automatically-movable connection from said hammer to the stop for actuating the stop to permit movement of the extractor, substantially as and for the purpose specified.

2. The combination, with the barrels and frame of a breech-loading gun, of an extractor movable lengthwise of the barrel for ejecting the shell from the barrel, a spring for operating the extractor, a stop for preventing the movement of the extractor, the hammer of the gun, an automatically-movable connection from said hammer to the stop for actuating the stop to permit movement of the extractor, and a re-

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tractor for returning the extractor to its normal position, substantially as and for the purpose specified.

3. The combination, with the barrels and frame of a breech-loading gun, of an extractor consisting of two sections independently movable lengthwise of the barrels for ejecting the shells from the barrels, springs for independently operating the sections of the extractor, independent stops for preventing the movement of the extractor-sections by said springs, the hammers of the gun, and movable connections from said hammers to the stops for actuating the stop to permit movement of the extractor, substantially as and for the purpose described.

4. The combination, with the barrels and frame of a breech-loading gun, of an extractor consisting of two sections having engaging shoulders, springs for independently operating the sections of the extractor, independent stops for preventing the movement of the extractor-sections by said springs, the hammers of the gun, movable connections from said hammers to the stops for controlling the action of the stops, and a retractor for engaging said shoulders on the extractor-sections and forcing the sections to their normal position, substantially as and for the purpose set forth.

5. The combination, with the barrel and frame of a breech-loading gun, of an extractor movable lengthwise of the barrel for ejecting the shell from the barrel, an ejector for operating the extractor, a spring for bearing against the ejector, a stop for preventing the movement of the extractor by said spring, a hammer, and a movable connection between the hammer and the stop for actuating the stop to permit movement of the extractor, substantially as and for the purpose specified.

6. The combination, with the barrel, fore-end piece, and frame of a breech-loading gun, of an extractor, an ejector pivoted to the fore-end piece, a spring bearing against the ejector for rocking the same to operate the extractor, a stop for preventing the movement of the extractor, the hammer of the gun, and an automatically-movable connection from said hammer to the stop for actuating the stop to permit movement of the extractor, substantially as and for the purpose set forth.

7. The combination, with the barrels, fore-end piece, and frame of a breech-loading gun, of the extractor consisting of two sections independently movable lengthwise of the barrels for ejecting the shells from the barrels, an ejector consisting of two independently-movable sections pivoted to the fore-end piece for independently operating the extractor-sections, separate springs for independently operating the ejector-sections, and a movable retractor-lever pivoted to the barrel for engaging the separate extractor-sections and returning said extractor to its normal position, substantially as set forth.

8. The combination, with the barrels and frame of a breech-loading gun, of an extractor, an ejector for operating the extractor to extract the shell, a lever pivoted to the barrel, and a stationary shoulder on the frame for rocking said lever and operating the same to return the extractor, substantially as set forth.

9. The combination, with the barrel, frame, and hammer of a concealed-hammer gun, of a movable dog secured to the barrel, a cocking-lever connected to the hammer and operating to cock the hammer by the movement of the movable dog secured to the barrel, a lock for locking the point of engagement of said movable dog from operative engagement with the point of engagement of the cocking-lever when the gun is in its normal closed position, an extractor, an ejector for operating the extractor, a lock for preventing the action of the extractor, and a connection from the hammer to the lock for preventing the action of the lock and permitting the operation of the extractor, substantially as and for the purpose set forth.

10. The combination, with the barrel, frame, and hammer of a concealed-hammer gun, of a movable dog secured to the barrel, a cocking-lever connected to the hammer and operating to cock the hammer by the movement of the movable dog secured to the barrel, a lock for locking the point of engagement of said movable dog from operative engagement with the point of engagement of the cocking-lever when the gun is in its normal closed position, an extractor, an ejector for operating the extractor, a lock for preventing the action of the extractor, a connection from the hammer to the lock for preventing the action of the lock and permitting the operation of the extractor, and a movable retractor for returning the extractor to its normal position, substantially as and for the purpose specified.

11. The combination, with the barrel, frame, and hammers of a breech-loading gun, of a movable dog secured to the barrel, a cocking-lever connected to the hammer and operated to cock the hammer by the movement of the movable dog secured to the barrel, an extractor adapted to engage the movable dog, an ejector adapted to operate the extractor, and a stop for preventing the movement of the extractor, substantially as set forth.

12. The combination, with the barrel, frame, and hammers of a breech-loading gun, of a movable dog secured to the barrel, a cocking-lever connected to the hammer and operated to cock the hammer by the movement of the movable dog secured to the barrel, an extractor adapted to engage the movable dog, an ejector adapted to operate the extractor, a stop for preventing the movement of the extractor, a lever pivoted to the barrel, and a shoulder on the frame for operating said lever and returning the extractor, substantially as and for the purpose set forth.

13. The combination, with the barrel, frame, and concealed hammers of a breech-loading gun, of a movable dog secured to the barrel, a cocking-lever connected to the hammer and operated to cock the hammer by the movement of the movable dog secured to the barrel, a divided extractor-rod having a cut-out for receiving the movable dog, shoulders on said rod adapted to engage the movable dog, a pair of ejectors adapted to operate the separate divisions of the extractor, and a pair of stops for normally preventing the movement of the extractors, substantially as specified.

14. The combination, with the barrel and frame of a breech-loading gun, of an extractor having a projecting rod, a shoulder on the rod, a spring-actuated stop for engaging the shoulder, and a movable connection between said hammer and stop for moving the stop from engagement with the extractor-shoulder and permitting operation of the extractor, substantially as described.

15. The combination, with the barrel and frame of a breech-loading gun, of an extractor, a shoulder on the extractor, a spring-actuated stop for engaging the shoulder, a connection between said hammer and stop for moving the stop from engagement with the extractor-shoulder, an ejector for engaging the extractor-rod, and a spring for bearing against the ejector, substantially as set forth.

16. The combination, with the barrel, fore-end piece, and frame of a breech-loading gun, of an extractor, a shoulder on the extractor, a spring-actuated stop for engaging the shoulder on the extractor-rod, a connection between said hammer and stop for moving the stop from engagement with the extractor-shoulder, an ejector pivoted to the fore-end piece for engaging the extractor, and a spring for bearing against the ejector, substantially as described.

17. The combination, with the barrel, barrel-lug, frame, and hammers of a breech-loading gun, of an extractor having a divided head and a divided rod projecting from the head, a cut-out in the opposite divisions of the rod, a rod mounted in the barrel-lug spring, stop-arms on the inner end of the latter rod projecting into the extractor-rod bearing and adapted to engage the shoulders formed by the cut-outs in the extractor-rod, an ejector for operating the extractor, and connections, substantially as described, between the hammers and said spring-arms, substantially as specified.

18. The combination, with the barrel, barrel-lug, frame, and hammers of a breech-loading gun, of an extractor having a divided head and a divided rod projecting from the head, a cut-out in the opposite divisions of the rod, a rod mounted in the barrel-lug, spring stop-arms on the inner end of the latter rod, projecting into the extractor-rod bearing and adapted to engage the shoulders formed by the cut-outs in the extractor-rod, laterally-extending arms projecting from the spring stop-arms, and sliding bars movable in the gun-frame with one extremity connected to the hammer and the other provided with a bearing-face for engaging said laterally-extending arms on the spring stop-arms, substantially as specified.

19. The combination, with the barrel, frame, and hammers of a breech-loading gun, of an extractor, a spring-actuated ejector for operating the extractor, a stop for preventing the movement of the extractor, an arm or bar projecting laterally from the stop, and a bar guided in the gun-frame with one extremity provided with a bearing-face adapted to engage said laterally-extending bar and the other extremity connected to the hammer, substantially as set forth.

20. The combination, with the barrel, fore-end piece, and frame of a breech-loading gun, of an extractor, an ejector pivoted to the fore-end piece, a spring bearing against the ejector, and a stop for preventing the action of said spring, substantially as specified.

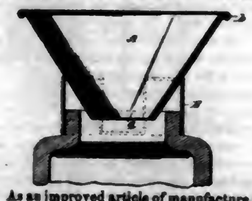
21. The combination, with the barrel, frame, and hammers of a breech-loading gun, of an extractor, a spring-actuated ejector for operating the extractor, a stop for preventing the movement of the extractor, an arm or bar projecting laterally from the stop, a bar guided in the gun-frame with one extremity provided with a bearing-face adapted to engage said laterally-extending bar and the other extremity connected to the hammer, and a movable lever for engaging the extractor and returning it to its normal position, substantially as and for the purpose described.

22. The combination, with the barrels and frame of a breech-loading gun, of a divided extractor, a pair of springs for independently operating the separate divisions of the extractor, and a movable stop mounted between said springs and provided with arms for engaging the springs and preventing their action, substantially as described.

23. The combination, with the barrels and frame of a breech-loading gun, of an extractor, a spring for automatically operating the extractor, and a movable stop M for preventing the operation of the spring, substantially as specified.

24. The combination, with the barrels and frame of a breech-loading gun, of an extractor, a spring for automatically operating the extractor, an arm movable into the path of said spring for preventing its movement, and a rod having an end-engaging portion for effecting the movement of said arm, substantially as described.

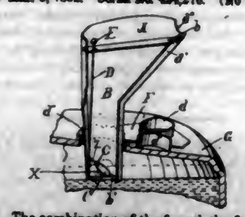
475,874. FRUIT-JAR FILLER. WALTER I. LEGGETT, Galesburg, Ill. Filed Nov. 17, 1891. Serial No. 412,134. (No model.)



Claim.—1. As an improved article of manufacture, a fruit-jar filler comprising the body of truncated-cone shape having a large discharge-opening and a skeleton support for sustaining said funnel in the mouth of a jug or jar and free from contact therewith, said support being formed from wire bent at intervals in depending angular loops and secured to the body or funnel on its outer side above its discharge-opening so as to clamp the neck of a jug, substantially as specified.

2. As an improved article of manufacture, a fruit-jar filler comprising a body of truncated-cone shape, and legs secured thereto on the outer side at a point above the discharge-opening, said legs being spaced so as to expose to view the discharge-opening of the funnel during operation and clamp the neck of a jug, substantially as specified.

475,875. INDICATING-FUNNEL. ISAAC W. LORD, Cucamonga, Cal. Filed Mar. 9, 1892. Serial No. 424,276. (No model.)

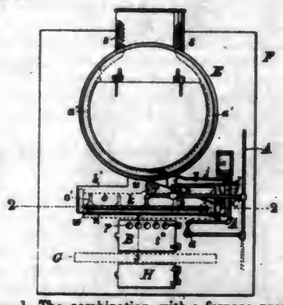


Claim.—1. The combination of the funnel, the float provided with a projecting arm and pivoted to the funnel, and an indicator-rod pivoted to such arm and arranged to be lowered by the rising of the float.

2. The combination of the funnel provided with the funnel-passage *a* and with the float-chamber B, closed at the top and sides and open at the bottom, the float provided with the projecting arm and pivoted inside the chamber to the walls of such chamber, substantially at the side of the float from which the arm projects, and a vertically-moving indicator-rod pivoted to the arm and extending upward through the top of the float-chamber and having a suitable indicator attached to the upper end of such rod.

3. The combination of the funnel provided with a pivoted float and indicator-rod and the height-adjusting and filler-supporting plate F, having a series of different-sized holes and a series of different-sized collars, respectively, surrounding the holes.

475,876. AUTOMATIC SMOKE-CONSUMING FURNACE. MICHAEL J. LYNN, Rochester, N. Y. Filed Sept. 23, 1891. Serial No. 406,577. (No model.)



Claim.—1. The combination, with a furnace provided with air-injecting devices, of a steam-supply pipe having a valve arranged to be opened by the opening of the furnace-door, a steam-cylinder having a piston and a connection by which the movement of the piston operates a valve in the pipe which supplies steam to the air-injecting devices, and an outlet-passage connected directly to the cylinder and provided with a regulating-valve, whereby the steam-pressure in the cylinder is reduced before the steam can condense, substantially as described.

2. The combination, with a furnace, of steam air-injecting devices, means for heating the air before it arrives at the injectors, and mechanism consisting of a steam-cylinder, piston, and supply-pipe provided with a valve arranged to be operated by the opening of the furnace-door, a suitable connection and valve whereby the supply of steam to the air-injectors is controlled, and an outlet-passage connected to the cylinder and provided with a regulating-valve, whereby the steam is gradually discharged, substantially as described.

3. The combination, with a furnace, of the furnace-door B, the steam-supply pipe A, provided with self-closing valve *a*, arranged relatively to the door so as to be opened only by the full opening thereof, the air-inlet passage or passages *h*, and steam jet or jets *j*, steam-pipe C, provided with valve *b*, steam-cylinder and piston *c*, and a suitable connection between the piston and the valve *b*, and the outlet-pipe *i*, provided with regulating-valve *v*, substantially as described.

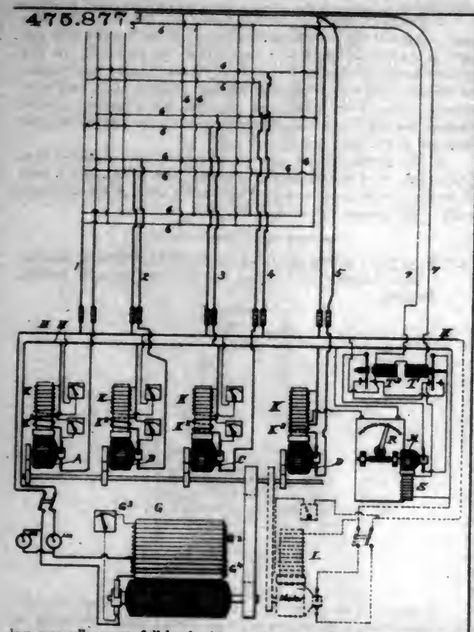
4. The combination, with a furnace, of steam air-injecting devices, mechanism consisting of a steam-cylinder, piston, and supply-pipe provided with a valve arranged to be operated by the opening of the furnace-door, a suitable connection and valve whereby the supply of steam to the air-injectors is controlled, and an outlet-passage provided with a valve, whereby the steam is gradually discharged from the cylinder, and the air-heating conduit consisting of perforated jacket *s*, passage *a'*, and casing *b'*, substantially as described.

5. The combination, with a furnace, of the air-passages *h*, steam-jets *j*, the movable protector *o*, provided with opening *w* and slot *e*, and suitable connecting piping and valves arranged to be operated by the opening of the furnace-door to automatically deliver steam to the said jets for a limited period of time after the opening of the door, substantially as described.

475,877. SYSTEM OF ELECTRICAL DISTRIBUTION. CYPRIEN O. MAILLOUX, New York, N. Y. Filed Nov. 26, 1891. Serial No. 413,050. (No model.)

Claim.—1. In a system of electric distribution, the combination, with the consumption circuit or circuits and the feeder wires or conductors connected to the various points thereof and over which the said consumption circuit or circuits are supplied while the load is normal from a suitable main-supply source or sources of energy, of a supplemental or auxiliary electro-motive-force generator or generators in the feeder wire or wires and in the direct circuit of the main source of supply between the same and the consumption-circuit, and operat-

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ing normally or at full load with an electro-motive force, counter or assisting, and adjusted with respect to the relative drop in the feed-wires or conductors to produce at full load a resultant drop necessary for the pressure or potential desired at the points of connection to the consumption circuit or circuits.

2. The combination, in a system of electric distribution, of a consumption circuit or circuits, a main-supply generator or generators from which said circuits derive their main or normal supply of energy, feed wires or conductors connecting the consumption circuit or circuits of parts of the system at different distances from the main generator or parts having normally-different loads, and a supplemental electro-dynamic machine or machines having armatures in said feeder-wire circuit or circuits between the main-supply generator and a consumption-circuit and normally adjusted, and applied in the manner described to oppose or assist the electro-motive force of the main machine, as and for the purpose described.

3. The combination, in a system of electric distribution, of the consumption circuit or circuits, feed wires or conductors leading to different parts thereof from a common source, and a supplemental or auxiliary electro-motive-force generator or generators included in said feeder-wires and having a normal action at full load adjusted with respect to the relative drop in said feeders, as and for the purpose described.

4. In a system of electric distribution, the combination, with the consumption circuit or circuits, of feeder-wires over which the consumption-currents are supplied, having a greater normal drop or loss for the portions of the system more remote from the source of supply or having a normally-less load and a less drop for the portions nearer to the source of supply or having a greater load, and a supplemental source of electro-motive force in the circuit of a feeder-wire and adjusted in the manner described with respect to the differences in the loss on the feeders, so as to produce on the consumption-circuits the required normal relation of potential at the points of connection with the feeder-circuits.

5. The combination, in a system of electric distribution, of a consumption circuit or circuits, feeder-wires over which the consumption-currents are supplied, having a greater normal resistance drop or loss for the portions of the system more remote from the source of supply and a less drop for the portions nearer to the source, and a supplemental assisting electro-motive-force generator in the feeder-wire connected to the more distant portion of the system, as and for the purpose described.

6. The combination, in a system of electric distribution, of a consumption circuit or circuits, feeder-wires over which the said consumption circuit or circuits are supplied when the load is normal from a suitable source or sources of energy, a supplemental electro-dynamic machine or machines having armatures operating either as motors or generators and included individually in the circuits of said feeder-wires, as and for the purpose described.

7. The combination, in a system of electric distribution, of a consumption circuit or circuits, feeder-wires connecting the same with a suitable source or sources of supply from which said consumption-circuits derive their energy when the distribution of load is normal, and an electro-dynamic armature operated as an electric-motor armature in the direct circuit of a feeder-wire between the normal source of supply and the consumption-circuit, and furnishing driving-power to assist in operating a generator armature or armatures normally supplying electric energy tending to supplement the potential of the normal or main source, as and for the purpose described.

8. The combination, substantially as described, in a constant-potential system of electric distribution, of a consumption circuit or circuits, feeder wires or conductors connected to different parts of the same, a generator or generators common to said feeder-wires and adapted to maintain the required difference of potential at the common terminals of the feeder-wires, and electro-dynamic armatures included individually in feeder-wires of the system and each provided with means for automatically adjusting its power according to the variations of load on its own feeder-wire.

9. The combination, in a system of electric distribution, of the consumption-circuits, the feeder-wires connecting the same with a common source of energy, and electro-dynamic armatures placed individually in the feeder-wires and operating either as motor or generator armatures, each of said machines being provided with means for automatically adjusting its field in accordance with changes of load of its own feeder.

10. The combination, in a system of electric distribution, of the consumption circuit or circuits, feeder wires or conductors connecting the same with a suitable source of energy, a supplemental electro-motive-force generator placed in a feeder-wire and normally adjusted with respect to the relation of drop between itself and another feeder due to a resistance, and means for automatically changing its electro-motive-force capacity according to the variations of load at a part of the consumption circuit or circuits.

11. In a system of electric distribution, the combination of the consumption circuit or circuits and the feeder-wires or conductors connecting the same with a common source of electric energy, and one or more supplemental armatures placed individually in the feeder-circuits and having field-magnet coils traversed, respectively, by an approximately constant current and by the current flowing over the feed-wire and through the armatures, as and for the purpose described.

12. The combination, in a system of electric distribution, of the consumption circuit or circuits, feed wires or conductors connecting the same with a common source of energy, and electro-dynamic armatures connected into said feeder-circuits and part operating as motors and part as generators, said motor-armatures furnishing driving-power to assist in operating the generator-armatures.

13. The combination, substantially as described, in a system of electric distribution, of the consumption circuit or circuits, the feeding wires or conductors connected with a common source of energy, and electro-dynamic machines having their armatures included in the feeder wires or circuits and adjusted, as described, to supply an electro-motive force assisting or opposing the main electro-motive force and in accordance with the drop required in the feeder-wires, said armatures and the main generator being interconnected, as described, so that the energy absorbed in the armatures opposing the main electro-motive force and converted into motive power therein will tend to drive the supplemental-generator armatures, as and for the purpose described.

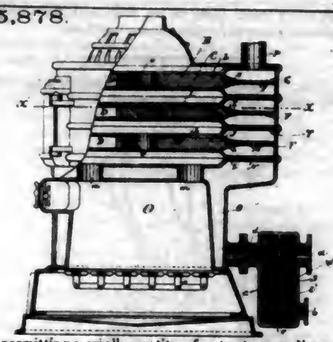
14. In a system of electric distribution, the combination, substantially as described, of the feeder wires or conductors connected to constant-potential circuits, a source or sources of energy common to said feeders and from which they branch separately, and supplemental electro-motive-force generators in said feeder branches and each provided with means for automatically adjusting its potential in accordance with changes of load on its own feeder independently of the changes on other feeders.

15. The combination, in a system of electric distribution, of an electro-dynamic armature operating as a supplemental electro-motive-force generator and placed in a feeder-wire between the main generator and the consumption-circuit, a field-magnet therefor, having a main-circuit coil in the feeder-wire, an independent field-magnet coil, and a controlling magnet or magnets for adjusting the effect of said independent coil, said magnet or magnets being in a pressure-wire connected to the consumption circuit at or near the point where the feeder-wire is attached.

475,878. HOT-WATER FURNACE. EUGENE S. MANNY, Montreal, Canada. Filed Aug. 10, 1891. Serial No. 402,373. (No model.)

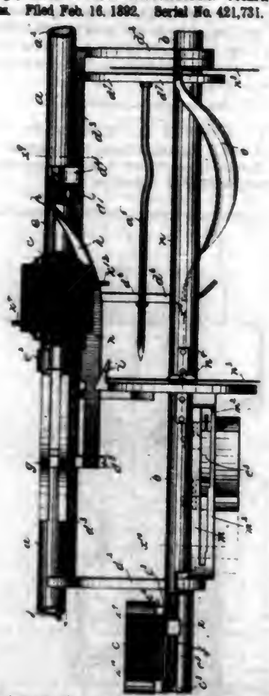
Claim.—1. In a hot-water furnace, the combination of a series of superposed sections, each provided with an opening for the products of combustion, an internal water-space D, having a vertical partition C, a projection G, having a horizontal partition F, joining onto the partition C, the main passages N, R, and K for causing the water to circulate around the said water-space, and a small hole through the partition F, permitting a small quantity of water to pass direct from section to section, substantially as and for the purpose set forth.

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2. In a hot-water furnace, sections B, having the projections G, vertical partition C, joined to the horizontal ones F, having the small openings M, and which form two apertures R and Q, substantially as described, and for the purposes set forth.

475,879. CASH-CARRIER APPARATUS. JOSEPH C. MARTIN, Florence, Mass. Filed Feb. 16, 1892. Serial No. 421,731. (No model.)



Claim.—1. A conveying apparatus comprising a main track composed of a tube having a continuous longitudinal guide-slot, combined with a propelling-cord contained within the said tube and supported and guided by the unslotted portion thereof, and carriers having laterally-grooved projections entering the slot of the tube, the edges of which engage with the grooves of said projections, and a cord-gripping clutch projecting from the carrier through the slit into the tube and co-operating with the propelling-cord therein, substantially as described.

2. The combination of a main track composed of a tube having a continuous longitudinal guide-slot with a propelling-cord contained within the said tube and supported and guided by the unslotted portion thereof, and carriers having grooved projections entering the slot of the tube, the edges of which engage with the grooves of said projections, and a cord-gripping clutch projecting from the carrier through the slit into the tube, and movable track sections or switches and guides co-operating with the carriers moving thereon, whereby the said carriers after passing from the main track onto the switch-section may be moved with the latter out of line with the guide-slot of the main track beyond the switch-section, substantially as described.

3. The combination of a main track composed of a tube having a continuous longitudinal guide-slot with carriers having grooved projections entering the slot of the tube, the edges of which engage with the grooves of said projections, and movable track sections or switches and guides co-operating with the carriers moving thereon, whereby the said carriers after passing from the main track onto the switch-section may be moved with the latter out of line with the guide-slot of the main track beyond the switch-section, substantially as described.

4. The combination of a main track composed of a tube having a continuous longitudinal guide-slot, with a propelling-cord contained within the said tube and supported and guided by the unslotted portion thereof, and carriers having grooved projections entering the slot of the tube, the edges of which engage with the grooves of said projections, and a cord-gripping clutch projecting from the carrier through the slit into the tube, and movable track sections or switches and guides co-operating with the carriers moving thereon, whereby the said carriers passing from the main track onto the switch-section may be moved with the latter out of line with the guide-slot of the main track beyond the switch-section, and a clutch-operating device for ungripping the cord when the carrier is removed from the main track, substantially as described.

5. The combination of a main track and carriers supported and guided thereon with a switch-track having a pivotal movement on an axis parallel with that of the main track and a guide co-operating with the carrier on the switch-track to produce pivotal movement thereof, substantially as and for the purpose described.

6. The combination of a main track and carriers supported and guided thereon with a switch-track having a pivotal movement on the axis parallel with that of the main track and a guide co-operating with the carrier on the switch-track to produce pivotal movement thereof, and a cam or guide connected with said switch-track and operated by carriers approaching the same to place the said switch-track in line with the main track, substantially as described.

7. The main track composed of a tube having a continuous guide-slit, combined with a pivoted switch-section provided with two guide-slits and a guide co-operating with carriers moving on said switch-section, whereby the carrier engaged with a guide-slit of the switch-track out of line with that of the main track is rotated into line with the guide-slit of the main track, substantially as described.

8. The main track composed of a tube having a continuous guide-slit, combined with a propelling-cord contained within the said tube and supported and guided by the unslotted portion thereof, and a pivoted switch-section provided with two guide-slits, a stationary guide whereby a carrier is introduced into engagement with one of said guide-slits, and a clutch-closing device in said guide, and a guide co-operating with carrier moving on said switch-section, whereby the carrier engaged with a guide-slit of the switch-track out of line with that of the main track is rotated into line with the guide-slit of the main track, substantially as described.

9. The main track composed of a tube having a continuous guide-slit, combined with a pivoted switch-section provided with two guide-slits and lock for fastening the said switch-section with one of its guide-slits in line with that of the main track, a stationary guide whereby a carrier is introduced into engagement with the other of said guide-slits, and a guide by which the carrier and track-section are moved to bring the guide-slit into which the carrier is introduced into line with that of the main track, and means operated by the carrier for unlocking the track-section to permit the said movement to take place, substantially as described.

10. The main track composed of a tube having a continuous guide-slot, combined with a propelling-cord contained within the said tube and supported and guided by the unslotted portion thereof, and a pivoted switch-section provided with two guide-slits, and a lock for fastening the said switch-section with one of its guide-slits in line with that of the main track, a stationary guide whereby a carrier is introduced into engagement with the other of said guide-slits, and a clutch-closing device in said guide, and a guide by which the carrier and track-section are moved to bring the guide-slit into which the carrier is introduced into line with that of the main track, and means operated by the carrier for unlocking the track-section to permit the said movement to take place, substantially as described.

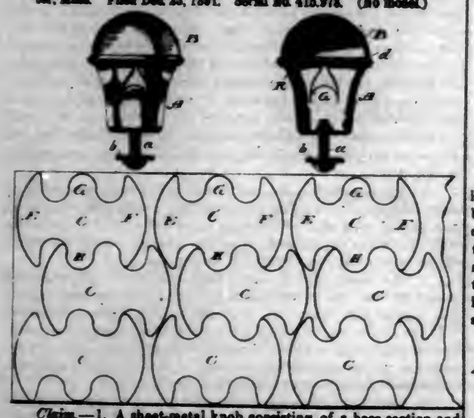
11. A carrier provided with a clutch composed of a stationary jaw and movable jaw and guide therefor, and a cam for moving said jaw toward the fixed jaw, and cam-actuators one of which projects from the carrier when the cam is in one position with the grip closed and the other of which projects when the cam is in its other position with the grip open, substantially as described.

12. The combination of the fixed jaw with a movable jaw and its actuating-cam, and the lever having one arm connected with said cam and its other arm with operating rods or projections extending from

opposite sides of the carrier alternately, substantially as and for the purpose described.

15. In a conveying apparatus, a main track provided with a continuous guide-slot and a carrier adapted to positively engage the same, in combination with a correspondingly-slotted oscillatory switch-section interposed between adjoining portions of said track, with its guide-slot normally in line with and forming a continuation of the main-track slot, and a stationary guide engaged by the carrier at the time it is on the switch-section for moving said section in a direction to throw its guide-slot out of line with that of the main track, substantially as and for the purposes hereinbefore set forth.

475,880. SHEET-METAL KNOB. AMBROSE T. MATTHEWS, Worcester, Mass. Filed Dec. 23, 1891. Serial No. 415,973. (No model.)



Claim.—1. A sheet-metal knob consisting of a base-section and a cap, said base-section formed from a blank having leaves and partial leaves or projections formed between the whole leaves, substantially as described.

2. A sheet-metal knob consisting of a base-section and a cap, said base-section formed from a blank having two leaves convex on their ends and projections or partial leaves formed between each of said whole leaves, substantially as described.

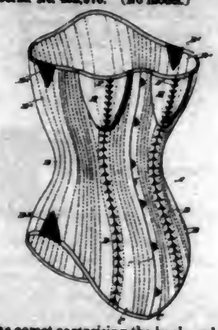
475,881. WOOD-CUTTING MACHINE. WILLIAM MERRILL, East Saginaw, Mich. Filed Sept. 30, 1889. Serial No. 325,567. (No model.)



Claim.—1. The combination, in a wood-cutting machine, of the frame carrying a wheel provided on its periphery with knives for severing the material into lengths and provided with outwardly and upwardly extending side pieces *d* and with the inclined bed *f* between the side pieces, the shearing-bar secured to the frame at the lower end of the bed *f* and in proximity to the said knives with the pressure-bars *e*, arranged in series side by side above the said bed *f* and pivotally supported at their outer ends by the said side pieces and having their inner and lower ends reaching over said shearing-bar, substantially as set forth.

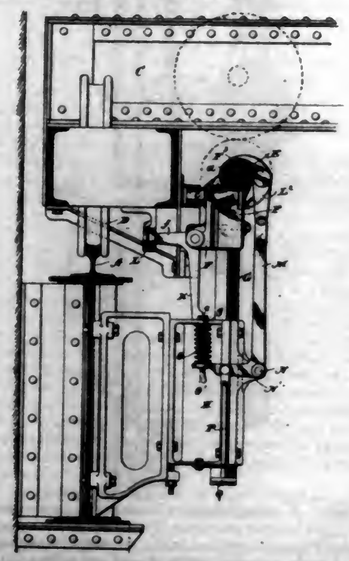
2. In a machine for cutting wood, the combination, with the frame having a supporting-bed and carrying feeding devices and an upper and a lower series of splitting-disks, each series of disks being provided on their peripheries with cutting-edges lying coincident with one side and with the flat sides of one series of disks overlapping the flat sides of the opposing series, and a shearing-bar at the end of the said supporting-bed, of a wheel mounted upon the said frame and carrying knives on its periphery having cutting-edges lying substantially parallel with its axis and passing in proximity to the said shearing-bar and provided on its periphery in front of said knives with cavities, substantially as described, beginning at the heel of one knife and increasing in depth to the radial plane of the edge of the next succeeding knife, substantially as and for the purpose set forth.

475,882. CORSET. NANCY E. MILES, Indianapolis, Ind. Filed Feb. 26, 1892. Serial No. 422,876. (No model.)



Claim.—The corset comprising the back-and-sides section, having its edges extending to the front of the body in a vertical line with the bust portions, and two front sections detachably connected with each other and meeting said back-and-sides section in said vertical line with the bust portions, non-elastic lacings connecting the meeting edges of said front and back-and-sides section from a point immediately below the bust to the lower edge of the corset, and elastic lacings connecting the bust portions from said point to the upper edge of the corset, substantially as specified.

475,888. OVERHEAD-TRAVELING CRANE. THOMAS R. MORGAN, Sr., and JOHN R. MORGAN, Alliance, Ohio, assignors of one-fourth to Thomas R. Morgan, Jr., and William H. Morgan, same place. Filed July 6, 1891. Serial No. 398,542. (No model.)



Claim.—1. The combination of a vertically-movable pillar, a half-bearing secured thereto, a cap or half-bearing pivoted to the half-bearing on the pillar, and a device carried by the pillar-support and engaging a device secured to the cap, whereby when the pillar and half-bearing are being lowered the cap is turned on its axis, substantially as set forth.

2. The combination, with a bracket or support, a pillar adapted to move longitudinally thereon, a half-bearing carried by the pillar, a cap or half-bearing pivoted to the half-bearing on the pillar, and a link rigidly connected with the cap, so as to move the same, of a part carried by the bracket or support and connected to said link, whereby when the pillar and half-bearing are being lowered the cap is turned on its axis, substantially as set forth.

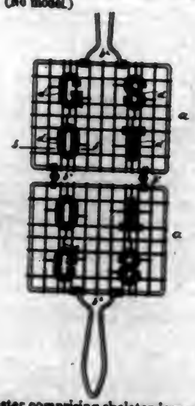
3. The combination, with a bracket or support, an angular pillar mounted and adapted to move vertically thereon, a half-bearing carried by said pillar, a cap or cover pivoted to the half-bearing, and a link or arm rigidly connected with the cap or cover, of a bell-crank lever pivoted to a stationary support, one arm of said lever being connected loosely with the link and adapted when the cap is closed over the half-box to rest in a line with said link, a spring bearing against the short arm of said lever, and means for sustaining the pressure of the spring when the pillar and half-bearing are in their elevated positions, substantially as set forth.

4. In an overhead-traveling crane, the combination, with a bridge, a shaft for transmitting motion to the bridge and moving parts thereon, a series of vertically-movable pillars, each carrying a half-bearing for the support of the shaft, and a cap or cover for each half-bearing, and means carried by the bridge for depressing and elevating the bearings, of a link rigidly connected to each cap and a lever carried by each pillar support or bracket and connected to its respective link, whereby as the pillars and half-bearings are lowered their caps are turned outwardly and away from the shaft, substantially as set forth.

5. The combination, with a pillar and half-bearing thereon and a step projecting from one side thereof, a cap or cover pivoted to the half-bearing, and a link rigidly connected to said cap or cover, of a bell-crank lever pivoted to a rigid support, the long arm of said lever being connected to the link carried by the cap, a spring bearing against the short arm thereof, and a rod connected to the short arm and bearing against the step, substantially as and for the purpose set forth.

6. The combination, with a vertically-movable pillar, a half-bearing thereon, a step projecting from one side thereof, a cap or cover pivoted to the half-bearing, and a link rigidly connected to said cap or cover, of a bell-crank lever pivoted to a rigid support and connected at the free end of its upright arm to the link, a spring bearing against the horizontal arm of said bell-crank, and a rod pivoted to said horizontal arm and adapted to be engaged and supported by said step when the parts are in their normal or elevated positions, substantially as set forth.

475,884. TOASTER. THOMAS J. MURRAY, New York, assignor of one-half to Robert O. Israel, Brooklyn, N. Y. Filed Dec. 26, 1891. Serial No. 416,160. (No model.)



Claim.—1. A toaster comprising skeleton jaws, one of the jaws of which is provided with raised teeth in the form of letters, characters, or symbols, substantially as set forth.

2. A toaster comprising skeleton jaws, both of the jaws being provided with raised teeth in the form of letters, characters, or symbols, substantially as set forth.

3. A toaster comprising skeleton jaws provided with letters, characters, or symbols, having flanges or ears bent so as to be below the level of the face of said letters, and means for applying said letters, characters, or symbols to said jaws, substantially as described.

475,885. DEVICE FOR FILLING COAL INTO REGULATION STOVES. FRIEDRICH C. NIEMZ, Duesseldorf, Germany. Filed Jan. 30, 1892. Serial No. 419,718. (No model.) Patented in Germany Nov. 5, 1890, No. 59,981.

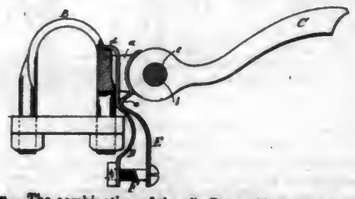


Claim.—In a device for filling coal into regulation stoves, the combination of the coale knee B, the pail A, the hinge *a*, and the closing device, as and for the purpose specified.

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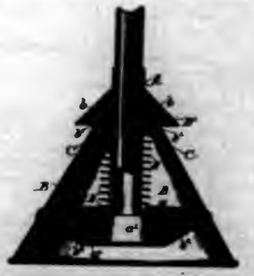


475,886. THILL-COUPLING. HENRY S. HUSHAKER and LEWIS D. BLANCHARD, Canton, Ohio. Filed Nov. 30, 1891. Serial No. 413,463. (No model.)



Claim.—The combination of the clip B, provided with the ears *a*, the draft-bolt *b*, the thill-iron C, the detachable fulcrum-bar D, provided with the bent or curved portion *d* and bent or curved above the screw F and below the sliding extension *e*, the spring E, provided with the extension *e*, and the screw-threaded bolt F, substantially as and for the purpose specified.

475,887. CLOTHES-POUNDER. MILLARD M. OLIN, Lanark, Ill. Filed Sept. 7, 1891. Serial No. 404,986. (No model.)



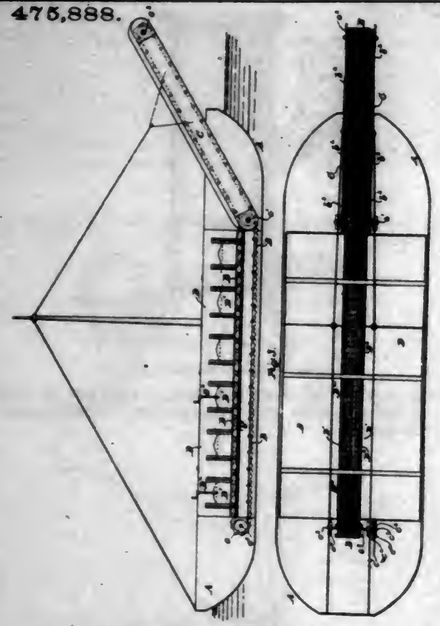
Claim.—A clothes-pounder having the central tube A, the perforated shell B, the partition *b'*, valve C, spring D, and inverted-pan-shaped extension *a'*, substantially as described.

475,888. HOISTING APPARATUS. MICHEL J. PAUL, London, England. Filed Dec. 31, 1890. Serial No. 376,395. (No model.) Patented in England Feb. 10, 1890, No. 2,140.

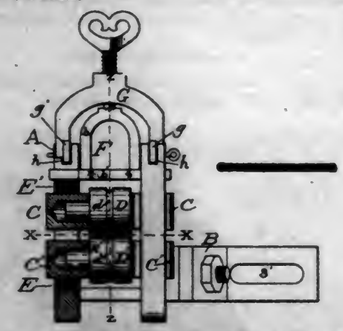
Claim.—1. For elevating coal and similar cargo and discharging the same from a barge or lighter, a traveling bed or endless chain B, formed of plates or links *b*, jointed together by means of rods *b'*, the trailing ends of the plates being of greater depth than the leading ends, so as to compensate for the inclination of the elevator and to overcome the tendency of the cargo to fall back while ascending the incline.

2. The combination, with a vessel A, of the two rows of bankers D, one along each side of the vessel and opening on a passage along the center line of the vessel, and a track b^3 in the vessel, of the endless traveling bed B, having rollers which run on said track, the drums on which said bed is mounted, the structure or arm C, pivoted at its lower end to the vessel and carrying one portion of the continuous traveling bed, and means for raising, lowering, and supporting the elevated end of the structure C, substantially as set forth.

475,888.



475,889. MACHINE FOR MAKING HOLLOW WIRE CABLE. OTHNIEL PEARSON, Hornellsville, N. Y. Filed Sept. 12, 1891. Serial No. 405,456. (No model.)



Brief.—The twisting-head carries a mandrel *k*, which projects through the compressing-plate I and between the grooved adjustable rollers D D', which press the cable upon the mandrel, thus forming a hollow cable with smooth exterior and interior surfaces.

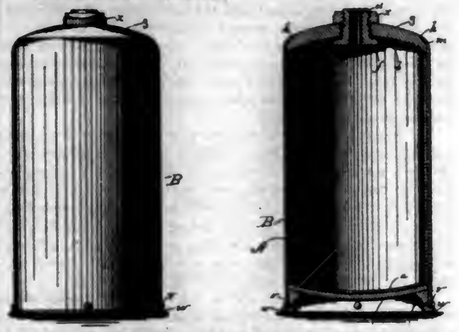
Claim.—1. In a hollow-wire-cable machine, the combination, with the revolving twister-head and its projecting core, upon which the tubular twist is formed, of the adjustable grooved rollers adapted to receive the completed cable and the core within the groove between the rollers, constructed substantially as and for the purpose specified.

2. The combination, with the frame carrying the adjustable rollers having the circumferential grooves, of the revolving twister-head provided with the core or mandrel upon which the completed cable is formed, said core projecting within the groove between the rollers, substantially as described.

3. The combination of the twister-head adapted to revolve and its core forming part of said twister-head with the frame A, having grooved rollers mounted therein designed to receive the tubular cable and the core, and the perforated concentrating or guide plate I, arranged substantially as and for the purpose described.

4. In a hollow-wire-cable machine, the combination, with the revolving twister-head and its core, upon which the hollow twisted cable is formed, of the frame A, carrying the grooved adjustably-arranged rollers, the perforated concentrating guide-plate I, and the adjustable arm B, constructed substantially as and for the purpose described.

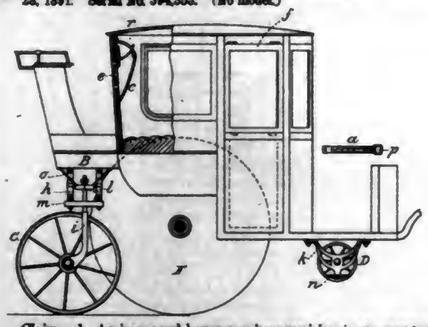
475,890. SODA-FOUNTAIN. JONATHAN RAMSEY, Boston, Mass., assignor of one-third to Horace D. Cove, same place. Filed June 1, 1891. Serial No. 394,656. (No model.)



Claim.—1. A soda-fountain comprising an inner seamless metallic cylinder having an integral convex bottom and head, a convex block covering said head, a metallic casing inclosing said cylinder and provided with an inturned flange at the top overlapping said block, and a bottom secured to said metallic casing and supporting the bottom of said cylinder, substantially as described.

2. A soda-fountain comprising an inner seamless metallic cylinder having an integral convex bottom and head, a convex block covering said head and provided with a peripheral recess, a metallic casing inclosing said cylinder and provided at its upper end with an inturned flange extending into said recess and overlapping the outer portion of said convex block, and a bottom secured to said metallic casing and supporting the bottom of said cylinder, substantially as described.

475,891. VEHICLE. CHARLES A. READE, Chicago, Ill. Filed May 23, 1891. Serial No. 394,353. (No model.)



Claim.—1. An improved hansom-cab comprising in its construction side running wheels F F, an elevated driver's seat located at a considerable distance in rear of the body of the hansom, and wheel C, located in rear of the body of the hansom and centrally of its width beneath said driver's seat, the said wheel being secured to the hansom by a forked, curved, shouldered turning-shaft *i*, the latter being held in position by supports *m l*, which are located between a pair of springs *h h*, whereby the vehicle is prevented from tilting backward and the horse motion to the same is overcome, substantially as described.

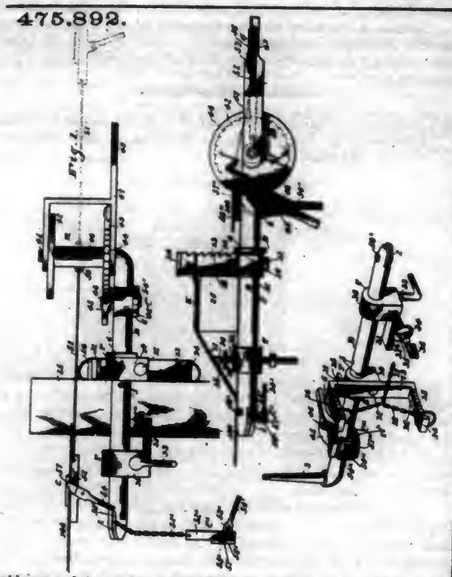
2. An improved hansom-cab comprising in its construction side running wheels F F, an elevated driver's seat located at a considerable distance in rear of the body of the hansom, wheel C, located in rear of the body of the hansom and centrally of its width beneath said driver's seat, and extended side wall portions *f f*, the upper portions of which are adapted to be swung laterally, substantially as and for the purpose described.

3. In a hansom-cab having two side running wheels, the combination of a rear wheel C, located centrally of the width of the hansom, and small wheels D D, secured between hangers *k k'*, one of which hangers extends outwardly laterally to form a step, substantially as described.

475,892. WIRE-STRETCHER. HERMAN J. ROHR, Alexis, Ill. Filed Jan. 21, 1892. Serial No. 418,738. (No model.)

Claim.—1. In a wire-stretcher, the combination of the body having a right-angularly-disposed and tapered journal at one end, means for removably securing said body to a fence-post, a reel journaled on

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said tapered journal at one end of the body and provided with a ratchet-head, a yoke embracing said reel and having its ends pivotally mounted on the journal outside of the heads of the reel and having a handle projecting radially therefrom, and a spring-actuated pawl carried by the yoke and engaging the ratchet-head of the reel, substantially as set forth.

2. In a wire-stretcher, the combination, with a cylindrical body having a collar thereon and a number of holes adjacent to the collar, one end of the body being notched, and a windlass journaled on and at right angles to the other end of the body, of a post-brace comprising a block mounted on the body, a set-screw passing therethrough into one of said holes, a yoke secured to the block with one edge serrated and the other edge notched, and a chain detachably engaging the notch in the body, one end being forked and having its terminal links embracing the sides of the yoke and resting in certain of the notches therein, substantially as set forth.

3. In a wire-stretcher, the combination, with a cylindrical body having a number of holes therein, one end of the body being notched, and a windlass connected with the other end of the body, of a post-brace comprising a block mounted loosely on the body, a set-screw passing therethrough into one of said holes, a yoke secured to the block, and a chain detachably engaging the notch in the body, one end being forked and having its terminal links respectively embracing the sides of the yoke, substantially as described.

4. In a wire-stretcher, the combination, with a body and a windlass connected with one end thereof, of a chain adapted to be led around a post, connections between the ends of the chain and one end and the center of the body, and a chain-tightener consisting of a block mounted on the body, a screw passing through the block and having a crank-handle on its front end, a detachable sleeve on the screw having a hook engaging one of the links of said chain, and means for holding this sleeve on the screw, substantially as described.

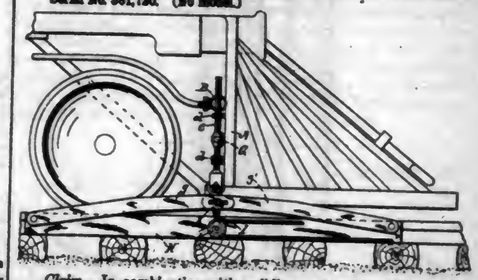
5. In a wire-stretcher, the combination, with a body and a windlass connected with one end thereof, of a chain adapted to be led around the post, connections between the ends of the chain and one end and the center of the body, means for tightening the chain, and a post-claw consisting of a flat body having at each end an ear with a perforation of a size to slide over the chain and at each side of said ear an inturned prong adapted to engage the post, substantially as described.

6. In a wire-stretcher, the combination, with a body and a windlass connected with one end thereof, of a post-brace adjustably mounted on the body, a chain leading therefrom and detachably seated in a notch in one end of the body, and a chain-tightener consisting of a block mounted on the body between its notched end and said brace, a screw taking through said block and having a crank-handle at its front end, and a hook on the rear end of the screw adapted to engage the chain, as and for the purpose set forth.

7. In a wire-stretcher, the combination, with a body and a windlass connected with one end thereof, of a chain connected with the other end of the body, a post-brace adjustably mounted on the body between its ends, the other end of the chain being connected with this brace, a chain-tightener, substantially as described, mounted on the body between that end thereof to which the chain is connected and said brace, and a post-claw longitudinally adjustable on the chain and having prongs adapted to engage the post, as and for the purpose set forth.

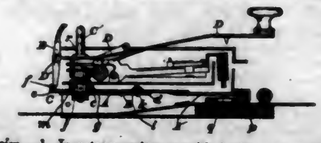
8. In a wire-stretcher, the combination, with a cylindrical body having a slot in one end and a windlass connected with the other end thereof, of a post-brace adjustable longitudinally and axially on said body, a chain leading from said brace and adapted to be detachably engaged with the notch in the body, and a chain-tightener between the notch and the post-brace and also longitudinally and axially mounted on said body, the tightener having a finger, all substantially as and for the purpose hereinbefore set forth.

475,898. DEVICE FOR AUTOMATICALLY OPERATING POWER CAR-BRAKES. BENTON C. ROWELL, Boston, Mass. Filed Feb. 16, 1891. Serial No. 381,720. (No model.)



Claim.—In combination with a sliding rod supported upon the frame of a locomotive or car truck for operating the valve of a power car-brake, a pair of levers placed parallel to and beside the rail, each pivoted at its outer end to a fixed support and respectively provided at their inner or contiguous ends one with a slot and the other with an engaging pin, and a crank-lever beneath the contiguous ends adapted to raise them to a position to act upon the said sliding rod and thereby apply the brakes when the switch or signal target is set to indicate "danger," substantially as described.

475,894. TYPE-WRITING MACHINE. FREDERICK SANDERSON, Chicago, Ill. Filed Mar. 2, 1891. Serial No. 383,532. (No model.)



Claim.—1. In a type-writer provided with a pivotal post, as C, a plate B, rigidly secured thereto, a type-plate movably secured to the post and to the plate, the outer portion of which is provided with rows of printing characters, and means for moving the type-plate and operating the characters, substantially as described.

2. In a type-writer provided with a pivotal post, as C, a plate, as B, rigidly secured to the lower end of the post and provided with a stop, as *k*, a slotted type-plate movably secured to the plate on the post, the outer portion of which is provided with rows of printing characters, one of the slots of the movable plate fitting upon the post and the other one upon the stop, and means for moving the plate and operating the characters, substantially as described.

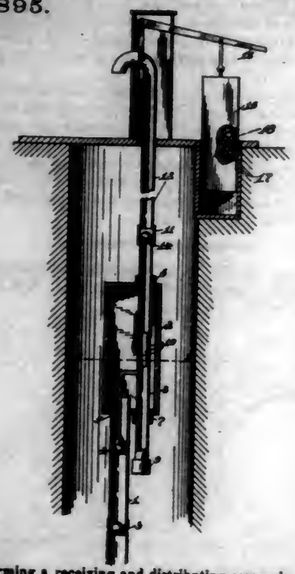
3. In a type-writer provided with a pivotal post, as C, a type-plate movably secured thereto, the outer portion of which is provided with printing characters and the rear end is provided with a stop, a lever pivotally connected with the post, the lower end of which is adapted to engage the stop on the plate, and means for moving the plate and operating the characters, substantially as described.

4. In a type-writer provided with a pivotal post, as C, a type-plate movably secured thereto, the outer portion of which is provided with printing characters and the rear end is bent upwardly to form a stop, a handle pivotally connected to the post, the outer end of which is adapted to engage with the type-plate and the rear end is provided with a pivot, and a lever upon the pivot, the lower end of which is adapted to engage with the upturned end of the plate, substantially as described.

475,895. PUMP. ERNELEEF J. SCHILLER, Grant, Nebr. Filed Feb. 25, 1891. Serial No. 382,798. (No model.)

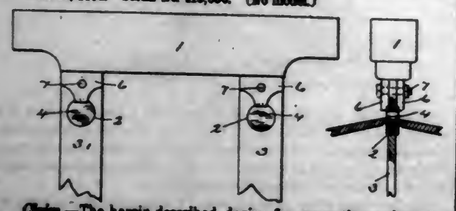
Claim.—In a pump, the combination of a closed suspended box

475,895.



or casing forming a receiving and distributing reservoir, a pump-cylinder connected with the lower end of said reservoir and projecting to the bottom of the well, said cylinder having a check-valve, a vertical reciprocating tube extending entirely through said box and packing-boxes in the same in a parallel plane to said pump cylinder and provided with a closed lower end working below the box, a series of lateral water-inlets opening into said box or casing, and an upwardly-opening valve near its upper end, a valved plunger working in said cylinder and connected with said tube within the box or casing and through which the water gently passes into the tube elevating the same and reciprocated thereby, a discharge-pipe connected with said tube, and means for reciprocating the tube, substantially as set forth.

475,896. CABLE-GRIP. JULIUS SCHERRA, Pittsburg, Pa. Filed Dec. 14, 1891. Serial No. 415,096. (No model.)



Claim.—The herein-described device for preventing or lessening the wear on cable-grip frames, consisting of disks of hardened steel inserted vertically in openings in the frame at the points of contact with the slot-irons, and suitable means for holding said pieces in position.

475,897. FIREWORKS. CARL SCHMIDT, Berlin, Germany, assignor to Gustav Gittenbowski, same place. Filed Nov. 30, 1891. Serial No. 413,579. (No specimens.)

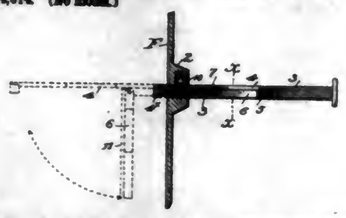
Claim.—The herein-described composition of matter for making star fireworks, consisting of steel chips, charcoal, nitrate of lead, shellac, and spirits, in or about in the proportions specified.

475,898. RHEOSTAT. FREDERICK W. A. SCHNEIDER, Toronto, Canada. Filed July 30, 1891. Serial No. 400,118. (No model.)



Claim.—A resistance medium composed of saponified fat, contained in a suitable casing interposed in an electric circuit and fitted with terminals to which the circuit-wires are connected, substantially as specified.

475,899. FRAUD-PREVENTIVE DEVICE FOR SLOT-MACHINES. JOHN SCHOFIELD, New York, N. Y. Filed Dec. 10, 1891. Serial No. 414,614. (No model.)



Claim.—1. A fraud-preventive for a coin-controlled apparatus, comprising a drawer having an opening 4 in its main part and a hinged leaf provided with an opening of smaller size arranged below the opening 4 and forming a ledge to receive the coin, said leaf being arranged to fall by gravity when the drawer is pushed within the casing of the apparatus, and means for limiting the outward movement of the drawer, substantially as set forth.

2. In combination, the casing having an opening, the drawer having an opening 4, and a hinged leaf with an opening 6 in line with the said opening 4, the said opening 6 being smaller and providing a ledge to support the coin of proper size with its upper surface flush with the upper surface of the drawer and the catch to engage the edge of the opening 4 when a thin coin is used, substantially as set forth.

3. In combination, the casing having an opening, a coin-drawer adapted thereto, having a socket to receive the coin, formed by an opening 4, extending partially through the drawer from its upper side and continued through to the other side by an opening of smaller diameter, forming a shoulder 7, which is a part of and movable with the drawer, substantially as described.

475,900. STEAM-ACTUATED VALVE. FREDERIK M. SCHORR, Buffalo, N. Y. Filed Aug. 24, 1889. Serial No. 321,871. (No model.)



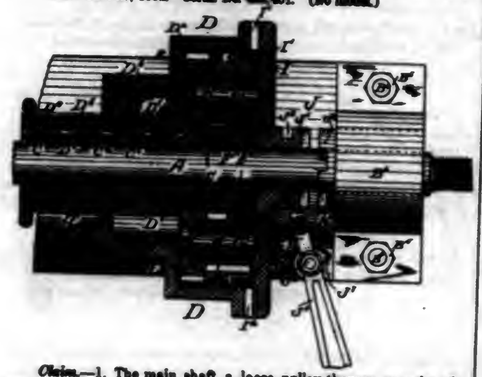
Claim.—1. In a steam-engine, the combination of a valve-seat provided with blind ports 8^a 8^b 8^c, an engine-valve nicely fitting the valve-seat, having exhaust and distributing ports for conducting steam to and from the engine, segmental wings rigidly connected with the engine valve-stem and provided with portions 21 22, having ports 19 and 20, the segmental wings fitting the valve-chamber 9^a 9^c, an actuating-valve mounted so as to turn on the valve-stem between the shoulders 21 22, and ports for alternately admitting steam from the interior of the cylinder and exhausting it, and thereby operating the main or engine valve, substantially as described.

2. In a steam-engine, the combination, with the engine-valve, of a valve for giving it its proper movements, consisting of two segmental wings fitted steam-tight within a valve-chamber and provided with ports 19 20, an actuating-valve mounted so as to have an oscillating movement on the valve-stem between the shoulders 21 22, an exhaust-port 23, and ports for alternately admitting steam to opposite sides of the segmental wings, substantially as above described, and for the purposes set forth.

3. In a steam-engine, the cylinder, the engine, engine-valve, and ports 6 for conducting steam to alternate sides of the steam-engine piston and the exhaust-port, in combination with another valve for operating the engine-valve, consisting of the segmental wings provided with two ports, and an actuating-valve mounted on the main valve-stem, steam-ports for conducting steam from the interior of the cylinder, and an exhaust-port 23, for the purposes described.

4. In a steam-engine, the combination, with the engine, of a pressure-regulating valve fitted within a valve-case and provided with openings to admit steam to the engine, a spring for keeping the valve up to its normal position when there is no pressure of steam on the top of the valve, and pipes having openings which communicate with the chamber *s* below the valve-piston 38 and with the interior of the cylinder at the point of cut-off, whereby when the engine-piston passes these openings or ports all pressures are balanced, so that the spring is free to act and close the valve, thereby cutting off the steam, substantially as described.

475,901. GEARING. HERBERT L. SHEPARD, Cincinnati, Ohio. Filed Feb. 23, 1892. Serial No. 422,401. (No model.)



Claim.—1. The main shaft, a loose pulley thereon carrying the pinion C, concentric with the shaft A, and the discal piece or plate I, compound pinion E G, pivotally attached to said plate I, and the pinion F, fixed to shaft A and meshing with pinion G, and the pinion C, meshing with the pinion E, the discal piece being movable along shaft A and provided with means for engaging pulley D when moved to it and also with means for engaging a stationary clutch-piece when moved toward the latter and away from the pulley, substantially as and for the purposes specified.

2. A main shaft, an operating-pulley thereon, and pinion C, fixed to the pulley and concentric on said shaft, discal piece I and planet-gear connected thereto, and shaft-gear F, the latter and pinion C engaging the planet-gear, substantially as described, clutch-teeth I^2 on pulley D and clutch-teeth I' on discal plate I for mutual engagement, the discal piece sliding on the shaft A, clutch-teeth I' on the piece J', and stationary clutch-teeth J^2 for enabling the discal piece when unclutched from the pulley to engage the stationary clutch-piece and remain stationary while the pulley revolves, substantially as and for the purposes specified.

3. A hollow pulley and pinion C therein and fixed to the pulley, shaft A, on which the pulley D freely revolves, pinion F, fixed on the shaft, discal piece I, and planet-gear pinions G E G E, respectively engaging the pinions C F and carried by said discal piece I, the periphery of the pulley being extended around the planet-gear and the piece I and said pulley being provided with the complementary parts of the clutch, the discal piece having, also, a clutch portion, the complementary part of such clutch being attached to a stationary part of the device, substantially as and for the purposes specified.

4. A hollow pulley and pinion C therein and fixed to the pulley, shaft A, on which the pulley D freely revolves, pinion F, fixed on the shaft, discal piece I, and planet-gear pinions G E G E, respectively engaging the pinions C F and carried by said discal piece I, the periphery of the pulley being extended around the planet-gear and the piece I and said pulley being provided with the complementary parts of a clutch, the discal piece having, also, a clutch portion, and the journal-bearing B^3 and the bushing B^2, and the complementary portion of the last-named clutch being fixed to the said bushing, substantially as and for the purposes specified.

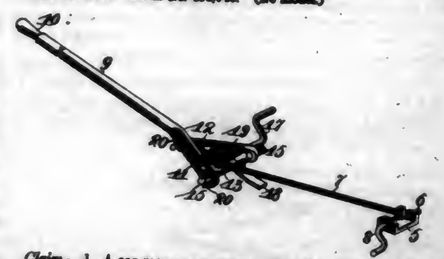
5. A hollow pulley and pinion C therein and fixed to the pulley, shaft A, on which the pulley D freely revolves, pinion F, fixed on the shaft, discal piece I, and planet-gear pinions G E G E, respectively engaging the pinions C F and carried by said discal piece I, the periphery of the pulley being extended around the planet-gear, and the clutch-teeth I^2, located on its peripheral edge, the discal piece I carrying the clutch-teeth I' for engagement with the clutch-teeth I^2 and also having clutch-teeth J' for engagement with the stationary clutch-teeth J^2, substantially as and for the purposes specified.

6. The shaft A and the sleeve C', attached to pinion C, concentric with and freely turning on said shaft, and the hollow pulley fixed to said sleeve, and pinion F, concentric with and fixed to said shaft, and piece I, revolving freely on shaft A and carrying the planet-gear G E, respectively engaging the pinions C and F, a clutch adapted for engaging the pulley and the piece I to be engaged, and a clutch portion on the latter piece, and a complementary clutch portion on a fixed piece of the supporting-frame for enabling the discal piece I when disengaged from the pulley to be rendered stationary, substantially as and for the purposes specified.

7. A shaft fitted for rotation, a pulley and pinion constructed for united rotation on said shaft, a pinion fixed to said shaft, a piece separate from said pulley, constructed for rotation on said shaft, and planet-gear pinions E and G, carried by said piece and respectively engaging the pulley-pinion and shaft-pinion, and one clutch for enabling the pulley to be engaged with the piece I and another clutch for enabling the piece I when disengaged from the pulley to be fixed in a stationary position, substantially as and for the purposes specified.

8. A shaft fitted for rotation, a pulley and pinion constructed for united rotation on said shaft, a pinion fixed to said shaft, a piece separate from said pulley, constructed for rotation on said shaft, and planet-gear pinions E and G, carried by said piece and respectively engaging the pulley-pinion and shaft-pinion, and one clutch for enabling the pulley to be engaged with the piece I and another clutch for enabling the piece I when disengaged from the pulley to be fixed in a stationary position, the pinion C being of a length greater than pinion E and the pinion G being of greater length than the pinion F, substantially as and for the purposes specified.

475,902. CAR-MOVER. GEORGE W. M. SIMMS, De Soto, Mo. Filed Jan. 22, 1892. Serial No. 418,946. (No model.)



Claim.—1. A car-mover comprising a grip, lips, such as 14, formed on the same and provided with screw-threaded openings, a hand-screw, such as 17, adapted to be screwed into one of said openings for adjusting the said grip upon the rail, and rounded projections, such as 15, projecting on each side of the said grip, whereby power may be applied to one side of the said grip, substantially as described.

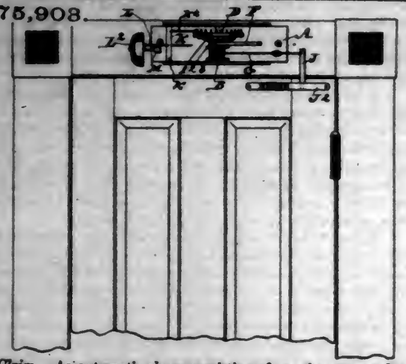
2. A car-mover consisting of a grip, such as 13, rounded projections, such as 15, formed on the same, screw-threaded openings formed in the said grip, a hand-screw, such as 17, adapted to be screwed into one of said openings, a lever, such as 9, provided with a suitable number of openings, one of which openings is adapted to receive one of the rounded projections 15, formed on the said grip, a clamp, such as 5, adapted to be attached to the truck-frame of the car, and a connecting-rod, such as 7, one end of which is attached to the said clamp and the opposite end removably attached to the said lever above the point where the said grip is attached to the said lever, substantially as described.

3. A car-mover consisting of a clamp, such as 5, provided with a hand-screw 8 for adjusting the said clamp to the truck-frame of the car, a rounded projection, such as 6, formed on the said car, connecting-rods, such as 7, one end of which is attached to the said projection, a lever, such as 9, provided with a suitable number of openings, such as 11, by means of which the opposite end of said rod 7 is attached to the said lever, a grip, such as 13, provided with rounded projections, such as 15, one of which is adapted to be received by one of said openings 11, lips, such as 14, formed in said grip and provided with screw-threaded openings 16, a hand-screw, such as 17, adapted to be screwed into one of said openings, and a brace, such as 19, one end of which is attached to one of said rounded projections 15, formed on said grip and the opposite end of said brace movably attached to the said lever, substantially as set forth.

4. A car mover comprising a grip, lips formed on the same, each of which are of like dimensions, rounded projections projecting on each side of said grip, whereby power may be applied to either side of the grip, and means for adjusting the said grip upon the rail, preventing the same from slipping in one direction and allowing it to slide in an opposite direction when power is applied to one side of the same, substantially as described.

475,903. BURGLAR-ALARM AND DOOR-CLOSING DEVICE. GABRIEL F. SNIDER, Abingdon, Iowa. Filed May 5, 1891. Serial No. 392,008. (No model.)

475,908.



Claim.—An automatic alarm consisting of an arbor mounted on a base adapted to be fixed to a door-frame, a coiled spring and clock-work mechanism connected with said arbor and adapted to actuate a bell-striker, and a bell and striker mounted on the same base and said base fixed to a door-frame above the top of a door hinged to the door-frame, a wooden strip or bar fixed to the top portion of a door hinged to the door-frame and said bar provided with perforations to admit a pin, and a movable wooden pin connected with said arbor by means of a cord, all arranged and combined with a door-frame and door to operate in the manner set forth, for the purposes stated.

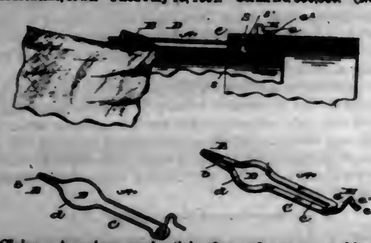
475,904. SPRING. JOSEPH H. SULLIVAN, Chicago, Ill., assignor to the William D. Gibson Company, same place. Filed Nov. 17, 1891. Serial No. 412,144. (No model.)



Claim.—1. A spring formed with spiral convolutions and having an end convolution provided with a loop, and its end provided with a spring-eye protruding through and returned at its extremity into and shielded by the loop, substantially as described.

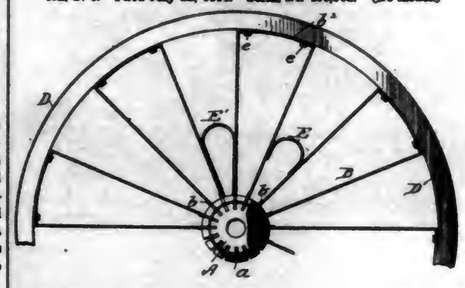
2. A helical wire spring A, having a loop *q* formed in each of its end convolutions and formed at each end into a spring-eye *p*, protruding through the loop, and having its extremity x^6 returned into and shielded by the loop, substantially as described.

475,905. SLEEVE AND CUFF HOLDER. LAWRENCE H. TAYLOR, Muscatine, Iowa. Filed July 13, 1891. Serial No. 399,389. (No model.)



Claim.—As an improved article of manufacture, a combined sleeve and cuff holder comprising a rearwardly-projecting arm B, provided with a V-shaped slot *b*, adapted to receive a portion of the sleeve, a forwardly-extending arm C, provided with a slot *c* of approximately the same breadth throughout its length and adapted to receive the sleeve-button shank and retain said button, whereby the wristband is held in its proper relation to the cuff, an enlarged portion D, connecting said arms and having an opening *d*, and a cuff-securer E, located at the outer end of the arm C and consisting of an outturned portion *e*, a downwardly and forwardly extending portion *e'*, and an extension e^2, approximately parallel with the plane of the arm C, said securer being adapted to retain the cuff against disengagement therefrom in either direction, substantially as and for the purpose set forth.

475,906. VEHICLE-WHEEL. WALDO W. VALENTINE, Washington, D. C. Filed July 22, 1891. Serial No. 400,302. (No model.)



Claim.—1. In a wheel, a hub composed of wood or other fibrous material and provided with elongated depressions about its circumference to form spoke-seats which have their bottoms closed, and spokes having their inner ends formed to correspond with the elongated spoke-seats and seated on the bottom thereof and secured therein, substantially as set forth.

2. In a wheel, the combination, with the hub having a series of elongated depressions about its circumference to form spoke-seats which extend lengthwise of the hub, of cross-heads fitted and held in the said elongated spoke-seats, and metal spokes secured to the said cross-heads, substantially as described.

3. In a wheel, spokes connected in pairs by an arch and having laterally-extended cross-heads at their inner ends and means for securing the same to the hub, substantially in the manner set forth.

4. In a wheel, the combination, with the rim and the hub, of spokes connected at their outer ends in pairs by an arch-piece, the radius of the arch being shorter than the radius of the inner periphery of the rim and adapted to tension the spokes radially, and means for securing the arch to the rim, substantially as set forth.

5. In a wheel, the combination of a wooden or other fibrous hub, straight metal spokes having their outer ends provided with rim-seats and their inner ends seated independently of each other on the hub and secured thereto, and a wooden rim having its inner face seated on the outer ends of the spokes and secured thereto and unpenetrated thereby, substantially as and for the purpose described.

6. In a wheel, the combination of a wooden or other fibrous hub, straight flat metal spokes set edgewise to the plane of the wheel and flexible in the direction of the circumference thereof and having their inner ends seated on and secured to the hub, a wooden rim having its inner face seated on the outer ends of the spokes and secured thereto, and a tension device to strain the spokes in the direction of their length, substantially as described, for the purpose specified.

7. In a wheel, straight flat metal spokes inflexible in the direction of their larger diameter arranged in radial lines and connected in pairs at their outer ends by an arch, substantially as and for the purpose set forth.

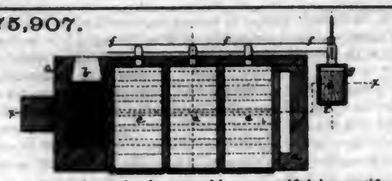
8. In a wheel having flat metal spokes flexible in the direction of their smaller diameter, spring braces or supports interposed between the spokes, and means for attaching same thereto, substantially as shown.

9. In a wheel, the combination, with the rim having seats *d* and *f*, of twin spokes having the arch b^2 fitted in the seat *d*, and the truss-brace F between a pair of twin spokes and fitted in the seat *f* and held to the rim by suitable fastenings, substantially as and for the purpose described.

475,907. PROCESS OF REFINING SILVER SULPHIDES. WILLIAM G. WARING, Silver City, N. Mex. Filed Oct. 8, 1890. Serial No. 367,690. (No model.)

Claim.—1. The herein-described process of separating the base metals from the silver contained in impure artificial argentiferous sulphides, which consists in roasting the said sulphides, mixing the sulphur dioxide evolved therefrom with steam and air, and forcing the said

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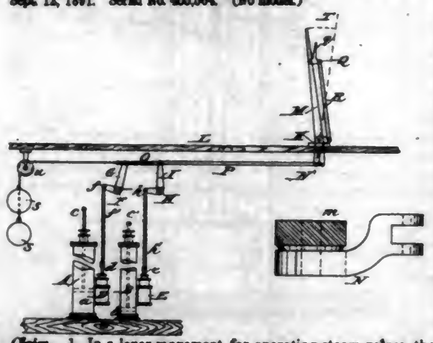


mixed gases through previously-roasted impure artificial argentiferous sulphides, substantially as described.

2. The herein-described process of separating the base metals from the silver contained in impure artificial argentiferous sulphides, consisting in roasting the said sulphides, mixing the sulphur dioxides evolved therefrom with steam and air, forcing said mixed gases or vapors through like previously-roasted material, and leaching said material with the condensed products obtained during the treatment, substantially as and for the purposes set forth.

3. The herein-described process of separating the base metals from the silver contained in impure artificial argentiferous sulphides, which consists in roasting the said sulphides, crushing the same, and forcing through the roasted and crushed sulphides the mixed gases formed of steam and air and the sulphide dioxide evolved from roasting like sulphides, substantially as described.

475,908. LEVER FOR STEAM-VALVES. ROBERT WEIR, Muskegon, Mich., assignor of one-half to Herman O. Lange, same place. Filed Sept. 12, 1891. Serial No. 405,564. (No model.)



Claim.—1. In a lever-movement for operating steam-valves, the combination, with two valves, of a lever and intermediate connections between the ends thereof and the valve-rod belonging to one valve, and an auxiliary handle pivoted to the first handle near the end thereof, together with suitable connections between said auxiliary handle and the valve-rod belonging to the other valve, substantially as described.

2. In a lever-movement for operating steam-valves, the combination, with two steam-valves, of a main lever, suitable connections between it and the valve-rod belonging to one valve, a lever pivoted to the main lever and having a handle in proximity to the handle of the main lever, a pivoted bell-crank, a connecting-rod between the auxiliary lever and said bell-crank, and suitable connections between the bell-crank and the valve-rod belonging to the other valve, substantially as described.

3. The combination, with two steam-valves, of a lever M and the bell-crank N, said lever and bell-crank being suitably pivoted, an auxiliary lever Q, having handle *q* and pivoted to lever M, a connecting-rod R between the lever Q and the bell-crank N, and the horizontal shafts F and H, each provided with rigid arms, said arms being connected by rods with the bell-crank N and lever M, respectively, and also with the valve-rods belonging to the valves, substantially as described.

4. In a lever-movement for operating steam-valves, the combination, with the valves having valve-rods *d* and *e*, of the shafts F and H, said shaft F having at one end arm *f* and at the other end arm G, and said shaft H having at one end arm A and at the other end arm I, the rod *f'*, connecting arm *f* with valve-rod *d*, the rod *h'*, connecting arm A with the valve-rod *e*, the pivoted lever M, the rod O, connecting said lever with the arm G, the handle-lever Q, pivoted to the lever M, and the pivoted bell-crank N, which is connected with the lever Q by the rod R and with the lever I by the rod P, all arranged to operate substantially as described.

5. In a lever-movement for operating steam-engine valves, the combination of the valves having valve-rods *d* and *e*, the shafts F and H, having arms, the main lever M, and bell-crank N, the connecting-rods O and P, connecting the main lever and the bell-crank, respectively, with arms on shafts F and H, the connecting-rods between the arms on shafts F and H and the valve-rods and the weights S S, and the cords connecting them with the rods O and P, respectively, substantially as described.

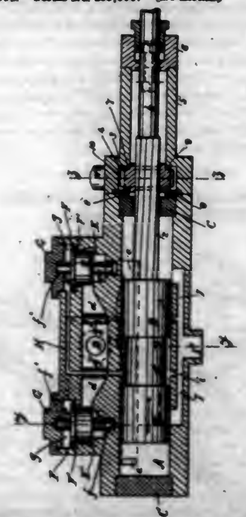
475,909. SYRINGE. THEODORE R. WILCOX, Newark, N. J. Filed Sept. 4, 1891. Serial No. 404,685. (No model.)



Claim.—1. In a syringe, the combination, with a casing and a cap having a square hole, of a plunger attached to a square stem and having a packing and a collar for expanding the same, means to hold the collar from turning in relation to the stem, a rod fitted to turn within the stem, and a screw-thread connecting the rod and collar, as and for the purpose set forth.

2. In a syringe, the combination, with a casing and a cap having a square hole, of the square stem fitted to such hole, the rod *c*, fitted to turn within the stem, the cup-leathers *h*, clamped upon the rod by washers *j*, the threaded hub *m* upon the rod, and the conical collar *n*, fitted to the thread upon the hub and provided with the lugs *o*, embracing the stem, as and for the purpose set forth.

475,910. ROCK-DRILL. HORACE G. WILLIAMS, Lykens, Pa. Filed Sept. 8, 1891. Serial No. 405,099. (No model.)

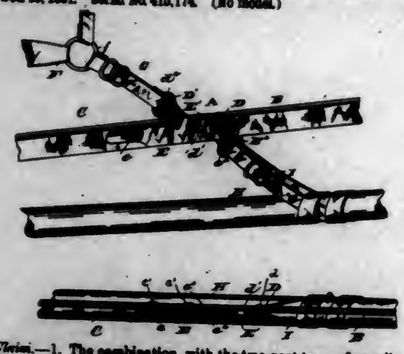


Claim.—1. The combination, with the cylinder and the long-grooved piston sliding therein, of separate lift-valves resting upon seats at those ends of the cylinder to which they do not pertain, the said cylinder being provided with ports extending longitudinally past each other and connecting the said valves with the ends of the cylinder to which they do pertain and having small ports also extending past each other and adapted to relieve the pressure behind the said valves and

to permit them to open automatically when the said small ports are uncovered by the piston in the cylinder, substantially as set forth.

2. The combination, with the piston-rod provided with spiral portions, of a ratchet-wheel mounted on the said portions, the distance-piece inclosing the piston-rod and ratchet-wheel and provided with a stuffing-box at its front end, the collar between the ratchet-wheel and the cylinder, the washers on each side of the ratchet-wheel, and the spring-actuated pawl adapted to engage with the ratchet-wheel, whereby the piston may be partially revolved at each alternate stroke, substantially as set forth.

475,911. HARNESS. OSCAR A. WILLYARD, Allegan, Mich. Filed Dec. 15, 1891. Serial No. 415,174. (No model.)

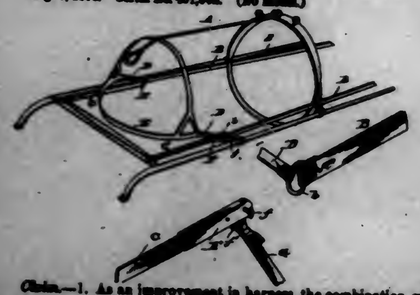


Claim.—1. The combination, with the two-part tugs, of coupling-plates respectively secured to the opposing ends of the tug-sections, each plate having an extension projecting obliquely with relation to the main portion and provided with a slot, which extensions relatively project in opposite directions when the pair of plates are brought together, means for connecting the plates in said position, and the two-part holdback-straps adapted to respectively connect the upwardly-projecting extension with the breeching and the oppositely-projecting extension with the thills, substantially as set forth.

2. The combination, with the two-part tugs, of coupling-plates secured to the opposing ends of the tug-sections, one pair of said plates being provided with transversely-disposed T-shaped studs and the other pair with longitudinal slots for receiving said studs, and holdback-straps, each formed in two sections, the upper sections being adapted to connect the forward plates with the breeching and the lower sections the rear plates with the thills, substantially as set forth.

3. As an improved article of manufacture, a coupling device for sectional tugs and holdback-straps, consisting of two plates, one of which being provided with a longitudinal slot and with an oblique extension projecting upwardly and rearwardly therefrom, the other plate being provided with a transversely-disposed T-shaped stud adapted to be received by said slot and with an oblique extension projecting downwardly and forwardly, said extensions each having a transversely-arranged slot, substantially as set forth.

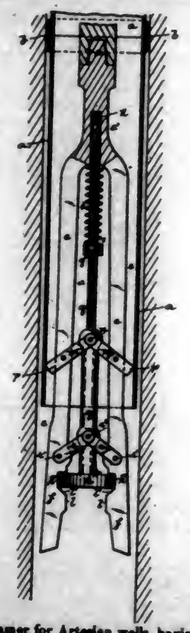
475,912. HARNESS. OSCAR A. WILLYARD, Hamilton, Mich. Filed Aug. 1, 1891. Serial No. 401,302. (No model.)



Claim.—1. As an improvement in harness, the combination, with the traces, each formed in two sections, a forward and rear section, respectively, of plates permanently secured to the forward end of the rear sections and connected with the thills by auxiliary holdback-straps and carrying a stud or button, and rings carried by the rear ends of the forward sections and connected to the breeching by main holdback-straps, said rings being adapted to be detachably connected to the plates, substantially as and for the purpose set forth.

2. As an improvement in harness, the combination, with the two-part traces, each comprising a forward section and a rear section provided at its forward end with a plate, said plate being provided with a clip *f*, to which the forward section is adapted to be attached, and with a clip *f'*, of the two-part holdback-straps, comprising the straps proper carrying the breeching and having their forward ends connected with the rear ends of said forward sections of the traces, and the auxiliary straps attached to the clips *f'* and adapted to connect the rear sections of the traces with the thills, substantially as and for the purpose set forth.

475,918. APPARATUS FOR DRILLING ARTESIAN WELLS. PATRICK YORKE, Washington, Pa. Filed May 4, 1891. Serial No. 391,468. (No model.)



Claim.—1. A reamer for Artesian wells, having two arms carrying bits at the lower ends thereof, a central bar longitudinally movable with relation thereto, and lever connections extending between and connected to said arms, said bar to provide for the closing and expanding of such arms, said levers having free ends adapted to extend beyond the arms of the reamer, substantially as and for the purposes set forth.

2. A reamer for Artesian wells, having two arms carrying bits, a central bar longitudinally movable with relation thereto and carrying a wedge at the base thereof, and the levers pivoted to said bar and arms and having the free ends extended beyond the arms, substantially as and for the purposes set forth.

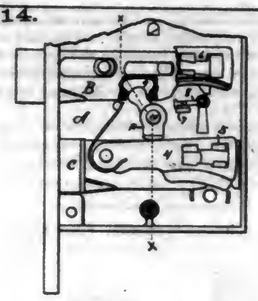
3. A reamer for Artesian wells, having two arms carrying bits, a central bar *g*, longitudinally movable with relation thereto and carrying the wedge *k* at the base thereof, the levers *m m*, pivoted to said bar and arms and having the free ends *p* and the links *r*, pivoted to said bar and arms near said wedge-block, substantially as and for the purposes set forth.

475,914. LOCK. ASHBEL ALLEN, New Britain, Conn., assignor to the P. & F. Corbin, same place. Filed Nov. 23, 1891. Serial No. 412,751. (No model.)

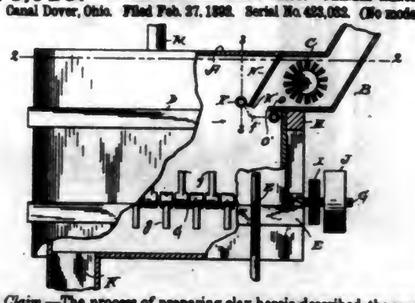
Claim.—1. The combination of the lock-bolt C and its tumblers, the inside lock-bolt B, having the recess 9, and an internal intermediate stop-lever connected with and actuated by said inside bolt, one of its ends lying between the side walls of said recess for automatically stopping and releasing said tumblers as said stop-lever is operated through the movement of said inside bolt B, substantially as described, and for the purpose specified.

2. The combination of the lock-case, the bolt C and its tumblers, the inside lock-bolt B, the stop-leg 7 on the case by the side of the keyhole for said bolt B, and an internal intermediate stop-lever connected with and actuated by said inside bolt, substantially as described, and for the purpose specified.

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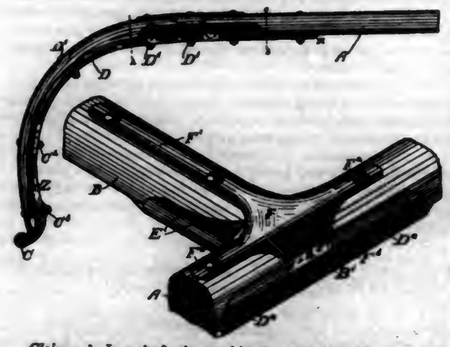


475,915. PROCESS OF PREPARING CLAY. PHINEAS ARNOLD, Canal Dover, Ohio. Filed Feb. 27, 1892. Serial No. 423,032. (No model.)



Claim.—The process of preparing clay herein described, the same consisting, first, in taking the clay in a dust-like or finely disintegrated condition and spraying or scattering the same through steam, and, secondly, in working the clay to develop its plasticity, substantially as set forth.

475,916. VEHICLE-SHAFT. JOHN ATKINS, Cincinnati, Ohio. Filed Nov. 17, 1891. Serial No. 412,160. (No model.)



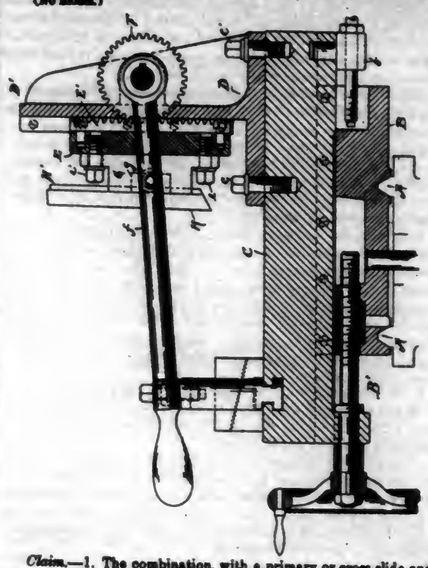
Claim.—1. In a shaft, the combination of the wooden portion A, strip D, having flanges D^3 D^3, and the eye C, provided with tongue C', receivable between said flanges, and the lugs C^4 C^4, substantially as and for the purposes specified.

2. In a shaft, the combination of the strip D, having recess D^4, and the eye C, provided with tongue C', receivable into said recess, and the lugs C^4 C^4, substantially as and for the purposes specified.

3. In a shaft, the combination of the strip D, having recess D^4, and the eye C, provided with tongue C', receivable into said recess, and the lugs C^4 C^4, which, when the tongue C' and the shaft A are combined together, are bent upon the said shaft, substantially as and for the purposes specified.

4. In a vehicle-shaft, the combination of the eye C, having the tongue C', strip D, having recess D^4, receiving the said tongue and having shaft A, and lugs C^4 C^4, connected by the cross-piece C^5, resting upon the tongue and secured to the latter by the bolt C^6, which at that point unites the tongue, strip, and shaft A together, the lugs being bent upon the shaft A, substantially as and for the purposes specified.

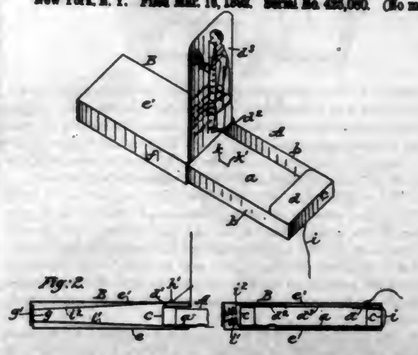
475,917. MACHINE FOR TURNING IRREGULAR SHAPES. GEO. C. BARDONS, Cleveland, Ohio. Filed May 14, 1891. Serial No. 392,726. (No model.)



Claim.—1. The combination, with a primary or cross slide and a bracket or knee mounted thereon, of a secondary slide mounted on and movable up and down the bracket, said secondary slide provided with rack-teeth, a pinion adapted to operate said slide by its engagement with the rack-teeth, and an operating-lever, substantially as set forth.

2. In a machine of the class indicated, the combination, with a primary or cross slide bearing a bracket, of a secondary slide mounted on and movable up and down the bracket, such secondary slide bearing a tool-holder, the tool-holder and bracket being adjustable on their respective seats, substantially as set forth.

475,918. MAILING OR SALESMAN'S BOX. JOSEPH H. BARKER, New York, N. Y. Filed Mar. 10, 1892. Serial No. 425,060. (No model.)



Claim.—1. In a box for mailing and other purposes, the combination of an outer case open at one end, an inner box or receptacle adapted to slide therein and having holes *k k'* formed in its bottom near one end and having other holes *m m* formed in its bottom near the other end, and a cord having one end attached to the outer case and having its middle portion passed up and down through said holes *k k'* and passed up and down through the holes *m m* and knotted on the under side, substantially in the manner shown, and extended outside of the outer case, substantially as shown and described.

2. In a box for mailing and other purposes, the combination of an outer case open at one end and having double flaps to close the other end, an inner box adapted to slide therein, and a cord attached to the inner box and passed back and forth through the inner flap, which closes the end of the outer case and held in place by the outer flap, substantially as shown and described.

3. In a box for mailing and other purposes, the combination of an outer case open at one end and having a longitudinal slit formed in the outer edge of its top, an inner box adapted to slide in said outer case and having a hinged cover, and a cord secured to the inside of the outer case and attached to said cover at a distance from its hinge and adapted to raise said cover and draw into said slit when the inner box is drawn out, substantially as shown and described.

4. In a box for mailing and other purposes, the combination of an outer case open at one end and having a longitudinal slit formed in the outer edge of its top, an inner box adapted to slide in said outer case, a hinged cover for said box, having an advertising device on its under side, and a cord secured to the inside of the outer case and attached to said cover at a distance from its hinge and adapted to raise said cover and draw into said slit when the inner box is drawn out, substantially as shown and described.

5. In a box for mailing and other purposes, the combination of an outer case open at one end and having a longitudinal slit formed in the outer edge of its top, an inner box adapted to slide in said outer case and having a hinged cover, a cord secured to the inside of the outer case and attached to said cover at a distance from its hinge and adapted to raise said cover and draw into said slit when the inner box is drawn out, and a cord attached to the outer case and to the inner box and adapted to limit the movement of the inner box, substantially as shown and described.

6. The combination of a box open at one end and having a curved slit *h h'* and a fastening-cord attached to the box and adapted to be drawn into and be held by said slit to retain the contents of the box, substantially as shown and described.

7. In a box for mailing and other purposes, the combination of an outer case open at one end and having a curved slit formed in the outer edge of its top, an inner box adapted to slide in said outer case, and a cord attached to the inner box and adapted to be drawn into and be held by said slit to retain the inner box within the outer case, substantially as shown and described.

475,919. PHOTOGRAPHIC CAMERA. ROBERT DE BARRI, New York, N. Y. Filed Aug. 8, 1891. Serial No. 402,069. (No model.)

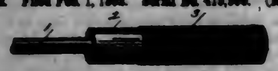


Claim.—1. The combination, with a plate-holder support and a front provided with a plurality of openings for the admission of light, of a rotary lens-carrier, a rotary shutter, means for holding the carrier and shutter under tension, and means for releasing them at intervals to bring the lens and an opening in the shutter successively in alignment with the openings in the front, substantially as set forth.

2. The combination, with the plate-holder support and a front provided with a plurality of openings for the admission of light, of a winding-spindle, a rotary lens-carrier and rotary shutter, both loosely mounted on the spindle, actuating-springs connecting the lens-carrier and shutter with the winding-spindle, and an escapement under the control of the operator to bring the lens and an opening in the shutter alternately in alignment with the openings in the front, substantially as set forth.

3. The combination, with the plate-holder support and the front provided with a plurality of openings, of a diaphragm provided with series of different-sized openings, one series for each opening in the front, means for rocking the auxiliary front to bring the different openings of each series in alignment with the openings in the front, a rotary lens-carrier, a rotary shutter, and means for operating them, substantially as set forth.

475,920. ELECTRIC CONDUCTOR. CHARLES W. BARRETT, Newton, assignor to the Washburn & Moen Manufacturing Company, Worcester, Mass. Filed Feb. 1, 1892. Serial No. 419,996. (No model.)

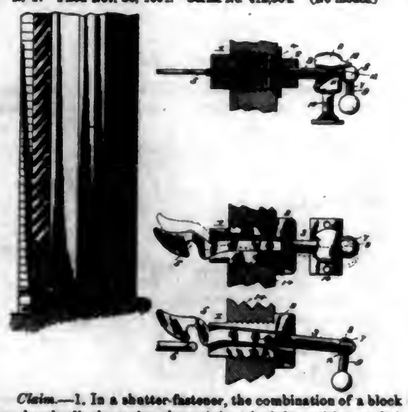


Claim.—1. As an improved article of manufacture, an insulated electric conductor consisting of a metallic conductor having a seamless coating of paper extending over the same and a protective covering extending over said coating of paper, substantially as set forth.

2. An electric conductor consisting of a metallic conductor, an insulating covering of seamless paper extending over the same, and a protective covering extending over the insulating covering, substantially as set forth.

3. The combination, with a metallic conductor, of a seamless paper coating surrounding said metallic conductor and applied thereto, and a protective covering or coating surrounding said seamless paper-coating, substantially as set forth.

475,921. SHUTTER-FASTENER. BENNY BERNSTEIN, New York, N. Y. Filed Nov. 20, 1891. Serial No. 412,534. (No model.)



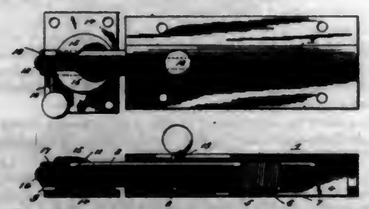
Claim.—1. In a shutter-fastener, the combination of a block having a longitudinal opening through it, a lock-lever fulcrumed therein and projecting at each side, the outer end being formed with a catch to engage a suitable staple and the inner end provided with a swiveled weighted arm adapted to engage a suitable keeper, substantially as specified.

2. The combination of the screw-threaded block, the lever fulcrumed therein, the staple adapted to be engaged by the outer end of the lever, the weighted arm swiveled to the inner end of the lever, and the keeper having open curved lips, substantially as specified, the opening between the lips being of less width than the diameter of the lock-lever and of greater width than the diameter of the weighted arm, for the purposes set forth.

3. The combination, with the lock-lever and the weighted arm, of the keeper having flaring mouth and curved open lips, the upper one having an extension at its rear to guide the weighted arm into and out of a locked position, substantially as specified.

4. The combination, in a shutter-fastener, with the lock-lever secured to the shutter and having a swiveled weighted arm at its end and keeper secured to the window-sill having flaring mouth and curved open lips, of means for limiting the upward movement of the arm, for the purposes specified.

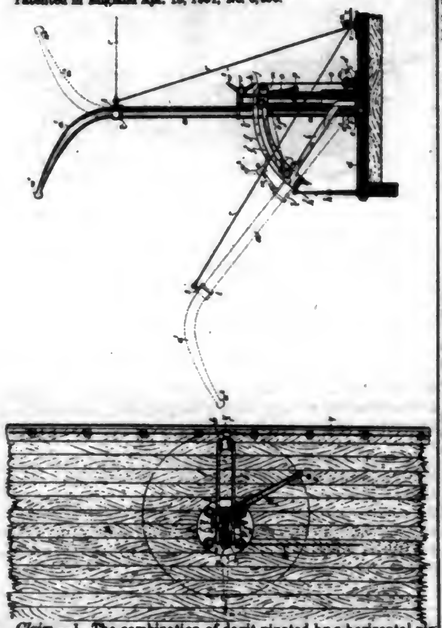
475,922. SPRING-BOLT. BENNY BERNSTEIN, New York, N. Y. Filed Nov. 20, 1891. Serial No. 412,536. (No model.)



Claim.—1. The combination, in a fastening for doors, box-lids, &c., of a bolt-barrel, the bolt-bar adapted to move longitudinally in said barrel, the spiral spring holding the bolt normally backward, the weighted arm swinging on the outer end of the bolt, and the keeper having open curved lips, the whole adapted to be operated substantially in the manner and for the purposes specified.

2. The combination, in a fastening for doors, box-lids, &c., with the keeper having curved open lips, of a spring-reacted bolt carrying at its end a swinging weighted arm adapted to automatically ride upon the lips of the keeper and fall behind the same when effecting a fastening.

475,923. BOAT-DAVIT. HENRY E. BOWRING, Mole Bank, East Molesey, England. Filed July 9, 1891. Serial No. 398,945. (No model.) Patented in England Apr. 13, 1891, No. 6,400.



Claim.—1. The combination of davit pivoted by a horizontal pin passing through its foot to a foot-block, foot-block pivoted in a base-plate made fast to the deck, slotted arc-shaped davit-guide, and a nut and bolt device, the bolt of which passes through the slotted guide and on the back of the davit, as set forth.

2. The combination of davit pivoted by a horizontal pin passing through its foot to a foot-block on the deck, a fixed arc-shaped davit-guide, and a guiding and fixing nut and bolt device in or upon the said davit-guide, the bolt passing through an eye on the davit.

3. The combination of base-plate secured to the deck, a foot-block pivoted in the said base-plate, a davit pivoted to the top of the said foot-block by a horizontal pin passing through the foot of the davit, a post standing upon the deck behind the said base-plate, foot-block, and davit, and an arc-shaped davit-guide consisting of a pair of arc-shaped bars, one on each side of the davit, as set forth.

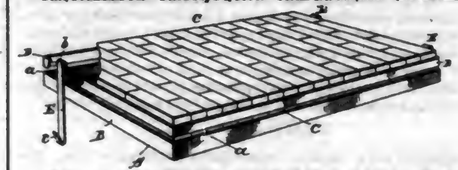
4. The combination of davit pivoted by a horizontal pin passing through its foot to a foot-block on the deck, a post standing on the deck behind the said davit and foot-block, an arc-shaped bar on each side of the davit, both bars being held in a fixed position by being made fast to the bulwarks or the side rails of the vessel and to the said post, and tackle for raising and lowering the davit, as set forth.

5. The combination of davit pivoted by a horizontal pin passing through its foot to a foot-block, foot-block pivoted in a base-plate fast to the deck, a post standing upon the deck behind the davit, a pair of parallel slotted arc-shaped bars, one on each side of the davit and supported at their front and rear ends by the bulwark or by the side rail of the vessel and the said post, respectively, an eye on the davit, and a nut-and-bolt device, the bolt of which is passed through the said bars and eye, as set forth.

6. The combination of davit pivoted by a horizontal pin passing through its foot to a foot-block, a foot-block pivoted in a base-plate fast to the deck, a post standing upon the deck behind the davit, an arc-shaped davit-guide supported at its front and rear ends by the bulwark or the side rail of the vessel and the said post, respectively, a pulley carried by rearward extensions on the davit, a pulley carried by the post on its rear face near the top of it, a pulley on the deck, and a line made fast to the post and led through the above-mentioned three pulleys in the order named, as set forth.

7. The combination of davit pivoted by a horizontal pin passing through its foot to a foot-block, foot-block pivoted in a base-plate fast to the deck, a post standing upon the deck behind the davit, an arc-shaped davit-guide supported at its front and rear ends by the bulwark or the side rail of the vessel and the said post, respectively, a pulley carried by rearward extensions on the davit, a pulley carried by the post on its rear face near the top of it, a pulley on the deck, a line made fast to the post and led through the above-mentioned three pulleys in the order named, a collar fast upon the vertical portion of the davit, a ring loosely embracing the said portion and resting upon the said collar, a pulley fixed to the deck behind the post above mentioned, and a line fast to the said ring and led through the said pulley, as set forth.

475,924. PAVING-BLOCK. STEPHEN BERDEN and JAMES SHERIDAN, Franklin, Pa. Filed Sept. 4, 1890. Serial No. 363,916. (No model.)

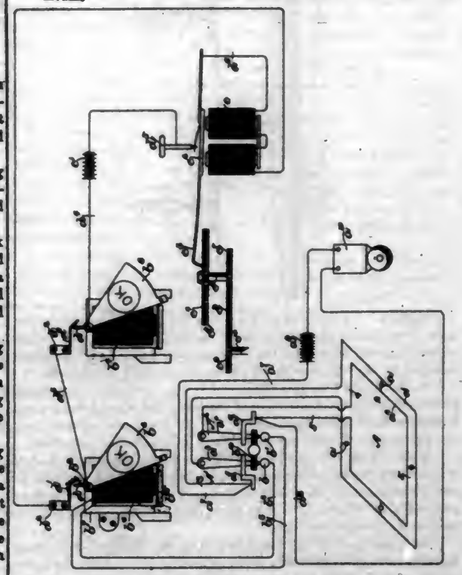


Claim.—1. A paving-block consisting of a metal base, blocks mounted thereon, and a band extending around the blocks, substantially as set forth.

2. A paving-block consisting of a shallow metallic pan, a series of bricks located therein, said bricks and pan being united at adjacent surfaces, and a band binding said bricks together at or near their outer ends, substantially as set forth.

4. A paving-block consisting of a metallic base, a series of independent blocks secured to the base and to one another, and a band secured around the blocks at a point at or near the upper ends of the blocks, substantially as set forth.

475,925. AUTOMATIC FIRE-ALARM SYSTEM. CHARLES BURGESS, Newton, Mass. Filed Jan. 29, 1892. Serial No. 419,651. (No model.)



Claim.—1. In an automatic fire-alarm system, the combination of the following instrumentalities, viz: a thermostatic circuit provided with one or more thermostats, a test-key or circuit-controller connected in the thermostatic circuits, a test-magnet controlled in its operation by the test-key or circuit-controller, an armature for the test-magnet, a recording apparatus, a local circuit in which the said recording apparatus is included, and a circuit-controller governing the condition of said local circuit and controlled in its operation by the armature of the test-magnet, substantially as described.

2. In an automatic fire-alarm system, the combination of the following instrumentalities, viz: a plurality of thermostatic circuits, each containing one or more thermostats, a plurality of test-keys, one for each thermostatic circuit, test-magnets controlled by said test-keys or circuit-controllers, a recording apparatus, a local circuit in which the said apparatus is located, and a plurality of circuit-controllers for said local circuit co-operating with the test-magnets and operated thereby, substantially as described.

3. In an automatic fire-alarm system, the combination, with a plurality of electric circuits provided with circuit-controllers or keys, and with a plurality of electro-magnets controlled by said keys or circuit-controllers, of a recording apparatus, a local circuit in which the said apparatus is located, and a plurality of circuit-controllers for the said local circuit controlled by the plurality of said electro-magnets, substantially as described.

4. In an automatic fire-alarm system, the combination of the following instrumentalities, viz: a plurality of thermostatic circuits, each containing one or more thermostats, a plurality of test-keys, one for each thermostatic circuit, test-magnets controlled by said test-keys or circuit-controllers, visual indicators operated by said test-magnets, a recording apparatus, a local circuit in which the said apparatus is located, and a plurality of circuit-controllers for said local circuit operated by the visual indicators, substantially as described.

475,926. SKATE. THOMAS W. BRYANT, Torrington, Conn. Filed Dec. 21, 1891. Serial No. 415,746. (No model.)



Claim.—1. A racing-skate consisting of a long and relatively-thin blade, a pair of corrugated supporting-plates having their lower edges lying against the sides of the blade and secured thereto, and foot-plates mounted on the said corrugated plates, substantially as set forth.

2. The blade 1, in combination with the corrugated supporting-plates embracing the upper edge of the blade and secured thereto and forming a backing therefor, and the sole and heel plates secured upon the upper edges of said supporting-plates, substantially as specified.

3. In a skate, the blade, in combination with a skate-body formed of opposed plates extending substantially the entire length of the blade and whose edges are secured to and support the blade, and a sole-plate and heel-plate secured to the top edges of said plates, substantially as and for the purpose set forth.

4. A racing-skate consisting of a long and relatively-thin blade, a pair of corrugated stiffening-plates extending substantially the entire length of said blade and having their lower edges lying against the opposite side of said blade and secured thereto, and suitable foot-plates for the support of the skate-fastenings, substantially as described.

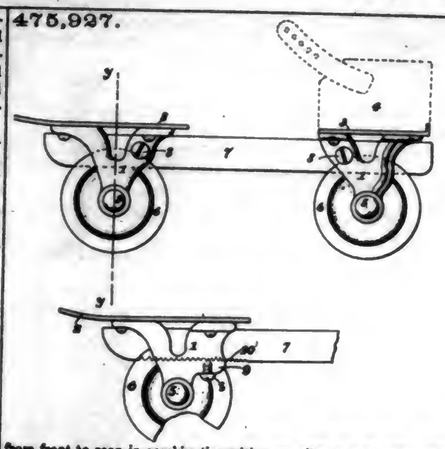
475,927. ROLLER-SKATE. THOMAS W. BRYANT, Torrington, Conn. Filed Dec. 21, 1891. Serial No. 415,745. (No model.)



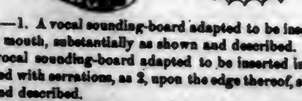
Claim.—1. In a roller-skate, a pair of foot-plates, each provided with a hanger having a rectangular opening extending therethrough from front to rear, in combination with a coupling-bar of rectangular section extending through the two hangers, and a set-screw in each hanger adapted for engagement with the coupling-bars, substantially as described.

2. In a roller-skate, a pair of foot-plates 2 and 3, each provided with a depending hanger 1, each of said hangers having a rectangular slot extending therethrough from front to rear, in combination with the coupling-bar 7, consisting of a single piece of metal of rectangular section, and the set-screws 8, tapped through the hangers and engaging the bar, all of the aforesaid parts arranged and adapted to operate substantially as and for the purpose set forth.

475,927.



475,928. VOCAL SOUNDING-BOARD. CRAFT C. CARROLL, New York, N. Y. Filed Oct. 2, 1891. Serial No. 408,130. (No model.)



Claim.—1. A vocal sounding-board adapted to be inserted in and held in the mouth, substantially as shown and described.

2. A vocal sounding-board adapted to be inserted in the mouth and provided with serrations, as 2, upon the edge thereof, substantially as shown and described.

3. A vocal sounding-board adapted to be inserted in the mouth and held in contact with the palatine surface of the upper jaw, substantially as shown and described.

4. A vocal sounding-board adapted to be inserted in the mouth, consisting of a thin plate of resonant material made to fit the roof of the mouth and provided with serrations, as 2, upon the edge thereof, substantially as shown and described.

5. A vocal sounding-board adapted to be inserted in the mouth and composed of aluminum or its alloys, substantially as shown and described.

6. A vocal sounding-board adapted to be inserted and held in the mouth, consisting of a thin plate of resonant material made to fit the roof of the mouth, substantially as shown and described.

475,929. NON-METALLIC BEARING. WILLIAM T. CARROLL, Worcester, Mass. Filed Feb. 1, 1892. Serial No. 419,978. (No model.)



Claim.—A non-metallic bearing thoroughly saturated with a wax, such as beeswax, paraffine-wax, or myrtle-wax, substantially as set forth.

475,930. PNEUMATIC DOOR-CHECK. CROMWELL G. CASE, New Britain, Conn., assignor to the P. & F. Corbin, same place. Filed Jan. 25, 1892. Serial No. 419,109. (No model.)

Claim.—1. In a door-check, the combination of a cylinder and a piston, both movably mounted and forming a compression-chamber, with operating devices for moving said cylinder and its piston simultaneously in opposite directions, and carrying both ends of said compression-chamber toward each other, substantially as described, and for the purpose specified.

2. In a door-check, the combination of an outer and inner cylinder, both movably mounted and fitted one within the other, and operating devices for simultaneously moving both of said cylinders in opposite directions, substantially as described, and for the purpose specified.

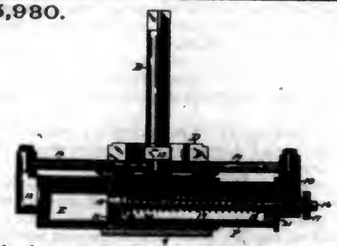
3. In a door-check, the combination of an oscillating or vibratory shaft, a cross-head moving therewith, a cylinder and piston, and a pair of links connecting said cylinder and piston with said cross-head for moving simultaneously in opposite directions, substantially as described, and for the purpose specified.

4. In a door-check, the combination of a cylinder and piston, the latter having a valve-seat, the valve 15, valve-steam 16, having a shoulder, and the adjustable screw-sleeve 17, mounted in a fixed position with reference to said valve-seat, whereby the leakage of the valve when closed for work may be regulated, substantially as described.

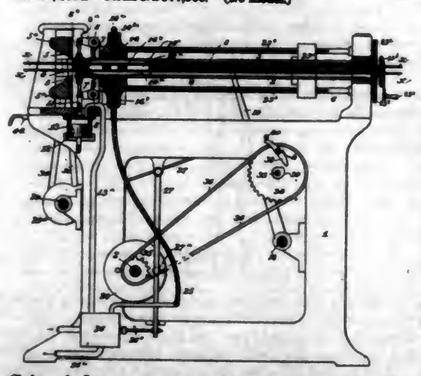
5. In a door-check, the combination of a holding-bracket having a cylindrical socket 9, a cylinder E, fitted to move within and supported by said socket, a piston fitted within and supported by said cylinder, and mechanism for moving said cylinder and piston within said socket, substantially as described, and for the purpose specified.

6. In a door-check, the combination of an outer and inner cylinder, the latter forming a piston and having a valve-seat, the valve 15, valve-stem 16, the head 10 of said inner cylinder, operating mechanism for moving said cylinders, and the release-lever 22, having one end arranged for engagement with said outer cylinder and its opposite end engaged with said valve-stem, substantially as described, and for the purpose specified.

475,980.



475,981. MACHINE FOR FEEDING AND CUTTING PAPER AND LIKE SHEET MATERIALS. WILLIAM G. CRAPIN, Brooklyn, N. Y. Filed Jan. 10, 1891. Serial No. 377,302. (No model.)



Claim.—1. In a machine for feeding and cutting sheet material, the combination, with a reciprocating knife to sever the material and a set of holders to clamp the material near the cutting-point, of a set of independently-operating grippers arranged abreast and a reciprocating carrier, in which said grippers are mounted, substantially as and for the purposes set forth.

2. In a machine for feeding and cutting sheet material, the combination, with a cutter for the material and a support for the latter while on its way to the cutting-point, of a reciprocating gripper-carrier, a set of grippers mounted therein abreast and backed each by a spring, and means, substantially as described, for relieving all the grippers simultaneously, whereby said grippers act independently in clamping the material and are acted upon together or jointly by the relieving mechanism.

3. In a machine for feeding and cutting sheet material, the combination, with a cutter, of a reciprocating carrier for the feeding-gripper, the said gripper, means for regulating the extent of travel of the gripper, a stationary cushioning device to cushion the gripper-carrier at the end of its forward stroke, and an adjustable cushioning device to cushion the said carrier at the end of its back-stroke.

4. In a machine for feeding and cutting sheet material, the combination, with a cutter and a support for the material on its way to the cutter, of a gripper-carrier mounted in guides, the said guides, a gripper mounted in said carrier, a rocking arm 19, coupled to the gripper-carrier by a rod 20, the said rod, the slotted link 17, means, substantially as described, for uniformly vibrating said link, the rod 21, coupled adjustably to said slotted link at one end and to the rocker-arm 19 at its other end, the cushions at the coupling of said rod with said arm, and the dash-pots arranged to cushion the gripper-carrier at the termination of its stroke in both directions.

5. In a machine for feeding and cutting sheet material, the combination, with an intermittent feeder for the material, a reciprocating knife timed to operate with said feeder, and mechanism, substantially as described, for operating said knife, of an automatic disengaging mechanism, substantially as described, for arresting the operation of the knife at predetermined intervals, whereby the material may be cut into lengths, each of which is a multiple of the distance traveled by the feeder.

6. In a machine for feeding and cutting sheet material, provided with two parallel feedways for the material, two reciprocating cutters operating in unison, a reciprocating gripper-carrier, two sets of grippers mounted in said carrier, one set arranged to face the other, and means, substantially as described, for simultaneously closing and simultaneously relieving the grippers of both sets.

7. In a machine for cutting sheet material, the combination of the knife mounted in guides, the said guides, the rock-shaft 29, the rockers fixed thereon, the rods 30, coupling the said rockers to the knife, a shaft 2, a crank thereon, the rod 31, coupled at one end to said crank and having a notch which normally engages a wrist-pin on the rocker 29^a, the said wrist-pin, and means, substantially as described, for disengaging the notch in rod 31 from said wrist-pin, whereby the operation of the knife may be arrested without stopping the machine.

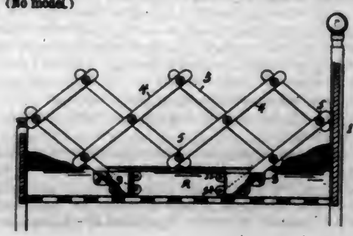
8. In a machine for feeding and cutting paper, the combination, with the reciprocating knife, the main shaft 2, the crank 32 thereon, the notched rod 31, coupled to said crank, the rocker 29^a, coupled to the knife and provided with a wrist-pin 29^c, adapted to engage the notch in rod 31, whereby rotation of the shaft 2 reciprocates said knife, of the rock-shaft 33, the arm 33^a thereon, the connector which couples said arm to the rod 31, the wheel 34, mounted loosely on shaft 33, the wheel 35 on shaft 2, the belt connecting said wheels, and means, substantially as described, whereby the wheel 34 rocks the shaft 33 once at each revolution of said wheel.

9. In a machine for feeding paper, the combination, with the sets of slats forming the two feedways, of the reciprocating gripper-carrier provided with a set of bearing-pieces for the grippers, arranged to play between said slats, the guides on which said carrier plays, the two sets of grippers mounted in said carrier, those of one set facing those of the other, means for closing said grippers on the material to be fed, and means for relieving all of said grippers simultaneously, as set forth.

10. The combination, with the gripper-carrier, of the spring-grippers mounted therein, the relieving-bars engaging the stems of said grippers, the cylinder 24, carried by one of said bars, the piston 24^a in said cylinder and coupled to the other of said bars, and means, substantially as described, for introducing an elastic fluid into said cylinder behind said piston, substantially as and for the purposes set forth.

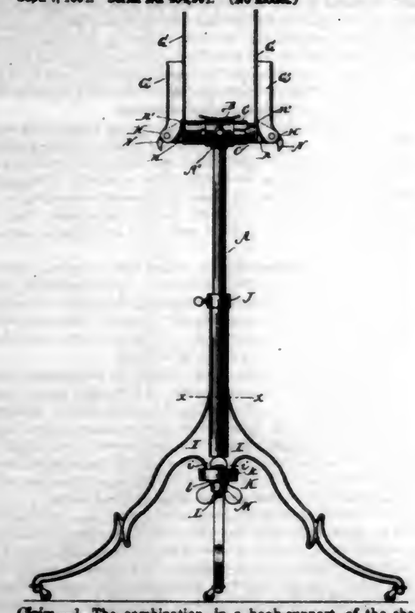
11. The combination, with the slats 6 and the springs behind them, of the rock-shaft 8, provided with arms coupled to the respective slats 6 and with an arm 9, the piston 12, coupled to the arm 9, the cylinder 13, in which said piston plays, and means, substantially as described, for admitting an elastic fluid to the cylinder behind said piston, as set forth.

475,982. FOLDING GUARD FOR BEDSTEADS. JULIUS H. CONRATH, Jefferson City, Mo. Filed Mar. 25, 1892. Serial No. 426,373. (No model.)



Claim.—As an improvement in folding guards for bedsteads, the combination, with a folding frame comprising downwardly-convergent and elongated end members, of sockets for receiving said members, said sockets having vertical opposing sides and upwardly-inclined divergent outer sides, whereby said sockets are adapted to receive said convergent members, substantially as and for the purpose set forth.

475,938. BOOK-SUPPORT. JAMES W. COULTAS, Havana, Ill. Filed Sept. 7, 1891. Serial No. 404,991. (No model.)



Claim.—1. The combination, in a book-support, of the shank-plates C C, adapted to be extended and contracted laterally on the clamp-bolt E and also adapted to rotate vertically on curved walls in a bearing *a* in giving the book vertical adjustment, a curved bearing or socket *a*, adapted to serve as a base for both the vertical movement and lateral extension of the shank-plates, and means of clamping the shank-plates and bearing together, substantially as described and shown.

2. The combination, in a book-support, of the shank-plates C C, adapted to be extended and contracted diversely and laterally on a clamp bolt or pin and also adapted to rotate vertically in giving the book vertical adjustment, all within the same clamping device, said clamping device being adapted to serve as a base for both said vertical movement and lateral extension and contraction and also adapted to lock the parts against all said movements, substantially as described and shown.

3. The combination, in a book-support, of the shank-plates C C, adapted to be extended and contracted laterally and diversely on a clamp-bolt E and also adapted to rotate vertically in a bearing, said rotation being guided by the bolt E moving in a slot in the bearing, and a clamp adapted to lock said shank-plates by the same locking effect against all said movements, substantially as described and shown.

4. The combination, in a book-support, of side plates G G, shank-plates C C, adapted to be extended and contracted laterally on a clamp-bolt E and also adapted to rotate vertically, the slotted bearing *a*, and a single clamp adapted by one and the same locking effect to adjust the grasp of the side plates and to lock said shank-plates against both said movements, substantially as described and shown.

5. In a book-support, the combination of a rest for the book, side plates hinged to slotted shank-plates, a spring operating on one side of the axial line of the hinge to hold the book open and operating on the other side of said axial line to close the book, a slotted bearing *a* on the stem A', adapted to receive the slotted shank-plates, and a screw operating in both slots to guide the movements of the shank-plates and to clamp the bearing and shank-plates together, substantially as described and shown.

6. In a book-support, the combination of a rest for the book, side plates hinged to slotted shank-plates, a spring operating on one side of the axial line of the hinge to hold the book open and operating on the other side of said axial line to close the book, a slotted bearing *a* on the stem A', adapted to receive the slotted shank-plates and a clamping-bolt operating in both slots to guide the movements of the shank-plates and to clamp the rest, bearing, and shank-plates together, substantially as described and shown.

7. In a book-support, the stem A, having legs I, provided with wings or flanges *i'*, hooked to break joint and prevent the edges from flaring, and means to clamp the legs to the stem, substantially as described and shown.

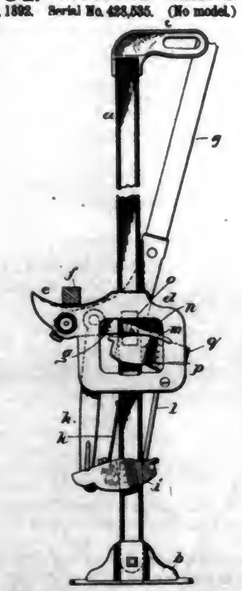
8. In a book-support, the stem A, legs I, provided with the projection *i*, cap J, cup K to retain the legs, hooked wings *i'*, and drawing-bolt L, substantially as described and shown.

9. In a book-support, the stem A, legs I, provided with the outwardly-sloping projection *i*, cap J, and cup K, provided with an inwardly-projecting flange *k* to retain the legs, and a bolt L to fasten the legs and cup together, substantially as described and shown.

10. In a book-support, the combination, with the stem of the main frame, of three or more legs adapted to be clamped about the stem at their top by an annular clamp and adapted to be received in a cup-shaped cavity at their bottom, said legs forming a globe or funnel-shaped cavity within the cup for the reception of a drawing-bolt, the head of which is cone or globe shaped or otherwise adapted to force the legs against the annular clamp, substantially as described and shown.

11. In a book-support, the combination, with the stem A, of the legs I, having curved wings *i*, adapted to be clamped about the stem at their top and adapted to be received into a cup at their bottom, the annular clamp J to clamp the legs to the stem, the cup K, having inwardly-sloping walls, said cup adapted to receive the legs at their bottom, and the drawing-bolt L to fasten the legs and cup together, substantially as described and shown.

475,934. LIFTING-JACK. WILLIAM H. COX, Virden, Ill. Filed Apr. 9, 1892. Serial No. 428,535. (No model.)



Claim.—1. The combination, in a lifting-jack, of a standard, a bracket movable on said standard, a movable clamping-runner, a lever having its fulcrum on said runner and adapted to actuate the bracket, and a second movable clamping-runner, substantially as described.

2. In a lifting-jack, the combination of a movable clamping-runner, a movable bracket supported by said runner, and a second clamping-runner placed above the first and adapted to support the bracket, substantially as described.

3. In a lifting-jack, the combination of a bracket surrounding a standard and movable thereon, a movable clamping-runner adapted to support the bracket, a second clamping-runner, a spring for throwing said second clamping-runner in position, and a movable thumb-lever for throwing it out of position, substantially as described.

475,985. EXTENSION-LADDER. DAYTON H. CREWS, Ledonia, Tex. Filed Dec. 29, 1891. Serial No. 416,413. (No model.)

Claim.—1. A ladder having aligned eyes in its side bars near their lower ends, a foot sliding vertically through said eyes and having an enlarged lower end, the body of the foot being toothed, and a spring-actuated catch sliding horizontally through staples and having an enlargement normally causing the teeth on said foot to engage with one of the eyes, as and for the purpose set forth.

475,985.



2. A ladder having on each side bar a bracket with an enlargement near its lower end, in combination with an inclined brace having a spike in its lower end and a laterally-projecting eye in its upper end loosely engaging said bracket, the brace being longer than the portion of the side bar below said enlargement, as and for the purpose set forth.

3. The combination, with a ladder made in several sections sliding over each other and means for extending and telescoping said sections, of a brace in two members pivoted to the lower ladder-section near its upper end, each member comprising two sections sliding over each other and having straps loosely embracing the other sections, the upper section having a vertical series of holes, means for extending said sections, and a staple adapted to pass over the strap on the lower section and take into two of the holes of said series, as and for the purpose set forth.

4. The combination, with a ladder made in several sections sliding over each other and means for extending and telescoping said sections, of friction-wheels journaled on the upper rung of each ladder-section but the uppermost, the side bars of the sections next above moving over said wheels, strap-braces 31', connecting the rungs supporting the friction-wheels with the side bars of the ladder, and angular metallic straps on the side bars of one section loosely embracing the side bars of the other, substantially as described.

5. The combination, with a ladder, a brace made in two sections, the upper one of which is pivoted to said ladder, and guides causing the sections to slide on each other, of a crank-shaft journaled in an extension of the guide on the lower section, a pawl and ratchet on this shaft, a wheel journaled in the slotted upper end of this section, and a rope leading from the shaft over the wheel and connected with the lower end of the upper section, substantially as described.

6. The combination, with a ladder, a brace made in two sections, the upper one of which is pivoted to said ladder and has a longitudinal series of holes, and a guide on the lower section, through which the upper section slides, of a crank-shaft journaled in an extension of said guide, a wheel journaled in a slot in the upper end of the lower section, a rope leading from the shaft over the wheel and connected with the lower end of the upper section, and a staple adapted to stand over said guide and removably engage two of the holes in said series, as and for the purpose set forth.

7. In a ladder, the combination, with the ladder proper and means for lengthening either of its side bars at its lower ends, of a pair of braces pivoted to the upper end of the ladder, a plug seated in the lower end of each brace and having a series of holes through its body, and a spring-actuated pin moving through a keeper on the brace and adapted to engage one of said holes, as and for the purpose set forth.

8. The combination, with a ladder, a brace pivoted to the upper end thereof and made in two members, and a rod connecting said members, of an eyebolt through the side bar of the ladder, a rod linked into the eye at one end and having a hook at its other end adapted to embrace said rod, and a spring-tongue normally closing said hook, as and for the purpose set forth.

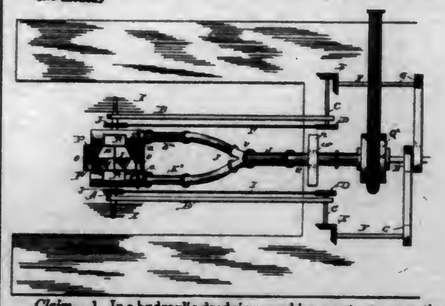
9. In an extensible ladder, the combination, with a lower section having a pulley secured to its upper rung, a windlass, and a rope leading from the windlass over the pulley to an eye, of a second section sliding on the first and a hook comprising a bent lower end secured to the lower rung of this section, a large hooked body, and a tongue pivoted to the extremity of the body and normally closing it, said eye being of a size to pass over the pivot and tongue, substantially as described.

10. In an extension-ladder, the combination, with a lower ladder-section and an upper ladder-section sliding thereover, of a catch comprising a body secured to two rungs of the upper section, a member pivoted at its upper end to the body and having a curved face at its lower end, a spring bearing the member to the rear, and a chain limiting its movement so as to bring said face over a rung of the lower section, substantially as described.

11. In an extension-ladder, the combination, with a lower ladder-section and an upper ladder-section sliding thereover, of a catch comprising a body secured to two rungs of the upper section, a member pivoted at its upper end to the body and having a curved face at its lower end, a spring bearing the member to the rear, a chain limiting its movement so as to bring said face over a rung of the lower section, and a pivotally-mounted lever arranged to be engaged by the rungs of the lower section and adapted to engage the pivoted member of the catch, as and for the purpose set forth.

12. In an extension ladder, the combination, with a lower section, a metallic rung at the upper end thereof having reduced ends seated in the side bars, strap-braces connecting said bars with the body of this rung, a pulley carried by the rung, wheels journaled on said reduced ends, and an upper ladder section whose side bars slide over said wheels, of a windlass on the lower section, a rope leading therefrom over the lower pulley and connected with a lower rung of the upper section, and guide-wheels journaled in the upper ends of the side bars of the ladder-section, all substantially as and for the purpose set forth.

475,986. HYDRAULIC EXCAVATOR. WILLIAM M. DOUGLAS, Galveston, Tex., assignor of one-half to the Bucyrus Steam Shovel and Dredge Company, Bucyrus, Ohio. Filed June 1, 1891. Serial No. 394,627. (No model.)



Claim.—1. In a hydraulic dredging-machine, a rotary excavating bucket-wheel having a series of disks on the opposite ends of and rotating with the bucket-shaft, substantially as set forth.

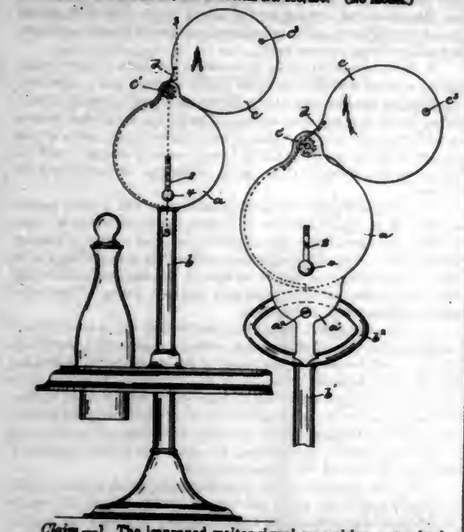
2. In a hydraulic excavator, the combination of a bucket-wheel provided with buckets having outward-sloping bottoms, whereby the spoil discharges laterally from the wheel, and a pair of suction-pipes located on opposite sides of said wheel, as and for the purpose set forth.

3. In a hydraulic excavator, a bucket-wheel arranged to discharge laterally, in combination with suction-pipes located on opposite sides of the wheel, substantially as set forth.

4. In a hydraulic excavator, a bucket-wheel provided with buckets arranged to discharge laterally, in combination with a Y-shaped suction-pipe, the lower ends of which pass astride the wheel, as set forth.

5. In a hydraulic dredging-machine, the combination, with a bucket-wheel consisting of a central shell having the form of a pair of truncated cones placed base to base, their sloping sides forming the bottoms of the buckets, and scooping-blades projecting from said shell, of a pair of disks on opposite sides of the latter and provided with openings and depositing-chambers on opposite sides of said bucket-wheel, into which the buckets discharge through said openings, substantially as described.

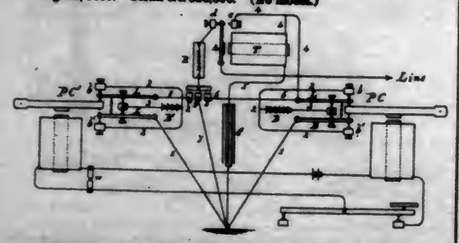
475,987. WAITER-SIGNAL. MARTIN V. B. STERRIDEN, Everett, Mass. Filed Jan. 16, 1892. Serial No. 418,429. (No model.)



Claim.—1. The improved waiter-signal comprising a standard, a casing secured thereto, said casing having an opening at one edge, a target pivotally connected to said casing and adapted to swing through said opening, a spring adapted to force the target out of the casing, and a detent adapted to hold the target in the casing, as set forth.

2. A waiter-signaling device comprising a casing having downwardly-projecting ears adapted to be pressed together by a screw or other adjusting device, whereby it may be secured to a suitable support, said casing having an opening at one edge, a target pivotally connected to the casing and adapted to pass through said opening, a spring adapted to force the target out of the casing, and a detent adapted to hold the target in the casing, as set forth.

475,988. TELEGRAPHY. THOMAS GOTHORPE, Rye, N. H. Filed Aug. 15, 1889. Serial No. 320,896. (No model.)



Claim.—1. In a telegraphic transmitting device, a pole-changer in a condenser-circuit, battery and circuit connections being controlled by the pole-changer, so that a definite amount of current will be sent to line and the line immediately put into condition to discharge, substantially as described.

2. A telegraph-transmitter consisting of a pole-changer located in a local circuit having a key, battery, and condenser therein, the pole-changer controlling the battery connections for the main line, whereby the battery is put to line when the local condenser-circuit is closed, and the line-circuit is broken immediately afterward, substantially as described.

3. The combination of a local circuit containing a key, battery, condenser, and the coils of a transmitting-magnet, with the main-line circuit and battery controlled by such magnet, whereby the battery is momentarily put to line, substantially as described.

4. In a telegraphic transmitting device, a pole-changer, a battery and circuit connection controlled by such pole-changer, a condenser and a magnet controlling the line and ground contacts included in such circuit, the line and ground contacts being connected to allow a definite amount of current to pass to line, and the line put into condition to discharge, whereby the line is cleared after the signaling-current has been sent, substantially as described.

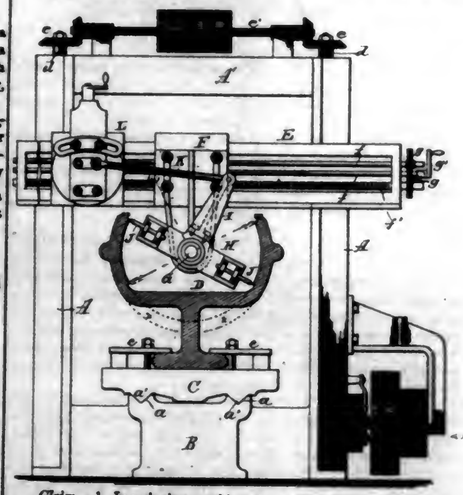
5. A telegraphic transmitting apparatus consisting of a pole-changer having an armature, battery, and local-circuit contacts in the path of such armature, a magnet and a condenser being included in the local circuit, such magnet controlling the connection of the line with one or more differently-conditioned ground-lines, whereby on movement of the armature the signaling-impulse is first sent over the line during a definite time, after which the current may be varied by connecting the line with either of the ground branches, as and for the purpose described.

6. In a telegraphic apparatus, a local circuit containing a battery and a key, a pole-changer controlled by such local circuit and arranged to control the battery of a main-line circuit, and a magnet located in a condenser-circuit, being first charged by such battery and controlling the main-line contacts, substantially as described.

7. A telegraphic transmitter consisting of permanent magnets having armatures pivoted to like poles thereof and presented to their opposite poles, coils surrounding such permanent magnets and located in a condenser-circuit, means for controlling such circuit, and battery and line connections controlled by the armatures of such permanent magnets, substantially as described.

8. A polarized transmitting device for telegraphy, consisting of a polar-magnet in a local condenser-circuit, a line-battery connected with opposite poles to the contacts of such relay, and means for grounding the line after the transmission of an impulse.

475,989. MACHINE FOR PLANING CIRCULAR GUIDES FOR ENGINE-BEDS. HERMAN HAMERLIN, Akron, Ohio, assignor to the Webster, Camp & Lane Machine Company, same place. Filed Sept. 26, 1891. Serial No. 406,220. (No model.)



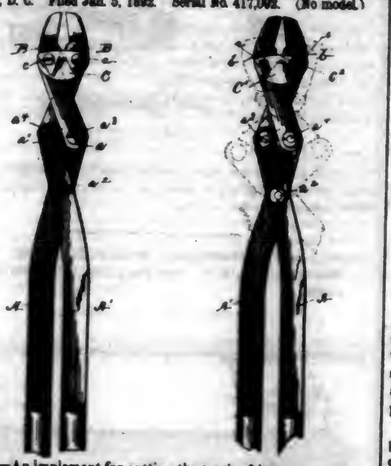
Claim.—1. In a planing-machine, the combination, with a suitable support and a cutter-head, of a movable head, means for adjusting the last-mentioned head, and a rod or link connecting said heads, substantially as set forth.

2. In a planing-machine, the combination, with a cutter-head, of an arm projecting from said cutter-head, a movable head, means for moving said movable head, and a rod or link connecting said movable head with the said arm, substantially as set forth.

3. In a machine for planing circular guides of engine-beds, the combination, with a cross beam or rail, of a saddle secured thereto, a shaft mounted in said saddle, a cross or cutter head carried at one end of said shaft, an arm projecting from said cross or cutter head, a movable head carried by the cross beam or rail, a rod or link connecting the movable head with the arm projecting from the cutter-head, and means for moving said movable head, substantially as set forth.

4. In a machine for planing circular guides of engine-beds, the combination, with a cross beam or rail, of a saddle secured thereto, a shaft mounted in said saddle, a cross or cutter head carried at one end of said shaft, an arm projecting from said cross or cutter head, a movable adjustable head carried by the cross beam or rail, a rod or link connecting the movable adjustable head with the arm projecting from the cutter-head, means for adjusting said movable head, and means for moving said movable adjustable head, substantially as set forth.

475,940. VETERINARY TOOTH-CUTTER. JOHN HAMLIN, Washington, D. C. Filed Jan. 5, 1892. Serial No. 417,092. (No model.)



Claim.—An implement for cutting the teeth of horses, comprising a pair of crossed and pivoted operating-levers, a pair of cutting-jaw levers pivotally connected with the forward ends of the operating-levers, and the connecting-plates between which the cutting-jaw levers are independently and loosely pivoted, whereby one cutting-jaw will move slightly in advance of the other, substantially as specified.

475,941. COMBINED SINK AND WASHTUB. FREDERICK H. HAWKINS, New York, N. Y. Filed July 24, 1891. Serial No. 400,579. (No model.)



Claim.—1. The combination, with a washtub, of a sink connected therewith and arranged to turn therein, said tub and sink having their discharge-openings or waste-pipes so arranged that the water from the sink will be prevented from discharging into the tub beneath.

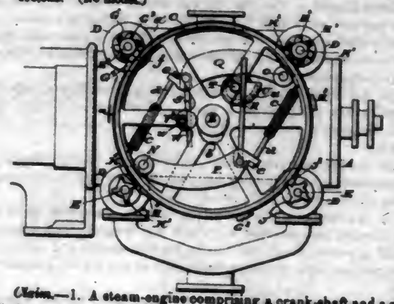
2. In a combined washtub and sink, the combination, with a tub and a sink so connected to said tub as to be adapted to rest therein and to be swung up out of the way, of a main waste-pipe and independent outlets between said waste-pipe and the tub and sink, substantially as and for the purpose specified.

3. In a combined washtub and sink, the combination, with a tub, a main waste-pipe communicating therewith, and a branch pipe communicating with said waste-pipe and having a vertically-disposed opening within the tub, of a sink adapted to rest within the tub and to be swung up out of the way and a discharge-conveyer depending from said sink and adapted to connect with the branch waste-pipe when the sink is in use, substantially as specified.

4. In a combined washtub and sink, the combination, with the tub, a vertical waste-pipe communicating therewith, and a branch pipe communicating with the waste-pipe and having a vertically-disposed opening within the tub, of a sink hinged to the tub and having overflow and waste discharge openings and a discharge-conveyer surrounding said opening and depending from the sink, said discharge-conveyer being so arranged that it will connect with the branch waste-pipe when the sink is in use, substantially as and for the purpose specified.

5. In a combined washtub and sink, the combination, with the tub, a sink hinged to the tub and having waste and overflow discharge openings and a conveyer surrounding said openings and depending from the sink, of a main waste-pipe communicating with the tub and a branch pipe communicating with the waste-pipe and having a vertically-disposed opening within the tub adapted to connect with the discharge-conveyer of the sink when said sink is in use, substantially as and for the purpose set forth.

475,942. VALVE-GEAR FOR ENGINES. FRANZ HERLT and JOSEF HIRSCHMANN, Philadelphia, Pa. Filed Jan. 16, 1892. Serial No. 418,322. (No model.)



Claim.—1. A steam-engine comprising a crank-shaft and a steam-cylinder provided with a steam-chest, rotary inlet-valves located within the same, rotary exhaust-valves located in the exhaust-ports of the steam-cylinder, and a wheel driven synchronously with the crank-shaft and adapted to operate said valves, substantially as and for the purposes set forth.

2. A steam-engine comprising a crank-shaft and a steam-cylinder provided with steam admission and exhaust ports, rotary valves located within said ports, and a wheel located outside and longitudinal of the steam-cylinder and moving synchronously with the crank-shaft, said wheel adapted to operate and control the rotary valves, substantially as and for the purposes set forth.

3. In a steam-engine, a crank-shaft and a steam-cylinder, said cylinder having steam admission and exhaust ports, rotary valves located within the same, a governor-wheel supported on said steam-cylinder by a stud and receiving its motion from the crank-shaft, toothed wheels on said rotary valves, and lugs on the rim of the governor-wheel adapted to contact with said wheels and operate said valves, substantially as and for the purposes set forth.

4. A steam-engine comprising a crank or main shaft and a steam-cylinder provided with steam admission and exhaust ports, and rotary valves located within the same and operated by two wheels driven by said crank-shaft, substantially as and for the purposes set forth.

5. A steam-engine comprising a crank-shaft and a steam-cylinder having steam admission and exhaust ports, rotary valves located within the same and each provided with a toothed wheel, and two wheels driven by said crank-shaft and having lugs disposed on the rims of said two wheels, said lugs adapted to contact with said toothed wheels and to operate said valves successively, substantially as and for the purposes set forth.

6. A steam-engine comprising a crank-shaft and a steam-cylinder having steam and exhaust ports, and rotary valves located within the same and adapted to be operated by two wheels, whereof one wheel is positively driven from the crank-shaft and the other or cut-off wheel by the former through a suitable governing connection, substantially as and for the purposes set forth.

7. A steam-engine comprising a crank-shaft and a steam-cylinder provided with inlet and exhaust ports, and rotary valves located within said ports and adapted to be operated by two wheels, whereof one serves to open successively all the said valves and close the exhaust-ports and the other to cut off the steam at the inlet-ports, substantially as and for the purposes set forth.

8. A steam-engine comprising a crank-shaft and a steam-cylinder provided with inlet and exhaust ports, and rotary valves located within said ports and adapted to be operated by two wheels, whereof one serves to open all the said valves and close the exhaust-ports and the other to cut off the steam at the inlet-ports, said wheels connected by a governor, substantially as and for the purposes set forth.

9. In a steam-engine, a crank-shaft and steam-cylinder having inlet and exhaust ports, valves located within the same and each having a toothed wheel, two wheels supported by the steam-cylinder and receiving rotary motion from the crank-shaft, and lugs attached to said wheels and adapted to contact with said toothed wheels and to control the said valves, the two wheels connected by a governor, substantially as and for the purposes set forth.

10. In a steam-engine, a set of valves and a valve-gear comprising two wheels connected by a governor, one of said wheels positively driven by the crank-shaft and the other or cut-off wheel adjustably driven by said positively-driven wheel, substantially as and for the purposes set forth.

11. In a steam-engine, two valve-operating wheels connected by a governor consisting of two levers hinged to the rim of one wheel, tension devices between said levers and said rim, and suitable gearing between said two wheels and adapted to be operated by said levers, substantially as and for the purposes set forth.

12. In a steam-engine, a set of valves located in the inlet and exhaust port and operated by two wheels, whereof one is provided with two levers hinged to the rim thereof, tension devices between said levers and rim, and a rack for each lever and engaging a pinion, one of said pinions attached to a cam and the other to a gear-wheel meshing with a segmental rack on the other wheel, substantially as and for the purposes set forth.

13. An engine having valves provided with toothed wheels, lugs secured to the periphery of a wheel, and ribs on said wheel, upon which the teeth of the wheels ride, all combined substantially as described.

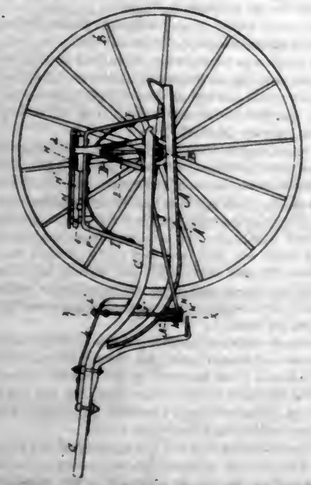
14. An engine having valves provided with toothed wheels and valve-operating wheels having lugs and ribs, said lugs having suitable buffers thereto, substantially as described.

15. An engine having a governor-wheel, and a cut-off wheel having a toothed cam attached to its hub, and weighted levers secured to said governor-wheel and having tension-springs and racks, said racks meshing with pinions, substantially as and for the purposes set forth.

16. An engine having a governor-wheel and a cut-off wheel for operating a set of valves located in the steam admission and exhaust ports, substantially as and for the purposes set forth.

17. An engine having a wheel provided with a governor to control a cut-off wheel, both of said wheels adapted to operate and control a set of valves, substantially as and for the purposes set forth.

475,943. TWO-WHEELED VEHICLE. ATWOOD B. KEYES, Princeton, assignor of one-half to Eben D. Hood, Sterling, Mass. Filed Nov. 27, 1891. Serial No. 413,170. (No model.)



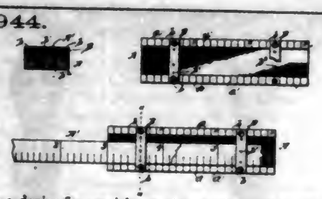
Claim.—1. In a two-wheeled carriage, the combination of the shafts provided with the uprights D, the hangers E, pivotally secured at their upper ends to the upper ends of said uprights and secured at their lower ends to opposite ends of the spring F, the connecting-rods J, rods J', pivotally secured to the front ends of said rods J, braces L, secured to the shafts, and the seat-frame supported by suitable springs, substantially as described.

2. In a two-wheeled carriage, the combination of the body, the seat-frame, the shafts provided with the uprights D, the pivoted hangers E, the springs for supporting the seat-frame, the rods J, pivoted rods J', braces L, spring K, having its opposite ends connected with the rods J, spring K', slotted at its ends, as shown, and hangers or stirrups N, substantially as set forth.

3. In a two-wheeled carriage, the combination, with a device for neutralizing the movements of the horse, of the adjustable seat described, and consisting, essentially, of the clamping-frame H, sliding-frame or rail H', and bars H'', pivoted at their rear ends to the said rails H' and adapted to have their front ends adjustably raised, substantially as described.

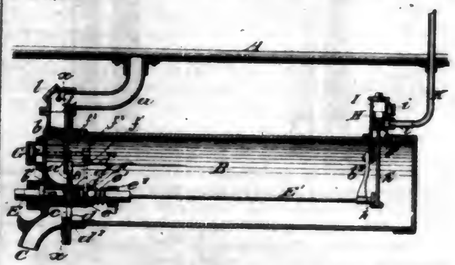
475,944. DEVICE FOR REPAIRING TAPE-MEASURES. CHARLES KNOWLTON, Yonkers, N. Y. Filed Feb. 6, 1892. Serial No. 420,611. (No model.)

Claim.—1. In a device for repairing steel tapes, the anvil having the edge ribs and the clamping devices provided with holes, substantially as specified.



2. In a device for repairing steel tapes, the anvil having the raised edges provided with scale-marks and clamping devices provided with holes, substantially as specified.

475,945. REGISTERING MEASURING-FAUCET. CHARLES A. MILLER, Brooklyn, N. Y. Filed Feb. 5, 1892. Serial No. 420,431. (No model.)



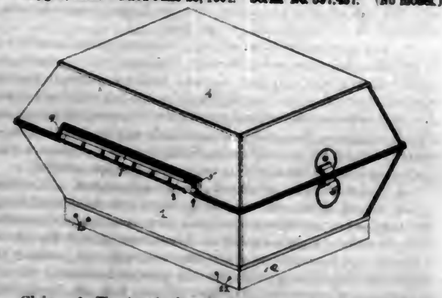
Claim.—1. A measure provided with inlet and discharge openings, a rotary valve for alternately closing the one and opening another of said openings, a register controlled by said opening and closing valve, and means for letting the air out of the measure and into the measure as it is filled and emptied, substantially as set forth.

2. The combination, with the supply-tank and measure, of a conduit leading from the supply-tank to the measure, a separate outlet-conduit leading from the measure, a single valve for alternately opening the one conduit and closing the other, a vent-conduit leading from the measure to a point above the liquid in the supply-tank, a vent-conduit leading to the open air, and means within the measure under the control of the aforesaid valve for opening and closing said vent-conduit as the inlet and outlet conduits are opened and closed, substantially as set forth.

3. The combination, with the measure, with its inlet and outlet openings, and the rotary valve for alternately opening and closing the said openings, of two vent-conduits, and a valve for alternately opening and closing said conduits, said valve being under the control of the aforesaid rotary valve, and the connection between the rotary valve and the vent-operating valve being located within the measure, substantially as set forth.

4. The combination, with the measure and its inlet and outlet openings, of the valve-spindle and the valve having a longitudinal movement along the spindle toward its seat, a spring for holding the valve to its seat, a register, and a connection between the valve and register, the said connection having an eccentric engagement with the valve, substantially as set forth.

475,946. ROASTER AND BAKER. CHARLES MCCONALOGUE, Cheboygan, Mich. Filed June 25, 1891. Serial No. 397,457. (No model.)



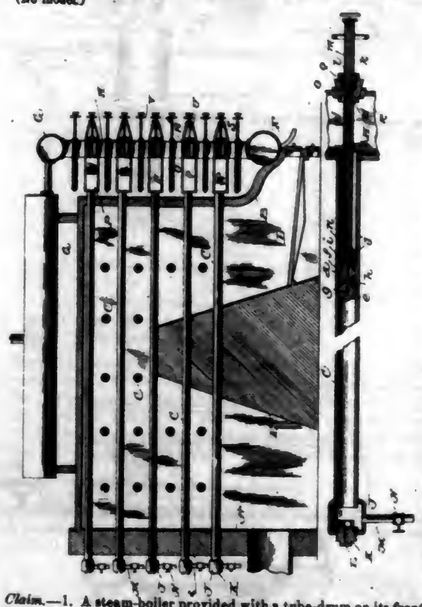
Claim.—1. The herein-described pan, comprising a lower pan 1 and a bottom pan 10, the pan 1 being fitted upon the lower pan and the latter provided with circulation-openings and said lower pan being

provided with a removable cover and with ventilating-openings, substantially as specified.

2. The herein-described pan, consisting of the upper inverted and the lower pans, the two hinged together at one of their meeting edges, the upper pan being provided with a recess at the center of one of its edges and the lower pan with a vertically-disposed flange perforated and extending into the recess and at opposite sides thereof having ways, and a perforated strip mounted for movement in the ways, substantially as specified.

3. The herein-described pan, having the inverted cover hinged thereto and having its upper edge beaded and upwardly extended at its center and perforated to form a flange, at each side of which are located ways, the upper pan being provided with a recess for the reception of the flange, and the perforated strip mounted for movement in the ways between the beads of the lower pan, whereby when thrown against one bead the perforations are in alignment and when thrown against the opposite bead said perforations are out of alignment and closed, substantially as specified.

475,947. CROSS WATER-TUBE STEAM-BOILER. FREDERICK R. MCMILLAN, Jacksonville, Ill. Filed Mar. 31, 1890. Serial No. 346,124. (No model.)



Claim.—1. A steam-boiler provided with a tube-drum on its front side, independent tubes having their front ends secured in the said tube-drum and their rear ends provided with vent-plugs and waste-pipes, and valves in the drum to control the flow of water to the tubes.

2. A steam-boiler having a tube-drum on its front side, independent tubes having their front ends secured in the said tube-drum, and sliding cut-off valves mounted in the tube-drum and adapted to cut off the water in the drum from the front end of any one tube.

3. In a steam-boiler, the combination of a tube-drum, a tube having its front end secured in said drum, a plug in the front side of the drum opposite the end of the tube, and sliding cut-off valves mounted in the drum around the front end of the tube.

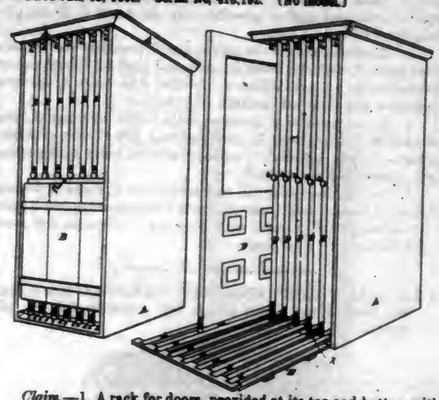
4. The combination of the tube-drum provided with rearward extensions, a tube having its front end secured in said drum between said extensions, sliding valves resting normally in the rearward extensions of the drum, and means for drawing said valves forward to cut off the water from the tube.

5. The combination of a tube-drum, a tube having its end secured thereto, sliding valves mounted in the drum and surrounding the end of the tube, supporting-arms projecting forward from the drum, and operating-rods mounted in said arms and acting on the sliding valves.

6. The combination of a tube drum, a tube secured therein, a sliding valve consisting of three wedge-shaped plates mounted in the drum, a stem projecting from the drum and adapted to draw the valve forward, and a rod mounted in said stem and adapted to pull on the middle plate to expand the valve.

7. In a boiler of the character described, the stopper-removing tool provided with a stuffing-box e, adapted to be fitted in the tube-drum and consisting of a stem *l*, adapted to engage the stopper, and a rod *n*, adapted to release the stopper from the tube.

475,948. RACK FOR DOORS. JAMES L. PEARE, Louisville, Ky. Filed Jan. 15, 1892. Serial No. 418,192. (No model.)



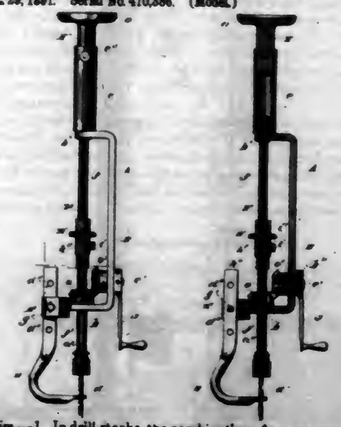
Claim.—1. A rack for doors, provided at its top and bottom with corresponding grooved ways and upon its front side with a flap hinged at the bottom of the rack, the flap also having grooved ways which register with those in the bottom of the rack, so that when the flap is dropped the grooved ways thereon form a continuation of those on the bottom of the rack.

2. A rack for doors, provided at its top and bottom with corresponding grooved ways and upon its front side with a flap hinged to its bottom, the flap having grooved ways which when the flap is dropped make a continuation of the grooved ways in the bottom, combined with sticks resting on casters or rollers and of proper width to support each one door in the grooved ways of the bottom free to run out into those of the flap.

3. A rack for doors, provided at its bottom and top with corresponding grooved ways and a flap hinged to the bottom, having grooved ways continuing when the flap is thrown open those of the bottom, combined with sticks of the proper width to carry a door running on casters in the grooved ways of the bottom and free to run into the grooved ways of the flap, and means connected with each stick for holding a door placed thereon in an upright position.

4. A rack for doors, provided at its bottom with corresponding grooved ways and a flap hinged to the bottom, having grooved ways continuing when the flap is thrown open those of the bottom, combined with sticks of the proper width to carry a door running on casters in the grooved ways of the bottom and free to run into the grooved ways of the flap, these sticks being fitted with pointed wire nails run through them point upward.

475,949. DRILL-STOCK. CORWIN H. PLATT, Cleveland, Ohio. Filed Oct. 29, 1891. Serial No. 410,366. (Model.)



Claim.—1. In drill-stocks, the combination of the compound shaft F, composed of the threaded shaft *f*, provided with the groove *h'*, the

shaft *f'*, provided with the key-slot *a''*, socket *k'*, provided with the set-screw *i*, with the frame B, provided with the bearings *b b' b''*, tube *e*, curved arm D, and arm-supporting fork E, all substantially in the manner and for the purpose herein described.

2. The combination of the wheel H with the shaft *f*, compound shaft F, frame B, curved arm D, arm-supporting fork E, beveled pinions *o o'*, and crank-shaft *c'*, provided with the crank J, for the purpose described and set forth.

3. The combination of the curved arm D, provided with the hole *d* and hole *d''*, with the frame B, compound shaft F, breast-block O, beveled pinions *o o'*, crank-shaft *c'*, provided with crank J, and arm-supporting fork E, all substantially as set forth.

4. The combination of the breast-block O with the frame B, compound shaft F, curved arm D, arm-supporting fork E, tube *e*, beveled pinions *o o'*, and crank-shaft *c'*, provided with the crank J, all substantially as described and set forth.

5. The combination of the compound shaft F, frame B, beveled pinions *o o'*, breast-block O, curved arm D, arm-supporting fork E, tube *e*, and crank-shaft *c'*, provided with the crank J to form the drill-stock A, all substantially as set forth.

475,950. SAFETY ATTACHMENT FOR TRUNKS. SETH H. SPARROW, Norwalk, Ohio. Filed Dec. 26, 1891. Serial No. 416,140. (No model.)



Claim.—1. The receptacle, separate engaging pieces fixed upon its inside and having a series of openings one above the other, slotted longitudinally-adjustable cross-pieces constructed to look in said openings and having a screw to lock said cross-pieces together, and a false cover held down by said cross-pieces, substantially as described.

2. As a new article of manufacture, safety attachments for trunks and like receptacles, consisting of upright pieces constructed to be secured to the inside of a trunk or other receptacle and provided with a series of openings one above the other, and rigid cross-pieces overlapping each other at their inner ends and slotted to be rigidly fastened together after adjustment, said cross-pieces having heads to engage the openings in the upright pieces, and a screw to fasten them together through the slots, substantially as described.

475,951. HAME-TUG. HARRY O. STANLEY, Pittsburg, Pa. Filed Mar. 16, 1892. Serial No. 425,143. (No model.)

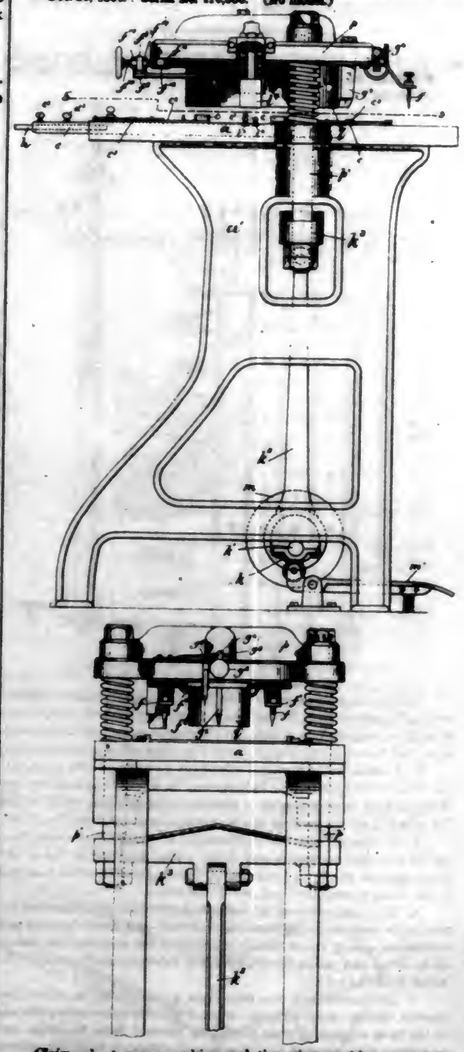


Claim.—1. The combination, with the looped strap H, and a plate A, inclosed therein and having pins B and the keeper L, of the latch E, pivoted thereto and provided with the recesses *g* to receive the pins, substantially as described.

2. The combination, with the looped strap H, and a plate A, inclosed therein and having pins B and an eye C, said eye being inclosed in the loop at the strap, of the keeper L, and the latch E, having a cross-bar D, fitting in said eye and provided with the recesses *g*, substantially as described.

3. The combination, with a plate A, having pins B, of the eye C, the keeper L, and the latch E, composed of the side bars F and cross-bars D G G', said cross-bars G G' having recesses to receive the pins B B, substantially as described.

475,952. VAMP MARKING AND THROATING MACHINE. GEO. R. STEWART, Ashland, and ALBERT G. BREWER, Hopkinton, Mass. Filed Dec. 28, 1891. Serial No. 416,333. (No model.)



Claim.—1. A vamp marking and throating machine comprising in its construction the vamp-supporting bed, the adjustable side and end gages thereon, a marking die or dies detachably secured to the bed, the carrier movable toward and from the bed, the throat-cutting die and marking devices attached to the carrier, and the yielding presser or piston supported by the carrier and arranged to co-operate with the marking or printing dies on the bed, as set forth.

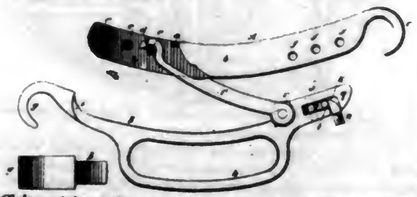
2. A vamp marking and throating machine comprising in its construction the vamp supporting bed, the carrier movable toward and from said bed, the marker-carrying arms pivoted at their inner ends to a support on the carrier and having markers at their outer ends, and the marker-adjusting rod having oppositely screw-threaded portions engaged with said arms, and a disk or flange projecting into a slot in the carrier, whereby said rod is prevented from moving endwise, the rotation of said rod causing the marker-arms to move simultaneously in opposite directions, as set forth.

3. A vamp marking and throating machine comprising in its construction the vamp-supporting bed, the carrier movable toward and from said bed, a support, such as the ear *f'*, secured to the carrier and movable lengthwise thereof, the marker-carrying arms pivoted to said support, and means for adjusting the support and markers lengthwise of the bed, as set forth.

4. The combination, with the vamp-supporting bed, of the spring-pressed pivoted gages *c c c' c'*, arranged in pairs, and means, substantially as described, for simultaneously moving said gages inwardly, as set forth.

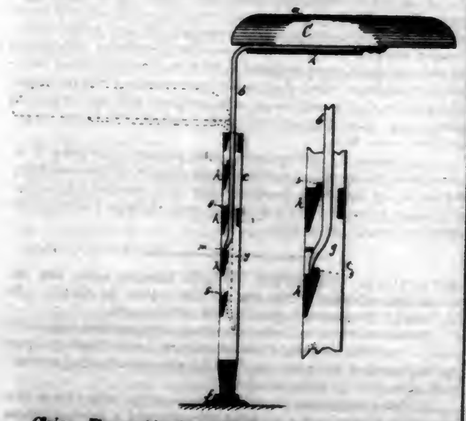
5. The combination, with the vamp-supporting bed, of the slides *d d e e*, connected by cross-bars *d' d'*, the spring-pressed gages *c c*, having inclines bearing on the studs on the bars *d d* and adapted to move said bars in one direction, the spring-pressed gages *c' c'*, having inclines bearing on studs on the bars *e e*, the adjustable collars *g g*, engaged with said cross-bars and adapted to permit a limited independent movement of the cross-bars, and means for securing said collars in different positions, as set forth.

475,953. HAME-FASTENER. JOSEPH STRETON, Newark, and THOMAS M. BLACKWELL, East Orange, N. J. Filed July 25, 1891. Serial No. 400,704. (No model.)



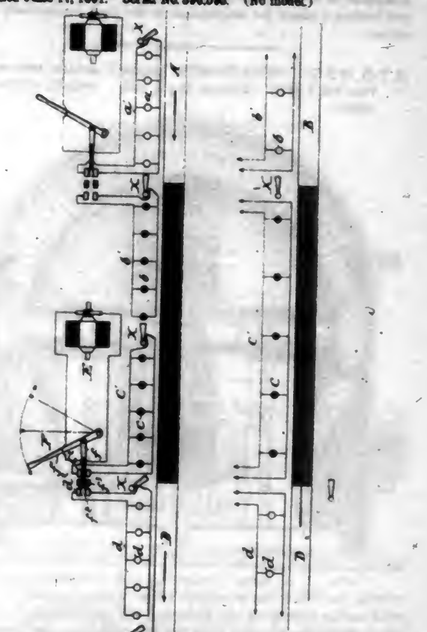
Claim.—A hame-fastener constructed with a casing A, provided at one end with a hook and with a series of holes *f* and at its opposite end with a corresponding series of posts *e*, a lever C, formed at one end with a hook to engage said posts, and a bar B, permanently secured at one end to the opposite end of said lever C, said bar B being provided with a catch to engage in said openings, substantially as described.

475,954. SUPPLEMENTARY SEAT FOR VEHICLES. WILLIAM H. TILLOU, Le Roy, N. Y. Filed May 6, 1891. Serial No. 391,763. (No model.)



Claim.—The combination, with the hollow standard *c*, provided with the ratchet-teeth *h h*, having shoulders *s s* at their tops, of the shank *b*, provided at its lower end with the curved detent *m*, engaging with the ratchet-teeth, and the seat C, attached to the top of the shank and on one side of the same, as shown and described, and for the purpose specified.

475,955. RAILWAY SIGNAL SYSTEM. WILLIAM G. WATTSON, Trappan, assignor of one-half to Joseph R. Stewart, Haverstraw, N. Y. Filed June 17, 1891. Serial No. 396,590. (No model.)



Claim.—1. In a block-signal system, the blocks each provided with a series of signals distributed throughout its length, said blocks being arranged in pairs, and a switching device for each pair, said device being constructed to set at "safety" the signals of one block at a time, the signals of the remaining block being simultaneously at "danger," substantially as described.

2. In a block-signal system, the blocks arranged in pairs and each provided with a series of electrically-operated signals distributed throughout its length, a separate electric circuit for the signals of each block, and a switch common to the circuits of each pair of blocks, said switch being arranged to make and break said circuits alternately, substantially as described.

3. In a block-signal system, the blocks arranged in pairs and each provided with a series of electrically-operated signals distributed throughout its length, an electric circuit connecting the signals of each series, an electric generator for each pair of blocks, and a switch arranged to throw the current from the generator into the circuit of either block, substantially as described.

4. In a block-signal system, a pair of contiguous blocks, each having a series of electrically-operated signals distributed throughout its length and a circuit for said signals, an electric generator for said circuits, and a switch consisting of the terminals d^3 c^3 of the block-circuits, intermediate non-conductors f^3, movable spring-terminals upon the generator-circuit, and means for shifting said terminals to contact with the terminals of either block-circuit or the intermediate non-conductors, substantially as described.

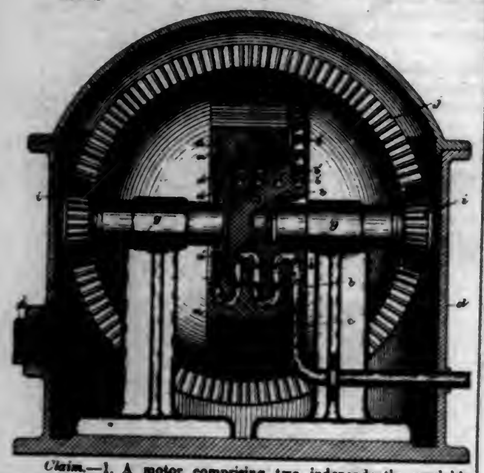
5. In a block-signal system, the blocks arranged in pairs and each provided with a separate electric circuit, a switch common to each pair of circuits, and combined day and night signals distributed throughout the length of each block, said signals each consisting of a target operated by a magnet in the circuit, and an electric lamp also in the circuit, whereby they are operated simultaneously, substantially as described.

475,956. SASH-CORD FASTENER. ALEXANDER WILSON, Rising Sun, Md., assignor of one-half to Job B. Siddell, Sylmar, Pa. Filed May 3, 1891. Serial No. 392,096. (No model.)



Claim.—A sash-cord fastener consisting of a cylindrical socket having a curved opening passing through it and a holder consisting of a segment of a ring conforming to the curved opening in the socket and having a shank for attachment to the cord, substantially as described.

475,957. STEAM-TURBINE. GEORGE J. ALTHAM, Swansea, Mass. Filed Feb. 3, 1891. Renewed May 4, 1892. Serial No. 431,754. (No model.)



Claim.—1. A motor comprising two independently-revoluble wheels, one within the other, said wheels having tangential buckets, each having a receiving and delivering end, the buckets of one wheel being offset from the buckets of the other wheel in a line parallel with the axes of the wheels, whereby the receiving ends of the buckets of one wheel will register with the delivering ends of the other, as set forth.

2. A motor comprising two independently-revoluble wheels, one within the other, the inner wheel having tangential buckets the receiving ends of which are at one side of the outer wheel, while the outer wheel has tangential reversely-extending buckets whose delivering ends are at one side of the inner wheel, the delivering ends of all the buckets in the inner wheel registering with the receiving ends of all the buckets in the outer wheel, as set forth.

3. In a motor, the combination of the inner wheel having tangential buckets in its outer periphery, the hollow outer wheel receiving the inner wheel and having tangential buckets in its inner periphery, offset from the buckets of the inner wheel in a line parallel with the axes of the wheels, whereby they will register at their receiving ends with the delivering ends of the buckets of the inner wheel, and a pipe or tuyere arranged to deliver a jet of steam or other fluid under pressure to the receiving ends of the buckets at one side of one of said wheels, as set forth.

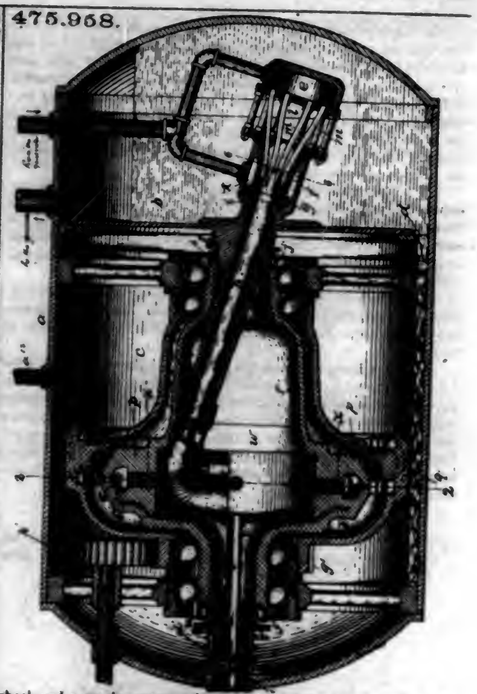
4. In a motor, the combination of the inner and outer turbines, one having internal and the other external buckets U-shaped in the direction of the axis of the wheel and having the delivery ends of the buckets of one wheel registering with the receiving ends of the buckets of the other wheel, means for supplying steam or other fluid to said buckets, the shafts supporting said wheels and mounted in fixed bearings, a power-transmitting shaft, and connections between said wheel-supporting shafts and the power-transmitting shaft, whereby the latter is driven by the rotation of the turbine, as set forth.

5. In a motor, the combination of the inner and outer turbines, one having external and the other internal buckets U-shaped in the direction of the axis of the wheel and having the delivery ends of the buckets of one wheel registering with the receiving ends of the buckets of the other wheel, means for supplying steam or other fluid to said buckets, the shafts supporting said wheels and mounted in fixed bearings, bevel gears or pinions on said shafts, a larger bevel-gear meshing with both of said pinions, and a power-transmitting shaft affixed to said larger gear, as set forth.

475,958. MOTOR. GEORGE J. ALTHAM, Swansea, Mass. Filed Feb. 16, 1891. Renewed May 4, 1892. Serial No. 431,755. (No model.)

Claim.—1. A motor comprising in its construction a reaction-wheel, a nozzle adapted to receive fluids under pressure, a tube connected with said nozzle and extending into said wheel, and stationary chutes connected with the end of the tube and arranged to discharge the fluids tangentially with respect to the inner circumferences of the

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wheel, and a supplementary wheel outside of the reaction-wheel to receive the discharge therefrom, as set forth.

2. A motor comprising in its construction a reaction-wheel provided with a cover *r*, a nozzle adapted to receive fluids under pressure, a tube connected with said nozzle and extending into said wheel, the tube being inclined with respect to the axis of the wheel and cover, and stationary chutes connected with the end of the tube and arranged to discharge the fluids tangentially with respect to the inner circumferences of the wheel, as set forth.

3. A motor comprising in its construction a receiving-chamber and a discharge-chamber, a reaction-wheel, a nozzle adapted to receive fluids under pressure, a tube connected with said nozzle and extending into said wheel, and stationary chutes connected with the end of the tube, the interior of the wheel at its center communicating with the atmosphere and having communication at its periphery with the discharge-chamber, as set forth.

4. A motor comprising in its construction a receiving-chamber and a discharge-chamber, a reaction-wheel, a nozzle adapted to receive fluids under pressure, a tube connected with said nozzle and extending into said wheel, and stationary chutes connected with the end of the tube, and a wheel surrounding the first-mentioned wheel, the interior of the latter wheel at its center communicating with the atmosphere and having communication at its periphery with the surrounding wheel, which in turn communicates at its periphery with the discharge-chamber, as set forth.

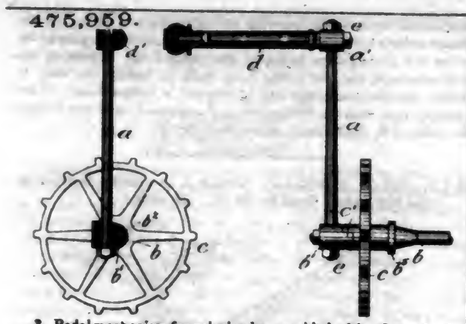
5. A nozzle for mixing fluids under pressure, embracing in its construction the chamber *g* and the annular chamber *k*, communicating therewith, the chamber *e*, communicating with chamber *g* by means of pipes or tubes, and the intervening open chamber *l* between the chambers *e* and *g*, as set forth.

475,959. VELOCIPEDE. WILLIAM ANDREWS, Aston, near Birmingham, England. Filed Oct. 21, 1891. Serial No. 409,461. (No model.) Patented in England Mar. 19, 1891, No. 4,905.

Claim.—1. Pedal mechanism for velocipedes, provided with a ball-pedal, a pedal-plate having a tapped aperture, a cone bearing engaging said aperture, and a jam-nut for locking the cone bearing, substantially as and for the purposes set forth.

2. Pedal mechanism for velocipedes, provided with a crank-arm comprising a lever having a scarfed extremity and a detachable boss or coupling having intersecting passages adapted for the reception of the scarfed extremities of the lever and of the member to which it is attached, the construction being such that the scarfed extremities are interlocked in the coupling, substantially as and for the purposes set forth.

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3. Pedal mechanism for velocipedes, provided with a flanged axle, a crank-boss detachably keyed to the end of the axle, and a driving sprocket or gear wheel loosely mounted on said axle intermediate of the flange and boss and adapted to detachably engage projections on said boss and to be slid off the axle, substantially as and for the purposes set forth.

4. Pedal mechanism for velocipedes, provided with a crank-lever, an axle, and a pedal-pin and having bosses or couplings provided with intersecting passages for the reception of the beveled or scarfed extremities of said lever, axle, and pin, substantially as and for the purposes set forth.

475,960. GONG DOOR-BELL. ANTHONY J. BROUILLARD, New Britain, Conn. Filed May 19, 1888. Serial No. 274,355. (No model.)



Claim.—1. In combination, in a gong-bell, a base-plate, a gong secured thereto, a swinging verge having a hammer attached thereto and provided with wiping-faces, a rotary ratchet-wheel with peripheral teeth adapted to engage the wiping-faces on the verge, a pin projecting from the hub of the ratchet-wheel and engaging a spiral cam in a sliding spindle, the sliding spindle having a spiral cam, a pin projecting from the side of the sliding spindle into a groove in the wall of the socket in which the spindle slides, whereby it is held against rotation, a push-button secured to the spindle by means of the connecting-link, and the adjustable bearer through which the push-button passes, all substantially as described.

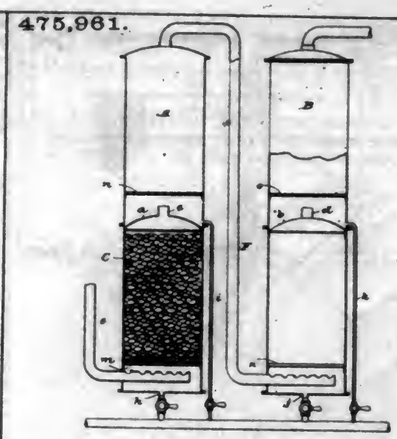
2. In combination with a gong-bell, the gong, the striking mechanism embodying as one element a sliding spindle, a push-button *l*, secured to the outer end of such spindle, a base supporting a bearer, and the adjustable bearer through which the push-button passes, all substantially as described.

3. In combination with a gong-bell the striking mechanism of which embodies a sliding spindle, the sliding spindle *c*, the link *l*, the push-button *l*, of glass or like brittle material, with its inner end secured in a socket in the outer end of the link, the base-piece *o*, and the adjustable bearer *n*, through which the push-button passes, all substantially as described.

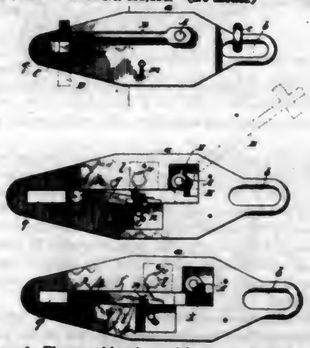
475,961. RECTIFYING APPARATUS. BOGDAN HOFF, Jaroslau, and JULIUS FROMMEL, Pawiostow, Austria-Hungary. Filed June 3, 1890. Serial No. 354,303. (No model.) Patented in Germany May 3, 1888, No. 53,700, and in Switzerland Jan. 18, 1890, No. 1,902.

Claim.—A rectifying apparatus consisting of a plurality of tanks divided into several compartments by means of dome-shaped diaphragms, inlet-pipes entering at the bottom thereof for the passage of vapors, a filling for the same, consisting of special grooved condensing bodies of refractory material having smooth surfaces and of a dense structure and provided with openings, grooves, or passages passing therethrough and so arranged as to present a system of channels from the top to the bottom, discharge-pipes at the tops of said tanks, and a collecting-pipe, substantially as set forth.

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475,962. HASP-LOCK. FRANK B. HOUSER, Felicity, Ohio. Filed Feb. 19, 1892. Serial No. 422,151. (No model.)



Claim.—1. The combination, with an eye having a shoulder, of a hasp having a slot through which the eye may pass, a hook pivoted to the hasp and engaging the eye, a bolt sliding longitudinally within the body of the hasp and adapted to engage said shoulder, a spring-actuated tumbler pivoted to said bolt and having a notch, one of whose walls is beveled, and a lip in the hasp, over which said beveled wall rides as the bolt is moved, as and for the purpose set forth.

2. The combination, with an eye having a shoulder, of a hasp having a slot through which the eye may pass, a shaft journaled through said hasp and carrying a hook adapted to enter the eye, a lug on said shaft, and a bolt within the body of the hasp, its forward end adapted to engage said eye and its rear end to be struck by said lug when the hook is turned to the rear, as and for the purpose set forth.

3. The combination, with an eye having a shoulder, of a hasp having a slot through which the eye may pass, a bolt within the hasp-body, a tumbler for holding said bolt, a key for operating it, a shaft journaled through said body and having a lug adapted to shoot the bolt, and a hook secured on said shaft, as and for the purpose set forth.

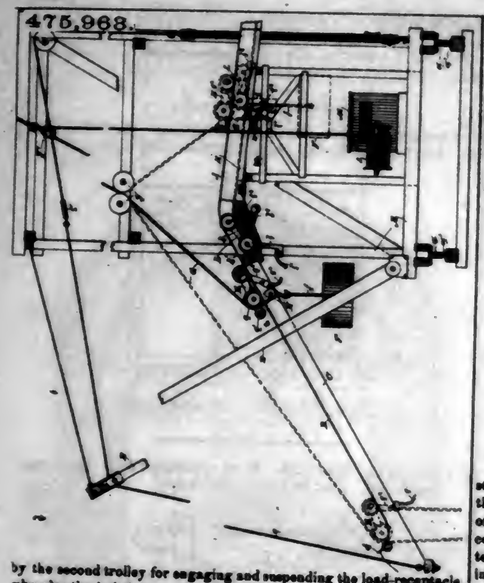
4. The combination, with an eye having a shoulder, of a hasp having a slot through which the eye may pass, a hook pivoted to the hasp and adapted to enter said eye, a bolt within the hasp-body, a key for operating the bolt, and means for shooting the bolt independently of the key, as and for the purpose set forth.

475,963. HOISTING APPARATUS. JAMES W. KIERNAN, San Francisco, Cal. Filed Mar. 11, 1892. Serial No. 424,547. (No model.)

Claim.—1. In a hoisting apparatus having oppositely-inclined tracks, a trolley for carrying the load up one incline and a second trolley in the path of the first trolley engaged by the latter trolley and provided with means for suspending the weight of the load and relieving the hoisting-rope of said weight as the load is carried down the opposite incline, substantially as herein described.

2. In a hoisting apparatus, the combination of a trolley, a hoisting rope or runner suspending the load-receptacle and engaging the trolley, whereby the latter and the receptacle are pulled up an incline, a second trolley in the path of and adapted to be engaged by the first trolley and carried with it on an opposite incline, and a means carried

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by the second trolley for engaging and suspending the load-receptacle, whereby the hoisting-rope is relieved of the weight of the load-receptacle during the travel on said opposite incline, substantially as herein described.

3. In a hoisting apparatus, the combination of the inclined track D, the oppositely-inclined track J, meeting its upper end, the track K, parallel to the track J, the trolley E, traveling on tracks D and J, the load-receptacle and hoisting rope or runner for suspending the receptacle and carrying the trolley up the track D, the second trolley L, traveling on track K and lying in the path of trolley E, whereby the trolleys engage and travel together down the tracks J and K, and means for suspending the load-receptacle from trolley L, substantially as herein described.

4. In a hoisting apparatus, the combination of the inclined track D, the oppositely-inclined parallel tracks J K, the former joining the track D, the trolley E, traveling on tracks D J, the second trolley L, traveling on track K, the hoisting rope or runner passing over and secured to trolley E and carrying the load-receptacle in its bight, the hook of trolley L, adapted to receive and suspend the load-receptacle, and the contact-piece of the trolley E for engaging said hook, whereby the trolleys travel together on tracks J K, substantially as herein described.

5. In a hoisting apparatus, the combination of the trolley E, having the pivoted arm with contact-piece, and the second trolley L, having the pivoted hook with controlling weight-arm, whereby the load-receptacle is received from the first trolley and suspended by the second trolley and the two trolleys are caused to move together, substantially as herein described.

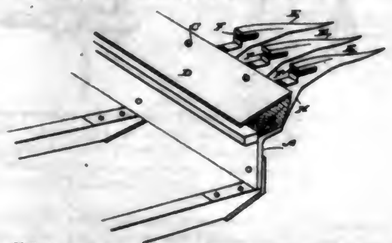
6. In a hoisting apparatus, the combination of the trolley E, having the pivoted arm with contact-piece, and the second trolley L, having the pivoted hook with pivoted guard and controlling weight-arm, whereby the load-receptacle is received from the first trolley and suspended by the second trolley and the two trolleys are caused to move together, substantially as herein described.

7. In a hoisting apparatus, the combination of the inclined tracks D, J, and K, the trolleys E and L, the guide-sheaves and pivoted arm with contact-piece of trolley E, the pivoted hook with controlling weight-arm of trolley L, and the hoisting rope or runner passing between the sheaves of trolley E and secured to its arm, said rope carrying the load-receptacle in its bight below said trolley, substantially as herein described.

8. In a hoisting apparatus, the oppositely-inclined tracks D and J, the trolley E, traveling thereon and having the pivoted arm, and the hoisting-rope suspending the load-receptacle and engaging the trolley, as described, in combination with the inclined track K, having the rapidly-inclined end lying under the end of the track J, and the second trolley L on said track K and having a hook adapted to rise up under the bail of the load-receptacle to suspend it, substantially as herein described.

9. A hoisting apparatus consisting of a frame having an inclined boom with track D, and the parallel tracks J K, inclined oppositely to the boom-track, the track J joining track D, and the track K having a rapidly-inclined end, the guide-pulleys located above the crest of said tracks, the trolley E, traveling on tracks D J and having the pivoted arm with contact-piece, the hoisting rope or runner passing between the guide-pulleys engaging the trolley E and suspending the load-receptacle, and the trolley L on track K, having the hook to receive the load-receptacle and to suspend it independently of the hoisting-rope, whereby the trolleys and receptacle may travel upon the tracks J K, substantially as herein described.

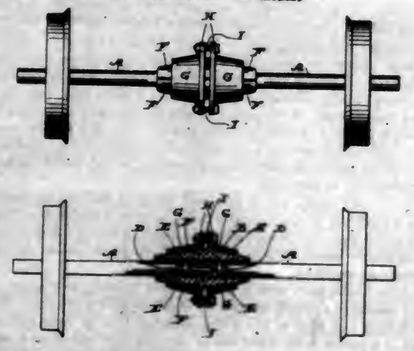
475,964. FINGER-BAR. MICHAEL H. LAUFENBURG, Stockton, Cal. Filed July 1, 1891. Serial No. 398,168. (No model.)



Claim.—1. A finger-bar for harvesters, consisting of the angle-steel plate, a wooden bar fitted upon the upper surface thereof, having the top beveled or inclined rearwardly, and a metal plate fitting the top of the wooden bar and bolted through it to the steel plate beneath, in combination with the sickle guards or fingers having shanks which extend through the wooden bar, and angular projections or lugs extending down the front of the bar and resting upon the top of the steel angle-plates, substantially as herein described.

2. The sickle guards or fingers having the slotted guides within which the sickle reciprocates, the rearwardly-extending shanks inclining downwardly and rearwardly, as shown, and the forked projections or lugs, in combination with the finger-bar consisting of the angle-steel plate, upon the front edge of which the guard-lugs rest, the wooden bar fitted to and extending along the upper surface of said plate and having the shanks of the guards driven into it at an angle, as shown, and the metal surface-plate fitted to the top of the wooden bar, inclining downwardly and rearwardly, and bolts or rivets whereby the plates and bar are secured together, substantially as herein described.

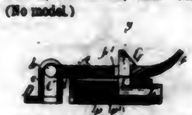
475,965. CAR-AXLE. DAVID M. MILLER, Fairfield, Cal. Filed Feb. 2, 1892. Serial No. 420,109. (No model.)



Claim.—1. The two-part axle having abutting ends with holes bored centrally in them and a guide-pin projecting into the holes, a two-part sleeve surrounding the meeting ends of the shafts, having inwardly-projecting collars, grooves formed in the axles, into which said collars fit, and the exterior collars by which the sleeves are clamped together and retained upon the axle, substantially as herein described.

2. A two-part axle with abutting ends, an axial pin-and-socket connection between the ends, by which a movable connection is made between the two, circumferential grooves around the adjacent meeting ends of the axles, a longitudinally-divided sleeve, the exterior of which forms a double cone and the interior is formed to fit the axle, and having interior collars which fit the annular grooves of the axle, exterior conical collars fitting the conical surfaces of the sleeves, with flanges upon their inner ends, and bolts by which these flanges are drawn toward each other, substantially as herein described.

475,966. FASTENER FOR THE MEETING-RAILS OF SASHES. WILLIAM M. MORTON, New Haven, Conn. Filed Mar. 15, 1892. Serial No. 425,086. (No model.)



Claim.—In a sash-fastener, the combination of the rear base-plate provided with the guiding-loops C, having the inverted journal-bearing at their upper ends and joined by the front and rear connecting-bars below the bearings, the operating-lever fitted and adapted to slide vertically between the said bars and provided with the lateral trunnions received in said guiding-loops, the front base-plate, a bolt guided therein, a catch or hook carried on the bolt and adapted to engage a shoulder or lip on said lever, a spring fitted upon the said bolt and adapted to actuate the bolt and its catch forwardly to draw and clamp the meeting-rails together, and a button projecting externally from the bolt for releasing the catch from engagement with the lever, substantially as specified.

475,967. OIL-GAGE FOR LAMPS. THOMAS A. MCGOVERN, Bolinas, Cal. Filed June 24, 1891. Serial No. 397,261. (No model.)



Claim.—1. In a lamp or lantern, the reservoir having the vertical slot made in one side, a casing having a corresponding slot made in the front and means whereby it may be secured to the interior of the reservoir and opposite the opening therein, and a vertical transparent tube fitting the casing and surrounded by a cement, whereby it is retained in place and the joints are packed to prevent leakage through the opening in the side of the reservoir, substantially as herein described.

2. In a lamp or lantern, a reservoir having a vertical slot made in one side, a casing with means for attaching it to the inner side of the reservoir, said casing having a slot corresponding with that in the reservoir, a vertical transparent tube open at both ends, fixed in the casing so as to expose one side through the openings, and a sliding protecting gate or cover movable in guides upon the outside of the reservoir, whereby the opening and tube may be exposed or protected, substantially as herein described.

475,968. COMBINED WEIGHING AND ADVERTISING DEVICE. DENNIS W. MCLAUGHLIN, San Leandro, Cal. Filed Apr. 13, 1891. Serial No. 388,790. (No model.)

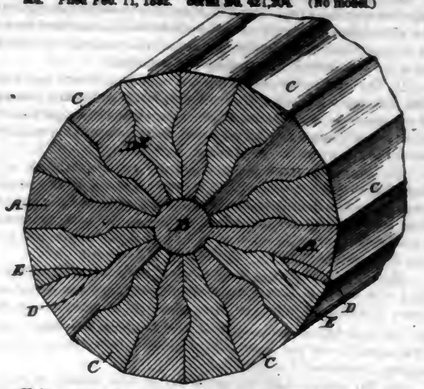


Claim.—1. The combination of platform 2, horizontal vibrating lever 8, cylinder 5, journaled at each end in the main frame, rod 14, connected to one end of lever 8 and with its other end arranged to act on cylinder 5, so as to impart a rotative movement thereto at a proper time, and spring 10, connected to the casing and to the lever 8, so as to bear downward on said lever, substantially as described.

2. In a combined weighing and advertising machine, the combination of the weighing-platform, the rotative advertising cylinder or equivalent device, and a pivoted lever, which connects at one end to the levers belonging to the weighing-platform and is provided at the other end with a depending rod provided with a conical foot-piece, that acts upon projecting pins on the end of the advertising-cylinder, together with the spring 17, substantially as described.

3. The combination, with the weighing-scale 2, the indicating-dial 4, and the lever 8, together with the other parts of the mechanism, whereby a weight upon the platform 2 is indicated by the dial, of the rotating cylinder 5, provided on one end with projecting pins, and the rod 14, connected to one end of the lever 8 and having at its other end a conical foot-piece 15, and the spring 17, arranged to engage the pins on the end of the cylinder, substantially as described.

475,969. MANUFACTURE OF AXLES, SHAFTS, &c. BENJAMIN F. PEACOCK, Anniston, Ala., and FRANCIS T. PEACOCK, Spartow's Point, Md. Filed Feb. 11, 1892. Serial No. 421,304. (No model.)



Claim.—A sectional pile for shafting, provided with a diametrically-arranged bar having a central portion and radial wings, and a series of radial sections with interlocking surfaces therefor.

475,970. ELECTRIC-RAILWAY MOTOR. JAMES F. SHAWHAN, Detroit, Mich., assignor, by mesne assignments, to Freeman B. Dickerson, same place. Filed May 10, 1890. Serial No. 351,338. (No model.)



Claim.—1. The combination, with the car-axle, of a motor supported thereon, the said motor consisting, essentially, of two electro-magnets and two armatures, the armatures being connected with the axle, substantially as described.

2. The combination, with the axle, of an electro-motor mounted thereon, the said motor having two field-magnets and two armatures, a gear-wheel mounted on said axle, and pinions on the armatures connected to opposite sides of said gear-wheel, substantially as described.

3. The combination, with the axle, of the hangers supported on the axle, a motor supported on said hangers and provided with two armatures revolving in a single magnetic circuit, and a gear-wheel on the axle and pinions on the armatures engaging the opposite sides of said gear-wheel, substantially as described.

4. The combination, with the axle and gear secured thereto, of a single magnetic circuit having two armatures rotating in the same direction and provided with pinions engaging the opposite sides of said gear-wheel, substantially as described.

5. The combination, with the axle, of the hangers connected thereto having bearings for the armature-shafts and connecting-pieces between the hangers having supports for the field-magnets, substantially as described.

6. The combination, with the axle supported in pedestals mounted in the frame, of a motor supported on said shaft and provided with two armatures, connections between the armatures and the axle, and elastic connections between the motor and the frame, substantially as described.

7. The combination, with the frame and axle supported therein, of a motor supported bodily on said axle and provided with two armatures, connections between the armatures and the axle, and elastic connections between the motor and frame, the said connections opposing the motion of the motor toward the frame but allowing it to move freely from the frame, substantially as described.

8. The combination, with the frame, of the axle supported therein, hangers supported on the axle, a motor carried by the hanger and embracing the axle, two armatures arranged at opposite sides of the axle and connected to drive the same, a rod connecting the hanger

and frame, and a spring between the rod and frame, substantially as described.

9. The combination, with the frame and axle supported therein, of hangers supported on said axle and carrying the electric motor, a pivoted rod connected to the motor and extending freely through the frame, a spring surrounding the rod, and an adjusting-nut on the rod, substantially as described.

10. The combination, with the axle and gear thereon, of a motor supported upon the axle having two armatures connected on opposite sides of the gear, and elastic connections between the motor and frame, the arrangement being such that the motors can commence to operate before the gear is turned, substantially as described.

11. The combination, in a motor-truck, of two motors, each provided with two armatures, a divided source of energy for said motors, the armatures being connected in series between the two portions of the source of energy, and the field-coils being connected in multiple between the two portions, substantially as described.

12. The combination, in a motor-car, of two motors, each provided with two armatures and two field-magnets of a divided source of energy for said motors, the armatures being connected in series between the divided portions, and the field-magnet coils being connected in multiple with themselves but in series with the armatures and portions of the source of energy, substantially as described.

13. The combination, in a motor-truck, of two-motors, each provided with two armatures and two field-magnets, and two sets of secondary batteries, the armatures being connected in series between the two sets, each field-magnet being provided with a high-resistance and a low-resistance coil and connected in multiple between the two sets of batteries, substantially as described.

14. The combination, in a motor-car, of two motors, each provided with two armatures and two field-magnets, each magnet being wound with two coils, one of high and one of low resistance, and a switch for closing the circuit through the high-resistance coils alone or through both the high and low resistance coils simultaneously, substantially as described.

15. The combination, with the motor-car, of a motor having two armatures and two field-magnets, the armatures being connected in series and the field-magnets being provided with two separate coils connected in multiple, substantially as described.

475,971. SNAP-HOOK. FRANK WHITE, Pomona, Cal. Filed Aug. 21, 1891. Serial No. 403,307. (No model.)



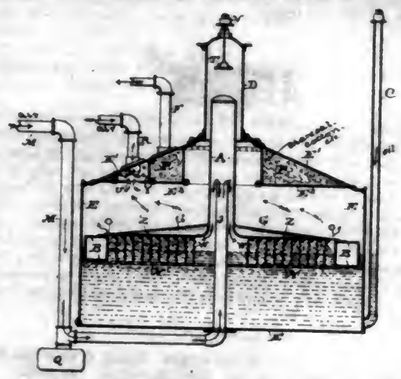
Claim.—1. A blank for a snap-hook, formed of a single piece of bendable metal made with a portion A to form the barrel of the hook, a portion B with part C to form the head and nose of the hook, said portion being provided with an opening D and a downwardly-extending slot E, which form the mouth and the guide for the thumb-piece of the bolt, respectively, and the perforated portion F, forming the end ears of the hook, substantially as herein described.

2. A blank for a snap-hook, formed of a single piece of bendable metal, made with a portion A to form the barrel of the hook, a portion B with part C to form the head and nose of the hook, said portion being provided with an opening D and a downwardly-extending slot E, which form the mouth and the guide for the thumb-piece of the bolt, respectively, the perforated portion F, forming the end ears of the hook, and the flange or lip between said end portions, forming the abutment for the base of the spring, substantially as herein described.

3. A snap-hook consisting of a single piece of metal folded upon itself to form the integral slotted barrel and head and nose portions of the hook and perforated end ears, and a bolt formed from a single blank or piece of bendable metal having the body portion I and thumb-piece *i* at right angles thereto.

4. A snap-hook consisting of a single piece or blank of metal bent upon itself to form the slotted barrel, head, nose, mouth, guide-slots, perforated end ears, and flange or lip forming an abutment, a sliding spring-controlled bolt of bendable metal, and a ring or link attachment formed of a single blank of metal bent upon itself and adapted to be attached to the ears of the barrel, substantially as herein described.

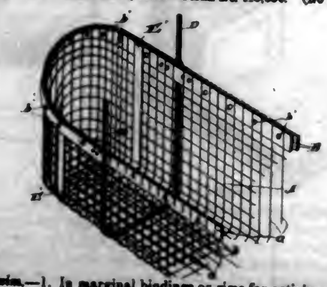
475,972. CARBURETOR. EDGAR B. RADLAM, San Francisco, Cal. Filed Nov. 2, 1891. Serial No. 411,289. (No model.)



Claim.—1. In a carbureting and air-mixing apparatus, a chamber constructed to contain gasoline and having a central air-inlet pipe extending above the surface of the liquid, an annular float constructed to rise and fall within the chamber, having the top portion closed and a vertical closed tube loosely inclosing the air-inlet pipe, continuous wicks suspended from the top plate and forming spiral channels from the center to the outside of the space within the float, a foraminous bottom through which the liquid enters the space containing the wicks, a packing of porous material supported by said plate between the wicks, and openings around the outer periphery of the wick-space for the escape of carbureted air, in combination with a supplemental chamber having perforated sides, containing an absorbent material and situated in the top of the carbureting-chamber, an opening through which the gas from below is admitted thereto, and a pipe through which air is delivered into the supplemental chamber to be mixed with the gas from below, substantially as herein described.

2. In a carbureting and air-mixing apparatus, a chamber constructed to contain gasoline, a central vertical air-admission pipe, and a float provided with a column A and constructed to rise and fall, the spirally-disposed wicks, the intermediate porous packing, and the foraminous supporting-plate, in combination with a chamber P, situated in the top of the carbureting-chamber and having plates B' fixed therein to form tortuous horizontal passages around the interior of the chamber, a chamber Y in the second chamber, having perforated sides and an absorbent filling, a passage by which gas is admitted thereto from the carbureting-chamber, a pipe R for supplying air to be mixed with the carbureted air in the chamber Y before it escapes into the carbureted-air chamber P, and an outlet F, by which the completed product is discharged from the chamber P, substantially as herein described.

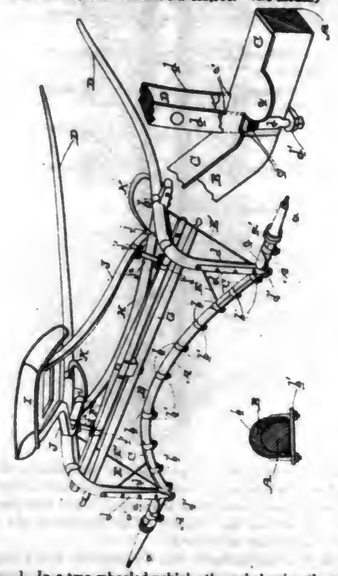
475,973. MARGINAL BINDING OR RIM. LOUIS G. BEERS, Chicago, Ill. Filed Dec. 22, 1891. Serial No. 415,836. (No model.)



Claim.—1. In marginal bindings or rims for articles composed of wire fabric or sheet metal, the combination of a marginal binding or rim composed of two pieces B of flat metal securing and inclosing the ends of the wire or metal composing the body and secured together by rivets with the body A, having its ends bent over one of the pieces B, and reinforcing-rods interposed between the pieces B and there secured, substantially as described.

2. In marginal bindings or rims for articles composed of wire fabric or strips of sheet metal, the combination of a marginal binding or rim composed of two pieces B of flat metal securing and inclosing the ends of the wire or metal strips composing the body and secured together by rivets with the body A, having its ends bent over one of the pieces B, the bails or handles D, and reinforcing-rods interposed between the pieces B and there secured by rivets, substantially as and for the purpose set forth.

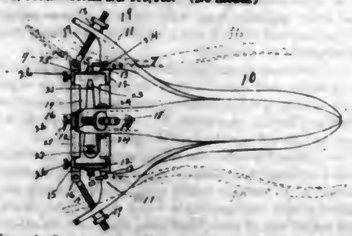
475,974. TWO-WHEELED VEHICLE. JOHN A. BILK, Pleasanton, Cal. Filed Nov. 30, 1891. Serial No. 412,566. (No model.)



Claim.—1. In a two-wheeled vehicle, the axle having the straight ends and the upwardly arched or bowed center, the wooden sheathing fitting over and clipped to the bowed center of the axle, the bent brace-straps secured on top of the axle and formed with or having steps on their outer portions, and the shafts with bent rear ends secured to the axle on top of the brace-straps, substantially as herein described.

2. In a two-wheeled vehicle, the combination of the axle having the straight ends and the upwardly arched or bowed center, the brace-straps of the axle, the shafts having the downwardly-bent rear ends secured to the inner portions of the straight ends of the axle on top of the brace-straps, the cross-bar with its whiffletree clipped to the shafts near their bent ends, the forwardly bent supporting-bar secured to the shafts and to the cross-bar, and the spring-arms of the seat clipped to the ends of the supporting-bar and to the cross-bar, substantially as herein described.

475,975. SPECULUM. WILLIAM R. CLOUGH, Cincinnati, Ohio. Filed Oct. 31, 1891. Serial No. 410,445. (No model.)



Claim.—1. In a speculum, the combination, with the valves thereof, of an expansible frame which supports them and upon which they are detachably mounted and means to expand the valves and to hold them in such expanded positions on their supporting-frame, this latter being composed of detachable sections so connected that two or more may be used alone and are capable of holding their position after the other frame-sections have been removed and provided with means to secure these sections to each other, all as substantially shown and described.

2. In a speculum, in combination, an expansible frame composed of sections, valves supported on said sections and laterally adjustable thereon, means to lock said sections on each other, and means to secure the valves in their adjusted positions on these sections, all as substantially shown and described.

3. In a speculum, the combination, with the valves thereof, of base-pieces upon which the former are pivotally mounted, means to adjust and hold the valves on said base-pieces, and slides which connect and support the base-pieces, all as substantially shown and described.

4. In a speculum, the combination, with the valves thereof, of an expansible frame provided with lugs upon which the former are pivotally mounted, screws secured to this frame and passing through slots in the valves, and nuts on these screws by which the position of the valves is regulated, all as substantially shown and described.

5. In a speculum, the combination, with the valves thereof, of base-pieces provided with lugs 13, upon which the valves are mounted, screws secured to the base-pieces and adjustably connected to the valves, adjustable slides supporting the base-pieces, and means to lock the slides in their adjusted positions, all as substantially shown and described.

6. In a speculum, the combination, with the valves thereof, of a supporting-frame provided with lugs upon which the former are detachably mounted, and spring-pivots whereby the valves are held on said lugs, all as substantially shown and described.

475,976. LAWN-MOWER. THOMAS COLDWELL, Newburg, N. Y. Filed Feb. 10, 1892. Serial No. 420,979. (No model.)



Claim.—1. In a lawn-mower, the combination, with the frame provided with guides adjacent to the sides of the machine, of blocks movable vertically in said guides, caster-wheels pivoted in said blocks, a weighted lever whose weight is proportioned to counterbalance the burden on the said wheels, and connections between said lever and each of said blocks, whereby the movement of the said lever will raise or lower the said wheels and the weight serve to hold them in the position desired, substantially as described.

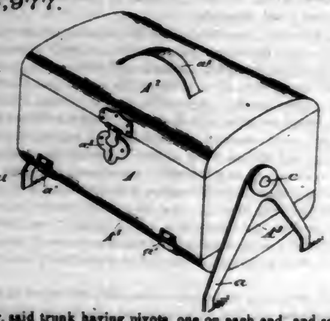
2. In a lawn-mower, the combination, with the frame provided with vertically-movable blocks provided with racks, of the caster-wheels pivotally secured to said blocks, the shaft provided with pinions engaging said racks, and adjusting mechanism, including a weighted lever connected with said shaft, the weight of said lever being proportioned to counterbalance the burden carried by said wheels, substantially as described.

3. In a lawn-mower, the combination, with the frame, of caster-wheels movably supported with respect to the frame adjacent to the sides thereof, the shaft connected to said caster-wheels for moving the same with respect to said frame, a weighted counterbalance-lever secured to said shaft, and the plate provided with adjusting apertures and pins, substantially as described.

475,977. HAND-TRUNK OR VALISE. EDWARD DILLINGHAM, Chelsea, Mass. Filed Jan. 30, 1892. Serial No. 419,834. (No model.)

Claim.—The herein-described reversible hand-trunk provided with a partition forming compartments, each compartment having a sepa-

475,977.



rate cover, said trunk having pivots, one on each end, and self-acting legs with bearings adapted to swing on said pivots, all constructed and adapted to operate substantially as described, and for the purpose set forth.

475,978. IMPLEMENT FOR CHIPPING ICE. EDWARD W. FLYNN, Clinton, Iowa. Filed Dec. 29, 1891. Serial No. 416,402. (No model.)



Claim.—1. In an implement of the class described, the combination, with a cutting-plate, of a guard-plate located above the same and approximately parallel therewith and having its outer end adjustable to or from the cutting-plate to regulate the space between the cutting-edge of the latter and the guard-plate, substantially as and for the purpose set forth.

2. In an implement of the class described, the combination, with a flat plate provided at its forward end with cutting-teeth, of a spring or yielding guard-plate located above the cutting-plate and normally parallel therewith, and means for adjusting said guard-plate nearer to the cutting-plate, substantially as set forth.

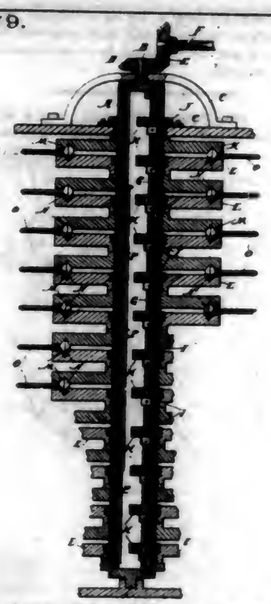
3. In an implement of the class described, the combination, with a flat plate provided at its forward edge with cutting-teeth and a handle having a longitudinally-disposed base portion secured at the upper face of said plate and having its upper side formed with a seat and beveled forwardly from the latter, of a spring or yielding guard-plate having its rear end rigidly secured in said seat and provided in advance of its secured end with an aperture, a rigid screw or bolt projecting through said aperture, and a thumb-nut disposed upon the projecting threaded end of the screw or bolt, substantially as set forth.

4. In an implement of the class described, the combination, with a cutter, of a guard-plate disposed above said cutter and having its forward edge curved upwardly and sharpened to form a scraper, substantially as set forth.

5. In an implement of the class described, the combination, with a handle having a forwardly-projecting base portion formed with a seat upon its upper side and beveled from said seat to its extreme forward end and a flat plate rigidly secured to the under side of said base and provided at its forward end with cutting-teeth, of a spring or yielding guard-plate rigidly secured at its rear end in said seat and having its outer edge curved upwardly and sharpened for the purpose described, said plate being recessed in rear of the latter, a screw or bolt passed upwardly through the cutting-plate and the forward end of the handle-base and projecting through an aperture in the guard-plate, and a thumb-nut disposed upon the projecting threaded end of the screw or bolt, substantially as set forth.

475,979. COTTON-HARVESTER. WALTER E. FOOTE, Chicago, Ill., assignor to George H. Todd, same place. Filed Dec. 29, 1891. Serial No. 416,486. (No model.)

475,979.



Claim.—1. In a cotton-harvester, the combination of a support having two members, one of which is rotatable independently of the other, and a rotary picker-stem supported by and between the members of said support and adapted to be rotated by the movement thereof, substantially as set forth.

2. In a cotton-harvester, the combination, with a support composed of relatively-movable members, of picker-stems peripherally supported by and between the members of said support and actuated to have both an axial rotation on their own axes and a bodily travel about the axis of said support by the movements of one or both members of said support relative to the other, substantially as described.

3. In a cotton-harvester, the combination, with a peripherally supported and actuated roller, of a picker-stem projecting axially from and supported by said roller, substantially as described.

4. In a cotton-harvester, the combination, with a picker-stem and a roller to which the inner end of said stem is axially secured, of a pair of plates or supports by which said roller is supported and rotated, one or both of said plates being movable, substantially as described.

5. In a cotton-harvester, the combination, with a picker-stem and a roller to which said stem is axially secured, of a pair of plates or supports by which said rollers are peripherally supported and rotated, said plates being moved past each other in opposite directions, substantially as described.

6. In a cotton-harvester, the combination, with a picker-stem and a roller to which said stem is axially secured, of a pair of plates provided on their opposing faces with annular grooves in which said roller is confined and travels, one or both of said plates being rotatable, substantially as described.

7. In a cotton-harvester, the combination, with a picker-stem and a roller to which said stem is axially secured, of a pair of plates provided with annular grooves in their opposing faces, in which said roller is confined and travels, and means for rotating said plates in opposite directions at different speeds, substantially as described.

8. In a cotton-harvester, the combination, with a series of picker-stems and a corresponding series of rollers to which said stems are axially secured, of a rotatable hollow shaft, a pair of plates provided in their opposing faces with grooves in which said series of stems are confined and travel, one of said plates being fixed and the other loose on said hollow shaft, and means for rotating one or both of said plates, substantially as described.

9. In a cotton-harvester, the combination, with a series of picker-stems and a corresponding series of rollers to which said stems are axially secured, of a rotatable hollow shaft, an internal rotating shaft eccentrically journaled therein, and a pair of plates provided with grooves in the opposing faces thereof, in which said series of rollers are confined and travel, one of said plates being fixed and the other loose on the hollow shaft and said loose plate being geared to said eccentric shaft, substantially as described.

10. In a cotton-harvester, the combination, with a series of picker-stems and a corresponding series of rollers to which said stems are axially secured, of a rotatable hollow shaft, an internal shaft eccentrically journaled therein, a pair of plates provided with annular grooves in the opposing faces thereof in which said series of rollers are confined and travel, one of said plates being loose and the other fixed on the hollow shaft, a gear connection between said eccentric shaft and the loose plate, and means for rotating said shafts simultaneously in opposite directions, substantially as described.

11. In a cotton-harvester, a picker-stem formed of a sheet of metal rolled into tubular form and having one lateral edge serrated or toothed, substantially as described.

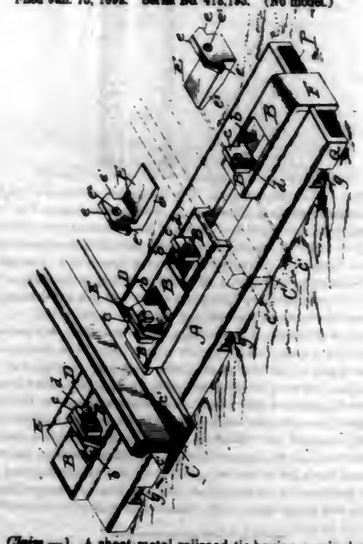
12. In a cotton-harvester, the combination, with a picker-stem formed of a sheet of metal rolled spirally into substantially a tubular form and having the outer lateral edge thereof toothed or serrated, of a wheel or gear, to which said stem is axially secured, substantially as described.

475,980. TILE-STAND. GEORGE HOLT, Philadelphia, Pa. Filed Dec. 17, 1891. Serial No. 415,331. (No model.)



Claim.—A tile-stand formed of a body and a frame formed of bars on the sides of said body, having flanges at top, pieces at the corners thereof embracing the ends of said side bars, and provided with upper and lower cross-pieces, and screws fitted in openings in the cross-pieces and adapted to tighten against said body, thus connecting the frame with the body, said parts being combined substantially as described.

475,981. RAILROAD-TIE. FRANK S. KETCHUM, New York, N. Y. Filed Jan. 15, 1892. Serial No. 418,193. (No model.)



Claim.—1. A sheet-metal railroad-tie having a raised upper side and a correspondingly-depressed under surface and having said under surface filled with a suitable ballasting material previous to the laying of the tie in position, as and for the purpose set forth.

2. A sheet-metal railroad-tie having depending end ears, as at F, and having the space between said ears filled with a ballasting mass previous to the laying of the tie, as and for the purpose set forth.

3. A sheet-metal railroad-tie having a central longitudinal rib, angular side flanges, and angular end ears, the whole formed of one piece of metal, as and for the purpose set forth.

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4. A sheet-metal railroad-tie having a central longitudinal rib, recesses which form the rail-seat, and slots formed in the face of said rib and having integral knees formed of the metal punched from said slots, in combination with an angular wedge-shaped key adapted to enter said slots and be secured there in connection with the ears above mentioned, as and for the purpose set forth.

5. A metallic railroad-tie having a central rib provided with rail-seat recesses and slots, at the ends of which are upwardly-retaining ears, in combination with a railroad-rail and a locking wedge-shaped key adapted to be secured in said slot and lock the rail to the tie, as and for the purpose set forth.

6. The combination, with the tie constructed as described and having the slot *b*, of the key E, bearing beveled portion e^2 and one or more shoulders e', as set forth.

475,982. COMBINED WHIP-SOCKET AND LOCK FOR LAP-ROBES. ALEX. S. KIRBY, Chicago, Ill. Filed Mar. 8, 1892. Serial No. 424,195. (No model.)



Claim.—1. In a combined whip-socket and lock for lap-robes, the combination of a socket provided at its upper end with a flaring or funnel-shaped mouth and having at its lower end the bottom C, having the opening *c*, arm D, having the opening *d*, and sleeve E, having the spring-actuated bolt G, with the springs L, secured at their lower portions to the movable bottom K and having their upper ends provided with outwardly-extending projections, and the ratchet-arm I, secured to the bottom K and adapted to pass through the openings *c d* and to engage the bolt G, substantially as described.

2. In a combined whip-socket and lock for lap-robes, the combination of a socket provided at its upper end with a flaring or funnel-shaped mouth and having at its lower end the bottom C, having the

opening *c*, arm D, having the opening *d*, and sleeve E, having the spring-actuated bolt G, having the removable thumb-screw H, with the springs L, secured at their lower portions to the bottom K, and having their upper ends provided with outwardly-extending projections and the inner portions of said ends provided with pieces of rubber or other protecting material, and the ratchet-arm I, secured to the bottom K and adapted to pass through the openings *c d* and to engage the bolt G, substantially as described.

3. In a combined whip-socket and lock for lap-robes, the combination of a socket provided at its upper end with a flaring or funnel-shaped mouth, having the annular groove *b* and the disk *c'*, having the central opening *c*[2] fitting in said groove, with the bottom C, secured to the lower portion of the socket and having the opening *c*, the arm D, having the opening *d*, and the sleeve E, having the annular flange *e'*, and the spring-actuated bolt G, the bottom K, having the ratchet-arm I and springs L secured thereto, said springs having their upper ends provided with outwardly-extending projections, substantially as described.

4. In a combined whip-socket and lock for lap-robes, the combination of a socket provided at its upper end with a flaring or funnel-shaped mouth, with the bottom C, secured to the lower portion of the socket and having the opening *c*, the arm D, having the opening *d*, and the sleeve E, having the annular flange *e'*, the spring-actuated bolt G, the bottom K, having the ratchet-arm I and springs L secured thereto, said springs having their upper ends bent outwardly and downwardly to form the projections M', substantially as described.

5. In a combined whip-socket and lock for lap-robes, the combination of a socket provided at its upper end with a flaring or funnel-shaped mouth, having the annular groove *b'* and the disk *c'*, fitting in said groove, with the bottom C, secured to the lower portion of the socket, and having the opening *c*, the arm D, having the opening *d*, and the sleeve E, having the annular flange *e'*, and the spring-actuated bolt G, having the removable thumb-screw H, the bottom K, having the ratchet-arm I, lugs *n*, and springs L secured thereto, said springs having their upper ends bent outwardly and downwardly, forming the projections M', and having the pieces of rubber *m* secured to the inner portion of said ends, substantially as described.

6. In a whip-socket, the combination of the socket A, having the flaring mouth B, with the bottom C, having the opening *c*, and sleeve E, having the annular flange *e'*, the bolt G, having the screw-threaded shank *g*, the beveled end *g'*, the spring F, the thumb-screw H, the bottom K, having secured thereto the ratchet-arm I and springs L, said springs having their upper ends provided with outwardly-extending projections, substantially as described.

475,983. BUSHING FOR JOURNAL-BEARINGS. FREDRICK LAPULP, Syracuse, N. Y. Filed June 20, 1891. Serial No. 396,942. (No model.)



Claim.—The combination, with a bushing-cast provided with longitudinal grooves at intervals in its bore, of a bushing consisting of segments of unequal depths inserted side by side into the bore and into mid grooves and cemented together, the deeper ones fitting into said grooves, each segment being composed of strips of rawhide placed side by side and cemented together.

475,984. FURNACE. JAMES MARSHALL, Plains, assignor of one-half to Welcott J. Parmelee, Wilkes-Barre, Pa. Filed May 5, 1891. Serial No. 391,668. (No model.)

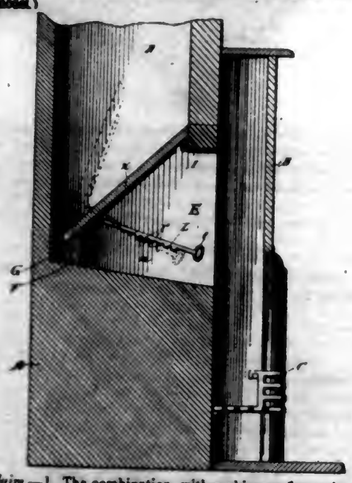


Claim.—1. In a furnace of the class described, the combination of the furnace-casing, the fire-box constructed transversely at the front end of the same, the chambers or receptacles open at top and bottom for charging and discharging the same and being constructed longitudinally in the furnace-casing, removable bottom plates closing the bottom openings in said receptacles, the flues extending from the ends of the fire-box between the side walls of the furnace-casing and the outer sides of the longitudinal receptacles, the intermediate flue extending between the inner side walls of said receptacles and connected at its rear end with the outer flues, and the chimney or smoke-stack arranged at the front end of the furnace-casing and connected with the upwardly-inclined front end of the intermediate flue, substantially as set forth.

2. In a furnace, the combination of the furnace-casing, the fire-box at one end of the same, the chambers 9, open at the top, the sliding bottoms 17 for the chambers, the flues 10, 11, and 12, leading from the fire-box and enveloping the sides of the chambers, and the smoke-stack communicating with the flue 12 and also located at the front end of the furnace, substantially as set forth.

3. In a furnace of the class described, the combination of the furnace-casing having the fire-box and the chimney located at the front end thereof, the longitudinally-disposed receptacles open at their upper ends, and the flues connecting the ends of the fire-box with the chimney and enveloping said receptacles, the pits constructed below said receptacles, and the slides separating said receptacles from said pits, substantially as and for the purpose set forth.

475,985. DAMPER FOR FIREPLACE CHIMNEY-FLUES. FRANK MCCONNELL, Chicago, Ill. Filed Jan. 11, 1892. Serial No. 417,672. (No model.)



Claim.—1. The combination, with a chimney-flue and a fireplace having a communicating passage-way with the chimney-flue, of a damper-support F, arranged at the rear of the communicating passage-way and provided with rearward projecting ears G, having open-ended slots H, the damper K, provided with pins *k*, removably arranged in the open-ended slots of the ears, the rod L, pivoted to the damper and provided with ratchet-teeth *l*, and the stationary pin *m* for engaging with the ratchet-teeth of the rod, substantially as described.

2. The combination, with a chimney-flue and a fireplace having a communicating passage-way with the chimney-flue, of a damper-support F, arranged at the rear of the communicating passage-way and provided with rearward projecting ears G, having open-ended slots H, the damper K, provided with pins *k*, removably arranged in the open-ended slots of the ears, the rod L, pivoted to the damper and provided with ratchet-teeth *l*, the stationary pin *m* for engaging the ratchet-teeth of the rod, and the support I, extending backward into the chimney-flue and arranged at the top portion of the communicating passage-way between the chimney-flue and the fireplace to constitute a support for the upper edge of the damper, substantially as described.

475,986. IRON FOR VEHICLE-TONGUES. THOMAS H. PARRY and THOMAS J. BAKER, Indianapolis, Ind., assignors to the Parry Manufacturing Company, same place. Filed Feb. 20, 1892. Serial No. 422,942. (No model.)

Claim.—1. In a vehicle-tongue, the combination, with the pole and transverse bar, of the angle-plates D and D', secured at their front sides to the pole and arranged, respectively, above and below the transverse bar and embracing the back side of the bar and overlapping each other on the back side of the bar, in the manner substantially as described, and for the purposes specified.

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2. In a vehicle-tongue, the combination, with the pole and the transverse bar, of the angle-plates D and D', arranged, respectively, upon the upper and lower faces of said transverse bar and embracing the back side of the bar and overlapping each other thereon, and the plates E, secured to the sides of the poles and having the lateral extensions E' to contact with the transverse bar, and the bolts *d*[3], all substantially as described.

475,987. COTTON-GIN ATTACHMENT. EUGENE C. SCOTT, Ellerville, assignor of one-half to George A. Kelly, Longview, Tex. Filed Nov. 23, 1891. Serial No. 412,823. (No model.)



Brief.—The invention comprises a perforated mote-board located underneath the gin-brush and a deflector and perforated separating-boards arranged at various angles in the lint-flue.

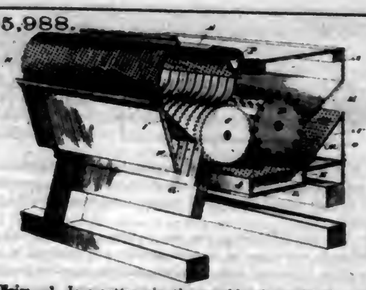
Claim.—1. In a cotton-cleaner, the combination, with the gin having the revolving saws and brush, of a perforated separating mote-board located directly beneath said brush, a collecting-chamber beneath said mote-board, the discharge-flue, and a series of perforated separating-boards located within said flue at an angle to each other, substantially as set forth.

2. In a cotton-cleaner, the combination, with the gin having revolving saws and brush, of a perforated separating mote-board located directly beneath said brush, a collecting-chamber beneath said mote-board, a discharge-flue, a perforated separating-board located at an angle within said flue and extending upwardly from one end of the said mote-board, a downwardly and outwardly arranged deflector secured in the top of said flue directly above the upper end of said inclined separator, a supplementally-inclined separating-board meeting the upper end of the first separating-board below said deflector, and a collecting-chamber located beneath the separators in front of the mote-board, substantially as set forth.

3. In a cotton-cleaner, the combination, with the gin having the revolving saws and brush, of a perforated mote-board located directly beneath said brush, the flue, and a supplemental separating-board located in the flue and set at an angle from said mote-board, substantially as set forth.

475,988. ROLL-BOX FOR COTTON-GINS. EUGENE C. SCOTT, Ellerville, assignor of one-half to George A. Kelly, Longview, Tex. Filed Dec. 22, 1891. Serial No. 415,889. (No model.)

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Claim.—1. In a cotton-gin, the combination, with the revolving saws, of an unyielding perforated breast-board located at the front side of the gin in front of said saws and a perforated seed-board arranged below the lower end of said breast-board, substantially as set forth.

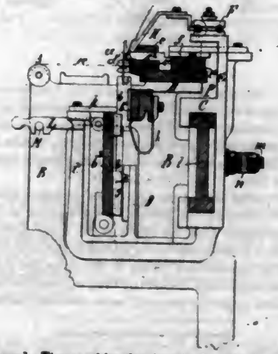
2. In a cotton-gin, the combination, with the gin-ribs and the revolving saws working between said ribs, of an unyielding perforated breast-board arranged in front of said ribs and a supplemental perforated cleaning-board above said ribs opposite said breast-board, forming an inclosed seed-cotton chamber, substantially as set forth.

3. In a cotton-gin, the combination, with the gin-ribs and the revolving saws working between said ribs, of the curved perforated breast-board arranged in front of said ribs and forming an inclosed seed-cotton chamber and a downwardly-inclined perforated seed-board arranged within said chamber below the lower end of said breast-board, substantially as set forth.

4. In a cotton-gin, the combination, with the revolving saws and the seed-cotton chamber in front of said saws, of a perforated seed-board arranged within said chamber and forming the bottom thereof, substantially as set forth.

5. In a cotton-gin, the combination, with the revolving saws, of the seed-cotton chamber in front of said saws and having inclosing unyielding perforated walls and inclined perforated bottom, substantially as set forth.

475,989. KNITTING-MACHINE. MAX A. SEMLER, Kappel, Germany. Filed May 18, 1891. Serial No. 392,572. (No model.) Patented in Germany July 19, 1890, No. 57,750, and in England May 2, 1891, No. 7,612.



Claim.—1. The combination herein described of a series of needles, a cam for reciprocating said needles, and a cam engaging said needles to give them a lateral movement.

2. The herein-described combination of a series of barbed needles, stationary barb-engaging shoulders, a cam for reciprocating the needles, and a cam engaging said needles to force them toward said shoulders to effect the closing of said barbs.

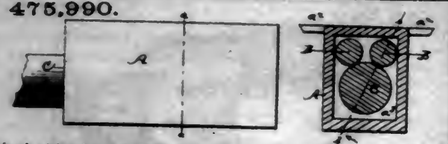
3. The herein-described combination of the series of needles, the stationary comb having inclines, the movable sinkers, and a cam for actuating said needles.

4. The herein-described combination of a series of needles, the grooved needle-bed, the grooved guide, the springs, the cam for reciprocating the needles, and the cam for forcing the needles against the said springs.

475,990. JOURNAL-BEARING. ALFRED R. SMITH, Brockville, N. Y. Filed Nov. 25, 1890. Serial No. 372,584. (No model.)

Claim.—1. In a journal-bearing, the box or frame A, having its corners right-angular in cross-section, and the bearings arranged and confined within the right-angled corners of the box or frame, com-

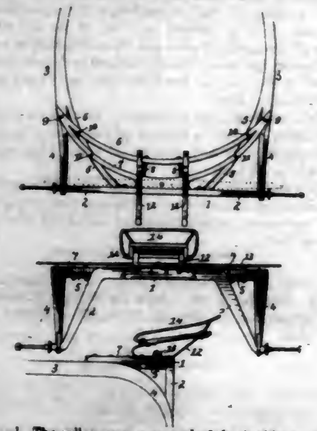
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bined with a journal which bears against the contact-surfaces of the bearings, said bearings being confined to positions on opposite sides of the vertical axis of the journal, substantially as and for the purpose described.

2. In a journal-bearing, the box or frame A, having the corners thereof made right-angular in cross-section and provided in its ends with sockets, combined with a journal, and the movable bearings extending longitudinally within said box or frame and supported in the right-angled corners thereof and the sockets therein, said bearings being in contact with the journal and arranged in the right-angled corners of the box or frame on opposite sides of the vertical axis of the journal, as and for the purpose described.

475,991. SULKY. WILLIAM J. WAYNE, Decatur, Ill. Filed Mar. 18, 1892. Serial No. 425,435. (No model.)



Claim.—1. The sulky-gear composed of the doubly-cranked axle, the shafts having their rear ends curved downward and secured to the axle, the stays running obliquely from the shafts to the upper part of the axle, and the curved truss-frame secured at its middle to the upper part of the axle, at its ends to the shafts, and at intermediate points to the stays, substantially as set forth.

2. The sulky-gear composed of the doubly-cranked axle, the shafts having their rear ends curved downward and secured to the axle, the stays running obliquely from the shafts to the upper part of the axle, the curved truss-frame secured at its middle to the axle, at its ends to the shafts, and at intermediate points to the stays, the straps secured to the truss and supporting the seat on their upwardly-extended ends, and the singletree under the seat and inside the straps, substantially as set forth.

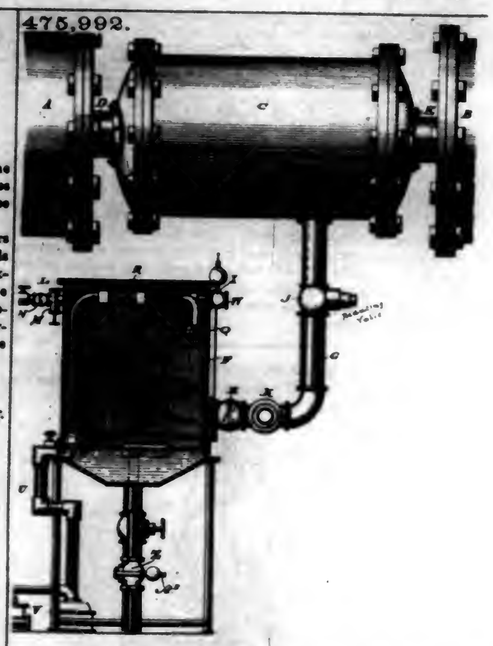
475,992. FEED-WATER HEATER. WARREN WEBSTER, Philadelphia, Pa. Filed July 6, 1891. Serial No. 398,473. (No model.)

Claim.—1. A vacuum feed-water heater and purifier having a vacuum-chamber and an automatic air-inlet or vacuum valve, in combination with a steam-receiver adapted to be in communication with the cylinders having the lowest and next to the lowest pressure, of a compound engine, and a connecting-pipe for said heater and receiver, having a steam-pressure-reducing valve therein, substantially as described.

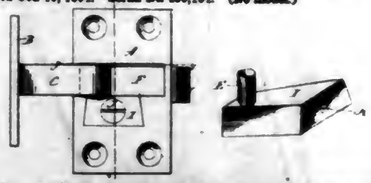
2. A vacuum feed-water heater and purifier having an automatic air-inlet or vacuum valve, in combination with a receiver adapted to be connected with two of the cylinders of a compound engine, and a connecting-pipe for said heater and receiver, having a pressure-reducing valve therein, substantially as described.

3. A vacuum feed-water heater and purifier having an automatic air-inlet or vacuum valve, in combination with a steam-receiver adapted to be connected with two of the cylinders of a compound engine, a connecting-pipe for said receiver and heater, having a pressure-reducing valve therein, and an overflow-pipe leading from said heater, having a weighted automatic valve, substantially as described.

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475,993. COACH-HINGE. ALBERT W. WERLE, New Haven, Conn. Filed Oct. 19, 1891. Serial No. 409,161. (No model.)



Claim.—1. The combination of the plate A, constructed with a transverse slot F and with an inwardly-projecting flange G, and also constructed with a recess H in said flange, opening through the plate A below the slot F, the pivot-plate adapted to be secured in said recess and carrying a pivot at its inner end, the plate B, constructed with an arm adapted to work through said slot and hung upon the said pivot on the pivot-plate, and the said flange constructed with an upwardly-projecting rim M around its inner edge, substantially as and for the purpose described.

2. The combination of the plate A, constructed with a transverse slot F and with an inwardly-projecting flange G, and also constructed with a recess H in said flange, opening through the plate A below the slot F, the said recess contracting in width from its outer end inward, the pivot-plate I of a contracting shape corresponding to the contracting shape of said recess and adapted to set therein, the pivot-plate constructed with a pivot near its inner end, with the plate B, constructed with an arm adapted to work through said slot and hung upon the said pivot on the pivot-plate, and means, substantially such as described, for securing said pivot-plate in its recess, substantially as described.

475,994. SUPPORT FOR SPINNING-SPINDLES. HENRY F. WOODHAMS, Whittenville, Mass. Filed Sept. 18, 1891. Serial No. 406,114. (No model.)



Claim.—The combination, with the sleeve-whirl spindle, the bolster-case provided with the upward-extending tube surrounded by the sleeve-whirl, and the combined bolster and step-tube rigidly secured at its lower end in the bolster-case and provided with a shoulder, of

the tube S, of slightly-less external diameter than the interior of the bolster-case within the whirl and of slightly-greater interior diameter than the exterior diameter of the combined bolster and step-tube surrounded by it, as described.

475,995. EYEGLASS OR SPECTACLE CASE. WILLIAM BERNHEIM, Philadelphia, Pa. Filed Aug. 3, 1891. Serial No. 401,602. (No model.)



Claim.—As an article of manufacture, an eyeglass or spectacle case, being an elongated sheath-like structure having an open end, and having two sides, one of which is flat and the other of which embodies a longitudinal central bulge, the outer edge of the bulged side of the case having a rim formed thereon and contained or seated within and secured to a rim formed on the edge of the other side of said case, substantially as set forth.

475,996. TAPE-WINDING MECHANISM FOR LIGHTING DEVICES OR OTHER ARTICLES. CHARLES P. BOOTH, Camden, N. J., assignor to the Magic Introduction Company, of New Jersey. Filed Aug 20, 1891. Serial No. 403,197. (No model.)



Claim.—1. A mechanism for winding and holding tape, &c., having a movable plate provided with two studs or spindles, one of which is revoluble, the arrangement being such that a coil of tape placed upon one spindle may be rewound upon the other by revolving the same and when so rewound will occupy at least a part of the space which it occupied before being rewound, substantially as shown and described.

2. A mechanism for winding and holding tape, &c., having a revoluble spindle so mounted as to be capable of movement substantially at right angles to its axis, and means for supporting a coil of tape and rewinding it upon the revoluble spindle by rotating the same, the tape when rewound occupying at least a part of the same space occupied by the coil before rewinding, substantially as shown and described.

3. A lighting device or other article having a casing provided with means for holding and rewinding a coil of tape, consisting of a support for the coil and a revoluble and sliding spindle upon which the tape is rewound so mounted as to slide toward the center of the casing as the tape is rewound thereon, so that the tape when rewound may occupy substantially the same space within the casing as when first introduced, substantially as shown and described.

4. A lighting device or other article having a casing provided with means for holding and rewinding a coil of tape, consisting of a support for the coil and a revoluble spindle upon which the same is rewound so arranged that the rewound tape will occupy substantially the same space it occupied when upon the support, said revoluble spindle being adapted to slide toward and the support away from the center of the casing as the tape is rewound, substantially as shown and described.

5. In a lighting device, the combination, with a casing adapted to receive a coil of tape having ignitible pellets thereon, of a support over which the tape is drawn, means for igniting the pellets one by one as they are drawn over the support, and a revoluble spindle upon which the tape is rewound as it is drawn over the support, said spindle being so mounted as to slide toward the center of the casing as the tape is rewound thereon and the rewound tape occupying substantially the same space as when first introduced in the casing, substantially as shown and described.

6. In a lighting device, the combination, with a casing adapted to receive a coil of tape having ignitible pellets thereon, of a support over which the tape is drawn, a scratcher adapted to ignite the pellets one by one as they are drawn over the support, and a revoluble spindle upon which the tape is rewound as it is drawn over the support, said spindle being so mounted as to slide toward the center of the casing as the tape is rewound thereon and the rewound tape occupying substantially the same space as when first introduced in the casing, substantially as shown and described.

7. A lighting device or other article having a casing adapted to receive a coil of tape and provided with a movable plate pivoted at one end and having at the other two studs or spindles, one of which is revoluble and adapted to rewind upon itself a coil of tape first mounted upon the other spindle, the arrangement being such that the coil of rewound tape occupies substantially the same space within the casing that it did when first introduced therein, substantially as shown and described.

8. In a lighting device, the combination, with a casing adapted to receive a coil of tape having ignitible pellets thereon, of a support over which the tape is drawn, means for exploding the pellets one by one as the tape is drawn over the anvil, a movable plate pivoted at one end and provided at the other with two studs or spindles, one of which is adapted to receive the coil of fresh tape and the other being revoluble and adapted to receive and wind upon itself the expended tape, and means for rotating the revoluble spindle, substantially as shown and described.

9. In a lighting device, the combination, with a casing adapted to receive a coil of tape having ignitible pellets thereon, of means for supporting an inflammable wick, a support over which the tape is drawn in proximity to the wick, means for exploding the ignitible pellets one by one as the tape is drawn over the support, so as to ignite the wick, and a movable plate having two spindles, one of which is revoluble, the arrangement being such that the unexpended tape is supported upon one spindle and drawn over the support and rewound upon the other after the pellets thereon are exploded as such rewinding-spindle is rotated, substantially as shown and described.

10. In a lighting device, the combination, with a casing adapted to receive a coil of tape having ignitible pellets thereon, of means for supporting an inflammable wick, a support over which the tape is drawn in proximity to the wick, means for exploding the ignitible pellets one by one as the tape is drawn over the support so as to ignite the wick, a plate pivotally attached at one end to the interior of the casing, two studs mounted upon the pivoted plate at the movable end thereof, and means for rotating one of said studs, substantially as shown and described.

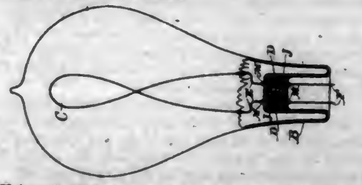
11. The combination, in a device for winding tape, &c., of a spindle upon which the tape is supported in the form of a coil, a revoluble spindle upon which such tape is rewound from the first spindle as the latter is rotated, means for rotating the rewinding-spindle, and means for moving both the supporting and the rewinding spindles substantially at right angles to the axis thereof as the tape is drawn from one and rewound upon the other, substantially as shown and described.

475,997. JOINT FOR WOODWORK. GEORGE BIEBERBACH, Brooklyn, N. Y. Filed Nov. 19, 1891. Serial No. 412,350. (No model.)



Claim.—The combination, with the treads and risers or other wooden parts, of a strip of metal introduced at its edges into a channel in the horizontal surface near the back edge and into a channel in the lower part of the riser or vertical portion above the junction, with the horizontal part or tread for rendering the joint water-tight, substantially as set forth.

475,998. SEAL FOR LEADING-IN WIRES. HENRY D. BURNETT, Lynn, and SAMUEL E. DOANE, Swampscott, Mass., assignors to the Thomson-Houston Electric Company, of Connecticut. Filed Mar. 7, 1892. Serial No. 423,973. (No model.)



Claim.—1. An incandescent electric lamp having a leading-in conductor sealed in the glass of the inclosing globe and a yielding support for said leading-in conductor near the point where it enters the glass.

2. An incandescent electric lamp having a leading-in conductor, with a smaller portion sealed in the glass of the inclosing globe and a larger portion joined thereto, and a yielding support for said larger portion independent of said smaller portion.

3. An incandescent electric lamp having a leading-in conductor sealed in the glass of the lamp-globe, a portion of the glass extending beyond the point of sealing therein, and a layer of yielding material interposed between the glass extension and the conductor.

4. An incandescent electric lamp having a leading-in conductor sealed in the glass of the lamp, the glass being formed with a space around the conductor near where it enters the glass, and a yielding filling material in said space.

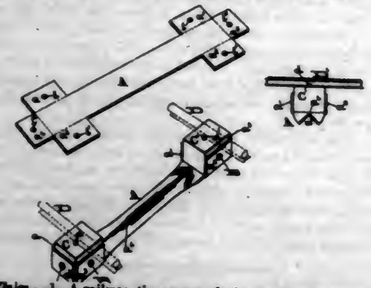
5. The combination, in a seal for leading-in conductors, of a smaller conductor, a larger conductor joined thereto, a glass body having the smaller conductor sealed therein and having a space around the joint of said conductors, and a filling of yielding material in said space.

6. The combination, in a seal for leading-in conductors, of the glass body, the small conductor sealed in and passing through the glass, the large conductor joined thereto, the glass body having a space around the joint, and an asbestus or equivalent filling material in said space.

7. The method of sealing leading-in conductors, which consists in applying a coating of refractory and yielding material to a portion of the conductor and then sealing the glass on both coated and uncoated portions of the conductor.

8. The method of sealing jointed leading-in conductors, consisting in coating the joint with refractory yielding material, heating the coating to expel volatile matters, and sealing the glass on both coated and uncoated portions of the conductor.

475,999. RAILWAY CROSS-TIE. FRANK A. BYRAM, Philadelphia, Pa. Filed Aug. 31, 1891. Serial No. 404,318. (No model.)



Claim.—1. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, for the purpose specified.

2. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, for the purpose specified.

3. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, the portion of said sheet or plate intermediate said recesses being depressed longitudinally from its center toward each edge, for the purpose specified.

4. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, the portion of said sheet or plate intermediate said recesses being depressed longitudinally from its center toward each edge, imparting to the same an inverted-V shape in cross-section, for the purpose specified.

5. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, for the purpose specified.

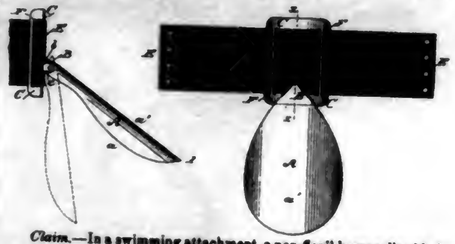
6. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, for the purpose specified.

7. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, the portion of said sheet or plate intermediate said recesses being depressed longitudinally from its center toward each edge, for the purpose specified.

8. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, the portion of said sheet or plate intermediate said recesses being depressed longitudinally toward each edge, imparting to the same an inverted-V shape in cross-section, for the purpose specified.

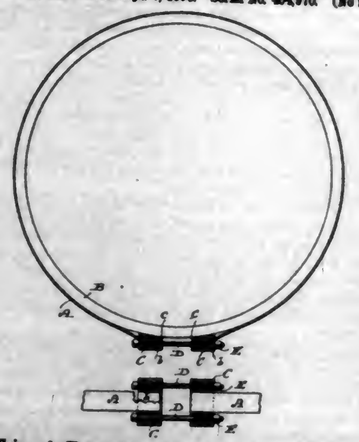
9. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, the portion of said sheet or plate intermediate the recesses being depressed longitudinally from its center to each edge, imparting to the same an inverted-v shape in cross-section, substantially as and for the purpose specified.

476,000. SWIMMING ATTACHMENT. RIDNER P. CAFFERTY, Jr., and WILLIAM M. CAFFERTY, New York, N. Y., assignors, by direct and mesne assignments, of one-half to Charles Grimmer, George H. Gillette, and John W. Grimmer, all of same place. Filed Feb. 6, 1892. Serial No. 420,591. (No model.)



Claim.—In a swimming attachment, a non-flexible propeller-blade permanently concaved upon one side and convexed upon the other, for the purpose described, and an attachment-plate, whereon the blade is pivoted at its shank, the shank of the blade having a stop-shoulder bearing against the plate to limit the angular movement of the blade.

476,001. COUPLING FOR HOOPS, &c. MALCOLM Y. CAMPBELL, Chicago, Ill. Filed Sept. 7, 1891. Serial No. 404,970. (No model.)

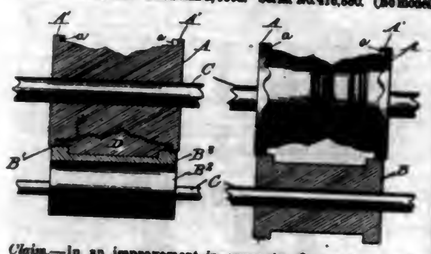


Claim.—1. The combination of a pair of slotted blocks recessed at the inner sides of their inner ends, a hoop or band having its ends passed through the block-slots and reserved into the adjacent recesses, whereby a snug fit is had against a cask or other opposing surface to secure a firm lock of the band ends independent of screws, bolts, plates, rivets, or other fastening devices, and suitable means for connecting said blocks, substantially as set forth.

2. The combination of a pair of diagonally-slotted blocks recessed at the inner sides of their inner ends parallel with the slots, a hoop or band having its ends passed through the block-slots, reserved into the adjacent recesses, and there retained independent of any fastening devices, and suitable means for connecting said blocks, substantially as set forth.

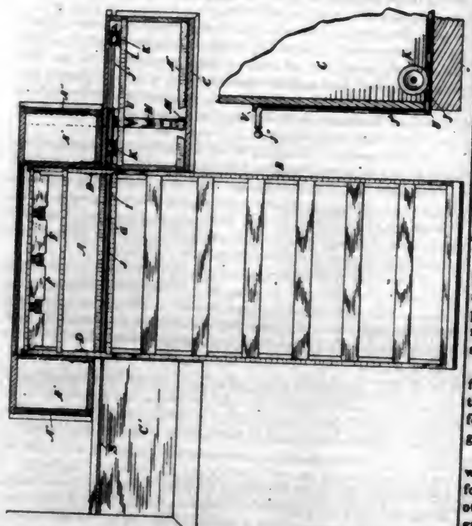
3. The combination of a pair of slotted blocks recessed at the inner sides of their inner ends, a hoop or band having its ends passed through the block-slots, reserved into the adjacent recesses, and there retained independent of any fastening devices, bolts engaging both blocks, and nuts adjustable on the bolts, substantially as set forth.

476,002. APPARATUS FOR COATING MOLDINGS. STEPHEN J. CARTER, Chicago, Ill. Filed Jan. 2, 1892. Serial No. 416,880. (No model.)



Claim.—In an improvement in apparatus for coating or ornamenting moldings, the combination of two or more rollers provided with portions of their surface which are adapted to impinge one another and other portions which are not in contact, which are adapted to form an opening surrounded by a continuous wall having the shape of the molding in cross-section, between which the molding and the plastic material can be fed, substantially as specified.

476,003. WARDROBE-BED. DOUGLAS D. COOK, Grand Rapids, Mich., assignor to William S. Gunn, same place. Filed July 13, 1889. Serial No. 317,484. (No model.)



Claim.—1. The combination, with a stationary article of furniture, a bed-frame pivoted therein, and a stationary track arranged in front thereof, of a movable article of furniture and rollers for supporting the same upon said track.

2. The combination, with a bed-casing, a bed-frame pivoted therein, and a stationary track provided with rails and arranged in front thereof, of an extension track and a cabinet laterally movable on said track.

3. The combination, with a stationary article of furniture, a bed-frame pivoted therein, and a stationary track arranged in front and at the base thereof, of a movable article of furniture and rollers for supporting the same upon said track, substantially as and for the purpose described.

4. The combination, with a stationary article of furniture, a bed-frame pivoted therein, and a stationary track arranged in front and at the base of the lower portion thereof, of a movable article of furniture and rollers for supporting the same and permitting of its sidewise or lateral reciprocation upon said track, substantially as and for the purpose described.

5. The combination, with a bed-casing, a bed-frame pivoted therein, and a stationary track secured in front and at the base of the lower portions thereof, of the cabinets and the rollers for supporting the same and permitting of their sidewise or lateral reciprocation upon said track, substantially as and for the purpose described.

6. The combination, with the bed-casing, the bed-frame pivoted therein, the wardrobes, and the stationary track secured in front and at the base of the lower portions thereof, of the cabinets and the rollers for supporting the same and permitting of their sidewise or lateral reciprocation upon said track, substantially as and for the purpose described.

7. The combination, with a bed-casing, a bed-frame pivoted therein, and a track secured in front and at the base of the lower portions thereof and comprising a stationary rail and extension-rails at the outer ends thereof, of the cabinets and the rollers for supporting the same and permitting of their sidewise or lateral reciprocation upon said track, substantially as and for the purpose described.

8. The combination, with the bed-casing, the bed-frame pivoted therein, the wardrobes, and the track secured in front and at the base of the lower portions thereof and comprising the stationary rail and extension-rails at the outer ends thereof, of the cabinets and the rollers for supporting the same and permitting of their sidewise or lateral reciprocation upon said track, substantially as and for the purpose described.

9. The combination, with the bed-casing, the bed-frame, the wardrobes, and the track comprising the stationary rail, the extension-rails hinged to the outer ends thereof and the forwardly-projecting sills having rollers at their front ends, of the cabinets and the rollers secured thereto for supporting the same and permitting of their sidewise or lateral reciprocation upon said track, substantially as and for the purpose described.

10. The combination, with the bed-casing, the bed-frame, the wardrobes, and the track comprising the stationary rail, the extension-rails hinged to the outer ends thereof and provided with legs at their outer ends, the springs for holding said extension-rails in raised position, and the forwardly-projecting sills having rollers at their front ends, of the cabinets and the rollers secured thereto for supporting the same and permitting of their sidewise or lateral reciprocation upon said track, substantially as and for the purpose described.

11. The combination, with the bed-casing, the bed-frame, the wardrobes, and the track comprising the grooved sill I, the stationary rail J, the extension-rails J', hinged to the outer ends thereof, and the forwardly-projecting sills H, having the rollers M at their front ends, of the cabinets C C', each provided at its lower end with the front sill N and the rear sill L, the latter having the peripherally-grooved rollers K journaled upon its rear side, whereby said cabinets are permitted to be reciprocated sidewise or laterally upon said track and in front of said bed-casing, bed-frame, and wardrobes, substantially as described.

12. The combination, with a stationary article of furniture, a bed-frame pivoted therein, and a stationary track arranged in front and at the base thereof, of a movable article of furniture, rollers for supporting the same upon said track, and means for connecting, guiding, and holding said articles of furniture together, substantially as described.

13. The combination, with a stationary article of furniture, a bed-frame pivoted therein, a stationary track arranged in front and at the base thereof, a laterally-movable article of furniture, and rollers for supporting the same upon said track, of means for connecting, guiding, and holding said articles together, substantially as described.

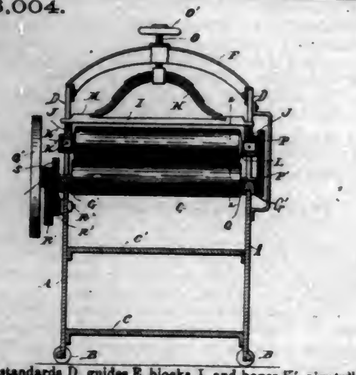
14. The combination, with the bed-casing A, provided on its top with the long strip T, which projects beyond its front edge and is formed with a tongue upon its under surface, of the bed-frame B, pivoted in said casing, the cabinets C C, formed in their tops with the grooves S, into which said tongue projects, the rollers for supporting said cabinets, and the track secured in front of the lower portion of said casing, whereby said cabinets are accurately guided as they are moved back and forth over said track and held firmly in place in front of said bed-casing, substantially as described.

15. In a wardrobe-bed, the combination, with the bed-casing A, having the sheaves D attached to its sides near its lower front portion, of the bed-frame B, formed with the slots E near the front edges and along the lower portions of its side rails and provided on the rear side of its lower end with the series of weights F, with the head-board G above the same, and at the front of its upper end with the cross-piece O, cross-piece P, hinged thereto and having the legs R, and the catch Q for holding the latter cross-piece in place, substantially as and for the purpose described.

476,004. MANGLE. ALFRED COHEN, Detroit, Mich. Filed July 27, 1891. Serial No. 400,882. (No model.)

Claim.—1. In a mangle, the combination, with the frame of the machine, of the roll G in fixed bearings in the frame, a spring-pressed

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roll I, the standards D, guides E, blocks J, and boxes K', pivotally secured in said blocks, substantially as described.

2. In a mangle, the combination, with the standards D, of guides E, formed thereby, the blocks J, having grooves J' engaging with said guides, the roll I, the boxes K', having pintles K³, the cross-bar M, the spring N, cross-bar P, and screw O, substantially as described.

476,005. TICKET CASE OR HOLDER. CLARENCE L. DAVIS, New York, N. Y. Filed Dec. 24, 1890. Serial No. 375,665. (No model.)



Claim.—1. A ticket holder or case having a cover provided with a slot, a roller revolubly mounted beneath the cover, over which the tickets are passed, and a slot or opening through which the tickets are discharged from the case, substantially as shown and described.

2. A ticket holder or case adapted to carry a string of folded tickets, consisting of a box or casing having a cover provided with a slot, an opening through which the tickets are discharged, and a bearing or support revolubly mounted beneath the slotted cover, beneath which the folded tickets are placed and over which they are fed from the case, substantially as shown and described.

3. A ticket holder or case adapted to carry a string of folded tickets, consisting of a box or casing provided with a slot, an opening through which the tickets are discharged, and a bearing or support revolubly mounted beneath the slotted cover, under which the folded tickets are placed and over which they are fed singly by pressure exerted upon them through the slot, substantially as shown and described.

4. A ticket holder or case having a shelf or plate, as 2, a roller, as 3, revolubly mounted therein, and means for feeding the tickets over the shelf and roller from the case, substantially as shown and described.

5. A ticket holder or case having a table or shelf partly covering the same, a roller revolubly mounted at or near one end of the table or shelf, and a cover provided with a slot, as 6, substantially as shown and described.

6. A ticket holder or case provided with a shelf or plate partly covering the same, a partition, as 12, a roller, as 3, revolubly mounted in the case, a cover, and means for feeding the tickets from the case, substantially as shown and described.

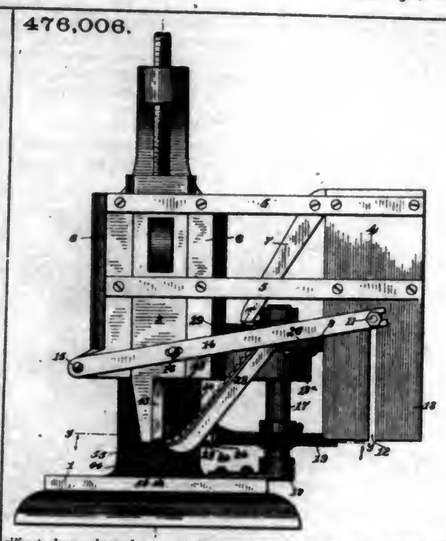
476,006. MACHINE FOR SETTING LACING-HOOKS. FREDERICK HOES, Bridgeport, Conn., assignor to the Smith & Pupke Manufacturing Company, New York, N. Y. Filed Jan. 13, 1891. Serial No. 377,653. (No model.)

Claim.—1. In a machine for setting lacing-hooks, the combination, with subsidiary and main feeding-chutes, of a spirally-grooved disk interposed between the said chutes, the said chutes being connected with the opposite ends of the said groove, a means for placing the hooks around the same groove, a spiral finger projecting partly across the said groove, and devices for delivering said hooks to the setting appliances, substantially as described.

2. The combination of the feed-disk having scroll groove and the rotary spider having legs extending athwart said groove with the spring-tongues which extend laterally immediately above said legs and operative hook-setting mechanism, substantially as shown and described.

3. The combination of the feed-disk having scroll groove and the rotary spider having legs extending athwart said groove with the reciprocatory hook-setting devices, substantially as set forth.

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silient dogs pivoted to said disk and overhanging said groove and operative hook-setting mechanism, substantially as set forth.

4. The combination of the feed-disk having scroll groove and the rotary spider having legs extending athwart said groove with the spring-finger projecting within the groove and operative hook-setting mechanism, substantially as set forth.

5. The combination of the feed-disk having scroll groove, the rotary spider having legs extending athwart said groove, and the devices for properly arranging the hooks within the groove with the feed-chute into which said groove leads, the ledge which overhangs said groove and chute, and thereby affords a guideway for the uniform delivery of the hooks to the setting devices, and operative hook-setting mechanism, substantially as shown and set forth.

6. In a machine for setting lacing-hooks, the combination of the feed-disk having a scroll groove within which the hooks are assembled, a feed-chute which leads from said groove to the setting devices, a ledge which overhangs said chute and a portion of said groove, means for manipulating the hooks and forcing them upon said ledge with their heads hooked over the latter, and operative hook-setting mechanism, substantially as shown and set forth.

7. In a machine for setting lacing-hooks, the combination of the vertically-reciprocatory press-gate, the reinforce-block secured to the lower end thereof, the setting-head pivoted to said gate and having a toe extending in normal position below said block, and means for successively forcing the hooks from said chute upon said toe, substantially as set forth.

8. In a machine for setting shoe-lacing hooks, the combination of the vertically-reciprocatory gate and devices carried thereby for holding the hooks during the operation of setting, with a feed-chute, a pivoted push-bar longitudinally movable in a path at approximately right angles to the said chute, means for oscillating the said push-bar on its pivot toward the said holding devices upon the completion of the forward movement of the said push-bar, whereby the said oscillating portion of the push-bar will force the hooks from the feed-chute upon the holding devices, and means for imparting an oscillation in the opposite direction to the said push-bar at the opposite end of its stroke, substantially as described.

9. In combination with the devices carried by a vertically-moving head for holding the hooks during the setting, and the feed-chute whereby the hooks are led to said devices, the pivoted push-bar having a reciprocatory movement transversely to the chute and in the immediate rear of the lowermost hook in the latter, and an abutment engaging the said push-bar upon a reciprocating motion thereof for throwing said bar toward said devices, whereby said hook is delivered to said devices, substantially as set forth.

10. The combination of the reciprocatory head 56, the push-bar pivoted therein and provided with ear 61, the abutments 62 63, the feed-tube, and the devices carried by a vertically-moving head for holding the hooks during the setting, substantially as set forth.

11. The combination of the foot-lever, the resilient plunger within the standard and having constant contact with said lever, the head 56 on the inner end of said plunger, the push-bar pivoted to said head and having a laterally-extending ear, and the bracket 64, having abutments 62 63, against which said ear strikes at the respective limits of its backward and forward movements, whereby said push-bar is vibrated laterally, substantially as set forth.

12. The combination of the vertically-reciprocatory press-gate, the reinforce-block secured to the lower end thereof, the setting-head pivoted to said gate and having a toe extending in normal position below said block, the feed-chute leading immediately beneath said block, the push-bar having a reciprocatory movement transverse to said chute and also a lateral vibration, whereby the lowermost hook is selected by said bar, and thereby forced beneath said block and upon said toe, substantially as shown and set forth.

13. In a machine for setting lacing-hooks, a setting-head which holds the hooks during the operation of setting and is carried by the reciprocatory gate of a press, in combination with a pivoted and reciprocating push-bar actuated by a power-lever for forcing the hooks on said head with their shanks depending and with a spring-pressed plunger bearing upon the said power-lever and carrying the said push-bar, substantially as shown and described.

14. In a machine for setting lacing-hooks, the combination, with the setting-head pivoted to the press-gate and adapted in normal position to receive the hooks, of means comprising a spring-pressed dog engaging a lug upon the head for swinging said head outwardly during the initial movement of said gate, whereby the hooks when set are released, substantially as set forth.

15. The combination of the setting-head pivoted to the gate and having lug 47, and the dog 49, pivoted to the standard and adapted to engage with said lug on the initial movement of said gate, whereby said head is swung outwardly, substantially as set forth.

16. In a machine for setting lacing-hooks, the combination, with the setting-block secured in the bed of the machine, suitable setting mechanism, and the devices for holding the hooks during the setting carried by the reciprocatory press-gate, of means including a horizontal spirally-grooved disk having a spindle rotating thereon for assembling and feeding the hooks and instrumentalities for delivering the hooks shank downward to said devices, substantially as set forth.

17. The combination, with a reciprocating gate and a stationary setting-head, of a stationary feed-chute and a positive feeding device therefor, a setting-head having a lug thereon and pivoted to the gate and swinging in a plane at right angles to the lower end of the said feed-chute, a reinforcing-block mounted on the said gate and normally above the lower end of the said pivoted setting-head, and a pivoted dog adapted to trip the said pivoted setting-head upon the beginning of an upward movement of the said gate, substantially as described.

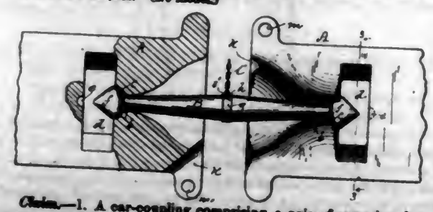
476,007. SUBMARINE TELEPHONE. HENRY FISCH, Michigan City, Ind. Filed Oct. 23, 1891. Serial No. 409,573. (No model.)



Claim.—1. A telephone comprising an electro-magnet embedded in a water-resisting compound, substantially as and for the purpose set forth.

2. A telephone comprising an electro-magnet surrounded by a water-tight case and embedded in a water-resisting compound, with an air-admission extending from the outside of the case to the space behind the diaphragm, substantially as and for the purpose set forth.

476,008. CAR-COUPLING. MICHAEL FLANAGAN, Milwaukee, Wis., assignor of one-half to William Doyle, same place. Filed Dec. 14, 1891. Serial No. 414,942. (No model.)



Claim.—1. A car-coupling comprising a pair of opposing draw-heads provided with conical depressions in their rear walls and longitudinal seats that have concave inner ends and are in line with the depressions, and a link-bar having its extremities in the form of conical knobs convex at their butts, substantially as set forth.

2. A car-coupling comprising a pair of opposing draw-heads, each of which has a vertical side thereof provided with a longitudinal recess intercepted by a vertical opening, countersunk longitudinal seats within the draw-bars, and a link-bar having its extremities in the form of knobs that engage with the countersinks of said seats, substantially as set forth.

3. A car-coupling comprising a pair of opposing draw-heads provided with conical depressions in their rear walls, longitudinal seats that have concave inner ends in line with the depressions, and bottom openings intermediate of the said rear walls and seats, and a link-bar having its extremities in the form of conical knobs convex at their butts, substantially as set forth.

476,009. TOOL FOR FINISHING EDGES OF CARTRIDGE SHELLS AND HEADS. CHARLES P. GILBERT and HENRY W. THOMAS, Bridgeport, Conn., assignors to the Union Metallic Cartridge Company, same place. Filed Feb. 8, 1892. Serial No. 420,746. (No model.)

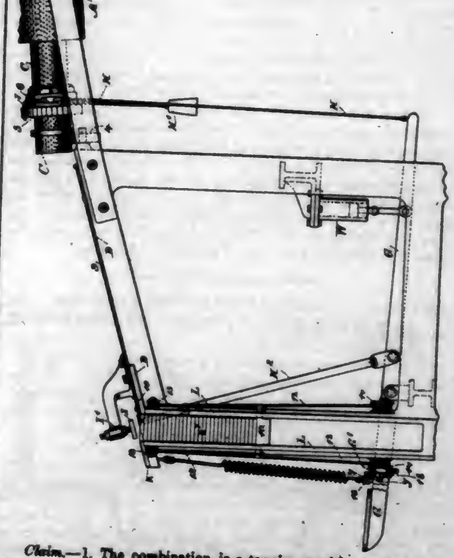


Claim.—1. A tool for finishing cartridge shells and heads, consisting, essentially, of a body having suitable openings, a cutter in one of said openings for removing the end of a shell or head, a cutter in the other opening for chamfering out the inner edge of a shell or head, and suitable means for locking said cutters in position.

2. A tool for finishing cartridge shells and heads, consisting of a suitable body having openings, substantially as shown and described, a cutter for determining the length of the shell or head, a cutter for chamfering out the inner edge thereof, suitable means for locking said cutters in position, and suitable means for smoothing the outer edge of the shell or head.

3. A tool for finishing cartridge shells and heads, consisting of a suitable body having openings, a cutter for determining the length of the shell or head, a cutter for finishing the inner edge thereof, a cutter for finishing the outer edge thereof, and set-screws for locking said cutters in position after adjustment.

476,010. MACHINE FOR ATTACHING TAGS TO PLUG-TOBACCO. GEORGE M. GUERRANT, New York, N. Y., and CORNELIUS W. GUERRANT, Danville, Va. Filed Feb. 4, 1892. Serial No. 420,353. (No model.)



Claim.—1. The combination, in a tagging-machine, with the incline down which the tags pass, of a revoluble perforated cylinder, and mechanism for revolving the same progressively, whereby the points of the tags are caught in the perforations and the tags turned with their points upwardly before passing out upon the incline, substantially as set forth.

2. The combination, with the incline in a machine for applying tags, of a revoluble perforated cylinder into which the tags are re-

ceived, troughs within the cylinder into which the tags are dropped after being lifted by the points of the tags entering the perforations, a second perforated cylinder into which the tags pass from the troughs and by which the tags are turned with their points upwardly, and mechanism for revolving the perforated cylinders, substantially as set forth.

3. The combination, in a tagging-machine, of an incline down which the tags slide, a perforated revoluble cylinder for lifting the tags by their points, a trough receiving the tags as they fall, a perforated cylinder into which the tags pass from the trough and by which the tags are turned with their points upwardly, and a ratchet-wheel and pawl for giving a progressive movement to the perforated cylinders, substantially as set forth.

4. The combination, in a tagging-machine, of an inclined table down which the tags pass, guides above the surface of the table and parallel with the same for directing the tags by acting upon their upwardly-projecting points, a plunger upon which the tags are allowed to pass, a head-block beneath which the plug-tobacco is placed and by which it is held, and mechanism for moving the plunger to force the tags upon the tobacco, substantially as set forth.

5. The combination, in a tagging-machine, of an inclined table down which the tags pass, guides above the surface of the table and parallel with the same for directing the tags by acting upon their upwardly-projecting points, a plunger upon which the tags are allowed to pass, a detainer and means for moving the same for allowing one set of tags to pass upon the plunger, a head-block beneath which the plug-tobacco is placed and by which it is held, and mechanism for moving the plunger to force the tags upon the tobacco, substantially as set forth.

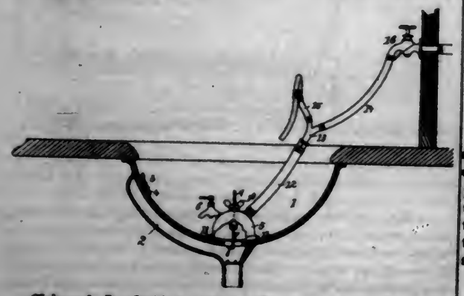
476,011. WATER-CLOSET. JOHN H. HAMILTON, Detroit, Mich. Filed Nov. 12, 1891. Serial No. 411,757. (No model.)



Claim.—1. In a water-closet, the combination, with the bowl having a trap formed at its lower end and a discharge-pipe, of a supply-pipe, a trap formed in the bowl below the supply-pipe and above said other trap, a passage leading from the upper trap to the bowl, a discharge-passage formed in the rear of the bowl, its upper end leading into the upper trap, an air-space formed between the discharge-passage and the trap in the lower portion of the bowl, a vent in the dividing-wall between the discharge-passage and said air-space, a vent-passage between the bowl and supply-pipe, and a trap formed at the lower end of the air-space, substantially as described.

2. In a water-closet, the combination, with a bowl having a trap in the lower portion thereof, an air-space communicating with said trap formed in the rear of the bowl, a discharge-passage formed in the rear of the air-space, a trap at the lower end of the air-space and the discharge-passage, a vent in the wall between the air-space and discharge-passage, a supply-pipe, a trap below the pipe into which the upper end of the discharge-passage leads, a passage leading from the upper trap into the rim of the bowl, and a drip and vent passage between the supply-pipe and bowl, substantially as described.

476,012. FLUSHING APPARATUS FOR WASTE-PIPES. WILLIAM M. HAWORTH, Decatur, Ill. Filed Feb. 7, 1891. Serial No. 380,894. (No model.)



Claim.—1. In a flushing apparatus, the combination of a concaved dome, a threaded rod extended through the dome and provided on its upper end with a nut and at its lower end with a hook, a gasket for the base of the dome, a gasket between the nut and the dome, and a supply-pipe connecting with the dome, substantially as set forth.

2. In a flushing apparatus, the combination of a concaved dome having a valve, a threaded rod extended through the dome and provided on its upper end with a nut and at its lower end with a hook, a gasket for the base of the dome, a gasket between the nut and the dome, and a supply-pipe connecting with the dome, substantially as set forth.

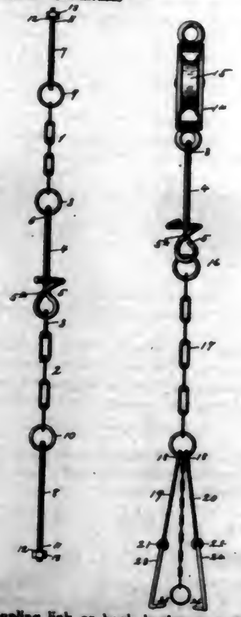
3. In a flushing apparatus, the combination of a concaved dome, a threaded rod extended through the dome and provided on its upper end with a nut and at its lower end with a hook, a gasket for the base of the dome, a gasket between the nut and the dome, a supply-pipe connecting with the dome, and two tubes having different diameters and connecting with the supply-pipe through a Y-coupling, substantially as set forth.

4. In a flushing apparatus, the combination of a concaved dome, a threaded rod extending through the dome and having a nut on its upper end, a hooked rod linked to the lower end of the threaded rod, a gasket for the base of the dome, a gasket between the nut and the dome, and a supply-pipe connected with the dome, substantially as set forth.

5. A flushing device for waste-pipes, consisting of a pipe adapted to be connected with the service-pipe, means for making a tight joint between the service-pipe and the waste-pipe, and a valve adapted to utilize water-hammer, as set forth.

6. In a flushing apparatus, the combination of a concaved dome having a vent-cock projecting from said dome, a threaded rod extended through the dome and provided on its upper end with a nut and at its lower end with an eye and a hook linked to said eye, a gasket for the base of the dome, a gasket between the nut and the dome, and a supply-pipe communicating with the top of the dome, substantially as set forth.

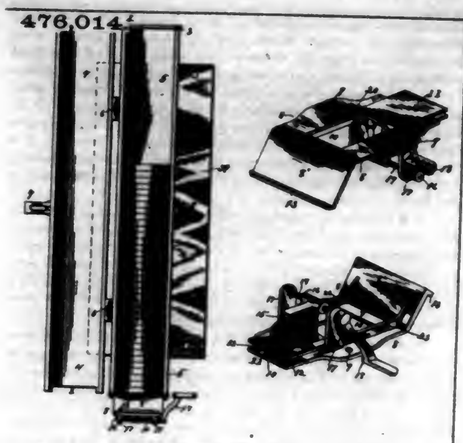
476,013. COUPLING-HOOK. CHARLES S. HIGGINS, Brooklyn, N. Y., assignor to Mary Francis B. Higgins, same place. Filed June 30, 1891. Serial No. 398,008. (No model.)



Claim.—A coupling link or hook having a straight cylindrical shank formed with a loop or eye at one end and having its opposite end bent in substantially a semicircle on one side of the shank to a point in line with the axis of said shank and from thence bent spirally toward the opposite end, so as to leave an open tortuous passage for the introduction of a connecting link or ring, said spiral being continued, encircling the shank, and forming an unbroken or continuous spiral hook, substantially as described.

476,014. SOAP-HOLDER. CHARLES S. HIGGINS, Brooklyn, N. Y., assignor to Mary Francis B. Higgins, same place. Filed Aug. 10, 1891. Serial No. 402,260. (No model.)

476,014



Claim.—1. A holder or receptacle for cakes of soap, which is formed in its front lower portion with an opening of a size sufficient to permit of the withdrawal of a single cake at a time, in combination with a removable and recessed bottom and a forwardly-movable slide raised above said bottom, and mechanism for reciprocating said slide, and mechanism for operating the same, including a rack-bar on the slide, a segment-rack, a forwardly-movable slide, a transverse shaft, and a spiral spring surrounding the same, substantially as described.

2. A holder or receptacle for cakes of soap, which is formed in its front lower portion with an opening of a size sufficient to permit of the withdrawal of a single cake at a time, in combination with a removable and recessed bottom and a forwardly-movable slide raised above the same, and mechanism for reciprocating said slide, and mechanism for operating the same, including a rack-bar on the slide, a segment-rack, a forwardly-movable slide, a transverse shaft, and a spiral spring surrounding the same, said shaft being provided with a finger-lever at one end, substantially as described.

3. A holder or receptacle for cakes of soap, which is formed in its front lower portion with an opening of a size sufficient to permit of the withdrawal of a single cake at a time, in combination with a removable and recessed bottom, and a forwardly-movable slide raised above the same, and mechanism for reciprocating said slide, and mechanism for operating the same, including a rack-bar on the slide, a segment-rack, a forwardly-movable slide, a transverse shaft, and a spiral spring surrounding the same, said shaft being provided with a finger-lever at one end, which projects upward and forward, substantially as described.

4. In a holder or receptacle for cakes of soap, a slide formed with longitudinal grooves in its sides or edges, in combination with a stationary recessed and removable bottom, a transverse shaft, and a spiral spring surrounding the same, and gearing between said shaft and the slide, substantially as described.

5. A holder or receptacle for cakes of soap, formed in two vertical parts and provided at its lower front end with an opening of a sufficient size to permit of the withdrawal of a single cake at a time and with a forwardly-movable slide for effecting the removal of said cake, in combination with a rack-bar, a segment-gear, and means for operating the same, said means including a transverse shaft, a spiral spring surrounding the same, and means for operating said shaft, said means consisting of an upward and forward extending finger-lever, substantially as described.

476,015. WALKING-STICK, &c. JEAN J. HIN, Paris, France. Filed Sept. 11, 1891. Serial No. 405,371. (No model.)

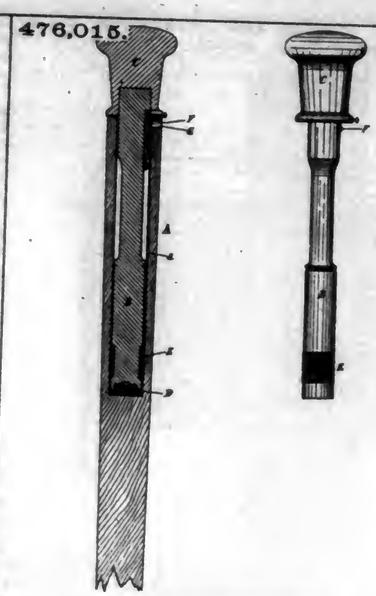
Claim.—1. A walking-stick, &c., formed with a hollow handle end, in combination with a piston or plunger that is recessed to receive a charge of tinder, substantially as described.

2. A walking-stick, &c., formed with a hollow handle end, in combination with a bushing that is fitted within said hollow end and a piston or plunger that is recessed to receive a charge of tinder, substantially as described.

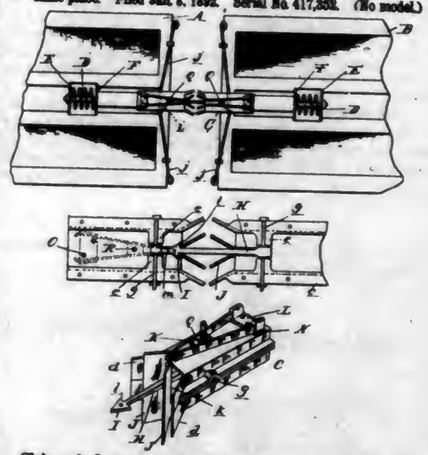
3. A walking-stick, &c., formed with a hollow handle end, in combination with a piston or plunger that is recessed to receive a charge of tinder and provided with an encircling line of packing, substantially as described.

4. The combination, with a walking-stick having a hollow upper end, of a plunger mounted to slide in said hollow end and recessed to receive a charge of tinder and a catch carried by the plunger and arranged to engage the stick, substantially as described.

476,015.



476,016. CAR-COUPLING. PETER HOFF, Detroit, Mich., assignor of three-fourths to Ed. E. Bryant, G. H. Barnes, and Ed. H. Gilman, same place. Filed Jan. 6, 1892. Serial No. 417,352. (No model.)

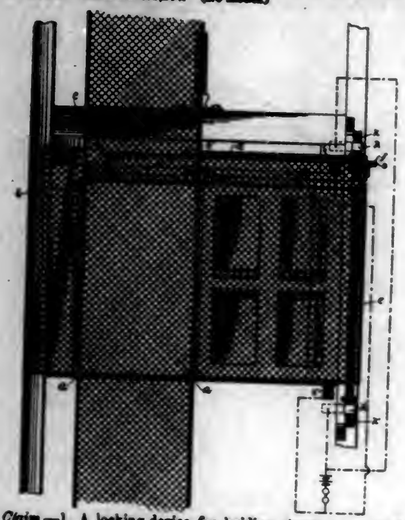


Claim.—1. In a car-coupler, the combination, with a draw-head, of a draw-bar secured thereto, consisting of two vertically-disposed and oppositely-inclined plates or jaws arranged across and free of the end of the draw-head, springs extending backward from the plates, arranged to cause the plates to normally approach each other, and a pivoted draw-bar arranged to be engaged and held between the plates by the springs, substantially as described.

2. In a car-coupler, the combination, with a draw-head and a draw-bar secured thereto and consisting of oppositely-inclined jaws arranged vertically across the open end of the draw-head, of springs formed by extension of the plates for causing said plates to approach each other, and a draw-bar pivoted on a transverse bar in the draw-head, having an arrow-shaped coupling-head, said bar being clamped between the jaws and adapted to be turned out of coupling position, substantially as described.

3. In a car-coupler, the combination of a draw-head formed of the two halves *a b*, the flanges *c*, bolts therethrough for securing the halves together, the half-bearing in each half, the shaft in said bearings, the hook secured to said shaft, and the spring-jaws with which said hook is adapted to couple, substantially as described.

476,017. ELEVATOR. HENRY L. HOLLIS, Chicago, Ill. Filed Aug. 10, 1891. Serial No. 402,987. (No model.)



Claim.—1. A locking device for holding elevator-cars at their landings, consisting of the lever *c*, the door provided with projections *b b*, the link-lever *d*, the rod *e*, and the arms *h h'*, substantially as described.

2. In devices for holding elevator-cars at their landings, the combination of the upright rod provided with stops having a space between them greater than the height of the car, bearings for the rod, buffer-springs to ease the contact of the car with the stops, and connections between the rod and the elevator-well door, whereby when said door is opened the stops are thrown into the path of the car and when the door is closed said stops are withdrawn, all substantially as described.

3. The combination, with a moving elevator-car, of a locking device adapted to hold the car at its landings, the door opening into the elevator-well, connections whereby said lock is operated upon the movement of the elevator-well door, and electric connections adapted to operate an alarm when the car is in contact with the locking device, all substantially as described.

476,018. VEHICLE-HUB. WLADYSLAW JANISZEWSKI, Cincinnati, Ohio. Filed Oct. 6, 1891. Serial No. 407,872. (No model.)



Claim.—1. The metallic hub provided with the annular flange B, and a movable flange and an adjustable flange C, and spokes located between the said flanges and held in position by sharp-pointed projections located on one of the said flanges, the hub being provided with the projection O^2 and the annular flange being provided with recess C', receiving said projection O^2, substantially as and for the purposes specified.

2. The metallic hub provided with the annular flange B and a movable flange and an adjustable flange C, and spokes located between the said flanges and held in position by sharp-pointed projections located on one of the said flanges, the hub being provided with the projection O^2 and the annular flange being provided with recess C', receiving said projection O^2, and the nut F, screwed upon the hub for preventing the recession of the flange C, substantially as and for the purposes specified.

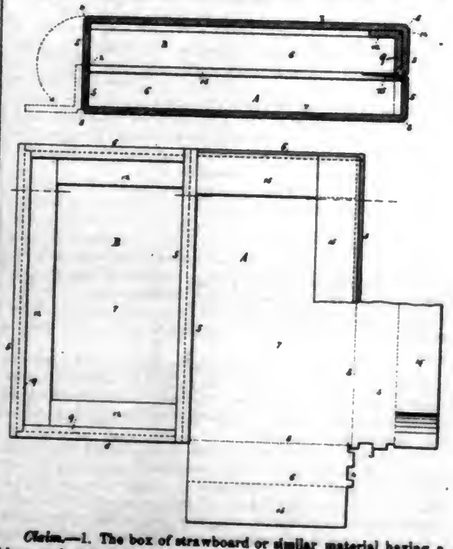
3. The combination, with a moving elevator-car, of a locking device adapted to hold the car at its landings, the door opening into the elevator-well, connections whereby said lock is operated upon the movement of the elevator-well door, and electric connections adapted to operate an alarm when the car is in contact with the locking device, all substantially as described.

4. The metallic hub provided with the annular flange B and a movable flange and an adjustable flange C, and spokes located between the said flanges and held in position by sharp-pointed projections located on one of the said flanges, and the nut F, screwed upon the hub for preventing the recession of the flange C, and the set-screw G, having chamber G' and opening G^2 and stopple G^3, substantially as and for the purposes specified.

5. A metallic hub provided with an annular flange B and a movable flange and an adjustable flange C, and spokes located between the said flanges and held in position by sharp-pointed projections located on the opposing faces of both of the said flanges, the flange C being provided with the annular recess O^2 and the nut F, the screw being received into the said recess when advanced upon the hub into place, substantially as and for the purposes specified.

6. A metallic hub provided with an annular flange B and a movable flange and an adjustable flange C, and spokes located between the said flanges and held in position by sharp-pointed projections located on the opposing faces of both of the said flanges, the annular flange being provided with the recess C' and the hub being provided with the projection O^2, entering the said recess C', the flange C being further provided with the annular recess O^2 and the nut F, the screw being received into the said recess when advanced upon the hub into place, substantially as and for the purposes specified.

476,019. PAPER BOX FOR CHESS, CHECKERS, &c. JOHN C. KOCH, Berlin, Germany. Filed Oct. 28, 1889. Serial No. 328,471. (No model.)



Claim.—1. The box of strawboard or similar material having a side or end of double thickness and a reinforcing-lap, the same being formed by partially cutting through the material on the line of the edge and upon the inner surface and folding the material inwardly to form the double thickness and the lap and securing the parts together, substantially as set forth.

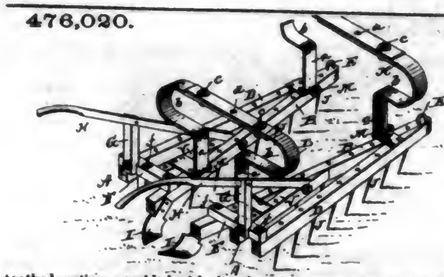
2. The box of strawboard or similar material having an interned rim 15, formed by partially cutting through the material at the edge of the side or end and turning down such material and securing the end portions thereof in place, substantially as set forth.

3. The box of strawboard or similar material having two parts secured together by a hinge, the sides and ends of one part being made of double thickness by partially cutting through the material upon the line of the edge and folding the material inwardly and securing the same, the other part of the box having an interned rim formed by partially cutting the material on the line of the edge and turning the rim inwardly and at right angles to the side or end, substantially as set forth.

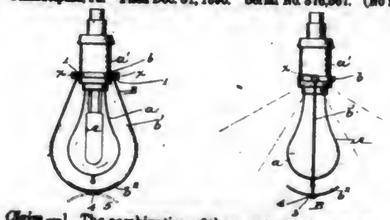
476,020. HARROW. ALBERT MESTAYER, Lorenzville, La. Filed Sept. 7, 1891. Serial No. 405,001. (No model.)

Claim.—The herein-described harrow, comprising the triangular-toothed sections provided with shovels at their rear ends and bows for connecting the front and rear ends, each of said bows consisting of two parts, each part hinged to each frame and having their opposite ends connected laterally adjustable to each other.

476,020.



476,021. ELECTRIC-LIGHT SHADE, &c. HOWARD A. MINER, Philadelphia, Pa. Filed Dec. 31, 1890. Serial No. 376,367. (No model.)



Claim.—1. The combination of the clasping device, the depending ball having a pivotal frictional connection with said device, and the plate adjustably supported upon said frame, substantially as described.

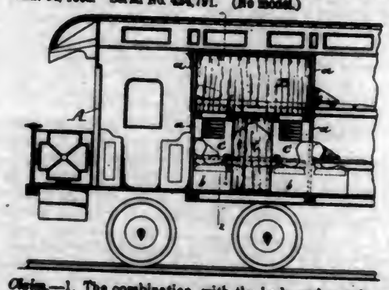
2. The combination of the clasping device, the depending ball pivotally connected therewith, and the slitted plate supported upon said frame and longitudinally adjustable thereon, substantially as described.

3. The combination of the clasping-band, the wire ball having end coils which are pivotally connected with said band, and the plate longitudinally adjustable upon said ball, substantially as described.

4. The combination of the clasping device adapted to embrace the head of an incandescent electric lamp, the frame depending from said device, and the slitted plate longitudinally adjustable and revolvable on said depending frame, substantially as described.

5. The combination of the supporting-frame, the plate longitudinally adjustable thereon, and means for securing the whole to a lamp, together with the supplementary plate provided with the tongue in the body thereof, adapted to be applied to said frame or member, substantially as described.

476,022. SLEEPING-CAR. JOHN H. MYERS, Philadelphia, Pa. Filed Mar. 14, 1892. Serial No. 424,791. (No model.)



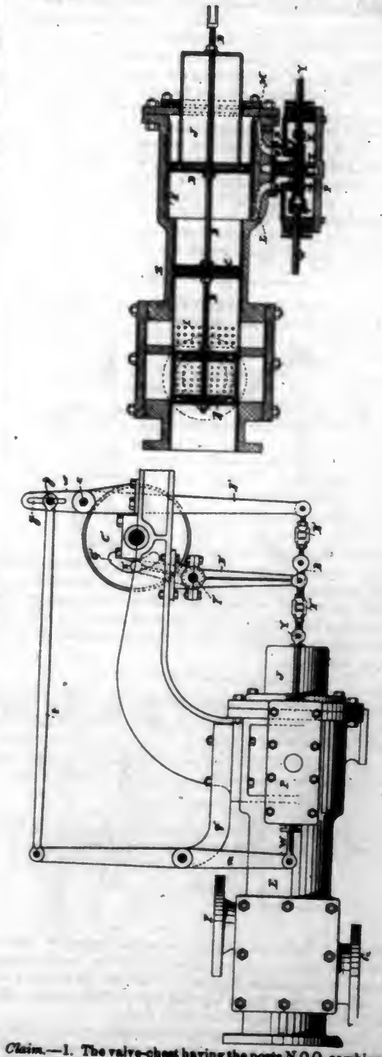
Claim.—1. The combination, with the body and seat-frame of a sleeping-car, of a screen C, adapted to fit the same, with locking devices *d d*, adapted to removably support the same in position thereon, substantially as described.

2. The combination, with the body and seat-frame of a sleeping-car, of a screen C, adapted to fit the same, with locking devices *d d*, adapted to removably support the same in position thereon, with ventilating-slats *m* therein, substantially as described.

3. The combination, with the body and seat-frame of a sleeping-car, of a pair of screens C C, adapted to fit the same, with locking devices *d d*, adapted to removably support the same in position thereon, and a pair of curtain-supports *e e*, removably maintained in position by hook devices on the inner edges of said ventilating-screens C, substantially as described.

4. The combination, with the body and seat-frame of a sleeping-car having a swinging bottom *c* above the seats, of a pair of screens C C, adapted to fit the same, with locking devices *d d*, adapted to removably support the same in position thereon, and a pair of curtain-supports *e e*, removably maintained in position by hook devices on the inner edges of said ventilating-screens C, substantially as described.

476,023. VALVE FOR HYDRAULIC ELEVATORS. JOHN MCADAMS, New York, N. Y. Filed June 13, 1891. Serial No. 396,044. (No model.)



Claim.—1. The valve-chest having the ports N O Q, combined with the cylinder-valve S, having ports *a b c h* and being open at one end and connected with the operating-rod W at the other, the inclosed piston-valve X, having coves *d e f*, exhaust-apertures and open interior *m* and being connected with the rod Y, the main valve A, heads C D, rod B, cylinder E, ports L M, and mechanism connecting the rod B with the valve S and the rod Y with the usual operating-cable, substantially as set forth.

2. The valve-chest having ports N O Q, combined with the hollow valve S, having ports *a b c* less in length than said ports N O Q, the port *h* in said valve S, the inclosed piston-valve having ports and coves and the hollow interior *m* leading to the exhaust-ports, the cylinder E, the

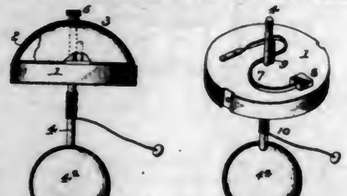
main valve, pistons, ports, and rod therein, the lever connections between said rod and said valve S, and intermediate mechanism between the said piston-valve and the usual operating-cable, substantially as and for the purposes set forth.

3. The valve-chest having ports, combined with the cylinder-valve having ports less in length than the first-mentioned ports, the inclosed piston-valve having ports, the cylinder E, the main valve, pistons, ports, and rod B therein, the levers A' *w* R, and rod *t*, connecting the lever B with said cylinder-valve, and mechanism intermediate the said piston-valve and the hand operating-cable, substantially as and for the purposes set forth.

4. The valve-chest having ports combined with the cylinder-valve having ports, the inclosed piston-valve having ports, the cylinder E, the main valve, pistons, ports, and rod B therein, mechanism, substantially as described, for operating said piston-valve, and the levers A' *w* R, and rod *t*, connecting the rod B with said cylinder-valve, the said rod *t* being adjustably secured to the lever *w*, so as to regulate the throw of the cylinder-valve, substantially as and for the purposes set forth.

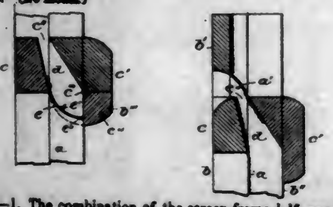
5. The valve-chest having the ports N O Q, combined with the hollow valve S, open at one end and connected with the rod W at the other end, ports *a*, *b*, *c*, and *h* in said valve S, the inclosed piston-valve X, connected with the rod Y at one end and having ports and coves and its hollow interior *m* open at the other end within said valve S to the exhaust-ports, the cylinder E, the main valve, pistons, ports, and rod therein, lever connections between said latter rod and the rod W, and intermediate mechanism between the said piston-valve and the usual operating-cable, substantially as and for the purposes set forth.

476,024. TOY FOR EMITTING SOUND. LOUIS REICHERT, Scranton, Pa. Filed Nov. 24, 1891. Serial No. 412,971. (No model.)



Claim.—The combination, with the disk, the gong secured thereto, and the bent spring secured thereto, having a hammer at its free end, of the rotatable shaft journaled in said disk and gong and provided with a weighted ball or sphere, and a trip-rod secured to said shaft, adapted to engage with and trip said spring, substantially as and for the purpose described.

476,025. FLY AND INSECT ESCAPE FOR DOORS, WINDOWS, &c. JOHN H. SELKIRK, Ithaca, N. Y. Filed Jan. 5, 1892. Serial No. 417,126. (No model.)

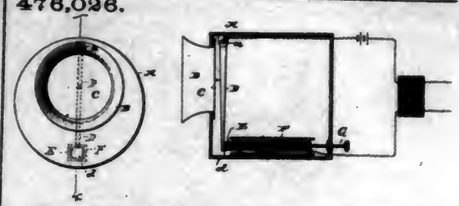


Claim.—1. The combination of the screen-frame *b b''*, cross-bars *c c'*, and screen fabric *a*, the inside surfaces of the bars *c c'* being inclined outward toward the light or outer air and the top inner edges of the said bars being closer together than the lower edges and the said parts adjusted to each other, as set forth.

2. The closing-lid *b''*, hinged to the cross-bar *c'* of the frame *b b'*, provided with the spring *e*, fast to the cross-bar *c*, the said spring being adjusted to hold the lid open when released and to hold it shut by its spur *e'*, as set forth.

3. A window-screen frame with bars *c c'*, between which a tapering insect-exit is formed, the bar *c'* having a portion which enters between the side rails of the screen-frame and also a portion extending beyond the face of the screen, forming thereby a rigid bar for guarding the said insect-exit, substantially as set forth.

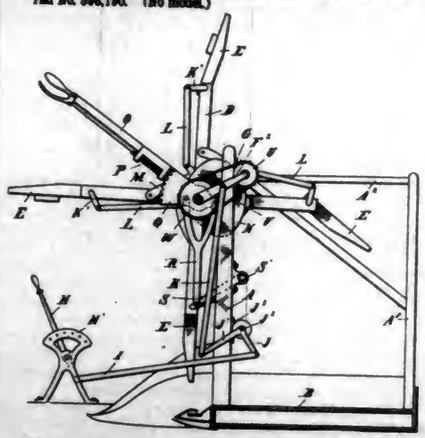
476,026. TELEPHONE. STEPHEN F. SHERMAN, New York, assignor of one-half to George F. Shaver, Yonkers, N. Y. Filed Mar. 2, 1892. Serial No. 423,494. (No model.)



Claim.—1. In a telephone-transmitter, the combination of a vibrating diaphragm and a variable resistance connected therewith and included in the circuit, made of a piece of conducting material creased or folded to form plaits, substantially as described.

2. In a telephone-transmitter, the combination of a vibrating diaphragm and a variable resistance connected therewith and included in the circuit, made of a piece of carbon creased or folded to form plaits, substantially as described.

476,027. MEANS FOR RAISING AND LOWERING HARVESTER-REELS. WALTER F. STEPSON, Milan, Mich. Filed July 1, 1891. Serial No. 398,190. (No model.)



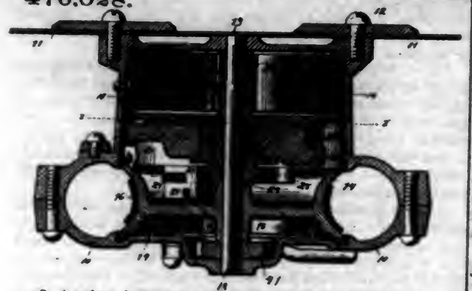
Claim.—1. In a harvester-reel, the combination of two supports on opposite sides of the harvester-platform, two cranks pivotally secured thereto, a reel-supporting shaft uniting the ends of the two cranks, a reel having a hollow shaft sleeved upon said reel-supporting shaft, beaters pivotally secured to the arms of the reel, the grooved cam sleeved upon the hollow shaft of the reel, the rollers engaging into said grooved cam and having actuating connections with the beater, the adjusting hand-lever of the cam provided with a spring-latch, and a notched segment sleeved upon the hollow shaft of the reel, the bifurcated connecting-rod and crank arranged to hold said notched segment in its relative position upon the hollow reel-shaft, and a raising and lowering device for adjusting the reel-supporting shaft in the arc of a circle, substantially as described.

2. In a harvester-reel, the combination of the upright A, the upright A', having the forwardly-projecting arm A^3, the bearing G on the upright A and arm A^3, the cranks F' and F^3, pivotally journaled in said bearings, the shaft F, uniting the ends of these cranks, the reel provided with the hollow shaft C, sleeved upon the shaft F, the hand-lever H, the segment H', the bell-crank lever J J', the connecting-bars I and K, pivotally connecting the arms of the bell-crank lever with the hand-lever H and crank F^3, respectively, and the coil-spring J^4, arranged to counterbalance the reel, all arranged to operate substantially as described.

476,028. SAFETY ATTACHMENT FOR RAILWAY-TROLLEYS. MELVIN A. YEAKLEY, Cleveland, Ohio, assignor of one-half to Robert A. Robertson, same place. Filed Apr. 7, 1891. Serial No. 387,947. (No model.)

Claim.—1. A safety device for trolleys, comprising a sheave or drum, means connecting said drum and the trolley-support, adapted to be operated by the rotation of the former to move the latter, mechanism for rotating said drum, and means connecting the said drum and rotating mechanism, adapted to be operated by the movement of said drum to release the rotating mechanism, substantially as set forth.

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2. A safety device for trolleys, comprising a sheave or drum, means connecting said drum and the trolley-support, adapted to be operated by the rotation of the former to move the latter, mechanism for rotating said drum normally disconnected therewith, and means connecting the said drum and rotating mechanism, adapted to be operated by the movement of said drum to release the rotating mechanism, substantially as set forth.

3. A trolley safety device comprising a drum or sheave, a cord or rope to be wound upon the sheave, mechanism for rotating the sheave, and means connecting the sheave and rotating mechanism, adapted to be operated by the movement of the sheave to release the rotating mechanism, substantially as set forth.

4. A trolley safety device comprising a drum or sheave, means connecting said drum and trolley-support, adapted to be operated by the rotation of the former to move the latter, a spring for rotating said drum, and means connecting said drum and spring, adapted to be operated by the movement of said drum to release the spring, substantially as described.

5. A safety device for railway-trolleys, consisting of a sheave provided with a rope or cord to connect with the trolley, a main spring, and mechanism between the main spring and the sheave operated by the movement of the sheave to release the spring, substantially as described.

6. The trolley and its support, the safety device having a sheave connected by a rope or cord with the trolley, a main spring in said device wound and locked, and mechanism actuated by the sheave for disengaging said lock and throwing the spring into action, substantially as described.

7. The trolley and the sheave connected by a rope or cord, a main spring having a lock to hold it in tension, and mechanism connected with and operated by the movement of the sheave to release the said block when the sheave is quickly rotated, substantially as described.

8. A safety attachment to connect with railway-trolleys, consisting in a sheave adapted to be rotated back and forth, a main spring normally disengaged from said sheave, and mechanism to throw the spring into engagement with and operated by the movement of the sheave, substantially as described.

9. A safety device for trolleys, having a shaft and a sheave free to rotate in opposite directions thereon, a main spring free on the shaft and having a lock normally disconnected with the sheave, and mechanism between the lock and sheave for connecting these parts actuated by the sheave, whereby the sheaves will be turned by the spring when the lock is released, substantially as described.

10. The safety attachment consisting in a casing adapted to be fixed to a car, a main spring and a lock therefor, a sheave for the trolley safety-rope, and a catch actuated by the sheave to loosen the main-spring locking mechanism, substantially as described.

11. The safety attachment for trolleys, having a main spring and a lock, a sheave for the trolley safety-rope having a counterweighted dog, and a sleeve constructed to release the main-spring lock engaged by said dog when the sheave is quickly rotated, substantially as described.

12. In a safety attachment for trolleys, the casing and the shaft and means to lock the shaft from turning, and a sheave and main spring with intermediate locking connections free to turn together on the shaft, substantially as described.

13. The casing and shaft, the sheave for the trolley safety-rope and a spring connected therewith to stretch the rope, a main spring, and interlocking connections between the main spring and the sheave, substantially as described.

14. In a trolley safety device, the casing and shaft, a main spring free on the shaft, and a lock for the spring engaging the casing, the sheave, and mechanism actuated by the sheave and supported on the shaft to disengage the main spring, substantially as described.

15. In a safety device for trolleys, the casing and the main spring and sheave therein, the lock for the main spring, and a set of counterweights on the sheave, and mechanism between the counter-weights and the main-spring lock to engage said lock, substantially as described.

16. In a trolley safety device, the sheave and the main spring, a bolt to lock said spring and said sheave together, and a shaft provided with means to move said bolt into and out of the locking position, substantially as described.

17. In a trolley safety attachment, the shaft, a main spring, a locking device for the spring on the shaft, the sheave having projections to be engaged by said locking device, and means on the shaft to move the locking device into engagement, substantially as described.

18. In a trolley safety device, the casing and shaft, a main spring and a lock therefor, a division-piece between said spring and lock to which the spring is attached and having guides for the lock to slide in, means on the shaft to move the lock back and forth, and the sheave, substantially as described.

19. In a safety device for trolleys, the casing having inward projections at intervals, the sheave having lateral projections at intervals, the main spring, a sliding lock therefor constructed to alternately engage the said projections, and the shaft provided with means to move said lock, substantially as described.

20. In a trolley safety attachment, the casing and shaft, the sheave having counter-weights, and a ratchet-dog connected therewith, a sleeve on the shaft with a ratchet-wheel to be engaged by said dog, a main spring, a sliding lock for the spring, and means on the shaft actuating the lock, substantially as described.

21. In a trolley safety device, the casing and shaft, a sheave free on the shaft, a ratchet-wheel rigid with the shaft, a dog on the sheave to engage the ratchet-wheel, a main spring, a lock therefor, and means rigid on the shaft and arranged to throw said lock back and forth, substantially as described.

22. In a safety device for trolleys, the sheave, a pair of connected counter-weights connected therewith having a dog, a spring to hold the dog normally out of engagement, a ratchet-wheel rigid on the shaft arranged to be engaged by said dog, a main spring, and a lock therefor, the shaft having means to throw the lock into and out of engagement, substantially as described.

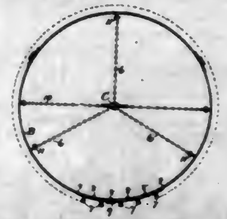
23. In a safety attachment for railway-trolleys, the shaft, the main spring, the sheave for the safety-rope, mechanism on the side of the sheave for connecting it with the shaft, consisting of a pair of pivoted connected counter-weights provided with a dog, a spring to keep said weights normally in a given position, and a ratchet-wheel on the shaft to be engaged by said dog, substantially as described.

24. In a trolley safety device, the casing, a shaft, a main spring normally wound and locked, a sheave free upon the shaft, a bolt to lock the main spring, and mechanism on the shaft to disengage said bolt, substantially as described.

25. In a safety device for trolleys, the casing, the shaft, the main spring, the sheave free to turn upon the shaft, a bolt connected with said spring to lock against the casing and upon the sheave alternately, and means fixed to the shaft to throw the bolt into engagement, substantially as described.

26. In a trolley safety device, the casing having inward projections at intervals, the main spring, the shaft, a plate free on the shaft having a sleeve supporting one end of the main spring, the locking-bolt having cam-surfaces and carried by the plate, a hub rigid on the shaft adapted to engage said cam-surfaces to throw the bolt into and out of engagement with the projections on the casing and sheave, and the sheave provided with said projections, substantially as described.

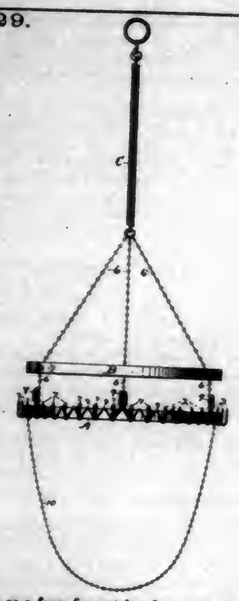
476,029. DISPLAY-RACK. EMIL ALTMAN, New Haven, assignor of one-half to F. H. Allis, New Britain, Conn. Filed June 23, 1891. Serial No. 397,761. (No model.)



Claim.—1. The herein-described display-rack, consisting, essentially, of the continuous chains 6, the frame A, permanently secured to said chains and having a series of hooks, the upper frame B, and means for detaching said upper frame from and attaching it to said continuous chains at various heights, substantially as described, and for the purpose specified.

2. In a display-rack, the combination of the frame A, provided with a series of vertical spring-clasps 9, the suspension-chains, and an upper frame secured to said chains at a point above said clasps and

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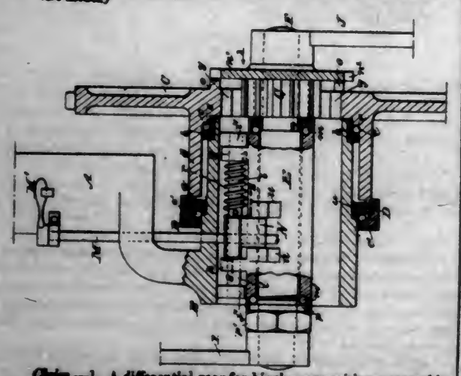
adapted to serve as a form for a strip of paper held within said series of clasps, substantially as described.

476,030. MOWING-MACHINE CUTTER. ISAAC F. BASSFORD, Milwaukee, Wis., assignor of one-half to Adolph Docter, same place. Filed Jan. 30, 1892. Serial No. 419,732. (No model.)



Claim.—The combination, with a cutter-bar having a vertical flange on its rear portion, a dovetailed channel extending its entire length, a dovetailed wedge-shaped transverse groove near its outer end, and a notch at the contracted end of said groove, of the cutter-blades having dovetailed ribs on the under sides and the wedge having a spring, the free end of which is formed into a downwardly-extending lug adapted to engage with said notch, substantially as described.

476,031. DIFFERENTIAL GEAR FOR BICYCLES. FRANK R. BARLOW, Gloucester City, N. J. Filed Aug. 15, 1891. Serial No. 402,708. (No model.)



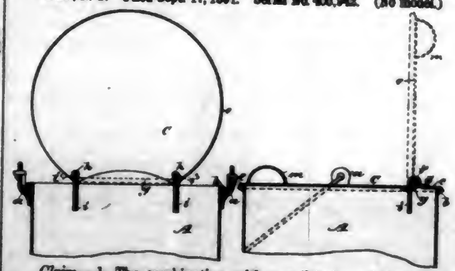
Claim.—1. A differential gear for bicycles, comprising a rotatably-supported sprocket-wheel, a swinging drive-shaft box within the sprocket-wheel support, a driving-shaft within the box, provided with a pinion adapted to engage an internal gear of the sprocket-wheel when the shaft-box is swung, and means for swinging the box, substantially as described.

2. A differential gear for bicycles, comprising a rotatably-supported sprocket-wheel, a driving-shaft box hung within the hollow support of said wheel, bearing a pinion adapted to mesh with internal gear-teeth in the sprocket-wheel hub when the shaft-box is moved laterally, a clutch device on the wheel and shaft adapted to lock together when the shaft is moved endwise, and a device adapted to consecutively move the box and shaft longitudinally and laterally, substantially as described.

3. The combination, with a pendent arm having a hollow hub at its lower end, a sprocket-wheel rotatable on the hub, having clutch-lugs on one side, and an internal gear-toothed ring, of a drive-shaft box hung within the arm-hub, a driving-shaft having crank-arms on its ends, a pinion on the shaft near one crank-arm, a shaft provided with a cam-block engaging projections on the shaft-box, and a clutch-flange on the drive-shaft adapted to engage the lugs on the sprocket-wheel when the cam-shaft is rocked, substantially as described.

4. The combination, with a pendent arm provided with a hollow hub having a sprocket-wheel thereon, ball-bearings between the hub and sprocket-wheel, a set of clutch-lugs on one side of the sprocket-wheel, and gear-teeth within said wheel, of a drive-shaft box hung within the hollow hub on a guide-rod fixed to the hub, a spiral spring on said rod adapted to hold the box centrally in the hub, a driving-shaft within the box having ball-bearings between it and the box, crank-arms on the ends of the shaft, a pinion on the shaft adapted to mesh with the internal gear of the sprocket-wheel when the shaft is swung laterally, a clutch-flange on the driving-shaft, and a cam-shaft bearing a cam-block lying between parallel limbs on the shaft-box and adapted to move the driving-shaft endwise or laterally, substantially as described.

476,032. HINGE FOR PAIL-LIDS. JOHN W. BOWERMAN, New York, N. Y. Filed Sept. 17, 1891. Serial No. 406,942. (No model.)



Claim.—1. The combination, with a pail-body and its lid, of a transverse rod secured on the lid at one folded edge thereof and two hook-bars which pass through holes in the lid and are affixed on the inside surface of the pail-body, substantially as described.

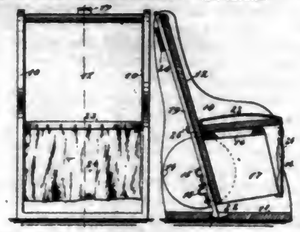
2. In a hinge-joint for a pail-body and its lid, a transverse wire rod secured in a fold along a straight edge of the lid, in combination with two hook-bars formed of wire rod bent into hook shape at one end, which rods pass loosely through holes in the lid near its edge and near the ends of the wire rod and are secured to the pail-body on its interior, having their hooked end portions loosely engaged with the incased wire rod, substantially as described.

476,033. METHOD OF DECORATING FABRICS. HENRY G. BUSCH, New York, assignor to Daniel Leroy Dresser, Flushing, N. Y., and Hera Read Goodridge, Newport, R. I. Filed Feb. 20, 1892. Serial No. 422,353. (No model.)



Claim.—The method herein described of decorating woven fabrics, consisting in first placing an apertured pattern-plate on the surface of the fabric, then applying an adhesive substance through the openings in the pattern-plate to the exposed part of the fabric, then removing the pattern-plate, and then sprinkling flocks on the adhesive substance to completely cover the top and edges thereof and render the adhesive substance invisible, as specified.

476,034. CHILD'S CHAIR. HORACE S. CARLEY, New York, N. Y. Filed July 13, 1891. Serial No. 399,327. (No model.)



Claim.—1. A chair provided with a swinging back, means for locking the back in different positions, a commode-seat attached to the back, wheels pivoted at the back, a removable cushioned seat adapted to cover the commode, and an adjustable tongue, as and for the purpose specified.

2. In a chair, the combination, with side pieces and a foot-board connecting the side pieces, of a back pivoted at its upper end between the side pieces, a seat carried by the back, and means for locking the back to the foot-board, either in an inclined or vertical position, substantially as described.

3. In a chair, the combination, with the side pieces and a foot-board connecting the side pieces, of a back pivoted at its upper end between the side pieces, a commode-seat permanently secured to the back, a removable seat adapted to be supported by the commode-seat, and means for locking the lower end of the back to the foot-board, either in an inclined or vertical position, substantially as described.

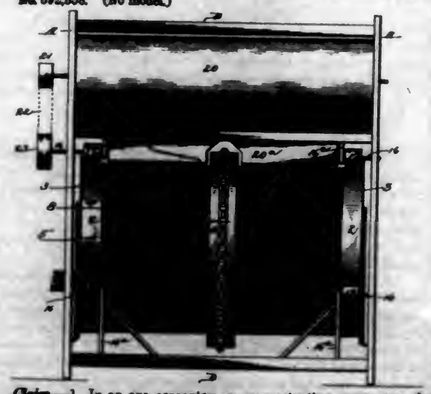
4. In a chair, the combination, with the side pieces and a foot-board connecting the side pieces, of a back pivoted at its upper end between the side pieces, wheels mounted on the back, a seat permanently secured to the back, a removable seat adapted to engage either the back or foot-board and to be supported by the permanent seat, and means for locking the back to the foot-board, substantially as and for the purpose set forth.

5. In a chair, the combination, with side pieces and a bottom board provided with a recess, of a back pivoted between the side pieces and provided with recessed sides, wheels mounted on the back, a seat carried by the said back, and a tongue sliding on the back and adapted to engage the recess of the bottom board, substantially as herein shown and described.

6. A chair provided with a swinging back, locking devices for securing the back in different positions, wheels located at the sides of the back, and a tongue capable of sliding upon the back, as and for the purpose specified.

7. A chair comprising side pieces and a bottom board connecting the same, a back pivoted at its upper end between the side pieces, bolts located upon the back at the lower portion thereof, wheels located at the sides of the back, a commode-seat secured to the front of the back, a removable cushioned seat covering the commode-seat, and a sliding tongue located at the rear face of the back, all arranged as and for the purpose set forth.

476,035. APPARATUS FOR CLEANING AND CONCENTRATING ORES. WILLIAM CLANCY, Anaconda, Mont. Filed May 11, 1891. Serial No. 392,358. (No model.)



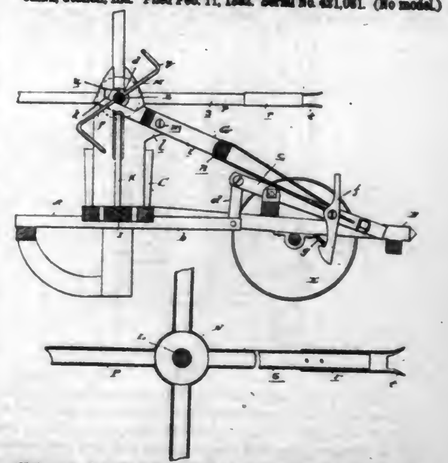
Claim.—1. In an ore screening or concentrating apparatus, the combination, with the rotatable drum consisting of the heads, the V-shaped ribs connecting the same, and the reticulated covering, of the tapering trough having a slot or opening in its upper side, the segmental shield in said drum, the arms connecting said shield with suitable supports having tubular ends, the rods working in the said tubular ends, and the coiled springs for pressing the shield against the ribs, substantially as described.

2. In an ore screening or concentrating machine, the combination, with the rotatable drum consisting of the heads, the V-shaped ribs, and the reticulated covering, of the segmental shield, the tapering trough having a slot in its upper side, and the feed-flume extending diagonally through the drum and its bottom having large meshes, substantially as described.

3. In an ore screening or concentrating apparatus, the combination, with the rotatable drum, the segmental shield, the tapering trough having a slot in its upper side, and the feed-flume, of the fan or blower having its discharge-spout above and in proximity to said trough, substantially as described.

4. In an ore screening or concentrating apparatus, the combination, with the uprights and cross-bars, the rotatable drum consisting of the heads 1, having arms 2 and flanges 3, the V-shaped ribs connecting said heads, and the central sprocket-wheel 18, bolted to said ribs, of the segmental shield 10, the trough 8, having a slot in its upper end, the feed-flume 15, the fan or blower 20, the pulley on the shaft of said fan, the rollers 17, the pulley 23 on the shaft of one of said rollers, and the belt 22, connecting said pulleys, substantially as described.

476,036. ATTACHMENT FOR CORN-PLANTERS. GEORGE J. CLINE, Goshen, Ind. Filed Feb. 11, 1892. Serial No. 421,061. (No model.)



Claim.—1. In a corn-planter attachment, a rotatable shaft having hollow hubs at opposite ends and hollow spokes secured to said hubs and formed in telescopic sections, the outer ends of the outer sections having shovels or penetrating points, substantially as specified.

2. The combination, with a corn-planter, of the forked standards rising therefrom, the yoke or frame pivoted to the standards and having its side branches crossing said forks, a lever pivoted to the main frame, a rope or the like connecting the lever with the yoke, suitable means for locking the lever, and a dropper attachment arranged in the slots of the standards and upon the yoke, whereby said attachment may be raised and lowered, substantially as specified.

476,037. TRANSOM-LIFTER. GEORGE A. COLTON, Chicago, Ill. Filed Mar. 25, 1892. Serial No. 426,599. (No model.)



Claim.—1. A transom-lift rod, lock, and guide comprising an apertured shell, a stirrup movable therein and embracing the rod, and a screw-nut having screw-threaded engagement with the shell and engaging the stirrup, substantially as specified.

2. The combination, with a shell having passages for the rod and threaded neck, of a stirrup having threaded shank and a screw-nut

having stem threaded for engagement with the neck and with the stirrup, substantially as specified.

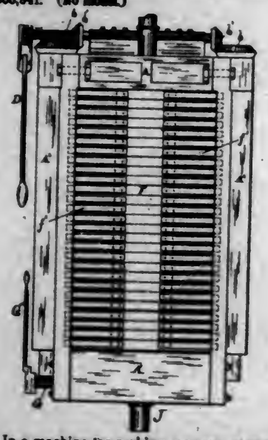
3. The combination, with a shell having passages for the rod and a threaded neck, of a stirrup having threaded shank and embracing the rod and a screw-nut having a stem having threaded engagement with the neck and with the shank of the stirrup, the stem of the stirrup and the stem of the nut being oppositely threaded, substantially as and for the purpose specified.

4. The combination, with a shell having threaded neck and passages for a rod, of a screw-nut having a stem with threaded engagement with the neck of the shell, a stirrup embracing the rod and having threaded engagement with the nut, and a spring arranged within the shell and bearing upon the outer face of the rod, as set forth.

5. The shell having opposite apertures for the rod and an interiorly-threaded screw-neck, a stirrup having exteriorly-threaded shank and cross-bar, a spring, and a screw-nut having stem threaded exteriorly and interiorly, the parts being detachable and adapted to serve with a transom-lift rod, substantially as specified.

6. A stirrup for a transom-lift, having a cross-bar, and a threaded neck and aperture for the rod, the neck being bored for the reception of a spring, as set forth.

476,038. CRAYON-MACHINE. JOHN S. COWDERY, HOWARD J. CURTIS, and EDWARD L. LIEDKE, Sandusky, Ohio; said Curtis and Liedke assignors to said Cowdery. Filed Jan. 17, 1889. Renewed Dec. 16, 1889. Serial No. 333,841. (No model.)



Claim.—1. In a machine for making crayons, carpenters' chalk, or other like articles, the combination of an upwardly and downwardly movable mold-plate having downwardly-discharging mold formation with an actuating-cam, said cam engaging with said mold-plate and thus raising it and then disengaging itself therefrom, substantially as set forth.

2. In a machine for making crayons, carpenters' chalk, or other like articles, the combination of an upwardly and downwardly movable mold-plate having downwardly-discharging mold formation with an actuating-cam, said cam located out of vertical line with said mold formation and having alternate engagement with and disengagement from said mold-plate, substantially as set forth.

3. In a machine for making crayons, carpenters' chalk, or other like articles, the combination of a mold-plate whose mold formations discharge downwardly and two rotary cams respectively engaging with the under sides of the opposite ends of said mold-plate, substantially as set forth.

4. In a machine for making crayons, carpenters' chalk, or other like articles, the combination of an upwardly and downwardly movable mold-plate whose mold formations discharge downwardly, movable cam mechanism engaging beneath said mold-plate, and a spring which presses down upon said mold-plate, substantially as set forth.

5. In a machine for making crayons, carpenters' chalk, or other like articles, the combination, with mold-plates relatively independent and respectively provided with fractional molds conjointly forming complete molds having downward discharge, of rotary cams relatively independent and respectively engaging beneath the ends of said mold-plates, said cams having springs relatively independent and respectively exerting downward pressure on the ends of said mold-plates, substantially as set forth.

6. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a number of cams, the projecting portion of one cam alternating with the depressed portion of the next cam, of a number of mold-plates respectively having engagement with said cams, substantially as set forth.

7. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of mold-plates and two rows of cams respectively engaging with opposite extremities of the mold-plates, the projecting portions of the cams of each row being located out of horizontal line with each other, substantially as set forth.

8. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of mold-plates, a mold-plate frame, and two series of cams located at the same side of the frame, the cams of each series engaging, respectively, with the extremities of the mold-plates and having their projecting and depressed portions respectively alternating with each other, the alternate projecting portions of each series of cams being on an axial pitch with respect to each other, substantially as set forth.

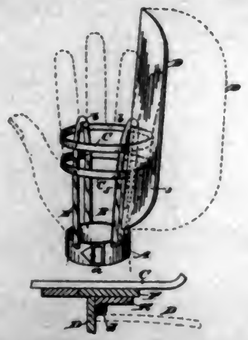
9. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a mold-plate frame provided on its opposite sides with shoulders, a series of mold-plates having their opposite extremities engaging with said shoulders, and two rows of rotary cams respectively engaging with opposite extremities of said mold-plates, the projecting portions of alternate cams of each row being located spirally on a pitch with respect to each other, the projecting portions of companion cams of the two rows being located substantially in the same horizontal plane, substantially as set forth.

10. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of mold-plates, a mold-plate frame provided with opposite recessed side portions, rotary shafts extending longitudinally in said side portions, said shafts provided with cams engaging with the opposite extremities of the respective mold-plates, and mechanism intermediately connecting said shafts, whereby they are caused to rotate synchronously, substantially as set forth.

11. In a machine for making crayons, carpenters' chalk, or other like articles, the combination of a series of mold-plates having end shoulders, a mold-plate frame having its sides provided with recesses in which said shoulders loosely fit, and cam mechanism located within said recesses, said shoulders resting on said cam mechanism and having reciprocating movement up and down within said recesses, substantially as set forth.

12. In a machine for making crayons, carpenters' chalk, or other like articles, the combination of mold-plates, a mold-plate follower, follower-actuating mechanism, and an apron connected with said follower and extending over said follower-actuating mechanism, substantially as set forth.

476,039. SWIMMING EQUIPMENT. PATRICK CURRAN, Hoquiam, Wash. Filed Sept. 16, 1891. Serial No. 405,855. (No model.)

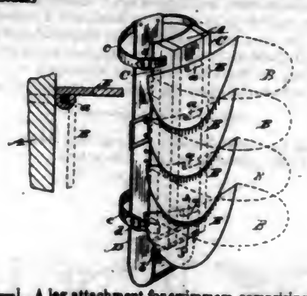


Claim.—1. The combination, with a wristband that is adjustable, looped straps each attached by the ends oppositely on the wristband and adapted to engage their folded parts with the hand between the fingers, and encircling bands attached to the looped straps and wristband, of a base-plate attached upon the encircling bands and wristband, and a paddle-blade rule-jointed by one edge to the base-plate, substantially as described.

2. The combination, with a wristband, a buckle thereon, looped straps each having its ends oppositely attached to the wristband and engaging the folded portion between the wearer's fingers, and two encircling bands affixed on the looped straps so as to embrace the hand, of a base-plate secured on the encircling bands and wristband to lie in the palm of the hand, a leaf-plate thereon, and a paddle-blade rule-jointed by one edge to the leaf-plate, substantially as described.

3. In a swimming equipment, the floats M N, that are attachable upon the arms and shoulders of a swimmer, substantially as described.

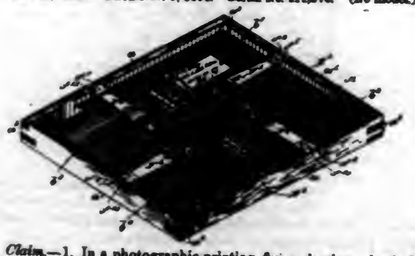
476,040. LEG ATTACHMENT FOR SWIMMERS' USE. PATRICK CURRAN, Hoquiam, Wash. Filed Nov. 30, 1891. Serial No. 413,590. (No model.)



Claim.—1. A leg attachment for swimmers, comprising a set of independent paddle-blades jointed to a base-block at one edge and adapted to extend at right angles therefrom, a float-strip on the base-block, and means for securing the base-block to the leg of the swimmer, substantially as described.

2. A leg attachment for swimmers, comprising a base-block, a float-strip on the base-block, adapted to sustain the weight of the attachment, a loop band adjustable for length and loosely joined to the lower end of the base-block, encircling-bands on the loop band, and a set of spaced paddle-blades rule-jointed upon the outer face of the base-block, substantially as described.

476,041. PHOTOGRAPHIC-PRINTING FRAME. FRANK A. DALY, Lowell, Mass. Filed Nov. 9, 1891. Serial No. 411,276. (No model.)
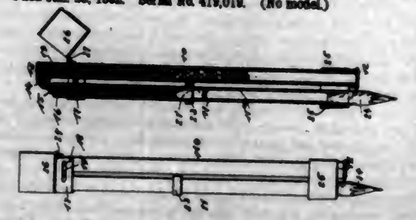


Claim.—1. In a photographic-printing frame having a back divided on intersecting lines into flaps, each hinged to the laterally-adjacent flaps and capable of being opened on either of said dividing lines, as and for the purpose specified.

2. The combination of the frame, the back, divided transversely and longitudinally into flaps, hinges connecting adjacent flaps, and springs each adapted to hold one of said flaps closed, as and for the purpose specified.

3. The combination of the frame, the back divided on intersecting lines into flaps, hinges connecting adjacent flaps, and springs, each secured to one of said flaps, and catches secured on said frame to engage said springs and hold said flaps closed, as and for the purpose specified.

4. The combination of the frame and the back divided on intersecting lines into flaps, each hinged to the adjacent flaps, each inner edge of each flap being provided with a tongue or groove to engage a corresponding groove or tongue on the adjacent edge of the next flap, as and for the purpose specified.

476,042. POCKET-LAMP. JACOB H. FAWER, New York, N. Y. Filed Jan. 23, 1892. Serial No. 419,019. (No model.)



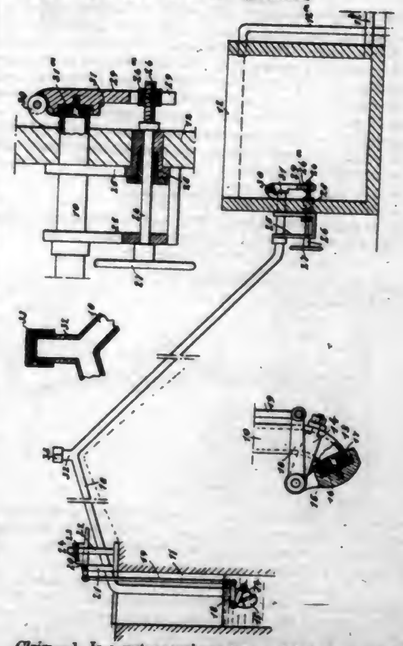
Claim.—1. The combination, with a tube provided with a scratcher or igniter at its upper or burner end, of a carrier mounted on the tube, movable at its upper end across said scratcher or igniter and adapted to carry suitable ignition devices, substantially as set forth.

2. A pocket-lamp comprising two nearly-parallel members, one adapted to carrying lighting-caps and the other having its upper end bent over the cap-carrying member and having a wick secured therein, a cap adapted to close the tops of the members, and a scratcher or igniter projecting from said bent end for igniting a lighting-cap and the wick by the movement of the members in relation to each other, substantially as described.

3. A pocket-lamp comprising two nearly-parallel members held to move in relation to each other, one member being adapted to carry lighting-caps and the other adapted to carry an oil-wick and having its upper end bent over the cap-carrying member and constituting an igniter, a slotted yoke and pin connecting the upper ends of the members and limiting their movements, a cap to cover the tops of the members, and a clasp to hold their lower ends together, substantially as described.

4. A pocket-lamp comprising an open-ended member adapted to carry lighting-caps, means for moving the caps therein, an oil-holding member or reservoir arranged nearly parallel with the cap-holding member, said oil-holding member having a wick therein and having its upper end arranged to overlap the cap-holding member, means for limiting the movements of the members in relation to each other, a bent scratcher or igniter toe secured to the oil-holding member and adapted to extend across the cap-holding member, and a cap to cover the upper ends of the members, substantially as described.

476,048. WATER-SUPPLY SYSTEM. JAMES W. FISHER, Palouse, Wash., assignor of one-half to Franklin G. McLain, same place. Filed Sept. 2, 1891. Serial No. 404,582. (No model.)

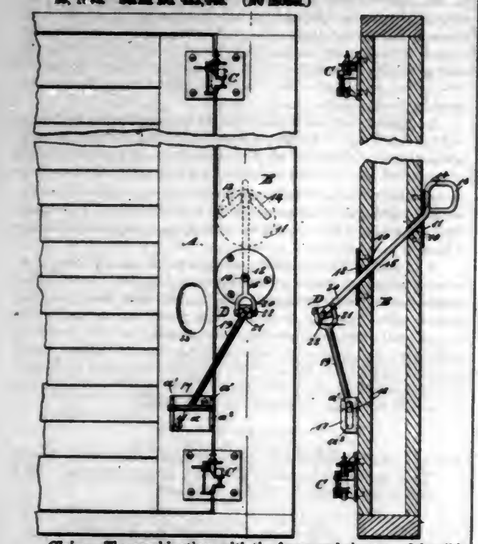


Claim.—1. In a water-supply system, a siphon-pipe, a swinging cap on one end of the pipe, a lever connected with the cap for opening and closing it, a pivoted cap on the other end of the pipe, and a screw connected with the cap for opening and closing it, substantially as described.

2. The combination, with a siphon-pipe having a bent end, of a bracket secured to the pipe adjacent to said end, a swinging cap pivoted to the bracket and adapted to close over the end, a hand-lever connected with the cap, so as to operate the same, and means for locking the lever, substantially as described.

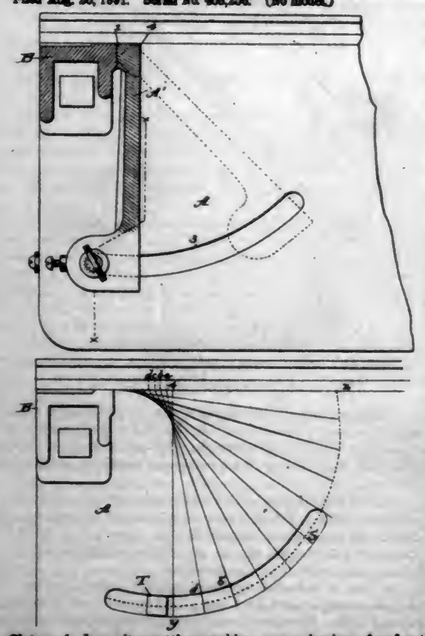
3. The combination, with the reservoir and the siphon-pipe arranged to extend through a wall of the reservoir, of a swinging lid pivoted within the reservoir and having a seat thereon which closes the pipe end, a frame secured to the outer wall of the reservoir, and a screw mounted in the frame and reservoir-wall and adapted to operate the swinging lid, substantially as described.

476,044. SHUTTER-WORKER. SARAH M. FISHER, Spencer, N. Y., assignor to herself and Mary Louise Jennings, same place. Filed Feb 29, 1892. Serial No. 423,446. (No model.)



Claim.—The combination, with the frame and shutter, of the sliding and rotating rod 15, extending from the inner side of the frame downwardly and outwardly therethrough and provided at its inner end with a fixed handle, the inner plate 11, having lugs between which the handle passes, the outer plate 12, the rod 19, having a universal connection with rod 15, the vertically-slotted bracket 17, and the cross-piece 18 on the lower end of rod 19 and mounted at its ends in said slots, substantially as set forth.

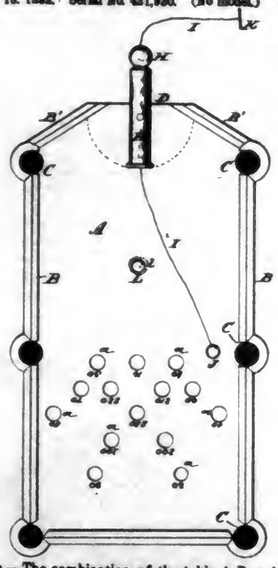
476,045. MITER-CUTTER. WILLIAM R. FOX, Grand Rapids, Mich. Filed Aug. 20, 1891. Serial No. 403,256. (No model.)



Claim.—1. In a miter-cutting machine, a gage having a free front end and connections for holding it closely in a slot in the base, combined with a bearing-post for the front end and a base having a curved slot the parts of which are equidistant from a shifting center on a line identical or parallel with the line of cut, substantially as described.

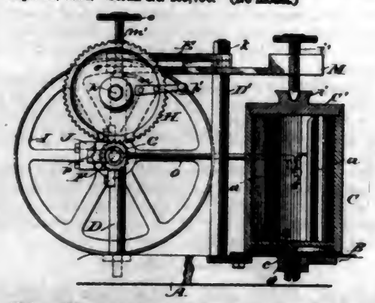
2. In a miter-cutter machine, a gage, a support for the front end of said gage against the thrust of the knife, and a curved guiding-bearing for the outer end of said gage for maintaining the shearing-edge in a line identical or parallel with the plane of the cut, the parts of said bearing for the outer end being equidistant from a shifting center on the front end of the gage, substantially as described.

476,046. GAME-BOARD. WILLIAM FULD, Baltimore, Md. Filed Feb. 18, 1892. Serial No. 421,920. (No model.)



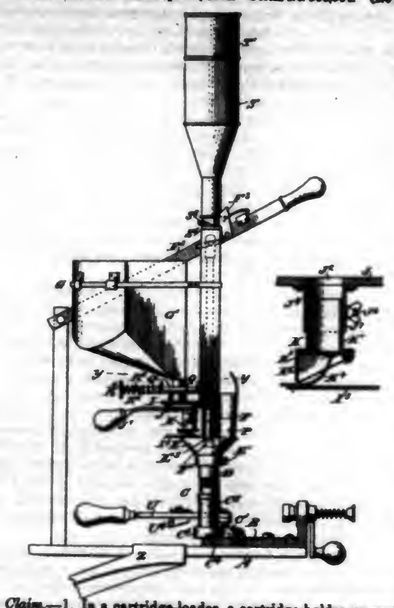
Claim.—The combination of the table A B, swiveled gun-barrel E, perforated piston F, having tubular piston-rod *f*, and perforated handle H, spring G, and ball J, having string I and button K, substantially as and for the purpose shown and set forth.

476,047. CHURN. JAMES C. GEORGE, Coffeyville, Kans. Filed Sept. 15, 1891. Serial No. 405,736. (No model.)



Claim.—The combination, with a base, a plate thereon, an adjustable externally-threaded foot-block in the plate cupped on its upper end, a cylindrical churn-body on the base, having radial wings therein, a central pivot depending from its bottom and engaging the foot-block, and provided with a removable lid having a central cupped depression on its top, of an upright frame on the base at one side of the churn-body, a horizontally-swinging arm pivoted between its ends to the frame, slotted at one edge of its outer end and having a vertical pivot-bolt on its inner end engaging the churn-lid, a vertical set-screw on the frame to engage said slotted end, a transverse shaft journaled in said frame provided with a double crank, a rod removably connecting the cranks and the churn-body, and gearing connected with the crank-shaft for rotating the shaft and oscillating the churn-body, substantially as described.

476,048. CARTRIDGE-LOADER. WILLIAM H. HANNER, Fort Assiniboine, Mont. Filed Apr. 11, 1891. Serial No. 388,804. (No model.)



Claim.—1. In a cartridge-loader, a cartridge-holder comprising an angular pivoted arm adapted to swing the holder out of line with the plunger, a ring secured on the angular arm, and a cylinder adapted to be secured at its base in the said ring to swing with the arm out of line with the plunger, substantially as described.

2. In a cartridge-loader, the combination, with a feed-hopper provided with a cross-piece, of a plunger arranged centrally with the said hopper and passing through an opening in the said cross-piece, and a head held on the plunger to engage the said cross-piece to raise the hopper when the plunger is raised, substantially as shown and described.

3. In a cartridge-loader, the combination, with a feed-hopper provided with a cross-piece, of a plunger arranged centrally with the said hopper and passing through an opening in the said cross-piece, a head held on the plunger to engage the said cross-piece to raise the hopper when the plunger is raised, and a lever for actuating the said plunger, substantially as shown and described.

4. In a cartridge-loader, the combination, with a feed-hopper provided with a cross-piece, of a plunger arranged centrally with the said hopper and passing through an opening in the said cross-piece, a head held on the plunger to engage the said cross-piece to raise the hopper when the plunger is raised, and a spring-pressed catch held on the said lever and adapted to lock the latter, the plunger, and the hopper in an uppermost position, substantially as shown and described.

5. In a cartridge-loader, the combination, with a feed-hopper provided with a cross-piece, of a plunger arranged centrally with the said hopper and passing through an opening in the said cross-piece, a head held on the plunger to engage the said cross-piece to raise the hopper when the plunger is raised, and a spring for supporting and returning the said plunger, substantially as shown and described.

6. In a cartridge-loader, a feeding device for powder and shot, comprising two hoppers, a fixed plate having apertures connected with the outlets of the said hoppers, a disk mounted to turn on the under side of the said plate and provided with oppositely-arranged openings adapted to alternately register with the apertures in the said plate, measuring devices held on the said disk and registering with the said openings, each measuring device comprising a cylinder held adjustably in a shell on the said plate, a spring-pressed pivoted bottom to close the cylinder, and a second fixed plate adapted to be engaged or disengaged by the spring of the pivoted door, substantially as shown and described.

7. In a cartridge-loader, a measuring device comprising a disk mounted to turn, and provided with a shell having a slot with graduated edges, a cylinder fitted to slide in the said shell, a thumb-screw passing through the said slot and adapted to fasten the said cylinder to the said shell, a bottom pivoted on the said cylinder to close the lower end thereof, and a spring secured on the said bottom and adapted to engage a fixed plate to hold the bottom closed, substantially as shown and described.

8. In a cartridge-loader, a measuring device comprising a disk mounted to turn, and provided with a shell having a slot with graduated edges, a cylinder fitted to slide in the said shell, a thumb-screw passing through the said slot and adapted to fasten the said cylinder to the said shell, a bottom pivoted on the said cylinder to close the lower end thereof, a spring secured on the said bottom and adapted to engage a fixed plate to hold the bottom closed, and a lever for turning the said disk to engage and disengage the said spring with the fixed plate, substantially as shown and described.

9. In a cartridge-loader, the combination, with a holder adapted to hold a cartridge, of a lever for locking the cartridge in place in the said holder, and a crimping device arranged in line with the said holder and provided with a revoluble flanged disk having projections adapted to crimp the shell of the cartridge, substantially as shown and described.

10. In a cartridge-loader, the combination, with a holder provided with a cylinder adapted to hold a cartridge, of a spring-pressed rod having a head and arranged to slide in line with the said cylinder to remove the cartridge from the said cylinder, substantially as shown and described.

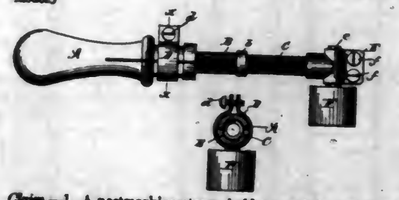
11. In a cartridge-loader, a holder comprising a pivoted angular arm, a ring supported on the said arm, and a cylinder held in the said ring, in combination with a lever provided with a spring adapted to engage the said cylinder to swing the said holder into a horizontal position, substantially as shown and described.

12. In a cartridge-loader, a holder comprising a pivoted angular arm, a ring supported on the said arm, and a cylinder held in the said ring, in combination with a lever provided with a spring adapted to engage the said cylinder to swing the said holder into a horizontal position, and a plate held in the said lever and adapted to engage the cartridge to push the same into the said cylinder, substantially as shown and described.

13. In a cartridge-loader, a holder comprising a pivoted angular arm, a ring supported on the said arm, and a cylinder held in the said ring, in combination with a lever provided with a spring adapted to engage the said cylinder to swing the said holder into a horizontal position, and a forked plate held in the said lever to lock the cartridge in the said cylinder, substantially as shown and described.

14. In a cartridge-loader, a holder comprising a pivoted angular arm, a ring supported on the said arm, and a cylinder held in the said ring, in combination with a lever provided with a spring adapted to engage the said cylinder to swing the said holder into a horizontal position, a forked plate held in the said lever to lock the cartridge in the said cylinder, and a crimping device operating in conjunction with the said holder and lever to crimp the cartridge, substantially as shown and described.

476,049. HOLDER FOR POSTMARKING-STAMPS. HARRISON T. KEITH, Vincennes, Ind. Filed Nov. 11, 1891. Serial No. 411,637. (No model.)



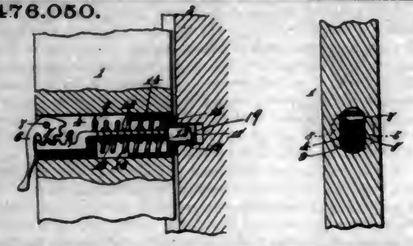
Claim.—1. A postmarking-stamp holder consisting of a hollow longitudinally-slitted handle, a clamp-collar for the slitted end of the handle, a flexible shank or spiral wire extending into the slitted handle, and a socket or head for the stamp, fixed to the outer end of the spiral shank, substantially as shown and described.

2. A postmarking-stamp holder consisting of a slitted handle with a clamp-collar, a slotted sleeve extending into the handle, a shank formed of a spiral spring extending into said sleeve, and a socket at its outer end for holding the stamp, substantially as shown and described.

476,050. SASH-FASTENER. WILLIAM H. KIRK, New Haven, Conn. Filed Jan. 6, 1892. Serial No. 417,196. (No model.)

Claim.—1. A combined window-sash holder and lock consisting of a tubular plunger, a flattened or U-shaped housing of lesser diameter than the tubular plunger and formed at its end with a spring-seat, a spindle formed at its rear end with a rack lying in said housing and carrying a bolt at its front end, a lever fulcrumed in said housing and having a segmental pinion engaging said rack, a spring bearing at its front end against the tubular plunger and at its rear end in the seat formed in the housing, and a spring for operating the bolt independently of the tubular plunger, said spring bearing at its front end against said plunger and at its rear end in the seat formed in the housing, substantially as described.

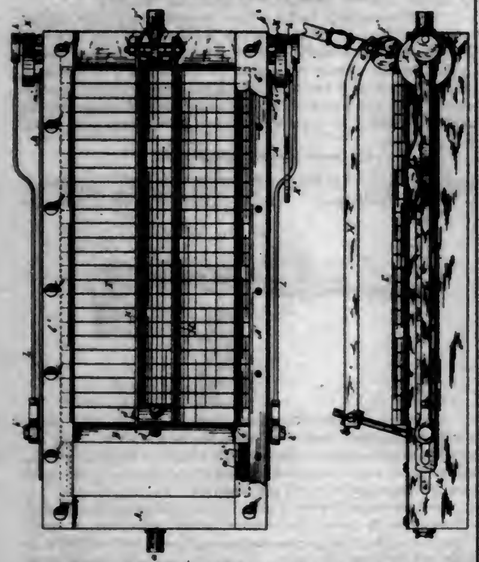
476,050.



2. The combination, with a window-sash formed with a cylindrical opening and a U-shaped opening of lesser diameter than the cylindrical opening and communicating therewith, of a flattened or U-shaped housing fitting the U-shaped opening in the window-sash, said housing formed at its end with a spring-seat, a tubular plunger working in the window-sash, a spindle formed at its rear end with a rack lying in said housing and carrying a bolt at its front end, a lever fulcrumed in said housing and having a segmental pinion engaging said rack, a spring bearing at its front end against the tubular plunger and at its rear end in the seat formed in the housing, and a spring for operating the bolt independently of the tubular plunger, said spring bearing at its front end against said plunger and at its rear end in the seat formed in the housing, substantially as described.

3. The housing consisting of a plate bent into two parallel walls, their ends bent laterally to form a seat for the spring 16, the edges of the laterally-bent portions being turned to form flanges, a separating-notch 4^a being formed in the curved web connecting the parallel walls, substantially as described.

476,051. CRAYON-MACHINE. CHARLES H. LEDDEN, Sandusky, Ohio, assignor to John S. Cowdery, same place. Filed Oct. 3, 1887. Renewed Dec. 3, 1888. Serial No. 292,536. (No model.)



Claim.—1. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of two mold-plates respectively provided with fractional molds conjointly forming a complete mold open at one end, one of said mold-plates adjustable in the longitudinal plane of the mold, substantially as set forth.

2. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of two sectional mold-plates together forming a complete mold, said mold being open at one end, said mold-plates adjustable relative to each other in line with the length of the mold, substantially as set forth.

3. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of two sectional mold-plates conjointly forming a complete mold, said mold-plates being respectively journaled eccentrically to one another and the sectional mold formed in each being open at one end, said mold-plates respectively having pivotal movement in the longitudinal plane of their molds, substantially as set forth.

4. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of two mold-plates respectively provided with fractional molds conjointly forming a complete mold open at one end, one of said molds adjustable in the longitudinal plane of the mold, and an adjustable bearing in which said adjustable mold has bearing, substantially as set forth.

5. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with two mold-plates respectively provided with fractional molds, of bearings in which they are journaled, said bearings adjustable in a plane at an angle to the longitudinal plane of the molds, substantially as set forth.

6. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a mold-plate, a mold-plate frame, and bearings in which said mold-plate is journaled at each extremity, said bearings having sliding movement longitudinally of the mold-plate frame, substantially as set forth.

7. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a mold-plate, bearings in which it is pivoted, and a mold-plate frame, said frame provided with rabbets in which said bearings have bearing, substantially as set forth.

8. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a mold-plate provided with end journals, bearings in which its respective journals have bearing, and a mold-plate frame provided with rabbets, said rabbets and journal-bearings having shoulders engaging with each other, said bearings having adjustable bearing in said rabbets, substantially as set forth.

9. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a mold-plate provided with end journals, two-part bearings in which said journals respectively have bearing, and a mold-plate frame in which said two-part bearings have sliding movement, substantially as set forth.

10. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of two rocking mold-plates respectively provided with fractional openings conjointly forming a complete mold, said mold-plates respectively having their axes of rocking movement parallel with each other, substantially as set forth.

11. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of rocking mold-plates, a pivotal follower adapted to engage with one of said mold-plates, a cam-lever, and link connecting mechanism connecting said cam-lever and follower, said link mechanism engaging with said follower eccentrically to its pivotal point, substantially as set forth.

12. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a pivotal follower adapted to engage with one of said mold-plates, a cam-lever also adapted to engage with one of said mold-plates, and a link connection connecting said cam-lever and follower, substantially as set forth.

13. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a pivotal follower adapted to engage with one of said mold-plates above its pivotal point, a cam-lever also adapted to engage with one of said mold-plates above its pivotal point, and link connection connecting said lever and follower, substantially as set forth.

14. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a pivotal follower adapted to engage with one of said mold-plates both above and below the pivotal point of the mold-plate, a cam-lever also adapted to engage with one of said mold-plates above its pivotal point, and link connection connecting said lever and follower, substantially as set forth.

15. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a follower adapted to engage with one of said mold-plates both above and below the latter's pivotal point, a primary cam-lever adapted to engage with one mold-plate of the series above said mold-plate's pivotal point, primary link connection connecting said follower and primary cam-lever, a secondary cam-lever, and secondary link connection connecting this latter lever with said follower, substantially as set forth.

16. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a follower adapted to engage with one of said mold-plates, a cam-lever, a primary link connection connecting said lever and follower, and a secondary link connection connecting said follower and the opposite mold-plate of the series, substantially as set forth.

17. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a follower adapted to engage with one of said mold-plates both above and below the latter's pivotal point, a primary cam-lever adapted to engage with one mold-plate of the series above said mold-plate's pivotal point, primary link connection connecting said follower and primary cam-lever, a secondary cam-lever and a secondary link connection connecting this latter lever with said follower, and a tertiary link connection connecting said follower and the opposite mold-plate of the series, substantially as set forth.

18. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a follower adapted to engage with one of the end mold-plates of the series, and a spring having bearing against the opposite mold-plate of the series, substantially as set forth.

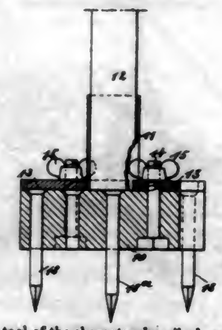
19. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a follower adapted to engage therewith, a cam-lever, primary link connection connecting said lever and follower, and secondary link connection connecting said follower and the opposite mold-plate of the series, said secondary link connection provided with a slotted opening through which passes the connection between said primary link connection and said follower, substantially as set forth.

20. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a follower having a standard rising therefrom, a cam-lever, and link connection connecting the two, said link connection adjustable vertically on said standard and lever, substantially as set forth.

21. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a follower having a standard rising therefrom, a cam-lever, and link connection connecting the two, said link connection adjustable vertically and horizontally relative to said standard and lever, substantially as set forth.

22. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a series of pivotal mold-plates, a follower having a standard rising therefrom, a cam-lever, and link connections intermediate of said standard and lever, the mold-plate adjacent to said standard, provided with a bearing-plate with which said standard is adapted to engage, the opposite mold-plate of the series also provided with a bearing-plate, and a spring bearing against the latter, substantially as set forth.

476,052. COMBINATION ICE-PICK. JAMES F. LOFTUS and REES R. WILLIAMS, Thorndike, Mass. Filed Sept. 26, 1891. Serial No. 407,094. (No model.)



Claim.—1. A tool of the character described, comprising a head having a handle thereon, a series of removable picks held in the head, and a movable plate mounted on the head, said plate having holes adapted to register with the picks, substantially as described.

2. A tool of the character described, comprising a head having a handled socket on its upper side, a series of movable picks extending vertically through the head, a movable plate mounted upon the head and having holes to register with the picks, said plates having, also, slots therein, and fastening-bolts extending through the head and the slots in the plate, substantially as described.

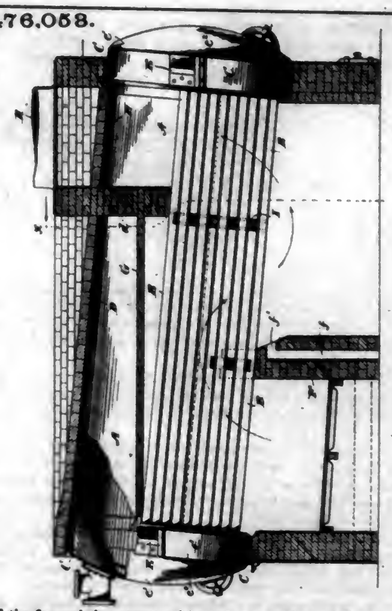
3. A tool of the character described, comprising a head having a suitable handle and having a flattened side and a knife secured within a recess in the flattened side of the head and extending tangentially therefrom, substantially as described.

476,053. STEAM-BOILER. JOHN MACCORMACK, Albany, N. Y. Filed Oct. 5, 1891. Serial No. 408,019. (No model.)

Claim.—1. In a steam-boiler, in combination, the boiler-shell, the water-tubes disposed beneath the same, the fire or bridge wall, the horizontal partition arranged above said tubes and extending from each side of the boiler-shell, the means for ultimately discharging the products of combustion, and the partition intermediate said bridge-wall and the latter, substantially as and for the purpose specified.

2. In combination with the tubes of a boiler, the two series of separate superimposed plates, said series being separated by a space, and the fire-resisting compound in such space, substantially as and for the purpose described.

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3. In combination with the tubes of a boiler, the partition or wall composed of a series of superimposed plates consisting each of a piece notched in its opposite edges to partially embrace the tubes of adjacent rows and a fire-resisting body secured to said plates, substantially as and for the purpose specified.

4. In combination with the tubes of a boiler, the partition or wall thereon consisting of a series of superimposed plates, each of which has notches in its opposite edges to partially embrace the tubes of adjacent rows, a fire-resisting body, and the studs or keys on said plates to engage said body, substantially as and for the purpose shown.

5. In combination with the tubes of a boiler, the partition or wall thereon consisting of two series of superimposed plates, each of the latter having notches in opposite edges to partially embrace the tubes of adjoining rows, and the fire-resisting substance placed between the two series of plates while in a plastic condition, substantially as and for the purpose described.

6. In combination with the tubes of a boiler, the wall or partition thereon consisting of a fire-resisting body placed between two plates, each of which has inwardly-projecting headed studs or keys engaging such body, substantially as and for the purpose set forth.

7. In combination with the tubes of a boiler, arranged in parallel rows, the partition or wall formed in part by a series of plates, each of which has such thickness as to enable it to be passed between the tubes of adjacent rows and in its opposite edges is notched to partially embrace said tubes, substantially as and for the purpose specified.

8. In combination, the boiler-shell, the series of water-tubes disposed beneath the lower half thereof, a fire or bridge wall, the horizontal partitions on each side of the boiler-shell, the uptake, the wall arched over the upper half of the boiler shell just in advance of the latter, and the partition or wall on the tubes extending downward from said arched wall, substantially as and for the purpose set forth.

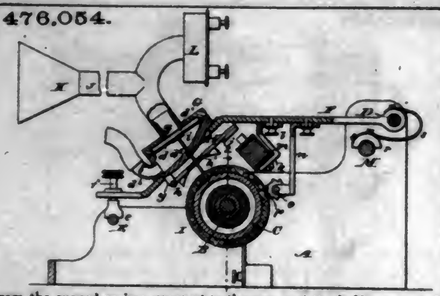
476,054. TELAPHONOGRAPH. JAMES P. MAGUIRE, North Adams, Mass. Filed July 23, 1891. Serial No. 400,465. (No model.)

Claim.—1. In a telephonograph or phonograph, the combination of a record-cylinder, a recording and reproducing stylus or styluses, a magnetic cylinder, and a stylus-operating lever furnished with one or more armatures held in the field of the magnetic cylinder, substantially as specified.

2. In a telephonograph or phonograph, the combination, with the mouthpiece and stylus-carrying lever of a phonograph, of an armature attached to the stylus-carrying lever, an electro-magnet adapted to act upon the armature, and a microphone attached to the phonograph mouthpiece and connected up in an electric circuit with the stylus-lever magnet, substantially as specified.

3. In a telephonograph or phonograph, the diaphragm-supporting arm, the guide-rod for supporting one end of the same, the feed-

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screw, the curved spring attached to the arm, and the half-nut carried by the curved spring and adapted to engage the screw when the diaphragm-supporting arm is in the position of use, substantially as specified.

4. In a telephonograph or phonograph, the combination, with the diaphragm-carrying arm F, of the adjusting-screw *f*, the saddle *e*, swiveled to the adjusting-screw, and the guide-rod E, substantially as specified.

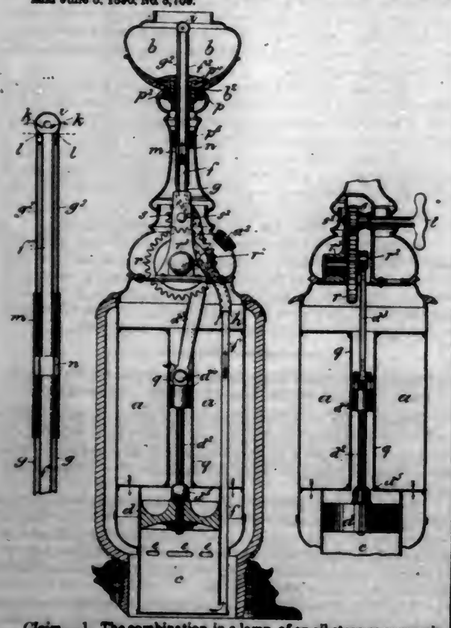
5. In a telephonograph or phonograph, the combination of a rectangular diaphragm bound at the ends and free at the edges, an electro-magnet, and a lever carrying a stylus and armature and adapted to be operated by the joint action of the diaphragm and electro-magnet, substantially as specified.

6. In a telephonograph or phonograph, the combination of the magnetic cylinder C, the stylus-carrying lever H, provided with the armatures *h*, *h'*, and *j*, the magnet *m*, the microphone or transmitter L, and the battery and line connections, substantially as specified.

7. The combination, in a telephonograph or phonograph, of a magnetic record-cylinder, a vibratory diaphragm carrying a recording-stylus, and an armature connected with the stylus and supported in the field of the magnetic record-cylinder, substantially as specified.

8. In a telephonograph or phonograph, the combination, with the phonograph-diaphragm and recording-stylus, of a microphone arranged to be operated simultaneously with the phonograph-diaphragm, armatures connected with the recording-stylus, and an electro-magnet arranged to act upon the said armature and placed in the circuit of the distant microphone, substantially as specified.

476,055. LAMP. HERBERT R. N. MASON, Birmingham, England. Filed Aug. 17, 1891. Serial No. 402,868. (No model.) Patented in England June 5, 1890, No. 8,709.



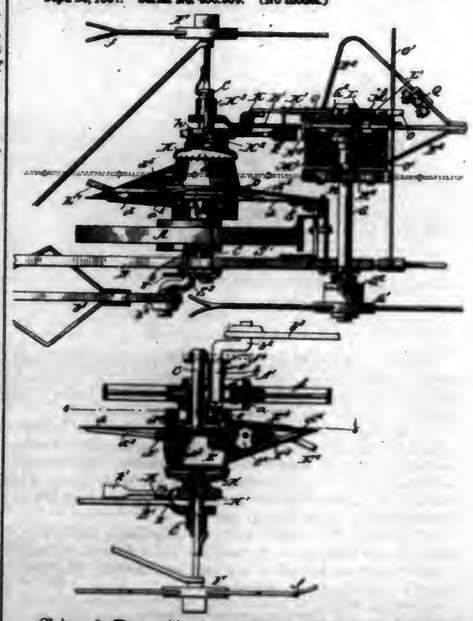
Claim.—1. The combination, in a lamp, of an oil-storage reservoir, a wick-dipping cup, a cylinder arranged in the storage-reservoir and having perforations for the flow of oil thereinto, an oil-tube connecting the lower portion of the cylinder with the wick-dipping cup, a vertical slotted guide-tube located in a fixed position above the cylinder, a piston in the cylinder, a piston-rod attached to the piston and having its upper end in sliding engagement with the slotted guide-tube, a crank-rod connected with the piston-rod, and gearing for operating the crank-rod to reciprocate the piston, substantially as described.

2. The combination, in a lamp, of an oil-storage reservoir, a wick-dipping cup, a cylinder arranged in the storage-reservoir and having perforations for the flow of oil thereinto, an oil-tube connecting the lower portion of the cylinder with the wick-dipping cup, a vertical slotted guide-tube located above the cylinder, a piston in the cylinder, a piston-rod attached to the piston and having its upper end in sliding engagement with the slotted guide-tube, a crank-rod connected with the piston-rod, a toothed wheel having a crank-pin engaging the crank-rod, and a pinion geared to the toothed wheel, substantially as described.

3. The combination, in a lamp, of an oil-storage reservoir, a wick-dipping cup, a cylinder arranged in the storage-reservoir and having perforations for the flow of oil thereinto, a piston in the cylinder, means for reciprocating the piston, an oil-pipe connecting the lower portion of the cylinder with the wick-dipping cup, and an overflow-pipe surrounding and concentric with the said oil-pipe and opening into the upper part of the storage-reservoir, said oil and overflow pipes composed of upper and lower sections telescoped together between the storage-reservoir and the wick-dipping cup, substantially as and for the purpose described.

4. The combination, with the concentric oil-feeding and overflow pipes of the lamp, of an oil-container or wick-dipping cup provided with a tubular bottom through which the said pipes pass to the oil-container or wick-dipping cup, and a screw-socket or cup for screwing into the neck of the lamp-body for forming a liquid-tight joint, as hereinbefore described and shown.

476,056. SEED-PLANTER. ANDERS MATSON, Moline, Ill. Filed Sept. 26, 1891. Serial No. 406,959. (No model.)



Claim.—1. The combination, with the parallel beams, of the stub-axle having a crank-arm, the ground-wheel, the delivery or feeding wheel journaled eccentric thereto, the horizontal shaft parallel with the stub-axle, and elbow-lever, all arranged substantially as shown and described.

2. The combination, with the parallel beams, of the stub-axle having a crank-arm, the horizontal shaft, the ground-wheel mounted on the axle, the delivery or feeding wheel journaled on the horizontal shaft, and the marker-wheel connected with the horizontal shaft and having a bifurcated spoke, substantially as shown and described.

3. An improved delivery or feeding wheel composed of a rim, spokes, and a hub-section, said hub-section being formed in two sections, a feed-chute connected with one of the same, and a valve at the mouth of the feed-chute, all arranged substantially as shown and described.

4. The combination, with the horizontal shaft, of the cam mounted thereon, the delivery or feeding wheel arranged upon said shaft and having a hub divided into two sections, a feed-chute connected with one of the sections, a valve at the mouth of the feed-chute, and a rock-shaft connected therewith and adapted to be engaged by the cam, substantially as shown and described.

5. The combination, with the horizontal shaft, of the cam mounted thereon, the delivery or feeding wheel arranged upon said shaft and having a divided hub, the feed-chute connected with one of the sections, the valve at the mouth of the same, the rock-shaft connected to the valve, the slide-valve, and strap connected therewith and engaging the cam, substantially as shown and described.

6. The combination, with the horizontal shaft carrying a cam, of the delivery or feeding wheel having a divided hub, the feed-chute, the valve and rock-shaft, the slide-valve and strap, the slide-plate, and pinion, all arranged substantially as shown and described.

7. The combination, with a hopper, of a revolving shaft journaled therein, the delivery-chute, the cup-disk, and the adjustable disk having beveled projections to form the bottom of the cups, said disks being mounted upon said shaft within the hopper, substantially as shown and described.

8. The combination, with a hopper and delivery-chute, of the cup-disk and shaft, the ratchet-wheel, the lever, the pitman connected thereto, and the operating and catch pawls, all arranged substantially as shown and described.

9. The combination, with the shaft O and eccentric, of the lever having a finger and weighted arm, the pitman, the operating and catch pawl, the shaft G, the cup-disk, the ratchet-wheel, hopper, and delivery-chute, all arranged substantially as shown and described.

10. The combination, with the hopper, delivery-chute, and shaft, of the cup-disk, the ratchet-wheel and cam-disk, the pitman and operating and catch pawls, the two-way valve, the lever connected thereto, and the lever N^3, adapted to engage the cam-disk and operating the two-way valve, substantially as shown and described.

11. The combination, with the hopper, shaft, cup-disk, and delivery-chute, of the ratchet and cam-disks, the pitman, operating and catch pawls, the two-way valve, the lever connected therewith, the lever N^3, the arm O, and marker-rod O', all arranged substantially as shown and described.

12. The combination, with a disk having a series of seed-cups formed thereon, of an adjustable disk having a series of projections having beveled sides adapted to form the bottoms of the seed-cups, substantially as shown and described.

13. The combination, with the hopper-shaft carrying seed-disks with cups and ratchet-disk, of the pawls and pitman, the lever having a finger and weighted arm, the eccentric, the clutch, and lever for operating the same, substantially as shown and described.

14. The combination, with the hopper, of the shaft journaled therein, the check-row wheel mounted upon one end of said shaft, the guide-wheels arranged upon opposite sides of the check-row wheel, and a rocking lever pivoted above the check-row wheel, said lever carrying a pawl adapted to engage the check-row wheel, the ends of said lever projecting over the guide-wheels, substantially as and for the purpose described.

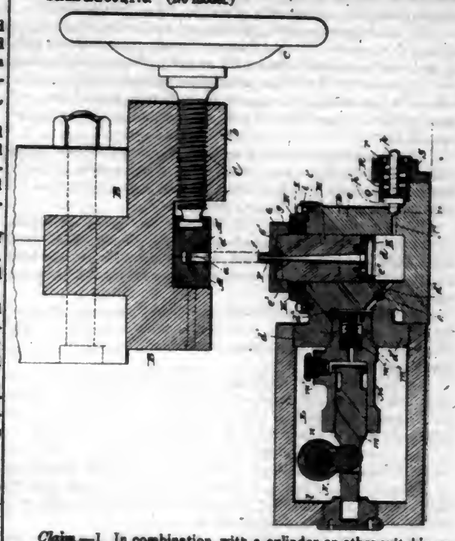
15. In a corn-planter, the combination, with a feed-chute, of the reciprocating slide-valve arranged therein and having teeth upon its edge, the slide-plate arranged also within the chute and having teeth upon its edge, and a pinion arranged between the slide-valve and plate, substantially as and for the purpose described.

476,057. WIRE-GAGE. CHARLES J. FULLER, Philadelphia, Pa., assignor to the Novelty Electric Company, same place. Filed Dec. 29, 1891. Serial No. 416,494. (No model.)



Claim.—In an electric-wire gage, the combination of a cam-shaped plate bearing a scale of ohms per foot, a wire-gage scale, a safe-current scale, with a pivoted arm B, having a pointer or pointers G, an angular bend V, and a formula $\frac{V}{C \times D}$ = ohms per foot stamped upon said arm, substantially as described, and for the purpose set forth.

476,058. APPARATUS FOR FORMING OR SHAPING HOLLOW ARTICLES. FRANK MOORFIELD, Brooklyn, N. Y. Filed Mar. 7, 1891. Serial No. 384,173. (No model.)



Claim.—1. In combination with a cylinder or other suitable appliance, a piston having a passage or conduit, and suitable means to transmit a fluid to the cylinder-chamber to move said piston and to be passed in part through its conduit, which communicates with said chamber in the direction in which the piston is moved by the fluid, substantially as and for the purpose specified.

2. In combination with a cylinder or other suitable appliance, a piston having a central unobstructed passage from end to end, and suitable means to transmit a fluid to the cylinder-chamber to move said piston and to be passed in part through the passage therein, said passage communicating with said chamber and the movement of the fluid through the piston-passage being in the direction in which the piston is moved by the same, substantially as and for the purpose shown.

3. In combination with an open-ended cylinder, a piston having a passage or conduit and suitable means to transmit a fluid to the cylinder-chamber to move said piston and to be passed in part through the conduit therein, said conduit being in communication with said chamber and allowing movement of fluid through it in the direction of the movement of the piston, substantially as and for the purpose set forth.

4. In combination with a cylinder, a piston having a passage or conduit, and an elastic body compressed or placed under tension by said piston when it is moved in one direction and operating by its expansion to move said piston in an opposite direction, substantially as and for the purpose described.

5. In combination with a cylinder, a piston having a passage or conduit, a flange on the piston overlapping a portion of the cylinder, and an elastic body between such flange and said portion of the cylinder, which is compressed by said piston when moved in one direction and operates in expanding to move the same in the reverse direction, substantially as and for the purpose shown and described.

6. In combination with a cylinder, a piston having a passage or conduit, a flange on the piston, an elastic body between the flange and a contiguous portion of the cylinder, and a ring inclosing said body, substantially as and for the purpose shown.

7. In combination with a cylinder, a vertically-movable piston having a vertical passage or conduit adapted at its upper end to discharge into an article to be shaped, a vessel or reservoir communicating with the cylinder-chamber, and a pump in such reservoir to force a fluid to the cylinder-chamber and through the piston, substantially as and for the purpose set forth.

8. In combination, a vertically-arranged cylinder, a vertically-movable piston therein having from top to bottom a passage or conduit adapted to communicate with a die containing an article to be shaped, a vessel or reservoir communicating with the cylinder-chamber below the piston, and suitable means to force fluid thereto from the reservoir to move said piston and to be in part passed through its conduit, substantially as and for the purpose described.

9. The method of making hollow articles, which consists in causing a blank in a die to conform thereto by means of a fluid under press-

ure, and while being subjected to such pressure preventing stretching thereof by subjecting it to endwise pressure, which compresses the metal of said blank during its tendency to stretch while being conformed to said die, substantially as and for the purpose set forth.

10. In combination with a cylinder, a piston having an opening or passage and a nipple or part to abut against and convey fluid to a body to be formed or shaped, substantially as and for the purpose specified.

11. In combination with a cylinder, a piston having a nipple provided with a shoulder to abut against the body to be formed or shaped and a portion to enter into said body, substantially as and for the purpose shown.

12. In combination with a cylinder, a piston having a nipple adapted to form a tight joint with the wall of the matrix, a die for holding the body to be shaped, and a shoulder to abut against the latter, substantially as and for the purpose set forth.

13. In combination with a die for holding the body to be shaped, a suitably-mounted nipple adapted to enter such die and form therewith a tight joint and having a reduced portion to enter into and form a joint with the body to be formed, substantially as and for the purpose described.

14. In combination, a cylinder, a perforated piston, a nipple having its perforation registering with that of the piston, and the collar for securing the nipple to the piston, substantially as and for the purpose specified.

15. In combination, a cylinder, a perforated piston having in its upper face a shouldered recess to form a seat, a nipple seated therein, and a screw-threaded collar engaging thread on the piston to secure said nipple in place, substantially as and for the purpose set forth.

16. In combination, a cylinder, a perforated piston, a nipple having its perforation registering with that of the piston, the flanged collar for securing the nipple to the piston, and the elastic body between the flange of the collar and an adjacent portion of the cylinder, substantially as and for the purpose shown.

17. In combination, a cylinder, a piston having a passage or conduit, suitable means to transmit a fluid under pressure to and through said piston, and a relief-valve, substantially as and for the purpose set forth.

18. In combination, a cylinder, a piston having a passage or conduit, suitable means to transmit a fluid under pressure to and through said piston, a passage opening outward from the cylinder-chamber, and a relief-valve to control said passage, substantially as and for the purpose specified.

19. In combination, a cylinder, a piston having a passage or conduit, a fluid-reservoir, suitable means to force fluid therefrom to and through said piston, a relief-valve controlling a passage from the cylinder, and the conduit to convey escaping fluid back to the reservoir, substantially as and for the purpose shown.

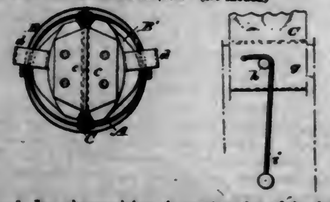
20. In combination, a cylinder, the boss projecting therefrom, a reservoir connected to said boss, the pump within the reservoir also attached to the latter, communicating with the cylinder-chamber, and means for conveying fluid from the latter to a body to be shaped, substantially as and for the purpose shown.

21. In combination, a cylinder, a piston therein having a passage or conduit and adapted to be moved against the body to be formed, and suitable means to transmit a fluid to said piston and through the passage therein into the body to be formed, substantially as and for the purpose described.

22. In combination, a movable die and a movable body or piston having a passage or conduit to convey fluid to the interior of said die, substantially as and for the purpose shown.

23. In combination with a perforated or hollow piston and the wall or part with which it should form a tight joint, the washer on the piston perforated in alignment with its opening, and a pump or other means for forcing fluid under pressure to said piston to move and be in part moved through the same in the direction of its movement, substantially as specified.

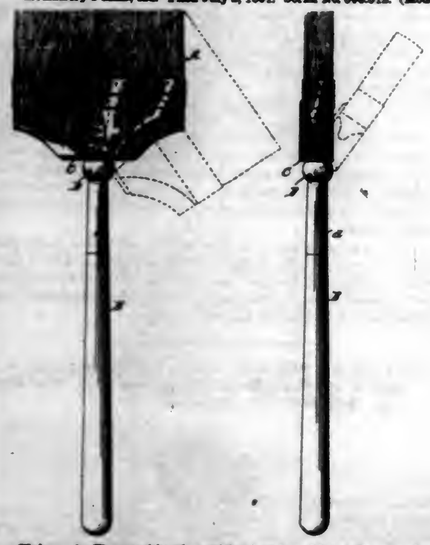
476,059. CHERRY-PICKER. GEORGE MORRIS, Libertyville, Ill. Filed Oct. 1, 1891. Serial No. 407,394. (No model.)



Claim.—1. In a cherry-picker, the combination of the ring A, the spring-pressed jaws B B', having curved sides and provided with heads *b*, the knives *c*, attached to the heads, the rings *d d* for receiving the thumb and finger, the sleeve C, and the receptacle D, substantially as specified.

2. In a cherry-picker, the combination of the spring-pressed jaws B B', provided with cutters *c*, the ring A, the flexible sleeve C, furnished with a ring *g*, having studs k, and the cam D, provided with hooks *i*, adapted to engage said studs k, substantially as specified.

476,060. ADJUSTABLE BRUSH-HANDLE. CHARLES F. MYERS, McKinstry's Mills, Md. Filed July 2, 1891. Serial No. 398,312. (Model.)

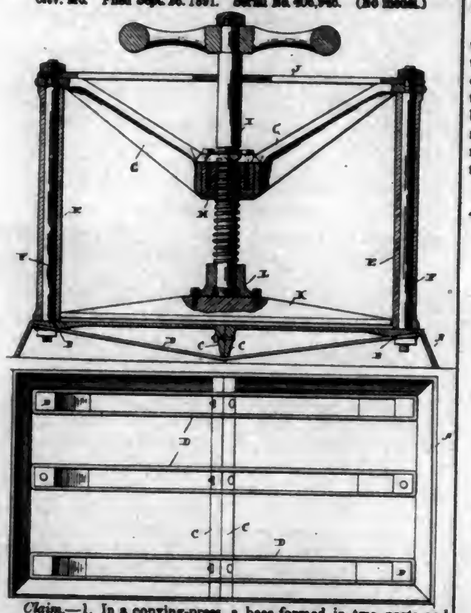


Claim.—1. The combination, with a brush and its stationary plate having positive locking clutch-faces thereon, of a swiveling pin passing through said plate, a separate or independent clutch fitting over and corresponding to said locking-faces, a screw-stem jointed to the swiveling pin, and a handle with a screw-thimble adapted to force the clutch up to locking engagement, substantially as shown and described.

2. The combination of a brush and its stationary plate having an angular boss forming a locking projection, a swiveling pin passing through said angular boss, a clutch having a series of angular recesses adapted to lock upon the angular boss, a screw-stem jointed to the swiveling pin, and a handle with a screw-thimble adapted to force the clutch up to locking engagement, substantially as shown and described.

3. The clutch D, having a series of angular recesses upon its inner side and a slot of ninety degrees with circular recesses upon its outer side, in combination with the brush-plate C, with angular boss, the swiveling pin *a*, the screw-stem *b*, and the screw-thimble *d*, substantially as shown and described.

476,061. LETTER-COPYING PRESS. JOHN W. MCCRONE, Kansas City, Mo. Filed Sept. 26, 1891. Serial No. 406,946. (No model.)

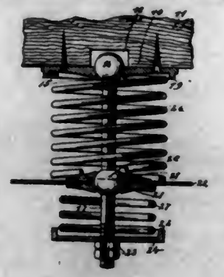


Claim.—1. In a copying-press, a base formed in two parts and downwardly-projecting flanges on the meeting edges of the said parts, combined with lugs on the outer under edges of the said base portion and a truss secured at its ends to the said lugs, against which the said flanges bear, substantially as shown and described.

2. In a copying-press, in combination, a base, flange C, lugs D, truss-rods connecting the said lugs and bearing upward on said flange, uprights secured to said base, a horizontal plate connecting the uprights, downwardly and inwardly extending arms secured at their outer ends to the uprights, an internally-screw-threaded nut, to which the inner ends of the arms are connected, a vertical screw, and a follower, substantially as shown and described.

3. In a press, the base portion, vertical hollow posts secured thereto, clamping-bolts extending through the said posts, depending arms connected at their outer ends to the said bolts, a screw-threaded nut, to which the inner ends of the arms are connected, a horizontal plate, which is clamped by the said vertical bolts, and a vertical screw, the parts being combined substantially as shown and described.

476,062. VEHICLE-SPRING. THOMAS F. MCKEE, Bloomville, Ohio. Filed Aug. 24, 1891. Serial No. 403,546. (No model.)

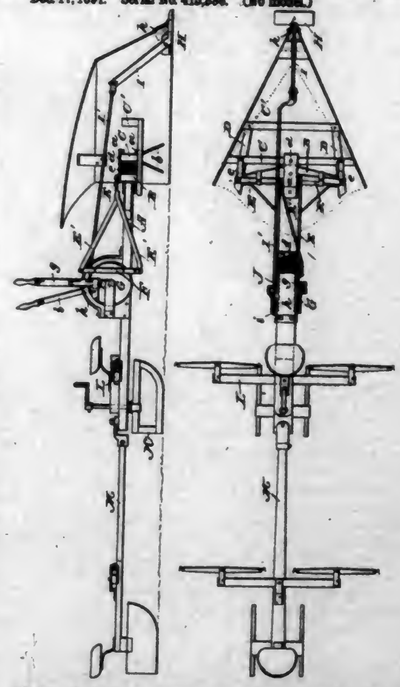


Claim.—1. The vehicle-spring herein described, comprising an attaching-plate having a socket, a bolt extending through the socket and having a ball working therein, a spring encircling the bolt, a second attaching-plate through which the bolt freely passes, and a second spring on the bolt between said second plate and a plate on the lower end of the bolt, substantially as set forth.

2. A spring attachment for vehicles, comprising an apertured fastening-plate adapted to be secured to a vehicle, a king-bolt attached to the fastening-plate by a ball-joint, clamping-plates adapted to be secured to a support and connected with the king-bolt by a ball-joint, a spiral spring arranged between the clamping-plates and the fastening-plate, and an adjusting-spring arranged between the clamping-plates and a plate on the free end of the king-bolt, substantially as described.

3. The combination, with the vehicle-body, the vehicle-shafts, and the cross-bar on the shafts, of an apertured fastening-plate secured to the body and provided with a seat on the under side, a king-bolt secured to the fastening-plate by a ball-joint, clamping-plates secured to the cross-bar and to the king-bolt by a ball-joint, a spiral spring held between the clamping-plates and the fastening-plate, a flanged plate mounted adjustably on the free end of the king-bolt, and a spring arranged between the flanged plate and the clamping-plates, substantially as described.

476,063. SNOW-PLOW. GEORGE NICHOLS, Hailey, Idaho. Filed Dec. 17, 1891. Serial No. 415,286. (No model.)



Claim.—1. In a snow-plow, the combination of the beam A, suitably supported at its rear end and provided at its front end with a cross-beam B, a snow-plow pivotally connected thereto, and levers E E, pivoted to a rigid cross-beam and connected by links to the frame of the snow-plow, said levers being connected by rods to means for manipulating the levers, so that one of the levers will be forced forwardly while the other is drawn rearwardly, substantially as shown, and for the purpose set forth.

2. In a snow-plow, the combination, with the plow and supporting-frame, of a vertically-adjustable point having an upwardly-extending bar I and a rod I', connected thereto, said rod being connected to a lever, substantially as shown, and for the purpose set forth.

3. In combination with a snow-plow, a point H, having beyond the plow a bent plate with vertical slots, said point having an inwardly-extended portion pivotally secured to the plow proper, and a rod I, adapted to be rocked upon its pivot to raise and lower the point, substantially as set forth.

4. In a snow-plow, the combination of the beam A, having a transverse beam B, and plates *a a*, rigidly secured thereto, the front end of the transverse beam being inclined, as shown, a king-bolt for

connecting the snow-plow thereto, levers E E, pivotally attached to the beam B, links *e e*, connecting the same to the frame of the snow-plow, and rods operating the levers in unison, substantially as shown, and for the purpose set forth.

5. In combination with a snow-plow constructed substantially as shown, an auxiliary beam M, adapted to be secured to the main beam A, said beam M carrying a driver's seat, sled, and doubletree, substantially as set forth.

476,064. SAFETY-LOCK FOR HAMMERLESS GUNS. RAYMOND L. PALMER, Tacoma, Wash. Filed July 30, 1891. Serial No. 401,133. (No model.)



Claim.—1. In a breech-loading firearm having concealed hammers, a sliding safety-bar C, the forward end of which is extended downwardly, safety-sears pivoted so as to be movable in and out of the path of the hammers, said sears having laterally-projecting portions with which the forward end of the sliding bar engages, and a lever B, having a portion B', which extends beyond the stock in the rear of the trigger, said lever B engaging directly with the sliding bar C, substantially as set forth.

2. In a breech-loading firearm having concealed hammers, a sliding safety-bar C, having a downwardly-inclined front end, safety-sears E E, having portions movable in and out of the path of the hammers and extended laterally, with which the forward end of the safety-bar is adapted to engage, springs for holding the safety-sears normally depressed, and means for moving the safety-bar to place the same in or out of engagement with the safety-sears, substantially as shown, and for the purpose set forth.

3. In a breech-loading firearm having concealed firing-hammers and lock mechanism, a sliding safety-bar connected with a manually-operated lever having its end projecting beyond the gunstock rear of the trigger-guard, and a dog carried by the safety-bar and adapted to be moved by the action of the safety-bar to lock and unlock the triggers, said safety-bars simultaneously moving the safety-sears in or out of the path of the hammers, substantially as set forth.

4. In a firearm having concealed hammers, a sliding safety-bar connected to a pivoted lever for projecting or retracting the same, spring-actuated safety-sears adapted to be automatically moved in the path of the hammers and out of the path of the same by contact with the safety-bar, and a dog pivoted to the safety-bar and adapted to play in a notch in the trigger-plate to lock the trigger when said bar is retracted, substantially as set forth.

5. The combination, in a firearm, of a movable safety-bar carrying a pivoted dog, the forward end of said safety-bar being adapted to raise the safety-sears E out of the path of the hammers when moved forward, triggers having plates F F, with notches G, in which the pivoted dog plays, said notches having inclined bottoms, substantially as set forth.

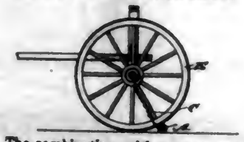
6. The combination, in a firearm constructed substantially as shown, of a lever B for projecting and retracting a safety-bar, said lever having a sliding bolt which is adapted to engage with an aperture in the stock for holding the lever B within the stock and the safety mechanism out of an operative position, substantially as set forth.

7. In combination with a firearm constructed substantially as shown, a safety-bar C, secured movably to the lock-casing and provided with an inclined forward end presenting a rest C^3, safety-sears E E, pivoted to the frame to move within the path of the hammers, said sears having inwardly-projecting portions e^2, with which the inclined end of the safety-bar engages when it is moved forward, substantially as set forth.

8. In combination with a firearm having a movable safety-bar C and mechanism for actuating the same, a pivoted dog carried by said safety-bar to engage with the trigger-plates when the bar is retracted and lie in the enlarged portion of the notch when the bar is projected, substantially as set forth.

9. The combination, in a fire-arm having concealed hammers, of a safety-bar carrying a pivoted dog, said dog engaging with notches G G in the trigger-plates, spring-depressed safety-sears E E, having portions e', adapted to lie in the path of the hammers, and extensions e^2, which engage with the forward end of the safety-bar, the parts being organized so that when the safety-bar is projected the dog carried thereby will be moved free of the trigger-plates and the sears elevated out of the path of the hammers simultaneously, substantially as set forth.

476,065. STOP-BLOCK FOR WAGONS. JOHN POMROY, Lake Linden, Mich. Filed Feb. 2, 1892. Serial No. 420,073. (No model.)



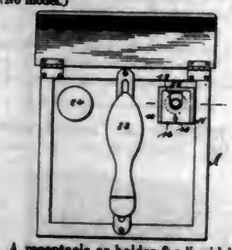
Claim.—1. The combination, with a wagon, of blocking devices consisting of chains, a spindle supported from said chains, and a roller on said spindle, the chain at one end being held to the wagon adjacent to and at the inside of the wheel and the other chain being adapted to engage the axle outside of the wheel or a fixed support beneath the wagon, substantially as described.

2. The combination, with a wagon having one skein-bolt of one of its axles formed with an eye at its head, of a wagon-block roller suspended by end-supporting chains, one of which is held to the wagon within the wheel and the other is formed with a hook for engaging the eye of the skein-bolt, the axle having an auxiliary eye for engaging said detachable hook when the wagon-block is not in use, substantially as described.

3. The herein-described wagon-block, consisting of a roller, a spindle on which said roller is mounted, and suspension-chains secured to the ends of said spindle, substantially as described.

4. The herein-described wagon-block, consisting of a roller, a spindle on which said roller is mounted to rotate, suspension-chains having rings removably secured on the ends of said spindle, and hooks at the opposite ends of said chains, substantially as described.

476,066. BLACKING-RECEPTACLE FOR BLACKING-STANDS. MATILDA A. POPOFF, Brooklyn, N. Y. Filed Mar. 23, 1892. Serial No. 426,053. (No model.)



Claim.—1. A receptacle or holder for liquid blacking, consisting of a box-like body provided with a series of grooves arranged one above the other, and a lid or cover adapted to slide in the grooves, the said lid or cover being provided with an opening through which the neck of a bottle may extend, substantially as shown and described.

2. A receptacle or holder for bottles containing liquid blacking or other liquids, consisting of a box-like body having an opening in one side and a series of grooves or channels emanating from the opening and arranged one above the other, and a lid adapted to slide in said grooves or channels and provided with a recess or opening produced in one edge, the said recess or opening being adapted to receive the neck of a bottle contained in the receptacle or holder, as and for the purpose set forth.

476,067. COMBINED PAPER-WEIGHT, LETTER-SCALE, AND CALENDAR. JOHN B. PRICE, Wollaston, Mass. Filed Mar. 30, 1892. Serial No. 427,114. (No model.)



Claim.—1. The combination, with a case or shell, of a weighing mechanism housed therein and having a scale-pan adapted to be unfolded beyond the shell or case when in operative position, substantially as described.

2. The combination, with a suitable shell or case, of a weighing mechanism housed therein and having a foldable arm which carries a scale-pan adapted to be projected or unfolded beyond the case or shell when in operative position, said arm and its attached pan being foldable wholly within the shell or case, as set forth.

3. The combination, with a suitable shell or case, of an axially-turning shaft carrying an index, a rock-shaft having means to actuate the aforesaid shaft, and a scale-pan carried by the rock-shaft and adapted to be folded and unfolded within the shell or case, substantially as described.

4. The combination, with a suitable shell or case, of an index-shaft, a rock-shaft having means to actuate the index-shaft, and a foldable arm connected to the rock-shaft and carrying the scale-pan, as and for the purpose described.

5. The combination, with a suitable shell or case, of an axially-turning shaft having an index, a spring-controlled rock-shaft having a pendant which engages with the index-shaft, and a foldable arm supported by the rock-shaft and carrying a scale-pan, substantially as described.

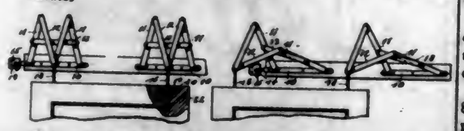
6. The combination, with a suitable shell or case, of a spiral index-shaft having a pointer, a rock-shaft carrying a pendant, arranged to contact with the index-shaft, a spring, and a foldable support for the scale-pan, substantially as described.

7. The combination, with a suitable shell or case, of a weighing mechanism housed within the case and having its scale-pan provided with clips for retaining the article on said pan, substantially as described.

8. The combination, with a suitable shell or case having a cover, of an index-shaft having a pointer, a rock-shaft having means to actuate the index-shaft, a foldable support on the rock-shaft, and a scale-pan carried by the support and having the letter-retaining clips, all combined and arranged substantially as described.

9. As an article of manufacture, a compound implement comprising a slotted case having a cover and the dial, the bands or rings seated within the case opposite the slots therein, the index-shaft, a rock-shaft having means to actuate the index-shaft, and a foldable support connected to the rock-shaft and carrying a scale-pan, substantially as described.

476,068. DOOR-HANGER. THEODORE C. PROUTY and CLAUDE W. TURNER, Evanston, Ill. Filed Oct. 2, 1891. Serial No. 407,551. (No model.)



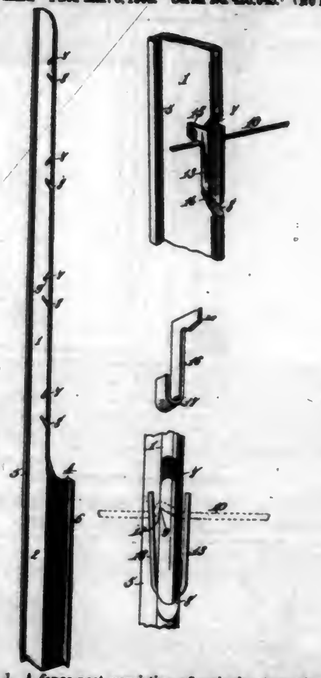
Claim.—1. A hanger of the character described, comprising two swinging outside arms, a connecting cross-arm pivoted thereto, two middle arms pivoted to the free ends of the outside arms and having two of their ends pivoted together, the converging ends of the middle arms being adapted to be secured to a movable object, substantially as described.

2. A hanger of the character described, comprising a supporting-bar, a pair of outside arms pivoted on the bar and connected pivotally by a cross-arm, middle arms pivoted to the outside arms and having two of their ends pivoted together, and a pendant-rod carried by the middle arms, substantially as described.

3. A hanger of the character described, comprising a base-bar, means for adjusting the bar, a pair of outside arms pivoted to the said bar and pivotally connected by a cross-arm, middle arms pivoted to the outside arm and having two of their ends pivoted together, said middle arms being arranged between the outside arms, and a pendant-rod secured to the connected ends of the middle arms, substantially as described.

4. A hanger of the character described, comprising a base-bar adapted to be pivoted to a support and having a screw mechanism at one end to adjust it, two outside arms pivoted to the base-bar and connected pivotally by a cross-arm, middle arms pivoted to the outside arms and having two of their ends pivoted together, and a pendant-rod detachably connected with the middle arms and adjustably secured to a door, substantially as described.

476,069. METALLIC FENCE-POST. BENJAMIN F. RANDALL, Fall River, Mass. Filed Mar. 3, 1892. Serial No. 423,645. (No model.)



Claim.—1. A fence-post consisting of a single piece of wrought metal having at one edge a lateral strengthening-rib and rolled integral with a right-angular base comprising two flanges, one of which terminates in a driving-head for the purpose of driving the post into the ground, substantially as described.

2. A metal fence-post consisting of a single piece of wrought metal having inclined wire-receiving slots and rolled integral with a right-angular base comprising two angular flanges, one of which terminates in a driving-head below the lowermost slot for the purpose of driving the post into the ground, substantially as described.

3. The combination, with a fence-post having upper and lower slots or recesses, of a hook which engages the lower slot or recess and is adapted to hook over a fence-strand passing through the upper slot or recess, substantially as described.

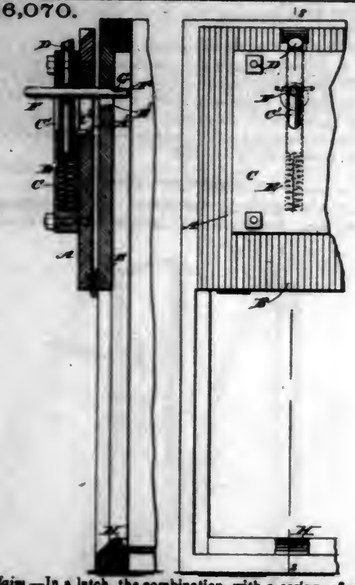
4. The combination, with a fence-post having a pair of slots 7 and 8, which are inclined in reverse directions relatively to one edge of the post, of a hook engaged with the lower slot 8 and having a hooked extremity which engages a fence-strand passing through the upper slot 7, substantially as described.

5. The combination, with a fence-post having an inclined slot, the bottom wall or edge of which is beveled, of a hook engaged with the post below the inclined slot and adapted to hook over a fence-strand passing through the slot, substantially as described.

6. The combination, with a fence-post having upper and lower inclined slots, and a fence-strand passing through the upper slot and formed with a bend 12, of a hook engaged with the lower slot and adapted to hook over the fence-strand passing through the upper slot, substantially as described.

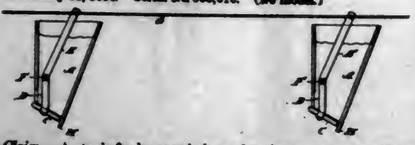
476,070. LATCH. AARON RICHARDSON, Uniontown, and FREDERICK E. RICHARDSON, Manchester, Iowa; said Aaron Richardson assignor to said Frederick E. Richardson. Filed Dec. 12, 1891. Serial No. 414,894. (No model.)

476,070.



Claim.—In a latch, the combination, with a casing, of a spring-pressed bolt fitted to slide therein, a handle attached to the said bolt and extending through guideways in the said casing to one side of the door, and two fixed keepers held on the door-casing and of which one is adapted to be engaged by the said bolt and the other by the said handle, substantially as shown and described.

476,071. FEED-TROUGH. GEORGE F. ROBINSON, New York, N. Y. Filed May 21, 1891. Serial No. 393,616. (No model.)



Claim.—A stock-feeder consisting of a chute and an oscillating lever pivoted intermediate its extremities and having a valve C rigidly attached to the lower extremity of the lever and swinging therewith in the arc of a circle when the lever is oscillated, said lower extremity of the lever standing, approximately, in a perpendicular position when the valve closes the discharge-mouth of the chute, and the chute being provided with a stop-flange H, inclined toward the valve to prevent lateral diversion of the feed and compel it to flow in a vertical direction between such stop-flange and the valve, substantially as described.

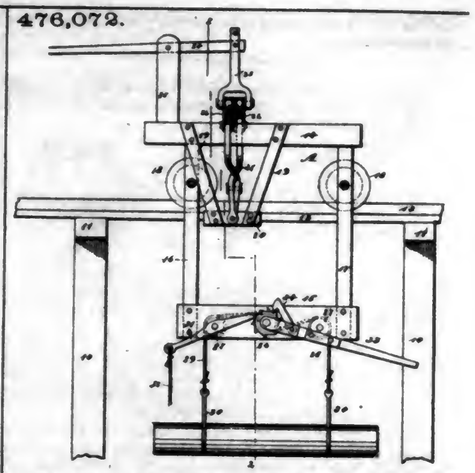
476,072. ELEVATED CARRIER. JAMES J. ROBINSON, River View, W. Va. Filed Nov. 11, 1891. Serial No. 411,621. (No model.)

Claim.—1. In elevated carriages, the combination, with a frame provided with wheels adapted to travel upon a rail, of spring-controlled brake-shoes projected downward from the opposite sides of the frame, the said brake-shoes being practically in horizontal alignment, tong-like levers attached to the brake-shoes, a main lever, and a link connection between the main lever and the tong-like levers, as and for the purpose set forth.

2. In an elevated carriage, the combination, with the lower portion thereof, of a drum journaled in said lower portion, friction-wheels located at opposite sides of the drum, a ratchet-wheel attached to the drum, a lever having movement independently of the ratchet-wheel and drum and provided with a dog adapted for engagement with said ratchet-wheel, a pawl also engaging with the ratchet-wheel, and cables leading from the drum in opposite directions over the friction-pulleys, the said cables being adapted to receive gripping devices, as and for the purpose set forth.

3. An elevated carriage provided with a drum having an attached ratchet-wheel, friction-pulleys at each side of the drum, a lever operating independently of the drum and ratchet-wheel, a dog carried by the lever and engaging with the ratchet-wheel, a detent also engaging with the ratchet-wheel, and cables leading from the drum in opposite directions over the friction-pulleys, substantially as described.

476,072.



476,078. STILL AND PROCESS. PHILIP RODES, Greenfield, Va. Filed Feb. 18, 1892. Serial No. 422,014. (No model.)



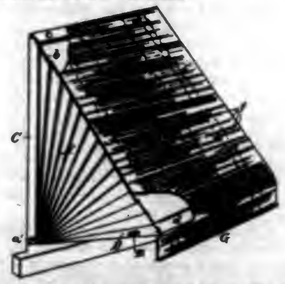
Claim.—1. An improved distilling process consisting in vaporizing and subsequently condensing the untreated liquor, then vaporizing the product of the said condensation and subsequently condensing the vapor thus produced, then vaporizing the backings from the second vaporization, together with some of the untreated liquor, and then condensing it, and finally introducing the product of the last-described step into the product of the first condensation, substantially as described.

2. In an apparatus of the character described, the combination, with a still, a condenser therefor, and a singling-pan in communication with said condenser, of a second still, a condenser therefor, and a connection between the said last-named still and the singling-pan, substantially as shown and described.

3. In an apparatus of the character described, the combination, with a still, a condenser therefor, a singling-pan communicating with said condenser, a second still communicating with said pan, and a condenser for said second still, of a third still communicating with said second still and a condenser for said third still, which discharges into said singling-pan, substantially as shown and described.

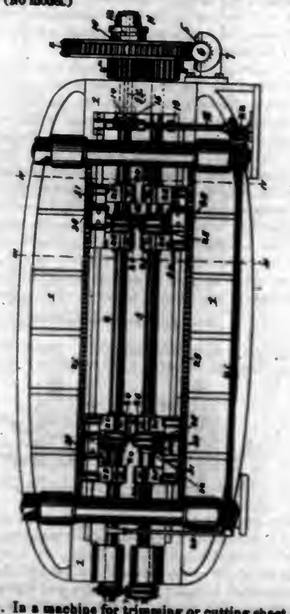
4. In an apparatus of the character described, the combination, with the stills C L N and condensers therefor, the condensers for the stills C and N being in communication with the still L, of a communication between the stills L and N and a connection between the still N and the source of supply of the untreated liquid, substantially as shown and described.

476,074. AWNING. EDWIN O. ROBISON, Pittsburg, Pa. Filed Oct. 14, 1891. Serial No. 408,684. (No model.)



Claim.—In an awning, the series of strips of unequal lengths pivotally secured together at their lower ends and forming the sides of the awning, the transverse pieces connecting the inner and outer strips, the flexible top fastened to the transverse pieces only and adapted to rest loosely on the sides when the awning is lowered, the outwardly-projecting bars E on the inner strips of each side, the flexible web b', secured to the upper edges of each strip near the top thereof, and the operating-rope, substantially as described.

476,075. SHEET-METAL TRIMMER AND CUTTER. PHILIP ROHAN, St. Louis, Mo., assignor to the St. Louis Improved Shear and Tool Manufacturing Company, same place. Filed Jan. 15, 1892. Serial No. 418,148. (No model.)

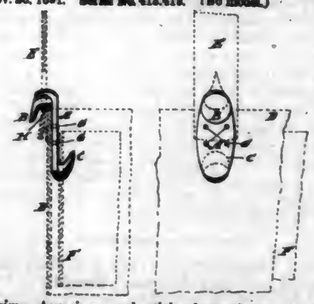


Claim.—1. In a machine for trimming or cutting sheet metal, the combination of the frame provided with suitable ways, the parallel shafts, means for turning the shafts, two pairs of movable cutters arranged on the shafts, sliding heads 23 and 25, guided on the ways and embracing the cutters for moving them along the shafts, and a rack-and-pinion mechanism for adjusting the heads on the ways, substantially as and for the purpose set forth.

2. In a machine for trimming or cutting sheet metal, the combination of two parallel shafts, means for turning the shafts, two pairs of cutters arranged on the shafts, boxes for moving the cutters along the shafts, and means for adjusting the boxes, comprising stationary racks, pinions engaging the racks, shafts to which the pinions are secured, and devices for turning said shafts, substantially as set forth.

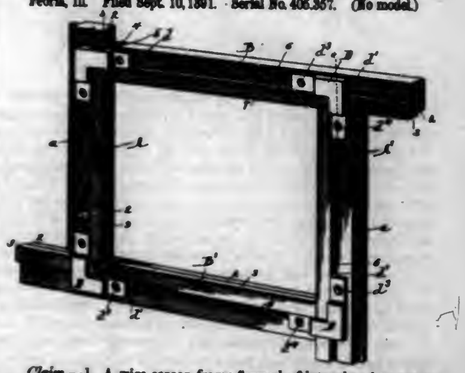
3. In a machine for trimming or cutting sheet metal, the combination of two parallel shafts, means for turning the shafts, two pairs of cutters arranged on the shafts, boxes for moving the cutters along the shafts, and means for adjusting the boxes, consisting of stationary racks, pinions engaging the racks, shafts to which the pinions are secured, levers, and pawl-and-ratchet connection between the levers and pinion-shafts, substantially as and for the purpose set forth.

476,076. BUTTON. GODFREY ROSENBERG, Brooklyn, N. Y. Filed Nov. 28, 1891. Serial No. 413,419. (No model.)



Claim.—As an improved article of manufacture, the duplex button herein shown and described, consisting of the flattened plate A, having at its extremities the two hooks B and C, which project in opposite directions from the flattened sides of the plate in a plane at right angles thereto, said plate adapted to lie flat against a garment and provided between the hooks with thread-holes G for attaching it to the garment, whereby one hook is adapted to engage the suspenders, while the other hook is adapted to engage and support the drawers, substantially as described.

476,077. ADJUSTABLE SCREEN-FRAME. GEORGE J. ROTHAN, Peoria, Ill. Filed Sept. 10, 1891. Serial No. 405,357. (No model.)



Claim.—1. A wire-screen frame formed of lateral and transverse rails, each of said rails having one end abutting against the inner edge of a rail extending at right angles thereto and having its inner edge abutting against the end of another rail extending at right angles thereto, each of said rails being formed with a longitudinal groove in its face, and corner-plates for uniting said rails, each of said corner-plates being extended beyond the end of the rail to which it is fastened and being provided with an inwardly-projecting rib entering the longitudinal groove in the face of the abutting rail, said corner-plates serving to hold said rails together in manner permitting them to be adjusted both laterally and transversely, substantially as described.

2. A wire-screen frame formed of lateral and transverse rails, each of said rails having one end provided with a shoulder and a recess and abutting against the inner edge of a rail extending at right angles thereto and having its inner edge formed with a shoulder and recess and abutting against and engaging the recessed and shouldered end of another rail extending at right angles thereto, and corner-plates for uniting said rails, each of said corner-plates being fastened to the end

of one rail and having a rib projecting inwardly beyond the face of and engaging the rail which it overlaps, said ribs of the corner-plates serving to hold the rails together, while permitting them to be adjusted both laterally and transversely, substantially as described.

3. A wire-screen frame formed of lateral and transverse rails, each of said rails having one end provided with a shoulder and a recess and abutting against the inner edge of a rail extending at right angles thereto and having its inner edge formed with a shoulder and recess and abutting against and engaging the recessed and shouldered end of another rail extending at right angles thereto, each of said rails being formed with a longitudinal groove in its face, and corner-plates for uniting said rails, each of said corner-plates projecting beyond the end of the rail to which it is fastened and being formed with a rib on its projecting portion, entering the longitudinal groove of the abutting rail and serving to prevent the separation of the rails except by withdrawing the ribs of the corner-plates from out the longitudinal grooves of the rails, substantially as described.

4. A metallic corner-plate for wire-screen frames, consisting of a body having two oppositely-extended arms, one of said arms having upon its inner face a rib or projection extending across the other arm and the opposite arm having upon its inner face a rib or projection extending transversely to but terminating at a distance from the rib or projection of said other arm, substantially as described.

5. A metallic corner-plate for wire-screen frames, consisting of a body having two oppositely-extended arms, one of said arms having upon its inner face a rib or projection d', extending in the direction of its length, and the opposite arm being formed with a rib or projection d upon its inner face, and a seat d^3 between said rib or projection d and said other arm, substantially as described.

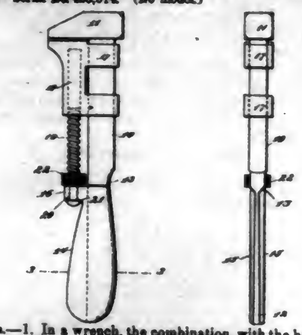
476,078. TACKLE-BLOCK. FRANK X. ROUSSEAU, Detroit, Mich. Filed Sept. 28, 1891. Serial No. 407,085. (No model.)



Claim.—1. In a tackle-block, the combination, with the shell, of a sheave journaled therein and a hook pivotally secured to the upper end, the shank of which hook is bifurcated, an eccentric clamping device pivotally secured upon the pivotal pin at the top directly above said sheave and in a vertical line with the axis thereof, said clamping device having a reduced hub for fitting between the forks of the bifurcated shank and having a lever-arm extending from it in one direction and a weighted portion extending from it in the opposite direction, said weighted portion having an arc-shaped clamping-periphery the curvature of which is opposite to the sheath and formed with a nose in normal contact with the hoisting-cable and a free upturned heel at the opposite extremity, said surface being substantially of the same width as the width of the sheave and provided with a concave serrated groove, said clamping device being pivoted upon said pivotal pin above the nose of the weighted portion, the construction being such that a pull on said lever-arm may throw the nose of the clamping device entirely out of contact with the hoisting-cable, substantially as set forth.

2. A tackle-block comprising the shell consisting of three plates and three bolts through them for holding them together, two sheaves journaled upon the middle bolt, one upon each side of the central plate, a hook pivotally secured upon the upper bolt, the shank of which hook is bifurcated and provided with a groove in the bottom of the bifurcation, the upper end of the central plate fitting in said groove, two eccentric clamping devices upon said bolt, one upon each side of the central plate, each one of which is reduced at the hub to fit between the fork and the central plate, and the main portion being of the same width as the sheave and consisting of an eccentric segment the curvature of which is opposite to that of the sheave and the surface provided with a concave spirally-serrated groove to register with the groove of the sheave, and an eye upon the lower bolt, the shank or upper wall of which is divided through its center to receive the lower end of the central plate, substantially as set forth.

476,079. WRENCH. JOHN RYAN, New York, N. Y. Filed Feb. 27, 1892. Serial No. 423,014. (No model.)



Claim.—1. In a wrench, the combination, with the body-bar having its lower end reduced, producing a shoulder, of a casing adapted to be sprung over the lower reduced portion of the body-bar and clamped thereto, engaging with the shoulder of said bar, substantially as shown and described, whereby the handle is rendered solid, but is constructed in two sections, as set forth.

2. In a wrench, the combination, with a body-bar having the lower end thereof reduced, forming a shoulder, and wedge-shaped in cross-section to form a portion of the handle, of a casing-section for the handle comprising a solid portion and wings emanating therefrom, the wings being adapted to clamp the handle portion of the body-bar and to engage with the shoulder of said bar, substantially as shown and described.

3. In a wrench, the combination, with a body-bar, the lower end of which is reduced to form a shoulder, the lower reduced portion of the body-bar being adapted as a portion of the handle and constructed, essentially, wedge-shaped in cross-section, of a movable jaw having sliding movement on the body-bar, a casing-section adapted as a portion of the handle, comprising a solid portion and wings emanating therefrom clamped to and engaging with the handle portion of the body-bar, a lip or extension formed upon the solid portion of the handle-casing at its upper end, and an adjusting-screw, the upper end of which is entered in a threaded aperture in the movable jaw, the lower end being held to turn in the lip or extension of the handle-casing, and an adjusting-piece secured to the adjusting-screw, substantially as shown and described.

4. In a wrench, the combination, with a body-bar carrying at its upper end a fixed jaw and having its lower end reduced to form shoulders tapering at the back edge of the bar, the lower reduced portion of the body-bar being adapted as a section of the handle and essentially wedge-shaped in cross-section, of a casing adapted as a second section of the handle, comprising a solid portion, and wings emanating therefrom, adapted to surround and engage the reduced or handle portion of the body-bar and also to engage with the shoulders of said bar, a lip or extension formed at the upper solid portion of the handle-casing, a jaw held to slide upon the body-bar, an adjusting-screw, one end of which is entered in a threaded aperture in the movable jaw, the other end being adapted to turn in the lip or extension of the handle, and an adjusting-piece secured to the adjusting-screw, whereby the latter may be manipulated, as and for the purpose specified.

476,080. ELECTRIC TERMINAL. HERCULES SARCHE, Detroit, Mich. Filed Sept. 29, 1891. Serial No. 407,189. (No model.)



Claim.—1. A terminal-fastening for electric and other wires, consisting of a post having a threaded shank projecting from a flat contact-face on said post and a collar having a non-central opening entering its periphery on one side of a diametrical line and emerging on its flat upper face between the periphery and the central opening receiving the threaded shank, substantially as described.

2. A terminal-fastening for electric and other wires, consisting of a post having a threaded shank projecting from a flat contact-face on said post, a collar having a straight non-central opening entering its periphery and emerging in its flat upper face between the periphery and a central opening receiving the threaded shank, and a contact-nut screwed on said shank, said nut and collar being each provided with a hanging flange surrounding the contact-surface beneath and inclosing the peripheries of the posts on which said surfaces are formed, substantially as described.

3. A terminal attachment for electric and other wires, the same consisting of a post having a threaded shank projecting from a flat contact-surface on said post, a series of collars, each having a flange dropped from its periphery and adapted to inclose the periphery of the adjacent collar below and each provided with a non-central straight opening for the wire passing through said flange and emerging on the flat upper face of the collar between the periphery and a flange surrounding a central opening which receives the threaded shank, and a contact-nut having a hanging flange inclosing the upper collar, substantially as described.

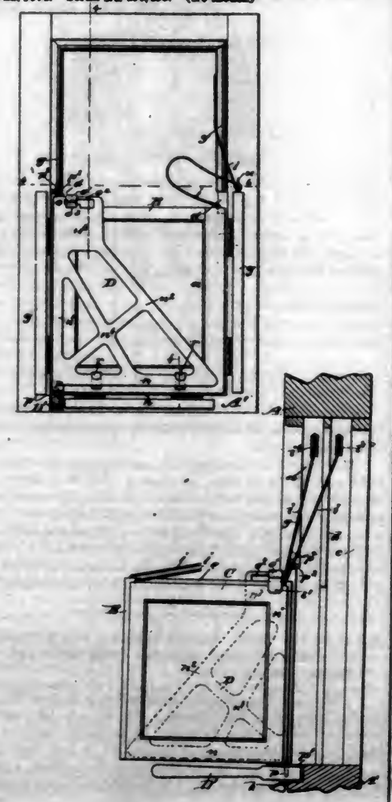
4. The combination, with a terminal consisting of a post having a threaded shank, of a conductor having the raw edge of its insulating-covering bound by a wire, the denuded portion of said conductor being brought upon a contact-surface, coiled around the shank, and fastened by the prolonged end of the binding-wire, and a contact cap or nut having a flange surrounding and dropping below the contact-surface, substantially as described.

5. An electric conductor having a wire bound around the raw edge of its insulating covering and prolonged beyond the extremity of the denuded portion of the conductor, substantially as described.

6. A permanent terminal for electric and other wires, having a central opening for the entrance of the wire, a concentric recess of larger diameter in which the denuded portion of the wire is bunched or knotted, and a positively-engaged contact-plug entering said chamber and compressing the bunched or knotted portion of the wire, substantially as described.

7. In terminals for electric wires, the combination, with a post having a flat circular contact-face, of a wire lying in a rectilinear opening which is inclined to the axis of the post, the end of the wire emerging upon said contact-face, and a contact cap or nut turned upon a threaded part of the post and pinching the wire upon the flat contact-face, substantially as described.

476,081. WINDOW. VALENTINE SCHIRMER, New York, N. Y. Filed Sept. 22, 1891. Serial No. 406,455. (No model.)



Claim.—1. A window comprising a frame, counterbalanced sash therein, parting-strips on the stiles, extending from above half the height of the frame within, sectional bead-strips hinged below to the stiles, and a removable device adapted to engage both sashes when they are opposite each other below and hold them upon it and swing them together laterally when manipulated, substantially as described.

2. The combination, with a window-frame and sliding sashes therein, provided with cords and weights, of a removable bracket-frame pivoted to swing laterally on the window-frame and having engagement with the sashes to support them in swinging adjustment, substantially as described.

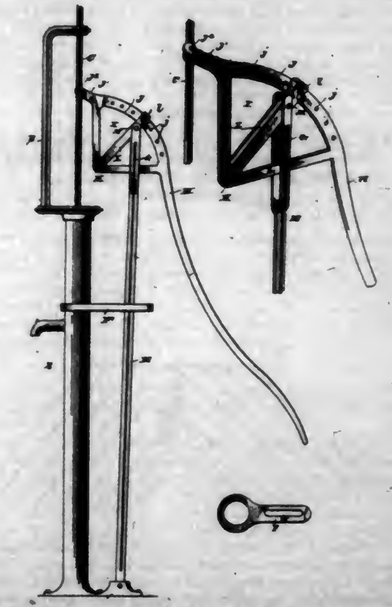
3. The combination, with a window-frame, counterbalanced sashes in the frame, adapted for hooked connection near their lower edges, sectional bead-strips having their lower sections hinged to the window-frame, and a hinged closing-strip on the sill of the frame, of a removable bracket-frame pivoted on a handle-bar below the lower sash and provided with a pintle above the handle-bar pivot, adapted to enter an eyebolt on the window-frame, and means for detachably connecting the window-sashes with the pivoted bracket-frame, substantially as described.

4. The combination, with a window-frame and counterbalanced sashes therein, adapted for hook-and-socket connection at their lower edges, of a removable bracket-frame pivoted on a handle-bar below the lower sash and upon the window-frame above said lower sash and engaged by hooks on the lower sash below said bracket and provided with a folding securable locking-bar at its upper edge adapted to engage both sashes, substantially as described.

5. In a window, the combination, with a frame having parting-strips extending down about half the length of the stiles within the frame, of a counterbalanced upper sash having pockets in its lower rail movable covers for said pockets, and hooks on the lower rail of the lower sash, adapted to enter said pockets when uncovered and the upper sash is lowered, substantially as described.

6. A swing-bracket for supporting window-sashes in their casements, consisting of a skeleton frame pivoted at its lower edge near one side in a handle-bar below the lower sash and at its upper edge on an aligning pintle entering an eyebolt on the window-casement, and a bar mounted to swing and slide on a cross-bar at the upper edge of said bracket, provided with hooks at its ends and adapted to lock the window-sashes together, substantially as described.

476,082. PUMP-HANDLE. CHARLES A. SELLON, Pike, N. Y. Filed Feb. 15, 1892. Serial No. 421,594. (No model.)



Claim.—1. In a pump-handle, the combination, with the pump-rod and an adjacent bearing-standard, of an adjustable pump-handle terminating in a sector-head connected to said pump-rod, and a circumferentially-adjustable link connected with said quadrant and said bearing-standard, substantially as set forth.

2. In a pump-handle, the combination, with the pump-rod and an adjacent bearing-standard, of an adjustable pump-handle terminating in the sector-head, connected at one end of the arc to said pump-rod, and a link pivoted to the center of the quadrant and circumferentially adjustable over the arc thereof and pivotally connected with said standard, substantially as set forth.

3. In a pump handle, the combination, with the pump-rod, of an adjacent bearing-standard pivoted at its lower end and terminating in an upper bifurcated end, an adjustable pump-handle terminating in a quadrant-head, working in said bifurcated standard end, said head being connected at one end of the arc to said pump-rod and provided with a series of perforations in the arc thereof, a link pivoted to the center of the quadrant and circumferentially adjustable over the arc, an adjusting-pin engaging the outer end of the link in any one of the series of perforations, and a pivot-bolt passing through the bifurcated end of said standard and the circumferentially-adjustable link, substantially as set forth.

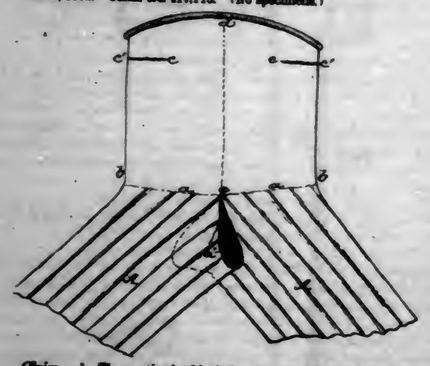
476,083. BANJO. BURT R. SHATTUCK, Boston, Mass., assignor to the L. B. Setcomb Company, same place. Filed Aug. 5, 1891. Serial No. 401,787. (No model.)



Claim.—1. In a banjo, the combination, with the rim, the top hoop B, and the neck or arm C, secured to the rim, of the cam or spreader E, pivoted to a plate fitted within a recess formed within the upper portion of the heel end of said neck or arm C and adapted to be forced out therefrom against the hoop or adjacent portion of the banjo, and the screw *i*, accessible from the outside of the neck and adapted to actuate the cam E, substantially as and for the purpose set forth.

2. In a banjo, the combination, with the neck or arm C and the rim and top hoop, of a separating device secured within a recess formed within the upper portion of the heel end of said neck or arm and adapted to produce a separation between said heel end of the neck and the top hoop B, said separating device consisting of a cam E, provided with a projecting portion 10, a plate D, to which said cam is pivoted, said plate having ribs or flanges *e f*, and a screw *i*, accessible from the outside of the neck and passing through the flange *f*, said screw being adapted to bear upon the portion 10 of the cam E, whereby said cam is turned horizontally upon its pivot in contact with the top hoop B, all constructed and arranged to operate substantially as described.

476,084. METHOD OF KNITTING HOSE. FREDERICK W. SIMONS, Philadelphia, Pa., assignor of one-half to Carrie Wilson, same place. Filed Jan. 5, 1892. Serial No. 417,113. (No specimens.)



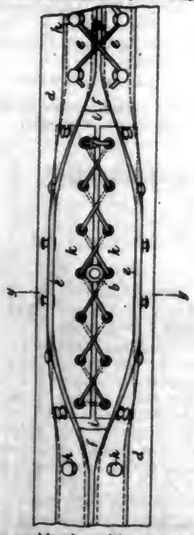
Claim.—1. The method of knitting the heels of stockings, which consists in knitting a continuous circular web upon one-half of each of two leg portions, then throwing out of action all the needles except a portion at the middle of one side of the machine, then successively bringing into action again the adjacent needles on that side of the machine, then repeating the operation on the other side of the machine to round or fashion the heels, and then dividing the knit web, portion longitudinally along the median line to form a separate heel for each of the two legs, substantially as shown and described.

2. The method of knitting the toe of a stocking, which consists in first knitting the full web of the foot with all the needles, then throwing out all the needles except those that knit the top part of the toe, and gradually widening and fashioning the toe by bringing in one needle at each end at each course until one-half of the needles are at work, then throwing out this half of the needles and bringing into action a portion of the needles which knit the sole and gradually bringing into action at each course an additional needle at each end to fashion the lower part or sole of the toe until this half of the needles are at work, and then throwing in all the needles and knitting a few courses, substantially as shown and described.

3. The method of knitting the feet of stockings in a continuous series or chain, which consists in knitting the foot of one stocking to the toe, clearing or throwing the upper half of the toe from the needles and placing upon these needles the instep portion of a new leg and heel section, and continuing the knitting to form a foot which shall be united to both the new leg-section and also the foot-section of the previous stocking, substantially as shown and described.

4. The method of knitting and forming the feet of stockings, which consists in first knitting the foot of one stocking to the toe, then clearing or throwing off the upper half of the toe from the needles and placing upon these needles the instep portion of a new leg and heel section and continuing the knitting to form a foot which shall be united to both the new leg-section and also the foot-section of the previous stocking, then cutting the lower half of the toe of one foot from the rear end of the sole of the next foot, and finally looping together and closing the toes and also the heels, substantially as shown and described.

476,085. ELASTIC TIRE. JOHN S. SMITH, London, England. Filed Mar. 10, 1891. Serial No. 384,515. (No model.)



Claim.—1. The combination, with an inflated tube and a covering for the same, of auxiliary laced lappets applied as described, and for the purpose set forth.

2. An elastic tire comprising an inner tube capable of being inflated and a covering for the same, the edges of which form flaps for enabling the tire to be secured to the rim of the wheel by means of laces, a protecting-layer being arranged between the inflated tube and the rim of the wheel, the said layer being formed of two lappets which can be wholly or partially turned back to allow the withdrawal of the inflated tube from the covering and which, where adapted to be thrown back, are held by auxiliary laced flaps, substantially as described.

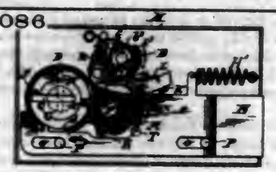
476,086. LOCK. EUGENE C. SMITH, New York, N. Y., assignor to the Universal Lock Company, same place. Filed May 29, 1891. Serial No. 394,502. (Model.)

Claim.—1. In a lock, the combination, with tumblers, of a locking-bar actuated by the tumblers, a bolt, and a flexible connection between the bolt and the locking-bar, by means of which the motion of the locking-bar imparts motion to the bolt, as described.

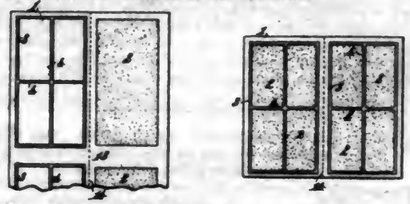
2. In a lock, and in combination with tumblers, a locking-bar actuated by the tumblers, an arm movably attached to the locking-bar by a spring, and a locking-lever adapted to be engaged by said arm, as described.

3. In a lock, the combination of a locking-bar having an internal chamber, and a spring in said chamber, having one end fixed to the locking-bar and the other end fixed to an arm which is movably attached to the locking-bar, as described.

476,086.



476,087. STICKY FLY-PAPER. JAY H. SMITH, Rochester, N. Y. Filed Jan. 23, 1892. Serial No. 419,065. (No model.)



Claim.—A sheet of sticky fly-paper having a field of soft sticky fly-catching material intersected by bars or strips of more adhesive material and surrounded by a border of material which is more adhesive than that composing the field, substantially as described.

476,088. DENTAL FLASK. WILLIAM E. STILES, Philadelphia, Pa., assignor of one-half to Mahlon Moyer, same place. Filed Nov. 18, 1891. Serial No. 412,286. (No model.)



Claim.—1. A dental flask consisting of a cope, a drag provided with racks, a cover for the cope, and pawls hinged to the cover and arranged to engage with the racks, substantially as described.

2. The combination, with the cope having depending bifurcated lugs, of the drag having serrated ribs coinciding with said lugs, and a cover carrying hinged pawls arranged to engage with said serrated ribs, substantially as described.

3. The combination, with a cope and a drag, of a cover provided with studs, a base carrying arms engaging with said studs, and a spring attached to said base-plate and pressing against the bottom of the cope, substantially as described.

4. The combination, with the cope A, having the bifurcated lugs *a*, of the drag B, having the vertical serrated ribs *b*, the cover C, carrying the hinged pawls C' and having the studs *c*', the base-plate E, provided with the spring-arms *e*, and the spring D, attached to said base-plate, substantially as described.

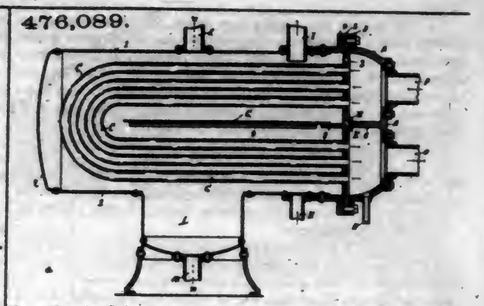
476,089. FEED-WATER HEATER. EDWIN R. STILWELL, Dayton, Ohio, assignor to the Stilwell & Bierce Manufacturing Company, same place. Filed Jan. 19, 1892. Serial No. 418,561. (No model.)

Claim.—1. In a feed-water heater, the combination, with the bent tubes C, supported in the shell of the heater, of the horizontally-arranged partition G, located in the body of the heater and separating the heater into two compartments between the forks of the pipe, and the lower compartment terminating in the mud-well L, located under the partition, substantially as specified.

2. In a feed-water heater, in combination with the bent tubes C, the horizontally-arranged partition G, separating the heating-chamber into two compartments, the inlet-pipe H near the steam-exit, the mud-well L, located beneath the partition, and the outlet water-pipe I, located near the steam-entrance and projecting below the surface of the water in the heater, substantially as specified.

3. In a feed-water heater, in combination with the bent pipes C, the horizontally-arranged partition G, separating the heating-chamber into two compartments, the inlet water-pipe H near the steam-exit,

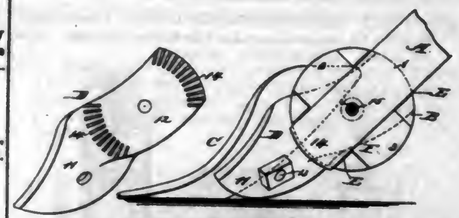
476,089.



the outlet-pipe I, located near the steam-entrance and projecting below the surface of the water in the heater, and the scum-blow-off pipe K, substantially as specified.

4. In a feed-water heater, the combination, with the heater-shell supporting the bent pipes C, of the horizontally-arranged partition G and the mud-well formed of the shell of the heater-shell, located vertically under the shelf and projecting downward centrally, so as to constitute a heater-supporting leg, substantially as specified.

476,090. PLOW-JOINTER. CHARLES A. STRINGER, Minneville, N. Y. Filed Jan. 28, 1891. Serial No. 379,417. (No model.)



Claim.—1. In a plow-jointer, an adjusting-disk provided with diametrical grooves in one face of different depths at its periphery, one groove crossing the other, the said grooves being adapted to receive the plow-standard, substantially as described, whereby a jointer may be given many positions and different inclinations in or out, as set forth.

2. In a plow-jointer, the combination, with a standard and a disk provided with diametrical recesses in one face of different inclinations and crossing one another, the said disk being provided upon its opposite face with radial teeth, of a shank comprising two sections, one at an angle to the other, the lower section being adapted for attachment to a share and the other section being provided with teeth to engage with the teeth of the disk, as and for the purpose set forth.

3. In a plow-jointer, the combination, with a standard and a disk provided upon one face with diametrical grooves crossing one another, the said grooves at their extremities being of different depths, and radial teeth formed upon the opposite side of the disk, of a share essentially scroll-shaped, a shank comprising a lower concaved member adapted for engagement with the share and an upper essentially-straight member standing at an angle to the lower member and provided with teeth adapted to engage with the teeth upon the disk, and fastening devices connecting the shank with the blade and the shank and disk with the standard, substantially as and for the purpose set forth.

476,091. PROCESS OF PURIFYING METALS. BENJAMIN TALBOT, Chattanooga, Tenn. Filed Jan. 19, 1892. Serial No. 418,583. (No specimens.)

Claim.—1. The process of purifying iron, which consists in placing in a suitable vessel a deep column of liquid basic slag, pouring the molten iron downward through the slag, thereby causing the metalloids and other impurities to combine with the basic elements of the slag, the reaction liberating heat, whereby the slag is maintained in a fluid state, continuing the pouring of impure metal through the slag, and separating the purified metal from the slag.

2. The process of purifying iron, which consists in treating iron by the basic process, removing the resulting basic slag to a vessel constructed to hold a deep column of the slag, pouring molten iron to be purified downward through the slag, thereby causing the metalloids or other impurities to combine with the basic elements of the slag, the reaction liberating heat, whereby the slag is maintained in a fluid state, continuing the pouring of impure metal through the slag, and separating the purified metal from the slag.

3. The process of purifying iron, which consists in placing in a suitable vessel a deep column of liquid basic slag, pouring the molten iron downward through the slag, thereby causing the metalloids or other impurities to combine with the basic elements of the slag, the reaction liberating heat, whereby the slag is maintained in a fluid state, continuing the pouring of impure metal through the slag, and withdrawing the purified metal from below the slag.

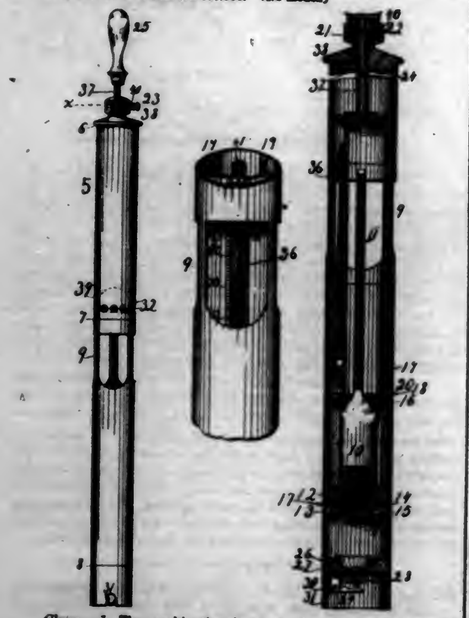
476,092. PROCESS OF REFINING METALS. BENJAMIN TALBOT, Chattanooga, Tenn. Original application filed Jan. 19, 1892, Serial No. 418,563. Divided and this application filed Apr. 6, 1892. Serial No. 428,083. (No specimens.)

Claim.—1. The improvement in the art of manufacturing steel, which consists in first desiliconizing and decarburizing the molten iron in a converter or furnace having an acid lining and thereafter filtering the metal through liquid basic slag to reduce the percentage of phosphorus.

2. The improvement in the art of making steel, which consists in first desiliconizing and decarburizing the molten iron in a converter or furnace having an acid lining and thereafter filtering the desiliconized and decarbonized metal through a body of liquid basic slag and finally adding manganese.

3. The improvement in the art of making steel, consisting in first desiliconizing and decarburizing the molten iron in a converter or furnace having an acid lining and thereafter filtering the same through liquid manganiferous basic slag, thereby reducing the phosphorus, and adding metallic manganese to the metal.

476,093. TESTER FOR SPIRITUOUS LIQUORS. KEMBER TAYLOR, Frankfort, Ky., assignor of one-half to John Meagher, same place. Filed Oct. 15, 1891. Serial No. 408,800. (No model.)



Claim.—1. The combination, in a tester for spirituous liquors, of a cup suitable to enter the bung-hole of a barrel, a valve near the lower end of the cup, a handle fitted to telescope within the cup, a thermometer attached to the handle to move therewith, seats for a hydrometer in the cup and handle, and a window in the cup opposite the normal position of the thermometer, substantially as described.

2. The combination, in a tester for spirituous liquors, of a cup suitable to enter the bung-hole of a barrel, a window in the side of the cup, a handle fitted to telescope within the cup, a thermometer attached to the handle and normally located opposite the window, and a hydrometer located loosely within the cup, substantially as described, whereby the thermometer may be normally located below the liquor-level of the cup to be wholly immersed in the liquor while the temperature is being read and then be drawn up out of the liquor, permitting free access to the thermometer-reading.

3. The combination, in testers for spirituous liquors, of a cup of a size and length adapted to enter the bung-hole of a barrel and having a window in its side, an inlet provided with a valve near the lower end of the cup, and outlets between the window and the top of the cup, and means, substantially as described, for lowering the liquor from the level of the said outlets to a point in the window, for the purpose specified.

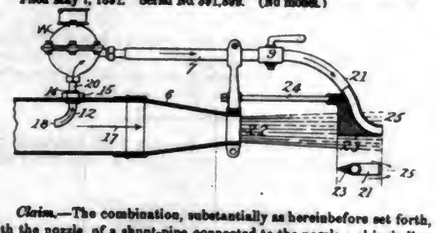
4. The combination of a closed cup for spirituous-liquor testers, a valve near the lower end thereof, a thermometer within the tube and attached to a sliding handle, a window in the side of the cup, and outlets above the window, substantially as described, whereby the liquor may escape to a fixed point.

5. The combination, in testers for spirituous liquors, of a closed cup with a glazed window in its side, cushioned seats for a hydrometer in the cup, and a movable handle carrying one of the seats, substantially as described.

6. The combination, in testers for spirituous liquors, of a closed cup having a fixed cushion as a seat for a hydrometer, a valve in the cup, and a rod fitted to slide into the cup and having a frame and a thermometer attached to it, the frame being provided with an annular cushion to engage a hydrometer, substantially as described.

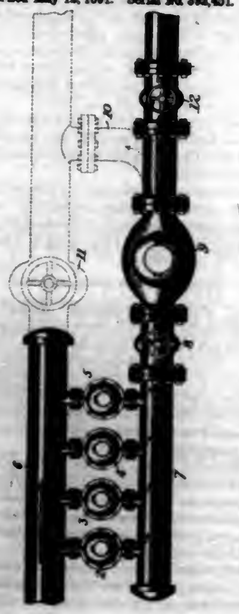
7. The combination, in testers for spirituous liquors, of a closed cup having a valve at its lower end, a rod carrying a thermometer and fitted to steady a hydrometer and provided with a notch at each end, and a spring-detent adapted to engage the said notches, substantially as described.

476,094. PROPORTIONAL WATER-METER. JOHN THOMSON, Brooklyn, assignor to the Thomson Meter Company, New York, N. Y. Filed May 7, 1891. Serial No. 391,892. (No model.)



Claim.—The combination, substantially as hereinbefore set forth, with the nozzle, of a shunt-pipe connected to the nozzle and including a meter therein, and a discharge-pipe for said meter terminating in the open stream beyond the outlet end of the nozzle.

476,095. APPARATUS FOR CALIBRATING WATER-METERS. JOHN THOMSON, Brooklyn, assignor to the Thomson Meter Company, New York, N. Y. Filed May 12, 1891. Serial No. 392,451. (No model.)



Claim.—The combination of the main pipe, the auxiliary pipe, two or more standardized meters in circuit therewith, the trial meter connected to the auxiliary pipe, the elbow connecting the auxiliary and main pipes, and valves 11 and 12, for the purpose set forth.

476,096. POSITIVE PROPORTIONAL WATER-METER. JOHN THOMSON, Brooklyn, assignor to the Thomson Meter Company, New York, N. Y. Filed Sept. 8, 1891. Serial No. 405,103. (No model.)



Claim.—1. The method, substantially as hereinbefore set forth, of controlling the operation of proportional water-meters, which consists in causing the measured volume to directly control the discharge of the measured and unmeasured volumes.

2. The method, substantially as hereinbefore set forth, of controlling the operation of proportional water-meters, which consists in causing the discharge of the measured volume to directly and positively control the discharge of the unmeasured volume.

3. The method, substantially as hereinbefore set forth, of positively controlling the operation of proportional water-meters, which consists in causing the measured volume to act directly upon a yielding controlling device and directly controlling the equilibrium device governing the flow of the unmeasured volume by the said yielding controlling device.

4. The method, substantially as herein set forth, of positively controlling the operation of proportional water-meters, which consists in causing the measured volume to act upon a controlling-valve having a yielding resistance and a directly and positively operated equilibrium-valve adapted to govern the flow of the unmeasured volume by said controlling-valve.

5. The within-described apparatus constituting a positive proportional water-meter, comprising the main external casing having mounted within its chamber a positive measuring mechanism, the controlling-valve having a yielding resistance, and an equilibrium-valve directly connected to the controlling-valve to act therewith, the arrangement and construction being such that the movements of said valves are caused by the action of the discharge from the measuring mechanism and the yielding resistance, substantially as set forth.

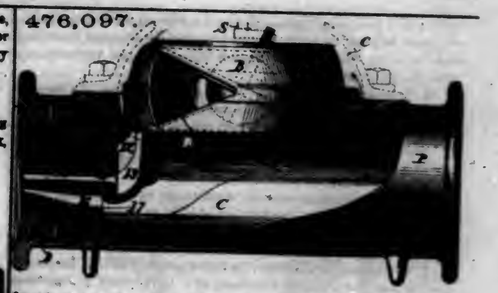
6. In a positive proportional water-meter, the combination of the controlling-valve having a yielding resistance, the equilibrium-valve directly connected to the controlling-valve, ports for the aforesaid valves, the valves being arranged to open and close the ports in a differential ratio, the main casing having inlet and outlet chambers, and a positive measuring mechanism connected to the inlet-chamber and discharging through the controlling-valve to the outlet-chamber, the arrangement and construction being such that the volume which passes through the said positive measuring mechanism causes the operation of the controlling-valve and the latter directly operates the equilibrium-valve, substantially as specified.

7. In a positive proportional water-meter, the combination, with the main casing and the measuring mechanism, of the controlling-valve, the equilibrium-valve, direct connections between the controlling-valve and the equilibrium-valve, the spring, and the valve-ports, substantially as specified.

476,097. PROPORTIONAL WATER-METER. JOHN THOMSON, Brooklyn, assignor to the Thomson Meter Company, New York, N. Y. Filed Sept. 8, 1891. Serial No. 405,104. (No model.)

Claim.—1. A proportional water-meter comprising a separate measuring-casing B, contained within a receiving-chamber C, an outlet-tube connected to the discharge from the measuring-casing, and a restricted converging nozzle arranged to encompass the outlet-tube and adapted to produce pressure upon the inlet and induction upon the outlet of the measuring mechanism contained within the said casing B, substantially as specified.

2. The combination of the measuring casing B, the receiving-chamber C, the tube connected to the discharge from the measuring-casing, and the restricted converging nozzle disposed in the path of the inferred volume, whereby to produce pressure upon the inlet and suction upon the outlet of said measuring-casing, substantially as specified.



3. The combination of the measuring-casing B, the receiving-chamber C, the tube connected to the discharge from the measuring-casing, and the restricted converging nozzle having a plurality of spring-tongues disposed in the path of the inferred volume, whereby to produce pressure upon the inlet and suction upon the outlet of said measuring-casing, substantially as described.

4. The combination of the measuring casing B, the receiving-chamber C, the tube connected to the discharge from the measuring-casing, the restricted converging nozzle having a plurality of spring-tongues disposed in the path of the unmeasured volume, and the fixed stops to limit the deflection of the aforesaid tongues, substantially as described.

476,098. METHOD OF AND APPARATUS FOR MAINTAINING A PROPORTIONAL FLOW OF FLUIDS THROUGH SEPARATE CHAMBERS. JOHN THOMSON, Brooklyn, assignor to the Thomson Meter Company, New York, N. Y. Filed Oct. 1, 1891. Serial No. 407,416. (No model.)



Claim.—1. The method, substantially as hereinbefore described, of controlling the operations of a proportional meter, the same consisting in automatically increasing or decreasing the areas of the ejection-ports controlling the measured and unmeasured streams when the flow in both streams is uniformly varied, and in automatically maintaining a fixed area of the discharge-ports upon the variation of the flow in but one of the streams.

2. A proportional meter provided with a self-acting compound valve having separate faces of equal areas mounted in separate chambers, arranged to automatically increase or decrease the areas of the ejection-ports controlling the separate streams when the flow in both streams is uniformly varied and to prevent the increase or decrease of the port areas upon the variation of the flow in but one of the streams, the said valve and its chambers being disposed to receive the discharge from the measuring mechanism, substantially as specified.

3. The combination, in a proportional meter, of separate receiving-chambers provided with ejection-ports, a valve having separate faces of equal areas controlling said ports, a fixed septum between said faces of the valve, and a spring for resisting the movements of the valve under the pressure of either or both of the two streams, the said receiving-chambers and the valve being located to receive the discharge from the measuring mechanism, substantially as specified.

4. In a proportional meter, a casing, a compound valve arranged within said casing to control the ports for the discharge of the major and minor streams, and a registering device having a port communicating with the inlet-chamber of the casing, and another port 25 communicating with one of the chambers of the compound valve, substantially as described.

5. In a proportional meter, a valve-casing having separate cham-

bers, with a compound piston-valve and a resilient resistance therein, two ports disposed circumferentially, and circular channels coinciding with the ports, whereby the channels will receive and deliver to and from the ports radially.

6. The combination, with the main external casing, of a measuring device, the valve-casing provided with separate chambers, the compound piston-valve, the parts of which are contained in said chambers, the resilient resistance, and the valve-casing ports leading from the chambers, the valve-casing and attachments being contained within the main external casing, substantially as set forth.

7. The combination, with the valve-casing having two sets of superimposed ports and a compound piston-valve therein, of circular receiving and discharging channels coinciding with said ports, substantially as specified.

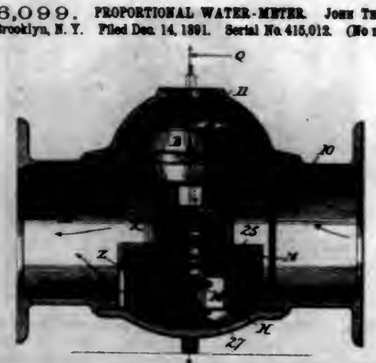
8. In a proportional meter, the combination, with two discharge-ports leading from separate chambers, of a valve-casing, a compound piston-valve having its parts operating in separate chambers of the valve-casing, and a resilient resistance in the casing for the said valve, substantially as specified.

9. The combination, with the main casing and measuring device therein, of the compound piston-valve, the resilient resistance, the intermediate chambers, each containing a port, of the valve and the valve-casing ports communicating with said chambers, substantially as described.

10. The combination, with the main casing having inlet and outlet chambers P X, with the measuring mechanism connected within the main case, the valve-casing containing the intermediate chambers D and E, the ports in the valve-casing, the compound piston-valve, and resilient resistance inclosed in said valve-casing, substantially as described.

11. The combination, with the main casing, of the valve-casing having separate ported chambers when the axial center of the said valve-casing is disposed at a right angle to the line of flow through the main chambers and directly beneath the measuring mechanism to receive the flow therefrom, substantially as specified.

476,099. PROPORTIONAL WATER-METER. JOHN THOMSON, Brooklyn, N. Y. Filed Dec. 14, 1891. Serial No. 415,012. (No model.)



Claim.—1. The combination of the differential valve, valve-casing, ports, and resilient resistance with the main casing and the measuring device, the arrangement and construction being such that the measured volume passes to the larger area of the valve, while the unmeasured or inferred volume passes to the smaller area thereof, substantially as described.

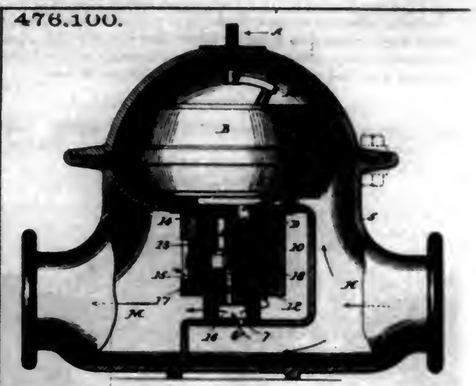
2. In a proportional water-meter, the combination, with the valve-casing having two series of ports and the resilient resistance, of the differential plunger-valve operating in said casing and provided with end-pressure surfaces of unequal areas, the greater area connected to the discharge from the measuring device.

476,100. POSITIVE PROPORTIONAL WATER-METER. JOHN THOMSON, Brooklyn, assignor to the Thomson Meter Company, New York, N. Y. Filed Jan. 12, 1892. Serial No. 417,843. (No model.)

Claim.—1. In a proportional meter, the compound differential valve having ends of unequal diameters exposed to the pressure of the main inlet-chamber and a mid-section connected to the discharge from the measuring mechanism, the face surface of said mid-section being greater than that of either of the ends, substantially as described.

2. In a proportional meter, the compound differential valve having ends of unequal diameters exposed to the pressure of the main inlet-chamber and a mid-section having one of its faces whose surface is greater than that of either of the ends connected to receive the flow from the measuring mechanism, the greater end diameter being formed

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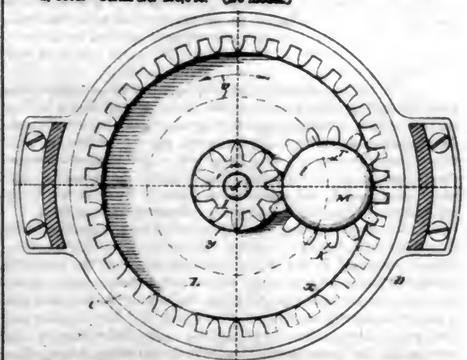


upon that side of the aforesaid mid-section reverse to its receiving-surface.

3. In a proportional meter, the compound differential valve having ends of unequal diameters exposed to the pressure of the main inlet-chamber and a mid-section having one of its faces whose surface is greater than that of either of the ends connected to receive the flow from the measuring mechanism, the lesser end diameter being formed upon the receiving side of the aforesaid mid-section.

4. In a proportional meter, the compound differential valve having ends of unequal diameters exposed to the pressure of the main inlet-chamber and a mid-section having one of its faces whose surface is greater than that of either of the ends connected to receive the flow from the measuring mechanism, the greater end diameter operating in an unported cylinder, while the lesser end diameter operates in a ported cylinder which receives the unmeasured fluid and the mid-section operates in a ported cylinder from whence the measured volume is ejected.

476,101. GEARING. JOHN THOMSON, Brooklyn, N. Y. Filed Feb. 2, 1892. Serial No. 420,046. (No model.)



Claim.—The combination of the intermediate gear and the hubs formed thereon, the differential gears having annular grooves and the pinion, substantially as set forth.

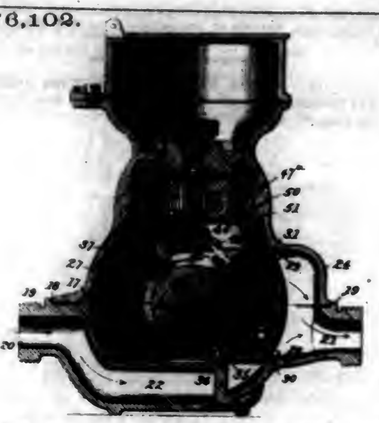
476,102. DISK WATER-METER. JOHN THOMSON, Brooklyn, N. Y. Filed Feb. 15, 1892. Serial No. 421,582. (No model.)

Claim.—1. In a disk water-meter, the main casing forming the disk-chamber, frustums mounted in said disk-chamber, a disk supported in said frustums, a horizontal channel extending across the chamber below the lower frustum, and a vertical inlet between the channel and disk-chamber, substantially as described.

2. In a disk water-meter, the main casing forming the spherical contour of the disk-chamber, the casing being divided on a median line of the chamber, the lower casings being provided with the inlet and outlet spuds and the horizontal channel, the upper casing being provided with a vertical inlet, the frustums supported in the casings, and the disk supported in the frustums, substantially as described.

3. In a disk water-meter, the combination of the main casings forming the spherical contour of the disk-chamber, the concentric flanges to the casings, a recess in one or both of said flanges, the inner and outer bearing-ribs, and gum-rubber gasket, the gasket having a cross-section

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substantially equal to the cross-section of the recess, but normally of less breadth than the recess, substantially as described.

4. In a disk water-meter, the combination of the main casings forming the disk-chamber, the frustums mounted in the disk-chamber and disk supported therein, the horizontal channel in the lower casing, the vertical inlet, and the curved section connecting the inlet and the channel, the construction and arrangement being such that the discharge from the curved section into the inlet is outside of the sweep of the disk, substantially as described.

5. In a disk water-meter, the combination of the main casing forming the disk-chamber, the frustums and disk mounted therein, the vertical inlet, and the horizontal channel, the latter passing under and crosswise to the opposite side of the disk-chamber, whereby the delivery of the water through the horizontal channel is in a direction substantially opposite to its delivery into the disk-chamber, substantially as described.

6. In a disk water-meter, the combination of the main casing forming the spherical contour of the disk-chamber, the detachable frustums, cylindrical bearings, and stop-shoulders formed in the disk-chamber supporting the frustums, whereby the frustums are adapted to be applied from the interior of the disk-chamber, substantially as described.

7. In a disk water-meter, the combination of the main casing forming the spherical contour of the disk-chamber, the disk, the upper and lower frustums fitting said disk-chamber and adapted to be inserted from the interior of the chamber, and bearings in said disk-chamber for said frustums, the lower frustum fitting snugly in its bearing and the upper frustum fitting freely to its bearing, whereby the position of the disk and the upper frustum are determined by the position of the lower frustum, substantially as described.

8. In a disk water-meter, the combination, with the disk and diaphragm, of the separate controlling-abutment, substantially as described.

9. In a disk water-meter, the combination, with the disk, of the diaphragm, and a notch in the disk opposite to the diaphragm, and a separate controlling-abutment co-operating with said notch, substantially as described.

10. In a disk water-meter, the combination, with the casings forming the spherical contour of the disk-chamber, of a disk mounted therein, and a separate controlling-abutment secured to the casings, substantially as described.

11. In a disk water-meter, the combination, with the casings forming the spherical contour of the disk-chamber, of the separable frustums fitting said disk-chamber, and a pin on the casings engaging one of the frustums to prevent rotation thereof, substantially as described.

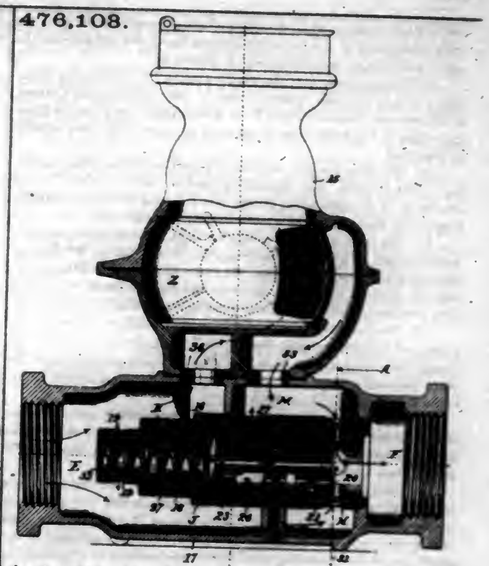
12. In a disk water-meter, the combination of the free controlling-block and its cylindrical journal-bearing, with the disk-spindle, disk, and frustums, the block being free to adapt itself vertically to the position of the spindle, substantially as described.

13. In a disk water-meter, the combination of the free controlling-block and its cylindrical journal-bearing, with the disk-spindle, disk, and frustums, the block being free either to revolve with the spindle by frictional contact or to remain stationary, substantially as described.

476,103. POSITIVE PROPORTIONAL METER. JOHN THOMSON, Brooklyn, N. Y. Filed Feb 18, 1892. Serial No. 422,015. (No model.)

Claim.—1. In a proportional meter, a valve device having piston-sections and a valve adapted to reciprocate in a valve-casing having chambers, one an end chamber connected to the main inlet-chamber, another an intermediate chamber connected to a separate controlling-

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chamber which receives the discharge from the measuring mechanism, and a final chamber communicating with the main outlet-chamber, the piston in the first chamber being of less area than that in the intermediate chamber, the valve being actuated by the pistons to open and close the communication with the outlet-chamber, substantially as described.

2. In a proportional meter, the combination of a positive-pressure piston acting in a chamber connected to the main inlet-chamber, a controlling-chamber, a negative piston of greater area than the positive piston, acting in a chamber connected to the controlling-chamber, and a valve acting in a chamber connected to the main outlet-chamber, the said valve controlling the communication with the outlet-chamber, substantially as described.

3. In a proportional meter, a differential piston having one end exposed to the pressure of the main inlet-chamber and its other end arranged to receive pressure from a controlling-chamber receiving the discharge from the measuring mechanism, the area of the piston which receives pressure from the controlling-chamber being greater than that of the end exposed to the main inlet-chamber, and a valve acting in the outlet-chamber to vary the proportional area of the discharging-ports, according to the variations of pressure in the several said chambers, substantially as described.

4. The combination, in a meter, of a series of chambers and pistons moving therein, and a controlling-chamber receiving a limited portion of the fluid, one piston receiving the pressure of the inlet-chamber, another piston receiving the pressure from the controlling-chamber, and a valve controlling the entire discharge to the outlet, substantially as described.

5. The combination, with the measuring mechanism, main casing, differential piston, valve, and valve-casing, of the main inlet-chamber, the controlling-chamber, and the main outlet-chamber, the arrangement and construction being such that the main inlet-chamber is connected to the measuring mechanism and to the lesser piston area, the controlling-chamber being connected to the greater piston area, to the outlet from the measuring mechanism, and to a valve-port in the valve-casing, while the main outlet-chamber is connected by a series of ports controlled by a valve to the main inlet-chamber and to the controlling-chamber, substantially as described.

6. The combination, with the main inlet-chamber and the inlet and outlet channels, of the measuring mechanism, the controlling-chamber, and the valve-casing chambers of the valve device provided with a differential piston, one end connected to the main inlet-chamber, the other end, the section of greater area, connected to the controlling-chamber, and the valve acting in a ported cylinder, substantially as described.

7. In a proportional meter, a valve device having a differential piston and a valve, each operating in separate chambers when both the measured and the inferred volumes pass through but one of the chambers, substantially as described.

8. In a proportional meter, a valve device having a differential piston and a valve, each operating in separate chambers, one of said chambers receiving and displacing from and to the main inlet-chamber, another of said chambers receiving and displacing from and to the

controlling-chamber, while the third chamber receives from both the main inlet-chamber and the controlling-chamber, but delivers into the main outlet-chamber, substantially as described.

9. The combination of the negative piston 23, valve-casing chambers J H, and the main outlet-chamber F, with a connecting-channel, as 28, between chambers J and F for the purpose of making the pressure within the said chamber J negative to chamber H, substantially as described.

10. The combination, with the differential pistons, valve-casing, main inlet-chamber, and controlling-chamber, of the valve directly connected to the differential pistons and actuated thereby to vary the area of the discharging-ports, substantially as described.

11. The valve and valve-casing having a series of valve-ports disposed radially in a single transverse plane of the casing, the disposal and construction being such that the entire flow of both the measured and the inferred volumes is delivered through the said valve-ports from outside to inside of the valve-casing, substantially as described.

12. The combination of the spring with the differential piston, the valve, and the valve-casing, the disposal being such that the spring coacts with the pressure from the main inlet-chamber to force the valve forward toward the main outlet-chamber, substantially as described.

13. The combination, with the differential piston and the valve-casing, of the openings, as 19, for connecting the pressure of the main inlet-chamber to the positive piston of the valve device, substantially as described.

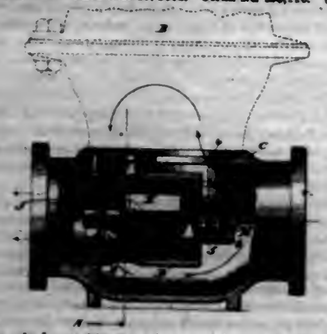
14. In a proportional meter, the combination, with the measuring mechanism and the main casing, of the valve device, and the valve-casing mounted in a cylindrical bearing formed in the axis of the main casing, the chambers of the said valve device being connected to the discharge of the measuring mechanism, substantially as described.

15. In a proportional meter, the combination, with the valve-casing and valve therein, of a series of ports radially disposed in a single transverse section of the casing, the number of the said ports corresponding to the proportional ratio of the meter, substantially as described.

16. In a proportional meter, a main inlet-chamber, a controlling-chamber, and a valve controlling a series of ports communicating with the inlet and the controlling-chambers and arranged to direct the total flow in streams of uniform character, substantially as described.

17. In a proportional meter, a main inlet-chamber, a controlling-chamber, a valve, and a series of ports communicating with the inlet and the controlling chambers and arranged to direct the total flow in equal streams, converging toward the center of the flow, substantially as described.

476,104. PROPORTIONAL WATER-METER. JOHN THOMSON, Brooklyn, N. Y. Filed Feb. 19, 1892. Serial No. 422,110. (No model.)



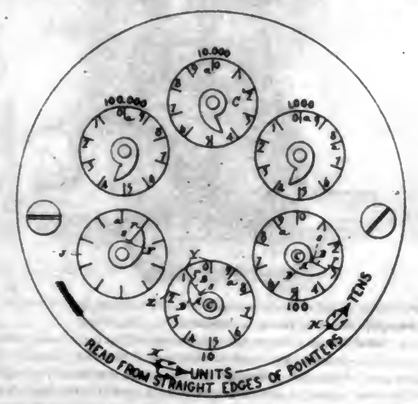
Claim.—1. In combination, the measuring mechanism, the main casing, the valve-casing having a single series of radial ports, the valve, and the spring, the arrangement and construction being such that the valve is operated against the spring by the reaction of the volume discharged through the ports.

2. The combination, with the measuring mechanism and the main casing, of the valve operated by the reaction of the discharged volume, the spring disposed to resist the said reaction, the valve-casing, and the radial ports, the flow passing through the ports from outside to inside of the valve-casing.

3. The reaction-valve provided with a channel for permitting the displacement of fluid from its reverse side to the main outlet-chamber, the discharge of said channel being extended outwardly beyond the plane of reaction.

4. The reaction-valve, spring, and valve-casing provided with a series of radial ports disposed in a single transverse plane thereof, in combination with means, as pins 10, for limiting the outward movement of the valve, whereby to prevent the ports from being entirely closed.

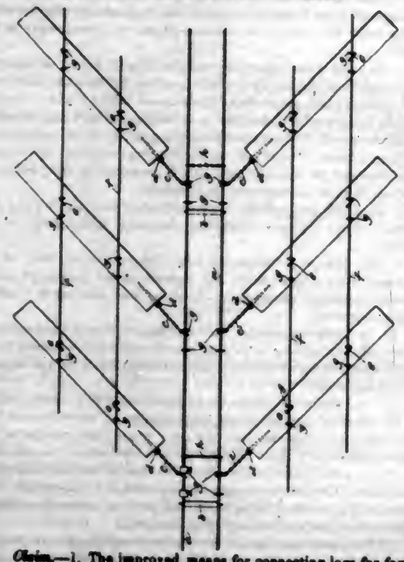
476,105. POINTER AND DIAL FOR COUNTING-REGISTERS. JOHN THOMSON, Brooklyn, N. Y. Filed Mar. 14, 1892. Serial No. 424,895. (No model.)



Claim.—1. In a counting-register having a series of indices around its periphery, a pointer having one straight edge and the other curved, the said pointer not reaching out to the indices, substantially as described.

2. In a counting-register having a series of indices around its periphery, the pointer having one straight edge terminating at the points *r s* and the other edge curved, the extremity *r* of the straight edge not reaching out to the indices, substantially as described.

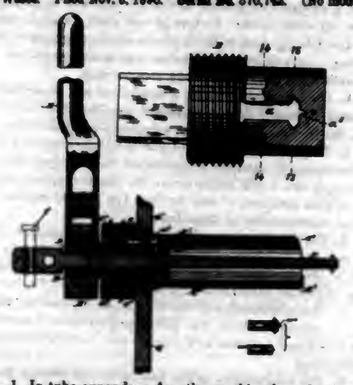
476,106. RAFTING LOGS. ABRAM VAN KOOY, Holland, Mich. Filed Dec. 13, 1889. Serial No. 333,677. (No model.)



Claim.—1. The improved means for connecting logs for forming rafts and for towing such rafts, the same consisting of the tow-lines *a a* and spacing-blocks *b*, secured to said lines, supplemental tow-chains *c*, attached to the tow-lines and adapted to extend laterally therefrom and having devices secured to their outer ends for connecting with a series of logs, the stay-lines *f*, and means for securing them to the logs, as shown and described.

2. In an apparatus for connecting logs to form rafts and for towing the latter, the combination, with the main tow-lines *a a*, spacing-blocks *b*, and connecting-ropes *h*, applied to said tow-lines, of the supplemental lateral tow-chains *c*, loosely connected with the main tow-lines and having devices secured to their outer ends for attachment to the logs, and a series of devices *g* for limiting the movement of the chains *c* on the tow lines, all as shown and described.

476,107. TUBE-EXPANDER. WILLIAM WALKER, Sydney, New South Wales. Filed Nov. 3, 1890. Serial No. 370,742. (No model.)



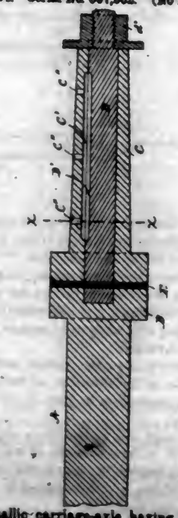
Claim.—1. In tube-expanders, &c., the combination of a flanged roller and a flangeless supporting-roller, the two rollers working together in sets within radial recesses in an axially-pierced rotary carrier, and a tapered mandrel within said bore, the supporting-roller being interposed between the flanged roller and the said mandrel, as and with the object explained.

2. In tube-expanders, an expanding and beading roller flanged at one or both ends, in combination with a rotary head, a supporting flangeless roller, and a central mandrel, as set forth.

3. In a tube-expander, &c., the combination of rotary, axially-bored, and radially-slotted head A, the tapering mandrel F, the provision in each radial slot of flangeless supporting-roller a^2 and flanged expanding and beading roller a' a^3, having axial stud a^4, working in grooves a^5, and the confining-screw a^6, substantially as set forth.

4. In tube-expanders, the roller-carrier A, in combination with an adjustable gage or cap C and lock-nut C' for the purpose of rendering the expander capable of adjustment to varying thicknesses of tube-plate and insuring that the bead shall be formed on the tube immediately within the tube-plate, as specified.

476,108. CARRIAGE-AXLE. FREDERIC E. WEED, Boston, Mass. Filed June 26, 1891. Serial No. 397,062. (No model.)



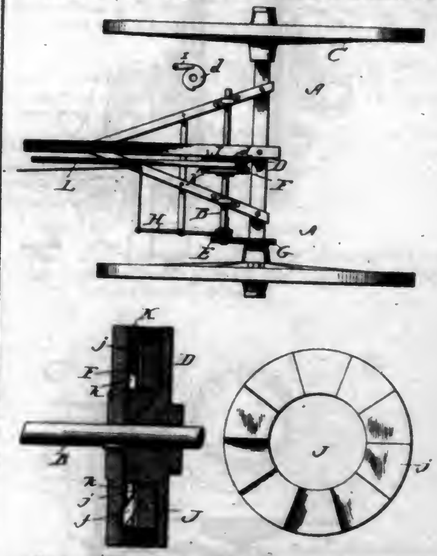
Claim.—1. A metallic carriage-axle having its collar B formed integral with a tubular metallic wheel-spindle C, the bore of which extends into the central portion of the collar, in combination with the soft-metal cylindrical core D, fixed in the collar of the axle and entirely surrounded by the wheel-spindle, substantially as described.

2. A metallic carriage-axle A, having its collar B formed integral with a tubular steel spindle C, the bore of which extends into the central portion of the collar, in combination with the soft-metal cylindrical core D, extending into the central portion of the collar and entirely surrounded by the steel spindle, and a transverse pin extending through the collar and through the inner end of the soft-metal core, substantially as described.

3. A metallic carriage-axle A, having its collar B formed integral with a tubular steel spindle C, the bore of which extends centrally into the collar, in combination with the core D, composed of a cylinder of wrought-iron extending into the central portion of the collar and entirely surrounded by the steel spindle, substantially as described.

4. A metallic carriage-axle having a collar B formed integral with a tubular steel spindle C, having transverse orifices C", communicating with a longitudinal groove C' in its inner surface, in combination with the soft-metal cylindrical core D, fixed in the collar of the axle and entirely surrounded by the steel spindles, substantially as described.

476,109. HORSE-CONTROLLING DEVICE. DANIEL T. WOODMAN, Blocksburg, Cal. Filed Aug. 14, 1891. Serial No. 402,681. (No model.)



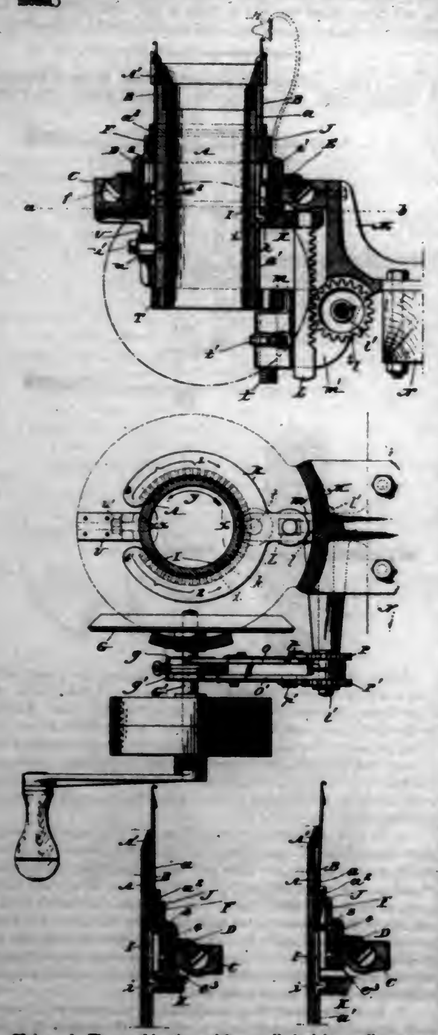
Claim.—1. In a horse-controlling mechanism, the combination, with a shaft adapted to be rotated from a wheel of the vehicle, of a drum loosely mounted on the said shaft, an annulus loosely mounted on the cylindrical portion of the drum and having teeth on one side, a disk secured on the shaft to revolve therewith, pawls connected with the said disk and adapted to project through openings in a head of the drum and engage with the teeth on the annulus, and a controlling-strap connected with the said annulus, substantially as and for the purpose described.

2. In a horse-controlling mechanism, the combination, with a shaft adapted to be rotated from a wheel of the vehicle, of a drum loosely mounted on the said shaft and having openings in a head thereof and cam portions between the said openings, an annulus loosely mounted on the cylindrical portion of the drum and having teeth on one side, a disk secured on the shaft to revolve therewith, pawls connected with the said disk and adapted to project through the said openings in the head of the drum and engage with the teeth on the annulus, and a controlling-strap connected with the said annulus, substantially as and for the purpose described.

3. In a horse-controlling mechanism, the combination, with a shaft adapted to be rotated from a wheel of the vehicle, of a drum loosely mounted on the said shaft and having openings in a head thereof and cam portions between the said openings, a ratchet-wheel and pawl to hold the drum from turning in an opposite direction to the winding of the hitching-strap, an annulus loosely mounted on the cylindrical portion of the drum and having teeth on one side, a disk secured on the shaft to revolve therewith, pawls connected with the said disk and adapted to project through openings in a head of the drum and engage with the teeth on the annulus, and a controlling-strap connected with the said annulus, substantially as and for the purpose described.

4. A horse-controlling mechanism comprising shaft B, gearing between the shaft and a wheel of the vehicle, a shipping-lever to throw the said gearing in and out of gear, a drum loosely mounted on the shaft and having openings *k* in a head thereof and having cam portions *k'* between the said openings, an annulus loosely mounted on the cylindrical portion of the drum and having teeth on one side, a disk secured on the shaft to revolve therewith, yielding pawls connected with the said disk and adapted to project through openings in a head of the drum and engage with the teeth on the annulus, and a controlling-strap connected with the said annulus, substantially as and for the purpose described.

476,110. CIRCULAR-KNITTING MACHINE. WILLIAM H. RELLER, Philadelphia, Pa. Filed June 16, 1891. Serial No. 396,419. (No model.)



Claim.—1. The combination, with a needle-bed, its needles, a cam-carrier, and its cams, of a series of sliding bits or fingers of varying lengths constructed to work in the same planes as the needles and adapted to maintain a predetermined number of said needles conditionally in active position, and means for operating said bits or fingers simultaneously, whereby when the bits or fingers are operated the planes of certain needle-beds are successively changed, substantially as described.

2. The combination, with a needle-bed, its needles, a cam-carrier, and its cams, of vertically-movable bits or fingers arranged in sets or series in the rear of certain needles, impressing devices acting upon the latter, a common supporting device for said bits or fingers, and mechanism for operating said supporting device step by step, substantially as described.

3. The combination, with a needle-bed, its needles, a cam-carrier, and its cams, of vertically-movable bits or fingers arranged in sets or series in the rear of certain needles, impressing devices acting upon the latter, a common supporting device for said bits or fingers, a rack, a pinion, its shaft, ratchet devices on said shaft, a cam device connected with the driving-shaft of the machine, connecting means therefor, and coacting pawl-and-lever mechanism intermediate said cam device and the ratchet devices, substantially as described.

4. The combination, with a needle-bed and its needles, of spring-actuated impressing devices supported upon the ribs of said bed to bear upon the shanks of the needles, substantially as described.

5. The combination, with a needle-bed, its needles, and the elastic needle-rotating band, of yoke-shaped wire devices suspended upon the ribs of said bed at points above the needle-rotating band, whereby the parallel members of said devices are pressed against the needle-shanks, substantially as described.

6. The combination, with a needle-bed, its needles, a cam-carrier and its cams, the face of the central V-cam being slightly back of the faces of the side cams, of the bits or fingers and mechanism for operating the same, substantially as described.

7. The combination of the needle-bed, its needles, the cam-cylinder, the annulus therein, the knitting-cams on said annulus, and the ring interposed between said annulus and cam-cylinder, substantially as described.

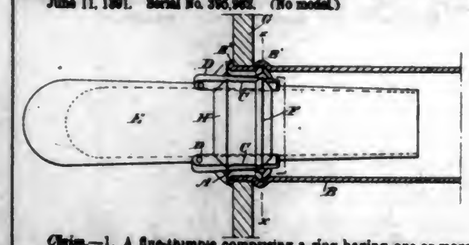
8. The combination of the needle-bed, its needles, the cam-cylinder, the annulus therein, the knitting-cams on said annulus, and the ring interposed between said annulus and cam-cylinder, said ring provided with inprojecting studs or teats which register with the grooves in the needle-bed, substantially as described.

9. The combination of the cam-carrier and its cams, the lowering-cam of said cams being loosely supported on said carrier, so as to be partially rotatable, substantially as described.

10. The combination of the bed-plate of the machine, the needle-bed, its needles, the cam-cylinder, the annulus therein, and the knitting-cams on said annulus, the lower ring-cam being loosely supported on said annulus in frictional contact with the base-plate, substantially as described.

11. The combination of the bed-plate of the machine, the slotted bracket depending therefrom, the set-screw *n'*, the needle-cylinder-engaged by said screw, the adjusting-screw *t*, connected with said cylinder, the supporting-bracket M, through which the latter screw extends, and a nut on this screw mounted in a recess in the bracket, substantially as described.

476,111. FLUE-THIMBLE. JOHN P. ADAMS, Fargo, N. D. Filed June 11, 1891. Serial No. 396,962. (No model.)



Claim.—1. A flue-thimble comprising a ring having one or more splits extending lengthwise and wedges driven lengthwise into the said splits, substantially as shown and described.

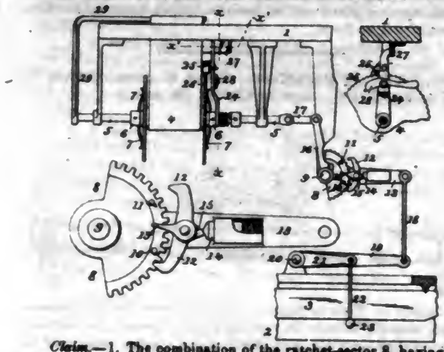
2. In a flue-thimble, the combination, with a ring having one or more splits extending lengthwise to permit the ring to yield, of a mandrel adapted to pass in the said ring and made conical and hollow and formed with a yielding wall adapted to engage the said ring, substantially as shown and described.

3. In a flue-thimble, the combination, with a ring having splits extending lengthwise to form sections, of wedges engaging the said splits to hold the ring-sections in place in the tube, substantially as shown and described.

4. In a flue-thimble, the combination, with a ring having splits extending lengthwise to form sections, of wedges engaging the said splits to hold the ring-sections in place in the tube and a hollow conical mandrel having a yielding wall and adapted to pass into the ring, substantially as shown and described.

5. In a flue-thimble, the combination, with a ring having longitudinal splits to form sections and segmental projections formed on the periphery of the said ring-sections, of wedges engaging the said splits to hold the ring in place in the tube, substantially as shown and described.

476,112. MECHANICAL MOVEMENT. GEORGE W. ANTON, Chicago, Ill. Filed Jan. 12, 1891. Serial No. 377,884. (No model.)



Claim.—1. The combination of the ratchet-sector 8, having pins or studs 10 and 11, the shaft 9, oscillating arm 13, journaled on the shaft, and the double-pointed reversible dog 12, having an inwardly-projecting finger 13, essentially as herein set forth.

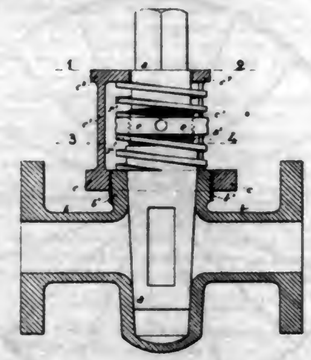
2. The combination of the ratchet-sector 8, having pins or studs 10 and 11, the shaft 9, oscillating arm 13, journaled on the shaft, the double-pointed reversible dog 12, provided with an inwardly-projecting finger 13 and a V-shaped projection 15, both centrally arranged, and the spring-plunger 14 on the arm 13, essentially as set forth.

3. The combination of the ratchet-sector 8, having pins or studs 10 and 11, the shaft 9, oscillating arm 13, journaled on the shaft, the double-pointed reversible dog 12, provided with an inwardly-projecting finger 13, the arms 16, the non-rotary shafts 5, carrying the ink-ribbon spools 4, and means for imparting a vibratory motion to the arm 13, essentially as herein set forth.

4. The combination of the ratchet-sector 8, having pins or studs 10 and 11, the shaft 9, oscillating arm 13, journaled on the shaft, the double-pointed reversible dog 12, provided with an inwardly-projecting finger 13, the arm 16, the non-rotary shafts 5, having stop-collars 6 and spring-fingers 7, the ink-ribbon spools 4, and means for imparting a vibratory motion to the arm 13, essentially as herein described.

5. The combination, with the endwise reciprocating non-rotary shaft 5, carrying the ink-ribbon spool and the arm 24, of the arm 24, carrying a pawl 25, engaging the ratchet-rim 26 of the spool, and the fixed cam-plate 27, having at each end oblique cam-operating faces adapted to operate said arm, substantially as herein set forth.

476,113. COCK OR TAP. ULYSSE ANDRÉ and OLIVIER DURAND, Barcelona, Spain. Filed Feb. 15, 1892. Serial No. 421,648. (No model.) Patented in France Nov. 27, 1891, No. 217,497.

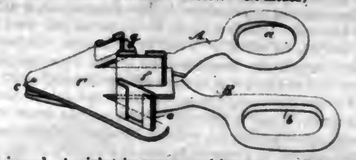


Claim.—1. In a cock or tap, the combination, with a plug, of springs arranged to act in opposite directions on the plug and means for causing the springs to act equally or unequally on the said plug, substantially as described.

2. The combination, with the plug and tap, of a nut screwed to the plug-stem, springs encircling the plug-stem on opposite sides of the nut, and abutments for the ends of the springs opposite the nut, substantially as shown and described.

3. The combination, with the cock-casing and plug, of a nut screwed to the casing so as to encircle the plug, a plate connected with the nut, a nut secured to the plug-stem, and springs encircling the plug-stem between its nut and the casing and between its nut and the plate, substantially as shown and described.

476,114. WICK-TRIMMER. DANIEL L. ANDREWS, Denison, Tex. Filed Sept. 5, 1891. Serial No. 404,819. (No model.)



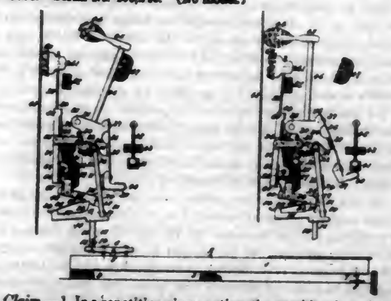
Claim.—1. A wick-trimmer comprising two parallel shear-blades A B, overlapped and pivoted together at their points or outer ends, formed with handles *a b* at their inner ends and formed with concave cutting-edges *a' b'* between their pivotal point and the handles, substantially as set forth.

2. A wick-trimmer comprising a flat plate provided with a guide-slot to receive the wick and a pair of blades pivoted upon the plate parallel therewith and adapted to have their cutting-edges register with the said slot to cut off the wick projecting therethrough, substantially as set forth.

3. A wick-trimmer comprising a pair of shears and a plate pivoted to the shears by the pivot thereof and formed with a series of wick-guiding slots converging at their ends nearest the said pivot, substantially as set forth.

4. In a wick-trimmer, the combination, with a pair of lap-jointed shear cutting-blades pivoted together at their outer ends, of a trifid guide-plate pivoted on the fulcrum of the shear-blades and provided with a depending guide-tube on each limb of the guide-plate, said tubes having different widths, substantially as described.

476,115. REPETITION PIANO-ACTION. JOHN C. ANTON, St. Louis, Mo., assignor of one-half to Philip G. Anton, same place. Filed Oct. 9, 1891. Serial No. 408,246. (No model.)



Claim.—1. In a repetition piano-action, the combination of the pivoted eccentric hammer-butt, the hammer mounted thereon, and the pendent blade 36 and buffer-button that control said hammer-butt and prevent the volunteer restriking of the hammer, substantially as described.

2. In a repetition piano-action, the combination of the pivoted eccentric hammer-butt, the hammer mounted on said butt, the pendent blade-spring secured to the hammer-butt above the level of its pivot-bearing and having a trip-foot below said level, and the adjustable buffer-button that said trip-foot collides with, substantially as described.

3. In a repetition piano-action, the combination of the pivoted eccentric hammer-butt, the hammer mounted on said butt, the pivot on which said butt is journaled, the blade-spring secured to the hammer-butt above the level of its pivot-bearing, the trip-foot at the bottom of said blade-spring on a level below that of said journal-bearing, the fulcrum-cushion 38 on said hammer-butt, and the buffer-button that said trip-foot collides with, substantially as described.

4. In a repetition piano-action, the combination of the pivoted eccentric hammer-butt, the balance plug-weight 35 in said butt, the hammer mounted on said butt, the pendent blade 36, secured to the hammer-butt above the level of its pivot-bearing, the trip-foot at the bottom of said pendent blade on a level below that of said journal-bearings, the fulcrum-cushion 38, arranged as a fulcrum to said pendent blade, the button-rail 43, the adjustable screw-button rod 42, and the cushioned buffer-button secured to said rod, substantially as described.

5. In a repetition piano-action, the combination of the pivoted key, the regulating-frog 4, adjustably attached to said key, the abstract or pedestal 10, mounted on said frog, the extended jack-arm 15,

mounted on said pedestal, the jack-shank 18, secured to said arm, the conical head 20, that surmounts said shank, the pivoted hammer-butt 26, and the saddle in said butt that rides on said head of the jack, substantially as described.

6. In a repetition piano-action, the combination of the pivoted key, the regulating-frog 4 and its rocker-foot 5, adjustably mounted on said key, the abstract or pedestal 10, the extended jack-arm 15 with its bevel butt-cost 17, the jack-shank 18, the conical jack-head 20, the hammer-butt 26, the saddle 33 in said butt that rides said jack-head, the damper-lever 50, the bevel-faced foot of said lever that rides the bevel-butt 17 of said jack-arm, the upwardly-projecting lugs 55 of said extended jack-arm, the underhung lugs 53 on the damper-lever, and the strap-spring 52, that is journaled in said lugs and whose working runner-nose 54 works between said lugs 55, substantially as described.

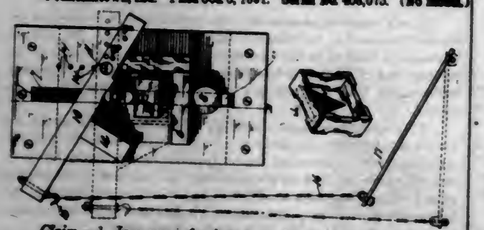
7. In a repetition piano-action, the combination of the pivoted key, the adjustable regulating-frog 4, the abstract 10, the extended jack-arm 15, having the bevel butt-cost 17, the jack-shank 18, the conical cushioned jack-head 20, having the projecting chin 22, the pivoted hammer-butt, the cushioned saddle 33 in said butt, the rocker arc-lug 32, and the adjustable regulating frog-plate 31, that chucks under the chin 22 of the jack-head, arranged to aid the back-throw of the hammer, substantially as described.

8. In a repetition piano-action, the combination of the pivoted key, the adjustable regulating-frog 4, the abstract 10, the extended jack-arm 15, having the bevel butt-cost 17, the jack-shank 18, the conical cushioned jack-head 20, having the projecting chin 22, the pivoted hammer-butt, the cushioned saddle 33 in said butt, the rocker-lug 32, the adjustable frog-plate 31, that chucks under said chin of the jack-head to facilitate the back-throw of the hammer, the damper-lever 50, the bifurcated hanger-bracket 49 in which said damper-lever is journaled, and the lug 25, that projects from the forward side of the jack-shank and works between the forks of the damper-lever to restrain the jack from lateral displacement, substantially as described.

9. In a repetition piano-action, the combination of the key, the center-pin on which said key works, the guide-pin 7, that guides the tappet end of said key, the adjustable regulating-frog 4, the abstract 10, that supports the lifting jack, the extending arm 15 of said lifting-jack with its bevel-butt 17, the damper-lever 50, having the bifurcated bevel-foot 51, that works on said bevel-butt 17, the hanger-bracket 49, secured to the main rail, in which bracket said damper-level is journaled, the reactionary spring 52, the shank 18 of the jack, the conical head mounted thereon, the cushion 24, secured to said shank of the jack, the pivoted hammer-butt, the hammer mounted thereon, the saddle in said hammer-butt mounted on the conical head of the jack, the pendent controlling-blade 36, secured to said hammer-butt above the level of its journal-bearing, the trip-foot secured to said controlling-blade beneath the level of said journal-bearing, and which trip-foot has its return rest on said cushion 24, and the adjustable buffer-button 41, substantially as described.

10. In a repetition piano-action, the combination of the hammer-butt, the hammer mounted on said butt, the balance-lever 70 and the ping weight it carries, the main rail 29, the bifurcated bracket 28, secured to said main rail, the journal-pin 27, secured in said bracket on which said hammer-butt has its journal-bearings, and the button plate 30, secured to said hammer-butt that holds it to its journal-bearings, substantially as described.

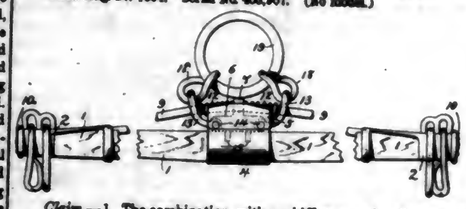
476,116. PRESS FOR HONEY-SECTIONS. FRANCIS M. ABBOTT, Fountaintown, Ind. Filed Oct. 8, 1891. Serial No. 408,075. (No model.)



Claim.—1. In a press for honey-sections, the combination, with the frame having the parts 5 and 6 secured to it, of the beam 7, sliding in a slot in the said frame and provided with the pivoted setter-block 20 and the thrust-block 22, and the lever pivoted to the frame and provided with the part 12, whereby the ends of the section are joined and the comb foundation secured in position, substantially as set forth.

2. In a press for honey-sections, the combination, with the frame provided with the vertical slot 4 and having the parts 5 and 6 secured to it, of the beam 7, sliding in the said slot and provided with the pivoted setter-block 20, the push-button 8, and the thrust-block 22 a spring 18, normally holding the said beam in its raised position, a spring 9, normally holding the said button pressed forward, and a lever pivoted to the frame and provided with the part 12, whereby the ends of the section are joined and the comb foundation secured in position, substantially as set forth.

476,117. WHIFFLETREE. GEORGE M. AYERS, Pittsfield, Pa. Filed Aug. 27, 1891. Serial No. 403,907. (No model.)



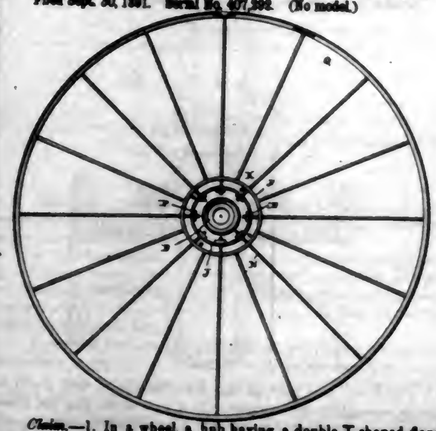
Claim.—1. The combination, with a whiffletree and a clip secured thereto centrally between its ends, of a pair of levers pivotally connected at their inner ends with the said clip, a spring interposed between the two levers and compressed when the latter move toward each other, and a draft-ring flexibly connected with the outer ends of the two levers to swing them toward each other when the draft is applied, substantially as described.

2. The combination, with a whiffletree, of a clip engaging the same, a bearing-block, a pair of levers pivotally engaged with the clip and bearing-block, a truss-rod connected at its extremities with the whiffletree and resting against the bearing-block, and a spring or springs mounted on the truss rod between the two levers, and means for swinging the levers toward each other to increase the spring-tension, substantially as described.

3. The combination, with a whiffletree, of a bearing-block connected therewith and provided with a projecting part or ear, a truss-rod extending through the said projecting part or ear, a pair of levers pivotally engaged with the bearing-block, a pair of springs arranged, respectively, between the levers and the projecting part or ear, and means for swinging the levers toward each other for increasing the tension of the springs, substantially as described.

4. The combination, with a whiffletree, of a clip engaging the same, a bearing-block interposed between the extremities of the clip and provided with a projecting part or ear, a pair of levers connected with the clip and bearing-block by pivot-pins, a truss-rod extending through the levers and the projecting part or ear of the bearing-block, a pair of springs arranged, respectively, between the levers and the projecting part or ear, a draft-ring or similar device, and links connecting the draft-ring or other device with the levers, substantially as described.

476,118. METAL WHEEL. FORTUNE L. BAILEY, Freeport, Ind. Filed Sept. 30, 1891. Serial No. 407,392. (No model.)



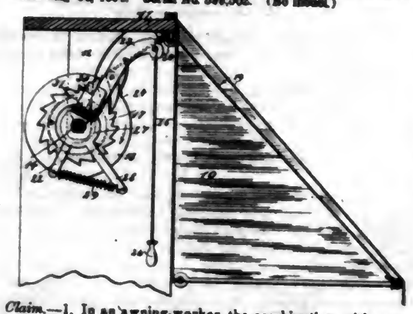
Claim.—1. In a wheel, a hub having a double T-shaped flange upon its exterior, combined with a tire, and spokes which have their outer ends secured to the tire and their inner ends passed through the outer T and secured to the inner T, substantially as shown and described.

2. In a wheel, a hub having an outwardly-extending annular web, the said web having two laterally-extending annular flanges from opposite sides thereof, the said flanges being separated from each other and the inner flange from the hub, the said flanges having transverse perforations which register, combined with a tire, and spokes which have their outer ends secured to the tire and their inner ends passed through the said flanges and held in by suitable means, substantially as specified.

3. A metal hub for a metallic wheel, consisting of the hub portion adapted to receive a boxing, and a double T-flange which extends annularly around the exterior of the said hub and provided with perforations to receive the inner ends of the spokes, substantially as described.

4. A metal hub having inwardly-extending flanges or projections, combined with a boxing which has its inner end to fit the said hub and its center and outer end resting upon the said flanges, whereby oil-chambers are formed, the said boxing having an oil-inlet and the hub an oil-inlet, substantially as specified.

476,119. AWNING-WORKER. JOHN T. BAKER, Chicago, Ill. Filed July 14, 1891. Serial No. 399,502. (No model.)



Claim.—1. In an awning-worker, the combination, with an awning, a spring-roller, and rope secured to the roller and to the awning-frame, of a loosely-mounted lever, mechanism between the lever and roller for operating the latter from the former, and a locking device for the roller adapted to be released by said lever, substantially as described.

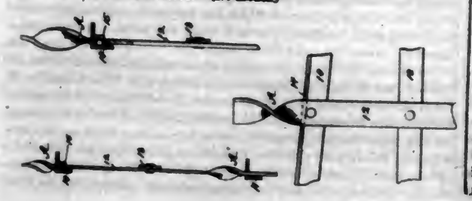
2. In an awning-worker, the combination, with a spring-roller, of a loosely-mounted and laterally-swinging lever, mechanism between the lever and roller for operating the latter from the former, and a locking device for the roller adapted to be engaged by the said lever to release the roller, substantially as herein shown and described.

3. In an awning-worker, the combination, with a shaft and a spring-roller loosely mounted on the shaft and provided with a ratchet-wheel, of a loosely-mounted lever provided with a pawl engaging the ratchet-wheel and a locking-pawl engaging the ratchet-wheel and adapted to be operated by the said lever, substantially as described.

4. In an awning-worker, the combination, with a spring-roller and a ratchet-wheel secured thereto and connected with the roller-spring, of a lever pivoted adjacent to the ratchet-wheel and adapted to swing laterally, a pawl on the lever engaging the ratchet-wheel, a spring-pressed locking-pawl adjacent to the said lever and engaging the ratchet-wheel, and means, as a handled rope, for working the lever, substantially as described.

5. In an awning-worker, the combination, with a stationary shaft, a roller mounted loosely on the shaft, a spring in the roller and connected at one end to the said shaft, and a ratchet-wheel at one end of the roller and connected with the spring, of a hub mounted loosely on the shaft and provided on one edge with a projecting arm and on the opposite edge with a projecting lever, which is hinged to the hub, a pawl carried by the lever to engage the ratchet-wheel, a hub secured to the shaft adjacent to the lever-hub, said hub having on one edge a projecting arm, which is connected by a spring with the arm of the lever-hub, a spring-pressed locking-pawl to engage the ratchet-wheel, and means, as a handled rope, for working the lever, substantially as described.

476,120. FENCE. JULIUS BAKER, Pittsburg, Pa. Filed Sept. 18, 1891. Serial No. 406,068. (No model.)



Claim.—A fence consisting in the upper and lower rails, each having a series of longitudinal slots 14, a series of flat metal pickets extending at their ends through the slots of the respective rails and twisted above both rails, an offset 15, punched through from one side of the pickets and resting against the under side of the top rail, bolts connecting certain of the pickets with the said rails, and a central rail riveted to the pickets between their ends, substantially as set forth.

476,121. BOX. JOSEPH M. BAKER, Louisville, Ky. Filed Feb. 12, 1892. Serial No. 421,293. (No model.)



Claim.—1. A packing-box having its sides A composed of three pieces *a*, *b*, and *c*, glued or cemented together, with the grain of the intermediate piece crossing that of the other pieces, the said intermediate piece being materially thinner than the other pieces, all substantially as shown and described.

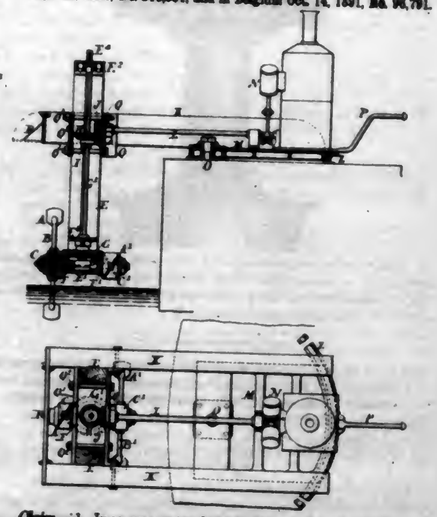
2. A packing-box having its sides A composed of three pieces *a*, *b*, and *c*, fastened together with the grain of the intermediate piece *b*, which piece shall be materially thinner than the other pieces, crossing the grain of the other pieces *a* and *c*, and tenons and mortises uniting the ends of the sides, all substantially as shown and described.

3. A packing-box having the slotted sides A, in combination with an end piece and the staple *c*, seated in the slot and secured at one end to the end piece and engaging the sides at the other end.

4. In combination with sides A, grooved, as at *d*, and slotted, as at *f*, an end piece seated in the groove, and the staple *c*, mounted in the slot and engaging the end piece and side.

5. In combination with sides A, slotted, as at *f*, the end piece, the staple *c*, seated in the slot and engaging the side and end piece, and the strip *g*, applied to the back of the staple.

476,122. APPARATUS FOR PROPELLING VESSELS. HENRY BARCROFT, Newry, Ireland. Filed Oct. 21, 1891. Serial No. 408,868. (No model.) Patented in England Apr. 20, 1891, No. 6,809; in France Sept. 25, 1891, No. 216,351, and in Belgium Oct. 14, 1891, No. 96,791.



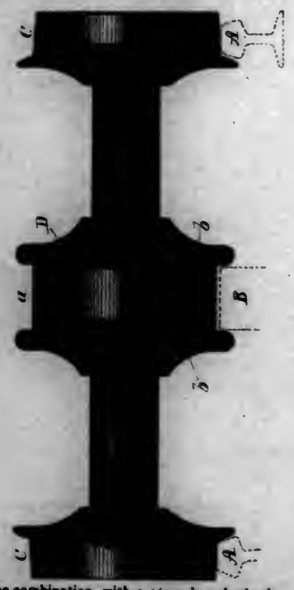
Claim.—1. In an apparatus for propelling boats, the combination of two oppositely-revolving sets of propeller-blades having their horizontal axes of rotation situated at any desired level and carried by a free hanging vertically-sliding frame, a horizontal support overhanging the stern of the boat and adapted to support the vertical hanging frame in variously-adjusted positions, a vertical shaft carried by the

vertically-hanging frame and having at its lower end a bevel-wheel gearing with diametrically-opposite bevel-wheels attached to the bosses of the two sets of propeller-blades, so as to rotate these in contrary directions on their fixed axes, and a bevel-wheel carried by the horizontal support, through the boss of which bevel-wheel passes the vertical shaft connected thereto by tongue and groove or equivalent device, so that the bevel-wheel will impart its rotation to the shaft while this is free to slide through the wheel, this being suitably geared to a motor-engine, substantially as described.

2. In an apparatus for propelling boats, the combination of two sets of propeller-blades A, adjustably carried in bosses C, mounted loosely on an axis D, fixed on the lower end of a vertical frame E, adjustable in overhanging supports K, said bosses having bevel-wheels F, geared to opposite sides of a bevel-wheel G on a vertical shaft G', carried by the frame E and connected by gearing H J to the shaft L of a motor-engine mounted on a revoluble platform carrying the supports K of the vertical frame, substantially as described.

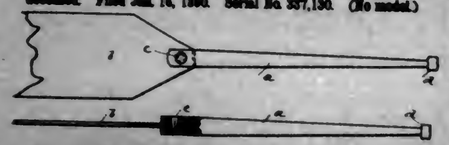
3. In an apparatus for propelling boats, the combination of two sets of propeller-blades A, adjustably carried in bosses C, formed as the naves or hubs of ordinary road-wheels and running on a fixed axis D, formed as an ordinary carriage-axle and carried by a vertically-sliding frame, the said bosses having bevel-wheels fixed or formed thereon, by which they receive rotary motion in contrary directions from a bevel-wheel on a vertical shaft carried by the said vertically-sliding frame and receiving rotary motion from a suitable motor.

476,123. SAFETY DEVICE FOR RAILROAD-TRUCKS. JOSEPH M. BOSWICK, Janesville, Wis. Filed Sept. 8, 1891. Serial No. 405,072. (No model.)



Claim.—The combination, with a car-axle and wheels on the end thereof, of an intermediate wheel located on the axle, the tread of the intermediate wheel being of the same diameter as the treads of the outside wheels, substantially as set forth.

476,124. TAG FOR BUTT-WELD TUBING. EDWARD BOWIN, McKeesport, Pa.; Martha A. Bowin administratrix of said Edward Bowin, deceased. Filed Jan. 16, 1890. Serial No. 337,130. (No model.)

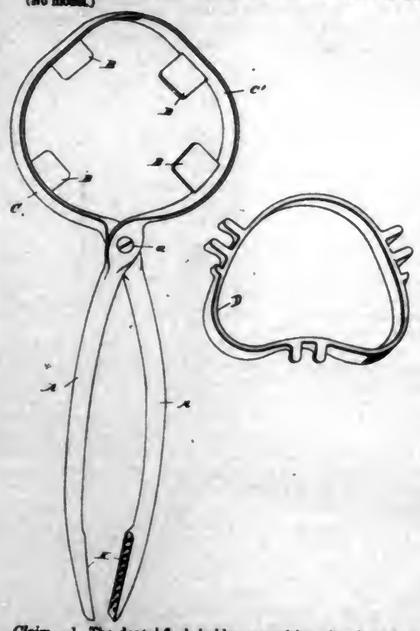


Claim.—1. The improved device for drawing pipe-blanks or skelps having a forked end passing on each side of a skelp, and a pin for passing through an aperture in the edge of the skelp when placed in the forked end, whereby the skelp is secured firmly to the tag, and thus enabled to be drawn through the welding-die and readily released from the tag without essential loss of material, substantially as specified.

2. The improved device for drawing pipe-blanks or skelps having a forked end passing on each side of the skelp, in combination with a separate pin for passing through apertures in said forked end, whereby the skelp is firmly secured to the tag and thus enabled to be drawn through the welding-tie and readily detached from the tag without the essential loss of material, substantially as described.

3. The improved device for drawing pipe-blanks or skelps herein shown and described, consisting of a tag or shank provided with a forked end forming rigid jaws separated by an intervening slot and passing on each side of the skelp, in combination with an unattached separate fastening-pin for passing through apertures in the said forked end, whereby the skelp is firmly secured to the tag and thus enabled to be drawn through the welding-die and readily detached from the tag without the essential loss of material, as set forth.

476,125. DENTAL-FLASK HOLDER. ENOCH A. BRYANT, Aspen, Colo. Filed Jan. 10, 1891. Renewed Apr. 14, 1892. Serial No. 429,134. (No model.)



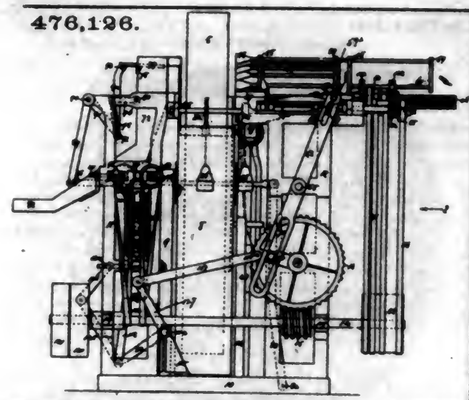
Claim.—1. The dental-flask holder comprising the pivoted jaws having the inwardly-extending lugs or projections around their inner surfaces, substantially as specified.

2. The dental flask holder comprising the pivoted jaws of irregular semicircular form, having the inwardly-extending lugs or projections around their inner surfaces and the inner surface of the rear portions of the handles serrated or roughened, substantially as and for the purpose specified.

476,126. BOTTLE-WASHING MACHINE. GEORGE BURGESS, Jr., Sheffield, England. Filed Jan. 15, 1890. Serial No. 337,019. (No model.)

Claim.—1. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, having through-apertures 6, in which the bottles are soaked and internally brushed, continuously-rotating and intermittently advancing and retiring brushes 27, arranged at one side of the carrier, by which the bottles are internally brushed while supported by the carrier and while the latter is at rest, simultaneously advancing and retiring ejectors 28, arranged at the same side of the carrier, by which the soaked and internally-brushed bottles are ejected from the carrier, intermittently-acting slats 77 and shutters 79, arranged at the other side of the carrier, by which the bottles ejected from the carrier are received and guided, mouths downward, to mesh for externally brushing them and internally rinsing them and are subsequently passed onto a delivery-table arranged at the same side of the carrier, continuously-rotating stationary brushes 75, by which the bottles are externally brushed both previously and subsequently to their being internally rinsed, intermittently-acting stationary rinsing-pipes 76, and intermittently-acting retiring and advancing carriers 107, by which the bottles to be rinsed are received from between the brushes 75, lowered onto the rinsing-pipes 76, and subsequently returned between such brushes 75 into position to be passed onto the delivery-table, as set forth.

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being internally rinsed, intermittently-acting stationary rinsing-pipes 76, and intermittently-acting retiring and advancing carriers 107, by which the bottles to be rinsed are received from between the brushes 75, lowered onto the rinsing-pipes 76, and subsequently returned between such brushes 75 into position to be passed onto the delivery-table, as set forth.

2. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, provided with apertures 6, in which the bottles are soaked and internally brushed, continuously-rotating and intermittently advancing and retiring brushes 27, arranged at one side of the carrier, by which the bottles are internally brushed while supported by the carrier and while the latter is at rest, and simultaneously advancing and retiring ejectors 28, arranged at the same side of the carrier, by which series of previously-soaked and internally-brushed bottles are ejected from the carrier, as set forth.

3. In machinery for washing bottles, in combination, a brush 27, socket 37, square rod 48, sleeve 49, and continuously-rotating pulley 50, a fixed supporting-bearing 33, and an endwise-reciprocating supporting-bearing 53, a sleeve 38, and contained spring 39, operating on the socket 37, and connected weight 40, intermittently advancing the brush, a simultaneously advancing and retiring guided brush-shield 29, advanced by a connected weight 45, the said brushes, shields, ejectors, and connected means being all in series of any required number, and levers 63 and 64, by which the series of brushes 27, shields 29, and ejectors 28 are simultaneously retired with a positive movement, as set forth.

4. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, provided with apertures 6, in which the bottles are soaked and internally brushed, intermittently advancing and retiring ejectors 28, arranged at one side of the carrier and by which the soaked and internally-brushed bottles are ejected therefrom, and intermittently-acting slats 77 and shutters 79, arranged at the other side of the carrier and by which the bottles ejected from the carrier are received and guided, mouths downward, between externally-operating brushes 75 and onto internally-rinsing pipes 76 and subsequently passed onto a delivery-table 82, all arranged at the same side of the carrier, as set forth.

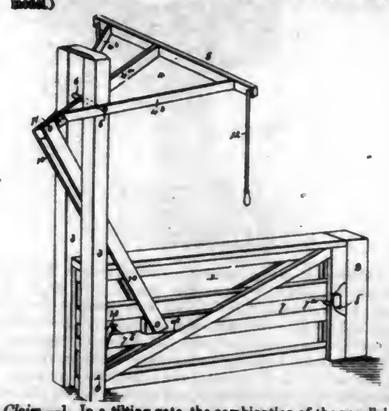
5. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, provided with apertures 6, in which the bottles are soaked and internally brushed, intermittently-acting slats 77 and shutters 79, arranged at one side of the carrier and by which the bottles ejected from the carrier after having been soaked and internally brushed while supported thereby are received and guided, mouths downward, between externally-operating brushes 75 and onto internally-rinsing pipes 76 and are subsequently passed onto a delivery-table 82, all arranged at the same side of the carrier, continuously-rotating stationary brushes 75, by which the bottles are externally brushed both previously and subsequently to their being internally rinsed, intermittently-acting stationary rinsing-pipes 76, and intermittently-acting retiring and advancing carriers 107, by which the bottles to be rinsed are received from between the brushes 75, lowered onto the rinsing-pipes 76, and subsequently returned between such brushes 75 into position to be passed onto the delivery-table, as set forth.

6. In machinery for washing bottles, in combination, intermittently-acting slats 77 and shutters 79, by which the bottles after being soaked and internally brushed are received and guided, mouths downward, between externally-operating brushes 75 and internally-rinsing pipes 76 and are subsequently passed onto a delivery-table 82, continuously-rotating brushes 75, by which the bottles are externally brushed both previously and subsequently to their being internally rinsed, intermittently-acting stationary rinsing-pipes 76, and intermittently-acting retiring and advancing carriers 107, by which the bottles to be rinsed are received from between the brushes 75, lowered onto the rinsing-pipes 76, and subsequently returned between such brushes 75 into position to be passed onto the delivery-table, as set forth.

7. In machinery for washing bottles, in combination, a channeled frame 72, an intermittently-operating slat 77, connected levers 94, 91, 89, and 83, and operating-cam 86×, and an intermittently-operating shutter 79, connected to and operated by such connected series of levers, such slats and shutters being in series of any required number, as set forth.

8. In machinery for washing bottles, in combination, a stationary force-pipe 104, a series of rinsing-pipes 76, intermittently-operating cock 124, and connected levers 126, 125, 113, and 127, and rod 117, operating crank-pin 116, and an intermittently-operating carrier 107, cups 118, and supporting-rods 112, connected to and operated by such connected series of levers, as set forth.

476,127. GATE. CHARLES CARDWELL, Commercial Point, Ky. Filed May 6, 1891. Renewed Apr. 18, 1892. Serial No. 429,705. (No model.)



Claim.—1. In a tilting gate, the combination of the parallel posts 3, the gate pivoted at its rear lower corner between the same, the V-shaped frame 4, pivoted at the upper ends of the parallel posts 3, the pivoted connecting-rods extending between the gate and the pointed outer end of the said frame, and the transverse bar 5, bolted to the wide end of the V-frame and having the end cords 12, substantially as set forth.

2. The combination, with the latch-post having the notch 8 and the parallel posts 3, of the gate 1, pivoted at its lower rear corner between the posts 3, the sliding latch 7, the spring 13, bearing against the rear end of the said latch, the V-frame 4, pivoted at the upper ends of the posts 3, the pivoted connecting-rods 10, arranged as specified, and the transverse bar 5, bolted to the wide end of the V-frame and having the end cords 12, substantially as set forth.

476,128. CONDUIT FOR ELECTRIC RAILWAYS. WALTER F. CARR and CHARLES F. PERRIN, Minneapolis, Minn. Filed Aug. 6, 1891. Serial No. 401,894. (No model.)

Claim.—1. A conduit provided with removable arch blocks spanning the parts of the arch adjacent to the slot-opening, the blocks being detachably secured together and held in working position by lugs and lug-seats, substantially as described.

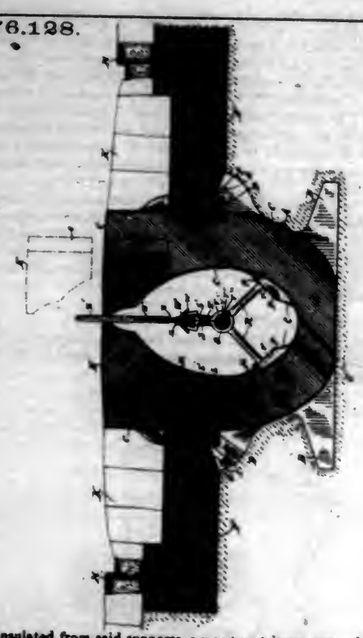
2. In a street-railway conduit constructed in sections, the combination, with sections having their walls continuous and integral from the slot-opening, of other sections located at suitable intervals provided with removable arch blocks seated in the side walls of the section and spanning the arch adjacent to the slot-opening.

3. The combination, with the track-rails, of the conduit having tie-seats on the exterior of its side walls and the ties having their inner ends resting in the said tie-seats and their outer ends secured to the rails, the said seats and ties being constructed with interlocking parts, so as to prevent endwise displacement of the ties, substantially as described.

4. The combination, with the ties having notches, of the conduit having the tie-seats on the exterior of its side walls provided with openings to receive the end of the ties and with locking lugs or projections adapted to engage the notches on the tie and hold the same in position, substantially as described.

5. In a conduit system of surface electric railways, the combination, with the conduit composed of insulating material, of supports secured to the walls of the conduit, a main wire or conductor secured

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on and insulated from said supports, a wooden stringer secured to the top of said supports, a trolley wire or conductor on the top of said stringer, and contact-rods or sub-feed-wires passing through said stringer and insulated from said supports connecting the said main conductor and the trolley-conductor, substantially as described.

6. In a conduit system of surface electric railways, the combination, with the conduit, of the main wire or conductor, the trolley wire or conductor, the wooden stringer, and a support for the said stringer and conductors securable to the inner walls of the conduit, having a divided head, the members of which are capable of separation to receive between them the main conductor and the stringer and are capable of being clamped together to secure the said parts in working position, substantially as described.

7. The combination, with the main wire and the wooden stringer for holding the trolley-wire, of supports for the same securable to the inner walls of the conduit, each of which supports is provided with a hollow hub and a pair of clamping-jaws formed continuous therewith, one member of which is pivotally connected to the body of the hub, adapted when in its open position to receive the main wire into its seat on the hub and the wooden stringer onto the half-seat of the other jaw, and to hold the said parts in their working position when the jaws are closed and locked together, substantially as described.

8. The combination, with the conduit and the conductor-supports securable thereto, having the clamping-jaws, of the wooden stringer supported by the jaws when in their closed position and provided with projecting eaves overreaching the ends of the jaws for shedding the water clear of the same, substantially as described.

9. The combination, with the conduit, of the supports for the conductors, each of which consists of a three-part bracket having divergent legs securable to the walls of the conduit, each of which is of oval or angular form in cross-section with the ridge of the same uppermost for the better shedding of dust, dirt, water, and other matter.

10. The combination, with the conductor-supports having legs terminating in expanded feet, of the conduit provided with correspondingly-shaped seats to receive the said feet, and means of securing the same thereto, substantially as described.

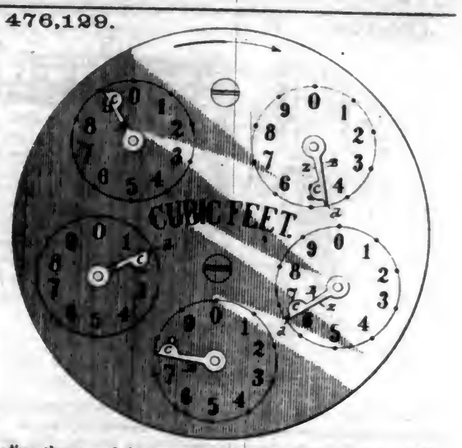
11. The combination, with the conductor-support having the clamping-jaws, one of which is pivoted, of the side clamps carried by one of the jaws for securing the clamps in their closed position, substantially as described.

476,129. INDEX-HAND FOR COUNTING-REGISTERS. ROBERT CAMPBELL, Rochester, assignor to the Thomson Meter Company, New York, N. Y. Filed Oct. 13, 1891. Serial No. 408,518. (No model.)

Claim.—1. In a counting-register, an index-hand the following edge of which is substantially straight or radial to the center of rotation of the hand, while the advancing edge of the hand is provided with a lateral projection, substantially as described.

2. The combination, with the dial of a counting-register having

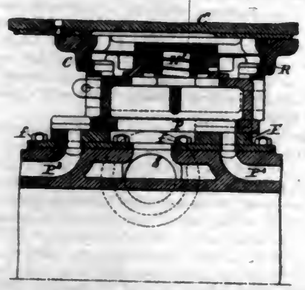
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indices thereon, of the index-hands the following edges of which are substantially straight or radial to the center of rotation of the hands, while the advancing edges of the hands are provided with lateral projections adapted to eclipse the indices in the direction toward which the pointers are traveling, substantially as described.

3. In a counting-register, an index-hand having one side practically straight, and the other side provided with a lateral projection adapted to eclipse the indices toward which it is traveling, substantially as described.

476,130. SLIDE-VALVE FOR STEAM-ENGINES. WALTER C. CRUNCH, Brixton, England. Filed May 2, 1891. Serial No. 391,388. (No model.) Patented in England May 8, 1890, No. 7,127; in France Feb. 10, 1891, No. 211,314; in Belgium Feb. 19, 1891, No. 93,220; in Italy May 19, 1891, LVIII, 97, and in Austria-Hungary Oct. 6, 1891, No. 19,313 and No. 47,057.



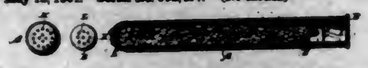
Claim.—1. A slide-valve for a steam or other fluid-pressure engine, having an internal cavity arranged to be supplied with working fluid through a port in the cylinder-facing, a central port having the inner edges of its face arranged to uncover for supply and to cover for cut-off, and ports leading to the ends of the cylinder and having the outer edges of their faces arranged to cover the said ports and to uncover them for discharge of exhaust into the case outside of the slide-valve, substantially as described.

2. A slide-valve for a steam or other fluid-pressure engine, having an internal cavity supplied with working fluid through a port in the cylinder-facing, having a middle port and two end ports governing double ports to each end of the cylinder, and having within its cavity eduction-passages with ports, said passages opening into the slide-case, substantially as described.

3. In combination with a slide-valve having an internal cavity supplied with working fluid through a port in the cylinder-facing, and a circular cap pressed against the cover of the slide-valve case and packed by a spring-ring carried on the upper edge of the slide-valve, substantially as and for the purpose described.

4. A slide-valve having an internal cavity supplied with working fluid through a port in the cylinder-facing and having a circular cap pressed against the cover of the slide-case and in which the forms and dimensions of the rubbing-surfaces are so arranged that the pressures toward the cylinder and toward the cover nearly balance each other and that the stationary surfaces are overpassed by the reciprocating surfaces, substantially as and for the purposes described.

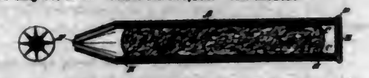
476,131. INHALER. HENRY D. CUSHMAN, Three Rivers, Mich. Filed May 12, 1891. Serial No. 392,497. (No model.)



Claim.—1. An inhaler composed of the combination of a hollow casing open at both ends and a hollow sliding sleeve also open at both ends and nearly of the same length as the casing, said sleeve adapted to contain medicament and to slide longitudinally within the casing and by such movement to unstop the openings both in the sleeve and in the casing at both ends and to close them in like manner, substantially as set forth.

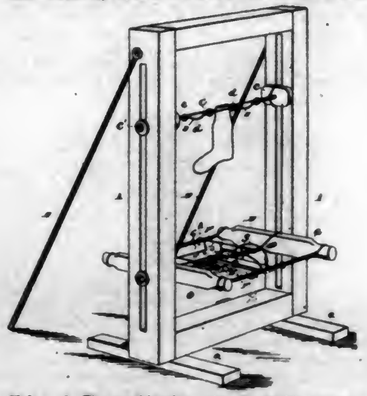
2. In an inhaler, the combination, with a casing open at both ends, of a sleeve also open at both ends, adapted to slide longitudinally with respect to the casing and by such movement to open or close passages through the inhaler, and stop mechanism for limiting the movement of the sleeve with respect to the casing, substantially as set forth.

476,132. INHALER. HENRY D. CUSHMAN, Three Rivers, Mich. Filed May 18, 1891. Serial No. 393,168. (No model.)



Claim.—In an inhaler, the combination, with a screw-threaded casing open at both ends, of a sleeve, also open at both ends and screw-threaded and adapted to be rotated to simultaneously unstop the openings in the casing and to close them, substantially as set forth.

476,133. DISPLAY-STAND. SAMUEL T. DICKENS, Eureka Springs, Ark. Filed July 31, 1891. Serial No. 401,281. (No model.)



Claim.—1. The combination, with a suitable support, of one or more sets of parallel wires secured thereto, means for adjusting the tension of said wires, and rings or collars sliding thereon, substantially as specified.

2. The combination, with a suitable support, of one or more sets of parallel wires secured thereto, one of said wires having loops formed therein, means for adjusting the tension of said wires, and collars or rings sliding on each set thereof, substantially as specified.

3. A display stand or rack comprising a frame, the feet hinged or pivoted thereto, and the pivoted brace-rods, said frame having therein parallel clamping-wires provided with sliding binding rings or collars, substantially as specified.

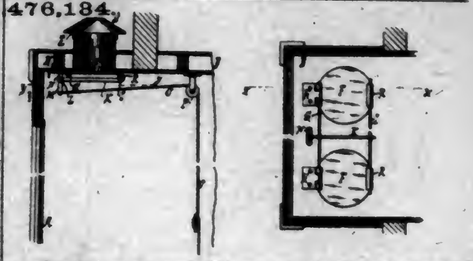
4. A display stand or rack comprising a frame adjustable with relation to its support, parallel clamping-wires having collars or rings held in said frame, and an adjustable display-frame below said wires, substantially as specified.

5. The display stand or rack comprising the frame having the parallel clamping-wires therein and the display-frame adjustably held in said main frame, said display-frame having the parallel wires, the rack, and the spring clamps or holders, substantially as specified.

476,134. VENTILATOR. FRANK DUBSTEWALD, Brooklyn, N. Y. Filed Mar. 28, 1892. Serial No. 426,577. (No model.)

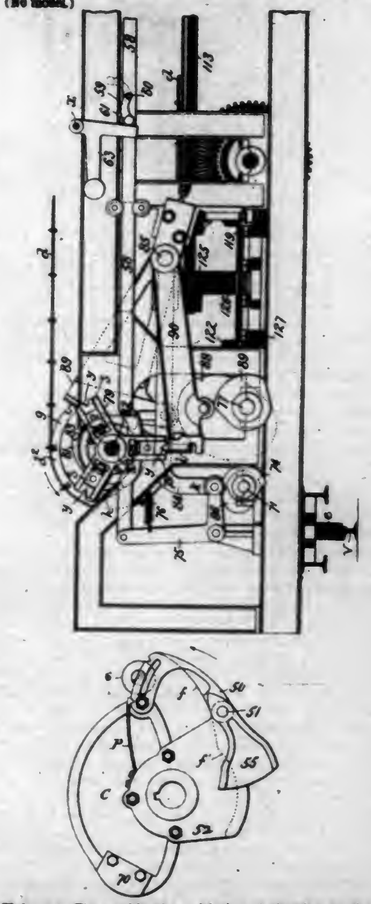
Claim.—The combination, with a ventilator, of a series of swinging lids or covers, a bar or rod I for connecting said lids, a tongue or rigid connection R, secured directly to the lids and joined to the bar

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or rod, and a lever or actuator K for operating the lids simultaneously, substantially as described.

476,135. APPARATUS FOR PRINTING OIL-CLOTH. GEORGE F. EISENHARDT, Philadelphia, Pa. Filed July 31, 1891. Serial No. 401,395. (No model.)

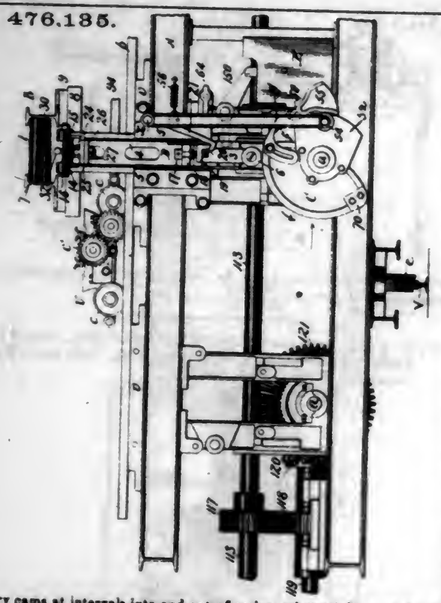


Claim.—1. The combination, with the printing-frame, of cams for lifting said frame and supplemental cams adjustable to depress said frame or to maintain it elevated and a flange adjacent to each supplemental cam arranged to impart the final pressure to the frame in printing, substantially as set forth.

2. The combination, with the reciprocating frames and cams for raising the same, of secondary cams and means for adjusting the secondary cams to depress the frames or to maintain them elevated, substantially as set forth.

3. The combination, with the printing-frames of an oil-cloth-printing machine, of cams for elevating the said frames, secondary cams for depressing the same, and means for automatically shifting the second-

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ary cams at intervals into and out of action, substantially as set forth.

4. The combination, with the printing-frames, of rotating cams arranged to make contact with rolls upon the frames and provided with secondary cams adjustable to engage the rolls from above or below, substantially as set forth.

5. The combination of the printing-frames, rotating cams for raising said frames, and secondary cams pivoted to the rotating cams, and means for shifting the secondary cams to carry them above or below the rolls on the frames, substantially as described.

6. The combination of a printing-frame having vertical side pieces and rollers 6 and cams C, arranged to act upon the rollers at one side, and movable cams *f*, arranged to act upon the rollers at the opposite side when in one position and to constitute extensions of the cams C when in the other position, substantially as set forth.

7. The combination, with the printing-frame, side pieces, and rollers 6, of revolving cams G below said rollers and supplemental cams *f*, pivoted to the cams C and adjustable to positions to pass below or above the rollers 6, substantially as set forth.

8. The combination of the printing-frame, stop, cam for lifting the frame, a movable cam for depressing the frame, a detent, and connections between the movable cam and the detent arranged to shift the movable cam according to the position of the detent, substantially as described.

9. The combination of the printing-frame, its stop and detent, cam for elevating the frame, movable cam for depressing the frame, and an arm *g*, connected with the detent and arranged in position to shift the movable cam according to the position of said arm, substantially as set forth.

10. The combination, with the printing-frame, stop, detent, and arm *g*, of a revolving cam C and cam-lever pivoted to the cam C and having a wing-shaped projection 55 arranged to engage a projection on the arm G to shift the same, substantially as set forth.

11. The combination, with the printing-frame and stops at opposite sides thereof, of detents connected to a transverse shaft *x*, means for rocking said shaft in one direction, and a longitudinal reciprocating bar 58, having a pawl movable thereon for rocking the shaft in the opposite direction, substantially as set forth.

12. The combination, with the printing-frames, stops, shafts *x*, detents, and reciprocating bar 58, of pawls on the bar adapted to be moved into and out of position to operate the shafts, substantially as described.

13. The combination, with the band-carrying wheel, the supporting-shaft, the arms, and the reciprocating dog *i*, of notched blocks *s*, adjustable upon said arms, substantially as set forth.

14. The combination, with the ink-troughs, of an operating crank-shaft and connections, including a rod, connected with said crank and arranged to occupy a position on the dead-center when the ink-troughs are in either of their extreme positions, and means for intermittently rotating said shaft, substantially as set forth.

15. The combination, with the ink-trough, crank-shaft 102, lever 93, and connecting-bars 92 94, of the crank-shaft 116, pivoted lever 95, connected with the latter, shaft 98, a ratchet thereon, arm 99, carrying a pawl engaging the ratchet, rod 97, connecting said arm and lever 95, and gearing connecting the shafts 98 and 102, substantially as and for the purpose set forth.

16. The combination, with the reciprocating trough, driving-shafts, and connections, of a brake device and means for applying the same as the troughs reach the limit of their movements in either direction, substantially as set forth.

17. The combination, with the reciprocating troughs, shafts, and connections for driving the same, of a pulley upon said shaft, a band encircling said pulley, a lever connected with the band, and a cam arranged to swing the lever to tighten the band as the troughs approach the limit of their movement in either direction, substantially as set forth.

18. The combination, with the main frame of the machine, and a series of printing-frames, cross-shafts, and frame-operating devices, of a continuous driving-shaft running the length of the machine, a counter-shaft to each pair of printing-frames, and gears between each counter-shaft and said driving shaft and between the cross-shafts of each pair of printing-frames and each counter-shaft, substantially as set forth.

19. The combination, with the printing-frames, the driving-shaft running the length of the machine, the cross-shafts, and connections between the latter and said frames, of a counter-shaft for each pair of cross-shafts, gearing between said driving-shaft and counter-shafts, and pinions at the ends of the latter shafts, and bevel-wheels upon each pair of adjacent cross-shafts, said latter wheels being upon opposite sides of the counter-shaft, substantially as set forth.

20. The combination, with the printing-frames, cross-shafts, and connections between the latter and the frames, of a continuous driving-shaft extending the length of the machine, a counter-shaft for each pair of cross-shafts, said counter-shafts being parallel with and below the driving-shaft and gear thereto, and gearing between each counter-shaft and the adjacent pair of cross-shafts, substantially as described.

21. The combination, with the ink-trough and the inking-roller turning therein, of a stationary plate or disk at the end of the roller and forming a flange projecting beyond its surface, substantially as described.

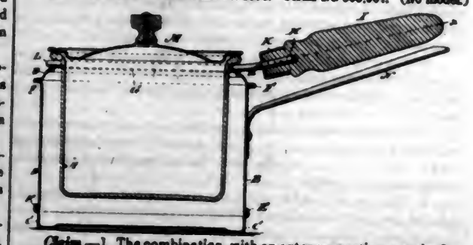
476,136. GRADUATED MEASURING-VESSEL. JOHN P. BUSTIN, New York, N. Y. Filed Aug. 25, 1891. Serial No. 403,680. (No model.)



Claim.—1. A measure consisting of an opaque vessel having a series of independent graduated lines of weights and measures indented thereinto, so that they are visible inside and outside the vessel, substantially as described.

2. A measure consisting of a metallic vessel having a series of independent scales of weights and measures formed by indentations in the metal to render the scales visible inside and outside thereof, substantially as described.

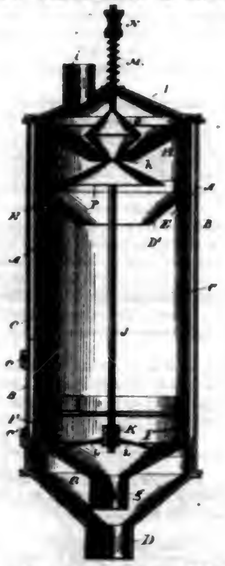
476,137. COOKING OR CULINARY VESSEL. JOHN P. BUSTIN, New York, N. Y. Filed June 11, 1891. Serial No. 395,907. (No model.)



Claim.—1. The combination, with an outer supporting-vessel, of an inner vessel having a plain or smooth body or side and a spring-clamp for said inner vessel, said spring-clamp being provided with a handle portion and said handle portion and spring-clamp being rigidly connected or formed of one piece and being confined to and located wholly at the upper part of the inner vessel, said spring-clamp being located outside the boundary of the side or body of the inner vessel, so as to project therefrom and rest upon the exterior of the upper rim of the outer vessel, substantially as described.

2. The combination, with an outer supporting-vessel having a handle made to extend from one side thereof, of an inner vessel having a plain or smooth body or side and provided with a clamp rigidly connected to or formed in one piece, with a handle portion made to correspond with or sit upon the handle of the outer vessel, said clamp being located at the upper part of the inner vessel and outside the boundary of the side or body of the inner vessel, so as to project therefrom and sit or rest upon the exterior of the upper rim of the outer vessel, substantially as described.

476,138. WHEAT-STEAMER. FRANK A. EVANS, Waterville, Minn. Filed Jan. 15, 1892. Serial No. 418,160. (No model.)



Claim.—1. In a wheat-steamer, a steam-jacketed cylinder having a series of steam-openings communicating with the interior thereof and a guide at its lower end, a hopper-pan removably fitted in the upper end of the cylinder and provided with a circular discharge-opening, a conical cover inclosing said hopper, a vertically-movable regulating discharge-pan moving in the guide at the lower end of the cylinder, a spring-supported valve-rod connected with said movable pan, and a conical valve carried by said valve-rod within the hopper-pan and normally held above the discharge-opening therein, substantially as set forth.

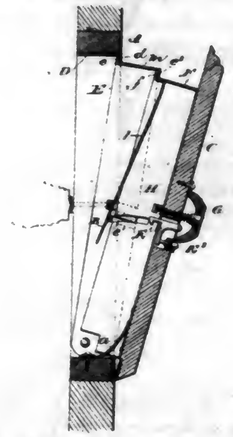
2. In a wheat-steamer, the combination of a cylinder having a series of steam-openings and an offstanding circular guide-flange secured to its lower inner edge, a flanged regulating discharge-pan working under said guide-flange, a hopper having a circular valve-opening, a spring-supported valve-rod connected to said movable pan, and a double-cone valve secured to said valve-rod and working in and over said valve-opening, substantially as set forth.

3. In a wheat-steamer, the combination of a cylinder having a series of steam-openings, a movable regulating discharge-pan working in and over the lower end of the cylinder, an annular deflecting-shelf secured within the cylinder over the steam-openings, a hopper having a valve-opening, a spring-supported valve-rod connected to said movable discharge-pan, a valve secured to said valve-rod within the hopper, and a spreading-disk connected with said valve-rod and located over said annular deflecting-shelf, substantially as set forth.

4. In a wheat-steamer, the combination of a cylinder having a series of steam-openings, a movable regulating discharge-pan inclosing and working within the lower end of said cylinder, an annular deflecting-shelf secured within the cylinder over the steam-openings, a hopper having a valve-opening, a spring-supported valve-rod connected to said movable discharge-pan, a double-cone valve carried by said valve-rod over and within said valve-opening, and a conical spreading-disk secured at its apex to said valve-rod directly below said valve and extending laterally to a point over said deflecting-shelf, substantially as set forth.

5. In a wheat-steamer, a jacketed cylinder inclosing a steam-space and provided with a series of interior steam-openings, a movable regulating discharge-pan working in and over the lower end of the cylinder, a deflecting-shelf secured within the cylinder over the steam-openings, a hopper having a valve-opening, a spring-supported valve-rod connected to said pan, a valve secured to said valve-rod within the hopper, and a spreading-disk connected to said valve-rod and located over said deflecting-shelf, substantially as set forth.

476,189. HOUSE-DOOR LETTER-BOX. JACK A. FAW, Bristol, Tenn. Filed Sept. 24, 1891. Serial No. 406,724. (No model.)



Claim.—1. In a mail-box or letter-receptacle, a frame having an extensible section pivoted within the opening of the frame, a hinged door carrying a section adapted to engage with the pivoted section, said sections being slotted, as shown, a cross-bar carried by the main frame, and a latch carried by the door and adapted to engage with the cross-bar, substantially as shown, and for the purpose set forth.

2. In a letter box or receptacle, a frame having a door hinged thereto, a cross-bar carried by the frame, a latch attached to the door so as to engage with the cross-bar, and means for sounding an alarm carried by the door and frame, substantially as shown, and for the purpose set forth.

3. In a letter box or receptacle, the combination of an apertured frame having a downwardly-extending ledge *a*, a section E, pivotally secured at its lower end to the frame, a door C, carrying a section F, which is adapted to engage with the section E, and a hinge connecting the door C to the frame A, the section E having an aperture *m*, substantially as set forth.

4. In a letter-box, the combination of an apertured frame A, having a depending flange at its upper end, a section E, pivoted at its lower end to the frame and provided at its upper end with an upwardly-projecting flange for engagement with the downwardly-extending flange of the frame A, an aperture or slot *m* in the upper portion of said pivoted section, a door hinged at its lower end to the frame and provided with a section F, having an upturned flange which engages with the downturned flange of the section E, a spring for normally extending said sections, a cross-bar B, carried by the frame A, and a latch carried by the door for engagement therewith, the side pieces of the sections E and F being slotted, substantially as set forth.

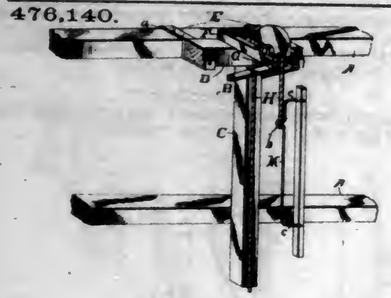
5. The combination, in a letter or mail box composed of an apertured frame, of pivoted section E, hinged bar, a cross-bar B, with which locking mechanism engages, and a spring guard-plate I, carried by the section F, substantially as shown, and for the purpose set forth.

6. In a letter-box, the combination of a frame having a door hinged thereto, a pivoted section connecting the frame and door, a latch carried by the door and adapted to engage with a bar carried by the frame, so as to hold the door normally closed, and an alarm mechanism carried by the door and frame, substantially as set forth.

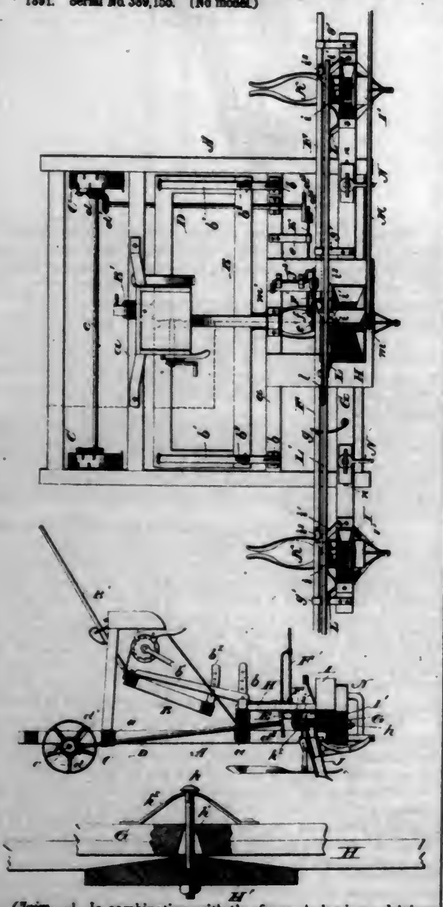
476,140. TOBACCO-HOISTING DEVICE. NATHEN I. FRIDELL, Fair Dealing, Ky. Filed Dec. 3, 1891. Serial No. 413,942. (No model.)

Claim.—The improved tobacco-hoisting device, substantially as described, comprising the cross-head, the bar connected to and depending from said cross-head, the hanger-arms E, fixedly connected to and extending laterally from the cross-head and adapted to engage a tier-pole, the hanger-beam connected to the cross-head and extending laterally therefrom in a direction opposite to the arms E, a pulley journaled in said hanger-beam, a hoisting-cable taking over said pulley, and a hook connected to one end of said cable and adapted to engage a hanger-stick, substantially as and for the purpose set forth.

476,140.



476,141. COMBINED HARROW AND CORN-PLANTER. FRANCIS R. HARVEY and BENJAMIN F. HARTMAN, Pickering, Pa. Filed Apr. 16, 1891. Serial No. 389,153. (No model.)



Claim.—1. In combination with the frame A, having a driving-shaft, and disk d^3, carrying a projection d^3, a bar for actuating the seed-slide removably connected to a pivoted bar G, a pitman E, pivoted to the bar F, and crank-arms f', pivoted to the bar G adjacent to the seed-slide and connected to the reciprocating bar F by links f^3, substantially as shown, and for the purpose set forth.

2. In combination with the frame A, a bar G, carrying the seed-planting mechanism, said bar being pivotally connected to the frame A by a horizontal bolt A, and supplemental means for holding the bar rigid to the frame, substantially as shown, and for the purpose set forth.

3. The combination, in a planter having a frame A and platform H, rigidly secured thereto, clamps N for retaining in position a bar G, a horizontal bolt A, operating in conjunction with the clamps, said bar G carrying seed-boxes and reciprocating seed-slide, the seed-slide being connected to a bar F, located in rear of the bar G and connected thereto by bell-crank levers f' and supports g', the bar F, carrying a pivoted pitman E, having a bent end for engagement with a projection 3 on the disk d^3, substantially as shown, and for the purpose set forth.

4. The combination, in a planter, of a bar G, carrying seed-boxes, and a sliding bar F, located in rear of the same, bell-crank levers f', pivoted to the bar G and connected by links i and i^3 to the seed-slide and bar F, a spring g for moving the bar F in one direction, and a hand and foot lever connected to each other and to the bar F, substantially as shown, and for the purpose set forth.

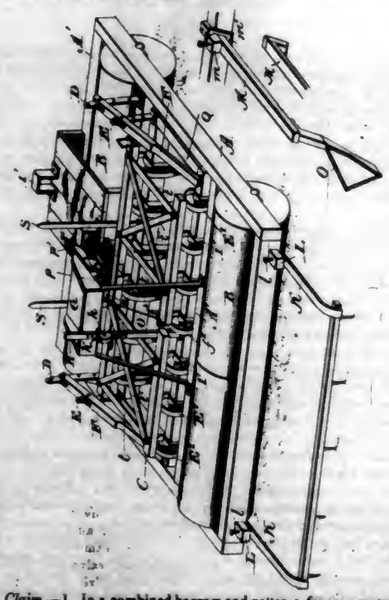
5. In combination, with a reciprocating bar F for operating the seed-slides of a planter, a spring or springs for moving the bar in one direction, and a pitman which intermittently engages with a projection d^3, carried by a disk d^3, a hand-lever F', connected with the reciprocating bar, and a foot lever f^3, connected with the hand-lever, substantially as set forth.

6. The combination, in a seed-planter pivotally attached to a frame having a driven disk, as d^3, of a pivoted pitman having a hooked end which engages with a projection d^3, carried by the disk, a spring for moving the bar F in an opposite direction from what it is moved by the disk and pitman, seed-slides connected to the reciprocating bar, so as to be moved at right angles therewith, and means for manually moving the bar F, substantially as set forth.

7. In combination with the frame A, having a transverse shaft c, and a driving-shaft D at right angles therewith, a bar G, carrying the seed-planting mechanism, said bar being removably connected by a horizontal pivot to the front central portion of the frame A, means for holding the bar G either at right angles with the frame A or oblique thereto, and a pitman E for connecting the planting mechanism with the driving-shaft, substantially as shown, and for the purpose set forth.

8. In combination with the drills J, coverers K, having upturned forward ends, apertures k', through which the drills pass, and angle-plates k^3 for connecting said coverers in rear of the drills with adjusting means, the rear members of the coverers being curved, substantially as set forth.

476,142. COMBINED ROLLER AND HARROW. FRANCIS R. HARVEY and BENJAMIN F. HARTMAN, Pickering, Pa. Filed May 7, 1891. Serial No. 391,887. (No model.)



Claim.—1. In a combined harrow and roller, a frame constructed substantially as shown and provided in rear of the rear roller with markers which can be set to enter the ground to a greater or less extent, as desired, by means of bolts which pass through blocks secured to the roller-frame, said bolts being adapted to bear upon the bars carrying the markers, substantially as set forth.

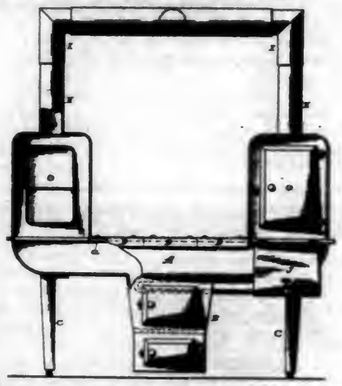
2. In combination with a harrow pivotally attached to a supporting-frame, said frame having an elevated seat and bar H, having a vertical series of perforations, a pin carried by the driver's seat, with which the bar H is adapted to engage, and a ball or loop carrying a cam which is adapted to engage with the bar H to hold it in engagement with the pin, substantially as set forth.

3. In combination with a frame, a harrow-section C, made up of upper and lower frames secured to each other so as to have a rocking movement, springs having horizontally-projecting ends secured in bearings, and angle-plates for connecting the lower sections pivotally to the springs and frames and means for laterally moving the upper sections with respect to the lower sections, substantially as set forth.

4. The combination, in a spring-tooth harrow, of a frame having fixtures or bearings in which the upper terminal portions of the teeth are secured, so as torn or have a rotary movement in said bearings, the bearings which engage with the terminal portions of the spring-teeth being vertically adjustable, whereby the angle of the teeth can be varied with respect to the frame and also adjusted in relation to the depth which the points will enter the ground, substantially as shown, and for the purpose set forth.

5. The combination, in a harrow for the purpose set forth and constructed substantially as shown, of spring-teeth journaled in the lower section of the harrow, upper sections connected to the spring-teeth, a swinging bar for connecting the upper sections to each other, and a central spring-tooth connected to one of the sections by a spring-bar, substantially as set forth.

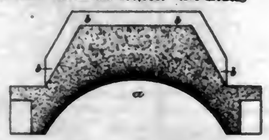
476,148. RANGE OR STOVE. ALEXANDER HEPPE, Bradford, Pa. Filed Mar. 16, 1891. Serial No. 385,163. (No model.)



Claim.—1. In a stove, the frame A, having flanged upper edge plates secured to the said flanges, ovens supported on the ends of the frame, and a continuous flue, which extends around the ovens, substantially as shown and described.

2. In a stove, the frame A, a fire-box formed therein, plates D, having turned-down ends and which are secured to the upper edges of the said frame, ovens supported on the ends of the frame, and a continuous flue, which extends around the ovens, substantially as shown and described.

476,144. BEARING. HENRY HOWSON, Philadelphia, Pa., assignor to the Holmes Fibre Graphite Manufacturing Company, Chicago, Ill. Filed Sept. 18, 1891. Serial No. 406,069. (No model.)



Claim.—1. A bearing composed of a lubricating material and a supporting material molded and united, the proportion of lubricating material to supporting material being greater at the face of the bearing than at the back, substantially as specified.

2. A bearing composed of a lubricating material and fiber compressed and united, the proportion of lubricating material to fiber being greater at the face of the bearing than at the back, substantially as described.

3. A bearing composed of plumbago and fiber compressed and united, the proportion of plumbago to fiber being greater at the face of the bearing than at the back, substantially as described.

4. A bearing composed of plumbago and fiber compressed and united and having at the bearing-face an excess of plumbago and at the rear an excess of fiber, substantially as described.

5. A bearing composed of lubricating material and fiber compressed and united, the lubricating material being in excess at the bearing-face and the fiber in excess at the rear, and the fibers lying transversely to the line of the bearing-face, so as to tie the bearing together transversely, substantially as described.

476,145. PROCESS OF MAKING COMPOSITION BEARINGS. HENRY HOWSON, Philadelphia, Pa., assignor to the Holmes Fibre Graphite Manufacturing Company, Chicago, Ill. Filed Mar. 9, 1892. Serial No. 424,291. (No specimens.)



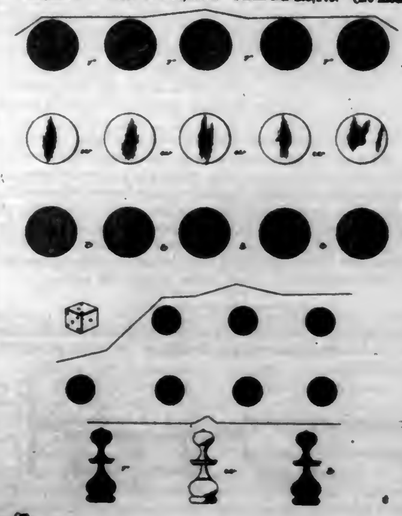
Claim.—1. The process herein described of manufacturing bearings, said process consisting in placing in a mold two or more layers of material, one of said layers having a greater proportion of lubricating material than the other, and compressing the material in a mold to form a solid homogeneous mass, in which the proportion of lubricating material to sustaining material is greater at the face than at the back, substantially as described.

2. The process herein described of manufacturing bearings, &c., said process consisting in placing in a mold two or more layers of material, one of said layers having a greater proportion of supporting material than the other, and compressing the material in the mold, so that the supporting material at the back of the bearing will act as a filter and prevent the escape of the lubricating material during the compression of the mass, substantially as specified.

3. The process herein described of manufacturing composition bearings, the process consisting in first placing a series of layers of lubricating and supporting material in the mold in a semi-fluid state, compressing the material in the mold, so as to unite the layers and to remove the liquid, drying the composition thus formed, impregnating the mass with a fluid binder, and drying the composition, so as to set, solidify, and harden the mass, substantially as described.

4. The process herein described of manufacturing composition bearings, said process consisting in first placing a series of layers of fiber and a lubricating material, such as plumbago, in a suitable mold, securing the composition in the mold, and subjecting the composition to an end pressure, so as to make the fibers in one section entangle with the fibers of the adjoining section to form a solid homogeneous mass, substantially as described.

476,146. GAME APPARATUS. OSCAR VON HUNERSDORFF, Philadelphia, Pa. Filed Mar. 16, 1892. Serial No. 425,175. (No model.)

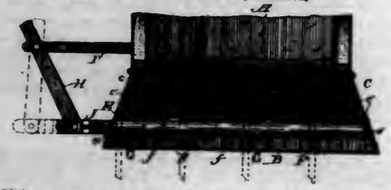


476,146.



Claim.—In a game apparatus having a geographical map, the combination of the lines of travel in different colors, pawns or movable pieces in colors to match said lines, and numbered chips in corresponding colors to designate the badge of the party and rotation of players, substantially as and for the purposes shown and described.

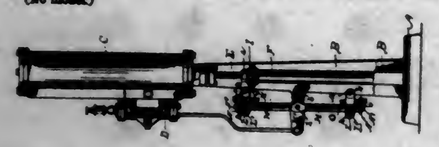
476,147. LOCOMOTIVE ASH-PAN. CHARLES J. W. JOHNSON, Temple, Tex., assignor of one-half to T. P. Self and M. D. Coffman, same place. Filed Feb. 9, 1892. Serial No. 420,913. (No model.)



Claim.—1. In an ash-pan for locomotive and other fire-boxes, the combination, with a carrier-frame adapted to be suspended under the fire-box and provided upon its sides with horizontally-disposed cleats, forming opposing grooves, of a rectangular frame sliding in said grooves, pivoted gravity-slats carried by said sliding frame, and rigid supports normally retaining said slats in horizontal position, substantially as and for the purpose set forth.

2. In an ash-pan for locomotive and other fire-boxes, the combination, with a carrier-frame open at its top and bottom and provided in its sides with opposing longitudinal grooves, of an open rectangular frame disposed and sliding in said grooves, slats disposed transversely across the sliding frame at equidistant points and pivoted thereto at one side the longitudinal center of said slats, supports rigid with the carrier and adapted to engage the portion of the slats farthest from their pivots, and a lever connected with the sliding frame for operating the latter, substantially as and for the purpose set forth.

476,148. VALVE-GEAR FOR DIRECT-ACTING STEAM-ENGINES. JOHN R. KELLEY, Philadelphia, Pa. Filed Sept. 3, 1891. Serial No. 404,627. (No model.)



Claim.—1. The combination of a steam-cylinder, the piston, the piston-rod, the collar or tappet, the valve controlling the entry of steam into the cylinder, the rocker-lever controlling said valve, and the longitudinally-adjustable tripping-arms mounted on said rocker-lever, substantially as set forth.

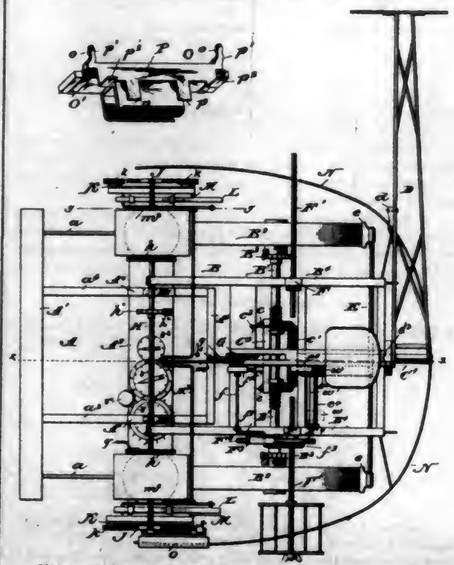
2. The combination of a steam-cylinder, the piston, the piston-rod, the collar or tappet, the valve controlling the entry of steam into the cylinder, the rocker-lever controlling said valve, and the independently-adjustable tripping devices mounted on the said rocker-lever, each of said devices consisting, essentially, of an adjustable arm mounted on the rocker-lever, and means for adjusting said arm longitudinally on the lever, substantially as set forth.

3. The combination of a steam-cylinder, the piston, the piston-rod, the collar or tappet, the valve controlling the entry of steam into the cylinder, the rocker-lever controlling said valve, and the independently-adjustable tripping devices mounted on the said lever, each of said devices consisting of a longitudinally-adjustable arm mounted on the rocker-lever, and an adjusting-screw for regulating the position of said arm, as set forth.

4. The combination of a steam-cylinder, the piston, the piston-rod, the collar or tappet, the valve controlling the entry of steam to the cylinder, the rocker-lever controlling said valve, and the independently-adjustable tripping devices carried by said rocker-lever, each of said devices consisting of an arm mounted upon said lever and carrying an anti-friction roller in its outer end, a supporting-plate secured to the outer end of the rocker-lever, and an adjusting-screw supported in said plate and engaging a suitable perforation in said arm, as set forth.

5. The combination of a steam-cylinder, the piston, the piston-rod, the collar or tappet, the valve controlling the entry of steam to the cylinder, the rocking lever controlling said valve, and the independently-adjustable tripping devices carried by said rocker-lever, each of said devices consisting of an arm K, mounted on the rocker-lever and bifurcated at its opposite ends and provided with a clamping-screw at one end and a friction-roller at the other end, a plate M, secured to the outer end of the rocker-lever, and an adjusting-screw O, supported in said plate and engaging said arm K for regulating its position, substantially as set forth and shown.

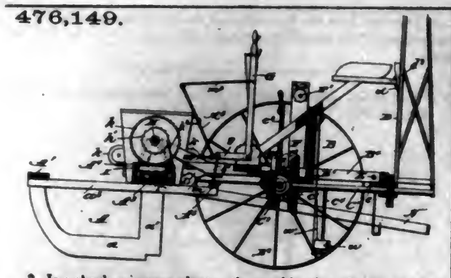
476,149. CHECK-ROW CORN-PLANTER. CHARLES E. KESSLER, Decatur, Ill. Filed Dec. 17, 1891. Serial No. 415,411. (No model.)



Claim.—1. In combination with a check-row corn planter, a bow or track extending on each side and around the rear end of the planter, and a movable carriage mounted thereon for carrying the check-cord from one side of the planter to the other, substantially as set forth.

2. In combination with a check-row corn-planter, a bow or track supported thereby, so as to extend from one side of the planter around the end to the other, and a carriage adapted to travel thereon and provided with fingers for grasping the check-row cord, substantially as shown, and for the purpose set forth.

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3. In a check-row corn-planter, the combination of a bow or track supported thereby, a movable carriage mounted thereon and provided with grasping-fingers, and a bar adapted to be projected to separate the fingers of the carriage for grasping the cord, substantially as set forth.

4. In a check-row corn-planter, the combination of the bow or frame, a carriage movably secured thereto, said carriage carrying a pivoted plate-spring actuated in one direction, and outwardly-projecting members p^3 for engagement with the bar for separating the fingers for grasping the check-row cord, substantially as shown, and for the purpose set forth.

5. In combination with a check-row corn-planter, a curved bow or track supported thereby, a movable carriage mounted on said bow or track, said carriage having grasping-fingers, outwardly-projecting members adapted to engage with an actuating-bar, and a spring for operating the fingers to open the same, so as to grasp the check-row cord, substantially as set forth.

6. The combination, with a check-row corn-planter constructed substantially as shown and provided with a horizontal shaft C, geared to the driving-wheel of the planter, a marker secured to the rear end of said shaft, and a weighted arm c^4, projecting from said shaft, substantially as shown, whereby the shaft C, which carries the marker, can be caused to engage with the driving-shaft and be turned thereby, for the purpose set forth.

7. In combination with a corn-planter, a marker secured to a horizontal shaft supported in bearings, an arm c^4, rigidly secured to said shaft, a weight mounted on said arm, and means for sliding said weight, substantially as shown, and for the purpose set forth.

8. In combination with a corn-planter, a marker mounted on a shaft, substantially as shown, an arm c^4, rigidly secured to said shaft, and flexible connections attached to said weight, one of said connections passing through a plate carried by the free end of said arm, substantially as set forth.

9. In combination with a shaft C, carrying a marker and bevel-wheel, bevel-pinions c c, held to move with the drive-shaft, and a cam C^3, suitably pivoted and adapted to hold the pinions out of mesh with the bevel-wheel or throw them alternately in engagement therewith, substantially as shown, and for the purpose set forth.

10. In combination with a shaft C, carrying a marker at one end and bevel-wheel at the other, sliding bevel-pinions c c, spring-actuated in one direction, and a cam C^3, adapted to engage with said pinions to throw either one or both out of engagement with the bevel-wheel carried by the shaft, substantially as shown, and for the purpose set forth.

11. In combination with the gearing constructed, substantially as shown, for operating a marker, a cam C^3, provided with a plate or bar C^5 for rocking the same, and a lever c^5, pivoted to the frame adjacent to the bar C^5 of the cam, said lever having bent portions adapted to hold the cam in different positions, substantially as set forth.

12. In a planter, the combination of a cord-carrying carriage and track therefor, and a lever G, connected to a movable bar L, said bar being adapted to actuate the bar M in one direction for opening the grasping-jaws carried by the movable carriage, substantially as shown, and for the purpose set forth.

13. The combination, in a check-row corn-planter, of fixed guide-pulleys, a forked wheel located between said guide-pulleys, a vertically-movable bar carrying inwardly-projecting pins, guide-rollers mounted on said bar, and a sliding bar L, adapted to engage with the projecting pins, so as to depress the bar carrying the guide-rollers to release the check-row cord and at the same time operate grasping-fingers attached to a carrier, substantially as shown, and for the purpose set forth.

14. In a check-row corn-planter, the combination of a frame or plate K, carrying guide-rollers, vertically-movable guide-rollers K', mounted on a bar having projecting pins, a spring for holding said bar normally elevated, and a movable bar L, having an inclined lower edge adapted to engage with the vertically-movable bar K' for ejecting the cord, substantially as set forth.

15. In a check-row corn-planter, the combination of fixed or permanently-mounted guide rollers, a vertically-movable bar K', carrying smaller guide-rollers, said bar being held normally in a raised position by springs, an arm M, together with a sliding bar L, which engages with pins carried by the vertically-movable bar K', and oppositely-inclined portion m for depressing the bar M, so as to contact with grasping-fingers of a movable carriage to open or throw apart said fingers to permit the entrance between the same of the cord, substantially as shown, and for the purpose set forth.

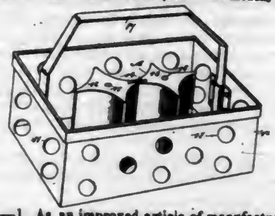
16. In combination with a check-row corn-planter, a lever G, pivoted to the main frame B thereof and connected by a link to the rear portion of the front frame, said frames being pivotally connected, substantially as shown, and a crank-shaft connected to the lever G above its pivot and by a rod m^2 to a sliding bar for actuating said sliding bar and mechanism engaged thereby, so as to lower the check-cord and cause the fingers of the carrier to engage therewith, substantially as shown, and for the purpose set forth.

17. In a seed-planter, the combination of a feed-wheel I, having gear-teeth i, horizontal plate with perforations and ratchet-teeth, an apertured disk lying partially within the lower portion of the crown-wheel, and a vertically-movable bar I^2, spring-actuated in one direction, said bar being adapted to be engaged by the ratchet-teeth, and when depressed will turn the lower feed-cylinder, substantially as set forth.

18. In combination with a shaft H, driven by a check-cord, substantially as shown, a gear-wheel having a projecting finger q, horizontal dials geared to each other and adapted to be actuated by said finger, one of the dials carrying a projecting finger, which actuates a bell-hammer, substantially as set forth.

19. In combination with a check-row corn-planter, a shaft H, driven by a check-cord and provided with means for actuating the seed-slides, a series of dials mounted on the horizontal beam A^2 of the front frame between the seed-boxes, the first of said dials having projecting pins, with which the finger q engages, and a projecting finger for actuating a bell-hammer, substantially as shown, and for the purpose set forth.

476,150. BOTTLE-BASKET. CHARLES A. KNIGHT, Brooklyn, assignor to the New York Condensed Milk Company, New York, N. Y. Filed Mar. 1, 1892. Serial No. 423,367. (No model.)



Claim.—1. As an improved article of manufacture, a basket for carrying bottles or like receptacles, the said basket comprising a body portion, and a partition located between its ends and sides and out of engagement with said parts, the said partition being provided with a series of socket-like faces and having a connection with the bottom of the basket at its center only, whereby the partition may yield laterally to a slight extent, substantially as shown and described.

2. A basket for the transportation of bottles or like receptacles, consisting of a body having a spring-bottom and a partition located in the center of the body and spaced from the sides and ends, the said partition being provided with a series of socket-like faces vertically formed therein, the said faces being arranged opposite the sides and the corners of the body, and a locking mechanism connecting the partition at its central portion with the spring-bottom of the body, as and for the purpose specified.

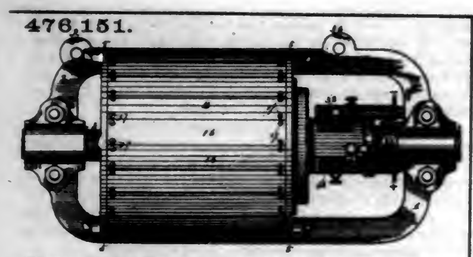
3. A basket for the transportation of bottles and like receptacles, consisting of a body, the sides, ends, and bottom of which are of a more or less yielding character, and a partition located within the body and spaced from its sides and ends, the said partition being shaped to approximate two connected blocks stellated in cross-section, the said partition being attached at its central portion to the bottom of the body, substantially as and for the purpose set forth.

476,151. DYNAMO-ELECTRIC MACHINE. WILLIAM KOEDDING, St. Louis, Mo., assignor of one-half to Edmond Verstraete, same place. Filed Jan. 31, 1891. Serial No. 379,787. (No model.)

Claim.—1. In a dynamo-electric machine, the combination of the cases 11, adapted to receive the wire coils, and the field-magnet cores composed of thin plates 6^a, arranged side by side in metallic contact in a line lengthwise of the magnet and having their poles set in said cases 11, substantially as set forth.

2. In a dynamo-electric machine, the combination of the detachably-supported cases 11, having the wire coiled thereon and arranged to form a cylindrical field, and the detachably-supported magnet-cores of horseshoe form in cross-section, said magnet-cores being arranged

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with one of their poles in each of the adjacent cases 11, whereby the cores can be removed singly and the cases can be removed singly by first removing the two adjacent magnet-cores, substantially as set forth.

3. In a dynamo-electric machine, the combination of the annular parts or rings 5 of the fixed frame, field-magnets attached to said rings, and a covering-strip 16, attached to each magnet and to the rings, substantially as set forth.

4. In a dynamo-electric machine, the combination of the annular parts or rings 5 of the fixed frame, the cases 11, attached to said rings and having the wire coiled thereon for forming a cylindrical field, magnet-cores inserted in said cases 11, and covering-strips 16, attached to said magnet-cores, substantially as set forth.

5. In a dynamo-electric machine, the combination of the U-formed parts 1 and 2, giving bearing to the armature-shaft, the annular parts or rings 5, supported upon said parts 1 and 2, the cases 11, attached at their opposite ends to the rings 5 and having the wire coiled thereon, the magnet-cores supported in said cases 11, the screw 18, passing through the rings 5 and the magnet-cores, and the covering-strips 16, substantially as set forth.

6. The armature-core having the oblique or inclined horns 24 at its ends, adapted to support the wire at the bends of the same, substantially as set forth.

7. The armature-core having the inclined horns 24 at its ends, said horns being provided with steps or corrugations for supporting the wires out of contact with each other, substantially as set forth.

8. The combination, in an armature, of the body or core of cylindrical form, two or more separate wires 25 25ª, carried in zigzags over the circumference of the core, and inclined horns 24 at each end of the core, adapted to support the wires at the bends and keep them out of contact with each other on the surface of the core, substantially as set forth.

9. The cylindrical armature having inclined horns 24 at its ends and insulating material 24ª, occupying the space between said horns, substantially as set forth.

10. The combination, in an armature, of two or more wires running in zigzag over the face of the core and around the same and having their ends in electric connection with different sections of a commutator, and brushes in contact with said commutator of suitable size to extend over a number of said sections, substantially as and for the purpose set forth.

11. The combination, in a dynamo-electric machine, of an armature having two or more separate wires wound in zigzag on the armature, and a commutator having rings parallel with the ends of the armature, each ring in electric connection with only one end of one wire and each ring in connection with two or more sections or bars of the part of the armature in contact with the brushes, substantially as set forth.

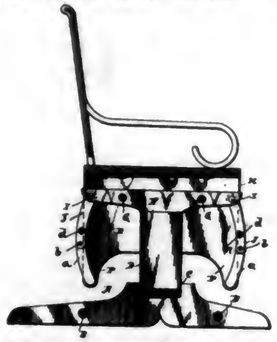
12. The combination, in a dynamo-electric machine, of an armature having two or more separate wires wound in zigzag on its surface, a commutator having a series of rings 27 parallel with the ends of the armature, a series of bars or sections 31, connected to said rings by strips 28, and suitable insulating material between said parts, said rings 27 being in electric connection with said wires, substantially as set forth.

13. The combination, in a dynamo-electric machine, of a number of field-magnets of alternate opposite polarity, an armature rotating in the field with two or more separate wires, each end of each wire in electric connection with two or more of the bars or sections of a commutator which revolve in contact with the brushes, and brushes each extending over a number of said sections equal to the number of armature-wires.

14. The combination, in a dynamo-electric machine, of an armature having a plurality of wires carried in a zigzag around it, and a commutator having conducting-rings parallel with the ends of the armature, the rings being double in number to the armature-wires and each end of each wire being in electric connection with a separate ring and each ring in electric connection with two or more distinct sections or bars, as 31, rotating in contact with the brushes, substantially as and for the purpose set forth.

15. The combination, with the armature of a dynamo-electric machine provided with the horns 24 and the insulating material 24ª between them, of the shields 26, substantially as and for the purpose set forth.

476,152. ROCKING-CHAIR. EZRA P. KOONTZ, Ligonier, Ind. Filed Mar. 30, 1891. Serial No. 386,758. (No model.)



Claim.—1. In a rocking-chair, a supporting-base, a chair, and jointed hangers which have their ends connected, respectively, to the support and the chair and their meeting pivoted ends provided with shoulders which allow the hangers to bend inward only, the parts combined substantially as shown.

2. In a rocking and tilting chair, the combination of a base, a seat portion, and the flexible hangers suspending the seat portion from the base and arranged in front and rear pairs, each hanger at its opposite ends journaled, respectively, to the base and seat portion to render the seat rocking and provided with the permanently-loose joint between its ends, the inner ends of the sections of each hanger overlapping and directly pivoted together to permit tilting by the lower sections of the hangers swinging upon their joints as centers, substantially as set forth.

3. The combination of the base, the seat portion, the hangers at their ends journaled, respectively, to the base and seat portion to suspend the seat portion, as set forth, to permit rocking, each hanger having a permanently-loose joint between its ends by being formed in sections, with their inner ends directly pivoted together, as shown, and the cross-bars connecting the hangers in pairs and secured rigidly thereto by sockets between their ends and their loose joints, as set forth.

4. In a chair, upwardly-extending supports, a seat having sides extending below the upper ends of said supports, and the flexible hangers arranged in front and rear pairs and at their upper and lower ends pivoted, respectively, to the uprights and to said sides, each hanger being provided with a permanently-loose joint between its ends to render the seat tilting, as set forth, said hangers being curved or extended outwardly between their ends, so that their lower ends will swing inwardly and upwardly with said joints as centers, substantially as specified.

5. A tilting and rocking chair consisting of the stationary uprights or base, the chair having depending sides extending below the tops of said uprights, and the flexible hangers arranged in front and rear pairs and at their upper and lower ends respectively pivoted to the uprights and to the said sides to permit rocking, each hanger being formed in two sections having their inner ends flattened and overlapping and loosely jointed together by a pivot and formed to prevent outward swinging, substantially as set forth.

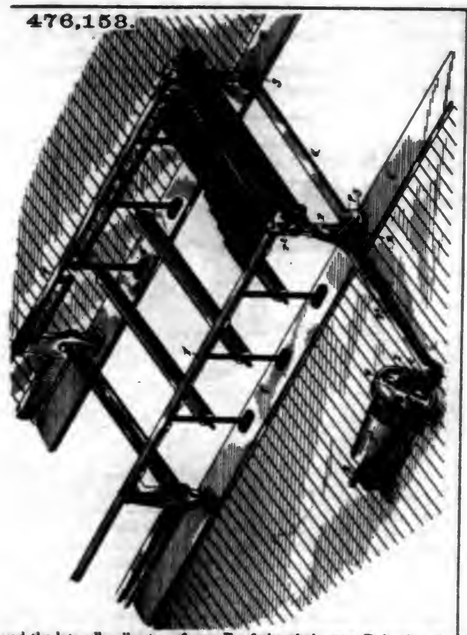
476,153. PAPER-MAKING MACHINE. LEIGHTON LEE, Wilmington, Del. Filed Nov. 14, 1891. Serial No. 411,923. (No model.)

Claim.—1. In a horizontal frame adapted to vibrate or reciprocate on or with its supports, means for imparting such vibratory or reciprocating motion thereto, which consists of a bell-crank or right-angled lever, the vertical arm of which constitutes one of the supports for the frame, and means, such as a revoluble crank, connected with the other arm to impart a vibrating motion to the lever on its fulcrum, substantially as set forth.

2. The combination, with the endless-wire-cloth frame of a paper-making machine adapted to vibrate or reciprocate laterally on or with its supports, of a bell-crank lever P, whose vertical arm forms one of the supports for the feed end of the frame, and means, such as a revoluble crank, connected with the other arm of said lever to impart a vibratory motion thereto, substantially as set forth.

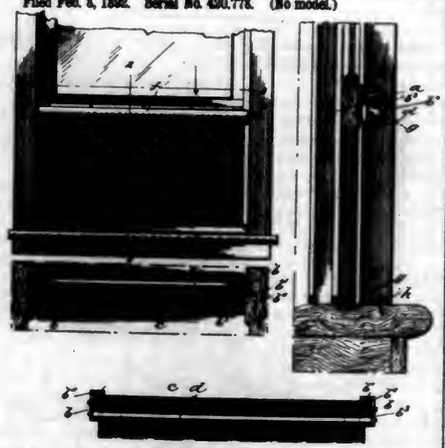
3. The combination, with the bed-plates O and cross brace or girt G, secured to said bed-plates and having journal-bearings at opposite ends, the post P', journaled in the bearings at one end of the cross-girt,

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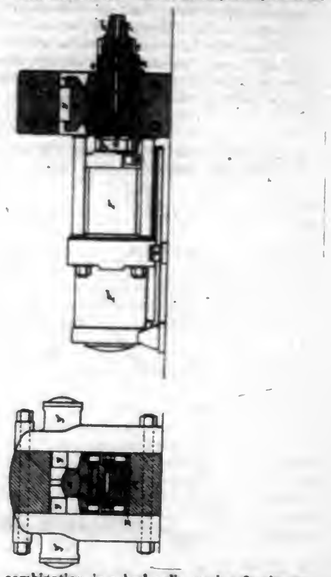
and the laterally-vibratory frame F, of the shake-post P, having the form of a bell-crank or right-angled lever pivoted in the bearings at the opposite end of the cross-girt G and provided with journals *p* at the point of junction of its vertical and horizontal arms, and means substantially such as described connected with the horizontal arm of the lever for imparting a vibratory motion thereto, substantially as and for the purpose set forth.

476,154. WINDOW-SCREEN. JAMES S. LESTER, Atlanta, Ga. Filed Feb. 8, 1892. Serial No. 420,778. (No model.)



Claim.—The combination of a window frame and sash, a pair of brackets *b b*, secured to the lower sash and having their supporting-arms bent around in front of the sash-strips, as at *b'*, these bracket-arms being provided with outwardly and downwardly projecting fingers *b*³, a casing *f*, removably secured to the sash above the brackets and extending outwardly and downwardly in front thereof, the ends of this casing being extended laterally, as at *f'*, so as to rest upon the bracket-arms, and provided with openings *f*², through which the fingers *b*³ project, a spring-actuated screen-roller journaled in the bracket-arms under the casing and carrying a screen, means for detachably securing the lower edge of the screen to the sill, and a roller journaled in brackets under the screen to keep the screen close to the sash-strips, substantially as described.

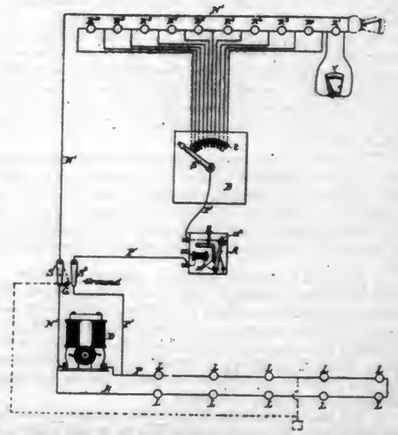
476,155. MACHINE FOR FORGING EYE-BARS. HENRY W. LOSH, Philadelphia, Pa. Filed Aug. 17, 1891. Serial No. 402,822. (No model.)



Claim.—1. The combination, in a hydraulic eye-bar forging machine, of the housing with its supporting-bed and ram, the longitudinally-movable upper, lower, and heading dies, and two sets of rolls, one interposed between the lower die and the bed and the other between the upper die and the ram, substantially as specified.

2. The combination of a hydraulic eye-bar-forging machine having longitudinally-movable upper and lower dies with a power-actuated gripping device for the bar, located beyond the limit of movement of said dies and having jaws which grip the upper and lower faces of the bar, and thereby serve to prevent buckling of that portion of the bar which is between the gripping device and the dies at the commencement of the operation, substantially as specified.

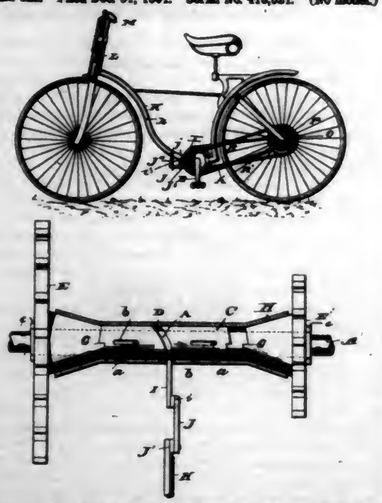
476,156. DEVICE FOR TESTING ARC-LIGHT CIRCUITS. ALBERT H. MANWAREN, Philadelphia, Pa. Filed Feb. 3, 1890. Serial No. 339,015. (No model.)



Claim.—1. The combination of the main or arc light circuit, the shunt or test circuit containing a series of resistances, a switch for putting said resistances in or cutting them out of said test-circuit, and a voltmeter or equivalent device whereby the proper adjustment of said switch is determined, one terminal of said meter being connected to the positive wire of the shunt-circuit and the other terminal to the negative wire of said shunt, substantially as specified.

2. The combination of the main or arc light circuit, the shunt or test circuit, a series of resistances therein, a switch for throwing said resistances in or cutting them out of the circuit, a voltmeter or equivalent device for determining the adjustment of said switch, one terminal of said meter being connected to the positive wire of the shunt circuit and the other terminal to the negative wire of said shunt, and switches for grounding either side of said test-circuit independently of the voltmeter, substantially as specified.

476,157. BICYCLE. THOMAS G. MOORE and SOLOMON F. CHILL, Dublin, Ind. Filed Dec. 31, 1891. Serial No. 416,621. (No model.)



Claim.—1. In a bicycle, the combination, with the pedal-shaft, the gear-wheels thereon and of different diameters, the conical clutch-sections fast to each of said wheels, and the elongated sleeve rotating with the pedal-shaft, but capable of an endwise movement thereon, said sleeve having clutch-teeth on each end adapted to engage the conical clutch-sections, of the elongated box forming a bearing for said sleeve and conical clutch-sections, and the lever mechanism for shifting said sleeve, substantially as specified.

2. In a bicycle, the combination, with the rear axle having the sprocket-wheels of different diameters thereon, the pedal-shaft, the loose gear-wheels thereon of different diameters and arranged oppositely to those of the rear axle, the driving-chains for said wheels and conical clutch-sections fast thereto, of the elongated sleeve rotating with the pedal-shaft, but capable of an endwise sliding movement thereon, said sleeve having clutch-teeth at each end designed to engage with the clutch-sections of the respective gear-wheels, a shifting-pin designed to have engagement with said sleeve through a cam-slot therein, and an elongated box forming a bearing for said sleeve and having conical portions forming bearings for the clutch-sections, substantially as specified.

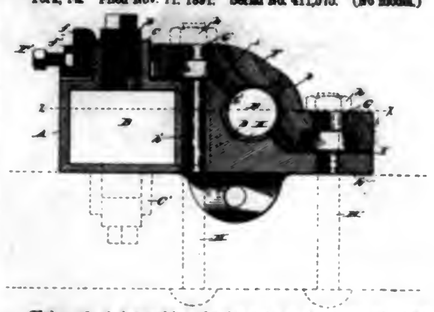
3. A bicycle having its pedal-shaft provided with two loose gear-wheels of different diameters and carrying conical clutches, a clutch-sleeve revoluble with said shaft and capable of an endwise movement thereon, means for effecting such endwise movement, and an elongated box forming a bearing for said sleeve and having conical portions forming bearings for the clutches of the gear-wheels, substantially as specified.

4. A bicycle having its pedal-shaft carrying loosely two gear-wheels of different diameters, said wheels having conical clutches thereon, a clutch-sleeve revoluble with said shaft and movable endwise thereon, said sleeve having a cam-groove therein, a box forming a bearing for said sleeve and having conical portions in which the conical clutches bear, and a shifting-pin adapted to engage said cam-groove to effect its endwise movement, and lever mechanism for operating said shifting-pin, substantially as specified.

5. The combination, with the pedal-shaft, the gear-wheels loosely mounted thereon, the conical clutches carried by said wheels, and the clutch-sleeve, of the box forming a bearing for said sleeve and clutches, substantially as specified.

6. In a bicycle, the combination, with the variable driving-gear and the clutch-sleeve for effecting the engagement of said gear, of the shifting-pin designed to engage a cam-groove in said sleeve, a stud or projection on said pin, an L-shaped lever J, pivoted to the frame and having a slot in one arm engaging said stud or projection, a short link J', connected to the other arm of said lever, a lever K, connected to said link, said lever conforming to the shape of the backbone and pivoted thereto, the rod or link L, connected to the forward end of said lever K, and a hand-lever M underneath the handle-bar, connected to said link, substantially as specified.

476,158. JOURNAL BOX OR BEARING. SAMUEL S. MORTON, York, Pa. Filed Nov. 11, 1891. Serial No. 411,575. (No model.)

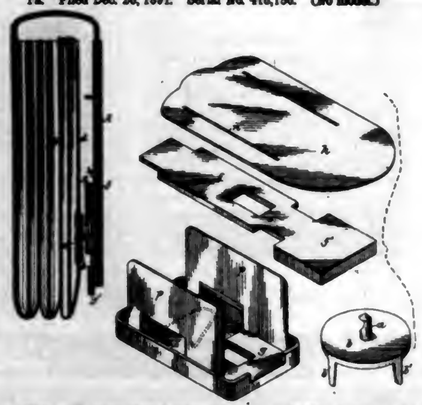


Claim.—1. A journal-box having two sections, one of which is adjustable relatively to the other in two directions at right angles to each other, a close-fitting bearing for a shaft or journal in said sections, and means for securing the independent adjustment of the adjustable section in either of the two directions, substantially as set forth.

2. A journal-box having two sections, the one capable of adjustment relatively to the other in two directions at right angles to each other, a close-fitting bearing for a shaft or journal in said sections, the line or plane of separation between the portions of the sections in which the said bearing is formed being inclined at an angle of substantially forty-five degrees to both of the planes of adjustment, and means for securing the independent adjustment of the adjustable section in either one of the two directions, substantially as set forth.

3. In a journal box or bearing, the combination of the lower main section, an upper adjustable section F, having slots through which pass the bolts which unite the sections, the yoke *f*, carried by the adjustable section, and the adjusting-screw seated in said yoke and having a bearing against a portion of the other section which projects upward and is surrounded by the said yoke, substantially as set forth.

476,159. POCKET-BOOK, &c. FREDERICK MÜLLER, Philadelphia, Pa. Filed Dec. 26, 1891. Serial No. 416,186. (No model.)

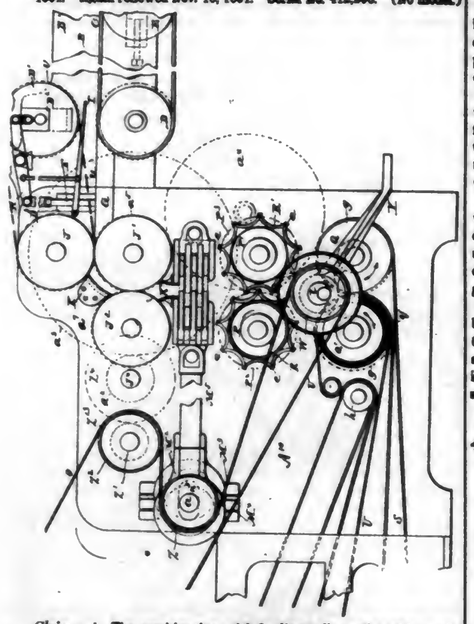


Claim.—1. A pocket-book, card-case, or the like having a flap or overlying portion secured to the other portion or body by a locking device consisting of a notched stem and a sliding bolt, one element of said locking device being secured to the inner layer or lining of the flap by fastening devices, which are covered by the outer layer of said flap, whereby no portion of the locking device is exposed on the outer face of the flap, the locking-bolt projecting beyond the edge of said flap, substantially as specified.

2. A pocket-book, card-case, or the like having a flap or overlying portion secured to the other portion or body by a locking device consisting of a notched stem and a sliding bolt, said flap carrying the sliding bolt and a casing and cover-plate therefor, said casing having

wings passing through slots in the cover-plate and through the inner layer or lining of the flap, and said wings being turned down between the inner and outer layers of said flap so as to be covered by the outer layer, whereby the lock-case is secured together and to the flap without the exposure of any part of said case upon the outer face of the flap, substantially as specified.

476,160. MACHINE FOR TREATING FIBROUS PLANTS. JAMES L. MYERS, New Orleans, La., assignor to the Tropical Fibre Machine and Process Company, Portland, Me. Filed Jan. 9, 1889. Renewed Mar. 4, 1891. Again renewed Nov. 18, 1891. Serial No. 412,298. (No model.)



Claim.—1. The combination, with feeding-rollers, of crushing-rollers located behind and in a plane with the feeding-rollers and reciprocating intersecting breaker-plates located immediately below the crushing-rollers, substantially as set forth.

2. The combination, with feeding-rollers, of rollers J J' J³, arranged substantially as shown, reciprocating breakers located below the crushing-rollers, and a curved deflector for guiding the material from the rollers J J' down between the rollers J³ J', substantially as set forth.

3. In a fiber stripping and cleaning machine, the combination, with double reciprocating intersecting breakers, of rollers for feeding material thereto and rotary cleaning-scrapers, substantially as set forth.

4. In a fiber stripping and cleaning machine, the combination, with double reciprocating intersecting breakers, of rotary cleaning-scrapers located below the breakers, substantially as set forth.

5. In a fiber stripping and cleaning machine, the combination, with double reciprocating intersecting breakers, of rotary cleaning-scrapers, and mechanism, substantially as described, for rotating and reversing the scrapers, substantially as set forth.

6. In a fiber stripping and cleaning machine, the combination, with two sets of intersecting breaker-plates and means for reciprocating both sets of plates, of rotary cleaning-scrapers and shiftable devices for rotating and reversing the scrapers, substantially as set forth.

7. In a fiber stripping and cleaning machine, the combination, with two sets of intersecting breaker-plates and eccentric mechanism for reciprocating both sets of breaker-plates, of rotary cleaning-scrapers and shiftable devices for rotating and for reversing the scrapers, substantially as set forth.

8. In a fiber stripping and cleaning machine, the combination, with two sets of slotted interlocking reciprocating breaker-plates and means for reciprocating both sets, of rotary cleaning-scrapers and shiftable driving devices for rotating and for reversing the motion of said scrapers, substantially as set forth.

9. In a fiber stripping machine, the combination, with double reciprocating breakers, eccentrics having provisions for adjusting the throw thereof, and pitmen connecting the eccentrics and breakers, of rotary cleaning-scrapers for receiving the material as it leaves the breakers.

10. In a fiber-stripping machine, the combination, with double reciprocating breakers, eccentrics having provisions for adjusting the throw thereof, and the pitmen connecting the eccentrics and breakers, of rotary cleaning-scrapers each having a friction-pulley, and a driving friction-pulley provided with means whereby it may be moved into contact with the pulley on either scraper, substantially as set forth.

11. The combination, with feed-rollers, crushing-rollers located behind the same, and a curved deflecting-plate located adjacent to the crushing-rollers for deflecting the material downwardly as it leaves the crushing-rollers, of intersecting reciprocating breaker-plates located below the crushing-rollers, substantially as set forth.

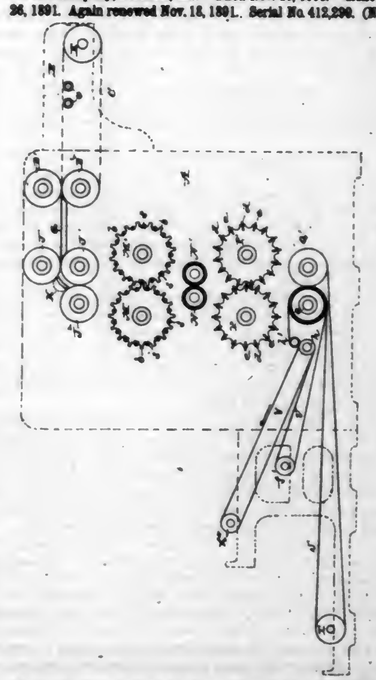
12. The combination, with a feed plate, feed-rollers, one of which is vertically movable, a stop-board, and crushing-rollers, of double reciprocating breakers beneath the crushing-rollers and a deflecting-plate for guiding the material from the crushing-rollers to the breakers, substantially as set forth.

13. In a fiber stripping and cleaning machine, the combination, with feed mechanism, double reciprocating breakers, and eccentrics for actuating the breakers, having provisions for adjusting the throw thereof, of rotary cleaning-scrapers, shiftable driving devices for rotating and reversing the motion of the latter, and grip-rollers and conveyer-belts, substantially as set forth.

14. In a fiber stripping and cleaning machine, the combination, with a feed-apron, feed-plate, feed-rollers, and crushing-rollers, of double reciprocating breakers, eccentrics for actuating the breakers simultaneously in opposite directions, rotary cleaning-scrapers, shiftable driving devices for rotating and reversing the motion of said scrapers, grip-rollers, and conveyer-belts, substantially as set forth.

15. The combination, with interlocking reciprocating slotted breakers arranged as described, whereby a continuous passage through the slots is alternately made and broken, a cover over the breakers, and a trumpet to guide material between them, of eccentric mechanism for actuating said breakers simultaneously in opposite directions, substantially as set forth.

476,161. MACHINE FOR TREATING FIBROUS PLANTS. JAMES L. MYERS, New Orleans, La., assignor to the Tropical Fibre Machine and Process Company, Portland, Me. Filed Nov. 10, 1888. Renewed Mar. 26, 1891. Again renewed Nov. 18, 1891. Serial No. 412,299. (No model.)



Claim.—1. In a fiber stripping and cleaning machine, the combination, with beater or scraper drums geared together and gripping-rollers located at one side of said drums, of a shiftable actuating device adapted to be thrown into engagement with either of said drums, whereby the direction of rotation thereof can be reversed, as described.

2. In a fiber stripping and cleaning machine, the combination,

with beater or scraper drums geared together, a pulley connected to each drum, and gripping-rollers located at one side of said drums, of a shaft carrying a power-transmitting pulley and means for placing said pulley in engagement with the pulley on either of said drums, substantially as set forth.

3. In a fiber stripping and cleaning machine, the combination, with gripping-rollers and beater or scraper drums geared together and each provided with a friction-pulley, of an eccentric-shaft having a friction-pulley thereon arranged to engage the pulley of either drum and a lever and treadle for shifting the shaft.

4. In a fiber stripping and cleaning machine, the combination, with beater or scraper drums geared together, a pulley connected to each drum, an eccentric-shaft carrying a power-transmitting pulley, and devices for moving the shaft, whereby the power-transmitting pulley thereon can be moved to engage the pulley on either drum, of yielding gripping-rollers located at one side of said drums.

5. In a fiber stripping and cleaning machine, the combination, with beater or scraper drums geared together, brushing and wiping drums also geared together, and gripping-rollers located between the beater or scraper drums and brushing or wiper drums, of a shiftable actuating device adapted to be thrown into engagement with either drum of each set, whereby the direction of rotation thereof can be reversed, as described.

6. In a fiber stripping and cleaning machine, the combination, with reversible beater or scraper drums and wiper-drums, brakes for stopping said drums, and mechanism for reversing them, of gripping-rollers located between the beater or scraper and wiper drums, substantially as set forth.

7. In a fiber stripping and cleaning machine, the combination, with crushing-rolls, of beater mechanism, gripping-rollers, and wiper-drums, the passage between said parts being in the same vertical plane, substantially as set forth.

8. In a fiber stripping and cleaning machine, the combination, with a pair of beater or scraper drums geared together, a pair of wiper-drums geared together, gripping-rollers located between the beater or scraper drums and the wiper-drums, and gripping-rollers located below the wiper-drum, of shiftable actuating devices adapted to be thrown into engagement with either drum of the two pairs, whereby the direction of rotation thereof can be reversed, as described.

9. In a fiber stripping and cleaning machine, the combination, with feeding mechanism, a pair of beater or scraper drums, a pair of wiper-drums, pulleys, means for placing one of said pulleys in engagement with either of the beater or scraper drums, and means for placing the other pulley in engagement with either of the wiper-drums, of gripping-rollers located between the beater or scraper and wiper drums and gripping-rollers located below the wiper-drums, substantially as set forth.

10. In a fiber stripping and cleaning machine, the combination, with feeding mechanism, beater or scraper drums geared together, wiper-drums geared together, shiftable power-transmitting devices, and means for placing said power-transmitting devices in engagement with either of the beater or scraper drums and either of the wiper-drums, of gripping-rollers located between the beater or scraper and wiper drums and gripping-rollers located below the wiper-drums, substantially as set forth.

11. In a fiber stripping and cleaning machine, the combination, with a frame and shafts journaled therein and carrying beater or scraper drums, wiper-drums, and friction-pulleys, of gripping-rollers located between the beater or scraper drums and the wiper-drums, eccentric-shafts, pulleys thereon having friction-surfaces, and levers for rocking the eccentric-shafts to change the contact of the friction-surfaces, substantially as set forth.

12. In a fiber stripping and cleaning machine, the combination, with a frame and shafts journaled therein, said shafts carrying beater or scraper drums, wiper-drums, and friction-pulleys, of gripping-rollers located between the beater or scraper drums and the wiper-drums, eccentric-shafts, pulleys mounted thereon, said pulleys having frictional surfaces, levers connected with said eccentric-shafts, and foot-treadles pivotally connected with the levers, substantially as set forth.

13. In a fiber stripping and cleaning machine, the combination, with a frame and shafts journaled therein, said shafts carrying beater or scraper drums, wiper-drums, gear-wheels, and V-shaped grooved frictional surfaces, of eccentric-shafts having friction-pulleys thereon, levers connected with said shafts, foot-treadles for operating said levers, a pulley Z, a drive-belt passing around said pulley Z and around pulleys on the eccentric-shafts, gripping-rollers located between the beater or scraper drums and wiper-drums, and gripping-rollers located below the wiper-drums.

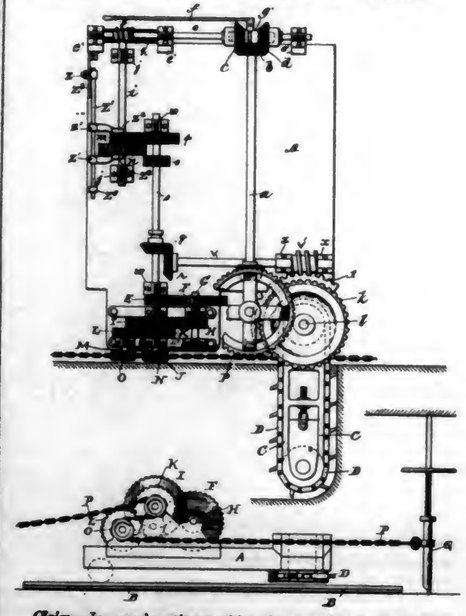
14. In a fiber stripping and cleaning machine, beater or scraper drums having blades on their surfaces and rubber cushions dovetailed in the surface of the drum between the blades, substantially as set forth.

15. In a fiber stripping and cleaning machine, a pair of wiper-drums having corrugated surfaces and alternating wipers and brushes secured in the projecting ribs between the corrugations, the wipers and brushes of one drum registering with the spaces between the wipers and brushes of the other drum, substantially as set forth.

16. The combination, with the main frame and an outside cheek held thereto by bolts passing through the two, said cheek being adapted to receive the ends of the shafts, of feeding mechanism, crushing-rolls, a deflecting plate for changing the course of the material being fed, beater or scraper drums, wiper-drums, gripping-rollers located between the beater or scraper drums and wiper-drums, eccentric-shafts, levers for throwing the latter, and gearing for transferring motion from one part of the machine to the other, substantially as set forth.

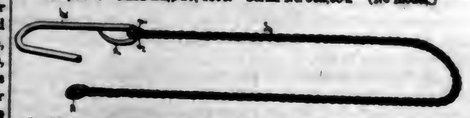
17. In a fiber stripping and cleaning machine, the combination, with drums and gripping-rollers, of aprons between which the fiber passes and an apron located in a plane below the drums for carrying off the shive.

476,162. COAL-CUTTING MACHINE. JAMES H. MCEWEN, Ridgway, Pa. Filed July 22, 1891. Serial No. 400,315. (No model.)



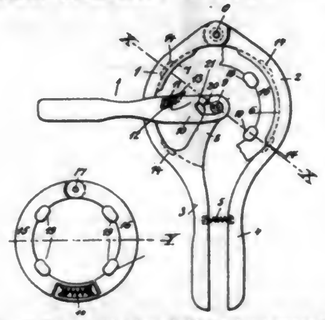
Claim.—In a coal-cutting machine, the chain P and a fixed device Q, to which one end of the said chain is secured, in combination with the pulleys N O, which are arranged obliquely with respect to each other in the same vertical plane and have the said chain passed around them in opposite directions, the shafts of the said pulleys, the intermeshing gear-wheels K L of the said shafts, the gear-wheel I on the shaft of wheel K, the pinion H, meshing therewith, the gear-wheel F on the shaft of pinion H, the motor-shaft of the machine, the frame and running-wheels of the said machine, and suitable gearing from the motor-shaft to the said wheel F, whereby the rotation of the said shaft is transmitted to the pulleys N O and the frictional contact of these pulleys with the chain causes the machine to advance along its track, substantially as set forth.

476,168. SASH CORD AND SECURER. WILLIAM H. NAYLOR, Philadelphia, Pa., assignor to the Naylor Manufacturing Company, Camden, N. J. Filed Aug. 21, 1890. Serial No. 362,654. (No model.)



Claim.—As a new article of manufacture, the within-described sash-cord, said cord being twisted so as to form a single eye at one end and two eyes side by side at the opposite end, a hook or equivalent retainer passing through the two eyes at the one end and bound therein by the twist in the cord, said hook securing the two eyes together, preventing the untwisting of the cord, substantially as specified.

476,164. CAN-OPENER. ALVIN E. NEWTON, Brooklyn, N. Y. Filed Jan. 19, 1892. Serial No. 418,667. (No model.)



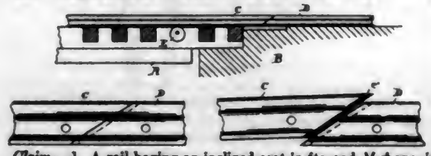
Claim.—1. In a combined can-holder and can-opener, two levers pivotally connected and having inner bearing-surfaces conforming with parts of the outer surface of a can and provided with suitable handles, combined with an arm extending from one of said levers and an additional lever fulcrumed thereto and containing a blade encircled by the can-holding levers for the purpose of cutting therewith the end of a can, substantially as set forth.

2. In combination with a can-holder provided with two levers pivotally connected and having inner bearing-surfaces, auxiliary hinged jaws provided with inner bearing-surfaces for gripping a can and with outer bearing-surfaces engaging with the bearing-surfaces of said levers, substantially as set forth.

3. In combination with a can-holder provided with two levers pivotally connected and having inner bearing-surfaces, auxiliary hinged jaws provided with inner bearing-surfaces for gripping a can and outer bearing-surfaces engaging with the bearing-surfaces of said levers, and a spring for forcing said jaws outward, substantially as set forth.

4. In combination with a can-holder provided with two levers pivotally connected and having inner bearing-surfaces, auxiliary hinged jaws provided with inner bearing-surfaces for gripping a can and with outer bearing-surfaces engaging with the bearing-surfaces of said levers, a blade-holder fulcrumed to an arm on one of said levers, extending inward over one of said auxiliary jaws, and means for varying the distance between the fulcrum and the blade, substantially as set forth.

476,165. RAIL FOR RAILWAYS. JOHN T. O'SHEA, Cleveland, Ohio. Filed Dec. 26, 1891. Serial No. 416,264. (No model.)



Claim.—1. A rail having an inclined seat in its end, V shape in cross-section, and a meeting rail constructed at its end to fit in said seat, substantially as described.

2. A railway-rail having a seat in its end inclined from top to bottom and the sides of the seat flaring from about the vertical center of the rail and the meeting rail having a tongue held between the said flaring sides of the seat, substantially as described.

3. A railway-rail having a seat formed in its end at an angle to a vertical plane and having the sides of the seat converging in straight lines to one side of the vertical center of the rail and the meeting rail having its end made with a beveled tongue to match said seat, substantially as described.

476,166. DRY CLOSET. WILLIS D. OVER, Bryan, Ohio. Filed July 7, 1891. Serial No. 398,651. (No model.)

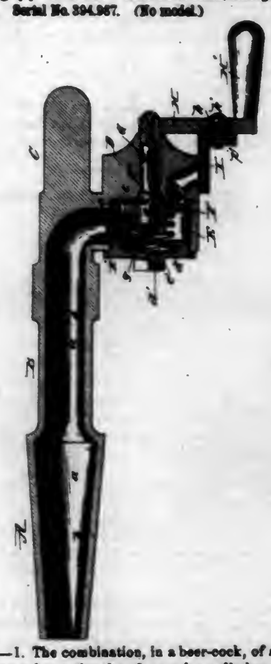


Claim.—1. In a portable closet such as described, the combination, with the casing having the hinged cover and hinged seat provided with an opening, elastic packing surrounding the opening on both sides, of the removable jar held within the casing, the catches for holding the seat down, with the packing on the under side in contact with the rim of the jar, and catches co-operating with the cover for holding the same in contact with the packing on the upper side of the seat, substantially as described.

2. In a closet such as described, the combination, with the casing having the side arms and back extending above the seat and the seat, of the cover hinged to the seat and fitting tightly over the opening therein and the lid hinged at or near the top of the back extension and working down between the side arms and closing against the seat at the forward edge, substantially as described.

3. In a closet such as described, the combination, with the casing, the seat, and cover hinged as described, and the jar within the casing, of the stationary retainer for the jar having the semicircular recess therein at the bottom of the casing and the hinged retainer on the opposite side of the jar having a corresponding recess therein, substantially as described.

476,167. FAUCET. HARVEY S. PARK, Chicago, Ill. Filed June 3, 1891. Serial No. 394,967. (No model.)



Claim.—1. In a beer-cock, of a valve-chamber having on one end a seating-face for a valve, a discharge-passage at the lower side of the valve-chamber, a disk valve in the valve-chamber seating against the face of the chamber and controlling the discharge-passage, an outside cap or cover traveling in the arc of a circle and turning with the valve, opening and closing the mouth of the discharge-passage, and a port in the valve traveling in the arc of a circle, opening and closing the discharge-passage, said port and the cap or cover both having the same limit of travel on opposite sides of a common center on which they turn, the limit of down travel of the port opening the discharge-passage with the cap or cover at the limit of its up travel and the commencement of the down travel of the cap or cover carrying the port immediately away from the discharge-passage, giving the cap or cover the travel from the limit of its upward travel down before closing the mouth of the discharge, thereby escaping the drip after the port is closed, substantially as and for the purposes specified.

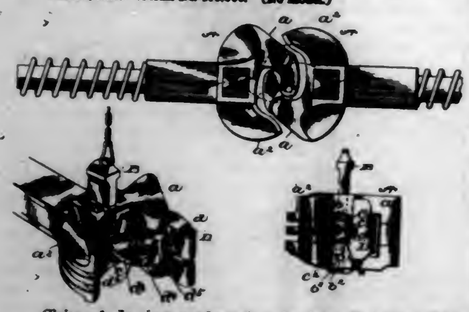
2. The combination, in a beer-cock, of a wall, a valve-chamber in the wall having on one end a valve-seating face, a discharge-passage from the lower side of the valve-chamber, a disk valve in the valve-chamber seating against the end face of the chamber, a port in the valve traveling in the arc of a circle and establishing communication between the valve-chamber and the discharge-passage at the limit of its down travel, a stem carrying the valve, a bar operating the stem, and a cap or cover on the bar traveling in the arc of a circle over a

coacting face of the wall around the mouth of the discharge-passage, opening and closing such mouth, the valve and cap or cover both turning with the valve-stem, and the valve-port and the cap or cover standing on opposite sides of the valve-stem and having a reverse travel to each other in turning, one traveling away from as the other approaches the discharge-passage, closing the discharge-passage to the port and giving the cap or cover a travel from its upward limit down before closing the mouth of the discharge, whereby the drip is all escaped before the cap closes the discharge-passage against dust, dirt, and insects, substantially as specified.

3. The combination, with a discharge-passage, of a disk valve having a face closing such passage, a port in the valve opening the discharge-passage and traveling in the arc of a circle, a stem carrying the valve, an outside cap or cover traveling in the arc of a circle, closing the mouth of the discharge-passage against dust, dirt, and insects, carried by the stem and located on the opposite side of the stem to the port, giving the closing-face of the valve immediate action at the commencement of the return of the cap or cover to close the mouth of the discharge-passage, thereby shutting off the discharge and escaping the drip during the return travel of the cap or cover, substantially as specified.

4. The combination, in a beer-cock, of the stem A B, elongated driving-head C, wall D, depending from the stem A B, chamber E in the wall D, disk valve F in the chamber E and having the port *e*, discharge-passage *f* from the chamber E, stem G, carrying the valve F, bar H, turning the stem G, cap or cover I, attached to the bar H and projecting beneath the mouth of the discharge *f* when the port *e* is at the top of the chamber E, the port *e*, and the cap or cover I, traveling in opposite directions in the turning of the stem G, and stop *i*, limiting with the driving-head C the turning of the stem G in either direction, substantially as and for the purposes specified.

476,168. CAR-COUPLING. THOMAS PERE, Reidsville, N. C. Filed Dec. 30, 1891. Serial No. 416,906. (No model.)

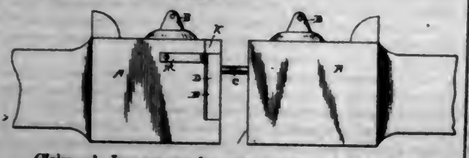


Claim.—1. In a car-coupler, a draw-head provided with a shouldered pin having a projection at its lower end, and a latch, the said projection when the pin is raised operating the latch to sustain the pin, substantially as described.

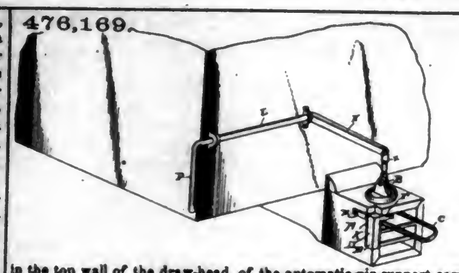
2. In a car-coupler, a draw-head provided with a shouldered pin having a projection at its lower end, and a latch pivoted independently of the pin, the latch being operated by the projection when the pin is raised, substantially as described.

3. In a car-coupler, a draw-head provided with a shouldered pin, a latch, and a jaw having a disk fixed to it, the pin being raised operating the latch to bring it under the shoulder to sustain the pin, and the jaw in being opened causing its disk to throw out the latch and itself sustain the pin, but upon being closed, as by its disk being properly struck, releasing the pin and allowing it to drop, locking the jaw, and thus coupling, substantially as described.

476,169. CAR-COUPLING. CHARLES B. PEPPS, Walton, Kans., assignor of one-half to Moses T. Johnson, same place. Filed Dec. 31, 1891. Serial No. 416,704. (No model.)



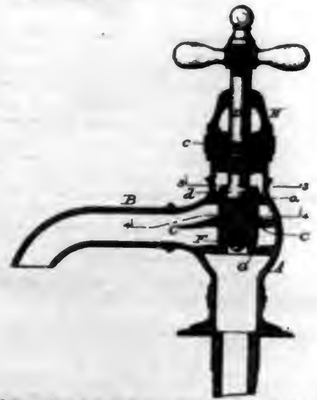
Claim.—1. In a car-coupler, substantially as described, the combination, with the draw-head having a recess in one of its side walls at its forward end and a link-pin adapted to take through an aperture



in the top wall of the draw-head, of the automatic pin-support comprising the vertical body and the lateral platform branch pivotally connected to the under side of the top wall of the draw-head, substantially as and for the purpose set forth.

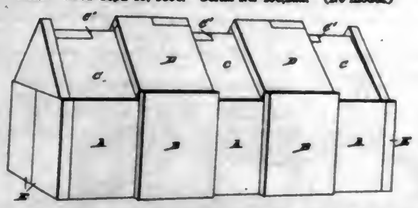
2. In a car-coupler, substantially as described, the combination, with the draw-head having a recess in one of its side walls at its forward end and a link-pin adapted to take through an aperture in the top wall of the draw-head, of the automatic pin-support comprising the vertical body and the lateral platform branch pivotally connected to the under side of the top wall of the draw-head and a spring backing the vertical body of the pin-support, substantially as and for the purpose set forth.

476,170. FAUCET. GEORGE W. RENTON, Brooklyn, assignor to Frederick H. Du Bois, New York, N. Y. Filed Dec. 4, 1890. Serial No. 373,593. (No model.)



Claim.—In a faucet, the combination of a shell or body provided with diaphragms *a* C and valve-seat G, the diaphragm C extending forward into the discharge-nozzle, an elongated valve-plug E, having bearings in the diaphragms *a* and C, a valve-stem D, flexibly connected with the plug E, and a cap H, having a threaded bearing for the valve-stem, whereby the valve-plug is enabled to seat itself freely and accurately and the escape of water around the valve-stem is prevented.

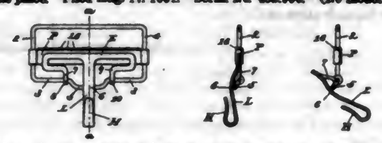
476,171. GRAVE-VAULT. FRANK C. RENSSOTTER, Union City, Mich. Filed Sept. 19, 1891. Serial No. 406,222. (No model.)



Claim.—A grave-vault comprising side slabs A, spaced a short distance from each other, slabs B, overlapping the slabs A and covering the intervening spaces, the top slabs C C, spaced a short distance from each other, their lower edges resting on the upper edges of the slab A, the upper edges of the corresponding slabs on opposite sides resting against and supporting each other and forming the angle of the roof, said upper edges being formed with interlocking shoulders, the slabs D, overlapping the slabs C and closing the intervening spaces, the

lower edges of said slabs D resting on the upper edges of the slabs B and their upper edges united in the same manner as those of the slabs C and the end slabs, all of said slabs being of imperishable material and their joints so arranged as to render them adjustable to different sizes of graves, substantially as specified.

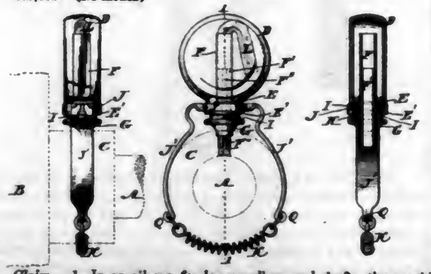
476,172. SUSPENDER-BUCKLE. HUBERT P. RICHARDS, New Britain, Conn., assignor to the Traut & Hine Manufacturing Company, same place. Filed Aug. 17, 1891. Serial No. 402,936. (No model.)



Claim.—1. In a grip-back buckle, the combination, with a buckle-frame, substantially as described, having in the lower bar thereof the frame-cam 5, of a buckle-lever, substantially as described, journaled on said lower bar and having a grip-bar and a lever-arm constructed with a cam-bearing coacting with said frame-cam for closing the lever, substantially as set forth.

2. In a grip-back buckle, the combination, with the wire buckle-frame carrying on the sides thereof a back plate and having the lower bar thereof below said back plate bent downwardly in its middle portion to form the frame-cam 5, of the clamp-lever consisting of a clamp-bar having downwardly-extending arms journaled on said lower bar and having a strap-carrying lever-arm constructed with a cam-bearing midway of the length thereof and coacting with said frame-cam for closing the lever, substantially as set forth.

476,173. LOOSE-PULLEY OILER. JOSIAS H. RICHARDS and AUGUSTUS W. BURR, Philadelphia, Pa. Filed Oct. 26, 1891. Serial No. 409,762. (No model.)



Claim.—1. In an oil-cup for loose pulleys and shafts, the combination of oil-cup D, open inner double tube F F', the portion F being split, as shown at F''', to set firmly and spring against the interior of portion F and projecting outwardly and adapted to enter a corresponding hole in a pulley-hub, said cup being provided with a clasp adapted to surround the hub of a pulley to hold the cup in place, all operating substantially as described.

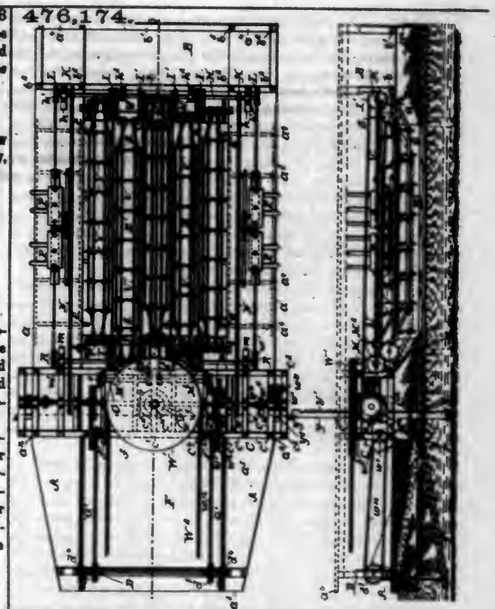
2. In an oil-cup for loose pulleys and shafts, the combination of oil-cup D, interior open tube F F', projecting through the neck of the same, said cup being provided with a clasp adapted to surround the hub of a pulley to hold the cup in place, and being also provided on the side opposite the cup with a balance-weight N, substantially as and for the purpose described.

476,174. HYDRAULIC MOTOR. WILLIAM H. ROSSETT, Kansas City, Mo. Filed Jan. 12, 1891. Serial No. 377,476. (No model.)

Claim.—1. In hydraulic motors, a water-carriage having side supporting-floats and an intermediate sluice, transverse gear-supporting beams at both ends of said carriage, having individual gear-supports at an angle to said beams above said sluice, transverse main driving-shafts journaled upon said floats upon the opposing sides of said beams, having gear thereon, parallel traversing rods in the line of direction of said sluice, having cranks at both ends, and gear connected with said cranks, mounted on said gear-supports, and meshing with said driving-shafts, substantially as and for the purpose described.

2. In hydraulic motors, a carriage having floats on both sides and an intermediate sluice having channels and channel-partitions in the line of direction of said sluice, transverse gear-supporting frames at both ends of said carriage, transverse main driving-shafts journaled upon said floats on the opposing sides of said gear-supporting frames, parallel traversing rods in the line of direction of said sluice, having water-actuated paddles, meshing gear on said driving shafts and said

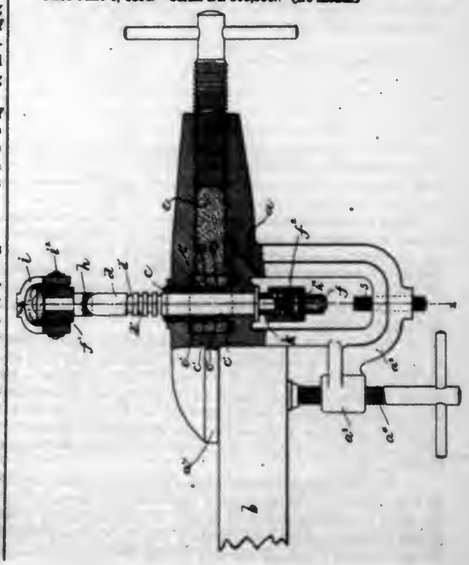
476,174.



channel-partitions, and cranks on both ends of said traversing rods connected with the gear on said channel-partitions, substantially as and for the purpose described.

3. In hydraulic motors, a water-carriage having side floats and an intermediate sluice, a hinged bottom to said sluice, transverse gear-supporting frames at both ends of said floats and main driving-shafts on the opposing sides of said frames, suitable water-actuated paddles in said sluice having paddle-supporting shafts in gear with said main driving-shafts, separate power-distributing shafts in one of said gear-supporting frames having gear connected with the main driving-shafts, winding-ropes connected with one of said power-distributing shafts at one end and also connected with the hinged bottom at the other, and shafting-gear on said separate power-distributing shafts connected with each other, for the purpose described.

476,175. BULLET-GREASING MACHINE. WILLIAM C. STEWART, Lynn, Mass., assignor of one-half to J. Hammond Stewart, same place. Filed June 6, 1891. Serial No. 395,336. (No model.)



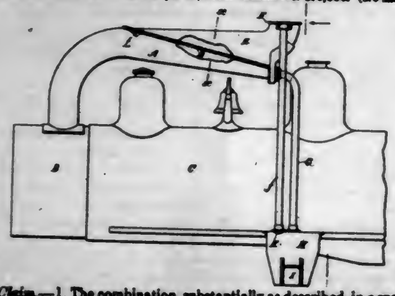
Claim.—1. In a bullet-greasing device, the combination of a stock or body having a socket formed to receive and accurately fit a cylindrical grooved bullet and provided with orifices arranged to coincide with the grooves of a bullet inserted in said socket, a grease-chamber in said stock communicating with said orifices, a lever pivotally connected to said stock, an arm or head pivoted to the lever above the said socket, said arm having a top presser arranged to bear on the upper end of a bullet and force the latter into the socket when the lever is depressed, a bottom presser or plunger adapted to move in said socket and bear on the lower end of the bullet therein, and connections between said plunger and the lever, whereby the plunger is caused to descend and ascend with the top presser, and thereby retreat before the bullet when the latter is entering the socket preparatory to being charged with grease and to eject the bullet from the socket after its grooves have been charged, as set forth.

2. The combination of the stock or body having the bullet-receiving socket, the latter being provided with orifices arranged to coincide with the grooves of a bullet, and the grease-chamber communicating with said orifices, said chamber having a grease-presser or follower, a rod fitted to slide in a guide in said stock, a top presser secured to the upper portion of said rod and arranged to force a bullet into the socket, a bottom presser or plunger secured to the lower portion of said rod and arranged to enter said socket, and means for depressing and raising said rod and the pressers connected therewith, as set forth.

3. The combination of the stock or body having the bullet-receiving socket, the latter being provided with orifices arranged to coincide with the grooves of a bullet, and the grease-chamber communicating with said orifices, said chamber having a grease-presser or follower, a rod fitted to slide in a guide in said stock, a top presser secured to the upper portion of said rod and arranged to force a bullet into the socket, a bottom presser or plunger fitted to move vertically in said socket, an arm secured to the bottom portion of said rod, and a yielding connection between the said arm and the bottom presser, whereby the pressers are adapted to be separated to permit the insertion and removal of a bullet, as set forth.

4. The combination of the stock or body having the bullet-receiving socket, the latter being provided with orifices arranged to coincide with the grooves of a bullet, and the grease-chamber communicating with said orifices, said chamber having a grease-presser or follower and a presser or plunger formed to fit closely and play vertically in said socket as a means for ejecting the bullet therefrom and for closing said orifices when raised to eject the bullet, as set forth.

476,176. SPARK-ARRESTER. DEMETRIUS B. STROUSE and WINFIELD GRIFFIN, Salem, Va., assignors to the Carper Railway Engine Company, same place. Filed Sept. 25, 1891. Serial No. 406,316. (No model.)



Claim.—1. The combination, substantially as described, in a spark-arrester for locomotives, of a smoke stack or flue extending backward over the boiler, a smoke-compartment divided off from the flue by a perforated partition extending lengthwise of the flue, and an upwardly-projecting exhaust-discharge leading from the smoke-compartment and having a cross-section of less extent than the superficial area of the perforated partition.

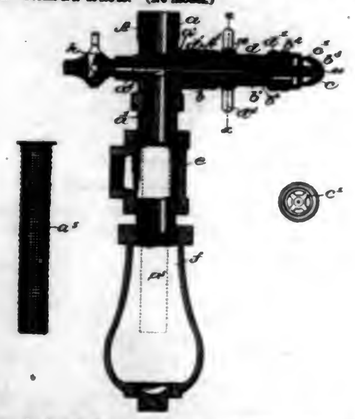
2. The combination, substantially as described, in a spark-arrester for locomotives, of a smoke stack or flue extending backward over the boiler, a smoke-compartment divided off from the flue by a perforated partition extending lengthwise of the flue, an upwardly-projecting exhaust-discharge leading from the smoke-compartment and having a cross-section of less extent than the superficial area of the perforated partition, and a cinder-receptacle connecting with the bottom of the flue.

3. The combination, substantially as described, in a spark-arrester for locomotives, of a smoke stack or flue extending backward over the boiler, a smoke-compartment divided off from the flue by a perforated partition extending lengthwise of the flue, an upwardly-projecting contracted exhaust-discharge leading from the smoke-compartment, a cinder-receptacle located below the smoke-stack and connected therewith by a pipe, and a pipe leading from the cinder-receptacle and having its exit at or in the mouth of the main exhaust-discharge.

4. The combination, substantially as described, in a spark-arrester for locomotives, of a smoke stack or flue extending backward over the boiler, a perforated partition extending lengthwise of said flue, having its forward end secured to the upper wall of said flue and provided with a spark-deflector L upon its under side, and a main exhaust-discharge located in the rear of said deflector and upon the opposite side of the said partition.

5. The combination, substantially as described, in a spark-arrester for locomotives, of a smoke stack or flue extending backward over the boiler, a smoke-compartment divided off from the flue by a perforated partition extending lengthwise of the flue and entirely surrounding the smoke-compartment, and an upwardly-projecting exhaust-discharge leading from the rear of the smoke-compartment, for the purpose described.

476,177. HYDROCARBON-BURNER. EDWARD J. THOMPSON, Antrim, N. H., assignor to the Goodell Company, same place. Filed Aug. 6, 1891. Serial No. 401,843. (No model.)



Claim.—1. In a hydrocarbon-burner, a stationary oil-tube and a movable oil-tube threaded to move with relation to said stationary oil-tube and to regulate by such movement the flow of oil through the tubes, an air-tube surrounding said oil-tubes and threaded to move with relation to said movable oil-tube to regulate the flow of air, and means for effecting a variable movement of said air-tube and movable oil-tube, to operate substantially as described.

2. In a hydrocarbon-burner, the oil-tubes b b^3, threaded to move one with relation to the other to regulate the flow of oil therethrough, the air-tube d, and tip e, and a connection between said air-tube and oil-tube, whereby movement of the former will effect a different movement of the latter, to operate substantially as described.

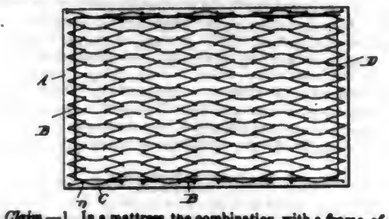
3. In a hydrocarbon-burner, the oil-tube b, the movable oil-tube b^3, threaded thereon, movement of the latter with relation to the former regulating the flow of oil, an air-tube d, and tip e, the screw 16, and groove 15, to operate substantially as described.

4. In a hydrocarbon-burner, a stationary oil-tube having a closed perforated end, a movable oil-tube threaded to move with relation to the said stationary tube and having a shoulder adapted to close the perforations in the end of said stationary tube, and an air-tube surrounding the said stationary and movable oil-tubes and having a tip to co-operate with the end of the said movable tube, substantially as described.

5. In a hydrocarbon-burner, a stationary oil-tube having a closed perforated end, a movable oil-tube threaded to move with relation to said stationary tube and having a shoulder adapted to close the perforations in the end of said stationary tube, an air-tube surrounding the stationary and movable oil-tubes and having a tip to co-operate with the end of said movable tube, and a cock to control the end of the stationary oil-tube opposite the closed perforated end, opening of the cock permitting fluid to be forced from the movable oil-tube through the perforations in the closed end of the stationary oil-tube and out from the latter through the cock, substantially as described.

6. In a hydrocarbon-burner, the combination of the following instrumentalities, viz: an oil-tube, a supply-conduit therefor, a drip-chamber in communication with the said conduit, a cylindrically-shaped sleeve forming a continuation of said supply-conduit and extending down into said chamber and removed from the side walls thereof, and a lateral oil-supply opening located opposite said cylindrical-shaped sleeve, substantially as described.

476,178. SPRING-BED. ARTHUR H. VIEL, Fenton, Mich. Filed Jan. 29, 1892. Serial No. 419,633. (No model.)



Claim.—1. In a mattress, the combination, with a frame, of a fabric secured thereto comprising a series of longitudinal and crimped sections transversely arranged and a series of horizontal laterally curved and yielding connecting-links hooked into the apices of said crimped sections, substantially as described.

2. In a mattress, the combination, with a frame, of a fabric secured thereto and comprising a transverse horizontal section B, formed of a continuous wire bent as shown and described, and the yielding connecting transverse sections C, consisting of single pieces of wire with a lateral horizontal bend extending from end to end and hooks D formed at the ends thereof, the parts arranged and connected substantially as and for the purpose described.

476,179. LADDER. ROBERT W. WHITEHURST, Norfolk, Va., assignor of one-half to McD. L. Wrenn, same place. Filed Jan. 9, 1892. Serial No. 417,446. (No model.)



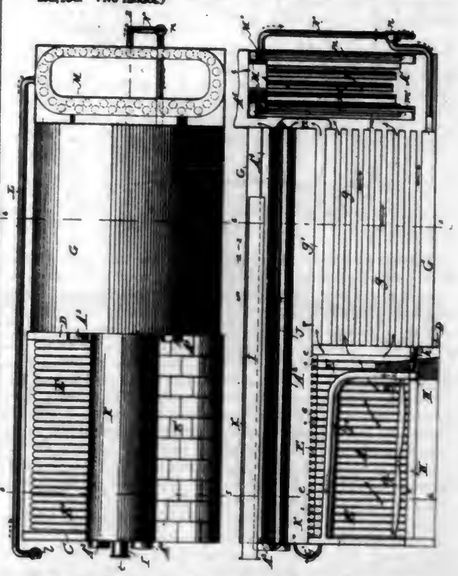
Claim.—In a ladder, the combination, with two sections of the same width, each having its side pieces extended beyond the last rung and notched at one end, one of which sections is shorter than the other one and is hinged to the longer one near the upper end thereof, whereby it may be used as a prop or an extension for the longer section, the notched ends of each of said sections being adapted to receive the notched ends of a narrower section, of two hooks upon the longer section, one above and one below the hinge, and locking devices upon the shorter section, adapted to be engaged, respectively, by the hooks when said section is in either of its two positions, substantially as set forth.

476,180. MEANS FOR PROTECTING THE BUNGWAYS OF BARRELS. MARK ANTHONY, Berkeley, assignor to the Golden Gate Safety Faucet Company, San Francisco, Cal. Filed Jan. 16, 1892. Serial No. 418,299. (No model.)



Claim.—The device for protecting bungways or similar openings in barrels, casks, kegs, or like packages during the operation of coating the interior, said device comprising a spout adapted to fit in the bungway or like opening, and means thereon for retaining it in position, said spout being designed to extend neatly to the inner end of said bungway or opening, substantially as specified.

476,181. STEAM-BOILER. JOHN BAIRD, New York, N. Y.; John S. Baird, Addison W. Baird, and John E. Parsons executors of said John Baird, deceased. Filed May 4, 1891. Renewed May 7, 1892. Serial No. 432,138. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a fire-box or combustion-chamber, a back connection, an interposed boiler-shell of large diameter extending above the fire-box, an upper shell extending over the fire-box, and a series of direct and return flues in both shells, through which hot gases pass to dry and superheat the steam.

2. The combination, substantially as hereinbefore set forth, of a front head, a back head, a fire-box or combustion-chamber, parallel upright transverse arched water-tubes inclosing its top and sides, a back connection, a main or lower shell of large diameter between the fire-box and back connection, pipes connecting the front head, back head, arched tubes, and main shell, an upper shell over the fire-box, and direct and return flues in the main shell and upper shell, through which a portion of the products of combustion pass.

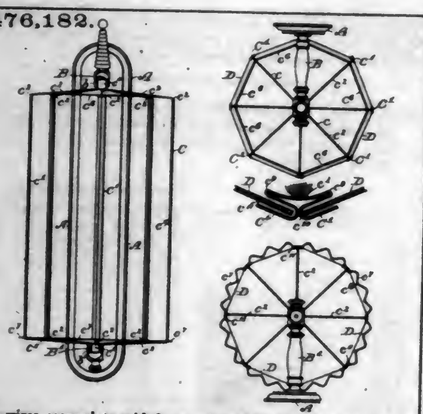
3. The combination, substantially as hereinbefore set forth, of a front head, a back head, a fire-box or combustion-chamber, parallel upright transverse arched water-tubes inclosing its top and sides, a back connection, an interposed lower or main shell of a diameter equal to the width of the fire-box, but extending above it, an upper shell of smaller diameter overlying the fire-box in front of the main shell, steam-pipes connecting the front head and arched tubes with the upper shell, direct and return flues in both shells, and a steam-pipe extending from the back of the main shell forward through the upper shell to dry and superheat the steam.

476,182. TABLET-DISPLAYING DEVICE. ERI G. BAKER, Lowell, Mass., assignor to the Baker Telephone Index and Tablet Company, same place. Filed June 8, 1891. Serial No. 395,461. (No model.)

Claim.—1. The cylinder comprising hubs or journals, frame-wires secured to said hubs and having parts parallel with each other and with the axis of said cylinder, plates secured to said parallel parts of said frame-wires and having grooves adapted to receive tablets or cards, and brace-wires secured to said frame-wires to hold said frame-wires in their proper positions relatively to each other, one of said brace-wires being arranged nearer to the center of said cylinder than said plates at the top of said cylinder and the other of said brace-wires being secured to said frame-wires below the grooves of said plates to support such tablets or cards, as and for the purpose specified.

2. The cylinder comprising hubs or journals, frame-wires secured to said hubs and having parts parallel with each other and with the axis of said cylinder, plates secured to said parallel parts of said frame-wires and having grooves adapted to receive tablets or cards, and

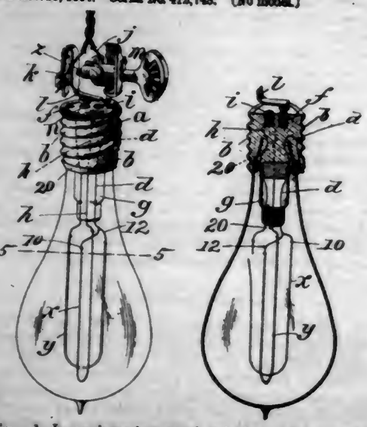
476,182.



brace-wires secured to said frame-wires to hold said frame-wires in their proper positions relatively to each other, one of said brace-wires being arranged nearer to the center of said cylinder than said plates at the top of said cylinder and the other of said brace-wires being secured to said frame-wires below the grooves of said plates to support such tablets or cards, and between said plates adapted to extend beyond such cards to enable said cylinder to be turned by applying the fingers to said last-named brace-wire, as and for the purpose specified.

3. The cylinder comprising hubs or journals, frame-wires secured to said hubs and having parts parallel with each other and with the axis of said cylinder, plates secured to said parallel parts of said frame-wires and having grooves adapted to receive tablets or cards, and brace-wires secured to said frame-wires to hold said frame-wires in their proper positions relatively to each other, one of said brace-wires being arranged nearer to the center of said cylinder than said plates at the top of said cylinder and the other of said brace-wires being secured to said frame-wires below the grooves of said plates to support such tablets or cards and between said plates adapted to extend beyond such cards to enable said cylinder to be turned by applying the fingers to said last-named brace-wire, said last-named brace-wire being corrugated in order to be more readily engaged by the fingers, as and for the purpose specified.

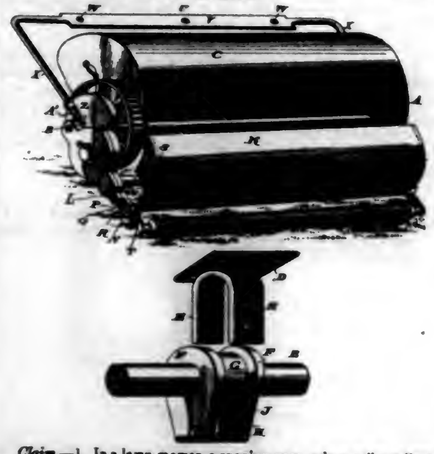
476,183. INCANDESCENT LAMP. JAMES BALL, Holyoke, Mass., assignor of two-thirds to James T. Abbe and George N. Tyner, same place. Filed Nov. 23, 1891. Serial No. 412,743. (No model.)



Claim.—1. In an incandescent electric lamp, the combination, with the globe or bulb having a suitable insulating material at its shank, of a leading-in wire *d*, having a connection with a suitable metallic part which is provided therefor at the shank and extended into the vacuum-space of the lamp, two or more separate metallic socketed pieces set in the said insulating material, several filaments, each having its one end connected to suitable portions of said leading-in wire *d*, and leading-in wires which are respectively connected to the other ends of the filaments and lead, respectively, to said socketed pieces, a screw-plug adapted to be set in either of said socketed pieces, and a switch having the movable finger *l*, adapted to range across all of said socketed pieces and adapted to have connection with the one thereof in which the screw-plug may be set, as set forth.

2. In an electric incandescent lamp, the combination, with the globe or bulb having a suitable insulating material at its shank, of a leading-in wire *d*, having a connection with a suitable metallic part which is provided therefor at the shank and extended into the vacuum-space of the lamp, two or more separate metallic pieces set in the said insulating material, several filaments, each having its one end connected to suitable portions of said leading-in wire *d*, and leading-in wires which are respectively connected to the other ends of the filaments and lead, respectively, to said metallic pieces, a movable contact-piece adapted to be supported by either of said metallic pieces, and a switch having the movable finger *l*, adapted to range across all of said metallic pieces and adapted to have connection with the one thereof on which the movable contact-piece may be set, substantially as set forth.

476,184. LAWN-MOWER. JOHN BRAUN and HENRY DECK, Philadelphia, Pa., assignors to John Braun & Sons, same place. Filed Dec. 3, 1891. Serial No. 413,360. (No model.)



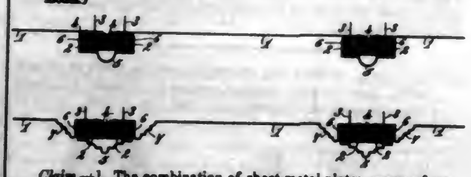
Claim.—1. In a lawn-mower, a running-gear axle, a collar adjustable thereon and adapted to be rigidly secured thereto, a bracket adapted to be seated on said collar, and a grass-receptacle connected with said bracket, said parts being combined substantially as described.

2. In a lawn-mower, a split collar having flanges or ribs thereon, a bracket with limbs adapted to be seated on said collar, and a grass-receptacle connected with said bracket, said parts being combined substantially as described.

3. In a lawn-mower, a cutter-guard, a journal or rotating piece adapted to be secured to said guard, and a clamping means for said rotating piece, said parts being combined substantially as described.

4. In a lawn-mower, a rotatable piece or journal having limbs adapted to embrace or hold a cutter-guard and having a screw-bolt therein on which it is adapted to turn and a nut for clamping said rotatable piece in place, said parts being combined substantially as described.

476,185. SHEET-METAL CEILING-PANEL. FRANK G. CALDWELL, Wheeling, W. Va., assignor to the Caldwell & Peterson Manufacturing Company, same place. Filed Mar. 1, 1892. Serial No. 423,410. (No model.)

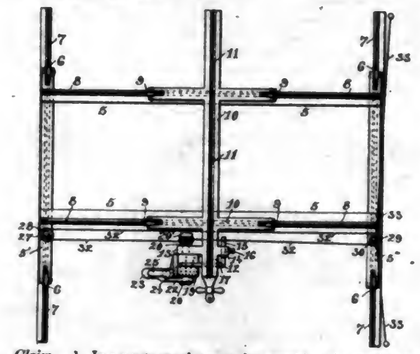


Claim.—1. The combination of sheet-metal plates, gangs of separated or spaced wooden blocks arranged along the edges of the plates and nailed to the joists, and sheet-metal moldings applied over and secured to the separated or spaced blocks, substantially as described.

2. A metallic ceiling-panel composed of a metal plate provided along each edge with a gang of separated or spaced wooden blocks which are nailed to the joists or beams for the purpose of securing the panel in position, substantially as described.

3. The combination of sheet-metal plates formed integral with moldings in juxtaposition to their edges to provide lateral flanges, gangs of separated or spaced wooden blocks secured to the lateral flanges and nailed to the joists or beams, and sheet-metal moldings applied over and secured to the separated or spaced wooden blocks, substantially as described.

476,186. PANTOGRAPH ENGRAVING-MACHINE. WILFRID CLARK, Providence, R. I., assignor to the John Hope & Sons Engraving and Manufacturing Company, same place. Filed Nov. 4, 1891. Serial No. 410,839. (No model.)



Claim.—1. In a pantograph engraving-machine, the combination, with the stylus-carriage and a belt secured to said carriage and extending around pulleys revolving on supports provided on the traverse-carriage, of one or more pulleys also revolving on said supports and carrying belts adapted to be clamped to the first-mentioned pulleys to revolve with them and take up said belts and thus operate the traverse-carriage, as described.

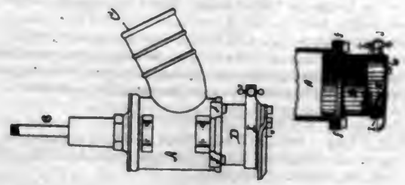
2. In a pantograph engraving-machine, the combination, with a stylus-carriage and a regulating device carried thereon, of a belt attached to and operated by said regulating device and means for transmitting the motion of the belt to the traverse-carriage, as described.

3. In a pantograph engraving-machine, the combination, with a stylus-carriage and a belt secured thereto and passing around pulleys revolving on supports secured to the traverse-carriage, of graduated pulleys adapted to be clamped to the first-mentioned pulleys and operating-belts to transmit the motion of the stylus-carriage to said traverse-carriage in a greater or less degree.

4. The combination, with the stylus-carriage 10, having the arms 13 and 14, a regulator-wheel 19, secured to the shaft 20, having the barrel 20′ and journaled in bearings in said arm 13, and a spring 17, supported by the arm 15 adjustable through a perforation in the arm 14 and having a pin 18, adapted to enter the holes in said regulator-wheel, of the belt 32, secured to the barrel 20′ and extending around the pulleys 28 and 29, the pulley 30, adapted to be clamped to the pulley 29, and the belt 33, wound around said pulley 30 and having its ends fastened, as described.

5. The combination, with the regulator-wheel 19, secured on a shaft 20, journaled in an arm carried on the stylus-carriage, and having the holes 21, a spring-operated pin engaging in such holes, and a brake-frame 22, pivoted to said shaft 20 and provided with the brake 24, operated by the handle 25 to lift the pin 18 out of the holes 21 and adapted to revolve the regulator-wheel, of the belt or band 32, passing over the pulleys 28 and 29 and attached to the spindle-barrel 20′, the pulley 30, adapted to be clamped to the pulley 29 and to revolve with the same, and the belt 33, wound around said pulley 30 and having its ends fastened, adapted to advance or retire said pulley when revolved in the proper direction, as described.

476,187. DEVICE FOR CONTROLLING THE WATER-JETS OF STREET-SPRINKLERS. CHARLES M. COLLINS, South Bend, Ind. Filed Apr. 9, 1891. Serial No. 388,286. (No model.)



Claim.—1. In combination, in a valved sprinkler-head, a stationary part A, provided with a lateral branch for a water-inlet, an interior valve mechanism, and means for attaching said part A to the supporting-frame, a rotatable part D, constituting the water-distributing chamber and provided with a jet-orifice extending across one side of said chamber transverse to its axis of rotation, and means whereby said part D may be locked in the position desired.

2. The jet-chamber D, provided with the slot-orifice *g*, combined with a movable valve-ring external to said chamber and means for causing said ring to ascend or descend while being rotated, for the purpose set forth.

3. The jet-chamber D, provided with the oblique slots *k*, substantially as set forth, combined with the valve-ring provided with studs *m*, adapted to enter said slots and compel said ring to rise or fall, according to the direction of rotation.

4. The jet-chamber D, provided with orifice *g* and oblique slots *k*, combined with the ring I, provided with the studs *m m* and clamp-screw *j*, substantially as shown.

476,188. PIPE-COUPLING. JOSEPH CONNOR, Philadelphia, Pa., assignor of one-half to Allen J. Fuller, same place. Filed June 24, 1891. Serial No. 397,290. (No model.)



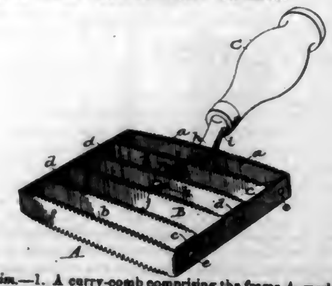
Claim.—1. The opposite collars A A′, with outwardly-projecting shoulders C C on the inner ends thereof, the sleeve E, having at one end the inwardly-projecting flange F, which engages with the shoulder C of the collar A, and at the other end the interior screw-threads E′, and the nut G, which abuts against the shoulder C′ of said collar A′ and is interposed between the sleeve E and said collar A′ and engages with the threads of said sleeve E, said nut encircling the collar A′, said sleeve E having a passage H coincident with the space between the two collars, the parts being combined substantially as described, forming an improvement in couplings, as stated.

2. In a coupling, a sleeve abutting against the shoulder of one collar, in combination with an exterally-threaded nut which abuts against the shoulder of the opposite collar and is interposed between said sleeve and second-named collar and is rotatable upon the latter and secured to said sleeve, said sleeve having a passage coincident with the space between the two collars, substantially as and for the purpose set forth.

3. The collars A A′, having flanges C C on their inner ends and separated at the flanges, and the packing D between said flanges, in combination with the sleeve E, which encircles the flanges C C, and the nut G, which encircles the collar A′ and engages with the sleeve E, said sleeve having a passage H coincident with the space between the two collars, substantially as described.

4. In a pipe-coupling, two opposite collars, a sleeve encircling the same, formed with a passage open to the exterior, and a tightening-nut, in combination with packing, which occupies a position between the collars coincident with the passage in the sleeve, the flange of one collar being interposed between the packing and tightening-nut, substantially as described.

476,189. CURRY-COMB. ALEXANDER C. DECKER, Keokuk, Iowa. Filed Jan. 7, 1892. Serial No. 417,336. (No model.)



Claim.—1. A curry-comb comprising the frame A, made of a single piece of metal bent to proper form, a body portion B, also made of a single piece of metal bent to proper form and secured within the frame, and a handle secured to the frame, all substantially as shown and described.

2. A curry-comb comprising a frame, a handle, and a body portion B, made of a single piece of metal bent so as to form the bars *b*, ears *c*, and connecting portions *d* and united to the frame.

3. A curry-comb comprising a body portion and a frame to receive the body portion, composed of a single piece of metal bent to proper form, with its end overlapping and united, and a handle journaled in the said overlapping ends.

4. In a curry-comb, the combination, with a frame having the openings *f m* and a perforated yielding bar *b*, of the handle C, provided with a stem *i*, entering the perforations and provided with lugs *l* and a retaining device or pin *k*.

5. In a curry-comb, the combination, with a frame having the openings *f m* and the perforated yielding bar *b*, of the handle C, provided with a stem *i*, having lugs *l* to fit the openings *m*, a retaining device *k* for the handle, and a spring between the bar and the frame.

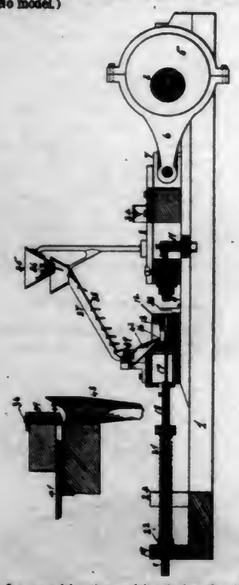
6. In a curry-comb, the combination, with a frame having openings *f m* and the perforated bars *b b*, of the handle C, having a stem *i*, provided with lugs *l*, a retaining device for the handle, and springs *n n* between the bars and also between the bars and the frame.

476,190. INHALER. ALONZO DOW, Wooster, assignor of one-half to Samuel J. Spalding, Canton, Ohio. Filed Sept. 24, 1891. Serial No. 406,673. (No model.)



Claim.—An inhaler comprising a receptacle or shell A, a chambered plug B, fitted in said shell and having an annular flange *b*, which contacts with the end of the shell and is provided with an opening C in its outer end and an independent passage D, formed in the wall of said plug and opening through the inner end thereof and the flange *b*, a foraminous diaphragm E, arranged in the central chamber of the plug, and a cap F, adapted to be fitted over the plug and arranged to close both the opening *c* and the outer end of the passage D therein, substantially as shown and described.

476,191. MACHINE FOR MAKING HOBNAILS. JOSIAH W. ELLS, Pittsburg, Pa., assignor to Oscar Kleber, Harry Kleber, and Henry Braun, same place. Filed Sept. 27, 1890. Renewed Mar. 24, 1892. Serial No. 426,298. (No model.)

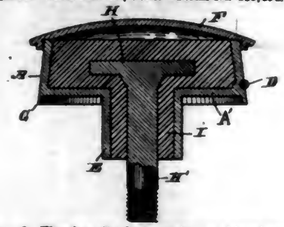


Claim.—1. In a machine for making hobnails of the character described, the combination of a box-die and suitable punch for severing a blank portion from a hot bar of metal, an intermittent nail-feeder, a longitudinally-acting nail-driver for forcing a nail centrally through said blank, a suitable spring for giving a percussive forward impetus to the nail-driver, a cam for compressing said spring and forcing the nail-driver back, a latch for holding the spring temporarily under compression, and a sliding block adapted to retreat within the box-die a distance equal to the movement of the punch therein without releasing the nail-driver or operating the nail-feeder.

2. In a hobnail-machine, the combination of a box-die and punch to operate therein, an automatically-acting nail-feeder, a longitudinally-acting nail-driver, a suitable spring for forcing said driver, a revolving cam for compressing said spring, a latch for temporarily retaining the spring under compression, a sliding block within the box-die, a passage way for the nails into and through said sliding block, and a retractor-bar connecting the punch-carrier to said sliding block to draw it forward and expel the supplemental-headed nails from the die-box by a recession of the punch.

3. In a hobnail-machine, the combination of a punch and die-box, a sliding block provided with a nail-receiver at the back of and extending into and through said die-box, an automatically-acting nail-feeder, and a nail-driver that shall operate only through the interposition of a metallic blank pressed into the box-die and against the sliding block by the punch.

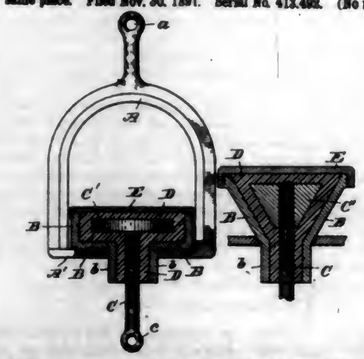
476,192. HANGER FOR ELECTRIC-RAILWAY WIRES. CHARLES R. ELLIOTT, Boston, Mass., assignor to the Revere Rubber Company, same place. Filed Nov. 30, 1891. Serial No. 413,491. (No model.)



Claim.—1. The described suspending and insulating devices, consisting of the shell having in one integral casting the side walls A, the bottom A', and the reduced depending tubular central portion E and lateral ears or hooks C for engagement with the transverse supporting-wire, in combination with the hanger H H', the enlarged head and prolonged stem of which are located centrally in said shell and its tubular extension, and with the body of insulating material I interposed between the parts A E and H H', substantially as and for the purpose set forth.

2. In an insulating-hanger, the shell A E, provided with a protecting-cap and formed with an annular water-shed or drip, in combination with the inclosed body of insulating material and the hanger H H', embedded in such material, substantially as set forth.

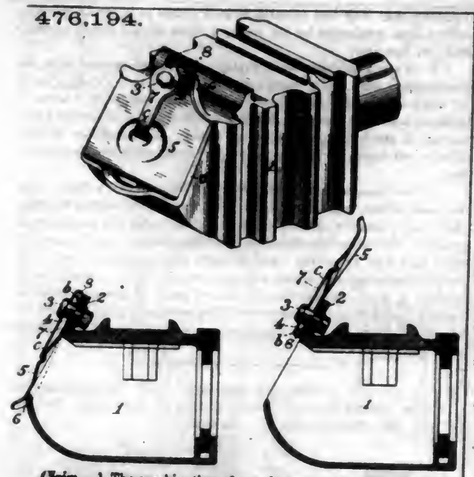
476,198. SWIVEL PULL-OFF FOR OVERHEAD WIRES. CHARLES R. ELLIOTT, Boston, Mass., assignor to the Revere Rubber Company, same place. Filed Nov. 30, 1891. Serial No. 413,492. (No model.)



Claim.—In a swivel pull-off or curve-hanger for electric railways, the stirrup or exterior hanger having arms A and annular portion A', in combination with the shell B, having tubular neck *b*, of reduced diameter, extending through said annular part, the interior hanger C C, held centrally within said shell and neck, and with the interposed body of insulating material D, said hangers being adapted to be supported and strained from opposite directions, substantially as set forth.

476,194. AXLE-BOX LID. PHILO H. FRENCH, Pittsburg, Pa., assignor to the Morris Box Lid Company, same place. Filed Feb. 1, 1892. Serial No. 419,906. (No model.)

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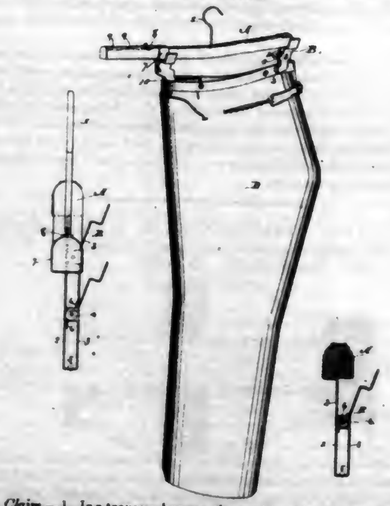


Claim.—1. The combination of an axle-box, a lid so pivoted thereto as to have a lateral movement transverse of the box, and a sprig having a bearing upon the lid and upon the axle-box, substantially as set forth.

2. An axle-box, in combination with a lid pivoted thereto, and a pivotal spring having a bearing on one side of its pivotal point on the lid and on the opposite side of its pivotal point upon the axle-box, substantially as set forth.

3. An axle-box, in combination with a lid provided with a projection on one side and pivoted to the axle-box, an arched or bowed spring also pivoted to the axle-box and bearing at its ends upon the lid and axle-box, respectively, and a lip formed on the end of the projection from the lid and adapted to engage the spring when the lid is swung from over the axle-box, substantially as set forth.

476,195. TROUSERS-HANGER. FRANK C. GERMANN, Jr., Albany, N. Y., assignor of one-half to William H. Frear, same place. Filed May 16, 1891. Serial No. 392,962. (No model.)



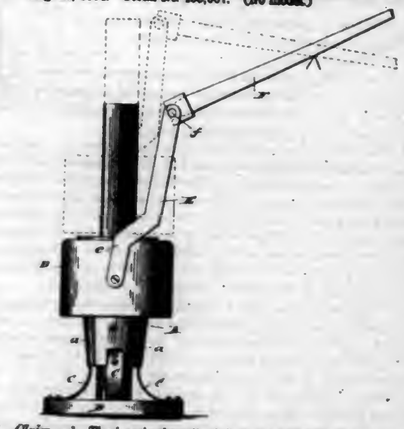
Claim.—1. In a trousers-hanger, the combination of a head or bar, two gripping devices, one of which is adapted to be received within the waistband of the trousers and to grip a fold of said waistband, one of said gripping devices being fixed to said bar and the other fitted to slide along said bar, and a locking device for locking the latter in position against the tension of the stretched waistband, substantially as described.

2. In a trousers-hanger, the combination of a head or bar, two gripping devices, one of which is adapted to be received within the waistband of the trousers and to grip a fold of said waistband, one of said gripping devices being fixed to said bar and the other fitted to slide along said bar, and a sprig-locking device for locking the latter in position against the tension of the stretched waistband, substantially as described.

3. In a trousers-hanger, the combination of a head or bar provided with serrations, a gripping device fitted to slide along said bar and provided with a sprig-detent adapted to engage with said serrations, and a stationary gripping device rigidly fixed to said bar, one of said gripping devices being adapted to be received within the waistband of the trousers and to grip a fold of said waistband, substantially as described.

4. In a trousers-hanger, the combination of a head or bar provided with serrations, two gripping devices, each consisting of a fixed jaw and a sprig-stretched movable jaw hinged to the fixed jaw, both of said jaws having inwardly-turned serrations, one of said gripping devices being rigidly fixed to said bar and the other adapted to slide along said bar, and provided with a sprig-detent adapted to engage in its serrations, and thereby lock said gripping device in position against the tension of the stretched waistband, substantially as described.

476,196. MACHINE FOR PULLING DRIVEN-WELL PIPES OUT OF THE GROUND. WILLIAM J. HAMILTON, Richmond, Ind., assignor of two-thirds to John W. Hoey and Frederick A. Wilke, same place. Filed Aug. 25, 1891. Serial No. 403,687. (No model.)



Claim.—1. The herein-described device for pulling pipes, comprising the base having an aperture therein, the segmental tapered jaws inclosing a circular aperture registering with the aperture in the base, said jaws being supported over the base by spring-arms, an annular collar beveled on its inner surface to fit said jaws, and a yoke-and-lever device for operating said collar, substantially as specified.

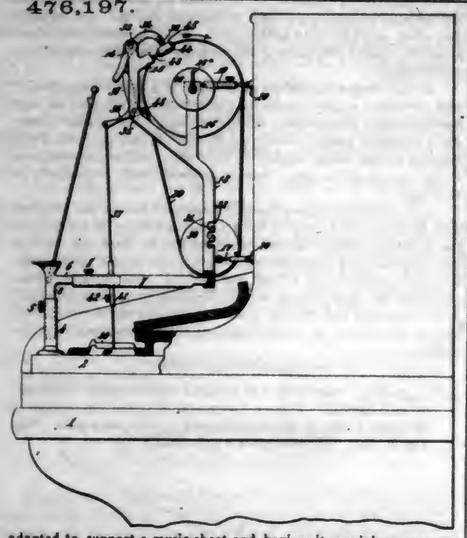
2. The herein-described device for pulling pipes, comprising an apertured base, a series of segmental jaws arranged in frusto-conical form having a yielding support over said base, the annular collar encircling said jaws and having an inner beveled surface, and the yoke-and-lever device for operating said collar, substantially as specified.

476,197. MECHANICAL ATTACHMENT FOR PIANOS AND ORGANS. JOHN E. HARRIMAN, Jr., Dallas, Tex., assignor of one-fourth to John N. Webb, Washington, D. C. Filed Feb. 28, 1891. Renewed Jan. 19, 1892. Serial No. 418,544. (No model.)

Claim.—1. The combination, with a musical instrument having a manual, of a recording attachment attachable to and detachable from said instrument, said attachment consisting of a frame, a removable and replaceable rod or shaft set in open bearings in said frame and having a series of strikers loosely mounted thereon, a series of bell-crank levers pivoted upon a separate supporting-shaft and having their arms on one side of the shaft bearing against the ends of the strikers, and a series of wires detachably connected at one end to the keys of the manual and at the other ends to the bell-crank levers, substantially as described.

2. The combination, with a musical instrument having a manual, of a frame detachably connected thereto, a rod or shaft supported in open bearings in said frame, a series of strikers loosely mounted on said rod or shaft, a corresponding series of bell-crank levers pivoted on a separate parallel rod or shaft and having one arm on each bearing against the end of one of the strikers, said bell-crank levers having each a lug or point projecting from its angular portion, a roll

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adapted to support a music-sheet and having its periphery in proximity to said lugs, and a series of wires or rods connecting the keys to the bell-crank levers, substantially as described.

3. The combination, with a musical instrument having a manual, of bars detachably and rigidly connected to said instrument, arms having sockets to receive said bars and provided with set-screws to fasten the said bars at any point to which they are adjusted, paper-supporting rolls having their journals supported in bearings in the frame, a series of strikers pivoted upon a rod or shaft mounted on the frame, a series of bell-crank levers bearing upon the ends of the strikers, and a series of rods or wires connecting the other ends of the bell-crank levers to the keys of the manual, substantially as described.

4. The combination, with a musical instrument having a manual, of a detachable frame, rolls journaled in said frame to support an endless band or sheet, a series of bell-crank levers having arms adapted to act upon a series of strikers and provided with lugs extending from the angular parts of said levers toward the periphery of one of the rolls, a series of rigid rods or wires connecting the said levers with the keys, and a sheet or band mounted on the rolls and provided with tappets moving in the vertical planes in which said lugs lie, substantially as described.

5. The combination, with a musical instrument having a manual, of a detachable frame, paper-supporting rolls journaled therein, a series of strikers pivoted upon a rod or shaft removably supported in the frame, a series of bell-crank levers pivoted upon a rod or shaft attached to the frame, said levers having lugs or points upon their angular portions extending toward the periphery of one of the rolls, and a series of rods or rigid connections between the ends of the bell-crank levers and the keys, whereby the notes of a musical composition may be recorded upon the paper passing over the roll, and a series of tappets mounted on said sheet over said recorded notes and used after removing the series of strikers to operate the keys and reproduce the melody recorded, substantially as described.

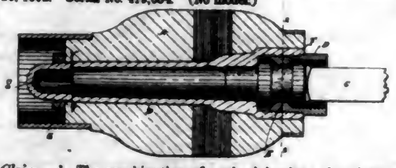
6. The combination, with a musical instrument having a manual, of a detachable frame, rolls journaled therein to support a band or sheet, a series of strikers pivoted upon a rod detachable from said frame, a series of levers operating the strikers, said levers having points or lugs extending toward the periphery of one of the rolls, a series of rigid connections between said levers and the keys of the instrument, and a sheet or band adapted to receive the impressions made by the strikers and to carry projecting tappets mounted on said sheet and covering the notes recorded, whereby the instrument may be caused to produce the recorded melody automatically, substantially as described.

7. The combination, with a musical instrument having a manual, of a frame detachably connected therewith, rolls journaled in said frame to support an endless sheet or band, a series of strikers pivoted on a removable rod or shaft, a series of bell-crank levers actuating said strikers and having lugs which project from their angular parts toward one of the rolls, a series of rigid connections between the power-arms of said bell-crank levers and the keys, and a sheet having tappets mounted thereon and provided with elastic points which move with the sheet in line with projections arranged a little in front of the lugs on the bell-crank levers, by which the elastic points are bent before reaching said lugs and released at such points as to strike said lugs with a force graduated by the resilient force of the points, substantially as described.

8. In a musical instrument having a manual or range of keys, the combination, with one or more rolls or pulleys carrying a sheet, strip, or band of material capable of receiving impressions, of a series of strikers, a series of levers operating said strikers, said levers being connected to the keys by wires buried at their ends in rubber suction-blocks, and means for feeding the strip or band, substantially as specified.

9. In a musical instrument, the combination, with a sheet, band, or other surface capable of receiving impressions and having recorded thereon the relative position and value of the notes of a musical composition, of a series of points or tappets attachable to and detachable from said sheet or surface, each having a length equal to that of the recorded impression it covers and each provided with an elastic point, a series of levers arranged in the lines of travel of the said points or tappets, and a frame having a series of projections arranged just below the point where the tappets engage said levers, substantially as specified.

476,198. **WHEEL BOX AND AXLE.** LEVI HARRIS, Kalamazoo, Mich., assignor of one-half to Oscar M. Allen, Sr., same place. Filed Jan. 29, 1892. Serial No. 419,634. (No model.)

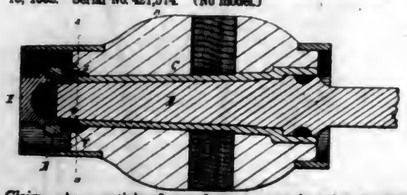


Claim.—1. The combination of a wheel having a box internally threaded within its inner end, an axle having a peripheral groove at said end, and a two-part nut adapted to screw into the threaded end of the box of said wheel and provided with the internal rib fitting into the peripheral groove of said axle, the sides of said rib and groove when viewed in cross-section being curved or slanting, substantially as set forth.

2. The combination of a wheel having a box internally threaded within its inner end, an axle having a peripheral groove at said end of the box, and a two-part nut adapted to screw into the threaded end of said box of the wheel and provided with the internal rib fitting into the peripheral groove of said axle, the sides of said rib and groove when viewed in cross-section being curved or slanting, the outer end of the box being closed and internally chambered, substantially as set forth.

3. The combination of a wheel having a box internally threaded within its inner end, an axle having a peripheral groove at said end, and a two-part nut adapted to screw into the threaded end of the box of said wheel and provided with the internal rib fitting into the peripheral groove of said axle, the sides of said rib and groove when viewed in cross-section being curved or slanting, and a nut screwed onto the outer end of the box of said wheel for holding said box in the hub, substantially as set forth.

476,199. **HUB-ATTACHING DEVICE.** LEVI HARRIS, Kalamazoo, Mich., assignor of one-half to Oscar M. Allen, Sr., same place. Filed Feb. 15, 1892. Serial No. 421,574. (No model.)

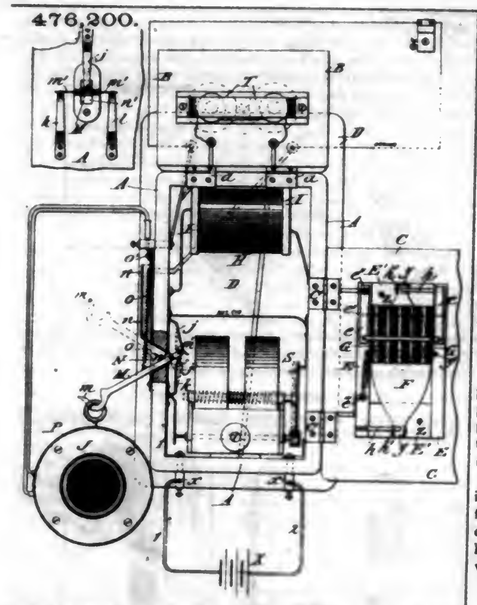


Claim.—As an article of manufacture, a metal washer for fitting against the end of a wheel-box and having the inner and outer flanges, a wheel-holding nut screw-threaded on its outer periphery at the inner end, and a supplemental nut adjustable on said threaded portion of the wheel-holding nut in a manner to be tightened against the flange of said washer, substantially as set forth.

476,200. **TELEPHONE.** EDWARD M. HARRISON, Fort Smith, Ark. Filed Aug. 9, 1890. Serial No. 361,599. (No model.)

Claim.—1. A telephone-case provided with a fixed top piece, an upper inclined door hinged at its inner edge to said top piece and having a rabbeted or recessed outer edge, and with a front lower door

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hinged to one of the side walls of the case and fitting at its top inner edge into the rabbet of said inclined door, making a tight joint therewith, whereby the case may be fully opened for inspection and the inclined door may be held closed by the lower door and dust excluded, substantially as described.

2. A telephone-case provided with a fixed top piece, the upper inclined door B, hinged to said top piece and having a rabbeted outer or front edge, and also having the ringer secured to its under side, said case being also provided with a lower door C, fitting at its upper edge into the rabbet of door B and having secured to its inner side the phonetic transmitter, substantially as described.

3. In a phonetic transmitter, the diaphragm having an elliptical shape, in combination with means for supporting it and leaving its edges free, substantially as described.

4. In a phonetic transmitter, the diaphragm of an elliptical shape, with narrow extensions at the ends of the long axis, in combination with supporting devices, the edges of the diaphragm being left free, substantially as described.

5. In combination with a frame, an elliptical diaphragm having extensions at the ends of its long axis resting on the frame and supporting-springs bearing on said extensions, substantially as described.

6. In combination with a frame, an elliptical diaphragm, cushions interposed between its ends and said frame, and supporting-springs bearing on the ends of the diaphragm above said cushions, substantially as described.

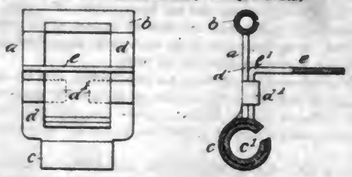
7. In combination with a frame, an elliptical diaphragm resting at its ends on the frame and having a transverse bridge and carbon-rod electrode, and springs adapted to hold the diaphragm in the frame, substantially as described.

8. A frame provided with side brackets at its upper ends having pivotally supported therein the pendent carbon electrodes, in combination with the elliptical diaphragm supported at its ends in said frame and provided with a transverse bridge and carbon-rod electrode in contact with said pendent electrodes, substantially as described.

9. The phonetic motor or receiver having two electro-magnets wound their full length and a permanent magnet between, all being of the same length and secured to a soft-iron heel-piece, adjusting-screws bearing on said heel-piece, a ferrotype diaphragm supported normally out of contact with the ends of the electro-magnets, and an inclosing case, all combined substantially as described.

10. The combination, in a telephone-switch, of a swinging metallic bar or lever having secured to its inner end a thin horizontal metallic bar, an escutcheon having an upper cylindrical end, and a socket *n'*, having a pivotal eye, a strong spiral spring in said cylindrical end for the purpose of pulling the switch-lever up, said bar being pivotally connected to said socket, three flat springs to make the different connections with the horizontal bar as the switch-lever is moved up and down, substantially as described.

476,201. **DRIVE-CHAIN.** CHARLES E. HART and CLARENCE A. TAPLIN, New Britain, Conn., assignors to the Stanley Works, same place. Filed Feb. 29, 1892. Serial No. 423,164. (No model.)

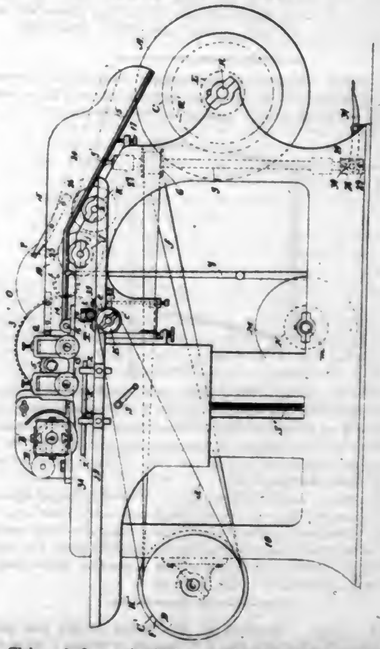


Claim.—1. The improved drive-chain link comprising an open frame with pintle end and knuckle end and the supplemental frame secured to the main frame by integral clips formed on the one part and bent down upon the other, the pintle in said link being formed at one end of the main part and the knuckle at the opposite end and of the two thicknesses of metal rolled one within the other, all substantially as described.

2. The improved drive-chain link comprising an open frame with pintle end and knuckle end, a supplemental frame secured to the side parts of the main frame, with a portion extending along said side parts and provided with a bracket-arm, and the integral clips, whereby the two parts of the frame are secured together, all substantially as described.

3. The improved drive-chain link comprising an open frame having integral clips on the side parts and a bracket part secured to the frame by said clips and having an arm projecting over the body of the link, the pintle formed at one end of the main part and the knuckle formed of a double thickness of metal, one part being rolled within the other, all substantially as described.

476,202. **SASH-MACHINE.** ELI B. HAYNE, Oshkosh, Wis. Filed Sept. 4, 1891. Serial No. 404,732. (No model.)



Claim.—1. In a sash-sticking machine, the combination, with the sticking devices, the work-support opposite the latter, and the feed-rolls, of a side guide for the work and a jointer at right angles thereto situated in advance of the front feed-rolls and on the same side of the work as said support and opposite to the sticking cylinder or cutter, substantially as set forth.

2. In a sash-sticking machine, the combination, with the sticking devices, the grooving-cutters, the work-support opposite the sticking-cutter head, and the feed-rolls, of a jointer situated in advance of and opposite to the feed-rolls and operating on the edge or side of the work

next said support and opposite that on which the molding is stuck, substantially as set forth.

3. In a sash-sticking machine, the combination, with the sticking devices, the grooving-cutters, and the boring-arbor, of a jointer situated between said cutters and the sticking devices and a work-supporting table on the same side of the work as the jointer and opposite the sticking-cutter, substantially as set forth.

4. In a sash-sticking machine, the combination, with the sticking devices and an underjointer in advance of the latter, of the grooving-cutters of different widths, separate arbors carrying said cutters, a boring-arbor, and an inclined table above said arbor, substantially as set forth.

5. In a sash-sticking machine, the combination of a level table having a grooving-cutter and stop, an inclined table in continuation of the first table, a stop and grooving-cutter for the inclined table, and a boring-arbor arranged at an angle to the latter, substantially as set forth.

6. In a sash-sticking machine, the combination of a table having a grooving-cutter, and a second table inclined or at an angle to the first table and in continuation thereof, and an independent cutter for the second table, substantially as set forth.

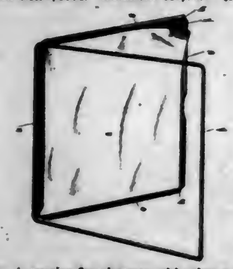
7. The combination, with the sticking devices and feed-rolls, of a work-table adjustable toward and from the same, and a side guide for the work, and a jointer mounted on said table in advance of and in proximity to the foremost of said rolls and operating on the side of the work next the table, substantially as set forth.

8. In a sash-machine, the combination of a narrow grooving-cutter, a boring-bit, a wide grooving-cutter situated between said narrow cutter and bit, and a work-support having its parts which hold the work for said cutters respectively in different planes transverse to the cutters, substantially as set forth.

9. The combination, with the level and inclined tables 14 15, of the stops P and Q, one for each of said tables, and the grooving-cutters 25 and 26 under said tables, respectively, substantially as set forth.

10. The combination, with the level and inclined tables 14 15, of the stops P and Q, one for each table, the grooving-cutters 25 and 26 under said tables, respectively, the jointer 32, the feed-rolls, the sticking devices, and a work support or table 12 over said jointer and opposite the feed-rolls and sticking-cutter, substantially as set forth.

476,203. FILM OR PLATE CARRIER. FREDERICK A. HETHERINGTON, Indianapolis, Ind., assignor of one-half to Thomas E. Hibben, same place. Filed Dec. 2, 1891. Serial No. 413,765. (No model.)



Claim.—1. A carrier for photographic plates or films, comprising a metal frame 1, having upturned flanges 2 on three sides and a hinging-flange 3 on the other side, in combination with a wire-clamp 4, hinged to the frame, adapted to be sprung into such carrier past the edges of the flanges for holding the plate or film in place, substantially as shown and described.

2. A film or plate carrier composed of a frame having upturned flanges upon the sides, one of such flanges cut out to allow access to the edge of the plate or film, in combination with a wire clamp adapted to be set into the frame and bearing frictionally against the sides of the flanges for holding the plate or film in position, substantially as shown and described.

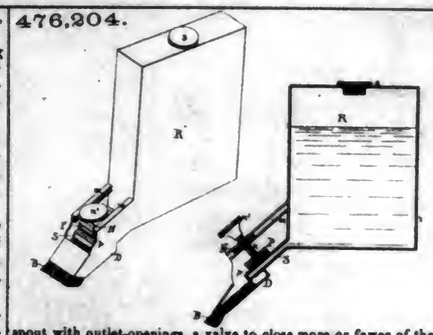
476,204. COLORING OR MOISTENING DEVICE FOR PAPER. ERNEST HOUGMAN, New York, N. Y., assignor to William J. Smith, Philadelphia, Pa. Filed May 5, 1891. Serial No. 391,642. (No model.)

Claim.—1. A moistening or color-distributing box having a discharge-spout with outlet-openings on its upper side, a valve to close more or fewer of the openings, and a distributer below the discharge-spout.

2. A moistening or color-distributing box having a discharge-spout with outlet-openings, a valve to regulate the discharge, and a pocket carried by the under side of the spout to receive and retain the distributer, substantially as described.

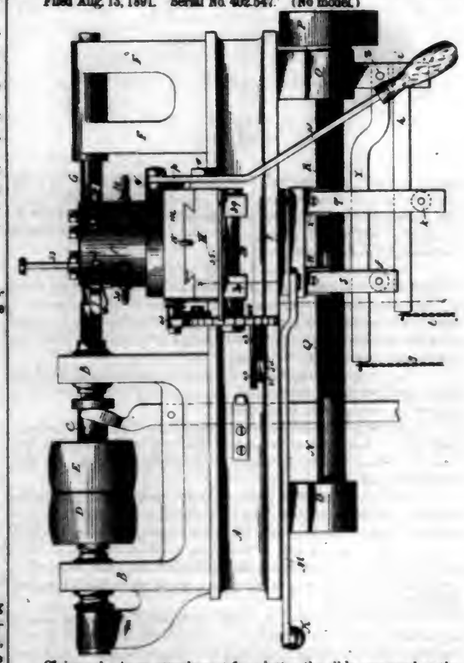
3. A moistening or color-distributing box having a discharge-

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spout with outlet-openings, a valve to close more or fewer of the latter, and an adjustable slide carrying the valve, with a distributer below the said spout, all substantially as described.

476,205. TURRET-LATHE. FREDERIC A. LANE, New Haven, Conn. Filed Aug. 13, 1891. Serial No. 402,547. (No model.)



Claim.—1. As an attachment for a lathe, the slide arranged on the bed and adapted for longitudinal movement thereon, the carriage on said slide arranged for reciprocating movement in a path at right angles to the path of movement of said slide, a turret on said carriage adapted to rotate upon a vertical axis, mechanism, substantially such as described, between the said slide and turret, whereby under the reciprocating movement of the carriage and turret a rotative movement will be imparted to the turret during the last part of its retreating movement, a ratchet-wheel arranged upon said slide and in a plane parallel with the path of movement of said carriage, a pawl on said carriage adapted to engage the teeth of said ratchet, the said wheel provided with a series of pins projecting longitudinally therefrom, and a stationary stop against which said pins are adapted to successively bear to arrest the longitudinal movement of the slide, substantially as described.

2. As an attachment for lathes, the combination of a slide H, arranged to move longitudinally on the bed of the lathe, a carriage *m*, arranged upon said slide to reciprocate in a path at right angles to the path of movement of said slide, mechanism, substantially such as described, to impart rotation to said turret during the last part of the retreating movement of the carriage, a stop upon the slide adapted to arrest the movement of the carriage at its extreme retreating position,

and a dog, as 53, arranged in the slide and adapted to be brought into position to arrest the carriage before it reaches its extreme rear movement, a ratchet-wheel 40, supported in said slide and so as to move therewith, a pawl on the carriage, arranged to engage the said ratchet in the retreating movement of the carriage, the said ratchet-wheel provided with a series of pins projecting longitudinally therefrom and corresponding to more or less of the tools in the turret, with a stop against which said pins are adapted to bear at a predetermined point in the longitudinal movement of said slide, and a lever 55, adapted to operate upon said dog 53, with a cam 54 on said ratchet-wheel, arranged to engage the said lever 55 at a predetermined point and for a predetermined length of time, substantially as described.

3. As an attachment for a lathe, the combination of a slide arranged on the bed of the lathe and so as to be moved longitudinally thereon, a carriage arranged on said slide and so as to reciprocate in a path at right angles to the path of movement of said slide, a turret on said carriage and adapted to rotate upon a vertical axis, and mechanism between the said slide and turret, whereby under the reciprocating movement of the carriage a rotative movement is imparted to the turret during the last part of the retreating movement of the carriage, the turret provided with a series of tools and also provided with a series of stops corresponding to said tools, with a stop-flange at the rear against which said stops are adapted to bear to govern the advancing movement of the carriage and turret, substantially as described.

4. As an attachment for a lathe, the combination of a slide arranged upon the bed of the lathe and so as to be moved longitudinally thereon, a carriage arranged upon said slide and so as to reciprocate in a path at right angles to the path of movement of the said slide, a turret arranged upon said carriage upon a vertical axis and so as to rotate thereon, mechanism between said slide and turret, whereby rotative movement will be imparted to said turret during the last part of the retreating movement of said carriage, a finger arranged at the rear and so as to slide backward and forward toward the turret, and mechanism, substantially such as described, to impart said sliding movement to said finger, the said finger constructed with an upward and rearwardly inclined surface at its forward end, substantially as and for the purpose described.

5. In a turret attachment for lathes, the combination of the slide H, arranged upon the bed of the lathe and so as to move longitudinally thereon, a carriage *m*, arranged upon said slide and so as to reciprocate in a path at right angles to the path of movement of said slide, a turret arranged upon said carriage and so as to rotate upon a vertical axis thereon, the turret carrying a series of tools, mechanism between the slide and turret, whereby a rotative movement is imparted to said turret during the last part of the retreating movement of said turret, a leading-screw N, arranged below but parallel with the path of said slide, said screw having a portion of its thread right hand and another portion of its thread left hand, stirrups S and T, hung to said slide and carriage, respectively, and half-nuts W and R, adapted to engage the corresponding threaded portions of said screw, with mechanism, substantially such as described, to draw said nuts into and take them out of engagement with their respective portions of the screw, substantially as described.

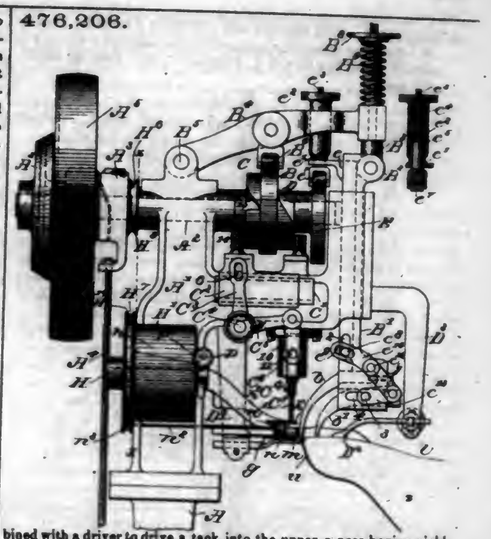
476,206. LASTING-MACHINE. CHARLES P. LAWRENCE, Mechanic Falls, Me., assignor to John F. Harris, Jr., Boston, Mass. Filed Feb. 8, 1892. Serial No. 420,634. (No model.)

Claim.—1. In a lasting-machine, a sliding yoke having an edge-guide and a downhold movable with said yoke, and means to slide said yoke laterally, combined with a vertically-moving carriage for the nippers, a fixed nipper rigidly secured to the carriage and a movable nipper sliding horizontally in the carriage, devices to move the carriage vertically, a nipper-actuating bar movable longitudinally in said carriage, and connections between it and the movable nipper to reciprocate it to close the nippers and open them at the proper times, and means to reciprocate said actuating-bar independently of the carriage, substantially as described.

2. In a lasting-machine, a sliding yoke having connected thereto an edge-guide and a downhold, means to slide the said yoke, a fixed and a movable nipper, a vertically-moving carriage in which the nippers are mounted, devices to move the said carriage vertically, a spring-controlled nipper-actuating bar movable longitudinally in said carriage, connections including a slotted lever and a link between it and the movable nipper to close and open the nippers at the proper times, and means to actuate said bar, combined with a driver to drive a tack into the upper and means including a slide, elbow-lever, and link to actuate the driver, substantially as described.

3. In a lasting-machine, a yoke having connected thereto an edge-guide and a downhold, means to guide the said yoke, a stationary presser, nippers, a vertically-moving carriage in which the nippers are mounted, devices to move the said carriage vertically, and devices to close the said nippers and open the same at the proper times, com-

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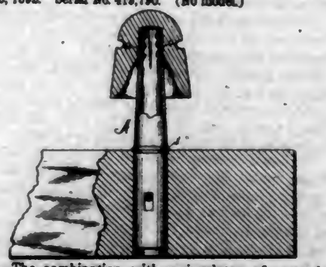
bined with a driver to drive a tack into the upper, a nose having yielding jaws between the presser and driver, a hopper, a chute, and a rotating picker at the end thereof above the nose to present a tack to said jaws in driving position with relation to the driver, substantially as described.

4. A head provided with a guideway, a yoke mounted to slide thereon, and an edge-guide and a downhold carried by the said yoke and movable in unison therewith, combined with a pair of nippers located in a vertical plane between the said edge-guide and the said downhold and independent means to operate the said nippers simultaneously and separately, substantially as described.

5. In a lasting-machine, a head provided with a guideway, a yoke mounted to slide thereon, means to reciprocate said yoke, and an edge-guide and a downhold carried by said yoke and movable therewith, combined with a pair of nippers located between said edge-guide and the said downhold and independent thereof and a presser-foot or devices *g*, stationary with relation to the edge-guide and downhold and located above said edge-guide, whereby the last while in contact with the edge-guide and downhold may be moved horizontally under the presser-foot, substantially as described.

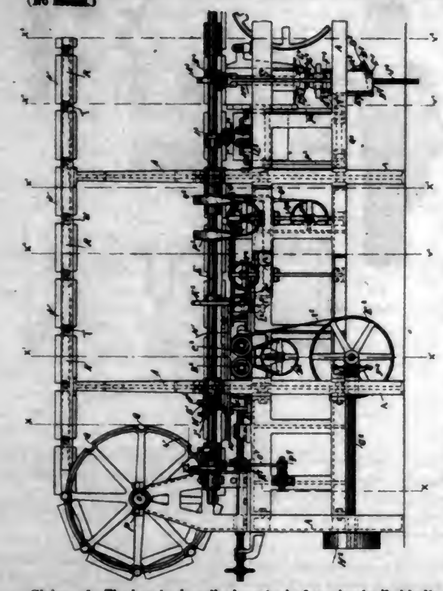
6. In a lasting-machine, a downhold, combined with a carriage grooved at its inner side and recessed at its lower end and having slots 2 and 4, a stationary jaw *b*, connected to the carriage to contact with the outer side of the upper, a horizontally-movable jaw to slide in said recessed end to contact with the inner side of the upper and provided with a stud extending through the slot 4, an actuator-bar in the groove of the carriage and having a stud extended through said slot 2, a lever pivoted to the carriage and having a slot to embrace the stud on the actuator-bar, and a link connecting said lever with the stud of the movable jaw to close the jaws and hold them closed on the upper, and devices yieldingly connected with and to move the carriage to lift the said jaws while closed, substantially as described.

476,207. INSULATOR-PIN. FRED M. LOCKE, Victor, N. Y. Filed Jan. 30, 1892. Serial No. 419,790. (No model.)



Claim.—The combination, with an insulator, of a post having a vertical recess clear across the outer end and a layer of soft material interposed between the insulator and post, as set forth.

476,208. BOOK BINDING AND COVERING MACHINE. CHARLES W. LOVELL and ALFRED BRENDEBERG, Brooklyn, assignors of one-third to John W. Lovell, New York, N. Y. Filed Sept. 17, 1891. Serial No. 406,090. (No model.)



Claim.—1. The herein-described method of mechanically binding and covering books and the like, which consists in evening the back of the book, applying adhesive material thereto, applying backing material thereto, presenting the cover in its flat condition thereto, and pressing the cover upon the book, substantially as set forth.

2. The herein-described method of mechanically binding and covering books and the like, which consists in surfacing the back of the book, applying adhesive material thereto, presenting the cover in its flat condition thereto, and pressing the cover upon the book, substantially as set forth.

3. The herein-described method of mechanically binding and covering books and the like, which consists in surfacing the back of the book, applying adhesive material thereto, applying a backing material thereto, presenting a cover in its flat condition thereto, pressing the cover upon the book, and folding the flaps of the cover against the sides of the book, substantially as set forth.

4. The herein-described method of mechanically binding and covering books and the like, which consists in surfacing the back of the book, removing loose particles therefrom, applying adhesive material thereto, presenting the cover thereto, and pressing the cover upon the book-back, substantially as set forth.

5. The herein-described method of mechanically binding and covering books and the like, which consists in surfacing the back of the book, removing the loose particles therefrom, applying adhesive material thereto, applying fibrous or other backing material upon the back of the book, applying the cover thereto, and by pressure squeezing the adhesive material through the backing material to the cover, substantially as set forth.

6. The herein-described method of mechanically binding and covering books and the like, which consists in surfacing the back of the book, removing the loose particles therefrom, applying adhesive material thereto, applying fibrous or other backing material upon the back of the book, applying the cover thereto, and by pressure squeezing the adhesive material through the backing material to the cover, smoothing the cover upon the back of the book, and folding its flaps against the sides of the book, substantially as set forth.

7. The herein-described method of mechanically binding and covering books and the like, which consists in surfacing the back of the book, removing loose particles therefrom, applying adhesive material thereto, applying backing material thereto, applying a cover thereto, rubbing down and pressing the cover against the book-back, and breaking its flaps around the corners of the book, substantially as set forth.

8. The herein-described method of binding books, which consists in surfacing the back of the book, applying adhesive material thereto, applying backing material thereto, and pressing the same against the book-back, substantially as set forth.

9. The herein-described method of binding books, consisting in surfacing the back of the book, removing loose particles therefrom, applying adhesive material thereto, and applying and pressing backing material upon the back of the book, substantially as set forth.

10. The herein-described method of mechanically and successively binding books, consisting in successively clamping the books, then moving them to a back-surfacing device, then to a gluing device, then to devices for applying the backing material, and then to cover-applying devices, substantially as set forth.

11. The herein-described method of mechanically and successively binding and covering books, consisting in successively clamping the books, then subjecting them to back-surfacing devices, then to devices for removing loose particles, then to devices for applying adhesive material, then to devices for applying the backing material, and then to devices for applying and pressing the cover upon the book, whereby they are successively bound and covered.

12. The herein-described method of binding books mechanically and automatically, consisting in first clamping the books, then surfacing their backs, then unclamping them and rounding their backs, then applying adhesive material to the backs, and then applying backing material to the backs and pressing the same upon the books, substantially as set forth.

13. The herein-described method of mechanically and automatically binding books, consisting in first clamping the books, then surfacing their backs, then unclamping and rounding the backs, then roughening or fibering the backs as rounded, then applying adhesive material to the backs, and then applying and pressing backing material to the backs, substantially as set forth.

14. The herein-described process of mechanically and automatically binding books, consisting in first clamping the books, then surfacing their backs, then unclamping them and rounding their backs, then applying adhesive material to their backs as rounded, then simultaneously making and applying a compound backing material to the books, and then pressing and drying the backing material upon the books, substantially as set forth.

15. The herein-described process of mechanically and automatically binding books, consisting in first clamping the books, then surfacing their backs, then unclamping and rounding their backs, then applying adhesive material to the backs, then simultaneously making and applying to the backs a compound backing material, and then forming or shaping and pressing the backing material upon the back and about the edges of the book, substantially as set forth.

16. The herein-described process of mechanically and automatically binding books, consisting in first clamping the books, then surfacing their backs, then unclamping and rounding their backs, then applying adhesive material to the back of the book, then automatically feeding and applying fibrous material to the back, then simultaneously making and applying to the book a compound binding material and pressing the same upon the book, whereby the adhesive material is squeezed through the fibrous material, and then forming and shaping the compound backing material upon the back and about the edges of the book, substantially as set forth.

17. The herein-described process of preparing books for binding, consisting of clamping the books, and then surfacing their backs by cutting or paper-removing devices operating at different angles relative to the back of the book, substantially as set forth.

18. The process described of preparing books for binding, consisting in clamping or holding the books in their desired position, slicing or removing the back edges of the book-leaves, roughening the said edges, and applying adhesive material thereto, substantially as set forth

19. The described process of preparing books for binding, consisting in holding or clamping the books in the desired position, surfacing the back of the books, and applying adhesive material thereto by a plurality of devices for applying the same, which operate upon the same book successively, substantially as set forth.

20. The method described of applying adhesive material to the backs of books, consisting in simultaneously applying the adhesive material and puncturing the back of the book, whereby the material is injected or worked into the back of the book, substantially as set forth.

21. The method herein described of preparing books for binding, consisting in evening the backs of the books, fibering or roughening the same, and working adhesive material into the same, substantially as set forth.

22. The method herein described of binding books, consisting in applying adhesive material to the back of the book, applying fibrous material upon the same, and simultaneously constructing, applying, and pressing to the back of the book a compound binding material, whereby the glue is squeezed through the fibrous material, substantially as set forth.

23. The method herein described of binding books mechanically, consisting in applying adhesive material to the back of the book, applying the binding material to the book, then moving the book and material to a covering device, covering the binding material, and returning it to position ready for the next succeeding book, substantially as set forth.

24. The combination of a book-carrier adapted to grasp and hold the book, a back-surfacing device, and back-gluing devices, substantially as set forth.

25. The combination of a book-carrier adapted to grasp and hold a boook, and a plurality of devices for surfacing the back of the book, acting upon it at different angles, substantially as set forth.

26. The combination of a book-carrier adapted to grasp and hold a book, a plurality of devices for surfacing the back of the book, acting upon it at different angles, and a back-brushing device, substantially as set forth.

27. The combination of a book-carrier adapted to grasp and hold a book, back-surfacing devices, and a plurality of back-gluing devices constructed and arranged to act upon the same book, substantially as set forth.

28. The combination of a book-carrier adapted to grasp and hold a book, a plurality of devices for surfacing the back of the book, and a plurality of glue-applying devices adapted to act upon the same book, substantially as set forth.

29. The combination of a book-carrier adapted to grasp and hold a book, surfacing devices for the back of the book, back-brushing devices, and a plurality of glue-applying devices adapted to act upon the same book, substantially as set forth.

30. The combination of a book-carrier adapted to grasp and hold a book, a back-surfacing device, back-gluing devices, and feeding devices for the backing material, substantially as set forth.

31. The combination of a book-carrier adapted to grasp and hold a book, a back-surfacing device, back-gluing devices, and applying and feeding devices for the backing material, substantially as set forth.

32. The combination of a book-carrier adapted to grasp and hold a book, a back-surfacing device, back-gluing devices, a device for feeding backing material to the books, and devices for pressing and shaping the same upon the book, substantially as set forth.

33. The combination of a book-carrier adapted to grasp and hold a book, a back-surfacing device which evens and roughens the back of the book, and glue-applying devices which simultaneously apply the adhesive material and puncture the back of the book, substantially as set forth.

34. The combination of a book-carrier adapted to grasp and hold a book, a back-surfacing device, and a device for applying adhesive material, which likewise punctures the back of the book, substantially as set forth.

35. The combination of a book-carrier adapted to grasp and hold a book, a back-surfacing device, a back-brushing device, and a glue-applying device, substantially as set forth.

36. The combination of a book-carrier adapted to grasp and hold a book, a back-surfacing device, a back-brushing device, and a glue-applying device, which likewise punctures the back of the book, substantially as set forth.

37. The combination of a movable book-clamping device adapted to grasp and hold the book, a gluing device, and a feeding device for the backing material, substantially as set forth.

38. The combination of a movable book-clamping device, a gluing device, and a feeding and attaching device for presenting and pressing backing material to and upon the book, substantially as set forth.

39. The combination of a book-carrier, a gluing device, and feeding and attaching device for presenting and pressing backing material to and upon the book, and a cover-feeding device, substantially as set forth.

40. The combination of a book-carrier, a gluing device, a feeding and attaching device for presenting and pressing backing material to and upon the book, a cover-feeding device, and cover breaking and pressing devices, substantially as set forth.

41. The combination of a book-carrier, back-surfacing devices, a gluing device, a feeding and attaching device for presenting and pressing backing material to and upon the book, a cover-feeding device, and cover breaking and pressing devices, substantially as set forth.

42. The combination of a book-carrier, a back-surfacing device, a brush, a gluing device, a feeding and attaching device for the backing material, a cover-feeding device, and a cover breaking and pressing device, substantially as set forth.

43. The combination of a book-carrier, a back-surfacing device, a gluing device, a feeding and attaching device for the backing material, a back-rounding device, a roll of paper and a roll of crash or like material and a gluing apparatus coacting therewith, means to bring the paper and crash together, and means for applying the same to the back of the book, and a severing device, substantially as set forth.

44. The combination of a book-carrier, a back-surfacing device, a gluing device, a feeding and attaching device for the backing material, a back-rounding device, a roll of paper and a roll of crash or like material and a gluing apparatus coacting therewith, means to bring the paper and crash together, and means for applying the same to the back of the book, and a severing device, and means automatically operated whereby the paper and crash are formed or shaped upon the back and around the edges of the book, substantially as set forth.

45. In a book binding and covering machine, the combination of a feeding and attaching device for the backing material, and a cover feeding and attaching device, substantially as set forth.

46. In a book binding and covering machine, the combination of feeding and attaching devices for the backing material, a cover-feeding device, and a cover breaking and pressing device, substantially as set forth.

47. In a bookbinding-machine, the combination of gluing devices for the back of the book, devices for feeding and attaching fibrous or like materials thereto, a roll of paper and a roll of crash or like materials, a gluing device coacting with said rolls, means to bring the paper and crash together, and means for applying the compound strip to the book-back, substantially as set forth.

48. In a bookbinding-machine, the combination of gluing devices for the back of the book, devices for feeding and attaching fibrous or like materials thereto, a roll of paper and a roll of crash or like materials, a gluing device coacting with said rolls, means to bring the paper and crash together, and means for applying the compound strip to the book-back, and a severing device for the compound strip, substantially as set forth.

49. In a bookbinding-machine, the combination of a roll of paper and a roll of crash or like materials, a gluing device coacting therewith, means to bring the crash and paper together and means to bring them in contact with the book, and a device for severing the crash and paper, substantially as set forth.

50. In a bookbinding-machine, the combination of a roll of paper and a roll of crash or like materials, a gluing device coacting therewith, means to bring the crash and paper together, means to bring the compound strip thus formed into contact with the book-back, a severing device for the compound strip, and means to form or shape the compound strip upon the back and edges of the book, substantially as set forth.

51. In a bookbinding-machine, the combination of a plate or bar, a clamp upon each side thereof, and means whereby the plate or bar is pressed against the back of the book and simultaneously therewith the clamps are pressed against the sides of the book near the back edges, whereby the backing material is formed upon or about the back of the book and its edges, substantially as set forth.

52. In a book binding or covering machine, the combination of clamps which hold the book and carry it forwardly, back-surfacing devices and back-gluing devices, and means between the two last devices whereby the clamp is relaxed and the back of the book rounded and the clamp again caused to grip the book in its changed condition, substantially as set forth.

53. In a book binding or covering machine, the combination of clamps which hold the book and carry it forwardly, back-surfacing devices and back-gluing devices, and means between the two last devices whereby the clamp is relaxed and the back of the book rounded and the clamp again caused to grip the book in its changed condition, and devices for feeding and attaching backing material to the book, substantially as set forth.

54. In a book binding or covering machine, the combination of clamps which hold the book and carry it forwardly, back-surfacing devices and back-gluing devices, and means between the two last devices whereby the clamp is relaxed and the back of the book rounded and the clamp again caused to grip the book in its changed condition, and devices for feeding and attaching backing material to the book, and means for applying adhesive material between the paper and crash or like materials and for uniting them to each other and to the book, substantially as set forth.

55. In a book binding or covering machine, the combination of clamps which hold the book and carry it forwardly, back-surfacing devices and back-gluing devices, and means between the last two devices whereby the clamp is relaxed and the back of the book rounded and the clamp again caused to grip the book in its changed condition, and devices for feeding and attaching backing material to the book, and means for applying adhesive material between the paper and crash or like materials and for uniting them to each other and to the book, and means to clamp or press the compound strip of paper and crash or like materials upon the back and about the edges of the book, substantially as set forth.

56. In a bookbinding-machine, the combination of jaws or clamps which hold the book and carry the same, a die or former for the book-back, and devices constructed and arranged to relax the clamps and to press the book into the said mold or former when the clamps are coincident in location with them, substantially as set forth.

57. In a book binding or covering machine, the combination of movable book holding and carrying clamps, and devices constructed and arranged to open the clamps when they are at rest, substantially as set forth.

58. The combination, in a book binding or covering device, of movable clamps adapted to hold and carry the book, and means for opening the clamps when they are at rest, actuated by the main shaft of the machine, substantially as set forth.

59. An intermittently-moving book-carrier having a plurality of book-holding clamps, surfacing devices and gluing devices for the backs of the books, and devices for feeding the backing material and the covers to the books, all of which are fixed in location, whereby the books are moved by the carrier coincident with the said devices successively, substantially as set forth.

60. The combination, in a book binding or covering machine, of an intermittently-moving book-carrier having a plurality of book-holding clamps, continuously-running book-surfacing and book-gluing devices for the backs of the books against which the said carrier successively carries the books, and means for feeding and attaching backing material and covers to the backs of the books, substantially as set forth.

61. The combination, in a book binding or covering machine, of a carrier provided with book-holding clamps adapted to hold and carry a book and to sustain it while being operated upon, and means for opening or relaxing said clamps, changing the position or arrangement of the book, and reclamping it in its altered condition for further operations, substantially as set forth.

62. In a book covering or binding machine, the combination of two endless carriers placed relatively to each other so that the adjacent portions run in the same direction, one of them having book-holding clamps and the other having devices which operate upon the book, substantially as set forth.

63. In a book covering or binding machine, the combination of two endless carriers placed relatively to each other in such manner that the adjacent portions run in the same direction, one of them having book-holding clamps and the other having devices which operate upon the book, both of them having an intermittent or step-by-step movement, substantially as set forth.

64. In a book binding or covering machine, the combination of a feeding device for feeding and applying backing material to the glued book, comprising a sprocket chain or belt which supports plates or tables having flanges upon one edge, and means whereby said devices are intermittently lifted against the back of the book, substantially as set forth.

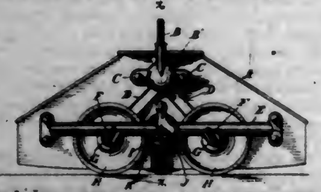
65. In a book binding or covering machine, the combination of a feeding device for feeding and applying backing material to the glued book, comprising a sprocket chain or a belt arranged on an inclined plane, plates or tables supported and carried by the sprocket chain or belt, a flange on the lower edge of each of said plates or tables, and means whereby the said devices are intermittently elevated against the back of the book, substantially as set forth.

66. In a bookbinding-machine, the combination of clamps which hold the book and carry the same, back surfacing or evening devices, and guides or supports which sustain the book against the action of the surfacing devices below the clamps, substantially as set forth.

67. In a bookbinding-machine, the combination of clamps which hold the book and carry the same, back surfacing or evening devices, and guides or supports, one of them fixed and the other yielding to admit the book between them, whereby the book is sustained against the action of the surfacing devices, substantially as set forth.

68. In a bookbinding-machine, the combination of a roll of paper and a roll of crash or like materials, an oscillating frame carrying a roller over which the paper and crash are both led, and means whereby the combined material may be attached to the books, so that the said frame will be pulled in one direction by the movement of the books and in the reverse direction by a spring or its equivalent, substantially as set forth.

476,209. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed Jan. 21, 1891. Serial No. 378,570. (No model.)



Claim.—1. In a carpet-sweeper, a brush-shaft journaled within a case, elastic pulleys on said shaft, driving-wheels engaging said pulleys below the axis thereof, and hangers having inclined slotted bearings in which said driving-wheels are movably journaled, substantially as described.

2. In a carpet-sweeper, a brush-shaft provided with elastic pulleys, inner and outer hangers secured to the case thereof, provided with inclined slotted bearings, and driving-wheels movably journaled in said bearings and engaging said elastic pulley on the brush-shaft, substantially as described.

3. In a carpet-sweeper, a bail having flexible arms terminating in cups and convex heads attached to the case, with which heads said cups engage, substantially as described.

4. In a sweeper, a brush-shaft having pulleys thereon, drive-wheels engaging said pulleys, and a hanger having slotted bearings in which the journals of said drive-wheels move upward and inward toward said brush-shaft, and an intermediate bearing for the journal of said brush-shaft, substantially as described.

5. In a sweeper, the combination, with a bail, a brush-shaft, and drive-wheels adapted to engage pulleys on said brush-shaft, of inner and outer hangers, said inner hangers each having a bearing for an end of the bail and formed with diverging arms having inclined slots and said outer hangers also having inclined slots, said slots forming bearings for the journals of the drive-wheels.

6. In a carpet-sweeper, the combination, with a brush-shaft having elastic pulleys, and driving-wheels engaging said pulleys and having inner and outer journals, of inner and outer hangers each formed with aligned inclined slotted bearings for said drive-wheel journals, said outer hanger also having intermediate bearing for said brush-shaft journal, substantially as described.

476,210. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed Feb. 16, 1891. Serial No. 381,697. (No model.)



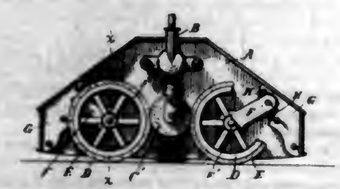
Claim.—1. In a carpet-sweeper, the combination, with levers having driving-wheels journaled to their inner ends and flexibly connected to the case at their outer ends, of rocker-arms pivotally connected to the case and to said levers, substantially as described.

2. In a carpet-sweeper, a brush-shaft having the pulley E, levers having wheels journaled on their inner ends adapted to contact the floor and said pulley, said levers connected to the case at their outer ends by studs passing through flexible bushings inserted in openings in said case and intermediately pivoted to one end of rocker-arms, the other end of which arms are pivoted to the case, substantially as described.

3. In a carpet-sweeper, a lever having a driving-wheel journaled to one end, a laterally-projecting stud at the opposite end, passing through an elastic bushing inserted in the wall of the case and also through circular plates of larger diameter than said bushing, said plates engaging the opposite faces of said wall, and a rocker-arm pivoted at one end to said lever near said stud and at the other end to said case, substantially as described.

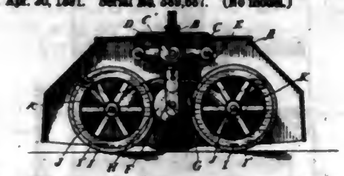
4. In a carpet-sweeper, a case having pendent flexible hangers, a brush-shaft journaled in said hangers, having pulleys outside said case, driving-wheels engaging said pulleys at opposite sides below the plane of the axis of the brush-shaft, and levers having said driving-wheels journaled on their inner ends, intermediately pivoted to rocker arms near their outer ends, and flexibly connected to said case at their outer ends, substantially as described.

476,211. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed Apr. 15, 1891. Serial No. 389,074. (No model.)



Claim.—In a carpet-sweeper, driving-wheels having compressible elastic rims engaging a pulley on the brush-shaft, said wheels journaled to rigid arms extending from said journals diagonally outward and upward and pivoted at their outer ends to angle-plates having stops to limit the movement of said arms, substantially as described.

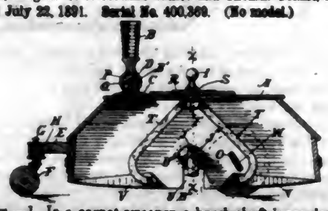
476,212. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed Apr. 20, 1891. Serial No. 389,667. (No model.)



Claim.—1. In a carpet-sweeper, levers having the driving-wheels journaled thereon, said levers pivoted to the case and horizontally movable thereon at their outer ends and pivotally attached to each other at their inner ends, substantially as described.

2. In a carpet-sweeper, levers having studs upon which the driving-wheels are journaled, said levers being extended from said studs diagonally upward and outward and having horizontal slots near their outer ends, and screws passing through said slots and attached to the case, said levers also extended inward and upward and pivotally connected to each other, substantially as described.

476,213. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed July 22, 1891. Serial No. 400,369. (No model.)

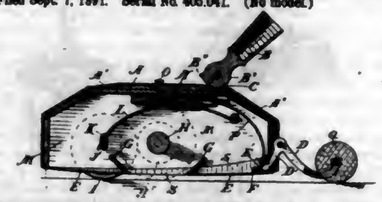


Claim.—1. In a carpet-sweeper, a brush-shaft journaled in laterally-flexible hangers and driving-wheels at one side of said brush-shaft journaled on a rod passing through inclined openings in the case, in combination with a caster-wheel on the side of the case opposite said driving-wheels and a spring engaging said caster-wheel and adapted to be depressed on the downward movement of the case when the latter is being lowered, as described.

2. In a carpet-sweeper, a handle-socket having a ring at its lower end surrounding an elastic bushing, through which passes a pivot-bolt, angle-plates at each side of said ring secured to the case, having depressions at their upper sides, and projections on the sides of said socket engaging said depressions, substantially as described.

3. In a carpet-sweeper, a push-pin having a T-head, connecting-rods pivoted to the same and to the dust-pans near the pivots of said pans, and a lifting-spring engaging the end of said push-pin, substantially as described.

476,214. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed Sept. 7, 1891. Serial No. 405,041. (No model.)



Claim.—1. In a carpet-sweeper, in combination with a case, a removable frame-work inclosed within the same and detachably secured thereto, a brush-shaft and driving-wheels journaled on said frame-work, and dust-pans attached to the same, substantially as described.

2. In a carpet-sweeper, in combination with a case, detachable partitions near each end of the same, a bar at the top and inclined strips at the bottom attached to said partitions, said strips forming inner stationary sides to dust-pans, said pans pivoted to said partitions and contacting said strips when closed, a brush-shaft journaled in said partitions, having pulleys on its outer ends, and driving-wheels journaled on a rod passing through said partitions, substantially as described.

3. In a carpet-sweeper, in combination with the case, a detachable frame consisting of two partitions connected at the top by a bar and at the bottom by inclined strips having notches at each end, bars extending across said partitions and pivoted to the same, bottoms attached to said bars, and a brush-shaft and driving-wheels journaled upon said frame, substantially as described.

4. In a carpet-sweeper, in combination with a brush-shaft journaled in the case and having pulleys at each end, a rod passing through elongated openings and movable therein above and below the plane of the axis of said brush-shaft and toward and from the brush-shaft and springs engaging said rod and sliding thereon and also forcing the same downward and toward the brush-shaft, substantially as described.

5. In a carpet-sweeper, dust-pans consisting of stationary bars at each side of the brush, bars extending across each end of the case and pivoted near one side of the same, and pan-bottoms attached to said pivoted bars, substantially as described.

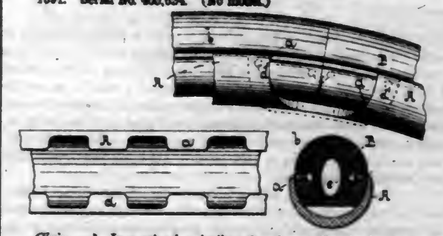
6. In a carpet-sweeper, dust-pans at each side of the brush, bars extending across each end of the case, forming the ends of said pans, and pivoted near one side of said case, one of said pans having an upturned edge near said pivots, a spring engaging said upturned edge to close said pans, and a pivoted lever having its inner arm engaging the same to open said pans and its outer arm provided with a wheel to support one side of the sweeper, substantially as described.

7. In a carpet-sweeper, a dust-pan having an upturned outer side having an outwardly-turned upper edge, a spring engaging said upturned side to close said pan, and a pivoted lever engaging the same to open said pan, said lever engaging said outwardly-turned edge and locking said pan when open, substantially as described.

8. In a carpet-sweeper, a bail-socket having a flattened lower end pivoted between the jaws of a hanger attached to the case and provided with a projection on said flattened end engaging the bed-plate of said hanger and limiting the movement of said socket, substantially as described.

9. In combination with a carpet-sweeper, a jacket of felt, cloth, or other suitable material inclosing the top and sides of the same and provided with openings for the projecting parts on the outside of the case, substantially as described.

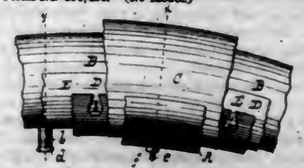
476,215. CUSHIONED TIRE. GEORGE T. REED, Baltimore, Md., assignor of one-half to Heston A. Cheatham, same place. Filed Sept. 14, 1891. Serial No. 405,634. (No model.)



Claim.—1. In a wheel, a hollow-faced metallic rim having an inwardly-projecting flange on each of its edges and an opening at one of its sides, combined with a flexible tube adapted to be drawn through said opening and to rest in the hollow of the rim, said tube having a groove at each side normally of less width than the thickness of said flanges and into which grooves the flanges are forced as the tube is drawn into position, said grooves terminating in channels of greater width than the thickness of the flanges, for the purpose specified.

2. In a wheel, a hollow-faced metallic rim having an opening at one side thereof, combined with a flexible tire adapted to be drawn through said opening and to rest in the hollow of the rim, a plate to cover said opening when the tire is in position, and rivets or screws passing through the said plate, the abutting ends of the tire, and the metallic rim to secure the several parts together, substantially as described.

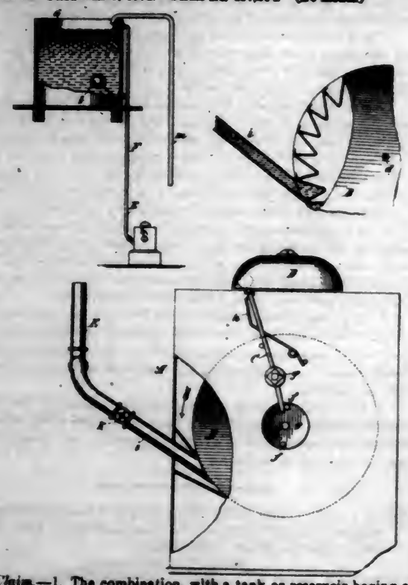
476,216. BICYCLE-WHEEL. GEORGE T. REED, Baltimore, Md., assignor of one-half to Heston A. Cheatham, same place. Filed Sept. 21, 1891. Serial No. 406,128. (No model.)



Claim.—In a wheel, the combination, with a hollow-faced rim, a pneumatic tube, and a tread partially inclosing the tube and resting in the said rim, of a series of spring-clamps interposed between the tube and the portions of the tread resting in the rim, said clamps having

notched edges for the purpose specified, threaded bolts passing through the clamps and rim, and nuts on the bolts to draw the clamps and rim toward each other, substantially as described.

476,217. AUTOMATIC ALARM. NATHAN RUBENSTEIN, New York, N. Y. Filed Jan. 6, 1892. Serial No. 417,214. (No model.)



Claim.—1. The combination, with a tank or reservoir having an outflow-pipe leading therefrom at the top and connected thereto by a branch pipe at the bottom and a float within the tank which operates a valve when the water has fallen to a certain extent to permit the outflow of water into said pipe, of a water-wheel arranged to be operated by the water descending through said pipe and an alarm connected with said wheel and operated thereby to indicate when the reservoir is nearly empty or also when it has been completely filled, substantially as described.

2. The combination, with a tank or reservoir having an outflow-pipe leading therefrom, of a casing having two compartments which are entered, respectively, by branch pipes of the overflow-pipe, said branches being provided with valves, a water-wheel in one compartment, and an alarm connected with said wheel and operated thereby to indicate the condition of the water in the tank, substantially as described.

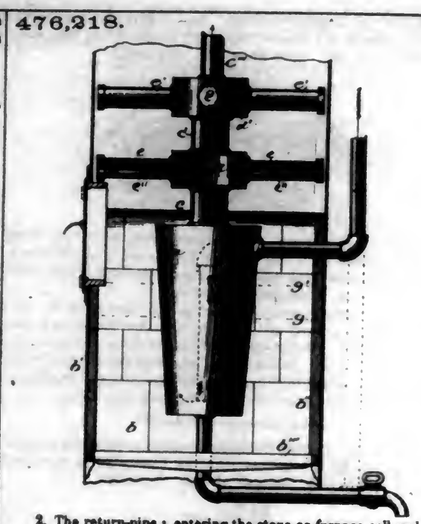
3. The combination, with a tank or reservoir having an outflow-pipe leading therefrom at the top and connected thereto by a branch pipe at the bottom, of the casing having two compartments, which are entered, respectively, by branch pipes from the overflow-pipe, said branches being provided with valves, a water-wheel in one compartment arranged to be revolved by the water from the said pipe, a disk secured to the shaft of said wheel, and engaging with a bell-hammer to sound an alarm when said wheel is revolved, substantially as described.

4. The combination, with a casing divided into two compartments, of a water-wheel located in one of said compartments, the other compartment being a waste or drain compartment, an outflow-pipe from a tank or reservoir, the branches of which pipe enter the two compartments, respectively, and are provided with valves to control the passage of the water therefrom into the said two compartments, one of said branches at times discharging water to operate the water-wheel and the other at times discharging its waste water into the waste-compartment, a disk secured to the shaft of said water-wheel, a bell or gong on the casing, and a bell-hammer engaging with said bell and said disk, substantially as described.

476,218. HOT-WATER HEATER. THOMAS TREE, Ithaca, N. Y. Filed Jan. 14, 1892. Serial No. 418,136. (No model.)

Claim.—1. In a water-heater inserted into a fuel burner or furnace, the inverted truncated cone-shaped chamber *a*, located in proximity to the grate and adapted to be embedded in the fuel, in combination with the enlarged chambers *d d* and their intermediate connections *c c*, of less diameter, and radiating stellated chambers *e e*, and the exit-tube *c''*, constructed and arranged as set forth.

476,218.



2. The return-pipe *j*, entering the stove or furnace cell and penetrating the upper part of the chamber *a* and extending nearly to the base of the same, in combination with the superimposed chambers, constructed and arranged as shown.

3. The water-holding chambers *d d*, having radiating arms *e*, provided with the diaphragms *e''*, terminating at the point of attachment of the arms *e* to the chambers *d d*, in combination with the intermediate connections *c c*, and the chamber *a*, having the entrance-pipe *j*, all arranged substantially as set forth.

4. The furnace, stove, or fuel-burner *b*, provided with the water-heating chambers *a* and *d d*, the fire-space below the bottom of the lower chamber *a*, entrance-pipe *j*, its extension to the inside base or bottom of the chamber *a*, pipes *c c*, and exit-pipe *c''*, combined and arranged substantially as set forth.

476,219. BAG-FASTENER. LOUIS A. WALKER, Brooklyn, assignor to himself as trustee, and Cornelius S. Mitchill, New York, N. Y. Filed Jan. 23, 1892. Serial No. 419,549. (No model.)



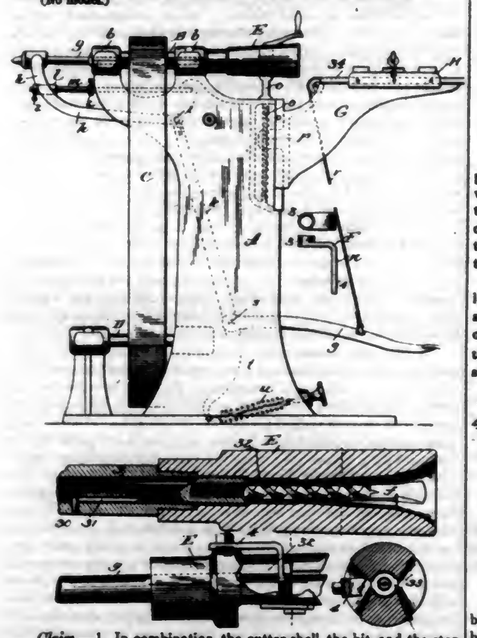
Claim.—1. A bag-fastener consisting of two parts hinged at one edge, one designed to go inside the bag and the other outside and adapted to clamp the mouth of the bag between them, and means for drawing the two parts together and locking them, as set forth.

2. A bag-fastener consisting of two hinged parts adapted to fit one within the other, one inside and the other outside the bag to clamp the mouth of the bag between them, and drawing and locking means loosely connecting the two parts and adapted to serve substantially as specified.

3. The bag-fastener consisting of the two parts, both convexly and oppositely arranged, loosely hinged together, and one adapted to fit within the other one inside the bag and the other outside the same, a loose connection between the two parts, and a locking part pivotally connected with the said loose connection, as set forth.

4. The combination, with a bag and its mouth-string, of a two-part clamp, one part arranged within the bag and the other outside, the outer part having holes through which the string is loosely passed, the two parts being loosely hinged together, a link loosely connected with the two parts and free to slide in the same, and a triangular pawl loosely pivoted on the said link outside the outer part of the clamp, substantially as specified.

476,220. DEVICE FOR FORMING THE ENDS OF HANDLES. JAMES A. AIKEN, Jackson, Mich. Filed Oct. 10, 1891. Serial No. 408,397. (No model.)



Claim.—1. In combination, the cutter-shell, the bit, and the stop around the bit, the said parts being constructed and arranged to leave a space to the rear for the escape of the shavings, substantially as described.

2. In combination, the cutter-shell, the bit, and the stop around the bit, the said stop having a seat at its forward end to receive the end of the handle and prevent the same from splitting, substantially as described.

3. In combination with the cutter-shell mounted upon a tubular shaft, a bit mounted upon a shank arranged axially in the shaft and having a stop combined therewith, all substantially as described.

4. In combination with the cutter-shell, the stop having a tubular form and arranged about the bit and provided, also, with the shank adjustably connected to the shell, substantially as described.

5. In combination with a cutter-shell and its tubular shaft, the bit and its shank arranged axially therein and connected to the shaft so as to revolve therewith and capable of reciprocating motion therein, and means for moving the bit longitudinally, substantially as described.

6. In combination with a cutter-shell and its tubular shaft, the bit and its shank arranged axially therein and connected to the shaft so as to revolve therewith and capable of reciprocating motion therein, and means for moving the bit longitudinally, and adjustable stops for limiting the movement of the bit or holding it in fixed position, substantially as described.

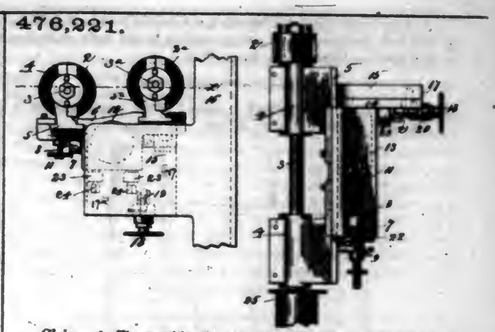
7. In combination with the cutter-shell, its stop, and the movable bit arranged in the shell, a carriage for holding the handle arranged to reciprocate toward the shell, and connections between the carriage and the bit-shank, substantially as described.

8. In combination, the cutter-shell, the axially-arranged bit, and the stop surrounding the bit and leaving a free space between itself and the bit for the escape of shavings, and an opening in the cutter-shell, substantially as described.

9. In combination, the cutter-shell formed with an opening, an axially-arranged bit, and a stop supported independently of the bit, with a free space between itself and the bit, substantially as described.

476,221. MATCHER. EDWIN BENJAMIN, South Evanston, Ill. Filed Nov. 14, 1890. Serial No. 330,945. (No model.)

476,221.



Claim.—1. The combination, in a matcher adapted to work two pieces of lumber at the same time, of two cutter-heads rotatable on vertical axes placed relatively to each other in a line nearly parallel to the line of travel of the lumber and a frame-work supporting said cutter-heads and rotatable as a whole upon a vertical pivot, whereby the relative positions of the axes of said cutter-heads to the line of travel of the lumber may be regulated.

2. The combination, in a matcher adapted to work two pieces of lumber at the same time, of two cutter-heads rotatable on vertical axes, each cutter-head being adapted to dress an inner edge of one piece of lumber, and a frame-work carrying both said cutter-heads and rotatable on a vertical pivot, said pivot being adjustable horizontally, substantially as described.

476,222. GAGE-COCK. HARRY F. BURGHAM, Pittsburg, Pa. Filed Sept. 22, 1891. Serial No. 406,515. (No model.)



Claim.—1. In a gage-cock, the combination of the cap and chamber therein with a valve and piston at the back of said valve, a number of small holes through said piston in the line of the valve-stem, and a tail-piece for support of the piston.

2. In a gage-cock, the combination of the cap and chamber therein with a valve-stem, a valve, a collar at the back of said valve, a number of straight holes through said collar, a support for the collar, and a forked nut or push-button on the outer end of the valve-stem.

3. In a gage-cock, the combination of the valve-chamber, a valve therein, and a valve-stem provided at its outer end with a push-button or nut having two or more projecting points or spurs, whereby the valve may be rotated upon the application of inward pressure and rotative force.

476,223. PACKING-RECEPTACLE. HENRY L. BOWELL, Chase City, Va., assignor of one-fourth to Robert T. Burton, Philadelphia, Pa. Filed Oct. 15, 1891. Serial No. 408,778. (No model.)



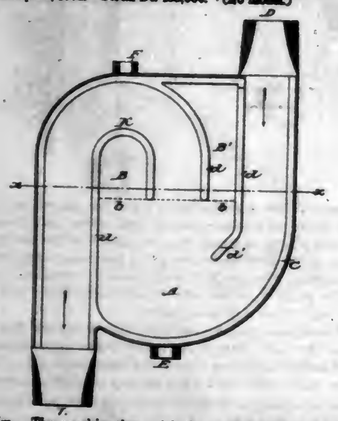
Claim.—1. The within-described receptacle for packing wearing-apparel, said receptacle consisting of a hollow body portion having an unobstructed interior in which clothing may be packed, said body having its exterior shaped in the form of a dummy for the reception of coats or the like, substantially as described.

2. The receptacle consisting of the hollow body having an unobstructed interior into which clothing may be packed, and having shoulder portions, a neck portion, and an opening through which access may be had to the interior of the body, for the purpose specified.

3. The receptacle consisting of the hollow body having shoulder portions, a neck portion, an opening, and doors closing said opening, substantially as set forth.

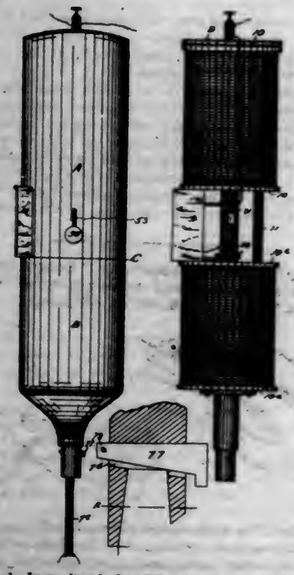
4. A packing-receptacle consisting of a hollow body having shoulder and neck portions at each end, an opening in said body, and doors for said opening, substantially as specified.

476,224. WATER-TRAP. JAMES T. BRIEN, Hoosick Falls, N. Y. Filed Sept. 7, 1891. Serial No. 405,066. (No model.)



Claim.—The combination, with the receiving-bowl of a trap, of a siphonic discharge-pipe, an induction-pipe, the mouth of the latter extended below that of the former, and an inclosed air-chamber sealed at the bottom intermediate the discharge and induction pipes, whereby the air from the chamber breaks or cuts off the siphonic discharge before the water reaches the level of the mouth of the inlet-pipe, as specified.

476,225. ELECTRICAL RECIPROCATING TOOL. WILLIAM P. GARSTARPHEN, Jr., Denver, Colo., assignor to the Electric Reciprocating Company, same place. Filed June 1, 1891. Serial No. 394,671. (No model.)



Claim.—1. In an electrical tool, the combination, with two hollow coils, of a movable bar supported therein, a circuit, a commutator located between the coils and consisting of a box or frame connecting the two coils and provided with a bottom located just above the movable bar and a top covering the working parts, a movable plate supported upon said bottom and provided with depending arms projecting through slots formed in the bottom of the box and into the path of the bar, which is provided with a shoulder adapted to alternately engage said arms as the bar reciprocates, a cylindrical circuit-breaker pivoted in the bottom of the frame or box and provided with a wrist or projection located to one side of its center and engaging a slot formed in the movable plate, a single contact-plate secured to said circuit-breaker and partially surrounding the same, the upper extremity of the circuit-breaker being pivoted in the top plate of the box, and three brushes one constantly in engagement with the contact-plate and the other two alternately in contact therewith, the brushes and coils being arranged and connected in the circuit, substantially as described, and for the purpose set forth.

2. In an electrical tool, the combination, with two hollow coils, of a movable bar supported therein, a circuit, a commutator located between the coils and consisting of a box or frame connecting the coils and provided with a bottom located just above the movable bar and a top covering the working parts, a movable plate supported upon said bottom and provided with depending arms projecting through slots formed therein and into the path of the bar, which is provided with a shoulder adapted to alternately engage said arms as the bar reciprocates, a cylindrical circuit-breaker consisting of a block of insulating material having an exposed metallic contact-plate partially surrounding the same, said circuit-breaker being pivoted in the bottom of the frame and provided with a wrist or projection located to one side of its center and engaging a slot formed in the movable plate, the upper extremity of the circuit-breaker being pivoted in the top plate of the box, and three metallic brushes, one continually in direct engagement with the contact-plate of the circuit-breaker and the other two alternately in direct contact therewith, the brushes and coils being arranged and connected in the circuit, substantially as shown and described, whereby as the movable bar reciprocates a partial rotation in reverse directions is imparted to the circuit-breaker, as and for the purpose set forth.

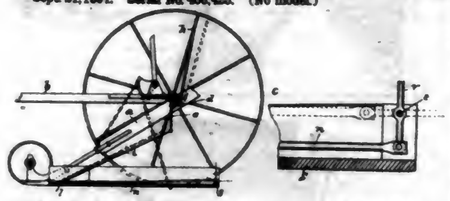
3. The combination, with two hollow coils inclosed by a suitable metallic shell or case, each coil being wound in a plural number of distinct sections by the use of a continuous wire, of a movable bar supported in said coils, a circuit and automatic switch mechanism connected with the coils and lying within the circuit, and a movable spring-plate suitably supported upon the tool and located within the shell or case, said plate having one extremity continually in electrical contact with one pole of the source of electricity, metallic contacts lying in the same plane and equal to the number of sections of each coil, these contacts being insulated from each other and each connected with a single corresponding section of both coils by a continuous conductor, said contacts forming a series of corrugations which the spring-plate is fashioned to engage, and means connected with the movable spring-plate and protruding through a slot formed in the inclosing case, whereby said plate may be shifted at will from the outside of the shell independently of the movement of the reciprocating bar, according as it is desired that the current shall pass through one or more of the coil-sections, substantially as described.

4. In an electrical reciprocating tool, the combination, with two hollow energizing-coils, of a movable bar supported in said coils, a circuit, switch mechanism located between the coils and projecting into the path of the movable bar, which acts directly thereon, said switch mechanism consisting of a circuit-breaker composed of a solid cylindrical block of insulating material and a single exposed metallic contact-plate partially surrounding said block, and three metallic brushes, two of the brushes being respectively connected with the coils and alternately in engagement with the contact-plate of the circuit-breaker, the third brush being connected with one pole of the electrical source and constantly in engagement with the contact-plate of the circuit-breaker, whereby the current is alternately passed through the coils and a reciprocating movement imparted to the bar, substantially as described.

5. In an electrical tool, the combination, with two hollow energizing-coils, of a movable iron bar supported therein, a circuit in which the coils lie, a commutator located between the coils, which are suitably separated therefor, said commutator consisting of a cylindrical circuit-breaker composed of a solid block of insulating material partially surrounded by a single exposed metallic contact-plate and three metallic brushes, two of the brushes being respectively connected with the coils and alternately in direct engagement with the contact-plate of circuit-breaker, the third brush being connected with one pole of the electrical source and constantly in direct engagement with the contact-plate of the circuit-breaker, and a sliding plate connected with the circuit-breaker and having arms projecting into the path of the movable bar, said bar being provided with a ring or shoulder adapted to engage these arms and actuate the circuit-breaker, whereby the current is alternately passed through the coils and a reciprocating movement imparted to the bar, substantially as described.

6. In an electrical reciprocating tool, the combination, with two hollow energizing-coils, of a movable iron bar supported therein, a circuit in which the coils lie, a switch mechanism located between the coils, which are suitably separated therefor, said mechanism consisting of a circuit-breaker composed of a cylindrical insulating-block partially surrounded by a single metallic contact-plate, and three metallic brushes, two of the brushes being respectively connected with the coils and alternately in direct engagement with the contact-plate of the circuit-breaker, the third brush being connected with one pole of the electrical source and constantly in direct engagement with the contact-plate of the circuit-breaker, and a sliding plate connected with the circuit-breaker and having arms projecting into the path of the movable bar, said bar being provided with a shoulder centrally located thereon and adapted to engage these arms and actuate the circuit-breaker, giving the same a partial rotation in reverse directions, whereby the current is alternately passed through the coils and a reciprocating movement imparted thereto, substantially as described.

476,226. HARVESTER. JAMES M. DODDRIDGE, Milton, Ind. Filed Sept. 21, 1891. Serial No. 406,426. (No model.)



Claim.—The shaft *d*, having arms *e h*, rods *i i*, shaft *m*, slats *s s s*, provided with case *w* and rod *n*, and teeth *r r*, in combination with a harvesting-machine in the manner and for the purpose substantially as set forth and described.

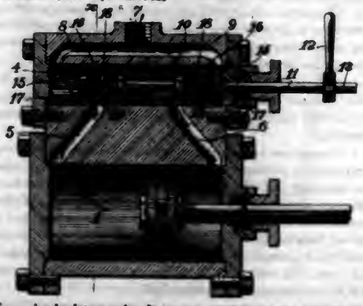
476,227. PIPE-HANGER. JONAH D. DUNNING, Athens, Pa. Filed Jan. 11, 1892. Serial No. 417,646. (No model.)



Claim.—1. In a pipe-hanger, the combination of a frame composed of separate lengthwise sections, each having an integral engaging hook at one end for engaging the pipe and serrations on the inner face of the opposite end, a support interposed between said sections and formed with a projection adapted to engage the serrations, and a clamp on the frame for holding the sections together, substantially as and for the purpose specified.

2. In a pipe-hanger, the combination of a frame composed of separate sections having an engaging hook at one end and curved bearings a^4 and serrations a^3 at the other end, a support having one end adapted to bear against the curved bearings a^4 and provided with a shoulder for engaging the serrations a^3, and a collar movable on the frame for holding the sections together, substantially as and for the purpose set forth.

476,228. PISTON-VALVE. JAMES HAMILTON, Bridgeport, Conn., assignor to Hunter, Patchen & Havens, same place. Filed Aug. 31, 1891. Serial No. 404,329. (No model.)

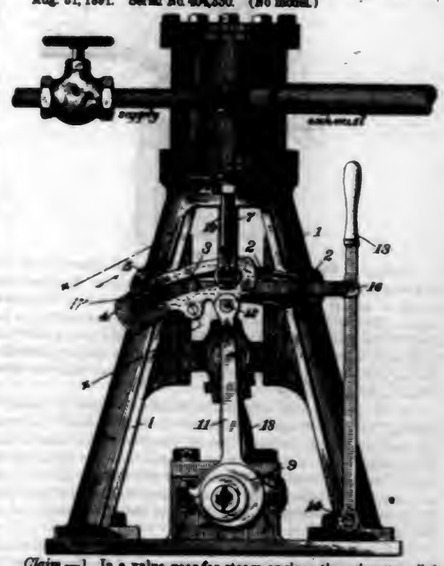


Claim.—1. A piston-valve for steam-engines, comprising the usual disks for admission and exhaust of steam to the cylinder, and additional disks beveled on one side and located on the valve-stem in close proximity to the first-mentioned disks, whereby an annular space is formed, said beveled disks being provided with steam-inlets, substantially as set forth.

2. In a slide-valve for steam-engines, the combination, with the ports which lead from the valve-chest within the steam-cylinder, of the reciprocatory and rotatory valve which controls the admission of steam to said ports, each end of the valve comprising two disks, with a narrow annular space between them, one of said disks serving as a cut-off between the ports and having a normal position beyond the latter, the other disk having a steam-inlet and beveled inward from said inlet, whereby the width of the edge of said disk is varied, substantially as shown and described.

3. The herein-described slide-valve for steam-engines, comprising a disk which cuts off steam between the ports, a disk having a steam-inlet and the width of whose edge is varied, there being a space between said disks, which varies in width inversely to the width of said edge, said space converging into a narrow annular recess between the disks at a point opposite to said inlet, said disks being mounted on a reciprocatory and rotatory stem, the rotation of the stem affording a means for adjusting the normal positions of the disks around their axes, whereby the varying widths of the inlet-disk are brought into position to normally throttle the ports to a greater or lesser degree, as the case may be, substantially as shown and described.

476,229. VALVE-GEAR FOR ENGINES. JAMES HAMILTON, Bridgeport, Conn., assignor to Hunter, Patchen & Havens, same place. Filed Aug. 31, 1891. Serial No. 404,330. (No model.)

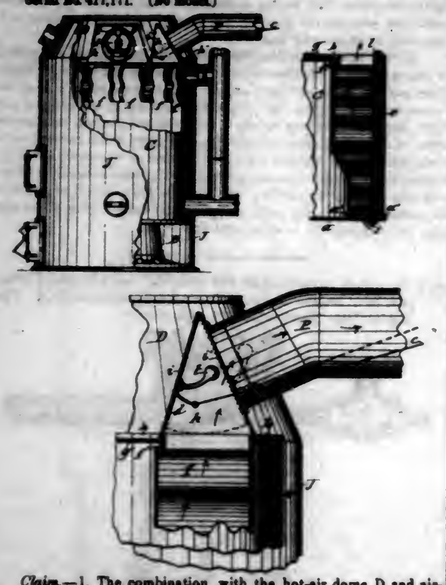


Claim.—1. In a valve-gear for steam-engines, the valve-stem link having a pivotal rocking joint which never changes its position with respect to said link and which is in alignment with a portion of the path of the connection between the valve-stem and the said link, in combination within a valve-stem loosely connected within the said link, a single eccentric operatively connected to one end of the said link, whereby the latter is rocked on its pivotal joint, and means for shifting the pivotal joint of said link to and fro on opposite sides of the valve-stem or to cause the said pivotal joint to be in direct alignment with the base of the said valve-stem, substantially as described.

2. The combination, with a stationary guide-link, of the pin adapted to slide freely therein, the pivoted hand-lever and operative connections between said lever and pin, whereby the latter may be shifted to and fro within said guide-link, a valve-stem link pivoted around said pin, the said pin being in direct alignment with a portion of the path of the stud upon the valve-stem, a valve-stem having a stud extending within the valve-stem link, a single eccentric on the crank-shaft of the engine, and the eccentric-rod operatively connected to said eccentric and pivoted to one end of the valve-stem link, substantially as described.

3. The combination, with a driven eccentric, of a frame having a stationary curved guide-link therein, a valve-stem link having a block rigidly secured to the central portion of the back thereof, a pin contained within the said block in alignment with the center of the slot within the link and moving freely within the guide-link, an eccentric-rod operatively connected to the said eccentric and pivoted to one end of the valve-stem link, a rigid valve-stem movably contained within the slot of the said valve-stem link, and means whereby the said pin may be shifted to and fro on opposite sides of the said valve-stem or whereby it may be placed in direct alignment with the stud upon the base of the said stem, substantially as described.

476,280. HOT-AIR FURNACE. WILLIAM W. KELSEY, Cortland, N. Y., assignor to the Kelsey Furnace Company. Filed Jan. 6, 1892. Serial No. 417,171. (No model.)



Claim.—1. The combination, with the hot-air dome D and air-flues terminating in said dome, of a hood placed over the upper end or ends of one or more of said air-flues to receive the air therefrom and provided with two ports, one of which communicates with the interior of the dome, a hot-air pipe extending from the other port of the hood to the apartment to be heated, and a damper in the hood, adapted to close either of the ports thereof and simultaneously open the other of said ports, as set forth.

2. The combination, with the combustion-chamber C, jacket J, forming the cold-air chamber B, and dome D, of the air-flues *f f*, extending from said cold-air chamber through the combustion-chamber and terminating in the dome, the hood A, placed over the upper end or ends of one or more said air-flues and provided with the ports *i i'*, the hot-air pipe P, extending from the port *i'*, and the damper *d*, arranged in the hood and movable from one port to the other thereof, as set forth and shown.

3. In combination with the dome D and air-flues *f*, terminating in said dome, the hood A, provided with ports *i i'*, the hot-air pipe P, extended from the port *i'*, the damper *d*, suspended from the top of the interior of the hood and movable from port to port, the weight *l*, attached to the damper to automatically close the port *i*, and the wire or chain *c*, connected to the damper and extended through the pipe P, substantially as and for the purpose set forth.

4. The combination of the combustion-chamber C, having the sand-bed *b*, formed by the vertical wall of said combustion-chamber, extending above the crown-sheet thereof, and the air-flues *f f*, extending through said crown-sheet and terminated above the same, the jacket J, formed with the dome D, the hood A, placed over the protruding end or ends of one or more of the aforesaid flues and seated in the aforesaid sand-bed and provided with ports *i i'*, the damper *d*, arranged in the hood movably from port to port, and the pipe P, extending from one of said ports, substantially as described and shown.

5. The combustion-chamber C, composed of the bottom plate *a*, provided with the flanges *a' a'* and apertures, the shell *e* and flues *f f*, seated on said bottom plate, said flues being formed with the shoulders *f''*, the crown-sheet *g*, resting on said shoulders, and the rods *l*, extending through the aforesaid flues and tying thereto the aforesaid bottom plate and crown-sheet, substantially as described and shown.

476,231. PURIFIER AND SEPARATOR. JONATHAN MILLS, Columbus, Ohio. Filed July 17, 1890. Serial No. 358,923. (No model.)

Claim.—1. A separator comprising an exhaust-fan, a passage to receive the material to be separated when first introduced and through which said material falls by gravity, said passage communicating directly with the inlet-opening of the fan, a second or auxiliary passage also communicating directly with the said inlet-opening of the fan, but separate from and not communicating with the first passage, a settling-chamber communicating with the exit-opening of the fan and with both of said passages, and means for controlling the flow of air through both of said passages, whereby the force of the aspirating-current may be varied at the point where the material introduced is first acted upon without changing the speed of the fan or affecting the current during its subsequent force, substantially as described.

476,231.



2. A separator comprising an exhaust-fan, a passage to receive the material to be separated when first introduced and through which said material falls by gravity, said passage communicating directly with the inlet-opening of the fan, a second or auxiliary passage also communicating directly with the said inlet-opening of the fan, but separate from and not communicating with said first passage, a settling-chamber communicating with the exit-opening of the fan, a second settling-chamber communicating with the first settling-chamber and also with the said passages, and means for controlling the flow of air through said passages, whereby the force of the air-current may be varied at the point where the material is first acted on without changing the speed of the fan or affecting the current during its subsequent course through said settling-chambers, substantially as described.

3. A separator comprising an exhaust fan, a passage through which the material to be separated falls by gravity, said passage communicating at its upper end with the inlet-opening of the exhaust-fan, a settling-chamber communicating with the exit-opening of the exhaust-fan and with said passage, a vertical wall or partition extending downwardly into said chamber between the inlet and outlet openings thereof, and a flat valve at the lower edge of said partition, substantially as described.

4. A separator comprising an exhaust-fan, a passage through which the material to be separted falls by gravity, said passage communicating at its upper end with the inlet-opening of the exhaust-fan, a second air-passage also communicating with the inlet-opening of the exhaust-fan, means controlling the flow of air through said passages, a settling-chamber connected with the outlet-opening of the exhaust-fan and with the said passages, and a vertical wall or partition extending downwardly into said settling-chamber between the inlet and outlet openings thereof, substantially as described.

5. A separator comprising an exhaust-fan, a passage through which the material to be separated falls by gravity, said passage communicating at its upper end with the inlet-opening of the exhaust-fan, a settling-chamber communicating with the outlet-opening of said exhaust-fan and with the lower end of said passage, and a gate or valve controlling the inlet-opening to the settling-chamber, substantially as described.

6. A separator comprising an exhaust-fan, a passage through which the material to be separted falls by gravity, a second or auxiliary passage also communicating with the inlet-opening of the exhaust-fan, a settling-chamber communicating with the exit-opening of the fan and with both of said passages, means controlling the flow of air through said passages, and a single flap-valve applied to control the admission of air to said passages, substantially as described.

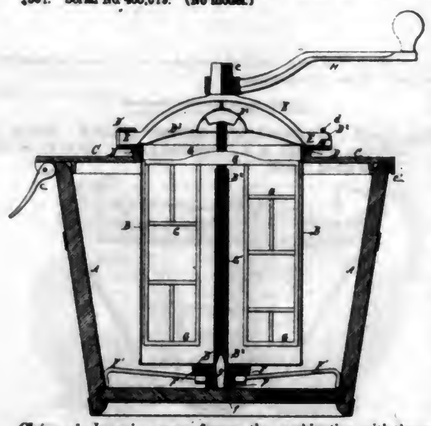
7. A separator comprising an exhaust-fan, a passage through which the material to be separated falls by gravity, a feeding device delivering material to the upper end of said passage, a hopper or receptacle located at the lower end of the passage, a settling-chamber communicating with the outlet-opening of the exhaust-fan and with said passage, a second passage leading from the outlet-opening of the settling-chamber to the inlet-opening of the fan, and means controlling the flow of air through said passages, substantially as described.

8. A separator comprising an exhaust-fan, a passage through which the material to be separated falls by gravity, said passage being connected at its top with the inlet-opening of the exhaust-fan and having an inclined side wall, upon which the material is delivered, a hopper or receptacle located at the lower end of the passage, a second or auxiliary passage also communicating with the casing of the exhaust-fan, a settling-chamber communicating with the exit-opening of the exhaust-fan and with both of said passages, and means controlling the flow of air through said passages, substantially as described.

9. A separator comprising an exhaust-fan, a passage through which the material to be separated falls by gravity, said passage being connected at its top with the inlet-opening of the exhaust-fan and having an inclined side wall, upon which the material is delivered, a feed device supplying material to the upper part of said wall, a hopper or receptacle located at the lower end of said passage, a second or auxiliary passage also communicating with the casing of the exhaust-fan, a settling-chamber communicating with the exit-opening of the exhaust-fan and with both of said passages, and means controlling the flow of air through said passages.

10. A separator comprising an exhaust-fan, a passage through which the material to be separated falls by gravity, said passage being connected at its upper end with the casing of the exhaust-fan and having an inclined side wall, upon which the material is delivered, an inclined wall *a*, the lower end of which is located over the upper part of said inclined side wall, a feed device discharging upon said wall *a*, a hopper or receptacle located at the lower end of the said passage, a second or auxiliary passage also communicating with the casing of the exhaust-fan, a settling-chamber communicating with the exit-opening of the exhaust-fan and both of said passages, and a valve or valves controlling the flow of air through both of said passages, substantially as described.

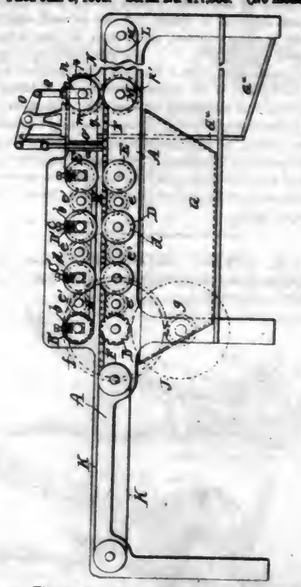
476,232. ICE-CREAM FREEZER. SAMUEL C. MOONY, Erie, Pa., assignor of one-half to William A. Schoenfeld, same place. Filed Sept. 14, 1891. Serial No. 405,619. (No model.)



Claim.—1. In an ice-cream freezer, the combination, with the receptacle B, ring D, and yoke E at the top thereof, and the gudgeon B' at the bottom thereof and having the tubular core B^3, opening outwardly at the bottom through said gudgeon, of the spider F F', forming a bearing for said gudgeon, the ring C, forming a bearing for the upper part of said receptacle B, and the dasher G within said receptacle having a shaft G' extending through the said tube B^3, and held against rotation by said spider.

2. In an ice-cream freezer, the combination, with the receptacle A, and the ring C, and spider F F', fixed to said receptacle A against rotation, of the receptacle B, journaled in the ring C and the spider F F' and having at its upper end the ring D, with sockets D' D^2, and the yoke E, fitting in said sockets and holding the cover B^2 onto said receptacle B and also having a tubular core B^3, opening outwardly at the bottom, and the dasher G, having a shaft G' fitting within said tube and held against rotation by the said spider.

476,233. ROLLER COMPRESSOR. JAMES LE F. MYERS, Boston, Mass. Filed Jan. 9, 1892. Serial No. 417,833. (No model.)



Claim.—1. The combination, with a system of compression-rollers arranged in pairs, the rollers of the several pairs being spaced vertically at different distances apart, of feeding-rollers and a vertically-movable stop-board located between the feeding-rollers and first pair of compression-rollers, substantially as set forth.

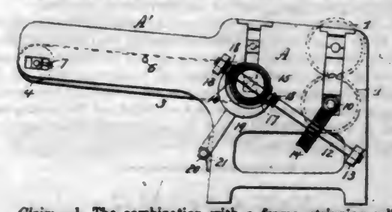
2. The combination, with a system of compression-rollers arranged in pairs, the rollers of the several pairs being spaced vertically at different distances apart, of feed-rollers, a stop-board located between the feed-rollers and compression-rollers, and a lever connecting the stop-board and the driving feed-roller, substantially as set forth.

3. The combination, with a system of compression-rollers arranged in pairs, the rollers of the several pairs being spaced vertically at different distances, of perforated plates located and filling the spaces between the lower rollers and plates located and filling the spaces between the upper rollers, substantially as set forth.

4. The combination, with a series of rollers journaled in fixed boxes in a horizontal plane and a similar series in spring-cushioned boxes in an inclined plane, of feed-rollers and a stop-board located between the feed-rollers and compression-rollers, substantially as set forth.

5. The combination, with two series of rollers, one in a horizontal and the other in an inclined plane, the nearest in the series being corrugated, and gearing for driving and communicating motion of feed-rollers, of a stop-board located between the feed-rollers and compression-rollers and a conveyer-belt, substantially as set forth.

476,234. LEAF-STRIPPING MACHINE. JAMES L. MYERS, Boston, Mass. Filed Mar. 30, 1891. Serial No. 387,023. (No model.)

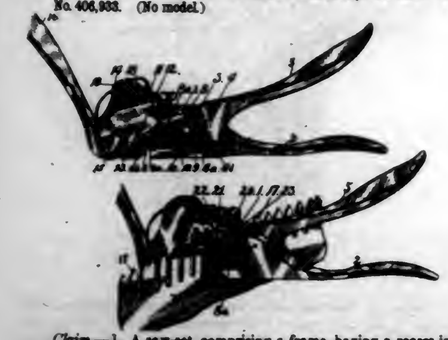


Claim.—1. The combination, with a frame, stripping-cylinders, and feed mechanism, of a rotary shaft having gearing thereon for communicating motion from one of the cylinders to the feed mechanism, and reversing mechanism for reversing the motion of said mechanism, substantially as set forth.

2. The combination, with a frame, stripping-cylinders, driving-pulley on the shaft of one of the cylinders, and a worm-wheel on the opposite end, of an endless feed-apron, rollers upon which the latter is carried, a bevel gear-wheel on the shaft on one of the rollers, a shaft having a worm gear-wheel meshed with the worm-wheel, bevel-pinions slidingly mounted on said shaft, a yoke having loose connection with the pinions and adapted to throw one out of mesh and the other in mesh with the bevel gear-wheel, and a lever for operating this yoke, substantially as set forth.

3. The combination, with a frame, a table, toothed stripping-cylinders, and feed-plate, of an endless feed-apron, yielding feed-roller, supporting-roller, and adjustable tension-roller, a shaft having a worm gear-wheel thereon meshed with a worm-wheel on the shaft of one of the cylinders, sliding bevel-pinions, yoke for moving said pinions on the shaft alternating in and out of engagement with a bevel gear-wheel on the shaft of one of the apron-rollers, a lever for operating the yoke, and a toothed segment by means of which the lever is locked, substantially as set forth.

476,235. SAW-SET. JOHN MCINTOSH, Port Elgin, assignor of one-half to Moses Bricker, Listowel, Canada. Filed Sept. 26, 1891. Serial No. 406,933. (No model.)



Claim.—1. A saw-set comprising a frame having a recess in its bottom, a stationary jaw forming a part of one side of said recess, a cam pivoted to the frame above the recess and playing through the same to coact with the stationary jaw, means for operating the said cam, and means for holding the saw in the recess.

2. The combination of a frame having pins or lugs on its sides, a screw mounted on the frame, and a gage carried by said screw and having depending side portions provided with slots engaging the pins or lugs on the frame.

3. In a saw-set, the combination of a swinging jaw pivotally secured to the frame-work, having its meeting face hardened and inclined to form one part of the die, the opposite end fitted with a cam operated by a lever pivotally secured to said frame-work, and a stationary jaw forming part of the frame-work and having its meeting face inclined and hardened to form the second die, and a means for holding the saw in position, consisting of an opposing surface and a holding-bolt operated by a lever, substantially as described.

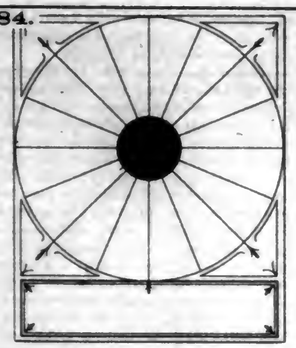
4. In a saw-set, the combination of a swinging jaw pivotally secured to the frame-work, having its meeting face inclined and hardened and fitted with a cam, a lever to operate said cam, a spring to return said cam and lever to their normal positions, a stationary jaw located in and forming part of the frame-work and having its meeting face inclined and hardened to correspond to the inclination of the meeting face of the swinging jaw, a holding-bolt located in said frame-work, a lever to operate said holding-bolt, and an opposing surface between which and the locking-bolt the saw is held, and a means for regulating the gage of the set, substantially as described.

5. In a saw-set, the combination of a swinging jaw pivotally secured to the frame-work, a lever for operating said swinging jaw, a stationary jaw located in and forming part of the said frame-work, the meeting faces of said jaws inclined and hardened to form the die, the holding-bolt located in said frame-work, a lever to operate said holding-bolt, an opposing surface between which and the holding-bolt the saw is firmly held, and a gage to regulate the set of the teeth, substantially as described.

DESIGNS.

21,584. ADVERTISING-COUPON. GEORGE H. DREW, Boston, Mass. Filed Apr. 30, 1892. Serial No. 429,963. Term of patent 14 years.

21,584.



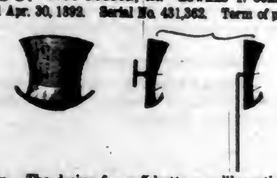
Claim.—The design for an advertising-coupon, substantially as shown.

21,585. BADGE. MAMIE C. BARBERO, Maquon, Ill. Filed Dec. 7, 1891. Serial No. 414,338. Term of patent 3½ years.



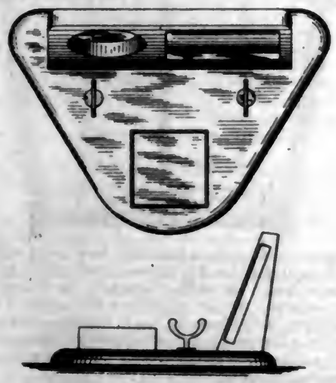
Claim.—The design for a badge or pin, as herein shown and described.

21,586. CUFF-BUTTON, &c. EDWARD T. CORBY, Carbondale, Pa. Filed Apr. 30, 1892. Serial No. 431,362. Term of patent 3½ years.



Claim.—The design for cuff-buttons or like articles, substantially as herein shown and described.

21,587. CALENDAR AND INKSTAND HOLDER. EDWARD A. HEMPHILL, Elizabeth, N. J. Filed May 5, 1892. Serial No. 431,956. Term of patent 7 years.



Claim.—The design for a calendar and inkstand holder herein shown and described, the same comprising the triangular base with rounded corners and the inclined calendar-holder rising from the base and having rounded corners, as set forth.

21,588. LAMP-SHADE. WILLIAM S. MCLEWEE, Trenton, N. J. Filed Apr. 30, 1892. Serial No. 431,356. Term of patent 7 years.



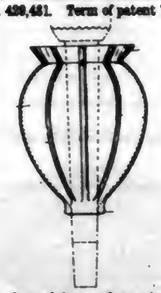
Claim.—The design for a lamp-shade, as herein shown and described.

21,589. SPONGE-CUP. JOHN G. BAIENSINGER, New York, N. Y. Filed Apr. 21, 1892. Serial No. 430,128. Term of patent 14 years.



Claim.—The design for a cup, as herein shown and described.

21,590. DRIP-CUP. HOWARD A. RUEHLE, Reading, Pa. Filed Apr. 16, 1892. Serial No. 429,481. Term of patent 7 years.



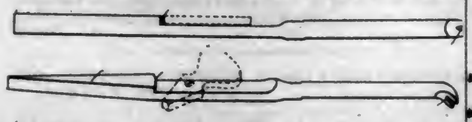
Claim.—The design for a drip-cup for umbrellas, substantially as shown and described.

21,591. EWER. CHARLES A. MAY, Trenton, N. J. Filed Apr. 14 1892. Serial No. 429,222. Term of patent 3½ years.



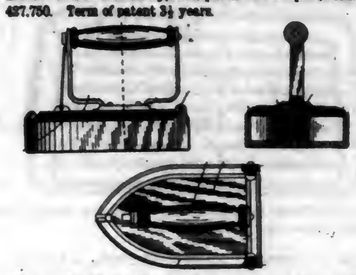
Claim.—The design for a ewer, substantially as shown.

21,592. WIRE-STRETCHER SHANK. ADOLPH WESTMEYER, Pacific, Mo. Filed Aug. 3, 1891. Serial No. 402,180. Term of patent 7 years.



Claim.—The design for a wire-stretcher shank herein shown and described.

21,593. SAD-IRON. JOHN J. BROOKS, Athens, Ohio, assignor of one-half to Frank E. Goldsberry, same place. Filed Apr. 4, 1892. Serial No. 427,750. Term of patent 3½ years.



Claim.—The design for a sad-iron, substantially as herein shown and described.

21,594. TOY SAVINGS-BANK. CHARLES G. SHEPARD and PETER ADAMS, Buffalo, N. Y.; said Adams assignor to Walter J. Shepard, same place. Filed May 9, 1892. Serial No. 432,379. Term of patent 7 years.



Claim.—The design for a toy savings-bank herein shown and described, the same comprising a wall or tower, a mortar facing the tower, and a figure representing a soldier standing near the mortar, substantially as set forth.

21,595. SPOON. DANIEL I. MURRAY, Dayton, Ohio. Filed Apr. 7, 1892. Serial No. 428,235. Term of patent 3½ years.



Claim.—The design for a spoon herein shown and described.

21,596. SPOON OR SIMILAR ARTICLE. FRANK H. OSBORNE, New York, N. Y., assignor to the Towle Manufacturing Company, Newburyport, Mass. Filed Apr. 25, 1892. Serial No. 430,637. Term of patent 7 years.

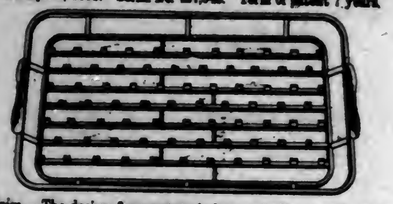


Claim.—1. The design for a fork or similar article herein shown and described.

2. In a design for a fork or similar article, the obverse herein shown and described.

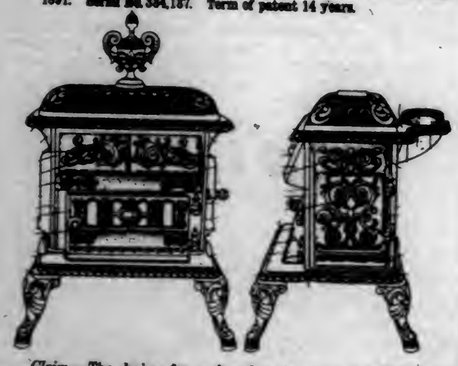
3. In a design for a fork or similar article, the reverse herein shown and described.

21,597. POTATO-BAKER. CHARLES H. BRIMAN, North Fairfax, Vt. Filed Apr. 2, 1892. Serial No. 427,543. Term of patent 7 years.



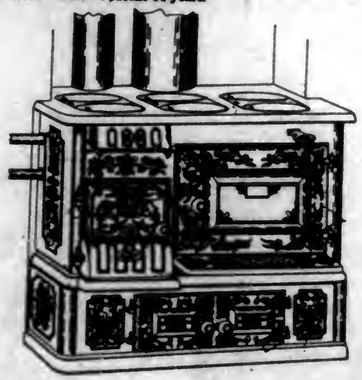
Claim.—The design for a potato-baker or similar utensil, substantially as herein shown and described.

21,598. DWARF PARLOR-STOVE. HENRY C. BASCOM and ROBERT GALBRAITH, Lansingburg, N. Y., assignors to said Bascom. Filed Mar. 7, 1891. Serial No. 384,187. Term of patent 14 years.



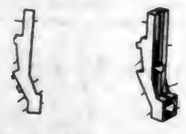
Claim.—The design for a dwarf parlor-stove, substantially as shown and described.

21,599. RANGE. HENRY C. BASCOM, Lansingburg, N. Y., assignor to S. R. Sexton & Son, Baltimore, Md. Filed Apr. 26, 1891. Serial No. 390,839. Term of patent 14 years.



Claim.—The design for a stove or range, substantially as shown and described.

21,600. NEEDLE-THREADER FRAME. PATRICK SLEMMY, Brooklyn, N. Y. Filed Apr. 24, 1891. Serial No. 390,336. Term of patent 14 years.



Claim.—The design for a needle-threader main frame herein shown and described.

TRADE-MARKS

REGISTERED MAY 31, 1892.

21,208. CIGARS. ELIAS AARONS & BRO., New Orleans, La. Filed Apr. 27, 1892.

PLUCK-LUCK

Essential feature.—The words "PLUCK AND LUCK." Used since April 15, 1890.

21,204. MALT LIQUORS. SAMUEL ALLSOPP & SONS, Limited, Burton-on-Trent, England. Filed Mar. 24, 1892.



Essential feature.—The representation of a human hand and the words "RED HAND." Used since July 1, 1890.

21,205. GINGHAMS. JOHN PARKIN & Co., Philadelphia, Pa. Filed Apr. 25, 1892.

GRANADA

Essential feature.—A colored oval field with the word "GRANADA" thereon. Used since 1888.

21,206. WRITING-PAPER AND ENVELOPES. GEO. B. HURD & Co., New York, N. Y. Filed Apr. 7, 1892.



Essential feature.—The representation of a disk having radiating points and an envelope with a monogram of the letters "G B H & Co" on its seal crossing its lower right-hand corner. Used since January 1, 1891.

21,207. BOOTS AND SHOES. JOHNSTON & MURPHY, Newark, N. J. Filed Apr. 27, 1892.

J. & M.

Essential feature.—The letters and character "J. & M." Used since April 21, 1892.

21,208. SAUCE FOR MEATS, FISH, GAME, GRAVIES, AND SOUP. LEA & PERRINS, Worcester, England. Filed Jan 22, 1891.



Essential feature.—The words "WORCESTERSHIRE SAUCE," associated with the fac-simile signature "LEA & PERRINS" upon an ornamental border bearing at one end a medallion containing the representation of a hare or rabbit and at the other end a medallion bearing the figures of two birds, the principal element of said border being a triangular leaf with the words "LEA & PERRINS" interwoven therein throughout. Used since 1874.

21,209. CORKS. MEYER BROTHERS DRUG COMPANY, St. Louis and Kansas City, Mo., and Dallas, Tex. Filed Mar. 31, 1891.

MB

Essential feature.—The letters "M B" inclosed in a diamond-shaped figure. Used since December 15, 1890.

21,210. TOILET SOAP, COSMETICS, CREAM, LOTION, HAIR DYE AND BLEACH, AND SIMILAR PREPARATIONS. MADAME MAY & Co., Boston, Mass. Filed Apr. 9, 1892.

MADAME MAY'S



Essential feature.—The words "MADAME MAY'S" and the portrait of a lady. Used since July 1, 1889.

21,211. KID AND OTHER GLOVES. PINES & PINNER, New York, N. Y. Filed Apr. 29, 1892.

OXFORD

Essential feature.—The word "OXFORD." Used since February 1, 1892.

21,212. KID AND OTHER GLOVES. PINES & PINNER, New York, N. Y. Filed Apr. 29, 1892.

RUGBY

Essential feature.—The word "RUGBY." Used since February 1, 1892.

21,218. REMEDY FOR CERTAIN NAMED DISEASES. GEORGE W. PAGE, Hawthorne, N. J., and New York: N. Y. Filed Apr. 30, 1892.



Essential feature.—The words "HOMINES DEOS ACCEDUNT HOMINIBUS DANDO SALUTEM," arranged within a ribbon tied with a bow-knot inclosing the representation of a mortar and pestle, with the word "PAGE" printed across the mortar. Used since January 1, 1892.

21,214. REMEDY FOR CERTAIN NAMED DISEASES. GEORGE W. PAGE, Hawthorne, N. J., and New York, N. Y. Filed Apr. 30, 1892.

PAGE'S ARBORA BOTANICA REMEDY.

Essential feature.—The words "PAGE'S ARBORA BOTANICA REMEDY." Used since January 1, 1892.

21,215. ROLLED WHEAT. PETTIJOHN CALIFORNIA BREAKFAST FOOD COMPANY, Minneapolis, Minn. Filed Apr. 25, 1892.

PETTIJOHNS
CALIFORNIA

Essential feature.—The words PETTIJOHNS CALIFORNIA." Used since October 28, 1890.

21,216. ROLLED WHEAT. PETTIJOHN CALIFORNIA BREAKFAST FOOD COMPANY, Minneapolis, Minn. Filed Apr. 25, 1892.



Essential feature.—The words "CALIFORNIA BREAKFAST FOOD" with the representation of a bear. Used since October 28, 1890.

21,217. WINES AND BRANDIES. L. J. ROSE AND COMPANY, Limited, San Gabriel, Cal., and London, England. Filed Mar. 12, 1892.

SUNNY SLOPE

Essential feature.—The words "SUNNY SLOPE." Used since January 1, 1887.

21,218. INSECTICIDE. HENRY AD. BERENBERG, New York, N. Y. Filed May 4, 1892.

ABC

Essential feature.—The letters "A B C." Used since May 1, 1890.

21,219. PLUG-TOBACCO, CIGARS, AND CIGARETTES. STRASHEIM & JABGER, Chicago, Ill. Filed Apr. 18, 1892.



Essential feature.—The words "CHAMPION AMERICAN" and the representation of two female heads. Used since October, 1890.

21,220. HOLLOW AND OTHER WOODEN WARE FOR HOUSEHOLD USE, AND FOR BUCKETS, TUBS, AND RECEPTACLES OR WORK MADE BY COOPERS. STRASHEIM & JABGER, Chicago, Ill. Filed Apr. 18, 1892.



Essential feature.—The words "CHAMPION AMERICAN" and the representation of two female heads. Used since January, 1891.

21,221. STATIONARY AND LOCOMOTIVE INJECTORS AND EJECTORS. THE HAYDEN & DERBY MANUFACTURING COMPANY, New York, N. Y. Filed Apr. 27, 1892.

METROPOLITAN

Essential feature.—The word "METROPOLITAN." Used since September 1, 1888.

21,222. PAPER SHOT-SHELLS. THE UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn. Filed Apr. 4, 1892.

FIELD

Essential feature.—The word "FIELD." Used since March 1, 1892.

21,223. BEER. WELDE & THOMAS, Philadelphia, Pa. Filed May 3, 1892.



Essential feature.—The word "PENN." Used since February 1, 1892.

21,224. REFINED PETROLEUM FOR INTERNAL AND EXTERNAL USE AS A REMEDY FOR DISEASES. ASEPSIS CHEMICAL COMPANY, Boston, Mass. Filed Apr. 26, 1892.

GLYMOL

Essential feature.—The word "GLYMOL." Used since September 15, 1890.

21,225. COSMETIC OR LIQUID FACE PREPARATION. CHARLES WILLIAM BUPPUS and CHARLES HENRY BREIDENBACH, Dayton, Ohio. Filed Apr. 15, 1892.



Essential feature.—The words "EMPRESS JOSEPHINE." Used since January 1, 1892.

21,226. BOOTS AND SHOES. B. A. CORBIN & SON, Webster, Mass. Filed Apr. 18, 1892.



Essential feature.—The representation of a camel. Used since January 20, 1892.

21,227. FIRE-PROOF BACKING SLABS AND SHEETS. NEWTON H. CULVER, Detroit, Mich. Filed Apr. 18, 1892.

ASBESTICON

Essential feature.—The word "ASBESTICON." Used since April 1, 1892.

21,228. ANTISEPTICS. CLINTON PHARMACEUTICAL COMPANY, Syracuse, N. Y. Filed May 2, 1892.

IATROL

Essential feature.—The word "IATROL." Used since April 15, 1892.

21,229. WHISKY. G. GUMP & SONS, Baltimore, Md. Filed Apr. 23, 1892.

Gordon

Essential feature.—The word "GORDON." Used since December 15, 1891.

21,230. LOCAL ANESTHETIC FOR PAINLESS EXTRACTION OF TEETH. HOWE & DILLS, Carlisle, Ky. Filed May 4, 1892.

SURMODONT ANALGIA.

Essential feature.—The words "SURMODONT ANALGIA." Used since April 1, 1892.

21,231. ROLLED WHEAT. PETTIJOHN CALIFORNIA BREAKFAST FOOD COMPANY, Minneapolis, Minn. Filed Apr. 25, 1892.



Essential feature.—The picture of a girl and the representation of the head of a horse partially concealed by a feed-bag having the word "OATS" on it. Used since October 28, 1890.

21,232. ROLLED WHEAT. PETTIJOHN CALIFORNIA BREAKFAST FOOD COMPANY, Minneapolis, Minn. Filed Apr. 25, 1892.



Essential feature.—The words "CALIFORNIA BREAKFAST FOOD." Used since October 28, 1890.

21,233. REMEDY FOR DISEASES OF THE UTERINE ORGANS AND SIMILAR AILMENTS. HENRY K. WAMPOLE & Co., Philadelphia, Pa. Filed Apr. 30, 1892.

AS-PARO-LINE

Essential feature.—The word "ASPAROLINE." Used since January 1, 1892.

21,234. SPECIFIC FOR NEURALGIA, RHEUMATISM, AND GOUT. FRANK ALKER, St. Louis, Mo. Filed May 5, 1892.

TRADE MARKS
RHEUMATISM, GOUT & NEURALGIA
SPECIFIC.

Essential feature.—The words "LALLEMAND'S SPECIFIC." Used since 1860.

21,235. LEATHER FOR THE UPPERS OF BOOTS AND SHOES AND FOR BOOTS AND SHOES. ALLEN, FIELD & LAWRENCE, Boston, Mass. Filed Mar. 17, 1892.

Juniper

Essential feature.—The word "JUNIPER." Used since March 3, 1892.

21,236. KEY-OPERATED CASH-REGISTERING MACHINES HAVING VISUAL INDICATORS. BOSTON CASH REGISTER COMPANY, Northampton, Mass. Filed Apr. 27, 1892.



Essential feature.—The representation of a serrated disk and a cash-registering machine within the boundaries thereof. Used since April 1, 1892.

21,237. WHISKY. DALLEHARD & Co., Chicago, Ill. Filed Mar. 1, 1892.



Essential feature.—A monogram consisting of the letter, character and abbreviation "D & Co." inclosed by a circle. Used since January 1, 1892.

21,238. VELVETEEN. MEYERHOF, MARX & SIMONSEN, Manchester, England. Filed Jan. 14, 1892.

CHAMPION

Essential feature.—The word "CHAMPION." Used since March 1, 1881.

21,239. MEDICINE FOR THE CURE OF THE ALCOHOL HABIT. THOMAS S. ROBERTSON, New York, N. Y. Filed Apr. 12, 1892.

PHOSPHO-NERVINE COMPOUND
"ROBERTSON'S TREATMENT"

Essential feature.—The words "PHOSPHO-NERVINE COMPOUND," "ROBERTSON'S TREATMENT." Used since January 1, 1892.

21,240. STEEL KNIVES, FORKS, AND SCISSORS, AND ANALOGOUS SMALL METAL ARTICLES. THE FIRM OF GOTTLIEB HAMMESFAHR, Solingen-Foche, Germany. Filed Apr. 18, 1892.



Essential feature.—An equilateral triangle inclosing a horizontal line crossed by a vertical line. Used since April, 1890.

21,241. HOT-AIR FURNACES. MAY & FIESINGER, Akron, Ohio. Filed Mar. 18, 1892.

AIR BLAST

Essential feature.—The words "AIR BLAST." Used since December 1, 1889.

21,242. BRONZE PAINTS. FUCHS & LANG, New York, N. Y. Filed Apr. 23, 1892.

AMERICA

Essential feature.—The word "AMERICA." Used since March 22, 1892.

21,243. HATS AND CAPS. HART & DUFF HAT COMPANY, St. Louis, Mo. Filed May 2, 1892.

TOUCH AS LEATHER

Essential feature.—The words "TOUCH AS LEATHER." Used since November 1, 1891.

21,244. SHEETINGS, SHIRTINGS, MUSLINS, AND COTTON DRESS FABRICS. MONTGOMERY COTTON MANUFACTURING COMPANY, Montgomery, Canada. Filed Apr. 5, 1892.



Essential feature.—The representation of a crown and the head, neck, and wings only of a dragon issuant from the crown. Used since March 1, 1892.

21,245. PACKED MEAT, HAMS, SHOULDERS, BACON SIDES, AND SAUSAGES. NORTH PACKING AND PROVISION COMPANY, Boston, Mass. Filed Apr. 18, 1892.



Essential feature.—The representation of a hog on a figure of the world. Used since 1882.

21,246. IRISH WHISKY. GEORGE STEIGER, Philadelphia, Pa. Filed Apr. 26, 1892.



Essential feature.—The representation of a jug or bottle with a handle, the word "POTEEN," a shamrock-leaf, and the word or name "CORKER," indicating the name of the manufacturer of the contained whisky. Used since January 1, 1890.

21,247. BLACKING AND OTHER DRESSING FOR SHOES AND LEATHER. ULMER MANUFACTURING CO., Boston, Mass. Filed Apr. 13, 1892.



Essential feature.—A monogram composed of the letters "U M Co." Used since March 16, 1892.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE SUTER.

Decided May 11, 1892.

PRACTICE—OBJECTION TO NEW MATTER—COURSE OF APPEAL.

When the objection to new matter is that it is merely in the descriptive part of the specification or drawing and does not affect the scope of the claims, an interlocutory appeal lies from the Examiner to the Commissioner; but when new matter appears in or affects a claim or claims the appeal lies to the Examiners-in-Chief.

ON petition.

WATER OR WIND WHEEL.

Application of Jacob Suter filed April 29, 1891, No. 390,961.

Mr. Benedict S. Wise for the applicant.

SIMONDS, *Commissioner:*

This is a petition from the decision of the Primary Examiner having reference to an amendment filed by applicant, the important part of which decision is:

The amendment shows, describes, and claims a different arrangement of parts—a new combination—and hence a clear departure from the original record, and under Rules 70 and 133, as construed by *ex parte Regan*, the application is open to rejection on that ground. The application is finally rejected.

When a Primary Examiner's objection with regard to new matter is simply that it is to be found in the descriptive portion of the specification or in the drawings, it is the applicant's right under the past practice of the Office to have the judgment of the Commissioner upon that point by interlocutory appeal; but when the Examiner objects that new matter is found in a claim or claims applicant's appeal lies to the Examiners-in-Chief.

In the present case the Examiner objects that he finds new matter in the claims. An interlocutory appeal to the Commissioner, therefore, will not lie.

The appeal is dismissed.

HALL *v.* LATTA.

Decided May 12, 1892.

PRACTICE—MOTION TO DISSOLVE INTERFERENCE—RULE 122.

The pendency of other motions in an interference case is no excuse for delaying a motion to dissolve the interference beyond the twenty days limited by the rule.

APPEAL from Examiner of Interferences.

VELOCIPEDE.

Patent granted J. W. Hall October 30, 1888, No. 391,895. Application filed by E. G. Latta February 2, 1888, No. 262,707.

Mr. A. J. Todd and *Mr. J. L. Norris* for Hall.

Messrs. Foster & Freeman for Latta.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Examiner of Interferences granting Noakes's motion to amend his preliminary statement. The preliminary statements were approved February 6, 1892. Noakes's motion to amend his preliminary statement was filed April 12, 1892. Henderson has taken his testimony-in-chief. In his original preliminary statement Noakes

SIMONDS, *Commissioner:*

The paper now acted upon is nominally an appeal from a decision of the Examiner of Interferences refusing to entertain Hall's motion that the case be transmitted to the Primary Examiner and dismissing the motion for dissolution filed therewith.

A history of this case is recited in the Commissioner's decision rendered April 8, 1892, (59 O. G., 463.)

Two points are pressed to excuse the delay in making the present motion: first, that it was not possible to make the searches in foreign patents which have been made within the twenty days allowed, as a matter of course, for making such motion, and, second, that this particular motion was not pressed because of the pendency of other motions, which will be found recited in the history of the case above referred to.

The pendency of the other motions referred to is not an excuse for not presenting the one now before the Office; and it is clear that the searches among foreign patents could have been made and completed in this Office long since.

The decision of the Examiner of Interferences dismissing the motion filed by Hall April 15, 1892, is affirmed.

HENDERSON *v.* NOAKES.

Decided May 12, 1892.

PRACTICE—AMENDMENT OF PRELIMINARY STATEMENT.

An amendment to a preliminary statement which takes the amending party's date back of the corresponding date of his opponent will not be allowed upon a state of facts consistent with the supposition that the party seeking to amend might have presented this earliest date in his original statement if he had used the utmost care and diligence.

APPEAL on motion.

METALLIC BAR FOR WINDOW-SASHES, ETC.

Application of William Henderson filed March 2, 1891, No. 383,477. Application of William H. Noakes filed December 22, 1890, No. 375,523.

Mr. C. C. Tillman and *Messrs. McFarland & Benjamin* for Henderson.

Mr. Charles T. Brown and *Mr. T. J. W. Robertson* for Noakes.

gives his first conception and production of drawing as occurring during the months of April and May, 1889. His amendment, which has been allowed by the Examiner of Interferences, substitutes "August 8, 1888," for "April and May, 1889." This carries Noakes's earliest date back of the earliest date testified to by Henderson. Noakes's story on which he bases his motion for amendment is, in substance, that by reason of sickness his memory has been impaired, wherefore he forgot the occurrences of August 8, 1888, until the same were recalled to him by the declarations of other persons. The affidavits of two physicians are furnished as to the sicknesses which Noakes has experienced; but they are not satisfactory as to the existence of the impairment of the memory.

Preliminary statements are very useful things in interferences, provided they are made with great care, and also provided the parties are held strictly to the history set up therein, An amendment to a preliminary statement which takes the date of him who makes it back of the corresponding date of his opponent should never be allowed upon a state of facts which is consistent with the reasonable supposition that the exercise of the utmost care and diligence on the part of him who seeks to amend would have ascertained and permitted him to state the correct date originally. That state of facts exists here—to wit, there is entirely reasonable ground to suspect that if Noakes had diligently sought among all those with whom he had had to deal in connection with the improvement in controversy at and after the date of his original idea of making that improvement he could have stated in his original preliminary statement what he now seeks to have incorporated therein.

Accordingly the amendment is refused, and the decisi on of the Examiner of Interferences is reversed.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

FREEMAN *v.* ASMUS.

Decided May 16, 1892.

1. PATENT—REISSUE—BLAST-FURNACE.

The first claim of reissued Letters Patent No. 3,204, issued to George Asmus November 24, 1868, on the surrender of original Letters Patent No. 70,447, issued to F. W. Lürmann November 5, 1867, for an improvement in blast-furnaces, is invalid, because it is not for the same invention as the original patent.

2. REISSUES APPLIED FOR BY ASSIGNEE AS FOR PATENT GRANTED BEFORE 1870.

Where an applicant for a patent in assigning his invention said that it was "fully described in the specification pertaining to said application, which I have signed under oath," and his assignee applied for a reissue at a time when the law did not require the inventor's oath to the reissue specification, *non sequitur* that the inventor himself would ever have asserted that the original application contained error arising from fraud, accident, or mistake, and this fact taken into consideration by the Court in determining that question.

APPEAL from the Circuit Court of the United States for the Eastern District of Pennsylvania.

Mr. Wayne MacVeagh and *Mr. W. D. Baldwin* for the appellant.

Mr. W. Bakewell and *Mr. Thomas B. Kerr* for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Eastern District of Pennsylvania, by George Asmus against Margaret C. Freeman, founded on the alleged infringement of reissued Letters Patent No. 3,204, granted to said Asmus, November 24, 1868, on the surrender of original Letters Patent No. 70,447, granted to F. W. Lürmann, of Osnabruck, in Prussia, November 5, 1867, for an improvement in blast-furnaces.

On the 12th of July, 1867, Lürmann assigned to Asmus all the right, title, and interest in and to the improvement for which Lürmann was about to apply for a patent, and the specification for which was signed by him on that day. The patent was granted to Lürmann, although the assignment was recorded in the Patent Office some time before the granting of the patent.

On the 3d of November, 1868, Asmus filed in the Patent Office a petition signed by himself, but not signed by Lürmann, praying for the reissue of the patent. In that petition, Asmus stated that he believed that the original patent was inoperative and invalid by reason of a defective specification, which defect had arisen from inadvertence and mistake; and he asked that a new patent might issue to him for the same invention, for the residue of the period of the original patent, under the amended specification therewith presented. The oath annexed thereto, made by Asmus, was sworn to October 24, 1868, and stated that Asmus verily believed that by reason of an insufficient or defective specification, the original patent was not "fully valid and available to him," and that the error had arisen from inadvertence, accident, or mistake, and without any fraudulent or deceptive intention. Accompanying the petition and oath was a statement signed by the attorneys for Asmus, which said:

The errors and defects occurring in the original specification by inadvertence and mistake and sought to be corrected by this application for a reissue are as follows: The invention, as described in the original specification and represented in the drawings, clearly comprises a blast-furnace with a closed breast, where the slag is discharged through an opening or openings cooled with water, but the claim in the original specification is confined to a slag-discharge piece or cinder-block constructed and attached in a certain specific manner. It is obvious that the cinder-block D can be connected to or cast solid with the plate C, without changing the nature of the invention and in the new specification this defect has been corrected and a clause has been added to the claim with the view to cover the whole ground of the invention.

The answer of the defendant denies the novelty of the invention, the alleged infringement, and the validity of the reissue, and assigns as grounds of such invalidity that the application for the reissue was not assented to, signed, or sworn to by Lürmann; that the reissue was for an invention different from that claimed in the original patent; and that the reissue contains much new matter interpolated by Asmus. Several other defenses were also set up.

With a view to a comparison of the specification of the original with that of the reissue, the following paper contains both of the specifications, the parts in italics not being found in the original, and the parts in brackets not being found in the reissue:

Be it known that [I] F. W. LÜRMANN, of Osnabruck, in the Kingdom of Prussia, [have] invented a new and useful Improvement in Blast-Furnaces, and I, *George Asmus, of the city, county and State of New York, assignee of the said F. W. Lürmann*, do

hereby declare [that] the following [is] *to be* a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 is a vertical central section of a furnace [to which my improvement is applied] *built according to this invention* Fig. 2 is a horizontal section through the tuyeres. Fig 3 is a front elevation of the slag-discharge piece *or cinder-block* detached. Fig. 4 is a vertical section *thereof* [of the latter, also detached.]

Similar letters indicate corresponding parts.

This invention relates to [furnaces for smelting iron ore, and has for its object to dispense with the "tymp" or fore hearth and the "wall-stone" now in common use in iron blast-furnaces. and to replace the tymp arrangement by such a construction as allows the slag to] *certain improvements in blast-furnaces with a closed breast; and it consists, principally, in a blast-furnace with a closed breast, where the slag is discharged through an opening cooled with water in such a manner that the tymp or fore hearth and the wall-stone can be dispensed with, and that the slag can* be tapped directly from the hearth. *It consists, further, in a slag-discharge piece or "cinder-block" of peculiar construction, as will be hereinafter more fully explained, whereby the building of a furnace according to this invention and its correct operation are materially facilitated. In order to enable those skilled in the art to fully understand the object of this invention, I will first point out the disadvantages of blast-furnaces with a fore hearth, such as are now in common use for melting iron ore.* In *such* [the tymp arrangement] *furnaces* the slag is driven out [of the furnace] by *first being* [being first] forced below the tymp-stone, which projects below the level of the tuyeres and intercepts the currents of air and prevents their escape with the slag which stands in the [tymp] *fore hearth* at the same level as on the hearth, the slag being discharged only when it rises in the [tymp] *fore hearth* high enough to overflow the top of the wall-stone that forms the bottom of the discharging-orifice. By this arrangement the tymp-stone constitutes a trap which intercepts the currents of air and causes their pressure to be exerted directly on the surface of the slag on the hearth. This method of construction has several disadvantages, one of which is the difficulty of keeping the tymp-stone and the surrounding parts in repair; another is, that the pressure of the currents of air or wind is limited [and counteracted] by the counter-pressure of the column of slag in the [tymp] *fore hearth;* and another is that, one side of the furnace being occupied by the [tymp,] *fore hearth,* no tuyere can be applied on that side, and consequently the supply of wind is irregularly distributed. *By the improvement which constitutes the subject-matter of this present invention these disadvantages are overcome* [My invention avoids or overcomes these disadvantages] in a simple and effective manner.

In [this example of my invention] *the drawings* the letter A designates the furnace, and B several tuyeres, which are arranged therein at a proper height. *The furnace is constructed with a closed breast,* [My furnace has no tymp] and the sides of the hearth, whether round or square, extend clear down to the bottom stone, the usual opening, (not shown in the drawing,) being made in the lower part of the hearth for the discharge of the iron. The openings for the tuyeres B are distributed at equal distances apart in the sides of the hearth. At a suitable height from the bottom stone [I leave] an opening *is left* in the hearth, in which [I place] *is placed* a cast-iron or brass slag-discharge piece *or cinder-block,* D, which is cast or made with numerous channels or pipes running up and down or in other directions through it, as shown in Figs. 3 and 4. The *cinder-block* [piece] D [is] *may be* formed with a dovetail on its upper end, which is fitted into the bottom of a stationary metallic plate, C, connected with the furnace, *or it may be attached to said plate in any other desirable manner, or cast solid with the same, if desired.* [The] *This* plate [C] is also cast or made with channels or pipes running through it, and the channels or pipes of said plate and of the *cinder-block* [piece] D may be so arranged as to connect or communicate with each other when the plate C and *cinder-block* [piece] D are in their proper *position,* [positions] or they may be independent of each other. *In the drawing the plate C is shown above the cinder-block, but it may also be placed below or in any other desirable position in relation to the same.* The object of the [said] channels or pipes is to permit the plate C and *cinder-block* [piece] D to be cooled by forcing water through them while the furnace is in operation, proper connections being made for that purpose with a reservoir of cold water or with a force-pump. One or more holes are made in the [said piece] *cinder-block* D, through which the slag is discharged, the shape of said holes being shown in Figs. 3 and 4, the middle portion being cylindrical, but each end being conical or flaring. The dimensions of the [slag-discharge piece] *cinder-block* are a little less than the opening in which it is placed and the space left around it is filled with sand, which can be readily removed in case it is desired to remove the block D to repair it or if it is desired to have an opening in the hearth to work through, as when any irregularity in the smelting process has taken place. The flow of the cooling-water through the [slag-discharge piece] *cinder-block* D is regulated for the purpose of controlling the discharge of the slag through it. By allowing much cooling-water to circulate through its water channels or pipes, the temperature of the *block* [piece] D is lowered sufficiently to allow a coating of slag to adhere and choke its discharge-openings, which are of less diameter in the middle than at their ends. By reducing the flow of cooling-water the *cinder-block* [piece] is allowed to retain a higher temperature, and in consequence the slag is melted out of the discharge-openings and they become clear and open and permit the slag to flow without interruption. When the slag in the hearth is [lower than] *below* the level of the discharge-openings the latter are simply closed by an iron *plug* [rod]. [My] *This* invention can be easily applied by those skilled in the art to which it belongs, to blast-furnaces of the common construction, *by removing the fore hearth and closing the aperture left in the breast of the furnace under the tymp-stone by inserting the plate C with the cinder-block D.* [This invention is attended with several advantages over the common method of constructing or arranging furnaces, among which I mention the following:] *The principal advantages derived from this invention are as follows:* First, it permits a higher pressure of wind. Second, the hearth is preserved in better condition than where the common mode of construction is retained. Third, the labor of the operation of smelting is lessened. Fourth, it allows one more side of the hearth for a tuyere. Fifth, it avoids the stoppages of the wind supply now necessary as often as the iron is discharged. Sixth, a considerable increase is gained in the product of the furnace, while at the same time the cost of labor and repairs is lessened.

Having thus described this invention, [What] what I claim as new, and desire to secure by Letters Patent, is—

1. *A blast-furnace with a closed breast, where the slag is discharged through an opening or openings cooled by water, substantially as set forth.*

[1.] 2. The slag-discharge piece *or cinder-block* D, constructed and arranged substantially as described.

[2.] 3. The [slag-discharge piece] *cinder-block* D, in combination with the plate C, to which it is *fitted* [attached,] substantially as described.

[3.] 4. The shape of the discharge opening or openings of the *cinder-block* [piece] D, being made flaring at its ends, and of diminished diameter in the middle or central part, substantially as described.

[4.] 5. *The combining* [Combining with] *of* the slag-discharge piece *or cinder-block with* a series of water channels or pipes, substantially as and for the purpose above set forth.

[5.] 6. Combining with the metallic plate C a series of water channels or pipes, substantially as and for the purpose set forth.

[6.] 7. The method of controlling the discharge of slag from blast-furnaces by regulating the temperature of the slag-discharge piece *or cinder-block,* substantially as described.

This specification signed by me this [twelfth day of July, 1867.] *24th day of October,* 1868.

[F. W. LÜRMANN.] *George Asmus.*

After a hearing on pleadings and proofs, the court entered a decree, on the 19th of July, 1886, adjudging that the reissued patent was valid; that the defendant had infringed its first claim; and that the plaintiff was entitled to recover profits and damages, and referring it to a master to ascertain the same. The opinion of the circuit court was given May 14, 1886, and is reported in 36 O. G., 231; 27 *Federal Reporter*, 684. On the report of the master a final decree was made by the court October 12, 1888, awarding to the plaintiff $1,000 damages and the costs of suit. The defendant has appealed to this Court.

As we are of opinion that the decree below must be reversed, because of the invalidity of the reissue, it is unnecessary to consider any other question.

The only claim of the reissue which, it is now contended, was infringed, is the first claim, which reads as follows:

1. A blast-furnace with a closed breast, where the slag is discharged through an opening or openings cooled by water, substantially as set forth.

Claims 2 to 7, inclusive, of the reissue are substantially in the same language as claims 1 to 6 of the original. Claim 1 in the reissue is entirely new, and it is not contended here that the defendant infringed any of the claims of the original patent, or any claim of the reissue other than claim 1.

It was held by the circuit court that, while claim 1 of the reissue was not embraced in the original, the matter claimed by that claim was so embraced; that the language of the original specification clearly described the closed-breast furnace; that a furnace built in accordance with the language of the original would be necessarily closed-breasted; that the other element of claim 1 of the reissue—

where the slag is discharged through an opening or openings cooled by water—

was no less clearly described in the original; that the drawings originally filed showed the same; that claim 1 of the reissue might, therefore, have been embraced in the patent as first issued, or introduced into the

reissue without changing the specification; that the change made by the reissue simply expressed the same thing in different terms; that claim 1 of the reissue was, therefore, not an enlargement of the invention; that such additional claim, omitted through inadvertence, accident, or mistake, might be secured by means of a reissue, if applied for within a reasonable time; that in this case the application was made a little after the expiration of one year; and that the question whether the omission occurred through inadvertence, accident, or mistake, was a question for the Commissioner of Patents.

But we are of opinion that these views cannot prevail in the present case. It is apparent, from the description contained in the specification of the original patent, that Lürmann considered his invention to consist essentially of a removable slag-discharge piece, cast with numerous channels or pipes running through it, formed with a dovetail at its upper end fitted into the bottom of a stationary metallic plate connected with the furnace, and provided with channels or pipes so that water might flow through the slag-discharge piece and plate, conjointly or separately, that they might be cooled while the furnace was in operation. The slag-discharge piece was made removable, and provided with one or more holes, the middle portion of the holes being cylindrical, but each end being conical or flaring. By regulating the flow of water through the slag-discharge piece, its temperature could be lowered sufficiently to allow a coating of slag to choke the discharge-opening, which coating could be melted out by diminishing the flow of water and thus allowing the temperature to rise. The opening could be closed by an iron block when necessary.

The fundamental devices claimed by Lürmann as his improvements were (1) the metal plate C, provided with water-channels; (2) the removable slag-discharge piece provided with water-channels; and (3) the method of regulating the discharge of the slag by raising and lowering the temperature of the slag-discharge piece.

The first claim of the original patent claimed a slag-discharge piece provided with a water-circulation, connected with a water-cooled plate C, having small hour-glass-shaped discharge-openings, and capable of being removed from the furnace when desired. The slag-discharge piece of the second claim was of the same character as that described in the first claim. The third claim was for the shape of the slag-discharge opening, flaring at its ends, and of diminished diameter in the middle. The fourth claim was for the combination of such slag-discharge piece and a series of water channels or pipes. The fifth claim was for the combination of the metallic plate C with a series of water channels or pipes. The sixth claim was for regulating the discharge of the slag by varying the temperature of the water-cooled slag-discharge piece.

Asmus, in his testimony, states that his reason for obtaining a reissue was to make the meaning of the whole invention as clear as possible; that the reason why he did not apply sooner for the reissue was that, in arranging a number of furnaces, they differed more or less in construction, and he had to adapt his construction according to the circumstances; that this made it necessary to give the construction quite different shapes, retaining always the main points; that experience caused him, in order to prevent mistakes, to find a formula which expressed the spirit of the invention in the clearest way possible, and which flowed plainly from the technical description given in the original patent; and that the experience and the reasoning derived from it took up some time. When asked what kind of mistakes he referred to, he said that—

> difference in shape might be taken for a different thing.

This testimony shows that, instead of desiring merely to remedy formal defects which appeared on the face of the papers, Asmus waited until experience and reasoning had shown him the broadest formula in which to express the claims of his patent so as to cover all possible modifications.

While the petition for the reissue states that Asmus believes that the original patent "is inoperative and invalid by reason of a defective specification," he does not make that allegation in his oath, but states in the latter merely that the patent "is not fully valid and available to him;" and in the statement accompanying the petition and oath, his attorneys say that the claim in the original specification is confined to a slag-discharge piece or cinder-block constructed and attached in a certain specific manner, and that the new first claim is added "with the view to cover the whole ground of the invention." A comparison of the original specification with that of the reissue shows that the only substantial change made is to insert in the latter enlarged definitions and descriptions of the alleged invention, and the new and enlarged first claim.

In the assignment of July 12, 1867, from Lürmann to Asmus, which bears date the same day as the signature of Lürmann to the original specification, the latter says that his invention—

> is fully described in the specification pertaining to said application, which I have signed under oath.

The inventor did not swear to the specification filed for the reissue; and, although his oath was not required to it, as the law stood at the time the reissue was applied for, yet the fact remains that the reissue was wholly the work of the assignee and not at all of the inventor; and it by no means followed that the inventor would ever have asserted that there was any error in the original specification or claims, arising from inadvertence, accident, or mistake.

The new matter inserted in the specification of the reissue, and hereinbefore set forth in italics, in connection with the omission from the reissue of the parts in brackets contained in the original, constituted a broad definition on which to found claim 1 of the reissue—a claim to—

> a blast-furnace with a closed breast, where the slag is discharged through an opening or openings cooled by water, substantially as set forth.

In addition to the description in the original of the connection of the slag-discharge piece with the metallic plate C, it is also stated in the reissue that such slag-discharge piece may be attached to the plate C—

> in any other desirable manner, or cast solid with the same, if desired.

This is new matter, as is also the addition, in the specification of the reissue, that, in the drawing, the

plate C is shown above the slag-discharge piece or cinder-block, but that it may also be placed below, or in any other desirable position in relation to the same. So, also, it is added in the specification of the reissue that the invention can be applied to blast-furnaces of the common construction—

> by removing the fore hearth and closing the aperture left in the breast of the furnace under the tymp-stone by inserting the plate C with the cinder-block D.

But the material point is the extension of the invention claimed, by the addition of claim 1 of the reissue the words in which, "substantially as set forth," refer to the new matter in the reissue, that the slag is discharged—

> through an opening cooled with water in such a manner that the tymp, or fore hearth, and the wall-stone can be dispensed with.

The intention manifestly was to construe the first claim so as to cover any kind of blast-furnace, with a closed breast, having a slag-discharge opening cooled in any manner or to any extent by water. There is nothing in the original specification which indicates that any such claim was intended to be made in the original patent. On the contrary, the whole purport of that specification shows that it was intended to claim only a slag-discharge piece or cinder-block constructed and attached in a specific manner, as is set forth in the statement of the attorneys of Asmus, accompanying his application for the reissue.

This case was decided in the circuit court, May 14, 1886; and both before and since that there have been numerous decisions in this Court which require that the present reissue be held invalid, although it was applied for within less than a year after the granting of the original patent. Those cases are *Mahn* v. *Harwood*, (30 O. G., 657; 112 U. S., 354;) *Coon* v. *Wilson*, (30 O. G., 889; 113 U. S., 268;) *Ives* v. *Sargent*, (38 O. G., 781; 119 U. S., 652;) *Parker & Whipple Co.* v. *Yale Clock Co.*, (41 O. G., 811; 123 U. S., 87;) *Matthews* v. *Ironclad Mfg. Co.*, (42 O. G., 827; 124 U. S., 347;) *Hoskin* v. *Fisher*, (43 O. G., 509; 125 U. S., 217;) *Flower* v. *Detroit*, (43 O. G., 1348; 127 U. S., 563;) *Yale Lock Co.* v. *Berkshire Bank*, (51 O. G., 1291; 135 U. S., 342;) *Electric Gas Co.* v. *Boston Electric Co.*, (55 O. G., 429; 139 U. S., 481.)

In *Mahn* v. *Harwood*, a reissue was held invalid, where it was clear that the only object of it was to enlarge the claims of the original patent. The description was not altered in the least. The claims in the original were clear and explicit, one of them being retained substantially in the reissue. Nothing was altered or changed, except to multiply the claims and make them greater, and that was done, not for the benefit of the original patentee, but for that of his assignee.

In *Coon* v. *Wilson*, the application for the reissue was made a little more than three months after the granting of the original patent; but it was said that a clear mistake, inadvertently committed, in the wording of the claim, was necessary, without reference to the length of time; that there was no mistake in the wording of the claim of the original; that the description warranted no other claim and did not warrant the claim of the reissue; that the description had to be changed in the reissue to warrant its new claim; and that the description in the reissue was not a more clear and satisfactory statement of what was described in the original, but was a description of a different thing, so ingeniously worded as to cover what was claimed in the reissue.

In *Ives* v. *Sargent*, the doctrine of *Coon* v. *Wilson* was approved and applied.

The whole subject was reviewed in *Parker & Whipple Co.* v. *Yale Clock Co.*, and the *dicta* in the case of *Seymour* v. *Osborne*, (11 Wall., 516,) were considered; and it was held that what was suggested or indicated in the original specification was not to be considered as a part of the original invention intended to be covered by the original patent, unless it could be seen, from a comparison of the two patents, that the invention which the original was intended to cover embraced the things thus suggested or indicated in the original specification, and unless the original specification indicated that those things were embraced in the invention intended to have been secured by the original patent. The cases of *Mahn* v. *Harwood* and *Coon* v. *Wilson* were cited and approved.

The case of *Parker & Whipple Co.* v. *Yale Clock Co.* is cited and applied in *Matthews* v. *Ironclad Mfg. Co.*, in *Hoskin* v. *Fisher*, in *Yale Lock Co.* v. *James*, (43 O. G., 881; 125 U. S., 447, 464,) and in *Flower* v. *Detroit*.

In *Yale Lock Co.* v. *Berkshire Bank*, a reissue was held invalid, although it was applied for only thirteen days after the granting of the original, because there was not a clear mistake, inadvertently committed, in the wording of the claim; and the cases of *Coon* v. *Wilson*, *Ives* v. *Sargent*, and *Parker & Whipple Co.* v. *Yale Clock Co.* were cited and applied.

In *Electric Gas Co.* v. *Boston Electric Co.*, a reissue was held invalid because there was no inadvertence, accident, or mistake such as would authorize a reissue with new claims, and the sole object of the reissue was unlawfully to expand the claims.

We are of opinion that the present reissue is invalid, so far as the first claim of it is concerned, because it is not for the same invention as the original patent, and is, therefore, within the express exception of the statute, (act of July 4, 1836, ch. 357, sec. 13, 5 Stat., 122.) There is nothing inconsistent with the foregoing views, in our decision in *Topliff* v. *Topliff*, (59 O. G., 1257.)

The decree of the circuit court is reversed and the case remanded to that court, with a direction to dismiss the bill, with costs.

Supreme Court of the United States.

RYAN *et al.* *v.* HARD *et al.*

Decided May 16, 1892.

PATENT—ANTICIPATION—WOVEN-WIRE BED-BOTTOMS.

Letters Patent No. 241,821, issued May 10, 1881, to Charles H. Dunks and James B. Ryan, for improvements in swing woven-wire bed-bottoms, is substantially anticipated by Letters Patent No. 101,039, issued March 22, 1870, to George W. Loomis, for an improved spring bed-bottom, and the mere substitution of woven wire for canvas, particularly as the complainants were not the first to introduce woven wire into the art, does not involve patentable invention.

APPEAL from the Circuit Court of the United States for the Northern District of New York.

Mr. J. B. Gleason for the appellant.
Mr. James B. Jenkins contra.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought April 7, 1887, in the Circuit Court of the United States for the Northern District of New York, by James B. Ryan, Francis A. Hall, William R. Cougle, and Richard W. Elliott, against Charles H. Hard, John J. Crawford, and Henry D. Hard, for an alleged infringement of Letters Patent No. 241,321, granted May 10, 1881, to Charles H. Dunks and James B. Ryan, for improvements in swing woven-wire bed-bottoms. The alleged infringement consisted in the sale by the defendants of woven-wire bed-bottoms containing the patented improvements. The answer of the defendants set up, among other things, the want of novelty and of patentability. Issue was joined and proofs were taken, and the circuit court, held by Judge Coxe, on August 13, 1888, gave an opinion in favor of the defendants, (35 Fed. Rep., 831,) in pursuance of which a decree was entered dismissing the bill.

The specification of the patent says:

C represents a central section of the ordinary woven-wire fabric in common use in bed-bottoms. This fabric is attached, at either or both ends, to a swinging cross-bar, which, in turn, is suspended from one of the end rails of the bedstead. By preference we construct the swinging bar in two parts—a lower portion, D, formed of wood, to which one end of the woven fabric is secured by means of suitable pins, or otherwise, and an upper portion D′, provided upon its outer edge with a series of holes *d*, the upper and lower portions being secured to each other by rivets, bolts, or other analogous devices. Thus the upper part may be made to assist in securing the end of the woven fabric, to cover the end of the fabric, and thus protect the mattress from undue wear, and also as a means by which to attach the springs E. links, or other devices employed to connect said swinging bar with the end rail of the bedstead.

E E represent a series of spiral springs, each connected at one end to the swinging bar, and at the other end to the end rail of the bedstead, preferably by means of an interposed supplemental bar or rail, F, which, in this instance, we have represented as being a metal bar provided with holes upon one edge for the attachment of the springs, and provided, also, upon the other edge with holes *f*, adapted to receive pins, by means of which said bar F can be attached, either to the end rail of the bedstead or to a separate rail, G, which, in turn, is secured to the end rail of the bedstead.

In Fig. 1 we have shown both methods of attaching the bar F to the bedstead, it being attached to the foot-rail B′ by means of a series of bolts, hooks, or pins, *b*; and in case pins are inserted in the rail B′ for this purpose, we prefer to incline them backward, in order to prevent the bar F from being accidentally detached when in use; or the pins may be provided with heads, the holes in the end rail of the bedstead being inclined inwardly at their lower ends, when the tension of the springs E will keep the form in position.

When the bar G is employed its ends may be notched to engage with the vertical posts of the bedstead, or with cleats or ribs secured to the inner faces of the posts or of the side rails, as the construction of the bedstead shall indicate as being most convenient; or the end rail of the bedstead may be provided with an inwardly-projecting rib having pins or hooks corresponding to those marked *b*; or hooks may be attached to and project from the inner face of the rail in proper position to receive the bar F.

Referring to Fig. 4, H H are the side rails, and I I′ the end rails, of a bed-bottom adapted to be applied to a bedstead of any ordinary or approved construction, and rest upon the cleats with which such bedsteads are usually provided for the purpose of supporting a detachable bed-bottom.

In this construction we prefer to dispense with the supplemental rail G and attach the bars F directly to the end rails, I I′, in such manner as to be readily detached therefrom, in order to facilitate the rolling up of the spring portions for transportation.

By an examination of the drawings it will be seen that the cut ends of the woven-wire fabric enter and are secured within a throat formed between the upper and lower faces of the swinging bar D D′, and that the springs or links which connect said bar to the end rail are attached to the bar at the edge opposite to that at which the woven wire enters the throat, and in about the same horizontal plane, so that the tension of the parts tends to maintain the bar in a substantially horizontal plane, thus presenting a suitable surface adapted to support the mattress without undue wear upon any portion of its lower surface. So, also, constructing the bar in such manner that it is adapted to receive a hook formed of one of the convolutions of the springs E facilitates the employment of such springs as they are usually found in the market, this result being best obtained by the employment of a strip of metal for one part of the bar D D′; but we do not wish to be limited to the use of metal for that purpose. One advantage which is due to the use of wood for this bar is the fact that its yielding and elastic nature permits attachment of the spring-wire of which the fabric C is formed, and the vibrations of the bar, when in use, without breaking their attached ends.

By the use of the springs and swinging bars the great strain upon the woven fabric which is required in beds of other construction may be dispensed with, because the springs may be made of such strength as will permit the fabric to be supported with comparatively little tension upon it when the bed is not sustaining any weight except that of the bedding, the springs preventing undue sagging of the fabric when the weight of a person is thrown upon it.

We do not wish to be limited to any particular description of springs for connecting the swinging bar or bars with the bedstead, or with the supporting frame shown in Fig. 2, as many other forms of springs might be employed without departing from the spirit of our invention.

Whenever in this patent we use the word "bed-bottom" or "bed" we wish to be understood as meaning either a removable construction, like that shown in Fig. 4, which is adapted to be made and sold as an article of manufacture separate and apart from the bedstead with which it is to be used, or a construction adapted to be attached directly to the end rails of an ordinary bedstead, our invention being equally adapted for use upon either of such constructions.

The claims are three in number, as follows:

1. In a bed-bottom, the combination, with an end rail, of the links or springs, the section of woven-wire fabric, and an intermediate connecting transverse bar, provided upon one edge with a throat adapted to receive the ends of a wire, and upon the opposite side with means for attaching the links or springs, substantially as described.

2. In a bed-bottom, the combination, with the end rail, of the links or springs, the section of woven-wire fabric, and an intermediate connecting-bar consisting of a part to which the fabric is attached, and a part adapted to protect the mattress from contact with the ends of the wire, substantially as set forth.

3. In a bed-bottom, the connecting-rail consisting of the part D, of wood, to which the fabric is attached, and the part D′, of metal, adapted to have the end of the springs E attached thereto, substantially as set forth.

The opinion of the circuit court says:

The essential feature of the invention consists in attaching the woven-wire fabric to a swinging cross-bar, which in turn is suspended by helical springs from the end rails of the bedstead. The patentees assert that by this arrangement are secured all the advantages of a swinging bed—elasticity, durability, and resiliency—while sagging in the center and the sudden jerky motion common in some bed-bottoms are avoided.

It then recites the first two claims, and proceeds:

Every element of the combination covered by these claims was concededly old and well known at the date of the patent. Woven wire had been used for more than twenty-five years as a fabric for bed-bottoms. It had been stretched from end rail to end rail and fastened by means very similar to that described in the patent. Bed-bottoms made of canvas, cord, sacking, and jointed links attached to "swing-bars" had been suspended by helical springs in analogous combinations. If, for instance, a fabric of woven wire were substituted for the canvas of the Loomis structure, it would probably be an exact anticipation of the complainant's combination.

The "Loomis structure" thus referred to is the structure described in Letters Patent No. 101,029, granted March 22, 1870, to George W. Loomis, for an improved spring bed-bottom. The specification and drawings of the Loomis patent show a bed-bottom which has an intervening, vibrating, connecting swing-bar, the office of which is the same as in the plaintiff's patent—namely, to connect the web with the helical springs. The bed-bottom has a web of canvas, an intervening connecting-bar, and helical springs. The web of canvas is fastened at both ends to the wooden swing cross-bars, which are attached to helical springs on the opposite sides.

The opinion of the circuit court then proceeds:

Is there patentable novelty in this change? It is thought not. If the patentees had been the first to introduce woven wire into the art, there would be more difficulty in reaching this conclusion, but they were not. All that they did was to suspend a fabric well known as a bed-bottom in substantially the same manner that other fabrics used for that purpose had been suspended. If the patentees, instead of using woven wire, had used some other woven fabric—woven twine or tape, for example—if their claims had included carpet or rubber cloth instead of woven wire, it will hardly be contended that they would be entitled to take rank as inventors. Why, then, should the use of woven wire give them this distinction? Its peculiar advantages above referred to as a material for beds were not discovered by them. The idea of swinging a bed-bottom was not theirs. They have substituted one well-known material for another and nothing more.

The court also said that the same material had been fastened to the rigid end rails by similar devices, and that the changes made by the patentees were only those which would occur to a mechanic who had skill enough to adapt the heavy and cumbersome joint to the new circumstances.

We concur with the circuit court, and its decree is affirmed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Copies of Decisions Furnished.

Hereafter an uncertified copy of every decision or action by any tribunal in this Office will be furnished by such tribunal to the interested party or parties without charge.

This order does not include the written statements of the grounds of decisions made by Examiners to the appellate tribunal in *ex parte* cases.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the developement of American invention.

W. E. SIMONDS,
Commissioner.

Women Inventors.

The Patent Office has published and has for sale a volume, containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Issue of June 7, 1892.

Patents	532—No. 476,236 to No.	476,767, inclusive.
Designs	19—No. 21,601 to No.	21,619, inclusive.
Trade-Marks	33—No. 21,348 to No.	21,379, inclusive.
Labels	None.	
Reissues	3—No. 11,242 to No.	11,244, inclusive.
Total issue	586	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	....	1	Nevada	....	....
Arizona Territory	....	....	New Hampshire	1	....
Arkansas	4	....	New Jersey	22	1
California	13	....	New Mexico Territ'y	....	....
Colorado	7	1	New York	85	10
Connecticut	24	1	North Carolina	1	....
Delaware	....	....	North Dakota	....	....
District of Columbia	6	....	Ohio	42	1
Florida	....	....	Oregon	3	....
Georgia	3	....	Pennsylvania	45	2
Idaho	1	....	Rhode Island	7	....
Illinois	65	1	South Carolina	4	....
Indian Territory	....	....	South Dakota	2	....
Indiana	19	....	Tennessee	....	....
Iowa	10	....	Texas	6	....
Kansas	11	....	Utah Territory	1	....
Kentucky	3	2	Vermont	2	....
Louisiana	4	1	Virginia	1	....
Maine	2	1	Washington	3	....
Maryland	7	....	West Virginia	3	....
Massachusetts	31	3	Wisconsin	5	1
Michigan	19	....	Wyoming	....	....
Minnesota	13	....	U. S. Army	....	....
Mississippi	1	....	U. S. Navy	....	....
Missouri	11	....	Total to citizens of the United States	490	28
Montana	2	....			
Nebraska	1	2			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Mexico	....	....
Austria-Hungary	1	....	Netherlands	....	....
Belgium	2	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	1	....
British Guiana	....	....	New Zealand	....	....
Canada	7	1	Norway	....	....
Chile, Republic of	....	....	Queensland	1	....
Colombia	....	....	Russia	1	....
Cuba	....	....	Scotland	....	....
Ecuador	....	....	South Australia	....	....
England	19	1	Spain	....	....
France	1	....	Sweden	5	....
Germany	21	1	Switzerland	....	....
Hawaii	....	....	Victoria	1	....
Ireland	....	1	Total to citizens of foreign countries	61	4
Italy	1	....			
Japan	....	....			

APPLICATIONS UNDER EXAMINATION.

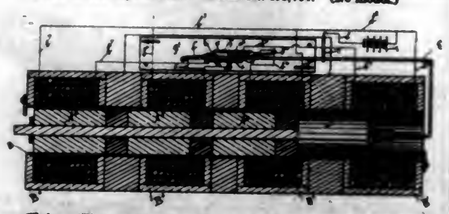
Condition at Close of Business May 31, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Apr. 19	May 28	184
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Apr. 16	May 20	69
7	Harvesters, Games and Toys	Apr. 11	May 24	229
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Apr. 12	May 21	128
2	Farm Stock, Products, etc	Apr. 1	May 18	289
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Apr. 4	May 16	261
8	Furniture, Toilet, Umbrellas and Canes, etc.	Apr. 2	May 13	252
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Apr. 11	May 7	158
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Apr. 7	Apr. 25	200
	Between two and three months in arrears.			
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Mar. 11	May 24	235
24	Sewing-Machines and Apparel	Mar. 3	May 20	91
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Mar. 19	May 19	228
10	Carriages and Wagons and Railway-Cars.	Mar. 17	May 19	584
9	Hydraulics, Fire-Extinguishers, etc.	Mar. 10	May 14	330
21	Textiles, etc	Mar. 7	May 13	294
18	Steam-Engineering, etc	Mar. 4	May 11	283
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Mar. 7	May 10	248
17	Paper-Manufactures and Printing.	Mar. 21	May 9	191
12	Mechanical Engineering, Store-Service, etc.	Mar. 30	May 6	197
23	Instruments of Precision, Acoustics, Optics, etc.	Mar. 24	May 4	273
22	Fire-Arms, Navigation, Signals, etc.	Mar. 19	May 3	229
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Mar. 8	May 2	296
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Mar. 26	Apr. 30	309
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Mar. 1	Apr. 26	328
1	Tillage and Fences	Mar. 21	Apr. 15	330
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Feb. 24	May 13	273
4	Civil Engineering, etc	Feb. 27	Apr. 29	452
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Feb. 22	Apr. 19	365
19	Stoves and Furnaces	Feb. 19	Mar. 22	401
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Jan. 9	May 3	427
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Jan. 14	Mar. 30	406
	Between five and six months in arrears.			
26	Electricity, Generation, Distribution, etc.	Dec. 28	May 17	364
	Total number of applications awaiting action			8,764
	Under one month in arrears.			
	Designs	May 23	May 23	52
	Trade-Marks	May 31	May 27	8

PATENTS

GRANTED JUNE 7, 1892.

476,236. ELECTRO-MAGNET. ANDREW D. AYERS, Kalamazoo, Mich. Filed Sept. 15, 1891. Serial No. 405,767. (No model.)



Claim.—The combination of a series of paramagnetically-incased coils provided with a series of magnetically-divided core-armatures, said armatures being bound together and each armature arranged to form portions of particular magnetic circuits, and a suitable commutator so arranged that the combined armatures are made to partake of the action of the series.

476,237. PAPER BOX. JAMES R. BAKER, Brooklyn, N. Y. Filed Nov. 11, 1891. Serial No. 411,541. (No model.)



Claim.—1. As a new and improved article of manufacture, a paper box having a permanent cover formed with an outlet-opening, in combination with an outer hinged cover having a flap working within and at the side of the box and extended to strike the wall of the box to lock the hinged cover and flap in open position to form a spout coincident with the outlet-opening, substantially as described.

2. A paper box formed with double walls at one side and provided with a permanent cover formed with an outlet-opening, in combination with an outer hinged cover having a flap working in and between the walls and extended to form a lock or stop for holding the hinged cover and flap in open position, substantially as described.

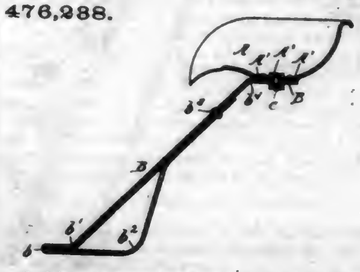
3. A blank or form for a box cut to form the corner slots d, d', d^3, and d^3, to form the flaps c, c', c^2, and C, and in the center at each edge to form the angles f f', forming the flaps f^2 f^2, and scored to form the walls l, l', l^2, l^2, and l^2, bottom pieces k k', and covers B C, the cover B having an opening B' formed therein, substantially as described.

476,238. HARVESTER-SEAT. CHARLES A. BAUER, Springfield, Ohio, assignor to the Warder, Bushnell & Glessner Company, same place. Filed Jan. 13, 1892. Serial No. 417,910. (No model.)

Claim.—1. A harvester-seat formed of sheet metal, pressed into shape and provided with downwardly-embossed ribs A' and intermediate them a downwardly-embossed bolt-seat A^2, in combination with the seat-support extending across and obtaining bearing on said ribs, and the bolt C, clamping the seat to the support at such bolt-seat, substantially as set forth.

2. A harvester-seat formed of sheet metal pressed into shape, having the downwardly-embossed ribs A' A', forming a bearing for its support on the under side, and the downwardly-embossed stop-lugs A^3, combined with the supporting-bar resting upon the ribs and between said stop-lugs, and the clamping-bolt inserted through the seat and support intermediate the ribs, substantially as set forth.

476,288.



3. A harvester-seat formed of sheet metal pressed into shape, and having downwardly-embossed ribs A' A' and intermediate them the downwardly-embossed bolt-seat A^2 and at the ends of the ribs the downwardly-embossed stop-lugs A^3, combined with the seat-support extending across and bearing upon the ribs between the stop-lugs, and the clamping-bolt binding the seat to the support at the said bolt-seat, substantially as set forth.

476,239. LAMP-SHADE. EPHRAIM I. BRAMS, Brooklyn, N. Y. Filed Dec. 16, 1891. Serial No. 415,241. (No model.)



Claim.—1. A lamp-shade made of a single piece of material scalloped at its lower edge and fastened together at its ends, in combination with a crown-piece similarly constructed, the shade and the crown-piece being provided with drawstrings, substantially as described.

2. A lamp-shade of a single piece of material folded in plaits and provided with a drawstring at its upper edge, in combination with a crown-piece similarly constructed and also provided with a drawstring, substantially as described.

3. A lamp-shade made of pliable material folded or creased, as described, and a crown-piece similarly constructed, in combination with a shade-holder having a collar adapted to hold the shade and crown-piece, said crown and shade pieces being provided with drawstrings, substantially as described.

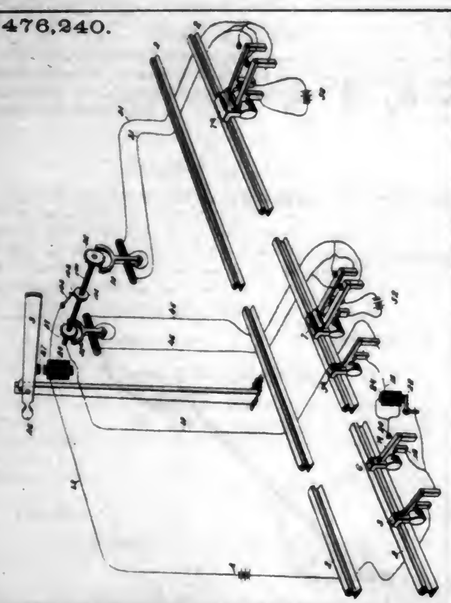
4. A lamp-shade made of paper or fabric scalloped at its lower edge, in combination with a series of radially-disposed supporting-arms, substantially equal in length to the distance from the top of the shade to the tops of the scallops, as described.

5. A lamp-shade made of paper, fabric, or analogous pliable material and scalloped at its lower edge, in combination with a series of radially-disposed supporting-arms equal in number to the number of scallops and having their free ends adapted to sustain the shade from either the inner or outer points of the scallops, whereby a shade of different conformation or shape may be produced, as described.

476,240. RAILWAY SIGNALING SYSTEM. FRANK P. BENJAMIN, New York, N. Y. Filed Sept. 5, 1891. Serial No. 404,613. (No model.)

Claim.—1. In a system of railway signaling, the following elements in combination: a signal, a locking device, and devices along the track at opposite ends of a section, automatically operated by a passing train to work said lock without changing the position of the

476,240.



signal when a train enters and leaves said section, so that the signal cannot be made to indicate "safety" while the train is on said section.

2. In a system of railway signaling, the following elements in combination: a signal, a locking device, devices along the tracks at opposite ends of the section, automatically operated by a passing train to work said lock without changing the position of the signal when the train enters and leaves said section, so that the signal cannot be made to indicate "safety" while a train is on said section, and means, substantially as described, for causing said signal to indicate "safety" if no train is on said section.

3. In a system of railway signaling, the following elements in combination: a signal, a locking device, devices arranged along the track at opposite ends of the section, automatically operated by a passing train to work said lock when a train enters and leaves said section, so that it cannot be made to indicate "safety" while a train is on said section, and a device along the track passed by the train before reaching said signal, automatically operated by a passing train for causing said signal to indicate "safety" if no train is on said section.

4. In a system of railway signaling, the following elements in combination: a signal, a locking device, said locking device being variously affected, according to the number of impulses transmitted to it, and being locked and unlocked by the same number of impulses, and devices along the track at opposite ends of a section, automatically operated by a passing train to work said lock when the train enters and leaves said section, and a device which when operated causes the signal to indicate "safety" if no train is on said section.

5. In a system of railway signaling, the following elements in combination: a signal, a locking device, devices arranged along the track at opposite ends of the section, automatically operated by a passing train to work said lock when it enters and leaves said section, and a device which when operated causes the signal to indicate "safety" if no train is on said section.

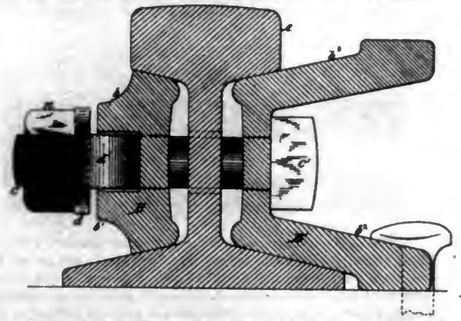
6. In an electric system of railway signaling, the following elements in combination: a signal, a locking device, devices along the track at opposite ends of the section, automatically operated by a passing train, and circuits connected with a suitable source of electric energy and with said locking devices and with said track devices to work said lock when a train enters and leaves said section, and a device which when operated causes the signal to indicate "safety" if no train is on said section.

7. In an electric system of railway signaling, the following elements in combination: a signal, a locking device, devices along the track at opposite ends of the section, automatically operated by a passing train, circuits connected with a suitable source of electric energy and with said locking device and with said track devices to work said lock when a train enters and leaves said section, so that the signal cannot be made to indicate "safety" while the train is on said section, a device along the track passed and automatically operated by a train before reaching said signal, and a circuit connected with a suitable source of electric energy and with the mechanism operating the signal and with said track device in front of said signal for bringing said signal to "safety" if no train is on said section.

8. In a system of railway signaling, the following elements in combination: a signal, devices along the track at opposite ends of a section, automatically operated by a passing train, a lock interposed between said signal and said track devices by which the lock is worked, and a device which when operated causes the signal to indicate "safety" if no train is on said section.

9. In a system of railway signaling, the following elements in combination: a signal normally standing at "danger," a locking device, and devices along the track at opposite ends of the section, automatically operated by a passing train to work said lock without changing the position of said signal when a train enters and leaves said section, so that the signal cannot be brought to "safety" while a train is on said section.

476,241. RAILWAY-RAIL JOINT. GUSTAVE BOURCARET, Cincinnati, Ohio. Filed Nov. 27, 1891. Serial No. 413,195. (No model.)



Claim.—1. In a railway-rail joint, in combination with a channeled splice-bar, a spring-washer consisting of a centrally-perforated plate having spring extensions of reduced width bent under in U form at opposite sides, said plate adapted to seat when compressed by its bolt-nut against the projecting flanges of the splice-bar and its spring extensions to enter the channel between said flanges and bear against the bottom of the channel, substantially as set forth.

2. In a railway-joint, the combination of a channeled splice-bar, a bolt passing through the channel of the same, and a washer for the bolt seating, when ultimately compressed, against the flanges of the splice-bar and having curved spring extensions at opposite sides seating in the channel of the bar, substantially as and for the purpose set forth.

3. The improved joint for railway-rails, embodying, in combination with the rails, a symmetrically-channeled inner splice-bar having channel margins extended to the limit of clearance of wheel-flanges, an outer symmetrical channeled splice-bar having flanges extended considerably outward to the limit of wheel-clearance above and correspondingly below, each splice-bar being pierced for bolt-holes through its channel on its neutral axis, retaining-bolts having heads seated non-rotatably between the flanges of the outer bar, washers seating against the flanges of the inner bar and provided with spring extensions seating in the channel of the same and retaining and preventing rotation of the washer, and retaining-nuts upon the bolts, compressing the washers in opposition to the resiliency of their springs against the channel margins of the inner splice-bar, substantially as set forth.

476,242. RAPID-FIRING GUN. RILEY BOWERS, Springfield, Ill. Filed July 8, 1891. Serial No. 398,866. (No model.)

Claim.—1. The combination of revolving cylinders A and B, provided with longitudinal grooves in their peripheries, forming the bore of a gun-barrel, with yokes provided with boxings located at the ends of said cylinders and supporting the same, all operatively connected, substantially as set forth.

2. The combination of the cylinders A and B, having longitudinal grooves in their peripheries, forming the bore of the gun-barrel, the cylinder A having intermediate grooves a' a' and the cylinder B having projections b' b', fitting into said grooves a' a', with means for revolving said cylinders, as set forth.

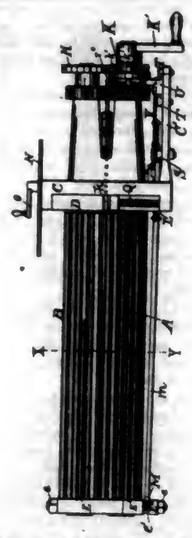
3. The combination of the muzzle-yoke E E' E^2 and the breech-yoke C and boxings D D', located therein, with the revolving cylinders having longitudinal grooves in their peripheries and located in said boxings, as and for the purposes described.

4. The combination of the wheel K, having pins k' k', the arm C, carrying cross-head U, provided with a slot, the pivoted arm V, working in said slot, the toggle-joint fulcrumed at S and connected to arm V, and wedges L and M, connected to and operated by said toggle-joint, substantially as shown.

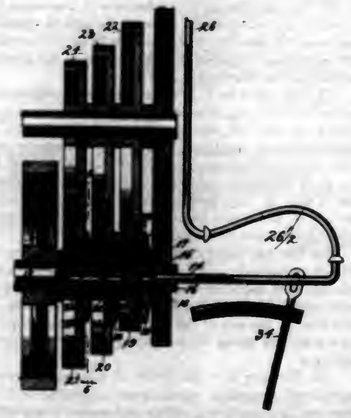
5. The combination of the wheel K, having pins k' k', the arm r^3; the elbow-lever connected with arm r^3 and fulcrumed at the end of R^2, the spring R', connected to r' by the piece r^2, and the firing-pin R, all operating together to effect the firing of the gun, substantially as shown.

6. In a rapid-firing gun, the combination of the crank-wheel K, the pins k' k', the gear-wheel H, operated by k' k', the gear-wheels G and F, which work in each other and operate the grooved cylinders A and B, composing the barrel, the breech and muzzle yokes holding said cylinders, the springs Q and d' d' operating in said yokes, and the wedges L and M, with their operating attachments, substantially as and for the purposes set forth.

476,243.



476,248. FRICTIONAL GEARING FOR STREET-CARS. GEORGE B. BRAYTON, Chicago, Ill. Filed Nov. 6, 1891. Serial No. 411,055. (No model.)



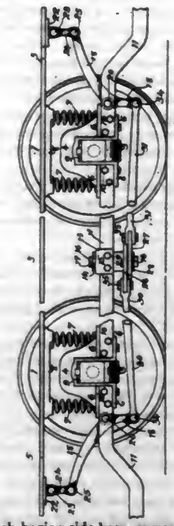
Claim.—1. In a device for producing differential motion, the combination of a hollow driving-shaft having channels leading outward, two or more gear-wheels of different sizes located loosely on the shaft, disks secured on the shaft, one adjacent to each wheel, formed each with a channel leading from its inner edge and opening near the middle of its inner face, a diaphragm secured on each face, and a loose friction-plate between each disk and gear-wheel, as and for the purpose stated.

2. In a device for producing differential motion, the combination of a driving-shaft formed with a central bore and channels leading from this through one side, a tube designed to let compressed air into the shaft and keep it filled with the same, two or more gear-wheels of different sizes located loosely on the shaft, disks secured on the shaft adjacent to these, formed with channels designed to be continuous with those in the shaft and opening near the middle of the inner face of the disk, a diaphragm secured on each such face, and a loose friction-plate located between each wheel and diaphragm, as and for the purpose stated.

3. In a device for producing differential motion, the combination of a driving-shaft formed with a central bore and channels leading out from this one way, a sliding tube of less diameter than that of the bore, a piston secured on the end of this, formed with an annular groove around it and with an opening leading from the inner end of the tube out to the groove, packings secured on the ends of the piston to make it fit air-tight in the shaft, two or more gear-wheels of different sizes located loosely on the shaft, an equal number of disks keyed to the shaft adjacent to the wheels, formed with channels connecting with the channels in the shaft and opening midway in the face of the disk, a diaphragm, and a loose friction-plate located adjacent, respectively, to disk and gear-wheel, as and for the purpose stated.

4. In a device for producing differential motion, substantially as described, the driving-shaft 12, the tube 14, the piston 15, the packings 16, the disks 27, the gear-wheels 19 20 21, of different sizes, located loosely on the shaft, the diaphragms 28, secured to the disks at their periphery, the friction-plates 30, located loosely between disk and gear-wheel, the lever 34, arranged to slide the tube, the pipes 26 and 26½, communicating with the air-tank 25, and the gear-wheels 22 23 24, corresponding inversely in size to wheels 19 20 21 and keyed to the counter-shaft 37, as and for the purpose stated.

476,244. EQUALIZING DEVICE FOR CAR-TRUCKS. JOHN A. BRILL and WALTER S. ADAMS, Philadelphia, Pa. Filed Nov. 7, 1891. Serial No. 411,160. (No model.)



Claim.—1. A truck having side bars, upwardly-extending levers pivotally secured to said side bars, and devices for securing the said upwardly-extending levers to the car-body or upper chord of the truck and for uniting them longitudinally and transversely, substantially as described.

2. The combination, in a truck, of wheels and running-gear for the same, side bars supported on the running-gear, upright levers pivotally secured to the side bars, an upper chord or car-sill, springs between said upper chord or sill and the running-gear, and means for securing said upper chord or sill to the upright levers and for uniting them longitudinally and transversely, substantially as described.

3. In a truck, the combination of the upright levers pivotally supported on the truck and a car-sill or upper chord supported on said upright levers, the upright levers on both sides of the truck being mechanically united by longitudinally and transversely disposed rods and levers, substantially as described.

4. In a truck, upright levers pivotally supported upon said truck, a car-sill or upper chord supported on said upright levers, and longitudinal rods secured to said upright levers below their fulcrum, the said upright levers and longitudinal rods on both sides of the truck being mechanically united, substantially as described.

5. In a truck, the combination of the following instrumentalities for holding or supporting a car-body on a truck, comprising the upper chord or car-sill, springs without spring-posts or housings between said chord or sill and the running-gear of the truck and upon which the upper chord or car-sill is supported, and upright levers uniting the said chord or sill and running-gear, and longitudinal rods connecting the upright levers, substantially as described.

6. The following instrumentalities for supporting a car-body on a truck-frame: running-gear, side bars supported on the running-gear, an upper chord or car-sill, springs between the chord or sill and the side bars, upright levers pivotally secured to the side bars and to the chord or sill, and longitudinal and transverse rods and levers secured to the upright levers, substantially as described.

7. The following instrumentalities for supporting a car-body on a truck, comprising the side bars supported on the running-gear, upright levers pivotally secured to the side bars, links pivotally secured to the upright levers, an upper chord or car-sill supported upon said links, and springs between said upper chord or sill and the side bars, substantially as described.

8. The following instrumentalities for supporting a car-body on a truck, comprising a stationary element of the truck structure, a sill or upper chord, springs between the stationary part of the frame and the upper chord or sill, and articulated devices between said stationary part of the frame and said upper chord or sill, substantially as described.

9. In a truck having side bars, the combination of the upper chord or car-sill, upright levers fulcrumed on the side bars and secured to the upper chord or sill, longitudinal rods secured to the upright levers below their fulcra, and transverse levers uniting the longitudinal rods, substantially as described.

10. In a truck having side bars, the combination of the upper chord or car-sill, upright levers fulcrumed on the side bars and secured to the upper chord or sill, longitudinal rods secured to the upright levers below their fulcra, transverse levers, and springs between the said chord or sill and side bars, substantially as described.

11. An equalizing device having upright levers and longitudinal rod, the said upright levers being adapted to be secured to the upper chord of the truck or sill of the car, the longitudinal rod being transversely connected, substantially as described.

12. An equalizing device having upright levers, longitudinally-parallel rods, and transverse levers alternately connected with the longitudinal rods, and a fulcrum for each transverse rod, substantially as described.

13. An equalizing device having upright levers, longitudinally-parallel rods, and transverse levers alternately connected with the longitudinal rods, and a mutual fulcrum for the transverse rods, substantially as described.

14. In a truck having side bars extending outwardly from the axle-boxes, an upper chord or car-sill extending past said axle-boxes, and equalizing-levers extending between the extended upper chord or sill and the extended side bars and connected by horizontal rods, substantially as described.

15. In a truck having side bars extending past the axle boxes, an upper chord or car-sill supported above and extending between and past said axle-boxes, equalizing-levers extending between the extended upper chord or sill and side bars, and devices for longitudinally connecting said levers, substantially as described.

16. In a truck having side bars extending past the axle-boxes, an upper chord or car-sill extending past said axle-boxes, equalizing-levers extending between said extensions, and devices for transversely connecting said levers, substantially as described.

17. In a truck having side bars extending past the axle-boxes, an upper chord or car-sill extending past said axle-boxes, equalizing devices extending between the extended upper chord or sill and the side bars, and devices for longitudinally and transversely connecting said levers, substantially as described.

18. A truck having an upper chord and side bars with equalizing-levers united by transverse levers and longitudinal rods supported on the side bars and secured to said upper chord, substantially as described.

19. A truck having contiguous side bars spaced apart, an upper chord and longitudinal rods connecting the said upright levers, and equalizing-levers supported on said side bars between the juxtaposed members thereof and secured to the upper chord, substantially as described.

20. In a truck, an equalizing device having upright levers supported on the side bars thereof, horizontal rods secured to the upright levers which extend under the said side bars, and a support for the inner ends of said horizontal rods, which support is located below the horizontal plane of the axles, substantially as described.

21. In a truck having side bars, an equalizing device having horizontal rods on both sides of the truck, transverse levers connecting the horizontal rods, and a support for said transverse levers carried by the side bars, substantially as described.

22. A truck having side bars, an equalizing device comprising upright levers and horizontal rods supported upon the side bars and transverse levers uniting said horizontal rods, said transvers levers being carried by the side bars and supported below the horizontal axis of the axles, substantially as described.

23. In an equalizing device, the combination, with the side bars of the axle-box frame, of the upright levers 18, fulcrumed on said bars, the arms of which extend above and below said side bars, upwardly-extending links 24, supported on the levers 18, devices for connecting the upright levers, and an upper chord or car-sill 5, supported on said links, substantially as described.

24. In an equalizing device, the combination of the side bars of the axle-box frame with the upright levers 18, fulcrumed to the side bars, devices for connecting the upright levers, an upper chord or car-sill 5, the journal-blocks 22, secured to said upper chord or sill, and the links 24, pivotally uniting said journal-blocks and levers 18, substantially as described.

25. The side bars 11, the levers 18, fulcrumed on said side bars, devices for connecting the upright levers, the upper chord 5, springs between the side bars and upper chord, the journal-blocks 22, secured to the upper chord, and links 24, uniting the levers 18 and journal-blocks, substantially as described.

26. Side bars 11, the upright levers 18, fulcrumed on said side bars, the upper end of said levers 18 having links 24, the upper chord or car-sill 5, supported on said links, horizontal rods 30 31 32 33, secured to the levers 18, and transverse levers 26 27, secured to said horizontal rods, substantially as described.

27. An equalizing device comprising an upper chord or car-sill 5, links 24, depending therefrom, levers 18, suitably supported and united to said links, horizontal rods 30 31 32 and 33, united to said levers 18, and transverse levers 26 27, uniting said horizontal rods, substantially as described.

28. An equalizing device comprising the levers 18, suitably supported, links 24 on said levers, horizontal rods 30 31 32 33, secured to said levers, and transverse levers 26 27, connecting said horizontal rods, substantially as described.

29. An equalizing device comprising the levers 18, links 24 on said levers, horizontal rods 30 31 32 33, secured to said levers below their fulcra, and transverse bars 26 27, uniting said horizontal rods, the bar 26 being secured to the rods 30 33 and the bar 27 to the rods 31 32, substantially as described.

30. An equalizing device having horizontal rods and a plurality of transverse levers, each one of said levers being secured at each end to a horizontal rod leading in opposite directions, said levers crossing each other, substantially as described.

31. The horizontal rods 30 31 32 33 and the transverse levers 26 27, said horizontal rods being in operative connection with the upper chord, the lever 26 being secured to the rods 30 33 and the lever 27 to the rods 31 32, substantially as described.

32. The combination of the side bars 11, transverse beam 12, strap 13, uniting the side bars and beam 12, the bolt 16, depending from the said beam 12, and the transverse bars 26 27, fulcrumed on said bolt and operatively connected with other levers to the upper chord or sill, substantially as described.

33. The side bars 11, transverse beam 12, supported on said side bars, a bolt 16, hung from said beam 12, transverse levers 26 27, fulcrumed on said bolt, and the thimble 29 between the beam 12 and transverse levers, the levers 26 27 being operatively connected with other levers to the upper chord or sill, substantially as described.

34. The side bars 11, transverse beam 12, supported on said side bars, a bolt 16, hung from said beam, a thimble 29, supported about the bolt 16, and levers, combined with a car-sill or upper chord supported by the said bolt, substantially as described.

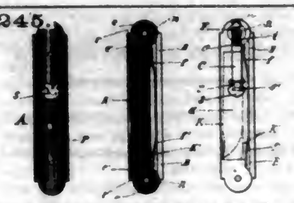
35. The side bars 11, bell-crank levers 18, having bosses 19, fulcrumed between the side bars, one arm of said lever extending below said side bars, the other arm extending above it, links having bifurcated ends pivoted to the upper arm of said levers, journal-blocks embraced by one end of the links, and an upper chord on said journal-blocks, and means for connecting the levers 18, substantially as described.

36. The side bars, the levers 18, fulcrumed thereto, the longer arm thereof extending upwardly and outwardly and the short arm downwardly away from its fulcra, and means for connecting said short arms, substantially as described.

476,245. POCKET-KNIFE. BRUNO VON BOLTENSTERN, New York, N. Y., assignor of one-half to Albert Weck, same place. Filed Mar. 17, 1891. Renewed Oct. 30, 1891. Serial No. 410,267. (No model.)

Claim.—1. The combination, with the handle of a pocket-knife, of a blade pivoted to the same, the tang of said blade having a groove or depression concentric to the pivot of the blade and extension recesses at diametrically-opposite points of the groove, and a spring-actuated slide-piece guided on the side plate of the handle and provided

476,245.

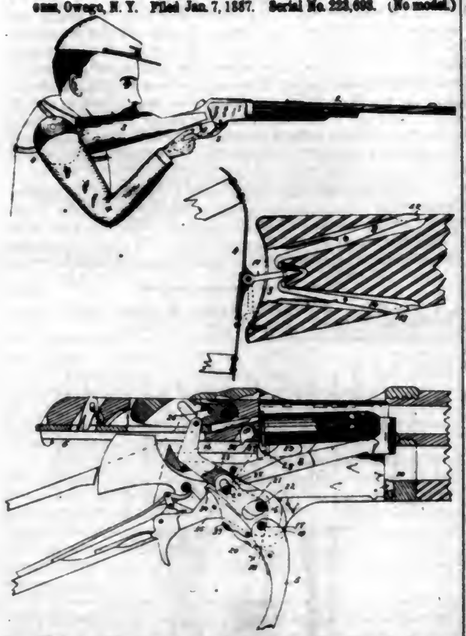


with an inwardly-projecting lug adapted to engage the groove and recesses on the tang, substantially as set forth.

2. The combination of the handle of a pocket-knife, said handle having a side plate provided with guide-slots, a blade pivoted to the handle and provided in its tang with groove or depression concentric with the pivot of the blade and with recesses at opposite points of said groove, and a spring-actuated slide-piece guided in the slots of the side plate and provided with lugs at opposite ends, one lug being adapted to engage the groove and recesses on the tang of the blade, while the opposite end lug is provided with an exterior push-plate, substantially as set forth.

3. The combination, with the handle of a pocket-knife, provided with a fixed rear piece and a side plate having guide-slots, of a blade having a semicircular tang and a shoulder abutting against the fixed rear piece, said tang having a groove or depression concentric with the pivot of the blade and recesses at diametrically-opposite points of the groove, and a spring-actuated slide-piece guided in the slots of the side plate and provided at one end with an inwardly-projecting lug extending into the groove and recesses of the tang and with an outwardly-extending leg having an exterior push-plate, substantially as set forth.

476,246. BREECH-LOADING MAGAZINE-GUN. ANDREW BURGESS, Owego, N. Y. Filed Jan. 7, 1887. Serial No. 223,693. (No model.)



Claim.—1. In a magazine small-arm, a shoulder-plate and catch connecting said plate to the gun to support it against the shoulder, in combination with a supporting and operating handle in position to be grasped by one hand of the operator and serve to hold the gun in position for operation by one hand, and a trigger in position to be pulled by the hand engaging the handle, substantially as described.

2. A magazine-gun having the operating-handle and trigger in position to be grasped by one hand of the operator, a catch in the stock in position to engage a catch on the shoulder of the operator, and a projection extending outside the stock by which the said catch may be disengaged, substantially as described.

3. In a magazine-gun, the operating-handle and trigger in position to be engaged by the hand of the operator while the gun is at the shoulder, a catch on the gun, and a catch constructed substantially as described for attachment to the shoulder of the operator and to have clutch engagement with the catch on the gun, the parts in combination, substantially as described.

4. A magazine having its operating-handle and trigger within reach of one hand of the operator while the gun is at the shoulder, a catch or clutch member attached to said gun, and a corresponding catch or clutch member connected to the person of the operator, the parts combined, substantially as described, so that the gun may be repeatedly loaded and fired while connected and held to the person of the operator.

5. In a breech-loading gun, a lever connected to the breech mechanism to move it to close and open the breech, said lever having a projecting handle by which it is operated, a joint in said operating-lever to permit its handle to turn against the body of the gun, and a spring-catch to hold it in operative position, all in combination, substantially as described.

6. In a breech-loading gun, a lever connected to the breech mechanism to move it to close and open the breech, said lever having a projecting handle by which it is operated, a joint in said operating-lever to permit its handle to turn against the body of the gun, and a spring-catch to hold it in operative position, and a connection outside the gun to release it, all in combination, substantially as specified.

7. In a breech-loading firearm, mechanism to close the breech, a lever 23, hung in the frame and connected to said mechanism to operate it, a vibrating operating-handle jointed to said lever and hung in the frame on a distinct axis, and a connection from the handle to the lever 23, more remote from the axis of the handle than from the axis of said lever, in combination, substantially as and for the purpose described.

8. In a breech-loading firearm, a vibrating handle pivoted in the frame to operate the breech mechanism, a vibrating operating-lever attached thereto and pivoted in the frame nearer its point of attachment to said handle than the axis thereof, all in combination, substantially as specified, to give accelerated movement to the lever and the breech-closing mechanism by the movement of the handle.

9. In a magazine-firearm, a bolt, a lever hung in the frame and having connection to said bolt to reciprocate it by the vibration of said lever to open and close the breech, and means of locking the breech, in combination with a fly by which bearing is obtained between the lever and bolt to force the bolt forward of its locking position, and an engaging shoulder carried by the bolt, substantially as described, for forcing back the hammer by the limited recoil of the bolt.

10. In a magazine-firearm, a reciprocating bolt having means for locking it forward in the frame and for forcing it forward of said locking position, in combination with a pivoted lever operated upon by the limited recoil of the bolt, and a resisting-abutment in the frame to turn said lever to produce engagement with and thereby throw back the hammer, substantially as and for the purpose set forth.

11. In a magazine-firearm, a reciprocating bolt, a magazine beneath the barrel, twin extractors hung to the sides of the bolt, said extractors having grasping-hooks extending downward below the face of the bolt in line with the path of movement of cartridges when feeding from the magazine, and a carrier to raise the cartridges into the grasp of said extractor-hooks, all in combination, substantially as described.

12. In a magazine-gun, a vibrating carrier and means to raise it, in combination with an auxiliary lever having oblique bearing in said carrier, and a shoulder on the lever for engagement of a moving part of the breech mechanism to slide it and raise its forward end by oblique movement in the carrier.

13. In a breech-loading firearm, a vibrating hammer, a vibrating operating-lever to move the breech, and a dog or pawl hung in the operating-lever and carried thereby in its movement of opening the breech to position for engagement with a shoulder in the hammer and moved to cock the hammer by the movement of the lever in closing the breech, all in combination, substantially as set forth.

14. In a breech-loading firearm, a vibrating operating-lever and a vibrating hammer, in connection with a cocking dog which cocks said hammer by movement of the operating-lever and having a connection to the outside of the gun for rendering said dog inoperative, substantially as described.

15. In a breech-loading firearm, a vibrating operating-lever and a vibrating hammer, in combination with a cocking-dog which cocks the hammer by movement of the operating-lever and a foll in the frame to engage and to release the dog from the hammer.

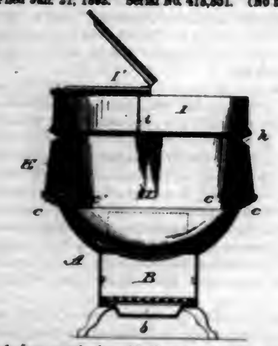
16. In a magazine-firearm, a reciprocating bolt and an ejector hung to vibrate upward in the face of the bolt, in combination with a carrier arranged to strike up said ejector and expel the shell and projections on said carrier and ejector to make engagement in the closing movement of the bolt and turn down the ejector.

17. In a magazine-firearm, a magazine to deliver cartridges longitudinally into the frame from under the barrel, a vibrating carrier, and means to force its face below the magazine, in combination with

a pin housed obliquely in the bottom of the frame and a spring to raise said pin to stop the magazine, and a projection from the said spring-pin into the mortise of the frame and in the path of movement of the face of the carrier, substantially as and for the purpose specified.

18. A magazine small-arm having a stock and barrel and loading at the breech, said gun having a loading-handle within reach of the hand of the operator to open and close the breech while the gun is at his shoulder and having means for attaching the butt of the gun and holding it to the shoulder while loading, substantially as described.

476,247. FOOD-STEAMER. THOMAS CASCADEN, Jr., Waterloo, Iowa. Filed Jan. 21, 1892. Serial No. 418,851. (No model.)

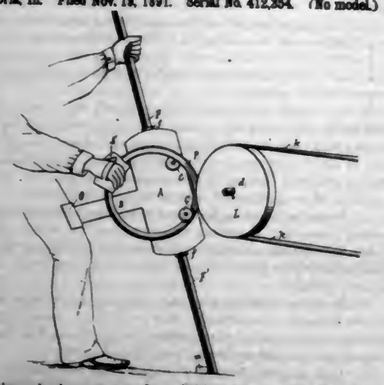


Claim.—1. In an agricultural boiler, the combination of a fire-box carrying an outwardly and upwardly flared portion having a peripheral groove, an inwardly-projecting flange *d*, which terminates to form a throat, a reversible rim having an outwardly-projecting portion adapted to receive a pipe, and doorways in the lower portion of the furnace located opposite each other, substantially as shown, and for the purpose set forth.

2. The combination, in an agricultural boiler or food-steamer, of a base A, having doorways for feeding fuel thereto located opposite each other, a reversible rim mounted on the upper part of the furnace and provided with an exhaust-opening for the products of combustion, and a kettle mounted thereon, substantially as shown, and for the purpose set forth.

3. The combination, with a base A, comprising a fuel-box having doorways opposite each other leading thereto and on different planes, an inwardly-projecting flange *d'*, and reversible rim E, mounted on the base beyond said flange, of a kettle D, adapted to be supported by the reversible rim and abut against the inwardly-projecting flange, said flange terminating so as to form a throat, substantially as shown, and for the purpose set forth.

476,248. POLISHER FOR METAL CASTINGS. ESSLEY J. CASE, Peoria, Ill. Filed Nov. 19, 1891. Serial No. 412,354. (No model.)



Claim.—1. As a means for polishing metal circles, the plate A, upon which the metal circle bears, provided with the extensions B, F, and F', and the anti-friction rollers C C upon the plate A, against which the metal circle bears, all substantially as described and set forth.

2. As a means for rotating metal circles for purpose of polishing, the combination, with the plate A, of the rollers C C, against which the inner edge of the circle P bears, the plate A, carried in a suitable frame-work, and the contact of the metal circle P, adjusted upon the plate A and with the edge thereof against the rollers C C, with the polishing-belt, all substantially as described and set forth.

476,249. FIRE-LIGHTING ATTACHMENT FOR STEAM FIRE-ENGINES. KRIOS L. COMER, Danbury, Conn., assignor to the Comer Automatic Steamer Lighter Company, same place. Filed Dec. 26, 1891. Serial No. 416,177. (No model.)



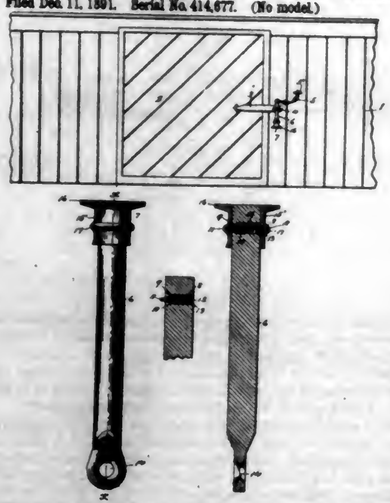
Claim.—1. In a device for lighting fires in steam fire-engines, the combination of a spindle adapted to be secured to the engine, a plate swiveled to said spindle, a rod extending from said plate and carrying matches and inflammable material arranged in close proximity to each other, a rod extended from said spindle and having at its extremity a scratcher-plate which rests normally against the heads of said matches, and means for revolving said plate, whereby the inflammable material is ignited and swung beneath the grate of the engine, substantially as shown and described.

2. In a device of the character described, the combination of a stationary scratcher plate, a rod capable of swinging and carrying inflammable material and matches, the heads of the latter being normally in frictional contact with said scratcher-plate and means for swinging said rod, whereby said material is ignited and carried beneath the grate of the engine, substantially as set forth.

3. The combination of the spindle secured to the engine, the scratcher-plate rigid with said spindle, the plate swiveled to said spindle, the rod extended from said plate and carrying inflammable material and matches, which latter are normally in frictional contact with the scratcher-plate, the pin detachably secured in the edge of said plate, and the chain whose ends are secured, respectively, to said pin and to the floor of the engine house, whereby when the engine is drawn from its house the inflammable material will be ignited and swing beneath the grate of the engine and the pin will be withdrawn from the plate, substantially as set forth.

4. The rod 3, having at its extremity a clamp 4 for the matches and provided with a spring-actuated presser-plate 6, whereby inflammable material may be retained in close proximity to the matches, in combination with a stationary scratcher-plate and means for swinging said rod from beneath the latter, substantially as shown and set forth.

476,250. SEAL-LOCK. PATRICK H. CONNER, Waterloo, Iowa. Filed Dec. 11, 1891. Serial No. 414,677. (No model.)

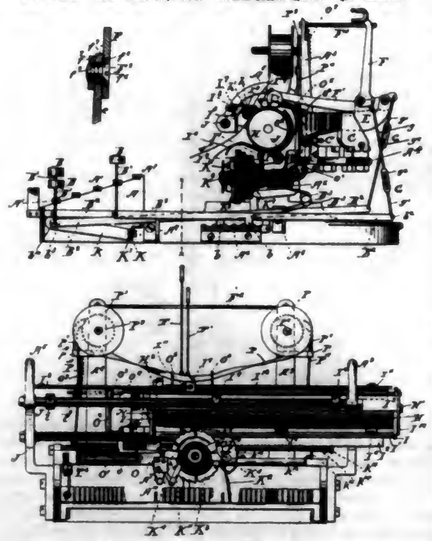


Claim.—1. In a seal-lock, the combination, with a bolt provided at one end with an eye or loop and having near the other end a recess or chamber for the insertion of a pin, spring, and a plug, of a cap or head open at both ends and having a circumferential groove midway of the sleeve portion for the reception of the locking pin or latch, substantially as described.

2. In a seal-lock, the combination, with a bolt having a loop or eye at one end and a recess or aperture near the other end of differing diameters for the insertion and securing of a movable pin, spring, and a plug, of a cap or head provided with a circumferential groove midway of the sleeve for the reception of one end of the locking-pin, substantially as described.

3. As an article of manufacture, a seal-lock consisting of and comprising a bolt with an eye or loop at one end and having near its other end a recess or chamber, in which is secured a movable pin resting on a spiral spring, said spring in turn resting upon an immovable plug, and a cap or head open at both ends, having a circumferential flange at one end and a circumferential groove midway of the sleeve portion of the same for the reception of the projecting end of the movable pin or latch secured in the bolt, substantially as described.

476,251. TYPE-WRITING MACHINE. JAMES S. COPELAND, Hartford, Conn. Filed Jan. 13, 1887. Serial No. 224,221. (No model.)



Claim.—1. An improved type-bar, as F, constructed with a bent tubular end piece of metal, as f^3, to receive and hold two type-stems, essentially as set forth.

2. The combination of two type-bars, as F F', of different lengths and a type-bar bracket, as E, constructed with two ears *e e'* to receive and support the type-bars, one on either side, and with the shank, as e^3, and the means, substantially as described, for securing the bracket adjustably in a line radial to the printing-point.

3. The combination of a plurality of type-bars, each having a plurality of type, a single bracket E, which offers fulcrum-supports for the type-bars at different distances from the common printing-point corresponding to the difference in length of the type-bars, and a vibrating bracket-support, as C, and the connections, substantially as described, with a shifting-key C^{13}, whereby the bracket may be vibrated radially to the printing-point correspondingly to the distance between the types on each bar.

4. The combination of a series of type-bars, as F, and a series of fulcrum-brackets, and devices, substantially as described, supporting the bars and brackets in the arc of a circle about a printing-point, and a vibrating device, substantially as described, connected with a shifting-key constructed and operating to vibrate the series of bars and brackets radially to the printing-point into an arc of a different diameter.

5. Means for operating a series of type-bar supports, consisting in a catch-pin C^9, common to the series, a rocking shaft, as C^8, and a shifting-key, as C^{13}, and their connections, constructed and combined with the supports to operate essentially as set forth.

6. In a type-writing machine, the combination of a segment-block, as C, constructed with an arm, as C', and a series of slots, as *c'*, to receive and hold a series of type-bar brackets, and mounted, as at D D', upon an arc-beam of the frame so as to be oscillated, and the means, substantially as described, for oscillating the block by a shifting-key to vibrate the brackets radially toward the printing-point.

7. A series of segment-blocks, as C, pivotally mounted in an arc of a circle about a perpendicular through the printing-point, combined with a series of type-bars and brackets held in each block, a rocking arm, as $C' C^9$, connected with the blocks, link-pins, as C^5, links, as C^4, and a rock-shaft and device, substantially as described, connecting the links with a shifting-key, as C^{13}, all constructed and operating, substantially as described, to vibrate the type-bars simultaneously in lines substantially radial to the printing-point.

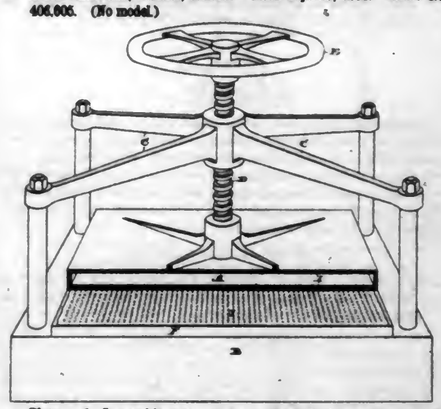
8. An improved space-bar K, consisting in a strip of metal in which a series of teeth are transversely cut on one side and with said teeth bent to form a row of rests at irregular distances from the main line of the strip and constructed to be adjusted and to operate essentially as set forth.

9. In a type-writing machine, a type-bar and its support having adjacent parallel bearing-surfaces, one of said parts having an additional conical bearing-surface, and an adjustable pivot having a conical portion constructed to fit said conical bearing-surface, substantially as described.

10. An improved joint for a type-bar, constructed with adjacent parallel bearing-surfaces on the support and on the type-bar and with adjacent conical bearing-surfaces in the type-bar and on the pivot, and means for setting up the latter.

11. In a type-writing machine, the combination, with a type-bar support provided with a plane vertical bearing-surface, of a type-bar having a plane vertical bearing-surface which is opposed to and guided by said plane bearing-surface of the support, and a bearing by which the type-bar is pivoted to the support and which is constructed to force the plane surface of the type-bar to contact with the plane surface of the support when the type-bar is vibrated on the bearing in a direction to effect printing, essentially as and for the purpose set forth.

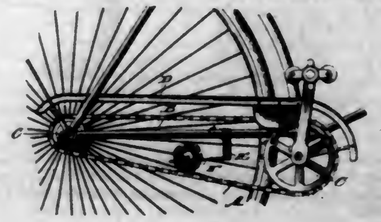
476,252. MACHINE FOR DRYING GARMENT-STAYS. FREDERICK CROMPTON, Toronto, Canada. Filed Sept. 23, 1891. Serial No. 406,605. (No model.)



Claim.—1. In combination, the lower chest B, the yielding pad F thereon, upon which the sheets to be finished are placed, and the upper adjustable steam-chest with means for applying pressure thereto, substantially as described.

2. In combination with the upper and lower steam-chests of a press, the removable pad F, having a yielding upper surface and a plurality of holes to allow for the escape of moisture, and the plate I, carried by the upper chest, substantially as and for the purpose set forth.

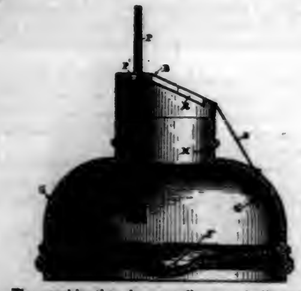
476,253. LUBRICATOR. WALLACE R. CURTIS and EUGENE LOSE, Pomeroy, Ohio. Filed Sept. 21, 1891. Serial No. 406,339. (No model.)



Claim.—1. A rotatable lubricator for chains, consisting of a perforated cylinder having a removable head, a revoluble slotted damper, and a knocker, as set forth.

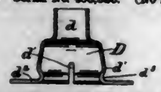
2. A rotatable lubricator consisting of a perforated cylinder having heads, one of which is removable and both carrying pintles, and a split revoluble spring-damper provided with a thumb-piece, as set forth.

476,254. RECEPTACLE FOR MUCILAGE, &c. CHRISTIAN DALER, Nuremberg, Germany. Filed Dec. 30, 1891. Serial No. 416,614. (No model.)



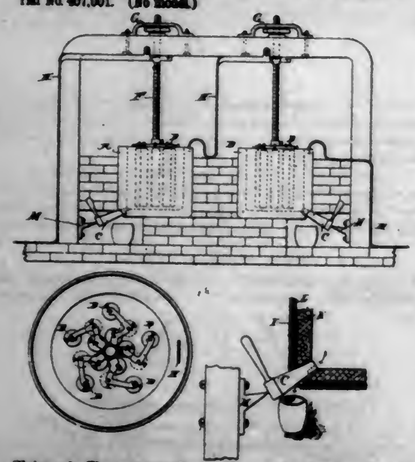
Claim.—The combination, in a mucilage or similar receptacle, of the body portion G, having slanting bottom and hollow F, with neck H and cap K, secured thereto, said cap K having slanting perforated roof B, the perforations *a b* in said cap being substantially wedge-shaped, and with cover D, substantially as and for the purposes described.

476,255. GLOVE-FASTENING. WILLIAM R. H. DOWSE, Newton, Mass., assignor to the Consolidated Fastener Company, Portland, Me. Filed Oct. 10, 1891. Serial No. 408,333. (No model.)



Claim.—In a glove and garment fastener, the combination, with a fastener top provided with suitable anvil and retaining parts, of a one-piece resilient socket D, having an outwardly-spreading flange d^3, a rolled-in neck d^2 near said flange, a top d, drawn in and extending upward into a central clinching-eyelet, and a number of spring-giving slits d' through the flange and body of the socket, constructed and arranged substantially as described.

476,256. METHOD OF AND APPARATUS FOR EXTRACTING ALUMINIUM. MICHAEL REESE, Atlanta, Ga. Filed Sept. 28, 1891. Serial No. 407,001. (No model.)

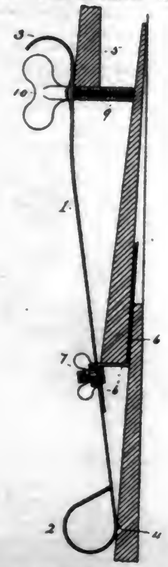


Claim.—1. The process of extracting aluminium from its oxides, consisting in leading a decomposing electric current through a fused mass of fluoride and chloride of aluminium to which free alumina has been added.

2. The process for the reduction of aluminium, consisting of fusing electrically a solvent composed of fluoride and chloride of aluminium in proportions specified, introducing into this solvent hot calcined alumina and maintaining uniform the resistance of the fused mass during decomposition.

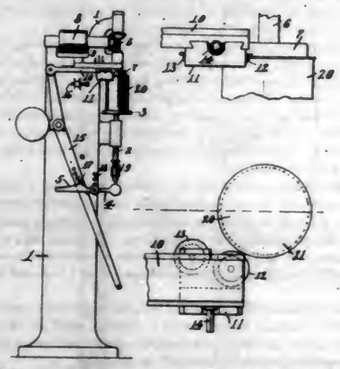
3. As an apparatus for reducing metals from their ores, a generator of electricity combined with a cup-shaped negative electrode and a positive electrode provided with regulating devices for varying its distance from the bottom and sides of the cup-shaped cavity.

476,257. SIDING-HOLDER. JOHN J. FERNAND, Hopkins, Minn. Filed Mar. 9, 1891. Serial No. 384,385. (No model.)



Claim.—A siding-holder consisting of a plate of spring metal having its end portions bent inward and an intermediate portion bent outward, an adjustable support for a siding-board on its upper portion and on its lower portion engaging tongues, and intermediate the ends a device consisting of an angular metal piece provided with a thumb-screw operating in a slot in said plate for regulating the lap, whereby the siding-holder is held in place and a siding-board supported thereon is held in proper position against the wall to which it is to be secured, substantially as set forth.

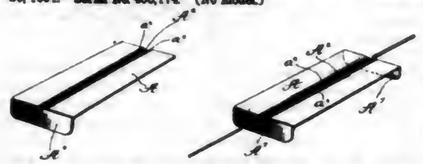
476,258. CAN-SEAMING MACHINE. JOHN B. FOOTE, Hamilton, Ohio. Filed Feb. 13, 1892. Serial No. 421,264. (No model.)



Claim.—1. In a can-seaming machine, the combination, substantially as set forth, with devices for holding and rotating a can, of a roll-carriage arranged for movement tangential to the can, a seaming-roll mounted in such carriage and so disposed that its periphery may engage the seam of the can, and an adjustable stop for limiting the advance of the carriage.

2. In a can-seaming machine, the combination, substantially as set forth, of two spindles arranged in a single axial line and provided with clamping-disks upon their contiguous ends, a roll-carriage arranged for movement tangential to said spindles, one or more seaming-rolls carried by said carriage and adapted to make peripheral engagement with the seam of a can clamped between said disks, and a treadle or lever connected with one of said spindles and with said carriage and arranged by its movement to first move said spindle toward its fellow spindle and then move said roll-carriage.

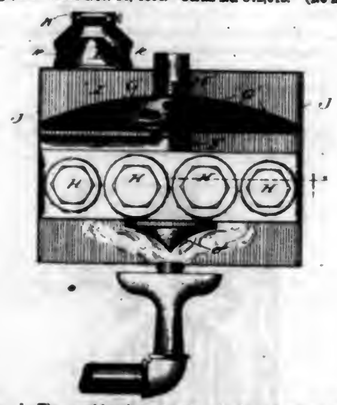
476,259. TAG. FREDERICK C. GLAVE, Irving Park, Ill. Filed July 20, 1891. Serial No. 400,174. (No model.)



Claim.—1. A metallic bale-tag consisting of the body A and the lobe A', integral with the body A, the face of the body A opposite the lobe A' being provided with shoulders aligned in a direction at right angles to said lobe for engaging the wire of the bale, substantially as shown and described.

2. A metallic bale-tag composed of the body A and lobe A', integral with said body A, said body A having a groove A^3, with shoulders a^3 extending about midway of said body at right angles to said lobe, substantially as shown and described.

476,260. GAS OR STEAM GENERATOR. JACOB M. GOLDSMITH, Chicago, Ill. Filed Nov. 20, 1890. Serial No. 372,515. (No model.)



Claim.—1. The combination of a pipe leading from a source of fluid to be vaporized, a cast integral retort into which the pipe leads, provided with a primary set of connected channels in which the fluid is subjected to partial vaporization and with a secondary set of connected channels communicating with the primary set and in which the partially-vaporized fluid is subjected to further vaporization, said retort having a chamber located at the point of greatest heat and at the exit-passage of the retort, and a delivery-pipe for the gas, substantially as described.

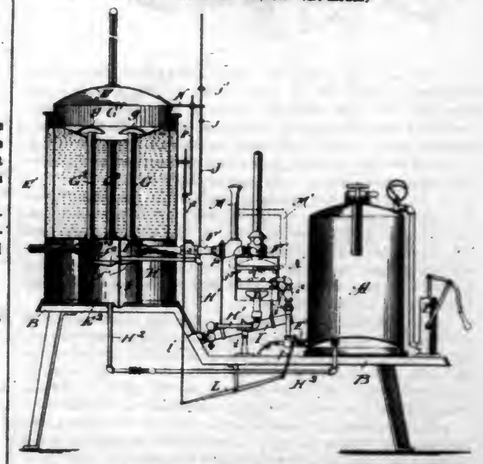
2. The combination of a retort of cast metal containing a multiple series of connected tortuous or winding ducts for detaining a combustible fluid in proximity to a source of heat and having vertical heat tubes or passages extending through the same, and a superheater located above the retort and containing a baffle-plate or other device for breaking up the currents from the retort, substantially as described.

3. The combination of a pipe leading from a source of fluid to be vaporized, a cast integral retort into which the pipe leads, provided with a primary set of connected channels in which the fluid is subjected to partial vaporization and with a secondary set of connected channels communicating with the primary set and in which the partially-vaporized fluid is subjected to further vaporization, said retort having a partitioned chamber with a dished bottom forming a flame-spreader located at the point of greatest heat and at the exit-passage of the retort, and a delivery-pipe for the gas, substantially as described.

4. The combination of a pipe leading from a source of fluid to be vaporized, a cast integral retort into which the pipe leads, provided with a primary set of connected channels in which the fluid is subjected to partial vaporization and with a secondary set of connected channels communicating with the primary set and in which the partially-vaporized fluid is subjected to further vaporization, said retort having a chamber with a dished bottom forming a flame-spreader located at the point of greatest heat and at the exit-passage of the retort, and a delivery-pipe for the gas, substantially as described.

5. The combination of a generator-retort provided with vertical flues extending through the same through which heat and air may pass, a surrounding jacket inclosing the retort, and a pipe leading from the jacket for conveying heated air to the place of use, substantially as described.

476,261. GAS-GENERATOR. JACOB M. GOLDSMITH, Chicago, Ill. Filed Jan. 23, 1891. Serial No. 378,816. (No model.)



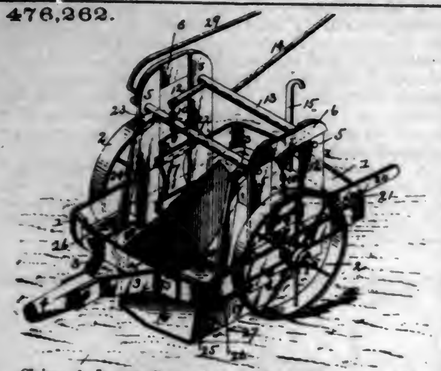
Claim.—1. In a gas-generator, the combination of an oil-supply tank, a gas-generating retort, a receptacle filled with fluid, a gas-holder arranged therein and constructed to rise as it is filled with gas and to sink as the gas is exhausted therefrom, means for regulating the supply of oil to the generating-retort, as described, and a safety shut-off valve in the oil-supply pipe, and means for automatically operating the same, comprising a lever L, a link *l*, directly connecting one end of such lever to the stem of the shut-off valve, a rod *l'*, extending from the other end of the lever to a point where it may be acted upon by the gas-holder when it sinks beyond the desired point, and pipes conveying oil from the tank to the gas-generator and gas from the generator to the gas-holder, substantially as described.

2. The combination of a receptacle filled with fluid, a gas-holder arranged therein and constructed to rise as it is filled with gas and to sink as the gas is exhausted therefrom, a pipe G for conveying gas into the gas-holder, a pipe G^2 for conveying gas out of the gas-holder, a pipe G^3, opening into the gas-holder on a lower plane than that of the openings of the gas inlet and outlet pipes to carry off particles of condensation, means for carrying the particles of condensation to such pipe, a chamber F^3, into which the pipes G^2 and G^3, which carry the gas and the particles of condensation from the gas-holder, open, a pipe or pipes leading from such chamber to convey the gas to the place of use, and pipes conveying oil from the tank to the gas-generator and gas from the generator to the gas-holder, substantially as described.

3. In a gas-generator, the combination of an oil-supply tank, a gas-generating retort, a gas-holder, a chamber F^3, intermediate the retort and the holder into which the gas is introduced from the retort and from which it passes to the holder, a pipe leading from the retort to such chamber and a pipe leading from such chamber to the holder, a chamber F^3, intermediate the holder and the place of use, into which the gas is introduced from the holder and from which it passes to the place of use, the partition F, separating the chambers F^2 F^3, partitions *f'* in said chambers F^2 and F^3, cutting off portions thereof for the reception of particles of condensation, and pipes conveying oil from the tank to the gas-generator and gas from the generator to the gas-holder, substantially as described.

476,262. EARTH-SCRAPER. JAMES A. GRAFF, Mount Pleasant, Iowa. Filed Aug. 17, 1891. Serial No. 402,980. (No model.)

476,262.



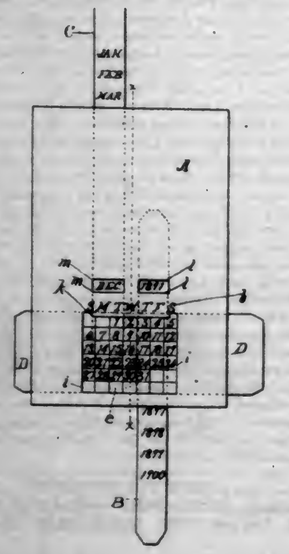
Claim.—1. In a grading and excavating machine, the combination, with the frame and the wheels, of the uprights secured to said frame, the cross-heads vertically movable in said uprights, the rock-bar having arms, the chains connecting said arms with the cross-heads, the scoop pivoted to said cross-heads, the pitman secured to the scoop, and the rearwardly-extending operating-rod connected with the pitman, substantially as and for the purpose described.

2. In a grading and excavating machine, the combination, with the frame, the wheels, and the pivoted scoop, of the transverse rock-bar having forwardly-extending arms, the bars connected with said arms, having hooked lower ends, the lugs on the scoop engaging with said hooked ends, the pitman secured to the scoop, and the rearwardly-extending operating-rod connected with the pitman, substantially as and for the purpose described.

3. In a grading and excavating machine, the combination, with the frame, the wheels, and the pivoted scoop, of the transverse rock-bar having forwardly-extending crank-arms, the bars connected with said arms, having hooked lower ends, and studs above said ends, the brackets through which said bars pass, and the lugs on the scoop, with which said hooked bars engage, substantially as described.

4. In a grading and excavating machine, the combination, with the frame, the wheels, the uprights, the cross-heads working in said uprights, the transverse rock-bar having operating-rod and crank-arms, the chains connecting the said arms and cross-heads, the pivoted scoop, the pitman, and operating-rod connected therewith, of the hooked bars engaging with lugs on the scoop, the crank-arms and rock-bar, with which said bars are connected, and the rod for operating said rock-bar, substantially as described.

476,263. PERPETUAL MONTHLY CALENDAR. JOSEPH GUIDINGER, Los Angeles, Cal. Filed Oct. 27, 1891. Serial No. 409,962. (No model.)



Claim.—1. The combination, with the frame, of a reversible panel pivotally supported therein, a rack and feed-box on the panel, and latches on the frame engaging the panel to hold it from swinging, substantially as specified.

2. The combination, with a fixed frame, of a panel pivoted centrally at top and bottom by vertical pintles in said frame and provided with an opening, a feed-rack fixedly secured to the said panel over said opening, and pivoted latches for engaging and holding the panel in its closed positions, as set forth.

3. The combination, with a fixed frame, of a panel pivoted to turn therein on vertical pintles at the top and bottom and provided with an opening, a feed-rack on the panel over the opening, pivoted latches on the frame, and stop lugs on the frame for engaging the latches, as and for the purpose specified.

Claim.—1. The combination set forth of the card A, provided with the day-initials *b*, arranged in a row, and with the day-indicating-strip slits *i i* arranged to form a sight-space *a* for the day-indicating strip D corresponding in width to the length of the row *b* of initials, and such day-indicating strip D provided with a series of the calendar-numbers from "1" to "31," inclusive, arranged in calendar form, the first column of which series consists of the numbers "1," "8," "15," "22," and "29," and a supplemental series *d* of numbers from "2" to "31," inclusive, except the numbers "8," "15," "22," and "29," said supplemental series being arranged at the left of the main series, with its top row *g* in line with the second row *h* of the main or complete series *c*.

2. The combination of the card A, provided with the day-initials in a row and with the day-indicating-strip slits *i i* arranged to form a sight-space *a* for the day-indicating strip D corresponding in width to the length of the row *b* of initials, and such day-indicating strip D provided with a series of the calendar-numbers from "1" to "31," inclusive, arranged in calendar form, the first column of which series consists of the numbers "1," "8," "15," "22," and "29," and a supplemental series *d* of numbers from "2" to "31," inclusive, except the numbers "8," "15," "22," and "29," said supplemental series being arranged at the left of the main series, with its top row *g* in line with the second row *h* of the main or complete series *c*, and the lateral tabs *l*, extending, respectively, beyond the outer edges of the two series of numerals.

3. In a calendar of the class described, the combination of the thick card A, partially divided by an incision beneath the row of day-initials *b* and parallel therewith at the top of the space *a* and split upward from such incision to form a recess between the main body and the day-strip-protecting flap *k* thus formed, and the day-strip arranged, substantially as set forth, with its upper edge between such day-strip-protecting flap and the main body of the card A.

476,264. MAGNESIUM-LIGHT COMPOSITION. EUGEN HACKH, Stuttgart, Germany. Filed May 14, 1891. Serial No. 392,796. (No specimens.)

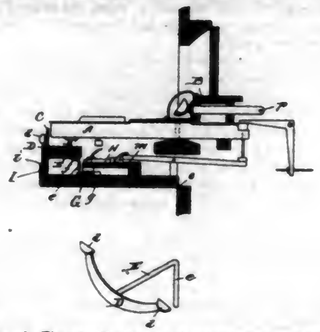
Claim.—The magnesium-light composition consisting of the fibrous material impregnated with vegetable oil, two parts, benzine, two parts, and Venice turpentine, one part, and sprinkled with magnesium powder, substantially as described.

476,265. MANGER. ELIAS S. HALL, Somerville, N. J. Filed Jan. 23, 1892. Serial No. 419,514. (No model.)



Claim.—1. The combination, with the frame, of a reversible panel pivotally supported therein, a rack and feed-box on the panel, and latches on the frame engaging the panel to hold it from swinging, substantially as specified.

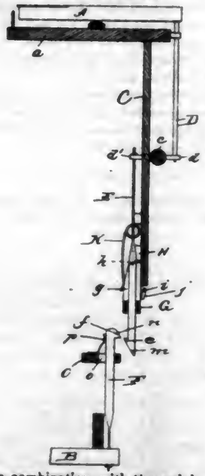
476,266. DEVICE FOR THROWING COUPLERS OF ORGANS INTO ACTION. FREDERICK W. HEDGELAND, Chicago, Ill., assignor to The W. W. Kimball Company, same place. Filed Nov. 27, 1891. Serial No. 413,317. (No model.)



Claim.—1. The combination, with a keyboard and coupler, of a thumb-lever D, a pivotal support upon which the same may be rocked, and means receiving motion from said pivotal support for operating the coupler-board, substantially as specified.

2. The combination, with the keys and the coupler-board, of a thumb-lever D, actuating a crank-arm *c*, and the slide provided with wedges and receiving motion from said crank-arm, substantially as set forth.

476,267. ORGAN-COUPLER. FREDERICK W. HEDGELAND, Chicago, Ill., assignor to The W. W. Kimball Company, same place. Filed Nov. 27, 1891. Serial No. 413,318. (No model.)



Claim.—1. The combination, with the pedals and manuals of an organ, of a series of divided trackers adapted to engage with each other at will and means for throwing them into engagement, substantially as specified.

2. The combination, with the pedals and manuals of an organ, of a series of divided trackers adapted to engage with each other at will and means for disengaging them, substantially as specified.

3. The combination, with the pedals and manuals of an organ, of a series of divided trackers adapted to engage with each other at will, a swinging frame for bringing the tracker-sections into engagement, and a stop for actuating said swinging frame, substantially as specified.

4. The combination, with the pedals and manuals of an organ, of a series of divided trackers adapted to engage with each other at will, a swinging frame for bringing the tracker-sections into engagement, a stop for actuating said swinging frame, and springs acting on said frame for releasing the engagement, substantially as specified.

5. The combination, with the divided tracker-sections, of the crank-wire and stop for swinging one section of the trackers into engagement with the other, substantially as specified.

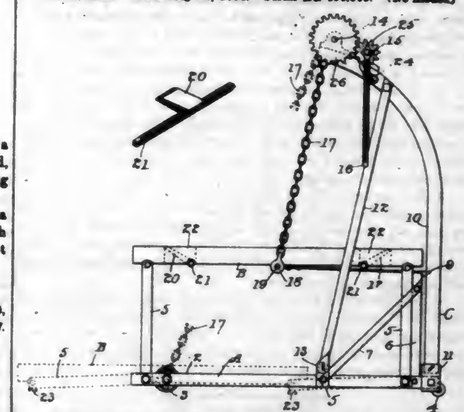
6. In a pedal and manual coupler, the combination of divided tracker-sections E F, means for moving the sections E, and springs *p*, acting upon the sections *f*, substantially as specified.

7. The combination, in a pedal and manual coupler, of the divided tracker-sections E F, one of said tracker-sections being movable to bring about an engagement and the other being made yielding, substantially as specified.

8. The combination, in an organ, of a detachable series of pedals and couplers for coupling the same to the manual, said couplers being separable without unfastening, substantially as specified.

9. The combination, in an organ, of a detachable series of pedals and couplers for coupling the same to the manual, said couplers having trackers made in upper and lower parts, adapted to engage with each other, substantially as specified.

476,268. COMBINED BENCH AND TRUCK. HENRY C. HICKS, St. Paul, Minn. Filed July 27, 1891. Serial No. 400,863. (No model.)



Claim.—1. In a device of the class described, the combination, with a suitable horizontal frame, of a platform supported thereon upon parallel legs pivoted to both, an upright frame detachably secured to said horizontal frame, a windlass carried by said upright frame, chains from said windlass detachably connected to said platform, and means for securing said platform in its raised position, substantially as and for the purposes set forth.

2. The combination of the horizontal frame, the platform supported by parallel pivoted legs upon said frame, a catch upon said platform engaging a cross-bar carried by said frame when the platform is in its raised position, and a windlass removably supported above said platform having its chains detachably secured to the same, substantially as and for the purposes set forth.

3. The combination, with the wheeled truck having a windlass removably supported above the same, of a platform supported upon parallel legs pivoted to it and said truck, chains detachably connecting said platform with said windlass, and means for holding said platform in its raised position, substantially as and for the purposes set forth.

4. The combination, with the wheeled truck, of the bench or platform supported thereon by parallel legs pivoted to both, a windlass removably arranged upon said truck above said platform, having its chains connected to said platform, and means for locking said platform to the frame of said truck in a raised position, substantially as and for the purposes set forth.

5. The combination, with a stone-cutter's bench, of a rock-shaft journaled thereon, and a lifting-dog secured to said shaft, lying normally below the top of the bench and adapted to be thrust above the truck by the rocking of said shaft, so as to lift a superincumbent block, substantially as set forth.

6. The combination, in a stone-cutter's bench, of a horizontal vertically-adjustable platform, an upright frame removably attached to one end of the bench and overhanging the platform, a windlass carried by said upright frame, and chains connecting said windlass with said platform, substantially as and for the purposes set forth.

7. The combination, with a suitable frame, of the vertically-adjustable platform supported thereon, the windlass supported upon said frame and overhanging said platform, and chains connecting said windlass to said platform, substantially as described.

8. The combination, with a stone-cutter's bench, of a transverse rock-shaft journaled thereunder and projecting beyond the edge of the bench, a lifting-dog upon said shaft adapted to be projected above the top of the bench by the turning of the shaft, and a recess in the bench to receive said dog when turned downward below the surface, substantially as described.

476,269. PERFUME-HOLDER. WARREN HILL, Chicago, Ill., assignor of one-third to Edward Chiles, same place. Filed Apr. 30, 1891. Serial No. 391,095. (No specimens.)



Claim.—1. As an article of manufacture, a perfume-holder consisting of a case or tube, a stick of solid perfume in said tube, means for temporarily engaging said stick to hold it adjustably in place, and a protecting cap or cover to protect the stick of perfume, one of said parts being perforated to allow the escape of the odor, substantially as described.

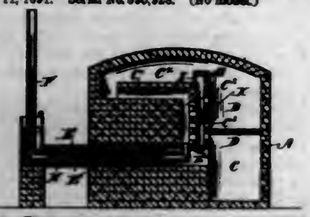
2. As an article of manufacture, a perfume-holder consisting of a case or tube, a stick of solid perfume in said tube, means for temporarily engaging said stick to hold it adjustably in place, and a protecting cap or cover to protect the stick of perfume, said cap being perforated to allow the escape of the odor, substantially as described.

3. As an article of manufacture, a perfume-holder consisting of a case or tube, one end of which is slotted, a stick of solid perfume, a ring on the slotted end of the tube to bind the latter against the stick of perfume and temporarily hold the latter in place, and a perforated projecting cap adapted to protect the stick of perfume and at the same time allow the escape of the odor, substantially as described.

4. In a perfume-holder, the combination, with the case B, in which a stick of solid perfume is placed, the end of which projects beyond the case, said case having its end reduced, as at b, slotted, as at b', screw-threaded, as at b^2, and provided with a threaded nut b^3, of the covering-cap D, provided with perforations to allow the escape of the odor, substantially as described.

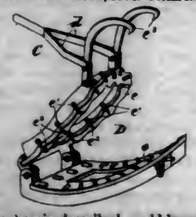
5. In a perfume-holder, the combination, with a tube or case in which a stick of solid perfume is placed and a perforated cap for protecting the open end of said tube, of a set-screw in the end of said tube, said set-screw adapted to bear on the stick of perfume and force the latter from the tube, substantially as described.

476,270. FURNACE. WILLIAM H. HODGSON, Winona, Minn. Filed June 11, 1891. Serial No. 396,928. (No model.)



Claim.—The combination of the ash-pit, the combustion-chamber above the same, the horizontal passage E', communicating at its inner end with the ash-pit, the vertical flue C^2, communicating at its upper end with the horizontal passage C', the heating-oven located above the said passage C' and communicating at one end with the same and at its other end with the combustion-chamber, the vertical flue C^3, located intermediate the flue C^2 and the combustion-chamber and communicating at its upper end with the oven and at its lower end with the passage E', a pipe E, arranged within the latter passage and communicating at its outer end with a suitable chimney and at its inner end with the flue C^3, and a cold-air pipe surrounding the pipe E and communicating at one end with the exterior air and at its other end with the passage E', as described, for the purpose specified.

476,271. MOLD-BOARD-SHAPING PRESS. WILLIAM H. HODGSON, Winona, Minn. Filed June 13, 1891. Serial No. 396,133. (No model.)



Claim.—1. The herein-described mold-board press, comprising the lower section having the curved upper surface, the upper section pivoted at its rear end to the rear end of the lower section and having its under surface curved to correspond to the curved upper surface of the lower section, an operating-lever pivoted to the upper section near its forward end, a lug or shoulder carried by the lower section at its forward end, and an engaging device pivoted to the lever and adapted to engage the said lug and to clamp the sections together when the lever is swung rearwardly and downwardly in the manner and for the purpose specified.

2. The herein-described mold-board press, comprising the lower plate having the curved upper surface, the upper plate hinged at one end to said lower plate and having its under surface curved to correspond with the curvature of the upper surface of the lower plate, an operating-lever consisting of the bar d' and the angular arms d, pivoted to the upper plate, lugs integral with the lower plate at its forward end, and hook-loops pivoted to the angular arms and adapted to engage with the said lugs to cause the plates to be clamped together when the lever is operated, in the manner described, for the purpose specified.

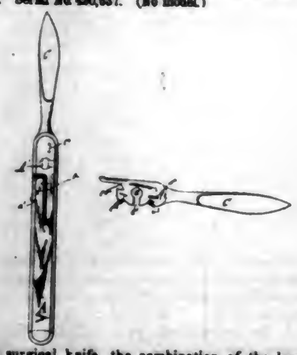
3. The herein-described improved mold-board press, comprising the lower curved plate, the upper curved plate pivotally secured to said former plate at its rear end, and the compound lever having angle-bars pivotally secured to said upper plate, and the hooks secured to said angle-bars and engaging said lower plate at their outer ends, substantially as set forth.

4. The herein-described mold-board press, comprising the lower section having a curved upper surface, a guide carried by said section near one of its lateral edges, feet supporting the forward end of the section, the upper section pivoted at its rear end to the rear end of the lower section and having a curved lower surface corresponding to the curved upper surface of the lower section, an operating-lever pivoted to the upper section near its forward end, a lug or shoulder carried by the lower section at its forward end, and an engaging device pivoted to the operating-lever and adapted to engage the said lug and to clamp the sections together when said lever is swung rearwardly and downwardly, in the manner and for the purpose specified.

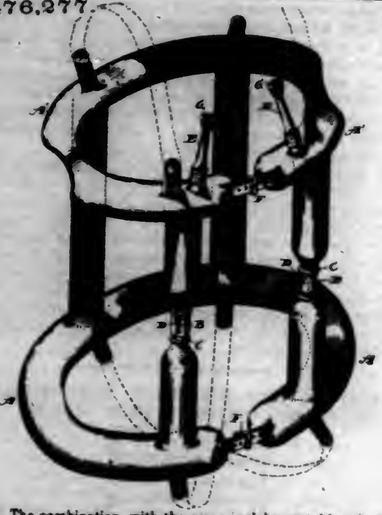
5. The herein-described improved mold-board press, comprising the plates of skeleton form, said plates being curved, as described, and hinged together at one end, the screws or bolts having their inner ends projected over the inner surfaces of said plates, and the lever connected to one of said plates and having hooks engaging the other one of said plates, substantially as set forth.

6. The herein-described mold-board press, comprising the curved plates hinged together at one end, the curved plates c, carried by said plates, and adjusting screws or bolts working in the lateral edges of the plates c, for the purpose specified.

476,272. SURGICAL KNIFE. OTTO A. HOELLER, Cincinnati, Ohio. Filed Feb. 8, 1892. Serial No. 420,637. (No model.)

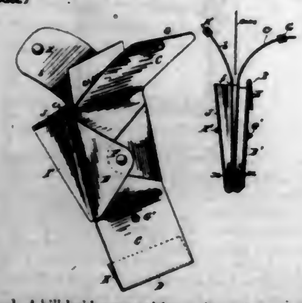

c
c
c

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2. The combination, with the upper and lower tubing A and A', provided with straps and connecting devices, of the vertical tubes connecting said tubing, inflating-valves in said tubes, and mouthpieces on the upper tubing, provided with valves, substantially as described.

476,278. PURSE, CARD-CASE, AND BILL-HOLDER. DAVID A. LAUFERTY, New York, N. Y. Filed Dec. 26, 1891. Serial No. 416,104. (No model.)

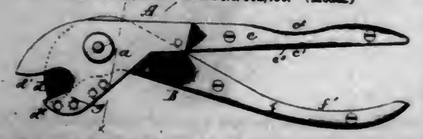


Claim.—1. A bill-holder comprising a piece of material not shorter than the length of a bank-bill and side pieces and end pieces adapted to overlap each other and provided with locking devices so situated as to engage with each other, substantially as set forth.

2. An interchangeable bill-holder and coin-pocket comprising a piece of material not shorter than the length of a bank-bill, side pieces and end pieces adapted to overlap each other, locking devices for the same, and a flap on one of the end pieces, adapted to fold over the folded side pieces and to act as a lock for the end piece to which it is attached, substantially as set forth.

3. A combined coin-purse, card-case, and interchangeable bill-holder or coin-purse comprising, essentially, two parts attached to each other back to back, one part having a coin-purse and the other having side pieces and end pieces provided with locking devices so situated as to engage with each other, and a flap on one of said end pieces, adapted to fold over the side pieces when folded and to hold the end piece to which it is attached, substantially as set forth.

476,279. PRUNING IMPLEMENT. WILLIAM LEVIN, New York, N. Y. Filed May 14, 1891. Serial No. 392,759. (Model.)



Claim.—1. As an article of manufacture, a pair of pruning-shears comprising a pair of blades, one composed of two plates and the other pivoted between the plates, the blade composed of the two plates having a notch formed in its edge in such position that the cutting-edge of the other blade falls outside of the edge of the notch when the other blade is in either of its extreme positions, substantially as set forth.

2. The combination, with a blade composed of a pair of plates secured together at suitable distances apart, said blade having a recess and a pair of jaws formed at its outer end, one jaw longer than the other, of a blade pivoted between these plates and adapted to co-operate therewith, substantially as set forth.

476,280. BOTTOM FOR METALLIC VESSELS. DAVID A. LEE and TRISTRAM D. BROWN, Clifton Springs, N. Y. Filed Dec. 17, 1891. Serial No. 415,366. (No model.)



Claim.—1. A bottom for pails made up of two plates of different metals shaped so as to nest with each other, one of said plates having apertures and means attached to the edges of said apertures and to the top and bottom plates for connecting the two plates permanently to each other, substantially as set forth.

2. In combination with a pail or vessel, a bottom therefor made up of two similarly-shaped plates connected centrally to each other, said plates being upset or bent so as to embrace the lower edge of the vessel and bring the upper plate in contact with the inner and outer edges of the side walls of the vessel, substantially as set forth.

3. A pail-bottom consisting of metallic plates B and C of metals having different properties, the inner plate having radial slots or apertures, solder or equivalent means for connecting the two plates centrally to each other, said plates having flanged peripheries, the outwardly-projecting flange being adapted to be upset to connect the plates to the vessel, substantially as set forth.

476,281. VENT FOR SHIPPING-CANS. DAVID A. LEE and TRISTRAM D. BROWN, Clifton Springs, N. Y. Filed Jan. 7, 1892. Serial No. 417,286. (No model.)



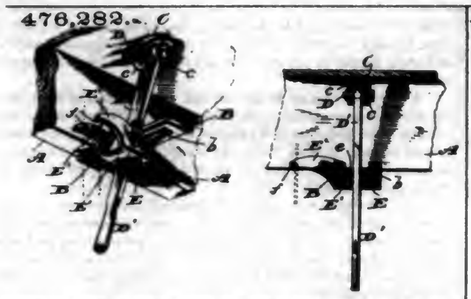
Claim.—1. In combination with a packing or shipping case A, a receptacle pivotally secured therein, said receptacle having a vent-tube with an upwardly-projecting end, to which a rubber tube or hose is secured so as to abut against the packing-case and form a closure for the vent-tube, substantially as shown.

2. In a packing or shipping case, a casing A, inclosing a receptacle B, a tube C, secured to the receptacle and provided with an inwardly-projecting end and an upwardly-projecting end, and a flexible tube secured to the upwardly-projecting end so as to abut against the top of the casing A and be bent by such contact, substantially as shown.

476,282. BELT-SHIFTER FOR CARDING-MACHINES. JOHN B. LIVEZEY, Allenton, R. I. Filed Mar. 28, 1892. Serial No. 426,731. (No model.)

Claim.—1. The combination, with the arm having a slot, of the

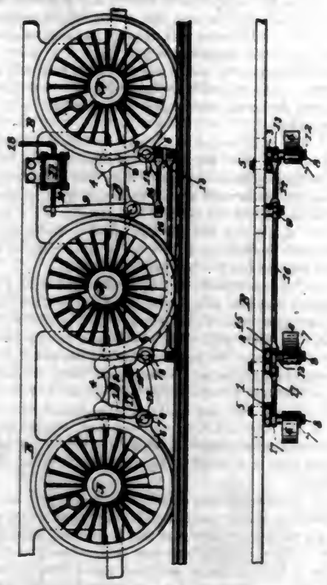
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casting mounted to slide on said arm and a lever having a removable pivot and passed through the slot of the arm and through a slot in the casting, as set forth.

2. The combination, with the arm having a longitudinal slot, of the casting having a slot, jaws with pins and flanges embracing said arm, and a lever passed through the slots of the arm and casting and having a removable pivot, as set forth.

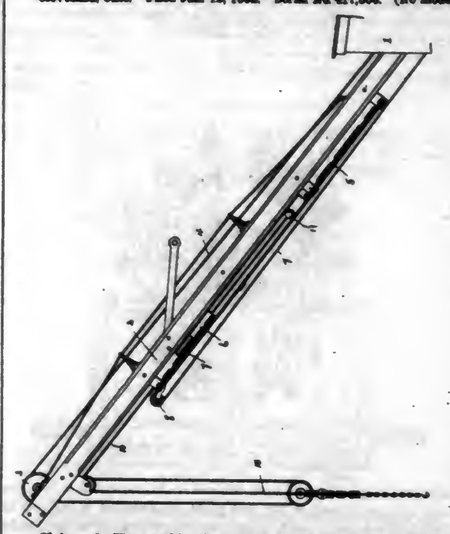
476,283. BRAKE. HERBERT M. LOFTON, Savannah, Ga. Filed Aug. 29, 1891. Serial No. 404,117. (No model.)



Claim.—1. In a device of the class specified, the truck-frame and driving-wheels thereon, the arm 3, pivoted to the said frame and carrying a brake-shoe bearing against one of the driving-wheels, a pendent lever 13, pivoted on said arm 3, the pitman 14, connected therewith and with a motive power, the pitman 16, connected to said arm farther from the pivotal point than the pitman 14 and connected at its opposite end to a second pendent arm carrying a brake-shoe bearing on one of the other driving-wheels, all combined, arranged, and operating substantially as and for the purpose specified.

2. In a device of the class specified, the truck-frame and driving-wheels thereon, the arm 3, pivoted to the said frame and carrying a brake-shoe bearing against one of the driving-wheels, a pendent lever 13, pivoted to said arm 3, the pitman 14, connected therewith and with a motive power, the pitman 16, connected to said arm farther from its pivotal point than the pitman 14, and connected at its opposite end to one arm of a bell-crank lever 15, pivoted on an arm 2, said arm pivoted to the frame B and carrying a brake-shoe bearing on the second driving-wheel, and a pitman 17, connecting the other arm of said bell-crank lever with the arm 1, pivoted to the frame and carrying a brake-shoe bearing on the periphery of the third driving-wheel, all combined, arranged, and operating substantially as and for the purpose specified.

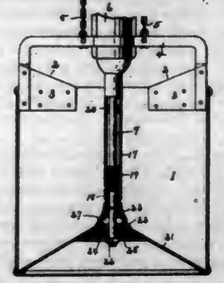
476,284. AUTOMATIC TRIP FOR DUMPING-BUCKETS. WILLIAM E. LUDLOW, Toledo, assignor to the Ludlow Manufacturing Company, Cleveland, Ohio. Filed Jan. 12, 1892. Serial No. 417,806. (No model.)



Claim.—1. The combination, with a boom, of a casing having a stop-block arranged therein, a dumping-bucket having trip mechanism, a tripping-weight within the casing, and a flexible connection uniting the weight and the said trip mechanism.

2. The combination, with a boom, of a casing having an adjustable stop-block arranged therein, a dumping-bucket having trip mechanism, a tripping-weight within the casing, and a flexible connection uniting the weight and the said trip mechanism.

476,285. DUMPING-BUCKET. WILLIAM E. LUDLOW, Toledo, assignor to the Ludlow Manufacturing Company, Cleveland, Ohio. Filed Jan. 12, 1892. Serial No. 417,807. (No model.)



Claim.—1. In a dumping-bucket, a body, a bail attached thereto, a trip mechanism, a movable rod engaged by the trip and carrying on its lower end the bucket-bottom, a tubular casing inclosing the rod, and a ball-and-socket joint between the said casing and the bottom.

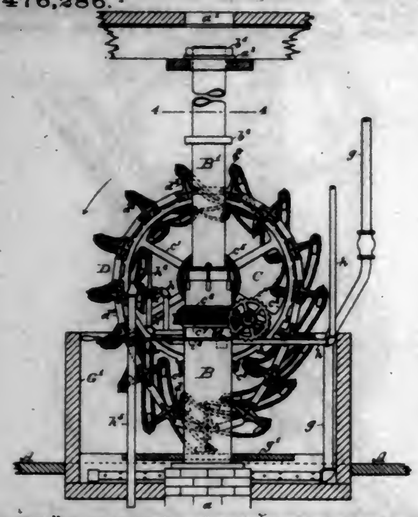
2. In a dumping-bucket, a body, a bail attached thereto, a trip mechanism, a movable rod engaged by the trip and carrying on its lower end the bucket-bottom, a tubular casing inclosing the rod, and a socket carried by the bottom, a ball carried by the rod and engaging the socket, and a recessed bearing between the socket and the said casing.

476,286. APPARATUS FOR SKEIN-DYEING. ALVIN S. LYON, Lowell, Mass. Filed Jan. 2, 1891. Serial No. 376,511. (No model.)

Claim.—1. The combination of a dye-vat, a water-tank, said tank and vat being separate and disconnected from each other, a hoist arranged at equal distances from said vat and tank and having a stationary part and a vertically-movable part provided with a laterally-extending arm or bracket, adapted to be raised and to be swung over said vat or tank, and a reel having a horizontal shaft permanently journaled in said arm, as and for the purpose specified.

2. The combination of a dye-vat, a water-tank, a hoist arranged at equal distances from said vat and tank and provided with a later-

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ally-extending arm or bracket, adapted to be raised and to be swung over said vat or tank, a reel, and guide-forks secured to said vat and tank and adapted to receive the outer journal-box of said reel, as and for the purpose specified.

3. The combination of a hoist having a stationary part and a vertically-movable part, a gear turning on said stationary part, mechanism for rotating said gear, a reel journaled in an arm or bracket with which said movable part of said hoist is provided and having a gear secured thereto concentrically therewith and adapted to engage said first-named gear by the lowering of said reel and to be disengaged therefrom when said reel is raised, as and for the purpose specified.

4. The combination of a hoist having a stationary part and a vertically-movable part, a gear turning on said stationary part, mechanism for rotating said gear, a reel journaled in an arm or bracket with which said movable part of said hoist is provided and having a gear secured thereto concentrically therewith and adapted to engage said first-named gear and secured thereto, a worm-shaft having a worm which engages said worm-gear, a clutch, one counterpart of which slides on said shaft and rotates therewith, the other counterpart of said clutch being loose on said shaft, and a driving-pulley loose on said shaft and rigidly secured to said last-named counterpart concentrically therewith, as and for the purpose specified.

5. The combination of a reel consisting of a shaft and two sprocket-wheels secured on said shaft, endless chains of equal lengths carried by said sprocket-wheels and extending below the same, and parallel poles journaled in said chains and adapted to approach each other by the curvature of said chains below said reel and to recede from each other as the curvature of said chains becomes less to vary the tension of a skein of yarn supported upon two of such poles, as and for the purpose specified.

6. The combination of two parallel concentric sprocket-wheels, a shaft on which both are fast, chains carried by said sprocket-wheels and each having arms extending therefrom in opposite directions in the plane in which each chain travels, and parallel poles eccentrically journaled in said arms near the free ends thereof to allow said poles to turn on said journals when immersed in a liquid and to vary the bearing-surfaces of a skein of yarn supported upon two of said poles, and thereby to expose equally all parts of said skein and yarn to the action of said liquid, as and for the purpose specified.

7. The combination of two parallel concentric sprocket-wheels, a shaft on which both are fast, chains carried by said sprocket-wheels and each having arms extending therefrom in opposite directions in the plane in which such chain travels, said arms having holes near their free ends, poles, and pole-receivers in which said poles are held, said receivers having journals eccentric to said poles and arranged in said holes parallel with each other to allow said poles to turn on said journals when immersed in a liquid and to vary the bearing-faces of a skein of yarn supported upon two of said poles, and thereby to expose equally all parts of said skein and yarn to the action of said liquid, as and for the purpose specified.

8. The combination of the reel and parallel poles of a material adapted to float in a liquid, said poles being carried by said reel and having eccentric journals, on which they are partially rotated when immersed in such liquid to change the bearing-surfaces of a skein of yarn, through which two of said poles pass, and to expose all parts of said skein equally to the action of said liquid, as and for the purpose specified.

9. The combination of the reel and parallel poles of wood, having eccentric journals, said poles being adapted to turn freely on said journals when immersed in a liquid to change the bearing-surfaces of a skein of yarn, through which two of said poles pass, and to expose all parts of said skein equally to the action of said liquid, as and for the purpose specified.

10. The combination of the pole-receiver having sockets and trunnions or journals and a pole adapted to enter said sockets and to be retained therein, said pole-receiver having a rod or yarn-guard connecting said sockets and arranged out of contact with said poles to retain skeins of yarn upon said pole between the ends thereof, as and for the purpose specified.

11. The combination of the pole-receiver having trunnions and sockets, said sockets opening toward each other and one of said sockets containing a spring, and a pole longer than the distance between said sockets and adapted to be thrust into one of said sockets against the resistance of said spring and to be forced endwise by the pressure of said spring into the other of said sockets, as and for the purpose specified.

12. The combination of the pole-receiver having sockets and a pole adapted to be held therein, said pole-receiver having trunnions or journals eccentric to said pole, as and for the purpose specified.

13. The combination of a pole oblong in vertical section and a pole-receiver having sockets to receive said pole and having journals or trunnions eccentric to said pole, as and for the purpose specified.

14. The combination of a dye-vat, steam-pipes arranged therein to heat dye-liquor contained in said vat, and a shield or diaphragm secured in said dye-vat and extending nearly from side to side thereof to prevent yarns suspended in said vat above said shield from being tangled by the violent ebullition of said dye-liquor, as and for the purpose specified.

15. The combination of a hydraulic hoist having a cylinder and a vertically-movable ram, a reel journaled on said ram, a valve or cock having a three-way-valve case and a two way plug turning therein, one of the ways of said valve-case being connected to a supply-pipe, another to the cylinder of said hoist, and a third to a waste-pipe, said supply-pipe and said waste-pipe to enable said ram and reel to be raised, lowered, or held in an elevated position by the turning of said plug, as and for the purpose specified.

16. The combination of a hydraulic hoist having a cylinder and a vertically-movable ram, a reel journaled on said ram, a valve or cock having a three-way-valve case and a two-way plug turning therein, one of the ways of said valve-case being connected to a supply-pipe, another to the cylinder of said hoist, and a third to a waste-pipe, said supply-pipe, said waste-pipe, a lever secured to said plug and provided with a hole near its free end, and a chain secured at one end to said ram and passing through the hole in said lever and provided at the other end with an enlargement adapted to strike against and turn said lever to shut off the supply from said cylinder when said reel and hoist are raised to a proper height, as and for the purpose specified.

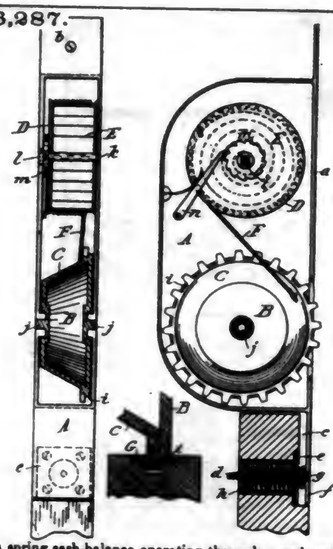
17. The combination of a hydraulic hoist having a cylinder and a vertically-movable ram, a reel journaled on said ram, a valve or cock having a three-way-valve case and a two-way plug turning therein, one of the ways of said valve-case being connected to a supply-pipe, another to the cylinder of said hoist, and a third to a waste-pipe, said supply-pipe, said waste-pipe, a lever secured to said plug and provided with a hole near its free end, and a chain secured at one end to said ram and passing freely through the hole in said lever and provided at the other end with an enlargement adapted to strike against and turn said lever to shut off the supply from said cylinder when said reel and hoist are raised to a proper height, said enlargement being of sufficient weight to take up the slack of said chain above said lever when said ram is again lowered, as and for the purpose specified.

476,287. SASH-BALANCE. JOSEPH P. MAGNEY, San Francisco, Cal. Filed May 4, 1891. Serial No. 391,504. (No model.)

Claim.—1. In a spring sash-balance, the combination, with a drum inclosing the spring, of a cone-shaped pinion gearing with a rack and a cable connecting the drum and pinion, substantially as and for the purposes set forth.

2. In a sash-balance, the combination, with a box or case set in the window-frame adjacent to a sash-run, of a drum or barrel journaled in said case and inclosing a spring, a wheel below such drum also journaled in the casing, having spur-teeth upon one edge and a frusto-conical periphery and projecting from the case or box to engage with a rack upon the sash, means for adjusting the case, and a cable connected to both drum and pinion, substantially as described and shown.

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3. In a spring sash-balance operating through a rack-and-pinion movement, the combination of a rack, a pinion engaging therewith, and a rigid bearing-shoulder to one side of the line of the teeth and projecting beyond the base-line thereof, acting as a positive gage for causing the engagement of the rack and pinion at the proper pitch-circle, substantially as described.

4. In combination, the window casing and sash, a box or frame loosely mounted in said casing, the screw extending through the box into the casing and having a stop at its outer end, and means between the casing and the box, bearing against each, to cause the box to follow the adjusting-screw outward when adjusted.

5. In combination with a window casing and sash, a box or frame loosely mounted in the casing adjacent to the edge of the sash, screws adjustable in the window-casing and connected loosely to said box or frame, and a spring on each screw for pressing the box outward against the heads of the screws, substantially as and for the purposes set forth.

6. In combination, the rack and pinion, the tension means, and the positive rigid bearing-surface between the rack and the pinion to limit the depth of the engaging parts, said positive bearing projecting beyond the base-line of the teeth, substantially as described.

476,288. INKSTAND. CHARLES F. MASON, Akron, Ohio. Filed Mar. 11, 1892. Serial No. 424,537. (No model.)

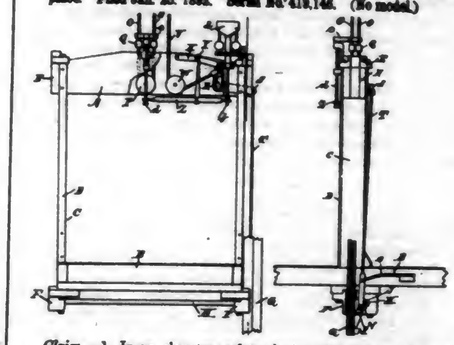


Claim.—1. In an inkstand of the class specified, the combination, with the ink-well, of the rigid cap having the radial and annular flanges and a central opening, and the inverted saucer-shaped diaphragm having a central opening and an annular ridge about said opening and at its outer edge a ring to fit the inside of the ink-well opening and the outside of the annular flange of the cap, and the dip-tube arranged to enter and slide in said cap, having a shoulder to rest on the edge of the diaphragm and a reduced portion to be inclosed by said diaphragm, substantially as shown and described, and for the purpose specified.

2. In an inkstand of the class specified, the ink-well and the rigid cap having a central opening for the dip-tube, and the dip-tube arranged to fit the central opening in the cap and having a reduced portion to enter the diaphragm, combined with a semi-spherical elastic diaphragm having a central opening to receive the dip-tube and an upwardly-extending ring integral therewith and arranged to rest between the cap and the interior of the ink-well, substantially as shown and described, and for the purpose specified.

3. In an inkstand of the kind specified, the combination, with an elastic inverted-saucer-shaped diaphragm having a central orifice for the dip-tube and an annular ridge on the upper face of said diaphragm surrounding said orifice and a short distance therefrom, of a dip-tube having a reduced portion to rest in said central orifice and having shoulders on opposite sides thereof, the upper shoulder being partially cut away, and a larger shoulder above said upper shoulder adapted to rest on said annular ridge, substantially as shown and described.

476,289. SAFETY DEVICE FOR ELEVATORS. EDWIN S. MATTHEWS, Cincinnati, Ohio, assignor of one-half to James L. Haven, same place. Filed Jan. 26, 1892. Serial No. 419,146. (No model.)



Claim.—1. In an elevator safety device, the combination, substantially as set forth, with an elevator-car and mechanism connected therewith for lifting a pawl-rod in case of emergency, of castings at the two sides of the car provided with bearings for a pawl-shaft and with segmental recesses concentric thereto having wall portions projecting inwardly in contact with the under portion of the heel of the pawl, a shaft journaled in said bearings and projecting into said recesses, and a pawl fast upon each end of said shaft and seating with their heels in said recesses and over said inwardly-projecting floors and adapted to engage the guide-rails of the car, and a pawl-rod connecting said shaft and said pawl-rod-lifting mechanism.

2. In an elevator safety device, the combination, substantially as set forth, with an elevator-car and mechanism thereon to turn a shaft in case of emergency, of a shaft having a pawl at each end and connected with said shaft-turning mechanism, and a casting secured to each side of the car and provided with a rigid bearing opposing the strain of the shaft downwardly and away from the car-guide and with a recess opening inwardly and downwardly and provided also with an inwardly and downwardly open pawl-heel bearing exterior to said shaft-bearing, and a removable block secured within each of said castings at the recess leading from said shaft-bearing and preventing the inward displacement of the shaft.

3. In an elevator safety device, the combination, substantially as set forth, with an elevator-car, a locking device thereon to engage the guide-rails of the elevator when drawn into action, a straining means, connections on the car from said straining means to said locking device to pull the locking device into action, an obstruction, as a toggle, to normally meet the strain and prevent the transmission of the strain to the locking device, a trigger arranged to hold said obstruction normally in obstructing position, one or more pairs of hoisting-ropes connected with the car, an evener to equalize the strain upon each hoisting-rope of a pair, collars upon the hoisting-ropes, a plate near said collars and arranged to be moved thereby as the hoisting-ropes shift with reference to the car, and connections between said plate and trigger whereby the movement of said plate effects the release of said trigger.

4. In an elevator safety device, the combination, substantially as set forth, of an elevator-car, a locking device, a straining means arranged to draw the locking device into action, a trigger arranged to prevent the action of the locking device, one or more hoisting ropes attached to the car and arranged in pairs and provided with collars, and connections adapted to cause the shifting of said collars to release said trigger.

5. In an elevator safety device, the combination, substantially as set forth, of an elevator-car, a locking device thereon, a straining means arranged to pull said locking device into action, one or more hoisting-ropes arranged in pairs and provided with collars, a governor, a trigger to prevent the action of the locking device, and connections from said trigger to said governor and said collars, whereby the shifting of the collars or abnormal speed of the governor effects the release of the trigger.

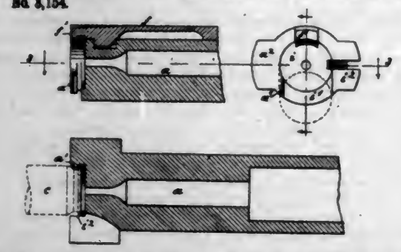
6. In an elevator safety device, the combination, substantially as set forth, of an elevator-car, a locking device thereon, a counterbalance-rope arranged to pull said locking device into action, a spring arranged

to pull said locking device into action, a trigger arranged to prevent the action of the locking device, and a governor arranged to trip the trigger if the car travels at abnormal speed.

7. In an elevator safety device, the combination, substantially as set forth, of an elevator-car, a locking device thereon, and counter-balance-rope arranged to pull said locking device into action, a spring arranged to pull said locking device into action, one or more hoisting-ropes arranged in pairs and provided with collars, a trigger to prevent the action of the locking device, and connections from said trigger to said collars, whereby the shifting of the collars effects the release of the trigger.

8. In an elevator safety device, the combination, substantially as set forth, of an elevator-car, a locking device thereon, a straining means arranged to draw said locking device into action, a trigger to prevent the action of the locking device, mechanism to effect the release of said trigger in emergencies, and a toggle abutting at one end upon a fixed point on said car and connected at its other end with the locking device so as to flex when the locking device goes into action and serve, when pressed back to normal position, to restore the locking device to normal idle condition.

476,290. CARTRIDGE-STOP FOR MAGAZINE-GUNS. PAUL MAUSER, Oberndorf-on-the-Neckar, Germany, assignor to the Waffenfabrik Mauser, same place. Filed Jan. 28, 1891. Serial No. 379,475. (No model.) Patented in Germany Sept. 15, 1889, No. 51,241; in Belgium Sept. 30, 1889, No. 87,772; in England Nov. 12, 1889, No. 18,014, and Oct. 31, 1890, No. 17,460; in Italy Dec. 10, 1889, No. 26,450/137; in Switzerland Dec. 5, 1890, No. 3,193, and in Austria-Hungary Mar. 18, 1891, No. 54,670, and No. 3,154.



Claim.—1. The combination, with a breech-loading bolt-gun, of a sliding bolt therefor having an extractor and constructed with a recess for receiving the base of a cartridge in its front end, a groove through the wall of said recess through which the cartridge may be slid into said recess, and a projection on said bolt constructed to engage with the lower portion of the cartridge and thereby to resist the escape of the cartridge when within said recess and engaged by said extractor.

2. The combination, with a breech-loading bolt-gun, of a sliding bolt therefor having an extractor and constructed with a recess for receiving the base of a cartridge in its front end, a groove through the wall of said recess through which the cartridge may be slid into said recess, said groove having a projecting portion engaging the base of the cartridge during its passage therethrough, and a projection on said bolt constructed to engage with the lower portion of the cartridge for preventing the escape of the cartridge through said groove.

3. The combination, with a breech-loading bolt-gun, of a sliding bolt therefor having an extractor and constructed with a recess for receiving the base of a cartridge in its front end, and a groove through the wall of said recess through which the cartridge may be slid into said recess, said groove having a projecting portion engaging the base of the cartridge during its passage therethrough, whereby while in said groove the cartridge is coupled to the bolt.

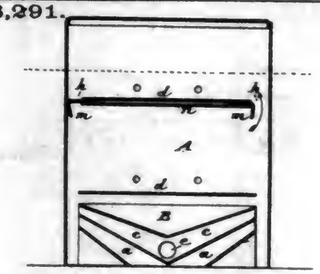
4. In a cartridge-catcher for breech-loading bolt-guns, a bolt *a*, having in its front end a recess *i*, and a groove *i'*, the bottom of which projects beyond that of the recess *i*, and one of the parallel sides of which forms a projecting ridge *a'* corresponding to the base of the cartridge, substantially as and for the purpose set forth.

5. In a cartridge-catcher for breech-loading bolt-guns, a bolt *a*, having in its front end a recess *i*, and a groove *i'*, one of the parallel sides of which forms a projecting ridge *a'* corresponding to the base of the cartridge, in combination with a spring-catch *b*, substantially as and for the purpose set forth.

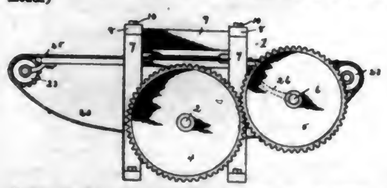
476,291. OVEN. GEORGE R. MOOR, Wilmington, Ohio. Filed Sept. 20, 1891. Serial No. 407,113. (No model.)

Claim.—The combination, with an oven-equalizer B, having flues *a c*, of the shelves *d*, coming short of the walls, and the slides *h*, as and for the purpose set forth.

476,291.



476,292. APPARATUS FOR TRIMMING CARBON POINTS. PHILO MOORE, Fremont, Ohio. Filed June 26, 1891. Serial No. 397,462. (No model.)



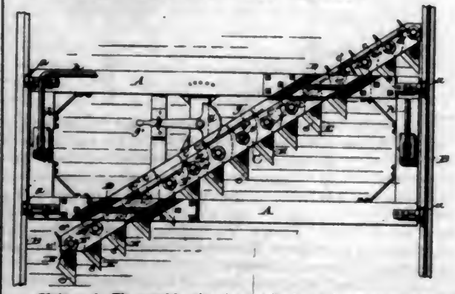
Claim.—1. In an apparatus for trimming carbon points, a frame-work, and a stationary knife-carrier fixed thereto, in combination with a sectional carbon-holder adapted to open by gravity, a shaft carried by the frame-work, and eccentrics carried by the shaft and operating to close the carbon-holder and raise it into engagement with the knives.

2. In an apparatus for trimming carbon points, a frame-work carrying a stationary knife-carrier, and a vertically-movable carbon-holder, in combination with an endless carrier and mechanism bringing the carbon-holder into operative position with the knives and for intermittently moving the carrier forward after the operation of the knives.

3. In an apparatus for trimming carbon points, a frame-work carrying a carbon-holder having slots coincident with the webs of the carbon-sheets, in combination with a knife-carrier carried by the frame-work and means for moving the carbon-holder vertically into a position to cause the knives to enter the slots and sever the webs.

4. In an apparatus for trimming carbon points, a frame-work, and a stationary knife-carrier fixed thereto, in combination with a sectional carbon-holder, an endless carrier, and two shafts journaled in the frame-work, one of which shafts carries eccentrics for closing the carbon-holder and bringing it into engagement with the knives and the other shaft mechanism for moving the said carrier forward a predetermined distance to face the trimmed carbons.

476,293. MALT-PLOW. ADOLPH MUTTENBERGER, Harvard, Ill. Filed July 27, 1891. Serial No. 400,796. (No model.)



Claim.—1. The combination, in a malt-plow, of a carriage adapted to travel back and forth over the malt-floor and a gang of plows provided with vertical stems, which are freely movable lengthwise in vertical apertures in said carriage, substantially as and for the purposes set forth.

2. The combination, in a malt-plow, of a carriage adapted to travel back and forth over the malt-floor and provided at the sides with wheels, ways for said wheels at the sides of the malt-floor, and a plow-beam obliquely mounted upon said carriage and provided with a gang of freely vertically-movable plows, substantially as and for the purposes set forth.

3. The combination, in a malt-plow, of a carriage provided with a plow-beam longitudinally adjustable in said carriage transversely to the travel of the plow and a gang of plows attached to said beam, substantially as and for the purposes set forth.

4. The combination, in a malt-plow, of a carriage adapted to travel back and forth over the malt-floor and provided with a plow-beam oblique to its line of travel and a gang of plows provided with vertical stems, which are freely movable lengthwise in vertical apertures in said beam and capable of being turned therein for reversing the plow, said stems being held from turning when the plows are in operation by keys which permit of their free vertical movement, substantially as and for the purposes set forth.

5. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor and a gang of reversible and vertically adjustable plows, substantially as and for the purposes set forth.

6. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor, a plow-beam mounted obliquely upon said frame and adjustable longitudinally therein, and a gang of plows attached to said beam, substantially as and for the purposes set forth.

7. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor, a plow-beam mounted obliquely and longitudinally adjustable in or upon said frame and provided with a gang of plows reversibly connected therewith, substantially as and for the purposes set forth.

8. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor and a longitudinally-adjustable plow-beam mounted obliquely upon said frame and provided with reversible and vertically adjustable plows, substantially as and for the purposes set forth.

9. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor and a plow-beam mounted upon said frame and provided with a gang of plows, said beam being jointed so as to permit of raising a part of the plows out of contact with the malt, substantially as and for the purposes set forth.

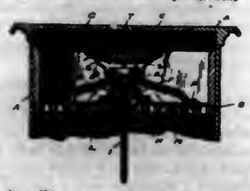
10. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor and provided with a gang of reversible plows and a sprinkler adjustably connected with said frame, so as to be shifted in the direction of travel of the machine when its movement is reversed, substantially as and for the purposes set forth.

11. The combination, in a malt-plow, of a suitable carriage adapted to travel back and forth over the malt-floor on ways provided for the purpose, a plow-beam mounted upon said frame and provided at suitable intervals with vertical sleeves longitudinally notched or slotted, and a gang of plows provided with upwardly-extending cylindrical shanks, which are loosely inserted in said sleeves and provided with lateral projections adapted to engage the notches or slots therein, so as to permit of the free vertical movement of said plows and to hold the same in proper working position, substantially as and for the purposes set forth.

12. The combination, in a malt-plow, of a suitable carriage adapted to travel back and forth over the malt-floor on ways provided therefor, a gang of freely vertically-movable plows attached to said carriage, and a cable passing over drums at or near the ends of the malt-floor and attached to said carriage, so as to move the same back and forth, substantially as and for the purposes set forth.

13. The combination, in a plow for turning malt, of suitable ways, a carriage adapted to travel on said ways over the malt-floor, and a gang of freely vertically-movable plows connected therewith and each consisting of a metallic mold-board provided at the lower edge with a strip of wood or other equivalent material which will not abrade the malt-floor, substantially as and for the purposes set forth.

476,294. OIL-BURNER. FRED L. MCGARAN, Indianapolis, Ind. Filed Dec. 4, 1891. Serial No. 414,042. (No model.)



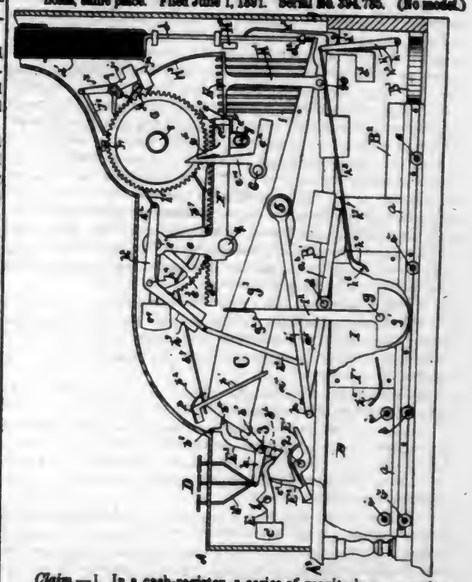
Claim.—1. An oil-burner composed of two cone-shaped parts with an air-space between, connected together at the top by grooved bridges, the central cone being hollow and adapted to be connected with an oil-supply, the outer cone having grooves around its sides and a pan at its base, substantially as described.

2. An oil-burner composed of two hollow cones, one within the other, and an air-space between the two, connected at the top by grooved bridges, the outer cone having channels around its sides, in combination with a spider consisting of a ring provided with radial arms adapted to hold said burner in place within the grate, substantially as described.

3. An oil-burner composed of two hollow cones with an air-space formed between, connected at the top by grooved bridges, the inner cone adapted to be connected with an oil-supply, the outer cone having grooves around its sides and a projecting pan below, in combination with an inclosing shell and a deflector resting on its top above the burner, all adapted to be supported within the fire-box of the stove, substantially as described.

4. In an oil-burner, a shell forming a hood, with a circular opening therein, such shell provided with adjustable base-wings and adapted to fit in and fill the fire-box of the stove around a burner, whereby the air from below will pass through such opening of the shell and around the burner, in combination with such burner held centrally within the shell by a ring-spider, substantially as set forth.

476,295. CASH REGISTER AND INDICATOR. HARRY M. NEBB, Springfield, Ohio, assignor to himself, O. W. Kelly, and Thomas Reynolds, same place. Filed June 1, 1891. Serial No. 394,786. (No model.)



Claim.—1. In a cash-register, a series of gravity-levers, a spring-actuated cash-drawer, and a locking-lever for said drawer, adapted to be operated by the weight of any of said levers, indicators operated by said levers, and detachable means for holding each of said levers in their normal positions, substantially as specified.

2. The combination, with a series of gravity-levers and an independent trip and key for each of said levers, and an indicator connected to each of said levers, adapted to be elevated when said lever is released, of a spring-actuated cash-drawer and a locking device therefor, said locking device being arranged below said levers so to be operated by any one thereof when released, substantially as specified.

3. In a cash-register, the combination, with a normally-inactive registering-wheel having a series of teeth on the periphery thereof, of a rack normally out of mesh with said wheel, but adapted to engage with the teeth thereof, means for producing a longitudinal movement of said rack, and a series of stop-pins adjacent to said rack to determine the movement thereof, a series of keys connected through suitable intermediate mechanism to said stop pins, and means for releasing said rack to permit it to engage said wheel when any of said keys are depressed, substantially as specified.

4. The combination, with a registering-wheel and a longitudinally-moving rack normally out of mesh with said wheel, but having teeth adapted to engage with similar teeth on the periphery of said wheel, of a series of stop-pins arranged at intervals equal to the pitch of the teeth of said rack and wheel in the direction of travel of said rack, means for bringing said rack into engagement with said wheel and

producing a longitudinal movement thereof when said rack is released, and a series of keys adapted to move said stop-pins and at the same time disengage said rack, substantially as specified.

5. The combination, with a gear and rack having intermeshing teeth, said rack being normally held out of engagement with said gear, and means for bringing said rack when released into engagement with said gear, of a series of stop-pins arranged at intervals in the direction of the travel of said rack, a series of keys adapted to operate the respective pins, each of said keys being also adapted to release said rack, and means for producing a longitudinal movement of said rack until it contacts with one of said pins when thus released, substantially as specified.

6. The combination, with a gear-wheel and an intermeshing rack supported in a pivoted frame, in which it is adapted to move longitudinally, and means for moving said frame on its pivoted center when released to cause the rack to engage with said wheel, of a gear-segment supported in said frame and engaging said rack, a series of stop-pins, each adapted when moved to an unusual position to limit the movement of said rack, a series of keys, each connected to one of said stop-pins, and a catch for holding said frame, adapted to be released by the operation of any of the keys in the series, and means for revolving the gear-segment to cause the rack to travel longitudinally when the frame is released, substantially as specified.

7. The combination, with a gear-wheel and a rack having teeth adapted to intermesh with said gear, but normally disengaged therefrom, of a pivoted frame supporting said rack by bearings which permit the rack to move longitudinally, means on said frame for moving said rack, a catch for holding said frame in its normal position, stop-pins arranged at intervals to limit the travel of said rack, and means for disengaging said frame to permit the rack to engage with the wheel when one of said pins is elevated, substantially as specified.

8. The combination, with a gear-wheel and a rack having teeth adapted to mesh with said wheel, said rack being normally out of engagement with said wheel, but provided with means for causing said teeth to engage when said rack is released, of a series of stop-pins arranged at intervals in the direction of travel of said rack, each adapted when moved to an unusual position to limit the travel of said rack, means for moving said rack, a catch mechanism for releasing said rack when one of said pins is moved to an unusual position, and means, substantially as described, for disengaging said rack and wheel by the contact between said rack and one of the stop-pins, substantially as specified.

9. The combination, with a gear-wheel and an intermeshing rack, of a series of stop-pins adapted to limit the movement of said rack, and means, substantially as described, for disengaging said rack from said gear by the contact between said rack and pins, substantially as specified.

10. The combination of a gear-wheel and an intermeshing rack, and a series of stop-pins arranged at intervals in the direction of travel of said rack and adapted to limit the movement thereof, said pins being supported in a movable frame, as described, and means connected with said frame for disconnecting said rack from said gear when the rack has reached the limit of its travel against one of said pins, substantially as specified.

11. The combination, with a longitudinally-moving rack and its pivoted supporting-frame, of a registering-wheel adapted to be engaged by said rack, stop-pins adapted to engage said rack and arrest the same at different points in its travel, a movable plate or frame supporting said stop-pins, a series of keys adapted to operate the respective stop-pins, a catch for holding said pivoted frame adapted to be released by each of said keys, and means for moving said rack into engagement with said wheel when so released, and a connection from said pivoted frame adapted to disengage said rack from said wheel by the contact of any of the stop-pins of the series, substantially as specified.

12. The combination, with a pivoted frame having a sliding rack therein, of a weighted segment supported in said frame, adapted to support said rack, a gear-wheel arranged above said rack, a weighted lever normally connected to said frame to raise said frame when released into engagement with said gear, a latch on said frame adapted to release said rack when in mesh with said gear, stop-pins to limit the movement of said rack at different intervals in the travel thereof, a movable frame for supporting said pins, and a weighted bell-crank arm adapted to be released by the movement of said frame, and means for disconnecting the pivoted frame from said pivoted lever by the movement of said bell-crank arm, substantially as specified.

13. The combination, with a gear, of a sliding rack and its pivoted supporting-frame, a catch for holding said frame in its normal position with the rack out of engagement with said gear, means for moving said frame when released to cause said rack to engage with said gear, a catch on said frame for holding said rack, said catch being adapted to be disengaged by the movement of said frame when the rack is in engagement with the teeth of said gear, stop mechanism for limiting the movement of said rack at different points in the travel thereof, and means connected with said stop mechanism for disengaging said rack from said gear when it has reached the limit of its travel, determined by said stop mechanism, substantially as specified.

14. In a cash-register, the combination, with a moving cash-receptacle, of a number of keys and levers arranged in series, a registering mechanism for each series of keys and levers, a stop mechanism in one series adapted when a key is depressed simultaneously with a key in a preceding series to automatically lock the levers of said series until the registration of the preceding series is complete, substantially as specified.

15. The combination, in a cash-register, of a series of registering-wheels each adapted to register amounts of different denominations, and means for moving the wheels of a higher denomination by the movement of the wheels of a lower denomination, a series of keys for each registering-wheel, and a series of gravity-levers, one for each key, each adapted to set into operation said registering-wheel, an independent connection from each of said keys, and a locking-arm adapted to engage all of the levers of one series when one of said levers is released simultaneously with a lever in a preceding series, and means for automatically disengaging said locking-lever when the registration of the preceding series is complete, substantially as specified.

16. The combination, with a series of gravity-levers and a series of indicating-tablets, one for each lever, of a supporting-stem for each of said tablets independent of said levers, but adapted to be operated thereby, a trip-arm for each of said levers and a key for each trip-arm, a yielding frame contacting with said trip-arms, and a locking-arm adapted to engage with said yielding frame when one of said gravity-levers is released, substantially as specified.

17. The combination, with a series of gravity-levers and a series of keys adapted to release said levers, of an indicator for each lever independent thereof and adapted to be moved thereby, movable stop-pins, one for each lever, and a longitudinally-moving rack adapted to be engaged by each of said stop-pins when moved to an unusual position, a registering-wheel adapted to be moved by said rack, means for forcing said rack into engagement with said gear by a movement of any of the levers in said series, a spring-actuated cash-drawer adapted to be released by each of said levers, and means for returning the said levers and said rack to their normal positions as said drawer is closed, substantially as specified.

18. The combination, with a series of keys, operating-levers, and indicators, one for each key, said indicators being independent of said levers, but adapted to be operated thereby, of an engaging finger for holding each of said indicators when moved by said levers, a vibrating arm adapted to engage with said fingers, and a curved spring-wire connected to said vibrating arm and adapted to be engaged by projecting pins on the moving cash-drawer as said drawer is opened and thus release said indicators, substantially as specified.

19. The combination, with a spring-actuating cash-drawer and a series of operating-levers, each adapted to operate said drawer, of a series of indicators, one for each lever, projecting fingers d^3, adapted to engage with said indicators, vibrating arms k', curved spring-wire k^5, and stop-pins k^6 k^7 on said drawer, substantially as specified.

20. The combination, with a series of gravity-levers and indicators, one for each lever, of a normally-closed spring-actuated cash-drawer, and a locking device adapted to be operated by each of said levers to open said drawer, a series of keys and trips, one for each lever, a yielding frame adapted to engage all of the trips of each series, a movable arm adapted when released to engage with said yielding frame and lock said frame in its normal position, and an auxiliary frame adapted to release said arms when moved by contact with one of said levers when released, substantially as specified.

21. The combination, with a series of operating gravity-levers and a spring-actuated cash-receptacle adapted to be operated by each of said levers, of a pivoted trip for each of said levers and a yielding frame engaging all of the trips in the series, a key connected to each trip, a locking-arm adapted to engage said yielding frame when one of the operating-levers is released, a transverse bar arranged under the series of levers, and a pivoted weighted lever for engaging said bar and raising the levers to their normal positions as the drawer is closed, substantially as specified.

22. The combination, with a series of gravity-operating levers and their operating-keys, of the pivoted arms K', bar A, pivoted weighted lever I^2, and a reciprocating cash-receptacle, substantially as and for the purpose specified.

23. The combination, with a series of registering-wheels and a series of levers for each wheel, of a longitudinally-moving rack adapted to engage each of said registering-wheels when released by the movement of one of said levers, stop-pins also operated by said levers, adapted to determine the movement of said rack, and intermediate projections on each of said registering-wheels adapted to engage with a moving arm having a connection with a pivoted pawl in engagement with the next registering-wheel of the series, and means, substantially as described, for causing the operating-levers in the different series to be disengaged in successive order, substantially as specified.

24. The combination, with the registering-wheels and their registering mechanism, of the intermediate projections j, sliding pawl j', weighted arm j^2, sleeve j^4, arm j^7, and pawl j^8, substantially as specified.

25. The combination, with a registering-wheel having peripheral teeth and a rack normally disengaged from said teeth, of a pivoted frame supporting said rack, and a pivoted pawl on said frame adapted to engage said rack, and a rim or projection on said registering-wheel adapted to operate said pawl and disengage said rack as the same is brought into engagement with said gear-teeth, substantially as specified.

26. The combination, with a series of registering-wheels, each having an operating-rack, and a gear-segment adapted to move said rack, of a series of operating-levers for each wheel, each adapted when moved to an unusual position to cause said rack to engage with said gear and operate the same to register the amount represented by said lever, a spring-actuated cash-receptacle adapted to be released by the movement of each of said levers, the transverse pivoted bars A and A^3, weighted pivoted lever I^2 on said drawer adapted to engage with one of said bars, and a link connection to the other bar, whereby the operating levers and racks are returned to their normal positions by the closing of said drawer, substantially as specified.

27. The combination, with the pivoted frame F and a moving rack supported therein, of a weighted segment supported on said frame and engaging with said rack, a gravity-arm normally connected to said frame to move said frame when released to bring said rack into engagement with a registering-wheel, a projecting finger on said frame, and a hook-shaped projection adapted to engage with said finger, and an extended bar on said hook-shaped projection adapted to be engaged by each of the levers in a series when moved to an unusual position, and means connected with each lever for determining the travel of said rack, substantially as specified.

28. The combination, with a registering-wheel, of a pivoted frame and sliding rack supported therein, and a gravity-lever normally connected to said frame and adapted when said frame is released to move the same to cause the rack to engage with said registering-wheel, a weighted gear-segment supported on said frame and engaging with said rack, a stop mechanism for determining the travel of said rack, a pivoted catch on said frame for releasing said rack when said frame is moved to bring said rack into engagement with said wheel, and means, substantially as described, for disconnecting said gravity-lever from said frame and causing the rack to be disengaged from said wheel at the limit of travel of said rack, determined by said stop mechanism, substantially as specified.

476,296. ELECTRIC BATTERY. RICHARD P. OSGOOD, Methuen, Mass. Filed Jan. 18, 1892. Serial No. 418,389. (No model.)



Claim.—1. In an electric battery, the combination of a containing-jar, a porous cup therein, two perforated copper plates respectively disposed in excitants on opposite sides of said cup and connected by straps or other means, a binding-post on said connection, a porous cup within the inner copper cylinder, a zinc plate provided with a binding-post, disposed within said inner porous cup, and an excitant for said zinc, substantially as described.

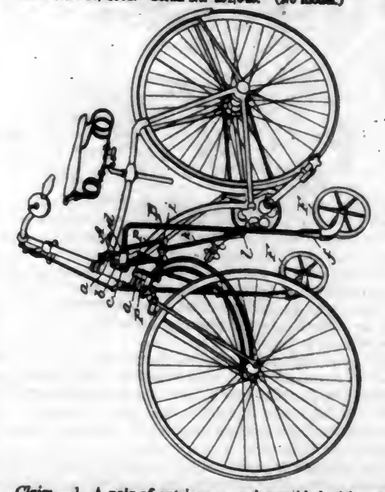
2. In an electric battery, a containing-jar and a porous cup disposed within said jar, in combination with a positive pole comprising two perforated copper plates disposed on opposite sides of said cup and connected, the outer plate being immersed in a solution of blue vitriol and the inner plate in an acid solution, substantially as and for the purpose set forth.

3. In an electric battery, a positive pole consisting of two perforated copper plates connected outside the excitant and separated by a porous cup, a porous cup within the inner plate, and a negative pole disposed in said inner cup, substantially as described.

4. In an electric battery, a containing-jar, in combination with the cup B, the connected perforated copper cylinders b d, forming the positive pole of said battery, the cup C, disposed within the inner plate d, the zinc D, disposed within said cup, and excitants for said poles, all being arranged to operate substantially as described.

5. In an electric battery, the perforated copper plate disposed in an acid solution within a porous cup in a containing-jar, a similar copper plate connected therewith and disposed outside said cup in a solution of blue vitriol, an inner porous cup, and a zinc plate disposed therein in an acid solution, all being combined and arranged to operate substantially as described.

476,297. BICYCLE-SUPPORT. CURTIS E. OVENS, Ashland, Ohio. Filed Feb. 17, 1892. Serial No. 421,945. (No model.)



Claim.—1. A pair of outriggers, each provided with a clamp fitted to each other and embracing a part of the machine, said outriggers extending laterally when in place, supporting the machine on both sides, substantially as described.

2. An outrigger having a half-clamp fitted to the machine, said clamp being provided with a hollow boss, a standard b, held in the boss, and a brace extending between the clamp and the vertical part of the standard, substantially as described.

3. The clamp part having the bearings a a and the boss for holding the standard, combined with the brace, substantially as described.

4. In an outrigger, a standard, a swiveled caster-wheel having vertical movement on the standard, and a spring between the standard and the caster-wheel, substantially as described.

5. In an outrigger for bicycles, a standard, a swiveled caster-wheel fitted to said standard to allow vertical movement of the same, the said standard being slotted, the collar, the pin for securing the collar to the standard, and the spring bearing upon the collar and standard, substantially as described.

476,298. CARRIAGE. AUGUSTUS H. PARRY, Amesbury, Mass. Filed Apr. 1, 1892. Serial No. 427,415. (No model.)

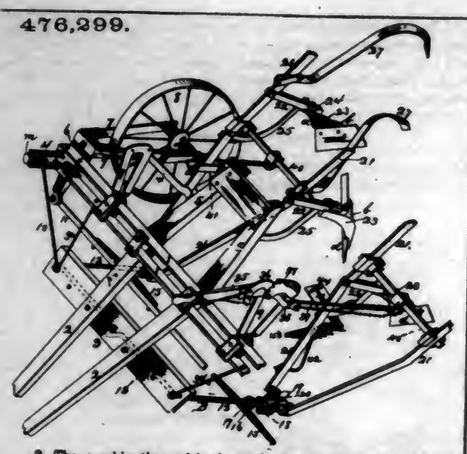


Claim.—A two-seated carriage formed with the side recesses D and the short wheel-houses E to cover said recesses, formed upon the front seat and arranged to turn forward, substantially as specified.

476,299. COMBINED CULTIVATOR, HARROW, HORSE-HOE, AND VINE-PULLER. ALLEN PEASE, Trumansburg, N. Y. Filed June 4, 1891. Serial No. 396,062. (No model.)

Claim.—1. The combination, with the main frame and the sectional tubular posts upon its ends, of vertical shafts journaled therein, plates carrying said shafts and connected in front to the transverse cross-bars 11, wheel-forks in the downward extension from said plate, wheels journaled therein, and stirrups secured to said forks, whereby said wheels are swung simultaneously.

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2. The combination, with the main frame, the pole, and draft-beam secured thereto, of the draw-bar consisting of two vertical posts connected at their upper ends by a cross-bar angularly bent at its center, and a grooved plate receiving the angular portion of said bar and means to secure it to the shaft beam.

3. The combination, with the main frame, the pole, and draft-beam secured thereto, of the draw-bar consisting of two vertical posts connected at their upper ends by a cross-bar angularly bent at its center, and a grooved plate receiving the angular portion of said bar, secured beneath the draft-beam, and the diverging tooth-bars connected to the posts of said draw-bars.

4. The combination, with the main frame, the pole, and draft-beam secured thereto, of the draw-bar consisting of two vertical posts connected at their upper ends by a cross-bar angularly bent at its center, and a grooved plate receiving the angular portion of said bar, secured beneath the draft-beam, the diverging tooth-bars connected to the posts of said draw-bars, and plows supported by said tooth-bars.

5. The combination, with the main frame, the pole, and draft-beam secured thereto, of the draw-bar consisting of two vertical posts connected at their upper ends by a cross-bar angularly bent at its center, and a grooved plate receiving the angular portion of said bar, secured beneath the draft-beam, the diverging tooth-bars connected to the posts of said draw-bars, and plows supported by said tooth-bars, and rise-pullers connected to said tooth-bars in rear of the plows and operating together, substantially as set forth.

476,300. THIMBLE FOR STOVEPIPES. FRED A. PETERS, Scio, Mich. Filed Feb. 8, 1892. Serial No. 420,770. (No model.)

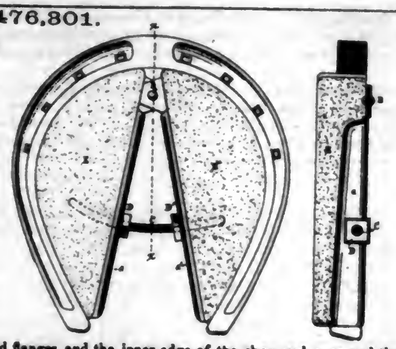


Claim.—In a thimble, the combination of an exterior cylinder with an interior cylinder, the said interior cylinder being provided with corrugations and so located in regard to the outer cylinder that a surrounding air-space is formed between the two said cylinders, substantially as and for the purpose set forth.

476,301. PROTECTING DEVICE FOR HORSES' FEET. MARTIN PROST, Brussels, Belgium. Filed Dec. 19, 1891. Serial No. 415,646. (No model.) Patented in Belgium Sept. 30, 1890, No. 91,982; in France Feb. 20, 1891, No. 196,606; in England Mar. 7, 1891, No. 4,139, and in Germany Mar. 12, 1891, No. 60,908.

Claim.—1. The combination, with a horseshoe, of metallic plates hinged together near one end and provided upon their opposing edges with flanges, as described, blocks of cork or the like arranged between

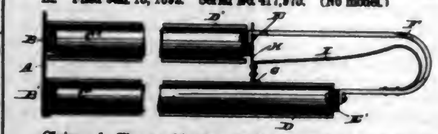
476,301.



said flanges and the inner edge of the shoe, and a curved threaded rod connecting said plates and provided with nuts adapted to be adjusted thereupon to cause the spreading of the plates, for the purpose specified.

2. The combination, with a horseshoe, of metallic plates hinged together near one end and provided with diverging opposing edges whereby to expose the frog of the hoof, said edges being provided with flanges, as described, blocks of cork or the like arranged between said flanges and the inner edge of the shoe, a curved rod passing through the flanges and spanning the space between the same, and nuts adapted to be adjusted upon said rod to cause the spreading of the plates, for the purpose specified.

476,302. HARVESTER-ELEVATOR. JULIAN H. PITKIN, Chicago, Ill. Filed Jan. 13, 1892. Serial No. 417,975. (No model.)

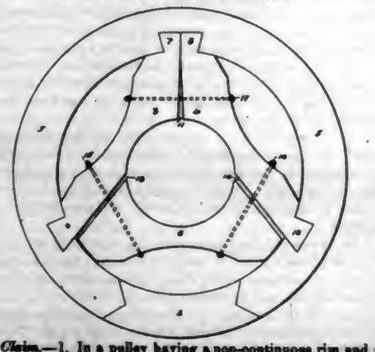


Claim.—1. The combination, with the endless elevating devices rigidly secured relative to each other, of the guide G, elastically held relative to the said elevating devices, whereby the said guide may yield away from the surface of the lowermost elevating device, substantially as described.

2. The combination, with the elevating-canvases fixed relative to each other, of the guide G, elastically held relative to the said elevating devices and permitted to rise and fall relative to the lowermost elevating-canvas and permit the masses of long grain carried by the said lowermost elevating-canvas to pass thereunder, substantially as described.

3. The combination, with the elevating-canvases fixed relative to each other, of the guide G, lying against the support and secured to the frame-work of the uppermost elevating device by bolts through the slotted holes to prevent displacement, and the spring I, adapted to hold the guide down to the lowermost elevating-canvas, substantially as described.

476,303. PULLEY. JOSEPH L. POTTER, Fort Wayne, Ind. Filed May 14, 1891. Serial No. 392,780. (No model.)

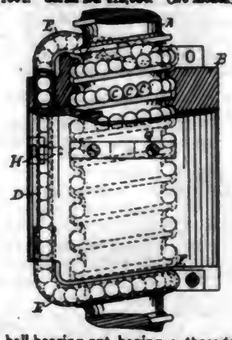


Claim.—1. In a pulley having a non-continuous rim and a single removable section for the admission of a shaft, the combination of two arms adapted to form half of the hub, which arms are attached to three

points or places in the rim, two of the ends of said arms being adjacent and the other two ends of said arms attached, respectively, in two other points or places, and a removable arm adapted to form the other half of the hub and with said fixed arms an equilateral triangle, and means to clamp the same upon the shaft.

2. In a pulley having a non-continuous rim and a single removable section for the admission of the shaft, the combination of two arms 3 and 4, the removable arm or cap 6, there being provided the spaces 11, 13, and 14 between the arms, and the bolts 15, 16, and 17.

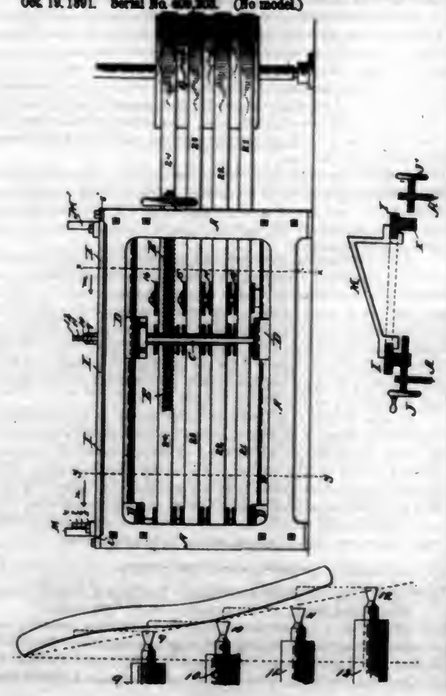
476,304. BALL-BEARING NUT. CHARLES R. PRATT, New York, N. Y., assignor to the Sprague Electric Elevator Company, same place. Filed Nov. 16, 1891. Serial No. 412,096. (No model.)



Claim.—1. A ball-bearing nut having a threaded way through solid metal and provided at each end with a separate return-way tube opening into the threaded way and a connection between the inner ends of said tubes, substantially as described.

2. A ball-bearing nut having a threaded way through solid metal and provided at each end with a separate return-way tube opening into the threaded way and a connection between the inner ends of said tubes, with an opening for the insertion of balls into the return-way, and means for closing said opening, substantially as described.

476,305. APPARATUS FOR AND METHOD OF GAINING WOOD FOR SEATS AND BACKS. ALSON R. PRESTON, Battle Creek, Mich. Filed Oct. 19, 1891. Serial No. 409,208. (No model.)



Claim.—1. The process of gaining wood seats and backs adapted for attachment to metallic standards, which consists in moving the same while in a vertically-inclined position in a horizontal line across a series of relatively-fixed vertical cutters or routers rotating in different horizontal planes and producing therein a series of inclined gains which increase in depth from the face of the wood to the terminal of the cut, substantially as described.

2. The process of gaining curved seats or backs for attachment to metallic standards, which consists in fixing the wood in a vertically-inclined position, moving the same in a horizontal plane while in said inclined position to a series of vertical rotary cutters adjusted to varying heights, and forming gains therein which increase in depth from the face of the wood to the terminal of the cut, substantially as described.

3. In a machine for gaining wood, the combination of two series of spindles, each carried by a separate frame, a common driving mechanism, and driving-belts, each of which passes around a spindle of each set of spindles, and a movable work-carriage, substantially as and for the purpose set forth.

4. In a machine for gaining wood, the combination of a machine-frame having the longitudinal bearing-bars, the stationary frame immovably supported thereon, the movable frame supported by said bearing-bars, the two series of cutter-spindles mounted in said stationary and movable frames, a work-carriage supported on the machine-frame above the cutters, and means for driving the cutter-spindles, substantially as described.

5. In a machine for gaining wood, the combination of a stationary frame carrying a series of cutters capable of rotation on their axes, an adjustable frame movable toward and from the stationary frame and likewise carrying a series of rotary cutter-spindles, driving-belts passing around the spindles on the stationary and movable frames, and a work-carriage, substantially as described.

6. In a machine for gaining wood, the combination of a machine-frame, a stationary cutter-frame mounted thereon and carrying a series of rotary cutter-spindles, a movable frame mounted in said machine-frame to be adjusted toward or from the stationary frame and carrying a series of cutter-spindles, the idler-pulleys adapted to be adjusted with the movable frame, the driving-belts passing around the idler-pulleys and the spindles of the two series, and a work carriage, substantially as and for the purpose described.

7. In a machine for gaining wood, the combination of the longitudinal bearing bars, the stationary cutter-frame clamped thereon and carrying a series of vertical spindles, the movable frame mounted on the bearing-bars and having the cutter-spindles and a series of idler-pulleys at one side of the spindles, the driving-belts, the hand-screw for moving the movable cutter-frame, and a work-carriage, substantially as described.

8. In a machine for gaining wood, the combination, with a machine-frame and a series of vertical cutter-spindles, of a work-carriage connected to the frame and adapted to be moved in a direct line across the cutter-spindles, substantially as described.

9. In a machine for gaining wood, the combination of a main frame, two series of vertical cutter-spindles, one series being carried by a stationary frame and the other series of spindles carried by a movable frame adapted to travel toward or from the stationary frame, an open-frame work-carriage supported on the top of the main frame and movable thereon transversely across the two series of cutter-spindles, and the inclined work-holding beds supported on the movable work-carriage, substantially as described.

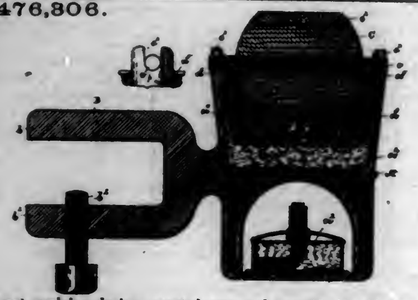
10. In a machine for gaining wood, the combination of a stationary frame carrying a series of cutter-spindles, a movable frame also carrying a series of spindles and a series of idler-pulleys, a common driving-drum, belts passing around said drum, the idler-pulleys, and the spindles of both sets, means for adjusting the movable cutter-frame, and a work-carriage provided with angular brackets for the work and having means for moving the same in a right line across the series of routers or cutters on the two sets of spindles, as set forth.

476,306. GLUING ATTACHMENT FOR HEEL-NAILING MACHINES. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed July 27, 1889. Serial No. 318,945. (No model.)



Claim.—As an improved article of manufacture, the herein-described gluing attachment for heel-nailing machines, comprising a shell A, having upper and lower compartments divided by a closed partition, the upper compartment being water-tight and removably holding a glue or cement containing receptacle and the lower compartment forming a support for a heater, the attaching arm, the parts of said shell and attaching arm being integral, and a rotatable glue or

476,806.



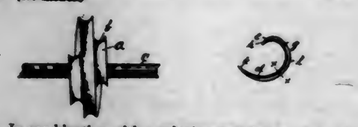
cement applying device mounted over and movable in said glue or cement holding receptacle, substantially as set forth.

476,807. SHOE-NAIL. FREEBORN P. RAYMOND, 2d, Newton, Mass. Filed July 27, 1889. Serial No. 318,947. (No model.)



Claim.—As an improved article of manufacture, the heel-fastening herein described, having a smooth shank of uniform size and diameter and an enlarged pointed end of a rounded or bulbous form and of equal cross-sectional diameter in all directions at its thickest portion, and having an entrance part tapering equally from said enlarged portion to its free end or point proper, as set forth.

476,808. SPINNING-MULE. JOHN RATCLIFFE, JOHN HILTON, and EDWIN MELLOR, New Bedford, Mass. Filed Dec. 17, 1891. Serial No. 415,406. (No model.)



Claim.—In combination with a spinning-mule having a drawing-in scroll, the device *d*, adapted to be secured to and lie in the groove of said drawing-in scroll, for the purpose described.

476,809. FASTENING FOR THE CAPS OF CANS, &c. GEORGE J. RICORD, Conneaut, Ohio. Filed Jan. 12, 1892. Serial No. 417,396. (No model.)



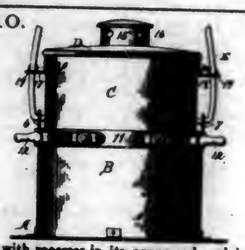
Claim.—The combination, with the top E, of the tapering nozzle A, having the curled upper edge and an inner annular groove below the curled edge, the disk-shaped cap having the depressed bottom and the downwardly-projecting flange and the washer K, said cap having on its exterior a series of short projections at its lower edge, adapted to engage the annular groove in the nozzle, whereby the cap when pushed downwardly into the nozzle will be locked in said groove, as and for the object set forth.

476,810. FEEDING DEVICE FOR ANIMALS. LEWIS M. REED, Patterson, Kans., assignor of one-half to James W. Hickman, same place. Filed Jan. 5, 1892. Serial No. 417,106. (No model.)

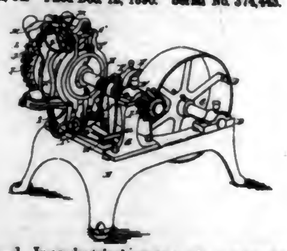
Claim.—1. The combination of the supporting heating-drum adapted to hold a heating means and formed with recesses in its upper edge and the food-holder having a draft-chimney, tubes in the holder, adapted to drain the holder and set in the recesses of the heating-drum, an annular ring on the outer end of the tubes, and teats clamped to the annular ring over the open ends of the tubes, substantially as described.

2. In a feeding device for animals, the combination of a heating-drum formed with recesses in its upper end and having bail-ears, a food-holder having radially-disposed tubes, and an annular ring arranged about the base of the food-holder on said tubes, and a bail the ends of which engage the ears of the drum and lock the holder and heating-drum together, substantially as described.

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476,811. ELECTRICAL GOVERNOR. MARK A. REFLOGLE, Mattawana, Pa. Filed Dec. 12, 1890. Serial No. 374,443. (No model.)



Claim.—1. In an electrical governor, the combination, with means, substantially as described, for establishing and breaking an electric circuit according to certain rates of speed, of a pair of electro-magnets separately communicating with such means at high and low speed, respectively, a pair of armature-levers pivoted to an arm continuously oscillating between said electro-magnets, a pair of pawls having depending counter-weights, substantially as described, pivoted to said arm above the levers, lugs or studs on the levers to hold the points of the pawls up, and oppositely-arranged ratchet-wheels secured to a shaft, adapted to control the power-supply of the motor.

2. In an electrical governor, the combination, with a continuously-oscillating arm, of a pair of pawls adapted to engage with ratchet-wheels, oppositely-arranged ratchet-wheels secured to the motor-controlling shaft, said pawls having depending counter-weights, as described, a pair of armature-levers adapted to hold said pawls normally out of contact with the ratchets by gravity, and a pair of electro-magnets provided with inclosing cups, substantially as described, and alternately charged with magnetism when the speed is higher or lower than normal, respectively.

3. In an electrical governor, the combination, with the arm K and electro-magnets N N', of the armature-levers L L', having enlarged portions L" L" and lateral studs or lugs *l l*, pawls M M, having depending counter-weights M' M', and the stops K", whereby the parts are held in normal position.

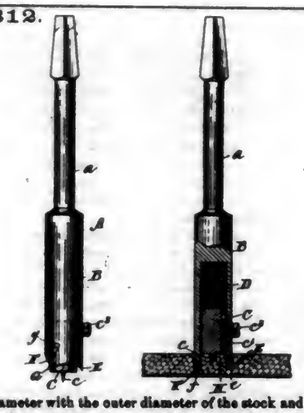
4. In an electrical governor, the combination, with a suitable standard electrically connected with an electrical supply-circuit, of a revoluble tubular vessel to contain mercury, having a vertical central tube and one or more vertical outer tubes with which the central one communicates, an electrical connection with the mercury in the central tube at speed lower than normal, and an electrical connection with the mercury in the outer tube or tubes at a speed above normal, said connections being separate and independent and insulated from the standard, substantially as and for the purpose set forth.

5. In an electrical governor, the combination of an electrically-connected standard, a tripodal mercury-retaining vessel revoluble in a horizontal plane therein, an insulated electrical connection with the mercury in the middle tube at lower speed than normal, an independent electrical connection with the mercury in the outer tube only at speed above normal, insulated collectors separately connecting with said electric media at the outer extremities, and separate electrical connections with said collectors, substantially as described.

476,812. PLUG-CUTTING TOOL. FREDERICK R. RHODE, Duluth, Minn. Filed Dec. 26, 1891. Serial No. 416,214. (No model.)

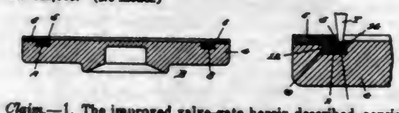
Claim.—1. A cylindrical revolving tool for cutting wooden plugs of uniform diameter throughout their lengths, comprising a cylindrical hollow stock having integral segmental teeth E, F, and G formed on its lower end, the teeth E having its cutting-edge on a circle corresponding in diameter with the outer diameter of the stock and its inner surface upwardly beveled and terminated on a circle corresponding in diameter to the inner diameter of said stock and the rear of said tooth cut away on an incline and having a thickness at its terminus about equal to the metal forming the stock, the tooth F having its cutting-edge formed by beveling the metal stock from its inner to its outer circumference and cutting away the metal diagonally rearward of said cutting-edge to a height corresponding to the termination of the rear portion of the tooth E, and the clearing-tooth G having a transverse clearing edge about equal in width to the thickness of the metal of the stock and its front surface being set far enough back and inclined from bottom to top to form a large escape-passage *g*, substantially as and for the purpose described.

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2. The combination of the automatic spring-actuated centering and ejecting plug C with a cylindrical hollow stock having integral segmental teeth E, F, and G formed on its lower end, the tooth E having its cutting-edge on a circle corresponding with the outer diameter of the stock and its inner surface upwardly beveled and terminated on a circle corresponding to the inner diameter of said stock, the front edge of said tooth being nearly vertical and the rear of said tooth being cut away on an incline and having a thickness at its terminus about equal to the metal forming the stock, the tooth F having its cutting-edge formed by beveling the metal stock from its inner to its outer circumference and cutting away the metal diagonally rearward of said cutting-edge to a height corresponding to the termination of the rear portion of the tooth E, and the clearing-tooth G having a transverse clearing edge on nearly the same plane with the lower edges of the teeth E and F and a width about equal to the thickness of the metal of the stock and its front surface being set far enough back and inclined from bottom to top to form a large escape-passage *g*, substantially as and for the purpose described.

476,813. VALVE-GATE. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Walter Wood, Philadelphia, Pa. Filed Nov. 23, 1891. Serial No. 412,863. (No model.)



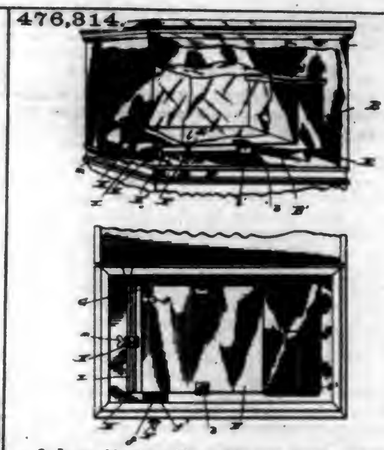
Claim.—1. The improved valve-gate herein described, consisting of the combination, with the plate having a lock-rim groove undercut on the outer side thereof, of the seat-ring having a downwardly-projecting lock-rim fitting into said groove, which lock-rim has the inwardly-projecting calking-ring adapted to be calked independently of the seat-ring face and is beveled or inclined on one side thereof to engage the undercut side of said groove, substantially as described.

2. The improved valve-gate seat-ring herein described, consisting of the disk-shaped ring or seat having a downwardly-projecting lock-rim which projects on the inner side thereof below the plane of the seat-ring face to form the calking-ring and has the projecting edge directly underneath the seat-ring face, substantially as described.

476,814. WATER-COOLER FOR USE IN REFRIGERATORS. REMEMBER W. RIDER, Racine, Wis. Filed July 17, 1891. Serial No. 399,843. (No model.)

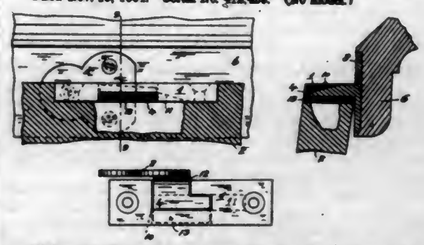
Claim.—1. The above-described water-cooler, L-shaped, its larger portion provided with a cover, and the open end of its smaller part provided with packed cover clamped in place, substantially as described.

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2. In combination with a refrigerator having a suitable water-faucet F and gasket *f* about the same, the above described water-cooler, having a lug G and thumb-screw *g* located opposite the gasket, whereby the cooler may be forced against the gasket, so as to make a tight joint and hold the cooler in position, substantially as and for the purposes described.

476,815. COFFIN-FASTENER. FRANK C. RIDDLE, St. Louis, Mo. Filed Nov. 12, 1891. Serial No. 412,429. (No model.)

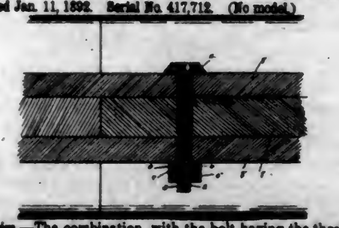


Claim.—1. The combination, in a burial-casket, of a foot 4, having a longitudinally-projecting toe, and a slotted keeper-plate having in its upper surface a recess equal to the width of the reduced portion of the foot and on the opposite side and under surface a recess equal to the length of the foot, substantially as and for the purposes specified.

2. The combination, in a burial-casket fastener, of a foot 4, provided with a longitudinally-projecting toe having a beveled or inclined side, and a slotted keeper-plate having an inclined recess in its under surface on one side of the keeper-plate slot, substantially as and for the purposes specified.

3. The combination, in a burial-casket fastener, of a foot 4, having a longitudinally-projecting toe, and a slotted keeper-plate having on its under surface a longitudinally-inclined recess which terminates in one end of the keeper-slot for the reception of the toe of the foot and also a lateral recess on one side of and corresponding in length with the slot in the keeper-plate, substantially as and for the purposes specified.

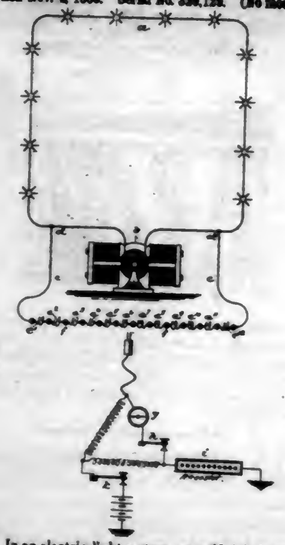
476,816. NUT-LOCK. WILLIAM D. RODGERS, Warrenton, N. C. Filed Jan. 11, 1892. Serial No. 417,712. (No model.)



Claim.—The combination, with the bolt having the thread and a groove oppositely disposed to the thread and formed upon the same portion of the bolt as is the thread, of the main nut fitting the thread, the supplemental jam-nut for fitting the groove, the two nuts having

recessed from dovetailed in cross-section, and the tie-wire inserted in the grooves and upset therein, substantially as specified.

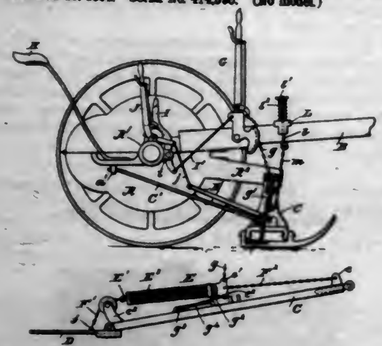
476,317. SYSTEM OF TESTING ELECTRIC CIRCUITS. CHARLES H. RUDD, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 4, 1889. Serial No. 329,129. (No model.)



Claim.—1. In an electric-light system, an artificial circuit containing high resistance of invariable amount, said artificial circuit being connected with the different sides of a dynamo-machine while supplying current to a working circuit, said artificial circuit having its resistance apportioned between connecting-sockets, in combination with a testing apparatus for determining the neutral point of said artificial circuit, substantially as and for the purpose specified.

2. An artificial circuit provided with movable terminal connections adapted to be connected with any one of several pairs of connecting devices of different active circuits, said artificial circuit having connection-sockets between the different resistance-coils thereof, said connection-sockets being covered with a plate of insulating material, openings being provided in said plate for the insertion of the plug attached to a Wheatstone-bridge galvanometer into the different connection-sockets, substantially as and for the purpose specified.

476,318. MOWING-MACHINE. JOHN F. SEIBERLING, Akron, Ohio. Filed Dec. 10, 1891. Serial No. 414,595. (No model.)



Claim.—1. The combination of a coupling-bar hinged to the main frame at one end and at the other to the finger-bar, a flexible connection, one end of which is secured to the inner end of the coupling-bar and the other to a rigid upright on the inner end of the finger-bar, a spring the tension of which is adjustable, located in said connection intermediate its ends, and a lifting-lever connected to said flexible connection and to the coupling-bar, substantially as described.

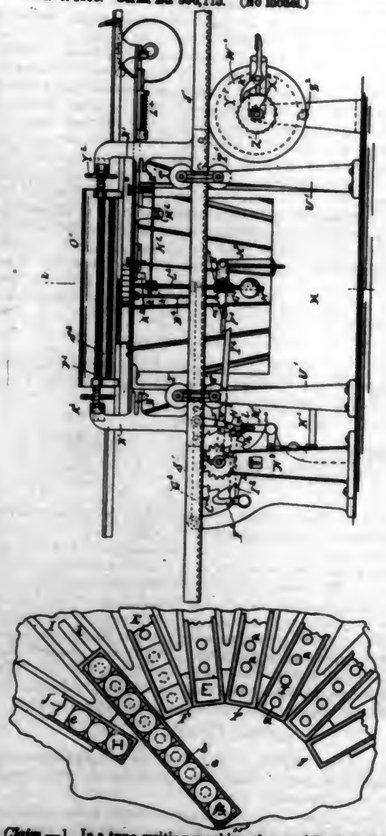
2. The combination, with a coupling-bar hinged to the main frame and a finger-bar hinged to the outer end thereof, of a flexible connection secured at one end to the inner end of the finger-bar and at the other to the inner end of the coupling-bar, a spring intermediate the ends of said flexible connection, and a treadle-lever connected with said flexible connection and coupling-bar, substantially as described.

3. The combination of a double-jointed coupling-bar between the main frame and the finger-beam, a flexible connection secured to the inner end of the coupling-bar and the inner end of the finger-beam, a spring in said connection, a stop link or chain between the said flexible connection and the coupling-bar, a hand-lever supported on the main frame, and a connection between the lever and said flexible connection, substantially as described.

4. The combination of the main frame, a hinged coupling-bar and a cutting apparatus hinged thereto, a flexible-connection between the cutting apparatus and the coupling-bar, a spring the tension of which is adjustable, located intermediate the ends of said flexible connection for supporting the free end of the cutting apparatus, a spring relieving the drag of the cutting apparatus as a whole, and a lifting-lever connected to said flexible connection and having a stop-link connection with the coupling-bar, whereby the cutting apparatus can be raised at its outer end only or bodily, as described.

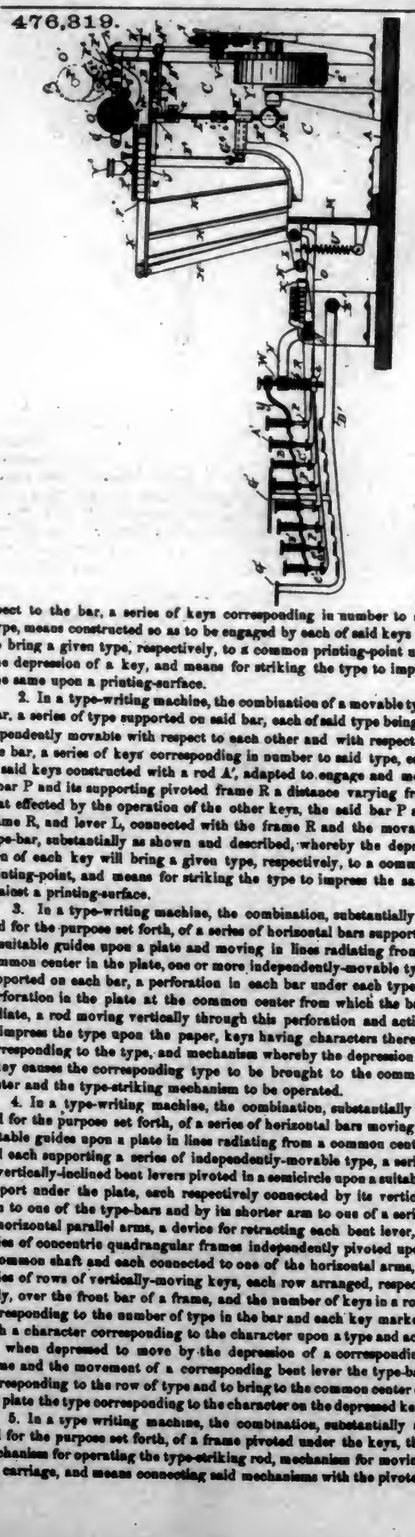
5. The combination of the double-jointed coupling-bar, the flexible connection provided with a spring intermediate its ends and secured at one end to the inner end of the coupling-bar and at the other to the inner end of the finger-beam, the lifting-lever connected with said flexible connection and with the coupling-bar, a treadle supported on the main frame and connected with the lifting-lever, flexible connection, and coupling-bar, and the driver's seat, all substantially as described.

476,319. TYPE-WRITING MACHINE. MELVIN L. SEVERY, Boston, Mass., assignor, by direct and mesne assignments, to Charles F. Howe, same place, and George Kempton, Sharon, Mass., trustees. Filed Jan. 6, 1890. Serial No. 336,115. (No model.)



Claim.—1. In a type-writing machine, the combination of a movable type-bar, a series of type supported on said bar, each of said type being independently movable with respect to each other and with re-

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spect to the bar, a series of keys corresponding in number to said type, means constructed so as to be engaged by each of said keys and to bring a given type, respectively, to a common printing-point upon the depression of a key, and means for striking the type to impress the same upon a printing-surface.

2. In a type-writing machine, the combination of a movable type-bar, a series of type supported on said bar, each of said type being independently movable with respect to each other and with respect to the bar, a series of keys corresponding in number to said type, each of said keys constructed with a rod A', adapted to engage and move a bar P and its supporting pivoted frame R a distance varying from that effected by the operation of the other keys, the said bar P and frame R, and lever L, connected with the frame R and the movable type-bar, substantially as shown and described, whereby the depression of each key will bring a given type, respectively, to a common printing-point, and means for striking the type to impress the same against a printing-surface.

3. In a type-writing machine, the combination, substantially as and for the purpose set forth, of a series of horizontal bars supported in suitable guides upon a plate and moving in lines radiating from a common center in the plate, one or more independently-movable type supported on each bar, a perforation in each bar under each type, a perforation in the plate at the common center from which the bars radiate, a rod moving vertically through this perforation and acting to impress the type upon the paper, keys having characters thereon corresponding to the type, and mechanism whereby the depression of a key causes the corresponding type to be brought to the common center and the type-striking mechanism to be operated.

4. In a type-writing machine, the combination, substantially as and for the purpose set forth, of a series of horizontal bars moving in suitable guides upon a plate in lines radiating from a common center and each supporting a series of independently-movable type, a series of vertically-inclined bent levers pivoted in a semicircle upon a suitable support under the plate, each respectively connected by its vertical arm to one of the type-bars and by its shorter arm to one of a series of horizontal parallel arms, a device for retracting each bent lever, a series of concentric quadrangular frames independently pivoted upon a common shaft and each connected to one of the horizontal arms, a series of rows of vertically-moving keys, each row arranged, respectively, over the front bar of a frame, and the number of keys in a row corresponding to the number of type in the bar and each key marked with a character corresponding to the character upon a type and acting when depressed to move by the depression of a corresponding frame and the movement of a corresponding bent lever the type-bar corresponding to the row of type and to bring to the common center of the plate the type corresponding to the character on the depressed key.

5. In a type writing machine, the combination, substantially as and for the purpose set forth, of a frame pivoted under the keys, the mechanism for operating the type-striking rod, mechanism for moving the carriage, and means connecting said mechanisms with the pivoted frame, whereby the depression of a letter-key depresses the pivoted frame and releases the said type-striking rod and the carriage-moving mechanism.

6. The combination, substantially as and for the purpose set forth, with the concentric frames R, of the frame V, pivoted on the shaft S and extending across the frame R, the rod W in the front bar of the frame, the collar *c* on the rod, and the spring *f* on the rod between the collar and the front bar of the frame.

7. In a type-writing machine, the combination, substantially as and for the purpose set forth, of the type-striking rod moving vertically in a suitable guide under the action of a spring, a paper-roller carriage moving longitudinally under the action of a spring, a rack-bar on the carriage and engaging with a pinion upon a shaft, the said pinion and shaft, a lever acting to move the type-striking rod, and mechanism connected with the said lever and the said shaft and with the spacing-lever, the said mechanism being operated by the spacing-lever to permit the movement of the type-striking rod and the carriage.

8. The combination, substantially as and for the purpose set forth, of the carriage moving longitudinally under the action of a spring or other suitable power, the rack-bar V' on the same, the pinion A^3, fixed on the shaft B^3 and engaging with the rack-bar, the escapement-wheel C^3, loose upon the shaft B^3, but connected thereto, the lever G^3, pivoted at one end and at the other carrying the type-striking rod L^3, a spring acting upon the rod to elevate the same, the arm H^3, pivoted to the lever G^3 and carrying a projecting tooth *h*, which engages with the escapement-wheel, the bent arm M', operated by the spacing-lever and acting when said lever is depressed to move the arm H^3 and disengage the pawl *h* from the escapement-wheel, and the pivoted pawl F^3, engaging with the other side of the escapement-wheel and suitably connected to the lever H^3.

9. The combination, substantially as and for the purpose set forth, of the type-striking rod L^3 and the adjustable spring K^3, supported on the pendant M^3 and connected by one end to the rod L^3.

10. The combination, substantially as and for the purpose set forth, of a type loosely supported on a bar F and having a body *b* and elevated face *c*, smaller than the body, a type-striking rod, a spring O^3, fixed at one end to the plate B and the other resting upon the body *b* of the type and provided with a perforation through which the face of the type projects.

11. The combination of the frame carrying the toothed wheel A^3, the pivoted lever C^3, provided with a short fixed arm or lug *f* and carrying the pawl B^3, engaged with said toothed wheel, and the pivoted holding-pawl E^3, also engaging said wheel A^3 and having a dog *e*, adapted to be engaged by the arm *t* of the lever C^3 by the downward movement of the latter to disengage said pawl B^3, substantially as shown and described.

12. The combination, substantially as and for the purpose set forth, of the pads P^3 P^4, the perforated plate R^3 between the same, the plate B, the rods S^3, fixed on the plate B and extending through the pads, the nuts T^3 and springs U^3 on the rods S^3, and means for pressing the inking-pads against the type by the descent of the type-striking rod.

13. The combination, substantially as and for the purpose set forth, of the rod B^4, passing through the inking-pad, the nut C^4 and washer D^4 on this rod, the spring E^4 on the rod between the washer D^4 and nut C^4, the pivoted lever G^4, attached to the lower end of the rod B^4, the latch-lever F^4, and the arm I^4, engaging with the latch-lever and connected to the arm H^3.

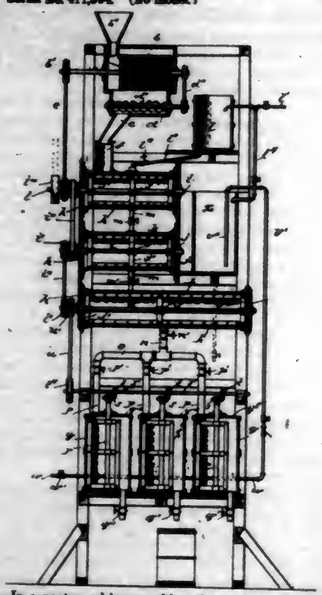
14. The combination, substantially as and for the purpose set forth, of the ink-receptacle V^3, provided with a denticulated rim, the stripe of felt or other suitable material lying on these denticulations and extending from the ink-receptacle to the ink-pad, the toothed ring W^3, and the screw-cap Y^3.

15. The combination, substantially as and for the purpose set forth, of the rod K^4, moving longitudinally under the plate B, a collar on the type-striking rod, which when the rod K^4 is moved comes under this rod and prevents the upward movement of the type-striking rod, a retracting-spring connected to the rod K^4, a pivoted lever M^4, connected at one end to the rod K^4 and having its other end projecting from the plate, and a projection on the paper-roller carriage adapted to strike the projecting end of the lever M^4.

16. The combination, substantially as and for the purpose set forth, of the rod K^4, moving longitudinally under the plate B, a collar on the type-striking rod, which when the rod K^4 is moved comes under this rod and prevents the upward movement of the type-striking rod, a retracting-spring connected to the rod K^4, a pivoted lever M^4, connected at one end to the rod and having its other end projecting from the plate, and an adjustable projection on the carriage, which projection strikes the projecting end of the lever M^4.

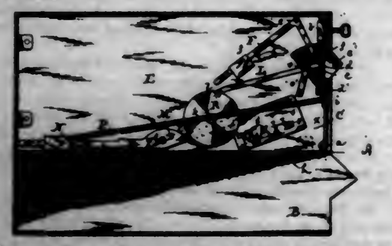
17. The combination, substantially as and for the purpose set forth, with the paper-support, of the finger I^3, attached to the rock-shaft H^3 and extending under the paper-roller and having its extremity on a line with the common center, and an arm on the rock-shaft, which when the roller is thrown back is struck by the paper-support and acts to throw up the arm I^3.

476,320. PASTE-MAKING MACHINE. FRANCIS H. SHEPHERD, Davenport, Iowa, assignor to Joseph S. Paris, same place. Filed Nov. 7, 1891. Serial No. 411,304. (No model.)



Claim.—In a paste-making machine, the combination of a frame, a rotary sieve mounted in the upper part thereof and provided with means for supplying flour to it, a series of horizontal cylindrical mixers mounted one above the other and means for delivering the flour from the sieve to the uppermost mixer, means for supplying a liquid to the uppermost mixer, horizontal rotary stirrers within the mixers and having their shafts extending out through the heads thereof and provided with pulleys, valved pipes connecting the mixers, a series of independent vertical cooking-cylinders mounted in the frame below the lowest mixer, vertical stirrers journaled in these cooking-cylinders and having their shafts extending out through the covers thereof, a horizontal shaft connected to the stirrer-shafts and provided with a pulley on its end, a series of belts connecting the pulleys on the several shafts, valved paste-pipes *p*, leading into the cookers and connected together above their valves and to the lowest mixer, valved discharge-pipes *q*, connected to the cooking-cylinders, and valved steam-pipes connecting the cookers, substantially as described.

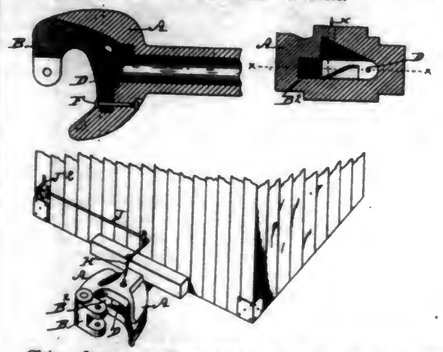
476,321. LETTER-BOX. WILLIAM D. G. SMITH, Sulphur City, assignor, by direct and mesne assignments, to Zepherin Le Beouf and Theodore Mayo, Calcasieu Parish, La. Filed Aug. 24, 1891. Serial No. 403,587. (No model.)



Claim.—1. In combination with a letter-box having a sign-opening in the bottom thereof, an indicator mechanism consisting of a wheel provided with projecting pins, as described, a pivoted sign-bar, a sliding weight on the rear of said bar, and a rod connecting the weight and door, substantially as and for the purpose set forth.

2. The combination, in a letter-box having an indicator-compartment and a sign-opening in the bottom thereof, of a pivoted sign-bar, a sliding weight thereon, and a rod connecting the said weight and door, as described, with a wheel provided with three projecting pins, as set forth, and a lever arranged to be operated by the flap of the letter-aperture, substantially as and for the purpose specified.

476,322. CAR-COUPLING. CLIFTON F. SPRIGGS, Des Moines, Iowa. Filed Nov. 12, 1891. Serial No. 411,750. (No model.)



Claim.—In a car-coupling, a latch consisting of a block of metal having a cavity in its front side that is open at its bottom and closed at its rear side and has a roof that extends horizontally in a plane that is at right angles to the front face of the latch and inclined relative to the flat bottom of the cavity, in combination with a draw-head having a cavity in its front face to admit the latch to be pivoted therein, and a jaw pivoted to an extension at the front end side of the draw-head, and a rear extension of said jaw having a cam on its end adapted to enter the cavity in the latch to engage the roof of the cavity and to lift the latch in the manner set forth, for the purposes stated.

476,323. CAR-STEP. FRANK H. STANWOOD, Chicago, Ill. Filed Sept. 12, 1891. Serial No. 405,457. (No model.)



Claim.—1. The open-work or reticulated step having a front rail located in a plane below that of the tread, whereby the passenger is compelled to place his foot upon a portion of the tread adapted to prevent slipping, substantially as set forth.

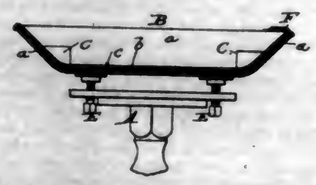
2. The open-work or reticulated step having a front rail located in a plane below that of the tread and having its front portion beveled off, substantially as specified.

3. The open-work or reticulated step having its meshes guarded by an interwoven strip F, having narrow portion *f* and wide portion *g*, substantially as set forth.

4. The open-work or reticulated step the tread whereof is composed of bent strips D, placed with their angles abutting and interlocked, and guard-strips F, placed between and interlocked with said strips D, substantially as set forth.

5. The open-work or reticulated step consisting of strips D and guard-strips F and provided with a front rail B, located below the surface of the tread, substantially as set forth.

476,324. GAME-BOARD. NILS O. STAREK, Madison, Wis. Filed Aug. 31, 1891. Serial No. 404,232. (No model.)



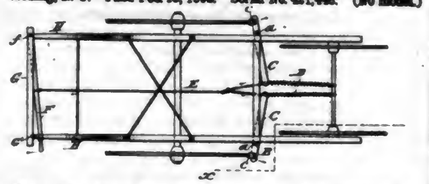
Claim.—1. A billiard or pool table having a flat bottom and curved or inclined sides connected directly with the bottom and up which the balls may roll, substantially as described.

2. A billiard or pool table having a flat bottom and curved sides to act in place of cushions and pieces extending diagonally across the corners to form pockets, substantially as shown and described.

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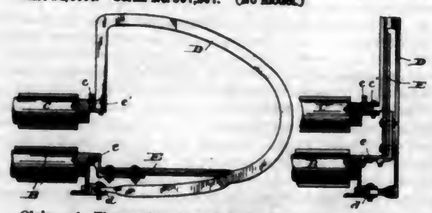


476,325. BRAKE FOR BABY-CARRIAGES. DANIEL B. STEVENS, Corning, N. Y. Filed Feb. 13, 1892. Serial No. 421,446. (No model.)



Claim.—In a brake for a child's carriage, the combination of the carriage having a handle G rigidly secured to push-bars H, a pivoted horizontally-swinging lever F, independent pivoted horizontally-swinging brake-shoe levers C C, a spring or springs D, secured by one end to a point forward of the brake-levers and by the other end to the brake-levers, and an operating cord or rod F, attached to the inner end of the brake-levers and to the operating-lever F, substantially as described.

476,326. HARVESTER. JOHN F. STEWARD, Chicago, Ill. Filed June 24, 1891. Serial No. 397,397. (No model.)



Claim.—1. The combination of the rearwardly-open elevating devices and the pivoted yoke D, substantially as described.

2. The combination of the rearwardly-open elevating devices, the hinged board E, and the hinged yoke D, substantially as described.

3. The combination of the rearwardly-open elevating devices, the hinged board E, and yoke D, the said board and yoke latched when in the extended position, substantially as described.

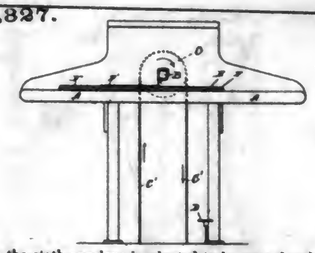
4. The combination of the rearwardly-open elevating devices, hinged extension-board E, hinged yoke D, and hinged backboard F, substantially as described.

5. The combination of the rearwardly-open elevating devices, the hinged extension-board E, the hinged yoke D, and the hinged backboard F, the said backboard and hinged board E so connected that the folding movement of one shall cause the other to fold, substantially as described.

476,327. LINSEED-CAKE STRIPPER. FREDERICK O. SWANELL, Chicago, Ill. Filed May 18, 1891. Serial No. 393,091. (No model.)

Claim.—1. In a machine for stripping the cloth envelope from linseed-cake, the combination, with a table along which the cake travels and by which it is supported at one or the other of its ends during the stripping operation, of an overhung winding-shaft, around the free end

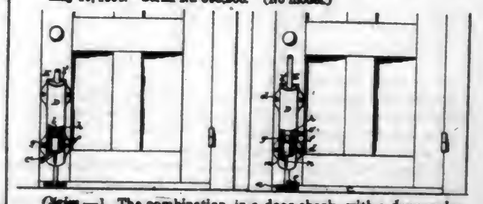
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of which the cloth envelope is adapted to be wound and from which the coil of cloth may be stripped endwise and beneath and over which the cake travels during the stripping operation, substantially as specified.

2. The machine for stripping linseed-cake, consisting of the combination of a table adapted to support the cake and extending upon both sides of the free end of the winding-shaft, in combination with the overhung winding-shaft made with a hollow or depression running in the direction of its length adapted to permit the coil of cloth to be more easily slipped off endwise, substantially as specified.

476,328. DOOR-CHECK. ZURIEL SWOPE, Lancaster, Pa. Filed May 19, 1891. Serial No. 393,288. (No model.)



Claim.—1. The combination, in a door-check, with a door and a sill having an elongated recess cut in it longitudinally thereof, of a tube having vertical slots and a horizontal slot connected with the vertical slots, a spring-rod passing through the tube, a lug or pin secured on the rod and adapted to engage each one of the slots, means for raising said rod, and a foot of greater length than the width of the recess so connected with the spring-rod that when said rod is lowered with the lug or pin engaged with one of the vertical slots the foot will extend transversely over the recess and when the lug or pin engages the other vertical slot said foot will register longitudinally with said recess and be adapted to enter therein, substantially as and for the purpose specified.

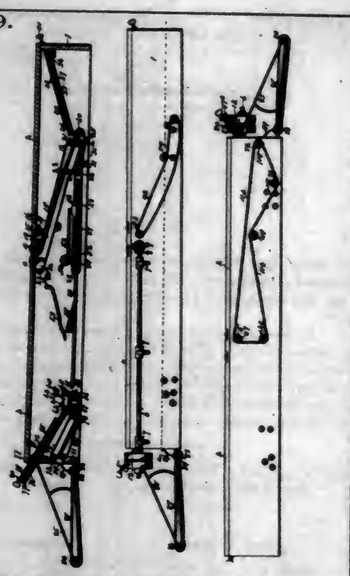
2. In a door-check, the combination, with a door-sill having an elongated recess cut in it longitudinally thereof, of a tube having vertical slots and a horizontal slot connected with the vertical slots, a spring-rod passing through the tube, a lug or pin secured on the rod and adapted to engage each one of the slots, means for raising said rod, a foot of greater length than the width of the recess and having an upwardly-curved connection with the spring-rod, and the toe thereof also curved up, the connection of the foot with the spring-rod being such that when said rod is lowered with the lug or pin engaged with one of the vertical slots the foot will lie longitudinally in an arc described by it with the swinging of the door and transversely over the recess and when the lug or pin engages the other vertical slot said foot will register longitudinally with said recess and be adapted to enter therein, substantially as and for the purpose specified.

476,329. FOLDING-MACHINE. WILLIAM A. TROLSS and WILLIAM J. MURRAY, Leavenworth, Kans. Filed June 6, 1891. Serial No. 396,230. (No model.)

Claim.—1. In a folding-machine, the combination, with folding-rolls making a first central fold, of a guide-bed consisting of two substantially parallel members between which the edge of the once-folded sheet may enter, two series of tapes carrying said sheet from the first folding-rolls to said guide-bed, and a second pair of folding-rolls receiving the second folded edge of the sheet and completing and advancing the sheet, the several parts being arranged to operate substantially as described.

2. In a folding-machine, the combination, with rolls making a first central fold, of a guide-bed consisting, substantially, of two parallel members between which the edge of the once-folded sheet may enter and pass as far as a stop lying between the two parallel members of the guide-bed, two separate series of tapes having surface contact with each other and delivering the once-folded sheet to the guide-bed, and a pair of rolls effecting the second fold, the guide-bed and the tapes

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being so arranged as to form and maintain a bend in the paper between said tapes and the mouth of the guide-bed, the several parts being arranged to operate substantially as described.

3. In a folding-machine, the combination, with a pair of rolls making a first central fold, of a guide-bed consisting of two parallel members between which the edge of the once-folded sheet may enter, an adjustable stop-bar arranged to check the advance of the sheet within the guide-bed, rolls forming a second fold parallel to the first, and two separate series of tapes carrying the once-folded sheet between them to the guide-bed, said tapes and guide-bed being so arranged relatively to each other that the parts of the once-folded sheet lying at the same time in each shall be in different planes, the angle between the two being in line with the space between the second set of folding-rolls, the several parts being arranged to operate substantially as described.

4. In a folding-machine, the combination, with a pair of rolls between which the centrally-folded edge of the paper is inserted, of a pair of rolls forming a second and parallel fold, means for directing the sheet through the second set of rolls, a guide-bed consisting of two parallel members between which the once-folded sheet partly enters as far as a stop, two or more separate series of tapes carrying the once-folded sheet to the guide-bed, means, substantially as described, for turning the twice folded sheet as it is fed forward to lie at right angles with its original position, and a third pair of folding-rolls forming a final and transverse fold, the several parts being arranged to operate substantially as and for the purposes described.

5. In a folding-machine, the combination, with a first and second pair of folding-rolls to form a central first fold and a second parallel fold in the center of the double sheet, of means, substantially as described, for locating and forming the second fold and for turning the twice-folded sheet to bring its longitudinal line and parallel lines of fold into parallelism with the line of travel, a third pair of folding-rolls forming a final transverse fold, the whole being accomplished upon the run, and means for directing the sheet between the second and the subsequent folding-rolls, substantially as described.

6. In a folding-machine, the combination, with separate sets of parallel folding-rolls for forming one or more parallel folds successively, followed by a transverse fold, of tapes between which the once-folded sheet is carried to the second set of folding-rolls, a guide-bed consisting of two parallel plates of such width as to admit the edge of the once-folded sheet between them, the entrance being adjacent to the point where the sheet emerges from the carrying-tapes, an adjustable stop-bar movable between said plates, screw-rods engaging ends of the said bar to move the same, a scale to guide the adjustment, and means, substantially as described, for turning the folded sheet to bring its width into line with the direction of travel, substantially as described.

7. In a folding-machine, the combination, with the separate sets of folding-rolls, of tapes between which the once-folded sheet is carried to the second set, means, substantially as described, for locating and forming the second fold parallel with the first, tapes upon which the twice-folded sheet is delivered and by which it is carried toward the third set of rolls, a pair of friction-rolls having peripheral contact at a point on one side of the central line of travel, a linear guide arranged on the other side and parallel with said line, the end of said guide being in the same transverse line with the friction-rolls, or thereabout, tapes between which the turned twice-folded sheet is received, means, substantially as described, for locating and forming the transverse fold, and a third set of folding-rolls, substantially as described.

8. In a folding-machine, the combination, with a pair of folding-rolls receiving the folded edge of the sheet, of tapes carried by said rolls and by a pair of rolls parallel therewith, one of which forms one of the second pair of folding-rolls, a guide bed, substantially as described, an adjustable stop, a second set of folding-rolls, tapes between which the twice-folded sheet is carried from the second set, tapes upon which the twice-folded sheet is carried toward the third set of folding-rolls, a pair of friction-rolls having peripheral contact upon one side of the central line of travel, a linear guide parallel with and on the other side of said line, the angular end of said guide being in the same transverse line with the friction-rolls, or thereabout, a third set of folding-rolls, a guide-bed, substantially as described, an adjustable stop, tapes between which the twice folded and turned sheet is received, tapes between which the transversely-folded sheet is received, a delivery-apron upon which said sheet is dropped, and means for imparting a step-feed to said apron, substantially as described.

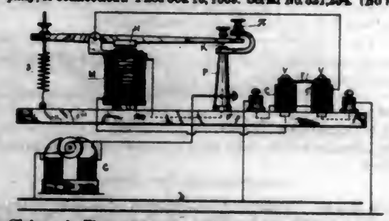
9. In a folding-machine, a guide-bed for locating and forming the line of fold, the same consisting of two substantially parallel members having an intermediate space adapted to receive the sheet, a stop-bar lying in said space, screw-rods engaging threaded openings in the ends of said bar, said rods being swiveled in suitable supports, means for feeding paper to said guide-bed, and means for folding the paper and discharging it from said guide-bed, substantially as described.

10. In a folding-machine, the combination, with a pair of folding-rolls and with tapes to carry the sheet, of a guide-bed for gaging and locating the line of fold, said guide-bed consisting of two parallel members having an intermediate space, an adjustable stop-bar, the parts being so arranged that the plane of movement of the paper in approaching said guide-bed shall be at a different angle from the plane of movement of the paper passing into said guide-bed, and means for folding the sheet and discharging it from said guide-bed, substantially as described.

11. The combination, with a folding-machine, of an attachment consisting of tapes carried by rolls between which the paper is received, a pair of measuring and severing rolls having knives to which the sheet or web is fed, tapes carried by rolls receiving the severed sheet, a guide-bed consisting of two parallel inclined members between which the edge of the severed sheet enters, the entrance being adjacent to the point where the sheet emerges from the carrying-tapes, said tapes and guide-bed being so arranged relatively to each other that parts of the sheet lying at the same time in each shall be in different planes, a stop-bar to arrest said edge, and a first pair of folding-rolls arranged beneath the space between the entrance to the guide-bed and the exit from the tapes carrying the severed sheet, substantially as described.

12. An attachment for a folding-machine, consisting of a frame having a series of tapes carried by rolls and adapted to receive and feed a continuous web of paper, a pair of measuring and severing rolls having suitable knives, a series of feeding-tapes between which the severed sheet is carried from the severing-rolls, a guide-bed composed of two substantially parallel inclined members having an intermediate space to receive the edge and part of the body of the severed sheet, and an adjustable stop-bar arranged between said members, said attachment being adapted to operate in connection with a folding-machine upon a continuous web of paper to sever the sheet and to locate, form, and introduce the first fold between the first pair of folding-rolls of the folding-machine, substantially as described.

476,330. SAFETY DEVICE FOR ELECTRIC MOTORS. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Oct. 16, 1889. Serial No. 327,294. (No model.)



Claim.—1. The combination, with a constant-potential circuit, of a normally-closed branch therein, a translating device, and a protective device included in said branch, said protective device being responsive to abnormal current and being adjusted or constructed to open said branch circuit only after a predetermined time, dependent upon and within the period for which the translating device may carry the abnormal current without injury.

2. The combination, with a translating device in a branch from a constant-potential circuit, of an automatic circuit-interrupter in said branch responsive to abnormal currents therein, a derived circuit around said translating device assisting said circuit-interrupter, and an electro-responsive device in said branch circuit responsive to abnormal current for controlling said derived circuit.

3. The combination, with a motor in a branch from constant-potential mains, of a circuit-interrupter in said branch responsive to abnormal currents therein, a derived circuit for governing the operation of said circuit-interrupter, and an electro-responsive device in said branch controlling said derived circuit.

4. The combination, with a constant-potential main, of a branch containing a translating device, and a protector in said branch dependent for its action upon the accumulated effects of abnormal current prolonged in said branch beyond the period of the usual or ordinary fluctuations of current that if prolonged would injure the apparatus.

5. The combination, with an electric apparatus fed from a source of potential sufficient to damage the same, of an electro-responsive device adjusted to respond to excess of current in the said apparatus, a cut-off or protective switch for such apparatus, and a device responsive to the accumulated effects of the current, as described, and governed by such electro-responsive device and adapted to bring the cut-off into operation on a predetermined lapse of time, determined or limited by the period during which the apparatus may be subjected to the same excess of current without damage from heating.

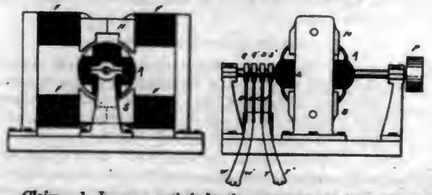
6. The combination, with an electric apparatus, of a safety cut-out, an electro-responsive device connected to the circuits of the apparatus and adjusted to respond to abnormal current strengths, and an electric heat-accumulator in which the heating effects of an electric current are absorbed or accumulated, as described, said heater being controlled by the electro-responsive device and being adjusted, as described, to bring the cut-off into operation only after the closure of circuit through the heater has been made for a prolonged period, determined by the time during which an abnormal current may flow without injury to the apparatus.

7. The combination, with an electric safety-fuse of conducting material, of an electric heater, to the heat-radiating effects of which said fuse is exposed, and an electro-responsive device governing the circuit of said heater and responsive to excessive current in the circuit to be protected.

8. The combination, with a safety-fuse in an electric circuit, of an electric heater in another circuit or branch of circuit and arranged in proximity to the safety-fuse, and an electro-responsive device governing the circuit of the heater and responsive to excessive current in the circuit of the fuse.

9. The combination, with the electric heating-coils, of a safety-fuse consisting of a piece of fusible conducting material included in an electric circuit and mounted on a heat-conducting support subjected to the heating action of said coils, as and for the purpose described.

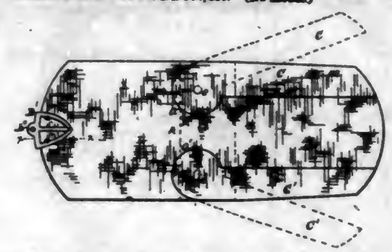
476,331. DYNAMO-ELECTRIC MACHINE. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Oct. 14, 1889. Serial No. 327,009. (No model.)



Claim.—1. In a magnetic induction-generator, such as a dynamo-electric machine, supplying alternating currents, an induced portion or armature-winding consisting of two coils or sets of coils relatively displaced in their magnetic field or fields and insulated from one another on the armature, with the position of maximum activity in one coil or set of coils coincident or approximately coincident with the position of non-activity of the other coil or set of coils, in combination with two separate work-circuits connected, respectively, with said coils or sets of coils, so as to be supplied with alternating currents from such coils independently.

2. The combination, substantially as described, in a magnetic induction-generator or dynamo-electric machine supplying alternating currents, of a set of field-magnet poles, two sets of coils electrically independent, but disposed thereon, and insulated from one another on the armature, so as to be acted upon with maximum power at intervals such that the maximum points of current in one set corresponds to the zero or minimum in the other, and separate work-circuits supplied with alternating currents from said sets of coils, respectively.

476,332. IRONING-MACHINE. DEAN C. TUBBS, Detroit, Mich. June 26, 1891. Serial No. 397,416. (No model.)

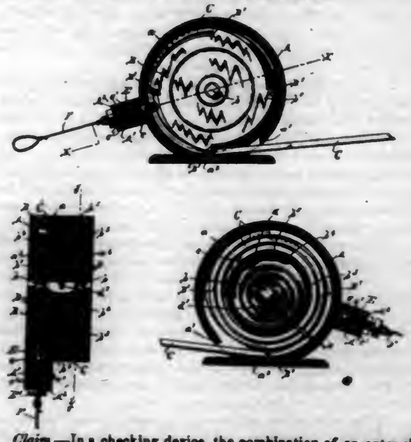


Claim.—1. In an ironing-board, the combination of a body A, a clamping device engaged therewith, a cleat or cross-piece D, secured to the under surface of said board, lateral arms C C', pivotally engaged at their inner extremities with said cross-piece, substantially as described.

2. In an ironing-board, the combination of the body A, longitudinally-extended arms C C', having a pivotal engagement at their inner ends therewith, the body longitudinally projecting between said arms, a support E, and a clamping device to secure the board upon a table, said support serving as a fulcrum when pressure is applied upon the free extremity of the board, substantially as set forth.

3. In an ironing-board, a body A, having, in combination therewith, lateral longitudinally-extended arms C C', having a pivotal engagement therewith at their inner extremities, whereby the outer extremities of said arms may be spread laterally from the outer extremity of the body, said body projecting longitudinally between the arms C C', substantially as described.

476,333. CHECKING DEVICE. SAMUEL O. TUBBS, Fulton, N. Y. Filed June 8, 1891. Serial No. 395,473. (No model.)

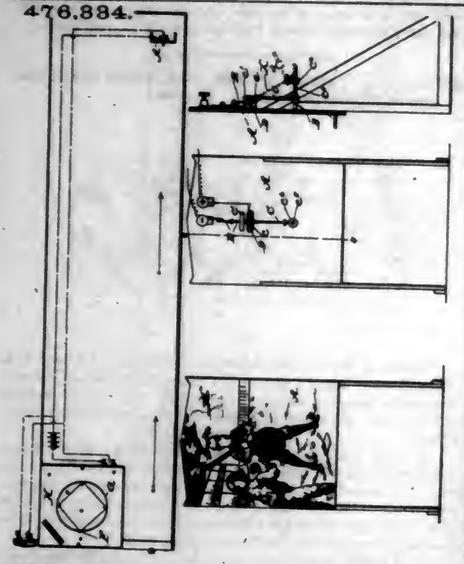


Claim.—In a checking device, the combination of an outer shell a, having an opening a', a drum revoluble within said shell and adapted to have secured thereto the inner end of the checkrein, which enters through the opening a', a spring for rotating the drum and winding the checkrein thereon, a chamber A', projecting outwardly from said shell, a bolt within the chamber A', having one end projecting beyond said chamber and the other adapted to engage the drum and prevent its revolution, a shoulder on the bolt, a spring encircling the bolt and interposed between said shoulder provided thereon and the adjacent wall of the chamber A' for engaging the bolt with the drum, and a nut E', movably mounted upon the outer end of the bolt, substantially as and for the purpose specified.

476,334. BASE-BALL GAME. MORRIS ULLMAN, Washington, D. C. Filed Aug. 14, 1891. Serial No. 402,663. (No model.)

Claim.—1. An electrically-operated game comprising an annunciator having an indicator arranged for variable degrees of movement, an electro-magnetic device arranged when operated to govern the

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variable movement of the indicator, a target having a contact-maker moved by the vibratory impulse of the target to an extent proportionate to the force of impact, and an electrical circuit connecting the target and the electro-magnetic device, substantially as and for the purpose described.

2. An electrically-operated game comprising an indicator arranged for variable degrees of movement, an electro-magnetic device arranged when operated to govern the variable movements of the indicator, a target having a contact-maker moved to an extent proportionate to the force of impact, said contact-maker being adjustable, whereby to require a greater or less impulse from the target to operate it, and an electric circuit connecting the electro-magnetic device and the target, all arranged as and for the purposes described.

3. An electrical game comprising an annunciator having an indicator arranged for varied movements, electro-magnetic devices for operating said indicator, as stated, a target or strike portion having a substantially rigid face, a pendulum contact-maker supported thereon, adapted to be swung to an extent proportionate to the force of impact against the target, and an electric circuit connecting the target and the electro-magnetic devices, said circuit adapted to be held closed different durations of time by the varied movements of the contact-maker, substantially as and for the purpose described.

4. The combination, with a target or strike portion and a contact-maker operated to close a circuit by the vibratory impulse of the target, of an annunciator having a top plate formed with an open way, a rotatable shaft carrying an indicator held to travel in such way, means for rotating such shaft, substantially as shown, a series of stops for limiting the indicator, a series of armatures and magnets for locking the stops, and an electrical circuit connecting the first magnet and the target, said magnets arranged to be successively brought into the circuit after the preceding magnet has been energized and its respective stop released, as and for the purpose described.

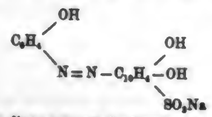
5. The combination, with the target or strike portion and the pendulum contact, of a rotatable shaft, the movable indicator held thereon, a series of weighted stops for limiting the movement of the indicator, a series of magnets and armatures, the armatures normally locking such stops, an electric circuit connecting the magnets and the target, the wires m m' m^2, and a series of spring-switch plates M M' M^2, said magnets, stop-plates M M' M^2, and wires m' m^2 m^3 arranged as shown, whereby the magnets will be successively connected with the main circuit by the released stop of the preceding magnet, substantially as and for the purpose described.

6. The combination of the annunciator, the movable indicator, means for moving it in one direction, a series of magnets and armatures, a series of stops for limiting the movement of the indicator, such stops held locked by the armatures, a series of electric circuits connected with the magnets, a strike portion or target having a substantially-rigid face, a swinging contact-maker having a bearing portion, and a series of yielding contacts arranged to be successively engaged by the bearing portion of the contact-maker, whereby to successively operate the several magnets and stops to allow the indicator to move, as and for the purpose described.

7. An electrical game comprising an annunciator having an indicator adapted for varied degrees of movement and held from movement by stops, magnets arranged to release such stops when energized, a substantially rigid strike member or target, a contact-maker operated by the vibratory impulse of the target, an electric circuit connecting the target and magnets in the annunciator, and a dynamometer in such circuit arranged to be operated by the closing of the circuit by the contact-maker and to register the force or continuance of the closed circuit, substantially as and for the purpose described.

476,885. VIOLET AZO DYE. MORITZ ULRICH, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 19, 1891. Serial No. 412,421. (Specimens.) Patented in France Apr. 9, 1891, No. 212,648, and in Italy Apr. 27, 1891, XXV, 29,631.

Claim.—1. The process of making a new azo dye-stuff of the formula—



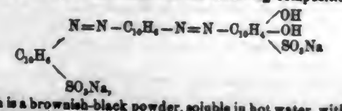
by combining the diazo compound of paramido-phenol with the sodium salt of dihydroxynaphthaline monosulpho-acid.

2. As a new manufacture, the azo coloring-matter which forms a dark brown powder soluble in water, especially hot water, with bluish-red color, from which bluish-red flakes separate on the addition of acids, soluble in alkalies with yellowish-red color, assuming first, when mixed with a small quantity of cold water, a yellowish-brown color, then yellowish-brown flakes are separated, and on further dilution the whole is dissolved to a clear bluish-red solution, and which dyes wool in acid baths a clear violet.

476,886. BLACK AZO DYE. MORITZ ULRICH, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 19, 1891. Serial No. 412,422. (Specimens.)

Claim.—1. The process for producing a new coloring-matter by combining diazotized beta-naphthylamine monosulpho-acid with alpha-naphthylamine, diazotizing the formed amido-naphthaline azonaphthaline sulpho-acid, and by coupling the obtained diazo compound with the sodium salt of the dihydroxynaphthaline monosulpho-acid S.

2. The new dye-stuff, which has the following composition:

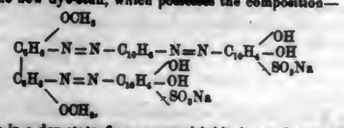


and which is a brownish-black powder, soluble in hot water, with greenish-black color, from which on the addition of acids a dark precipitate is separated, soluble in sodium carbonate, soda-lye, or ammonia liquid, with blackish-blue color, and by concentrated sulphuric acid is dissolved with a deep-green color, which on the addition of water at first becomes blue, then violet, and on further dilution blue flakes separate and the supernatant liquid becomes colorless, and which dyes wool unmordanted a greenish black and wool mordanted with chromium salts greener shades in acid baths.

476,887. BLUE DYE. MORITZ ULRICH and RICHARD LAUBE, Elberfeld, Germany, assignors to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 19, 1891. Serial No. 412,423. (Specimens.) Patented in England Aug. 29, 1889, No. 13,665; in Germany Aug. 6, 1890, No. 57,912, and in France Feb. 3, 1891, No. 200,590.

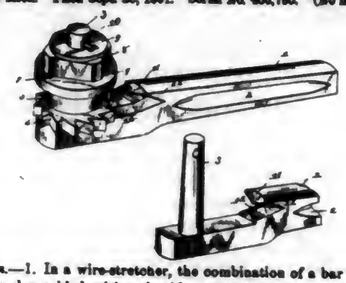
Claim.—1. The process of producing a new direct dyeing coloring-matter by combining molecular proportions of tetrazo-diphenol-dimethylether and alpha-napthylamine, diazotizing the thus-obtained product, and combining the resulting tetrazochloride with two molecular proportions of the sodium salt of the dihydroxynaphthaline monosulpho-acid S.

2. The new dye-stuff, which possesses the composition—



and which in a dry state forms a grayish-black powder, is difficultly soluble in cold, more easily in hot, water and sodium carbonate with bluish color, dissolving in soda-lye and ammonia with deep-blue color, and from its watery and alkaline solutions it separates on the addition of acids in blue flakes while the liquid slowly becomes almost colorless, is dissolved with greenish-blue color by concentrated sulphuric acid, from which a finely-powdered blue precipitate separates on the addition of water and which dyes unmordanted cotton in alkaline baths a pure indigo-blue.

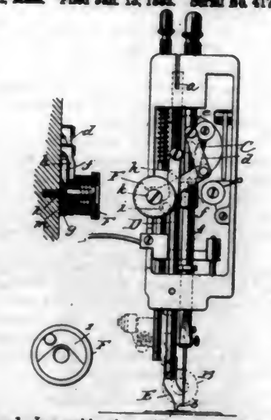
476,888. WIRE-STRETCHER. HARRY H. VAN ORNER, Edwardsburg, Mich. Filed Sept. 25, 1891. Serial No. 406,755. (No model.)



Claim.—1. In a wire-stretcher, the combination of a bar having a spindle and provided with a shoulder, a ratchet-wheel mounted on the spindle and having its hub extended and squared, a collar arranged on the hub, and a pawl straddling the shoulder of the bar and engaging the ratchet-wheel, substantially as described.

2. In a wire-stretcher, the combination of a bar having a spindle and provided with a shoulder having inclined recesses on opposite sides thereof, the walls of the recesses being oppositely beveled, a ratchet-wheel having its hub squared, a collar arranged on the hub, and a pawl provided with a V-shaped recess and straddling the shoulder of the bar and having the upper and lower faces at the sides of the recess beveled and conforming to the configuration of the recesses of the bar, substantially as described.

476,839. TRIMMER FOR SEWING-MACHINES. ALPHA O. VERY, Boston, Mass. Filed Jan. 13, 1892. Serial No. 417,900. (No model.)

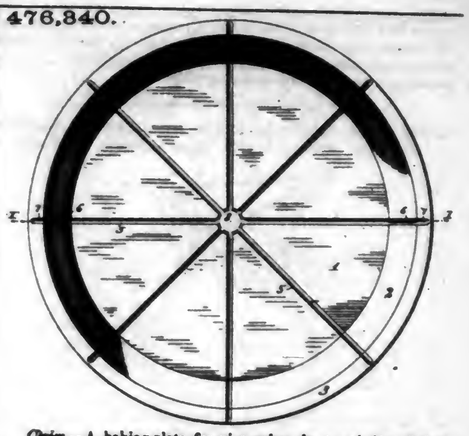


Claim.—1. In combination with the needle-bar, a pivoted connection between said bar and the frame, said connection being jointed, a trimmer-bar, a link carried by the trimmer-bar, and means detachably connecting said link to the jointed connection, substantially as described.

2. In combination with the needle-bar, a jointed and pivoted connection between said bar and the frame, a trimmer-bar, a link carried by the trimmer-bar, a button operating said link and forming connecting means between said link and the jointed connection, substantially as described.

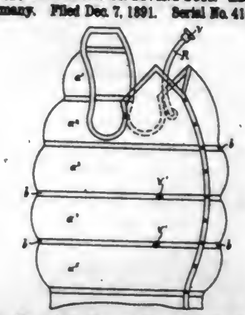
3. In combination with the needle-bar, a pivoted and jointed connection between the same and the frame, a trimmer-bar, a link carried by the trimmer-bar and having its lower end pivoted upon a pin, said pin being carried by a spring-button, a perforation in the jointed connection between its pivot on the frame and its connection with the needle-bar, and means for connecting the link of the trimmer-bar and the button to the said jointed connection by means of the pin entering the perforation, substantially as described.

476,840. BAKING-PLATE FOR PIES, &c. CHARLES L. WAGANDT, Baltimore, Md., assignor to Keen & Hagerty, same place. Filed Feb. 6, 1892. Serial No. 420,560. (No model.)



Claim.—A baking-plate for pies, cakes, &c., consisting of sheet metal having formed therein at equal distances apart depressions or recesses which extend in radial directions over the bottom, sides, and edges of the plate, and which produce upon the exterior of the bottom slightly-projecting supporting-ribs, as and for the purposes set forth.

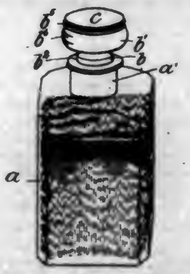
476,841. SWIMMING OR DIVING SUIT. ABRAHAM WEIL, Brunswick, Germany. Filed Dec. 7, 1891. Serial No. 414,336. (No model.)



Claim.—1. The herein-described swimming or diving suit, provided with a plurality of independent cells arranged vertically with relation to each other and separated by stripe *b*, the upper cells a' a^3 a^2 being normally in open communication with each other and the lower cells a^4 a^5 communicating with each other by means of a valve adapted to be opened or closed, as desired, and an inlet-tube connected to one of said cells, substantially as set forth.

2. In a swimming or diving suit, the combination of a plurality of air-cells arranged vertically with relation to each other, the upper cells a' a^3 a^2 being normally in open communication with each other and the lower cells a^4 a^5 provided with valves whereby they may be brought into communication with cell a^2 and with each other, substantially as set forth.

476,842. BOTTLE-STOPPER AND MEASURING DEVICE. FORREST W. WEST, Philadelphia, Pa. Filed Nov. 24, 1891. Serial No. 412,972. (No model.)



Claim.—In combination, a bottle and a detachable tubular stopper provided at the top thereof with an elastic diaphragm and having

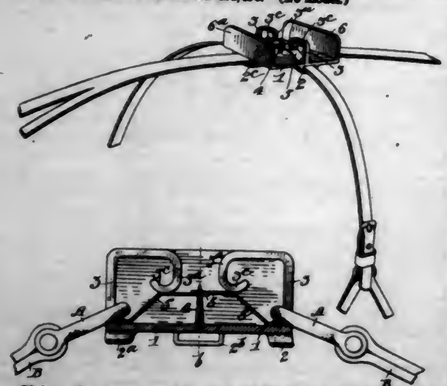
a plug fitting the neck of the bottle, the construction being such that the stopper may be wholly or partly filled by the inversion of the stopper and bottle and repeated depression of the diaphragm, substantially as and for the purposes set forth.

476,843. DEVICE FOR HOLDING MILK-TICKETS. JAMES WHITE, Chicago, Ill. Filed Feb. 13, 1890. Serial No. 340,873. (No model.)



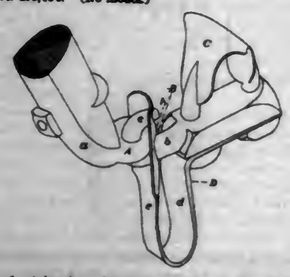
Claim.—A vessel of pottery or other frangible material having a handle and provided with a slit or pocket in the rim thereof adjacent to the handle, substantially as and for the purposes described.

476,844. TRACE-CARRIER. JOHN W. WHITE, Burlington, Kans. Filed Feb. 13, 1892. Serial No. 421,458. (No model.)



Claim.—In a trace-carrier, the combination, with a plate having eyes formed upon its lower surface and having upwardly-projecting guard-flanges on two of its opposite edges, of teeth projecting upwardly from the two remaining edges of the plate and bent inwardly toward each other to near the center of the plate and then downwardly and then outwardly, a pin projecting upwardly from the center of the plate, and spring-plates secured to the upper surface of the said plate and having their free ends moving on the said pin, the said spring-plates bearing on the outwardly-projecting ends of the said teeth, as described.

476,845. THILL-COUPLING. WALTER F. WHITON, Bangor, Me., assignor of one-fourth to John R. Mason, same place. Filed Feb. 3, 1892. Serial No. 420,156. (No model.)



Claim.—1. A hook-and-eye coupler, in combination with a spring having a free arm slotted to receive the point and shank of the hook and having a stop between said slots.

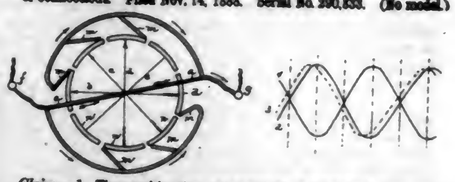
2. A thill or pole coupler consisting of the combination of a hook, an eye, and a spring having two slots in its free arm and a stop between said slots, said slots being so located as to admit and receive the point and shank of said hook.

3. A thill or pole coupler consisting of the combination of an eye attached to the rear end of the thill, a hook attached to the axle or axle-clip, and a spring having its rear end fixed to the axle or axle-clip and in its free end two slots and a stop between said slots, said slots being so located as to admit and receive the point and shank of said hook.

4. In a hook-and-eye thill-coupler, the U-shaped spring D, having two slots in its free end and a stop between said slots.

5. In a hook-and-eye thill-coupler, the combination of a hook, an eye, and a U-shaped spring having two slots in its free end and having the upper extremity of its free end laterally curved inward.

476,846. ALTERNATING-CURRENT MOTOR. MERLE J. WIGHTMAN, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Nov. 14, 1888. Serial No. 290,833. (No model.)



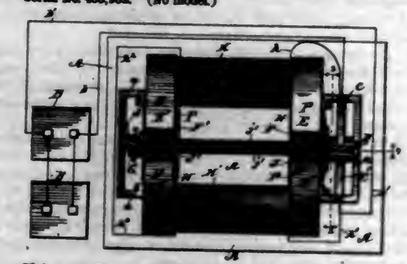
Claim.—1. The combination, substantially as described, of a source of alternating currents, an armature, and a field-magnet, said armature and field-magnet being both supplied from said source with alternating currents conveyed through them in a direction to set up repulsion between armature and field at each alternation, and means for keeping out of circuit those portions of the armature between which and the field attraction exists.

2. The combination, substantially as described, of an alternating-current field-magnet and an alternating-current armature, both supplied with synchronous currents from an external source, and a commutator by which the armature-coils in one half of the magnetic field or fields are cut out of circuit, the coils in the remaining half being alone used for producing the motive power.

3. The combination, substantially as described, of an alternating-current field-magnet, an alternating-current armature supplied with alternating currents passing through the same in a direction to set up a repulsive action, and a commutator which retains the armature-conductors in circuit into the position where the reaction between the field and armature prevents current from flowing through said armature-conductor.

4. An alternating-current motor consisting of a closed-circuit-armature machine having opposite commutator-brushes maintained in position approximately ninety degrees from the main brushes and connected directly with one another, said main brushes being connected to a source of alternating currents, all as set forth, whereby current will flow only in two segments of armature-coils and be prevented from flowing in intermediate segments.

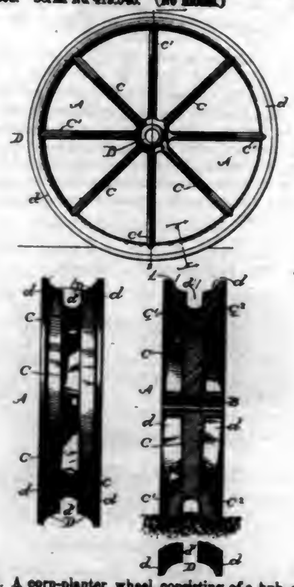
476,847. ELECTRIC MOTOR. DAVID H. WILSON, Chicago, Ill., assignor of one-tenth to Charles T. Brown, same place. Filed Aug. 28, 1891. Serial No. 403,932. (No model.)



Claim.—1. In an electrical motor, a series of coils electrically connected together extending around a series of electro-magnets, the opposite coils of the series wound so that the electrical current therein shall extend in different directions around the core of the electro-magnets thereof, a series of armatures whereof the bobbins are wound so that the current extending in one direction in a bobbin on one armature will extend in the other direction in the corresponding bobbin of the adjacent armature secured on a common shaft, a commutator on such shaft in electrical connection with the series of armatures, and commutator-brushes in electrical contact with the commutator, in combination with a wire extending to one of the electro-magnetic coils and to one of the commutator-brushes and adapted to be electrically connected with one pole of an electrical generator, and a wire extending to the last one of the coils of the series and to the other commutator-brush and adapted to be attached to the other pole of an electrical generator, whereby a portion of a current extending from a generator attached to the wires will extend through the electro-magnetic coils and the remainder thereof through the commutator-brushes and the armatures of the motor, substantially as described.

2. In an electrical motor, the combination of more than one electro-magnetic coil wound and connected in series, the adjacent coils wound in a different direction, respectively, and having a common electro-magnetic pole, armatures arranged on a common shaft in front of the poles of the series of electro-magnets, adjacent ones of such armatures wound in opposite directions, a wire connecting with the wire forming the coil of the electro-magnets before such wire enters into the coil and with one of the commutator-brushes of the motor and adapted to be attached to one pole of an electrical generator, and a wire connecting with the wire extending from the last one of the series of electro-magnetic coils and with the other commutator-brush of the motor and adapted to be attached to the other pole of the electrical generator, substantially as described.

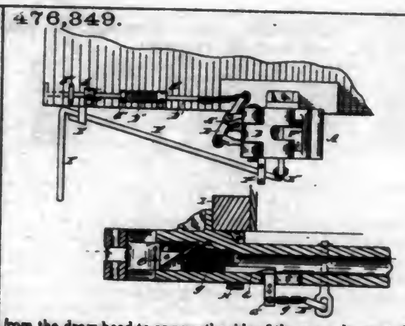
476,848. CORN-PLANTER WHEEL. PETER E. WESTLAND, Kewanee, Ill., assignor to the Peters Pump Company, same place. Filed Jan. 25, 1892. Serial No. 419,540. (No model.)



Claim.—1. A corn-planter wheel consisting of a hub, spokes radiating therefrom having forked outer ends, and a split tire, the two parts of which are formed with concaved outer faces and separated from each other to form an intervening space, substantially as described.

2. In a corn-planter wheel, the combination, with a hub and spokes, of a split tire on the spokes, the two parts of which are separated from each other and which tire has an outer concave face obliquely arranged at its inner adjacent edges, substantially as described.

476,849. CAR-COUPLING. FRANK R. WOODMAN, Cedar Rapids, Iowa. Filed Sept. 1, 1891. Serial No. 404,472. (No model.)



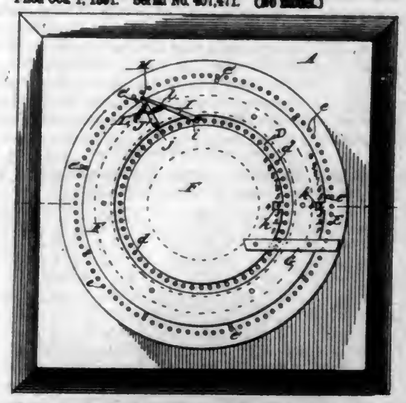
Claim.—1. In a car-coupler of the class described, the combination, with a draw-head having inclined guides for the locking-block, substantially as described, of a block adapted to slide on said inclined guides and to automatically lock the coupler, a bar mounted in the draw-head back of the block, with a portion extending below and through a slot in the draw-head, a chain connecting the bar with the block, and means, substantially as described, connecting with the other end of the bar to draw the same back.

2. In a car-coupler, the combination of a rock-shaft extending from the draw-head to or near the side of the car, a lever at the outer end, a crank at the inner end, a connection thereof with the downwardly-extending end of a bar sliding inside the draw-head, a block adapted to lock the knuckle by its own gravity, and a chain connecting it with the forward end of the said bar, and a stirrup supporting the draw-head under the dead-wood, the said stirrup being adapted to catch the extending portion of the bar and uncouple the pair of draw-heads in case the tail-bolt breaks.

3. In a car-coupler of the class described, the combination, with the draw-head and its pivoted knuckle, of a lever pivoted at one side of the draw-head, a plunger attached to one of its ends, and a rod connected with the other end, with a handle thereon, whereby the knuckle may be thrown out to coupling position by the operator at the side of the car.

4. In a car-coupler of the class specified, the combination, with the draw-head and its pivoted knuckle, of a lever pivoted to one side of the draw-head, a plunger connected with one end, a rod connected with the other end and extending to or near the side of the car, and a spring adapted to force said rod normally outwardly, thereby forcing the plunger inwardly and against the knuckle to throw it outwardly when uncoupled.

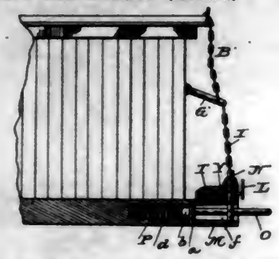
476,850. ADDING-MACHINE. JOSEPH W. WRIGHT, Guion, Tex. Filed Oct. 1, 1891. Serial No. 407,471. (No model.)



Claim.—1. In an adding-machine, the combination of the units-annulus, provided with pins in multiples of ten and a supplemental pin opposite every tenth pin, the tens-annulus surrounded by the units-annulus and having a series of pins, and the carrier, consisting, essentially, of two interpivoted spring-provided arms, one end of one of said arms being adapted to engage a pin on the tens-annulus and the junction-point of the two arms being adapted to be engaged by a supplemental pin, substantially as described.

2. In an adding-machine, the combination of the units-annulus, provided with pins in multiples of ten and a supplemental pin opposite every tenth pin, the tens-annulus surrounded by the units-annulus and having likewise a series of pins, and a carrier device normally out of engagement with all the pins and simultaneously engaging a supplemental pin and one pin on the tens-annulus, said carrier device consisting of two arms pivoted to each other, one of said arms being pivoted at its opposite end to the cover of the machine while the opposite end of the other arm is rabbeted to engage a pin on the tens-annulus, a spring secured to each of said arms and another spring secured to the cover and to the arm which is pivoted on the cover, substantially as described.

476,851. CAR-COUPLING. JAMES D. YOUNG, Elgin, Tex. Filed July 30, 1891. Serial No. 400,168. (No model.)



Claim.—1. In an automatic car-coupler, the combination of a lever-shaft having two ends projecting downwardly, a connection between one end of said shaft and a coupling-pin, a draw-head, and a link, substantially as described.

2. In an automatic car-coupler, a link provided with a lug, in combination with a recessed draw-bar, a spring located in said recess and bearing against said lug, and a pin to limit the outward movement of said link.

3. The combination of a link yieldingly held in a recessed draw-bar, a pin normally held out of engagement with said link, and a yieldingly-held plate normally supporting said pin, substantially as described.

4. The combination of a rod extending to the top of a car, a coupling-pin, a connection between said pin and rod, a yielding support for said pin operated by a similar support on another car, a draw-head, and a link yieldingly held in a recess in said draw-head, as and for the purpose described.

5. In an automatic car-coupler, the combination of a draw-head, a link carried thereby, a pin, a pin-support consisting of a slotted plate carrying a buffer and provided with shoulders, pins limiting the outward movement of said plate by engaging said shoulders, and a spring for normally forcing said plate and buffer outward, substantially as described.

6. In an automatic car-coupler, the combination of a recessed draw-head, a pin located in said head, a link provided with a lug, a spring located in said recess and normally pressing said lug into engagement with said pin, a box or keeper, a spring-pressed plate carried therein, a coupling-pin supported by said plate and adapted to fall into engagement with said link when said plate is retracted, said plate adapted to be operated by a buffer on another car, and means for withdrawing said pin from engagement with the link operated from either top or the side of the car, all substantially as described, and for the purpose specified.

476,852. OIL-STOVE. AUGUST F. ZIMMERLING, Jackson, Mich. Filed Aug. 31, 1891. Serial No. 404,361. (No model.)



Claim.—1. In combination with a stove, a door adapted when opened to form a flue, substantially as described.

2. In combination with a stove, a door adapted when open to receive articles to be heated and to form a flue for conducting heat to said articles, substantially as described.

3. A stove for burning hydrocarbons, consisting of a vertical frame provided at its base with a burner, a deflecting-partition over said burner, and doors closing the compartments above said deflecting-partition, adapted when open to form horizontal flues, substantially as described.

4. A stove for burning hydrocarbons, consisting of a vertical frame provided at its base with a burner, a deflecting-partition over said burner, and doors closing a compartment above said deflecting-partition, adapted when open to receive articles to be heated and to form a flue for conducting the heat to said articles, substantially as described.

5. A stove for burning hydrocarbons, consisting of a vertical frame provided with a burner at its base, a heating-compartment above said burner, a partition between the burner-chamber and said heating-chamber, provided with openings to admit the heat to said heating-chamber, and doors closing said heating-chamber, adapted when open to close the said openings in the partition and form horizontal flues, substantially as described.

6. A stove for burning hydrocarbons, consisting of a vertical frame provided at its base with a burner, a heating-compartment above said burner, a partition between said burner and the heating-compartment, provided with openings to admit the heat, a diving outlet-flue leading from said chamber, and doors closing said chamber, adapted when opened to close the openings in the partition and to form horizontal flues, substantially as described.

476,853. SHEET-METAL PACKAGE. EDWARD ALLEN, Indianapolis, Ind. Filed Feb. 5, 1892. Serial No. 420,407. (No model.)



Claim.—A wrapper or casing for a package of sheet-metal plates, consisting of the body B, formed of sheet metal, its sides and front end bent up with their edges bent in and down, and its rear end bent up with its edge bent out and down at that point just below the entrance to the ways formed by the interned edges of the sides, leaving the entrance to said ways open, as shown, and a top B, having upturned flanges on its sides and forward end and a downwardly-turned flange on its rear end, adapted to engage with the edges of said top and be interlocked therewith, substantially as set forth.

476,854. WALL-FACING. MAX AMS, New York, N. Y. Filed Mar. 4, 1892. Serial No. 423,637. (No model.)



Claim.—A facing for ceilings and floors, consisting of a layer of tiles, an open-mesh backing, and a divided cement filling composed of separate rows or blocks set back from the edges of the tiles, substantially as specified.

476,855. SULKY-PLOW. CHARLES ANDERSON, South Bend, Ind., assignor to the South Bend Iron Works, same place. Filed Mar. 3, 1892. Serial No. 423,630. (No model.)

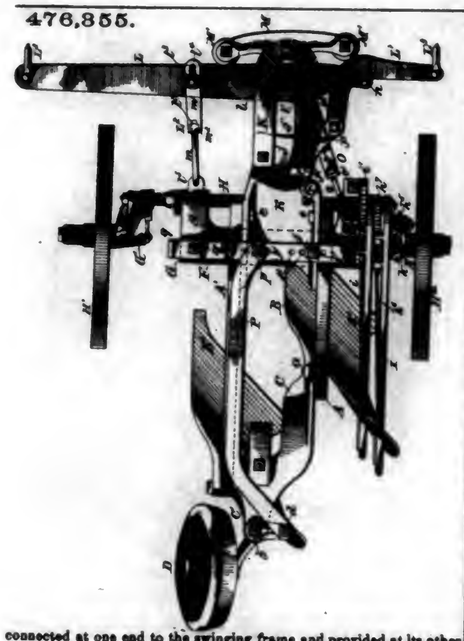
Claim.—1. In a sulky-plow, the combination, with the beams and a swinging axle-frame carrying wheels, of a spacing-plate secured between said beams, draft devices connected to said spacing-plate, a pivoted caster-wheel, and a connection between the axle-frame and said caster, whereby the two will be turned simultaneously when the team is turned, substantially as set forth.

2. In a sulky-plow, the combination, with the beams and a swinging axle-frame, of draft devices, a pivoted caster-wheel, a connection between said caster-wheel and swinging axle-frame, and an adjustable bar pivotally connected at one end to the axle-frame and at the other end with the guide-plates of the draft devices, substantially as set forth.

3. In a sulky plow, the combination, with the beams and a swinging axle-frame, of draft devices, a pivoted caster-wheel, a connection between said caster-wheel and swinging frame, and an adjustable bar pivotally connected at one end to the swinging frame, the other end of said bar being made with an elongated slot and connected with the guide-plates of the draft devices, substantially as set forth.

4. In a sulky-plow, the combination, with a swinging frame carrying wheels and draft devices having guide-plates, of a bar pivotally

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connected at one end to the swinging frame and provided at its other end with an elongated slot and connected with the guide-plates of the draft devices, substantially as set forth.

5. In a sulky-plow, the combination, with a swinging frame carrying wheels and draft devices comprising a long and a short bar, of a bar connected at one end to the swinging frame and at the other end to the long bar of the draft devices, substantially as set forth.

6. In a sulky-plow, the combination, with a swinging frame, and wheels carried thereby, and draft devices comprising a long and a short bar, of a pivoted caster-wheel, a connection between the caster-wheel and swinging frame, and a bar connected at one end with the swinging frame and at the other end to the long arm of the draft devices, substantially as set forth.

7. In a sulky-plow, the combination, with a swinging frame, wheels carried thereby, and draft devices comprising a long and a short draft-bar, of an adjustable bar connected at one end to the long bar of the draft devices and at the other end to the swinging frame, substantially as set forth.

8. In a sulky-plow, the combination, with a swinging frame carrying wheels and draft devices comprising a long and a short draft-bar, of a bar connected at one end with the swinging frame and provided at its other end with an elongated slot and connected with the long bar of the draft devices, substantially as set forth.

9. In a sulky-plow, the combination, with a swinging frame, beams, and a spacing-plate rigidly secured to said beams, of guide-plates secured to the spacing-plate, a short draft-bar also connected to said spacing-plate, a larger draft-bar carried by the guide-plates, and a lever pivoted to the guide-plates and bearing against the front edges of both draft-bars.

10. In a sulky-plow, the combination, with plow-beams and a spacing-plate secured between them, of U-shaped guide-plates pivotally connected at one end to said spacing-plate and having a sliding connection at their other ends with said plate, and draft devices connected to said guide-plates, substantially as set forth.

11. In a sulky-plow, the combination, with plow-beams and a spacing-plate, of guide-plates connected thereto, a bracket pivotally connected between said guide-plates, a long draft-bar secured to said bracket, a short draft-bar pivotally connected to said spacing-plate and passing through said bracket, and a lever pivoted between its ends to the guide-plates and bearing against the draft-bars, substantially as set forth.

476,856. GOVERNOR. GEORGE G. ARMAMA, Syracuse, N. Y., assignor of one-half to Henry Lacy, same place. Filed Oct. 6, 1891. Serial No. 407,896. (No model.)

Claim.—1. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame, an eccentric on one lever, a counter-balance for the eccentric on the other lever, and a strap connecting said levers, whereby they operate simultaneously, substantially as and for the purpose described.

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2. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame at points substantially diametrically opposite to each other and formed with arms extending inwardly to the center of said support, an eccentric on one of said inwardly-extending arms, and a counter-balance for the eccentric on the other of said arms, substantially as and for the purpose specified.

3. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame at points substantially diametrically opposite to each other and formed with inwardly-extending arms, an eccentric mounted on one of said arms, an eccentric counter-balance mounted on the other of said arms, and straps connecting the opposite extremities of said levers, whereby they operate simultaneously, substantially as and for the purpose described.

4. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame at points substantially diametrically opposite to each other and formed with extremities projecting beyond said hinge-points, centrifugally-operating weights mounted on said projecting extremities and arranged substantially diametrically opposite to each other, and a strap connecting said levers, whereby they operate simultaneously, substantially as set forth.

5. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame, an eccentric on one lever, a counter-balance for the eccentric on the other lever, a strap connecting said levers for operating them simultaneously, and a movable adjuster for said strap, substantially as and for the purpose specified.

6. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame, centrifugally-operating weights arranged on said levers at points substantially diametrically opposite to each other, an eccentric on one of the levers, a counter-balance for the eccentric on the other lever, and a strap connecting said levers, whereby they operate simultaneously, substantially as and for the purpose described.

7. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame, centrifugally-operating weights arranged on said levers at points substantially diametrically opposite to each other, an eccentric on one of the levers, a counter-balance for the eccentric on the other lever, a strap connecting said levers, whereby they operate simultaneously, and an adjusting-support for the end of said strap, substantially as and for the purpose set forth.

8. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame, an eccentric on one lever, a counter-balance for the eccentric on the other lever, a slot in one lever, and a projection on the other lever movable in said slot, substantially as and for the purpose set forth.

9. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame, centrifugally-operating weights on two levers, a strap having one extremity secured to one lever, and a rocking support on the other lever adapted to be secured to the opposite extremity of said strap, substantially as and for the purpose specified.

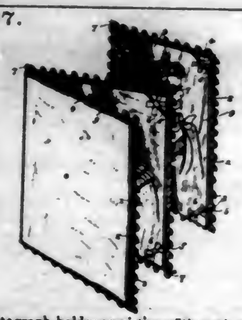
10. In a governor, the combination of a supporting-frame, a pair of levers hinged to said frame and formed with their extremities projecting beyond their hinge-point and with inwardly-extending arms, centrifugally-operating weights secured on substantially diametrically-opposite arms of said levers, movable supports on the other arms of said levers, straps having one extremity secured to said supports and the other to the adjacent end of the opposing lever, an eccentric on the inner arm of one lever, and a counter-balance for the eccentric on the inner arm of the other lever, substantially as and for the purpose set forth.

476,857. PHOTOGRAPH-HOLDER. VIOLA J. AUGER, Springfield, Mo. Filed Mar. 10, 1892. Serial No. 424,402. (No specimens.)

Claim.—1. As an article of manufacture, the herein-described section for photograph-holders, the same consisting of a rectangular wire frame provided at each side and near each of its corners with eyes and elastic loops located at each of the corners and connected with the eyes, substantially as specified.

2. The herein-described photograph-holder, the same consisting of the series of sections surrounded by filigree frames forming a continuous series of eyes, cords for removably connecting pairs of adjacent eyes of adjacent sections, whereby the sections are adapted to fold upon each other, and elastic loops applied to the corners of each section and engaging the eyes thereof, substantially as specified.

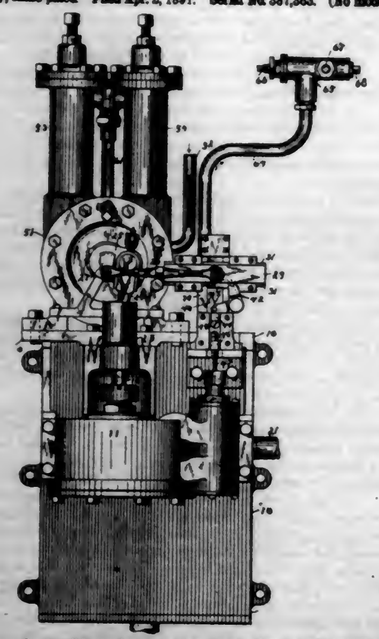
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3. The photograph-holder consisting of the series of sections, each consisting of a plain wire frame bent to desired shape and an external wire binding forming a filigree provided at intervals with eyes, loose connections between the eyes of adjacent sections, elastic loops at the corners of the sections between the eyes, and pads applied to the outer sides of the two end sections, substantially as specified.

4. The photograph-holder comprising a series of wire frames loosely connected together at alternately-opposite edges, photograph-retaining devices mounted on each frame, and an autograph-card located in each frame and held by said devices, substantially as specified.

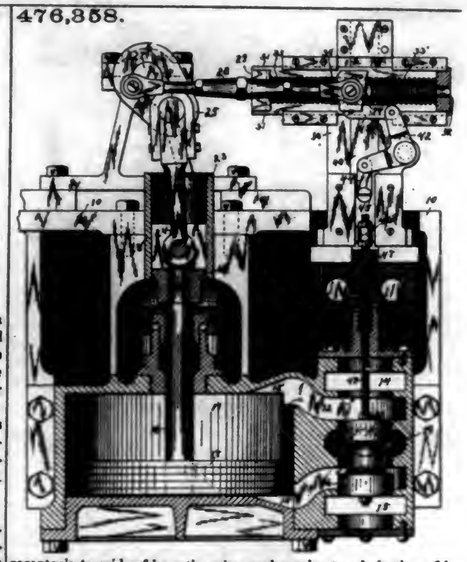
476,858. PORTABLE OR DOMESTIC REFRIGERATOR. ALEXANDER T. BALLANTINE, Cleveland, Ohio, assignor to the Domestifroid Company, same place. Filed Apr. 2, 1891. Serial No. 387,363. (No model.)



Claim.—1. A refrigerating apparatus comprising a refrigerating-coil, a condenser, a refrigerant-receptacle and connecting-pipes, combined with a compressing-pump having cylinders and reciprocating pistons therein by which the spent gas is taken from the coil, compressed, and forced through the condenser and refrigerant-receptacle back to the coil, an oscillating arm with which the pistons are connected and by which they are operated, a rock-shaft on which the oscillating arm is secured, a hydraulic motor connected with the rock-shaft, a reciprocating valve for such motor, and adjustable connections between the said valve and the rock-shaft, by which the throw of the pump-pistons may be regulated so as to insure a complete stroke of each in order to expel all of the compressed gas.

2. In a refrigerator, a motor, and a pump, in combination with a condensing-chamber, a refrigerant-receptacle and a condensing-coil located in said chamber, a refrigerating-pipe arranged to discharge by gravity toward the pump, a feed-pipe extending from the refrigerant-

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receptacle to said refrigerating-pipe, and a valve to admit the refrigerant, located on a plane above the bottom of the pump, substantially as described.

3. In a refrigerator, a reciprocating pump to exhaust the refrigerating-coil and condense the refrigerant, a condensing-chamber and a refrigerant-receptacle therein, and a condensing-coil discharging by gravity into the top of said receptacle, a refrigerating-pipe arranged to discharge by gravity into the bottom of the said pump, a feed-pipe from the refrigerant-receptacle, connected with the refrigerating-pipe and a controlling-valve at the point of union between said pipes, substantially as described.

4. In a refrigerator, a condensing-chamber, and a condensing-pipe and a refrigerant-receiver exposed to the water in said chamber, in combination with a hydraulic motor having a discharge-passage into said chamber to utilize the waste or exhaust motor fluid for condensing and cooling purposes, substantially as described.

5. In a refrigerator, a pump having a chamber in its bottom for the accumulation of gas and oil, a refrigerating-pipe discharging by gravity into said chamber, and a condensing-pipe on the pressure side of the pump, having a gravity discharge, in combination with a receptacle into which said pipe empties, a condensing-chamber inclosing said receptacle and condensing-pipe, and a feed-pipe with a valve connecting said receiver with the refrigerating-pipe, substantially as described.

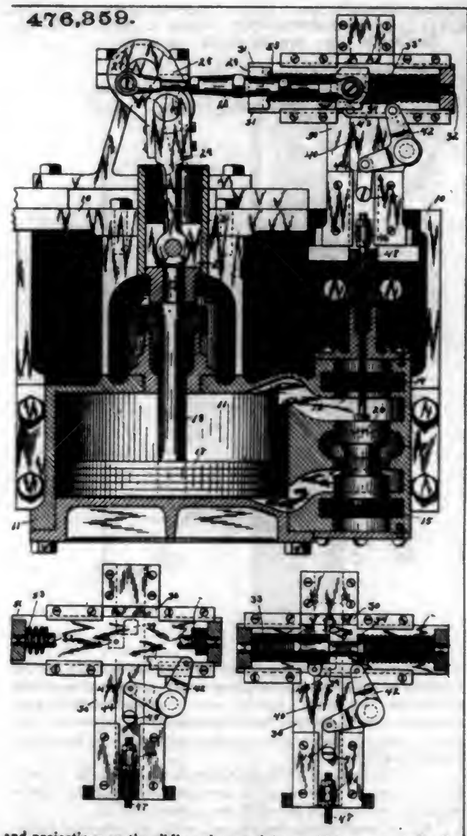
6. In a refrigerating apparatus, a feed-pipe and a refrigerating-pipe, and a coupling uniting said pipes, having two separate valves to control the flow of refrigerating agent from one pipe to the other, and a plugged opening in said coupling for supplying the refrigerating agent, substantially as described.

7. A refrigerating apparatus comprising a refrigerating device, such as a coil of pipe, a refrigerant-receptacle from which the refrigerant is forced by accumulated pressure therein into the refrigerating device, a condensing-pump having a chamber below its pistons, into which chamber the spent gas from the refrigerating device is discharged and whence it is taken by the pump and compressed, a condensing and cooling chamber, above which the refrigerating device and the pump are arranged and in which is submerged the refrigerant-receptacle, a coiled pipe conveying the compressed gas from the pump through the condensing and cooling chamber into the refrigerant-receptacle, and a hydraulic motor whose waste water discharges into the cooling and condensing chamber, substantially as described.

476,859. RECIPROCATING HYDRAULIC MOTOR. ALEXANDER T. BALLANTINE, Cleveland, Ohio, assignor to the Domestifroid Company, same place. Filed Apr. 2, 1891. Serial No. 387,364. (No model.)

Claim.—1. The combination of a reciprocating piston, a shaft driven thereby, a reciprocating valve for controlling said piston, and mechanism for starting the valve and piston and preventing a dead-centering of the same, said mechanism comprising a sliding plate carrying the valve-rod, a box connected to the shaft and arranged to travel crosswise of the sliding plate, springs in said box, a sliding sleeve arranged between said springs for compressing said springs alternately,

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and projections on the sliding plate and box, which are periodically locked and unlocked, substantially as and for the purposes described.

2. The spring-carrier and a projection thereon, the springs and the spring-compressor supported by said carrier, a valve, a sliding bar connected with the valve and also with the spring-compressor, and a projection on said sliding bar, said carrier and sliding bar moving at right angles to cause their projections to interlock at intervals, substantially as described.

3. A spring-carrier supported in guideways to slide therein and having a lateral projection, a rock-shaft to actuate said carrier, a valve-actuating bar supported in guideways at right angles to the spring-carrier, a projection on said bar corresponding to the projection on the carrier, springs in said carrier, and connections between the valve-actuating bar and the springs, whereby the periodical locking and releasing of said projections is effected, substantially as described.

4. The sliding spring-carrier, the springs therein, and a projection on said carrier, the sliding valve-operating bar at right angles thereto, and a complemental projection on said bar, a spring-compressor in said spring-carrier, and a bell-crank lever interposed between the spring-compressor and the sliding valve-operating bar, whereby said bar and spring-carrier may be locked and unlocked, substantially as described.

5. The spring-carrier and the springs supported on a rod therein, a spring-compressor on the rod between the springs, the valve and valve-operating bar, a link and rocking connection between said bar and the spring-compressor, and locking projections on said compressor and the spring-carrier, substantially as described.

6. A spring-carrier having a projection on its rear, a valve-operating bar at right angles to the carrier and having a projection to engage with the projection in the carrier, separate springs in the carrier, a spring-compressor supported between the said springs, and a link connection between the said compressor and the valve-operating bar, substantially as described.

7. A carrier having a pair of compressible springs and a spring-compressor between the same, in combination with a valve-operating bar, a rocking connection between said bar and the spring-compressor, and projections from the carrier and bar adapted to interlock to hold temporarily the valve-operating bar in raised or lowered position, whereby the spring-compressor is held against the tension of one of the springs, substantially as described.

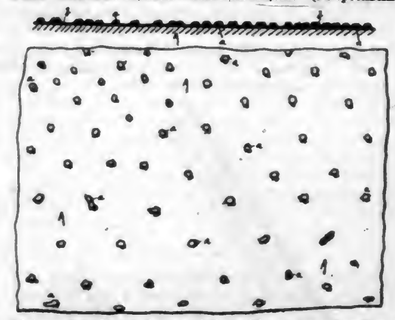
8. The carrier supported in horizontal guides and having a central rod with springs and a spring-compressor thereon and a projection on its rear, in combination with a valve-operating bar having a projection locking temporarily on said carrier, and link and rocking connections between the spring-compressor and the valve-operating bar, substantially as described.

9. The valve and the valve-operating bar having a projection on its face, and a transverse sliding frame having a projection on its rear, engaging the projection on the valve-operating bar alternately above and below, an elbow-lever, a spring-compressor and springs, and link connections between said compressor and the valve-operating bar and the said elbow-lever, substantially as described.

10. The reciprocating piston, and the rock-shaft, and the valve and the valve-actuating bar, a sliding carrier-frame operated by the rock-shaft and constructed to engage and disengage said valve-actuating bar, springs in said carrier and a spring-compressor between the springs, a rocking lever, and link connections between the lever and the spring-compressor and the valve-operating bar, respectively, substantially as described.

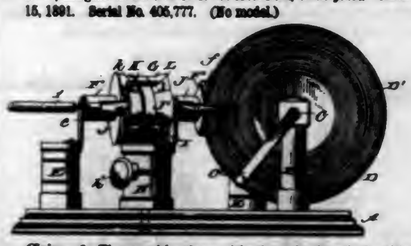
11. The spring-carrier having a central grooved rod, springs on the rod, and collars between the springs, sliding on said grooves, and a sliding sleeve between collars, in combination with a valve-operating bar having a projection to lock on the said carrier and pivoted connections between the said bar and the sliding sleeve between the said springs, substantially as described.

476,860. WALL-COVERING. JOSEPH W. BATH, Minneapolis, Minn. Filed Jan. 14, 1890. Serial No. 336,896. (No specimens.)



Claim.—A wall-covering consisting of fragments of cork or other material interposed between a wall or other surface to which it is applied and a flexible covering of paper or fabric presenting in relief upon the surface of the covering the irregular shape of the interposed substance.

476,861. PENCIL-SHARPENER. HERMAN A. BENEDICT, Syracuse, N. Y., assignor of one-half to T. W. Meacham, same place. Filed Sept. 15, 1891. Serial No. 405,777. (No model.)



Claim.—1. The combination, with the wheel and the friction-roller arranged to move in contact therewith, of the rotatable standard, the pencil-holder carried thereby, a shaft parallel with the holder and receiving its motion direct from the wheel, and a band for revolving the said holder from said friction-roller, as set forth.

2. The combination, with the rotary wheel, of the rotatable standard, a revoluble pencil-holder, a pulley mounted to revolve therewith, and a band passed over the said pulley and receiving its motion from the rotary wheel through intermediate frictional devices, as set forth.

3. In a pencil-sharpener, the combination, with the rotatable standard, of a yoke thereon, a hollow shaft removably journaled in the upright portions of the yoke and having spring portions at the ends, a pulley mounted to revolve with said shaft, a revoluble wheel, and

intermediate connections between the wheel and the said pulley, substantially as specified.

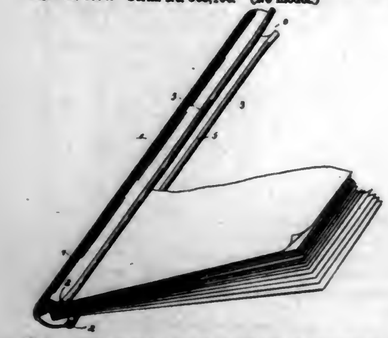
476,862. STUD OR BUTTON. MICHEL BRESSON, New York, N. Y. Filed Mar. 13, 1802. Serial No. 425,407. (No model.)



Claim.—1. The combination of a head *a*, with an inner stem *b* secured thereto, jaws *c*, pivoted to the stem, a catch, and an independently-movable outer tube *e*, provided with slots, through which the jaws are adapted to be projected, substantially as specified.

2. The combination of head *a*, with stem *b* secured thereto, jaws *c*, pivoted to the stem, a spring *d*, having laterally-projecting handle d' and nose d^2, and with a surrounding slotted tube *e*, having head e^2, substantially as specified.

476,863. TEMPORARY BINDER. AUSTIN BURT, Black River Falls, Wis., assignor of one-half to Horace E. Burt, same place. Filed Sept. 16, 1890. Serial No. 365,166. (No model.)



Claim.—A temporary binder consisting of a piece of resilient metal bent into U shape and having cylindrical-rolled edges diverging from each other at each end to form flaring mouths and wire rods inclosed within said rolled edges, substantially as described.

476,864. UMBRELLA-NOTCH. SAMUEL COLLINS, Philadelphia, Pa. Filed Apr. 9, 1891. Serial No. 388,284. (No model.)



Claim.—In combination with ribs having transverse pins passed through them at points some distance from their upper extremities, the rib-holding notch formed of two parts, which are separable, one part being provided with two circles of upper notches in the same horizontal plane and the other part provided with a circle of lower notches, and a partitioned recess between the notches, and the first-named part having a rounded-off isolated and crowning outer surface, substantially as described.

476,865. TRANSOM-LIFTER. GEORGE A. COLTON, Chicago, Ill. Filed Nov. 28, 1891. Serial No. 413,415. (No model.)

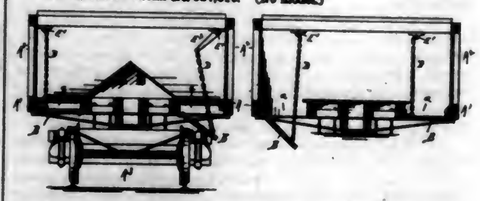


Claim.—1. In a transom-lifter, the combination, with the rod formed with a depression, of a stirrup having a portion to receive the rod and provided with an exterior wart or projection, whereby the substance of the stirrup may be compressed into the depression of the rod to firmly connect the two together, substantially as and for the purpose specified.

2. As an improved article of manufacture, a stirrup for transom-lifters, comprising a sleeve portion provided with an exterior wart or projection, substantially as and for the purpose specified.

3. The combination, with the rod, of the guide-bracket having screw-threaded boss, and through which the rod passes, and the set-screw tapped through said boss and having its inner end upset to impinge against the interior of the bracket, substantially as and for the purpose specified.

476,866. DUMP-CAR. ROBERT S. COX, Terre Haute, Ind. Filed Oct. 22, 1889. Serial No. 327,816. (No model.)

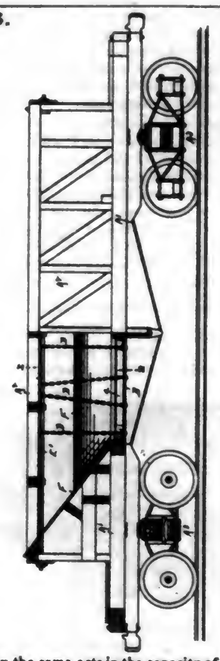


Claim.—1. In a dump-car, the combination, with the frame and inclined bottom, of downwardly-opening doors hinged to the bottom, a longitudinally-arranged shaft journaled in the ends of the car above the doors, and chains directly connecting the shaft and free edges of the doors, substantially as and for the purposes described.

2. In a dump-car, the combination, with the frame and inclined bottom, of downwardly-opening doors hinged at their inner edges to said bottom, a longitudinally-arranged shaft journaled in the ends of the car in vertical alignment with the free edges of the doors, and chains secured to said free ends, having their upper ends wound around and secured to the shaft, whereby upon the unwinding of the chain the doors are lowered, substantially as and for the purposes described.

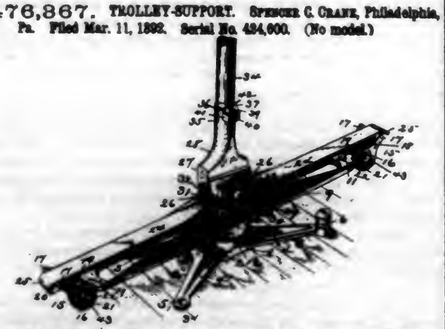
3. In a dump-car, the combination, with the frame and inclined bottom, of hinged doors forming chutes hinged at their inner edges to said bottom and below the incline thereof, a longitudinally-arranged shaft journaled in the ends of the car in vertical alignment with the free edges of the doors, two or more chains secured to said free edges and wound around and secured to the shaft, and means for rotating

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the shaft, whereby the same acts in the capacity of a windlass and any incline given to the doors at the discharge, substantially as and for the purposes described.

476,867. TROLLEY-SUPPORT. SPENCER C. CRANE, Philadelphia, Pa. Filed Mar. 11, 1892. Serial No. 424,600. (No model.)



Claim.—1. A trolley-support composed of a pivoted trolley-pole and a spring bearing upwardly against the butt of the pole, tending to maintain the latter in an upright position, substantially as described.

2. A trolley-support consisting of a pivoted trolley-pole and a leaf-spring bearing upwardly against the butt of the pole, tending to maintain the latter in an upright position, substantially as described.

3. A trolley-support consisting of a pivoted trolley-pole, top bearings for the same, and a spring pressing upwardly against the butt of the pole to lift and maintain the latter in its bearings, substantially as described.

4. A trolley-support consisting of a pivoted trolley-pole, top bearings for the same, and a leaf-spring pressing upwardly against the butt of the pole to lift and maintain the latter in its bearings, substantially as described.

5. A knockdown trolley-support composed of a pivoted pole, slot-bearings for the same, and a spring acting upon the butt of the pole and reacted upon by the butt, whereby the parts are interlocked, substantially as described.

6. In a trolley-support, the combination of a swiveled cradle provided with slot-bearings and a trolley-pole provided with a cam-shaped butt pivoted in the same, of a leaf-spring supported upon the cradle under the pole-butt, acting upon the latter to maintain it in its bearings and to interlock the parts, substantially as described.

7. A trolley-support composed of a pivoted trolley-pole, elongated bearings for the same, and a spring maintaining the trolley-pole pivoted at one end of the bearings, substantially as described.

8. A trolley-pole support composed of a pivoted trolley-pole, provided with a butt having cam-surfaces and an intermediate flattened portion, bearings for the pivots of the trolley-pole, and a spring acting in conjunction with the flattened portion of the pole-butt to lock the pole in an upright position and yielding to the action of the cam-surfaces as the pole is inclined, substantially as described.

9. In a trolley-support, the combination of a pivoted trolley-pole provided with a cam-shaped butt, a leaf-spring acting upon the pole-butt and tending to maintain it in an upright position, and supports for the ends of the spring, substantially as described.

10. In a trolley-support, the combination of a pivoted trolley-pole provided with a cam-shaped butt, a leaf-spring acting upon the cam-surfaces of the pole-butt and riding thereunder as the pole is tilted, and supports for the ends of the spring, on which the latter is movable longitudinally, substantially as described.

11. In a trolley-support, the combination of a pivoted trolley-pole provided with a cam-shaped butt, a leaf-spring acting upon and riding under the cam-surfaces of the pole-butt and provided with downturned ends, and supports for the spring, acting in conjunction with the downturned ends thereof to limit the longitudinal movement of the spring, substantially as described.

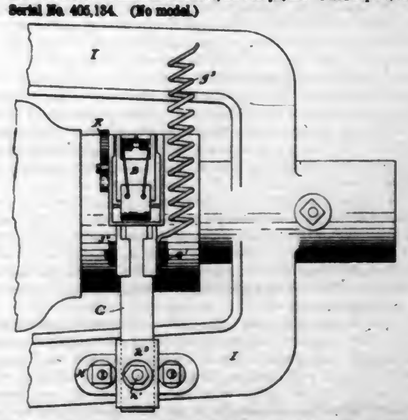
12. In a trolley-support, the combination of a pivoted trolley-pole provided with a cam-shaped butt, with a leaf-spring freely supported at its ends and bearing with the middle upwardly against the butt, and means for raising and lowering the spring-supports, substantially as described.

13. In a knockdown trolley-support, the combination of a pivoted trolley-pole, bearings for the same, a leaf-spring acting upon the pole-butt to maintain the pole-pivots in their bearings, adjustable supports for the ends of the spring, and locking-pins for maintaining the end supports in the adjustable positions, substantially as described.

14. A knockdown trolley-support consisting of a swiveled cradle, adjustable supports mounted on the ends of the cradle, a pivoted trolley-pole provided with a cam-shaped butt, slot-bearings for the trolley-pole, formed in the cradle, and a leaf-spring sustained at the ends on the adjustable supports and engaging under the pole-butt, the said spring tending to maintain the trolley-pole upright and serving to lock the parts of the trolley-support together, substantially as described.

15. In a knockdown trolley-support, a pole-butt provided with a socket for the end of the pole split into two jaws, opposing lugs formed on the jaws, and a wedge for separating the lugs to close the jaws, substantially as described.

476,868. BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES AND MOTORS. FRANK R. DAGGETT, St. Joseph, Mo. Filed Sept. 8, 1891. Serial No. 405,184. (No model.)



Claim.—1. An electrical-brush holder composed of a triangular solid head of brass or other suitable metal, a cross-bolt connecting the apices of the vertical jaws or sides of such head and covered by a sleeve, a ratchet-wheel at one end of said bolt, and a pawl adapted to engage the teeth of said ratchet, a pin passing through said sleeve and bolt midway between the vertical jaws, a swinging plate hung on said bolt, a spiral spring wound around said sleeve with its free ends projecting downward and resting on the side of said swinging plate, and a tongue attached to the bottom of said swinging plate, substantially as and for the purposes described.

2. An electrical-brush holder composed of a triangular solid head of brass or other suitable metal, a cross-bolt connecting the apices of

the vertical jaws or sides of such head and covered by a sleeve, a ratchet-wheel at one end of said bolt, and a pawl adapted to engage the teeth of said ratchet, a pin passing through said sleeve and bolt midway between the vertical jaws, a swinging plate hung on said bolt, a spiral spring wound around said sleeve with its free ends projecting downward and resting on the side of said swinging plate, and a tongue attached to the bottom of said swinging plate, in combination with suitable means for attaching said brush-holder to an electrical commutator, the combination being and operating substantially as and for the purposes described.

3. An electrical-brush holder composed of a triangular solid metallic head, a cross or ratchet bolt connecting the apices of the vertical sides of such head, a sleeve covering said bolt, a ratchet-wheel at one end of said bolt, and a pawl pivoted on the side of one of said jaws and adapted to engage the teeth of said ratchet, a pin passing through said sleeve and bolt midway between said vertical sides, a swinging plate hung on said cross-bolt, a spiral spring wound around said sleeve with its free ends projecting and resting on the side of said plate, a tongue attached to the bottom of said plate, an oblong brush-chamber in the bottom of said head and having a portion of its top cut from the back forward to allow the free action of said tongue throughout the length of said brush-chamber, and slotted extensions under the bottom of said head and integral therewith and provided with vertical corrugations along their outer sides, in combination with suitable means for attaching said brush-holder to an electrical commutator, the combination being and operating substantially as and for the purposes described.

4. An electric-brush holder composed of a triangular head adapted to hold a brush in position with a yielding pressure against the periphery of an electrical commutator, slotted extensions under the bottom of said head and parallel with its sides, vertical corrugations on the outer sides of said slotted extensions, a pair of box-clamps with the tops thereof widened and provided with vertical corrugations adapted to mesh and engage the vertical corrugations of said slotted extensions, lugs fitted into the tops of said clamps, extending inwardly and located one side of the center of said clamps and adapted to fit into the slots in said extensions, and a threaded bolt passing through said box-clamps and adapted to bind them firmly together and to said triangular head by means of said extensions, corrugations, and lugs, combined with a means for attaching said brush-holder to the yoke of an electrical commutator, substantially as and for the purposes described.

5. An electrical-brush holder composed of a triangular head adapted to hold a brush in position against the periphery of an electrical commutator and having the described slotted extensions and vertical corrugations, a pair of box-clamps provided with vertical corrugations adapted to mesh and engage the vertical corrugations of said extensions, lugs fitted into the tops of said clamps, extending inwardly and located one side of the center of said clamps and adapted to fit into the slots in said extensions, a threaded bolt passing through said clamps and adapted to bind them firmly together and to said triangular head by means of said extensions, corrugations, and lugs, an insulator of hard maple or other suitable wood, paraffined, as described, adapted to be attached to the bottom of said triangular metal head or holder in a vertical position by means of said corrugated box-clamps and extensions, and a contact wire bolted to the outside of one of said box-clamps by means of the bolt which holds the same together, combined with a means for attaching said brush-holder to the yoke of an electrical commutator, substantially as and for the purposes described.

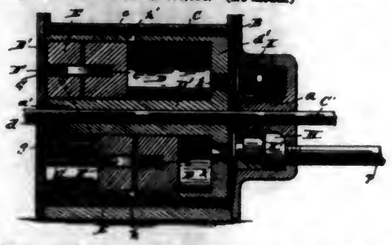
6. In combination with an electric-brush holder adapted to automatically hold a brush in contact with the perimeter of a commutator, a vertically-adjustable slotted insulator attached thereto and supported in a bracket attached to the yoke of the commutator and having shoulders at its top, and the extensions E E' on the holder between which the neck *f* of such insulator is fitted, all substantially as and for the purposes set forth.

7. In an electrical-brush holder, a head adapted to automatically hold a brush in contact with the perimeter of a commutator, in combination with a vertical standard or insulator attached thereto, a slot near the base of said insulator, adapted to receive a stud, a bracket with slotted arms adapted to be bolted to the yoke of a commutator and provided with a stud adapted to pass through a slot near the base of said insulator, box-jaws to receive said base, a clamp adapted to incloss the outer side of said insulator, a spring-lock washer and lock-nut fitting the outer end of said stud and adapted to closely and rigidly clamp and bind the base of said insulator to the bracket, and bolts and lock-nuts to attach said bracket to the yoke of an electrical commutator, substantially as and for the purposes described.

8. In electrical-brush holders, a pair of heads adapted to automatically hold a pair of brushes in contact with the opposite sides or poles of an electrical commutator and perpendicular to the axis thereof, corrugated slotted extensions under the bottom of said heads and parallel with the sides thereof, adapted to attach said heads to the standard or insulator, box-clamps with vertical corrugations on their inner sides, and lugs extending inwardly, located to one side of the center of said box-clamps and adapted to engage the said slotted extensions, vertical insulators or standards fastened to said head by means of said clamps, lugs, corrugations, and slotted extensions, and means for attaching the same to the yoke of an electrical commutator, substantially as and for the purpose described.

9. A pair of heads or holders adapted to hold a pair of brushes in contact with the opposite sides or poles of an electrical commutator and at right angles to the axis thereof, slotted extensions, corrugations, lugs, box-clamps, and bolts, as described, for attaching the same to the head of a pair of vertical insulators or standards, combined with a pair of contact or terminal wires bolted to said heads by means of the bolt which holds the parts thereof together, vertical insulators, and brackets and clamps adapted to attach said brush-holders to opposite sides of the yoke of an electrical commutator, substantially as and for the purpose described.

476,869. **RECIPROCATING ROTARY ENGINE.** CHARLES W. DAKE, Grand Haven, and EDWARD B. DAKE, Muskegon, Mich. Filed Aug. 28, 1891. Serial No. 403,990. (No model.)



Claim.—1. In a rotary engine, the outer casing having a double-inclined cam secured to the inner surface of one of its heads, the rotary cylinder slotted to receive said cam, and having a series of alternately or successively reciprocating pistons therein and engaging said cam, substantially as specified.

2. In a rotary engine, the combination, with the outer cylinder or casing having a circular double inclined cam secured to the inner surface of one of its heads, of the rotary piston-cylinder having a series of successively-reciprocating pistons therein, said pistons having each a slot and anti-friction roller engaging and traveling on said cam, said slots extending below said rollers and formed with an arcuate mouth, substantially as specified.

3. The combination, with the outer casing or cylinder having the cam therein and stationary therewith, of the cylinder having a series of pistons therein, provided with ports and exhausts, by means of which they are alternately and successively reciprocated, said pistons having each an arcuate-mouthed slot engaging said cam, and an anti-friction roller in said slot, the piston-cylinder being also slotted to receive said cam, substantially as specified.

4. The combination, with the outer cylinder or casing and the cam secured to the inner face of one of its heads, of the rotary cylinder provided with slots to receive said cam and with a series of successively-reciprocating pistons engaging said cam, substantially as specified.

5. The combination, with the outer cylinder or casing and the cam secured to the inner face of one of its heads, of the rotary cylinder provided with a series of piston-chambers therein, slots connecting said chambers and receiving said cam, and pistons reciprocating in said chambers and provided with slots, and anti-friction rollers adapted to travel said cam, substantially as specified.

6. In a rotary engine, a rotary valve having an arcuate port and a marginal flange, a second valve located within said flange and arranged to partially cover said port, a connection between the two valves, and means for operating the said valves, substantially as specified.

7. In a rotary engine, a valve comprising a rotary disk provided with an arcuate port and with a surrounding marginal flange, a rotary segmental valve within said flange and axially arranged with relation to the first valve and adapted to partially close said port, said segmental valve having an arcuate lug engaging said port and provided with a gear, means for actuating said gear and thereby the valves, and stops for limiting the movement of the said disk, substantially as specified.

8. The combination, with the outer casing having a steam-chest formed in one of its heads and provided with an interior cylindric shaft-bearing centrally of said chest, of a valve located within said steam-chest and provided with an arcuate port, said valve having a central bearing on said cylindric shaft-bearing, a segmental valve also having a bearing on said shaft-bearing, said segmental valve arranged to partially close said port and provided with a projection engaging the same, a gear on said segmental valve, a pinion meshing therewith,

means for actuating said pinion, and stops for limiting the movement of said valves, substantially as specified.

9. The rotary engine comprising the outer cylindric casing having a steam-chest in one of its heads and a double inclined circular stationary cam on the interior of the opposite head, an inner rotary cylinder rigidly secured to a shaft having bearings in said heads, a chamber between the two cylinders, said inner cylinder having therein a series of successively-reciprocating pistons provided each with a groove and with an anti-friction roller traveling said cam, said inner cylinder also having slots to receive said cam, and suitable reversing-valve and exhaust mechanism, substantially as specified.

476,870. **FISHING-ROD.** FRED D. DIVINE, Utica, N. Y. Filed Mar. 8, 1892. Serial No. 424,240. (No model.)



Claim.—A substantially-straight split-bamboo fishing-rod composed of united parallel spirally-twisted longitudinal sections, substantially as and for the purpose described.

476,871. **TETRAZO BLUE DYE.** CARL DUISBERG, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed July 16, 1891. Serial No. 399,695. (Specimens.) Patented in Germany Nov. 19, 1885, No. 40,247; in England Nov. 24, 1885, No. 14,494; in France Dec. 19, 1885, No. 173,042; in Austria-Hungary May 7, 1886, No. 30,062 and No. 48,173, and in Italy June 30, 1886, Nos. 20/338.

Claim.—1. The herein-described new direct dyeing tetrazo dye-stuff having the formula substantially as described and which is a violet-black powder soluble in water with violet-blue color, that is reddened by alkalies and soluble in concentrated sulphuric acid with a dark-blue color, from which on dilution with water the color separates out, and dyeing unmordanted cotton in baths with common salt a greener blue than does the analogous coloring-matter containing the alpha-naphtholalphamonosulpho-acid.

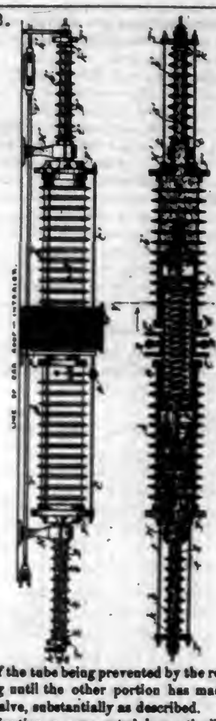
2. The process for the production of a new direct dyeing tetrazo dye-stuff by combining one molecular proportion of the tetrazo compound of dianisidine with one molecular proportion of beta-naphtholdisulpho-acid R and then with one molecular proportion of alpha-naphtholalphamonosulpho-acid, (Clève.)

476,872. **THERMOSTATIC GOVERNOR AND MOTOR.** WILLIAM R. EASTMAN, Boston, Mass. Filed Sept. 4, 1891. Serial No. 404,730. (No model.)

Claim.—1. In combination, a corrugated hermetically-sealed tube filled with expansible fluid and connected with a damper at one end, a yielding detent for the tube at the other end, and a fixed detent to limit the motion of the first-mentioned end of the tube, as and for the purposes set forth.

2. A hermetically-sealed metal tube completely filled with a liquid and having annular corrugations to allow of lengthening and shortening the tube by expansion and contraction of the said inclosed liquid, the said tube being formed in two portions, which lengthen at different

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times, one part of the tube being prevented by the resistance of a spring from lengthening until the other portion has made its full excursion to operate the valve, substantially as described.

3. In combination, a corrugated hermetically-sealed tube filled with expansible fluid and connected with a damper at one end, a yielding detent for the tube at the other end, a fixed detent to limit the motion of the first-mentioned end of the tube, and a rigid bar or cylinder within the bore of the sealed tube to prevent deflection from a right line when lengthening against resistance, substantially as set forth.

4. A hermetically-sealed metal tube completely filled with a liquid and having annular corrugations to allow of lengthening and shortening the tube by expansion and contraction of the said inclosed liquid, the said tube being formed in two portions, which lengthen at different times, one part of the tube being prevented by the resistance of a spring from lengthening until the other portion has made its full excursion to operate the valve, one portion of the said tube being held rigidly at one end to lengthen only in one direction and the other portion of said tube held rigidly at the same point to lengthen only in the other direction, substantially as described.

5. A hermetically-sealed metal tube completely filled with a liquid and having annular corrugations to allow of lengthening and shortening the tube by expansion and contraction of the said inclosed liquid, in combination with a rigid bar or cylinder within its bore to prevent deflection from a right line when lengthening against resistance, as specified.

6. In combination, a damper, valve, or other mechanism to be operated, a corrugated hermetically-sealed tube filled with an expansible fluid and connected with the mechanism to be operated at one end, a yielding detent for the tube at the other end, a fixed detent to limit the motion of the first-mentioned end of the tube, and a rigid bar or cylinder within the bore of the said tube to prevent deflection from a right line when lengthening against resistance, substantially as described.

7. In combination, a corrugated hermetically-sealed tube formed in two parts, one of which is of greater diameter than the other, filled with expansible fluid and connected with a damper at one end, a yielding detent for the tube at the other end, and a fixed detent to limit the motion of the first-mentioned end of the tube, as and for the purposes set forth.

8. The combination of an expansible tube having an internally-screw-threaded anchorage secured thereto, a bolt screwed into said anchorage, means for turning said bolt, and a spring bearing against said bolt at one end and having at the other end means for resisting its action, as and for the purposes specified.

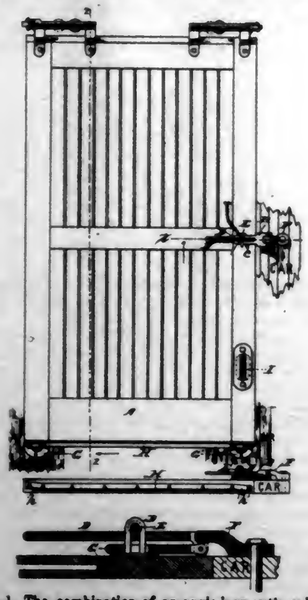
9. The combination of an expansible tube having within it an internally-screw-threaded anchorage secured thereto, a bolt screwed into

said anchorage, a spring bearing against said bolt, a tube surrounding said spring, the tube and bolt being secured together by an extensible connection, substantially as set forth.

10. The combination of an expansible tube having within it an internally-screw-threaded anchorage secured thereto, a bolt screwed into said anchorage, a spring bearing against said bolt, a tube surrounding said spring, the tube and bolt being secured together by a suitable connection consisting of a projection rigidly connected with the bolt, and a disk secured to the tube and having a suitable recess or perforation for receiving said projection, substantially as described.

11. A hermetically-sealed metal tube completely filled with a liquid and having annular corrugations to allow of lengthening and shortening the tube by expansion and contraction of the said inclosed liquid, the said tube operating by the motion of one end a mechanism and held at the other end by a spring having more resistance than the mechanism operated for the purpose of preventing rupture or distortion of the said tube by excessive expansion of the inclosed fluid.

476,873. SLIDING-DOOR LOCK AND FIXTURE. WILLIAM R. EASTMAN, Boston, Mass. Filed Sept. 28, 1891. Serial No. 406,963. (No model.)



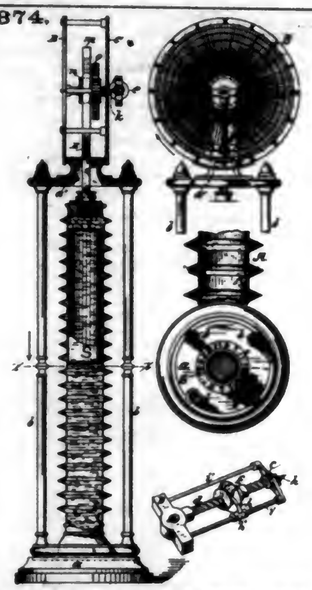
Claim.—1. The combination of an angle-iron with ends bent to form inclined planes, a car-door, and suitable clips for pressing the door against the car, with a locking device working and constructed substantially as described to force the bent ends of the angle-iron into and out of the recesses of the clips, for the purpose specified, substantially as described.

2. In a freight-car-door fastening, the combination of a bracket permanently attached to the body of the car, a locking-lever hinged to said bracket, a hasp hinged only to said locking-lever, and a staple permanently attached to the door, which staple receives both the locking-lever and the hasp, substantially as described.

3. In a freight-car-door fastening, the combination of a bracket permanently attached to the body of the car, a locking-lever hinged to said bracket, a hasp hinged only to said locking-lever and provided with a thumb-piece for holding it away from the locking-lever, and a staple permanently attached to the door, which staple receives both the locking-lever and the hasp, substantially as described.

4. A freight-car-door closing and locking device consisting of a lever in the form of a bell-lever, carrying at one end a hasp hinged thereto and itself hinged at its angle to a bracket permanently attached to the body of the car, in combination with a staple attached to the car-door, against which the force of the bell-lever is exerted to both open and close the said door and through which a lock or other fastening may be passed above both the locking-lever and the hasp, substantially as described.

476,874. RECORDING-THERMOMETER. WILLIAM R. EASTMAN, Boston, Mass. Filed Oct. 5, 1891. Serial No. 407,736. (No model.)



Claim.—1. In a self-registering thermometer, a wheel which when not allowed to revolve is pushed forward in contact with the dial and marks upon its surface by abrasion during a rise of temperature and which on being allowed to revolve actuates a nut upon a relatively stationary screw to move said marking-wheel, in combination with an hermetically-sealed corrugated motor-cylinder containing an expansive fluid for giving motion to a pivoted frame carrying said marking-wheel.

2. In a self-registering thermometer, a wheel which when not allowed to revolve is pushed forward in contact with the dial and marks upon its surface by abrasion during a rise of temperature and which on being allowed to revolve actuates a nut upon a relatively stationary screw to move said marking-wheel, in combination with an hermetically-sealed corrugated motor-cylinder containing an expansible fluid which actuates the said mechanism by changes of temperature.

3. A recording-indicator consisting, essentially, of a marking-wheel mounted upon a nut traversing a relatively stationary screw, a ratchet-wheel mounted upon said nut, and a pawl not attached to but moving laterally with said wheel.

4. The frame D, screw *d*, nut *f*, marking-wheel *e*, ratchet *g*, pawl *h*, mounting *K'*, and rod *i*, and means for moving said combination in front of a dial.

476,875. SLIDING GATE. EMIL FISCHER, Hallsville, Ill. Filed Sept. 30, 1891. Serial No. 407,309. (No model.)

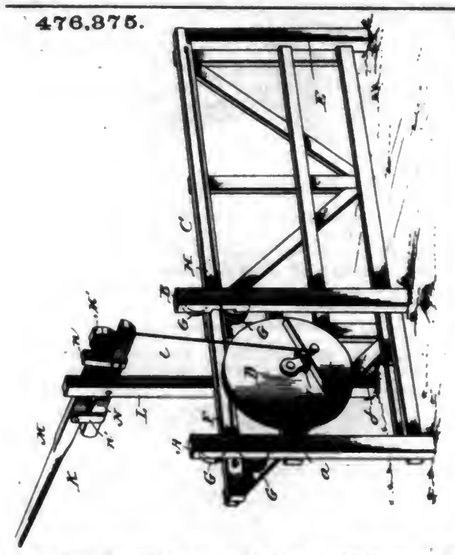
Claim.—1. The combination, with a sliding gate and supports therefor, of a sheave-wheel having a circumference somewhat greater than the width of the gate-opening, a cable connected at its ends to the ends of the gate, respectively, and passing around the said sheave-wheel between its ends, and a weight attached to the same sufficient to move the gate to the end of its travel after an initial momentum has been imparted thereto, substantially in the manner set forth.

2. The combination, with a sliding gate and supports therefor, of a sheave-wheel having a circumference somewhat greater than the width of the gate-opening, a cable passing around the said sheave-wheel and having connections at its ends with the ends of the gate, and an actuating-weight attached to the same sufficient to move the gate and having a limited independent movement, substantially as set forth, for the purpose specified.

3. The combination, with a gate and a weighted sheave-wheel having a circumference somewhat greater than the width of the gate-opening and heavy enough to operate the gate automatically after an initial momentum has been imparted thereto, of a short lever, as N, pivotally supported between its ends and having the loop *n* and the standards *n'*, and the lever M, pivoted to standard *n'*, and having its short end projected through the loop *n* and weighted, substantially as described, for the purpose specified.

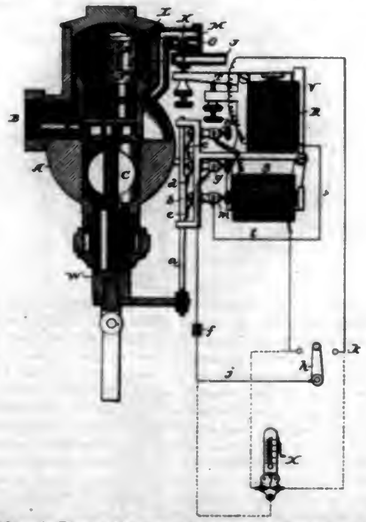
4. The combination of the sliding gate, supports therefor, a sheave-wheel having a circumference somewhat greater than the width of the gate-opening, a cable passing around the said sheave-wheel and connected at its ends with the ends of the gate, a weight concentrically

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mounted with the said sheave-wheel and constructed to actuate the same and having a limited independent movement, the short lever N, pivotally supported between its ends, the connection I between the said weight, lever N, the loop *n*, and the standard *n'*, secured to the lever N, and the lever M, pivoted to the standard *n'* and having its short end projected through the said loop and weighted, substantially as set forth.

476,876. ELECTRICALLY-CONTROLLED VALVE. WILLIAM R. FLEMING, Philadelphia, Pa. Filed Nov. 3, 1888. Serial No. 289,969. (No model.)



Claim.—1. The combination of the main valve having supply and discharge ports, a piston connected at one side with the main valve, a passage between the supply-port of the main valve and the other side of said piston, an auxiliary valve in said passage, an electric circuit and motor for controlling the auxiliary valve, and a circuit-breaker arranged in said circuit and connected to the main valve and operated thereby, substantially as described.

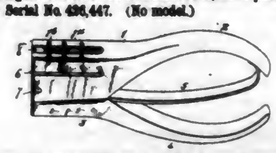
2. The combination of the main valve operated by a piston, the auxiliary valve K, operated by the armature T of magnet R, the magnet S, controlling armature V, which locks the armature T, and a contact-piece *b*, connected with the main valve, substantially as described.

476,877. LEGGIN. CHARLES R. GOODSPEED, Chicago, Ill. Filed Aug. 8, 1891. Serial No. 402,115. (No model.)



Claim.—A leggin having a frame consisting of three rings, two of said rings united by vertical bars connected to the ends thereof and wherein the third ring is connected to one of said rings by opposite braces, each removed a quarter-circumference from the opening of said ring, substantially as specified.

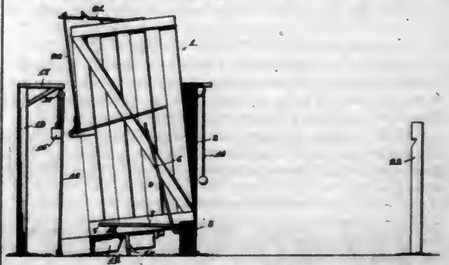
476,878. TICKET-PUNCH. HARRY M. GRANTHAM, Wilmington, Ohio, assignor of one-fourth to Adam Scott, same place. Filed Mar. 26, 1892. Serial No. 426,447. (No model.)



Claim.—1. A portable coupon-ticket punch comprising the body 3, formed with a handle and having the dies or punches mounted in it, and the body 1, hinged to the part 3, provided with a handle and formed with the ticket-opening 6, the series of registering apertures, and having formed in the upper part 1^{x} of its body the longitudinal vertical observation-opening 8, substantially at right angles to the ticket-slot, and an opening-spring, as 5, substantially as set forth.

2. The combination of the body 3, formed with a handle and having dies or punches 9, arranged in two parallel lines, the body 1, hinged to the part 3, having a handle and formed with the ticket-opening 6, the vertical observation-opening 8, substantially at right angles to the ticket-slot, and the series of apertures 1^{a} and 1^{b}, arranged in two parallel lines, as specified, and the opening-spring, substantially as set forth.

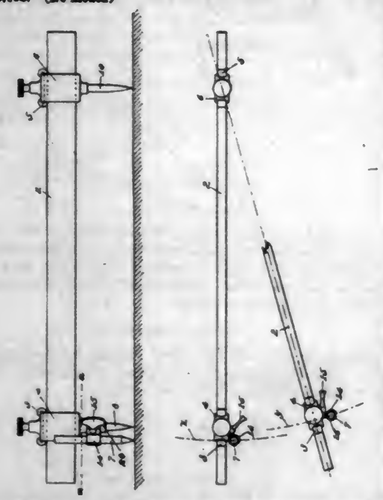
476,879. GATE. WILEY M. GRESHAM, Winchester, Ill., assignor of one-half to Alexander Campbell Palmer, same place. Filed Sept. 24, 1891. Serial No. 406,664. (No model.)



Claim.—The combination of the opposite supporting-posts, a gate provided at its lower inner corner with a horizontal bar journaled at its ends in the post near their bottoms, a keeper extending from the inner end of the gate, a counterbalancing-lever fulcrumed at its lower end on the gate and having its outer side provided with a notch that loosely receives the keeper, a post arranged in rear of the said lever and provided with a pulley and weight, a rope passing over the pulley and connected to the weight and to the upper end of the lever, posts

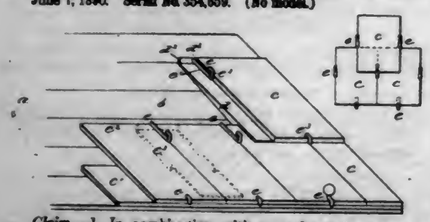
at opposite sides of the gate-supporting posts, a gate-operating rope having its outer ends passed over pulleys supported by said posts and the gate-supporting posts and terminating in pulls, the guide-plate secured to the upper rail of the gate and having the inner portion of the gate-operating rope passed from reverse sides through its perforations and forming a loop, a notched latch-post, the spring-latch located on the free end of the gate, and the rope leading from the free end of the latch to the loop portion of the gate-operating rope, substantially as specified.

476,380. BEAM-COMPASSES. HENRY HAHLAN, New Britain, Conn., assignor to Justus A. Traut, same place. Filed Dec. 15, 1891. Serial No. 415,102. (No model.)



Claim.—The improved beam-compasses herein described, consisting in the combination, with the beam and a pair of heads adjustable thereon and each provided with a compass-point, of the adjustable pencil-carrying clamp having parallel bearings for receiving the trammel-point and pencil, respectively, and means for closing said clamp and for holding the same in position longitudinally of the trammel-point, substantially as shown and described.

476,381. ROOF. SAMUEL R. HAWTHORNE, Middlebury, Vt. Filed June 7, 1890. Serial No. 354,659. (No model.)

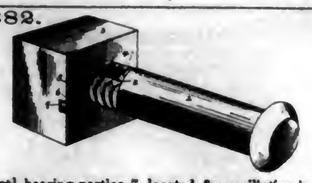


Claim.—1. In combination with a roof-covering composed of boarding and slate, the improved bib made of thin metal with one end having an upturned flange and provided at its sides with downturned flanges terminating in a shoulder, all substantially as described.

2. In a roofing, in combination with the slate-fastening devices and slates, the two-part bracket *i*, having the interlocking tubular arms forming the rail socket and fastening, all substantially as described.

476,382. NUT-LOCK. SAMUEL C. HICKERSON, Malta, Ohio, assignor of one-half to Elmer L. James, same place. Filed Jan. 2, 1892. Serial No. 416,830. (No model.)

Claim.—The combination, with the bolt having the longitudinal groove formed in its threaded end, of the nut having the bolt-receiving opening and at its inner face provided with the recess tangentially disposed with relation to the opening and extending from the opening to the outer wall or edge of the nut, said recess consisting of the central cylindrical portion 5 and the diametrically-opposite branches 6, flared toward their outer ends, the locking-pawl consisting of the cylindrical central bearing portion 7, located for oscillation in the cylindrical bearing portion 5 of the recess, and the diametrically-opposite pawl and tail ends 8 and 9, the former located in the inner recess 6 and the latter in the outer portion of the recess 6, and the flat spring 10, riveted at 11 to one side of the tail 9 and bearing against the wall of the outer recess 6 and serving to inwardly press the inner or pawl end of the locking-pawl into engagement with the groove of the bolt, substantially as specified.



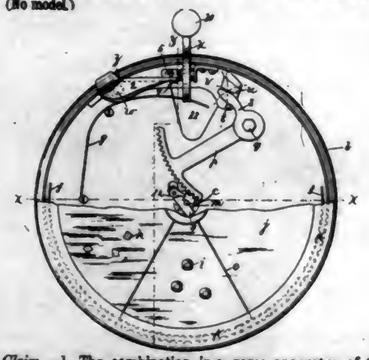
476,383. INGOT-PROTECTOR. WILLIAM R. HINSDALE, Newark, N. J. Filed Aug. 22, 1891. Serial No. 403,422. (No model.)



Claim.—1. The method of casting steel ingots, which consists in first pouring the fluid metal into a suitable mold, and, second, embedding in the upper portion of the fluid metal an imperforate cover of suitable metal and of smaller dimensions than the bore of the mold to form and engage with a fin upon the head of the ingot, as and for the purpose set forth.

2. A steel ingot having an imperforate sheet-metal cover with its edges embedded in the upper portion of the same, as and for the purpose set forth.

476,384. COIN-CONTROLLED GAME APPARATUS. MARTIN G. IMBACH, Jr., Brooklyn, N. Y. Filed June 5, 1891. Serial No. 395,195. (No model.)



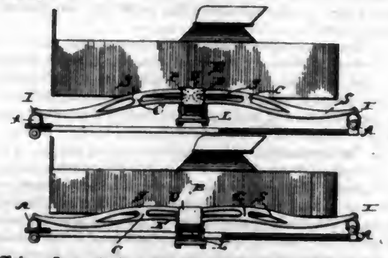
Claim.—1. The combination, in a game apparatus, of the horizontally-rotating disk having the hollow sleeve attached to its lower side and resting on the stud-pivot attached to the bottom of the case, the horizontal driving-segment pivoted on the bottom of the case and geared with said sleeve by the ratchet and pawl, the horizontal thrusting-lever for operating said segment, also pivoted on the bottom of the case and having the stud and lug embracing the radial arm of the toothed segment, hand-lever for actuating the thrusting-lever, arranged in a vertical plane and having the pendent arms embracing the thrusting-lever, and the coin-cell providing the operative connection of said hand-lever and thrusting-lever through the instrumentality of a coin inserted through the slot and adapted to remove said connection by the escape of the coin, which is released by the retraction of the hand-lever, substantially as described.

2. The combination, with the horizontally-rotating disk and the driving-segment geared with it by the ratchet and pawl, of the thrusting-lever for operating said segment, a hand-lever for actuating the thrusting-lever, and the coin-cell providing the operative connection of said hand-lever and thrusting-lever through the instrumentality of a coin inserted through the slot, said thrusting-lever connected with the arm of the segment in the angular arrangement, whereby the contact-point of the thrusting-lever with the arm of the toothed segment shifts toward the axis of said arm and accelerates the movement of the driving-segment, substantially as described.

3. In a coin-controlled horizontally-rotating disk game apparatus having a disk-driving segment, a thrusting-lever for operating the disk-driver, and the hand-lever for actuating the thrusting-lever, the combination of the standards on the thrusting-lever, the adjustable bottom plate on the bottom of the case, and the arm of the hand-lever, forming the coil for the controlling-coin, substantially as described.

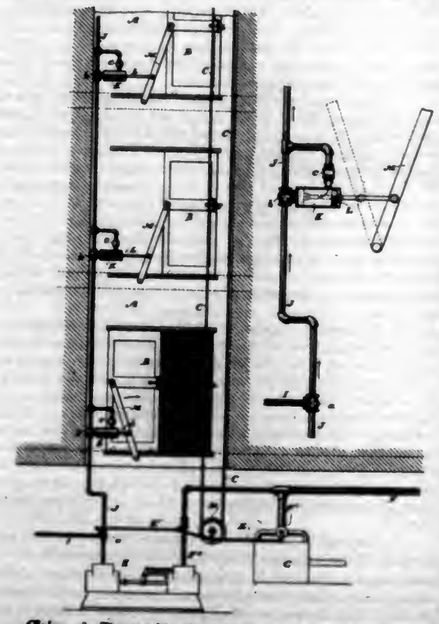
4. The combination, in a game apparatus, of a horizontally-rotating disk, inclosed field over the disk, bars dividing said field into two or more sections, and levers and driving-segment for rotating said disk, located below and geared with said disk through the ratchet and pawl, effecting continuous rotation of the disk by the thrust of the driving apparatus, substantially as described.

476,385. VEHICLE-SPRING. VAN G. JEFFRIES, Coshocton, Ohio. Filed Sept. 13, 1890. Renewed Apr. 23, 1892. Serial No. 430,420. (No model.)



Claim.—In a vehicle-spring, the combination, with the bolster and rear axle and the four side bars S, pivoted at their outer ends to said bolster and axle standing outside the buggy-body, said bars being provided with rounded inner ends E, of the body B, bearings G thereon, cross-rods R, journaled loosely in said bearings and rigidly connecting the two front and the two rear side bars between their ends, a spring I, centrally connected to the body and having shackles U, pivoted to and depending from its ends, and two pins projecting inwardly from each shackle end and loosely engaging said rounded ends of the two side bars, substantially as described.

476,386. DEVICE FOR CLOSING ELEVATOR-GATES. CHARLES N. JUDSON, Brooklyn, N. Y. Filed Apr. 29, 1891. Serial No. 390,960. (No model.)



Claim.—1. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of one or more doors and connections intermediate the same and said car-controlling device, whereby upon starting the car said door or doors may be automatically closed.

2. The combination, with an elevator-shaft and the doors or gates thereof at the landings, of a controlling device for controlling the elevator-car and connections intermediate the device and the said doors or gates, whereby any and all of said doors or gates may be closed upon the movement of the said controlling device.

3. The combination, with an elevator comprising a shaft and a car, of one or more doors and individual actuating mechanism connected with each door, a controlling device for controlling the starting and stopping of the elevator-car, and connections intermediate the same and said door-actuating mechanisms, whereby any and all of the doors may be closed upon the movement of the controlling device of the car.

4. The combination, with an elevator comprising a shaft and a car, of one or more doors and individual fluid-actuated or pneumatic mechanism for each door, a pneumatic chamber or compressor and pipe connections intermediate the same and said actuating mechanisms, a controlling device for starting and stopping the elevator-car, and means intermediate the same and said pneumatic chamber or compressor for controlling the latter.

5. The combination, with an elevator comprising a shaft and a car, of one or more doors and mechanism connected with all of said doors and acting when thrown into operation to close them, a controlling device for the car, and connections intermediate the same and said mechanisms for throwing the latter into operation at the starting of the elevator-car.

6. The combination, with an elevator comprising a shaft and a car, of one or more doors, each provided with a cylinder having a piston connected with and operating the door to close the same, a pneumatic chamber or compressor, a pneumatic or fluid-supply pipe connected with said chamber or compressor and normally opening into the supply end of each cylinder and out from the exhaust ends thereof, and means remote therefrom for controlling the supply of fluid to the cylinders, whereby the fluid may pass through the cylinders in succession.

7. The combination, with an elevator comprising a shaft and a car, of one or more doors, each provided with a cylinder having a piston connected with and operating the door to close the same, a pneumatic chamber or compressor and a pneumatic or fluid-supply pipe connected therewith and connected with one end of each cylinder, so that the fluid acts upon one side of the piston thereof, a branch pipe provided with a valve for preventing a backflow and connecting the other end of each cylinder with the supply-pipe, thereby making the cylinders normally continuous with the supply-pipe, and means for controlling the supply of fluid to the supply-pipe and cylinders.

8. The combination, with an elevator comprising a shaft and a car, of one or more doors, each provided with a cylinder having a piston connected with and controlling the door, a pneumatic or fluid-supply pipe communicating with one end of each cylinder and having a pneumatic chamber or compressor connected thereto, each cylinder provided at the end remote from the supply-pipe connection with a branch pipe and a valve located therein and controlling the connection between said end of the cylinder and the supply-pipe, whereby the cylinder may be made continuous with the supply-pipe by way of the said branch pipe, a controlling device for starting and stopping the car, and connections whereby the said device governs the supply of fluid to the supply-pipe.

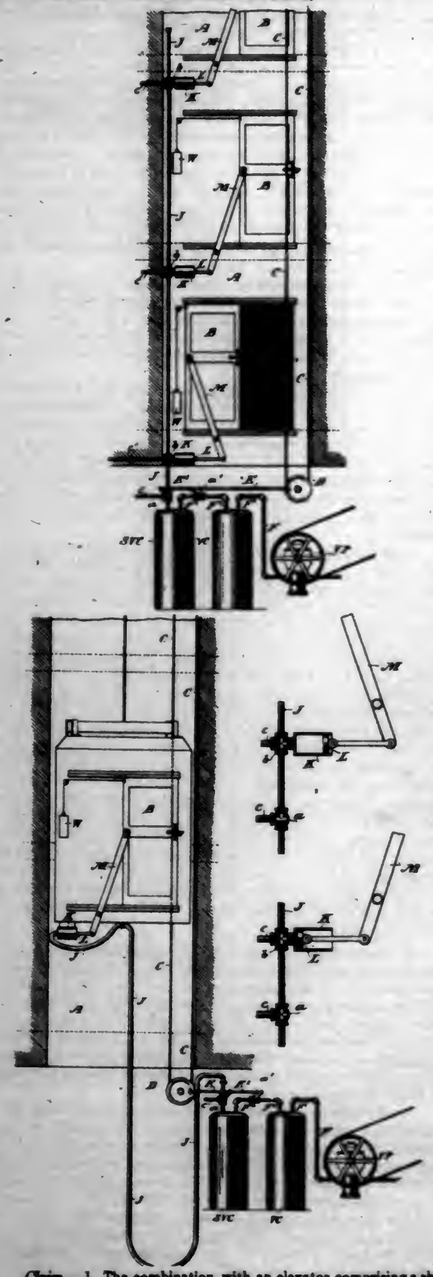
9. The combination, with an elevator comprising a shaft and a car, of one or more doors, each provided with a cylinder having a piston connected with and operating the door, a pneumatic or fluid-supply pipe connected with each cylinder and a valve controlling such connection, whereby each cylinder may at will be cut off from the supply-pipe, a branch pipe connecting one end of each cylinder with the supply-pipe, a pneumatic chamber or compressor for the supply-pipe, and a controlling device for the elevator-car for governing the supply of fluid to the pipe.

10. The combination, with an elevator comprising a shaft and a car, of one or more doors, each provided with a cylinder K, having a piston L, connected with and controlling the door in closing it, of a pneumatic or fluid-supply pipe J, communicating with one end of each cylinder and a pneumatic chamber or compressor connected therewith, a branch pipe connecting the supply-pipe with the end of the cylinder K remote from where the supply-pipe is connected and a valve c located therein, and a controlling device C of the elevator-car for governing the supply of fluid to the pipe J and cylinders K, substantially as and for the purposes set forth.

11. The combination, with a series of doors, each provided with a cylinder having a piston connected with and operating the door, a supply-pipe connected with the supply end of each said cylinder, and a branch pipe for each cylinder, connecting its exhaust end with the said supply-pipe and provided with a valve to prevent a backflow, of a valve for each cylinder controlling the connection between the cylinder and supply-pipe and serving to cut out the portion of the supply-

pipe between the valve and adjacent branch pipe or to cut out the cylinder at will.

476,387. ELEVATOR. CHARLES H. JUDSON, Brooklyn, N. Y. Filed Oct. 3, 1891. Serial No. 407,600. (No model.)



Claim.—1. The combination, with an elevator comprising a shaft and car and a device for controlling the car, of one or more doors, a vacuum-engine connected with each of said doors and operating the same to close it, said vacuum-engine connected with and governed by the said car-controlling device and serving upon moving the controlling device to close said door or doors.

2. The combination, with an elevator comprising a shaft and car and a device for controlling the car, of one or more doors and individual mechanism for actuating each of said doors to close it, a vacuum-pipe connected with each of said mechanisms, and a vacuum-chamber connected with said pipe, the connection between said vacuum chamber and pipe being governed by said car-controlling device, whereby any open door may be automatically closed.

3. The combination, with an elevator comprising a shaft and car and a device for controlling the car, of one or more doors, an individual vacuum-cylinder for each door, provided with a piston connected with the door for closing the same, a vacuum-pipe connected with each of said cylinders, and a vacuum-chamber connected with said pipe, the connection between said vacuum-chamber and pipe being governed by said car-controlling device, whereby upon moving the said device any open door may be automatically closed.

4. The combination, with an elevator-car and the door of the car, of a controlling device for starting and stopping the car and traveling connections intermediate said car-controlling device and said door, whereby upon moving said controlling device the door may be automatically closed.

5. The combination, with an elevator-car and the door of the car, of a controlling device for the car, a pneumatic device having a traveling connection for operating the said door to close the same, said pneumatic device being governed by the said car-controlling device, whereby upon moving said controlling device the door may be automatically closed.

6. The combination, with an elevator-car and the door of the car, of a controlling device for the car, a pneumatic cylinder having a piston connected with said door and acting to close the same, a pneumatic pipe having a traveling connection with said cylinder, and a pneumatic chamber connected with said pipe, the connection between said pneumatic chamber and pipe being governed by said car-controlling device, whereby upon moving said controlling device the door may be automatically closed.

7. The combination, with an elevator comprising a shaft and car, of a pneumatic engine for closing the doors, comprising a main and a secondary pneumatic chamber connected together and provided with valves arranged so that when the secondary chamber is in communication with the pneumatic connection controlling the doors the said main chamber is cut off therefrom, and vice versa, and means for controlling the movement of said valves.

8. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of one or more doors, a pneumatic device for closing the doors and comprising a main and a secondary pneumatic chamber connected with each other and provided with valves, and connections intermediate said valves and the controlling device of the elevator-car, whereby upon starting the car by manipulating said controlling device the secondary chamber may be cut off from the main and placed in communication with the pneumatic connections controlling the doors, and upon manipulating said controlling device to stop the car the said secondary chamber may be cut off from the said pneumatic connections controlling the doors and placed in communication with the said main chamber.

9. The combination, with an elevator comprising a shaft and a car and a controlling device for the car, of one or more doors, a pneumatic cylinder for each door, provided with a piston connected therewith and acting to close the door, a main and a secondary pneumatic chamber connected with each other, and pipe connections intermediate the secondary chamber and each of said pneumatic cylinders, valves controlling the connection between the said chambers and the connection between the said secondary chamber and the pneumatic cylinders, and connections intermediate the car-controlling device and the said controlling-valves for simultaneously operating the same to cut off communication between the main and secondary chambers and to place the secondary in communication with the pneumatic cylinders, and vice versa.

10. The combination, with an elevator comprising a shaft and a car and a controlling device for the car, of one or more doors and a pneumatic engine for closing the same and comprising a main and a secondary pneumatic chamber connected together and the secondary one connected with the door-operating mechanisms, a valve controlling the connection between the secondary chamber and the said door-operating mechanisms and a valve controlling the connection between the main and secondary chambers, a wheel or rocking member actuated by said car controlling device, and connections between the two said valves and the said wheel or rocking member, whereby the movements of the valves may be simultaneously controlled, for the purpose set forth.

11. The combination, with an elevator comprising a shaft and a car, of one or more doors and a pneumatic device for closing the same, a main and a secondary pneumatic chamber connected together, said secondary chamber connected with the said pneumatic device operating the doors, such connections being provided with an exhaust or vent, and a three-way valve adapted to connect the said secondary chamber with the said connection and cut it off from the exhaust and to connect the said exhaust with the said connection and cut it off from the said secondary chamber, and a valve controlling the connections between the two said chambers and operated simultaneously with the said first valve, and means for operating said valves, for the purpose set forth.

12. The combination, with an elevator comprising a shaft and a car and a controlling device for the car, of one or more doors, each provided with a vacuum-cylinder K, having a piston L, connected with the door and acting to close the same, a vacuum-chamber and a pipe connection J intermediate the chamber and the cylinder K, and a valve controlling the connection between the same, and connections between said car-controlling device and said valve, whereby upon starting the car the said valve may be opened, for the purpose set forth.

13. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of one or more doors, each provided with a vacuum-cylinder K, having a piston L for closing the door, a vacuum-chamber, and a pipe J, connecting the chamber with said cylinder, said connection J being provided with an exhaust or vent *e*, a three-way valve *a*, controlling the connections between the exhaust, the pipe J, and the said vacuum-chamber, and connections intermediate said car-controlling device and said valve *a* for operating the valve, for the purpose set forth.

14. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of one or more doors, a pneumatic device for closing the door, a main and a secondary pneumatic chamber having an intermediate pipe connection F″ provided with a valve *a′*, the pipe J, intermediate the said cylinder K and the said secondary chamber and provided with an exhaust *e*, and a three-way valve *a*, controlling the connection between pipe J, the exhaust, and the said secondary chamber, and connections intermediate said car-controlling device and the two said valves *a* and *a′*, for the purpose set forth.

15. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of a vacuum-cylinder K for each door, provided with a piston L, connected with the door and acting to close the same, a main vacuum-chamber VC and a secondary vacuum-chamber SVC, having intermediate pipe-connection F″ provided with a valve *a′*, a pipe J, connecting the said cylinders K and the said secondary chamber and provided with a valve *a*, and connections intermediate said car-controlling device and the two said valves *a* and *a′*, whereby the said valves may be simultaneously operated, substantially as and for the purpose set forth.

16. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of a pneumatic system for closing the doors and comprising a main and a secondary pneumatic chamber connected together by pipe F″, provided with a valve *a′*, a pipe J, connecting the secondary chamber with the pneumatic devices for operating the doors and provided with a valve *a*, a wheel or rocking member D, operated by said car-controlling device, and connections E and E′, intermediate said valves *a* and *a′* and the said member D, substantially as and for the purpose set forth.

17. The combination, with an elevator car and the door of the car, provided with a vacuum-cylinder K, having a piston L connected with the door and acting to close the same, of a vacuum-chamber and a pipe connection J, intermediate the same and the cylinder K, and a valve controlling the connection between the same, a controlling device for the elevator-car, and connections between the same and the said valve, whereby upon starting the car said valve may be opened, for the purpose set forth.

476,388. APPARATUS FOR CLOSING ELEVATOR-DOORS. CHAS. H. JUDSON, Brooklyn, N. Y. Filed Feb. 17, 1892. Serial No. 421,871. (No model.)

Claim.—1. The combination, with an elevator comprising a shaft and car, of one or more passenger-doors, electrically-operated mechanism connected with and positively actuating each door to close it, and a switch controlling said electrically-operated mechanisms, whereby any open door may be automatically closed by operating said switch.

2. The combination of a series of doors, an electric motor for closing each door, an electric circuit including said motors, and a switch controlling said circuit, whereby any open door of the series may be automatically closed by operating the switch.

3. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of one or more doors, electrically-operated mechanism for closing each door, and a switch controlling said electrically-operated mechanisms, said switch connected with and operated by the said car-controlling device.

4. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of one or more doors, an electric motor for closing each door, a source of electricity and an electric circuit leading therefrom and including said motors, means for automatically cutting each motor out of the circuit upon closing its door, and a switch controlling said circuit and connected with and operated by said car-controlling device.

5. The combination, with an elevator comprising a shaft and car, of one or more doors, an electric motor for closing each door, a source of electricity and a main circuit leading therefrom and including said motors, a branch circuit around each motor and circuit-completing mechanism located therein and operated by the door and serving to complete the circuit by way of the branch upon closing the door, whereby the motor thereof may be cut out of circuit, and a switch controlling the main circuit.

6. The combination, with an elevator comprising a shaft and car, of one or more doors, an electric motor for closing each door, a source of electricity and a main circuit leading therefrom and including the said motors, a branch circuit around each motor having circuit-completing mechanism located therein and operated by the door and serving to complete the circuit by way of the branch upon closing the door, whereby the motor thereof may be cut out of circuit, a normally-open branch circuit for each motor provided with a hand-switch for shunting the motor and its branch at will, and a switch for controlling the main circuit.

7. The combination, with an elevator comprising a shaft and car and a controlling device for the car, of one or more doors, an electric motor for closing each door, a source of electricity and a main circuit leading therefrom and including said motors, a branch circuit around each motor provided with circuit-completing mechanism operated by the door and serving to complete the circuit by way of the branch upon closing said door, whereby the motor thereof may be cut out of circuit, and a switch controlling the main circuit and connected with and operated by said car-controlling device.

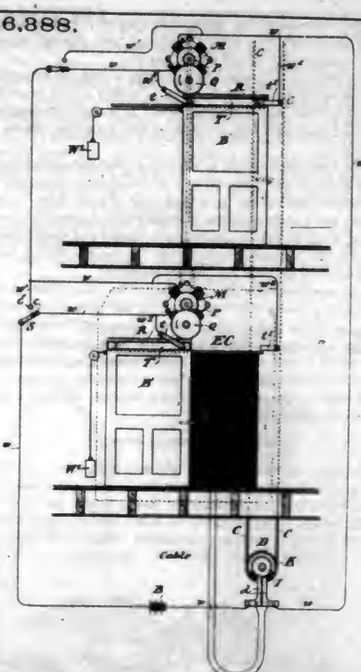
8. The combination, with an elevator-car and its door, of an electric motor for closing said door, a source of electricity and a circuit leading therefrom and including said motor, means for automatically cutting said motor out of circuit upon the closing of the door actuated thereby, and a switch for controlling said circuit.

9. The combination, with an elevator-car and its door, of an electric motor for closing said door, a source of electricity and a main circuit leading therefrom and including said motor, a branch circuit around said motor and circuit-completing mechanism located therein and operated by said door and serving upon closing the door to complete the circuit by way of the branch, thereby cutting the motor out of circuit, and a switch for controlling the main circuit.

10. The combination, with an elevator-car and its door and a controlling device for the car, of an electric motor for closing said door, a source of electricity and a main circuit leading therefrom and including said motor, means controlled by said door for cutting said motor out of circuit upon closing the door, and a switch controlling said main circuit and connected with and operated by said car-controlling device.

11. The combination, with a door having a rack for actuating it, of an electric motor geared to said rack, a branch circuit around the

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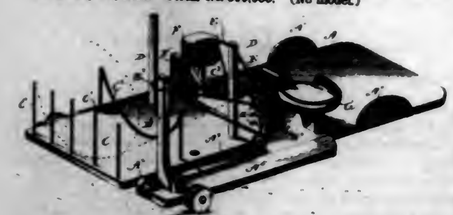
motor, and circuit-completing mechanism controlled by said door for completing the circuit by way of the branch upon closing the door, whereby the motor may be cut out of circuit.

12. The combination, with a door having a rack for actuating it, of an electric motor geared to the rack, a branch circuit around the motor and provided with contacts therein, and a circuit-completing plate mounted upon said door for making and breaking circuit with said contacts.

13. The combination, with an elevator comprising a shaft and car and a controlling device C for the car, of one or more doors and electrically-operated mechanism for closing each of said doors, a source of electricity and a main circuit *w*, including said electrically-operated mechanisms, a switch located in the main circuit and comprising the terminals *d d*, and a rocking switch-disk D, provided with a contact K and operated by said car-controlling device C.

14. The combination, with an elevator comprising a shaft and car and a controlling device C for said car, of one or more doors B', an electric motor M for closing each door, a source of electricity and a main circuit *w* leading therefrom and including said motors, a branch circuit w^3 around said motor and circuit-completing mechanism located therein and controlled by the door actuated by said motor, and a switch located in the main circuit and connected with and operated by said car-controlling device C.

476,889. CORN-SHOCKER. FRANCIS B. KENDALL and JOHN T. KENDALL, Monmouth, Ill., assignors, by direct and mesne assignments, of one-half to Myron A. Giddings and Charles Crosier, and said John T. Kendall assignor of his remaining one-fourth interest to said Francis B. Kendall, Myron A. Giddings, and Charles Crosier, all of same place. Filed July 18, 1891. Serial No. 399,953. (No model.)



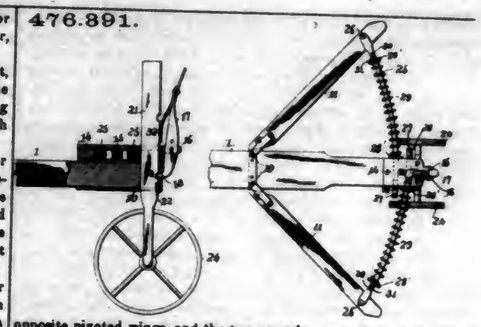
Claim.—The combination, with the platform, of the hinged supplemental platform provided with formers, and a hinged curved rod on the rear former and having a horizontal portion to engage pins on said former, and vertical rods C' at one end of the supplemental platform and uprights D at the other end, substantially as and for the purpose described.

476,890. SHAFT OR POLE SUPPORT. JOHN H. KENNEY, Huntington, W. Va. Filed Feb. 26, 1892. Serial No. 422,877. (No model.)



Claim.—A shaft-holder comprising a bar provided with openings arranged near one of its ends, an L-shaped clamp having one of its arms adjustably secured in one of the openings and having its other arm arranged parallel with the bar, and the straight clamp adjustably secured in the other opening and arranged at right angles to the bar, substantially as described.

476,891. GRAIN-DRILL. PERRY KEELING, Logansport, Ind., assignor to the King Drill Company, same place. Filed Jan. 9, 1892. Serial No. 417,547. (No model.)



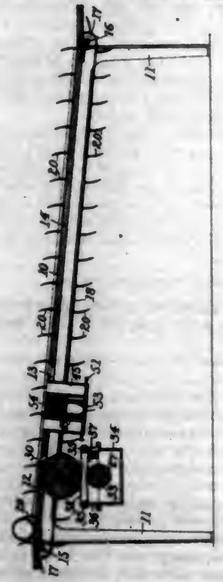
Claim.—1. In a grain-drill, the combination, with the beam, the pivoted side wings, and the transversely-recessed block, of the curved rods pivoted at their outer ends to the wings, having their inner ends passed through the block and provided with perforations, pins removably mounted in the perforations for preventing a withdrawal of the rod, pairs of washers loosely mounted on each of the rods, and springs coiled upon the rods between the washers, substantially as specified.

2. In a grain-drill, the combination, with the central beam, the opposite pivoted wings, and the transversely-recessed block mounted on the rear end of the beam, of the curved rods pivoted at their outer ends to the ends of the wings and having their inner ends provided with a series of adjusting-perforations and passed through the blocks, pins mounted in the perforations, pairs of washers loosely mounted on each of the rods, adjusting-perforations formed in the outer ends of the rods, and pins removably mounted therein, substantially as specified.

3. In a grain-drill, the combination, with the beam and the metal block secured at the rear end of the same and provided with a vertical passage and at its rear end with bearing-lugs, of a gage-wheel the shank of which is mounted loosely in the passage and provided with notches, a lever terminating at its lower end in an inwardly-disposed finger for engaging the notches of the standard or shank and fulcrumed between the bearing-lugs of the block, and a spring secured to the front end of the lever and bearing against the shank, substantially as specified.

4. In a grain-drill, the central beam, the opposite pivoted side wings, the curved rods pivoted at their outer ends to the wings and having their inner ends passed loosely through guideways provided on the central beam, and the springs encircling the rods and operating substantially as set forth.

476,892. LABELING-MACHINE. RICHARD KUPP, New York, N. Y. Filed Jan. 25, 1892. Serial No. 419,159. (No model.)



Claim.—1. The combination, in a labeling-machine, of a bed over which the articles to be labeled may roll, a paste-supply device, a label-holder, and movable bands or chains having fingers to receive and guide the articles to be labeled, substantially as shown and described.

2. The combination, in a bottle-labelling machine, of a bed over which the bottles may roll, a paste-supplying device, a label-holder, and movable bands or chains having fingers to receive and guide the bottles, the fingers on one of said bands or chains being longitudinally adjustable thereon, substantially as shown and described.

3. The combination, in a labeling-machine, of a bed over which the articles to be labeled may roll, a paste-supplying device, a label-holder, movable bands or chains having fingers to receive and guide the articles to be labeled, and a bar adjustably secured upon the bed to guide the ends of the articles, substantially as shown and described.

4. The combination, in a labeling-machine, of a bed over which the articles to be labeled may roll and having an aperture therein, a paste-roll journaled beneath said aperture with its upper surface flush with the upper surface of the bed, means to rotate said roll, means to supply paste to said roll, and movable bands or chains having fingers to receive and guide the articles to be labeled, substantially as shown and described.

5. The combination, in a labeling-machine, of a bed over which the articles to be labeled may roll and having an aperture therein, a prismatic paste-roll journaled below said aperture, means to supply paste to said roll, and means to rotate said roll with an intermittent motion, substantially as shown and described.

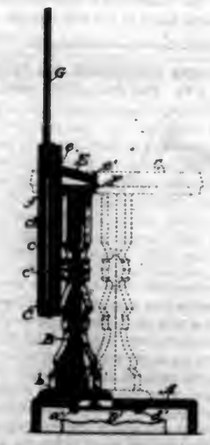
6. The combination, in a labeling-machine, of a bed over which the articles to be labeled may roll and having an aperture, a label-holder supported below said aperture, said holder consisting of a series of fingers terminating in inwardly-turned lips flush with the surface of the bed, and a spring-follower, and movable bands or chains having fingers to receive and guide the articles to be labeled, substantially as shown and described.

476,893. DYE-STUFF. RICHARD LAUCH, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 19, 1891. Serial No. 412,481. (Specimens.) Patented in France Dec. 2, 1887, No. 187,365

Claim.—1. The coloring-matter herein described, derived from tetrazo-diphenyl and salicylic acid, which is a greenish-black amorphous powder, readily dissolving in water with deep-gray-black color, in soda-lye with red, and in concentrated sulphuric acid with intensely-blue-red color, which latter turns greenish blue on the addition of a large quantity of water, a precipitate, however, not being separated, and which dyes unmordanted cotton in neutral or alkaline baths a greenish black or dark gray of high fastness and intensity.

2. The process for producing the herein-described dye-stuff by combining molecular proportions of tetrazo-diphenyl, salicylic acid, and alpha-naphthylamine, sulphonating the product thus obtained, diazotizing and further combining it with one molecular proportion of the sodium salt of alpha-naphthol-alpha-monosulphoeic acid.

476,894. COMBINED TABLE, PRIE-DIEU, AND CONFESSIONAL. HECTOR LAVIGNE, New York, N. Y. Filed Feb. 5, 1892. Serial No. 420,421. (No model.)



Claim.—1. A table having a slotted base, a standard, a table-top having a hinged connection with said standard, a plate beneath the base, and bolts passed through the slots in the base and securing the standards rigidly to the plate, substantially as shown and described.

2. A table having a slotted base, a standard, a table-top having a hinged connection with said standard, a slotted plate beneath said base, bolts passed through the slots in said plate into the under side of said base, and bolts passed through the slots in the base and securing the standards to said plate, substantially as shown and described.

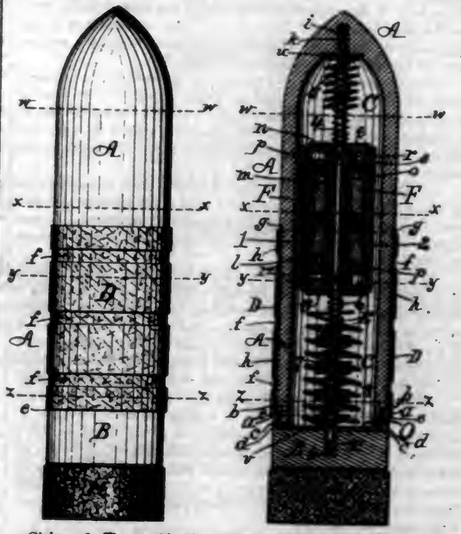
3. The combination, with a top, of a leaf hinged to the under side of the top and a second leaf hinged to the first and having a sliding connection with the top, and a supporting-standard secured rigidly to said second leaf, substantially as shown and described.

4. The combination of a standard, a top having a hinged connection with said standard, a screen formed of reticulated material, supported in a frame and sliding in ways in said top, and latches to hold said screen in elevated position, substantially as shown and described.

5. The combination of a standard, a base to which said standard is adjustably secured, a top, a leaf hinged to the under side of said top, and a second leaf hinged to the first and having a sliding connection with the top, said standard being rigidly secured to said second leaf, substantially as shown and described.

6. The combination of a standard, a slotted base, bolts fixed to the standard and adapted to move in the slots of said base, a top having a hinged connection with said standard, and a screen sliding in ways in said top, substantially as shown and described.

476,895. SHELL FOR HIGH EXPLOSIVES. EDWARD LEFEVER and JOHN A. BERNER, Syracuse, N. Y. Filed Nov. 12, 1890. Serial No. 371,257. (No model.)



Claim.—1. The combination, with the body of the shell, of an explosive-carrier disposed centrally within the bore or chamber thereof of less diameter than said bore or chamber and cushioned solely at its ends, as shown, whereby said explosive-carrier will be out of contact with and disconnected from the encircling inner surface of the body, substantially as and for the purposes specified.

2. The combination, with the body of the shell, of an explosive-carrier disposed centrally within the bore or chamber thereof and comprising an inner and an outer cylinder, said cylinders being cushioned solely at their ends, and said outer cylinder being of less diameter than the bore or chamber of the body of the shell and said inner cylinder of less diameter than said outer cylinder, as shown, whereby the outer cylinder will be out of contact with and disconnected from the encircling inner surface of the body and said inner cylinder out of contact with and disconnected from the encircling wall of the outer cylinder.

3. The combination, with the body of the shell, of the explosive-carrier mounted within the chamber of the body upon a support extending from end to end of the chamber and adapted to longitudinal movement thereon, substantially as described.

4. The combination, with the body of a shell, of a movable longitudinal guide or supporting rod therein, elastic cushions at the extremities of said rod, an explosive carrier encircling said rod, and cushions for said explosive-carrier.

5. The combination, with the body of the shell, of a movable longitudinal guide or supporting rod therein, elastic cushions at the extremities of said rod, an explosive-carrier encircling said rod, and a plurality of coiled springs of varied diameter and thickness encircling said rod at either end thereof and serving as elastic cushions for said explosive-carrier, substantially as described.

6. The combination, with the body of the shell, of a movable longitudinal guide or supporting rod therein, elastic cushions at the extremities of said rod, an explosive-carrier encircling said rod, but in non-contact therewith, and cushions for said explosive-carrier.

7. The combination, with the body of the shell, of a movable lon-

gitudinal guide or supporting rod therein, elastic cushions at the extremities of said rod, an explosive-carrier encircling said rod, but in non-contact therewith, and a plurality of coiled springs of varied diameter and thickness encircling said rod at either end thereof and serving as elastic cushions for said explosive-carrier, substantially as described.

8. The combination, with the body of the shell, of a movable longitudinal guide or supporting rod therein, elastic cushions at the extremities of said rod, an explosive-carrier encircling said rod and comprising an inner and an outer cylinder, said cylinders being in non-contact with each other and said inner cylinder being in non-contact with said rod and said outer cylinder with the encircling inner surface of the body of the shell, and elastic cushions for said explosive-carrier.

9. The combination, with the body of the shell, of a movable longitudinal guide or supporting rod therein, elastic cushions at the extremities of said rod, an explosive-carrier encircling said rod and comprising an inner and an outer cylinder, said cylinders being in non-contact with each other and said inner cylinder being in non-contact with said rod and said outer cylinder with the encircling inner surface of the body of the shell, elastic cushions for said inner cylinder, interposed between the ends of said inner and outer cylinders and in contact therewith, and elastic cushions for said outer cylinder interposed between the same and the end walls of the shell.

10. The combination, with the body of the shell, of the explosive carrier or cylinder centrally disposed within the bore or chamber of the body and held in non-contact with the inclosing chamber-wall by its supporting-rod that extends longitudinally beyond its ends and whereon it is adapted to move longitudinally, substantially as described.

11. The combination, with the body of the shell, of an explosive carrier or cylinder disposed within the bore or chamber of the body upon a supporting-rod adaptable to longitudinal movement, and said explosive-carrier adapted to parallel and independent movement thereon, substantially as described.

12. The combination, with the body of the shell, of the cylindrical explosive-carrier mounted centrally within the bore or chamber of the body upon a center support extending longitudinally through the carrier to the ends of the chamber, the said carrier being in non-contact with the surrounding chamber-wall and retained yieldingly movable longitudinally by suitable cushioning interposed between its heads and the ends of the chamber of the body, substantially as described.

13. In a shell for high explosives, the combination of the breech-piece inclosing and engaging by its annular interiorly-threaded extremity the annular exteriorly-threaded end of the breech portion of the shell's body with the circumferential soft-metal flange or rim adjacent to the body's breech, and against which soft-metal portion the screwed breech-piece abuts, creating an air and gas tight union between said breech-piece and the breech portion of the shell's body, substantially as described

14. The combination, with the body of the shell, of the explosive-carrier comprising an outer and an inner cylinder adapted to free and independent movement longitudinally, and mounted upon a centrally and longitudinally disposed guide and supporting rod within the chamber of the body, the outer peripheral surface of the interior cylinder lying in non-contact within the outer and inclosing cylinder, and the external cylinder lying in non-contact with the interior surface of the chamber of the body, substantially as described.

15. The combination, with the body of the shell, of a movable longitudinal guide or supporting rod therein, elastic cushions at the extremities of said rod, an explosive-carrier encircling said rod and comprising an inner and an outer cylinder, said cylinders being in non-contact with each other and said inner cylinder being in non-contact with said rod and said outer cylinder with the encircling inner surface of the body of the shell, elastic cushions for said inner cylinder interposed between the ends of the same and the outer cylinder, and coiled springs of varied diameter and thickness encircling said rod between the ends of said outer cylinder and the end walls of the shell and serving as elastic cushions for the explosive-carrier, substantially as described.

16. The combination, with the body of the shell, of the explosive-carrier centrally and longitudinally mounted upon a suitable support within the bore of said body and out of contact at all points with the encircling inner surface of the body, the said explosive-carrier being provided with one or more washers at its extremities, that snugly fit the central support of the carrier and whereby the center tube of the carrier surrounding said support is adapted to be held out of contact with aforesaid support, substantially as described.

17. The combination, with the body of the shell, of the explosive-carrier movably disposed upon a central and longitudinally-erected supporting-rod within the chamber of the body, the said carrier comprising an outer cylinder in non-contact with the surrounding chamber-wall and an inner explosive-charged cylinder in non-contact with the surrounding wall of the inclosing cylinder, the said interior cylinder being cushioned externally its extremities and the adjacent inner ends of the inclosing cylinder, substantially as described.

18. The combination, with the body of the shell, of the explosive-carrier centrally and longitudinally mounted upon the guide and supporting rod extending from end to end of the chamber of the body and cushioned thereat, and the mechanical cushioning disposed at or adjacent to the outer ends of the explosive-carrier and in proximity to the aforesaid guide and supporting rod, substantially as described.

19. The combination, with the body of the shell, of the centrally and longitudinally erected guide or supporting rod situated within the chamber of the body and lineally movable to a degree therein, provided at its front and rear portions with a series of coiled springs of varied diameter and stiffness, which encircle in non-contact one with the other the guide or supporting rod and adapted to movably retain in position the substantially-central interposed carrier, against which two or more of the springs indirectly abut, substantially as described.

20. The combination, with the body of the shell, of the attached annular soft-metal jacket provided at its rear end with an annular flange or rim, against which the contacting end of the breech-piece is adapted to forwardly press when secured to the body of the shell and forming an air and gas tight joint thereat, substantially as described.

21. A shell for high explosives, comprising a chambered body and an explosive-carrier therein consisting of separate independently-rotatable cylinders contained the one within the other, substantially as described.

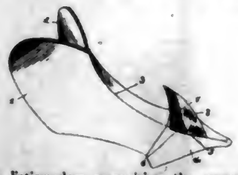
22. A shell for high explosives, comprising a chambered rotatable body and an independently-rotatable explosive-carrier therein consisting of separate independently-rotatable cylinders contained the one within the other.

23. The combination, with the body of the shell and a longitudinal guide or supporting rod therein, of an explosive-carrier encircling said rod, said explosive-carrier being of less diameter than the bore or chamber of the body and cushioned solely at its ends.

24. The combination, with the body of the shell and a longitudinal guide or supporting rod therein, of an explosive-carrier loosely encircling said rod and of less diameter than the bore or chamber of the body, whereby it will be out of contact both with the encircling inner wall of the bore or chamber and said rod and cushioned for said explosive-carrier located solely at the ends thereof.

25. The combination, with the body of the shell and a longitudinal guide or supporting rod therein, of an explosive-carrier comprising an inner and an outer cylinder, said inner cylinder having an opening through it for the passage of said rod of greater diameter than said rod, whereby it will be out of frictional contact with said rod, and said outer cylinder being of greater diameter than said inner cylinder and of less diameter than the bore or chamber of the shell, whereby it will be out of frictional contact with the side wall of said inner cylinder and also with the wall of said bore or chamber, and elastic cushions for said cylinders located solely at the ends thereof.

476,396. COLTER ATTACHMENT FOR PLOWS. WILLIAM G. LEWIS, Caledonia, Iowa. Filed Feb. 3, 1892. Serial No. 420,215. (No model.)



Claim.—The listing-plow comprising the opposite converging mold-boards terminating in a point comprising opposite converging wings, the meeting edges of the wings and mold-boards being in line and the meeting edge of the point being provided with a threaded perforation and with a plain mortise, combined with a substantially triangular colter mounted upon and rising vertically from the meeting edge of the point, said colter being provided with a front convexed reduced cutting-edge and upon its under side with a threaded tenon taking in the perforation and a plain tenon taking in the mortise, and a nut located upon the threaded tenon below the point, the cutting-edge of the colter being in line with the meeting edges of the mold-board and wings, substantially as specified.

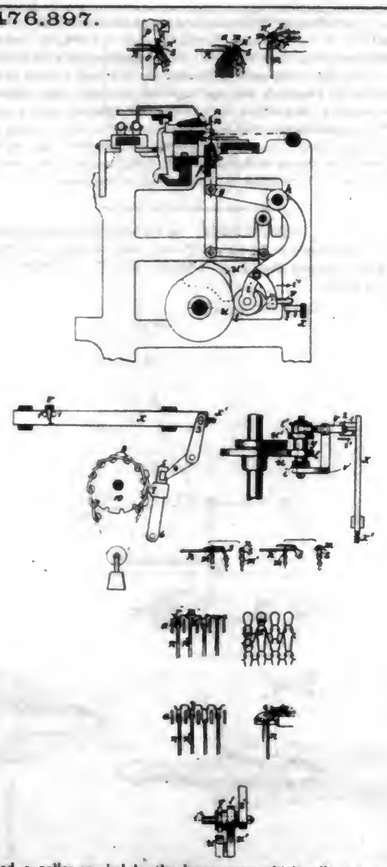
476,397. STRAIGHT-BAR KNITTING-FRAME. GOTTHARD LINDENHUTH, Hohenkirchen, Germany. Filed May 11, 1891. Serial No. 392,409. (No model.)

Claim.—1. In a straight-bar knitting-frame, the combination, with a needle-bar carrying a row of long and short needles, as described, of a rocking lever connected at one end with the needle-bar and adapted to reciprocate the latter, a cam-shaft provided with two cams, as described, a roller carried by the lever, upon which roller one of said cams normally acts, and a second roller having connection with the said lever and adapted to be periodically moved laterally to bring it into position to be acted upon by the other cam, for the purpose specified.

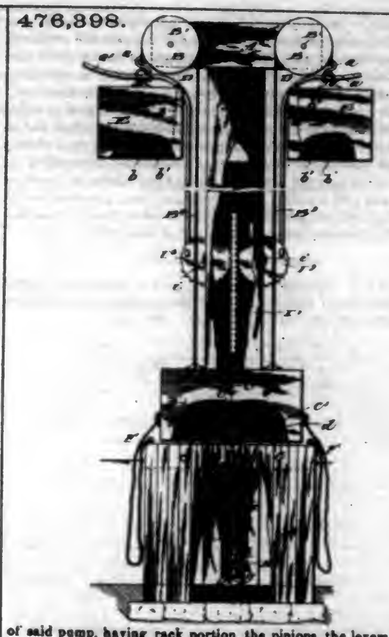
2. In a straight-bar knitting-frame, the combination, with a needle bar carrying a row of long and short needles, as described, of a rocking lever connected at one end with the needle-bar and adapted to reciprocate the latter, a cam-shaft provided with two cams, as described, a roller carried by the lever, upon which roller one of said cams normally acts, a second roller having connection with said lever, a shifting-lever connected with the said second roller and adapted to move the same laterally periodically to bring it into position to be acted upon by the other cam, and a spring acting upon the shifting-lever to cause it to free the second roller from its operating-cam, for the purpose specified.

3. In a straight-bar knitting-frame, the combination, with a needle-bar carrying a row of long and short needles, as described, of a rocking lever connected at one end with the needle-bar and adapted to reciprocate the latter, a cam-shaft provided with two cams, as described, a roller carried by the lever, upon which roller one of said cams normally acts, a second roller having connection with the said lever, a shifting-lever connected with the said second roller and adapted to move the same laterally periodically to bring it into position to be acted upon by the other cam, and means for operating the shifting-lever, comprising a traveling chain having projections, a pivoted lever, upon which said projections act, and a bell-crank lever having one end adapted to be acted upon by the pivoted lever and its opposite end connected with the shifting-lever, as described.

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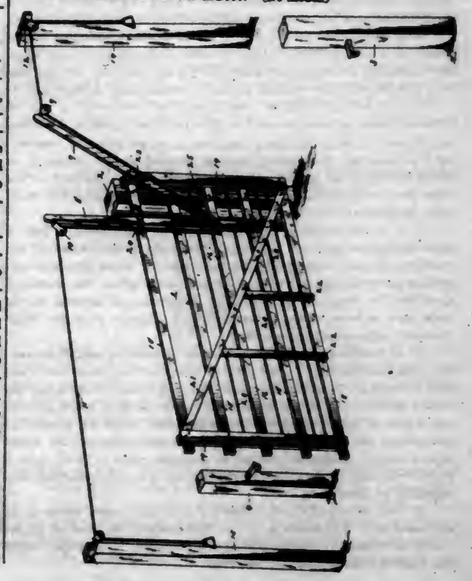
476,398. HYDRAULIC FORCE-PUMP. MONTGOMERY LOPE, Spartanburg, S. C., assignor to O. P. Morgan and L. W. Osborne, same place. Filed July 9, 1891. Serial No. 398,575. (No model.)

Claim.—1. The combination, with a force-pump, of the piston-rod of said pump, having rack portion, the pinions, the levers connected with the pinions, the receivers carried by the levers, the counterbalance-receiver connected with the receivers, and means for adjusting the leverage, as set forth.

2. The combination, with the piston-rod having rack, of the pinions meshing therewith, the levers connected with the pinions, the receivers adjustable on the levers, the counterbalance-receiver, and the cords connecting the levers and counterbalance-receiver, as set forth.

3. The combination, with the force-pump, the racked piston-rod thereof, the pinions, and the levers connected therewith, of the receivers, the counterbalance-receiver, the valves and their operating means, and the stroke-regulating cords, all substantially as and for the purpose specified.

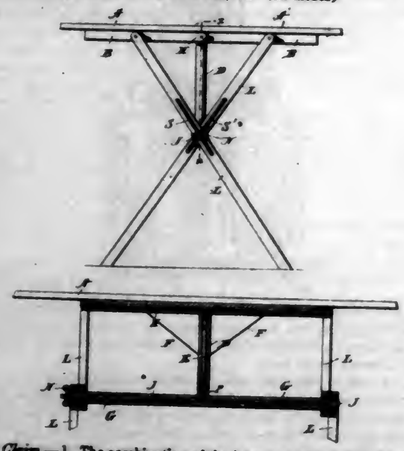
476,399. SWINGING GATE. ALBERT R. LYCAN, Paris, Ill. Filed Mar. 14, 1892. Serial No. 424,889. (No model.)



Claim.—1. The combination of a swinging gravity-closing gate, a vertical bar arranged near the inner end of the gate and projecting from the top thereof, an inclined bar arranged at the top of the gate and projecting upward and rearward therefrom, and an operating-rope connected with the tops of the bars, substantially as described.

2. The combination of a swinging gravity closing gate provided with a horizontal latch-bar pivotally mounted on it, a vertical bar arranged near the inner end of the gate and projecting from the top thereof and provided with a pulley, an inclined bar arranged at the inner end of the gate and projecting upward and rearward therefrom and provided with a pulley, and an operating-rope connected to the latch-bar and extending therefrom along the vertical and inclined bars and over the pulleys thereof, substantially as described.

476,400. **FOLDING TABLE.** WILLIAM R. MORGAN and CLIFTON S. OSBORN, Grand Rapids, Mich.; said Morgan assignor to said Osborn. Filed Aug. 25, 1891. Serial No. 403,734. (No model.)



Claim.—1. The combination of the leaves provided with cleats, a cross-rod to the ends of which the cleats are pivoted, the cross-legs pivoted to the cleats and provided with slots, a cross-piece having pivots extending through the slots in the legs, and a clamping-nut engaging one of the pivots, said leaves adapted to fold with the legs and to unfold and be held in different positions, substantially as described.

2. In a folding table, the combination of the cross-rod, the pair of leaves pivotally connected with the ends of the cross-rod, the cross-legs pivotally connected to the leaves and having longitudinally-slotted portions, the cross piece or brace having end pivots extending through the longitudinal slots in the legs, a center bracket attached to the cross-rod, to which the leaves are pivoted, and adapted to rest upon the cross piece or brace, and means for rigidly clamping the legs one upon the other at their slotted portions, substantially as described.

3. In a folding table, the combination of a cross-rod, a pair of table-leaves having cleats pivoted to the ends of the cross-rod, the cross-legs pivoted to the cleats, the cross piece or brace pivotally connecting the cross-legs, the vertical bracket secured to the cross-rod to which the cleats are pivoted, and a vertical guide-rod secured to the cross piece or brace and on which guide-rod the bracket slides vertically, substantially as described.

4. In a folding table, the combination of a cross-rod, a pair of table-leaves having cleats pivoted to the ends of the cross rod, the cross-legs pivoted to the cleats, the cross piece or brace pivotally connecting the cross-legs, the tubular support attached to the cross-rod to which the cleats are pivoted, and the guide-rod secured to the cross piece or brace and entering the tubular support when the latter descends, substantially as described.

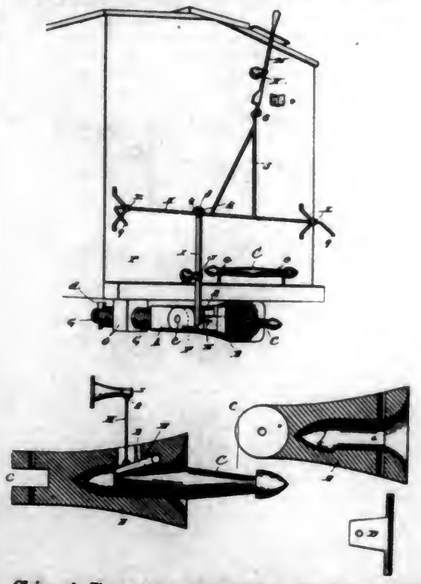
5. In a folding table, the combination of crossing legs, each having a longitudinal slot, a cross piece or brace having pivots which extend through the slotted portions of the legs, means for clamping the slotted portions of the legs rigidly to the cross piece or brace, a cross-rod, a pair of table-leaves provided with cleats, which are pivoted to the ends of the cross-rod and to the upper extremities of the cross-legs, a vertical guide-rod secured to the cross piece or brace, and a bracket secured to the cross-rod and sliding upon the guide-rod, substantially as described.

6. In a folding table, the combination of the hinged leaves A A', the bracket D, the cross-legs L, the cross-brace G, the vertical guide-rod E, on which the bracket slides, and the spring P, arranged under the bracket, substantially as described.

7. In a folding table, the combination of the independently-swinging leaves A A', the cross-rod H, with the ends of which the leaves are pivotally connected, the cross-legs L, having longitudinal slots, the cross-brace G, having pivots passing through the slots and moving therein, and means for clamping the legs together, whereby either table-leaf can be inclined independent of the other, substantially as described.

8. In combination with the leaf of a table or desk having loops 2, of the desk-strip 1, having spring-arms 4, passing through the loops and loosely connected with the table or desk, so that they can oscillate and also move lengthwise, substantially as described.

476,401. **CAR-COUPLING.** ORLANDO R. MYERS, Warsaw, assignor of three-fourths to Ephraim H. Porter, Oliver Edwards, and George D. Myers, Hancock County, Ill. Filed Oct. 30, 1891. Serial No. 410,396. (No model.)



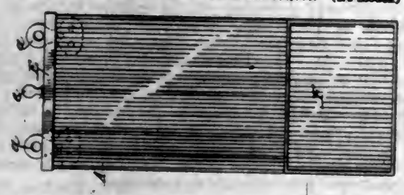
Claim.—1. The conical double-headed connecting-bolt C, in combination with the flanged hinged draw-head B and the draw-bar A, the flanged hinged draw-head B, having a concave face and a throat to receive connecting-bolt, or a connecting-link and a vertical pin hole or socket that provides for the coupling with the common link-and-pin coupling, substantially as described.

2. The latch D, in combination with the conical double-headed bolt C, the spring E, and the hinged draw-head B, as and for the purpose described.

3. The rod H, in combination with the lever I, the vibrating lever K, and the lever M, for the purpose and substantially as described.

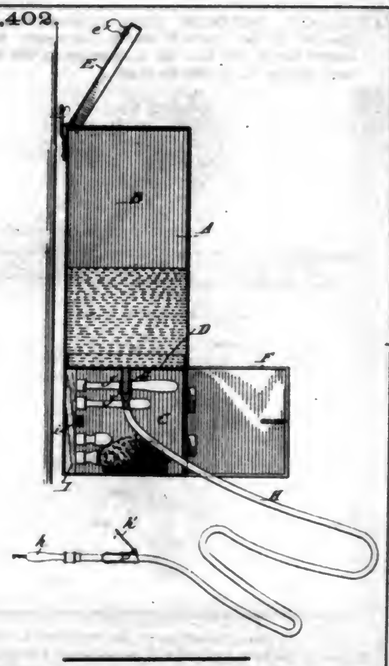
4. The hinged draw-head B, in combination with the draw-bar A, the conical double-headed bolt C, the latch D, the spring E, and the spring F, as and for the purpose described.

476,402. **SYRINGE AND SYRINGE-BOX.** LUCY R. MEYER, Chicago, Ill. Filed Nov. 6, 1891. Serial No. 411,079. (No model.)

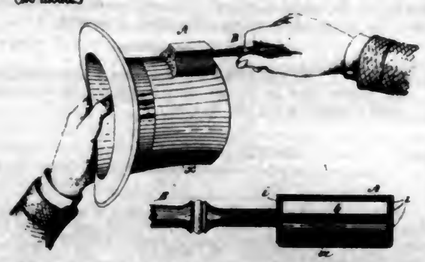


Claim.—The herein-described combined syringe and syringe-box, which consists in a casing having two compartments, one of which serves as a fountain for containing water or other liquid or fluid and the other of which serves to contain the operative parts of the syringe, the intervening partition between said compartments having a tubular nipple to which the syringe-tube is connected, substantially as described.

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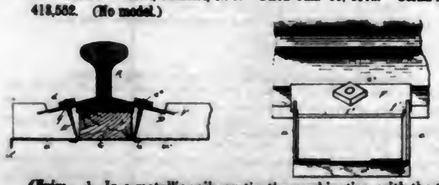


476,403. **IMPLEMENT FOR IRONING HATS.** ALEXANDER R. MCDONALD, Brooklyn, N. Y. Filed Mar. 20, 1891. Serial No. 385,723 (No model.)



Claim.—A hand implement for burnishing or ironing silk hats, comprising a handle and a head mounted rotatively on said handle, said head being provided with means for heating it over a gas-jet and having a smooth concave ironing-face, which extends the entire length of said head, the handle having its longitudinal axis substantially parallel with the ironing-face of the head, as set forth.

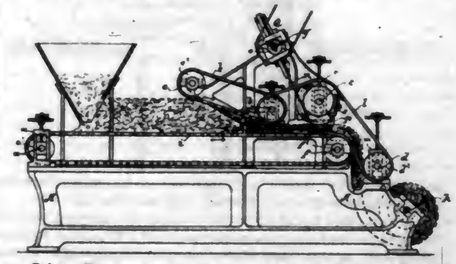
476,404. **METALLIC RAILWAY CROSS-TIE.** WILLIAM MCMAHEN and GEORGE R. LOW, Summit, N. J. Filed Jan. 19, 1892. Serial No. 418,562. (No model.)



Claim.—1. In a metallic railway-tie, the combination, with the tie having vertical side edges formed with seats for the rails and inclined bearings extending in opposite directions on opposite sides of the seats and shoulders at the ends of the bearings, of clamping-plates having extensions on their lower ends fitting between the flanges of the tie and their outer portions engaging with said shoulders and their upper edges arranged to engage with the rails, and bolts passing through the tie and plates and having nuts on their ends, substantially as described.

2. In a metallic railway-tie, the combination, with the tie having vertical side flanges and downwardly-extending end flanges, seats formed on the side flanges, and inclined bearings formed on the flanges adjacent to the seats, of packing-blocks within the tie between the seats, plates on the inclined bearings arranged to engage directly with the rails, securing-plates between the flanges formed with hooks on their lower edges passing through suitable openings in the tie, bolts on the upper edges of the securing-plates passing through the clamping-plates, and nuts on the bolts, substantially as described.

476,405. **MACHINE FOR INTERLACING CURLED HORSE-HAIR, &c.** FRITZ OCHS, Fürth, Germany. Filed Feb. 23, 1892. Serial No. 422,480. (No model.)



Brief.—The machine comprises two feed-aprons arranged at an angle to each other, an obliquely-reciprocating frame carrying a set of needle-hooks, and a rotating shaft carrying a series of disks to press down the material while the fibers are being interlaced by the hooks. If it is desired to interlace the fibers in the reverse direction, a second set of aprons may be placed below the first and the material fed from the first to the second set, thus exposing the reverse side, which is operated upon by a second set of hooks.

Claim.—1. In a machine for interlacing curled horse-hair, the combination of an endless apron for carrying the raw material and an endless apron arranged at an acute angle to the former apron, the adjacent surfaces of both aprons moving in the same direction, and means for adjusting one end of one of the aprons at the nearest approach of each other with the pressure-disks mounted on a shaft, chain-wheels, chains, and ratchet-wheel, an obliquely-up-and-down-moving needle-frame carrying the needle-hooks, a feeding-pawl, and a winding mechanism, as and for the purposes herein shown and set forth.

2. In a machine for interlacing curled horse-hair, the combination of a needle-frame carrying one or more rows of needle-hooks and a rotating shaft carrying adjustable eccentrics with two endless feeding and compressing aprons and an adjustable shaft carrying pressure-disks, as and for the purposes herein shown and described.

3. In a machine for interlacing curled horse-hair, the combination of two parallel endless carrying-aprons moving in opposite directions and an endless compression-apron arranged at an acute angle to one of the latter with needle-frames carrying needle-hooks, shafts carrying pressure-disks, pressure-rollers, and means for regulating the position and operating the needle-hooks and for propelling the aprons and the other feeding mechanism at a uniform speed, as and for the purposes herein shown and described.

476,406. **ANTI-RATTLER.** ELIHU R. PETTIT, Philadelphia, Pa. Filed Nov. 14, 1889. Serial No. 330,258. (No model.)

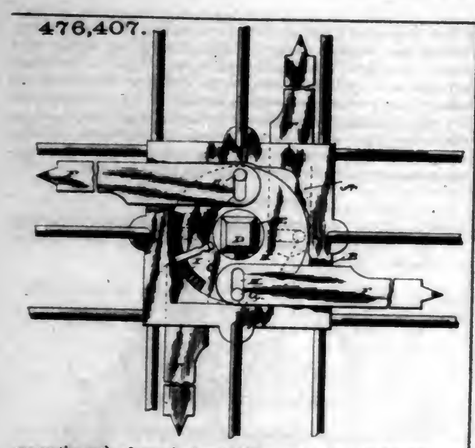


Claim.—An anti-rattler consisting of a body having a portion bent at an angle thereto, a slotted spring-tongue connected with said body, and a spring-tongue connected with said bent portion, said tongues being bent across said body and bent portions and of concave-convex form, substantially as and for the purpose set forth.

476,407. **COVER FOR BARRELS, &c.** EDWIN S. PHELPS, Leavenworth, Kans. Filed Feb. 20, 1892. Serial No. 422,274. (No model.)

Claim.—1. In a cover for barrels or other vessels, the combination, with the revoluble operating disk or plate, of the series of fingers connected with said plate and arranged some above and others below the plate, whereby they may be arranged close together and move

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across the path of travel of each other without interference one with the other, substantially as and for the purposes described.

2. In a cover for barrels or other vessels, the combination, with the revoluble operating plate or disk provided with studs or pins projecting from opposite faces thereof, of reciprocating fingers located above and below said frame, formed with elongated openings extending transversely to their length, into which said studs or pins enter, substantially as and for the purposes described.

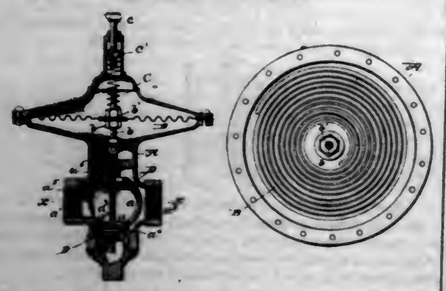
3. In a cover for barrels or other vessels, the combination, with the frame formed with openings in its sides for the passage of reciprocating fingers, of reciprocable fingers inclosed in said frame and passing through said openings and located next to the side walls of the frame and a revoluble operating disk or plate located between the top and bottom of the frame, connected with said fingers for reciprocating the same, substantially as and for the purposes described.

4. In a cover for barrels or other vessels, the combination, with the frame having a revoluble disk or plate inclosed therein between its top and bottom and side walls, of reciprocable fingers moving in said frame and connected with said plate or disk, substantially as and for the purposes described.

5. In a cover for barrels or other vessels, the combination, with the frame and its reciprocable fingers, of the wires or strands passed through and secured within openings formed in parts of said frame and extending radially from the frame, substantially as and for the purposes described.

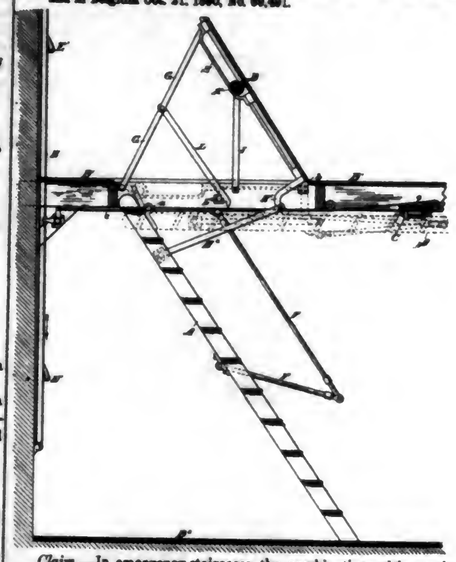
6. In a cover for barrels or other vessels, the combination, with the reciprocating fingers and means for operating the same, of a locking device having one part of it next to said operating means to engage with it and another part adjacent to a key that receives an operating-lever, whereby it may be released from locking engagement by the lever that actuates the operating means, substantially as and for the purposes described.

476,408. GOVERNOR. REUBEN H. PLASS, Brooklyn, N. Y. Filed Sept. 8, 1892. Serial No. 323,229. (No model.)



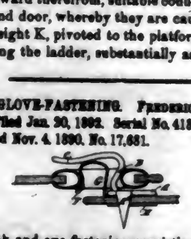
Claim.—A regulator whereby the flow of liquids is controlled, comprising a diaphragm, preferably of thin metal stamped or otherwise formed to produce flutes or corrugations, the indentations producing the flutes or corrugations being of a continuous spiral form, substantially as described.

476,409. FIRE-ESCAPE. SAMUEL T. RAWLINGS, Frome, England. Filed Mar. 12, 1891. Serial No. 384,836. (No model.) Patented in England July 24, 1890, No. 11,900; in France Oct. 31, 1890, No. 205,238, and in Belgium Oct. 31, 1890, No. 90,491.



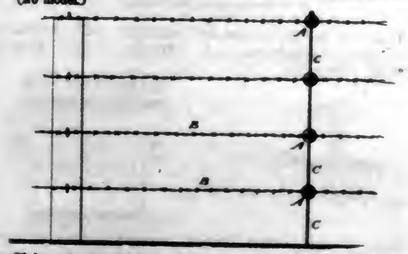
Claim.—In emergency staircases, the combination, with an elevated floor or platform provided with an opening, of a ladder A, hinged beneath the platform, the trap-door B, pivoted to the platform and arranged to swing upward therefrom, suitable connecting mechanism between the ladder and door, whereby they are caused to move simultaneously, and the weight K, pivoted to the platform and provided with guide S for balancing the ladder, substantially as specified.

476,410. GLOVE-FASTENING. FREDERICK A. RICHARDSON, London, England. Filed Jan. 20, 1892. Serial No. 418,863. (No model.) Patented in England Nov. 4, 1890, No. 17,681.



Claim.—A hook-and-eye fastening consisting of an eye G and a hook comprising a base A, a stem B, formed on its outer or rear wall with a seat for the inner rear wall of the eye, a prong C, projecting forwardly from the upper or outer end of the stem, and a yielding stop interposed between the front end of the prong and the stem against which the front inner wall of the eyelet bears.

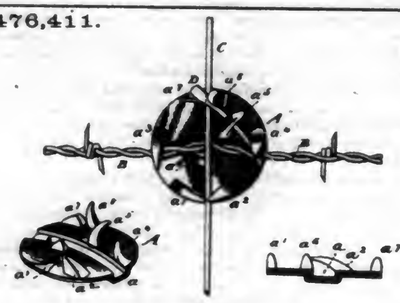
476,411. CLAMP OR FASTENER FOR WIRE FENCES. CHARLES S. ROGERS, San Antonio, Tex. Filed Aug. 17, 1891. Serial No. 402,906. (No model.)



Claim.—1. A wire-fence clamp consisting of the metallic disk or plate A, with the curved cross-groove *a* and prongs a^2 a^4 a^5 to hold the horizontal rail and the perpendicular stay-wire C, and the key D, as shown and described.

2. The combination of the grooved disk with the prongs a^4 a^4 a^5, arranged to hold the key D diagonally across the stay-wire C, and the rail-wire B, as shown and described.

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476,412. AUTOMATIC GAS-EXTINGUISHER. FRANCIS H. ROOT, Chicago, Ill., assignor to George H. Bliss, same place. Filed Dec. 16, 1889. Serial No. 333,967. (No model.)



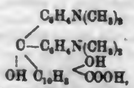
Claim.—1. A gas-burner provided with a pressure-chamber arranged to extend alongside the burner-flame, a valve which is normally closed to prevent the flow of gas from the burner, but opened to establish such flow by an increment of pressure within the pressure-chamber, and a body of volatile liquid contained within the pressure-chamber and vaporizable to create sufficient pressure to open the valve by heat from a light held in position to light the gas, the pressure for holding open the valve after the gas has been lighted being maintained by heat from the burner-flame acting direct upon the pressure-chamber alongside the flame, substantially as set forth.

2. The combination, substantially as hereinbefore set forth, with a gas-burner, of a pressure-chamber containing a body of volatile liquid and having an extension *e*, arranged to stand alongside the burner-flame, a movable abutment subject to pressure within the pressure-chamber, and a valve normally closed to prevent the flow of gas from the burner and opened to establish such flow by an increment of pressure within the pressure-chamber, substantially as described.

476,413. TRIPHENYLMETHANE DYE. FRIEDRICH RUNKEL, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Dec. 16, 1891. Serial No. 415,518. (Specimens.) Patented in Germany Aug. 22, 1890, No. 58,483; in England Sept. 16, 1890, No. 14,621, and in France Sept. 19, 1890, No. 206,330.

Claim.—1. The process of producing a new triphenylmethane dye-stuff by combining in the presence of concentrated sulphuric acid equimolecular proportions of tetramethyldiamidobenzhydrol and alpha-hydroxynaphthoic acid, removing the uncombined alpha-hydroxynaphthionic acid, and by further oxidizing the thus-produced leuco compound.

2. As a new product, the triphenylmethane dye-stuff having the formula,

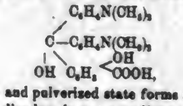


and which in a dried and pulverized state is a brownish powder difficultly soluble in water, sodium carbonate, and ammonia, more soluble in soda-lye with blue color, and on adding a dilute mineral acid a deep-blue solution results, which on the further addition of acid becomes bluish black, then brownish red, and on further addition of water recovers a blue color. The alcohol solution is indigo-blue, that in concentrated sulphuric acid is violet in color, which on cooling is first brown, then yellowish red, which assumes a dull-brown color on mixing with a large quantity of water and is precipitated by the addition of sodium acetate, and when treated with reducing agents is converted into the corresponding leuco compound, which again can easily be oxidized into the dye-stuff, and producing shades of a pure-blue color and perfect fastness to soaping.

476,414. TRIPHENYLMETHANE DYE. FRIEDRICH RUNKEL, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Dec. 16, 1891. Serial No. 415,517. (Specimens.) Patented in Germany Aug. 22, 1890, No. 58,483; in England Sept. 16, 1890, No. 14,621, and in France Sept. 19, 1890, No. 206,330.

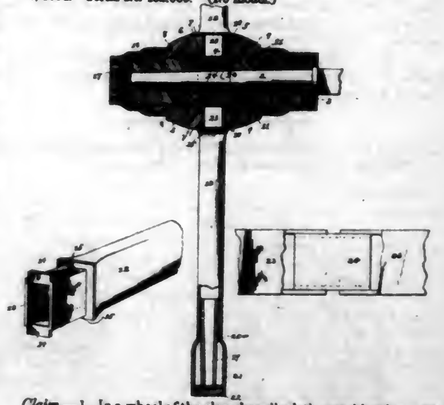
Claim.—1. The process of producing a new valuable triphenylmethane dye-stuff by combining in the presence of concentrated sulphuric acid equimolecular proportions of tetramethyldiamidobenzhydrol and salicylic acid and by subsequently oxidizing the resulting leuco compound, substantially as described.

2. The coloring-matter which has the formula,



and which in a dried and pulverized state forms an olive-colored powder which difficultly dissolves in water, sodium carbonate, and ammonia liquid with violet color, somewhat more easily in soda-lye with the same color, and when mixed with water and dilute hydrochloric acid is gradually added to the liquid at first a bluish-green, then a reddish-brown color is produced, which when poured into a great excess of water gives a green liquid; also, dissolves easily with reddish-violet color in alcohol, and by concentrated sulphuric acid is dissolved with brownish-yellow color, changing into yellowish red by cooling, and mixing with a great quantity of water assumes a light-brown color; out of dilute-acid solutions it is separated by the addition of sodium acetate, and by reducing agents it is converted into the corresponding leuco compound, which again is oxidizable into the dye-stuff, from which the reddish-violet shades produced are totally fast to soaping.

476,415. VEHICLE-WHEEL. IRVIN A. RUSSELL, Minneapolis, Minn., assignor of one-half to Joseph E. Burgess, same place. Filed Aug. 7, 1891. Serial No. 402,009. (No model.)



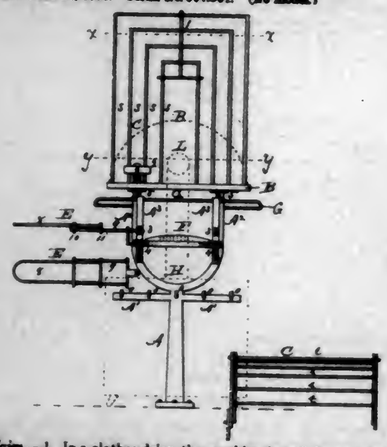
Claim.—1. In a wheel of the class described, the combination, with the cylindrical metal sleeve externally threaded at opposite sides of its center and the series of spokes terminating at their inner ends in tenons provided at their upper and lower ends with shoulders, of the opposite clamping-collars internally threaded and mounted upon the sleeve at opposite sides of the spokes and provided at their two inner corners with an L-shaped annular continuous groove for receiving the flanges or shoulders of the spokes, substantially as specified.

2. In a wheel of the class described, the combination, with the cylindrical threaded and bored sleeve and the series of spokes reduced at their inner ends to form tenons, having opposite end shoulders at their inner ends and at their outer ends provided with surrounding shoulders, of the series of wedge-shaped keys inserted under the surrounding shoulders between the diverging tenons of each pair of spokes and the front and rear clamping-collars internally threaded and at their inner corners provided with annular grooves L-shaped in cross-section and adapted to fit the shoulders of the spokes, substantially as specified.

3. In a wheel of the class described, the combination, with the centrally-bored exteriorly-threaded sleeve having a plain annular space at its center and the series of spokes terminating at their opposite sides and at their inner ends in outwardly-disposed shoulders, of the opposite clamping-collars having L-shaped annular grooves for receiving the shoulders of the spokes and at their outer ends having an external nut-receiving polygonal surface and the bands mounted upon the sleeve outside of the collars and having at their inner ends swells or enlargements taking over the outer ends of the collars, substantially as specified.

4. In a wheel, the combination, with the tubular spoke threaded at its outer end and a tubular tenon threaded therein, of a hollow rim having an inner arched wall perforated to receive and fit the tenon and a filling of plaster-of-paris or other substance, substantially as specified.

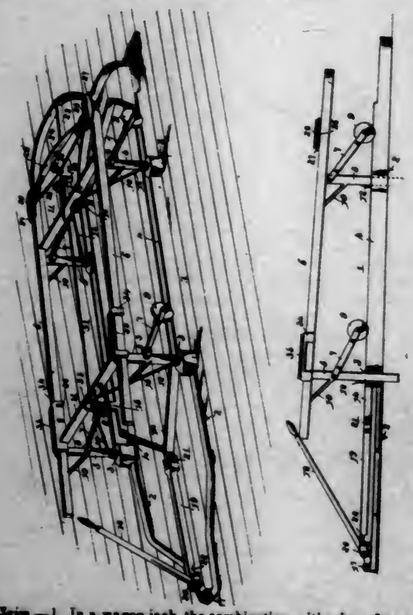
476,416. CLOTHES-DRIER. GEORGE T. SAMPSON, Dayton, Ohio. Filed June 24, 1891. Serial No. 397,201. (No model.)



Claim.—1. In a clothes-drier, the combination of the supporting-frame A, the drying-frame B, arms A^1, wire support G, supplementary drying-frame C C, and folding legs of parts D and J, substantially as described.

2. The combination of the frame B for the rear support, the semi-circular drying-frame of parts C C, and the jointed legs of parts D and J as the front support, substantially as described.

476,417. WAGON-JACK. GEORGE J. SCHLOSSER, Leadville, Colo. Filed Feb. 17, 1892. Serial No. 421,811. (No model.)



Claim.—1. In a wagon-jack, the combination, with a base-frame, of a superimposed vertically-reciprocating frame having opposite longitudinal side bars, cross-bars connecting the same, rear rests, and inverted-U-shaped blocks forming rests and provided at their depending edges with pairs of opposite notches, said blocks being mounted upon the opposite side bars of said superimposed frame and having their notches adapted to engage the cross-bar, substantially as specified.

2. In a wagon-jack, the combination, with a base-frame, a superimposed wagon-supporting frame, and means for raising and lowering the same, of a rear longitudinal bar, a transverse rest-bar supported on the longitudinal bar and terminating at its ends in heads provided with pads, means for reciprocating the rest-bar upon the longitudinal bar, and rests located at the front end of the frame, substantially as specified.

3. In a wagon-jack, the combination, with a base-frame, a superimposed wagon-supporting frame having cross-bars, and means for raising and lowering said latter frame, of a longitudinal bar connected with the cross-bar and the rear end of the frame, a sliding block mounted on the longitudinal bar and having its upper face recessed in the rear of the same and provided with a kerf and in front of the same with perforated ears, a transverse rest-bar pivoted in the recess and terminating at its outer ends in padded heads, a bowed spring seated in the kerf and having its terminals resting against the rest-bar at opposite sides of its pivot, a reciprocating rod pivoted between the ears and having its front end extending through the perforation in the front cross-bar, and the notched blocks U-shaped in cross-section, provided with pads, and mounted on the opposite side bars of the wagon-supporting frame and adapted to engage the perforated cross-bar, substantially as specified.

4. In a wagon-jack, the combination, with the elongated frame having perforations, and in rear of the same tracks, and the lever pivoted at the front end of the frame, of the vertical standards mounted in the perforations, the wagon-supporting frame mounted on the standards, the arms pivoted at their upper ends to the standards and provided at their lower ends with rollers for moving on the tracks, and connections between the axles of the rollers and the lever, substantially as specified.

5. In a wagon-jack, the combination, with the lower base-frame having perforations in its opposite side bars, and the lever pivoted at its lower end to the front end of the frame, of the vertical standards mounted for reciprocation in the openings, the U-shaped wagon-frame mounted on the standards, the arms pivoted at their upper ends to the standards and provided at their lower ends with rollers for moving on the base-frame, the draft-frame located in the base-frame and provided with lugs connected with the axles of the rollers, and the link connecting the front end of the draft-frame with the lever, substantially as specified.

6. In a wagon-jack, the combination, with the oblong base-frame having the pairs of opposite perforations, and the lever pivoted at its lower end to the front end of the frame, of the vertical standards mounted in the perforations, the U-shaped frame supported by the standards, the arms pivoted at their upper ends to the standards and provided with grooved pulleys or rollers for moving over tracks on the frame, the oblong draft-frame having lugs connected with the axles of the rollers, and the link loosely connected to the front end of the draft-frame and the lever above its pivot and provided with a notch at its front end for engaging with the front end of the base-frame, substantially as specified.

476,418. ALIZARINE DERIVATIVE. ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 18, 1891. Serial No. 412,302. (Specimens.)

Claim.—1. The process for the manufacture of a coloring-matter by oxidizing the alizarine bordeaux herein described with manganese in concentrated sulphuric-acid solution and by combining the resulting diquinone with salicylic acid, likewise in sulphuric-acid solution.

2. The coloring-matter derived from alizarine bordeaux, which is a greenish-black amorphous mass with metallic luster, almost insoluble in cold and hot water, soluble in sodium carbonate with reddish-blue color and very soluble in soda-lye with greenish-blue, and in ammonia with pure blue color, in concentrated sulphuric acid with greenish-blue color, from which solution yellowish-brown flakes are precipitated on the addition of water, and which dies wool mordanted with chromium salts in greenish-blue shades.

476,419. ALIZARINE DYE. ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 18, 1891. Serial No. 412,425. (Specimens.)

Claim.—1. The process hereinbefore described of producing a new alizarine dye-stuff by the action of ammonia upon the anthradiquinone formed when alizarine bordeaux is oxidized in sulphuric-acid solution with manganese at low temperatures.

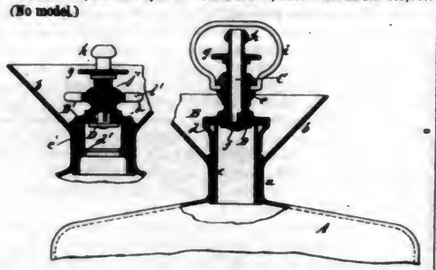
2. The new dye-stuff which is almost insoluble in water, but soluble in solutions of sodium carbonate with a reddish violet, in soda-lye with indigo-blue color, and in ammonia liquid with bluish-violet color, and by concentrated sulphuric acid is dissolved with dark-violet color, which turns at first into red and then into reddish brown when diluted with water.

476,420. ALIZARINE DERIVATIVE. ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 18, 1891. Serial No. 412,426. (Specimens.)

Claim.—1. The process of producing a new alizarine dye-stuff by treating alizarine bordeaux with ammonia and subsequently precipitating the color with acids.

2. As a new product, the dye-stuff hereinbefore described, containing nitrogen, which forms a dark-violet crystalline precipitate with a greenish reflex, is insoluble in water, easily soluble in soda-lye, with a brightly-blue color, dissolving in concentrated sulphuric acid with red color and cinnabar-red fluorescence, sulphuric-acid solutions of which show distinct and clear bands of absorption in the spectroscope, and from its solutions in concentrated sulphuric acid it separates on the addition of water in yellowish-brown flakes, and which dyes wool mordanted with chromium salts a blue similar to that which is produced by alizarine blue.

476,421. VALVED STOPPER FOR WATER-BAGS. GEORGE H. F. SCHRADER, New York, N. Y. Filed Dec. 3, 1891. Serial No. 413,678. (No model.)



Claim.—1. A stopper for water-bags, having a threaded opening through it, combined with a threaded tubular valve-stem passing through said opening, having a head by which to turn it and having on its inner end within said stopper a valve-disk adapted by screwing out said stem to seat itself against the inner side of the stopper and thereby close said opening.

2. A stopper for water-bags, having a right-hand thread for attaching it to the neck of the bag and an opening through it with a left-hand thread, combined with a left-threaded tubular valve-stem passing through said opening and having on its inner end a valve-disk adapted to seat itself against the inner side of the stopper to close said opening, whereby by turning the stem to the right it screws outwardly and seats said valve-disk and the seating thereof tends to tighten the attachment of the stopper.

3. A stopper for water-bags, having a threaded opening through it, combined with a threaded tubular valve-stem passing through said opening, having on its outer end a nozzle adapted for the attachment of a syringe-tube and on its inner end a valve-disk, whereby by screwing said stem outwardly said valve-disk seats against the inner side of the stopper and closes the outlet through said opening and by screwing the stem inwardly and applying a syringe-tube to the nozzle thereof the valve is opened and water may flow out through said stem and syringe-tube, thereby converting the water-bag into a fountain-syringe.

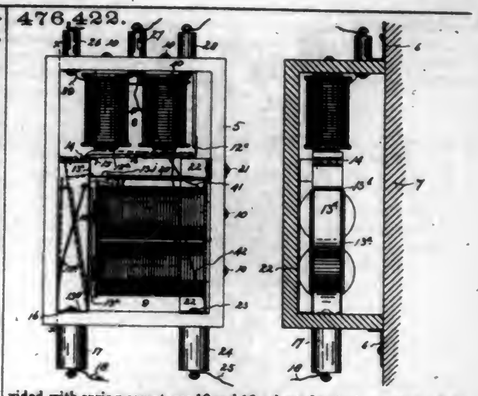
4. A stopper for water-bags, having a threaded opening through it and constructed with a valve-seat at the inner end of said opening and with a shoulder at the outer end of said opening, combined with a threaded tubular valve-stem passing through said opening, having on its outer end a nozzle for the attachment of a syringe-tube and a shoulder for engagement with said shoulder on the stopper and on its inner end a valve-disk adapted to seat against said valve-seat in the stopper to close said opening when the stem is screwed out, and a packing-ring surrounding said stem, interposed between said shoulders on the stem and stopper and adapted to be compressed between them when the stopper is screwed fully in for use with a syringe, whereby the leakage of water around the stem is prevented in either position of the latter.

5. A stopper for hot-water bottles, having a threaded opening through it, combined with a threaded valve-stem passing through and irremovable from said opening, said stem constructed to leave a conduit through said opening, and a valve carried by said stem and adapted to close said opening and thereby to prevent a flow through said conduit.

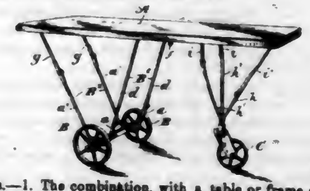
476,422. ELECTRIC-LIGHTING SYSTEM. ALBERT SCHMIDT, Denver, Colo. Filed Dec. 1, 1891. Serial No. 413,736. (No model.)

Claim.—The combination, with an incandescent-lamp circuit, of means for controlling the same, consisting of a divided-battery circuit, two electro-magnets—one in each branch of the battery-circuit—provided with spring-armatures 12 and 13, adapted to lock together when brought in contact, armature 13 being in the lamp-circuit and consisting of magnetic material supplemented by a material of higher conductivity, a spring-clip 20, also in the lamp-circuit in the path of a projection 13′ on the armature 13 and adapted to make electrical contact with said projection when the two armatures are locked together, and push-buttons in each branch circuit, whereby either magnet may be energized accordingly as it may be desired to make or break the lamp-circuit, substantially as described.

476,422.



476,423. BIER. JAMES W. SHIRER, Cynthiana, Ky. Filed Feb. 15, 1892. Serial No. 421,613. (No model.)



Claim.—1. The combination, with a table or frame and jointed frames, of wheels carrying said frames and means for locking the frames in open or operative position.

2. The combination, with a table or support and jointed frames connected therewith, of means for locking said jointed frames in open or operative positions, two wheels supporting one of said frames, and a single swiveled wheel supporting the other frame.

3. The combination, with a table or support, a jointed frame secured thereto, and wheels carrying said jointed frame, of a jointed frame triangular in shape, a single swiveled wheel supporting same and means for locking both of said frames in open or operative positions, substantially as set forth.

476,424. HANDLE FOR BICYCLES. WILLIAM C. SMITH, Goshen, Ind. Filed Aug. 6, 1891. Serial No. 401,917. (No model.)



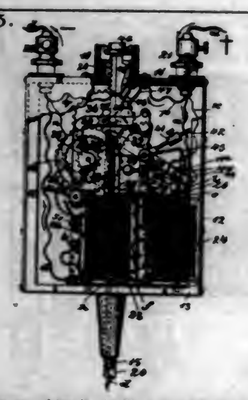
Claim.—1. The rubber handle for bicycles, having a radial series of air spaces or chambers therein separated from each other by radial ribs or walls of soft rubber, substantially as specified.

2. The handle for bicycles, comprising the inner rubber adapted to fit closely around the handle-bar or metallic core and having therein a series of air chambers or spaces separated by walls or ribs and an outer covering of harder rubber than said inner covering, substantially as specified.

476,425. ELECTRIC-ARC LAMP. EDWARD F. SMITH, Cincinnati, Ohio. Filed Oct. 5, 1891. Serial No. 407,716. (No model.)

Claim.—1. In an electric-arc lamp, the construction whereby the arc is established, consisting of the combination, with the magnet of the series coil and the carbon-feed rod of such a lamp, of mechanism capable of raising the carbon-feed rod, a lever actuated by this magnet, a rock-shaft deriving its motion from the magnet through the

476,425.



medium of the lever, which is rigidly mounted upon the former, and a lateral extension also rigidly connected to and moving with the rock-shaft and capable of engaging with and actuating, for the purpose of starting the lamp, the mechanism which raises the feed-rod, all as substantially shown and described.

2. In an electric-arc lamp, the construction whereby the arc is established and maintained, and which construction consists of the combination, with the magnet of a series and shunt coil, of an oscillating lever 27, connected with its ends to each one of the magnets, a rock-shaft deriving its motion from the magnets through the medium of this lever, which is rigidly mounted upon the former, a lateral extension also rigidly connected to and moving with the rock-shaft, and mechanism capable of raising and supporting the carbon-feed rod and electrically controlled by the rotary reciprocatory motion of the rock-shaft, which is imparted to it through the medium of the extension mentioned before, which engages with said mechanism, all as substantially shown and described.

3. In an electric-arc lamp, the combination, with the toothed carbon-feed rod thereof, of a movement mechanism consisting of a train of gear-wheels whereby the feed-rod is moved and an electrically-controlled toothed sector capable of intermeshing with the train of gear-wheels and thereby regulating its movement, all as substantially shown and described.

4. In an electric lamp, the combination, with the toothed carbon-feed rod thereof, of a train of gear-wheels whereby this feed-rod is moved, a toothed sector intermeshing with this train of gear-wheels, regulating its motion, an oscillating lever turning a rock-shaft upon which this sector is rigidly secured, and two magnets controlling the movements of this lever, all as substantially shown and described.

5. In an electric lamp, the combination, with the toothed carbon-feed rod thereof, of a movement mechanism consisting of a train of gear-wheels whereby the feed-rod is moved, an electrically-controlled toothed sector capable of intermeshing with this train of gear-wheels, thereby regulating its movement, and an electrically-controlled cut-out consisting of levers 43 *m*, wires *k* and *n*, and resistance-coil *o*, all as substantially shown, and for the purposes described.

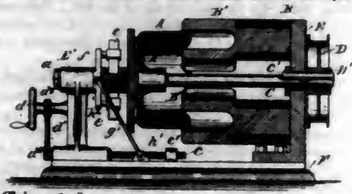
6. In an electric lamp, the combination, with the main circuit thereof, of the cut-out circuit *k* 44 *o n*, connecting binding-posts 21 and 22, which circuit contains a resistance-coil of higher resistance than is produced by the carbon points when in their normal position, all as substantially shown and described.

7. In an electric lamp, the combination, with the toothed feed-rod thereof, of a train of gear-wheels whereby this feed-rod is moved, an escapement engaging with this train of gear-wheels and regulating its motion, an oscillating lever turning a rock-shaft to which this escapement is rigidly secured, and two magnets controlling the movements of this escapement, all as substantially shown and described.

8. In an electric-arc lamp, the means to shunt the current from the lamp in case of accidents and establish electrical connection between binding-posts 21 and 22, and which means consist in the combination, with resistance-coil 24, of a lever 27, a contact-piece *m*, operated by it, post *l*, and wires *k* and *n*, connecting-piece *m* and post *l* with the binding-posts, all as substantially shown and described.

9. In an electric-arc lamp, the means to shunt the current from the lamp in case of accidents and establish electrical connection between binding-posts 21 and 22 and the means to revert the current again to its normal path through coil 23, and which means consist in the combination, with resistance-coil 24, of a lever 27, a contact-piece *m*, operated by it, post *l*, wires *k* and *n*, connecting piece *m* and post *l* with the binding-posts, and resistance-coil *o*, of higher resistance than coil 23, all as substantially shown and described.

476,426. ELECTRIC GENERATOR OR MOTOR. ELMER A. SPERRY, Chicago, Ill. Filed Apr. 3, 1886. Serial No. 197,595. (No model.)



Claim.—1. In an electric generator or motor, the combination, with the field-magnets, of the longitudinally-adjustable armature, its rotary shaft and commutator, and the contact-brushes and devices, substantially as shown, for simultaneously adjusting the armature in relation to the field-magnets and changing the angular position of the brushes on the commutator with reference to the field-magnet, for the object herein stated.

2. In an electric generator or motor, the combination, with the armature, field-magnets, commutator, and commutator-brushes in such machines, of mechanism organized to vary or change simultaneously the relation of the first two and second two of the above-named parts, and also the relation between the brushes and the field-magnet, in response to the variations in an electric current, substantially as specified.

3. The combination, with the movable shaft and journal of a generator or motor, the moving brush supports or yoke *f*, and mechanism adapted to rotate or adjust said yoke, operating from the movement of said shaft and journal, of a mechanism adapted to vary the relation between the brushes and field-magnets, substantially as and for the purposes specified.

4. The combination, with the longitudinally-movable shaft and bearing of a generator or motor, of revolving brush supports or yoke *f*, and mechanism adapted to rotate said yoke connected with so as to derive motion from the said shaft and bearing, a mechanism adapted to vary the relation of the brushes to the field-magnets and the relation of the armature and field-magnets simultaneously, substantially as set forth.

5. In a generator or motor, the combination, with the adjustable bearing and longitudinally-movable shaft, of the screw *c*, ratchets *i i'* of opposite phase connected with said screw, and the vibrating pawls or dogs *j j'*, adapted to be brought into engagement with said ratchets, substantially as set forth.

6. In an electric generator or motor, the combination of the field-magnets with an armature and a brush-yoke, a mechanism responsive to variations in the main current of the machine, and connections from the same whereby the brush-yoke is rotated about the commutator, and simultaneously therewith the field-magnets and armature are moved with reference to each other, so as to vary the relation of one to the other.

7. In an electric generator or motor, the combination of the field-magnets with an armature and a brush-yoke, a mechanism responsive to variations in the main current of the machine, and connections from the same whereby the brush-yoke is rotated about the commutator and simultaneously therewith the field-magnets and armature are moved with reference to each other so as to vary the relation of one to the other, said mechanism driven from the shaft of the armature.

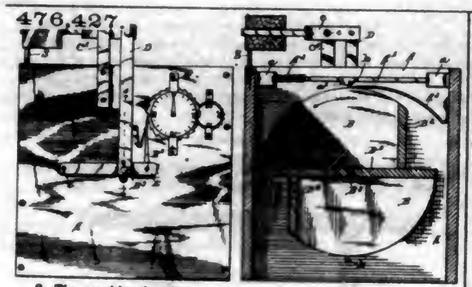
8. In a generator or motor, the combination of an armature movable along its magnetic field with operating mechanism to cause such movement, and stops organized so as to throw such operating mechanism out of operative connection with the parts when the armature has reached its limit of motion in either direction.

9. In a generator or motor, the combination of an armature movable in its magnetic field with operating mechanism to cause such movement, stops organized so as to throw such operating mechanism out of operative connection with the parts when the armature has reached its limit of motion in either direction, and brushes adapted to be moved about the commutator by said operating mechanism simultaneously with the motion of the armature.

476,427. GRAIN-WEIGHING MACHINE. JOHN SPRINKLE, Walton, Ind. Filed Sept. 29, 1891. Serial No. 407,121. (No model.)

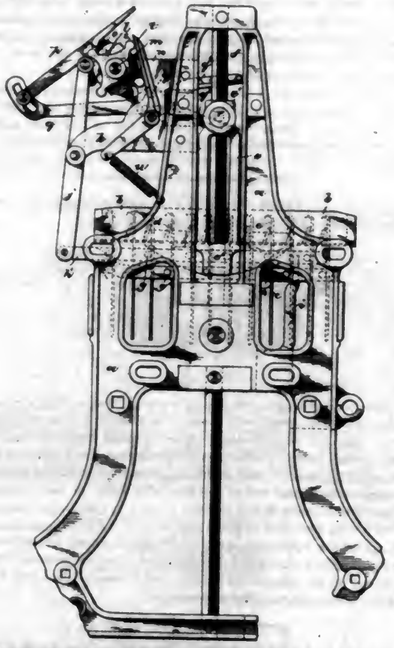
Claim.—1. The combination, in an automatic weighing-machine, of a double hopper consisting of a cylinder divided equally by a partition extending through its center and each part being reduced at one end, as shown, stop-pins on said cylinder, a detent with which said stop-pins will come in contact, a bar carrying said detent provided with a buffer-spring, a spring-pawl for catching and holding the cylinder against a reverse movement, a shaft on which the cylinder is mounted, a bifurcated scale-beam mounted on appropriate knife-edges, links connecting said scale-beam with the shaft of said cylinder, and arms pivoted to the casing at one end and connected to the cylinder-shaft at the other, substantially as set forth.

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2. The combination, in an automatic weighing-machine, of a cylinder embodying the hoppers, the scale-beam, links connecting said scale-beam to the shaft of the cylinder, and arms E, pivoted to the casing connected to the cylinder shaft or links and provided with a pawl, which engages with and operates the counting or registering mechanism, all substantially as set forth.

476,428. JACQUARD MECHANISM FOR LOOMS. GEORGE W. STAFFORD, Providence, R. I. Filed Dec. 14, 1891. Serial No. 414,992. (No model.)



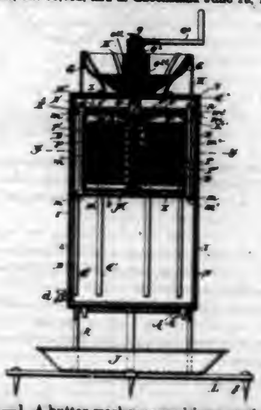
Brief.—For weaving Marseilles quilts the pattern-cards usually employed to cause the plain shedding of the heavy backing warps are dispensed with, and instead thereof are employed light frames, which act alternately upon the sets of the Jacquard hooks, permitting their engagement with the griff.

Claim.—1. The combination, with the griff and vertical hooks of a Jacquard mechanism, of rods disposed between the said hooks without direct connection therewith, the said rods being placed adjacent to the upper ends of the said hooks and arranged in two or more series, and means for moving successively the respective series of rods laterally to shift the hooks relatively to the knives of the griff and determine their engagement thereby, substantially as described.

2. The combination, with the griff and vertical hooks of a Jacquard mechanism, of rods disposed between the said hooks without direct connection therewith, the said rods being placed adjacent to the upper ends of the said hooks and arranged in two or more series, movable bars in which the said rods are secured, levers connected with said bars, cams acting upon the said levers, and means for rotating the said cams, substantially as described.

3. The combination, with the griff and vertical hooks of a Jacquard mechanism, of rods disposed adjacent to the said hooks and arranged in two or more series, movable bars to which the said rods are secured, levers connected with the said bars, cams acting upon said levers, a shaft carrying said cams, a ratchet-wheel on said shaft, a pawl engaging said ratchet-wheel, and a pawl-carrier actuated by the griff aforesaid, substantially as described.

476,429. BUTTER-WORKER. FREDERICK R. C. STRUVER, Pine Creek, Queensland. Filed Mar. 5, 1890. Serial No. 342,738. (No model.) Patented in New South Wales Dec. 13, 1889, No. 1,917; in Victoria Dec. 16, 1889, No. 7,350; in Tasmania Dec. 21, 1889, No. 779; in New Zealand Dec. 30, 1889, No. 4,152; in South Australia Jan. 8, 1890, No. 1,493; in England Jan. 27, 1890, No. 1,428; in France Feb. 5, 1890, No. 208,583; in Germany Feb. 6, 1890, No. 54,060; in Canada Feb. 25, 1890, No. 33,782, and in Queensland June 16, 1890, No. 915.



Claim.—1. A butter-worker comprising a stationary working cylinder provided with foraminous heads and with inwardly-projecting radial arms, a shaft revoluble in said cylinder and having like arms arranged to pass between the arms of the cylinder, and an inclosing vessel of greater diameter and height than the working cylinder within which vessel said cylinder is detachably connected, for the purpose set forth.

2. A butter-worker comprising a stationary working cylinder provided with detachable foraminous heads and with inwardly-projecting radial arms, a shaft revoluble in said cylinder and provided with like arms arranged to pass between the arms on the cylinder, means for introducing brine into the working cylinder through the shaft, and an inclosing vessel of greater diameter and height than the working cylinder, which latter is detachably supported in said vessel above the bottom thereof, for the purpose set forth.

3. A butter-worker comprising a stationary working cylinder provided with foraminous heads and with inwardly-projecting radial arms, a shaft revoluble in said cylinder and also provided with radial arms adapted to pass between those of the cylinder, an inclosing vessel of greater diameter and height than said cylinder, which latter is detachably supported in said vessel above the bottom thereof, and means, substantially such as described, for exteriorly cooling the inclosing vessel, for the purpose set forth.

4. A butter-worker comprising a stationary working cylinder having detachable foraminous heads and inwardly-projecting radial arms, a shaft revoluble in said cylinder and having like arms arranged to pass between those of the cylinder, the upper end of said shaft being tubular and having a port leading from said tubular portion into the working cylinder, a valve for said port, and an inclosing cylinder of greater diameter than said working cylinder, which latter is detachably supported in said vessel above the bottom thereof, for the purposes set forth.

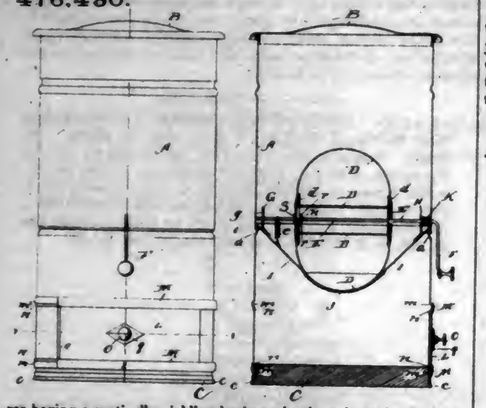
5. The combination, in a butter-worker, with the working cylinder P, of the shaft O, whose upper portion is tubular and provided with a port leading into the cylinder, a valve adapted to close said port, and a valve-rod extending through said tubular portion of the shaft, for the purpose set forth.

6. The combination, with the vessel D, provided with the brackets *m*, the butter-working cylinder P, supported from said brackets, the shaft O in said cylinder, and the cover C, provided with the tubular journal o^2 for the said shaft, of the vessel G, provided with an axial bearing fitting around said journal o^2, for the purpose set forth.

476,480. FLOUR-BIN. CHRISTIAAN TANGENBERG, Chicago, Ill. Filed Nov. 6, 1891. Serial No. 411,289. (No model.)

Claim.—1. The flour-bin provided with a removable sieve, a stir-

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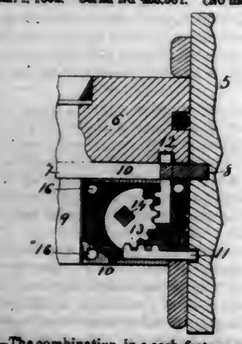


rer having a vertically-yielding horizontal axis, and a spring for keeping the stirrer in contact with the sieve, both the stirrer and spring being supported upon the sieve and removable therewith, substantially as specified.

2. The combination, with the flour-bin having the beads *m* and offsets *n*, adapted to maintain the door at such a remove from the bin as will prevent injury to the finished surface, of the sliding door L and the guards M, substantially as specified.

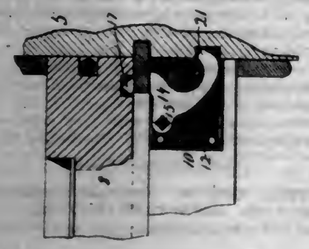
3. The combination, with the bin and the sliding door therefor, of ways for the door set off from the body of the bin, so as to hold the door at a remove from and prevent injury to the finish of the bin, substantially as set forth.

476,481. SASH-FASTENER. LEVI P. TREADWELL, Danbury, Conn. Filed Mar. 1, 1892. Serial No. 423,381. (No model.)



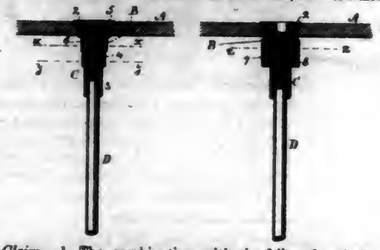
Claim.—The combination, in a sash-fastener, of a gear-wheel journaled upon the lower sash, two bolts having rack-teeth to engage the gear-wheel, the first bolt being located in front of the gear-wheel to engage the side frame and the second bolt located between the gear-wheel and the said side frame and at right angles to the first bolt, and a parting-strip and an upper sash both notched to receive the second bolt, the notches in the sash being directly behind the parting-strip, substantially as described, whereby the upper sash may be released while the lower sash still remains locked.

476,482. SASH-FASTENER. LEVI P. TREADWELL, Danbury, Conn. Filed Mar. 1, 1892. Serial No. 423,382. (No model.)



Claim.—The combination, in a sash-fastener, of a bolt journaled to the lower sash and having two ends to project at right angles beyond the sash, the side frame being notched to receive one of the said ends, and the parting-strip and the upper sash both notched to receive the other end, the notches in the upper sash being concealed behind the parting-strip, substantially as described.

476,483. WHEEL FOR CYCLES. JOHN VETTERLEIN, North Plain field, N. J. Filed Feb. 15, 1892. Serial No. 421,502. (No model.)



Claim.—1. The combination, with the felly, of a nipple passing through the felly and having a flange against the exterior of the felly, a spoke screw-threaded near the end, a sleeve forming a nut screwed upon the spoke and having a collar by which the sleeve can be held or rotated, a screw-threaded exterior near one end to screw to the nipple, and a cylindrical portion at the other end into which the wire of the spoke passes, substantially as set forth.

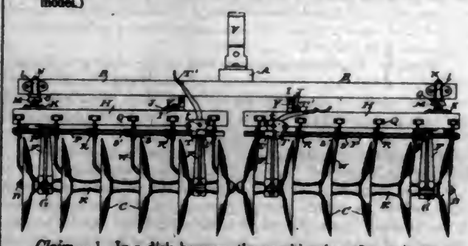
2. The combination, with the screw-threaded spoke, of a sleeve forming a nut screwed upon the spoke, a nipple passing through the felly and having a flange against the exterior of the felly, and a screw connection between the sleeve and the nipple, substantially as set forth.

476,484. LATCH. CHARLES A. WHITBERG, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,828. (No model.)



Claim.—A door-bolt comprising a case, a freely-sliding bolt and bolt-shank located therein and confined by suitable guides, two shoulders or projections on said shank, an arm pivoted upon said case and having one end located between said shoulders or projections on said shank, whereby said bolt and shank can be moved back and forth by the engagement of said end of the arm with either of said shoulders or projections, a freely-sliding tumbler located in guides upon the case, a spring acting upon said tumbler and serving to hold the same at all times against the bolt-shank, a recess in said bolt-shank located to receive said tumbler when the bolt is shot, and a projection on said tumbler located to be engaged by another end of said pivoted arm when said bolt is shot, substantially as described.

476,485. DISK HARROW. HARRY WIARD and HIRAM M. BURDICK, Syracuse, N. Y. Filed Oct. 22, 1891. Serial No. 409,631. (No model.)



Claim.—1. In a disk harrow, the combination of a main frame, disk gangs, and a hinge-joint having a base-plate, a sector-plate, and a central piece pivoted to the base-plate by a horizontal pin and to the sector-plate by an engaging vertical shank and sleeve and provided with a recessed lug engaging the forward edge of the sector-plate, substantially as shown and described.

2. In a disk harrow, the combination, with a gang of revolving disks, of a series of scrapers pivoted at their upper end to the gang-beam and mounted freely on a reciprocating bar provided with lugs bearing against the front of the scraper-shank, and spiral springs bearing against the back of said shank and adapted when compressed to adjust the scrapers to any irregularity in the faces of the disks and when relaxed to withdraw the scrapers from the disks, substantially as shown and described.

3. In a disk harrow, the combination, with a gang of revolving disks, of a series of scrapers pivoted at their upper end to the gang-beam and mounted freely on a reciprocating rod provided with vertically-disposed pins bearing against the front of the scraper-shank below said bar, and spiral springs bearing against the back of said scraper-shanks, substantially as shown and described.

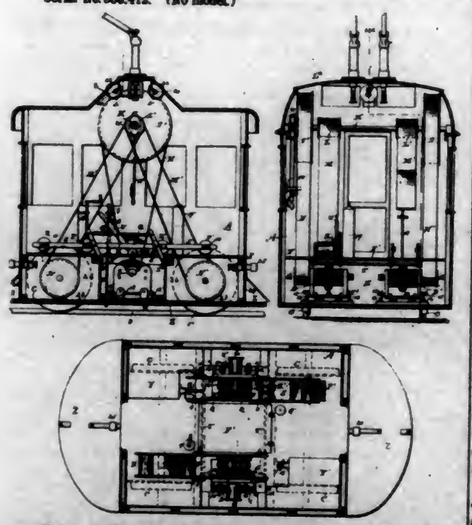
476,486. COP FOR SEWING-MACHINES. CHARLES R. WILKINSON, New Haven, Conn. Filed Feb. 10, 1892. Serial No. 420,947. (Model.)



Claim.—1. A cop of thread having a channel indented therein, extending from its central portion outwardly, substantially as set forth.

2. A cop of thread having a radial channel indented in its side and a cover attached to the side of the cop and covering the channel, substantially as set forth.

476,487. ELECTRIC LOCOMOTIVE. THOMAS E. ADAMS, Cleveland, Ohio, assignor to the Brush Electric Company. Filed May 23, 1890. Serial No. 353,412. (No model.)



Claim.—1. The combination, with the spring-mounted car-body and wheel-base, of pulleys in the upper portion of the car-body, pulleys on the wheel-base, belting for transmitting motion to the pulleys in the upper portion of the car-body, and belting connecting said pulleys with the pulleys on the wheel-base, substantially as set forth.

2. The combination, with the spring-mounted car-body and the wheel-base, of the propelling electric motor or motors on said body, the belting from the motor-shaft or shafts to speed-reducing pulleys or intermediates on the car-body and from said reducing-pulleys to the wheel-base, and the quick-acting automatic slack-controller for the belting, substantially as described.

3. The combination, with the wheel-base and the spring-mounted car-body provided with a well or box below the ordinary floor-level, of the motor or motors in said well or box, the pulleys in the roof, the belting, and the quick-acting automatic slack-controller, substantially as described.

4. The combination, with a wheel-base and a car-body provided with a well or box below the ordinary floor-level, of the motor or motors in the said well or box, the pulleys in the car-roof, and the vertical belts, substantially as described.

5. The combination, with a wheel-base and a car-body provided with a well or box below the ordinary floor-level and a removable flooring over said well or box, of an electric motor or motors in said well or box, pulleys in the roof of the car and on the motor or motors and wheel-base, and vertical belts, substantially as described.

6. An electrically-propelled vehicle in which the electricity is supplied from an overhead line and the mechanical power is conveyed to the wheel-base through belt-gearing and in which also the car-body is provided with a dome-like elevation in the roof adapted for observing the line near the car and having a part of the belt-gearing arranged therein, substantially as described.

7. The combination, with a vertical belt and a vertically-adjustable motor, of ears on the base-plate of said motor and adjusting-screws passing through said ears and bearing on the motor-frame, whereby the motor may be moved horizontally, substantially as set forth.

8. In combination with the motor or motors and belt-gearing of an electrically-propelled vehicle having intermediate or speed-reducing pulleys in the roof connected by vertical belts with said motor or motors, motor-adjusting means for vertically adjusting said motor or motors, substantially as described.

9. In combination with the motor or motors, wheel-base, and belt-gearing of an electrically-propelled vehicle capable of traveling in either direction, a reversible belt-tightener having a presser or roller for bearing against whichever part of the belt tends to become slackened, according to the direction of the travel, substantially as described.

10. In combination with a wheel-base and belt-gearing, a reversible belt-tightener, substantially as described.

11. In combination with a belt for transmitting power with reversals of the motion, a reversible belt-tightener, substantially as described.

12. The combination, with a spring-mounted car-body, the wheel-base, and the belt-gearing between pulleys on the wheel-base and car-body, respectively, of a reversible belt-tightener constituting a quick-acting automatic slack-controller and having a yielding presser or pressing roller for bearing against whichever part of the belt tends to become slackened, according to the direction of the car's motion, substantially as described.

13. In combination with the spring-mounted car-body, the propelling electric motor or motors, the wheel-base, and the belt-gearing between the electric motor or motors and the wheel-base, the automatic slack-controller in the form of a reversible belt-tightener with yielding pressure or pressing rollers, substantially as described.

14. In combination with a belt, the reversible belt-tightener comprising rollers on opposite sides of the belt, springs, and mechanical connections, whereby a roller may be pressed by yielding pressure against either part of the belt, leaving the other free, substantially as described.

15. In combination with a belt, the reversible belt-tightener comprising rollers on opposite sides of the belt, springs, and mechanical connections, whereby the belt may be tightened from either side or left loose, substantially as described.

16. In combination with a belt, a reversible belt-tightener comprising a pair of pressers or pressing rollers, a carrier for the said pressers or pressing rollers, and a shifting-lever, substantially as described.

17. The combination, with a wheel-base, spring-mounted car-body, propelling motor or motors, and the belt-gearing, of a reversible belt-tightener constituting a quick-acting automatic slack-controller and comprising a pair of pressing rollers with their carrier, springs, and shifting-lever, substantially as described.

18. The combination, with the wheel-base, the car-body, and the counter-shaft, of the two motors geared to said shaft, clutch mechanism whereby one or both of said motors may be made to engage said counter-shaft, and gearing between the counter-shaft and wheel-base, substantially as described.

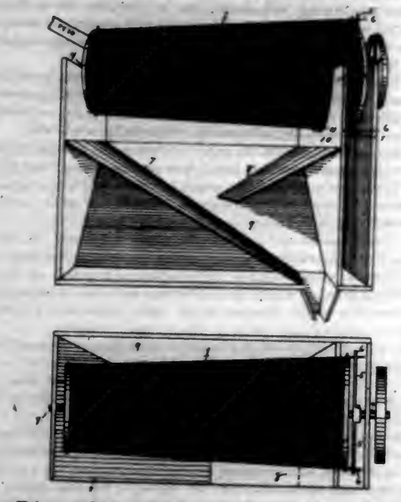
19. The combination, with an electrically-propelled vehicle, of a stout frame having its lower portion extending below the axles of the vehicle immediately over the tread of the rails, a floor located on said frame over the axles, and an electric motor supported by said frame under said floor, substantially as set forth.

20. The combination, with an electrically-propelled car, of a stout frame located under the axles thereof and extending from one end to the other of said car and platforms secured at the ends of said frame and projecting therefrom in the same plane as the lower portion of said frame, said platforms being of a length sufficient to project beyond the coupler at the end of said electrically-propelled car and beneath and beyond the end of the platform of the adjacent car to which said electrically-propelled car is coupled, substantially as set forth.

21. The herein-described electrically-propelled vehicle, comprising the wheel-base, the spring-mounted car-body provided with a stout frame below the axles and an ordinary floor above the axles, an elec-

tric motor or motors in the space between said frame and floor, a counter shaft in the roof of the car-body, belting between the motor or motors and counter-shaft and between the counter-shaft and wheel-base, and the reversible belt-tightener with quick-acting yielding pressers and a shifting-lever, substantially as described.

476,438. SCREEN FOR CLAY, ORES, &c. EUGENE A. AUSTIN, Boulder, Colo. Filed Sept. 12, 1891. Serial No. 405,534. (No model.)

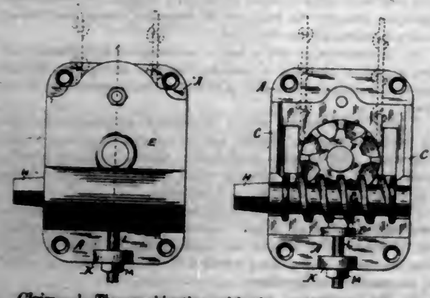


Claim.—1. In a revolving screen, substantially as described, the hubs provided with the elongated slots and an axle passing through said slots, substantially as set forth.

2. In a revolving screen, substantially as described, the hubs provided with the elongated slots placed at right angles to each other and an axle passing through said slots, substantially as set forth.

3. A revolving screen consisting of the screen 1, loosely journaled on axle 4, and arm 5, secured on axle 4, its ends adapted to engage the rods 6 6, attached to the screen, substantially as set forth.

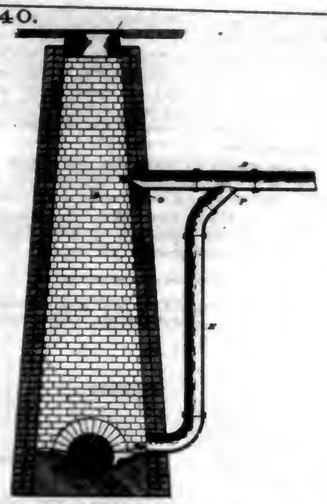
476,439. DEVICE FOR OPERATING AWNINGS. GIDEON K. BANCROFT, Philadelphia, Pa. Filed Mar. 19, 1892. Serial No. 425,534. (No model.)



Claim.—1. The combination, with the worm, worm-wheel, and sprocket wheel and chain, of a box and cover having bearings for said wheels, a bracket secured to a wall, an orifice in this bracket with beveled sides, lugs on said box adapted to engage with said beveled sides, a lug I on said box, a lug K on said bracket, and a bolt L, and nut M, all substantially as and for the purposes set forth.

2. The combination of a bracket A with orifice B, having beveled sides, as described, and a notch N, and lug K, of box C, having lugs D, and lug I, a bolt L, and nut N, and a sprocket wheel and chain, and means for revolving this sprocket-wheel, all substantially as and for the purposes set forth.

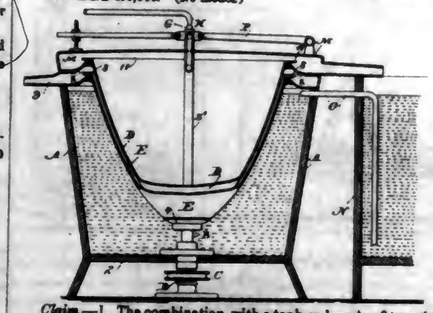
476,440. MANHOLE AND SEWER CONNECTION. JAMES P. BATES, Springfield, Mo., assignor of one-half to Alexander Donoghy, same place. Filed Nov. 14, 1891. Serial No. 411,922. (No model.)



Claim.—1. A system of underground drainage, consisting of a manhole B, lateral pipe D, opening into said manhole and provided with a discharge-pipe E, by which the contents of the pipe D may be discharged into a connecting-sewer, substantially as described.

2. In a system of underground drainage, a manhole B, having a cover A and opening into a sewer C, in combination with the pipe D, provided with a dam o and a discharge-pipe E for connecting the pipe D with the sewer, substantially as described.

476,441. CENTRIFUGAL APPARATUS FOR COOLING OR HEATING LIQUIDS. CARL G. BJORLIN, Stockholm, Sweden, assignor to himself, and Richard Duncan Harris, New York, N. Y. Filed Oct. 19, 1891. Serial No. 409,116. (No model.)



Claim.—1. The combination, with a tank or box A, of two similar centrifugal sheet-metal vessels D E, a spindle to which such vessels are connected and means for rotating the same, an axial pipe opening into a hollow portion or hub in the spindle, there being openings through this hub into the space between the two sheet-metal vessels and tubular openings at such hub for the passage of liquid from the tank into the inner vessel of the centrifugal vessels, and annular troughs or covers for receiving the liquids from the edges of the centrifugal vessels, substantially as set forth.

2. The combination, with a tank, of means for supplying to the same cooling or heating liquid, a spindle and means for revolving the same, two sheet-metal vessels, one within the other, with a space between them for the passage of the liquid to be heated or cooled, there being a hollow hub in or connected with the spindle, with openings into the space between the two centrifugal vessels, a tubular opening for the passage of liquid from the tank into the inner centrifugal vessel, a valve for regulating the passage of liquid through such tubular opening, and mechanism for regulating the position of the valve, substantially as set forth.

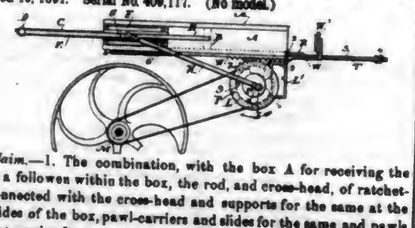
3. The combination, with the liquid-holding vessel N and pipe O, of the tank A, the spindle B, passing through the bottom of the tank and having a flaring cup at the upper end, the sheet-metal vessel E, connected with the said cup, a hollow hub secured into the flaring cup, the sheet-metal vessel D, fastened to such hollow hub, the axial supply-pipe G, opening into the hollow hub, there being holes through the hollow hub into the space between the vessels D and E, the tube L, passing through the hollow hub and receiving liquid that passes through the opening 10 in the flaring cup, and the annular troughs or covers K and M around the upper ends of the respective centrifugal vessels D and E, substantially as set forth.

4. The combination, with the liquid-holding vessel N and pipe O of the tank A, the spindle B, passing through the bottom of the tank and having a flaring cup at the upper end, the sheet-metal vessel E, connected with said cup, a hollow hub secured into the flaring cup, the sheet-metal vessel D, fastened to such hollow hub, the axial supply-pipe G, opening into the hollow hub, there being holes through the hollow hub into the space between the vessels D and E, the tube L, passing through the hollow hub and receiving liquid that passes through the opening 10 in the flaring cup, the annular troughs or covers K and M around the upper ends of the respective centrifugal vessels D and E, and a valve and mechanism for moving the same to regulate the quantity of liquid passing through the pipe L, substantially as set forth.

5. The combination, in a centrifugal cooling or heating apparatus, of two outwardly and upwardly flaring vessels parabolic in shape, and a shaft to which both vessels are connected and by which they are revolved, a surrounding stationary vessel for holding water, and means for admitting liquid to be heated or cooled to flow between the vessels in a thin layer, substantially as specified.

6. The combination, in a centrifugal cooling or heating apparatus, of an upwardly and outwardly flaring vessel parabolic in shape, a shaft with which such vessel is connected and by which it is revolved, and a surrounding stationary vessel for holding water, and means for supplying liquid into the bottom at the center of the centrifugal vessel, and a receiving-vessel around the upper edge of such revolving vessel, whereby the liquid within such vessel is spread in a nearly uniform layer upon the interior of such vessel by the centrifugal action, and thus heated or cooled and then delivered from the upper edge, substantially as specified.

476,442. BUTTER-CUTTER. CARL G. BJORLIN, Stockholm, Sweden, assignor to himself, and Richard Duncan Harris, New York, N. Y. Filed Oct. 19, 1891. Serial No. 409,117. (No model.)



Claim.—1. The combination, with the box A for receiving the butter, a follower within the box, the rod, and cross-head, of ratchet-bars connected with the cross-head and supports for the same at the outer sides of the box, pawl-carriers and slides for the same and pawls upon the carrier for engaging the ratchet-bars, a cross-shaft and crank-pins moved by the same, and connecting-rods from the crank-pins to the pawl-carriers for moving the same and the follower, substantially as set forth.

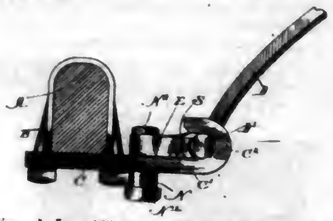
2. The combination, with the box for receiving butter and the follower within the box for ejecting the butter at one end, of mechanism for moving the follower, a frame and guides at one end of the box and a wire for cutting the butter and mechanism for moving the frame and wire, and a shelf upon which the cake of butter is received, the sector connected with the shelf, and a pin, rack, and interrupted gear for moving the parts, substantially as set forth.

3. The combination, in a butter cutter and stamper, of the box for receiving the butter, a follower and means for moving the same to project the butter at one end of the box, a movable frame at one end of the box and a wire for cutting off the butter, a stamp, a slide-rack for supporting the same, an interrupted gear acting upon the rack for giving motion in one direction, and a spring for moving the parts in the other direction, substantially as set forth.

4. The combination, in a butter cutter and stamper, of a box for receiving the butter, a follower within the box for projecting the butter at one end, a rod and cross-head connected to the follower, ratchet-bars from the cross-head, pawl-carriers and pawls to act on the ratchet, connecting-rods and adjustable cranks for giving motion to the pawl-carriers and follower, a frame and wire at the end of the box for cutting off the butter, a cam for depressing and holding such frame, a spring for moving the frame and wire in cutting the butter, a shelf at one end of the box for receiving the cake of butter and slotted sector connected to the shelf, an interrupted gear, rack-bars, and pins for acting upon the sector and shelf, a stamp and a rack-bar carrying the stamp, an interrupted gear, and spring for moving such rack-bar and stamp, substantially as set forth.

476,443. THILL-COUPLING. JOHN BRADFORD, Jr., Winslow, Ill. Filed Oct. 10, 1891. Serial No. 408,347. (No model.)

476,448.



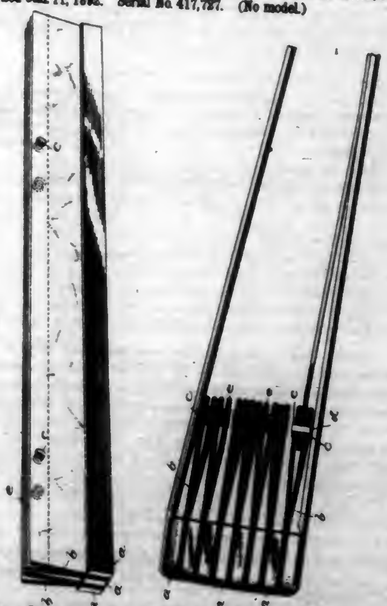
Claim.—1. In a thill-coupler, the combination, with an axle-clip and a plate fastened thereto and provided at its front end with rearwardly-open hooks separated by a suitable space, of a thill-iron provided at its rear end with a transverse pin adapted to engage said hooks, a laterally-swinging button pivoted to the plate and adapted to lock the pin in place, and a spring fastened to the button and adapted when the button is in working position to lie between the hooks of the plate and prevent accidental rotation of the button, but to be pressed downward and passed under the point of one of said hooks as the button is swung out of working position, substantially as shown and described.

2. The combination, with the plate C C', provided with the hooks C^3, of the thill-iron D, having the transverse pin D', adapted to engage said hooks, the laterally-swinging button E, pivoted to the plate and adapted to lock the pin in place, and the spring S, fastened to the button and having a free upturned end adapted to lie between said hooks and prevent accidental rotation of the button or to be pressed downward and passed under the point of one of said hooks, substantially as shown and described.

3. The combination, with the plate provided with hooks C^3, of the thill-iron D, having the pin D', the button E, and the bolt made up of two parts F F', separated by a head H, the part of the bolt below the head being passed through the plate and both ends of the bolt being provided with nuts for the purpose, respectively, of locking the bolt to the plate and locking the button to the bolt, substantially as shown and described.

4. The combination, with the plate C C', provided with hooks C^3 and having a slot *s*, of the thill-iron D, having the pin D', the button E, pivoted to the plate by a bolt passing through and adjustable in the slot *s*, and the nuts N N' N^2, securing the bolt in the slot and securing the button upon the bolt, substantially as shown and described.

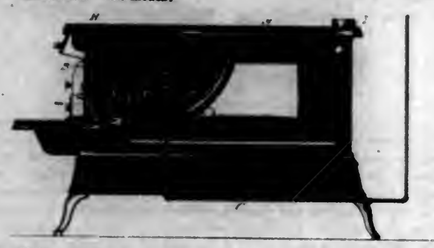
476,444. TEMPORARY BINDER. JOHN F. BRICK, Cantril, Iowa. Filed Jan. 11, 1892. Serial No. 417,727. (No model.)



Claim.—In a temporary binder of the class described, a series of longitudinal binding-strips having separate pairs of double clamping-

stubs bound between their contiguous sides, the outer end of said stubs being made stiffer and provided with registering holes, in the manner substantially as described.

476,445. OIL-BURNER. CARL F. BROSTRÖM, Chicago, Ill., assignor of one-half to William S. Minty, same place. Filed Feb. 5, 1891. Serial No. 380,312. (No model.)



Claim.—1. The herein-described oil-burner, consisting of the combination of the burner-pan, the grate located within said pan, the oil-feed by which the oil is fed below said grate, the air-feed by which the air is fed above said grate, and the chimney-flue, all substantially as shown and described.

2. The herein-described oil-burner, consisting of the combination of the burner-pan, the grate resting upon said pan, the oil-feed, the air-feed, and the chimney-flue, all substantially as shown and described.

3. The herein-described oil-burner, consisting of the combination of the burner-pan, the grate, the oil-feed, the air-feed by which the air enters in close proximity to the oil, and the chimney-flue, all substantially as shown and described.

4. The herein-described oil-burner, consisting of the combination of the burner-pan, the grate, the oil-feed, the air-feed having a wide nozzle by which the air is spread over the grate, and the chimney-flue, all substantially as shown and described.

5. The herein-described oil-burner, consisting of the combination of the burner-pan, the grate having upright partitions and air-passages through them and channels along the bottom of the grate, the oil-feed, the air-feed, and the chimney-flue, all substantially as shown and described.

6. The herein-described oil-burner, consisting of the combination of the burner-pan, the grate, the oil-feed, the air-feed having a wide nozzle with a projecting portion across the middle of the grate, the pivoted damper, and the chimney-flue, substantially as shown and described.

7. The herein-described oil-burner, consisting of the combination of the burner-pan, the grate, the oil-feed feeding the oil below the grate, the air-feed feeding the air above the grate, and the chimney-flue, all substantially as shown and described.

476,446. EXTENSION-BRACKET. JOHN G. BOTHWELL, Torrington, Conn., assignor to the Turner & Seymour Manufacturing Company, New York, N. Y. Filed Nov. 9, 1891. Serial No. 411,242. (No model.)

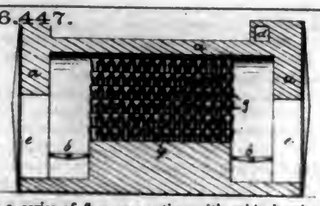


Claim.—The extension-bracket comprising two strips of metal, the one bent into shape to form the horizontal and brace portions of the bracket and having its ends turned to form flanges for the reception of the fastenings and having an elongated slot in its horizontal portion and the other having one of its ends bent to form a seat for the thing to be suspended and its other end T-shaped and turned downwardly to pass through the said slot and engage the under side of the horizontal portion of the other strip, one of the pieces having a lug struck up from its surface and the other having recesses formed in it to receive the lug, substantially as set forth.

476,447. APPARATUS FOR MAKING ULTRAMARINE-BLUE. JOHANN BÖTTEL, Newark, N. J. Filed Nov. 19, 1891. Serial No. 412,373. (No model.)

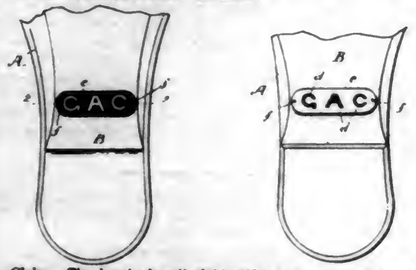
Claim.—In an apparatus for manufacturing ultramarine-blue, the combination of an oven having a fire-chamber at the opposite ends

476,447.



thereof, a series of flues connecting with said chamber and with a stack or chimney and arranged within the walls of the oven on opposite sides thereof and extending below the bottom or hearth to carry off the gases and products of combustion, and a hearth or bottom raised above the grates of the fire-chambers and adapted to receive a stack or series of pots and centrally located in respect to the vertical walls of the oven, whereby an open space is left on all sides of the said bottom and the pots to admit the hot air to freely circulate around and between the same, as and for the purposes set forth.

476,448. SOLE. GEORGE A. COWLES, Rochester, N. Y. Filed June 8, 1891. Serial No. 395,529. (No model.)



Claim.—The herein-described identification-tag, consisting of a plate adapted to be secured to one side of the sole of a shoe and a similar plate to be attached to the opposite side of the sole, a series of letters or characters upon one of the plates and provided with attaching-prongs, said letters being of a contrasting color to the plate and the prongs being passed through the plate and secured, and means for securing the plates to the sole, substantially as set forth.

476,449. BLACKING-BRUSH. WILLIAM R. DEER, Baltimore, Md. Filed Sept. 6, 1890. Serial No. 364,194. (No model.)



Claim.—1. A cast-metal bristle-frame for brushes, consisting of a group of tapered rings in a single piece, having a central separating-opening closed on one side by a perforated plate, through which the central fastening-screw may be passed, as set forth.

2. A cast-metal bristle-frame consisting of a group of tapered rings cast together, provided with a central opening through which to introduce the fastening-screw, and prongs to engage the wood of the brush to prevent turning and loosening, as set forth.

476,450. CAR-COUPLING. DANIEL DONAHUE, New York, N. Y. Filed Feb. 20, 1892. Serial No. 422,266. (No model.)

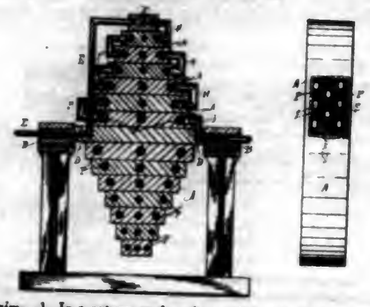


Claim.—1. The combination, in a car-coupling, of a draw-head having two fixed jaws and an opening through vertically between them, a double hook hinged in one of the said jaws with the forward one of its hooks adapted to swing partly across the mouth of the draw-head and the rear hook at the same time to engage a shoulder in front of it in the draw-head, and a bolt loosely set in the said draw-head in the path of the said rear hook and provided with a stem projecting up through the draw-head, the bolt and hook being correspondingly

slanted, substantially as described, whereby the bolt is raised bodily out of the path of the rear hook by the same coming in.

2. A car-coupling draw-bar having an upward-projecting lug near its rear end adapted to engage a cross-beam of the car if its normal connection with the car should become broken, substantially as described.

476,451. ROTARY ENGINE. GEORGE ELRICK, Joliet, Ill. Filed Sept. 14, 1891. Serial No. 405,629. (No model.)



Claim.—1. In a rotary engine, the combination of the concentric rings A, each provided with a spiral port P, having the chambers S, the port of each ring being connected with the port of an adjacent ring, substantially as and for the purpose set forth.

2. The rotary steam-engine shown and described, consisting of the body portion A, having the connected spiral ports P, provided with the chambers S, disposed at regular intervals throughout their length and increasing in diameter from the inlet to the exhaust, and having its spiral form extend alternately in either direction, substantially as and for the purpose set forth.

476,452. APPARATUS FOR DISPENSING BEVERAGES. WILLIAM L. EMBOREN, Franklin, Mass. Filed May 15, 1891. Serial No. 392,869. (No model.)

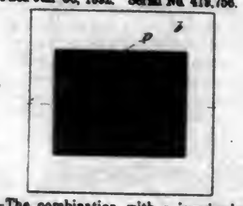


Claim.—1. The combination, with the liquid-holding receptacle *a*, of the raised platform therein carrying wheels and located below the upper edge of the receptacle, an annular table mounted to rotate on said wheels, and one or more nozzles passing upwardly through the opening of said annular table and arranged to deliver liquids into glasses or tumblers supported by the table, as set forth.

2. The combination, with the receptacle *a*, having one or more nozzles passing upwardly therethrough, of a raised platform therein having a series of wheels upon its surface and an annular table adapted to rotate upon said wheels and having grooves in its under surface for said wheels, said platform and table being located below the upper edge of the receptacle, as set forth.

3. The improved liquid-dispenser hereinbefore described, consisting of the receptacle *a*, the raised platform *d* therein, the central inlet-pipe *f*, having an automatically-closed tumbler-washing device at its upper extremity, the annular rotatable table bearing on anti-friction wheels mounted upon the platform *d*, and one or more nozzles *e*, communicating with supply-pipes and arranged to discharge liquids into tumblers supported by said table, the said platform and table being located below the upper edge of the receptacle, as set forth.

476,453. BOX-COVER. FREDERICK V. BUTLINGER, West Brighton, N. Y. Filed Jan 30, 1892. Serial No. 419,756. (No model.)



Claim.—The combination, with a jewelry-box cover having an opening, of a piece of satin placed in said opening, which satin bears an inscription on its face on that part within the opening, the edges of said piece of satin being glued to the under side of the top plate of the cover, a pad inserted in the opening of the cover below the piece of satin and pressing said satin upward slightly through said opening, and a reinforcing-plate on the under side of the top plate of the cover for the purpose of holding the pad in place, substantially as set forth.

476,454. OVERSTITCH BINDING FOR EDGES OF FABRICS. HENRY H. PEPEL, New York, N. Y., assignor to The Union Special Sewing Machine Company, of Illinois. Filed June 20, 1891. Serial No. 396,893. (No model.)



Claim.—1. A binding consisting of a piece of fabric, a line of stitches consisting of threads passed through the fabric, forming a series of loops on the under side thereof, and also passed over the edge of the fabric, forming a second series of loops on the under side engaged with the first series of loops, each pair of threads which passes over the edge of the fabric being contiguous upon the face side of the fabric, and an independent thread passed about each pair of contiguous threads to hold them together.

2. A binding consisting of a piece of fabric, a series of zigzag stitches over the edge of the fabric, with loops upon the under side, a locking-thread upon the under side of the fabric, engaged with the loops of the zigzag stitches, and an independent thread about each pair of threads of the zigzag stitch, which diverge at the edge of the fabric, drawing said divergent threads together to form the appearance of a whip-stitch.

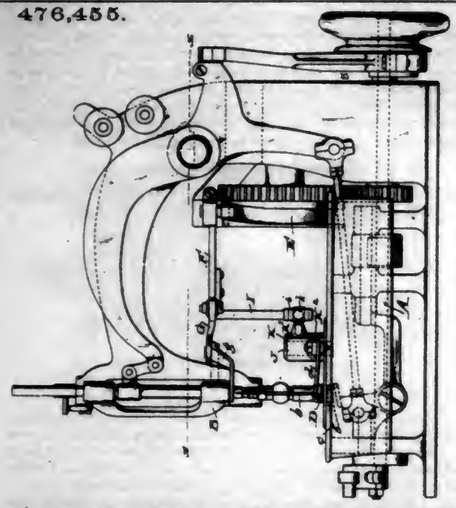
3. A binding consisting of a piece of fabric, a series of zigzag stitches consisting of threads passed over the edge of the fabric and through the fabric and looped together on the under side thereof, with the adjacent threads of successive stitches drawn together to produce a whip-stitch effect, and an independent tying-thread on the under side of the fabric, passed about said adjacent threads of successive stitches to hold them together.

476,455. SEWING-MACHINE. HENRY H. PEPEL, New York, N. Y., assignor to The Union Special Sewing Machine Company, of Illinois. Filed June 20, 1891. Serial No. 396,894. (No model.)

Claim.—1. In a sewing-machine, the combination, with a reciprocating needle-bar and its needle, of the needle-guide B, cam E, lever F, operated by the cam E, connections between the needle-guide B and lever F, whereby the needle-guide is vibrated laterally, thread-carrier *d*, having its end adjacent to the reciprocating needle, and connections between the lever F and the thread-carrier *d*, whereby the latter is vibrated synchronously with the needle-guide B and the needle-bar and needle guided therein.

2. In a sewing-machine, the combination, with the reciprocating needle-bar and its needle, of the needle-guide B, cam E, lever F, operated by said cam E, connections between the lever F and needle-guide,

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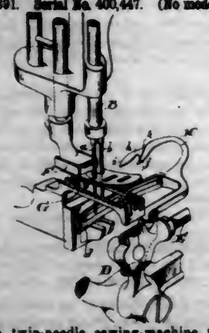


whereby it is vibrated laterally, a bell-crank lever having one arm longer than the other, the thread-carrier *d*, carried by the longer arm of the bell-crank lever, and connections between the shorter arm of the bell-crank lever and the lever F, whereby lateral vibrations are imparted to the needle-guide B and carrier *d* synchronously and the carrier *d* is vibrated a greater distance than the needle, so as to move successively to the right and left thereof.

3. In a sewing-machine, the combination, with the reciprocating needle-bar and its needle, of the needle-guide B, cam E, lever F, operated by the cam E, connections between the lever F and needle-guide B, whereby it is vibrated laterally, a bell-crank K, journaled upon the base-plate, a thread-carrier *d*, carried by the bell-crank K and having its thread-carrying end adjacent to the needle, and a connection between the lever F and bell-crank K, whereby the latter is rocked synchronously with the vibration of the lever F to vibrate the thread-carrier *d*.

4. In a sewing-machine, the combination, with a reciprocating needle-bar and needle, of a vibrating needle-guide B, a cam E, a lever F, operated by the cam E, connections between the lever F and needle-guide B, a bell-crank K, journaled upon the base-plate of the machine, a thread-carrier *d*, carried by one arm of the bell-crank K, a depending arm carried by the lever F and having a slot *i*, and a ball *k*, carried in the end of the other arm of the bell-crank K, working in the slot *i* of the arm I.

476,456. SEWING-MACHINE. HENRY H. PEPEL, New York, N. Y., assignor to The Union Special Sewing Machine Company, of Illinois. Filed July 23, 1891. Serial No. 400,447. (No model.)

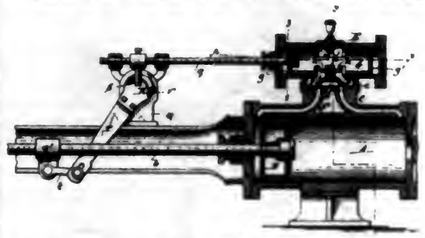


Claim.—1. In a twin-needle sewing-machine, the combination, with the reciprocating needles and the cloth-feeding devices, of the vibrating looper *d*, means to vibrate said looper *d* transversely to the feed and also in a direction opposite to the feed, and a looper-arm H, connected with the means for vibrating the looper *d*, whereby said arm H is vibrated synchronously with the looper *d*.

2. In a sewing-machine, the combination of the reciprocating twin needle, the cloth-feeding devices, the cloth-plate, a vibrating looper located under the cloth-plate, means to vibrate said looper transversely to the feed of the machine and in a direction opposite to the feed, and a looper-arm H, carried by the looper under the cloth-plate and vibrating therewith and having its end projecting above the cloth-plate adjacent to and in line with the needles.

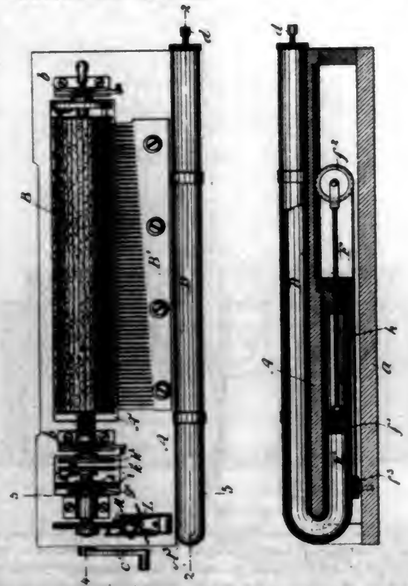
3. The combination, with the looper of a double or twin needle sewing-machine, of the looping-arm H, carried thereby and having the forked or notched end A to catch the thread, the prong *i* adjacent to said notch, and the groove *k*.

476,457. VALVE FOR STEAM-ENGINES. PERCY R. FOSTER, Buffalo, N. Y. Filed Mar. 2, 1891. Serial No. 383,413. (No model.)



Claim.—The combination, with the steam cylinder and piston, the steam-chamber, and cylindrical steam-chest, of a slide-valve arranged in said steam-chamber, a piston-valve arranged in said steam-chest and capable of a longitudinal reciprocating motion with the slide-valve and a transversely-oscillating motion independent of the slide-valve, a cam actuated from the steam-piston and provided with two opposing oblique faces, and a projection on the valve-rod arranged between said faces, whereby the piston-valve is first turned and then positively moved forward by one of the cam-faces until the steam-pressure is applied to the piston-valve, when the stroke of both valves is completed by the action of the steam and the projection on the valve-rod is thrown against the opposite cam-face, substantially as set forth.

476,458. MUSICAL BOX. HENRY A. GAUTSCHI, Philadelphia, Pa., assignor to Henry Gautschi & Sons, same place. Filed Feb. 20, 1892. Serial No. 422,179. (No model.)



Claim.—1. A musical box having a pin-barrel and its accessories and provided with a cylinder, a piston, a drum and cord connected with the piston, pawl-and-ratchet connections interposed between the drum and pin-barrel, and means for winding the cord on the drum, substantially as and for the purposes set forth.

2. A musical box having a pin-barrel and its accessories and provided with a cylinder, a piston, means for forcing the piston into the cylinder to compress air therein, and gearing interposed between said piston and pin-barrel, substantially as and for the purposes set forth.

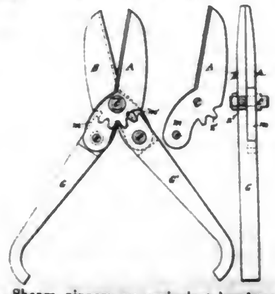
3. A musical box having a pin-barrel and its accessories and provided with a cylinder, a piston working in the cylinder, a drum and cord connected with the piston, pawl-and-ratchet connections between the piston and pin-barrel, and means for winding the cord on the drum, substantially as and for the purposes set forth.

4. A musical box having a pin-barrel and its complemental comb and provided with a compressed-air reservoir, a cylinder in communication with the reservoir, a piston in the cylinder, a drum and cord connected with the piston, pawl-and-ratchet connections interposed between the drum and pin-barrel, and means for winding the cord on the drum, substantially as and for the purposes set forth.

5. The combination, in a musical box, of a pin-barrel, a drum, pawl-and-ratchet connections between the drum and pin-barrel, a cylinder, a piston provided with a piston-rod having a pulley journaled thereto, a cord passing over the pulley and having one end thereof attached to a fixed member and having the other end thereof adapted to be wound on and off of the drum, and means for winding the cord onto the drum, substantially as and for the purposes set forth.

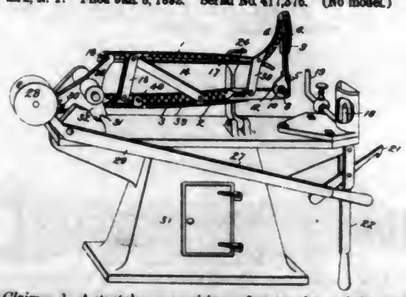
6. The combination, in a musical box, of a pin-barrel, a reservoir, a cylinder in communication with the reservoir and provided with a piston, a drum and cord adapted to force the piston into the cylinder to compress air in the reservoir and to be rotated by the subsequent movement of the piston due to expansion of the compressed air, a valve in the reservoir for the admission of additional supplies of air, pawl-and-ratchet connections interposed between the drum and pin-barrel, and means for winding the cord on the drum, substantially as and for the purposes set forth.

476,459. SHEARS. CARL HAMANN, Reinbeck, and JACOB A. SCHMIDT, Barmen, Germany. Filed Apr. 22, 1892. Serial No. 430,173. (No model.)



Claim.—Shears, nippers, or equivalent hand-tools in which the two corresponding blades, jaws, or faces are pivoted one on the other and provided with extensions on which are respectively pivoted handles having teeth gearing each with the blade, jaw, or face other than that to the extension of which the respective handle is pivoted.

476,460. BOOT-TREEING MACHINE. CHARLES L. HEISLER, Dunkirk, N. Y. Filed Jan. 8, 1892. Serial No. 417,376. (No model.)



Claim.—1. A stretcher comprising a foot portion and the leg-sections, the rear sections being composed of two parts overlapping each other, and connections between the sections, whereby as the leg is expanded the parts of the rear section will slide on each other, substantially as described.

2. A stretcher having a foot portion and leg portion comprising the front section, the rear section in two parts sliding on each other, links connecting both of the rear sections to the front section, and a locking device for locking the parts of the rear section together when expanded, substantially as described.

3. A stretcher having a foot portion and leg portion comprising the front leg-section, the rear leg-section made in two parts sliding on each other, links connecting the inner part of the rear section to the front section, and a link connecting the upper part of the rear section to the front section, the inner part being slotted for the passage of the latter link, substantially as described.

4. In a stretcher having a foot portion and leg portion, the combination, with the front section, of a rear section made in two parts arranged to slide on each other, one of the parts being slotted, and a stud holding the two parts in sliding connection, and connections between the front and rear sections, substantially as described.

5. In a stretcher having a foot portion and leg-sections, the combination, with the front section, of the two-part rear section, one of the parts being provided with a slot and the other with a stud, and connections between the front and rear sections, whereby the parts of the rear section may slide with relation to each other and be locked together and the front and rear sections can be expanded and retracted with relation to each other, substantially as described.

6. The combination, with the stretcher, of a perforated steam-pipe extending through the stretcher and having a socket-piece connected to the pipe and a socket conforming to the shape of a portion of the last and adapted to support the same and having a steam-pipe arranged therein adapted to fit the socket-piece in the last, substantially as described.

7. The combination, with the socket, of a collapsible stretcher having means for locking the parts in their expanded positions, a lever, and a hook carried by the lever and adapted to engage with the stretcher and unlock the parts thereof, substantially as described.

8. The combination, with the socket, of a boot-tree comprising a front and rear section, one of the sections being made in two parts sliding with relation to each other, a locking device uniting the two parts, connections between the front and rear sections, and a hook carried by a lever and arranged to engage the locked parts to release them and collapse the stretcher, substantially as described.

9. The combination, with the crimping-machine having a hook-sector and lever for operating the same, of a collapsible boot-tree consisting of the front and rear sections and links connecting the same, whereby the sections of the boot-tree may be expanded by the hook-sector, substantially as described.

10. The combination, with a crimping-machine having a pinion and hook-sector mounted thereon, of a lever for operating the same, a device for holding the boot-tree while being expanded by the hook-sector, and a socket for supporting the boot-tree while being collapsed, substantially as described.

476,461. CALENDAR. JOHN HOCHHEIMER, Hamilton, Ohio. Filed Apr. 5, 1892. Serial No. 427,963. (No model.)



Claim.—1. In a calendar, the combination, with an inner tube having calendar indications thereon, of an outer independently-movable sheath having a transparent exposing-face and carrying calendar indications, substantially as described.

2. In a calendar, the combination, with an inner member having calendar indications on its outer face, of an outer transparent member movably secured in place and carrying calendar indications, substantially as described.

3. In a calendar, the combination, with a hollow inner member carrying calendar indications on its outer face, of a transparent outer member having calendar indications on its inner face and movably supported relative to the inner member, substantially as described.

4. In a calendar, the combination, with an inner member having calendar indications on its outer face, of an outer transparent member carrying calendar indications, having an integral cap fitting over the inner member and movably supported relative to the inner member, substantially as described.

5. In a calendar, the combination, with an inner member having calendar indications on its outer face, of a rotating outer member having calendar indications thereon and a transparent exposing-face and a cap for the inner and outer members, substantially as described.

6. In a calendar, the combination, with an inner stationary member, of a column of century-numerals arranged on the outer face thereof and an outer transparent member carrying on its inner face calendar indications of the months and the days of the month, movably supported around the inner member, substantially as described.

7. In a calendar, the combination, with an inner cylindrical member having calendar indications on its outer face, of a base supporting the inner member and formed with a bearing on its upper face, an outer member carrying calendar indications and having a transparent exposing portion, and a cap, substantially as described.

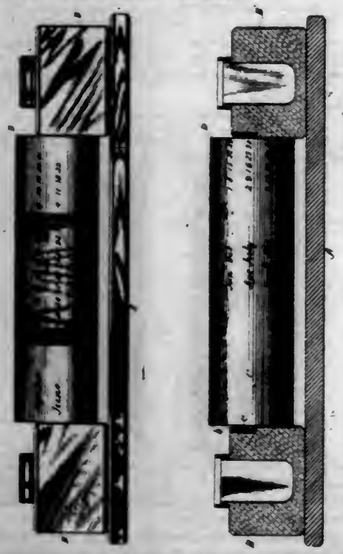
8. In a calendar, the combination, with a base, of a tube supported thereon having calendar indications on its outer face, consisting of the indications of the months of the year arranged near its upper end and the indications of the days of the month arranged near its lower end in vertical columns, an outer transparent member having digits representing the years of a century arranged in vertical columns and the days of the week below the columns, all of which occupy a position at or near the center portion of the transparent member, and an integral cap on the transparent member, substantially as described.

9. In a calendar, the combination, with an inner member, of an outer transparent member movably supported around the inner member and movable calendar indications between the inner member and the outer face of the outer member, substantially as described.

10. In a calendar, the combination, with the inner stationary member, of a column of century-numerals arranged on the outer face thereof, an outer member carrying calendar indications of the months and the days of the months, movably supported around the inner member, and a series of week-day indications on the inner member, substantially as described.

11. In a calendar, the combination of an inner member having calendar indications thereon, of an outer member having a transparent exposing-face and carrying calendar indications, one of said members being arranged to rotate independent of the other, substantially as described.

476,462. CALENDAR. JOHN HOCHREINER, Hamilton, Ohio. Filed Apr. 5, 1892. Serial No. 427,962. (No model.)



Claim.—1. In a calendar, the combination, with an inner cylinder containing calendar tabulations, of an outer transparent cylinder mounted thereon and free to rotate independently thereof, and supports for the cylinders, substantially as described.

2. In a calendar, the combination, with a cylinder having calendar tabulations thereon, of an outer transparent cylinder carrying calendar tabulations on its inner face, and supports for the cylinders, substantially as described.

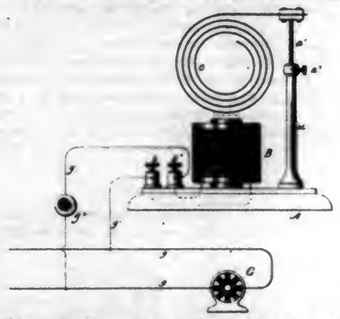
3. In a calendar, the combination, with an inner cylinder having calendar tabulations thereon, of an outer cylindrical sheath or shell formed of transparent material and having calendar tabulations on its inner face, supports for the cylinder, and means on the supports for preventing the rotation of the cylinder, substantially as described.

4. In a calendar, the combination, with a base, of two ink-wells arranged at opposite ends thereof, seats formed in the wells, a cylinder located between the wells, hubs on the cylinder engaging the seats, calendar tabulations on the cylinder, and an independent movable cylindrical shell on the cylinder formed of transparent material and carrying tabulated indicating-marks, substantially as described.

5. In a calendar, the combination, with a cylinder having calendar tabulations thereon, of an outer transparent cylindrical shell loosely fitted on the cylinder, and supports for the cylinder, arranged to engage the ends of the cylinder and shell, substantially as described.

6. In a calendar, the combination, with the supports having angular seats formed therein, of a cylinder between the supports carrying calendar tabulations, an outer cylindrical shell having transparent exposing-surfaces, and angular hubs on the cylinder engaging the seats of the support, substantially as described.

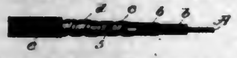
476,468. ELECTRIC CHIME OR BELL. JOSEPH H. HUNTER, Pittsburg, Pa. Filed Feb. 29, 1892. Serial No. 423,138. (No model.)



Claim.—1. The combination, with an electro-magnet, of a chime or gong located near the pole of the magnet and movable bodily toward and against the same under the attraction of the magnet, for the purpose set forth.

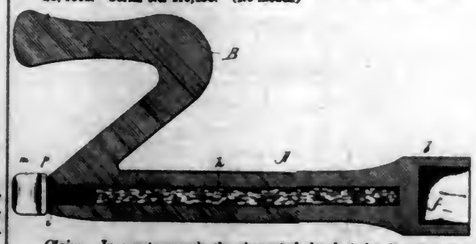
2. A call-bell or alarm consisting of the combination of an electro-magnet and a sounding spiral located within attractive distance of the magnet and adapted to be moved bodily against the magnet to produce a sound.

476,464. METALLIC-CIRCUIT CABLE. CHARLES R. JACKSON, Boston, Mass. Filed Nov. 12, 1891. Serial No. 411,702. (No model.)



Claim.—The combination, with an insulated conductor, of two metallic strips wound spirally about the same, one of said strips being wound over and upon and to cover the space between the turns of the other of said strips, the successive convolutions of each strip being separated, substantially as described.

476,465. WRENCH. FRANK R. JORDAN, Auburn, Me. Filed Jan. 25, 1892. Serial No. 419,153. (No model.)

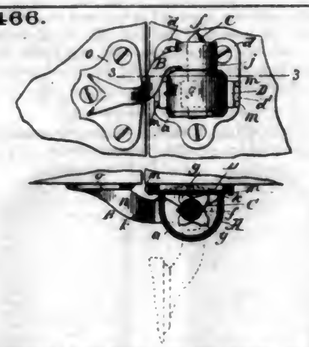


Claim.—In a nut-wrench, the elongated shank A, having the nut-socket *f* in one end and the V-handle at the opposite end, arranged as described, the oil-chamber *h* in said shank opening through the end at the handle and provided with the interiorly-screw-threaded mouth countersunk at *i*, the packing *p* in said countersink, and the screw-plug *m*, turned into said mouth, substantially as described.

476,466. LOCK-HINGE. FRANK H. KNIGHT, Florence, Mass. Filed Oct. 5, 1891. Serial No. 407,814. (No model.)

Claim.—1. A hinge one member of which consists of a hollow casting or shell with apertures *k k* in the opposite side walls thereof

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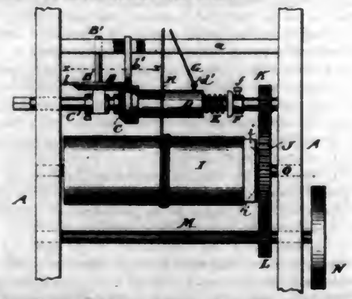


and a stud mounted vertically and rotatably thereon, one portion of which is projected through and above the upper wall of the shell, another portion of the said stud being contained within the shell and provided thereat with outward extensions and intermediately thereof less prominent sections, a flat spring supported by the borders of said apertures and in a position to be intermediately thereof impinged upon by the said stud extensions, and the other member of the hinge having a fixed engagement with the upwardly-projected portion of the stud, substantially as described.

2. In a hinge, the combination, with a casing or shell, open at its rear side and having upper and lower walls, the latter having the socket *h* and the upper wall being provided with a recess *i*, which extends to the rear open side of the shell and the opposite side walls of the shell having the apertures *k*, and confinement-lugs, as *d*, of a stud having between its ends the extensions *g g* with intermediate depressions and said stud having its lower portion bearing in said socket *h* and its upper portion extended through said aperture *i* and beyond the top of the casing, and the flat spring extended across the rear side of said chambered shell and held against transverse displacement by the borders said apertures *k*, of the movable hinge member G, comprising the arm which at its extremity rests upon the top of the chambered hinged member and has an engagement with said stud, and one or more stops for preventing endwise movement of the spring, substantially as described.

3. In a hinge, the combination, with the casing, open at its rear and having upper and lower walls, the lower wall having the socket *h* and the upper one being formed with a recess *i*, which extends to the rear open side of the casing, of a stud having between its ends radially-projecting extensions *g g* with intermediate depressions, the portion of the stud comprising such features being less extended at one side of the axis than the others, the spring extending across the chamber in said shell relative to the said extension-provided stud, substantially as described, and the movable hinge member connected to the stud, substantially as and for the purposes set forth.

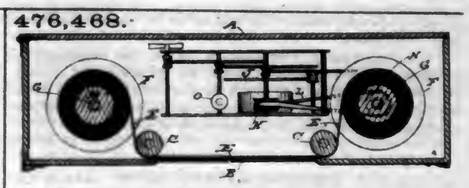
476,467. WELL-DRILLING MACHINERY. JOSEPH G. LEE, Dallas, Tex., assignor of one-half to Gideon T. Macon, same place. Filed Nov. 30, 1891. Serial No. 413,543. (No model.)



Claim.—In a well-drilling machine, the bevel-wheel B, having cam *b* on its periphery and arranged loosely on a vertical shaft B', a bevel-pinion C, fast on power shaft C', a loose drum D, sliding on shaft C', the spring E, and collar F, in combination with the drill-rope, as and for the purpose described.

476,468. EDUCATIONAL APPARATUS. WILLIAM H. LEEK, Quincy, Cal. Filed Feb. 27, 1892. Serial No. 423,067. (No model.)

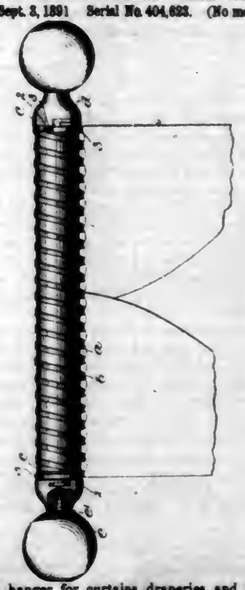
476,468.



Claim.—1. An educational device consisting of the case having one or more openings or windows upon one side, vertically-disposed reversible drums and guide-rollers upon each side of the opening, a reversible belt having figures and propositions imprinted upon each side, a mechanism by which the drums are caused to rotate, so as to transfer the belt from one drum to the other and cause it to pass across the opening in the case, and a mechanism by which the speed of the driving mechanism and the movement of the belt across the opening are regulated, substantially as herein described.

2. An educational device consisting of a case having one or more openings in one side, vertical removable and reversible drums with belts wound thereon, having propositions and figures marked upon the belts, guide-rollers by which the belt is caused to pass across the openings from one drum to the other, a clock-work mechanism whereby the drums are caused to rotate to move the belt across the opening, vertical shafts journaled in the lower part of the casing having the upper ends made polygonal, adapted to engage corresponding openings in the centers of the lower ends of the drum, guide-shafts entering corresponding openings in the upper ends of the drums, and elastic arms upon which these guide-shafts are mounted, whereby they may be lifted out and the drums removed to reverse or replace the belts, substantially as herein described.

476,469. HANGER FOR CURTAINS. JAMES W. LESLIE, Everett, Mass. Filed Sept. 3, 1891. Serial No. 404,623. (No model.)



Claim.—1. A hanger for curtains, draperies, and the like, consisting of a spirally-wound strip having a hole therein at each end and adapted to be arranged loosely on a pole, and independent supports at each end of said pole, composed of a collar having exterior projections, to which said strip is detachably connected by the holes in the ends, substantially as described.

2. A hanger for curtains, draperies, and the like, consisting of a spirally-wound strip having a series of holes in each end and adapted to be arranged on a pole, cup-shaped end pieces to fit on the ends of the pole, and a collar having exterior projections located at each end of and to which the ends of said strip are connected, said collars and end pieces being detachably connected, substantially as described.

3. A hanger for curtains, draperies, and the like, consisting of a spirally-wound strip adapted to be arranged on a pole, collars to which the ends of said strip are connected, a projection on the exterior of said collar, and cup-shaped end pieces peripherally slotted to embrace

the said projections and to which said collars are connected, substantially as described.

4. A hanger for curtains, draperies, and the like, consisting of a spirally-wound strip to encircle the pole, and two end pieces to which the ends of said strip are connected, the outer faces of said end pieces being concaved to receive a spherical ornament, as shown, and provided with a central pole, as 5, substantially as described.

476,470. MEASURING DEVICE FOR LIQUIDS. JAMES W. LESLIE, Everett, Mass. Filed Sept. 3, 1891. Serial No. 404,634. (No model.)



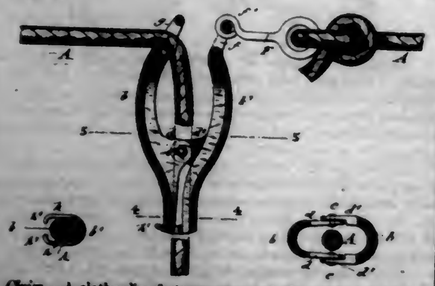
Claim.—1. A measuring device for liquids, consisting of the tube *d* to fit a hole through a stopper, made open at one end and closed at the opposite end and provided with a side opening d^3 near one end, and the tube *c*, adapted to fit and be turned within the tube *d*, made open at each end and provided with a side opening *c* near one end to register with the opening d^3, and the stopper *e* for the tube *c*, the bayonet-joint or equivalent by which said tubes *d* and *c* are connected, and the annular lip c^3 on the bayonet-joint of the tube *c*, which incloses and conceals the said bayonet-joint, substantially as described.

2. A measuring device for liquids, consisting of the tube *d*, adapted to be secured to a stopper, made open at one end and closed at the opposite end and provided with a side opening d^3 near one end, and the tube *c*, having the sharpened end and adapted to fit and be turned within the tube *d*, made open at each end and provided with a side opening *c'* near one end to register with the opening d^3, and the stopper *e* for the tube *c*, substantially as described.

3. A measuring device for liquids, consisting of the tube *d*, adapted to be secured to a stopper, made open at one end and closed at the opposite end and provided with a side opening d^3 near one end and the flange d^5 near the opposite end, and the tube *c*, adapted to fit and be turned within the tube *d*, made open at each end and provided with a side opening *c'* near one end to register with the opening d^3, substantially as described.

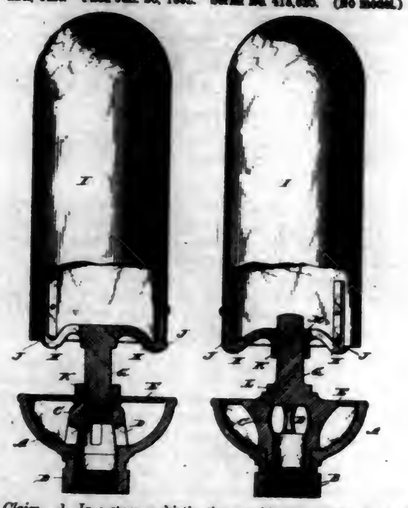
4. A measuring device for liquids, consisting of the tube *d*, adapted to be secured to a stopper, made open at one end and closed at the opposite end and provided with a side opening d^3 near one end, and the tube *c*, adapted to fit and be turned within the tube *d*, made open at each end and provided with a side opening *c'* near one end to register with the opening d^3, said tubes having a bayonet-joint or equivalent by which they are connected, substantially as described.

476,471. FASTENER FOR CLOTHES-LINES. WILLIAM LEUCKER, Brooklyn, N. Y. Filed Nov. 16, 1891. Serial No. 412,030. (No model.)



Claim.—A clothes-line fastener composed of two fulcrumed lever-arms provided with bulging upper portions and converging lower portions, one end of the clothes-line being attached to the upper end of one lever-arm, while the upper end of the other arm is provided with an opening for the passage of the loose end of the clothes-line, the lower end of one lever-arm being provided with guard-pieces having inwardly-bent ends that act as stops for the lower end of the other lever-arm, substantially as set forth.

476,472. STEAM-WHISTLE. EDMUND LUNKENHEIMER, Cincinnati, Ohio. Filed Jan. 20, 1892. Serial No. 418,626. (No model.)



Claim.—1. In a steam-whistle, the combination of the base, the central supporting-stem G, the radial arms H, carried by the stem G, and the independent bell I, fastened to and carried by the arms H, substantially as described.

2. In a steam-whistle, the combination of the base, the central supporting-stem G, the arms H, carried by the stem G and having vertically-extended outer ends, and the bell I, fitting over and secured to said outer ends of the arms H, substantially as described.

3. In a steam-whistle, the combination of the base, the central stem G, the radial arms H, carried by the stem G, and the independent bell I, secured to and supported by the arms H near its lower end, substantially as described.

4. In a steam-whistle, the combination of the base, the central stem G, the arms H, carried by the stem G and having upturned outer ends provided with shoulders J, and the bell I, fitting over the upturned ends of the arms H and resting upon the shoulders J, substantially as described.

5. In a steam-whistle, the combination of the base, the central supporting-stem G, the arms H, carried by the stem G and adjustable toward and from the base, and the bell I, supported by the arms H, substantially as described.

6. In a steam-whistle, the combination of the base, the central supporting-stem G, threaded at its lower end and screwed into the base, the arms H, carried by the stem G, and the bell I, carried by the outer ends of the arms H, substantially as described.

7. In a steam-whistle, the combination of the base, the central supporting-stem G and radial arms H, cast integral, the lower end of the stem being threaded and screwed into the base and the arms H having upturned outer ends and shoulders J, and the bell I, fitting over and secured to the upturned ends of the arms H and resting upon the shoulders J, substantially as described.

8. In a steam-whistle, the combination of the base, the central stem G, the chime-partitions O, carried by the stem G and having tops P, and the single bell I, fitting over the partitions O and supported by the stem G, substantially as described.

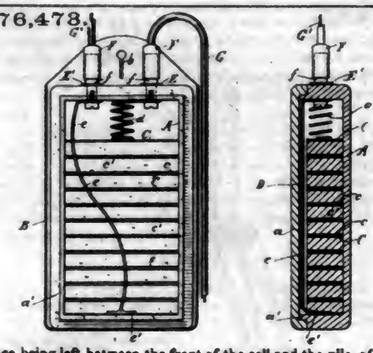
9. In a steam-whistle, the combination of the base, the central stem G, the radial supporting-arms H, the chime-partitions O, carried by the stem G and having tops P', and the bell I, fitting over the partitions O and supported by the arms H, substantially as described.

10. In a steam-whistle, the combination of the base, the central stem G, the radial arms H, carried by the stem G, and the bell I, formed of a single piece of metal and supported by the arms H, substantially as described.

476,478. ELECTRIC BODY-WEAR. ROBERT S. MEARS, Newton, Kans. Filed Nov. 27, 1891. Serial No. 413,307. (No model.)

Claim.—1. The combination, with the pile and its inclosing cell,

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a space being left between the front of the cell and the pile, of a binding-post at the top of the cell, and a flexible wire situated in the said space and provided with a metallic plate, whereby the lower part of the pile is connected with the said binding-post, substantially as set forth.

2. The combination, with the removable pile, of the cell inclosing the pile, the cell-cover at the front of the cell, a space being left between the said cover and the pile, a binding-post at the top of the cell, a flexible wire secured to the said binding-post, and a wedge-shaped plate secured to the said wire and adapted to be inserted at any part of the pile when the cell-cover is removed to vary the strength of the current, substantially as set forth.

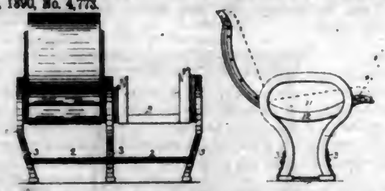
3. The combination, with the removable pile, of the cell inclosing the pile, a binding-post secured to the top of the cell, and a metallic spring adapted to connect the said binding-post with the top of the pile and to hold the elements of the pile in position in the cell.

4. The combination, with the inclosing cell provided with a cover at its front part and the pile, a space being left between the said pile and cover, of a binding-post at the top of the cell, a flexible wire provided with a contact-plate and arranged in the said space and adapted to connect the lower part of the pile with the said binding-post, a second binding-post at the top of the cell, and a spring adapted to connect the said second binding-post with the top of the pile and to retain the elements of the pile in position in the cell, substantially as set forth.

5. The combination, with the cell and the pile inclosed therein, of the binding-posts secured to the cell and connected to the opposite ends of the pile and provided with cylindrical portions projecting from the cell, and the conductors provided with tubes adapted to fit over the said cylindrical portions, substantially as and for the purpose set forth.

6. The combination, with an electrode formed of a metallic disk provided with a loop, the back of the said disk and the loop being coated with insulating material, of a case for the electrode, consisting of a front plate of absorbent material and a back plate of india-rubber provided with a slit through which the said loop may project, the said plates being secured together at their edges, substantially as set forth.

476,474. REVERSIBLE SEAT. HENRY C. MOIR, Summer Hill, near Sydney, New South Wales. Filed July 13, 1891. Serial No. 399,986. (No model.) Patented in New South Wales Dec. 2, 1890, No. 2,650; in Queensland Dec. 17, 1890, No. 1,209, and in New Zealand Dec. 29, 1890, No. 4,773.



Claim.—1. In a reversible seat, the combination of the standards, the combined back and seat, and the curved runners attached to the ends thereof, substantially as described, with the curved carriers attached to the standards and forming a continuous bearing and support for the ends of seat, and the interlocking grooves and ribs on said runners and carriers, respectively, substantially as described.

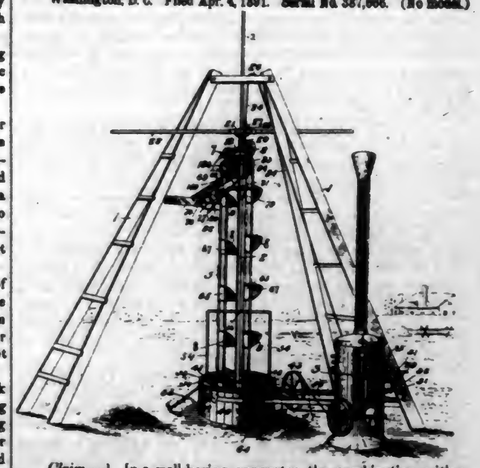
2. A reversible seat comprising the combined seat and back-rest, curved runners formed with laterally-projecting tongues which are made round or circular in cross-section, the standards, and the curved longitudinally slitted or split tubular carriers adapted to receive and guide said runners, whereby the runners and carriers are adapted to be interlocked, so as to fulfill the double purpose of supporting the moving parts and of locking the standards together, substantially as described.

3. In a reversible seat, the combination of the standards, the shiftable combined back and seat, and the curved runners attached to the ends thereof and engaging carriers on the standards, substantially as described, with the buffers attached to the ends of the runners and serving both as keepers to prevent their disengagement with the carriers and as stops to limit the movement of the runners, substantially as described.

4. The combination of three standards and curved carriers attached to the inner faces of the outer standards and to the opposite faces of the inner standard, with a pair of combined back and seat frames, the curved runners attached to the ends thereof, respectively, engaging a carrier on the outer and inner standards, and the buffers attached to the ends of said runners for limiting the movement thereof and preventing the same disengaging the carriers, substantially as described.

5. In a reversible seat for cars, &c., the combination of the combined back and seat and the curved runners attached to the ends thereof, substantially as described, with the curved carriers attached to suitable supports and extending the width of the seat, the interlocking tongue-and-groove connections between said carriers and runners, and the buffers attached to the extremities of the runners and serving both as keepers and stops, substantially as and for the purpose specified.

476,475. WELL-BORING APPARATUS. ALFRED W. MORGAN, Washington, D. C. Filed Apr. 4, 1891. Serial No. 387,666. (No model.)



Claim.—1. In a well-boring apparatus, the combination, with a shaft having cutters secured to its lower end and having an endless elevator located at one side of and traveling with the shaft, of a pulley for the elevator at the lower end of the shaft, the axle of which extends beyond the outer end of the pulley, and a shield upon the outer end of the axle and upon the side of the shaft opposite the cutters and adapted to bear against the side of the well, substantially as described.

2. In a well-boring apparatus, the combination, with a shaft having an endless elevator located at one side thereof and traveling with the same, of bits secured to the lower end of the shaft and additional plows located beyond the bits and adapted to throw their furrows inward toward the shaft and into the path of the buckets of the elevator, substantially as described.

3. In a well-boring apparatus, the combination, with a shaft having bits or cutters at its lower end and an endless elevator located at one side of and traveling with the shaft, of a dump at the top and means for automatically operating the dump at regular intervals, substantially as described.

4. In a well-boring apparatus, the combination, with a shaft, an endless elevator, and a dump connected therewith, of two stub-axles at the upper portion of the shaft, a bevel-pinion upon each of the stub-axles, one of which operates the elevator and the other one operates the dump, and a stationary bevel-wheel for engaging with the two pinions, substantially as described.

5. In a well-boring apparatus, the combination, with a shaft, an endless elevator, and a chute connected therewith, of a dump pivotally connected with the end of the chute and provided with a spring-catch connecting the same therewith, a rod operating the spring, and means for operating the rod, substantially as described.

6. In a well-boring apparatus, the combination, with a shaft and an endless elevator at one side of and traveling with the shaft, of a dump at the top, a stationary bevel-wheel, and two pinions meshing therewith, one of which pinions operates the elevator and the other operates the dump, said pinions and wheel being so related to each other that the dump will be operated only after so many buckets have been discharged into it, substantially as described.

7. In a well-boring apparatus, the combination, with a shaft and an endless elevator at one side of and traveling with the shaft, of a chute at the upper end, a dump pivotally connected with the chute and provided with a spring-catch connecting the same therewith, an L-shaped arm connected with the dump, and a longitudinally-movable rod engaging with the catch and the arm, substantially as described.

8. In a well-boring apparatus, the combination, with a shaft and an endless elevator at one side of and traveling with the shaft, of a chute at the upper end, a dump pivotally connected with the chute and provided with a spring-catch for connecting the same therewith, a slotted L-shaped arm connected with the dump, and a longitudinally-movable rod through the slot and provided with a crook adapted to engage with the catch and the arm, substantially as described.

9. In a well-boring apparatus, the combination, with a shaft, of a curb at the top of the well, a crown-wheel located upon the top of the curb, sets of rollers upon the sides of the curb engaging with the crown-wheel, one above, one below, and one at the edge of the crown-wheel, a scraper for each upper roller, a rectangular frame within the crown-wheel and connected with the shaft, and means for operating the crown-wheel, substantially as described.

10. In a well-boring apparatus, the combination, with a shaft, of a curb at the top of the well, a crown-wheel on top of the curb, a pinion for operating the crown-wheel, a frame connected with the curb, a shaft in the frame, having a friction-clutch for engaging the pinion, two levers pivotally secured to the frame, one end of one of which engages with the clutch and the free end of the other one serves as a handle, and a rod connecting the other ends of said levers, substantially as described.

11. In a well boring apparatus, the combination, with a shaft having an endless elevator chain or belt at one side of and traveling with the shaft, said chain having reversible buckets, the bottom of each of which is in line with the chain, of a chute near the top of the chain, one end of which is adjacent to the chain and is adapted to engage with and clean the bottom of each bucket, substantially as described.

12. In a well-boring apparatus, the combination, with a shaft having an endless elevator chain or belt at one side of and traveling with the shaft, said chain having reversible buckets, the bottom of each of which is in line with the elevator, of a chute near the top of the chain, one end of which is adjacent to the chain and is adapted to engage with and clean the bottom of each bucket, and stops upon the chute for engaging with the sides of the bucket and forcing them back beyond the end of the chute, substantially as described.

13. In a well-boring apparatus, the combination, with a shaft having an endless elevator chain or belt at one side of and traveling with the shaft, said chain having reversible buckets, the bottom of each of which is in a line with the chain, of a chute near the top of the chain, one end of which is adjacent to the chain and is adapted to engage with and clean the bottom of each bucket, a stop for holding the bottom of the bucket against the end of the chute, and means for throwing the sides of the bucket back beyond the end of the chute, substantially as described.

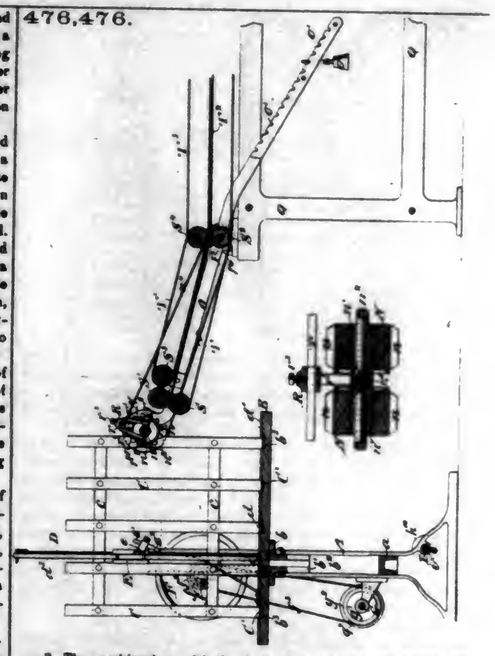
14. In a well-boring apparatus, the combination of a shaft having an endless elevator chain or belt at one side of and traveling with the shaft, said chain being provided with reversible buckets, and means for reversing the buckets and scraping the contents therefrom, substantially as described.

476,476. FEEDING APPARATUS FOR RULING AND PRINTING MACHINES. JOHN MCADAMS, Brooklyn, N. Y. Filed June 27, 1891. Serial No. 397,691. (No model.)

Claim.—1. The combination, with the support for the pile of paper to be ruled, of a tilting frame mounted independently of said support and carrying feed-roller sections adapted to rest upon the top of the pile, means for adjusting the pressure of the feed-roller sections upon the pile, adjusting devices for shifting the feed-roller sections laterally of the machine, and receiving-rollers in position to receive and advance the paper as it is fed by the feed-roller sections, substantially as set forth.

2. The combination, with the support for the pile of paper to be ruled, of a tilting frame, feed-roller sections mounted at the end of the frame and adapted to rest with their faces on the top of the pile, a sleeve on which the feed-roller sections are mounted, the said sleeve having a sliding movement laterally of the machine, and an adjusting device having a sliding movement upon a bar over the feed-roller sections and having branches extending between the adjacent ends of the feed-roller sections, substantially as set forth.

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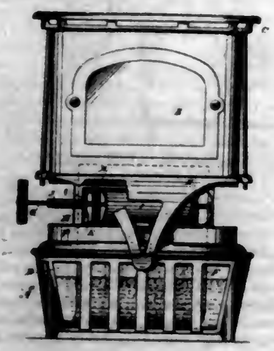


3. The combination, with the feed-roller sections and means for operating them, of the vertically-movable table as a support for the pile of paper to be fed, the laterally and longitudinally movable upright frames seated upon the table for squaring and adjusting the pile, supports mounted on said frames in sliding adjustment, holders secured to said supports, retaining barbs or blades adjustably held within the holders, elevating-chains engaged with the table, and a train of gear for operating the chains, substantially as set forth.

4. The combination, with the vertically-movable table, the elevating-chains, and the train of gear for operating the chains, of the drive-shaft, means for connecting and disconnecting the train of gear to and from the drive-shaft, and a spring in connection with the train of gear, the said spring being so connected as to be wound when the table is lowered and its tension thus exerted to cushion the table, substantially as set forth.

5. The combination, with the uprights, the vertically-movable table located between the uprights, the elevating-chains connected with the table, and the train of gear for winding the chains to elevate the table, of the drive-shaft, the worm-gear connection between the drive-shaft and the table-actuating gear, the spring-actuated shifting lever in connection with the worm, and the tripping devices in position to be operated by the upward movement of the table to disconnect the drive-shaft from the table-operating gear, substantially as set forth.

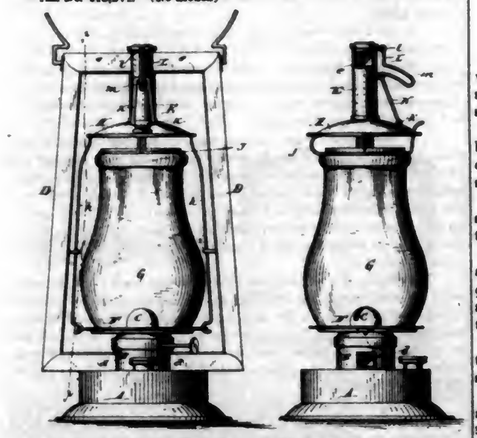
476,477. WICK-ADJUSTER FOR LAMPS. ALEXANDER J. MCADAM, San Francisco, Cal. Filed July 21, 1891. Serial No. 400,352. (No model.)



Claim.—1. In a lamp or lamp-stove, and in combination with its wick-tube and wick, the casing having a vertically-elongated open end, and the feed-shaft or spindle fulcrumed at one end within said casing, its outer end passing freely through and movable in vertical planes up and down in the open end of the casing, substantially as herein described.

2. In a lamp or lamp-stove, and in combination with its wick-tube and wick, the casing having the vertically-slotted end, the feed-shaft or spindle within the casing and having its outer end projecting freely through and movable in vertical planes up and down in the slotted end of said casing, the sleeve or bearing around said shaft or spindle, and the plate on said sleeve or bearing, covering the slotted end of the casing, substantially as herein described.

476,478. TUBULAR LANTERN. WARREN MCARTHUR, Chicago, Ill., assignor to the Steam Gauge and Lantern Company, Syracuse, and The R. E. Dietz Company, New York, N. Y. Filed Nov. 18, 1891. Serial No. 412,271. (No model.)



Claim.—1. The combination, with the lantern-frame and the vertically-movable bell guided upon the central tube of the lantern-frame, of an upper link pivoted with its upper end to the lantern-frame and a lower link pivotally connecting the lower end of the upper link with the bell, substantially as set forth.

2. The combination, with the lantern-frame and the vertically-movable globe-frame, of an upper link pivoted with its upper end to the lantern-frame, a lower link pivotally connecting the lower end of the upper link with the upper end of the globe-frame, and a thumb-piece formed on one of said links, substantially as set forth.

3. The combination, with the lantern-frame and the vertically-movable globe-frame, of an upper link pivoted with its upper end to the lantern-frame and resting thereon when the globe-frame is raised and a lower link pivotally connecting the upper link with the upper end of the globe-frame, whereby the globe-frame is held in a raised position, substantially as set forth.

4. The combination, with the lantern-frame and the vertically-movable globe-frame, of an upper link pivoted with its upper end to the lantern-frame and a lower link pivotally connecting the upper link with the upper end of the globe-frame, both links being arranged in front of the depending tube of the frame and resting against the same in the lower position of the globe-frame, substantially as set forth.

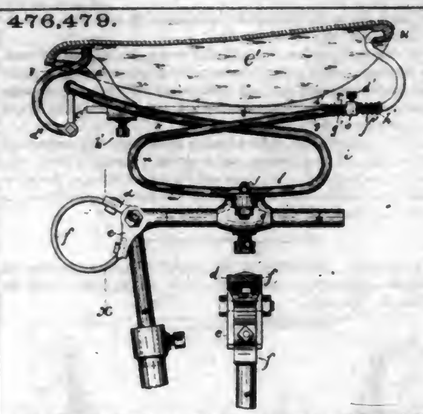
5. The combination, with the lantern-frame and the globe-frame capable of vertical movement on the upper portion of the lantern-frame, of an upper link pivoted with its upper end to the lantern-frame and resting thereon in its elevated position and a lower link connecting the free end of the upper link with the globe-frame and resting against the lantern-frame in the lower position of the globe-frame, substantially as set forth.

476,479. SADDLE FOR VELOCIPEDES. WILLIAM D. MCCOY, Orange, N. J. Filed Oct. 5, 1891. Serial No. 407,663. (No model.)

Claim.—1. The combination, in a saddle, of a seat c' and means for tensioning the same, and a spring i for supporting the same, said spring being connected at one end to said seat by a slide-bearing independent of said tensioning means and the other end of said spring having a hinged relation to said seat, substantially as set forth.

2. The combination, in a saddle, of a rigid or tensioned seat for the rider, and a spring having forward and rearward projections, one of

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which is hinged to said seat and the other having a sliding relation to said seat, free to slide without affecting the tension of the seat, substantially as set forth.

3. The combination, with a flexible saddle-seat and a distending-bar, of a spring providing a support for the seat, the said spring at one of its ends or pair of ends having a sliding relation to said bar, substantially as set forth and shown.

4. In combination, the flexible saddle-distending bar, supporting-spring i, and sliding bearing o, all said parts being arranged and adapted to operate substantially as set forth.

5. In combination with the bars a b and adjustable spring-seat g, a supporting-spring i, having oppositely-extending arms or parts k and q, and a saddle-seat having an independent distending-bar supporting said seat and supported at one end by said arms or parts q, substantially as and for the purposes set forth.

6. In combination with a saddle, a supporting-bar h and horizontal bar b, hinged thereto, and a spring f to cushion the vibrations, substantially as described.

7. In combination with a saddle, a support a, having a bearing d, a horizontal bar having a bearing e, and a spring f, interposed between said bearings and cushioning the vibrations of said horizontal bar, substantially as set forth.

8. In combination with a saddle, a hinged support comprising the hollow or tabular bars a b and inserted bearing-pieces d e and spring f, arranged and combined substantially as set forth.

9. In combination with the seat g, a spring i, bent in the form of a loop, with upwardly and oppositely projecting arms, supplemental springs attached to said arms and supporting the saddle-seat c', and said seat, all arranged and combined substantially as and for the purposes set forth.

10. In combination with the seat g, a central main spring clamped thereon and having arms k and q, extending toward the cantle and pommel, respectively, and supplemental springs secured to said arms and supporting said cantle and pommel, substantially as set forth.

11. The combination, with a seat c' and a distending-bar for giving tension to the same, of a supporting-spring having arms k and q, one of which is connected with the cantle and the other with the distending-bar, and said seat c' having said cantle, substantially as set forth.

12. In combination with the supporting-spring with upturned arms or extremities, a saddle movable backward and forward independent of said spring, and springs for cushioning the backward and forward vibrations, substantially as set forth.

13. In combination with the seat g, spring i, link c', and swinging support d'', a seat c', having cantle and pommel plates and bracket, a distending-bar t, and bearing-block o, all arranged and adapted to operate substantially as and for the purposes set forth.

14. In combination with the seat g, spring i, link c', and swinging support d'', a seat c', having cantle and pommel plates and a depending bearing a', a distending-bar t, secured in said bearing, and a sliding bearing o, arranged on said distending-bar and receiving the spring i, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

15. The combination, with the flexible saddle-seat and distending-bar, of a supporting-spring centrally located under the seat and having an independent relation to said bar in the matter of tension on the seat, so that when the tension is applied by means of the bar the said spring is in no way affected thereby, for the purpose set forth.

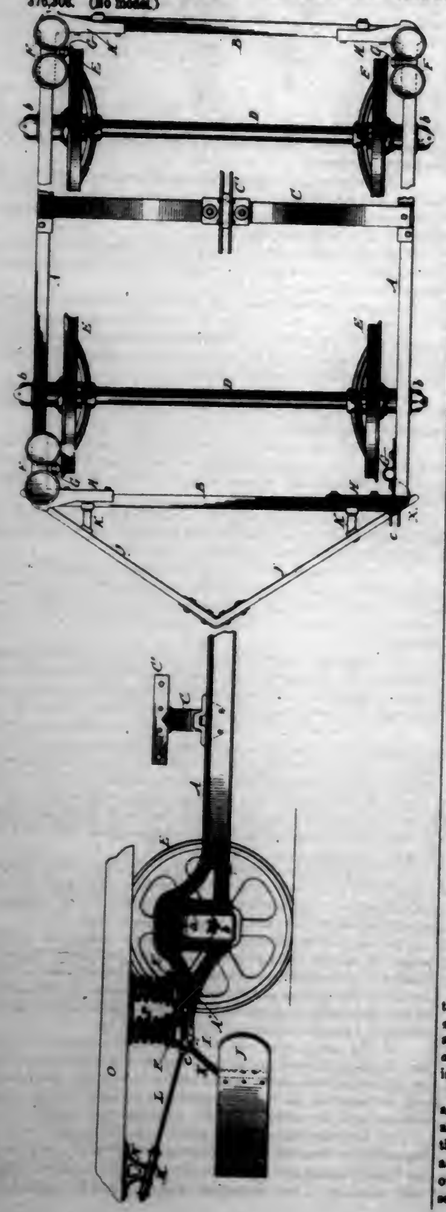
16. The combination, with a seat c' and a distending-bar for giving tension to the same, of a supporting-frame centrally arranged under the said seat and having arms k and q provided to admit of a downward movement, a slide o, adapted to admit of said movement of said

arms, and a spring *f'*, limiting the movement of said arms, substantially as and for the purpose described.

17. The combination, with a flexible saddle-seat, of a tension-rod, and a bearing *o*, and a spring *i*, having a hinge connection with one of the terminals of the said seat and extending therefrom to the opposite extremity of the seat and engaging the bearing *o*, substantially as and for the purpose set forth.

18. The combination, with a flexible saddle-seat, of a tension-rod provided with a sliding bearing, and a spring *i*, having a hinge connection at one extremity of the seat and thence extending to the other extremity of said seat and engaging said slide-bearing, substantially as and for the purpose described.

476,480. MOTOR-TRUCK FOR CARS. WILLIAM A. MCGUIRE and MOSES G. HUBBARD, Jr., Chicago, Ill. Filed Dec. 30, 1890. Serial No. 376,306. (No model.)



Claim.—1. In a car-truck having a short wheel-base and a long spring-base, a one-piece side sill having yoke-pedestals formed therein, and depressed extensions beyond the yoke-pedestals, upon which the springs are seated.

2. In a car-truck having a short wheel-base and a long spring-base, one-piece side sills having yoke-pedestals formed therein, depressed extensions beyond the yoke-pedestals upon which the springs are seated, and central cross and end sills connecting the side sills.

3. A side frame for trucks formed of one piece of metal provided with journal-box openings and guides and extended beyond the journal-box openings for carrying all or part of the load, in combination with end sills joined to said extended portions of the side frame by means of two fish-plates covering both the outside and inside of the joint.

4. A car-truck having each of its sides formed of one piece of metal and extended beyond the journal-boxes at each end, said extended portions being depressed to lower the height of the car and having one or more spring-seats thereon, in combination with the springs on which the car is mounted, substantially as and for the purpose set forth.

5. A car-truck frame having each of its sides formed of one piece of pressed sheet metal and its ends extended beyond the journal-boxes and depressed, as described, in combination with one or more spring-seats located on said extended and depressed portions for receiving all or part of the springs on which the car is mounted, substantially as and for the purposes described.

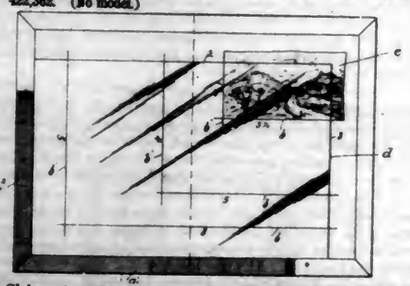
6. A motor-truck frame having each of its sides formed of one piece and continuously without joints between the ends thereof and extended beyond the journal-boxes at each end, said extended portions being depressed to lower the height of the car, in combination with the upwardly-curved support C and one or more spring-seats located on said extended and depressed portions for receiving all or part of the springs on which the car is mounted, substantially as and for the purposes specified.

7. The side of a truck-frame formed of one piece of sheet metal provided with journal-box openings and guides and extended portions beyond the journal-boxes for carrying all or part of the load, in combination with the ends of said extended portions joined to the end sills by angle flanged fish-plates constructed to cover the outside and inside of the joint and form the corner of the truck, substantially as and for the purposes specified.

8. A car-truck having each of its sides formed of one piece of material, in combination with fish-plates for joining said sides to the end sills and one or more spring-seats on said fish-plates for receiving all or part of the springs, substantially as and for the purposes described.

9. A truck-frame having each of its side pieces formed of one piece of flanged metal, in combination with angle flanged fish-plates, the outer fish-plate of each corner constructed to fit into the section of the sides, and end sills extending over the edges of the flanges, so as to cover the joint and make a curved corner to the frame, substantially as and for the purposes specified.

476,481. APPARATUS FOR TRIMMING PHOTOGRAPHIC PRINTS. HARRY H. NEWCOMB, Boston, Mass. Filed Feb. 23, 1892. Serial No. 422,362. (No model.)



Claim.—1. A paper-trimming device comprising in its construction a bed provided at two of its edges with raised stops or flanges a' a^3 and on its face with lines b b', all relatively arranged, as shown, and a plate or guide d, formed to bear at two of its edges against the stops a' a^3 and to bear on the bed, two of the edges of said plate constituting guides for a trimming-tool, as set forth.

2. A paper-trimming device comprising in its construction, first, a bed having raised stops a' a^3 at two of its edges, lines b b' on its face, and a transparent plate c, covering said lines and constituting a cutting-bed, and, secondly, a transparent plate or guide d, formed to bear at two of its edges against the stops a' a^3 and to bear on the bed, two of the edges of said plate constituting guides for a trimming-tool, as set forth.

476,482. PAPER-HOLDER. DOCTOR F. OLIVER, Oakland, Cal. Filed Dec. 11, 1891. Serial No. 414,762. (No model.)



Claim.—1. In a paper-holder, the elastic scroll 1', in combination with the base portion A, for the purpose set forth, substantially as described.

2. In a paper-holder, the elastic scroll having the corrugations 8, in combination with the base A, substantially as described.

3. In a paper-holder, the elastic scroll 1', in combination with the perforated base A, substantially as described.

4. In a paper-holder, the elastic scroll 1', in combination with the ruled base A, substantially as described.

5. In a paper-holder, the elastic scroll 1', in combination with the perforated and ruled base A, substantially as described.

6. In a paper-holder, the combination of the scroll 1', having corrugations 8, with base-plate A, provided with a ruled surface, and perforations 4', for the purpose set forth, substantially as described.

476,483. SECONDARY-BATTERY PLATE. EDWARD G. PARAMORE, Philadelphia, Pa., assignor, by mesne assignments, to the Paramore Electric Company, of West Virginia. Filed Sept. 2, 1890. Renewed Oct. 31, 1891. Serial No. 410,434. (No model.)

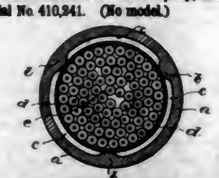


Claim.—1. A secondary or storage battery plate composed of a porous cup, a grid consisting of a strip or sheet cut or divided into leaves and located in said cup, and active material in the latter surrounding said grid or plate, substantially as set forth.

2. A secondary or storage battery plate composed of a grid or lead plate consisting of a strip or sheet cut or divided into leaves *a*, differently-directed active material in contact with said grid, and the latter and the active material inclosed in a porous cup, substantially as set forth.

3. In a secondary or storage battery plate, the combination of a porous cup or receiver, active material in said cup, a strip or sheet-lead grid cut or divided into leaves, and the latter directed through the active material, substantially as set forth.

476,484. ELECTRIC CABLE. WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 29, 1891. Serial No. 410,241. (No model.)

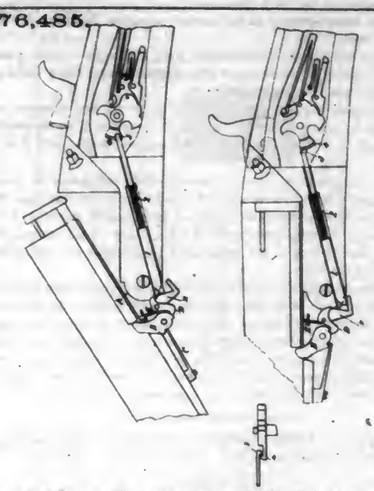


Claim.—In an electric cable, the combination, with a core of insulated conductor or conductors, of an exterior metallic sheath having interior projecting longitudinal ribs in contact with the core, substantially as described.

476,485. EJECTOR MECHANISM FOR BREECH-LOADING GUNS. THOMAS PERKIS, London, England. Filed Mar. 24, 1891. Serial No. 386,282. (No model.)

Claim.—In breech-loading small-arms, the combination, with an automatic ejector mechanism carried by the barrel and provided with a catch or sear D and a lock mechanism provided with a sliding projection 4, substantially as set forth, of a spring-actuated sliding piece 1 for the said catch to strike when the breech is partially opened after firing, thereby permitting the ejector mechanism to operate, said sliding piece being provided with a springy and hooked rear end adapted to be forced back into engagement with the said projection when the breech is fully opened, substantially as and for the purpose set forth.

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476,486. RESPIRATOR. GUSTAVE PORDENA, Chicago, Ill. Filed Feb. 2, 1892. Serial No. 420,106. (No model.)

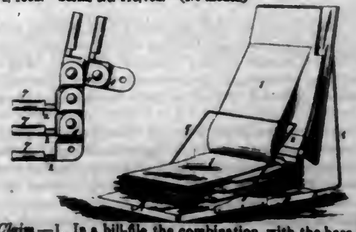


Claim.—1. A respirator-casing provided at its respective ends with doors of wire-cloth, a central horizontal imperforate diaphragm, inhaling and exhaling passages in different planes, a recess in the face side forming a respiratory chamber, inhaling and exhaling openings in the wall on opposite sides of said recess and communicating with the respective passages above and below said diaphragm, and flexible valves covering said openings from opposite sides, substantially as set forth.

2. The combination of the respirator-casing provided on the face side with a recess, as described, the flaring rim inclosing the recessed part, the soft elastic cushion bordering said rim, and the flexible apron covering the upper part of the rim, substantially as set forth.

3. A respirator provided with a re-entering recess on the face side forming a respiratory chamber and having the inhaling and exhaling passages in different planes, the screen or gauze partitions located in said passages and extending from the bottom of said recess to the opposite inclosing wall, and the valves d' d^3, substantially as set forth.

476,487. BILL-FILE. EDWIN B. PUTNEY, Lyons, N. Y. Filed Jan. 21, 1892. Serial No. 418,762. (No model.)



Claim.—1. In a bill-file, the combination, with the base 2, having ears thereon, of the sheets of paper removably secured to said base,

said bases being adapted to be loosely connected together through their ears, as set forth.

2. In a bill-file, the combination, with the bases 2, having ears thereon, of sheets of paper removably secured to said bases and having an index upon their margins.

3. The combination, with the bases 2, having ears thereon and adapted to be loosely connected together, of sheets of paper removably secured to said base, and the whole mounted upon a base 4 4, as set forth.

4. The combination, with the bases 2, of the sheets secured thereon, said bases 2 being loosely secured together and mounted upon the base A, of a bracket mounted upon the front end of the base A for the purpose of forming a rest when the sheets are turned up, and the bracket 9, mounted upon the base A for the purpose of holding the sheets up, as set forth.

5. The combination, with the bases 2, having ears thereon and provided with vertical studs, sheets of paper perforated to fit over said studs, said bases being adapted to be loosely secured together at their ears, and the whole mounted upon the base A, of the brackets 8 and 9, the bracket 9 being provided upon its inner end with a crank-arm and adapted to engage with the strap-spring upon the outer edge of the base, with which the crank-arm engages, as set forth.

476,488. MINER'S SAFETY-LAMP. HENRY J. RICHARDS, Wilkes-Barré, Pa. Filed Feb. 10, 1892. Serial No. 421,020. (No model.)



Claim.—1. In a safety-lamp, the combination of a bowl and burner carried thereby, a gauze cylinder secured over the burner, a supplemental gauze cylinder secured over said cylinder, and means for vertically adjusting said supplemental cylinder, substantially as described.

2. In a safety-lamp, a bowl carrying a burner, a ring removably secured to the bowl, vertical rods screwed into ears on the ring, a ring connecting the upper ends of the rods, a gauze cylinder secured to the ring between the rods, a supplemental gauze cylinder inclosing the inner cylinder and carrying a ring at its lower end, and means for vertically adjusting the supplemental cylinder and ring on the rods, substantially as described.

3. In a safety-lamp, the combination of a bowl carrying a burner, a ring *d*, carried by the bowl and provided with an upwardly-extending threaded flange *d'*, a gauze cylinder *e*, secured to the ring inside of the flange, and a supplemental gauze cylinder embracing the inner cylinder and carrying a threaded ring at its lower end, substantially as described.

4. The combination of the bowl and burner, an inner gauze cylinder, a cage supporting a threaded ring above the gauze cylinders, a supplemental or outer gauze cylinder adjustably secured over the inner cylinder, and an externally-threaded hood *g*, screwed into the said ring, substantially as described.

5. The combination of a lamp bowl and burner, the burner being carried by a removable disk *c*, a cylinder screwed to the bowl and clamping the disk thereto, and a ring screwed on the upper end of the cylinder and carrying a cylinder, substantially as described.

6. The combination of a bowl flanged around its opening, a disk clamped over the opening and having screwed into it a burner, a cylinder screwed to the bowl and provided with an internal flange engaging the disk, a wick-adjusting wheel having its shaft passed out through the cylinder, a ring secured on the upper end of the cylinder, and a gauze cylinder supported on the ring, substantially as described.

7. The combination of a lamp-bowl carrying a burner, a cylinder carried by the bowl, a threaded ring secured on the upper end of the cylinder, and a ring screwed into said ring and carrying a gauze cylinder, substantially as described.

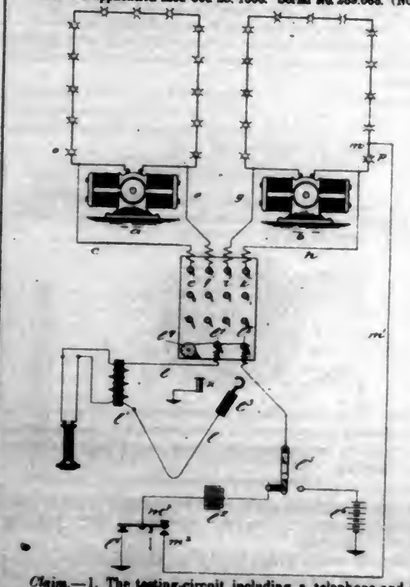
476,489. MANUFACTURE OF PULLEY-WHEELS. JOHN RITCHIE, Beamsville, Canada. Filed Dec. 29, 1890. Serial No. 376,051. (No model.)



Claim.—1. As an improvement in apparatus for the manufacture of pulley-wheels and the like, the combination, with a flask or framing, of a pattern, a hollow metal case formed with integral oppositely-extending tubular projections for the entrance of the oil and for conveying the same to the axle, and means for suspending the case in the mold-cavity, substantially as set forth.

2. As an improvement in apparatus for the manufacture of pulley-wheels and the like, the combination of a flask or framing, a pattern having its periphery concaved and a portion of its body thickened, said thickened portion provided upon one side with a V-shaped depression and also having lugs projecting laterally therefrom, said lugs occupying a central position, a core to fit the depressions left in the sand by said lateral lugs, and a hollow metal case provided with an inclined face corresponding to the innermost inclination formed by the V-shaped depression of the pattern and with inner and outer tubular projections, the latter extending normally from said inclined face, substantially as set forth.

476,490. SYSTEM OF TESTING FOR ELECTRIC CIRCUITS. CHAS. H. RUDD, Evanston, assignor to the Western Electric Company, Chicago, Ill. Original application filed Jan. 19, 1888, Serial No. 260,944. Divided and this application filed Oct. 25, 1888. Serial No. 289,068. (No model.)



Claim.—1. The testing-circuit including a telephone and a condenser, the circuit of one side of the condenser being connected directly to ground, and a movable test terminal, in combination with terminals *e f* of a lamp circuit, extended from different sides of the dynamo-electric machine, whereby on connecting the movable terminal with the different extended terminals of the electric-light circuit the condition of the electric circuit with respect to insulation may be determined, substantially as and for the purpose specified.

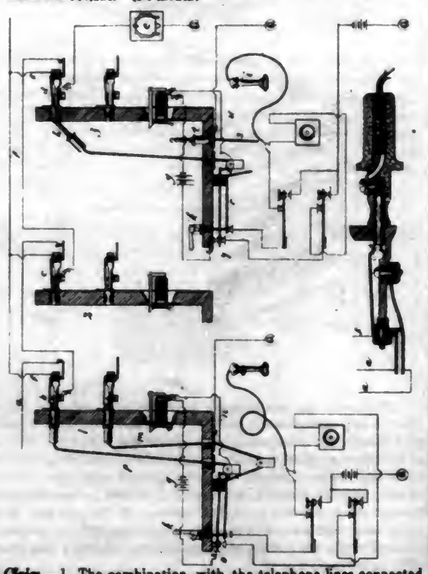
2. The combination, with an electric-light circuit, of the branches *m'* and *h*, extended from different sides of a lamp included in said circuit, and a test-circuit including a condenser and telephone, and means for including said test-circuit between the terminals of said branches, substantially as and for the purpose specified.

476,491. ALIZARINE DYE. ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 16, 1891. Serial No. 412,308. (Specimens.)

Claim.—1. The process of making a new alizarine dye, which consists in oxidizing alizarine bordeaux in sulphuric-acid solution with manganese, treating the resulting anthradiquinone with salicylic acid, and treating the resulting compound with ammonia.

2. The new coloring-matter, which in a dry state is an olive-colored powder with metallic luster, sparingly soluble in water, easily in sodium-carbonate with blue color, in soda-lye with greenish-blue and in ammonia and in glacial acetic acid and alcohol with reddish-blue color, and in concentrated sulphuric acid with reddish-violet color, from which solution reddish-brown flakes are precipitated by adding water, and on wool mordanted with chromium salts it produces a very clear bluish green.

476,492. CIRCUIT FOR TEST-BATTERIES AND CORDS OF MULTIPLE SWITCHBOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 1, 1885. Serial No. 167,228. (No model.)



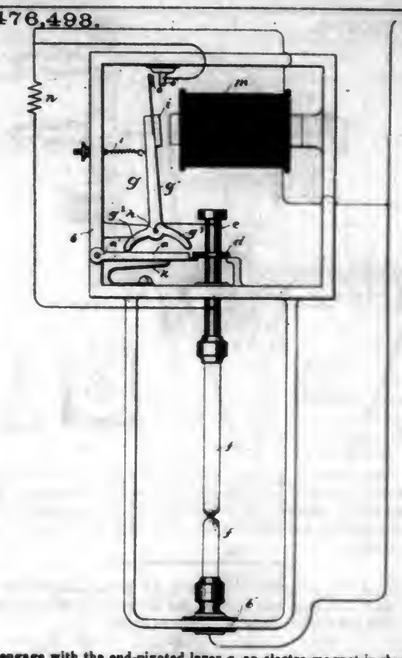
Claim.—1. The combination, with the telephone-lines connected with spring-jack switches on the different boards, of test-circuits, one for each telephone-line, pairs of cords at the different boards, a coil of battery *g* permanently included in circuit with the different clearing-out shutters, the operator's telephone at each board, and switching apparatus whereby the telephone and the battery *g* of any pair of cords may be alternatively included in and disconnected from the circuit of the cords.

2. Multiple switchboards provided with spring-jack switches, each of said switches being provided with a test-piece, in combination with pairs of plugs and cords at each of the boards for connecting any two of the switches together, the said cords being connected with a source of electricity and the operator's telephone, whereby on applying a plug to the test-piece of any switch it may be determined whether the telephone-line of said switch is in use at any other switchboard.

476,493. ELECTRIC-ARC LAMP. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 13, 1891. Serial No. 408,598. (No model.)

Claim.—1. The combination, with the lever *a*, pivoted at one end and adapted to impart motion to one of a pair of carbons, of a lever *g*, pivoted at or near its center and having its extremities g^3 g^4 adapted to engage with the end-pivoted lever *a*, an electro-magnet in shunt of the carbons, adapted to impart motion to the centrally-pivoted lever *g*, a spring *l*, acting in opposition to the magnet *m* upon the lever *g*, and a spring *k*, acting upon the end-pivoted lever *a* to cause a separation of the carbons, substantially as described.

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2. The combination of an end-pivoted lever adapted to impart motion to one of a pair of carbons with a lever pivoted at or near its center and having its extremities adapted to act independently of each other upon said end-pivoted lever, and a spring or its equivalent acting to maintain said end-pivoted lever in engagement with one of the extremities of said centrally-pivoted lever, whereby the mechanism is adapted to receive continuous motion in one direction of the centrally-pivoted lever into motions of one of the carbons in successively-opposite directions, substantially as described.

3. The combination of an end-pivoted lever, in connection with mechanism whereby it acts to impart motion to one of a pair of carbons, with a lever pivoted at or near its center and having its extremities adapted to act independently of each other upon said end-pivoted lever, a spring or equivalent acting to maintain said end-pivoted lever in engagement with one of the extremities of said centrally-pivoted lever, an armature in connection with said centrally-pivoted lever, and an electro-magnet in shunt of said pair of carbons adapted to act upon said armature, whereby said electro-magnet in producing a continuous approaching movement of its armature is adapted to cause motions of the said carbons in successively-opposite directions, substantially as described.

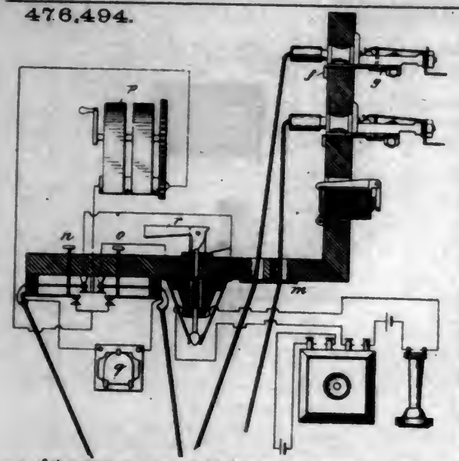
4. The combination, with the end-pivoted lever *a*, actuating one carbon *f* of a pair *f f'*, of the centrally-pivoted lever *g*, the spring *k*, the armature *i*, electro-magnet *m* in shunt of said carbons, resistance *n* in series with said carbons and within the shunt *m*, and contacts *o o'*, adapted to be closed by the movement of lever *g* and when closed to complete a short circuit about resistance *n*, substantially as described.

476,494. KEYBOARD SYSTEM FOR METALLIC CIRCUITS. JOHN A. SEELY, New York, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 15, 1886. Serial No. 218,948. (No model.)

Claim.—1. In a keyboard system, the combination of calling-keys composed each of two levers, a pair of cords having two strands, the two strands being connected to the levers of the calling-keys, respectively, contact-points connecting with the calling generator, a clearing-out annunciator permanently included in a circuit between corresponding levers or springs of the keys, whereby the generator may be looped into the circuit of either of the two telephone-lines, while at the same time the clearing-out annunciator is excluded from the circuit.

2. The combination, with the clearing-out drop *q* included in a circuit between two corresponding springs or levers of the calling-keys

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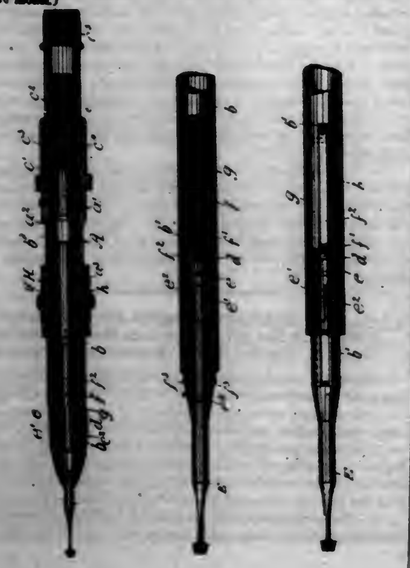
s o, of the generator connected between contacts common to the corresponding springs of said calling-keys, whereby the generator may be looped in a metallic circuit in either direction without sending current through the clearing-out drop, substantially as and for the purpose specified.

476,495. PADLOCK. SAMUEL R. SLAYMAKER, Lancaster, Pa., assignor to himself, John F. Barry, and William F. Troast, same place. Filed Apr. 4, 1892. Serial No. 428,425. (Model.)



Claim.—As a new article of manufacture, a padlock composed in whole or in part of aluminum or an alloy thereof, substantially as described.

476,496. HANDPIECE FOR DENTAL ENGINES. WILLIAM M. SPEARMAN, Philadelphia, Pa. Filed Feb. 23, 1892. Serial No. 422,365. (No model.)

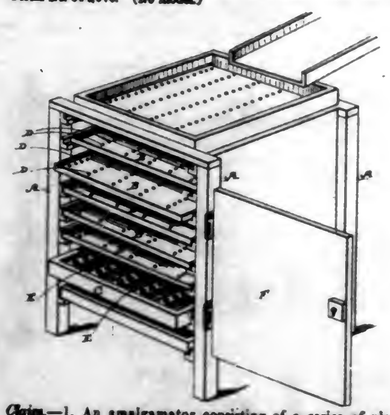


Claim.—1. A dental-engine handpiece provided with a revoluble spindle having a slotted and tubular extremity, a key secured in the tubular portion of the spindle, a forked plate mounted in the slotted portion of the spindle and provided with tines forming jaws, a tool having a shank adapted to be locked by the key, and means for clamping the jaws, substantially as and for the purposes set forth.

2. A dental-engine handpiece provided with a revoluble tubular and slotted spindle, a key secured in the tubular portion of the spindle, a forked plate mounted in the slotted portion of the spindle and provided with tines forming jaws, a tool having a shank adapted to be inserted into said spindle and held therein by the jaws, a sheath movable endwise on said spindle and adapted to engage said jaws, and a sliding sleeve accessible from the exterior of the handpiece and connected with said sheath, substantially as and for the purposes set forth.

3. A dental-engine handpiece provided with a tubular and slotted tool-spindle, a tool inserted into the tubular end of the spindle, a key fixed in the tubular end of the spindle and engaging the extremity of the shank of the tool, a forked plate mounted in the slotted portion of the spindle and provided with tines forming jaws for engaging the shank of the tool, a revoluble sheath adapted to operate said jaws and provided with an annular groove, a sleeve mounted on the main casing of the handpiece and afforded a range of end-play, and a feather attached to said sleeve and engaging the annular groove of the sheath, substantially as and for the purposes set forth.

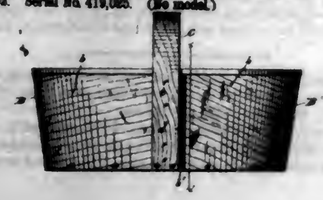
476,497. AMALGAMATOR. ALVA M. STETSON, Oakland, Cal., assignor of one-half to Thomas R. Hayes, same place. Filed June 3, 1891. Serial No. 394,978. (No model.)



Claim.—1. An amalgamator consisting of a series of plates or trays having amalgamated or silvered bottoms, with lines of perforations therein, the perforations of one plate being out of line with those of the adjacent plate, mercury-containing drawers having upwardly-extending ribs or partitions extending parallel with each other and forming mercury channels, said ribs or partitions having perforations through them, whereby the lighter portions of the pulp may be conveyed away without loss of mercury, while the valuable portions are confined within the parallel channels between adjoining ribs, substantially as herein described.

2. In an amalgamator having a series of plates or trays with amalgamated or silvered bottoms provided with lines of perforations, the mercury-containing drawers having parallel-spaced ribs or partitions rising above the surface of the drawers and forming channels, which lie in line with the perforations of the amalgamating-plate next above, whereby the spaces between the ribs or partitions form channels, in which the valuable portions of the pulp are confined, said ribs having perforations through them, through which the lighter portions of the pulp flow, substantially as herein described.

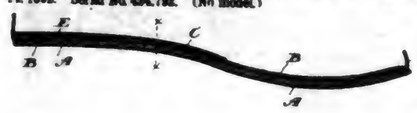
476,498. BASKET. ORRIS STODDARD, Busti, N. Y. Filed Jan. 23, 1892. Serial No. 419,025. (No model.)



Claim.—1. The herein-described basket, comprising the body made of two pieces, each of which is bent to form one end of the basket and a portion of the sides thereof, the adjacent inner ends of said sides being overlapped about the middle of said body, the handle arranged over and fastened to the overlapped ends of the body-pieces, and the bottom arranged within the body-pieces and secured thereto, substantially as described.

2. A basket such as herein described, comprising the body made of two pieces, each of which is bent to form one end and a portion of each side of the basket, said body-pieces having their inner ends overlapped and arranged so that the grain extends in a curved line from end to end thereof, the handle having its ends arranged over said overlapped ends of the body-pieces, the transverse fastening devices extending through said ends and handle, and the bottom arranged within the body and suitably secured thereto, as and for the purpose described.

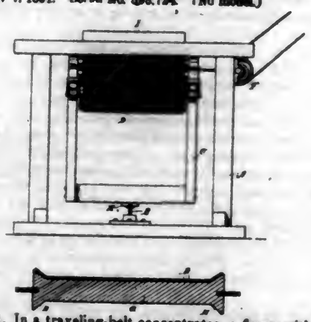
476,499. SOLE. THOMAS W. TRIBBY, Rochester, N. Y. Filed Mar. 14, 1892. Serial No. 424,782. (No model.)





Claim.—A shoe provided with an insole of cork extending the length of the shoe, cemented to the sole of the same from ball to toe and secured at the shank portion by a covering-strip C, attached to the sole at one edge by the line of stitching that unites the upper and sole and at the other edge stitched to a strip D, that likewise is attached to the sole by the line of stitching that unites the upper and sole and having a heel-piece E upon the heel portion of the insole to receive the heel-attaching nails or tacks, substantially as described.

476,500. CONCENTRATOR. JAMES TULLOCH, Angel's Camp, Cal. Filed July 7, 1891. Serial No. 398,734. (No model.)



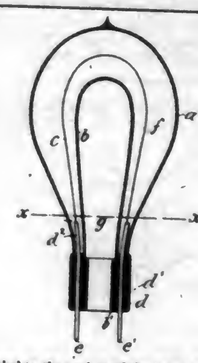
Claim.—1. In a traveling-belt concentrator, a frame with rollers journaled transversely upon the upper part, an endless belt adapted to travel about said rollers from end to end of the frame, stationary pivots fixed in line beneath the center of the belt, and means for tilting the frame and belt from side to side about the pivots, whereby a sharp side and downward motion of the belt is produced, substantially as herein described.

2. In a concentrator, an endless traveling belt adapted to move over rollers upon which it is supported, said belt having a continuous surface of rubber, made with lines crossing each other in the manner of woven canvas and forming a corresponding surface of rubber, substantially as herein described.

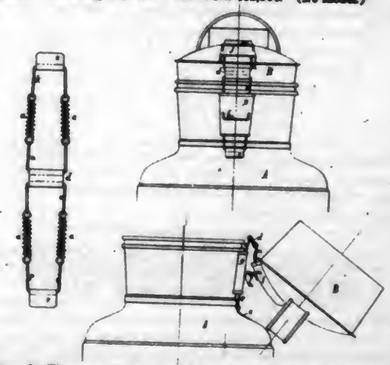
476,501. INCANDESCENT ELECTRIC LAMP. EPHRAIM E. WEAVER and GUSTAVUS E. MANYPENNY, Philadelphia, assignors of one-fourth to John Woolman Comfort and William Steele Ambler, Jenkintown, and John Cunningham, Jr., Philadelphia, Pa. Filed Dec. 5, 1891. Serial No. 414,093. (No model.)

Claim.—The herein-described incandescent electric lamp, provided with a hollow reflector of irregular, square, or elliptical cross-section forming the inner wall of the vacuum-chamber thereof, and a filament having the two parts thereof disposed in proximity to the points or ends of the hollow reflector, and said filament, connected with electrodes, sealed to the socket of the lamp, the construction and arrangement being such that a supply of air is afforded around about the internal surface of the reflector, whereby overheating or other damage to the reflector of the lamp is prevented, for the purposes set forth.

476,501.



476,502. MILK-CAN ATTACHMENT. HOWARD WINDLE, Fairville, Pa. Filed Aug. 11, 1891. Serial No. 402,361. (No model.)



Claim.—1. The combination, with a milk-can and its lid, of a hinge uniting them, said hinge being attached to each by a yielding connection, substantially as described.

2. The combination, with a milk-can and its lid, of a spring-loop attached to each, said loops being flexibly joined together, substantially as described.

3. The combination, with a milk-can and its lid, of the spring-loop attached to each and the link *d*, uniting the loops, substantially as described.

4. The combination, with a milk-can and its lid, of the spring-loop attached to each, a casing surrounding each loop, and a link uniting the loops, substantially as described.

5. The combination, with a milk-can provided with a hook *h*, of a lid provided with the eye *m* and a flexible yielding connection uniting the can and the lid, substantially as described.

6. The combination, with the can A, having the casing *g*, provided with a hook *h*, of the lid B, having the casing *f*, provided with an eye *m*, the spring-loops inclosed in the casings, having one end attached to the can and the lid, respectively, and the link *d*, uniting the other ends of the loops, substantially as described.

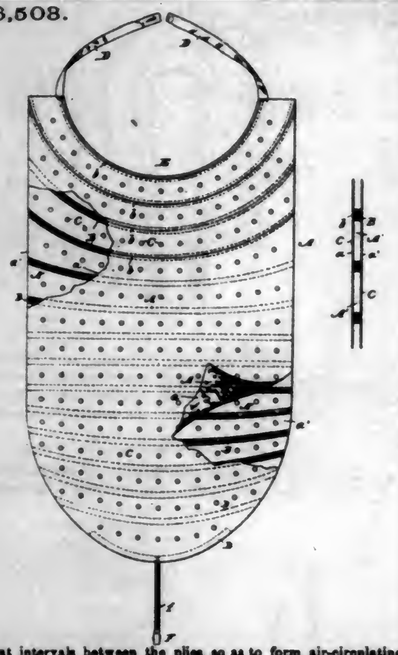
476,503. SHIRT AND CHEST PROTECTOR. ROBERT P. WOODWARD, Brooklyn, N. Y. Filed Aug. 5, 1891. Serial No. 401,734. (No model.)

Claim.—1. A shirt and chest protector comprising a sheet of flexible material, with strips of light and yielding material secured to the inner face of the sheet, so as to form air-circulating spaces or channels between the strips, substantially as described.

2. A shirt and chest protector comprising a sheet of flexible material, with strips of light and yielding material secured to the inner face of the sheet and extending transversely thereof at intervals, so as to form intervening air-circulating spaces or channels, substantially as described.

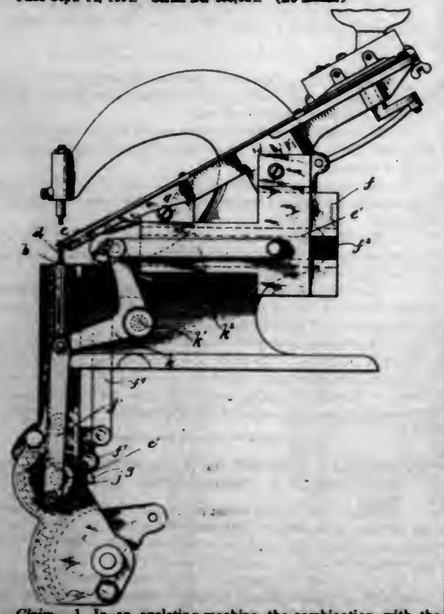
3. A shirt and chest protector comprising two or more plies of flexible material, with strips of light and yielding material secured

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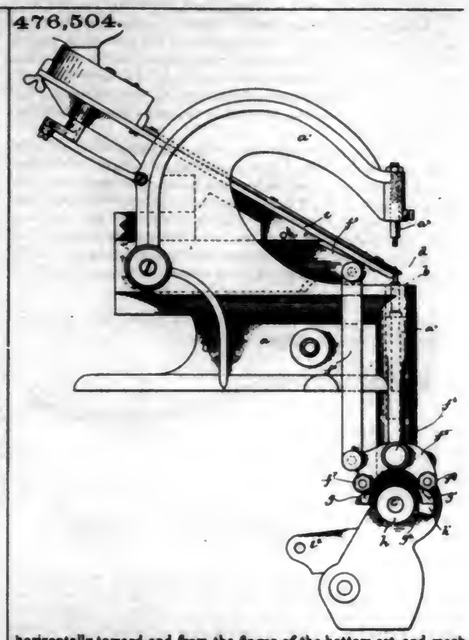
thereto at intervals between the plies, so as to form air-circulating spaces or channels, the edges of the plies being free between the strips, so as to leave the ends of the air-circulating spaces or channels open, substantially as described.

476,504. EYELETING-MACHINE. SEBASTUS WOODWARD, Somerville, assignor to the Merrick Sewing Machine Company, Boston, Mass. Filed Sept. 14, 1891. Serial No. 405,631. (No model.)



Claim.—1. In an eyeleting-machine, the combination, with the fixed top set and the reciprocating bottom set, of the eyelet-chute, a slide affixed thereto, a guide supporting said slide and chute, said guide being pivoted to the supporting-frame and adapted to oscillate vertically, mechanism for reciprocating the slide to carry the chute

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horizontally toward and from the finger of the bottom set, and mechanism for oscillating the pivoted guide to raise and lower the chute, as set forth.

2. In an eyeleting-machine, the combination of the fixed top set, the reciprocating bottom set, the eyelet-chute, the slide affixed to said chute, the vertically-movable guide supporting said slide and chute, the oscillating pivoted lever having one arm connected with said guide, the rocking plate carrying cams arranged to raise the ends of said lever alternately, and means for rocking or oscillating said plate, as set forth.

3. In an eyeleting-machine, the combination of the rock-shaft provided with an arm *k'*, the rocking plate mounted to swing loosely on said rock-shaft and provided with cams *g g'*, means for rocking the rock-shaft, the pivoted lever having its ends arranged to bear on said cams, the pivoted guide connected with said lever, and the eyelet-chute affixed to a slide adapted to move on said guide, as set forth.

4. In an eyeleting-machine the combination of the rock-shaft provided with an arm *k'*, the rocking plate mounted to swing loosely on said rock-shaft and provided with cams *g g'*, the segmental gear pivoted to the supporting-frame and meshing with a gear affixed to the rock-shaft, said segmental gear having an arm adapted to be connected with a treadle, the pivoted lever having its ends arranged to bear on said cams, the pivoted guide connected with said lever, and the eyelet-chute affixed to a slide adapted to move on said guide, as set forth.

5. In an eyeleting-machine, the combination of the rock-shaft provided with an arm *k'*, the rocking plate mounted to swing loosely on said rock-shaft and provided with cams *g g'*, the segmental gear pivoted to the supporting-frame and meshing with a gear affixed to the rock-shaft, said segmental gear having an arm adapted to be connected with a treadle, the pivoted lever having its ends arranged to bear on said cams, the pivoted guide connected with said lever, and the eyelet-chute affixed to a slide adapted to move on said guide, the crank *j* on the rock-shaft, and the connections between said crank and the slide, whereby the eyelet-chute is reciprocated horizontally, as set forth.

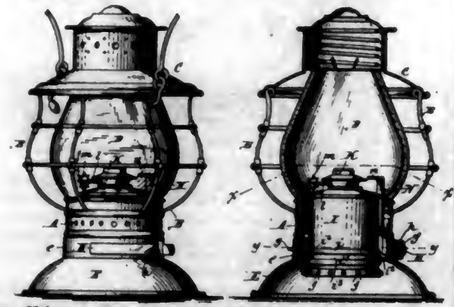
476,505. TUBULAR LANTERN. FREDERICK K. WRIGHT, Syracuse, N. Y., assignor to the Steam Gauge and Lantern Company, same place, and The B. B. Dietz Company, New York, N. Y. Filed Dec. 1, 1891. Serial No. 413,892. (No model.)



Claim.—1. The combination, with the tubular-lantern frame and the vertically-movable globe-frame, of an elbow-lever composed of a wrist pivoted in the upper portion of the tubular-lantern frame, arms projecting from opposite ends of said wrist on the front and rear sides of the tubular frame, a link connecting the globe-frame with one of said arms on one side of the tubular frame, and stops formed on the opposite side of the tubular frame and limiting the movement of the other arm, substantially as set forth.

2. The combination, with the tubular-lantern frame provided with a vertical central tube and horizontal branch tubes and the vertically-movable bell guided upon the central tube, of an elbow-lever composed of two arms and a horizontal connecting-wrist pivoted obliquely in the central tube and a stop on the tubular frame, whereby the free arm of the lever is caused to pass downwardly along the side of one of the tubes and to strike said stop in lowering the globe-frame and strike the top of the other tube in raising the globe-frame, substantially as set forth.

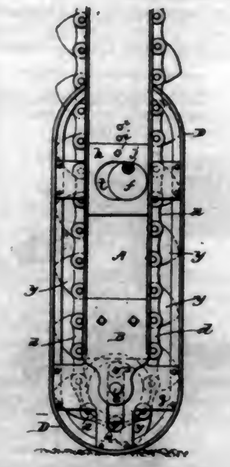
476,506. WICK-RAISER ATTACHMENT FOR LANTERNS. FREDERICK K. WRIGHT, Syracuse, N. Y., assignor to the Steam Gauge and Lantern Company, same place. Filed Feb. 3, 1892. Serial No. 420,153. (No model.)



Claim.—1. The combination, with a lantern-frame and a detachable bottom secured to the lantern-frame by a releasable fastening, of an oil-pot permanently attached to said bottom and capable of rotative movement therein, a burner provided with a laterally-projecting wick-raiser shaft, and a stop-arm attached to the lantern-frame and adapted to come in contact with the button of the wick-raiser shaft, substantially as set forth.

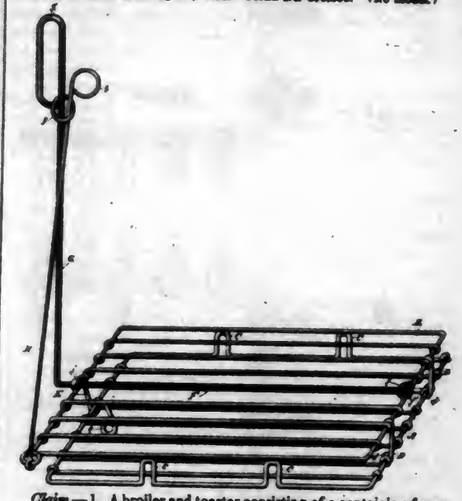
2. The combination, with the lantern-frame and a detachable bottom secured to the lantern-frame by a releasable fastening, of an oil-pot capable of rotative movement therein and provided with beads or projections above and below the said bottom, a burner provided with a laterally-projecting wick-raiser shaft, and a stop-arm attached to the lantern-frame and adapted to come in contact with the button of the wick-raiser shaft, substantially as set forth.

476,507. ENDLESS-CHAIN ELEVATOR. BENJAMIN ARNOLD, East Greenwich, R. I. Filed Apr. 5, 1892. Serial No. 427,801. (No model.)



Claim.—In an endless-chain elevator, the combination, with the elevator-leg, of a guard-frame to shield the buckets, arranged to be moved to or from the end of the leg to protect or expose the buckets, and means for so moving it, substantially as herein set forth.

476,508. BROILER AND TOASTER. THOMAS BARRETT, San Francisco, Cal. Filed July 21, 1891. Serial No. 400,253. (No model.)



Claim.—1. A broiler and toaster consisting of a containing-frame, a handle therefor, a hinge connection between frame and handle, and a rod connected with the frame to reverse it, substantially as herein described.

2. A broiler and toaster consisting of a containing-frame, a handle at one end, to which said frame is hinged, whereby it may be reversed, and a rod connected with the frame at one end and guided by the handle to reverse said frame, substantially as herein described.

3. A broiler and toaster consisting of a containing-frame, a rod upon which said frame is hinged, whereby it may be reversed, an upturned handle formed or connected with said hinge-rod, and a rod connected with the frame for turning it, substantially as herein described.

4. A broiler and toaster consisting of a containing-frame, a rod extending in the longitudinal center plane of and journaled in the frame, whereby the latter may be reversed, an upturned handle formed or connected with one end of the hinge-rod, and a rod connected with one side of the frame for turning it, substantially as herein described.

5. A broiler and toaster consisting of the containing-frame, the central hinge-rod with its upturned end handle, the turning-rod connected with the frame-corner, and the ring connecting the handle and rod, substantially as herein described.

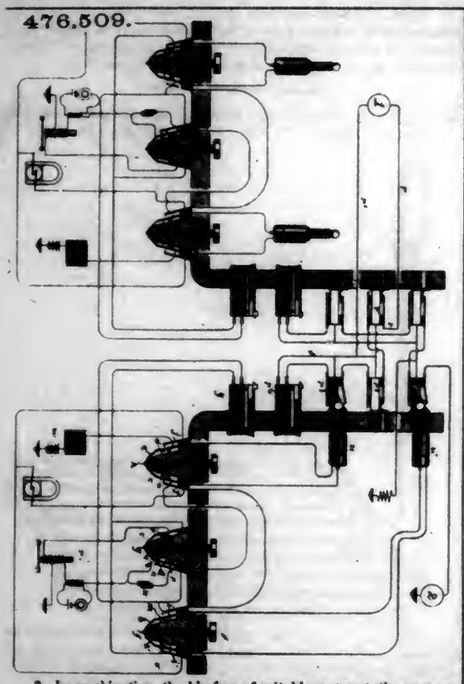
6. A broiler and toaster consisting of the containing-frame composed of the upper and lower wire racks hinged together at one end and having a fastening link at the other, the longitudinal central rod journaled in the ends of the upper rack, the upturned handle end of the rod, and the turning-rod connected with the corner of the upper frame and guided by the handle, substantially as herein described.

476,509. KEYBOARD-CIRCUIT FOR MULTIPLE SWITCHBOARDS. ORO A. BELL, New York, N. Y., assignor to the Western Electric Company, of Illinois. Filed Sept. 30, 1891. Serial No. 407,961. (No model.)

Claim.—1. As an element in a keyboard-circuit, the combination of contact-anvils *p p'*, springs *c c'*, adapted to make contact with *p p'*, respectively, a spring *d*, adapted to come into contact with and be raised by spring *c* when said spring *c* is separated from its anvil *p*, a contact-anvil *o*, adapted to make contact with spring *d* when the said spring is not raised by spring *c*, and a wedge and plunger or other suitable means for raising springs *c c'* from their contacts, substantially as and for the purpose described.

2. In combination, contact-anvils *p p'*, springs *c c'*, adapted to rest upon said contacts *p p'*, respectively, a spring *d*, adapted to make contact with and be raised by spring *c* when said spring *c* is raised, a contact-anvil *o*, adapted to make contact with spring *d* when said spring is not raised, a condenser *x*, connected between contact-anvils *p* and *o*, a telephone connected between contacts *o* and *p'*, and suitable means for separating the springs *c c'* from their respective contacts, substantially in the manner described.

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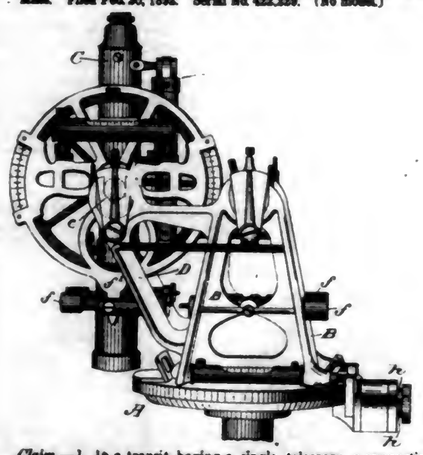
3. In combination, the block *a* of suitable material, the contact-strips *o*, *o'*, *p*, *p'*, *m*, and *n*, mounted thereon and adapted to make contact with the springs *d*, *b'*, and *d'*, *c*, *c'*, *b*, and *e*, respectively, the springs *c* and *d* being furnished with contact-points, whereby they are crossed together when the spring *c* is raised from its contact-anvil, the contact-springs *i i' j j'*, adapted to make contact with the springs *b b' e e'*, respectively, and wedges *f g h*, attached to plungers moving in perforations through the block, substantially as described.

4. In combination, the block *a*, contact-strips *o*, *o'*, *p*, *p'*, *m*, and *n*, adapted to make contact with springs *d*, *b'*, and *d'*, *c*, *c'*, *b*, and *e*, respectively, conductors extending from the tip and sleeve of a connecting-plug to the springs *c* and *d'*, respectively, other conductors extending from the tip and sleeve of another connecting-plug to spring *b* and *b'*, respectively, a conductor joining strip *m* with spring *d*, a conductor joining spring *c* with strip *n*, a telephone having its terminals connected to strips *o* and *p'*, a condenser having its sides connected to strips *o* and *p*, respectively, conductors joining springs *i'* and *j* and connected to one pole of a source of electric current, another conductor joining springs *i* and *j'* and connected to the other pole of the source of current, and an annunciator included in a conductor joining the contact-strip *o'* with the conductor joining the strip *m* and spring *d*, substantially as set forth.

5. The combination, in a listening-key, of a spring connected to one contact-piece of a connecting-plug, a contact-anvil therefor, connected to one terminal of a telephone and to one side of a condenser, means for forcing said spring away from its contact-anvil, a second spring connected to one contact-piece of another connecting-plug, and a contact-anvil therefor, connected to the other side of the said condenser, said second spring being so disposed with relation to the first spring as to make electrical contact therewith and to be raised from its anvil simultaneously with the separation of the first spring from its anvil, whereby the telephone and condenser are disconnected from the connecting-plugs and the said plugs are connected directly, substantially as described.

6. The combination, with loop-plugs, each having two contact-pieces, of a spring connected to two corresponding contact-pieces of the plugs, contact-anvil thereof, connected to one terminal of a telephone, a second spring connected to one of the remaining contact-pieces of the plugs, an anvil therefor, connected to the other terminal of said telephone and to one side of a condenser, a third spring connected to the remaining contact-piece of the plugs, a contact-anvil therefor, connected to the other side of said condenser, and means for separating all the springs from their contact-anvils and closing said third spring upon said second spring, whereby said condenser normally included between two corresponding contact-pieces of said plugs and said telephone normally in a bridge connection between the different contact-pieces of said plugs may be disconnected from the plugs and connection made directly between like contact-pieces of the two plugs, substantially as described.

476,510. ENGINEER'S TRANSIT. CHRISTIAN L. BERGER, Boston, Mass. Filed Feb. 20, 1892. Serial No. 422,229. (No model.)



Claim.—1. In a transit having a single telescope, a supporting-frame having two sets of fixed journal-bearings for the pivots of the horizontal axis of revolution of the telescope, one set of bearings being arranged to permit the telescope when mounted therein to be turned for vertical or nearly vertical sights without obstruction of its line of sight by the frame, substantially as described.

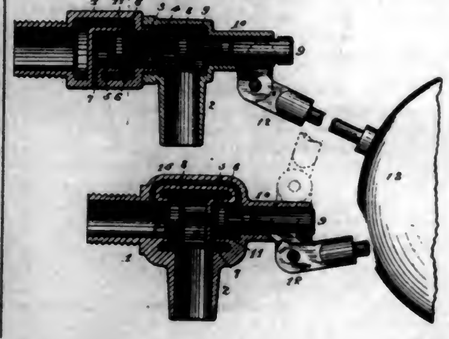
2. In a transit having a single telescope, a supporting-frame having two sets of fixed journal-bearings for the pivots of the horizontal axis of revolution of the telescope, said two sets of bearings being so arranged that the line of sight of the telescope when mounted in either set of bearings will revolve in the same vertical plane, substantially as described.

3. In a transit having a single telescope, a supporting-frame for the telescope, adapted to revolve with the vertical axis of revolution and having two sets of journal-bearings for the pivots of the horizontal axis of revolution of the telescope, the axis of one set of bearings intersecting the vertical axis of revolution of the frame, while the other set of bearings is offset therefrom to permit the telescope when mounted therein to be turned about its horizontal axis of revolution for vertical or nearly vertical sights without obstruction of its line of sight by the frame, substantially as described.

4. In a transit, a U-shaped supporting-frame B, having normal bearings *b* for the telescope and auxiliary bearings *d*, supported by the U-shaped frame B and so far offset therefrom that the vertical line of sight of a telescope mounted therein will be unobstructed by said frame, substantially as described.

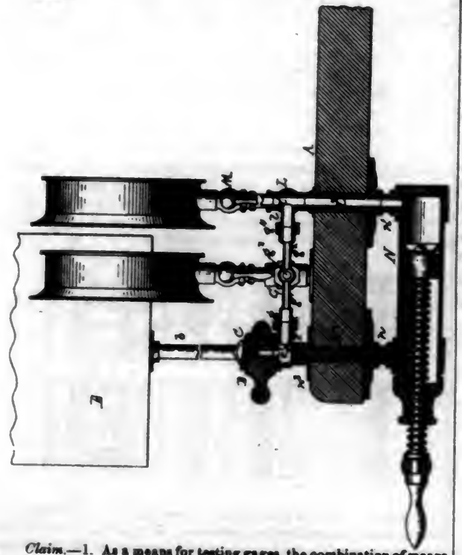
5. In a transit, the combination, with a telescope, of a supporting-frame therefor, having two sets of bearings and two sets of vertical tangent adjusting-screws for said telescope, substantially as described.

476,511. VALVE. CORNELIUS BERKEY, Hartford, Conn., assignor to the Berkey Manufacturing Company, same place. Filed Aug. 10, 1891. Serial No. 402,214. (No model.)



Claim.—A valve consisting of a body having a water-way with a port, a valve-seat around the port, and a piston-chamber supported by arms in the water-way upon the pressure side of the port and provided with an opening, an outlet-bib screwed upon the body adjacent to the port, a piston movable in the piston-chamber in the water-way on the pressure side of the port, a spindle connected with the piston and supported at its outer end by a hub projecting from the outlet-bib, a float-lever bearing a float attached to the end of the spindle, and a valve borne by the spindle on the escape side of the port, substantially as specified.

476,512. DEVICE FOR TESTING PRESSURE-GAGES. CHARLES R. BOSWORTH, Everett, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Feb. 17, 1892. Serial No. 421,870. (No model.)



Claim.—1. As a means for testing gages, the combination of means for supplying water under pressure, a water-supply pipe, a pipe for the attachment of several gages, a waste-pipe, a valve giving communication among these three pipes, and a pump communicating with the pipe whereto the gages are to be attached, as set forth.

2. As a means for testing gages, the combination of means for supplying water under pressure, a water-supply pipe *b*, the three-way valve, the waste-pipe E, the gage-cocks K and M, the pump N, and the pipes for connecting the gage-cocks and the pump with the three-way valve, as set forth.

476,513. VENDING-MACHINE. JOHN A. BOWYER and URIAH L. HULL, Chicago, Ill., assignors of one-eighth to Theron Carson, same place. Filed Feb. 29, 1892. Serial No. 423,110. (No model.)



Claim.—1. The combination, in a vending-machine, of a horizontal movable flat discharge-plate J, provided with a series of teeth projecting forwardly in the direction of the discharge and also standing up slightly from the surface of the plate, as set forth, whereby the plate is adapted both to support a pile of papers and to discharge the lower one of the pile, substantially as specified.

2. In a vending-machine, a paper-discharging plate J, constructed of sheet metal and provided with teeth *o*, secured in bends of the metal, substantially as specified.

3. The combination, in a vending-machine, of a suitable case, a coin-controlling mechanism, a paper-discharging plate J, a movable panel in the case adapted to open and give access to the paper which is sold, a bar U for separating the paper sold from the pile, and a handle for actuating said discharging device, substantially as set forth.

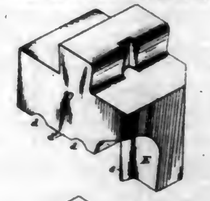
4. The combination of a receptacle for a single pile of papers, a movable plate supporting the pile and adapted to discharge the lower one therefrom, a device whereby the purchaser may operate said plate, two independent coin-chutes adapted to receive different amounts of money, and controlling mechanism connecting both of said chutes with said plate, whereby the machine is adapted to use with either of the amounts of money for which the chutes are intended, substantially as set forth.

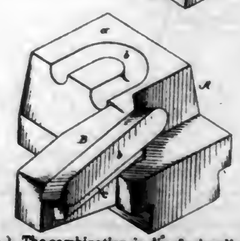
5. The combination, in a newspaper-vending machine, of a receptacle for a single pile of papers, a discharging device therefor, a coin-chute adapted to receive coin of one denomination, a second coin-chute adapted to receive two coins of the same denomination, and devices whereby said discharging device is controlled from either of said chutes, substantially as set forth.

6. The combination, in a vending-machine, of a receptacle for a single pile of papers, a discharging device, separate coin-chutes, controlling mechanism connecting both said chutes with said discharging device, and a gage located at the discharge-opening, whereby the machine is adapted to use with editions of different thickness and selling at different prices, substantially as specified.

7. The combination, in a newspaper-vending machine, of a discharging-plate located below the pile of papers and adapted to move the lower paper into position for delivery, mechanism whereby the purchaser actuates said plate, and a separating-blade U, mechanically connected to said discharging mechanism and moved into position between the bottom paper and the one next above it by said mechanism, substantially as set forth.

476,514. DIE FOR MAKING LINKS. WILLIAM M. BOYLES, Berwick, Pa., assignor to the Jackson & Woodin Manufacturing Company, same place. Filed Feb. 15, 1892. Serial No. 421,562. (No model.)





Claim.—1. The combination, in dies for bending and welding links, of the lower die having a semicircular groove in its face and at one side an extension, a horn on said extension, said horn being so arranged as to throw the upper arm of the link-blank out of line with the lower arm, an upper die having a semicircular groove in its face corresponding to the groove in the lower die, and a leg at one side which acts upon and turns down the upper arm of the link-blank, substantially as described.

2. The combination, in dies for bending links, of the lower die consisting of a body, a horn on which the blank to be bent is mounted, and a filling-piece under the horn to throw the two arms of the blank out of line with each other, with an upper die consisting of a body and a depending leg so situated in respect to the horn of the lower die as to bend one arm of the blank over the end of the horn when the dies come together, substantially as specified.

476,515. HAND-SETTING MECHANISM FOR TIMEPIECES. ARNOLD BRADLEY, Cherryvale, Kans., assignor of one-half to W. P. Hammon, Oakland, Cal. Filed Feb. 24, 1890. Serial No. 341,622. (No model.)

Claim.—1. A watch, clock, or other timepiece having a rim with opening therein provided with a notch or recess, in combination with a bar or slide mounted upon the top plate of the timepiece and slotted upon a pin thereon, said rack-bar having a handle portion extending through said recess and having its inner side portion provided with a rack or toothed surface, a gear on the shaft or pivot of the

476,515.

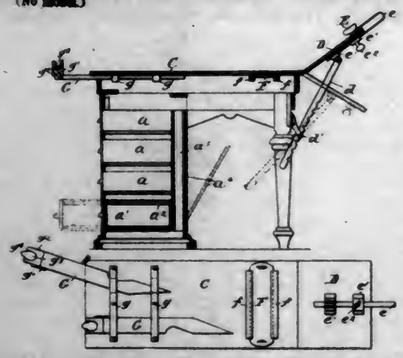


seconds-hand into engagement with which the toothed portion of the slide is moved to set the hand forward or backward, substantially as herein described.

2. In a watch, clock, or other timepiece, a top plate having a notched or recessed rim, a toothed slide or rack bar slidable upon said plate and having a handle portion projecting through the rim, a gear on the seconds-hand shaft or pivot, a spring on said shaft or pivot below the gear, a sleeve or cylinder rising from the gear and inclosing the upper end of the pivot, and a nut or screw-tap on the up end of said pivot, substantially as herein described.

3. In a watch, clock, or other time-piece, a gear on the seconds-hand pivot, in combination with a longitudinally and laterally moving toothed slide or bar slotted upon a pin upon the top plate of the time-piece, the pin R or guide against which the outer face of the slide contacts to force the toothed portion of the slide transversely into contact with the pinion as the slide is drawn out longitudinally, and a spring acting against the slide to move it laterally away from the pinion, substantially as herein described.

476,516. SURGICAL AND GYNECOLOGICAL TABLE. JOHAN R. CHERMERLIN, Scranton, Pa. Filed May 16, 1891. Serial No. 392,942. (No model.)



Claim.—1. In a surgical table, the combination, with the main frame and table-top, of a single leaf connected to the top at one end thereof by a double-acting hinge, and means for adjusting it to various angles above and below the plane of the top, whereby it may be used either in an elevated or depressed position, substantially as described.

2. In a surgical table, the combination, with the main frame, the top, and means for adjusting the latter to incline in two directions, of a single leaf connected to the top at one end thereof by a double-acting hinge, and means for adjusting it above and below the plane of the top, whereby it may be used either in an elevated or depressed position, substantially as described.

3. In a surgical table, the combination, with the table-top, of the sliding leg-rests, each rest having a hinged outer section and a brace for holding said section vertical when desired, whereby the outer end of the rest may be adjusted to different operative elevations, substantially as described.

4. The combination, with the main frame and the top, of the leg-rests G, sliding in guides *g* beneath the top, said rests each having a hinged outer section provided with a stirrup, and a brace, substantially as described.

476,517. QUARTER-BOOT FOR HORSES. JOHN CLARK and FRANK W. FLOYD, Detroit, Mich. Filed June 25, 1891. Serial No. 397,533. (No model.)

Claim.—1. A quarter-boot for horses, consisting of shield A and a double flexible apron having an inner portion B' and an outer portion B stitched together at the top and having the outer section B stitched to the upper edge of the shield and the inner section B' stitched to the lower edge of the shield, substantially as described.

2. A quarter-boot for horses, consisting of a shield A, a double

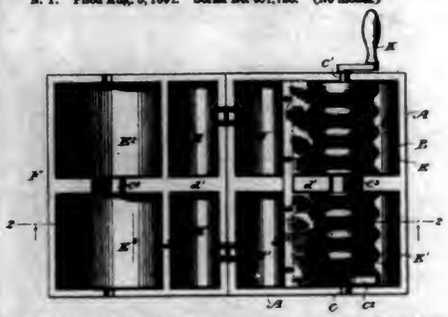


lining B and B', the outer thickness of lining stitched to the upper edge of the shield and the inner thickness stitched to the lower edge of the shield, and a cushion between said inner lining B' and the shield and outer lining, substantially as described.

3. In a quarter-boot for horses, the combination of a shield and an inner and outer apron, the outer apron adapted to prevent the accumulation of gravel in front of the shield and the inner lining adapted to flex with the foot of the animal, substantially as described.

4. A quarter-boot for horses, comprising a shield A and a double lining B B', the outer lining stitched to the upper edge of the shield, and the said boot provided with a clip adapted to pass down and beneath the hoof and help retain the boot in position on the hoof, substantially as described.

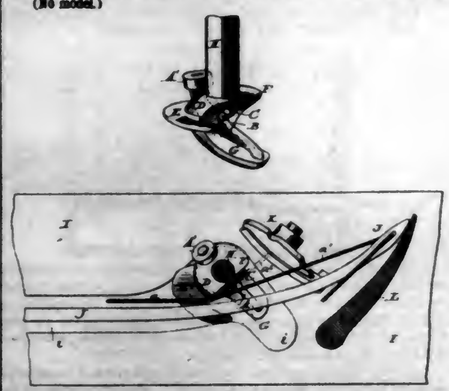
476,518. ICE-CREAM FREEZER. NICHOLAS CLARKSON, New York, N. Y. Filed Aug. 5, 1891. Serial No. 401,723. (No model.)



Claim.—1. An ice-cream freezer consisting of a box divided into two or more compartments, substantially as described, each of said compartments being fitted with a removable vessel of less depth than said compartment, and a cover for closing said box, in combination with a corrugated cylinder for containing refrigerating material, means for revolving said cylinder, and an adjustable knife or scraper, substantially as set forth.

2. In an ice-cream freezer, a rotatable cylinder for containing refrigerating material, having corrugations formed in its circumference in lines parallel to the direction of its rotation, substantially as described.

476,519. CORD-KNOTTER FOR GRAIN-BINDERS. CHARLES COLAHAN, Cleveland, Ohio. Filed Mar. 10, 1891. Serial No. 384,489. (No model.)



Claim.—1. The combination of the breast-plate provided with an open slot that permits the entering of the cord-carrying arm in placing the cord over the knotter-jaws to the cord-holder, said slot

extending beyond the knotter to permit the free discharge of the knot outwardly in the direction of the outgoing bundle, and the outwardly-pointing knotter having its pivoted jaw extending beyond the face of the fixed jaw, provided with a depression B and guard C, projecting over the depression B, wherein the cord is received as the knotter revolves and held in position to prevent its injury as the finger rises to grasp the ends in the formation of the knot, substantially as described.

2. The combination of a knotter that in its normal position has its jaws pointing outwardly to permit the discharge of the knot that is stripped therefrom by the outgoing bundle, the pivoted knotter-jaw A, extending beyond the face of the fixed jaw, and its friction actuating-roller A', said knotter-jaw having the depression B, projecting guard C, and the rigid jaw G, provided with the cord-guiding flange F, all mounted on the vertical revolving shaft H, operating substantially as described.

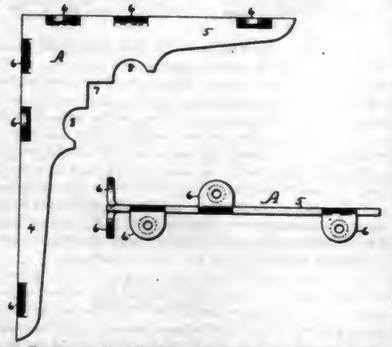
3. In a grain-binder, a flexible cord-carrying arm and means for deflecting the point of said arm after passing the knotter to carry the cord to the cord-holder located at one side of the slot in the breast-plate.

4. The combination of the open-slotted breast-plate I, the vertical revolving knotter provided with a cord-supporting finger extending across the cord-slot to receive and support the cord as the knotter-jaw points outwardly, the pivoted jaw A, and its depression B, that receives the cord from the cord-supporting finger as the knotter revolves and holds the same in proper position for the ends to be grasped by the open jaw without liability of injuring the cord in the formation of the knot.

5. The combination of the breast-plate I, the vertical revolving knotter-shaft H, its rigid jaw G, guiding-flanges D F, and cord-supporting finger E with the vibrating jaw A, depression B, and guard C, operating substantially as described.

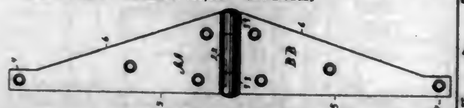
6. In combination with the guiding-standard L, a laterally flexible binder arm, and the cord-holder arranged to receive the cord therefrom and carry the same in position to be grasped by the knotter as it revolves in the formation of the knot, substantially as shown and described.

476,520. SHELF-BRACKET. THOMAS CORSCADEN, New Britain, Conn., assignor to the Stanley Works, same place. Filed Dec. 15, 1890. Serial No. 374,682. (No model.)



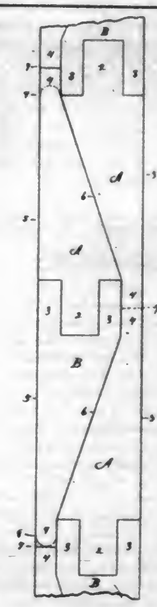
Claim.—The herein-described sheet-metal bracket, consisting of a plate-like body portion with screw-hole lugs turned edgewise therefrom at its outer edge and having its inner edge at the point between its two arms provided with a central right-angular notch and a rounded notch at each side of the same, substantially as described, and for the purpose specified.

476,521. MANUFACTURE OF HINGES. THOMAS CORSCADEN, New Britain, Conn., assignor to the Stanley Works, same place. Filed Dec. 21, 1891. Serial No. 415,908. (No model.)

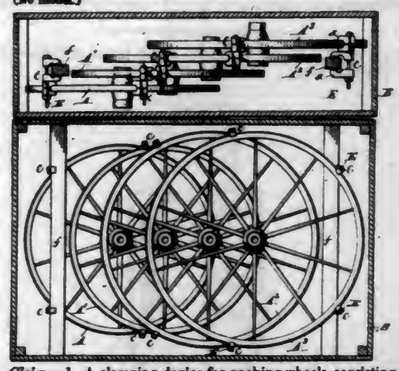


Claim.—In the manufacture of strap-hinges, the herein-described method of cutting the blanks, which consists of cutting two rows of blanks from a strip or plate of metal of a width equal to the knuckle end of one blank and tip end of another blank, the blanks in each row being arranged butt to butt and tip to tip and divided longitudinally by the oblique line 6 and one side edge of one knuckle-blank, substantially as described, and for the purpose specified.

476,521.



476,522. DEVICE FOR PACKING VEHICLE-WHEELS. FRANCIS G. DAVIS, Watertown, N. Y. Filed Jan. 11, 1892. Serial No. 417,628. (No model.)



Claim.—1. A clamping device for packing wheels, consisting of a series of connected movable jaws bearing against opposite sides of each wheel and capable of movement toward and from each other, thereby firmly grasping each wheel and also forming space-blocks between the wheels, whereby the wheels are held out of contact with each other, substantially as set forth.

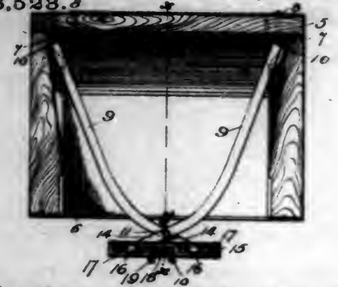
2. A device for packing wheels, comprising several clamps, each of which consists of two jaws capable of movement toward and from each other and bearing against opposite sides of the same wheel, and a tightening device whereby the clamps are attached together and tightened upon the wheels, substantially as set forth.

476,523. CATTLE-TIE. JOHN O. DAVIS, Goodhue, Minn. Filed Jan. 23, 1892. Serial No. 418,996. (No model.)

Claim.—1. The combination, with a manger, of two levers pivoted thereon and having their lower ends pivoted on one another, a short bar fastened thereon, and a chain-yoke secured on said bar for fastening the head of the animal, substantially as described.

2. The combination, with the rail of a manger, of levers 9, having their upper ends pivoted thereon, the lower ends of said levers being bent in toward one another and pivotally secured together, a bar with respect to which said levers are adjustable, and a flexible yoke secured to said bar, substantially as described.

476,523.



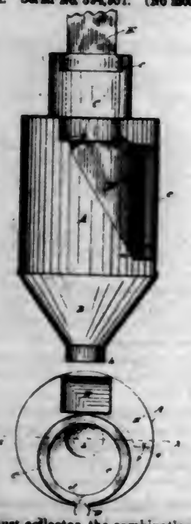
3. The combination, with a manger, of levers 9, pivoted thereon, the lower ends of said levers being pivotally connected, a bar 15, provided with slots 17, bolts 16, arranged in said slots and in the extreme ends of said levers, an eyebolt arranged in said bar, short chains 19, extending therefrom, and a yoke-bar having ends whereon said chains may be fastened, substantially as described.

4. The combination, with the bolts 7, of the levers 9, having their ends secured thereon, the short arms 14 of said levers, the pivotal bolt 11, bolts 16, the slotted bar 15, secured thereby, means for limiting the upward movement of said levers, and a yoke arranged on the bar 15, substantially as described.

5. The combination, with the bolt 7, of the levers 9, having their ends secured thereby, the short arms 14 of the said levers, pivot-bolts 11, the slotted bar 15, secured thereby, a swivel-bolt 18 in said bar 15, short chains 19, extending therefrom, and a yoke 20, having snap-hook ends to engage said chains, substantially as described.

6. The combination, with the pivoted levers, of the fastenings for the upper ends thereof, the projecting lower ends of the levers, the block arranged thereon, the chains 19, having their lower ends secured on said block, the yoke-bar 20, consisting of the grooved and longitudinally-curved bar having hooked ends 21, and the spring 22, arranged on said bar and adapted to close said hooks, wherein the links of said chains are adapted to be secured, substantially as described.

476,524. DUST-COLLECTOR. HENRY L. DAY, Minneapolis, Minn. Filed June 3, 1891. Serial No. 394,951. (No model.)



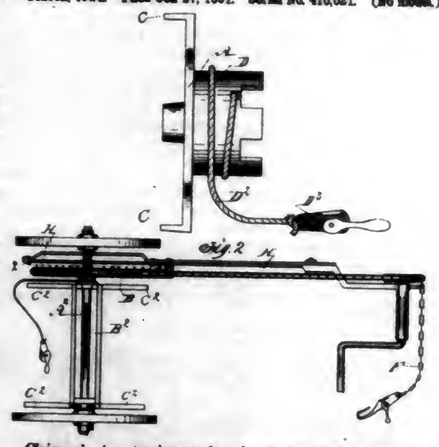
Claim.—1. In a dust collector, the combination, with a collecting-chamber, of an inlet-spout for the dust-laden air, having its body arranged to enter the said chamber parallel with the chamber's axis, and a curved or spiral delivery-section for said inlet-spout within the said collecting-chamber, substantially as described.

2. In a dust-collector, the combination, with a collecting-chamber, of an inlet-spout entering the chamber parallel with the axis of the same, and a curved or spirally-arranged delivery-section for the dust-laden air within the said chamber spread out or extended in the axial direction and contracted in the radial direction with reference to said chamber, substantially as and for the purpose set forth.

3. In a dust-collector, the combination, with a collecting-chamber, of an inlet-spout for the dust-laden air, having its body arranged to enter the said chamber parallel with the axis of the chamber and provided with a curved or spiral delivery-section within the said chamber of less extent than a complete circle, substantially as and for the purpose set forth.

4. In a dust-collector, the combination, with a collecting-chamber provided with a clean-air discharge at its receiving end and a dust-discharge at its delivery end or side, of an inlet-spout for the dust-laden air entering the receiving end of the said chamber parallel with the axis of the same and provided with a curved or spiral discharge-section of less extent than a complete circle and terminating in a discharge-mouth, which is extended in the axial direction and contracted in the radial direction with reference to said chamber, substantially as and for the purpose set forth.

476,525. WIRE REEL AND STRETCHER. GEORGE E. DIXON, Beacon, Iowa. Filed Oct. 27, 1891. Serial No. 410,021. (No model.)

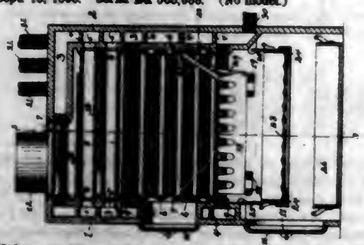


Claim.—1. An attachment for wire reeling and stretching machines, consisting of a drum adapted to be placed on an axle and having means at its one edge to engage the end portion of a spool of wire and means at its other end adapting it to clutch a sprocket-wheel, substantially in the manner set forth, and for the purposes stated.

2. An improved means for connecting a sprocket-wheel and spool of wire in a wire reeling and stretching device, consisting of a drum having an enlarged face at its one end, with flanges at its top and bottom, adapted to overlap the edges of one of the cross-pieces on the end of a spool of wire and provided at the other end with projections having interdental spaces between them, that portion of the sprocket-wheel in juxtaposition thereto having coacting projections, as required, to produce a clutch, as and for the purposes stated.

3. A combined drum and clutch consisting of a cylinder having one end open and projections on said end, adapted to enter corresponding openings in a sprocket-wheel and the other end partially closed and a bearing in the center to admit an axle, and flanged extensions at the closed end, adapted to engage the frame of a spool for fence-wire, in combination with the rotating axle of the carriage of a wire reel and stretcher and a sprocket-wheel fixed to said axle, to operate in the manner set forth, for the purposes stated.

476,526. HOT-WATER HEATER. JAMES H. DODDS, Eau Claire, Wis., assignor of one-half to Jay Harry Roberts, same place. Filed Sept. 13, 1890. Serial No. 365,688. (No model.)



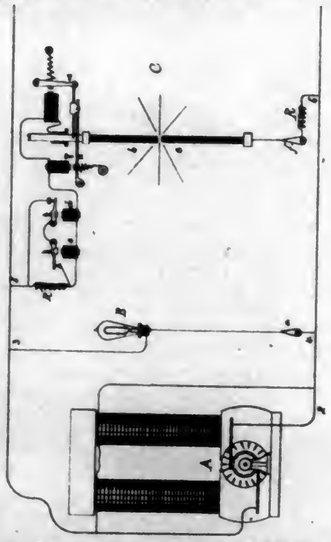
Claim.—1. The combination, with the opposite heads or water-spaces having perforations and bosses threaded with right-hand threads

on one head and with left-hand threads on the other, of the horizontal pipes or tubes which are screw-threaded to fit the same and arranged therein to form the sides and bottom of the fire-box and clamping said heads together, substantially as herein described, and for the purpose set forth.

2. The combination of the heads having openings surrounded by bosses provided with inner shoulders and a supplemental series of threaded openings, packing mounted upon the said shoulders surrounding the openings within the bosses, horizontal circulating-pipes having their ends fitting within the opposite shouldered bosses, and a series of clamping and circulating pipes having threaded ends engaging said threaded openings in the opposite heads for clamping the heads together, thereby forcing the ends of said pipes against the packing, which is protected from burning by the ends of the tubes and the bosses by being in contact with the water, substantially as set forth.

3. The combination of the heads or water-spaces, the pipes or tubes connecting the same and forming the sides and top of the fire-box, the casing having the ash-pit, and the side doors provided near their lower edges with flanges to prevent air from passing from the ash-pit in an upward direction between said doors and the adjacent pipes or tubes, substantially as set forth.

476,527. SYSTEM OF ELECTRIC LIGHTING. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 7, 1882. Serial No. 68,653. (No model.) Patented in England Aug. 19, 1882, No. 3,976; in Belgium Jan. 3, 1883, No. 60,002; in Italy Jan. 27, 1883, No. 15,026, and in France Apr. 16, 1883, No. 148,862



Claim.—1. The combination, with a constant-potential main circuit having a difference of potential greater than can be effectively used with an arc lamp, of incandescing electric lamps located in multiple-arc branch circuits from such main circuit, arc lamps in other multiple-arc branches from the main circuit, and resistances in the separate arc-lamp circuits to reduce the difference of potential effective at the electrodes of the arc lamps, substantially as set forth.

2. The combination, with a constant potential main circuit having a difference of potential greater than can be effectively used with an arc lamp, of incandescing electric lamps located in multiple-arc branch circuits from such main circuit, arc lamps in other multiple-arc branches from the main-circuit resistances in the separate arc-lamp circuits to reduce the difference of potential effective at the electrodes of the arc-lamps, and circuit-controllers for each of the multiple-arc circuits, substantially as set forth.

3. The combination, with the same circuit, of incandescent lamps in multiple-arc circuits therefrom, arc lamps also located in multiple-arc circuits therefrom, a resistance for each of such arc-lamp circuits, and a circuit-controller in each arc-lamp circuit and a magnet for operating the same in series with the arc lamp, whereby the formation of a short circuit is prevented, substantially as described.

4. The combination, with the same circuits, of incandescent lamps in multiple-arc circuits therefrom, arc lamps also located in multiple-arc circuits therefrom, a resistance for each of such arc-lamp circuits, and two electro-magnets located in each arc-lamp circuit, having armature-levers closing a shunt around such resistance at their back and front contacts, respectively, substantially as set forth.

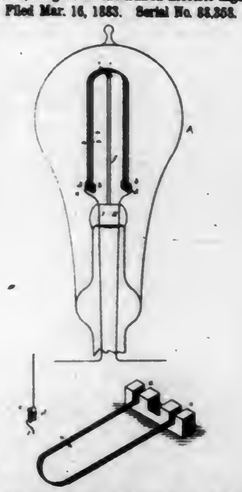
5. The combination, with the same circuits, of incandescent lamps in multiple-arc circuits therefrom, arc lamps also in multiple-arc circuit therefrom, the circuit of each arc lamp being completed only through the electrodes thereof, a circuit-controller for each arc-lamp branch, and a magnet in series with the arc lamp and operated by increase of current for operating said circuit-controller, whereby a short circuit is prevented when the lamp-electrodes touch, substantially as described.

6. The combination of a main circuit, incandescent lamps in multiple-arc circuits therefrom, an arc lamp also in a multiple-arc circuit therefrom, the circuit of the arc lamp being completed only through the electrodes thereof, a resistance, and a circuit-controller for throwing it into or out of circuit for preventing a short circuit when the electrodes of the lamp touch, substantially as described.

7. The combination of a main circuit, incandescent lamps in multiple-arc circuits therefrom, an arc-lamp also in a multiple-arc circuit therefrom, a safety device normally not operative in the arc-lamp circuit, and a controller to throw said safety device into operation for preventing a short circuit when the electrodes of the arc lamp touch, substantially as described.

8. The combination, with the same circuit, of incandescent lamps in multiple-arc circuits therefrom, arc lamps also located in multiple-arc circuits therefrom, a circuit-controller in each arc-lamp circuit, and one or more magnets for operating the same in series with the arc lamp, substantially as described.

476,528. INCANDESCENT ELECTRIC LAMP. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Mar. 16, 1883. Serial No. 88,358. (No model.)



Claim.—1. In an incandescent electric lamp, two or more separate filamentary conductors connected in multiple arc and a support consisting of a central arm having pins or devices between which the filaments are separately held, whereby they are steadied and maintained at the proper distance apart, substantially as set forth.

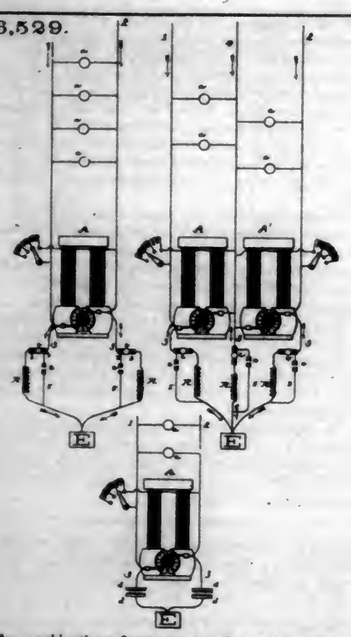
2. In an incandescent electric lamp, two or more separate filamentary electrical conductors arranged side by side and substantially parallel, masses of carbonized material at the ends of said conductors, and an intermediate support for holding the several filaments in position, substantially as set forth.

3. In an incandescing electric lamp, the combination, with the masses of carbonized viscous material forming the enlarged ends of the incandescent conductors, of the loose holders attached to the leading-in wires and the wedges inserted therein, substantially as set forth.

476,529. SYSTEM OF ELECTRICAL DISTRIBUTION. THOMAS A. EDISON, Menlo Park, N. J. Filed Oct. 10, 1883. Serial No. 108,569. (No model.)

Claim.—1. The combination of one or more dynamo-electric machines, two or more metallic conductors extending therefrom, translating devices connected in parallel circuit with such conductors, and means for forming a connection from each of said conductors to the earth without breaking its connection with the machine or machines, substantially as set forth.

476,529.



2. The combination of one or more dynamo electric machines, two or more metallic conductors extending therefrom, translating devices connected in parallel circuit with said conductors, and a ground connection from each of said conductors through a resistance, substantially as set forth.

3. The combination of one or more dynamo-electric machines, two or more metallic conductors extending therefrom, translating devices connected in parallel circuit with said conductors, an open conductor extending from each of said conductors to the ground, and means for closing said open conductors, substantially as set forth.

476,580. INCANDESCENT ELECTRIC LAMP. THOMAS A. EDISON, Llewellyn Park, N. J. Filed June 4, 1887. Serial No. 240,300. (No model.)



Claim.—1. In an incandescent electric lamp, the combination of contacts in co-operative relation, one being a spring, situated in the stem of the lamp, connected with one wire and having an opening through which said wire passes and substantially parallel with said wire, whereby the spring is normally held away from the other contact, which is connected to the other side of the circuit, whereby upon destruction of said wire the spring is allowed to make contact with the other side of the circuit, substantially as described.

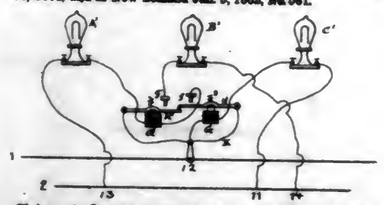
2. In an incandescent electric lamp, two springs situated in the stem of the lamp and each connected with one of the wires therein, being substantially parallel thereto and having openings through which said wires pass, the wires normally holding said springs out of contact with each other, whereby upon the destruction of said wires the springs will make contact with each other, substantially as described.

3. The combination, in an incandescent lamp, of two cut-out springs in the neck of the lamp, connected to opposite leading-in wires, said springs being bent toward each other at one end to form adjacent contact-surfaces and being perforated, the wires passing through said perforations and holding the springs apart, substantially as described.

4. In an incandescent electric lamp, the combination, with the wires leading to the filament, of two metal plates, each connected with one of said wires and situated with their surfaces near together, whereby such plates are mutually attracted by their electrification, substantially as set forth.

5. In an incandescent electric lamp, the combination, with the leading-in wires, of a spring cut-out situated in the neck or stem of the lamp, composed of parts normally insulated from each other and constructed to be released and come into contact with each other to bridge said wires by the passage of an arc down said wires, and two metal plates, each connected with one of said wires and situated with their surfaces near together, so as to be mutually attracted by their electrification, whereby the lamp is cut out when the arc does not form upon the breaking of the filament, substantially as set forth.

476,581. ELECTRIC-LIGHTING SYSTEM. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Apr. 26, 1881. Serial No. 31,794. (No model.) Patented in England June 8, 1881, No. 2,492; in Germany July 16, 1881, No. 19,922; in France July 20, 1881, No. 144,039; in Belgium July 28, 1881, No. 55,301; in Italy July 30, 1881, No. 13,197; in Portugal Aug. 24, 1881; in Victoria Sept. 6, 1881, No. 3,077; in India Oct. 11, 1881, No. 801; in Spain Nov. 2, 1881, No. 1,766; in New South Wales Nov. 5, 1881; in Austria-Hungary Nov. 9, 1881, No. 1,819; in Queensland Dec. 30, 1881, and in New Zealand Jan. 5, 1882, No. 581.

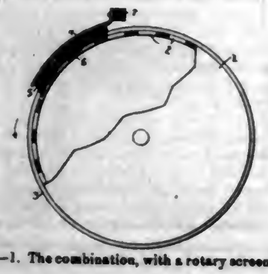


Claim.—1. In a multiple-arc system, the combination of three or more derived circuits or branches, each containing an independent translating device, a magnet in the first branch, an armature therefor, normally holding the second branch open, but closing the same when demagnetized, a magnet in the second branch, an armature therefor, which when attracted holds the third branch open, a contact for the armature, connected to the third branch, and a device for holding the armature against said contact when retracted, substantially as described.

2. In an electrical cut-out, the combination, with two electromagnets, of a spring-armature passing between them and connected to the circuit and a co-operating contact adjacent to the spring and connected to the circuit passing through the second magnet, so that upon the demagnetization of one magnet the armature will fly back and complete a circuit through the other magnet and be held thereby, substantially as set forth.

3. The combination, in a multiple-arc system, of three or more derived circuits or branches, the first branch passing from the main circuit through a lamp or other translating device, a magnet, and a switch to the other side of the main circuit, the second branch passing from the main circuit through a lamp and the same switch to the other side of the main circuit and the third branch passing through a lamp to said switch and back to the main circuit, substantially as described.

476,582. ORE-SCREENING APPARATUS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 15, 1891. Serial No. 408,756. (No model.)



Claim.—1. The combination, with a rotary screen, of a card-wire-brush cleaner resting freely on the surface thereof, substantially as described.

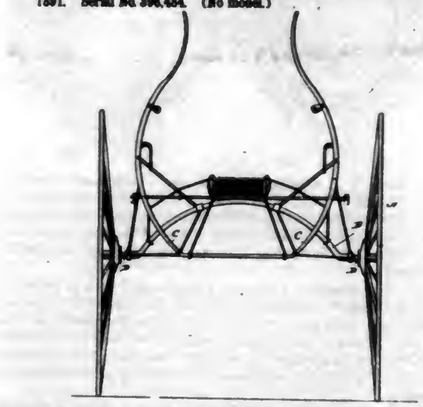
2. The combination, with an ore-screen having elongated perforations, of a card-wire-brush cleaner resting freely on the surface thereof, substantially as described.

3. The combination, with an ore-screening cylinder, of a long flexible card-wire-brush cleaner resting freely on the surface thereof, whereby it will follow the contour of the cylinder and whereby the wire teeth will snap into the perforations to remove obstructions, substantially as described.

4. The combination, with an ore-screening ribbed cylinder, of flexible card-wire-brush cleaners resting freely on the surface thereof between the ribs, whereby they will follow the contour of the cylinder, substantially as described.

5. The combination, with a rotary ore-screening cylinder, of a long flexible card-wire-brush cleaner fixed at its upper end to a suitable support and having its lower end free and resting against the cylinder, substantially as described.

476,588. VEHICLE-WHEEL. WILL A. FLEMING, Lewiston, Idaho, assignor of one-half to George W. Morrison, same place. Filed June 16, 1891. Serial No. 396,454. (No model.)



Claim.—1. In a wheel, a hub having a spoke-seat at each end thereof, in combination with a series of spokes secured within the said seats, a collar carried by the spokes, and brace-wires connecting the collar of one spoke with that of another spoke.

2. In a wheel, the combination, with the hub having at each end a flange, each forming one wall of the spoke-sockets and carrying a socket or cup, the outer ends of the said sockets being screw-threaded, the cap and inner plate detachably engaging said threads and forming the complement of the spoke-sockets, the spindle having rounded seats and a collar, the balls seated therein, and the clamping-plate engaging the inner plate and bearing against the collar of the spindle, substantially as specified.

3. In a wheel, the combination, with the hub having at each end a flange, each forming one wall of the spoke-sockets and carrying a socket or cup, the outer ends of said sockets being screw-threaded and forming the complements of the spoke-sockets, the spindle having rounded seats and a collar, the balls therein, the clamping-plate engaging the inner plate and bearing against the collar of the spindle, the nut on the outer end of the spindle and having rounded seats, and the lock on the nut having screw-threaded engagement with the spindle, substantially as specified.

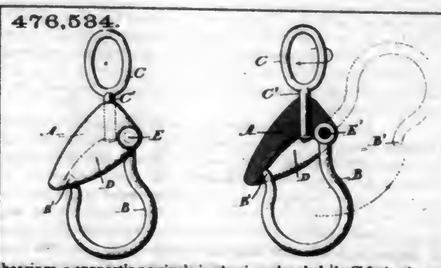
4. In a wheel, the combination of a spindle having flanges provided with bearings, a hub having bearings and sockets for vertical and inclined spokes, balls arranged in the bearings of the spindle and hub, vertical and inclined spokes fitting the sockets of the hub, a rim, and braces connecting the spokes.

5. In a wheel, the combination of a spindle having threaded outer ends and flanges or collars formed with bearings, nuts secured to the threaded ends and formed with bearings, a hub having bearings, balls arranged in the bearings of the hub and spindle, caps detachably secured to the hubs and forming spoke-sockets, spokes in said sockets, and a rim.

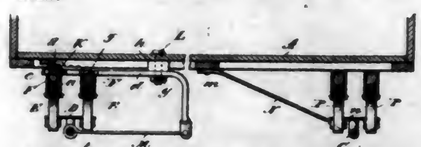
476,584. HOISTING-HOOK. ROBERT W. GIBBS, Philadelphia, Pa. Filed Nov. 13, 1890. Serial No. 371,171. (No model.)

Claim.—A hoisting-hook consisting of a shield or cover A, recessed on its under surface at one end to adapt it to cover the point of a hook and at the other end to receive the head of the hook and its bearings, a supporting swivel-ring having a headed pin C fitting loosely in a vertical recess in the shield or cover, whereby the latter may rotate thereon, and a curved hook with a thickened head B^2, having its bearings upon a bolt E, passing through said recess and secured therein by countersunk nuts, said parts being constructed, combined, and arranged substantially as set forth, in order that the reciprocation of the hook will cause its point to fall with certainty into the recess provided therefor when the device is suspended perpendicularly.

476,584.



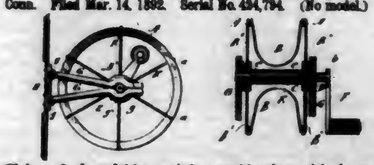
476,585. RUNNING-GEAR FOR VEHICLES. WILLIAM LE R. HAWES, Cincinnati, Ohio. Filed Dec. 11, 1891. Serial No. 414,734. (No model.)



Claim.—1. In a running-gear for vehicles, the combination, with the front axle and spring secured thereto so as to have a direct bearing thereon, of a T-plate rigidly secured on top of said spring, the cross-bar of said plate being segmental in shape and serving as the lower fifth-wheel plate and the rear extension thereof provided with an opening and having its inner end bent down at right angles to the body with a king-bolt to connect said plate to the vehicle-body, and a brace pivotally connected to the axle and to the downward extension of the T-plate on substantially a horizontal plane, in the manner and for the purpose described.

2. In a running-gear for vehicles, the combination, with the front axle and spring secured thereto so as to have a direct bearing thereon, of a T-plate rigidly secured on top of said spring, the cross-bar of said T-plate being segmental in shape and serving as the lower fifth-wheel plate and the rear extension of said plate provided with an opening at its inner end and bent down at right angles to the body, a king-bolt to connect same to the vehicle-body, a brace pivotally connected to the axle and to the downward extension of the T-plate on substantially a horizontal plane, and rear springs with braces connecting the ends of rear axle with the body of the vehicle to take the place of a reach, substantially as shown and described.

476,586. FISHING-REEL. ANDREW B. HENDRYX, New Haven, Conn. Filed Mar. 14, 1892. Serial No. 424,794. (No model.)



Claim.—1. In a fishing-reel, the combination, with the spool and base-plate thereof, of a frame composed of two corresponding stirrup-shaped pieces of wire respectively attached to the said plate, having their extremities fastened together and bowed outwardly near their extremities to form a bearing for the spool, substantially as described.

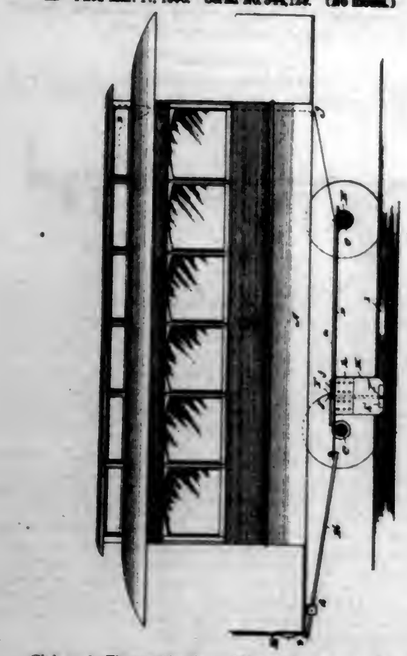
2. In a fishing-reel, the combination, with the base-plate and frame thereof, of a spool composed of a spindle, two rings virtually corresponding in size to the diameter of the spool, a series of body-wires, each bent to form a loop, and two spoke ends applied to the said rings between which their loops are located, and hubs mounted on the spindle and receiving the spoke ends of the wires, substantially as described, and whereby the said rings bind the body-wires together and stiffen the spool.

3. In a fishing-reel, the combination, with the base-plate and frame thereof, of a spool composed of a spindle, two rings, a series of body-

wires, each bent to form a loop, and two spoke ends having outwardly-turned extremities applied to the said rings between which their loops are located, and two hubs mounted on the spindles and each composed of a radially-grooved disk to receive the inner portions of the spoke ends, and a notched disk to receive the bent ends of the same, substantially as described.

4. In a fishing-reel, the combination, with the base-plate thereof, of a frame composed of two corresponding stirrup-shaped pieces of wire respectively attached to the said plate, having their extremities attached together and bowed outwardly near their extremities to form a bearing for the spool, and a spool composed of a spindle, two rings, a series of body-wires, each bent to form a wide open loop, and two spoke ends applied to the said rings between which their loops are located, and two hubs mounted on the spindle near the ends thereof and each composed of a radially-slotted and a notched disk receiving the spoke ends of the body-wires between them, substantially as described.

476,537. STATION-INDICATOR. RUDOLPH G. HOURTEST, Chicago, Ill. Filed Mar. 17, 1890. Serial No. 344,129. (No model.)



Claim.—1. The combination, with a car having a street or station indicator mechanism therein and a cable connected with the operative mechanism, of the indicator conducted beneath the car and having its other end secured with a crank-operating lever, said lever vertically positioned and adapted to rock in its bearings and having an end thereof projected to pass into the slot of a cable railway, and a yielding tripping projection secured in the conduit, substantially as described.

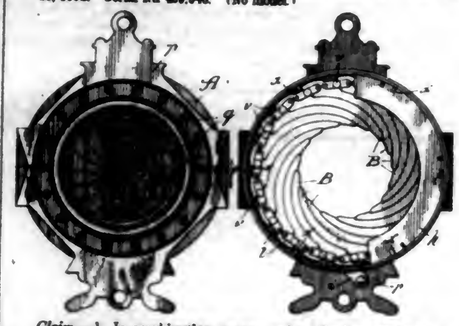
2. A means for operating indicators on cable railways, comprising, in combination with an indicator mechanism located in the car, a cable connected with the operative mechanism of the indicator conducted beneath the car and having its other end secured with an operating-lever, said lever being vertically positioned and adapted to rock in its bearings, and a guard-plate projected from the car into the slot and adapted to shield the operating-lever, substantially as described.

3. The combination of a car, a depending pivoted trip-rod, an obstructing device in the path of the trip-rod, means for moving the trip-rod at will out of the plane of the obstructing device while the car is in motion without disturbing or changing the indicators, street or station indicators adapted to be changed to display names, and a connection between the trip-rod and the street or station indicators to effect their change as the trip-rod is swung, substantially as described.

4. A means for operating a street or station indicator, comprising, in combination, a supporting-bar having an end thereof pivotally connected with one of the axles and its opposite end projected to bear upon the other axle, and means under the control of the driver for rocking said lever on its pivot whereby to elevate the supporting-bar, a crank-lever vertically positioned and adapted to rock in a bearing on the supporting-bar, a cable connecting the crank member with the operating mechanism of the car, and the bent end of said crank-lever projecting to engage the tripping device located along the line of way, substantially as described.

5. In means for operating street or station indicators, the combination of a rocking bell-crank lever having one member connected by a flexible medium with the operating mechanism of an indicator and having a bent end thereof projected through a slot in the track to engage a tripping projection located below said slot, and a spring adapted to turn said rocking lever, so as to permit the bent end thereof to be removed from the slot, substantially as described.

476,538. MEDAL. WILLIAM W. HUNT, Chicago, Ill. Filed Apr. 18, 1892. Serial No. 429,648. (No model.)



Claim.—1. In combination, a case and a diaphragm formed of leaves pivoted on a circle or approximate circle and interconnected to open and close at their inner ends in such a circle, means for opening and closing the diaphragm, and a suitable design or the like caused to appear or disappear by opening or closing the diaphragm, substantially as described.

2. In combination, a case and a diaphragm formed of leaves pivoted on a circle or approximate circle and interconnected to open and close at their inner ends in such a circle, means for opening and closing the diaphragm, and a suitable design or the like formed on the surface of the diaphragm and caused to disappear and reappear, respectively, by opening and closing the diaphragm, substantially as described.

3. In combination, a case having a circular series of openings about its face and a diaphragm formed of connected leaves provided with characters to coincide with said openings, the leaves being pivoted on a circle or approximate circle to open and close at their inner ends in such a circle, means for opening and closing the diaphragm, and a suitable design or the like caused to appear or disappear by opening or closing the diaphragm, substantially as described.

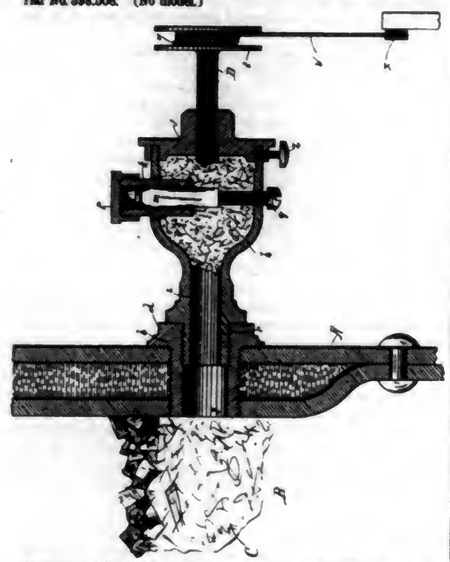
4. In combination, a case having a circular series of openings about its face and a diaphragm formed of connected leaves provided with characters to coincide with said openings, the leaves being pivoted on a circle or approximate circle to open and close at their inner ends in such a circle, means for opening and closing the diaphragm, and a suitable design or the like formed on the surface of the diaaphragm and caused to disappear and reappear, respectively, by opening and closing the diaphragm, substantially as described.

5. A medal comprising, in combination, a case, a diaphragm within the case, formed of leaves B, pivoted on a circle or approximate circle and interconnected by links *l*, means for opening and closing the diaphragm, and a suitable design or the like caused to appear or disappear by opening or closing the diaphragm, substantially as described.

6. A medal comprising, in combination, a case having a circular series of openings *q* about the center of its face-plate, a diaphragm within the case, formed of leaves B, interconnected by links *l*, and provided on their head portions *m'* with characters to coincide with said openings, the leaves being pivoted at their said head portions on a circle or approximate circle, means for opening and closing the diaphragm, and a suitable design or the like caused to appear or disappear by opening or closing the diaphragm, substantially as described.

7. A medal comprising, in combination, a case A, having a circular series of openings *q* about the center of its face-plate, a diaphragm within the case, formed of leaves B, interconnected by links *l*, and provided on their head portions *m'* with characters to coincide with said openings, the leaves being pivoted at their said head portions on a circle or approximate circle, stops *o*, at which the leaves are held in place in the case, a handle *i*, extending from one of the leaves to work the diaphragm, and a suitable design or the like on the surface of the diaphragm and caused to disappear and reappear, respectively, by opening and closing the diaphragm, substantially as described.

476,539. AUTOMATIC FIRE-KINDLER FOR STEAM FIRE-ENGINES. SAMUEL G. JACKSON, Haverhill, Mass. Filed July 6, 1891. Serial No. 398,506. (No model.)



Claim.—1. The fire-box of the engine, in combination with the case or chamber opening through a wall thereof, an explosive element in said chamber, a rotary plunger projecting into the chamber, actuating mechanism therefor, and a frangible vessel containing an explosive element disposed in the path of said plunger, substantially as described.

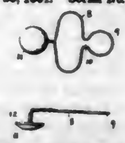
2. The fire-box of the engine and the tube *g*, tapping the same, in combination with the metallic chamber A, opening into said tube and provided with the cap *j*, and the plunger D, working in said cap, and means for actuating said plunger, and the frangible vessel *m*, disposed in said chamber in the path of said plunger, substantially as specified.

3. In a steam fire-engine, the chamber *h*, opening through the water-jacket of said engine and provided with the tube *k* and adjustable stop *q*, in combination with the rotary plunger D, working in the wall of said chamber, and the frangible vessel *m*, disposed in said tube and resting in said stop, substantially as described.

4. In a steam fire-engine, a chamber *h*, opening into the fire-box thereof, in combination with a screw-plunger D, working in a wall of said chamber and provided with the pulley *t*, a cord *v*, connecting said pulley with a pulley on a fixed support, and a frangible vessel for containing an explosive disposed within said chamber in the path of said plunger, substantially as described.

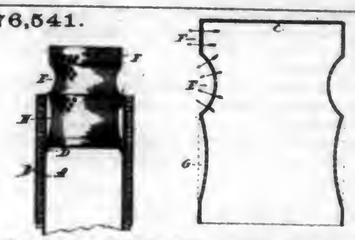
5. The fire-box of the engine, in combination with the explosive-chamber *h*, opening through said jacket, the screw-plunger D, working in the head of said chamber, and means for actuating said plunger, and the vessel *m*, disposed in a guide tube or socket, as *k*, in said chamber in the path of said plunger, substantially as described.

476,540. LINK CUFF-FASTENER. CHARLES F. JENKS, Williamsport, Pa., assignor of two-thirds to Philip R. Shaw and Frank R. Sackett, same place. Filed Mar. 23, 1891. Serial No. 386,043. (No model.)



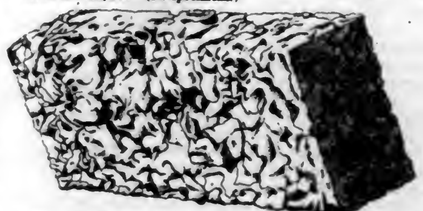
Claim.—A fastener for securing a cuff with separate parallel edges to a sleeve, comprising a loop 9, a body 8, connected to said loop by a contracted neck, a right-angle section 12, said parts being made of a single wire bent in the form indicated, and a stud or button on the section 12, substantially as described.

476,541. CENTRAL-DRAFT LAMP. AUGUSTUS H. JONES, Meriden, Conn., assignor to the Meriden Bronze Company, same place. Filed Nov. 9, 1891. Serial No. 411,336. (No model.)



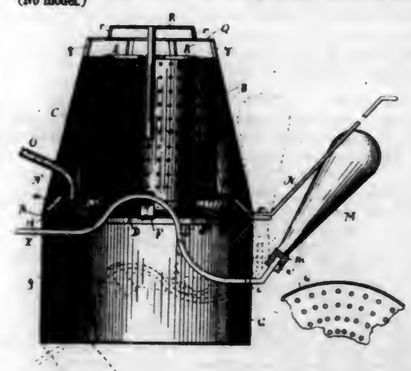
Claim.—An air-distributer for a central-draft lamp, consisting of a tube of somewhat less diameter than the internal diameter of the central-draft tube, the distributer closed at its upper end, its side walls perforated and the sides constructed with an annular groove E, concave in vertical section upon its outside and so as to leave a plain perforated space between the upper edge of the said groove E and the top of the distributer, and also constructed with a second annular concave groove G below the groove E, the perforations extending through both the grooves, substantially as described.

476,542. ARTIFICIAL STONE. JOHANN H. KLEB, Newark, N. J., assignor of one-half to Fred W. Kleb, same place. Filed Aug. 21, 1891. Serial No. 403,280. (No specimens.)



Claim.—The herein-described artificial stone, which consists of coke or other similar material derived from combustion, combined with shell, cement, and gypsum mixed with water, substantially as and for the purposes set forth.

476,543. VAPOR-BURNER. JOHN A. LANNERT and WILLIAM R. JEAVONS, Cleveland, Ohio. Filed July 20, 1891. Serial No. 400,054. (No model.)



Claim.—1. In a vapor-burner, the upper supporting-frame, the movable burner-bowl, and the lever and a support therefor, and a spring cross-arm on the lever forming a rest for the bowl, substantially as described.

2. In a vapor-burner, the stationary upper part, the detachably-secured hood, the burner-bowl, and the supporting-lever therefor, substantially as described.

3. The stationary upper part of the burner, the lever and a support therefor and a counter-weight on the lever, the movable bowl, and the elastic cross-arm on the lever bearing up the bowl, all combined and operating substantially as described.

4. In a vapor-burner of the kind described, the movable bowl and the lever supporting the bowl, having a fixed counter-weight to balance the bowl in working position and a support for the lever, substantially as described.

5. In a vapor-burner, the supporting-lever, the detachable bifurcated counter-weight, and means to keep the said weight from turning, substantially as described.

6. The stationary upper frame, the movable bowl, the lever and a support therefor, and a counter-weight detachably fixed on the lever, substantially as described.

7. The movable bowl, the lever for supporting the bowl, and a weight thereon at an angle to a vertical plane, substantially as described.

8. In a vapor-burner, the movable bowl, the lever for supporting the bowl, the bifurcated counter-weight for said lever, and a support for the lever, substantially as described.

9. In a vapor-burner, the fixed upper part and the pivoted supporting-lever having an upward extension to form a stop against the said fixed part, substantially as described.

10. In a burner, a fixed upper frame and a hood suspended from said frame, in combination with a burner-bowl and a lever pivoted in said hood and supporting said bowl, substantially as described.

11. In a vapor-burner, the stationary upper part of the burner, the detachably-secured hood, a movable burner-bowl, and a pivoted lever for the bowl, substantially as described.

12. The stationary upper part of the burner, a hood hinged thereto, a movable burner-bowl, and a lever for the bowl, pivoted in the hood, substantially as described.

13. The stationary part of the burner, in combination with a hood suspended therefrom, a lever with a counter-weight pivoted on the hood, and a bowl with a flue resting on said lever, substantially as described.

14. The burner provided with the hood about its bottom, a burner-bowl, a lever to support the said bowl, and a door for the hood, fixed to said lever, substantially as described.

15. In a vapor-burner, the fixed upper part, the hood beneath the same, having an opening in its side, and the door to close said opening, substantially as described.

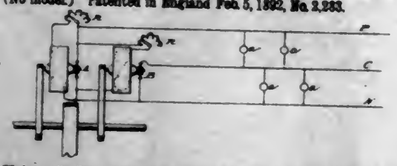
16. In a vapor-burner, the fixed upper frame, the hood affixed thereto having a perforated bottom, and the door for said hood, substantially as described.

17. In a vapor-burner, a supply-pipe having at its end a combined conductor for the oil and shield for the vapor, said part formed with tapered or inclined sides running substantially to a point, substantially as described.

18. The burner provided with perforated tubes forming a combustion-chamber between them and a flame-deflecting ring over said combustion-chamber and above said tubes, substantially as described.

19. The burner provided with perforated tubes forming a combustion-chamber between them, combined with a flame-deflecting ring arranged over said combustion-chamber, and a protecting-shield above said ring, substantially as described.

476,544. SYSTEM OF ELECTRICAL DISTRIBUTION. HARRY W. LEONARD, New York, N. Y. Filed Dec. 28, 1891. Serial No. 416,293. (No model.) Patented in England Feb. 5, 1892, No. 2,283.



Claim.—1. In a system of series multiple electrical distribution, the combination of main conductors, groups of translating devices in series between them, a compensating conductor connected between the translating devices, an electrical generator connected between the said main conductors, and a compensating device of constant difference of potential serving either to receive or produce electrical energy as the excess of load shifts from one side of the compensating conductor to the other, such device being connected between the compensating conductor and one of said main conductors, the compensating conductor being connected with the other main conductor through the translating devices only, substantially as set forth.

2. In a system of series multiple electrical distribution, the combination of main conductors, groups of translating devices in series between them, a compensating conductor connected between the translating devices, an electrical generator connected between the said main conductors, and a compensating device connected between the compensating conductor and one of said main conductors only and serving as the excess of load shifts from one side of the system to the other to either take energy from the prime motor and supply it to the side of the system with which it is connected or take energy from its side of the system and supply it to the prime motor, said compensating device having a constant difference of potential between its terminals, substantially as set forth.

3. In a series of electrical distribution, the combination of main conductors, groups of translating devices in series between them, a compensating conductor connected between the translating devices, an electrical generator connected between the said main conductors, and a constant-potential dynamo-electric machine connected between the compensating conductor (the compensating conductor being connected with the other main conductor through the translating devices only) and one of the other conductors and operating either as a motor or as a generator as the excess of load shifts from one side of the compensating conductor to the other, substantially as set forth.

4. In a system of electrical distribution, the combination of main conductors, groups of translating devices in series between them, a compensating conductor connected between the translating devices, a dynamo-electric machine connected between the said main conductors, and a constant-potential dynamo-electric machine connected between the compensating conductor and one of the other conductors, both of said dynamo-electric machines being operated by the same prime source of power, substantially as set forth.

5. In a system of electrical distribution, the combination of main conductors, groups of translating device in series between them, a compensating conductor connected between the translating devices, a generator having an electro-motive force and current capacity suitable to operate all the translating devices under conditions of perfect balance, and a compensating device of constant difference of potential serving either to receive or produce electrical energy as the excess of load shifts from one side of the compensating conductor to the other, such device being connected between the compensating conductor and one of said main conductors, the compensating conductor being connected with the other main conductor through the translating devices only, substantially as set forth.

6. In a system of electrical distribution, the combination of main conductors, groups of translating devices in series between them, a compensating conductor connected between the translating devices, a dynamo-electric machine connected between the said main conductors, and a constant-potential dynamo-electric machine connected between the compensating conductor and one of the other conductors, both of said dynamo-electric machines being mechanically connected with the same engine or prime motor, substantially as set forth.

7. In a system of electrical distribution, the combination, with three-wire mains, of a two-wire feeder, a generator connected with said feeder and having sufficient electro-motive force to supply the translating devices in series, and an auxiliary generator of different electro-motive force from the main generator and connected between the compensating conductor and one of the outer conductors of one of the three-wire mains, substantially as set forth.

8. In a system of series multiple electrical distribution, the combination of main conductors, groups of translating devices in series between them, a compensating conductor connected between the translating devices, an electrical generator connected between the said main conductors, and a compensating device serving either to receive or produce electrical energy as the excess of load shifts from one side of the compensating conductor, such device being connected between the compensating conductor and one of said main conductors and being provided with means for regulating its electro-motive force, substantially as set forth.

9. In a system of series multiple electrical distribution, the combination of main conductors, groups of translating devices in series between them, a compensating conductor connected between the translating devices, an electrical generator connected between the said main conductors, and a dynamo-electric machine connected between the compensating conductor and one of the other conductors, provided with means for regulating its electro-motive force and operating either as a motor or as a generator as the excess of load shifts from one side of the compensating conductor to the other, substantially as set forth.

10. The combination of the three conductors, the groups of translating devices in series between the outer conductors, the main generator connected between said outer conductors, the compensating device connected between the middle conductor and one of the outer ones, and a safety device operated by abnormal variations of current in said conductor to reduce the electro-motive force of said main generator, substantially as set forth.

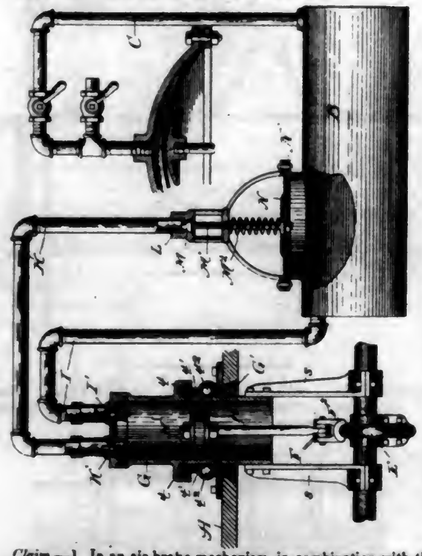
11. The combination of the three conductors, the groups of translating devices in series between the outer conductors, the main generator connected between said outer conductors, the compensating device connected between the middle conductor and one of the outer ones, a resistance in the field-circuit of said main generator, and an electro-magnetic device operated by abnormal currents in the middle wire for throwing said resistance into circuit, substantially as set forth.

476,545. SADDLE-BAGS AND HAND-CASE. WINFIELD S. MARSHALL, Centralia, Ill. Filed Mar. 26, 1891. Serial No. 386,492. (No model.)



Claim.—In a saddle-bags and hand-case, two boxes connected by a strap and adapted to be placed together back to back, in combination with a handle the ends of which are divided and secured permanently to one box and adapted to engage fastenings on the other box, substantially as set forth.

476,546. AIR-BRAKE. FRANK W. MILLS, Chicago, Ill., assignor to the Mills Improved Pneumatic Brake Company, same place. Filed Aug. 3, 1891. Serial No. 402,102. (No model.)



Claim.—1. In an air-brake mechanism, in combination with the air-reservoir for the brakes, pump mechanism for pumping air into the reservoir, and means, substantially as described, actuated by the operation of the brake-applying mechanism for bringing the pump-piston into engagement with a part moving with the wheel, whereby the application of the brakes shall cause the pump to eject air into the reservoir to renew the supply therein, substantially as described.

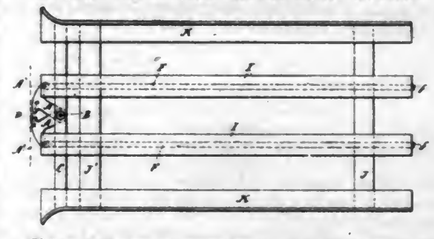
2. In an air-brake mechanism, the combination, with the air-reservoir, of a pump actuated by the revolution of the car-axle, pipe I for conveying air from the pump to the reservoir, pipe K for admitting air into the pump and provided at its opposite end with a valve, and a diaphragm connected with the valve-stem and operated by the pressure in the reservoir, whereby the reduction of pressure in the reservoir shall open the valve to admit air to the pump-cylinder and the access of sufficient pressure to the cylinder shall close the valve admitting air to the pump, substantially as described.

3. In an air-brake mechanism, in combination with the reservoir B, the vertically-arranged pump G, having a vertically-sliding support on the car-floor, and means for operating the same, substantially as described.

4. In an air-brake mechanism, in combination, the reservoir B, the eccentric E, moving with the wheel, the shoe F^3, normally held in engagement with the eccentric, an air-pump and its piston, and a connection between the piston and shoe, pipes leading from the pump-cylinder to the reservoir B and the open air, respectively, and an automatic valve in the open-air pipe actuated by the pressure in the reservoir to open or close communication of said pipe with the open air, substantially as described.

5. In an air-brake mechanism, in combination with the reservoir B and diaphragm N, located thereon to receive the air-pressure therefrom, and with the pump-cylinder G, the outlet-pipe I, leading from the pump to the reservoir, the inlet-pipe K for the pump, and the spring-controlled valve M at the open end of the pipe K, having its valve-stem connected with the diaphragm N, substantially as and for the purpose described.

476,547. CHARGING-WAGON. CHARLES S. MORSE, Waterbury, Conn., assignor to the Benedict & Burnham Manufacturing Company, same place. Filed Jan. 4, 1892. Serial No. 416,962. (No model.)



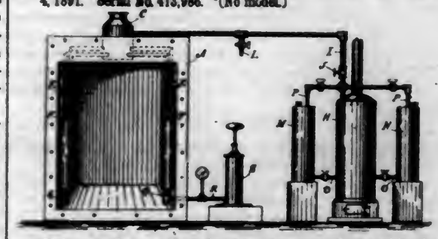
Claim.—1. A charging-wagon having at its rear end one or more projecting gripping-jaws and a rod extending from each of said jaws to the front of the wagon, where it is upturned for engagement by a tray when the same is in its final position upon the wagon, substantially as described, and whereby the wagon may be coupled with the front wall of a furnace while it is being loaded and automatically uncoupled therefrom by a tray drawn out upon it from the furnace.

2. A charging-wagon having at its rear end two projecting pivotal gripping-jaws, a rod extending from each of said jaws to the forward end of the wagon and there upturned for engagement by a tray when the same is in its final position upon the wagon, and one or more springs connected with the jaws for urging them into their closed position, substantially as described.

3. In a charging-wagon, the combination, with the frame thereof, having two longitudinal beams forming part of its bed, of two pivotal gripping-jaws projecting from the rear end of the wagon, two rods respectively attached to the said jaws and extending forward through the said beams in which they are housed to the front of the wagon, where they are upturned for engagement by the tray when in its final position on the wagon, and one or more springs connected with the jaws for urging them into their closed positions, substantially as described.

4. A charging-wagon having one or more gripping-jaws projecting from its rear end, a rod extending from each of said jaws to the front of the wagon, where it is upturned, one or more springs connected with the jaws for urging them into their closed positions, and angled side pieces outwardly curved at their rear ends to give right direction to the tray as it enters upon the wagon, substantially as described.

476,548. DEPURATOR. JOHN NIXON, Farmland, Ind. Filed Dec. 4, 1891. Serial No. 413,966. (No model.)



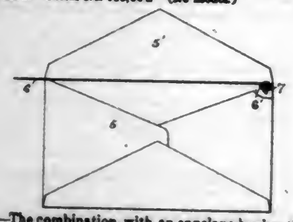
Claim.—1. In a medicated-vapor apparatus, the combination of the closed chamber, the vessel mounted in the top of said chamber and provided with an absorbent filling, the steam-supply pipe connected with said vessel, the distributing-pipes extending from said vessel beneath the top and along the sides of said chamber, and the drip-pipe arranged to receive the ends of said distributing-pipes, all arranged to co-operate substantially as set forth.

2. In a medicated-vapor apparatus, the combination of the closed chamber, the boiler, the steam-pipe connecting said chamber and boiler, the pair of reservoirs arranged adjacent to said boiler, suitable pipes connecting the lower ends of the reservoirs with the interior of the

boiler, pipes connecting the upper ends of the reservoirs with said steam-pipe, and suitable stop-valves arranged in said pipes between the reservoirs and the boiler and between the reservoirs and the steam-pipe, all arranged to co-operate substantially as and for the purpose set forth.

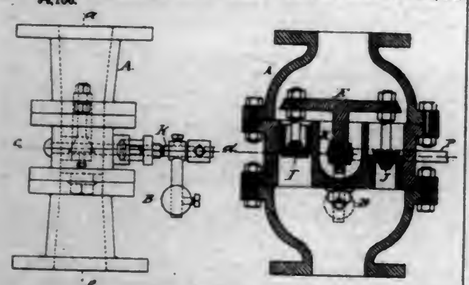
3. In a medicated-vapor apparatus, the combination of the closed chamber, the air-pump connected therewith, the vessel mounted in the top of the chamber, provided with an absorbent filling and connected with the interior of the chamber by a series of distributing-pipes, the steam-pipe connecting the boiler and said vessel, the boiler, and the medicine-reservoirs connected with said boiler, all arranged to co-operate substantially as and for the purpose set forth.

476,549. ENVELOPE. DENIS NORMAND, Providence, R. I. Filed Jan. 21, 1892. Serial No. 418,804. (No model.)



Claim.—The combination, with an envelope having the flap 5′ and the cord 6, of the metallic fastening device consisting of a central portion 7′ and the prongs 7^2 and 7^3, and the notches 7^4, adapted to secure one end of the cord to the envelope on the line of the fold of the flap 5′, substantially as described.

476,550. GOVERNOR EQUILIBRIUM-VALVE. JOSEPH FILET, Liege, Belgium. Filed Jan. 9, 1892. Serial No. 417,542. (No model.) Patented in Belgium Dec. 24, 1890, No. 93,235, and Mar. 12, 1891, No. 94,106.



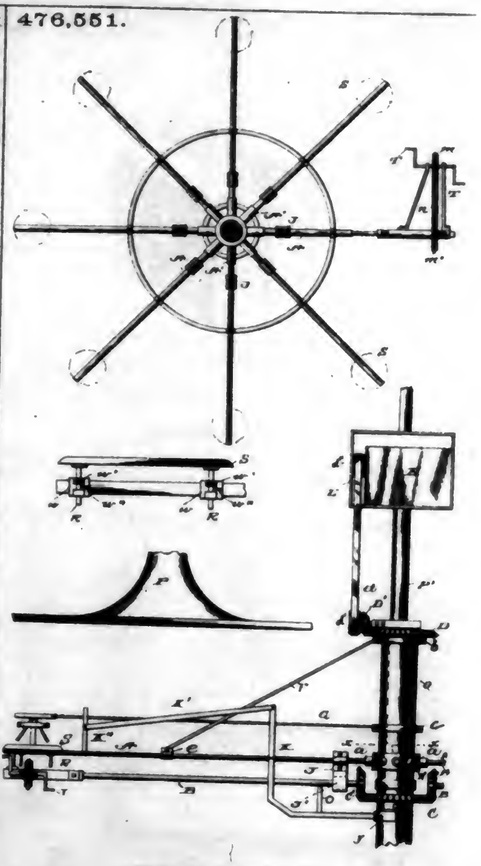
Claim.—The herein-described device for regulating the passage of steam, comprising a valve-case having two valve-openings, two valves oppositely arranged to each other for opening and closing said openings, a rock-shaft between said openings having its outer end projecting through the casing, a T-shaped beam having an end of its vertical portion fixed to said rock-shaft and the ends of its horizontal portion connected to said valves, a lever fixed to the outer end of said rock-shaft, a weight in said rock-shaft serving as a counter-weight to said levers, and a pivoted rod for connecting said levers with a governor, all arranged, combined, and operating substantially as shown and described.

476,551. MERRY-GO-ROUND. EDGARD POHL, Louisville, Ky. Filed Oct. 16, 1891. Serial No. 408,934. (No model.)

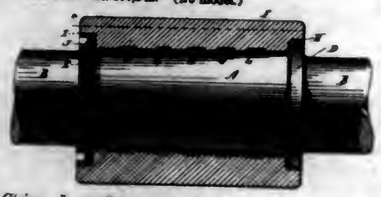


Claim.—In a device of the described class, the standard P, collar A′, arms A, shaft B, gears C and C′, seat S, the brake-rods K″ K′ K, and shoe Y, in combination with suitable actuating devices for rotating said shaft B, as and for the purpose specified and shown.

476,551.



476,552. ROLLING-MILL ROLL. WILLIAM POLLARD, Ansonia, Conn., assignor of one-half to Franklin Farrell, same place. Filed Oct. 2, 1891. Serial No. 407,542. (No model.)

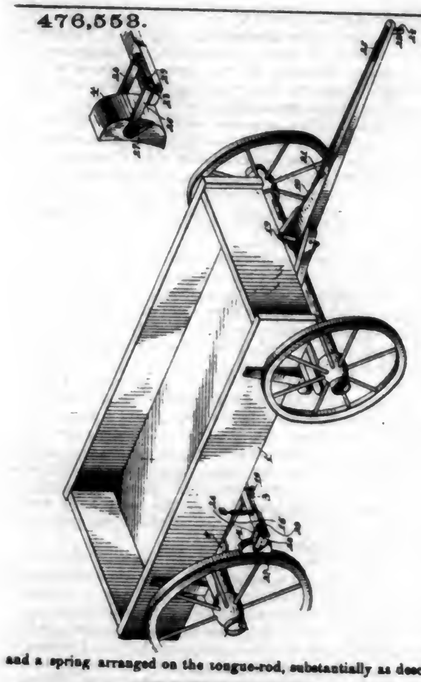


Claim.—In a roll for rolling metal, the combination of a shaft, a steel sleeve thereon, the said sleeve constructed with substantially annular grooves upon its inside and so as to form recesses between the sleeve and the surface of the shaft, the inner surface of the sleeve between the said recesses corresponding in diameter to the diameter of the shaft and so as to form a series of bearings between the sleeve and shaft substantially throughout the length of the sleeve, said sleeve being hardened upon its outside, but the inner portion or body of the sleeve left in its normal condition, substantially as described.

476,553. WAGON-BRAKE. TIMOTHY P. RANDALL, Adrian, Mich., assignor of one-half to George Kastler, same place. Filed Mar. 4, 1891. Serial No. 383,750. (No model.)

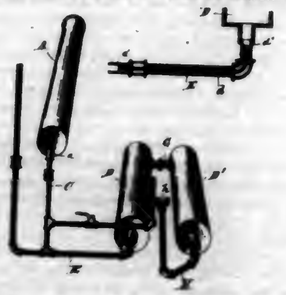
Claim.—The combination of a running-gear having a tongue provided at its outer end with a vertical slot, a brake-bar, brake-shoes arranged at the ends of the brake-bar and provided in their sides with triangular recesses, link-plates pivoted in the recesses and connected to the brake-bar, brake-levers connected with the brake-bar, the tongue-rod connected with the brake-levers and having its front end bent downward and arranged in said slot and provided with a recess,

476,558.



and a spring arranged on the tongue-rod, substantially as described.

476,554. APPARATUS FOR CONVERTING PETROLEUM, &c., INTO GAS AND BURNING THE SAME. GEORGE F. RANDOLPH, Little Genesee, N. Y. Filed Sept. 30, 1891. Serial No. 407,318. (No model.)



Claim.—1. The apparatus for the purpose herein described, comprising the oil-reservoir A, feed-pipe C, discharging at its lower end into a steam-supply pipe E, the primary retort or cylinder D, into which said pipe E leads, a jet-pipe *d* within said pipe E and terminating just outside the retort D, the secondary retort or cylinder D′, connected with the cylinder D, the discharge-pipe H, terminating in a burner, the hot-air supply-pipe lying in proximity to said burner at one end and at the opposite end communicating with the pipe C above its point of discharge, and the regulating cocks or valves in the several pipes, substantially as specified.

2. The combination, with the fire-box of a steam boiler or generator, of the retorts or cylinders D D′, arranged side by side therein and connected one with the other, a steam-supply pipe leading from the dome of the boiler to the primary cylinder D and forming a mixing-chamber, a jet-pipe in said steam-pipe and terminating at one end just outside said cylinder, an oil-supply pipe discharging into the pipe E around said jet-pipe, a hot-air pipe, one end of which is in proximity to the burner, communicating with the oil-supply pipe above the point of discharge, and the necessary regulating cocks or valves, substantially as specified.

476,555. MANUFACTURE OF SOAP WITH WHEY. ALBERT W. RENSTRÖM, Mälhammar, assignor to the Lactocrine Company, Limited, Stockholm, Sweden. Filed Aug. 26, 1890. Serial No. 363,348. (No specimens.) Patented in Sweden Nov. 24, 1889, No. 2,290.

Claim.—1. The herein-described process of making soap, consisting in concentrating whey up to the consistency of porridge or to dryness, combining fat and alkali to produce a saponified mass, and intimately combining the concentrated whey and the saponified mass, substantially as set forth.

2. A soap into which concentrated whey is mixed, substantially as set forth.

476,556. MANUFACTURE OF SOAP. ALBERT W. RENSTRÖM, Mälhammar, Sweden. Filed Jan. 16, 1892. Serial No. 418,311. (No specimens.) Patented in Sweden Nov. 24, 1889, No. 2,290; in England May 30, 1890, No. 7,854; in France Sept. 15, 1890, No. 205,854, and in Canada May 9, 1891, No. 36,560.

Claim.—1. The herein-described process of making soap, consisting in adding concentrated milk and whey to a previously-saponified soap mass, substantially as set forth.

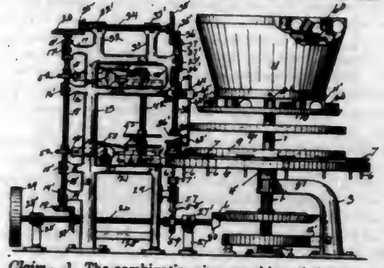
2. A soap containing a mixture of concentrated milk and whey, substantially as set forth.

476,557. SOAP. ALBERT W. RENSTRÖM, Mälhammar, Sweden. Filed Jan. 16, 1892. Serial No. 418,312. (No specimens.) Patented in Sweden Nov. 24, 1889, No. 2,290; in England May 30, 1890, No. 7,854; in France Sept. 15, 1890, No. 205,854, and in Canada May 9, 1891, No. 36,560.

Claim.—1. The herein-described process of making soap, consisting in adding concentrated milk to a previously-saponified soap mass and combining to secure a homogeneous soap product, substantially as set forth.

2. A soap containing concentrated milk as an element, substantially as set forth.

476,558. CAN-CRIMPING MACHINE. JOHN W. ROBERTS, Cleveland, Ohio, assignor of one-half to the Sherwin-Williams Company, same place. Filed Jan. 29, 1892. Serial No. 419,720. (No model.)



Claim.—1. The combination, in a machine of the character described, of a vertical shaft having an intermittent rotary movement, a carrier-frame fixed upon the shaft, a series of disks having spindles journaled around the carrier-frame, a friction-face around the carrier-frame, and a friction-bearing for the friction-face with a friction-wheel mounted upon the vertical shaft and a friction-bearing for the friction-wheel, substantially as shown and described.

2. The combination, in a machine of the character described, of a carrier-frame having an intermittent rotary movement, spindles having disks on their tops, said spindles projecting through journals around the carrier-frame, a rotating disk above the orbit of the spindles having disks, a plunger below the orbit of the spindles, and a cam adapted to raise the plunger vertically as the spindles successively come over the plunger to grip a can between the disk on the spindle and the rotating disk above, substantially as shown and described.

3. The combination, in a machine of the character described, of a carrier frame having an intermittent rotary movement, spindles having disks on their tops, said spindles projecting through journals around the carrier-frame, a rotating disk above the orbit of the spindles having disks, a plunger below the orbit of the spindles, said plunger consisting of a vertical bar having a cap on its top and a yielding bearing between the bar and cap, and a cam adapted to raise the plunger as the spindles successively come over the plunger, substantially as shown and described.

4. In a machine of the character described, a sliding block, a cam to reciprocate the sliding block, adjustable connection between the cam and sliding block, and a yielding bearing between said adjustable connection and sliding block, substantially as described.

5. The combination, in a machine of the character described, of a shaft carrying crimping-disks, sliding blocks having journals in which said shaft rotates, cams to reciprocate the sliding blocks and shaft, adjustable connection between the cams and sliding blocks, and yielding bearings between said adjustable connections and the sliding blocks, substantially as shown and described.

6. In a machine of the character described, a sliding block having

a bore therein, a rod to enter said bore and having its opposite end threaded, a yielding bearing back of said rod within the bore of the sliding block, a bar having a bore into which the threaded end of the rod enters, a cross-opening in the bar, and a wheel in said cross-opening, the wheel being bored axially and threaded to screw upon said rod, substantially as described.

7. In a machine of the character described, a shaft carrying crimping-disks, sliding blocks having journals in which the shaft rotates, bores in the sliding blocks, rods entering said bores and having their opposite ends threaded, springs in the bores of the sliding blocks back of the rods, bars having bores into which the threaded ends of the rods enter, and cross-openings in the bars, worm-wheels in said cross-openings and bored axially and threaded, the worm-wheels being screwed upon the rods, and worm-gears to turn the worm-wheels, substantially as described.

8. The combination, in a machine of the character described, of sliding blocks, cams to reciprocate the sliding blocks, adjustable connections between the cams and sliding blocks, and yielding bearings between the adjustable connections and sliding blocks with means for gripping and revolving cans while being crimped, substantially as shown and described.

9. The combination, in a machine of the character described, of a shaft carrying crimping-disks, sliding blocks having journals in which said shaft rotates, cams to reciprocate the sliding blocks and shaft, and adjustable connection between the cams and sliding blocks with a carrier-frame having an intermittent rotary movement, spindles having disks journaled around the carrier-frame, a rotating disk supported above the orbit of the spindles having disks, a plunger below the orbit of the spindles, and a cam adapted to raise the plunger as the spindles successively come over the plunger, substantially as shown and described.

10. The combination, in a machine of the character described, of a shaft carrying crimping-disks, sliding blocks having journals in which said shaft rotates, cams to reciprocate said sliding blocks and shaft, any suitable connection between the cams and sliding blocks, and yielding bearings between said connection and sliding blocks with a carrier-frame having an intermittent rotary movement, spindles having disks journaled around the carrier-frame, a rotating disk supported above the orbit of the spindles having disks, a plunger below the orbit of the spindles, and a cam adapted to raise the plunger as the spindles successively come over the plunger, substantially as shown and described.

11. The combination, in a machine of the character described, of sliding blocks, cams to reciprocate the sliding blocks, adjustable connections between the cams and sliding blocks, and yielding bearings between said adjustable connections and sliding blocks with a carrier-frame that has an intermittent rotary movement, spindles having disks journaled around the carrier-frame, a rotating disk supported above the orbit of the spindles having disks, a plunger below the orbit of the spindles, and a cam adapted to raise the plunger as the spindles successively come over the plunger, substantially as shown and described.

12. The combination, in a machine of the character described, of a supporting machine-frame, a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the driving-shaft and the vertical shaft having cams thereon, a vertical shaft rotated by driving connection between it and the vertical shaft having cams thereon, a vertical shaft carrying crimping-disks, and reciprocating connection between the vertical shaft carrying crimping-disks and the cams on the vertical shaft that is operated by the driving-shaft, substantially as shown and described.

13. The combination, in a machine of the character described, of a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the driving-shaft and the vertical shaft having cams thereon, a vertical shaft rotated by driving connection between it and the vertical shaft having cams thereon, a vertical shaft carrying crimping-disks, sliding blocks having bores therein and having journals in which the vertical shaft carrying crimping-disks rotates, rods having one end in the bores of the sliding blocks and the opposite end threaded, bars into which the threaded ends of the rods enter, and wheels bored axially and threaded to screw upon said rods, substantially as shown and described.

14. The combination, in a machine of the character described, of a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the horizontal driving-shaft and the vertical shaft having cams thereon, a vertical shaft that is rotated by driving connection between it and the vertical shaft having cams thereon, a vertical shaft carrying crimping-disks, sliding blocks having bores therein and having journals in which the vertical shaft carrying crimping-disks rotates, rods having one end in the bores in the sliding blocks and the opposite end threaded, yielding bearings within the bores of the sliding blocks back of the rods, bars into which the threaded ends of the rods enter, and wheels bored axially and threaded to screw upon the said rods, substantially as shown and described.

15. The combination, in a machine of the character described, of a vertical shaft carrying a carrier-frame, disks having spindles passing through journals around the circumference of the carrier-frame, means for giving said shaft and frame an intermittent rotary movement, and means for raising successively the disks having spindles as the shaft and carrier-frame stop after each intermittent movement with a supporting machine-frame, a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the driving-shaft and the vertical shaft having cams thereon, a vertical shaft rotated by driving connection between it and the vertical shaft having cams thereon, a vertical shaft carrying crimping-disks, and reciprocating connection between the vertical shaft carrying crimping-disks and the cams on the vertical shaft that is operated by the driving-shaft, substantially as shown and described.

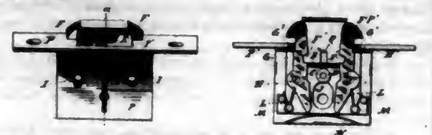
16. In a machine of the character described, a vertical shaft carrying a carrier-frame, disks having spindles passing through journals around the circumference of the carrier-frame, a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the driving-shaft and the vertical shaft having cams thereon, a vertical shaft supported above the orbit of the disks having spindles, driving connection between said shaft and the vertical shaft carrying cams, a vertical shaft carrying crimping-disks, reciprocating connection between the vertical shaft carrying crimping-disks and the cams on the vertical shaft that is operated by the driving-shaft, a plunger below the orbit of the disks having spindles, means for raising the plunger to elevate the spindles having disks as they successively come over the plunger, and driving mechanism between the horizontal driving-shaft and the vertical shaft to which the carrier-frame is attached, said driving mechanism being adapted to give the carrier-frame and the vertical shaft upon which it is fixed an intermittent rotary movement, substantially as shown and described.

17. The combination, in a machine of the character described, of a vertical shaft carrying a carrier-frame, a friction-face around the carrier-frame, a friction-bearing for the friction-face of the carrier-frame, disks having spindles passing through journals around the circumference of the carrier-frame, means for giving said shaft and frame an intermittent rotary movement, and means for raising successively the disks having spindles as the shaft and carrier-frame stop after each intermittent movement with a supporting machine-frame, a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the driving-shaft and the vertical shaft having cams thereon, a vertical shaft rotated by driving connection between it and the vertical shaft having cams thereon, a vertical shaft carrying crimping-disks, and reciprocating connection between the vertical shaft carrying crimping-disks and the cams on the vertical shaft that is operated by the driving-shaft, substantially as shown and described.

18. In a machine of the character described, a vertical shaft carrying a carrier-frame, a friction-face around the carrier-frame, a friction-bearing for the friction-face of the carrier-frame, disks having spindles passing through journals around the circumference of the carrier-frame, a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the horizontal driving-shaft and the vertical shaft having cams thereon, a vertical shaft supported above the orbit of the disk having spindles, driving connection between said shaft and the vertical shaft carrying cams, a vertical shaft carrying crimping-disks, reciprocating connection between the vertical shaft carrying crimping-disks and the cams on the vertical shaft that is operated by the driving-shaft, a plunger below the orbit of the disks having spindles, means for raising the plunger to elevate the spindles having disks as they successively come over the plunger, and driving mechanism between the horizontal driving-shaft and the vertical shaft to which the carrier-frame is attached, said driving mechanism being adapted to give the carrier-frame an intermittent rotary movement, substantially as shown and described.

19. In a machine of the character described, a vertical shaft carrying a carrier-frame, disks having spindles passing through journals around the circumference of the carrier-frame, a supporting machine-frame, a horizontal driving-shaft, a vertical shaft having cams thereon, driving connection between the driving-shaft and vertical shaft, a horizontal shaft above the machine-frame, driving connection between the vertical shaft carrying cams and the horizontal shaft above the machine-frame, a vertical shaft rotated by driving connection between it and the upper horizontal shaft, a vertical shaft carrying crimping-disks, reciprocating connections between the vertical shaft carrying crimping-disks and the cams on the vertical shaft that is operated by the driving-shaft, a plunger below the carrier-frame carrying the spindles with disks attached, means for raising the plunger to elevate the spindles and disks as they successively come over the plunger, and driving mechanism between the horizontal driving-shaft and the vertical shaft that carries the carrier-frame, the driving mechanism being adapted to give the cam-carrier and the vertical shaft upon which it is fixed an intermittent rotary movement, substantially as described.

476,559. LOCK. JAMES ROCHE, Terryville, Conn., assignor to the Eagle Lock Company, same place. Filed Nov. 2, 1891. Serial No. 410,599. (No model.)



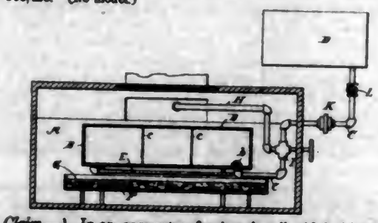
Claim.—1. In a lock, the combination, with a housing always projecting beyond the face-plate of the lock with which it is combined, of two combined bolts and tumblers having their inner edges notched at opposite points and their hooked outer ends normally projecting laterally from the end of said housing and always projecting beyond the said face-plate, and automatic secondary locking members to normally lock the said combined bolts and tumblers positively in their projecting positions, the said secondary locking members being located between the combined bolts and tumblers and co-operating with the notched inner edges thereof and constructed to be acted upon by a key, substantially as described.

2. In a lock, the combination, with the back and face plates thereof, of a reciprocal housing, bolts normally projecting laterally from the ends of the same and moving therewith, and secondary locking members connected with the said movable housing and the back plate for normally locking the bolts positively in their projected positions, substantially as described.

3. In a lock, the combination, with the back and face plates thereof, of a reciprocal carrier provided with a bolt-like housing and constructed with an opening for the key by which it may be operated, a spring arranged to push the said carrier outwardly, one or more combined bolts and tumblers pivoted to the said carrier on opposite sides of the said opening, respectively, and having their hooked outer ends entered into the said housing, the inner edges of their outer ends being correspondingly notched and their inner ends shaped to be engaged by the key, a spring-actuated cam-plate moving with the said carrier and having independent lateral movement, a spring-actuated guard extending laterally across the bolts above their fulcra and having an inwardly-projecting bridge adapted to hold the bolts apart in their projected positions, and a stop mounted in the said back plate to arrest the guard from movement with the combined bolts and tumblers, substantially as set forth.

4. In a lock, the combination, with a housing, of combined bolts and tumblers having their inner edges correspondingly notched, and secondary locking mechanism consisting of a laterally-movable spring-actuated cam-plate having a key-opening and provided upon its upper edge with two cam-fingers, a spring-actuated vertically-movable guard constructed with two cam-notches corresponding to the said fingers and provided with an inwardly-projecting bridge for engagement with the inner edges of the bolts above their fulcra, and a stop for co-operation with the guard, the bridge whereof is moved into alignment with said notches for the retraction of the hooked upper ends of the combined bolts and tumblers, substantially as described.

476,560. APPARATUS FOR BURNING PETROLEUM-OILS, &c. OSWALD R. ROUTH, Jersey City, N. J. Filed Oct. 17, 1890. Serial No. 368,428. (No model.)

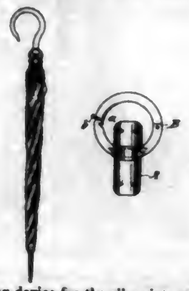


Claim.—1. In an apparatus for burning liquid fuel in stoves or other heaters, the combination, with a supply-tank, of a gas-forming chamber, a pipe connecting them, another pipe having valved connection therewith and having an open end adapted to enter a flue, and a burner located beneath the chamber and connected therewith.

2. In an apparatus for burning liquid fuel in stoves or other heaters, the combination, with a supply-tank, of a gas-forming chamber, a pipe connecting them, an outlet-pipe connected thereto, a three-way cock at the junction adapted to open communication only between the tank and chamber or between the chamber and outlet-pipe, and a burner located beneath the chamber and connected thereto, so as to receive its supply therefrom.

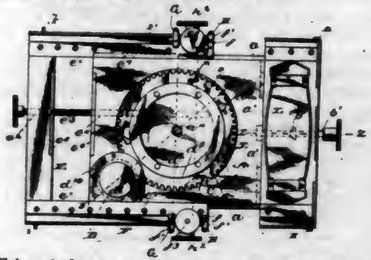
3. The combination, with the tank D, chamber B, pipe C, perforated tube or pipe E, and kindling-burner G, constructed and arranged as described, of the branch pipe H, extended from the pipe C, and the check-valve in said pipe C, all substantially as and for the purpose herein set forth.

476,561. CATCH FOR RIB-POINTS OF UMBRELLAS. OTTO SCHMIDT, Berlin, Germany. Filed Aug. 28, 1890. Serial No. 363,301. (No model.)



Claim.—A fastening device for the rib-points of umbrellas, consisting of a divided ring B, secured to the umbrella-handle by a swivel-joint, said ring being hinged at one point and separable at another point, a notched spring on the under side of the movable portion, a notch on the under side of the portion which is attached to the handle and which is engaged by the notched spring, and a releasing-pin *b* for forcing the notched spring open, substantially as described.

476,562. PHOTOGRAPHIC CAMERA. WILLIAM SCORER, Havant, England. Filed July 22, 1889. Serial No. 318,345. (No model.) Patented in England Aug. 31, 1888, No. 12,573.



Claim.—1. In a photograph-camera, the combination, with the front sliding base A and the annular plate *d'*, having teeth C, of pinion D, adapted to engage said teeth C for actuating said plate *d'* and the screw *b'* for securing the front to said base, substantially as set forth.

2. In a photograph-camera, the combination, with the auxiliary base E, consisting of the cross-piece *e* and side pieces *e'*, of plates *e²*, secured to pieces *e'*, adapted to receive flanges *a* on the base A, ways F on said side pieces *e'*, blocks *f*, having T-heads *f'*, and set-screws A^4, plates G and H, secured to sliding block *f*, and screw-threaded pins h' on said plates G, substantially as set forth.

3. In a photograph-camera, the combination, with the sliding base A, the front of said camera hinged to said base, of auxiliary base E, consisting of cross-pieces *e* and side pieces *e'*, plates *e²* and ways F on said side pieces, T-headed blocks *f*, having set-screws A^3, adapted to slide on ways F, and plates G and H, engaging the blocks *f*, substantially as set forth.

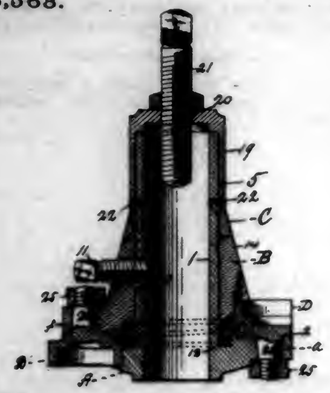
4. In a camera, the combination, with the base A and auxiliary base E, said base A adapted to move in said auxiliary base, of an annular plate *d'*, having teeth C, pinion D, adapted to engage said teeth C for actuating said plate *d'*, and screw *e⁴*, adapted to move said base A, substantially as set forth.

476,563. CUTTER-HEAD. SAMUEL J. SHIRK, Milton, Pa. Filed Oct. 3, 1891. Serial No. 407,638. (No model.)

Claim.—1. A circular bit for a cutter-head, consisting of a bit and a threaded clamping-bolt integral with each other, the clamping-bolt being formed with a tapering portion between the threaded ends and the bottom of the bit, substantially as described.

2. In a cutter-head, the combination of a lower section consisting of a central threaded hub formed at its base with radially-projecting flanges having bit-seats on their upper faces and circular openings between the flanges, into which the bits of the upper section pro-

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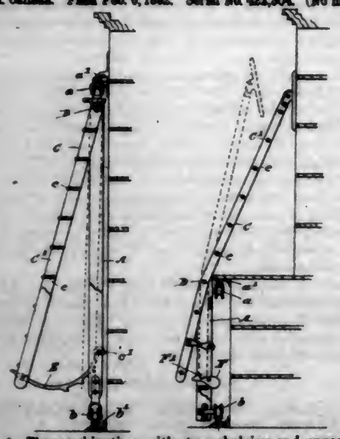
ject, an adjustable upper section consisting of a sleeve to fit the hub of the lower section and formed at its base with radially-projecting flanges having bit-seats on their under faces and circular openings between the flanges, into which the bits of the lower section project, and means for adjusting and holding the upper section, substantially as described.

3. In a two-part cutter-head, the combination of a lower section adapted to carry the bits to make the upper carve of the cut and an upper adjustable section adapted to carry the bits to make the lower carve of the cut, bits on the lower section, and bits on the upper section intermediate of the others, substantially as described.

4. In a cutter-head, the combination of a hub having radial flanges at its base, circular bits on the flanges, and circular spaces between the flanges, an upper adjustable section fitted on the hub of the lower section and formed with radial flanges, and circular spaces between the flanges to take in the bits on the lower section, and bits on the under face of the flange of the upper section, arranged to project in the spaces between the flanges of the lower section, substantially as described.

5. The combination, with a matcher cutter-head having radial flanges formed with bit-seats having central tapering bolt-holes, of a circular cutting-bit having a clamping-bolt integral with the bit, said clamping-bolt being formed tapering adjacent to the bottom of the bit to fit the tapering bolt-holes in the flanges on the head, and a nut to clamp the bolt, substantially as described.

476,564. ROLLING STEP-LADDER. CHARLES H. D. SINCENNES, Montreal, Canada. Filed Feb. 6, 1892. Serial No. 422,304. (No model.)



Claim.—1. The combination, with store-shelving and upper and lower guide-railing, of a traveling carrier-frame confined between said upper and lower guide-railing and a swinging step-carrying portion carried by and traveling with said frame.

2. The combination, with store-shelving and upper and lower guide-railing, of a traveling carrier-frame confined between said upper and lower guide-railing, and a pivoted step-carrying portion or frame, and means for holding same at an angle of inclination.

3. In a rolling step-ladder, the combination, with store-shelving and upper and lower guide-railing, of a traveling carrier-frame confined between said upper and lower guide-railing, a step-carrying portion or frame pivoted at its upper end to said carrier-frame, and a pivoted curved prop adapted to hold such step portion at an angle of inclination.

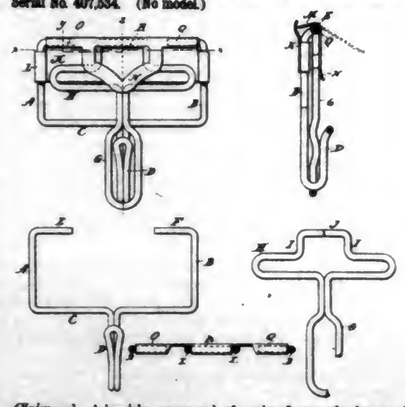
4. The combination, with store-shelving and upper and lower guide-railing, of a traveling carrier-frame confined between said upper and lower guide-railing and a movable step-carrying or ladder portion.

5. The combination, with store-shelving and upper and lower guide-railing, of a vertical traveling carrier-frame carrying vertical rollers confined between said guide-railing and an inclined step-carrying or ladder portion.

6. In a rolling step-ladder, the combination, with store-shelving and upper and lower guide-railing, of a traveling carrier-frame confined between said upper and lower guide-railing, a pivoted step-carrying portion, and a curved ratchet-prop E and pin adapted to hold such step portion at an angle of inclination.

7. The combination, with store-shelving and upper and lower guide-railing, of a traveling carrier-frame confined between said guide-railing, and a pivoted step-carrying portion pivoted about midway of its length to said carrier-frame, and holdfast devices for retaining the ladder in its normal position or at an angle for use.

476,565. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Oct. 2, 1891. Serial No. 407,534. (No model.)



Claim.—1. A buckle composed of a wire frame, the lower side of the frame having a depending hook therefrom, the ends of the wire upon the upper side turned inward into longitudinal line with each other, but so as to leave a space between the said two ends, combined with a wire guard-lever bent and extending down to form a guard for the said hook of the frame, the ends of the wire of the said guard-lever turned inward to form a pintle-bar and standing between and in line with the inwardly-turned ends of the frame, combined with a clamping-bar made fast to the frame and projecting upward and a sheet-metal jaw-lever constructed with tongues closed around the turned-in ends of the frame and around the pintle-bar of the guard-lever, so as to form a hinge between the said guard-lever and the frame, the said jaw-lever being free to swing on the said turned-in ends of the frame and upon the pintle portion of the guard-lever independent of said guard-lever, the said jaw-lever constructed with a downward projection to form a handle by which it may be so turned independent of the guard-lever, substantially as described.

2. A buckle having a frame made from wire provided with a depending hook upon its lower side, the two ends of the frame turned inward at the top, but so as to leave a space between, a guard also made from wire doubled, its two upper ends bent at right angles to the line of the guard and so as to stand in the upper side of the frame between the two ends of that side of the frame, with a lever made from sheet metal closed around the said two ends of the upper side of the frame and around the portion of the bar between the ends of the upper side of the frame to form a hinge between the guard, the frame and the lever, with a clamping-bar against which the said lever is adapted to clasp the strap, substantially as described.

3. A buckle consisting of a frame made from wire, the ends of the wire turned inward to form the upper side of the frame, but so as to leave a space between the said ends, a swinging part also made from wire bent to form a longitudinal portion standing between the two ends of the upper side of the frame, combined with a sheet-metal clamping-lever closed around the said two ends of the upper side of the frame and around the horizontal portion of the said swinging part and a clamping-bar against which the said lever is adapted to clasp the strap, substantially as described.

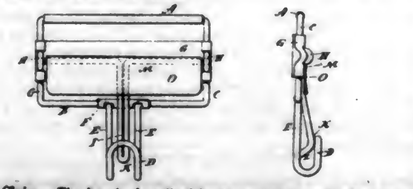
476,566. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Dec. 21, 1891. Serial No. 415,768. (No model.)



Claim.—1. A buckle having the frame made from wire composed of two sides and two ends, a bearing-bar longitudinally across the frame and secured at the two ends of the frame, a lever made from wire doubled to form the loop or handle of the lever, and the two branches turned to the right and left and at the ends offset in a horizontal plane, the extreme ends of the offsets turned to the right and left to form pivots by which the lever is hung to the frame, substantially as described, and whereby the jaw portion of the lever is made elastic.

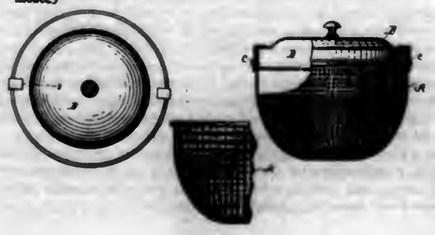
2. A buckle consisting of a frame, with a bearing-bar extending across the frame, the bar offset rearward between the ends of the frame, combined with a lever made from wire bent at the center to form a handle, the two branches turned to the right and left from the said handle and in diagonal lines from each other, so as to produce substantially a V shape, the said branches bent forward near their ends to form offsets G in a horizontal plane and the extreme ends from these offsets turned to the right and left and into line with each other to form pivots H H, the said lever hung in the said frame by the said pivots, and whereby the said diagonal branches of the lever offset from the pivots is adapted to impinge upon the bearing-bar, substantially as described

476,567. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Feb. 8, 1892. Serial No. 420,701. (No model.)



Claim.—The herein-described buckle, consisting of a frame made from wire, composed of an upper side A, lower side B, and two ends C C, the lower side bent downward at the center to form two branches terminating in and so as to form a depending hook, the two branches of the hook distant from each other, so as to leave a space between them, combined with a pressure-bar extending across the rear of the frame and secured to the two ends thereof, a spring-tongue made from wire doubled to form the tongue I, the two branches turned to the right and left to form the pivot-bar J, the ends of the said bar J secured to the ends of the frame, with a lever M, hung to said bar, the jaw portion of the lever turned rearward, so as to operate in connection with the pressure-bar, and the lever outside the pivot-bar, to which it is hung, turned downward against the said tongue to form a handle, the said tongue elastic and bent at its lower end to form a yielding guard within the mouth of the hook, substantially as described.

476,568. FLOATING TEA OR COFFEE EXTRACTOR. JOSHUA SMITH, Casco, Mich. Filed Jan. 18, 1892. Serial No. 418,419. (No model.)



Claim.—A floating coffee or tea extractor consisting of a dish-like base provided with a series of perforations graduated in size from the top to the bottom, said perforations being largest at the top, a cover having a dead-air chamber, and means for attaching said cover to the base, substantially as set forth.

476,569. HORSE-COLLAR. GEORGE I. SHELL and LUTHER GILLETTE, Little Falls, N. Y. Filed Jan. 9, 1892. Serial No. 417,528. (No model.)



Claim.—A horse-collar consisting of the small and large rolls, the latter having a strip secured thereto and projecting outward from the said roll, and a pad formed of felt and rubber having one edge secured to said strip and the other edge secured to the rolls, substantially as described.

476,570. FUSE-BLOCK FOR ELECTRIC CIRCUITS. ELMER A. SPERRY, Chicago, Ill. Filed Mar. 19, 1891. Serial No. 385,581. (No model.)



Claim.—1. A revoluble block of insulating material having a hub in contact with a conductor, terminals *f*, mounted upon the block and insulated from each other and adapted by a rotation of the block to be brought successively into contact with the spring in contact with the terminal, as J, fuse-wires connecting the hub to the terminals *f*, and a hand-wheel, as W, on the shaft of the block, adapting it to manual rotation, in combination with a supporting-base.

2. In combination with a base of insulating material, a revoluble fuse-block mounted thereon, flat-faced terminals, as *f*, mounted on the fuse-block, terminals, as N and D, mounted on the base, one of which is connected with the ground and the other to the line-wire, fuse-wires mounted upon the block connecting the terminals *f* with the terminal N, and a terminal, as J, mounted upon the block in proximity to the terminal D for static discharge, and a spring S, attached to the terminal J, adapted to press in succession against the terminals *f* and adjust the position of the block to that of best contact between the spring and the terminals *f* and to maintain it there.

476,571. THERMOMETER-CASE. WILLIAM A. SPURGEON, Muncie, Ind. Filed Feb. 26, 1891. Serial No. 383,229. (No model.)



Claim.—1. A thermometer-case provided with an internal seat about midway between its ends, a follower adapted to close against said seat, and a spring whereby the follower is pressed against the seat, substantially as specified.

2. A thermometer-case consisting of a tube of suitable diameter for about half its length to receive the thermometer, the other portion being enlarged and grooved or corrugated longitudinally, the said portion being provided with a follower, and means for holding the follower normally to its seat, substantially as specified.

3. A thermometer-case provided with an internal seat about midway between its ends, a follower adapted to close against said seat, a spring adapted to press said follower against said seat, and a removable cap pressing said follower against its seat and closing the lower end of the thermometer-case, substantially as shown and described.

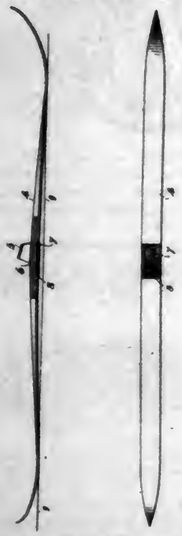
4. The combination, with a thermometer-case having longitudinal grooves or corrugations extending about half the length of the case, of a follower mounted in said case, and a spring actuating the same, substantially as specified, for the purpose set forth.

5. A thermometer-case consisting of a hollow tube closed at one end and adapted to contain an antiseptic fluid, and a porous spring-actuated follower located within said tube and adapted to retain the

antiseptic fluid within the case when the thermometer is withdrawn and to permit said fluid to pass through said follower and surround the thermometer when the same is inserted and the follower-spring compressed, substantially as shown and described.

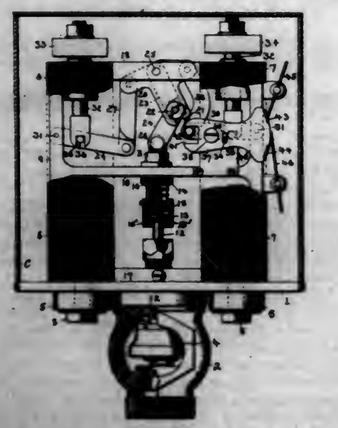
6. The combination, with the thermometer-case closed at one end and provided at its open end with a screw-thread and a porous spring-actuated follower located in said case, of a thermometer adapted to enter the case, and a cap engaging the screw-thread and adapted to force the thermometer against the follower and hold the same against the tension of the spring, substantially as shown and described.

476,572. SNOW-SHOE. CARL O. STORK, New York, N. Y. Filed Feb. 24, 1892. Serial No. 422,626. (No model.)



Claim.—A snow-shoe formed with an elastic or pliant bottom or sole arched longitudinally and provided upon the bottom at or near the center of the arch with a non-adjustable friction device or plate permanently secured thereto and normally lying out of contact with the sliding surface or ground and adapted to be brought into action by springing or pressing down the arch of the shoe, substantially as and for the purpose set forth.

476,573. ELECTRICAL VALVE-CONTROLLER. JOHN V. STOUT, Easton, Pa. Filed Dec. 22, 1891. Serial No. 415,905. (No model.)



Claim.—1. The combination of a valve, a toggle-joint connected thereto, a fulcrum for said toggle and means for applying power to the toggle, comprising a lever pivoted at said fulcrum, an armature connected to said lever, and a magnet adapted to move said armature, substantially as described.

2. The combination of a valve and valve rod or stem, a toggle-joint connected thereto, a fulcrum for said toggle, a lever pivoted at said fulcrum and connected to the toggle-joint for applying power thereto, two magnets and armatures, and power-transmitting devices between said armatures and toggle-lever, substantially as described.

3. The combination of a valve and valve-stem, a toggle-joint connected at one end to said stem and at the other end to a fulcrum, one or more arms connected to the upper member of the toggle and projecting from the fulcrum, and means consisting of magnets and armatures suitably connected thereto for applying power at the end of said arm or arms to bend or straighten the toggle, thereby opening or closing the valve, substantially as described.

4. The combination, in a valve-controller, of a valve and valve-stem, a toggle-joint connected at one end to said stem and at the other end to a fulcrum, one or more arms connected to the upper member of the toggle and projecting from the fulcrum, and means consisting of magnets and armatures and power-transmitting connections between said armatures and projecting arms for applying power to said arm or arms to bend or straighten the toggle, thereby opening or closing the valve, substantially as described.

5. The combination of a valve and valve-rod, a toggle-joint, one end of which is connected to said rod and the other end of which is connected to a fulcrum, magnets and armatures, and power-transmitting devices between said armatures and toggle-joint for operating the latter to open or close the valve, said armatures being movable in lines substantially parallel with the direction of movement of the valve, substantially as described.

6. The combination of a valve and valve-rod, a toggle comprising two levers 23 24, suitably pivoted, the T piece or pieces centered on the fulcrum and engaging with the knuckle-pin of the toggle, and means for applying power to the cross-head of said T-pieces, substantially as described.

7. The combination of a valve and valve-rod, a toggle, one end of which is connected to the valve-rod, the other end of which is connected to a fulcrum, two magnets and armatures, and power-transmitting mechanism between the armatures and toggle for bending and straightening the same to open and close the valve, said armatures being balanced, whereby the power required to move them is reduced, substantially as described.

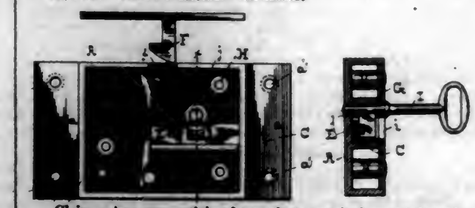
8. The combination, with the base-plate 1, having one or more ribs formed integral therewith and constituting the yoke or yokes of a magnet or of magnets, of magnet poles and coils secured to said base-plate over the rib or ribs, substantially as described.

9. The combination of the valve supported outside of the base-plate, the valve-rod and operating-toggle, the magnets, and the armatures connected to the toggle for operating it, the yokes of said magnets being composed of ribs integral with the base-plate, substantially as described.

476,574. LUBRICANT. WILSON H. STRICKLER, Dodge City, Kans. Filed Apr. 6, 1891. Serial No. 387,733. (No specimens.)

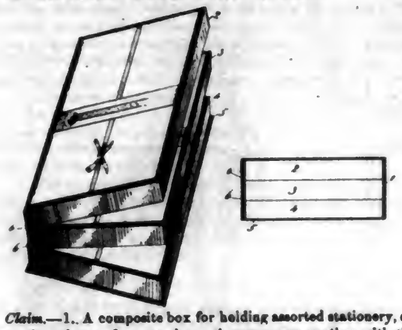
Claim.—A composition of pulverized asbestus, soapstone, mica, and oil, substantially as described.

476,575. LOCK. GEORGE C. SOCRO, Baltimore, Md. Filed Jan. 20, 1892. Serial No. 418,732. (No model.)



Claim.—As a new article of manufacture, a lock consisting of a casing provided with a shelf cast integral therewith, a hooked catch pivoted within the casing and adapted to bear against the inner end of the shelf when in its normal position, a spring to hold the pivoted catch against the shelf, a sliding bar supported on said shelf and engaging the pivoted catch, said bar having a lug provided with a recess into which the bit of the key is adapted to enter to move the sliding bar, and thereby operate the pivoted catch, a second hooked catch adapted to be secured to the lid of a box or crate and to enter an opening in the wall of the casing and automatically interlock with the pivoted hook, a removable plate supported on hollow standards integral with the casing, and rivets to secure the casing and plate together, all arranged and operating substantially as described.

476,576. STATIONERY-BOX. JOHN M. TATE, New York, N. Y. Filed Dec. 10, 1891. Serial No. 414,635. (No model.)

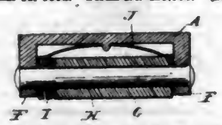


Claim.—1. A composite box for holding assorted stationery, consisting of a column of receptacles resting upon one another with their open tops uppermost and a cover having sides extending to the bottom of the column of receptacles, as shown and described.

2. A composite box for holding assorted stationery, consisting of a column of receptacles resting upon one another, the lowest receptacle having a flanged bottom, and a cover having sides extending over the sides of the column of receptacles and resting on the flange of the lowest receptacle, substantially as shown and described.

3. A composite box for holding assorted stationery, consisting of a column of receptacles with their open tops uppermost, hinged together, and a cover having sides extending downward to the bottom of the column of receptacles, substantially as shown and described.

476,577. VEHICLE CHAFE-IRON. LOUIS THIERRY, Detroit, Mich. Filed Mar. 18, 1892. Serial No. 425,397. (No model.)



Claim.—1. In a chafe-iron for vehicles, the combination, with a frame, of a shaft mounted therein, a roller on the shaft, and a spring on the frame between the same and the top of the roller, having its ends bent down and engaging the roller, substantially as described.

2. In a chafe-iron for vehicles, the combination, with a frame, of a shaft mounted therein, a roller on the shaft, a coiled spring sleeved on the shaft at the end of the roller, and a spring engaging the roller and coiled spring, substantially as described.

3. In a vehicle chafe-iron, the combination of the frame A, having the overhanging ears F, the roller G, the shaft H, upon which said roller is journaled, the coil-spring I at one end of said shaft, and the leaf-spring interposed between the frame and the roller, with means for securing the device to a vehicle, substantially as described.

476,578. REVERSIBLE DOUBLE-SHOVEL PLOW. JOHN W. TERUEL, Keyser, W. Va., assignor of two-thirds to A. P. Ritzell and P. H. Neffen, same place. Filed Sept. 16, 1891. Serial No. 405,850. (No model.)

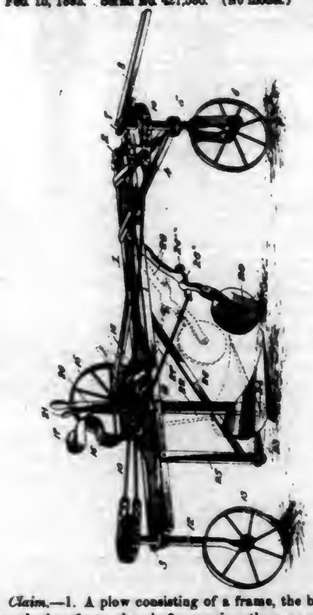


Claim.—In combination, the beams and standards, shovels carried by the standards, a pivoted frame connecting the standards, handles guided on the beams, and standards and rods connecting the handles with the pivoted frame or bracket, for the purpose described.

2. In combination, the standards carrying shovels, beams having their forward ends pivotally connected, guides carried by the beams, handles guided by said guides, a frame or bracket connecting the beams, and rods connecting the handles with the frame or bracket for moving the standards, for the purpose described.

3. In combination, the beams and standards, shovels carried by the standards, a link connecting the forward ends of the beams, a bracket pivotally connecting the standards, and suitable handles for guiding the plow, said handles consisting of rods passing through staples in the standards and having their forward ends sliding in ways formed on the beams, and rods connecting the bent ends with the bracket between the standards.

476,579. SULKY-PLOW. SAMUEL H. TIBBMAN, Morris, Ill. Filed Feb. 15, 1892. Serial No. 421,580. (No model.)



Claim.—1. A plow consisting of a frame, the bracket extending outward therefrom, the shaft carrying the supporting-wheel and mounted therein, the sprocket-wheel carried by said shaft, the shaft carrying the supporting-wheel and sprocket-wheel and mounted at the rear of the frame, the sprocket-chain engaging said sprocket-wheels, the axle carrying the supporting-wheel, the vertical and inclined brace-bars having their upper ends connected to the frame and their lower ends adjacent, forming a rigid frame, the short bar connected to the vertical brace at one end, the plow-point connected to the other end of the short bar, the vertical hand-lever having its lower end connected to the plow-point, the colter-arm pivoted to the frame, and the rod connecting the arm and hand-lever, substantially as described.

2. A plow consisting of a frame, the supporting-wheel, the sprocket wheels and chain, the curved rack-bar secured to the frame, the plate secured to the frame, the lever pivoted to said plate and carrying the spring-steel for engaging the rack-bar, the arm or bar connected to said lever, the plow connected to said arm or bar, the vertical brace-arm connected to said bar and the frame, the inclined brace-bar connected to the frame and the vertical bar, the rod pivoted to the frame, the rod carrying the colter-wheel and swiveled in said rod, the screw for securing the rod, and the rod connected to the hand-lever and swiveled rod, all adapted to operate as described.

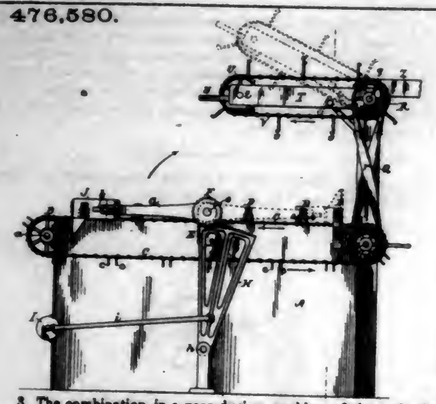
3. In a plow, the combination of the vertically-movable arm with the arm carrying the colter-wheel and swiveled to the vertically-movable arm, and a set-screw for retaining the swiveled colter-arm.

476,580. APPARATUS FOR DYEING. GEORGE M. UHDY, Philadelphia, Pa. Filed Dec. 14, 1891. Serial No. 414,949. (No model.)

Claim.—1. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, chains for moving said bars from end to end of the tank, and arms pivoted on the opposite sides of said tank adapted to carry the bars from one end of the tank to the other, substantially as specified.

2. In a yarn-dyeing machine, the combination of the tank, the yarn-carrying bars, devices for moving the same along the edge of the tank, and pivoted arms adapted to carry the yarn-carrying bars from one end of the tank to the other, with blocks at the outer ends of said arms, said blocks having pockets for the reception of the ends of the yarn-carrying bars, substantially as specified.

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3. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, devices for traversing the same along the edges of the tank, pivoted arms on the opposite sides of the tank, blocks J on the outer ends of said arms, pockets in said blocks for the reception of the yarn-carrying bars, and devices for operating upon said blocks, substantially as specified.

4. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, devices for traversing said bars from end to end of the tank, and pivoted arms on the opposite sides of said tank adapted to carry the bars from one end of the tank to the other, blocks on the outer end of said arm, pockets in said blocks, inclined blocks adapted to close the mouths of said pockets, and springs adapted to act upon said inclined blocks, substantially as specified.

5. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, mechanism for traversing said bars from end to end of the tank, pivoted blocks at the outer end of said arms, pockets therein for the reception of the ends of the yarn-carrying bars, and inclined blocks at the opposite end of the tank adapted to operate upon the blocks J and effect the release of the yarn-carrying bar, substantially as specified.

6. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, mechanism for traversing said bars from end to end of the tank, pivoted arms on the opposite sides of said tank, and a movable frame, and delivery-chains carried by said frame, with devices for effecting the movement of said chains, substantially as specified.

7. The combination, in a yarn-dyeing machine, of the tank, the yarn-carrying bars, mechanism for traversing said bars from end to end of the tank, pivoted arms on the opposite sides of said tank, and a pivoted delivery-frame, and a delivery-chain thereon, with inclined blocks carried by said delivery-frame to operate upon the pivoted arms and effect the delivery of the yarn-carrying bars, substantially as specified.

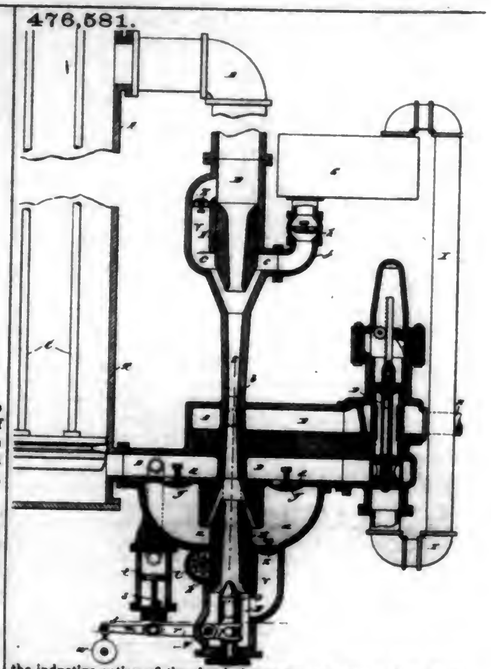
476,581. HYDRAULIC ELEVATOR. ISAAC H. VENN, Yonkers, N. Y., assignor, by mesne assignments, to the National Company, of Illinois. Filed July 25, 1889. Serial No. 318,652. (No model.) Patented in England Nov. 5, 1889, No. 17,604; in Germany Nov. 5, 1889, No. 56,790; in France Nov. 5, 1889, No. 201,735, and in Italy Dec. 31, 1889, No. 499.

Claim.—1. The combination, with the cylinder, piston, and supply and circulating pipe or pipes of a hydraulic elevator, of an injector through which the water passes in entering the induction end of the cylinder and which communicates with the eduction end of said cylinder through a passage additional to the circulating-passage between the induction and eduction ends of the cylinder, whereby the inductive action of the water passing through the injector acts to circulate water from the eduction to the induction end of said cylinder, substantially as described.

2. The combination, with the cylinder, piston, and supply and circulating pipe or pipes of a hydraulic elevator, of an injector through which the water passes in entering the induction end of the cylinder and which communicates with the eduction end of said cylinder through a passage additional to the circulating-passage between the induction and eduction ends of the cylinder, whereby the inductive action of the water passing through the injector acts to circulate water from the eduction to the induction end of said cylinder, and a check-valve controlling said additional passage, substantially as described.

3. The combination, with the main cylinder, piston, and circulating-pipe of a hydraulic elevator, of an injector located in said circulating-pipe and communicating with an outside supply of water, whereby

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the inductive action of the circulating water operates to draw in an additional supply of water, substantially as described.

4. The combination, with the main cylinder, piston, and circulating-pipe of a hydraulic elevator, of an injector located in said circulating-pipe and communicating through a check-valve with an outside supply of water, whereby the inductive action of the circulating water operates to draw in an additional supply of water, substantially as described.

5. The combination, with the cylinder, piston, and supply and circulating pipe or pipes of a hydraulic elevator, of an injector through which the water passes in entering the induction end of the cylinder and which also communicates with the eduction end of the cylinder, and a second injector through which the water passes in circulating and which communicates with an outside supply of water, whereby the inductive action of the water passing through said respective injectors operates to circulate water from the eduction to the induction end of said cylinder and to draw in an additional supply of water, substantially as described.

6. The combination, with the cylinder, piston, and supply and circulating pipe or pipes of a hydraulic elevator, of an injector through which the water passes in entering the induction end of the cylinder and which also communicates through a check-valve with the eduction end of the cylinder, and a second injector through which the water passes in circulating and which communicates through a check-valve with an outside supply of water, whereby the inductive action of the water passing through said respective injectors operates to circulate water from the eduction to the induction end of said cylinder and to draw in an additional supply of water, substantially as described.

7. The combination, with the cylinder, piston, and supply and circulating pipe of a hydraulic elevator, of reversely-arranged injectors located in said pipe and communicating, respectively, with the eduction end of said cylinder and with an outside supply, whereby the inductive action of the water entering the induction end of said cylinder operates to circulate water from the eduction to the induction end of the cylinder and whereby the inductive action of the water in circulating operates to draw in an additional supply of water, substantially as described.

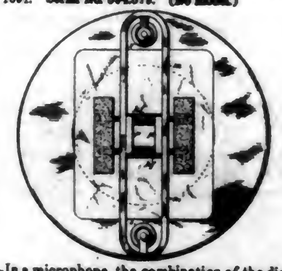
8. The combination, with the cylinder, piston, and supply and circulating pipe of a hydraulic elevator, of reversely-arranged injectors located in said pipe and communicating, respectively, with the eduction end of the cylinder and with an outside supply, whereby the inductive action of the water entering the induction end of the cylinder operates to circulate water from the eduction to the induction end of the cylinder and whereby the inductive action of the water in circulating operates to draw in an additional supply of water, and by-passes having reversely-arranged check-valves affording communication around said injectors, substantially as described.

9. The combination, with the cylinder, piston, and supply and circulating pipe or pipes of a hydraulic elevator, of an injector through which the water passes in entering the induction end of the cylinder and which also communicates with a supply of water under less pressure than the water entering the cylinder, and a valve O, controlling the flow of water through the induction-nozzle and controlled by the pressure in the eduction end of the cylinder, substantially as described.

10. The combination, with the cylinder, piston, supply-pipe, and main valve of a hydraulic elevator, of an injector located in said pipe, a by-pass affording communication around said injector, and a valve controlling said by-pass and operated in conjunction with the main valve, substantially as described.

11. The combination, with the cylinder, piston, circulating-pipe, and main valve of a hydraulic elevator, of an injector located in said pipe, a by-pass affording communication around said injector, and a valve controlling said by-pass and operated in conjunction with the main valve, substantially as described.

476,582. MICROPHONE. CÆSAR VOGT, Posen, Germany. Filed May 27, 1891. Serial No. 394,319. (No model.)



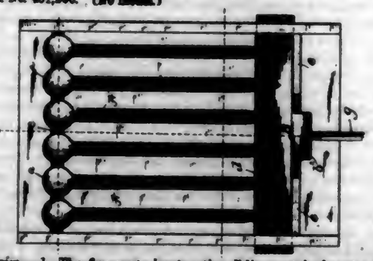
Claim.—In a microphone, the combination of the diaphragm having two recessed contact-blocks insulated from each other with carbon cylinders bridging these contacts, provided with magnetic sleeves, and a magnet or magnets in inductive proximity to the sleeve of magnetic material for maintaining the operative relation between the cylinders and contacts, substantially as described.

476,583. MAGNETIC TELEPHONE. CÆSAR VOGT, Posen, Germany. Filed Sept. 14, 1891. Serial No. 405,732. (No model.)



Claim.—In a double-poled telephone, a device for adjusting the outer annular pole with relation to the membrane, composed of a horseshoe steel magnet carrying at the end of one of its branches the bobbin with an iron core as the inner pole and on the other branch an iron cylinder surrounding said bobbin as the other pole and of a screw having a head countersunk into and secured by a washer upon the branch carrying the bobbin and having a screw-threaded shaft engaging in a tapped hole in the other branch of the steel magnet, substantially as set forth.

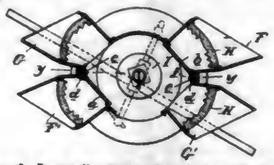
476,584. GRATE-BAR AND SHAKER ATTACHMENT FOR FURNACES. GEORGE W. WALKER, Tama, Iowa. Filed July 31, 1891. Serial No. 401,266. (No model.)



Claim.—1. The fire-grate having the sliding notched or toothed bar, the pivoted or hinged bars whose free ends rest within the notches of said sliding bar, and means for actuating said sliding bar, substantially as set forth.

2. The combination, in a fire-grate, of the pivoted or hinged bars and the toothed or notched sliding bar having at its forward edge a flange provided with a lever-receiving aperture registering with a corresponding aperture in a lug depending from the front support of said pivoted or hinged bars, said latter bars having their free ends resting within the notches of said toothed or notched bar, substantially as set forth.

476,585. RAILWAY SIGNALING-LANTERN. GEORGE E. WARREN, Detroit, Mich. Filed Jan. 21, 1892. Serial No. 418,758. (No model.)



Claim.—1. In a railway signaling-lantern, the combination, with a stationary casing having a series of apertures and a lamp within, of a shutter of colored glass pivoted between two of the apertures and adapted to be rocked to cover either one or two of the apertures, substantially as described.

2. In a railway signaling-lantern, the combination, with a stationary casing having two sets of apertures adapted to be arranged in line with crossing railways and a lamp within, of two shutters of colored glass oppositely arranged within the casing, and operating mechanism adapted to move said shutters across either of the two sets, substantially as described.

3. In a railway signaling-lantern, the combination of the stationary casing having two sets of apertures adapted to be arranged in line with crossing railways and a lamp within, of the shutters *b*, of colored glass, oppositely arranged within the casing, the shafts *d*, on which said shutters are secured, the cranks on said shafts, the actuating-shaft, and connection between said actuating-shaft and crank-arms, substantially as described.

4. In a railway signaling-lantern, the combination, with the stationary casing having apertures and a lamp within, of the shutter *a*, the squared hub *c*, the shafts *d*, having a squared portion engaging in said hub, a bearing in which said shafts are journaled, cranks at the end of said shafts, blocks in which said cranks slidingly engage, arms in which said blocks are pivoted, and a shaft for rocking said arms, substantially as described.

476,586. COTTON-CHOPPER. CHARLES W. WILLIAMS, Montgomery, Ia. Filed Jan. 25, 1892. Serial No. 419,212. (No model.)



Claim.—1. In a cotton-chopper, the combination, with an axle and a frame mounted thereon having upwardly-arched sides, of cross-bars which connect the lower ends of the opposite arches, and a chopper-carrying shaft journaled in the said cross-bar and which revolves beneath the said arches, substantially as shown and described.

2. In a cotton-chopper, the combination of an axle, a gear-wheel, a frame supported on the axle having upwardly-arched sides, a chopper-shaft journaled between the arches, a longitudinally-moving gear-wheel on the end of said shaft which engages the gear on the axle, a rock-shaft journaled in the ends of the arches, an arm depending therefrom which engages the laterally-moving gear, and an operating-lever, substantially as shown and described.

3. In a cotton-chopper, the combination, with an axle, a gear-wheel thereon, a frame supported on the axle having upwardly-arched sides, a chopper-carrying shaft journaled between said arched sides, a movable gear on the shaft which engages the gear on the axle, a horizontal rock-shaft journaled in the arched frame, an arm depending therefrom which engages the said movable gear, a rod extending rearward from the crank end of the shaft, a handle projecting outward from the rear of the frame, a ratchet-bar connecting the said handle with the rear end of the arched frame, a lever pivoted to the handle and which is connected to the rear end of the said rod, and a dog carried by said lever which engages said ratchet-bar, substantially as shown and described.

476,587. SUPPORT FOR SPINNING-SPINDLES. HENRY F. WOODBURY, Whitinsville, Mass. Filed Sept. 18, 1891. Serial No. 406,116. (No model.)



Claim.—1. In a spinning-spindle, the combination, with the spindle provided with a sleeve-whirl and a case adapted to be secured to a rail and having a tubular extension above the rail adapted to enter the sleeve-whirl, of a supporting-tube firmly secured in the bottom of the case and extending upward in the case above the center of the whirl and not in contact with the interior of the case and a combined bolster and step tube loosely fitting in the supporting-tube and held against rotation by a pin extending through the lower part of the combined bolster and step tube and the wall of the supporting-tube, as described.

2. In a support for a spinning-machine spindle, the combination, with the case 4, provided with the upward-extending tube, of the supporting-tube 5, firmly secured in the bottom of the case 4, and the combined bolster and step tube 7, supported loosely in the tube 5 and held against rotation by the pin 8, as described.

476,588. ENGINE-REGISTER. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed May 26, 1888. Serial No. 312,087. (No model.)

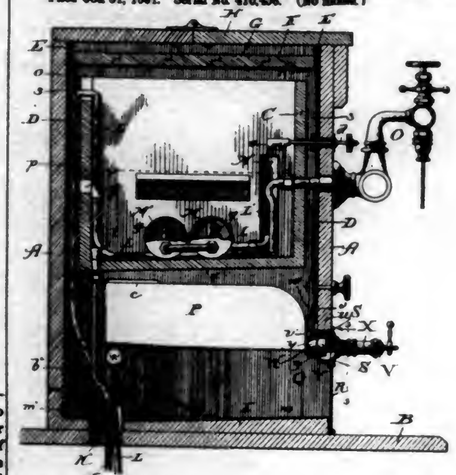


Claim.—1. The combination, with a direct-acting engine, of the disks *a*, a registering mechanism, and the connections for imparting motion from one disk to another throughout the series, a ratchet-wheel *k* for moving the units-disk, a driving-pawl engaging said ratchet-wheel, and connections between the pawl and a moving part of the engine, having a movement varying with that of the piston whereby the pawl is retracted behind a tooth of the ratchet-wheel as the engine passes the middle of its stroke in one direction and advanced to drive the ratchet-wheel by said tooth as the engine passes the middle of its stroke in the other direction, substantially as described.

2. The combination, with a direct-acting engine, of the disks *a*, a registering mechanism, and connections for imparting motion from one disk to another throughout the series, a ratchet-wheel *k* for moving the units-disk, a driving-pawl engaging said ratchet-wheel, and connections between the pawl and a moving part of the engine, having a movement varying with that of the piston whereby the pawl is retracted behind a tooth of the ratchet-wheel as the engine passes the middle of its stroke in one direction and advanced to drive the ratchet-wheel by said tooth as the engine passes the middle of its stroke in the other direction, and a spring adjusting and holding pawl *p*, having an inclined surface 7 engaging the ratchet-tooth, substantially as described.

3. The combination, with a direct-acting engine, of the disks *a*, a registering mechanism, and connections for imparting motion from one disk to another throughout the series, a ratchet-wheel *k* for moving the units-disk, lever *m*, swinging pawl *n*, mounted on said lever and engaging said ratchet-wheel, and operating connections between said lever *m* and a moving part of the engine, having a movement varying with that of the piston whereby the pawl is retracted behind a tooth of the ratchet-wheel as the engine passes the middle of the stroke in one direction and advanced to drive the ratchet-wheel by said tooth as the engine passes the middle of its stroke in the other direction, substantially as described.

476,589. SODA-FOUNTAIN. OTTO SWIETUSCH, Milwaukee, Wis. Filed Oct. 31, 1891. Serial No. 410,456. (No model.)



Claim.—1. In a soda-fountain, the combination, with the walls *A* and cover thereof, of an ice-receptacle C, supported therein and terminating below the top of the fountain and smaller in diameter than the interior of the fountain, whereby air-spaces *s* intervene, a lining D, of non-conducting material, impervious to moisture, secured directly against the marble forming the inner walls of the fountain and constituting the interior surface of the fountain-walls, and means for conveying the liquid to be cooled through the ice-receptacle to the outlet, substantially as described.

2. In a soda-fountain, the combination, with the walls A and cover thereof, of an ice-receptacle C, supported within the fountain below the top thereof and of smaller diameter than the interior of the fountain, whereby an air-space *s* intervenes between the ice-receptacle and the inner walls of the fountain, and provided in its walls with passages *r*, leading from the interior into the passages *s*, plates *q*, secured to the inner walls of the ice-receptacle above the openings *r* and inclining downward therefrom, thereby shielding the said openings, and means for conveying the liquid to be cooled through the ice-receptacle to the outlet, substantially as described.

3. In a soda-fountain, the combination, with the walls and cover thereof, of an ice-receptacle C, of smaller diameter than the interior of the fountain, supported within the fountain below the top thereof, pipe L, leading from without the fountain to the bottom of the ice-receptacle and coiled therein, reservoirs M and M', interposed in the pipe L and provided with the pipes *g*, reservoir N, provided with a vent *e* and valve for opening and closing the same, pipe L', leading from the interior of the reservoir N to the exterior of the fountain, and faucet O upon the pipe L', substantially as described.

4. In combination with the walls A of a soda-fountain and impervious non-conducting lining D therefor, the rim E, securing the upper end of the lining to the fountain and provided at its lower edge with the flange *n*, serving as a support for the inner wooden cover F, substantially as described.

5. In combination with a soda-fountain having an opening K extending through the bottom thereof, the metal sheathing *m*, provided with the rim *k*, surrounding the opening K, and cover *h* for the rim, having openings through it for the passage of pipes, substantially as described.

6. In combination with a soda-fountain having an opening K extending through the bottom thereof, the metal sheathing *m*, provided with the rim *k*, surrounding the opening K, cover *h*, of india-rubber, pipe J, draining the ice-receptacle of the fountain and extending through the cap *h* and opening K, and branch pipe *i*, leading through the rim *k* and into the pipe J, substantially as described.

7. In combination with a soda-fountain provided with an opening Q in the lower portion of its front wall, the sirup-cans P, each provided with a faucet projecting from the lower part of its forward end and with a flange to aid in closing the upper part of the opening Q, means for supporting the can above the bottom of the fountain, and means for opening and closing at will the lower portion of the opening Q, whereby the accessible cooling-space U below the sirup-cans is provided, substantially as described.

8. In combination with a soda-fountain provided with an opening Q in the lower portion of its front wall and means for partly closing the same, the angle-plate T, forming an inclined plane and ledge toward the rear of the fountain to raise and support the rear end of the sirup-can, and means for supporting the forward end of the sirup-can, substantially as described.

9. In combination with a soda-fountain with an opening Q in the lower portion of its front wall and means for partly closing the same and with the sirup-can P, provided on its faucet extension with the plate S, having the flange *u*, the angle-plate T for raising and supporting the rear end of the can and strip *v* and spring *w* for supporting the forward end of the can through the medium of the flange *v'* and retaining it in place, substantially as described.

10. In combination with a soda-fountain provided with an opening Q in the lower portion of its front wall and means for partly closing the same and with the sirup can P, the angle-plate T, detachably connected to the rear wall of the fountain and serving as a medium for raising and supporting the rear end of the can, and means for supporting the forward end of the can in about the same horizontal plane with the rear portion, substantially as described.

11. In combination with a soda-fountain, substantially as described, the sirup-can P, having the internally-flaring and externally-threaded nipple W, faucet-tube X, provided on its extension with screw-threads finer than those on the nipple W and tapering at its inner end to fit the interior of the nipple, and collar Y, threaded internally to match the differential screw-threads on the nipple and faucet-tube, substantially as and for the purpose set forth.

12. In combination with a soda-fountain, substantially as described, the sirup-can P, faucet-tube X, means for coupling them together, flange-plate S, rigid with the faucet-tube, means for supporting the rear end of the sirup-can above the bottom of the soda-fountain, and means for supporting the forward end of the sirup-can from the wall above it, substantially as described.

13. In a soda-fountain, the combination of a drip-pan located in the lowest part of the interior thereof and provided with an outlet, an ice-receptacle supported above the drip-pan, whereby a cooling-space is formed between the bottom of the ice-receptacle and bottom of the fountain, one or more air-passages connecting the interior of the ice-receptacle with the cooling-space, and a non-conducting water-repellant lining for the fountain, terminating at its lower end in the interior of the drip-pan, whereby all drip and accumulating moisture are collected and carried off, substantially as described.

476,590. MACHINE-GUN. ISRAEL N. ARCHBOLD, Ridge Farm, Ill. Filed July 13, 1891. Serial No. 399,416. (No model.)



Claim.—1. In a machine-gun, a revolving integral breech block or head having flanges C and C' at its ends and an open annular groove or breechway between them, one or more barrels projecting from the flange C, and a suitable firing mechanism in the flange C', and a stationary shoe or pressure-plate within the groove at the point of firing, said groove being adapted to receive the cartridges or other ammunition and pass it under the shoe, substantially as described.

2. In a machine-gun, a revolving breech-block having a flange at each end and an open groove or breechway between them, one or more barrels projecting from the front flange and suitable firing mechanism in the rear flange, a stationary pressure-plate or shoe within the groove, and a cartridge carrier or chain provided with cartridge-cylinders of the same length as the width of the groove and adapted to pass between the shoe and the bottom of the groove, substantially as described.

3. In a machine-gun, a revolving breech-block having an open breechway between its peripheral flanges C C', one or more barrels leading from flange C, suitable firing mechanism in the flange C', and a flexible cartridge carrier or chain D, comprising a series of cartridge-holders *d*, binding-straps *d'* and *d²*, the latter *d²* having hook ends, and connecting-links *d³*, engaging the hooked ends of said straps, said carrier being adapted to be fed into the gun and passed through the said open breechway for the firing operation, substantially as described.

4. In a machine-gun, the combination of a muzzle block or disk B and breech-block B', mounted on a revolving shaft, a cluster of barrels mounted in said blocks, said breech-block having an open breechway constructed between its peripheral flanges C C' and said barrels being open both at muzzle and breech, adjustable firing-pins I, mounted in flange C' in line with said barrels, hammers L, suitable cam devices for operating said hammers, and a cartridge carrier or chain D, the latter being adapted to be fed into and conveyed through the open breechway of said breech-block, substantially as and for the purpose specified.

5. In a machine-gun, a muzzle-block and a breech-block mounted on a revolving shaft, a circular cluster of barrels grouped around said shaft in said blocks, said breech-block having an open breechway between its flanges C C', firing-pins I, mounted in flange C', hammers L, mounted on spring-controlled bars *l*, projecting from the breech-block, rigidly-mounted cams Q and R on the shaft-bearing *a'*, and cartridge-carrier D, the latter being fed and conveyed through the breechway transversely, substantially as and for the purpose specified.

6. In a machine-gun, the combination, with breech-block B', having an open breechway between its flanges C C', of a top plate or cap G, having suitable supports, and a presser-plate or shoe G', suspended from said cap G within said open breechway and adapted to seat the advancing cartridge-carrier cylinders in the sockets *h* of the breechway, substantially as and for the purpose specified.

7. In a machine-gun, the combination, with breech-block B', having an open breechway between its flanges C C', of a top plate G, mounted centrally over the said breech-block upon the upper ends of supports E E' and F F', the said supports having flaring inner faces *e* and *f*, respectively, which form inlet and outlet guideways or jaws to and from said open breechway, presser-plate or shoe G', suspended from said top plate G within said open breechway at its uppermost portion, vertical bolts *g g* and springs *g' g'* for adjusting the position of said presser-plate, and a spring lip or guard H, attached to the bottom of said presser-plate on the inlet side of the breechway, substantially as herein set forth.

8. In a machine-gun, the combination, with a breech-block B', having an open breechway between its flanges C C', and a central groove or race *c* in the bottom of said breechway, of an upright arm or ejector *c'*, the latter being adapted to positively release or dislodge the paying-out or spent portion of the cartridge-carrier D from said breechway on the exit side of the gun, substantially as herein set forth.

9. The combination, with the breech-block B', having the open breechway between its flanges C C', of the firing-pins I, boxes or chambers J, springs J', collars *i'* on the said pins, and the adjusting heads or nuts K on the outer threaded ends of the pins, substantially as herein set forth.

10. The combination, with the breech-block B', having the open breechway between its flanges C C', of the firing-pins I, hammers L, blocks L', upon which the hammers are mounted, headed bars *l*, springs *n'*, screw-plugs *m*, and right-angled bars N *n*, substantially as and for the purpose specified.

476,591. REVOLVING FIREARM. ISRAEL N. ARCHBOLD, Ridge Farm, Ill. Filed July 30, 1891. Serial No. 401,235. (No model.)

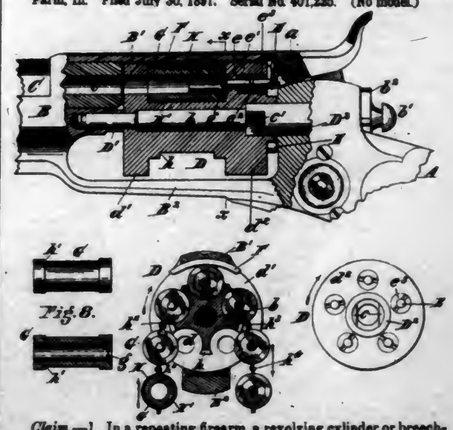


Fig. 8.

Claim.—1. In a repeating firearm, a revolving cylinder or breech-block whose face is longitudinally grooved or channeled to form a circular series of longitudinal sockets or open chambers therein, a flange

at one or both ends thereof, the flange at the fore-end being suitably bored to correspond with said sockets and the caliber of the gun and the flange at the rear end fitted with firing-pins registering with said sockets, said cylinder being adapted to receive a cartridge-holder carrier drawn into the opening in the frame at the breech of the barrel by the intermittent rotation of said cylinder, and the cartridges fired in succession, substantially as herein set forth.

2. In a repeating firearm, a rotating cylinder having longitudinal semicircular furrows or grooves *d* on its surface to form chambers or sockets open at the side, the ribs between said grooves being each provided with a recess for the reception of the ligaments of a carrier-chain as it passes through the gun, substantially as herein set forth.

3. In a repeating firearm, a rotating cylinder having longitudinal semicircular open sockets or chambers *d* on its surface and a flange d' at its fore-end, the latter being suitably bored to correspond with said sockets and the caliber of the gun, substantially as herein set forth.

4. In a repeating firearm, a rotating cylinder having longitudinal semicircular open sockets *d* and fore-end flange d', the latter being fitted with a circular series of bushings d^3, corresponding in arrangement and number with said sockets and each having a central bore suited to that of the caliber of the gun, substantially as herein set forth.

5. In a repeating firearm, a rotating cylinder D, having a circular series of longitudinal semicircular open grooves or sockets *d* and a rear flange d^3, the latter being fitted with a circular series of firing-pins E, corresponding in number and arrangement with said socket, substantially as herein set forth.

6. In a repeating firearm, a cylinder D, having the longitudinal open sockets *d* and rear end flange d^3, the latter being fitted with firing-pins E, said firing-pins registering with the respective sockets *d* and mounted in graduated chambers *c*, each of such chambers containing expansion-springs bearing outwardly against collars on said pins, and a screw plug or cap c^4, substantially as herein set forth.

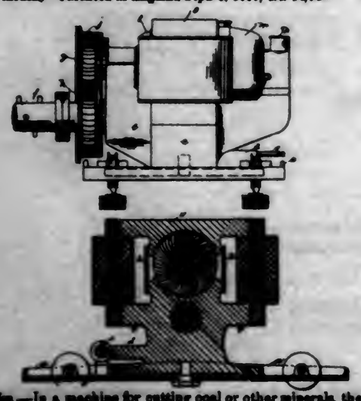
7. In a repeating firearm, a rotating cylinder D, provided with open sockets and a rear flange, firing-pins in the flange registering with the sockets, and a cartridge-holder carrier comprising a series of firing-shells in a flexible chain and adapted to be fed through the gun by means of the rotation of the cylinder, the bore of each firing-cylinder being provided at its rear end with a countersunk recess or shoulder for the reception of the cartridge, whereby the carrier may fit closely within the sockets of the cylinder, substantially as described.

8. In a repeating firearm, the combination, with the frame-bar B and the cylinder D, of a guide-plate F, mounted on said frame-bar B, substantially as herein set forth.

476,592. PROCESS OF MAKING BORAX. JAMES ASCOUGH, Handsworth, England. Filed Aug. 31, 1891. Serial No. 404,389. (Specimens.)

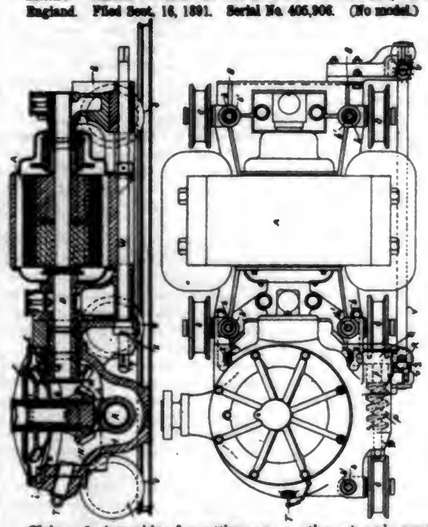
Claim.—The herein-described method of manufacturing granular sodium biborate or borax, which consists in placing the component parts in a suitable vessel, adding thereto a small quantity of water, subjecting the same to heat to drive off the superfluous moisture, transferring the mass to other vessels, and agitating the same during process of cooling, substantially as described.

476,593. MACHINERY FOR CUTTING COAL AND OTHER MINERALS. LLEWELYN B. ATKINSON, CLAUDE W. ATKINSON, and WALTER T. GOULDEN, London, England. Filed Aug. 18, 1891. Serial No. 403,066. (No model.) Patented in England Sept. 6, 1889, No. 14,041.



Claim.—In a machine for cutting coal or other minerals, the combination of a magnetic pole-piece or yoke connecting the like poles of two electro-magnets and adapted to form in one casting a circular base to the motor for swiveling upon a traveling carriage and also adapted for the bearings of the revolving armature-shaft and of an under counter-shaft, geared together by cog-wheels and chain, with a cutter-bar mounted on the said counter-shaft, substantially as set forth.

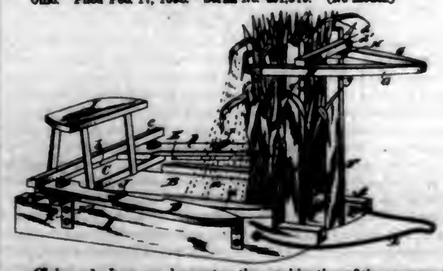
476,594. MACHINERY FOR CUTTING COAL OR OTHER MINERALS. CLAUDE W. ATKINSON and LLEWELYN B. ATKINSON, London, England. Filed Sept. 16, 1891. Serial No. 405,906. (No model.)



Claim.—1. A machine for cutting coal or other minerals, consisting of an electric motor provided with dust and flame-light casings, inclosing armature and commutator mounted on a main frame detachably attached in two parts and carried on wheels, the motor-shaft placed parallel to the longitudinal axis of the main frame, and double bevel-gear connecting motor-shaft to a cutter-bar journaled in an arm of an oblique swiveling frame, adapted to rotate through an angle of about forty-five degrees by worm and worm-sector into a direction at right angles to the motor-shaft and in a plane oblique to the horizontal in order to allow entry of the cutter-bar into a side face of coal and ultimately to cut at a lower level than the track-rail, substantially as described.

2. In a machine for cutting coal or other minerals, the main frame divided into two parts, one part carrying the electric motor and the other part the cutting mechanism, in combination with means for detachably attaching the said two parts together, consisting of a screw-threaded shaft and taper-slotted pins with cotters on one part and a nut and hobs on the other part to engage, respectively, with each other, the gearing between the motor and cutting mechanism being adapted to engage with a sliding driving-joint to effect the driving of one by the other, substantially as and for the purposes described.

476,595. CORN-HARVESTER. RILEY J. AULTMAN, Shanesville, Ohio. Filed Feb. 17, 1892. Serial No. 421,819. (No model.)



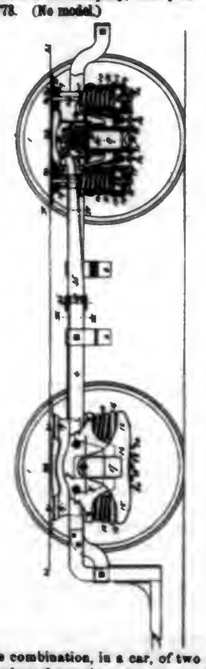
Claim.—1. In a corn-harvester, the combination of the runners A, the platform or floor B, the posts or standards F, the spreading and retaining arms G, the bar *d*, and the pivoted knife-bars D, provided with the cutting-knives E, substantially as and for the purpose specified.

2. The combination of the runners A, the platform or floor B, the posts or standards F, the adjustable arms G, the arm H, and the pivoted arms D, provided with the cutting-knives E, substantially as and for the purpose specified.

3. The combination of the runners A, the platform or floor B, the adjustable arms K, and the pivoted knife-bars D, provided with the foot-plates J, substantially as and for the purpose specified.

4. The combination of the adjustable platform A, the pivoted knife-bars D, extending forward and beyond the knives E, the knives E, fixed to the bars D, the posts or standards F, the adjustable arms G, and the bar *d*, substantially as and for the purpose specified.

476,596. CAR-TRUCK. FREDERICK A. BAIER, St. Louis, Mo., assignor to the Brownell Car Company, same place. Filed Feb. 25, 1892. Serial No. 422,778. (No model.)



Claim.—1. The combination, in a car, of two bars 35, extending endwise of the car, pivoted together at or near their mid-length, and the contiguous ends of the two bars connected, respectively, with the car-body and with parts bearing directly upon the car-axle, substantially as set forth.

2. The combination, in a car, of two bars 35 at each side of the car, extending lengthwise of the car, two of each pair being pivoted together at or near their mid-length, and the contiguous ends of each pair connected, respectively, with car-body and with parts bearing upon the car-axle, substantially as and for the purpose set forth.

3. The combination, in a car, of a pair of bars 35, extending lengthwise of the car, pivoted together at or about their mid-length, with the contiguous ends 35^a and 35^b, connected, respectively, to the car-body and to parts bearing directly upon the axle, and a spring interposed between the end 35^b and the axle-bearing, for the purpose set forth.

4. The combination, in a car, of a pair of bars 35, pivoted together at or near the mid-length of the bars, said bars extending lengthwise of the cars and their contiguous ends 35^a 35^b connected, respectively, to the car-body and the truck, for the purpose set forth.

5. The combination, in a car, of a pair of bars 35, pivoted together at or near their mid-length, extending lengthwise of the car, with their contiguous ends 35^a 35^b connected, respectively, with the car body and truck, and springs interposed between the said ends and the car body and truck.

6. The combination, in a car, of a pair of bars 35, pivoted together, substantially as described, extending lengthwise of the car, with the ends 35^a of the bars connected with the car-body and the ends 35^b connected with the truck by means of the standard 29, shackle 40, and interposed spring 39, adapted to operate substantially as set forth.

7. The combination, in a car, of the pair of bars 35, pivoted together at or near their mid-length, one end, as 35^a, of each bar connected with the car-body and the other end having double-acting spring connection with the truck, substantially as set forth.

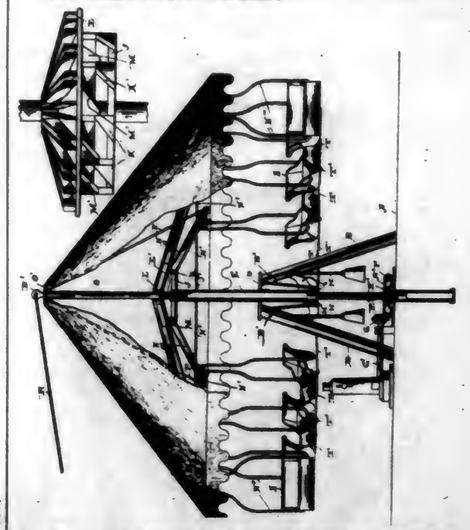
8. The combination, in a car, of pedestals connected to the truck, pedestals connected to the body, playing within the truck-pedestals, springs 12, supporting the truck-pedestals, and springs 10 within the springs 12, supporting the body-pedestals, and a shoe 16, connected to the grease-box and forming bearings for the springs 12 and 10, substantially as set forth.

9. The combination, in a car, of the shoe 16, attached to the grease-box and having cups 14, with central orifices 28, the springs 10 and 12, the bolts 24, and the cups 13, resting in the cups 14, substantially as set forth.

10. The combination, with the grease-box 17 of a car, of the truck-pedestal 8, the bolts 31, with nuts 33, the bar 32, and the stirrups 34, substantially as set forth.

11. The combination, in a car, of the body and truck supported on separate springs and the bars 35, pivoted together and having ends connected, respectively, to the body and the grease-box 17 or other part of the truck, substantially as and for the purpose set forth.

476,597. ROUNDABOUT. FRANK S. BALDWIN, Newark, N. J., assignor of one-half to John W. Tilley, Castleton, N. Y. Filed Aug. 10, 1891. Serial No. 402,291. (No model.)



Claim.—1. In a carrousel, a base, a wheel journaled thereon provided with a screw-threaded opening, means for revolving the wheel, uprights supporting a guiding-plate, a vertically-moving screw-threaded shaft, a collar loosely mounted on the shaft, weighted ropes connected at their inner ends to the collar and passing over pulleys in the said uprights, and a frame supported on the said shaft, the parts being combined to operate substantially as shown and described.

2. In a carrousel, a vertical shaft, means for revolving the shaft, a frame J, supported on said shaft and having peripheral projections and a central socket, and an arm-carrying frame L, having a depending bearing which fits the said socket and depending projections which engage the projections K, the parts being combined to operate substantially as shown and described.

3. In a carrousel, a vertical shaft, means for revolving the shaft, a frame supported thereon having a socket and peripheral projections, one edge of each of the latter being made vertical and the other edge made sloping, and a frame having a depending projection which bears in the said socket and which is also provided with downward projections which have vertical and sloping edges which engage the corresponding edges on the projections K, the parts being combined to operate substantially as shown and described.

4. In a carrousel, a vertical shaft, means for revolving the shaft, a frame supported on the upper end of the shaft, arms extending outward from the frame, carriers pivotally connected to the said arms, bars pivoted to the carriers, and springs connecting the bars, the parts being combined to operate substantially as shown and described.

5. In a carrousel, a vertical shaft, means for revolving the shaft, a frame supported on the upper end of the shaft, arms extending outward from the frame, carriers pivotally connected to the said arms, and springs connecting the carriers, the parts being combined to operate substantially as shown and described.

6. In a carrousel, a base, a wheel mounted thereon provided with

a screw-threaded opening, uprights supporting a guiding-plate, a screw-threaded shaft, a stop secured to the shaft, a collar loosely mounted on the said shaft, a ball-bearing interposed between the stop and the collar, weighted ropes connected to the collar and adapted to pass over pulleys in the said uprights, and a frame supported on the upper end of the shaft, the parts being combined to operate substantially as shown and described.

7. In a carrousel, a frame, a post, and a means for moving the post vertically in the frame, a collar loosely secured to said post, and weighted ropes adapted to pass over rollers journaled in the frame and which are connected to said collar at their inner ends, substantially as shown and described.

8. In a carrousel, a vertical shaft and a means for revolving the same, combined with a frame pivotally supported on the upper end of the shaft, a rod extending upward from the center of the frame, and a rope connected to the said rod, whereby the frame is oscillated, substantially as shown and described.

9. In a carrousel, a vertical shaft and a means for revolving the same, combined with a plate pivotally supported on the upper end of the shaft, projecting ribs on the upper face of the plate, arms secured to the said plate between the said ribs and radiating outward therefrom, and carriers supported by the said arms, substantially as shown and described.

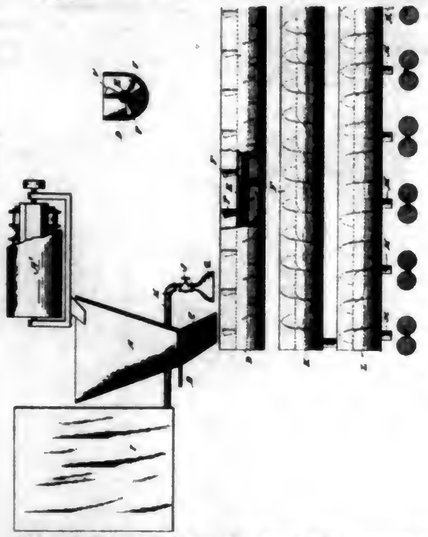
476,598. TRAVELING-BAG. ASHLEY BABBOTT, Portland, Oreg. Filed Nov. 5, 1891. Serial No. 410,973. (No model.)



Claim.—1. In a traveling-bag or valise, the combination of a body portion having longitudinally-divided covers hinged to the sides thereof, the ends of the body portion being cut away to provide shoulders, the hinged tops or sections having projecting portions adapted to abut against said shoulders when the inner edges rest upon the upper edges of the sides, a projecting strip c^4, adapted to overlap the edges of the adjacent section, and a handle secured centrally to the section of the cover carrying the strip c^4, substantially as shown, and for the purpose set forth.

2. The combination, in a traveling-bag or valise, of a body portion A, having swinging or hinged covers secured to the longitudinal edges thereof, strips a a, attached to the interior of the body portion a slight distance above the base thereof, a receptacle B, adapted to rest upon said strips and be slid thereon, said receptacle having a cylindrical portion, and a cover surrounding said cylindrical portion, said cover being centrally hinged and attached to stiffening-strips located between the walls of the receptacle B and walls of the cylindrical portion b thereof, substantially as shown, and for the purpose set forth.

476,599. PROCESS OF AND APPARATUS FOR THE MANUFACTURE OF ALIMENTARY PRODUCTS FROM CORN. HERVEY BATES, Jr., Indianapolis, Ind. Filed June 13, 1891. Serial No. 396,190. (No model.)



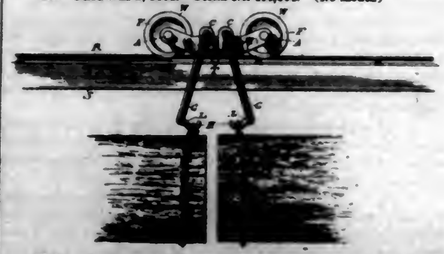
Claim.—1. The process hereinbefore described of producing an alimentary product from corn, which consists, essentially, in first hulling and degerminating the corn, then feeding the same under a spray of water at the initial point of travel, then stirring and mixing and simultaneously conveying the same longitudinally in a trough, then partially evaporating the moisture from the corn, and finally feeding the same to and flattening between rollers, substantially as and for the purpose set forth.

2. In an apparatus for treating corn to produce an alimentary product, the combination, with a mixing and conveyer trough D, provided with a broken-flighted conveyer E F, of a feeding-hopper A for delivering the corn to the trough, and a water-reservoir I, conduit-pipe H, and spraying-nozzle or rose-jet G, substantially as and for the purpose set forth.

3. In combination with the hopper A, trough D, with broken-flighted conveyer, and the spraying-nozzle G, and evaporating conveyer-trough K, substantially as and for the purpose set forth.

4. The combination and arrangement of the hopper A, water-reservoir I, rose-jet G, conveyer E F, evaporating conveyer-trough K, delivery-trough L, and crushing or flattening rolls N, substantially as and for the purpose set forth.

476,600. ELEVATED CARRIER. MARCUS E. BENSON, West Plains, Mo. Filed Jan. 2, 1892. Serial No. 416,861. (No model.)



Claim.—1. A support for an elevated carrier-track, consisting of a post set in the ground, an inclined beam resting between its ends on said post, staked at one end to the ground and notched at its other end, and wooden stringers resting in said notches of the various beams, as set forth.

2. An elevated carrier-track consisting of posts set in the ground, inclined beams, each resting between its ends on one post, secured to the ground at its lower end and notched at its upper end, and wooden stringers resting in the notches of the various beams, and steel rails mounted on said stringers, as set forth.

3. In a lumber-carrier, the combination, with posts set in the ground, inclined beams resting at their lower ends upon and secured to the ground and at their centers on the posts, wooden stringers connecting the upper ends of the beams, and steel rails mounted on the stringers, of a truck consisting of a grooved wheel and a pendent carrier pivotally supported by said wheel and having a hook at its lower end, as set forth.

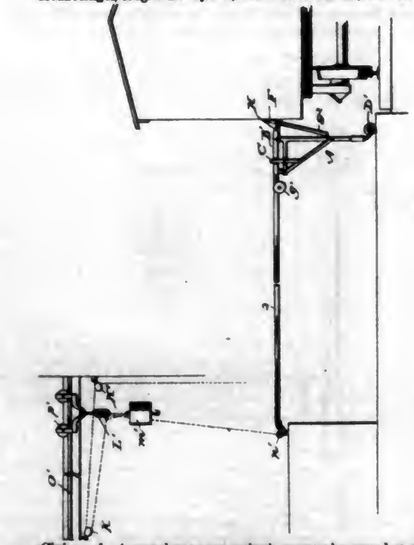
4. A truck for lumber-carriers, consisting of a body, grooved supporting-wheels journaled therein and adapted to move on a suitable track, clips carried by the body, and two carriers, each mounted on a transverse pivot in the clips and having a hook at its lower end, as set forth.

5. A truck for lumber-carriers, consisting of two metal plates connected near their ends by axles, wheels journaled on said axles, a wooden block between the wheels, clip-plates at the sides of and having eyes above the main plates, transverse bolts passing through the clip-plates, main plates, and block, and two carriers, each having a horizontally-bent upper end pivoted in a pair of said eyes and an inturned lower end provided with a hook standing directly beneath the line of the supporting-wheels, as hereinbefore set forth.

6. A truck for elevated carriers, comprising the body, the wheels at the ends, and two carriers pivotally mounted on the body between the wheels, substantially as set forth.

7. A truck for elevated carriers, comprising the body, the wheels at the ends, and two carriers pivotally mounted on the body between the wheels and disposed divergently from their pivots and provided with inwardly-facing hooks at their lower ends, substantially as set forth.

476,601. WAREHOUSE GANG-PLANK. OTTO J. R. BOESELAGER, Mount Angel, Oreg. Filed Apr. 13, 1892. Serial No. 429,063. (No model.)



Claim.—1. A warehouse gang-plank counterbalanced at one end and a structure attached to and adapted to support the other end of the plank and provided with rollers to travel on the platform, substantially as and for the purpose described.

2. A warehouse gang-plank counterbalanced at one end and a structure pivotally attached to the other end of the said plank and provided with rollers to travel on the platform and support the outer end of the said plank, said structure being adapted to be folded over on the plank, substantially as and for the purpose described.

3. A warehouse gang-plank counterbalanced at one end, a structure pivotally attached to the other end of the said plank to support the same, and spring-catches to hold the said structure to the plank, substantially as and in the manner set forth.

4. A warehouse gang-plank counterbalanced at one end, a structure pivotally attached to the other end of the said plank to support the same and having a brace portion to come up under the said gang-plank, and spring-catches to lock the said brace portion to the said plank, substantially as described.

5. The combination, with a gang-plank, of a rod at one end of the plank, having grab-hooks, and a lever to rotate said rod to engage the grab-hooks with the car or other structure, substantially as described.

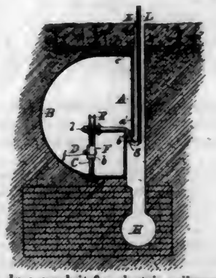
6. The combination, with a warehouse gang-plank, of counterbalancing-weights connected therewith, substantially as and for the purpose described.

476,602. AXLE-BEARING. GEORGE BOTSFORD and WILLIAM HOUTS, Nineveh, Ind. Filed Jan. 25, 1892. Serial No. 419,169. (No model.)



Claim.—The combination of an axle provided with bands arranged at the inner end and the outer end of the spindle, said spindle having its outer end right and left hand threaded, a hub, an axle-box provided at its outer end with a recess and with exterior threads and having at its inner end an annular casing extending over the inner end of the hub, balls arranged in the recess and the casing, washers retaining the balls therein, nuts arranged on the threaded end of the spindle, a cap fitting over the outer end of the spindle and engaging the threads of the axle-box and fitting against the outer end of the hub, and a sand-band fitting over the inner end of the hub, substantially as described.

476,603. CONDUIT FOR ELECTRIC RAILWAYS. WILLIAM BRADLEY, Fort Wayne, Ind. Filed June 22, 1891. Serial No. 397,006. (No model.)



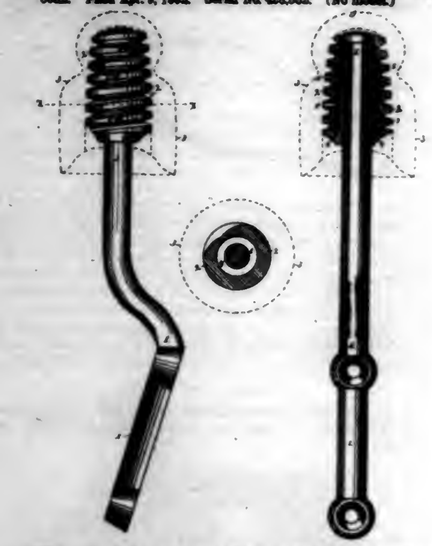
Claim.—1. In a conduit for electric railways, the combination of a box or pipe with the plate A, forming the upper side a, the lower part b forming with said upper side a slot s, a slot extending from the roadway or track down to or below the bottom of the box or pipe, one side of said box or pipe forming part of one side of said slot, the same being adapted to permit the operation of a supporting-arm of a contact device and also adapted to confine within the slot the water and other substances which may enter it and conduct such substances outside the box directly into the drain, a drain placed below the bottom of said box and directly beneath said slot and communicating with it, adapted to carry off the water which may pass into it, standard C, adapted to support the trolley-wire or conductor, flanges provided with longitudinal slotted holes and attached by bolts to said standards and adapted to permit a lineal movement, and a conductor or trolley-wire attached to said flange.

2. In a conduit for electric railways, the combination of a box or pipe constructed with a longitudinal side entrance or slot for the supporting-arm of a contact device to pass through and be operated, said side entrance being formed by the upper part or vertical plate of one side of the box projecting laterally over the lower part of the same side, a slot extending from the roadway down to or below the bottom of the box or pipe, one side of said box or pipe forming part of one side of said slot, the same being adapted to permit the operation of a supporting-arm of a contact device and also adapted to confine within the slot the water and other substances which may enter it and conduct such substances outside the box directly into the drain, a drain placed below the bottom of said box and directly beneath said slot communicating with it, adapted to carry off the water which may pass into it, a trolley-wire or conductor supported within said box and adapted to permit the passage of a trolley-wheel or contact device upon or in contact with it.

3. In a conduit for electric railways, the combination of a box or pipe provided with a longitudinal slot, with a slot extending from the roadway or track to or below the bottom of the box or pipe, one side of said box or pipe forming part of one side of said slot, the same being adapted to permit the operation of a supporting-arm of a contact device and also adapted to confine within the slot water and other

substances which may enter it and conduct such substances outside the box, and a drain placed beneath said slot communicating with it

476,604. INSULATOR-BRACKET. THOMAS H. BRADY, New Britain, Conn. Filed Apr. 9, 1892. Serial No. 428,532. (No model.)



Claim.—1. An insulator-bracket consisting of a shank and a hollow head secured to the shank, with an interior space between the shank and head, substantially as described, and for the purpose specified.

2. An insulator-bracket consisting of a shank and a threaded hollow head secured to the shank, with an interior space between the shank and head, substantially as described, and for the purpose specified.

3. An insulator-bracket consisting of a shank and a hollow head secured to the shank, with an interior space between the shank and head and openings through the walls of the head, substantially as described, and for the purpose specified.

476,605. ARTIFICIAL TOOTH. ROBERT BREWSTER, New Barnet, England. Filed Sept. 23, 1891. Serial No. 406,601. (No model.) Patented in England May 1, 1890, No. 6,733.



Claim.—1. In artificial teeth, the combination of a single metal pin at the back of the tooth, an undercut recess in the neck thereof, an opening in the back, communicating with such undercut recess, and a narrow shallow recess in the back, communicating with said opening, substantially as herein shown and described, and for the purpose stated.

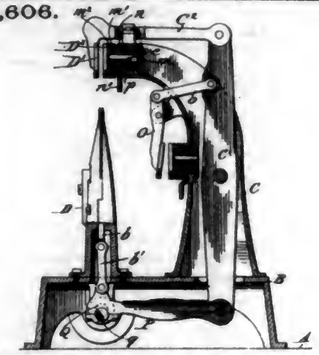
2. In artificial teeth, the combination of a single metal pin at the back of the tooth, an undercut recess in the neck thereof, a shallow recess in the back in communication with said undercut recess, and a metal backing-piece having a lower perforated end fitting over the metal pin and an upper extended end entering the undercut recess in the neck, substantially as herein shown and described, and for the purpose stated.

476,606. SEAM-PRESSING DEVICE. JOHN E. BROWN, Washington Court-House, Ohio. Filed Nov. 3, 1891. Serial No. 410,765. (No model.)

Claim.—1. In a seam pressing or flattening device, the combination, with a support or standard, of a vibrating head or hammer, a stationary head or disk having a shank adapted to fit within a tube or socket-piece, the said tube or socket-piece constructed to receive the shank and provided with a flange, an elastic packing interposed between said flange and the stationary disk, and means for securing the said tube or socket-piece in different adjusted positions on the standard, substantially as shown and described.

2. In a seam pressing or flattening device, the support or standard

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provided with a screw-threaded socket, a vibrating head or hammer, a stationary head or disk having a shank adapted to fit within a tube or socket-piece, the said tube or socket-piece constructed to receive the shank and complementarily screw-threaded to engage the socket in the standard, a flange on said tube, and an elastic packing interposed between the flange and stationary disk, in combination, substantially as shown and described.

3. The combination of the standard C, the lever C', fulcrumed in said standard, means for rocking the same, the stationary disk or head D^3, the arm or bar C^3, having a beater or presser at one end and pivotally connected with the lever C' at the other and supported and sliding in suitable bearings, so as to be reciprocable longitudinally with respect to itself upon said standard and the said bearings, substantially as shown.

476,607. ELECTRIC-LIGHT MAST-ARM. JOHN H. CALDWELL, Philadelphia, Pa. Filed June 19, 1891. Serial No. 396,794. (No model.)

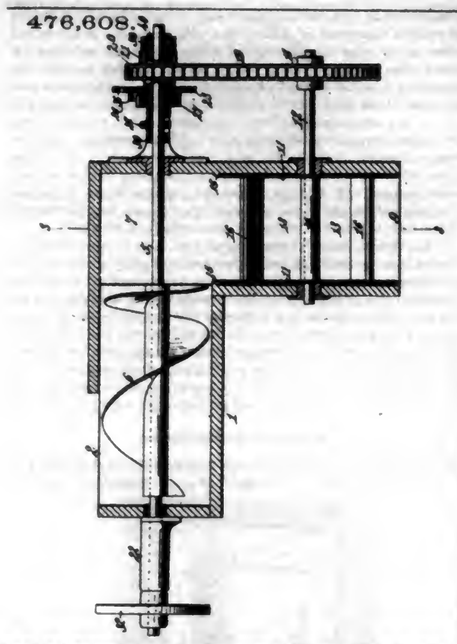
Claim.—The combination of a supporting plate or bracket provided with lugs *a*, which extend beyond the sides of a pole to which the bracket is adapted to be secured, a rod supported by the bracket, a mast-arm pivotally connected to the ends of said rod and provided with the intermediate inclined portion *f*, the ends of the arm being in different planes, and means for turning the mast-arm on its pivots, substantially as described.

476,608. GRAIN-METER. ADDISON N. CALKINS, Quincy, Ill. Filed Jan. 27, 1892. Serial No. 419,442. (No model.)

Claim.—1. In a grain-meter, the combination, with a measuring-wheel having radial partitions and a casing inclosing said wheel and provided with inlet and discharge openings, of yielding caps placed on the outer ends of the wheel-partitions and having yielding contact with the wheel-casing, substantially as described.

2. In a grain-meter, the combination of a box for receiving the material to be measured, a screw conveyer mounted in said box, a vertically rotary measuring-wheel having closed ends and an open periphery and provided with radial partitions forming a series of compartments that are adapted to communicate successively with the screw conveyer, and gearing connecting the shafts of said screw con-

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veyer and measuring-wheel and automatically actuating said wheel, substantially as described

3. In a grain-meter, the combination of a screw conveyer having a rotary longitudinally-movable shaft, a box inclosing said conveyer, a vertically rotary measuring-wheel having radial partitions and compartments open at the periphery and adapted to be brought successively into communication with one end of the box inclosing the conveyer, a shaft for said measuring-wheel provided with a fast sprocket-wheel, a loose sprocket-wheel on the conveyer-shaft, a chain connecting said sprocket-wheels, clutch mechanism on the conveyer-shaft, and means for causing the pressure of the grain to move the conveyer-shaft endwise and automatically clutch and unclutch the loose sprocket-wheel and intermittingly actuate the measuring-wheel, substantially as described.

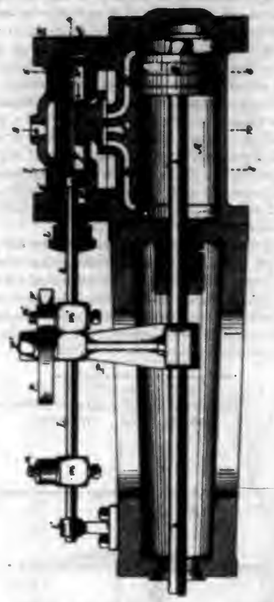
4. In a grain-meter, the combination of the screw conveyer 6, having a longitudinally-movable shaft 5, provided with clutch-ratchet 27, the loose sprocket-wheel 20, mounted on said shaft and provided with a disk 23, having a spring-actuated pawl 25, adapted to engage said ratchet, a spring 34 on the other end of said shaft, a lever 28, actuated from the shaft 5 and having a pin 31 to hold the pawl away from the ratchet, the vertical measuring-wheel 10, having a shaft 12, provided with a fast sprocket-wheel 18, and the chain 19, connecting the sprocket-wheels 18 and 20, substantially as described.

5. In a grain-meter, the combination of the box 1, having inlet 2 at one end, the casing 8, communicating with the other end of said box and provided with discharge-opening 9, the vertical measuring-wheel 10, mounted in said casing in communication with the box 1 and having a shaft 12, provided with a fast sprocket-wheel 18, a screw conveyer 6, inclosed in the box 1 and provided with a longitudinally-movable shaft 5, having a ratchet 27, the loose sprocket-wheel 20, mounted on said shaft and provided with a disk 23, carrying a spring-actuated pawl 25, adapted to engage the ratchet 27, the lever 28, actuated from the shaft 5 and carrying a pin 31, adapted to hold the pawl 25 away from the ratchet 27, the spring 34 on the shaft 5, and the chain 19, connecting the sprocket-wheels 18 and 20, substantially as described.

6. In a grain-meter, the combination of the casing 8, having discharge-opening 9, the vertical measuring-wheel 10, provided with radial partitions 13 and intermediate compartments 14, the yielding caps 16 on the outer ends of said partitions, and the springs 17 for forcing said caps into yielding contact with the casing, substantially as described.

7. In a grain-meter, the combination of the screw conveyer 6, having a longitudinally-movable shaft 5, the loose sprocket-wheel 20, mounted on said shaft and adapted to be clutched therewith, a brake 36, the vertical measuring-wheel 10, having a shaft 12, provided with a fast sprocket-wheel 18, and the chain 19, connecting said sprocket-wheels 18 and 20, substantially as described.

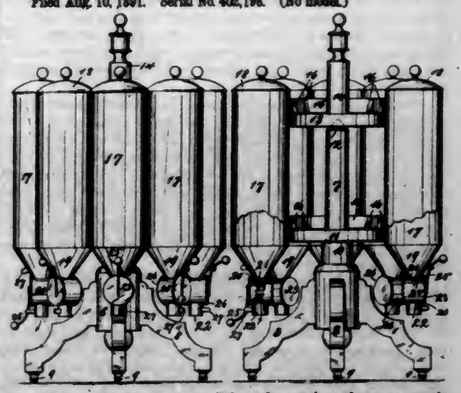
476,609. STEAM-ACTUATED VALVE. DYER COOPER, Philadelphia, Pa. Filed Feb. 23, 1892. Serial No. 422,518. (No model.)



Claim.—1. The combination of the steam-chest having open-ended cylindrical chambers in communication at all times with the steam-supply, a cylindrical plunger adapted to said chambers, said cylindrical plunger being recessed and fitting over a slide-valve, a slide-valve, exhaust-ports leading from said cylindrical chambers, and passages in said cylindrical plunger, with mechanism for oscillating said plunger, substantially as specified.

2. The combination, in a steam-engine, of the slide-valve, a steam-chest having opposite chambers d' d^2 in communication at all times with the steam-supply, a cylindrical plunger adapted to said chambers and having a recess with inclined faces i i', to which the slide-valve is adapted, exhaust-ports leading from said cylindrical chambers, the cylinder A, its reciprocating piston, a piston-rod *b*, a standard secured to said rod, a double cam carried by said standard, a rod extending from said plunger to the standard, and blocks carried by said rod and adapted to be acted upon by said double cam, substantially as specified.

476,610. SELF-MEASURING STORE-CASE. THOMAS F. CRARY, Middleport, Ohio, assignor of one-half to Frank W. McLean, same place. Filed Aug. 10, 1891. Serial No. 402,198. (No model.)



Claim.—1. A store-case consisting of a number of cans or vessels having discharge-openings at their lower ends and circularly arranged, in combination with a central supporting-standard provided with shelves on which the cans rest, said supporting-standard being in two

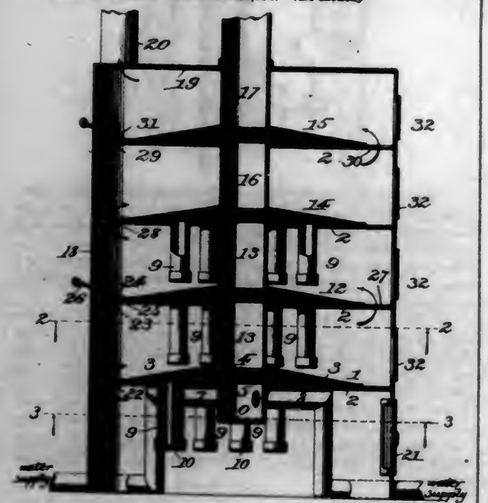
sections separable from each other and each carrying one of the shelves, all substantially as shown and described.

2. A store-case consisting of a group of cans having individual measuring attachments and connected to each other by soldering, preferably, rings or bands to which the so-united group is affixed, rests connected to and interiorly projecting from said rings, shelves upon which said rests are supported, and a central standard from which said shelves extend, all substantially as shown and described.

3. A store-case consisting of a group of cans having individual measuring attachments and connected to each other, preferably by soldering, two rings or bands to which the so-united group is affixed rests connected to and interiorly projecting from said rings, and a central standard carrying two shelves, one for each band, their rests being supported thereon, one of said shelves resting on a shoulder on said standard, the other on the pointed upper end of the same, all substantially as shown and described.

4. In cylindrical measuring attachments of the kind shown, the means to regulate their cubic capacity, which means consists of a stationary screw-threaded stud 30, rigidly connected at the center of one of the heads of the measure, a movable head having a boss 29, screw-threaded interiorly and capable of engagement with stud 30, and a flange provided on this movable head to hold it straight and guide it evenly, all substantially as shown and described.

476,611. STEAM-GENERATOR. JAMES CUNNINGHAM, Dunbore, Pa. Filed Jan. 9, 1892. Serial No. 417,557. (No model.)



Claim.—1. A steam-generator consisting of a plurality of water-domes, each having a rising top portion and a bottom plate extending beyond the outer edge of the top and apertured to close the space between the periphery of the dome and the fire-jacket and cause the heated air to pursue a circuitous course through the air-space, said domes being connected by central vertical pipes giving intercommunication and the structure being inclosed by a fire-jacket, substantially as described.

2. In a steam-generator, the combination, with a plurality of water-domes, each having substantially the form of a frustum of a cone of small altitude, of a fire jacket inclosing said domes, which have communication by means of central connecting-pipes, water-supply pipes entering said jacket beneath the lower dome and communicating at their inner raised ends with a pendent water-chamber hanging from the bottom plate of the lower dome, and dampers closing draft-passages in the edges of said bottom plates, whereby the heated gases are compelled to flow entirely through the intermediate spaces, substantially as described.

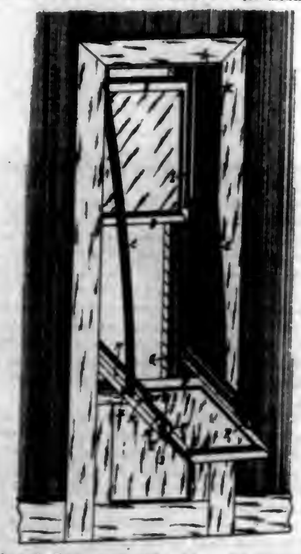
3. In a steam-generator, the combination, with a plurality of water-domes, each composed of a rising top portion and a bottom plate extending beyond its point of union with the top, of a fire-jacket at the outer edges of said bottom plates, the latter being each provided with a draft-opening in or near one edge, adapted to communicate with a similar opening in the diametrically-opposite edge or part of the next bottom plate, the alternate bottom plates being provided, also, with dampered openings directly over the draft-passages in the bottom plate below, substantially as described.

4. In a steam-generator, the combination, with a plurality of water-domes, each composed of a top portion rising toward a central pipe communicating with the dome above and a bottom plate having a series of pendent extensions, of a fire-jacket surrounding the structure and water-supply pipes entering the fire-jacket at its lower end upon different sides, said pipes rising within the fire-chamber and then approaching a central pendent water-chamber which communicates with the lower dome and is entered by said pipes, substantially as described.

5. In a steam-generator, the combination, with a plurality of water-domes arranged one above another and having communication by means of central vertical pipes, of a fire-jacket to which the bottom plates of said domes approach, said bottom plates having opposite draft-passages, with dampers closing the passages on one side in the alternate bottom plates, the pintles of the dampers being prolonged and passed through the fire-jacket, substantially as described.

6. A steam-generator consisting of a plurality of water-domes arranged in an ascending series, the lower dome having a series of pendent extensions around a central pendent water-chamber, water-pipes entering a fire-jacket inclosing the domes and communicating with the pendent water-chamber, and a chimney entering the top of the jacket on one side, the bottom plate of the lower dome and that of the third being provided with draft-passages on the same side with the chimney, the other bottom plates having two opposite draft-passages in each, one of which is closed by a damper beneath the single opening in the plate next above, substantially as described, and for the purpose specified.

476,612. WINDOW-FRAME. CHARLES DAHLEN, New York, N. Y. Filed June 18, 1891. Serial No. 396,741. (No model.)



Claim.—1. The combination, with a window-frame, of fixed parting-strip sections, stop-strips pivotally secured at their upper parts to the window-frame, metallic sash-guide frames having parallel channels and connected at their lower ends to the window-frame, and means for engaging the stop-strips with the guide-frames to hold the latter in a horizontal or inclined position when swung inward, substantially as described.

2. The combination, with a window-frame, of fixed parting-strip sections and movable stop-strips and a metallic sash-guide frame having parallel channels for the sashes, part of said frame being bent so as to form a stop-section, as D, adapted to sit against and protect the movable stop-strip, substantially as described.

476,618. ELECTRIC SWITCH. CHARLES E. DAVIS, Chicago, Ill. Filed Feb. 20, 1891. Serial No. 382,136. (No model.)

Claim.—1. In an electric switch, the combination of a base B, a switch-bar C, having a straight slot therein, the catches d', the co-operating pin c, the arbor D, provided with the pins A, adapted to engage with the switch-bar and to move it parallel to itself out of engagement with the catch d', with which it is in contact, and the spring s for rotating the bar and retracting it to engagement with the succeeding catch.

2. In an electric switch, the base having the catches d', the co-operating pin c thereon, the slotted switch-bar, a projecting pin, as A, on the arbor, engaging in both directions with projections on the

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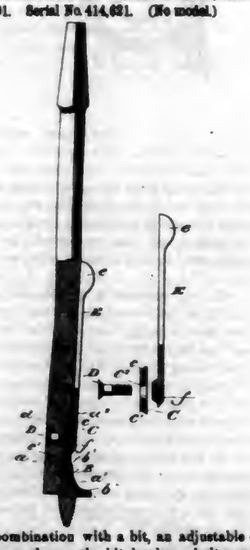


switch-bar, with lost motion between them, and the spring s on the arbor, in engagement with the switch-arm, combined and operating substantially as described.

3. In an electric switch, the combination of the base B, the catches, as d', the co-operating pins c, the slotted switch-bar C, the arbor D, a lost-motion-engaging connection between the arbor D and the bar C, adapted to move the bar laterally out of engagement with the catch d' and permit its rotation and retraction to a succeeding catch.

4. In an electric switch, the base provided with an aperture for the passage of the line-wire, a binding-terminal consisting of the thick part T, bent angularly into the aperture and provided with a screw P, and the brush t, having one end beneath the thick part T, which is secured to the base and which clamps the brush thereto by means of the screw w.

476,614. ADJUSTABLE BIT. HENRY C. DAVIS, Annisquam, Mass. Filed Dec. 10, 1891. Serial No. 414,621. (No model.)



Claim.—1. In combination with a bit, an adjustable cutter constructed substantially as shown, the bit having a bolt-receiving aperture which is countersunk and serrated, a bolt having a serrated head, a clamping-plate having opposite beveled upper and lower edges, a conical aperture, and a lever having a conical portion adapted to engage therewith, substantially as set forth.

2. A bit having its shank straight on one edge and cut away to receive an adjustable cutter and clamping plate, an adjustable bolt, means for holding the same against turning, a lever pivoted upon the threaded portion of the bolt and adapted to engage with a clamping-plate, so as to force the same against the adjustable cutter, substantially as shown, and for the purpose set forth.

3. In combination with a bit constructed substantially as shown and provided with a flat side, which is recessed, so as to provide shoulders a' and a^3, an adjustable cutter B, adapted to lie partially within said recess, a clamping-plate having oppositely-beveled edges, a bolt adjustably secured to the bit, and a lever E, threaded for engagement with the bolt, said lever being adapted to bear upon the clamping-plate when turned to lie parallel with the bit, substantially as shown, and for the purpose set forth.

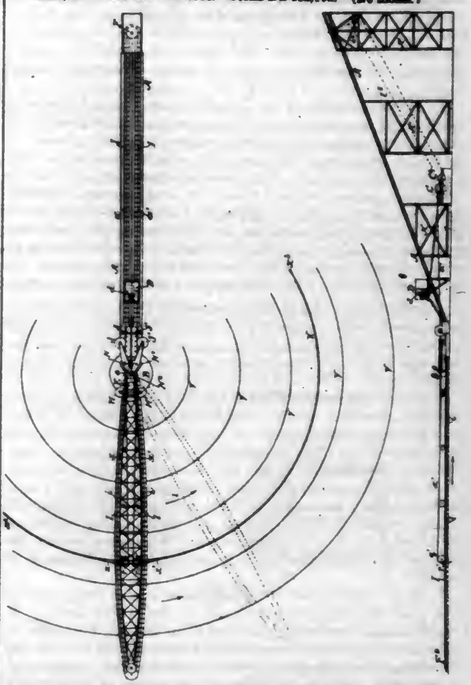
4. In combination with a bit provided with an adjustable cutter and clamping-plate, which are adapted to be forced against each other, a bolt carried by the bit, the threaded end passing through the clamping-plate for engagement with the lever, which is pivoted thereto, said lever having a conical portion which is adapted to engage with the inclined walls of the aperture in the clamping-plate, the end of said lever extending beyond said aperture in the clamping-plate, substantially as set forth.

476,615. CONVEYING MECHANISM. JAMES M. DODGE, Philadelphia, Pa. Filed Nov. 17, 1891. Serial No. 412,191. (No model.)



Claim.—The combination, in a conveyer, of the conveying-chain, the conveying portion of which is sagged or carved, flights carried by said chain, and carriers for the chain, with a trough under the conveying portion adapted to support the material being conveyed, the face of said trough being substantially parallel with and conforming to the curve or sag-line of the chain, substantially as described.

476,616. CONVEYING MECHANISM. JAMES M. DODGE, Philadelphia, Pa. Filed Nov. 17, 1891. Serial No. 412,192. (No model.)



Claim.—1. The combination, in a conveyer, of the fixed section and the pivoted section, a vertical pivot therefor, so that it can be moved in a horizontal plane, with an endless conveying-chain passing around a guide at the end of the fixed section and around a guide at the end of the pivoted section and adapted to carry material from the pivoted section to the fixed section, substantially as described.

2. The combination, in a conveyer, of the fixed section having two troughs situated side by side, a pivoted section also provided with two troughs, a chain-wheel at the end of the fixed section, a chain-wheel at the end of the pivoted section, and an endless conveyer-chain adapted to pass around the two wheels and having flights adapted to the two troughs on the stationary section and the two troughs on the pivoted section, substantially as specified.

3. The combination of the inclined stationary section having inclined troughs thereon, a chain-wheel at the upper end of the said section, a section pivoted at the base of the inclined section and having at each side a trough, a wheel at the end of the pivoted section, and an endless chain adapted to pass around the two wheels and having flights adapted to the troughs, substantially as described.

4. The combination of the fixed section and the pivoted section, troughs on each section, a center plate at the pivot-point of the pivoted section, and a flighted chain conveyer adapted to the troughs in both sections and also adapted to travel over the center plate, substantially as described.

5. The combination, in a conveying apparatus, of the fixed section, the pivoted section, two independent troughs in each section, an endless-chain conveyer adapted to said troughs, a guide at the end of the fixed section, around which the conveyer-chain passes, a guide at the end of the pivoted section, around which the conveyer-chain passes, and two sets of wheels, one set on each side of the pivot, one set being carried by the pivoted section and the other set being fixed, substantially as described.

6. The combination of the center plate, an inclined fixed section, troughs thereon, a pivoted section, troughs on each side of said pivoted section, an endless-chain conveyer adapted to said troughs, a driving-wheel, around which the conveyer-chain passes, said driving-wheel being at the upper end of the fixed section, a wheel at the extreme end of the pivoted section, around which the conveyer-chain passes, two sets of wheels for the conveyer-chain, one set on one side of the pivot being carried by the pivoted section and the other set on the opposite side of the pivot being fixed, with two wheels mounted in bearings above the conveyer-chain and situated between the fixed set of wheels and the inclined trough, substantially as described.

7. The combination of the fixed section, the pivoted section, troughs on each section, an endless-conveyer chain adapted to said troughs, mechanism for driving said chain, guides for the chain, and an extension of the pivoted section passing rearward from the pivot-point and carrying a take-up wheel which takes up the slack in the conveying-chain when the pivoted section is moved, substantially as described.

8. The combination of the flat center plate, a pivot, a fixed section, troughs thereon, a pivoted section, troughs on said pivoted section, a driven endless-chain conveyer adapted to said troughs and to the flat upper surface of the center plate, a rearward extension of the pivoted section beyond the pivot, a take-up wheel thereon for the conveyer-chain, guiding-wheels H H' near the pivot-point and carried by the pivoted section, and guiding-wheels J J' on the opposite side of the pivot in line with the fixed troughs, the whole so arranged that on the movement of the pivoted section to one side or the other the take-up wheel will take up the slack of the chain at the center plate on the run opposite the one conveying the material, substantially as specified.

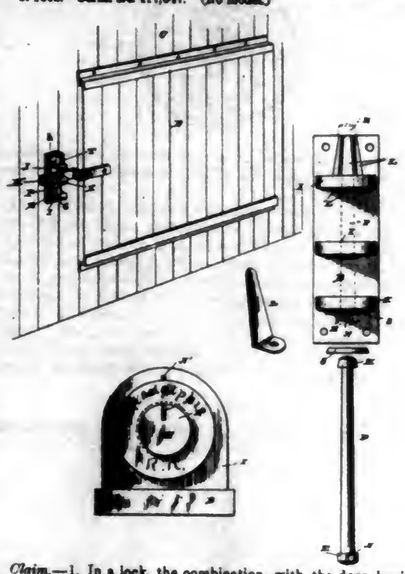
9. The combination of the pivoted section, conveying mechanism, and a steering-rope anchored at the side of the pivoted section and extending to and along said section, with mechanism for drawing upon said rope to move the section toward the anchor, substantially as specified.

10. The combination of the pivoted conveying-section, the pivot therefor, a conveyer on said pivoted section, mechanism for driving said conveyer, steering-ropes x x', and steering apparatus situated near the pivot end of the conveyer, said ropes passing from said steering apparatus along the pivoted section to a point distant from the pivot and then passing out from the pivoted section one to an anchor on one side of the section and the other to an anchor on the other side of the section, so that upon drawing one rope the pivoted section will be moved in one direction and drawing upon the other rope the pivoted section will be moved in the opposite direction, substantially as specified.

11. The combination, in conveying apparatus, of the pivoted section, pivot therefor, conveying-troughs on said pivoted section, conveyers adapted to said troughs, mechanism for imparting motion to said conveyers, steering-drums, driving-shafts, clutches for reversing the motion of said drums, an elevated platform, a shaft, a hand-wheel, a rope-wheel, ropes passing from said rope-wheel to the clutching mechanism, whereby on turning the hand-wheel the clutches can be operated, and steering-ropes passing from the drums along the pivoted section to a point at a distance from the pivot, one rope passing from the pivoted section to an anchor at one side, the other rope passing to an anchor at the opposite side, substantially as described.

12. The combination of the inclined fixed section, trough thereon, the pivoted section, trough on said pivoted section, an endless-chain conveyer adapted to said trough, mechanism for driving said endless-chain conveyer, steering-drums, clutches therefor for reversing the motion of said drums, mechanism for operating the clutches, steering-ropes passing from said drums through the center portion of the inclined section to the pivot-point, guiding-wheels N N' near the pivot, and guiding-wheels N^2 N^2, mounted at the pivot for the steering-ropes, said steering-ropes passing from the wheels to a point distant from the pivot, with guiding-wheels at this point, around which the ropes pass, one rope being anchored on one side of the pivoted section and the other rope being anchored on the opposite side of the pivoted section, substantially as described.

476,617. SEAL-LOCK. JOHN DOWLING, Altoona, Pa. Filed Jan. 5, 1892. Serial No. 417,047. (No model.)



Claim.—1. In a lock, the combination, with the door having a hasp, of a base-plate secured to the door-frame and having three staples in vertical alignment, over the center one of which the hasp passes, leaf-springs rising from the upper staple and converging normally toward their tips, a guard-tube for the springs, a pin passing upward through the eyes in said staples and having a knob resting on the tips of the springs, and a seal connected with the rod beneath the lowermost staple and larger than the eye therein, as and for the purpose set forth.

2. In a lock, the combination, with the door having a hasp, of a base-plate secured to the door-frame and having three staples in vertical alignment, over the center one of which the hasp passes, leaf-springs rising from the upper staple and converging normally toward their tips, a pin passing upward through the eyes in said staples and having a knob resting on the tips of the springs, a head at the lower end of the pin of a size to pass through the eyes, and a washer-shaped seal surrounding the pin between the head and the lower staple and larger than the eye therein, as and for the purpose set forth.

3. In a lock, the combination, with the door having a hasp, of a base-plate secured to the door-frame and having three staples in vertical alignment, over the center one of which the hasp passes, a pin passing up through the eyes in said staples and having a head at its lower end, means for preventing its withdrawal through the uppermost eye, and a washer-shaped seal having an opening fitting the pin, said seal being located between the head and the under side of the lower eye and larger than either, as and for the purpose set forth.

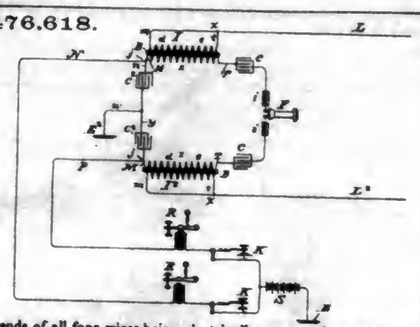
4. In a lock, the combination, with a door having a hasp, of staples, over one of which the hasp passes, a pin passing through the eyes in said staples, means for holding it therein, a head at one end of the pin of a size to pass through the several eyes, the side of the head and the adjacent face of the nearest staple having notches, and a circular seal centrally perforated to fit the pin and interposed between the staple and the head and larger than the latter, as and for the purpose hereinbefore set forth.

476,618. APPARATUS AND SYSTEM FOR COMPOUND TELEGRAPHY AND TELEPHONY. FRANCIS W. DUNBAR, Newark, N. J., assignor to the American Telephone and Telegraph Company, of New York. Filed Jan. 26, 1892. Serial No. 419,190. (No model.)

Claim.—1. A combined simple and inductive resistance apparatus consisting of an iron core having its length divided into two wire-spaces and a coil formed of a twisted pair of insulated wires wound in each of the said wire-spaces in the same helical direction, the four inner terminals of the said pairs of wires being electrically united, substantially as specified.

2. A combined simple and inductive resistance apparatus comprising an iron core and two twisted pairs of insulated wires wound thereover, one of the said pairs from one end to the center of said core and the other from the center to the remaining end, the wires of one pair differing in resistance from those of the other pair and the central or

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inner ends of all four wires being electrically connected together substantially as described herein.

3. The combination, in a resistance and retardation apparatus, of an iron core having iron end plates and an approximately central partition, twisted pairs of insulated wires wound in the spaces between the central partition and the end plates, respectively, the inner terminals of all four conductors being joined electrically to each other at the said central partition, and an outer iron shell or sheath, substantially as described.

4. In a system for the simultaneous transmission of telephonic and telegraphic signals over the same conductors, the combination, with two main conductors severally provided with earth terminal branches and including telegraphic apparatus, and constituting direct and return conductors united by branches or bridges, including telephonic apparatus and condensers, to form a double-wire telephonic circuit, of a resistance and retardation apparatus interposed at the junction of each of the main conductors with its telegraphic and telephonic branches or extensions and having two independent differential helices, each formed of a double and twisted insulated conductor wound in the same helical direction on the two ends of an iron core and included, respectively, in the said branches, but having their inner terminal ends all connected together, whereby is provided a simple resistance between each branch and the main line, but an inductive resistance between the telegraphic and telephonic branches, substantially as described.

5. The combination, substantially as hereinbefore described, in a system for the simultaneous transmission of telegraphic and telephonic signals, of two main conductors extending between terminal stations, an earth branch at each station for each conductor, including telegraphic stations, and provided with condensers to absorb the static discharge of said instruments, a branch, loop, or bridge at each station joining the said two main conductors and including in its circuit a telephone and a condenser, and a resistance apparatus constructed as described herein, connected at the junction of said main conductors with the telegraph and telephone branches and forming a simple resistance between each branch and the main line, but an inductive or retardation resistance between the telegraphic and telephonic branches.

476,619. BOX FOR BLACKING, &c. ISIDORE EISENSTADT, Chicago, Ill. Filed Sept. 16, 1891. Serial No. 406,069. (No specimens.)



Claim.—1. A receptacle for blacking and the like, made throughout of open-work material adapted to be introduced into a box, substantially as described.

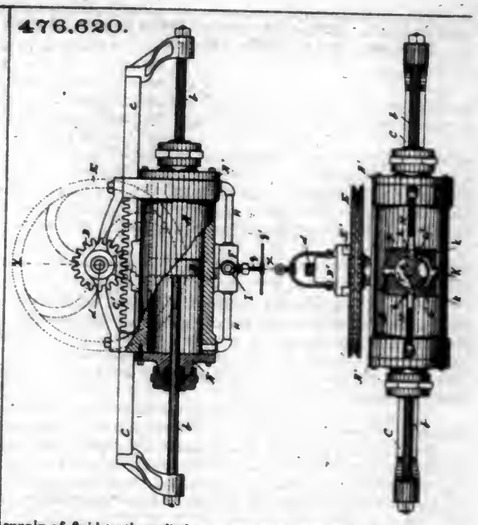
2. The cake-holder for blacking and the like, comprising an inverted box composed entirely of open-work material C, introduced to fit snugly in the external box A, substantially as described.

3. In combination, the external box A, cover B, and the interior box C, made of open-work material and having the downward depending sides fitting within the side of the box A, substantially as described.

476,620. STEAM STEERING APPARATUS. BYRON W. FELLOWS, Beverly, Mass., assignor of one-half to Cornelius Murphy, same place. Filed Nov. 24, 1891. Serial No. 412,962. (No model.)

Claim.—1. The combination of a cylinder having a stuffing-box at each extremity, a piston in the cylinder, a valve for controlling the

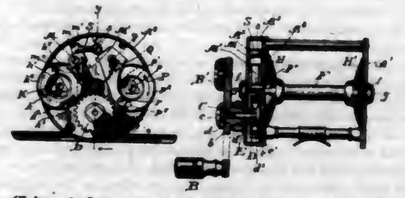
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supply of fluid to the cylinder, a piston-rod secured to the piston and extending in reverse directions therefrom through the stuffing-boxes at the opposite ends of the cylinder, a bar arranged outside the cylinder, provided with a rack and having its extremities connected with the opposite ends of the piston-rod, a shaft provided with a chain-wheel and a pinion, which is geared with the rack, a rudder-post, and a chain connection between the rudder-post and the chain-wheel, substantially as described.

2. The herein-described steam steering apparatus, consisting, in combination, of a steam-cylinder, a piston movable therein and having a rack connected to its piston-rod, a pinion meshing in said rack and secured to a shaft provided with a clutch, a chain-wheel loose on said shaft and adapted to be connected to the said clutch, and a reversing-valve for actuating the steam-piston and its connections, substantially as and for the purpose set forth.

476,621. FISHING-REEL. RICHARD R. FENNER, Chicago, Ill., assignor of one-half to Charles H. Falch, same place. Filed Oct. 10, 1891. Serial No. 408,290. (No model.)

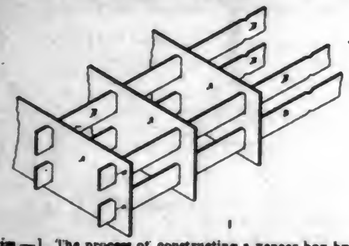


Claim.—1. In a click mechanism for fishing-reels, the combination, with a pinion attached to the spindle of the reel, of a disk K, having a cam-face upon its edge, pivoted within one head of the reel and protruding through the rim thereof, a bell-crank lever having one arm bearing against the cam-face of said disk, a click-spring attached to the other arm of the said lever, and a second spring pressing against said bell-crank lever and normally holding said lever against said cam-face and said click-spring against said pinion, substantially as described.

2. In a click mechanism for fishing-reels, the combination, with the spindle F and pinion F', attached thereto, of the pivoted disk K, having milled edge k^3 protruding from the rim of the reel, the curved slot k^2, stop-screw k^4, and wedging-face k^5, the bell-crank lever M, having arms m and m', the click-spring M', attached to one of the said arms, and the spring S, pressing against said bell-crank lever, substantially as and for the purposes described.

3. In a brake or drag mechanism for fishing-reels, the combination, with the spindle of the reel and a flange attached thereto, of a spring in one end of said reel, a stud in the end of said spring normally pressed by it against said flange, and a cam P, having milled edge p^3 protruding from the rim of said reel, grooved slot p^2 to receive said stud, and inclined faces p^3 and p^4, adapted to bear up the end of the said spring and raise said stud clear of said flange, substantially as described.

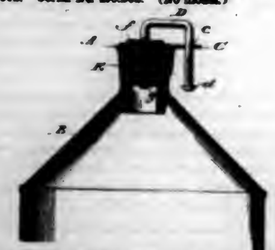
476,622. VENEER BOX. JEFFERY T. FERREE, Anderson, Ind. Filed Feb. 1, 1892. Serial No. 419,982. (No model.)



Claim.—1. The process of constructing a veneer box by mortising one set of veneer strips and notching another set, and then inserting one set of strips through the mortises of the other, one of which sets is wetted to expand them and the other condensed by seasoning, and then drying the strips to expel moisture and shrink one set upon the other, substantially as specified.

2. The process of constructing a box of veneer strips by mortising strips A across the grain of the wood in a moistened or expanded condition, notching strips B in a condensed or dry condition, inserting the notched strips B into the mortises of strips A as far as the notches, and then expelling the moisture from the expanded strips A until they shrink upon and grasp the neck of strips B, substantially as specified.

476,623. CAN-STOPPER. BENJAMIN P. FIELD, Babylon, N. Y. Filed Feb. 4, 1892. Serial No. 420,262. (No model.)



Claim.—1. In combination with a can or vessel, a U-shaped bolt attached movably thereto, a stopper carried by the threaded portion of the bolt, and a nut adapted to contact with the lower end of the stopper, substantially as shown, and for the purpose set forth.

2. In combination with a vessel or can, an apertured angle-plate C, permanently secured adjacent to the mouth of the vessel, a bent bolt D, having parallel members one of which has a head *d* and the other being threaded, a disk *f*, carried by the threaded member of the bolt, and a nut *g* and expansible stopper being attached to the bolt between the disk and nut, substantially as shown.

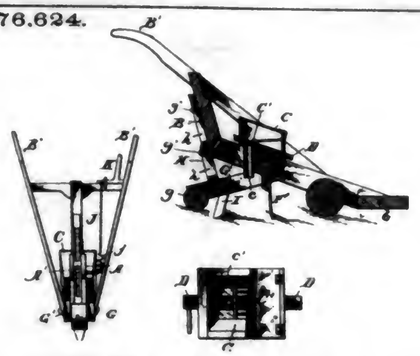
3. In combination with a vessel or can, an apertured angle-plate secured permanently to the neck adjacent to the discharge-opening of the vessel, a bolt D, adapted to be retained upon the can by the apertured angle-plate, said bolt being bent, as shown, and provided with a head *d*, the member of the bolt opposite thereto being threaded, a disk *f*, secured upon the threaded portion of the bolt, a stopper beneath the same, and a nut *g*, the threaded portion of the bolt passing through the stopper, the parts being organized, substantially as shown, to not only provide means for retaining the stopper permanently to the vessel, but also means for expanding the stopper, and a grasping portion for withdrawing the same.

476,624. CORN-PLANTER. ELBEN C. FISHER, Stonerville, W. Va. Filed July 24, 1891. Serial No. 400,642. (No model.)

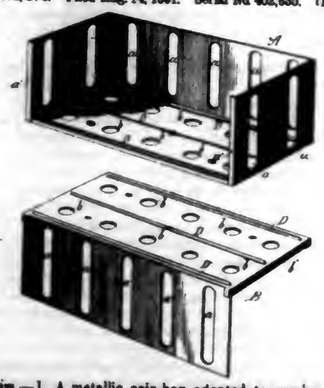
Claim.—1. In a corn-planter, the combination of the parallel pieces A A', a hopper, a feed-slide adapted to reciprocate in said hopper, the frame pivotally secured to said pieces A A' and extending in rear of the hopper, and the slotted post H, secured to the pivoted frame and adjustable on the upright B, substantially as described.

2. In a corn-planter, the main beam consisting of the parallel pieces A A', the upright B, secured in the rear ends thereof, the ground wheel, the hopper mounted on said beam and having a spout *c*, extending downward between the same, the two pieces G G', pivoted to the main beam in front of the hopper and extending behind the same, the post H, secured between the pieces G G' and projecting upward in contact with the upright B, the slot *h* in said post, and the pins *g'* on the upright B, which pass through said slot and guide the post in its vertical movement, substantially as described.

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476,625. BOX FOR HOLDING COIN. ROBERT H. FORSYTH, Washington, D. C. Filed Aug. 14, 1891. Serial No. 402,635. (No model.)



Claim.—1. A metallic coin-box adapted to receive and closely confine a series of columns of coin and provided in its side walls with slots to expose the sides of the outer columns and in its top and bottom with openings to expose the sides of the inner columns, whereby the integrity of the contents may be determined without opening or unsealing the box.

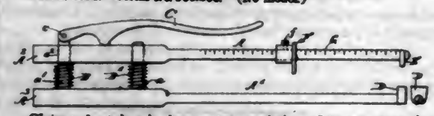
2. A metallic coin-box adapted to receive a series of rows of columns of coin and having in its top and bottom walls openings to permit a view through the box between the inner columns.

3. A metallic coin-holder consisting of the box-like body having an open top and side and the top having the fourth side attached, said parts provided with openings adapted, as described, to expose to view the edges of all the contained coin.

4. A coin-holder comprising a main or body portion made of a single piece of sheet metal bent to form the bottom and three vertical walls and a top portion also made of a single piece of sheet metal bent to form a cover and one vertical wall, the edges of two opposite walls of the body portion being flanged, as shown, to form guides and holding-wings for the removable side.

5. A rectangular sheet-metal coin-box having corrugations formed therein to give the requisite rigidity and having between the corrugations openings adapted to expose the ends and sides of the coin column to view.

476,626. GLASS-TUBE CUTTER. JONATHAN O. FOWLER, Jr., New York, N. Y., assignor to Alexander Everett Hunt, Scranton, Pa. Filed Feb. 5, 1891. Serial No. 380,383. (No model.)



Claim.—1. A hand glass-cutter consisting of two arms or jaws, one provided with a cutter and the other adapted to serve as a rest or clamp for the glass and arranged to reciprocate, in combination with means for holding the same in a practically parallel position, the two jaws being adapted and arranged upon manipulation to maintain a parallel relation while one arm is moving to and from another or both arms are moving to and from each other, substantially as described.

2. In a hand glass-cutter, the combination, with the two arms, one carrying a cutter and the other a rest for the glass tubing and arranged to reciprocate, of the vertical guides for preventing the arms getting out of the same plane with one another, substantially as described.

3. In a hand glass-cutter, the combination, with the two arms, one carrying a cutter and the other a rest for the glass tubing and arranged to reciprocate, of the vertical guides and springs, substantially as described.

4. In a hand glass-cutter, the combination, with the two arms, one carrying a cutter and the other a rest for the glass tubing and arranged to reciprocate and to approach and recede from each other parallel, of an auxiliary mechanical device applied upon or connected to the aforesaid arm or arms for operating an arm or arms, substantially as described.

5. A glass-tube cutter comprising an arm with a cutter at one end, said arm being attached at or near the other end to another arm carrying a suitable bearing opposite the cutter of the first arm, the bars being so connected as to permit movement toward and from each other and having an auxiliary connecting device connected to or bearing upon each bar and with a projecting lever-handle, whereby the bars may be pressed toward each other during the cutting, substantially as described.

476,627. TILE OR BRICK CUTTER. ROBERT M. FRESHE, Plymouth, Ohio. Filed Sept. 8, 1890. Serial No. 364,327. (No model.)



Claim.—1. In a brick and tile machine, the combination of a stationary frame or support, a cutting-table resting on said frame and capable of a combined longitudinal and lateral movement thereon, and a lever adapted to move said cutting-table in both directions, substantially as set forth.

2. In a brick and tile machine, the combination of a stationary bed-frame having track-rails on its sides, a table-frame mounted on the bed-frame and having a longitudinal movement thereon, a wire-cutting frame provided with a platen and movable transversely across the table-frame, and a lever to move the wire-cutting frame and the table-frame, substantially as described.

3. In a brick and tile machine, the combination of a stationary bed-frame having track-rails on its sides, an endwise-movable table-frame supported on rollers upon said track-pieces, a wire-cutting frame provided with a platen and adapted to move transversely across the table-frame, a removable brick board or pallet adjacent to the platen of the cutting-frame, a side-abutting plate or thrust-plate, and an end-abutting plate or stop, all substantially as described.

4. In a brick and tile machine, the combination, with the bed or frame, of a horizontally-movable carriage, a transversely and horizontally movable cutting-table having a stop or end-abutting plate, and a lever connected with said carriage and table, substantially as set forth.

5. In a brick-machine, the combination of an upper frame, a longitudinal shaft for imparting a longitudinal movement to said frame, a lever for operating said shaft, and a cutting-table and cutting-wires, substantially as set forth.

6. In a brick-machine, the combination of standards or supports, a rectangular frame rigidly secured thereto, said frame provided with inwardly-extending flanges, an upper frame, transverse shafts provided with end rollers, said rollers disposed between the flanged portion of the lower frame, a longitudinal shaft having bearings in said upper frame and adapted to impart movement thereto, and cutting table and wires, substantially as set forth.

7. In a brick-machine, the combination of standards or supports, a rectangular frame rigidly secured thereto and provided with transverse strengthening pieces having arch-shaped cavities, an upper frame, a longitudinal shaft for imparting movement to the upper frame and said shaft passing beneath the arch-shaped cavities of the strengthening-stripe and having bearings in the lower frame and also in the upper frame, a lever for operating said shaft, and a cutting-table and cutting-wires, substantially as set forth.

8. In a brick-machine, the combination of a cutting-table having both longitudinal and lateral movement with pallet-supports moving in unison with said table.

9. In a brick-machine, the combination of a movable frame, a longitudinal shaft for imparting movement thereto, said shaft provided near opposite ends with segmental gears, transverse yokes having their lower members formed into racks meshing with the segmental gears of the shaft, and a cutting-table and cutting-wires, substantially as set forth.

10. In a brick-machine, the combination of a movable frame provided with end pieces or hoods, transverse brackets connecting the side pieces of said frame and provided with suitable bearings, a longitudinal shaft passing through said bearings, said shaft having segmental gears mounted thereon near opposite ends, transverse yokes interposed between the transverse brackets and the end pieces or hoods, said yokes having their lower members formed into racks adapted to mesh with the segmental gears, a cutting-table secured to said yokes, and cutting-wires, substantially as set forth.

11. In a brick-machine, the combination of a movable frame provided with end pieces or hoods, transverse brackets connecting the side pieces of said frame and provided with suitable bearings, said shaft having segmental gears mounted thereon, transverse yokes interposed between the transverse brackets and the end pieces or hoods, said yokes having their lower members formed into racks adapted to mesh with the segmental gears and rollers interposed between the upper and lower members of the yokes, said rollers mounted upon short shafts extending from the transverse brackets, a cutting-table secured to the yokes, and cutting-wires, substantially as set forth.

12. In a brick-machine, the combination of a movable frame, a longitudinal shaft for imparting movement thereto, said shaft provided with segmental gears, transverse yokes having their lower members formed into racks meshing with the segmental gears of the shaft, angular adjustable supports secured to the upper members of said yokes, said supports provided at their forward ends with upwardly-extending stops or flanges, a pallet resting upon said supports, a cutting-table secured to the yokes, and cutting-wires, substantially as set forth.

13. In a brick-machine, the combination of an upper movable frame, a longitudinal shaft for imparting motion thereto, and an operating-lever having a universal-joint connection with said shaft, whereby the same may be given either a longitudinal or lateral movement or a combined longitudinal and lateral movement, substantially as set forth.

14. In a brick-machine, the combination of an upper movable frame, a longitudinal shaft for imparting motion thereto, and an operating-lever having its fulcrum-point at its lower end and a pivotal connection with the longitudinal shaft above said fulcrum-point, substantially as set forth.

15. In a brick-machine, the combination of standards having arms projecting laterally therefrom, a segment secured to said arms, an upper movable frame, a longitudinal shaft for imparting motion thereto, an operating-lever having its lower bifurcated end working on the segment and provided with an oblong opening above said end, and an arm pivoted in the upper end of said oblong opening and having its lower end engaging the end of the longitudinal shaft, substantially as set forth.

16. In a brick-machine, the combination of a longitudinally-moving frame, a cutting-table having a combined longitudinal and lateral movement, cutting-wires moving in unison with said table, with a thrust-bar and an angle-plate or stop having longitudinal movement only.

17. In a brick-machine, the combination of an upper movable frame, a longitudinal shaft for imparting motion thereto, said shaft provided near opposite ends with segmental gears, transverse yokes having their lower members formed into racks adapted to engage the segmental gears, and an operating-lever having its fulcrum-point at its lower end and a pivotal connection with the longitudinal shaft above fulcrum-point, whereby a combined longitudinal and lateral motion is imparted to the movable frame, substantially as set forth.

18. In a brick-machine, the combination of standards or supports, a rectangular frame rigidly secured thereto, said frame provided with inwardly-extending flanges, an upper movable frame, transverse shafts carrying end rollers working between the flanges of the rectangular frame and the side pieces of the upper frame, transverse brackets connecting the side pieces of the movable frame, a longitudinal shaft having bearings in the upper frame and having mounted thereon segmental gears, an operating-lever therefor, transverse yokes having their lower members formed into racks engaging the segmental gears and curved from their rear ends upwardly, short shafts extending from the transverse brackets carrying rollers, which work between the two

members of the yokes, a cutting-table connected to the yokes, a transverse strip connecting the ends of the forwardly-extending portions of the yokes, and cutting-wires extending from said strips to the forward portion of the cutting-table, substantially as set forth.

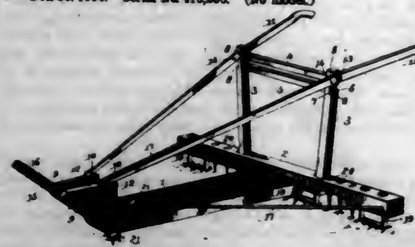
19. In a brick-machine, the combination of a transverse thrust-bar, a series of cleats secured thereto, a series of plates secured to said cleats with a space between the contiguous edges, a laterally-movable cutting-table, and cutting-wires adapted to pass between said spaces as the table is thrust rearwardly to its full extent, substantially as set forth.

20. In a brick-machine, the combination of a cutting-table, a transverse bar, adjustable bands arranged on said bar, said bands provided at their upper ends with apertured caps and at their lower ends with slotted extensions, rods having their upper screw-threaded ends passing through said apertures, thumb-nuts upon said screw-threaded ends, adjustable bands encircling the forward side piece of the cutting-table, said bands provided at their upper ends with slitted extensions or flanges and also provided with lugs or projections, and cutting-wires secured to the lower ends of the bars, passing into the slitted extensions of the upper and lower bands, and having their lower ends secured to the lugs of said lower bands, substantially as set forth.

21. In a brick-machine, the combination, with a movable cutting-table, of an adjustable end stop or angle-plate secured thereto, substantially as set forth.

22. In a brick-machine, the combination of a transverse thrust-bar provided with an open back, a series of cleats secured thereto, a series of plates secured to said cleats with a space between the contiguous edges, a laterally-movable cutting-table, and cutting-wires adapted to pass between said spaces as the table is thrust rearwardly to its full extent, substantially as set forth.

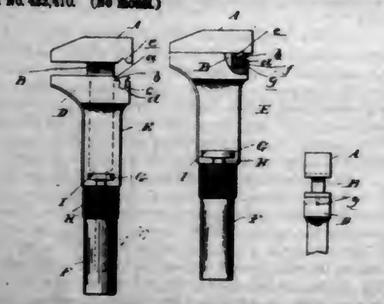
476,628. COTTON-CHOPPER. ISAAC R. GAY, Camden, S. C. Filed Dec. 26, 1891. Serial No. 416,238. (No model.)



Claim.—1. In a machine of the class described, the combination, with the longitudinal beam, of the transverse rear beam, the U-shaped choppers spaced apart and depending from the under side of the same, and the series of rake-teeth depending from the transverse beam and alternating with the choppers, substantially as specified.

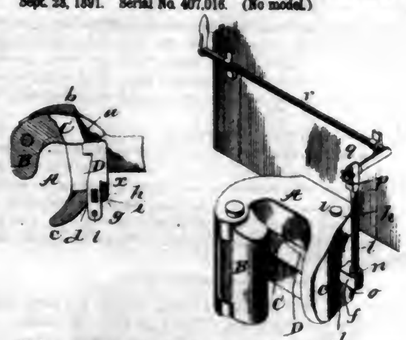
2. In a machine of the class described, the combination, with the longitudinal beam and the plow-at the front end of the same, of the transverse beam bolted to the rear end of the longitudinal beam, the central and outer end U-shaped choppers secured to the under side of and depending from the transverse beam, and the series of rake-teeth also depending from said beam and alternating with the choppers, substantially as specified.

476,629. WRENCH. PETER GENDRON, Toledo, Ohio, assignor to the Gendron Iron Wheel Company, same place. Filed Feb. 23, 1892. Serial No. 422,410. (No model.)



Claim.—A wrench consisting of a shank having a stationary jaw thereon, a movable jaw on the shank, both jaws having rearward extensions forming jaws, the movable jaw formed with a gain and a cylindrical transverse recess in its upper face and the under face of the rear of the stationary jaw having a gripping-notch formed therein, and a serrated head *b*, having the cylindrical extension *c* fitted in the said recess, the combined width of the head and extension being less than the width of the recess or gain, substantially as described.

476,630. CAR-COUPLING. JOHN GREEN, Renovo, Pa., assignor of one-half to William L. Holman and John McCord, same place. Filed Sept. 23, 1891. Serial No. 407,016. (No model.)



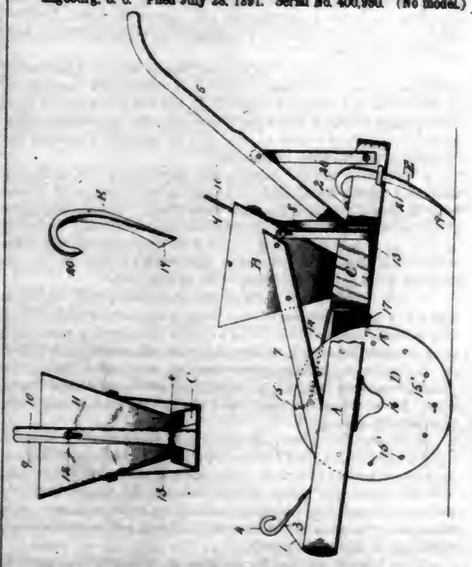
Claim.—1. In an automatic car-coupling, the combination of a swinging hook and a latch fulcrumed in and extending through one side of the head and part way across the draw-bar and provided with a shoulder bearing against the inside of the head and the inner end of the hook bearing against the free end of the latch when the hook is coupled.

2. In an automatic car-coupling, the combination of a swinging hook and a latch fulcrumed in one side of the head, extending through said side of the head and part way across the draw-bar and provided with a vertical pin at its inner end.

3. In an automatic car-coupling, the combination of a swinging hook and a latch fulcrumed in one side of the head to move vertically, extending through said side of the head, bearing against the inside thereof, and extending part way across the draw-bar and provided with a vertical pin which engages the lower side of the draw-bar.

4. A latch for automatic car-couplings, consisting of a horizontal body having an inclined surface and a vertical pin at one end, a shoulder, and an arm at the opposite end to engage an operating-lever.

476,631. FERTILIZER-DISTRIBUTER. JOSEPH T. GRIFFITH, Orangeburg, S. C. Filed July 23, 1891. Serial No. 400,980. (No model.)

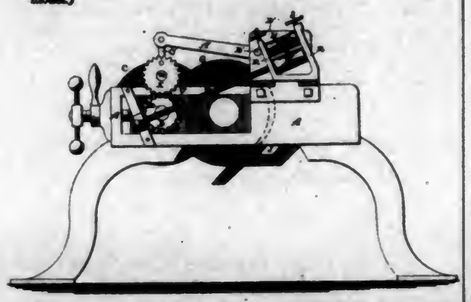


Claim.—1. In a fertilizer-distributer, the hopper B, formed with the flaring stem or neck 6, substantially as described.

2. In a fertilizer-distributer, the combination of the hopper B, formed with the flaring stem or neck 6, the shoe hung on the lower end of the hopper, and means for agitating the shoe, substantially as described.

3. The plow-tooth herein described, consisting of a plow end and a stem bent over, down, and inward and terminating in a point adapted to rest on and engage the upper face of the frame, as specified.

476,632. NAIL-MACHINE. SYLVANUS R. GROFF, Marietta, assignor of two-thirds to Henry C. Musser, Schoek's Mills, Pa., and Horace M. Engle, Roanoke, Va. Filed Aug. 2, 1890. Serial No. 360,791. (No model.)



Claim.—1. In a machine for forming wire screws or nails, the combination of a frame, a die having a curved working face, one longitudinal edge of said working face being recessed throughout its length, so that one end of the wire-section will remain of the original diameter to form the head, the other longitudinal edge being bulged throughout its length to form the point, the portion of the face between said edges being formed to swage out the wire, and the rotary wheel coacting with said die and having one edge recessed and the other edge bulged completely around the wheel and having the periphery corresponding with the die, as set forth, the space between said wheel and die decreasing in size from one end to the other, whereby wire-sections dropped transversely into said space are headed and pointed instantaneously and by a single step.

2. The combination of a frame, a stationary vertical die provided with the downwardly-curved working face having one longitudinal edge recessed throughout its length and the other edge bulged, the face between said edges having the inclined projections, a horizontal shaft, and a wheel carried thereby coacting with said die, having one edge recessed and the other bulged completely around its periphery and its periphery formed to correspond with the die, said die being so formed that the space between the wheel and the die gradually decreases in width from the upper receiving end downwardly to the lower discharge end, whereby wire-sections dropped into said space are by one operation pointed, headed, and threaded, each section being swaged out, except at the end within said recess, which is left of the original diameter of the wire to form the head.

3. In a nail-machine, a frame, a stationary curved die, a shaft, a wheel carried thereby to coact with said die in forming a wire nail, a driving-shaft geared to said before-mentioned shaft, a wire-reel, a wire-guide carried by the frame, wire-feed rolls operated from said drive-shaft, and a cutting mechanism comprising a knife at the inner end of said guide, arranged to cut the wire into lengths and drop the lengths into the space between the die and wheel, combined substantially as specified.

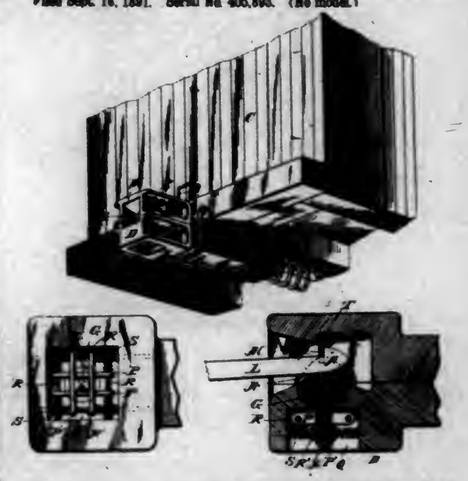
4. In combination, a frame, a vertical stationary curved die, a rotary wheel coacting therewith, said die and wheel being relatively formed to simultaneously form the head, point, and grooves of the nail, the die and wheel being so arranged that the space between them decreases downwardly, a horizontal wire-guide in a plane above said space through which the wire is fed, and a knife acting with said plate to cut the wire into lengths and drop them transversely into the space, substantially as shown and described.

5. In a nail-machine, a stationary die transversely fluted, a transversely-fluted rotary die coacting therewith, a wire-guideway arranged transversely to and in a plane above said dies with its inner end located near the receiving end of the space between the dies, and a cutting mechanism at the inner end of said guideway to sever the wire into lengths and drop the lengths into said space, combined substantially as shown and described.

6. In a nail-machine, the combination, with the guide M, of a wheel R, the lever P, and a regulating-screw for adjusting the pressure of the wheel upon the wire, feed-rolls, and a mechanism for operating the feed-rolls, substantially as set forth.

7. In a nail-machine, the combination of a supporting frame, a shaft journaled therein carrying a wheel, a die placed therein adjacent to the wheel, a cog-wheel upon the said shaft, a driving-shaft having a wheel engaging therewith, a bevel and spur wheel upon one end, a shaft having a wheel on one end engaging the said bevel-wheel and a feed-roller upon its opposite end, a second roller engaging the said first roller, a cutter, and a wheel engaging the spur-wheel which operates the cutter simultaneously, as shown and described.

476,633. CAR-COUPLING. AYRES HAMILTON, Fort Garland, Colo. Filed Sept. 16, 1891. Serial No. 405,893. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head having a mouth and a globular ball turning in a cavity within said draw-head and having a notch registering normally with the mouth, of a link adapted to enter said mouth and notch and means for locking the link detachably therein, substantially as described.

2. In a car coupling, the combination, with a draw-head having a flaring mouth and a globular ball turning in a cavity within said draw-head and having a notch registering with the rear end of the mouth, said ball having, also, a depending extension passing through the bottom of the draw-head, of a link adapted to enter said mouth and notch, means for detachably locking it therein, and spring-actuated plates beneath the draw-head pressing against said extension from all sides, as and for the purpose set forth.

3. In a car-coupling, the combination, with a draw-head having a cavity and in its bottom a recess, a globular ball turning in said cavity and having an extension depending into the recess, and means for coupling a link to said ball, of four rods arranged in two pairs at right angles to and in different planes from each other in said recess, coiled expansive springs on said rods, and four plates having eyes near their ends sliding on the rods, the springs bearing the plates normally against said extension, as and for the purpose set forth.

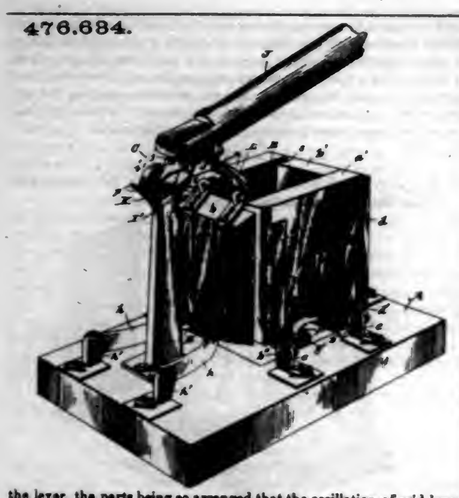
4. In a car-coupling, the combination, with a ball mounted loosely in a cavity in the draw-head and having a notch, and a link having a semi-arrow-head at its end, of a transverse shaft in the draw-head having a web adapted to fall across the upper end of the notch, a perforated depending ear at the outer end of said shaft, and a spring-actuated operating-rod engaging said ear and extending through the top of the draw-head, as and for the purpose hereinbefore set forth.

476,634. BUTTER-PRINT MACHINE. JAMES C. HARRIS, Londonderry, Chester County, Pa. Filed Sept. 19, 1891. Serial No. 406,256. (No model.)

Claim.—1. The combination, with a press-box formed of hinged or pivoted ends and sides and a press-head having a yielding connection with one of the ends, of a lever having an oscillating support upon a vertical arm or standard secured to the base, said lever having a connection with the press-head and having bearings on said standard, whereby as it is operated the sides and ends will be operated on their supports to open and close the box, substantially as specified.

2. A press-box formed of sides and ends pivotally connected to a base-piece and to a hinge within said base, a press-head having a yielding connection with one of said end pieces, an arm or standard secured to the base at the rear of said end, a lever having a loose connection with said arm and with the press-head, and cam mechanism on the upper end of said arm or standard operating in connection with

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the lever, the parts being so arranged that the oscillation of said lever opens and closes the press independently of other mechanism, substantially as specified.

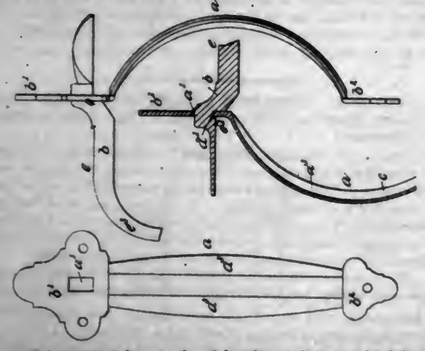
3. The combination, with the press-box having the hinged or pivoted ends and sides, the removable bottom or print-block, and the press-head having springs connected thereto and secured to one end portion, of the lever having the bifurcated casting secured to its lower end and an arm pivoted thereto and secured to the press-head, an arm or standard secured to the base or support and having a rounded head provided with a horizontal and an oblique slot, a pivot-bolt passed loosely through the arms of said bifurcated casting and through said horizontal slot, and a bearing-piece carried by said casting and adapted to engage said oblique slot and the rounded head when the lever is operated, all arranged substantially as and for the purpose described.

476,685. DRIVE-CHAIN. CHARLES R. HART, New Britain, Conn., assignor to the Stanley Works, same place. Filed Nov. 19, 1891. Serial No. 412,410. (No model.)



Claim.—In a drive-chain, the links having side bars 7 in two thicknesses of sheet metal, the knuckle portion 10, formed at the end thereof, and the lips 18, bent or swaged up inside of said bars, substantially as described, and for the purpose specified.

476,686. LATCH-HANDLE. CHARLES R. HART, New Britain, Conn., assignor to the Stanley Works, same place. Filed Mar. 23, 1892. Serial No. 426,052. (No model.)



Claim.—As an improved article of manufacture, a latch-handle made of a single piece of sheet metal curved lengthwise to shape and terminating in flattened foot portions and having an integral rib or corrugation extending lengthwise of the curved body portion of the handle, all substantially as described.

476,687. DRIVE-CHAIN. CHARLES R. HART, New Britain, Conn., assignor to the Stanley Works, same place. Original application filed Nov. 11, 1891, Serial No. 412,410. Divided and this application filed Apr. 30, 1892. Serial No. 431,247. (No model.)



Claim.—In a drive-chain, a link having a knuckle portion formed of two thicknesses of metal rolled or coiled one around the other, said two thicknesses being fastened together by a locking device within the rolled or curved part of said knuckle portion, to prevent the outer thickness or coil from slipping upon the inner one under a pulling strain, as specified.

476,688. OVERCHECK-LOOP FOR BRIDLES. JOHN M. HARTER and SAMUEL E. HARSH, Wabash, Ind. Filed Jan. 22, 1892. Serial No. 418,931. (No model.)

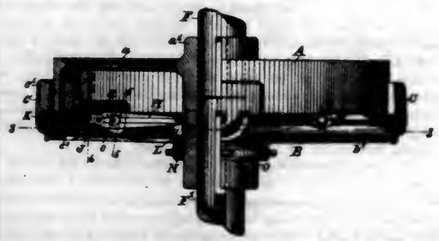


Claim.—The overdraw-loop having one end flat and perforated and formed to be pivoted to the crown-piece and the other end of the loop having the shank to pass through the crown-piece and the button on its under end, so it can be detached.

476,689. COATING METALS AND ALLOYS WITH OXIDES. ALEXANDER E. HASWELL and ARTHUR G. HASWELL, Vienna, Austria-Hungary. Filed Feb. 10, 1892. Serial No. 421,089. (Specimens.)

Claim.—The hereinbefore-described process of electro-depositing binoxide of lead and binoxide of manganese on copper and its alloys, which consists in immersing the article to be coated in a bath containing nitrate of lead and carbonate of manganese suspended in a solution of caustic soda or caustic potash and in depositing the said oxides from the said bath by passing an electric current from the article through such bath.

476,640. CLUTCH. HARRY W. HILL, Cleveland, Ohio. Filed Jan. 29, 1892. Serial No. 419,693. (No model.)



Claim.—1. In a friction-clutch, in combination, a clutch-arm, a pair of movable jaws mounted thereon, a toggle-lever pivotally connected at its outer end to a link and pivotally connected between its ends to the outer jaw, a link pivotally connected at its outer end to the inner jaw and at its inner end with the outer end of the toggle-lever, and means for actuating said toggle-lever, substantially as set forth.

2. In a friction-clutch, in combination, a clutch-arm, a pair of movable jaws mounted thereon, a toggle-lever pivotally connected at its outer end to a link and between its ends to the outer jaw, a link pivoted at its inner end to the outer end of said lever, an adjustable pivotal connection between the outer end of said link and the inner jaw, and means for actuating said toggle-lever, substantially as set forth.

3. In a friction-clutch, in combination, a clutch-arm, a pair of radially-movable clutch-jaws mounted thereon, a toggle, of which one member is pivotally connected with the outer jaw and the other is pivotally connected with the inner jaw, means for adjusting the said connection with the inner jaw, and mechanism for actuating the toggle, substantially as set forth.

4. In a friction-clutch, in combination, a clutch-arm, a pair of radially-movable jaws mounted thereon, a block, and means for adjustably connecting the same to the inner jaw, combined with a toggle, suitable connections between the toggle members and the outer jaw and said block, respectively, and means for actuating said toggle, substantially as set forth.

5. In a friction-clutch, in combination, a clutch-arm, a pair of clutch-jaws mounted thereon with a recess between the jaw-shanks, a toggle-lever pivoted between its ends to the outer jaw, the outer end of said lever lying in said recess, a link in said recess pivoted at one end to the toggle-lever and at the other end to the inner jaw, and suitable connections between the inner end of the toggle-lever and the sliding sleeve, substantially as set forth.

6. In a friction-clutch, a clutch-arm, a pair of radially-movable clutch-jaws mounted thereon, said jaws being curved substantially as described, whereby a longitudinal recess is formed between them, a block lying in said recess, and an adjusting-screw-threaded rod connecting said block with the inner jaw, said rod extending outward in said recess to a point where it can be reached through a hole in the outer jaw, combined with a toggle-lever pivoted between its ends to the outer jaw, the outer end of said lever extending into the recess between the jaws, a link lying in said recess and pivoted at one end to the end of the toggle-lever and at the other end to the said block, and a link connecting the inner end of the toggle-lever with the sliding sleeve, substantially as set forth.

7. In a friction-clutch, a clutch-arm having grooved side bars, and a pair of clutch-jaws loosely mounted thereon, whereby they are permitted a limited rocking motion, combined with mechanism for moving said jaws toward and from each other, and an interposed cylindrical flange, substantially as and for the purpose specified.

8. In a friction-clutch, a clutch-arm having grooved side bars and a connecting web, and a pair of clutch-jaws the shanks of which are slidable upon each other and are loosely fitted into the grooves in the side bars, combined with a spring interposed between the said web and the nearest jaw-shank, and mechanism for moving said jaws toward and from each other, and an interposed cylindrical flange, substantially as and for the purpose specified.

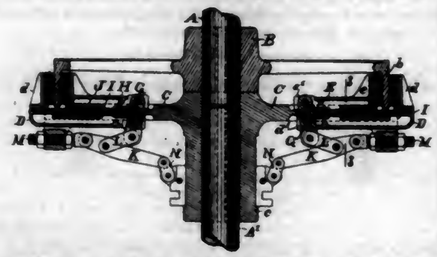
9. In a friction-clutch, in combination, a clutch-arm having two parallel grooved side bars and a curved web connecting them, a pair of jaws having curved shanks, the edges of which lie in said grooves, a toggle lying in the recess between said jaws and suitably connected with the jaws, a sliding sleeve, and a link passing through a slot in the web of the clutch-arm and connected at its ends, respectively, with said sleeve and with an inward extension of one of the toggle members, substantially as set forth.

10. In a friction-clutch, a clutch-arm, a pair of radially-movable jaws mounted thereon, and means for moving said jaws toward and from each other, combined with a lever pivotally connected with said two jaws, an automatically-adjustable fulcrum for said lever, and means for rigidly connecting said fulcrum to the clutch-arm, substantially as and for the purpose specified.

11. In a friction-clutch, a clutch-arm having a longitudinal slot, a pair of radially-movable jaws mounted on said arm, a lever pivotally connected with said jaws, respectively, a fulcrum-piece for said lever movable in the slot in the clutch-arm, and means for rigidly connecting said fulcrum-piece with the clutch-arm, substantially as set forth.

12. In a friction-clutch, a clutch-arm having a radial slot through one side bar, a bolt passing through said slot having its head and its nut on opposite sides of said bar, and a lever pivoted on said bolt, combined with a pair of clutch-jaws mounted on the clutch-arm and pivotally connected with said lever, substantially as set forth.

476,641. CLUTCH. HARRY W. HILL, Cleveland, Ohio. Filed July 13, 1891. Renewed Apr. 13, 1892. Serial No. 428,961. (No model.)



Claim.—1. In a friction-clutch, in combination, a clutch-arm and pair of radially-movable clutch members supported thereon, a movable device which engages with both of said clutch members, whereby when either clutch member is moved the other is simultaneously moved in the opposite direction, and a radially-adjustable connection between said movable device and clutch-arm, substantially as and for the purpose specified.

2. In a friction-clutch, in combination, a shaft, a cylindrical flange suitably supported from and concentric with said shaft, a clutch-arm, a pair of clutch members mounted on said arm, a radially-movable block adjustably secured to said clutch-arm and lying between the clutch members, a movable device connected with said block and engaging with said clutch members, and means for moving said device, substantially as and for the purpose specified.

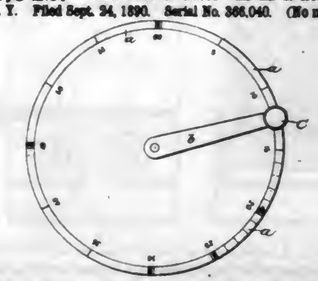
3. In a friction-clutch, in combination, a shaft, a cylindrical flange supported from and concentric with said shaft, a clutch-arm, a pair of clutch members mounted thereon, a block, a movable device suitably connected with said block and engaging with both of said clutch members and adapted by its movement to move them in opposite radial paths, and a screw engaging with said clutch-arm and block, whereby said block may be moved toward and from said flange, substantially as and for the purpose specified.

4. In a friction-clutch, in combination, a shaft, a cylindrical flange supported from and concentric with said shaft, a clutch-arm, a pair of clutch members mounted thereon, a block adjustably connected with said arm, a lever pivoted to said block and on opposite sides of said block to the clutch members, respectively, and means for rocking said lever on its middle pivot, substantially as and for the purpose specified.

5. In a friction-clutch, in combination, a shaft, a cylindrical flange supported from and concentric with said shaft, a clutch-arm, a pair of clutch members mounted thereon, a block lying between said members, a lever pivoted to said block and on opposite sides of said pivot with the clutch members, respectively, an adjustment-screw engaging with said block and with the clutch-arm, and means for rocking said lever, substantially as and for the purpose specified.

6. In a friction-clutch, in combination, a shaft, a cylindrical flange supported from and concentric with said shaft, a clutch-arm, a pair of clutch members mounted on said arm, a lever G, pivotally connected with said clutch arm and on opposite sides of that pivot with the clutch members, respectively, a toggle-lever K, made in two independent pieces and pivoted to the clutch-arm, a toggle-arm L, lying between the two parts of the toggle-arm K and pivoted thereto and to the lever G, a link N, pivotally connected with the sliding sleeve and lying between the two parts of the lever K and pivoted thereto, and a sliding sleeve, substantially as and for the purpose specified.

476,642. COMBINATION-LOCK. ALVAH S. HOBART, Yonkers, N. Y. Filed Sept. 24, 1890. Serial No. 366,040. (No model.)

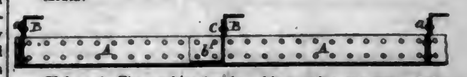


Claim.—1. The combination of a permutation-lock, a handle for setting the tumblers thereof, and marks in the path of the handle, the handle being so constructed as to engage with the marks as it passes them, whereby its position is indicated, substantially as described.

2. The combination of a permutation-lock, a handle for setting the tumblers thereof, and marks in the path of the handle, the handle being so constructed as to engage with the marks as it passes them, whereby its position is indicated, said marks being of different character to represent different divisions of the scale, substantially as described.

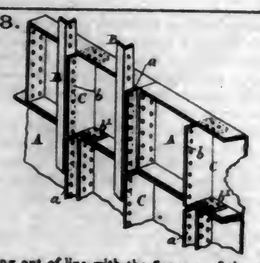
3. The combination of a permutation-lock, a handle for setting the tumblers thereof, and marks in the path of the handle, the handle being so constructed as to engage with the marks as it passes them, whereby its position is indicated, said marks being in number some multiple of four and evenly distributed in the quadrants of the circle, substantially as described.

476,643. CONSTRUCTION OF VESSELS. ALBERT C. A. HOLSAPPEL, London, England. Filed Jan. 8, 1892. Serial No. 417,604. (No model.)



Claim.—1. The combination, in a ship or other structure, of plates A, provided with interior flanges arranged in layers, one of said flanges a of said plates being deeper than the others, the flanges a of the plates

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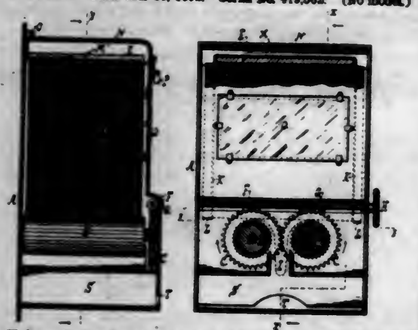


of one layer being out of line with the flange *a* of the plates of other layers, and transverse ties B, connected to the said flanges *a*, substantially as described.

2. The combination, in a ship or other structure, of plates A, provided with interior flanges arranged in layers, one of the flanges *a* of said plates being deeper than the others, the flanges *a* of the plates of one layer being out of line with the flange *a* of the plates of other layers, connecting-plates C, secured to said plates A, and a transverse tie B, secured to the flanges *a* and connecting-plates C, substantially as described.

3. In a ship or other structure, the combination, with plates A, provided with flanges, one of said flanges *a* being deeper than the others, the flanges *a* of the plates of one layer being out of line with the flange *a* of the plates of other layers, of connecting-plates C, secured to the plates A in line with the flanges *a*, transverse ties B, secured to said flanges *a* and connecting-plates C, and flanged plates D, connecting the ties B to form closed ballast-cells, substantially as described.

476,644. CABINET FOR TOILET-PAPER. JAMES T. HOYT, New York, N. Y. Filed Jan. 28, 1892. Serial No. 419,582. (No model.)



Claim.—1. A toilet-paper cabinet containing a pair of rotating rollers which support the pile of paper, in combination with gears made to connect said rollers, so as to rotate their upper or supporting faces toward one another to bend and fold the lowermost sheet and discharge it in its folded condition, and a handle for rotating one of the rollers, substantially as described.

2. A toilet-paper cabinet containing a pair of rotating rollers which support the pile of paper, in combination with gears made to connect said rollers, so as to rotate their upper or supporting faces toward one another to bind and fold the lowermost sheet and discharge it in its folded condition, and a handle for rotating one of the rollers, said cabinet having its bottom provided with a discharge throat or passage located in a plane extending between the two rollers, substantially as described.

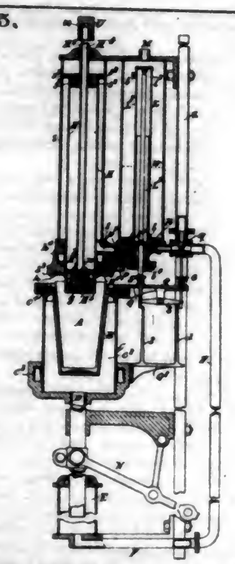
476,645. METHOD OF AND APPARATUS FOR AERATING BEVERAGES. WILLIAM HUGHS, London, England. Filed Aug. 6, 1891. Serial No. 401,853. (No model.)

Claim.—1. The method of aerating liquids for immediate consumption in glasses, consisting in partially filling the glass with the liquid to be aerated, raising the level of the liquid in the glass by means of a hollow displacer, closing the glass air-tight, and forcing the gas through the displacer into the liquid while removing the displacer from the glass.

2. In an apparatus for aerating liquids, the combination of an elastic receptacle for the glass for the liquid to be aerated with a cup surrounding the elastic receptacle, to which fluid under pressure is admitted, and means for closing the glass while the liquid is being aerated, substantially as set forth.

3. In an apparatus for aerating liquids, the combination of a re-

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ceptacle for the glass with a ram or displacer for expelling air from the glass and means for closing the glass, all substantially as set forth.

4. In an apparatus for aerating liquids, the combination of a receptacle for the glass for the liquid and means for closing the glass with a displacer having a longitudinal movement to displace the liquid in the container and a gas-inlet, all substantially as set forth.

5. In an apparatus for aerating liquids, the combination of a glass for the liquid and means for closing the same with two chambers L and S, a valved passage connecting the two chambers, a displacer for the liquid in the container, moving in the chamber S, and a valved passage leading from the chamber L to the glass, all substantially as and for the purposes set forth.

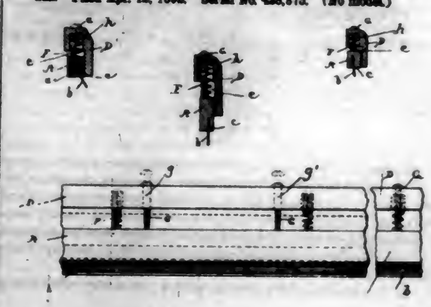
6. In an apparatus for aerating liquids, the combination of a glass for the liquid and means for supporting and closing the glass with a hollow ram or displacer having a perforated bottom and a gas-inlet, all substantially as set forth.

7. In an apparatus for aerating liquids, the combination of a glass for the liquid and means for supporting and closing the same with a hollow ram or displacer having a perforated bottom and a valved piston capable of longitudinal movement in the displacer, all substantially as and for the purposes set forth.

8. In an apparatus for aerating liquids, the combination of an elastic receptacle for the glass, a chamber surrounding the elastic receptacle, and means for admitting fluid under pressure to the said vessel with a hollow displacer and an inlet-passage provided with a cock to admit gas to the glass, all substantially as set forth.

9. In an apparatus for aerating liquids, the combination of an elastic receptacle for a glass and a vessel surrounding the elastic receptacle with a chamber S, a movable displacer, a chamber L, valved passages from the said chamber L, one leading to the glass, one to the chamber S, and one to the vessel surrounding the elastic receptacle, and means for closing the glass, all substantially as set forth.

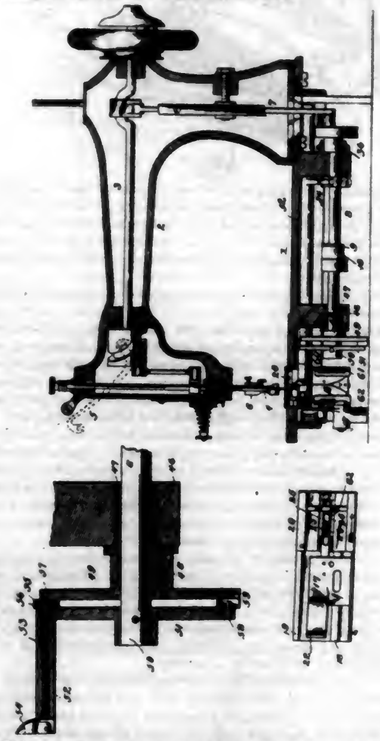
476,646. WEATHER-STRIP. JAMES H. HULL, Londonville, Canada. Filed Apr. 12, 1892. Serial No. 428,573. (No model.)



Claim.—1. In combination with the bar A and its flexible material and with the rabbeted strip or bar D, L-shaped in cross-section, and springs interposed between these bars, guide-rods G, screwed to strip A and free to play through holes in bar D, all substantially as set forth.

2. In combination with a bar of wood having a strip of flexible material let into a slit therein and having a set of adjustable screws inserted in the side opposite such strip, a bar D, provided with a set of holes through which said screws are passed and on which the bar is loosely held, and a set of springs between such bars, all substantially as set forth.

476,647. SEWING-MACHINE. CHARLES B. HUNT, London, England. Filed Feb. 10, 1892. Serial No. 420,973. (No model.) Patented in England Aug. 18, 1890, No. 12,959; in France Jan. 5, 1891, No. 210,601; in Belgium Jan. 3, 1891, No. 93,367; in Germany Jan. 16, 1891, No. 60,930; in Italy Jan. 28, 1891, XXV, 29,012, LVII, 61, and in Austria-Hungary May 18, 1891, No. 4,544, and No. 16,860.



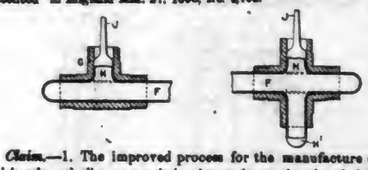
Claim.—1. In a sewing-machine, the combination, with the bed-plate, a reciprocating needle-carrying bar, a rotary looper, and a lower reel-carrier, of a transversely-movable slide arranged under the bed-plate and having elastic fingers provided with inwardly-projecting lips or tongues, a vibrating lever moving in a horizontal plane parallel with the bed-plate and having a forked extremity, a device detachably connecting the forked extremity of the lever to the slide, a rotary under shaft having a cam and supporting the looper, and an arm jointed at one extremity to the lever and having at its opposite extremity a cam-strap encircling the cam on the under shaft, substantially as described.

2. The combination, with a needle-carrying bar, of a rotary under shaft, a pair of loosely-connected looper-beams rotated by the shaft, a looper having an axially-oscillating stem carried by one looper-beam and engaged by the other looper-beam, and means for moving the latter lengthwise as it rotates for axially oscillating the looper-stem, substantially as described.

3. The combination, with a needle-carrying bar, of a rotary under shaft, a pair of loosely-connected looper-beams rotated by the shaft, a looper having an axially-oscillating stem carried by one looper-beam and engaged by the other looper-beam, and a cam on the under shaft for moving the latter beam lengthwise as it rotates for axially oscillating the looper-stem, substantially as described.

4. The combination, with a needle-carrying bar, of a rotary under shaft, a pair of loosely-connected looper-arms rotated by the shaft, a looper having axially-oscillating stem carried by one looper-beam and provided with a grooved disk or head engaged by a part of the other looper-beam, and a cam on the under shaft for moving the latter beam lengthwise as it rotates for axially oscillating the looper-stem, substantially as described.

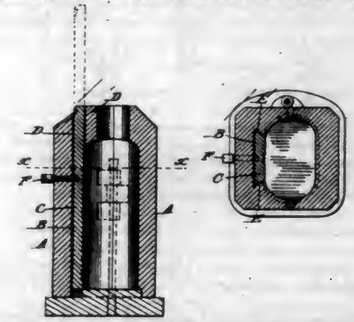
476,648. GLASS-LINED BEND, ELBOW, OR PIPE-FITTING. ALFRED HUMBLEBY, Stairfoot, Barnsley, England, assignor to Dan. Rylands, same place. Filed Jan. 14, 1892. Serial No. 418,072. (No model.) Patented in England Mar. 27, 1890, No. 4,792.



Claim.—1. The improved process for the manufacture of glass-lined bends and elbows, consisting in passing a closed-ended hot-glass tube into a heated-metal bend or elbow and then blowing the hot-glass tube against the walls of the metal bend or elbow and subsequently cutting or wetting off the blowing-tube and the burst-off.

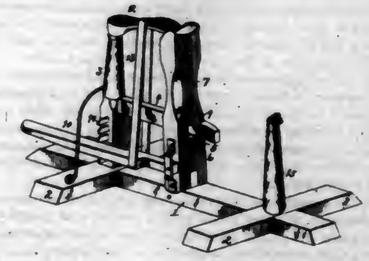
2. The improved process for the manufacture of glass-lined junction-pieces, consisting in passing a closed-ended hot-glass tube into one arm of a heated-metal junction-piece and then dropping hot glass into the other arm or arms of the said junction-piece and blowing into the tube, thereby forming a hole at the junction or junctions and forcing the glass up into and against the walls of the several arms of the metal junction-pieces, thus completing the lining of the same, substantially as set forth.

476,649. LABEL-FORMER FOR GLASS-MOLDS. JOHN S. IRWIN, Saltsburg, Pa. Filed Feb. 18, 1892. Serial No. 422,029. (No model.)



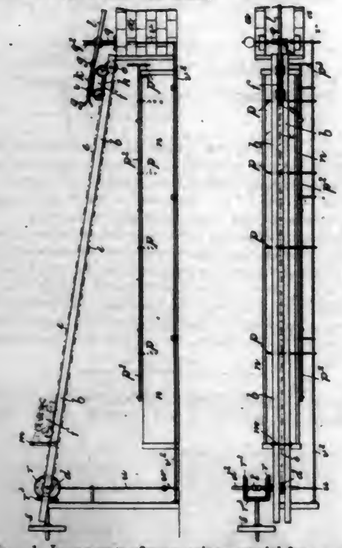
Claim.—The former for making hollow vessels, constructed with a recess to receive an impression-plate which will constitute a portion of the molding cavity of the former and formed with a passage-way through the upper portion of the body of the former for the impression-plate to slide in, said passage-way forming a continuation of said recess and serving to guide and steady the impression-plate and to allow the plate to be inserted and removed from the upper portion of the mold, substantially as and for the purposes described.

476,650. PEGGING-JACK. WILEY M. JONES, Webb City, Ark., assignor of one-half to Elijah W. Smith, same place. Filed Nov. 11, 1891. Serial No. 411,597. (No model.)



Claim.—In a shoe-jack, the combination, with the base, the stationary upright, and the forwardly-projecting arm pivoted thereto, having beveled or curved upper side and a series of rack-teeth on its under side, of the pivoted upright having a slot through which said arm passes, a transverse plate adapted to engage with said teeth, a hinged or pivoted plate adapted to bear upon the beveled or curved end of said arm, and a foot-lever pivoted to said pivoted upright, substantially as described.

476,651. APPARATUS FOR GALVANIZING WROUGHT OR CAST IRON AND STEEL. THOMAS JOWER, Hetherton, England. Filed Dec. 31, 1891. Serial No. 416,818. (No model.)



Claim.—1. In apparatus for removing material from a galvanizing bath, the combination, with an inclined slotted platform, of an endless chain carried by pulleys on said platform, a gripper-carrier connected to said chain, a gripper carried by said gripper-carrier, and means for driving said chain, substantially as described.

2. The combination, with an inclined slotted platform and a galvanizing bath located near one end thereof, of an endless chain carried by pulleys on said platform, a gripper-carrier connected to said chain, a gripper carried by said gripper-carrier, gear mechanism for driving said chain, and devices for reversing the direction of movement of said chain, substantially as described.

3. The combination, with a galvanizing bath, an inclined slotted platform, and a traveling gripper-carrier arranged thereupon, of a cooling-trough located under said platform for receiving the articles taken from the galvanizing bath, and devices for supporting said articles in and raising them from the cooling-trough, substantially as described.

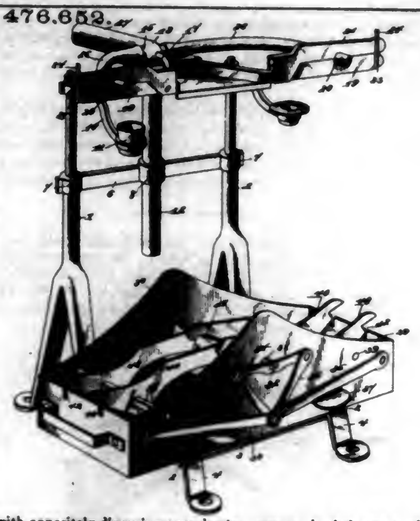
476,652. BEER-RACKING TROUGH. JOHN KAHL, Menominee, Mich. Filed Feb. 16, 1892. Serial No. 421,710. (No model.)

Claim.—1. In an apparatus of the class described, the combination, with a barrel-support, of a frame at one side of the same, an adjustable shaft mounted in the frame, a coupling mounted on the shaft and provided with branches, opposite arms diverging from the shaft and provided with half-notches, clamping-levers pivoted on the arms and provided with corresponding half-notches, means for clamping the levers, and pipes leading from the branches, extending through the opposite half-notches and adapted at their lower ends for introduction into the bung-holes of the barrels, substantially as specified.

2. In an apparatus of the class described, the combination, with a barrel-support, a frame in rear of the same, and an adjustable shaft mounted in the frame, of a coupling mounted on the shaft, a clamping arm extending from the shaft, and a discharge-pipe connected with the coupling, passed through the clamping-arm and adapted at its lower end for connection with the bung-hole of the barrel, substantially as specified.

3. In an apparatus of the class described, the combination, with a barrel-support, of a rear frame-work, a vertical shaft mounted in the frame-work, a T-shaped coupling swiveled on the upper end of the shaft, a table swiveled on the shaft below the coupling and provided

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with oppositely-diverging arms having recesses in their upper edges, clamping-bars pivoted on the arms and having corresponding recesses, means for locking the arms and bars together, and flexible pipes leading from the branches of the coupling between the arms and bars and adapted at their lower ends for connection with the barrel, substantially as specified.

4. In an apparatus of the class described, the combination, with a barrel-support, of posts rising from the rear thereof, cross-bars connecting the posts and provided with central eyes, a vertical shaft mounted in the eyes, means for adjusting the same in said eyes, a T-shaped coupling swiveled on the upper end of the shaft and provided with a transparent sight-tube terminating in a faucet, a perforated table swiveled on the shaft below the coupling, a glass support under the table, opposite arms diverging from the table, clamping-bars pivoted on the arms, metal coupling-tubes located between the arms and bars, flexible branch pipes connecting the branch pipes and couplings, swinging U-shaped clamps pivoted at their upper ends to the outer ends of the clamping-bars and adapted to be swung under the beveled ends of the bars, and discharge-pipes connected to the front ends of the coupling-tubes and adapted at their lower ends for connection with the barrels, substantially as specified.

5. In an apparatus of the class described, the combination, with the discharge-pipe supports, of a tank, a rock-shaft passing through the tank at each side of the center thereof and provided with barrel rests or levers, a central rock-shaft for supporting the inner ends of the levers, a triangular-shaped cam depending from the center of the rock-shaft, and means for oscillating said triangular-shaped cam in either direction, substantially as specified.

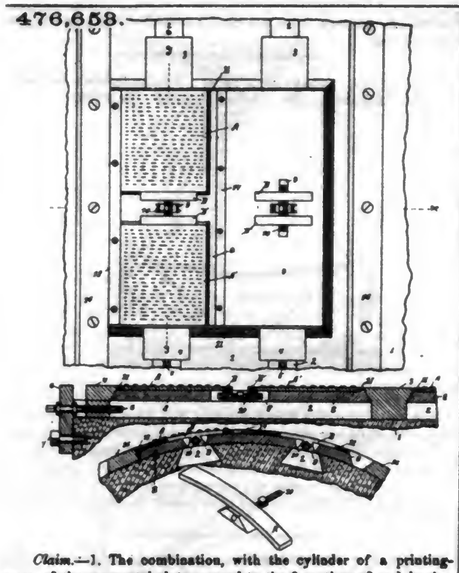
6. In an apparatus of the class described, the combination, with discharge-pipes and their supports, of a tank, a central rock-shaft journaled therein, a rock-arm mounted on the outer end of the shaft, links depending from the rock-arm, a pair of foot-levers pivoted at their outer ends to the tank and at their inner ends to the links and provided with foot-plates, rock-shafts journaled in the side walls of the tank at opposite sides of the central rock-shaft, barrel-supporting levers mounted upon each of the outer rock-shafts, having their upper edges curved and their outer extremities beveled and their inner under edges recessed to take over the central rock-shaft, and a triangular cam depending from said central rock-shaft for raising and lowering either pair of barrel-supporting levers, substantially as specified.

7. In an apparatus of the class described, the combination, with the filling mechanism, of a tank, a rock-shaft journaled in the tank, a pair of levers, forming a barrel-support, mounted on the rock-shaft, and means for raising the levers to an inclined position for discharging the barrel, substantially as specified.

8. In an apparatus of the class described, the combination, with the discharge-pipe-supporting rack or frame comprising a pair of vertical posts, of horizontal rest-bars 2, projecting therefrom and terminating at their front ends in feet, a tank mounted on the rest-bars, opposite rock-shafts mounted in the tank, rest-levers pivoted on the rock-shafts, and means for raising and lowering the same, substantially as specified.

476,653. ELECTROPLATE ATTACHMENT. CHRISTIAN KEOK, Cincinnati, Ohio. Filed Dec. 23, 1891. Serial No. 415,931. (No model.)

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Claim.—1. The combination, with the cylinder of a printing-press, of the segmental plate secured to the face thereof and having slots formed therein, clamping devices located in the slots, means for spreading said clamping devices, and retaining devices co-operating with the clamping devices, substantially as and for the purpose set forth.

2. The combination, with the cylinder of a printing-press, of a series of segmental plates secured to the face of the cylinder and having slots and end ribs to engage stereotype-plates, clamping devices arranged in the slots of the segmental plates, and means for spreading the clamps, substantially as described.

3. The combination, with the cylinder of a printing-press, of a series of segmental plates secured to the face of the cylinder and provided with ribs 11, the beveled stereotype-plates, clamping devices arranged on the segmental plates for forcing the stereotype-plates into engagement with the ribs, and means for operating the clamping devices, substantially as described.

4. The combination, with the cylinder of a printing-press, of a series of segmental plates 8, secured to the face of the cylinder and provided with central slots 9, the clamps B B', located in the slots, the screw 10, connecting the clamps and operating to spread the same, the stereotype-plates A A', mounted on the segmental plates, and retaining devices co-operating with the clamping devices to retain the stereotype-plates in position, substantially as described.

476,654. BALE-TIE. IRVING A. KILMER, Newburg, N. Y. Filed Oct. 19, 1891. Serial No. 409,178. (No model.)



Claim.—A bale-tie having at one end the usual loop and at the other a hook consisting of a catch and forward brace, the strand-wires composing the hook being nearly closed near the center and the vertical branches or members diverging, as set forth.

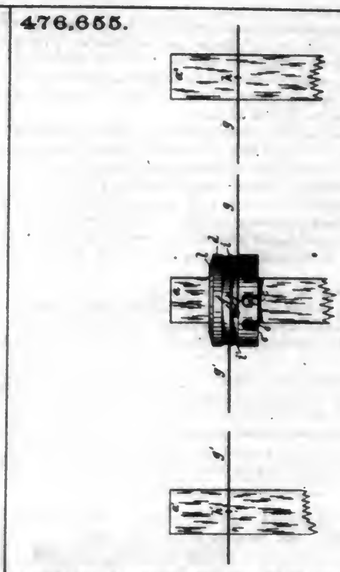
476,655. WIRE-TENSION DEVICE. ALOUIN E. KIETZNER, Painesville, Ohio. Filed Feb. 29, 1892. Serial No. 423,122. (No model.)

Claim.—1. A wire-tension device consisting of a collar or drum rigidly secured to a post and provided with shouldered lugs, a sleeve encircling said drum, having in its lower edge shouldered notches corresponding to said lugs, and means for attaching the wire to said sleeve, substantially as set forth.

2. In a wire-tension device, a sleeve having an annular shoulder, shouldered notches in its lower edge, and means for attaching wires thereto, in combination with a collar rigidly secured to a post and provided with lugs arranged to register with the notches in the sleeve, substantially as described.

3. In a wire-tension device, the combination, with a drum rigidly secured to a post having its outer surface channeled and provided with

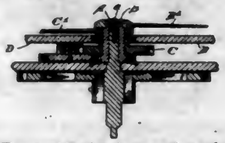
476,655.



extended lugs, of a surrounding sleeve having eyes with lugs therein for attaching the wires and notches that register with the lugs on the drum, substantially as set forth.

4. In a wire-tension device, the combination, with a post, of a drum secured thereto, dished at the top, and having projecting lugs, a sleeve surrounding said drum, having notches and eyes, as described, and provided with a flange extending inwardly over the top of the drum, and wires attached to the sleeve, substantially as shown.

476,656. CANNON-PINION FOR TIMEPIECES. HENRY C. KLEIN, Muncie, Ind. Filed May 19, 1890. Serial No. 352,297. (No model.)



Claim.—1. The combination, in a watch or clock, of the cannon-pinion, the center pinion divided at its outer end, and a screw entering said outer end, whereby the sides of said center pinion may be forced outwardly against the interior of said cannon-pinion and the amount of friction thus increased, substantially as set forth.

2. The combination, in a watch or clock, of the cannon-pinion, the center pinion on which said cannon-pinion is mounted, said center pinion being divided at the end and provided with a longitudinal screw-threaded perforation, and a screw having a wedge-shaped head adapted to be inserted in said perforation and thus force apart the ends of said center pinion, substantially as described, and for the purpose specified.

476,657. LETTER-BOX. ANTHONY N. KLEIN, San Francisco, Cal. Filed Sept. 15, 1891. Serial No. 405,755. (No model.)



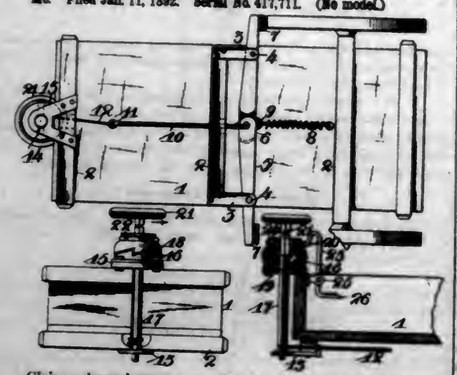
Claim.—1. The combination, with a mail-box, of the hollow letter-drop attachment suitably secured thereto, said attachment provided with forwardly-side-extending ears, and the forwardly-overlapping hood or protector, and the gravity-drop movably secured between the forwardly-side-extending ears and adapted by pressure to be moved inwardly, as and for the purpose set forth.

2. The combination, with a letter-box, of the letter-drop attachment consisting of the hollow frame B, provided with a forwardly-overlapping hood, forwardly-side-extending ears forming dust-protectors, gravity-operating drop movably secured between the ears within hollow frame and adapted by pressure to be swung inwardly, the lower end or bottom of said drop being inclined or beveled and provided with a forwardly-extending seat adapted when closed to contact with the beveled end of the upwardly-extending wall D, as and for the purpose set forth.

3. In a mail-box for letters or the like, the combination of the inwardly-moving gravity-drop movably secured between forwardly-side-extending ears and the overlapping flange or protector for securing against admission of rain, snow, or the like, as and for the purpose set forth.

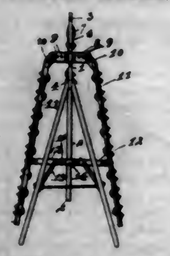
4. The combination, with a letter-drop attachment having an overlapping hood *b*, the forwardly-extending side ears *b'*, and the wall D, having a beveled upper edge, of a gravity-drop having its upper edge pivoted in the overlapping hood in rear of the ears *b'* and its lower edge provided with a seat adapted to engage the upper end of the wall D, the upper end of the drop being in advance of its lower end.

476,658. BRAKE FOR WAGONS. AUGUST KLEINDORP, Ballwin, Mo. Filed Jan. 11, 1892. Serial No. 417,711. (No model.)



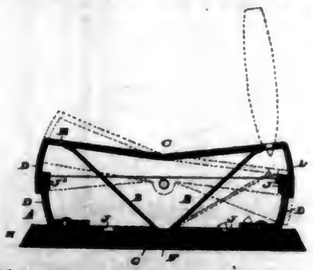
Claim.—As an improvement in wagon-brakes, the combination, with the vehicle-body having upon its under side a transverse bar 2, provided with a central aperture and rearwardly-projecting plates 3, secured to the ends of said bar, of the brake-beam formed of two bars 5 5, pivoted between the plates 3 and the vehicle-body and carrying brake-shoes at their outer ends, a rigid bar 10, coupling the opposing ends of the bars 5 and passing through the aperture in the bar 2, for the purpose described, and means for operating the brake through the medium of the bar 10, substantially as and for the purpose set forth.

476,659. CULTIVATOR. SIGMUND LANDAUER, Atlanta, Ga. Filed Nov. 17, 1891. Serial No. 412,227. (No model.)



Claim.—In a device of the class specified, a beam composed of two parts, the front portion being secured to the back portion and having an upturned portion at each end for attachment of the handles and draft device, a cross-piece secured to said beam, side pieces pivoted thereon, and means for holding said side pieces apart and for bracing the rear ends of the handles, substantially as and for the purpose specified.

476,660. CIGAR-TIP CUTTER. WILLIAM H. LILLY, Lancaster, Pa. Filed Nov. 14, 1891. Serial No. 411,934. (No model.)



Claim.—A cigar-cutter consisting of a box having segmental ends, a base provided with a V-shaped recess, diverging knives secured to said base, and a cap pivotally secured to said box in the vertical plane of the angle of the knives, having tip-openings and segmental ends, the cutting-edges of said knives being in contact with said cap adjacent to the tip-openings therein and the angle of the knives being seated in the recess in the base and the parts named combined substantially as described.

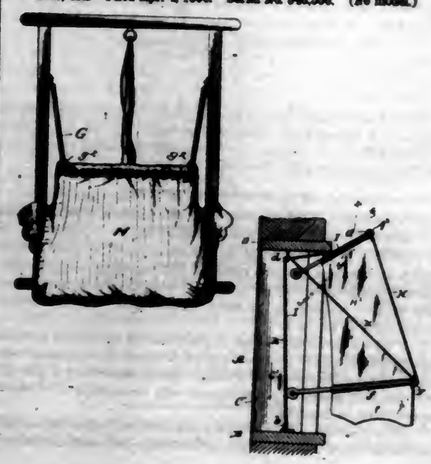
476,661. PAPER BOX. PHILIP LINDENMEYER, Baltimore, Md. Filed Feb. 11, 1892. Serial No. 421,118. (No model.)



Claim.—1. The improvement in the art of making covered boxes, which consists in slitting strips of paper at intervals lengthwise preparatory to producing the box ends, forming the tube-blank or flattened tube adapted to make several boxes, applying to said tube a wrapper, simultaneously cutting said wrapper and the tube into sections across the slitted portion of the latter, changing said sections into tubular form, and closing their ends, substantially as set forth.

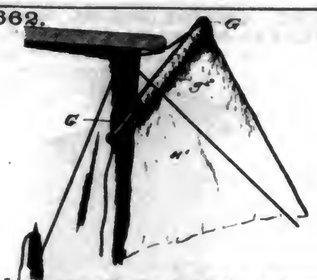
2. The improvement in the art of making covered boxes, which consists in forming the tube-blank or flattened tube adapted to make several boxes and in applying to said tube a wrapper, securing the wrapper to parts of the tube-blank corresponding to sides of the boxes when completed, simultaneously cutting the tube and its wrapper into sections, changing said sections into tubular form, and closing their ends, substantially as set forth.

476,662. VENTILATING-AWNING. CHARLES A. LLOYD, Baltimore, Md. Filed Apr. 4, 1890. Serial No. 346,536. (No model.)

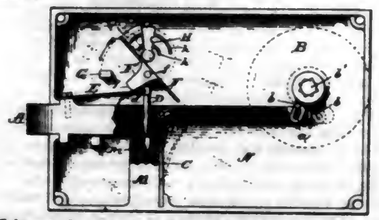


Claim.—In an awning of the class described, in combination with the lower hinged frame F *f* and the upper frame G, hinged at a fixed point, of the awning-cloth H, having its cheeks H' secured to the upper hinged frame G by loose sleeves g^3, so as to slide freely thereon, and means, substantially as described, whereby the upper and lower frames may be operated independently, as and for the purpose set forth.

476,662.



476,663. LATCH AND LOCK COMBINED. BILL G. LOWERY, Blue Mountain, Miss. Filed Mar. 25, 1892. Serial No. 426,642. (No model.)



Claim.—1. In a door-lock, the combination, with the bolt A, having hole a^2 therein, of the pin D, normally passing through said hole, the spring E, attached to said bolt and adapted to lift said pin clear of the lower end of said hole, the double-bell-crank lever F, having arm F' for pressing said pin down, and a catch for engaging the lower end of said pin D when pressed through said hole, substantially as and for the purposes described.

2. In a door-lock, the combination, with the bolt A, having hole a^2 and shoulder *a'*, with means for withdrawing said bolt, of the spring C, engaging said shoulder and normally pressing said bolt outward, the pin D, normally passing nearly through said hole a^2, the spring E, attached to said bolt and adapted to lift said pin clear of the lower end of said hole, and the double-bell-crank lever F, having arm F', with cam-face f^3 and flat face *f'*, and a catch for the lower end of said pin D when pressed through said hole a^2, substantially as described.

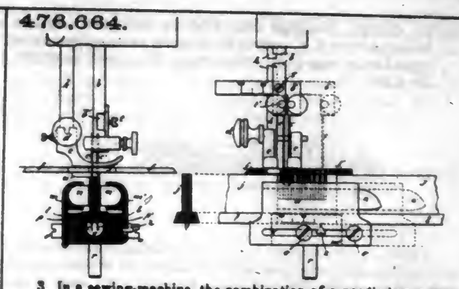
3. In a door-lock, the combination, with the knob B, slotted crank *b*, pin *a*, bolt A, having hole a^2 and shoulder *a'*, of the spring C, engaging said shoulder and normally pressing said bolt outward, the pin D, normally passing nearly through said hole a^2, the spring E, attached to said bolt and adapted to lift said pin clear of the lower end of said hole, and the double-bell-crank lever F, having arm F', with cam-face f^3, flat face *f'*, stop G, and a catch for the lower end of the said pin D when pressed through said hole a^2, substantially as described.

476,664. SEWING-MACHINE. CARLO LURASCHI, Milan, Italy. Filed Oct. 27, 1891. Serial No. 410,000. (No model.) Patented in Italy May 16, 1889, XLIX, 290; in Belgium Nov. 30, 1889, No. 88,502; in England Dec. 3, 1889, No. 19,443; in France Jan. 3, 1890, No. 201,667; in Austria-Hungary Feb. 20, 1890, No. 31,393 and No. 7,112; in Germany Aug. 9, 1890, No. 53,072, and in Switzerland Dec. 16, 1890, No. 3,513.

Claim.—1. In a sewing-machine, the combination of a needle-bar, a fixed needle, and an adjustable needle secured thereto, the fixed needle-plate provided with a single needle-hole and the adjustable needle-plate provided with a series of needle-holes, substantially as described.

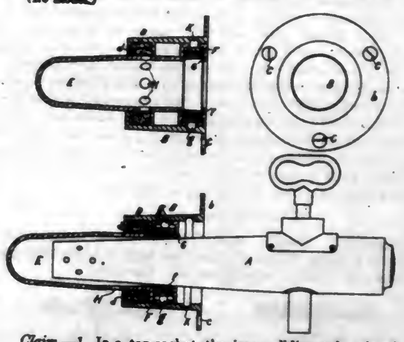
2. In a sewing-machine, the combination of a needle-bar carrying a fixed and an adjustable needle, the presser-foot bar carrying a fixed foot, an adjustable foot, a shuttle-driver carrying a fixed shuttle-box and an adjustable shuttle-box, shuttles carried by said shuttle-boxes, a partition arranged between said shuttle-boxes and provided upon one side with a single needle-groove and upon its other side with an adjustable plate provided with a series of needle-grooves, and guides carried by said partition and serving as ways upon which the shuttle-driver travels, substantially as described.

476,664.



Claim.—3. In a sewing-machine, the combination of a needle-bar, a needle secured thereto, a graduated horizontal bar adjustably secured to said needle-bar, a rotative sleeve mounted upon one end of said graduated bar and carrying a needle, and a set-screw for holding said sleeve in different positions upon said bar, whereby the needle carried by the adjustable bar may be thrown in and out of operation, substantially as described, and for the purpose specified.

476,665. TAP-SOCKET FOR BARRELS, &c. CHRISTOPHER J. MATHEW, Walmer, England. Filed Jan. 2, 1892. Serial No. 416,749. (No model.)



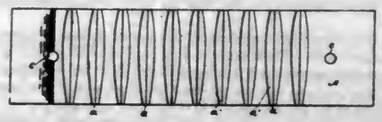
Claim.—1. In a tap-socket, the inner sliding tube closed at its inner end, provided with a rubber joint for the tap and segmental plates behind the said rubber, and studs projecting beyond the periphery of the tube, substantially as set forth.

2. In a tap-socket, the inner sliding tube provided with a rubber joint for the tap and segmental plates behind the said rubber, and studs projecting beyond the periphery of the tube, substantially as described.

3. In a tap-socket, the inner sliding tube provided with a rubber joint for the tap and segmental plates behind said rubber, studs projecting beyond the periphery of said tube, the external bush provided with a rubber joint on its inner end for the inner sliding tube, and a circular groove within its upper end, into which the joint-studs of the inner tube engage, substantially as set forth.

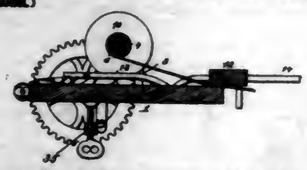
4. In a tap-socket, the inner perforated sliding tube provided with a rubber joint for the tap and segmental plates behind said rubber, studs projecting beyond the periphery of said tube, the external bushing provided with a rubber joint on its inner end for the inner sliding tube, and a circular groove within its upper end, into which the joint-studs of the inner tube engage, substantially as set forth.

476,666. CIGAR-MOLD. FREDRIK C. MILLER, Newport, Ky. Filed Jan. 20, 1890. Serial No. 337,456. (No model.)



Claim.—A cigar-mold the matrices of whose lower member are made in sections connected to a flexible back, in combination with a rack having a convex surface, over which the flexible back is bent to expand the matrices, and means for retaining the lower member in position on the rack, substantially as and for the purpose set forth.

476,667. MACHINE FOR WINDING BANDAGES. CHARLES MILLER, Auburn, N. Y., assignor, by direct and mesne assignments, to James Richens, same place. Filed July 29, 1891. Serial No. 401,063. (No model.)



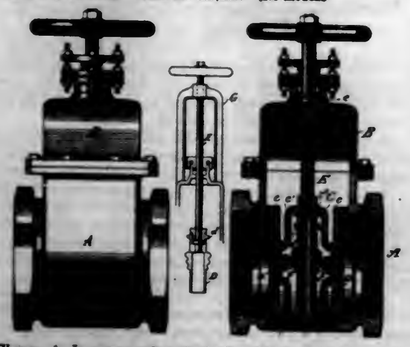
Claim.—1. In a machine for winding bandages, the combination, with the base, the upwardly-extending brackets, the slidable angular shaft having a guide-disk, and means for rotating the same, of the tension device consisting of the bent rod or bar having loops, the pins secured to the base passing through said loops, the slidable block or strip through which the ends of said rod pass, and the pivoted cam-disk, substantially as described.

2. In a machine for winding bandages, the combination, with the base, the upwardly-extending brackets, the slidable angular shaft, and means for operating the same, of the tension device consisting of the bent rod or bar having loops, the pins secured to the base passing through said loops, the slidable block or strip through which the ends of said rod pass, and the pivoted cam-disk, substantially as described.

3. In a machine for winding bandages, the combination, with the base, the upwardly extending brackets, the slidable angular shaft, the hub or sleeve through which said shaft passes, the guide-disk, and means for rotating said hub, of the tension device consisting of the bent rod or bar having loops, the pins secured to the base passing through said loops, the slidable block or strip through which the ends of said rod pass, and the pivoted cam-disk, substantially as described.

4. In a machine for winding bandages, the combination, with a rotatable shaft, of the tension device consisting of the bent rod or bar having loops, the pins secured to the base passing through said loops, the slidable block or strip through which the ends of said rod pass, and the pivoted cam-disk, substantially as described.

476,668. VALVE. ALLEN T. MILLER, Dayton, Ohio, assignor, to George F. Kuhns, William H. Kuhns, and Harry B. Kuhns, same place. Filed July 31, 1891. Serial No. 401,299. (No model.)



Claim.—1. In a stop-valve, the body, with its opposing seats, in combination with the valve-disks and their connecting arms, the nut, the screw to operate the nut, and the rollers seated between the nut and the disks, substantially as described and shown.

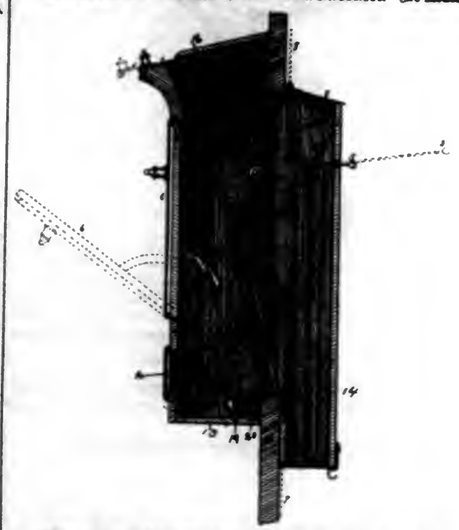
2. In combination with the valve-body, the two disks and their elastic arms with openings therein, a nut provided with roller *d*, and with the toothed surfaces, the screw engaging said nut, and the toothed rollers seated between the nut and the valve-disks, substantially as shown.

3. In a valve, the combination of two valve-disks and expansible connections between them, with an intermediate sliding member and rollers seated between said member and the disks and acting against the inclined surfaces thereon, whereby the movement of the member in relation to the disks is caused to effect their separation.

4. In a stop-valve, the body, with its opposing seats, in combination with the valve-disks and their connecting arms, the rollers F, the roller-actuating member, and means for operating the same, substantially as described.

5. In a stop-valve, a valve proper consisting of two disks and an elastic supporting and connecting arm, in combination with a movable sustaining and spreading device passing through the elastic arm and acting between the disks.

476,669. HOUSE-DOOR LETTER-BOX. THOMAS G. MILLIGAN, Washington, D. C. Filed Apr. 6, 1891. Serial No. 388,186. (No model.)



Claim.—1. A mail-box having a compartment for house-mail, having an opening through which the mail can be removed, and a compartment for outgoing mail, provided with the opening through which the carrier can remove the mail, said compartments communicating, said compartments each having a receiving-opening and a swinging partition or deflector to close either compartment and direct the mail into the other compartment, arranged to operate substantially as set forth.

2. The mail-box having compartments for outgoing and delivered mail, provided with suitable openings, and the swinging deflector or partition arranged to close either compartment and direct the received mail into the other, said deflector provided with a spring yieldingly holding it in position to close the compartment for outgoing mail and so as to direct the delivered mail into the proper compartment and provided with means whereby it can be swung to direct outgoing mail into the proper compartment, arranged to operate substantially as described and set forth.

3. In a letter-box formed of two vertical sections, suitable means for uniting the same, the interiors of the sections communicating at the top, a central vertical partition separating the lower portions of the sections, and a swinging deflector to direct the mail received into the upper portion of either section into the other section.

4. A letter-box provided with inner and outer compartments and an internal swinging partition arranged to direct letters received in the upper portion of the outer compartment into the lower compartment and provided with means whereby it can be swung so as to direct letters received into the upper part of the inner compartment into the outer compartment, substantially as set forth.

5. A mail-box having an inclined top cut away at its lower edge, so as to leave an opening into the box between the upper end of the side of the box and the lower edge of the top, ways on the under side of the top, and the slide located in said ways and extending over said opening and resting on the upper edge of the side of the box, so as to normally close the opening, and provided with the opening near its upper end and the handle at its outer end.

6. A letter-box consisting of the two vertical sections, the central vertical partition separating the lower portions of the two sections, the swinging vertical partition hinged at its lower edge on the top of said first-mentioned partition and provided with a spring to yieldingly hold it swung to its limit in one direction, and means connected to said swinging partition and extending to the exterior, so that the partition can be swung to its limit of movement in the opposite direction, each section being provided with a letter-receiving opening at its top and with a letter-removing opening at its lower portion.

7. The letter-box having two compartments, each provided with a letter-receiving opening at the top, and the swinging partition provided with a spring normally yieldingly holding the partition, so as to direct the house or delivered letters received into the opening of the outer compartment into the inner compartment, and the rod connected with said partition, whereby it can be swung free, so as to direct letters received into the opening of the inner compartment into the outer compartment.

8. In a letter box, the combination of the inner and outer compartments, the inner compartment provided with openings at the top and bottom, respectively, for inserting and removing mail from the inside of the house, the outer compartment being provided with openings at its upper and lower portion, the hinged partition at the central portion of the box, the central rigid partition forming guides for the mail, the outer section having a movable bottom plate to receive the mail, and a signal or an indicator operated by the movement of said plate, substantially as described.

9. The house letter-box composed of the two vertical compartments having their separate top receiving-openings and provided with mail-removing openings, the stationary vertical partition separating the lower portions of the compartments, and the swinging partition hinged to and forming an upward extension from said stationary partition and arranged to guide the letters received into their proper compartments, substantially as described.

10. The house letter-box having two compartments, respectively, for outgoing and house mail, the swinging partition yieldingly held in position to direct the house-mail into its proper compartment and provided with means extending to the exterior of the house-mail compartment, by which said partition can be swung to direct outgoing mail inserted at the top of the house-mail compartment into the other compartment, substantially as described.

11. The mail-box having the swinging partition arranged within the box to direct the mail into either side of the bottom of the box, means yieldingly holding said partition swung to its limit in one direction, and means, substantially as described, whereby the partition can be swung to direct the mail to the other side of the bottom.

12. A mail-box having a glass-covered opening at its outer side, vertical ways on the inner side of the box at said opening, a signal-plate confined in said ways to move from or behind said opening, a bottom plate for said box pivoted between its ends, so that the mail received will fall on and depress its free end, said plate being connected to said free end by a link to operate as described, the opposite end of said bottom plate being counterweighted, substantially as described.

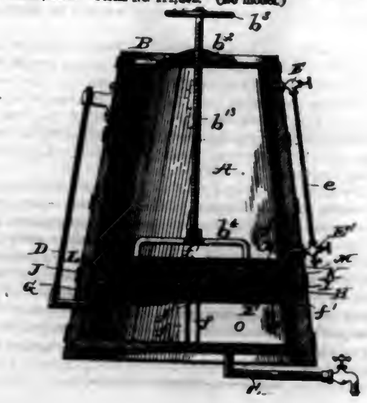
13. A mail-box having its bottom divided into two compartments, means, substantially as described, whereby the house and outgoing mails are directed to their proper compartments, a balanced bottom plate in one compartment to receive the mail, and an indicator operated by said plate to show when the compartment contains mail, substantially as described.

476,670. BICYCLE-TIRE. CLAUDIUS H. MITCHELL and RICHARD M. VEITCH, Oakland, Cal. Filed Feb. 17, 1892. Serial No. 421,631. (No model.)

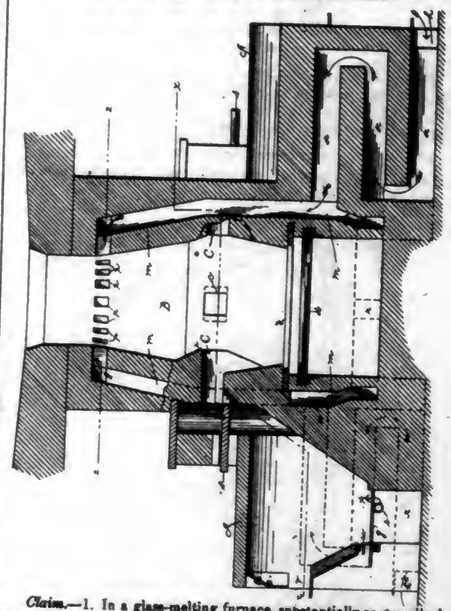


Claim.—The combination of a tire having metal spring and metal bands C and E, and the rod D, and the mode of connection between the rubber portion of the tire A and the metal felly at H, as shown, for the purpose as specified.

476,671. BEER-FILTER. JOHAN MOELLER, Boston, Mass. Filed Nov. 14, 1891. Serial No. 411,892. (No model.)



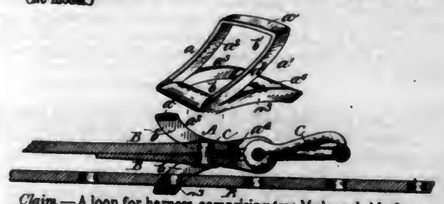
476,672. GLASS-FURNACE. MICHAEL L. MURPHY, Corsopolis, Pa. Filed Sept. 16, 1891. Serial No. 406,910. (No model.)



Claim.—1. In a glass-melting furnace, substantially as described, the combination of a deep well or eye, an air-chamber surrounding the same, and one or more producers arranged at the side or sides of said eye or well and connected therewith by a passage opening tangentially therein, said producers having air-flues located in the side walls of the same and communicating with said air-chamber, substantially as and for the purpose set forth.

2. In a glass-melting furnace, substantially as described, the combination of a deep well or eye, an air-chamber surrounding the same and communicating therewith, one or more producers arranged at the side or sides of said eye and connected therewith by a channel or passage opening tangentially therein, said producers having air-flues located in the side walls of the same and communicating with said air-chamber, and a perforated pipe located beneath said producers, respectively, for the admission of steam thereto, substantially as set forth.

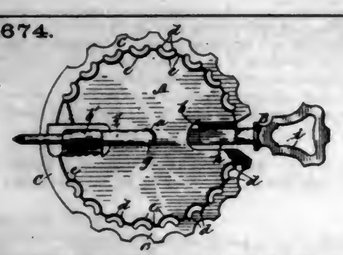
476,673. BILLET-LOOP. THOMAS G. NELSON and WILLIAM P. GILBERT, Sweet Springs, Mo. Filed Feb. 25, 1892. Serial No. 422,731. (No model.)



Claim.—A loop for harness, comprising two V-shaped side frames, the arms of which are of substantially equal length and are arranged with relation to each other at less than a right angle, and having a flattened cross-bar at the intersection of the angles and connecting cross-bars at each pair of the outer ends of the arms of the side frames.

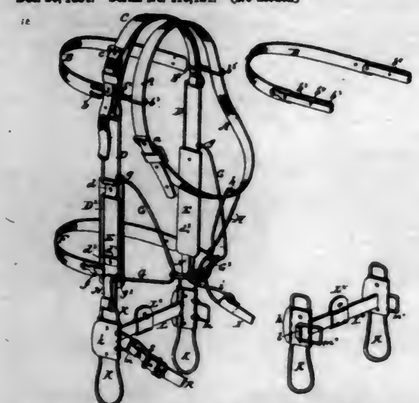
476,674. STOVEPIPE-DAMPER. ALBERT S. NEWEY, Kansas City, Mo., assignor to John Hobrecker, Jr., Omaha, Nebr. Filed Oct. 21, 1891. Serial No. 409,411. (No model.)

476,674.



Claim.—In a stovepipe-damper, a body supplied with a hole at or near the center, with lips projecting from the opposite sides of said body, in combination with a holder or handle passing through said hole and underneath said lips, for the purposes set forth.

476,675. BRIDLE. STEPHEN A. HOLEN, McCrory, Ark. Filed Dec. 26, 1891. Serial No. 416,121. (No model.)



Claim.—1. In a bridle, the combination of the head-band, the throat-latch, and a brow-band having at each end two loops separated by a wire connection with the wire cheek-bars D and D^2, closed at both ends and the sheet-metal link *d*, uniting them, substantially as described.

2. In a bridle, the combination of the head-band, the throat-latch, the brow-band, the wire cheek-bars D and D^2, closed at both ends, and the sheet-metal link *d* with the angular wire bails G, having an eye at one end connected with the upper cheek-bars D and an eye at the opposite end connected to the lower cheek-bars D^2, and the link G^2, substantially as described.

3. In a bridle, the combination of the head-band, the throat-latch, the brow-band, the wire cheek-bars D and D^2, and the sheet-metal link *d* with the angular bent wire bails G, the link G^2, uniting them, and the link H, having the form of a figure 8, one loop of which embraces the link G^2 and the other loop embracing the throat-latch, substantially as described.

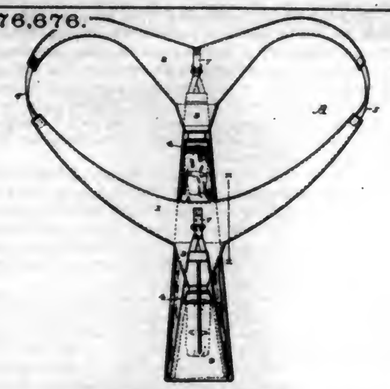
4. In a bridle, the combination of the head-band, the throat-latch, the brow-band, the wire cheek-bars D and D^2, closed at both ends, and the sheet-metal link *d* with the bit, consisting of wire loops, bit-bars K, sheet-metal guards *k* encircling them, links *m*, doubled sheet-metal bit L, and plate L^2, centrally embracing said bit, substantially as described.

476,676. CATAMENIAL SACK. ROSA I. ODELL and CLARA S. HOWELL, Baltimore, Md. Filed Nov. 27, 1891. Serial No. 413,940. (No model.)

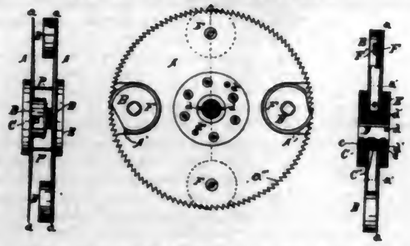


Claim.—A napkin-holder consisting of the belt A, composed of back and front yokes joined by elastic connections at the sides and having downward extensions in the middle of each yoke, an angular metal frame 4, secured in each of said extensions to hold the ends of the napkin, tabs 7, secured on the back and front of the belt over the metal frames, and a napkin-shield B, provided with elastic straps at the ends and buckles in the elastics to buckle on the tabs 7 of the belt, substantially as described.

476,676.



476,677. DADO-HEAD. JOSEPH W. OLIVER, Grand Rapids, Mich. Filed May 26, 1891. Serial No. 394,422. (No model.)



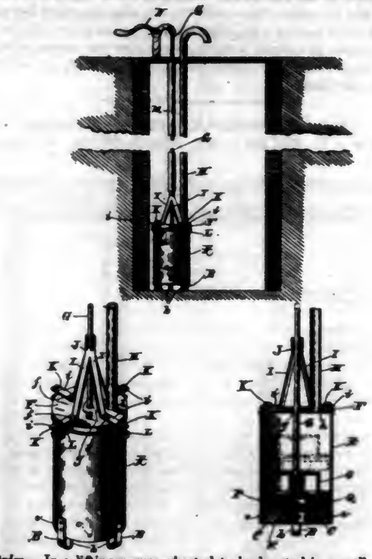
Claim.—1. In a dado-head, the combination, with circular supports having teeth upon their peripheries, of knives secured to the inner surfaces of the supports in position, so that their edges may stand upon the peripheral circle of the supports, collars attached to the centers of the supports, one of said collars having a flange that projects beyond the inner surfaces of the support and is provided with screw-threads upon the inner surface, an annular bolt having screw-threads upon its outer surface to mesh with the screw-threads in the flange C' and the collar C, said annular bolt being provided with an outwardly-projecting flange near one end, the other collar attached to the outer surface of the other support and provided with a groove for the reception of the flange *d'* on the bolt, and pins and holes for holding the supports to position, substantially as set forth.

2. In combination, a dado-head having circular supports heavy at their centers and tapering upon their inner surfaces to a thin edge, openings A' at their edges and a series of saw-teeth upon their peripheries, circular cutters gradually tapering from their edges back to meet the taper of the supports, a collar attached to one support and provided with an inwardly-projecting annular flange having a screw-thread upon its inner surface, an annular bolt having a screw-thread and a flange upon its outer surface, and a collar provided with a groove *e* upon its inner surface for the reception of the flange *d'* on the bolt and secured to the other support, substantially as and for the purpose set forth.

3. The combination, in a dado-head, of circular supports having saw-teeth around their peripheries, collars and central screws for adjusting the supports, with circular knives, each having a thin base and an annular flange standing at right angles with the base and cut away at one side to form the cutting-edge, a slot through the base, bolts provided with nuts having conical heads and bodies that project through the support and nearly through the knives, and pins and apertures in the support, substantially as specified.

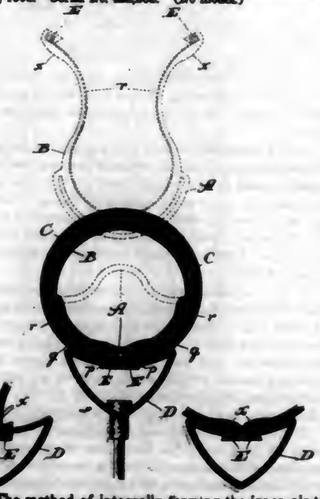
4. The combination, with a dado-head, of two adjustable supports, a collar solidly attached to one of said supports, said collar provided with an annular hub having a screw-thread therethrough to form a nut, an annular bolt provided on its outer surface with a screw-thread to mesh in the aforesaid nut and an outwardly-projecting bearing and a notch in the end, and a second collar secured to the other support and provided with an offset to form a groove between the collar and the side of the dado-head around the aperture therethrough for the reception and free action of the projection on the bolt, all arranged to form an adjusting-screw for the head, substantially as and for the purpose set forth.

476,678. CISTERN-CLEANER. FRANK OVERTON and JOHN FAUNT, La Grange, Ind. Filed Nov. 23, 1891. Serial No. 412,796. (No model.)



Claim.—In a lifting-pump adapted to be located in a well or cistern, the combination, with the pump-cylinder A, provided with the removable top or cover F, having vertical expelling-tube H, the perforated lugs L, the standards I, bent at their lower ends to form feet *i*, overlapping the edge of cover F, and the fastening-bolts, of the stationary guide-tube M, secured to standards I and extending to the top of the well or cistern, and the pump-rod and valves, substantially as and for the purpose described.

476,679. PNEUMATIC TIRE. JOHN F. PALMER, Riverside, Ill. Filed Feb. 20, 1892. Serial No. 422,902. (No model.)



Claim.—1. The method of integrally forming the inner air-tube and self-sealing canvas-covered retaining-envelope therefor of a pneumatic tire, which consists in molding a web A, of rubber, with a canvas-covered rubber strip B on a curve, and then reversing the curve and forming the integral air-tube and retaining-envelope into an endless tubular tire-shaped ring, substantially as described.

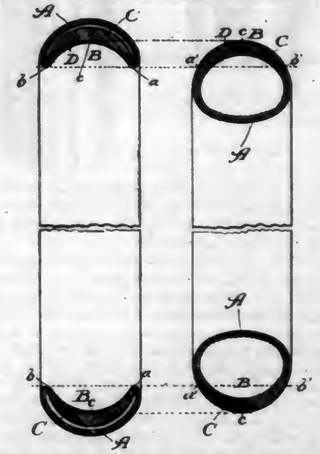
2. The method of integrally forming the inner air-tube and self-sealing canvas-covered retaining-envelope therefor of a pneumatic tire, which consists in molding on a curve a canvas-covered rubber strip with a thickening of the rubber toward its longitudinal center and with a web A, of rubber, along its thickened portion, and then reversing the curve and forming the integral air-tube and retaining-envelope into an endless tubular tire-shaped ring, substantially as described.

3. As a new article of manufacture, a pneumatic tire having its retaining-envelope formed of canvas-covered compressed rubber provided with a rubber web A, forming with the said envelope the inner air-tube, substantially as described.

4. As a new article of manufacture, a pneumatic tire having its retaining-envelope formed of canvas-covered rubber with the rubber compressed and thickened toward the longitudinal center of the tread portion of the tire and provided along the said thickened portion with a rubber web A, forming with the said envelope the inner air-tube, substantially as described.

5. In combination, the slotted hollow felly D and a pneumatic tire comprising a retaining-envelope formed of canvas-covered rubber with the rubber compressed and thickened toward the longitudinal center of the tread portion of the tire and provided along the said thickened portion with a web A, forming with the said envelope the air-tube, beads E along the edges of the retaining-envelope to enter the slot in the felly and fasten the tire in place, and an outer covering C, clamped along its edges between the said felly and retaining-envelope, substantially as described.

476,680. PNEUMATIC TIRE. JOHN F. PALMER, Riverside, Ill. Filed Apr. 12, 1892. Serial No. 428,822. (No model.)



Claim.—1. A tube for forming a pneumatic tire, having before completion an endless tubular concavo-convex form with its body thickened on the concave side and provided with a continuous strip of substantially non-stretching material on the exterior at the concave side, substantially as described.

2. The method of producing, in a pneumatic tire, a compressed and thickened tread portion, which consists in forming a tubular ring of rubber, thickened on the hub side and having applied thereto a substantially non-stretching ring of fabric, thereupon inverting the relation of parts, so that the non-stretching fabric shall be on the tread portion, thereby compressing the thickened body of rubber, substantially as described.

3. The method of forming a pneumatic tire with a thickened and compressed tread portion on the internal tube, which consists in building the tube in the form of a ring out of soft rubber with a hub-side layer of substantially non-stretching fabric, thereupon vulcanizing the product and inverting the curvature of the fabric and attached parts, substantially as described.

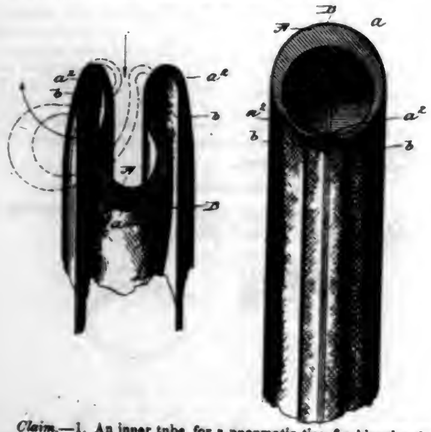
4. The method of forming a pneumatic tire with a thickened and compressed tread portion on the interior tube, which consists in forming a ring of canvas having the intended curvature of the tread, applying to its convex face a thickened body of rubber, and then applying an endless tube of rubber having in one-half a collapsed concavo-convex outline to conform to the convexity of the thickened rubber, producing vulcanization in the parts, and thereupon reversing the curvature of the fabric and attached parts with intermediate or subsequent inflation, substantially as described.

5. The method of making strips of fabric substantially non-stretching for use in forming a pneumatic tire, which consists in applying together oppositely-cut strips of fabric, each strip having its fibers diagonally arranged with a long fiber on an acute angle and a short fiber on an obtuse angle, whereby stretching of the strip produces a curvilinear form, and when thus produced further stretching in either strip

is substantially prevented by the resistance of the other, substantially as described.

6. A pneumatic tire having an outer thickened tread portion of rubber inverted and held in position by a substantially non-stretching backing composed of two or more superimposed attached layers of diagonally-cut fabric, the fiber in alternate layers being arranged in opposite directions, substantially as set forth.

476,681. PNEUMATIC TIRE. JOHN F. PALMER, Riverside, Ill. Filed Apr. 23, 1892. Serial No. 430,300. (No model.)

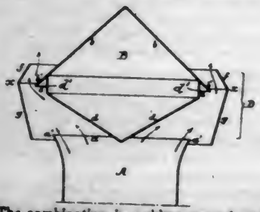


Claim.—1. An inner tube for a pneumatic tire for bicycles, &c., having the tread portion of increased thickness held normally under compression, as described, and having at its hub side a continuous sealed joint, substantially as described.

2. The method of producing an inner tube for pneumatic tires, which consists in molding the rubber therefor with a thickened tread portion on a reverse curvature, causing to adhere to the concave face a substantially non-stretching flexible material, reversing the curvature of the tread portion and non-stretching backing, and finally joining the flaps and sealing the same, substantially as described.

3. The method of producing an inner tube for pneumatic tubes, which consists, first, in applying to an annular mandrel having the proper curvature a curved non stretching annular strip of flexible material, molding upon said mandrel a strip of rubber having its edges unjoined, thickening the rubber on the outer side of the mandrel or form, vulcanizing the parts together, and thereupon reversing the curvature of the flexible material and thickened portion of the rubber, and joining and sealing the edges of the strip to form the air-tube, substantially as described.

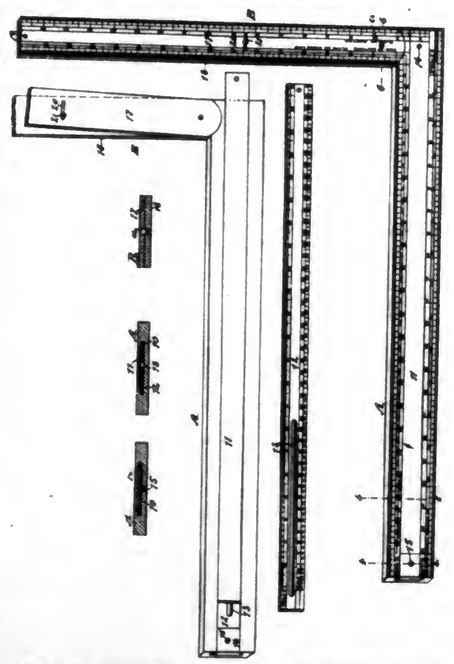
476,682. VENTILATOR OR CHIMNEY-COWL. RICHARD M. PARCOAST, Camden, N. J. Filed June 22, 1891. Serial No. 397,090. (No model.)



Claim.—1. The combination, in a chimney-cowl, of the chimney-opening, with a deflector above said opening, said deflector having a bottom in the shape of an inverted cone or pyramid, so that the smoke or air passing from the cowl will be deflected outward and upward thereby, an inclined crown, and a flange connecting the inverted conical bottom of the deflector with the crown of the same, the edge of said crown extending beyond the flange, but not beyond a line extended in the plane of the deflector bottom, thereby forming an annular space between the bottom and the edge of the crown to prevent water from flowing down the bottom from said edge of the crown without interfering with the free egress of smoke or air from the cowl, substantially as described.

2. The combination, in a chimney-cowl, of the neck, with the deflector situated above the neck, said deflector having an inverted conical or pyramidal bottom, an inclined crown, and a flange connecting the crown with the bottom and forming an annular space between the bottom and the edge of the crown, the said edge extending beyond the flange, but not beyond a line extended in the plane of the deflector bottom, and with an annular deflector D opposite the cowl-opening and having upper and lower tapered portions, substantially as and for the purpose described.

476,688. CARPENTER'S SQUARE. MARK P. PATERSON, New Rochelle, N. Y. Filed May 5, 1891. Serial No. 392,064. (No model.)



Claim.—1. A carpenter's square having a removable slide mounted in one arm and connecting devices for securing the ends of the slide to the respective arms of the square when removed, substantially as set forth.

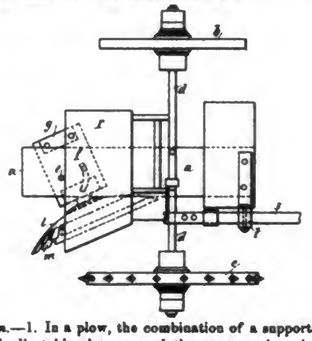
2. In a carpenter's square, the combination, with one arm thereof provided with a longitudinal recess, of removable slides adapted to be normally located in said recess, one of the slides being provided with a slot at one end, and a block capable of sliding in said recess, the said block being provided with a set-screw, whereby it may be fixed at the end of the square, forming a barrier for the slides, or fixed at any point in the length of the recess when the slides are removed, as and for the purpose set forth.

3. In a carpenter's square, the combination, with the arms of the square, the longer arm of which is provided with a longitudinal recess, of a block held to slide in the said recess, a rule provided with a slot at one end, the slotted end of the rule engaging with the block and the opposite end with the short arm of the square, an adjusting-screw connecting the rule with the block, and a clamp, substantially as shown and described, for adjustably connecting the rule with the short arm of the square, as and for the purpose specified.

4. The combination, with a carpenter's square, of an auxiliary section 17, lying upon the short arm of the square and having its edges flush with the edges thereof, a pivot extending through the inner end of said section at its longitudinal center into the said short arm, as shown at *a*, to permit the said section to be swung in either direction past the longitudinal edges of the said short arm, the said auxiliary section having a transverse slot through it between its ends, and a set-screw passed therethrough into said short arm to clamp the said section in any desired position, substantially as set forth.

5. A carpenter's square having a removable slide mounted in its long arm and connecting devices for securing the ends of the slide to the respective arms when removed, the short arm of the square being provided with a parallel section pivoted at its inner end, substantially as set forth.

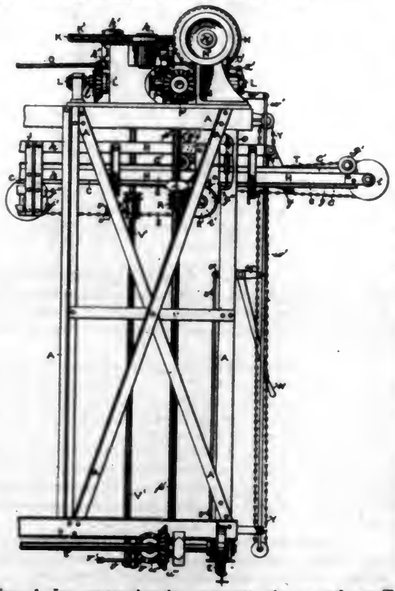
476,684. SPADE-PLOW. WASILI PIGHIDO, Kiev, Russia. Filed Feb. 26, 1892. Serial No. 422,886. (No model.)



Claim.—1. In a plow, the combination of a supporting-frame, a horizontal adjustable plate secured thereto to rock on bolt *c*, means, substantially as described, for clamping said plate in the desired adjustment, the stub-shaft mounted in the boxes carried by said plate, and the concavo-convex disk rigidly secured on one end of said shaft, substantially as set forth.

2. In a plow, the combination of the wheeled supporting-frame, a plate secured thereto and horizontal adjustable means for clamping the plate in the desired adjustment, boxes carried by said plate, a sub-shaft mounted in said boxes and provided with a plate *n*, rigid on one end, the concavo-convex disk *l*, rigidly secured to said plate *n*, and the inclined spades rigid with and projecting from the edges of said disk, substantially as set forth.

476,685. APPARATUS FOR CHARGING GAS-RETORTS. JOHN RUSCOE, Hyde, England. Filed Nov. 21, 1890. Serial No. 372,253. (No model.) Patented in England Nov. 13, 1889, No. 18,106.

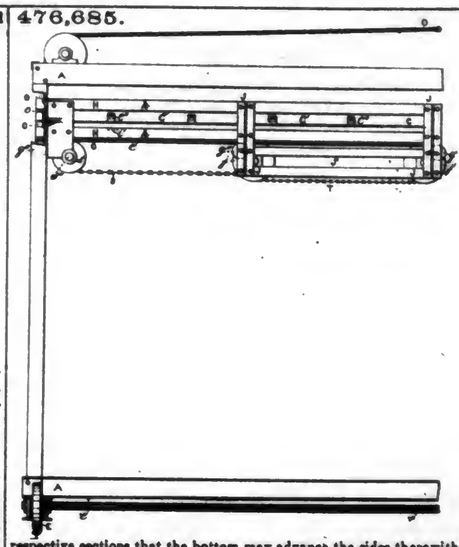


Claim.—1. In a retort-charging apparatus, the scoop-frame H, in combination with the sectional scoop-frame J, slides J', fixed pulleys *j*, pulleys *j'*, journaled in sliding bearings, and chain T, extended around said pulleys and attached to the side section of the scoop.

2. In combination with the carriage G, the charging-scoop consisting of the longitudinally and independently movable sections mounted in and sustained at one end by the carriage, and the projections I I', mounted on the respective sections of the scoop and arranged to engage one with the other, whereby one section is enabled to advance the other.

3. In a retort-charging apparatus, the scoop-sustaining frame, in combination with the scoop composed of independently-movable side and bottom sections provided with interacting projections I I' on the

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respective sections that the bottom may advance the sides therewith, and locking-pawls *i* to temporarily hold the sides during the retreat of the bottom.

4. In a retort-charging mechanism, the combination of the scoop composed of independently-movable sections, in combination with its sustaining-frame H, the driving-chain S, attached to the bottom of the scoop, its sustaining-pulleys, the chain T for retracting the sides of the scoop, the fixed pulleys *j* and *i*, and the traveling pulleys *j'*.

5. In a retort-charging apparatus, the combination, with the scoop C, the scoop-carriage G, and scoop-frame H, of the frame J, the sliding chain-pulleys *j j'*, the projecting pieces *j''*, affixed to the scoop-bottom *c*, the lugs *j'''*, attached to the bearings of the sliding pulleys *j'*, and the chain T, extending around the pulleys, substantially as described.

6. In a retort-charging apparatus, the combination, with the two-part scoop C, the scoop-carriage G, and the scoop-frame H, wherein the scoop and its carriage move to and fro, of the frame J, the chain-wheels *r''*, *s'*, and *i*, the sliding pulleys *j j'*, and the actuating-chains S and T, substantially as described.

7. The combination of the main frame, the scoop-carrying frame movable vertically in the main frame, the horizontal driving-shaft, connections between the driving-shaft and the movable frame for raising and lowering the latter, a vertical shaft and clutch-actuated gearing between the same and the driving-shaft, a worm-gear on the movable frame, connections between said gear and the scoop for actuating the latter, and a sliding worm on the vertical shaft for actuating the worm-gear, substantially as shown and described.

476,686. APPARATUS FOR DRAWING GAS-RETORTS. JOHN RUSCOE, Hyde, England. Filed Nov. 21, 1890. Serial No. 372,254. (No model.) Patented in England Nov. 13, 1889, No. 18,106.

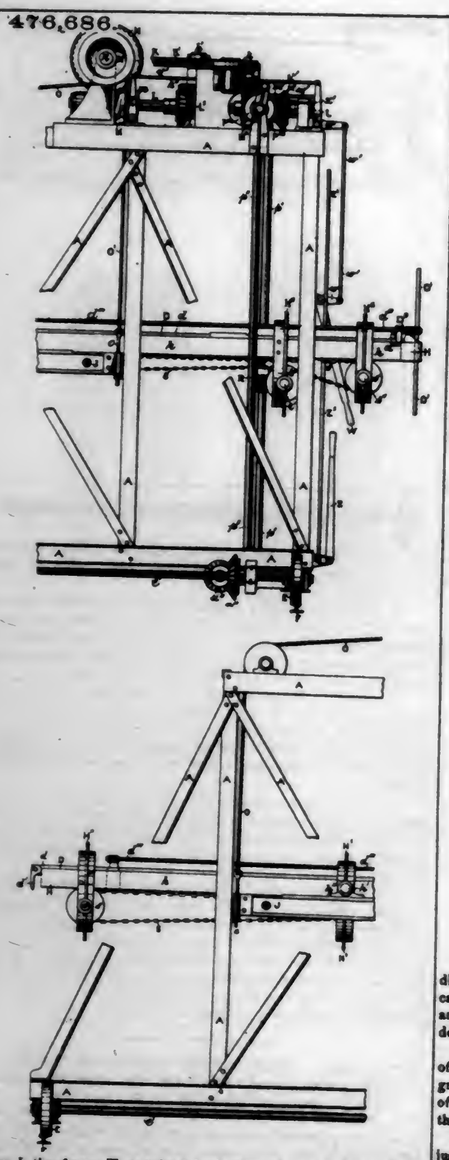
Claim.—1. In an apparatus for drawing gas-retorts, a main frame, a frame H, supported in the main frame, and a rake D, arranged to slide longitudinally on the frame H, in combination with the chain S, connected to the rake, the chain-carrying pulleys, and the worm-gear and pinions for driving the same, all mounted on frame H, the vertical driving-shaft, the worm splined on said shaft and capable of sliding up and down thereon, and means for raising and lowering frame H.

2. In an apparatus for drawing gas-retorts, the main frame, the frame H, the rake-carriage movable to and fro therein, the rake-bar *d*, connected by a vertical pivot to the carriage, and mechanism, substantially as described, for controlling the motion of the rake on said pivot, whereby the rake may be caused to act on the side of the retort.

3. In combination with the main frame, the frame H, the rake-carriage movable back and forth therein, the rake-bar *d*, connected to the carriage and constructed to swing laterally, the rock-shaft *d''*, provided with an operating device, an arm arranged to travel with the carriage and along the rock-shaft, and a connection from said arm to the rake-bar, whereby the rake may be adjusted laterally and held as it is withdrawn through the retort.

4. In an apparatus for drawing gas-retorts, the main frame mounted to move transversely in front of the retorts, in combination with the frame J, the cords and winding-drums for sustaining and adjusting

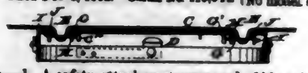
476,686.



frame J, the frame H, sustained by horizontal axes in frame J, the rake-carriage mounted to move back and forth on frame H, the rake-bar joined to the carriage to swing horizontally, the lever Z, and connections for tilting frame H, lever D and its connections for moving the rake horizontally, and mechanism for advancing and retarding the rake.

5. The main frame and its sustaining-wheels E, in combination with the frame J, its suspending and adjusting ropes and drums N', the frame H, mounted on horizontal axes on frame J, means for controlling the motion of frame H on said journals, the rake mounted to slide forward and backward in frame H, the rake-operating chain and its sustaining-pulleys, the vertical shaft p'', and the clutch and gears through which it actuates wheels E, shaft p', its sliding worm, and the gear connecting the same with the chain-driving pulley, the main driving-wheel K, intermediate gear, and gears and clutches through which said driving-wheel communicates motion to the winding-drum, the shaft p', or shaft p'', as set forth.

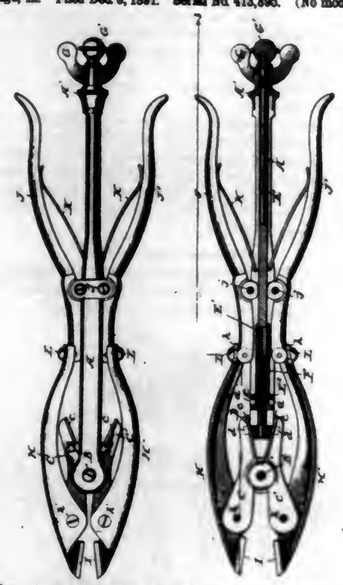
476,687. POCKET ATTACHMENT. SALLY SALISBURY, New York, N. Y. Filed Feb. 1, 1892. Serial No. 419,944. (No model.)



Claim.—1. A safety attachment composed of hinged jaws, one of which is provided with slots and perforated lugs H I, located on opposite sides of each slot, and pins E, adapted to slide in each pair of said lugs, for attaching the frame to a garment-pocket, as shown and described.

2. In a safety attachment, the combination, with a garment-pocket F, of a bag A, having a device E for fastening it to the garment-pocket, a second bag A' and the devices consisting of the ears K L and ring N, which detachably connect it to the upper bag A, the said devices being applied on the same side as the device that secures the upper bag to the garment-pocket, as and for the purpose specified.

476,688. VETERINARY DENTAL FORCEPS. DAVID M. SCHNEPPER, New Castle, Ind., assignor to Charles Truax, Green & Company, Chicago, Ill. Filed Dec. 3, 1891. Serial No. 413,895. (No model.)



Claim.—1. A veterinary dental forceps comprising a bar or handle, hand-levers pivotally mounted on said bar, a second set of levers carrying gripping jaws or blades connected to the first set of levers, and means for adjusting the said second set of levers, substantially as described.

2. A veterinary dental forceps comprising a bar or handle, a pair of levers pivotally mounted thereon, a second pair of levers carrying gripping-jaws pivotally connected to the first pair of levers, and a pair of levers connected to said gripping-levers and pivotally mounted on the handle, substantially as described.

3. In a veterinary dental forceps, a handle having a pair of adjustable levers pivotally mounted therein, means for positively adjusting the relation of said levers, and a pair of levers carrying gripping-jaws pivotally mounted in said adjustable levers, substantially as described.

4. A veterinary dental forceps comprising three systems of levers, one set being connected to the handle and forming the fulcrum for the second set, which is pivotally connected thereto, and are provided with cutters, and the third set being adjustably connected to the cutting-levers and pivotally mounted on the handle, substantially as described.

5. In a veterinary dental forceps, a handle composed of two parts suitably joined together and bifurcated at their forward end, a screw-rod passing through the handle, fixed against longitudinal movement, but free to rotate therein, a pair of adjustable levers mounted in the handle, a block for adjusting said levers, and a screw connecting said block to the screw-rod, substantially as described.

6. In a veterinary dental forceps, the combination, with the hollow handle, of a pair of levers pivotally mounted therein, the levers having inclined faces provided with flanges, and an incline block moving between the inclined faces of the levers and provided with jaws

embracing the flanges, and an adjusting device whereby the block may be moved with relation to the levers, substantially as described.

7. In a veterinary dental forceps, the combination, with the handles, adjusting-levers pivotally mounted therein, an incline block for adjusting said levers, a screw-rod passing through the handle, a screw connecting the block to the handle, and means for turning the screw-rod, substantially as described.

8. In a veterinary dental forceps, the combination, with the levers provided with jaws, of the operating-levers mounted on the handles and a stud pivotally mounted in the end of the operating-levers, the neck of which is adapted to enter a slot in the rear portion of the cutting-levers, substantially as described.

9. In a veterinary dental forceps comprising the handle, a pair of adjustable levers mounted therein and forming a movable fulcrum, a pair of cutting-levers pivoted to the adjusting-levers, a pair of operating-levers mounted on the handle and connected to the cutting-levers, a screw-rod passing through the handle, and an incline block connected to said screw-rod and arranged to adjust the adjusting-levers, substantially as described.

476,689. ROLL-PAPER HOLDER AND CUTTER. EDWIN R. SEXTMAN, Philadelphia, Pa. Filed Aug. 14, 1891. Serial No. 402,649. (No model.)



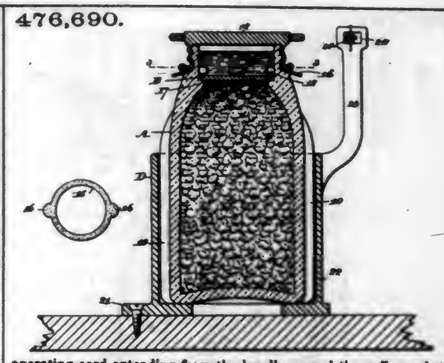
Claim.—1. In a roll-paper holder, the combination, with uprights or standards provided with bearings for a reel of paper and slots above the bearings, portions of which slots are wider than others, of a knife held to slide and to fall by gravity in the slots of the standards or uprights, lugs or bearings projected downward from the ends of the knife and containing elongated openings, a tension-roller located beneath the knife the trunnions whereof are journaled in the elongated openings in the bearings, the said tension-roller sustaining the weight of the knife and communicating its weight to the periphery of the paper roll, and a bail pivotally attached to the knife and adapted for engagement with the free end of the paper leading from the reel, as and for the purpose specified.

2. In a roll-paper holder, the combination, with standards having bearings therein and slots above the bearings wider at one point than at others, and a roll of paper the axes of which are held to turn in the bearings of the uprights, of a knife provided with a longitudinal channel near its cutting edge in its under surface, lugs projected downward from the ends of the knife of a width corresponding to the width of the narrower portions of the upright slots, the knife being adapted to drop and slide in said slots by gravity, a tension-roller journaled in the lugs attached to the knife and having vertical movement in its bearings, the said tension-roller sustaining the weight of the knife and communicating said weight to the paper roll, and a bail pivotally connected with the knife, the horizontal member of which bail is located beneath the knife, the said member being adapted to engage with the outer end of the paper leading from the reel and to enter the channel in the knife as the paper is being cut, substantially as described.

476,690. CANNING OR PRESERVING JAR. REBECCA C. SHEELEY, Lyons, Kans. Filed Jan. 26, 1892. Serial No. 419,292. (No model.)

Claim.—1. The jar-holding socket 22, open at its upper end to receive a jar and hold it against rotation and provided with an upward-extending arm 23, having a pulley at its upper end, in combination with a wrench to engage the jar-cover and having a handle and an

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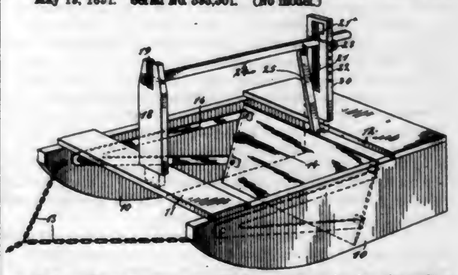


operating-cord extending from the handle around the pulley, substantially as shown and described.

2. The combination, with a fruit or preserving jar provided with a series of exterior ribs, of a socket open at its upper end to receive the jar and prevent it from rotating, the interior contour of which socket practically corresponds to the exterior contour of the jar, as and for the purpose set forth.

3. The combination, with a fruit or preserving jar and the cover thereof, the body of the jar being provided with a series of exterior ribs and its cover with a series of outwardly-extending projections, of a socket open at its upper end to receive the body of the jar, the interior of the socket being shaped to clamp the exterior of the jar and prevent it from turning, an arm projecting upward from the socket having an opening therein, and a friction device contained within the opening, a wrench adapted to fit over the cap or cover and receive the projections thereof, said wrench being provided with a handle, and a cord attached to the handle and passed through the opening in the arm of the socket and in engagement with its friction device, as and for the purpose specified.

476,691. SCRAPER. BENJAMIN F. SHUART, Billings, Mont. Filed May 19, 1891. Serial No. 393,301. (No model.)



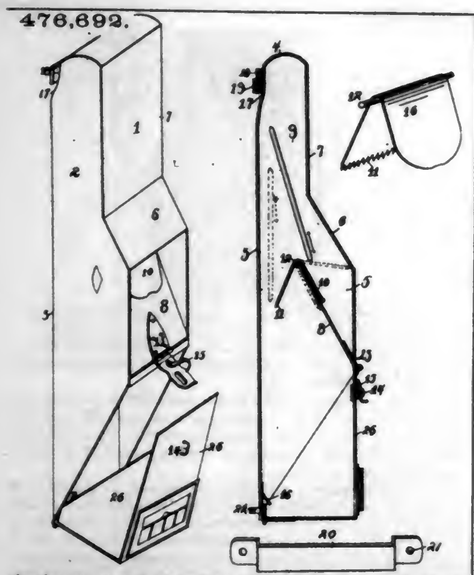
Claim.—The combination, with the platform having depending sides or runners, front and rear cross-pieces 11 12, vertical standards projecting from said cross-pieces, V-shaped bails or frames pivoted at their bends inside of the forward ends of the runners or sides parallel therewith, a blade 14, secured at its ends to the diverging ends of said bails, a lever pivoted at its front end to the front upright and adjustably connected near its opposite end with the rear upright, and a link pivotally connecting said lever between its ends with the said blade, substantially as set forth.

476,692. LETTER-BOX. CHARLES SHUMAN, St. Louis, Mo. Filed Jan. 4, 1892. Serial No. 416,928. (No model.)

Claim.—1. An improved letter-box having an upper vertical receiving-chamber constructed narrow to hold the mail-matter in an upright position therein, an opening for insertion of mail-matter, located in the wall of the box a distance beneath the upper end of said chamber greater than the length of an ordinary mail-package to permit all packages to be inserted through said opening bodily within said chamber, and a larger chamber located beneath said opening and in communication with said receiving-chamber by way of a vertical passage, substantially as set forth.

2. An improved house or street letter-box having an upper vertical receiving-chamber constructed narrow to hold the mail-matter in an upright position therein, a larger chamber located beneath and in communication with the receiving-chamber by way of a vertical passage, and an upwardly-inclined passage which opens into said receiving-

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chamber, the opening of the inner end of said passage located beneath the upper end of the receiving-chamber a distance greater than the length of an ordinary mail-package and at a distance above said larger chamber greater than the length of an ordinary mail-package, in combination with a suitable door for removal of mail from the larger chamber, substantially as set forth.

3. An improved house or street letter-box constructed at its lower end with a receptacle for deposited mail, a vertical receiving-chamber of smaller transverse sectional area than said receptacle and in communication therewith by way of a passage, said vertical receiving-chamber arranged narrow to receive and hold papers and packages in an upright position, an opening for insertion of mail, located in one wall of the box intermediate of said vertical receiving-chamber and said receptacle at a distance beneath the upper end of the receiving-chamber that is greater than the length of an ordinary mail-package to permit papers and packages to be inserted bodily within said receiving-chamber without bending or doubling, and said opening located a distance above the bottom of said receptacle that is greater than the length of an ordinary mail-package, to permit packages to drop below said opening, a V-shaped plate having arms constructed to alternately close said opening and the passage between the said vertical receiving-chamber and said receptacle, and a suitable door for removing the mail from the receptacle, substantially as set forth.

4. An improved house or street letter-box comprising a chamber for receiving deposited mail, located in the lower portion of the box, a vertical receiving-chamber located above said first-named chamber, a passage leading into said vertical receiving-chamber, a V-shaped plate having two arms and pivotally mounted within said box, with one of said arms located upon the interior of the box and the other arm located upon the exterior thereof and projecting into said passage, and a suitable door for removing mail from the box, substantially as set forth.

5. An improved house or street letter-box comprising a lower chamber for holding deposited mail, a vertical receiving-chamber located above said first-named chamber, a passage opening into said receiving-chamber, a V-shaped plate having two arms and pivotally mounted upon the interior of the box, one of said arms constructed to close the passage between said two chambers and the other arm arranged to close said first-named passage when the inner arm of said V-shaped plate is moved downward, the end of the arm which closes the passage between said two chambers being provided with serrations, and a door for removing mail from the box, substantially as set forth.

6. The house or street letter-box constructed with a depression in its back near the upper end of same, and a downwardly-extending hook 19, located within said depression and arranged to engage a fastening device and secure the upper end of the box in position, substantially as shown and described.

476,698. WRENCH. FRANK W. SIMMONS, Blue Mound, Kans. Filed June 12, 1891. Serial No. 396,004. (No model.)

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Claim.—A wrench the head of which is provided with a V-shaped recess longitudinally disposed with the stock thereof, one face of the recess being provided with inwardly-disposed inclined teeth, substantially as specified.

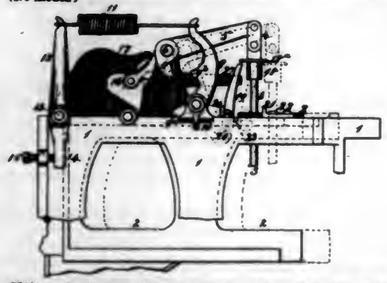
476,694. GAS-BURNER. HARPER F. SMITH, Philadelphia, Pa., assignor to William F. McCully, same place. Filed Mar. 7, 1892. Serial No. 424,097. (No model.)



Claim.—1. A gas-burner consisting of a supply-pipe with a vaporizing-chamber, a valve-chamber connected thereto, and a single superheating-tube extending centrally from said pipe and the wall of said chamber beside the burner proper and being deflected at top from the tip of the same, substantially as described.

2. A gas-burner consisting of a supply-pipe with a vaporizing-chamber therein, a valve-chamber attached to said pipe, and a single superheating-tube extending centrally from one chamber to the other beside the burner proper and deflected from the tip of the latter, the wall of the valve-chamber having a bore leading directly from said chamber to the adjacent end of the superheating-tube, said parts being combined substantially as described.

476,695. TACKING MECHANISM FOR LASTING-MACHINES. CHARLES SINNING, St. Louis, Mo., assignor to the Sinning Lasting Machine Company, same place. Filed Oct. 26, 1891. Serial No. 409,892. (No model.)



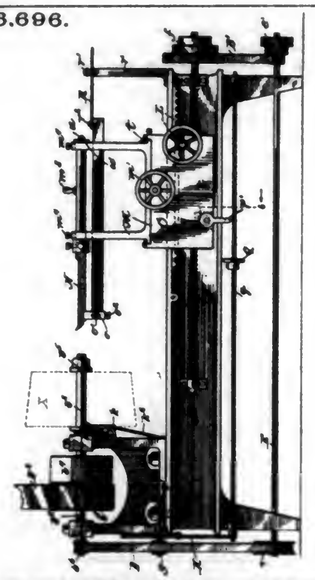
Claim.—1. In a tacking mechanism for a lasting-machine, the fixed frame 1, sliding frame 2, having bearing therein, hammer-rod 3, and lever 5, having bearing in the sliding frame and connected together, projection 8 on the lever 5, the arms 9 and lever 12 on the fixed frame, connected by a spring 11, the cam 17 on the fixed frame, the flange 18 on the hammer-rod, the pivoted dog 19 on the sliding frame, and stops 21 and 24 on the fixed frame, all constructed and adapted to operate substantially as set forth.

2. In a tacking mechanism for a lasting-machine, a fixed frame 1, a sliding frame 2, having bearing therein, the hammer-rod 3, lever 5, pivoted arm 9, and dog 19 upon the sliding frame, the cam 17 on the fixed frame, and a spring 11, connecting the arm 9 with the fixed frame, all constructed, arranged, and adapted to operate substantially as set forth.

476,696. WOOD-TURNING MACHINE. ABRAHAM STONER, Stony Point, Ia., and FRANCIS M. PENNEBAKER, Pleasant Hill, Ky. Filed Aug. 14, 1891. Serial No. 402,690. (No model.)

Claim.—1. In a turning-machine, the combination, with the bed-

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frame, the tool-carriage sliding on the latter, and mechanism for feeding it, of the work-holder pivoted at its inner end, and the headed bolt *b*, working in an arc slot of said bed-frame and provided with a nut *b'* for clamping the work holder at any required inclination to the tool or cutter, a rotatable arbor mounted in the work-holder and adapted to carry a block on its inner end, and means for connecting the said arbor and the carriage-feed mechanism, as shown and described.

2. In a turning-machine, the combination, with the bed-frame, the tool-carriage sliding on the latter, a screw-shaft, and means for temporarily locking it with the carriage, of the work-holder having an arbor, as specified, the shaft arranged longitudinally on the lower portion of the frame, a belt-and-pulley connection between said arbor and shaft, a similar connection between the latter and the feed-screw shaft, the half-nut adapted to engage the screw-shaft, an eccentric for raising and lowering the nut and having a lever-arm, as specified, and a stop which engages the said arm, and thus automatically breaks the connection between the feed-shaft and carriage, as shown and described.

3. In a turning-machine, the combination, with the work-holder pivoted and adapted for lateral adjustment, as set forth, of the block-turning attachment rigidly secured to and thus movable with the work-holder, consisting of a cutting-tool, a stock therefor, a bar arranged and supported rigidly at a right angle to the arbor of the work-holder, and a rotatable screw-shaft journaled alongside said bar and serving to adjust the tool-stock along the latter, as shown and described.

4. In a turning-machine, the combination, with the work-holder and a carriage adapted to slide toward and from the same, of a cutting-tool and a stock for holding it, the tool and stock being aligned horizontally and the stock adapted for rotation on its axis to adjust the tool, as specified.

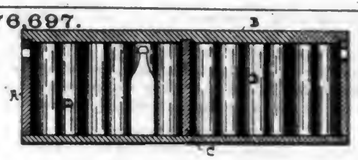
5. In a turning-lathe, the combination, with the cutting-tool N and its holder or stock arranged horizontally and aligned, as specified, of the tool-rest consisting of a bar O, carrying a tool-supporting piece at its free end and arranged beneath and parallel to said tool and stock, and also adapted to slide lengthwise in its supports, whereby it may be adjusted independently of the tool, as and for the purpose specified.

6. In a turning-machine, the combination, with the work-holder, the carriage adapted to slide toward and from the latter, the tool-holder sliding transversely on said carriage, the tool and sliding tool-rest, of the stop-bar adapted for adjustment lengthwise and pivoted on a fixed support and loosely connected with the rest, as shown and described.

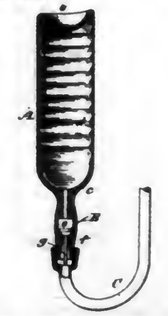
476,697. BOTTLE-CASE. GEORGE C. SUCRO, Baltimore, Md. Filed Jan. 20, 1892. Serial No. 418,731. (No model.)

Claim.—The combination, with an outer case, of a series of complete and independent cylindrical cells arranged in rows parallel in one direction, but staggered in the other, and pointed staple-clips which are placed over the ends of adjoining cells with their points turned inward and inserted in the material of the cells, substantially as and for the purpose specified.

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476,698. PESSARY. HORACE H. TAYLOR, Fresno, Cal., assignor of one-half to Nathan W. Moody, same place. Filed Aug. 21, 1891. Serial No. 403,337. (No model.)



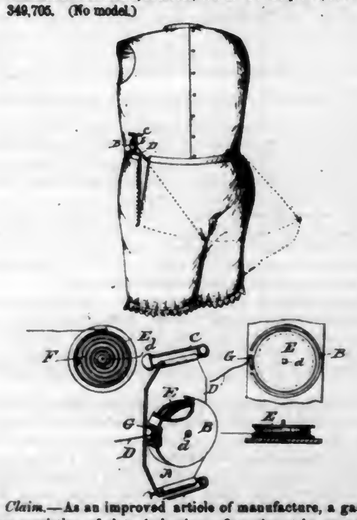
Claim.—1. An elastic hollow longitudinally-extensible pessary, made of india-rubber or the like, with its upper and lower extremities of greater thickness than its side walls.

2. An elastic hollow longitudinally-extensible pessary having transversely corrugated or ribbed side walls of less thickness and more flexible than its ends.

3. A pessary comprising a cylindrical hollow body of flexible material, having its sides thinner than the ends and transversely corrugated, a concave upper end, and a tubular extension projecting from the lower end and provided with a check-valve in said tubular extension, said valve having its stem projecting beyond the end of the tubular extension, substantially as herein shown and described.

4. The combination, with the pessary A, provided with the tubular extension *f*, and the check-valve B in said extension, of a band and a bent rod secured to the band and provided at its free end with an open-ended socket adapted to fit upon the extension of the pessary, said extension projecting through said socket, substantially as herein shown and described.

476,699. SUPPORTER FOR THE REAR FLAP OF TROUSERS. CHARLES S. TERPENING, Prescott, Wash. Filed Apr. 28, 1890. Serial No. 349,705. (No model.)



Claim.—As an improved article of manufacture, a garment-supporter consisting of plate A, having safety-pins at its opposite ends, a spring winding-drum mounted on one face of said plate, a cap for pro-

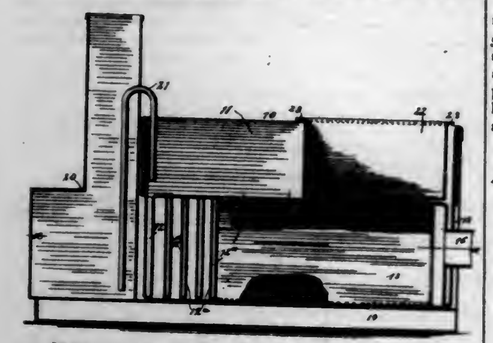
tecting the said drum, a cord secured to the said drum and wound thereon, and means for securing the free end of the said cord to the flap of the garment, whereby when the said flap is lowered the cord will be unwound from the drum against the tension of the spring and on releasing the flap the said cord will be rewound on the drum and return the flap to a normal position, substantially as described.

476,700. ELECTRIC-ARC LAMP. ROBERT H. THURSTON, Ithaca, N. Y. Filed Feb. 27, 1892. Serial No. 423,036. (No model.)



Claim.—An electric lamp having broad flat carbons moving in the same vertical line or in approximately parallel lines, with the carbons arranged in planes intersecting at a small angle for the purpose of preventing the carbons slipping by each other when shaken by the wind or other force, substantially as specified.

476,701. EVAPORATING-PAN. HARRISON P. THURSTON, Centre Bartlett, N. H. Filed June 26, 1891. Serial No. 397,492. (No model.)



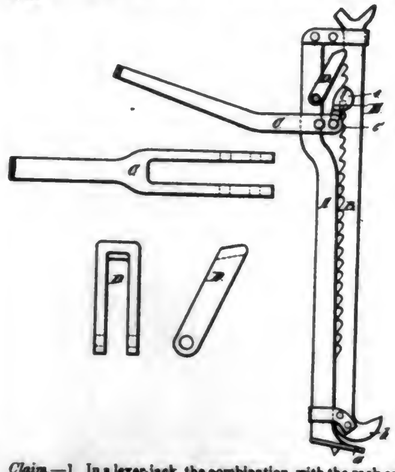
Claim.—1. An evaporator comprising an evaporating receptacle or pan having a fire-box beneath it closed at its ends, an inlet and outlet in the same end of the box, and hollow flanges depending from and communicating with the receptacle and dividing the fire-box into longitudinal return-flues, substantially as set forth.

2. An evaporator comprising a receptacle having a depending hollow flange around its lower edge, which thus forms a fire-box, a suitable door and outlet for the fire-box, and a series of curved hollow flanges arranged centrally on the under side of the receptacle and forming flues between them, substantially as described.

3. The combination, with the ash-box, of a receptacle having a depending hollow flange around the edge, which rests upon the box, and having a suitable door and outlet, and a series of curved hollow flanges extending centrally from the receptacle to the ash-box, said flanges terminating at a point adjacent to the outlet, substantially as described.

4. An evaporator comprising the flat ash-box, the receptacle having depending hollow flanges resting on the ash-box, a series of curved hollow flanges extending centrally from the receptacle to the box and terminating adjacent to the outlet to form flues, a tank on the rear end of the ash-box, a siphon-pipe connecting said tank with said receptacle, and the supplemental pan within and having flanges resting on the edges of the evaporating-receptacle, substantially as shown and described.

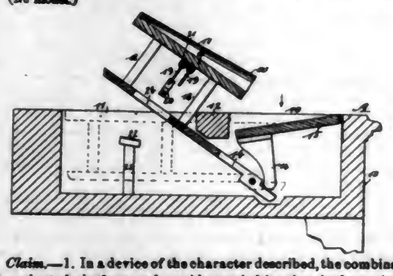
476,702. LEVER-JACK. WILLIAM TREWHELLA, Blackwood, Victoria, assignor of one-half to Benjamin Trewhella, Jr., same place. Filed Nov. 6, 1891. Serial No. 411,047. (No model.) Patented in Victoria June 4, 1889, No. 6,795, and in New South Wales July 10, 1890, No. 2,323.



Claim.—1. In a lever-jack, the combination, with the rack or lifter bar, the fixed standard along which said bar has motion, and a spindle pivotally connected with the standard, said spindle having an enlarged portion in which are formed two bearings or recesses parallel with its longitudinal axis, of the pawls D and E, provided with journals loosely seated in said bearings, said pawls engaging the rack-bar at a point above their axes of oscillation, substantially as and for the purpose set forth.

2. In a lever-jack, the combination, with the rack or lifter bar B, the standard A, along which the bar has motion, the retaining-plates g', secured to said standard, and the spindle G, journaled in said plates, said spindle having one of its journals squared at one end and having an enlarged portion, on which are formed two bearings g^3 g^3, of the pawls D and E, provided with journals d' and e', respectively, seated loosely in said bearings, said pawls engaging the rack-bar at points above their journal-bearings, for the purpose set forth.

476,703. CHANGE RECEIVER AND TRANSFER TABLE. WERT R. OOSTMANN, New York, N. Y. Filed Nov. 11, 1891. Serial No. 411,609. (No model.)



Claim.—1. In a device of the character described, the combination, with a pivoted platform and a table carried by the platform, the said table being provided with automatically-folding wings, of a second table having a bearing upon the platform near one end, substantially as shown and described, whereby when the second table is pressed downward the leaf-table is elevated over it, as and for the purpose set forth.

2. In a device of the character described, a platform pivoted near one end, a table supported by the platform, provided with leaves and gravity devices operating the leaves, a check device engaging with the gravity devices, and a second table having bearing at one end upon the platform and located near one end of the leaf-table, substantially as and for the purpose specified.

3. In a device of the character described, the combination, with a support, a platform pivoted to the support near one end, a table carried by the platform, provided with leaves at opposite sides, and weighted arms connected with the leaves and extending beneath the table in opposite directions, of a check device adapted for engagement with the weighted arms when the table is in a horizontal position, and a second table having one end hinged and the other free, the free end having engagement with the platform between its pivot and the end nearest to which the pivot is located, the said second table being also located adjacent to one end of the leaf-table, whereby when the second table is pressed downward the leaf-table will be elevated over and at an inclination thereto, as and for the purpose set forth.

4. In a device of the character described, the combination, with a receptacle divided into two compartments and a table hinged to one wall of one of the compartments, of a platform pivoted in the receptacle near one end and beneath the table, and a connection between the table and the shorter end of the platform, a table carried by the platform adapted to carry articles, comprising a body-section and leaf-sections, weighted arms attached to the leaves and extending beneath the body-section of the table in opposite directions, and a stop-post secured to the casing or receptacle and adapted to extend upward through the opening in the platform to engage with the weighted arms, as and for the purpose specified.

476,704. ASTIGMASCOPE. JOHN K. UNDERWOOD, Geneva, N. Y. Filed Apr. 16, 1890. Serial No. 348,248. (Model.)



Claim.—1. In an astigmascope, the revoluble barrel, the adjustable mirror suspended in the smaller portion of the barrel, and the diaphragm secured in the same portion of the barrel adjacent to and inclined from the mirror, with the glasses having a line across their face and located at the rear end of the said barrel, substantially as and for the purpose set forth.

2. In an astigmascope, the revoluble barrel, the adjustable mirror, the mirror-holder, and the diaphragm having an inclined position relative to the mirror, in combination with the ring having graduated markings upon its face and securely attached to the said barrel, and the sleeve in which the barrel revolves, substantially as and for the purpose set forth.

3. In an astigmascope, the movable barrel having securely attached to it a ring having graduating markings on its face, in combination with a sleeve having a projection pivoted to a tripod or other standard and having opposite shorter projections provided with an indicator-line, said barrel being supported and revolved in said sleeve, carrying with it the graduated ring, substantially as shown and described, and for the purpose set forth.

4. In an astigmascope, the adjustable mirror, the centrally-perforated diaphragm located at the rear end of the mirror, and the mirror-holder, in combination with the barrel-supporting sleeve and the marking-ring, substantially as and for the purpose set forth.

5. The plate provided with openings i and i', having a flange for the reception of one end of the tube or barrel A, in combination with the slide M, provided with a semi-opaque glass, substantially as shown and described, and for the purpose set forth.

6. The flanged plate having a projection in which is secured a screw-threaded rod and the slide M, having a perforated angle-piece through which the said rod passes, in combination with the disk having degree-markings thereon and the thumb-screw formed in the same piece with the disk, substantially as and for the purpose set forth.

7. In an astigmascope, the combination of the revoluble barrel comprising a large rear portion and a smaller front portion, of the slide adapted to be operated upon the face of the rear end of the large portion and the diaphragm secured in the said smaller portion between the mirror and the said large portion, substantially as and for the purpose set forth.

476,705. BRICK-MACHINE. WILLIAM C. VANNEMAN, Anderson, Ind. Filed Oct. 31, 1891. Serial No. 410,526. (No model.)

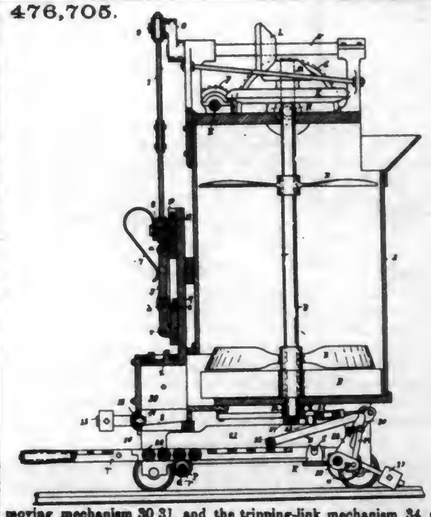
Claim.—1. In a brick-machine, in combination with the molding-box, the concaved stone-door 13, hung upon stud-shafts, the removable die 3 adjacent to the stone-door opening, through which the same may be removed, substantially as specified.

2. In combination with a brick-machine having the vertical-moving plunger, the table T, suspended upon the centers S, and the shaft P, carrying the adjustable eccentrics Q and r, substantially as specified.

3. In a brick-machine, the combination of the brackets R, the table T, suspended near its rear end on centers S, supported in said brackets, and the shaft P, having eccentrics Q r, substantially as described.

4. In a brick-machine, the combination, with the cylinder A and shaft D, having crank 22, of the pivoted arms 24 and 28, the mold-moving mechanism 30 31, and the tripping-link mechanism 34, substantially as described.

476,705.

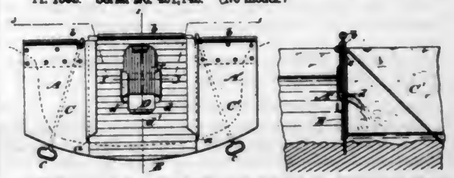


5. In combination with the crank-driving mechanism 22 and the mold-moving mechanism 30 31, the crank-arms 28, journaled loosely upon the shaft 29, and the link mechanism 34 for locking said arm to the shaft 29, substantially as specified.

6. In a brick-machine, the combination of the removable die 3, the concaved stone-door 13, having stud-shafts 14, provided with weighted arms 15, the plunger 2, the cross-head 4, carrying said plunger, the pitman 1, and yielding mechanism between the pitman and the cross-head, substantially as described.

7. In a brick-machine, the combination of the cylinder A, having the shaft D, provided with a crank 22, the mold-moving mechanism driven by said crank, the table T, suspended on centers near its rear end, and the shaft P, provided with eccentrics Q r, substantially as described.

476,706. DAM. OTTE VAN OOSTERN, Portland, Oreg. Filed Feb. 11, 1892. Serial No. 421,142. (No model.)



Claim.—1. A dam comprising a metal plate having its upper portion provided with double walls spaced apart and a filling of wood between the said walls, substantially as herein shown and described.

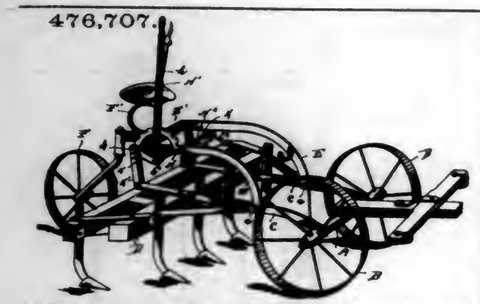
2. In a dam, the combination, with the side wings A A', having the vertical grooves a, of the gate B, sliding in the said grooves and provided with an opening D, and the grooved strip d d', the upper edges of the side wings and gate being provided with the rods b, the braces C C', hinged to the rods and provided with feet c, and the auxiliary gate e, sliding in the said grooved strips of the gate B, substantially as herein shown and described.

476,707. WHEEL-CULTIVATOR. FRED W. VAUGHAN, San Francisco, Cal. Filed Dec. 14, 1891. Serial No. 414,977. (No model.)

Claim.—1. The combination, in a cultivator, with the front axle, of the drag-bars movably coupled at their ends to said axle, a shovel-carrying beam secured to rear ends of the drag-bars, main frame secured at its forward end to the drag-bars direct, and the rear ground-wheel for supporting rear of said frame, as and for the purpose set forth.

2. In a cultivator, the combination, with the drag-bars movably secured to the horizontal axle, of the main frame connected at its forward end to the drag-bars, the rear ground-wheel supporting rear portion of the main frame, operating mechanism for raising or lowering the shovel-carrying beam, consisting of the hand-lever connected to rotatable cross-rod working in bearing in the main frame, rearwardly-ex-

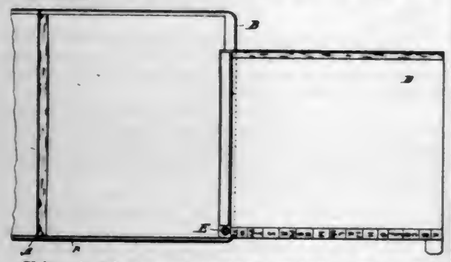
476,707.



tending arms projecting from said rod, and connecting-arms movably secured to the rearwardly-extending arms and to the beam, as and for the purpose set forth.

3. In a cultivator, the combination, with the drag-bars, of the main frame consisting of the curved pieces at their forward ends, being secured to the drag-bars, the rear ground-wheel for supporting rear portion of the main frame, and the driver's seat secured to the riding attachment, as and for the purpose set forth.

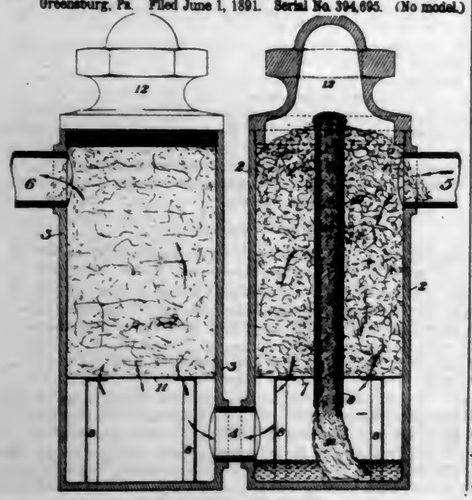
476,708. MOVABLE INDEX FOR LETTER-COPY BOOKS. MILES VERNON, Brooklyn, N. Y. Filed Mar. 10, 1892. Serial No. 424,437. (No model.)



Claim.—1. A letter-press copy-book consisting of the covers B, the leaves C, and the index D, pivoted at one corner to the inner side of one of the book-covers to swing in a plane parallel with the cover into and out of the book, substantially as described.

2. A letter-press copy-book consisting of the covers B, the leaves C, the index D, and the pivot E, engaged with a corner of one of the book-covers and pivotally connecting one corner of the index therewith, so that the index can swing in a plane parallel with the cover into and out of the book, substantially as described.

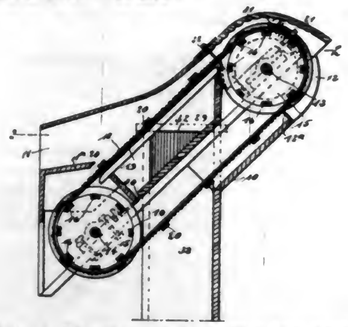
476,709. CARBURETOR AND PURIFIER. GEORGE W. WEAVER, Greensburg, Pa. Filed June 1, 1891. Serial No. 394,695. (No model.)



Claim.—1. A gas carbureting and purifying device comprising a chamber adapted to contain and containing a liquid carbureting and cleaning agent in the lower part thereof, a body of loose material above the cleaning agent, a tube having perforations in its sides and extending upwardly from the chamber into the loose material, a wick located in said tube extending down into the liquid agent, and a gas-inlet and a gas-outlet pipe, substantially as and for the purposes described.

2. A gas carbureting and purifying device comprising a chamber adapted to contain and containing a liquid carbureting and cleaning agent in the lower part thereof, a body of loose material above the cleaning agent, a wick extending up from the cleaning agent into said loose material, a second chamber containing loose material and connected with the first-named chamber, a gas-inlet pipe entering one of said chambers, and a gas-outlet pipe leading from the other chamber, substantially as and for the purposes described.

476,710. COTTON CLEANER AND CONDENSER. WILLIAM R. WHERRY and WILLIAM F. SMITH, Overton, Tex. Filed Feb. 20, 1892. Serial No. 422,297. (No model.)



Claim.—1. The combination of the case or frame having an inlet at its lower end and a hinged downward-curved hood at its upper end with the endless carrier mounted in the said case or frame with its higher end within the curved hood, substantially as set forth.

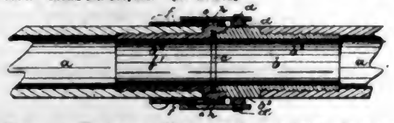
2. The combination of the case having an inlet at its lower end and a curved internally-corrugated hood at the upper end, and the endless carrier in the casing, with its higher end within the curved hood, substantially as set forth.

3. The combination of the case having an inlet at one end and an outlet at the other, an endless carrying-belt, drums for said belt arranged beneath the inlet and above the outlet, and a spring-pressed corrugated hood hinged to the case and extending above the upper drum, substantially as described.

4. The combination of the movable screen-carrying belt and the sand-box arranged within the belt and having an opening at its lower end, substantially as described.

5. The combination of the case having an inlet at one end and an outlet at the other, a movable endless screen-belt held to move between the inlet and outlet, a sand-box mounted within the belt, and air-pipes opening from the sides of the sand-box to convey the dust and dirt away, substantially as described.

476,711. HOSE-COUPLING. ANDREW WHELAN, South Orange, N. J., assignor of one-half to Frank S. Feindt, same place. Filed Nov. 3, 1891. Serial No. 410,721. (No model.)

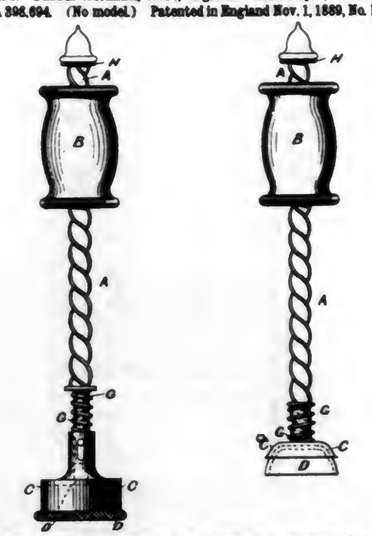


Claim.—1. The improved hose-coupling consisting of two nozzles, one of which is provided with adjustable lugs or studs *d'*, lying back from the end of its nozzle and serving as a catch, and the other with two levers, one of which is pivoted or fulcrumed on the other and is provided with hooks to engage said studs, substantially as and for the purposes set forth.

2. The improved hose-coupling herein described, consisting of a threaded nozzle, a collar adjustably screwed thereon and provided with oppositely-disposed lugs or studs *d'*, and a nozzle *b'*, having a frame *f f g* pivoted thereon and provided with opposite extensions *k' k'*, serving as lifting finger-pieces, the said frame *f f g* having a hooked frame *h h h'* pivoted thereon at points between the pivotal extremities thereof and the said lifting finger-pieces, said parts being arranged and combined substantially as and for the purposes set forth.

3. In combination with the hose-sections *a a*, a threaded nozzle *b*, a collar *d*, adjusted on said nozzle and provided with studs *d'*, a nozzle *b'*, arms *f f*, pivoted on said nozzle *b'* and having the curved connector *g* and finger-piece extensions *k'*, and arms *h h*, pivoted on said arms *f f* and having hooks to engage said studs and having the curved finger-piece *k'*, lying on the same side of the hose or nozzles with the finger-piece *g*, all substantially as and for the purposes set forth.

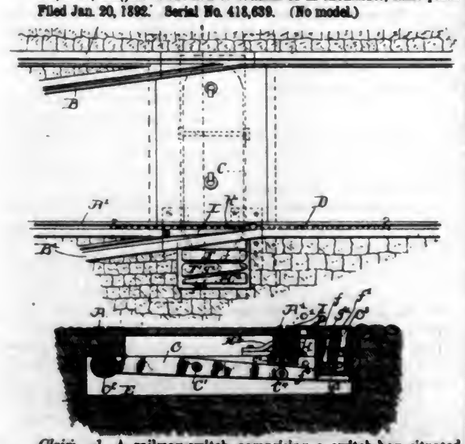
476,712. APPARATUS FOR APPLYING BOTTLE STOPPERS OR CAPS. DENNIS WICKHAM, Ware, England. Filed July 7, 1891. Serial No. 398,694. (No model.) Patented in England Nov. 1, 1889, No. 17,330.



Claim.—1. The combination, with a twisted or worm shaft A, having a handle B and a socket C, of a rubber cushion D in said socket for engaging the head of a stopper, and a spiral spring G on said twisted or worm shaft in proximity to the socket C, substantially as described.

2. The combination, with a twisted or worm shaft A, having a handle B and a socket C, of a rubber cushion D in said socket, a rubber cushion D', and a spring G on the twisted or worm shaft in proximity to the socket C, substantially as described.

476,713. TRAMWAY-SWITCH. JOHN R. WIGGINGTON, Washington, D. C., assignor of one-half to William R. H. Alexander, same place. Filed Jan. 20, 1892. Serial No. 418,639. (No model.)

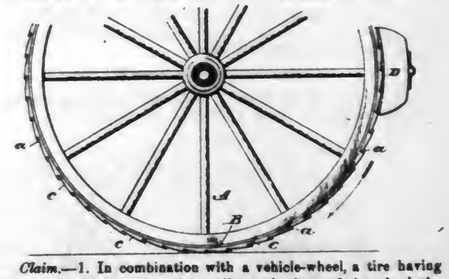


Claim.—1. A railway-switch comprising a switch-box situated adjacent to the rails of a track capable of vertical movement, a switch-lever arranged within the box, a switch-tongue connected with the switch-lever, a swinging frame supporting the box, an inclined lever pivoted in or adjacent to the rail, and a connection between the lever and frame, substantially as described.

2. A railway-switch comprising a switch-box situated adjacent to the rails of a track capable of vertical movement, a switch-lever arranged within the box, a switch-tongue connected with the switch-lever, a pivoted frame supporting the box, a lever pivoted in or adjacent to the rail, a connection between the lever and the frame, a lug on the wall of the opening receiving the frame and box, and a projection on the switch-lever engaging the lug, substantially as described.

3. A railway-switch comprising a vertically-movable switch-box situated adjacent to the rails of a track, a switch-lever arranged within the box, a switch-tongue, a rod loosely connecting the said lever with the tongue, a plate for supporting the end of the rod, a pivoted frame supporting the box, a lever pivoted in or adjacent to the rail, a connection between the lever and the frame, a lug on the wall of the opening receiving the frame and box, and a projection on the switch-lever engaging the lug, substantially as described.

476,714. WHEEL-TIRE. WILLIAM R. WILCOX, Ridgway, Colo. Filed Nov. 19, 1891. Serial No. 412,397. (No model.)



Claim.—1. In combination with a vehicle-wheel, a tire having ratchet-teeth which incline forwardly at the base of the wheel, the points of which are adapted to engage with the roadway when the wheel is locked by a brake, substantially as set forth.

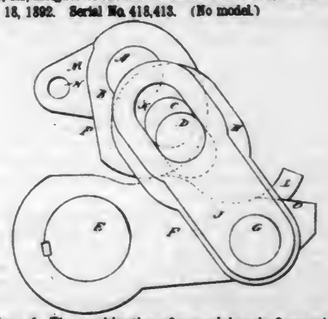
2. In combination with a vehicle-wheel, a tire having recesses for the reception of projecting ratchet-teeth, said tire being secured over a plain tire, substantially as set forth.

3. In combination with a vehicle-wheel, a tire C, having apertures, and reversible blocks *d*, retained within said apertures, substantially as set forth.

4. In combination with a vehicle-wheel, a tire C, having apertures, the front and rear walls of which are oppositely-inclined at different angles, and wedge-shaped blocks *d*, adapted to be reversibly secured within said apertures, substantially as set forth.

5. In combination with a vehicle-wheel having an ordinary tire secured over the felly or rim thereof, a supplemental tire secured over the plain tire, said supplemental tire having on its outer face inclined or raised portions forming ratchet-teeth, the projecting portions thereof being adapted to engage and dig or plow into the ground when the wheel is locked against rotation, the points of said ratchet-teeth contacting with the road-bed or ground first, and a brake-block B, adapted to engage with the supplemental tire and bear upon the highest portions of said ratchet-teeth, substantially as shown, and for the purpose set forth.

476,715. MECHANICAL MOVEMENT. ALFRED B. WILLCOX, Chicago, Ill., assignor of one-half to E. L. Whittemore, Toledo, Ohio. Filed Jan. 18, 1892. Serial No. 418,413. (No model.)

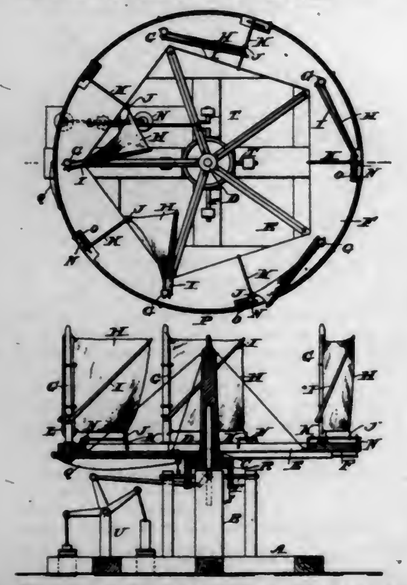


Claim.—1. The combination of a revolving shaft carrying a crank having two crank-pins in the same radial line, but one more distant

from the center of motion than the other, an oscillating shaft, an arm projecting radially from said oscillating shaft and in substantially the same plane as the plane of the said crank, the said arm carrying a projecting crank-pin, and two connecting-rods arranged on the crank-pin of the said oscillating shaft, the said connecting-rods joined, respectively, to two crank-pins on the said revolving shaft, the said connecting-rods constructed for a predetermined length of lost motion between the crank-pin and the oscillating shaft and the two crank-pins of the revolving shaft, the periphery of the crank and the adjacent surface of the said arm curved corresponding to the points of contact between the said crank and arm in the revolution of the crank, substantially as and for the purpose described.

2. The combination of a revolving shaft carrying a crank having two crank-pins in the same radial line, but one more distant from the center of motion than the other, an oscillating shaft, an arm projecting radially from said oscillating shaft and carrying a projecting crank-pin, and two connecting-rods arranged on the crank-pin of the said oscillating shaft, the said connecting-rods joined, respectively, to the two crank-pins on the revolving shaft, the said connecting-rods constructed for a predetermined length of lost motion between the crank-pin of the oscillating shaft and the two crank-pins of the revolving shaft, the crank constructed with a cam-surface P and the arm with a corresponding bearing-surface O, the said surfaces adapted to come gradually together as the return movement of the arm commences, substantially as and for the purpose described.

476,716. WIND-MOTOR. HAGBARTH WIPGE, Miles City, Mont. Filed Oct. 23, 1891. Serial No. 409,599. (No model.)

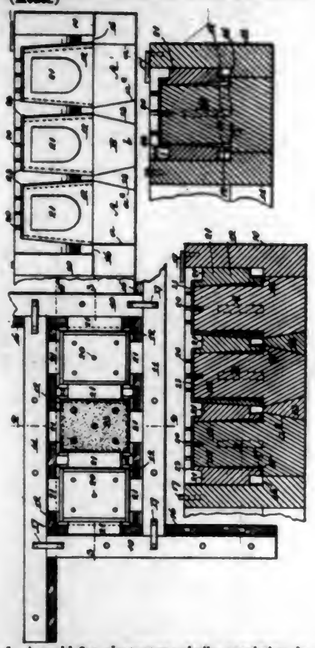


Claim.—1. A wind-motor comprising a horizontally-disposed wheel mounted to revolve, a series of masts erected on the rim of the said wheel, sails supported on the said masts, travelers arranged on the said rim of the wheel and engaged by a ring on the lowermost outer corner of the said sail, and means, substantially as described, for locking or unlocking the outer end of the said traveler, as set forth.

2. In a wind-motor, the combination, with a frame provided with a central post carrying a pivot, of a wheel mounted to turn on the said pivot, masts erected on the rim of the said wheel and carrying sails, a gear-wheel held on the hub of the said wheel, and a series of gear-wheels in mesh with the said hub gear-wheel, and each mounted on a shaft adapted to be connected with the machinery to be driven, substantially as shown and described.

3. In a wind-motor, the combination, with a wheel mounted to travel, of masts erected on the rim of the said wheel, sails held on the said masts and each provided at its outer lowermost corner with a ring, travelers engaged by the rings of the said sails, levers formed with hooks adapted to engage the outer ends of the said travelers, and means, substantially as described, for actuating the said levers simultaneously to lock or unlock the said travelers, as set forth.

476,717. MOLD FOR ELECTROTYPE-SHELLS AND SIMILAR ARTICLES. JACOB C. WOLFE, New York, N. Y., assignor to the Metal Base Electrotype Company, same place. Filed Nov. 16, 1890. Serial No. 371,805. (Model.)



Claim.—1. A mold for electrotype-shells, consisting in the flask or frame, the separate core-blocks A B in the flask or frame, of less height than the sides and ends thereof and having lower inclined faces, core-plates between the several blocks and between their outer sides and the sides and ends of the flask or frame, and the wedge-shaped keys or spacing-blocks 13 between the inclined faces of the lower ends of the core-blocks, substantially as set forth.

2. An electrotype-mold comprising the flask or frame having a shoulder 16 around its interior, a series of core-blocks A B in the frame and of less height than the frame, each block having an external shoulder around it in the same horizontal plane as the shoulder 16 and having their lower adjacent faces inclined, a series of core-plates resting against the faces of each block above its shoulders and against the inner walls of the flask or frame, and the wedge-shaped spacing blocks or keys 13 between the said lower inclined faces of the blocks, substantially as shown and described.

3. The combination, with the flask or frame, of the core-block having an encircling shoulder 18, the core-plates fitting against the faces of the block and resting on its shoulder, and the core 21 on the outer face of each plate and spaced from its marginal edges, substantially as shown and described.

4. The combination, with the flask, of the core-block having an encircling shoulder 18 and provided with a series of recesses 19^a, and the core-plates 12, resting on the shoulder 18, and each having on its inner face a rib or projection entering the said recesses and on its outer face the core 21, spaced from the marginal edges of the plate, substantially as shown and described.

5. A mold comprising a separable flask, tapering core-blocks, spacing blocks or keys inserted between the core-blocks at their base, core-plates intervening between the upper surfaces of the body-sections and between said sections and the flask, and spacing-plates engaging with the core-blocks and core-plates, substantially as specified.

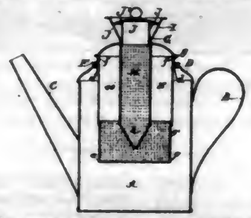
6. In a mold of the character set forth, the core-block having an encircling shoulder 18 between its upper and lower faces and inward-inclined faces below the shoulder, the faces of the block above the shoulder being inclined upward and inward, and each having a groove 19^a, in combination with the core-plates and keys or spacing-blocks, substantially as set forth.

7. As a new article of manufacture, the angular spacing-plate 15, having a transverse offset or shoulder on both faces at the juncture of its two inclined portions, substantially as set forth.

8. As a new article of manufacture, the core-plate 12, having a core 21 on one face and a vertically-extending rib or projection 12^a on its opposite face, substantially as shown and described.

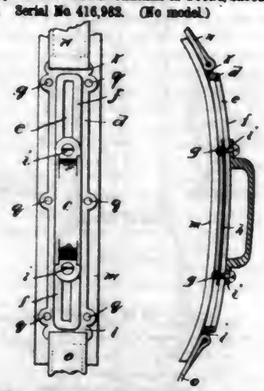
9. A mold comprising a rectangular expansible open flask or frame having a shoulder 16 around its inner walls, a series of core-blocks A B therein having encircling shoulders 18, in the plane of shoulders 16, the adjacent faces of the blocks below the shoulder being inclined to form wedge-shaped spaces, the smaller ends of which are uppermost, and the blocks above the shoulders having their faces inclined upward and inward, the wedge-shaped spacing blocks or keys 13 in said wedge-shaped spaces, the plates 12, having cores 21 and resting on the several shoulders 18, the spacing-plates 14 between the adjacent faces of cores 24 and the core-blocks, and the pins 20 in the upper faces of the core blocks, substantially as set forth.

476,718. COFFEE-POT. WILLIAM H. WRIGLEY, New Orleans, La. Filed Oct. 10, 1891. Serial No. 408,371. (No model.)



Claim.—The improved coffee-pot, substantially as described, consisting of the pot proper, the coffee-holder fitted therein and having its upper portion within said pot imperforate and its sides near its lower end perforated, as described, the hot-water holder fitted in said coffee-holder and having its sides perforated at points opposite both the imperforate and the perforated portions of the coffee-holder, said hot-water holder being provided at its upper end with a cover G to close the top of the coffee-holder, and a cover for the hot-water holder, all substantially as and for the purposes set forth.

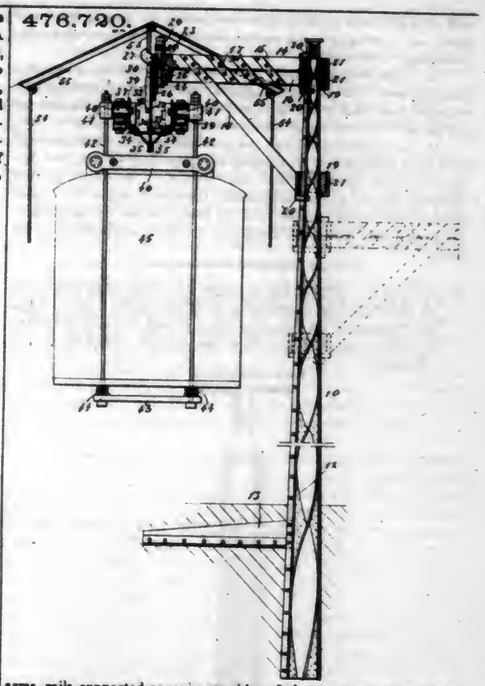
476,719. TRACE-GUIDE. CHARLES E. YOUNG, Sabetha, Kans. Filed Jan. 4, 1892. Serial No. 416,982. (No model.)



Claim.—1. The combination of a plate provided with a longitudinal slot and eyes or loops at the end of said plate, the trace-loop having both ends bearing on said plate, and the clamping-plate at the inner side of said slot, and bolts passing through both ends of said loop and said slot and the clamping-plate, as and for the purposes set forth.

2. In combination, the pad-skirt, the supporting-plate extending longitudinally thereof and riveted or otherwise secured thereto and having eyes at its opposite ends, the upper eye being rigidly secured to the pad-skirt by the strap passed therethrough, the girth or belly-band billet passed through the lower eye, said plate having a longitudinal slot, a vertically-adjustable trace-loop at the outer side of said slot, and clamping means whereby said loop is clamped in the desired vertical position.

476,720. ELEVATED RAILROAD. ELIPHALET I. ARNOLD, Georgetown, Tex. Filed May 26, 1891. Serial No. 394,120. (No model.)



Claim.—1. An elevated railway comprising a series of supporting-posts carrying laterally-extending arms which are pivoted on the posts, a supporting-truss pivoted in the free ends of the arms, and rails supported on opposite sides of the truss, substantially as described.

2. An elevated railway comprising a series of posts having laterally-extending arms, a truss suspended from the free ends of the arms, rails supported on opposite sides of the truss, substantially as described.

3. The combination, with an elevated-railway track, of a roof supported above the track and depending shields supported upon the eaves of the roof, substantially as described.

4. An elevated railway comprising a series of vertical posts having laterally-extending arms pivoted upon their upper ends, a truss pivotally suspended from the free ends of the arms, a base-plate secured to the truss near the lower edge of the same, and rails carried on the base-plate, substantially as described.

5. In an elevated railway, track-supports comprising a series of hollow posts having near the bottom laterally-extending arms and having a central spiral core, and arms pivoted to the upper ends of the posts, said arms having depending braces which are also pivoted to the posts, substantially as described.

6. The combination, with supporting-posts and swinging two-part arms, of a track-carrying truss having near its upper edge parallel flanges to embrace the lower member of the post, a pin extending through the lower flange and into the post, and a ball-jointed connection between the truss and the upper member of the arm, substantially as described.

7. In an elevated railway, the combination, with a supporting-arm having a socket in its upper side, of a track-supporting truss having a slideway thereon, rods secured in the slideway and arranged to embrace the supporting-arm, and a cross-bar connecting the upper ends of the rods, said cross-bar having a ball in its under side to fit the socket of the arm, substantially as described.

8. The combination, with elevated track-rails and trucks arranged to run thereon, of spring-pressed slide-boxes supported in the trucks, bolts extending laterally from the boxes, hangers suspended from the bolts, and a car mounted upon springs within the hangers, substantially as described.

9. The combination, with a suspended car and its supporting-hangers, of yokes connecting the side members of each hanger, rods connecting the yokes, sockets carried by the rods, and springs arranged within the sockets and adapted to press collars on the rods, substantially as described.

10. In an elevated railway, the combination, with the two converging fixed sections and with the main line, of a cross-truss supported above the track, a swinging section supported from the cross-truss, hinged to the main line, and adapted to align with the converging fixed section of the track, and a lever mechanism for moving the swinging section, substantially as described.

11. In an elevated railway, a switch comprising a cross-truss supported upon posts and provided on one side with a track, cross-heads

held to slide in the track, a lever mechanism for moving the cross-heads, and a swinging track-section suspended from the cross-heads, substantially as described.

12. In an elevated railway, the combination, with the converging fixed track-sections and the swinging switch-section, of a sliding rail arranged upon each of the fixed sections and a lever mechanism for moving the rail from the ground, substantially as described.

13. In an elevated railway, the combination, with the converging fixed track-sections and the adjacent swinging track-section, of a sliding rail secured upon the fixed track-sections, a bell-crank pivoted above the rail and having one member connected therewith, a cable secured to the opposite member of the bell-crank and connected with the ground, and means for operating the cable, substantially as described.

476,721. DEVICE FOR HOLDING AND OPERATING THE JAWS OR ENDS OF THE REINS OF A TEMPER-SCREW. OTHO J. BALDWIN, Youngsville, assignor of one-half to William A. Louden and George W. Louden, Allegheny, Pa. Filed Mar. 12, 1892. Serial No. 424,664. (No model.)



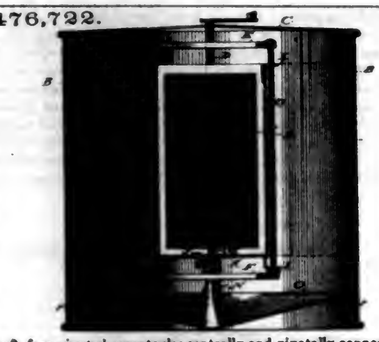
Claim.—1. In a device for operating and holding the jaws or the ends of the reins of a temper-screw, the combination of a lever having upon one end a solid ball and upon the other end a cam or eccentric, said lever being mounted upon a journal-bolt having bearing c^3 in the jaws of a yoke, the yoke fitting around the end or jaws of the reins of the temper-screw and provided with two jaws having the notches c^2, in which is located the aforesaid lever, the journal-bolt upon which said lever is mounted, and the pawl or ratchet located and mounted upon the lug a^2 of said lever, all substantially as described, and for the purpose set forth.

2. The combination of the lever A with the ends of the reins of a temper-screw, said lever being mounted upon a journal-bolt having bearings c in the ends of a yoke C, the yoke U, located upon the end or the jaws of the reins of the temper-screw and provided with the circular ends having notches c^2, in between which ends is located the aforesaid lever, the journal-bolt, upon which the lever A is mounted, the pawl mounted upon the lug a^2 of the lever A, and the elastic block located in the orifice a^3 of the lever A, all substantially as described, and for the purpose set forth.

476,722. HONEY-EXTRACTOR. WILLIAM BAYLISS, Brantford, Canada. Filed Aug. 17, 1891. Serial No. 402,950. (Model.)

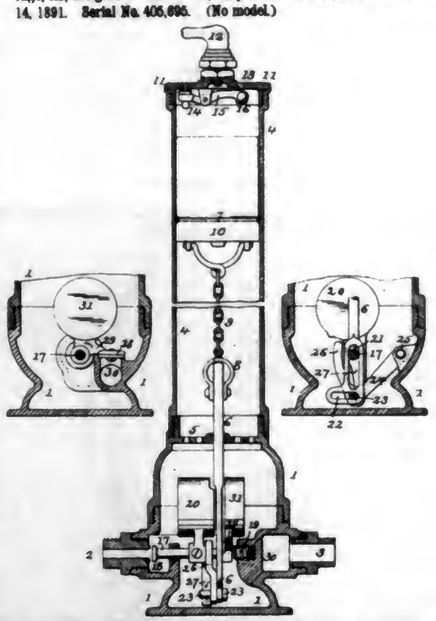
Claim.—1. In a honey-extractor, the combination, with the reversible shaft, of cross-pieces loosely mounted on said shaft, rods connecting said cross-pieces, foraminated receptacles journaled on the rods, and means fixedly connected to the shaft for changing the position of the receptacles when the motion of the shaft is reversed, substantially as described.

2. In a honey-extractor, the combination, with the tank, of a rotary shaft suitably mounted therein, a frame loosely journaled on the



shaft, foraminated receptacles centrally and pivotally connected to the frame and provided with bottoms having horizontal slits or passages, and a spider fixedly connected to the shaft and provided with ends engaging with the slits in the bottom of the receptacles, substantially as described.

476,723. AUTOMATIC AIR-COMPRESSOR. BRUNO BECK, Chicago, Ill., assignor of one-half to Philip J. Cook, same place. Filed Sept. 14, 1891. Serial No. 405,696. (No model.)



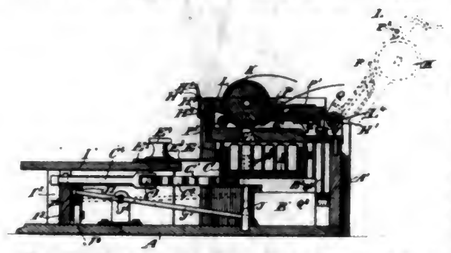
Claim.—1. In an automatic air-compressor, the combination, with the vertical cylinder and its weighted piston, of the valve-rod 6, a flexible connection between the piston and the valve-rod, the bell-crank lever 24, connected to the valve-rod and having an arm 26, adapted to operate the overbalance-weight, the valve-stem 17, having movement in a longitudinal direction by means of the screw formation 19 and provided with an overbalance-weight 20, and an outlet-valve head 28, controlling the outlet-passage 30, substantially as herein described.

2. In an automatic air-compressor, the combination, with the vertical cylinder and the weighted piston, of the valve-rod 6, a flexible connection between the piston and the valve-rod, the bell-crank lever 24, connected to the valve-rod and having a pin or stud 23, adapted to operate the overbalance-weight, the valve-stem 17, having movement in a longitudinal direction by means of the screw formation 19 and provided with an overbalance-weight 20, and an outlet-valve head 28, controlling the outlet-passage 30, substantially as herein described.

3. In an automatic air-compressor, the combination, with the vertical cylinder and its weighted piston, of the valve-rod 6, a flexible connection between the piston and the valve-rod, the bell-crank lever 24, connected to the valve-rod and having an arm 26 and a pin or stud 23, adapted to operate the overbalance-weight, the valve-stem 17, having

ing movement in a longitudinal direction by means of the screw formation 19 and provided with an overbalance-weight 20, and an outlet-valve head 28, controlling the outlet-passage 30, substantially as herein described.

476,724. TYPE-WRITING MACHINE. ALLARD E. BENEDICT, Cairo, Nebr. Filed Apr. 20, 1891. Serial No. 389,609. (No model.)



Claim.—1. In a type-writer, the combination, with the frame having transverse guideways at its ends and the laterally-movable carriage resting at its ends on said ways, the type-frame sliding longitudinally in the carriage and having parallel rows of vertical type-receiving spaces open at both ends, and a knob or handle provided with a pointer and connected with the said sliding type-frame to move it and the carriage simultaneously toward and from the operator or slide the said frame along the carriage, of a paper-carriage over the type-case and provided with a roll and spacing mechanism, a central vertical plunger beneath the said case to engage the lower ends of the type as they are successively brought in line therewith, an index-plate having rows of characters corresponding with those on the type and with which the pointer co-operates, and a lever through the medium of which the plunger and spacing mechanism are operated, substantially as set forth.

2. The combination, with the frame having a central transverse bar provided with a type-aperture, a vertically-aligned plunger or pin therebelow, of the carriage sliding laterally between the aperture and plunger and provided with a type-frame sliding longitudinally therein and having vertical type-receiving spaces, a handle or knob projecting from the frame for operating it and the carriage, a longitudinally-extending printing-lever connected with the said plunger or pin, a paper-carriage above the apertured bar, and a spacing mechanism connected therewith and having a transverse operating-lever crossing the printing-lever, substantially as shown and described.

3. The combination, with the frame, the laterally and longitudinally sliding type-case having a series of vertical type-spaces, the central vertical plunger or pin thereunder, a longitudinally-extending printing-lever therefor, and a vertically slotted or notched bar or piece across the slots or notches of which said lever projects, of the longitudinally-sliding paper-carriage above the type-case and a spacing mechanism therefor, having a spacing-lever pivoted to the frame to swing laterally and vertically and adapted to enter any of said slots or notches and crossing the printing-lever to operate it, substantially as shown and described.

4. The combination, with the frame, the laterally-sliding carriage thereon, a type-frame sliding longitudinally on the carriage, of a tongue or arm projecting at right angles from the carriage and provided with notches, and spring-actuated retaining-arms mounted on the frame to engage said notches and retain the carriage against accidental displacement, substantially as shown and described.

5. In a type-writing machine, the combination, with a fixed bar having a central opening, of a type-case mounted to slide longitudinally and laterally, type set vertically in the type-case and adapted to slide vertically therein and through the said central printing-opening in the fixed bar, a pin adapted to slide vertically to engage the under side of one of the type to force the latter upward into and through a central printing-opening, and a spring held on the said fixed bar and adapted to press with its free end on the upwardly-movable type to return the same to its former position when the said pin recedes, substantially as shown and described.

6. The combination, with the frame, the central vertical printing plunger or pin, and the longitudinally-extending printing-lever connected therewith, of the laterally-sliding carriage, the transverse center of which is over said plunger or pin, the longitudinally-sliding type-frame on the carriage, having vertical parallel type-spaces, a horizontal plate projecting from the forward side of the frame and provided with a pointer and a knob or handle, an indicating-table under the pointer, a paper-carriage sliding longitudinally over the type-frame and provided with a spacing-lever crossing the printing-lever to one side of the said indicating-table, whereby the type may be properly located above the plunger by one hand and the printing and spacing be effected simultaneously by the other hand, substantially as shown and described.

7. The combination, with the laterally-sliding carriage and the type-frame sliding therein across the central printing-point, of two vertically-swinging frames hinged at their outer ends, respectively, to the ends of the carriage and each provided at its inner end with a transverse inking-roller under which the type-frame slides, substantially as shown and described.

8. In a type-writer, the combination, with the type-case, paper-carriage, the printing-lever, and the mechanism operated thereby, of a horizontally and vertically swinging spacing-lever crossing the printing-lever, a vertically-swinging spring-depressed lever under the outer end of which the inner end of the spacing-lever projects, and connections between the inner end of said spring-depressed lever and the paper-carriage, substantially as shown and described.

9. In a type-writing machine, the combination, with a paper-carriage mounted to slide longitudinally and provided with a rack, of a spring-pressed lever having a bent end engaging the rack, a second lever on which the first-named lever is pivoted, a third lever pivotally connected with the second lever for rocking it, a spacing-lever actuating the third lever, a lever pivoted alongside of said second lever and having a hook crossing the first-named lever and provided with a lever whereby it may be operated to hold the bent end of the first-named lever out of engagement with the rack, substantially as shown and described.

10. The combination, with the paper-carriage provided at one end on its lower side with a vertically-swinging arm T, inclined upward from its outer end, of a bell having a pivoted striker, the upper end of which has a lateral lug or projection T', under which the inclined arm passes to raise the striker and from which the lug drops when the upper end of the incline is passed, substantially as shown and described.

11. In a type-writing machine, a paper-carriage comprising a frame, a paper-roller, a bearing pivoted at one end of the said frame and adapted to support one end of the said roller, a second bearing pivoted on the said frame and adapted to be swung outward to disengage the end of the said roller, and a spring-pressed rod connected with the said second bearing to swing the latter outwardly, substantially as shown and described.

12. In a type-writing machine, a paper-carriage comprising a frame mounted to slide longitudinally and pivoted at its rear end to be swung upwardly, a bearing having trunnions journaled in one end of the said frame, a second bearing pivoted at the other end of said frame and adapted to swing laterally, a roller journaled in the said bearings, and a knob held on the said roller for conveniently turning the same in the bearings, substantially as shown and described.

13. In a type-writing machine, a paper-carriage comprising a frame mounted to slide longitudinally and pivoted at its rear end to be swung upwardly, a bearing having trunnions journaled in one end of the said frame, a second bearing pivoted at the other end of the said frame and adapted to swing laterally, a roller journaled in the said bearings, a knob held on the said roller for conveniently turning the same in the bearings, a toothed wheel held on the said roller, and a spring-pressed pawl engaging the said toothed wheel, substantially as shown and described.

14. In a type-writing machine, a paper-carriage comprising a frame mounted to slide longitudinally and pivotally at its rear end to be swung upwardly, a bearing having trunnions journaled in one end of the said frame, a second bearing pivoted at the other end of the said frame and adapted to swing laterally, a roller journaled in the said bearings, a knob held on the said roller for conveniently turning the same in the bearings, a plate provided with tongues held on the said frame and passing in close proximity to the said roller to guide the paper, and a second roller journaled in spring-bearings and arranged in line with the said first-named roller to permit the paper to pass between the two rollers, substantially as shown and described.

15. In a type-writing machine, the combination, with a paper-carriage mounted to slide longitudinally and provided with a rack, of a spring-pressed lever having a bent end adapted to engage the said rack, a second lever on which the first-named lever is pivoted between its ends, a spring connecting the short arm of the first-named lever with the second lever, a third lever pivoted between its ends and connected at one end by a link with the said second lever, and a space-lever actuating the opposite end of said third lever, substantially as shown and described.

16. In a type-writing machine, the combination, with a paper-carriage mounted to slide longitudinally and provided with a rack, of a spring-pressed lever having a bent end adapted to engage the said rack, a second lever on which the first-named lever is pivoted, a third lever connected by a link with the said second lever, a space-lever actuating the said third lever, and a pivoted lug in which the said space-lever is pivoted to permit of moving the latter, so that its end engaging the third lever can be moved nearer to or farther from the fulcrum of the said third lever, substantially as shown and described.

17. In a type-writing machine, the combination, with a paper-car-

riage mounted to slide longitudinally and provided with a rack, of a spring-pressed lever having a bent end adapted to engage the said rack, a second lever on which the first-named lever is pivoted, a third lever connected by a link with the said second lever, a space-lever actuating the said third lever, a pivoted lug in which the space-lever is pivoted to permit of moving the latter, so that its end engaging the third lever can be moved nearer to or farther from the fulcrum of the said third lever, and an adjustable spring pressing on the said third lever, substantially as shown and described.

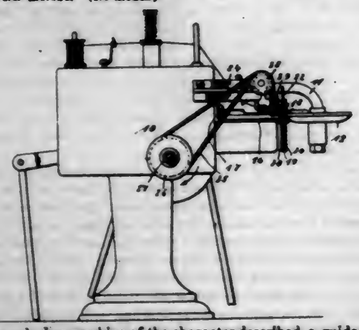
18. In a type-writing machine, the combination, with a type-case comprising a carriage mounted to slide transversely, and a type-holder mounted to slide longitudinally in the said carriage, of a frame pivoted on the said carriage, and an inking-roller journaled in the said frame and adapted to travel on the type contained in the said holder, substantially as shown and described.

19. In a type-writing machine, the combination, with a type-case comprising a carriage mounted to slide transversely and a type-holder mounted to slide longitudinally in the said carriage, of a frame pivoted on the said carriage, an inking-roller journaled in the said frame and adapted to travel on the type contained in the said holder, and a cap hinged on the said frame and extending over and in contact with the top of the inking-roller, substantially as shown and described.

20. In a type-writing machine, the combination, with a paper-carriage mounted to slide longitudinally and provided with a rack, of a spring-pressed lever adapted to engage the said rack, a second lever pivoted between its ends and formed with a hook at its upper end engaging the said first-named lever, and a hand-lever adapted to engage the lower end of said second lever to depress its upper end, and under the control of the operator to disengage the said first-named spring-pressed lever from the rack when the carriage has reached a left-hand position, substantially as shown and described.

21. In a type-writing machine, the combination, with a paper-carriage mounted to slide longitudinally and formed with a rack, of a spring-pressed lever having a bent end adapted to engage the said rack, a second lever having a hook at its upper end adapted to engage the said first-named lever and provided at its lower end with a weight, and a transverse lever projecting at its inner end under the weighted end of said hook-lever to raise its lower end and depress its upper end to move the first-named lever out of engagement with the said rack, substantially as shown and described.

476,725. GUIDING ATTACHMENT FOR FUR-SEWING MACHINES. CATHARINA BOOM, New York, N. Y. Filed Feb. 11, 1892. Serial No. 421,130. (No model.)



Claim.—1. In a machine of the character described, a guide comprising an open ended hood and a central partition extending longitudinally through the hood and having brushes on its sides, substantially as described.

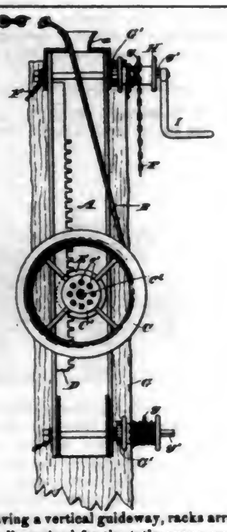
2. In a machine of the character described, the combination, with the guide consisting of a hood having a depending central partition, of a revolubie brush held to turn at one end of the guide, substantially as described.

476,726. TETHER. WILLIAM R. BRADLEY, Roscoe, N. Y. Filed July 9, 1891. Serial No. 398,898. (No model.)

Claim.—1. The combination, in a tether, with the body or frame having a vertical rack, of a traveling winding-wheel within the body or frame and geared to the said rack, and the tether-rope secured at its inner end to the wheel and wound thereon, substantially as set forth.

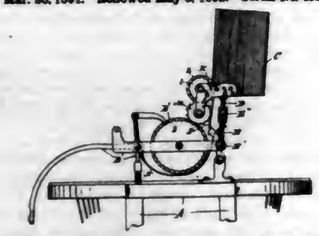
2. The combination, in a tether, with the body or frame, of the racks and guideways therein, the winding-wheel, the tether-rope secured at its inner end to the wheel and about which it is wound, said wheel being geared to the racks to cause it to rotate and wind the rope, and anti-friction rollers on the axis of the wheel and traveling in the said ways, substantially as set forth.

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3. A tether having a vertical guideway, racks arranged along the same, a gravity winding-wheel for the tether-rope, a guide-opening at the upper end of the tether, through which said rope passes, friction-disks on the axle of said gravity-wheel, and circular series of pins on the hub of the wheel engaging the above-named racks, all in combination, substantially as described.

476,727. AUTOMATIC ENVELOPE-FEEDER FOR TYPE-WRITING MACHINES. JOHN H. BROWER and HERBERT C. ROSS, Minneapolis, Minn., assignors of one-third to Franklin L. Stiles, same place. Filed Mar. 23, 1891. Renewed May 6, 1892. Serial No. 432,008. (No model.)



Claim.—1. The combination, with the line-feed devices of a type-writer carriage, comprising the impression-roller, gear-wheel, and actuating-lever, of the envelope-magazine mounted on said carriage, the face-feed roller mounted on said magazine for supplying the envelopes one at a time to said impression-roller and provided with a gear-wheel, and the intermediate gear-wheel carried by said magazine and engaging the gear-wheels of said impression-roller and said face-feed roller for driving the latter from the former, substantially as described.

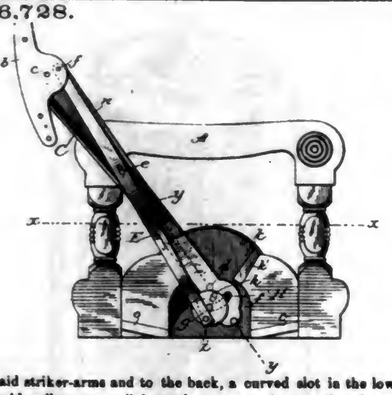
2. The combination, with the type-writer feed-carriage and its line-feed, comprising the impression-roller, gear-wheel, and actuating-lever, of the angularly and vertically adjustable holders E, mounted on the rear rail of the said carriage, the envelope-magazine C, mounted on said holders, provided with the bearing-brackets K, the follower F, located in the said magazine, the spring H for moving said follower, the face-feed roller L, working against the outermost of the series of envelopes in opposition to the spring H and provided with a gear-wheel *l*, and the intermediate gear-wheel M, mounted in the said brackets K and engaging the gears *b* and *l*, substantially as and for the purpose set forth.

476,728. CAR-SEAT. EDWIN L. BUSHNELL and GEORGE W. DRYER, Poughkeepsie, N. Y., assignors to the E. L. Bushnell Spring Company, Limited, same place. Filed Dec. 15, 1891. Serial No. 415,131. (No model.)

Claim.—1. In combination, striker-arms pivoted on a suitable support, a seat-back pivoted on the striker-arms, a supplemental arm pivoted on one of said striker-arms and to the back, and a pivoted-link connection interposed between the lower end of the supplemental arm and the striker-arm, substantially as described.

2. In combination, striker-arms pivoted on a suitable support, a seat-back pivoted on the striker-arms, a supplemental arm pivoted on

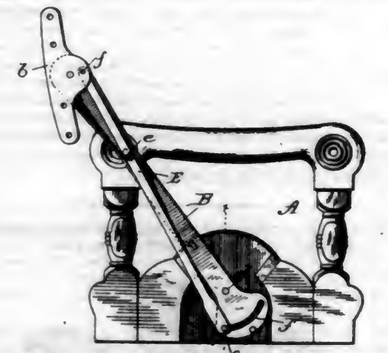
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one of said striker-arms and to the back, a curved slot in the lower end of said striker-arm, a link turning upon a pivot passing through said slot, said link being pivoted to the supplemental arm, and a loose connection between said link and the striker-arm, substantially as described.

3. In combination with the end frames of a car-seat, blocks forming a part thereof, striker-arms pivoted to said blocks, a seat-back, a supplemental arm carried by one of the striker-arms, both the striker and supplemental arms being also pivoted to the seat-back, a second pivot *g* in the block, a link turning on said pivot and connected to the supplemental arm, and a loose connection between the link and striker-arm, substantially as described.

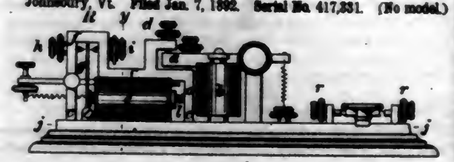
476,729. CAR-SEAT. EDWIN L. BUSHNELL and GEORGE W. DRYER, Poughkeepsie, N. Y., assignors to the E. L. Bushnell Spring Company, Limited, same place. Filed Mar. 12, 1892. Serial No. 424,723. (No model.)



Claim.—1. In combination, striker-arms pivoted on a suitable support, a seat-back pivoted to the striker-arms, and a supplemental arm pivoted so as to have slight longitudinal movement on one of said striker-arms and to the back, the lower end of the supplemental arm being pivotally connected to the seat-arm frame below the pivot of the striker-arm, substantially as described.

2. In combination, striker-arms pivoted on suitable supports, a seat-back pivoted on the striker-arms, a supplemental arm pivoted so as to have slight longitudinal movement on one of said striker-arms, a curved slot in the lower end of one of said striker-arms, a projection *g* on the frame, extending through said slot, and a pivoted connection between the upper end of said supplemental arm and the back, the lower end of the arm being pivoted on the projection *g*, substantially as described.

476,730. TELEGRAPH-INSTRUMENT. CHARLES R. CARR, St. Johnsbury, Vt. Filed Jan. 7, 1892. Serial No. 417,231. (No model.)



Claim.—In a combined telegraph sounder and relay, an arm extending from the sounder to the relay and bearing on each end a fork, and each fork provided with the usual adjusting-screws for limiting the play of the armature-bars of the respective instruments, substantially as described, and for the purposes set forth in my specification.

476,781. YARN-SEPARATOR FOR SPINNING-FRAMES. ALFRED D. CHANDLER, Chelmsford, Mass. Filed Aug. 25, 1890. Serial No. 363,055. (No model.)



Claim.—1. The combination of the spindles, the ring-rail, the separators, means for imparting a vertical traverse to said ring-rail and separators, and adjustable stops to vary the limit of the downward movement of said separators, as and for the purpose specified.

2. The combination of the spindles, the ring-rail, the separators, the separator-bar, the separator-rods, means for imparting a vertical traverse to said ring-rail and separator-rods, said separator-rods being adjustable in length to vary the limit of the upward movement of said separators, and adjustable stops to vary the limit of the downward movement of said separators, as and for the purpose specified.

3. The combination of the spindles, the ring-rail, the separators, the separator-bar, the separator-rods, means for imparting a vertical traverse to said ring-rail and separator-rods, said separators being arranged and adapted to remain between said spindles during the entire traverse of said ring-rail and said separator-rods being adjustable in length to vary the limit of the upward movement of said separators, and adjustable stops to vary the limit of the downward movement of said separators to vary the length of the traverse of said separators without affecting the length of the traverse of said ring-rail, as and for the purpose specified.

4. The combination of the spindles, the ring-rail, vertical separator-rods, means for giving said ring-rail and separator-rods a vertical traverse, separators, the separator-bar operated by said separator-rods, stands in which said separator-rods are guided, and stop-collars secured on said separator-rods above said stands and by striking on the tops of said stands adapted to limit the downward movement of said separator-rods, as and for the purpose specified.

5. The combination of the spindles, the ring-rail, vertical separator-rods, means for giving said ring-rail and separator-rods a vertical traverse, separators, the separator-bar operated by said separator-rods, stands in which said separator-rods are guided, and stop-collars secured on said separator-rods above said stands and by striking on the tops of said stands adapted to limit the downward movement of said separator-rods, said collars being adjustable on said rods to vary the length of the traverse of said rods, as and for the purpose specified.

6. The combination of the spindles, the ring-rail, the vertical separator-rod having a foot adjustable in length, the separators, the separator-bar operated by said rod, and the cross-shaft having an arm provided with a stud which extends under said foot, as and for the purpose specified.

7. The combination of the spindles, the ring-rail, the vertical separator-rod, a foot secured to said rod and formed in two parts, each provided with a slot, a bolt arranged in said slots to secure the parts thereof to each other and to allow the same to be adjusted on each other, the separators, the separator bar operated by said rod, and the cross-shaft having an arm provided with a stud which extends under said foot, as and for the purpose specified.

8. The combination of a separator-bar having journals or pivot-pins, separators carried by said bar, separator-rods having sockets to receive said journals and to enable said separators to be turned into or

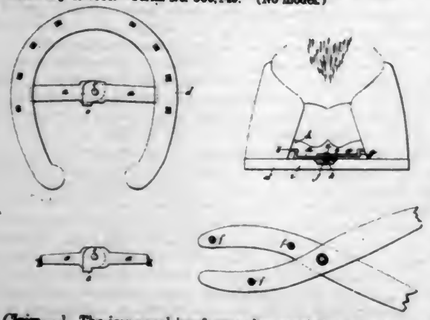
out of their operative position, means for retaining said journals in said sockets when said separators are in an operative position, and means for allowing said journals to be detached from said sockets when said separators are turned out of said operative positions, as and for the purpose specified.

9. The combination of the separator-bar, separators carried thereby, the separator-rod, a socket secured thereto and provided with an inclined slot and with a curved projection concentric with said lower end of said slot, and a bracket secured to said separator-bar and having pins, one of which enters said slot to enable said bar and separators to be turned thereon and the other of which normally engages said projection, but is disengaged therefrom by turning said bar to allow said pin first named to be disengaged from said slot and said separator-bar to be disconnected from said separator-rod, as and for the purpose specified.

10. The combination of the separator-bar, separators secured thereto, the separator-rod, a socket secured rigidly thereto, a bracket secured to said separator-bar and having a pin which turns in said socket to enable said separators to be moved into a horizontal position or at will into a vertical position, and a stop arranged on said socket to engage said bar and to support said separators in a raised position, as and for the purpose specified.

11. The combination of the spindles, the ring-rail, means for giving the same a vertical traverse, the vertical separator-rod, a foot secured to said rod and formed in two parts, each provided with a slot, and a bolt arranged in said slots to secure the parts thereof to each other and to allow the same to be adjusted vertically on each other, each part of said foot being provided with vertical ribs and the ribs on one of said parts entering between the ribs on the other of said parts to prevent them from turning on each other, as and for the purpose specified.

476,732. HOOF-SPREADER. GEORGE T. CHAPMAN, White Plains, assignor of three-fourths to William Harvey Merritt, New York, N. Y. Filed May 1, 1889. Serial No. 309,149. (No model.)



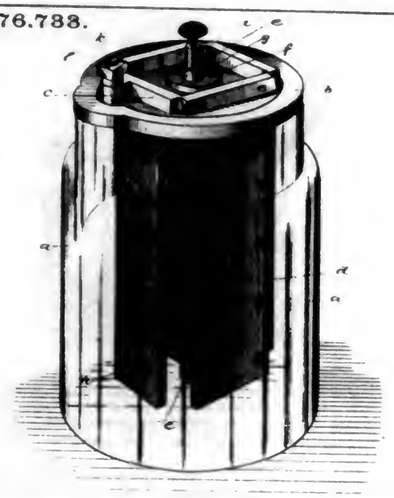
Claim.—1. The improved hoof-expander consisting of a pair of strut-plates jointed together side by side near one end suitably for extension by shifting the joint in the edgewise direction of the plates from an angular position of the two plates relatively to each other into a right line between the outer extremities, one of said plates having the stop-lug between the pivot and the outer extremity of the other plate and adapted to come to a bearing on said other plate when the pivot has passed slightly beyond said right line and lock the plates in the extended position, said strut-plates having the outer extremities adapted to "bite" in the surfaces of the hoof above the shoe.

2. The improved hoof-expander consisting of a pair of steel plates jointed together side by side near one end suitably for extension by shifting the joint in the edgewise direction of the plates from an angular position of the two plates relatively to each other into a right line between the outer extremities, one of said plates having the stop-lug between the pivot and the outer extremity of the other plate and adapted to come to a bearing on said other plate when the pivot has passed slightly beyond said right line and lock the plates in the extended position, said steel plates having the laterally-offset portions of the outer ends sidewise relatively to them, and the pointed extremities of said offset portions adapted to enter the heel-clefts and bite in the side walls thereof, substantially as described.

476,733. GALVANIC BATTERY. MARTIN M. CLARK, Chicago, Ill. Filed Dec. 26, 1888. Serial No. 294,602. (No model.)

Claim.—1. The combination, with the glass jar, of the wooden ring placed thereon, the lead head resting upon the wooden ring, the carbon elements supported by said lead head and being cast therein, the zinc element placed within the carbon elements and centrally suspended from the lead head, a wooden paraffined bushing surrounding

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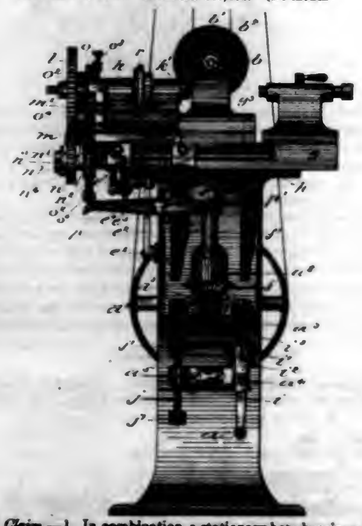
the zinc element to insulate the same from the lead, the projection on the lead head and the hardened lead nut placed on said projection, substantially as and for the purpose specified.

2. The combination, with the jar, of the lead head and the four carbon plates or elements cast therein, said head being provided with a central opening and bushing placed in said opening, the zinc rod inserted through said bushing, an adjustable stop upon said zinc rod, which stop rests against the bushing, and a rubber piece upon the lower portion of the rod for separating the same from the carbon plates, and the wooden ring fitted to the upper edge of the jar upon which the lead head rests, substantially as and for the purpose specified.

3. The negative element composed of carbon plates, in combination with a lead head, in which head the said carbon plates are cast, a lead binding-post provided upon said head, and a hardened nut for said binding-post, substantially as and for the purpose specified.

4. The carbon and zinc elements, in combination with a central lead head from which said elements are suspended, said lead head forming a portion of the cover, the wooden ring forming the outer portion of said cover, and the jar upon which the cover is placed, substantially as and for the purpose specified.

476,734. GEAR-CUTTER. FRANCIS W. CLOUGH, Springfield, Mass. Filed Nov. 7, 1891. Serial No. 411,162. (No model.)



Claim.—1. In combination, a stationary base bearing a shaft having a cutter with a rotary movement only and bearing a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with an intermittently-rotated gear, and mechanism connected with the driving-power for intermittently rotating the gear, all substantially as described.

2. In combination, a stationary base bearing a shaft having a cutter with a rotary movement only and bearing a vertically-moving table supporting a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with an intermittently-rotated gear, and mechanism connected with the driving-power for intermittently rotating the gear, all substantially as specified.

3. In combination, a base bearing a shaft having a rotary cutter and bearing a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with an intermittently-rotated gear, mechanism connected with the driving-power for intermittently rotating the gear, and an intermittently-operated clutch mounted upon the carriage for holding the live-spindle during the forward movement of the carriage, all substantially as specified.

4. In combination, a base bearing a shaft having a rotary cutter and bearing a vertically-moving table supporting a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with an intermittently-rotated gear, mechanism connected with the driving-power for intermittently rotating the gear, and a clutch mounted upon the carriage for holding the live-spindle during the forward movement of the carriage, all substantially as described.

5. In combination, a base bearing a shaft having a rotary cutter and bearing a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with an intermittently-rotated gear, mechanism connected with the driving-power for intermittently rotating the gear, a shipping mechanism with a part in the path of movement of the carriage for throwing a clutch from a part revolving in one direction to a part revolving in the opposite direction, and the clutch connected with the carriage-moving mechanism, all substantially as described.

6. In combination, a base bearing a shaft having a rotary cutter and bearing a vertically-moving table supporting a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with an intermittently-rotated gear, mechanism connected with the driving mechanism for intermittently rotating the gear, a shipping mechanism with a part in the path of movement of the carriage connected by a swiveled rod with a shipping-lever for throwing a clutch from a part revolving in one direction to a part revolving in the opposite direction, and the clutch connected with the carriage-moving mechanism, all substantially as described.

7. In combination, a base bearing a shaft having a rotary cutter and bearing a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with a gear bearing a pawl in engagement with a ratchet secured to a shaft bearing a pinion meshing with a rack reciprocated by a lever, and mechanism connected with the driving-power for oscillating the lever, all substantially as specified.

8. In combination, a base bearing a shaft having a rotary cutter and bearing a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with a gear having a pawl in engagement with a ratchet secured to a shaft bearing a pinion meshing with a rack having an adjusting-screw and reciprocated by a lever, and mechanism connected with the driving-power for oscillating the lever, all substantially as described.

9. In combination, a base bearing a shaft having a rotary cutter and bearing a vertically-movable table supporting a horizontally-moving carriage having a live-spindle with a gear in mesh with a pinion meshing with a gear having a pawl in engagement with a ratchet secured to a shaft bearing a pinion meshing with a rack having an adjusting-screw and reciprocated by a lever, mechanism connected with the driving-power for oscillating the lever, and a shipping mechanism with a part in the path of movement of the carriage for throwing the clutch from a part revolving in one direction to a part revolving in the opposite direction, and the clutch connected with the carriage-moving mechanism, all substantially as specified.

10. In combination with a cutting-machine, a movable carriage bearing a spindle having a gear in mesh with a pinion meshing with a readily-removable gear mounted upon a shaft, a slide connected with the said shaft, and mechanism connected with the driving-power for reciprocating the slide and giving to the gear an intermittent rotary movement, all substantially as described.

11. In combination with a cutting-machine, a movable carriage bearing a spindle having a gear in mesh with a pinion meshing with a gear mounted upon a shaft and bearing a pawl in engagement with a readily-removable ratchet secured to said shaft, a slide connected with the shaft, and mechanism connected with the driving-power for reciprocating the slide and giving to the gears an intermittent rotary movement, all substantially as described.

12. In combination, in a cutting-machine, a movable carriage bearing a spindle having a gear in mesh with a pinion mounted upon an oscillating bearing and meshing with a readily-removable gear

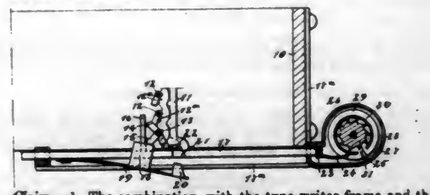
mounted upon a shaft, a slide connected with said shaft, and mechanism connected with the driving-power for reciprocating the slide and giving to the gears an intermittent rotary movement, all substantially as described.

13. In combination with a cutting-machine, a movable carriage bearing a spindle having a gear in mesh with a pinion meshing with a readily-removable gear loosely mounted upon a shaft and bearing a pawl in engagement with a ratchet removably secured to said shaft, a slide bearing a rack in mesh with a pinion mounted upon said shaft, and mechanism connected with the driving-power for reciprocating the slide, all substantially as described.

14. In combination with a cutting-machine, a movable carriage bearing a spindle having a gear in mesh with a pinion meshing with a gear mounted upon a shaft, a slide connected with said shaft, mechanism connected with the driving mechanism for reciprocating the slide and giving to the gears an intermittent rotary movement, and a clutch mounted upon the carriage holding the spindle during the forward movement of the carriage, all substantially as described.

15. In combination with a cutting-machine, a movable carriage bearing a spindle having a gear in mesh with a pinion meshing with a gear mounted upon a shaft, a slide connected with the shaft, mechanism connected with the driving-power for reciprocating the slide and giving to the gears an intermittent rotary movement, a split ring encircling the shaft mounted upon the carriage holding the spindle, and a cam for operating the ring, all substantially as specified.

476,785. REGISTERING ATTACHMENT FOR TYPE-WRITERS. HARRY I. CROMER, Rapid City, S. D. Filed July 8, 1891. Serial No. 398,828. (No model.)



Claim.—1. The combination, with the type-writer frame and the register secured thereon, of a recessed sliding bar adapted to operate the register and arranged adjacent to the space-bar of the machine, a spring secured to the sliding bar and having a lug to enter the recess thereof, a lug on the space-bar to contact with the lug on the spring, and a stud on the sliding bar and block on the spring arranged, respectively, in the path of the type-rod and space-rod lugs, substantially as described.

2. The combination, with the type-writer frame and the register secured thereon, of a recessed sliding bar adapted to operate the register and arranged adjacent to the space-bar of the machine, a spring secured to the sliding bar and having a projection adapted to penetrate the recess thereof, a lug on the space-bar to contact with the projection on the spring, and a lever mechanism for releasing the spring and returning the sliding bar by the movements of the oscillating space-rod, substantially as described.

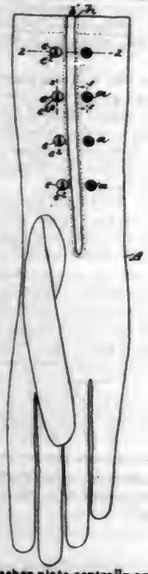
476,786. GLOVE-FASTENING. AUGUST V. DEMANGE and JULES M. R. HERVIEU, Paris, France. Filed Aug. 24, 1891. Serial No. 403,553. (No model.) Patented in France Dec. 22, 1890, No. 206,058.



Claim.—1. In a glove-fastener, the combination, with an imperforate cap plate having two opposite limbs a', that are folded toward each other and then in contact at right angles to the cap-plate near its center, of a hook-plate c, having a hook c', bent on the edge toward a single slot c^3 in said plate, which slot receives the locking-tangs of the cap-plate, substantially as set forth.

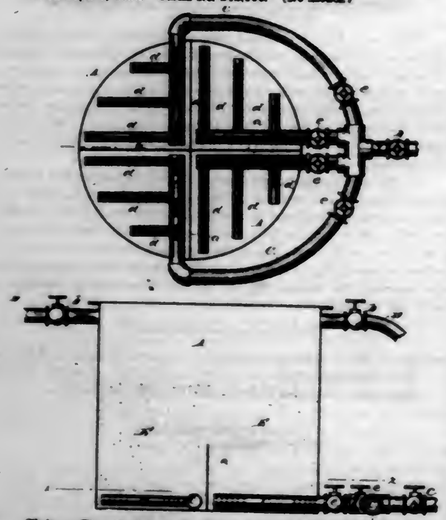
2. The combination, with a circular cap-plate having two locking tangs bent from opposite points on its edge toward each other, and then in parallel planes at a right angle to the lower face of the cap-plate, and an oval hook-plate having an integral hook-limb formed at one end and return-bent on the lower face of said plate and further provided with an elongated aperture aliguing with the edges of the hook-limb, of a disk whereon an integral flattened loop is formed, and two locking-tangs bent from opposite points on the disk edge toward each other and then in parallel planes at a right angle to the

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face of the disk, and a washer-plate centrally apertured to receive the locking-tangs of the disk, substantially as described.

476,787. FILTER. WILLIAM M. DEUTSCH, Elizabeth, assignor, by mesne assignments, to the New York Filter Company, Newark, N. J. Filed Sept. 4, 1886. Serial No. 212,660. (No model.)



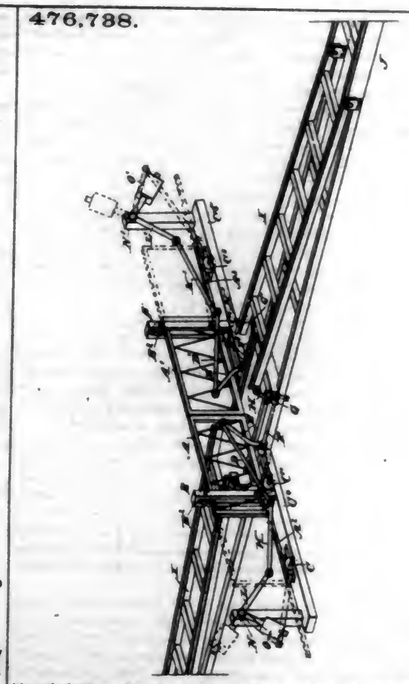
Claim.—The combination, with a filter having its bottom portion divided into a number of compartments, of the discharge-pipe arranged to communicate with each compartment separately, substantially as described.

476,788. RAILROAD-GATE. DAVID M. DEWITT, Bee Branch, Ark. Filed Jan. 9, 1892. Serial No. 417,605. (No model.)

Claim.—1. In a railroad-gate, the combination, with panels mounted to slide and hinged platforms forming sections of the track, of the longitudinally-extending shafts F F', provided with the arms E E' between their ends and the arms G G' at their ends, the links D D', pivoted to the panels and to the arms E E', and the links H H', pivoted to the platforms and to the arms G G', substantially as described.

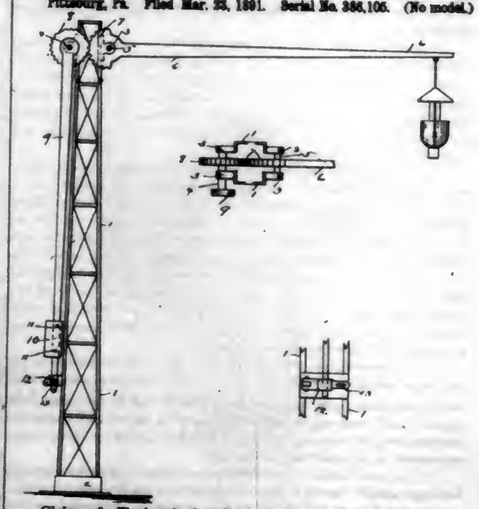
2. In a railroad-gate, the combination, with sliding panels and

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hinged platforms forming sections of the track, of the longitudinally-extending shafts F F', provided with arms G G' at their ends and arms E E' between their ends, links D D', pivoted to the panels and to the arms E E', the links H H', pivoted to the platforms and to the arms G G', the pivoted weighted bell-crank levers L L', and the links K K', pivoted to the panels and to the bell-crank levers, substantially as herein shown and described.

476,789. ELECTRIC-STREET-LAMP POST. THOMAS FLANNERY, Pittsburg, Pa. Filed Mar. 23, 1891. Serial No. 386,105. (No model.)



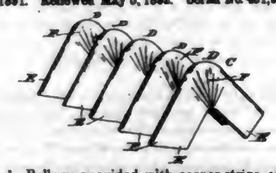
Claim.—1. The herein-described mast-arm for electric lights, comprising a post having shafts journaled at its top, a normally-horizontal arm 6, attached at its inner end to one of said shafts and adapted to support a lamp at its outer end, a normally-vertical arm 9, attached at its upper end to the other of said shafts, in gear with said arm 6 and having a weight so placed as to cause it to be nicely overbalanced by said arm 6 and lamp, for the purpose specified, and a means for

locking said arm 9 to said post for holding said arm 6 in its horizontal position.

2. The herein-described mast-arm for electric lights, consisting of the post 1, the shafts 4 5, mounted in bearings near the top of the same, the normally-horizontal arm 6, secured to said shaft 3 and having an integral toothed segment, the gear-wheel 8, secured to said shaft 4 and engaging said toothed segment, a downward-extending arm 9, secured at its upper end to said shaft 4 and provided with a weight, and a means for locking said arm 9 to the post, substantially as described.

3. The herein-described mast-arm for electric lamps, which consists of a post, the shafts journaled in bearings in the upper end of said post, the toothed wheel on one shaft, the projecting arm on the other shaft, having an enlarged hub provided with a segmental rack arranged to mesh with the toothed wheel, the downwardly-extending arm secured to the shaft of said toothed wheel, a weight adapted to be adjusted vertically on said arm, and a hasp and lock arranged to secure the arm in a rigid position, substantially as described.

476,740. BELLOWS. JOHN G. GAREIS, Brooklyn, N. Y. Filed July 15, 1891. Renewed May 5, 1892. Serial No. 431,929. (No model.)



Claim.—1. Bellows provided with corner strips, each formed of a single piece of material and containing a series of corners arranged adjacent to one another, substantially as shown and described.

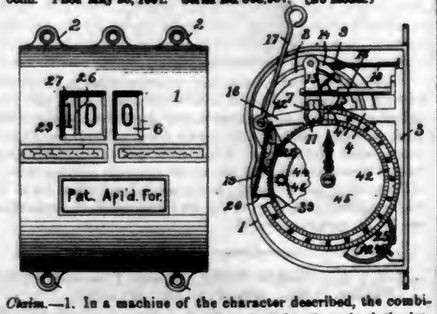
2. Bellows provided with corner strips, each formed of a single piece of material and containing a series of rounded-off corners arranged alongside of one another and adapted to be fastened by their legs to the folds of the sides and ends of the bellows, substantially as shown and described.

3. Bellows comprising sides and ends, having folds and corner strips, each made of a single piece of material and containing a series of corners adapted to be fastened to the adjacent folds of the sides and ends, substantially as shown and described.

4. Bellows provided with a corner strip formed of a single piece of material and provided with a series of corners arranged alongside of one another, each corner having legs extending at right angles and connected with each other by rounded-off corners, substantially as shown and described.

5. Bellows provided with a corner strip formed of a single piece of material and containing a series of corners arranged adjacent to one another and a lining for the said corners, substantially as shown and described.

476,741. FARE-REGISTER. JOSEPH H. GREENLEAF, New Haven, Conn. Filed May 26, 1891. Serial No. 393,987. (No model.)



Claim.—1. In a machine of the character described, the combination, with the main shaft bearing the units-indicating wheel, the latter provided with a tubular extension having openings therein, of the ratchet-wheel and pawl for the operation of the units-wheel step by step, the tens-indicating wheel journaled upon the main shaft within the extension of the units-wheel, a ratchet-and-pawl mechanism interposed between the units and tens wheels and adapted to impart a one-to-ten movement from the former to the latter, and a stationary figure-tablet within the extension of the units-wheel and beyond the edge of the tens-wheel, the whole arranged substantially as and for the purpose set forth.

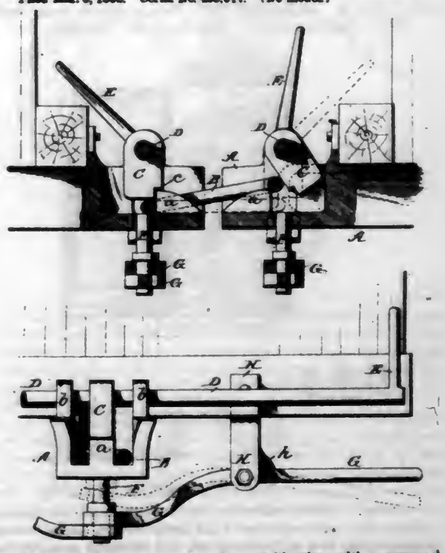
2. In a fare-register, the combination, with the main shaft having attached thereto the units-indicating wheel, of the ratchet-wheel carried by the units-wheel and the pawl for the operation of said ratchet-wheel, a tubular perforated extension upon said units-indicating wheel, a tens-indicating wheel journaled upon the main shaft alongside the units-indicating wheel and visible through the openings in the extension, a ratchet-wheel carried by said tens-indicating wheel, a pawl hinged within the units-indicating wheel with its face in line with the ratchet-wheel on the tens-wheel and having a toe projecting outwardly beyond the periphery of said units-wheel, a cam adapted to engage and depress said pawl once at each revolution, a pinion fast on the main shaft, and a pair of gears having an unequal number of teeth engaged and operated by said pinion, and indicating dials and pointers actuated by said gears, substantially as and for the purpose herein specified.

3. In a machine of the character described, the combination, with the main shaft, of the units-wheel carried thereon and means for operating the same step by step, a tubular extension upon said units-wheel, provided with ten openings in one place and a single opening beyond the ten openings, the tens-indicating wheel journaled upon the main shaft within the tubular extension and having itself an extension provided with a single opening in the same vertical plane with the single opening in the units-wheel extension, a ratchet-wheel carried by the tens-wheel, a pawl carried by the units-wheel and adapted to operate the ratchet on the tens-wheel, a fixed sign-bearing tablet in the same plane with the two single openings heretofore referred to, a pinion carried by the main shaft, and registering mechanism, substantially as described, engaged and driven by said pinion, for the purpose and in the manner hereinbefore described.

4. In a fare-register, the combination, with the inclosing casing, of the horizontal shaft bearing the indicating-wheels and means, as described, for operating said wheels, the pinion 11, fast upon said horizontal shaft at one end thereof, and the differential gears 38 and 39, and suitable connections between said gears and the dials, both of said gears engaged and driven by the pinion 11, substantially as and for the purpose set forth.

5. In a fare-register, the combination, with the horizontal main shaft having attached thereto the units-indicating wheel, of the tens-indicating wheel journaled on said shaft and actuated from the units-indicating wheel, the bell-crank lever and its connections whereby step-by-step movement is imparted to the units-indicating wheel, the pinion 11, borne upon the main shaft and partaking of its motion, the differential gears 38 and 39, journaled below the main shaft and engaged and driven by its pinion, and the dials and their connections with the gears 38 and 39, all of said parts combined and adapted to operate substantially as and for the purpose hereinbefore set forth.

476,742. CAR-COUPLING. WILLIAM GREENLEES, Brookland, D. C. Filed Mar. 3, 1892. Serial No. 423,617. (No model.)



Claim.—1. In a car-coupling, the combination, with a recessed draw-head provided with a lug or hook having an inclined front side and vertical rear side, of a transverse rock-rod having a lever-arm and a gravity-arm fixed at an angle to each other, whereby the one is normally inclined rearward and the other is normally pendent, the

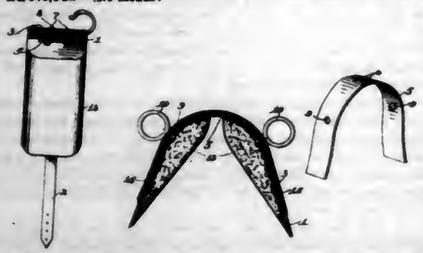
said gravity-arm bearing normally against the said lug, as shown and described.

2. In a car-coupling, the combination, with the draw-head having an opening in its floor and a lug or hook fixed in front of the same, of a link-lifter consisting of a push-rod working in said opening and a lever connected with the push-rod and pivoted beneath the car transversely thereof, as shown and described.

3. In a car-coupling, the combination, with the draw-head having an opening in its floor and a lug or hook fixed in front of it, of a push-rod and lever connected therewith and a hanger in which said lever is pivoted and having a projecting portion that bears on the outer arm of said lever, and thus supports the push-rod in proper position, as shown and described.

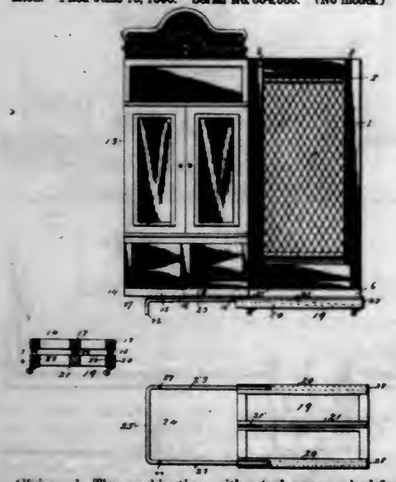
4. In a car-coupling, the combination, with the draw-head having a lug, as specified, and a link-locking pendent gravity-block, of the rock-rod and its lever-arm and a lever and push-rod, arranged as and operating as specified.

476,748. SADDLE. GEORGE R. GRIGGS, Ada, Ohio, assignor of one-fourth to Frank S. Burke, Houston, Tex. Filed Nov. 29, 1890. Serial No. 373,040. (No model.)



Claim.—The herein-described harness-saddle, consisting of the leather skirt having transverse slots formed therein near the ends thereof, the jockey surmounting the said skirt and secured along its edge thereto, the curved resilient thin metallic tree lying closely against the under side of the skirt, bent to form opposite terminals, the entire tree being formed integral and having its ends passed outwardly through the transverse slots of said skirt and the ends thereof loosely extending into pockets formed between the lower ends of the jockey and the skirt, and pads secured to and over the under side of the said tree, as specifically set forth.

476,744. WARDROBE-BED. WILLIAM S. GUNN, Grand Rapids, Mich. Filed June 10, 1890. Serial No. 354,883. (No model.)



Claim.—1. The combination, with a bed-casing, a bed-frame pivoted therein, and a stationary track provided with two grooved or channeled side rails and a central rail, of a horizontal extension-track provided with two rails and a laterally-movable wardrobe provided with a truck at its bottom formed of two side sills and a central sill having rollers journaled therein, substantially as and for the purpose described.

2. The combination, with a bed-casing, a bed-frame pivoted therein, and a stationary track provided with two grooved or channeled side rails and a central rail having its left end inclined and its upper surface arranged in a slightly-higher plane than the upper surfaces of said side rails, of a horizontal extension-track provided with two rails and a laterally-movable wardrobe provided with a truck at its bottom, formed of two side sills and a central sill having rollers journaled therein, substantially as and for the purpose described.

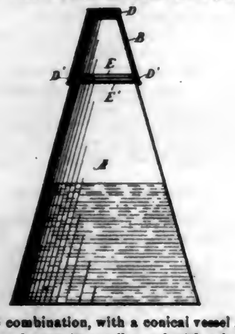
3. The combination, with a bed-casing, a bed-frame pivoted therein, and a stationary track provided with two grooved or channeled side rails having vertical plates at their right ends and a central rail having its left end inclined and its upper surface arranged in a slightly-higher plane than the upper surfaces of said side rails, and a horizontal extension-track provided with two rails having stop-points near their outer ends, of a laterally-movable wardrobe provided with a truck at its bottom, formed of two side sills and a central sill having rollers journaled therein, substantially as and for the purpose described.

4. The combination, with a bed casing, a bed-frame pivoted therein, and a stationary track provided with two grooved or channeled side rails having vertical plates at their right ends and a central rail having its left end inclined and its upper surface arranged in a slightly-higher plane than the upper surfaces of said side rails, and a horizontal extension-track provided with two rails having stop-points, legs, and a transverse rod or handle, of a laterally-movable wardrobe provided with a truck at its bottom formed of two side sills and a central sill having rollers journaled therein, substantially as and for the purpose described.

5. The combination, with a bed-casing, a bed-frame pivoted therein, and a stationary track provided with rails and arranged in front thereof, of a laterally-movable wardrobe provided with a series of rollers at its bottom and the angular plates 29 and 30, which are respectively secured near the adjacent edges of said wardrobe and bed-casing, substantially as and for the purpose described.

6. The combination, with a bed-casing, a bed-frame pivoted therein, and a stationary track provided with rails and arranged in front thereof, of a laterally-movable wardrobe provided with a series of rollers at its bottom, the finger-levers 31, having the cam-slots 32, and the studs or pins 33, substantially as and for the purpose described.

476,745. METALLIC-VESSEL CLOSURE. THOMAS C. HOGLE, Grand Rapids, Mich. Filed Oct. 16, 1891. Serial No. 408,965. (No model.)



Claim.—The combination, with a conical vessel A, provided with a handle and formed near its smaller end with a bead with concave and convex portions, a packing in said bead, and a smaller vessel B, provided with a handle, the two vessels being so constructed relatively to each other that the vessel B forms the apex of a cone of which the vessel A forms the base, and its rim embraces the packing in the bead of the vessel A and a packing in the smaller end of the vessel B and resting against the smaller end of the larger vessel, all substantially as and for the purpose specified.

476,746. COOKING UTENSIL. AUGUSTA R. ISAACS, New York, N. Y. Filed Nov. 11, 1891. Serial No. 411,585. (No model.)

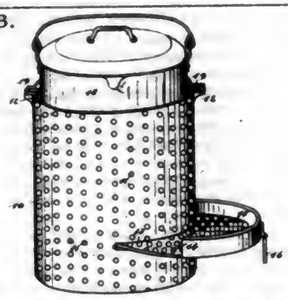
Claim.—1. A cooking utensil comprising a perforated body having an open top and bottom and provided with an opening in one side near the bottom and with brackets on the inside in the plane of the opening, and a perforated plate fitted to slide in the opening and resting upon the said brackets, substantially as described.

2. A cooking utensil comprising a perforated body having an open top and bottom and provided with an opening in one side and with brackets on the inside in the plane of the opening and a perforated plate fitting in the opening and provided with an upwardly-projecting flange fitting against the side of the body and closing the opening thereof, substantially as described.

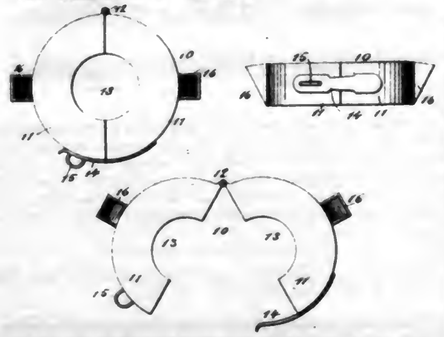
3. A cooking utensil consisting of a perforated body open at top and bottom and provided with an opening in one side and with brackets on the inside in the plane of the opening, a perforated plate fitted to slide in the opening and resting upon the brackets, and a saucepan fitting in the top of the body and forming a cover therefor, substantially as described.

4. The herein-described cooking utensil, consisting of a perforated body open at top and bottom and provided with bearings at the top and opening in one side and brackets on the inside in the plane of the opening, a perforated plate fitted to slide in the opening and resting upon the brackets and provided with a flange closing said opening, and a saucepan fitting in the top of the body and provided with trunnions resting in the said bearings, as specified.

476,746.



476,747. LUBRICATOR-GLAND. FORTUNATUS G. KELLOGG, Brainerd, Minn., assignor of one-half to Henry Fox, same place. Filed Aug. 5, 1891. Serial No. 401,745. (No model.)



Claim.—As an improved article of manufacture, the lubricator-gland consisting in a box 10, composed of the two sections 11, hinged together at 12 and provided opposite their place of hinging with a staple 15 and hasp 14 and a peripheral funnel 16 on each section, the adjacent or meeting sides of the two sections having registering semi-circular openings forming the shaft-passage 13, substantially as set forth.

476,748. WATCH-CASE SPRING. JOHN R. KETCHEM and THOMAS C. HIXON, Morrilton, Ark. Filed Nov. 21, 1891. Serial No. 412,689. (Model.)

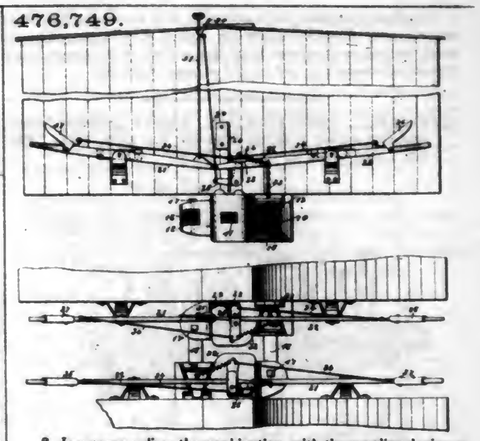


Claim.—The watch-case spring provided with a swiveling rivet or screw having its head nicked or adapted for turning and having two sharp-edged lips extending beyond the head in diametrically-opposite directions, substantially as shown and described.

476,749. CAR-COUPLING. DANIEL KENT, Alpena, S. D., assignor of one-eighth to George H. Arne, same place. Filed Sept. 25, 1891. Serial No. 406,780. (No model.)

Claim.—1. In a car-coupling, the combination, with the coupling device or pin, of two operating-levers pivotally connected together at their inner ends, a connection between said levers and the coupling device or pin to raise and lower it, a lock or latch carried by one of the levers, hand-levers on the outer ends of said levers, both connected with said lock or latch, and a keeper on the end of the car with which the said lock or latch is adapted to engage, substantially as set forth.

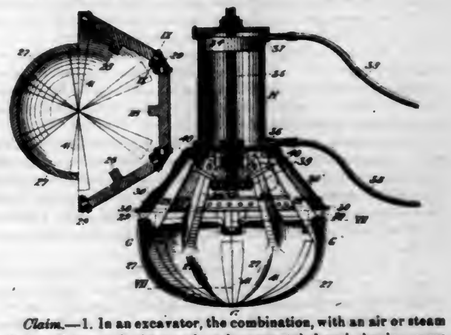
476,749.



2. In a car-coupling, the combination, with the coupling device or pin, of the two levers extending adjacent to the sides of the car and pivotally connected with each other and said pin or coupling device, a latch or lock pivoted between its ends on one of said levers, hand-levers on said two levers and connected with said latch or lock, a bell-crank lever also connected with said latch or lock, a rod sliding vertically on the end of the car and connected at its lower end with one of the horizontally-extending levers, a hand-lever mounted on the upper end of said rod and connected with the bell-crank lever, and a keeper on the end of the car with which said lock is adapted to engage, substantially as set forth.

3. A coupling consisting in the draw-head having the three openings as described, one of the outer openings being flared and provided in its side walls with grooves 15, the pivoted coupling-plate 13, having opposite lugs at its lower rear end entering the said grooves, and operating-levers mounted on the end of the car, connected with each other and with the plate 13, one of the levers carrying a lock adapted to be operated from the outer ends of both levers, substantially as set forth.

476,750. EXCAVATING APPARATUS. ISAAC P. LAMBING, Golden, Colo. Filed Mar. 31, 1891. Serial No. 387,117. (No model.)



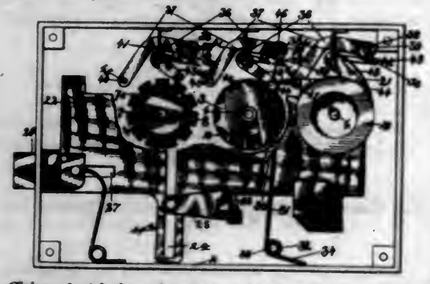
Claim.—1. In an excavator, the combination, with an air or steam cylinder, piston, and piston-rod, and segmental shovels having arms directed inward and upward to a point above their attachment to the cross-head or piston-rod, of a strong metallic ring having depending lugs to which the lever-arms of the shovels are pivoted, said ring being connected with the piston-cylinder, substantially as and for the purposes described.

2. In an excavator, the combination of a steam or air cylinder, piston, and piston-rod, a frame for supporting the excavating-shovels, consisting of a metallic skirt attached to the lower end of the cylinder, a ring at the base of the skirt, lugs attached to and depending from said ring, and segmental shovels pivoted to said lugs and having inwardly-bent lever-arms connected with the piston-rod, substantially as and for the purposes described.

3. In an excavator, the combination of a series of pointed segmental shovels, each having an inward curvature across or in a horizontal plane and an outward longitudinal curvature, with a ring or frame, to which they are pivotally connected, and arms connected with the piston-rod of an engine placed above the ring or frame which supports the shovels, substantially as and for the purposes described.

4. In an excavator, the combination, with a base-ring having an upper integral flange and depending lugs, of a cover secured to the upper flange, shovels pivoted in the lugs, and means for operating said shovels, substantially as and for the purposes described.

476,751. COMBINATION-LOCK. ALFRED C. LAWRENCE, Toronto, assignor of one-half to Edward J. Wheeler, Port Perry, Canada. Filed Aug. 1, 1891. Serial No. 401,408. (Model.)



Claim.—1. A lock consisting of a series of tumblers having formed on their peripheries a series of notches and a slot extending from the periphery inward toward the hub, a registering-plate having formed in it a circular guideway in which is located a stop, a stop on the side of the tumbler running in the said guideway and adapted to impinge against said stop, a double-acting pawl to engage with notches on the edges of said tumblers, a locking-bolt provided with a series of stops to engage with the slots in said tumblers, means for bringing said slots into alignment and indicating the fact, and means for throwing the locking-bolt backward, substantially as described.

2. A lock consisting of a series of tumblers, each of which has formed on its periphery a series of spaces and a slot extending from said periphery inward toward the hub, a two-part pawl engaging with spaces on the peripheries of said tumblers to hold the tumblers while in their closed position and to indicate by sound the distance each tumbler has been turned, a stop on one of the side faces of each of said tumblers, a registering-plate having a circular guideway in the side face adjacent to said tumbler, in which moves the stop on said tumbler, a stop in said guideway with which the stop on said tumbler comes in contact, a locking-bolt provided with a series of lateral stops, which engages with the slots of said tumblers, means for setting said tumblers to different combinations and turning the slots into alignment, and means for throwing the locking-bolt backward when said slots are in alignment, substantially as described.

3. A lock consisting of a locking-bolt, a series of tumblers controlling the movement of the bolt, means for operating said tumblers, a locking-arm arranged below the tumblers and provided at its upper end with fingers adapted to engage the recesses of the tumblers, and means for operating said locking-arm.

4. In a lock, in combination, with the tumblers, a double-acting pawl consisting of a branched pivoted arm at one end to some convenient portion of the casing and provided on the inner side of the elbow with a notch which engages with a notch formed on the pivoted end of the pawl, the outer end of said pawl engaging with a series of notches formed on the periphery of said tumblers, substantially as described.

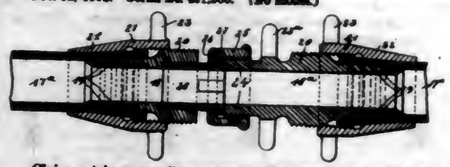
5. In a lock, the combination of a tumbler having formed on its edge a series of notches and a slot extending from the periphery inward toward the hub, a stop on one of the side faces of said tumbler, a registering-plate journaled on the same spindle as said tumbler is journaled on and having formed in its side face adjacent to said tumbler a guideway in which works said stop on the side face of said tumbler, a stop in said guideway with which the stop of said tumbler comes in contact, a dial on the outer face of said registering-plate, and means for locking said registering-plate into any adjusted position, substantially as described.

6. In a lock, a series of circular-shaped tumblers each of which has formed on its periphery a suitable number of notches and a slot extending from the periphery inward toward the hub, a stop formed on one of its side faces engaging in a circular guideway formed on the side face of the registering-plate adjacent to said tumblers, a stop in said guideway with which a stop on said tumbler comes in contact, said registering-plate and tumbler journaled on the same spindle, the tumbler rigidly fastened to the spindle and the registering-plate loosely journaled thereon, a dial on the outer side of said registering-plates, a series of notches on the peripheries of said registering-plates, said notches of equal pitch and corresponding in number with the number of numerals on said dial, and means for setting said registering-plates to any desired combination, means for bringing the slots in the tumblers into alignment and announcing by sound that fact, a locking-bolt provided with a series of stops to engage with the slots of said tumbler when said slots are in alignment, and suitable means for throwing said locking-bolt backward, substantially as described.

7. A lock consisting of a series of tumblers circular in form and each having a notched periphery and a slot extending inward, a branched arm pivoted at one end to a suitable bearing and having a notch at the inner side of its elbow, said notch engaging the notched end of a pawl which is pivoted at said notched end and has its free end engaging with a space on the periphery of said tumbler, and a locking-bolt provided with stops engaging with the slots in the tumblers when in alignment.

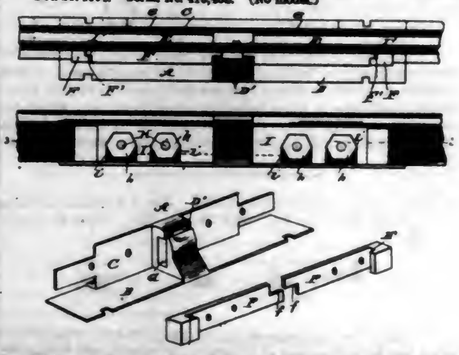
8. In a lock, a series of tumblers having notched peripheries and slots extending from the peripheries inward toward the hubs, branched arms pivoted at one end and provided with notches on the inner sides of their elbows, pivoted dogs having notched ends which engage the notches in the branched arms and having their free ends adapted to engage the notched peripheries of the tumblers, a locking-bar provided with a series of stops to engage the slots in the tumblers, registering-plates adjacent to the tumblers provided with guideways on their side faces, stops on the tumblers moving in said guideways, stops in said guideways to limit the movement of the tumblers, dials on the outer faces of the registering-plates, said registering-plates having notched peripheries corresponding to the notched peripheries of the tumblers, pins engaging the peripheries of the registering-plates, means for bringing the slots in the tumblers into alignment, and means for throwing the locking-bolt backward.

476,752. HOSE-COUPLING. JOSEPH LEITT, Troy, N. Y. Filed Feb. 12, 1892. Serial No. 421,283. (No model.)



Claim.—A hose-coupling comprising hollow screw-threaded plugs 18 18ª, of which the plug 18 is also internally threaded and both having tapering ends, sleeve nuts screwed upon the plugs and having tapering portions overlapping the tapering ends of the plugs, the flanged swivel-plug 28, screwed into the plug 18, and the locking-sleeve 25, turning upon the swivel-plug and screwed upon plug 18ª, substantially as set forth.

476,758. RAIL-JOINT. JOHN H. LEWIS, Coulee City, Wash. Filed Dec. 29, 1891. Serial No. 416,482. (No model.)



Claim.—1. In a rail-joint, the improved chair A, formed with a base-plate B, a side plate C, and a transverse portion D within the hollow formed by the juncture of said plates B and C and provided with a seat for the fish-plate, substantially as described, and for the purposes set forth.

2. In a rail-joint, the combination, with the chair having a transverse portion provided with a seat for the fish-plate, of the fish-plate formed in sections fitted at their adjacent ends in said seat, substantially as described.

3. In a rail-joint, a chair having a transverse portion D, such portion D being provided in its opposite edges with vertical grooves forming seats for the nut-locking plates, substantially as set forth.

4. An improved rail-joint comprising the chair having the transverse portion provided with seats for the nut-locking plates, the fish-plate having near its outer ends seats for the nut-locking plates, and the locking plates fitted and held in said seats, substantially as set forth.

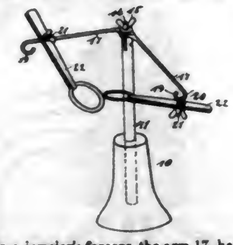
5. The combination, in a rail-joint, with the chair having a transverse portion and the bolts and their nuts, of the locking-plates for said nuts, such plates being engaged with the transverse portion of the chair, all substantially as set forth.

6. In a rail-joint, the combination of the chair having a transverse portion provided with seats for the fish-plate sections and for the locking-plates, the rails fitted in said chair, the fish-plate sections fitted at their inner ends in the seat in the transverse portion and provided near their outer ends with seats for the lock-plates, and the lock-plates fitted at their ends in the seats in the transverse portion of the chair and of the fish-plate sections, substantially as set forth.

7. The improvement in rail-joints, substantially as described, consisting of the chair having a base-plate, a side plate, and a transverse portion, the latter being provided with seats for the fish-plate sections and for the lock-plates, the fish-plate sections having near their outer ends seats for the lock-plates, and the lock-plates, substantially as described and shown.

8. In a rail-joint, substantially as described, the combination of the chair, the fish-plate sections, and the locking-plates held by the said chair and sections, substantially as set forth.

476,754. JEWELER'S FORCEPS. DAVID MENDELSON, Eureka, Utah. Filed Oct. 17, 1891. Serial No. 409,019. (No model.)

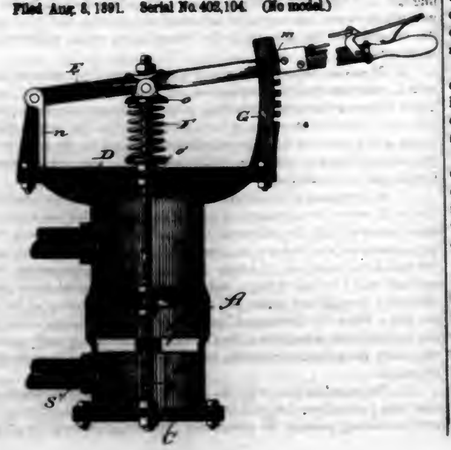


Claim.—1. In a jeweler's forceps, the arm 17, having its outer extremity gradually curved upon itself, as shown at 19, an eyebolt or clamp on the arm and adapted to slide from its body portion around upon the curved extremity, and tweezers mounted on the bolt or clamp, substantially as set forth.

2. A jeweler's forceps comprising a supporting-post slotted at its upper end, a bolt mounted in the slot to swing, arms adjustably secured at their inner ends to said bolt and gradually curved at their outer extremities upon themselves, and tweezers provided with eyebolts adapted to slide from the said arms around upon their curved extremities, substantially as set forth.

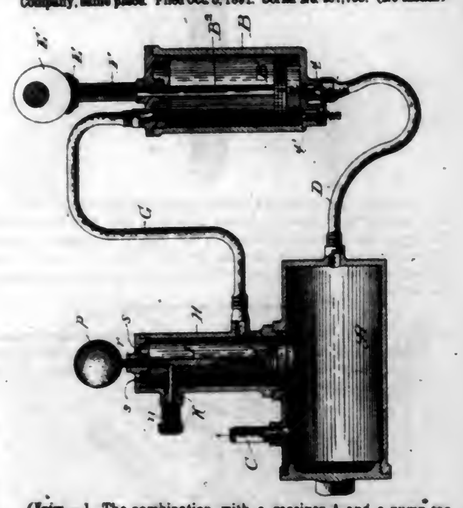
3. In a jeweler's forceps, the combination, with the post, of a ring-bolt the ring 28 of which is adjustably clamped on the upper end of the post to slide thereon and of sufficient diameter to swing over the top of the post in either direction, and tweezers carrying arms mounted on the shank of said bolt, substantially as described.

476,755. SAFETY-VALVE. MORTIMER E. MILLS, Chicago, Ill., assignor to the Mills Improved Pneumatic Brake Company, same place. Filed Aug. 8, 1891. Serial No. 402,104. (No model.)



Claim.—A pressure-regulating valve comprising a shell having its interior divided into a high and low pressure chamber by a partition having a central opening affording a valve-seat, a valve seating in and operating to close said opening, a valve-stem carrying the valve and extending from each face thereof to the opposite end of the shell, flexible diaphragms, to which the stem is fastened, closing the chambers at their outer ends, a regulating device mounted externally to the shell and connected with the stem, and ports leading into the shell at opposite sides of the partition therein, substantially as described.

476,756. AIR-PUMP FOR BRAKE MECHANISMS. MORTIMER E. MILLS, Chicago, Ill., assignor to the Mills Improved Pneumatic Brake Company, same place. Filed Oct. 5, 1891. Serial No. 407,785. (No model.)



Claim.—1. The combination, with a receiver A and a pump for introducing fluid under pressure therein, comprising a cylinder and a piston held to the driving-power, substantially as described, of a passage affording communication between the pump behind the piston and the open air, and a valve operated by the pressure in the receiver and serving to close communication between said passage and the open air and open communication between said passage and the receiver, whereby, according to the amount of pressure in the receiver, the pressure behind the piston may be normal to permit the pump to operate or equal to that below the piston to cause the same to be balanced, substantially as described.

2. In combination with the receiver, the pump B, having the piston B' and means for operating the same, and a connection between the piston and its driving mechanism, disconnectible on balancing the piston, passage D, leading directly to the receiver from in front of the piston, passage G, leading indirectly to the receiver from a point behind the piston B', and the cylinder H, having communication with the receiver and with the open air, and valve-piston I, moving in said cylinder and exposed to the pressure in the receiver and operating to open and close communication between passage G and the receiver and open air, respectively, substantially as described.

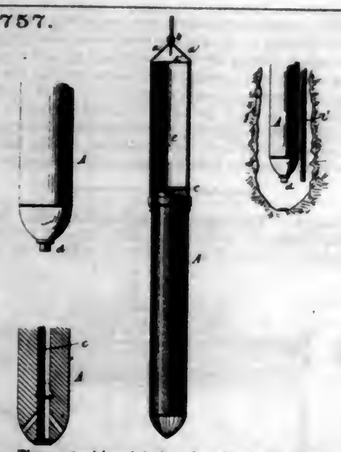
3. In combination with the receiver A, the cylinder H, communicating with the receiver and with the open air, respectively, and having the port shown, piston I, having notched stem I', moving in said cylinder across the port, and catch K, engaging said stem at the notches, the parts being arranged to operate substantially as described.

4. In combination with receiver A, pump-cylinder B, and piston B', connected with and operated by the axle, as described, cylinder H, communicating with the cylinder and open air, respectively, piston I, moving in the cylinder, and passages D and G, affording communication between the pump-cylinder on opposite sides of the piston and the cylinder H and receiver, respectively, substantially as described.

5. In combination with the receiver A, the open cylinder H, the weighted piston I in said cylinder, having the notched stem I', catch K, pump-cylinder B, and piston B' therein, pipe D, leading from said pump to the receiver to convey fluid thereto, and pipe G, affording communication between the cylinders B and H and adapted to be opened and closed by the piston I in its movement, substantially as described.

476,757. WELL-BORING AND PROSPECTING. GEORGE A. MILLER, Colfax, Wash. Filed Jan. 21, 1891. Serial No. 378,596. (No model.)

476,757.



Claim.—The method hereinbefore described of boring wells and prospecting, which consists of, first, forming a seat within the earth for the explosive; second, in dropping said explosive in position; third, in firing the explosive by allowing the drill shaft and cap to drop thereon, and, fourth, in disposing of the disintegrated mass in the manner set forth.

476,758. THILL-COUPLING. SAMUEL MIRFIELD, Toronto, Canada, assignor of one-half to Wm. Howes Oliphant, same place. Filed Oct. 30, 1891. Serial No. 409,312. (No model.) Patented in Canada Nov. 2, 1891, No. 37,710.



Claim.—1. In a thill-coupling, the combination of the thill-plate having a forward, upward, and rearward projection, and a concave recess formed beneath the rearward projection, the round end bar of the loop of the thill-iron fitting into the same and held in position by a block with a concave bottom *f* and forward projection *f'*, which extends below the top edge of the side bar D" and end loop of the thill-iron when the shaft is in its normal position, as and for the purpose specified.

2. The combination of the thill-plate having a forward, upward, and rearward projection, a concave recess formed beneath the rearward projection, the round end bar of the loop of the thill-iron fitting into the same and held in position by a block with a concave bottom *f* and forward projection *f'*, which extends below the top edge of the side bar D, and the set-screw G, placed in the rearward projection *a'* and so adjusted as to exert a pressure on the block F, as and for the purpose specified.

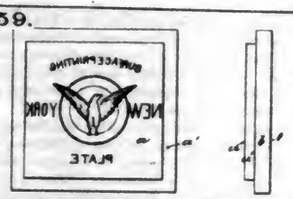
3. The combination of the thill-plate having a forward, upward, and rearward projection, the recess beneath the rearward projection *a'*, the thill-iron D, having a loop D' with round end bar *d*, and the block F, having a concave bottom *f* and cavity in the top of the block for the reception of the end of the set-screw G, which extends through the rearward projection *a'* so as to exert a pressure upon the block in said cavity, as and for the purpose specified.

4. The thill-plate A', having a forward, upward, and rearward projection *a'*, the recess *c* beneath the rearward projection *a'*, and the block F, having a concave bottom *f* and a cavity in the top of the block for the reception of the set-screw *g*, which extends through the rearward projections *a'*, in combination with the thill-iron D, having a loop D', extending at an angle to that portion of the thill-iron by which it is secured to the end shaft, as specified.

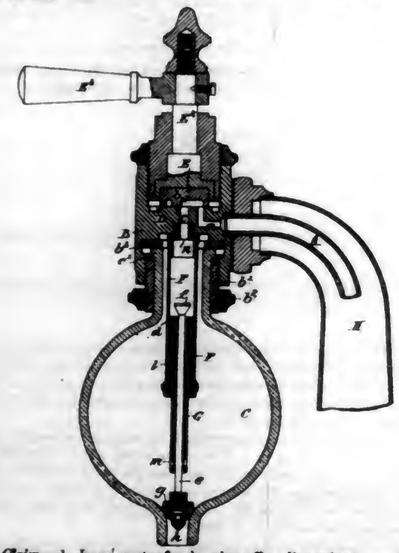
476,759. SURFACE-PRINTING PLATE. JOHN MULLALY and LOTHROP L. BULLOCK, New York, N. Y. Filed Dec. 29, 1890. Serial No. 376,131. (No model.)

Claim.—1. The process of manufacturing aluminium surface-printing plates of different prescribed grades of porosity, consisting in regulating the density of the aluminium plates mechanically, according to the character of the designs to be imposed thereon, substantially in the manner described.

2. The herein-described plate for use in surface printing, consisting of a plate in which aluminium predominates, having a suitable design imposed thereon, said plate being compressed to a prescribed density, substantially as described, for the purpose of adapting it to the nature and requirements of the design imposed thereon.



476,760. APPARATUS FOR DISPENSING LIQUIDS. ROBERT A. PANCHAUD and WILLIAM G. TEMPLE, London, England; said Temple assignor to said Panchaud. Filed Feb. 23, 1892. Serial No. 422,451. (No model.)



Claim.—1. In apparatus for drawing off or dispensing aerated liquids, the combination, with an intermediate vessel in communication with a main reservoir and having an outlet-port therein, of a valve operated by the pressure in the aerated liquid to close said outlet-port, substantially as described.

2. In an apparatus for drawing off or dispensing aerated liquids, the combination, with an intermediate vessel in communication with a main reservoir and having an outlet-port therein, of a valve for closing said port operated by the pressure in the aerated liquid in the intermediate vessel, and means for automatically opening said valve upon the reduction of the pressure in the intermediate vessel, substantially as described.

3. The combination, with an intermediate vessel in communication with a main reservoir and having an outlet-port, of means for opening and closing the communicating passage between the main reservoir and intermediate vessel, a tube or cylinder in the intermediate vessel, and a piston in the tube or cylinder operated by the pressure in the aerated liquid to close the outlet-port of the intermediate vessel, substantially as described.

4. In apparatus of the kind hereinbefore mentioned, the combination, with means for opening and closing communication between the main reservoir and the intermediate vessel and for opening and closing communication between the interior of the intermediate vessel and the exterior or outer air, of a tube or cylinder in the intermediate vessel fitted with a hollow sliding piston and tubular piston-rod, and a stem extending through the piston and tubular rod and carrying at its upper end a valve for closing and opening the passage through the piston-rod and at its lower end a plug or stopper for closing and opening the outlet from the intermediate vessel, substantially as hereinbefore described.

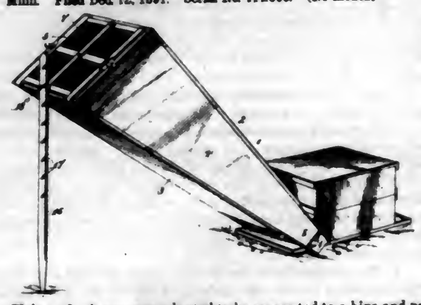
5. The combination, with the intermediate vessel in communication with a main reservoir and having an outlet-port, of a valve in the communicating passage for alternately connecting the interior of the intermediate vessel with the main reservoir and with the atmosphere, a tube or cylinder in the intermediate vessel into which the communicating passage discharges, a piston in said cylinder, a hollow piston-rod having openings at its outer end communicating with the interior of the intermediate vessel, a valve-stem in said hollow piston-rod, a valve on one end of the valve-stem for closing the inner end of the hollow piston-rod, and a valve on the other end for closing the outlet-port of the intermediate vessel, substantially as described.

476,761. SKIRT-PROTECTING GARMENT. LENA SITTIG, Brooklyn, N. Y. Filed Apr. 11, 1892. Serial No. 428,731. (No model.)



Claim.—A skirt-protecting garment comprising the outer skirt having a bifurcated extension secured to the bottom edge thereof and adapted to be turned up to inclose the skirts of the wearer, said extension having leg-openings therein, in combination with the waist-band and supporting-straps, said straps terminating in encircling bands for engaging said extension at the leg-openings.

476,762. SWARM-CATCHER. BARNETT TAYLOR, Forestville, assignor to W. G. Rundell, E. H. Crain, and E. G. H. Adams, Spring Valley, Minn. Filed Dec. 12, 1891. Serial No. 414,860. (No model.)



Claim.—1. A swarmer adapted to be connected to a hive and provided with a contracted end and having side extensions projecting beyond the top and bottom and provided with flexible transverse strips secured to the upper and lower edges of the extensions, whereby a bee-tight joint is effected, substantially as described.

2. The combination of a swarmer having a contracted end and provided with side extensions, transverse flexible strips secured to the upper and lower edges of the extensions and provided at their outer edges with stiffening-cleats, and flexible linings arranged on the inner faces of the extensions, substantially as described.

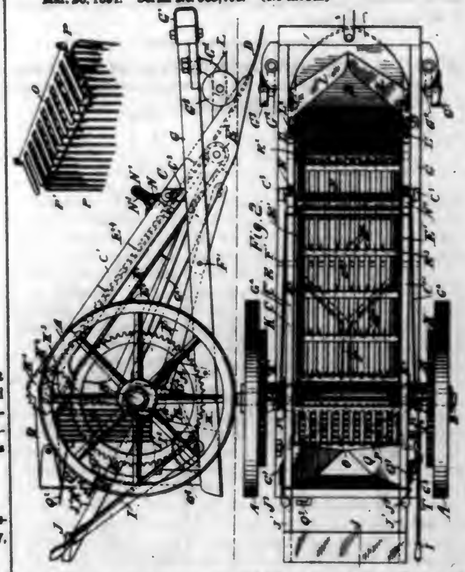
3. The combination of a swarmer having a contracted end and provided with extensions, transverse flexible strips secured to the upper and lower edges of the extensions, the vertical pieces secured to the inner faces of the extensions, and the flexible linings secured to the strips and to the extensions and being tapering or wedge-shaped, substantially as and for the purpose described.

4. The combination of a swarmer provided with a contracted end and having extensions, transverse flexible strips secured to the extensions, projections arranged on the top and bottom of the swarmer, a removable board closing the contracted end of the swarmer, and a strap engaging the projections and securing the board in place, substantially as described.

5. The combination of a swarmer having a contracted end and provided with extensions, the vertical pieces secured to the inner faces of the extensions, and the flexible linings secured to the strips and to the extensions and being tapering or wedge-shaped, substantially as and for the purpose described.

6. The combination of a swarmer provided with a contracted end and having projections arranged on the top and bottom of the swarmer, a removable board closing the contracted end of the swarmer, and a strap engaging the projections and securing the board in place, substantially as described.

476,768. POTATO-DIGGER. WILLIAM H. VAN VOORHIS, Spearville, Kans., assignor of one-third to Walter S. Ritchie, Aspen, Colo. Filed Mar. 30, 1891. Serial No. 386,798. (No model.)



Claim.—1. In a digger, the combination, with an axle and the drive-wheels thereon, of an elevator-frame rigidly connected to the axle, a draft-frame loosely suspended from the axle, a lever pivoted to the elevator-frame, a hand-lever pivoted to the draft-frame, and a connection between the hand-lever and the lever pivoted to the elevator-frame, substantially as described.

2. In a digger, the combination, with an axle and the drive-wheels thereon, of an elevator-frame rigidly connected to the axle, a draft-frame loosely suspended from the axle, a bifurcated lever pivoted to the elevator-frame and having its rear end slotted, a U-shaped lever pivoted to the draft-frame and engaging the slot of the bifurcated lever, and a hand-lever secured to one of the trunnions of the U-shaped lever, substantially as herein shown and described.

3. In a digger, the combination, with the axle and a draft-frame suspended therefrom, of seat-bars pivotally connected with the axle, links connecting the lower ends of the seat-bars with the draft-frame racks projecting upward from the draft-frame, and catches on the seat-bars and engaging the said racks, substantially as described.

4. In a digger, the combination, with a plow and an elevator on which the plow discharges, of a plate arranged on the discharge end of the elevator and formed with prongs and an open receptacle below the said plate and provided with deflecting-plates in its top for deflecting the potatoes against the sides of the receptacle, substantially as and for the purpose set forth.

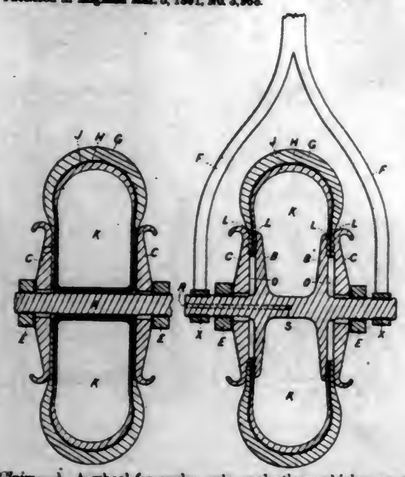
5. In a digger, the combination, with a plow and an elevator on which the plow discharges, of a plate at the discharge end of the elevator, provided with prongs, an open receptacle below the said plate and provided with V-shaped open deflecting-plates, and a hopper at the rear of the prongs, substantially as herein shown and described.

6. In a digger, the combination, with a plow and an elevator on which discharges the said plow, of a plate arranged on the discharge end of the said elevator and formed with prongs, an open receptacle arranged underneath the said plate to receive the potatoes passing between the prongs and provided with deflectors for deflecting the potatoes against the sides of the receptacle, a hopper arranged at the rear end of the said prongs to receive the larger potatoes rolling over the prongs, and means, substantially as described, for supporting the mouth of a bag underneath the said hopper, substantially as set forth.

7. In a digger, the combination, with a plow and an elevator on which discharges the said plow, of a plate arranged on the discharge end of the said elevator and formed with prongs, an open receptacle arranged underneath the said plate to receive the potatoes passing between the prongs and provided with deflectors for deflecting the potatoes against the sides of the receptacle, a hopper arranged at the rear end of the said prongs to receive the larger potatoes rolling over the prongs, means, substantially as described, for supporting the mouth of a bag underneath the said hopper, and a bottom hinged on the under side of the said hopper to close the bottom opening therein, substantially as shown and described.

8. In a digger, the combination, with an elevator provided with chains mounted to travel and having cross-bars formed with teeth or prongs, of a spring-pressed roller arranged over the said prongs and serving to crush clods carried forward by the said prongs, substantially as shown and described.

476,764. PNEUMATIC WHEEL FOR VEHICLES. JOSEPH C. HALL, London, England. Filed June 20, 1891. Serial No. 397,004. (No model.) Patented in England Mar. 5, 1891, No. 3,968.



Claim.—1. A wheel for cycles, cabs, and other vehicles, consisting of a chamber filled with compressed air or gas and constructed without ordinary spokes, rim, or tire, substantially as set forth.

2. A wheel for cycles, cabs, and other vehicles, consisting of a chamber filled with compressed air or gas, the walls of the said chamber consisting partly of layers, separate jackets, or envelopes of india-rubber and non-expansive textile fabric and partly of circular inner flanges of metal or other material, extending from an axle and secured in position by means of outer flanges or washers, substantially as set forth.

3. A wheel for cycles, cabs, and other vehicles, consisting of a chamber filled with compressed air or gas, the walls of the said chamber consisting of layers, separate jackets, or envelopes of india-rubber and non-expansive textile fabric and being secured to an axle by means of flanges extending therefrom at each side of the said chamber, the said walls having an inner tube or aperture through their center and through which the axle passes, and the said aperture or tube being composed of the same material or walls as the outer walls of the said chamber, substantially as set forth.

4. A wheel for cycles, cabs, and other vehicles, consisting, first, of a spherical chamber filled with compressed air or gas, the walls of the said chamber being composed of layers, separate jackets, or envelopes of india-rubber and non-expansive textile fabric, and, second, of an axle which is passed through the center of the said spherical chamber and the walls thereof, which axle fits within the two apertures or orifices in the walls aforesaid with sufficient tightness to prevent the escape of air from the interior of the chamber, substantially as set forth.

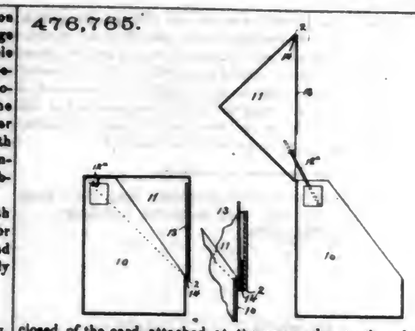
476,765. DISPLAY-PACKAGE. GILBERT P. KNAPP, New York, N. Y. Filed May 14, 1891. Serial No. 392,714. (No model.)

Claim.—1. The combination, with a package and its cover, of a card connected to the cover at or near the front edge by a flexible connection in position to hang in a substantially vertical plane when the package is open.

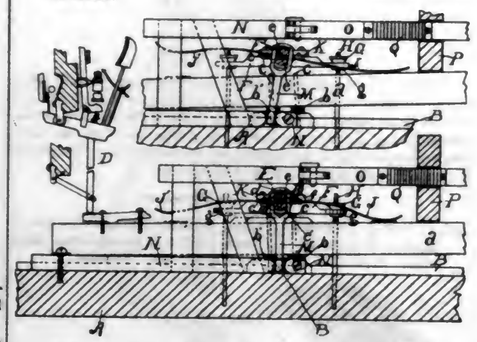
2. The combination, with a package and its cover having the downwardly-extending front side inclosing the front of the package when closed, of the card attached at the upper edge to the edge of said front side by a flexible connection, whereby it will depend therefrom when the package is open, substantially as described.

3. The combination, with a package having its front wall cut away to expose its contents, the hinged cover having the front side inclosing the cut-away portion when closed and the stops for limiting backward movement of the cover, of the card connected to the front or upper portion of the cover by a flexible connection, substantially as described.

476,765.



476,766. TOUCH-REGULATING DEVICE FOR PIANOS. FRANK W. KRIEGEL, Los Angeles, Cal. Filed Sept. 2, 1891. Serial No. 404,563. (No model.)

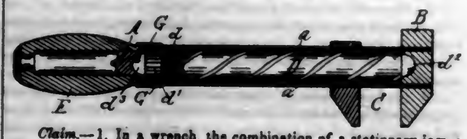


Claim.—1. A piano-touch regulating device, comprising a journaled key-spring rod arranged practically at the pivoted point of the keys and provided upon each side with a series of laterally-projecting spring mediums arranged to be pressed upon or removed from their respective keys upon each side of the pivoted point of the keys.

2. The combination of the rod formed of the two rod members, the series of laterally-projecting spring mediums arranged to respectively engage the keys, means for clamping the rod members together, the journaled brackets in which the rod is journaled, and means for partially rotating the rod.

3. The combination of the journaled rod provided with the laterally-projecting springs, the journal-brackets F, the screw-posts H, and the set-screw taps G *g*.

476,767. WRENCH. ALBERT K. LOVELL, Jackson, Mich. Filed Sept. 26, 1891. Serial No. 406,823. (No model.)



Claim.—1. In a wrench, the combination of a stationary jaw, a sliding jaw, a spirally-grooved shaft engaged with and rotated by said sliding jaw, and means for locking said shaft, whereby the sliding jaw is held in any desired position, substantially as described.

2. In a wrench, the combination of a stationary jaw, a sliding jaw, a spirally-grooved shaft engaged with and rotated by said sliding jaw and provided with a toothed portion at one end, and a detent engaging with said tooth portion, substantially as described.

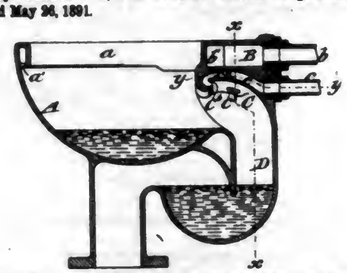
3. In a wrench, a frame, a stationary jaw riveted to the end of said frame, a revoluble spirally-grooved shaft mounted in the stationary jaw and the shank of said frame, a sliding jaw on said frame engaged with and rotating said shaft, and means for locking said shaft, substantially as described.

4. In a wrench, the combination of a stationary jaw, a spirally-grooved shaft engaged with and rotated by said sliding jaw and provided with a serrated portion, whereby the same may be revolved by the hand, and means for locking said shaft, substantially as described.

5. In a wrench, the combination of a frame having interior concave portions, a stationary jaw attached to the end of said frame, a revoluble spirally-grooved shaft mounted between the side bars of said frame and revolving in said concave portion, a head sliding on said frame engaged with and rotating said shaft, and means for locking said shaft, substantially as described.

REISSUES.

11,242. WATER-CLOSET BOWL. JOHN G. BEEKMAN, New York, N. Y., assignor to the Beekman Sanitary System Company, of New Jersey. Filed Nov. 11, 1891. Serial No. 411,642. Original No. 452,963, dated May 26, 1891.



Claim.—1. A water-closet bowl provided with a flushing device adapted to discharge water around the rim of the bowl, and a second flushing device consisting of a flushing-chamber provided with water-conduits leading to the right and left and with a water-conduit intermediate of those leading to the right and left, the said conduits above the overflow opening into the upper portion of the discharge-conduit from the bowl, substantially as set forth.

2. A water-closet bowl provided with a thickened portion, an inlet for the discharge of water around the interior of the body of the bowl, and a second inlet-chamber formed in the thickened portion of the bowl and opening into the discharge-conduit forming an independent flush for the walls of the neck of the discharge-conduit, substantially as set forth.

11,243. ATTACHMENT FOR PIPE-CUTTERS. HARRY COMSTOCK, Fulton, N. Y. Filed Mar. 2, 1892. Serial No. 423,541. Original No. 440,017, dated Nov. 4, 1890.



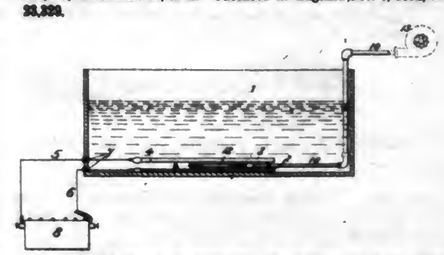
Claim.—1. The angular attachment for a pipe-cutter herein described, having converging faces provided with abrading-surfaces and marginal ribs or strips with smooth surfaces arranged in or nearly in the plane of the abrading-surfaces, substantially as described.

2. An angular attachment for a pipe-cutter, having its converging faces provided with guiding-ribs and with abrading surfaces upon each side of said ribs, said attachment also having marginal ribs or strips, their smooth faces being arranged in or nearly in the plane of the abrading-surfaces, substantially as described.

3. An angular attachment for a pipe-cutter, having guiding-ribs upon its converging faces and provided upon each side of said ribs with abrading-surfaces and with smooth-surfaced marginal ribs or strips separated from the abrading-surfaces by channels parallel with the ribs, the smooth surfaces of the marginal ribs being substantially in the plane of the abrading-surfaces, substantially as described.

4. An attachment for a pipe-cutter, formed of a single piece of metal having angular form, its similar parts being provided with central guiding-ribs 3^a, abrading or serrated faces 4, grooves or channels 5, and marginal ribs or strips 6, having smooth faces which lie in or nearly in the plane of the abrading-surfaces 4, substantially as described.

11,244. PROCESS OF AND APPARATUS FOR BLEACHING BY ELECTROLYSIS. ALBERT E. WOOLF, New York, N. Y., assignor, by mesne assignments, to Rosamond Woolf and Thomas J. Montgomery, same place. Filed May 5, 1892. Serial No. 431,965. Original No. 471,454, dated Mar. 22, 1892. Patented in England Feb. 6, 1892, No. 33,329.



Claim.—1. In the art of bleaching, the process set forth, which consists in submitting sea-water to electrolysis, forcing atmospheric air into the electrolyte, discharging the same between the electrodes, and submitting the materials to be bleached to the action of the products of electrolysis in the same vat or tank, substantially as specified.

2. In the art of bleaching, the process set forth, which consists in submitting sea-water to electrolysis, forcing atmospheric air into the electrolyte, discharging the same between the electrodes, and submitting the materials to be bleached to the action of the products of electrolysis in the same vat or tank during agitation of the electrolyte, substantially as specified.

3. In a bleaching apparatus, the combination, with a vat or receiving-tank containing an electrolyte, of positive and negative electrodes arranged therein, a source of electric energy connected therewith, an air-forcing device, and an air conduit or tube entering the electrolyte and having a discharging-terminal lying between the electrodes, substantially as described.

4. In a bleaching apparatus, the combination, with a vat or tank, of a positive electrode and a perforated negative electrode connected to wires entering the tank, a storage-battery in circuit with said electrodes, an air-forcing device, and an air conduit or tube entering the tank and having a terminal provided with air-exits discharging between the electrodes, substantially as described.

5. The combination, with a vat or tank containing an electrolyte composed of sea-water or equivalent saline solution and having the materials to be bleached immersed therein, of a positive electrode, a negative electrode having irregular surfaces placed close together or side by side, a source of electrical energy in circuit therewith, and means for admitting air between the electrodes, substantially as described.

6. The combination, with a vat or tank containing an electrolyte composed of sea-water or equivalent saline solution, of a positive electrode composed of platinum and a negative electrode composed of carbon, both immersed in the electrolyte, a source of electrical energy in circuit with said electrodes, and means for causing the electrolyte to circulate between the electrodes and for agitating the electrolyte, substantially as described.

DESIGNS.

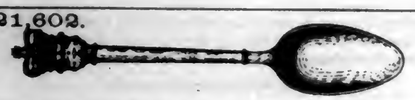
21,601. SPOON, &c. GILBERT L. CROWELL, Jr., Arlington, N. J., assignor to Damon Greenleaf and Joseph Hayden Crosby, Jr., Jacksonville, Fla. Filed Apr. 13, 1892. Serial No. 429,071. Term of patent 7 years.



Claim.—The design for handles of spoons and similar articles, substantially as shown and described.

21,602. SPOON, &c. CHAUNCEY H. RICHARDSON, Duluth, Minn. Filed May 2, 1892. Serial No. 431,571. Term of patent 3½ years.

21,602.



Claim.—The design for a spoon or similar articles, substantially as shown and described.

21,603. SPOON. GEORGE WILKINSON, Providence, R. I., assignor to the Gorham Manufacturing Company, same place. Filed May 3, 1892. Serial No. 431,724. Term of patent 7 years.



Claim.—The design for a spoon, as herein shown and described.

21,604. SPOON. GEORGE WILKINSON, Providence, R. I., assignor to the Gorham Manufacturing Company, same place. Filed May 3, 1892. Serial No. 431,725. Term of patent 7 years.



Claim.—The design for a spoon, as herein shown and described.

21,605. SPOON. GEORGE WILKINSON, Providence, R. I., assignor to the Gorham Manufacturing Company, same place. Filed May 3, 1892. Serial No. 431,726. Term of patent 7 years.



Claim.—The design for a spoon, as herein shown and described.

21,606. FONT OF PRINTING-TYPE. HERMAN IHLENBURG, Philadelphia, Pa., assignor to The MacKellar, Smiths & Jordan Company, same place. Filed May 12, 1892. Serial No. 432,787. Term of patent 7 years.

ABCDEFGHIJKLMNOPQRS

TUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890

Claim.—The design for a font of printing-type, as herein described and shown in the annexed typographical impression.

21,607. FONT OF PRINTING-TYPE. HERMAN IHLENBURG, Philadelphia, Pa., assignor to The MacKellar, Smiths & Jordan Company, same place. Filed May 12, 1892. Serial No. 432,788. Term of patent 7 years.

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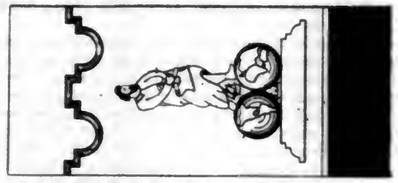
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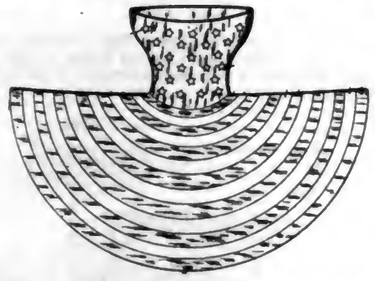
Claim.—The design for a font of printing-type, as herein described, and as shown in the annexed typographical impression.

21,608. BADGE. JAMES L. TERHUNE, Harrison, N. J. Filed Apr. 14, 1892. Serial No. 429,230. Term of patent 3½ years.



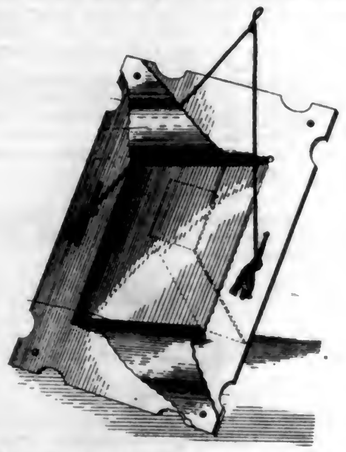
Claim.—The design for a badge, as herein shown and described.

21,609. DANCING-DRESS. ELVIRA C. HOFFMAN, New York, N. Y. Filed Apr. 28, 1892. Serial No. 431,064. Term of patent 7 years.



Claim.—The design for a dancing-dress, substantially as shown and described.

21,610. PICTURE-FRAME. EDWARD C. BROWN, Chicago, Ill. Filed Apr. 25, 1892. Serial No. 430,636. Term of patent 3½ years.



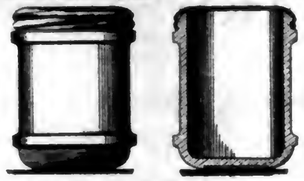
Claim.—The design for a picture-frame, substantially as herein shown and described.

21,611. MATCH-BOX. WILLIAM W. HAYDEN, Newark, N. J. Filed May 13, 1892. Serial No. 432,933. Term of patent 3½ years.



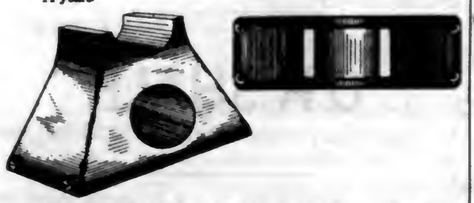
Claim.—The design for a match-box, substantially as shown and described.

21,612. JAR. FRANCIS M. UNDERHILL, New York, N. Y., assignor to Whitall, Tatum & Co., same place. Filed May 6, 1892. Serial No. 432,065. Term of patent 14 years.



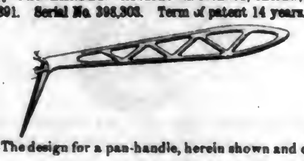
Claim.—The design for a jar or pot, substantially as shown.

21,613. PILLOW-BLOCK STANDARD. HARRY W. HILL, Cleveland, Ohio. Filed Mar. 10, 1892. Serial No. 424,451. Term of patent 14 years.



Claim.—The design for a pillow-block standard, substantially as shown and described.

21,614. PAN-HANDLE. ADOLPHUS A. MCLEOD, Cheraw, S. C. Filed July 2, 1891. Serial No. 398,303. Term of patent 14 years.



Claim.—The design for a pan-handle, herein shown and described.

21,615. COOKING-STOVE. FRANCIS RITCHIE, Troy, N. Y., assignor to Isaac A. Sheppard, Franklin L. Sheppard, and Howard R. Sheppard, Philadelphia, Pa. Filed May 12, 1892. Serial No. 432,790. Term of patent 14 years.



Claim.—The design for the ornamentation of a cooking-stove, as herein described, and shown in the accompanying drawing.

21,616. LAMP-CHIMNEY. GEORGE W. BLAIR, Pittsburg, Pa. Filed Dec. 7, 1891. Serial No. 414,340. Term of patent 14 years.



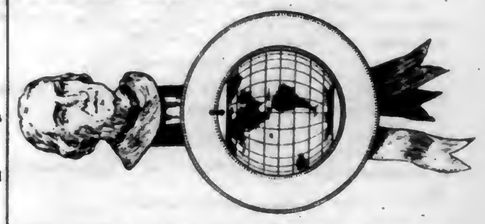
Claim.—The design for lamp-chimneys, substantially as herein shown and described.

21,617. LAMP-CHIMNEY. GEORGE W. BLAIR, Pittsburg, Pa. Filed Dec. 7, 1891. Serial No. 414,341. Term of patent 14 years.



Claim.—The design for lamp-chimneys, substantially as herein shown and described.

21,618. BADGE. EMMA M. ESQUA, Harrison, N. Y. Filed Apr. 8, 1892. Serial No. 428,392. Term of patent 3½ years.



Claim.—The design for a badge, substantially as herein shown and described.

21,619. BOX FOR COFFEE-MILLS. CHARLES MORGAN and MATHIAS REDLINGER, Jr., Freeport, Ill., assignors to said Charles Morgan, Edgar H. Morgan, and Albert Baumgarten, same place. Filed Feb. 27, 1892. Serial No. 423,090. Term of patent 7 years.



Claim.—The design for a box for a coffee-mill, substantially as shown and described.

TRADE-MARKS

REGISTERED JUNE 7, 1892.

21,248. SHEARS, SCISSORS, AND POCKET-KNIVES. HERMANN BOKER & Co., New York, N. Y. Filed May 3, 1892.



Essential feature.—The word "TRENTON" arranged in a diamond-shaped figure, the size of the letters increasing from the ends of the diamond to its center. Used since June, 1880.

21,249. HORSE BLANKETS OR COVERS. BURLINGTON BLANKET COMPANY, Burlington, Wis. Filed Apr. 12, 1892.

·STAY ON·

Essential feature.—The words "STAY ON." Used since March, 1892.

21,250. OIL AND GAS STOVES. CENTRAL OILGAS STOVE COMPANY, Northampton and Boston, Mass. Filed Apr. 29, 1892.

Oilgas

Essential feature.—The word "OILGAS." Used since April 1, 1891.

21,251. PERFUMERY. MAJESTIC PERFUME CO., New York, N. Y. Filed May 2, 1892.



Essential feature.—The words "VAN WINKLES MAJESTIC PERFUMES." Used since May 5, 1891.

21,252. SPORTING-POWDER. MIAMI POWDER COMPANY, Xenia, Ohio. Filed May 4, 1892.



Essential feature.—The representation of a flock of ducks and the words "ALARM SPORTING." Used since February 1, 1892.

21,253. COMPOSITION FOR POLISHING METALS. NOBLE & STEBBINS, New York, N. Y. Filed May 4, 1892.

21,258. ROYAL

Essential feature.—The word "ROYAL." Used since February 15, 1892.

21,254. COAL. PERKINS & Co., New York, N. Y. Filed Apr. 26, 1892.

O.K.SHALE

Essential feature.—The letters and word "O. K. SHALE." Used since January 1, 1892.

21,255. WHEAT-FLOUR. J. & M. SCHWABACHER, Limited, New Orleans, La. Filed Apr. 15, 1892.



Essential feature.—The words and character "STAR & CRESCENT" and the representation of a star and crescent. Used since January 1, 1892.

21,256. STATIONARY STEAM-ENGINES. THE STEARNS MANUFACTURING COMPANY, Erie, Pa. Filed Apr. 19, 1892.

WOODBURY

Essential feature.—The word "WOODBURY." Used since 1851.

21,257. LAUNDRY-STARCH. THE NATIONAL STARCH MANUFACTURING COMPANY, Covington, Ky., Indianapolis, Ind., and New York, N. Y. Filed Apr. 9, 1892.



Essential feature.—The representation of a woman holding in one arm a sheaf of wheat, and the words "GERMANIA PURE." Used since 1875.

21,258. TOMATO CATSUP. JAMES BUTLER, New York, N. Y. Filed May 12, 1892.

PEERLESS

Essential feature.—The word "PEERLESS." Used since April 1, 1892.

21,259. FLEXIBLE DOORS, BLINDS, AND SHUTTERS. FLEXIBLE DOOR AND SHUTTER COMPANY, Portland, Me., and Worcester, Mass. Filed May 12, 1892.

Flexifold

Essential feature.—The word "FLEXIFOLD." Used since January 1, 1892.

21,260. BRAIDINGS AND TRIMMINGS FOR WEARING-APPAREL. J. HALLWORTH & SON, Manchester, England. Filed May 9, 1892.



Essential feature.—The representation of a cock, together with the representation of a hemisphere or globe. Used since March 1, 1892.

21,261. CHEESE. THOMAS D. MILLAR, Ingersoll, Canada. Filed Apr. 25, 1892.

PARAGON

Essential feature.—The word "PARAGON." Used since February, 1887.

21,262. BATTING OR RATS OF COTTON. J. PAGE & SON, Cohoes, N. Y. Filed Apr. 30, 1892.



Essential feature.—The representation of a cotton-bat and a horse-shoe-magnet. Used since March 25, 1892.

21,263. STOMACH BITTERS AND A COMPOUND OF SARSAPARILLA AND POTASH. REIS & HENRY, Louisville, Ky. Filed Apr. 29, 1892.

Edward Wilder

Essential feature.—The words "EDWARD WILDER." Used since November 22, 1891.

21,264. SILVERED METAL PINS AND BLACK PINS. THE AMERICAN PIN COMPANY, Waterbury, Conn., New York, N. Y., Boston, Mass., and Chicago, Ill. Filed May 12, 1892.

TOURIST

Essential feature.—The word "TOURIST." Used since May 1, 1892.

21,265. EYE-WASHES. JAMES G. FITZHERBERT, Newark, N. J. Filed May 6, 1892.

OCCIDENTAL

Essential feature.—The word "OCCIDENTAL." Used since April 26, 1892.

21,266. WHISKY. JOHN MILLER & CO., Boston, Mass. Filed Apr. 23, 1892.

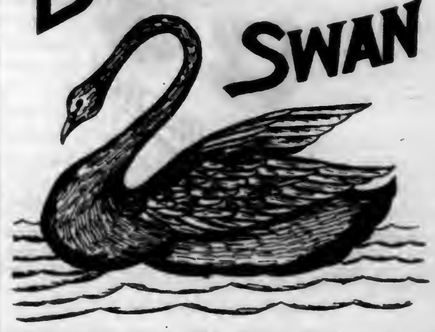
21,266. OVERTON



Essential feature.—The word "OVERTON" and a monogram composed of the letters and character "J M & Co" Used since March 15, 1892.

21,267. TEA. PAXTON & GALLAGHER, Omaha, Nebr. Filed Apr. 20, 1892.

BLACK SWAN



Essential feature.—The words "BLACK SWAN," or the representation of a swan. Used since September 1, 1890.

21,268. TEA. PAXTON & GALLAGHER, Omaha, Nebr. Filed Apr. 20, 1892.

KAMO

Essential feature.—The word "KAMO." Used since September 1, 1890.

21,269. REMEDIES IN THE FORM OF TABLETS FOR RHEUMATISM AND DISEASES OF THE KIDNEYS. WILLIAM WILSON, New York, N. Y. Filed May 4, 1892.

LITHINE

Essential feature.—The word "LITHINE." Used since April 22, 1892.

21,270. CIGARS. MAURICE HYMAN, Denver, Colo. Filed May 13, 1892.

HOTEL·METROPOLE

Essential feature.—The word "HOTEL-METROPOLE." Used since September 1, 1891.

21,271. CYLINDRICAL FRANGIBLE BOXES FOR USE IN COIN-CONTROLLED VENDING-MACHINES. NATIONAL U. S. STAMP DELIVERY COMPANY, Portland, Me., and Boston, Mass. Filed Apr. 23, 1892.

Cartouch

Essential feature.—The word "CARTOUCH." Used since April 4, 1892.

21,272. SEWING-MACHINES AND ATTACHMENTS. THE NEW HOME SEWING MACHINE COMPANY, New York, N. Y. Filed Feb. 27, 1892.

HOPE

Essential feature.—The word "HOPE." Used since December 1, 1891.

21,273. REMEDY FOR THE CURE OF RHEUMATISM, GOUT, AND LUMBAGO. MCKINNIS & CHESEMAN MANUFACTURING CO., Pittsburg, Pa. Filed May 10, 1892.



Essential feature.—The word "RHEUMACURA" and two medallion portraits representing, respectively, the members of the registrants' firm—namely, Henry McKinnis and E. M. Cheseman. Used since February 1, 1892.

21,274. WATER-FILTERS. C. BÜRRING & Co., Hamburg, Germany. Filed May 3, 1892.



Essential feature.—The representation of a woman resting her left hand on a faucet at the top of a filter and with her right hand holding a pitcher below the filter. Used since July 1, 1889.

21,275. WHISKY. DUNCAN, ALDERDICE & COMPANY, Limited, Newry, Ireland. Filed Dec. 7, 1891.



Essential feature.—The representation of a map of Ireland and the words "THE NATIVE WHISKY." Used since October 28, 1889.

21,276. REMEDIES PUT UP IN THE FORM OF A POWDER, LIQUID, AND SALVE FOR CATARRH, SORE EYES, AND DISEASES OF THE BLOOD. DEARTH & SMITH, Jasper, Ala. Filed Apr. 23, 1892.

MAGNETIC HAND



CHARMER.

Essential feature.—The words "MAGNETIC HAND CHARMER," with the representation of a hand. Used since January 22, 1892.

21,277. MEDICINE TO PURIFY THE BLOOD AND TO CURE RHEUMATISM. EPHRAM GLOUDE, Rondout, N. Y. Filed Apr. 16, 1892.

MOUNTAIN GROWTH.

Essential feature.—The words "MOUNTAIN GROWTH." Used since October 1, 1891.

21,278. SWISS RIBBED UNDERWEAR. SPIELMANN & Co., New York, N. Y. Filed May 3, 1892.



Essential feature.—The representation of an eagle grasping a shield, on which are shown an anchor and star. Used since June 4, 1887.

21,279. LAGER-BEER. THE PETER SCHOENHOFEN BREWING COMPANY, Chicago, Ill. Filed May 6, 1892.

AMBROSIA

Essential feature.—The word "AMBROSIA." Used since March 25, 1892.

THE NORRIS PETERS CO. PHOTO-LITH. WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

SPRAGUE *v.* HUNTER.

Decided April 29, 1892.

PRACTICE—INTERFERENCE—DIVISIONAL APPLICATION—BURDEN OF PROOF.

Where a party to an interference in which his divisional application is involved relies on an alleged statement of invention in his original application for the purpose of determining where the burden of proof lies, such statement must clearly and definitely cover the invention claimed in the divisional application.

APPEAL on motion.

ELECTRIC RAILWAY-MOTOR.

Patent granted Frank J. Sprague March 25, 1890, No. 424,436. Application of Rudolph M. Hunter filed September 16, 1889, No. 324,077.

Messrs. Dyer & Seely for Sprague.
Mr. R. M. Hunter pro se.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Primary Examiner to the effect that the burden of proof is upon Sprague in this interference. Hunter's application, involved in interference is a divisional application in which his claims now in interference appear for the first time. The Examiner's decision goes upon the ground that Hunter's original application, from which such divisional application proceeds, contains a statement of invention covering the same ground, and he quotes the following as being that statement:

To the axle or axles of the vehicle I journal one or more electric motors, which have their journals so located that they are preferably balanced upon said axle. By this means the motor-shaft is allowed to move in an arc about the axle and is connected thereto by suitable gearing or power-transmitting devices. To prevent the free rotation of the motor, it is connected by a spring device to the vehicle or truck frame. This enables the first power of the motor in starting to be expended in putting the spring under tension and provides an elastic connection between the motor and axle, facilitating the starting of the vehicle into motion from a state of rest.

I do not limit myself to any particular form of elastic connection, as the specific connections are capable of much modification. * * * As shown in the application, I prefer to use two motors, one on each axle and facing each other and connected to the opposite ends of the same supporting-spring, and this combination is particularly desirable for pivoted trucks of large cars.

The matter just quoted discloses the improvement in controversy. It is not a claim thereto. Is it a statement of invention which will practically answer in lieu of a claim? If it be, then one must be able to gather from it with substantial certainty what it is that the applicant points out as the thing he has invented. One might possibly treat this as a statement of invention practically equivalent to a claim to a combination of all the parts mentioned. Again, one might suspect that the "elastic connection" is a thing which applicant desires to point out as his invention. A statement of this sort that leaves one in doubt as to whether the entire combination of parts or a certain "elastic connection" is the thing which applicant is setting forth as his invention has not the requisite certainty which will warrant its acceptance as a substitute for a claim for the purpose in hand.

Apropos of what was said at the oral argument concerning the decision in *Van Depoele* v. *Daft*, (58 O. G., 520,) it is proper to say that said decision, as well as the present one, has no application outside of deciding who shall stand in the position of plaintiff and who in the position of defendant.

The decision of the Primary Examiner is reversed.

LOSSIER *v.* WILLSON *v.* COWLES AND COWLES *v.* ROGERS *v.* DARLING *v.* BOGUSKI *v.* GRATZEL.

Decided May 7, 1892.

1. PRACTICE—QUESTION ON THE MERITS NOT PROPER SUBJECT OF INTERLOCUTORY APPEAL TO THE COMMISSIONER.

Objections to the operativeness or patentability of the subject-matter of the issue of an interference are not proper subjects for an interlocutory appeal to the Commissioner from an Examiner's refusal to dissolve the interference.

2. PRIORITY OF INVENTION IS THE PRIMARY QUESTION IN AN INTERFERENCE.

Whether or not a statutory bar exists against the grant of a patent to an applicant is immaterial upon a motion to dissolve an interference, since priority of invention is the primary question in an interference.

APPEAL on motion.

OBTAINING ALUMINIUM BRONZE.

Application of Jean Louis Lossier filed February 24, 1890, No. 341,638. Application of Thomas L. Willson filed April 17, 1889, No. 307,337. Application of Eugene H. Cowles and Alfred H. Cowles filed February 27, 1889, No. 301,377. Application of Augustus J. Rogers filed June 29, 1888, No. 278,573. Application of James D. Darling filed June 15, 1888, No. 277,239. Applications of Joseph J. Boguski filed March 12, 1889, No. 302,955, and April 7, 1887, No. 234,061. Patent granted Richard Gratzel May 3, 1887, No. 362,441.

Mr. G. P. Lowrey and *Messrs. Bentley & Blodgett* for Lossier.
Messrs. A. C. Fraser & Co. for Willson.
Messrs. Paine & Ladd for Cowles and Cowles.
Messrs. Winkler, Smith, Vilas, Flanders & Bottum and *Dodge & Sons* for Rogers.
Messrs. Fowler & Fowler for Darling.
Messrs. Leggett & Leggett for Boguski.
Mr. Carl Pieper and *Messrs. Knight Bros.* for Gratzel.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Primary Examiner refusing Willson's motion to dissolve this interference.

The first count of the motion, together with the reasons presented therefor, is as follows:

Count 1. That this interference be dissolved on the ground that there is no interference in fact:
(a) That there is no interference in fact between the application of Willson and that of Lossier.
(b) That there is no interference in fact between the application of Willson and that of Cowles and Cowles.
(c) That there is no interference in fact between the application of Willson and that of Rogers.
(d) That there is no interference in fact between the application of Willson and that of Darling.
(e) That there is no interference in fact between the applications of Willson and Boguski.
(f) That there is no interference in fact between the application of Willson and the patent of Gratzel.
Reasons: For Count 1—(1) The defined issue does not mean the same invention as applied to the processes of all the parties. (2) The process of Willson is a different invention from the respective processes of the other parties. (3) No claim of any party properly construed by his specification covers the processes of all the other parties.

Having regard to the presence of the words "or like compound" in the issue, taking into consideration the fact that these various specifications and claims are to some degree based upon mere theories of chemical and electrical action, and also taking into consideration the fact that it probably cannot be proved that expressions which seem like limitations in the claims of the various applicants are material, it is held that a sound discretion requires the continuance of the interference.

The second count of the motion, together with the reasons presented therefor, is as follows:

Count 2. That this interference be dissolved on the ground that there has been such irregularity in declaring the same as will preclude a proper determination of the question of priority.
Reasons: For Count 2—(1) In no one of the applications have all preliminary questions been settled by the Primary Examiner. In no one of the applications have the claims been put in such condition that they will not require alteration after the interference shall have been finally decided. (2) The issue does not specify an operative invention. (3) The issue does not define a patentable invention. (4) The issue is not clearly defined, but is vague and indefinite. It is so loosely expressed as to include different inventions.

It is held that the preliminary questions have been settled by the Primary Examiner to that extent which will permit the interference to proceed intelligently to the determination of the question of priority of invention. As regards the allegations that—

(2) The issue does not specify an operative invention. (3) The issue does not define a patentable invention,

those are not matters proper for consideration on an interlocutory appeal to the Commissioner. As to the allegation that—

(4) The issue is not clearly defined, but is vague and indefinite,

the holding is that the point is not well taken.

The third count of the motion, together with the reasons presented therefor, is as follows:

Count 3. That this interference be dissolved on the ground that the defined issue is not a patentable invention.
Reasons: For Count 3—(1) The defined issue is for an inoperative invention, because it expresses an incomplete process and one insufficient to accomplish a result. (2) The defined issue covers the application of a principle or force of nature—namely, the use (any use) of electricity in the production of alloys of aluminium and other like metals. (3) The defined issue is lacking in patentable novelty, because anticipated by, (specifying references.)

None of these allegations is proper subject-matter for interlocutory appeal.

The fourth count of the motion, together with the reasons presented therefor, is as follows:

Count 4. That the issue of this interference be re-formed to clearly express a single patentable operative invention claimed by all the parties to the interference.
Reasons: For Count 4—The issue as now expressed fails to define an invention which is (a) unitary, (b) patentable, (c) operative, and (d) common to all of the parties.

This count, as defined by the reasons and excluding questions elsewhere herein decided, does not present subject-matter for interlocutory appeal.

The fifth count of the motion, together with the reasons presented therefor, is as follows:

Count 5. That this interference be dissolved and redeclared so as to exclude the application of Cowles and Cowles, and to include in lieu thereof their United States Patent No. 334,658, dated August 18, 1885.
Reasons: For Count 5—Cowles and Cowles have no right to make a claim to the subject-matter as defined by the issue in their application here involved, because such claim should, if at all have been made by them in their said prior patent, No. 334,658, and can now be made by them only in a reissue thereof.

It is by no means clear that the Cowles and Cowles patent discloses the matter covered by the interference issue. The weight of probability is the other way.

The sixth count of the motion, together with the reasons therefor, is as follows:

Count 6. That this interference be dissolved as to the application of Lossier on the ground that his claims included in this interference are not for a patentable invention.
Reasons: For Count 6—Lossier's claims are not founded upon his specification. His claims are inoperative and present no patentable invention over the references cited in the foregoing reasons for Count 3.

At the oral argument a contention was made which is in effect that a statutory bar exists against Lossier's having the patent he now seeks, whether or not he be the prior inventor. If the fact be as claimed, it may yet remain that he is the prior inventor, and for that reason the fact is immaterial. If, as alleged, his claims are inoperative and present no patentable invention, that is not a matter which can be brought up on interlocutory appeal.

The seventh count of the motion, together with the reasons therefor, is as follows:

Count 7. That this interference be dissolved as to the application of Boguski, No. 302,955, on the ground that there is no interference in fact between the claim therein and any claim of any other party to the interference.
Reasons: For Count 7—Boguski's single claim in application No. 302,955 is limited to "a flux," which is employed in the process of no other party.

The mention of a flux in any of the claims of any of the parties is held to be an immaterial matter.

The decision of the Primary Examiner is affirmed.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

WHITE *v.* RANKIN *et al.*

Decided April 18, 1892.

1. PATENT—JURISDICTION OF FEDERAL COURTS—CONTRACT.
Where a plaintiff's bill in equity is purely a bill for the infringement of patent-rights, asking for the usual relief in the usual form, and containing no suggestion of contract relations between plaintiff and defendant, the mere fact that the defendant's answer sets up an alleged contract gives the court no warrant to dismiss the case for want of jurisdiction on the ground that the rights of the parties are governed by contract.
2. SAME—TEST OF JURISDICTION.
In such a case the question is upon the infringement of the patent, and the subject-matter of the action is disclosed in the bill, the defendant's answer being in effect a mere denial of infringement, and raising an issue clearly within the jurisdiction of the court.
3. FORMER CASES DISTINGUISHED.
Hartell v. *Tilghman* (99 U. S., 547) and *Wilson* v. *Sandford* (10 How., 101) distinguished.

APPEAL from the Circuit Court of the United States for the Northern District of California.

Mr. M. A. Wheaton for the appellant.
Mr. F. J. Lippitt and *Mr. D. L. Smoot* for the appellees.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought April 19, 1878, in the Circuit Court of the United States for the District of California, by George W. White, a citizen of California, against Ira P. Rankin, A. P. Brayton, John Howell, and James M. Thompson, citizens of California, for the infringement of Letters Patent No. 44,145, granted to George W. White and Austin G. Day, as assignees of George W. White, the inventor, September 6, 1864, for seventeen years from August 23, 1864, for an improved apparatus for roasting and reducing ores; and also for the infringement of Letters Patent No. 46,287, granted to George W. White, as inventor, February 7, 1865, for seventeen years from that day, for an improved apparatus for calcining ores. All of the interest of Day in Patent No. 44,145 was conveyed by him to White before September 20, 1876.

The bill is in the usual form of bills in equity for the infringement of Letters Patent. It alleges that the defendants, since September 20, 1876, and before the filing of the bill, without the license of the plaintiff and without any right so to do, have manufactured, used, and sold machines embracing the inventions covered by both of the patents, and infringing the same. It contains no mention of or reference to any contract with the defendants for their use of either of the patents. The prayer of the bill is in the usual form, for a perpetual injunction, an account of profits, an assessment of damages, and an increase of the latter to an amount not exceeding three times the sum at which they shall be assessed. It also prays for a discovery from the defendants as to the number of furnaces they have made since September 20, 1876, how the same were constructed, whether they have not on hand a large number, and how many, of such furnaces, and how the same are constructed.

The defendants demurred to the bill on the ground that it showed no case for a discovery or for relief, and that the discovery demanded was in aid of the enforcement of a penalty. The demurrer was sustained as to discovery, with leave to the plaintiff to amend. The bill was then amended by striking out the prayer for an increase of damages and by waiving all right to a penalty.

The defendants then put in a plea to the bill, setting up that the plaintiff, on February 13, 1875, agreed in writing to assign to the defendant Thompson a one-fourth interest in the two patents in question, with a corresponding one-fourth interest in all patents that the plaintiff might thereafter obtain for improvements made by him on said inventions, and a corresponding interest in all reissues and extensions of said patents, in case Thompson should, within sixteen months thence ensuing, elect to take the said assignment; that within the sixteen months Thompson elected to take it, and in due time thereafter performed every act necessary to entitle himself to it, and duly demanded of the plaintiff the execution and delivery of the said assignment, to which Thompson became entitled as of June 13, 1876; that the plaintiff White failing to execute and deliver the same to Thompson on demand, the latter, on August 31, 1876, brought suit against White in the District Court of the Nineteenth Judicial District of California, in and for the city and county of San Francisco, to compel a specific performance of the said contract and for other relief; that White appeared and defended the suit; that the issues raised by the pleadings were duly tried and determined by the said district court, which, on November 22, 1877, made a decree containing the following findings of fact: (1) That the contract set up in the complaint of Thompson was made between the parties; (2) that Thompson made to White a loan of $1,000, and delivered to White a note and agreement mentioned in the contract, and received from White his notes for $1,000; (3) that Thompson elected to take the assignment of one-fourth of the patent-rights mentioned in the contract, and made known to White his said election before and upon the expiration of the sixteen months; (4) that, at the expiration of that time, Thompson, at San Francisco, with reasonable diligence sought White, for the purpose of demanding from him an assignment of one-fourth of the said patent-rights, and prepared to tender and deliver to White, in payment therefor, White's said notes and Thompson's assignment of the income of the said one-fourth, in accordance with the terms of the contract; (5) that White knew of Thompson's purpose, and evaded him; (6) that, at the expiration of the sixteen months, Thompson, by writing addressed to and received by White, demanded an assignment of one-fourth of the said patent-rights, and offered to pay the consideration and perform the conditions imposed upon him by the contract; (7) that, on July 11, 1876, Thompson made to White a personal tender of White's said notes and an assignment of the income of said one-fourth, and demanded from White an assignment of the one-fourth; (8) that White made no objections to any of the said offers or tenders of performance; (9) that, between the first offers of performance and the commencement of that suit, on September 1, 1876, Thompson made efforts to settle the matter without litigation; (10) that Thompson, at the expiration of the sixteen months, was, and ever since had been and still was, willing and ready to perform the conditions on his part to entitle him to the assignment of the said one-fourth, and in due time made tender of performance; that, from such findings of fact, the court was of opinion, as a conclusion of law, that Thompson was entitled to an assignment of one-fourth of said patent-rights as of June 13, 1876, and to an account; that thereupon it was decreed (1) that White execute and deliver to Thompson a proper deed transferring and assigning to him, as of June 13, 1876, a one-fourth interest in the two inventions secured by the said two patents, with a corresponding interest in all patents that White might have obtained since February 13, 1875, or might thereafter obtain, on improvements made by him on said inventions, and a corresponding interest in all reissues and extensions of said patents; (2) that Thompson, on the delivery of such deed, should

surrender to White his said notes, and execute and deliver to him an assignment of the income of said one-fourth, to run for the period of two years from June 13, 1876, unless the sum of $4,000 should be sooner realized; and (3) that if White should fail, for five days from the date of the decree, to obey it, then the clerk of the court, as special commissioner, should execute and deliver the deed to Thompson, and receive for White the notes and assignment of income; that it was referred to a commissioner to ascertain and report certain matters, and among them the profits lost and the damages sustained by Thompson since June 13, 1876, in consequence of White's failure to make the assignment; that, White having failed for more than five days after the entry of the decree to execute and deliver the assignment, the special commissioner, on January 31, 1878, received for White from Thompson the notes of White and the assignment of income mentioned in the decree, and executed and delivered to Thompson a deed transferring to the latter, as of June 13, 1876, a one-fourth interest in the two inventions secured by the said two patents, with a corresponding one-fourth interest in all patents that White might have obtained since February 13, 1875, or might thereafter obtain, on improvements theretofore or thereafter made by White on said inventions, and a corresponding interest in all reissues and extensions of the patents; that that deed was duly recorded in the Patent Office; that the other commissioner, before referred to, took depositions as to the account, and on October 25, 1880, returned them and his report to the Superior Court of the City and County of San Francisco, which by law had superseded the said district court; that the cause came on for hearing upon White's motion for a final decree on the report, and, the judge who entered the decree of November 22, 1877, being no longer on the bench, the motion was heard and determined by a different judge, who, treating that decree as a nullity, entered an order, on February 4, 1881, against the objection of Thompson, setting aside and vacating all proceedings in the cause subsequent to the filing of the answer, restoring the cause to the calendar for trial, and charging Thompson with all the costs accrued up to the time of the order; that afterward, on February 15, 1881, on the motion of White and against the objection of Thompson, the order of February 4, 1881, was amended so as to declare that the decree of November 22, 1877, and also the conveyance of January 31, 1878, and all proceedings in the action subsequent to the filing of the answer, were vacated and set aside, and the cause restored to the calendar for trial, and that Thompson should be charged with all the costs of the suit; that on April 5, 1881, Thompson appealed to the Supreme Court of California from the action of the superior court in its orders of February 4 and 15, 1881, and the appeal was undetermined and still pending; that at the time of the grievances mentioned in the bill in this suit Thompson was, and still is, the owner of and entitled to one-fourth of the inventions and patent-rights mentioned in the bill, and to make, use, and vend the furnaces; and that every furnace involving the said inventions, made, used, and sold by the defendants, was made, used, and sold under Thompson's said right and by virtue of his authority.

The plaintiff, in August, 1883, put in a replication to that plea. On April 1, 1884, the defendants filed a supplement to their plea, setting forth that on June 15, 1883, the Supreme Court of California sustained the appeal of Thompson, reversed the said orders of the superior court of February 4 and 15, 1881, and remanded the cause to that court for further proceedings not inconsistent with the opinion of said supreme court. (63 Cal., 505.)

On August 11, 1884, the circuit court of the United States, on a hearing on the supplementary plea, overruled it, with leave to the defendants to file an amended plea. On August 25, 1884, they filed a plea setting up that Thompson, at the time of the grievances mentioned in the bill, was and still is the owner of and entitled to one-fourth of the inventions and patent-rights mentioned in the bill, and entitled to make, use, and vend the said furnaces; and that every furnace involving said inventions, made, used, and sold by the defendants, was made, used, and sold under Thompson's said right and by virtue of his authority. To the plea a replication was filed by the plaintiff in September, 1884. On the 29th of April, 1885, the circuit court entered an order overruling the plea, and assigning the defendants to answer the bill.

On May 29, 1885, the defendants put in an answer to the bill, denying that the plaintiff, since September 20, 1876, had been and still was the exclusive owner of the two patents; denying that they had, without right manufactured, used, and sold furnaces covered by said patents; denying that they had infringed upon or violated any rights held by the plaintiff under the patents; and setting up that the defendant Thompson was, and ever since June 13, 1876, had been, the owner of one-fourth of the inventions covered by the patents, and that every furnace manufactured, used, and sold by the defendants, involving the said inventions, was manufactured, used, and sold under the authority and license of Thompeon as owner aforesaid of one-fourth of said inventions. A replication was filed to the answer in June, 1885.

On the 26th of February, 1886, a stipulation signed by the solicitors for the respective parties was filed, headed "Stipulation of Submission and Agreed Facts," wherein it was admitted, on behalf of the defendants, that after June 13, 1876, and before November 22, 1877, the defendants made and sold more than four furnaces, involving devices and inventions described in and covered by the two patents in question, and that the said making and selling were done at the instance and by the direction of the defendant Thompson, "who asserts that he had authority so to do under the contract, decree, and deed hereinafter mentioned." The stipulation then sets out the agreement of February 13, 1875, between White and Thompson; the complaint of Thompson against White, filed August 31, 1876, in the suit in the State court; the answer of White to that complaint; the decree of November 22, 1877; the deed of January 31, 1878; the orders of February 4 and 15, 1881, made in the State court; the bill of exceptions for a second appeal to the Supreme Court of California, (which contains an order made by the Supe-

rior Court of the City and County of San Francisco, on August 26, 1884, ordering judgment in favor of Thompson against White, and that White convey to Thompson a one-fourth interest in the patents, and a corresponding one-fourth interest in all patents and patentable improvements on said inventions made by White prior to June 13, 1876, upon the delivery by Thompson to White of the notes mentioned in the complaint in the suit in the State court, and the payment by Thompson to White of $4,000;) the report of the Commissioner in the suit of Thompson against White as to profits and damages, and copies of the two patents. By the stipulation it was admitted by the defendants that nothing had been paid by Thompson to White under the decree of August 26, 1884; and it was further agreed that the cause should be brought on for hearing upon the pleadings therein, and in accordance with the terms of the stipulation.

The cause having been heard by the Circuit Court of the United States for the Northern District of California, to which it had been transferred, that court entered a decree on October 10, 1887, that the bill be "dismissed for want of jurisdiction." From that decree the plaintiff appealed to this Court. He having since died, his administrator has been substituted as appellant.

We are of opinion that the decree of the circuit court must be reversed. That decree was that the bill of complaint be dismissed for want of jurisdiction. The jurisdiction is clear on the face of the bill. The case stated by the bill arises on the patents. There is no suggestion in the bill that there was ever any contract or agreement, or attempt to make one, between the plaintiff and the defendant Thompson, or that either the plaintiff or the defendants claim anything under any contract. The averment in the bill that the defendants have made, used, and sold machines containing the patented inventions without the license of the plaintiff and without any right so to do, cannot be regarded as raising any question on any alleged license or contract.

The circuit court did not decide the case upon the facts contained in the stipulation, nor did it adjudicate upon the legal effect of those facts. It did not hold that those facts were facts in the case, and then dismiss the bill because the existence of those facts as facts removed the case from the cognizance of the court. It appears to have dismissed the bill on the simple ground that the defendants set up a contract of license from White. The bill being purely a bill for infringement, founded upon patents, what was set up by the defendants was set up as a defense and as showing the lawful right in them to do what they had done, and as a ground for the dismissal of the bill because they had not infringed the patents, although they had made and sold more than four furnaces involving the inventions covered by the patents. The decree was not one upon the facts of the case, but was simply a decree that the court had no jurisdiction to try the case. The subject-matter of the action, as set forth in the bill, gave the court jurisdiction, and exclusive jurisdiction, to try it. All of the parties to the suit were citizens of California, and, if jurisdiction did not exist under the patent laws, it did not exist at all.

Reliance is placed by the defendants upon the cases of *Wilson* v. *Sandford*, (10 How., 101;) *Hartell* v. *Tilghman*, (99 U. S., 547,) and *Albright* v. *Teas*, (106 U. S., 613; 1 Sup. Ct. Rep., 550.)

In *Hartell* v. *Tilghman*, *supra*, the head-note of the report is that—

> a suit between citizens of the same State cannot be sustained in the circuit court, as arising under the patent laws of the United States, when the defendant admits the validity and his use of the plaintiff's Letters Patent, and a subsisting contract is shown governing the rights of the parties in the use of the invention.

But, in the case now before the Court, the circuit court did not find that there was a subsisting, valid contract governing the rights of the defendants in the use of the invention. The circuit court found nothing as to the existence or validity of the contract, decree, or deed mentioned in the stipulation. The stipulation provides that, at the hearing, the contract, complaint, answer, decree, and deed, set forth in the stipulation, may be offered in evidence, subject to such objections as might be urged against the originals thereof. The stipulation further states that the defendants do not admit that anything is due to the plaintiff from Thompson, and that they do admit that nothing had been paid by Thompson to the plaintiff under the decree of the State court of August 26, 1884, and since the making thereof. All these matters and questions ought to have been adjudicated by the circuit court before it could find ground to determine whether or not it should dismiss the bill. Until it had so adjudicated those questions, the decision in the case of *Hartell* v. *Tilghman* could not apply.

In that case, a reference to the bill, in the records of this Court, as filed in the circuit court November 2, 1874, shows that Tilghman, in addition to setting out his patent, stated that it had been his practice to put up such fixtures as were required to work his patented invention at the premises of the parties desiring to obtain a license, and then to demonstrate its practicability and instruct the parties in its use, with the previous understanding, however, that, if successful and satisfactory, the parties should then repay the expenses incurred by him, and execute a regular form of license contract adopted by him; that a copy of the form of license adopted by Tilghman at the time was annexed to his bill, and it is there found; that about midsummer, 1873, one of the defendants applied to his agent to obtain a license to use the patented invention; that the nature of the license and agreement issued by the plaintiff, the mode of accounting and of changing the license rate, was explained to him, and he then agreed to execute a license and agreement accordingly; that, on the faith of that agreement, machinery was supplied and erected by Tilghman at the works of the defendants, and a demand was then made by Tilghman's agent for the repayment of the cost of the machinery and for the execution of the regular license and agreement; that, after much delay, the cost of the machinery was repaid to Tilghman, but the defendants, on April 25, 1874, positively refused to execute the license and agreement, being the same issued to others in the same business; that the defendants were then served with notice to desist from using the patent process; that several monthly payments of royalty had previously been received from the defendants on

the faith of their promise to execute a regular license and agreement; that, since their refusal so to do, the defendants had continued to send monthly reports of work done and checks therefor to the agent of Tilghman, as if in payment under a license, but such checks were returned to them, as they had no authority to use said process; that the right had been reserved to Tilghman and his agents, in all licenses executed by him, to visit and inspect machines operating his said process; and that, on the 26th of June, 1884, his agents formally applied for and were refused admission at both factories of the defendants, the foreman in each case asserting the express directions of the defendant Hartell not to admit either of them. One of the interrogatories put in the bill was whether a license was not tendered to the defendants to execute, and whether they had not refused to execute it. The rest of the matters in the bill were in the usual form of a bill for the infringement of a patent.

Thus, in that case, the plaintiff showed distinctly in his bill that he had made an agreement with the defendants, and under it had supplied them with machinery; that they had used such machinery and paid him royalty for its use, and had continued, after they refused to execute a regular license and agreement, to send reports of work done and checks in payment therefor, as if in payment under a license; and that they had violated a right claimed by the plaintiff and his agents to visit and inspect machines operating his process. Those allegations amounted substantially to saying that what the defendants had done they claimed to have done rightfully, under an agreement with the plaintiff. That is a very different case from the one stated in the bill in the present suit.

In the opinion in *Hartell* v. *Tilghman*, it is stated that the plaintiff in that suit set out in the bill what the Court understood to be a contract with the defendants for the use by the latter of his invention; that he declared that the defendants had paid him a considerable sum for the machines necessary in the use of the invention, and also the royalty which he asked, for several months, for the use of the process secured by the patent; and that he alleged that afterward the defendants refused to do certain other things which he charged to have been a part of the contract, and thereupon he forbade them further to use his patent process and then charged them as infringers. The circuit court had decided in favor of the plaintiff, and this Court reversed the decree, with directions to dismiss the bill without prejudice. That was done by this Court in view of the averments of the bill, and on a consideration of the evidence in the case, as to the verbal agreement made between the parties, and the transactions between them which took place under it.

The case of *Wilson* v. *Sandford* (10 How., 99) is cited by the Court in *Hartell* v. *Tilghman*. In that case the bill was filed to set aside a contract which the plaintiff had made with the defendants for the use of machines under a patent belonging to the plaintiff, and to restrain the use of them, as infringements, on the ground that the contract had been forfeited by the refusal of the defendants to comply with its conditions.

The case of *Albright* v. *Teas* (106 U. S., 613; 1 Sup. Ct. Rep., 550) was the case of a bill, where the parties were citizens of the same State, brought in a court of that State for moneys alleged to be due under a contract whereby certain patents granted to the plaintiff were transferred to the defendant. The bill prayed for an accounting of the amounts due the plaintiff for royalties under the contract, and for a decree therefor. The case was removed into the circuit court of the United States, but that court held, on final hearing, that it had no jurisdiction, because the case did not arise under any law of the United States, and remanded the case to the State court. This Court affirmed the decree, citing as authority *Wilson* v. *Sandford* and *Hartell* v. *Tilghman*.

In *Manufacturing Co.* v. *Hyatt* (125 U. S., 46; 8 Sup. Ct. Rep., 756) the cases above referred to were reviewed, and it was stated that it had been decided in those cases that a bill in equity in the circuit court of the United States, by the owner of a patent, to enforce a contract for the use thereof, or to set aside such a contract because the defendant had not complied with its terms, was not a case arising under the patent laws; and it was said that the bill in *Hartell* v. *Tilghman* alleged that the defendants had broken a contract by which they had agreed to pay the plaintiff a certain royalty for the use of his invention, and to take a license from him, and thereupon he forbade them to use it, and they disregarded the prohibition. The same view was taken of *Albright* v. *Teas*.

The case of *Marsh* v. *Nichols* (140 U. S., 344; 11 Sup. Ct. Rep., 798) is to the same purport.

We are entirely satisfied that the circuit court ought not to have dismissed the bill in this case for want of jurisdiction, but ought to have proceeded to hear it upon the merits, and the proofs put in; and the decree is reversed, and the cause remanded to that court, with a direction to hear it upon the merits.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Modification of Austro-Hungarian Trade-Mark Law.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 10, 1892.

This Office has been officially advised that on the 10th of June, 1891, the Austro-Hungarian Department of Commerce issued a decree, No. 23,208, to the following effect:

"Marks of subjects of Sweden and Norway, as well as (citizens) of the United States of North America, are, by reason of the special conditions of the Trade-Mark Conventions of May 10, 1890, and of November 25, 1871, admitted to registration even when they only consist of names, firms, and other words, if proof is produced that the same are registered in the home country."

W. E. SIMONDS,
Commissioner.

Changes in Classification.

(ORDER No. 702.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 10, 1892.

The following classes and sub-classes are established in Division III:

Class 205. Metal-Drawing:
1. Bars.
2. Tubes.
3. Wire—
4. Reels.
5. Draw-plates.
6. Roller-dies.
7. Lubricants.

Class 206. Metal-Welding:
1. Welding.
Ingots and piles—
2. Bar,
3. Beam,
4. Plate,
5. Rail,
6. Tube,
7. Fluxes.

Class 207. Shaping Fluid Metal:
1. Shaping.
Shaping, by dies—
2. Bars and plates.
3. Tubes—
4. Compound,
Tubes—
5. Curved.
6. Covering wire.
7. Shaping, by rolls.
8. Granulating.

In Class 75. Metallurgy:
159. Furnaces, forge—
160. Tuyeres.
161. Crucibles.

The following sub-classes are abolished in Division III:

In Class 78. Metal-Forging:
17. Compositions.
4. Forges.
20. Forge-tuyeres.

In Class 80. Metal-Rolling:
12. Compound plates and bars.
4. Piles and fagots.

The title of sub class 5, Forging and Welding, Class 78, Metal-Forging, is changed to "Forging."

Sub-class 15, Rods for Wire, Class 134, Metal Tubing and Wire, is hereby transferred to Class 80, Metal-Rolling, and sub-class 8, Wire, Pointing, Class 134, is transferred to Class 78, Metal-Forging.

Class 78, Metal-Forging, and Class 80, Metal-Rolling, are transferred from Division III to Division XIII.

Class 81, Metal-Working Tools, is hereby transferred from Division XIII to Division XIV.

W. E. SIMONDS,
Commissioner.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

LABELS.

6,545.—Title: "HOUSEKEEPER'S GINGHAM APRONS." (For aprons.) *Hope Mills Manufacturing Company*, Fayetteville, N. C. Application filed May 12, 1892.

DISCLAIMER.

466,580.—*Frank Getz Slemmer*, Marydell, Md. IMPROVEMENT IN SOLDERING-MACHINES. Patent dated January 5, 1892. Disclaimer filed June 11, 1892, by the patentee.

Enters his disclaimer to "the invention of a hinged back plate, and amends the claims by striking out the word 'hinged' in each claim, inserting in place thereof in claim 1 the word *secured*."

Issue of June 14, 1892.

Patents	429—No. 476,768 to No. 477,196, inclusive.
Designs	3—No. 21,620 to No. 21,622, inclusive.
Trade-Marks	33—No. 21,280 to No. 21,312, inclusive.
Label	1—No. 6,545.
Reissues	None.
Total issue	466

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nevada	1	.....
Arizona Territory	.....	.....	New Hampshire	3	.....
Arkansas	2	.....	New Jersey	34	1
California	10	1	New Mexico Territ'y	.....	.....
Colorado	3	.....	New York	88	6
Connecticut	10	.....	North Carolina	.....	1
Delaware	1	.....	North Dakota	1	.....
District of Columbia	5	.....	Ohio	21	2
Florida	1	.....	Oregon	.....	.....
Georgia	1	.....	Pennsylvania	28	3
Idaho	.....	.....	Rhode Island	3	.....
Illinois	43	3	South Carolina	.....	.....
Indian Territory	.....	.....	South Dakota	.....	.....
Indiana	11	.....	Tennessee	3	1
Iowa	6	.....	Texas	11	.....
Kansas	3	.....	Utah Territory	5	.....
Kentucky	3	1	Vermont	2	.....
Louisiana	3	.....	Virginia	5	.....
Maine	1	.....	Washington	4	.....
Maryland	10	2	West Virginia	.....	.....
Massachusetts	24	.....	Wisconsin	15	.....
Michigan	9	.....	Wyoming	.....	.....
Minnesota	6	2	U. S. Army	.....	.....
Mississippi	2	.....	U. S. Navy	.....	.....
Missouri	13	3			
Montana	.....	.....	Total to citizens of the United States	396	26
Nebraska	4	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	2	.....	Netherlands	.....	.....
Barbadoes	.....	.....	Newfoundland	.....	.....
Belgium	1	.....	New South Wales	.....	1
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	1	.....
Canada	3	1	Queensland	.....	.....
Chile, Republic of	.....	.....	Roumania	.....	.....
Cuba	.....	.....	Russia	.....	.....
Denmark	.....	.....	Scotland	1	.....
Egypt	.....	.....	South Australia	.....	.....
Ecuador	.....	.....	Spain	.....	.....
England	15	3	Sweden	.....	.....
France	4	3	Switzerland	1	.....
Germany	8	...	Victoria	.....	.....
Guatemala	.....	.....	West Australia	.....	.....
Italy	.....	.....			
Ireland	.....	.....	Total to citizens of foreign countries	36	8
Japan	.....	.....			

APPLICATIONS UNDER EXAMINATION.

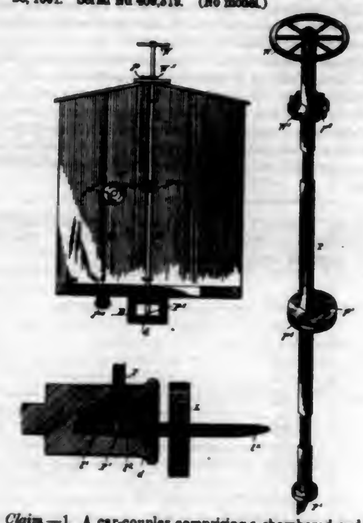
Condition at Close of Business June 7, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Apr. 25	June 3	214
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Apr. 22	June 3	81
7	Harvesters, Games and Toys	Apr. 18	May 31	236
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Apr. 15	May 31	142
8	Furniture, Toilet, Umbrellas and Canes, etc.	Apr. 7	May 26	267
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Apr. 11	May 23	189
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Apr. 8	May 23	258
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Apr. 11	May 2	248
	Between two and three months in arrears.			
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Apr. 4	June 1	218
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Mar. 14	May 28	256
17	Paper-Manufactures and Printing.	Apr. 2	May 27	196
21	Textiles, etc.	Mar. 14	May 27	209
24	Sewing-Machines and Apparel	Mar. 10	May 27	99
10	Carriages and Wagons and Railway-Cars	Mar. 21	May 21	604
18	Steam-Engineering, etc	Mar. 9	May 19	289
2	Farm Stock, Products, etc	Apr. 1	May 18	273
22	Fire-Arms, Navigation, Signals, etc.	Mar. 28	May 17	223
9	Hydraulics, Fire-Extinguishers, etc.	Mar 21	May 16	364
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Mar. 14	May 16	223
23	Instruments of Precision, Acoustics, Optics, etc.	Mar. 28	May 12	270
12	Mechanical Engineering, Store-Service, etc.	Apr. 1	May 4	224
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Mar. 26	Apr. 30	306
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Mar. 17	Apr. 30	333
1	Tillage and Fences	Mar. 22	Apr. 15	366
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Feb. 24	May 13	314
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Mar. 1	May 3	371
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Mar. 3	May 2	256
4	Civil Engineering, etc.	Mar. 4	Apr. 29	460
19	Stoves and Furnaces	Feb. 19	Mar. 22	382
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Jan. 28	May 11	442
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Jan. 14	Mar. 24	431
	Between five and six months in arrears.			
26	Electricity, Generation, Distribution, etc.	Jan. 2	May 17	333
	Total number of applications awaiting action			9,075
	Under one month in arrears.			
	Designs	May 31	May 31	44
	Trade-Marks	June 4	June 6	16

PATENTS

GRANTED JUNE 14, 1892.

476,768. CAR-COUPLING. JOHN AGUFF, Kilgore, Tex. Filed Oct. 20, 1891. Serial No. 409,319. (No model.)



Claim.—1. A car-coupler comprising a chambered and outwardly-flaring draw-head, a coupling-pin movable vertically in said draw-head and having at its lower end an inclined bearing-face and a collar P' immediately above the same, and a coupling-link constructed and adapted to lift the coupling-pin on entering the draw-head, said link having an opening for the reception of the pin, as and for the purpose set forth.

2. In a link-and-pin coupler, a revoluble and vertically-movable coupling-pin and a connection between the pin and the car-brakes for operating the latter, for the purpose set forth.

3. In a link and-pin coupler, a revoluble and vertically-movable coupling-pin, a connection between the pin and the car-brakes for operating the latter, and a locking device to lock the pin against rotation, for the purpose set forth.

4. The combination, with the brake shaft or rod of a car, of a link-and-pin coupler having a revoluble and vertically-movable coupling-pin, and actuating devices controlled by the coupling-pin and imparting a rotary motion to the brake-shaft, for the purpose set forth.

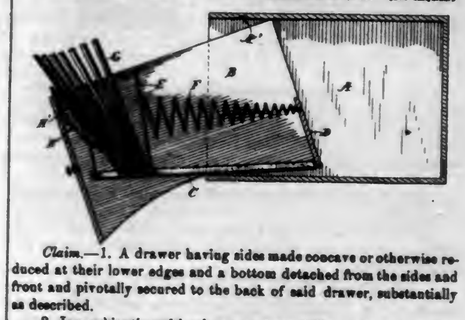
5. The combination, with the brake-shaft of a car, of a link-and-pin coupler having a coupling-pin extending above the car-roof, said pin having a rotary as well as a longitudinal motion in its bearings, actuating devices controlled by the coupling-pin and imparting a rotary motion to the brake-shaft, and a locking device to lock the pin against rotation, for the purpose set forth.

476,769. NUT-LOCK. WILLIAM J. ALLISON, Chicago, Ill. Filed Mar. 30, 1892. Serial No. 427,024. (No model.)



Claim.—In a nut-lock, the locking-plate F, having a portion turned upward to engage with the nut and a portion cut from its circumference to make a spring-metal pawl H, which has its free end curved under the edge of the locking-plate and adapted to engage with teeth on the circumference of the toothed washer and sufficiently long to be thrown back and locked on the edge of the locking-plate, the washer-plate C, having teeth on its periphery adapted to engage with the free end of the locking-pawl H, suitable mechanisms for locking the toothed washer to prevent it from rotating on the bolt, and a bolt and nut, as specified and shown.

476,770. DRAWER FOR FURNITURE. CHARLES O. ALLEN, Grand Rapids, Mich. Filed Feb. 16, 1892. Serial No. 421,709. (No model.)



Claim.—1. A drawer having sides made concave or otherwise reduced at their lower edges and a bottom detached from the sides and front and pivotally secured to the back of said drawer, substantially as described.

2. In combination with a drawer, substantially as described, a case, as A, to receive the same, having depressions, as A', to engage the rear corners of said drawer, substantially as described.

3. In combination with a drawer having sides made concave or otherwise reduced at their edges and a bottom detached from the sides and front and pivotally secured to the back, a support pivoted to the front of the bottom, engaging the front of the drawer and movable thereon, substantially as described.

4. In combination with a drawer having a bottom detached and vertically movable at the front, a spring pivoted to said bottom, said spring engaging the front and movable thereon, a movable septum in said drawer, and a spring engaging said septum and the back of the drawer, substantially as described.

5. In combination with a drawer having a bottom movable at the front, a support for the contents of said drawer, said support pivoted at its lower end to the said drawer-bottom, engaging the drawer-front and movable thereon, said support also having a spring, as H, engaging said contents near the bottom, substantially as described.

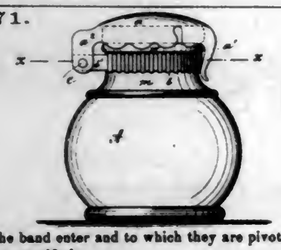
6. The combination of a drawer having a bottom movable at its front, a support pivoted at its lower end to said bottom, said support engaging the drawer-front and movable thereon and provided with a spring engaging the contents of said drawer near the bottom, a movable septum engaging the rear of said contents, and a spring pressing said septum forward, substantially as described.

7. The combination of a case, as A, and a drawer having sides with concave lower edges resting upon the bottom of said case, and a bottom to said drawer, resting upon the bottom of said case at the front and pivotally secured to the rear of said drawer, substantially as described.

476,771. CAP FOR MUSTARD-BOTTLES. MAX ARM, New York, N. Y. Filed Feb. 20, 1892. Serial No. 422,185. (No model.)

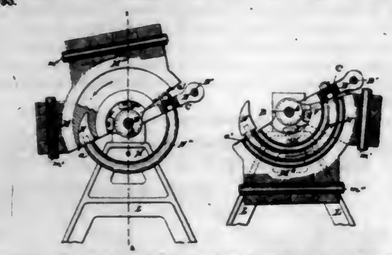
Claim.—The combination of a bottle with an elastic corrugated-metal band surrounding its neck and having disconnected ends, and with a lid having a pair of downwardly-depending lugs between which

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the ends of the band enter and to which they are pivotally attached, substantially as specified.

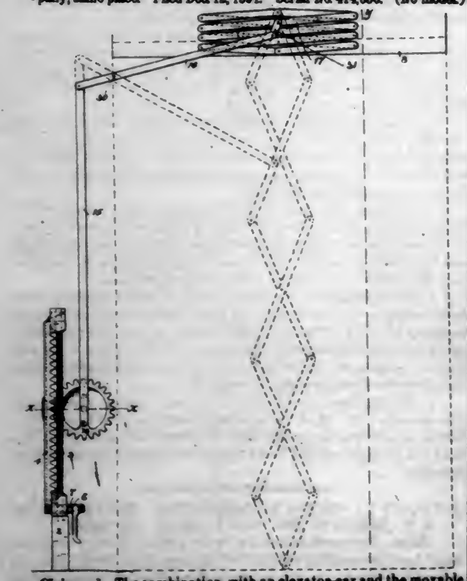
476,772. APPARATUS FOR MOLDING CURVED HOLLOW GLASS ARTICLES. LÉON APPERT, Paris, France. Filed Dec. 28, 1891. Serial No. 416,317. (No model.) Patented in France Aug. 29, 1889, No. 200,473; in England Feb. 3, 1890, No. 1,903, and in Germany Oct. 24, 1890, No. 57,693.



Claim.—1. In apparatus for the purpose specified, the combination of a curved mold mounted so as to be capable of rotating on its axis and a core carried detachably by a curved carrier mounted on the same axis as the hub and capable of rotation independently thereof, substantially as described.

2. The combination of the curved mold divided transversely into two parts, each part being divided lengthwise, so that it can be opened independently of the other part, said mold being rotatable as a whole on its axis, and a core mounted concentrically with reference to said mold and rotatable independently thereof, substantially as and for the purpose specified.

476,773. ELEVATOR-DOOR-OPERATING DEVICE. GEORGE W. ARCHER, Rochester, N. Y., assignor to the Archer Manufacturing Company, same place. Filed Dec. 12, 1891. Serial No. 414,856. (No model.)



Claim.—1. The combination, with an elevator-car and the movable rack thereon, of a door leading into the elevator-well, a gear connected therewith, with which the rack engages and adapted by its rotation to operate said door, and a stationary projection in the well co-operating with the rack and retaining it in engagement with the gear while the car is in proximity to the door, substantially as described.

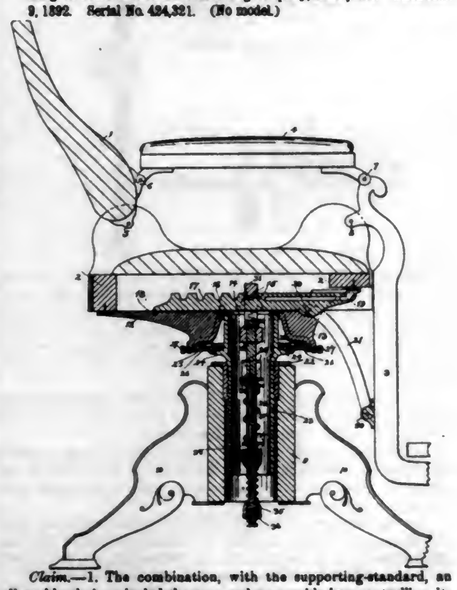
2. The combination, with an elevator-car and the rack pivoted thereon, of a door leading into the well, a gear connected thereto, with which the rack engages and adapted by its rotation to operate said door, and a stationary lug in the well co-operating with the rack and retaining it in engagement with the gear while the car is in proximity to the door, substantially as described.

3. The combination, with the door leading into the elevator-well, a gear connected thereto and adapted by its rotation to operate said door, of an elevator-car, a movable rack thereon, a spring for moving the rack out of engagement with the gear, and a stationary projection in the well co-operating with the rack and retaining it in engagement with the gear while the car is in proximity to the door, substantially as described.

4. The combination, with an elevator-car having the movable rack thereon, of a door leading into the well, the plate secured in the well, having the lug at one side, the gear connected to the door and operating by its rotation to open and close it, and the pivot-pin securing the gear to the plate, substantially as described.

5. In a door-operating device for elevator-wells, the combination, with the door and operating device therefor located in the well, of a car and a device on the car co-operating with the one in the well for actuating the door, capable of being moved out of co-operative position, and a stationary projection or retaining device engaging the device on the car and maintaining the two devices in connection when once engaged until the door has been opened and closed, substantially as described.

476,774. BARBER'S CHAIR. GEORGE W. ARCHER, Rochester, N. Y., assignor to the Archer Manufacturing Company, same place. Filed Mar. 9, 1892. Serial No. 424,321. (No model.)



Claim.—1. The combination, with the supporting-standard, an adjustable chair swiveled thereon, and a movable bar controlling its adjustment, of a movable locking projection on the chair engaging said bar and a vertically-movable rod on the standard swiveled to the locking projection, substantially as described.

2. The combination, with the supporting-standard, an adjustable chair swiveled thereon, and a movable bar controlling its adjustment, of a movable locking projection on the chair engaging said bar and also the standard for preventing movement on the latter, and a vertically-movable rod on the standard swiveled to the locking projection, substantially as described.

3. The combination, with the supporting-standard, an adjustable chair swiveled thereon, and a movable bar controlling its adjustment, of the movable locking projection on the chair engaging said bar, a vertically-movable rod on the standard connected to the projection through a swivel connection, and a foot-lever connected to said rod, substantially as described.

4. The combination, with the supporting-standard, an adjustable chair swiveled thereon, and a movable bar controlling its adjustment, of a movable locking projection on the chair engaging said bar, a movable rod on the standard operating said projection, a base or support in which the standard is vertically adjustable, a lever pivoted on said base, and an extensible connection, substantially as described, between said lever and rod, whereby the chair may be adjusted and moved vertically and the locking device operated by means of the lever, as set forth.

5. The combination, with the supporting-standard, an adjustable chair swiveled thereon, and a movable bar controlling its adjustment, of a movable locking projection on the chair engaging said bar, and also the standard, for preventing movement on the latter, a movable rod on the standard operating said projection, a base or support in which the standard is vertically adjustable, a lever pivoted on said base, and an extensible connection, substantially as described, between the rod and lever, whereby the chair may be turned, adjusted, and moved vertically, and the locking device operated by the lever, as set forth.

6. The combination, with the stationary base, the standard vertically adjustable thereon, and the chair swiveled on the standard, of a locking device for preventing the movement of the chair on the standard, an operating-lever on the base, and a swiveled extensible connection, substantially as described, between the lever and locking device, whereby the chair may be turned, the standard adjusted vertically, and the locking device operated by means of the lever, as set forth.

7. The combination, with the standard, a chair swiveled thereon, of a vertically-movable projection for locking the chair to the standard, the rod for actuating the projection, a stationary foot-lever for actuating the rod, and a swivel connection between the lever and locking projection, whereby the latter may be actuated irrespective of the lateral adjustments of the chair, substantially as described.

8. The combination, with the stationary base, the vertically-adjustable standard, and an adjustable chair mounted thereon, of a locking projection controlling the adjustments of the chair, a foot-lever mounted on the base, and an extensible connection, substantially as described, between the projection and lever, whereby the former may be actuated by the latter irrespective of the vertical adjustment of the standard, as set forth.

9. The combination, with the stationary base, the vertically-adjustable standard, and a chair swiveled on the standard, of a locking projection for securing the chair to the standard, a foot-lever mounted on the base, and an extensible connection, substantially as described, between the foot-lever and locking projection, whereby the latter may be actuated by the former irrespective of the vertical adjustment of the standard, as set forth.

10. The combination, with the stationary base, the vertically-adjustable standard, and an adjustable chair swiveled thereon, of a securing device controlling the adjustment and rotary movement of the chair, a foot-lever mounted on the base, and an extensible connection, substantially as described, between the foot-lever and securing device, whereby the latter may be actuated by the former irrespective of the vertical adjustment of the standard, as set forth.

11. The combination, with a standard, an adjustable chair swiveled thereon, and a movable rack controlling its movement, of the yoke engaging the bar, vertically movable on the chair, the rod swiveled to the yoke and prevented from rotation on the standard, the spring engaging the rod and standard for holding the yoke in engagement, and a foot-lever connected to the rod for actuating it, substantially as described.

12. The combination, with the stationary base having the nut, the threaded standard operating therein, and the chair mounted on the standard, of a locking device for controlling the movements of the chair, a foot-lever on the base, and connections between it and the locking device, embodying a nut and screw, having the pitch of the thread on the standard, substantially as described.

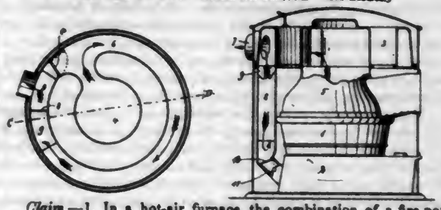
13. The combination, with the stationary base having the nut, the threaded standard operating therein, and the adjustable chair mounted on the standard, having the movable bar, of the yoke, the threaded rod swiveled to the yoke, the slot-and-pin connection between the standard and rod, the spring for actuating the yoke, the nut on the rod, and the lever to which said nut is connected, substantially as described.

14. The combination, with the stationary base having the nut, the threaded standard operating therein, and the adjustable chair swiveled on the standard, having the movable bar, of the yoke engaging the bar and the standard, the threaded rod swiveled to the yoke, the slot-and-pin connection between the rod and standard, the spring for actuating the yoke, the nut on the rod, and the lever to which said nut is connected, substantially as described.

15. The combination, with the hollow standard having the perforated ring at its upper end, of the seat-frame, the spider secured thereto having the annular portion 14, the adjustable chair-back and depending bars connected by the arms, the sliding rack-bar connected to the depending bars, the yoke 31, having the arm 32, the rod 29, swiveled to the yoke, and a foot-lever for operating it, substantially as described.

16. The combination, with the base, the standard screwing therein, having the ring, of the seat-frame, the spider having the annular portion 14 and lugs 15 thereon, the rack-bar 17, the adjustable chair connected thereto, the threaded rod swiveled to the yoke, the spring for retracting it, the nut screwing on the rod, the lever pivoted on the base, and the link pivoted to the lever and nut, substantially as described.

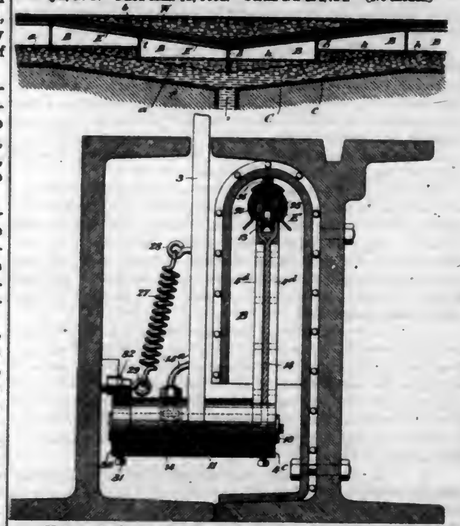
476,775. HOT-AIR FURNACE. HENRY D. BABCOCK, Leonardsville, N. Y. Filed May 14, 1891. Serial No. 392,694. (No model.)



Claim.—1. In a hot-air furnace, the combination of a fire pot, ash-pit, furnace-dome, circular radiator, a reverse draft-flue secured to the radiator and extending downward inside of furnace-casing, the partition in the reverse flue extending from the top of radiator nearly to bottom of reverse flue, and dust-flue connecting lower end of reverse flue with ash-pit, substantially as set forth.

2. In a hot-air furnace, the combination of a fire-pot, ash-pit, furnace-dome, and circular radiator having an opening from the dome to the radiator and an exit-opening, of a reverse draft-flue secured to the radiator and extending downward therefrom between the inlet and the exit to the radiator, a partition in the reverse flue extending from near the bottom thereof up through and cutting off the flue of the radiator, and a damper on the opposite side of the exit-opening from the partition and between the inlet and exit openings of the radiator, substantially as set forth.

476,776. ELECTRIC RAILWAY. RICHARD W. BARKLEY, Brooklyn, N. Y. Filed Mar. 12, 1892. Serial No. 424,724. (No model.)



Claim.—1. In an electric railway, the combination of a diving-bell, an electric conductor passing therethrough, a contact-piece, an insulated conductor leading from said piece, and means for moving said piece reciprocatingly into and out of said diving-bell, substantially as described.

2. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a contact-piece for coaction with said conductor, an insulated conductor leading from said piece, and means for moving said contact-piece reciprocatingly into and out of said diving-bells, substantially as described.

3. In an electric railway, the combination of a series of diving-bells, an electric conductor passing through the same, a contact-piece, a movable carrier supporting the same, an insulated conductor leading from said piece, and means for moving said carrier reciprocatingly, whereby the contact-piece is moved into and out of the diving-bells, substantially as described.

4. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a contact-piece, a pivoted carrier supporting the same, an insulated conductor leading from said piece, and means for rocking said carrier, substantially as described.

5. In an electric railway, the combination of a series of diving-bells, an electric conductor passing through the same, a contact-piece, a movable carrier supporting the same, an insulated conductor leading from said piece, a spring for moving said carrier upwardly, and devices for moving the same downwardly, substantially as described.

6. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a contact-piece, a pivoted carrier supporting the same, an insulated conductor leading from said piece, a spring for moving said carrier upwardly, and mechanism for moving it downwardly, substantially as described.

7. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a contact-piece, a pivoted carrier supporting said piece, an insulated conductor leading from said piece, a spring for moving said carrier upwardly, an arm on said carrier, and a fixed depressor in the path of said arm adjacent the walls separating the diving-bells, whereby said carrier is oscillated and the contact-piece passes said separating walls, substantially as described.

8. In an electric railway, the combination of a series of diving-bells, an electric conductor passing through the same, a contact-piece, a pivoted carrier for said piece, an insulated conductor leading from said piece, arms on said carrier, a fixed depressor near the walls separating the diving-bells, and a spring for moving the said carrier upwardly, whereby said carrier is rocked and the contact-piece passes said walls, substantially as described.

9. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a contact-piece, a movable carrier supporting the same, an insulated conductor leading from said piece, inclined guides for centering said carrier as it returns to its upper position, and means for moving said carrier, substantially as described.

10. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a contact-piece, a pivoted carrier supporting the same, inclined guides for centering said carrier as it rises, and means for rocking said carrier, substantially as described.

11. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a support depending from a car, a carrier pivotally connected with said support, a contact-piece carried by said carrier for coaction with said conductor, a two-section insulated conductor leading from said piece to the motor, and means for rocking said carrier, whereby contact between the two sections of the conductor is broken when the carrier is rocked from its upper position, substantially as described.

12. In an electric railway, the combination of a series of diving-bells, an electric conductor passing through the same, a support depending from a car and having a hollow bearing, a carrier journaled in said bearing, a contact-piece supported by said carrier, a two-section insulated conductor leading to the motor from said piece, and means for rocking said carrier, whereby contact between said two sections is broken when the carrier is rocked from its upper position, substantially as described.

13. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a support depending from a car and having an insulated contact-piece thereon, an insulated conductor connected to said piece, a contact-carrier pivoted to said support and having a trolley and an insulated contact-piece for coaction with the first-named contact-piece when in normal position, and means for rocking said carrier, whereby said pieces are separated, substantially as described.

14. In an electric railway, the combination of a series of diving-bells, an electric conductor passing therethrough, a support depending from a car and having a hollow bearing, an insulated contact-piece within the said bearing, an insulated conductor connected with said piece, a contact-carrier journaled in said bearing and having an insulated contact-piece normally in contact with said first-named piece, an insulated conductor on said carrier connected with the contact-piece thereon, and means for rocking said carrier, whereby said contact is broken, substantially as described.

15. In an electric railway, the combination of a diving-bell, an electric conductor passing through the same, thimbles insulating the conductor from the bell, and an insulated canopy supported within the diving-bell and supporting the conductor and being separated from the bell and the conductor by an air-space, substantially as described.

16. In an electric railway, the combination of a number of diving-bells having abutting walls, rabbets in said abutting walls forming hand-holes, an electric conductor in each diving-bell passing through the walls of the rabbets and insulated therefrom, means for joining said conductors within the hand-holes, and insulating material surrounding said joint, substantially as described.

17. In an electric railway, the combination of a support having a hollow bearing, an electric conductor leading through the wall of said bearing, a contact-carrier comprising an arm and a shaft, the latter journaled in the said bearing, means controlling said carrier, and an electric conductor within said shaft and arm having one end connected with a contact-piece and the other extending out to the surface of the shaft in contact with the conductor on the bearing, substantially as described.

18. In an electric railway, the combination of a support having a hollow bearing, an electric conductor passing through the wall of said bearing, a shaft journaled therein having a central and radial bores, a contact-carrier arm secured to said shaft at one end and having a fork at the other and having a central forked hole, a trolley-wheel pivoted in said forks, a conductor leading from said wheel through the arm and shaft to and in contact with the conductor on the support or bearing, suitable insulation, and means controlling said shaft and arm, substantially as described.

19. In an electric railway, the combination of a support having a hollow bearing, an electric conductor leading through the wall of said bearing, a shaft journaled in said bearing and having a central and radial bores, a contact-carrier arm having an eye fitting said shaft and having a U-shaped groove in one side extending into the eye, a piece fitting in said U-groove, but not filling the same to the bottom, means securing the same in place, an electric conductor in the hollow of the arm and the bores of the shaft and contacting with the conductor on the support, and means for controlling the arm and shaft, substantially as described.

476,777. COMBINED CORK AND CORKSCREW. MAX BRUST, New Albany, Ind. Filed Nov. 14, 1890. Serial No. 371,424. (No model.)



Claim.—1. The combination of a stem provided with a handle and a stopper and having lugs *k'* at its end, a screw *c*, having a fork, and hooks *i* to engage the lugs *k'*, substantially as described.

2. The combination, in a corkscrew, of a stem provided with a handle and with a stopper connected thereto, and a screw secured detachably to the stem, substantially as and for the purpose set forth.

476,778. AUTOMATIC SACK FILLING AND SEWING MACHINE. JOHN T. BIRD and ARTHUR T. TIDSWELL, Spokane Falls, Wash. Filed Aug. 13, 1891. Serial No. 402,536. (No model.)

Claim.—1. In a machine for filling and sewing sacks, the combination of a sack-holder, a device for closing said sack-holder and the mouth of the sack held thereby, a table, pulling-gears, and a sewing device, substantially as set forth.

2. In a machine for filling and sewing sacks, the combination, with a table and sack-holder, of pulling-gears mounted on said table and adapted to engage the sack-holder, a sewing device supported on the table, lifting-bars adapted to receive the sack-holder after the sewing is completed and the sack released from the holder, and carrier-belts adapted to receive the holder from the lifting-bars and return it to the initial point, substantially as specified.

3. The combination of the constantly-moving belt F with the intermittently-moving floor D and suitable means to intermittently transmit motion from the belt F to the floor D, substantially as specified.

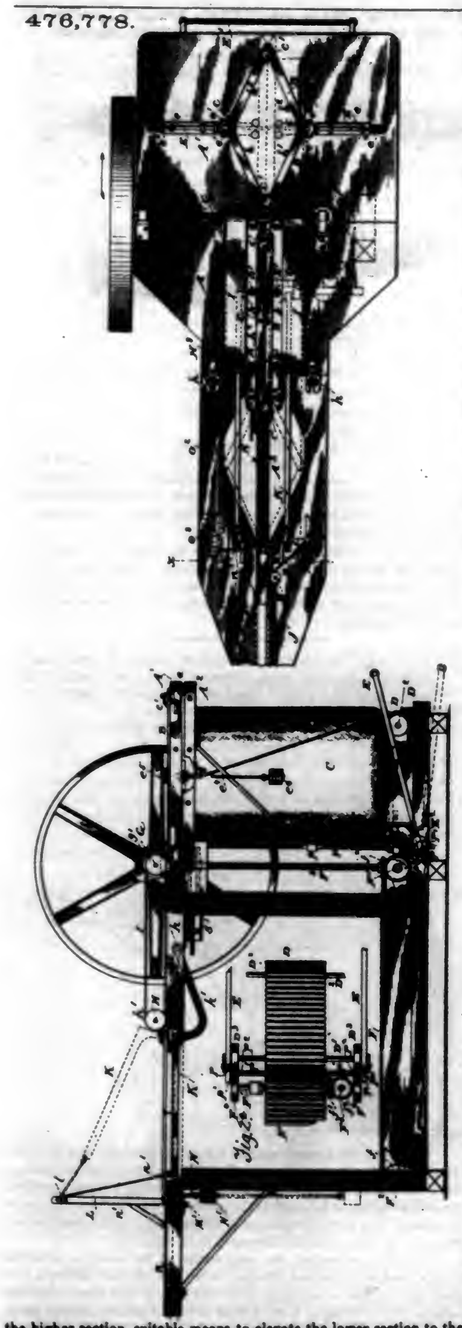
4. The combination, with the sliding bar J and the sack-holder, of the lifting-bars K, a looped rope having branches attached to the ends of the lifting-bars and to the sliding bar, and a weight attached to the looped rope, substantially as specified.

5. A sack-holder consisting of four bars hinged together, and springs at two opposite joints to force the holder open, combined with sliding bars adapted to engage the other two opposite joints of the holder, and means to actuate the bars to close the holder against the force of the springs, substantially as specified.

6. A sack-holder consisting of four bars hinged together and having a rack on two of its sides, forming a straight line when the holder is closed, combined with a spur-gear adapted to engage the rack and move the sack-holder, substantially as specified.

7. A table formed in two sections, one section being hinged to the frame at its outer end and normally lower than the other section, combined with a sack-holder having a rack on its upper face and initially supported on the lower section, a spur-gear mounted in bearings on

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the higher section, suitable means to elevate the lower section to the level of the higher to bring the rack into engagement with the spur-gear, and means to revolve the spur-gear to move the sack-holder, substantially as specified.

476,779. FLOW-BEAM ATTACHMENT. FERDINAND J. BLAHER, Cold Spring, Wis. Filed Jan. 12, 1892. Serial No. 417,872. (No model.)

Claim.—1. The combination of a plow-beam, a casing secured to said beam and provided upon opposite sides with elongated slots, a rod within said casing formed near one end with a disk and having

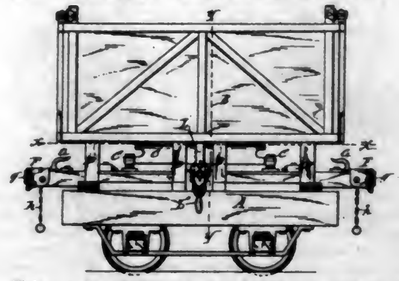
476,779.



its opposite extremities provided with tubular heads at right angles thereto, the extremities of the head at the rear end passing through the elongated slots, and the head at the opposite extremity arranged exteriorly of the end of the casing, a coiled spring surrounding the rod and confined between the disk and the forward end of the casing, and clevises secured to the opposite heads of the rod by bolts passing therethrough, substantially as set forth.

2. The combination of a plow-beam, a casing consisting of two angular sections having their meeting edges at the top and bottom, the forward ends thereof provided with angular abutting flanges, the flange of one being confined in ways extending from the other, and the sides of said sections provided with elongated slots, a rod within the casing formed near one end with a disk and having its opposite extremities provided with tubular heads at right angles thereto, the extremities of the head at the rear end passing through the elongated slots and the head at the opposite extremity arranged exteriorly of the end of the casing, a coiled spring surrounding the rod and confined between the disk and the forward end of the casing, and clevises secured to the opposite heads of the rods by bolts passing therethrough, substantially as set forth.

476,780. DUMPING-CAR. CYRUS W. BRIDGMAN, North Hector, N. Y. Filed Jan. 9, 1892. Serial No. 417,444. (No model.)



Claim.—1. In a dumping-car, the combination, with the truck, of a body-support pivoted upon the central portion of the truck, a stationary support upon the truck farthest from the dumping side of the car, the body mounted on the pivoted support and having its discharging-gate hinged to the top of the body, and a latch for locking said gate hinged to the body and provided with a lever adapted to strike the truck and thereby unlock the gate, as set forth.

2. The combination, with the truck, of a body-support pivoted upon the central portion of the truck, a stationary support upon the truck farthest from the dumping side of the car, the body hinged to the pivoted support, and a lever attached to said support and supporting the body at its dumping side, as set forth.

3. The combination, with the truck, of a body-support pivoted upon the central portion of the truck, a stationary support upon the truck farthest from the dumping side of the car, the body hinged to the pivoted support, the discharge-gate hinged to the top of the body, a latch for locking the gate provided with a lever adapted to strike the truck and unlock the gate, and a lever attached transversely to the pivoted support and supporting the dumping side of the body, substantially as described and shown.

4. In combination with the truck and body pivotally supported thereon, a lever for dumping the body, and an extension of said lever adjustably connected thereto, as set forth.

5. In combination with the truck and body pivotally supported thereon, a lever for dumping the body provided with longitudinal guides, and a lever-extension movably connected to said guides, as set forth and shown.

6. In combination with the truck and body pivotally supported on the central portion of said truck, a stationary body-support on one side of the truck, a lever for dumping the body fulcrumed on the truck and supporting the body at the side opposite to the stationary support, and a lock confining the lever in its body-supporting position on the truck, as set forth.

7. In combination with the truck and body pivotally supported thereon, the lever L, catch *c*, attached to the truck, and the sliding bolt *b*, connected to the lever, substantially as and for the purpose set forth.

8. In combination with the truck and body pivotally supported thereon, the lever L, catch *c*, attached to the truck, the sliding bolt *b*,

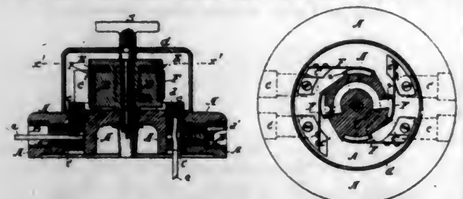
connected to the lever, and the link *b'*, connected to the bolt and adapted to engage the aforesaid catch and retain the bolt in its locked position, substantially as described and shown.

9. In combination with the truck, the central support C, pivoted to the truck, the side support D, mounted rigid on the truck, the body B, hinged to the said central support, and the lever L, rigidly attached to the central support and formed with the oblique upwardly-extended arm L', supporting the body at its dumping side and provided at the opposite end with the slot *a*, the catch *c*, secured to the truck and passing through said slot and provided with an orifice above the lever, the sliding bolt *b*, passing through said orifice, and the link *b'*, connected to said bolt and adapted to embrace the upper end of the aforesaid catch, substantially as described and shown.

10. The combination, with the lever L, of the guide-rods *d d*, attached to opposite sides of said lever, and the extension L'', having the bifurcation *e e*, slotted longitudinally and terminating with perforated ears *d' d'*, receiving through them the aforesaid guide-rods, substantially as described and shown.

11. The combination, with the body B, of the U-shaped bearing I, disposed with its free ends facing the opposite side of the body and having vertical bolt-holes in said ends, the journal *i*, mounted in the aforesaid bearing and formed with shoulders *i' i'* and with leaves *j j*, the bolt *l*, passing through the bolt-holes of the bearing I, and the gate B', attached to the aforesaid leaves, substantially as described and shown.

476,781. ELECTRIC SWITCH. FRANCIS BROADWAX, New York, N. Y. Filed Nov. 3, 1890. Serial No. 370,136. (No model.)



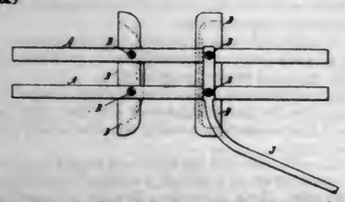
Claim.—1. In a double-pole switch, a rotating cam provided with a series of faces of conducting material—such as metal—and non-conducting material—such as glass—in the form of steps, the contact-plates of each set being placed diametrically opposite each other and connected together by a conductor upon and around which the insulating material of which the cam is formed is molded.

2. In an electric switch, a rotating cam provided with a series of faces of conducting and non-conducting material in the form of steps, the conducting-faces being provided with an insulating-ledge 2, extending beyond and flush with the conducting-plate.

3. In an electric switch, a coupling-piece provided with a plurality of intersecting screw-threaded apertures having an angular relation to each other, combined with a suitable set-screw.

4. In a double-pole switch, a rotating cam provided with a series of faces of conducting material—such as metal—and non-conducting material—such as glass—in the form of steps, the contact-plates of each set being placed diametrically opposite each other and connected together by a conductor of irregular form, upon and around which the insulating material of which the cam is formed is molded.

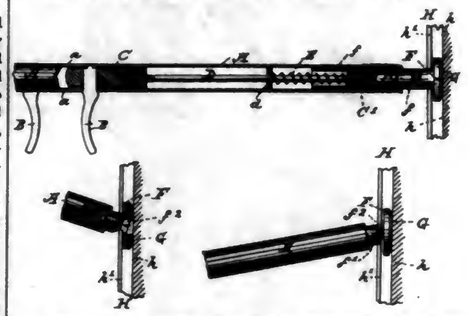
476,782. IMPLEMENT FOR VENEERING LUMBER. WILLIAM E. BROCK, Plainfield, N. J. Filed Apr. 24, 1891. Serial No. 390,343. (No model.)



Claim.—1. An implement for veneering lumber, molding, or the like, consisting of rods A, connected with formers D by means of bolts, said formers having their inner edges adapted to fit the edges of the lumber or other article, substantially as and for the purpose described.

2. An implement for veneering lumber, molding, or the like, consisting of rods A, connected with formers D by means of bolts, said formers having their inner edges adapted to fit the edges of the board or other article and the whole provided with a handle for manipulating the same, substantially as and for the purpose described.

476,788. SHADE ATTACHMENT. EDWARD T. BURROWES, Portland, Me. Filed Dec. 26, 1891. Serial No. 416,160. (No model.)

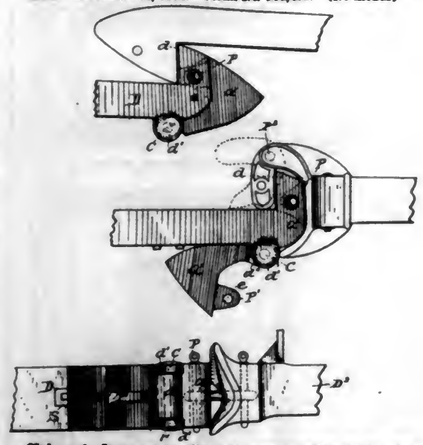


Claim.—1. In frictional shade-holding mechanism, the combination, with the spring-actuated rods, of independently-movable spindles, suitable friction-tips, and a universal joint connecting each of said spindles with its tip.

2. The combination, with the hollow shade-stick and spring-actuated rods therein, of independently-movable hollow spindles fitting within the outer ends of said hollow shade-stick and adapted to receive the outer end of either spring-actuated rod, and friction-tips attached by universal joint to the outer ends of said hollow spindles, substantially for the purpose set forth.

3. The combination, with the hollow shade-stick and spring-actuated rods therein, of independently-movable hollow spindles fitting said hollow shade-stick and adapted to receive the outer end of either spring-actuated rod, and friction-tips attached to the outer ends of said hollow spindles.

476,784. CAR-COUPLING. JOHN M. BURTON, Wichita, Kans., assignor, by mesne assignments, to himself, and George D. Burton, Boston, Mass. Filed Feb. 14, 1891. Serial No. 381,492. (No model.)



Claim.—1. In a car-coupling, the combination of the draw-bar provided with a hooked draw-head, a swinging point pivoted to said draw-head and adapted to be swung in front thereof to form a pointed hooked coupling or to one side thereof to permit the coupling of said draw-head with a twin-jaw coupling, and means for holding said swinging point in either position, substantially as described.

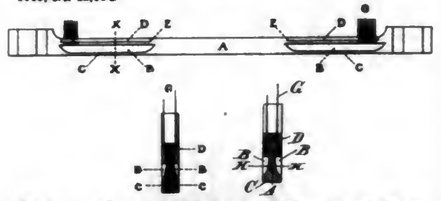
2. In a car-coupling, the combination of the draw bar provided with a hooked draw-head recessed in its front end and having a pin-hole and pin, and a swinging point pivoted to said draw-head and adapted to be swung in front thereof to form a pointed hooked coupling or to one side thereof to permit the coupling of said draw-head with a link, substantially as described.

3. In a car-coupling, the combination of a draw-bar, a hooked draw-head provided with a recess in its front end and a vertical pin passing through said recess, perforated lugs opposite the hooked portion of the draw-head, a swinging point provided with a vertically-arranged and flattened shank pivotally secured between said lugs and a perforated lug adapted to enter the recess in the draw-head and be held therein by the said pin, and the flat spring for yieldingly holding the point when turned in either position, substantially as described.

4. In a car-coupling, the combination of the draw-bar, the draw-head, the pivoted swinging point provided with the vertically-pivoted shank flattened at its sides, and the flat spring fixed to the draw-bar and yieldingly bearing against said pivoted shank, substantially as described.

5. In a car-coupling, the combination of the draw-bar, the draw-head provided at its front end with a recess and the vertical pin-hole, and the pivoted swinging point provided with the perforated lug adapted to enter said recess and be secured therein by means of a pin, substantially as described.

476,785. GILL-FALLER. EDWARD CLARKSON, Bradford, England, assignor of one-half to Edwin Farnell, Woonsocket, R. I. Filed Feb 26, 1891. Serial No. 382,591. (No model.) Patented in England Oct. 12, 1885, No. 12,094.

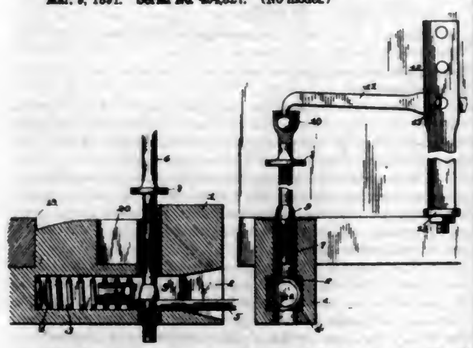


Brief.—In order to avoid the labor of drilling, through the entire depth of the faller-bar, holes in which the gill-pins are to be inserted, the bar has part of its side cut away, thus diminishing the thickness of metal to be drilled. In order that the bar may have the requisite steadiness and stiffness, the cut-out recesses are made to taper outward toward the back of the bar, so that the width at the back is substantially the same as at the front. A piece of brass, to prevent rusting of the bar, is inserted in the top of the bar at the places where the pins are inserted.

Claim.—1. The faller head or bar A, provided with gills or pins G and having one or more recesses B formed in the side thereof and tapering or running outward toward the back C and also having its back C of the same or substantially the same breadth as the upper edge and forming a part of the solid bar itself, substantially as described.

2. The combination of the brass bar D with the faller-bar A, provided with pins G and having one or more recesses B formed in the side thereof and tapering or running out toward the back C and also having its back C of the same or substantially the same breadth as the upper edge and forming a part of the solid bar itself, substantially as described.

476,786. CAR-COUPLING. OLIVER P. CONLEY, Eaton, Ohio. Filed Mar. 9, 1891. Serial No. 424,327. (No model.)

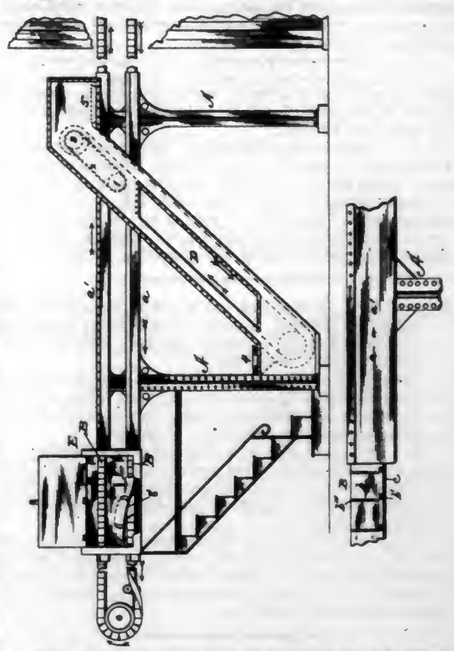


Claim.—1. In a car-coupling, the combination of a draw-head having a longitudinal opening and provided with a pin-opening, a pin-supporting spring arranged in the longitudinal opening and adapted to be moved rearward by a link, and a coupling-pin arranged in the pin-opening and adapted to be supported by the spring and provided with the lower rounded collar and the upper enlarged collar, substantially as described.

2. In a car-coupling, the combination of a draw-head having a longitudinal opening and provided with a pin-opening, a pin-supporting spring arranged in the longitudinal opening, a pin supported by the spring and provided with the lower rounded collar and the upper enlarged collar, a pivoted supporting-post, an operating-lever fulcrumed on the post and connected with the coupling-pin, and a keeper provided with a latch and receiving the outer end of the lever, substantially as described.

3. In a car-coupling, the combination of a draw-head having a longitudinal opening and provided with a pin-opening and having a recess communicating with the pin-opening and forming a support, a pin-supporting spring arranged within the longitudinal opening, and a coupling-pin arranged in the pin-opening and adapted to be supported by the spring and by the recess, substantially as described.

476,787. DEVICE FOR TRANSPORTING MATERIALS. DAVID R. DALE, Syracuse, N. Y. Filed June 20, 1891. Serial No. 397,006. (No model.)



Claim.—1. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudinally by an endless cable secured to each section and connected vertically and flexibly by an accordion plaited or folded connection secured to and lying between the ends of the vertical sides.

2. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudinally by an endless cable secured to each section and connected vertically and flexibly by an accordion plaited or folded connection secured to and lying between the ends of the vertical sides, and an endless bottom of pliable material lying upon the bottom of the conveyer.

3. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudinally by an endless cable secured to each section and connected vertically and flexibly by a plaited or folded connection secured to and lying between the ends of the vertical sides, in combination with trackways provided with anti-friction rollers supporting the conveyer.

4. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudinally by an endless cable secured to the sections and connected vertically and flexibly by a plaited or folded connection secured to and lying between the ends of the vertical sides, and an endless bottom of pliable material within the conveyer, in combination with trackways provided with anti-friction rollers supporting the conveyer.

5. An endless conveyer comprising sections flexibly connected, trackways provided with anti-friction supports for the conveyer, drums around which the conveyer passes, and means for twisting the conveyer to invert it.

6. The combination, with the endless conveyer and its trackway, of receiving-boxes below the conveyer and an auxiliary elevator, and a pulley rotated by its frictional contact with the conveyer and actuating said elevator to elevate matter from the boxes and discharge it into said conveyer.

7. The combination, with the endless conveyer and its trackways,

of the station-boxes inclosing them and through which they pass both ways and provided with doors through which access is had to the conveyer to deposit matter in it for transmission or to remove it from the conveyer in transit.

8. The combination, with the endless conveyer and its trackways, of the station-boxes inclosing them and through which they pass both ways and provided with doors through which access is had to the conveyer to deposit matter in it for transmission, and the catcher pivoted above the conveyer and adapted to be dropped into the conveyer and onto its bottom to remove matter therefrom while in transit.

9. A receiving and delivering apparatus comprising an endless flexible conveyer, trackways therefor, means to actuate the conveyer, elevators for picking up the matter deposited in the boxes and depositing it in the conveyer, and stations along the line at which matter can be directly deposited in the conveyer and caught and removed therefrom, in combination.

10. An endless conveyer consisting of sections, each consisting of a bottom and vertical sides connected to an endless cable and connected to each other by means of rearwardly-projecting slotted ears upon one section overlapping the end of the adjoining section, and bolts or pins through said slots.

11. An endless conveyer consisting of sections, each consisting of a bottom and vertical sides connected to an endless cable and connected to each other by rearwardly-projecting ears upon one section overlapping the end of the adjoining section and bolts through said slots, and said sections vertically connected by a folding connection secured to the ends of the vertical sides, in combination with trackways provided with anti-friction rollers supporting the conveyer.

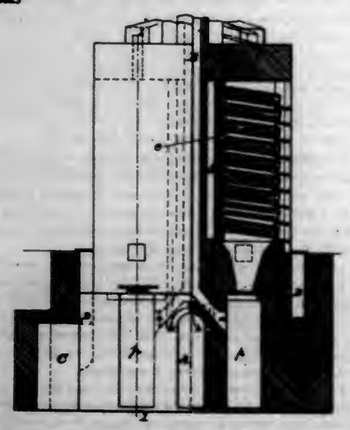
476,788. COMPOSITION FOR CLEANING WALL-PAPER AND FOR OTHER PURPOSES. JAMES R. DEVINE, Baltimore, Md., assignor of one-half to Frederick H. Samstag, same place. Filed Apr. 2, 1892. Serial No. 427,534. (No specimens.)

Claim.—1. A plastic composition for cleaning wall-paper and the like, consisting of partially-cooked flour, chloride of sodium, and powdered naphthaline, all commingled together in a homogeneous mass of a putty-like consistency, substantially as described.

2. A plastic composition for cleaning wall-paper and the like, consisting of partially-cooked rye and wheat flour mixed, cornmeal, chloride of sodium, powdered naphthaline, and a coloring-matter, all commingled together into a homogeneous mass of a putty-like consistency, substantially as described.

3. A plastic composition for cleaning wall-paper and the like, consisting of partially-cooked rye and wheat flour, chloride of sodium, pulverized naphthaline, and coloring-matter, such as burnt umber, all commingled together into a homogeneous mass of a putty-like consistency, substantially as described.

476,789. FURNACE FOR SMELTING ZINC ORES. SELWYN G. BUSAR, St. Louis, Mo. Filed July 30, 1891. Serial No. 401,197. (No model.)

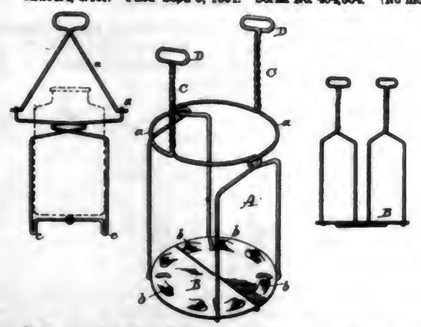


Claim.—1. In a zinc-smelting furnace having two complete furnaces arranged back to back, as usual, and provided with usual basement ash-pits, the passage-way A, extending from end to end of the furnace and parallel with the ash-pits, substantially as described.

2. In a zinc-smelting furnace having two complete furnaces arranged back to back, as usual, and provided with usual basement ash-pits, the passage-way A, extending from end to end of the furnace and parallel with the ash-pits, combined with a ventilating-chimney and flues connecting them, substantially as described.

3. In a zinc-smelting furnace having two complete furnaces arranged back to back, as usual, and provided with usual basement ash-pits, the passage-way A, extending from end to end of the furnace and parallel with the ash-pits, combined with a ventilating-chimney and independent flues connecting the ash-pits and chimney and the said passage-way and chimney, substantially as described.

476,790. HOLDER FOR FRUIT-JARS. ARTEMESIA F. FROST, Shubert, Nebr. Filed Sept. 5, 1891. Serial No. 404,804. (No model.)



Claim.—1. A rack or holder for fruit-jars, comprising two parts provided with upward extensions and hinged together at the bottom in such a manner that the weight of a jar or other device placed on the bottom will cause the parts of the rack or holder to approach each other and thereby clamp the jar or article located between them, substantially as set forth.

2. In a rack or holder for a fruit-jar, the combination, with a bottom, of a body portion made of wire, said parts of the body being loosely looped together, so that said body may be expanded or contracted to accommodate jars of various sizes, substantially as set forth.

3. In a fruit-jar holder or rack, the combination, with a body portion, of a sectional metallic bottom, the said connections hinged together, substantially as set forth.

4. In a fruit-jar holder or rack, the combination, with a body portion, of a metallic bottom connected thereto, said bottom being made of two parts hinged together, and spring-lips projecting upwardly from said bottom, substantially as set forth.

476,791. MACHINE FOR MAKING BOX-PLAITED PAPER FOR CARPET-LININGS, &c. AUSTIN GUSS, Milwaukee, Wis., assignor to the Folded Paper Carpet Lining Company, of Illinois. Filed Apr. 17, 1891. Serial No. 389,295. (No model.)

Claim.—1. In a machine for making box-plaited paper, the crimping-rollers for crimping the paper, in combination with the tuckers for forming the crimped paper into box-plaits, substantially as and for the purposes specified.

2. In a machine for making box-plaited paper, the combination, with the crimping-rollers, of the tuckers for forming the box-plaits and a compressor for compressing the plaits and rendering their folds permanent, substantially as and for the purposes specified.

3. In a machine for making box-plaited paper, the combination, with the crimping rollers, of the tuckers, the compressor, a pasting mechanism for supplying paste to the plaited paper, and means for applying binding-strips to the pasted portions thereof, substantially as and for the purposes specified.

4. In a machine for making box-plaited paper, the crimping or die rollers C C', having intermeshing die grooves and ribs rectangular in cross-section, in combination with a tucking mechanism adapted to operate upon the base of the upright sides of the crimps made by said dies to form the same into a box-plait, substantially as described.

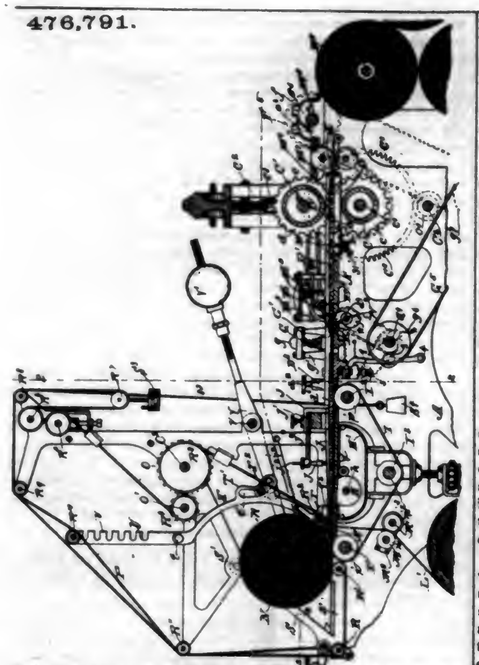
5. In a machine for making box-plaited paper, the crimping-rollers C C', provided with intermeshing grooves or ribs *c*, rectangular in cross-section and having circumferential grooves *d*, in combination with the stripper-bars D D', arranged in said grooves, substantially as shown and described.

6. In a machine for making box-plaited paper, the tuckers arranged in two series, reciprocating in opposite directions, and engaging with the paper during their forward movement only, substantially as and for the purposes specified.

7. In a machine for making box-plaited paper, the tuckers E, each provided with an inclined finger *e* and a horizontal finger *e'*, substantially as and for the purposes specified.

8. In a machine for making box-plaited paper, the transverse rock-shafts, each provided with a series of tucker-arms and having their boxes mounted to slide in suitable ways, in combination with the operating-shafts provided with eccentrics of equal but opposite eccentricity and pitmen connecting said eccentrics to their respective rock-shafts, substantially as and for the purposes specified.

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9. The combination of the rock-shafts which carry the tuckers and the arms attached to said shafts for rocking said shafts with cams arranged to strike said arms alternately, thereby rocking the shaft of the tucker-arms and causing the tuckers to rise clear of the paper while being retracted, substantially as shown and described.

10. In a machine for making box-plaited paper, the combination of the cams with the arms having rollers at one end and the rock-shafts to which said arms are attached for the purpose of vibrating the same, the tuckers, and a flat spring curved upward at its free end and so arranged that said arms will ride upward on said spring when the tuckers are being retracted and said spring will press the tuckers onto the paper during their forward movement, substantially as shown and described.

11. The combination, with the compressor G, having arms G^2, with rollers g^3, of the cam-wheels G^2, provided with depressions g^4, and the springs G', bearing upon the top of the compressor, substantially as and for the purposes specified.

12. In a machine for making box-plaited paper, the combination, with the compressor, of the series of tucker-arms reciprocating simultaneously in opposite directions and engaging with the paper during their forward movement, substantially as and for the purposes specified.

13. In a machine for making box-plaited paper, the combination, with the bed of the machine, along which the paper travels, of crimping-rollers arranged at the front end of the bed, the tuckers and compressor arranged in the rear of the crimping-rollers, a pasting mechanism arranged in the rear of the tuckers and compressor, and the stripper-bars extending above the bed through the crimping-rollers and through the tuckers and compressor to the pasting mechanism, substantially as and for the purposes specified.

14. In a machine for making box-plaited paper, the combination, with the bed, of the continuously-operating crimping-rollers and pasting mechanism arranged at the ends thereof, the intermittently-operating tuckers and compressor intermediate between them, and the stripper-bars extending above the bed through the crimping-rollers to the pasting mechanism and constructed and arranged to allow the paper free play to expand and contract at each end and to compress the same upon the bed during the tucking and compressing operations, substantially as and for the purposes specified.

15. The combination, with the tuckers and the compressor, of the upper stripper-bars extending above the bed through the tuckers and compressor and provided with inclines d^3 between the tuckers and compressor, substantially as and for the purposes specified.

16. The combination, with the bed A', of the upper stripper-bars D', pivoted at their forward ends, and the spring-supported and adjustable cross-bars D^4, to which said stripper-bars are connected at their rear ends, substantially as and for the purposes specified.

17. The combination, with the bed A', of the belts I, traveling thereon, the paste-wheels H, arranged between the belts, and the elastic pressure-plate J, arranged above the belts, substantially as and for the purposes specified.

18. The combination, with the bed A', of the belts I, traveling thereon, the paste-wheels H, arranged between the belts, and the inclined and adjustable pressure-plate J, substantially as and for the purposes specified.

19. The combination, with the feeding-belts, of the paste-wheels intermediate between the same, the pressure-plate for holding the paper upon the paste-wheels, and independent rollers corresponding in number to the paste-wheels and arranged to supply the binding-strips to the fabric, substantially as and for the purposes specified.

20. The combination, with the independent rollers B and the binding-strips L', carried thereby, of tension devices for regulating the feed of the binding-strips, substantially as and for the purposes set forth.

21. In a machine for making box-plaited paper, the feeding mechanisms consisting of a serrated plate secured to an arm, a feed-bar on which said arm is mounted, a lever having suitable devices whereby said lever reciprocates said feed-bar horizontally, and a box in which said bar moves horizontally and which is reciprocated vertically by a cam operated by suitable devices, in combination with the compressor and pasting mechanisms, said feeding mechanisms being so arranged in the machine as to assist in moving the paper from the compressor to be acted on by the pasting mechanisms, substantially as shown and described.

22. In a machine for making box-plaited paper, a spindle N, upon which the finished product is to be wound, having its journals freely movable vertically, in combination with an adjustably-weighted lever applied to said spindle to keep it horizontal, conveying-tapes passing around said spindle and arranged to receive the finished product from the bed of the machine and conduct it to and wind it upon the said spindle, a series of driving-rollers upon which said tapes are mounted, one or more of which rollers are provided with adjustable bearings, adjustable weights or counter-balances applied to said movable roll or rolls and arranged to adjust the same automatically to keep the tapes tant as the spindle is filled, and mechanism for driving said rollers to impart the required movement to the tapes, substantially as described.

23. In a machine for making box-plaited paper, a spindle arranged to receive the finished paper from the machine, in combination with endless tapes so arranged as to guide said paper onto the spindle, rollers upon which said tapes are mounted, and sprocket chains and wheels which actuate said rollers, and a triangle pivoted to the frame and in which part of the rollers have their bearings, said triangle being so pivoted and held as to be capable of being thrown up when the roll of paper is completed, substantially as and for the purposes specified.

24. In a machine for making box-plaited paper, a frame containing rollers suitably arranged for carrying the endless tapes in such manner as to guide the finished paper onto the spindle, said frame having a section containing part of the rollers so pivoted as to allow said section to be swung up, so as to remove the finished roll of paper, in combination with weights suitably arranged to hold said tapes tightly secured upon said rollers and to hold said triangle when it is swung up, substantially as and for the purposes specified.

25. In a machine for making box-plaited paper, the weighted lever V, pivoted to the frame of the machine and having at its lower end the forks V^3 and V^4, with the bar T^2 rigidly secured at the outer ends of the forks V^3 and V^4, in combination with the arm T, having the slot *t'*, in which the bar T^2 moves upwardly as the roll increases in size, and the spindle N, substantially as shown and described.

26. In a machine for making box plaited paper, the weighted lever V, fulcrumed to the frame of the machine, and the adjustable weight V', and the bar T^2, rigidly secured to the forks V^3 and V^4 of the lever, and the arm T, having the slot *t*, in which the bar T^2 moves, in combination with the adjustable shaft *r*, rollers R^2, and spindle N, substantially as shown and described.

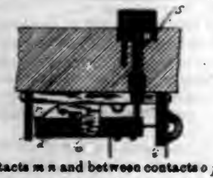
27. In a machine for making box-plaited paper, the fingers Z and the tapes P, in combination with the spindle N, substantially as and for the purposes specified.

28. In a machine for making box-plaited paper, the screw 16, secured to the frame of the machine, and the stud-pin 23 and lever 20, in combination with the spindles B B' B^2, all combined and arranged substantially as and for the purposes specified.

476,792. ELECTRIC SWITCH. WILLIAM M. GOODRIDGE, Highland Park, assignor to the Western Electric Company, Chicago, Ill. Filed Oct. 19, 1888. Serial No. 288,578. (No model.)

Claim.—1. The combination, with the contact-piece *k l*, of the contacts *m n*, included between the outer portions of piece *k l*, the con-

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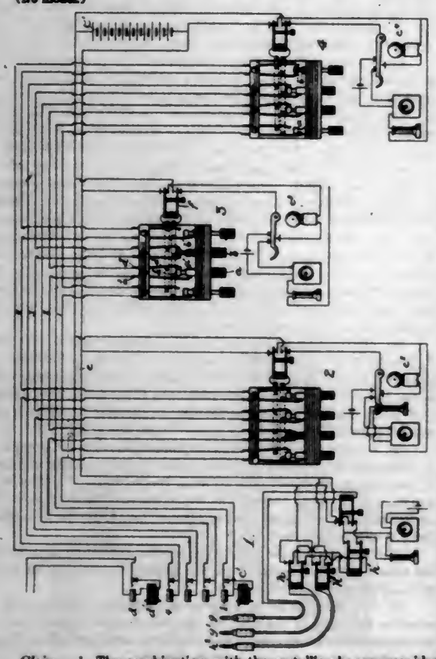


tact *q*, opposite contacts *m n* and between contacts *o p*, placed opposite, respectively, to the outer portions of contact-piece *k l*, contacts *m o*, and also contacts *n p*, being permanently connected together, and movable contacts *e f* and *g h*, adapted to be moved together from the contacts on one side to the contacts on the other side thereof, substantially as and for the purpose specified.

2. A circuit-changing device consisting in the combination, with the pivoted block carrying the four contact-pieces in the same plane, of a rubber block provided with a slot through which the free ends of said springs are inserted, contacts arranged upon the opposite edges of said slot, a spring for holding the contact-springs against the contacts on one edge, and a push-key for overcoming the resistance of said spring and moving the block on its pivot to separate the contact-springs from one line of contacts and close said springs upon the other line or set of contacts on the opposite side of the slot, substantially as and for the purpose specified.

3. The combination, with the circuit *t*, connected with movable springs or contacts *g h*, of the circuit *u*, connected with the springs or movable contacts *e f* of a circuit including an electrical instrument connected between the contacts *p n* and *o m*, the contact-piece *k l*, and the contact-piece *q*, the movable contacts *e f* and *g h* being in the same line or plane and adapted to be moved from contacts *k l m n* on one side to contacts *o p q* on the other, whereby the electrical instrument may be looped into circuits *t u*, alternately, without leaving either of said circuits open.

476,793. METALLIC-CIRCUIT HOUSE-TELEPHONE SYSTEM. WILLIAM M. GOODRIDGE, Highland Park, Ill., assignor to the Western Electric Company, Chicago, Ill. Filed Sept. 30, 1889. Serial No. 325,511. (No model.)



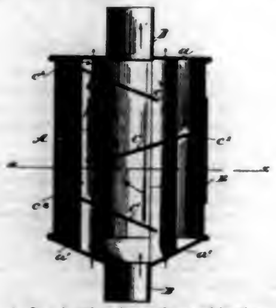
Claim.—1. The combination, with the metallic plunger provided with the groove, of two springs, the tension of which tends to force them against separate contact-points to close upon separate points, said plunger being adapted to be normally forced between said springs to hold them away from their contacts and form an electric medium between them, said springs being of different lengths and the longer being adapted to fall into the groove of the plunger when the plunger is withdrawn, while the shorter spring is separated from the plunger, whereby said springs are separated from their contacts when the plunger is inserted and closed thereon when the plunger is withdrawn, substantially as and for the purpose specified.

2. A telephonic system comprising a telephone and signal-receiving apparatus at a station, connected to a telephone-line extending through several sub-stations, said line normally including at each of said sub-stations two line-springs and the metallic body of a plunger extending between said springs, said plunger being adapted to be withdrawn from between said springs, and a loop containing a telephone, terminating in contact-points adapted to make contact with said springs when the plunger is withdrawn, substantially as described.

3. The combination, with a telephone-line including a telephone at a station and extending through several sub-stations, of springs at each sub-station, forming the opposite terminals of said line at that station, a metallic plunger inserted between said springs, said plunger being adapted to be withdrawn from between said springs, contact-points adapted to make contact with said springs when said plunger is withdrawn, a conducting-loop terminating in said contact-points, and a key in said loop adapted to alternately include in the loop a source of electricity or a telephone, substantially as described.

4. The combination of several stations, each having an individual line extending through every other station and including at each other station two springs and the metallic body of a plunger establishing contact between said springs, said plunger being adapted to be withdrawn from between said springs, and contact-points forming the terminals of a conducting-loop, adapted to make contact with said springs when said plunger is withdrawn, and a key adapted to include alternately a source of electricity or a telephone in the loop, substantially as described.

476,794. HEATING-DRUM. PHILIP H. GRIMM and FRANK J. WILLIARD, Ashland, Wis. Filed Jan. 28, 1892. Serial No. 419,493. (No model.)



Claim.—1. In a heating-drum, the combination, with the casing having an inverted-cone-shaped bottom, substantially as shown, and for the purpose set forth, of fixed inclined deflector-plates having their opposite lower portions cut away, as set forth.

2. In a heating-drum, the combination, with the casing provided with the vertical air-flues, of the inclined deflector-plates having their opposite lower portions cut away, as shown, and perforated at their opposite upper portions, for the purpose specified.

3. In a heating-drum, the combination, with the casing, of the reversely-inclined deflector-plates having their opposite lower portions cut away, as shown, and perforated at their opposite upper portions, and vertical air-flues passing through the top and bottom of the casing and through the deflector-plates, substantially as described.

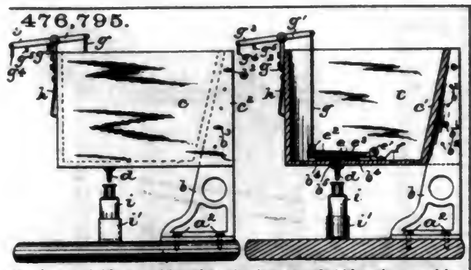
4. In a heating-drum, the combination of the casing A, having an inverted-cone-shaped bottom *a'* and the inlet and outlet B B, the inclined deflector-plates C, having their opposite lower portions cut away and their opposite upper portions perforated at *c'*, and the air-flues D, passing through the top and bottom of the casing and through the deflector-plates, substantially as shown and described.

476,795. BOTTLE-FILLING MACHINE. ALBERT L. HATFIELD, Newark, N. J. Filed Dec. 29, 1891. Serial No. 416,422. (No model.)

Claim.—1. In a machine for filling bottles, the combination of a tank or reservoir provided with a series of holes or openings, a nipple in each opening, a rigid cover above said openings in said tank normally closing said openings, and means for raising and lowering said cover for operating all of said nipples simultaneously, consisting, essentially, of a rod pivoted to said cover and a fulcrumed lever to which the opposite end of said rod is attached, substantially as and for the purposes set forth.

2. In a machine for filling bottles, the combination of a tank or reservoir provided with a series of holes or openings, a nipple in each

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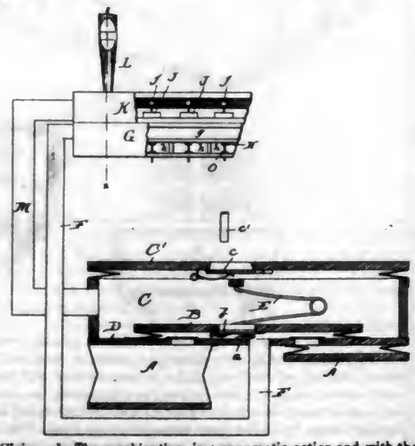
opening, a rigid cover hinged to the bottom of said tank, a packing secured to said cover on the under side thereof, and means for raising and lowering said cover for operating all of said nipples simultaneously, consisting, essentially, of a rod pivoted to said cover and a fulcrumed lever to which the opposite end of said rod is attached, substantially as and for the purposes set forth.

3. In a machine for filling bottles, the combination of a tank or reservoir provided with a series of holes or openings and beads or ribs b^4, arranged substantially as set forth, nipples in said openings, a hinged cover in said tank, a packing secured to said cover on the under side thereof and adapted to fit in the space formed by said beads b^4, and means for raising and lowering said cover for operating said nipples simultaneously, substantially as and for the purposes set forth.

4. The herein-described bottle-filling machine, comprising therein a bed or table, standards or frames secured to said table, a tank *c*, having backwardly-projecting ribs c^3 for securing said tank to said standards, a series of holes or openings in said tank, and beads b^4, surrounding said openings, nipples in said openings, a hinged cover in said tank, a packing secured to said cover on the under side thereof and adapted to fit in said space formed by said beads b^4, and means for raising and lowering said cover for operating all of said nipples simultaneously, substantially as and for the purposes set forth.

5. The herein-described bottle-filling machine, comprising therein a bed or table, standards or frames secured to said bed or table, a tank *c*, having backwardly-projecting ribs c^3 for securing said tank to said standards, a series of holes or openings in said tank, and beads b^4, surrounding said openings, a hinged cover in said tank, a packing secured to said cover on the under side thereof and adapted to fit into said space formed by said beads b^4, a rod *g*, pivoted to said cover, a fulcrumed lever g', to which the opposite end of said rod is secured, and means for operating said lever and holding the same in its tilted position, substantially as and for the purposes set forth.

476,796. PNEUMATIC ACTION FOR ORGANS. FREDERICK W. HEDGELAND, Chicago, Ill. Filed Nov. 23, 1891. Serial No. 412,742. (No model.)



Claim.—1. The combination, in a pneumatic action and with the small bellows J, of chamber *g*, supplying the air for the small bellows, separate chambers *h*, located between said supply-chamber and the bellows and having an outlet for relieving the pressure, a valve for controlling said outlet, and another valve for shutting off the air from the supply-chamber, both the said valves being upon a common stem and the latter being loosely mounted thereon, substantially as set forth.

2. In a pneumatic action for organs, the combination, with the small bellows for operating the valves of the pipes and the wind-chests, of a bellows B, supplying the air to the inside of said small bellows, and another bellows surrounding said bellows B and receiving its air therefrom for supplying the wind-chests, substantially as set forth.

3. The combination, with the wind-chest and the series of small bellows located in the wind-chest, of an inner and an outer supply bellows, one of said bellows being connected by an air-passage to the small bellows and the other by another passage to the chest, substantially as specified.

4. The combination, in a pneumatic action, of inner bellows B, receiving the air from the feeders, and an outer bellows C C', receiving air from said inner bellows, substantially as set forth.

5. The combination, in a pneumatic action, of inner bellows B, receiving the air from the feeders, pressure-creating spring E, and an outer bellows C C', charged from said inner bellows, substantially as set forth.

6. In a pneumatic action, the combination of inner bellows and outer bellows and pipe connections from each of said bellows, one conduit carrying the air to the wind-chest and the other to the valve-operating bellows, one of said first-mentioned bellows being adapted to create a greater pressure than the other, substantially as set forth.

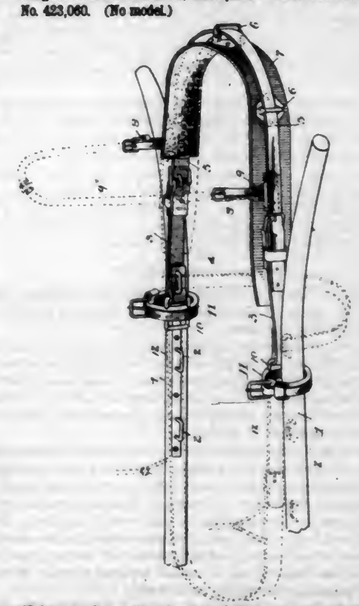
7. In a pneumatic action, a valve *j*, secured directly to the movable side of the single-compartment small bellows J, and means for creating unequal air-pressures upon the inner and outer surfaces of said movable side, substantially as set forth.

8. The combination, with the speaking-pipes and pneumatic action of an organ, of the double bellows shown, one part of said bellows sounding the pipes and the other operating the action, substantially as set forth.

9. The combination, with the pipes and the bellows for sounding the same, of a pneumatic action and a bellows for operating the latter, one of said bellows having feeders and venting into the other bellows, substantially as set forth.

10. The combination, with an organ, of two wind-supplying bellows, one of said bellows being provided with feeders and venting its excess pressure into the other bellows, whereby unequal pressures may be created by the use of a single blowing apparatus, substantially as specified.

476,797. HARNESS. WILLIAM A. HUNTER, Terre Haute, Ind., assignor to Della R. Hunter, same place. Filed Feb. 27, 1892. Serial No. 423,060. (No model.)



Claim.—1. In combination, the draft-tug sections 3, perforated at their rear ends, the loops on the thills adapted to the said perforations, the said draft-tug sections having in their rearwardly-projecting ends metallic staples, the thill-tugs secured to said staples, the draft-tug sections 12, also secured to said loops, and the shaft-straps adapted to pass through the thill-loops for holding the tugs in place, substantially as described.

2. In combination, the draft-tug sections 3, having perforations, the thills having a series of loops to enter said perforations, the thill-tugs connected to the draft-tugs 3, the draft-tug sections 12, also connected with the sections 3, and the means for holding the sections 3 to the thills, substantially as described.

3. In combination, the breast-collar, the breast-straps supported thereby to have longitudinal movement, the draft-tug sections 3 at the rear ends of the breast-strap, the thill-tugs connected to the draft-tug sections 3 and carried thereby, the draft-tug sections 12, also connected to the tug-sections 3, and means for securing the sections 3 to the thills, substantially as described.

476,798. HORSESHOE. ALBERT D. JEFFREY, Brooklyn, N. Y., assignor of two-thirds to Myron C. Kelsey and William Krymer, same place. Filed Apr. 4, 1891. Serial No. 387,683. (No model.)



Claim.—1. A horseshoe having a socket, in combination with a removable calk therefor having a shank adapted to enter said socket, said calk constructed with a vertical slot bifurcating its shank and extending thence into and almost but not entirely through its body portion, and a key adapted to enter said slot at the body end and when driven home therein to spread said shank laterally and thereby lock said calk and shoe together.

2. A horseshoe having a socket, in combination with a removable calk therefor having a shank adapted to enter said socket, said calk constructed with a vertical slot entirely bifurcating its shank and extending thence into and throughout the vertical length of its body portion and laterally almost but not entirely through its body portion, whereby the two halves of the calk are tied together only by a narrow part of its metal and are hence readily expansible, and a key adapted to enter said slot at the body end and when driven home therein to spread said shank laterally and thereby lock said shoe and calk together.

3. A horseshoe having an internally-enlarged socket and constructed with a hole adjacent thereto but extending angularly relatively thereto and through the shoe, in combination with a calk therefor having a split shank adapted to enter said socket, and a key adapted to enter said split shank and thereby lock the calk to the shoe and said key constructed with an angularly-extending arm adapted, when the key is in position, to enter said hole in the shoe, whereby by engaging therewith it prevents displacement of the key and the latter can be removed by acting on said arm through said hole from the other side of the shoe.

4. A removable calk for horseshoes, consisting of an integral body portion and a reduced shank *a* integral therewith, said body and shank constructed with a vertical slot traversing throughout their entire height and laterally through said shank and almost but not entirely through said body, whereby the two halves of the calk are tied together only by a narrow part of its metal and are hence readily laterally expansible, whereby a key may be entered into said slot at the body end and driven home therein toward the shank end for laterally spreading the shank to lock the calk to a horseshoe.

476,799. PROCESS OF AND MACHINE FOR MAKING EMERY-WHEELS. ALLEN JOHNSTON, Ottumwa, Iowa. Filed July 5, 1889. Serial No. 316,606. (No model.)

Claim.—1. The press for the manufacture of emery-wheels, consisting of the hollow ring and hollow core, both having provision for the admission of a heating agent, a follower closing one end of the space between said ring and core, and a plunger actuated by hydraulic or other suitable pressure moving in said space and closing the other end thereof, substantially as set forth.

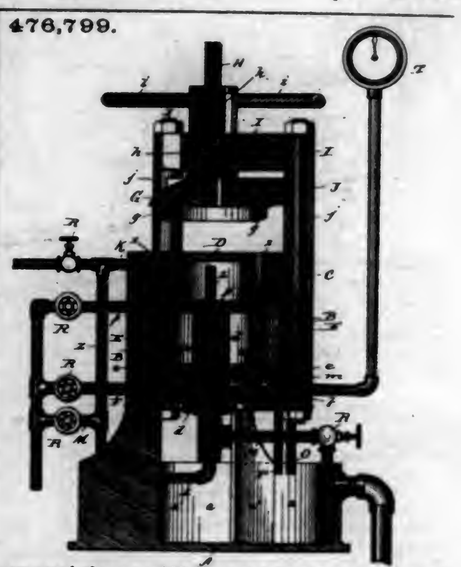
2. The press for the manufacture of emery-wheels, consisting of a cylinder B, a hollow core D *d*, a hollow ring C, and pipe connections for supplying said core and ring with heating and cooling agents, in combination with the follower and plunger, substantially as set forth.

3. The press for the manufacture of emery-wheels, consisting of the hollow ring and hollow core, both provided with pipe connections for the admission of heating and cooling fluids to their interior, a follower having a beveled flange *g*, and a pressure actuated plunger, all combined and operating substantially as set forth.

4. The combination, with the plunger and its cylinder B, of the core D, having a stem *d*, receiving the pipe L and also giving discharge to the water, said pipe L and the discharge-pipe connecting with said stem, whereby the core is supplied with and exhausted of the heating and cooling fluids, substantially as set forth.

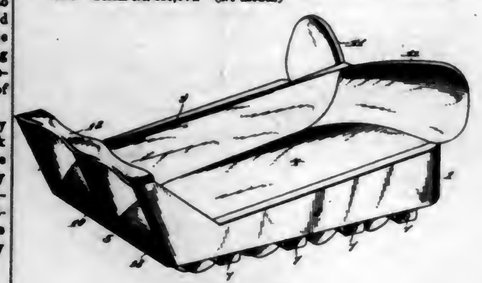
5. The combination, with the plunger and its packing, of the rib or ribs *u v*, substantially as and for the purpose set forth.

6. The process of making emery-wheels which are composed of



a compound of emery and binding material rendered plastic by heat, which consists of the following successive steps, namely: first, placing the heated compound in a mold that is heated to such degree as to prevent the chilling of the compound, second, applying pressure to the compound in the mold while it is still hot, and, third, cooling the mold and its contents until the latter are solid, substantially as specified.

476,800. SNOW-PLOW. JOSEPH KOLB, Belfast, Pa. Filed Dec. 24, 1891. Serial No. 416,074. (No model.)

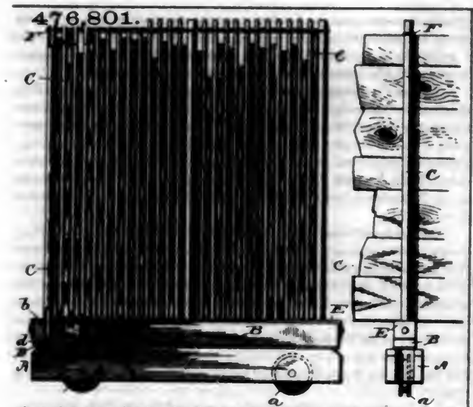


Claim.—In a snow-plow, the combination of a frame comprising tapering sides, a sloping top presenting a convex surface and having its front end inclined downward and a bottom provided with openings, truck-wheels arranged in said openings and supporting the frame, the longitudinal blade, the wings diverging from the rear end of the longitudinal blade, the side cutters arranged at the front of the frame, and the cross-bar secured to the cutters and the blade, substantially as described.

476,801. LUMBER-DRYING TRUCK. WILLIAM A. LEARY, Norfolk, Va. Filed Oct. 12, 1891. Serial No. 408,460. (No model.)

Claim.—1. In a lumber-transporting device, the combination, with a movable support, of a series of uprights or posts suitably spaced and

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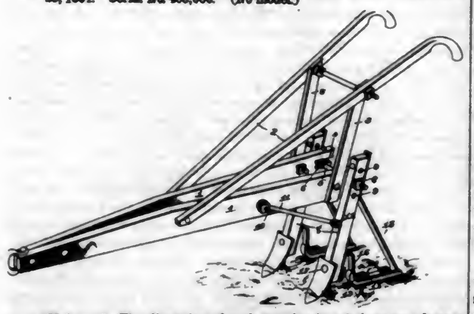
adapted to have lumber let down between them, and means, substantially as described, for attaching together the upper ends of the posts, substantially as and for the purpose described.

2. In a lumber-transporting device, the combination, with a movable support having a series of openings, of a series of hollow posts or uprights fitted in said openings and a stud upon the support for each of the uprights and adapted to enter the lower end of the same, substantially as and for the purpose described.

3. The combination, with a lumber-transporting device, of a movable support having a series of openings, a series of tubular uprights or posts, one being contained in each of the openings, and a plate or bar upon the under side of the support having a stud or projection for each opening and entering the same and the end of the tube therein, substantially as described.

4. In a lumber-transporting device, in combination, several movable racks, each consisting of a support having suitably-spaced posts or uprights adapted to have lumber passed down between them, and a bar G, having a plurality of depending studs *g* for entering the upper ends of the posts for connecting the posts of each rack after the lumber has been placed, substantially as and for the purpose described.

476,802. PLOW. WILLIAM R. LEE, Nelsonville, Tex. Filed Aug. 25, 1891. Serial No. 403,666. (No model.)



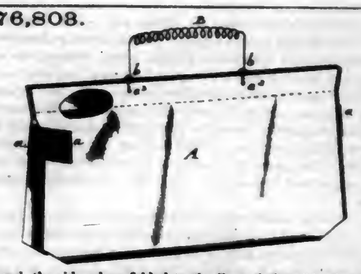
Claim.—1. The diverging plow-beams having their rear ends provided with open recesses or notches, combined with the rod passed therethrough and having nuts at opposite sides of the beams, the standard supported upon the rod, the inclined brace 11 for the standard, and the bolts 14, passing vertically through the recesses in the rear of the rods, substantially as specified.

2. The combination, with the beam and standard, of the triangular brace 13, having a series of adjusting-holes at its upper end and at its lower front end curved upwardly, forwardly, and downwardly and at its extremity slotted, the adjusting-bolts 14 and 17, passed through the adjusting-holes and slot, the steel shoe 18 and the bolts 20, passing through the same and the base of the brace, the shoe at its front end upwardly bent, as at 19, into the curved portion of the brace, substantially as specified.

476,808. PARCEL-HOLDER OR ADVERTISING-VALISE. DANIEL W. LOWE and CHARLES DIRICK, Lockport, Ill. Filed Mar. 30, 1892. Serial No. 427,125. (No model.)

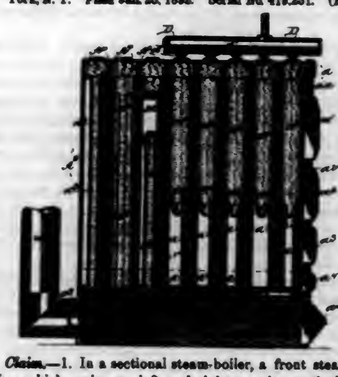
Claim.—The paper blank A, having the extension-strips *a a' a²* at

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each end, the side edges folded to the lines a^1 a^1, and having the holes a^3 a^3 in one of the folded edges to adapt it to be folded on lines a^4 a^2 and to have the said strips pasted on, as described, whereby a paper valise may be made, as set forth.

476,804. SECTIONAL STEAM-BOILER. WILLIAM M. MACKAY, Newark, N. J., assignor to the Richardson & Boynton Company, New York, N. Y. Filed Jan. 25, 1892. Serial No. 419,231. (No model.)



Claim.—1. In a sectional steam-boiler, a front steam-and-water section which embraces left and right exterior vertical columns, an upper horizontal connecting-chamber, a lower horizontal continuous connecting chamber or passage between the foot of the two columns, an intermediate or mid-height horizontal chamber or passage connecting the two vertical columns, and a series of vertical passages which are longitudinally oval in their horizontal area and which extend from the intermediate horizontal chamber or passage to the upper horizontal chamber or passage.

2. In a sectional steam-boiler, a front steam-and-water section which embraces left and right exterior vertical columns, an upper horizontal connecting-chamber, a lower horizontal connecting chamber or passage between the foot of the two columns, an intermediate or mid-height horizontal chamber or passage which directly connects the two vertical columns, and a series of vertical passages which extend directly upward from the intermediate horizontal chamber or passage to the upper horizontal chamber or passage.

3. A sectional steam-boiler the fuel and combustion chambers of which are inclosed above and laterally by a series of steam-and-water sections, each of which embraces exterior vertical left and right steam-and-water columns, an upper horizontal chamber or passage which unites the vertical columns at their upper extremities, an intermediate horizontal chamber or passage which directly connects the vertical exterior columns and which longitudinally of the boiler is of an extent about equal to one-third the longitudinal extent of the exterior columns, and a series of vertically-arranged passages which extend downwardly from the upper horizontal chamber or passage and embrace or overlap and unite with the intermediate chamber or passage.

4. A sectional steam-boiler the fuel and combustion chambers of which are inclosed above and laterally by a series of steam-and-water sections, each of which embraces exterior vertical left and right steam-and-water columns, an upper horizontal chamber or passage which at their upper extremities unite the vertical columns, a horizontal chamber or passage which at about its mid-height directly connects the vertical exterior columns and which longitudinally of the boiler is of an extent about equal to one-third the longitudinal extent of such columns, and a series of vertically-arranged passages which are longitudinally of the boiler oval in their horizontal area, which longitudinally of the boiler are about two-thirds the extent of the vertical columns, and which extend from the upper horizontal chamber or passage to the intermediate horizontal chamber or passage.

5. A sectional steam-boiler the bridge-wall section of which is composed of a left and a right exterior vertical steam-and-water column, a top horizontal chamber or passage which connects the exterior steam-and-water columns, a bottom horizontal chamber or passage which connects the lower extremities of the exterior vertical steam-and-water columns, a series of intermediate edge to edge transversely-oval vertical chambers or passages which are of smaller extent from front to rear than the exterior vertical columns, and a series of smoke-openings above the upper extremities of the transversely-oval chambers or passages and immediately below the top horizontal chamber or passage.

6. A sectional steam-boiler the bridge-wall section of which is composed of a left and a right exterior vertical steam-and-water column, a top horizontal chamber or passage which connects the exterior steam-and-water columns, a bottom horizontal chamber or passage which connects the lower extremities of the exterior vertical steam-and-water columns, a series of intermediate contiguous transversely-oval vertical chambers or passages which together extend across the space between the exterior vertical columns, and a series of steam-and-water passages which extend upwardly from the transversely-oval steam-and-water chambers or passages to the top horizontal chamber or passage, such upwardly-extending steam-and-water passages alternating with smoke-openings formed in the upper extremity of such bridge-wall section immediately below the top horizontal chamber or passage.

7. A sectional steam-boiler the bridge-wall section of which is composed of a left and a right exterior vertical steam-and-water column, a top horizontal chamber or passage which connects the exterior steam-and-water columns, a bottom horizontal chamber or passage which connects the lower extremities of the exterior vertical steam-and-water columns, a series of intermediate contiguous transversely-oval vertical steam-and-water columns or passages, and a series of non-contiguous longitudinally-oval steam-and-water chambers or passages which in their lower portion overlap each side of the upper extremities of the transversely-oval steam-and-water chambers or passages and which in their main portion separate and are in alternation with the members of a series of smoke-openings in the upper extremity of such bridge-wall section.

8. A sectional steam-boiler the bridge-wall section of which embraces a series of vertical transversely-oval steam-and-water tubes or passages which are placed edge to edge in a plane below the several smoke-openings of such bridge-wall section, and a series of longitudinally-oval steam-and-water chambers or passages which in their lower portion overlap the transversely-oval steam-and-water chambers or passages and which are placed in alternation with the members of the series of smoke-openings in such section, whereby smoke-openings of the necessary capacity are provided without diminishing the capacity of the steam-and water passages.

9. In a sectional steam-boiler, a smoke-chamber section behind and coincident with the bridge-wall section, which is composed of a left and a right vertical exterior steam-and-water column, a top horizontal chamber or passage which extends transversely of the apparatus and connects the exterior steam-and-water columns, a transversely-extending chamber or passage at the lower extremity of such smoke-chamber section which is of about one-third the extent, longitudinally, of the exterior vertical columns, and a series of vertical tubes or passages which are longitudinally oval in their horizontal area, which are of about two-thirds the dimensions from front to rear of the exterior vertical columns, which are placed at a distance apart about equal to their transverse horizontal diameter, and which extends from the top horizontal chamber or passage to the transversely-extending chamber or passage at the lower extremity of such smoke-chamber section.

10. In a sectional steam-boiler, a rear steam-and-water section which embraces left and right exterior vertical steam-and-water columns, a top horizontal steam-and-water chamber or passage which at each end opens into the upper portion of the exterior vertical steam-and-water columns, a bottom horizontal chamber or passage which connects the lower extremities of the exterior vertical steam-and-water columns, and a series of intermediate vertically-placed steam-and-water passages which extend from the top horizontal steam-and-water chamber or passage to a point above a series of smoke-openings and which in horizontal area are transversely oval and are of less extent from front to rear than the exterior vertical steam-and-water passages.

11. In a sectional steam-boiler, a rear steam-and-water section which embraces left and right exterior vertical steam-and-water columns, a top horizontal steam-and-water chamber or passage which at each end opens into the upper portion of the exterior vertical steam-and-water columns, a bottom horizontal chamber or passage which connects the lower extremity of the two exterior vertical steam-and-water columns, a series of intermediate contiguous vertically-placed horizontally-oval steam-and-water passages which extend from the top horizontal steam-and-water chamber or passage to a point a short distance above a series of low-down smoke-openings, and a series of longitudinally-oval steam-and-water passages which extend downwardly along and upon the transversely-oval steam-and-water passages from a point in a plane above the upper extremities of the several smoke-openings to the bottom horizontal chamber or passage.

12. In a sectional steam-boiler, a series of transversely-extending steam-and-water sections, each of which is composed of a left half-section and a right half-section, each of the two half-sections being complete in itself, the two being placed edge to edge at the center of the apparatus and each being independently connected with a separate steam-drum and with a water-supply pipe which extends longitudinally along the base of the apparatus at each side thereof, substantially as described.

13. In a sectional steam-boiler, a series of transversely-extending steam-and-water sections, each of which is composed of a left half-section and a right half-section, each of the two half-sections being complete in itself, the two being placed edge to edge at the center of the apparatus and each being independently connected with a separate steam-drum and with a separate water-supply pipe which extends longitudinally along the base of the apparatus at one side thereof, the two longitudinally-extending cold-water pipes being connected together at the rear of the apparatus by an intermediate transversely-extending pipe.

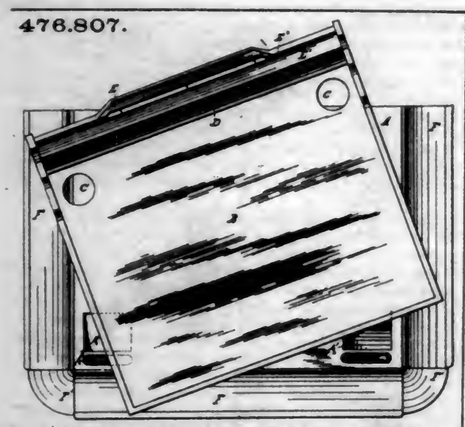
14. In a sectional steam-boiler, a series of transversely-extending steam-and-water sections which in their lower onter portions bestride the fuel-chamber and which in their upper portions embrace top transversely-extending steam-and-water passages, mid-height transversely-extending steam-and-water passages, and a series of vertical steam-and-water passages which directly connect the top and the mid-height transversely-extending steam-and-water passages, the mid-height passages and the vertical connecting-passages being of smaller extent from front to rear than the bestriding and overhanging inclosing portions of the sections, so that all their parts are exposed to the direct action of the gaseous and other volatile productions of combustion.

15. In a sectional steam-boiler, a combustion-chamber which is formed above the fire-box, which opens into and has direct connection with the fire, which has a series of vertical tubes which are connected at the top with the steam-and-water space, and which are connected at the bottom with a mid-height cross-tube, the communication from the cross-tube to the steam-and-water space being directly upward and all the surface in the combustion-chamber being direct-acting fire-surface, substantially as described.

16. A sectional steam-boiler in which are combined a front steam-and-water section which embraces left and right vertical steam-and-water columns, top and mid-height transverse steam-and-water ways and vertical intermediate steam-and-water ways, a series of steam-and-water sections which bestride the fuel-chamber and each of which embraces left and right vertical steam-and-water columns, top and mid-height horizontal steam-and-water ways, and intermediate vertical steam-and-water tubes which connect the horizontal steam-and-water ways, a bridge-wall section which is provided with smoke-openings and which comprises left and right vertical steam-and-water columns, top and bottom horizontal steam-and-water chambers or passages, intermediate vertical transversely-oval contiguous steam-and-water tubes which extend from the bottom passage upwardly to the smoke-openings, and longitudinally-oval steam-and-water passages which are placed in alternation with the smoke-openings, which in their lower portion overlap the upper extremities of the transversely-oval passages and which at their upper extremity open into the top horizontal passage, a smoke-chamber steam-and-water section which has left and right vertical steam-and-water columns, top and bottom horizontal passages, and intermediate vertical steam-and-water passages or tubes which are separated from top to bottom by smoke-openings, and a rear steam-and-water section which has left and right vertical steam-and-water columns, top and bottom horizontal steam-and-water passages, and intermediate vertical steam-and-water passages.

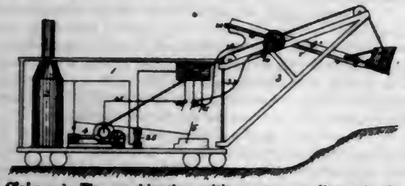
17. A sectional steam-boiler in which are combined a front steam-and-water section which embraces left and right vertical steam-and-water columns, top and mid-height transverse steam-and-water ways, and vertical intermediate steam-and-water ways, a series of steam-and-water sections which bestride the fuel-chamber and each of which embraces left and right vertical steam-and-water columns, top and mid-height horizontal steam-and-water ways, and intermediate vertical steam-and-water tubes which connect the horizontal steam-and-water ways, a bridge-wall section which is provided with smoke-openings and which comprises left and right vertical steam-and-water columns, top and bottom horizontal steam-and-water chambers or passages, intermediate vertical transversely-oval contiguous steam-and-water tubes which extend from the bottom passage upwardly to the smoke-openings, and longitudinally-oval steam-and-water passages which are placed in alternation with the smoke-openings, which in their lower portion overlap the upper extremities of the transversely-oval passages and which at their upper extremities open into the top horizontal passage, a smoke-chamber steam-and-water section which has left and right vertical steam-and-water columns, top and bottom horizontal passages, and intermediate vertical steam-and-water passages or tubes which are separated from top to bottom by smoke-openings, and a rear steam-and-water section which has left and right vertical steam-and-water columns, top and bottom horizontal steam-and-water

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tionary body A, provided on its face, properly located, with the receptacles A', the troughs A^2, the advertising-benches F, the corner-spaces F^2, containing the blocks F', and the parallel holding-cleats A^3 along the edges of the benches F, in combination with the center pin B' and with the spring G, such pin and spring connecting the body A with the revolving portion of the desk, consisting of the face B, provided with the excavations C, the back E, provided on its face E' with the top cleat E^2, and the parallel concave cleat D, substantially as specified.

476,808. STEAM-SHOVEL. JOHN NICHOL, Chicago, Ill. Filed Dec. 22, 1891. Serial No. 415,927. (No model.)



Claim.—1. The combination, with a crane, a dipper having a hinged bottom, a latch for latching said bottom, and a dipper-handle, of a rope connected to said latch, and devices operated by compressed air for pulling said rope to unlatch said bottom, substantially as described.

2. The combination, with a crane, a dipper having a hinged bottom, a latch for latching said bottom, and a dipper-handle, of a cylinder mounted upon said dipper-handle, a piston working in said cylinder, a piston-rod, means for connecting the piston-rod and the latch, and a pipe for conducting compressed air into said cylinder, substantially as and for the purpose specified.

3. The combination, with an air-compressor, a crane, a dipper having a hinged bottom 13, a latch-bolt 15, latch 17, and rope 18, of a cylinder 28, piston 20, rod 19, connected to said rope, spring 22, and a pipe for conducting compressed air into the cylinder 28, substantially as and for the purpose specified.

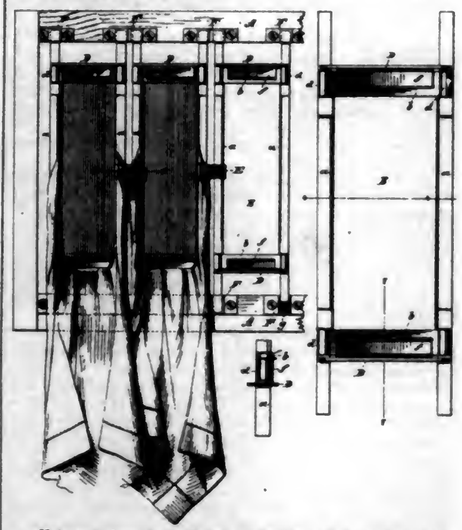
4. The combination, with a crane, a dipper-handle mounted upon said crane, mechanism for moving said dipper-handle upon said crane, and a dipper carried by said handle, of a brake for said dipper-handle, and devices operated by compressed air for setting said brake, substantially as described.

5. The combination, with a crane, a dipper-handle mounted upon said crane, mechanism for moving said dipper-handle upon said crane, and a dipper carried by said handle, of a brake-wheel 10, brake-band encircling said brake-wheel, and devices operated by compressed air for tightening said band upon said brake-wheel to set the brake, substantially as described.

6. The combination, with an air-compressor, a crane, a dipper-handle mounted upon said crane and having a rack 7, a dipper carried by said handle, shaft 9, pinion 8, brake-wheel 10, and brake-band 11, of a cylinder 29, a piston 30, rod 31, connected to said brake-band, and a pipe for conducting compressed air into said cylinder, substantially as and for the purpose specified.

7. In a steam-shovel, the combination, with a crane, a dipper-handle, a dipper having a hinged bottom, devices operated by compressed air to unlatch said bottom, a brake operated by compressed air to lock the dipper-handle in a stationary position, a hoisting-drum, and mechanism operated by compressed air to effect the rotation of said drum, of compressed-air pipes 26, 33, and 45 and valves 27, 34, and 46 for controlling the admission of compressed air to said pipes, a steam-engine 4, and lever 5 for controlling the supply of steam to said engine, the lever 5 and valves 27, 34, and 46 being arranged in proximity to each other, substantially as and for the purpose specified.

476,809. FABRIC-HOLDING FRAME FOR EMBROIDERING-MACHINES. JOHN J. NIEDERER, New York, N. Y. Filed Feb. 8, 1892. Serial No. 420,667. (No model.)



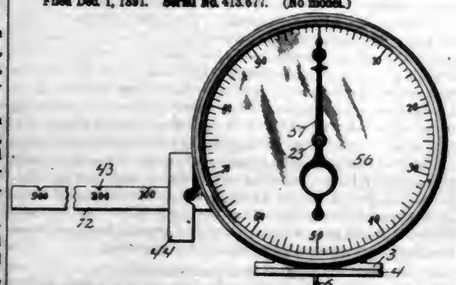
Claim.—1. In a frame B, the combination of the swiveled side bars *a a*, having angular end portions, with the end bars *b b*, socketed to permit of the rotation of said side bars *a a*, and with keys D for locking said swiveled sides *a a* in position, substantially as described.

2. The frame B, having end bars *b b* and side bars *a a* swiveled to said end bars, combined with the keys D D for locking said side bars *a a* to prevent their turning and with the rods *e e* and clamps *f f*, substantially as described.

3. The combination, in an embroidering-frame, of the ends *b b* and sides *a a*, swiveled thereto, with means, substantially as described, for securing fabrics to said ends and sides and for stretching the fabrics while secured to said frame, substantially as described.

4. The combination of the frame B, having rotating sides with projections or ends, with the main frame A, having sockets F and springs *g*, said ends of frame B being adapted to be sprung into and held in the sockets F of said main frame, substantially as described.

476,810. AUTOMATIC WEIGHING-SCALE. NILS NILSON, Minneapolis, assignor of one-fourth to Edward F. Quackenbush, Le Sueur, Minn. Filed Dec. 1, 1891. Serial No. 413,677. (No model.)



Claim.—1. In a weighing-scale, the combination of a scale-beam with a draw-rod pivotally connected with the short arm thereof, a curved lever pivoted at an intermediate point and having one of its arms or ends linked to the short arm of the scale-beam, a second and similarly-curved lever pivoted at one end and having its free end overhanging the first, and indicating means in connection with one of said levers, substantially as described.

2. The combination, in a weighing-scale, of two identically-curved levers, the first pivoted at a point between its ends, the second pivoted at one of its ends and opposite the free curved end of the other, the curve of each lever being identical with that of the other and a true arc of a circle, and indicating means in connection therewith, substantially as described.

3. The combination, in a weighing-scale, of a lever pivoted at a middle point and having a downwardly-curved arm, the curved surface thereof being a true arc of a circle, a second lever having a correspondingly-curved edge adapted to make a rolling contact on the other, said lever pivoted at one end and having its free end overhanging the first, a weight on said free end, means for applying the force or weight to be measured to the end of the first lever opposite the curved end thereof, and means for indicating said weight, substantially as described.

4. The combination, in a weighing-scale, of a frame with a lever 32, pivoted in bearings provided therein, a lever 35, pivoted at an opposite point and at one of its ends and having a weighted free end, a dial, a pointer arranged thereon, a pinion connected therewith, a quadrant for operating the same, an arm 49, arranged in connection with said quadrant, and a projection on the free end of the lever 35 to engage said arm, all substantially as described.

5. The combination, in a weighing-scale, of a frame, with a scale-beam pivoted therein, a draw-rod connected with the short arm of the same, a curved lever 32, pivoted at an intermediate point, a lever 35, oppositely pivoted and having its curved surface in contact with that of the lever 32, a link pivotally connecting the short arm of the scale-beam with the lever 32, a dial, and a pointer therefor, a pinion connected therewith, a quadrant-gear to engage said pinion, an arm arranged in connection with said quadrant, and a projection provided on the free end of the lever 35 to engage said arm, whereby as said lever is raised said arm will be operated to move said quadrant, as and for the purposes specified.

6. The combination of a frame with a scale-beam pivoted therein, a draw-rod connected with the short arm of the scale-beam, a sliding counterpoise arranged on said scale-beam, similarly-curved levers 32 and 35, pivoted, respectively, in bearings 22 and 21, a pinion, a quadrant engaging the same and secured upon a short shaft, an arm extending from said shaft, a projection on the lever 35 to engage said arm, a link pivotally connecting the short arm of the scale-beam with the short arm of the lever 32, said lever 35 having its free end weighted, and an indicating device in connection with said pinion, substantially as described.

7. The combination, in a weighing-scale, of a frame, a scale-beam pivoted therein, a draw-rod in connection therewith, curved levers, one pivoted at a middle point and the other pivoted at its end, a link connecting the first with the scale-beam, a shaft, an arm 49, rigidly secured thereon, the projection on the second curved lever to engage said arm, an indicating mechanism arranged in connection with said shaft, and a scoop-frame pivotally connected with said first lever, substantially as and for the purpose specified.

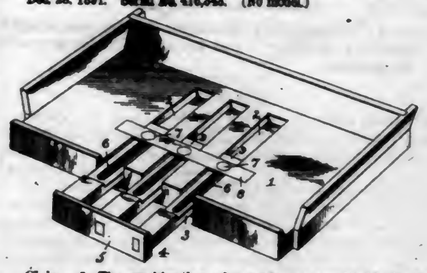
8. The combination, in a weighing-scale, of a frame, a curved lever 32, having a short arm provided with knife-edges 31, and also provided with knife-edges 33, bearings 22 for the same in said frame, a lever 35, having a portion curved to correspond with the curve of the first lever and provided at one end with bearings in said frame, the free end of said lever 35 being weighted and provided with a friction-roll projection, an arm 49, pivoted on a shaft 24, journaled in said frame, said arm adapted to engage said projection, an indicating device in connection with said shaft to be operated thereby, a scoop-frame provided with end bearings 60 to engage said knife-edges 31 and means for holding said scoop-frame in a free vertical position, substantially as described.

9. The combination, with the frame provided with a base 4 and having the simple and the ogee curved portions 19 and 20, of bearings 14, 21, and 22, arranged therein, the scale-beam pivoted in the first and the levers 35 and 32, pivoted, respectively, in the bearings 21 and 22, said levers provided with engaging curved surfaces, a link 29, pivotally connecting said scale-beam and the lever 32, a draw-rod connected with said scale-beam, a sliding counterpoise on said beam, said beam marked with the unit-weights, a dial marked with fractional weights, a pointer thereon, a pinion in connection therewith, a quadrant to engage the same and arranged on a shaft 24, an arm 49, extending therefrom, a projection on the lever 35 to engage said arm, the end 39 of said lever provided with a weight 41, a case 2, inclosing said frame and levers, substantially as described.

10. The combination, in a weighing-scale, of the frame with the scale-beam pivoted therein and having the short arm 11 and the sliding counterpoise, a draw-rod connected with said short arm, an extension 27 on said short arm, an adjustable counter-balance therefor, curved levers 32 and 35, pivoted in bearings 21 and 22, a link 30, connecting the short arm of said beam and the lever 32, the weighted end of the lever 35, the friction-roller arranged thereon, the arm 49, having the arm 54 and fixed on the shaft 24, the shaft 24, provided with the quadrant-gear, a pinion to engage the same, a dial and a pointer therefor fixed on the pinion-shaft, substantially as described.

11. The combination, in a weighing-scale, of the scale-beam and the draw-rod therefor, said scale-beam notched for unite-weights and having the sliding counterpoise, the curved levers 32 and 35, linked to said scale-beam, the quadrant arranged to be operated by the movement of the lever 35, the pinion engaging said quadrant, the scoop-frame pivoted on the end of the lever 32, the dial provided with two sets of marks, the pointer arranged thereon and connected with said pinion, and said pointer provided with the end 68, adapted to move over the second set of marks on said dial, and a case inclosing said levers, substantially as described.

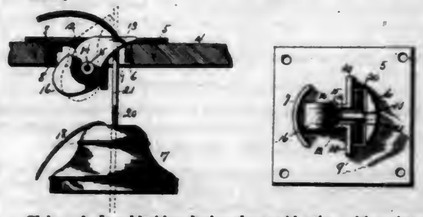
476,811. VEHICLE-SEAT. CARL OLSON, Roland, Iowa. Filed Dec. 28, 1891. Serial No. 416,343. (No model.)



Claim.—1. The combination of a main seat provided in its face with parallel grooves, a supplemental seat composed of a series of sliding bars arranged in the grooves and adapted to be extended from the seat when in use and to be returned within the grooves when not in use, and means for securing the bars in the grooves, substantially as described.

2. The combination of a main seat provided with grooves, a strip spanning the grooves, and a supplemental seat provided with sliding bars arranged in said grooves and provided at their rear ends with projections to engage the strip and having longitudinal slots and bolts passing through the strip and arranged in the slots of the sliding bars, substantially as described.

476,812. HITCHING DEVICE. JOHN R. PARKINSON, Aspen, assignor of two-thirds to Silas Bertenshaw, Denver, and Will S. Parkison, Glenwood Springs, Colo. Filed Nov. 23, 1891. Serial No. 412,840. (No model.)



Claim.—1. In a hitching device, the combination, with a plate or support formed with an opening for the passage of a weighted hitching-strap, of a tongue pivoted to one side of said opening and adapted when depressed to lie across the opening and having its rear end weighted to automatically move said tongue from across said opening and into an upright position when pressure is removed from the forward end of the tongue, and a weighted hitching-strap formed with openings for the weighted tongue to enter, substantially as and for the purposes described.

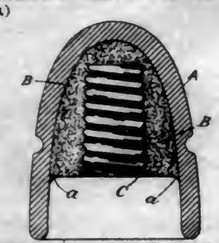
2. In a hitching device, the combination, with a plate or support having an opening for the passage of a weighted hitching-strap, of a tongue pivoted to one side of said opening and adapted when depressed to lie across the opening and having its rear end weighted and located beneath its support, a recess formed in the plate to receive the end of the tongue when depressed, and a weighted hitching-strap formed with openings for the weighted tongue to enter, substantially as and for the purposes described.

3. In a hitching device, the combination, with a plate or support having an opening for the passage of a weighted strap, of a pivoted counterbalanced tongue adapted to lie across said strap-opening, ribs formed on one face of said plate on opposite sides of said opening, and a weighted hitching-strap formed with openings for said tongue to enter, substantially as and for the purposes described.

4. In a hitching device, the combination, with a plate or support having an opening for the passage of a weighted strap, of depending projections to one side of said strap-opening having a space between them, a tongue pivotally supported back of said depending projections and adapted to play in the space between said projections and to lie across the strap-opening when depressed, and a weighted hitching-strap formed with openings for said tongue to enter, substantially as and for the purposes described.

5. In a hitching device, the combination, with a plate or support having an opening for a weighted strap and an opening extending transversely to the strap-opening to receive a pivoted tongue, of a tongue lying in said transverse opening and pivoted to a support, bosses on opposite sides of said tongue to center the tongue in its opening, and a weighted hitching-strap formed with openings for said tongue to enter, substantially as and for the purposes described.

476,818. PORCELAIN INSULATOR. JAMES PAGE and ALBERT P. SEYMOUR, Syracuse, N. Y. Filed Mar. 21, 1892. Serial No. 425,672. (No specimens.)



Claim.—1. A line-insulator, of porcelain or similar insulating material, having its socket, which fits upon a supporting-pin, formed in a mass of a porous cement cast within the insulator and saturated with paraffine or similar water-repellent substance.

2. A line-insulator consisting of a porcelain shell glazed, excepting at its socketed part, and provided with a mass of porous cement cast in such unglazed part and saturated with paraffine or similar material.

3. In a line-insulator, a socketed block of porcelain or other vitreous insulator having a socket formed in a mass of cement within the block and provided with a thin metal bushing around which the cement is cast.

4. As a new article of manufacture, a porcelain line-insulator having its socket formed in a mass of porous cement cast in the insulator and saturated with paraffine or similar water-repellent substance, and a bushing of thin metal lining said socket and held fast by the cement.

5. A line-insulator consisting of a porcelain cup-shaped shell provided on its interior with the longitudinal and vertical ribs or grooves, in combination with a mass of porous cement cast in said shell and saturated with a water-repellent substance and a socket in said cement lined with a protective bushing, as and for the purpose described.

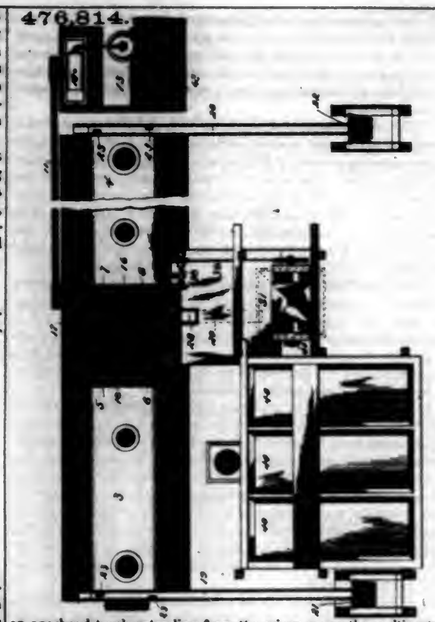
476,814. ASPHALT-PAVING APPARATUS. AMOS H. PERKINS, Chicago, Ill., assignor to the Western Paving and Supply Company, of Illinois. Filed Feb. 13, 1892. Serial No. 421,454. (No model.)

Claim.—1. In an asphalt-mixing apparatus, the combination of sand-drying drums, a motor for driving the same, a conveyer receiving motion from said drums, adapted to supply sand thereto, a conveyer adapted to move the sand discharged therefrom and deliver it to a storage-receptacle, and a measuring-hopper located below and connected with said storage-receptacle and provided with slides to alternately open and close the inlet and discharge passages of said measuring-hopper, substantially as described.

2. An asphalt-mixing apparatus consisting of sand-drying drums, a motor for driving the same, a conveyer receiving motion from said drums, adapted to supply sand thereto, a conveyer adapted to move the sand discharged therefrom and deliver it to a storage-receptacle, a measuring-hopper located below and connected with said storage-receptacle, a mixer below said measuring-hopper, a driving apparatus connecting said mixer with the motor driving the sand-drier, and means for supplying a measured quantity of asphalt to said mixer, all combined and operating substantially as described.

3. An asphalt-mixing apparatus consisting of sand-drying drums, a motor for driving the same, a conveyer receiving motion from said drums, adapted to supply sand thereto, a conveyer adapted to move the sand discharged therefrom and deliver it to a storage-receptacle, a measuring-hopper located below and connected with said storage-receptacle, a mixer below said measuring-hopper, a driving apparatus connecting said mixer with the motor driving the sand-drier, and means for supplying a measured quantity of asphalt to said mixer, said means consisting of a trolley supporting a measuring-ladle carried upon

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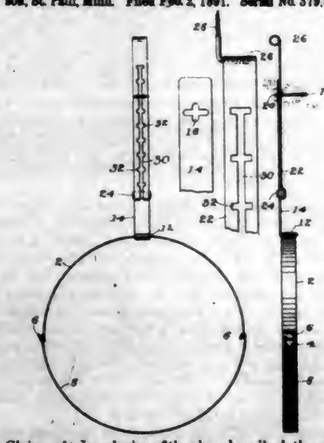


an overhead track extending from the mixer across the melting-tank, substantially as described.

4. The combination, in an asphalt-mixing apparatus, of a receptacle for the heated sand, having a diaphragm near its bottom, said diaphragm being provided with perforations near its margin, and a measuring-hopper connected to the bottom of said receptacle below said diaphragm, substantially as and for the purpose described.

5. The combination, in an asphalt-mixing apparatus, of sand-drying drums and their driving-gear, a platform supporting said drums and gearing capable of flexure under the weight of the drums, and a truss-rod extending across the unsupported part of said platform and provided with a turnbuckle, whereby the flexure of said platform may be varied to adjust the inclination of said drums, substantially as and for the purpose described.

476,815. ADJUSTABLE STOVEPIPE-SUPPORT. ALBERT PETTERSON, St. Paul, Minn. Filed Feb. 2, 1891. Serial No. 379,899. (No model.)



Claim.—1. In a device of the class described, the combination of a two-part clasp to surround the pipe, a sheet-metal arm rigidly connected to one member of the clasp, a sheet-metal extension-piece sliding upon said arm and adapted to be attached to a hook or other support having a longitudinal slot and oppositely-arranged notches in the sides of the slot, and a spring-catch adapted to be inserted through said slot and turned transversely thereof to engage said notches and to

lock the extension-piece upon said arm, substantially as and for the purpose set forth.

2. The combination of the semicircular sheet-metal clasp, members 2 and 8, adapted to surround the pipe and to be connected end to end, an arm having a loop firmly engaging the member 2 and having an opening formed by intersecting longitudinal and transverse slots therein, a spring-catch arranged in said opening, and the extension-piece 22, sliding upon said arm and adapted to be connected to a suitable support and having the longitudinal slot 30 and the notches 32 in the sides of said slot, adapted to receive said spring-catch, substantially as and for the purpose set forth.

3. In a device of the class described, the combination, with the pipe-clasp, of a two-part attachment to said clasp, comprising a sheet-metal arm connected to the clasp and a sheet-metal extension-piece sliding upon said arm and connected to the support, one of said members having an opening therethrough formed by the intersection of a transverse and longitudinal slot and the other member having a longitudinal slot and oppositely-arranged notches in the sides of said slot corresponding in size to the transverse slot of the opening in the other member, and a laterally-expanding spring-catch held in said opening in one member and extending through the slot in the other member and adapted to engage the notches of its slot, substantially as described.

476,816. ELECTRIC CONVERTER. GUSTAV PFANHAUSER, Exeter, N. H., and ALFRED PFANHAUSER, Cleveland, Ohio, assignors to the Brush Electric Company, Cleveland, Ohio. Filed May 14, 1887. Serial No. 238,205. (No model.)



Claim.—1. In an inductorium, the combination, with the primary and secondary conductors, of a magnetic envelope surrounding or inclosing them and consisting of iron particles insulated from one another.

2. In an inductorium, the combination, with the primary and secondary conductors, of a magnetic envelope surrounding them, consisting of iron filings separated from one another by insulating material.

3. In an inductorium, the combination, with the primary and secondary conductors, of a magnetic envelope surrounding them, consisting of particles of iron coated with insulating material and massed together.

4. In an inductorium, the combination, with the primary and secondary conductors, of a magnetic envelope surrounding them, consisting of particles of iron coated with paraffine and massed together.

5. The combination of a primary conductor, a secondary conductor laid parallel therewith, and a magnetic envelope consisting of insulated iron particles formed to inclose said conductors.

6. The combination of a primary conductor, a secondary conductor inclosing the primary, a winding around said secondary conductor, and a magnetic envelope inclosing the same and consisting of insulated iron particles.

7. The combination of a primary and secondary conductor laid parallel, a magnetic envelope consisting of insulated iron particles formed to inclose said conductors, and an exterior covering for said envelope.

8. In an inductorium, two or more primary conductors or convolutions thereof arranged at a little distance from one another, in combination with secondary conductors or convolutions arranged in close proximity to the respective primaries and a filling between and around said conductors, consisting of insulated iron particles.

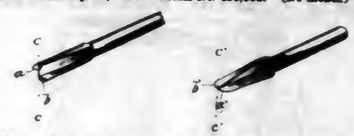
9. The combination of an inclosing box, a filling of insulated iron particles therein, and a series of inductive conductors or convolutions thereof arranged within said box at a little distance from one another and surrounded by the magnetic filling, whereby the latter forms a closed magnetic circuit around each inductive conductor or convolution thereof.

10. An inductive battery consisting of the combination of a number of inductive elements, each consisting of a primary and secondary conductor arranged in close proximity to one another and the several elements disposed at a little distance apart, with a box in which said elements are placed, a filling of insulated iron particles in said box between and around the respective elements, and electrical connections between the respective conductors at the opposite ends of the elements.

11. An inductive battery consisting of the combination of a box formed with holes in its opposite sides, a number of inductive elements, each consisting of a primary and secondary conductor arranged in close proximity to one another and the several elements arranged in said box with their opposite ends projecting through the holes therein, electrical connections between the respective conductors at the opposite protruding ends of the elements, and a filling of insulated iron particles in said box between and around the respective elements.

12. An inductive battery consisting of the combination of a box formed with holes in its opposite sides, a number of inductive elements, each consisting of a tubular secondary conductor and a primary conductor inclosed thereby, with its opposite ends protruding beyond the ends thereof, the several elements arranged in said box with their opposite ends projecting through the holes therein, electrical conducting-couplings between the projecting ends of successive secondary conductors, electrical conducting-couplings between the protruding ends of successive primary conductors, and a filling of insulated iron particles in said box between and around the respective elements.

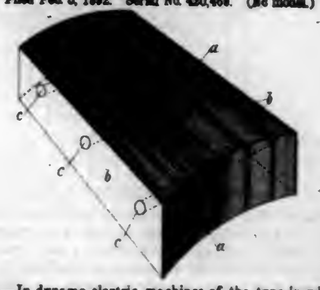
476,817. ENGRAVING-TOOL. CHARLES F. PRATT, East Buffalo, N. Y. Filed Apr. 8, 1892. Serial No. 428,332. (No model.)



Claim.—1. A rotary carving-tool having a plane passing longitudinally through the axis of the tool and having co-ordinate cutting-edges projected from opposite sides of the said plane, substantially as shown and described.

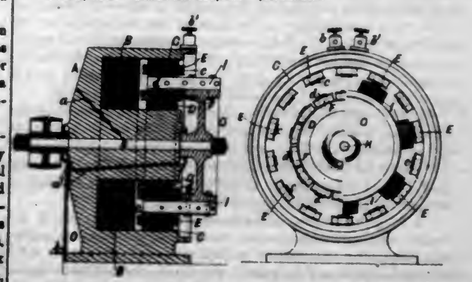
2. A rotary carving-tool having a plane passing longitudinally through the axis of the tool and terminating in a cutting-edge and co-ordinate cutting-edges projected from opposite sides of the said cutting-edge at points equidistant from the axis of the tool, substantially as specified, and for the purpose described.

476,818. MAGNETIC INDUCTOR FOR DYNAMO-ELECTRIC MACHINES. LAZARUS S. M. PYKE and EDWARD S. HARRIS, London, England. Filed Feb. 5, 1892. Serial No. 420,468. (No model.)



Claim.—In dynamo-electric machines of the type in which the field-magnet inducing and induced wire coils are all fixed, a magnetic inductor composed of laminæ of soft iron and laminæ of hard metal interspersed one with another for the purpose of strengthening the inductor, substantially as specified.

476,819. FIELD-MAGNET FOR DYNAMO-ELECTRIC MACHINES. LAZARUS S. M. PYKE and EDWARD S. HARRIS, London, England. Filed Feb. 5, 1892. Serial No. 420,470. (No model.)

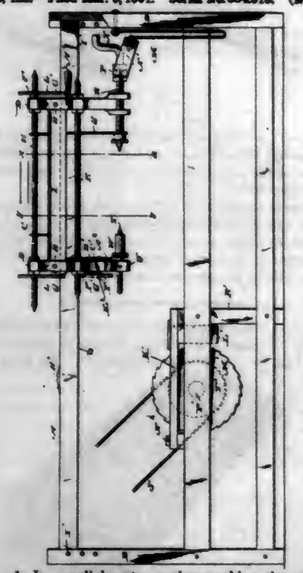


Claim.—1. In a dynamo-electric machine, a field-magnet formed by the combination of an electric conductor, formed of or acting as a single coil, a single magnetizable mass surrounding the said coil on the inner and outer circumferences and on one face and extending beyond the coil at the other face, and two sets of flat rings of magnetic metal fitting in and on the prolongations of the magnetizable mass and formed

so as to give projections adapted for the particular requirements desired, substantially as specified.

2. In a dynamo-electric machine, a field-magnet formed by the combination of an electric conductor formed of or acting as a single coil, a single magnetizable mass surrounding the said coil on the inner and outer circumferences and on one face and extending beyond the coil at the other face, and two sets of flat rings of magnetic metal fitting in and on the prolongations of the magnetizable mass and with secondary coils on the field-magnet polar extensions, and laminated inductors adapted to revolve between the opposing pairs of polar projections, as described.

476,820. RADIAL-CENTER SAWING-MACHINE. JOHN S. REID, Muncie, Ind. Filed Mar. 9, 1891. Serial No. 384,312. (No model.)



Claim.—1. In a radial-center sawing-machine, the combination, with a way and a carriage traveling thereon, of an adjustable center and a fixed center, a sliding sleeve mounted on said fixed center and provided at its rear end with a pinion, gear-wheels meshing with said pinion, a pinion on a shaft carrying a dial-disk, an index or pointer for said dial-disk, and a gage carried by the adjustable center, all constructed and arranged whereby the butt may be gaged to regulate the width of the strips to be cut, substantially as specified.

2. In a radial-center sawing-machine, the combination of a way and a carriage traveling thereon, a fixed and an adjustable center carried by said carriage, a sliding sleeve loosely mounted on the fixed center and serrated at its front end and provided with a pinion at its other end, a spiral spring for forcing said sleeve against the butt, a dial-disk, and gears actuating said dial-disk and meshing with said pinion when the butt is in position, substantially as shown and described.

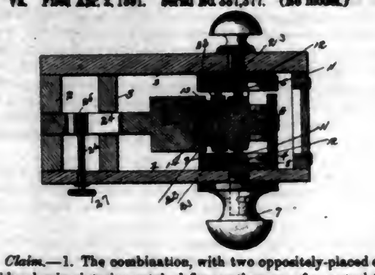
3. In a radial-center sawing-machine, the combination of the main frame, the bar *b*, and the carriage consisting of the hangers D, united by the threaded shafts E and provided with rollers H H, adapted to travel on the bar *b* of the shield I, suspended from the top shaft E and straddling the bar *b*, substantially as shown and described.

4. In a radial-center sawing-machine, the combination of the main frame, the bar *b*, the carriage consisting of the hangers D, united by the threaded shafts E and provided with rollers H, adapted to travel on the bar *b*, the shield I, suspended from the top shaft E and straddling the bar *b*, and the adjustable scrapers L, carried by the top shaft E, substantially as shown and described.

5. In a radial-center sawing-machine, the combination of the frame, a way, a carriage traveling thereon and provided with centers for holding a butt, the ball N', pivoted to one of said centers, and a rope connected to said ball and to the frame, substantially as shown and described, and for the purpose specified.

6. In a radial-center sawing-machine, the combination of the main frame, the vertical standards B, each provided with a series of apertures, the bar *b*, vertically adjustable on said standards and secured thereto by pins I', a carriage traveling on said bar and provided with centers for holding a butt, and a saw mounted in fixed bearings in the main frame, substantially as shown and described.

476,821. COMBINATION-LOCK. JAMES R. R. RIDDICK, Wakefield, Va. Filed Apr. 2, 1891. Serial No. 387,377. (No model.)



Claim.—1. The combination, with two oppositely-placed exterior tumblers having interior notched flanges thereon, of a central tumbler interposed between the said exterior tumblers and having notched annular flanges upon each side, each of the said tumblers having engaging projections thereon, a locking-bolt having a bifurcated rear end provided with shoulders adapted to bear upon the said flanges upon the tumblers or to pass through the notches thereof, and a graduated handle secured to one of the said exterior tumblers, substantially as described.

2. In a lock, the combination, with two oppositely-placed exterior tumblers having notches and projections thereon, of a tumbler centrally placed between the said exterior tumblers and having notches and recesses in its periphery, of a stud adapted to be removably secured in any of the said recesses and to engage the projections upon the exterior tumblers, a locking-bolt adapted to have its rear end bear against the periphery of the said tumblers or to pass into the notches therein, and a graduated handle secured to one of the said exterior tumblers, substantially as described.

3. The combination, with two oppositely-placed exterior tumblers having projections and interior annular notched flanges thereon, of a tumbler centrally placed between the said exterior tumblers and having annular notched flanges upon its opposite sides and recesses in its periphery, a stud adapted to be removably contained in any of the said recesses and to engage the projections upon the exterior tumblers, a locking-bolt having a bifurcated rear shouldered end adapted to bear upon the flanges of the said tumblers or to pass through the recesses therein, and a graduated handle secured to one of the exterior tumblers, substantially as described.

4. The combination, with two oppositely-placed exterior tumblers having projections and interior annular notched flanges, of a tumbler centrally placed between the said exterior tumblers and having annular flanges upon its opposite sides and having recesses in its periphery, each of the flanges upon the said central tumbler having a plurality of notches therein, a stud adapted to be removably secured in any of the said peripherical recesses and to make contact with the projections upon the exterior tumblers, plugs adapted to be inserted in the unused notches in the flanges of the central tumblers, a locking-bolt having a bifurcated rear shouldered end adapted to bear upon the flanges of the said tumblers or to pass through the recesses therein, and a graduated handle secured to one of the exterior tumblers, substantially as described.

476,822. VEHICLE-GEARING. DANIEL D. RUPLE, Columbus, Ohio. Filed Sept. 3, 1891. Serial No. 404,615. (No model.)



Claim.—1. In a vehicle-gear, the combination, with the body, wheels, and axles, of an L-shaped shaft having its horizontal arm journaled, as described, beneath the vehicle-body, a frame *c*, pivoted or journaled upon the vertical arm of said shaft, and springs *d d'*, connected, as described, the frame *c*, and axle *b*, substantially as specified.

2. In a vehicle-gear, the combination, with the body, wheels, and axles, of an L-shaped shaft having its horizontal arm journaled, as described, beneath the vehicle-body, a frame *c*, pivoted or journaled upon the vertical arm of said shaft, springs *d d'*, connected, as described, the frame *c* and axle *b*, yoke *h*, embracing loosely the horizontal portion of the shaft, and cushions *h'* on the vertical arms of said yoke, substantially as and for the purpose specified.

3. In a vehicle-gear, the combination, with the body, wheels, and axles, of the L-shaped shaft *g*, journaled, as described, beneath said body, triangular frame *c*, pivoted on the vertical portion of said shaft, shackles d^3 on axle *b*, and springs *d d'*, rigidly connected with the side bars or wings of the frame *c* at their rear end and jointedly connected with the shackles d^3 at their forward ends, said shackles being reversed, as described, and said spring connection therewith being formed on opposite sides of said axle, substantially as specified.

476,823. SPRING FOR SHIPS' BERTHS, CAR-SEATS, &c. SAMUEL L. SAUNDERS, Lynn, Mass. Filed Oct. 30, 1891. Serial No. 410,800. (No model.)



Claim.—1. In combination with the seat, as A, springs, as *a*, secured at one end thereto, and bearing-blocks pivotally connected with the seat-support and through which said springs are passed and by which they are supported, and means for adjusting the height of the bearing-blocks, substantially as described.

2. In combination with the seat A, springs, as *a*, secured at one end thereto, a suitable frame, as H, pivoted to the seat-support, and bearing-blocks, as *h*, for the springs, pivotally secured to the frame H, substantially as described.

3. In combination with the seat A, springs, as *a*, secured at one end thereto, a suitable frame, as H, pivoted to the seat-support, bearing-blocks, as *h*, for the springs, pivotally secured to the frame H, and a pawl, as N, attached to the seat-support and having teeth to engage the frame H, whereby the height of the frame can be adjusted.

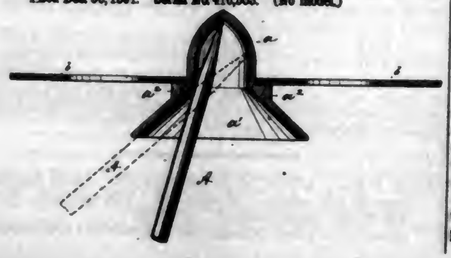
476,824. HAIR-WAVER. MARY L. SCHLEY, New York, N. Y. Filed Dec. 20, 1890. Serial No. 375,346. (No model.)



Claim.—1. An improved hair-waver comprising a flat bar having a lateral hook-shaped extension, the sides of the said extension being smooth and flat and entirely within the planes of the sides of the bar, and an elastic band extending between the end of the bar and the end of the extension.

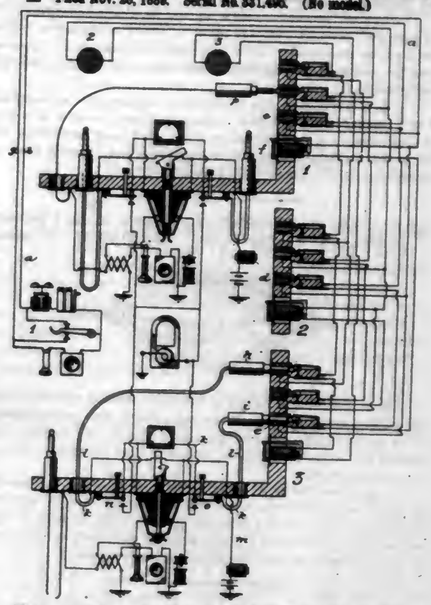
2. The herein-described hair-waver, consisting of the flat bar A, provided with the aperture a^2 at one end and at its opposite end with the lateral hook-shaped extension A', having the knob *a'*, and the elastic band B, secured in the perforation and engaging the knob of the hook-shaped extension, as specified.

476,825. SPINNING TOY. CHARLES SCHWARTZ, Brooklyn, N. Y. Filed Dec. 30, 1891. Serial No. 416,553. (No model.)



Claim.—A spinning toy composed of a conical cap having an outwardly-flaring flange and a surrounding shoulder a^2 at the upper end of the flange, and a disk secured to such shoulder, substantially as specified.

476,826. TELEPHONE-EXCHANGE APPARATUS. JOHN A. SEELY, Brooklyn, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 25, 1889. Serial No. 331,493. (No model.)



Claim.—1. The combination, with a metallic circuit, including a subscriber's station and connected with switches distributed on different switch-boards, of a loop-plug adapted to be inserted in one of the switches of said line, said loop-plug being provided with two strands, one of said strands being provided with a permanent ground connection through a retardation-coil and the other strand being provided with a key, and a source of electricity in a ground branch with which said key is adapted to be connected, substantially as and for the purpose specified.

2. Two telephone-lines looped together in metallic circuit through the subscriber's station and a pair of loop-plugs and flexible cords for effecting this looping together, one of the strands of said cords being provided with a branch to ground through a retardation-coil and the other strand being provided with two calling-keys, in combination with a source of electricity in a ground branch with which said keys are adapted to be connected, whereby current may be sent over either of said telephone-lines through the subscriber's station by operating the appropriate key, the circuit thus formed in either case being from ground at the central office through the source of electricity to the key and thence to one strand of a cord and thence over the metallic circuit and back to the other strand of the cord and thence through the branch containing the retardation-coil to ground.

476,827. WIRE-CLEAT. ALBERT P. SEYMOUR, Syracuse, N. Y. Filed Mar. 21, 1892. Serial No. 425,674. (No model.)



Claim.—1. As a new article of manufacture, a wiring-cleat having a base and top formed, respectively, with a recess and projection extending practically the whole length of the cleat and provided with two holes for clamping-screws, all as described, whereby wires may be bent and clamped at two points near the ends of the cleat and at one or more points between the clamping-screws.

2. As a new article of manufacture, a wiring-cleat consisting of the two elongated pieces A B, formed with clamping-jaws extending practically the whole length of the pieces and adapted to bend the

wire when the top is clamped down, and having two holes or perforations for clamping-screws near the ends of the blocks or pieces.

3. As a new article of manufacture, a wiring-cleat composed of two pieces A B of insulating material, formed near their ends with clamping-jaws adapted to bend the wire when the top is clamped down, and with two holes or perforations for clamping-screws near the end, whereby wires of different sizes may be effectively clamped, as and for the purpose described.

4. In a wiring-cleat having a top and back formed, respectively, as described, to clamp and bend the wire, a stud or projection *e*, projecting from one member, and a corresponding recess in the opposite member, said stud serving to keep the wire out of contact with the clamp-screw.

5. In a wiring-cleat, the combination, substantially as described, with a top and a back adapted to clamp and bend the wire, of a stud or projection from one piece surrounding the hole or perforation for the screw, and a corresponding depression in the opposite piece or member, as and for the purpose described.

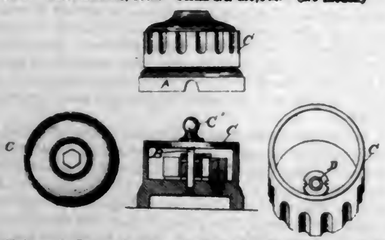
476,828. CIRCUIT-BREAKING INSULATOR. ALBERT P. SEYMOUR, Syracuse, N. Y. Filed Mar. 21, 1892. Serial No. 425,675. (No model.)



Claim.—1. A circuit-breaker insulator consisting of a solid block of porcelain or similar material, having grooves, slots, or depressions at its opposite ends disposed at right angles to one another, and grooves in the side of said block extending from each slot or groove to the opposite end.

2. As a new article of manufacture, a circuit-breaker insulator consisting of a solid block of porcelain or similiar vitreous material, having grooves or slots B B' at its opposite ends disposed at right angles to one another and tapering inwardly, and the grooves *a* along the side of the block, as and for the purpose described.

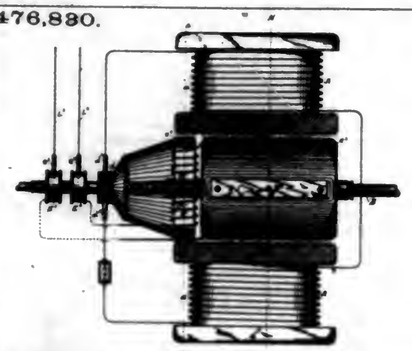
476,829. ELECTRIC SWITCH. ALBERT P. SEYMOUR, Syracuse, N. Y. Filed Mar. 21, 1892. Serial No. 425,678. (No model.)



Claim.—1. In an electric switch or other device having an operating switch spindle or shaft, the combination, with such spindle, of an attached imperforate cover of insulating material for the switch devices, serving, also, as the switch knob or handle and attached at its center to said spindle, so as to turn the same.

2. The combination, substantially as described, with the operating-spindle for a switch, of an imperforate cover of porcelain or similar insulating material, adapted to close in the switch mechanism, said cover being attached at its center to the operating switch-spindle and adapted to form an operating knob or handle for the switch.

476,830. COMPENSATING ALTERNATING-CURRENT DYNAMO. OLIVER B. SHALLENBERGER, Rochester, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Feb. 13, 1889. Serial No. 299,893. (No model.)



Claim.—1. The combination, with a field-magnet, of an armature revolving in the field of force established thereby, a second armature, coils for establishing a field of force therefor, receiving currents from the first-named armature, a magnetic bridge-piece between points of opposite polarity in the core of the first-named armature, and supplemental coils wound upon said bridge-piece.

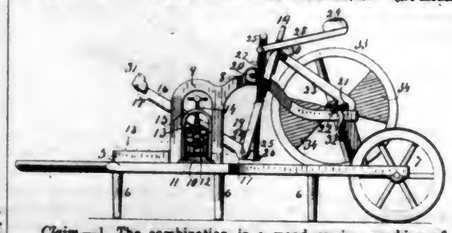
2. The combination, with the field-magnet and two armatures revolving within the field of force established thereby, of a commutator through which currents are delivered from one armature to the coils of the field-magnet for exciting the same, a bridge-piece applied to the first-named armature, having its poles directed to points of normally-opposite polarity in the armature-core, supplemental coils wound thereon and connected in series with the coils of the second armature, and a commutator or collector constituting the terminals of the coils of the second armature.

3. An armature for electric machines, consisting of an annular core, a bridge-piece directed to points diametrically opposite in said core, main exciting-coils upon the annular portion of said core, and supplemental coils wound upon the bridge-piece, substantially as described.

4. An armature for electric machines, consisting of an annular core, a bridge piece directed to points diametrically opposite in said core, main exciting-coils upon the annular portion of said core and supplemental coils wound upon the bridge-piece, a field-magnet excited by currents delivered from the first-named coils, and an independent source of current for the second-named coils.

5. An armature for electric machines, consisting of an annular core, a bridge-piece directed to points diametrically opposite in said core, said bridge-piece being narrowed at its ends and in magnetic contact with the annular core, main exciting-coils upon the annular portion of said core, and supplemental coils wound upon the bridge-piece, substantially as described.

476,831. WOOD-SAWING MACHINE. JAMES SHANAHAN, Port Gibson, Miss. Filed Feb. 13, 1892. Serial No. 422,012. (No model.)



Claim.—1. The combination, in a wood-sawing machine, of a frame, a sash fitted to slide therein, an arch above and secured at its ends to the sash, a yoke hung to the arch by a screw, and means upon the sash for holding wood in opposition to the said yoke, substantially as described.

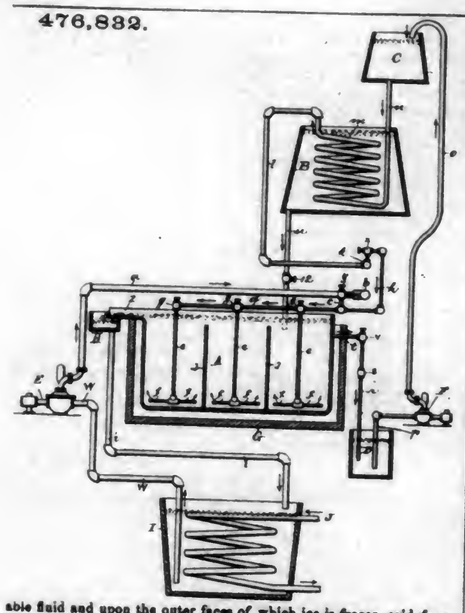
2. The combination, in a wood-sawing machine, of a frame, means for holding wood thereon, a lever pivoted in a general vertical position upon the frame, a saw pivotally hung at one end of the said lever, and a rod passing through the said lever and pivotally connected at one end with the shank of the saw to the rear of the hanger-pivot thereof, and pivotally connected near its other end with a second lever, this second lever being mounted to rest freely upon shoulders of the first-named lever, substantially as described.

3. The combination, in a wood-sawing machine, of a frame, a lever pivoted thereto, a saw pivotally hung upon the lever, and a rod fitting freely in the lever and pivotally connected with the shank of the saw to the rear of the lever connected therewith, the said rod having a wedging portion to engage the lever, whereby the saw may be held suspended, substantially as described.

476,832. APPARATUS FOR MAKING ICE. THOMAS SHIPLEY, Cincinnati, Ohio, assignor of one-half to Louis J. Dolle, same place. Filed Sept. 25, 1891. Serial No. 406,367. (No model.)

Claim.—1. A hollow freezing-plate for containing a non-congealable fluid and upon the outer faces of which ice is frozen, said freezing-plate having inlets for the non-congealable fluid along its bottom, having no horizontal partitions or plates, and having an outlet for the non-congealable fluid at its upper part, whereby the non-congealable fluid circulates upwardly through the plate, substantially as set forth.

476,832.



2. A hollow freezing-plate for containing a non-congealable fluid and upon the outer faces of which ice is frozen, said freezing-plate having inlets for the non-congealable fluid along its bottom, having no horizontal partitions or plates, having vertically-extending partitions, and having an outlet for the non-congealable liquid at its upper part, whereby the non-congealable fluid circulates by upward uniformly through the plate, substantially as set forth.

3. A hollow freezing-plate having vertical partitions 2 2 and outlet *z* at its upper part, in combination with perforated pipes *f* (the perforations of which constitute inlets for the non-congealable fluid) at the bottom of the plate, and pipes *e* and *d* for conveying the non-congealable fluid to the pipes *f*, substantially as set forth.

4. The combination of the refrigerating-tank I, a plurality of freezing-plates having discharge-nozzles, the conduit H, into which all of the freezing-plates discharge, a return-pipe i, leading from the conduit H to the tank I, the supply-pipe W, leading from tank I to the freezing-plates, and the pump E in pipe W, substantially as set forth.

5. A freezing-plate having a main outlet near the top, a secondary outlet below the level of said main outlet, and a valve controlling said secondary outlet, whereby the non-congealable fluid within the freezing-plate can be drawn off to the level of said secondary outlet, substantially as set forth.

6. A freezing-tank containing the liquid to be frozen, a supply-tank for holding the liquid to be frozen preparatory to its being introduced into said freezing-tank, and a hollow freezing-plate within said freezing-tank, upon the exterior surfaces of which the liquid within said freezing-tank is frozen, in combination with a non-congealable-fluid circuit which conducts a non congealable fluid from the interior of said hollow freezing-plate into operative contact with the fluid in said supply-tank, (whereby the temperature of said non-congealable fluid is raised above the freezing-point, thus changing said fluid from a freezing medium into a thawing medium and at the same time lowering the temperature of the liquid to be subsequently frozen in said supply-tank,) and thence back to said hollow plate, and means for conveying said non-congealable fluid through said circuit, substantially as set forth.

7. A freezing-tank containing the liquid to be frozen, a hollow freezing-plate within said tank, upon the exterior surfaces of which the liquid within said freezing-tank is frozen, a refrigerator where a non-congealable fluid is cooled below the freezing-temperature, means for conveying said non-congealable fluid in circuit from said refrigerator to and through said hollow freezing-plate, thereby effecting the freezing of the liquid in said freezing-tank and back to said refrigerator, and means for cutting off said circuit, in combination with a supply-tank for holding the liquid to be frozen preparatory to its being introduced into said freezing-tank, a non-congealable-fluid circuit which conducts a non-congealable fluid from the interior of said hollow plate into operative contact with the fluid in said supply-tank, (whereby the temperature of said non-congealable fluid is raised above the freezing-point, thus changing said fluid from a freezing medium to a thawing medium and at the same time lowering the temperature of the liquid to be subsequently frozen in said supply-tank,) and thence back to said hollow plate, means for conveying said non-congealable fluid through said circuit, and means for cutting off said circuit, substantially as set forth.

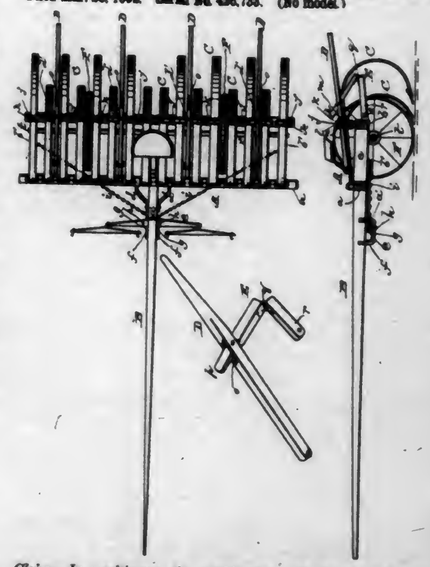
476,883. TYPE-WRITING MACHINE. FREDERICK L. H. SIMS, Toronto, Canada. Filed Aug. 3, 1891. Serial No. 401,491. (No model.)



Claim.—1. In a type-writer, and in combination, the pawl E, the dog D, and holding and adjusting means for the said dog, comprising the pin J, having one end smaller than the other and eccentric thereto, substantially as described.

2. In a type-writer, and in combination, the pawl E, the dog D, the pivot-pin for the dog, having one end smaller than the other and eccentric thereto, the said pin having the screw-gear thereon, the screw M, engaging therewith, and the pin *i*, extending into the annular groove in the screw, substantially as described.

476,884. CULTIVATOR. JAMES D. SIMMONS, Hagerstown, Md. Filed Mar. 28, 1892. Serial No. 426,733. (No model.)

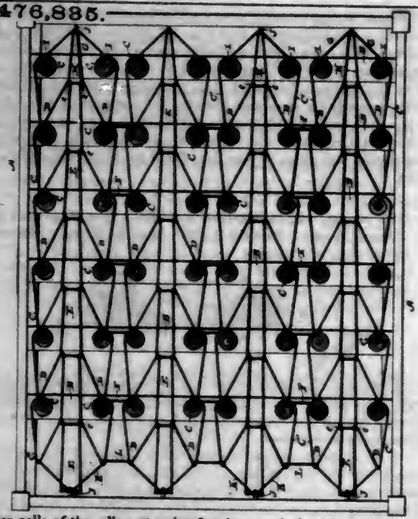


Claim.—In a cultivator, the combination, with the frame having transporting-wheels, of the teeth pivoted on top of the front cross-bar, the movable cross-bar beneath said teeth, the plates arranged above the teeth and provided with the spring, the hand-levers pivoted at their forward ends to the frame and secured about their center to the movable upper cross-bars and provided with the slot, and the jointed bars pivoted to the rear cross-bar of the frame and hinged, as shown, the upper end passing through and pivoted in the slot of the lever, the extended end of said bar serving as a handle, substantially as described.

476,885. BED-SPRING. JAMES SIMS, DAVID J. WOOD, and JOHN W. SIMS, Bentonville, Ark. Filed Apr. 8, 1892. Serial No. 428,358. (No model.)

Claim.—1. In a spring bed-bottom, the combination, with the slats, of the adjacent pairs of coiled springs upon said slats, each of said pairs of springs having extended bridges which comprise the opposite V-shaped portions having their respective apices engaging the

476,885.

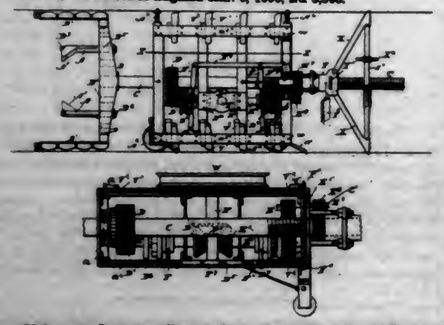


upper coils of the adjacent pair of springs and the central elongated U-shaped portions joining the inner ends of the V-shaped portions and extended beyond the apices of said V-shaped portions between and beyond the said adjacent pair of springs and interlocked with the bridge of said adjacent pair of springs, substantially as set forth.

2. In a spring bed-bottom, the combination of the adjacent pairs of coiled springs, each of said pairs of springs having extended bridges which comprise opposite V-shaped portions having their respective apices engaging the upper coils of the adjacent pair of springs and the central elongated U-shaped portions joining the inner ends of the V-shaped portions and extended beyond the apices of said portions between and beyond the said adjacent pair of springs and interlocked with the bridge of said adjacent pair of springs, and the coupling-links connecting the apices of the adjacent V-shaped portions with the coils of the springs which said apices engage, substantially as set forth.

3. In a spring bed-bottom, the combination, with the bed-frame and the slats thereto, of the adjacent pairs of coiled springs upon said slats, each of said pairs of springs having extended bridges interlocking with the adjacent bridges and pairs of springs, said bridges comprising opposite V-shaped portions and a central elongated U-shaped portion extended beyong the apices of said V-shaped portions and between and beyond the said adjacent pair of springs, and the end couplings having a central loop portion engaging the end bridges, and laterally-extending hook-arms engaging the top coils of the end pairs of springs and the bed-frame, substantially as set forth.

476,886. TUNNELING OR MINING MACHINE. Reginald Stanley, Nuneaton, England. Filed May 3, 1891. Serial No. 393,646. (No model.) Patented in England Mar. 6, 1890, No. 3,595.



Claim.—1. In a tunneling-machine, the combination of the main frame, the relatively-advancing cutting mechanism mounted on said main frame, cutter-driving gearing, the frame-advancing gearing, a transversely-arranged power-shaft engaging with both said gearings, a rope-wheel on said shaft, and clutch devices for alternately connecting and disconnecting the two gearings and the said transversely-arranged power-shaft, substantially as set forth.

2. The combination, with the main frame, the cutting apparatus, the rope-wheel rotating in one direction only, the cutter-driving gearing, and the frame-advancing gearing, said cutter-driving gearing and frame-advancing gearing being actuated alternately, of the clutch devices for simultaneously engaging and disengaging the continuously-revolving rope-wheel with said gearings alternately, substantially as described.

3. The combination of the main frame, the relatively-advancing cutter-driving shaft, the transversely-arranged power-shaft, the rope-wheel for imparting motion thereto, two longitudinally-arranged continuously-moving shafts geared to said power-shaft, gearing connected to one of said two shafts for driving the cutters, gearing connected to the other of said shafts for advancing the main frame, and clutch devices for alternately connecting and disconnecting the said continuously-moving shafts and the said gearings, respectively, substantially as set forth.

4. In a tunneling-machine, an upright centrally-arranged main frame, a tunnel-forming cutter, a longitudinally-moving cutter-carrying shaft, a transverse initial power-shaft, cutter-rotating gearing, frame-advancing gearing, a longitudinally-moving clutch for alternately engaging said gearings with said power-shaft, and the clutch-shifter for simultaneously connecting one of said gearing and disconnecting the other, substantially as set forth.

5. The combination of the cutting apparatus, the main frame, the wheels or supports for the main frame, the guides on the main frame, a series of stays independent of the supports and adapted to be driven endwise into the roof or floor of the mine, and locks for clamping the stays tightly in place, substantially as set forth.

6. The combination, with the main frame, the cutting apparatus projecting from said frame, and the wheels or supports for said frame, of the wedge bars or stays V', independent of said frame-supports, adapted to be driven into the floor, and the wedges for clamping the parts V' tightly against the machine, substantially as set forth.

7. The combination of the main frame, the supporting-wheels arranged in the central vertical longitudinal plane, the cutting apparatus extending forward from the frame, the hinged bracing-frames projecting laterally from the main frame, rollers on the ends of said frames, and the locking links or bars for said swinging frames, substantially as set forth.

8. The combination of the main frame, the rotary cutter-shaft mounted on said frame, the rope-wheel at the side of said frame, the shaft for said wheel extending across the frame, the swinging brace-frames extending laterally from the main frame, the lateral braces for the upper portion of the frame, and the series of adjustable wedges or relatively sharp bars V', adapted to be driven downward into the floor, substantially as set forth.

9. The combination of the main frame, the cutting apparatus, the movable abutment against which said main frame and cutting apparatus bear, sprags hinged to said abutment, and an extensible bar connecting said sprags independently of said abutment, substantially as set forth.

10. In a mining-machine, the combination, with the main frame and the longitudinally-arranged threaded shaft carrying the cutting apparatus, of a sleeve or abutment behind said frame and loosely sliding on said threaded shaft, sprags hinged to said sleeve or abutment, and an extensible bar connecting said sprags independently of the abutment, substantially as set forth.

11. The combination of the main frame, the cutting apparatus, the cutter-driving gearing mounted in the main frame, the nut secured to the main frame, and the abutment bearing against the frame and supported independently of the nut and the frame, substantially as set forth.

12. The combination of the main frame, the cutters, the nut secured to the frame, the threaded shaft engaging with the nut, and the abutment surrounding the shaft loosely in the rear of the nut and supported independently of the frame and bearing against it when the cutters are at work, substantially as set forth.

13. The combination of the main frame, the cutting apparatus, the cutter-driving gearing supported on the main frame, a feed mechanism for the cutters, and an abutment supported independently of the frame and the feeding mechanism and behind and bearing against the frame when the cutters are at work, substantially as set forth.

14. The combination, with the main frame, the cutting apparatus advancing relatively thereto, the cutter-driving gearing mounted thereon, and means for fastening the frame to the surrounding walls, of the abutment supported independently of the main frame and bearing against it when the cutting apparatus is advancing, substantially as set forth.

15. The combination of the frame, the cutters advancing relatively to the frame, means for fastening the frame to the surrounding walls, the threaded shaft, the nut, and the abutment in rear of the machine, adapted to receive alternately the thrust of the cutters and the thrust of the frame, substantially as set forth.

16. The combination of the frame, the cutters advancing relatively to the frame, means for fastening the frame to the surrounding walls,

the abutment engaged with the surrounding walls, the nut, and the screw-shaft secured to the cutters, said shaft and nut bearing alternately against the abutment, substantially as set forth.

17. The combination of the frame, the cutters, the nut, the abutment separate from the nut and mounted independently of the frame and bearing against the frame when the cutters are at work, and the oppositely-projecting extensible sprags connected at their ends to said abutments and adapted to be driven into the roof and floor of the mine, substantially as set forth.

18. In a mining-machine, the combination, with the main frame and the cutting apparatus, of the movable abutment behind said frame, sprags X X, hinged thereto, telescopic screws X', and hand-wheels X², substantially as set forth.

19. In a mining-machine, the combination, with the main frame and the cutting apparatus, of the movable abutment behind said frame, against which said frame and cutting apparatus alternately bear, sprags hinged on opposite sides of said abutment and projecting outwardly therefrom, telescopic screws secured in the outer ends of said sprags for forcing said sprags into engagement with the adjacent walls, and hand-wheels for turning said screws, substantially as set forth.

20. The combination, with a main frame and the rotary cutter-shaft projecting rearward from said frame, of an abutment, as at Y, mounted loosely on said shaft and abutting against said main frame and said shaft alternately, sprags hinged to said abutment, and telescopic screws for forcing said sprags apart and into apertures in the walls of the heading, substantially as set forth.

21. The combination, with a main frame and the rotary cutter-shaft projecting rearward from said frame, of an abutment mounted loosely on said shaft, said abutment having an aperture or slot extending through the sides thereof, a plate adapted to slide in said aperture, and means for making said abutment stationary relatively to the rotary shaft and main frame alternately, substantially as set forth.

22. The combination, with the main frame and the cutting apparatus adapted to be alternately made stationary and each adapted to be advanced relatively to the other while the latter is stationary, of the nut mounted in the frame and the movable abutment behind the machine, against which the main frame and the cutting apparatus alternately bear, substantially as set forth.

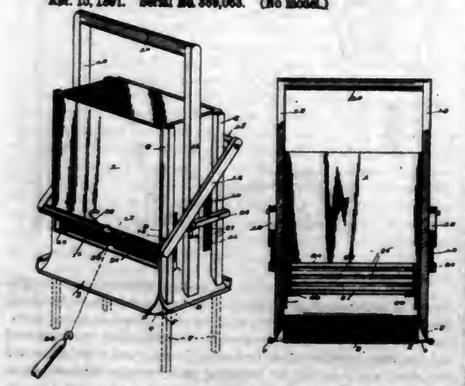
23. The combination, with the main frame and the rotary cutter-shaft adapted to be alternately made stationary and each adapted to be advanced relatively to the other when the latter is in rotation, and the nut secured on the frame, of the movable abutment on said rotary shaft, against which the main frame and the rotary cutter-shaft bear alternately, substantially as set forth.

24. The combination of the main frame, the cutting apparatus, and the gearing therefor, and vertically-adjustable shields secured to the frame and adapted to be extended over the machine, substantially as set forth.

25. In a tunneling-machine, the combination of the main frame, the cutting apparatus, the gearing, and shields hinged to the frame and adapted to be extended over the machine, substantially as set forth.

26. In a tunneling-machine, the combination of the main frame, the cutting apparatus, the gearing, shields secured to the frame and extending over the machine, and extensible stays secured to the frame and adapted to press the shields against the sides of the tunnel, substantially as set forth.

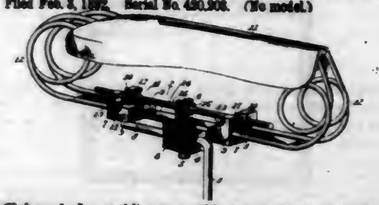
476,887. EVAPORATOR. Elias Stillwell, Dodgeville, Mo. Filed Apr. 15, 1891. Serial No. 389,063. (No model.)



Claim.—1. In a fruit-evaporator, the rectangular sheet-metal casing provided at its lower edge with slits or ventilating-openings at each corner for the admission of air and having integral outturned flanges connected and stiffened together in their outturned positions by a wire binding to form feet for the casing to rest upon, substantially as set forth.

2. The combination, with the casing having the integral outturned bottom flanges forming feet, tubular vertical sockets secured to each end of the casing and opening through the end flanges, and spring-catches having points extending through perforations in the said tubular sockets, of the supplemental and detachable legs vertically movable in said sockets and through and below said flange-feet and having recesses to receive the points of the spring-catches, substantially as set forth.

476,888. BICYCLE-SADDLE. Frank Swetland, Angola, N. Y. Filed Feb. 3, 1892. Serial No. 420,908. (No model.)

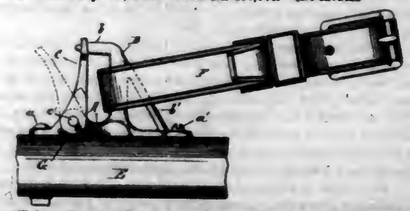


Claim.—1. In a saddle, the combination, with the spring-bar provided with a post having a bearing, a collar mounted for sliding on the bar at one side of the post, said collar having a perforation and a transverse groove or seat in its inner face, a threaded rod journaled in the post and provided with a collar or angular boss, of the leather-seat connections between its rear end and the spring-bar, the pair of springs connected to the front end of the seat and having their lower ends passed through the perforations in the collar, and the nut 17, having lugs 18, threaded on the rod and adapted to engage the seat of the collar, substantially as specified.

2. In a saddle, the combination, with the spring-bar, the bifurcated post rising therefrom, the opposite collars mounted for sliding on the bar, the seat, and the opposite pairs of springs connected thereto, of the right-and-left-hand threaded rod mounted in the recesses formed in the collars and having the plain central bearing portion located in the bifurcation of the post and provided at opposite sides of the post with polygonal bosses, the angles of which are at variance with each other, substantially as specified.

3. In a saddle, the combination, with the spring-bar having upon its upper side the bifurcated post and at its lower side the bored stud, the L-shaped standard, and the binding-bolt 5 for securing the stud thereto, of the opposite L-shaped sliding collars 7, having the recesses 10 in their upper sides, slots 8 near their lower ends and opposite perforations 9, the seat 11, the springs 12, connected thereto and terminating in the perforations 9, the adjusting-rod 14, having the plain bearing 15, polygonal bosses 16, mounted in the bifurcated post and having its opposite ends threaded in opposite directions, the nuts 17, having the trunnions 18 at diametrically-opposite sides thereof and seated in recesses 13 formed in the inner faces of the collars, substantially as specified.

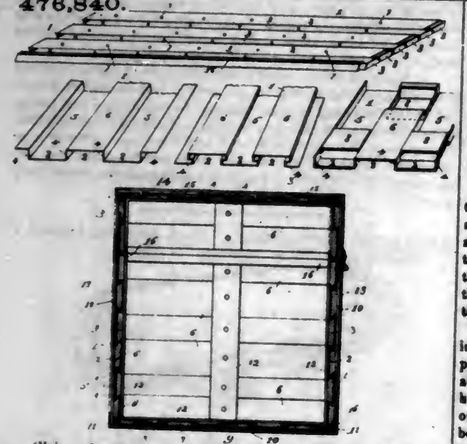
476,889. HOLDBACK FOR VEHICLES. James F. Tait, Evanston, Ill. Filed Sept. 23, 1891. Serial No. 407,071. (No model.)



Claim.—In a holdback-iron, the combination, with a base-plate A, having a transverse circular recess G, and with an upwardly-projecting and forwardly-opening hook B, of a tongue C for closing the hook-opening, a pivot-pin *c'* for securing the tongue to the base-plate, a spiral spring D, wound upon the pivot pin *c'* and normally holding the swinging end of the tongue C against the hook B, said spring being housed within the recess G, and a boss or shoulder *c* on the tongue and adapted to engage in said recess, substantially as described.

476,840. MANUFACTURE OF TRUNKS, &c. Brad D. Taylor, Hornellsville, N. Y. Filed Aug. 26, 1891. Serial No. 403,513. (No model.)

476,840.



Claim.—1. A trunk or analogous article having its walls formed of a series of stiffening-pieces, and a sheet of flexible material passing alternately from the outside to the inside of the wall and partly around said pieces and having the connecting portions 4 situated at substantially right angles to the faces of said walls, substantially as set forth.

2. A trunk or analogous article comprising a series of stiffening-pieces, a metallic sheet passing alternately over the inner and outer faces of said pieces, and transverse bands lying upon said pieces and sheet and connected therewith, substantially as set forth.

3. In a trunk or analogous article, the combination of a sheet of flexible material bent to form recesses or corrugations on its inner and outer sides and having connecting portions joining the outer and inner parts of the sheet, and stiffening-pieces situated in said recesses, said sheet being continuous from one face to another of the trunk, substantially as set forth.

4. The combination of a series of stiffening-pieces, a sheet of flexible material bent to receive said pieces alternately on its outer and inner faces and having the connecting portions 4 situated at substantially right angles to the faces of said walls, and securing means for holding said sheet and pieces together, substantially as set forth.

5. The combination of a series of stiffening-pieces, a sheet of flexible material bent to receive said pieces alternately on its outer and inner face, and transverse bands and rivets uniting said pieces and material, substantially as set forth.

6. The herein-described method of making trunks and other articles, consisting in forming a sheet of flexible material with alternate crimped portions or recesses on both of its sides and filling said recesses with stiffening-pieces, then removing portions of said pieces, and then bending the sheet to form the body of the article, substantially as set forth.

7. The herein-described method of making trunks and other articles, consisting in forming a sheet of separate stiffening-pieces and continuous flexible binding material which passes alternately in front of and behind said pieces, then securing together said pieces and material, then removing portions of the stiffening-pieces, and then bending the sheet, substantially as set forth.

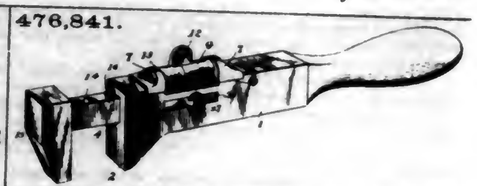
8. The herein-described method of making trunks and other articles, consisting in forming a continuous flat sheet of stiffening-pieces, and flexible binding material which passes alternately in front of and behind said pieces, then securing together said pieces and material while said sheet is in a substantially flat form by rivets or nails, then removing portions of the stiffening-pieces on the lines where the angles of the finished article are to occur, and then bending the sheet on said lines to form the body of the article, substantially as set forth.

9. A trunk or analogous article having its walls formed of a series of stiffening-pieces, and a sheet of flexible material passing alternately from the outside to the inside of the wall and partly around said pieces and having the strips 8, substantially as set forth.

10. As an improved article of manufacture, a trunk having its walls formed of a series of stiffening-pieces, a sheet of flexible material which passes alternately from the inner to the outer side of the trunk and is bent to form recesses in which said pieces are seated, and pieces extending crosswise of said recesses and connected with the sheet, substantially as set forth.

476,841. WRENCH. JOHN J. TOOHEY, Washington, Ind., assignor of one-half to Nathan B. Russell, same place. Filed Mar. 19, 1892. Serial No. 425,608. (No model.)

476,841.

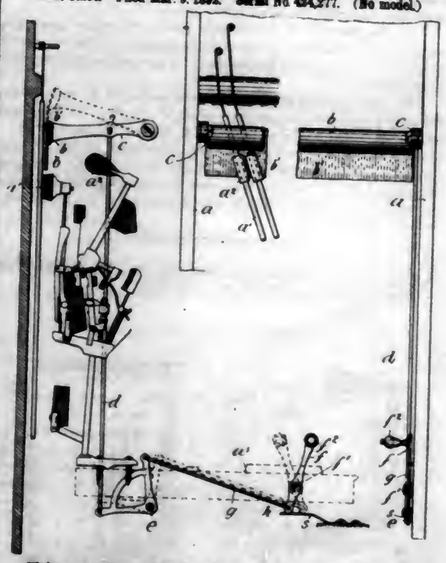


Claim.—1. In a wrench, the combination, with the hollow stock terminating at one end in a handle and at the opposite end in a fixed jaw and provided at one side with an opening, bearings being formed above and below the same, of a shank mounted for sliding in this stock and terminating at its outer end in a jaw, a bolt mounted for oscillation in the bearings and provided at its inner face with a series of transverse threads for engaging threads on the shank, and a thumb-lug opposite the threads, substantially as specified.

2. In a wrench, the combination, with the hollow stock terminating at one end in a handle and at the opposite end in a fixed jaw and provided at one side with an opening, bearings being formed above and below the same, of a shank mounted for sliding in the stock and having its rear side provided with series of inclined teeth and at its outer end provided with a jaw, and an oscillating bolt mounted in the bearings and provided with a series of inclined teeth at one side, said teeth being disposed oppositely to those of the shank and provided in rear of the same with a thumb-lug, substantially as specified.

3. In a wrench, the combination, with the stock having a rectangular bore, said stock terminating at one end in a jaw and at the opposite end in a handle provided at one side with a slot and at its rear side with an opening, the slot and opening communicating with the bore, and bearing-lugs formed above and below the opening, of a shank mounted for sliding in the bore and having its rear side provided with transverse teeth, a jaw on the outer end of the shank, an oscillating bolt mounted in bearings in the lugs and provided at its inner side with transverse teeth, a thumb-lug located on the bolt opposite the teeth thereof, and a stud mounted on the shank and extending through the slot, substantially as specified.

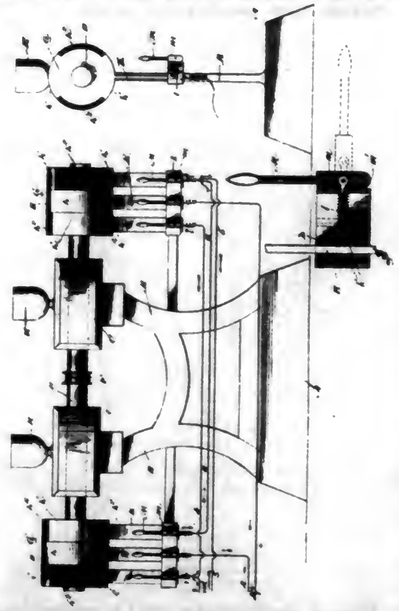
476,842. MUFFLING ATTACHMENT FOR UPRIGHT PIANOS. OTTO R. TREFZ, Philadelphia, Pa., assignor to the Lester Piano Company, same place. Filed Mar. 9, 1892. Serial No. 424,277. (No model.)



Claim.—1. The combination, in a muffling attachment for upright pianos, of a curtain or apron adapted for insertion between the hammers and wires, link-work for operating said curtain or apron, a pivotal hand-lever having one extremity accessible from the keyboard and the other extremity provided with a knuckle and attached to said link-work, and a spring for engaging said knuckle, substantially as and for the purposes set forth.

2. The combination, in a muffling attachment for upright pianos, of a curtain or apron adapted for insertion between the hammers and wires, link-work for operating said curtain or apron, a pivotal hand-lever having one extremity connected with said link-work and the other extremity accessible from the keyboard, and a spring-and-knuckle bearing for automatically retaining the curtain or apron in operative or inoperative position, substantially as and for the purposes set forth.

476,848. CURRENT-ALTERNATOR. HARRY L. TYLER, Corning, N. Y., assignor of two-thirds to George W. Drake and Charles E. Drake, same place. Filed Oct. 6, 1891. Serial No. 407,857. (No model.)



Claim.—1. In a current-alternator, the combination, with a suitable support and bearings, of a shaft journaled horizontally in said bearings and provided with a central pulley, means for operating said shaft, opposite commutators mounted upon each end of said shaft, said commutators being provided with central continuous contact rings or faces, a series of segmental contact-faces joining said central rings and alternately disposed with relation to each other on both sides of the central ring and insulated bearing-faces interposed between the ends of said opposite sets of segmental faces, and of a series of commutator-brushes adjustably supported beneath and in contact with the several faces of said commutators and connected in circuit with the source of supply and each other to alternately reverse the current over the working wires, substantially as set forth.

2. In a current-alternator, the combination of the opposite commutators mounted upon each end of a shaft independently operated away from the generator, said commutators being provided with central continuous contact-rings, a series of outer and inner segmental contact-faces alternately disposed with relation to each other on both sides of the central ring and joining the same, said faces having their ends projecting beyond the ends of the opposite alternately-disposed face and insulated bearing-faces interposed between the ends of said segmental faces, and a series of commutator-brushes in contact with said central and the inner and outer contact-faces, the central contact-brushes being connected to the generator-wires and said outer contact-brushes being in circuit with the working or distributing wires and with the inner contact-brush of the opposite commutator, so as to reverse the current over the working wires as the outer and inner brushes are alternately inserted, substantially as set forth.

3. In a current-alternator, the combination, with the commutators, of the brush-holders comprising single rectangular boxes having a series of independent compartments insulated from each other, a spring-actuated follower located within each compartment and provided with an outwardly-extending stem, a bifurcated lever located upon the outside of said holders and pivotally connected with said stems, said lever having rounded bearing ends, and of the contact-brushes adapted to be adjustably clamped between said followers and the rear insulated sides of said compartments, substantially as set forth.

476,844. VALVE. CLARENCE E. VAN AUKEN, Chicago, Ill. Filed Feb. 15, 1892. Serial No. 421,933. (No model.)

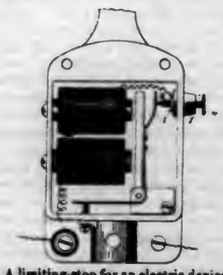


Claim.—1. In a valve, a shell having an inlet and an outlet, in combination with an expansible post within the shell but not secured thereto, an inverted bucket forming a float, surrounding the post, a tube in which the expansible post extends, secured to the float, a cap having a valve thereon mounted on the expansible post, and a valve-seat against which the valve is adapted to fit, thereby closing the outlet, whereby air in the shell or case can escape therefrom and whereby such valve is closed against the escape of steam by the expansion of the post and against the escape of water by the flotation of the float, substantially as described.

2. In a valve, a shell having an inlet and an outlet and a water-outlet, in combination with an expansible post within the shell but not secured thereto, an inverted bucket forming a float surrounding the post, a tube in which the expansible post extends, secured to the float, a cap having a valve thereon mounted on the expansible post, and a valve-seat against which the valve is adapted to fit, thereby closing the outlet, whereby air in the shell or case can escape therefrom and whereby such valve is closed against the escape of steam by the expansion of the post and against the escape of water by the flotation of the float, substantially as described.

3. In a valve, a shell having an inlet and an outlet and a water-outlet, in combination with an inverted bucket forming a float, a tube secured in the float, an expansible post fitting loosely in the tube and not secured thereto or to the shell, a cap having a valve thereon mounted on the expansible post, such cap extending partially over the float, and a valve-seat therefor in the outlet, whereby the expansion of the post will raise the cap and close the valve without moving the float and whereby the floating of the float will raise the cap and close the valve without moving the post, substantially as described.

476,845. LIMITING-STOP FOR ARMATURES. RICHARD VARLEY, Jr., Englewood, N. J. Filed July 27, 1891. Serial No. 400,837. (No model.)



Claim.—1. A limiting-stop for an electric device, comprising a stop or stud and a compressible sleeve of elastic material in which the stop is locked by compression of the sleeve.

2. A limiting-stop for an electric vibrator or the like, comprising a fixed elastic bushing and a stop or stud locked therein by the elastic pressure of the bushing.

3. A limiting-stop for a vibrating armature or the like, comprising a fixed soft-rubber bushing and an adjusting-screw supported under compression in the bushing.

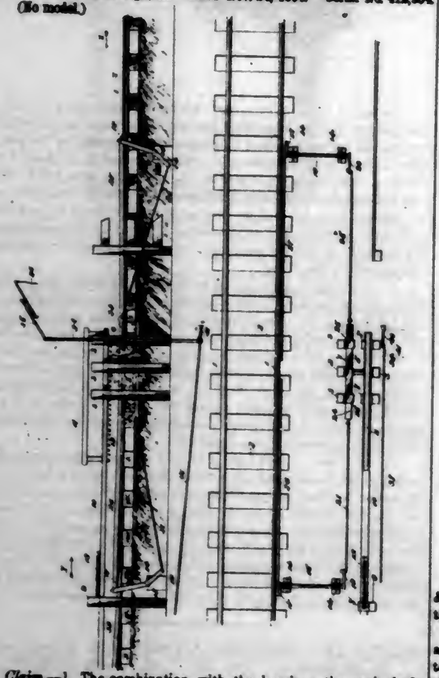
4. A limiting-stop for a vibrating armature or the like, comprising a fixed compressible bushing, an adjusting-screw held by the elastic pressure of the bushing, and a nut engaging the screw, said nut being held from turning relatively to the bushing.

5. A limiting-stop for a vibrating armature or the like, comprising an elastic bushing and an adjusting-screw supported therein and held firmly by the elastic pressure of the bushing.

6. A limiting-stop for a vibrating armature or the like, comprising an elastic bushing tapered for convenient insertion in an opening through a fixed support, an adjusting-screw within the bushing, and a nut engaging the screw, said nut being adapted to lock against the bushing to prevent turning.

7. A limiting-stop for a vibrating bell or the like, comprising a soft-rubber bushing and an adjusting-screw within the bushing, the head of the screw being less in diameter than the bushing, whereby the whole may be conveniently forced into an opening through a fixed support.

476,846. RAILROAD-GATE AND DANGER-SIGNAL. WILKINS J. WEBB, Hillsborough, Ill. Filed Nov. 24, 1891. Serial No. 412,994. (No model.)



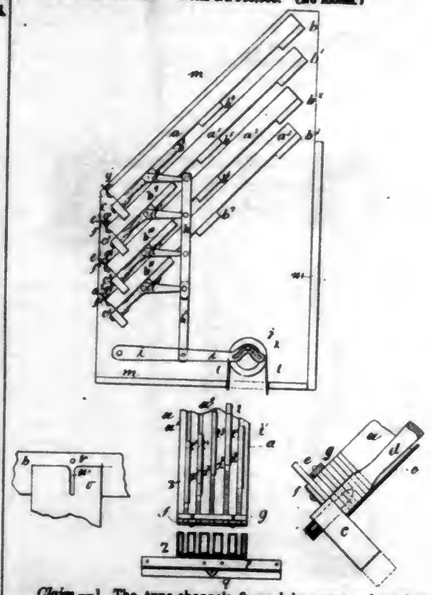
Claim.—1. The combination, with the bearings, the rock-shafts mounted in the bearings, the upwardly and downwardly extending rock-arms, and the sliding bars 26 and 27, pivoted to the upper ends of the upwardly-extending rock-arms and inwardly disposed and located alongside the track, where they are adapted to be depressed by the wheels of a passing train, of a gate located at one side of the track and between the rock-shafts, mechanism for operating the gate, and devices connecting the lower ends of the depending rock-arms with the gate-operating mechanism, substantially as specified.

2. The combination, with the posts at one side of the track, provided with keepers, the rock-shafts at opposite sides of the posts, the bearings for the same, and the upwardly and downwardly extending rock-arms of the shafts, of the gate having an extended lower bar mounted for movement in the keepers, which lower bar is provided with teeth, a retracting-spring for the gate, a shaft mounted in the bearings of the bars, a pair of gear-wheels mounted on the shaft, one of which engages with the teeth of the gate, rack-bars mounted at opposite sides of the companion gear-wheel, and connecting-rods loosely connected to the outer ends of the rack-bars and to the lower ends of the lower rock-arms, substantially as specified.

3. The combination, with the posts at one side of the track, provided with keepers, the rock-shafts at opposite sides of the posts, the bearings for the same, and the upwardly and downwardly extending rock-arms of the shafts, of the gate having an extended lower bar mounted for movement in the keepers, which lower bar is provided with teeth, a retracting-spring for the gate, a shaft mounted in the bearings of the bars, a pair of gear-wheels mounted on the shaft, one of which engages with the teeth of the gate, rack-bars mounted at opposite sides of the companion gear-wheel, connecting-rods connecting the lower ends of the arms 20 with the outer ends of the rack-bars, and bars mounted at the sides of the rails, said bars being inwardly disposed and pivotally connected at their outer ends with the upper ends of the upwardly-extending rock-arms, substantially as specified.

4. The combination, with the bearings, the rock-shafts mounted in the bearings, the upwardly and downwardly extending rock-arms, and the sliding bar pivoted to the upper end of the upwardly-extending rock-arm, inwardly disposed, and located alongside the track, whereby it is adapted to be depressed by the wheels of a passing train, of the protective device at the crossing and devices connecting the lower end of the depending rock-arm with the said protective device, substantially as specified.

476,847. COMPOSITOR'S CASE. GEORGE WHITE, New York, N. Y. Filed June 11, 1889. Serial No. 313,855. (No model.)



Claim.—1. The type-channels formed by rectangular tubes *s c'*, &c., fastened to a bottom plate *c* at regular intervals corresponding to the size of the type, substantially as described.

2. The continuous push-bars *c c'*, &c., each combined with and acting directly upon a series or a nest of type-channels having the bottom and lower part of the sides cut away at the forward end, substantially as described.

3. A nest of type-channels constructed for the grouping of the type so that those in no one channel shall be twice as thick as those in another channel in the same nest, substantially as described.

4. The combination of the nest of type-channels and the lever *d* with the continuous push-bar *c*, operating to raise the end types in said type-channels, substantially as described.

5. The combination of the several nests of type-channels, and the push-bars *c c'*, &c., and the connecting-rod *h* with the levers *d d'*, &c., operating to raise the end types in said type-channels, substantially as described.

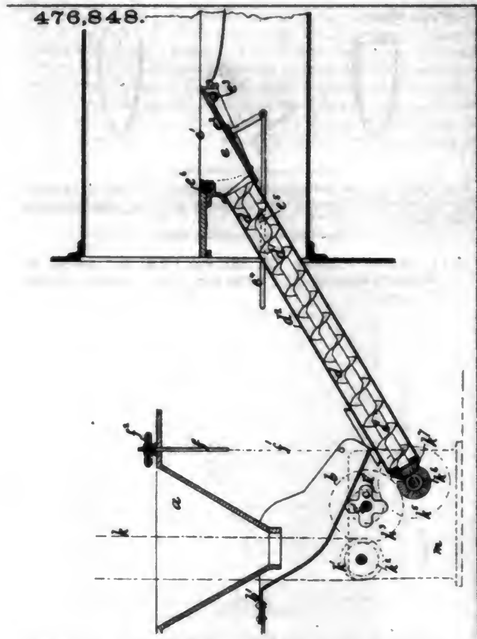
6. The combination of the several nests of type-channels, and the lever *i*, the connecting-rods *h* and *h'*, and the levers *d d'*, &c., with the continuous push-bars *c c'*, &c., operating to lift the end types in said type-channels, substantially as described.

7. The combination of the several nests of type-channels, and a cam and lever, and the connecting-rods *h* and *h'* with the levers *d d'*, &c., and the continuous push-bars *c c'*, &c., operating to lift the end types in said type-channels, substantially as described.

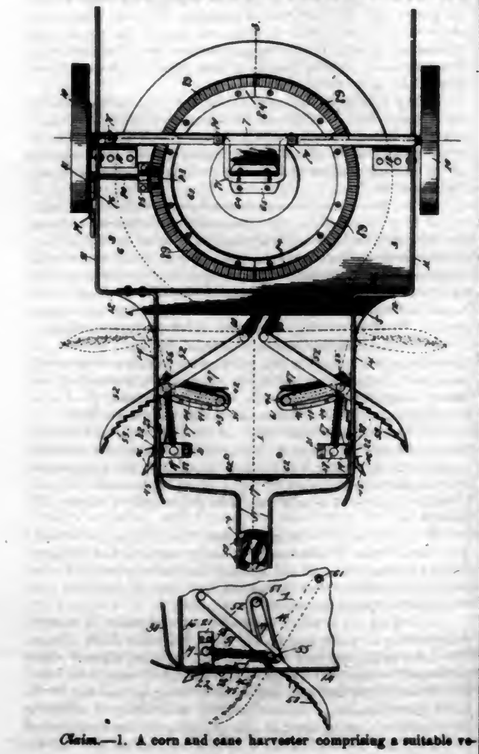
476,848. MECHANICAL STOKER. RICHARD H. WILLIAMSON, Ashton, England. Filed Sept. 29, 1891. Serial No. 407,129. (No model.)

Claim.—In a mechanical stoker, the combination, with the hopper *a*, of the chute *b*, rigidly fixed at *b'*, the adjusting devices *f*, *f'*, and *f''* for said chute, the cylinder d^3, the conveying-screw *d*, mounted therein, the gear L^6 driven by chain *k* and meshing with gear *b*, mounted on shaft *d'*, the cam *c*, also mounted on said shaft and vibrating said rigidly-attached chute, gearing between the said shaft and the screw conveyer, and a door c^3, pivoted at c^3 and operated by lever c^4, pivoted at c^5 to close the discharge of said cylinder d^3 into the furnace, substantially as set forth.

476,848.



476,849. CORNSTALK-HARVESTER. WILLIAM F. WILLIAMS, Kansas City, Mo. Filed Nov. 5, 1891. Serial No. 410,972. (No model.)



Claim.—1. A corn and cane harvester comprising a suitable vehicle, cutters pivoted in pairs at opposite sides of the vehicle and operating, as shears, solely by contact of one member of each pair with the stalk to be severed, a retracting-spring connected to the vehicle and also to the contacting cutter of each pair, and a guide also connected to the vehicle and engaging the inner end of the companion cutter, substantially as set forth.

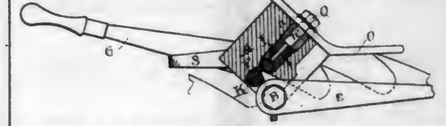
2. A corn and cane harvester comprising a suitable vehicle, open segmental guides located beneath the front of said vehicle and closed at their inner ends, V-shaped cutters pivoted beneath the vehicle-body and carrying rollers at their inner ends, which work within said guides, companion cutters pivotally connected at their inner ends to the under side of the body of the vehicle and each pivotally connected to the angle of the corresponding V-shaped cutter, and retracting-springs, each connected at one end to the connected parts of one pair of cutters and at its opposite end to the under side of the vehicle, substantially as set forth.

3. A corn and cane harvester comprising a vehicle-body and a revolving dumping-platform located at the rear of the vehicle, a removable vertical standard carried by said platform, and a permanent and also a removable cross-bar carried by the upper part of the standard, substantially as set forth.

4. A corn and cane harvester comprising a vehicle-frame mounted upon a rear carrying-axle, a rock-shaft having a U-shaped bend and mounted above said axle, a tilting platform connected to said shaft, a rack-segment carried by the vehicle-frame, and a tilting lever having a grip-pawl engaging the rack and connected to the rock-shaft, substantially as set forth.

5. A corn and cane harvester comprising a suitable vehicle, open segmental guides having closed inner ends and secured beneath the body portion of the vehicle, and cutters arranged in pairs at opposite sides of the vehicle and operative at times as shears, a retracting-spring connected to one of the cutters of each pair and vehicle-body, separate sockets for the inner end of each companion cutter, located, respectively, at the rear of and in front of the guides, and detachable pivots for the inner ends of the cutters, arranged to enter said sockets, the front sockets serving to set the companion cutters rigidly and to hold the spring-connected cutters in innermost position, substantially as set forth.

476,850. SAW-SWAGING DEVICE. HENRY WILLIAMSON, Bay City, Mich. Filed Dec. 9, 1891. Serial No. 414,521. (No model.)



Claim.—1. In a saw-swage, the adjustable bearing L within the swage for the die-shaft, substantially as shown.

2. A saw-swage consisting of the shaft F, provided with a segmental groove forming a die, an adjustable die-shaft bearing within the swage, a spindle having a flat surface forming an anvil, and a gripping device, substantially as described.

3. In a saw-swage, the combination, with the shaft F, provided with a segmental groove forming a die, of an adjustable bearing for the die-shaft within the swage and a spindle having a flat surface forming an anvil, arranged and operated substantially as described.

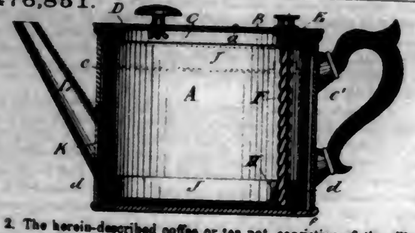
4. In a saw-swage, the combination, with a box or cube A, of a shaft on which a die is formed, an adjustable bearing for the shaft within the swage, an adjustable spindle on which an anvil is formed, a handle secured to the die-shaft, the setting device S for adjusting the die, and a tooth-gripping device, substantially as described.

5. In a saw-swage, the combination, with the box or cube A, of the shaft F, on which the die H is formed, the adjustable bearing L for the die-shaft within the swage, the adjustable spindle K, on which the anvil K' is formed, the handle G on the die-shaft, the setting device S, the clip R, secured on the outer end of the die-shaft by the split washer V, fitting into an annular groove in the shaft and countersunk in the clip, the adjustable guide O, and the tooth-gripping device, substantially as described.

476,851. TEA OR COFFEE POT. THOMAS E. WILLIAMS, London, England. Filed Nov. 13, 1891. Serial No. 412,297. (No model.)

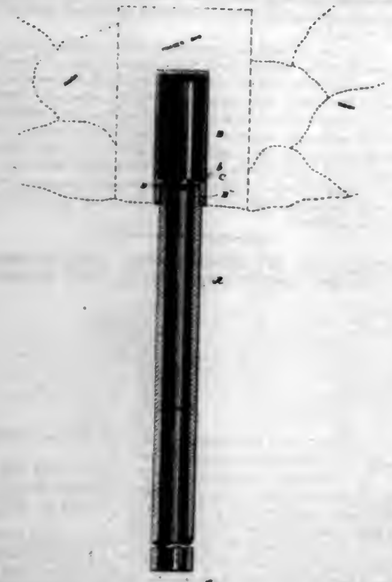
Claim.—1. The herein-described coffee or tea pot, consisting of the pot A, portable cover B, provided with rim C, the lid D on said portable cover B, the boss E, tray J, provided with boss H and perforated on only a portion of its surface and provided with projections E, and screw F at one edge of the tray and pot engaging boss H and passing through said tray, said boss H being located at the imperforate portion of the tray, substantially as herein set forth.

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2. The herein-described coffee or tea pot, consisting of the elliptical pot A, portable cover B, provided with rim C, the lid D on said portable cover B, the boss E, elliptical tray J, provided with boss H and perforated on only a portion of its surface and provided with projections E, and screw F at one edge of the tray and pot engaging boss H and passing through said tray, said boss H being located at the imperforate portion of the tray, substantially as herein set forth.

476,852. GAS-CAP. JOHN D. WILLIAMS and DAVID E. DAVIES, Nanticoke, Pa. Filed Jan. 13, 1892. Serial No. 417,963. (No model.)



Claim.—1. In combination with the blasting-tube, a metallic powder-containing cap or chamber connected at one end thereof and an intermediate disk interposed between the gas-cap and tube, substantially as described.

2. The combination of the blasting-tube, a metallic powder-containing cap which is screwed on the end of said tube, and a thin lead-paper disk interposed between the gas-cap and the tube, substantially as described.

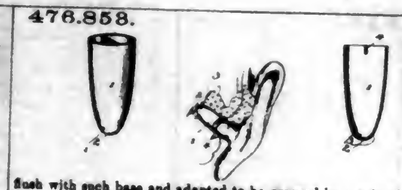
3. The combination of the barrel A, having a screw-threaded end, a gas cap or chamber B, adapted to contain powder, having an interior annular flange and screwed upon the end of tube A, and a thin disk located between the end of the barrel and the flange, substantially as described.

4. The combination of the tube A, gas-cap B, having screw-threaded part B', which engages the screw-threaded end of the barrel A, and having also the annular interior flange C, and the thin lead-paper disk D, interposed between the barrel A and cap B, all substantially as described.

476,853. ARTIFICIAL EAR-DRUM. GEORGE H. WILSON, Louisville, Ky. Filed May 3, 1892. Serial No. 431,677. (No model.)

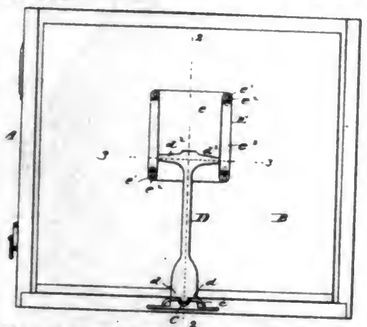
Claim.—An artificial ear-drum composed of a conical rimless body formed with a pair of divergent passages through its contracted end and provided at its hollow base with an internal transverse diaphragm

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flush with such base and adapted to be grasped by a pair of tweezers for the convenient insertion and removal of the drum, substantially as described.

476,854. HOLDER FOR LETTERS, FILES, &c. EDMUND W. WOODRUFF, Washington, D. C. Filed Aug. 13, 1890. Serial No. 361,880. (No model.)



Claim.—1. In a file-box or document-holder, the combination of a case or frame having an undercut groove in one of its interior faces, a file-board or follower within and connected with said case and movable therein, and a tilting or oscillating locking-lever having at its lower end outer shoulders or projections engaging the upper sides of said groove and inner projections engaging the under sides of the groove and adapted to bear at its free end against the follower, said follower having a sliding bearing upon the lever and a free downward-sliding movement relative thereto in lines parallel with the follower, substantially as set forth.

2. In a file-box or document-holder, the combination, with the case or frame open at its top and a file-board or follower, of a removable index having partially-closed pockets for the reception of the letters or documents, the pockets being indexed on their open edges and having their letter edges presented to the open top of the case, substantially as set forth.

3. In a file-box or document-holder having a follower adapted to assume an inclined position, the combination, with the case or frame, of a removable index formed in separate sections and having partially-closed pockets for the reception of the letters or documents, whereby the sections may slide relative to each other, and the contents of the file or a portion thereof contained in one of said sections may be removed and examined while still retained in proper place and arrangement by the said pockets or the section, substantially as set forth.

4. The herein-described index, adapted for use in a file-box or document-holder, consisting of a plurality of separate sections loosely connected but adapted to slide relative to each other, as described, each section being provided with one or more partially-closed pockets for the reception of letters or documents, substantially as set forth.

5. The herein-described index, adapted for use in a file-box or document-holder, consisting of a plurality of sections loosely connected together, having pockets and adapted to move or slide one upon another, and marginal indicating-marks arranged in two or more rows, the under of which are exposed by said movement of the sections, substantially as set forth.

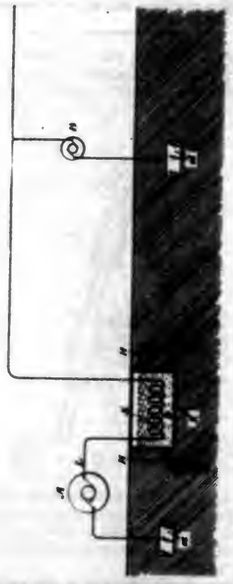
6. In a file-box or document-holder, the combination, with the box case or frame, of a file-board or follower, an index, and a supporting and locking device for the follower, adapted to permit the lower edge of the latter to bear against the lower edge of the index when the holder is opened, substantially as set forth.

7. In a file-box or document-holder, the combination of a case or frame having an undercut groove in one of its interior faces, a removable index having partially-closed pockets, the open edges of which pockets are presented to an open top or side of the case, a file-board or follower within said case and adapted to engage the side of the index and to assume an inclined position, and a tilting or oscillating locking-lever D, having inner and outer projections or shoulders adapted to engage said groove, bearing at its free end against said follower

and having a sliding engagement therewith, substantially as set forth.

8. In a file-box or document-holder, the combination of a case or frame, a file-board or follower shorter than the end or side of the case with which it is parallel, a support for said follower, which is immovable in the direction of the length of the follower, and slide-connecting devices between said support and the follower, whereby the follower may be thrust down to expose the ends of the documents for examination or drawn up to clamp and flatten them, substantially as set forth.

476,855. LIGHTNING-ARRESTER. ALEXANDER WURTS, Pittsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, same place. Filed Jan. 21, 1892. Serial No. 418,764. (No model.)



Claim.—1. The combination, with an electric generator and translating devices supplied with current therefrom, of an aerial electric conductor through which the current from the generator is transmitted to the translating devices and a bare conductor embedded in the earth and interposed between the aerial conductor and the generator, substantially as described.

2. The combination, with an electric generator and translating devices supplied with current therefrom, of an aerial electric conductor through which currents are transmitted to the translating devices and a bare conductor interposed between the aerial conductor and the generator and embedded in a well-grounded conducting medium, substantially as described.

3. The combination, with an electric circuit, of a bare conductor connected in series with the circuit and embedded in a well-grounded conducting medium, said bare conductor being formed into a coil.

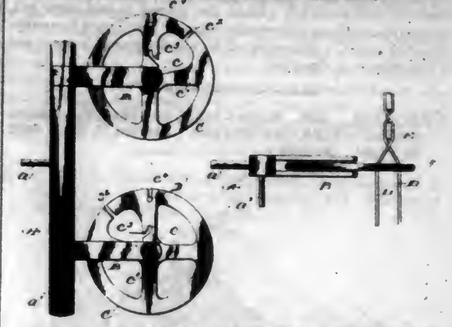
4. The combination, with a source of electric currents, of a main-line conductor leading therefrom, a vessel of conducting material electrically connected with the earth, a conducting medium contained therein, and a bare electric conductor surrounded by the said conducting medium and connected in series with the main-line circuit.

5. The combination, with a source of electric currents, of a main-line conductor leading therefrom, a vessel of conducting material electrically connected with the earth, a conducting medium contained therein, and a coiled bare electric conductor surrounded by the same and connected in series with the main line of the circuit.

6. The combination, with an electric-railway system, of a generator, a trolley-wire supplied from said generator, and a section of bare wire embedded in the earth, through which a permanent electrical connection is formed between the trolley-wire and the generator.

7. The combination of parallel aerial conductors, translating devices supplied therefrom, a generator for supplying currents to the said conductors, and well-grounded bare conductors interposed between each of said parallel conductors and the corresponding terminals of the machine, substantially as described.

476,856. FENCE-WIRE TWISTER. MARCUS B. YATES, Bartows, Mo. Filed Feb. 2, 1892. Serial No. 420,050. (No model.)

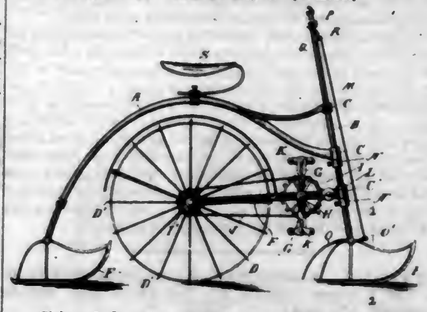


Claim.—1. In a fence-loom, the combination, with a suitable supporting and actuating device, of the centrally or axially pivoted wheel having a peripheral opening or seat for a wire strand, and an inner opening or seat for a second wire strand, arranged intermediately of said peripheral opening or seat and the pivot or axis of the wheel, substantially as set forth.

2. In a fence-loom, the combination, with a handled beam having projecting therefrom at right angles arms or supports, of the wheel centrally or axially pivoted between said arms or supports and having a peripheral opening or seat for a wire strand and an inner opening or seat for a second wire strand, arranged intermediately of said peripheral opening or seat and the pivot or axis of the wheel, substantially as specified.

3. In a fence-loom, the combination, with a suitable supporting and actuating device, of the centrally or axially pivoted wheel having a peripheral opening or seat for a wire strand and an inner opening or seat for a second wire strand, arranged intermediately of said peripheral opening or seat and the pivot or axis of the wheel and standing at an approximately obtuse angle to the first-named opening, said wheel also having a radial or peripheral slot therein to provide for the passage of the wire strand contained or held by said inner opening or seat, substantially as set forth.

476,857. ICE-VELOCIPEDE. JOHN F. ZALSMAN, Holland, Mich. Filed Feb. 17, 1892. Serial No. 421,879. (No model.)



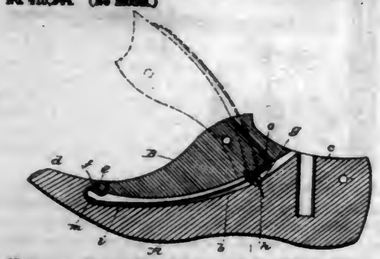
Claim.—1. In an ice-velocipede, the combination of a frame pivoted to swing in a vertical plane, a driving-wheel journaled on said frame, a shaft having cranks and treadles attached and journaled on said frame between said pivot and wheel, and mechanism to transmit motion from said shaft to said wheel, substantially as described.

2. In an ice-velocipede, the combination of a vertically adjustable and rotatable collar on the steering-post, a forked frame pivoted at its forward end to said collar, and a driving-wheel journaled in the forked end of said frame, a shaft having cranks and treadles journaled on said frame, and sprocket wheels and chains connecting said shaft and driving-wheel, substantially as described.

3. In an ice-velocipede, the combination of a main frame supporting a saddle having a runner at the rear and collars at the front, a steering-post rotative in said collars and vertically adjustable therein, a collar rotative and vertically adjustable on said post, a frame pivoted at its forward end to said collar, a driving-wheel journaled upon the rear end of said frame, a shaft having cranks and pedals journaled on said frame between said wheel and collar, and sprocket wheels and chain connecting said shaft and wheel, substantially as described.

4. In an ice-velocipede, in combination with a rotative steering-post having handles at the top and a forked lower end and a runner pivoted in said lower end, a brake, also pivoted to said lower end, having a rearward and downwardly projecting arm O and a forwardly-projecting arm O', a connecting-rod M, and the pivoted levers R and Q, substantially as described.

476,858. LAST. MARTIN J. BARLEY, Lake Village, N. H., assignor of one-half to John S. Crane, same place. Filed Dec. 16, 1891. Serial No. 415,944. (No model.)



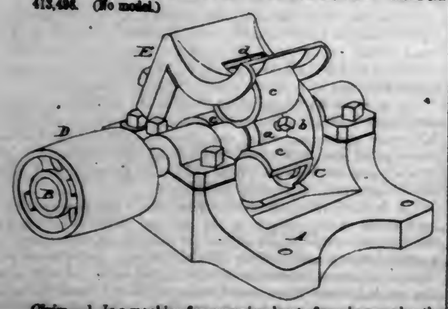
Claim.—1. The last having a narrow longitudinal groove and loop or eye fixed immovably to said last crosswise of said groove, in combination with an instep-block having a longitudinal wire or rod secured at opposite ends thereto, said wire or rod sliding in said groove and passing through said loop or eye, said groove being of just sufficient width to accommodate said wire, substantially as set forth.

2. The last having longitudinal groove extending into the toe of the last and a loop or eye A, in combination with an instep-lock having a longitudinal wire or rod secured at opposite ends thereto, said wire or rod sliding in said groove and passing through said loop or eye, and said wire or rod having a loop or bend *m* therein which extends beyond said instep or block and which enters and locks into the portion of said longitudinal groove which extends into the toe end of the last, substantially as set forth.

3. The last having longitudinal groove and a loop or eye A near the upper end of said groove, in combination with an instep-block having a longitudinal wire or rod secured at opposite ends thereto, said wire or rod sliding in said groove and passing through said loop or eye, and said wire or rod having near its upper end an inclined or cam-shaped portion *o*, which co-operates with said loop or eye to draw the upper portion of the instep-block to the last, and reciprocal means carried by the last and instep-block, respectively, for engaging the lower end of the instep-block to the last, substantially as set forth.

4. The last having open longitudinal groove *b* extending into the toe of the last, whereof a locking-shoulder *c* is formed above the lower end of the said groove, and a loop or eye A, fixed immovably to said last near the heel end thereof and crosswise of said groove *b*, in combination with an instep-block having a wire or rod *i* secured at opposite ends thereto, said wire or rod sliding in said groove and passing through said loop or eye, said wire or rod having at one end a loop or bend *m*, which extends beyond the lower end of the instep-block and which rod enters into the lower closed end of said groove *b* and locks beneath said locking-shoulder *c*, and said wire or rod having at its upper end an inclined or cam portion *o*, which co-operates with said loop or eye A to draw the instep-block to the last.

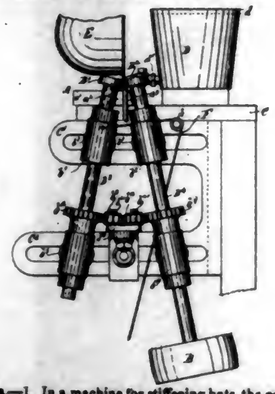
476,859. MACHINE FOR REMOVING KNOTS FROM POLES. JOHN C. BALLEW, Evansville, Ind. Filed Nov. 30, 1891. Serial No. 413,496. (No model.)



Claim.—1. In a machine for removing knots from hoop-poles, the combination, with a main frame, of a shaft journaled therein and provided with a cutter-head and a work-support located above the cutter-head and provided with a hole or opening, down through which the knots shall project, and with a seat for the pole, extending in the direction of the shaft, the said cutter-head and work-support being so arranged and adjusted one in relation to the other that the cutters or knives of the cutter-head shall not project appreciably above the upper face of the work-support.

2. In a machine for removing knots from hoop-poles, the combination, with a main frame, of a shaft journaled therein and provided with a cutter-head, and a work-support curved from front to rear, located above the cutter-head and provided with a hole or opening, down through which the knots shall project, the said cutter-head and work-support being so arranged and adjusted one in relation to the other that the cutters or knives of the cutter-head shall not project appreciably above the upper face of the work-support.

476,860. MACHINE FOR STIFFENING HATS. WILLIAM H. BARNUM, Danbury, Conn., assignor to Charles H. Merritt, same place. Filed Dec. 18, 1891. Serial No. 415,443. (No model.)

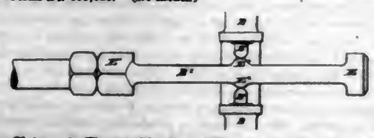


Claim.—1. In a machine for stiffening hats, the combination, with a distributing-tank for stiffening material constructed to receive a hat-brim, of a pair of rollers adjacent an opening of the tank for engaging a hat-brim and moving it through the stiffening material in said tank, substantially as specified.

2. In a machine for stiffening hats, the combination of a reservoir for stiffening material, a distributing-tank receiving stiffening material from said reservoir and constructed to receive a hat-brim, and rollers adjacent an opening of the tank for engaging a hat-brim and moving it through the stiffening material in the tank, substantially as specified.

3. In a machine for stiffening hats, the combination, with a distributing-tank for stiffening material constructed to receive a hat-brim, of pieces of sponge in said tank for depositing stiffening material on the hat-brim, and rollers adjacent an opening of the tank for moving a hat-brim through said sponge, substantially as specified.

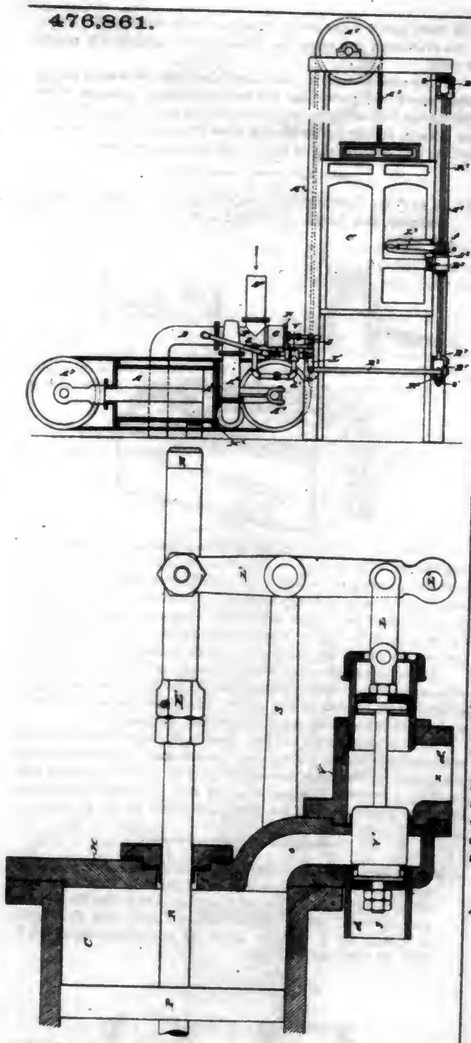
476,861. OPERATING MECHANISM FOR HYDRAULIC-ELEVATOR VALVES. NORMAN C. BARRETT, Chicago, Ill., assignor to the Otis Brothers & Company, New York, N. Y. Filed Feb. 11, 1885. Serial No. 155,625. (No model.)



Claim.—1. The combination of the cage, the main operating-engine, an auxiliary engine connected to the valve of the main engine, a lever connected to the rod of the auxiliary engine by a clamp frictionally engaging the valve-rod and to the valve-rod, and having its fulcrum between the connections to impart a movement less in extent and opposite in direction from the piston to the valve, and connections, substantially as described, between the lever and cage, whereby the auxiliary valve may be moved from the cage independently of the main valve, while the movement of the latter is transferred to the auxiliary valve, substantially as and for the purpose described.

2. In a hydraulic elevator, the combination of the car, lifting-cylinder, controlling-valve, auxiliary cylinder C, piston P, rod R, having a continuation, as a bar B^3, and heads E E', lever L', link L, auxiliary

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valve V', passage o, and a fulcrum on which the lever L' vibrates, by means of which the piston P closes the valve V' as the former approaches either end of its stroke, substantially as described.

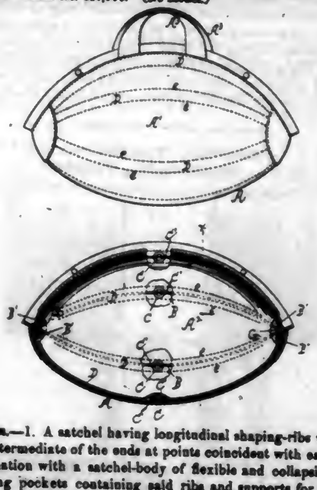
3. The combination of the car, lifting-cylinder, main valve and valve-rod having projections E E' E^3, auxiliary valve, and a connecting-lever between the two provided with a clamp, whereby the auxiliary valve while carried with the main valve may be moved independently thereof at all times, substantially as and for the purpose set forth.

4. The combination of the piston connected to the main valve of a hydraulic elevator, the piston-rod provided with the rounded legs E^3, an auxiliary valve, and a lever pivoted to the stem of the auxiliary valve and having a movable connection with the rod of the piston through the medium of a clamp frictionally engaging the rod, substantially as described, whereby the friction is increased at one point when it engages with the said legs E^3 of the connection without interfering with the positive independent adjustment of the lever, for the purpose set forth.

5. The combination of the cage, the operating-engine and its valve, an auxiliary engine provided with a piston, piston-rod, valve, and valve-rod, and a lever connected with the cage and with the piston-rod by a clamp and with the valve-rod of the auxiliary engine and adjustable independently of the said piston-rod, whereby the auxiliary valve is moved by the movement of the auxiliary piston, but can be moved from the cage without the movement of said piston, substantially as and for the purpose set forth.

6. The combination of the main valve of an elevator apparatus and auxiliary engine provided with a piston and piston-rod and auxiliary valve, provided with a stem, a lever connected with the auxiliary valve and provided with frictional connections between it and the piston-rod of the auxiliary engine, the cage of the elevator, and connections between the latter and the auxiliary valve, substantially as set forth.

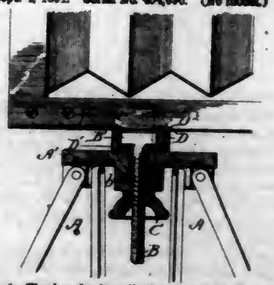
476,862. COLLAPSING SATCHEL. JOHN I. BATES, Brooklyn, N. Y., assignor of one-half to Homer Brooks, Jersey City, N. J. Filed Jan. 13, 1892. Serial No. 417,906. (No model.)



Claim.—1. A satchel having longitudinal shaping-ribs which are jointed intermediate of the ends at points coincident with each other, in combination with a satchel-body of flexible and collapsible material, having pockets containing said ribs and supports for the outer ends of the ribs, substantially as and for the purpose described.

2. A satchel having a body of flexible and collapsible material and longitudinal shaping-ribs which are jointed intermediate of the ends at points coincident with each other, in combination with the transverse supporting-rings at the opposite ends of the body, having the outer ends of the series of ribs interlaced therewith, substantially as and for the purpose described.

476,863. TRIPOD-HEAD. LEONARD E. BENNETT, McHenry, Ill. Filed Sept. 4, 1891. Serial No. 404,696. (No model.)



Claim.—1. The herein-described means for detachably securing a tripod to a camera, consisting, essentially, of a socketed plate adapted to be secured to the camera and having a slot in its bottom and a rod adapted to be detachably secured to the tripod-head and provided with a T-head adapted to be passed through the slot in the plate and to be turned at an angle thereto, as described.

2. In a photographic camera, the combination, with the camera and a socketed plate secured to the under side of said camera and provided with a rectangular slot, of a tripod, a threaded rod passing through the tripod-head and having a T-head lying within the socket of the plate and adapted to be turned therein, as and for the purpose specified.

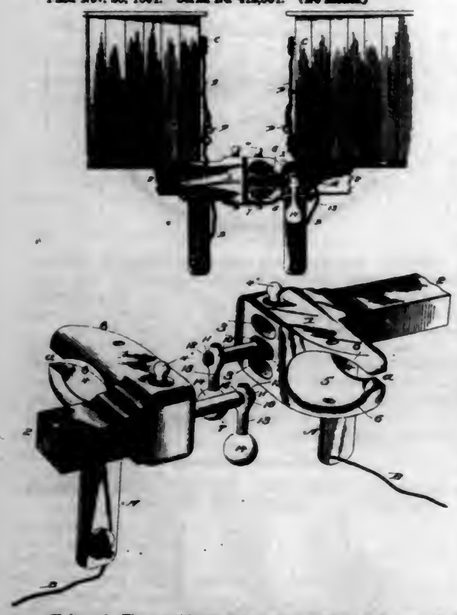
3. In a photographic camera, the combination, with the camera and a socketed plate secured to the under side of said camera and provided with a rectangular slot and abutments on each side thereof, of

a tripod a rod passing through the tripod-head and having a T-head lying within the socket of the plate and adapted to be turned therein and to be limited in its turning movements by said abutments, as described, for the purpose specified.

4. In a photographic camera, the combination, with the camera and a socketed plate secured to the under side thereof and provided with a rectangular slot, of a tripod, a rod passing through the tripod-head and having a T-head lying within the socket of the plate and adapted to be turned therein, and a tightening-nut adjustably mounted on said rod below the tripod-head, as and for the purpose specified.

5. In a photographic camera, the combination, with the camera and the socketed plate provided with a rectangular slot and having angular abutments on each side of the slot, one edge of each abutment being flush with the sides of the slot and the other edge of each abutment at right angles to said slot, of a tripod and a rod passing through the tripod-head and having a T-head lying within the socket of the plate with its edges abutting against the edges of the abutments, said T-head being adapted to be turned within the plate and to be withdrawn through the slot thereof, as and for the purpose specified.

476,864. CAR-COUPLING. BENNY BERNSTEIN, New York, N. Y. Filed Nov. 20, 1891. Serial No. 412,531. (No model.)



Claim.—1. The combination, in a car-coupler, of the coupling-heads having a recess for the reception of the coupling bar or link and a flaring mouth having curved lips at one side, of the coupling-bars provided with an opening at one end, the coupling-pins, and the dependent weighted arms swinging upon the coupling-bars and adapted to ride upon the surface of the flaring mouth of the draw-heads and pass through the open lips thereof to automatically couple the cars together, substantially as specified.

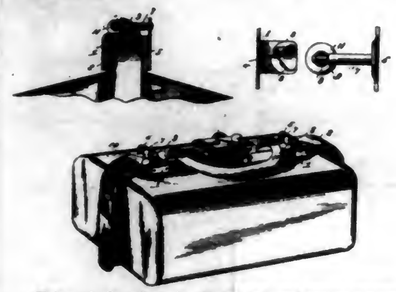
2. The combination, in a car-coupler, of the coupling-heads having a recess for the reception of the coupling bar or link and a flaring mouth having curved lips at one side, of the coupling-bars provided with an opening at one end, the coupling-pins and the dependent weighted arms swinging upon the coupling-bars and adapted to ride upon the surface of the flaring mouth of the draw-heads and pass through the open lips thereof to automatically couple the cars together, and means for elevating the dependent weighted arms to uncouple the draw-heads, substantially as specified.

3. The combination, with the coupling-bars having contracted forward ends, of the recessed sleeves and dependent weighted arms, and the pins fastened in said contracted portion, and extending into recesses in the sleeves to limit the movement of the sleeves and prevent the weighted arms from being lifted above a horizontal position, substantially as specified.

4. The combination, in a car-coupler, with the draw-head having flaring mouth with rearwardly and upwardly curved lower lip, and opening at the rear, of the coupling-bar with swinging weighted arm at its front, said arm adapted to ride upon the curved lip of the mouth of the draw-head and enter the draw-head to automatically couple the same.

5. The combination, in a car-coupler, with the draw-head having flaring mouth with curved lips and rear and lateral openings, of the coupling-bar with swinging weighted arm, the bar of larger diameter than the arm, and the lateral opening of the draw-head of less diameter than the bar, substantially as and for the purposes specified.

476,865. FASTENING FOR SATCHELS, HAND-BAGS, &c. BENNY BERNSTEIN, New York, N. Y. Filed Nov. 20, 1891. Serial No. 412,537. (No model.)

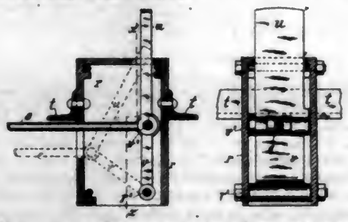


Claim.—1. In a fastening for satchels and similar receptacles, the combination, with the jaws of such article, of the keeper secured to one of the jaws having vertical open lips curved upwardly and rearwardly from the front edge and with the opening between the lips at one side of the center of said keeper and the bar secured to the opposite jaw and carrying at its end a swinging weighted arm at right angles to the bar, the parts being adapted to operate substantially as specified.

2. The combination, in a satchel-fastener, of the keeper provided with curved lips of unequal lengths, and the horizontal bar carrying a weighted arm adapted to ride up over the curved lips and be guided so as to fall behind the keeper, substantially as specified.

3. In a fastening for satchels, hand-bags, pocket-books, &c., the combination, with the plate having curved open lips secured to one jaw, of the opposite plate secured to the other jaw of the article and carrying a bar with swinging weighted arm, and means for limiting the upward movement of the arm, substantially as and for the purposes described.

476,866. RAILWAY-SIGNAL. ANTON S. VON BLEICHORF and CARL ADLER, Baden, Austria-Hungary. Filed Sept. 27, 1890. Serial No. 366,423. (No model.) Patented in England Apr. 2, 1889, No. 5,633; in Germany Apr. 5, 1889, No. 49,023; in France Apr. 3, 1889, No. 197,302; in Belgium Apr. 3, 1889, No. 85,743, and in Austria-Hungary Oct. 7, 1889, No. 12,047 and No. 51,342.



Claim.—A signaling apparatus for railways, consisting of a casing containing a vertical jointed and collapsible bar *u*, hinged to another bar *v*, adapted to be turned about a trunnion *r'*, both rods jointed to a horizontal rod extending through the side of the casing and connected to the signal-box by means of suitable cranks, in combination with spring-levers attached to any suitable part of the under side of the engine and connected by suitable mechanisms to the bell or other part of the engine which is required to operate, substantially as set forth, and for the purpose specified.

476,867. SIPHON WATER-CLOSET. JAMES R. BOYLE, Jr., Brooklyn, N. Y., administrator of James R. Boyle, deceased. Filed Oct. 26, 1891. Serial No. 409,336. (No model.)

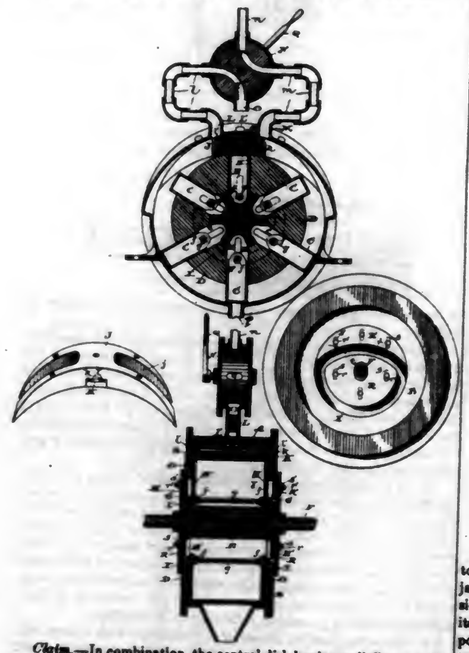
Claim.—1. A water-closet consisting of the combination of a bowl, the soil-passage leading therefrom, an upper trap in said passage by which water is retained in the bowl, a lower trap therein by which an air-space is formed between the two traps, and an air-passage leading from said space and opening into the up leg of the lower trap beneath the normal water-level therein, so as to be sealed thereby when the closet is at rest.

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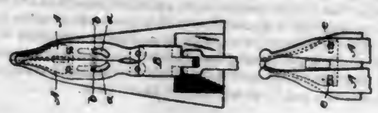
2. In a double-trapped siphon-closet, the combination of a jet-opening for diverting a jet from the flushing-water and discharging it into the air-space or down leg of the siphon, in combination with an air-passage leading from said air-space and terminating in an opening sealed in the up leg of the lower trap when the closet is at rest.

476,868. ROTARY ENGINE. ARCHIBALD H. BRENTNELL, Toronto, Canada. Filed Aug. 24, 1891. Serial No. 403,561. (No model.)



Claim.—In combination, the central disk having radially-movable pistons, the cam for operating them, consisting of two plates arranged with their edges opposite and at a distance from each other, one of which extends around the shaft and has an elongated opening for the shaft and the other of which is located above the shaft, the said plates being independently adjustable toward and from each other, the abutment J, having an opening extending through it from top to bottom on each side of the central portion, the inlet and outlet opening on opposite sides of the central portion, and the adjustable packing in the central portion, substantially as described.

476,869. BEADING AND TURNING MACHINE. JOHN R. BROWN, Washington Court-House, Ohio. Filed Feb. 4, 1892. Serial No. 420,316. (No model.)



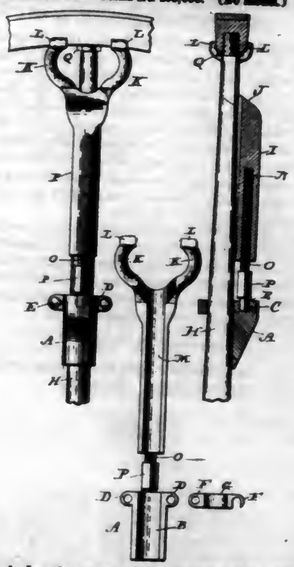
Claim.—1. In a beading and turning machine, the combination, with a horn or standard, of a pair of laterally-vibrating turning or spreading fingers and a supplemental or back finger adapted to act upon the scallop, substantially as described.

2. In a beading and turning machine, the combination, with a horn or standard, of a pair of vertically-reciprocating and laterally-vibrating turning or spreading fingers and a non-laterally vibrating supplemental finger adapted to act upon the scallop, substantially as described.

3. In a beading and turning machine, the combination, with a horn or standard, of a pair of turning or spreading fingers capable of being vibrated laterally and provided with supports for a supplemental finger, a supplemental finger supported upon said turning or spreading fingers, and means, substantially as described, for preventing its movement laterally.

4. In a beading and turning machine, a pair of vertically-reciprocating and laterally-vibrating turning or spreading fingers, pins *e e* on said fingers, a supplemental or back finger *D*, provided with slots *d d* to engage pins *e e*, a spline *f* on the supplemental finger, and the horn or standard *H*, having a groove *f'* to receive said spline, substantially as shown and described.

476,870. TIRE-TIGHTENER. ROBERT W. CATON, Gatesville, Tex. Filed Sept. 14, 1891. Serial No. 405,653. (No model.)



Claim.—1. In a tire-tightener, the combination of a block adapted to be clamped to a spoke and formed with a cavity in its top face, a jaw adapted to bear against the under side of the felly on opposite sides of the spoke and formed with a threaded aperture extending from its lower end upwardly, and an adjusting-screw having a threaded portion fitting in the threaded aperture of the jaw and a plain portion turning freely in the cavity of said block and formed between the threaded and plain portions with an angular portion for the application of a tool to turn the screw to adjust the jaw without a vertical movement of the screw, substantially as and for the purposes set forth.

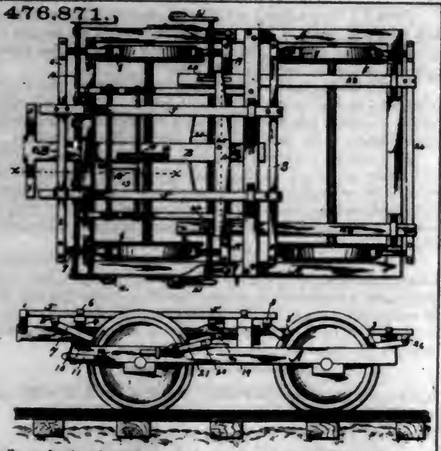
2. In a tire-tightener, the combination, with a block adapted to be clamped to a spoke and an adjusting-screw, of a jaw operated by said screw and having its upper portion extended or curved to one side and then bifurcated to form two arms, each of which is provided with a fork adapted to lie against the under face and the side of the felly, substantially as and for the purposes set forth.

476,871. CAR-BRAKE. THOMAS F. CLARK, Lancaster, N. H. Filed Jan. 7, 1892. Serial No. 417,243. (No model.)

Claim.—1. The combination, with a car-truck, of a draw-bar having laterally-projecting arms, the upper frame mounted slidingly upon said truck, provided with brakes adapted to travel upon the tread of the wheel, and the springs 4, the chain 9, having one end secured to the upper frame and the other end to the shaft 10, the shaft 10, and means for rotating said shaft, as set forth.

2. The combination, with a car-truck, of a draw-bar having lat-

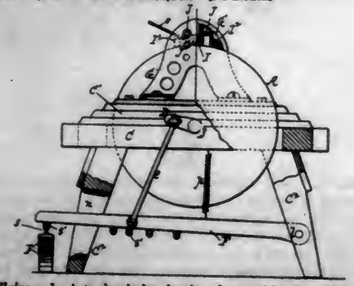
476,871.



erally-projecting frames upon its forward end, a ratchet upon its upper face, the shaft 13, having a ratchet-wheel 14, adapted to engage with the aforesaid ratchet, and a spring-strap having a lug upon its outer end, adapted to engage with the ratchet-wheel 16, the wheel 16, secured to the shaft 15, the shaft 15, having ratchet-wheels 18 located directly under the bars 5 5, said bars 5 5 having ratchets adapted to engage with said ratchet-wheels, the upper frame mounted slidingly upon said truck, provided with brakes and adapted to travel upon the tread of the wheel, the spring 4, the chain 9, having one end secured to the upper frame and the other end to the shaft 10, the shaft 10, and means for rotating said shaft, as set forth.

3. The combination, with a car-truck, of a draw-bar having the cross-bar 25 secured adjacent to its rear end, the frame-bars 23, secured to said cross-arm and provided on its forward end with slots 22 and the lugs 24, the dog 27, adapted to be raised and lowered by the lug 28, located upon the shaft 20, and means for rotating said shaft, substantially as described, for the purposes set forth.

476,872. TOOL-GRINDER. JAMES M. CLOCK, New York, N. Y. Filed Nov. 17, 1891. Serial No. 412,146. (No model.)



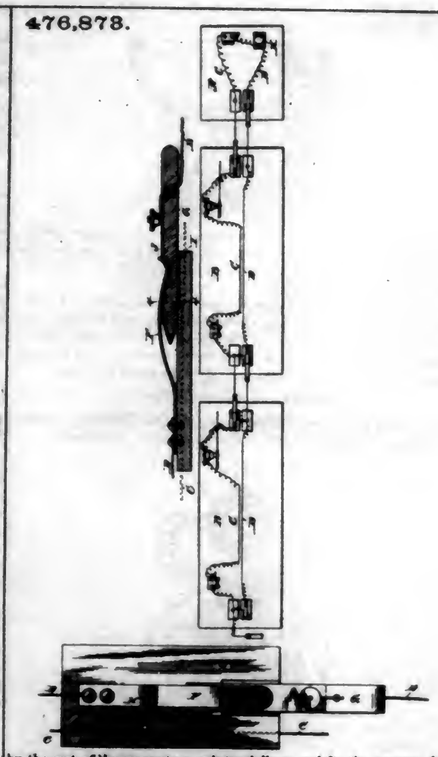
Claim.—1. A tool-grinder having, in combination with a grindstone, cross-bars above and contiguous to the face of the stone, one forming a rest and fulcrum and another a stop or abutment for the tool, and supports for said bars constructed to permit adjustment thereof in relation to the stone, substantially as and for the purpose described.

2. A tool-grinder having, in combination with a grindstone, standards on opposite sides and central of the stone, constructed with vertical grooves on their inner surfaces, cross-bars the ends of which are fitted in said grooves of the standards at points to bring the bars above and contiguous to the face of the stone, and screw-bolts connecting the standards for clamping the bars endwise, substantially as and for the purpose described.

476,873. ELECTRIC TRAIN-SIGNAL. NATHANIEL B. CRESSEE, Chicago, Ill., assignor of one-half to De Witt C. Crozier, same place. Filed Oct. 27, 1890. Serial No. 369,394. (No model.)

Claim.—1. In a train-signaling system, the combination, with a closed circuit for the electrical current and mechanical generators included in said circuit, of signaling devices also included in said circuit, part of which are operated by some of the generators and the others

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by the rest of the generators, substantially as and for the purpose described.

2. In a train-signaling system, the combination, with a closed circuit for the electrical current, of a series of magneto-generators and signaling devices located upon the engine and several cars of the train and included in said circuit, and another series of mechanical generators also included in said circuit and located upon the several cars of the train, and a signal device upon the engine included in said circuit, but operative only by the current of the last-mentioned series of generators, substantially as described.

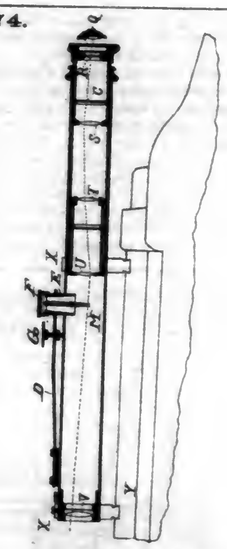
3. In a train-signaling system, the combination, with a closed circuit for the electrical current, of a series of mechanical generators and signaling devices located upon the engine and the several cars of the train and included in said circuit, a second series of mechanical generators located upon each car of the train, a cord attached at one end to each car and at its opposite end to each generator of said second series for operating the same, and a signal device upon the engine included in said circuit, but operative only by the current of the last-mentioned series of generators, substantially as described.

4. In a train-signaling system, the combination, with a closed circuit for the electrical current, of a series of mechanical generators and signaling devices located upon the engine and the several cars of the train and included in said circuit, a second series of mechanical generators located upon each car of the train, a spring-actuated rack-bar suitably geared to for operating each generator of said second series, a cord extending the length of each car and secured at its ends, respectively, to the car and the rack-bar of the generator therein, and a signal device upon the engine included in said circuit, but operative only by the current of the last-mentioned series of generators, substantially as described.

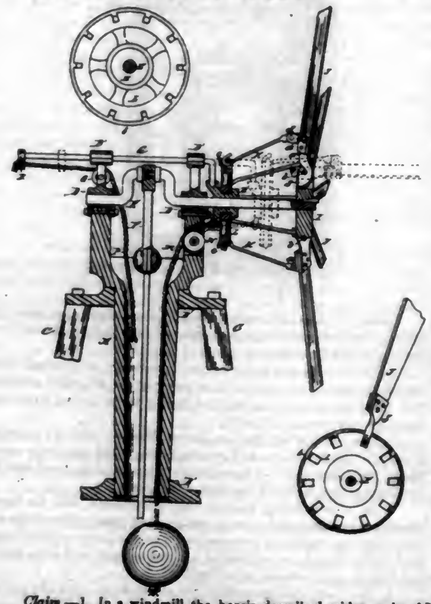
476,874. TELESCOPIC RIFLE-SIGHT. LAWSON C. CUMMIN, Montpelier, Vt. Filed Apr. 30, 1891. Serial No. 391,164. (No model.)

Claim.—The combination, in a rifle telescope-sight, of a fixed perpendicular line A, with globe C on its upper part, placed in the focus of the eye-lens, with a pivoted needle H, aligned with it in the focus of the object-lens, and a movable horizontal line L, with globe M attached, placed in the focus of the object-lens and rendered adjustable in any direction by means of the needle H and springs D and K, and thumb-screws G and P, all substantially as set forth.

476,874.



476,875. WINDMILL. EUGENE DOWNS, Vinton, Iowa, assignor of one-half to J. T. Christie, same place. Filed July 12, 1890. Renewed Jan. 11, 1892. Serial No. 417,756. (No model.)

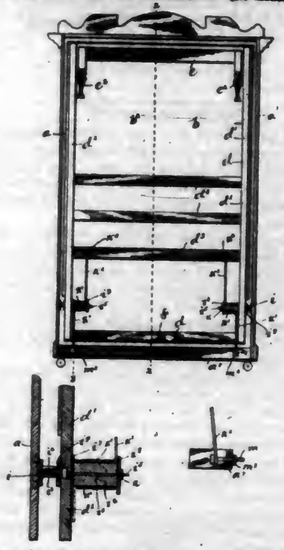


Claim.—1. In a windmill, the herein-described spider or head I, having parallel-sided notches in the periphery to receive and form lateral bearings for the vane-irons, a shallow peripheral groove, and a continuous ring of round iron shrunk into said groove to form pivots for said vane-iron and strengthen the spider, as specified.

2. In a windmill, the herein-described spider I, having notches in the periphery to receive a pivoted member, a shallow peripheral groove with a continuous ring of round iron shrunk therein, and a flange *c* a short distance from the ring to abut upon the end of the pivoted member, substantially as and for the purpose set forth.

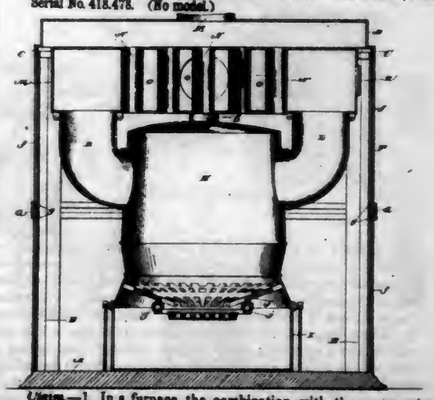
3. In a windmill, the combination of the spider I, having notches for vane-irons therein, and a continuous pivot-ring *b*, shrunk into a shallow peripheral groove, and the vane-iron S, having an upwardly-inclined opening therein adapted to admit the pivot-ring as the vane-iron is tilted backwardly and downwardly, as described.

476,876. FOLDING BED. MATTHEW K. ENGLISH, Columbus, Ohio. Filed Sept. 21, 1891. Serial No. 406,299. (No model.)



Claim.—In a folding bed, the combination, with the casing *a*, having a cross-piece a^7, and a bed-frame provided with slats a^8, journaled within said casing, of spools or sleeves i^4, supported, as described, from the inner sides of said bed-frame, spring-wires *k'*, coiled about said spools, adjusting-bolt *m*, passing through said cross-piece a^7, and a nut on the outer projecting end of said bolt, one end of each of the springs *k'* being secured to one of the bed-slats and the remaining end thereof secured to the inner end of one of said adjustable bolts, substantially as and for the purpose specified.

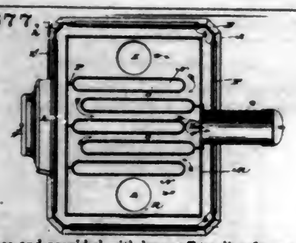
476,877. HOT-AIR FURNACE. JACOB FRIDLEY, Carlisle, Pa., assignor of one-half to William A. Darr, same place. Filed Jan. 18, 1892. Serial No. 418,478. (No model.)



Claim.—1. In a furnace, the combination, with the rectangular base, of a series of angle corner-pieces or columns arising vertically from each corner of said base and provided with inner offstanding flanges, sectional inclosing casing-sheets secured within the flanges of said corner-pieces, intermediate casing rails or bars provided with upper and lower flanges receiving the intermediate edges of said casing-sheets and secured at the ends to said corner-pieces, and heating devices located within said casing, substantially as set forth.

2. In a furnace, the combination, with the rectangular base, of a series of vertical angle corner-pieces or columns arising from each cor-

476,877.



ner of said base and provided with inner offstanding flanges, sectional inclosing casing-sheets secured within the flanges of said corner-pieces, angular connecting-rails connecting the upper ends of said columns or corner-pieces with each other, an inclosed hot-air cover seated and secured within said angular connecting-rails, and heating devices located within said casing, substantially as set forth.

3. In a hot-air furnace, the combination, with the casing and the fire-pot located therein, of an inclosed radiator-box adjacent to the fire-pot and provided with a series of elongated open hot-air tubes extending therethrough, diaphragm-strips located between alternate ends of said tubes and the walls of the radiator, opposite smoke and combustion pipes connected with opposite sides of the fire-pot and opposite ends of said radiator, and a central escape-pipe centrally connected to said radiator, substantially as set forth.

4. In a hot-air furnace, the combination, with the casing and the fire-pot located therein, of an inclosed rectangular radiator-box located directly above the fire-pot and provided with a series of elongated parallel open hot-air tubes extending through said box, diaphragm-strips located between alternate ends of said tubes and the walls of the radiator to form circuitous smoke and combustion flues around said flues, opposite conducting and supporting pipes connected with opposite sides of the fire-box and opposite ends of the radiator-box to form opposite drafts drawing to the center of said box, and a central escape-pipe connected with said radiator-box at the center thereof, substantially as set forth.

5. The combination, with a heater, of a radiator-box provided with a series of elongated parallel open hot-air tubes extending through said box, diaphragm-strips located between alternate ends of said tubes and the walls of the radiator to form circuitous smoke and combustion flues, opposite conducting-pipes connected with opposite sides of said heater and opposite ends of the radiator-box to form opposite drafts drawing to the center of said box, and a central escape-pipe, substantially as set forth.

476,878. MOCK PISTOL. CHARLES GOLDEN, Chicago, Ill., assignor of one-half to Solomon Jacobson, same place. Filed Oct. 19, 1891. Serial No. 408,120. (No model.)

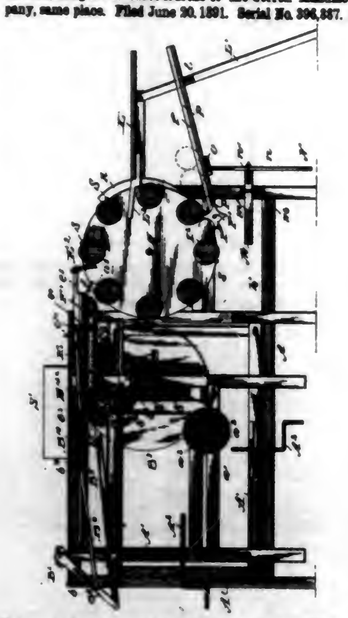


Claim.—1. In a mock pistol, a picture-holder consisting of a rotatable ring having ratchet-teeth on the inside thereof, non-rotatable abutments arranged in the form of a ring, extending into the rotatable ring and supporting the same, around which the rotatable ring turns, a trigger pivoted to the frame of the device within the circumference of the picture ring, a spring yieldingly holding the trigger in a forward position, and a spring-dog on the trigger, yieldingly held against the teeth of the rotatable ring, in combination with a frame resembling a pistol in form, and a magnifying-glass in such frame, through which the pictures can be viewed when brought before it, substantially as described.

2. In a mock pistol, a picture-holder consisting of a rotatable ring having ratchet-teeth on the inside thereof, a non-rotatable ring extending into the rotatable ring and supporting the same, around which the rotatable ring turns, a trigger pivoted to the frame of the device within the rings, a dog pivoted on the trigger, a spring yieldingly holding the trigger in a forward position, and a spring on the trigger, yieldingly holding the dog against the teeth of the rotatable ring, in combination with a frame resembling a pistol in form, such frame being hollow and serving as a receptacle in which articles can be placed, and a magnifying-glass in such frame, through which the pictures can be viewed, substantially as described.

3. In a mock pistol, the combination of a barrel adapted to hold coin, a spring in such barrel tending to hold its contents near the outer end thereof, a second barrel adapted to hold coin, a spring in the second barrel, tending to hold the contents thereof toward the outer end, a revoluble picture-holder, a trigger having a dog thereon adapted to actuate the picture-holder, a magnifying-glass through which the pictures may be viewed when brought into position before it, a receptacle upon one side of the picture-holder, adapted to hold car-tickets and postage-stamps, a receptacle on the other side of the picture-holder, and a receptacle in the handle of the device and movable covers to both of such receptacles, substantially as described.

476,879. CAN-LABELING MACHINE. CHARLES I. GORRELL, Belair, Md., assignor of three-fourths to the Gorrell Manufacturing Company, same place. Filed June 20, 1891. Serial No. 396,887. (No model.)



Claim.—1. In a can-labeling machine, the combination, with the adhesive receptacle and its grooved roller, of the feed device having projections or pins for engaging the label, as set forth.

2. In a can-labeling machine, the combination, with the adhesive receptacle having grooves in its upper face and the roller provided with coincident grooves, of the label feeding device having pins working in said grooves, as set forth.

3. In a can-labeling machine, the combination, with the adhesive receptacle and its grooves and grooved roller, of the stationary cutter having coincident grooves, the movable cutter, and the label-feed device having pins vertically movable, as set forth.

4. In a can-labeling machine, the combination, with the paste-receptacle provided with grooves and grooved roller, of the stationary cutter having coincident grooves, the movable knife, and the label-feed device having pins carried by a movable frame and arranged to act directly on the labels, as set forth.

5. In a can-labeling-machine, the combination, with the pasting mechanism, of the label-feed device having pins carried by a pivoted frame and a hinged hammer for actuating said hinged frame and means for holding and releasing said frame, as set forth.

6. In a can-labeling machine, the combination, with the reciprocating label-feed frame with its pivoted frame carrying pins, of the vertically-movable pivoted hammer actuated by said feed-frame, means for holding the pivoted frame in its downward position, means for releasing the frame, and means for returning it to its upward position, as set forth.

7. In a can-labeling machine, the combination, with the reciprocative feeding-frame and its pivoted frame carrying pins, of the transversely-sliding bar for holding said frame in its downward position, means for actuating the pivoted frame, means for operating the sliding bar to release the frame, and means for returning the pivoted frame to its upward position, as set forth.

8. In a can-labeling machine, the combination, with the reciprocative feeding-frame and its spring-actuated pivoted frame carrying pins, of the transversely-sliding bar for holding said frame in its downward position, and means for actuating said bar to release the frame, and means for depressing the frame, as set forth.

9. In a can-labeling machine, the combination, with the feeding-frame and its pivoted frame carrying pins, of the spring-actuated transversely-sliding bar for holding said frame in its downward position, and means for actuating said bar to release the frame, means for depressing the frame, and means for returning it to its upward position when released, as set forth.

10. In a can-labeling machine, the combination, with the reciprocative feeding-frame and its spring-actuated pivoted frame carrying pins, of the spring-actuated transversely-sliding bar for holding said frame in its downward position, and means for actuating said bar to release the frame, and means for depressing the frame, as set forth.

11. In a can-labeling machine, the combination, with the reciprocative label-feed frame with its pivoted frame, of the vertically-movable pivoted hammer actuated by the feed-frame, means for holding the pivoted frame in its downward position, means for releasing the frame, means for returning it to its upward position, and can holding and releasing mechanism, as set forth.

12. In a can-labeling machine, the combination, with the label-feed frame and its pivoted frame, of the vertically-movable pivoted hammer actuated by the feed-frame, means for holding the pivoted frame in its downward position, means for releasing the frame, means for returning it to its normal position, and an automatic can holding, rotating, and releasing mechanism, as set forth.

13. In a can-labeling machine, the combination, with the feed-table and the can-holding drum equipped with reciprocating shafts carrying disks and springs acting thereon, of a can-holding wheel and slide adapted to normally prevent rotation of the wheel, as set forth.

14. In a can-labeling machine, the combination, with the feed-table and the can-holding drum equipped with reciprocating shafts carrying disks and springs acting thereon, of a can-holding wheel and spring-actuated slide adapted to normally prevent rotation of the wheel, and means actuating the slides, as set forth.

15. In a can-labeling machine, the combination, with the feed-table and the can-holding drum equipped with reciprocating shafts carrying disks and springs acting thereon, of a can-holding wheel and spring-actuated slide adapted to normally prevent rotation of the wheel, and means for actuating the slide in opposition to its spring at predetermined periods, as set forth.

16. In a can-labeling machine, the combination, with the feed-table and its can-holding wheel, of the slide and the cam at the inner end of the feed-table and intervening devices for actuating the slide, as set forth.

17. In a can-labeling machine, the combination, with the feed-table, its slide, and can-holding wheel, of the can-holding drum provided with lugs, and the cams on the feed-table, arranged to be actuated by the lugs, means for returning the slide to its normal position, and connections between the cams and slides, as set forth.

18. In a can-labeling machine, the combination with the feed-table, its slide, and can-holding wheel, of the can-holding drum provided with lugs, the cams on the feed-table, arranged to be actuated by the lugs, and the blocks on the feed-table, connected with the slide and arranged to be actuated by the said cam, as set forth.

19. In a can-labeling machine, the combination, with the feed-table and its slide, of the blocks carried by the slide, the can-holding wheel, the cams pivoted to the feed-table and arranged to actuate said blocks, means for returning the slide to its normal position, and the can-holding drum provided with lugs to actuate the cams, as set forth.

20. In a can-labeling machine, the combination, with the feed-table and its slide, of the blocks carried by the slide, the can-holding wheel, the cams pivoted to the feed-table and arranged to actuate said blocks, the can-holding drum provided with lugs to actuate the cam, and the spring on the feed-table, acting on the blocks in opposition to the cam, as set forth.

21. In a can-labeling machine, the combination, with the drum and the shafts journaled therein and carrying the can-holding disks, of means for rotating said shafts with their disks at predetermined periods, and means for moving said shafts endwise at predetermined intervals, and label feed, pasting, and severing mechanism, as set forth.

22. In a can-labeling machine, the combination, with the drum and the shafts journaled therein and carrying the can-holding disks, of means for rotating said shafts with their disks at predetermined periods, means for moving said shafts endwise at predetermined periods, and springs acting upon said shafts to return them to their normal position, and label feed, pasting, and severing mechanism, as set forth.

23. In a can-labeling machine, the combination, with the grooved drum and means for rotating the same, of the shaft journaled therein and carrying can-holding disks and friction-rollers, and the fixed disks having cams to engage said rollers at predetermined periods, as set forth.

24. In a can-labeling machine, the combination, with the grooved drum, of the shafts journaled in the flanges thereof, the collars fast on the shafts and arranged in the grooves of the drum, the springs acting on the collars, and the fixed cams arranged to engage the collars at predetermined periods to force them in opposition to their springs, and means for rotating the drum, as set forth.

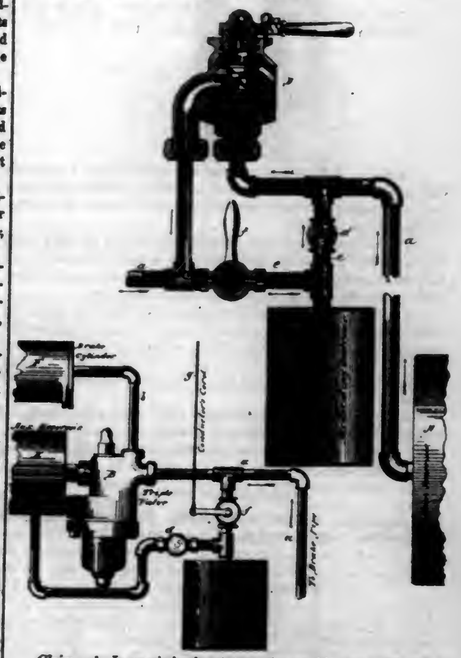
25. In a can-labeling machine, the combination, with the drum and its shafts carrying can-holding disks and friction-rollers, of the fixed disks having cams, the springs acting upon the shafts to move them endwise, and the fixed cam for moving the shafts in opposition to their springs, and means for rotating the drum, as set forth.

26. In a can-labeling machine, the combination, with the power-shaft, its drum and shafts, disks, springs, rollers, and the fixed cam and lugs co-operating therewith, of the label-feed mechanism and the intermediate connections, substantially as described, between the power-shaft and said feed mechanism, as set forth.

27. In a can-labeling machine, the combination, with the power-shaft, the drum and its shafts, disks, springs, rollers, and the fixed cam, and lugs co-operating therewith, of the label-feed mechanism, the adhesive-applying mechanism, and connections, substantially as described, between said parts, as set forth.

28. In a can-labeling machine, the combination, with the power-shaft, its drum and its shafts, disks, springs, rollers, and the fixed cam, and lugs co-operating therewith, the feed mechanism, the label-feed mechanism, and the adhesive-applying mechanism, of connections, substantially as described, whereby all of said parts are operated from the main power-shaft, as set forth.

476,880. AIR-BRAKE. DAVID HARNEY, Turner, Ill. Filed Nov. 23, 1885. Serial No. 183,697. (No model.)



Claim.—1. In an air-brake system, the combination of the triple valve and an accelerating air-reservoir G, connected thereto so as to accelerate the releasing of the valve, substantially as described.

2. In an air-brake system, the combination of a triple valve, an accelerating air-reservoir, an air-supply therefor, and a pipe or passage connecting said accelerating-reservoir with an air-supply pipe or passage for the triple valve, substantially as described.

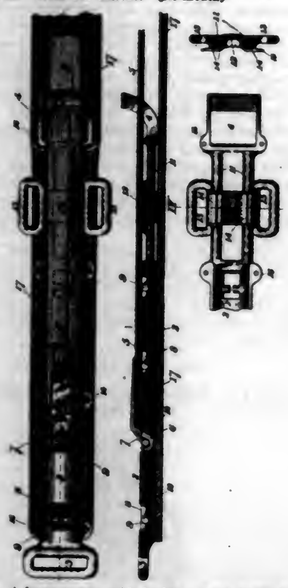
3. In an air-brake system, the combination of a triple valve, the air-supply passage therefor, the main reservoir, and an accelerating-reservoir connecting with said supply-passage at a point between the main reservoir and the triple valve, substantially as described.

4. In an air-brake system, the combination of a triple valve, the

main reservoir, an accelerating-reservoir, and a check-valve in the supply-passage of the accelerating-reservoir, substantially as described.

5. In an air-brake system, the combination of a triple valve, the main reservoir, the engineer's valve, and an accelerating-reservoir the supply and discharge passages of which respectively connect with the supply and discharge passages of the engineer's valve, substantially as described.

476,881. HAME-TUG. EUGENE L. HOWE, Cleveland, Ohio. Filed Nov. 13, 1891. Serial No. 411,695. (No model.)



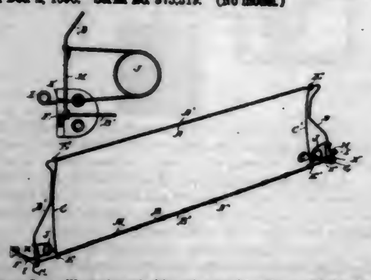
Claim.—1. A hame-tug provided with a metal frame having side bars or ribs and a slide having a loop or loops at its ends and flanges bent in opposite directions to substantially inclose the side bars or ribs, substantially as described.

2. A hame-tug comprising a metal body portion having a metal loop connected thereto by rods or ribs and a slide having a loop or loops at its ends, and flanges bent in opposite directions to substantially inclose the rods or ribs, substantially as described.

3. A hame-tug having a body portion provided with means for attachment of the tug-hook, and a slide movable upon a section of the body portion and having flanges bent in opposite directions, the parts of said body portion adjacent to the slide being higher than the slide, whereby friction of the tug and slide is prevented, substantially as described.

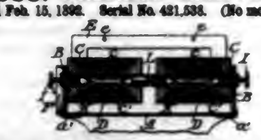
4. A hame-tug comprising a body portion having hook-holes, oppositely-extending lugs in said holes, a hook arranged to engage the lugs, a loop connected to said body portion by rods or ribs, and a slide movable thereupon, substantially as described.

476,882. PILLOW-SHAM HOLDER. FRANCIS KARR, Chicago, Ill. Filed Dec. 2, 1890. Serial No. 373,319. (No model.)



Claim.—In a pillow-sham holder, the combination, with the sham-holding frame, composed entirely of wire and consisting of two sections rectangular in form and each composed of a single piece of wire which is bent to form the side bars A A' and B and B', the end bars C, C', D, and D', the guide-eyes E and F, through which the side bars work, the loop H, the spring ends I, constituting the retaining devices, and the coils J, of the brackets, in which are respectively one end of each section and which are provided with cams engaged by the spring ends I, substantially as described.

476,888. SPOOL-HOLDER. MICHAEL G. KUHN, New York, N. Y. Filed Feb. 15, 1892. Serial No. 421,538. (No model.)



Claim.—1. The combination of a fixed spool-holding spindle, hollow and slotted, as described, a support therefor, a laterally-yielding spring placed longitudinally within said spindle, and an adjusting-screw tapped into said spindle axially and adapted to bear against the end of said spring, substantially as shown and described.

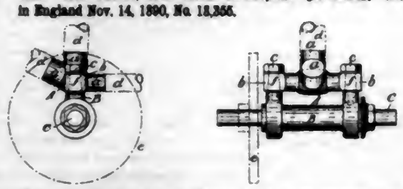
2. In a spool-holder, the combination of a base, a side plate supported by said base, but movable with respect thereto, a spool-supporting spindle fixed to said side plate, said spindle being hollow and slotted, a laterally-yielding spring placed longitudinally within said spindle, and an adjusting-screw adapted to bear against the end of said spring, substantially as shown and described.

3. In a spool-holder, the combination of a base, side plates having a hinged or pivotal connection with said base, spool-supporting spindles fixed to said side plates, and a locking-bar connected with one of said side plates and adapted to engage the other, said locking-bar being formed with guide-eyes for the thread from the spools, substantially as shown and described.

4. In a spool-holder, the combination of a base, side plates having a hinged or pivotal connection with said base, spool-supporting spindles fixed to said side plates, the corresponding spindles on the opposing plates being in alignment, a pin carried by one of said corresponding spindles and adapted to enter a recess in the other, and means to lock the plates in position, substantially as shown and described.

5. In a spool-holder, the combination of a base, side plates having hinged or pivoted connection with opposite sides of said base, spool-supporting spindles fixed to both of said side plates, the corresponding spindles on the opposing plates being in alignment and adapted to engage and support each other at their free ends, and means to lock the plates in position, substantially as shown and described.

476,884. VELOCIPEDE. EDWARD LESLE, Wolverhampton, England. Filed Dec. 26, 1891. Serial No. 416,102. (No model.) Patented in England Nov. 14, 1890, No. 18,355.



Claim.—1. In a cycle or velocipede, the combination, with the frame, of the elongated tubular detachable bracket B, provided with a shaft-bearing and with two shanks A, adapted to enter corresponding holes or apertures *f* in said frame, and means for securing said shanks rigidly but removably in place in said holes.

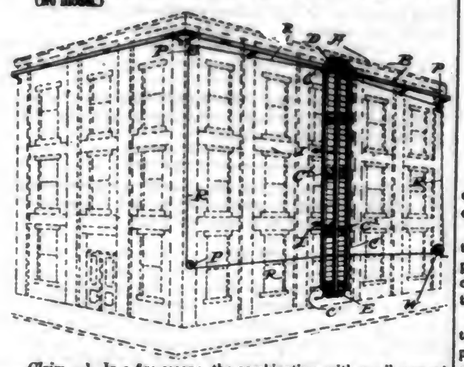
2. In a cycle or velocipede, the combination, with the tubes and block A, forming the frame thereof, said block having two apertures or holes *f*, of the bottom bracket B, provided with two screw-threaded shanks A, adapted to engage the respective holes in the block, and the nuts *c*.

3. In a cycle or velocipede, the combination, with the tubes and the block A, united rigidly together to form the frame, said block being provided with tapered holes *f*, of the bottom bracket B, provided with tapered shanks A to engage the respective holes in the block, and the nuts *c* on said shanks.

4. In a cycle or velocipede, the combination, with the frame comprising the tubes and the block A, secured permanently thereto and provided with vertically-arranged tapered holes *f*, of the bottom bracket B, provided with a shaft-bearing and with two tapered shanks A, adapted to fit into the tapered holes in the block, and nuts *c* for securing said bracket in place, substantially as set forth.

5. In a cycle or velocipede, the combination, with the frame thereof provided with a block A at its lower part, said block having a portion extending transversely of the longitudinal axis of the cycle with holes *f* therein, of the bottom bracket B, provided with shanks A to engage said holes in the block, and means for securing said shanks removably in said holes.

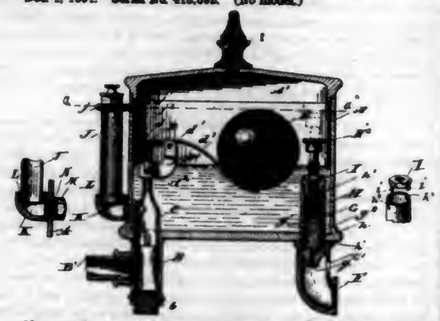
476,885. FIRE-ESCAPE AND FIREMAN'S LADDER. WILLIAM F. LOYD, Canal Dover, Ohio. Filed Dec. 4, 1891. Serial No. 414,091. (No model.)



Claim.—1. In a fire-escape, the combination, with a rail secured to the side of the building, of an upright supporting-frame carrying an endless ladder and having connected therewith a trolley or traveler mounted on said rail, said supporting-frame comprising longitudinal or upright members, and cross-pieces connecting said longitudinal members, substantially as indicated, the longitudinal members having rearwardly-extending arms or brackets carrying rollers in contact with the building, and said longitudinal members inclosing the side pieces of the endless ladder on three sides, thereby preventing the swaying of the ladder in either direction, substantially as set forth.

2. In a fire-escape, the combination, with a rail secured to the side of the building, of an upright supporting-frame carrying an endless ladder and having connected therewith a trolley or traveler mounted on said rail, said supporting-frame comprising longitudinal or upright members, and cross-pieces connecting said longitudinal members, substantially as indicated, a crank for communicating motion to said ladder, and suitable mechanism for preventing a return movement of said ladder, substantially as set forth.

476,886. LUBRICATOR. LOUIS L. MAIN, Cleveland, Ohio. Filed Dec. 1, 1891. Serial No. 413,692. (No model.)

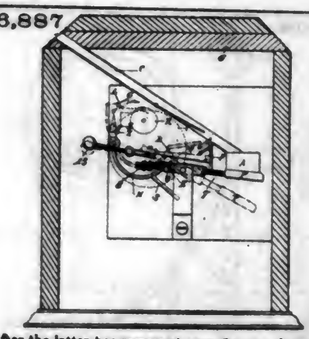


Claim.—The combination, with an oil-cup provided with a narrowed inlet and float controlled valve therefor, of one or more outlet-tubes, each tube being provided with sight-openings, an interior tube with perforations for admission and discharge of oil, and packed piston for cutting off or admitting oil to the inner tube, substantially as described.

476,887. TELEPHONE SYSTEM. BÉLNAIRE MARINOVITCH and GÉZA SEARVADY, Paris, France. Filed Sept. 5, 1889. Serial No. 323,042. (No model.) Patented in France Oct. 30, 1886, No. 179,369, and in England Aug. 19, 1889, No. 13,057.

Claim.—1. In a telephone system, the combination, with a main line and a telephone therein, of a normally-closed short circuit around the said telephone, a circuit-breaker in said short circuit, and a motor controlling the circuit-breaker and automatically closing the short circuit after the latter has remained open for a predetermined period of time, substantially as described.

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2. In a telephone system, the combination, with a main line and a telephone therein, of a normally-closed short circuit around said telephone, a circuit-breaker in said short circuit, a motor controlling said circuit-breaker, and a coin-operated detent for said motor, substantially as described.

3. In a telephone system, the combination, with a main line and a telephone therein, of a normally-closed short circuit around said telephone, a circuit-breaker in said short circuit, a spring-motor or clock-works controlling said circuit-breaker, a detent for the clock-works, an electro-magnet for operating the detent, and an electric circuit including the magnet and provided with terminals adapted to be bridged by a coin or token, substantially as described.

476,888. CHECK-RECEPTACLE. HENRY W. MATTHEWS, New York, N. Y. Filed Oct. 24, 1891. Serial No. 409,692. (No model.)



Claim.—The combination of a box or receptacle for checks or cards, means to secure it to a fixed object, said receptacle having an open top with an inwardly-projecting rim and having an open front with a cross-bar slightly below the said rim to leave a space for the passage of a single check, the sides of said receptacle near the front and within the line of said cross-bar being formed with channels or grooves, and a plate bearing a number or character designating said receptacle inserted in said channels or grooves, substantially as shown and described.

476,889. POLE FOR ELECTRIC WIRES. JULIUS MEYER, New York, N. Y., and CARL BENDER, Chicago, Ill., assignors to the Edison General Electric Company, New York, N. Y. Filed Mar. 17, 1892. Serial No. 425,260. (No model.)

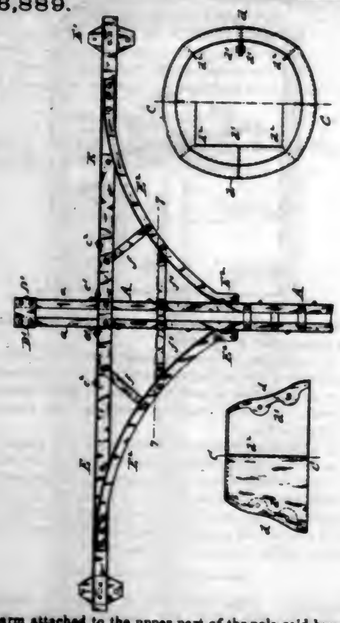
Claim.—1. The combination, with a pole or vertical support formed of converging angle-pieces, of a horizontal bracket-arm formed of two pieces of angle-iron which abut at their outer parallel end portions and converge from their parallel center portions toward each end, the center portions being at such a distance apart that the said pole can pass through the same, and wire-carrying plates supported at the outer ends of said arms, substantially as described.

2. The combination, with an upright pole formed of converging angle-pieces and lattice-work connecting said angle-pieces, of a horizontal bracket-arm attached to the upper part of the pole, said bracket-arm being composed of angle-irons, curved arms for supporting said angle-irons, and straps and braces between the pole, bracket-arm, and curved arms, substantially as set forth.

3. The combination, with a pole for electric wires, said pole being formed of converging angle-irons connected by lattice-pieces, of a horizontal bracket-arm formed of two angle-irons, curved arms for supporting said angle-irons, and horizontal braces between the pole, bracket-arms, and curved arms, the angle-irons of the bracket-arms and the horizontal braces extending at their center portions around the poles and converging toward their ends, substantially as set forth.

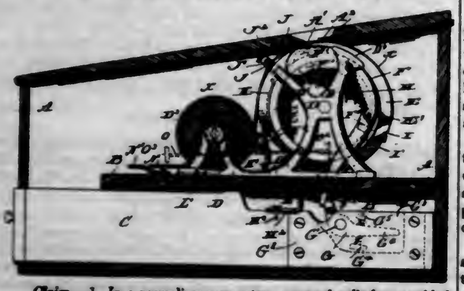
4. The combination, with an upright pole formed of converging angle-pieces and lattice-work connecting the same, of a horizontal

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bracket-arm attached to the upper part of the pole, said bracket-arm being formed of two angle-irons that embrace the upper end of the pole and are made converging toward their outer ends, wire-supporting plates attached to the outer ends of the bracket-arm, curved arms connecting the pole with the outer ends of the bracket-arm, horizontal braces or straps for connecting the pole and curved arms, said braces or straps extending around the pole and converging toward the curved arms, and inclined connecting straps or plates between the curved supporting-arms and the angle-irons of the bracket-arm, substantially as set forth.

476,890. CASH-RECORDER. CHARLES H. MORFORD, Allentown, Pa. Filed Feb. 3, 1892. Serial No. 420,189. (No model.)



Claim.—1. In a recording apparatus, a record-cylinder provided with a clutch-ring, a clutch-lever, and a lever-operating dog mounted on a drawer, substantially as specified.

2. In a recording apparatus, a record-cylinder and its operating mechanism, a drawer, and a dog pivoted to the drawer and provided with means for adjusting the same on its pivot, substantially as specified.

3. In a recording apparatus, a record-cylinder and its operating devices, in combination with the drawer carrying a pivoted dog and an adjustable stud, substantially as specified.

4. In a recording apparatus, the combination, with the cylinder and means for securing the record-sheet thereto, of tension-bars, one being arranged upon each side of the paper, and means for yieldingly regulating their pressure upon the paper, substantially as specified.

5. The combination, with the record-cylinder of a recording apparatus, of tension-bars, one being arranged upon each side of the paper, a spring contacting therewith, and means for controlling the tension of the spring, substantially as specified.

6. In a recording apparatus, a record-cylinder provided with a clutch-ring, and a clutch-lever mounted on said ring and means for operating the lever, substantially as specified.

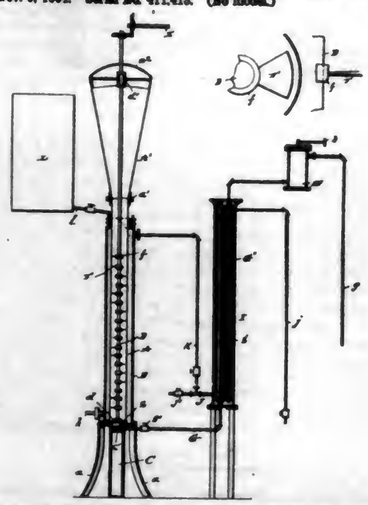
7. The combination, with a record-cylinder, of a clutch-ring and a clutch-lever having lugs arranged to bear upon both sides of the ring at one end of the lever and upon one side at another point on the lever, substantially as specified.

8. The combination, with a record-cylinder having a clutch-ring and a clutch-lever, of a frame-work provided with an arm for retaining the lever on the ring, substantially as specified.

9. The combination, with a record-cylinder having a clutch-ring, of a clutch-lever and a brake arranged to bear on the ring, substantially as specified.

10. The combination of a record-cylinder having a clutch-ring, a clutch-lever, a brake, and means for moving the lever and removing the brake, substantially as specified.

476,891. PROCESS OF AND APPARATUS FOR EVAPORATING SUGAR SOLUTIONS. JAMES A. MORRELL, New Orleans, La. Filed Nov. 9, 1891. Serial No. 411,413. (No model.)

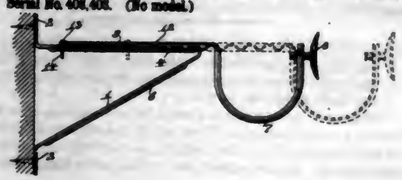


Claim.—1. The process of evaporating and crystallizing saccharine liquids, which consists in maintaining in a state of violent agitation a vertical column of such liquid and then forcing through such agitated column of liquid a current of compressed air which has been previously heated to a temperature below the boiling-point of the liquid so treated and keeping up such action until the liquid has been reduced to a solid, as and for the purpose described.

2. In an apparatus for crystallizing saccharine and saline solutions, the combination of a stand-pipe adapted to be heated upon its exterior surface, a supply-pipe connected with the upper portion of said stand-pipe, an agitator passing through said pipe, and an air-supply pipe entering the lower end of the stand-pipe and adapted to discharge air up through the mass therein, substantially as specified.

3. In an apparatus for evaporating and crystallizing saccharine and saline solutions, the combination of the stand-pipe, a liquid-supply tank therefor, a longitudinal agitator-shaft extending through the stand-pipe, an air-reservoir, an air-pipe leading from the air-reservoir to the stand-pipe, a steam-heater inclosing the air-pipe, and a steam-jacket surrounding the stand-pipe and connected to the steam-heater, substantially as described.

476,892. EXTENSION-BRACKET. THOMAS MORRIS, Brooklyn, assignor to Julius Barbecker & Co., New York, N. Y. Filed Oct. 12, 1891. Serial No. 408,408. (No model.)



Claim.—1. The combination, with a sheet-metal bracket having a longitudinal slot and corrugations on opposite sides thereof, of a carrying-piece having corrugations corresponding with those upon the bracket by which the carrying-piece is locked after adjustment and at its inner end a tongue and cross-piece, said tongue being adapted to engage the slot and the cross-piece to lie on the under side thereof, substantially as described.

2. The combination, with the bracket having a central slot and corrugations on opposite sides thereof, of a carrying-piece having a holding-loop at its outer end, a depressed rib corresponding with the slot in the bracket, and at its inner end a tongue adapted to slide freely in the slot, and a cross-piece adapted to engage the bracket on the under side, thereby locking the carrying-piece to the bracket.

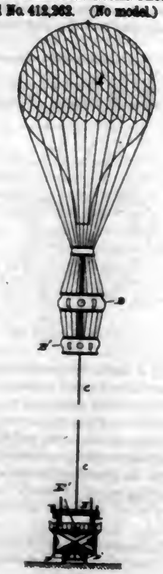
3. A bracket having a longitudinal slot, on opposite sides of said slot ribs 5, and on the outer sides of the ribs corrugations, in combination with a carrying-piece having a depressed rib corresponding with the slot, raised ribs corresponding with the ribs on the bracket, bearings 15, adapted to ride over ribs 5 when the carrying-piece is tilted, a tongue adapted to engage the grooves, and a cross-piece at the end of the tongue which is adapted to be passed through the groove and then turned crosswise to the bracket, whereby the carrying-piece is held in position.

4. The combination, with a bracket having a central slot and corrugations on opposite sides thereof, of a carrying-piece having corrugations corresponding therewith and at its inner end a tongue and cross-piece, substantially as described, and an adjustable support, the lower ends of which are adapted to engage corrugations upon the bracket and the upper end to engage corrugations upon the carrying-piece, whereby the latter may be held at a raised position.

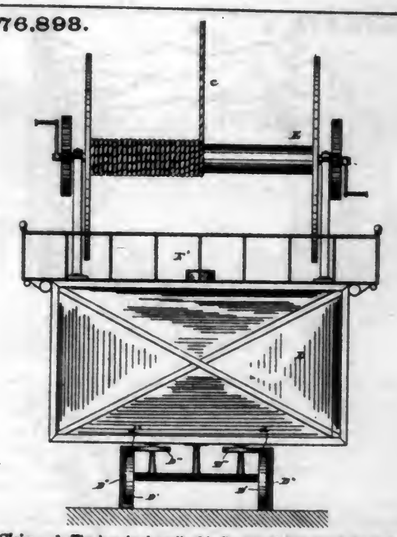
5. A bracket having a central slot and corrugations on opposite sides thereof, in combination with a carrying-piece having corresponding corrugations, a tongue adapted to engage the slot, and at the end of the tongue a cross-piece adapted to engage the bracket to hold the carrying-piece in position, and an adjustable support having a similar tongue and cross-piece, whereby it is retained in position, the top of said support being adapted to engage corrugations in the carrying-piece and the bottom to engage corrugations in the bracket, whereby all of said parts are held in operative position until the carrying-piece is tilted.

6. A bracket having a central slot, ribs on opposite sides of the slot, and corrugations outside of the ribs, in combination with a carrying-piece having similar corrugations, a depressed rib to engage the slot, raised ribs to engage the ribs on the bracket, bearings 15, which engage the ribs on the bracket when the carrying-piece is tilted, and a tongue and cross-piece, for the purpose set forth, and an adjustable support having a similar tongue and cross-piece, projections 18, which engage corrugations in the bracket, and a groove 21 to receive the depressed rib in the carrying-piece.

476,898. CAPTIVE BALLOON. LOUIS PATY, Paris, France. Filed Nov. 18, 1891. Serial No. 412,262. (No model.)



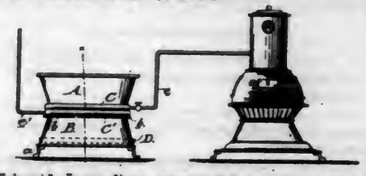
476,898.



Claim.—1. The herein-described balloon-railway, consisting of the balloon and cars attached thereto, the rolling car having wheels placed in vertical grooves, horizontal rollers bearing against the flanges of the vertical grooves, and means for varying the weight of the car, as set forth.

2. The herein-described balloon-railway, consisting of the balloon and cars attached thereto, the rolling car having rollers D′ engaging vertical grooves D″, the horizontal rollers D‴, bearing against the flanges of said vertical grooves, and the tank D on said car and platform provided with a railing, said tank and platform adapted by means of water, &c., to increase or decrease the weight of the car, substantially as and for the purpose set forth.

476,894. RADIATOR. OLE PEDERSON, Aurora, Ill. Filed Oct. 9, 1891. Serial No. 408,212. (No model.)



Claim.—1. In a radiator, upper and lower sections of tapering form in cross-section with their smaller ends communicating, one of said sections having connecting-passages, and means for supplying heat to said passages, substantially as herein described.

2. In a radiator, upper and lower sections seated one on the other and made tapering from their outer ends inward, communicating tubes or passages at the junction of said sections, pipes connecting with said passages, and means for supplying heat thereto, substantially as herein described.

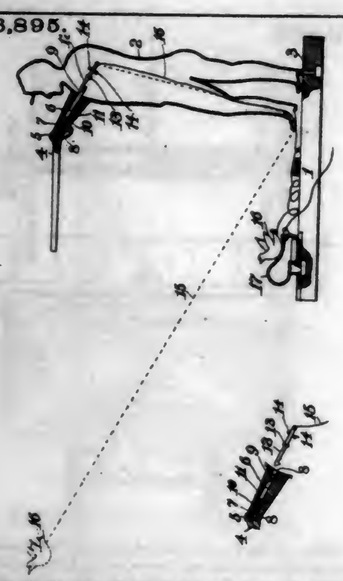
3. A radiator consisting of a lower section elevated above the floor, having its lower end open and made wider than its upper end and provided near said upper end with a supporting-flange, an upper section fitted upon said flange and having its upper end open and wider than the lower end, circulating-tubes or passages in the lower end of said upper section, and means for supplying heat thereto, substantially as herein described.

4. In a radiator, upper and lower sections of tapering form in cross-section, having their contracted ends joining circulating-tubes at said junction, pipes for supplying heat thereto, and a water-trough in the lower section for moistening the air passing through the sections, substantially as herein described.

476,895. MECHANICAL TOY. EDWIN I. PYLE, Bridgeport, Conn. Filed Aug. 31, 1891. Serial No. 404,263. (No model.)

Claim.—1. A toy marksman comprising a figure holding a gun in position for shooting, a cord operatively attached to suitable firing mechanism, and a suitable object, as a toy pigeon, secured to the free

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end of the cord, whereby when said object is thrown in the air said mechanism will be operated simultaneously with the dropping of said object, substantially as set forth.

2. In a toy marksman comprising a figure holding a gun in position for shooting and suitable firing mechanism for said gun, the combination of a cord whose ends are respectively secured to said mechanism and to a suitable object, as a toy pigeon, a swivel connection between said figure and a base, and means for throwing said object to the limit prescribed by the cord, substantially as set forth.

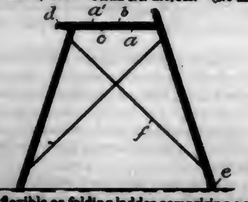
3. In a mechanical toy marksman, the combination, with a gun provided with suitable firing mechanism and supported by the figure of a marksman, and an object, as a toy pigeon, of devices for throwing said object into the air, and appliances for operating said mechanism simultaneously with the flight of said object, substantially as set forth.

476,896. SOLDERING METAL FOR ALUMINIUM. ALEXIUS RAVEN, Christiania, Norway. Filed Jan. 19, 1892. Serial No. 418,575. (No specimens.)

Claim.—1. The herein-described soldering metal for aluminium, consisting of zinc, cadmium, and tin mixed in substantially the proportions specified.

2. The herein-described method of making soldering metal for aluminium, consisting in melting zinc, then adding cadmium, and then adding tin in pieces, the whole mass to be stirred during the entire operation.

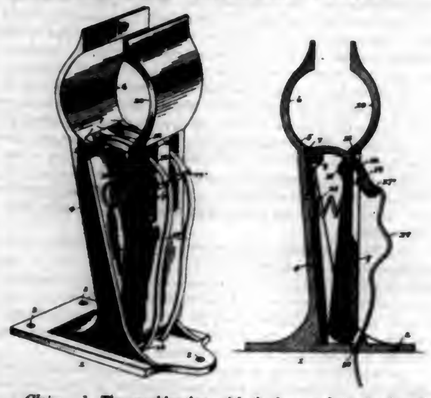
476,897. LADDER. ERNST L. RIPP, Schönau, near Chemnitz, Germany. Filed Mar. 13, 1892. Serial No. 425,443. (No model.)



Claim.—1. A flexible or folding ladder comprising a series of links disposed in pairs and having one of their respective extremities and a point intermediate of their extremities pivoted to certain of the rounds or rungs and having their free extremities adapted to abut against a round or rung intermediate of the pivoted rounds of the next succeeding pair of links of the series, substantially as and for the purposes set forth.

2. The combination, in a flexible or folding ladder, of a series of rounds or rungs, a series of links disposed in pairs and having one of their respective extremities and a point intermediate of their extremities pivoted to certain of the rounds or rungs and having their free extremities adapted to abut against a round or rung intermediate of the pivoted rounds of the next succeeding pair of links of the series, rollers at one end of the ladder, and tie-rods adapted to engage certain of said rounds or rungs, substantially as and for the purposes set forth.

476,898. STITCHING-HORSE. ADOLPHUS M. SANDERS, Rockburg, Wis. Filed Dec. 12, 1891. Serial No. 414,590. (No model.)

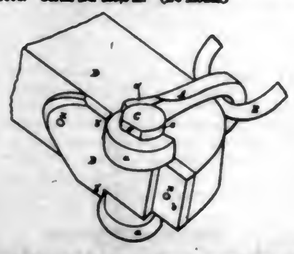


Claim.—1. The combination, with the base and the fixed section rising therefrom and terminating in a fixed jaw, of a pivoted section provided with slots, curved cam-levers pivoted at their inner ends to the section first mentioned and having their free ends passed through the slots of the section last mentioned, a strap connected at its sections to the free ends of the levers, and a spring interposed between the two sections, substantially as specified.

2. The combination, with the opposite sections pivoted together at their lower ends and terminating at their upper ends in jaws, one of said sections being provided with slots, of curved levers pivoted at their inner ends to the unslotted section and having their free ends passed through the slotted section, the interposed spring for spreading the sections, and means for drawing down the levers, substantially as specified.

3. The combination, with the opposite pivoted sections terminating at their upper ends in jaws, one section being provided with bearing-lugs and the other with opposite slots having loose rollers, of a pair of curved levers pivoted in the bearing-lugs and having their free ends passed through the slots, which free ends are perforated and in advance of their perforations provided with pins, and the leather loop having its free ends perforated and passed through the perforated ends of the levers and engaged over the pins thereof, substantially as specified.

476,899. CLEVIS. GEORGE SAXBY, East Bloomfield, N. Y. Filed Mar. 2, 1892. Serial No. 423,562. (No model.)



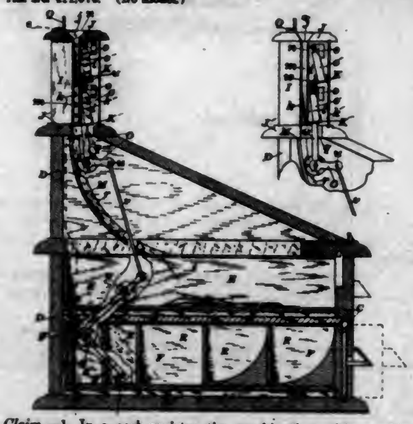
Claim.—1. In a clevis, the combination of a supporting-plate B, a stud C, integral therewith, and a removable link A, having terminal hooks *a a*, all arranged and operating substantially as described.

2. In a clevis, the combination of the plate B, having the shoulders *b' b'*, the stud C, integral therewith, and the link A, having the hooks *a a*, all arranged and operating substantially as described.

3. In a clevis, the combination of the plate B, the stud C, integral therewith and having expanded heads, the link A, having the hooks *a a*, and the lugs *a' a'*, all arranged and operating substantially as described.

4. In a clevis, the combination of the plate B, having the shoulders *b' b'*, the stud C, integral therewith and having expanded heads *c c*, the link A, having the hooks *a a*, and the lugs *a' a'*, all arranged and operating substantially as described.

476,900. CASH-REGISTER. JOHN F. SCHAARRENBERGER, Chicago, Ill., assignor to Charles R. Funk, same place. Filed Nov. 12, 1891. Serial No. 411,678. (No model.)



Claim.—1. In a cash-register, the combination, with a cabinet provided with a slot leading into the top, of two stops in the slot, a drawer within the cabinet, and means for connecting the stops with the drawer, whereby the movement of the drawer in one direction operates one of the stops and the movement of it in the opposite direction operates the other stop, substantially as set forth.

2. In a cash-register, the combination, with a cabinet provided with a slot leading from the top, of two stops in the slot, a drawer in the cabinet, and two systems of rods and levers, one of which is connected with one of the stops and is operated by pulling out the drawer and the other one is operated by pushing in the drawer, substantially as set forth.

3. In a cash-register, the combination, with a cabinet provided with a slot leading from its top, of two stops in said slot, a drawer in the cabinet, one side of which drawer is provided with a forwardly-swinging lever and the other side is provided with a rearwardly-swinging lever, and two systems of rods and levers, one of which is connected with one of the stops and is operated by the lever on one side of the drawer and the other system is connected with the other stop and is operated by the lever on the other side of the drawer, substantially as set forth.

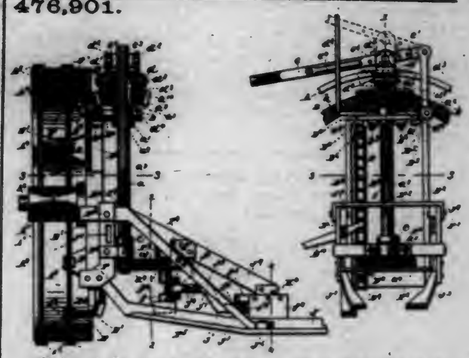
4. In a cash-register, the combination, with a cabinet provided with a slot leading from its top, of two stops in the slot and two drawers in the cabinet divided into compartments, said slot being also divided to correspond with the compartments of one of said boxes, the other drawer being adapted to receive the cash, and means for removing one of the stops from the slot when one of the drawers is pulled out and for removing the other stop when the drawer is pushed in, substantially as set forth.

5. In a cash-register, the combination, with the cabinet proper, of a top mounted thereon comprising slotted top and bottom pieces, solid end pieces, and transparent walls between the top and bottom pieces and the end pieces, two of said walls forming a vertical slot between them, which registers with the slots in the top and bottom pieces, one of said walls being provided with a horizontal slot, two stops secured to the end pieces, one of which stops is adapted to pass through the horizontal slot in one of the walls and the other one is adapted to pass under the bottom of said wall, and means for operating the stops, substantially as set forth.

6. In a cash-register the cabinet of which is provided with a receptacle and a vertical slotted top communicating therewith, the walls of which slot are transparent and one of them is provided with a horizontal slot, two stops pivotally secured to the end pieces, each stop comprising a bar and a plate secured to the lower end thereof, said plate projecting at an angle therefrom, one of which plates is adapted to pass through the horizontal slot and close the vertical slot and the other plate is adapted to pass under the bottom of said wall, and means for operating the stops, substantially as set forth.

476,901. VERTICAL GEARING FOR HARVESTERS AND MIDDLE. GEORGE SCHUDDEE, Walnut, Tex. Filed Apr. 23, 1891. Serial No. 390,312. (No model.)

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Claim.—1. In a harvester, a plate D, secured to the axle of the master-wheel and carried in a vertical position, with its vertical edges provided with flanges D^4 D^5 and their upper ends extended and turned inward to a horizontal position at D^4 D^5, in connection with the upper end of the plate D, extended and turned down over the ends D^2 D^3 to a horizontal position, forming the projection D^6, as shown, and for the purpose described.

2. In a harvester, the combination, with the finger-bar J, provided with an extension J', of the bars J^2, J^3, and J^5, bent around the rear of the plate D, as shown, and for the purpose described, in connection with the bars P, P', P^2, and P^3, and the plate D, provided with flanges D^4 D^5 and carried by the axle of the master-wheel, for the purpose described.

3. In a harvester, the combination, with the finger-bar J, provided with the extension J', of the bars J^2, J^3, and J^5, bent around the rear of the plate D, as shown, and for the purpose described, in connection with the bars P, P', P^2, and P^3, the plate D, supported by the axle of the master-wheel, and a chain D^7 or its equivalent secured to near the upper end of the plate D and extending downward to engage with a hook D^6, as and for the purpose described.

4. In a harvester, the combination, with the finger-bar J, provided with the extension J', of the bars J^2, J^3, and J^5, bent around the rear of the plate D, as shown, and for the purpose described, in connection with the bars P', P^2, and P^3, the plate D, supported by the axle of the master-wheel, a chain D^7 or its equivalent secured to near the upper end of the plate D and extending downward to engage with a hook D^6, as and for the purpose described, in connection with the bar P, provided with an opening J^{11}, and a lever D^{10}, provided with a stud D^{11}, as shown, and for the purpose described.

5. In a harvester, a bracket *d*, engaging with the groove d^7 and perforated and provided with the bracket d', having ears d^9 d^9, in connection with a lever to engage with said ears, a bracket d^{10}, a link d^{11}, a bracket d^{12}, and a bevel-pinion d^{13}, as shown, and for the purpose described.

6. In a harvester, a bracket *d* in engagement with the groove d^7 and perforated and provided with the bracket d', having ears d^9 d^9, in connection with a lever formed of the ends *e* and *e'*, connected by the strips e^3 and e^4, provided with the strips e^5 and e^6, curved as shown, and pivoted to the ears d^9 d^9, a bracket d^{15}, provided with notches d^{16} and b^7, a link d^{11}, a bracket d^{12}, and a bevel-pinion d^{13}, as and for the purpose described.

7. In a harvester, a bracket *d* in engagement with the groove d^7 and perforated and provided with the perforated bracket d', having ears d^9 d^9, in connection with a lever provided with the strips e^5 and e^6, curved as shown, and pivoted to the ears d^9 d^9, the strip e^3, provided with the dovetail extension e^4, a bracket d^{15}, provided with notches d^{16} and b^7, in connection with the upright d^{18}, a bracket d^{19}, and a bevel-pinion d^{13}, as and for the purpose described.

8. In a harvester, the combination of a bracket *b*, secured to the projection D^4 and provided with a stud b^4, and an anti-friction roller or idler on said stud b^4 in position to operate on the rear surface of the toothed rim B, for the purpose described.

9. In a harvester, the combination of the bracket *b*, secured to the projection D^4, with its body bifurcated and provided with slots b^2 b^2 for the purpose described and provided with a stud b^4, and an anti-friction roller on said stud, as shown, and for the purpose described.

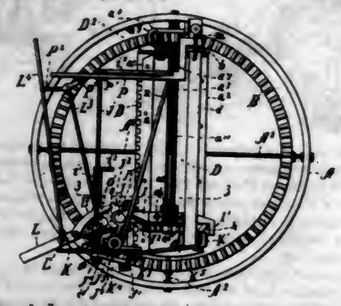
10. In a harvester, the combination of a sickle-head secured to the sickle-bar and provided with a vertical stud L^2 to receive the pitman J, and an anti-friction roller L^4 near its upper end in connection with guides f^{17} and f^{18}, and brackets f^{21} and f^{21}, as shown, and for the purpose described.

11. In a harvester, the combination of a shiftable finger-bar clip pivoted to the finger-bar J and provided with the projection *i'*, and

extension i and arm i^3, secured in position by a spring-pin, as shown, and for the purpose described.

12. In a harvester, the combination of a shiftable finger-bar clip having the projections i and i' and an arm or extension i^3, said clip pivoted to the finger-bar, with the projection i extending over the sickle-bar, the arm or extension i^3 being provided with a groove i^4, said clip secured in position by a spring-pin having a projecting head, as shown, and for the purpose described.

476,902. RAISING AND LOWERING MECHANISM FOR HARVESTERS. GEORGE SCHUBERT, Walnut, Tex. Filed May 12, 1891. Serial No. 392,533. (No model.)



Claim.—1. In a harvester, the combination, with a rod L^4, provided with a stud L^2 to engage with a moving gear-wheel or toothed rim B and pivoted near its lower end to a lever L, said lever L pivoted on the harvester-frame or on the shaft J, of a ratchet-wheel or pinion J^3 on the shaft J, a dog L^3, pivoted to the lever L and in position to engage with the ratchet wheel or pinion J^3, a pinion on the shaft J in position to engage with a rack a, and a dog i, as shown, and for the purpose described.

2. In a harvester, the combination, with a rod L^4, provided with a stud L^2 to engage with a moving gear-wheel or toothed rim B and pivoted near its lower end to a lever L, said lever L pivoted on the harvester-frame or on the shaft J, of a ratchet wheel or pinion J^3 on the shaft J, a dog L^3, pivoted to the lever L and in position to engage with the ratchet wheel or pinion J^3, a pinion on the shaft J in position to engage with a rack a, a pinion J' on a shaft J^4, said pinion J' in mesh with the pinion J^3, a dog o to engage with said pinions, the grain-wheel adjusted by the shaft J^4, as shown, a bracket i', and a rod j, supported by the harvester-frame, as shown, and for the purpose described.

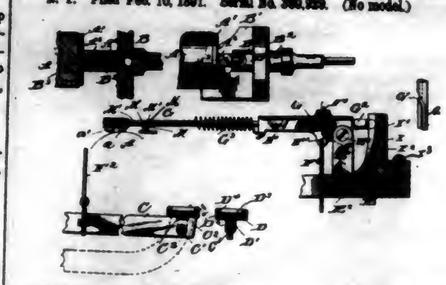
3. In a harvester, the combination of a lever L, pivoted on a shaft J and provided with a rod L^4, having a stud L^2 on arm L', secured to the lever L and pivoted on the shaft J to prevent the lever L from swinging laterally, a pinion J^3 on the shaft J, a dog L^3, pivoted to the lever L in position to engage with the pinion J^3 in connection with a pinion J^3 in position to engage with a rack a, a shaft J^4, provided with a pinion J', a rod j, a bracket i', a dog i, and a spring i^3, as shown, and for the purpose described.

4. In a harvester, the combination, with a shaft J^4, provided with a pinion J', of a bracket i', supported by a rod j, carried by the frame of the harvester, a dog i on the rod j and loosely secured to the bracket i' and provided with an extension or projection o to engage with the pinion J' and J^3, a spring i^3, secured to the frame of the harvester and pressing with its free end against the dog i, a crook j^3 in the rod j, as shown, in connection with a shaft R, and a shaft R', provided with a pinion i^5, a segment v, a shaft J, provided with pinions J^3 and J^3, a rack a, a lever and rod L^4, provided with a stud L^2, as and for the purpose described.

5. In a harvester, the combination of a shaft J, provided with a pinion J^3 and a pinion J^3 to engage with a rack a, a lever L, provided with an arm L', the lever L and arm L', pivoted on the shaft J astride the pinion J^3, a dog L^3, pivoted to the lever L in position to engage with the pinion J^3 and provided with a rod L^5, pivoted to a hand-latch P^3, the hand-latch pivoted to the frame of the harvester, a rod j, supported by the frame of the harvester and provided with crooks j', j^3, j^3, and j^5, as shown, and for the purpose described, and provided with a bracket i', a lever i^7 to operate the rod j, and a support K^3 for the lever L, as shown, and for the purpose described.

6. In a harvester, the combination, with a shaft J, journaled in a bearing J^2 and in the bracket I, said bracket I secured to the bar h and to the extension f', adjacent the rack a and bar a^2 and projecting rearward past the rack a and curved, as shown, of a bracket I^2, secured in the rearward projecting curved part of the bracket I to form a bearing for the shaft J, pinions J^3 and J^3 on the shaft J, a rack a, a lever L, pivoted on the shaft J and provided with a dog L^3, a rod L^4, a stud L^2, and a dog i, as and for the purpose described.

476,903. TYPE-WRITING MACHINE. CHARLES SPIRO, New York, N. Y. Filed Feb. 10, 1891. Serial No. 380,939. (No model.)



Claim.—1. An oscillatory type-bar, in combination with a bar-carrier and with means for rotating the bar and for reciprocating the bar within the carrier by the oscillation of the bar, substantially as specified.

2. A pivoted type-bar, a type-bar carrier pivotally connected with the bracket, and means for reciprocating the type-bar for varied distances within the carrier, substantially as specified.

3. A pivoted type-bar carrier, a reciprocatory type-bar provided with multiple printing characters, and means for selecting the character of the type-bar which is to be brought to the printing-point, substantially as specified.

4. The combination, with a bracket, of a type-bar carrier, a rotative and reciprocatory type-bar, and means for reciprocating and for rotating the type-bar to bring the printing character into contact with an inking-pad and with the platen of a type-writing-machine, the rotating and reciprocating devices being arranged in the path of the type-bar, substantially as specified.

5. A type-bar and means for its oscillation and reciprocation to and from the platen to present a type to the platen and to turn the bar and present said type to an inking-pad, substantially as specified.

6. An oscillatory reciprocative rotatable type-bar, in combination with means for reciprocating the same and with means arranged in the path of the bar as it oscillates for the purpose of rotating said bar, substantially as specified.

7. A rotatable reciprocative type-bar pivotally mounted for oscillation, and means arranged in the path of its oscillatory movement to rotate and means for reciprocating said bar, and means for determining the extent of said rotation and reciprocation, substantially as specified.

8. A type-bar having a multiplicity of printing characters thereon and mounted for oscillation and reciprocation, in combination with means for selecting one of the characters thereon to be brought to the printing-point, substantially as specified.

9. A reciprocative type-bar having a plurality of printing characters and mounted for oscillation, in combination with means for selecting a character on the bar to be brought to the printing-point and means for rotating said bar so as to bring the printing character into direct contact with an inking-pad after each impression, substantially as specified.

10. The combination, with a pivoted type-bar carrier, of a type-bar and means for its rotation and reciprocation and a stop to determine the limit of its rotation, substantially as specified.

11. The combination of a type-bar carrier pivoted for oscillation, a type-bar movably mounted in the carrier for reciprocation, and a spring connecting the bar and carrier, substantially as specified.

12. The combination of a type-bar carrier pivotally mounted for oscillation, a type-bar mounted for reciprocation and rotation in the carrier, and a character-selecting device provided with paths for the type-bar, substantially as specified.

13. The combination, with a platen, of a journal movably fitted to the pin of the platen and means for non-rotatably securing the two together, substantially as specified.

14. The combination, with a platen and with the standard or bracket of a carriage, of a longitudinally-movable journal slotted for the reception of a screw mounted in the gudgeon or pin of the platen proper, substantially as specified.

15. The combination, with the platen and casting and pin or gudgeon, of a screw mounted in said pin or gudgeon and a journal adapted to receive said pin or gudgeon and the screw thereof and having a seat for the head of said screw, substantially as specified.

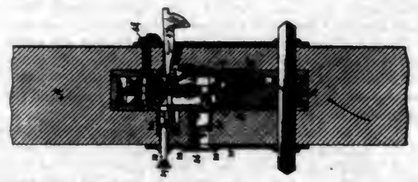
16. In combination with a key-lever having a hole therethrough, a key provided with a bifurcated stem and adapted to rest bodily upon the edge of the lever to prevent oscillation and having its stem forced rigidly into the hole thereof, substantially as specified.

17. The combination, with a key-lever having an inset at one edge and a hole in line with the inset, of a key having a bifurcated stem adapted to be forced rigidly into the hole of the key-lever, substantially as specified.

18. An oscillatory, reciprocative, and rotatable type-bar, in combination with means arranged in the path of the bar as it oscillates for the purpose of rotating said bar and with means for giving and determining the extent of its reciprocation, substantially as specified.

19. The combination of a type-bar, means for rotating said bar, means for determining the extent of its rotation, and a spring encircling said bar and connected thereto at one end and at the other to a non-rotatable part, substantially as specified.

476,904. PERMUTATION-LOCK. DIETERLE STEBER and JOHN SCHIELE, Philadelphia, Pa. Filed June 4, 1891. Serial No. 395,123. (Model.)



Claim.—1. A lock in which a notched bolt is combined with a series of live and dummy tumblers which have no tendency to move in either direction, but are adapted to engage directly with and to be disengaged from said notched bolt, each tumbler having a single notch in one edge, and the notches of the respective tumblers being so arranged that the live tumblers will normally lock the bolt, but when moved by a single movement will release the same, while the dummy tumblers normally release the bolt, but when moved by a single movement lock the same, substantially as specified.

2. A lock in which the notched bolt is combined with live and dummy tumblers notched as described, a notched frame in which said tumblers are guided transversely to the bolt, and means for lifting said frame so as to carry all of the tumblers out of engagement with the bolt, substantially as specified.

3. A lock in which a notched bolt is combined with a series of notched tumblers, a frame in which said tumblers are guided transversely, and a spring presser-bar extending along the series of tumblers and acting upon all of said tumblers, substantially as specified.

4. The combination of the notched bolt, the transversely-moving tumblers having heads each with two recesses side by side, and the spring presser-bar bearing upon said tumblers and adapted to enter either recess of the same, substantially as specified.

5. The combination of the notched bolt and the transversely-moving tumblers with the keyhole-plate having openings enlarged at the end and with a key having an enlarged head and contracted shank, whereby it must first be introduced in one direction and then moved in a direction at right angles thereto before it can act on the tumbler, substantially as specified.

6. The combination of the notched bolt and the transverse tumblers, the key having an enlarged head and contracted shank and the key-box having contracted notches for the shank of the key and pockets for the enlarged head of the same, substantially as specified.

7. The combination of the notched bolt and the transverse tumblers, the key having an enlarged head and contracted shank, the keyhole-plate having openings enlarged at one end, and the key-box having pockets for the reception of the enlarged head of the key, but in a different plane from said enlarged ends of the keyhole, substantially as specified.

8. The combination of the notched bolt and the transverse tumblers with the key having a slotted head, the key-gate having partitioned openings, and means for preventing the preliminary insertion of the key in line with the openings in said key-gate, substantially as specified.

9. The combination of the notched bolt, the transversely-moving tumblers, and means, substantially as described, including a graduated dial and permutation-tumblers, for restoring said tumblers and locking the bolt after they have been moved from their normal position to unlock the bolt, substantially as set forth.

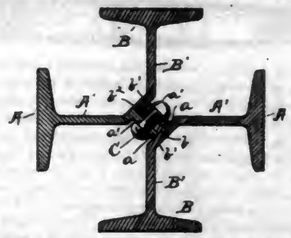
10. The combination of the notched bolt, the transversely-moving tumblers, the relocking-bar, and the relocking-lever having one arm for engaging with the tumblers and the other arm engaging with the bar, substantially as specified.

11. The combination of the notched bolt, the transversely-moving tumblers, the relocking-lever, the bar engaging therewith, and means for operating said bar from the outside of the door, substantially as specified.

12. The combination of the notched bolt, the transversely-moving tumblers, the resetting mechanism, and means for operating said resetting mechanism, comprising a spindle, a graduated dial, and a series of permutation-disks which must be adjusted to predetermined position before the resetting device can be operated, substantially as specified.

13. The combination of the notched bolt, the transversely-moving tumblers, the locking-lever and its bar, the resetting-lever, the permutation disks and dial, and the spindle having a squared and graduated portion engaging with the dial, an enlarged portion for engaging with the permutation-disks, and a finger for engaging with the resetting-lever, substantially as specified.

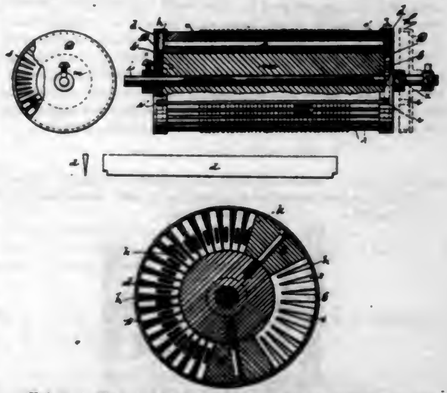
476,905. BUILDING-COLUMN. HERMAN F. STUER, Cleveland, Ohio. Filed Dec. 26, 1891. Serial No. 416,167. (No model.)



Claim.—1. A column composed of two single-headed beams and a double-headed beam, the single-headed beams having a web respectively terminating in an L-shaped portion and the central portion of the web of the double-headed beam being oblique to the body of the web of said double-headed beam, the L-shaped portion of the single-headed beams abutting the central oblique portion of the double-headed beam and the beams being secured together by bolts or rivets, substantially as set forth.

2. A column composed of three metallic beams or bars, two single-headed beams A and a double-headed beam B, the central portion of the web of the double-headed beam being shaped as at $b\,b'$ and the adjacent portion of the web of the single-headed beams being shaped as at a, portion a of the web of single-headed beams abutting portions $b\,b'$ of the web of the double-headed beams and the beams being secured together by bolts or rivets, substantially as set forth.

476,906. ROTARY PRINTING-MACHINE. HORACE B. THOMPSON, Brooklyn, N. Y. Filed Mar. 31, 1891. Serial No. 387,047. (No model.)



Claim.—1. The combination, with a cylindrical type-bed, of slotted types, bars for holding the latter, rules, blocks, and retaining means arranged at the ends of the bed for holding the type in place, substantially as described.

2. The combination, with a cylindrical type bed, of slotted types, bars for holding the latter, beveled rules, two slotted disks, and retaining means arranged at the ends of the bed for holding the type and rules in place, substantially as described.

3. The combination, with a cylindrical type-bed, of slotted types, bars for holding the latter, beveled rules, blocks, two slotted disks, and two flanged collars for holding the type and rules in place, substantially as described.

4. The combination, with a cylindrical type-bed for holding type or electroplates, of rules, blocks, two radially-slotted disks, and two

collars provided with inwardly-projecting flanges, substantially as described.

5. The combination, with a cylindrical type-bed, of rules and blocks, a pair of radially-slotted disks, and a pair of movable flanged collars, substantially as described.

6. The combination, with a cylindrical type-bed, of rules and blocks, two radially-slotted disks, and two movable and inwardly-flanged collars, each flange provided with a slot or opening, substantially as described.

476,907. BASS-BAR FOR VIOLINS, TENOR-VIOLS, AND BASS-VIOLS. JONATHAN H. TIBBITS, San Diego, Cal. Filed Dec. 11, 1891. Serial No. 414,766. (No model.)

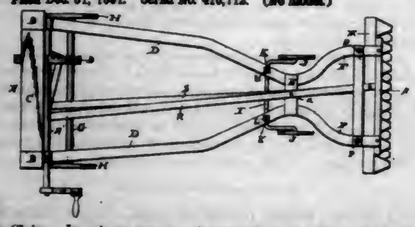


Claim.—1. In a violin, a wooden post attached to the inner side of the belly at a point directly under the bridge of the bass side and projecting downward and having a slot in its lower and exposed end to receive the wire brace, substantially as shown and described.

2. In a violin, a wire string in the chest attached to the belly at the neck and extending through the slot in the lower and exposed end of the post B to the top of the metal lever W at the opposite end of the chest, substantially as described, and for the purposes specified.

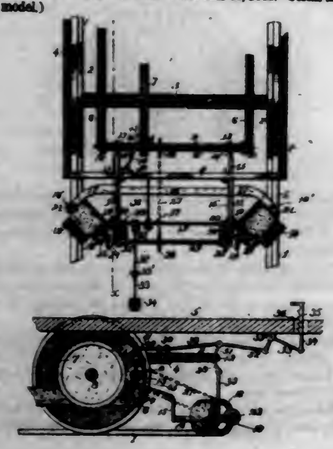
3. In a violin, the wooden bass-post and support B, the wire string A A, and the metal lever W, held in position in the wooden block H by the pin F and operated by means of the screw E, substantially as described, and for the purposes set forth.

476,908. LAWN-MOWER. THOMAS J. TUCKER, Wenshleau, Mo. Filed Dec. 31, 1891. Serial No. 416,712. (No model.)



Claim.—In a lawn-mower substantially as described, the combination, with the runner-frame, the cross-bar N, connecting the forward ends of the branches of said frame, and the reciprocatory sickle-bars having the longitudinal shoulders upon their outside at their inner edges, of the clamps N', having the angular branches *b* at their rear ends and the shoulders *c* at their forward ends, and the set-screws P, headed at their upper ends and passing loosely through apertures in the branches of the runner-frame and through threaded apertures in the clamps N', all substantially as and for the purpose set forth.

476,909. RAIL-CLEANING ATTACHMENT FOR CARS. PALMER WARDMAN, East Saginaw, Mich. Filed Jan. 12, 1892. Serial No. 417,792. (No model.)



Claim.—1. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with obliquely-arranged brushes and shafts located at the sides of its front portion, with journal-boxes for both ends of said shafts, and with gears secured to their inner ends, of means for simultaneously lowering said supporting-frame and revolving said shafts and brushes, substantially as described.

2. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with obliquely-arranged brushes and shafts located at the sides of its front portion, with journal-boxes for both ends of said shafts, with bevel-gears secured to their inner ends, and with a transverse shaft having at its ends corresponding and intermeshing bevel-gears, of means for simultaneously lowering said supporting-frame and revolving said brushes and shafts, substantially as described.

3. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with angularly-shaped and forwardly-extending arms, with a bar arranged transversely and near the middle of said arms, with obliquely-arranged brushes and shafts located at the sides of its front portion, with journal-boxes for both ends of said shafts, and with gears secured to their inner ends, of means for simultaneously lowering said supporting-frame and revolving said shafts and brushes, substantially as described.

4. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with angularly-shaped and forwardly-extending arms, with a bar arranged transversely and near the middle of said arms, with a transverse shaft journaled upon the front ends of said arms and having gears at its ends, and with obliquely-arranged brushes and shafts located at the sides of its front portion, with journal-boxes for both ends of said shafts, and with gears secured to their inner ends, of means for simultaneously lowering said supporting-frame and revolving said shafts and brushes, substantially as described.

5. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with angularly-shaped and forwardly-extending arms having forked outer ends, with correspondingly-shaped bearing-plates secured to said forked ends, with the adjustable journal-boxes secured to said forked ends, and plates with obliquely-arranged brushes and shafts located at the sides of its front portion, with journal-boxes for both ends of said shafts, and with gears secured to their inner ends, of means for simultaneously lowering said supporting-frame and revolving said shafts and brushes, substantially as described.

6. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with angularly-shaped and forwardly-extending arms having forked outer ends, with correspondingly-shaped bearing-plates secured to said forked ends, with the adjustable journal-boxes secured to said forked ends and plates, with a transverse shaft journaled in said boxes and having bevel-gears at its ends, and with obliquely-arranged brushes and shafts, the latter being adjustably journaled and having bevel-gears at their inner ends, of means for simultaneously lowering said pivoted supporting-frame and revolving said shafts and brushes, substantially as described.

7. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with forwardly-extending arms and with revoluble and obliquely-arranged brushes and shafts at the sides of its front portion, of means for lowering and raising said pivoted supporting-frame, its shafts and brushes, said means including a rock-shaft provided with short arms on its lower side near its ends, and the vertical rods which are pivoted at their upper ends to said short arms and secured at their lower ends to the front ends of said forwardly-extending arms, substantially as described.

8. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with forwardly-extending arms and with revoluble and obliquely-arranged brushes and shafts at the sides of its front portion, of means for lowering and raising said pivoted supporting-frame, its shafts and brushes, said means including a rock-shaft provided with short arms on its lower side near its ends, the vertical rods, and connections for operating said rock-shaft from the platform of a car, substantially as described.

9. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with forwardly-extending arms and with revoluble and obliquely-arranged brushes and shafts at the sides of its front portion, of means for lowering and raising said pivoted supporting-frame, its shafts and brushes, said means including a rock-shaft provided with short arms on its lower side near its ends, the vertical rods, and connections for operating said rock-shaft from the platform of a car, consisting of a short arm on the upper side of said rock-shaft, a slightly-inclined rod pivoted at its rear end to said arm, a vertically-arranged bell-crank lever pivoted to the front end of said rod, and a vertical treadle-bar pivoted at its lower end to said lever and projected up through an opening formed in said platform, substantially as described.

10. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with forwardly-extending arms and with revoluble and obliquely-arranged brushes and shafts at the sides of its front portion, of means for lowering and raising said pivoted supporting-frame, its shafts and brushes, said means including a short rod, a horizontally-arranged bell-crank lever pivoted to the front end thereof, a rock-shaft having a short arm on its upper side, a rod pivotally connected to said bell-crank lever and arm, another short arm on the upper side of said rock-shaft, an inclined rod pivoted at its rear end thereto, a vertically-arranged bell-crank lever pivoted to the front end of said rod, a vertical treadle-bar pivoted at its lower end to said lever and formed with a ratchet or toothed edge, and a fixed pawl or stop for engaging the same, substantially as described

11. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with obliquely-arranged brushes and shafts located at the sides of its front portion, with journal-boxes for both ends of said shafts, and with gears at the inner ends thereof, and mechanism for lowering and raising said supporting-frame and the parts mounted thereon, of a geared wheel-axle and connections intermediate of the same and said brushes and shaft for starting and stopping the rotation thereof simultaneously with the lowering and raising of said supporting-frame, substantially as described.

12. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with brushes and shafts, the latter having bevel-gears at their inner ends, and with a transverse shaft having corresponding gears meshing therewith, and mechanism for lowering and raising said supporting-frame and the parts mounted thereon, of a geared wheel-axle and connections intermediate of the same and said brushes and shafts for starting and stopping the rotation thereof simultaneously with the lowering and raising of said supporting-frame, said connections, including a transverse shaft provided with a normally-loose pinion, a laterally-movable clutch therefor, and a sprocket-wheel, a sprocket-wheel secured to said transverse shaft at the front portion of said frame, and a belt or chain passing over said sprocket-wheels, substantially as described.

13. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with obliquely-arranged, revoluble, and adjustable brushes and shafts and mechanism for lowering and raising the same, of a geared wheel axle, connections intermediate of the same and said brushes and shafts for starting and stopping the rotation thereof simultaneously with the lowering and raising of said supporting-frame, and devices for throwing said connections into and out of operative relation from the platform of the car, substantially as described.

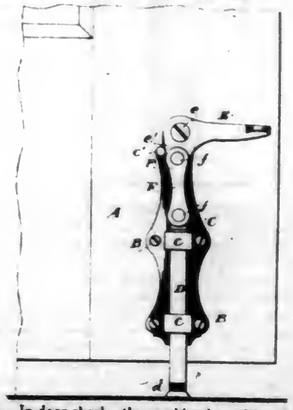
14. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with obliquely-arranged, revoluble, and adjustable brushes and shafts and mechanism for lowering and raising the same, of a geared wheel-axle, connections intermediate of the same and said brushes and shafts for starting and stopping the rotation thereof simultaneously with the lowering and raising of said supporting-frame, and devices for throwing said connections into and out of operative relation from the platform of the car, said devices including a transverse shaft provided with a normally-loose pinion, a laterally-movable clutch therefor, a vertical lever attached at its lower end to said clutch, and means connected with the upper end of said lever for moving said clutch into and out of engagement with said pinion, substantially as described.

15. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with obliquely-arranged revoluble and adjustable brushes and shafts and mechanism for lowering and raising the same, of a geared wheel-axle, connections intermediate of the same and said brushes and shafts for starting and stopping the rotation thereof simultaneously with the lowering and raising of said supporting-frame, and devices for throwing said connections into and out of operative relation from the platform of the car, said devices including a transverse shaft provided with a normally-loose pinion, a laterally-movable clutch therefor, a vertical lever attached at its lower end to said clutch, and means connected with the upper end of said lever for moving said clutch into and out of engagement with said pinion, said means comprehending a short rod, a horizontally-arranged bell-crank lever pivoted to the front end thereof, a rock-shaft having a short arm on its upper side, and a rod pivotally connected to said bell-crank lever and arm, substantially as described.

16. In a rail-cleaning attachment for cars, the combination, with a pivoted supporting-frame provided with obliquely arranged revoluble and adjustable brushes and shafts and mechanism for lowering and raising the same, of a geared wheel-axle, connections intermediate of the same and said brushes and shafts for starting and stopping the rotation thereof simultaneously with the lowering and raising of said supporting-frame, and devices for throwing said connections into and out of operative relation from the platform of the car, said devices including a transverse shaft provided with a normally-loose pinion, a laterally-movable clutch therefor, a vertical lever attached at its lower end to said clutch, and means connected with the upper end of said lever for moving said clutch into and out of engagement with said pinion, said means comprehending a short rod, a horizontally-arranged bell-crank lever pivoted to the front end thereof, a rock-shaft having a short arm on its upper side, a rod pivotally connected to said bell-crank lever and arm, another short arm on the upper side of said rock-shaft, an inclined rod pivoted at its rear end thereto, a vertically-arranged bell-crank lever pivoted to the front end of said rod, a vertical treadle-bar pivoted at its lower end to said lever and formed with a ratchet or toothed edge, and a fixed pawl or stop for engaging the same, substantially as described

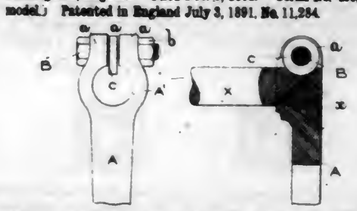
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476,910. DOOR-CHECK. CHARLES T. WELLS, Ohio Falls, Ind. Filed Nov. 16, 1891. Serial No. 412,104. (No model.)



Claim.—In door checks, the combination, with a door-plate having guides *c* and lugs *c'*, a slide-bolt D, and an end-pivoted link F, of the elbow-lever E, fulcrumed at the vertex of its angle and adapted to be turned a half-revolution, whereby it may hold the bolt up from the floor or down against it, as and for the purpose set forth.

476,911. CRANK FOR VELOCIPEDES. FREDERICK WESTWOOD, Birmingham, England. Filed Feb. 9, 1892. Serial No. 420,868. (No model.) Patented in England July 3, 1891. No. 11,284.



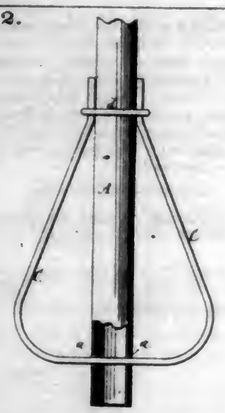
Claim.—The combination, with an axle the end of which is provided with a round-bottomed keyway, of a crank-hub provided with a slot and a boss on each side of the slot, a circular key in the slot and projecting therefrom into the said keyway, and a bolt passing through the said bosses and through the key, whereby all the said parts are securely clamped together, substantially as set forth.

476,912. FENCE-POST. FRANK S. WOOD, Greece, N. Y. Filed Dec. 28, 1889. Serial No. 335,228. (No model.)



Claim.—The combination, with a fence-post consisting of a section of gas-pipe and provided with a cross-hole through the same, of an anchor-wire inserted through the hole and standing centrally in line with the post, said wire being bent in the form of a loop, the upper ends resting in contact with the post, and a loose ring slipping over the tops of the wire to fasten them in place, as herein shown and described.

476,912.

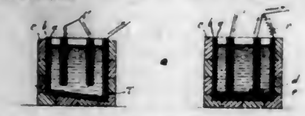


476,913. PROCESS OF MANUFACTURING ALLOYS OF IRON OR STEEL AND NICKEL. EZRA F. WOOD, Munhall, assignor to Carnegie, Phipps & Company, Limited, Pittsburg, Pa. Filed June 5, 1891. Serial No. 395,254. (No specimens.)

Claim.—1. The process of alloying nickel with iron and steel, consisting in charging bricks composed of nickel oxide and carbonaceous matter upon the hearth of a furnace, superimposing pig-iron thereon, and then heating the same, thereby causing reduction of the oxide and decarburization of the iron and producing an alloy of nickel and steel, substantially as and for the purposes described.

2. The process of alloying nickel with iron and steel, consisting in charging a layer of limestone into a basic furnace, superimposing a layer of bricks composed of nickel oxide and carbonaceous material, then charging in pig-iron, and heating the charge, thereby causing reduction of the oxide and decarburization of the iron and producing an alloy of nickel and steel, substantially as and for the purposes described.

476,914. PROCESS OF AND APPARATUS FOR THE EXTRACTION OF ALUMINIUM. MYRTHIL BERNARD and ERNEST BERNARD, Paris, France. Filed Jan. 20, 1888. Serial No. 261,373. (No model.) Patented in France May 17, 1887, No. 183,691; in Belgium July 14, 1887, No. 78,206; in Luxemburg July 14, 1887, No. 362, and in England July 13, 1887, No. 10,057.



Claim.—1. The method of electrolyzing molten aluminium compounds, which consists in passing the main portion of an electric current through the molten mass between electrodes immersed in the same and the remaining fraction of the current between the anode and the containing-vessel, substantially as described.

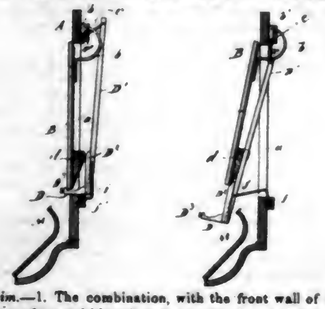
2. The process of producing aluminium by electrolysis, which consists in first making a molten bath containing fluoride of aluminium and then passing the main portion of an electric current through the bath between electrodes immersed in the bath and the remaining fraction of the current between the anode and the containing-vessel, substantially as described.

3. The process of producing aluminium by electrolysis, which consists in first making a melted bath which is specifically lighter than aluminium and which contains fluoride of aluminium and chloride of sodium and then passing the main portion of an electric current through the bath between suitable electrodes placed in the bath and the remaining fraction of the current through the anode, the bath, and containing-vessel, substantially as described.

4. The process of producing aluminium by electrolysis, which consists in melting together cryolite and chloride of sodium in such proportions as to form a bath which is specifically lighter than aluminium and then passing the main portion of an electric current through the bath between an anode and a cathode to the exclusion of the containing-vessel and the remaining fraction of the current through the bath between the anode and the containing-vessel as a fractional cathode, whereby pure aluminium is liberated at the cathode and aluminium alloy is formed upon the containing-vessel, substantially as described.

5. An apparatus for producing aluminium by electrolysis, consisting of a metallic containing-vessel or crucible for the bath, an anode, a cathode, a depositing-vessel or crucible for the same located within and insulated from the containing-vessel, and a branch conductor of high electrical resistance between the cathode and the containing-vessel, whereby the latter becomes a fractional cathode, substantially as described.

476,915. UPRIGHT-PIANO CASE. ALOYS BRAMBACH, New York, N. Y. Filed Mar. 1, 1892. Serial No. 423,341. (No model.)



Claim.—1. The combination, with the front wall of an upright-piano case, of a panel hinged at its upper end to said front wall and a music-rack connected by pivot-links at its upper and lower ends with the front wall, said rack being adapted to swing below the panel and form an extension of the same, substantially as set forth.

2. The combination, with the front wall of a piano, of a front panel hinged at its upper part to the same, a music-rack provided with longitudinal strips, and pivot-links connecting the upper and lower parts of the said strips with the front wall and adapted to permit the moving of the rack in forward position below the front panel, so as to form an extension of the same, substantially as set forth.

3. The combination, with the front wall of an upright-piano case, of a front panel hinged at its upper part to said wall, a music-rack having a short panel above the rack part, upwardly-extending strips attached to said panel, strips secured to the rack, and links pivoted to the inside of the front wall and to the upper and lower ends of the said strips, substantially as set forth.

4. The combination, with the front wall of an upright-piano case, of a front panel pivoted at its upper part to said wall and provided with beveled backwardly-extending guide-pieces, a music-rack having a short panel above its rack part, upwardly-extending strips attached to said panels, pivot-links connecting the upper ends of the strips with the upper part of the front wall, and L-shaped pivot-links connecting the lower parts of said strips with the inside of the front wall, substantially as set forth.

5. The combination, with the front wall of an upright-piano case having an opening, of a hinged front panel for said opening, a music-rack provided with a front lip of greater length than the width of the opening, upwardly-extending strips attached to the music-rack, and pivot-links pivoted to said strips and the inside of the front wall, so that the front lip of the rack retains the front panel in closed position when the rack is moved to the inside of the opening of the front wall, substantially as set forth.

6. The combination, with the front wall of an upright-piano case having a front opening, of a panel hinged at its upper end to the front wall, said panel being beveled at its inner lower edge, a music-rack having a short panel above its rack part, the upper edge of the said panel being likewise beveled, upwardly-extending strips attached to said panel, and pivot-links pivoted, respectively, to the upper and lower ends of said strips and to the inside of the front wall, substantially as set forth.

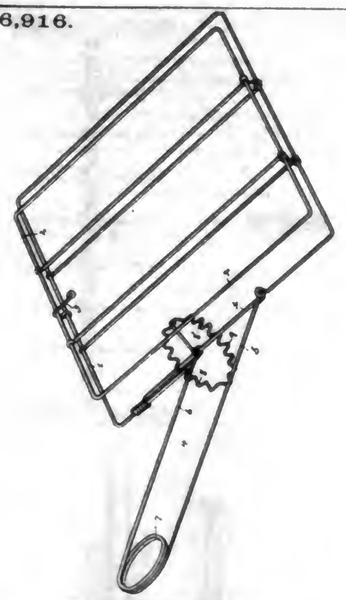
476,916. BROILER. LA MONT L. BRIGGS, New Hampton, Iowa. Filed Feb. 8, 1892. Serial No. 420,752. (No model.)

Claim.—1. A broiler comprising two members hinged together and adapted to hold the substance to be cooked, a rack secured to one of the members, and a handle hinged to the same member and arranged to engage the rack, whereby the handle may be retained at the desired angle to the members, substantially as described.

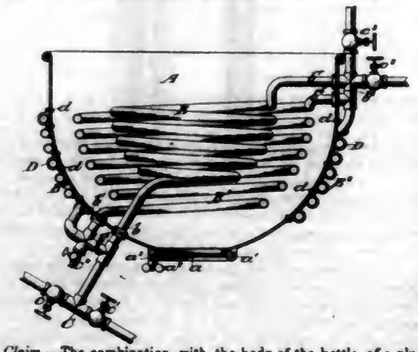
2. A broiler comprising two members hinged together, a circular rack arranged on one of the members, and a handle hinged to the same member and arranged to engage the rack, substantially as described.

3. A broiler comprising two members hinged together, a circular rack arranged on one of the members, and a handle hinged to the same member and having a spring-actuated portion arranged to engage the rack, substantially as described.

476,916.



476,917. CONFECTIONER'S KETTLE. THOMAS BURKHARD, Brooklyn, N. Y. Filed Dec. 14, 1891. Serial No. 414,908. (No model.)



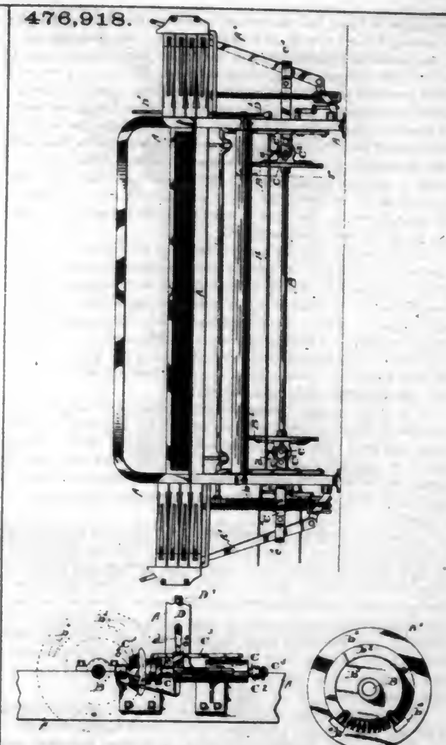
Claim.—The combination, with the body of the kettle, of a plurality of series of pipe-coils, one of said series extending upwardly and downwardly within the body of the kettle and another of said series extending upwardly and downwardly along the exterior of the kettle and in proximity thereto, exterior connections common to the interior and exterior series of coils, and cocks for regulating the transmission of hot and cold mediums at pleasure through the coils, substantially as set forth.

476,918. LOOM. THOMAS J. CORCORAN, Peru, Ind. Filed Feb. 27, 1892. Serial No. 422,997. (No model.)

Claim.—1. Mechanism for operating the shuttle-throwing lever of looms, which consists of a shaft geared to suitable power, a wheel mounted thereon, having a beveled surface in its face provided with a geared segment, a transverse shaft having a gear-wheel with a straight or widened portion upon one side, which gear-wheel is arranged to mesh with the geared segment of the other wheel and be operated thereby and then be held by said straight side from turning during the rest of the revolution of said other wheel, a crank on said shaft, and a pitman rod running from said shaft to said shuttle-throwing lever, substantially as set forth.

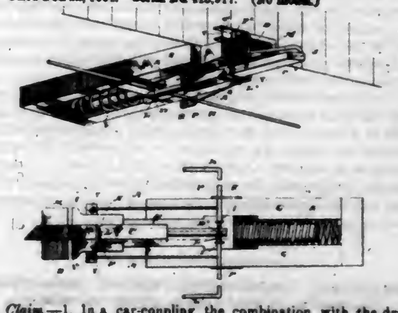
2. In a device for operating the shuttle-throwing levers of a loom, the combination, with the shaft B, geared to suitable power and carrying the wheels B', each of which is formed with a beveled surface b^4 in its face, having a geared segment therein, and a slot b^5, formed at each end of said segment, of the shafts C, journaled in suitable bearings, one adjacent to each of said wheels B', the wheels C', mounted on said shafts C and each formed with a flange c upon one side, the edge of which is straight, and a beveled smooth portion c^2 upon the same side, said wheels C' being arranged to mesh with the segments of said wheels B' and be operated thereby, substantially as described, the cranks C^3, also mounted on said shafts C, and the pitman-rods C^4, each connected at one end to the crank-pin of one of said cranks and at the other end to one of the shuttle-throwing levers, substantially as set forth.

476,918. LOOM. THOMAS J. CORCORAN, Peru, Ind. Filed Feb. 27, 1892. Serial No. 422,997. (No model.)



3. In a device for operating the shuttle-throwing levers of looms, the combination of the shaft B, geared to suitable power, a wheel B', formed substantially as described, mounted thereon, a shaft C, a wheel C', formed substantially as described and mounted thereon to engage and be operated by said wheel B', a crank C^3 on said shaft C, the pitman-rod C^4, connected to said crank at one end and to the shuttle-throwing lever at the other, the rock-shaft D with a downwardly-extending finger d, which engages with a suitable seat in the stem of a shifting-fork C^5, and said shifting-fork engaging with a circumferential groove in the hub of the wheel C', all substantially as set forth.

476,919. CAR-COUPLING. ADAM J. COVER, Broken Sword, Ohio. Filed Dec. 22, 1891. Serial No. 415,917. (No model.)



Claim.—1. In a car-coupling, the combination, with the drawhead having a vertical pin-opening, a pin moving therein and having a

plate across its upper end, and vertical rods depending from said plate and passing through eyes in the sides of the draw-head, the latter moving longitudinally in guides beneath the car, of plates on said guides provided with elongated slots, eyes in the lower side of the draw-bar, a shaft journaled in said eyes, extending through said slots and having handles at the sides of the car, arms extending forward from said shaft and pivoted to the vertical rods, a loop depending from the shaft, a catch pivoted thereto, extending forward and having at its front end a link-guiding plate and beneath the same a transversely-inclined projection, a loop depending from the draw-head and embracing said front end, the latter having a notch at one side, and a spring opposite said notch throwing the latter normally into engagement with the loop, as and for the purpose set forth.

2. In a car-coupling, the combination, with the draw-head having a vertical pin-opening, a pin moving therein and having a plate across its upper end, and vertical rods depending from said plate and passing through eyes on the draw-head, the latter moving between guides beneath the car, of plates on said guides provided with elongated slots, eyes in the lower side of the draw-bar, a shaft journaled in said eyes, extending through the slots and having handles at the sides of the car, and arms extending forward from said shaft and pivoted to the vertical rods, as and for the purpose set forth.

3. In a car-coupling, the combination, with a draw-head having a vertical pin-opening and a pin moving therein, of guides between which the draw-head moves, longitudinally-slotted plates on said guides, an oscillating shaft connected with the draw-bar, passing through said slots and having handles at its ends, and an arm extending forward from said shaft and pivotally connected with said pin, as set forth.

4. In a car-coupling, the combination, with the draw-head having a vertical pin-opening, a pin therein, eyes in the draw-bar, an oscillating shaft journaled therein, and connections between said shaft and pin, of a loop depending from the shaft, a catch pivoted thereto, extending forward, and having at its front end a rearwardly-beveled link-guiding plate and beneath the same a transversely-inclined projection, a loop depending from the draw-head and embracing said front end, the latter having a notch at one side, and a spring opposite said notch throwing the latter normally into engagement with the loop, as set forth.

5. In a car-coupling, the combination, with the draw-head having a vertical pin-opening, a pin therein, eyes in the draw-bar, an oscillating shaft journaled therein, and connections between said shaft and pin, of a loop depending from the shaft, a catch pivoted thereto, extending forward, and having at its front end a transversely-inclined projection, a loop depending from the draw-head and embracing said front end, the latter having a notch at one side, and a spring opposite said notch throwing the latter normally into engagement with the loop, as set forth.

6. In a car-coupling, the combination, with the draw-head having a vertical pin-opening, a pin therein, eyes in the draw-bar, an oscillating shaft journaled therein, and connections between said shaft and pin, of a loop depending from the shaft, a catch pivoted thereto, extending forward, and having a notch in one side, a loop under the draw-head embracing said front end, a spring secured to said end within the loop and bearing the notch normally into engagement with said loop, and means for breaking said engagement, as set forth.

7. In a car-coupling, the combination, with the draw-head having a vertical pin-opening, a pin therein, eyes in the draw-bar, an oscillating shaft journaled therein and having handles at its ends, and arms extending from said shaft and pivotally connected with the pin, of means, substantially as described, for holding the pin raised, but permitting its descent when the cars come together, as set forth.

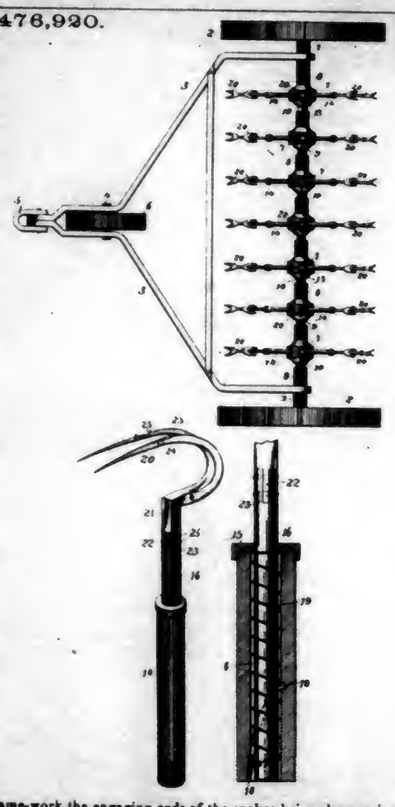
8. In a car-coupling, the combination, with the draw-head having a vertical pin-opening, a pin therein, and pin-raising devices connected therewith, of a loop depending from said head, a catch standing within said loop and having a notch at one side, a spring at its other side bearing the notch into engagement with the loop, means for disengaging it therefrom, and connections between said catch and the pin-raising devices, as and for the purpose set forth.

9. In a car-coupling, the combination, with the draw-head having a pin-opening, a pin therein, and pin-operating devices connected therewith, of a loop on said draw-head, a catch movable longitudinally through said loop, having a notch in one side engaging the loop and having at its front end a transversely-inclined projection, a spring at the other side bearing the notch normally into engagement with the loop, and connections between said catch and the pin-operating devices, as and for the purpose hereinbefore set forth.

476,920. SPONGE-DREDGER. WILLIAM G. DENHAM, Monticello, Fla. Filed Jan. 13, 1892. Serial No. 417,904. (No model.)

Claim.—1. In a sponge-dredge, the combination, with a wheel frame-work, of a series of sponge-picking wheels mounted in the

476,920.



frame-work, the engaging ends of the spokes being above or in a plane with the treads of the supporting-wheels, substantially as specified.

2. In a sponge-dredge, the combination, with a transverse shaft or axle, draft devices, and wheels mounted on the axle, of a series of sponge-picking wheels mounted on the axle, the spokes of the latter wheels terminating short of or on a line with the treads of the supporting-wheels, substantially as specified.

3. In a sponge-dredge, the combination, with an axle, supporting-wheels rigidly mounted thereon, and draft devices, of a series of revoluble hubs mounted on the axle, a series of spokes having sponge-engaging ends radiating from the hubs and terminating above or in a plane with the treads of the wheels of the frame, substantially as specified.

4. In a sponge-dredge, the combination, with the axle, the fixed wheels on the ends of the same, and the draft devices, of the series of hubs mounted loosely on the axle and having their faces provided with inclined teeth, collars mounted on the axle and alternating with the hubs, spring-pressed detents extending from the collars and adapted to engage the teeth of the hubs, whereby said hubs are permitted to rotate in but one direction, and sponge-engaging spokes radiating from the hubs and terminating above or in line with the lower portions of the supporting-wheels, substantially as specified.

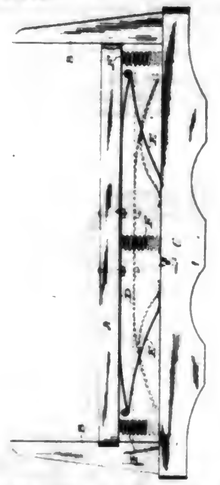
5. In a sponge-dredge, the combination, with the frame-work, of a wheel rotatably mounted therein, said wheel comprising a hub, a series of hollow tubular spoke-sections spirally slotted and radiating from the hub, a series of solid spoke-sections mounted in the tubular section and terminating at their outer ends in sponge-engaging devices and at their inner ends in lugs riding in the spiral slots, and springs for normally retracting the solid spoke-sections within the tubular sections, substantially as specified.

6. In a sponge-dredge, the combination, with the frame-work, of the dredging-wheel mounted therein for rotation, the same consisting of a hub, a series of tubular spoke-sections spirally slotted and terminating at their outer ends in perforated caps, solid spoke-sections mounted in the tubular spoke-sections and having lugs engaging the slots thereof and at their outer ends terminating in mortises, coiled springs mounted on the solid spoke-sections and interposed between the lugs and caps, and the series of dredging-hooks the shanks of which fit within the mortises, substantially as specified.

7. In a dredge for sponges, a dredge-wheel having telescopic spokes terminating in sponge-engaging ends, in combination with means for normally maintaining the spokes telescoped and for laterally twisting the outer sections of the spokes when distended, substantially as specified.

8. In a sponge-dredge, a dredging-wheel having spokes combining with the twin hooks 20, terminating at their rear ends in the shank 21 and at their outer extremities recessed, and the pivoted bars 25, located in the recesses, substantially as specified.

476,921. VEHICLE-SPRING. JOHN DIEHL, Racine, Wis., assignor of one-half to John F. Bickel, same place. Filed Feb. 16, 1891. Serial No. 381,683. (No model.)



Claim.—1. A vehicle-spring comprising a bar, a curved spring-plate having its central portion secured to the under side of the bar, but having its ends normally at some distance from an opposing bolster, and other spring-plates having their outer ends secured to the ends of the first, whereby only their inner ends normally rest upon said bolster, their outer ends being only in contact with the same when the resistance of said first spring-plate is overcome, substantially as set forth.

2. A vehicle-spring comprising a bar, a curved spring-plate having its central portion secured to the under side of the bar, but having its ends normally at some distance from an opposing bolster, other spring-plates having their outer ends joined to the ends of the first, whereby only their inner ends normally rest upon said bolster, and spiral springs depending from said bar to come into play when the resistance of said first spring-plate has been overcome, substantially as set forth.

476,922. ADJUSTABLE COUCH. CHARLES GERTZ, Brooklyn N. Y. Filed Jan. 30, 1892. Serial No. 419,745. (No model.)

Claim.—1. In an extensible couch, the combination, with a series of slats provided with end pieces, vertically-folding braces uniting the end pieces, springs on the slats, a burlap covering on said springs, and cords fastened to said covering between the springs and secured to the hinged folding braces uniting the said end pieces, substantially as set forth.

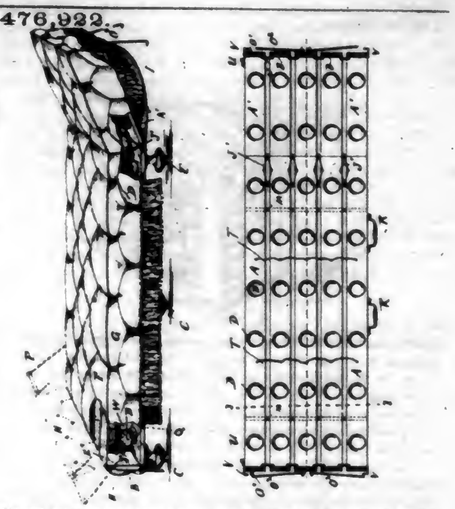
2. In an extensible couch, the combination, with a series of slats provided with end pieces, of vertically-folding braces connecting the end pieces, springs on the slats, a burlap covering secured to the tops of the springs, a lining secured to the under sides of the slats, and strings secured to the top burlap and bottom lining and connected with the joints of the folding braces, substantially as set forth.

3. In an extensible couch, the combination, with a series of slats, of hinged braces uniting them, springs on the slats, a burlap covering secured to the tops of the springs, and a cushion fastened along its central line only to the burlap covering, substantially as set forth.

4. In an extensible couch, the combination, with a series of slats, of hinged braces uniting them, springs on the slats, a burlap covering secured to the tops of the springs, and a cushion fastened along its central line to the burlap covering, which cushion is provided with wings at its sides and at its ends, substantially as set forth.

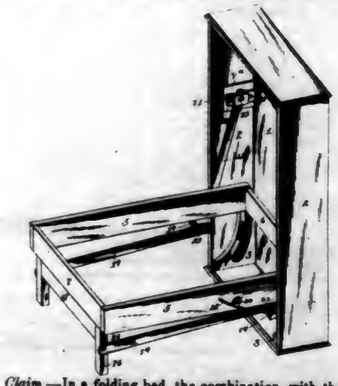
5. In an extensible couch, the combination, with a series of slats,

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of hinged braces connecting them, springs on the slats, a covering on said springs, a cushion resting on the covering, wings at the sides and ends of said cushion, and braces for holding the wing at the foot end of the couch-frame in raised position, substantially as set forth.

476,923. CABINET-BED. JOHN W. HATTON and SAMUEL H. SWIFT, Taylor, Tex. Filed Feb. 6, 1892. Serial No. 420,495. (No model.)

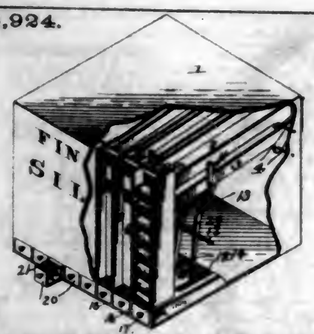


Claim.—In a folding bed, the combination, with the rectangular casing, the metal plates 3, secured to the opposite side walls thereof and provided with the curved recesses or ways 4, the upper portions of which are straight, of the bed-frame, the laterally-extending trunnions having rollers for riding in the recesses of the plates, the pins projecting laterally from the bed-frame and provided with anti-friction rollers, the opposite convoluted springs having their inner ends secured to the walls of the casing and their outer ends taking loosely under the laterally-projecting anti-friction rollers, said springs having a closing tendency, the plates 9, having the keepers 11, the straps 12, having their lower ends bent to loosely embrace the lower edges of the side bars of the bed-frame and terminating at the inner sides thereof, pivots for connecting the upper ends between the keepers and plates and the lower ends to the bed-frames, the pair of legs 16, transverse connecting-bars 17, hinges for connecting the bar with the foot of the frame, and the connecting-bars 19, pivoted at their rear ends to the lower upturned ends of the suspension-straps and at their forward ends to the legs 16, said connecting-bars lying within and adjacent to each side rail of the bed-frame, substantially as specified.

476,924. THREAD-CABINET. CHARLES W. HUDGENS, Hizabeth, Ark. Filed July 25, 1891. Serial No. 400,767. (No model.)

Claim.—1. In a thread-cabinet, the combination, with the casing, the vertical partition 6, having the lateral ribs or flanges 7 8 and an

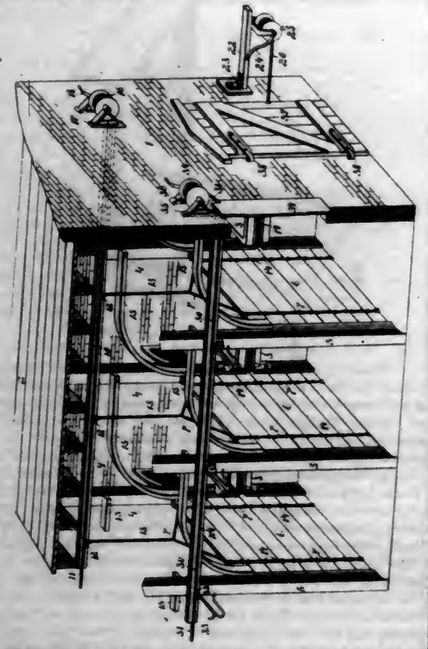
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opening between said ribs or flanges, and the chute pivotally connected adjacent to its rear end and having its forward free end resting between the flanges 8, of the partition adjacent to the opening therein, the sliding drawer having a top wall in its rear portion, and a lever fulcrumed at an intermediate point in its length and flexibly connected at its lower end to the drawer and bearing at its upper end against the chute, substantially as and for the purpose set forth.

2. In a thread-cabinet, the combination, with the casing having a series of openings in its rear side, a flap or cover covering said openings, and the partition 6, having a series of openings, of a series of chutes pivotally connected adjacent to their rear ends and having their forward free ends resting adjacent to the openings in the partition, the links 11, flexibly connecting the chutes, and a suitable means for raising and lowering the free ends of said chutes, substantially as specified.

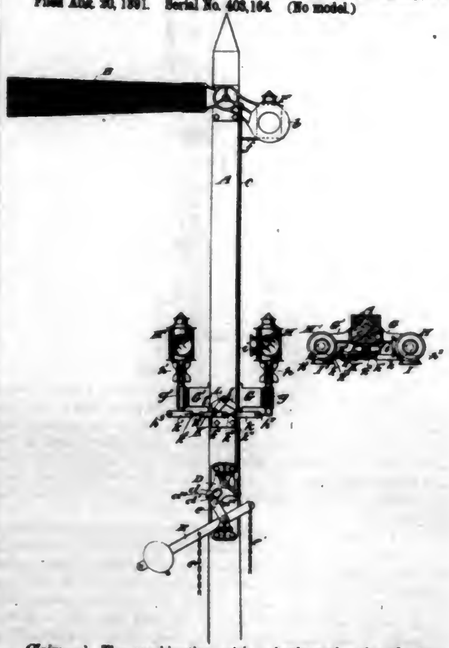
476,925. STABLE. JOHN F. JEFFERS, Kansas City, Mo., assignor of one-half to George Letcher, same place. Filed July 17, 1891. Serial No. 399,340. (No model.)



Claim.—1. In a stable, a number of stalls having each a vertically-movable flexible partition, curved supports extending upwardly and laterally from said stalls, a main flexible connection leading above the stalls, branch flexible connections connected to said main connection and to the partitions, and a reel or drum to which said main connection is attached, a horizontal longitudinally-recessed guide extending transversely of the stalls adjacent to the mangers, a flexible carrier running in said guide and carrying staples to receive halter-straps, and a windlass or drum mounted upon a hinged support, said flexible carrier being attached to said windlass or drum, substantially as set forth.

2. In a stable, a number of stalls arranged side by side and having vertical front and rear stall-posts grooved on their inner sides, a number of flexible stall-partitions, each interposed between one set of front and rear posts and vertically movable between said posts, a main flexible connection extending continuously and horizontally above said stalls, branch flexible connections connected to the partitions and also to the main flexible connection, a reel or drum to which the main flexible connection is attached, located exteriorly of the building, a horizontal longitudinally-grooved guide extending continuously transversely of the stalls and adjacent to the mangers thereof, a continuous flexible carrier extending through the groove of the guide and carrying staples to receive halter-straps, and a second windlass or drum to which said carrier is connected, located exteriorly of the building and mounted upon a hinged support, substantially as set forth.

476,926. RAILWAY-SIGNAL. CHARLES R. JOHNSON, New York, N. Y., assignor to the Johnson Railroad Signal Company, Rahway, N. J. Filed Aug. 20, 1891. Serial No. 403,164. (No model.)



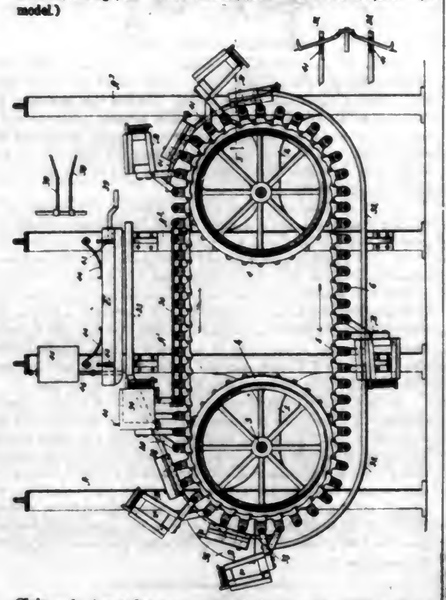
Claim.—1. The combination, with a horizontal series of rotary lamps and a vertical series of lamps, one lamp being common to both the horizontal and vertical series, of a signal-operating rod, and intermediate mechanism between the rod and lamps, whereby the lights from the horizontal series of lamps are exposed when the signal is thrown in one direction and the lights from the vertical series of lamps are exposed when the signal is thrown in the opposite direction, substantially as set forth.

2. The combination, with a horizontal series of rotary lamps and a vertical series of lamps, one of the lamps of the horizontal series forming, also, one of the lamps of the vertical series and another lamp of the vertical series being fixed, of a signal-operating rod, a shield connected therewith and adapted to obscure and expose the fixed light as the rod is thrust in one direction or the other, and a connection between the signal-operating rod and the series of rotary lamps, whereby the latter are rocked in one direction or the other as the rod is thrust in the one direction or the other, substantially as set forth.

3. The combination, with the signal-support, the signal-arm pivotally secured thereto and provided with a disk or shield, and a signal-operating rod for operating the signal-arm, of a lamp fixed in position to be exposed and obscured by the disk carried by the signal-arm, a pair of lamps having rotary supports and located in horizontal alignment, cranks secured to the rotary lamp-supports, a bar connected with the cranks, and an angle-lever engaged with the connecting-bar and signal-operating rod, whereby the lamps in horizontal alignment are simultaneously rotated as the signal-operating bar is moved, substantially as set forth.

4. The combination, with the rotary lamps in horizontal alignment, one of the lamps being provided with lenses of different colors facing in different directions, and a fixed lamp located above the rotary lamp with the different lenses and having a lens corresponding to one of the lenses on the rotary lamp, another lens on the rotary lamp corresponding with the lens upon another rotary lamp in horizontal alignment therewith, of a signal-operating rod, mechanism connecting the signal-operating rod and the rotary lamps, and a shield connected with the operating-rod in position to obscure and disclose the light from the fixed lamp, the shield and the rotary movements of the lamps being so timed that when the operating-rod is thrust in one direction lights of the same color will be exposed to the front in the rotary lamps and the light of the fixed lamp obscured and when thrust in the opposite direction lights of the same color different from that before exposed will be disclosed from the fixed lamp and one of the movable lamps in vertical alignment therewith and the two previous lights obscured from the front, substantially as set forth.

476,927. CAN FORMING AND SOLDERING MACHINE. LEO KELLER, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,873. (No model.)



Claim.—1. A can forming and soldering machine comprising a traveling plate provided with pivoted wings, a traveling former-block adapted to be thrown upon said plate, guide-rails to throw said wings around said former-block, and a soldering-iron constructed to operate on the blank when folded on the former-block.

2. A can forming and soldering machine comprising a traveling chain or carrier trained around a couple of wheels, a plate provided with pivoted wings connected with said carrier, a former-block connected with said carrier, the connections between said former-block and plate and carrier being such that said former-block will be thrown upon the plate when passing from one wheel to another, guide-rails for throwing said wings upon the former-block, and a soldering-iron constructed to operate on the blank when folded on the former-block.

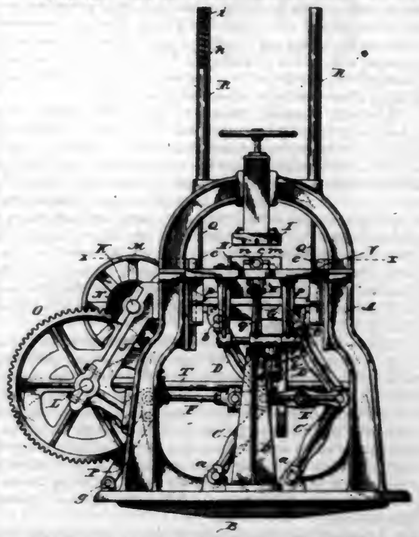
3. A can forming and soldering machine comprising a traveling plate provided with pivoted wings, a traveling former-block adapted to be thrown upon the plate, guide-rails 33 for throwing said wings around said former-block, deflecting-rails 39 for throwing said wings away from said former-block, rails 32 for holding said wings extended, and a soldering-iron constructed to operate on the blank when folded on the former-block.

4. A can forming and soldering machine comprising a traveling plate having guide-heads 35 and pivoted wings, a traveling former-block adapted to be thrown upon said plate, a side gage 38, secured to the frame of the machine, guide-rails to throw said wings around the former-block, and a soldering-iron constructed to operate on the blank when folded on the former-block.

5. A can forming and soldering machine comprising a traveling plate having pivoted wings, a traveling former-block adapted to be thrown upon said plate, said former-block consisting of two members pivotally connected with each other, a spring for holding said members together, a pin or abutment on one of said members, adapted to strike the plate when the former-block is thrown thereon and extend said members, guide-rails for throwing said wings around the former-block, and a soldering-iron constructed to operate on the blank when folded on the former-block.

6. The combination, with the traveling plate and former-block of a can forming and soldering machine, of a soldering-iron located in the path of said former-block and plate, constructed to operate on the blank when folded on the former-block and supported in yielding bearings, a soldering-pot having a pipe or passage whose end is located near the forward end of said former-block, a valve controlling the admission of soldering material through said pipes or passage, an arm connected with and operating said valve, located in the path of wings upon said plate, guide-rails for throwing said wings around the former-block, and heating devices for said pot and soldering-iron.

476,928. BRICK-PRESSING MACHINE. CHARLES W. RAYMOND, Dayton, Ohio. Filed Oct. 1, 1891. Serial No. 407,408. (No model.)



Claim.—1. In a brick-pressing machine, the combination, with the carrier having vertical reciprocating motion and a compress-box carried thereon and provided with a movable bottom for expelling a pressed brick, of a stationary feeding-table arranged to be flush with the top of the compress-box at its lowest limit of stroke and a feeding-pusher upon said table and actuated automatically by the press, substantially as described.

2. In a brick-pressing machine, the combination, with the carrier having vertical reciprocating motion and a compress-box carried thereon and provided with a movable bottom having a pendent leg, of an automatic feeding-pusher, a releasing-block for the leg, and connecting mechanism so adjusted that when the feeding-pusher carries an unpressed brick over the mouth of the compress-box the block is withdrawn and the leg and bottom permitted to drop, substantially as described.

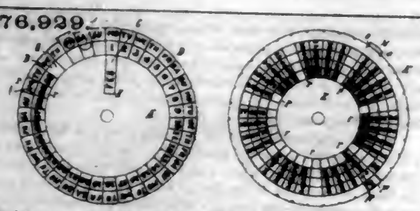
3. In a brick-pressing machine, the combination, with the leg E' and pusher-pitman C', having the lug c', of the rod c', carrying the toe d' and plate g', and the retracting-spring f', substantially as and for the purpose specified.

4. In a brick-pressing machine, the combination, with the carrier G, of the rods Q, arch A, tubes R, and springs k, substantially in the manner and for the purpose specified.

476,929. CALENDAR. ALBERT SACHS, Hamilton, Ohio. Filed Feb. 23, 1892. Serial No. 422,475. (No model.)

Claim.—1. A calendar comprising a series of disks rotatably secured upon each other at a common center, the rear disk being provided with a notch in its edge and numbers arranged radially and concentrically upon its surface to indicate the different years of the different centuries, and the next to the rear disk being provided with numbers arranged concentrically to register with the notch in the rear disk to indicate the number of the century, and the front disks being pro-

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vided with means for indicating the months and days, substantially as set forth.

2. A calendar comprising a series of disks rotatably secured upon each other at a common center, the rear disks being provided with slits in their outer edges which register with each other, and the outer disk being provided with a notch or a cut-away portion between two of said slits, also with numbers arranged radially and concentrically upon its outer surface to indicate the years of the century, and the other disk being provided with numbers arranged concentrically upon its face to register with the notch of the outer disk to indicate the number of the century, and the front disks being provided with means for indicating the month and days of the year, and one of them being also provided with an arm extending out to the edge of the rear disk and provided with hooks which are adapted to engage with the slits in the edges of the rear disks, substantially as set forth.

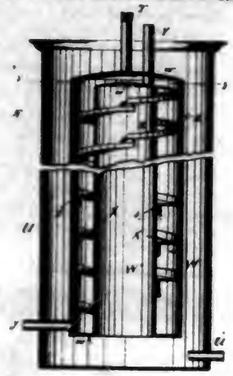
3. A calendar comprising a series of disks rotatably secured upon each other at a common center, the rear disks being provided with means for indicating the century and the number of the year of the century and the front side of one of said disks being provided with the names of the days of the week arranged concentrically around its outer edge, and the front disks being of a less diameter than the rear disks, and the outer one of said front disks being provided with two openings and a series of numbers around its outer edge to correspond with the names of the days upon the rear disk, and the next to the outer disk being provided with the names of the months of the years and with characters to indicate the last day of the month, said characters and names of the months being visible through the openings in the outer disk, substantially as set forth.

4. A calendar comprising a series of disks rotatably secured upon each other at a common center, the rear disks being provided with means for indicating the number and years of the centuries and the front surface of one of them being provided with the names of the days of the week, and the front disks being of less diameter than the rear disks and provided with names for indicating the months and days, the names of the months being upon two disks, one of which is stationary relatively to the rear disks and the other one is movable relatively thereto one space, whereby the month following January and February can be moved one space forward for leap-year, substantially as set forth.

5. A calendar comprising a series of disks rotatably secured upon each other at a common center, the rear disks being provided with means for indicating the number and years of the century and one of them being provided upon its front surface with the names of the days of the week, and the front disks being of a less diameter than the rear disks and provided with means for indicating the names of the months and the number of days of the month, the names of the months being upon two disks, one of which is provided with means for attaching it to the rear disk and with a catch for engaging with the intermediate front disk, said intermediate front disk being provided with a notched edge to be engaged by the catch of the lower front disk, whereby it may be rotated one space for leap-year, and being also provided with a projection for rotating it and indicating the odd day in leap-years, and also with openings through which the names of the months upon the lower disks may be seen, and the outer front disk being provided with two openings, through which the names of the months upon the other disks may be seen, and also the character upon the intermediate front disk to indicate the last day of the month, substantially as set forth.

6. A calendar comprising a series of disks rotatably secured upon each other at a common center, the rear disk being provided with the names of the days of the week and the front disks being of less diameter than the rear disk and provided with numbers from one to thirty to register with the names of the days of the week of the rear disk, and the intermediate front disks being provided with the names of the months and with characters to indicate the last day of the month, the lower one of said intermediate disks being adapted to be secured to the rear disk and the next intermediate disk being rotatable one space relatively thereto to indicate leap-year, said front disk and the next one thereto each being provided with openings through which the names of the months and the character for the last day of the month can be seen, substantially as set forth.

476,930. DISTILLING AND RECTIFYING APPARATUS. JEAN SCHAFRAN, New York, N. Y., assignor of one-half to Gottlieb Jetter, same place. Filed Sept. 24, 1891. Serial No. 406,760. (No model.)



Claim.—1. In a distilling apparatus, the combination of two concentric cylinders having their upper ends closed and their lower ends united, a serpentine gutter formed between said cylinders and composed of a series of semicircular spiral sections, the lower end of each semicircular spiral section overlapping the upper end of the next section with the under side of the lower end part of the next section above it, substantially as set forth.

2. In a distilling apparatus, a cooler formed of two concentric cylindrical vessels and spiral gutters formed between said vessels, said gutters being provided with apertures, substantially as set forth.

3. In a distilling apparatus, the combination of a still, a fusel-oil separator, a valved pipe H, connecting the top of said still with said separator, a pipe I^4, extending from said separator, a common connecting-pipe G, connected with said pipe I^4, a rectifier, a pipe K, provided with a valve K′ and connected with said pipe G, a pipe S, leading from said rectifier to said pipe G, a valve G′ in said pipe G, between said pipes K and S, a condenser, and a pipe connecting said condenser with said pipe G on the same side of the valve G′ as the pipe S.

4. In a distilling apparatus, the combination of a still, a fusel-oil separator, a valved pipe H, connecting the top of said still with said separator, a pipe I^4, extending from said separator, a common connecting-pipe G, connected with said pipe I^4, a rectifier, a pipe K, provided with a valve K′ and connected with said pipe G, a pipe S, leading from said rectifier to said pipe G, a valve G′ in said pipe G between said pipes K and S, a condenser, a pipe connecting said condenser with said pipe G on the same side of the valve G′ as the pipe S, and a pipe F, provided with a valve F′, connecting the upper portion of the still with the said pipe G.

476,931. VEHICLE-SPRING. WILLIAM SHARP, Allegheny, Pa. Filed Jan. 16, 1892. Serial No. 418,905. (No model.)



Claim.—1. In a combined elliptical and spiral spring, the combination, with the opposing halves A A of the elliptical spring and the loose outer leaves B B applied thereto, of the spiral spring D, interposed between the halves A A, the two socket-pieces C, each composed of the base *a*, the circular flange *b*, and the central projection *c*, having the threaded bore *d*, the ends of the spring D being fitted into the annular spaces between the flanges *b* and central projections *c*, and the screws E E, each passed through one of the leaves B and halves A of the elliptical spring and screwed into the bore *d* in the socket-piece C, whereby each single screw E secures one of the leaves B to the spring A and holds one of the socket-pieces C in position, substantially as described.

2. In a combined elliptical and spiral spring, the combination, with the opposing halves A A of the elliptical spring and the loose outer leaves B B applied thereto, of the spiral spring D, interposed between the halves A A, the two socket-pieces C, each composed of the base *a*, the circular flange *b*, and the central projection *c*, having the threaded bore *d*, the cushion-rings F F, located in the annular space between the flange *b* and central projection *c* of each socket-piece C, the ends of the spring D fitting in said annular spaces and bearing against the rings F F and the screws E E, each passed through one of the leaves B and halves A of the elliptical spring and screwed into the bore *d* in the socket-piece C, whereby each single screw E secures the one of the leaves B to the spring A and holds one of the socket-pieces C in position, substantially as described.

476,932. PNEUMATIC DOOR CHECK AND CLOSER. JOHN S. SHRAWDER, Norristown, assignor to the Vacuum Door Check Company, Collegeville, Pa. Filed Dec. 26, 1891. Serial No. 416,106. (No model.)

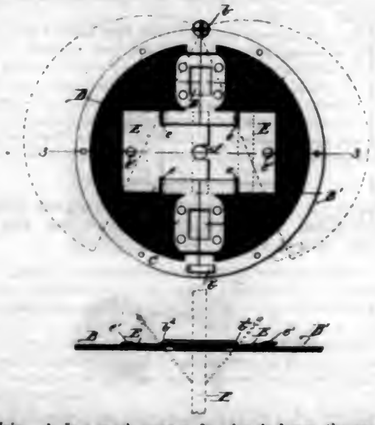


Claim.—1. The combination, in a pneumatic door check and closer, of a cylinder, a piston movable in said cylinder and having its face exposed to atmospheric pressure, an inlet at the head of the cylinder communicating with the atmosphere and controlling the extent of vacuum created in rear of the piston, and means, substantially as described, for connecting the piston and door, the construction being such that the strain on the working parts of the device does not at any time exceed the pressure of the atmosphere on the face of the piston, which is partially counterbalanced by the vacuum in rear thereof, so that the door is thereby allowed to gently close under the influence of a spring.

2. The combination, in a pneumatic door check and closer, of a cylinder, a piston movable in said cylinder and having its face exposed to atmospheric pressure, means, substantially as described, for permitting air to escape into the atmosphere from the head of the cylinder during the movement of the piston therein, an air-inlet communicating with the atmosphere and controlling the extent of the vacuum created at the head of the cylinder by the withdrawal of the piston, and mechanism, substantially as described, for connecting the piston and door, whereby the pressure on the working parts of the device does not exceed at any time the pressure of the atmosphere irrespective of any pressure manually brought to bear against the door in the opening or closing thereof.

3. The combination, in a pneumatic door check and closer, of a cylinder, a piston, a piston-rod, a coiled spring connected with said rod and cylinder, means, substantially as described, connected with said piston to permit of the escape of air from the cylinder past said piston, a vent for slowly admitting air to the cylinder in rear of the piston, and mechanism, substantially as described, interposed between the piston-rod and door, substantially as and for the purposes set forth.

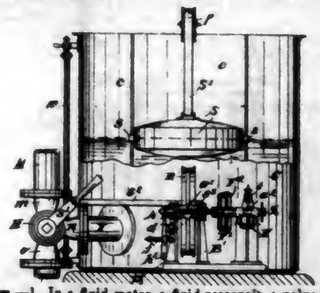
476,933. SPARK-ARRESTER FOR ELECTRIC LAMPS. WALTER M. STRUBER, Chicago, Ill. Filed Feb. 5, 1892. Serial No. 420,435. (No model.)



Claim.—1. In a spark-arrester for electric lamps, the combination, with a centrally-apertured reticulated screen for covering the lamp, of tilting plates for closing the central aperture and adapted to fit closely around the carbon, said plates being non-conductors of electricity, substantially as described.

2. In a spark-arrester for electric lamps, the combination, with a centrally-apertured screen for covering the lamp-globe, of tilting plates for covering the aperture, said plates having transverse recesses to engage the sides of the screen-aperture, substantially as described.

476,934. FLUID-METER. EMANUEL SPIRO, Krumau, Austria-Hungary. Filed Feb. 27, 1892. Serial No. 423,009. (No model.) Patented in Belgium Oct. 1, 1891, No. 96,636, and in Italy Dec. 31, 1891, XXV, 30,622. LX. 106.



Claim.—1. In a fluid-meter, a fluid-reservoir, a valve for controlling the flow of liquid to and from the reservoir, a lever for operating said valve, a float having a rising and falling motion with the liquid flowing into or out of said reservoir, a recording mechanism, a transmitting mechanism for transmitting the movements of the float to the recording mechanism, and a shifting device controlled by the valve-lever for throwing the transmitting and recording mechanisms into or out of gear, for the purposes set forth.

2. In a fluid-meter, a fluid-reservoir, a float having a rising and falling motion with the liquid entering into or flowing out of said reservoir, a recording mechanism, its driving-shaft, and means for transmitting the movements of the float to the driving shaft of the recording mechanism, comprising a revoluble and endwise-movable shaft, a pulley thereon, and a belt connecting the pulley with the float, and a clutch-coupling, one element of which is secured to the driving-shaft of the recording mechanism and the other to the endwise-movable pulley-shaft, for the purpose set forth.

3. In a fluid-meter, a fluid-reservoir, an inlet and outlet valve therefor, a lever for operating the same, a float having a rising and falling motion with the liquid flowing into or out of said vessel, a recording mechanism, its driving-shaft, means for transmitting the movements of the float to said shaft, comprising a revoluble and endwise-movable shaft, a pulley thereon, a belt connecting the pulley with the said shaft, and a clutch-coupling, one of the elements of which is secured to the driving-shaft of the recording mechanism and the other to the endwise-movable pulley-shaft, in combination with a shifting-lever for shifting the endwise-movable pulley-shaft, and a connection between said lever and the valve-lever, for the purpose set forth.

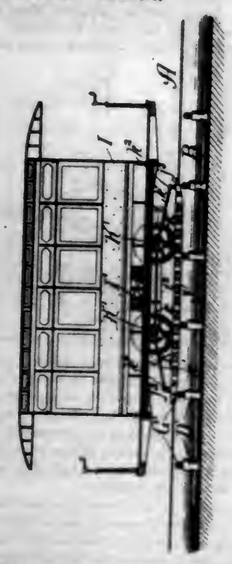
4. In a fluid-meter, a fluid-reservoir, a float having a rising and falling motion with the liquid in the reservoir, and a recording mechanism comprising a revoluble shaft, an eccentric thereon, a pencil-carrier adapted to be reciprocated by the eccentric, and a graduated dial having a uniform rotation about its axis arranged for co-operation with the pencil-carrier, in combination with a transmitting mechanism for transmitting the movements of the float to the eccentric-shaft, for the purpose set forth.

5. In a fluid-meter, a fluid-reservoir, a valve for controlling the flow of liquid to and from the reservoir, a valve-lever, a float having a rising and falling motion with the liquid in the reservoir, and a recording mechanism comprising a graduated dial having a uniform rotation about its axis, a pencil-carrier adapted to co-operate with the dial, a revoluble shaft and an eccentric thereon adapted to impart a reciprocating movement to the pencil-carrier, in combination with a transmitting mechanism for transmitting the movements of the float to the eccentric-shaft, a clutch-coupling interposed between the eccentric-shaft and the transmitting-shaft, said clutch-coupling being controlled by the valve-lever, for the purpose set forth.

6. The combination, with the float S, the dial U, pencil-carrier *l*, shaft a^3, and eccentric E and friction-cone F^3 thereon, of the endwise-movable shaft *a*′, carrying the friction-cone F′, the pulley R, and belt S′, substantially as and for the purpose set forth.

7. The combination, with the vessel C, the two-way valve V and its lever *s*′, the float S, the dial U, pencil-carrier *l*, and shaft a^3, carrying the eccentric E and friction-cone F^3, of the endwise-movable shaft *a*′, carrying the friction cone F′ and the pulley R, the belt S′, the spring-actuated lever *h*, connected with shaft *a*′, the lever s^3, connected with the valve-lever *s*′, and the cam *d* on the pivot of said lever s^3, substantially as and for the purpose set forth.

476,935. ELECTRIC RAILWAY. CHARLES P. TATRO, Spokane, Wash., assignor of three-fifths to Joseph Hanauer, same place, and J. E. Montgomery and James Montgomery, Chicago, Ill. Filed July 14, 1891. Serial No. 399,453. (No model.)



Claim.—1. The combination, with a continuous insulated conductor, a conduit inclosing said conductor and its insulation, and a plurality of vertically-movable conducting-plungers held normally out of contact with said continuous conductor and adapted to contact with the same when depressed, of a vehicle provided with a shoe having a vertically-rigid and laterally-flexible body to successively bear vertically on said plungers and depress the same, substantially as described.

2. The combination, with a continuous insulated conductor, a conduit inclosing said conductor and its insulation, and a plurality of vertically-movable conducting-plungers, each provided with a wheel at its upper end and provided with a spring to hold its lower end normally upward and out of contact with the continuous conductor, of a vehicle provided with a shoe having a vertically-rigid and laterally-flexible body to successively bear vertically upon the rollers of the plungers and depress these latter into contact with the continuous conductor, substantially as described.

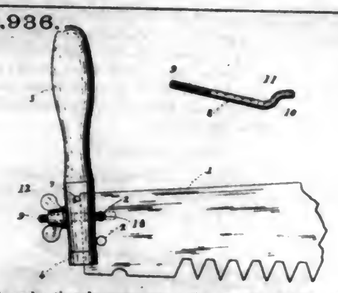
3. The combination, with a slotted underground conduit and a conductor therein, of a flexible contact-shoe adapted to ride in the slot of the conduit and provided with non-conducting rollers projecting from its sides to contact with the walls of the slot, substantially as described.

4. The combination, with a line-wire, of a pipe inclosing the same and composed of sections, T-couplings connecting the several sections and each provided with an insulated supporting-block for the line-wire, and a standard connected with each T-coupling by a tube and provided with a contact-plunger sliding therein, substantially as described.

5. The combination, with an insulated conductor and a pipe inclosing the same, of contact-plungers arranged at intervals along the pipe, a standard for each plunger, provided with a chamber and a spring therein, and a vented piston of non-conducting material secured to the plunger, fitting the chamber, and bearing on the spring, substantially as described.

6. The combination, with a line-wire, a pipe inclosing the same, and an insulating-filling, of chambered standards arranged at intervals, an insulated tube extending from the chamber of each standard to the interior of the pipe, an insulating-cap and packing for the upper end of said tube, a contact-plunger fitting in each tube and provided with an insulating-piston fitting the chamber of the standard and having an air-vent, and a spring located in said chamber and bearing against the piston, substantially as described.

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holding it, and a thumb-screw nut on the opposite end for tightening the saw in place to the handle, substantially as described.

2. In a saw-handle provided with a longitudinal slot in its lower end to receive the end of the saw, the combination of a holding-bolt, a double bend 10 and 11 at the holding end of said bolt, a saw and thumb-nut at the opposite end, and a metal ferrule 4, having a central cross-piece provided with an opening to receive the saw, substantially as and for the purposes described.

476,937. NAME-PLATE FOR HATS. JOSEPH G. WARD, Irvington, N. J. Filed Jan. 14, 1892. Serial No. 418,029. (No model.)



Claim.—1. The combination, with a name-plate for the sweat-band of a hat, of a rigid pin secured at one end and projecting rearwardly and then longitudinally with respect to said plate and at the opposite end of said name-plate an adjustable pin movable upon bearings of said name-plate, substantially as set forth.

2. The improved name-plate for hats, consisting of the plate adapted to conform to the hat, a pin projecting rearwardly and longitudinally from one end thereof, and a hinged or pivoted pin secured at the other and adapted to be turned after having been inserted to its final holding position, substantially as set forth.

3. The improved name-plate for hats herein described, consisting of a convex plate adapted to conform to the concavity of the sweat-band, a rearwardly and longitudinally extending pin at one end, and a rearwardly and longitudinally bent pin hinged or pivoted at the other end, substantially as set forth.

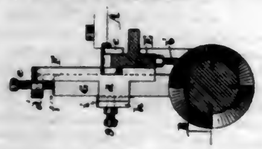
4. The combination, with the curved body-plate having a space upon which to engrave or form the name, of pins secured rigidly at one end of said plate, a plate hinged to the opposite end of said body-plate, and providing pins adapted to co-operate with the rigid pins in fastening the said curved body-plate to the concave surface of the hat, substantially as set forth.

5. In combination, a body-plate with rigid pins and co-operating hinged pins, substantially as and for the purposes set forth.

6. In combination, a body-plate having a pair or plurality of pins at one end, which extend outwardly from the said plate and having a pair or plurality of hinged pins at the other, substantially as set forth.

7. In combination, a body-plate having a pair or plurality of pins at one end, a pair or plurality of hinged pins at the other, and a catch for holding the hinged pins in position, substantially as set forth.

476,938. DEVICE FOR GRINDING THE BLADES OF ROTARY CYLINDERS. ARTHUR R. WHITNEY, Winchester, Mass. Filed Nov. 14, 1891. Serial No. 411,896. (No model.)

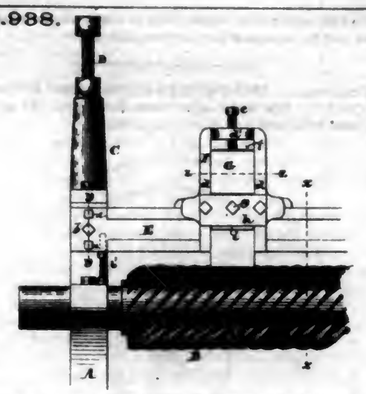


Claim.—1. In a machine having a revolving cylinder that requires grinding at intervals, the combination, with said cylinder and its frame, of the guide-bar E, mounted upon and adjustable vertically and horizontally thereof, the grinding-tool frame or holder F, provided with the lips *d d*, the clamping-screw *g*, and the adjusting-screw *e*, and a grinding-tool of stone or other suitable abrading material, all constructed, arranged, and operating substantially as described.

476,986. CROSSCUT-SAW HANDLE. MOSES B. TRUE, Batavia, N. Y. Filed Nov. 4, 1891. Serial No. 410,886. (No model.)

Claim.—1. The herein-described wooden saw-handle, having a longitudinal slot in its lower end to receive the end of the saw, a holding-bar adapted to pass through the handle and provided at one end with a double bend 10 and 11 to pass through a hole in the saw for

476,988.



2. The combination, with a revolving cylinder, its frames A, and any suitable mechanism for imparting a rotary motion to said cylinder, of the bar E, adjustably secured to said frames, the grinder-holding frame F, provided with the lips *d d*, adjusting-screw *e*, and the clamping-screw *g*, the block of stone or other suitable grinding material G, and the plates *f* and *i*, all constructed, arranged, and operating substantially as described.

476,939. EMBLEMATIC SOCIETY BADGE AND ROSETTE. BENJAMIN S. WHITEHEAD, Newark, N. J. Filed Sept. 19, 1891. Serial No. 406,186. (No model.)



Claim.—1. The combination, with a suspensory ribbon, of a printed line or staff thereon, and an applied wrinkled or waved flag, one edge of which is fastened coincident with said line or staff, substantially as set forth.

2. In a badge, the rosette combining a covered metal plate *d*, having an annular bead at the periphery, and a central recess, a covered insignia-plate arranged in said recess, and a bordering, substantially as set forth.

3. In a badge, a ribbon *a*, providing space for the society-name, &c., and at the ends having applied flag-sections *w w*, and transverse bands at the edges thereof, substantially as set forth.

4. The combination, with the suspensory ribbon, of an applied flag *w*, having one edge secured to an imprinted line on said ribbon, and said imprinted line having the form of a flag-staff, substantially as set forth.

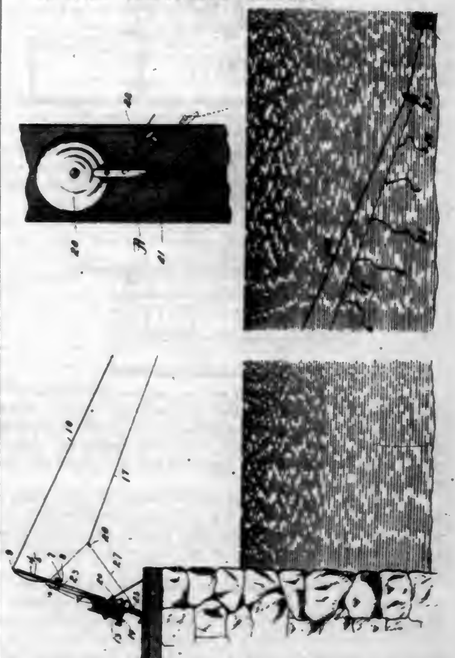
5. In a badge, the combination, with a suspensory ribbon, of an insignia consisting of an applied flag bearing stars and stripes and cut in the form of a shield and bearing an imprinted symbol *l*, substantially as set forth.

6. In combination with a suspensory ribbon having a society-name imprinted thereon, a shield pasted upon said ribbon, the said shield consisting of a woven flag-section having a symbol printed thereon, substantially as set forth.

7. In a badge, a rosette having at its back two plates or disks holding therebetween a bordering-ruffle and cement for uniting said parts, substantially as set forth.

8. In a badge, a rosette having at its back two plates or disks between which a ruffling *e* is secured, substantially as set forth.

476,940. FISHING APPARATUS. PETER WIRE, Chicago, Ill. Filed Oct. 29, 1891. Serial No. 410,249. (No model.)



Claim.—1. In a fishing-tackle, a standard adapted to be secured in an upright position and having a lower guide 18 and an upper guide 9, a guide-line 10, passing through said upper guide 9 and adapted to be secured at its end to a weight on the bottom of a body of water, and a fishing-line passing through said lower guide 18 and connected with a weight having a sliding connection with said guide-line, substantially as described.

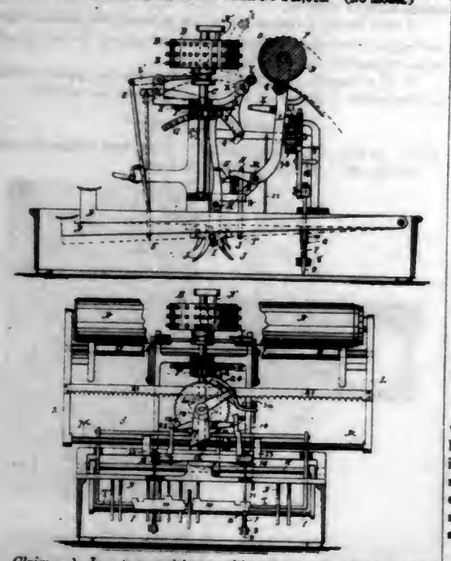
2. In a fishing-tackle, a standard adapted to be secured in an upright position and having a lower guide 18 located between its ends, an adjustable extension 4, mounted upon said standard and provided with an upper guide 18 near its upper end, a guide-line 10, passing through said upper guide 9 and adapted to be secured at its end to a weight on the bottom of a body of water, and a fishing-line passing through said lower guide 18 and connected with a weight having a sliding connection with said guide-line, substantially as described.

3. In a fishing-tackle, a standard adapted to be secured in an upright position and having a lower guide 18 and an upper guide 9, a guide-line 10, passing through said upper guide 9 and adapted to be secured at its end to a weight on the bottom of a body of water, and a fishing-line passing through said lower guide 18 and connected with a weight having a sliding connection with said guide-line, an alarm-bell secured to said standard, a spring-arm carrying a hammer adjacent said bell, and a lever located to engage said spring-arm and connected with said lever, substantially as described.

4. In a fishing-tackle, a standard adapted to be secured in an upright position and provided with a sliding extension 4, secured thereto and longitudinally adjustable with relation to said standard, a lower guide 18 upon said standard, an upper guide 9 upon said extension, a guide-line 10, passing through said upper guide 9 and adapted to be secured at its end to a weight on the bottom of a body of water, and a fishing-line passing through said lower guide 18 and connected with

a weight having a sliding connection with said guide-line, substantially as described.

476,941. TYPE-WRITING MACHINE. BYRON A. BROOKS, Brooklyn, N. Y. Filed July 22, 1887. Serial No. 245,012. (No model.)



Claim.—1. In a type-writing machine, the combination of a type-wheel, a plurality of key-levers, each provided with a cam by which it is revolved, a vibrating platen-carriage, a longitudinally-moving platen carried thereby, and suitable connecting mechanism, substantially as described, between said key-levers and said platen-carriage for vibrating the platen.

2. In a type-writing machine, the combination of a type-wheel, a plurality of key-levers by which it is revolved, and an inking-pad carried by a vibrating support and caused to press intermittently against said type-wheel by the operation of said key-levers, substantially as described.

3. In a type-writing machine, the combination of a type-wheel, a toothed wheel on a type-wheel shaft, a vibrating platen-carriage, a plurality of key-levers provided with cams, by means of which said type-wheel is revolved, and a prong attached to said carriage, having a vibratory movement with relation to said toothed wheel, substantially as described.

4. In a type-writing machine, the combination of a type-wheel, a plurality of key-levers, an inking-pad suspended on a vibrating support, and a bar operated by said key-levers for pressing said pad against the face of the printing-type, substantially as described.

5. In a type-writing machine, the combination of a type-wheel, a plurality of key-levers, an inking-pad operated by said key-levers for inking the type on said wheel, and a vibrating platen for causing the type to print on the receiving-paper.

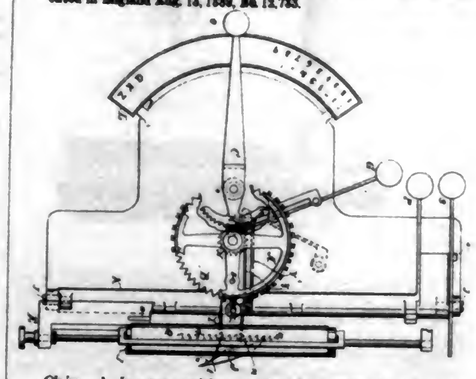
6. In a type-writing machine, the combination of a type-wheel, a plurality of key-levers for revolving said type-wheel, a vibrating inking-pad for inking the printing-type, actuated by said key-levers, and a vibrating and longitudinally-traveling platen, and suitable connections, substantially as described, between the key-levers and the type-wheel, the inking-pad, and the platen, respectively.

7. In a type-writing machine, the combination of a plurality of key-levers provided with cams, a type-wheel operated by said levers, a vibrating and longitudinally-moving platen, a bell-crank lever for vibrating said platen, and a universal bar actuated by said key-levers for operating said bell-crank lever, substantially as described.

8. In a type-writing machine, the combination of a type wheel, a vibrating and longitudinally-traveling platen, a plurality of key-levers by which it is operated, said key-levers being provided with cams for revolving said type-wheel, means, substantially as described, for causing said platen to vibrate when said type-levers are depressed, and means, substantially as described, for causing said platen to move longitudinally when said key-levers are released.

9. In a type-writing machine, the combination of a vibrating longitudinally-traveling platen, a type-wheel, a pinion on the shaft of said type-wheel, a gear meshing with said pinion, a universal swinging bar connected with said gear, and a plurality of key-levers, each provided with a cam, and means, substantially as described, for vibrating said platen and for causing it to move longitudinally.

476,942. TYPE-WRITING MACHINE. BYRON A. BROOKS, Brooklyn, N. Y. Filed July 31, 1889. Serial No. 319,275. (No model.) Patented in England Aug. 13, 1889, No. 12,783.



Claim.—1. In a type-writing machine, the combination of a type-wheel provided with a plurality of rows of type, a type-wheel shaft having a longitudinal motion to which said type-wheel is fixed, a pinion-wheel carried by but loosely connected with said shaft, a gear meshing in said pinion, an oscillating arm carrying said gear at one end and provided at its other end with a finger-piece and pointer, and means, substantially as described, for keeping said pinion fixed when said shaft moves longitudinally.

2. In a type-writing machine, the combination of a vibrating and non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, a rack attached to said secondary carriage, and a fixed pawl engaging the said rack to space between letters, substantially as described.

3. In a type-writing machine, the combination of a type-wheel, a letter-plate, an arm provided with a hand-piece and pointer, a vibrating and non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, and a longitudinally-traveling secondary platen-carriage carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, substantially as described.

4. In a type-writing machine, the combination of a platen, a type-wheel, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, a printing key-lever rigidly connected to said primary carriage for causing it to vibrate to print, and a spacing key-lever loosely connected to said carriage for causing it to vibrate to space between words, substantially as described.

5. In a type-writing machine, the combination of a type-wheel attached to a stationary support, a platen, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, and a secondary platen-carriage traveling longitudinally to space between letters carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, substantially as described.

6. In a type-writing machine, the combination of a platen moving longitudinally to space between letters, a type-wheel attached to a stationary support, a pinion on the type-wheel shaft, a notched wheel on said shaft, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried thereby, said primary carriage being intermediate between said support and said secondary carriage, and a projection from said primary carriage engaging with said notched wheel, substantially as described.

7. In a type-writing machine, the combination of a type-wheel, a type-wheel shaft having a longitudinal motion to which said type-wheel is fixed and by which it is shifted to bring different rows of type into printing position, a notched wheel and a pinion-wheel carried by but not fixed to said shaft for revolving said shaft, and means, substantially as described, for moving said shaft longitudinally, and means, substantially as described, for keeping said pinion and notched wheel fixed when said shaft moves longitudinally, substantially as described.

8. In a type-writing machine, the combination of a type-wheel provided with a plurality of type, an index-plate, an oscillating arm provided with a pointer directly indicating the letter to be printed and with a hand-piece, a vibrating non-traveling platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a secondary longitudinally-traveling platen-carriage to space between letters carried thereby, said primary carriage being intermediate between said support and said secondary carriage, a printing key-lever independent of said pointer and hand-piece, and a shifting key-lever, substantially as described.

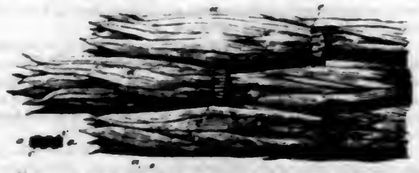
9. In a type-writing machine, the combination of a vibrating and longitudinally-traveling platen-carriage, a platen carried thereby, and a fixed projection arranged in the path of said platen-carriage when it approaches the end of its longitudinal motion by which printing is prevented when the end of a line is reached, substantially as described.

10. In a type-writing machine, the combination, with the mechanism for spacing between words, of a key-lever having a vibrating and also a longitudinal motion, a projection in the path of the vibrating motions of said key-lever, and a hook which takes under said projection by the longitudinal motion of said key-lever, substantially as described.

11. In a type-writing machine, the combination of a platen, a type-wheel, a notched wheel carried by the axis of said wheel, a vibrating non-traveling platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried thereby, said primary carriage being intermediate between said support and said secondary carriage, and a projection on said primary carriage which engages with the notches on said notched wheel when the carriage is vibrated, substantially as described.

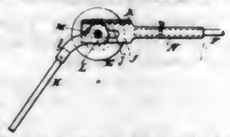
12. In a type-writing machine, the combination of a type-wheel attached to a stationary support, a notched wheel carried by the axis of said type-wheel, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried thereby, said primary carriage being intermediate between said support and said secondary carriage, a printing key-lever rigidly connected to said primary carriage for causing it to vibrate to print, and a projection on said primary carriage which engages with the notches on said notched wheel when the carriage is vibrated, substantially as described.

476,943. HAND OF LEAF-TOBACCO. GUSTAV FALK, New York, N. Y. Filed Nov. 3, 1891. Serial No. 410,706. (No model.)



Claim.—A hand of leaf-tobacco separated from the butt-ends, arranged together in a flat form, and secured together by stitching, substantially as described.

476,944. DENTAL ENGINE. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Feb. 12, 1892. Serial No. 421,949. (No model.)



Claim.—1. In a dental engine, a joint for the flexible arm for guiding the band, consisting of two members hinged together and having a transverse pin adjustable upon one member and movable with the other, in combination with guide-pulleys upon the transverse pin, about which the cord passes.

2. In a dental engine, a jointed or flexible arm consisting of two members, one of which is slotted in the direction of its length and the other of which is provided with a transverse pin movable in the slot of the other member and in which both members are loosely connected or fulcrumed at a point transversely to the slot, in combination with guide-pulleys upon the transverse pin, about which the cord passes.

3. In a dental engine, the combination of an arm adjacent to the standard, having at its free end a longitudinal guide, a second arm connecting with the free end of the first-mentioned arm by a transverse pin working in said guide and also movably connected to said first-mentioned arm at a point to one side of the guide, grooved guide-pulleys on the transverse pin, a handpiece supported by the free end of the second-mentioned arm, having a grooved driven pulley, and an endless band leading from the main drive-wheel of the standard about the guide-pulleys to the driven pulley on the handpiece.

4. In a dental engine, a jointed or flexible arm consisting of two members, one of which is slotted in the direction of its length and the other of which is provided with a transverse pin movable in the slot of the other member and in which both members are loosely connected or fulcrumed at a point transversely to the slot by a rack-and-pinion connection, in combination with guide-pulleys upon the transverse pin, about which the cord passes.

5. In a dental engine, a standard provided with a driving-wheel and treadle motion, in combination with a flexible compensating arm connected at one end to the top of the standard, a handpiece connected to the other end of the flexible arm and having a grooved driven pulley, guide-pulleys at the joints of the arms, and an endless drive cord or band extending from the driven wheel to the drive-wheel and passing about the guide-pulleys, and in which the several members of the flexible arm have their ends nearest the handpiece formed with longitudinal guides and are movably connected with the adjacent members at one side of said guides and in which the several members of the flexible arm at a distance from their ends farthest from the handpiece are provided with transverse pins carrying the grooved guide-pulleys and guided in the guides on the ends of the adjacent members.

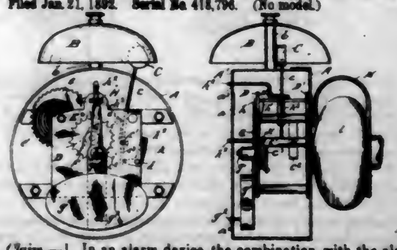
6. In a dental engine, the combination of the vertical standard and drive-wheel with the horizontal member of the flexible arm, hinged to the top of the standard and provided at the juncture with guide-pulleys, the forearm or second member of the flexible arm hingedly connected to the horizontal member, grooved guide-pulleys carried on the forearm or second member of the flexible arm at a short distance from the fulcrum point or connection with the horizontal member, a handpiece having a grooved driven pulley supported from the free end of the forearm or second member, and an endless band extending from the drive-wheel to the driven pulley of the handpiece and guided about the guide-pulleys.

7. In a dental engine, the combination of the vertical standard and drive-wheel with the horizontal member of the flexible arm, hinged to the top of the standard and provided at the juncture with guide-pulleys, the forearm or second member of the flexible arm hingedly connected to the horizontal member and movable about said member as an axis, grooved guide-pulleys carried on the forearm or second member of the flexible arm at a distance from the fulcrum point or connection, a handpiece having a grooved driven pulley supported from the free end of the forearm or second member, with provision for universal movement, and an endless band extending from the driven wheel to the driven pulley of the handpiece and guided about the guide-pulleys.

8. In a dental engine, a flexible arm consisting of several members, combined with a handpiece having a grooved driven wheel connected to said arm by a universal joint consisting of a part pivoted upon the end of the forearm and hinged to the member of said flexible arm directly connected with the handpiece, guide-pulleys carried upon the member directly connected with the handpiece at a distance from its fulcrum-point and nearer to the handpiece, and a band passing about the guide-pulleys and driven wheel of the handpiece.

9. In a dental engine, a standard, combined with a grooved driving-wheel and treadle motion, a flexible arm consisting of several members jointed together and connected at one end to the top of the standard and at the other to the handpiece, grooved guide-pulleys upon each member of the flexible arm near one of its ends, but slightly removed from the joints, a handpiece having a deeply-grooved driven pulley, and an endless band passing from the driven wheel about the guide-pulleys to the driven pulley on the handpiece.

476,945. BURGLAR-ALARM. BENJAMIN F. KRAFT, Reading, Pa. Filed Jan. 21, 1892. Serial No. 418,796. (No model.)



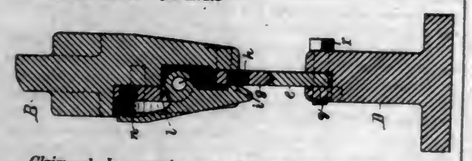
Claim.—1. In an alarm device, the combination, with the alarm-movement having a verge carrying the alarm-hammer, of a trigger

mechanism comprising a spring-retracted slide-bar having an arm arranged to engage the alarm-hammer and a pivoted lever adapted to engage a stop upon said slide-bar, and means for operating the lever to release the hammer, substantially as set forth.

2. In an alarm device, the combination, with the alarm-movement having a verge carrying the alarm-hammer and provided with an arm, of a trigger mechanism, means for operating the same to release the hammer, and a locking mechanism for said hammer, consisting of a pivoted bell-crank having means at one end for operating it and adapted to engage at its opposite end said arm of the verge, as specified.

3. In an alarm device, the combination of the casing, alarm-bell, an alarm-movement having a verge carrying the alarm-hammer and provided with an arm, a spring-retracted slide-bar having a stem projecting through a wall of said casing and an arm adapted to engage the bell-hammer, a pivoted weighted lever adapted to engage a stop on said slide-bar, a pivoted bell-crank having one of its ends adapted to engage said arm of the verge and its opposite end provided with operating means extending through a wall of the casing, and means for releasing the bell-hammer.

476,946. CORNICE-PRESS. FRANK M. LEAVITT, Brooklyn, N. Y., assignor to the Vulcan Company, Philadelphia, Pa. Filed Feb. 26, 1892. Serial No. 422,999. (No model.)

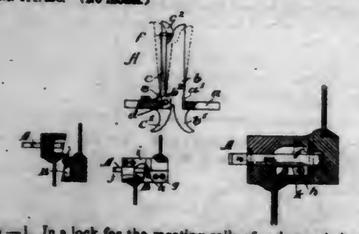


Claim.—1. In a cornice-press, the combination, with a reciprocating cross-head provided upon its under side with the groove *f* to admit a long force *g*, of one or more latches *j*, pivoted at the side of the groove at right angles to the force and having a jaw *i* pressed normally into one side of the groove to engage the force, the lower face of the jaw being sloped, and thereby adapted to press outward automatically when the force is placed in the groove, substantially as set forth.

2. In a cornice-press, the combination, with the reciprocating cross-head B, provided upon its under side with the groove *f* to admit a long force *g* and with notches *o*, formed transversely to the groove at one side of the same, of the latches *j*, pivoted adjacent to the notches and having each a jaw *i* projected through the notch *o* into the groove, with the lower face of the jaw sloped outwardly, as and for the purpose set forth.

3. In a cornice-press, the combination, with the reciprocating cross-head B, provided upon its under side with the groove *f* and having the notches *o* formed transversely to such groove, of the brackets *l*, bolted to the cross-head adjacent to the notches *o*, and the latches *j*, pivoted each in the bracket by pin *m* and having the jaw *i*, with its under side sloped outwardly and pressed normally into the groove *f* by a spring, as and for the purpose set forth.

476,947. FASTENER FOR THE MEETING-RAILS OF SASHES. CHARLES G. LINDSOE, Salt Lake City, Utah. Filed Nov. 10, 1891. Serial No. 411,422. (No model.)



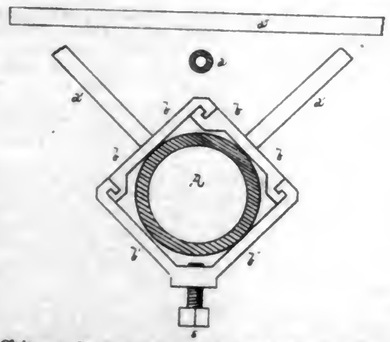
Claim.—1. In a lock for the meeting-rails of sashes and the like, the combination, with the rails, one of which is provided with a pin or projection, of the hinged jaws *c b*, mounted in the other rail and adapted to take about said pin as they are pushed in, whereby said rails are locked together, substantially as set forth.

2. In a lock for the meeting-rails of sashes and the like, the combination, with the rails, one of which is provided with a pin or projection, of the hinged jaws *c b*, adapted to take about said pin, one of said jaws having a groove *m* in its side, the escutcheon-plate through which said jaws play, and the pin *n* on said plate, arranged to take into the groove in said jaw, substantially as and for the purposes set forth.

3. In a lock for the meeting-rails of sashes and the like, the combination, with the rails, one of which is provided with a pin or projection, of the hinged jaws mounted in the other rail and adapted to take about said pin when pushed into place, and the weather-strip B, mounted in grooves in the rails and adapted to be dropped to a horizontal position when the rails come together, said jaws when in their operative position holding said weather-strip in its horizontal position, substantially as and for the purposes set forth.

4. In a lock for the meeting-rails of sashes and the like, the combination, with the rails, one of which is provided with a pin or projection, of the hinged jaws mounted in the other rail and adapted to take about said pin, the weather-strip B, pivotally mounted to play in grooves in the rails and provided with a stud *j*, and the hooked plate *i* on one of the rails, arranged to take against said stud *j* on the weather-strip as the rails meet, whereby said strip is dropped to its horizontal position, said hinged jaws when in their operative position holding said weather-strip securely in place, as and for the purposes set forth.

476,948. CLAMP FOR LUGGAGE-CARRIERS FOR VELOCIPEDES. RICHARD D. PERRY, Elyria, Ohio. Filed Mar. 7, 1892. Serial No. 424,094. (No model.)

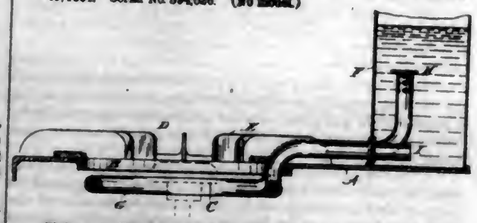


Claim.—1. In a luggage-carrier for velocipedes, the combination of the frame thereof and a sectional and interlocking clamp for securing same as desired, one section being attached to one arm of the frame and another section to another corresponding arm of the frame, and all so constructed as to interlock with each other and any other or further sections provided for forming a complete clamp, all as above set forth, and substantially as described.

2. In a clamp for a luggage-carrier for a velocipede, in combination with the frame thereof, a clamp consisting of two or more sections provided with interlocking hooks at each end of each section, whereby the sections will be capable of being separated or interlocked at a point between the points of attachment of the arms *a' a'* of the frame, all as above set forth, and substantially as described.

3. In a sectional clamp for a luggage-carrier for a velocipede, sections provided with hooks or other mechanism for interlocking, in combination with each other and provided with a separating place between the points of attachment of the ends of the frame *a' a'*, whereby two of said sections may be separated or interlocked at a point between the points of attachment of the ends *a' a'* of the frame, all as above set forth, and substantially as described.

476,949. WATER-HEATING DEVICE. TIMOTHY ROGERS, Springfield, Ohio, assignor of one-half to Alfonso Farrell, same place. Filed May 25, 1891. Serial No. 394,026. (No model.)



Claim.—1. The combination, with a stove-top and a water-tank supported thereon, of a grate extending over the hole in said top to support a cooking utensil and notched to the hole at one side of said grate, and a water-heating chamber consisting of a looped pipe, both ends being connected to said tank and adapted to extend along above the stove-top to the said hole, then bent downward through said notched grate and outward horizontally in reverse directions under the same, leaving a space between the opposing bends, whereby the water-heating chamber and tank may be readily set on or removed from said stove-top, the grate being adjusted above said looped pipe by means of said notched portion for the admission of the pipe below the grate.

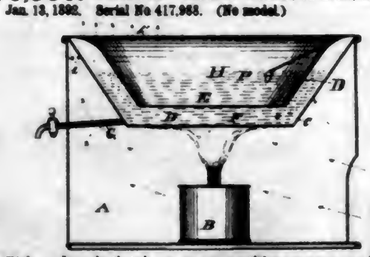
2. The combination, with a water-tank, of a water-heating chamber consisting of a plurality of loops of pipe communicating with said tank and adapted to embrace a burner, said loops being laid in reverse directions with a space between the opposing return-bends.

3. The combination, with a water-tank, of a water-heating chamber consisting of a plurality of loops of pipe communicating with said tank, the said loops being laid in reversely horizontal directions, but with ascending inclination as the loops extend back and forth, the opposing loops being separated by a space at their return-bends.

4. As an improved article of manufacture, a water-heating chamber consisting of a plurality of loops of pipe laid in reverse directions, with a space between the opposing bends of said loops.

5. As an improved article of manufacture, a water-heating chamber consisting of a plurality of loops of pipe laid in reversely-horizontal directions, but with ascending inclination to facilitate the passage of the water from said pipe as it rises under the influence of heat, the reverse bends of said pipe leaving an open space at one side of the device where the loops are separated.

476,950. BATH-TUB. JAMES T. WATSON, St. Louis, Mo. Filed Jan. 13, 1892. Serial No. 417,968. (No model.)



Claim.—In a bath-tub, an upper partition concave on its upper surface and convex on its lower surface and supported on the body of the bath-tub and a lower partition arranged below said upper partition, said partitions being joined together at or near their peripheries and provided with vapor-holes and forming a reservoir for the reception of water, for the purposes specified.

476,951. WORK-CLAMPING BLOCK FOR ENGRAVERS. CHARLES E VAN NORMAN, Springfield, Mass. Filed Dec. 24, 1891. Serial No. 416,063. (No model.)

Claim.—1. In an engraver's work-holding block, the base B, having a flat lower end, and the body C, constituting a support for the work-holding devices of the block, surmounting said base and resting thereon, combined with the semi-spherical attachment A, detachably connected to said base, substantially as set forth.

2. In an engraver's work-holding block, the base B, having a flat lower end in which is a screw-threaded socket, and the body C, constituting a support for the work-holding devices of the block, surmounting said base and resting thereon, combined with the semi-spherical attachment A, having a screw-threaded stud thereon for engagement with said said socket, substantially as set forth.

3. In an engraver's work-holding block, a metal ring surrounding the top thereof having one or more sockets therein to receive the shank of a clamp, and a pin fixed in said ring and extending into said socket, combined with a clamp-shank having an annular groove into which said pin enters and having a part thereof between said groove and its end slabbed off or flattened, substantially as set forth.

4. In an engraver's work-holding block, the jaws 13 and 15, a right and left screw with which said jaws are connected, whereby they are given simultaneous movements toward and from each other, combined with a work-supporting plate 19, having thereon a transverse V-shaped rib with which said jaws engage when moved toward each other, substantially as set forth.

5. In an engraver's work-holding block, the top C, having a pending stud thereon, on the end of which is fixed a metal plate, combined with the base B, having a socket to receive said stud, a metal plate at the base of said socket, a metal ring interposed between said two metal plates, and a metallic bearing-bell placed within said ring, substantially as set forth.

6. The combination, with the perforated jaws 13 and 15 and a screw for moving the same, of a pair of fixtures 21, having studs thereon to enter the perforations in said jaws, and the clamping-opening *i*, formed partly in each of the meeting edges of said fixtures, substantially as set forth.

7. The combination, with the perforated jaws 13 and 15 and a screw for moving the same, of a pair of thimble-holding fixtures 22, having studs thereon to enter the perforations in said jaws and one thereof having a socket *i* therein to receive the top of the thimble and the other an abutment-face opposite said socket, substantially as set forth.

8. The combination, with the perforated jaws 13 and 15 and a screw for moving the same, of several fixtures 23, adjustable thereon relative to their adjoining straight borders and each having a stud thereon to enter a perforation in said jaws and each having the notch *y* in its side to engage the inner portion of the border of a watch-cap, substantially as set forth.

476,952. FEED-BAG. JOHN H. WILLIAMS, Boston, Mass., assignor to the Williams Folding Feed Basket Company, same place. Filed July 13, 1891. Serial No. 399,294. (No model.)

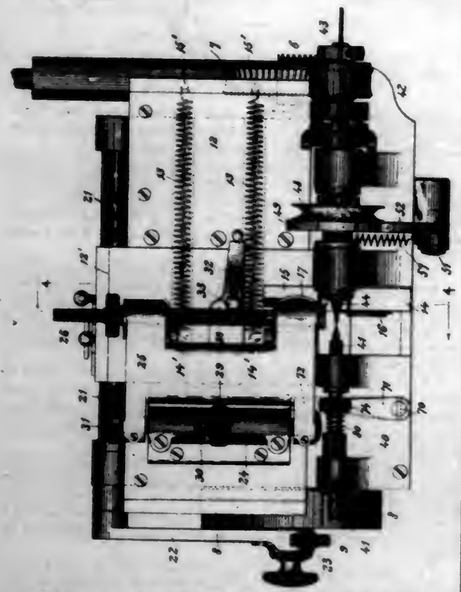


Claim.—1. In a feed-bag, a ventilating side piece comprising the curved trough-shaped metal binding-strip 3, one or more stay-strips secured thereto, and a wire-cloth sheet having its margin inserted in

the trough of the binding-strip 3, combined with the flexible body-piece 10, having a curved marginal stiffening-wire, the said body-piece and wire sheet having their edges bent round the said stiffening-wire and inserted in the trough of the binding-strip and secured by the compression of the binding-strip, as set forth.

2. In a feed-bag, a ventilating side piece comprising the curved trough-shaped metal binding-strip 3, one or more stay-strips secured thereto, and a wire-cloth sheet having its margin inserted in the trough of the binding-strip 3, combined with the flexible body-piece 10, having a curved marginal stiffening-wire, the said body-piece and wire sheet having their edges bent round the said stiffening-wire and inserted in the trough of the binding-strip and secured by the compression of the binding-strip, and the mouth-strips 12, projecting above the ventilating side pieces, as set forth.

476,953. MACHINE FOR MAKING GEARS OR PINIONS. DUANE H. CHURCH, Waltham, Mass. Filed Mar. 1, 1892. Serial No. 423,413. (No model.)



Claim.—1. In a gear and pinion making machine, the combination of a work holding and rotating spindle, means for rotating the same, an alternately operative and inoperative index mechanism adapted when operative to alternately arrest and release said spindle, thus giving the latter a period of step-by-step rotation which is alternated with a period of continuous rotation, means for varying the rate of rotation of the spindle, so that its motion is more rapid during the continuous than during the step-by-step period, and suitable means for cutting a blank or piece of work held by said spindle, as set forth.

2. In a gear and pinion making machine, the combination of a work holding and rotating spindle, means for rotating the same, an alternately operative and inoperative index mechanism adapted when operative to alternately arrest and release said spindle, thus giving the latter a period of step-by-step rotation which is alternated with a period of continuous rotation, and a plurality of cutters and operating mechanism therefor, one of said cutters being adapted to reduce a blank held by the spindle during the continuous rotation, while another is adapted to form teeth on the blank during its period of step-by-step rotation, as set forth.

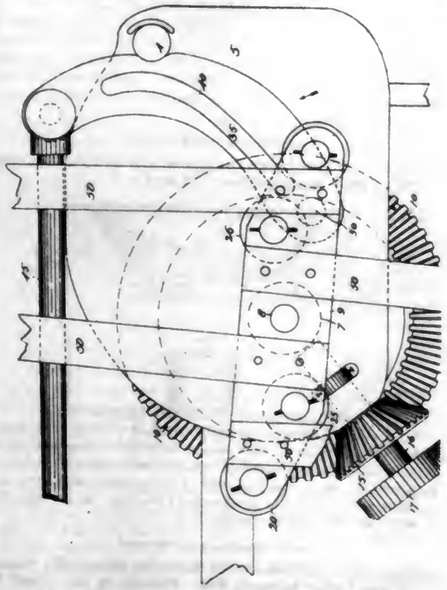
3. In a gear and pinion making machine, the combination of a work holding and rotating spindle, mechanism for alternately rotating the same continuously and step by step, a slide adapted to move longitudinally and transversely with relation to the spindle, two tools carried by said slide at opposite sides of the axial line of the spindle, means for moving said slide transversely to present said tools alternately to the work, means for moving said slide longitudinally while one of the tools is presented to the work, a vertically-movable frame on said slide having a tooth-forming tool adapted to be moved along the work by the longitudinal movements of the slide, and means for alternately raising and depressing said frame to make said tool alternately operative and inoperative, as set forth.

4. In a gear and pinion making machine, the combination of a work holding and rotating spindle, mechanism for alternately rotating the same continuously and step by step, a slide adapted to move longitudinally and transversely with relation to the spindle, two tools carried by said slide at opposite sides of the axis of the work held by the spindle, mechanism for moving said slide transversely to present said tools alternately to the work, mechanism for moving the slide longitudinally while one of the tools is presented to the work, a vertically-movable frame on said slide having a tooth-forming tool adapted to be moved parallel with the axis of the work by the longitudinal movements of the slide, mechanism for alternately raising and depressing said frame to alternately present said tool to and remove it from the work, and mechanism for rotating the spindle step by step and for locking it after each step or partial rotation, the several operating mechanisms being organized to operate in the order specified, whereby a blank is first scored or grooved circumferentially, then reduced in diameter at one end, and finally provided with teeth, as set forth.

5. In a gear and pinion making machine, the combination, with a work holding and rotating spindle and mechanism for alternately rotating the same continuously and step by step, of a slide movable longitudinally with relation to said spindle and a frame carrying a tooth-forming cutter connected with said slide and capable of horizontal and vertical adjustment thereon, as set forth.

6. In a gear and pinion making machine, the combination, with a work holding and rotating spindle and mechanism for alternately rotating the same continuously and step by step, of a frame carrying a tooth-forming cutter and provided with means for horizontal and vertical adjustment with relation to the chuck, whereby the cutter may be brought into proper operative position, and means for reciprocating said cutter in directions parallel with the axis of the chuck, as set forth.

476,954. BALING-PRESS. HENRY DEITZ, Denver, Colo. Filed June 18, 1891. Serial No. 396,770. (No model.)



Claim.—1. In a mechanical power, the combination, with a base-plate, of an arm centrally pivoted and mounted upon said plate and provided with anti-frictional depending bearings, a pitman, and an oscillating arm 35, pivoted to the base-plate at one extremity and to the pitman at the opposite extremity, arm 35 being provided with a track formed upon its upper surface, whereby as arm 9 rotates its bearings engage said track and impart to arm 35 an oscillating movement, substantially as described.

2. In a mechanical power, the combination, with a base-plate, of a rotating arm 9, provided with four depending anti-frictional bearings, two on each side of the axis, a pitman, an oscillating arm 35, provided with a track on its upper surface, arm 35 being pivoted to the base-plate at one extremity and to the pitman at the opposite extremity, whereby as arm 9 rotates two of its bearings alternately engage the track of arm 35 and give said arm its forward movement, while the other bearings alternately engage said track and give the arm its reverse movement, substantially as described.

3. In a mechanical power, the combination of a base-plate, a rotating arm 9, pivoted thereon and provided with four depending rollers, a pitman, an oscillating arm 35, provided with a curved track on its upper surface and pivoted to the base at one extremity and to the pitman at the opposite extremity, whereby as the arm 9 rotates two of its rollers alternately engage the track of arm 35 and give said arm its forward movement, while the other two alternately engage the track and give the arm its backward movement, substantially as described.

4. In a mechanical power, the combination of a base-plate 5, a rotating arm having four depending rollers, two outer rollers 20 and two inner rollers 25, there being a space between each roller 20 and its adjacent roller 25, a pitman, an oscillating arm provided with a curved track 40 on its upper surface and pivoted at one extremity to plate 5 and at the opposite extremity to the pitman, whereby as arm 9 rotates rollers 20 alternately engage track 40 and move it forward comparatively slowly, while rollers 25 engage the same track and move the arm backward correspondingly quickly, substantially as described.

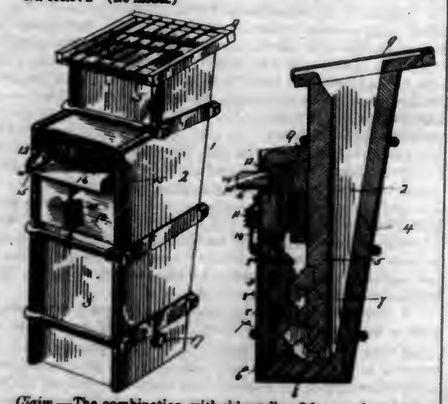
5. In a mechanical power, the combination, with a pitman and a base-plate, of an arm 35, pivoted to the pitman at one extremity and to the base-plate at the opposite extremity, and a rotating arm provided with depending bearings adapted to engage arm 35 and give both its forward and backward movement, substantially as described.

6. In a mechanical power, the combination, with a plunger, a pitman, and a base-plate, of an oscillating arm 35, pivoted to the base-plate and to the pitman, and a rotating arm 9, engaging the oscillating arm and moving the same both forward and backward, the relation of arms 9 and 35 being such that their respective planes of rotation and oscillation are parallel or approximately parallel, substantially as described.

7. In a mechanical movement, the combination, with a pitman and a base-plate, of an oscillating arm 35, pivoted to the base-plate and to the pitman, and a rotating arm moving in a plane parallel or approximately parallel with the plane of oscillation of arm 35, the rotating arm being provided with bearings adapted to engage the oscillating arm and give both its forward and backward movement, substantially as described.

8. In a baling-press, the combination, with the plunger, of a pitman, an oscillating arm 35 connected with the pitman, and a rotating arm provided with four anti-frictional depending bearings adapted to engage arm 35 and impart an oscillating movement thereto, substantially as described.

476,955. AMALGAMATOR. WILLIAM J. GARD, SAMUEL S. DALZELL, and WILLIAM A. SHAFER, Moab, Utah. Filed Oct. 13, 1891. Serial No. 408,574. (No model.)



Claim.—The combination, with side walls, of front and rear walls, a partition contained between the said front and rear walls, the said partition terminating above the bottom of the box thus formed and continuing, together with the rear wall, to above the level of the front wall, the said partition having a recess in the forward face of its lower end, ribs alternately secured to the forward face of the said partition and the rear face of the said front wall, and a board pivoted above the upper end of the said front wall, substantially as described.

476,956. BANKING-PIN FOR WATCHES. THOMAS GILL, Waltham, Mass. Filed Mar. 17, 1892. Serial No. 425,220. (No model.)

Claim.—1. A banking-pin adapted to be rotated in a socket in a watch-plate and provided with a longitudinal slot whereby the pin is enabled to be compressed and to automatically expand to give it a firm bearing upon the surface of the socket, as set forth.

2. A compressible banking-pin adapted to be rotated in a socket in a watch-plate and having a varying diameter, whereby it is adapted to be interlocked with a correspondingly-formed socket, as set forth.

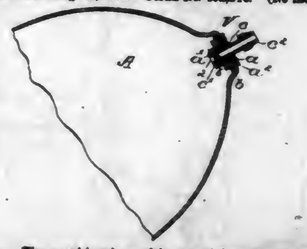
3. A watch-plate having sockets varying in diameter, combined with banking-pins having correspondingly-varying diameters, whereby they may be interlocked with said sockets against endwise movement, said pins being longitudinally slotted and adapted to be compressed by their insertion in the sockets, as set forth.

4. The combination of a watch-plate and a banking-pin inserted in the socket therein, one of said parts being of resilient construction, whereby a yielding pressure is maintained between the pin and the wall of the socket, as set forth.

476,956.



476,957. VALVE FOR AIR-CUSHIONS. DAVID HALE, Boston, Mass. Filed Aug. 10, 1891. Serial No. 402,216. (No model.)



Claim.—The combination, with an article designed to be inflated with air, of an interiorly-threaded valve-case flanged at its outer end and exteriorly threaded to receive thereon a retaining-nut, the material of the article being clamped between said flange and nut, a valve-seat in the bottom of said casing, a tubular rotatable stem externally threaded to fit in said casing and having a closed end to co-operate with the valve-seat, and an opening in the stem above its closed end, said end and opening constituting the valve, the outer end of said stem protruding beyond the surface of the article, whereby the article may be inflated, rotation of the stem opening or closing the valve and retaining it in a fixed position, substantially as described.

476,958. CAR-COUPLING. PHILIP HIER, Chicago, Ill. Filed Jan. 27, 1892. Serial No. 419,440. (No model.)



Claim.—1. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having reversely-inclined faces, which engage the tail-piece of the knuckle, substantially as and for the purposes specified.

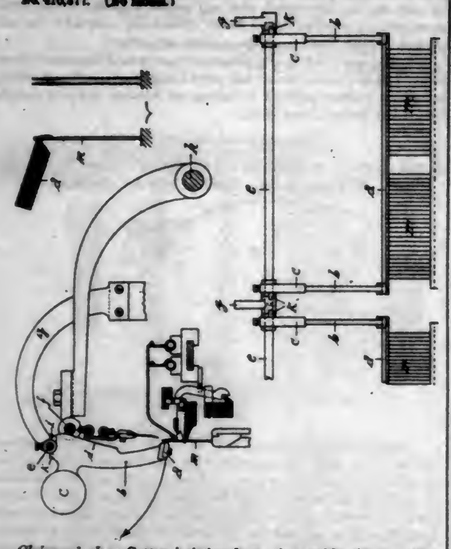
2. In a car-coupling, the combination, with a pivoted knuckle, of a vibrating locking-block having a rear incline adapted to engage the tail-piece of the knuckle, whereby the tail-piece in its outward movement causes the forward vibration of the locking-block, substantially as and for the purposes specified.

3. In a car-coupling, the combination, with a vibrating locking-

block provided with an incline adapted to engage the tail-piece of the knuckle to rotate said block forward on the tail-piece and having a recess 9, of an unlocking-pin provided with a lug or offset 4', substantially as and for the purposes specified.

4. In a car-coupling, the combination, with a pivoted knuckle having a tail-piece, of a vibrating locking-block having a rear incline adapted to engage the tail-piece in its outward movement and an unlocking-pin adapted to engage the vibrating locking-block in one direction only, substantially as and for the purposes specified.

476,959. NEEDLE-RAIL FOR COTTON'S KNITTING-FRAMES. FRIEDRICH A. LUDWIG, Chemnitz, Germany. Filed Nov. 4, 1891. Serial No. 410,877. (No model.)



Claim.—1. In a Cotton knitting-frame, in combination, a swinging needle-rail suspended by arms *b* from spindles *c*, mounted in brackets *g*, and provided with weights *e*, substantially as described.

2. The combination, with the brackets *g*, having mounted therein spindles *c*, carrying arms *b*, having curved interior sides *d* and weights *e* and carrying needle-rail *a*, of the shaft *f* of the narrowing-bar, substantially as described.

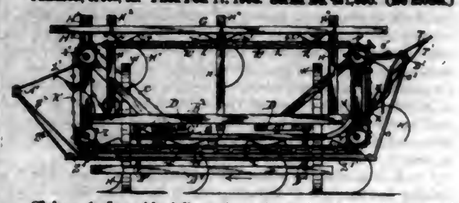
3. The combination, with the arms *b*, mounted on spindles *c* and carrying rail *a* and provided with weights *e*, arranged as described, of the brackets *g* and the arms *b*, having the rests *k*, adapted to lie upon projection *i* of the brackets *g* when the rail is thrown back, substantially as described.

476,960. CARPET-STRETCHER. ALBERT H. MOORE, Gloucester, Mass. Filed Nov. 11, 1890. Serial No. 371,087. (No model.)



Claim.—In a carpet-stretcher, the combination of the handle *b*, provided with the ears *c c* and jaw A, formed in one piece with said handle and having a straight front edge and made concavo-convex in the direction of the length of said handle, the pointed fulcrum-horn *d*, also formed in one piece with said jaw and handle and projecting from said jaw at its front edge at an angle to the handle *b* of about one hundred and twenty degrees, and the handle *g* and jaw B, formed in one piece and pivoted to the ears *c c*, the inner face of the jaw A and the outer face of the jaw B being arranged eccentric to the pivotal connection of the jaw B to the ears *c c*, substantially as described.

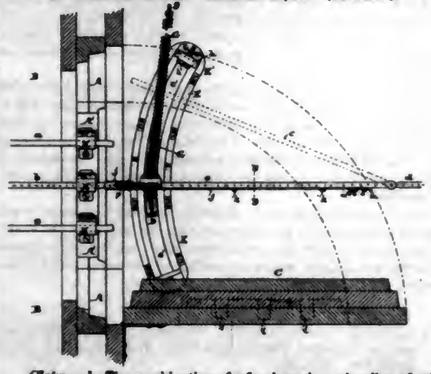
476,961. SIDE-DELIVERY HORSE HAY-RAKE. HORACE MCPHERSON, Crete, Ill. Filed Feb. 17, 1892. Serial No. 421,835. (No model.)



Claim.—1. In a side-delivery horse hay-rake, the combination of the main frame, guides K and L, endless sprocket-chains R', rakes R H', having the arms V X, sprocket-wheels r' r' Z Z, guide-rails G G', cross-bars A' and B³, curved guide T, braces O O' O² S² S³, guide-bars S³, and the means described for driving said chains and rakes and for vertically adjusting the main frame, substantially as and for the purpose set forth.

2. In a horse hay-rake, in combination with the main frames and the rakes, the guard-board D³, arranged across the path of the machine immediately in the rear of the rakes, substantially as and for the purposes set forth.

476,962. REFRIGERATOR-SWITCH. GEORGE W. PITMAN, Salem, Mass. Filed Mar. 16, 1892. Serial No. 425,190. (No model.)



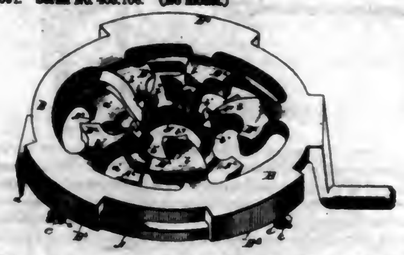
Claim.—1. The combination of a fixed track, a plurality of other fixed tracks removed therefrom, a switch-section of track pivoted at one end to the end of said first-mentioned fixed track and arranged to connect at its other end with either of the fixed tracks, a locking device for connecting said switch to either one of said fixed tracks, a traveling hanger for supporting the movable end of said switch-track and provided with revoluble anti-friction bearing-surfaces, a guideway for said hanger to travel in, and a spring to move said switch laterally when it has been uncoupled from either one of said fixed tracks.

2. The combination of the fixed track *d*, a plurality of other fixed tracks, a switch-section of track pivoted to the end of the rail *d* and arranged to connect at its movable end with either one of the fixed tracks, a traveling hanger for supporting the movable end of said switch-track section, a guideway for said hanger to travel in, a spring to move said switch laterally when it is uncoupled from a fixed track, and mechanism having provision for automatically unlocking said switch-section from either one of said fixed tracks.

3. The combination of a door-frame opening into a refrigerating-room, a door for closing said opening, a plurality of fixed tracks located in the refrigerating-room, with their ends terminating within the doorway or opening, a fixed track outside of said refrigerator-room, a switch-section of track pivoted to said outer fixed track and adapted to connect at its movable end with either of said fixed tracks, a traveling hanger connected to the movable end of said switch, a guideway for said hanger to travel in, a spring to move said switch-track laterally when disconnected from either of said fixed tracks, a coupling device for connecting the movable end of said switch-track to either of said fixed tracks, a locking-plate for holding said coupling in engagement with a fixed rail, a cam-like projection on the upper outer corner of the door, adapted to engage and raise said locking-plate to unlock said coupling device, and a spring for retracting said coupling device when unlocked.

4. The combination of a door for closing an opening in a refrigerator-room, a plurality of fixed tracks located within the refrigerator-room, a single fixed track outside of said room, a switch-section of track pivoted to said outer fixed track and arranged to connect with either one of the tracks within the refrigerator-room, a traveling hanger connected to said switch-section, a guideway for said hanger to travel in, a yielding abutment at one end of said guideway, a spring to move said switch-track and hanger about their axis of motion when disengaged from the refrigerator-tracks and maintain said hanger in contact with said abutment when the switch is not in use, a coupling device to connect said switch with either of said refrigerator-tracks, a device for locking said coupling in engagement with a refrigerator-track, a cam-like projection upon said door, arranged to engage and operate the locking device to release the coupling, and a spring for retracting said coupling.

476,963. GRATE. JOHN A. FRISH, Scranton, Pa. Filed Aug. 19, 1891. Serial No. 403,106. (No model.)



Claim.—1. In a grate such as described, the combination, with the upper movable section constituting the supporting-surface for the bed of fuel and having the radial arms with laterally-projecting fingers, of the stationary section underlying and supporting the movable section, having corresponding radial arms with lateral fingers projecting in the opposite direction, substantially as described.

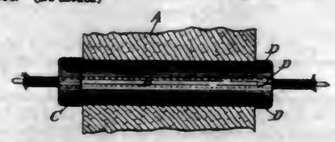
2. In a grate such as described, the combination, with the underlying supporting section, of the upper section having the upwardly-curved arms forming an irregular or undulating supporting-surface for the bed of fuel, and the laterally-projecting fingers on said arms at approximately the highest points, substantially as described.

3. In a grate such as described, the combination, with the stationary section having the rim, central ring or bearing, and radial arms between said rim and bearing, of the upper movable section having the rim supported by the rim of the stationary section, and the radial arms having their inner ends supported by the central ring or bearing of the stationary section, substantially as described.

4. In a grate such as described, the combination, with the stationary section having the rim, central ring, and radial arms between said rim and central ring, of the upper movable section having the rim supported by the rim of the stationary section, and the independent radial arms having bearings on their inner ends resting on the central ring of the stationary section, substantially as described.

5. In a grate such as described, the combination, with the stationary section having the peripheral anti-friction rollers, the central ring and radial arms, of the upper movable section having the rim resting on said anti-friction rollers, and the radial arms resting at their inner ends on the central ring of the lower section, substantially as described.

476,964. INSULATING-TUBE FOR ELECTRIC CONDUCTORS. ALBERT P. SEYMOUR, Syracuse, N. Y. Filed Mar. 5, 1892. Serial No. 423,831. (No model.)



Claim.—1. The combination, with the joist or other piece of wood B, of a wiring-tube of insulating material fitting a hole in the piece B and held in place therein by lateral projections on opposite ends of the tube.

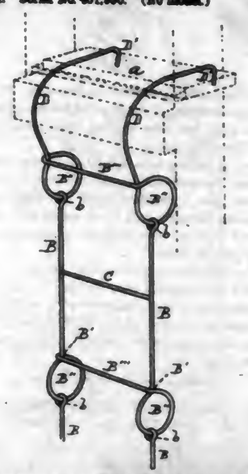
2. As a new article of manufacture, a wiring-tube made of porcelain or similar vitreous material, formed, as described, with a body made as an easy fit for the hole into which it is to be driven and with its ends enlarged, whereby said tube may be driven and when driven will be held against withdrawal by said projections.

3. As a new article of manufacture, a wiring-tube of insulating material adapted to be driven through a hole provided for its reception and provided with a slight lateral enlargement or projection, one or more, at its entrance end, as and for the purpose described.

4. As a new article of manufacture, a china or porcelain tube adapted to be driven through a hole provided for its reception and furnished at its entering end with one or more separate slight projections placed at irregular intervals, as and for the purpose described.

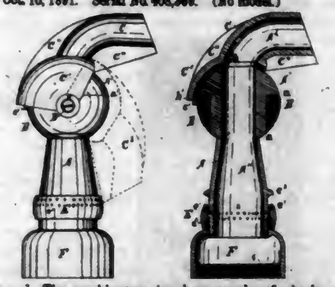
5. As a new article of manufacture, a wiring-tube having a head C and a body B, forming an easy fit for the hole into which the tube is to be driven, and furnished at its entrance end with one or more lateral enlargements or projections adapted to permit the tube to be driven, but to hold it in place when its end is forced through the hole.

476,965. FIRE-ESCAPE. CHARLES A. SMITH, Lynn, Mass. Filed Aug. 6, 1891. Serial No. 401,980. (No model.)



Claim.—In a fire-escape of the character described, a series of sections, each consisting, essentially, of a wire bent into the parallel portions B and rung B‴, said wire being also formed at the points where the ends of said rung and the lower ends of said portions B meet into large loops or coils B″ of size and shape to constitute fenders, whereby the main portion of the fire-escape is kept off at a suitable distance from the wall of the building, thus affording a sufficient tread for the foot, substantially as set forth.

476,966. HOSE-NOZZLE. CHARLES SPENCER, Grand Rapids, Mich. Filed Oct. 10, 1891. Serial No. 408,362. (No model.)



Claim.—1. The combination, in a hose-nozzle, of a body provided with a convex bearing at the outer end, an adjustable collar, an adjustable nozzle having a crooked or goose neck, and a body fitted to form a water-joint with the convex surface A' and pivoted to the adjustable collar, substantially as specified, and for the purpose set forth.

2. The combination, in a hose-nozzle, of a main nozzle fitted at one end to attach to the hose and at the other end with a convex surface to form a water-joint with the adjustable nozzle, an adjustable collar, a crooked nozzle pivoted to said collar, the body of which is fitted to form a water-tight ball-and-socket joint with the end of the main nozzle, and hardened-steel trunnions and bushings to form the pivot upon which the adjustable nozzle is supported, substantially as specified.

3. The combination, in a hose-nozzle, of a main nozzle fitted at one end to be attached to the hose and at the other end to form a ball-and-socket joint with an adjustable nozzle, an adjustable collar, a crooked adjustable nozzle pivoted thereto, with a series of apertures

through the main nozzle, and a collar screwed upon the nozzle over the apertures and provided with corresponding apertures arranged so that the flow of water through them may be shut off at pleasure, substantially as and for the purpose set forth.

476,967. MANUFACTURE OF AXES. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Jan. 22, 1890. Serial No. 337,163. (No model.)

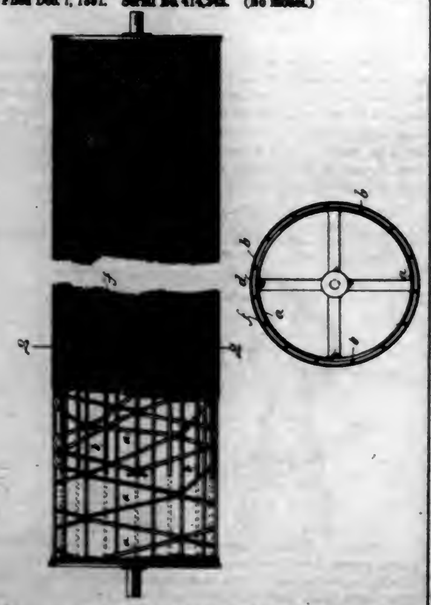


Claim.—1. The herein-described improvement in manufacturing axes or other tools, consisting in shaping the several parts thereof separately to finished form and then welding such parts together, as and for the purpose described.

2. In the art of making axes, the improvement which consists in shaping separately the steel cutting bit and body portion or part to which it is joined each to finished form and with correspondingly-shaped ends, passing through said parts an electric current, heating them thereby, and welding them together by contact, substantially as and for the purpose described.

3. The herein-described improvements in the manufacture of tools having an eye for the insertion of a handle, consisting in separately forming or shaping two pieces adapted to be welded together on a plane which intersects the eye and the sides of the tool and then uniting said parts on such plane by the electric-welding process, as and for the purpose described.

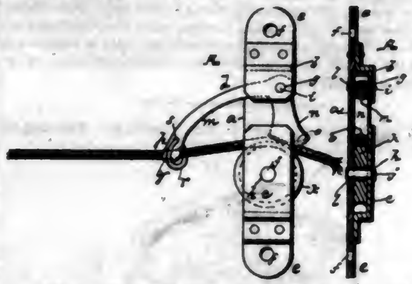
476,968. DANDY-ROLL. ANDREW J. TUCKER, Springfield, Mass. Filed Dec. 7, 1891. Serial No. 414,342. (No model.)



Claim.—1. An open-work supporting-shell for a dandy-roll, consisting of a single wire which is formed into a series of coils wound to conform to the periphery of a cylinder and having, ultimately, a course from end to end of the roll-shell, each of said coils having, however, detours from a regular helical course whereby portions of each coil are brought to and connected with portions of both the preceding and succeeding coils, substantially as described.

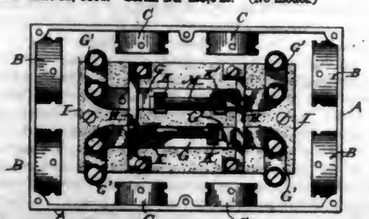
2. In a dandy-roll, an inner supporting-shell consisting of a single wire which is formed into a series of coils wound to conform to the periphery of a cylinder and having, ultimately, a course from end to end of the shell, each of said coils having detours from the regular helical course whereby portions of each coil are brought to and connected with both preceding and succeeding coils, the longitudinal wires supported on and secured to the outer side of the said single sinuously-coiled wire, and the usual outer roll-covering, substantially as described.

476,969. ROPE-HOLDER. GEORGE B. WARNER and LEWELLYN J. ALLEN, Woodbury, Conn. Filed Mar. 3, 1892. Serial No. 423,585. (No model.)



Claim.—A rope or line holder consisting of the plate having the angular housings perforated to receive the journals, the grooved pulley, and the angular lever having a groove in its end and a loop secured thereto, the same adapted to engage a rope, and a short arm thereof adapted to bear upon the rope, whereby the latter is held firmly between the same and the pulley, substantially as described.

476,970. JUNCTION-BOX. CRAIG R. ARNOLD, Sharon Hill, Pa. Filed Mar. 22, 1892. Serial No. 426,942. (No model.)



Claim.—1. In a junction or branch box for electric conductors, the combination, substantially as described, of line bars or strips and branch bars, said branch bars crossing said line-bars and being provided at their ends with clamps or attachments for holding the branch and line wires, as and for the purpose described.

2. In a junction or branch box for electric wiring, the combination, substantially as described, with a box or case having a lid or cover fastened thereon by screws or other devices and provided with the air-tight packing, of a central detachable screw cap or plug in said lid or cover, line bars or strips and branch bars or strips fastened to an insulating-base within said box or cover, and fuse clips or holders arranged in pairs upon said line and branch bars and disposed, as described, immediately beneath the central opening, closed by said detachable cap or plug.

3. The combination, in a junction or branch box for electric wires, of branch and line bars mounted on an insulating-block within said box and crossing one another, as described, a lid or cover and suitable fastening devices for securing the same permanently in position, a detachable screw cap or plug at the center of said cover, and fuse clips or holders mounted in pairs on said crossing branch and line bars and in the space between the branch bars immediately beneath the central opening, covered by said detachable cap or plug.

4. In a branch or junction box, the combination, substantially as described, with the two parallel line-bars G G, having the line-clamps at opposite ends, of the two parallel branch bars H H, formed as bridges, straddling the parallel line-wires and the pair of fuse-clips fastened to the said line and branch bars and arranged, as described, to hold the fuse in the space between the parallel branch bars.

5. In a junction-box, the combination, substantially as described, with a pair of line-bars and a pair of branch bars, one pair formed as bridges across the other pair, of two pairs of fuse-clips mounted on said line and branch bars and arranged to hold the fuses in the space between the parallel bridging-bars.

6. In a branch or junction box for electric wiring, the combination, substantially as described, of a pair of line-bars and a pair of branch bars, one pair formed as bridges straddling the other pair and the latter pair being provided with lateral extensions to bring their sockets or clips into line with the openings through which the conductor-wires pass.

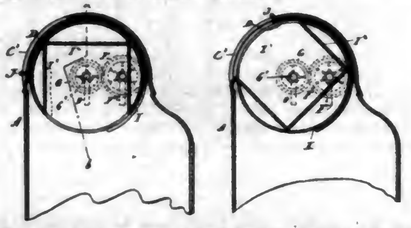
7. The combination, substantially as described, with the pair of line-bars and the pair of branch bars bridging one another, of a pair of fuse-clips, one mounted on a bridging-bar and the other upon a post or projection rising from a bridged bar.

8. In a bridge or junction box for electric wires, the combination, substantially as described, of parallel line-bars and parallel branch bars crossing one another, as described, all of said bars being provided with wire clips or clamps at opposite ends.

9. The combination, substantially as described, with the parallel line-bars having lateral projections bearing wire clamps to receive the line-wires, of the parallel branch bars formed as bridges crossing said line-bars and each provided with a wire clip or clamp in the support at both ends of the bridge, and spring fuse-clips mounted upon the branch bars and upon projections rising from the line-bars, said spring fuse-clips opening outward to adapt them to receive the ends of the fuse.

10. The combination, with the fuse-tubes, of glass or similar material, containing the fuse-wires, of the collars on the ends of said tube, formed of coiled spring-wire, as and for the purpose described.

476,971. LETTER-BOX. WILLIAM F. ASHAM, Shelton, Conn. Filed Mar. 7, 1892. Serial No. 424,089. (No model.)



Claim.—1. In a letter-box, the combination, with a body having an arched hood or cap constructed with a horizontal mail-opening, of a sliding door longitudinally bowed to conform to the shape of the hood, supported at its ends within the same, and provided at each end with a segmental rack, a rotatable cylindrical mail-receiver fitting snugly within the hood and door and having a peripheral opening which it presents to the mail-opening in the head, and gearing between the racks of the door and the said mail-receiver, whereby the latter is rotated by the movement of the door, substantially as set forth.

2. In a letter-box, the combination, with the body having an arched hood or cap constructed with a horizontal mail-opening, of a sliding door longitudinally bowed to conform to the shape of the hood, supported at its ends within the same, and provided at each end with a segmental rack, a rotatable cylindrical mail-receiver fitting snugly within the hood and door, having a peripheral opening which it presents to the mail-opening in the hood and containing a rectangular pocket, and gears connecting the racks of the door with the mail-receiver, whereby the latter is rotated by the movement of the door, substantially as set forth.

476,972. HEATING APPARATUS FOR CARS OR BUILDINGS. WILLIAM C. BAKER, New York, N. Y. Filed July 27, 1891. Serial No. 400,833. (No model.)

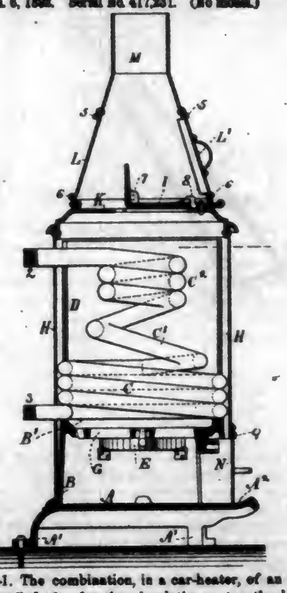


Claim.—1. The combination of the radiator-case having a perforated conduit extending through the lower portion of the same, and heat-absorbing material inclosed by the case and excluded from the conduit by the perforated bottom thereof, so that a clear passage for steam within the conduit is afforded, substantially as set forth.

2. The combination, in a radiator, of a case containing pebbles or similar substances, a perforated grating supporting such pebbles and leaving a space in the case below the grating, a steam-supply pipe opening into such space, and a pipe for the discharge of air and the water of condensation, substantially as specified.

3. The combination, in a radiator, of a horizontal case containing pebbles or similar substances, a perforated grating supporting such pebbles and leaving a space in the bottom part of the case below the grating, a steam-supply pipe opening into such space at one end, and a pipe at the other end for the discharge of air and the water of condensation, substantially as specified.

476,978. CAR-HEATER. WILLIAM C. BAKER, New York, N. Y. Filed Jan. 6, 1892. Serial No. 417,231. (No model.)



Claim.—1. The combination, in a car-heater, of an ash-pit case and grate, a coiled pipe for the circulating water, the lower coil of pipe resting upon the top of the ash-pit case and the coil surrounding the fire at this place, the pipe of the coil being also bent inwardly and formed into a second or upper coil of less size, a fire-pot surrounding the upper coil and above the lower coil, a fire-proof cylinder surrounding the ash-pit case, the lower coil, and the fire-pot, and a top-plate connected with the fire-proof cylinder, a safety-plate, and a smoke-flue, substantially as set forth.

2. A coil for a car-heater, composed of a pipe of increasing diameter upwardly, such pipe being coiled to form the wall of the fire-chamber at the lower portion and bent inwardly and formed into an upper coil of less diameter, substantially as set forth.

3. The combination, in a car-heater, of a base, an exterior fire-proof case connected at its lower end to the base, a top plate permanently connected to the exterior case and provided with flue-openings and a safety-plate, an ash-pit case within the lower part of the exterior case, a grate within and supported by the ash-pit case, a coil of pipe above the ash-pit case and forming the lower inclosure of the fire-chamber, and a case above the coil of pipe and within the exterior case and forming the upper part of the fire-chamber, substantially as specified.

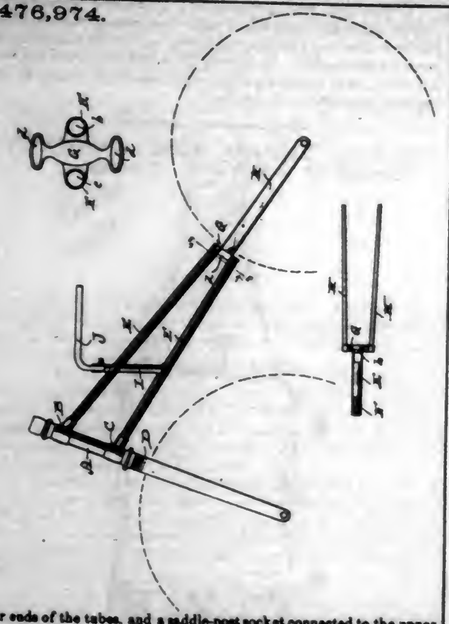
4. The combination, in a car-heater, of a base-plate and exterior fire-proof cylinder, an ash-pit case within the cylinder, such ash-pit case being flaring to set closely within the fire-proof cylinder at the bottom and be slightly distant from the same at the top, a pipe for circulating water, coiled to form the lower part of the fire-chamber, such coil being within the fire-proof cylinder and the pipe being bent inwardly and formed into an upper coil, a fire-pot within the fire-proof cylinder and around the upper coil, and a top plate and escape-flue, substantially as set forth.

476,974. BICYCLE-FRAME. FRANK H. BOLTE, Milwaukee, Wis., assignor to the Sarcombe-Bolte Manufacturing Company, same place. Filed Feb. 23, 1892. Serial No. 422,515. (No model.)

Claim.—1. A bicycle-frame comprising a steering-head, rearwardly-converging upper and lower fore-and-aft tubes connected to the steering-head, and a fork joined to the rear ends of the tubes, substantially as set forth.

2. A bicycle-frame comprising a steering-head, upper and lower fore-and-aft tubes connected to the steering-head, a fork joined to the

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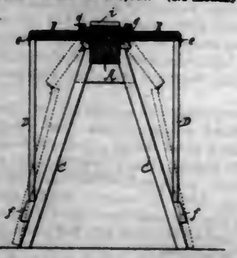
rear ends of the tubes, and a saddle-post socket connected to the upper one of said tubes intermediate of its ends, substantially as set forth.

3. A bicycle-frame comprising a steering-head, upper and lower fore-and-aft tubes connected to the steering-head, a fork joined to the rear ends of the tubes, and a saddle-post socket in the form of a vertically-disposed tube that is rigidly connected to the former tubes intermediate of its ends, substantially as set forth.

4. A bicycle-frame comprising a steering-head, upper and lower fore-and-aft tubes connected to the steering-head, a plate having lugs engaging the rear ends of said tubes, and wheel-hangers engaging sockets or eyes in the plate at right angles to the lugs thereon, substantially as set forth.

5. A bicycle-frame comprising a steering-head, upper and lower fore-and-aft tubes connected to the steering-head and converged toward each other in a downward and rearward direction, a vertically-disposed tube that is rigidly engaged with the upper one of the fore-and-aft tubes and lap-joined to the lower one of the same, a plate fast to the rear lower ends of said fore-and-aft tubes, and wheel-hangers extending downward and toward the rear from the plate, substantially set forth.

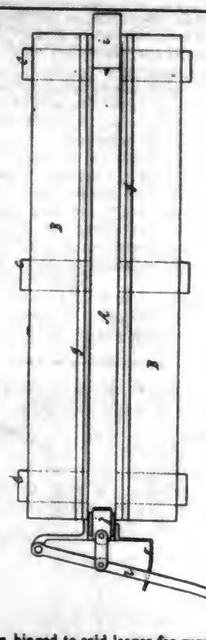
476,975. GLUING-TABLE. WILLIAM R. BROCK, Plainfield, N. J. Filed Apr. 24, 1891. Serial No. 390,247. (No model.)



Claim.—1. A gluing-table having, in combination, the top, the leaves hinged to said top for engaging the edges of the board lying thereon, holding it in position to receive the veneer, the side rails upon said leaves acting as gages for bringing and retaining the veneer in proper relation to the board, and the brace-bars hinged to said leaves for supporting the same in horizontal position, substantially as shown and described.

2. A gluing-table having, in combination, the top, the fixed stop at one end of said top, the movable stop at the other end thereof, the hand-lever for adjusting said movable stop, the leaves on opposite sides of said top hinged thereto for engaging the edges of the board lying thereon, the side rails upon said leaves acting as gages for the veneer,

476,975.



and the brace-bars hinged to said leaves for supporting the same in horizontal position, substantially as shown and described.

476,976. CULTIVATOR. GEORGE W. BROWN and OLOF A. JOHNSON, Galesburg, Ill. Filed Jan. 28, 1892. Serial No. 419,506. (No model.)



Claim.—1. In combination, in a parallel cultivator, side frames to which the cultivator-gangs are hinged or journaled, runners rigidly fixed one to the outer end of each side frame to support said frame and swing or sway with it, and an arch or yoke the vertical ends of which are pivotally connected with the inner ends of the side frames, substantially as described.

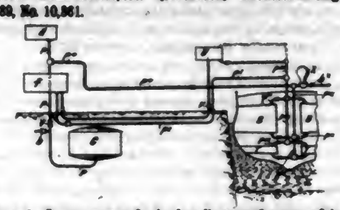
2. In combination, in a parallel cultivator, side frames A, yoke or arch C, pivotally connected with the inner ends of the side frames, and runners D, rigidly affixed to the outer ends of said side frames, substantially as described.

3. In combination, the arch or yoke C, having vertical journal ends c', the side frames A, having parallel bars a, with coincident holes a^3, in which the ends of the yoke or arch are journaled, the coincident holes a^4 for the pin a^5, to which the plow-gangs are hinged or journaled, the bars a', connecting the outer ends of the bars a, the runners D, constructed substantially as described and having a rectangular upper portion d^3, with recesses d^4 in its upper and lower sides, which receive the ends of the bars a, the bolt d^5, and the shoulders a^2 on the bars a, substantially as described, and for the purpose specified.

4. In combination, the arch or yoke and the side frames having their inner ends journaled to said yoke and their outer ends fixed to runners D by a bolt d^5, substantially as described.

5. The combination, substantially as hereinbefore set forth, in a parallel cultivator, of an arch or yoke and side frames pivotally connected at their inner ends with said yoke and at their outer ends rigidly connected with runners from the forward ends of each of which a brace-rod extends to the vertical part of said arch or yoke to stay and brace the runner and side frame each with the other.

476,977. APPARATUS FOR THE TRANSFERENCE OF HYDROCARBON OILS. WILLIAM DOCKWELL, Brighton, England. Filed Feb. 14, 1890. Serial No. 340,411. (No model.) Patented in England July 3, 1889, No. 10,861.

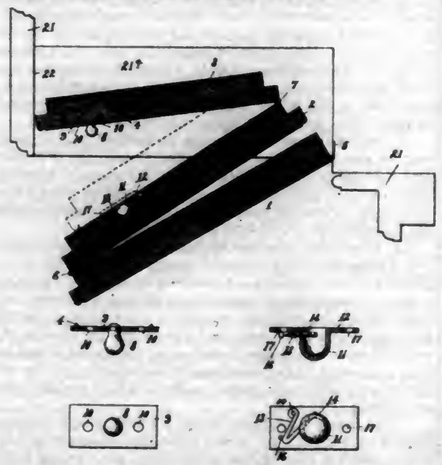


Claim.—1. In apparatus for hydraulic transference of hydrocarbon oils to or from ships or ships' tanks, the combination, with the said tanks, of the water-pressure tank A, pipe P, and cylindrical conical-ended container C, with oil-supply cistern f, pipe P', and valves b and V V, whereby oil may be transferred to or from the said marine vessels or their tanks and the lodgment of liquid or the formation of air-spaces effectually prevented, as set forth.

2. In apparatus for hydraulic transference of hydrocarbon oils to or from ships or ships' tanks, the combination in such apparatus, essentially composed of water-pressure tank A, water-pipe P, oil-pipe P', and ships' tanks B T, of the container C, constructed with a cylindrical-shaped body having a truncated-cone-shaped top and a truncated-cone-shaped bottom, the bases of the cones being opposite to each other and the apexes in axial line with the cylindrical body and having the said oil and water pipes proceeding from the said apexes, respectively, whereby the interior of the container C presents a smooth even surface preventing the lodgment of liquid and the formation of air-spaces, as set forth.

3. In apparatus for hydraulic transference of hydrocarbon oils to or from ships or ships' tanks, the combination, with the tank A, pipe P, container C, the source of oil-supply, and the pipes and valves, of the high-level secondary reservoir U, as set forth.

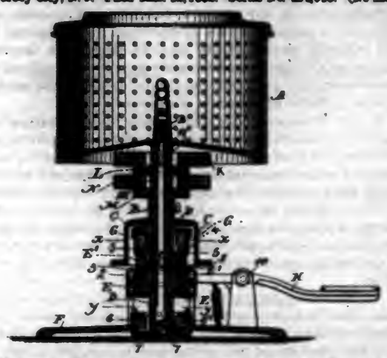
476,978. SHUTTER-FASTENER. JOSEPH CAHN, New York, N. Y. Filed Feb. 15, 1892. Serial No. 421,512. (No model.)



Claim.—1. A spring-clutch composed of the following parts in combination: a plate with pointed lugs upon one side and a knob upon the other enlarged at its outer end, and a second plate provided with a recess to receive said knob and with a slot in the side of the shell surrounding said recess, together with a spring attached to the under side of said second plate and projecting through said slot, substantially as described.

2. A spring-clutch composed of the following parts in combination: a plate with pointed lugs upon its under side and a knob upon the outer side, which knob has a shoulder formed at its base, and a second plate provided with a recess to receive said knob and to fit tightly over said shoulder and having a slot cut through the shell surrounding said recess, together with a spring attached to the under side of said second plate and projecting through said slot, substantially as described.

476,979. CENTRIFUGAL APPARATUS. CHARLES L. CAIRNS, Jersey City, N. J. Filed Mar. 12, 1892. Serial No. 424,615. (No model.)



Claim.—1. The combination, with the basket, spindle, and pulley in a centrifugal machine, and the tubular socket for the spindle having a ball-bearing, of the cylindrical bearings E and E', recessed for the reception of the ball of the spindle, the base-plate F, to which the bearing E is connected, said upper bearing E' passing into the cylinder of the driving-pulley, and springs within the bearings E and E' and cylinder-sections between the springs and the spindle socket near the respective ends, substantially as set forth.

2. The combination, in a centrifugal machine, with the basket, spindle, cylindrical driving-pulley, and spindle-socket having a ball projection, of recessed bearings surrounding the ball of the socket and bolted together, the upper bearing having a cylinder passing up into the pulley, and springs above and below the ball and between the cylinders of the bearings and spindle-socket, substantially as set forth.

3. The combination, in a centrifugal machine, with the basket, the spindle, and spindle-socket, of a driving-pulley the cylindrical portion of which extends down around the spindle-socket and is provided with a flange at the lower edge, a lever, and brake-shoes upon such lever acting against the under side of the flange on the driving-pulley to lift the separator, and bearings for the spindle-socket extending up within the pulley, substantially as set forth.

476,980. PUZZLE. WILLIAM H. COOK, Philadelphia, Pa., assignor of one-half to Edward B. Staggers, Jr., same place. Filed July 22, 1891. Serial No. 400,329. (No model.)



Claim.—A puzzle consisting of a rectangular box adapted to receive sixteen square blocks, two separated obstructing-plates a b, arranged parallel to each other in said box, and a third plate c, arranged below and in line with the plate a, and fifteen blocks, six marked with a successive number of letters or figures, three marked with a similar color or indicator, and the remaining three with another color or indicator, substantially as and for the purpose set forth.

476,981. BUNDLE-CARRIER. JOHN J. COURTNEY, Minneapolis, Minn. Filed Nov. 25, 1891. Serial No. 413,100. (No model.)



Claim.—1. The combination, in a bundle-carrier for grain-harvesting machines, of carrier-arms integrally formed with a pivotal portion 9, whereby they are loosely mounted in their supports, a guiding

portion 10 at the stubbleward side of the pivotal portion, a guiding portion 11 at the grainward side of the pivotal portion, connecting mechanism whereby the several arms are caused to move concurrently and are controlled by the operator, and supporting-cam 8, provided with the opening 14, the camway 15, and the camway 16, whereby the arms are supported rigidly to carry their load and caused to move downward and backward toward the side of the machine to discharge the same, substantially as described.

2. The combination, in a bundle-carrier for grain-harvesting machines, of carrier-arms integrally formed with its sole pivotal portion 9, whereby the arms are loosely mounted in their supports, and projections 12 at the grainward end of the carrier-arms, the bar 13, connecting the projections 12 of the several arms together, connecting mechanism whereby the carrier is controlled by the operator, and guiding-cams in which the arms are loosely mounted, supported rigidly to carry their load and caused to move downward and backward toward the side of the machine to discharge the same, substantially as described.

3. The combination, in a bundle-carrier for grain-harvesting machines, of carrier-arms integrally formed with a pivotal portion 9, whereby they are loosely mounted in their supports, a guiding portion 10 at the stubbleward side of the pivotal portion, a guiding portion 11 at the grainward side of the pivotal portion, and projection 12 at the grainward end of the carrier-arms, the bar 13, connecting the projection 12 of the several arms together, controlling mechanism whereby the carrier is controlled by the operator, and supporting-cams 8, provided with the opening 14, camway 15, and camway 16, whereby the carrier-arms are supported rigidly to carry their load and caused to move downward and backward toward the side of the machine to discharge the same, substantially as described.

4. In a bundle-carrier for grain-harvesting machines, the combination of the carrier-arm 7, the pivotal portion 9, the bearing portion 10, the bearing portion 11, the projection 12, the bar 13, the guiding-cam 8, with the opening 14, camway 15, and camway 16, the rod 18, guide 19, and spring 20, substantially as described.

5. In a bundle-carrier for grain-harvesting machines, the combination of the carrier-arms 7, the pivotal portion 9 thereof, the bearing portion 10 thereof, the bearing portion 11 thereof, and the projection 12 thereof, with the bar 13, the guiding-cam 8, provided with the opening 14, camway 15, and camway 16, the rod 18, guide 19, and spring 20, the rod 22, bell-crank 23, rock-shaft 24, and adjustable bearing 25, substantially as described.

6. In a bundle-carrier for grain-harvesting machines, the combination of the carrier-arms 7, the pivotal portion 9 thereof, the bearing portion 10 thereof, the bearing portion 11 thereof, and the projection 12 thereof, with the bar 13, the guiding-cam 8, provided with the opening 14, camway 15, and camway 16, the rod 18, guide 19, and spring 20, the rod 22, bell-crank 23, rock-shaft 24, adjustable stop 30, and stop 32, substantially as described.

476,982. ELEVATED RAILWAY. ADOLPHUS DAVIS, London, England. Filed May 23, 1891. Serial No. 393,788. (No model.) Patented in Canada Dec. 5, 1890, No. 35,554.



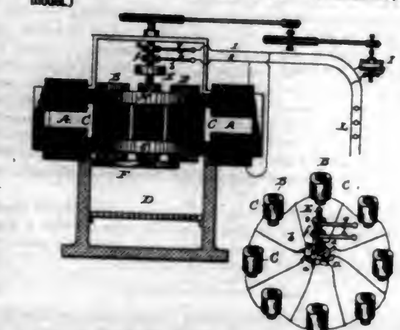
Claim.—1. In an elevated railway, the combination, with a series of single posts, of a lattice-girder resting on same and having its lower chord sunk into the caps of such posts, cross-pieces resting on such chord and carrying on their outer ends longitudinals, and diagonal stays from top chord of girder to such cross-pieces, all as herein described, and for the purposes set forth.

2. The combination, with the posts J, of the girder resting on top of same, cross-pieces H, carried on top of chord C, cross-plates G, connected with girder by diagonal stays E, longitudinals L, and rails M, substantially as and for the purposes herein set forth.

3. In an elevated railway, the combination, with a single girder carrying on the ends of cross-pieces resting on its lower chord the longitudinals and rails, of guides secured to the under side of the traveling car and projecting downward on both sides of and under the top chord of such girder, as and for the purposes described.

4. In an elevated railway, the combination, with the roadway structure embracing a single girder carrying the rails on the ends of cross-pieces resting on its lower chord, of the car with its wheels carried on stub-axles suspended directly from the bottom of such car and guides, also secured to the bottom of such car and projecting downward on both sides of and under the top chord of such girder.

476,988. PYROMAGNETIC GENERATOR. THOMAS A. EDISON, Llewellyn Park, N. J. Filed June 13, 1887. Serial No. 241,099. (No model.)



Claim.—1. An electrical generator having, in combination, an interstitial body constructed of thinly-disposed magnetic material, whereby it is given a great heat radiating and absorbing surface relative to its mass, a source of magnetism for magnetizing such body, a controlled source of heat for heating such body, whereby its temperature can be raised and lowered, and an electric conductor located within the influence of the varying field of force caused by the heating and cooling of such body when magnetized, substantially as set forth.

2. An electrical generator having, in combination, a magnetized body, an electric conductor located within the influence of its field of force, a controlled source of heat for heating such body, whereby its temperature can be raised and lowered, and a commutator for commutating the alternating current generated in said electric conductor into a straight current, substantially as set forth.

3. An electrical generator having, in combination, an interstitial body constructed of thinly-disposed magnetic material, whereby it is given a great heat radiating and absorbing surface relative to its mass, a source of magnetism for magnetizing such body, a controlled source of heat for heating such body, whereby its temperature can be raised and lowered, an electric conductor located within the influence of the varying field of force caused by the heating and cooling of such body when magnetized, and a commutator for commutating the alternating current generated in said electric conductor into a straight current, substantially as set forth.

4. An electrical generator having, in combination, a magnetized body, an electric conductor located within the influence of its field of force, a source of heat for heating such body, and a moving director or shield alternately directing the heat to and cutting it off from such magnetized body, substantially as set forth.

5. An electrical generator having, in combination, a magnetized body, an electric conductor located within the influence of its field of force, a source of heat for heating such body, a moving director or shield alternately directing the heat to and cutting it off from such magnetized body, and a cold-air channel controlled by said director or shield and connected thereby with said magnetized body when the heat is cut off therefrom, substantially as set forth.

6. An electrical generator having, in combination, a series of magnetized bodies, electric conductors located within the influence of the fields of force of such bodies, a source of heat, and a heat director or shield directing the heat to and cutting it off from such magnetized bodies in succession, whereby the temperature of such bodies is progressively raised and lowered, substantially as set forth.

7. An electrical generator having, in combination, a series of magnetized bodies, electric conductors located within the influence of the fields of force of such bodies, a source of heat, a heat director or shield directing the heat to and cutting it off from such magnetized bodies in succession, whereby the temperature of such bodies is progressively raised and lowered, and a commutator collecting the currents from said several electric conductors and delivering them as a straight current to the translation-circuit, substantially as set forth.

8. An electrical generator having, in combination, a series of magnetized bodies, electric conductors located within the influence of the fields of force of such bodies, a source of heat, a heat director or shield directing the heat to and cutting it off from such magnetized bodies in succession, whereby the temperature of such bodies is progressively raised and lowered, and a cold-air channel controlled by said director or shield and connected thereby with the magnetized bodies as they are cut off from the source of heat, substantially as set forth.

9. An electrical generator having, in combination, a series of magnetized interstitial bodies constructed of thinly-disposed magnetic material, so as to have a great heat radiating and absorbing surface relative to their mass, electric conductors located within the influence of the fields of force of such bodies, a source of heat, and a heat director or shield directing the heat to and cutting it off from such magnetized bodies in succession, whereby the temperature of such bodies is progressively raised and lowered, substantially as set forth.

10. In an electrical generator, the combination, with a magnet, of an interstitial body of magnetic material placed in metallic connection with both poles of the magnet and forming a keeper thereto, an electric conductor wound around or upon such interstitial body, and a controlled source of heat, whereby the temperature of such interstitial body can be raised and lowered, substantially as set forth.

11. An electrical generator wherein are combined two iron rings or plates connected by a number of interstitial bodies of magnetic material, one or more magnets magnetizing such rings or plates and interstitial bodies, conductors wound around such interstitial bodies, a furnace, and means for directing the heat from such furnace through such bundles of tubes progressively, substantially as set forth.

12. An electrical generator wherein are combined two iron rings or plates connected by a number of interstitial bodies of magnetic material, one or more magnets magnetizing such rings or plates and interstitial bodies, conductors wound around such interstitial bodies, a furnace, and means for directing the heat from such furnace through such interstitial bodies progressively and for drawing fresh air to supply said furnace through the interstices of the other bodies, substantially as set forth.

13. An electrical generator wherein are combined two iron rings or plates connected by a number of interstitial bodies of magnetic material, one or more magnets magnetizing such rings or plates and interstitial bodies, conductors wound around such interstitial bodies, a furnace, and a moving shield covering the open ends of such interstitial bodies in succession and cutting them off from the heat of the furnace, substantially as set forth.

14. An electrical generator wherein are combined two iron rings or plates connected by a number of interstitial bodies of magnetic material, one or more magnets magnetizing such rings or plates and interstitial bodies, conductors wound around such interstitial bodies, a furnace, a moving shield covering the open ends of such interstitial bodies in succession, and a fresh-air duct connected with said shield for drawing fresh air through the tubes covered by the shield, substantially as set forth.

15. The combination, with the moving heat-directing shield of a pyromagnetic generator, of a motor moving such shield operated or controlled by the current from such generator, whereby the generator is made self-regulating, substantially as set forth.

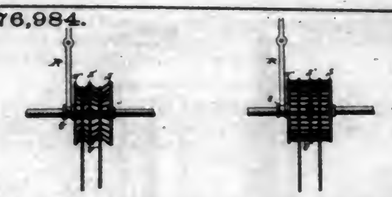
16. An electrical generator wherein are combined a series of magnetized bodies, electric conductors within the influence of the fields of force of such bodies, a source of heat, a moving director or shield for directing the heat to such bodies progressively, a moving commutator for collecting the currents induced in said conductors, and an electric motor supplied with current by said commutator and operating both said commutator and said directing means, substantially as set forth.

17. An electrical generator wherein are combined two iron rings or plates connected by a number of interstitial bodies of magnetic material, one or more magnets magnetizing such rings or plates and interstitial bodies, conductors wound around such interstitial bodies, a furnace, a moving shield covering the open ends of said interstitial bodies in succession and cutting them off from the heat of the furnace, and an electric motor operating said shield and supplied with current from such conductors, substantially as set forth.

476,984. EXPANSIBLE PULLEY. THOMAS A. EDISON, Llewellyn Park, N. J. Original application filed June 10, 1890, Serial No. 354,946. Divided and this application filed Aug. 28, 1890. Serial No. 363,255. (No model.)

Claim.—1. An expansible pulley having heads or disks, one of which is movable relative to the other, and a rope connection between

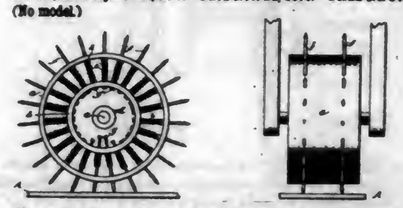
476,984.



the disks, upon which the belt travels and the working circumference of which is made smaller or larger, as desired, substantially as set forth.

2. An expansible pulley having heads or disks, one of which is movable relative to the other, and a connection between the same by means of flexible ropes or cords threaded through holes in the disks substantially as set forth.

476,985. TROLLEY FOR ELECTRIC RAILWAYS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Nov. 21, 1890. Serial No. 372,290. (No model.)



Claim.—1. A current-collector for electric railways, having rods or spikes for making contact with the conductor, and a spring pressing each rod or spike outward, substantially as set forth.

2. A current-collector for electric railways, having several movable radial rods or spikes, the ends of which are adapted to bear on a suitable conductor, and a spring for pressing each rod or spike outward, substantially as described.

3. A current-collector for electric railways, having, in combination, a wheel and a series of pointed rods or spikes carried by said wheel, and springs projecting said rods or spikes outwardly, substantially as set forth.

4. A current-collector for electric railways, having, in combination, a wheel with holes in its periphery, and pointed rods or spikes extending loosely from said holes, substantially as set forth.

5. A current-collector for electric railways, having, in combination, a wheel with holes in its periphery, pointed rods or spikes projecting from said holes, and springs opposing the inward movement of said rods or spikes, substantially as set forth.

6. A current-collector for electric railways, having, in combination, a wheel with a central web and two concentric flanges, pointed rods or spikes passing through said flanges, and springs on said rods between the flanges, substantially as set forth.

7. A current-collector for electric railways, having spring-pressed pointed rods or spikes of hardened steel for making contact with the conductor, substantially as set forth.

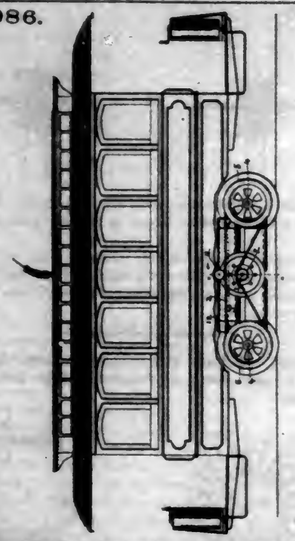
476,986. MEANS FOR PROPELLING ELECTRIC CARS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Mar. 2, 1891. Serial No. 383,374. (No model.)

Claim.—1. The combination, in a car, of a motor, a sprocket-wheel driven thereby, pulleys with smooth peripheries on the car-axles, a chain belt co-operating with the wheel and both pulleys, one side of the belt being unsupported between the pulleys, whereby said side is allowed to assume a catenary curve, thereby increasing the friction of the chain on the pulleys, substantially as described.

2. The combination, in a car, of a motor, a sprocket-wheel on each end of the motor-shaft and driven thereby, pulleys with smooth peripheries on the car-axles in line with the sprocket-wheels, and chain belts co-operating with both the wheels and the pulleys, one side of each belt being unsupported between the pulleys, whereby the said side is allowed to assume a catenary curve, thereby increasing the friction of the chain on the pulleys, substantially as described.

3. A chain belt consisting of several series of bent links pivoted together end to end, each series consisting of several bent links side by side, so that the bends are in line and are adapted to fit simultaneously over suitable cogs, in combination with a sprocket-wheel engaging therewith on the concave side of the links, and a pulley over which the chain passes and on which the convex sides of the links bear, substantially as described.

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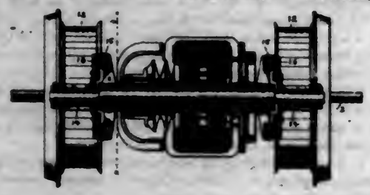


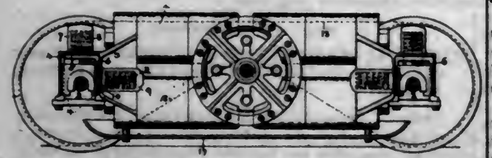
4. The combination of a sprocket-wheel or drum, a smooth pulley, and a chain belt having bent links connecting the wheel and pulley, the concave side of the links facing the sprocket-wheel and the convex sides of the links facing the smooth pulley, substantially as described.

5. As a new article of manufacture, a chilled-iron cog-wheel having a flange and a mass of softer iron around said flange connected thereto and adapted to constitute one member of a magnetic clutch, substantially as described.

6. As a new article of manufacture, a chilled-iron cog-wheel having a flange and a ring of softer iron secured to the flange and adapted to constitute one member of a magnetic clutch, substantially as described.

476,987. ELECTRIC LOCOMOTIVE. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Mar. 2, 1891. Serial No. 383,375. (No model.)





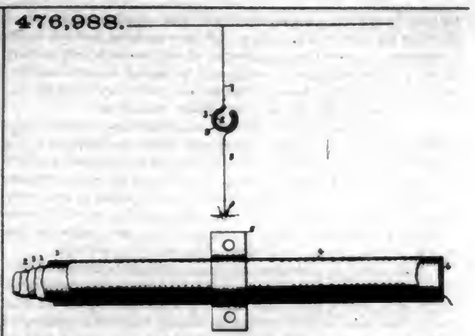
Claim.—1. The combination of a motor, a shaft or axle, a movable block and a spring supporting the motor, and a second spring acting on the block in a direction substantially opposite to the strain of the motor and having strength sufficient to withstand the pull of the motor, substantially as described.

2. The combination of a shaft or axle, a block resting thereon and having an extension, a box for the block, having a holder, and a spring in said holder and pressing against said extension, substantially as described.

476,988. LIGHTNING-ARRESTER. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Aug. 14, 1891. Serial No. 402,656. (No model.)

Claim.—1. The combination, with a circuit, of a lightning-arrester which is destroyed by a single use connected thereto, and a fusible wire in the circuit of said lightning-arrester, said fusible wire being of such conductivity and character that it will be fused by any current that will pass through the lightning-arrester, whereby both the arrester

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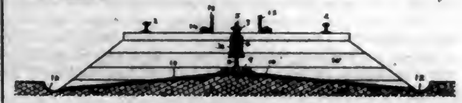
and the fusible wire will be simultaneously destroyed, substantially as described.

2. The combination, with a circuit, of a lightning arrester which is destroyed by a single use and consisting of sheets of metal foil separated by insulating material, such as paraffined paper, one sheet of the foil being connected to the circuit and another sheet of the foil being connected to ground, said ground connection including easily-fused wire, substantially as described.

3. The combination, with a circuit, of a lightning-arrester which is destroyed by a single use and consisting of sheets of metal foil separated by insulating material, such as paraffined paper, one sheet of the foil being connected to the circuit and another sheet of the foil being connected to ground, one of said connections including easily-fused wire, substantially as described.

4. The combination, with a circuit, of a lightning-arrester which is destroyed by a single use and consisting of sheets of metal foil separated by insulating material, such as paraffined paper, a water-tight inclosing-case, one sheet of the foil being connected to the circuit and another sheet of the foil being connected to ground, one of said connections including easily-fused wire, substantially as described.

476,989. CONDUCTOR FOR ELECTRIC RAILWAYS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Aug. 14, 1891. Serial No. 402,658. (No model.)



Claim.—1. The combination of a railway-track, a working conductor extending along the track, insulators supporting said conductor, and poles or standards supporting the insulators, said poles or standards being placed in water-ways or drains and being of sufficient length to support the working conductors above the surface of the ground and above the top of the water-ways, whereby the conductor is supported by poles of considerable length, and is thus supported similarly to aerial pole-lines, substantially as described.

2. The combination of a railway-track, a working conductor extending along the track, insulators supporting said conductors, and poles or standards supporting the insulators, said poles or standards being placed in transverse water-ways having inclined bottoms, substantially as described.

3. The combination of a railway-track, a working conductor extending along the track, and poles or standards supporting the working conductor, said poles or standards being placed in transverse water-ways or drains, substantially as described.

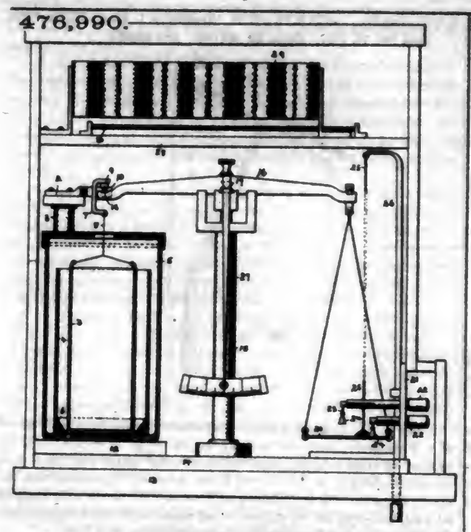
4. The combination of a railway-track having cross-ties, a conductor between the rails of the track and above the ties, and insulators on poles between the ties supporting said conductor, said poles being supported on the bottoms of water-ways, substantially as described.

5. The combination, with the ties and rails, of the conductor supported between the rails and above the ground, a supporting-pole for the conductor standing in a transverse water-way, and a guard supported by the ties on each side of the conductor, substantially as described.

6. The combination, with a conductor, of poles supporting the conductor above the ground and between the rails of a track, said poles being located in transverse water-ways, and a guard on each side of said conductor, substantially as described.

476,990. ELECTRIC METER. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Aug. 26, 1891. Serial No. 403,009. (No model.)

476,990.



Claim.—1. The combination, with a meter in which current is measured by the weight of metal deposited and having more than one depositing-cell, of a single weighing apparatus forming a part of the meter and common to all of the cells and in position or adapted to be moved into position to weigh the cathodes without removing them from their cells, substantially as described.

2. The combination, with the depositing-cells of an electrical meter having more than one cell, of a weighing apparatus forming a part of the meter and movable into position to weigh an electrode of either cell at will, substantially as described.

3. The combination, with the depositing-cells of an electrical meter having more than one cell, of a weighing apparatus forming a part of the meter and a sliding supporting-plate for the same movable to bring the weighing apparatus into position to co-operate with either cell at will, substantially as described.

4. The combination, with the depositing-cells of an electrical meter having more than one cell, of a weighing apparatus forming a part of the meter and movable into position to weigh an electrode of either cell at will, said weighing apparatus having a balanced lever or scale-beam, one end of which is adapted to support the electrode to be weighed and the other end of which carries a suitable pan, and movable handles supporting weights in such position as to be placed on the pan by movement of the handles, substantially as described.

5. The combination, with the depositing-cells of an electrical meter having more than one cell, of a weighing apparatus forming a part of the meter and movable into position to weigh an electrode of either cell at will, said weighing apparatus having a balanced lever or scale-beam, one end of which is adapted to support the electrode to be weighed and the other end of which carries a suitable pan, and movable handles having hooks supporting weights in such position as to be placed on the pan by movement of the handles, substantially as described.

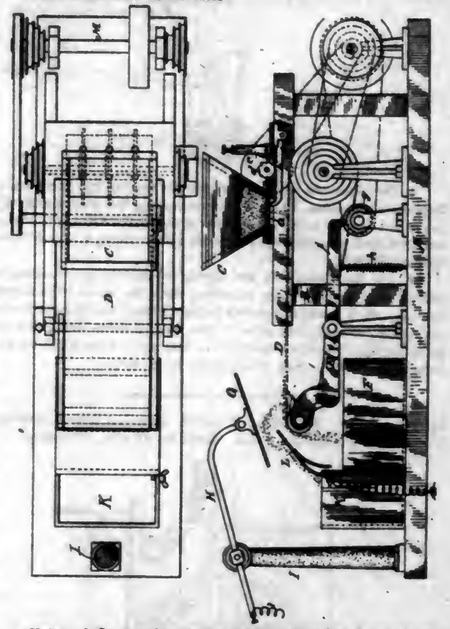
6. The combination, in a meter, of depositing-cells, the suspending devices for electrodes thereof and the movable weighing apparatus adapted to be engaged with either suspending device at will, substantially as described.

7. The combination, with the depositing-cell of an electrical meter, of a weighing apparatus forming a part of the meter and in position to weigh an electrode of the cell, said weighing apparatus having a balanced lever or scale-beam, one end of which is adapted to support the electrode to be weighed and the other end of which carries a suitable pan, a chain of definite weight per unit of length, and means for placing any desired length of chain on the pan, substantially as described.

8. The combination, with the depositing cell of an electrical meter, of a weighing apparatus forming a part of the meter and in position to weigh an electrode of the cell, said weighing apparatus having a balanced lever or scale-beam, one end of which is adapted to support the electrode to be weighed and the other end of which carries a suitable pan, handles carrying weights and adapted to move the same onto or off from the pan, a chain of definite weight per unit of length, and means for placing any desired length of the chain on the pan, substantially as described.

9. The combination, with the depositing-cell of an electrical meter, of an inclosing case therefor, a weighing apparatus also in said inclosing case and adapted to engage the cathode to weigh it without removing it from its cell, substantially as described.

476,991. METHOD OF AND APPARATUS FOR SEPARATING ORES. THOMAS A. EDISON, Llewellyn Park, N. J. Filed May 21, 1888. Serial No. 274,586. (No model.)



Claim.—1. In a machine for separating pulverulent material composed of particles of different specific gravities, the combination, with a traveling belt, of an electrified plate placed over the belt at the end thereof toward which the upper side of the belt moves for attracting the lighter particles against the force of gravity, and separate receptacles adjacent to said end to receive the lighter and heavier particles, respectively, substantially as set forth.

2. The combination, in a machine for separating pulverulent material composed of particles of different specific gravities, of a traveling belt, means for feeding pulverulent material onto it, an electrified body over the belt at the end toward which the upper side of the belt moves, and a guide-plate for the lighter particles projecting over the belt at said end and below the electrified body, substantially as described.

3. In a machine for separating pulverulent material composed of particles of different specific gravities, the combination, with a traveling belt, of an electrified plate located over the belt and a grounded guiding-plate located between the electrified plate and the belt, substantially as set forth.

4. The combination, in a machine for separating pulverulent material composed of particles of different specific gravities, of a traveling belt supported on suitable rollers, means above the belt at one end to attract some of the particles of the pulverulent material on the belt, and means for agitating the belt at said end, consisting of a pivoted arm or frame supporting the belt-carrying roller, and means for moving the arm or frame on its pivot, substantially as described.

5. The combination, in a separating apparatus, of a traveling belt, means for spreading pulverulent material thereon, and an attracting plate or device above and in advance of or extending beyond said belt, whereby as the belt carries the material along the light particles will be raised by attraction and carried forward, thereby being separated from the heavier particles, substantially as described.

476,992. INCANDESCENT ELECTRIC LAMP. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Jan. 24, 1891. Serial No. 378,922. (No model.)

Claim.—1. In an incandescent electric lamp, the combination, with the loop-shaped carbon filament connected with leading-in wires, of the third wire connected with the center of the loop and extending outside the lamp and a wire extending from the top of the loop and supported by the top of the lamp-bulb, substantially as set forth.

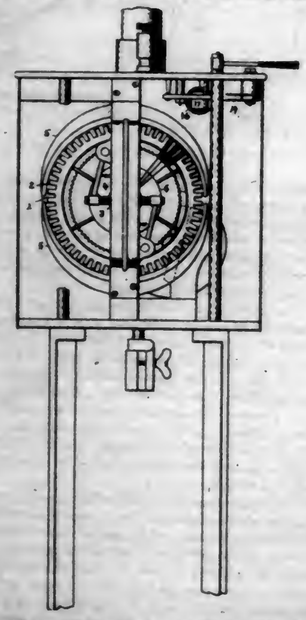
476,992.



2. The improvement in the method of making and using incandescent electric lamps, which consists in heating the lamp electrically during exhaustion, with the two sides of the looped filament in series, and afterward using said lamp with the sides in multiple arc, substantially as set forth.

3. The improvement in the method of making an incandescent electric lamp having a wire extending from the center of its looped filament, which consists in passing current through the filament during exhaustion, with the two sides of the loop in series, and afterward permanently connecting together the leading-in wires which extend from the ends of the loop, substantially as set forth.

476,993. ELECTRIC-ARC LAMP. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 1, 1891. Serial No. 407,451. (No model.)

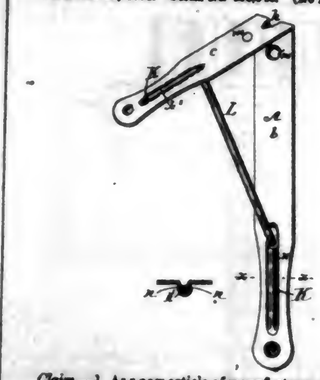


Claim.—1. The combination, in an arc lamp, of a motor field-magnet, an armature therefor, polar extensions extending from said field-magnet, and a metal disk in the magnetic field formed by said extensions operatively connected to the motor-shaft and forming a retarding device, substantially as described.

2. The combination, in an arc lamp, of a movable carbon, a motor for moving it, polar extensions having raised surfaces, and a metal disk in the field of said polar extensions and connected to the motor, whereby it operates as a retarding device, substantially as described.

3. The combination, in an arc lamp, of a movable carbon, a motor having a field-magnet coil in the main and a field-magnet coil in a shunt circuit, a polar extension from the field-magnet on each side of one of the coils, and a disk connected to the motor and movable between said polar extensions, substantially as described.

476,994. SHELF-BRACKET. FREDERICK L. ELLIS, Middletown, Conn. Filed Oct. 10, 1891. Serial No. 408,248. (No model.)

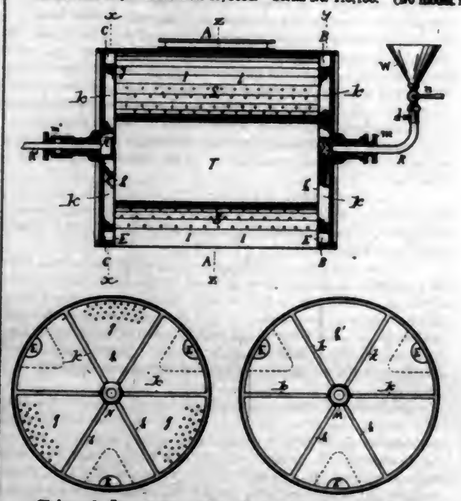


Claim.—1. As a new article of manufacture, a shelf-bracket formed of a sheet-metal strip having longitudinal loops or sockets near the ends of its arms stamped from the sheet metal on the side interior to the angle and with a wire or rod brace extended across between the arms of the bracket and having its ends inserted in the said loops or sockets, the metal of the sockets being closed or firmly clamped upon the brace to secure it in position, substantially as specified.

2. As a new article of manufacture, a shelf-bracket formed of a sheet-metal strip bent to form a rectangle, having a diagonal hollow rib stamped inwardly at its corner and longitudinal hollow ribs stamped from the sheet metal on the side interior to the angle and provided with longitudinal loops or sockets near the ends of its arms, stamped from the sheet metal on the side interior to the angle, and with a wire brace or rod extended across between the arms of the bracket and having its ends inserted in the said loops or sockets, the metal of the sockets being closed or firmly clamped upon the brace to secure it in position, substantially as specified.

3. As a new article of manufacture, a shelf-bracket formed of a sheet-metal strip, having a bead or hollow rib around its edge stamped from the sheet metal and provided with longitudinal loops or sockets near the ends of its arms, stamped from the sheet metal on the side interior to the angle, and with a wire or rod brace having its ends inserted in the said loops or sockets, the metal of the sockets being closed or firmly clamped upon the brace to secure it in position, substantially as specified.

476,995. WASHING-MACHINE. JOHANN M. ENGELHARDT, Bremen, Germany. Filed Dec. 15, 1891. Serial No. 415,135. (No model.)



Claim.—1. In a steam-washer, the combination, with the revolving cylinder having a distributing-chamber at one end provided with radial arms, said cylinder being also provided with hollow wings connecting with said chamber, having their inner walls perforated, of a supply-pipe for said distributing-chamber and a strainer interposed between said water supply and said hollow wings, substantially as described.

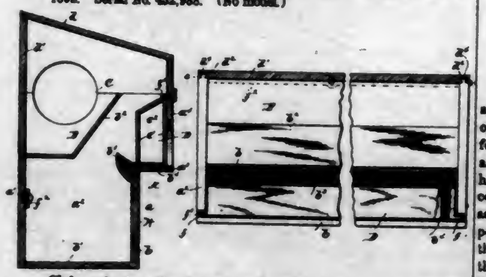
2. In a steam-washer, the combination, with the revolving cylinder provided with a distributing-chamber at one end and a collecting-chamber at the other end and with hollow wings intermediate said chambers and communicating therewith, the inner walls of said wings being perforated, of a supply-pipe for said distributing-chamber, and an outlet-pipe connected with said collecting-chamber, substantially as described.

3. In a steam-washer, the combination, with the revolving cylinder provided with a collecting-chamber at one end having radial arms or partitions and a series of hollow wings communicating therewith, having their inner walls perforated, of the stationary receiving-vessel connected with an outlet-pipe and adapted to receive the washing fluid from said collecting-chamber, and a supply-pipe for said cylinder communicating with said wings, substantially as described.

4. In a steam-washer, the combination, with the revolving cylinder provided with a collecting-chamber at one end having radial arms or partitions and a series of hollow wings communicating with said chamber and having their walls perforated, of the stationary receiving-vessel adapted to receive the washing fluid from said arms or partitions, a blind supply-pipe for said cylinder, communicating with said wings, and an outlet-pipe communicating with said receiving-vessel, substantially as described.

5. In a steam-washer, the combination and arrangement, with a hollow drum in which the washing is effected, of hollow perforated prismatic wings, an inclosure at the inlet end of the drum, containing radial arms and communicating with the hollow wings through suitable openings, a similar inclosure at the outlet end of the drum, also containing radial arms, and a vessel into which the liquid is lifted for discharge, said second chamber communicating with the hollow wings and with the drum through suitable openings and perforations, and means for rotating the drum and for the inlet and outlet of the fluids, substantially as described.

476,996. STREET LETTER-BOX. WILLIAM M. FITZWATER, Berryville, assignor of seven-tenths to H. L. D. Lewis, S. J. C. Moore, A. Moore, Jr., C. Kownslar, and G. G. Calmer, Clarke County, and Marshall McCormick, Berryville, Va. Filed Apr. 20, 1891. Renewed May 14, 1892. Serial No. 432,983. (No model.)



Claim.—1. A mail or letter box having a horizontal opening in its front wall and a pocket or conductor open at its lower end and pivotally mounted in position above said horizontal opening so as to coincide at said lower end with said opening and designed to move inward, as set forth.

2. A mail or letter box having an upper overhanging portion and upper and lower cross-pieces, between which an opening is formed, and a pocket or conductor pivotally mounted in position so as to coincide with said opening and designed to move inward, as set forth.

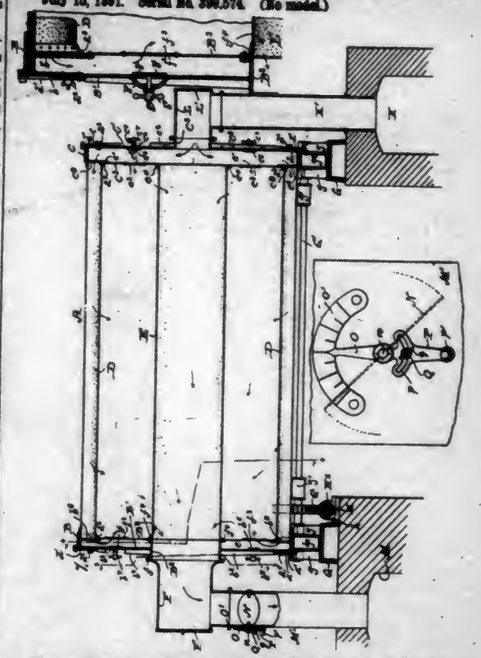
3. A mail or letter box having an upper overhanging portion, upper and lower cross-pieces, between which an opening is formed, a pocket or conductor having a lower open end coincident with said opening and having short rods or lugs projecting from its upper end, forming pivotal bearings therefor, substantially as set forth.

4. A mail or letter box having a horizontal opening in its front wall and a flange or projection at one end thereof, forming a rest, and a pocket or conductor pivotally mounted in position and having a lower open end coincident with said opening, substantially as set forth.

5. A mail or letter box having an upper partition therein, forming a pocket or receptacle and having a horizontal opening in its front wall, and a pocket or conductor pivotally mounted in position and having its lower open end coincident with said opening and designed to be limited in its movement by said partition, substantially as set forth.

6. The herein-described improved mail or letter box, comprising the part or section having the top and the back piece, which latter is provided with grooves or recesses and holes or apertures and the part or section having the end pieces provided with tenons fitting said grooves or recesses, the apertured cross-bar, and the screw projected therethrough, substantially as set forth.

476,997. PNEUMATIC MALTING-DRUM. FRANKLIN B. GIESLER, and HENRY SMITH, Milwaukee, Wis., assignors to the Galland-Henning Pneumatic Malting Drum Manufacturing Company, same place. Filed July 15, 1891. Serial No. 399,574. (No model.)



Claim.—1. In a malting-drum, the combination, with the outer and inner heads at each end separated by spaces and having central openings in the outer heads, one of said inner heads having an imperforate center and the other having a central opening, of peripherally-arranged open-ended perforated semi-cylinders between said inner heads, a perforated central cylinder extending from the imperforate center of one of said inner heads to the central opening in the other of said inner heads, annular rows of openings in each of said inner heads, perforated plates covering said openings, annular rows of openings in the outer heads, registering with the said annular rows of openings in the inner heads and with the said semi-cylinders, and closing devices for said openings in the outer heads, substantially as set forth.

2. The combination, with a rotating malting-drum, of shafts formed in sections and connected together, arranged longitudinally beneath said drum and carrying pulleys on which said drum rests and by which it is rotated, and worm-wheels fast on said shafts, another shaft arranged transversely beneath said drum and beneath said longitudinally-arranged shafts, a sleeve loose on said transverse shaft and terminating in worms at each end and having clutch-notches at one end, a longitudinally-movable clutch-collar secured to said transverse shaft and having clutch-pins at one end, and a shifting-lever in engagement with said clutch-collar, substantially as set forth.

3. In a malting-drum, a cylinder having feed-openings in its periphery, one near each end thereof and each surrounded by a collar shaped to fit and secured to the said periphery, said collar having an annular flange rising to a uniform height and provided with a flat pivoted door, and dumping-openings arranged in a line intermediate of the lines of the feed-openings and provided with sliding doors, substantially as set forth.

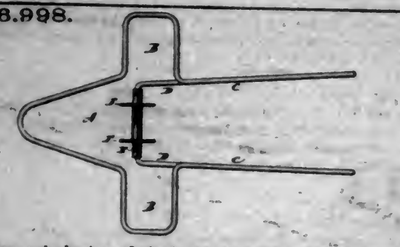
476,998. STALLION-GUARD. ARIAH H. GILBERT, Birmingham, Conn. Filed Nov. 30, 1891. Serial No. 413,617. (No model.)

Claim.—1. In a stallion-guard, the combination, with the frame thereof, of a rotary barb, substantially as described.

2. In a stallion-guard, the combination, with an open wire frame, of a rotary barb, substantially as described.

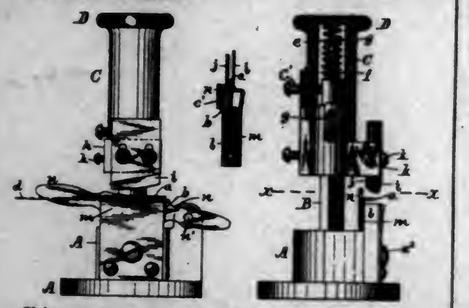
3. In a stallion-guard, the combination of an open wire frame

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made from a single piece of wire bent to form a forwardly-projecting bearing-loop, two laterally-projecting girth-loops, and two diverging sheath-loops standing in vertical planes and containing a bearing, and a rotary barb journaled on said bearing and having spur-wheels, substantially as described.

476,999. MACHINE FOR POINTING AND PUNCHING SHOE-LACES. PHILIP GOLDSTEIN, Newark, N. J. Filed Apr. 12, 1892. Serial No. 428,767. (No model.)



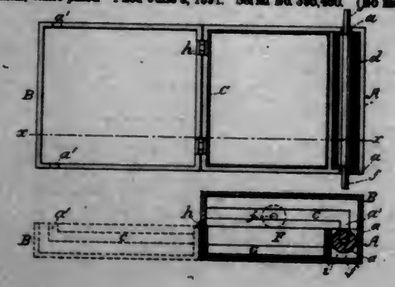
Claim.—1. In a device for pointing and punching shoe-laces, the clamp *a*, having the hole *c* and provided upon one edge with the flange *b* and tapered upon the opposite edge, in combination with means for pressing it upon the shoe-lace during the pointing operation, as and for the purpose set forth.

2. The device for pointing and punching shoe-laces, consisting in the clamp *a*, having the hole *c* and provided upon one edge with the flange *b* and tapered upon the opposite edge, in combination with a knife-bed to support the shoe-lace, a lever to actuate the clamp, and a carrier movable to and from the clamp with a knife and punch secured thereon, as and for the purpose set forth.

3. The device for pointing and punching shoe-laces, consisting in the clamp *a*, having the hole *c* and provided upon one edge with the flange *b* and tapered upon the opposite edge, in combination with a knife-bed to support the shoe-lace, a lever to actuate the clamp, the spring *m*, carrying the shoe-lace seat m^2, adjacent to the knife-bed, and a carrier movable to and from the knife-bed with a knife and punch, as and for the purpose set forth.

4. The apparatus for pointing and punching shoe laces, consisting in the base A, post B, knife-bed *l*, and clamp-lever *n*, secured upon the base, with the clamp pivoted upon the lever and projected over the knife-bed, and the slider C, movable upon the post and formed with the carrier *h*, having the knife *i* and punch secured detachably thereto, the whole arranged and operated substantially as herein set forth.

477,000. APPARATUS FOR PRODUCING MANIFOLD COPIES. WILLIAM M. GORDON, Chicago, Ill., assignor of one-half to John W. Hoffman, same place. Filed June 8, 1891. Serial No. 395,460. (No model.)

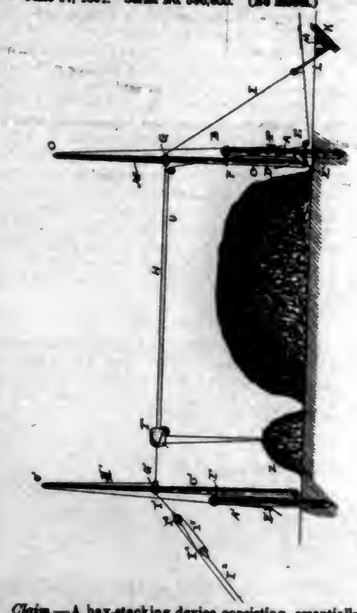


Claim.—1. A transferring-surface for producing manifold copies, composed of carbonate of calcium, glycerine, and muriatic acid, substantially as described.

2. The herein-described composition of matter to be used as a slab or pad for taking manifold copies, consisting of an absorbing base portion composed of hydrous sulphate of lime and a transferring-surface portion composed of carbonate of calcium, glycerine, and muriatic acid, substantially as described.

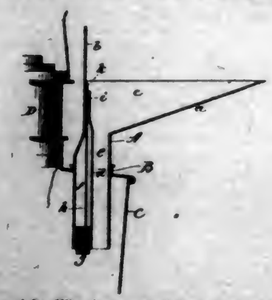
3. The case for receiving and retaining the transferring-pad, having two hinged folding sections, one of said sections being provided with openings or guideways *c c* and passages *d' d'*, and the other with a tray *i* and grooves *a a*, and a roller which is adapted to travel in the openings or guideways *c c* over the surface of the transferring-pad, for the purpose of removing any surplus moisture, substantially as described.

477,001. HAY-CARRIER. RICHARD GIBSON, Randolph, Ind. Filed June 17, 1891. Serial No. 396,655. (No model.)



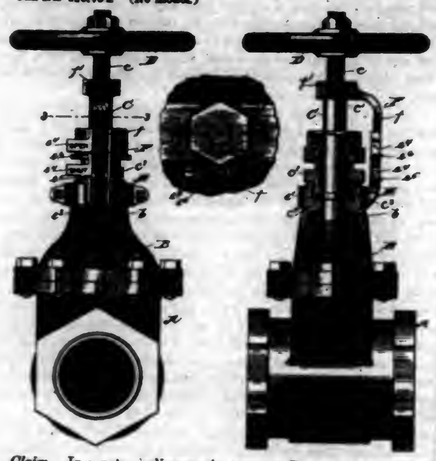
Claim.—A hay-stacking device consisting, essentially, of two upright posts, a mast hinged to each post, means for raising said masts, a cable connected to the masts and provided with means for raising and depressing them, and a traveling carrier on said table, substantially as shown and described.

477,002. FUNNEL FOR FILLING LAMPS. THOMAS W. GRIFFIN, New Haven, Conn., assignor of one-half to Robert H. Nesbit and John H. Bulford, same place. Filed Feb. 23, 1892. Serial No. 422,413. (No model.)



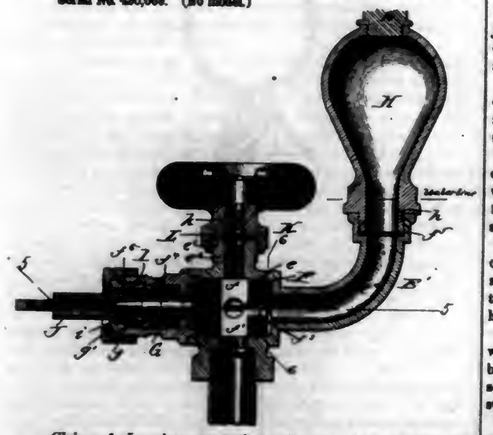
Claim.—A funnel for filling lamps, consisting of a tube A, adapted for insertion through the filler-opening in the font, and constructed with a laterally-projecting trough having an inclined bottom *a*, sides *c c*, and a guard *b* at the tube end of the trough, and the tube constructed with a partition *d*, dividing it into two parts *e f*, the one part *e* leading from the trough and the other part *f* cut off from the trough, combined with a float *g* in the said part *f*, and a rod extending from the float upward through the upper end of the part *f* and there terminating in an indicator, substantially as described.

477,003. VALVE-INDICATOR. JAMES T. HAYDEN, Chicago, Ill., assignor to the Crane Company, same place. Filed Nov. 3, 1891. Serial No. 410,734. (No model.)



Claim.—In a valve-indicator, the case-cap B, in combination with the indicator-bracket E, having two-part collar *c c'*, applied to said cap and adjustable around it, the valve-stem C, and the indicating-arm F, arranged to slide in said bracket, connected to and adjustable around said valve-stem, whereby the indicator may be adjusted from one side of the valve-stem to another, substantially as described.

477,004. LOW-WATER ALARM. JAMES T. HAYDEN, Chicago, Ill., assignor to the Crane Company, same place. Filed Feb. 2, 1892. Serial No. 420,069. (No model.)



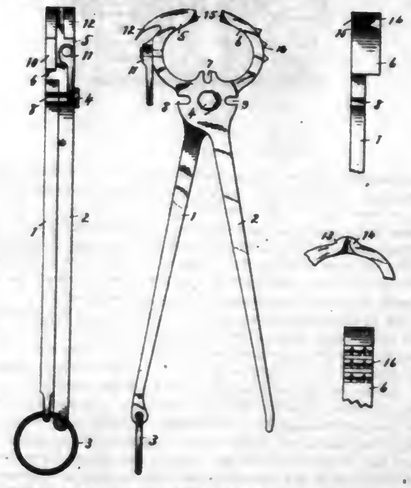
Claim.—1. In a low-water alarm, the main pipe extending into the boiler, in combination with a valve-case mounted thereon and provided with an outlet for the escape of steam, a button of fusible metal closing said outlet, a supplementary air-chamber arranged at one side of the valve-case and connecting therewith, and a valve seated within the said case and constructed and arranged to control the outlet therefrom and to provide a constant communication between the supplementary chamber and the boiler, substantially as described.

2. In a low-water alarm, the main pipe connecting with the boiler, in combination with a valve-case E, mounted thereon and provided with outlet-port d^4, the three-way valve F, seated therein and provided with a rear port f^6, the supplementary air-chamber H, connected with said rear port, and a fusible button I, secured in a position to close the said outlet-port, substantially as described.

3. In a low-water alarm, the main pipe connecting with the boiler, in combination with the valve-case E, mounted thereon and provided with escape-port d^4, the supplementary air-chamber H, connected with the valve-case, the valve F, provided with ports *f*, f' f^3, and f^5, the fusible button I, applied to the escape-outlet, and the perforated screw-cap K, securing said button in place, substantially as described.

4. In a low-water alarm, the main pipe connecting with the boiler, in combination with the valve-case E, mounted thereon, the oscillating three-way valve F, seated therein and provided with an angular shank on its stem, the thimble I, surrounding said shank and provided with flange *i*, having notches i', the valve-key J, provided with side lugs j', and a valve-stop arranged to limit the movement of the valve to a quarter-turn, substantially as described.

477,005. TOOL FOR OPERATING ON WIRES OF FENCES. JAMES HEARD, Delta, Colo. Filed Mar. 19, 1891. Renewed Nov. 28, 1891. Serial No. 413,425. (No model.)



Claim.—1. The combination, in a pair of nippers, of the two curved jaws, one of which has its exterior surface roughened to form a fulcrum, while the other has a claw formed on its exterior, substantially as described.

2. The combination, in a pair of nippers, of the two curved jaws, one of which has its exterior surface roughened to form a fulcrum, and the cam-gripping device mounted on the exterior of the other jaw, substantially as described.

3. The combination, in a pair of nippers, of the two curved jaws, one of which has its exterior surface roughened to form a fulcrum, while the other has a claw formed on its exterior, and the ring attached to the handle of that nipper-jaw which has the roughened exterior, substantially as described.

4. The combination, in a pair of nippers, of the two curved jaws, one of which has its exterior surface roughened to form a fulcrum, and the cam-gripping device mounted on the exterior of the other jaw, together with the ring attached to the handle of that nipper-jaw which has a roughened exterior, substantially as described.

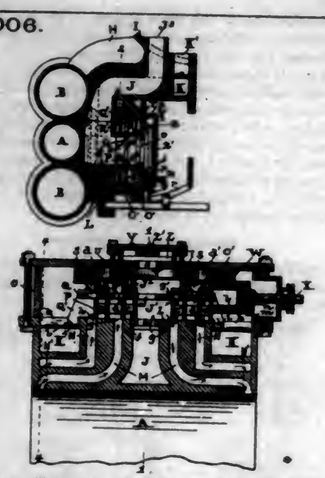
5. In a pair of nippers, the combination of the two curved jaws which have considerable portions of their abutting faces left with broad opposing surfaces, while the remaining portions are cut away so as to form a recess and a pair of sharp-pointed projections, substantially as described.

6. In a pair of nippers, the combination of the two curved jaws which have considerable portions of their abutting faces left with broad opposing surfaces, while the remaining portions are cut away so as to form a recess and a pair of sharp-pointed projections, one of said jaws having its exterior surface roughened to form a fulcrum, a claw formed on the exterior of the other jaw, and a cam-grip mounted behind said claw, the shearing-recesses formed in the jaws of the nippers near the pivot by which they are connected, and the ring mounted in the handle, substantially as described.

477,006. COMPOUND STEAM-ENGINE. JESSE HUNT, Baltimore, Md. Filed Feb. 23, 1892. Serial No. 422,344. (No model.)

Claim.—1. In a compound steam-engine, the combination, with the valve-seat having ports and passages communicating with the high and low pressure cylinders, respectively, of a slide-valve working over

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said seat and provided with a chamber open to the live-steam supply, passages for communicating with the high-pressure-cylinder ports in the valve-seat, an exhaust-chamber, also to communicate with said high-pressure ports, and passages for communicating with the low-pressure ports, and an auxiliary-valve seat fitting against the outer side of said valve and having ports corresponding with those on the main-valve seat and arranged to communicate with the chambers and passages in the valve, in the manner substantially as described.

2. In a compound steam-engine, the combination, with the valve-seat having ports and passages communicating with the high and low pressure cylinders, respectively, of a slide-valve working over said seat and provided with a chamber open to the live-steam supply, passages for communicating with the high-pressure-cylinder ports in the valve-seat, an exhaust-chamber, also to communicate with said high-pressure ports, and passages for communicating with the low-pressure ports, an auxiliary-valve seat, in the form of a partition, fitting against the outer side of said slide-valve and having ports through it corresponding with those in the main-valve seat and arranged to communicate with the chambers and passages in the valve, and a valve working over the outer face of said partition and having a chamber for live steam and a chamber for exhaust-steam from the high-pressure cylinder, said latter chamber to have communication with chambers and passages in the main valve, substantially as described.

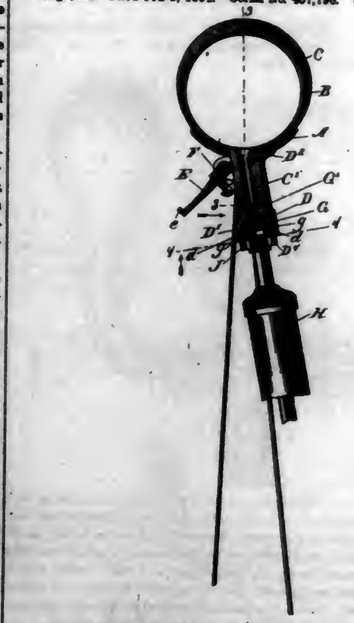
3. In a compound steam-engine, the combination, with the valve-seat having ports and passages communicating with the high and low pressure cylinders, respectively, of a slide-valve working over said seat and provided with a chamber open to the live-steam supply, passages for communicating with the high-pressure-cylinder ports in the valve-seat, an exhaust-chamber, also to communicate with said high-pressure ports, and passages for communicating with the low-pressure ports, an auxiliary-valve seat, in the form of a partition, fitting against the outer side of said slide-valve and having ports through it corresponding with those in the main-valve seat and arranged to communicate with the chambers and passages in the valve, a valve working over the outer face of said partition and having a chamber for live steam and a chamber for exhaust-steam from the high-pressure cylinder, said latter chamber to have communication with chambers and passages in the main valve, and balance-rings in the outer valve held by spring-pressure against the valve-chest lid.

4. In a compound steam-engine, the combination, with the valve-seat having ports and passages communicating with the high and low pressure cylinders, respectively, of a slide-valve working over said seat and provided with a chamber open to the live-steam supply, passages for communicating with the high-pressure-cylinder ports in the valve-seat, an exhaust-chamber, also to communicate with said high-pressure ports, an auxiliary-valve seat, in the form of a partition, fitting against the outer face of said slide-valve and having ports through it corresponding with those in the main-valve seat and arranged to communicate with the chambers and passages in the valve, said partition having side standards fitting against the main-valve seat and provided with lugs taking past said seat, a valve working over the outer face of said partition and having a chamber for live steam and a chamber for exhaust-steam from the high-pressure cylinder, said latter chamber to have communication with chambers and passages in the main valve, and balance-rings in the outer valve held by spring-pressure against the valve-chest lid.

5. In a compound steam-engine, the combination, with the valve-seat having ports and passages communicating with the high and low pressure cylinders, respectively, of a slide-valve working over said seat and provided with a chamber open to the live-steam supply, passages for communicating with the high-pressure-cylinder ports in the valve-seat, an exhaust-chamber, also to communicate with said high-pressure ports, and passages for communicating with the low-pressure ports, an auxiliary-valve seat fitting against the outer side of said valve and having ports corresponding with those of the main-valve seat and arranged to communicate with the chambers and passages in the valve, and also provided with a central port open to the live-steam supply and side ports communicating with the exhaust-chamber of the slide-valve, a supplemental valve-chest in communication with the said central port of the auxiliary-valve seat, and a supplemental valve in said chest, controlling communication between the valve-chest and the side ports of the auxiliary-valve seat.

6. In a compound steam-engine, the combination, with the valve-seat having ports and passages communicating with the high and low pressure cylinders, respectively, of a valve-chest having a lid with a central port through it and side ports, a slide-valve working over said seat and provided with a chamber open to the live-steam supply, passages for communicating with the high-pressure-cylinder ports in the valve-seat, an exhaust-chamber, also to communicate with said high-pressure ports, and passages for communicating with the low-pressure ports, an auxiliary-valve seat in the form of a partition, fitting against the outer side of said slide-valve and having ports through it corresponding with those in the main-valve seat and arranged to communicate with the chambers and passages in the valve, and also provided with a central port open to the live-steam supply and side ports communicating with the exhaust-chamber of the slide-valve, a valve working over the outer face of said partition and having a chamber for live steam and a chamber for exhaust-steam from the high-pressure cylinder, said latter chamber to have communication with chambers and passages in the main valve, a supplemental valve-chest on the lid of the main valve-chest and having communication through the central port in said lid with the live-steam chamber of the outer valve, and also having communication through the side ports in the lid with the exhaust-chamber of said outer valve, and a supplemental slide-valve in said chest, controlling communication with the said exhaust-chamber.

477,007. TIRE-INFLATING DEVICE. THOMAS B. JEFFERY, Chicago, Ill. Filed Oct. 5, 1891. Serial No. 407,798. (No model.)



Claim.—1. In combination with the wheel-rim, an inflatable tire seated therein, the tire-core having an inlet-tube and the rim having an aperture through which said tube protrudes toward the axis of the wheel, and a reinforcing-plate outside the rim extending across the aperture and rigidly secured to the rim on opposite sides of the aperture, substantially as set forth.

2. In combination with the rim, the inflatable tire seated therein, said tire having an inlet-tube and the rim having an aperture through which the inlet-tube protrudes toward the axis of the wheel, and a standard constituting a support for the inlet-tube, rigidly secured to the rim and extending therefrom toward the axis and diverging from the plane of rotation of the wheel, substantially as set forth.

3. In combination with the rim, the inflatable tire seated therein, said tire having an inlet-tube and the rim having an aperture through which the inlet-tube protrudes toward the axis of the wheel, and a standard constituting a support for the inlet-tube, rigidly secured to the rim and extending therefrom toward the axis and diverging from the plane of rotation of the wheel, substantially as set forth.

4. In combination with the rim, the inflatable tire seated therein, said tire having an inlet-tube and the rim having an aperture through which such inlet-tube protrudes toward the axis of the wheel, and the standard rigid with the rim, adapted to give lateral support to the inlet-tube, the inlet-tube having a metallic terminal and the standard having a seat for said terminal, in which the latter is non-rotatable, said terminal being threaded to receive the inflating-pump, substantially as set forth.

5. In combination with the rim and the inflatable tire seated therein, the tire having an inlet-tube and the rim having an aperture through which such inlet-tube protrudes toward the wheel-axis, a standard rigid with the rim at said aperture, adapted to afford lateral support to the inlet-tube, a metallic terminal for the inlet-tube, and suitable means for binding the latter rigidly to the standard, said terminal being adapted to receive the nozzle of the inflating-pump, substantially as set forth.

6. In combination with the rim and the inflatable tire seated therein, the tire having an inlet-tube and the rim having an aperture through which said tube protrudes, the inlet-tube-supporting standard rigid with the rim, and the lever hinged to said standard, provided with a button projecting from its inner side, substantially as and for the purpose set forth.

7. In combination with the rim, the inflatable tire seated therein, the tire having an inlet-tube and the rim having an aperture through which said inlet-tube protrudes, the lever hinged to the standard, and the button screwed into the lever near its pivot and adapted to compress the inlet-tube, whereby it is adjustable to vary the extent to which it protrudes toward the inlet-tube, substantially as set forth.

8. In combination with the rim, the inflatable tire seated therein, the tire having an inlet-tube and the rim having an aperture through which said tube protrudes, the inlet-tube-supporting standard, and the lever pivoted thereto, provided with a button screwed through it and having its outer end provided with means for turning it to adjust it in and out, substantially as set forth.

9. In combination with the rim, the inflatable tire seated therein and having an inlet-tube, the rim being provided with an aperture through which said tube protrudes, the inlet-tube-supporting standard, the lever pivoted thereto having a button adapted to compress the tube, the standard being laterally recessed to admit the free end of the lever, and a ring adapted to encircle the end of the lever and hold the latter in position to compress the tube, substantially as set forth.

10. In combination with the rim, the inflatable tire seated therein having an elastically-compressible inlet-tube, the rim being provided with an aperture through which said tube protrudes, the inlet-tube-supporting standard, the lever pivoted thereto and provided with an inwardly-extending projection which is adapted to compress the tube, a ring which is adapted to encircle the standard and the end of the lever when the latter is rocked over to position to compress the tube, the lever having the tooth *c*, and the ring having the aperture *k*, adapted to receive said tooth, whereby the elastic reaction of the compressible tube serves to force the tooth on the lever into engagement with the aperture in the ring, substantially as set forth.

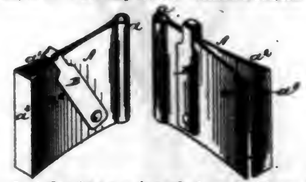
11. In combination with the rim, the inflatable tire seated therein, the tire having an inlet-tube and the rim having an aperture through which said tube protrudes, the inlet-tube supporting standard, the lever pivoted thereto and provided with an inward projection adapted to compress the tube, and the cap-ring K, adapted to fit over the end of the standard and close its end aperture and lap over the end of the lever to lock it in position to compress the tube, substantially as set forth.

12. In combination with the rim, an inflatable tire seated therein, the tire having an elastically-compressible inlet-tube, the inlet-tube-supporting standard, a lever pivoted thereto and having a projection adapted to protrude into the standard to compress the inlet-tube when the free end of the lever is rocked toward the standard, a cap-ring K, adapted to cover the end of the standard and lap over the end of the lever, the lever being provided with a tooth *c* and the cap being provided with an aperture *k*, adapted to receive the tooth, whereby the elastic reaction of the inlet-tube serves to cause engagement of the tooth in the aperture, and thereby lock the cap onto the standard, substantially as set forth.

13. In combination with the rim, an inflatable tire seated therein having an elastically-compressible inlet-tube, the inlet-tube-supporting standard, the lever pivoted thereto having an inward projection adapted to compress the tube when the lever is rocked toward the standard, the cap-ring K, adapted to cover the end of the standard and close its aperture, having the tongue K', adapted to lap over the end of the lever, the lever having the tooth *c*, and the tongue provided with the aperture *k*, adapted to receive the tooth, substantially as and for the purpose set forth.

14. In combination with the inlet-tube, its nipple, and the pump-nozzle adapted to be screwed together, the pump-nozzle being longitudinally ribbed or corrugated, substantially as set forth.

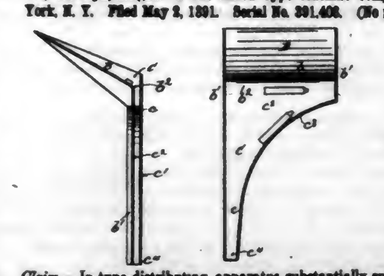
477,008. SLUG FOR TYPE-CONTAINING CHANNELS. LOUIS K. JOHNSON, Brooklyn, assignor to The Alden Type Machine Company, New York, N. Y. Filed May 2, 1891. Serial No. 391,402. (No model.)



Claim.—1. A slug for type-channels, formed with one or more expansible sides and provided with a contractor, substantially in the manner and for the purpose described.

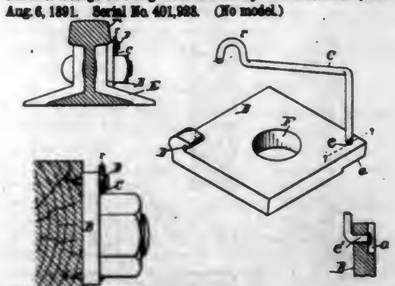
2. A slug formed of a single piece of spring metal, combined with a contractor, substantially in the manner and for the purpose described.

477,009. TYPE-DISTRIBUTING APPARATUS. LOUIS K. JOHNSON, Brooklyn, assignor to The Alden Type Machine Company, New York, N. Y. Filed May 2, 1891. Serial No. 391,403. (No model.)



Claim.—In type-distributing apparatus substantially such as described, a type-receiver consisting of a wide inclined receiving-plate and a converging type conduit arranged at an obtuse angle thereto, the lower edge of said receiving-plate at its juncture with the conduit being substantially horizontal, for the purpose and substantially in the manner described.

477,010. NUT-LOCK. JOHN B. JOHN, Chicago, Ill., assignor of two-thirds to George M. Illingworth and Henry L. Carroll, same place. Filed Aug. 6, 1891. Serial No. 401,928. (No model.)

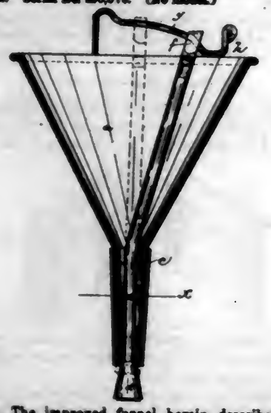


Claim.—1. In a nut-lock, the combination, with a bolt and nut, of a washer provided with the central aperture F, catch D, and lugs *i*, the spring locking-lever C, pivotally attached thereto at a point diametrically opposite said catch and bent to conform to and engage two contiguous facets of a nut between the point of pivoting and the free end thereof, substantially as shown and specified.

2. In a nut-lock, the combination, with a bolt and nut, of a washer provided with the central aperture F and catch D, the spring

locking-lever C, pivotally attached thereto at a point diametrically opposite said catch and best to conform to and engage two contiguous facets of a nut between the point of pivoting and the free end thereof, substantially as shown and specified.

477,011. FUNNEL. LOUIS KIECKHEFER, Poughkeepsie, N. Y. Filed Feb. 6, 1892. Serial No. 420,573. (No model.)



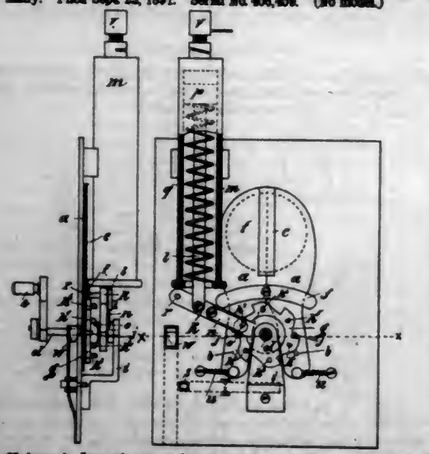
Claim.—1. The improved funnel herein described, combining therein the funnel-like body, a packing secured around the smaller end, a tube extending through the interior of the funnel and at the smaller end of the funnel provided with a valve and at the larger end with a hook, and an inclined bearing for the hooked end, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

2. The combination, with the funnel, of a vent-tube provided at its lower end with a valve to close the funnel and at its upper end with a hook to engage an incline on the edge of said funnel, substantially as set forth.

3. The combination, with the funnel having at the edge thereof an incline *g* and stop *h*, of a vent-tube provided with a valve *d* and a bearing at its upper end to engage said incline.

4. In combination with the funnel having an incline *g* and stop *h*, a vent-tube bent, as indicated, and provided with a valve at one end and a bearing to engage the incline at the other, the said tube-bearing being adapted to be forced up the incline to draw the valve *d* into close relation to the funnel and the said bent tube to be turned pivotally by such movement, substantially as set forth.

477,012. CAMERA-SHUTTER. LOUIS M. KORDS, Munich, Germany. Filed Sept. 23, 1891. Serial No. 406,406. (No model.)



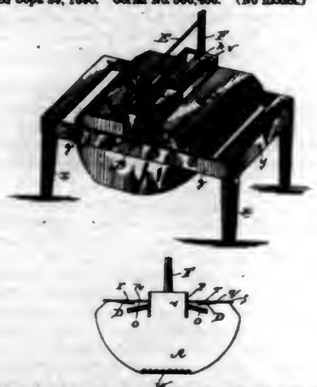
Claim.—1. In a photograph-camera shutter, the combination of the spring-closed pivoted plates having pins *j*, the rotary toothed disk *g*, having pins *h'* *h²*, &c., a spring-operated lever *k*, having spring-pin *o* and the pin *r* on the end of the lever, and the spring-catch S, the whole operating substantially as set forth.

2. In a photograph-camera shutter, the combination of the spring-closed pivoted plates *a*, having pins *j*, the shaft *d*, the toothed disk *g*, having pins *h'* *h²*, &c., mounted on said shaft, a spring-operated lever K, rigidly secured to shaft *d* and carrying a spring-controlled pin *o*, which co-operates with the pins *h'* *h²*, &c., a cushioning device connecting with lever *k*, pin *r* on the end of said lever, and spring-catch S, substantially as set forth.

3. In a photograph-camera shutter, the combination of the spring-closed pivoted plates *a*, having pins *j*, the shaft *d*, the toothed disk *g*, having pins *h'* *h²*, &c., mounted on said shaft, a spring-operated lever K, rigidly secured to shaft *d* and carrying a spring-controlled pin *o*, which co-operates with the pins *h'* *h²*, &c., a cushioning device connecting with lever *k*, pin *r* on the end of said lever, and spring-catch S, substantially as set forth.

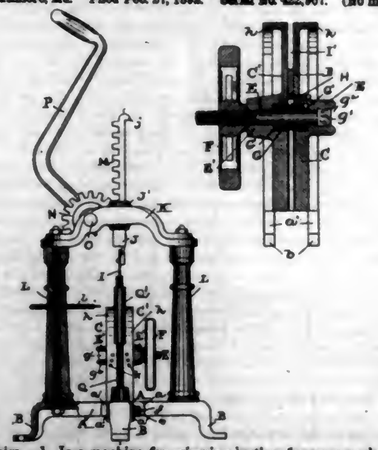
4. In a photograph-camera shutter, the combination of the pivoted plates *a*, having pins *j*, the springs *u* to normally close said plates, the shaft *d*, the toothed disk *g*, having pins *h'* *h²*, &c., loosely mounted on said shaft, the lever *k*, rigidly secured to the shaft, the spring *n* and pin *o*, carried by the lever, the cylinder M, having valve V, the spring *q* and piston *p*, moving in said cylinder, the rod *l*, connecting the piston and lever *k*, the pin *r* on the end of the lever, and catches W and S, the whole operating substantially as set forth.

477,013. WASHING-MACHINE. CHARLES F. LANE, Tulare, Cal. Filed Sept. 29, 1890. Serial No. 366,496. (No model.)



Claim.—In an improved washing-machine, the combination, with a suds-box having a corrugated bottom, of the end covering-pieces provided with air-vents, the valves arranged upon the under sides of said end pieces beneath the air-vents, the removable lid arranged between the end pieces, the inclined shelves arranged beneath each end piece, the supporting-frame, and the gudgeons attached to the suds-box, all arranged substantially as shown and described.

477,014. CRIMPING-MACHINE FOR CRUPPERS. HUGO LEUBE, Baltimore, Md. Filed Feb. 27, 1892. Serial No. 422,967. (No model.)

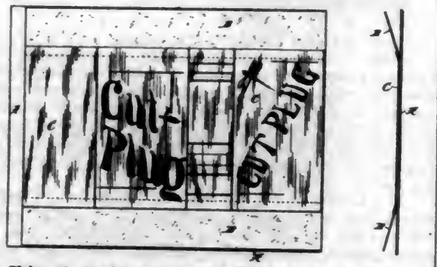


Claim.—1. In a machine for crimping leather for crupper-docks, the combination of a bed-piece having projections from two opposite side edges, a crimping-plate resting on said bed-piece and rigidly secured thereto, another crimping-plate loosely resting on said bed-piece and having downward-extending portions fitting against the side edges thereof, elastic blocks between said downward-extending portions and the projections from the bed-piece, means for adjusting said loosely-mounted plate at different distances from the stationary plate, an interposed plate comprising a base for the channel formed between the two crimping-plates, and a plunger to enter between the said two crimping-plates, in the manner and for the purpose described.

2. In a machine for crimping leather for crupper-docks, the combination of a pair of crimping-plates standing vertically side by side on a suitable base with a space between them and adjustable to different distances apart, each of said plates having a laterally-extending flat top surface and holes or sockets therein, an interposed plate comprising the base of the channel formed between the two crimping-plates, gage-pins projecting from the flat top surfaces of the crimping-plates and fitting in the sockets in the latter and adjustable to different positions therein for the purpose of holding the leather in the proper position, and a plunger to enter between the crimping-plates, in the manner and for the purpose described.

3. In a machine for crimping leather for crupper-docks, the combination of a pair of crimping-plates standing vertically side by side on a suitable base with a space between them and adjustable to different distances apart, each of said plates having a laterally-extending flat top surface and holes or sockets therein, an interposed plate comprising the base of the channel formed between the two crimping-plates, gage-pins projecting from the flat top surfaces of the crimping-plates and fitting in the sockets in the latter and adjustable to different positions therein for the purpose of holding the leather in the proper place, a suitable upright on one side of the crimping-plates, an adjustable gage-pin fitting transversely through said upright and arranged to center the leather at its middle part, and a plunger to enter between the crimping-plates, in the manner and for the purpose described.

477,015. TOBACCO WRAPPER AND PACKAGE. THOMAS J. MALONEY, Jersey City, N. J. Filed Mar. 19, 1892. Serial No. 425,512. (No model.)

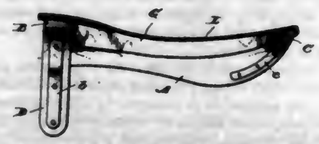


Claim.—1. A tobacco-wrapper consisting of a sheet of paper or other suitable material having at its opposite edges loose strips of foil secured to the wrapper at their inner edges, substantially as described.

2. A tobacco-wrapper consisting of a sheet of paper or other suitable material having at its opposite edges loose strips of foil secured to the wrapper at their inner edges, and a label secured to the body of the wrapper and overlapping the edges of the foil, substantially as described.

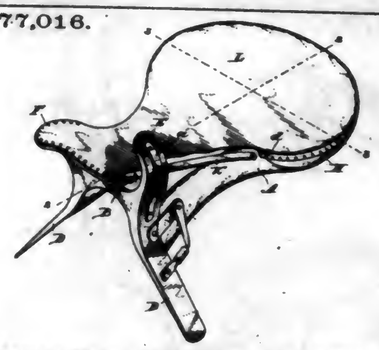
3. A tobacco-package having a covering consisting of a wrapper of paper or other suitable material, loose strips of foil folded over the ends and overlapping the sides of the package and secured at their inner edges to the wrapper, and a label covering the sides of the package and overlapping the foil at each end, substantially as described.

477,016. RIDING-SADDLE. WILLIAM J. MORAN and MICHAEL J. MORAN, Covington, Ky. Filed Aug. 28, 1891. Serial No. 403,956. (No model.)



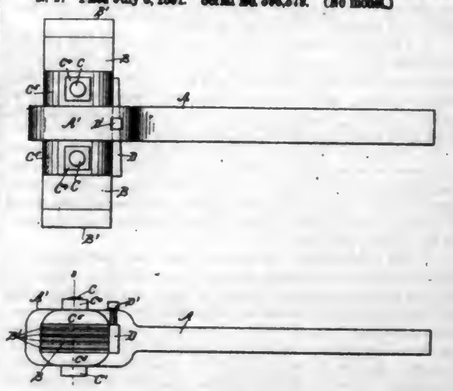
Claim.—A side-saddle comprising the cross-head B and side bars A A, forming the tree, the strip G upon the off one of said bars, the short strip H upon the near one and having its rear end located at or near the cantle end of said bar, the strip K, of suitable material, extending from the front end of strip H to the cross-head, the said strips

477,016.



constructed to support a cover or seat L, and the said cover, substantially as shown and described.

477,017. STONE-DRESSING HAMMER. GEORGE MCDONALD, Troy, N. Y. Filed July 3, 1891. Serial No. 398,379. (No model.)



Claim.—1. In a stone-hammer, a hammer-head composed of a plurality of blades severally beveled or sharpened at each end and detachably bound together by two screw-threaded bolts, each bolt passing through an elongated washer extending transversely across the outer blade on one side of the head through the several blades and secured to a similar washer or nut on the opposite side of the head, substantially as set forth.

2. In a stone-hammer, the combination of a handle having an eye at one end, blades situated in said eye and having bolt-holes suitably located, washers abutting against each edge of each side wall of the eye and resting on the blades, and screw-bolts passing through each pair of washers and through the blades, whereby said blades are bolted together and to the washers and the latter are held solidly against each edge of each side wall of the eye, substantially as set forth.

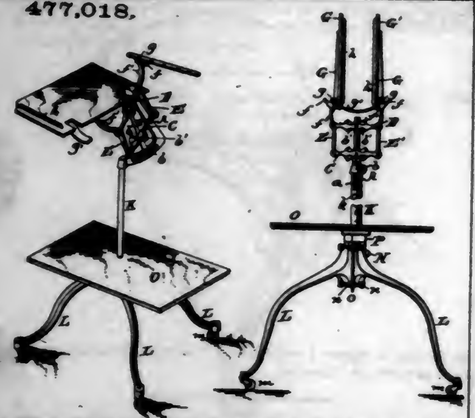
477,018. BOOK-SUPPORT. DONALD H. MCPHERSON, Le Roy, N. Y. Filed Aug. 28, 1891. Serial No. 403,996. (No model.)

Claim.—1. In a book-support, the combination, with a base or support, of an angular frame provided with a depending stud or pin, a depending bar attached to said frame, cross-bars carried by said depending bar, links connecting the ends of said bars, and carrying-plates connected to said links, substantially as described.

2. In a book-support, the combination of the angular frame adapted to be secured on a suitable base or standard, a depending bar pivoted at its upper end to said angular frame, a thumb-screw fitted in a segmental slot in the lower member of the angular frame and in the depending bar, cross-bars pivotally connected to the depending bar, links connecting said cross-bars, and carrying-plates pivotally connected to said links, substantially as described.

3. The combination of the angular frame adapted to be mounted on a base or standard and having a segmental slot formed in its lower side, the depending bar pivotally connected at its upper end to said frame, the bearing-plates carried by said bar, the set-screw for connecting the depending bar and the lower member of the angular frame, the cross-bars pivoted on the depending bar and contacting with the

477,018.



bearing-plates, the members connecting the outer ends of said cross-bars, and the carrying arms or plates pivotally connected to the upper ends of said members, substantially as described.

4. A support or stand having the inner faces of its legs grooved or recessed near their upper ends to form a socket for a standard and having the ears or lugs projecting on opposite sides and pivots connecting adjoining lugs or ears on the legs, one of said pivots being removable, whereby the legs can all be turned on the pivots, so as to lie in the same plane, substantially as shown and described.

5. A support or standard having the inner faces of its legs grooved or recessed to form a socket and having the projections or lugs on opposite sides thereof, the lugs on opposite sides being in different horizontal planes, whereby the lugs on adjacent legs overlap, and pivots connecting such overlapping lugs, substantially as shown and described, for the purpose specified.

6. The combination of the angular frame, the depending bar pivotally connected to said frame, the thumb-screw fitted in a segmental slot in the lower member of the angular frame and in the depending bar, the cross-bars pivoted on said depending bar, the members connecting the outer ends of the cross-bars, said members being curved outward slightly from a point above the upper cross-bar, the projecting lug or studs on said members near the upper ends thereof, the supporting-arms pivotally connected to the upper ends of said members, the carrying-plates secured on said supporting-arms, and the straps connecting said plates, substantially as shown and described.

477,019. BUTTER-CUTTER. CONRAD NEHRBADT, Dayton, Ohio. Filed Dec. 28, 1891. Serial No. 416,294. (No model.)



Claim.—In a butter-cutter, a handle divided longitudinally in two halves attached to each other, each half having a crescent-shaped groove adapted to receive a steel-wire bow having each of its extremities provided with a notch and a perforation above said notch, in combination with a wire cutter having its extremities inserted in said perforations and notches and bent in the manner herein shown and described.

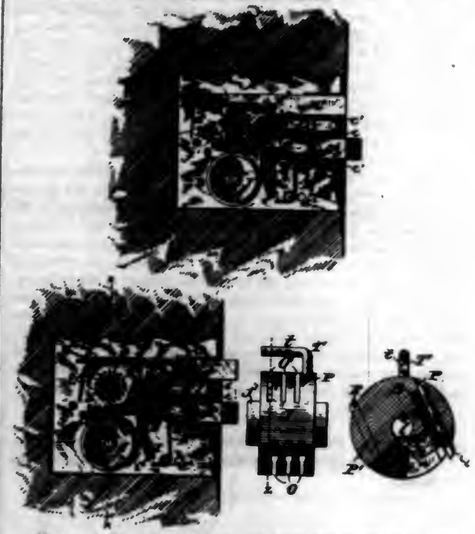
477,020. NUT-LOCKING WASHER. PATRICK HOLAN, Birmingham, Ala. Filed July 7, 1890. Serial No. 357,966. (No model.)



Claim.—1. A nut-lock comprising a ring or washer having a sharp-edged ridge upon its opposite faces, the one upon one side being located around the outer edge or periphery of the ring and the one upon the other side being located around the inner edge, whereby the inner ridge is forced inward toward the center of the ring by the pressure of the nut, substantially as described.

2. A nut-lock comprising a spiral spring or washer, each face of which is provided with a sharp-edged ridge, the one upon one face being located around the outer edge and the other one being located around the inner edge, substantially as described.

477,021. CYLINDER-LOCK. JOHN B. PRIOR, Wollaston, Mass. Filed Mar. 30, 1892. Serial No. 427,107. (No model.)



Claim.—1. In a combined lock and latch, the combination, with a bolt and a latch, of an independent knob-spindle normally disconnected from the latch, a detent in engagement with the bolt, means movable with the latch and adapted to be engaged with the knob-spindle, and a key-actuated turning plug or barrel adapted to free the detent from the latch and adjust the latch-retracting means into engagement with the operating-spindle, substantially as and for the purpose described.

2. In a combined lock and latch, the combination of a spring-propelled bolt, two independent detents arranged to engage respectively with said bolt when it is retracted and projected, a latch, an operating-spindle therefor, and a key-actuated turning plug or barrel adapted to release one detent from the bolt prior to retracting the same and to release the other detent when the bolt is projected, as and for the purpose described.

3. In a combined lock and latch, the combination, with an operating-spindle and a bolt, of a latch having means normally disconnected from said spindle and a turning plug or barrel for adjusting the latch-retracting means into engagement with the operating-spindle, as and for the purpose described.

4. In a combined lock and latch, the combination of an operating-spindle, a latch having retracting means normally disconnected from the operating-spindle, an independent locking-bolt arranged to be retracted by the latch, and a key-operating turning plug or barrel for connecting the latch-retracting means to the operating-spindle, substantially as described.

5. In a combined lock and latch, the combination of an operating-spindle, a latch, a removable retracting-bar connected to said latch and having means to engage with the operating-spindle, a spring-projected bolt having a projection in the path of the latch to withdraw the bolt as the latch is retracted, a detent for the bolt, and a key-actuated turning-plug arranged to release the bolt-detent and move the latch-retracting bar into engagement with the operating-spindle, substantially as described.

6. In a combined lock and latch, the combination of an operating-spindle, a latch having retracting means disconnected from said spindle, a bolt adapted to be retracted by inward movement of the latch, two independent detents for respectively holding the bolt in its projected and retracted positions, and a key-actuated turning-plug arranged to release the two bolt-detents and adjust the latch-retracting means into engagement with the operating-spindle, as and for the purpose described.

7. In a combined lock and latch, the combination of an operating-spindle having a hub provided with projections, a latch, a retracting-bar pivoted to the latch and having means adapted to be adjusted into engagement with the projections on said spindle-hub, a key-actuated plug having a piece moving therewith to elevate the latch-retracting bar, and a locking-bolt, substantially as described.

8. In a combined lock and latch, the combination of a spring-projected locking-bolt, a gravity-detent adapted to engage said bolt when it is projected, a spring-controlled detent to engage the bolt when retracted, a key-actuated plug having a moving part to release both detents from the bolt, and a latch and its operating-spindle, substantially as described.

9. In a combined lock and latch, the combination of an operating-spindle, a latch, a key-actuated turning plug or barrel having a moving detent-releasing piece, a retracting gravity-bar pivoted to the latch and arranged in the path of the releasing-piece to be elevated thereby into engagement with the spindle, a locking-bolt in the path of the latch-retracting-bar, and the independent bolt-detents, both arranged in the path of the releasing-piece on the turning barrel or plug, substantially as described.

10. The combination, with a fixed cylinder, of an axially-turning plug having the tangential passages and the radial slots opening into said passages and a central key-passage, the endwise movable plungers fitted in said passages, and the tumblers connected to said plungers and projecting into the key-passage, substantially as and for the purpose described.

11. The combination, with a fixed cylinder, of an axially-turning plug or barrel fitted therein and having the intersecting passages and slots, the pivoted tumblers arranged in the slots and each having one end extending into the key-passage, the plungers fitted in the tangential passages and having one end of the tumblers connected thereto, and the springs bearing on said tumblers, substantially as described.

12. The combination, with a fixed recessed cylinder or shell, of a radially-slotted and longitudinally-perforated plug or barrel, the endwise-movable plungers fitted in tangential passages near the periphery of said plug, the pivoted angular tumblers, each having one arm connected to a plunger and its other arm arranged in the key passage or way, and a spring bearing on each tumbler between its fulcrum and the point of connection of the tumbler to the plunger, substantially as described.

477,022. CUT-OFF VALVE. GIDEON V. PUTNAM, Gloversville, N. Y. Filed Oct. 24, 1891. Serial No. 409,705. (No model.)

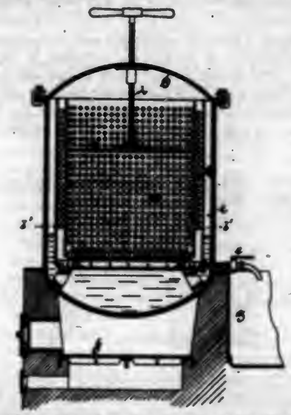


Claim.—1. In combination with the main valve steam-chest of an engine, a cut-off-valve chest receiving the live steam and provided with steam-ports communicating with said steam-chest, throttling-slides seated movably toward and from each other within the cut-off-valve chest and provided with steam-ports and bridges at their adjacent ends, rods extending from the throttling-slides, a centrally-pivoted lever connected at opposite ends to said rods to regulate the throttling, and a cut-off valve placed movably over the ports of the throttling-slides and actuated by the motion of the engine, as set forth.

2. In combination with the main-valve steam-chest of an engine, a cut-off-valve chest of cylindrical form receiving the live steam and having in its side steam-ports communicating with the main steam-chest, two cylindrical throttling-slides in said cut-off-valve chest and of the same or nearly the same diameter and provided each with a steam-port in its side and with a bridge at its inner end, two rods extending, respectively, from the two throttling-slides through one end and the same end of the cut-off-valve chest, a centrally-pivoted lever connected at opposite ends to the said rods to move the slides simultaneously in opposite directions, a governor actuating said lever, a cylindrical slide-valve located in the throttling-slides and provided in its side with a port of about the same width as the bridge between the ports of the cut-off-valve chest, and a rod extending from said valve through the end of said chest and receiving reciprocating motion from the engine, as set forth.

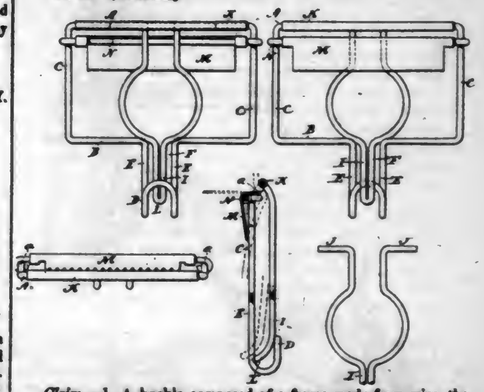
3. The combination of the cut-off-valve chest A of cylindrical form and provided with the ports *a a* and circumferential grooves *r r*, the cylindrical throttling-slides *b b*, having perforated heads, and the valve *f*, having perforated diaphragms *s s*, substantially as described and shown.

477,023. APPARATUS FOR MELTING TALLOW, WAX, &c. ADOLF SEIFFERT, Frankenstein, Germany. Filed Feb. 4, 1891. Serial No. 380,300. (No model.)



Claim.—The combination of an inner perforated boiler *a* with an intermediate boiler *b*, that is perforated on top, but solid at the bottom, an outer solid boiler *c*, a heat-generator, a discharge-pipe *e*, and a piston within the inner boiler, substantially as specified.

477,024. BUCKLE. DWIGHT I. SMITH, Waterbury, Conn., assignor of one-half to Earl A. Smith, same place. Filed Feb. 8, 1892. Serial No. 420,702. (No model.)



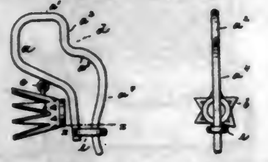
Claim.—1. A buckle composed of a frame made from wire, the wire bent to form the lower side B, with its depending hook projecting therefrom, the two ends C C and the ends of the wire turned inward to form parts G G of the upper side A, but so as to leave a space between the said two parts G G, combined with a guard, also made from wire, doubled to form the hook-tongue I, the two branches of the wire forming the guard extending upward and turned horizontally and so as to stand in the space between the two ends of the wire on the upper side of the frame, a sleeve around the said inwardly-projecting ends of the frame and the projecting ends of the guard, the bar N, longitudinally across the frame, secured to the two ends of the frame near and parallel to the upper side of the frame, and a metal lever hung upon said bar, the upper edge of the lever turned forward and adapted to engage the suspender between the upper side of the frame and the edge of the jaw, substantially as described.

2. A buckle consisting of a frame made from wire, the ends of the frame bent forward so as to bring the upper side of the frame into a plane forward of the plane of the frame, a cross-bar longitudinally across the frame, secured to the two ends of the frame substantially at the said bends, and a sheet-metal lever hung upon said cross-bar, the upper edge of the lever turned forward and adapted to engage the suspender between the upper side of the frame and the edge of the jaw, substantially as described.

3. A buckle consisting of a frame made from wire bent to form the lower side B, with a depending hook therefrom, the two ends C C, the ends of the wire turned inward to form portions G G of the upper side, but so as to leave a space H between the said turned-in ends, the

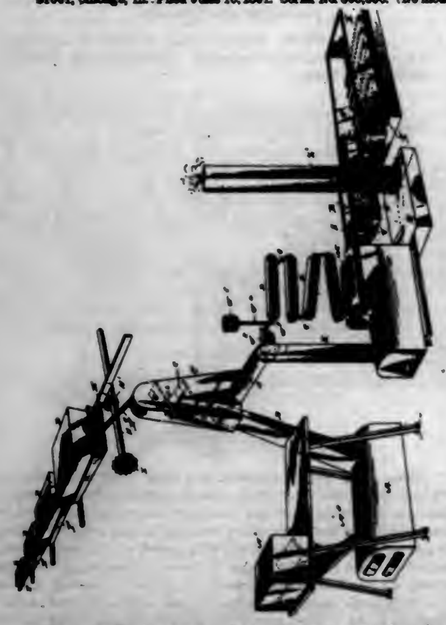
ends C C of the frame bent near the upper side and so as to bring the said turned-in ends G into a plane forward of the plane of the frame, a guard made from wire doubled to form a tongue for the hook and extending upward, the two ends of the wire turned horizontally, corresponding to and so as to stand in the space H between the two ends G G of the frame, a sleeve K around the said turned-in ends G G and the horizontal portions of the guard, a cross-bar N, attached to the two ends of the frame near the upper side and parallel therewith, and a sheet-metal lever hung upon the said bar, its upper edge turned forward and adapted to grasp the suspender between the upper side of the frame and the edge of the jaw, substantially as described.

477,025. EAR-RING. MARCUS STERN, New York, N. Y. Filed Sept. 25, 1891. Serial No. 406,329. (No model.)



Claim.—An ear-wire having a shoulder *d*, a rearwardly-extending section d^2 back of the shoulder, a substantially-parallel front section, and a suspending-loop *e*, secured to such front section, as set forth.

477,026. APPARATUS FOR TREATING ORES. WILLIAM H. B. STOUT, Chicago, Ill. Filed June 10, 1891. Serial No. 395,830. (No model.)



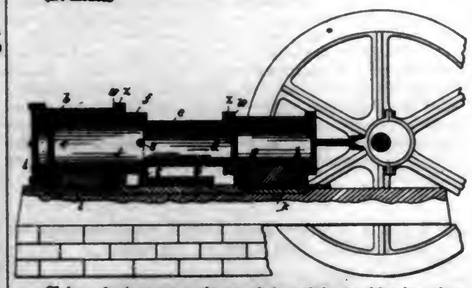
Claim.—1. The mechanism for treating ores, consisting of a series of connected crushers D, roaster C, connected with said crushers by the pipe F and having the inclined plates C', receiver J^3, connected with said roaster by the tunnel J, the series of connected pulverizers L, connected with the receiver J^3 by the pipe J^3 and by pipe J^4 with the tank J^5, the amalgamators M, connected with the pulverizers L and the sluice W and located in the top of the drum N, and drum N, connected with the compartments Z and by the pipe K with the tunnel J, substantially as shown and described, and for the purposes set forth.

2. The mechanism for treating ores, consisting of a series of connected crushers D, each having an inclined bottom F^6 and a grate F', provided with an elastic cushion F^8 and a cam-actuated hammer, roaster C, connected with said crushers by the pipe E, receiver J^3, connected with said roaster by the tunnel J, the series of connected pulverizers L, connected with the receiver J^3 by the pipe J^3 and by pipe J^4 with the tank J^5, the amalgamators M, connected with the pulverizers L and sluice W and located in the top of the drum N, and drum N, connected with the compartments Z and by the pipe K with the tunnel J, substantially as shown and described, and for the purposes set forth.

3. The mechanism for treating ores, consisting of a series of connected crushers D, roaster C, connected with said crushers by the pipe F, receiver J^3 connected with said roaster by the tunnel J, the series of connected pulverizers L, each consisting of a casing L^3, and the revolving grated cylinder L', having the roller L^2, resting loosely therein, said pulverizers connected by the pipe J^3 with the said receiver, pipe J^4, connected with the tank J^5, the amalgamators M, connected with the pulverizers L and the sluice W and located in top of the drum N, and drum N, connected with the compartments Z and by the pipe K with tunnel J, substantially as shown and described, and for the purposes set forth.

4. The mechanism for treating ores, consisting of a series of connected crushers D, roaster C, connected with said crusher by the pipe F, receiver J^3, connected with the said roaster by the tunnel J, the series of connected pulverizers L, connected with the receiver J^3 by the pipe J^3 and by pipe J^4 with the tank J^5, the amalgamators M, each consisting of a cylinder and having the revolving cylinder M', provided with the spring-abutted paddles M^3, said amalgamators connected with the pulverizers L and sluice W and located in the top of the drum N, and drum N, connected with the compartment Z and by the pipe K with the tunnel J, substantially as shown and described, and for the purposes set forth.

477,027. DIVIDED-CYLINDER STEAM-ENGINE. THOMAS THATCHER, Elizabethport, N. J. Filed Feb. 6, 1892. Serial No. 420,561. (No model.)



Claim.—1. A steam-engine consisting of the combination of two cylinders whose extended axes coincide and relatively the one double the cross-section of the other and closed at those ends farthest from each other by suitable plates bolted thereto, plungers fitting in the remaining ends and rigidly connected together, a steam-chest having ports leading to the farther ends of the said cylinders, a pipe connecting the port going to the larger cylinder with that end of the smaller cylinder which is nearest the larger cylinder, a pipe *q'*, connecting with that port which leads to the larger cylinder, an exhaust-pipe leading from the steam-chest, and a valve controlling the steam and for causing it to exhaust from the smaller to the larger cylinder and from the latter to the atmosphere, the said valve being connected to an eccentric-rod.

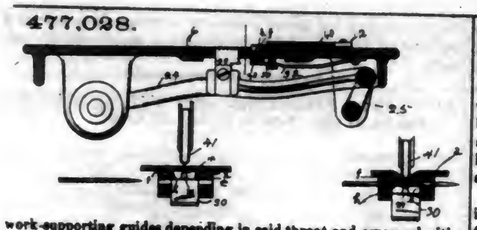
2. In a steam-engine, the combination of a larger and smaller cylinder whose axes coincide, plungers movable therein and connected together and of such length *in toto* that it extends approximately from center to center of the said cylinders, and means for exhausting the steam from the smaller cylinder to the larger, and a supplementary pipe *q*, connecting that end of the cylinder which is nearest the other cylinder to that end of the other cylinder which is farthest from the first cylinder.

3. In a steam-engine, the combination of two cylinders whose extended axes coincide, concentric cylinders fitting movably therein, hollow and closed at one end of each, the remaining ends being connected together, and corresponding pairs of said cylinders being of such diameters that the cross-sectional areas are as one to two, a guide *t*, projecting downward from the larger inner cylinder and located between guides *u*, running parallel to and below the said first-named cylinders, and packing-boxes surrounding the said inner cylinders at ends of the outer or first-named cylinders.

477,028. SEWING-MACHINE FOR FINISHING BUTTONHOLE-PIECES. ROBERT W. THOMSON and ROBERT M. PHELPS, Lynn, Mass., assignors to the Head Method Finishing Machine Company, Nashua, N. H. Filed July 2, 1888. Serial No. 278,826. (No model.)

Claim.—1. In a machine for finishing buttonhole-pieces, the following instrumentalities in combination, viz: an eye-pointed thread-carrying needle, complemental stitch-forming devices, and devices to actuate the same, a bed or cloth plate provided with a slot or throat, work-supporting guides depending in said throat and arranged with a space between them for receiving the material, a reciprocating former or work-bender to bend the material between the work-supporting guides and below the needle-path, co-operating devices to lift said material above the needle-path to enable the needle at one thrust to enter and pass out from the material disposed between said work-supporting guides at the same side and between the right face of the material and the stay-cord and thrum ends, the needle at another thrust passing the material outside the stay-cord and thrum ends and making a stitch to cross and hold the stay-cord and thrum ends in place, and an adjustable stop disposed in said throat to limit the movement of the material below the needle path.

477,028.



2. In a machine for finishing buttonhole-pieces, the following instrumentalities in combination, viz: an eye-pointed thread-carrying needle, complemental stitch-forming devices, and devices to actuate the same, a bed or cloth plate provided with a slot or throat, work-supporting guides depending in said throat and arranged with a space between them for receiving the material, a reciprocating former or work-bender to bend the material between the work-supporting guides and below the needle-path, co-operating devices to lift said material above the needle-path to enable the needle at one thrust to enter and pass out from the material disposed between said work-supporting guides at the same side and between the right face of the material and the stay-cord and thrum ends, the needle at another thrust passing the material outside the stay-cord and thrum ends and making a stitch to cross and hold the stay-cord and thrum ends in place, and an adjustable stop disposed in said throat to limit the movement of the material below the needle path.

3. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides arranged with a space between them for receiving the material and movable for enlarging or contracting said space, a former supported to permit movement toward and from the needle-path, and operating means to depress the former upon the material in order to bend the material between the work-supporting guides and below the needle-path, substantially as described.

4. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides arranged with a space between them for receiving the material, a former supported to permit movement from and toward the needle-path, and operating means to depress the former upon the material in order to bend the material between the work-supporting guides and below the needle-path, said work-supporting guides being movable toward and from each other and also toward and from the needle-path for straining and sharpening the bend of the material, substantially as described.

5. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides adjustable to and from each other and arranged with a space between them for receiving the material, a former supported to permit movement toward and from the needle-path, and operating means to depress the former upon the material in order to bend the material between the work-supporting guides and below the needle-path, substantially as described.

6. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating needle, spring-supported guides arranged with a space between them for receiving the material and movable for enlarging and contracting said space, a former supported to permit movement from and toward the needle-path, and operating means including a spring interposed between said former and its actuator to depress the former upon the material in order to bend the material between the guides and below the needle-path, substantially as described.

7. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, a grooved throat-plate having in its walls an opening, through which said needle is made to operate, work-supporting guides independent of the throat-plate groove for supporting the material in the throat-plate groove arranged with a space between them for receiving the material, a former supported to permit movement toward and from the needle-path, and operating means to depress the former upon the material in order to bend the material between the work-supporting guides and below the needle-path, substantially as described.

8. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides for supporting the material above the needle-path arranged with a space between them for receiving the material, a former supported to permit movement from and toward the needle-path, and operating means to depress the former upon the material in order to bend the material between the work-supporting guides and below the needle-path, and a co-operating work-support to act upon and support the material below the needle-path and adjustable toward and from the needle-path, substantially as described.

9. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides for supporting the material above the plane of the needle-path arranged with a space between them for receiving the material, a former supported to permit movement from and toward the needle-path, and operating means to depress the former upon the material in order to bend the material between the said guides and below the needle-path, and a co-operating work-support to act upon and support the material below the plane of the needle-path, said lower support being recessed, as described, to receive the bar-cord and thrum ends of a buttonhole-piece, substantially as described.

10. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides for supporting the material above the plane of the needle-path arranged with a space between them for receiving the material, a former supported to permit movement from and toward the needle-path, and operating means to depress the former upon the material in order to bend the material between the said guides and below the needle-path, and a co-operating spring-supported work-support to act upon and support the material below the plane of the needle-path and movable from a point below to a point above the needle-path in order to lift and support the material above the needle-path, substantially as described.

11. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides for supporting the material above the plane of the needle-path arranged with a space between them for receiving the material, a former supported to permit movement from and toward the needle-path, and operating means to depress the former upon the material in order to bend the material between the said guides and below the needle-path to thereby enable a stitch to be made through the bent material and to lift and support the former above the plane of the needle-path during the formation of the next stitch, and independent lift mechanism to lift and support the material above the plane of the needle-path during the formation of said next stitch to thereby enable said stitch to be taken outside of the material, substantially as described.

12. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, work-supporting guides arranged with a space between them for receiving the material, a former supported to permit movement toward and from the needle-path, a lever connected with said former, and operating means to move said lever in order to lift and depress the former, substantially as described.

13. In combination, a sewing-machine stitch-forming mechanism including an eye-pointed thread-carrying needle, the guides *c h*, and their spring-levers *a f*, a former supported to permit movement from and toward the needle-path, and operating means to depress the former upon the material in order to bend the material between said guides and below the needle-path, substantially as described.

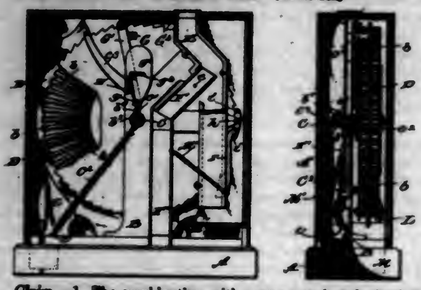
14. In combination, a sewing-machine stitch-forming mechanism including a reciprocating perforating-needle, the described work-supporting guides and former and thrum-comb, composed of pileated fibrous material, substantially as described.

15. A pileated thrum comb or gatherer to gather or arrange during a relative movement of the buttonhole-piece and comb the loose thrums and stay-cord along the under side of a buttonhole-piece in position to be bound or secured thereto, combined with means to effect said relative movement and with devices to bind or secure the said thrums and stay-cord while so gathered or positioned to the under side of said buttonhole-piece without changing or affecting the face side thereof.

16. In a machine of the character described, the former 41, the supporting-rod 40, operating-lever extension 44, collar 46, and coil-spring 45, combined with a collar on the rod 40 to stop the downward movement thereof and stitch-forming mechanism including a reciprocating perforating-needle and throat-groove, substantially as described.

17. A thrum comb or gatherer comprising a mass of upstanding projections or spires to gather or arrange during a relative movement of the buttonhole-piece and comb the loose thrums and stay-cord along the under side of the buttonhole-piece in position to be bound or secured thereto, combined with means to effect said relative movement and with devices to bind or secure said thrums and stay-cord while so gathered or positioned to the under side of said buttonhole-piece without changing or affecting the right or face side thereof.

477,029. AUTOMATIC VENDING-MACHINE. RICHARD W. UHLIG, College Point, N. Y., assignor to Seth R. Beckwith, East Orange, N. J. Filed June 28, 1891. Serial No. 397,052. (No model.)



Claim.—1. The combination, with a rotary pocketed wheel and a delivery-chute beneath the same, of curved guides upon their adjacent lower edges with integral vertical projections *d*, serving as guides at the delivery-chute, and a horizontally-movable slide upon one of said guides, and formed with a longitudinal slot and a shoulder at its inner end and adapted to move across the delivery-chute and to be guided and limited in its movement by one of said projections, and the means working in said slot, as set forth.

2. The combination, with the rotary pocketed wheel having notched periphery, of the coin-chute, the coin-chute lever pivoted thereon and at its lower end provided with an enlargement working through an opening in the chute and at its upper end carrying a pin to engage the notches of the wheel, and a pivoted horizontal arm for engagement with a projection of the said lever, as set forth.

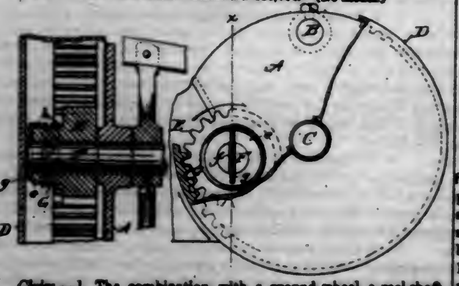
3. The combination, with the rotary pocketed wheel having notched periphery, of the coin-chute, the coin-chute lever thereon, and at its lower end provided with an enlargement working through an opening in the chute and at its upper end carrying a pin to engage the notches of the wheel, and a pivoted horizontal arm for engagement with a projection of the said lever, said horizontal arm being pivoted to the chute working through a hollow therein with its inner end curved and its upper portion formed upon its under side with separated notches, as set forth.

4. The combination, with a rotary pocketed wheel having a stop on one face thereof and the standard having a curved slot, of a pivoted arm arranged to be moved by said stop and a rod connected with said arm and working through an opening in the coin-chute, as set forth.

5. In a vending-machine, the combination, with a rotary pocketed wheel with stop and coin-chute, of the movable arm working through an opening in the chute, a pivoted radially-arranged lever connected with said arm, a spring acting upon the lever, and a curved guide for the arm, substantially as shown and described.

6. In a vending-machine, the combination, with the rotary pocketed wheel provided with a stop and the coin-chute, of the standard, the arm pivoted thereto and carrying a pin working in a curved slot in the standard, a horizontal arm carried by the pivoted arm and arranged to close the entrance to the coin-chute when engaged by the stop upon the pocketed wheel, and a spring arranged to act upon the said pin and the pivot of the arm, as set forth.

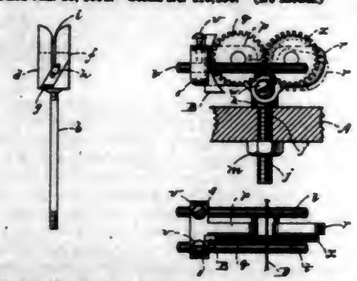
477,080. LAWN-MOWER CLUTCH. FRANK M. WATERS, Dayton, Ohio, assignor to The Farmers Friend Manufacturing Company, same place. Filed Jan. 2, 1892. Serial No. 416,780. (No model.)



Claim.—1. The combination, with a ground-wheel, a reel-shaft, and a pinion on the shaft meshing with the said ground-wheel, of a resilient coil wound upon a part of the pinion and fixedly connected with the reel-shaft.

2. The combination, with a lawn-mower, ground-wheel, and reel-shaft, and a pinion loosely mounted on said shaft and meshing with the ground-wheel and having a sleeve, of a resilient coil wound upon said sleeve of the pinion and fixedly engaged at one end with the reel-shaft.

477,081. YARN-CLEARER. JULIUS M. WEAVER, Ashland, Mass. Filed Jan. 25, 1892. Serial No. 419,126. (No model.)



Brief.—The gear *q* is journaled on the wing *p* and the gear *x* on the adjustable wing *r*. The two gears intermesh, and the yarn is drawn through the eye *s* formed thereby, whereby the yarn is cleared of obstructions. The plate *r* is adjustable by means of the screw *w* to adapt the device to different sizes of yarn. The key B allows the gears to rotate in one direction only.

Claim.—1. A yarn-clearer comprising a body or standard, and two intermeshing gears mounted thereon, the journal of one of said gears being adjustable, substantially as and for the purpose set forth.

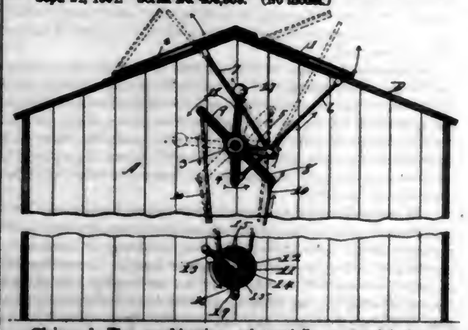
2. In a yarn-clearer, the combination of a body, a gear journaled thereon, a plate adjustable on said body, a companion gear journaled thereon, horizontal yarn-guides disposed on opposite sides of said gears, and a key for restricting the rotation of the gears in one direction, substantially as set forth.

3. In a yarn-clearer, a body provided with a wing, as *p*, and the gear *q*, journaled thereon, in combination with a pivoted wing *r*, mounted on said body, and the gear *x*, journaled on said wing, substantially as set forth.

4. In a yarn-clearer, a body provided with a wing, as *p*, and a gear *q*, journaled on said wing, in combination with the pivoted wing *r*, provided with the gear *x*, and the yarn-guides *t*, mounted on said body, substantially as set forth.

5. In a yarn-clearer, the body A, provided with a wing *p* and pivoted wing *r*, combined with the gears *q x*, journaled, respectively, on said wings, the horizontal yarn-guides *t*, mounted on the wing *p*, and the key B, arranged to restrict the movement of said gears, substantially as and for the purpose set forth.

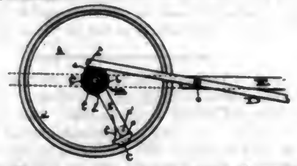
477,082. TRANSOM-LIFTER. HENRY WEBER, Chicago, Ill. Filed Sept. 21, 1891. Serial No. 406,339. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with the hinged ventilators of a building, of a rock-shaft supported in bearings on said building, crank-arms 4 and 5 upon said shaft, links 6 and 7, connected with said crank-arms 4 and 5 and with said ventilators, arms 8 and 9, secured to said shaft, gear connections between said arms 8 and 9 and a revoluble shaft 12, a perforated disk 14 upon said shaft 12, a bracket 19, having a pin 16 for engagement with said disk, and a crank 13 for turning said shaft 12, substantially as described.

2. The combination, substantially as hereinbefore set forth, with a hinged ventilator of a building, of a rock-shaft supported in bearings on said building, a crank-arm upon said shaft, a link connected with said crank-arm and with said ventilator, a counterbalance-weight upon an arm projecting from said shaft for counteracting the weight of said ventilators, said counterbalance-weight being so located that when the ventilator is closed said weight will stand to one side of the center of the shaft and upon the opposite side thereof in which it moves in opening and closing said ventilators, and devices for turning said shaft, substantially as described.

477,083. BICYCLE. STEPHEN WILSON, Philadelphia, assignor of one-half to Harry C. Conkle, Wayne, Pa. Filed July 7, 1891. Serial No. 398,730. (No model.)



Claim.—1. The combination of a circular shell provided with a rim, a rotary arm in said shell, a friction device carried by said arm and engaging with said rim in one direction of rotation of the arm, a spring for returning the latter to its initial position, a reciprocating lever, and a connection intermediate and secured to the latter and the arm, substantially as shown and described.

2. The combination of a circular shell provided with a rim having a conical inner face, a rotary arm in said shell, a friction device carried by said arm and having therein a conical groove, the latter and the groove coming into engagement in one direction of rotation of the arm, a spring for returning the latter to its initial position, a reciprocating lever, and a connection intermediate and secured to the latter and the arm, substantially as shown and described.

3. The combination of a circular shell provided with a rim, a rotary arm in said shell, a friction device carried by said arm and engaging with said rim in one direction of rotation of the arm, a reciprocating lever, and a spring-strap coiled around and secured to the hub of the arm and to said lever, substantially as shown and described.

4. The combination of a circular shell provided with a rim having a conical inner face, a rotary arm in said shell, a friction device carried by said arm and having therein a conical groove, said groove and rim coming into engagement in one direction of rotation of the arm, a reciprocating lever, and a spring-strap coiled around and secured to the hub of the arm and to said lever, substantially as shown and described.

5. The combination of a circular shell provided with a rim having a conical inner face, a rotary arm in said shell, a friction device carried by said arm, having therein a conical groove, said groove and rim coming into engagement in one direction of rotation of the arm, means for returning the latter to its initial position, and a spring for keeping said friction device in operative relation with the arm, substantially as shown and described.

6. The combination of a circular shell provided with a rim having a conical inner face, a rotary arm in said shell, a friction device carried by said arm and having therein a conical groove, said rim and groove coming into engagement in one direction of rotation of the arm, a reciprocating lever, a spring-strap coiled around and secured to the hub of the arm and to said lever, and a spring for keeping said friction device in operative relation with the rim, substantially as shown and described.

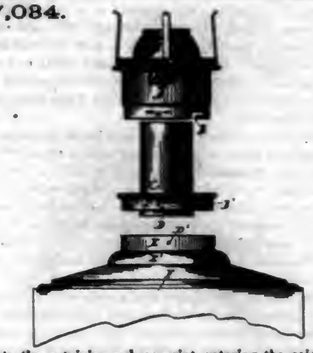
7. The combination of a circular shell provided with a rim, a rigid rotary arm in said shell, and a pivoted friction device carried by said arm, having its pivotal point intermediate its axis and rear end, said device being thereby adapted for frictional engagement with said rim upon the forward swing of the arm, substantially as shown and described.

8. The combination of a circular shell provided with a rim, a rigid rotary arm in said shell, a pivoted friction device carried by said arm, having its pivotal point intermediate its axis and rear end, said device being thereby adapted for frictional engagement with said rim upon the forward swing of the arm, a reciprocating lever, and a spring-strap coiled around and secured to the hub of the arm and to said lever, substantially as shown and described.

477,084. LAMP-BURNER. FRANK T. WILLIAMS, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Aug. 19, 1891. Serial No. 403,127. (No model.)

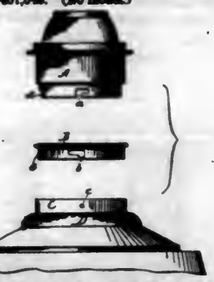
Claim.—In a lamp-burner, the combination, with a burner-socket having one or more double-ended bayonet-slots formed in its flange, of a burner-slip having one or more simple bayonet-slots formed in its flange, substantially as set forth, and whereby the turning of the burner-slip to disconnect it from the burner-socket will turn the same and change one end of its double-ended slot for the other end thereof with

477,084.



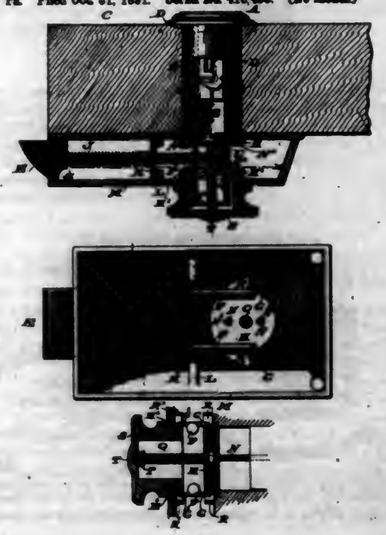
respect to the retaining nub or point entering the said slot from the lamp-fount, with which the burner-socket is thus coupled.

477,085. LAMP-BURNER. FRANK T. WILLIAMS, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Oct. 2, 1891. Serial No. 407,542. (No model.)



Claim.—In a lamp-burner, the combination, with a burner-socket having one or more bayonet-slots formed in its flange, of a burner-slip having one or more bayonet-slots formed in its flange and corresponding in location but extending in reverse direction from the slot or slots in the burner-socket, and one or more retaining-points extending inward from the neck of the lamp-fount and adapted in length to be engaged by both the burner-socket and the burner-slip through the slots thereof, and means for positively coupling the burner-socket and the burner-slip for rotation together, substantially as described.

477,086. CYLINDER LOCK. CHARLES D. WILLIAMS, Philadelphia, Pa. Filed Oct. 31, 1891. Serial No. 410,433. (No model.)

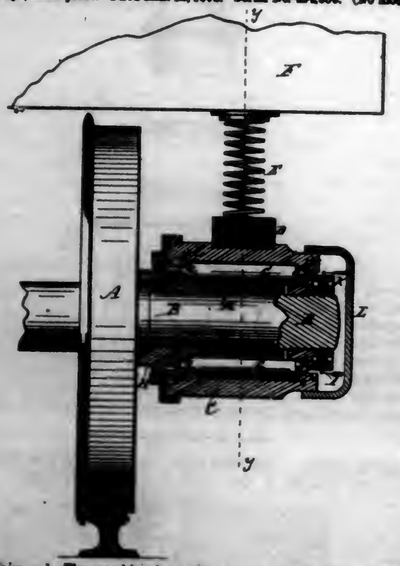


Claim.—1. A rotatable plate mounted in a casing and having shoulders thereon, a latch adapted to engage with said shoulders, movable rods passing through said plate, a cross-bar connecting the inner ends of said rods, a screw swiveled in said casing and engaging said cross-piece, and a lock having openings to freely receive the ends of the rods opposite from the cross-bar, said parts being combined substantially as described.

2. A latch having a rotatable plate mounted on the casing thereof, an annular plate secured to the knob of said latch, a frame which passes freely through the first-named plate into said knob, a lock in which said frame is adjustably fitted, and toes on the connecting-rods of the latch, said toes being in pairs which engage independently with shoulders on the said rotatable plates, whereby the latch may be operated by said knob or lock and the lock and latch adjustably connected relatively to the thickness of a door to which they are applied, the parts named being combined substantially as described.

3. A latch with an operating-knob, a plate within the casing, a rotatable lock, a frame passing through said plate and casing into the lock, a screw swiveled in said plate and working in the cross-bar of said frame, and a plate connected with the knob and having shoulders thereon, said latch having toes for engaging said first-mentioned plate and said knob-plate, said parts being combined substantially as described.

477,087. ANTI-FRICTION BEARING FOR CAR-AXLES. HENRY B. WILLIAMS, Rochester, N. Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed Mar. 12, 1892. Serial No. 424,639. (No model.)



Claim.—1. The combination, with the axle A and box C, of the sleeves H I on the axle, the sleeve I forming a nut, and the rollers G G, provided with conical ends *a a*, which rest on corresponding bevels *b b*^{1} *b*^{2}, as shown and described, and for the purpose specified.

2. The combination, with the axle and box, of the sleeves H I, the intermediate sleeve M, and the set of rollers G G, the rollers being provided with conical ends that rest between beveled ends of the box and sleeves, as and for the purpose specified.

477,088. BANK-NOTE. WILLIAM W. WOOD, Elmira, N. Y. Filed Nov. 23, 1891. Serial No. 412,780. (No model.)

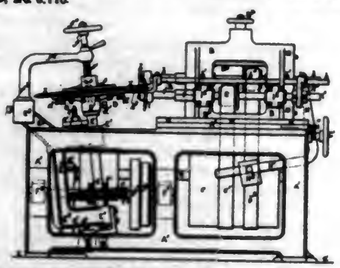


Claim.—1. As a new article of manufacture, the herein-described bank-note, having at its opposite extremities characters for representing the denomination arranged inversely one with the other, substantially as and for the purpose set forth.

2. As a new article of manufacture, the herein-described note, the same having at its opposite extremities characters for representing the name of the payer and payee, the characters at one extremity being arranged inversely to the characters at the opposite extremity, substantially as and for the purpose specified.

3. As a new article of manufacture, the herein-described bank-note, the same having at the opposite extremities of each of its opposite faces characters representing the denomination of the note, the name of the payer and payee, said characters at one extremity of one face being arranged inversely to the characters on the opposite extremity of said face, substantially as and for the purpose set forth.

477,089. MACHINE FOR TURNING OR SHAPING THE HEADS OF CASKS. SAMUEL WILSON, Glasgow, Scotland, assignor to himself, James Muir, and William Boyd, same place. Filed Apr. 21, 1890. Serial No. 348,887. (No model.) Patented in England Jan. 14, 1888, No. 613; in Germany May 8, 1888, No. 45,899; in France Aug. 24, 1888, No. 192,570; in Belgium Aug. 25, 1888, No. 83,000, and in Spain Jan. 2, 1889, No. 8,778.



Claim.—1. In a machine for turning or shaping the heads or ends of casks or other like articles, the combination of an oscillating head-carrying frame with a traversing head-stock consisting of an open rectangular frame B with horizontal and vertical slides B^2 B^3, carrying the bearings *b*^{2} *b*^{3} of the rotating and reciprocating spindles *b' b* of the adjustable saw *l* and planing or cutting knives *i i* and *b'*, as and for the purpose set forth.

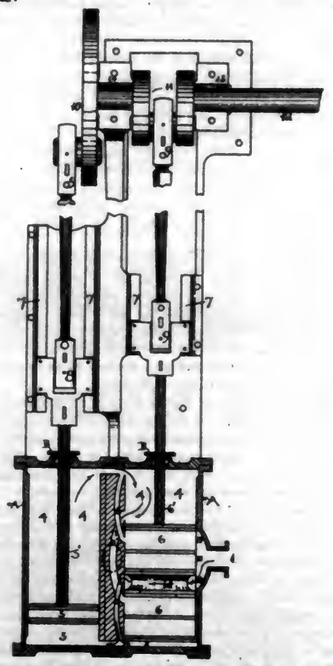
2. In a machine for turning or shaping the heads of casks, the combination of an adjustable head-stock carrying reciprocating rotating spindles, with cutters and saws mounted thereon, and with an oscillating frame provided with a rotating vertical spindle carrying at its upper end a retaining-disk to hold the head to be formed, whereby the head may be brought to the saws tangentially, substantially as set forth.

477,040. SCRAP-BOOK. FRANK BOWMAN, Brooklyn, N. Y. Filed Feb. 17, 1892. Serial No. 421,803. (No model.)



Claim.—As an improved article of manufacture, a scrap-book having bound in it permanent leaves *a* for the reception of the scraps and interposed supplemental leaves *b*, the latter saturated on both sides with paraffine or the like and weakened near the binding by a line of perforations *b'*, whereby the gummed surfaces will be prevented from adhering to the interposed leaves and these latter leaves rendered capable of removal, substantially as and for the purpose described.

477,041. VALVELESS ENGINE. HARRY BROUSSEAU and GILBERT PATTERSON, Newberry, Mich. Filed Oct. 17, 1891. Serial No. 408,688. (No model.)



Claim.—A valveless engine consisting of a cylinder having two cylinders connected at each end, provided with a live-steam port on its side and midway its length and each cylinder containing a piston, one an ordinary piston, the other, the piston next the live-steam port, occupying about two-thirds of the length of the cylinder and having its center smaller transversely opposite the live-steam port and having within the partition dividing the cylinder two live-steam passages 2' 2', opening into each end of the cylinders, and the exhaust-ports 4' in each end of the cylinder, whereby when steam is admitted it will be conveyed through the small piston to the live-steam passage 2' to end of cylinder, forcing pistons backward or forward, as the case may be, said pistons connected to individual cranks, the piston-rod for the valve-piston being shorter than the other, the valve-piston traveling about one-third the distance of the other, substantially as described, and as and for the purpose set forth.

477,042. SEAT AND LUGGAGE-CARRIER ATTACHMENT FOR BICYCLES. WASHINGTON I. CALVER, Hagerstown, Md., assignor of one-half to A. W. Miller, same place. Filed Jan. 11, 1892. Serial No. 417,704. (No model.)

Claim.—1. A seat attachment for bicycles, consisting of a frame-work constructed from a single piece of metal with rearwardly-extending arms for attachment to the post of the front fork of a bicycle, said frame-work being provided with a seat-holding and foot-rest portion consisting of a piece of bent wire having eyes engaged with loops of the seat attachment and having depending portions provided with foot-rests.

2. The combination, with the frame C, provided with rearwardly-extending arms *c'* for connection with the post of the front fork of the bicycle and with loops *c*^{2}, of the seat-holding foot-rest frame having a horizontal portion engaged with the said loops *c*^{2} and provided with depending arms *c'*, having vertically-adjustable foot rests *c*^{3}.

3. A seat attachment for a bicycle, consisting of a wire frame-work C, provided at its front lower portion with a foot-rest frame adapted

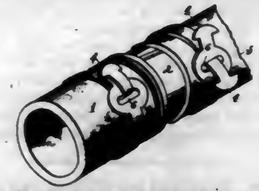
477,042.



to be turned up, and thus serve as a support for a luggage-carrier or for packages to be sustained by said seat attachment.

4. The combination, with the frame C, consisting of a single piece of metal and provided with rearwardly-extending arms for engagement with the post of the front fork of a bicycle, of a foot-rest frame consisting of a horizontal portion *d* and depending arms *d'*, said arms being provided with suitable foot-rests.

477,048. DEVICE FOR SECURING HOSE TO COUPLINGS. LEGLON L. CHADBOURNE and EDWARD A. BERRINGER, Brooklyn, N. Y., and HENRY J. MCCOY, Orange, N. J. Filed Feb. 2, 1892. Serial No. 420,121. (No model.)



Claim.—1. The herein-described device for clamping hose and the like to couplings, consisting of a metallic strip or band having a shouldered head at each end and an aperture or slot for the passage of one of said heads, substantially as set forth.

2. The combination, with a flexible hose and a hollow metallic coupling, of the metallic fastening-band having headed ends and an aperture near one end, said band being passed around the hose, and one of the headed ends passed through said slot and bent upon the other end, substantially as described.

477,044. TRUSS. CHARLES COLVIN, Bearstown, Ill., assignor of one-third to Henry C. Myer, same place. Filed Feb. 2, 1892. Serial No. 420,107. (No model.)

Claim.—1. In a truss, the combination, with the belt or band having fastening straps or buckles, a perineal strap, and a buckle at the back of the band for engaging therewith, of the pad consisting of the circular pieces, one of which is provided with a circular opening, secured together near their peripheries and to the band, forming a pocket, the leather disk secured to said pocket and band, having intersecting slits at right angles to each other, the spring-actuated plate intermediate of the disk and pocket, and means for pressing said band against the body, substantially as described.

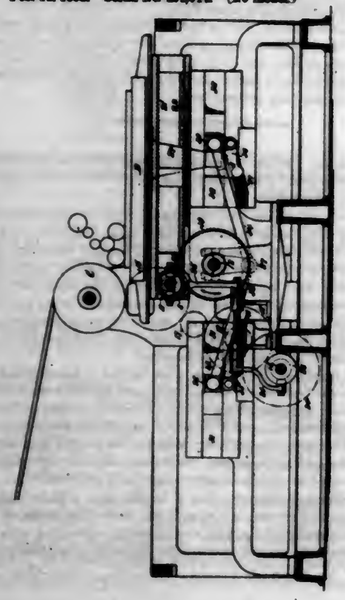
2. In a truss, the combination, with the belt or band having fastening straps and buckles, a perineal strap, and a buckle at the back of the band for engaging therewith, of the pad consisting of the circular pieces connected together near their peripheries and to the band, forming a pocket to receive filling material, the leather disk secured to said pocket and band, having intersecting slits at right angles to each other, the metal plate intermediate of said pocket and disk, having outwardly-projecting pins and a central stud, a plate having inwardly-projecting tubes in which said pins work, and a central aperture for the passage of the stud, a coiled spring encircling said stud, and means for pressing the pad against the body, substantially as described.

477,044.



3. In a truss, the combination, with the belt or band having fastening straps and buckles, a perineal strap, and a buckle at the back of the band for engaging therewith, of the pad consisting of the circular pieces connected together near their peripheries and to the band, forming a pocket to receive a filling material, the leather disk secured to said pocket and band, having intersecting slits at right angles to each other, the metal plate intermediate of said pocket and disk, having outwardly-projecting pins and a central stud, a plate having inwardly-projecting tubes in which said pins work and a central passage for the passage of the stud, a coiled spring encircling said stud, a series of studs on the outer face of said last-mentioned plate, the loops connected with said studs, the fastening straps and buckle secured to the band and to the perineal strap, substantially as described.

477,045. BED-MOTION FOR CYLINDER PRINTING-MACHINES. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Feb. 18, 1892. Serial No. 421,914. (No model.)



Claim.—1. The combination, with the bed and a mechanism operating to drive it throughout the principal extent of its movement in either direction, of a controlling-arm moved to and fro, periodically engaged with the bed and operating to complete such movement and reverse the bed at the end of its run by rapidly retarding the same to a state of rest and then starting and accelerating its movement in the reverse direction, substantially as described.

2. The combination, with the bed and a mechanism operating to drive it throughout the principal extent of its movements of reciprocation, of controlling-arms moved to and fro, alternately engaged with the bed and operating to complete such movements at opposite ends of its run by rapidly retarding the same to a state of rest and then starting and accelerating its movement in the reverse direction, substantially as described.

3. The combination, with the moving bed, of a crank and a controlling-arm that is moved to and fro, automatically connected with the bed and disconnected therefrom and operates to slow down and arrest its movement in one direction and to start the same in the opposite direction, substantially as described.

4. The combination, with the reciprocating bed, of two crank-actuated controlling-arms that are automatically connected therewith and disconnected therefrom, one operating at each end of the run of the bed to slow down and arrest its movement in one direction and to start and accelerate the same in the opposite direction, substantially as described.

5. The combination, with the bed and a rack-and-pinion mechanism operating to drive it during the principal extent of its run in either direction, of a crank-actuated controlling-arm moved to and fro and periodically engaged with the bed while it is moving at its maximum speed and thereafter operating to slow down and arrest the same at the end of its run, then to start and accelerate it in the reverse direction and be disconnected from the bed when its maximum speed is again attained, substantially as described.

6. The combination, with the bed and a rack-and-pinion mechanism operating to drive it during the principal extent of its reciprocation, of two crank-actuated controlling-arms moved to and fro and periodically alternately engaged with the bed at each end of its run while it is moving at its maximum speed and thereafter operating to slow down and arrest the same and then to start and accelerate it in the reverse direction and be disconnected from the bed when its maximum speed is again attained, substantially as described.

7. The combination, with the bed and a rack-and-pinion mechanism operating to drive the bed during the principal extent only of its movement in either direction, of a crank-actuated controlling-arm moved to and fro, periodically engaged with and operating to rapidly diminish such movement of the bed, arrest the same, then start and accelerate its movement in the reverse direction, together with means acting to bring said controlling-arm into operative relation to the bed while the rack-and-pinion mechanism is becoming inoperative as the driver, substantially as described.

8. The combination, with the bed and a rack-and-pinion mechanism operating to drive the bed during the principal extent only of its reciprocation, of crank-actuated controlling-arms moved to and fro, periodically engaged with and operating to rapidly diminish such movement of the bed at each end of its run, arrest the same, then start and accelerate its movement in the reverse direction, together with means acting to bring said controlling-arms alternately into operative relation to the bed while its rack-and-pinion mechanism is becoming inoperative, substantially as described.

9. The combination, with the bed, a mechanism to drive it throughout the principal extent of its movement in either direction, and a controlling-arm periodically engaged with the bed and operating to complete such movement and reverse the bed at the end of its run by retarding, arresting, starting, and accelerating the same, of a locking device coupling said arm to the bed, substantially as described.

10. The combination, with the bed and a mechanism operating to drive it throughout the principal extent of its reciprocation, and controlling-arms periodically engaged with the bed and operating to complete such movement and reverse the bed at each end of its run by retarding, stopping, starting, and accelerating the same, of locking devices coupling said arms to the bed, substantially as described.

11. The combination, with a rack-and-pinion mechanism operating to drive the bed during the principal extent of its run, of a crank-actuated controlling-arm periodically engaged with the bed and operating to slow down and arrest the bed, then to start and accelerate it in the reverse direction, and a locking device for coupling said arm to the bed, substantially as described.

12. The combination, with a rack-and-pinion mechanism operating to drive the bed during the principal extent of its reciprocation, of two crank-actuated arms coacting with the bed to slow down, stop, start, and accelerate the same at each end of its run, and locking devices for coupling said arms to the bed, substantially as described.

13. The combination, with a driving-pinion and means for shifting the same laterally on a shaft mounted in fixed bearings and a bed-rack having two members that alternately engage opposite sides of said pinion, of a crank-actuated controlling-arm and means for engaging it with and disengaging it from the bed at the end of its run in one direction, substantially as described.

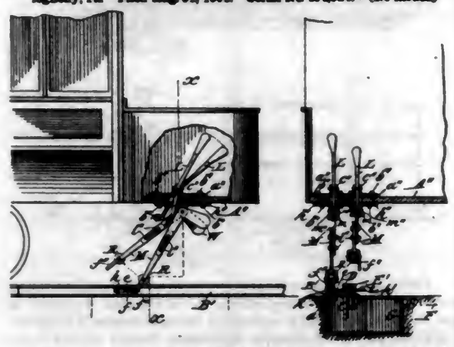
14. The combination, with a driving-pinion and means for shifting the same laterally on a shaft mounted in fixed bearings and a bed-rack having two members that alternately engage opposite sides of said pinion, of two crank-actuated controlling-arms and means for engaging one arm with and disengaging it from the bed at one end of its run and engaging and disengaging the other arm at the opposite end of the run of the bed, substantially as described.

15. The combination of the bed and its driving-rack whose members are separated vertically to suit the pitch-diameter of the driving-pinion with which they alternately engage, a driving-pinion whose axis is mounted in fixed bearings, means for shifting said pinion from the path of travel of one to that of the other member of said rack, and a driver with which said pinion remains constantly geared during all of its lateral movements, substantially as described.

16. The combination, with the moving bed and a crank-actuated controlling-arm that operates to slow down and arrest its movements in one direction and to start the same in the opposite direction, of a latch, as 36, and a cam, as 39, whereby said latch is automatically connected to the bed and disconnected therefrom, substantially as described.

17. The combination, with the reciprocating bed and two crank-actuated controlling-arms, one operating at each end of the run of the bed to slow down and arrest its movement in one direction and to start the same in the opposite direction, of latches 35 36 and cams 41 39, whereby said latches are automatically connected therewith and disconnected therefrom, substantially as described.

477,046. STREET-RAILWAY SWITCH. MARTIN A. CUTTER, Allegheny, Pa. Filed Aug. 31, 1891. Serial No. 404,237. (No model.)



Claim.—1. In a railway-switch, the combination of the switch-rail, the cams located on each side of the switch-rail and contacting with the same, the levers secured to the under side of the platform of a car, and the levers secured to the top side of the platform, substantially as described.

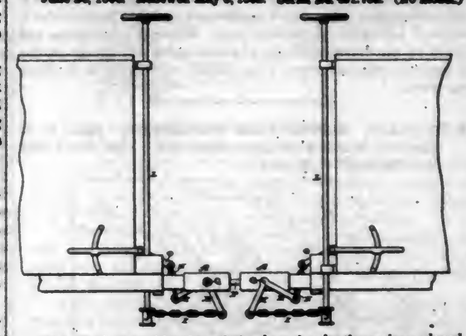
2. In a railway-switch, the combination of the switch-rail, the cams pivoted on each side of the switch-rail, with their cam-faces contacting with the same, the levers secured to the said cams, and the overbalanced levers secured to the platform of a car, substantially as described.

3. In a railway-switch, the combination of the switch-rail, the cams pivoted on each side of the switch-rail, with their cam-faces contacting with the same, and the overbalanced levers adjustably secured to the platform of a car, substantially as described.

4. In a railway-switch, the combination of a switch-rail, the cams pivoted on each side of the said rail and with their cam-faces contacting with the same, the levers projecting from the said cams, and the means for moving the said levers, consisting of the levers M M, pivoted to the under side of a platform of a car, and the levers L L, pivoted to the top of the platform and extending through the same, with their lower ends over the lower ends of the levers M M, substantially as described.

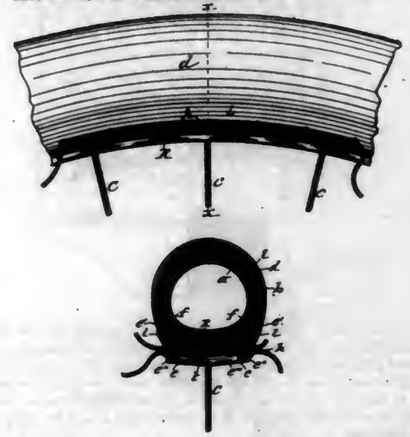
5. In a railway-switch, the combination of the switch-rail, the cams pivoted on each side of the said rail, with their cam-faces engaging with the same, the overbalanced levers pivoted on the top of the platform and extending down through the same, the overbalanced levers pivoted to the under side of the platform, the rollers, and the engaging fingers carried by the latter levers, substantially as described.

477,047. CAR-COUPLING. ISAAC DAVIS, Haden, Neb. Filed June 26, 1890. Renewed May 3, 1892. Serial No. 431,732. (No model.)



Claim.—The combination of the draw-heads, the springs placed therein, the cam placed between the springs, the operating-shaft which extends through the cam, the lever H, chains I N, shaft L, and lever O, substantially as set forth.

477,048. BICYCLE-TIRE. EDWARD G. DORSHEIMER, Geneva, N. Y. Filed Jan. 26, 1892. Serial No. 419,112. (No model.)



Claim.—1. A pneumatic tire formed of a rubber tube terminating with reversely-beveled end edges lapping onto each other and connected together and a canvas lining covering said tube and extending over the splice thereof and cemented thereto, as set forth.

2. The rim R, formed with perforated webs projecting inward therefrom, in combination with the rubber tube and the jacket covering said tube and having its longitudinal marginal portions reinforced in thickness and seated on the exterior of said webs, and lacings passing through the webs and fastening thereto the aforesaid marginal portions of the jacket, as set forth.

3. The rim R, formed with the perforated and fluted webs *c c*, in combination with the rubber tube *a*, the jacket *d*, having its longitudinal marginal portion seated in the flutings of the webs, lacings passing through the webs and fastening thereto the jacket, and the cushions *f f*, interposed between the jacket and air-tube at the outer edge of the rim, substantially as described and shown.

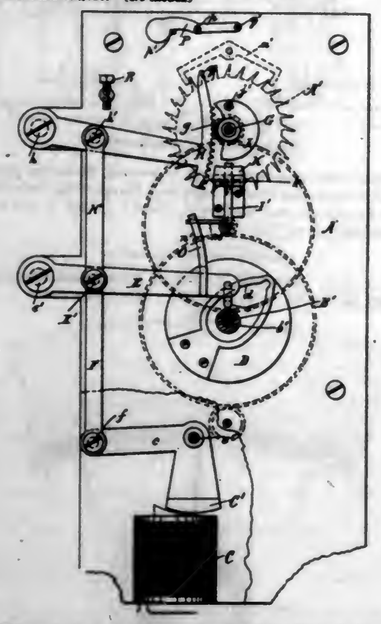
4. The rim R, formed with the perforated fluted webs *c c*, projecting inward from said rim, in combination with the rubber tube *a*, the jacket *d*, having its longitudinal edges reinforced in thickness, the canvas lining *l*, wrapped around and inclosing said edges of the jacket and seated with the same on the exterior of the aforesaid webs, eyelets secured in the jacket and its inclosing lining, and lacings passing through said eyelets and perforations of the webs *c c*, substantially as described and shown.

5. The rim R, composed of a sheet-metal band bent at opposite edges into the double flanges *d* and *d'*, and intervening webs *c c*, projecting inward from the rim, in combination with the rubber tube *a* and the jacket *d*, enveloping said tube and secured to the exteriors of the aforesaid webs of the rim, substantially as described and shown.

6. The rim R, composed of a sheet-metal band bent at opposite

edges into the double-folded flanges *d' d'*, intervening webs *e e*, projecting inward from the rim, and cross-tie *d''*, uniting the inner flanges *d'* and perforated in said webs, in combination with the rubber tube *a*, jacket *d*, having its longitudinal edges reinforced in thickness and seated on the exterior of the aforesaid webs, and lacings passing through the webs and edges of the jacket, substantially as described and shown.

477,049. ELECTRIC CLOCK-SYNCHRONIZER. JAMES W. DU LANEY and CHARLES F. DU LANEY, Canton, Ohio. Filed Sept. 4, 1891. Serial No. 404,733. (No model.)



Claim.—1. In a clock-synchronizer, the combination, with the cam-shaped loop operatively connected with the minute-hand, of the pivoted lever provided with a setting-pin engaging with the said loop, the electro-magnets, the pivoted bell-crank lever carrying the armature at one end, and the link connecting the other end of the said bell-crank lever with the aforesaid lever, substantially as and for the purpose set forth.

2. In a clock-synchronizer, the combination, with the electro-magnets and the pivoted toothed sector operatively connected with the armature of the said magnets, of the stationary sleeve encircling the shaft of the seconds-hand, the pinion journaled on the said sleeve and gearing into the said sector, and the revolvable sliding tube operatively connected with the said pinion and provided with a pin adapted to be thrust forward into the path of the seconds-hand, whereby the said hand may be set, substantially as set forth.

3. In a clock-synchronizer, the combination, with the electro-magnets and the pivoted toothed sector and the pivoted lever operatively connected together and to the armature of the said magnets, of the cam-shaped loop for setting the minute-hand, adapted to be operated by a pin projecting from the said lever, the stationary sleeve encircling the shaft of the seconds-hand, the pinion journaled on the said sleeve and gearing into the said sector, the revolvable sliding tube operatively connected with the said pinion and provided with a pin for setting the seconds-hand, and a lever operated by the minute-hand lever and adapted to thrust the said pin forward into the path of the seconds-hand, substantially as set forth.

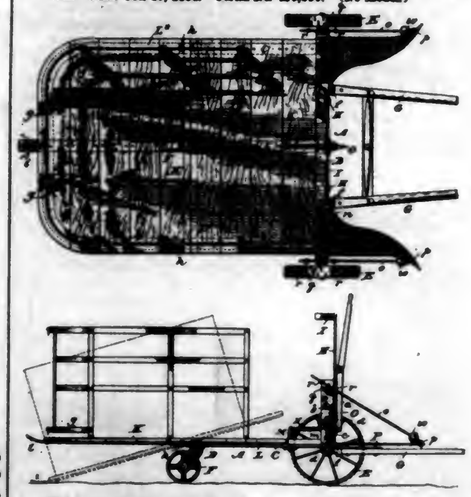
4. In a clock-synchronizer, the combination, with a stationary sleeve encircling the shaft of the seconds-hand, of a revolvable sliding tube journaled on the said sleeve and provided with a retractible spring-pressed pin adapted to set the hand and to be pushed back when pressed against the hand, substantially as set forth.

5. In a clock-synchronizer, the combination, with the pivoted toothed sector for setting the seconds-hand, of a pivoted trip-lever provided with a projecting pin and adapted to be raised by the said sector, whereby the said pin may be momentarily placed in front of the seconds-hand to prevent it from being carried past the setting-point, substantially as set forth.

6. In a clock-synchronizer, the combination, with the stationary sleeve encircling the shaft of the seconds-hand, of the driving-pinion provided with a pawl, the notched disk engaging with the said pawl, and the sliding tube provided with long pins sliding in holes in the said disk and a pin for setting the seconds-hand, the said pinion, disk, and tube being journaled on the said sleeve, substantially as and for the purpose set forth.

7. In a clock-synchronizer, the combination, with the stationary sleeve encircling the shafts of the seconds-hand, of the driving-pinion and the revolvable sliding tube operatively connected together and journaled on the said sleeve, the said tube being also provided with a pin for setting the seconds-hand, a toothed sector for revolving the said pinion and tube, a pivoted lever provided with pins engaging with a groove in the said tube, and the lever for setting the minute-hand, provided with an arm having an inclined slot adapted to engage with a pin on the said pivoted lever and to cause it to slide the tube upon the said sleeve, substantially as and for the purpose set forth.

477,050. CORN-HARVESTER. DARWIN H. GLIDDEN, Brooklyn, Wis. Filed Oct. 19, 1891. Serial No. 408,999. (No model.)



Claim.—1. In the herein-described corn-harvester, a main frame, hinges secured to said frame, cutting-knives attached at one end to said hinges, rods pivoted at one end to the outer extremity of the cutting-knifes and at the opposite end passing through a guide in the frame, and stops upon said rods for limiting their movement, substantially as described.

2. In a corn-harvester, a main axle provided with upturned ends, cutting-knives hinged to said main axle, rods secured at one end to the cutting-knives and at the other end movable in guides on the upturned ends of the axle, and stops upon said rods for limiting the movement of the knives, substantially as described.

3. In the herein-described corn-harvester, in combination with the main frame and the axle having upturned ends, hinges secured to said axle, cutting-knives attached at one end to said hinges, a rod pivoted at one end to the outer extremity of the cutting-knives and at the opposite end movable in guides on the axle-uprights, and means for limiting the movement of said rod, substantially as described.

4. The herein-described corn-harvester, in combination with the main frame and the axle provided with upturned ends, hinges secured to said axle, cutting-knives attached at one end to said hinges, a rod pivoted at one end to the outer extremity of the cutting-knives and at its opposite end movable in guides on the axle-uprights, and nuts on said rod for limiting its movement, substantially as described.

5. In the herein-described corn-harvester, in combination with the main frame and the axle having upturned ends, an eye secured to each of said upturned ends, hinges secured to said axle, cutting-knives attached at one end to said hinges, a rod pivoted at one end to the outer extremity of the cutting-knives and at the opposite end passing through the eye secured to the axle-uprights, and stops upon said rod for limiting its movement, substantially as described.

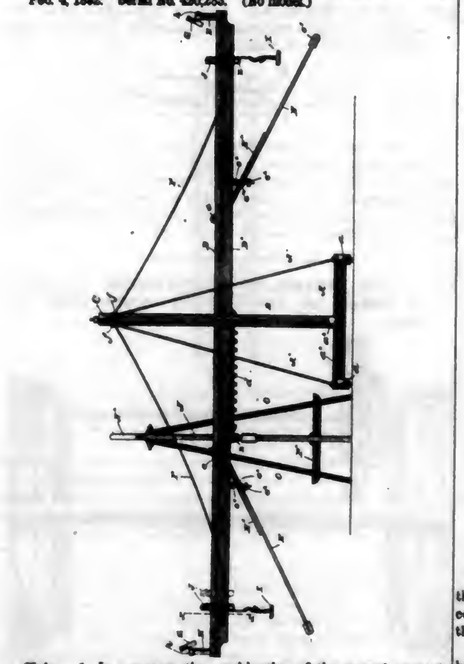
6. A corn-harvester comprising a suitable frame, an axle-bar forming part of said frame, vertically-swinging cutting-knives secured to said axle-bar, rods at one end secured to said knives and at the other end movable in guides on the axle-bar, and weights adjustable upon said rods for keeping the knives normally in a horizontal position, substantially as described.

477,051. FOLDING OR KNOCKDOWN BOX. JOSEPH GORDON and CHARLES R. PERKINS, Pioneer, Ohio. Filed Aug. 7, 1891. Serial No. 402,000. (No model.)



Claim.—In a knockdown or folding box, the combination of the bottom having end strips, the side strips having slots 16 in their upper edges and intersecting recesses 17, the supplemental end and side strips, the end and side pieces hinged thereto, the projecting pins on the end pieces, the cover having apertures for the passage of said pins, the end strips, the side strips having recesses 13, the hooks 14, connected with said side strips, and the staples 15 and 18, substantially as described.

477,052. SEESAW. CHARLES J. HATCH, Bayonne, N. J. Filed Feb. 4, 1892. Serial No. 420,283. (No model.)



Claim.—1. In a seesaw, the combination of the central support consisting of the base A, the uprights B B, the upper cross connecting-bar C, and the adjustable fulcrum T, which is supported in slots in the inner opposing faces of the uprights B B, the vibrating board D, and the foot-supporting frames provided thereon, consisting of the side bars J J and foot-supports K K, carried thereby, substantially as described.

2. The combination, with the board D and its support, of the foot-supporting frames consisting of the vertical side bars J J, connection L, foot-supports K K, carried by the lower ends of the bars J, and clamping-bolt M, substantially as described.

3. The combination, in seesaw apparatus, with the vibrating board thereof, of foot-supporting frames consisting of the side bars J J, connected by the upper rod L, said bars carrying at their lower ends the foot-supporting bars K K and the clamping-bolt M, and the hinged seat-backs G G, carried by the horizontal handle-ended bars A, mounted on uprights H, supported on the ends of the board D, substantially as described.

477,053. THILL-COUPLING. FRANKLIN B. HUNT, Washington, D. C., assignor of one-half to John T. Clements and George S. Chase, same place. Filed Jan. 25, 1892. Serial No. 419,188. (No model.)

477,053.



Claim.—1. A rubber cushion provided with a vertical circular recess and horizontal circular seats, substantially as described.

2. A key consisting of a shaft provided with a boss midway of its length and a finger-piece at one end, said boss being circularly eccentric and cut away circularly on one side of its periphery and toothed or notched on the opposite side, substantially as described.

3. The combination, with a recessed clip having circularly-recessed arms, of a rubber cushion having a vertical circular recess and horizontal seats, and a key provided with a boss and finger-piece, substantially as described.

4. The combination, with a recessed clip having circularly-recessed arms, of a rubber cushion having a vertical circular recess and horizontal seats, a key provided with a boss and finger-piece, and the spring in the recess of the clip, substantially as described.

477,054. TYPE-WRITING MACHINE. HARRY C. JOHNSON, Washington, D. C. Filed Aug. 22, 1889. Serial No. 321,570. (No model.)

Claim.—1. In a type-writer, a key-lever, and a key secured thereto having a movement independent of that of the key-lever, in combination with two types, and connections between the same and the key and the lever, substantially as described.

2. In a type-writer, the combination, with the type-bars and the key-lever having the usual movement whereby it may be depressed to actuate one of said type-bars, of the key arranged upon and having an independent sliding movement on said key-lever, and mechanism whereby said key may actuate a second type-bar, substantially as set forth.

3. In a type-writer, a key mounted and sliding upon a support, said key having secured thereto a key-rod, in combination with a type-bar provided with an actuating-rod, and a lever connecting said actuating-rod with the key-rod by a pin on said key-rod engaging a slot in said lever, substantially as described.

4. In a type-writer, the combination, with a key mounted and sliding upon a support, of the rod connected to said key and to a lever by a pin on said key-rod engaging a slot in said lever, said lever connecting with the type-bar-actuating rod, and a spring adapted to automatically return the said key to its normal position, substantially as described.

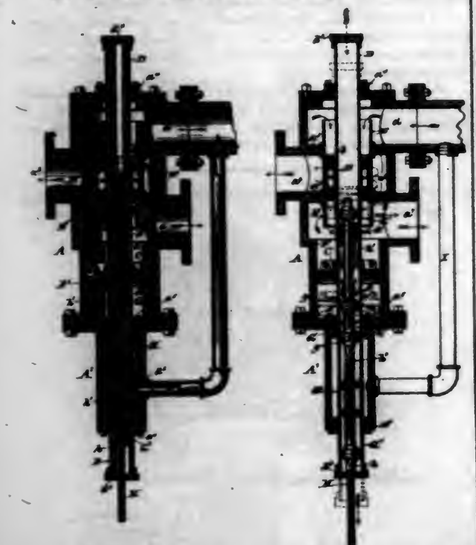
5. In a type-writer, the combination, with the key and its rod having a stud and the spacing-bar, of the spacing-bar-operating lever provided with a cam engaging said spacing-bar, said stud engaging said spacing-bar-operating lever, substantially as described.

6. In a type-writer, the combination, with the key, its rod, and means to actuate the type-bar, of the key-lever having in the upper corner edges of its sides undercut grooves forming a dovetail rib or

way which enters a correspondingly-shaped groove in the under side of said key and upon which the key slides, substantially as set forth.

7. In a type-writer, the combination, with the type-bars and the key-lever, having the usual movement whereby it may be depressed to actuate one of said type-bars, of the key arranged upon and having an independent sliding movement on said key-lever, mechanism whereby said key by its sliding movement may actuate a second type-bar, means for simultaneously actuating the spacing-bar, and a spring to return said key to its normal position, substantially as described.

477,055. ELEVATOR-VALVE. AUGUST KIECKHEFER and GEORGE CADMAN, Milwaukee, Wis.; said Cadman assignor to said Kieckhefer. Filed Jan. 5, 1891. Serial No. 376,700. (No model.)



Claim.—1. The combination of a cylinder having supply and exhaust ports and an intermediate port, a valve controlling communication between said ports, and an actuating-piston mounted upon a tubular rod which is provided on opposite sides of said piston with ports, one having a constant communication with the supply and the other with the exhaust, and an intermediate port in constant communication with a closed chamber on one side of said piston, and an auxiliary valve within said tubular rod controlling communication between either extreme port and the intermediate port therein, substantially as and for the purposes set forth.

2. The combination of a cylinder having supply and exhaust ports and an intermediate port, a chamber at one end of said cylinder having a supply connection, a valve controlling communication between either supply or exhaust port and the intermediate port, and an actuating-piston mounted upon a hollow rod having three ports, one opening into said cylinder in constant communication with the exhaust, one opening into said chamber in constant communication with the supply, and the intermediate port opening into the closed end of said cylinder on one side of said piston, and an auxiliary valve movable axially in said hollow rod and controlling communication between the port, opening into the closed end of the cylinder and either of the other ports in said rod, substantially as and for the purposes set forth.

3. The combination, with a cylinder having supply and exhaust ports and an intermediate port, of a chamber at one end of said cylinder having a supply connection, a tubular valve-rod extending from the cylinder into said chamber, a valve and an actuating-piston mounted upon said tubular rod, which has a port on each side of said piston opening into said cylinder and a port opening into said chamber, and an auxiliary valve within said tubular rod, which serves as a cylinder therefor, substantially as and for the purposes set forth.

4. The combination, with the main valve-cylinder having supply and exhaust ports, an intermediate port, and an extension beyond the exhaust-port, of a chamber at the end of the extension of said cylinder having a supply connection, the main valve and an actuating-piston of greater area than said valve mounted upon a tubular valve-rod which extends from said cylinder into said chamber and has ports on opposite sides of said piston opening into said cylinder and a port opening into said chamber, and an auxiliary valve within and movable lengthwise of said tubular rod, substantially as and for the purposes set forth.

5. The combination, with the main valve-cylinder having supply and exhaust ports and an intermediate port, of a smaller cylinder within the main cylinder communicating at the ends with said supply and exhaust ports and through lateral openings with said intermediate port, the main valve placed within the smaller cylinder, and an actuating-piston of larger area mounted upon a tubular rod which is movable lengthwise of the cylinder and provided with ports opening into the same on opposite sides of said piston, an auxiliary valve within and movable lengthwise of the tubular valve-rod, and a supply connection with said tubular rod, substantially as and for the purposes set forth.

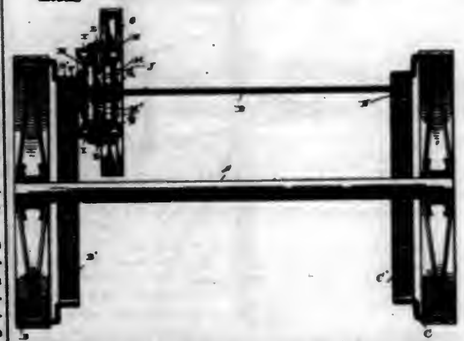
6. The combination, with the main valve-cylinder having suitable ports and a reciprocating valve controlling communication between said ports, of an actuating-piston by which said valve is moved, a tubular rod upon which said valve and piston are mounted, provided on opposite sides of said pistons with ports for supplying water to and discharging the same from said actuating-piston, a supply connection with said tubular rod, and an auxiliary valve movable within and lengthwise of said tubular rod, so as to control the ports therein, substantially as and for the purposes set forth.

477,056. BILLET-LOOP. EDGAR T. KIRKPATRICK, Adrian, Mo., assignor of one-half to Jotham Scudder, same place. Filed Dec. 15, 1891. Serial No. 415,161. (No model.)



Claim.—As an improved article, a billet attachment for harness and other straps, consisting of a rectangular box having a projection bent downwardly into a loop and then backwardly in an inclined direction underneath the box and extending to the opposite end thereof, forming a spring-arm to prevent accidental disengagement of the buckle or other connection, substantially as described.

477,057. GEARING FOR TRACTION-ENGINES. FLORENS KITTEN, Ferdinand, Ind. Filed Feb. 2, 1892. Serial No. 420,065. (No model.)



Claim.—1. In a gearing of the character described, the combination, with the wheel H and a peripheral flange thereon, of a cogged wheel on the outer side of the said flange and to one side of the flange center, for the purpose substantially as shown and described.

2. In a gearing of the character described, the combination, with the wheel H, of an outwardly-projecting hub thereon, for the purpose substantially as shown and described.

3. In a gearing of the character described, the combination, with the wheel H, the spokes formed therein, and a peripheral flange, of webs which connect the said spokes, the said webs, together with the peripheral flange, forming bearings for the pivotal bolts L, substantially as shown and described.

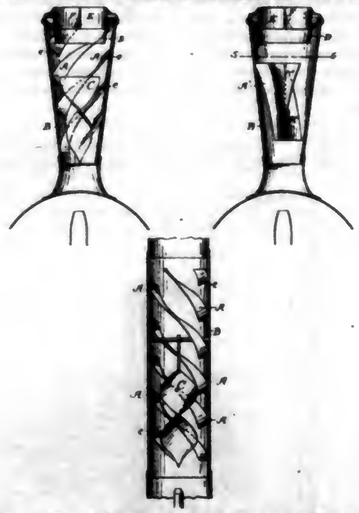
4. In a gearing of the character described, the combination, with the wheels E, H, and G, of a peripheral flange on the wheel H, the said flange being of greater width than the combined width of the said three wheels, for the purpose described.

5. In a gearing of the character described, the combination, with the shaft D and bevel-gear G, keyed thereto, of wheel H, loose on said shaft, a projecting hub made integral with said last-named wheel, bevel-wheel E, adapted to revolve on said hub, and pinion F, secured to said last-named gear, substantially as shown and described.

6. In a gearing of the character described, the combination, with the wheel H, the spokes therein, a peripheral flange, and webs which connect the said spokes, of pivotal headed bolts, which extend down through the said flange and webs to form pivots for the pinions N, the said bolts extending in a line with the center of the shaft D, upon which the wheel H is mounted, substantially as shown and described.

7. The combination, with an axle, drive-wheels mounted thereon, tires for the said wheels, and internal gear-wheels formed by bending the inner edges of the tires downward and inward, of a counter-shaft and gearing, of the form shown and described, mounted thereon, which engages the said gears formed by the wheel-tires, substantially as set forth.

477,058. SPARK-ARRESTER. CARL G. LUTEMAN, Altoona, Pa. Filed Feb. 23, 1892. Serial No. 422,536. (No model.) Patented in Sweden Mar. 26, 1889, No. 2,069, and in Finland Oct. 7, 1890, No. 367.



Claim.—1. The combination, in a spark-arrester, of the stack, a series of deflecting strips or plates A, secured at an angle to the walls of the stack and forming a helix, and a helical deflecting-plate centrally mounted within the stack and curved in the same direction as the helical deflecting-strips A, substantially as specified.

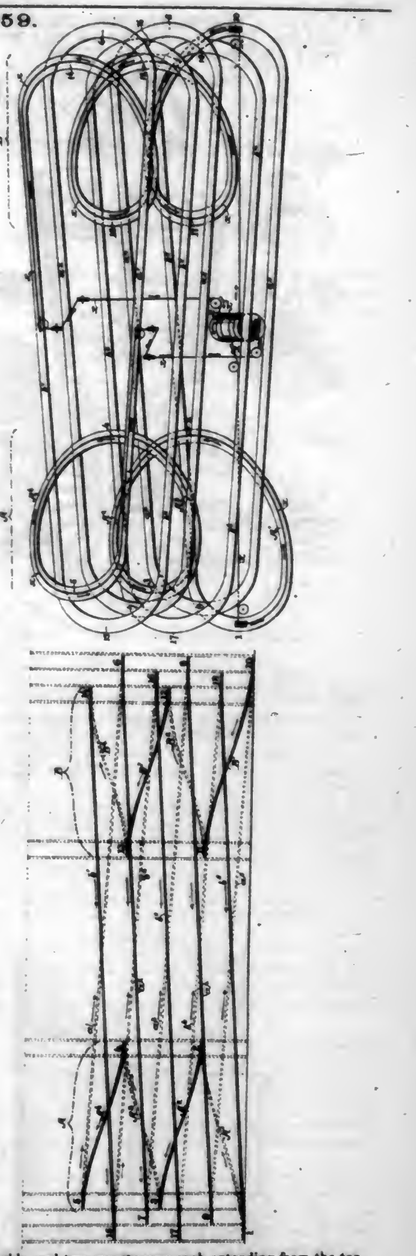
2. The combination, in a spark-arrester, of the stack, a series of strips or plates secured thereto and forming a helix, the lower ends of said strips being in a line substantially parallel with the length of the stack, and a central deflecting-plate centrally mounted within the stack, substantially as specified.

3. The combination of the stack, a series of helical deflecting-strips, a flange at the top of said stack projecting inwardly and forming with the walls of the stack a pocket, into which the sparks or cinders are directed, and a series of deflecting-blades at or at about the top of the stack, whereby the escaping gases are deflected into a vertical path, substantially as specified.

4. The combination, in a spark-arrester, of the stack, a series of deflecting strips or plates A, secured at an angle to the wall of the stack and forming a helix, a helical deflecting-plate mounted centrally within the stack and curved in the same direction as the helical deflecting-strips, and a flange at the top of the stack, said flange projecting inwardly and forming with the walls of the stack a pocket, into which the sparks or cinders are directed, substantially as specified.

477,059. GRAVITY-RAILWAY. JACOB B. MAXWELL, Middletown, Del. Filed Jan. 25, 1892. Serial No. 419,183. (No model.)

477,059.



Claim.—1. A gravity-railway having a continuous track comprising two oblong gravity-runs and two lifts, one at one end of the oblong structure and the other at the other end of the same, each of said lifts extending from the bottom of one gravity-run to the top of the other, substantially as specified.

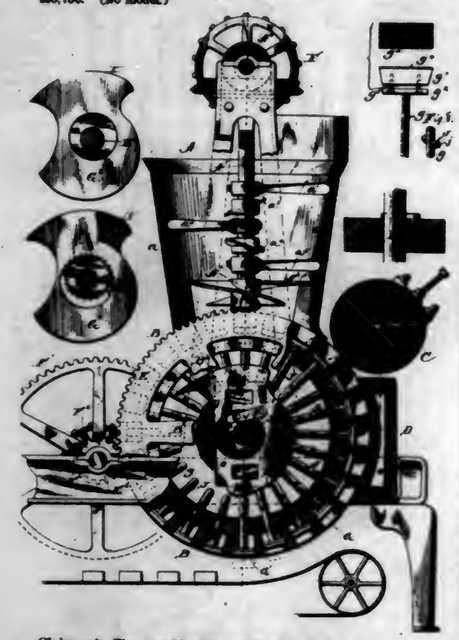
2. A gravity-railway having two oblong gravity-runs and two spiral lifts, one at one end of the oblong structure and the other at the other end of the same, each of said spiral lifts being provided with a traction-cable and each extending from the bottom of one gravity-run to the top of the other, substantially as specified.

3. A gravity-railway consisting of two spiral portions, each having a lifting-cable, and two gravity-runs each extending from the top of one spiral to the base of the other, said spirals being contained within the gravity-runs at the ends of the same, substantially as set forth.

4. A gravity-railway having two cable-lifts and two gravity-runs, each of said gravity-runs extending from the top of one lift to the base of the other, the tracks of one of said gravity-runs being in different horizontal and vertical planes from those of the other, substantially as specified.

5. A gravity-railway having two cable-lifts and two gravity-runs, each of said gravity-runs extending from the top of one lift to the base of the other, and the tracks of one of said gravity-runs being in a different vertical plane from those of the other gravity-run, substantially as specified.

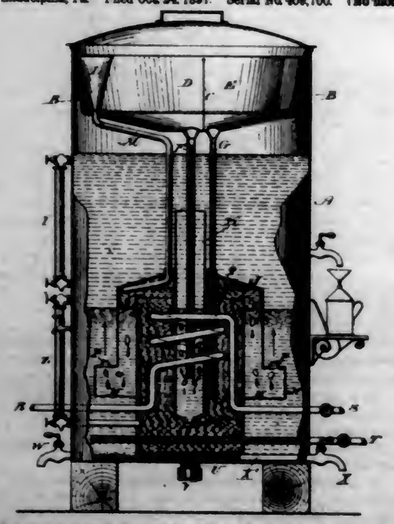
477,060. BRICK OR FUEL PRESS. MAX NIEDLINGER, Minneapolis, Minn. Filed Apr. 2, 1890. Renewed Mar. 4, 1892. Serial No. 423,750. (No model.)



Claim.—1. The combination, with the shaft, the rotary mold-wheel having molds in its periphery and rotating around the axis of said shaft, and the radially-acting plungers, of the centrally-arranged cam, the support for the cam independent of said shaft, and means, substantially as described, actuated by said shaft for adjusting the cam, substantially as set forth.

2. The combination of the mold-wheel, the central wheel-supporting shaft, the plungers, the cam, the cam-supports, the eccentric H or equivalent, and the links connecting the eccentric to the cam, substantially as set forth.

477,061. APPARATUS FOR PURIFYING OIL. EMIL HOPPEL, Philadelphia, Pa. Filed Oct. 24, 1891. Serial No. 409,700. (No model.)



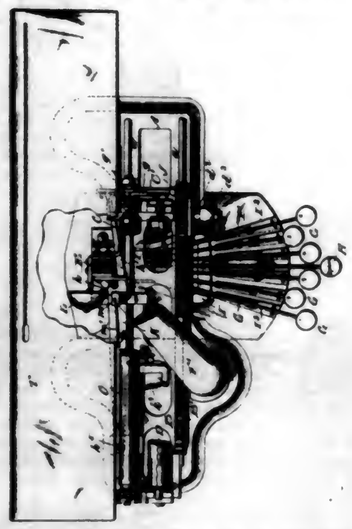
Claim.—1. A tank having the cylinder H therein, the same being closed at bottom and open at top, the cylinder K in said cylinder J, the supply-pipe F entering said cylinder K, the inverted cylinder J over said cylinder H, and the outlet U at the bottom of the vessel, said parts being combined substantially as set forth.

2. An apparatus for the purpose set forth, consisting of a tank having a reservoir in its upper part, the cylinder H in its lower part with a space between its wall and that of the tank, a cylinder covering said first cylinder and having a lower chamber with openings in its top, and a pipe leading from said reservoir to said first cylinder, said parts being combined substantially as described.

3. An apparatus for the purpose set forth, having a tank with an inner cylinder, a covering-cylinder for first cylinder, having a lower chamber with openings in its top, and a funnel with a pipe leading into said covering-cylinder, substantially as described.

4. An apparatus for the purpose set forth, consisting of a tank, a reservoir in the upper part thereof having a partition therein forming two chambers, a cylinder in the lower part of said tank, an inner cylinder covering said first cylinder and having at its lower end a chamber with openings in its top wall, a cylinder open at its top and closed at its bottom, having its lower end within said first cylinder and supported on said second cylinder, a pipe leading from one of said chambers to said first cylinder, and a pipe leading from the other chamber to said inner cylinder, said parts being combined substantially as described.

477,062. EMBOSSING-MACHINE. THOMAS C. ORNDORFF, Worcester, Mass. Filed July 9, 1891. Serial No. 398,576. (No model.)

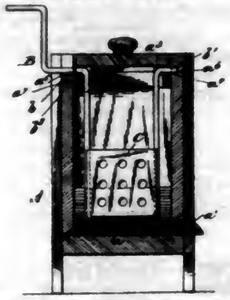


Claim.—1. The combination of the carriage and mechanism for actuating the same, the paper-feed rolls, the lever for actuating said rolls to feed the paper, and the lock separated from and independent of the carriage-actuating mechanism, whereby the carriage is prevented from returning, operated by the feed-roll lever to release the carriage and permit its return to the starting-point at the time and in the manner substantially as hereinbefore set forth.

2. The combination of the embossing mechanism, the carriage, mechanism for imparting to the carriage a step-by-step movement of progression, connected to and operated by the embossing mechanism, a lock separate from and independent of the carriage-actuating mechanism to prevent the return of said carriage, feed-rolls mounted on the carriage, and a feed-roll lever, which when moved to cause the rolls to feed operates the lock to release the carriage, substantially as and for the purpose hereinbefore set forth.

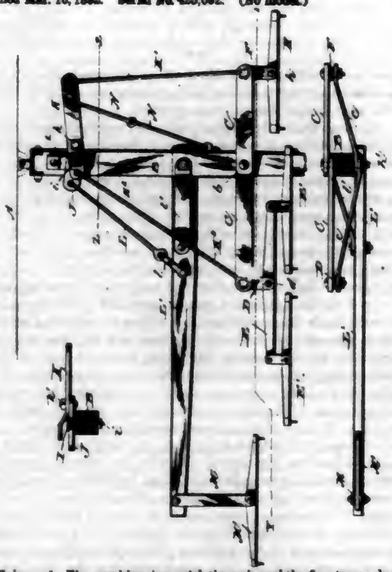
3. The punchers or embossers arranged in two rows of three each, the opposed anvil for the same, the character keys or levers, one for each embosser, and the space-key, in combination with the carriage and step-by-step feed mechanism for the same, actuated by the said keys or levers, and the paper-feed rolls mounted on said carriage, the feed-roll lever, and the lock separate from and independent of the carriage-feed mechanism and connected to and operated by the feed-roll lever, these parts being constructed and arranged together for joint operation in the manner hereinbefore set forth.

477,063. CHURN. DANIEL H. PARKER, Pleasantville, Pa. Filed Jan. 15, 1892. Serial No. 418,145. (No model.)



Claim.—In a churn, the body provided near the top with a projection a^2, in combination with the lid of the churn located upon said projection, the dasher-holder B, provided with the journals b and b' and the wheel b^2, and located and working in suitable bearings upon said projection and in the sides of the body of the churn, the lower portion of said dasher-holder being U-shaped and the upper ends thereof bent outwardly at right angles, providing journals for same, one or both of said ends being continued sufficiently far to be formed into a crank-handle b^4, and the dasher C, having upon its side edges the vertical grooves, whereby the same is rigidly located within the U-shaped dasher-holder, substantially as described, and for the purpose set forth.

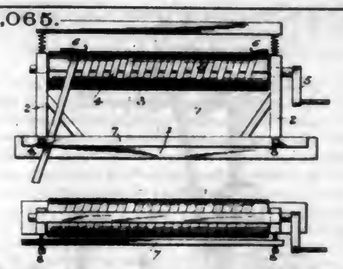
477,064. DRAFT-EQUALIZER. FERDINAND A. POLKA, Oakes, N. D. Filed Mar. 16, 1892. Serial No. 425,092. (No model.)



Claim.—1. The combination, with the pole and the front cross-bars, of the equalizing-lever pivoted to the rear of the pole on a removable pivot, the equalizing-lever pivoted to one end thereof, the removably-pivoted central equalizing-lever, and the rods connecting the two rear levers with the central lever and with the front cross-bars, substantially as specified.

2. The combination, with the pole and the front cross-bars, of the equalizing-lever K, pivoted to the rear end of the pole, the rod pivotally connecting one end thereof with the cross-bars, and the chain connecting the said lever with the pole, and the central equalizing-lever pivoted on the pole between the cross-bars and rear levers and connected by rod to a lever connected with the said lever K, as and for the purpose specified.

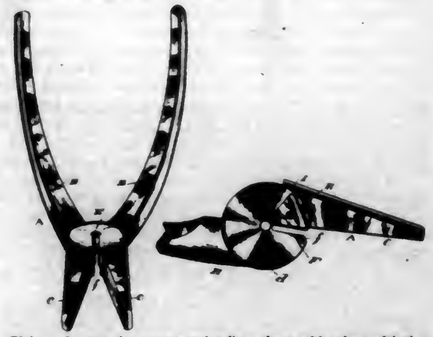
477,065. WASHER FOR VEHICLE-AXLES. WILLIAM RICHARD, HERBERT G. OSGOOD, and EDWARD R. HEATH, Bloomville, Ohio. Filed Jan. 30, 1892. Serial No. 419,617. (No model.)



Claim.—1. As an improved article, a washer for vehicle-spindles, consisting of a strip of wood bent into an annular ring, with the ends unattached to each other, and the grain thereof running in the same direction with the curvature of the strip, substantially as described.

2. The herein-described method of forming washers, the same consisting in taking a strip of wood or vulcanized rubber, then winding the same on a cylinder, and finally severing into rings, substantially as set forth.

477,066. PLIERS. SANFORD O. ROOT, Lodi, N. Y. Filed Nov. 10, 1891. Serial No. 411,596. (No model.)



Claim.—1. As an improvement in pliers, the combination, with the pivoted members comprising coincident countersunk fulcrum-disks provided each with a radially-arranged slot extending nearly to the center of the fulcrum, of removable and interchangeable cutters rigidly secured at the opposing faces of the fulcrum-disks and adjacent to the slots, substantially as and for the purpose set forth.

2. As an improvement in pliers, the combination, with the pivoted members consisting of handles, jaws, and intermediate fulcrum-disks, the latter being provided with transverse radially-disposed slots and with angular sockets or recesses in their inner faces adjacent to said slots, of removable and reversible cutters corresponding to and secured in said sockets or recesses and formed with three independent cutting-edges, substantially as set forth.

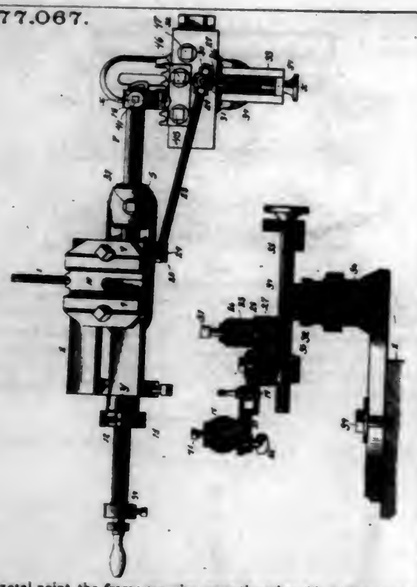
3. As an improvement in pliers, the combination, with the pivoted members comprising handles and jaws, of the intermediate fulcrum-disks integrally connecting the respective handles and jaws and provided each with a transverse radially-disposed slot extending nearly to the center of said disks, reinforcing-bosses formed integral with and provided at the outer faces of said disks for the purpose described, and a pivot-screw disposed centrally through the disks, substantially as set forth.

4. As an improvement in pliers, the combination, with the pivoted members consisting of handles, jaws, and intermediate fulcrum-disks formed integral therewith, said disks being reinforced at their outer sides, a transverse radially-located slot formed in each of the disks and extending nearly to the center thereof, and an angular socket or recess provided in the inner face of each disk adjacent to said slots, of removable and reversible cutters corresponding to and secured in the sockets or recesses, each cutter having three independent cutting-edges, and a pivotal screw passing centrally through the disks, substantially as set forth.

477,067. GRINDING-MACHINE. WILLIAM ROSS, Willard, Tex. Filed Jan. 20, 1892. Serial No. 418,690. (No model.)

Claim.—1. In a grinding-machine, the combination, with a grinding-wheel mounted in stationary bearings, of a pivoted frame adapted to swing horizontally, having mounted thereon an adjustable carriage adapted to be moved back and forth upon said frame at one side of

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the pivotal point, the frame carrying upon the other side of the pivotal point a pattern-roller, said carriage and pattern-roller being movable simultaneously in opposite directions, the carriage to or from the grinding-wheel and the pattern-roller to or from the pattern-table.

2. In a grinding-machine, the combination, with a stationary grinding-wheel, of a horizontally-swinging frame having mounted thereon a reciprocating carriage at one side of the pivotal point, while at the other side is mounted the pattern-roller, and a pattern-table mounted independently of said frame, but coupled to said reciprocating carriage by a connecting rod and adapted to move back and forth simultaneously a distance coequal therewith.

3. In a grinding-machine, the combination, with a stationary grinding-wheel, of a horizontally-swinging frame having mounted thereon a reciprocating carriage at one side of the pivotal point, while at the other side is mounted the pattern-roller, a pattern-table mounted independently of said frame, but coupled to said reciprocating carriage by a connecting-rod and adapted to move back and forth simultaneously a distance coequal therewith, said reciprocating carriage and pattern-table being operated by a screw rod secured to said frame and said pattern-table being adjustable to allow for the wear of the emery-wheel.

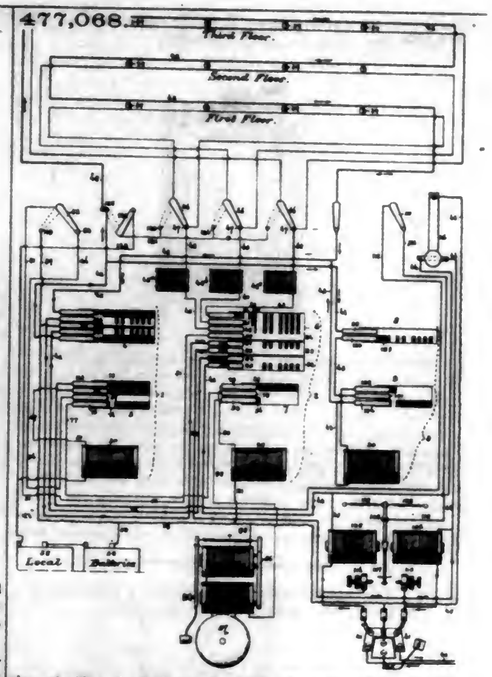
4. In a grinding-machine having a horizontally-swinging frame, the bit-carriage constructed with a hollow shaft, one end of which is mounted in a casting and adjustably secured thereto, whereby said carriage may be turned in said casting and raised or lowered relatively to the grinding-wheel.

477,068. **FIRE-ALARM SYSTEM.** LEWIS G. ROWAND, Camden, N. J., assignor to Henry C. Terry, Philadelphia, Pa. Filed Dec. 14, 1891. Serial No. 415,068. (No model.)

Claim.—1. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuits, a thermostat or switch normally open and having one of its ends connected to the main line and its opposite end connected to the building-circuit, a mechanical signaling-alarm operating a circuit-breaker, said mechanical signaling-alarm being normally locked, an electro-magnet in the building-circuit controlling the locking devices of said mechanical signaling-alarm, a second circuit-breaker, mechanism for rotating the same, an electro-magnet normally locking such mechanism, a normally-open circuit in which said electro-magnet is placed, said normally-open circuit being adapted to be closed by the mechanical signaling-alarm, and a ground connection normally out of circuit with the second circuit-breaker, but adapted to make circuit therewith, substantially as specified.

2. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuits, a thermostat or switch normally open and connected to the main line and to the building-circuit, a mechanical signaling-alarm carrying a circuit-breaker, said mechanical signaling-alarm being normally locked, an electro-magnet in the building-circuit controlling the locking devices of said mechanical signaling-alarm, a second circuit-breaker, mechanism for rotating the same, an electro-magnet normally locking such mechanism, a normally-open circuit in which said electro-magnet is placed, said normally-open circuit being adapted to be closed by the mechanical signaling-alarm, and a ground connection normally out of circuit with the second circuit-breaker, but adapted to make circuit therewith, substantially as specified.

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3. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuits, brushes thereon in electrical contact with a circuit-breaker 5, the circuit-breaker 5, a mechanical signaling-alarm carrying said circuit-breaker 5, an armature-lever controlling the rotation of the same, an electro-magnet in the building-circuit controlling said armature-lever, a circuit-breaker 4, contact-brushes on the main line in contact with said circuit-breaker 4, and a means of indicating a ground on the main inside line, comprising, in connection with the aforesaid mechanical signaling-alarm and its circuit-breakers 4 and 5, a relay-magnet 105 on the ingoing wire of the main inside line, a relay-magnet 106 on the outgoing wire of said line, an armature-lever mounted between said magnets and normally acted upon by said magnets with equal force, a branch of the main line extending from said armature-lever to the circuit-breaker 5, a contact-point 114, and a contact-point 115 on the main line, whereby on the grounding of the current at a point on the main inside line the current is diverted to the ground, substantially as specified.

4. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuits, brushes thereon in electrical contact with a circuit-breaker 5, the circuit-breaker 5, a mechanical signaling-alarm carrying said circuit-breaker 5, an armature-lever controlling the rotation of said circuit-breaker 5, an electro-magnet in the building-circuit controlling said armature-lever, a circuit-breaker 4, and contact-brushes on the main line in contact with said circuit-breaker 4, substantially as specified.

5. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuit, a thermostat or switch adapted to connect the main line to the building-circuit, a circuit-breaker 6, mechanism for rotating the same, brushes in contact with said circuit-breaker, the building-circuits electrically connected to said brushes, circuit-breaker 5, mechanism for revolving the same, a brush 55 in contact with said circuit-breaker and electrically connected to a brush 50 in contact with the circuit-breaker 6, an electro-magnet in a circuit of which a brush 56 in contact with the circuit-breaker 5 forms a terminal, a battery in the magnet-circuit, the circuit-breaker 4, brushes electrically connected to the main inside line and in contact with said circuit-breaker, a brush 76, normally in contact with the insulated portion of the circuit-breaker 5, an electro-magnet in a circuit of which the brush 76 forms a terminal, said electro-magnet controlling the mechanism for revolving the circuit-breaker 6, and a conducting portion 74 on the circuit-breaker 5, which when brought into contact with the brush 76 serves to complete the circuit through the electro-magnet controlling the rotation of circuit-breaker 6, substantially as specified.

6. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuits, thermostats or switches adapted to connect the main line to the building-circuits, a circuit-breaker 6, a series of brushes in contact therewith, one of said brushes being electrically connected to each building-circuit, stepped ribs of insulating material on said circuit-breaker 6, a contact-brush 50, mechanism for rotating the circuit-breaker 6, and an electro-magnet adapted to lock said mechanism, said electro-magnet being in a normally-open circuit extending from the brush 50 to the ground, with means for closing the circuit and energizing the said electro-magnet to effect the release of the mechanism, substantially as specified.

7. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuit, thermostats or switches adapted to connect the main line to the building-circuit, annunciator-magnets on said building-circuits, a circuit-breaker 6, a series of brushes in contact therewith, said brushes being electrically connected to the building-circuit, stepped ribs of insulating material on said circuit-breaker 6, a brush 50, normally in contact with said circuit-breaker, mechanism for rotating the circuit-breaker 6, and an electro-magnet normally acting to lock said mechanism, said magnet being in a normally-open circuit extending from the brush 50 to the ground, with means for automatically closing the circuit and energizing the said magnet to effect the release of the mechanism, substantially as specified.

8. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuits, thermostats or switches adapted to connect the main line to the building circuit, a circuit-breaker 6, a series of brushes in contact therewith, one of said brushes being electrically connected to each building-circuit, contact-brushes electrically connected to the main line and in contact with the circuit-breaker, a contact-brush 50, mechanism for rotating the circuit-breaker 6, and an electro-magnet adapted to lock said mechanism, said electro-magnet being in a normally-open circuit extending from the brush 50 to the ground, with means for closing the circuit and energizing said electro-magnet to effect the release of the mechanism, substantially as specified.

9. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building and normally forming a closed circuit, a circuit-breaker 6, through which said circuit is closed, means for rotating said circuit-breaker, and contact-brushes on the main line in electrical contact with the circuit-breaker 6, whereby on the rotation of the circuit-breaker the circuit through the main line is alternately broken and made, substantially as specified.

10. In an electric fire-alarm system, the combination of a central receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the building-circuits, thermostats or switches adapted to connect the main inside line to the building-circuits, a circuit-breaker 6, comprising rings 82, 83, and 84, insulated from each other, alternate insulated and conducting portions on said circuit-breaker 6, contact-brushes on the main inside line in contact with said insulated portions 82 and 83, stepped ribs of insulating material on the portion 84 of said circuit-breaker, a series of brushes on the building-circuits in contact with said portion 84, a brush 50, mechanism for rotating said circuit-breaker 6, an electro-magnet controlling said mechanism, said electro-magnet being in a normally-open circuit extending from the brush 50 to the ground, and means for automatically closing said circuit and energizing the said electro-magnet to effect the release of the mechanism, substantially as specified.

11. In a fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the local lines, a thermostat or switch between such local line and the main line, circuit-breakers 6 and 7, mechanism for rotating the same, contact-brushes on the main line in contact with said circuit-breaker 6, brushes on the local line in contact with said circuit-breaker 7, and an electro-magnetic belt, the conducting and insulating portion of the circuit-breaker 7 being so arranged that after the circuit-breakers have started their rotation the current will be directed through the circuit-breaker 7 to the electro-magnets of the bell, substantially as specified.

12. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the local lines, a circuit-breaker 6, mechanism for rotating the same, an electro-magnet for controlling the movement of said mechanism, brushes on the local lines in electrical contact with the conducting-surface of the circuit-breaker 6, and a normally-open circuit extending from the circuit-breaker 6 through the electro-magnet to the earth, substantially as specified.

13. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the circuit-breaker 6, the local lines, brushes on said local lines in electrical contact with the conducting-surface of said circuit-breaker 6, annunciator-magnets on said local lines, annunciator for the floor-circuits operated by said annunciator-magnets, mechanism for rotating said circuit-breaker 6, an electro-magnet controlling said mechanism, and a normally-open circuit extending from said circuit-breaker through the electro-magnet to the earth, substantially as specified.

14. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the local lines, a circuit-breaker, mechanism for rotating the same, and an electro-magnet controlling said mechanism, said circuit-breaker having a series of ribs of insulating material stepped in length, with brushes on the local circuit under which said ribs pass, and a normally-open circuit extending from said circuit-breaker through the electro-magnet to the earth, substantially as specified.

15. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending therefrom to the local station and through the building, a circuit-breaker in said local station, the main ingoing wire having its circuit completed through one side of the conducting portions of the circuit-breaker and the main outgoing line having its circuit completed through the conducting portions of the opposite side of the circuit-breaker, a ground-wire, and a brush on said ground-wire normally in contact with the insulated portion of said circuit-breaker and so arranged as to come into contact with both of the conducting portions of said circuit-breaker on the rotation of the latter, substantially as specified.

16. In an electric fire-alarm system, the combination of the central receiving-station and its instruments, the main line extending therefrom to the local station and through the building, a shunt on said main line, an electro-magnet of high resistance in said shunt, a mechanical signaling-alarm controlled by said resistance-magnet and a circuit-breaker adapted to make and break the main-line circuit through the shunt, substantially as specified.

17. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, an electro-magnet, a shunt on said main line on which said electro-magnet is placed, a mechanical signaling-alarm controlled by said electro-magnet, and circuit-breakers carried by said mechanical alarm, the arrangement of conducting-surface of one of said circuit-breakers being such that after the electro-magnet has once been energized the current through said electro-magnet is cut off, substantially as specified.

18. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending therefrom to one or more local stations, and a means of indicating a break in said main-line wire, comprising a shunt-circuit, an electro-magnet therein of a higher resistance than the resistance through the main line, a train of gears, an armature-lever under the control of said electro-magnet normally locking such train of gears, and a circuit-breaker carried by said train of gears, substantially as specified.

19. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to one or more local stations, and a means of indicating a break in said main-line wire, comprising a shunt-circuit, an electro-magnet therein of a higher resistance than the resistance of the main line, an armature-lever under the control of said magnet, a mechanical alarm normally locked by said armature-lever, and circuit-breakers carried by said mechanical alarm, one of said circuit-breakers being provided with alternate insulating and conducting portions and adapted to make and break the circuit through said shunt and main line and the other of said circuit-breakers being adapted to cut off the flow of current through the electro-magnet after it has once been energized, whereby the resistance of such magnet to the passage of the current is avoided, substantially as specified.

20. In an electric fire-alarm system, the combination of the main line, the local lines, a ground-wire, a local battery between such local lines and the ground wire, and annunciators on said local lines with switches for connecting the local lines to the ground-wire and battery for the purpose of energizing the circuit, substantially as specified.

21. A fire-alarm system comprising the main line, the local lines forming closed circuits, thermostats or switches between such local lines and main line, annunciator magnets on said local lines, a battery, and a test-line having contact-points extending to said battery, with switches for connecting the local lines to the contact-points of such test-line, substantially as specified.

22. In a fire-alarm system, the combination of the main line, the

local lines, thermostats or switches between said main line and the local lines, a circuit-breaker 6, mechanism for rotating the same, an electro-magnet controlling said mechanism, contact-brushes on the local lines normally in contact with said circuit-breaker 6, the circuit-breakers 4 and 5, brushes on the main line in contact with said circuit-breaker 4, brushes on the local lines in contact with said circuit-breaker 5, mechanism for rotating said circuit-breakers 4 and 5, an electro-magnet controlling said mechanism, and a normally-open circuit extending from said circuit-breaker 6 through the electro-magnet to the ground, substantially as specified.

23. In a fire-alarm system, the combination of the main line extending from the central station through the building, the local lines, thermostats or switches between said main line and the local lines, a circuit-breaker 6, brushes on the local lines in contact with said circuit-breaker 6, mechanism for rotating said circuit-breaker, a circuit-breaker 4, brushes on the main line in contact with said circuit-breaker 4, mechanism for rotating the same, an electro-magnet controlling said mechanism, and a normally-open circuit extending from said circuit-breaker 6 through the electro-magnet to the earth, substantially as specified.

24. In an electric fire-alarm system, the combination of the main line extending from a receiving-station through the building, the local lines, thermostats or switches between said local lines and the main line, annunciator-magnets on said local lines, the circuit-breaker 6, brushes on the local lines in contact with said circuit-breaker 6, mechanism for rotating said circuit-breaker, a circuit-breaker 4, having insulated and conducting portions, brushes on the main line in contact therewith, mechanism for rotating the said circuit-breaker 4, an electro-magnet controlling said mechanism, and a normally-open circuit extending from said circuit-breaker 6 through the electro-magnet to the earth, substantially as specified.

25. In an electric fire-alarm system, the combination of the receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the local lines, thermostats or switches between the said main line and the local lines, the circuit-breaker 6, having ribs of insulating material stepped in length, brushes on the local lines in contact with said circuit-breaker, a circuit-breaker 4, brushes on the main line in contact therewith, mechanism for rotating said circuit-breaker 4, an electro-magnet controlling said mechanism, and a normally-open circuit extending from said circuit-breaker 6 through the electro-magnet to the earth, substantially as specified.

26. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending therefrom to the local station and through the building, the local lines, thermostats or switches between the said main line and the local lines, the circuit-breaker 6, having ribs of insulating material stepped in length, brushes on the local lines in contact with said circuit-breaker 6, a circuit-breaker 4, brushes on the main line in contact with said circuit-breaker 4, mechanism for rotating said circuit-breaker, an electro-magnet controlling said mechanism, a normally-open circuit extending from said circuit-breaker 6 through the electro-magnet to the earth, and a battery on said normally-open circuit, substantially as specified.

27. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending to a local station and through the building, local lines, thermostats or switches between said main line and the local lines, a circuit-breaker 6, comprising insulated rings 82, 83, and 84, contact-brushes on the local lines in contact with the portion 84, a circuit-breaker 4, brushes on the main line in contact with said circuit breaker 4, mechanism for rotating said circuit-breakers, an electro-magnet controlling said mechanism, a normally-open circuit extending from the portion 84 through the electro-magnet to the earth, and contact-brushes on the main line in contact with the portions 82 83 of the circuit-breaker 6, substantially as specified.

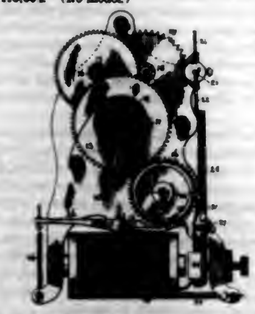
28. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending to a local station and through the building, the local lines, thermostats or switches between said main line and the local lines, a circuit-breaker, a ring 84 thereon, mechanism for rotating the same, contact-brushes on the local lines in contact with said ring 84, a circuit-breaker 4, brushes on the main line in contact with said circuit-breaker 4, a circuit-breaker 5, mechanism for rotating said circuit-breakers 4 and 5, an electro-magnet controlling said mechanism, a normally-open circuit extending from the portion 84 through brushes in contact with the circuit-breaker 5 and from thence through the electro-magnet to the earth, an electro-magnet controlling the mechanism for rotating the ring 84, and a normally-open circuit extending from a brush 76, in contact with the insulated portion of said circuit-breaker 5, through the electro-magnet controlling the mechanism for rotating the portion 84 to the earth, and a conducting-surface 74 on the circuit-breaker 5, through which the circuit is completed on the stopping of the circuit-breaker, substantially as specified.

29. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending to the local station and through the building, the local lines, thermostats or switches between said main line and the local lines, a circuit-breaker 6, a ring 84 thereon, mechanism for rotating the same, contact-brushes on the local lines in contact with said ring 84, a circuit-breaker 4, brushes on the main line in contact with said circuit-breaker 4, a circuit-breaker 5, mechanism for rotating said circuit-breakers 4 and 5, an electro-magnet controlling said mechanism, a normally-open circuit extending from the portion 84 through brushes 55 and 56 in contact with the circuit-breaker 5, and from thence through the electro-magnet to the earth, an electro-magnet controlling the mechanism for rotating the ring 84, and a normally-open circuit extending from a brush 76, in contact with the insulating portion of said circuit-breaker 5, through the electro-magnet controlling the mechanism for rotating the portion 84 to the earth, and a conducting-surface 74 on the circuit-breaker 5, through which the circuit is completed on the stopping of the circuit-breaker, the circuit breaker 7, and the electro-magnet 96 of the electric bell 97, substantially as specified.

30. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending to the local station and through the building, the local lines, thermostats or switches between said main line and the local lines, a circuit-breaker 6, a ring 84 thereon, mechanism for rotating the same, contact-brushes on the local lines in contact with said ring 84, a circuit-breaker 4, brushes on the main line in contact with said circuit-breaker 4, a circuit-breaker 5, mechanism for rotating said circuit-breakers 4 and 5, an electro-magnet for controlling said mechanism, a normally-open circuit extending from the portion 84 through brushes 55 and 56 in contact with the circuit-breaker 5, and from thence through the electro-magnet to the earth, an electro-magnet controlling the mechanism for rotating the ring 84, and a normally-open circuit extending from a brush 76, in contact with the insulated portion of said circuit-breaker 5, through the electro-magnet controlling the mechanism for rotating the portion 84 to the earth, and a conducting-surface 74 on the circuit-breaker 5, through which the circuit is completed on the stopping of the circuit-breaker and the portion 82 and 83 of the circuit-breaker 6, substantially as specified.

31. In an electric fire-alarm system, the combination of a receiving-station and its instruments, the main line extending to a local station and through the building, the local lines, thermostats or switches between said main line and the local lines, a circuit-breaker 6, a ring 84 thereon, mechanism for rotating the same, contact-brushes on the local lines in contact with said ring 84, a circuit-breaker 4, brushes on the main line in contact with said circuit-breaker 4, a circuit-breaker 5, mechanism for rotating said circuit-breakers 4 and 5, an electro-magnet controlling said mechanism, a normally-open circuit extending from the portion 84 through brushes 55 and 56 in contact with the circuit-breaker 5, and from thence through the electro-magnet to the earth, an electro-magnet controlling the mechanism for rotating the ring 84, and a normally-open circuit extending from a brush 76, in contact with the insulated portion of said circuit-breaker 5, through the electro-magnet controlling the mechanism for rotating the portion 84 to the earth, and a conducting-surface 74 on the circuit-breaker 5, through which the circuit is completed on the stopping of the circuit-breaker, and the annunciators on the local circuits, substantially as specified.

477,069. FIRE-ALARM SYSTEM. LEWIS G. ROWAND, Camden, N. J., assignor to Henry C. Terry, Philadelphia, Pa. Filed Dec. 14, 1891. Serial No. 415,054. (No model.)

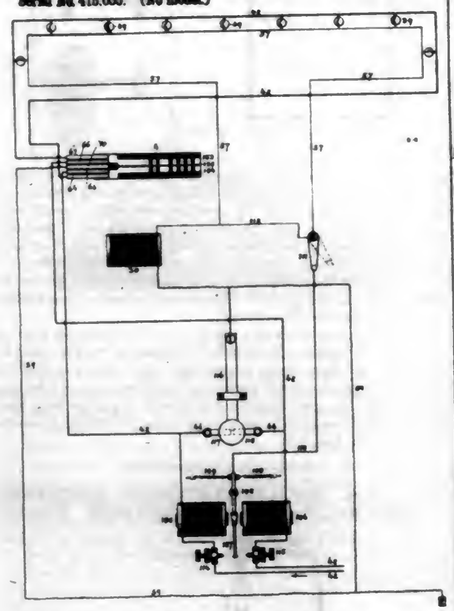


Claim.—1. A signaling-alarm comprising a pair of circuit-breakers, a normally-locked train of power-driven gears adapted to rotate said circuit-breakers at different speeds, insulated and conducting surfaces on said circuit-breakers, a notched disk rotated by the gears, and an arm adapted to engage therewith, the insulated and conducting surfaces being so arranged with respect to the notches in the disk that one of said circuit-breakers may be stopped at a predetermined point and the path of the current through the conducting-surfaces of the contact-breaker changed, substantially as specified.

2. A signaling-alarm comprising a pair of circuit-breakers, a normally-locked train of power-driven gears adapted to rotate said circuit-breakers, a notched disk carried by said train of gears, a rock-shaft 27, an arm 31, adapted to engage with one of the notches in said disk and lock the same, an armature connected to said rock-shaft, an electro-magnet controlling said armature, a lever 34, having one of its ends adapted to engage with the second notch in said disk, and a spring connecting the opposite end of said lever to a fixed point on the frame, substantially as specified.

3. A circuit-breaker for a mechanical signaling-alarm, comprising a ring of conducting material extending entirely around the circuit-breaker, and insulating portions so arranged on either side of said ring that the stoppage of the circuit-breaker at a predetermined point after completing its rotation will re-establish the main circuit through another path, substantially as specified.

477,070. FIRE-ALARM SYSTEM. LEWIS G. ROWAND, Camden, N. J., assignor to Henry C. Terry, Philadelphia, Pa. Filed Dec. 14, 1891. Serial No. 415,055. (No model.)

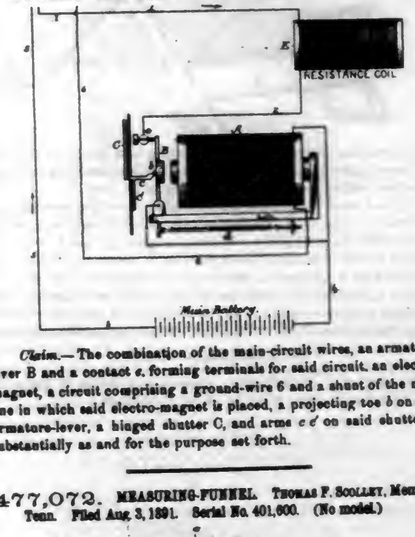


Claim.—1. In an electric fire-alarm system, the combination of the main line, the relay-magnets 105 106 on the ingoing and outgoing wires, respectively, of said main line, a contact-drum, alternate insulated and conducting portions thereon, brushes on the main line in contact with said drum, mechanism for rotating said drum, an electro-magnet controlling said mechanism, an armature-lever normally in a central position between the magnets of the relay and adapted to be brought into contact with contact-points on the main line, and a normally-open circuit extending from the armature-lever through the said controlling electro-magnet to the ground, substantially as specified.

2. The combination, in an electric fire-alarm system, of the main line, opposite relay-magnets on the ingoing and outgoing wires, respectively, of said line, a contact-drum, alternate insulated and conducting portions thereon, brushes on the main line in contact with said contact drum, mechanism for rotating said drum, an electro-magnet controlling said mechanism, a local circuit, and thermostats or switches between said local circuit and the main line, said local circuit extending from the thermostats or switches through the said controlling electro-magnet to the ground, substantially as specified.

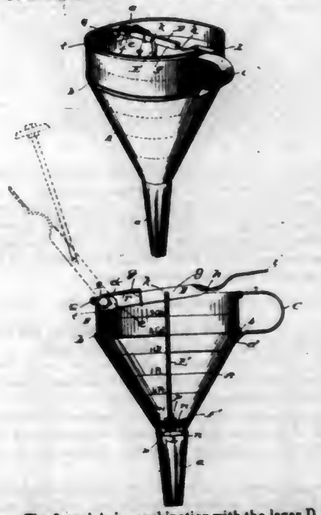
3. In an electric fire-alarm system, the combination of the main line, the opposite relay-magnets on the ingoing and outgoing wires, respectively, of said line, the local line, thermostats or switches between such main line and local line, the contact-drum having alternate insulated and conducting portions, brushes on the main line in contact with said drum, mechanism for rotating said contact-drum, an electro-magnet controlling such mechanism, a pivoted armature-lever between the magnets of the relay, and a normally-open circuit extending from said armature-lever through the said controlling electro-magnet to the ground, branch wires from the main line extending to contact-points 117 118, a key adapted to be brought into contact with such contact-points, and a ground-wire extending from the key, substantially as specified.

477,071. ANNUNCIATOR. LEWIS G. ROWAND, Camden, N. J., assignor to Henry C. Terry, Philadelphia, Pa. Filed Dec. 14, 1891. Serial No. 415,056. (No model.)



Claim.—The combination of the main-circuit wires, an armature-lever B and a contact *e*, forming terminals for said circuit, an electro-magnet, a circuit comprising a ground-wire 6 and a shunt of the main line in which said electro-magnet is placed, a projecting toe *b* on said armature-lever, a hinged shutter C, and arms *c c'* on said shutter C, substantially as and for the purpose set forth.

477,072. MEASURING-FUNNEL. THOMAS F. SCOLLEY, Memphis, Tenn. Filed Aug. 3, 1891. Serial No. 401,600. (No model.)

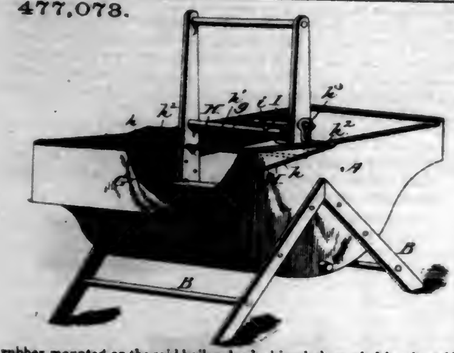


Claim.—The funnel A, in combination with the lever D, hinged at one end to the upper edge of the funnel and having its opposite end free to swing, as shown, the spring also secured to the upper edge of the funnel and adapted to press upwardly on the lever, and the rod E, carrying a valve at its lower end and pivoted at its upper end to the lever D, whereby both rod and lever may be turned entirely out of the funnel without disconnecting any of the parts, substantially as specified.

477,073. WASHING-MACHINE. ALEXANDER H. SHAMBAUGH, Avilla, Ind., assignor of one-half to Isaac Shambaugh, same place. Filed Sept. 28, 1891. Serial No. 407,054. (No model.)

Claim.—1. In a washing-machine, the combination, with a suds-box and a swinging bail having an extended loop, as A^1, of a vibrating

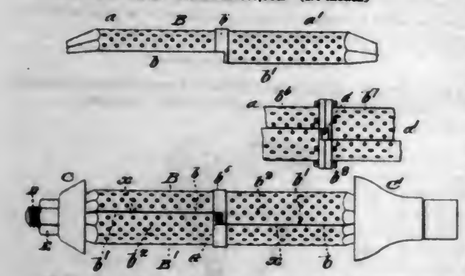
477,078.



rubber mounted on the said bail and a locking-bolt carried by the said rubber and constructed to engage with the said extended loop and lock the rubber and bail together, substantially as set forth.

2. In a washing-machine, the combination, with a suds-box and a vibrating rubber, of a swinging bail consisting of the arms A, which are pivoted to the sides of the suds-box, a straight portion A', on which the said rubber is mounted, crank portions A^2, connecting the parts A with the ends of the part A', and the extended loop A^3, and the locking-bolt I, mounted on a cross-bar of the rubber and adapted to be projected through a handle of the said rubber and engaged with the said extended loop A^3, substantially as and for the purpose described.

477,074. FLUE-BRUSH. LLEWELLYN B. SHULTZ, St. Louis, Mo. Filed Mar. 17, 1892. Serial No. 425,311. (No model.)



Claim.—1. A flue-brush having its staves divided transversely and united substantially as and for the purpose described.

2. A flue-brush whose staves have offsets and projections at their side edges and having in one part of the brush-head a row of projections opposite the joint between the staves in the opposite part of the brush-head and said staves being divided transversely and united, substantially as and for the purpose described.

477,075. SAFETY-CAR. WILLIAM SKYRME, San Francisco, Cal. Filed Feb. 26, 1892. Serial No. 423,090. (No model.)

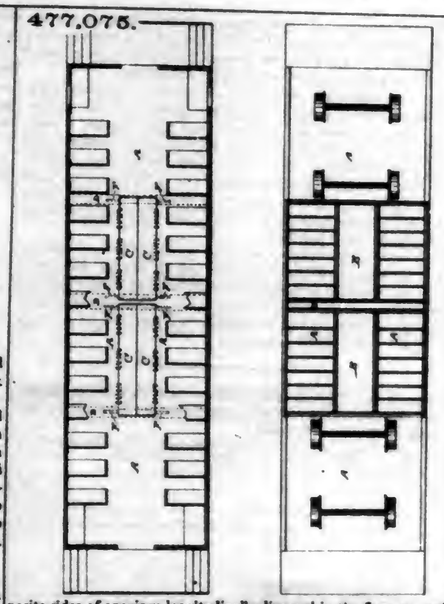
Claim.—1. The combination, with a car, of doors in its floor or roof connected with each other and hinged upon opposite sides of central longitudinally-disposed openings made in said floor or roof and meeting upon a central line with closed transverse channels adjacent to the ends of the doors, and mechanism for opening said doors automatically by the overturning of the car, substantially as herein described.

2. The combination, with a car, of longitudinally-disposed oppositely-opening doors, correspondingly-shaped openings made in the floor or roof of the car, and mechanism comprising movable weights and connections from one door to the other, whereby said doors are opened automatically by the overturning of the car, substantially as herein described.

3. The combination, with a railway-car, of doors hinged upon opposite sides of central longitudinally-disposed openings made in the floor or roof of the car and meeting upon a central line, with closed transverse channels adjacent to the ends of the doors, lever-arms projecting into said channels from the ends of the doors, weights movable within said channels, and chains connecting the weights with the lever-arms, whereby the uppermost door will be opened by the action of the weight when the car is overturned and the lowermost will fall open by gravitation, substantially as herein described.

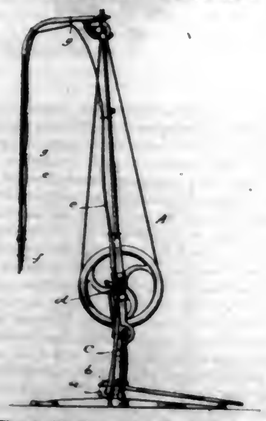
4. The combination, with a railway car, of doors hinged upon opposite sides of openings longitudinally disposed in the floor or roof of the car, transverse channels adjacent to the meeting ends of said doors, weights adapted to move to the lowermost ends of the channels when the car is overturned, lever-arms projecting from the ends of the doors, and chains connecting the ends of said arms with the weights, whereby the lowermost door is opened by gravitation and the uppermost door by the action of the weight upon its levers, and swinging latches and catches, whereby the doors are engaged and prevented from closing, substantially as herein described.

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5. The combination, with a railway car, of doors hinged upon opposite sides of openings longitudinally disposed in the floor and roof of the car, said doors closing toward each other upon a central line midway of the openings and having their meeting edges and the ends which fit into the openings inclined or beveled to prevent their binding so that they cannot be opened when the car is overturned, substantially as herein described.

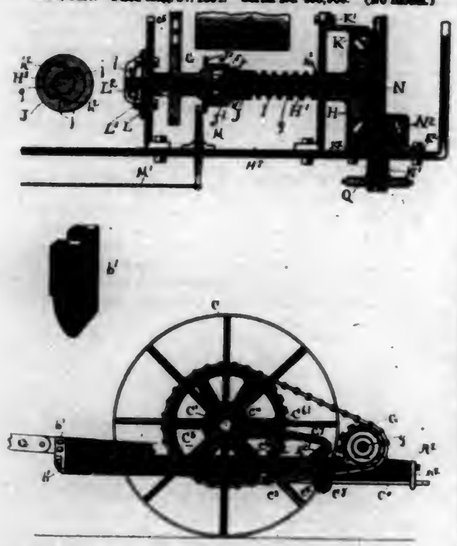
477,076. DENTAL-ENGINE ATTACHMENT. HENRY E. SPENCER, Spencer, Miss. Filed Oct. 10, 1891. Serial No. 408,298. (No model.)



Claim.—1. The combination, with a dental engine, of a stationary plate secured to the lower part thereof, a flexible valved bulb secured on said plate, a movable plate above the bulb and connected to the pedal, a flexible air-tube connected to the outlet end of the bulb and extending to the tool-holder at the end of the flexible arm of the engine, a nozzle secured on the end of the air-tube, and clasps secured at intervals along the flexible air-tube, whereby the same may be detachably connected to the working arm and flexible shaft of the engine, substantially as described.

2. The combination, with a dental engine, of a stationary concaved plate secured to the lower part thereof, a bulb supported on said plate, a movable plate above the bulb and connected to a movable part of the machine by a spring-arm, a flexible air-tube connected to the bulb and extending to the tool-holder, and an air-nozzle connected to the end of the said tube, substantially as described.

477,077. HARVESTER-GEARING. ANDREW STARK, Chicago, Ill., assignor of one-half to the Warder, Bushnell & Glessner Company, Springfield, Ohio. Filed Aug. 27, 1891. Serial No. 403,909. (No model.)



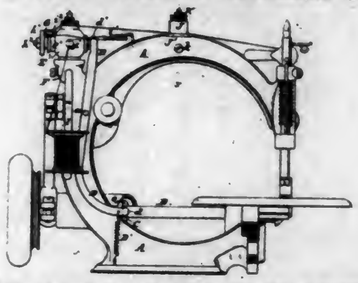
Claim.—1. In combination with the main frame, the drive-wheel crank-axle journaled at its wrists on said frame, the main power-wheel concentric and rigid with said drive-wheel, the main power-receiving wheel having fixed bearing on the frame at a point removed from the crank-axle wrist-bearings, and the chain communicating power from the main power-wheel to the power-receiving wheel, the lever-arm C^{31}, rigid with the crank-axle and extending from the crank-wrist radially with respect to the drive-wheel, a lever fulcrumed on the main frame, a pulley on said lever in position to take up the slack of the chain as the lever is rocked, and a link connecting said lever to the arm C^{31}, the pivotal connections of said link being substantially in a plane which contains the axis of the power-receiving wheel and the crank-wrist axis when the drive-wheel axis is also in that plane, substantially as set forth.

2. In combination, substantially as set forth, the drive-wheel and the power-wheel concentric and rigid therewith, the drive-wheel crank-axle, and the power-receiving wheel, said crank-wrists and said power-receiving wheel having bearings fixed with respect to each other on the main frame, the crank having the arm C^{31} rigid with it, the bell-crank lever $d\,d^2$, pivoted on the main frame and having the slack pulley on one of its arms, and the link C^7, which connects the other arm to the lever-arm C^{31}, substantially as set forth.

3. In combination, substantially as set forth, the frame and the fixed shaft g thereon, the power-receiving wheel adapted to rotate on said shaft, having clutch-teeth at one end of its hub, the beveled gear-wheel H, also adapted to rotate on said shaft and longitudinally stopped thereon, the clutch-sleeve J, feathered on the hub of said beveled gear-wheel and adapted to engage the clutch-teeth of the power-receiving wheel, and a spring coiled about the said sleeve-hub and stopped at one end thereon and at the other end stopped against the hub of the clutch-sleeve, said sleeve having a flange J^2, and the shipping-lever M, pivoted on the frame and adapted to press against said flange to disengage the clutch by moving the clutch-sleeve against the reaction of the spring.

4. In combination, substantially as set forth, the main frame, the bracket K, rigid therewith, the fixed shaft g, screwed into said bracket, the power-receiving wheel adapted to rotate on said shaft and having clutch-teeth at one end of its hub, the beveled gear-wheel H, also adapted to revolve on said shaft, having its sleeve-hub stopped on the shaft at one end and being stopped at the other end by the bracket K, the clutch-sleeve J, feathered on said hub of the beveled gear-wheel and adapted to engage the clutch-teeth of the power-receiving wheel, and a spring stopped at one end on the sleeve-hub and reacting at the other end against the clutch-sleeve, and suitable means for moving the clutch-sleeve endwise to disengage it from the power-receiving wheel, substantially as set forth.

477,078. TENSION FOR SEWING-MACHINES. WILLIAM J. STEWART, Chicago, Ill. Filed Apr. 9, 1888. Serial No. 270,160. (No model.)



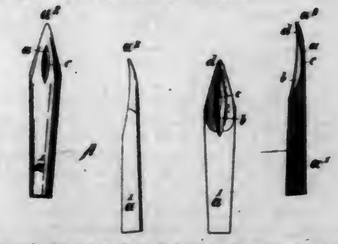
Claim.—A sewing-machine tension comprising, in combination, a pair of thread-clamping jaws or heads capable of opening to release the thread, an operating-lever D for the same pivoted to the side of the machine-arm by means of a transversely-arranged pivot a, so as to vibrate in a plane parallel with the side of said arm, and having its lower end extended forwardly and laterally to engage the operating-cam, the main driving-shaft B, carrying a hub or cam C, the operating-face of which is on the forward end of the hub, and a spring for drawing the lower end of the lever D backward in a direction opposite to the cam, substantially as set forth.

477,079. BREAST-STRAP SLIDE. HIRAM D. STODDARD, Binghamton, N. Y. Filed July 8, 1891. Serial No. 398,637. (No model.)



Claim.—A breast-strap slide having the continuous convex portion and end loops and side flanges with the screw-threaded pin projecting therefrom, and a nut, substantially as described.

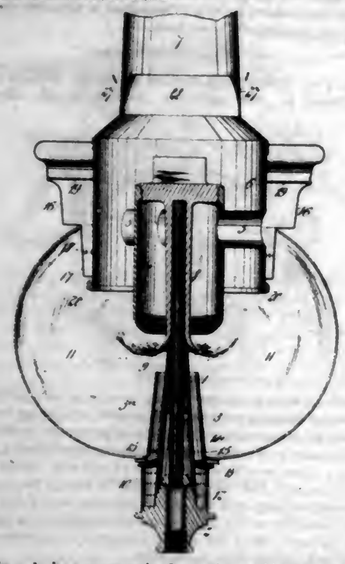
477,080. PEN. HANS SULZER, Winterthur, Switzerland. Filed Dec. 10, 1891. Serial No. 414,610. (No model.)



Claim.—1. A pen constructed of a non-elastic material, as a mineral substance, having a curved unslitted point, a convex upper face, an ink-cavity extending near to the pen-point, and an ink-channel centrally of the pen on its under side leading from said cavity to the pen-point, as set forth.

2. A pen constructed of a non-elastic material, as a mineral substance, having a solid shank, a curved point, a convex upper face, intercommunicating ink-cavities in its opposite faces, and an ink-channel formed centrally in the under side of the pen and connecting the ink-cavities with the pen, as set forth.

477,081. LAMP. THOMAS C. J. THOMAS, London, England. Filed Mar. 10, 1890. Serial No. 343,341. (No model.) Patented in England Nov. 26, 1887, No. 16,247; in France Nov. 6, 1888, No. 193,941, and in Belgium Nov. 7, 1888, No. 83,872.



Claim.—1. In a regenerative lamp, the combination of a base 2, adapted to be carried by a pedestal or other support below it and a removable regenerator supported by said base, the one being provided with a rod and the other with a socket adapted to receive said rod, and a burner comprising a tube carried by said base and through which the support for said regenerator extends from said base, said support being arranged concentric but out of contact with said burner-tube and so as to form therewith an upper annular gas-outlet passage, substantially as herein described.

2. In a regenerative lamp, the combination of a burner comprising a tube without central air-inlet, a base adapted to be connected to a pedestal or other support below it and to carry said burner-tube, a vertical rod extending centrally through said burner-tube but independent thereof and directly carried at its lower end by said base, said rod forming, with the top of said burner-tube, an annular gas-outlet, and a regenerator arranged to rest upon said rod, so as to be capable of being readily lifted therefrom and from said burner-tube, substantially as herein described.

3. In a regenerative lamp, a burner-tube with base adapted to be carried by a pedestal or other support from below, a regenerator supported above said burner-tube and so that its weight is taken directly by said base, but capable of ready removal from above said burner-tube, a glass or globe inclosing said burner-tube and supported solely by said base, and a loose vertically-movable annular cover carried by said glass or globe, fitting said regenerator and arranged to close the space or opening between the top of said glass or globe and said regenerator, substantially as herein described, for the purpose set forth.

4. In a regenerative lamp, a burner-tube of truncated conical form without central air-passage and traversed by a central rod, forming therewith an upper annular gas-outlet, a regenerator located above the upper end of said burner-tube, and an annular downwardly and outwardly curved deflector 9, supported centrally by said regenerator, so as to cover said annular gas-outlet, substantially as herein described.

5. In a regenerative lamp, a truncated conical burner-tube open at its upper end, a regenerator located above said burner-tube, a rod extending through said burner-tube from the bottom thereof and forming with the top of said tube a gas-outlet, a centrally-arranged annular deflector 9, arranged between said burner-tube and said regenerator, so as to cover or overlap the gas-outlet, a closed glass or globe inclosing said burner-tube, and an air-tube in communication with the external atmosphere and with the interior of the glass or globe and surrounding said burner-tube, substantially as herein described, for the purpose specified.

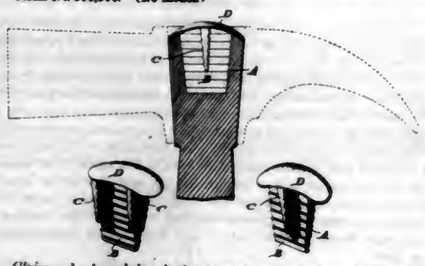
6. In a regenerative lamp, the combination of a conical burner-tube 1, with base 2, a rod 3, directly secured to said base and extending through said burner-tube, so as to form therewith an upper annular gas-outlet, a regenerator 4, 5, and 6, with projection 20, and with a central socket 8, into which said rod can enter, so as to support said regenerator, and a loose vertically-movable annular cover 16, fitting said regenerator, capable of being carried by the lamp-globe and of then closing the opening between the top edge of said globe and the regenerator, the lower end of said socket 8 being flared outward to form a deflector 9, which when in place covers said gas-outlet, substantially as herein described, for the purpose specified.

7. In a regenerative lamp, the combination of a truncated conical burner-tube 1, open at its upper end, a base 2, carrying said burner-tube and adapted to be secured to a pedestal or other support below it, a rod 3, directly secured to said base and extending through but independently of said burner-tube and forming therewith an annular gas-outlet, a regenerator with projection 20 and with a central socket 8, into which said rod 3 can enter, so as to support said regenerator above and independently of said burner-tube, an annular deflector 9, arranged above the upper open end of said burner-tube and carried by said socket 8, a globe 11, supported solely from below and inclosing said burner-tube, a loose vertically-movable annular cover 16, carried by said globe, fitting said regenerator and closing the annular opening between the top edge of said globe and regenerator, and a chimney 7, substantially as herein described.

8. In a regenerative lamp, the combination of a burner-tube 1, having an annular gas-outlet at its upper end, a regenerator arranged above said burner-tube, a rod connecting the base of said burner-tube with said regenerator and forming with said burner-tube an annular gas-box of gradually-increasing cross-sectional area from top to bottom, said gas-box having one or more inlets for gas near its lower end, and a centrally-arranged downwardly and outwardly curved deflector suspended centrally from said regenerator and arranged to cover the annular gas-outlet of said burner-tube, substantially as herein described, for the purposes set forth.

9. In a regenerative lamp, the combination of a burner, a regenerator, a glass or globe inclosing said burner, and a chimney for hot gases and products of combustion, said chimney being constructed or provided with openings 27 near its lower end for admitting cool or comparatively cool air into said chimney, and with an annular curved deflecting-guard 28, arranged within said chimney behind said openings, substantially as described and shown, for the purposes specified.

477,082. WEDGING DEVICE FOR TOOL-HANDLES. FRANK H. THOMPSON and GEORGE P. TORREY, Philadelphia, Pa. Filed July 6, 1891. Serial No. 398,596. (No model.)



Claim.—1. A wedging device consisting of a main wedge and auxiliary wedges projecting from the opposite side thereof and having their entering edges above the entering edge of the main wedge, the faces of said wedges having teeth, substantially as described.

2. A wedging device consisting of a head, a main wedge, and auxiliary wedges connected with opposite sides of the main wedge, said main and auxiliary wedges having teeth on their faces, substantially as described.

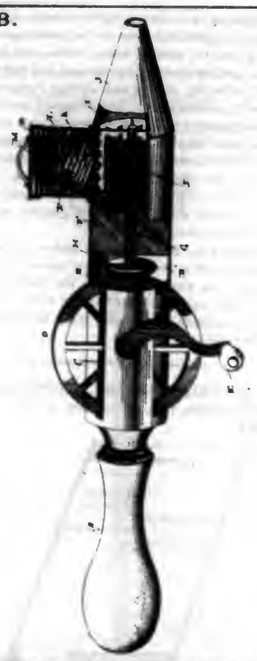
3. A wedging device consisting of a head, a main wedge, and auxiliary wedges on opposite sides of the faces of the main wedge, the faces of both wedges having serrations thereon, those of the auxiliary wedges being at a right angle to those on the main wedge, substantially as and for the purpose set forth.

477,083. GRATER. GEORGE THORN, Salt Lake City, Utah. Filed Feb. 10, 1892. Serial No. 421,040. (No model.)

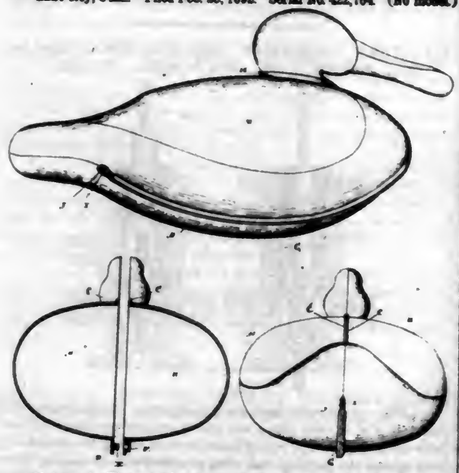
Claim.—1. A nutmeg-grater comprising a tube having a handle at one end, an operating-wheel supported within the tube, having cogs, a revolving shaft placed centrally and longitudinally within the tube, having a pinion upon its inner end, which engages the said operating-wheel, a cylindrical grater upon the opposite end of the shaft, a journal for the said shaft, and a laterally-extending hopper for the nutmeg opposite the said grater, substantially as specified.

2. A grater comprising a tube having a handle at one end, a transverse slot near its inner end, a driving-wheel journaled within the tube and placed within the said slot, a longitudinal shaft centrally journaled within the tube, a laterally-extending hopper for the material being grated, a pinion upon the inner end of the shaft, and a cylindrical grater also secured to the shaft opposite the said hopper, substantially as set forth.

477,088.



477,084. DECOY. FREDERICK A. THORN and GEORGE THORN, Salt Lake City, Utah. Filed Feb. 25, 1892. Serial No. 422,764. (No model.)



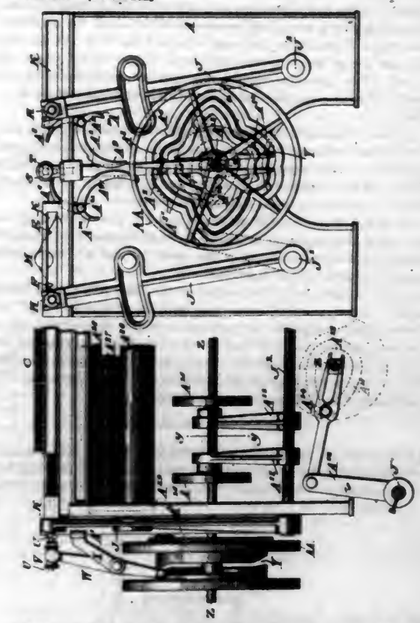
Claim.—1. The combination, with the decoy-sections having registering flanges on their edges, of a band for holding the sections together and which is adapted to lap over the said flanges, substantially as shown and described.

2. A decoy formed of vertical longitudinal sections, projections at the front and rear ends of the decoy in line with the adjacent edges of the sections, and an elastic band which is normally of a length shorter than the distance between the said projections, but which is adapted to be expanded and connected thereto at its respective ends covering the longitudinal joint between the projections, substantially as shown and described.

3. The combination, with the flanged decoy-sections and a projection on the rear end thereof, of a band having a loop formed in one end which fits over the decoy's neck and a slit in its opposite end which fits over the said projection on the rear end, substantially as shown and described.

4. A decoy formed of vertical longitudinal sections having curved lower sides, outwardly-projecting flanges on the meeting edges of the sections, projections on the front and rear ends of the decoy in line with the said flanges, and an elastic band normally of a length shorter than the distance between the projections, but which is adapted to be secured thereto at its respective ends, extending around and over the flanges between the said projections, substantially as shown and described.

477,085. MACHINE FOR MAKING FISH OR OTHER NETS. HENRY W. THURSTON, Brooklyn, N. Y. Filed Apr. 14, 1890. Serial No. 347,832. (No model.)



Claim.—1. The shuttles and shuttle-races and a table for said races, having a central passage, rotatable and sliding heads mounted on said table, hooks projecting inwardly from said heads, and arms carrying said heads, in combination with the shafts J J¹, with which said arms are connected, the arms A¹⁸ on said shafts, and the cams A¹⁶, operatively connected to and actuating said arms, substantially as described.

2. The shuttles and shuttle-races and a table for said races, having a central passage in the top thereof, in combination with rotatable and sliding heads, hooks projecting inwardly from said heads, arms carrying said heads, shafts connected with said arms, jointed arms secured to said shafts and cams on the frame engaging said jointed arms, and throw-off cams for said heads on opposite sides of said passage, said carrying-arms being at opposite ends of said passage, substantially as described.

3. In a net-weaving machine, shuttles with recesses in opposite ends and races on a table, rising and falling hooks guided on said table, arms carrying the heads of said hooks, and means for operating said arms, in combination with rotary hooks, a tubular bar in which said hooks are mounted, a rack in said bar, pinions on said hooks meshing with said rack, rising and falling arms carrying said bar and rack, a lever for oscillating said rack, and means for operating said lever, and cams for throwing off the hooks from the shuttles, said cams being on opposite sides of the center of the table, substantially as described.

4. In a net-weaving machine, shuttles with recesses in opposite ends and races on the table, rising and falling hooks guided on said table, arms carrying the heads of said hooks, and means for operating said arms, in combination with rotary hooks, a tubular bar in which said hooks are mounted, rising and falling arms carrying said tubular bar, and means for operating said arms, a rack in said bar, pinions on said hooks meshing with said rack, a lever for oscillating said rack,

means for operating said lever, and cams for throwing off the hooks from the shuttles, said cams being on opposite sides of the center of the table, substantially as described.

5. The shuttles the tables with races and rising and falling hooks thereon, heads, oscillating arms which carry the same, the hooks and means for supporting and rotating the same, rising and falling arms carrying said means, and means for operating said arms, in combination with cams, which are mounted on the ends of the table and located in the paths of the oscillating and rising and falling arms and the hooks aforesaid.

6. A hook-carrier, means for supporting the same, a pinion on said carrier, and a rising and falling rack mounted on the frame and engaging with the said pinion, in combination with the cams on said carrier and posts against which the cams abut, said posts being on opposite sides of said cams, substantially as described.

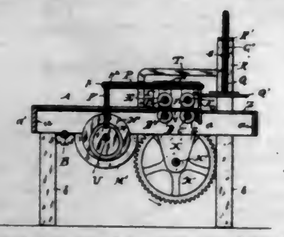
7. A bar having a rack fitted thereto and hooks with pinions mounted thereon, in combination with rising and falling arms A', means for vibrating said arms on which said bar is mounted, the oscillating arm or lever W, which is connected with said rack-bar, and the cams A^{21} on the device which carries the hooks and connected parts, and the posts A^{22} on opposite sides of said cams, whereby the hooks are rotated and the bar receives reciprocating motion, substantially as described.

8. The rollers A^{27} A^{28}, in combination with a ratchet on the shaft of one of said rollers, a pawl mounted on an arm or lever engaging said ratchet, a slide engaging with said lever, arms A^{29} A^{16}, connected with said slide, a shaft carrying said arms, and means for operating said arms, combined substantially as described.

9. The rollers A^{27} A^{28}, a pawl and ratchet, a lever carrying said pawl, and a slide engaging said lever, in combination with means for operating said slide, consisting of the arms A^{16} and A^{29}, and a wheel engaging the arm A^{16}, as described.

10. The rollers A^{27} A^{28}, a ratchet on the roller A^{27}, a pawl engaging said ratchet, and a lever carrying said pawl, said rollers A^{27} and A^{28} being geared together, in combination with a slide which engages said lever, and the arms A^{16} and A^{29}, and a wheel engaging the arm A^{16} for operating said slide, the support of the latter being provided with a screw, which may be set nearer to and farther from the slide for adjusting the feeding action of said rollers.

477,086. MACHINE FOR CUTTING VENEER DISH-BLANKS. CHARLES H. TREAT and ANDREW B. RADEHART, Baltimore, Md.; said Radehart assignor to said Treat. Filed May 15, 1891. Serial No. 392,931. (No model.)



Claim.—1. In a machine for making veneer dishes, the combination of scoring-rollers and feed-rollers parallel therewith, cutting and slitting rollers and feed-rollers parallel therewith, the said cutting and slitting rollers having knives which notch out the edges of the veneer-strip and slit the latter inward from the notched portion, mechanism for intermittently revolving the rollers, and a vertically-reciprocating knife for cutting off the scored, cut, and slitted blank from the main strip of veneer.

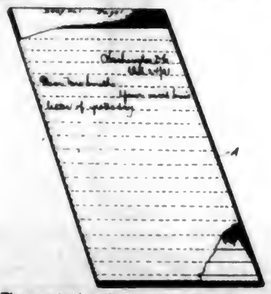
2. In a machine for making veneer dishes, the combination of a table having an opening through it at one end, scoring-rollers and feed-rollers parallel therewith, cutting and slitting rollers and feed-rollers parallel therewith, the said cutting and slitting rollers having knives which notch out the edges of the veneer strip and slit the latter inward from the notched portion, mechanism for intermittently revolving the rollers, a vertically-reciprocating knife for cutting off the scored, cut, and slitted blank from the main strip of veneer, and a vertically-reciprocating plunger to act on the cut-off blank and force it through the opening in the table, whereby it is bent into the desired shape.

3. In a machine for making veneer dishes, the combination of scoring-rollers and feed-rollers parallel therewith, cutting and slitting rollers and feed-rollers parallel therewith, mechanism for intermittently revolving the rollers, a knife for cutting off the scored and slitted blank from the main strip of veneer, horizontal levers of the first class, from the end of which said knife is suspended, links depending from the opposite ends of said levers, and revoluble disks having cam-grooves engaged by suitable rollers on the lower ends of said links.

4. In a machine for making veneer dishes, the combination of a table having an opening through it at one end, scoring-rollers and feed-rollers parallel therewith, cutting and slitting rollers and feed-rollers parallel therewith, mechanism for intermittently revolving the rollers, a vertically-reciprocating knife for cutting off the scored and slitted blank from the main strip of veneer, a vertically-movable plunger to act on the cut-off blank and force it through the opening in the table, whereby it is bent into the desired shape, horizontal levers pivoted at one end to the table, links connecting their opposite ends with the plunger, and revoluble disks having cam-grooves engaged by rollers carried by the said horizontal levers.

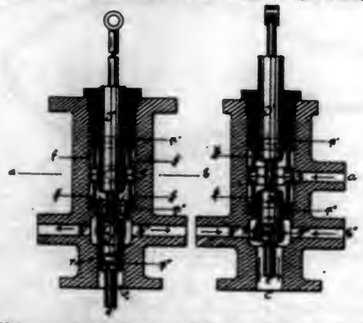
5. In a machine for making veneer dishes or trays, the combination of a a scoring and a feed roller, one above the other, a slitting and a feed roller, one above the other, the table provided with an opening where these rollers are located, and strips bridging across the said opening on the same plane as the table and located between the upper and lower rollers.

477,087. TABLET FOR USE IN LETTER-WRITING. WILLIAM M. VIBBS, Clarksville, Tenn. Filed Nov. 2, 1891. Serial No. 410,584. (No model.)



Claim.—The herein-described combined writing-tablet and blotter, consisting of two hinged integral leaves of blotting-paper or other analogous material the faces of which are provided with guide-lines and adapted to be turned with either sheet out, whereby all four faces of said leaves are utilized in writing a letter, substantially as described.

477,088. SLIDE-VALVE. HERMANN VON MITSLAFF, Berlin, Germany. Filed Sept. 12, 1891. Serial No. 405,538. (No model.)



Claim.—1. A valve having a sliding piston, in combination with packings p' p'' for said piston and hollow cylinder-sections f f, placed between said packings, said cylinder-sections having flanges made to bear against the packings and being provided with an opening for the entrance of fluid into the sections to spread the latter, substantially as described.

2. A valve having a sliding piston, in combination with the packings p' p'' for said piston and hollow cylinder-sections placed between the packings and made to bear against the latter by the pressure of the fluid, said piston having an undercut groove r and a rim i, with a packing p''' supported by said rim, substantially as described.

477,089. PROCESS OF PURIFYING AMMONIA. HANS VON STROMBECK, New York, N. Y. Filed Nov. 9, 1891. Serial No. 411,878. (No specimens.)

Claim.—The within-described process of purifying ammonia, which consists in exposing the crude ammonia gas to the action of metallic sodium, then separating the purified gas from the impurities, and finally liquefying the gas, substantially as described.

477,090. SOLDERING APPARATUS. CHARLES L. WAGANDT, Baltimore, Md., assignor of one-half to Keen & Hagerty, same place. Filed Dec. 12, 1888. Serial No. 293,396. (No model.)



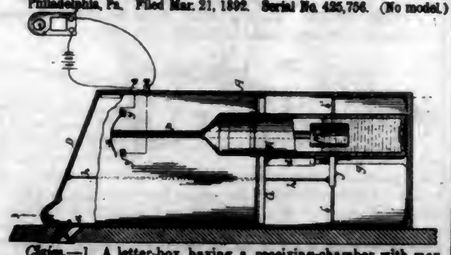
Claim.—1. In a soldering apparatus, the combination, with the soldering tip or burner and a conduit leading thereto, of the Y connection L, having the part or limb l', adapted to receive the gas-supply, and the part l, provided at the point of union of said parts with the air-jet orifice l^3 of small area relative to the area of the part l', substantially as set forth.

2. In a soldering apparatus, the combination of a soldering tip or burner, a conduit leading thereto, the connection L, having the pipe l^3 joined to said conduit and provided with the branch or limb l', of relatively large area, and the branch or limb l, having the fine-jet orifice l^3 situated at the point of union of said branches, and the valves a' g for independently regulating the air and gas supplied to said branches, substantially as set forth.

3. In a soldering apparatus, the Y connection L, having the delivery-pipe l^3, the air-supply branch l, provided with the partition l^4 and air-jet orifice l^3 at its junction with said delivery-pipe, and the gas-supply branch l', having the partition m^4 and regulating-jet orifice m^3 situated at a distance from the junction of said branches and from said orifice l^3, substantially as set forth.

4. In a soldering apparatus, a Y or connection having the delivery-pipe l^3, the air-pipe l, provided with the fine-jet orifice l^3 immediately at the branching point of the Y, and the gas-pipe l', provided with the perforated partition m^4, situated at a distance back from said branching point, substantially as set forth.

477,091. HOUSE-DOOR LETTER-BOX. FREDERICK H. WALKER, Philadelphia, Pa. Filed Mar. 21, 1892. Serial No. 425,756. (No model.)



Claim.—1. A letter-box having a receiving-chamber with movable bottom, a circuit-breaker for controlling an electric alarm or annunciator, a rod for acting on said circuit-breaker, means for first depressing and then releasing said rod on the depression of the movable bottom, and means for restoring the rod after it has been released, substantially as specified.

2. A letter-box having a receiving-chamber with movable bottom, a circuit-breaker, a rod for acting on said circuit-breaker, means for first depressing and then releasing said rod on the depression of the movable bottom, and a float for restoring the rod after it has been released, substantially as specified.

3. A letter-box having a receiving-chamber with movable bottom, a trip-plate, a spring-catch for retaining the same, a tongue on the movable bottom for operating said spring-catch, a circuit-breaker, a rod controlling the same, means for first depressing and then releasing said rod on the fall of the trip-plate, and means for returning the rod after it has been released, substantially as specified.

4. A letter-box having a receiving-chamber with movable platform constituting the bottom of the same, a circuit-breaker, a rod for controlling the same, a slide-bar engaging therewith, a cam for moving the slide-bar out of engagement with the rod as it is depressed, and means for causing the depression of said slide-bar on the movement of the platform, substantially as specified.

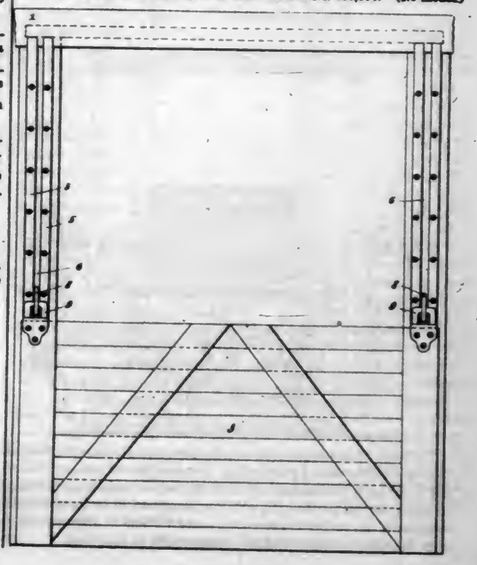
5. A letter-box having a receiving-chamber with movable bottom, a trip-plate, a spring-catch for engaging the same, a finger on the movable bottom for operating said catch, a circuit-breaker, a rod for controlling the same, a slide-bar engaging with said controlling-rod, a cam for moving said slide-bar out of engagement, and means whereby the trip-plate is caused to engage with the slide-bar both in falling and in rising, substantially as specified.

6. A letter-box having a receiving-chamber with movable bottom, a trip plate, a spring-catch engaging therewith, a finger on the movable bottom for operating said catch, a circuit-breaker, a controlling-rod therefor, a slide bar engaging therewith, a cam for causing disengagement, and a lost-motion connection between said slide-bar and the trip plate, substantially as specified.

7. A letter-box having a receiving-chamber with tilting bottom, having a letter-receiving plate secured to said tilting bottom near the free end and projecting inward over the same toward the fulcrum, a circuit-breaker, a rod for controlling the same, means for first depressing and then releasing said rod on the tilting of the letter-receiving platform, and means for restoring the rod after it has been released, substantially as specified.

8. A letter-box having a receiving-chamber with movable lid or cover and movable bottom, a trip-plate, a spring-catch therefor, a catch-releasing finger on the movable bottom, a circuit-breaker, a controlling-rod therefor, means for first depressing and then releasing said rod on the drop of the trip-plate, means for raising the rod after its release, and a connection between the trip-plate and the lid or cover of the box, so as to provide for the resetting of said trip-plate, substantially as specified.

477,092. GRAIN-DOOR FOR RAILWAY-CARS. JOHN C. WANDS, St. Louis, Mo. Filed Sept. 26, 1891. Serial No. 407,050. (No model.)



Claim.—1. The combination of the car-door, staples or brackets, and stirps secured to the car-body, said staples or brackets having heads fitting in grooves in the car-body behind said stirps and said door being pivoted to and having loose connection with the staples or brackets, whereby the door may be moved vertically and then swung away from the car-body, substantially as and for the purpose set forth.

2. The combination of a car-body having grooves 7, with enlargements 11, a car-door, staples or brackets 8, having heads 10, and eyes or castings 9 for loosely connecting the staples or brackets to the car-door, substantially as set forth.

477,098. NAIL-ARRANGING DEVICE. CHARLES K. WEAD, Malone, N. Y., assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Nov. 7, 1891. Serial No. 411,205. (No model.)



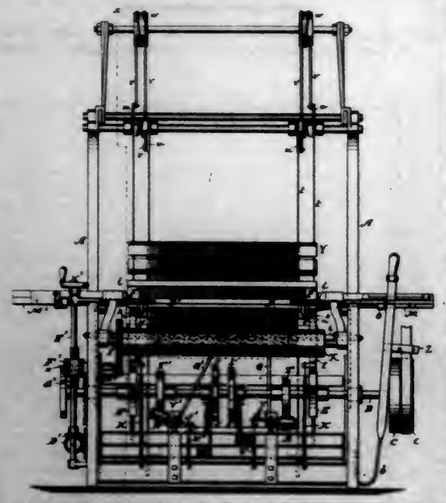
Claim.—1. In a nail-arranging apparatus, a pair of independent circularly-moving rolls or turners and means to rotate said rolls in the same direction, whereby the adjacent surfaces of said rolls travel in opposite directions to act on and turn a nail about its longitudinal axis, substantially as described.

2. In a nail-arranging apparatus, a pair of independent circularly-moving rolls or turners and means to rotate said rolls in the same direction, whereby the adjacent surfaces of said rolls travel in opposite directions to act on and turn a nail about its longitudinal axis, combined with a nail-receiving chute, substantially as described.

3. In a nail-arranging apparatus, a pair of independent circularly-moving rolls or turners and means to rotate said rolls in the same direction, whereby the adjacent surfaces of said rolls travel in opposite directions to act on and turn a nail about its longitudinal axis, combined with a hopper and feeding mechanism to supply the rolls with nails, to operate substantially as described.

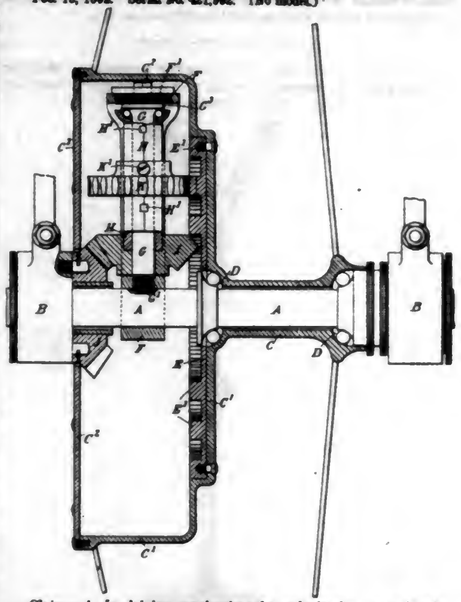
4. In a nail-arranging apparatus, a pair of circularly-moving rolls or turners, the adjacent surfaces of which travel in opposite directions to act on and turn a nail about its longitudinal axis, combined with a pusher to aid in discharging the nails from between the rolls, substantially as described.

477,094. LOOM. HENRICH WIDMER, West Hoboken, N. J. Filed Oct. 29, 1891. Serial No. 410,235. (No model.)



Claim.—The combination, with the fixed shuttle-boxes and the heddles, of a batten having pivoted arms G, provided with attached brackets I, springs K, connected with the brackets for depressing the latter to throw the batten forward, and a driving-shaft B, carrying cams E, adapted to act on the brackets, and cams T T' and L', adapted to actuate the shuttle and the heddles, substantially as described.

477,095. DRIVING MECHANISM FOR VELOCIPEDES. FREDERICK C. ADAMS and FRANCIS T. HEDSHAW, London, England. Filed Feb. 18, 1892. Serial No. 421,992. (No model.)



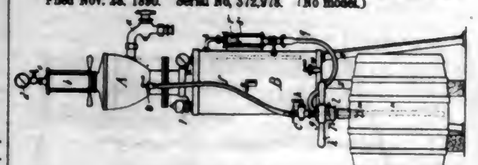
Claim.—1. In driving mechanism for velocipedes, an epicyclic train consisting of a non-rotating gear-wheel secured to the frame or body of the machine, a series of concentric gear-wheels or rings of teeth secured to or forming part of the driven wheel, and an intermediate wheel carried upon an arm secured to the driving-shaft and adapted to gear with the said non-rotating wheel and with any one of the said concentric gear-wheels or rings of teeth, substantially as set forth.

2. In driving mechanism for velocipedes, an epicyclic train consisting of a non-rotating gear-wheel secured to the frame or body of the machine, a series of concentric gear-wheels or rings of teeth secured to or forming part of the driven wheel, and an intermediate wheel carried upon an arm secured to the driving shaft and adapted to gear with the said non rotating gear-wheel, said intermediate wheel carrying a pinion which may be made to gear with any one of the said concentric gear-wheels or rings of teeth, substantially as set forth.

3. In driving mechanism for velocipedes, the combination of the non-rotating wheel J, secured to the frame of the machine, the series of concentric rings of teeth E', secured to the driven wheel, the arm G, secured to the driving-shaft A, the intermediate wheel I, mounted on the said arm, said wheel I having a sleeve H, which carries a pinion K, and means for securing the pinion K in various positions to cause it to gear with any one of the said concentric rings E', substantially as set forth, and for the purpose specified.

4. In an epicyclic driving mechanism for velocipedes, the combination, with the stationary wheel and driven wheel, of an intermediate compound wheel constructed in two parts, one part of which is adapted to slide axially on the other, said compound wheel being supported by a frame F, substantially as described.

477,096. APPARATUS FOR USE IN BARRELING BEER OR OTHER LIQUIDS. WILHELM ALBACH, Höchst-on-the-Main, Germany. Filed Nov. 28, 1890. Serial No. 372,978. (No model.)



Claim.—1. In an apparatus for barreling beer and other aerated liquids, the combination of the receptacle A, having an inlet-pipe *a* and outlet-cock *c*, the air-vessel B, having a valve *f* in its upper part, the faucet C, having cock A, the flexible pipe *f*, connecting the cock *c* and faucet C, the pipe *m*, leading from the faucet and provided with cone *l* and pipe *n*, and the gage-glass *r*, communicating with the air-vessel B and faucet C, substantially as described.

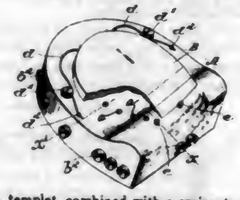
2. In an apparatus for barreling beer and other aerated liquids, the combination of the receptacle A, having an inlet-pipe *a*, cock *c*, and gage-glass *b*, provided with three-way cock *c*, the air-vessel B, having valve *f* and air-cock *y*, the faucet C, having cock A, the flexible pipe *f*, connecting the cock *c* and faucet C, the pipe *m*, leading from the faucet and having cone *l* and pipe *n*, adapted to enter a barrel, the cock *p* on the faucet C, the gage-glass *r*, provided with ball-valve *r'*, the flexible pipe *g*, connecting the cock *p* and gage-glass *r*, and the pipe *s*, connecting said gage-glass with the interior of the air-vessel, substantially as described.

477,097. BAG-FASTENING. JOHN RAUBACH, Newark, N. J., assignor to Joseph F. Kitchell, same place. Filed Apr. 15, 1891. Renewed Feb. 18, 1892. Serial No. 421,994. (No model.)



Claim.—The improved catch or fastener for bag or satchel frames, which consists in the case *c*, the catch and finger-piece journaled therein, the spring secured to the inside of said case and engaging with said journals, the catch-plate *i*, secured to the inside of the inner jaw of the bag-frame and carrying the hook *h*, and spring *l*, having the detent *m* and incline *n*, said parts being arranged to operate in connection with one another, as and for the purposes set forth.

477,098. HEEL-NAILING MACHINE. CHARLES H. BROWN and ALONZO B. MCCOY, Burlington, N. J., assignors to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 23, 1892. Serial No. 426,079. (No model.)

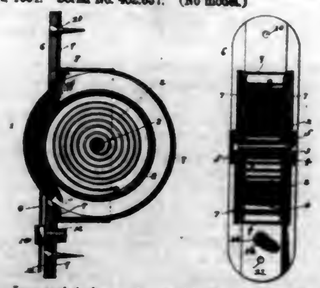


Claim.—1. A templet, combined with a spring to act against the rounded rear edge of the heel, and a spring-supported vertically-movable gage, against which the spring presses the breast of the lift or heel, substantially as described.

2. The templet and the independent spring-supported vertically-movable gages, combined with a spring to act against the lift or blank and hold it against the gages, substantially as described.

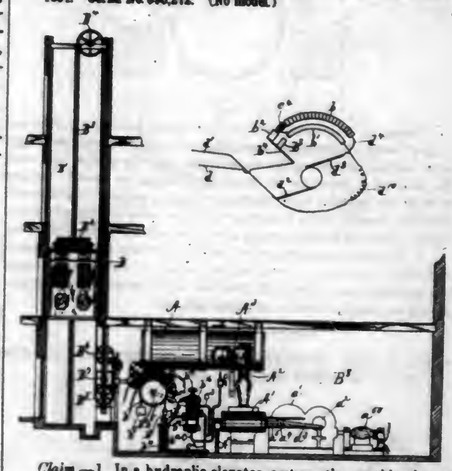
3. The two springs *d d*, their holding-studs, and the templet, combined with a spring-supported vertically-movable gage adapted to act against the breast of the lift or blank, substantially as described.

477,099. SASH-BALANCE. AMOS D. CARLE, Malden, Mass. Filed Aug. 14, 1891. Serial No. 402,637. (No model.)



Claim.—In a sash-balance, the combination of a casing, a spring-actuated pulley mounted therein and adapted to receive a sash cord or chain, a brake-band arranged to engage the pulley frictionally to retard the rotation of the same and having one end secured to the casing by a screw for securing the casing to a window-frame and provided at its other end with a lug having a threaded opening, and an adjusting-screw mounted in the casing and engaging the threaded lug and provided with a polygonal head arranged on the outer face of the casing, whereby the pressure on the pulley may be positively adjusted from the exterior of the window-casing, substantially as described.

477,100. ELECTRIC ELEVATOR. JOHN H. CLARK, Boston, Mass., assignor to the Whittier Machine Company, same place. Filed June 5, 1891. Serial No. 395,272. (No model.)



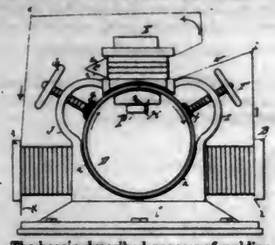
Claim.—1. In a hydraulic-elevator system, the combination of the following instrumentalities, viz: an elevator, a tank or vessel to contain fluid to actuate the elevator, a pump to supply the fluid to the tank, an electric motor to operate said pump, a switch to control the circuit of the motor, a cylinder, a piston located therein and operatively connected to the said switch, a valve casing provided with a port connected to the said tank, a second port connected to the said cylinder, and an outlet-port for the fluid discharged from the cylinder, and a valve in said valve-casing to control said ports, whereby the fluid is confined in the cylinder when the fluid in the tank is at a predetermined point, and the motor thereby maintained inoperative, substantially as described.

2. In a hydraulic system, the combination of the following instrumentalities, viz: an elevator, a tank or vessel to contain fluid to actuate the elevator, a pump to supply the fluid to the tank, a shunt-wound electric motor to operate said pump, a switch comprising a resistance included in the armature-circuit of the motor, a conducting strip or section included in circuit with the field-coils of the motor, a supplemental coil b^4, connected to the resistance and to the conducting-strip, a movable member of the said switch connected to the line-circuit, and mechanism, substantially as described, actuated by the volume of fluid in the tank to operate the said movable member of the switch, substantially as specified.

3. In a hydraulic-elevator system, the combination of the following instrumentalities, viz: an elevator, a tank or vessel to contain fluid to actuate the elevator, a pump to supply the fluid to the tank, an electric motor, and intermediate gearing to connect the pump with the armature-shaft of the said motor, a switch to control the circuit of the motor, a cylinder, a piston located therein and operatively connected to said switch, a valve-casing provided with a port connected to the said tank, a second port connected to the said cylinder, and an outlet-port for the fluid discharged from the cylinder, and a valve in said valve casing to control said ports, whereby the fluid is confined in the cylinder when the fluid in the tank is at a predetermined point, and the motor thereby maintained inoperative by the fluid confined in the cylinder, substantially as described.

4. In a hydraulic-elevator system, the combination of the following instrumentalities, viz: a tank or vessel to contain fluid to actuate the elevator, a pump to supply the fluid to the tank, a shunt-wound electric motor to operate said pump, a switch comprising a resistance included in the armature-circuit of the motor, a conducting-strip included in circuit with the field-coils of the motor, and a movable member connected to the line-circuit, a pulley to which said movable member is secured to move therewith, a cylinder, a piston therein, a weight, a connection joined to the said piston and to the said weight, a valve to control the movement of the said piston, a valve-casing connected to the tank, and means to act on said valve in opposition to the fluid, substantially as described.

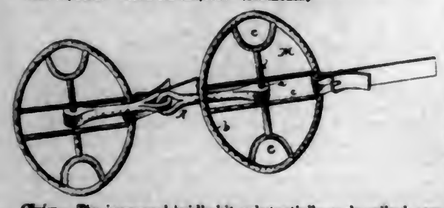
477,101. ELECTRIC WELDING. CHARLES L. COFFIN, Detroit, Mich. Filed Nov. 6, 1889. Serial No. 329,393. (No model.)



Claim.—1. The herein-described process of welding a continuous piece of metal by electricity, consisting in bringing together the edges to be welded, connecting the material on each side of the joint with the poles of a generator of electricity, passing an electric current through the material to be welded, interposing magnetic resistance to the direct passage of the current through the material without traversing the joint, and finally pressing the edges together to form the weld.

2. The herein-described process in the operation of welding metals electrically, consisting in resisting the passage of the current through the material in any other path than that of the proposed weld by subjecting any shorter path to magnetic influence.

477,102. BRIDLE-BIT. ORRIN COMBS, Walnut Grove, Ill. Filed Mar. 12, 1892. Serial No. 424,712. (No model.)



Claim.—The improved bridle-bit, substantially as described, comprising a mouth-bar and the rings pivotally connected to the ends of said bar and having the parallel cross-bars *c*, the short diametrically-disposed bars *d*, extending at right angles to the bars *c*, and the loops connected at an intermediate point in their length to the ends of the bars *d* and at their ends to the ring, all the parts of said ring lying in the same plane, substantially as and for the purpose set forth.

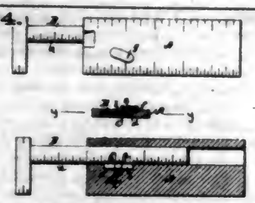
477,103. SASH-HOLDER. LORENZO DAMON, West Chester, Pa. Filed Dec. 5, 1891. Serial No. 414,146. (No model.)



Claim.—The combination, with a window-frame, an upper sash, a pair of parallel vertical strips attached to the inside of the upper sash and formed with undercut inner edges to provide a dovetailed groove, a lower sash having its outside cut away to provide a space which receives the parallel strips, a metallic bearing-plate attached to the outside of the lower sash and against which the parallel strips bear, a metallic bearing-plate attached to the inside of the lower sash, a shank extending through the said bearing-plates and having a head at its inner edge, which engages the undercut inner edges of the parallel strips, and means for moving the shank lengthwise to rigidly clamp the parallel strips against the metallic bearing-plate at the outside of the lower sash, substantially as described.

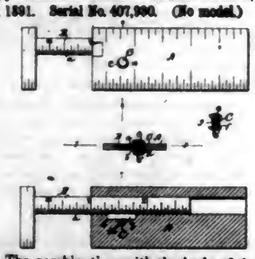
477,104. CALIPER-RULE. SAMUEL DARLING, Providence, R. I. Filed Oct. 6, 1891. Serial No. 407,989. (No model.)

Claim.—1. The combination, with the body of the rule, provided with a transverse circular perforation, the caliper-slide, and the gib adapted to bear against the edge of the slide, of the cam held in the circular perforation and provided with a groove which embraces the edge of the gib, substantially as described.



2. The combination, with the body of the rule, provided with a transverse circular perforation, the caliper-slide, and the gib adapted to bear against the edge of the slide, of the cam held in the circular perforation and provided with a groove which embraces the edge of the gib and the arm whereby the proper movement may be imparted to the cam, substantially as described.

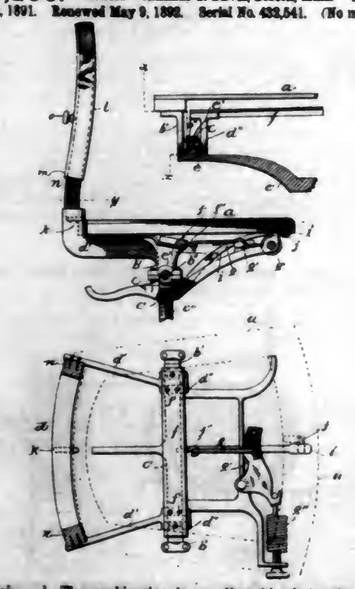
477,105. CALIPER-RULE. SAMUEL DARLING, Providence, R. I. Filed Oct. 6, 1891. Serial No. 407,990. (No model.)



Claim.—1. The combination, with the body of the rule, provided with a transverse perforation, and the caliper-slide, of the tightening-wedge having opposite projecting heads and held in the transverse perforation, substantially as described.

2. The combination, with the body of the rule, provided with a transverse perforation, and the caliper-slide, of the tightening-wedge made in two parts, with a solid head upon each part, and held in the transverse perforation, substantially as described.

477,106. CHAIR. CHARLES B. DAVIS, Boston, Mass. Filed Feb. 13, 1891. Renewed May 9, 1892. Serial No. 432,541. (No model.)

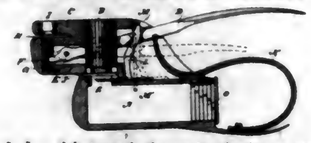


Claim.—1. The combination, in an adjustable chair, of a suitable supporting-frame, a seat pivotally supported thereon, a tiltable back mounted on a pair of arms extending under the seat and provided with standards pivoted on the frame, a cross-bar connected with an adjustable righting-spring, and locking devices at the front and rear of the seat, as and for the purpose set forth.

2. The combination, in an adjustable chair, of a suitable supporting-frame, a normally-horizontal seat supported on standards pivoted at the center of the frame, a lock at the front of the seat for locking the seat and frame together, a tiltable back mounted on divergent arms extending under the seat and provided with standards pivoted common with that of the seat, and a lock for locking the back and seat together, all arranged and adapted to operate in the manner and for the purpose set forth.

3. In an adjustable chair, the combination of a non-tiltable supporting-frame, a seat and back pivoted to tilt on the frame, said seat being mounted on pivots independent of the back and the back on arms and pivots independent of the seat, said pivots being common to each other, and locking devices at the front and rear of the seat, whereby the frame, seat, and back are secured to tilt together or independently or made non-tiltable, as set forth.

477,107. TICKET-PUNCH. WILLIAM C. DOWNING, San Francisco, Cal. Filed Feb. 26, 1892. Serial No. 422,963. (No model.)



Claim.—1. In a ticket-punch, the receiver having an opening and die in the upper part, a punch adapted to reciprocate in a guide above the opening, a slot extending transversely above the opening in the receiver, through which a ticket may be introduced, and a slide movable across said opening, in combination with a second punch operating in a direction the reverse of the first-named punch, a ticket-slot to the second punch on a different plane from that of the ticket-slot to the first-named punch, a lever D, engaging both punches, and a cam-lever L, engaging the slide and actuated by the movement of the lever D, whereby the slide is withdrawn when the first-named punch is depressed to allow the part punched out of the ticket to fall into the receiver and is restored to its normal position to close the opening when the punch is retracted, substantially as herein described.

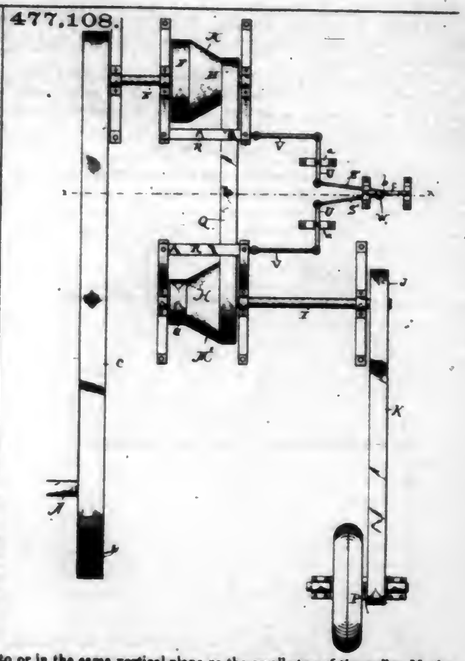
2. In a ticket-punch, the receiver having a die and opening upon the top, a punch reciprocating in a guide above and in line with said opening, a slot through which the edge of the ticket may be introduced between the punch and the die, and a second punch adapted to reciprocate in the outer end of the frame, with corresponding die and ticket-slot, in combination with the lever passing through the first-named punch and fulcrumed in the frame, said lever having an extension upon the opposite side of its fulcrum engaging the second-named punch, whereby the two are actuated simultaneously by the same lever, substantially as herein described.

3. In a ticket-punch, a receiver having an opening and a die upon the upper side, a punch reciprocating in a guide above and in line with said opening, a transverse slot above the die for the introduction of a ticket, a reciprocating slide, by which the opening is closed when the punch is raised and retracted when the punch is depressed, a lever D, passing through a slot in the punch-shank, and a cam-arm L, by which the slide is actuated, passing through a slot in the lever D, and a pin M', forming a transverse key to lock the fulcrum-pin of the arm L in place and prevent the removal of any of the parts, substantially as herein described.

477,108. BELT-AND-PULLEY GEARING. JAMES FISHER, New Orleans, La. Filed Feb. 13, 1892. Serial No. 421,402. (No model.)

Claim.—1. In a belt-and-pulley gearing for transmitting motion from an engine-shaft to a fan-shaft, the combination, with the engine-shaft, a pulley fixed thereon, the fan-shaft, and a pulley fixed on said shaft, of the intermediate shaft E, a pulley fixed on said shaft, a belt taking around the pulley on the engine-shaft and the pulley on the intermediate shaft E, the stepped pulley fixed on the shaft E, the intermediate shaft I, the pulley fixed on said shaft, the belt taking around the pulley on the fan shaft and the pulley on the shaft I, the stepped pulley arranged on the shaft I and having its large step arranged opposite to or in the same vertical plane as the small step of the pulley on the shaft E and its small step arranged opposite to or in the same vertical plane as the large step of the pulley on the shaft E, a belt taking around the stepped pulleys of the shafts E and I, and a suitable means for shifting said belt laterally, substantially as and for the purpose set forth.

2. In a belt-and-pulley gearing, substantially as described, the combination, with the shaft E, the shaft I, the stepped pulley M, fixed on the shaft E and comprising the large step, the small step, and the intermediate truncated-cone-shaped portion, the stepped pulley M', fixed on the shaft I and comprising the large step arranged opposite



to or in the same vertical plane as the small step of the pulley M, the small step arranged opposite to or in the same vertical plane as the large step of said pulley M, and the intermediate truncated-cone-shaped portion, and the belt connecting the stepped pulleys M M', of the guide supports or tracks arranged at the sides of the pulleys, the loops movable on said tracks and surrounding the belt, the levers U, the hand-lever, the links connecting the weight end of the hand-lever and the power ends of the levers U, and links connecting the weight ends of said levers U and the movable saddles, all substantially as specified.

477,109. SATCHEL OR BAG FRAME. ROBERT FLOCKE, Newark, N. J., assignor to Gustav Bernheim, New York, N. Y. Filed Jan. 25, 1892. Serial No. 419,104. (No model.)



Claim.—1. In a hinge for a satchel-frame, the combination, with the leaves, each of which is provided with perforations parallel with the central or hinge perforation, of a tubular pintle through the central opening of the leaves, a spring-actuated push-rod through the pintle, a cross-head on the end of the rod, and pins in the cross-head, the inner ends of which are adapted to enter the holes in the leaves and lock the hinge, substantially as set forth.

2. The combination, with the hinge of a satchel-frame, of a tubular pintle, a socketed head or washer upon one side of the knuckle of the hinge and a recess or groove in the other, a spring-actuated push-rod passing through said socketed head and pintle, and means connected with said push-rod for automatically locking the hinge when the latter is open, as described, and for the purposes set forth.

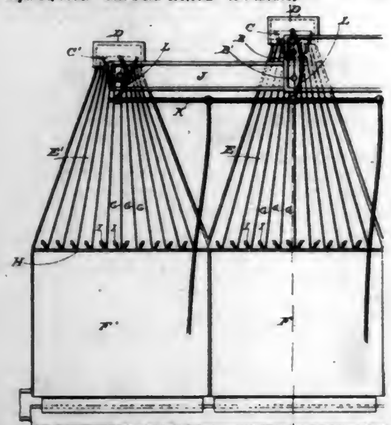
3. In a hinge for a satchel-frame, the combination, with the leaves, having perforations arranged parallel with the central or hinge perforation, of a tubular pintle passing through the central opening of the leaves, a spring-actuated push-rod arranged in said tubular pintle, and means in connection with said push-rod for engaging with the holes in the leaves and locking the hinge, as described, and for the purposes set forth.

477,110. PAINT COMPOUND. WILLIAM B. FREDERICK, San Francisco, Cal., assignor to the Atmospheric Paint Compound Company, same place. Filed Sept. 29, 1891. Serial No. 407,187. (No specimens.)

Claim.—1. A compound consisting of chloride of sodium, saltpeter, oxalic acid, French chalk, and raw linseed-oil mixed in the proportions herein described.

2. The combination, with a paint compound, of an auxiliary compound consisting of chloride of sodium, saltpeter, oxalic acid, French chalk, and raw linseed-oil, mixed with the paint in proportions substantially as described.

477,111. CONCENTRATOR. GEORGE GATES, Jackson, Cal. Filed Sept. 14, 1891. Serial No. 405,694. (No model.)



Claim.—1. The combination of the supply-sluice, the supplemental sluice extending beneath it, inclined discharge-troughs fixed beneath the upper supply-sluice, a receiving-box into which the troughs discharge, the parallel inclined distributing-tables extending at right angles with the sluices, over which the material flows from said box, and being narrow at the upper or receiving end and diverging to the lower end, and having guide-flanges upon their surfaces, said supply-sluice having holes made through its bottom, one of which communicates with said distributing table and the other with the supplemental sluice, substantially as herein described.

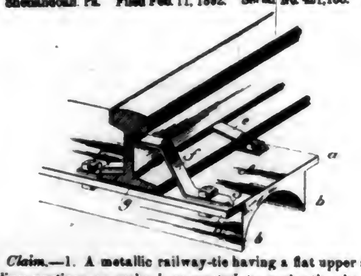
2. In a concentrator, a main supply-sluice, a supplemental sluice extending beneath it, a series of inclined concentrating-tables extending at right angles with the main and supplemental sluices, intermediate distributing-tables situated between the supply-sluice and the concentrating-tables, said tables being made narrow at the upper or receiving end and diverging to the lower end, and having vertical guide-flanges fixed upon their surfaces and diverging from the receiving to the discharge ends, openings made in the main sluice above each of the distributing-tables, one of which communicates with said table and the other with a supplemental sluice beneath the main sluice, whereby the pulp may be directed upon the distributing and concentrating tables, or cut off therefrom and delivered into the supplemental sluice, and thence upon a secondary table, substantially as herein described.

3. In a concentrator, a series of inclined concentrating-tables, corresponding inclined distributing-tables, the lower ends of which deliver upon the upper ends of the concentrating-tables, flanges fixed upon said distributing-tables, diverging from the receiving to the discharge ends of the tables, a supply-sluice whereby pulp is delivered upon the upper end of the distributing-tables, and guides I, fixed to the surfaces of the tables near the discharge end to change the direction of the delivery of the pulp at this point, substantially as herein described.

4. In a concentrator, a series of inclined concentrating-tables, a corresponding series of inclined distributing-tables diverging from the receiving end to the discharge and delivering upon the upper ends of the concentrating-tables, diverging flanges fixed upon the surfaces of the distributing-tables, whereby the pulp or material is caused to diverge from the receiving to the discharge ends of said tables, directing-pieces I fixed to the lower ends of distributing-tables, and perforated plates H, through which the pulp is delivered from the distributing-tables to the upper ends of the concentrating-tables, substantially as herein described.

5. A concentrator consisting of a series of inclined tables standing parallel with each other, each successive table lower than the preceding one, a supply-sluice extending at right angles with said tables above their upper or receiving ends, corresponding distributing-tables adapted to receive material from the supply-sluice and deliver it upon the concentrating-tables, said distributing-tables diverging from the receiving to the discharge ends and having correspondingly-diverging flanges fixed upon their surfaces and dividing them into channels through which the pulp flows, perforated plates and guide-pieces at the lower ends of the distributing-tables, whereby the material is evenly delivered upon the upper ends of the concentrating-tables, holes made in pairs in the bottom of the supply-sluice and corresponding with each of the distributing-tables, inclined chutes, with each of which one of these holes communicates, and a supplemental sluice extending beneath and parallel with the main sluice with which the other hole communicates, and plugs or stoppers whereby either of the holes may be closed and the other opened to supply material to the distributing and concentrating tables or diverted into the supplemental sluice, substantially as herein described.

477,112. METALLIC RAILWAY-TIE. WILLIAM A. GRAEBER, Shenandoah, Pa. Filed Feb. 11, 1892. Serial No. 421,135. (No model.)



Claim.—1. A metallic railway-tie having a flat upper surface, depending portions or webs *b*, connected to each other by an arched portion, and laterally-extending flanges *a a* beyond the straight walls of the webs, having apertures *c c*, substantially as shown, and for the purpose set forth.

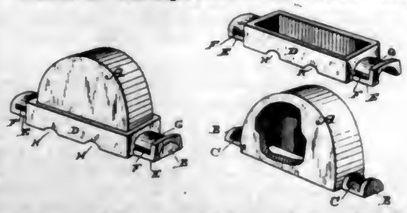
2. The combination, in a metallic railway-tie having a flat upper surface and laterally-projecting flanges *a a*, vertical depending portions or webs having straight outer and curved inner sides, bolt-holes *c c*, extending through the flanges *a a*, clamps *e*, adapted to be engaged by bolts, and apertures *d'* and *d²*, adapted to receive a bolt and the end of a brace-plate *f*, substantially as shown, and for the purpose set forth.

477,113. BALL-BEARING. FRIEDRICH A. GRÜNEBERG, New York, N. Y. Filed Aug. 19, 1891. Serial No. 403,096. (No model.)



Claim.—The combination, with two rings or disks placed one above the other, the lower one being provided near its peripheral surface, upon its inner face, with two inclined surfaces and the inclination of said surfaces being in opposite directions, of a plate interposed between the rings or disks and provided with a series of pockets, spherical bodies loosely fitted in said pockets and having a bearing against the inner faces of the rings or disks, the bearing of the lower ring or disk being inclined, and a pivot-pin connecting the plate and the rings or disks, substantially as shown and described.

477,114. BUMPER FOR VEHICLE-SPRINGS. MILTON HALL, San Francisco, Cal. Filed Aug. 24, 1891. Serial No. 403,586. (No model.)

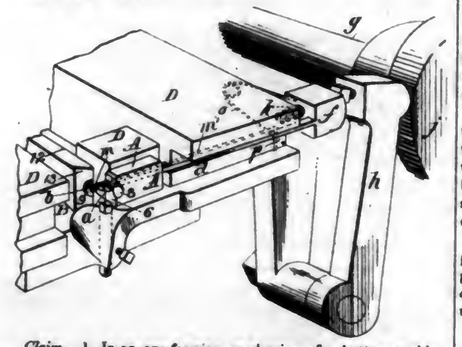


Claim.—1. The bumper or relief-pad consisting of the semicircular elastic hollow block having the lugs or extensions by which it is secured and a non-elastic frame inclosing the lower portion of the pad, substantially as described.

2. The bumper or relief-pad consisting of the semicircular block having the hollow chamber made within it, lugs or extensions from each side of the block, having the grooves or channels made upon the exterior surface, a rectangular yoke inclosing the bumper, having tubular extensions fitting over the lugs of the bumper, and grooves or channels for the reception of holding-clips which are fitted thereto, substantially as described.

3. A bumper or relief-pad consisting of the elastic hollow block with extensions or flanges and an inclosing yoke or frame by which it is retained and secured in place, in combination with a supplemental rigid piece fitted within the mouth of the hollow pad to prevent undue compression at this point, substantially as described.

477,115. BUTTON-MACHINE. FRED. H. HARDMAN, Beverly, assignor to Walter E. Bennett, Boston, Mass. Filed Aug. 21, 1891. Serial No. 403,366. (No model.)

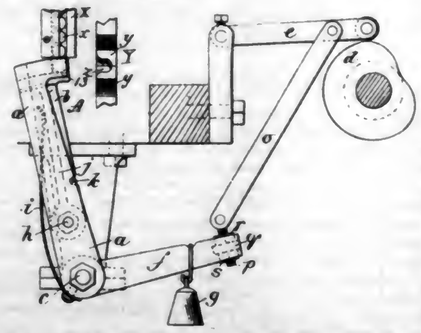


Claim.—1. In an eye-forming mechanism of a button-machine, the combination, with a block having a forming-stud projecting from one side face thereof, of another block movable with one side face in bearing upon the face of the first block from which said stud projects and having a forming or die opening of U form within said bearing-face which extends to the end of the block and to coact with said stud, and a guard-piece provided to extend within said U-opening and to lie just back of said stud and serving after the formation of the eye-staple as the movable die retreats to prevent the staple from being carried rearwardly with the movable block and off from the stud, as set forth.

2. In a button-machine, the combination, with a block having a stud *a* extended from the face thereof, of another die-block movable by one side along the side of said first block and having the U-opening *b* within said side and the rearwardly-extended groove *n*, and a guard member extended to lie just back of and slightly separated from the said stud, substantially as described.

3. In a button-machine, the combination, with the die A, having the V-stud *a* in its end and the groove 10 in its rear side, and the die B, movable as specified and provided with the U-opening *b*, and the groove *n*, of the ejector located for play within the said groove, and means for moving it endwise back and forth, and the guard-rod supported alongside of and at the rear of the ejector-rod and limited at its inner end by walls of the openings in said die B, and a spring for maintaining the guard inwardly, as described and shown.

477,116. BLANK-CONVEYER. FRED. H. HARDMAN, Beverly, assignor to Walter E. Bennett, Boston, Mass. Filed Aug. 21, 1891. Serial No. 403,369. (No model.)



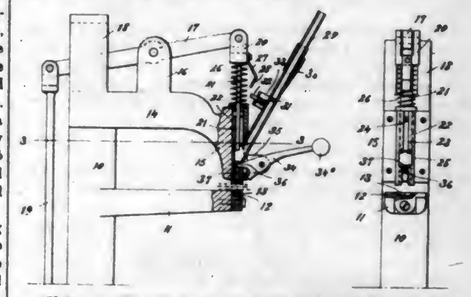
Claim.—1. The combination, with the chute, of a conveyer consisting of a primary member *a* and another member mounted thereon for a movement therewith and also for a movement independently thereof, a pocket in the top of the conveyer, the walls of which are formed by portions of the said members, a stop for limiting the extent of movement of one of said members, whereby the other member in its continued movement advances the rear wall of the pocket constituted thereby for the expulsion of the blank, and means for moving the one member into its normal or pocket-forming relation with the one carrying it on the return movement of the conveyer, and means for imparting a forward-and-backward movement to the primary member, substantially as described.

2. In a conveyer for the purpose substantially as described, the combination, with the arm *a*, adapted to move forward and back, of the arm *b*, mounted thereon, substantially as described, and adapted to move as one with the arm *a* and also to have a limited movement independently with relation thereto parallel with the plane of movement of said arm *a*, the arm *b* being provided in its extremity with the niche 8 and the base-ledge 9 and the arm *a* having the niche constituted by the side lip 13 and rear shoulder 12, and the spring for normally maintaining both arms in their pocket, constituting relations for the purpose set forth.

3. The combination, with a conveyer consisting of the arm *a* and the arm *b*, pivoted on the side thereof, and the spring *i*, and a stop *k*, the arm *b*, having in its upper end the niche 8, with the laterally-extended base 9, and the arm *a*, having the rear shoulder 12 and side lip 13, the spring-finger *n*, applied on the arm *b*, substantially as described, of a receiver adapted to constitute a stop for the movement of the arm *b*, substantially as described.

4. The conveyer comprising the arms *a* and *b*, connected and comprising the pocket, substantially as described, combined with the angular arm *f*, connected to said arm *a*, and the cam *d*, and cam-lever *e*, the link connected to said cam-lever and having an adjustable connection with said arm *f*, substantially as and for the purpose set forth.

477,117. STAPLE-DRIVING MACHINE. GILBERT HAY, Madison, Nebr., assignor to himself and Edward Jacobs, same place. Filed Nov. 5, 1891. Serial No. 410,997. (No model.)



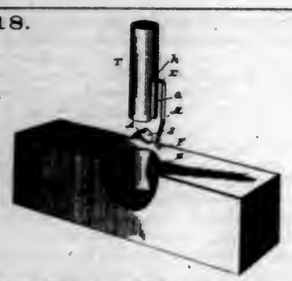
Claim.—1. The combination, with the vertical slideway and the plunger reciprocating therein and provided at its upper end with a downward-extending arm 27 28, of the inclined raceway communicating with the lower end of the slideway, a plate-spring 30, having a stop-lug 31 between its ends entering the raceway from its lower side, and a spring-retracted plunger 32 in the path of the lower end of arm 27 28 and entering the raceway from its upper side at a point opposite the lower end of the plate-spring to push said spring and its lug outward to release a staple, the said plunger then receiving the staple and in turn releasing it when moved outward, substantially as set forth.

2. A staple-setting machine consisting of a standard provided with horizontal arms 11 14, a clinching-anvil on arm 11, a vertical slideway thereover on the arm 14, a vertical plunger 21 in the slideway, operating mechanism therefor, the depending arm 27 28, secured to the upper end of the plunger, the inclined raceway 29, communicating with the slideway below the lower end of the plunger 21, a plate-spring 30, provided between its ends with a stop-lug 31, entering the lower side of the raceway, a spring-retracted plunger 32 in the path of the arm 27 28 and entering the raceway below lug 31 and opposite the lower end of the spring to push the latter outward, and the vertically-swinging gravity-lever 34, pivoted between its ends, having a point at the end of its short arm entering the slideway below the raceway directly in the path of the plunger 21 and weighted at its outer end, substantially as set forth.

477,118. WOOD-JOINT. JASPER N. HIERONYMUS, Fairbury, Ill. Filed Oct. 9, 1891. Serial No. 408,236. (No model.)

Claim.—1. A wood-joint comprising one member having an opening in one side, a plate wider than the opening and engaging the walls of the same, a second member terminating in a tenon and fitting said opening and having a longitudinal groove at its end and an approximately transverse hole at the upper end of the groove, and a hook, its body lying in said groove, its upper end being bent at an angle and

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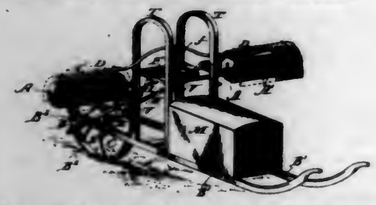
seated in said hole and its lower end deflected by the plate and hooked into the body of the first member.

2. A wood-joint comprising one member having an opening in one side, a second member fitting said opening and having a longitudinal groove with an approximately transverse hole at its upper end, a hook with its body lying in said groove, its upper end bent at an angle and seated in said hole and its lower end curved outwardly and upwardly from the second member into the body of the first, and a plate between the bottom of the hole in the first member and the inner end of the second member, with an end projecting beyond the wall of said hole and under the bend of said hook.

3. A wood-joint comprising a member having an opening in one side, a deflecting-plate wider than the opening mounted therein and engaging the walls thereof, a second member fitting said opening and having longitudinal grooves in its opposite faces, whose upper ends are connected, and a double hook with its arms lying in said grooves, its bend connecting the arms above said grooves, and its lower ends deflected outwardly by the plate and hooked into the body of the first member.

4. The combination, with one member having a hole in one side and a spreader-plate bent at an angle and seated in said hole with its angle uppermost, of a second member of a size to fit said hole and a hook member set into the wall of this member and projecting beyond the end thereof in a line above one of the beveled faces of said plate, as and for the purpose set forth.

477,119. POISON-DISTRIBUTER. HARRY J. HILL, Perry's Mills, N. Y. Filed May 4, 1891. Serial No. 391,580. (No model.)



Claim.—1. The combination, with the beams, of the vertically-adjustable platform supported above the same, the crank-shaft journaled upon said platform, the distributing-cylinders, the adjustable pitmen, the crank-arms, and operating-wheel, all arranged substantially as shown and described.

2. The combination, with the beams, of the upright standards, the vertically-adjustable platform arranged between the same, the crank-shaft journaled thereto, the cylinders, the hanger supported from the platform, the adjustable pitmen, the crank-arms, and operating-wheel, substantially as shown and described.

3. The combination, with the beams, of the operating-wheel, the axle whereof is provided with a ratchet-disk and crank-arms, the pawls attached to the wheel, the pitmen-rods, and the operating crank-shaft carrying the distributing-cylinders, substantially as shown and described.

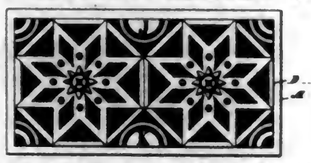
4. The combination, with the supporting uprights, of the vertically-adjustable platform arranged between the same, the journal-bearings attached to the under side of said platform, the pendent bearing-plates attached also to said platform, the crank-shaft journaled in said bearings, the cylinders, the adjustable sectional pitmen-rods, the crank-arms, and operating-wheel, substantially as shown and described.

5. The combination, with the upright standards, of the vertically-adjustable platform, a post secured to said platform, a hanger supported upon said post, a crank-shaft having its ends journaled in the ends of the hanger, the cylinders mounted upon said shaft, the adjustable pitmen-rods connected to said shaft, and the operating devices, arranged substantially as shown and described.

6. The combination, with the crank-shaft, of the cylinders mounted thereon and formed of foraminous material, and the slatted covering surrounding said cylinders, one or more of the slats of said covering-slats being adapted to be withdrawn, substantially as and for the purpose described.

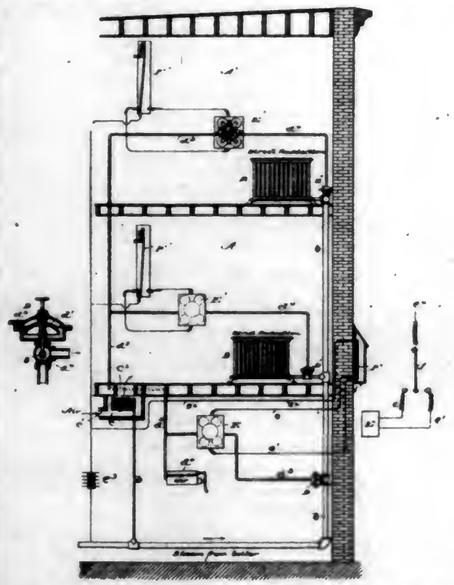
7. The combination, with the crank-shaft, of the cylinders mounted thereon, the hanger, and hoods attached to said hanger and adapted to protect the cylinders, substantially as described.

477,120. COLORED TRANSPARENCY. MORRIS HOUSMAN, Brooklyn, N. Y. Filed Feb. 18, 1892. Serial No. 421,905. (No model.)



Claim.—The combination, with a flexible or plastic base embossed with an ornamental design, of a metallic leaf on the embossed part and a transparent cover provided with a colored design and adjusted over the metal leaf, substantially as described.

477,121. AUTOMATIC TEMPERATURE-REGULATING SYSTEM. WARREN S. JOHNSON, Milwaukee, Wis. Filed Jan. 3, 1890. Serial No. 335,772. (No model.)

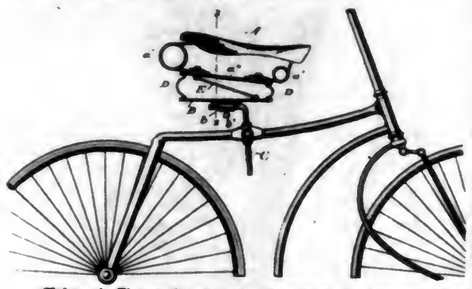


Claim.—1. In an automatic temperature-controlling system, the combination, with an apartment to be heated, of an indirect-heating apparatus, a direct-heating apparatus, and a thermostat external to the apartment controlling the direct heater, whereby a second heater is brought into action to assist the first by an abnormal reduction of temperature occurring outside of the apartment.

2. In a heating system, the combination of two or more apartments, direct heaters therein, a supply-pipe leading to said heaters, a thermostat subject to the temperature outside of the building, a valve controlled by said thermostat and in turn controlling the steam-delivery, the series of heaters, local valves controlling the action of the respective heaters, and thermostats within the apartments controlling the local valves, whereby an abnormal reduction of temperature outside of the building brings into play supplemental heaters to co-operate with the main heater.

3. In a heat-regulating system and in combination with an apartment to be heated, an indirect heater C external to the apartment, a direct heater B within the apartment, a valve D, through which the direct heater is supplied, fluid-pressure devices for operating said valve D, an electric valve controlling the fluid-supply, and a thermostat external to the building controlling the electric valve.

477,122. BICYCLE. WARREN S. JOHNSON, Milwaukee, Wis. Filed July 18, 1891. Serial No. 399,956. (No model.)



Claim.—1. The combination of a spring-supported bicycle-saddle complete in itself, a support therefor, and an intermediate compressible sack or chamber filled with an elastic fluid between the base of the saddle and its support, the said sack or chamber increasing in thickness toward the rear, substantially as shown and described.

2. The combination of the saddle and its base-plate, a supporting-plate adapted to be attached to the frame of the bicycle, and a flexible sheet secured at its edges to the two plates to form a collapsible chamber, substantially as shown and described.

3. The combination of the seat-supporting plate B, provided with means for attaching it to the frame of a bicycle or similar machine, the base-plate a^3, a collapsible chamber filled with elastic fluid between said plates, the saddle A, and the springs between the saddle and its base-plate, substantially as shown and described.

4. In combination with a bicycle-saddle, a collapsible supporting-chamber filled with air or other elastic fluid and means, substantially as described, to limit the longitudinal movement of the saddle.

5. A support for a bicycle-saddle, consisting of a pneumatic sack adapted in form to fit beneath the saddle and divided internally into non-communicating chambers.

477,123. SADDLE-SUPPORT FOR BICYCLES. WARREN S. JOHNSON, Milwaukee, Wis. Filed Nov. 23, 1891. Serial No. 412,801. (No model.)



Claim.—1. A saddle-support for a bicycle, consisting of a double or bent spring having a compressible pneumatic sack between its arms.

2. In combination with a bicycle-frame and a saddle complete in itself, an intermediate support consisting of a spring fixed at one end to the frame and at the opposite end to the saddle to resist lateral and longitudinal motion of the latter, and a compressible inflated sack acting to sustain the weight of the saddle.

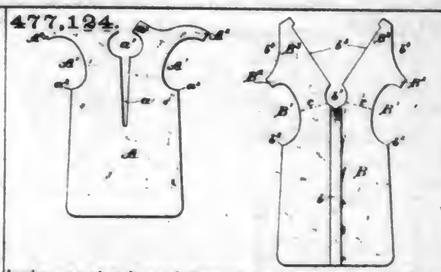
3. The combination of the seat-post C, the spring D, fixed at one end thereto, the saddle fixed to the opposite end of said spring, and a compressible inflated sack secured between the ends of the spring, substantially as described and shown.

477,124. SHIRT. JAMES B. JOHNSON, Memphis, Tenn. Filed Dec. 21, 1891. Serial No. 415,756. (No model.)

Claim.—1. The combination, in a shirt having a neck-opening and a slit or opening extending from the said neck-opening downward, of a back having extensions integral therewith and turned over the shoulders extending down inside of the front, round the armholes, and beneath the bosom to reinforce these points, and a front having extensions integral therewith and turned over the shoulders outside of the extensions from the back, extending down round the back of the armholes and back of the neck-opening to reinforce these points and form the yoke, substantially as described.

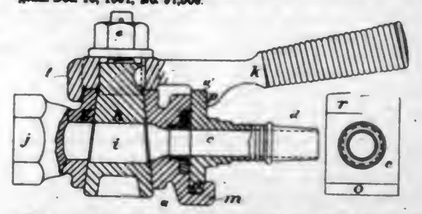
2. The combination, in a shirt having a neck-opening and a slit or opening extending from the said neck-opening downward, of a back

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having extensions integral therewith and turned over the shoulders extending down inside of the front, round the armholes, and beneath the bosom to reinforce these points, a front having extensions integral therewith and turned over the shoulders outside of the extensions from the back, extending down round the back of the armholes and back of the neck-opening to reinforce these points and form the yoke, and the sleeves inserted between the extensions from the front and back, substantially as described.

477,125. COMBINED COCK AND COUPLING. SAMUEL W. JOHNSON, Nottingham, and THOMAS C. CLAYTON, Normanton, England. Filed June 23, 1891. Serial No. 397,266. (No model.) Patented in England Jan. 6, 1891, No. 253; in France Dec. 10, 1891, No. 217,964, and in Belgium Dec. 10, 1891, No. 97,509.



Claim.—1. A combined cock and coupling comprising a main body or casing formed with a groove upon its face, said groove being in a plane at an angle to the longitudinal axis of the coupling, a plug in the casing, a handle for turning the plug, a shoulder upon said handle, and a detachable coupling-plate held at one edge by the groove, and thereby prevented from longitudinal movement, and secured at its other edge by the shoulder on the handle.

2. A combined cock and coupling comprising a main body or casing formed with an inclined groove upon its face, said groove being in a plane at an angle to the longitudinal axis of the coupling, a plug in the casing, a handle for turning the plug, a shoulder upon said handle, and a detachable coupling-plate having an inclined edge engaged by the groove, and thereby prevented from longitudinal movement, and secured at its other edge by the shoulder on the handle.

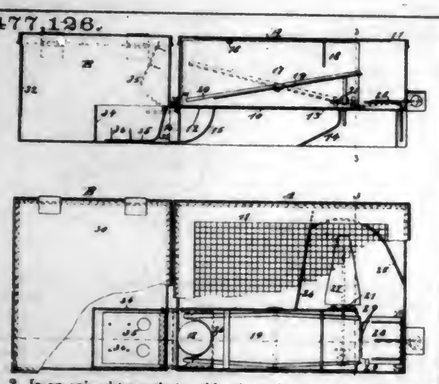
3. A combined cock and coupling comprising a main portion consisting of a body or casing, a plug, a handle for rotating said plug, a lip or flange forming a groove upon the face of the body or casing in a plane at an angle to the longitudinal axis of the coupling, and flanges extending from the face of the body or casing, and a secondary portion consisting of a detachable pipe-holding coupling-plate held in operative position by the groove, the flanges, and the depending shoulder upon the handle.

4. A combined cock and coupling comprising a main element consisting of a body or casing, a plug therein, and a handle for rotating said plug, and a secondary element consisting of a detachable coupling-plate held at one edge by a groove on the face of the main portion and in a plane at an angle to the longitudinal axis of the coupling and at its other edge by a shoulder on the handle, and a packing between the main and secondary portions.

477,126. ANIMAL-TRAP. JOSEPH KLAR and FRANK H. HALL, Anna, Ill. Filed Nov. 12, 1891. Serial No. 411,707. (Model.)

Claim.—1. In an animal-trap, the combination, with a covered chamber provided with two openings in its bottom, one near the center and the other at one end, an inclined platform leading up to the central opening, and a chute leading from the end opening out through the end of the trap, the said end opening being normally closed by a swing-door, of a chute or runway pivoted above the central opening and leading to the end opening in the bottom of the trap, a cell connected with the gated end opening of the trap, and a bait-platform provided with an extension normally engaging with the runway or chute, substantially as described.

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2. In an animal-trap, the combination, with an inclosed chamber, the bottom whereof is provided with a central opening and with an opening near one end, the said chamber being also provided with an opening in its end below its bottom, a passage-way connecting the end opening at the bottom and the end opening below it, the lower end opening being normally closed by a swing-door, of a cell connected with the gated opening of the trap chamber and provided also with a swing-door opposite said opening, a runway or chute pivoted at one side of its center above the floor of the trap-chamber over the central opening and leading to the end opening, a weighted bait-platform provided with an extension normally engaging with and elevating one end of the chute or runway, and a second weighted platform located in front of the elevated end of the runway, the weighted platform being adapted as a lock for the runway when compressed, as and for the purpose specified.

3. In an animal-trap, the combination, with a trap-chamber having an opening in its bottom near the center and an opening near one end, also in the bottom, connected by a passage-way with the opening in the end below the bottom, the latter opening being provided with a gravity-door, and a cell-compartment connected with the trap-chamber at its gated opening, the cell being also provided with a drop-door, of a chute or runway pivoted at one side of its center within the trap-chamber above the bottom and over the central opening leading to the end opening in the bottom of said chamber, and a weighted bait-platform provided with an extension adapted to normally elevate one end of the runway or chute and depress the opposite end, as and for the purpose set forth.

4. An animal-trap provided with an inlet and an exit opening, a trough or runway fulcrumed above said openings, covering one and leading to the other, and a trip device having connection with one end of the runway, substantially as described.

5. An animal-trap provided with an inlet and an exit opening, a trough or runway fulcrumed at one side of its center above the openings, covering the inlet and leading to the exit opening, and a pivoted weighted bait-platform normally supporting the longer end of the runway, substantially as described.

6. An animal-trap provided with an inlet and an outlet opening, a trough or runway fulcrumed above the openings, covering the inlet and leading to the outlet opening, a pivoted weighted bait-platform normally supporting the runway at a distance from the inlet-opening, and a locking-platform located in front of one end of the runway, substantially as described.

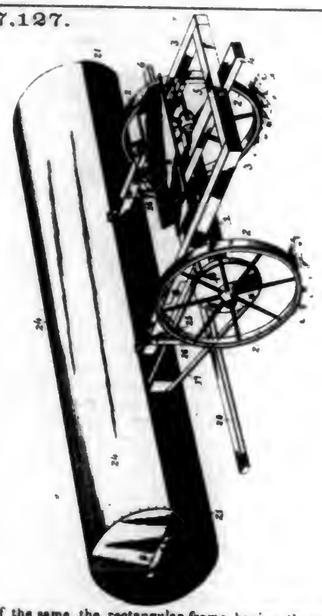
477,127. POISON-DISTRIBUTER. JOHN M. KRUEGER and FRITZ WUNDERLICH, Shiner, Tex. Filed Oct. 6, 1891. Serial No. 407,922. (No model.)

Claim.—1. In a poison-distributer, the combination, with the supporting frame-work and the transverse frame supported thereby, of the series of hoppers seated in the transverse frame, a cover removably mounted on the transverse frame, an agitator-shaft horizontally journaled in the hoppers and at its ends in the transverse frame, means for rotating the same, and a reticulated bottom located in each of said hoppers, substantially as specified.

2. In a poison-distributer, the combination, with the transverse hopper-supporting frame, the series of hoppers mounted in the frame, the transverse agitator-shaft, means for operating the shaft, and brushes mounted on the shaft within each hopper, of the reticulated depending distributing-screen secured to the transverse frame, the reticulated bottoms secured to the hoppers, and the textile-fabric bottoms superimposed over the reticulated bottoms and in contact with the brushes, substantially as specified.

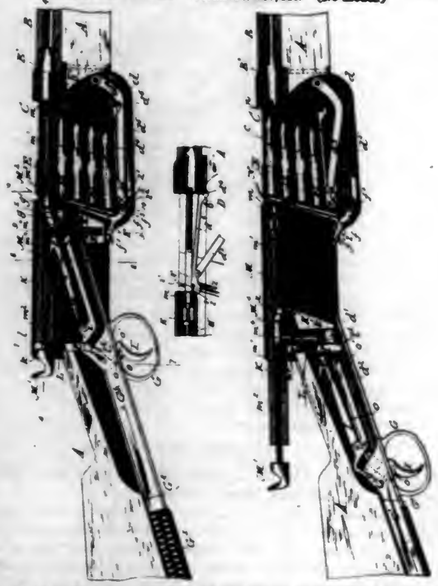
3. The combination, with the axle, the ground-wheels, the pulley

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on one of the same, the rectangular frame having the rearward extensions bolted thereto, the depending hangers, and the transverse deflecting-bar secured thereto, of the oblong frame secured to the extensions, the hoppers mounted in the transverse frame, the agitator-shaft journaled in the hoppers, the reticulated bottoms of the hoppers, the depending bagging reticulated distributer located under the transverse frame, and the hinged cover for the transverse frame, substantially as specified.

477,128. MAGAZINE-GUN. FRANKLIN W. LAWTS, Washington, D. C. Filed Jan. 27, 1892. Serial No. 419,446. (No model.)



Brief.—The longitudinally-sliding breech-bolt is operated by a spring-actuated slide on the gunstock. A cartridge feed case or clip is automatically ejected as the last cartridge is pushed into the barrel, and the breech-block is locked open by the carrier-table, thus calling attention to the fact that the magazine is empty.

Claim.—1. A breech-loading firearm comprising a sliding breech-bolt and a sliding spring-actuated trigger-guard operatively connected with the breech-bolt.

2. A breech-loading firearm comprising a sliding breech-bolt, a sliding spring-actuated trigger-guard, a vertically-sliding abutment, a firing-pin sliding in the breech-bolt, and operative connections between the trigger-guard slide, the breech-bolt, sliding abutment, and the firing-pin.

3. The combination, substantially as hereinbefore set forth, of a reciprocating breech-bolt, a spring-actuated slide, connections between the slide and a downwardly-projecting arm of the breech-bolt, a vertically-sliding abutment having a downwardly-extending arm engaging a groove or guide in the slide, a trigger pivoted in the slide, a firing-pin, and its sear adapted to engage with the trigger.

4. The combination, substantially as hereinbefore set forth, of a longitudinally-reciprocating breech-bolt carrying a sliding firing-pin, a trigger-guard slide moving in inclined guides, a sear carried by the firing-pin and adapted to engage with a hook on the front end of the slide and with a shoulder on the breech-bolt, and a vertically-sliding abutment operated by the trigger-guard slide.

5. The combination, substantially as hereinbefore set forth, of a longitudinally-reciprocating breech-bolt, a spring-actuated firing-pin therein, a sear pivoted to the firing-pin, a trigger-guard slide, connections between this slide and a downwardly-projecting arm of the breech-bolt, a vertically-sliding abutment operated by the slide, and a trigger adapted to engage with the sear and with a shoulder of the firing-pin.

6. The combination, substantially as hereinbefore set forth, of a breech-bolt, a reciprocating firing-pin, a sear carried by the firing-pin, and a trigger adapted to engage with the sear and with a shoulder of the firing-pin.

7. In a breech-loading gun, the combination of a longitudinally-reciprocating breech-bolt, and an extractor mounted in a recess in the receiver and provided with a heel extending into a recess in the breech-bolt and moved by shoulders at opposite ends of the recess, the arrangement being such that the breech-bolt may move to a certain extent without moving the extractor.

8. In a magazine fire-arm, the combination of a reciprocating breech-bolt, means for feeding successively a series of cartridges vertically directly into the axial line of fire and into the path of the breech bolt, and a spring-actuated slide connected with the breech-bolt for forcing it forward to shove the cartridge along the axial line of fire into the firing-chamber.

9. In a magazine-firearm, the combination of a receiver open at top and bottom, a detachable automatically-expelled cartridge case or holder, means for feeding successively a series of cartridges vertically directly into the axial line of fire and into the path of the breech-bolt, and a spring-actuated trigger-guard slide connected with the breech-bolt to shove the cartridge along the axial line of fire into the firing-chamber.

10. The combination, in a magazine-firearm, of a spring-actuated carrier located in a magazine-chamber below a receiver open at top and bottom, and a cartridge case or holder the upper end of which is arranged in the receiver and has an opening or chamber into which the cartridges are successively fed and through which the breech-bolt passes.

11. A magazine-firearm comprising a reciprocating breech-bolt and a cartridge case or holder having its upper end arranged in the receiver and having a chamber open at front, rear, and bottom, but closed at top, into which the cartridges are successively fed and through which the breech-bolt passes.

12. A magazine-firearm comprising a cartridge case or holder having a chamber at top into which the cartridges are successively fed and through which the breech-bolt passes, a spring-actuated carrier, and a catch engaging the cartridge-case to hold it in position.

13. In a magazine-firearm provided with a receiver open at top and bottom, the combination of a reciprocating breech-bolt and an automatically-expelled cartridge case or holder having a chamber through which the breech-bolt passes.

14. A cartridge case or holder open at each end and at bottom, provided with grooves for the rims of a series of cartridges and having a chamber at the top adapted to receive a reciprocating breech-bolt.

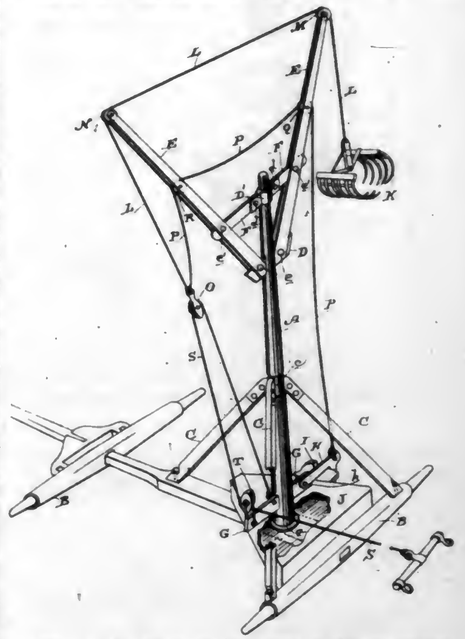
15. In a magazine-firearm having a receiver open at top and bottom, the combination of a longitudinally-reciprocating breech-bolt, a detachable vertically-moving cartridge case or holder, a catch for retaining the holder in the magazine-chamber, a cartridge-table which engages with the catch to release it and permit the cartridge-holder to be automatically expelled, and a spring which is operatively connected with the table and which forces it upwardly to feed the cartridges successively to disengage the catch and to engage with the cartridge-holder to expel it, substantially as set forth

16. In a breech-loading firearm, the combination of a spring actuated breech-bolt and a spring-actuated cartridge-table engaging the breech-bolt to hold it in its retracted position against the force of its spring.

17. In a magazine-firearm, the combination of a longitudinally-reciprocating breech-bolt, means for reciprocating it, a cartridge-table, means for permanently connecting it to the gun in the magazine-chamber, and means for moving the table into engagement with the breech-bolt to hold it in its retracted position, substantially as set forth.

18. In a magazine-firearm, the combination of a cartridge case or holder, a catch engaging therewith, a carrier adapted to disengage the catch from the case and provided with a shoulder to engage the breech-bolt to lock it back after the ejection of the last cartridge-shell.

477,129. DERRICK. GEORGE I. LAUGHTON, Reno, Nev. Filed Aug. 28, 1891. Serial No. 403,999. (No model.)



Claim.—1. In a derrick, the combination of an axially-turnable mast, diverging arms carried thereby, a load-lifting rope carried by the arms, a latch to hold the mast from turning and to relieve it, and a rope connected with the latch and with the load-lifting rope to operate said latch at the proper time, substantially as herein described.

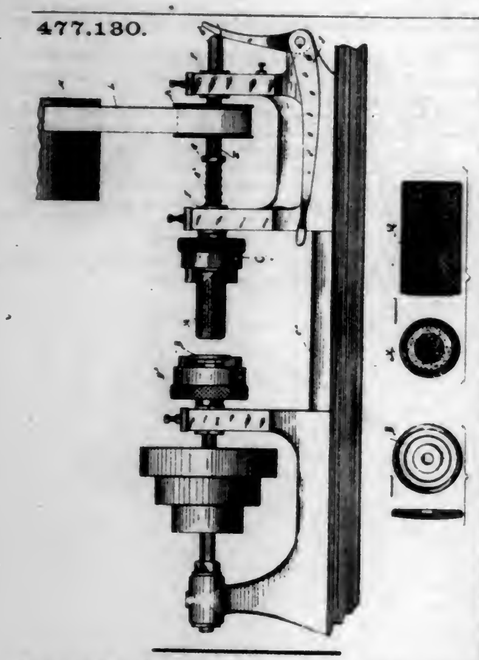
2. In a derrick, the combination of the axially-turnable mast having the cross-bar, the latch secured to said bar to hold and release the mast, the divergent arms secured to the mast, the load-rope carried by the arms, the latch-rope secured to the latch and carried by said arms, the block O, to which the load and latch ropes are secured, and the draft-rope passing over the block and connected with the bar of the mast, substantially as herein described.

3. In a derrick, the combination of the axially-turnable mast, the divergent arms removably secured thereto, the brace-arms pivotally connected with the mast and with the arms, the cross-bar secured to the mast and the latch carried by the cross-bar, the load-rope carried by the arms, the latch-rope carried by said arms and secured to the latch, the block O, to which said ropes are connected, and a draft-rope secured to the bar, passing over the block, and down through a pulley at the end of the bar, substantially as herein described.

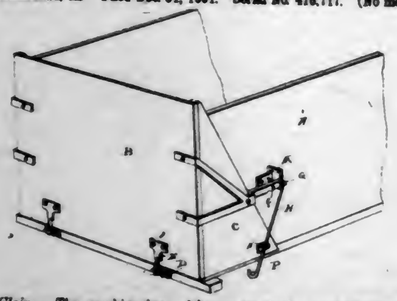
477,130. MACHINE FOR TURNING PATTERNS ON PEARL, IVORY, OR OTHER SUBSTANCES. JOSEPH H. LAWLER, New York, N. Y. Filed Nov. 6, 1890. Serial No. 370,792. (No model.)

Claim.—The combination, with a lathe, as shown, of a chuck for holding the article to be operated upon, an opposed rotating chuck for holding the former and adapted to be moved longitudinally, said former having configurations on its end to form a complementary configuration on the article, and a longitudinal hollow space or tube through the center of the former of sufficient size to allow the filings to pass off, as set forth.

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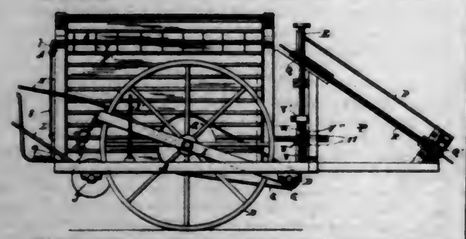


477,131. END-GATE. HARRY W. LEAVITT and JOHN A. BRYSON, Hammond, Ill. Filed Dec. 31, 1891. Serial No. 416,717. (No model.)



Claim.—The combination, with a wagon-body, staple-castings M, secured thereto, end-gate B C, perforated, and notched hasp-arms G, secured to the end-gate and arranged when the gate is closed to engage staple M, bar H, hooked at both ends, one end arranged to engage perforations of arm G and the other to engage hasp M, hook N, secured to end-gate and arranged to act as a guide for rod H, of latch E, secured to the end-gate and formed with lip *m*, and catch D, secured to the wagon-body, said catch formed with arms *a* and perforated lip *c*, the several parts arranged and operating as and for the purpose set forth.

477,132. CORN-HARVESTER. LEDYARD V. LEWIS and STEPHEN S. ALLEN, Sun Prairie, Wis. Filed Jan. 22, 1891. Serial No. 378,674. (No model.)



Claim.—1. The combination, with a frame, of a horizontal power-shaft, the vertical shafts arranged forward of the power-shaft, the lower ends of said shafts extending below the power-shaft, the star-like cutter-knives secured upon the lower end of the vertical shafts, the spiral gear-wheels mounted upon the power-shaft, and the spiral gears mounted upon the vertical shafts in the same horizontal plane as the power-shaft and adapted to mesh with the spiral gears on said power-shaft, substantially as shown and described.

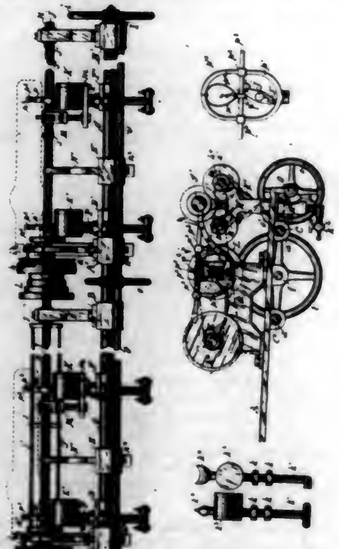
2. The combination, with the stalk-passage walls slotted horizontally at their rear sides, of the vertical shafts arranged adjacent to said rear sides, the stalk-reels mounted upon said shafts and adapted to pass through the slots in the walls, and the bifurcated spring-plates secured to the inner faces of the walls coincident with the slots, whereby the reels will work between the members of the bifurcated plates, substantially as shown and described.

3. In a corn-harvester, the combination, with a shaft having longitudinal slots at right angles to each other, of a wheel arranged upon said shaft, said wheel having diametrically-crossing arms within the bore of the same, which arms rest within the longitudinal slots and are operated substantially as shown and described.

4. The combination, with the frame, of the horizontal power-shaft, the spiral gears carried thereon, the vertical shafts arranged forward of the power-shafts and extending above and below the same, the spiral gears mounted upon the vertical shafts in the same horizontal plane as the power-shaft, the knives secured upon the lower ends of the vertical shafts, and the stalk-reels arranged upon the vertical shafts above the power-shaft, a collar resting upon the hub of said reel, and a vertically-yielding fastening device bearing upon said collar to hold the reel normally rigid with the vertical shaft and permit it to revolve when a predetermined resistance limit is exceeded.

5. The combination, with the frame and the knife-shafts mounted thereon, of the sprocket-wheels mounted obliquely upon said shafts and having radial arms in different diametrical planes and lying in slots in the shafts, secondary sprocket-wheels mounted below the first and in front of the knife-shafts, and chains passing around each pair of sprocket-wheels and provided with stalk-gathering arms, substantially as set forth.

477,133. MACHINE FOR CUTTING LAMP-CHIMNEYS. JEAN LOSET, Flémalle-Haute, Belgium. Filed June 26, 1891. Serial No. 397,604. (No model.)

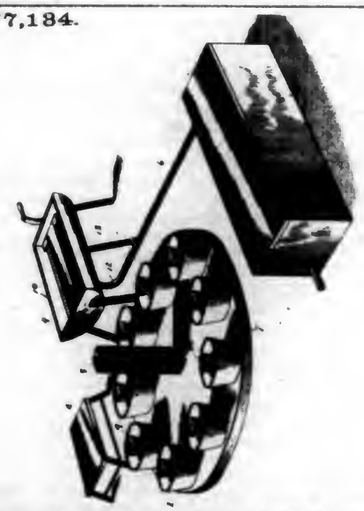


Claim.—1. In a machine for cutting lamp-chimneys, the brackets P, secured to the frame of the machine for supporting the cutters p^3, and eccentrics placed on the shaft J for actuating said cutters, substantially as shown and described.

2. In a machine for cutting lamp-chimneys, the combination of the toothed sectors o^3, placed upon the shaft O, which is actuated by the wheel *o*, held in its place by the pawl *o'*, with the lower grooved parts of the brackets N and N' for raising or lowering the latter, substantially as shown and described.

477,134. OYSTER-WASHING MACHINE. WILLIAM H. MACQUEEN, Baltimore, Md. Filed Nov. 17, 1891. Serial No. 412,188. (No model.)

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Claim.—1. In an apparatus of the class described, a revolving turn-table having a series of water-receiving tubs mounted at intervals thereon and removable perforated cylinders mounted in the tubs, substantially as specified.

2. In an apparatus of the class described, the combination, with a rotatable turn-table, a series of water-receptacles thereon, of a tub having bearings, a series of perforated oyster-receiving cylinders mounted in the receptacles and removable therefrom, and means for removably and rotatably supporting them in the tub, substantially as specified.

3. In an apparatus of the class described, the combination, with the rotatable turn-table, the series of receptacles arranged at intervals thereon, and the series of perforated cylinders removably mounted in the receptacles, of the tub, means for supporting a cylinder removably and rotatably in the tub, and the cooling-tank adjacent to the table and tub, substantially as specified.

4. In an apparatus of the class described, the combination, with the tub having opposite bearings, of the internal frame having trunnions mounted in the bearings and provided with a lid or cover, means for rotating the internal frame, and a perforated oyster-receiving cylinder mounted in the internal frame, substantially as specified.

5. The combination, with the tub, of the internal rotatable frame, a cover for the frame, means for locking the cover in a raised or lowered position, a perforated oyster-receiving cylinder, and opposite rectangular bands fitting in the internal frame and secured over the cylinder near its ends, substantially as specified.

6. In an apparatus of the class described, the combination, with the tub having bearings, the internal frame comprising the opposite rectangular ends and longitudinal connecting-strips, one of which is hinged to one of the ends, a button located on the opposite end for locking the strip in a closed position, and a hook on the tub for locking the strip in a raised position, and the perforated cylinder having the rectangular straps and finger-loops adapted to fit within the frame, substantially as specified.

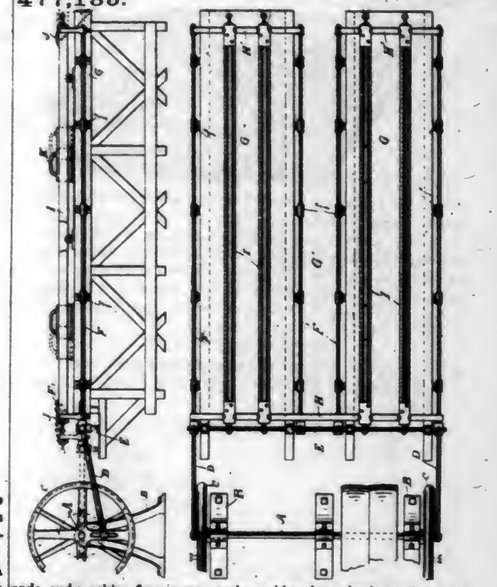
7. In an apparatus of the class described, the combination, with the tub for receiving the rinsing-cylinder and the cooling-tank, of an inlet supply-pipe for the tub and an outlet-pipe for the latter, said outlet-pipe leading to the cooling-tank, substantially as specified.

477,135. GLASS-POLISHING MACHINE. FERDINAND K. MAXIMILIAN, New York, N. Y. Filed Sept. 18, 1891. Serial No. 406,054. (No model.)

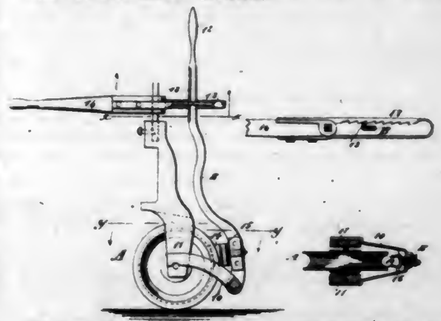
Claim.—1. In a machine for polishing the beveled edges of glass plates, the combination, with two separated beds, of rods ranging longitudinally at each side of each bed and standards on each longitudinal rod, a transverse bar or rod supported at one end of the machine by the adjacent standards and extending across both beds, two separated cross bars or rods at the opposite end of the machine, one at each bed, and duplicate longitudinal rubber-carrying bars supported on said cross-bars and separately adjustable thereon transversely of the machine, substantially as shown and described.

2. In a glass-polishing machine, two beds having a passage-way therebetween, a transverse rod at one end thereof, longitudinal guide-rods connected with said transverse rod and ranging at each side of each bed before the level thereof, standards on said guide-rods at the ends, and a rubber frame supported on said end standards consisting of cross-bars and two sets of longitudinal rubber-carrying bars laterally adjustable on said cross-bars, the frame being open at one end to permit entrance to above-named passage-way, in combination with means for reciprocating the frame on the beds, substantially as described.

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477,136. BRAKE ATTACHMENT FOR THE STEER-WHEELS OF HEADERS. DANIEL E. MENTZEL, Spangle, Wash. Filed Jan. 29, 1892. Serial No. 419,690. (No model.)



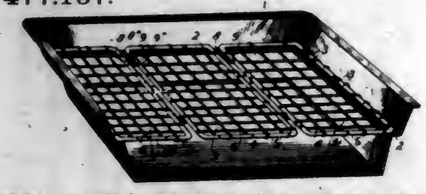
Claim.—1. The combination, with the steering-wheel of a harvester, header, or like apparatus, provided with a forwardly-projecting guide-arm having a rearward-projecting open guide or yoke, of a brake to engage the wheel and provided with an operating-lever extending upward through guide or yoke for operation by the driver, and a locking device for locking the lever to the said guide or yoke, substantially as set forth.

2. The combination, with the steer-wheel of a harvester, header, or like agricultural implement and its straddle-iron and guide-arm, of a yoke projected rearward from the straddle-iron, a lever fulcrumed upon the yoke, a brake-shoe carried by the lever and adapted for engagement with the wheel, and a rack projected from the guide-arm of the wheel and adapted to be engaged by the lever, as and for the purpose specified.

477,137. SINK AND RACK. WILLIAM H. MERSON, Long Island City, N. Y. Filed July 18, 1891. Serial No. 399,963. (No model.)

Claim.—1. The rack or trap described, comprising a series of open-work sections flexibly connected together in such manner that they may be folded flat upon each other, in combination with the sink having the supporting-ledge and the pins 3, rising from said ledge at such a distance from the end wall of the sink that a space will be af-

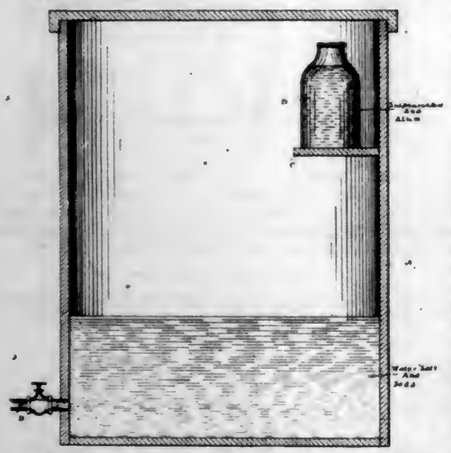
477,187.



forded between said pins and wall to receive the rack or trap when the sections thereof are folded upon each other, substantially as specified.

2. In a sectional rack or trap, substantially as and for the purpose described, the combination of two sections respectively comprising the outer frame-rods 5, and wires connected to the frame-rods and woven to form meshes, and loops or eyes formed on the contiguous frame-rods of the sections and interlooped, substantially as and for the purpose set forth.

477,188. PROCESS OF EXTINGUISHING FIRE. HIRAM S. MILLER, Detroit, Tex. Filed June 9, 1891. Serial No. 395,710. (No specimens.)



Claim.—In the process of extinguishing fire, the improvement which consists in introducing a solution of alum and sulphuric acid into a solution of common salt and soda, substantially as described.

477,189. FEED-TROUGH. JOHN A. MITCHELL and CHARLIE T. DEAL, Scottsburg, Ind. Filed July 5, 1889. Serial No. 316,563. (No model.)

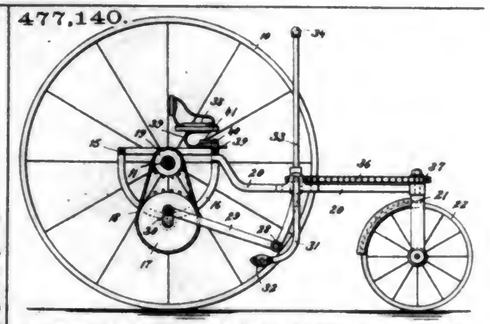


Claim.—The herein-described feed-trough, comprising the body C, the wire frame H, hinged to the top of the body and consisting of a series of transverse bars, said frame being of a size sufficient to close the mouth of the feed-trough and swing downwardly therein, a removable screen-frame in the bottom of the feed-trough, and the spring M, arranged within the interior of the feed-trough and connected therewith so as to force the wire frame downwardly as the feed within the trough is removed, substantially as described.

477,140. TRICYCLE. ARCHIE MCDOUGALL, Salt Lake City, Utah. Filed Sept. 21, 1891. Serial No. 406,370. (No model.)

Claim.—1. A tricycle comprising the usual driving and steering wheels, a driving-axle connected to the driving-wheels, a frame mounted centrally on the axle and connected by a reach with the fork of the

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steering-wheel, a driving sprocket-wheel mounted beneath the axle and having a sprocket-wheel and chain connection therewith, an oscillating lever mounted on the reach, and an operative connection between the lever and driving sprocket-wheel, substantially as described.

2. A tricycle comprising parallel driving-wheels connected by a driving-axle, a steering-wheel arranged in advance of the main wheels and connected by a reach with a frame on the driving-axle, a sprocket-wheel pivoted on the axle-frame and connected by a chain with a sprocket-wheel on the axle, a seat mounted on the axle-frame, an oscillating and revoluble lever pivoted on the reach and connected by a rod and crank with the driving sprocket-wheel, and a sprocket-wheel and chain connection between the oscillating lever and the steering-fork, substantially as described.

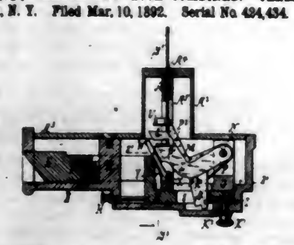
3. The combination, with the tricycle wheels and axle, the frame mounted on the axle, and the sprocket-wheel mechanism for driving the axle, of a reach extending from the axle-frame to the fork of the steering-wheel, a frame pivoted on the reach and provided with a depending lever, a rod-and-crank connection between the lever and the driving sprocket-wheel, a pedal mechanism for oscillating the pivoted frame, a handle-bar mounted in the pivoted frame and held to turn therein, and a sprocket-wheel and chain connection between the handle-bar and the steering-fork, substantially as described.

4. The combination, with the driving-axle, the frame mounted thereon, and the sprocket-wheel mechanism for driving the axle, of a reach extending from the axle-frame to the steering-fork, said reach having a horizontal frame formed centrally thereon, an oscillating frame pivoted in the reach-frame and having a depending lever connected by a rod and crank with the driving sprocket-wheel, depending parallel cranks connected with the oscillating frame and carrying pedals at their lower ends, a handle-bar mounted in the oscillating frame and held to turn therein, and a sprocket-wheel and chain connection between the handle-bar and the steering-fork, substantially as described.

477,141. FLAVORING-POWDER. SARAH E. MCINTOSH, Almond, N. Y. Filed Nov. 13, 1890. Serial No. 371,343. (No specimens.)

Claim.—A comminuted flavoring composition consisting of dried albumen reduced to a powder, sugar incorporated therewith, the compound thus formed being saturated with a flavoring extract or essential oil, an additional quantity of comminuted albumen being incorporated after the addition of the flavoring, for the purpose set forth.

477,142. LATCH AND LOCK COMBINED. JAMES W. MCKEE, Brooklyn, N. Y. Filed Mar. 10, 1892. Serial No. 424,434. (No model.)



Claim.—1. The combination, with a lock-case having a keyhole-slot and a sliding bolt arranged in the case, of a pivot-pin, a series of oscillatory tumblers mounted on the pivot-pin and moved across the keyhole-slot by the insertion of the key thereinto, and an oscillatory lever mounted on the pivot-pin of the tumblers, having an arm engaging the tail end of a sliding bolt and moved by the key parallel with the tumblers across the keyhole-slot to cause the arm of the lever to retract the bolt, substantially as described.

2. The combination, with a lock-case having a keyhole-slot and a sliding bolt arranged in the case, of a pivot-pin, a series of oscillatory tumblers mounted on the pivot-pin, provided with notches in their back edges and moved across the keyhole-slot by the insertion of the key, and an oscillatory lever mounted on the pivot-pin of the tumblers, provided with a cross-bar normally engaging the notches in the back edges of the tumblers and having an arm engaging the tail end of the sliding bolt, said lever being moved by the insertion of the key in a plane parallel with the tumblers across the keyhole-slot to cause the arm of the lever to retract the bolt, substantially as described.

3. The combination, with a bolt, of a series of tumblers, and a lever having an arm or connection for engaging the bolt, said lever having a head, as U, and said key having an eye or recess, as V, for receiving said head U, substantially as described.

4. The combination, with a bolt, of a series of tumblers, and a lever mounted on a common pivot or support, said lever being connected with the bolt, and an extension or base A′, made to carry said pivot and provided with a head A, having a keyhole or slot A^4, substantially as described.

5. The combination, with a bolt, of a series of tumblers, and a lever mounted on a common pivot or support, said lever being connected to the bolt, and an extension or base A′, made to carry said pivot and provided with a head A, having a keyhole or slot A^4, and a transverse opening A^5 for accommodating the movement of the lever and tumbler, substantially as described.

6. The combination, with a lock-case having a keyhole-slot, a sliding bolt arranged in the case, and a spring for projecting the bolt, of a slide for retracting the bolt by hand, a locking-slide for engaging and holding the bolt when retracted, a pivot-pin, a series of oscillatory tumblers mounted on the pivot-pin and moved across the keyhole-slot by the insertion of the key, and an oscillatory lever mounted on the pivot-pin of the tumblers, having an arm engaging the tail end of the sliding bolt and moved by the key parallel with the tumblers across the keyhole-slot to cause the arm of the lever to retract the bolt, substantially as described.

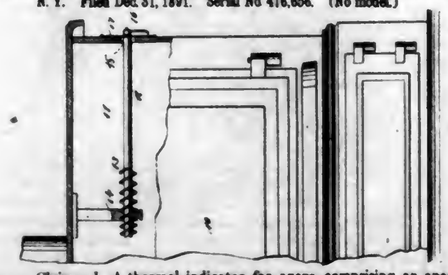
7. The combination, with a lock-case having a keyhole-slot and a sliding bolt arranged in the case, of a pivot-pin, a series of oscillatory tumblers mounted on the pivot-pin and moved across the keyhole-slot by the insertion of the key, an oscillatory lever mounted on the pivot-pin of the tumblers, having an arm engaging the tail end of the sliding bolt and moved by the key parallel with the tumblers across the keyhole-slot to cause the arm of the lever to retract the bolt, and a spring-pressed locking-tongue pivoted at one end and having its opposite end normally engaging the oscillatory lever and moved out of engagement therewith by the action of the tumblers when the proper key is inserted to move the tumblers across the keyhole-slot, substantially as described.

8. The combination, with a bolt, of a series of oscillatory tumblers, and a lever oscillating in a plane parallel with the tumblers and having an arm of connection for engaging the bolt, and a key for actuating the tumblers and bolt, said key having recesses or cut-out portions for receiving the lever and the tumblers, substantially as described.

9. The combination, with a bolt, of a series of oscillatory tumblers, and a lever oscillating in a plane parallel with the tumblers and connected to the bolt, and a locking tongue or stop placed into square or locking contact with the lever and into inclined contact with one or more tumblers, said locking tongue or stop being freed from engagement with the lever by the action of the tumblers when the proper key is inserted, substantially as described.

10. The combination, with a bolt, of a lever connected to the bolt, a locking-tongue for the lever, and a tumbler (one or more) for moving the locking-tongue to its releasing position, substantially as described.

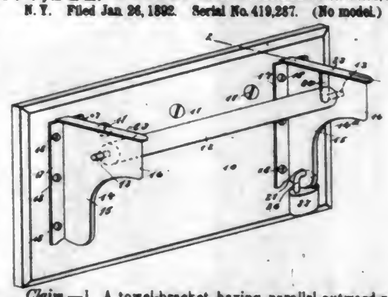
477,148. OVEN-THERMOMETER. HARVEY MURDOCK, Brooklyn, N. Y. Filed Dec. 31, 1891. Serial No. 416,656. (No model.)



Claim.—1. A thermal indicator for ovens, comprising an apertured hanger for the interior of the oven, an expansible and revoluble rod passed through said hanger, a screw thread connection between the rod and the hanger to cause the former to rotate in the latter when expanding, and indicating devices for the exterior of the oven, operated by the said rod, substantially as set forth.

2. The combination, with an oven having an indicating-dial on its outer wall and a threaded hanger within, of an expansible rod having one end screw-threaded and adapted to fit the hanger and the opposite end journaled in the dial and provided with an indicating-band, substantially as described.

477,144. TOWEL-BRACKET. WILLIAM A. HEIDHARDT, New York, N. Y. Filed Jan 26, 1892. Serial No. 419,287. (No model.)



Claim.—1. A towel-bracket having parallel outward-projecting arms placed vertically edgewise, one arm having a transverse aperture for one roller-trunnion and the upper edge of the other arm having a trunnion-receiving slot therein, and a separate and independent flat plate 22, provided with a transverse aperture for the roller-trunnion which enters said slot, and means for positively locking said plate to said slotted arm to prevent the roller-trunnion from being moved out of the slot, substantially as described.

2. The combination, with a towel-bracket having the outward-projecting roller-carrying arms having the usual trunnion-receiving slot and aperture, respectively, the slotted arm being hollow and open at its upper end, of a separate and independent plate having an aperture to receive one roller-trunnion and adapted to be inserted down into said hollow arm, the hollow arm and plate having registering apertures to receive a locking device, substantially as set forth.

3. In a roller-towel bracket, a supplemental bracket comprising an outer shell having flanges for attachment to a support and having vertical slots at the top, a removable inner portion adapted to fit within the shell and having a perforation adapted to register with the shell-slots, and a lock to fasten the two parts of the bracket together, substantially as described.

4. A roller-towel bracket comprising a wall-plate, supplemental end brackets secured to the wall-plate, one bracket comprising an outer shell and a removable inner portion, the parts of the bracket being adapted to support a roller and one of the brackets having its shell slotted at the top and its removable portion perforated adjacent to the slots in the shell, and a lock to hold the two parts of the slotted bracket together, substantially as described.

477,145. STEAM-BOILER ATTACHMENT. JOHN O'BRIEN and CHARLES K. PICKLES, St. Louis, Mo. Filed Mar. 31, 1892. Serial No. 427,241. (No model.)

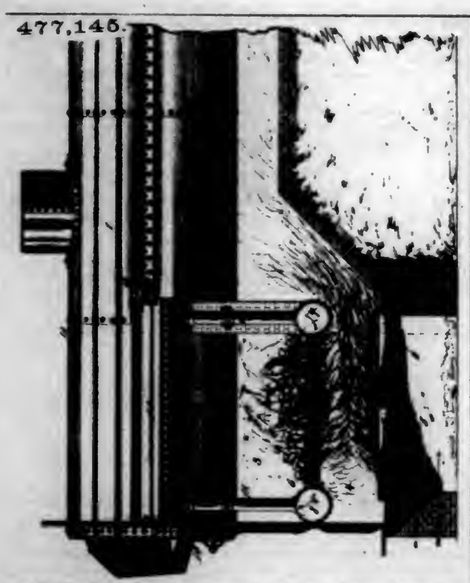


Claim.—1. The combination, in a steam-boiler attachment of a downdraft-furnace, of hollow grate-bars, a boiler, a tank located above the grate-bars and subjected to the heat of the fire-box, and pipes forming a communication between the boiler, hollow grate-bars, and tank, substantially as and for the purpose set forth.

2. In a boiler attachment of a downdraft-furnace, the combination of hollow grate-bars communicating with front and rear manifolds, a pipe forming a communication between the boiler and the front manifold, a settling-tank located above the grate-bars, a pipe forming a communication between the rear manifold and the tank, and a pipe forming a communication between the tank and the boiler, substantially as and for the purpose set forth.

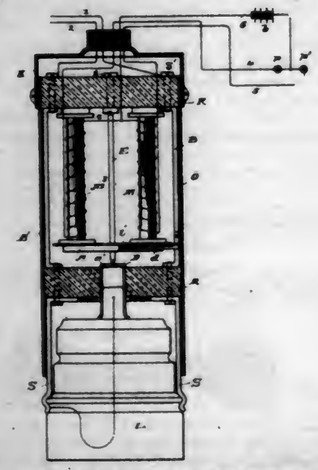
3. In a steam-boiler attachment of a downdraft-furnace, the combination of hollow grate-bars, front and rear manifolds with which the grate-bars communicate, settling-tanks located above the grate-bars, pipes forming a communication between the boiler and the settling-tanks, pipes forming a communication between the settling-tanks and the front manifold, pipes forming a communication between the rear

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manifold and the settling-tanks and which extend up a distance into the settling-tanks, and pipes forming a communication between the settling-tanks and the boiler, substantially as and for the purpose set forth.

477,146. ELECTRIC-LAMP-SOCKET SWITCH. GWYNNE S. PAINTER, Baltimore, Md., assignor of one-half to James F. Morrison, same place. Original application filed Mar. 17, 1891, Serial No. 385,299. Divided and this application filed July 24, 1891. Serial No. 400,619. (No model.)



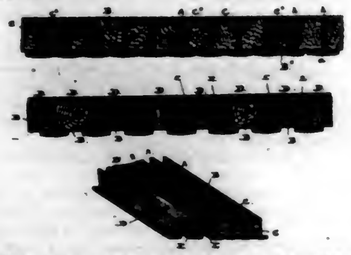
Claim.—1. The combination, with an electric-lamp socket, of two sets of electro-magnets mounted therein, each set excited by a circuit independent of the circuit of the lamp, an armature mounted upon a pivotal axis parallel to the magnets within the socket and oscillated by the said magnet, and a contact forming a terminal of the lamp-circuit making contact with the armature and controlling the said circuit in accordance with the operation thereof.

2. In an electric-lamp socket, the combination of a plurality of electro-magnets mounted upon an insulating-disk therein, an armature mounted upon a pivotal axis and oscillating in a horizontal plane with respect to the poles of the said magnets, a section of non-conducting material fixed to the armature, and a contact engaging the armature and the said section alternately, and thereby completing or breaking the main lamp-circuit.

3. In an electric-lamp socket, the combination of the shell, two insulated disks within said shell, a plurality of electro-magnets fixed to said disk, a shaft pivotally supported by both disks, an armature fixed to said shaft and oscillating in a plane horizontal to the poles of the magnets, a section of insulating material in the armature, and a contact alternately engaging the armature and the insulating-section, and thereby making and breaking the main lamp-circuit.

4. In an electric-lamp socket, the combination of a plurality of electro-magnets excited independently of the main lamp-circuit, an armature rotatably mounted under the influence of said magnets, said armature being constructed of conducting material, a section of insulating material in said armature, and a contact engaging the armature proper and the insulating-section therein alternately, and thereby completing or breaking the main lamp-circuit.

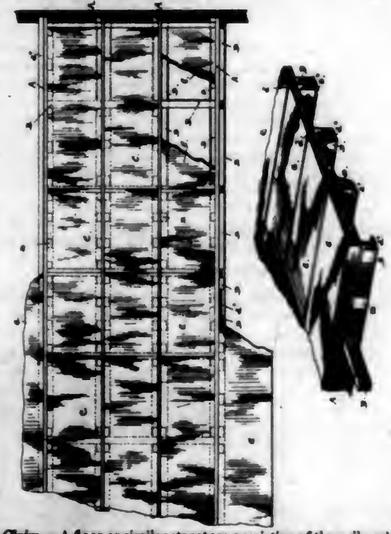
477,147. FLOOR OR ROOF FOR BUILDINGS. GEORGE W. PARKER, San Francisco, Cal. Filed July 10, 1891. Serial No. 399,078. (No model.)



Claim.—1. A roof, floor, or similar structure for buildings, consisting of the rails having bottom flanges laid in close relation and in spaced rows, the spacing-blocks, and a filling, of cement or composition, laid between the rails and between or over the spacing-blocks, substantially as hereinbefore described.

2. In a roof, floor, or similar structure, the combination of the rails having bottom flanges and laid in spaced rows and close order, the spacing-blocks, and a filling, of cement or composition, adapted to form a hard water-tight surface, laid in between the rails and between the spacing-blocks, as described, the flanges of the rails forming supports for the spacing-blocks and constituting the ceiling of the apartment beneath, as hereinbefore set forth.

477,148. LIGHT-TRANSMITTING FLOOR OR SIDEWALK. GEORGE W. PARKER, San Francisco, Cal. Filed Jan. 21, 1892. Serial No. 418,839. (No model.)



Claim.—A floor or similar structure consisting of the rails or beams having bottom flanges set at intervals apart in spaced rows, the spacing-blocks B, located beneath the joints of the glass slabs, the glass slabs or plates, and the supporting-blocks D between the flanges and the slabs or plates, substantially as hereinbefore described.

477,149. NUT-LOCK. WATERS B. PARROT, Elizabeth, N. J. Filed Dec. 14, 1891. Serial No. 414,968. (No model.)



Claim.—1. In a lock-nut, the combination, with a washer having an aperture to receive a bolt and having its outer face formed as a series of inclined planes, of a lock box or shell and adapted for use in connection with an ordinary nut, one closed face of the box or shell being provided with a lug the upper surface of which is inclined, the said lug being adapted for engagement with the inclined planes of the washer, substantially as shown and described.

2. In a locking-nut, the combination, with a washer provided with an opening therein and having one face formed as a series of inclined planes and a bolt passed through the washer, of a locking box or shell screwed upon the bolt, having its inner face provided with a lug the top surface of which is inclined, the said lug being adapted for engagement with the inclined planes of the washer, an elastic washer carried by the bolt and engaging with the inner surface of the locking box or shell, and a jam-nut screwed upon the bolt entering the locking box or shell and engaging with the washer, substantially as shown and described.

3. In a lock-nut, the combination, with a washer having an opening in its center and one face shaped as a series of inclined planes, and a bolt passed through the washer, of a locking box or shell the inner face of which has produced thereon a lug having an inclined top surface, the said locking box or shell being also provided with a groove adjacent to the inner face of the lug, a jam-nut screwed upon the bolt and adapted to enter the locking box or shell and turn therewith, and a bridge-piece having its upper surface inclined, the said bridge-piece being adapted to enter the locking box or shell, as and for the purpose specified.

4. In a lock-nut, the combination, with a washer having one face formed as a series of inclined planes and a bolt passed through the washer, of a locking box or shell and entered upon the bolt, the inner face of which locking box or shell is provided with a lug the outer face of which is inclined, and a groove adjacent to the inner raised surface of the lug, a bridge-piece inclined in an opposite direction to the lug and adapted to enter the groove in the locking box or shell, an elastic washer carried by the bolt and located within the locking box or shell, and a jam-nut located upon the bolt and entered into the locking box or shell, substantially as shown and described.

477,150. DEVICE FOR CONTROLLING THE DISTRIBUTION OF OILS TO LAMPS AND MEANS FOR LIGHTING AND EXTINGUISHING THE SAME. THOMAS PENN and ALFRED E. PENN, London, assignors to the Penn Lamp and Lighting Company, Limited, Aberdare, England. Filed Feb. 26, 1890. Serial No. 341,900. (No model.) Patented in England May 21, 1889, No. 8,389.

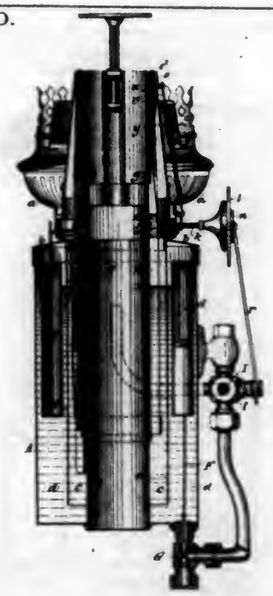
Claim.—1. In a lamp of the character referred to, the combination of the oil-fount having a side passage therein, a chamber having a passage communicating with said side passage, a float located in said chamber, a valve beneath the chamber and connected to the float, and a seat in which said valve works, said seat having a supply-passage arranged at an angle to the line of motion of the valve, substantially as shown, and for the purpose described.

2. In a lamp of the character described, the combination of the oil-fount having a side passage therein, a chamber having a passage communicating with said side passage, a float located in said chamber, a valve beneath the chamber and connected to the float, and a seat within which said valve works, said seat having a supply-passage arranged at an angle to the line of motion of the valve and a by-pass communicating at one end with the float-chamber and at the other end with the valve-seat beneath the valve, substantially as set forth.

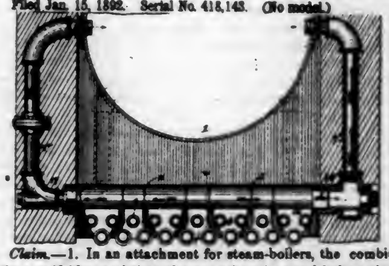
3. The combination, with the pipe I, having a cock *t*, and the movable lever on the wick-raising spindle, of the additional lever secured to the plug of said cock, connections between the two levers, and means for operating said levers, whereby the wick is raised or lowered and the oil-supply opened or cut off, substantially as described.

4. In a lamp of the character described, the combination of the oil-fount having a side passage therein, a chamber having a passage communicating with said side passage, a float located in said chamber, a valve located beneath the chamber and connected to the float, and a seat within which said valve works, said seat having an oil-supply passage and a by-pass communicating at one end with the float-chamber and at the other end with the valve-seat beneath the valve, substantially as set forth

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477,151. ATTACHMENT FOR STEAM-BOILERS. CHARLES K. PICKLES, St. Louis, Mo., assignor of one-half to John O'Brien, same place. Filed Jan. 15, 1892. Serial No. 418,143. (No model.)



Claim.—1. In an attachment for steam-boilers, the combination of the manifolds consisting of connecting-pipes and independent sections mounted on said connecting-pipes, with the furnace-grate consisting of water-tubes secured to said sections and communicating between said manifolds, substantially as and for the purpose set forth.

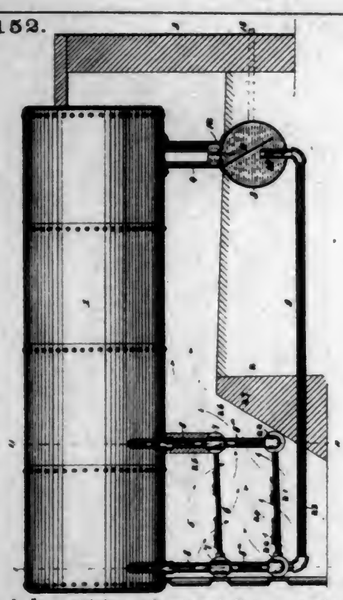
2. In an attachment for steam-boilers, the combination of the manifolds consisting of the connecting-pipes, the removable independent sections mounted on said connecting-pipes, and openings 10 in said pipes, with the furnace-grate consisting of water-tubes connected to said sections and forming communication between the manifolds and suitable communications between the manifolds and the boiler, substantially as and for the purpose set forth.

3. In an attachment for steam-boilers, the combination of the connecting-pipes, a number of independent removable sections mounted on the pipes and communicating therewith to form manifolds, water-tubes forming the grate of the furnace and fitting into said sections, and vertical pipes forming communication between the manifolds and the boiler, the front manifold being located beneath the water-tubes and the inner manifold being located above the water-tubes, substantially as shown and described.

4. In an attachment for steam-boilers, the combination of the connecting-pipes, removable sections fitted on the connecting-pipes to form manifolds, vertical pipes jointed to the manifolds and forming a communication between the manifolds and the boiler, and water-tubes forming the grate of the furnace, said water-tubes being screwed into the sections of the inner manifold and expanded into the sections of the outer manifold, the sections of said outer manifold being provided with removable plugs, all substantially as and for the purpose set forth.

477,152. STEAM-BOILER ATTACHMENT. CHARLES K. PICKLES and JOHN O'BRIEN, St. Louis, Mo. Filed Jan. 15, 1892. Serial No. 418,149. (No model.)

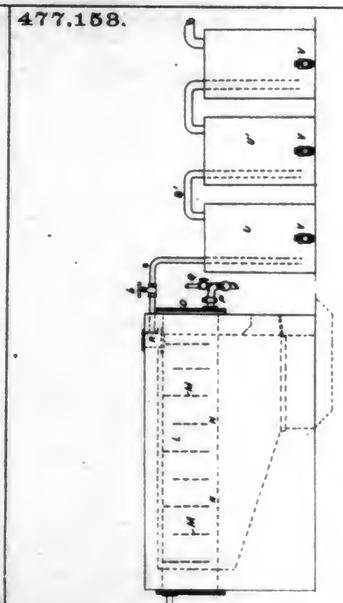
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Claim.—1. In an attachment for steam-boilers, the combination of an upper and lower pair of manifolds communicating with the boiler at their opposite ends, water-tubes extending between the upper pair of manifolds and forming an upper grate, water-tubes extending between the lower pair of manifolds and forming a lower grate, a wall extending across the furnace between the upper inner manifold and boiler, a suitable bridge-wall, suitable drafts above the upper grate and below the lower grate, and an unobstructed passage between the rear manifolds, whereby there will be a downdraft through the upper grate and an updraft through the lower grate, substantially as and for the purpose herein set forth.

2. In an attachment for steam-boilers, the combination of an upper and lower pair of manifolds communicating with the boiler, water-pipes forming the grate of the fire-box and forming a communication between the upper pair of manifolds, water-pipes forming the grate of the ash-pit and forming a communication between the lower pair of manifolds, a wall extending from the upper inner manifold to the boiler, a mud-drum, and a pipe forming a communication between the mud-drum and said manifolds, the whole being arranged for operation substantially as shown and described.

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and removable covers closing and connecting the ends of the pipes, connections between said tank and coil, a pump or equivalent device located between the two, a retort in connection therewith, a draw-off cock for said retort, and a condenser in connection with the retort.

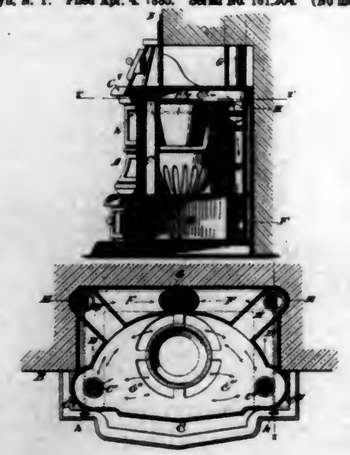
4. In the herein-described apparatus, the combination, with the retort and condenser, of a dome R, attached to the retort, having an annular cup at its base, and a pipe connection between the upper part of said dome and the condenser and having a contracted portion, substantially as described.

477,154. CLASP. HANNAH P. QUEEN, Odell, Nebr. Filed Jan. 22, 1892. Serial No. 418,925. (No model.)



Claim.—The clasp comprising two like members, each formed of wire and composed of a holding or securing portion recurved to form an enlarged loop, the free ends of which are bent adjacent to each other and provided with balls or projections, substantially as specified.

477,155. FIREPLACE-HEATER. JEREMIAH J. RICHARDSON, Brooklyn, N. Y. Filed Apr. 4, 1885. Serial No. 161,204. (No model.)



477,158. DISTILLATION OF HYDROCARBON OR OTHER OILS. CARL M. PIELSTICKER, London, England. Filed Nov. 26, 1890. Serial No. 372,721. (No model.) Patented in England Apr. 23, 1890, No. 6,466, and Jan. 4, 1891, No. 1,308; in France Nov. 26, 1890, No. 209,809; in Belgium Nov. 26, 1890, No. 92,853; in Spain Nov. 26, 1890, No. 11,511; in Italy Dec. 31, 1890, No. 23,644, and in Austria-Hungary June 16, 1891, No. 53,380.

Claim.—1. In an apparatus for the continuous distillation of oil, a supply-tank, a coil, connections between the two, means for heating both tank and coil, means for forcing the liquid from the supply-tank through the said coil, a steam jet or blast in connection with said coil, a retort through which the liquid is also forced, said retort being provided with baffle-plates and a draw off cock, a steam-ejector fitted to said draw-off cock, a second heating-coil in connection with the retort, an expansion-chamber connected with one end thereof, a condenser in connection therewith, and a gas holder or other receptacle.

2. In an apparatus for the continuous distillation of oil, a supply-tank, means for heating the same, a heating-coil comprising a series of pipes D, blocks E, incasing the same, removable covers closing and connecting the ends of the pipes, said pipes D gradually increasing in diameter from the inlet to the outlet, connections between this heating-coil and the supply-tank, a pump or equivalent device located between the two for forcing the oil through the heating-coil, a retort in connection therewith, a steam jet or blast attached to the heating-coil, a draw-off cock attached to the retort, a steam-ejector fitted to said cock, and a condenser in connection with the retort.

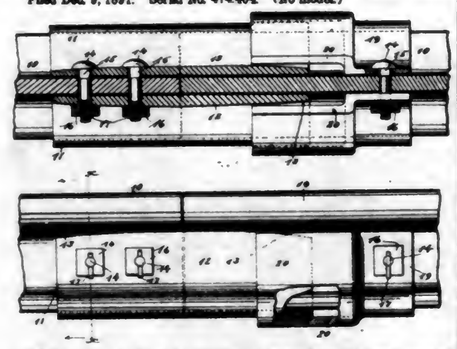
3. In an apparatus for the continuous distillation of oil, a supply-tank, means for heating the same, a heating-coil comprising a series of pipes, blocks of cast-iron or refractory material incasing the same,

Claim.—1. The combination, in a fireplace-heater having a heater-frame, of the fire-box, the combustion-chamber over the same, the vertical descending flues connecting with combustion-chamber at top, as set forth, and situated in front of the frame of the heater, the horizontal rearwardly-extending base-flues connecting with said vertical flues, and the transverse back base-flues connected with the smoke pipe or pipes, for the purpose set forth.

2. The combination, in a fireplace-heater, of a fire-box, the combustion-chamber over same, the front and rear vertically-descending flues on each side of heater, the latter being provided with dampers, as described, the rearwardly-extending bottom side flues and the transverse horizontal base-flues, and the vertical exit-flues or smoke-pipes, whereby an independent draft is obtained on each side of heater, substantially as shown and described.

3. In a fireplace-heater, the combination of a frame, a fire-box, a combustion-chamber over the same, the vertically-descending flues connected to the combustion-chamber and arranged wholly or in part in front of the frame, the rear vertically-descending flues, also connected to the combustion-chamber, provided with dampers, as described, the horizontal rearwardly-extending bottom side flues, the independent transverse bottom flues, and the vertical exit-flue or smoke-pipe divided in the middle, whereby independent drafts on each side of the heater are maintained.

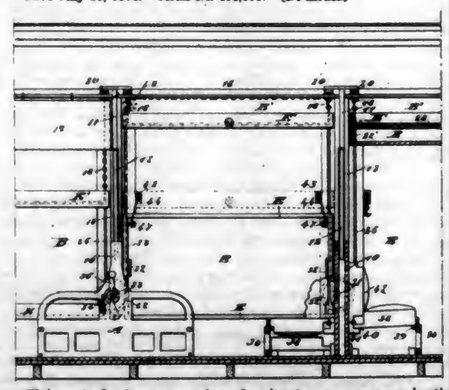
477,156. RAIL-JOINT. RICHARD ROBEY, Dartmouth, Canada. Filed Dec. 9, 1891. Serial No. 414,464. (No model.)



Claim.—1. A rail-joint comprising overlapping sheaths adapted to be secured to the meeting ends of railroad-rails, the sheaths being disconnected at their overlapping ends from each other to form a sliding joint and shaped to fit the lower portions of the rails, substantially as described.

2. A rail-joint comprising sheaths adapted to be secured to the meeting ends of railroad-rails, one of said sheaths having thinned ends and the opposite sheath having an enlarged portion to fit over the adjacent sheath, substantially as described.

477,157. SLEEPING-CAR. WILLIAM SMOKNER, New York, N. Y. Filed July 20, 1891. Serial No. 400,095. (No model.)



Claim.—1. In the construction of a sleeping-car, an upper berth having vertical movement, a lower berth independent of the upper one, locking devices capable of uniting the two berths, and an elevating mechanism connected with only one of the berths, substantially as described.

2. In the construction of a sleeping-car, the combination, with an upper berth movable vertically in a horizontal position, of a lower and independent berth of equal size with the upper one and adapted for contact with the upper berth, a latch device carried by one berth, keepers connected with the other berth, and a hoisting mechanism connected with only one of the berths, substantially as shown and described.

3. In the construction of a sleeping-car, the combination, with an upper berth and an elevating mechanism connected therewith, of a support at the bottom of the car, a lower berth removable from its support and independent of the upper berth, and locking devices whereby the two berths may be connected and disconnected, disconnected when in position for use and connected when in their storage position, as and for the purpose specified.

4. In the construction of a sleeping-car, the combination, with an upper berth, cables attached to the berth near its corners, and an elevating mechanism connected with the cables and capable of operation from the aisle of the car, of a lower berth independent of the upper one and of substantially equal size, the lower berth being adapted to rest upon the seats of a section, a latch located in the bottom of one berth, and keepers carried by the upper berth to be engaged by said latch, substantially as described, whereby the upper berth may be manipulated alone or employed as a medium for raising or lowering the lower one, as set forth.

5. In the construction of a sleeping-car, an inclosed chamber located in the roof-section of the car, an upper berth having vertical movement, a lower berth independent of the upper one, yet capable of a locking engagement with the upper berth, and a hoisting mechanism connected with one of the berths, whereby the berths may be elevated through the medium of but one hoisting mechanism into the inclosed roof-chamber and maintained therein, as and for the purpose specified.

6. In the construction of a sleeping-car, the combination, with an upper berth provided with an opening in its bottom and in its ends and latches held to slide over said openings and operated from the front of the berth, of a hoisting mechanism connected with the upper berth, a support located in the bottom of the car, a lower berth adapted for engagement with the support, yet removable therefrom and independent of the upper berth, the lower berth being provided with keepers to enter openings in the upper berth, and latches carried by the upper berth for engagement with the keepers in the lower one, as and for the purpose set forth.

7. In the construction of a sleeping-car, the combination, with a support and a berth sustained by and yet removable from the support, of a lifting mechanism located in the car-body, a portion of the mechanism being located immediately above the berth, and a detachable connection between the lifting mechanism and the berth near one side of the latter, whereby the berth may be raised to a vertical position from its support and maintained in that position, providing room for dressing, &c., and whereby, also, the berth may be restored to its horizontal position, when desired, substantially as set forth.

8. In the construction of a sleeping-car, the combination, with a support and a berth removable from this support, of weighted cables attached to the berth at one side of its frame and means, substantially as shown and described, for releasing the cable from the berth when the latter is to be lowered to a horizontal position, the cables carrying it to a vertical position, as and for the purpose set forth.

9. In the construction of a sleeping-car, the combination, with the lower berth thereof removable from supports provided for it, of cables located partially within and partially without a chamber formed in the car-body, the said cables being provided with weights at their inner ends and a grappling device at their outer ends, the latter being adapted for attachment to the berth at one side thereof, whereby when the grapples are attached to the berth it will be carried from a horizontal to a vertical position substantially parallel with the wall of the chamber in which the actuating-weights are located, as and for the purpose set forth.

10. In the construction of a sleeping-car, a seat constructed with the front section removable from its frame, an interior chamber, a removable bottom, a hinged back, and a locking engagement between the back and the seat, whereby the back may be maintained in a vertical position, as and for the purpose specified.

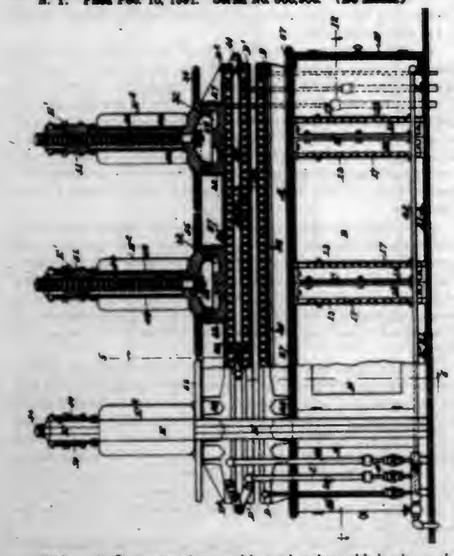
11. In the construction of a sleeping-car, a seat constructed with its front section hinged to fall downward and provided with an interior chamber, a removable bottom capable of being stored in said chamber, and a back hinged at its lower end to drop downward as a substitute for the bottom, the said back being supported by the front section when in the horizontal position, as and for the purpose set forth.

12. In the construction of a sleeping-car, the combination, with the lower partition of a section and an upper partition spaced therefrom and forming a portion of the roof-section, of a movable panel located in the lower partition and a hoisting device, substantially as

shown and described, through the medium of which the panel may be made to engage with the upper partition, thereby connecting the upper and the lower partitions, as and for the purpose specified.

13. In the construction of a sleeping-car, the combination, with the lower partition of a section and an upper partition in vertical alignment therewith and constituting virtually a portion of the roof structure, of a panel loosely fitted in the lower partition and a weighted cable attached to the panel, whereby the said panel when desired may be elevated to an engagement with the upper partition and maintained in such position, as and for the purpose set forth.

477,158. VENEERING-MACHINE. CHARLES SPRAGUE, New York, N. Y. Filed Feb. 10, 1891. Serial No. 380,908. (No model.)



Claim.—1. In a veneering-machine, a heating-table having an inlet and an outlet opening and comprising a body-section provided with a marginal rib upon one face and also with a series of spurs and a cover-plate concealing the spurs and attached to the ribs, substantially as described, whereby a central chamber is obtained, as and for the purpose set forth.

2. In a veneering-machine, a series of heating-tables located one above the other, certain of which tables are adjustable, each table being provided with an inlet and an outlet opening and comprising a body-section provided with a marginal rib upon one face and also with a series of spurs, and a cover-plate concealing the spurs and attached to the ribs, weights connected with the movable tables, links also connected with the movable tables, whereby they move together and pressure devices exerting tension upon the tables, substantially as and for the purpose specified.

3. In a veneering-machine, a heating-table having steam inlet and exhaust openings and comprising a body-section provided with a marginal rib upon one face and also with a series of spurs and a series of strengthening-ribs upon the opposite face and a cover-plate resting upon the spurs and attached to the marginal rib, as and for the purpose set forth.

4. In a veneering-machine, the combination, with a series of heating-tables provided with steam inlets and outlets, and an inclosed chamber containing baffle projections, certain of which tables are movable, of links connecting the movable tables, weights connected with the movable tables, a pressure device engaging with one of the movable tables, and a trough located beneath the margin of the fixed table, substantially as shown and described.

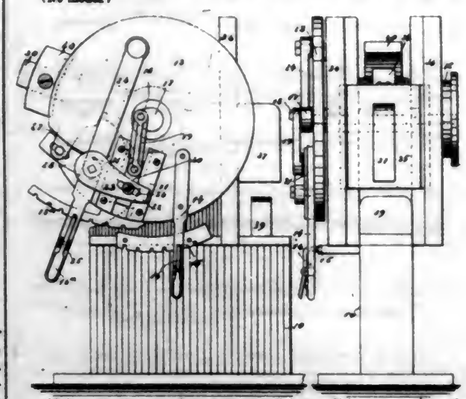
5. In a veneering-machine, the combination, with a fixed and a movable heating-table arranged one above the other, each being provided with an interior chamber having inlets and outlets, of stiles located near the sides of the tables, weights held to slide upon the stiles and connected with the movable table, yokes connecting the stiles, and followers supported by the yokes and bearing upon the movable tables, as and for the purpose specified.

6. In a veneering-machine, the combination, with a fixed heating-table and movable heating-tables operating to and from the fixed table, each table being provided with an interior chamber having an inlet and an outlet, of a link connection between the movable tables, stiles located near the sides of the table, movable weights held to slide upon the stiles and connected with the movable tables, yokes connecting the stiles, and a follower bearing against and adapted to exert pressure upon one of the movable tables, substantially as described.

7. In a veneering-machine, the combination, with a fixed heating-table and movable heating-tables capable of being carried to and from the fixed table, each table being provided with an interior chamber having an inlet and an outlet and containing baffle projections, of links connecting the movable tables, stiles located near the tables, weights held to slide upon the stiles and connected with the movable tables, a follower bearing against and adapted to exert pressure upon one of the movable tables, and means, substantially as described, for disposing of the overplus veneering liquid, as and for the purpose specified.

8. In a veneering-machine, the combination, with a fixed heating-table and movable heating-tables, each provided with an interior heating-chamber having an inlet and an outlet, the upper movable table being provided with a socket in its upper face, of links connecting the movable tables, stiles located near the tables, weights held to slide upon the stiles and connected with the upper tables, a yoke connecting the stiles, a screw held to turn in the yoke, and a wheel secured to one end of the screw and provided with a hub adapted to enter the socket of the uppermost table, as and for the purpose set forth.

477,159. POWER-HAMMER. JAMES B. SWEENEY and ROBERT W. LAIRD, St. Johnsbury, Vt. Filed July 21, 1891. Serial No. 400,210. (No model.)



Claim.—1. A power-hammer comprising a disk arranged vertically and made adjustable around its axis, a plate held and adapted to reciprocate in a slideway arranged on a face of said disk, a driving-shaft arranged at a right angle to the disk, a helve pivoted on the latter and operating vertically, a hammer fixed on the outer end of such helve, and means for connecting the sliding plate with the helve and also with the driving-shaft, as shown and described.

2. In a power-hammer apparatus, the combination of a pivoted helve, a segment attached to one end of the latter and having a spring connection with it, a reciprocating hammer and guides therefor, and straps attached to the segment and hammer at their respective ends, all operating as shown and described.

3. In a power-hammer apparatus, the combination, with the driving-shaft, the hammer and its helve pivoted on the driving-shaft, the disk also pivoted on the shaft and thus made adjustable around it, of the lever 24, pivoted to said disk and adapted for adjustment for the purpose stated, means for locking said lever, and means for connecting it with the hammer-helve, substantially as shown and described, whereby the throw of the hammer may be regulated, as specified.

4. The combination, with the main frame, having a suitable driving-shaft therein, the tilting helve mounted on the shaft, and the hammer connected with and operated by the helve, of the disk mounted loosely on the shaft, the slide-plate mounted on the disk and having a crank connection with the driving-shaft, a lever pivoted on the disk, and a two-armed crank journaled in the lever and whose journal is arranged in a slot in the disk, one arm of the crank being secured to the slide-plate and the opposite arm connected with the rear end of the tilting helve, substantially as described.

477,160. LAND AND WATER VELOCIPEDE. THEODORE G. P. VOGT, Passaic, N. J. Filed Oct. 30, 1891. Serial No. 410,296. (No model.)

Claim.—1. In a land and water velocipede, the combination, with two spaced air-tight hulls, a transverse axle, two hollow tricycle-wheels thereon, and a forward hollow steering-wheel, of a paddle-wheel rotatable on the hulls between the same, and a treadle propelling-gear connected to the paddle-wheel and main tricycle-wheels, substantially as described.

2. In a land and water velocipede, the combination, with two elongated air-tight hulls held spaced apart, a transverse axle rotatable thereon, two main chambered tricycle-wheels on the axle, having hollow tires and radial paddle-blades thereon, a forward hollow steering-wheel supported between the hulls to swivel laterally and rotate, and a paddle-wheel between the hulls on a treadle-shaft rotatably supported in the side walls of a wheel-case on the hulls, of a treadle propelling-gear connected to the axle and paddle-wheel shaft, two saddles above the hulls, and cords to control the steering-wheel extended toward the saddles, substantially as described.

3. In a land and water velocipede that is provided with two spaced air-tight hulls, a water-wheel within a wheel-case on the hulls, and means to rotate the water-wheel, of two main tricycle-wheels having cylindric air-chambers, radial paddle-blades thereon, elastic tires on the wheel-peripheries, a hollow steering-wheel located forwardly between the hulls, adapted to swivel and rotate, a tire thereon, and a steering device which may be operated from seats on the wheel-case, substantially as described.

4. In a land and water velocipede, the combination, with two elongated and end-tapered hulls that are air-tight and held spaced apart by a yoke-bar at each end, a water-wheel between the hulls near the center, having radial buckets, a wheel-case above the water-wheel, a transverse rotatable axle, and two hollow main tricycle-wheels thereon having laterally extending cylindric air-chambers, radial paddle-blades thereon, and a peripheral elastic tire, of a forward hollow air-tight steering-wheel adapted to swivel and rotate between the hulls, two saddles on the wheel case, located at the front and rear, treadle gears below on the wheel-case for each saddle, sprocket gearing and chains connecting the treadle-gear with the axle, and cords leading from a steering-gear on the steering-wheel to points near the saddles, substantially as described.

477,161. HAY-RACK. WILLIAM T. WALLACE, Beloit, Kans. Filed Jan. 18, 1892. Serial No. 418,477. (No model.)

Claim.—1. In a hay-rack, the combination, with a base structure provided with a longitudinally-adjustable frame, of side and end panels connected with the base structure, the front panel being laterally adjustable and provided with a drop-section, and a locking connection, substantially as shown and described, between the front panel and the side panels, the end and side panels being capable of opening outward from the base structure when desired, exposing the contents of the rack from top to bottom, substantially as set forth.

2. In a hay-rack, the combination, with a base structure, a frame held to slide in said structure, and a flexible connection between the sliding frame and the base structure, of side and end panels erected upon the base structure at the margins thereof, the front end panel being adjustable to and from the rear panel, and fastening devices, substantially as described, connecting the panels, as and for the purpose set forth.

3. In a hay-rack, the combination, with a base structure made in skeleton form and a frame provided with a lattice-body and held to slide in the base, the said frame having a flexible connection with the rear of the base structure, of side panels attached to the side margins of the base structure, a rear end panel also attached to the base structure, and a forward end panel attached to the forward portion of the sliding panel of the base, and devices, substantially as shown and described, connecting the panels erected upon the base and upon the base-panel with each other, as and for the purpose specified.

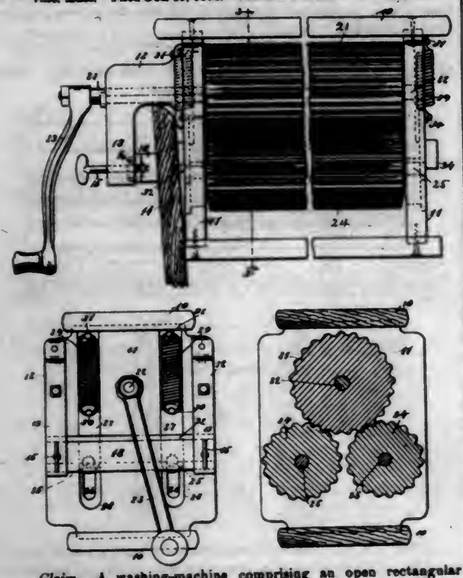
4. In a hay-rack, the combination, with a base structure of essentially skeleton form, a panel held to slide in said structure of less length than the structure, and a flexible connection between the rear of the panel and the rear of the structure, of an upper structure consisting of side panels and a rear end panel attached to the base structure and a front panel hinged to the forward portion of the base-panel, and fastening devices connecting the panels of the upper structure one with the other, as and for the purpose set forth.

5. In a hay-rack, the combination, with a base structure of essentially skeleton form and a panel of less length than the base structure held to slide therein and having a flexible connection with the rear of

the structure, of an upper structure erected upon the base around the base-panel, the said upper structure consisting of side panels, a rear end panel hinged to the base structure, the hinges being provided with studs extending through the base structure and auts upon the lower ends of the studs, and a forward panel having a hinge connection with the forward portion of the base-panel, the forward portion of the upper structure being constructed in hinged sections, and fastening devices, substantially as shown and described, uniting the panels of the upper structure, as and for the purpose set forth.

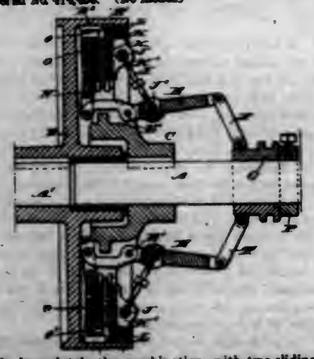
6. A hay-rack provided with a base consisting of a skeleton frame, a panel sliding in said frame, and a flexible connection between the panel and the skeleton frame, substantially as shown and described, one upright panel of the rack being adapted for attachment to the sliding panel of the base, as specified.

477,162. WASHING-MACHINE. FREDRICK M. WEBSTER, Somerville, Mass. Filed Dec. 19, 1891. Serial No. 415,645. (No model.)



Claim.—A washing-machine comprising an open rectangular frame having parallel vertical slots 26 in its end pieces 11, slides 27, mounted in ways in the outer faces of said end pieces over the slots, spiral springs 29, drawing the slides upward, two rollers the journals or shafts of which extend through said slots and are mounted in the lower ends of the slides, a third roller above and intermediate of the said two rollers and provided with an operating-crank, and means for securing the said frame in a tub, substantially as set forth.

477,163. CLUTCH. JOHN S. ADAMS, New Orleans, La. Filed Dec. 9, 1891. Serial No. 414,456. (No model.)



Claim.—1. In a clutch, the combination, with two sliding blocks and a sliding sleeve, of a lever mechanism connected to said blocks and sleeve for alternately operating the blocks by a continuous movement of the said sleeve, substantially as described.

2. In a clutch, the combination, with two sliding blocks and a sliding sleeve, of a lever pivoted a short distance from one end, connected on opposite sides of its pivot with the sliding blocks, and having one end pivotally connected to the sleeve and alternately operating the blocks by a continuous movement of the said sleeve, substantially as described.

3. In a clutch, the combination, with two sliding blocks and a sliding sleeve, of a lever pivoted a short distance from one end, links connected to the lever on opposite sides of its pivot and to the blocks, and a link pivoted to one end of the lever and to the sleeve, whereby the blocks will be alternately operated by a continuous movement of the sleeve, substantially as described.

4. In a clutch, the combination, with a pulley having teeth on one portion of its rim and a sliding sleeve, of two sliding brake-blocks, one of which is provided with teeth, a pivoted lever having its longer arm pivotally connected to the sleeve, and links connecting the lever with the blocks, substantially as described.

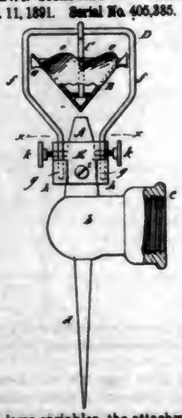
5. In a clutch, the combination, with a hub and a sliding sleeve, of sliding blocks carried by the said hub, a pivoted lever, links connecting the lever with the blocks, one of the said links being adjustable, and a link pivoted to the lever and to the sleeve, substantially as described.

6. In a device of the class described, the combination, with a pulley having teeth on one portion of its rim and a hub provided with arms having guideways, of a lever pivoted on each of the said arms, blocks fitted to slide in the said guideways, one of the blocks being provided with teeth, links connecting the said blocks with the said lever at opposite sides of its fulcrum, and a brake-shoe held on one of the said blocks and adapted to engage the rim of the pulley to be driven, substantially as shown and described.

7. In a device of the class described, the combination, with a hub provided with arms having guideways, of a lever pivoted on each of the said arms, blocks fitted to slide in the said guideways, links connecting the said blocks with the said lever at opposite sides of its fulcrum, a brake-shoe held on one of the said blocks and adapted to engage the rim of the pulley to be driven, the other block being provided with a tooth for engaging a tooth on the rim of the said pulley, substantially as shown and described.

8. In a device of the class described, the combination, with a hub provided with arms having guideways, of a lever pivoted on each of the said arms, blocks fitted to slide in the said guideways, links connecting the said blocks with the said lever at opposite sides of its fulcrum, a brake-shoe held on one of the said blocks and adapted to engage the rim of the pulley to be driven, the other block being provided with a tooth for engaging a tooth on the rim of the said pulley, a sleeve mounted to slide and provided with arms, and links connecting the said arms with the said levers, substantially as shown and described.

477,164. LAWN-SPRINKLER. CHARLES H. BAKER, Bay City, Mich. Filed Sept. 11, 1891. Serial No. 405,385. (No model.)

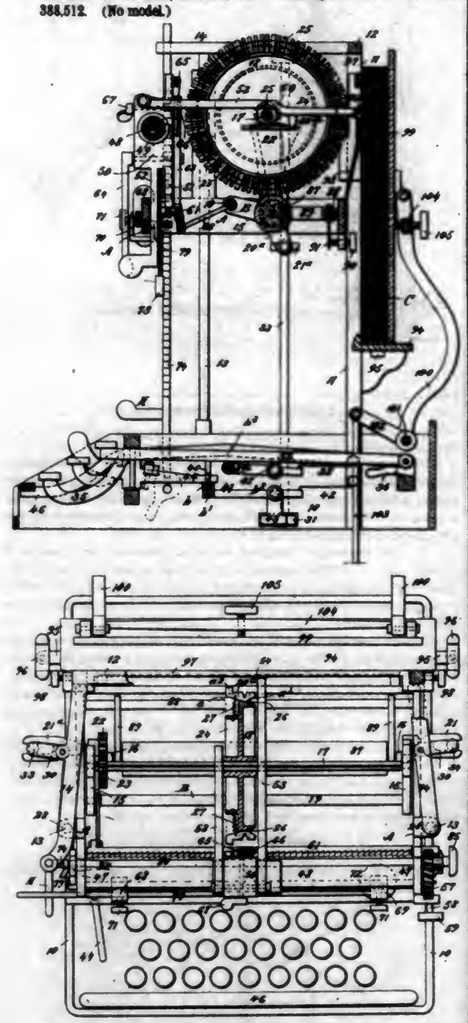


Claim.—1. In a lawn-sprinkler, the attachment comprising a collar to embrace the sprinkler-nozzle and provided with pivot-screws and opposite set-screws at right angles thereto, an open frame secured to the collar, and a deflector supported within the frame, substantially as set forth.

2. In a lawn-sprinkler of the character herein described, the combination, with the stream-issuing nozzle, of an adjustable loose collar around said nozzle, pivot pins or screws applied to said collar and having their bearing in or on the nozzle, intermediate adjusting set-screws

adapted to laterally tilt to opposite sides said collar on its pivots and to hold it in position, a revolving cone having angling wings on its exterior arranged above or over said nozzle, a fixed spindle carrying at its lower end said cone, and an open tilting supporting-frame carrying said spindle and carried by said collar, so as to be laterally adjustable in common with it, substantially as shown and described.

477,165. TYPE-WRITING MACHINE. WILLIAM J. BORDEN, Hico, and JAMES W. JOHNSON, Houston, Tex. Filed Apr. 11, 1891. Serial No. 388,512. (No model.)



Claim.—1. In a type-writer, a type-wheel, spring-pressed type carried by the wheel, an oscillating frame supporting the wheel, an actuating mechanism connected with the frame, a shifting and a driving mechanism connected with the wheel, and a trip mechanism in the path of the rotation of the wheel acting successively upon the type carried by the wheel, as and for the purpose specified.

2. In a type-writer of the character described, the combination, with a laterally-movable type-wheel, of a sleeve, a tension device connected with the sleeve, and arms projected from the sleeve and engaging with the wheel, as and for the purpose specified.

3. In a type-writer of the character described, the combination, with a laterally-movable wheel and spring-pressed type located upon the wheel, of a sleeve, a tension device connected with the sleeve, arms projected from the sleeve and engaging with the wheel, and pins carried by the arms, adapted for engagement with the type, substantially as specified.

4. In a type-writer of the character described, the combination, with a rocking frame and a type-wheel laterally movable in said frame, of a sliding sleeve, a tension device connected with the sleeve, arms projecting from the sleeve and engaging with the wheel, and pins carried by the arms, adapted to engage with the type of the wheel, substantially as described.

5. In a type-writer of the character described, the combination, with a vertically-movable carriage, a sleeve held to slide laterally upon the carriage, and a tension device connected with the sleeve, of a rocking frame journaled in the carriage, a type-wheel having lateral movement in the frame, and arms projected from the sleeve and engaging the wheel at opposite sides thereof, substantially as described.

6. In a type-writer of the character described, the combination, with a vertically-movable carriage, a sleeve held to slide laterally upon the carriage, and a tension device connected with the sleeve, of a rocking frame journaled in the carriage, a feed mechanism connected with the sleeve and the frame, a type-wheel laterally movable in the frame, and guide-arms projected from the sleeve and engaging with opposite sides of the type-wheel, substantially as described.

7. In a type-writer of the character described, the combination, with a vertically-movable carriage, a sleeve held to slide laterally upon the carriage, and a tension device connected with the sleeve, of a rocking frame journaled in the carriage, a feed mechanism operated from the frame and operating upon the sleeve, a type-wheel having lateral movement in the frame, guide-arms attached to the sleeve and engaging with the type-wheel, and an ink-roller connected with the carriage, the axes whereof are in alignment with the axes of the rocking frame, substantially as described.

8. In a type-writer of the character described, the combination, with a vertically-movable carriage, a sleeve held to slide laterally upon the carriage, and a tension device connected with the sleeve, of a rocking frame journaled in the carriage and carrying a shaft, a wheel having lateral movement upon the said shaft and provided with spring-pressed type, a feed mechanism operated by the frame and operating upon the sleeve, guides attached to the sleeve and engaging with the wheel, an ink-roller journaled within the carriage and engaging with the type, and a tension device connected with the roller, as and for the purpose specified.

9. In a type-writer of the character described, the combination, with a carriage, a rocking frame journaled in the carriage, a type-wheel capable of lateral movement in the frame, a crank-shaft journaled below the carriage, and keys engaging with said shaft, of a sleeve mounted to slide laterally on the carriage, a tension device connected with the sleeve, a fork swiveled to one side of the rocking frame, a vertical rock-shaft engaging with the fork, a connection between the crank-shaft and the rock-shaft, and a feed mechanism operated by the rocking frame and operating on the sleeve, substantially as shown and described.

10. In a type-writer of the character described, the combination, with a carriage, a rocking frame journaled in the carriage, a type-wheel capable of lateral movement in the frame, a crank-shaft journaled below the carriage, and keys adapted to bear upon the crank-shaft, of a sleeve held to slide upon the carriage, a tension device connected with the sleeve, guide-arms projected from the sleeve and engaging the type-wheel, a fork having a swivel connection with one side of the rocking frame, a vertical rock-shaft passing through the fork, a gear connection between the lower end of the fork and the crank-shaft, a feed operated from the rocking frame and operating upon the sleeve, and a cam journaled in the sleeve and connected with the feed, regulating the throw of the same, substantially as and for the purpose specified.

11. In a type-writer of the character described, the combination, with a carriage, a rocking frame mounted in the carriage and carrying a horizontal shaft, and a type-wheel held to slide upon the shaft, of a sleeve loosely mounted upon the carriage, a tension device connected with the sleeve, guide-arms extending from the carriage and engaging with the wheel and provided with pins adapted to engage with the type, a rack pivoted in the carriage and connected with the rocking frame, a spring pressed tooth pivoted upon the sleeve and engaging with the rack, a cam engaging with the tooth, and a lever connected with the cam, substantially as shown and described.

12. In a type-writer of the character described, the combination, with a carriage, a rocking frame mounted in the carriage and carrying a horizontal shaft, and a type-wheel held to slide upon the shaft, of a sleeve loosely mounted upon the carriage, provided with a downwardly-extending spur and a finger-bar, a tension device connected with the sleeve, guide-arms extending from the sleeve and engaging with the type-wheel and its type, a rack pivoted in the carriage and connected with the rocking frame, a spring-pressed tooth fulcrumed upon the inner side of the carriage and engaging with the rack, the pivot of which is provided with an attached lever, a cam engaging with the upper portion of the tooth, and a lever connected with said cam, substantially as described, and for the purpose specified.

13. In a type-writer of the character described, the combination, with a vertically-adjustable carriage, a rocking frame journaled in the carriage, a type-wheel having lateral movement in the frame, and brackets adjustable upon the front of the carriage and carrying a letter-scale, of a sleeve loosely mounted upon the carriage, provided with a downwardly-extending finger-bar and a spur, the said sleeve being adapted to slide between the brackets, a tension device connected with the sleeve, guide-arms projected from the sleeve and engaging with the type-wheel, a rack journaled in the carriage and connected with the rocking frame, a spring-pressed tooth pivoted upon the sleeve and engaging the rack, and a regulating-cam engaging with the tooth, substantially as shown and described.

14. In a type-writer of the character described, the combination, with a carriage and a rocking frame journaled in the same, consisting, essentially, of two upright arms, each having an independent pivot and a shaft journaled in the top thereof, a type-wheel held to slide upon the shaft, and a pinion secured to the shaft, of an upwardly-extending rack journaled at one side of the frame and engaging with the pinion, a fork connected with the rack and a similar fork connected with the opposite side of the frame, vertical rock-shafts passing through the forks, a crank-shaft connected with one rock-shaft, a second and lower crank-shaft connected with the other rock-shaft, and key-levers adapted to press the said crank-shafts downward, as and for the purpose specified.

15. In a type-writer of the character described, the combination, with a rotary shaft and a type-wheel held to revolve with the shaft, of a crank-shaft connected with the wheel-shaft, the crank-arm whereof is constructed in two sections, one of which is movable, graduated pins located in the movable section of the crank-arm, and key-levers adapted to bear against said pins, substantially as described.

16. In a type-writer of the character described, the combination, with a rotary shaft and a type-wheel held to turn therewith, of a crank-shaft having a rack connection with the wheel-shaft, the crank-arm of which is made in two sections, one movable upon the other, detachable and graduated pins located upon the movable section of the crank-arm, key-levers adapted for engagement with the pins, and a shifting lever connected with the movable section of the crank-shaft arm, substantially as described.

17. In a type-writer of the character described, the combination, with a carriage and a rocking frame journaled in the same, consisting, essentially, of two upright arms, each having an independent pivot and a shaft journaled in the upper end thereof, a type-wheel held to slide upon the shaft, and a pinion secured to the shaft, of an upwardly-extending rack journaled at one side of the rocking frame and engaging with the pinion, a fork connected with the rack and another fork with the frame opposite the rack, vertical rock-shafts passed through the forks, a crank-shaft below the carriage and connected with the rock-shaft of the frame, a second and lower crank-shaft connected with the rock-shaft of the rack, the arm of the latter crank-shaft being made in two sections, one of which is movable and provided with graduated pins, and key-levers adapted to engage first with the upper crank-shaft and then with the pins of the lower crank-shaft, substantially as specified.

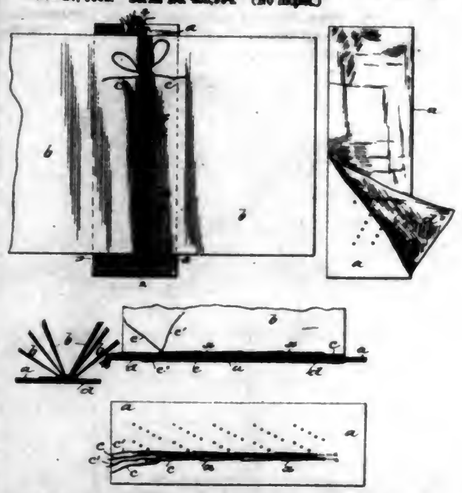
18. In a type-writer of the character described, the combination, with the frame, a carriage located in the frame, and a rocking vertical rack at one side of the frame, of a tooth held to slide longitudinally in the carriage and adapted for engagement with the rack, a lever fulcrumed upon the carriage and connected with the tooth, a spring-pressed angular tooth pivoted at one side of the carriage, also adapted to engage with the rack, and a regulating-disk provided with graduated spurs adapted as a stop or check for the longitudinal tooth when the carriage is dropped downward, substantially as specified.

19. In a type-writer of the character described, the combination, with a frame, a carriage located in the frame, and a rack located at one side of the frame and having its upper end journaled in the frame and its lower end in an apertured disk pivoted to the frame, the said rack being provided with an attached handle, of a tooth held to slide longitudinally in the carriage and adapted for engagement with the rack, a lever fulcramed upon the carriage and connected with the tooth, a spring-pressed angular tooth pivoted at one side of the carriage and also adapted to engage with the rack, and a regulating-disk provided with graduated spurs engaging with the angular tooth, substantially as shown and specified.

20. In a type-writer of the character described, the combination, with a frame, of a table located at the back of the frame and adapted to receive a book, arms pivoted at their lower ends in the frame, and a platen pivoted to the arms and adapted to engage with the back of the book, the said platen being located above the table, as and for the purpose specified.

21. In a type-writer of the character described, the combination, with the frame thereof, of a table located at the back of the frame and having end extensions, arms pivoted at their lower ends in the frame, mechanism, substantially as described, for manipulating said arms, a platen pivoted to the upper ends of the arms, located above the table and adapted to engage with the back of a book, a bar connecting the arms beneath the fulcrum of the platen, and a set-screw carried by the said bar and adapted for engagement with the platen, as and for the purpose specified.

477,166. BLANK BOOK. JAMES W. BURRE, Uvalde, Tex. Filed Feb. 27, 1892. Serial No. 422,994. (No model.)



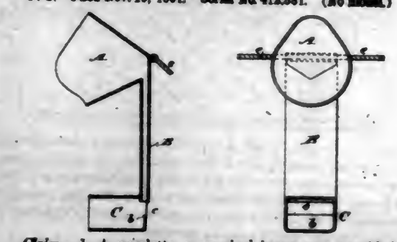
Claim.—1. As the improvement hereinbefore described, the backing-piece or binder *a* for blank sheets, the same being flat in form and having a series of parallel lengthwise rows of aligned perforations, and a series of cords passing through such perforations and forming a series of loops which interlock, as shown and described.

2. A binder or backing-piece for blank books, having a series of parallel rows of perforations and a corresponding series of cord loops drawn through them, the several perforations of adjacent rows being arranged out of transverse alignment with each other, as shown and described.

3. The combination, with a series of collections or packs of sheets, of a flat flexible binder or backing-piece having a series of parallel lengthwise rows of perforations and a like series of cord loops which pass through coincident holes in the several packs, the perforations of adjacent rows being in diagonal and not transverse alignment, as shown and described, for the purpose specified.

4. As an improved article of manufacture, the flat flexible binder or backing-piece for a series of packs of blank sheets, the same having a series of parallel lengthwise rows of perforations, those perforations which are in adjacent rows being in diagonal but not transverse alignment, as shown and described, for the purpose specified.

477,167. MUSICAL INSTRUMENT. WILLIAM CARTER, Albion, N. Y. Filed Nov. 19, 1891. Serial No. 412,381. (No model.)

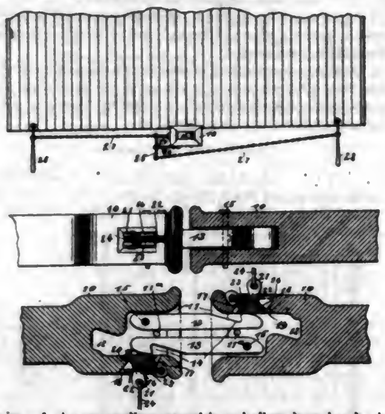


Claim.—1. A nasalette or musical instrument provided with a nose cap or hood adapted to form a receiver for air blown through the nostrils, a duct for deflecting such air downward from said receiver, and a tubular mouthpiece connected with said duct below and provided with a sounding strip or device for the air expelled from the hood-shaped receiver and through the mouthpiece, substantially as specified.

2. The combination, with a nasalette or musical instrument constructed substantially as described, of attached opposite side holding devices adapted to hug or receive the ears of the performer within them.

3. The combination, with a musical instrument of the character described, of the opposite side holding devices adapted to hug or receive the ears of the performer within them and constructed of wire loops, with rubber attachments uniting said loops to the instrument, essentially as shown and described.

477,168. CAR-COUPLING. WILLIAM P. CLARK, Elberton, Ga. Filed Oct. 1, 1891. Serial No. 407,365. (No model.)

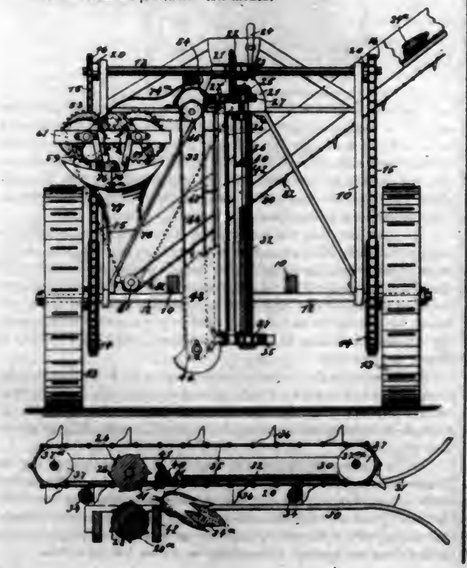


Claim.—1. A car-coupling comprising a hollow draw-head, a horizontally-swinging hook pivoted in the draw-head and adapted to project therefrom, and a spring-pressed dog mounted to swing horizontally in the side of the draw-head opposite the hook, substantially as described.

2. A car-coupling comprising a hollow draw-head, a horizontally-swinging hook pivoted in one side of the draw-head and projecting forwardly therefrom, a spring-pressed dog pivoted to swing horizontally in the opposite side of the draw-head and adapted to engage the hook of an opposing coupling, and a lever mechanism for moving the dog against the spring, substantially as described.

3. A car-coupling comprising a hollow draw-head having a forwardly-extending and horizontally-swinging hook pivoted therein, a spring-pressed dog held to swing horizontally in the draw-head, said dog being pivoted in the side of the draw-head opposite the hook, a stop to limit the movement of the dog, and a lever mechanism for moving the dog against its spring, substantially as described.

477,169. CORN-HARVESTING MACHINE. JAMES CLEMENTS, JOHN CLEMENTS, and FRED. H. ROLLINS, Lake City, Iowa. Filed July 6, 1891. Serial No. 398,539. (No model.)



Claim.—1. A corn-harvester comprising a portable frame having a central passage-way therein, compressor-shoes arranged on opposite sides of the passage-way, a vertical beater having flanges arranged at one side of the passage-way, a guard-board arranged opposite the beater, an elevator adjacent to the guard-board and arranged to deliver into a husker, and an elevator to receive the husked corn from the husker, substantially as described.

2. In a corn-harvester, the picking mechanism comprising a frame having a central passage-way therein, a vertical beater having flanges arranged on one side of the passage-way, flanged rollers arranged opposite each other and adjacent to the beater, and a guard-board arranged opposite the beater, substantially as described.

3. In a corn-harvester, the picking mechanism comprising a frame having a central passage-way therein, a side-board arranged on one side of the passage-way, an elevator arranged opposite the side-board, a vertical revoluble beater mounted in the rear of the side-board, and a guard-board arranged opposite the beater, substantially as described.

4. In a corn-harvester, the picking mechanism comprising a frame having a central passage-way therein, compressor-shoes arranged on opposite sides of the passage-way, said shoes terminating at their front ends in diverging horns, a vertical beater held to revolve on one side of the passage-way, and a guard-board arranged opposite the beater, substantially as described.

5. In a corn-harvester, the combination, with the frame having a central passage-way therein, having compressor-shoes, which terminate at their front ends in diverging horns, of a revoluble beater having flanges arranged on one side of the passage-way, a guard-board arranged opposite the beater, and a feed-belt held to move through the aperture, substantially as described.

6. In a corn-harvester, the combination, with the frame having a central passage-way therein and the compressor-shoes therein, said shoes terminating at their front ends in diverging horns, of a pair of feed-rollers mounted in the passage-way, a carrying-belt held to move through the aperture, a vertical beater arranged on one side of the passage-way, and a guard-board arranged opposite the beater, substantially as shown and described.

7. In a corn-harvester, the combination, with the picking mechanism and the husker, of an elevator arranged to carry the ears from the picker to the husker, said elevator comprising a pair of chains running over pulleys and having buckets pivoted thereon, and projecting guards secured to the upper roller and adapted to turn in the path of the buckets, substantially as described.

8. In a corn-harvester, the combination, with the elevator 33, having a series of buckets pivoted thereon, of guards secured to the upper roller of the elevator and arranged to turn in the path of the buckets, and a guide-strip arranged opposite the upper end of the roller and adapted to guide the ears to the buckets, substantially as described.

9. In a corn-harvester, the husker comprising parallel revolable shafts having oppositely-extending arms thereon, clamping devices secured to the ends of the arms and adapted to close upon the ears of corn, and guards to prevent the corn from following the clamps, substantially as described.

10. In a corn-harvesting machine, the husker comprising two oppositely-rotating parallel shafts, projecting arms carried by the shafts and terminating in hooks, transverse shafts extending through the arms and carrying claws adapted to close upon the hooks, a cam and gear mechanism for closing and opening the claws, and guards supported near the paths of the hooks and claws, substantially as described.

11. In a corn-harvester, the husker comprising two oppositely-rotating parallel shafts, a plurality of oppositely-arranged arms carried by the shafts, hooks pivoted on the free ends of the arms, transverse shafts extending through the free ends of the arms and carrying claws adapted to close upon the hooks, cranks secured to the ends of the transverse shafts and provided at their attached ends with gears, a cam-track arranged in the path of the cranks, mutilated gears pivoted to the main husker-frame and adapted to engage the crank-gears, and guards supported near the paths of the hooks and claws, substantially as described.

12. In a corn-harvester, the combination, with the husker and the elevator arranged adjacent thereto, of guide-springs arranged above the husker and elevator and oppositely-arranged spring-arms projecting downward between the arms of the husker, substantially as described.

13. The combination, with the husker comprising oppositely-arranged shafts carrying arms having clamping devices at their ends, of guards arranged adjacent to the free ends of the arms and adapted to prevent the corn from following the arms, substantially as described.

14. A corn-harvester comprising a frame having a central passage-way therein, mounted on wheels, compressor-shoes arranged in the passage-way and provided at their front ends with diverging horns, a flanged feeder mounted on one side of the passage-way, a guard-board arranged opposite the beater, feeding mechanism for carrying the stalks through the passage-way, an elevator arranged on one side of the ap-

erture and in front of the guard-board and beater, a husker adapted to receive the corn from the elevator, a hopper arranged to receive the husked corn from the husker, and an elevator to receive the corn from the hopper and deliver it into an adjacent receptacle, substantially as described.

477,170. PANTALOONS-HANGER. CHARLES T. N. ENGELS, Middlesborough, Ky., assignor of one-half to John W. Forrest, Cumberland Gap, Tenn. Filed Oct. 6, 1891. Serial No. 407,534. (No model.)



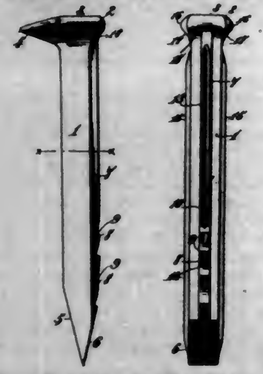
Claim.—1. A pantaloons-hanger comprising parallel connected rocking strands or wires, each having an outward-projecting arm or jaw movable toward and from each other, according to the direction in which the strands or wires are rocked, and said strands or wires being bowed or bent outward to form means for rocking them, and means for holding the said bowed or bent portions together, substantially as set forth.

2. A pantaloons-hanger comprising parallel connected rocking strands or wires, each having an outward-projecting arm or jaw movable toward and from each other, and said strands being also bowed or bent outward to form means for rocking them, and a suspension hook or eye having a sliding connection along the strands or wires and upon their outward bowed or bent portions to hold them together, substantially as set forth.

3. A pantaloons-hanger consisting of two strands of wire having a hinge connection, each bent to form a central bow-section, an essentially horizontal section at each side of the bow-section, and arms at the extremities projected in a direction opposite to that of the bows, said arms terminating in loops, substantially as shown and described.

4. A pantaloons-hanger comprising a body-section consisting of two strands of wire having a hinge connection and provided at their extremities with arms terminating in loops arranged at an angle to the main portions of the strands, and bow-sections intermediate of the ends of the strands, and a suspension device essentially hook-shaped held to slide upon the strands of the body-section, substantially as described.

477,171. RAILWAY-SPIKE. JOHN M. FENNERTY, Washington, D. C.; Barbara Fennerty administratrix of said John M. Fennerty, deceased. Filed Aug. 6, 1891. Serial No. 401,894. (No model.)



Claim.—1. As an improved article of manufacture, a rail-spike having a flat driving-head, a rail-holding tongue or lip depressed below the flat surface of the head, a penetrating-point beveled front and rear into angles of different inclinations and lengths, the short one being at the rear edge of the spike, longitudinal grooves in the front edge, which diverge away from each other in a direction from the head portion to the penetrating-point, and a longitudinal rib extending along the rear side of the head and formed at its lower portion with ratchet-like teeth, substantially as described.

2. A railway-spike having a flat driving-head, a rail-holding tongue or lip depressed below the flat surface of the head, a penetrating-point beveled front and rear into angles of different inclinations and lengths, a longitudinal rib extending along the rear side of the head and having its lower portion formed with teeth, and longitudinal rabbeted corners at the sides of the longitudinal rib, substantially as described.

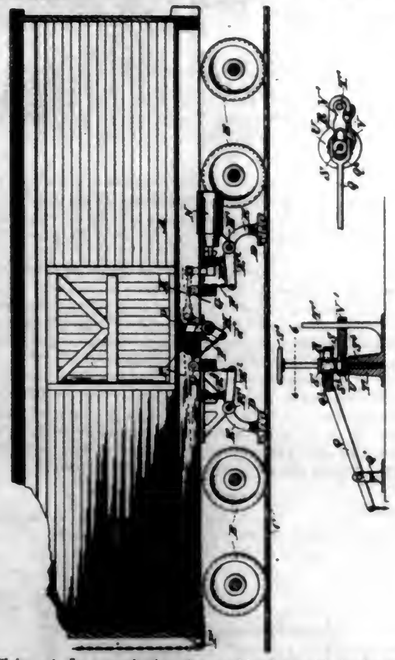
3. A railway-spike having a flat driving-head, a rail-holding tongue or lip depressed below the flat surface of the head, longitudinal grooves in its front side, a longitudinal laterally-projecting rib on its rear side, and a penetrating-point beveled front and rear into angles of different inclinations and lengths, substantially as described.

4. A rail-spike having a longitudinal laterally-projecting rib extending along the back of its head and formed with a longitudinal groove in its outer edge, substantially as described.

5. A railway-spike having a longitudinal laterally-projecting rib grooved in its outer edge and formed with teeth at its lower portion, substantially as described.

6. A railway-spike having at one edge longitudinal grooves, which diverge from the head portion to the point, and at the opposite edge a laterally-projecting longitudinal rib extending along the rear side of the spike-head, substantially as described.

477,172. CAR-BRAKE. JAMES W. FISHER, Palouse, Washington, assignor to himself, Frank McLain, Barnett Jones, Winfield Jones, and Erman Doering, same place. Filed Nov. 21, 1891. Serial No. 412,607. (No model.)



Claim.—1. In a car-brake, the combination, with brake-shoes adapted to engage the rails, of arms pivotally connected with the said brake-shoes, a shaft carrying the said arms, an arm projecting from the said shaft, a chain connected with the free end of the last-mentioned arm, a second shaft provided with an arm connected with the said chain, and means for turning the said shaft by hand or power, substantially as shown and described.

2. In a car-brake, the combination, with brake-shoes adapted to engage the rails, of arms pivotally connected with the said brake-shoes, a shaft carrying the said arms, an arm projecting from the said shaft, a chain connected with the free end of the last-mentioned arm, a second shaft provided with an arm connected with the said chain, means for turning the said shaft by hand or power, and a spring pressing on the chain-arm of the first-mentioned shaft, substantially as shown and described.

3. In a car-brake, the combination, with a lever for applying the brake-shoes and carrying a link pivoted thereto, of a staff provided with collars engaging the said link, and means, substantially as described, for raising and lowering the said staff, substantially as shown and described.

4. In a car-brake, the combination, with a lever for applying the brake-shoes and carrying a link pivoted thereto, of a staff provided with collars engaging the said link, means, substantially as described, for raising and lowering the said staff, and a ratchet-wheel and ratchet for locking the said staff in place to prevent its turning when the brake-shoes are applied, substantially as shown and described.

477,173. HOOP-COUPLING. HENRY W. FORD and RICHARD M. FERGUSON, Beloit, Wis., assignors to the Eclipse Wind Engine Company, same place. Filed Aug. 22, 1891. Serial No. 403,494. (No model.)

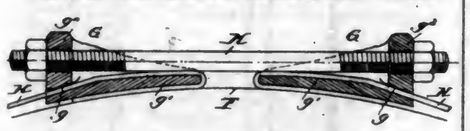


Claim.—1. As a fastening and tightening device for tank-hoops, a coupling consisting of two metal blocks connected together by a straining-rod, one of said blocks being provided with a loosely-fitting socket for said straining-rod, and a transverse part extending away from said socket toward the center between the blocks and around which the end of the hoop is to be bent and which when the straining-rod is tightened up causes said metal block to press said transverse part toward the tank, and thus strongly clamp that portion of the hoop which extends between said transverse part and the tank, substantially as and for the purpose set forth.

2. As a fastening and tightening device for tank-hoops, the combination of the straining-rod D with the couplings B B, each coupling being constructed with the transverse part b', around which the hoop is bent and beneath which it is clamped to the tank, and with the transverse part b, arranged to come between the hoop and the tank and adapted to form an angle in the hoop when the latter is applied in connection with the couplings, substantially as herein set forth.

3. In a device for fastening a tank-hoop, the coupling member B, consisting of a metallic block or casting provided with the transverse parts b b' to engage with the hoop, the projecting lug b^3, constructed to receive the end of the straining-rod and co-operate therewith, and the opening b^3 between the parts b, b', and b^3 to admit and accommodate the end of the hoop, substantially as herein set forth.

477,174. HOOP-COUPLING. HENRY W. FORD and RICHARD M. FERGUSON, Beloit, Wis., assignors to the Eclipse Wind Engine Company, same place. Filed Aug. 24, 1891. Serial No. 403,501. (No model.)



Claim.—1. As a fastening and tightening device for tank-hoops, a coupling consisting of two metallic blocks connected by a straining-rod, one of said blocks being provided with an opening adapted to admit the body of the hoop, with a transverse projecting part to receive the end of the straining-rod, and with a transverse part extending from said projecting part toward the center between the blocks and around which the end of the hoop is bent so as to lie between said transverse part and the body of the tank and be firmly clamped to the tank by the action of the straining-rod, substantially as described.

2. In a device for fastening a tank-hoop, the coupling member G, consisting of a metallic block provided with the projecting lug g^3, constructed to receive and co-operate with the end of a straining-rod, the transverse part g', inclined upward toward the center of the rod and away from the projecting lug g^3, and the opening g under the lug g^3 to allow of the passage of the hoop under said lug and thence over and around under the part g', substantially as set forth.

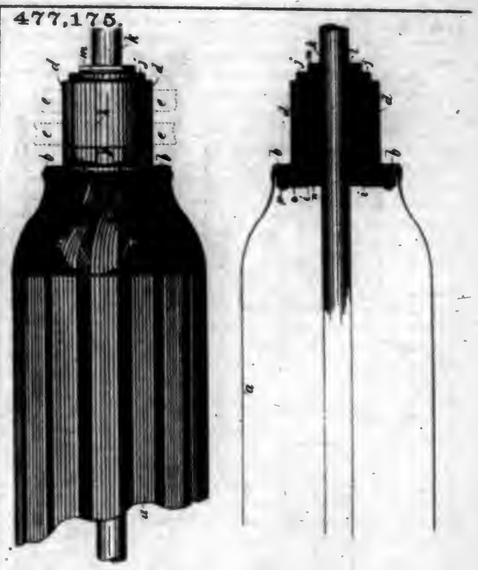
477,175. DETACHABLE COMMUTATOR. CHARLES H. GAYLORD, Cleveland, Ohio. Filed Dec. 17, 1891. Serial No. 415,420. (No model.)

Claim.—1. A detachable commutator and armature consisting of metallic sections d, suitably insulated, of a cylindrical form, one terminal of which having a male thread, in combination with a collar b, provided with a female thread for engagement and disengagement with said male thread of the cylinder, with the collar arranged in electrical contact with the armature, substantially as and for the purpose set forth.

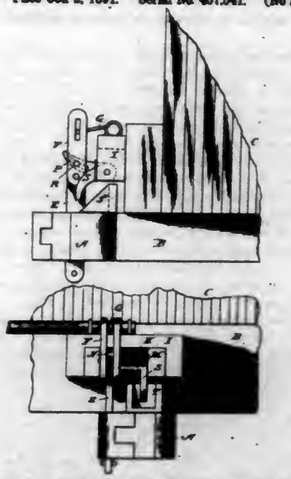
2. In combination with the armature of an electric motor or dynamo, a detachable commutator consisting of two or more metallic sections forming a cylinder or sleeve suitably insulated and threaded into a collar composed of two or more sections insulated and connected with the wires of the armature, said cylinder being in electrical contact with said collar arranged in co-operative relation with the brushes, substantially as and for the purpose specified.

3. In an adjustable commutator and armature, the cylinder or sleeve of the said commutator threaded at one terminal thereof with the collar b, having a threaded connection with the said sleeve, in combination with the armature arranged in electrical connection with the commutator, substantially as and for the purpose set forth.

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477,176. CAR-COUPLING. JOSEPH H. GOODE and WILLIAM H. ANTHONY, Richmond, Va., assignors of one-third to William Garstang, same place. Filed Oct. 2, 1891. Serial No. 407,541. (No model.)



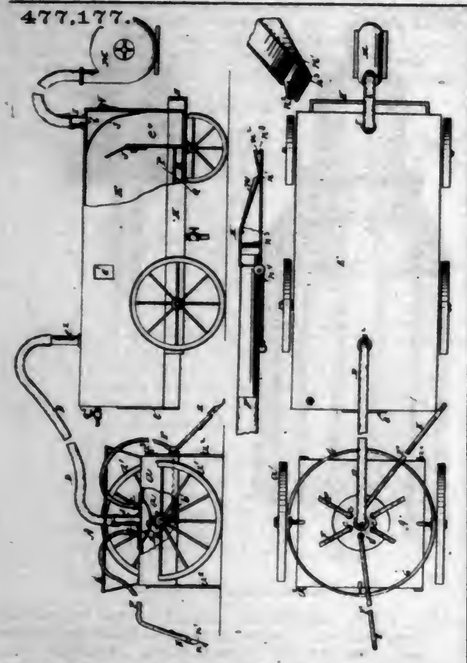
Claim.—The combination, with the locking-bar and links of a twin-jaw car-coupler, of a rock-shaft having upwardly and downwardly-curved levers and the draw-head and recessed block thereon, the upwardly-curved lever being slotted and confined between the links by a pin and the downwardly-curved lever adapted to be engaged and to engage the rear wall of the recessed block, substantially as described, and for the purpose set forth.

477,177. PROCESS OF AND APPARATUS FOR HARVESTING COTTON. WALLACE P. GROOM, Brooklyn, N. Y. Filed June 1, 1891. Serial No. 394,689. (No model.)

Claim.—1. The process herein set forth of harvesting cotton, consisting in collecting it from the different plants by air-currents induced by a partial vacuum and then separating it from the coarser impurities by an auxiliary air-current induced by the partial vacuum, substantially as described.

2. The process herein set forth of harvesting cotton, consisting in collecting it from the different plants by air-currents induced by a partial vacuum, separating it from the coarser impurities by an auxiliary air-current induced by the partial vacuum, allowing it to settle while

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under partial vacuum, and drawing off the dust and lighter impurities by suction.

3. In cotton-harvesting apparatus, the combination of the closed perambulator provided with a plurality of flexible hand-tubes, a portable storage box or chamber connected with said perambulator by a flexible suction-pipe, and mechanism for creating and maintaining a partial vacuum within said storage box or chamber and throughout the apparatus, substantially in the manner and for the purpose set forth.

4. In apparatus for harvesting cotton, substantially as described, the combination of a closed perambulator provided with a series of flexible hand-tubes discharging into a common transfer-compartment having an opening for the discharge of heavy impurities into the main body of the perambulator, a portable storage box or chamber connected with said transfer-compartment by a flexible suction-pipe, and mechanism for creating and maintaining a partial vacuum within said storage box or chamber and the rest of the apparatus, substantially in the manner and for the purpose described.

5. In apparatus for harvesting cotton, substantially as described, the combination of the closed perambulator provided with a series of flexible hand-tubes discharging into a common transfer-compartment having an opening for the discharge of heavy impurities into the main body of the perambulator, a valve or damper in the main body of the perambulator for controlling the volume of air to be admitted thereto and upward through the aperture in the bottom of the transfer-compartment, a portable storage box or chamber connected with said transfer-compartment by a flexible suction-pipe, and mechanism for creating and maintaining a partial vacuum within said storage box or chamber and the rest of the apparatus, substantially in the manner and for the purpose described.

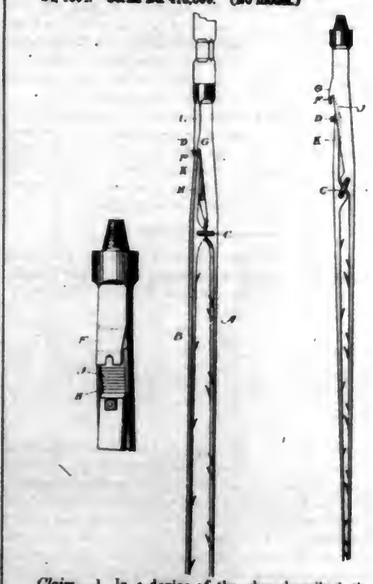
6. In apparatus for harvesting cotton, substantially as described, the combination of a picking device formed with an automatically-closing jaw, a flexible hand-tube connecting said picking device with the transfer-compartment of a closed perambulator, a suction-tube connecting said transfer-compartment with a portable storage box or chamber, and mechanism for creating and maintaining a partial vacuum throughout the apparatus, substantially in the manner and for the purpose set forth.

7. In apparatus for harvesting cotton, substantially as described, the combination of a picking device formed with inwardly-projecting teeth, an automatically-closing jaw and mechanism for opening the same, a flexible hand-tube connecting said picking device with the transfer-compartment of a perambulator, a suction-tube connecting said transfer-compartment with a portable storage box or chamber, and mechanism for creating and maintaining a partial vacuum throughout the apparatus, substantially in the manner and for the purpose described.

8. In apparatus for harvesting cotton, substantially as described, the combination of a closed perambulator having a series of flexible hand-tubes, a portable storage and settling box or chamber connected with said perambulator by a flexible suction-tube, a valve or damper for regulating the admission of air to said portable storage and settling box or chamber, and mechanism for creating and maintaining a partial vacuum within said storage and settling box or chamber and throughout the apparatus, substantially in the manner and for the purpose described.

9. In apparatus for harvesting cotton, substantially as described, the combination of a closed perambulator having a series of flexible collecting hand-tubes, a portable storage and settling box or chamber connected with said perambulator by a flexible suction-tube, mechanism for creating and maintaining a partial vacuum throughout the apparatus, and an automatic vacuum-valve arranged in the apparatus to limit the internal tension of air, substantially in the manner and for the purpose described.

477,178. **WELL-FISHING TOOL.** MAJOR HALL, St. Paul, Minn., assignor of one-half to Jacob Webber Thompson, same place. Filed Dec. 24, 1891. Serial No. 416,099. (No model.)



Claim.—1. In a device of the class described, the combination, with the relatively-fixed jaw and the movable jaw linked thereto, of the barbs upon the adjacent faces of the jaws and means for automatically locking the jaws upon each other when in clutched position, substantially as described.

2. In a device of the class described, the combination of the members loosely linked together and adapted to fit within a pipe or cylindrical hole, the barbs upon the inner faces of the members, means for setting the members in open position, and means for automatically locking the members when clutched, substantially as described.

3. In a device of the class described, the combination of the members having convex exterior faces adapted to fit into a cylindrical pipe, the barbs upon their adjacent or meeting faces, the link loosely connecting them to each other, the device for setting them in open position, and the automatic locking device for holding them in clutched position, substantially as described.

4. The combination of the fixed clamp member, the movable clamp member linked thereto, the barbs upon their adjacent faces, the stop device upon the fixed member for limiting the upward movement of the movable member thereon, means for setting them in open position, and means for automatically interlocking them in clutched position, substantially as described.

5. The combination of the fixed member, the movable member linked thereto, the barbs upon the inner faces of said members, and the rack upon the fixed member adapted to be engaged by the end of the movable member, so as to lock them together in clutched position, substantially as described.

6. In a device of the class described, the combination, with the relatively fixed and movable clamp members provided with barbs upon their inner faces, of the link loosely connecting said members together, the grooved guide upon the fixed member to receive the upper end of the movable member and to hold it substantially parallel with the fixed member, the stop upon the fixed member provided with an overhanging slotted projection or lip, and the set-screw upon the movable member adapted to enter said slot and to be screwed down upon said lip, so as to set the clamp in open position, substantially as described.

7. In a device of the class described, the combination of the relatively-fixed clamp member, the relatively-movable member, the link connecting said members together, the barbs upon the inner faces of said members, the slotted stop upon the fixed member, the shank upon the movable member adapted to abut against said stop, and the set-screw upon said shank adapted to enter said slot and be screwed down upon said stop, so as to set the clamps in open position, substantially as described.

8. In a device of the class described, the combination of the relatively-fixed member, the relatively-movable member linked thereto, the barbs upon the inner faces of said members, the guide upon the fixed member, the shank upon the movable member working therein, and the rack upon the fixed member adapted to be engaged by said shank, so as to automatically lock said members together in clutched position, substantially as described.

9. A clamp comprising, in combination, a relatively-fixed jaw, a relatively-movable jaw linked thereto, and means for automatically interlocking them in clutched position, substantially as described.

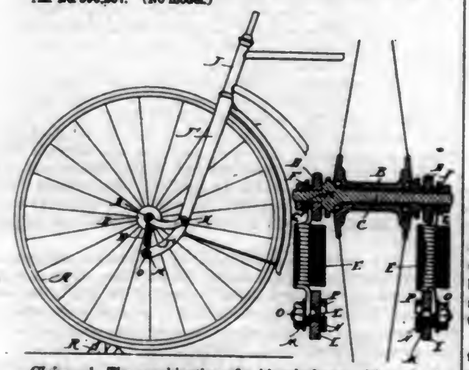
10. A clamp comprising, in combination, a relatively-fixed jaw, a relatively-movable jaw linked thereto, barbs arranged upon the inner faces of said jaws, the guide upon one engaged by the other jaw and holding them parallel with each other, substantially as described.

11. A well-fishing tool consisting of a pair of similar slender-pointed jaws having convex outer faces and barbed inner faces, means for setting them in open parallel position, and automatic means for locking them in clutched position, substantially as described.

12. A clamp comprising, in combination, a relatively-fixed jaw, a relatively-movable jaw linked thereto, and means for automatically locking the jaws together in any relative position when clutched upon an object.

13. A clamp comprising, in combination, a relatively-fixed jaw, a relatively-movable jaw linked thereto, devices upon the inner faces of the jaws for engaging an object, and means for automatically locking the jaws in clutched position.

477,179. **BICYCLE.** LEWIS P. HALLADAY, Chicago, Ill., assignor to the Marion Cycle Company, Marion, Ind. Filed June 15, 1891. Serial No. 396,267. (No model.)



Claim.—1. The combination of a bicycle-frame with a wheel, a spring-hanger suspended on the axle of such wheel, and a connection between the frame and spring in a substantially vertical line beneath such axle, so that the frame is spring-supported from the axle.

2. The combination of a bicycle-frame with a link pivoted to the axle and to such frame and a spring-hanger secured to the axle and to the lower end of such frame, whereby the latter is spring-supported on the axle.

477,180. **SWIVEL-LOOM.** GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Apr. 25, 1892. Serial No. 430,560. (No model.)



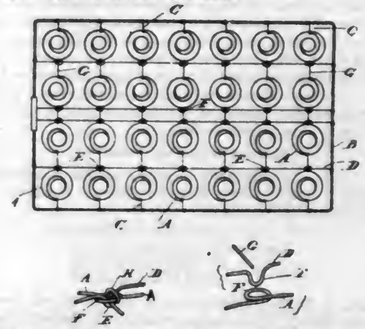
Claim.—1. In a swivel-shuttle loom, the combination, with the block or support for the swivel-shuttles made separate from the swivel-shuttle beam and adapted to be detached therefrom and attached thereto, of means for attaching said block to the swivel-shuttle beam, consisting of spring hooks or catches, substantially as set forth.

2. In a swivel-shuttle loom, the combination, with the upper part of a swivel-shuttle beam in which are supported the swivel-shuttle racks, of the block or support in which are supported the swivel-shuttles and their operating-pinions, said block made separate from the upper part of the swivel-shuttle beam and attached thereto in the manner substantially as set forth and consisting of two or more separate pieces forming divisions in the block, with bushings which form distance-pieces between the divisions of the block interposed between them, upon which bushings are supported and turn the pinions, and bolts or screws passing through said divisions and bushings to bind the parts of the block together, substantially as set forth.

3. A swivel-shuttle block or support for supporting two or more swivel-shuttles and their operating pinions, consisting of two or more separate pieces forming the divisions in the block, with spaces between them for the pinions and the swivel-shuttles, and bushings inserted in said spaces in the hubs of the pinions to form distance-pieces between the divisions of the block and to act as journals or bearings for the pinions, and bolts or screws passing through said divisions and bushings to bind the parts of the block together, and means for attaching the block to the rack portion of the swivel-shuttle beam, substantially as set forth.

4. The combination, with the swivel-shuttle beam, of the independent swivel-shuttle-carrying block consisting of two or more separate pieces forming divisions in the block, with bushings interposed between said divisions, which serve to hold said divisions apart and form distance-pieces between the same and act as journals or bearings for the pinions, and bolts or screws passing through said divisions and bushings to bind the parts of the block together, substantially as set forth.

477,181. **BED-SPRING.** CHARLES KING, Detroit, Mich., assignor to the Farren Brothers Company, New Haven, Conn. Filed May 2, 1892. Serial No. 431,559. (No model.)



Claim.—1. In a spring-bed, the combination, with the coil-spring having a loop formed at one side of the end coil and an extension of the end of the wire at the opposite side thereof, of a connecting-wire having a crimp or bend adapted to pass through the eye and the connecting-wire from the adjacent coil passing through the bend beneath the loop and coiled around the loop, substantially as described.

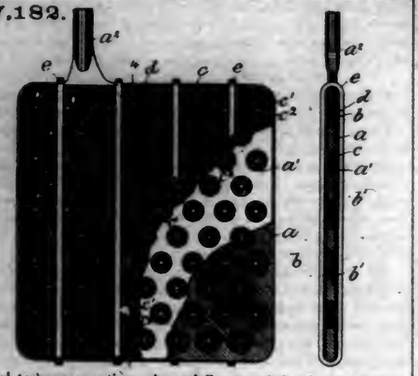
2. In a spring-bed, the combination of a series of coil-springs, a frame around the same, to which the marginal springs are connected, and connecting-wires connected at their ends to the ends of the frame, bends in the connecting-wires at each spring, loops in the lower coil of the spring, through which said bends engage, and a locking-wire formed by an extension of the lower end of the adjoining spring engaging through the bend beneath the eye and coiled around the eye, substantially as described.

477,182. **SECONDARY BATTERY.** HENRY H. LLOYD, Philadelphia, Pa., assignor to the Electric Storage Battery Company, Gloucester City, N. J. Filed Feb. 27, 1892. Serial No. 423,972. (No model.)

Claim.—1. A battery plate or electrode composed of a conducting-support and active material or material to become active and provided with insulating acid-proof sheets covering the support and having clusters or groups of holes or perforations disposed opposite the active material or material to become active, substantially as and for the purposes set forth.

2. In a secondary or storage battery, an acid-proof sheet adapted to cover a support and provided with clusters or groups of holes or perforations adapted to form a net-work over the active material or

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material to become active, substantially as and for the purposes set forth.

3. A secondary or storage battery comprising a vase or cell, an electrolyte, two series of plates composed, respectively, of a support and active material or material to become active, and insulating acid-proof sheets covering the faces of said supports and provided with groups of perforations constituting a net-work overlying the active material or material to become active, substantially as and for the purposes set forth.

4. A battery plate or element composed of a conducting-support and active material or material to become active and provided with insulating acid-proof sheets covering the support and having clusters or groups of holes or perforations disposed opposite the active material and one of said holes or perforations in line with an aperture extending through the active material or material to become active, substantially as and for the purposes set forth.

5. A battery plate or electrode composed of a conducting-support having pieces of active material or material conditioned to become active fitted into perforations in said support and having their ends substantially flush with the respective faces of said support and provided with insulating acid-proof sheets covering said supports and having groups or clusters of holes disposed opposite the exposed portions of the pieces of active material or material to become active, substantially as and for the purposes set forth.

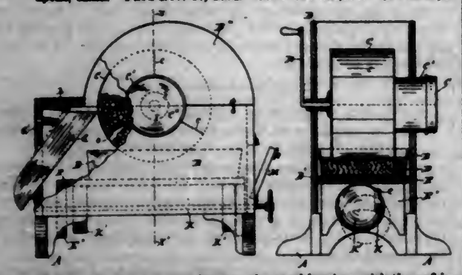
477,183. CALIPER-RULE. GEORGE D. MCLANE, Providence, R. I., assignor to Darling, Brown & Sharpe, same place. Filed Oct. 6, 1891. Serial No. 407,966. (No model.)



Claim.—1. The combination, with the body of the rule, provided with a transverse opening, the caliper-slide, and the fixed stud arranged within the transverse opening, of the tightening-wheel arranged upon the stud, substantially as described.

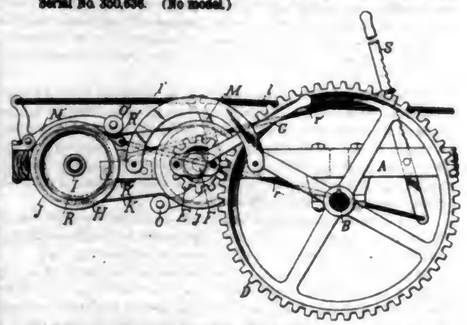
2. The combination, with the body of the rule, provided with a transverse opening, the caliper-slide, and the fixed screw-threaded stud arranged within the transverse opening, of the tightening-wheel provided with a screw-thread which fits the screw-threaded stud, substantially as described.

477,184. ICE-CREAM FREEZER. LINDON P. BURDICK, Minneapolis, Minn. Filed Nov. 17, 1891. Serial No. 412,319. (No model.)



Claim.—In an ice-cream freezer, the combination, with the refrigerant-cylinder, of the cream-pan, a vertically-movable support under said pan provided with depending parts working in guideways at their lower portions and provided near their upper portions with vertical slots, and the shaft working through the said vertical slots and provided with a pair of eccentrics or cams working one under and against each end of said support, substantially as and for the purpose set forth.

477,185. MACHINE FOR SPOOLING AND UNSPOOLING BARBED FENCE-WIRE. MOSES M. CULVER, Glidden, Iowa. Filed May 5, 1890. Serial No. 350,636. (No model.)



Claim.—1. In a wire gathering and disbursing machine, the combination of an eccentric shaft mounted in bearings on the frame of the machine, a lever attached thereto, a combined spur-wheel and pulley mounted on the eccentric shaft, means for rotating the spur-wheel and pulley when the eccentric shaft is thrown to one extreme of its movement by the lever, and a belt connecting the pulley on the eccentric shaft with a pulley on the spool-shaft, which is mounted on the frame of the machine in the rear of the eccentric shaft, substantially as and for the purpose specified.

2. In a wire gathering and disbursing machine, the combination of the driving-wheel C, axle B, spur-wheel D, spur-wheel E, pulley H, attached thereto, shaft I, pulley J, carried by it, and belt K with rollers O and O', mounted on levers M and M', and means whereby the rollers can be pressed upon the belt with a varying force, substantially as shown.

3. In a wire disbursing and stretching machine, the combination of a revolving shaft extending transversely across the machine, upon which the spool is mounted, an eccentrically-mounted friction and locking wheel thereon, and an encompassing band attached to a lever pivoted to the machine and adapted to be pressed upon the wheel with varying force, substantially as shown.

4. In a machine to be drawn over the ground to disburse and stretch wire in fence-making, the combination of a shaft extending transversely across the machine, upon which the spool is fixedly mounted, an eccentrically-mounted brake-wheel thereon, means whereby friction is thrown upon this wheel to keep the wire stretched while unreeling and to lock the spool and shaft against rotation when the desired amount of wire has been disbursed, and anchors pivoted to the frame of the machine and adapted to be pressed into the ground when the wire has been stretched taut, substantially as and for the purpose specified.

5. In a wire disbursing and stretching machine, the combination, with the shaft extending transversely across and beyond the machine and mechanisms thereon to prevent rotation of the shaft and to lock the spool thereon, of a brace-rod pivoted to the front of the machine to be attached to one of the arms of the spool, substantially as and for the purpose specified.

6. In a wire gathering, disbursing, and stretching machine, the combination to form a spool-clamp of a block secured to the shaft and arms pivoted thereon, connected by a rod, upon one end of which is an eccentrically-mounted wheel, substantially as and for the purpose specified.

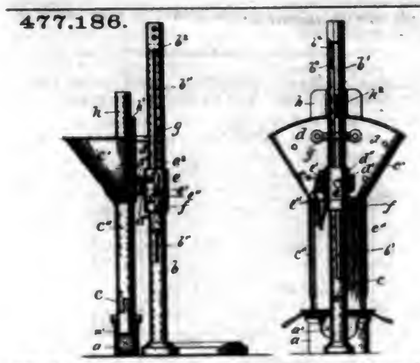
477,186. MACHINE FOR PACKING TOBACCO. WILLIAM J. CORBIN, Richmond, Va., assignor of three-fifths to M. Millhiser & Co., same place. Filed Mar. 4, 1892. Serial No. 423,765. (No model.)

Claim.—1. The combination of a funnel and plunger and a mold *a* therefor, this mold having its opposite sides open, as at *a'*, substantially as described.

2. The combination of a mold and funnel and plunger, said funnel consisting of a flaring mouth and a depending tube adapted to enter the mold, this tube being constructed of separated elastic plates, substantially as described.

3. The combination of a mold, a plunger, and a funnel-mouth having a depending tube, said tube consisting of two thin steel plates *c*, having their upper ends secured to the funnel-mouth and their adjacent edges terminating close together, and plates connecting their adjacent edges above the top of the mold, substantially as described.

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4. In a packing-machine, the combination of a mold, a support, a funnel supported on said support and adapted to enter the mold, a plunger, and means for attaching said funnel to the support, whereby it may be vertically moved and also inverted, substantially as described.

5. In a packing-machine, the combination of a mold, a support, a vertically-movable and invertible funnel thereon, means for vertically and invertibly attaching the funnel to the support, and a plunger supported within and attached to the funnel so as to be invertible and movable therewith, substantially as described.

6. In a packing-machine, the combination of a mold, a standard adjacent thereto, a funnel fitting within the mold, means for vertically-movably attaching the funnel to the standard, a plunger fitted within the funnel, and means for securing the plunger directly to the funnel, but at the same time allow it a limited movement independently of the same, substantially as described.

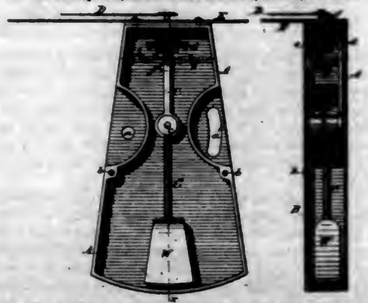
7. The combination of a mold, a standard, a sliding sleeve on the standard, a funnel pivoted to said sleeve and adapted to be inverted, and a plunger within said funnel, substantially as described.

8. The combination of a standard and a mold, a vertically-movable funnel secured to the standard and provided with an inwardly-projecting pin, and a plunger fitted within the funnel and movable therewith, said plunger being provided with a longitudinal slot in which works said pin on the funnel, whereby the plunger is secured within and to the funnel and has a limited vertical movement independently thereof, substantially as described.

9. The combination of a mold, a standard, a funnel pivotally supported and vertically movable on the standard, and an automatic catch for holding the funnel in its inverted and normal positions, substantially as described.

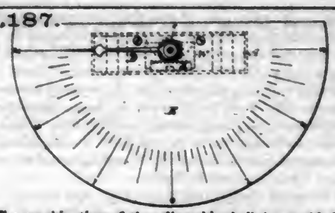
10. The combination of a mold, a grooved standard, a sliding sleeve on the standard carrying an automatically-working pawl engaging said groove, an invertible funnel connected to the sleeve, and a cam on this funnel, adapted to operate the pawl, substantially as described.

477,187. INDICATING DEVICE FOR GUNS. HENRY HLEB, Niagara Falls, N. Y., assignor of one-half to Francis E. Grice, Washington, D. C. Filed Sept. 24, 1890. Serial No. 365,970. (No model.)



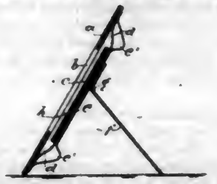
Claim.—1. The combination of the shell A, containing the spindle C, provided with a weight W and pivoted on knife-edges, said spindle having the segment *d*, meshing with a pinion *e*, mounted on an auxiliary spindle *f*, and carrying the pointer D on the outer face of a dial-plate E, having the graduations of a circle on it, all as shown and specified.

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2. The combination of the adjustable shell A, provided with the pivoted weight W, operating by the segment *d*, and the pinion *e* on the spindle *f*, carrying the pointer D and indicating the degrees on the dial-plate E, secured to the trunnion or other suitable part of the gun, and thus indicating the proper angle for firing the gun, all constructed and arranged as shown, and for the purpose set forth.

477,188. PICTURE-FRAME. ORVILLE C. B. ELLIS, Chicago, Ill. Filed Mar. 1, 1892. Serial No. 423,350. (No model.)



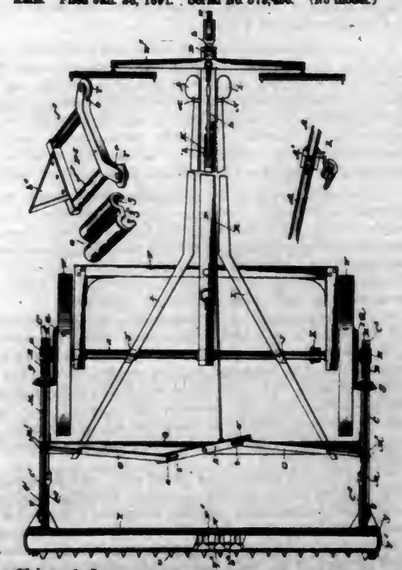
Claim.—1. The combination, with a picture-frame, of a back overlapping the sight and secured to the frame by elastic straps on said back secured to the frame, substantially as specified.

2. The combination, with a picture-frame, of a back overlapping the sight and secured to the frame by elastic straps on said back secured to the frame, and a yielding cover over said back, and straps secured to said frame, substantially as specified.

3. The combination, with a picture-frame, of a back overlapping the sight and secured to the frame by elastic straps on said back, and a yielding cover over said back, and straps secured to said frame and provided with a brace, substantially as specified.

4. The combination, with a picture-frame, of a back overlapping the sight and secured to the frame by elastic straps on said back, and a yielding cover provided with transverse ridges *c'* and brace *f*, substantially as specified.

477,189. REAPING-MACHINE. ALBERT D. MARBLE, Winfield, Kans. Filed Jan. 28, 1891. Serial No. 379,496. (No model.)



Claim.—1. In a reaping-machine, the combination, with the main axle supported by the driving-wheels, gears on the outer faces of the

latter, hubs on the outer ends of the axle, and tubular bearings extending forwardly from said hubs, of a support sustained by the axle, side bars connected therewith and at their rear ends with said hubs, a cutting apparatus carried by the front ends of said side bars, universal joints connected to said apparatus and having squared sockets in their rear members, main shafts having squared front ends engaging said sockets, their rear ends sliding loosely in said tubular bearings, small gears on said shafts adapted to engage those on the driving-wheels, and means, substantially as described, for moving said shafts longitudinally, as and for the purpose set forth.

2. In a reaping-machine, the combination, with the main axle supported by the driving-wheels, gears on the outer faces of the latter, hubs on the outer ends of the axle, and tubular bearings extending forwardly from said hubs, of a support sustained by the axle, means, substantially as described, for raising and lowering said support, side bars connected to said support and at their rear ends to said hubs, a cutting apparatus carried by the front ends of said side bars, universal joints connected to said cutting apparatus and having squared sockets in their rear members, main shafts having squared ends engaging said sockets, their rear ends sliding loosely in said boxes, small gears on said shaft adapted to engage those on the driving-wheels, collars on said shafts, levers centrally pivoted on the support and having bifurcated outer ends engaging between the collars on the shafts, pins at their inner ends, a centrally-pivoted shifter-bar also mounted on said support and having slots loosely engaging said pins, and means, substantially as described, for moving said shifter-bar, as and for the purpose set forth.

3. In a reaping-machine, the combination, with the main axle supported by the driving-wheels, gears on the outer faces of the latter, hubs at the ends of the axle having rearward extensions, and tubular bearings on said hubs, of a support sustained by the axle, a cutting apparatus carried by said support, main shafts connected with said cutting apparatus and having their rear ends journaled in said tubular bearings, gears on said shafts engaging those on the driving-wheels, side bars connected at their front ends to the cutting apparatus and pivoted at their centers to said support, the rear ends of said side bars being turned up and provided with several holes, and bolts whereby they are adjustably connected with said rearward extensions, as and for the purpose set forth.

4. In a reaping-machine, the combination, with a tongue having a socket, and a bracket mounted on said tongue and having a pin over the socket, of a lever having a slot loosely mounted on said pin, and shifting devices, substantially as described, connected by a pitman-rod with said lever, as and for the purpose set forth.

5. The combination, with a support, side bars at the ends thereof, longitudinally-moving shafts above said side bars, gears thereon adapted to engage driving-gears, and a pair of collars on each shaft, of a shifter-bar centrally pivoted to said support and having slots near its ends, and operating-levers pivoted to said support outside said bar, one end of each lever having a pin engaging the slot in said bar and the outer end being bifurcated and loosely seated between said pair of collars, as and for the purpose set forth.

6. In a reaping-machine, the combination, with a supporting frame-work having driving-wheels, a support carried thereby, main shafts adapted to be alternately driven from said driving-wheels, and universal joints in said main shafts, of a rectangular frame carried by said support and having wheels at its corners, said frame being approximately tubular in cross-section and said universal joints being connected with two of said wheels, and an endless chain of knives and links passing over the wheels in said frame, substantially as described.

7. In a reaping-machine, the combination, with a tubular finger-bar having slotted fingers, a rectangular frame whose side bars communicate with the ends of said finger-bar, each of said side bars comprising telescoping members and the clips surrounding them, wheels at the upper corners of said frame, wheels at the lower corners thereof, and means for driving the latter, of an endless chain of knives and links passing over said wheels, substantially as described.

8. In a reaping-machine, the combination, with a vertically-disposed rectangular frame, wheels at the corners thereof, and means for moving them, of an endless chain moving over said wheels, said chain comprising open links whose end bars are rounded, the rear bars being extended at the ends and provided with friction-rollers, knives secured to the front bars, and connecting-links comprising two hook-shaped members connected by an interposed web, each member embracing one of said rounded ends of a knife-frame, all substantially as hereinbefore set forth.

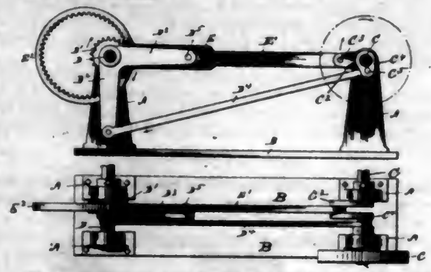
9. In a reaping-machine, the combination, with the main axle having forwardly-projecting boxes, supporting-wheels journaled on the axle and having gears, shafts journaled and sliding in said boxes and extending forwardly, and the endless cutting apparatus driven in opposite directions by said shafts, of gear-wheels and collars rigidly mounted on and turning with the shafts, and means for shifting the collars and shafts simultaneously and oppositely to throw one gear-wheel out of and the other into engagement with the gear on the supporting-wheel, substantially as described.

477,190. LIBRARY-FURNITURE. LOUIS C. TAYLOR, Trenton, N. J. Filed Sept. 19, 1891. Serial No. 406,192. (No model.)



Claim.—A portable folding and revolving display-rack, which consists of shelves centrally mounted one above the other upon a removable standard around which they revolve, adjustable supports secured to said standard, one below each shelf and supporting the center thereof, independent frames serving as sides for said shelves, each frame being loosely connected to each of said shelves by rings or similar devices, and legs projecting from the top of said rack and serving to hold books when open, substantially as shown and described.

477,191. MECHANICAL MOVEMENT. JOSEPH D. WHITCOMB, Worcester, Mass., assignor to Charles H. Woodcock, same place, and George Anson Walker, Boston, Mass. Filed May 13, 1891. Serial No. 392,577. (No model.)



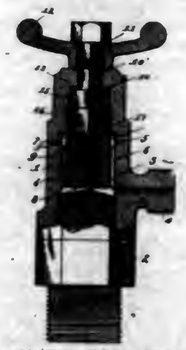
Claim.—1. The combination of a driving-shaft provided with a crank, a pivoted oscillating lever connected at one end with said crank and carrying an internal gear upon its opposite end, a driven shaft, a pinion on said driven shaft engaged by said internal gear, and a pivoted bell-crank carrying in one arm a pivot of said oscillating lever and having its other arm operatively connected with said driving-shaft, whereby an oscillating motion is imparted to said bell-crank, substantially as described.

2. The combination, with a driven shaft and a pinion on said shaft, of an internal gear carried by an oscillating lever and engaging said pinion, an oscillating bell-crank carrying a pin upon which said oscillating lever is pivoted, an oscillating lever carrying said internal gear and provided with a slot inclosing the pivotal pin carried by said bell-crank, and a driving-shaft provided with a crank connected with said oscillating lever and having a second crank connected by a link with said bell-crank, whereby said bell-crank is oscillated, substantially as described.

3. The combination, with a driving-crank, of an oscillating lever connected with said crank, an internal gear carried by said oscillating lever, a driven shaft, a pinion on said driven shaft engaged by said internal gear, an oscillating arm pivoted at one end and carrying a pivotal pin upon which said oscillating lever is pivoted, and connected actuating mechanism, substantially as described, whereby a movement is imparted to said oscillating lever conjointly with the motion imparted to said oscillating lever by its connected driving-crank, substantially as described.

4. The combination of a driving-shaft C, provided with cranks C^3 and C^4, driven shaft D, provided with a pinion D', a pivoted bell-crank having arms D^4 D^5, said arm D^5 carrying a pin D^6, serving as the fulcrum of an oscillating lever E, provided with a slot E and pivoted upon the pin D^6, an internal gear E^3, carried by said oscillating lever and engaging the pinion D', said oscillating lever being connected with and actuated by the crank C^3, and a link D^4, connecting the crank C^4 with the arm D^4 of the pivoted bell-crank, whereby an oscillating motion is imparted to the pivotal pin D^6, substantially as described.

477,192. VALVE. CHARLES L. BASTIAN, Chicago, Ill., assignor to Lawrence M. Ennis, same place. Filed Aug. 17, 1891. Serial No. 402,805. (No model.)



Claim.—1. The combination, with the housing having a valve-seat, of a reciprocating valve held against rotation, a valve-stem having screw-threaded connection with said valve and being provided with a shoulder, and a nut having threads of opposite pitch to said threaded connection between the stem and the valve, adapted to force said shoulder against the end of the housing, substantially as set forth.

2. The combination, with the housing having a valve-seat, of a reciprocating valve held against rotation, a valve-stem having screw-threaded connection with said valve and being provided with the shoulder 15 and prismatic portion 16, and a nut fitting on said prismatic portion and having external threads engaging in the housing and being capable of movement independently of the valve, substantially as set forth.

3. The combination, with the housing having a valve-seat, of a valve having spline-and-groove connection with the housing, a valve-stem having screw-threaded connection with said valve and being provided with the shoulder 15 and prismatic portion 16, a nut or sleeve fitting on said portion 16 and having external threads of different pitch from said threaded connection between the stem and valve, and a gasket surrounding the stem between shoulder 15 and the end of the housing, substantially as set forth.

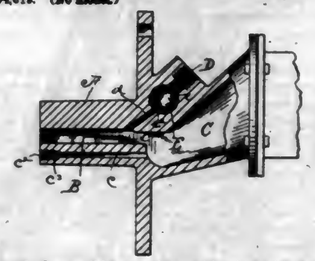
4. The combination, with the housing having a valve seat, of a reciprocating valve held against rotation, a valve-stem having screw-threaded connection with said valve and being provided with a shoulder, a nut having threads of opposite pitch to said threaded connection between the stem and the valve, adapted to force said shoulder against the end of the housing, and a hand-wheel or knob secured rigidly to said nut for rotating the valve-stem, substantially as set forth.

5. The combination, with the housing having a valve-seat, of a reciprocating valve held against rotation, a valve-stem having screw-threaded connection with said valve, a shoulder or supplemental valve carried by said stem, a nut having threads of opposite pitch to said threaded connection between the stem and the valve, adapted to force said shoulder or supplemental valve against the end of the housing, and a hand-wheel on said stem for rotating it, formed integrally with said nut, substantially as set forth.

6. The combination of the housing having the threaded socket and a valve-seat, a reciprocating valve held against rotation, a valve-stem having threaded connection with said valve and being provided with a shoulder adapted to come against the end of the housing, a nut located in said socket and having threads of opposite pitch to the pitch of the threaded connection between the valve and the stem, and a hand-wheel formed integrally with the nut and being secured to the valve-stem with capability of moving longitudinally thereon, substantially as set forth.

7. The combination, with the housing having a valve-seat and the threaded socket, of a reciprocating valve held within said housing against rotation, a valve-stem having a threaded end 9, engaging in said valve, and a prismatic portion, a shoulder or supplemental valve carried by said valve-stem, a nut having a prismatic interior fitted upon said prismatic portion of the valve-stem and being located within the said socket, and a hand wheel or knob formed integrally with said nut, the threads of said nut being right-hand threads and the threads on the end 9 of the stem being left-hand threads and of greater pitch than the threads of the nut, substantially as set forth.

477,198. OIL-BURNER. JOHN J. BURDUP, Cleveland, Ohio, assignor of three-fourths to Mary A. Sheppard and William J. Sheppard, same place, and Richard B. Tate, Pittsburg, Pa. Filed Sept. 3, 1891. Serial No. 404,619. (No model.)

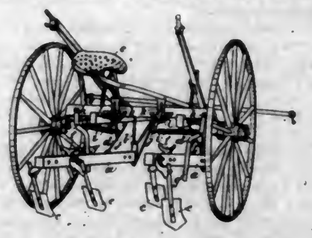


Claim.—1. In an oil-burner, the combination, with the mixing or commingling chamber having inlets for air and oil, respectively, of a tubular valve having a series of outlet-orifices adapted to register with the oil-inlet of the mixing or commingling chamber and having a longitudinal peripheral groove and an orifice at either end of said groove for receiving and distributing the oil to the series of outlet-orifices, substantially as set forth.

2. In an oil-burner, the combination, with the mixing or commingling chamber having inlets for oil and air, respectively, and an air supply pipe or reservoir, of a slit in the front end of the burner below and extending approximately the entire width of the mouth of the burner, substantially as indicated, one or more openings or channels leading directly from the air supply pipe or reservoir to and discharging into said slit, and a plug or spreader located opposite the discharging end of said air channel or channels, substantially as set forth.

3. In an oil-burner, the combination, with a mixing or commingling chamber having inlets for oil and air, respectively, and an air supply pipe or reservoir, of a slit in the front end of the burner below and extending approximately the entire width of the mouth of the burner, a series of openings or channels leading directly from the air supply pipe or reservoir to and discharging into said slit, and plugs or spreaders located opposite the discharging ends of said air channels or openings, substantially as set forth.

477,194. RIDING-CULTIVATOR. BENJAMIN F. BUTLER, Rockford, Ill. Filed Apr. 17, 1891. Serial No. 389,378. (No model.)

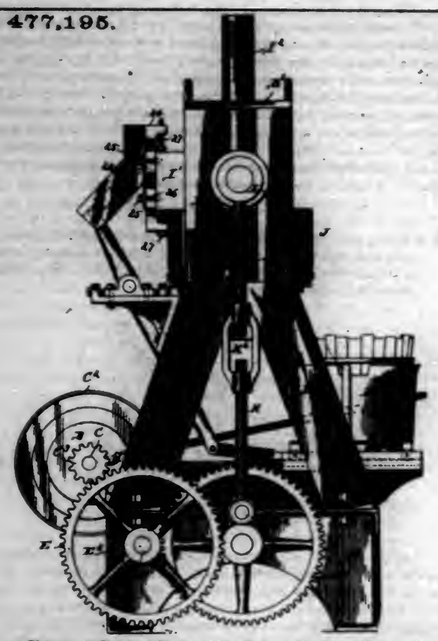


Claim.—1. In a riding-cultivator, the combination of two gangs movable laterally independently of each other, a pendent lever and spring, and a foot-piece with each gang, adapted for so moving them independently of each other, substantially as described.

2. The combination of a cultivator beam or gang, the pendent lever *g*, the slotted standard or plate *k l*, the adjustable hook *j* and the spring *i*, whereby the beam may be returned to its normal position when moved aside by the rider, substantially as shown and described.

477,195. TRUSSING-MACHINE. WILLIAM GLADER, Chicago, and HENRY SCHMIDT, Elgin, Ill.; said Glader assignor to said Schmidt. Filed June 4, 1891. Serial No. 395,042. (No model.)

477,195.



Claim.—1. In a trussing-machine, the combination, with a reciprocating driver and a movable trussing-pot having annular ledges for the hoops or trussing-rings and a rest or stop at its bottom for the staves, of mechanism for automatically operating said driver and pot, so as to cause the pot to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after the trussing operation, substantially as and for the purpose described.

2. In a trussing-machine, the combination, with a reciprocating driver, means for adjusting the range of reciprocation of said driver, and a movable trussing-pot having ledges for the trussing rings or hoops and a rest or stop at its bottom for the staves, of mechanism for automatically operating said driver and pot, so as to cause the pot to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after the trussing operation, substantially as and for the purpose described.

3. In a trussing-machine, the combination, with a vertically-reciprocating driver and a horizontally intermittent reciprocating trussing-pot having horizontal annular ledges for the trussing rings or hoops, and a rest or stop at its bottom for the staves, of mechanism for automatically operating said driver and pot, so as to cause said pot to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver, substantially as and for the purpose described.

4. In a trussing-machine, the combination, with a vertically-reciprocating driver, means for adjusting the range of reciprocation of said driver, and a horizontally-intermittent reciprocating trussing-pot, having annular ledges for the trussing-hoops and a rest or stop at its bottom for the staves, of mechanism for automatically operating said driver and pot, so as to cause said pot to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver, substantially as and for the purpose described.

5. In a trussing-machine, the combination, with a reciprocating driver and a movable trussing-pot having longitudinal ledges for the hoops and a rest or stop at its bottom for the staves, of a connection between said driver and pot, whereby the pot will be moved to a center under the driver, remain in that position during the trussing operation, and move out from under the driver simultaneously with and during the reciprocation of the driver, substantially as and for the purpose described.

6. In a trussing-machine, the combination, with a reciprocating driver, means for adjusting the range of reciprocation of said driver, and a movable trussing-pot having annular ledges for the hoops and a rest or stop at its bottom for the staves, of a connection between said driver and pot, whereby the pot will be moved to a center under the driver, remain in that position during the trussing operation, and move out from under the driver simultaneously with and during the reciprocation of the driver, substantially as and for the purpose described.

7. In a trussing-machine, the combination, with a reciprocating driver and a movable trussing-pot having annular ledges for the hoops and a rest or stop at its bottom for the staves, of a cam and lever connection between said driver and pot, whereby the latter will be moved to a center under the driver, remain at rest during the trussing operation, and move out from under the driver during the reciprocation of the driver, substantially as described.

8. In a trussing-machine, the combination, with a reciprocating driver, means for adjusting the range of reciprocation of said driver, and a movable trussing-pot having horizontal ledges or shoulders for the hoops and a rest or stop at its bottom for the staves, of a cam and lever between said driver and pot, whereby the latter will be moved to a center under the driver, remain at rest during the trussing operation, and move out from under the driver during the reciprocation of the driver, substantially as described.

9. In a trussing-machine, the combination, with a reciprocating driver and a movable trussing-pot having horizontal ledges or shoulders for the hoops and a rest or stop at its bottom for the staves, of a cam attached to and movable with the driver and a lever connected at one end with the pot and at the opposite end with the cam, so as to be actuated thereby during the reciprocation of the driver, substantially as and for the purpose described.

10. In a trussing-machine, the combination, with a reciprocating driver, means for adjusting the range of reciprocation of said driver, and a movable trussing-pot having hoop-supporting ledges or shoulders and a support at its lower end for the staves, of a cam attached to and movable with the driver and a lever connected at one end with the pot and at the opposite end with the cam, so as to be actuated thereby during the reciprocation of the driver, substantially as and for the purpose described.

11. In a trussing-machine, the combination, with a reciprocating driver and a movable trussing-pot having hoop-supporting ledges or shoulders and a rest or stop at its lower end for the staves, of a cam secured to and movable with the driver and a lever connected at one end with the pot and at its opposite end engaging and operated by said cam, substantially as described.

12. In a trussing-machine, the combination, with a reciprocating driver, means for adjusting the range of reciprocation of said driver, and a movable trussing-pot having supporting ledges or shoulders and a rest or stop at its lower end for the staves, of a cam secured to and movable with the driver and a lever connected at one end with the pot and at its opposite end engaging and operated by said cam, substantially as described.

13. In a trussing-machine, the combination, with a reciprocating driver, means for adjusting the range of reciprocation of the driver, a trussing-pot, and a movable carriage supporting and carrying said pot, of a cam adjustably secured to the driver and a lever, one end of which engages and is operated by said cam, and a link connection between the opposite end of said lever and the carriage, substantially as described.

14. In a trussing-machine, the combination, with a reciprocating driver, crank-wheels, crank-rods connecting said wheels and driver, turnbuckles in said rods for adjusting the length thereof, and a movable trussing-pot, of a cam adjustably secured to the driver, and a lever connected at one end with said pot and at its opposite end engaging and actuated by said cam, substantially as described.

15. In a trussing-machine, the combination, with a reciprocating driver adapted to engage the ends of the staves and a gatherer attached thereto for gathering the ends of the staves before their being operated upon by the driver, of a movable trussing-pot having truss hoop or ring supporting ledges or shoulders and mechanism for operating said driver and pot, substantially as described.

16. In a trussing-machine, the combination, with a reciprocating driver having a concaved operating-face and a gathering-ring attached thereto, the operating-face of which curves or inclines inwardly to the face of the driver, of a movable trussing-pot and mechanism for operating said pot and driver, substantially as described.

17. In a trussing-machine, the combination, with a reciprocating driver adapted to engage the ends of the staves and a movable trussing-pot having hoop-supporting ledges or shoulders, of mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after such operation, and a gatherer attached to the driver for gathering the upper ends of the staves to their normal position before being operated on by the driver, substantially as described.

18. In a trussing-machine, the combination, with a vertical reciprocating driver and a horizontally-intermittent reciprocating trussing-pot and mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after such operation, of a power-shaft and clutch thereon and a stop device connecting said clutch and pot, so as to automatically throw the clutch out of engagement after each complete operation of the machine, substantially as described.

19. In a trussing-machine, the combination, with a vertically-reciprocating driver, a horizontally-intermittent reciprocating trussing-pot, and mechanism for simultaneously operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed, of a power-shaft, clutch thereon, a spring-actuated hand-lever normally throwing such clutch out of engagement, a lock device engaging said lever, so as to lock the clutch into engagement, and means whereby said lock device is released by the pot on its outward movement from under the driver, substantially as described.

20. In a trussing-machine, the combination, with a vertically-reciprocating driver, a horizontally-intermittent reciprocating trussing-pot, and mechanism for simultaneously operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed, of the power-shaft, clutch thereon, a spring-actuated hand-lever normally throwing such clutch out of engagement, a spring actuated lock device engaging said lever, so as to lock the clutch into engagement, and means whereby said lock device is released by the pot on its outward movement from under the driver, substantially as described.

21. In a trussing-machine, the combination, with a vertically-reciprocating driver, a horizontally-intermittent reciprocating trussing-pot, and mechanism for simultaneously operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed, of a power-shaft, clutch thereon, and spring-actuated hand-lever normally throwing said clutch out of engagement, a latch on said lever, a spring-actuated rock-shaft, a crank-arm thereon engaging said latch, and a stop-arm thereon engaged and operated by the pot, so as to disengage the crank-arm from the latch, substantially as described.

22. In a trussing-machine, the combination, with a reciprocating driver, of a movable trussing-pot provided with annular shoulders for supporting the trussing-rings, and mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed, latches attached to the pot, and means for automatically operating said latches to engage the upper truss-ring when the pot moves to a center under the driver and disengaged from the same when the pot moves out from under the driver, substantially as described.

23. In a trussing-machine, the combination, with a reciprocating driver, of a movable trussing-pot provided with annular shoulders for supporting the trussing-rings, and mechanism for automatically driving said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed, spring-actuated latches attached to the pot, and means for automatically operating said latches to engage the upper truss-ring when the pot moves to a center under the driver and disengaged from the same when the pot moves out from under the driver, substantially as described.

24. In a trussing-machine, the combination, with a reciprocating driver, a gatherer attached thereto for gathering the staves to their normal position prior to being operated upon by the driver, and a movable trussing-pot provided with annular shoulders for supporting the trussing-rings, of mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed and the gatherer disengaged from the staves, latches, and means for automatically operating said latches to engage the upper truss-ring when the pot moves to a center under the driver and disengaged therefrom when the pot moves out from under the driver, substantially as described.

25. In a trussing-machine, the combination, with a reciprocating driver, a gatherer attached thereto for gathering the staves to their normal position prior to being operated upon by the driver, and a movable trussing-pot provided with annular shoulders for supporting the trussing-rings, of mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed and the gatherer disengaged from the staves, spring-actuated latches, and means for automatically operating said latches to engage the upper truss-ring when the pot moves to a center under the driver and disengaged therefrom when the pot moves out from under the driver, substantially as described.

26. In a trussing-machine, the combination, with a reciprocating driver and gatherer attached thereto for gathering the ends of the staves prior to their engagement by the driver, and a movable trussing-pot provided with annular shoulders for supporting the trussing-rings, of mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after such operation is completed, of spring-actuated latches pivoted to and movable with the pot for engaging the upper truss-rings and means for overcoming the tension of said springs and forcing the latches into engagement with the upper truss-ring when the pot moves to a center under the driver, substantially as described.

27. In a trussing-machine, the combination, with a reciprocating driver, a gatherer secured thereto for gathering the ends of the staves prior to being operated upon by the driver, and a trussing-pot provided with annular shoulders for supporting the trussing-rings, of mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver when such operation is completed, latches for engaging the upper truss-ring, springs normally holding said latches out of engagement with said ring, and springs forcing the latches into engagement with the truss-rings when the tab is moved to a center beneath the driver, substantially as described.

28. In a trussing-machine, the combination, with a reciprocating driver and an intermittently-reciprocating trussing-pot having hoop-supporting ledges or shoulders and a rest or stop at its lower end for the staves, of mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after such operation, and a cushioned stop device for limiting the movement of the pot, substantially as described.

29. In a trussing-machine, the combination, with a reciprocating driver and an intermittently-reciprocating trussing-pot, of mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after such operation, and a stop device for limiting the inward movement of the pot, comprising a socketed bracket and piston working therein, a yielding cushion between said piston and bracket and the end of the socket in the bracket, and an adjustable stop-bolt projecting from said piston, substantially as described.

30. In a trussing-machine, the combination, with a reciprocating driver and movable trussing-pot and mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after such operation is completed, of a carriage supporting the trussing-pot, anti-friction rollers therefor, and a spring connection between said rollers and carriage, substantially as described.

31. In a trussing-machine, the combination, with a reciprocating driver and movable trussing-pot and mechanism for automatically operating said driver and pot, so as to cause the latter to move to a center under the driver, remain at rest during the trussing operation, and move out from under the driver after such operation is completed, of a carriage supporting the trussing-pot, having slots near the front and rear ends thereof, anti-friction rollers working in said slots and bearing upon the bed of the machine, a spring-bar extending between the bearings of said rollers, and a connection between the carriage and said bar between the rollers, whereby the carriage is yieldingly suspended from said bar, substantially as described.

32. In a trussing-machine, the combination, with the reciprocating driver, a trussing-pot, and a movable carriage supporting and carrying said pot, of a cam adjustably secured to the driver, a lever engaged and operated by said cam at one end, a link connecting the other end of said lever with said carriage, and means for adjusting the range of reciprocation of said driver, substantially as set forth.

33. In a trussing-machine, the combination, with a vertically-reciprocating driver, a horizontally-reciprocating trussing-pot having hoop-supporting ledges or shoulders and a rest or stop at its lower end for the staves, and means for intermittently projecting said pot under the driver and withdrawing it therefrom, of automatic stop mechanism operated by the movement of the pot for rendering the latter inactive when in its withdrawn position, substantially as set forth.

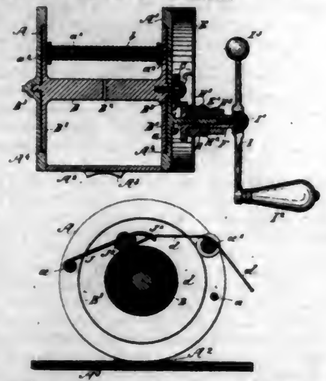
34. In a trussing-machine, the combination, with the vertically-reciprocating driver and the trussing-pot having hoop-supporting ledges or shoulders and a rest or stop at its lower end for the staves, of the horizontally-reciprocating carriage supporting said pot and means for causing said carriage to intermittently move to center under the driver and to move outward again at the completion of the trussing operation, substantially as set forth.

35. In a trussing-machine, the combination, with the reciprocating driver adapted to engage the ends of the staves and an intermittently-reciprocating trussing-pot having hoop-supporting ledges or shoulders and a rest or stop at its lower end for the staves, of a rigid gatherer secured to the driver and adapted to engage the staves in advance of said driver, substantially as set forth.

36. In a trussing-machine, the combination, with the reciprocating driver adapted to engage the ends of the staves and the intermit-

tently-reciprocating trussing-pot having hoop-supporting ledges or shoulders and a rest or stop at its lower end for the staves, of a rigid interiorly beveled or rounded gathering-ring adapted to engage the ends of the staves in advance of the driver, substantially as set forth.

477,196. FISHING-REEL. CURTIS H. WILCOX, Brooklyn, N. Y., assignor to Deborah C. Folk, same place. Filed Dec. 4, 1889. Renewed Feb. 2, 1891. Serial No. 379,918. (No model.)



Claim.—1. The combination, with the spool, its frame, and the pinion on the spool, of a shaft rigid with the end piece of the frame, a sleeve movable on said shaft and carrying a pinion, and a handle upon said sleeve and adapted to rotate it or to move it lengthwise upon the shaft, substantially as described.

2. The combination, with a spool and its frame, of a pinion carried by said spool, a shaft rigid with one of the end pieces of the frame, a casting having a hub or boss, a sleeve in said boss upon said shaft and movable lengthwise upon said shaft, and a pinion carried by the inner end of said sleeve, substantially as described.

3. The combination, with the frame, the spool, and the pinion carried thereby, of the casing formed with the boss, the sleeve passed through said boss and carrying at one end within said casing a pinion and at the other end a handle, and a shaft upon the end piece of the frame and passed through said sleeve and boss and upon which the sleeve is longitudinally adjusted, substantially as and for the purpose specified.

4. The combination, with the frame, the spool, and its pinion, of the winding-pinion carried by a shaft adjustable to and from the spool-pinion and provided with annular grooves, and a spring-catch adapted to engage either one of said grooves to hold the shaft in either of its adjusted positions, substantially as described.

5. The combination, with the frame, the spool, and its pinion, of the winding-pinion carried by a shaft adjustable to and from the spool-pinion, a spring-catch, and grooves to receive the catch in the relation thereto to engage and retain the winding-pinion in or out of contact with the spool-pinion, substantially as described.

6. The combination, with the spool and its winding mechanism, of a hinged brake attached to the frame of the spool to swing on its pivot, with its free end in advance of the spool and provided with a detachable pad to bear on the line, substantially as described.

7. The combination, with the spool, of a pivoted lever-brake normally gravitating onto the spool, with its free end extending in the direction of the outhanging line and arranged to bear on the line, as set forth.

8. The combination, with the spool, its frame, and winding mechanism, of a brake provided with a detachable pad, substantially as described.

9. The combination, with the spool and its winding mechanism, of a hinged brake attached to the frame of the spool to swing on its pivot, with its free end in advance of the spool and arranged to bear on the line, as set forth.

10. In combination with a reel and its winding mechanism, an absorbent pad supported by the frame of the reel in yielding contact with the line, substantially as described.

11. In combination with a reel and its winding mechanism, an absorbent pad attached to a support hinged to the frame of the reel and held thereby in yielding contact with the line, substantially as described.

12. The combination, with the spool, its frame, and winding mechanism, of a brake provided with an absorbent pad, substantially as described.

13. The combination, with the spool, its frame, and winding mechanism, of a hinged brake on the frame and an absorbent pad carried by the brake, substantially as and for the purpose specified.

14. The combination, with the reel, the frame, and the spool-winding mechanism, of a brake adapted to bear upon the line and formed with a transverse passage for the line, substantially as described.

15. The combination, with the reel and its frame, of a hinged brake adapted to bear upon the line and provided with an absorbent pad and a transverse passage for the line, substantially as described.

16. In combination with a reel and its winding mechanism, a brake consisting of a rest or drop supported by the frame of the reel and provided with a transverse slot or passage in the relation to the spool, whereby the line may pass through said slot close to and directly onto the coil of wound-in line in winding it in, substantially as described.

17. In combination with a reel and its winding mechanism, a brake consisting of a rest or drop hinged to the frame of the reel and provided with a transverse slot or passage in the relation to the spool, whereby the line may pass through said slot close to and directly onto the coil of wound-in line in winding it in, substantially as described.

18. In combination with a reel and its winding mechanism, a hinged drop or rest supported by the frame of the reel and provided with an absorbent pad and with a transverse slot or passage in advance of the pad, substantially as described.

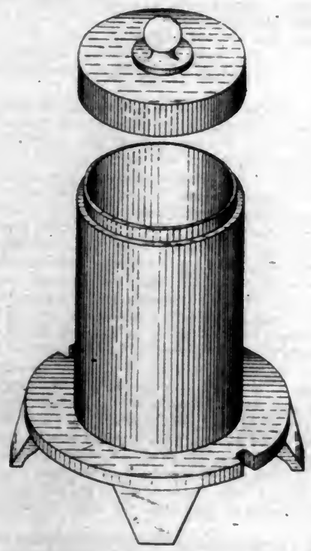
19. The combination, with the spool, of the traverse-guide for the line, consisting of the right and left spirally-grooved and independently-pivoted roll, said roll alone constituting the guide whereby the line draws over and rotates said roll and thereby traverses the grooves when reeling in, substantially as described.

20. The combination, with the spool, of the traverse-guide for the line, consisting of the right and left spirally-grooved roll pivoted independently in the reel-frame parallel with the spool, said roll alone constituting the guide whereby the line is caused to draw over and rotate the roll and thereby traverse the same in the grooves when reeling in, substantially as described.

21. The combination, with the spool, of the traverse-guide for the line, consisting of the right and left spirally-grooved roll, said roll alone constituting the guide, and the hinged drop or rest having a transverse slot or passage through which the line may pass, substantially as described.

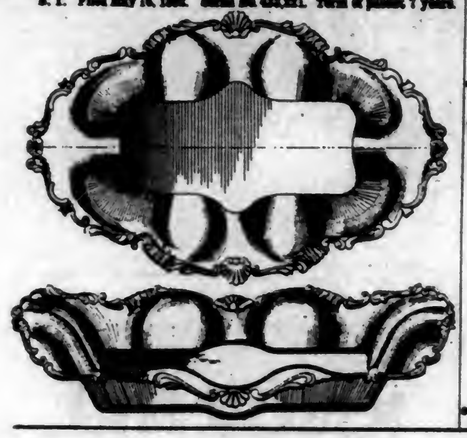
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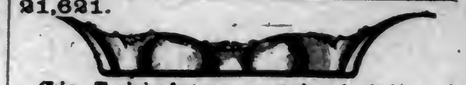
21,620. GLASS DISH. BENJAMIN BENNETT, Jeannette, and HENRY S. MCKEE, Allegheny, Pa. Filed Jan. 18, 1892. Serial No. 418,506. Term of patent 14 years.



Claim.—The design for a glass dish, herein shown and described.

21,621. TRAY OR RECEPTACLE. ADOLPH LOEWE, Brooklyn, N. Y. Filed May 16, 1892. Serial No. 433,221. Term of patent 7 years.





Claim.—The design for trays or receptacles, as herein shown and described.

21,622. HOSE-REEL SPOOL. THOMAS V. FOSMIRE, New Utrecht, N. Y. Filed Apr. 20, 1892. Serial No. 431,230. Term of patent 14 years.



Claim.—The design for a hose-reel spool, herein shown and described.

TRADE-MARKS

REGISTERED JUNE 14, 1892.

21,280. PILLS. JOHN SEPTUS ABRAHAM, Sydney, New South Wales. Filed Aug. 20, 1891.

ABRAHAM'S PILLS

Essential feature.—The representation of a dandelion-plant in bloom and the words "ABRAHAM'S PILLS." Used since August 28, 1874.

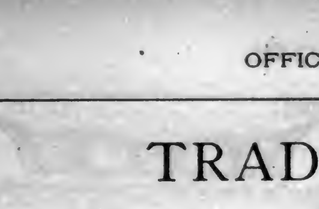
21,281. WHISKY. BETTERTON & Co., Knoxville, Tenn. Filed May 2, 1892.

Golden Spring

Essential feature.—The words "GOLDEN SPRING." Used since January 1, 1891.

21,282. HATS AND CAPS. HART & DUFF HAT COMPANY, St. Louis, Mo. Filed May 3, 1892.

THE CORONET



Essential feature.—The words "THE CORONET" and the symbolic representation of a crown or head-dress surmounted by a star. Used since January 1, 1892.

21,283. HATS AND CAPS. HART & DUFF HAT COMPANY, St. Louis, Mo. Filed May 17, 1892.



Essential feature.—The words "MOLE-SKIN CRUSHERS." Used since September 1, 1891.

21,284. HATS AND CAPS. HART & DUFF HAT COMPANY, St. Louis, Mo. Filed May 17, 1892.



Essential feature.—The words "THE MEDALLION" and the representation of three medals. Used since January 1, 1891.

21,285. TIN AND TERNE PLATE AND COATED AND UNCOATED SHEET METAL. N. & G. TAYLOR Co., Philadelphia, Pa. Filed May 17, 1892.

KNOXALL

Essential feature.—The word "KNOXALL." Used since January 1, 1892.

21,286. TAILORS' TRIMMINGS, INCLUDING BUTTONS, BUCKLES, CLASPS, AND HOOKS AND EYES. BECKERMANN & Co., New York, N. Y. Filed Mar. 24, 1892.

GILT EDGE

Essential feature.—The words "GILT EDGE." Used since August 25, 1891.

21,287. IMPROVED AND REFORMED BABY-CLOTHES. THE FIRM OF MRS. R. J. GUSS, New York, N. Y. Filed May 9, 1892.

DOROTHY.

Essential feature.—The word "DOROTHY." Used since June 1, 1891.

21,288. IMPROVED PATTERNS FOR BABY-GARMENTS AND UNDERGARMENTS. THE FIRM OF MRS. R. J. GUSS, New York, N. Y. Filed May 9, 1892.

DOROTHY.

Essential feature.—The word "DOROTHY." Used since June 1, 1891.

21,289. PINS. KIRBY, BEARD & COMPANY, Limited, Birmingham, England. Filed May 17, 1892.

LION

Essential feature.—The word "LION." Used since March 21, 1892.

21,290. BUTTER AND EGGS. JOHN C. MAHR & SONS, New York, N. Y. Filed May 7, 1892.



Essential feature.—The representation of a right-angle triangle. Used since April 1, 1891.

21,291. MUSICAL INSTRUMENTS. JÉRÔME THIBOUVILLE-LAMY, Paris, France. Filed Feb. 29, 1892.



Essential feature.—The word "VIRTUOSE" and the representation of a bird perched upon a violin. Used since March 1, 1888.

21,292. MUSICAL INSTRUMENTS. JÉRÔME THIBOUVILLE-LAMY, Paris, France. Filed Feb. 29, 1892.



Essential feature.—The representation of a bird perched inside the ring of a musical horn. Used since March 1, 1888.

21,293. REMEDY FOR RHEUMATISM, NEURALGIA, AND HEADACHE. THE CABLE SPECIALTY Co., Pittsburg, Pa. Filed May 2, 1892.

ELECTRO MYTHIQUE

Essential feature.—The words "ELECTRO MYTHIQUE." Used since April 1, 1885.

21,294. GIN. J. S. SMITH, DRUCE & COMPANY, Limited, London, England. Filed May 16, 1892.



Essential feature.—The representation of a phœnix. Used since June, 1847.

21,295. HYPNOTIC COMPOUNDS FOR INTERNAL AND EXTERNAL USE. BURGOYNE, BURBIDGE, CYRIAX & FARRIER, London, England. Filed Apr. 27, 1892.

CHLOROBROM.

Essential feature.—The word "CHLOROBROM." Used since January 1, 1892.

21,296. LARD. J. M. O'HALLON & Co., New York, N. Y. Filed May 5, 1892.

GUAYAS

Essential feature.—The word "GUAYAS." Used since February, 1892.

21,297. FOUNTAIN-PENS. MARIE BROWN and CAMILLE GUBBINS, New York, N. Y. Filed May 16, 1892.

Dashaway

Essential feature.—The word "DASHAWAY." Used since 1884.

21,298. CHAMPAGNE. L. GIRARD & CIE., Spernay, France, and New York, N. Y. Filed Jan. 8, 1892.

Breton-Sec

Essential feature.—The word "BRETON-SEC." Used since January 1, 1872.

21,299. PILLS. HATTIE & MYLIUS, Halifax, Canada. Filed Mar. 14, 1892.



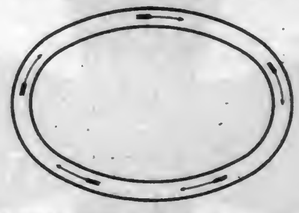
Essential feature.—A rectangular red ground and the capital letter "P" printed thereon in white. Used since June 1, 1891.

21,300. CRACKERS AND CAKES. HENDERSON, LAWS & Co., Baltimore, Md. Filed May 13, 1892.

HONEY DROPS

Essential feature.—The words "HONEY DROPS." Used since March 1, 1892.

21,301. REFRIGERATORS AND REFRIGERATOR-CARS. JOSEPH Francis HANRAHAN, Chicago, Ill. Filed Apr. 8, 1892.



Essential feature.—The representation of two concentric ellipses with interposed arrows or darts. Used since April, 1891.

21,302. NUTS. HALL & HAYWARD COMPANY, Louisville, Ky. Filed Mar. 7, 1892.



Essential feature.—The words "GOLDEN ROD" and the representation of a spray of the plant of that name. Used since April 2, 1891.

21,303. FABRIC FOR WINDOW-SHADES. LYON, HALL & Co., Baltimore, Md. Filed May 5, 1892.



Essential feature.—The word "LANCASTER" and the representation of a shield bearing the figures of three lions inclosed by a wreath. Used since May, 1889.

21,804. NAVAL, MILITARY, SOCIETY, AND THEATRICAL UNIFORMS. HORSTMANN BROS. & CO., Philadelphia, Pa. Filed Feb. 29, 1892.



Essential feature.—The representation of a knight in armor. Used since January, 1872.

21,805. SUGAR-PINE DOORS. SIERRA LUMBER COMPANY, San Francisco, Cal. Filed Apr. 26, 1892.



Essential feature.—The representation of a crown. Used since March 14, 1892.

21,806. WHEAT-FLOUR. THE NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed May 6, 1892.



Essential feature.—The representation of a Maltese cross and the word "PERFECT" across the face thereof. Used since July 1, 1891.

21,807. WHEAT-FLOUR. THE NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed May 6, 1892.



Essential feature.—A monogram formed of the letters "N C M. Co." Used since July 1, 1892.

21,808. WATCHES AND PORTABLE CLOCKS. WEBSTER C. BALL, Cleveland, Ohio. Filed Apr. 11, 1892.

B OF LE

Essential feature.—The letters and word "B of Le." Used since April 2, 1892.

21,809. WATCHES AND PORTABLE CLOCKS. WEBSTER C. BALL, Cleveland, Ohio. Filed Apr. 11, 1892.

O OF RC

Essential feature.—The letters and word "O of RC." Used since April 2, 1892.

21,810. WATERPROOFED CARBOLIZED PAPER. J. JEWITT & SON, Stanley, N. J. Filed May 17, 1892.



Essential feature.—The representation of a rampant griffin grasping an anchor. Used since April 1, 1890.

21,811. MEDICINE FOR THE TREATMENT OF DRUNKENNESS, OPIUM, MORPHINE, AND TOBACCO HABITS AND KINDRED DISEASES. THE CHICAGO DIPSOCURA COMPANY, Chicago, Ill. Filed Apr. 25, 1892.



Essential feature.—The word "DIPSOCURA." Used since August 1, 1891.

21,812. PILLS. HARRY C. WILKINSON, Chicago, Ill. Filed May 21, 1892.

PILBORITAS

Essential feature.—The word "PILBORITAS." Used since May 1, 1887.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE AUCHU.

Decided June 7, 1892.

PRACTICE—PETITION TO COMMISSIONER FROM EXAMINER—RULE 145.

A petition to the Commissioner under Rule 145 will not lie unless the question appealed has been twice acted upon by the Examiner.

ON petition.

SAWMILL PLANT.

Application of Henry Auchu filed September 4, 1890, No. 363,893.

Mr. E. B. Stocking for applicant.

SIMONDS, *Commissioner:*

This is a petition taken from the action of the Primary Examiner which—

prays that the Examiner in charge of the above-specified application be directed to admit and act upon the merits of the amendment of said application, which amendment was filed on April 25, 1892.

This application as originally filed contained two claims. December 4, 1890, the claims were rejected for lack of invention, no references being cited except Commissioner's decision *ex parte* Cheesebrough, (C. D., 1869, 18.) December 18, 1890, claim 1 was amended and "a definite reference or an allowance" asked. December 30, 1890, the claims were rejected, but without further citation. January 13, 1891, two additional claims, 3 and 4, were presented, and a reconsideration was asked. January 21, 1891, claim 1 was rejected on references; claims 2, 3, and 4 were rejected on references and as covering aggregations. January 29, 1891, claims 1 and 3 were canceled, and a reconsideration of claims 2 and 4 was requested. February 16, 1891, claims 1 and 2 (formerly 2 and 4) were finally rejected. February 24, 1891, an application of the references in compliance with Rules 65 and 66 was requested. March 5, 1891, the Examiner declined to modify or enlarge his previous action. March 16, 1891, applicant insisted upon a compliance with the provisions of Rules 65 and 66. March 20, 1891, the Examiner repeated his action of March 5, 1891. April 9, 1891, applicant repeated his request, last referred to. At this point the application was transferred to another division in the office. May 29, 1891, the Examiner stated his reasons for holding the previous actions to be correct; he stated that the claims covered aggregations, and that "this is an additional reason for rejecting them. The application still stands under the final rejection heretofore given." There is an unimportant mistake of fact in this language just quoted. The reason referred to was not "additional" nor *new*. June 15, 1891, applicant made a request for reconsideration. June 22, 1891, the Examiner adhered to his former final rejection. June 29, 1891, applicant presented an amendment to his specification and a new claim 1, for the purpose of procuring an interference with Letters Patent No. 454,716, granted to Harlow M. Crittenton, June 23, 1891. August 15, 1891, the Examiner refused admission to the proposed amendment, first, because the case was under final rejection, and, second, because the proposed amendment presented new matter. September 4, 1891, applicant took a petition to the Commissioner from the last action of the Examiner. October 14, 1891, the Assistant Commissioner denied the petition without prejudice, on the ground that no showing, duly verified, of good and sufficient reasons had been made why the amendment was not earlier presented. October 20, 1891, applicant offered an amendment to the specification and four new claims, accompanied by certain unverified reasons why the proposed amendment was not earlier presented. November 17, 1891, the Examiner refused admission to the amendment last referred to; the reasons given were held insufficient under Rule 68; the fourth claim was objected to as embodying new matter, and the first three claims objected to because they covered subject-matter previously presented and withdrawn. December 7, 1891, applicant filed an argument. January 21, 1892, the Examiner furnished applicant with a letter in answer to his argument. January 27, 1892, applicant took a petition to the Commissioner from the Examiner's refusal of November 17, 1891, to enter the proposed amendment. February 23, 1892, the petition was denied, it being held that applicant had not made a sufficient showing under Rule 68, and that so far as then appeared there was no obstacle to the filing of a new application for the matter sought to be patented. April 25, 1892, applicant presented a proposed amendment substantially a duplicate of that of October 20, 1891, but accompanied by an unverified statement that the invention had been in public use for more than two years prior thereto, and for that reason he could not file a new application. April 28, 1892, the Examiner wrote applicant this letter:

The request that the above-named case be reopened and the amendment of the 25th instant entered is not supported by any sufficient reasons therefor. The amendment is for this reason refused admission.

Then came the present petition of April 29, 1892.

The petitioner's first reason for his present petition is that for the purpose of taking an appeal to the Examiners-in-Chief the amendment should be entered irrespective of any showing as to why the claims were

not earlier presented. A reference to Rule 68 shows that this contention has no standing.

The petitioner's second reason for his present petition is that the Office letter of May 29, 1891, reopened the case by giving an additional reason for rejection. The petitioner's mistake in this matter has already been pointed out in connection with the foregoing mention of that letter.

The third reason upon which the petitioner bases the present petition is that the amendment should be entered because the Office granted a patent to a subsequent applicant, Crittenton, said patent covering the invention of his application. This is not a good reason. The grant of a patent to A for a certain improvement has nothing to do, under circumstances such as these, with the question whether B is asking for a patent for a patentable improvement. The question of patentability is not involved here; it is a question of merits, and that question is not reviewable upon this petition.

Petitioner's fourth reason upon which he bases his petition is that the amendment ought to be entered—

even if the application was finally rejected, the discovery of the issue of the Crittenton patent—

being—

a sufficient reason why the amendment offered the second day after said issue should have been received and why it was not sooner presented.

What was said about the third reason applies equally to the fourth.

Petitioner's fifth reason upon which he bases his present petition is that the amendment should be entered because the invention has been in public use for more than two years. If such be the fact, it should be shown by the affidavit of the person having knowledge of the facts. No such affidavit is offered, and because of its absence the reason urged is not a good one.

The Examiner's statement in answer to this petition is as follows:

This petition is not in order, since the action of the Examiner refusing to admit an amendment filed on the 25th of April last was not reconsidered in accordance with the rules, because petitioner made no request for a reconsideration. Under the practice, therefore, announced in *ex parte Bennett* (35 O. G., 1004) it is the duty of the Examiner to "confine his answer to simply calling attention to such fact," which he now does.

Rule 145, governing petitions, is as follows:

Upon receiving a petition stating concisely and clearly any proper question, which has been twice acted upon by the Examiner, and which does not involve the merits of the invention claimed, or the rejection of a claim, and also stating the facts involved and the point or points to be reviewed, an order will be made fixing a time for hearing such petition by the Commissioner, and directing the Examiner to furnish a written statement of the grounds of his decision upon the matters averred in such petition at least five days before such day of hearing. No fee is required for such a petition.

Under this rule the Examiner's point is well taken, and by reason thereof the petition is dismissed.

HENDERSON *v.* NOAKES.

Decided June 8, 1892.

1. PRACTICE—AMENDMENT OF PRELIMINARY STATEMENT.

The Office acts judicially rather than ministerially in permitting or denying the amendment of a preliminary statement.

2. DEGREE OF DILIGENCE REQUIRED.

"The utmost care and diligence," rather than mere "reasonable diligence," are required in the making of a preliminary statement.

MOTION for rehearing.

METALLIC BAR FOR WINDOW-SASHES, ETC.

Application of William Henderson filed March 2, 1891, No. 383,477. Application of William H. Noakes filed December 22, 1890, No. 375,523.

Mr. C. C. Tillman and *Messrs. McFarland & Benjamin* for Henderson.

Mr. Charles T. Brown and *Mr. T. J. W. Robertson* for Noakes.

SIMONDS, *Commissioner:*

This is a motion for a rehearing of a decision rendered May 12, 1892, denying Noakes's motion to amend his preliminary statement, such decision being reported in 59 O. G., 1431. In that decision these remarks are made:

Preliminary statements are very useful things in interferences, provided they are made with great care, and also provided the parties are held strictly to the history set up therein. An amendment to a preliminary statement which takes the date of him who makes it back of the corresponding date of his opponent should never be allowed upon a state of facts which is consistent with the reasonable supposition that the exercise of the utmost care and diligence on the part of him who seeks to amend would have ascertained and permitted him to state the correct date originally. That state of facts exists here—to wit, there is entirely reasonable ground to suspect that if Noakes had diligently sought among all those with whom he had had to deal in connection with the improvement in controversy at and after the date of his original idea of making that improvement he could have stated in his original preliminary statement what he now seeks to have incorporated therein.

It is a part of the present contention that the action of the Office in permitting or denying the amendment of a preliminary statement is a ministerial, executive, or administrative act in distinction from a judicial act. The contention is held to be a wholly mistaken one, the present trier being of the opinion that it is possibly more judicial in its nature than any other act a Patent Office official is called upon to perform. It appeals to a sound judgment in the highest possible degree. As to the general nature of the acts in which such an act is included the Supreme Court has said—

that it was intended that the Commissioner of Patents, in issuing or withholding patents, in reissues, interferences, and extensions, should exercise quasi-judicial functions, is apparent from the nature of the examinations and decisions he is required to make and the modes provided by law, according to which, exclusively, they may be reviewed. (39 O. G., 615; *Butterworth, Com'r., v. Hoe*, 112 U. S., 50.)

And, again:

The true conclusion, therefore, is that in matters of this description, in which the action of the Commissioner is quasi-judicial, the fact that no appeal is expressly given to the Secretary is conclusive that none is to be implied. (*Ib.*)

Another part of the present contention is that it was apparently made material in the former decision denying the proposed amendment of the preliminary statement, that it was one which carried "Noakes's earliest date back of the earliest date testified to by Henderson;" that such a fact should not be considered on such a motion, and that it is not a material fact. The present trier is of the opinion that it is of the highest possible materiality. Can any one suppose that this applicant would be now seeking for this amendment to his preliminary statement if it did not carry his dates back of those of his competitor? The asking of the question disposes of the contention.

It is still another part of the contention that reasonable diligence only is required in the making of a preliminary statement, whereas the former decision in this case called for—

the exercise of the utmost care and diligence.

The opinion first expressed is still adhered to. The very foremost reason for the existence of the rule requiring preliminary statements is to prevent the shifting of a contestant's case after the issue has once been made up, and nothing but the most convincing evidence of a mistake, coupled with the exercise of the utmost care and diligence in the making of the preliminary statement, will warrant the change.

It is another part of the present contention that the amendment now sought is necessary for the ends of justice. Such a view is a very narrow view of the ends of justice. Possibly justice might be furthered in this particular case by permitting the amendment desired; but what about establishing a practice of permitting such amendments generally except under the conditions named? That would be very far from furthering the ends of justice. The example of the United States Supreme Court in establishing certain modes of procedure and in compelling suitors to abide by them even to their own hurt is sufficient warrant for this Office.

The motion is denied.

EX PARTE MCCLELLAN.

Decided June 8, 1892.

PRACTICE—"INCOMPLETE COMBINATION"—FUNCTION—COURSE OF APPEAL.

The question of "incomplete combination of elements," and an objection that a claim covers only the function of a machine, involve the merits and are appealable to the Examiners-in-Chief in the first instance.

ON petition.

TYPE-WRITING MACHINE.

Application of Charles H. McClellan filed May 28, 1891, No. 394,416.

SIMONDS, *Commissioner:*

Petition is taken from the refusal of the Primary Examiner to further consider the merits of the claims in this case until certain objections to their form shall be removed.

The Examiner holds that a certain claim is—

objectionable, as it is drawn to a combination but enumerates only a single element—the spring.

The Examiner states:

Obviously to have any combination there must be at least two elements recited as positive factors of the claim.

Under Rule 133 the question of "incomplete combination of elements" is one of merits, appealable to the Examiners-in-Chief in the first instance.

The second objection of the Examiner to said claim is—

that it covers merely the "use" or function of a spring.

Under the well-settled practice of the Office an objection that a claim covers nothing but the function of a machine involves the merits, from which appeal lies to the Board. The objection of functionality is one of form, reviewable by the Commissioner only when the objection is really one of indefiniteness in not setting forth the invention so as to be readily understood.

The "objections" of the Examiner should be made *rejections*, and the Examiner should also cite to the applicant all other reasons for rejecting the claim or claims, in order that one appeal may carry the whole case forward to the appellate tribunals.

So far as the petition asks that the Examiner shall consider the merits of the claims the same is hereby granted.

EX PARTE GEORGE B. HURD & CO.

Decided April 20, 1892.

TRADE-MARK—"ROYAL VELLUM."

The words "*Royal Vellum*," as applied to a certain class of fine stationery, are not anticipated by the registered Trade-Mark "*Royal Irish Linen*," since, though the word "*Royal*" is prominent in each case, enough of the distinguishing features of the registered mark are not found in the mark under discussion to work deception upon a purchaser using ordinary caution.

APPEAL from Primary Examiner.

TRADE-MARK REGISTRATION.

Application of George B. Hurd & Co. filed January 25, 1892, No. 41,022.

Mr. William B. Greeley and *Mr. Charles L. Sturtevant* for the applicants.

FROTHINGHAM, *Assistant Commissioner:*

This is an appeal taken from the action of the Examiner refusing to register a Trade-Mark for writing-paper and envelopes, as hereinafter stated.

The question presented for consideration in this case is whether the Trade-Mark sought to be registered is so similar to any mark already registered for use upon the same class of articles as to be calculated to deceive purchasers using ordinary caution. (See *ex parte Coon*, 58 O. G., 946; *McLean* v. *Fleming*, 96 U. S., 245.)

The class of merchandise to which the Trade-Mark is declared to be appropriated is fine stationery, and the particular description of goods comprised in such class on which it is used is writing-paper and envelopes. The essential feature of applicants' mark is declared to consist in the words "Royal Vellum." The registered Trade-Mark cited by the Examiner as a reference is that of Marcus Ward & Co., of London, etc., numbered 3,922, and registered August 8, 1876, for writing-paper.

The essential feature of the mark of the reference is stated to be the words "Royal Irish Linen."

The Examiner holds that—

the word "Royal" constitutes the Trade-Mark in both cases, and that Marcus Ward & Co.'s Trade-Mark is a complete anticipation of the mark presented by applicant; that the words "Irish Linen" in the one case and "Vellum" in the other are descriptive names for paper and incapable of exclusive appropriation by any party, Irish linen paper being as familiar to the public as legal cap, and vellum being known to the trade as a heavy uniform paper showing no grain and having a very smooth and fine surface. It is used for some of the finest printing.

The Examiner also holds that the case clearly comes within the Commissioner's decision in the case of *ex parte Coon*, (58 O. G., 946,) to the effect that when the thing presented for registry is so nearly like some prior Trade-Mark as to be likely to lead to mistake or confusion the Office ought to decline to register.

Upon examination of the present application and the reference cited I am unable to agree with the Examiner in holding that the word "Royal" constitutes the Trade-Mark of either the reference or the application. The Trade-Mark of the reference does not consist in either the word "Royal" alone or the words "Irish Linen" alone, but in the association of the three words "Royal," "Irish," and "Linen." The Trade Mark in the present case does not consist of the word "Royal" alone or of the word "Vellum" alone, but in the association of the two words "Royal" and "Vellum" used in an arbitrary sense.

While it is true that imitative marks infringe not only when they contain the entire mark previously

adopted, but also when they contain enough of the prominent features of the prior mark to be likely to cause purchasers using ordinary caution to be misled, yet in the present case I am of the opinion that enough of the prominent features of the registered mark has not been adopted to cause purchasers using ordinary caution to believe when buying paper stamped with the words "Royal Vellum" that they are buying "Royal Irish Linen," manufactured by Marcus Ward & Co.

The decision of the Examiner is overruled.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

HOYT *et al. v.* HORNE.

Decided May 16, 1892.

PATENT—INFRINGEMENT—RAG-ENGINE.

Letters Patent No. 303,374 issued August 12, 1884, to John Hoyt, for a rag-engine for paper-making, sustained, and held infringed by Letters Patent No. 347,043, issued August 10, 1886, to John H. Horne.

APPEAL from the Circuit Court of the United States for the District of Massachusetts.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of Letters Patent No. 303,374, issued August 12, 1884, to John Hoyt, for a rag-engine for paper-making.

This invention [said the patentee in his specification] relates to engines for beating rags and similar fibrous material into pulp for the manufacture of paper. In these machines a beater-roll set with knives around its periphery is used, in combination with a bed-plate also set with knives, the said parts being placed in a tank or vessel in which a constant circulation of the material to be pulped is maintained.

Heretofore ordinarily the material has been circulated horizontally around an upright partition termed a "mid-fellow," and the beater-roll and bed-plate have been placed in the alley or channel between this mid-fellow and one side of the tank. The beater-roll lifted the material over a sort of dam, (termed a "back-fall,") and the material then flowed by the action of gravity around the mid-fellow and entered again between the beater-roll and the bed-plate. It has, however, been proposed to dispense with the mid-fellow and have the material returned under the back-fall and bed-plate. In either case, however, the circulating force is that of gravity due to the piling up of the liquid or semi-liquid on the side of the back-fall opposite from the beater-roll. Consequently the flow is comparatively feeble, and it is necessary to use a large quantity of water in order to prevent the fiber in suspension from depositing. In the present invention a much more rapid and vigorous circulation is maintained. The beater-roll is placed at one end of the vat, which is of a depth sufficient to contain it, and the other part of the vat is divided by a horizontal partition or division which extends from the beater-roll nearly to the other end. The material to be pulped is carried around by the beater-roll and is delivered into the upper section above the partition. It flows over the partition, then passes down around the end of the same and returns through the lower section of the vat to the beater-roll. The bed-plate is placed at the bottom of the vat under the beater-roll. The beater-roll not only draws in the material, creating a partial vacuum in the lower section of the vat, but delivers it into the upper section with considerable force, impelling it forward very rapidly. By the aid of this more rapid as well as more vigorous circulation not only is the material returned more quickly, and therefore acted upon more often by the beater-roll in the same time, but it may be worked with a much less quantity of water, and thereby very important advantages may be secured. These advantages are, first, in the improved quality of the product, for when a considerable body of the fibrous material is drawn between the knives the different pieces are rubbed together and thus disintegrated without destroying the length and felting quality of the fiber, whereas when the pulp is thin the pieces are ground individually, as it were, between the knives, and the integrity of the fiber in large measure destroyed; secondly, in the greater quantity of pulp which can be prepared in a medium of given size, owing to the larger proportion of fibrous material in the charge, and thirdly, in avoiding the liability of the fibrous material depositing out of the liquid and lodging in the channels. * * *

The operation of the engine is as follows: The beater-roll and bed-plate knives being adjusted properly, the vat is filed with the rags or fibrous material to be pulped and the proper quantity of water. The beater-roll being revolved at the speed of one hundred and twenty revolutions per minute—the rags and liquid are drawn between the knives, are carried up by the beater-roll, and thrown over the edge of the plate P. They flow around the partition N with considerable velocity and return again and again to be acted upon by the knives. The roll is revolved until the pulp is properly reduced.

Modifications may be made in details of construction without departing from the spirit of the invention, and parts thereof can be separately used if desired.

The claims alleged to have been infringed were as follows:

1. The improvement in beating rags to pulp in a rag-engine having a beater-roll and bed-plate knives, consisting in circulating the fibrous material and liquid in vertical planes, drawing the same between the knives at the bottom of the vat, carrying it around and over the roll and delivering it into the upper section of the vat, substantially as described.

2. A rag-engine for paper-making, comprising the vat, the beater-roll mounted on a horizontal shaft in one end of the vat, and the horizontal partition dividing the body of the vat into an upper and a lower section or passage, the fibrous material and liquid being carried from the lower section between the knives and delivered over the top of the beater-roll into the upper section or passage, substantially as described.

The device employed by the defendant was manufactured under Letters Patent No. 347,043, issued August 10, 1886, to John H. Horne, the defendant. With relation to the peculiar feature of his invention he stated in his specification as follows:

One great difficulty hitherto in the construction of these engines, whatever may be the path of travel given to the material contained in them, consists in the fact that the various fibers or bunches of fiber, after being placed within the engine, maintain concentric paths of movement with respect to each other. Thus a piece of stock located near the sides of the tub or one placed near the mid-feather will continue to travel in concentric paths until the engine is emptied, except in case manual labor is applied with a paddle to disturb their courses and compel them to deviate therefrom; hence it is obvious that the fiber traveling the more rapidly will be reduced more quickly, and the "stuff" is of uneven quality. * * *

The essential object of my invention is to effect a change in the course of the material in the engine automatically and obliquely to the longitudinal axis of the engine during each complete passage thereof around the tub, and thereby thoroughly mix the stock. Thus the particles which are nearest the mid-feather in one passage about the tub, and which therefore traveled the fastest, are directed and changed obliquely across the engine prior to their passage about the roll, and hence they will emerge and are located near the side. Such stock will consequently travel the slowest during the next passage around the tub, since it remains contiguous to the retaining-walls of the latter. This mixing and stirring of the material within the tub is effected primarily by the shape of the tub in cross-section, the width of which is equal to the active face of the roll, or thereabout, the latter located in one end thereof. Thus to effect the desired change in the path of movement of the stock the proportions of the tub are altered, and in cross-section the two passages formed in the tub by the mid-feather are twice as deep as they are wide, or thereabout. Again, the stock is permitted to fill the entire width of the engine just prior to its entrance beneath the roll, and also immediately after leaving the same; hence the mid-feather terminates a short distance before reaching the roll, and the stock, as it approaches the latter, as before premised, is permitted to spread out and fill the entire width of the engine. * * * After the passage of the stock between the roll and the bed-plate the particles composing it are directed upon and over the back-fall, which here extends entirely across the engine and in front of the roll, but contracts as it extends away from the latter, until it unites with the mid-feather, whence it is continued downward between the latter and the side of the engine to the bottom of the tub. This contraction of one-half its width again restores the mass of stock to a general vertical position, and the latter is so maintained until just prior to its return passage beneath the roll. Thus it will be evident that the fibers composing the material in process of being pulped cannot travel in continuous concentric paths of movement, but are changed and forced obliquely of the engine, whereby a thorough mixing of the stock is automatically effected by the spiral motion imparted to it both before and after leaving the roll.

The case was heard in the circuit court upon pleadings and proofs, and a final decree entered dismissing the bill upon the ground that the defendant had not infringed the plaintiff's patent. (35 Fed. Rep., 830.) From this decree the plaintiff appealed to this Court.

Mr. A. Pollak and *Mr. Philip Mauro* for the appellants.

Mr. F. P. Fish for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

The engine in ordinary use by paper-makers for the reduction of rags to pulp prior to the invention in question consisted of a tub about fourteen feet in length with straight sides and semicircular ends. Through

the center of this ran a vertical partition called the "mid-feather," extending lengthwise of the tub, and with sufficient room between the ends of the partition and the ends of the tub to allow the pulp to pass around from one side of the tub to the other. Midway of the tub and between the mid-feather and one side was a wheel or beater-roll armed with knives placed longitudinally upon the periphery of the wheel. Beneath the roll were corresponding knives in the bed-plate, and by the revolution of the wheel the rags were drawn between these knives and reduced to pulp. At one side of the roll the bottom of the tub was curved upward forming a ridge or dam, termed a "back-fall," about four inches high extending across the channel parallel with the roll. The beater-roll revolved away from the top of the back-fall, and the material being lifted by the rotation of the roll to the top of the back-fall slid down the incline by gravity, which was the only force acting to cause a flow of nearly thirty feet, from the back of the beater-roll around to the front of it again. The speed of the pulp was thus necessarily very slow.

1. The novelty and patentability of the Hoyt patent were not denied, though two prior patents were referred to for the purpose of limiting its claims. The Umpherston engine was patented in England in April, 1884, a few months before the Hoyt patent was issued in this country. This machine differs from the old tub only in the fact that the mid-feather runs horizontally instead of vertically, and the return passage or channel for the pulp is underneath instead of alongside of the channel containing the beater-roll. Apparently the only advantage which it possesses over the old one is in economy of floor-space.

The Cooke engine, patented in England in 1880, is a machine of the type known as "disk grinders," and is not a beating-engine of the type of the machines involved in this suit. It has no beater-roll, the grinding being done by two disks at the end of the tub between which the pulp is drawn in at the center of the disks, and works its way outward to the periphery between the grinding-surfaces. It seems to us to have little bearing upon the present case except in the fact that the grinding mechanism is located at the end of the tub instead of in the center.

The Hoyt engine differs from the old tub in ordinary use in two or three important particulars. First, the beater-roll is located at the end of the tub, instead of in the center, having in this particular a certain resemblance to the Cooke machine; second, the mid-feather runs horizontally instead of vertically, a feature in which it resembles the Umpherston engine; and, third, the beater-roll extends across the whole width of the tub, and its revolutions are toward instead of away from the top of the back-fall or dam. The result of this is such a greatly-increased speed in the flow of the pulp that it is said to be brought in contact with the knives twelve times as often as was possible in the old tub or engine.

The circulation of the material around the roll in vertical planes is the salient feature of the Hoyt invention, and its utility is shown in its general adoption by paper-makers.

2. The main question in the case is that of infringement. In the defendant's engine the beater-roll is also located at the end of the tub and extends across its entire width; the top of the back-fall or dam also extends across the entire width in front of the beater-roll, but narrows at one side as it descends to the bottom of the tub to one-half of its width. The mid-feather is made vertical instead of horizontal, so that the pulp after it leaves the dam circulates in a horizontal instead of a vertical plane; but as it returns to the beator-roll it passes back under the dam, spreading out to the entire width of the tub, and is taken up by the beater-roll precisely as in the Hoyt patent. It is insisted by the defendant in this connection that there is no infringement of the first claim of the Hoyt patent, since the pulp is not circulated "in vertical planes," nor is it delivered by the beater-roll "into the upper section of the vat," as specified in that claim. Literally it is not. A technical reading of the specification undoubtedly required that the mid-feather should run horizontally instead of vertically; but the object of this was that the pulp should be received and delivered by the beater-roll along its entire length—viz., across the entire width of the tub—and this is accomplished in the same way in both devices. In both engines the beater-roll revolves toward the top of the dam or back-fall, and a similar acceleration of speed is obtained. How the pulp shall circulate at the other end of the tub is a matter of small consequence so long as it shall circulate in vertical planes at the point where it comes in contact with the roll.

An additional function is claimed for the Horne device in the fact that the pulp falling as it descends the dam from a vertical to a horizontal plane in a kind of torsional current, is more thoroughly mixed than in the Hoyt device, where the pulp continues to flow in parallel lines from the time it is delivered by the beater-roll to the time it is received by it again. This may be true, and defendant's engine may be in this particular an improvement upon the other, but he has none the less succeeded in appropriating all that was of value in the Hoyt device—viz., the beater-roll at the end of the tub, extending across its entire width, and the circulation of the pulp in vertical planes at the only point where such circulation is of value. The substitution of a vertical for a horizontal mid-feather at the inoperative end of the tub is merely the use of an old and well-known mechanical equivalent, and obviously intended to evade the wording of the claims of Hoyt patent. (*Winans* v. *Denmead*, 15 How., 330.) Indeed, the ingenuity displayed in this evasion is only equaled by the ingenuity with which it is concealed in the specification of the defendant's patent, and the function of a more thorough mixture of the pulp put forward as the salient feature of the invention. The actual intent to evade is the more manifest from the fact that Horne, under a contract with the plaintiff, made seventeen machines according to the plaintiff's patent, but owing to some disagreement as to the quality of the work done by him, the contract was terminated, and Horne began the production of his own engines, and subsequently took out a patent for his invention.

We are, therefore, of opinion that defendant's machine is an infringement of the first claim of the

plaintiff's patent. Whether it be an infringement of the second claim admits of more doubt, since that contemplates a horizontal partition dividing the body of the vat into an upper and lower section or passage. We do not, however, find it necessary to pass upon this question.

The decree of the court below is, therefore, reversed, and the case remanded with instruction to enter a decree for the plaintiff upon the first claim, and for further proceedings in conformity with this opinion.

U. S. Circuit Court—Southern District of New York.

UNITED STATES *v.* LOEB.

Decided February 23, 1892.

TRADE-MARK—INCIDENTAL PROTECTION OF, BY SECTION 3449 OF THE REVISED STATUTES NOT UNCONSTITUTIONAL.

The purpose of section 3449 of the Revised Statutes of the United States, prohibiting the shipment of spirituous liquors, etc., under any other than their proper name or brand as known to the trade, is solely to facilitate the enforcement of the revenue laws, and the fact that the statute may sometimes operate for the incidental protection of a Trade-Mark does not affect its constitutionality within the meaning of the *Trade-Mark Cases*, (100 U. S., 82.)

PETITION for writ of *habeas corpus* to release Morris Loeb, held under a charge of violating section 3449 of the Revised Statutes of the United States by shipping a package of twelve bottles of domestic gin manufactured at Cincinnati, Ohio, but branded "Booth & Co., London, Superior Old Tom Gin."

Mr. A. J. Dittenhoefer for the petitioner.

Mr. Maxwell Evarts for the United States.

LACOMBE, *J.:*

Under the authority conferred by the first clause of section 8 of article 1 of the Constitution—to wit, to "levy and collect taxes," and to "make all laws which shall be necessary and proper for carrying into execution that power"—Congress has levied a tariff upon foreign goods, and also taxes certain domestic products, under a comprehensive plan of internal revenue. The Government of the United States collects duties upon spirituous and fermented liquors and wines brought from abroad and lays taxes upon such as are manufactured here, and also upon the business of manufacturing and dealing in them. It has elaborated in great detail a system by which it practically takes control of the manufacture of alcoholic spirits for the purpose of managing the collection of the revenue assessed therefrom, and exercises a surveillance over their manufacture and sale. The constitutionality, generally, of such legislation is not assailed. Without rehearsing the details of this system, it is apparent that it may be very desirable, perhaps necessary, to its success that all casks or packages containing distilled spirits shall be truthfully marked, such marking affording to the officers of the Government a convenient means both of checking the returns of the manufacturing distiller and preventing the smuggling of untaxed products into the general market of the country. In the last paragraph of section 29 of the act of Congress approved July 13, 1866, and entitled "An act to reduce internal taxation and to amend an act entitled 'An act to provide internal revenue to support the Government, to pay interest on the public debt, and for other purposes,' approved June 30, 1864," (now section 3449 of the Revised Statutes of the United States,) it is provided as follows:

> Whenever any person ships, transports, or removes any spirituous or fermented liquors or wines, under any other than the proper name or brand known to the trade as designating the kind and quality of the contents of the casks or packages containing the same, or causes such act to be done, he shall forfeit said liquors or wines, and casks or packages, and be subject to pay a fine of five hundred dollars.

That the relator did ship, transport, and remove a package of spirituous liquor—to wit, gin—under a name or brand "other than the proper name or brand known to the trade as designating the kind and quality of" the contents of the package is conceded. He insists that he should be discharged, because, as he contends, this provision of statute is an attempt to legislate for the protection of Trade-Marks, and as such beyond the constitutional power of Congress, citing the *Trade-Mark Cases*, (100 U. S., 82.) I am unable to assent to this proposition. There is nothing in the section which restricts its operation as counsel for the relator suggests or indicates that it was passed for any purpose other to provide facilities for the enforcement of the internal-revenue laws. The trade may be able to recognize the kind and quality of spirituous liquors by some "proper name or brand," and that name or brand still be no "Trade-Mark" in the sense in which the word was used in the statute which was criticised by the Supreme Court in the case cited. The section seems to be well adapted to facilitate the administration of the internal-revenue system. As a part of that system it was within the power of Congress to enact it, and it should not be held unconstitutional because in some cases the "name or brand," which must be placed upon the cask or package in order to truthfully describe the contents, happens to be a Trade-Mark, which might thus incidentally be protected. (*State* v. *Bridge Co.*, 18 How., 421.)

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[*BY AUTHORITY OF CONGRESS.*]

VOL. 59—No. 12. TUESDAY, JUNE 21, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the developement of American invention.

W. E. SIMONDS,
Commissioner.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Indexes to Foreign Patents.

The following indexes to foreign patents have been translated, compiled, and published under the authority of the Commissioner of Patents, and may be obtained as a Patent Office publication at the prices given below:

INDEX TO FRENCH PATENTS, 1791 to 1879, inclusive, (subject-matter,) one volume, 935 pages, bound in cloth $10 00
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Bound half-turkey 2 50
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Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

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Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1 50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

DISCLAIMER.

473,679.—*James F. Thompson*, Rockland, Mass., assignor of one-half to *Charles F. Baker*, Boston, Mass. IMPROVEMENT IN COLORING AND BURNISHING COMPOSITIONS. Patent dated April 26, 1892. Disclaimer filed June 11, 1892, by said *Thompson* and *Baker*.

Enter their disclaimer to claim 1, which is in the following words, to wit:

1. The improved burnishing composition hereinbefore described, comprising an alkaline solution and wax dissolved therein, as set forth.

Issue of June 21, 1892.

Patents	434	No. 477,197 to No. 477,630, inclusive.
Designs	32	No. 21,623 to No. 21,654, inclusive.
Trade-Marks	41	No. 21,313 to No. 21,353, inclusive.
Labels	None.	
Reissues	5	No. 11,245 to No. 11,249, inclusive.
Total issue	512	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	5	....	Nevada	1	....
Arizona Territory	....	....	New Hampshire	2	....
Arkansas	1	....	New Jersey	27	7
California	14	2	New Mexico Territ'y	....	....
Colorado	4	....	New York	79	12
Connecticut	19	1	North Carolina	....	...
Delaware	....	....	North Dakota	....	....
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Georgia	2	....	Pennsylvania	54	4
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Illinois	48	2	South Carolina	....	....
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Iowa	3	....	Texas	3	....
Kansas	7	....	Utah Territory	....	....
Kentucky	7	1	Vermont	2	....
Louisiana	1	....	Virginia	5	....
Maine	3	....	Washington	3	....
Maryland	1	....	West Virginia	1	1
Massachusetts	25	4	Wisconsin	11	....
Michigan	13	1	Wyoming	....	....
Minnesota	5	....	U. S. Army	....	....
Mississippi	....	....	U. S. Navy	....	....
Missouri	18	....			
Montana	1	....	Total to citizens of the United States	417	35
Nebraska	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Mexico	....	....
Austria-Hungary	2	....	Netherlands	1	....
Belgium	....	....	Newfoundland	....	..
Bermuda	....	....	New South Wales	1	..
Brazil	1	....	New Zealand	....	....
Canada	10	....	Norway	1	....
Chile, Republic of	....	....	Queensland	....	....
Colombia	....	....	Russia	....	....
Cuba	....	...	Scotland	2	2
Ecuador	....	....	South Australia	1	...
England	11	2	Spain	....	....
France	4	..	Sweden	....	....
Germany	14	1	Switzerland	....	1
Hawaii	....	....	Victoria	....	....
Ireland	....	....			
Italy	....	....	Total to citizens of foreign countries	49	6
Japan	1	....			

APPLICATIONS UNDER EXAMINATION.

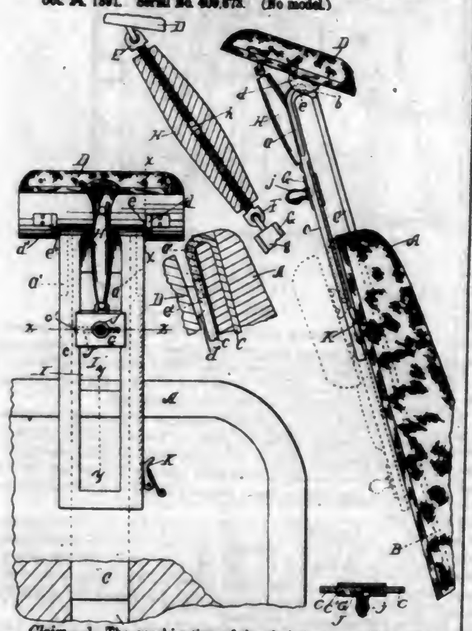
Condition at Close of Business June 14, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Fariery, etc.	Apr. 29	June 13	87
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	May 2	June 11	215
7	Harvesters, Games and Toys	Apr. 25	June 7	265
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Apr. 25	June 8	133
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Apr. 15	May 31	242
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Apr. 21	May 14	239
	Between two and three months in arrears.			
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Apr. 8	June 13	203
17	Paper-Manufactures and Printing.	Apr. 8	May 31	195
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	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Mar. 1	May 16	282
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Mar. 1	May 5	379
19	Stoves and Furnaces	Feb. 19	Mar. 22	374
	Between four and five months in arrears.			
26	Electricity, Generation, Distribution, etc.	Jan. 21	May 21	321
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Feb. 6	May 11	465
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Jan. 16	Apr. 4	428
	Total number of applications awaiting action			9,075
	Under one month in arrears.			
	Designs	June 10	June 11	15
	Trade-Marks	June 10	June 13	16

PATENTS

GRANTED JUNE 21, 1892.

477,197. HEAD-REST. JOHN A. BAKER, Pasadena, Cal. Filed Oct. 24, 1891. Serial No. 409,673. (No model.)



Claim.—1. The combination of the chair-back provided with the standard-guide, the standard arranged to slide in such guide, the head-rest pivoted to the standard, the brace pivoted to the head-rest at one end, the brace-block pivoted to the other end of the brace and arranged to slide along such standard, and suitable means arranged to secure such brace-block upon the standard when raised to elevate the head-rest.

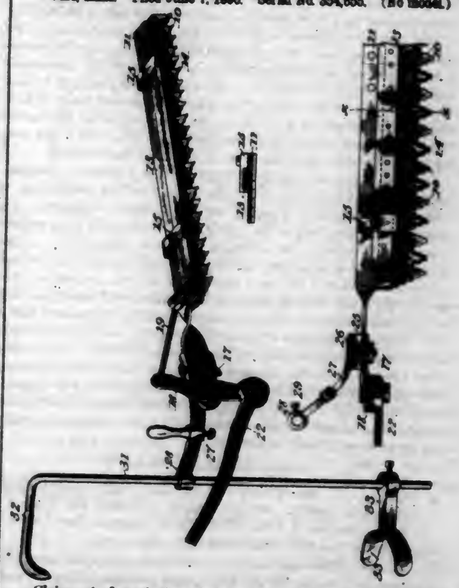
2. The combination of the chair-back provided with the standard-guide, the standard arranged to slide in such guide, the head-rest mounted upon such standard, and suitable means of attachment arranged to connect the head-rest with the standard and adapted to pivot the head-rest to the standard to hold the head-rest at the top of the standard and to tilt it backward and slide it downward along such standard.

3. The combination of the chair-back provided with a suitable guide, the adjustable head-rest standard arranged to slide up and down along such guide and provided with the grooves in its top portion, the front lower walls of such grooves being curved forward at their upper ends and provided with the pivot-retaining shoulder, the head-rest provided near its mid-length with pivots arranged to project into and run within the grooves and form a pivotal support for the head-rest, and an adjustable brace arranged to connect the head-rest with the standard.

4. The combination set forth of the chair-back provided with the standard-guide, the standard provided with the rear guide and with grooves in its top portion, the front lower walls of such grooves being curved forward at their upper ends and respectively provided with a pivot-retaining shoulder, the head-rest provided near its mid-length with the pivots arranged to project into and run within the grooves and form a movable pivotable support for the head-rest, the screw pivoted to the head-rest, the slide-block movably secured to the standard, the reverse screw pivoted to the slide-block, the handle or nut provided with the right and left screw socket, and means for securing the slide-block to the standard.

5. The combination of the chair-back provided with the standard-guide, the standard arranged to slide in such guide, the head-rest, and suitable intermediate means connecting the head-rest with the standard and arranged to slide along such standard to elevate the head-rest above or depress it below the top of such standard.

477,198. HEDGE-CUTTING MACHINE. JOHN F. CRAMPLIN, Cedar Vale, Kans. Filed June 7, 1890. Serial No. 354,655. (No model.)



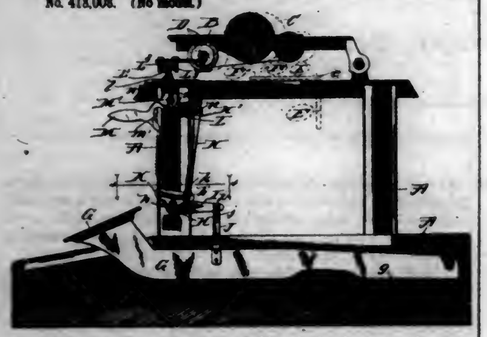
Claim.—1. In a hedge-trimmer, the combination, with a fixed body-bar having secured thereto a series of knives, of a carrying-bar also provided with knives and held to slide over the fixed knives, a plate attached to the body bar contacting with and guiding the sliding bar, a lever fulcrumed upon the body-bar and connected with the sliding bar, and a handle adjustably secured to said lever, substantially as shown and described.

2. In a hedge-cutter, the combination, with a fixed body-bar, knives secured thereto, a knife-carrying bar held to slide over fixed knives, and plates secured to the body-bar contacting with and guiding the sliding bar, of a lever fulcrumed upon the body-bar, a connection between one end of the lever and the sliding bar, a handle adjustably secured to the other end of the lever, and a supporting-arm adjustably attached to the body-bar, substantially as and for the purposes specified.

3. In a hedge-trimmer, the combination, with a stationary knife-bar, of a sliding knife-bar, a lever fulcrumed upon the stationary bar, a handle adjustably secured to the lever, a connection between the lever and sliding knife-bar, a supporting-arm adjustably secured to the body-

bar, an attaching-rod adjustably secured to the supporting-arm provided with a crooked upper end, and a curved hip-plate adjustably attached to the lower part of said attaching-rod, substantially as shown and described.

477,199. SHIFTING MECHANISM FOR TYPE-WRITING MACHINES. JAMES C. COWAN, Chicago, Ill. Filed Jan. 14, 1892. Serial No. 418,006. (No model.)



Claim.—1. In a paper-roller-shifting device for type-writers, the combination of a lever having two bearing-surfaces, a rod on which either of such surfaces may bear, a spring, one end whereof is attached to the lever and the other end to the type-writer, whereby the lever and the rod on which it bears are yieldingly held in a given position, a link pivoted to a lever extending out from the rod, a second link pivoted at one end thereof to the lever bearing on the rod and at the other end having a slot, through which an abutment on the first-named link extends, and an abutment on the longer end of the first-named link, a tube adapted to rock on a rod, a lever rigidly secured to such tube, extending on both sides of the axial line thereof, a slot in such lever through which the abutment on the longer end of the first-named link extends, and a lever rigidly secured to the tube with a link connecting such lever with a key-lever, substantially as described.

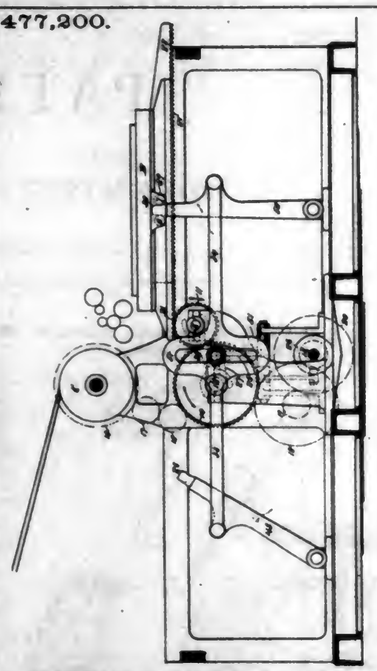
2. In a paper-roller-shifting device for type-writers, the combination of a lever having two bearing-surfaces, a rod on which either of such surfaces may bear, a spring, one end whereof is attached to the lever and the other end to the type writer, whereby the lever and the rod on which it bears are yieldingly held in a given position, a link pivoted to a lever extending out from the rod, a second link pivoted at one end thereof to the lever bearing on the rod and at the other end having a slot, through which an abutment on the first-named link extends, and an abutment on the longer end of the first-named link, a tube adapted to rock on a rod, a lever rigidly secured to such tube and extending on both sides of the axial line thereof, a slot in such lever through which the abutment on the longer end of the first-named link extends, and a lever rigidly secured to the tube with a link having a slot at one end thereof, through which an abutment on the last-named lever extends, thereby connecting such last-named lever with a key-lever, substantially as described.

477,200. BED-MOTION FOR CYLINDER PRINTING-MACHINES. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Feb. 26, 1892. Serial No. 422,835. (No model.)

Claim.—1. The combination, with a rack-and-pinion mechanism operating to drive the bed during the principal extent of its movement in either direction, of a crank-actuated lever whose free end acts as a controlling-arm engaging the bed near the end of its run in either direction and operating to rapidly modify its movement, arrest the same, start, and accelerate it in the reverse direction, together with means acting to bring said lever into co-operation with the bed, while the rack and pinion become inoperative as the driver, substantially as described.

2. The combination, with a rack-and-pinion mechanism operating to drive the bed during the principal extent of its movement in either direction, of crank-actuated levers whose free ends act as controlling-arms engaging the bed near the ends of its run in either direction and operating to rapidly modify its movement, arrest the same, start, and accelerate it in the reverse direction, together with means acting to bring said levers into co-operation with the bed, while the rack and pinion become inoperative as the driver, substantially as described.

3. The combination, with a rack-and-pinion mechanism operating to drive the bed during the principal extent of its run, of a crank-actuated lever whose free end acts as a controlling-arm coacting with the bed to slow down and arrest it at the end of its run and start the same in the contrary direction, substantially as described.



4. The combination, with a rack-and-pinion mechanism operating to drive the bed during the principal extent of its run, of crank-actuated levers whose free ends act as controlling-arms coacting with the bed to slow down and arrest it at the ends of its run and start the same in the contrary direction, substantially as described.

5. The combination, with the bed and its driving-rack having two members in the same horizontal plane, of a driving-pinion and an intermediate pinion turning on shafts mounted in fixed bearings and means for simultaneously shifting both laterally, so that they shall alternately engage with opposite members of said rack, substantially as described.

6. The combination, with the moving bed, of a lever separate therefrom and a crank operating to vibrate the lever and automatically engage its free end with and disengage it from the bed, whereby the lever is caused to retard and arrest the movement of the bed in one direction and to start and accelerate the same in the opposite direction, substantially as described.

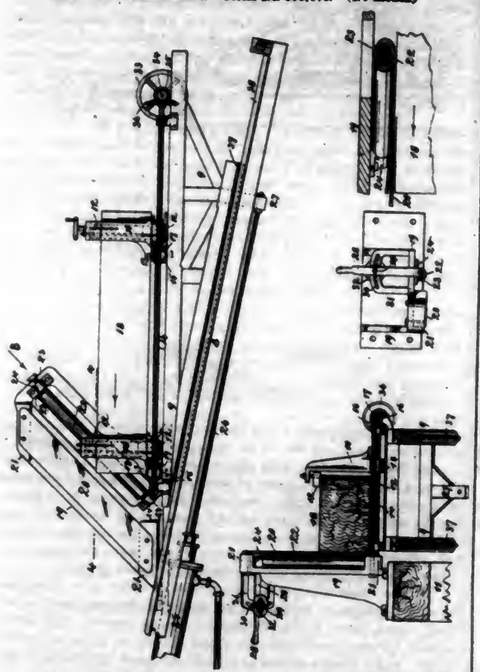
7. The combination, with the reciprocating bed, of two levers separate therefrom and a crank operating to vibrate said levers and automatically engage their free ends with and disengage them from the bed, said levers alternately operating to retard and arrest the bed in one direction and to start and accelerate the same in the opposite direction, and thus reversing the bed at each end of its run, substantially as described.

8. The combination, with the bed and mechanism operating to drive it throughout the principal extent of its movement in either direction, of a pivoted vibrating lever whose free end acts as a controlling-arm periodically engaging the bed and operating to complete each movement and reverse the bed at the end of its run by rapidly retarding the same to a state of rest and then restarting and accelerating its movement in the reverse direction, substantially as described.

9. The combination, with the bed and a mechanism operating to drive it throughout the principal extent of its movements of reciprocation, of two pivoted vibrating levers whose free ends act as controlling-arms alternately engaged with the bed and operating to complete such movements at opposite ends of its runs by rapidly retarding the same to a state of rest and then starting and accelerating its movement in the reverse direction, substantially as described.

10. The combination, with the bed and a rack-and-pinion mechanism for driving the same, of a crank-actuated lever whose free end is a toothed member automatically entered into a socket or sockets to connect it with the bed while the parts are moving at uniform speed and operating to slow down and arrest the bed, then to start and move it in a reverse direction, and be disconnected therefrom when its maximum speed is again attained, substantially as described.

477,201. WOOD-CUTTING MACHINE. BRUNO DAHM, Cincinnati, Ohio. Filed June 5, 1891. Serial No. 395,176. (No model.)



Claim.—1. In a wood-cutting machine, the general construction and combination of an inclined track, a stationary knife-frame with knife secured beside the track and inclined thereto, a carriage having inclined runners and a horizontal platform and provided with means to hold the wood thereon, an extension 27, reaching down from the under side of the carriage, and connecting means 26, connecting the carriage to the motive power through the medium of said extension, all as substantially shown and described.

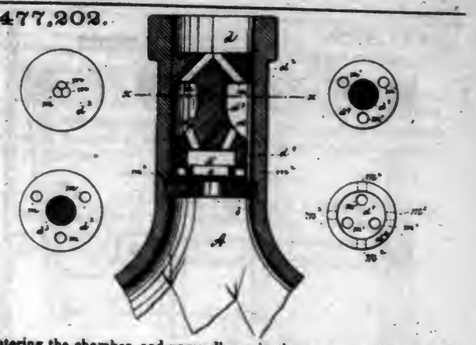
2. In a wood-cutting machine of the kind described, the means to regulate the thickness of the cut and to prevent the same from following the grain in a direction different from the intended line of cut, said means consisting of a roller 22, a shaft 23, on which the former turns, eccentric-bearings on which said shaft turns, an adjusting-lever, and means to hold it in its position, and whereby roller 22 may be adjusted laterally with reference to the knife, all as shown and described.

3. In a wood-cutting machine, the general construction and combination of an inclined track, a stationary knife-frame secured beside the track in an inclined position and provided with extensions to which the knife is secured and with bearings for roller-shaft 23 and with a segmental bracket 31, a carriage having a horizontal platform and inclined runners and suitably prepared to securely hold the wood, an extension 27 on said carriage, to which the motive power connects, a roller 22, being laterally adjustable in its position between the carriage and the knife-frame, serving as a means to regulate the thickness of the cut and as a guide, a shaft 23, on which this roller turns, eccentric-bearings on which this shaft turns, an adjustable lever, and means to hold it in its position on bracket 31, all as substantially shown and described.

477,202. BOTTLE-STOPPER. LOUIS A. EBERHARDT, Brooklyn, N. Y. Filed Mar. 10, 1892. Serial No. 424,330. (No model.)



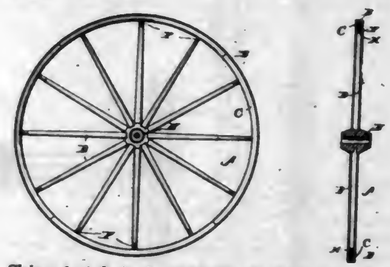
Claim.—1. The combination of a bottle with a valve-seat *b*, a valve *c*, and a plug having a chamber *d'*, laterally-projecting ports m^3, entering the chamber, and upwardly-projecting ports *m*, substantially as specified.



2. The combination of a bottle with a valve-seat *b*, a valve *c*, and a plug having a valve-chamber, an upper and a lower head, a central neck, and three sets of ports, substantially as specified.

3. The combination of a bottle with a valve-seat *b*, a cup-shaped valve *c*, and a plug having a valve-chamber, an upper and a lower head, a central neck, and three sets of ports, of which two sets extend through the neck and lower head into the chamber, while the third set extends through the upper head, substantially as specified.

477,203. SPOKE CONNECTION FOR VEHICLE-WHEELS. GEORGE E. ELLIOTT, Grosvenor Dale, Conn. Filed Apr. 20, 1891. Serial No. 389,664. (No model.)



Claim.—1. A device for connecting the end of a spoke with the felly, consisting of the metallic piece F, having a pintle I and formed with the wings G G, which are separated at their inner ends from the base of the socket by the slot or kerf K, substantially as and for the purpose set forth.

2. The herein-described device for connecting the end of a spoke with the felly, consisting of the metallic piece F, having a pintle I and formed with the wings G G, which are separated at their inner ends from the base of the socket by the slot or kerf K, the wings G G being of such length that they will just meet when pressed together around the spoke and form a cylinder of the same size as the spoke, substantially as set forth.

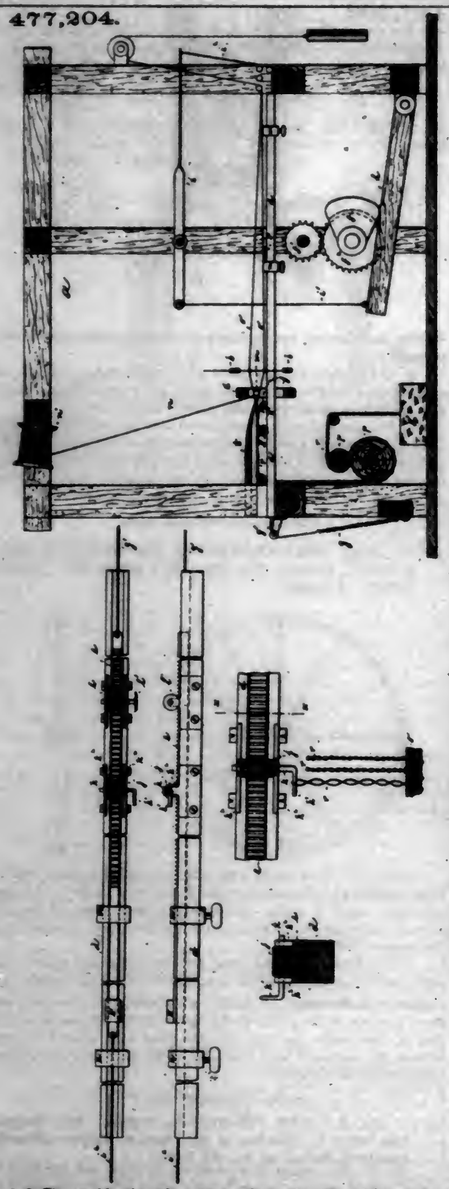
477,204. LOOM FOR WEAVING FRINGE. KARL ROSBERG, New York, N. Y. Filed Aug. 15, 1891. Serial No. 402,705. (No model.) Patented in England Jan. 14, 1886, No. 618.

Brief.—The shuttle first moves to the right and traverses the warp, beyond which it moves to form a loop, Fig. 8. Then the lay, with the shuttle, moves forward to cause the loop to be enlarged by a finger *f* and to be engaged by the hook *k*, Fig. 9. The shuttle next moves to the left, recrossing the warp, while the loop is retained by the hook, Fig. 10. At this point the cam *f'* causes the rack *e* to be moved backward, and thus the pinion *j* is revolved to twist the loop into a twisted fringe *r*, Fig. 4. Then the shuttle and lay move forward until a stop-pin *s*, secured to the lay, knocks the finished fringe off the hook, after which the spring *g* causes the rack to move forward and into its original position, ready for the formation of the next fringe.

Claim.—1. The combination, in a fringe-twister, of a shuttle with a reciprocating rack, a pinion engaged thereby, and a hook secured to the pinion and adapted to engage the looped weft, substantially as specified.

2. The combination of a shuttle with a reciprocating rack, a pinion engaged thereby, a hook secured to the pinion, and a stop *s* for throwing off the loop, substantially as specified.

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3. The combination of a reciprocating rack with a pinion engaged thereby, a hook secured to the pinion, a shuttle having pins m', and with a fixed spool n', substantially as specified.

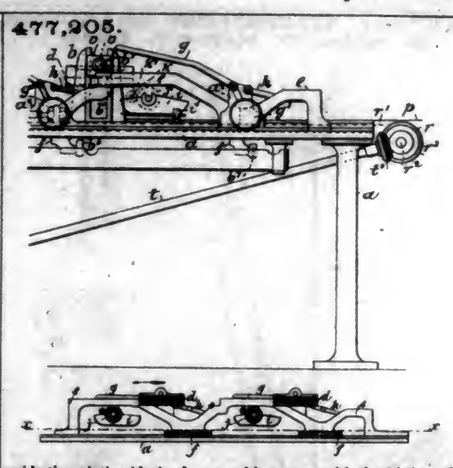
4. The combination of a reciprocating rack e, having head e', with a pinion, a hook secured to the pinion, and with a pair of gages u, engaging the head e', substantially as specified.

5. The combination of a reciprocating rack with a pair of pinions engaged thereby, a hook k', secured to one pinion, and a cutter l', secured to the other pinion, substantially as specified.

477,205. MACHINE FOR PRINTING OR EMBOSSING FABRICS. JAMES FARRER, Salford, England. Filed Sept. 16, 1890. Serial No. 364,168. (Model.) Patented in England Jan. 12, 1889, No. 602.

Claim.—1. The combination of a main frame a, frame b, arranged to reciprocate thereon, printing-blocks d, mounted in vertical slideways in said reciprocating frame and supported by rollers b^4, arranged to run on guide-rails c, said rails being formed with rises and dips to

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guide the printing-blocks d over and in contact with the fabric p, the pivoted levers g h, and the inking device, substantially as set forth.

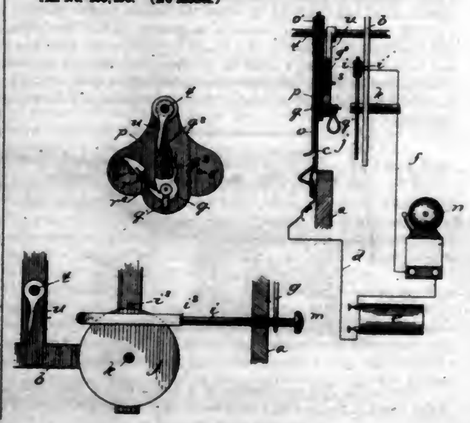
2. The combination, with the reciprocating frame b, of vertical sliding printing-blocks d, mounted thereon, the guide-rails c and pairs of levers g h, pivoted to the brackets a^3 on the framing for supporting the printing-blocks d, the sliding frames b, with standards b', the slide-blocks b^3, carrying the printing-blocks d, the trunnions b^2 and the anti-friction rollers b^4, which run on guide-rails c and secured to blocks b^3, and the inking device, substantially as set forth.

3. The combination, with the guide-rail c, of the pairs of pivoted levers g h, pivoted to bracket a^3, the weights g', keeping lever g normally raised, levers h, the color-boxes i, having screws i', said boxes located between printing-blocks d and the dip in guide-rail c, the rollers j and k being mounted in color-boxes i, and the pinions j' and k', fixed to the rollers, substantially as herein set forth.

4. The combination of the driving-shaft l, carrying pinions l', spur-wheel m' on shaft m, driven by pinion l', the disk m^2, fixed on shaft m and having an eccentric-pin m^3 connected by link n to rocking levers o, fixed on rocking-shaft o', supported in bearings o^3 in frame a, and the sliding frame b, having fixed at each side the pairs of adjustable catches b^5, b^6, and b^7, substantially as herein set forth.

5. The combination, with the roller p' in standard p^3, of the traveling chain r', with needle-like points mounted on chain-wheels r, supported on frame a, the rollers p^2, the brushes s, fixed to chain-wheels r, the shaft r^2, having bevel-gear r^1 thereon, and driving bevel-gear t', fixed on shaft t, the bevel-gear t^2, driven by bevel-gear u' on shaft u, the elliptical gear u^2, fixed thereto and driven by elliptical gear v on shaft v', and spur-wheels v^2, driven by spur-wheels m^4 on shaft m, substantially as herein set forth.

477,206. ELECTRIC ALARM-CLOCK. BENJAMIN FRANKLIN, Chicago, Ill., assignor of three-fourths to David H. Fletcher, Calvin R. Beach, and George H. Morrell, same place. Filed Sept. 12, 1891. Serial No. 405,498. (No model.)



Claim.—1. The combination, with a clock, of a battery electrically connected with the hour-hand arbor and dial, respectively, an electric bell interposed in circuit therewith, a movable alarm-hand having a metallic connection with the dial, contact-points in the rear of said dial, arranged to move in unison with and to bear a fixed relation thereto, and an arm upon the hour-hand arbor in operative proximity to said contact-points, substantially as shown and described.

2. The combination, with a clock, of a battery, means for electrically connecting the same with the hour-hand arbor and dial, respectively, an electric bell interposed in circuit with said battery, an alarm-hand in connection with said dial, a circuit maker and breaker located behind and in metallic connection with said dial, an arm or contact-point upon the hour-hand arbor, adapted to engage therewith, a disk mounted upon the winding-arbor, a sliding rod in contact therewith in normal circuit with the battery, and an insulating device upon said rod, whereby a change of position thereof may make or break said electric circuit, substantially as shown and described.

3. The combination, with a clock having a battery and electric bell normally in circuit with the dial and hour-hand arbor thereof, of an oscillatory circuit maker and breaker in frictional contact with the dial and provided with radial arms, one of which is insulated at its end and the other of which consists of a metallic weight mounted upon a spring, means for limiting the oscillatory movement of said device, an arm upon the hour-hand arbor in operative proximity to said arms, and an alarm-hand in metallic connection with said dial, substantially as shown and described.

4. The combination, with a clock having a battery and electric bell normally in circuit with the dial and hour-hand arbor thereof, of an alarm-hand rigidly connected with a plate in metallic connection with the back of the dial-plate, an oscillatory circuit-making device, as described, in frictional contact with said plate, and a metallic arm mounted upon the hour-hand arbor and in operative proximity to said circuit making and breaking device, substantially as shown and described.

5. The combination, with a clock having a battery and electric bell normally in circuit with the dial and hour-hand arbor thereof, of the alarm-handle o, revoluble plate p in metallic contact with the dial, collar q in resilient frictional contact with said plate, insulated point q^2 and weighted metallic point r', attached to said collar, substantially as set forth, means for limiting the oscillatory movement of said collar, and arm u in operative proximity to said points q^2 and r', substantially as specified.

6. The combination, with a clock having its dial and hour-hand arbor in electric circuit with a battery and bell, of an alarm-hand, a revoluble plate connected therewith and with the dial, an oscillatory circuit making and breaking device pivotally mounted upon said plate, provided with two contact-points projecting radially from its axis, one of said contact-points being insulated and the other consisting of a metallic weight connected with its axis by a spring, and means for maintaining said axis in frictional contact with said plate, stops for limiting its movement, and an arm arranged to engage said points, respectively, as the hour-hand arbor is revolved, substantially as shown and described.

7. The combination, with a clock, of a battery, means for electrically connecting the same with the hour-hand arbor and dial, respectively, an electric bell interposed in circuit with said battery, an alarm-hand attached to said dial, an oscillatory circuit-maker in connection with said dial, an arm upon said hour-hand arbor, adjusted to engage with and actuate said circuit-maker, a disk mounted upon the winding-arbor, a sliding rod in frictional contact therewith and having an insulating material upon its outer end, and the contact-spring g, substantially as specified.

8. The combination, in an electric alarm attachment for clocks, of the disk j and rod i, the latter being provided with insulating material upon its outer end, whereby the rotation of said disk may tend to maintain said rod normally in circuit with the battery, substantially as specified.

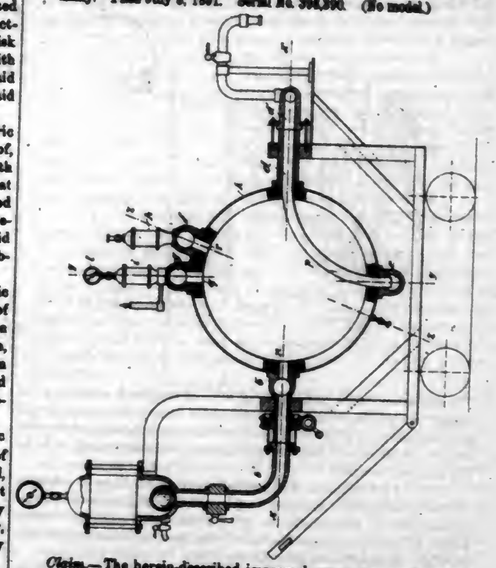
477,207. COLLAR. MICHAEL FRIEDLY, Ada, Ohio, assignor of one-half to Henry Schindewolf, same place. Filed Jan. 15, 1892. Serial No. 418,131. (No model.)



Claim.—1. The herein-described collar, provided with a pair of slits, the material between said slits constituting a keeper, and a tab for the keeper, said tab having an end provided with an arrow-shaped head forming shoulders engaging with the keeper and provided with a buttonhole, substantially as specified.

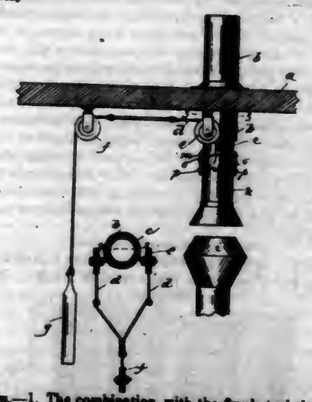
2. A collar-band provided at its center with a buttonhole and at opposite sides thereof with slits and a tab having a smaller buttonhole reinforcing and registering with that of the collar-band, said tab being removably mounted in the slits and interlocking therewith, substantially as specified.

477,208. BEER-FILTER. HERMANN C. J. GERRER, Berlin, Germany. Filed July 3, 1891. Serial No. 398,290. (No model.)



Claim.—The herein-described improved apparatus, consisting of the cylindrical body provided on its outside with an inlet b for unfiltered material, a draw-off socket for filtered material, and gage-glasses, and manometer, filtering-plates m m, so arranged as to form chambers for unfiltered material and for filtered material, canals leading from inlet b to the chambers for unfiltered material, a tank on the outer lower side of the apparatus, a tube connected with the draw-off socket, and passed through the middle filtering-chamber, and canals connecting the chambers for filtered material with the outer tank, substantially as set forth.

477,209. SMOKE-FUNNEL. HENRY W. GOODRIDGE and CHARLES JOHNSON, Chicago, Ill. Filed Mar. 7, 1892. Serial No. 424,064. (No model.)

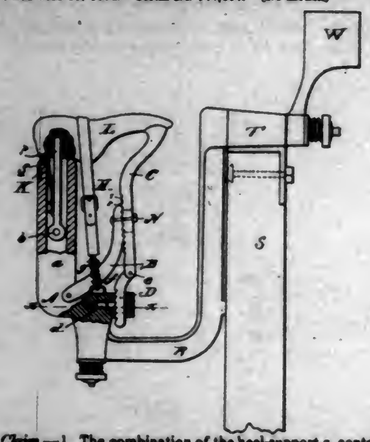


Claim.—1. The combination, with the fixed stack b, of the stack c, sliding therein and provided at its lower end with opposite concavities m, and the swinging funnel h, pivotally connected with the sliding stack and provided at its upper end with convexities n, which enter the said concavities of the sliding stack, substantially as described.

2. The combination, with the fixed stack b, of the stack c, sliding therein and provided at its lower end with pendent hangers or arms

o and opposite concavities m, and the swinging funnel A, pivoted to the hangers or arms and provided at its upper ends with convexities n, which enter the said concavities of the sliding stack, substantially as described.

477,210. LAST-SUPPORTER. JOHN GRANT, Windsor, Canada. Filed Jan. 15, 1891. Serial No. 377,897. (No model.)



Claim.—1. The combination of the heel-support a, containing the hinged pin p, the vertically-adjustable toe-rest C, the strap H, and straining-spring g, adapted to draw said strap downward, and thereby confine the last to the toe and heel supports, substantially as and for the purpose described.

2. In a last-support, the combination of a heel-support, a hinged vertically-adjustable toe-support, and a holding-strap connected to the heel-support by an intermediate spring and adapted to pass around the hollow of the last and hold the same to the heel and toe supports, substantially as and for the purpose described.

3. In a last-supporter, the combination of the hollow supporting-arm a, the heel-supporting pin P, having its upper extremity triangular in form and its plane at an angle to the plane of the body, as shown and described, and a holding-strap H, arranged in combination with an iron last, substantially as and for the purpose described.

4. In a last-supporter, the combination of a hollow heel-supporting arm, a supporting-pin P, of which the upper extremity is shaped in the form of a truncated pyramid, and a holding-strap H, all combined and operating as described.

5. In a last-supporter, the combination of a heel-supporting arm of metal formed hollow and containing a hinged pin and a block of wood detachably inserted, as described, near the end of said heel-supporting arm, all combined and operating substantially as described.

6. In a last-supporter, the combination of a heel-supporting pin hinged within a hollow supporting-arm, a toe-support made in two parts hinged together, one of said parts being adjustable vertically with respect to said heel-support and the other of said parts being hinged to said first part and adapted to swing along the supported last, and a brace provided with means adapted to secure the said swinging part in position, substantially as and for the purpose specified.

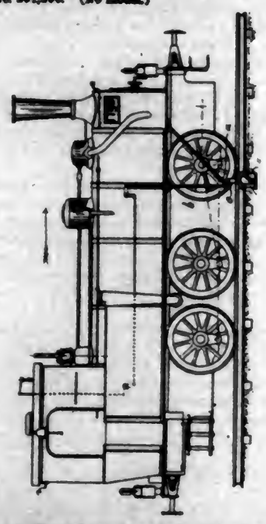
7. In a last-supporter, the combination, with the heel-supporting arm, of a toe-support made in two parts hinged together, one of said parts being provided with a rack and adapted to engage with a holding-pawl on said heel-support and the other of said parts being also provided with a rack and adapted to engage with a toothed brace and to be secured by said brace in position, substantially as and for the purpose described.

477,211. ICE-CREAM FREEZER. FRANK P. HARBAUGH, Chambersburg, Pa. Filed July 15, 1890. Serial No. 358,822. (No model.)



Claim.—In a freezer, the combination of a tub A, a liquid-receiving vessel B, provided with a central depending pivot adapted to be seated in a socket in the bottom of the tub A, a shaft D, having its lower end fitted in a central socket in the bottom of the vessel B and its upper end extended above said vessel, an ice-can C, fitted around the shaft D within the vessel B and provided with an internal hub or boss F, a set-screw f, working through such hub or boss and bearing against the shaft D, a series of dasher-blades carried by the shaft D and working near the exterior surface of the can C and the interior surface of the vessel B, and driving mechanism connected to the upper portion of the shaft D, substantially as shown and described, for the purpose set forth.

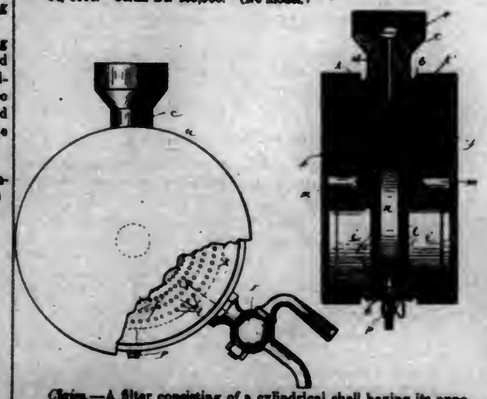
477,212. MEANS FOR PREVENTING COLLISIONS ON RAILWAYS. HERMAN G. HELD, Zwolle, Netherlands. Filed Nov. 19, 1888. Serial No. 291,296. (No model.)



Claim.—1. The combination of movable tongues c, means for fixing them in one position or the other, connections whereby said fixing devices may be operated to change the direction of operation of the tongues, and a signaling apparatus on the train adapted to engage the tongues, substantially as set forth.

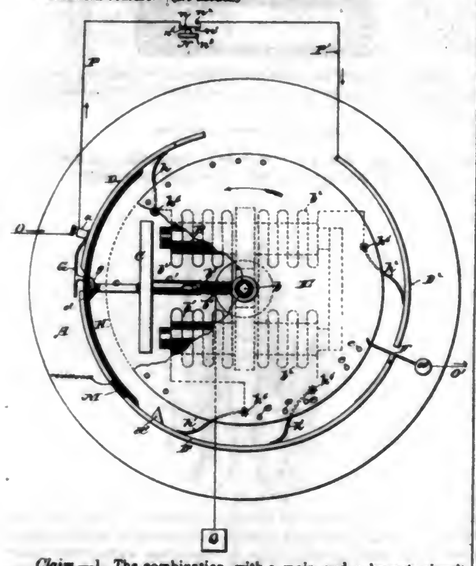
2. The combination of movable tongues c, means for fixing them in position, lever g, connected with a movable element of the track system, connection whereby said fixing devices may be operated to change the direction of operation of the tongues, and an alarm device operated by tongues c when a train passes over them, substantially as set forth.

477,218. FILTER. OMAR H. JEWELL, Chicago, Ill. Filed Sept. 14, 1891. Serial No. 405,580. (No model.)



Claim.—A filter consisting of a cylindrical shell having its opposite ends screw-threaded externally and provided with an internal annular flange g, screw-caps f f', screwing on the threaded ends of the shell, filtering material supported by the said annular flange, and perforated disks h h', resting against the filtering material, and having laterally-projecting bosses m m', bearing, respectively, against the screw-caps, so that by screwing up said caps the perforated disks are tightened against the annular flange, substantially as described.

477,214. ELECTRIC CONTROLLING APPARATUS FOR FIRE ALARMS. GEORGE KNOWLES, Jr., Milwaukee, Wis. Filed Dec. 3, 1889. Serial No. 332,433. (No model.)



Claim.—1. The combination, with a main and a branch circuit supplied with current from the same source, of signal transmitting mechanism and an electro-magnet having its winding normally in connection with the main and the branch circuits and arranged to control said signal-transmitting mechanism in its operation, and a shunt around the winding of said magnet, having sufficient resistance to force current through the branch when it is closed and both shunt and branch are in circuit, substantially as and for the purposes set forth.

2. The combination, with a main and branch circuits supplied with current from the same source and circuit-controlling devices in said branch circuits, of an electro-magnet wound differentially with the wires of the main and branch circuits, suitable mechanism for the performance of the desired work controlled by said magnet, a shunt around the windings of said magnet, and a switch controlled by said magnet to divert the current of the main circuit through said shunt when the branch circuit is broken, substantially as and for the purposes set forth.

3. The combination of a main circuit and a branch circuit supplied with current from the same source, an electro-magnet the windings of which are normally connected with said main and branch circuits, a shunt around the windings of said magnet provided with resistance, and a switch controlled in operation by said magnet and arranged to automatically divert the current of the main circuit from the windings of said magnet through said shunt upon the opening of the adjacent branch circuit, substantially as and for the purposes set forth.

4. The combination of a main circuit and branch circuits, all supplied with current from said main circuit, each branch circuit including suitable mechanism for the performance of the desired work, an electro-magnet controlling the operation of said mechanism and having its windings normally connected with said main and the corresponding branch circuit, a shunt around the windings of said magnet provided with resistance, and a switch which is controlled by said magnet and constructed and arranged when the branch circuit is broken to connect said shunt with the main circuit and cut the windings of said magnet out of the main circuit, thereby maintaining the main circuit for other branches and preventing the transmission of signals through the main line from other points from affecting said magnet, substantially as and for the purposes set forth.

5. The combination of a main circuit and a branch circuit provided with one or more circuit-controlling devices and supplied with current from said main circuit, an electro-magnet the winding of which has connections with the main and branch circuits, a shunt provided with resistance around said magnet, a switch by which the current is diverted from the winding of said magnet through said shunt and the main circuit is maintained closed for operation with other branches, and mechanism controlled in operation by said magnet, substantially as and for the purposes set forth.

6. The combination, with a main circuit and a branch circuit supplied with current therefrom and provided with a suitable circuit-controlling device, of a movable magnet having its windings connected with contact-pieces movable therewith, by which said windings are connected normally with the main and branch circuits, a shunt provided with resistance around the windings of said magnet, and a switch controlled in operation by said magnet, arranged to divert the current of the main line from the winding of said magnet through said shunt, and thereby maintain a closed main circuit for other branches when the branch with which said magnet is normally connected is temporarily broken, substantially as and for the purposes set forth.

7. The combination of a main and a branch circuit supplied with current therefrom and provided with one or more circuit-controlling devices, a differentially-wound electro-magnet, one winding of which is connected normally with the main circuit and the other winding with the branch circuit, a shunt around said magnet, and a switch arranged to divert the current around said magnet through the shunt, and thereby maintain the main circuit for other stations on the main line, substantially as and for the purposes set forth.

8. The combination, with a main circuit and one or more branch circuits provided with suitable circuit-controlling devices, of an electro-magnet for each branch circuit, having its winding normally connected therewith and with the main circuit, signal-transmitting mechanism for each branch circuit, controlled in operation by its magnet, and a switch by which the current of the main line is automatically shunted around said magnet upon the opening of the corresponding branch circuit and the main line is maintained for the transmission of signals from other stations, substantially as and for the purposes set forth.

9. The combination, with a main circuit and one or more branch circuits provided with circuit-controlling devices, of an electro-magnet for each branch circuit having its winding normally connected therewith, signal-transmitting mechanism controlled in operation by said magnet, a home-stop to arrest and hold said mechanism in its normal position, and a trouble-stop arranged to arrest said mechanism when the corresponding branch circuit remains open after being broken, so as to indicate an accidental break or interruption of said branch circuit by a signal distinguishable from signals for other purposes, both stops being controlled by said magnet, substantially as and for the purposes set forth.

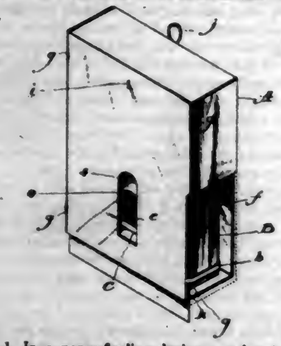
10. The combination, with a main circuit and a number of branch circuits supplied with current from the same source and provided with suitable circuit-controlling devices, of a differentially-wound magnet for each branch circuit, one winding of which is normally in circuit with a branch circuit and the other in circuit with the main circuit, signal-transmitting mechanism controlled in operation by said magnet, a locking device arranged to be operated by the opening and closing of said branch circuit through said magnet, a home-stop with which the locking device engages to arrest and hold the signal-transmitting mechanism in its normal position when the branch is closed, and a trouble-stop arranged to arrest its movement when the branch circuit remains open, so as to indicate by a predetermined signal an accidental break or interruption in said branch circuit, the magnet being arranged to disengage the locking device from the trouble-stop when the branch circuit is re-established, substantially as and for the purposes set forth.

11. The combination, with a main circuit and branch circuits supplied with current from the same source and provided with circuit-controlling devices, of a differentially wound magnet for each branch circuit, having one of its windings normally connected in a branch circuit and the other in the main circuit, signal-transmitting mechanism controlled in operation by said magnet, a locking device operated by the opening and closing of the branch circuit, a stop with which the locking device engages to hold said mechanism in its normal position, another stop arranged to arrest the movement of said mechanism when the corresponding branch circuit remains open, so as to indicate an accidental break or interruption of said branch circuit by a signal distinguishable from signals for other purposes, a shunt, and a switch operated by said mechanism, set in motion by the breaking of the branch circuit to divert the current of the main circuit around the winding of said magnet, substantially as and for the purposes set forth.

12. The combination, with a main circuit and a branch circuit supplied with current from the same source and provided with suitable circuit-controlling devices, of signal-transmitting mechanism arranged to send signals through said main circuit and to be set in operation by the opening or closing of said branch circuit, a movable electro-magnet controlling the operation of said signal-transmitting mechanism and arranged to automatically cut its winding out of the main line when the branch circuit is broken, and a shunt through which the current of the main line is automatically diverted and maintained when the magnet is cut out, substantially as and for the purposes set forth.

13. The combination of a main and a branch circuit supplied with current from the same source, signal-transmitting mechanism, a single electro-magnet controlling the operation of said mechanism and having its winding normally in connection with the main and branch circuits, a shunt-circuit around said magnet provided with resistance to compel sufficient current to flow through the branch circuit when the same is closed for energizing said magnet, and an automatic switch arranged to divert the current through the said shunt when the branch circuit is broken, substantially as and for the purposes set forth.

477,215. TOILET-PAPER CASE. ISAAC M. LOWENSTEIN, Philadelphia, Pa. Filed Oct. 20, 1891. Serial No. 409,265. (No model.)

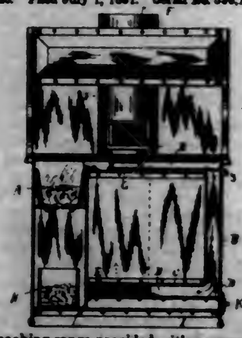


Claim.—1. In a paper-feeding device, a casing A, having vertical slot *a* provided in the face thereof, vertical slide C, provided on the interior of the face of the casing, adapted to slide vertically against the said interior face of the front wall, elastic band *c* or its equivalent secured to the walls of the casing and to the said slide C, stop *d*, provided on the interior wall of the casing, frictional surface *e*, provided on the slide C, and elastic bands *b* or their equivalents for compressing the package of paper against the said slide C, and a discharge-slot A, substantially as described

2. In a paper-feeding device, a casing A, slot *a*, provided in the face thereof, vertical slide C, adapted to slide vertically against the interior surface of the front wall of the casing A, elastic bands *c* or its equivalent secured to the casing and to said slide for retaining the slide automatically to a normal elevated position after being depressed, orifice *o*, provided in the slide C, strip of rubber *e*, provided over said orifice *o* and upon the interior face of the slide C, rear plate *f*, discharge-slot A, provided in bottom of casing, and means for compressing the package of paper against and toward said vertical slide, substantially as described.

3. In a paper-feeding device, the combination of a casing A, slot *a*, vertical slide C, elastic band *c* or its equivalent, secured to the walls of the casing and to said vertical slide, stop *d*, orifice *o*, provided in the slide C, frictional strip *e*, secured to the inner face of the slide C, elastic bands *b* or their equivalents for compressing the package of paper against said slide C, and slot A, provided in the bottom of the casing, substantially as described.

477,216. COOKING STOVE OR RANGE. FREDERICK MARQUART, Cleveland, Ohio. Filed July 1, 1891. Serial No. 398,117. (No model.)



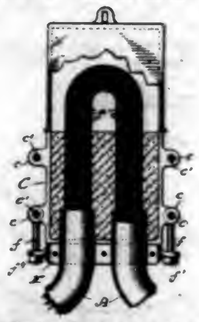
Claim.—A cooking-range provided with an oven in its body portion, a fire-pot at one side of the oven, a heat-passage from said pot over the oven and around one side thereof and across beneath the bottom of the same, and a fresh-air passage beneath the said heat-passage on the bottom of the oven formed by two plates D and I, and openings for the admission of air to said air-passage, and openings to discharge the heated air into the space beneath the fire-pot, whereby heated air is fed to the fire to supply combustion, substantially as described.

477,217. POCKET PERFUME-CASE. JOHN MCCOY, Pasadena, Cal. Filed Dec. 11, 1890. Serial No. 374,411. (No model.)



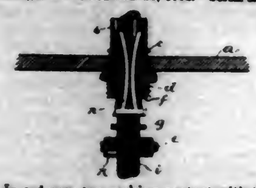
Claim.—A perforated wire-lined pocket-case containing a bag or other flexible receptacle for perfume-powders or the like, substantially as described.

477,218. CABLE JUNCTION-BOX. JOHN D. MCLEOD, Milwaukee, Wis. Filed Dec. 15, 1891. Serial No. 415,133. (No model.)



Claim.—A junction-box for electrical distribution, said box containing a filling of insulating material, in combination with a multiple-wire cable entering said box, a corresponding multiple-wire cable issuing therefrom, and loops of insulated wire joining the wires of the respective cables, the joints or splices of the multiple wires with the loops being embedded in the filling of insulating material and the bend of the loops extending beyond said material, substantially as described.

477,219. CARBON-ROD CONTACT FOR ARC LAMPS. CHARLES MCKELLER, Chicago, Ill. Filed Jan. 26, 1892. Serial No. 419,270. (No model.)



Claim.—1. In a device for making contact with the carbon-rod of an electric lamp, the combination of the tube *b*, detachably secured to the floor of the lamp, the contact-brush *n*, the ring *g*, adapted to press the flange of said contact-brush against the end of said tube, and the screw-cap *e*, adapted to hold said ring and contact-brush detachably in place, substantially as described.

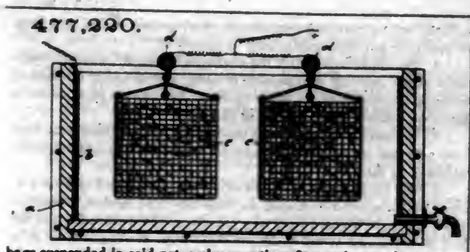
2. A device for making contact with the carbon-rod of an electric lamp, consisting of a contact-brush of comb-shaped metal curved so as to enter the tube through which the carbon-rod passes, said comb-shaped piece of metal having its teeth curved and having a flange adapted to rest upon the end of said tube, in combination with a cap adapted to be screwed upon the end of said tube and to press upon the flange of said contact-brush, whereby said contact-brush is detachably held in place in said tube, substantially as described.

477,220. PROCESS OF RECOVERING TIN FROM SCRAP. JOHN J. HAHN, Paterson, N. J. Filed Feb. 27, 1892. Serial No. 422,983. (No specimens.)

Claim.—1. The process of recovering tin from tinned scraps, which consists in suspending the scraps in a stannic-salt solution containing lead plates, and then passing an electric current from the tinned scraps to the lead plates, whereby the tin will be dissolved from the scraps and precipitated on the lead plates.

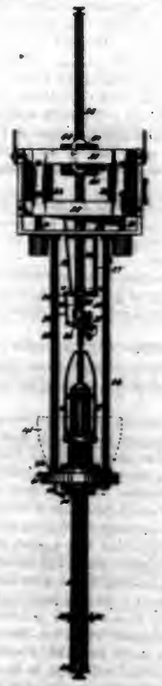
2. The combination of the vat lined with lead plates, the notched

477,220.



bags suspended in said vat, and connections for passing an electric current to the scrap in the bags and from the lead plates, substantially as and for the purposes set forth.

477,221. ELECTRIC-ARC LAMP. LEMON PARKER, St. Louis, Mo. Filed July 13, 1891. Serial No. 399,316. (No model.)



Claim.—1. The combination, in an electric-arc lamp, of a stationary retaining-tube firmly and immovably fastened to the frame of the lamp, a vertical column of carbons therein placed end to end and feeding freely downward through said tube by gravity independent of feeding devices, and a clutch for gripping the lowest carbon and regulating the arc, substantially as described.

2. In an electric-arc lamp, a stationary carbon-retaining tube for supplying the carbons, having a cut-away place at one side at its lower end, a clutch for gripping the carbon itself to govern the arc, and electro-magnetic devices controlling said clutch, whereby when a carbon is nearly consumed it will automatically be discharged from the carbon-retaining tube and clutch and a fresh carbon automatically supplied thereto.

3. An electric-arc lamp having a clutch for gripping the carbon itself, consisting of two plates 36 and 37, perforated, as set forth, and pivoted together by an angular extension, and electro-magnetic devices controlling the free end of the lower plate and thereby the upper plate to move it in opposite directions longitudinally of its length to grip and free the carbon as the free end of the lower plate is raised and lowered.

4. An electric-arc lamp having a clutch for gripping the carbon itself, consisting of two suitably-perforated plates, one overlying and articulated to the other, electro-magnetic devices for controlling one of said plates and thereby the other plate, and adjustable stops between which said plates are adapted to play

5. The combination, in an electric-arc lamp, with a fixed tubular carbon-retaining tube having a cut-away place therein at the side and lower end and perforated at its lower end in the manner set forth, of a clutch consisting of two perforated plates through which the carbon is adapted to pass, and electro-magnetic devices for controlling said clutch, whereby when a carbon is nearly consumed it will be thrown out of alignment with the lower carbon and discharged from the clutch and carbon-retaining tube and a new one automatically supplied.

6. In an electric-arc lamp, the combination of a mechanically-impelled carbon, a shiftable bail engaging the end of the carbon and normally restraining said carbon from further movement, whereby when the bail is shifted the said mechanically-impelled carbon will be discharged automatically by the impelling means.

7. As a means of controlling mechanically-impelled carbons, the combination of a suitable retaining-tube for such carbons, a suitably-impelled sliding tube arranged within the interior of the first-mentioned tube and bearing against the lower end of the carbon, and a shiftable device or bail for holding the carbon in the position in which it is placed, whereby upon the sliding tube being depressed the said shiftable device may be shifted aside and the carbon discharged from the retaining-tube.

8. As a means of controlling mechanically-impelled carbons, the combination of a suitable retaining-tube for such carbons, a suitably-impelled sliding tube arranged within the interior of the first-mentioned tube and bearing against the lower end of the carbon, knobs upon the said sliding tube projecting through slots in the first-mentioned tube, and a shiftable device or bail for holding the carbon in the position in which it is placed, whereby upon the knobs being depressed the said shiftable device may be swung to one side and the carbon discharged from the retaining-tube.

9. An electro-magnetic mechanism having the ends of the coils in electrical communication, respectively, with suitable members secured thereto and separable as a whole from spring actuated retaining devices in electrical communication with the respective terminals of the apparatus, whereby the coils may be readily removed and inserted and electrical communication with the apparatus is established and broken, respectively, by inserting and removing the said coils.

10. An electric-arc lamp having suitable electro-magnets, the coils of which are made removable as a whole by extension-arms carried thereby engaging with suitable spring-actuated retaining means upon the lamp.

11. An electro-magnetic mechanism having the ends of the coils in electrical communication, respectively, with suitable members secured thereto and insulated therefrom, and a spring-casing therefor with which the said members make contact and complete the electric circuit of the coils, substantially as and for the purpose set forth.

12. The combination, in an electric-arc lamp, of a carbon-retaining tube through which the carbons may gravitate freely, electro-magnetic devices for feeding the carbons in said retaining-tube and regulating the arc, the axes of the magnets whereof are arranged coincident with the axis of the retaining-tube, suitable members extending from said magnets and insulated therefrom, with which members the terminals of the coils of the magnets are respectively connected, and a casing carrying suitable corresponding members connected with the respective terminals of the circuit and with which the aforesaid members carried by the magnets engage.

13. The combination, in an electric-arc lamp, of a stationary retaining-tube, a vertical column of carbons resting end to end one upon another and loosely inclosed by said tube, a hollow core surrounding said carbon-retaining tube, main and derived circuit coils controlling said core and encircling the same, a clutch for gripping the lowermost of said column of carbons and regulating the arc, and suitable actuating devices between the core and the said clutch.

477,222. NUT-LOCK. LEMAN B. PECK and FRANK L. STERNER, Cardington, Ohio. Filed Feb. 27, 1891. Serial No. 383,092. (No model.)



Claim.—A nut-lock consisting in a strip of stout and rigid metal, the ends of which are so recessed as to form in each end one large and center notch and two smaller notches, each notch presenting the outline of an obtuse angle, the said strip being bent into a curve and the two sides of each notch being slant-beveled from the concave or inner face to the convex or outer face of the strip, so as to form sharp edges at the ends of the concave face of the strip, the said nut-lock being constructed and arranged, as hereinbefore shown and described, for the purpose of engaging with its notches the angled sides of the nuts to which it is applied and forming with its sharpened edges a wedge between the engaged nuts and their seats

477,223. MEANS FOR OPERATING AMMETERS AND OTHER ELECTRICAL APPARATUS. HERBERT M. PILKINGTON and ROGER S. WHITE, Brooklyn, N. Y. Filed Sept. 24, 1891. Serial No. 406,630. (No model.)



Claim.—1. The combination, in an electrical apparatus of the character described, of one or more movable members, an armature or armatures for operating the same, and two or more coils for said armature or armatures in separate line-wires, all of said wires being simultaneously in condition for use, the construction and arrangement of the coils and armatures being such that the added effect of all of the coils will be sufficient to effect an entire operation of said device, substantially as described.

2. The combination, in an electrical apparatus, of a movable member, one or more armatures for said member, and several coils, each normally in position to act thereon, each coil being arranged to perform a certain fraction of the work required to effect an entire operation of said movable member and the construction and arrangement of the coils and armature being such that the added effect of all of said coils will be sufficient to effect said entire operation, substantially as described.

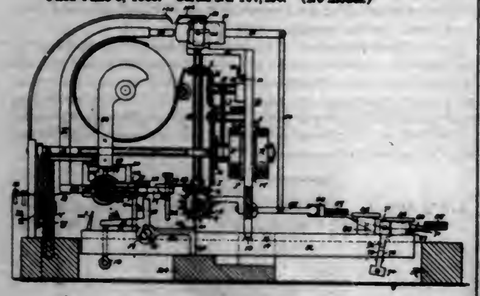
3. The combination, in an electrical apparatus, of a movable member, one or more armatures for said member, and several coils, each normally in position to act thereon, each coil being arranged to perform a certain fraction of the work required to effect an entire operation of said movable member and the construction and arrangement of the coils and armatures being such that the added effect of all of said coils will be sufficient to effect said entire operation, said coils being in line-wires connected to separate generators, substantially as described.

4. The combination, in an ammeter or similarly-operated indicator, of a movable member, such as an index-hand, one or more armatures connected therewith, and several coils in separate line-wires acting in conjunction on said armature or armatures, substantially as described.

5. The combination, in an ammeter, of one or more movable members, one or more armatures connected therewith, and coils in the positive and negative leads of a three-wire system, both coils acting in conjunction on said armature or armatures and through the same on said movable member or members, substantially as described.

6. The combination, in an ammeter or indicator, of several coils in separate line-wires, a single pointer, a single scale, and means acted upon in conjunction by said coils for moving said hand or pointer, substantially as described.

477,224. TYPE-WRITING MACHINE. JOHN PRATT, Gadsden Ala., assignor to the Hammond Type Writer Company, New York, N. Y. Filed June 3, 1886. Serial No. 167,486. (No model.)





Claim.—1. A key-lever provided with a movable stop capable of being moved out of its operative position while the key-lever is in its depressed position, in combination with a holding means, substantially as described, for preventing accidental displacement of said stop from its operative position, substantially as described.

2. The combination, with the check-pin shaft, of a key-lever provided with a movable stop capable of being moved out of the field of movement of the check-pin shaft while the key-lever is retained in its depressed position, substantially as described.

3. The combination, with the check-pin shaft, of a horizontal key-lever provided with a vertically-movable and frictionally-held stop, substantially as described.

4. The combination, with the check-pin shaft, of a key-lever provided with a pivoted or hinged movable stop held against accidental displacement by friction, said stop capable of being moved out of the field of movement of the check-pin shaft while the key-lever is in its depressed position, substantially as described.

5. The combination, with the check-pin shaft and a key-lever carrying a movable stop provided with a foot, of a stop-bar for returning said movable stop to normal position, substantially as described.

6. The combination, with a key-lever provided with a movable stop, of a check-pin shaft with which said stop co-operates, and a disengaging bar or lever for moving said stop to its inoperative position when it has performed its function, substantially as described.

7. The combination, with a key-lever provided with a frictionally-pivoted and movable stop, of a check-pin shaft and a disengaging bar or lever for moving said stop to its inoperative position when it has performed its function, substantially as described.

8. The combination, with a key-lever provided with a frictionally-held and movable stop, of a check-pin shaft and a disengaging bar or lever for moving said stop to its inoperative position when it has performed its function, and a stop-bar for returning said movable stop to its normal position when its key-lever is released, substantially as described.

9. The combination, with a key-lever provided with a jack and a movable stop, of a check-pin shaft, a hammer-lever, and a disengaging bar or lever for shifting said stop into its inoperative position, substantially as described.

10. The combination, with a key-lever provided with a jack and a movable stop, of a check-pin shaft, a hammer-lever, and a disengaging bar or lever connected with said hammer-lever, substantially as described.

11. The combination, with a key-lever provided with a jack and a movable stop, of a check-pin shaft, a toothed locking-wheel, a hammer-lever, a locking-pawl, and a disengaging bar or lever, substantially as described.

12. The combination, with a key-lever provided with a jack and a pivoted movable stop, of a check-pin shaft, a toothed wheel on said shaft, a hammer-lever, and a pawl and disengaging bar or lever connected with said hammer-lever, substantially as described.

13. The combination, with a key-lever provided with a jack and a movable stop, of a check-pin shaft, a toothed wheel on said shaft, a hammer-lever, and a disengaging-bar separate from and moved by said hammer-lever and provided with a pawl, substantially as described.

14. The combination, with a key-lever provided with a jack and a movable stop, of a holding means, substantially as described, for said stop, a check-pin shaft, a hammer-lever, and a disengaging bar or lever connected with said hammer-lever, substantially as described.

15. The combination, with a key-lever provided with a jack and a movable stop, of a check-pin shaft, a toothed wheel on said shaft, a hammer-lever provided with stops, as 43 and 44, and a disengaging bar or lever provided with a pawl and having a movement limited by said stops independent of said hammer-lever, substantially as described.

16. The combination, with a key-lever provided with a jack and a movable stop, of a hammer-lever and a disengaging-bar provided with a disengaging projection, substantially as described.

17. The combination, with a key-lever provided with a jack and a movable stop, of a hammer-lever and a disengaging-bar provided with an adjustable disengaging projection, substantially as described.

18. The combination, with the check-pin shaft and its toothed wheel, of the hammer-lever and a pawl connected with and actuated by said hammer-lever and arranged to co-operate with said toothed wheel, substantially as described.

19. The combination, with a key-lever provided with a jack, of a hammer-lever, a disengaging bar or lever provided with a pawl and connected with said hammer-lever, so as to move partly with and partly independent of the same, and a toothed wheel with which said pawl co-operates, substantially as described.

20. The combination, with a type-wheel forming, substantially, an equatorial section of a sphere and provided with two or more rows of type, of a shaft to which said type-wheel is universally pivoted, a pivoted frame or lever engaging said type-wheel, and a lever and connections whereby said frame is moved on its pivot to bring another row of type opposite the impression-hammer, substantially as described.

21. A type-wheel in the form substantially of an equatorial section of a sphere, provided with two or more rows of type and universally pivoted to a rotating shaft, substantially as described.

22. A type-wheel in the form of an equatorial section of a sphere, provided with two or more rows of type, in combination with a rotating shaft and a ring pivoted to said shaft and to said type-wheel, the said pivots being located at right angles to each other, substantially as described.

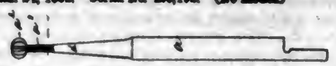
23. A type-wheel in the form substantially of an equatorial section of a sphere, provided with two or more rows of type and universally pivoted to a shaft, in combination with a forked lever engaging said type-wheel, a supporting-bracket, and U-shaped pieces connected with said lever and pivoted in the bracket-arms, so as to provide a passage for the inking-ribbon, substantially as described.

24. A type-wheel in the form substantially of an equatorial section of a sphere and provided with two or more rows of type, in combination with the type-wheel shaft and a sliding hub thereon, to which the type-wheel is universally pivoted, substantially as described.

25. The combination, with the movable type-wheel bracket, of the type-wheel shaft passing through the same, a collar or hub sliding on said shaft and resting on said bracket, and a type-wheel universally pivoted to said hub, whereby the type-wheel is permitted to be shifted on its shaft out of the range of the impression-hammer, substantially as described.

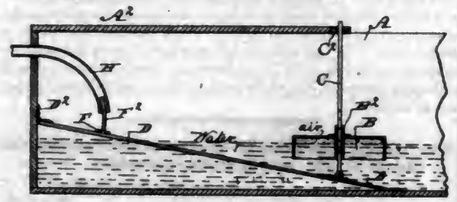
26. The combination, with an escapement capable of being shifted both to the right and to the left, of a type-wheel and a series of stops located to arrest said type-wheel, so that the right-hand edge of each of its type shall be brought into alignment with one and the same imaginary line, substantially as described.

477,225. DENTAL DRILL. CARL RAUER, Dusseldorf, Germany. Filed Mar. 24, 1892. Serial No. 426,192. (No model.)



Claim.—A dental drill provided with a contracted cutting-neck and a laterally-projecting cutter head, substantially as specified.

477,226. AUTOMATIC CUT-OFF FOR WATER-TROUGHS. WILLIAM S. REAGAN, Myra, Kans. Filed May 15, 1891. Serial No. 392,932. (No model.)



Claim.—An automatic stock-watering device consisting of a trough, a lever hinged to the inside of one end of the trough to extend toward the other end, a post hinged to the free-end portion of the lever to project up through a cross-piece fixed to the trough, a float having an open bottom and a closed top and an open-ended sleeve in its center adapted to slide on the post and to be detachably fixed to the post, a valve fixed on top of the lever and provided with a curved projection that extends into the open curved end of a supply-pipe that terminates in the trough, all arranged and combined to operate in the manner set forth, for the purposes stated.

477,227. HOSE-CLAMP. LEWIS H. REDFIELD, Syracuse, N. Y., assignor of one-half to J. Richard Clancy, same place. Filed Sept. 24, 1891. Serial No. 406,726. (No model.)



Claim.—As an improved article of manufacture, a hose-clamp consisting of a band of sheet metal provided with coincidingperforations at each end and terminating with a tongue extending from the center of its width at one end and with tongues extending from the opposite end at opposite sides of the center of its width, said band being bent annular-shaped and thence outward and folded inward on lines central between the perforations, and the tongues of each end being bent to lie on the inner side of the opposite end of the male portion of the band, substantially as described and shown.

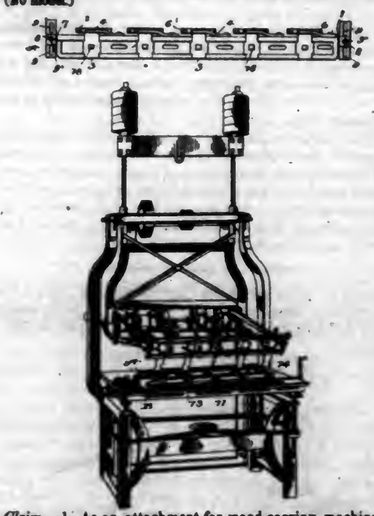
477,228. WRENCH. EBENEZER W. RIDER, Racine, Wis. Filed Sept. 1, 1891. Serial No. 404,401. (No model.)



Claim.—1. The handle B, having the block E pivoted inside the front jaw, and the part D, having ratchet-thread d' and swiveled in said block and adapted to act as a thumb-screw to move the jaw A onward, and the spring G, fixed to handle B to press the part D down, and the movable outer jaw A, having ratchet-teeth a^3 on its upper face, all combined and operating as set forth.

2. The hollow handle B, slotted at b' on the under side and having spring C inside it, and the ratchet-teeth piece D, swiveled in the pivoted block E, and the outer jaw A, having the shank a, upon which the said spring acts, and the lug g, fixed to the jaw A and movable in the slot b and acting as a stop and thumb-piece, all combined as set forth, and operating as described.

477,229. ATTACHMENT FOR CARVING-MACHINES. JOSEPH ROELMANN, St. Joseph, Mo. Filed May 25, 1891. Serial No. 394,057. (No model.)



Claim.—1. As an attachment for wood-carving machines, a bar having means for carrying a series of blocks and held in end supports provided with slots for fastening-screws, whereby the bar may be secured to a table and adjusted forward or backward thereon and in which supports the bar may also be turned around and adjusted to the desired position.

2. An attachment for wood-carving machines, having a stock or block carrying bar hung on centers in its supports and provided with a series of index-plates for severally holding the blocks, each of said plates being mounted to permit it to be turned on its own center and provided with an automatic detent, serving to hold it to its adjusted position.

3. An attachment for wood-carving machines, having its block-carrying bar hung on centers in its supports and provided with a series of plates, each having a pin or shank inserted in a socket on the bar, and a set-screw whereby when the plate is raised or lowered relatively to the bar it may be held firmly in its adjusted position.

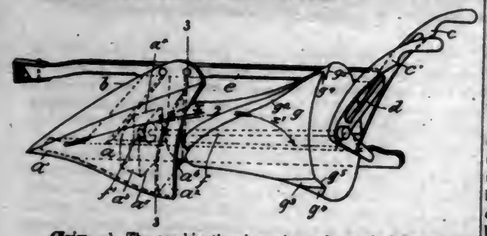
4. In combination, the supports S, bar A, pendent thereon, and plates 1, revolubly socketed in said bar and having automatic detents 5 and provision for receiving a center bit and adjusting-screws 9^x, all substantially as shown and described.

5. Attachments for use in carving-machines, consisting of a pair of bars, each having slots whereby they may be secured relatively to each other upon the bed or table of the machine, as desired, and having center bits, and means, substantially as shown and described, where-

by the pattern and the blocks held between the bits may be turned on their axes and secured in any such adjusted position, and one of these bars having revoluble toothed plates and spring-pawls, all substantially as set forth.

6. The combination, with slotted bar A, having a series of revoluble index-plates provided with spring-pawls, of slotted bar B and its worm-shaft and center bits, the combination being and operating substantially as set forth.

477,280. PLOW. NEWTON C. SAMPLE, Philadelphia, Pa. Filed Mar. 18, 1892. Serial No. 425,494. (No model.)

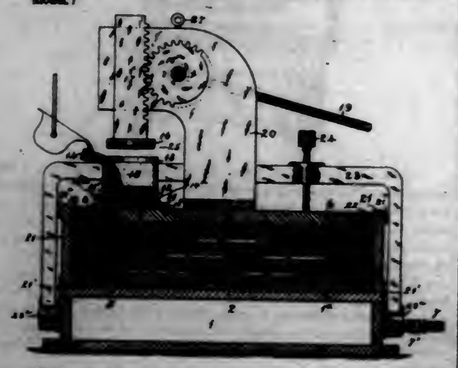


Claim.—1. The combination, in a plow, of a conical furrow-slice deliverer rotatably mounted upon a substantially horizontal axis and a fixed mold-board having its rear convex surface conforming to the curvature of the front end of the conical furrow-slice deliverer, whereby a continuous warped path having a movable section is afforded for the passage of the furrow-slice, substantially as and for the purposes set forth.

2. The combination, in a plow, of a rotatable furrow-slice deliverer provided at its front end with an annular recess and a convex mold-board carried by the landside of the plow and provided with a lip fitting said recess and conforming to the curvature of the surface of the front end of the furrow-slice deliverer, substantially as and for the purposes set forth.

3. The combination, in a plow, of a fixed mold-board provided with a convex rear surface and an internal chamber, a bracket connected with the landside, an axis mounted in said bracket and attached to said mold-board by a nut in said chamber, and a rotatable furrow-slice deliverer mounted on said axis and having its operative surface carved in conformity with the rear convex surface of the mold-board, substantially as and for the purposes set forth.

477,281. APPARATUS FOR CASTING METALS. JOHN J. C. SMITH and VICTOR R. SMITH, Passaic, N. J.; said John J. C. Smith assignor to said Victor R. Smith. Filed Apr. 28, 1891. Serial No. 390,729. (No model.)



Claim.—1. In a casting apparatus, the combination of a mold-casing, one or more molds therein, a charging or injecting hopper upon said casing, a means of applying pressure above the molten metal in said hopper, a passage through the hopper-floor into said casing, and an imperforate asbestus mat upon said floor, whose substance is such as to temporarily close said passage, but to become ruptured without entire detachment by the application of external pressure to the upper surface of the molten metal, substantially as set forth.

2. In a casting apparatus, the combination of a mold-casing, one or more molds therein, a charging or injecting cylinder above the same, a piston in said cylinder, means for depressing said piston, a passage from said cylinder to said casing, and an imperforate asbestus mat or diaphragm whose substance is such as to close said passage against the weight of the supernatent molten metal and to become ruptured without entire separation on the depression of the piston, in the manner and for the purposes set forth.

3. In a casting apparatus, the combination, with one or more molds, of a hermetical casing therefor, a vacuum-chamber, a passage from said casing to said chamber, a charging or injecting cylinder or hopper, a passage from said hopper into said casing, an imperforate asbestus diaphragm of sufficent substance to temporarily close said passage, and a forcing-piston whose depression ruptures said diaphragm and fills the molds, substantially as set forth.

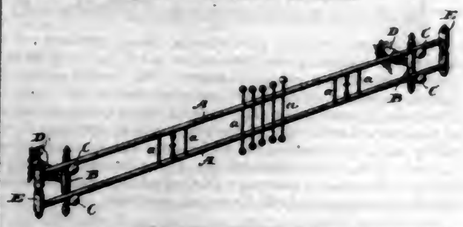
4. In an apparatus for producing delicate and sharp metallic castings, the combination of a hermetically-closed mold-casing, one or more pairs of molds therein, a forcing-piston, the asbestus facing thereof, a charging hopper which fits and receives said piston, a passage in the hopper-floor to said mold-casing, an asbestus lining to the hopper-walls, an imperforate asbestus mat that temporarily closes the said passage, and an asbestos bushing to said passage, substantially as set forth.

5. In an apparatus for producing sharp and delicate castings of metals, the described combination of one or more pairs of molds, a hermetically-sealed casing therefor, a charging-cylinder, an asbestus lining to said cylinder, a passage from said cylinder to the interior of said casing and molds, an imperforate asbestus diaphragm which temporarily closes said passage, a forcing-piston which fits said cylinder, and an asbestus facing to said piston, substantially as set forth.

6. In an apparatus for producing sharp and delicate castings in metal, the combination of the base or box 1, one or more superimposed pairs of molds 2, the hinged sides 21, the coping 6, the charging-cylinder 13, supported on said coping and having the screws 13ª and the rabbet 14ª, the disk 11 on the top of said coping, the gate or passage 11' therein, and the asbestus mat or diaphragm 12, whose shape and dimensions are such as to conform to said disk, to engage under said rabbet, and to support the uncompressed molten metal, said mat thus serving the several purposes of sealing the junction of the cylinder with the said coping, a non-conducting support and insulator for said molten metal, and a temporary obstruction between the cylinder and the mold-casing, substantially as set forth.

7. In an apparatus for producing delicate and sharp castings of refractory metals, the combination of supporting exhaust-box 1, having a gate or passage 11' in the mold-casing, one or more pairs of molds 2, perforated coping 6, vacuum-chamber 8, which communicates with said box by a pipe 7, having a stop-cock 7', steam-operated ejector 9, perforated disk 11, asbestus diaphragm 12, conformable to said disk and whose substance is such as to support and isolate the molten metal, charging-cylinder 13, having rabbet 14ª and fastening-screws 13ª, asbestus lining 15 of said cylinder, asbestus-faced forcing-piston 16, depressing mechanism 17 18 19, hinged casing sides 21, hinged yokes 23, and clamp-screws 24, the whole being arranged and adapted to operate as set forth.

477,282. CURTAIN-FIXTURE. CHARLES W. SMITH, Norwalk, Ohio. Filed Feb. 13, 1892. Serial No. 421,432. (No model.)

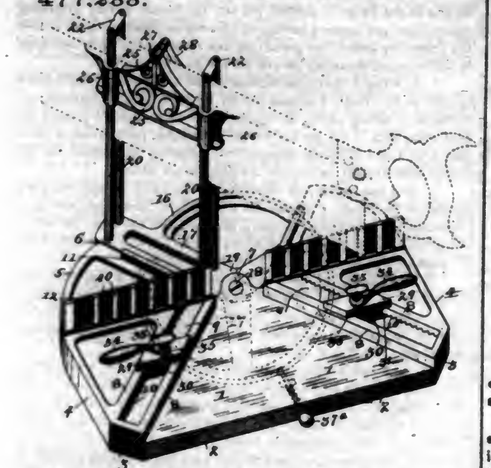


Claim.—A bracket for curtain-poles, consisting of a vertical member, a horizontal attaching member extending therefrom, and two separated pins projecting horizontally therefrom, having concaved sides and enlarged or flanged ends, combined with two parallel rods connected at their ends by removable vertical pieces E, substantially as described.

477,283. MITER-MACHINE. ALBERT H. SOUKUP, Kansas City, Mo. Filed Sept. 26, 1890. Serial No. 365,461. (No model.)

Claim.—1. An improved mitering-machine comprising a base or bed provided with two rearwardly-converging slots or openings having each a pair of marginal ribs serrated on their under sides and a pair of adjustable clamps composed each of a block working in the slot and having serrated flanges to engage the serrations of the ribs, a top plate, a bolt extending through said top plate, a set-nut screwed upon the upper end of the bolt, and a handle having a hub surrounding the upper part of the bolt to engage the upper side of the top plate, substantially as set forth.

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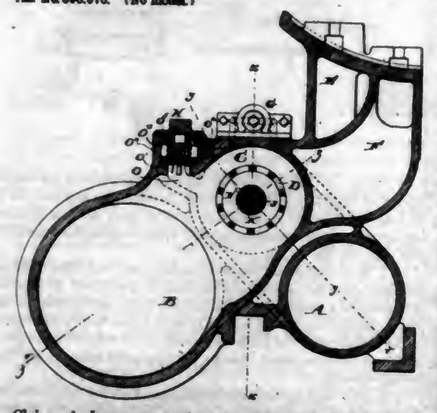
2. An improved mitering-machine comprising a bed or base having a pair of rearwardly-convergent slots, ribs located in pairs at the margins of said slots, adjusting-clamps working in said slots and upon said ribs, and a pair of rearwardly-divergent stop-ribs located upon the upper side of the base and extending from the inner ends of the guide-ribs, substantially as set forth.

3. An improved mitering-machine comprising a base or bed, an annular saw-guide carrier centered beneath said bed and having marginal sockets, and a spring-pressed pin extending through the front margin of the bed and engaging said sockets at its inner end, substantially as set forth.

4. An improved mitering-machine comprising a suitable base having a pair of rearwardly-convergent slots, marginal guide-ribs for said slots, adjusting-clamps working in said slots and upon said ribs, and a pair of auxiliary guards detachably connected to the upper side of the base and having vertical ribs, substantially as set forth.

5. An improved mitering-machine comprising a base or bed, an annular saw-guide carrier centrally pivoted beneath said bed and having spoke-like arms, a number of guide-standards projecting vertically from one of said arms and arranged in pairs, and a saw-guide composed of two parallel sections having sleeves surrounding and working vertically upon said standards, substantially as set forth.

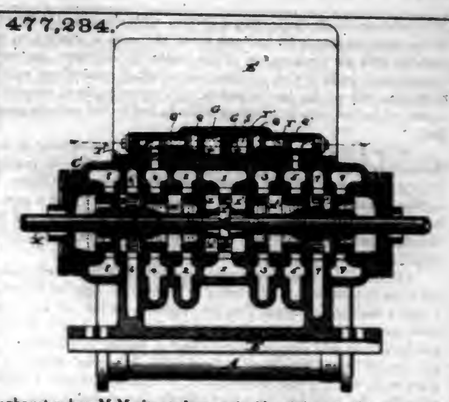
477,284. STEAM-ENGINE. GEORGE S. STRONG, New York, N. Y., assignor to James H. Gamble, Cincinnati, Ohio. Filed July 7, 1891. Serial No. 398,670. (No model.)



Claim.—1. In a steam-engine, the combination of an independent admission-valve L L' with exhaust piston-valves M M', situated on each side of the admission-valve and in the same valve-box, but movable independently of the admission-valve.

2. In a steam-engine, the combination of a piston-valve chamber, the concentric independently-movable valve-rods J and K, extending through the same, an admission-valve L L, secured to one rod, and

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exhaust-valves M M, situated on each side of the admission-valve, but secured to the other valve-spindle.

3. The combination of the independent admission-valves L L' with exhaust-valves M M', situated on each side of the admission-valve and in the same valve-box, and ports 2 4 and 3 5, leading into the valve-box, the pair 2 4 connecting with the passage 10, leading to one end of the cylinder, and the pair 3 5 with the passage 11, leading to the other end thereof, all substantially as and for the purpose specified.

4. In combination with the high and low pressure cylinders of a compound engine, the common valve-chamber C, having ports 1, 2, 3, 4, 5, 6, and 7, arranged as described, the ports 10 and 11, connecting ports 2 and 4 and 3 and 5, respectively, and leading to the opposite ends of the high-pressure cylinder, the ports 12 and 13, leading from ports 6 and 7, respectively, to the opposite ends of the low-pressure cylinder, and the piston-valves L L' M M' N N', working in said valve-chamber and over the ports.

5. In combination with the high and low pressure cylinders of a compound engine, the common valve-chamber C, having ports 1, 2, 3, 4, 5, 6, and 7, arranged as described, the ports 10 and 11, connecting ports 2 and 4 and 3 and 5, respectively, and leading to the opposite ends of the high-pressure cylinder, the ports 12 and 13, leading from ports 6 and 7, respectively, to the opposite ends of the low-pressure cylinder, the independent admission-valve L L', and the exhaust-valves M M' N N', situated in each side of the admission-valve.

6. In combination with the high and low pressure cylinders of a compound engine, the common valve-chamber C, having ports 1, 2, 3, 4, 5, 6, 7, 8, and 9, arranged as described, the ports 10 and 11, connecting ports 2 and 4 and 3 and 5, respectively, and leading to the opposite ends of the high-pressure cylinder, the ports 12 and 13, leading from ports 6 and 7, respectively, to the opposite ends of the low-pressure cylinder, and piston-valves L L' M M' N N', working in said valve-chamber and over the ports.

7. The combination of the independent admission-valve L L' with exhaust-valves M M', situated on each side of the admission-valve and in the same valve-box, but movable independently of the admission-valve, and ports 2 4 and 3 5, leading into the valve-box, the pair 2 4 connecting with the passage 10, leading to one end of the cylinder, and the pair 3 5 with the passage 11, leading to the other end thereof, all substantially as and for the purpose specified.

8. In combination with the high and low pressure cylinders of a compound engine, the common valve-chamber C, having ports 1, 2, 3, 4, 5, 6, and 7, arranged as described, the ports 10 and 11, connecting ports 2 and 4 and 3 and 5, respectively, and leading to the opposite ends of the high-pressure cylinder, the ports 12 and 13, leading from ports 6 and 7, respectively, to the opposite ends of the low-pressure cylinder, and the piston-valves L L' M M' N N', working in said valve-chamber and over the ports, the valve L L' being movable independently of the valves M M' and N N'.

9. In combination with the high and low pressure cylinders of a compound engine, the common valve-chamber C, having ports 1, 2, 3, 4, 5, 6, 7, 8, and 9, arranged as described, the ports 10 and 11, connecting ports 2 and 4 and 3 and 5, respectively, and leading to the opposite ends of the high-pressure cylinder, the ports 12 and 13, leading from ports 6 and 7, respectively, to the opposite ends of the low-pressure cylinder, and piston-valves L L' M M' N N', working in said valve-chamber and over the ports, the valve L L' being movable independently of the valves M M' and N N'.

10. In combination with a steam-engine, a valve-chamber O^2, a port O^3, leading to said chamber from the steam-supply, a port O', leading to said chamber from one end of the engine-cylinder, and a valve O^4, seated on port O' and situated below port O^3.

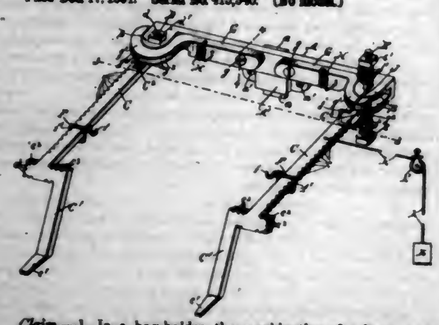
11. In combination with a valve-box C of a compound engine con-

structed substantially as specified, a series of valve chambers O^3, formed in the same casting with the valve-box and each connected, as by port O^3, with the steam-supply of the respective cylinders, and each connected by ports O with the valve-ports leading, respectively, to the respective ends of the two cylinders, and normally-closed valves O^4, seated on each of ports O, all substantially as and for the purpose specified.

12. In a compound engine, a starting-valve G, consisting of differential cylinders P P', cylinder P having a port S leading by passage T to the admission-port of the low-pressure engine, and cylinder P' having a port T near its inner end leading to passage T and a port R leading to the steam-supply port of the high-pressure cylinder, and differential pistons Q Q', connected together and operating in the cylinders P P', substantially as and for the purpose specified.

13. In a Cross compound engine, substantially as described, a starting-valve G, consisting of differential cylinders P P', cylinder P having a port S leading by passage T to the admission-port at one end of the low-pressure cylinder, and cylinder P' having a port T near its inner end leading to said passage T and a port R leading to the steam-supply port of the high-pressure cylinder, and differential pistons Q Q', working in the cylinders, as described, in combination with a similar valve G^x, the passage T of which leads to the admission-port at the opposite end of the low-pressure cylinder.

477,235. BAG-HOLDER. JASON D. TIMMERMAN, Spring Lake, N. Y. Filed Dec. 17, 1891. Serial No. 415,340. (No model.)



Claim.—1. In a bag-holder, the combination of a frame, a supporting-arm having its inner extremity hinged to the frame, and a catch-lever G, having one extremity movably mounted on the frame and the other provided with an engaging face adapted to removably engage the inner extremity of the supporting-arm, substantially as and for the purpose set forth.

2. In a bag-holder, the combination of a frame, a supporting-arm C, having its inner extremity hinged to the frame and its outer extremity formed with a downwardly-projecting end C', having a laterally-extending shoulder for engaging the front of the bag-top, and a shoulder provided on the inner end of said arm above the downwardly-projecting end for engaging the rear portion of the bag-top, substantially as and for the purpose specified.

3. In a bag-holder, the combination of a frame having an upright bearing, a pivot journaled in said bearing, a supporting-arm C, having its inner extremity mounted on said pivot, whereby the supporting-arm is hinged to the frame and is held from vertical movement, and having its outer extremity formed with a downwardly-deflected end C', provided with a laterally-extending shoulder for engaging the front of the bag-top, a shoulder provided on the inner end of said arm for engaging the rear portion of the bag-top, above the downwardly-projecting end, and a catch-lever G, having one extremity pivoted to said frame and the other provided with an engaging face adapted to removably engage the inner extremity of the supporting-arm, substantially as and for the purpose set forth.

4. In a bag-holder, the combination of a frame, a supporting-arm hinged to the frame and formed with engaging shoulders along its edge, a catch-lever G, having one extremity movably mounted on the frame and the other provided with an engaging face for removably engaging the supporting-arm and holding said arm in its adjusted position, and a loop movable on the arm and adapted to engage the shoulders thereon and formed with a projecting engaging shoulder adapted to engage the bag, substantially as specified.

5. In a bag-holder, the combination of a frame, a supporting-arm having its inner extremity hinged to the frame and its outer extremity provided with a downwardly-deflected end C', offset inwardly from the remainder of said arm and adapted to engage the bag, and a shoulder on said arm above the deflected end, adapted, also, to engage the bag, substantially as and for the purpose set forth.

6. In a bag-holder, the combination of a frame, a supporting-arm hinged to the frame, a pivotal pin for the frame, having projecting extremities, and a spring having its opposite extremities coiled around the projecting ends of the pivotal pin and its central portion connected to said arm, substantially as and for the purpose specified.

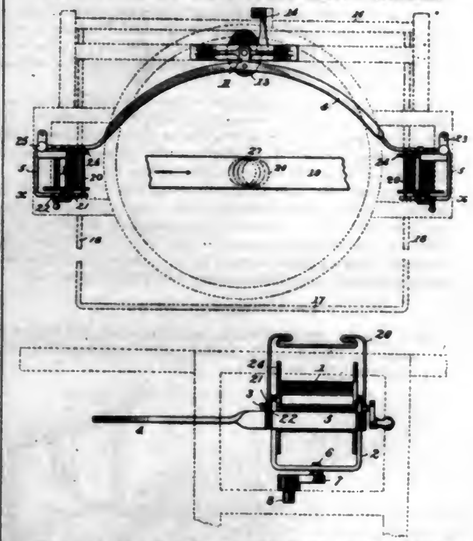
7. In a bag-holder, the combination of a frame, a supporting-arm hinged to the frame, a pivotal pin for the arm, having projecting extremities, a spring having its opposite extremities coiled around the projecting ends of the pivotal pin and its central portion connected to said arm, and a movable shoulder for adjusting the tension of said spring, substantially as and for the purpose set forth.

8. In a bag-holder, the combination of a frame, a supporting-arm hinged to the frame, a pivotal pin for the arm, having projecting extremities, a spring having a loop j, engaged with the arm, the coils j^2, mounted on the projecting ends of the pivotal pin, and interlocked ends j^3, substantially as and for the purpose specified.

9. In a bag-holder, the combination of a frame, a supporting-arm hinged to the arm and provided with an engaging shoulder, and a lever pivoted to the frame and formed at one extremity with a curved rack for engaging the shoulder of the supporting-arm, substantially as and for the purpose set forth.

10. In a bag-holder, the combination of a frame, a supporting-arm hinged to the frame and formed with engaging shoulders, a catch for holding said arm in its adjusted position, a loop movable on the arm and adapted to engage the shoulders thereon and formed with an engaging shoulder adapted to engage the bag, and a downwardly-deflected end on the supporting-arm, having a bag-engaging shoulder beneath the plane of the corresponding shoulder on the loop, substantially as and for the purpose specified.

477,236. TYPE-WRITING MACHINE. JAMES A. WATSON, Washington, D. C. Filed Apr. 8, 1892. Serial No. 428,394. (No model.)



Claim.—1. In a type-writer, the combination, with the ribbon and spools, of spool-supports, connections between said supports for maintaining the spools in a constant relation to each other, and means for imparting rotation to said supports in a plane substantially parallel with the plane of the ribbon.

2. In a type-writer, the combination, with the ribbon and spools, of spool-supports, connections between said supports for maintaining the spools in a constant relation to each other, and means for imparting a variable rotary movement to said supports in a plane substantially parallel with the plane of the ribbon, whereby the margin of the ribbon is made to travel over the printing-point more rapidly than the middle portion.

3. In a type-writer, the combination, with the ribbon and spools, of spool-supports, connections between said supports for maintaining the spools in a constant relation to each other, means for rotating said supports, and elliptical gearing, substantially as described, for varying the speed of the supports during each rotation.

4. In a type-writer, the combination, with the ribbon and ribbon-spools, of spool-supports, connections between said supports for maintaining the spools in a constant relation to each other, cranks upon which said supports are carried, and means for rotating the cranks simultaneously, substantially as described.

5. In a type-writer, the combination of the spool-supports, the curved frame connecting the supports, and the rotatable cranks for carrying said frame and supports, substantially as described.

6. In a type-writer, the combination, with the ribbon and spools, of spool-supports, connections between said spool supports for maintaining the spools in a constant relation to each other, means for imparting rotation to said supports in a plane substantially parallel with the plane of the ribbon, and means for turning the ribbon-spools to feed the ribbon lengthwise, substantially as described.

7. In a type-writer, the combination, with the ribbon and spools, of spool-supports, connections between said supports for maintaining the spools in a constant relation, means for imparting rotation to said supports in a plane substantially parallel with the plane of the ribbon, ratchet-wheels connected with the spools, and detents attached to fixed supports and movable into and out of engagement with the ratchet-wheels, substantially as described.

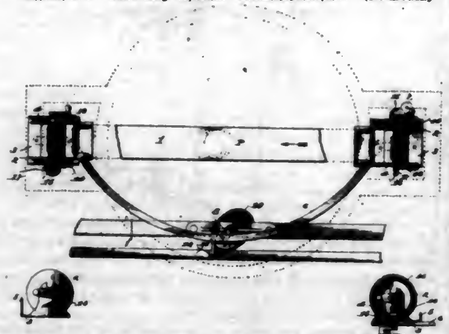
8. In a type-writer, the combination, with the ribbon and ribbon-spools, and ratchet-wheels connected with the spools, of a curved frame connecting the spool-supports, three cranks arranged to carry said frame and supports, means for rotating the cranks, and detents connected to the frame of the type-writer and movable into and out of engagement with the ratchet-wheels, substantially as described.

9. In a type-writer, the combination, with the ribbon and spools, of spool-supports, a curved frame connecting said supports, three cranks mounted in the main frame and arranged to carry said curved frame and supports, and elliptical gearing for imparting variable rotary movement to the cranks, substantially as described.

10. In a type-writer ribbon-feeding mechanism, the combination, with a rock-shaft and an arm and pawl carried thereby, of elliptical gearing operated by the pawl for imparting a suitable movement to the ribbon, substantially as described.

11. In a type-writer ribbon-feeding mechanism, the combination, with a rock-shaft and a broad pawl carried thereby, of a revoluble shaft and an elliptical ratchet-wheel fixed upon the shaft, said pawl being arranged to engage the teeth of the ratchet-wheel, whereby a variable movement is given to the shaft, substantially as described.

477,237. TYPE-WRITING MACHINE. JAMES A. WATSON, Washington, D. C. Filed May 19, 1892. Serial No. 433,554. (No model.)



Claim.—1. In a type-writer, the combination, with the ribbon and spools, of spool-supports, connections between said supports for maintaining the spools in a constant relation to each other, cranks for imparting a rotary movement to the spool-supports, and connections between the cranks and the spools for rotating the latter as the cranks revolve, substantially as described.

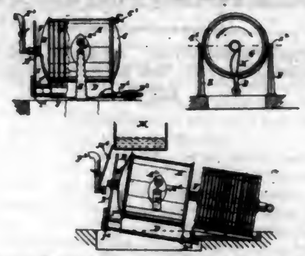
2. In a type-writer, the combination, with the ribbon and spools, of spool-supports, connections between said supports for maintaining the spools in a constant relation to each other, cranks for imparting a rotary movement to the spool-supports, and gears upon the crank-pins and spool-shafts for rotating the spools when the cranks are rotated, thereby imparting a spiral movement to the ribbon, substantially as described.

3. In a type-writer, the combination, with the ribbon and ribbon-spools, of spool-supports, spool-shafts mounted in said supports, cranks for imparting rotary movement to said supports, gears mounted upon the crank-pins, and gears mounted upon the spool-shafts, said shafts having a longitudinal movement in their bearings to permit the gears to be engaged and disengaged, substantially as described.

4. In a type-writer, the combination, with the ribbon and ribbon-spools, of the spool-supports, each consisting of a base 3, side bearings 4, and ribbon-guide 5, the frame 6, connecting the spool-supports, and the supporting-cranks 7 and 8, substantially as described.

5. The combination, with the ribbon and ribbon-spools and the spool-shafts having grooves 17 at each end, of the spool-supports having bearings 4, springs 18, attached to the bearings, the cranks for imparting a rotary movement to the spool-supports, and the gears mounted, respectively, upon the spool-shafts and the crank-pins, substantially as described.

477,238. FILTER. CLARK E. WHITTEMORE, Brooklyn, N. Y. Filed May 6, 1891. Serial No. 391,617. (No model.)



Claim.—1. The combination, in a horizontal filter, of a loosely-trunnioned cylindrical main chamber and an auxiliary refuse-chamber, the main chamber having an opening in one end adapted to admit the passage of an axial tube and the auxiliary chamber having an opening on one end adapted to be used as a bearing for a carry-screw and on the other end a valve-chamber with an opening for the discharge of refuse, as herein described and set forth.

2. The combination, in a horizontal filter having a trunnioned main chamber and an under refuse-chamber terminating in a valve-chamber with an opening for the discharge of refuse regulated by a valve, of a central perforated axial tube passing through the main chamber and through a stuffing-box located on the end of the chamber, the said central tube having horizontal ribs, upon which is keyed a series of grooved rings with radial arms, as herein described and set forth.

3. In a horizontal filter, the combination of a main chamber with an auxiliary chamber, the auxiliary chamber having an opening on one end adapted to be a bearing for a refuse carry-screw and on the other end a valve-chamber with an opening controlled by a valve for the discharge of the refuse, the main chamber having a ribbed and perforated central tube with a series of grooved annular rings keyed upon it, the rings having radial arms, and a series of concentric rings located between said arms, as herein described and set forth.

4. In a horizontal filter, the combination, with the central tube, of foraminated disks thereon, each having a central opening for the tube and grooves upon the surface, with filter-cloth upon said disks, having folded seams lying in said grooves, and the supporting-frame placed between each pair of said disks, substantially as described.

5. In a horizontal filter, the combination of the central tube having a series of metallic grooved and foraminated disks thereon, with supporting-frames between each pair of said disks, upon which are placed in segments or entire circles filter-cloth the perimeter of which extends beyond and is adapted to fold over the perimeter of the metal disks, and a binding-ring adapted to pass over the folded or extended cloth edge and firmly bind the same to the perimeter of the metal disks, as herein described and set forth.

6. In a horizontal filter, in combination with a main chamber and an auxiliary refuse-chamber, the main chamber having a central tube adapted to revolve, upon which is fixed a series of foraminated metal and cloth-covered disks, with a supporting-frame between each pair of said disks and an annular ring separating each pair of said disks, and a cleaning-fork H, loosely fixed upon it, the end of the fork H extending into the refuse-chamber in which it is engaged and prevented from revolving with the central tube, as herein described and set forth.

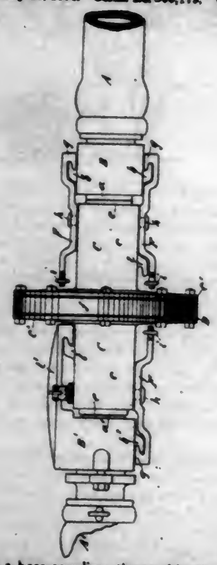
7. In a horizontal filter having a main chamber with a central perforated tube, upon which is placed a series of foraminated and cloth-covered metal disks, with an annular ring separating each pair, upon which is loosely hung a cleaning-fork, the combination of a lower or refuse chamber and a carry-screw operating in said chamber, the discharge end of the screw entering into a valve-case containing a valve, the operation of which is controlled by a spring, as herein described and set forth.

8. The combination, in a filter consisting of a main chamber and a refuse-chamber, the main chamber having a central perforated tube, upon which is placed a series of foraminated metal and cloth-covered disks, the refuse-chamber containing a carry-screw, the end of which enters into a valve-case containing a valve, the opening of which is controlled by a spring, and a supply-tank the inlet-valve of which is regulated by a float, and the outlet-pipe, controlled by a cock, in connected with the central tube of the main chamber and thence with the

pass through the perforations in the central tube, and grooves in the center rings of the pans, as and for the purpose herein shown and described.

9. A horizontal rotating filter consisting of a transioned cylindrical chamber with inlet and outlet parts, having a central perforated tube, upon which is strung a series of foraminated metal and cloth-covered filter-pans which rotate with the central tube, and an auxiliary refuse-chamber, in which is located a carry-screw, which also rotates and enters into and discharges in a valve-case containing a valve regulated in its operations by a spring, as herein shown and described.

477,239. HOSE-COUPLING. FREDERIC W. WRIGHT, Great Neck, N. Y. Filed July 11, 1891. Serial No. 399,179. (No model.)



Claim.—1. In a hose-coupling, the combination of two coupling heads or sections having abutting seats, with a locking projection on one of them having its locking-face inclined to tighten by a downward movement and a two-armed locking-lever pivoted to the other, with one of its arms adapted to engage said projection, and a suspending device from which the opposite arm of said lever is hung, whereby the weight of the coupling, acting through the lever and suspending device, serves to thrust downward the engaging arm of the locking-lever, and thereby hold it in engagement with the projection.

2. In a hose-coupling, the combination of two coupling heads or sections having abutting seats, opposite locking projections formed on one of them, opposite locking-levers pivoted to the other of them, having each a locking-arm on one side of its fulcrum and a suspending arm or tail on the opposite side thereof, and chains connected to the tails of said levers, from which the coupling is suspended.

3. In a coupling, an intermediate coupling-section C, having locking-levers F F pivoted to its opposite sides and a locking projection *l* on one side, whereby it is adapted for engagement either with a coupling-head B, having opposite locking projections *b b*, or by turning one of the levers out of the way with a Sewall coupling B', substantially as specified.

4. In a hose-coupling, a coupling head or section C, formed with a diaphragm-chamber *d*, a diaphragm D therein, and a tube E, connected therewith and formed with the terminal seat *e* of the coupling at its end and with locking provisions for coupling it to an adjoining coupling-head.

5. In a hose-coupling, an intermediate coupling-section C, formed with a casing *c* and a diaphragm-chamber *d*, two diaphragms D D at opposite sides of said chamber, so that steam may enter between them, and tubes E E, attached to said diaphragms, extending through the shell *c* to the opposite ends thereof, and formed with seats *e e*.

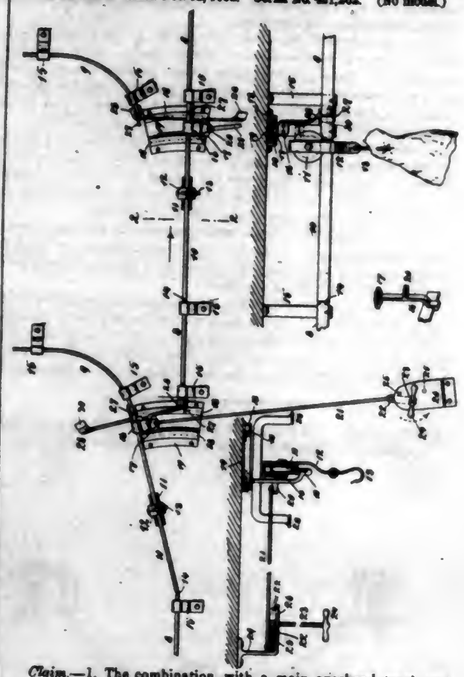
6. In a hose-coupling, a coupling head or section formed with a drainage-opening for draining off water of condensation, a trap-valve for closing said opening, and a diaphragm exposed to the steam-pressure within the head and connected to and operating said valve, whereby when the steam-pressure is turned on the deflection of said diaphragm closes to the valve and when the steam is turned off the retraction of the diaphragm opens the valve.

7. In a hose-coupling, an intermediate coupling head or section C, formed with a diaphragm-chamber *d*, having a drainage-opening *m*, a diaphragm in said chamber, and a valve G, adapted to close said opening and connected to and moved by said diaphragm.

8. In a hose-coupling, an intermediate coupling-section C, having opening *m*, a valve G for closing said opening, its stem *n*, toggle-links *p p*, and diaphragms D D, connected to said links, whereby the movements of said diaphragms are transmitted to the valve to open or close it.

9. In a hose-coupling, an intermediate coupling-section C, having seats at its opposite ends, locking-levers F F, pivoted to it at opposite sides and ends, suspending-chains *i i*, support H, and intervening chain *k*, substantially as specified.

477,240. SWITCH FOR OVERHEAD TRACKS. JOHN H. AERENS and HUBERT OSTENDORF, Cincinnati, Ohio, assignors to C. Schmidt & Co., same place. Filed Feb. 12, 1892. Serial No. 421,262. (No model.)



Claim.—1. The combination, with a main overhead track and branch track, of a switch-track pivoted to the main track and provided with yoke-shaped guards or stops extending from each side, whereby when the switch-track is in connection with either the main or branch track a roller or trolley is prevented from running off the open track, all as substantially shown and described.

2. The combination, with a main overhead track and branch track, of a switch-track pivoted to the main track and provided with yoke-shaped guards or stops extending from each side to prevent any of the rollers or trolleys from running off of the open track-section and hooks 30, secured to the under side of said stops and capable of binding against the track for the purpose of increasing the resistance of the stops, all as substantially shown and described.

477,241. RIVET-SETTING TOOL. WILLIAM C. BRAY, Newton Centre, and EDWARD A. HEMENWAY, Boston, Mass., assignors to the Tubular Rivet Company, New Haven, Conn. Filed Oct. 3, 1890. Serial No. 367,379. (No model.)

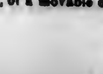


Claim.—1. In a rivet-setting machine, the combination of a clinching anvil or die, a reciprocating plunger and a setting-tool carried thereby, a nose-piece in the form of a sleeve having a bore of varying diameter mounted loosely on and movable endwise of said plunger and provided with the slot *d'*, a pin set in said plunger and projecting into said slot, the collar D, mounted loosely upon said plunger above said nose-piece, two springs secured to and pendent from said collar and having portions of their lower ends turned inward beneath the lower end of said nose-piece, a spring interposed between said collar and the nose-piece, and means having provision for withdrawing the inwardly-projecting portions of said spring from beneath the nose to permit the rivet to be driven independently of any action of the rivet-head thereon.

2. In a rivet-setting machine, the combination of a clinching anvil or die, a reciprocating plunger and a setting-tool carried thereby, a tubular nose-piece surrounding the lower end of said plunger and tool and movably connected to said plunger by a pin and slot, as set forth, a collar loosely mounted on said plunger above said nose, a spring interposed between said collar and nose, two spring-arms secured to and depending from said collar, and provided at their lower ends with inwardly-projecting portions, each having formed in its center a notch to fit the shank of the rivet and having its corner on each side of said notch rounded or beveled, as set forth, and means having provision for withdrawing said inward projections of said springs from beneath the nose-piece independently of any action of the rivet thereon, substantially as described.

3. The combination of the anvil *b*, the plunger B, provided with the inverted frusto-conical surface *c*, the nose-piece C, provided with the slot *d'*, the collar D, the springs E E, provided with the slots *e'*, and the inwardly-turned portions *e'*, the push-pins *i i*, the stop-pin *d*, the spring *f*, and the frame A, all constructed, arranged, and adapted to operate substantially as described.

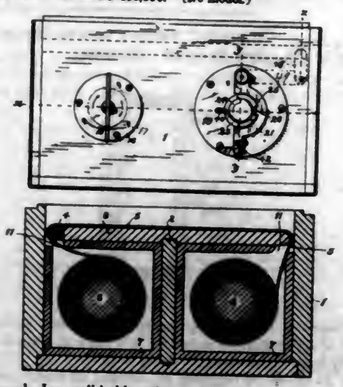
477,242. LACING-HOOK. WILLIAM C. BRAY, Newton Centre, Mass. Filed May 5, 1892. Serial No. 431,897. (No model.)



Claim.—1. A lacing-hook having an inner head or flange to bear upon the material, suitable means for securing said hook to the material, a cord-receiving neck arranged eccentric to said inner head, and an outer head composed of a perforated metal disk, and a cap of pyroxyline or other colorable material adapted to be molded to the desired shape while in a plastic state and then become hard and tough, and a flanged metal shank for securing said cap to said perforated disk, the flanged end of which metal shank is embedded in and surrounded by said molded material and the opposite end of which is clinched upon the inner surface of said perforated head.

2. A lacing-hook having an inner head or flange to bear upon the material in which it is to be set, suitable means for securing said hook to the material, a cord-receiving neck arranged eccentric to said inner head, and an outer head composed of a perforated metal disk integral with said neck and inner head and provided with an annular rabbet in its inner face, and a finishing-cap of pyroxyline or other colorable material capable of being molded to the desired shape while in a plastic state and then become hard and tough, and a flanged metal shank for securing said cap to said perforated disk, the flanged end of which metal shank is embedded in and surrounded by said molded material and the opposite end of which is clinched into said annular rabbet, as set forth.

477,243. PHOTOGRAPHIC-ROLL HOLDER. FRANK A. BROWNELL, Rochester, N. Y., assignor to the Eastman Company, same place. Filed Dec. 28, 1891. Serial No. 416,336. (No model.)



Claim.—1. In a roll-holder, the combination, with the rotatable arbor movable with the film, of a movable detent engaging the arbor for arresting it, the retaining-dog for automatically engaging the detent and holding it out of engagement when released, and connections between the arbor and dog for disengaging the latter by the movement of the former, substantially as described.

2. In a roll-holder, the combination, with the rotatable arbor movable with the film, having the notched collar, of the locking-detent engaging said notch, the retaining-dog for automatically engaging the detent and holding it out of engagement when released from the notch, and the movable projection for actuating the dog and releasing the detent, substantially as described.

3. In a roll-holder, the combination, with the rotatable arbor movable with the film, having the notched collar, of the locking-detent engaging said notch, the retaining-dog for automatically engaging the detent and holding it out of engagement when released from the notch, and connections between the arbor and dog for releasing the latter and permitting the detent to engage the collar after the notch has moved away from the detent, substantially as described.

4. In a roll-holder, the combination, with the rotatable arbor movable with the film, having the notched collar, of the locking-detent, the counter-disk, the pawl engaging it connected to the detent, the retaining-dog for automatically engaging the detent and holding it out of engagement when released from the notch, and the movable projection operating the dog and releasing the detent, substantially as described.

5. In a roll-holder, the combination, with the arbor movable with the film, having the projection for engaging a spool and the notched collar, of the locking-detent engaging the notch, the retaining-dog automatically engaging the detent and holding it out of engagement when released from the notch, and the projection on the arbor releasing the dog and permitting the detent to engage the collar after the notch has moved away from the detent, substantially as described.

6. In a roll-holder, the combination, with the arbor movable with the film, the notched collar thereon, and the detent having the projection engaging the notch, of the spring for operating it and the film-marker connected to and operated by the movement of the detent, substantially as described.

7. In a roll-holder embodying a film-support, the combination, with the arbor movable with the film, of the detent engaging the same, the spring operating the detent, the pivoted film-marker on the film-support, the arm connected to the detent, and the link connecting said arm with the film-marker, substantially as described.

8. In a roll-holder, the combination, with the arbor movable with the film and the detent engaging the same, of the counter-disk having the teeth, the pawl on the detent engaging the counter, and the spring engaging the heel of the pawl and holding its end in engagement with the counter and operating in a direction to cause the engagement of the detent with the arbor, substantially as described.

9. The combination, with the arbor having the notch, the detent, and the spring for operating it, of the retaining-dog and its spring and the dog-releasing projection on the arbor, substantially as described.

10. The combination, with the arbor having the notch, the detent, and the spring for operating it, of the retaining-dog, the projection on the arbor for releasing it, the counter-disk on the arbor, and the pawl on the detent for actuating said disk, substantially as described.

11. The combination, with the arbor having the notch, the detent, the spring 28, and the pawl 41, of the retaining-dog, the releasing projection on the arbor, the spring 34, the lug 30, and the counter-disk, substantially as described.

12. The combination, with the casing, of the plate secured thereto, having the aperture 40, the arbor, the counter-disk on the arbor, the detent pivoted on the plate, having the operating-handle and engaging the arbor to arrest it, the pawl on the detent, the film-marker in the casing, and connections between the detent and film-marker, substantially as described.

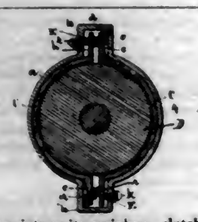
13. In a film-holder, the combination, with the open-ended casing having the stationary film-support secured therein and the open-ended slots at the ends thereof for the passage of film, said support removed from the back or bottom, leaving a space behind it, of the end piece for the casing secured removably in position, whereby removable film rolls or boxes may be inserted endwise in the casing, with the film extending over the film-support, substantially as described.

14. In a film-holder, the combination, with the casing having the vertical partition and the stationary film-support secured thereto, forming two open-ended compartments, open-ended slots being left at the ends of the support, of the removable slotted boxes containing film adapted to be inserted endwise in the casing, with the film extending over the support and the end piece of the casing secured removably in position, substantially as described.

477,244. FRICTION-CLUTCH. EARL E. CLARK, Canton, Ohio. Filed Oct. 6, 1891. Serial No. 407,794. (No model.)

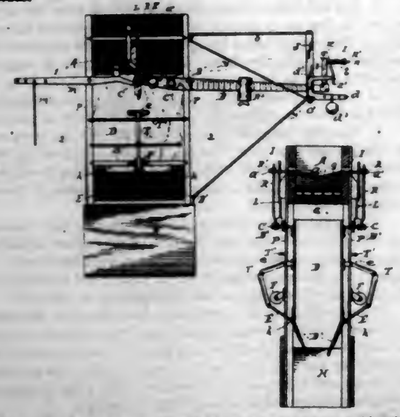
Claim.—The combination, in a friction-clutch, of the hub B, having an overhung annular flange provided with hollow lugs projecting there-

477,244.



from at diametrical points on its periphery, clutch-operating levers F, fulcrumed in said hollow lugs and provided with fulcrum ends *d*, bevsled on one face, semicircular shoes C, having at one of their ends the plain lugs *h* and at the other ends the operating-lugs *e*, provided with one outer beveled face each, the interposed springs E between the plain faces of the lugs *h* and *e*, and the set-screw *k* for regulating the bite or grip of the shoes C upon the hub, substantially as specified.

477,245. GRAIN-METER. McCLELLAN COWAN and JAMES G. RAGAN, Wichita, Kans. Filed May 15, 1891. Serial No. 392,559. (No model.)



Claim.—1. In the herein-described grain-meter, the combination, with the frame, of the pivotally-supported weigh-beam, the weighing-receptacle suspended from said weigh-beam, the spring-latch fixed to the outer end of the weigh-beam, the weight-lever and latch-arm thereof pivotally attached adjacent said spring-latch, and the lever and weigh-beam weights, substantially as and for the purpose set forth.

2. In the herein-described grain-meter, the combination, with the frame, of the hopper fixed in the upper part of said frame and provided with downwardly-opening doors having side extending arms, the weighing-receptacle likewise provided with downwardly-opening doors having side extending arms, the forked weigh-beam for pivotally supporting said receptacle, the toggles for connecting said receptacle-door arms with fixed studs or eyes of the receptacle, the stationary wheels for actuating said toggles and arms, the rods for connecting the arms of the hopper-doors with the receptacle, and the gravity-latches for retaining said arms, substantially as and for the purpose set forth.

3. In the herein-described grain-meter, the combination, with the vertically-movable weighing-receptacle, of the downwardly-opening doors hinged thereto and provided with actuating-arms extending therefrom, the toggles arranged connecting said arms with the receptacle sides, and the stationary wheels arranged to be engaged by said toggles and arms to open and close the said doors when the receptacle lowers and rises, substantially as set forth.

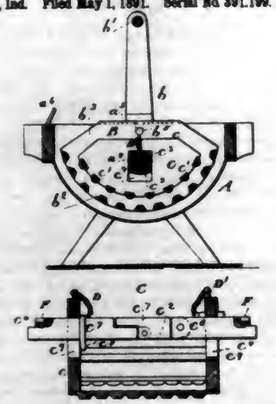
4. In the meter described, the combination, with the receptacle D, of the doors D', hinged thereto and provided with side arms extending therefrom, the toggles T, arranged connecting said arms with the receptacle sides, the stationary wheels adapted to operate said arms and toggles by engagement therewith during the movement of the receptacle for operating said receptacle-doors, and the cross-rods T', arranged to be engaged by said toggles to insure positiveness in straightening said toggles to hold said doors locked, substantially as described and set forth.

5. In the herein-described grain-meter, the combination, with the weigh-beam, of the spring-latch attached to the end thereof, the shouldered weight-lever fulcrumed at one side of said beam and provided with the extending latch-arm in the path of said spring-latch and adapted to be engaged by said latch when the weigh-beam is moved up or down, and the lever and weigh-beam weights, wherein said latch mechanism and weight-lever assist in holding down the weigh-beam and release it when the receptacle of the meter has become charged with a proper measure of grain, substantially as and for the purpose specified.

6. A grain-weighing machine consisting of the combination, with a frame, of a grain-receiving hopper having downwardly-opening doors in its bottom portion actuated by means of extending arms, a grain-weighing receptacle having side extending arms and suspended from the forked end of a pivoted weigh beam below said hopper and also provided with downwardly-opening doors in its bottom actuated by means of extending arms, a pair of toggles arranged connecting said arms with the receptacle, a pair of stationary wheels adapted to be engaged by said toggles and arms to open and close said receptacle-doors, a pair of rods arranged connecting the receptacle with the arms of the hopper-doors for operating said doors, a pair of gravity-latches arranged to hold said doors closed during the time grain is being discharged from the receptacle and releasing said doors to permit them to open thereafter, the weight-latch provided with the spring-latch at its free end, the supplemental weight-lever having a latch-arm adapted to be engaged by said spring-latch to assist in retaining the weigh-beam, and the compound weights, substantially as and for the purpose set forth.

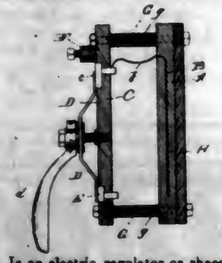
7. In the herein-described grain-meter, the combination, with the weigh-beam, of the spring-latch attached to the end portion thereof, the supplemental shouldered weight-lever fulcrumed adjacent said latch and provided with a horizontally-exending latch-arm arranged in the path of said latch, and the supplemental adjustable weight of said lever, substantially as and for the purpose set forth.

477,246. WASHING-MACHINE. BENJAMIN F. CRIBBERRY, Boyleston, Ind. Filed May 1, 1891. Serial No. 391,199. (No model.)



Claim.—In a two-rubber washing-machine, the upper one provided with a shaft consisting of the piece c^6, the flat bar c^8, strap c^9, and toggle c^7, the ends of shaft having holes or bearings adapted to fit over studs c^4 c^4 on the inside of tub, as and for the purpose set forth.

477,247. RHEOSTAT. GEORGE K. CUMMINGS, Chicago, Ill. Filed Dec. 11, 1891. Serial No. 414,663. (No model.)



Claim.—1. In an electric regulator or rheostat, an electric conductor of high resistance embedded in a block or plate of molded insulating material, substantially as set forth.

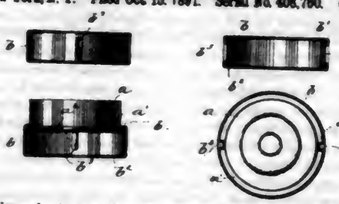
2. In an electric regulator or rheostat, an electric conductor of high resistance embedded in a block or plate of molded insulating and heat-resisting material, substantially as set forth.

3. In an electric regulator or rheostat, an electric conductor of high resistance embedded in a block or plate of molded insulating material, in combination with a metallic shell or cover, substantially as set forth.

4. The electric regulator or rheostat having a face-plate C, carrying the contact-points, binding-posts, &c., and formed of insulating material molded around the points, posts, &c., substantially as set forth.

5. In an electric regulator or rheostat, a face-plate formed of molded insulating material and carrying the contact-points, binding-posts, &c., and an electric conductor of high resistance embedded in a block or plate of similar material, substantially as specified.

477,248. CONSTRUCTION OF CHECKERS. HARRY DAVIDSON, New York, N. Y. Filed Oct. 15, 1891. Serial No. 408,790. (No model.)



Claim.—1. A man for the game of checkers, consisting of the combination of a body and a shell or frame surrounding the same, there being a telescoping connection between them, substantially as and for the purpose described.

2. A man for the game of checkers, consisting of the combination of a body and a shell or frame surrounding the same, there being a telescoping connection between them, and devices for locking the two parts in their extended or closed positions.

3. The combination, with a shell *b*, provided with two flanges b' b^2 and with the projections b^3, of the body *a*, provided with the flange a', having notches a^2, adapted to register with the said projections b^3, for the purpose set forth.

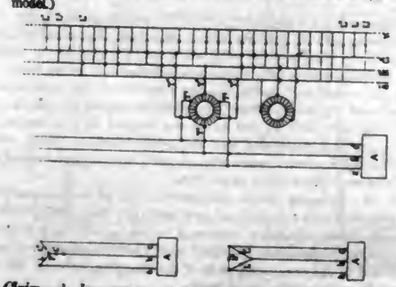
477,249. CIGAR-CUTTER. MAYNARD L. DIXON, New York, N. Y., assignor to F. H. La Pierre, same place. Filed Mar. 15, 1892. Serial No. 424,979. (No model.)



Claim.—1. A cigar-cutter consisting of a case provided with an opening *c*, a slide having a cutting-blade arranged to move at a right angle to the axis of said opening, with a lever L, provided with a cam or projection *a*, and a spring *f*, provided with a corresponding projection *b*, the said parts being arranged to operate substantially as shown and described.

2. The combination, in a cigar-cutter, of a slide B, having a cutting-blade secured thereto, and a spring located within said slide, a pivoted lever L, provided with a cam or projection *a*, and a spring *f*, provided with a corresponding projection *b*, the said parts being arranged to operate substantially as described, whereby by a single movement of the operating-lever a sudden movement is imparted to the cutting-blade, the ejector-spring is compressed, and the severed fragment ejected, as set forth.

477,250. DISTRIBUTION OF ROTARY ELECTRIC CURRENTS. ALARD E. DU BOIS-REYMOND, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Apr. 30, 1891. Serial No. 391,157. (No model.)



Claim.—1. In a system of distribution of multiphase electric currents, the combination, with a generator of multiphase currents, of main-line conductors leading therefrom, a multiphase transformer having its primary in circuit with said main-line conductors, distributing-conductors connected to the secondary of said transformer, an independent equalizing-conductor, and lamps or other translating devices in circuit between each secondary conductor and the independent conductor.

2. In a system of distribution of multiphase electric currents, the combination, with a generator of multiphase currents, of main-line conductors leading therefrom, a multiphase transformer having its primary in circuit with said main-line conductors, distributing-conductors connected to the secondary of said transformer, an electromotor or other translating device in circuit with said distributing-conductors, an independent equalizing-conductor, and lamps or other translating devices in circuit between each secondary conductor and the equalizing-conductor.

3. In a system of distribution of multiphase electric currents, the combination, with a generator of multiphase currents, of main-line conductors corresponding in number with the separate impulses transmitted from the generator, a multiphase transformer having its primary in circuit with said main-line conductors, distributing-conductors connected to the secondary of said transformer and corresponding in number with the secondary currents generated, an equalizing-conductor, and lamps or other translating devices in circuit between each secondary conductor and the equalizing-conductor.

4. In a system of distribution of multiphase electric currents, the combination, with a generator of multiphase currents, of main-line conductors corresponding in number with the separate impulses transmitted from the generator, a multiphase transformer having its primary in circuit with all or a portion of said main-line conductors, distributing-conductors connected to the secondary of said transformer and corresponding in number or in some multiple of the number of the main-line conductors connected with the primary of said transformer, an independent equalizing-conductor, and lamps or other translating devices in circuit between each secondary conductor and the equalizing-conductor.

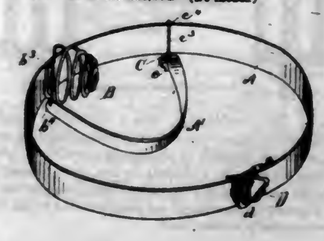
5. In a system of distribution of multiphase electric currents, the combination, with the secondary distributing-conductors leading from a multiphase transformer, of an independent equalizing-conductor, and lamps or other translating devices in circuit between each secondary conductor and the equalizing-conductor.

6. In a system of distribution of multiphase electric currents, the combination, with the secondary distributing-conductors leading from a multiphase transformer, of an independent equalizing-conductor, and lamps or other translating devices between each secondary conductor and the equalizing-conductor, and such a number of lamps or other translating devices included in each circuit that their resistance shall be approximately equal.

7. The herein-described method of distributing alternating multiphase electric currents, which consists in generating a current made up of three or more successive phases or currents of equal period and amplitude, transmitting said current phases or currents separately to the place of consumption, there transforming them into secondary currents having the same phase and period but of a different tension, and subsequently distributing said secondary currents separately to electro-motors or other translating devices, and in such a manner that the separate currents may be properly equalized between the different devices to which they are fed.

8. The herein-described method of distributing alternating multiphase electric currents, which consists in generating a current made up of three or more successive phases or currents of equal period and amplitude, transmitting said current-phases or currents separately to the place of consumption, there transforming them into secondary currents having the same phase and period, but of different tension, and subsequently distributing said secondary currents separately to electro-motors and to other translating devices independent of said motors and in such a manner that the separate currents may be properly equalized between the independent translating devices to which they are fed.

477,251. TRUSS. HERBERT P. EWELL, Rochester, Mich. Filed Feb. 12, 1892. Serial No. 421,274. (No model.)



Claim.—1. In a truss, a coiled-wire pad having the extension of its lower turn passed across the diameter of the base and a band to pass under the limb and attach to the free end of said extension, substantially as described.

2. A pad for trusses, consisting of a coil of wire formed into hemispheric shape, having the turns at the pressure end wound closer than those at the place of attachment to the belt and adapted to form the surface to rest against the body and having the extension of its lower turn passed across the diameter of the base and terminating in a hook, whereby it is adapted to be engaged with the strap A', substantially as and for the purpose described.

3. In a truss, a coiled-wire pad having an extension of its lower turn passed across the diameter of the base, a supporting-band, and a ring adapted to hold said band to the extension of the spring, substantially as described.

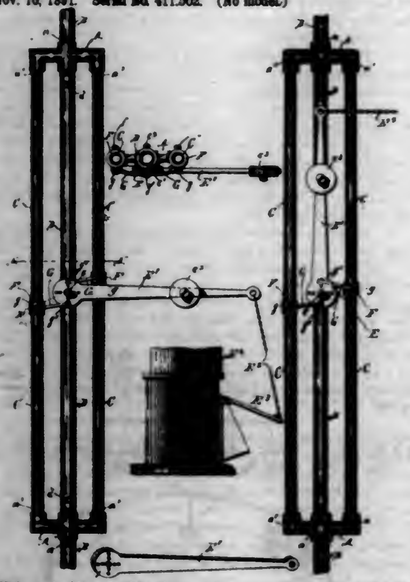
4. A device for attaching an auxiliary strap to a main band, consisting of the buckle C, the bar c^3, and the ring c^4, pivoted to said buckle, substantially as described.

477,252. TIMEPIECE FOR BOILING EGGS. LUDWIG GÜNTHER, Schwerin, Germany. Filed Aug. 12, 1891. Serial No. 402,450. (No model.)



Claim.—An egg-watch consisting of a case, a movement having a single hand or pointer, a stop mechanism for arresting the hand or pointer when the latter has run ten minutes and completed a single circle around the dial, and a dial having an outer circle divided into ten equal parts representing ten minutes of time and subdivided into half-minutes and also having a series of inner circles, on which are placed the names of articles to be cooked and arrows indicating the stages of cooking, substantially as described.

477,253. REGULATOR. EDWARD HAYM, Rochester, N. Y. Filed Nov. 10, 1891. Serial No. 411,502. (No model.)



Claim.—1. The combination, with a circulating system B, of a flexible fluid-conducting pipe connected in said circulating system and adapted to be moved laterally by its expansion and contraction, a substantially rigid support in proximity to the pipe, a plate movably mounted on the support, and a movable connection between said pipe and plate, whereby the position of the plate is varied as the pipe moves laterally, substantially as described.

2. In a regulator, the combination of a pair of stationary supports, a fluid-conducting pipe having its opposite ends secured to said supports and its central portion free to move laterally, a substantially rigid support in proximity to the pipe, a plate movably mounted on the latter support, and a connection between said plate and the central portion of said pipe, substantially as and for the purpose set forth.

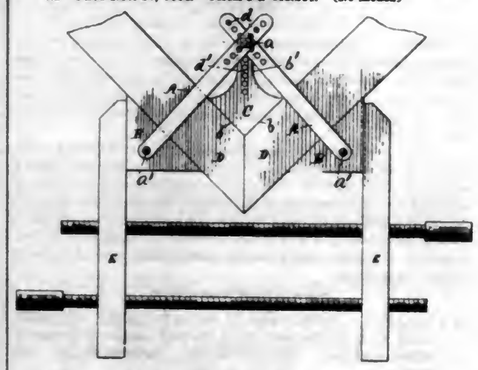
3. In a regulator, the combination of a pair of stationary supports, a fluid-conducting pipe having its opposite ends secured to said supports and its central portion free to move laterally, a substantially rigid support in proximity to the pipe, a plate movably mounted on the latter support, a column movably mounted on the central portion of said pipe, and a link between the collar and the movable plate, substantially as and for the purpose specified.

4. In combination, a pair of supports, a fluid-conducting pipe adapted to permit the passage of fluids therethrough, supported at its opposite extremities by said supports, whereby its central portion is free to move laterally when the pipe is expanded or contracted by the temperature of the fluid, a hollow support between the former supports formed with openings at its opposite extremities for permitting the passage of air therethrough, a movable plate mounted on the latter support, and a connection between said plate and the central portion of said pipe, whereby the position of the plate is varied as the pipe moves laterally, substantially as and for the purpose described.

5. In combination, a pair of supports having a central and two lateral passages, fluid-conducting pipes between the corresponding lateral passages of the heads, having their central portion adapted to move laterally, a central substantially rigid support between the former supports, a movable plate on the latter support, and connections between the central portions of said pipes and said plate, whereby the position of the plate is varied as the pipes move laterally, substantially as and for the purpose specified.

6. In combination, a pair of supports having a central and two lateral passages, fluid-conducting pipes between the corresponding lateral passages of the heads, having their central portions adapted to move laterally as the temperature of the fluid varies, a central hollow support between the former supports, having openings at its opposite extremities for the passage of air therethrough, a movable plate on the latter support, provided with a weighted arm, collars adjustably mounted on the central portion of the pipes, and links between said collars and plate, whereby the position of the plate is varied as the pipes move outwardly, substantially as and for the purpose set forth.

477,254. MITER-CLAMP. FREDERICK W. HEDGELAND, Chicago, Ill. Filed Nov. 27, 1891. Serial No. 413,281. (No model.)



Claim.—1. In a clamping device, the combination of the companion levers pivoted together at their inner ends, the clamping-blocks pivoted to the outer ends of said levers, and a wedge-block adapted to fit the inside corner of a miter-joint, substantially as set forth.

2. In a clamping device, the combination of the companion levers pivoted together at their inner ends, the triangular blocks pivoted to the outer ends of said levers and adapted to bear against the outer edges of a miter-joint, and the wedge-block or inside corner-piece having a pivotal connection common with the connected ends of said levers, substantially as set forth.

3. In a clamping device, the combination of the companion levers provided with a number of perforations in their joining ends, the clamping-blocks adjustably connected to the opposite ends of said levers, and the wedge-block provided with a perforated stem extension and joined to the connecting ends of the clamping-levers by the same pivot-bolt, substantially as set forth.

477,255. ICE-CREEPER. HUGO JEDLICKA, Bilsa, Austria-Hungary. Filed Mar. 28, 1892. Serial No. 426,747. (No model.) Patented in France Mar. 20, 1891, No. 212,236; in Germany Mar. 21, 1891, No. 58,768, and in England Mar. 23, 1891, No. 5,188.



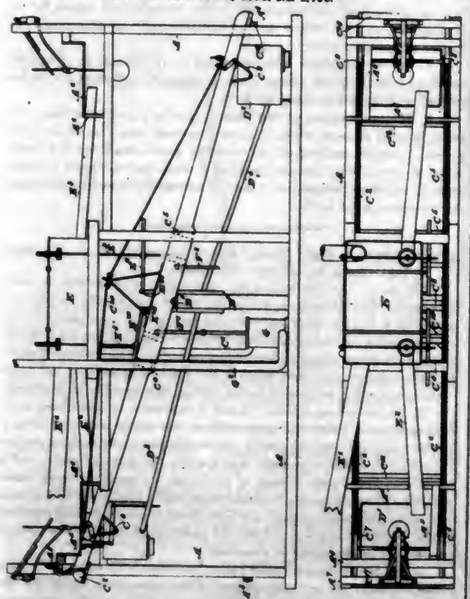
Claim.—1. In a device of the character herein described, the combination of a sole-plate provided with a central longitudinal groove, the toe and heel blocks, means for securing the former to the toe of the shoe, a stirrup h, a threaded bolt h', passing through part a', a toothed part on the latter, a screw-nut h^3, working on said bolt and serving to clamp the heel against part a', substantially as set forth.

2. In a device of the character herein described, the combination of a sole-plate provided with a central longitudinal groove and a central reinforcing-rib, toe and heel blocks secured to and depending from said plate, the toe-guard b', the protecting-strip c for the same, the stirrup h, the threaded bolt h', passing through part a', the toothed part on the latter, the screw-nut h^3, working on said bolt and serving to clamp the heel against part a', substantially as set forth.

3. In a device of the character herein described, the combination, with the sole-plate, of toe and heel blocks and means for securing the same to the sole-plate, the stirrup h, the threaded bolt h', passing through the part a', a toothed part on the latter, and the screw-nut h^3, working on said bolt and serving to clamp the heel against part a', substantially as set forth.

4. In a device for protecting foot-coverings against moisture and sleet, the combination, with an iron sole-plate b, having a longitudinal groove b^x, of heel and toe blocks secured to said sole-plate, a waterproof lining d, two treading-blocks $c\,c$, secured to and depending from said sole-plate b, said device being secured to the shoe by means of a rubber strap g, and the clamping device $h\,h^3$, embracing the heel, substantially as set forth.

477,256. WATER-ENGINE. HENRY JERGER, Norwood, South Australia. Filed Jan. 20, 1891. Serial No. 378,492. (No model.) Patented in South Australia Dec. 4, 1890, No. 1,790.

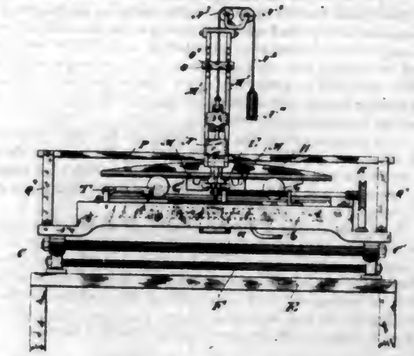


Claim.—1. In a water-engine, the combination, with an oscillating lever-beam, of actuating-tanks, one pivoted to each end of said beam, rods for keeping said tanks upright while ascending and descending, and means for locking and unlocking said tanks, and a hanger for retaining them in their upper position, substantially as and for the purpose specified.

2. In a water-engine, the combination, with an oscillating lever-beam, of actuating-tanks pivotally connected, one at each end of said beam, means for locking and unlocking said tanks, a hanger for retaining the actuating-tanks in upper position, rods pivotally attached to said tanks for keeping them upright during their up and down movements, and a ball-float adapted to release the tanks, substantially as set forth.

3. The combination of lever-beam $C'\,C^3$, supply-tank E, the pump-rods $F'\,F^3$, the actuating-tanks $D'\,D^3$, pivotally connected to said beam, the rods $D^3\,D^4$ for keeping the tanks in their upright position as they ascend and descend, and the locking apparatus, substantially as and for the purposes described.

477,257. ENGRAVING-MACHINE. CHARLES A. KER, Glasgow, Scotland. Filed Feb. 26, 1892. Serial No. 422,865. (No model.) Patented in England Apr. 21, 1891, No. 6,835.



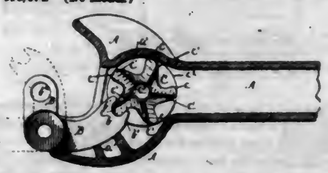
Claim.—1. A machine for engraving music, consisting of a table A, with revolving part B and beating appliance under said revolving part, traveling bars H H' I I', longitudinal sliding bar provided with a punch, and the striker for striking said tool, substantially as hereinbefore described.

2. In a machine of the character described, the combination of the adjustable frame carrying the punch, means, substantially as described, for operating the punch, and the adjusting-screw Q, with index-pointer S S' for adjusting said frame and regulating the distance apart of the lines or strokes.

3. In a machine of the character described, the combination of the sliding bar L, having a lever L' split at its end to receive different punches, the guides M', supported on said bar, pin O^4 or its equivalent, substantially as hereinbefore described.

4. In a machine of the character described, the combination of the table adapted to carry the material to be operated upon, means, substantially as described, beneath said table for heating the same, a punch, and means for operating said punch, substantially as set forth.

477,258. CAR-COUPLING. HARRY E. KIRK, Erie, Pa., assignor of one-half to Benjamin J. Walker, same place. Filed Nov. 10, 1891. Serial No. 411,474. (No model.)



Claim.—1. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle, of a pivoted catch-dog for engaging the inner end of the long arm of said knuckle, a ratchet-clutch for holding said catch-dog, and means for disengaging said clutch.

2. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle having a cog formation on the inner end of its long arm, of a pivoted catch-dog having a cog formation thereon to engage the cog formation on the end of the knuckle-arm, a ratchet-clutch for holding said catch-dog, and means for disengaging said clutch.

3. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle having a cog formation on the inner end of its long arm, of a pivoted catch-dog having a cog formation thereon to engage the cog formation on the end of the knuckle-arm, a ratchet-clutch for holding said catch-dog, having one part thereof formed on the lower end of said dog and the other part on the draw-head, and means for lifting up said dog so as to disengage said clutch parts.

4. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle, of a pivoted catch-dog for engaging the inner end of the long arm of said knuckle, a ratchet-clutch for holding said catch-dog, having one part thereof formed on the said dog and the other on the draw-head, and means for lifting said dog so as to disengage said clutch parts.

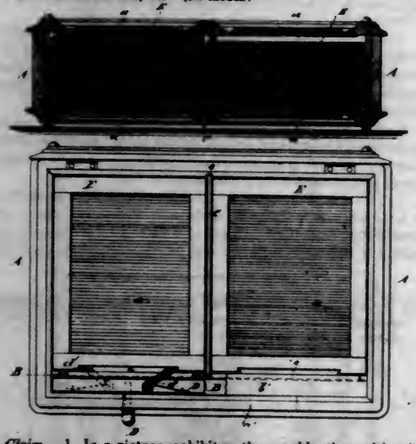
5. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle having a cog formation on the inner end of its long arm, of a pivoted catch-dog having a cog formation thereon to engage the cog formation on the end of the knuckle-arm, a ratchet-clutch for holding said catch-dog, formed with one part on said dog and the other part on a fixed part of the coupler, and means for disengaging said clutch.

6. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle having a cog formation on the inner end of its long arm, of a pivoted catch-dog having a cog formation thereon to engage the cog formation on the end of the knuckle-arm, a ratchet-clutch for holding said catch-dog, formed with one part on said dog and the other part on a fixed part of the coupler and having on each part as many ratchet-teeth as there are cog-teeth on the said dog, and means for disengaging said clutch.

7. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle, of a pivoted catch-dog for engaging the inner end of the long arm of said knuckle, a ratchet clutch for holding said catch-dog, and the shouldered lifting-pin D for lifting said dog and disengaging said clutch.

8. In a car-coupler of the type herein shown, the combination, with the pivoted knuckle having a cog formation on the inner end of its long arm, of a pivoted catch-dog having a cog formation thereon to engage the cog formation on the end of the knuckle-arm, a ratchet-clutch for holding said catch-dog, means for disengaging said clutch, a bearing-disk on said dog, and a curved bearing-surface fitting said disk on the side wall of the draw-head opposite said knuckle.

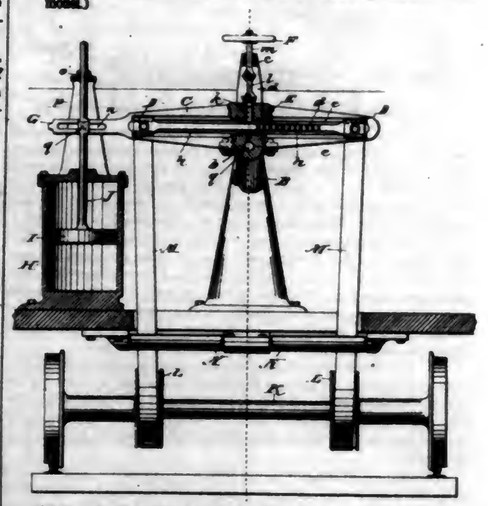
477,259. PICTURE-EXHIBITOR. FREDERICK E. MERKEL, New York, N. Y., assignor to Merkel & Granssam, same place. Filed Apr. 23, 1891. Serial No. 390,099. (No model.)



Claim.—1. In a picture-exhibitor, the combination, with a box having a longitudinal compartment B', formed by a transverse partition-wall, of a loose partition-wall sliding in grooves in one side wall of the box and in the said transverse partition-wall, so that two main compartments are formed, frames having recesses and being stored in the main compartments, and a sliding block in the transverse compartment, which sliding block is provided with spring-actuated hooks, one on the upper and one on the lower part of the same, which hooks engage the recesses of the frame, substantially as set forth.

2. In a picture-exhibitor, the combination, with a box having a longitudinal closed compartment B', formed by a transverse partition-wall having a longitudinal groove and longitudinal slots, of a loose partition-wall sliding in grooves in one side wall of the box and in the said transverse partition-wall, so that two main compartments are formed, frames having recesses and being stored in the main compartments, and a sliding block in the transverse compartment, which sliding block is provided with spring-actuated hooks, one in the upper and one in the lower part of the same, which hooks project through the respective slots of the transverse partition-wall and engage the recesses of the frames, and with a longitudinal rib sliding in the groove of the said transverse partition-wall, substantially as set forth.

477,260. MECHANISM FOR PROPELLING CARS. ELMER E. MILLER, Canton, Ohio. Filed Feb. 8, 1892. Serial No. 420,677. (No model.)



Claim.—1. The combination, in a mechanism for propelling tramway-cars, of the working beam having an elongated aperture, as *d*, slides having a geared connection with a central pinion by which the slides may be moved to or from the central portion of the working beam, substantially as described, and for the purpose set forth.

2. The combination of the beam C, having a toothed pinion centrally located thereon, slides having toothed arms to engage said pinion, a flexible connection between the pinion-shaft and the hand-wheel by which the slides may be moved on said beam, a strap connecting the said slides with ratchet-wheels on the car-axle, and means for vibrating the beam to rotate said axle, substantially as described, and for the purpose set forth.

3. The combination, with the beam C, of the arm G, elongated aperture *n*, slide *g*, and piston J, when operated substantially as described, and for the purpose set forth.

4. The combination of the beam C, having a toothed pinion centrally located thereon, slides D, having toothed arms A to engage said pinion, a flexible connection between the pinion-shaft and the hand-wheel F, straps M to connect the slides D with ratchet-wheels L on the axle K, and the intermediate rollers N, substantially as described, and for the purpose set forth.

477,261. URN. THOMAS MILLER, Jersey City, N. J. Filed Mar. 23, 1892. Serial No. 426,136. (No model.)

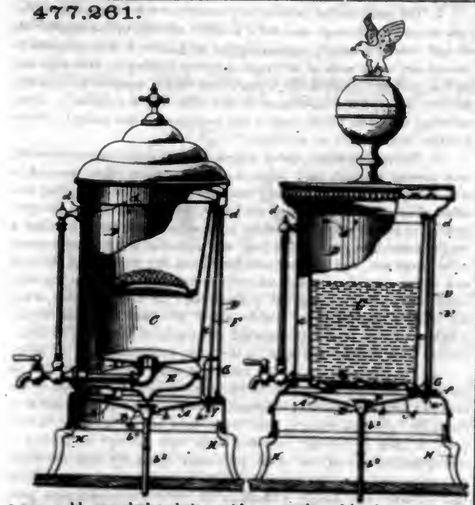
Claim.—1. An urn having an outer casing, a removable or interchangeable fluid-receptacle fitting the upper part of the casing and providing a hot-air space between the casing and receptacle, clamp-bolts engaging the casing and fluid-receptacle and holding the latter in place, and a removable guard-plate having or providing an atmospheric-air inlet-opening and held beneath the fluid-receptacle by the bolts which sustain this receptacle in the casing, substantially as described.

2. An urn having an outer casing, a removable or interchangeable fluid-receptacle fitting the upper part of the casing and providing a hot-air space between the casing and receptacle, clamp-bolts engaging the casing and fluid-receptacle and holding the latter in place, and a removable guard-plate having or providing an atmospheric-air inlet-opening and held beneath the fluid-receptacle by the bolts which sustain said receptacle in the casing, said bolts having nuts permitting removal of the guard-plate alone or both the guard-plate and fluid-receptacle at pleasure, substantially as described.

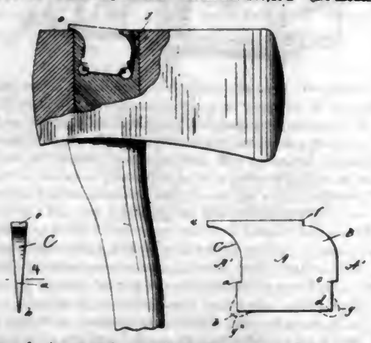
3. An urn having an outer casing provided with an upper hot-air outlet, a removable or interchangeable fluid-receptacle fitting the upper part of the casing and providing a hot-air space between the casing and receptacle, clamp-bolts engaging the casing and fluid-receptacle and holding the latter in place, a burner below the fluid-receptacle, and a removable guard-plate below said receptacle and having or providing an atmospheric-air inlet proportioned relatively to the casing hot-air outlet to maintain a slow upward current of hot air in the space around the fluid-receptacle within the casing, said guard-plate held by the bolts which sustain the fluid-receptacle in the casing, substantially as described.

4. In an urn, the combination, with the casing having an upper hot-air outlet, a fluid-receptacle sustained in the casing and providing a hot-air space between the casing and receptacle, and a burner below said receptacle, of a guard-plate beneath the receptacle, having or providing an atmospheric-air inlet proportioned relatively to the casing hot-air outlet to maintain a slow upward current of hot air in the space around the fluid-receptacle within the casing, substantially as described.

477,261.



477,262. AX OR TOOL WEDGE. GEORGE P. MORRILL, Canterbury, N. H. Filed July 5, 1883. Serial No. 279,134. (No model.)



Claim.—1. An ax-wedge provided with a projecting horn *c* and a concave curved section C and having the outline of the opposite end an exact reversal in form of said horn and said concave section, substantially as described.

2. An ax-wedge provided with the projecting horn *c*, the concave curved section C, the angular projection *a*, and having the outline of the opposite end an exact reversal, substantially as described.

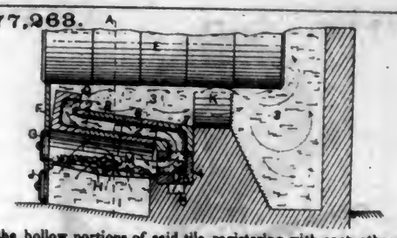
477,263. FURNACE. DOUGAL J. MCKENZIE, Chicago, Ill. Filed Mar. 14, 1892. Serial No. 424,769. (No model.)

Claim.—1. A furnace having a fuel-chamber M and heating-chamber 3, heating-chamber 3 above fuel-chamber M, a horizontally disposed arch consisting of heat-resisting material separating chambers M and 3, and passage-ways 2 within said arch connecting the rear end of chamber M with the front end of chamber 3, substantially as shown and described.

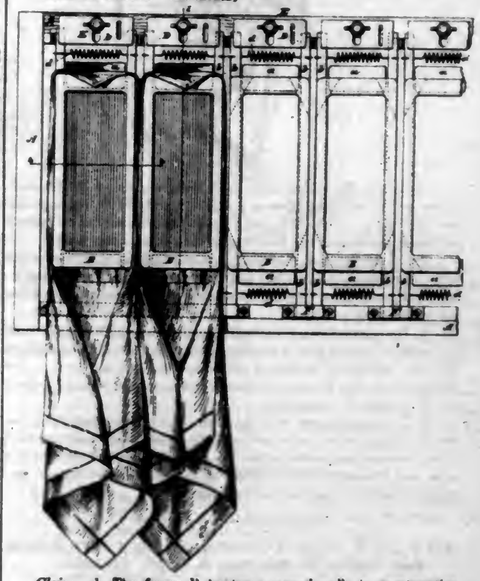
2. A furnace having a fuel-chamber M and heating-chamber 3, one above the other, and a horizontally-disposed top for said fuel-chamber, said top separating said chambers, said top consisting of hollow tile, the hollow portions of said tile registering with each other and forming passage-ways for the gases of combustion from the rear end of said fuel-chamber to the front end of said heating-chamber, substantially as described.

3. In a furnace as described, auxiliary air-passages capable of admitting a supply of air within the passage-ways 2 at the rear end of said passage-ways, for the purpose stated.

477,268.



477,264. FABRIC-HOLDING FRAME FOR EMBROIDERING-MACHINES. JOHN J. NIEDERER, New York, N. Y. Filed Jan. 21, 1892. Serial No. 418,828. (No model.)



Claim.—1. The frame B, having grooved walls, in combination with the rods *a a b b*, adapted to enter said grooves, and with springs connecting said rods *b b*, substantially as and for the purpose set forth.

2. The grooved frame B, combined with rods *a a* and *b b*, adapted to enter the grooves of said frame, the rods *b b* being longer than the frame B, with springs connecting the rods *b b* where they project from the frame B, and with the main frame A and means, substantially as described, for attaching the frame B to the frame A, all as specified.

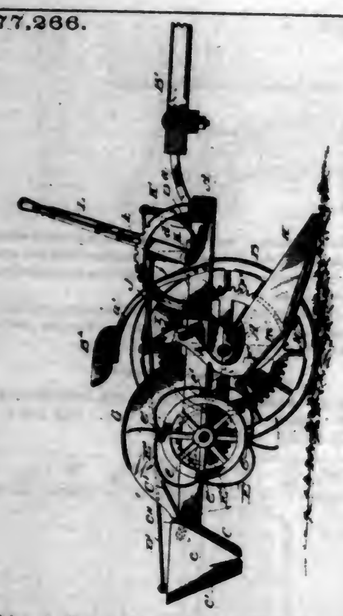
477,265. MANUFACTURE OF PLATED ARTICLES. WILLIAM E. PEABODY, Bridgeport, Conn. Filed Dec. 7, 1891. Serial No. 414,227. (No specimens.)



Claim.—The method of producing a plated article reinforced at the wearing-points, that consists in electroplating such points in a blank and then subjecting the plated surface to pressure, thus forming the article to shape, and finally plating and finishing the surface, including those parts previously plated, all substantially as described.

477,266. POTATO-DIGGER. GEORGE M. D. POMEROY and GEORGE H. WEBBER, Lebanon, Ind. Filed Jan. 12, 1892. Serial No. 417,863. (No model.)

477,266.



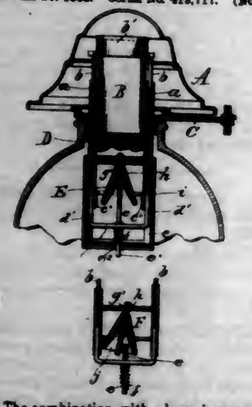
Claim.—1. The combination, with the shovel and reel, of a shaft on the rear of the shovel, free to partially revolve in its bearings and carrying fingers, a rock-shaft, and connections between the rock-shaft and the upper ends of the side bars of the shovel, as set forth.

2. The combination, with the frame and the hinged portion of the box, comprising the rear side and two ends, of the forward crank-shaft and connections between the said shaft and movable part of the box, as set forth.

3. The combination, with the frame, of the shovel having side bars journaled on a shaft held in bearings on the frame and extended above the pivot, and means connected with the extended upper ends of the side bars and with a cross rock-shaft for raising and lowering the front end of the shovel, as set forth.

4. The combination, with the frame and the cross-shaft, of the shovel having curved side bars pivoted on said shaft and extended above the same and curved to the rear, the forward crank-shaft having arms, and the rods pivotally connecting the upper ends of the side bars with the said arms, substantially as specified.

477,267. LAMP-EXTINGUISHER. JOHN B. PRICE, Wollaston, Mass. Filed Jan. 29, 1892. Serial No. 419,717. (No model.)



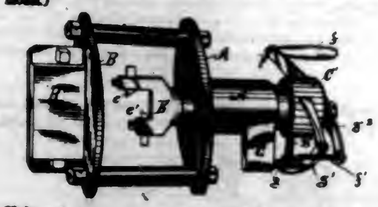
Claim.—1. The combination, with a lamp-burner, a wick-tube, an extinguisher, and rods extending downward from the latter, of spring mechanism for throwing the extinguisher over the flame to extinguish it, and a gravity device interposed when in its normal position between the extinguisher and its rods, whereby to hold the extinguisher away from the wick, substantially as set forth.

2. The combination, with a lamp-burner, of tubes secured thereto, rods extending through said tube, a collar secured to the upper ends of said rods and loosely embracing the wick-tube, a slide adapted to receive the lower ends of said rods, a spring bearing on said slide and tending to force it upwardly, a pendulous weight adapted to normally prevent the upward movement of the slide, and a cylinder or drum inclosing the parts which control the operation of the collar or extinguisher, substantially as set forth.

3. The combination, with a lamp-burner, of tubes secured thereto, rods passing through said tubes, a collar or extinguisher secured to said rods and adapted to loosely embrace the wick-tube, a spring-actuated slide adapted to receive the lower ends of said rods, a pin projecting upwardly from said slide, a cross-bar between the tubes, a weight pendulously suspended from said cross-bar and having a recess in its lower end, and a stem extending from the weight and through said recess, said stem being adapted to receive the pin on the slide when the lamp is in an upright position, said pin being adapted, when the lamp is overturned or unduly jarred, to enter the recess in the weight, and thus permit the upward movement of the collar or extinguisher to extinguish the light on the wick, substantially as set forth.

4. The combination, with a burner, of tubes secured thereto, rods extending through said tubes, an extinguisher or collar secured to the rods and adapted to loosely embrace the wick-tube, a yoke removably connected with the tubes at their lower ends, a slide mounted in said yoke, a stem projecting from said slide and through said yoke, a spring encircling said stem, a pin projecting upwardly from the slide, a cross-bar between the tubes, a weight pendulously suspended from said cross-bar and having a recess in its lower end, and a stem projecting from said weight and through the recess in the weight, said stem being adapted to remain normally in line with the pin on the slide, said pin being adapted to enter the recess in the weight when the stem of the weight moves out of line therewith, substantially as and for the purpose set forth.

477,268. AXLE-CUTTER. DAVID R. REED and ORLANDO GURNEE, New Hudson, Mich. Filed Aug. 31, 1891. Serial No. 404,203. (No model.)



Claim.—1. In an axle-cutter, the combination of the plates A and B, the jaw B', having a vertical adjustment on the plate B, and the jaw B^3, adjustably engaged with the jaw B', substantially as described.

2. In an axle-cutter, the combination of a frame, a sleeve having a threaded connection with said frame and adapted to feed forward on being rotated therein, a spindle rotatably mounted in said sleeve and provided with a tool-head, a ratchet-wheel on said sleeve, a crank on said spindle provided with an adjustable pin, and a pawl operated by the pin and adapted to rotate said ratchet-wheel and sleeve one or more points on each revolution of said crank, substantially as described.

3. In an axle-cutter, a feeding mechanism consisting of lever g', pivoted to the frame of said cutter, and pawl g^3 and pin f'', mounted in the crank of said axle-cutter, substantially as described.

4. In an axle-cutter, a feeding mechanism consisting of lever g' and pawl g^3, in combination with crank F, and pin f'', having a slotted connection with said crank, whereby the throw of the lever g' may be increased or diminished, substantially as described.

5. In an axle-cutter, feeding mechanism consisting of threaded sleeve C, ratchet-wheel C', lever g', pawl g^3, rigid pawl g^4, and crank F, provided with pin f'', substantially as described.

477,269. VEHICLE POLE OR SHAFT. LORENZO M. ROBBINS, Elizabeth, Ark. Filed Oct. 15, 1891. Serial No. 408,759. (No model.)



Claim.—The combination, with the recessed transverse bar, of the shafts, the bars pivotally connecting the same with the said bar, and the bars seated in recesses in the shafts and arranged to work in the recesses of the said bar, as set forth.

477,270. HOOK-RACK. EDWARD ROOT, Chicago, Ill. Filed Nov. 23, 1889. Renewed May 16, 1892. Serial No. 433,127. (No model.)



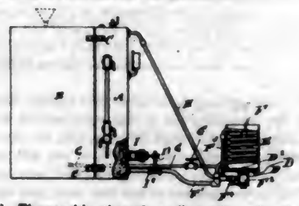
Claim.—1. A hook-rack the base and hooks of which are each entirely composed of separated segments of a ring, the center segment downwardly curved or inverted and the end ones upwardly curved or in an inverted position relative to the center segment, substantially as described.

2. A hook-rack the base and hooks of which are entirely composed of a segment of a ring, the center segment downwardly curved or inverted and the end ones upwardly curved or in an inverted position relative to the center segment, in combination with a pivot connection between said base and hooks, whereby they are adapted to fold upon each other, substantially as described.

3. The combination, with the base and the hooks, consisting of three segments of a ring, the center segment being downwardly curved or inverted and the end ones upwardly curved or in an inverted position relative to the center segment, of an end-to-end pivot connection consisting, essentially, of an ordinary screw and a bushing socketed with the head of the screw into the end of one of said members and the thread of the screw projecting into the other member, substantially as described.

4. The combination of the base and the hooks consisting of three segments of a ring, the center segment being downwardly curved or inverted and the end ones upwardly curved or in an inverted position relative to the center segment, the pivot connection between the ends of said members, and a washer or cap, substantially as described.

477,271. APPARATUS FOR BURNING HYDROCARBON OR OTHER OILS FOR LIGHTING AND HEATING. GEORGE ROSE, Glasgow, Scotland, assignor of two-thirds to Archibald Baird and Matthew Barr Baird, same place. Filed June 10, 1891. Serial No. 395,769. (No model.) Patented in England Nov. 13, 1889, No. 18,101.



Claim.—1. The combination of an oil-supply, a closed water-tank, a burner, an oil-supply pipe thereto, steam-generator in proximity to the burner, a supply thereto from the water, steam connections from said generator to the water-tank, a piston controlled by the pressure in said tank, a spraying device in the burner, and steam connections therefrom to said generator, substantially as set forth.

2. In combination, the burner having a steam-chamber, an oil-well above and opening into the steam-chamber, an oil-supply pipe for said oil-well, a water-tank, a steam-coil in the burner, having a supply from the water-tank, said supply having a siphon-bend and a steam connection to the water-tank, and a steam connection to said steam-chamber, substantially as set forth.

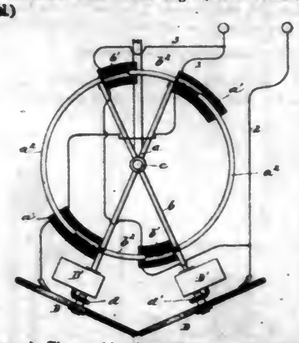
3. In combination, an oil-tank, a water-tank, a burner comprising a sprayer, a steam-generator in proximity to the burner, a water-supply from the water-tank to said generator, a valve in said pipe, a piston controlling said valve and controlled by the pressure in the tank, and steam connections from said generator to said spraying device and to said water-tank, substantially as set forth.

477,272. JOURNAL-BEARING. WILLIAM H. ROWELY, La Porte, Ind. Filed Feb. 26, 1892. Serial No. 422,743. (No model.)

Claim.—In a journal-bearing, the combination, substantially as set forth, of a bearing-body formed of a bed-half and a cap-half united and provided with a circular recess extended in depth oppositely into flat-bottomed recesses E, extending the length of the body, and two half-boxes separably seated in said body and provided with outer extensions G, extending the length of the half-boxes and fitting said flat-bottomed recesses, and with wings H, fitting said circular recesses.



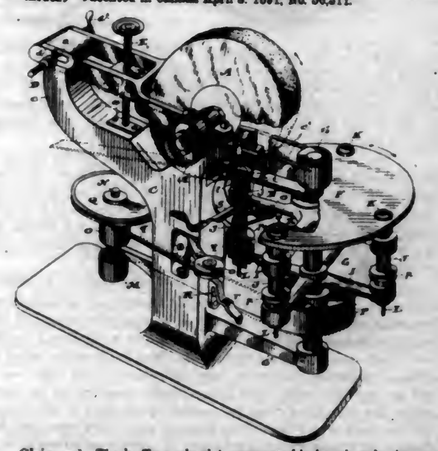
477,273. ELECTRIC-ARC LAMP. NORMAN F. RUTHERFORD, Bathurst, New South Wales. Filed Aug. 13, 1891. Serial No. 402,506. (No model.)



Claim.—1. The combination, with a pair of levers pivoted at their intersection, each carrying a carbon electrode, of two pairs of solenoids, one in the main circuit of the lamp and the other in the shunt-circuit of the lamp, one of the levers carrying the main magnets and the cores of the shunt-magnets and the other carrying the shunt-magnets and the cores of the main magnets, substantially as described.

2. In an arc lamp, a pair of levers pivoted at their intersection and carrying, respectively, the carbon electrodes, in combination with main and shunt solenoids and the cores thereof, the said magnets and cores being carried by the levers, and devices carried by the levers for feeding the carbon electrodes.

477,274. MACHINE FOR POLISHING BUTTONS. DILMAN B. SHAFFE, Berlin, Canada. Filed Mar. 12, 1891. Serial No. 384,906. (No model.) Patented in Canada April 3, 1891, No. 36,311.



Claim.—1. The buffing-wheel A, supported in bearings in the open frame B, which extends on both sides of the slotted rear arm c and is clamped in position by the spindle D with handle d', in combination with the chucks K, detachably secured on the top of the spindles J, which are successively caused to revolve by the cord q passing around

the pulley Q, guide-pulleys o, and pressing against the chuck-revolving pulley p, secured to the spindle J, as specified.

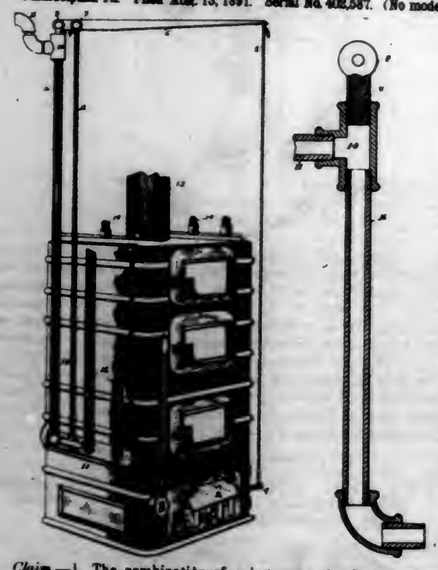
2. The buffing-wheel A, supported in bearings in the open frame B, which extends on both sides of the rear arm c and is adjusted vertically by the screw-spindle E, in combination with the chucks K, detachably secured on the top of the spindles J, which are successively caused to revolve by the cord q passing around the pulley Q, guide-pulleys o, and pressing against the chuck-revolving pulley p, secured to the spindle J, as specified.

3. The chucks K, detachably secured on the hollow spindles J, which are driven as described, in combination with the rod L, which is raised by the raised projection r on the bracket R as it passes it, substantially as and for the purpose specified.

4. The chucks K, detachably secured on the hollow spindle J and carried around past the buffing-wheel by the circular revolving table F, in combination with the rod L, operated as described, and a brush S, arranged as and for the purpose specified.

5. The chucks K, attached to or forming part of the spindle J and carried around past the buffing-wheel by the circular revolving table F, in combination with the brushes T, secured to the forwardly-projecting arms c', and arranged as and for the purpose specified.

477,275. FURNACE-DAMPER REGULATOR. LEVI F. SMITH, Philadelphia, Pa. Filed Aug. 13, 1891. Serial No. 402,587. (No model.)



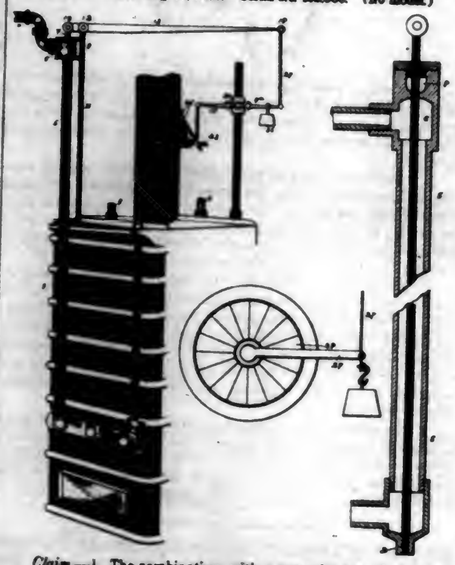
Claim.—1. The combination of a hot-water-circulating system having in the discharge end of the return-pipe a section or tube of highly-expansible material, a lever having a fixed fulcrum and suitably connected to the upper end of said section or tube, and a damper for the furnace of the heater, also connected to said lever, substantially as described.

2. The combination of a hot-water-circulating system having in the discharge end of the return-pipe a section or tube of highly-expansible material joined to the main portion of the return-pipe by a flexible coupling device, a lever having a fixed fulcrum and suitably connected to the upper end of said section or tube, and a damper for the furnace of the heater, also connected to said lever, substantially as described.

3. The combination of the water-heating furnace and an exterior return-flow water-tube connected rigidly thereto and communicating therewith at its lower end, formed of an expansive metal and connected at its upper end by a joint to the return-water pipe, a vertical bar rigidly mounted on the furnace and rising to the upper end of the tube, an oscillating horizontal lever fulcrumed on the upper end of said bar and having its short arm pivotally connected to the upper end of the tube, the damper for regulating the draft of the furnace, and the chain or rod connecting the long arm of the lever with said damper, all constructed and arranged to operate substantially as set forth.

4. The combination of the water-heating furnace, an exterior return-flow water-pipe formed of an expansive metal rigidly connected by its lower end to and communicating with the heater and rising above the same, the yielding-joint connection between the upper end of said tube and the return-flow piping of which said tube forms part, the vertical bar adjustably secured to the heater and rising beside the tube, the lever fulcrumed on said bar, the connection between the short arm of said lever and the tube located above the junction of the tube and pipe, the damper, and the connection between the long arm of the lever and the damper, whereby the damper is regulated automatically according to the temperature of the return water flowing to the heater, substantially as and for the purpose described.

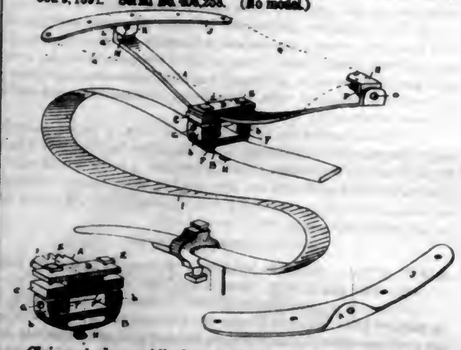
477,276. PIPE-DAMPER REGULATOR. LEVI F. SMITH, Philadelphia, Pa. Filed Aug. 13, 1891. Serial No. 402,588. (No model.)



Claim.—1. The combination, with a water-heater, of an exterior return-flow pipe connected therewith, having a stuffing-box on its upper end, a rod formed of expansive metal, passing through said stuffing-box into the pipe and rigidly connected at its lower end to the lower end of the pipe, a lever fulcrumed on a fixed support and having its short arm pivotally connected to the upper end of the rod above the tube, a damper for regulating the draft, and connections between the long arm of said lever and the damper, substantially as and for the purpose specified.

2. The combination of the heater, the exterior hot-water return-flow pipe, the expansible rod in said pipe, secured to the lower end thereof and projecting through its upper end, the pivoted lever connected to the projecting upper end of said rod and pivoted on a bar rising beside said rod, the oscillating weighted lever connected by its weighted end to the free end of said first lever, and the damper connected to the free end of said oscillating lever and operated thereby, substantially as set forth.

477,277. VELOCIPEDE-SADDLE. ELIAS SMITH, Peoria, Ill. Filed Oct. 9, 1891. Serial No. 408,258. (No model.)



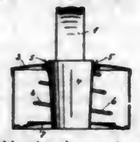
Claim.—1. In a saddle for velocipedes, the spring A, substantially

as shown, having the beveled ear a formed on the rear end thereof and the ear a on the forward end thereof, in combination with the rear saddle-plate J, with its beveled lug K, made integral therewith, the bolt L, and the forward saddle-plate N, and the bolt O, substantially as and for the purposes herein set forth and described.

2. In a saddle for velocipedes, the spring A, substantially as shown, having the beveled ear a formed on the rear end thereof and the ear a on the forward end thereof, in combination with the clamp composed of the plate C, having depending ears F F and pivoted to a casting B by the bolt G, substantially as and for the purposes set forth and described.

3. In a saddle for velocipedes, the spring A, substantially as shown, having the beveled ear a formed on the rear end thereof and the ear a on the forward end thereof, the rear saddle-plate J, with its beveled lug K, made integral therewith, the bolt L, and the forward saddle-plate N, and the bolt O, in combination with the clamp composed of the plate D, secured by the bolts E E to the plate C, having depending ears F F and pivoted to a casting B by the bolt G, and the S-shaped spring I, substantially as herein set forth and described.

477,278. CAKE-CUTTER. LEVI W. SNELL, Utica, N. Y., assignor of one-half to F. William Fix, Jr., same place. Filed Mar. 24, 1892. Serial No. 426,202. (No model.)

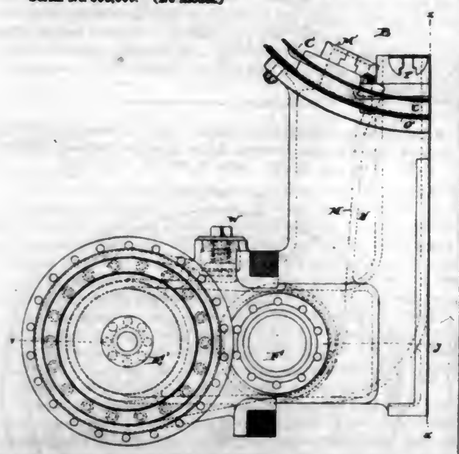


Claim.—1. The combination, in a cake-cutter, of an outer cutting-rim, a removable central cutter, a concave follower having a central opening for said central cutter, and a spring for actuating the follower, substantially as set forth.

2. The combination, in a cake-cutter, of an outer cutting-rim, a central cutter, a concave follower having a central opening for the central cutter and a circumferential rib and upwardly-inclined rim, and a spring for actuating the follower, substantially as set forth.

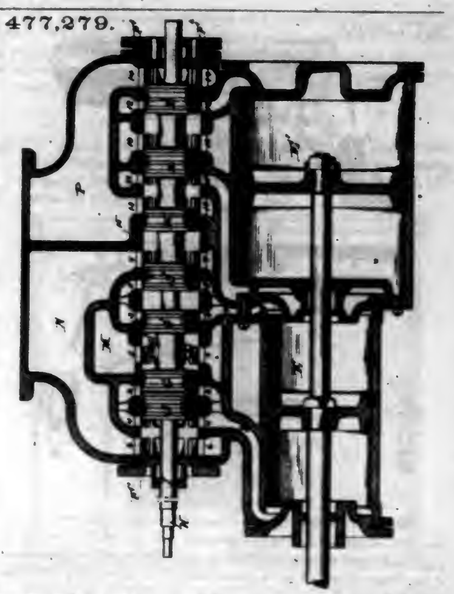
3. The combination, in a cake-cutter, of an outer cutting-rim, a removable central cutter, a catch for securing the central cutter to the head of the cake-cutter, a washer-shaped concave follower having a circumferential rib and upwardly-inclined rim and adapted to work in the space between the outer cutting-rim and the central cutter, and a spring for actuating the follower, substantially as set forth.

477,279. COMPOUND ENGINE. GEORGE S. STRONG, New York, N. Y., assignor to James N. Gamble, Cincinnati, Ohio. Filed July 7, 1891. Serial No. 398,669. (No model.)



Claim.—1. In combination with the two cylinders of a compound engine, the piston-valve chambers F', having a steam-admission port 1, delivery-ports 2 and 3, leading to the high-pressure cylinder, and exhaust-ports 4 and 5, connected with the delivery-ports, as described, valves G G' and J J', operating in valve-chamber F', as described, a receiver connected with the exhaust of the high-pressure-cylinder, a piston-valve chamber F^3, having a steam-admission port 10, connected with the receiver and ports 11 and 12, leading to the ends of the low-

477,279.



pressure cylinder, and a valve L L', working in said chamber F^3, substantially as and for the purpose specified.

2. In combination with the two cylinders of a compound engine, the piston-valve chambers F', having a steam-admission port 1, delivery-ports 2 and 3, leading to the high-pressure cylinder, and exhaust-ports 4 and 5, connected with the delivery-ports, as described, valves G G' and J J', operating in valve-chamber F', as described, a receiver connected with the exhaust of the high-pressure cylinder, a piston-valve chamber F^3 in line with chamber F', having a steam-admission port 10, connected with the receiver and ports 11 and 12, leading to the ends of the low-pressure cylinder, and a valve L L', working in said chamber F^3 and attached to the same valve spindle as valves J J', substantially as and for the purpose specified.

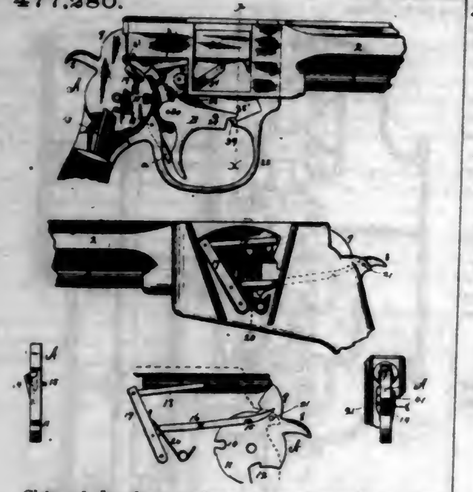
3. In combination with the two cylinders of a compound engine, the piston-valve chambers F', having a steam-admission port 1, delivery-ports 2 and 3, leading to the high-pressure cylinder, and exhaust-ports 4 and 5, connected with the delivery-ports, as described, valves G G' and J J', operating in valve-chamber F', as described, a receiver connected with the exhaust of the high-pressure cylinder, a piston-valve chamber F^3, forming a continuation of chamber F' and separated therefrom by a cylindrical connection 15, said chamber having a steam-admission port 10, connected with the receiver and ports 11 and 12, leading to the ends of the low-pressure cylinder, a valve L L', working in said chamber F^3 and attached to the same valve-spindle as valves J J', and a partition-valve K, also attached to the same spindle and working in cylinder 15, all substantially as and for the purpose specified.

4. In combination with the two cylinders of a compound engine arranged in line or tandem, the continuous piston-valve chamber F, comprising portions F' F^3, separated by a plain cylindrical portion 15, a steam-admission port 1 in the center of portion F', delivery-ports 2 3, one on each side of port 1, exhaust-ports 4 5, lying outside of ports 2 3 and connected like said ports with ports 8 and 9, leading to each end of the high-pressure cylinder, exhaust-ports 6 7, lying outside of ports 5 6 and connecting with a receiver, a steam-admission port 10, midway of chamber F^3 and connected with the receiver, ports 11 and 12 on each side of said port 10 and leading to the respective ends of the low-pressure cylinder, exhaust-ports 13 and 14, lying outside ports 11 and 12, an independently-actuated admission-valve G G' in chamber F', valves J J', situated on each side of said admission-valve, valves L L' in chamber F^3, and a partition-valve K, working in cylinder 15, said valves G, G', L, L', and K working together as described, all substantially as and for the purpose specified.

5. In a locomotive-engine having compound cylinders, a receiver consisting of the outer shell A^3 of the locomotive, and an inner corrugated cylinder C, forming the smoke-box and divided by a partition C', as and for the purpose specified.

477,280. MAGAZINE-PISTOL. FRED N. TRAVER and EDWARD W. FRENCH, Binghamton, N. Y. Filed Aug. 10, 1891. Serial No. 402,210. (No model.)

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Claim.—1. In a firearm, a hammer pivoted in the frame, a lever pivotally mounted and having a point with which the hammer engages and a spur upon its other end, in combination with a slide mounted in the frame, provided in its lower side with a notch with which said spur engages.

2. In a firearm, a slide mounted in the frame, in combination with a rotating hammer, a bar detachably connected to said hammer and pivotally connected to a lever, said lever pivotally mounted upon the frame and pivotally connected to a pull-rod, said pull-rod pivotally connected to said slide, and a retracting-spring.

3. In a firearm, the combination, with a rotating hammer provided with tumbler-notches, of an auxiliary trigger pivoted in the guard and having one end adapted to engage with said notches and the other projecting within the guard, and a trigger pivoted in the frame and adapted when pulled back to engage with said auxiliary trigger and disengage it from the hammer.

4. In a firearm, the combination, with the trigger having a shoulder on its upper face, of a cartridge-elevator, and a lever hinged to its bottom, with which the shoulder on the trigger engages to elevate said carrier by the pull upon the trigger.

5. In a firearm, the combination, with the trigger, the pawl pivotally mounted therein, and the hammer provided with a notch, with which the pawl engages when the hammer is partly cocked, of a lever slotted to engage with the trigger and pivoted in the frame, a bar connected to it and to another lever, a lever pivoted to the frame and hinged to the elevator, and a cartridge-elevator, and the mainspring engaging with the hammer and operating by forcing the trigger down to lower said elevator.

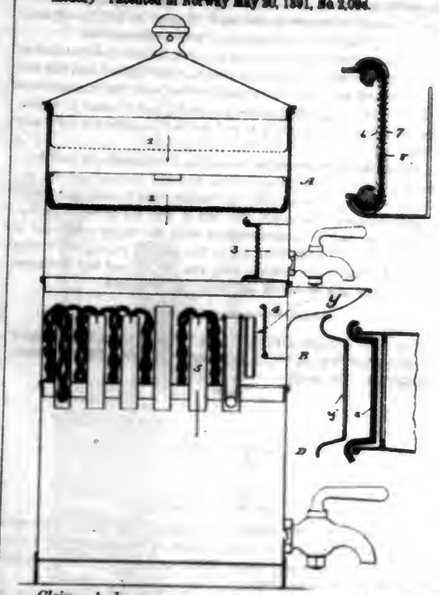
6. In a firearm, the combination, with the trigger, the pawl pivotally mounted therein, and the hammer provided with a notch, with which the pawl engages when the hammer is partly cocked, of a lever slotted to engage with the trigger and pivoted in the frame, a bar connected to it and to another lever, a lever pivoted to the frame and hinged to the elevator, and a cartridge-elevator, and the mainspring engaging with the hammer and operating by forcing the trigger down to lower said elevator behind the magazine, and a cartridge-magazine provided with a cartridge-expelling spring.

7. In a firearm, the combination, with the trigger, the pawl pivotally mounted therein, and the hammer provided with a notch, with which the pawl engages when the hammer is partly cocked, of a lever slotted to engage with the trigger and pivoted in the frame, a bar connected to it and to another lever, a lever pivoted to the frame and hinged to the elevator, and a cartridge-elevator, and the mainspring engaging with the hammer and operating by forcing the trigger down to lower said elevator behind the magazine, and a cartridge-magazine provided with a cartridge-expelling spring, and a downward lug on said elevator, closing part of the magazine when it is elevated.

8. In a firearm, the combination, with a magazine and a spring within it compressed by the insertion of the cartridges, of a bail pivoted upon the magazine and extending across the open end thereof.

9. In a firearm, the combination, with the magazine, the spring within it, and the bail pivoted upon its sides and extending across its open end, of the frame having a socket to receive the end of the magazine and provided with grooves in its inner surface, with which said bail engages.

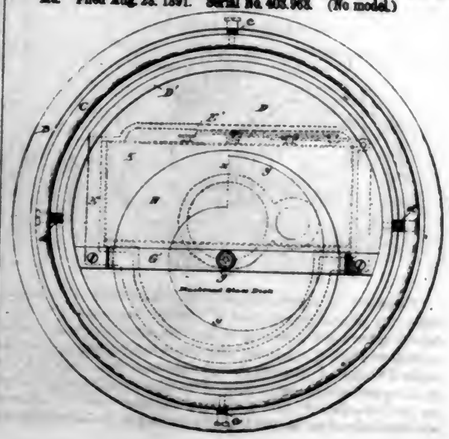
477,281. APPARATUS FOR PURIFYING OIL. OLE K. THOMASSEN, Christiania, Norway. Filed Sept. 5, 1891. Serial No. 404,910. (No model.) Patented in Norway May 20, 1891, No. 2,096.



Claim.—1. In an apparatus for refining waste oil, the combination, with the lower receiver B, a capillary filter within the same, a basin *y* in the upper part and outside of said receiver, and a filter 4 between said capillary filter and basin and in close proximity to both, of an upper receiver removably mounted on said receiver B and provided with an imperforate bottom, filtering means located in said upper receiver, and a cock serving as a discharge for the latter below its filtering means and enabling the flow of semi-refined oil to be graduated and controlled, substantially as set forth.

2. In apparatus for refining waste machine-oil, the combination of the receivers A, B, and D, vertically and detachably arranged, the receiver A having an imperforate bottom and horizontally-disposed filters or sieves, a cock serving as a discharge for the receiver below said horizontal sieves, and a vertical sieve 3, the receiver B receiving oil from the cock of receiver A and containing a vertical sieve guarding its ingress-opening and consisting of filter fabric clamped by a removable frame, together with pipes passing through the bottom of said receiver B, the central tube serving as an air-passage and the remainder containing wick-tubes and acting as capillary filters, substantially as set forth.

477,282. RECORDING-COMPASS. JOHN J. TOWNSEND, Portsmouth, Va., assignor to the Townsend Marine Invention Company, Baltimore, Md. Filed Aug. 23, 1891. Serial No. 403,963. (No model.)



Claim.—1. The combination, with a case having a slit, of a vertical shaft carrying a magnetic needle and an opaque disk containing a diaphanous spiral line, forming but a single turn and intersecting the plane of the slit, substantially as described.

2. The combination, with a case having a slit, of a magnetic needle and a screen covering said slit and adapted to be moved by the needle, said screen consisting of a sheet of glass or other transparent material having an opaque coating, a portion of said coating being removed in a line intersecting the plane of the slit, substantially as described.

3. The combination, with a case having a slit, of a vertical shaft carrying a magnetic needle and a glass disk blackened on one side, the opaque coating being removed in a spiral line, substantially as described.

4. The combination, with a case having a slit, of a vertical shaft carrying a magnetic needle and an opaque disk having a diaphanous spiral line forming but a single turn, with its ends falling short of the same radial line by an amount equal to the width of the slit, substantially as described.

5. A recording-compass comprising a suitable case for the compass-needle and a removable dark-box for containing a sensitized surface to be affected by the movements of the compass-needle, substantially as described.

6. The combination, with the case E, containing the shaft and compass-needle, of the shallow box adapted to fit up against the top of the case above the needle, substantially as described.

7. A recording-compass comprising the case E, the removable box K, having an opening in its top, the slide *k*, adapted to close said opening and provided with a rack, and the shaft *k'*, carrying a pinion meshing with said rack, substantially as described.

8. A recording compass comprising the box K, having an opening in its top, the screen *k* for closing said opening, the rock-shaft *m'*, having rock-arms *m m²*, the roller M, journaled on the arms *m*, and the spring *m³*, bearing against the arm *m²*, substantially as described.

9. A recording-compass comprising the case E, the box K, removable therefrom and containing the feed-roll N, whose axle carries the cog-wheel T outside of the box K, the clock-work G, contained in a frame secured to the case E, and a train of gears adapted to connect the clock-work and the cog-wheel T when the box is placed in the case, substantially as described.

10. A recording-compass comprising the case E, the box K, removable therefrom and containing the winding-drum L, a pinion *l* on the axle of the winding-drum and outside of the box, a drum Q, journaled in fixed bearings in the case E, a weighted cord wound on the drum, and gearing connected with the drum and adapted to mesh with the pinion *l* when the box K is placed in the case, substantially as described.

11. A recording-compass comprising the case E, the removable box K, containing the feed-roll N, provided with a cog-wheel T outside of the box, the clock-work having a gear-wheel *o*, and a train of gears connecting the gear-wheel *o* and cog-wheel T, said train being mounted on a frame adapted to be swung clear of the box K when the latter is to be removed from the case, substantially as described.

12. In a recording-compass, the combination, with the casing containing a slit, of the magnetic needle secured to the vertical spindle, the disk H, mounted on the spindle in close proximity to the slit in the casing and containing the spiral *y*, which makes substantially a complete turn and is thereby adapted to intersect the plane of the slit at every position of the needle, a sensitized strip arranged to travel at one side of the spindle, and a motor for moving the strip, substantially as described.

13. In a recording-compass, the combination, with the casing having in its top D the slit *x*, of the spindle G, passing below the top D and having the magnetic needle secured to it, the disk H, mounted on the spindle just above the top D and having the spiral *y*, making substantially a complete turn and intersecting the plane of the slit *x*, the traveling sensitized strip arranged below the top D at one side of the spindle, and a motor for moving the strip, substantially as described.

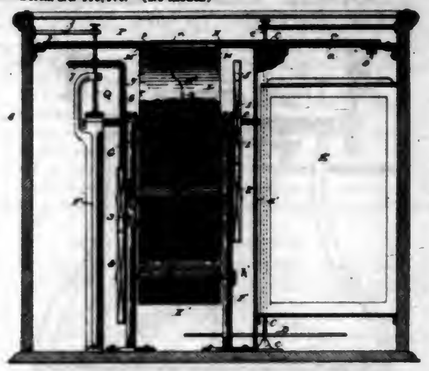
14. A recording-compass comprising the casing having the slit *x*, the dark-box arranged below the top D, the spindle arranged at one side of the dark-box and carrying the disk H above the top of the casing, and a long magnetic needle secured to the spindle and arranged to swing below the dark-box, substantially as described.

15. The combination, with the casing having the slotted top D, of the magnetic needle F, secured upon the spindle G, the conical step-bearing *g*, and the adjustable conical bearing *g'* for the spindle, the disk H, secured to the spindle just above the top D, the dark-box immediately below the top D at one side of the spindle, and means for moving a sensitized strip in the dark-box, substantially as described.

16. A recording-compass comprising, in combination with the magnetic needle, a screen having a slot, and a disk having a spiral *y*, forming but a single turn and intersecting the plane of the slot, its ends lying nearly in the same radial line and both on the same side of the center of the disk, substantially as described.

17 A recording-compass comprising a case having a beveled recess in the under side of its top and a slit at the summit of the recess, a movable screen controlling the passage of light through said slit, a sensitized strip traveling below the slit, and a suitable device for pressing said strip into the recess, substantially as described.

477,283. AUTOMATIC RECORDING-COMPASS. JOHN J. TOWNSEND, Portsmouth, Va., assignor to the Townsend Marine Invention Company, Baltimore, Md. Filed Mar. 22, 1890. Renewed Dec. 29, 1891. Serial No. 416,476. (No model.)



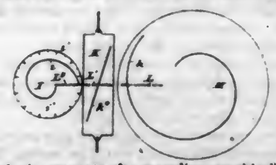
Claim.—1. A recording-compass comprising a magnetic needle, a spirally-slotted disk revolved thereby, a sensitized sheet, a motor arranged to move said sheet under the disk, and a time-recording device adapted to mark upon the sensitized sheet regular intervals of time, substantially as described.

2. In a recording-compass, the combination, with the magnetic needle, of a spirally-slotted disk revolved thereby, a strip of sensitized material adapted to be moved under the disk, a motor for causing the strip to move, and a wheel revolved by the motor at an even rate of speed and adapted to mark the record-strip at predetermined intervals of time, substantially as described.

3. In a recording-compass, the combination, with the casing A, having the diaphragm *a* slotted at M M', and the partition *a'*, of the slotted disk N, controlled by the magnetic needle, and the slotted wheel P, revolved by clock-work at a regular speed, substantially as described.

4. In a recording-compass, the combination, with the spindle B and the needle C, of the spirally-slotted disk N, the clock-work E, the drum G, guide-rollers, the spools, the wheel P, and gears 1, 2, 3, 4, 5, 6, and 7, substantially as described.

477,284. AUTOMATIC COURSE, SPEED, AND TIME RECORDER FOR VESSELS. JOHN J. TOWNSEND, Portsmouth, Va., assignor to the Townsend Marine Invention Company, Baltimore, Md. Filed Apr. 29, 1890. Renewed Dec. 29, 1891. Serial No. 416,477. (No model.)



Claim.—1. An apparatus for recording graphically the course, time, and rates of speed of a vessel, consisting of a magnetic needle, a clock, a submerged device offering a resistance to its passage through the water, three movable slotted screens connecting, respectively, with needle, clock, and submerged device, and a sensitized surface traveling below the screens, substantially as described.

2. The combination, with a drum, of a magnetic needle carrying a slotted disk, a wheel having one or more slots, a clock driving the drum and wheel, a slotted slide, and a drag connected with the slide, substantially as described.

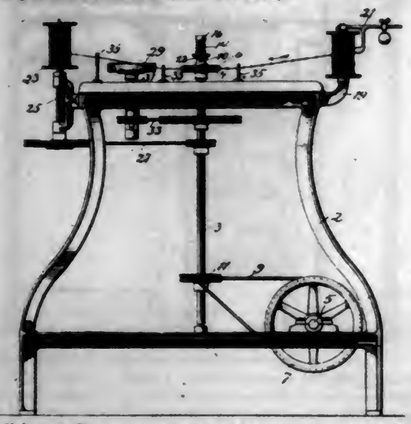
3. The combination, with the casing having a slotted diaphragm, of the drum, revolving below said diaphragm, the obliquely-slotted slide between the drum and the diaphragm, the spring attached to one end of the slide, and the drag attached to the other end of the slide, substantially as described.

4. The combination of the casing having the diaphragm, the guides let into the under surface of the diaphragm, the slotted slide supported by marginal flanges in said guides, the adjustable spring attached to

one end of the slide, and the drag connected with the other end, substantially as described.

5. A speed-recorder for vessels, consisting of the combination, with the casing having a slotted diaphragm, of a slotted slide movable below the slot in the diaphragm, a drag connected with said slide, a sensitized surface below the slide, and suitable means, substantially as described, for moving the sensitized surface, as and for the purposes set forth.

477,285. MACHINE FOR REMOVING SUPERFLUOUS MATERIAL FROM THREAD. CHARLES L. TRAVER, Minneapolis, Minn. Filed July 6, 1891. Serial No. 398,488. (No model.)



Claim.—1. The combination, with the grooved guide and gage plate, of the cutters arranged upon opposite sides thereof and means for moving the thread or fiber along said grooved plate and between said cutters.

2. The combination, with means for moving the thread, of the gage and guide plate and the cutters arranged to cut close to said guide-plate on opposite sides thereof.

3. The combination, with means for moving the thread, of the circular cutters and the grooved plate projecting between said cutters.

4. The combination, with means for moving the thread, of the circular cutters, means for rotating said cutters, and the grooved disk projecting between said cutters.

5. The combination, with the gage and guide plate, of the cutters and a spring-tension device for holding one of said cutters, substantially as described.

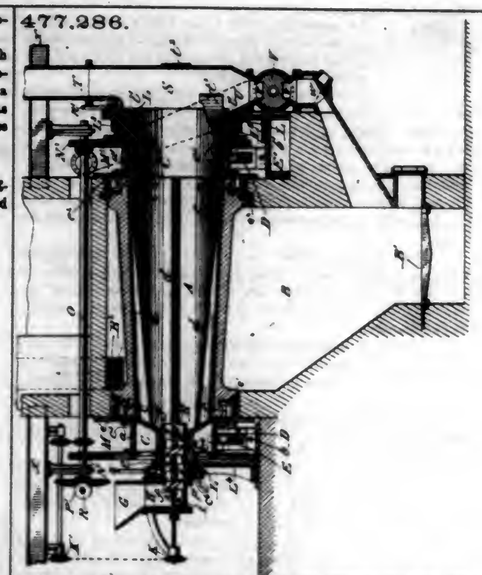
6. The combination, with the removable gage and guide plate 13, of the cutter 4, the removable cutter 6, said cutters being arranged on opposite sides of said guide-plate, and a tension device for holding said cutter 6 in contact with said guide-plate, substantially as described.

7. The combination, with the guide and gage plate, of the cutters arranged on opposite sides thereof, means for moving the thread or fiber over said guide and between said cutters, and means for giving a rolling or turning motion to said thread or fiber.

8. The combination, with the guide and gage plate, of the cutters arranged on opposite sides thereof, means for moving the thread or fiber over said guide and between said cutters, and the brush for engaging said thread after it leaves said cutters.

9. The combination, with the guide and gage plate, of the cutters arranged on opposite sides thereof, means for moving the thread or fiber over said guide and between said cutters, a rotating brush, and means for bringing the thread or fiber after it leaves the cutters in an inclined direction across the edge of said brush.

477,286. RETORT-FURNACE. JOHN A. YEADON and WILLIAM ADDIS, Leeds, England. Filed July 23, 1890. Serial No. 359,645. (No model.) Patented in England Nov. 29, 1889, No. 19,153.



Claim.—1. A retort-furnace, in combination with a retort revolubly mounted in the furnace, the interior of said retort being provided with stirrer-blades tapering or diminishing in height toward the discharge end of the retort, substantially as described.

2. A retort-furnace, in combination with a retort revolubly mounted in the furnace, the interior of said retort flaring toward its discharge end and provided with stirrer-blades, said blades tapering or diminishing in height toward the flaring end of the retort, substantially as described.

3. A retort-furnace, in combination with a revolubly-mounted retort consisting of a main body portion and end portions separably connected to the main body portion, said main body portion being located within the combustion-chamber of the furnace and the end portions being located outside the combustion-chamber, annular rims in the furnace-walls, within which rims the inner extremities of the end portions are journaled, an additional annular rim within which the outer extremity of the discharge end portion is journaled, supporting-rollers intermediate of the said additional annular rim and proximate furnace-wall rim to relieve them from the weight of the discharge end portion, and power-transmitting mechanism geared to both end portions, and driving them simultaneously, substantially as described.

4. A retort-furnace provided with openings in its front and rear walls, said openings being faced with annular metallic rims, in combination with a retort consisting of a main body portion and auxiliary end portions, the ends of the main body portion being provided with annular circumferential grooves and with radial grooves, bolts whose heads rest within the circumferential grooves and whose bodies rest within the radial grooves, and removable nuts for securing the main body portion to the auxiliary end portions by means of said bolts, substantially as described.

5. In a retort-furnace, a retort revolubly mounted therein, said retort having at its discharge end an annular flange separated therefrom by an intervening socket-space, in combination with an end plate communicating with the gas-exit and having an inwardly-extending annular flange fitting within the said socket-space and an outer casing surrounding the flange, substantially as described.

6. In a retort-furnace, a retort revolubly mounted therein, said retort having at its discharge end an annular flange separated therefrom by an intervening socket-space, in combination with an end plate S, communicating with the gas-exit and having an inwardly-extending annular flange fitting within the said socket-space, a casing surrounding the flange, packing within the casing, and a steam-pipe, substantially as described.

7. In a retort-furnace, a retort revolubly mounted therein, said retort having at its receiving end a projecting annular flange, in combination with a feed-tube fitting within said annular flange, a casing surrounding the annular flange, said feed-tube and casing being supported independently of the retort, packing within the casing, and a steam-pipe, substantially as described.

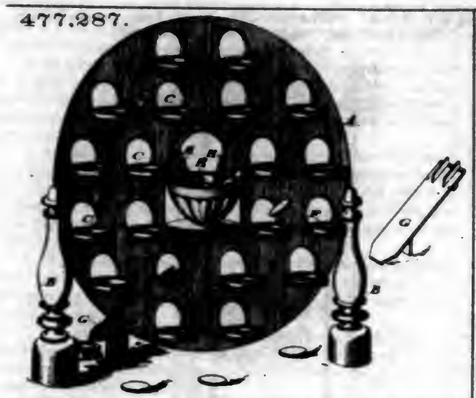
477,287. GAME APPARATUS. CHARLES ZIMMERLING, Philadelphia, Pa. Filed May 27, 1891. Serial No. 394,285. (No model.)

Claim.—1. In a game apparatus, an upright plate with a series of openings therein, supports at the bases of said openings, cups on said supports, a chip, and a snapper, said parts being combined substantially as described.

2. In a game apparatus, a plate having an opening, and a tray in said opening, and a cup adapted to be supported on said tray, substantially as described.

3. A plate having an opening with a tray or supporting device adjacent thereto, in combination with a cup adapted to rest on said

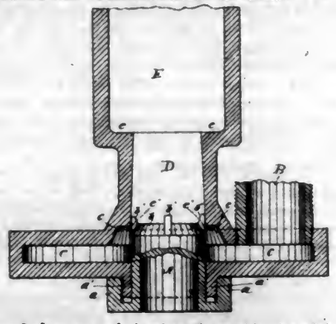
477,287.



device, and a tongue on the plate projecting from the wall of the opening into the cup for preventing the dropping of said cup, substantially as described.

4. A game apparatus consisting of a plate having openings therein, trays secured in said openings, resonant cups on said trays, an inclined chute sustained on said plate and having its upper end adjacent to one of the openings in the plate, a chip, and a snapper, substantially as described.

477,288. GAS AND AIR MIXER. ANOS L. AVERY, Bradford, Pa. Filed Apr. 14, 1891. Serial No. 388,934. (No model.)



Claim.—1. In a gas and air mixer, the combination of the hollow sleeve A, having the beveled end *b*, carrying projections *b'*, pipe D, the gas-supply pipe B, and the circular chamber C, having the supplemental chamber *c*, all substantially as shown and described.

2. In a gas and air mixer, the combination of the receiver C, having supplemental chamber *c*, gas-supply pipe B for conveying gas to said receiver, delivery-pipe D, having converging sides, and the adjustable hollow sleeve A, fitting within said pipe D, having the beveled end *b*, carrying the projections *b'*, and the screw-threaded flange *a*, for the purpose set forth.

477,289. MILK-RECEIVER. EDWARD BATTERS, Toronto, Canada. Filed Jan. 2, 1892. Serial No. 416,759. (No model.)



Claim.—1. In combination, the receptacle having an opening in one of its side walls and the movable spout arranged in the upper part of the receptacle and guided to move through the said opening, the said spout filling said opening and forming a closure for the same and having an opening at its outer end to receive the milk and an opening at its inner end to discharge the same into the receptacle, substantially as described.

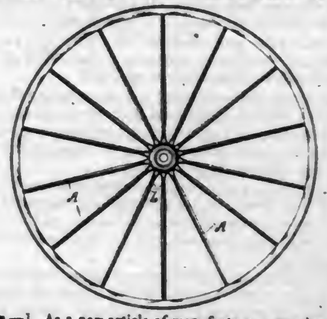
2. The receptacle having a main spout I projecting laterally therefrom and the sliding supplemental spout M, extending and guided through the said main spout and forming a closure for the same and extending across the upper part of the receptacle, said spout having its outer and inner ends provided with openings to receive and discharge the milk, substantially as described.

3. In combination, the receptacle having the upwardly-inclined spout on one side, the supplemental movable spout extending through the same in inclined position and across the top of the receptacle, said spout forming a closure for the main spout and having openings at its outer and inner ends to receive and discharge the milk, and the sieves N O, carried by the movable spout, substantially as described.

4. In combination, the receptacle, the main spout projecting laterally therefrom, and the supplemental spout fitting in the main spout and reaching across the upper part of the receptacle, said spout forming a closure for the lateral opening and having a ticket-pocket on its upper side arranged to be concealed when the spout is slid within the main spout, substantially as described.

5. In combination, the receptacle having a lateral opening, the supplemental spout movable therein and guided in the upper part of the receptacle, said spout having an opening at its outer end for the reception of the milk and an opening at its inner end for the discharge thereof into the receptacle, the guides o, extending downwardly across the supplemental spout, and the sieves supported thereby, the said guides serving as stops for the supplemental spout, substantially as described.

477,290. SPOKE FOR VEHICLE-WHEELS. ALMA BEDFORD, Coldwater, Mich. Filed July 20, 1891. Serial No. 400,070. (No model.)



Claim.—1. As a new article of manufacture, a wooden spoke for vehicles having a foot at one end and a tongue at the opposite end, and an interposed throat oval in cross-section, the body of said spoke being rhombal in cross-section, as set forth.

2. In a vehicle-wheel, the combination, with the rim and hub, of the spokes having a square foot secured in the hub, the resilient throat oval in form, the rhombaled formed body extending from the throat to the outer end, which is provided with a plain tenon secured in the rim.

477,291. SASH-HOLDER. WILLIAM A. BOMAR, Metropolis City, Ill. Filed Apr 16, 1892. Serial No. 429,384. (No model.)



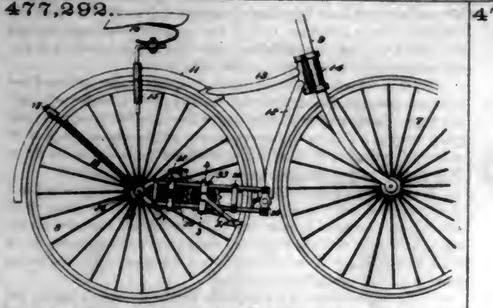
Claim.—1. In a sash holder and lock, in combination, a rod or bar, cam having two faces, either of which may engage said bar, and a spring-pressed pin carried by said cam between its faces, which impinges against said bar, substantially as shown and described.

2. In a sash holder and lock, in combination, a rod or bar having a toothed side, a pivoted cam having alternately-operative faces, each of which is grooved so as to engage the bar on each side of its teeth, and a spring-pressed pin having a V-shaped end to engage said teeth, substantially as shown and described.

477,292. BICYCLE. JAMES BRADLEY, Albany, N. Y., assignor of one-half to Harrison W. Bullock, same place. Filed Feb. 11, 1892. Serial No. 421,132. (No model.)

Claim.—1. In a bicycle, the combination, with the driven wheel,

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of a pedal-gear train, bearings for the outer members of said gear-train, and friction-balls separating the bearings from the gear-wheel journals, substantially as described.

2. In a bicycle, the combination, with the driven wheel, of a pedal-gear train, bearings for the outer members of said train, a shaft or arbor for each of said members and upon which it is fixed, sleeves on the shaft, and friction-balls separating the bearings from the sleeves, substantially as described.

3. In a bicycle, the combination, with the driven wheel, of a pedal-gear train, bearings for the outer members of said train, said bearings consisting of a main body portion and a two-part nut having a recess between the parts for the reception of friction-balls, a shaft or arbor for each of said outer gear-wheels and upon which it is fixed, sleeves on the shaft, and friction-balls separating the interior of the two-part nut from the sleeves, substantially as described.

4. In a bicycle, the combination, with the driven wheel, of a pedal-gear train and bearings for the outer members of said train, and rods upon which the bearings are mounted, said bearings being split at their ends and provided with clamping-screws for clamping the split ends upon the rods, substantially as described.

5. In a bicycle, a pedal-gear frame consisting of two pairs of guide-rods for the gear-wheel bearings, said rods being connected to form a rigid frame and said frame being suspended at one end from the driven-wheel hub and at the other end from the backbone-frame, substantially as described.

6. In a bicycle, a pedal-gear frame, consisting of two pairs of guide-rods for the gear-wheel bearings, one pair of said rods being shorter than the other, cross-pieces for connecting said pairs to form a rigid frame, one of said cross-pieces being connected to the wheel-hub and the outer ends of the longer pair of guide-rods being connected by a cross-piece supported from the backbone-frame, substantially as described.

7. In a bicycle, a frame-work consisting of two pedal-gear frames, each formed of two pairs of guide-rods for the gear-wheel bearings, connected to form rigid frames, said frames being suspended at one end from the driven-wheel hub, a saddle-supporting backbone having at its end a cross-pin connecting it to the outer ends of the pedal-gear frames, and rods extending rearwardly from the hub and having a bridge-piece for connecting them to the backbone, substantially as described.

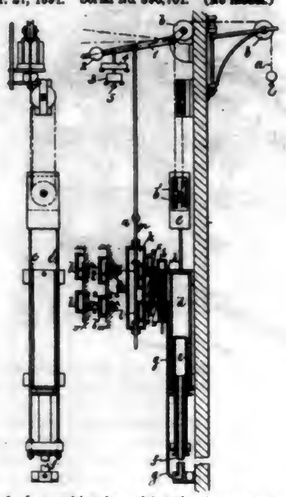
477,293. SCREW-CUTTING DIE. CALVIN L. BUTLER, Greenfield, Mass. Filed Mar. 3, 1892. Serial No. 424,183. (No model.)



Claim.—1. The combination, with a screw-cutting die-holder provided with an annular groove formed outward from within, and holes radiating outward through said groove, as described, and the die in parts with grooves corresponding with the groove of the holder, of feathers provided with studs adapted to engage the grooves of the holder and die and extend through openings of said holder, as and for the purpose set forth.

2. The combination, with a holder for a screw-cutting die having a cylindrical wall perforated radially with alternating plain and screw-threaded holes and provided with an annular groove cut from within outward, of the screw-cutting die formed in parts having splayed angles, each part provided with a groove corresponding with the groove of the holder, feathers with studs fitting into the grooves of the die and holder and unscrewthreaded holes of the latter, the conical screws, and flat-pointed screws, all arranged substantially as and for the purpose set forth.

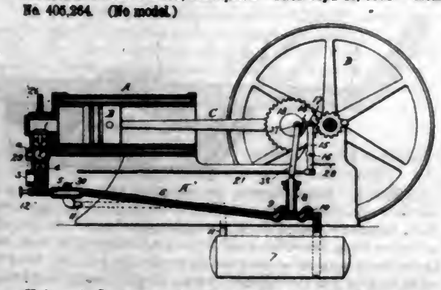
477,294. HYDRAULIC LIFT. ROBERT CAREY, London, England. Filed Apr. 27, 1891. Serial No. 390,701. (No model.)



Claim.—1. In combination with a fixed tubular plunger *f* and a pipe communicating therewith, a movable hollow plunger fitting over the said fixed plunger and closed at the upper end, a fixed cylinder open at the lower end to receive the said movable piston, a pipe entering the said cylinder, valves controlling the passage of fluid through the said pipes to or from the said cylinder and movable plunger, as needed, a heavy pulley-block supporting the weight to be lifted or lowered and connected to the said movable plunger, a movable weighted lever provided at one end with a pulley carrying a lifting chain or cable, which is connected to said heavy pulley, an auxiliary valve-chamber, and operating connections between the valves in this chamber and said movable lever, substantially as and for the purpose set forth.

2. In combination with the fixed hollow plunger *f* and the pipe *g*, communicating therewith, a plunger *e*, closed at the top and movable over the same, a fixed cylinder *d*, receiving the upper end of the said movable plunger, a pipe *h*, extending into the said cylinder, a valve-chamber *i*, communicating with the said cylinder and movable plunger through the said pipes, valves in the said chamber closing and opening the said pipes, a second valve-chamber provided with pipes A B E, making communication with the valve-chamber *i* and said second valve-chamber, as shown, valves *l*, controlling the said pipes, the rod *m* of the said valves *l*, the weighted lever 1, to which the said rod is connected, a weighted pulley carrying block *c*, connected to the said movable plunger and moving therewith, and a chain provided at one end with means for supporting the weight to be lifted and lowered and passing over the pulleys of the said block, and a pulley mounted on the said lever in order that any variation in the weight to be lifted may shift the valves in the valve-chamber aforesaid, and thus direct the supply or withdrawal of fluid to or from either side of the said hollow movable plunger to compensate for such change, substantially as set forth.

477,295. GAS-ENGINE. JAMES A. CHARTER, Sterling, Ill., assignor of one-half to John Charter, same place. Filed Sept. 10, 1891. Serial No. 405,264. (No model.)



Claim.—1. In a gas-engine, the combination, with the explosion-chamber, of a valve-casing having two air-ports, a valve controlling the passage of air through the ports, and means for automatically

opening communication alternately between the combustion-chamber and one or the other of said air-ports, substantially as described.

2. In a gas-engine, the combination, with the explosion-chamber, of a valve-casing having two air-ports, a valve and its operating devices for opening said air-ports alternately, and an oil-nozzle extending into the casing, so that the air from one of the ports will traverse the nozzle, substantially as described.

3. In a gas-engine, the combination, with the explosion-chamber, of a valve-chamber, an automatic valve between the explosion-chamber and valve-chamber, the valve-chamber being provided with two air-ports and a nozzle extending into the chamber past one of the air-ports, and a valve and its operating devices for opening said air-ports alternately, substantially as described.

4. In a gas-engine, the combination, with the explosion-chamber, of the valve-casing having two air-inlet ports and a three-way valve and operating devices therefor for opening said ports alternately, substantially as described.

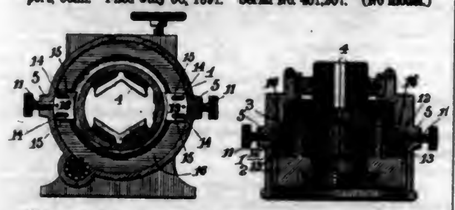
5. In a gas-engine, the combination, with the valve-chamber, of the nozzle extending into the chamber, a pump supplying oil to said nozzle, and an overflow-chamber interposed between the nozzle and pump, substantially as described.

6. The combination, with the valve-chamber and nozzle extending therein, of a reservoir, a pipe leading from the reservoir to the nozzle, a pump located in said pipe, and an overflow-chamber also located in said pipe and connected to the reservoir, substantially as described.

7. In a gas-engine, the combination, with the explosion-chamber, of the valve-chamber having two air-inlet ports, a valve and operating devices therefor for opening said ports alternately, a nozzle extending into the chamber adjacent to one of the ports, a reservoir connected to the nozzle by means of a pipe 6, a pump arranged in the line of said pipe, and a pipe 11, connecting the pipe 6 with the tank, substantially as described.

8. In a gas-engine, the combination, with the valve-chamber having two air-inlet ports, of a valve arranged to open said ports alternately, a gear-wheel connected to the shaft of the engine and carrying a cam, and a lever operated by the cam and connected to operate the valve, substantially as described.

477,296. PIPE-THREADING MACHINE. RODERICK P. CURTIS and LEWIS R. CURTIS, Southport, assignors to Curtis & Curtis, Bridgeport, Conn. Filed July 30, 1891. Serial No. 401,207. (No model.)



Claim.—1. In a pipe-threading machine, the casing having therein an annular seat, in combination with separate and independent lead-blocks secured against said seat and capable of an inward-and-outward movement, substantially as set forth.

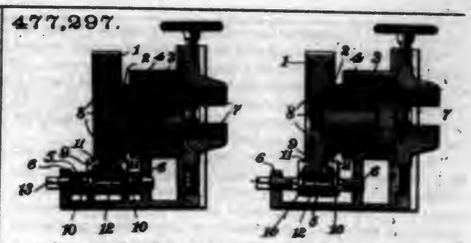
2. In a pipe-threading machine, the combination of the annular seat in the casing, having its entire area in the same vertical plane, the lead-blocks having countersunk slots and abutted against said seat, the pins extended from said seat within said slots and having heads which are closely adapted to said countersunk portions, and means, as thumb-screws, for operating said blocks, substantially as shown and described.

3. In a pipe-threading machine, the combination, with the casing having nipples on opposite sides thereof, of the plate having a shoulder which fits snugly within the face of said casing, and arms secured to opposite sides of said plate and extended across said nipples, whereby the latter may be pierced in accurate alignment with each other to accommodate the thumb-screws for the lead-blocks, substantially as set forth.

477,297. PIPE-THREADING MACHINE. RODERICK P. CURTIS, Southport, assignor to Curtis & Curtis, Bridgeport, Coun. Filed July 30, 1891. Serial No. 401,209. (No model.)

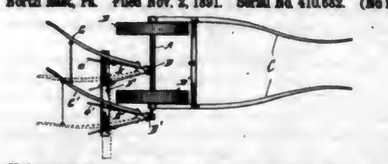
Claim.—1. In a machine of the character described, the combination, with the toothed die-carrying ring capable of a sliding movement in a direction parallel to its axis, and the pinion engaging the same, whereby rotation is imparted to said ring, of a keeper which slides in harmony with said ring and secures the latter rigid to the pinion as to movement in a direction at right angles to the axis of said ring, substantially as set forth.

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2. In a pipe-threading machine embodying in its organization a toothed die-carrying ring mounted on a rotatory spindle, which latter is journaled in suitable bearings, and a pinion whereby said ring is rotated, the combination, with said ring and pinion, of a keeper which secures said ring and pinion rigidly together as to movement in a direction at right angles to their axes, substantially as shown and set forth.

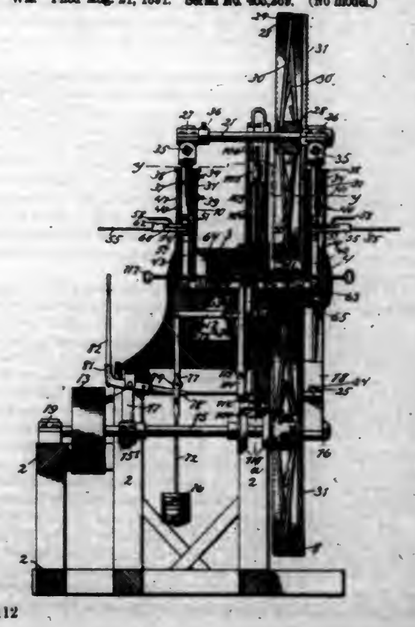
477,298. VINEYARD WEED-CUTTER. DENNIS D. DEWEY, North East, Pa. Filed Nov. 2, 1891. Serial No. 410,682. (No model.)



Claim.—1. The combination, in a vineyard cutter, of an axle, wheels thereon and thills secured to said axle, with adjustable arms or drag-bars, one of which is coupled to said axle between the wheels and the other to a projection on said axle outside of one of the wheels, a cutting-blade pivoted to said arms, so as to be carried at the rear of one side of the machine, and handles secured to said arms or drag-bars, substantially as and for the purpose set forth.

2. The combination, in a vineyard weed-cutter, of an axle, as A, having wheels B B' and thills, as C, thereon, with the arms E E', coupled to the axle A by means of universal joints D D' and having adjustable sections *e e'* thereon, a cutting-blade, as F, pivoted to the lower ends of the sections *e e'* and adapted to be adjusted at different angles with the axle and at different inclinations, and laterally-curved handles, as G G', secured to the arms E E', substantially as and for the purpose set forth.

477,299. BAND-SAW MILL. CHARLES M. EMERSON, Eau Claire, Wis. Filed Aug. 21, 1891. Serial No. 403,269. (No model.)



Claim.—1. The combination, with the base provided with the hollow columns, of the bearing-sleeves 37, arranged in the upper portions of said columns and provided with the flanges 38, adapted to rest upon the tops of the columns, means for laterally adjusting said sleeves in said columns, the upper shaft, the bearings thereof, and the shanks 34, upon which said bearings are supported and which are held in said bearing-sleeves 37, substantially as described.

2. The combination, with the base provided with the hollow columns, of the bearing-sleeves arranged in the upper portions of said columns, means for laterally adjusting said sleeves in said columns, the shanks arranged in said sleeves, the upper shaft supported upon said shanks, and means for simultaneously or independently moving said shanks in a vertical direction, substantially as described.

3. The combination, with the base and the hollow columns, of the bearing-sleeves arranged in the upper ends of said columns and laterally adjustable therein, the upper shaft, the shanks arranged in said bearing-sleeves, the shaft-bearings pivotally supported upon said shanks, the jack-screws connected with said shanks, means for operating said screws, and the weighted levers supporting said jack-screws, substantially as described.

4. The combination, with the base and the columns provided with scales arranged thereon, of the adjustable shanks arranged in said columns and supporting said shaft of the upper wheel and the pointers arranged upon said shanks and extending over said scales, substantially as described.

5. The combination, with the base provided with the columns, of the upper wheel, its shaft, shanks arranged in said columns and supporting said shaft, levers supporting said shanks, a weight connected with said levers and adapted to raise said shanks, and a hand-lever arranged to raise said weight and thereby to permit the upper wheel to be lowered.

6. The combination, with the base, of the integral columns 9 and 10 thereof, the narrow top of the base, the depression 11 therein between the main part of the base and the column 9, the hollow bracket portion 7, from which the column 9 springs, the depending hanger secured upon the outer end of said bracket by bolts 20, the lower end of said bracket provided with a laterally-adjustable bearing, the lower shaft, the lower wheel arranged on the said shaft between the hanger and the forward part of the base, the upper shaft, means for adjustably securing the same, the upper wheel on said shaft and arranged between said column and above said depression 11, jack-screws supporting the bearings of the upper shaft, openings in each column, and the jack-screw levers extending through said openings, the walls of said base being closed at all other points except said openings, substantially as described.

7. The combination, with the hollow base, of the upper band-wheel and the shaft thereof, with vertically-adjustable bearings for said shaft, levers 44, pivoted within said base, the said bearings being supported upon the outer ends of said levers 44, the link 68, the lever 69, the rod 72, the weight 76 thereon, the lever 78, adapted to engage said rod 72 and lift the same, and means for operating said lever to lift said rod, and thereby permit the lowering of the band-wheel, substantially as described.

8. The combination, with the upper band-wheel and the shaft thereof, of the base, levers arranged within the said base, a weight in connection with said levers to normally support said band-wheels, a pivoted lever 78, adapted to engage the weight mechanism, and a bar 82, arranged in the socket of said lever 78, substantially as described.

9. The combination, with the base and the hollow columns thereof, of the upper shaft and the band-wheel thereon, bearings for said shaft, the shanks 34 thereof, the shank-sleeves 37, arranged in the tops of the columns and engaging said shanks 34, means for supporting said shanks, said sleeves being smaller than the inside of said columns, and set-screws 39 for adjusting said shank-sleeves laterally in said columns, substantially as described.

10. The combination of the column of the base with the upper band-wheel shaft, the bearing thereof, the shank 34 and the yoke 33, on which said bearing is trunnioned, guides for said shank in the top of the column, the supporting-lever 44, the weight depending from the inner end thereof, an arm 43, pivoted on the outer end of the lever 44, the threaded spindle 49, having the end 45 fitting upon the top of the arm 43 and revoluble thereon, the ratchet 51, secured upon the part 48 of said spindle, the lever 54, having its end loosely journaled on the hub of said ratchet, a double pawl 59, pivoted on the lever 54, said pawl 59 having the end 58, the similarly-pointed spring-rod 60, fixed upon the lever 54 and held in engagement with said pawl, means for throwing said pawl from one side or the other, and a slip-bar 55 to be inserted in the end of said lever 54, substantially as described.

11. The combination, with the saw-guide arm, of the pin 95, vertically arranged on the end thereof, a shoulder or ring on said pin, a block provided with the short groove to fit the forward side of said pin and its ring or shoulder, screw-bolts 93, extending through the end of the arm and into threaded openings provided in the swing-block, said swing-block being thereby held against said pin and thereby supported on said arm, and saw-guides arranged on said swinging block, substantially as described.

12. The combination, with the saw-guide arm, of the pin 95, vertically arranged on the end thereof, a shoulder or ring on said pin, a block provided with the short groove to fit the forward side of said pin and its shoulder or ring, screw-bolts 93, extending through the end of the arm and into threaded openings provided in the swing-block, said swing-block being thereby held against said pin and supported on said arm, the L-shaped saw-guides 86 and 87, having the inwardly-projecting parts provided with dovetailed ribs, said swinging block provided with dovetailed grooves extending transversely with respect to the saw held between the guides, the L portions being provided with slots, and bolts 91 for securing the same upon said swinging blocks, all substantially as and for the purpose specified.

13. The combination, with the arm 83, of the base whereon the same is secured, the end 97 of said arm, the extension portion of said arm, said arm being provided with vertical T-slots, bolts 101, arranged in the extension portion and having their heads arranged in the T-slots of the arm, nuts on said bolts for securing the extension part firmly upon the arm 83, horizontal openings arranged in the end of the extension part, blocks 94, arranged in said part, the screw-bolts 93, extending through the same, the swinging block 90, the vertical pin 95, arranged between said block and the end of the extension-arm, said parts being grooved to receive the same, as described, said bolts passing through the same and into said swinging block, whereby said block may be adjusted with respect to the arm, adjustable saw-guides arranged on the swinging block, and an adjustable stop arranged between said guides, substantially as described.

477,800. GUIDE FOR MOLDERS' FLASKS. HENRY H. GARRETT, Pittsburg, Pa. Filed Mar. 21, 1892. Serial No. 425,723. (No model.)



Claim.—1. In a guide for molders' flasks, the combination of two fixed guides adapted to be secured to the cope and the drag, respectively, a sliding block longitudinally adjustable upon each of said guides, and a guide-pin adjustable upon one of said blocks toward and from the fixed guides and fitting a slot or guideway upon the other block, substantially as set forth.

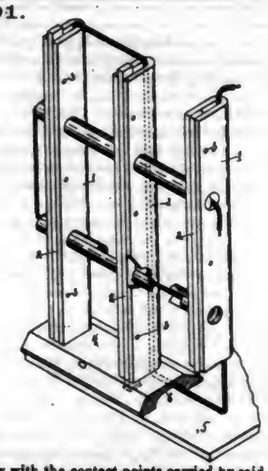
2. In a guide for molders' flasks, the combination of two fixed guides adapted to be secured upon the cope and the drag, respectively, a sliding block fitting on one of said guides and having an outwardly-projecting arm, a clamp for fixing said block in position on the guide, a guide-pin fitting freely on and depending from the arm of the sliding block, a clamp for fixing said guide-pin, a second sliding block fitting on the other fixed guide and having a projecting arm slotted to receive the guide-pin, and a clamp for fixing said sliding block on said fixed guide, substantially as set forth.

477,801. ELECTRIC JAIL. PERLEY HALE, Chicago, Ill., and CHARLES H. SPARKS, St. Louis, Mo., assignors, by direct and mesne assignments, of part interest to William S. Hull, Sheffield, Ala. Filed Sept. 7, 1891. Serial No. 405,016. (No model.)

Claim.—1. A cell having vertical and horizontal grate-bars forming a cell-grating and provided with channels for the passage of electric wires, a ceiling and a floor provided with crevices or corrugations for the reception of the electric wires, a door carrying electric contact-points, electric wires traversing said cell grating, ceiling, and floor and adapted to be brought in contact with the contact-points carried by the cell-door, an electric wire traversing the said cell-door and in electrical connection with said contact-point carried by the same, an electric switch for throwing the wire traversing the door out of circuit, a battery, an electro-magnet provided with an armature, an alarm mechanism and battery for actuating the same, and suitable electrical connection between the wires which traverse the cell walls, floor, and ceiling, and the electro-magnet, battery, and alarm mechanism, substantially as set forth.

2. An inclosure having its sides, floor, and ceiling and doors provided with crevices or corrugations for the insertion of electric wires, the said door carrying electric contact-points, electric wires traversing said walls, ceiling, floor, and door and adapted to be thrown in electrical continuity with the contact-points carried by said door, an electric wire traversing said door and in electrical connection with the said contact-points carried by the same, an electric switch for throwing the wire traversing the door out of circuit, a source of electricity, an electro-magnet provided with an armature, an alarm mechanism and battery for actuating the same, and suitable electrical connections between the wires which traverse said inclosure, the electro-magnet, battery, and alarm mechanism, substantially as set forth.

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trical continuity with the contact-points carried by said door, an electric wire traversing said door and in electrical connection with said contact-points carried by the same, an electric switch for throwing the wire traversing the door out of circuit, a source of electricity, an electro-magnet provided with an armature, an alarm mechanism and battery for actuating the same, and suitable electrical connections between the wires which traverse said inclosure, the electro-magnet, battery, and alarm mechanism, substantially as set forth.

3. A metallic grating consisting of vertical bars 1, U-shaped in cross-section and provided with a series of perforations, filling-plates 2, secured in said vertical bars and projecting within said perforations, tubular horizontal bars provided with recesses in which said filling-plates are adapted to fit, a ceiling and floor for said cell, composed of plates, such as 74, provided with crevices 75 and a plate 76, secured to said plate 74, electric wires passing through said vertical bars, horizontal bars, and traversing said ceiling and floor, an electro-magnet, a source of electricity, an alarm mechanism, and a source of electricity for actuating the same, and suitable electrical connections between said circuit-wires which traverse the cell, the electro-magnet, and alarm mechanism, substantially as set forth.

4. A cell having vertical and horizontal grate-bars forming a cell-grating and provided with channels for the passage of insulated electrical conductors, a ceiling and floor composed of plates, insulated electric conductors interposed between said plates, an alarm mechanism, and suitable electric connections, substantially as set forth.

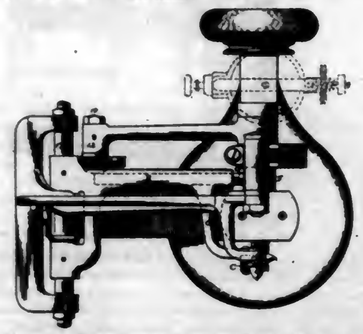
5. An inclosure having vertical and horizontal grate-bars forming a grating provided with channels for the passage of insulated conductors, a ceiling and floor composed of plates, insulated conductors interposed between said plates, a door carrying electric contact-points, insulated conductors traversing said grating, ceiling, and floor and adapted to be brought in electrical continuity with the contact-points carried by the said door, an insulated conductor traversing the said door and in electrical connection with said contact-points carried by the same, an electric switch for throwing the wire traversing the door out of circuit, a battery, an electro-magnet provided with an armature, an alarm mechanism and battery for actuating the same, and suitable electric connections between the wires which traverse the inclosure, walls, floor, and ceiling, and the electric magnet, and alarm mechanism, substantially as set forth.

6. A cell having vertical and horizontal gate-bars forming a cell-grating and provided with channels for the passage of electric wires, a ceiling and floor composed of plates, electric wires interposed between said plates, a door carrying electric contact-points, electric wires traversing said cell grating, ceiling, and floor and adapted to be brought in contact with the contact-points carried by the cell-door, an electric wire traversing the said cell-door and in electrical connection with the said contact-points carried by the same, an electric switch for throwing the wire traversing the door out of circuit, a battery, an electric magnet provided with an armature, an alarm mechanism and battery for actuating the same, and suitable electrical connections between the wires which traverse the cell walls, floor, and ceiling, and the electro-magnet, battery, and alarm mechanism, substantially as set forth.

7. An inclosure having its sides, floor, ceiling, and doors embodying plates, electric wires interposed between said plates, the said door carrying electric contact-points, electric wires traversing said walls, ceiling, floor, and door and adapted to be thrown into electrical continuity with the contact-points carried by said door, an electric wire traversing said door and in electrical connection with the said contact-points carried by the same, an electric switch for throwing the wire traversing the door out of circuit, a source of electricity, an electro-magnet provided with an armature, an alarm mechanism and battery for actuating the same, and suitable electrical connections between the wires which traverse said inclosure, the electro-magnet, battery, and alarm mechanism, substantially as set forth.

8. A metallic grating consisting of vertical bars 1, U-shaped in cross-section and provided with a series of perforations, filling-plates 2, secured in said vertical bars and projecting within said perforations, tubular horizontal bars provided with recesses in which said filling-plates are adapted to fit, a ceiling and floor for said cell, composed of plates, electric wires passing through said vertical bars, horizontal bars, and traversing said ceiling and floor, interposed between the plate thereof, an electro-magnet, a source of electricity, an alarm mechanism and a source of electricity for actuating the same, and suitable electrical connections between said circuit-wires which traverse the cell, the electro-magnet, and alarm mechanism, substantially as set forth.

477,802. SEWING-MACHINE. CHARLES M. HINE, Pittsburg, assignor to Helen D. Shields, Allegheny County, Pa. Filed Jan. 16, 1891. Serial No. 378,017. (No model.)



Claim.—1. In a sewing-machine, a driving-shaft, a needle-arm carrying a needle, an eccentric upon the shaft for moving the arm longitudinally, and an eccentric for moving the arm vertically, combined with a feeder, an eccentric for moving the feeder longitudinally in unison with the needle-arm, and an eccentric for moving the feeder vertically in opposition to the needle-arm, substantially as set forth.

2. In a sewing-machine, a driving-shaft, a pivoted laterally-vibrating yoke, an eccentric upon the shaft for moving it laterally, a needle-arm carrying a needle, connected at one end to the said yoke, an eccentric connected with the opposite end of the arm for moving it vertically, a feeder connected at one end to the yoke, whereby it is moved longitudinally, and an eccentric connected with the opposite end of the feeder for moving it vertically, the parts combined substantially as described.

3. The combination of the main shaft provided with an eccentric, an eccentric-strap provided with a rod, a hollow feed-bar provided with a feed-dog and in which hollow feed-bar the strap-rod reciprocates, a yoke by means of which the feed-bar is given a back-and-forth motion, means for operating said yoke, and a needle-arm carrying a needle, which is given by a suitable mechanism an up-and-down and a back-and-forth motion, substantially as specified.

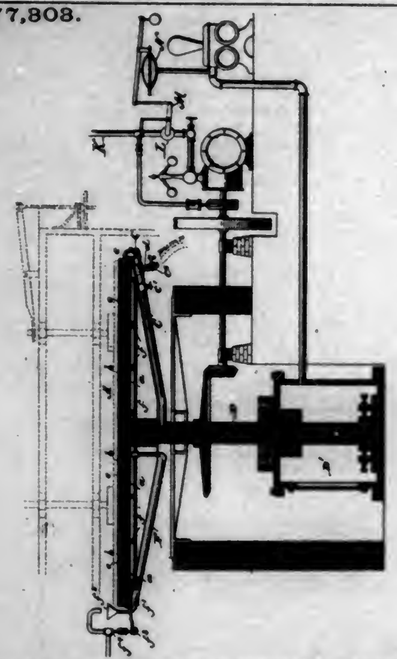
477,808. APPARATUS FOR GRINDING AND POLISHING GLASS. GEORGE A. MARSH, Jr., Sandusky, Ohio. Filed Feb. 12, 1891. Serial No. 381,190. (No model.)

Claim.—1. A hollow glass-holding table having a multiplicity of apertures in close proximity to each other, channels surrounding said apertures, a liquid-supply connecting with said channels, and an air-exhaust pipe connecting with the air-chamber in the table, the same being adapted to be used with a suitable packing for retaining a plate or plates of glass thereon when the air is exhausted from the table, substantially as set forth.

2. In a hollow glass-holding table having an upper plate with a multiplicity of apertures connecting with a vacuum-chamber, a channel surrounding each aperture, a raised circumferential wall forming an outer channel, a liquid-supply connecting with said channels, means for exhausting the air from the central chamber of the table, a packing adapted to rest upon the raised portions of the table, substantially as shown, so as to provide a multiplicity of vacuum-cells when the air is exhausted from the central chamber, as set forth.

3. In combination with the hollow glass-supporting table, for the

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purpose set forth, a series of apertures or perforations in substantially close proximity to each other, channels surrounding each of said apertures, so as to provide a multiplicity of vacuum-cells, a reticulated packing adapted to cover the liquid-channels, and means for exhausting the air from the central chamber, substantially as set forth.

4. In combination with a hollow glass-supporting table having a series of vacuum-cells, an air-exhaust pipe, and a water-supply connected with said chamber, so that liquid can be forced into each of the cells in the surface of the table, substantially as shown, and for the purpose set forth.

5. In a glass-supporting table, a central chamber and apertured upper plate having a series of channels surrounding each aperture, an exhaust-pipe connected with the central chamber, a water-supply pipe leading into the channels, and a water-supply leading into the vacuum-chambers, substantially as shown, and for the purpose set forth.

6. A glass-holding table made up of a series of hollow sections supported so that the upper surfaces thereof will be on the same plane, each section having a multiplicity of apertures, air-exhaust mechanism for forming vacuum-cells adjacent to said apertures, a support or supports surrounding each aperture or vacuum-cell, an exhaust-pipe connected to the chamber of each section, and means for producing a vacuum therein when a plate is placed over the cells, together with means, as a plug or plugs, for closing the apertures of one or more of said cells, substantially as shown, and for the purpose set forth.

7. A glass-holding table made up of a number of hollow castings arranged side by side and supported on a suitable frame, each casting having a hollow chamber and raised walls projecting upward from the top plate thereof to form vacuum cells above the top plate, apertures connecting each vacuum-cell with a hollow chamber, means for closing one or more of said apertures, an exhaust-pipe connecting the hollow chambers with an air-exhaust mechanism, said pipe having valves for disconnecting one or more of the castings from the exhaust mechanism, and a packing adapted to rest upon the raised walls surrounding each vacuum-cell, substantially as set forth.

8. The combination, with a glass polishing or grinding mechanism, of a hollow table, a shaft having an air-duct which communicates with air-exhaust mechanism and with the table, whereby the plate or plates of glass are held on the table by a vacuum or atmospheric pressure, for the purpose set forth.

9. The combination, with a glass polishing or grinding mechanism, of a hollow supporting-table the upper plate or face of which is provided with a series of perforations or apertures, raised walls surrounding said perforations or apertures, forming with the glass independent vacuum-chambers which communicate directly with the vacuum-chamber of the supporting-table and exhaust mechanism, and a water-supply having branch pipes which communicate with channels surrounding each aperture or vacuum-cell, substantially as set forth.

10. In a glass grinding or polishing machine, the combination of a hollow supporting-table, a hollow standard connecting therewith by a pipe C, the lower end of said standard being inclosed by an air-chamber, a pipe connecting said air-chamber to an exhaust mechanism, and mechanism for connecting the hollow standard with driving mechanism, so that the table and standard can be rotated, substantially as shown, and for the purpose set forth.

11. In combination with a revoluble glass-holding table, a chamber connected to an exhaust-pipe, said exhaust-pipe leading into a hollow standard, an air casing or chamber encircling the hollow standard, and an exhaust mechanism connected with the air-chamber, a pipe having a series of branches communicating with channels in the upper surface of the revolving table, and means, substantially as shown, for causing an automatic liquid-supply to the channels, as set forth.

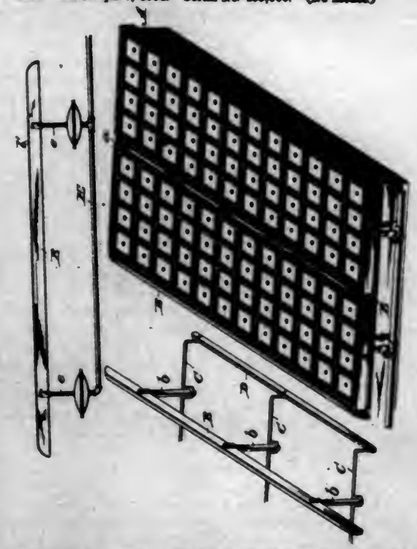
12. In combination with a revoluble table made up of a series of castings having a multiplicity of apertures in the upper plates thereof, a series of channels surrounding said apertures, means for exhausting the air from the chambers in the tables, so as to form a multiplicity of vacuum-cells, and an automatic liquid-supply connected with the channels, the air-exhaust pipe having a valve and a water-supply connected thereto between the valve and the chambers, substantially as set forth.

13. In combination with a revoluble grinding-table upon which the glass plates to be ground are held by a vacuum or air-exhaust, a motor for turning said table, an air-exhaust mechanism connected to the table, and an automatic brake and power-supply mechanism adapted to be operated when the vacuum is destroyed in the table, so as to cause a stoppage of the motor and brake upon the driving-shaft which revolves the table, substantially as shown.

14. In combination with a glass-holding table made up of a series of adjacent hollow sections with circumferential raised walls united to each other, so that the upper faces will be on the same plane, each section being provided with a multiplicity of apertures communicating with the hollow chambers, a series of channels surrounding each aperture, a water-supply pipe F, having branch pipes *f* communicating with the channels, an air-exhaust pipe C, connected by branch pipes *c* to each of the chambers, and a packing adapted to cover the channels and form a multiplicity of cells, the glass plates resting directly or indirectly upon said packing, substantially as shown, and for the purpose set forth.

15. In combination with a glass-holding table having a series of apertures or vacuum-cells in close proximity to each other, water-channels surrounding each vacuum-cell, and an absorptive packing shaped to lie over the water-channels, substantially as set forth.

477,804. APPARATUS FOR PLACING PLATE-GLASS ON GRINDING AND POLISHING TABLES. GEORGE A. MARSH, Jr., Sandusky, Ohio. Filed Sept. 7, 1891. Serial No. 405,009. (No model.)



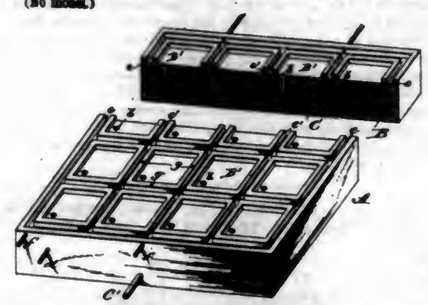
Claim.—1. In a glass grinding or polishing table, a plurality of bars or strips connected to each other to move in unison and means for elevating said bars or strips above the surface of the table upon which the glass rests, for the purpose set forth.

2. In a glass-holding table having grooves or spaces in its upper surface, bars or strips adapted to lie within said grooves or spaces and means for raising or lowering said bars, substantially as and for the purpose set forth.

3. In a glass grinding or polishing table having a series of grooves or spaces *a*, bars or strips adapted to lie within said grooves or spaces and means for raising said strips simultaneously, substantially as and for the purpose set forth.

4. In combination with a glass grinding or polishing table made up of a series of sections located adjacent to each other, so as to provide spaces between said sections, bars B, located within said spaces and connected to means for raising and lowering the same, the upper edges of said bars having a fabric covering, substantially as shown, and for the purpose set forth.

477,805. GLASS GRINDING OR POLISHING TABLE. GEORGE A. MARSH, Jr., Sandusky, Ohio. Filed Sept. 7, 1891. Serial No. 405,010. (No model.)



Claim.—1. In combination with a table for grinding or polishing glass, having on its surface a series of cells connected with a vacuum-chamber, a chamber beneath the upper surface of the table and having no connection therewith, said chamber being adapted to receive a cooling medium, for the purpose set forth.

2. In a grinding or polishing table for plate-glass, the combination of a table having the surface made up of vacuum-cells, each cell being connected directly with an air-chamber beneath the vacuum-cells, and a chamber for the circulation of a cooling medium between the air-chamber and vacuum-cells, substantially as set forth.

3. In a grinding or polishing table for plate-glass, the combination of a table having a series of independent cells and water-channels formed on its upper portion, an air-chamber connected with each of the vacuum-cells, and a chamber adapted to receive a cooling medium, located between the upper face of the table and the vacuum-chamber, and inlet and outlet pipes communicating with the cooling-chamber and liquid-supply, substantially as set forth.

4. In a glass-holding table having a surface consisting of a multiplicity of vacuum-cells, water-channels surrounding the same, the walls of the water-channels having recesses or depressions forming communication between the vacuum-cells and water-channels, and an air-exhaust pipe connecting the vacuum-cells to a chamber, substantially as set forth.

5. In a glass grinding or polishing table constructed substantially as shown and provided with a chamber adapted to receive a cooling medium, located within the table, said chamber having vertical supports forming deflectors, so as to cause a circulation of the cooling medium within the chamber, substantially as set forth.

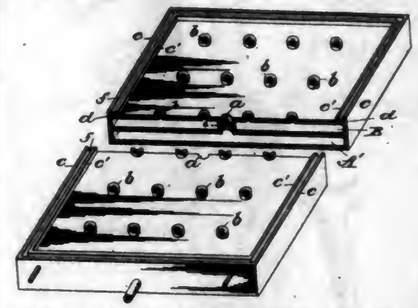
6. In a grinding or polishing table for plate-glass, constructed substantially as shown and provided centrally with a chamber for the reception of a cooling medium, an air-chamber located beneath the same, hollow stays *b*, connecting the air-exhaust chamber with the vacuum-cells, and stays or supports B within the cooling-chamber, forming deflectors which insure a circulation of the cooling medium within the central chamber, substantially as set forth.

7. In a glass grinding or polishing table having a top with a multiplicity of independent cells, each connected with an air-exhaust mechanism, so as to retain the glass thereon, by a vacuum or atmospheric pressure, a compartment formed in the table and adapted to receive a cooling medium, for the purpose set forth.

8. In a table for holding plate-glass for the purpose set forth, a top having a raised circumferential wall and a multiplicity of air chambers or cells each having marginal walls, an air-chamber communicating with the top, and a cooling-chamber interposed between the air-chamber and the top of the table, substantially as shown.

9. In a glass-holding table for the purpose set forth, a top having a raised circumferential wall, raised supports disposed over the top of the table, so as to provide water-channels, the cells or vacuum-chambers so formed being connected to a chamber by hollow supports or stays, and an interposed chamber for the reception of a circulating cooling medium, located between the air and vacuum cells, said cooling medium being adapted to absorb the heat generated by the exhaustion of the air from the vacuum-cells and that generated by friction in polishing or grinding the glass, substantially as set forth.

477,806. TABLE FOR HOLDING PLATE-GLASS. GEORGE A. MARSH, Jr., Sandusky, Ohio. Filed Sept. 30, 1891. Serial No. 407,346. (No model.)

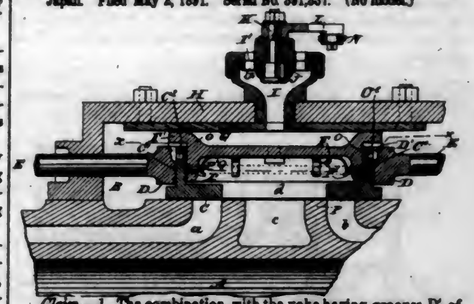


Claim.—1. In a glass polishing or grinding table, a top having raised marginal walls adapted to support a packing, the channel between said walls communicating with the liquid-supply, central stays or supports extending upwardly from the top of the table, and an air-passage connecting with a vacuum-chamber, substantially as set forth.

2. In a glass grinding or polishing table, a top having raised walls forming water-channels which are connected by apertures with a liquid-chamber B, supports extending from the top of the table to the same level as the walls forming the water-channels, and an aperture connecting the top or section thereof with a vacuum-chamber by an air-passage which passes through the liquid-chamber, substantially as set forth.

3. The combination, in a glass grinding or polishing table constructed substantially as shown and provided with raised marginal walls connecting with a liquid-supply, of hollow supports, also connected with the water-supply, and a vacuum-chamber communicating with the section or table top bounded by the walls, substantially as set forth.

477,807. BALANCED SLIDE-VALVE. JOHN MCDONALD, Tokio, Japan. Filed May 2, 1891. Serial No. 391,337. (No model.)



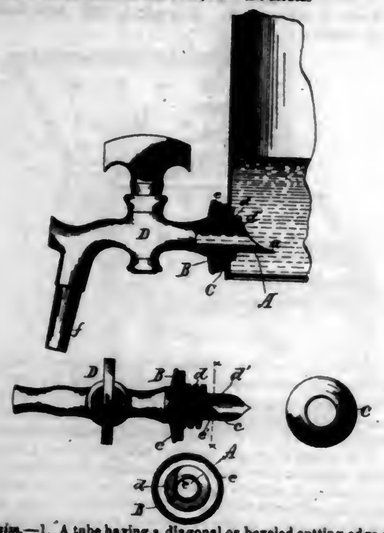
Claim.—1. The combination, with the yoke having grooves D', of the balanced valve having a vertically-sliding cover, a packing-groove provided with packing O, and apertures leading through the sides of the valve to said packing and registering at their outer ends with the yoke-grooves D' to admit steam to the packing, substantially as set forth.

2. In a balanced slide-valve, the combination, with a steam-chest provided with an air-valve, of a slide-valve fitted to slide in the said steam-chest and provided with a sliding crown-plate or cover adapted to be seated on the face-plate of the said steam-chest, substantially as shown and described.

3. In a balanced slide-valve, the combination, with an open-top valve, of a crown plate or cover for the valve, fitted to slide vertically in the said valve, packing-strips held in the outer surface of the crown-plate or cover, pins engaging the packing-strips, and springs secured to the under side of the cover and engaging said pins, substantially as herein shown and described.

4. In a balanced slide-valve, the combination, with a steam-chest provided with an air-valve, of the open-top slide-valve C in the steam-chest, and the crown-plate F, fitted to slide in the valve and provided with the flange F', adapted to be seated on the face-plate of the steam-chest, substantially as described.

477,808. FAUCET. JAMES M. MCFARLAND, Virginia City, Nev. Filed Jan. 30, 1892. Serial No. 419,626. (No model.)

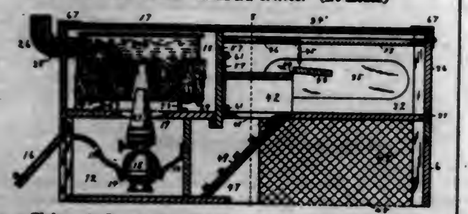


Claim.—1. A tube having a diagonal or beveled cutting-edge and a screw-thread projecting out beyond the outer surface of said tube, the said screw-thread starting from a point in advance of the rear edge of the bevel, substantially as set forth.

2. The combination, with a tube having a beveled or diagonal cutting-edge, a flange or abutment, and a screw-thread extending from the rear end of the beveled portion of the tube to or near the flange or abutment, and a yielding washer bearing against the rear face of the abutment, of a faucet attached to the tube, substantially as set forth.

3. The combination, with a faucet having an elongated discharge-nozzle, a diagonal or beveled cutting-edge at its inner end, an abutment, and screw-threads extending from a point near the inner edge of the bevel to a point near the abutment, of a yielding washer encircling the threads and bearing against the abutment, substantially as set forth.

477,809. POULTRY-BROODER. JAMES A. PORTER, Greenfield, Ohio. Filed Oct. 5, 1891. Serial No. 407,735. (No model.)



Claim.—1. In a poultry-brooder, a compartment having a lamp-supporting ring or band with radial arms attached to the sides of the compartment and a lamp supported therein, and a compartment above having a tank the upper part of which carries hooks for holding the curtains in position, a tank-supporting cylinder, and three pipes attached to the tanks, one of which passes inside a second and extends to the central hollow cylindrical portion of the tank, for the purpose specified, substantially as set forth.

2. In a poultry-brooder, a compartment having a lamp 15, with chimney 21, and a compartment above having a tank-supporting cylinder 23, a tank 24, placed over said lamp and received and supported by said cylinder and having curtains depended from its upper projection, and three pipes attached to said tank, one of which passes inside a second and extends to the central portion of the tank, for the purpose specified, all in combination substantially as set forth.

3. In a poultry-brooder, a compartment having a lid or top door 17, orifices or doorways 58 in one side, sliding doors 59 for closing said orifices or doorways, said doors being connected by beams 61 and operated by rod 63, secured to one of said beams and extending out through the side of the brood-box, a tank-supporting cylinder 23, placed upon the floor of the compartment, a tank 24, received and supported by said cylinder, said tank having curtains depended from its upper projection, hooks for holding said curtains in position, and three pipes, one of which passes inside a second and extends to the hollow central portion of the tank, for the purpose specified, and a lamp 15, placed beneath said tank, all in combination substantially as set forth.

4. In a poultry-brooder, a compartment having a hinged lid or top door 17, a tank-supporting cylinder 23, a tank 24, received and supported by said cylinder, said tank having curtains depended from its upper projection, hooks for holding said curtains in position, and three pipes, one of which passes inside a second and extends to the central portion of the tank for the purpose specified, a lamp 15, placed beneath said tank, and an adjoining compartment or run having a hinged lid or top door 34, a detachable net-bearing frame 38, placed beneath said lid or top door, a hinged end door 36, an orifice 41 in the floor of the compartment, a box 42, placed over said orifice and forming an entrance or passage-way to incline or stairway 49, leading to a lower compartment, said box having a hinged door 43, with chain 45 and hook 46, designed to catch in the meshes of netting 39, said compartments being separated by partition-wall 57 and connected by orifices or doorways 58 in said partition-wall, all in combination substantially as set forth.

477,810. CHALK-SHARPENER. FRANK A. PURCELL, and JOHN MORGAN, Vincennes, Ind. Filed Apr. 25, 1892. Serial No. 430,534. (No model.)

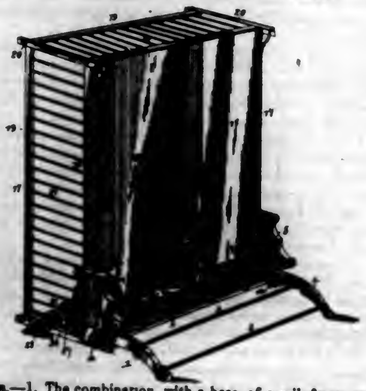


Claim.—1. A chalk-sharpener comprising a box or receptacle, a slotted cover arranged thereon, and a knife or knives having a V-shaped slot and arranged obliquely in the slot of the cover, substantially as specified.

2. A chalk-sharpener comprising a box or receptacle having a slotted cover, a knife or knives having a V-shaped slot and fixed obliquely in the slot of said cover, and a top for said knives also having a longitudinal V-shaped slot, substantially as specified.

3. A chalk-sharpener comprising a box or receptacle, a removable cover having a vertical slot and grooves in its opposite walls, the knives having the shouldered and reduced portion adapted to bear in the groove of the slotted cover and also having a V-shaped slot forming cutting-edges, and a cover for said knives having a longitudinal V-shaped slot, substantially as specified.

477,811. FOLDING CRIB. CHARLES S. RICKARD, Grand Rapids, Mich. Filed Apr. 15, 1891. Serial No. 389,031. (No model.)



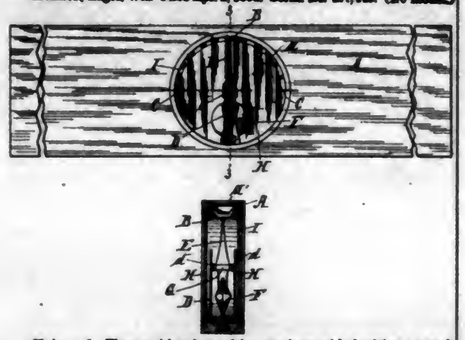
Claim.—1. The combination, with a base, of a crib-frame and a post pivotally supported above the base, and a hinge connecting the same to the bottom of the crib, whereby the latter is capable of a horizontal, pivotal, and vertical swinging movement upon the base, substantially as specified.

2. The combination of the base, the rockers mounted thereon, the cross-bar connecting the rockers, the post pivoted upon the cross-bar, and the crib-body hinged to said post, substantially as set forth.

3. The combination of the base, the rockers mounted thereon, the post pivoted to the rocker-frame, the crib-body hinged to said post, and the catches or angle-irons secured upon the inner sides of the side pieces of the base, substantially as set forth.

4. The combination of the base, the rocker-frame mounted thereon and having the pivoted post or upright, and the crib-body connected with said post or upright by means of a spriage-hinge, substantially as and for the purpose set forth.

477,812. PLUMB-LEVEL. MARTIN C. ROCKTRACHER and JOHN H. MCKEON, Eagle, Wis. Filed Apr. 2, 1892. Serial No. 427,443. (No model.)

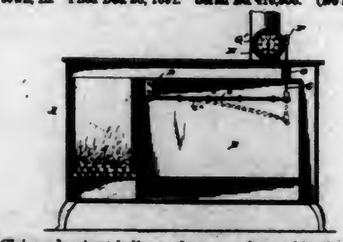


Claim.—1. The combination, with a stock provided with a central transverse aperture and intersecting glass-covered aperture in the top edge thereof, a medially-pivoted index within the central aperture adapted to have a complete circular swing and having a pointed upper end and a weighted lower end, a strip extending below the top aperture, and glass side pieces covering the transverse aperture, substantially as set forth.

2. In a combined level and plumb, the combination of a stock provided with a central transverse aperture and an intersecting glass-covered aperture in the top edge thereof, a medially-pivoted index within the central aperture having a pointed upper end and a weighted lower end and adapted to have a complete circular movement, a strip extending below the top aperture, inwardly-projecting strips at diametrically-opposite points of the bordering edges of the central aperture, a graduated scale, and glass side pieces covering the central aperture, substantially as set forth.

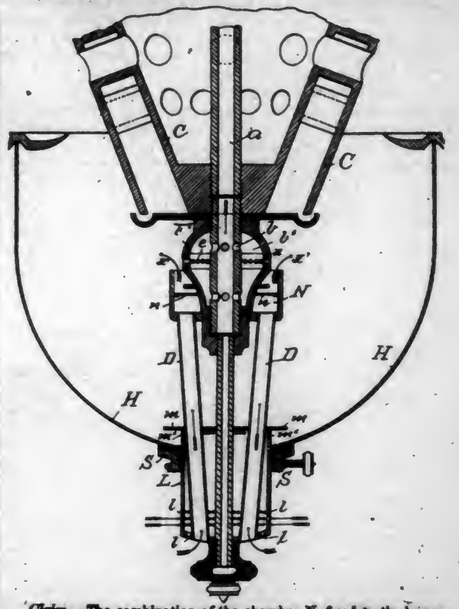
3. In a combined level and plumb, the combination of a stock provided with a central transverse aperture and an intersecting glass-covered aperture in the top edge thereof, a U-shaped standard having inwardly-extending bearings at its upper ends, an index having a pointed upper end, a lower weighted end, and a medial transverse shaft having its pointed extremities turning in the bearings, said index constructed to have a complete circular movement, a strip extending below the top aperture, inwardly-extending strips at diametrically-opposite points of the transverse aperture, a graduated scale, and glass side pieces covering the central aperture, substantially as set forth.

477,813. HEAT-INDICATOR. FREDERICK W. SEARS, Prophetstown, Ill. Filed Dec. 28, 1891. Serial No. 416,353. (No model.)



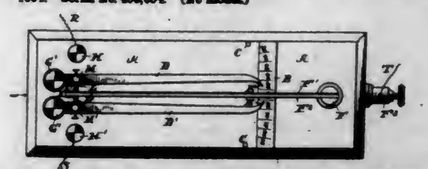
Claim.—In a heat-indicator for ovens, the combination of a metallic thermostatic bar securely suspended at one end from a suitable point of attachment within the oven and having the other end free to move, a heat-indicating device mounted upon the stove and having a pinion-controlled indicating-hand and an actuating-arm, a tube-guard placed between the top of the stove and the oven, and an operating-rod working through said tube and connected to the free end of said thermostatic bar and to said actuating-arm, said thermostatic bar normally holding the hand of the indicator at the zero-point and forming the spring for said indicating mechanism, substantially as set forth.

477,814. REGENERATING GAS-LAMP. WILHELM SIEMEN and JOHANN W. KÜSTER, Düsseldorf, Germany. Filed June 1, 1889. Serial No. 312,576. (No model.) Patented in Belgium Apr. 26, 1889, No. 81,572; in France May 4, 1889, No. 190,206; in England May 18, 1889, No. 7,336; in Italy Sept. 25, 1889, No. 22,506, and in Austria-Hungary Nov. 30, 1889, No. 16,761 and No. 40,095.



Claim.—The combination of the chamber N, fixed to the burner and having perforated disk *n*, and of the downwardly-extending tubes D, secured to the bottom of and communicating with chamber N, with the perforated casing L, fixed to the ends of tubes D and carrying the shade H, said casing being closed by disk *m*, projecting over the rim of the casing and having holes for letting pass the tubes D, the latter adapted to let air to the under side of the flame, for the purpose as described.

477,815. THERMOTIC CIRCUIT-CLOSER. WALTER H. TAPLEY, Chicago, Ill., assignor to the Ware Automatic Heat Generator and Regulator Company, same place. Filed Aug. 14, 1889. Renewed Oct. 24, 1891. Serial No. 409,654. (No model.)



Claim.—1. In a thermostat, the combination of the elastic strip or spring, two adjustable pointers, each mounted upon a separate circuit-pivot, said pointers each carrying a contact-point through which the current is transmitted by way of the contacting strip and the respective circuit-pivot of the pointer, and a graduated scale at the swinging ends of the pointers, substantially as set forth.

2. In a thermostat, the combination of the elastic strip or spring, two adjustable pointers, each mounted upon a separate circuit-pivot, said pointers each carrying a contact-point through which the current is transmitted by way of the contacting strip and the respective circuit-pivot of the pointer and upon opposite sides of the strip, and a graduated scale adjacent to the swinging ends of the pointers and the fixed end of the strip, substantially as set forth.

3. In a thermostat, the combination of the elastic strip or spring and two adjustable pointers, each pivoted upon a separate circuit-terminal and upon opposite sides of the strip and below the strip, with a graduated scale below the strip and adjacent to its fixed end, the

swinging ends of the pointers being arranged to traverse the scale below the strip, substantially as set forth.

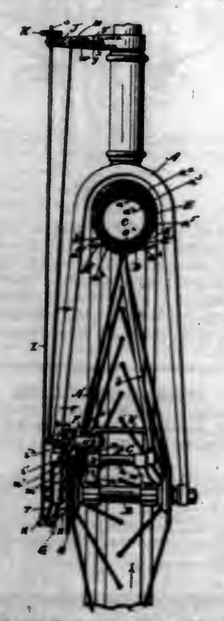
4. In a thermostat, the combination of the elastic strip or spring, two adjustable pointers, each carrying a contact-point and each mounted upon a separate circuit-pivot, and two binding-posts electrically connected to the circuit-pivots, substantially as set forth.

5. In a thermostat, the combination of the elastic strip, two adjustable pointers, each carrying a contact-point and each mounted upon a separate circuit-pivot upon opposite sides of the elastic strip, a battery-wire connecting the strip with the battery, and two return-wires, each connected at one end with the battery and at the opposite end with one of the pointers, whereby an electric current may be sent through the return-wires alternately as the temperature of the strip is changed, substantially as set forth.

6. The combination of the strip or spring, two pointers, each carrying a contact-point and each mounted upon a separate circuit-pivot, two electro-magnets, and electrical connections, substantially as set forth, whereby when the temperature of the elastic strip or spring is raised one of the magnets is energized and when the temperature of the elastic strip or spring falls the other electro-magnet is energized, substantially as set forth.

7. In a thermostat, the combination, with the base, of the screw-threaded circuit-pivot formed at its upper end with a screw-threaded socket, the pointer, and the set-screw which pivots and clamps the pointer, substantially as set forth.

477,316. PNEUMATIC TIRE AND MEANS FOR INFLATING THE SAME. PARDON W. TILLINGHAST, Providence, R. I. Filed June 8, 1891. Serial No. 395,615. (No model.) Patented in England June 17, 1891, No. 10,308.



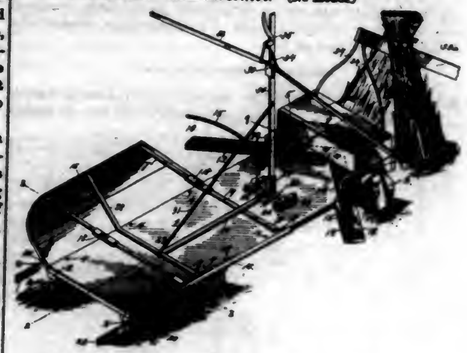
Claim.—1. A pneumatic tire consisting of the inner rubber air-tube provided with a textile covering adapted to prevent the bursting of the tube, the outer rubber covering and the intervening textile layers, whereby the central tread portion of the tire will be protected from puncture and made stiffer than the sides, substantially as described.

2. The combination, with the wheel, the support for the same, and a pneumatic tire, of an air-pump attached to the hub of the wheel and connected with the cavity of the tire, and a cam jointed to the wheel-support and adapted to operate the piston of the pump, substantially as described.

3. The combination, with the wheel, the support for the same, a pneumatic tire, and an air-pump attached to the hub of the wheel and connected with the cavity of the tire, of the cam jointed to the wheel-support and adapted to operate the piston of the pump, and means for adjusting the inclination of the cam at the will of the rider to vary the action of the pump, substantially as described.

4. The combination, with the wheel, the support for the same, a pneumatic tire, and an air-pump for inflating the tire, of the exhaust-valve and means for operating the same at the will of the rider, substantially as described.

477,317. CORN-HARVESTER. JAMES B. TOSH, Valley Falls, Kans. Filed Oct. 3, 1891. Serial No. 407,639. (No model.)



Claim.—A cornstalk-harvester comprising a suitable body portion or platform, a rock-shaft mounted thereon, a bar or standard extending normally upward from said rock-shaft, a pair of stalk-throwing arms pivoted to the standard, a grip-lever also pivoted to the standard, and the links connecting the grip-lever with the inner portions of the throwing-arms, substantially as set forth.

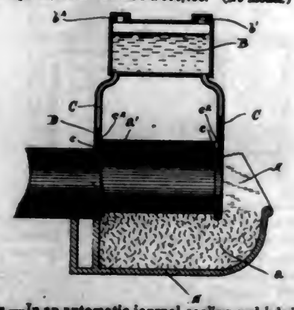
477,318. NUT-LOCK. ALONZO G. TURNER, Durango, Colo., assignor of two-thirds to Frank A. Kimball, same place, and Alexander Levy, Walsenburg, Colo. Filed Mar. 3, 1892. Serial No. 424,216. (No model.)



Claim.—1. In a nut-lock, the combination, with a bolt having a double screw-thread, two oppositely-threaded nuts provided on their adjacent faces with projecting portions to form a depression between them, and a washer inserted between the two nuts, of a shield or hood provided on its inner surface with a rib to fit into the depression between the nuts, provided also with apertures, and a pin to pass through the apertures in the shield and through the depression between the nuts and hold said shield in place, substantially as described.

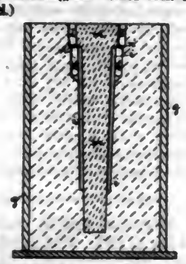
2. As an article of manufacture, a nut-lock consisting of a double-threaded bolt C, nuts or barrs 1 and 2, having projecting portions on their adjacent faces to form a depression between the same, a washer 6, of any suitable material, between said nuts, a shield or hood D, provided on its interior with a longitudinal rib fitting over said nuts in the depression between them, and apertures for the reception of a locking-pin 4 to secure the hood in place, substantially as described.

477,319. AXLE-LUBRICATOR. JOHN R. WILSON, Pittsburg, Pa. Filed Apr. 28, 1891. Serial No. 390,733. (No model.)



Claim.—In an automatic journal cooling and lubricating apparatus, the combination, with a car-axle box, of a supply tank or reservoir, delivering-tubes depending from said supply-tank and bearing directly upon the journal, the same being provided with a solid curved abutting portion conforming to the curvature of the journal, and laterally-triangular escape-slots formed in the sides of the same immediately above the termination of said solid portion and facing inwardly toward the center of and in a line with the journal, and fusible plugs covering said slots, which plugs are adapted to be melted by the transmission of heat from the heated journal through the solid abutting ends of said tubes, said solid portions also forming the bases of said lateral triangular openings, so as to expel the fluids in a deluge-stream laterally over the length of the journal when said plugs are fused, substantially as set forth.

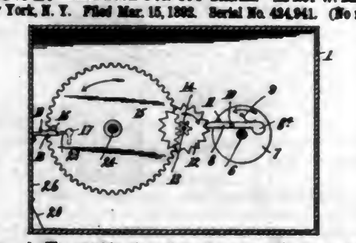
477,320. GATE FOR MOLDS AND CASTINGS FORMED THEREBY. STEPHEN J. ADAMS, Pittsburg, Pa. Filed Mar. 11, 1891. Serial No. 384,554. (No model.)



Claim.—1. A mold for forming wagon-boxes and like articles having feathers or lugs thereon, having a main mold-cavity, a feather or lug cavity extending along the same, and a gate or runner cavity above the feather-cavity and of greater width and thickness than the feather-cavity, said gate or runner cavity communicating with the feather-cavity by abrupt angles, substantially as and for the purposes set forth.

2. In tubular castings having feathers or lugs thereon, the combination, with the main casting having a feather or lug formed thereon at one end thereof, of a gate or runner casting extending above the lug and of greater width and thickness than the lug, said gate or runner casting connecting with the lug by abrupt angles, substantially as and for the purposes set forth.

477,321. TIME-LOCK FOR TOY BANKS. LE ROY W. BALDWIN, New York, N. Y. Filed Mar. 15, 1892. Serial No. 424,941. (No model.)

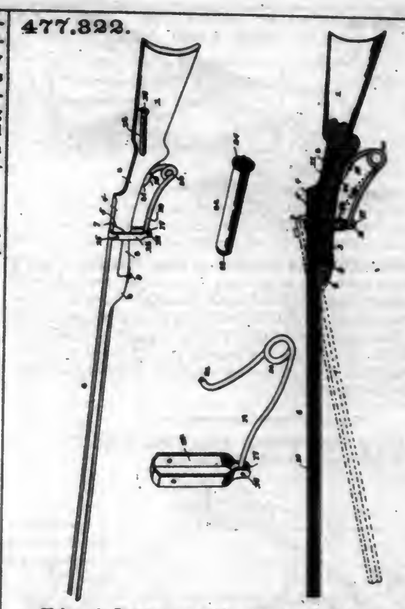


Claim.—1. The combination of a coin-receptacle, a door for said receptacle, a lock on said door, an adjustable dial-plate inclosed in the same casing with said receptacle, a keyhole in said plate, a keyhole in said casing, a key which may be inserted to open the lock when the two keyholes are in line, a clock-train and gearing conveying motion from the mainspring-shaft of said clock-train to said dial, two members of said gearing having a pawl-and-ratchet connection whereby the dial is moved when the main shaft is turned backward to wind up the clock, but not when the shaft is turned forward to drive the clock-train, substantially as described.

2. The combination of a coin-receptacle, a door for said receptacle, a lock on said door, an adjustable dial-plate inclosed in the same casing with said receptacle, a keyhole in said dial-plate, a keyhole in said casing, a key which may be inserted to open the lock when the two keyholes are in line, a clock-train and gearing conveying motion from the mainspring-shaft of said clock-train to said dial, two members of said gearing having a pawl-and-ratchet connection whereby the dial is moved when the main shaft is turned backward to wind up the clock, but not when the shaft is turned forward to drive the clock-train, together with a window in the casing through which the figures on the dial may be read successively as the dial turns and its position thereby determined, substantially as described.

477,322. BLOW-GUN. WILLIAM M. BURNES, Galesville, assignor of one-half to Joseph W. Skinner, La Crosse, Wis. Filed July 30, 1891. Serial No. 401,302. (No model.)

477,822.



Claim.—1. In a toy gun of the class described, the combination, with the stock comprising the grip, the fore-arm, and the block having an inclined front face formed at the rear end of the fore-arm, the barrel hinged at its under side to the fore-arm and at its rear end adapted to close snugly against the block, the block and grip being provided with an air-passage communicating with the barrel, and a tube connected at the rear end of the air-passage and terminating in a mouthpiece, of a spring-wire loosely connected to the barrel, rearwardly extended under the grip, and terminating in a coil, and at its end forwardly disposed and secured to the grip of the gun, substantially as specified.

2. In a toy gun of the class described, the combination, with the stock comprising the grip, the fore-arm, and the block having an inclined front face formed at the rear end of the fore-arm, the barrel hinged at its under side to the fore-arm and at its rear end adapted to close snugly against the block, the block and grip being provided with an air-passage communicating with the barrel, and a tube connected at the rear end of the air-passage and terminating in a mouthpiece, of a yoke loosely embracing and pivoted to the rear end of the barrel, a spring-wire loosely connected to the extended end of the yoke, rearwardly extended and terminating in a coil, and forwardly disposed and secured to the grip of the gun, substantially as specified.

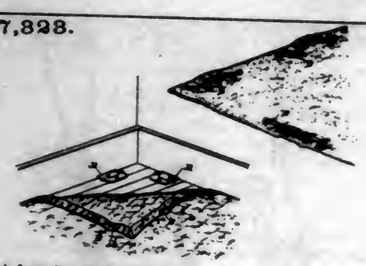
3. In a toy gun of the class described, the combination, with the stock comprising the butt, grip, fore-arm, and at its rear end the block 4, having a front inclined face, said block and stock being bored, as at 11, and at its rear end provided with a flexible tube 12, terminating in a mouthpiece 13, of the barrel inclined at its rear end to fit the face of the block and having its bore communicating with that of the block and grip and provided upon its under side with an extension of the fore-arm, the hinge connecting the extension with the fore-arm, the elongated yoke 14, embracing the barrel and fore-arm and pivoted at 15 to diametrically-opposite sides of the barrel, and the spring-wire bent to form the grip extending parallel with the grip of the gun, having its front end terminating in an eye pivoted to the yoke and at its rear end coiled to form spring-coils and beyond the same terminating in a point driven in the under side of the grip of the gun, substantially as specified.

4. In a toy gun, the combination, with the stock comprising the fore-arm and the block, of a barrel hinged to the fore-arm and adapted to close against the block, a pneumatic tube leading to the barrel, a yoke embracing the barrel and depending below the fore-arm, and a bowed spring having one end connected to the stock and the other to the yoke, substantially as specified.

477,328. CARPET-FASTENER. REMINGTON M. CHILDS, Rigin, Ill. Filed Mar. 3, 1892. Serial No. 423,613. (No model.)

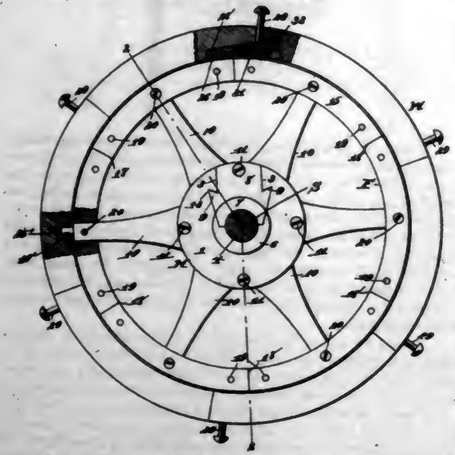
Claim.—1. A carpet-fastening consisting of a pin interwoven within the edge of the carpet and a hook or catch secured to the floor, adapted to be engaged by said pin interwoven in the said carpet, substantially as described.

477,828.



2. A fastening of the character set forth, consisting of pins or headed wires interwoven in the edges of the carpet or cover to be secured to form loops on the under side of the carpet or cover and a hook or catch consisting of a plate secured in a horizontal manner and having an upwardly-projecting tongue to be engaged by said pins or headed wires and arranged in line under the said carpet or cover, a series of said hooks or catches being employed and arranged in alignment, substantially as described.

477,824. FLY-WHEEL. BYRON COBURN, Le Roy, N. Y. Filed Dec. 4, 1891. Serial No. 414,024. (No model.)



Claim.—1. A wheel having a hub made in two duplicate parts, each part having an opening from its center hole to its outer edge, a section removably secured in said opening, spokes detachably secured to the hub, and a sectional felly, as and for the purpose set forth.

2. A wheel having a hub made in two duplicate parts, each part having an opening extending from its center hole to its outer edge and provided with recesses in its side walls, a section removably secured in said opening and having teeth fitting said recesses, a sectional flange around the center hole of the hub, spokes radiating from the hub, and a sectional felly, as and for the purpose set forth.

3. A wheel having a hub made in two duplicate parts, each part having an opening extending from its center hole to its outer edge, sections removably seated in said openings and arranged to be out of alignment with each other, radial strengthening-webs on the adjacent faces of the parts, spokes whose inner ends are secured between the parts and between the webs, and a felly made in sections detachably connected, as and for the purpose set forth.

4. A wheel having a hub made in two duplicate parts, each part having an opening extending from its center hole to its outer edge, sections removably seated in said openings and arranged to be out of alignment with each other, radial strengthening-webs on the adjacent faces of the parts, spokes whose inner ends are seated between the parts and between the webs, bolts passing through the parts between the spokes, one of such bolts also passing through each of the said sections, and a felly made in sections detachably connected, as and for the purpose set forth.

5. The combination, with a wheel whose spokes project beyond the outer face of its felly, of a ring of weighted segments, each having a cavity fitting over the projecting end of a spoke, and connections, substantially as described, between the ends of the segments, as and for the purpose set forth.

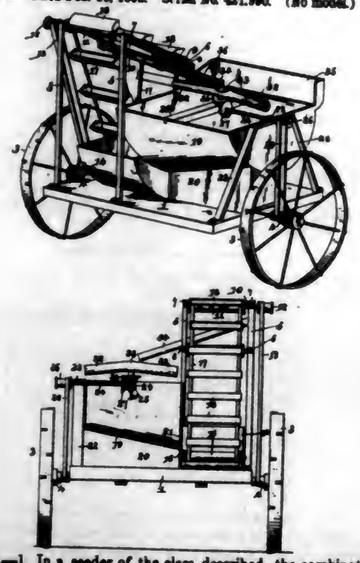
6. The combination, with a wheel, of a ring of weighted segments having tongue-and-groove connections between their meeting ends and screws passing through the segments radially inward and bearing on the periphery of the wheel, as and for the purpose set forth.

7. The combination, with a wheel, of a ring of weighted segments surrounding the same, each segment having a projection at one end transversely dovetailed and of less radial thickness than the body of the segment and in its other end a dovetailed recess opening through the inner face of the segment, but not extending completely to the outer face of the said inner segment, and means for holding the segments on the wheel, substantially as described.

8. The combination, with a wheel, of a ring of weighted segments surrounding the same, each having a projection at one end transversely dovetailed and radially reduced and in its other end a dovetailed recess opening through the inner face of the segment, but not extending completely to the outer face of the said inner segment, and screws, each passing inwardly through the shell and projection and bearing against the periphery of the wheel, as and for the purpose set forth.

9. The combination, with a ring, of weighted segments, each having a dovetailed projection at one end and a dovetailed recess in its other, the projection having a shallow recess in its inner face and the recess having a shell covering the outer face of the projection, of a nut seated in each shallow recess, a wheel within the ring, and a screw passing through each shell, projection, and nut and bearing against the periphery of the wheel, as and for the purpose hereinbefore set forth.

477,825. BROADCAST SEEDER. DAVID G. DANIELS, Grand Tunnel, Pa. Filed Feb. 18, 1892. Serial No. 421,990. (No model.)



Claim.—1. In a seeder of the class described, the combination, with the vertical rotating shaft, the seed-tubes mounted thereon, and means for operating the shaft, of a hopper, seed-conducting devices for carrying seed from the hopper to the tubes, and means for regulating the speed of the seed-conducting devices, substantially as specified.

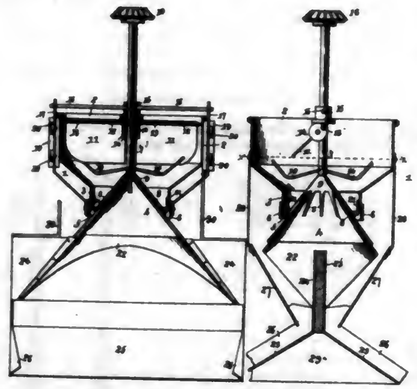
2. In a seeder of the class described, the combination, with the hopper, the vertical shaft arranged thereover, the seed-tubes on the shaft, adapted to rotate therewith, and means for rotating the shaft, of seed-conducting devices between the hopper and the tubes, and an apron or guard located in front and at one side of the path traversed by the tubes, and an inclined trough located within the same and adapted to conduct seed back into the hopper, substantially as specified.

3. In a seeder of the class described, the combination, with the bed, the ground-wheels, the pulleys thereon, the inclined hopper, the seed-box with which the hopper communicates, the opposite standards having front and rear bearings, shafts mounted therein and in the seed-box, pulleys mounted on the shafts, a pair of belts mounted on the pulleys, cups connecting the belts, and a drive-belt between the hub-pulley and the rear shaft, of the standard located at the opposite side of the bed, the cross-bar spanning the hopper, a transverse shaft journaled in a bearing-standard and cross-bar and provided at its inner end with a gear and at its outer end with a pulley, a belt connecting the latter with the hub-pulley of the ground-wheel at that side of the machine, a vertical shaft journaled in the cross-bar, seed-tubes mounted on the upper end of the shaft, an intermediate feeder, a gear located below the tubes upon the vertical shaft and engaged and operated by the gear at the inner end of the transverse shaft, the inclined chute leading from a point below the cups to a point above the feeder, the curved apron located in front of the seed-tubes upon the hopper, and the inclined return-trough located below the apron, substantially as specified.

477,826. METHOD OF MANUFACTURING ARTIFICIAL GRANITE AND MARBLE. CHARLES GEORGE, Berlin, Germany. Filed Jan. 6, 1891. Serial No. 376,915. (No specimens.)

Claim.—The method of manufacturing artificial marble, consisting in mixing finely-ground silicates with argilliferous sand and in special cases with fragments of marble, in melting the mixture in a regenerative firing, in mixing the batch with a similar one prepared separately in the same manner and kept in a tough state and colored by the addition of a metallic oxide, and in casting the resulting batch into molds, for the purpose as described.

477,827. FEED-REGULATOR. WILLIAM GRIBBEN and JOSEPH M. GAGE, Croswell, Mich. Filed Dec. 1, 1891. Serial No. 413,607. (No model.)



Claim.—1. In a feeder, the combination of a hopper provided with a feed-opening, a cut-off arranged to regulate the size of the opening, a vertical shaft mounted in the hopper, a horizontal rod centrally secured to the vertical shaft, a sleeve loosely arranged on the shaft and connected with the cut-off and arranged above the horizontal rod, and hinged blades mounted on the horizontal rod and supporting the sleeve and adapted to raise and lower the same, whereby the cut-off will rise and fall, according to the bulk of the material within the hopper, substantially as described.

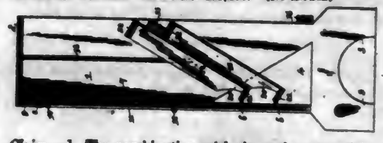
2. The combination, in a feeder, of a hopper provided with a feed-opening, a cut-off arranged to regulate the size of the opening, a vertical shaft mounted in the hopper, a sleeve loosely mounted on the shaft and connected with the cut-off, and the hinged blades carried by the shaft and provided with cams supporting the sleeve and adapted to cause the same to rise and fall, substantially as and for the purpose described.

3. In a feeder, the combination of a hopper provided with a feed-opening, a cut-off arranged to regulate the size of the opening, a vertical shaft mounted in a hopper, a horizontal rod centrally secured to the central shaft and extending therefrom, a sleeve loosely mounted on the shaft and connected with the cut-off, the blades provided at their upper edges with sleeves arranged on the horizontal rod, and the disks eccentrically secured to the inner ends of the blades and supporting the sleeve, substantially as described.

4. In a feeder, the combination of a hopper provided with a feed-opening and having a lower cylindrical portion 3, vertical ribs arranged at intervals on the cylindrical portion, a conical distributer, and a vertical shaft mounted in the hopper and carrying downwardly-extending radial fingers arranged on the outer face of the conical distributer, substantially as described.

5. In a feeder, the combination of a hopper provided with a feed-opening, a conical distributer, the laterally-extending portions 22, provided with longitudinal slots, the division-board extending though the slots, the inclined deflectors provided at their sides with flanges 26, the triangular end pieces supporting the division-boards and the deflectors, and the segmental guards inclined toward the deflectors, substantially as described.

477,828. SPOOL-HOLDER. OSCAR J. ISRAEL, Charlton, Iowa. Filed July 23, 1891. Serial No. 400,490. (No model.)



Claim.—1. The combination, with the casing comprising the opposite side walls having opposite grooves terminating at their lower ends midway the side walls in bearings, of the spool-tray having compartments and opposite trunnions located at the sides of the tray and adapted to ride in the grooves of the side walls, substantially as specified.

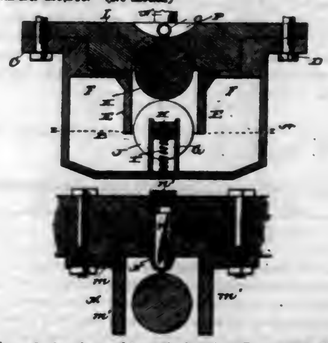
2. The combination, with the casing comprising the opposite side walls having vertical grooves upon their inner sides and terminating midway of the side walls in bearings, of a spool-holder consisting of a series of trays located one upon the other and each arranged slightly in rear of the tray below, each tray having a series of partitions dividing it into compartments, and opposite trunnions extending from the opposite walls of one of the trays and located in front of the center of the combined series of trays, substantially as specified.

3. The combination, with the opposite side walls having the vertical grooves or ways, the lid, the front stationary cover, and the sliding cover located in front of the spring-clasp, secured to the stationary cover, the series of spool-trays offset from each other and mounted upon each other, each tray comprising a series of longitudinal partitions reduced at their front ends and front connecting rest-strips, the opposite trunnions extending from the sides of the trays in front of the transverse center thereof and riding in the grooves, and the transverse strip 15, located above the ends of the grooves and connecting the rear edges of the side walls, substantially as specified.

4. The casing having the grooves or ways 13, combined with the series of inclined spool-trays secured one upon the other, with the upper tray offset from the lower tray, so that said trays do not interfere with free access to each other, and bearing-trunnions 23 for the trays to rest in the grooves or ways, substantially as described.

5. The casing having the grooves or ways 13, combined with the series of inclined spool-trays secured one upon the other, with the upper tray offset from the lower tray, so that said trays do not interfere with free access to each other, and bearing-trunnions 23 for the tray to rest in the grooves or ways and the sliding door 11 to close over the front of the trays, substantially as specified.

477,829. JOURNAL-BOX. EDWARD JOHNS and CHALKLEY DAWSON, Bellaire, and HENRY STANTON, Flushing, Ohio. Filed Feb. 20, 1892. Serial No. 423,218. (No model.)



Claim.—1. In a journal-box, the bearings L, connected by a cross-piece M, substantially as described.

2. In a journal-box, the bearings L, connected by the cross-piece M, having flange *m* and rib *b'*, substantially as described.

3. In a journal-box, the bearings L, connected by the cross-piece M, and the oil-carrier N, arranged between the ribs of the cross-piece and supplying oil to both bearings, substantially as described.

4. In a journal-box, the bearings L, the pipes O O, and the T N, having partition in the center to divide the oil, substantially as described.

5. In a journal-box, the oil-receiver provided with a partition E, forming an air-tight chamber above the bottom of said partition, whereby the oil is saved in case the car is dumped in one direction, substantially as described.

6. In a journal-box, an oil-receiver provided with a partition or

each side, forming an air-tight chamber on each side of the box above the bottom of said partitions, whereby the oil is saved in case the car is dumped in opposite direction at different times, as set forth.

477,330. WAGON-LOCK. WILLIAM MCCORMACK and ROBERT M. PATTON, Otwell, Ind. Filed May 26, 1891. Serial No. 394,223. (No model.)



Claim.—The combination, with a vehicle, of a brake-bar having brake-shoes and suspended by links from the running-gear, the vertical springs 7, arranged at the sides of the vehicle and having their upper ends secured to the running-gear and their lower ends hooked and engaging the brake-bar and holding the same forward to keep the brake-shoes off the wheels, the rock-shaft journaled on the running-gear and provided with depending arms, the connecting-rods 8, having their front ends secured to the brake-bar and having their rear ends bifurcated and pivoted to the arms, the lever 12, having its lower end secured to one end of the rock-shaft, the approximately U-shaped handle-receiving clips having the lever secured between their sides and forming stops, one of the clips being removable, the connecting-rod 14, having its front end bifurcated and provided at its rear end with a longitudinally-disposed opening to receive the lever 12, a roller arranged at the rear end of the opening and bearing against the lever 12, the curved ratchet mounted on the body, the operating-lever having its lower end fulcrumed at the bottom of the body and provided with a longitudinal opening receiving the ratchet, and latch mechanism mounted on the operating-lever and engaging the ratchet, substantially as described.

477,331. BAG-LOCK. HERCUS MCKINNON, Eureka, Cal. Filed Jan. 22, 1892. Serial No. 418,917. (No model.)



Claim.—1. In a lock, an elongated casing having a series of receiving-openings in one edge or side thereof, oppositely-working spring-actuated bolt-plates working within said casing and having a series of corresponding locking-openings, operating-stems secured to the inner ends of said bolt-plates and projecting through the top of the casing, and an intermediate locking device between the inner ends of said plates, substantially as set forth.

2. In a lock, the casing having a series of catch-receiving openings in one side thereof, an oscillating disk pivotally secured within the casing, oppositely-working spring-actuated bolt-plates secured at their inner ends to said disk and provided with a series of locking-openings corresponding to the casing-openings, and a catch-bar, substantially as set forth.

3. In a lock, the casing having a series of catch-receiving openings in one side, an oscillating disk pivotally secured within the casing and provided with a limit-notch working over a projecting stop, oppositely-working spring-actuated bolt-plates secured at their inner ends to said disk and provided with a locking-flange having a series of locking-openings corresponding to the casing-openings, operating-stems secured to said bolt-plates, and a catch-bar, substantially as set forth.

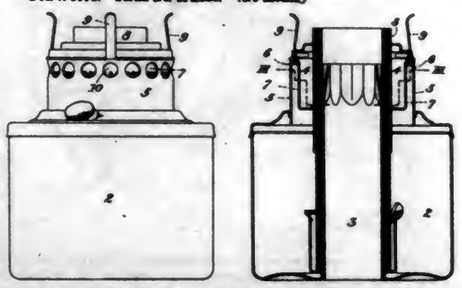
4. In a lock, the combination of a casing having a series of catch-receiving openings in one side, oppositely-working spring-actuated bolt-plates having locking-openings corresponding to the casing-openings, a catch-bar, an oscillating disk connected to the inner ends of said bolt-plates, and a locking device arranged above said disk between said inner ends of the plates, substantially as set forth.

5. In a lock, the combination of a casing having a series of catch-openings, oppositely-working spring-actuated bolt-plates having locking-openings, a catch-bar, and a bolt-plate locking and unlocking plate centrally located within the lock-casing between the inner ends of said bolt-plates and adapted to be locked against the same or locked out of the path of the movement of said plates, substantially as set forth.

6. In a lock, a casing having a series of catch-receiving openings, oppositely-working bolt-plates having locking-openings, a catch-bar, a locking-plate working between the inner ends of said bolt-plates and provided with a locking stud or pin, and a series of spring-actuated locking-tumblers working over said locking-plate and engaging said locking stud or pin, substantially as set forth.

7. In a lock, a casing having a series of catch-receiving openings, oppositely-working bolt-plates having locking-openings, a flanged catch-bar, a locking-plate having slots working over pins projecting within the casing between the inner ends of said bolt-plates, a centrally-disposed locking stud or pin and an operating-notch in one edge thereof, and a series of spring-actuated tumblers pivotally mounted upon one of said casing-pins and provided with opposite locking-openings adapted to receive said locking stud or pin, and communicating slots between said openings to allow said locking stud or pin to pass from one locking-opening to another, substantially as set forth.

477,332. LAMP. ARCHIBALD W. PAULL, Wheeling, W. Va. Filed Dec. 7, 1891. Serial No. 414,223. (No model.)



Claim.—1. A central-draft lamp provided with a burner, perforated casing permanently secured thereto, and a removable wick-tube, substantially as described.

2. A lamp-fount provided with a burner-casing permanently secured thereto, inwardly-projecting flanges, and a burner-tube resting upon such flanges, substantially as described.

3. A lamp-fount having a central draft-tube, a perforated burner-casing secured to the fount, an inwardly-projecting annular flange, and a burner-tube having a projecting portion resting thereon, substantially as described.

4. A central-draft lamp provided with a burner having a perforated casing permanently attached thereto, and an air-feeder permanently secured in the draft-tube, substantially as described.

477,333. SOOT-REMOVING COMPOUND. WILLIAM T. PEDDLEY, Sedalia, Mo., assignor of one-half to William D. Ilgenfritz, same place. Filed Mar. 3, 1892. Serial No. 423,651. (No specimens.)

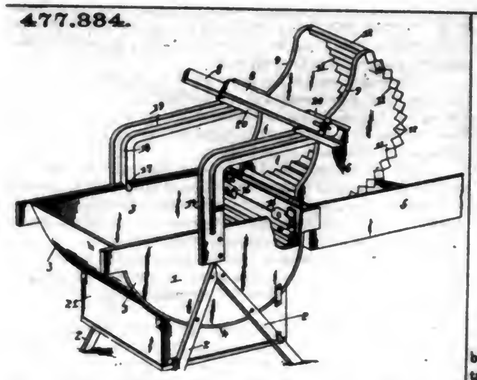
Claim.—The herein-described soot-removing compound composed of zinc or zinc ore, (black-jack,) muriate of ammonia, sulphur, and charcoal, combined in substantially the proportions specified.

477,334. WASHING-MACHINE. FRANK PLUMB, Sunfield, Mich. Filed Sept. 29, 1891. Serial No. 407,163. (No model.)

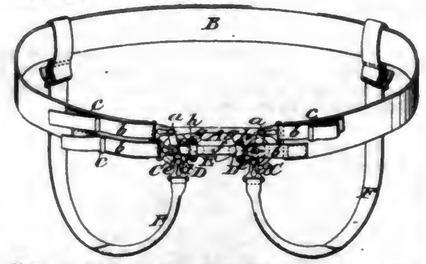


Claim.—In a washing-machine, the combination of the body, a cover hinged to one end of the body and adapted to be thrown back and supported in a horizontal position to form a drip-pan, approximately L-shaped arms slotted throughout their length and secured to the sides of the body extending upward and horizontally over the end of the body to which the cover is hinged and over the latter when the same is in a horizontal position, a stationary rubber arranged within the body, and an oscillating rubber provided with journals arranged in the slots of the arms, substantially as and for the purpose described.

477,334.



477,335. TRUSS. GRIFFITH REES, New York, N. Y. Filed Mar. 31, 1892. Serial No. 426,722. (No model.)



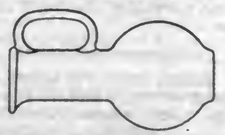
Claim.—1. In a truss, the combination of an open front plate or frame, having upper and lower strap-posts on each side, a flexible body-band having two straps at each end for connection with the upper and lower strap-posts on the respective sides of said open plate or frame, a pad, and a plate for supporting said pad adjustably upon the lower bar or member of said open front plate or frame, substantially as and for the purpose herein set forth.

2. In a truss, the combination of a front plate, a pad supporting plate adjustable upon said front plate, and a clamp consisting of two plates and screws, between which said front plate and pad-supporting plate are received and by which said supporting-plate is secured in its adjusted position on said front plate, substantially as herein set forth.

3. In a truss, the combination of an open plate or frame having upper and lower strap-posts on each side and having a downward extension below the said lower strap-posts and an additional strap-post on said extension, a flexible body-band having two straps at each end for connection with the strap-posts on the respective sides of said open plate or frame, a pad, and a plate for supporting said pad upon the lower bar or member of said open front plate or frame, and a perineal band attached to the back of the said body-band and to said additional post, substantially as herein set forth.

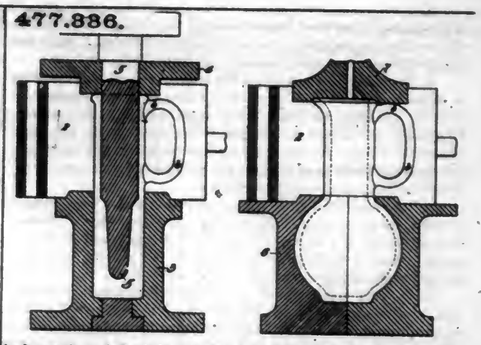
4. In a truss, the combination of a body-band, a front plate or frame to which the ends of said body-band are attached, a perineal strap, the rear end of which is attached to said body-band, a pad, a supporting-plate for said pad, a clamp consisting of two plates and two screws, between which the said front plate or frame and said supporting-plate is received, one of said screws being below the said front plate or frame and having a post-head for the attachment of the front end of the perineal strap, all substantially as and for the purpose herein set forth.

477,336. MANUFACTURE OF GLASSWARE. DANIEL C. RIPLEY, Pittsburg, Pa. Filed Jan. 9, 1891. Serial No. 377,196. (No model.)

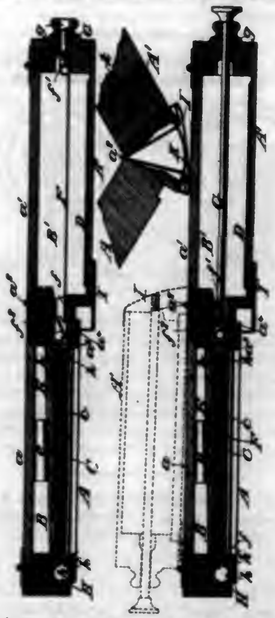


Claim.—In the manufacture of glassware, the improvement, which consists in pressing a glass blank having a finished neck portion, a finished handle portion integral with the neck portion, and an unfinished body portion wholly below the level of the finished portions, and then transferring the blank to a separate blow-mold and expanding the unfinished body portion therein by blowing, substantially as and for the purposes described.

477,336.



477,337. PHOTOGRAPHIC FILM-HOLDER. THOMAS SAHLY, New Haven, Conn. Filed Oct. 22, 1891. Serial No. 410,194. (No model.)



Claim.—1. The film-holder comprising folding sections hinged together independently of the camera-box, one section containing an exposing-chamber and the other a storage-chamber, means for excluding light from entering the chambers at the hinged sides, the transparent plate at the front of the exposing-chamber, a follower for holding the films flatly against the transparent plate, and means for successively engaging the rear edges of each film and forcing the film forward from one chamber to the other, substantially as set forth.

2. The film-holder comprising an exposing-chamber and a storage-chamber arranged to intercommunicate, means for holding a plurality of films in position to be successively exposed, a shield having a sliding movement from one chamber to the other, and means for directing the shield between the film in position to be exposed and the next succeeding film, thereby excluding light from the second film during the exposure of the first film, substantially as set forth.

3. The film-holder comprising folding sections, one containing an exposing-chamber and the other a storage-chamber, means for holding a plurality of films in the exposing-chamber in position to be successively exposed, and a combined film-transferring slide and shield adapted to traverse the two chambers, substantially as set forth.

4. The film-holder comprising folding sections, one containing an exposing-chamber and the other a storage-chamber, means for holding a plurality of films in the exposing-chamber in position to be success-

ively exposed, a combined film-transferring slide and shield adapted to traverse the two chambers, and an operating-rod having a removable engagement with the slide and shield, substantially as set forth.

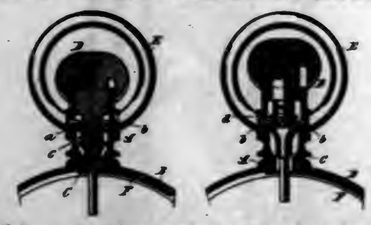
5. The film-holder comprising the folding sections, one containing an exposing chamber and the other a storage-chamber, spacing devices for separating the films at their edges, a chamber for receiving the spacing devices, and a combined film-transferring slide and shield adapted to traverse the chambers and remove the spacing device into the receiving-chamber as the slide and shield assumes its position between the films, substantially as set forth.

6. The combination, with folding sections, of a dark hinge or hood covering the space between the opening and closing edges of the sections at the side and ends and connected to the opposite sections, the opposite sides of the hood being adapted to fold beneath the central portion as the sections open, substantially as set forth.

7. The dark hinge or hood comprising the strip adapted to extend from one outside edge of two folding sections to the opposite outside edge of the two hinged sides of the sections and to project beyond the ends of the two meeting sides, and end pieces, one edge of each being secured to the projecting end of the strip and the opposite edge of each adapted to be secured to the swinging end edges of the hinged sides of the section, substantially as set forth.

8. The combination, with the two folding sections and the dark hinge or hood secured to their opening edges at their hinged sides and covering the space between them, of distending devices secured to the sections within the hinge or hood to prevent the collapse of the hood, substantially as set forth.

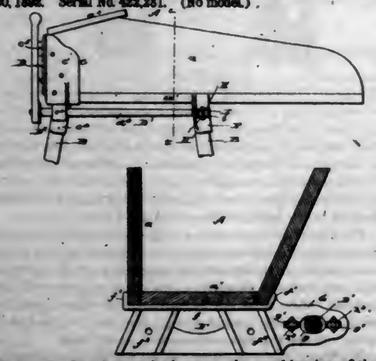
477,888. WATCH-CASE PENDANT. CHARLES SCHWITTER, Brooklyn, N. Y. Filed Mar. 26, 1892. Serial No. 426,489. (No model.)



Claim.—1. A watch-case pendant consisting of a pendant proper, a stem fitted in said pendant and formed with an elongated recess thereon, and a bow having its end or ends projecting through said pendant and engaging said recess in the stem, substantially as described.

2. In a watch-case pendant, the combination, with a pendant proper, of a stem fitted therein and provided with recesses *a c* and separating-shoulder *d*, and a bow having its end or ends projecting through said pendant and engaging said recesses, substantially as described.

477,889. STRAW OR FEED CUTTER. HIRAM M. SMITH, Richmond, Va., assignor to Elizabeth Louise Smith, same place. Filed Feb. 20, 1892. Serial No. 422,381. (No model.)



Claim.—1. In a hay or feed cutter, the combination of the front bracket having the side walls which inclose the wooden side pieces of the hopper and the front bearing c^2, the rear bracket having the sockets f^3 f^3 for the legs, the oscillating knife, the shaft or axle D', supported on said brackets, and the laterally-adjustable bearing for the rear end of the knife-axle, substantially as set forth.

2. The combination of the hopper, the front bracket, the separate rear bracket having the web G formed with the slots *g'* and aperture *g*, the vibrating knife D, the rocking axle D', passed loosely through the aperture *g* and having the enlarged end d^2, and the bodily-adjustable bearing, substantially as set forth.

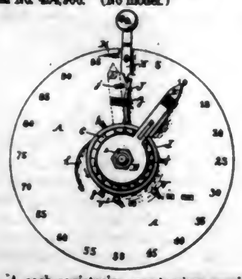
3. The combination of the rear bracket having the side and bottom walls a c' c^2, the leg-sockets c^3, and the bearing c^2, the rear bracket having the leg-sockets, the oscillating knife, the axle D, having the head or flange d^2, and the laterally-adjustable bearing for the rear end of the axle, substantially as set forth.

4. The combination of the adjustable bearing H H', the rear bracket F, cast with an integral web G, having an aperture *g*, the front bracket C, having a permanently closed bearing c^2, the oscillating knife, and the axle mounted in the two said bearings and passing loosely through the rear bracket, substantially as set forth.

5. The combination, with the oscillating knife and the axle, of a front bracket, and a separate rear bracket supporting the rear legs, and the adjustable bearing formed in two similar parts, substantially as set forth.

6. The combination of the oscillating knife, the rocking axle having its rear end mounted on the support for the rear legs, the front bracket or mouth-piece having the walls c c' c^2 outside of the wooden parts of the hopper, the leg-supports c^3 c^3, the chilled ledger-knife c^4, and bearings c^2, all integral, all of said parts being constructed and arranged substantially as set forth, whereby the said brackets hold the axle and the oscillating knife properly relatively to the hopper, substantially as set forth.

477,840. CASH REGISTER AND INDICATOR. GEORGE W. SPURR, New Britain, Conn., assignor of one-half to Robert C. Mitchell, New York, N. Y., and Fred B. Mitchell, New Britain, Conn. Filed Mar. 15, 1892. Serial No. 424,966. (No model.)



Claim.—1. A cash-registering mechanism consisting of the fixed arbor B, the dial A, rotating arm F, carrying the pointer H, and pointer E, adapted to rotate on arbor B, said pointer H, carried by the arm F, being adapted to advance said pointer E by contact therewith to point to any desired number on the dial A, substantially as described.

2. In a cash-register, the dial A, rotating arm F, drum D, spring *a*, pointer E, pawl *b*, ratchet-ring C, and ring I, rollers *f f f*, and lever-arm J, arranged substantially as and for the purpose specified.

3. The combination, in a cash-register, of the dial A, rotating arm F, and pointer E, adapted to point to any desired number on the dial, with the stop *j* and raised incline K, all substantially as and for the purpose described.

4. In a cash-register, the combination of a lock-bar S and spring *q*, with the rotating arm F and cam U, said cam U being adapted to be brought into contact with and to depress said lock-bar S when the arm F is at zero on the dial and to be brought out of engagement with said lock-bar S when said arm F is rotated, substantially as described.

5. In a cash-register, as described, the rotating arm F, its bearing *t*, and cam U, with a lock-bar S, moving on pins *r r*, sliding in grooves in the said bar, one groove being widened at its lower end, as described, and the spring *q*, substantially as and for the purpose specified.

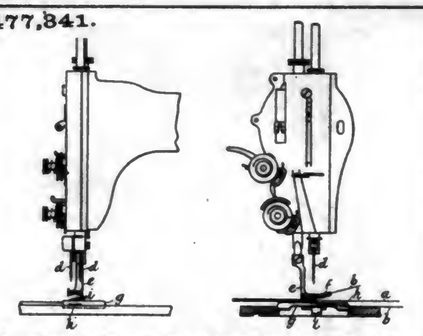
6. In a cash-register, the dial A, drum D, spring *a*, pointer E, pawl *b*, ratchet-ring C, ring I, spring *d*, rollers *f f f*, and lever-arm J, having the bevel *i*, all substantially as described.

7. The combination, in a cash-register, of the revolving arm F, the pointer E, and the disks L M N', arranged and operating as described, with the drawer-lock bar S, spring *q*, and cam U, substantially as and for the purpose set forth.

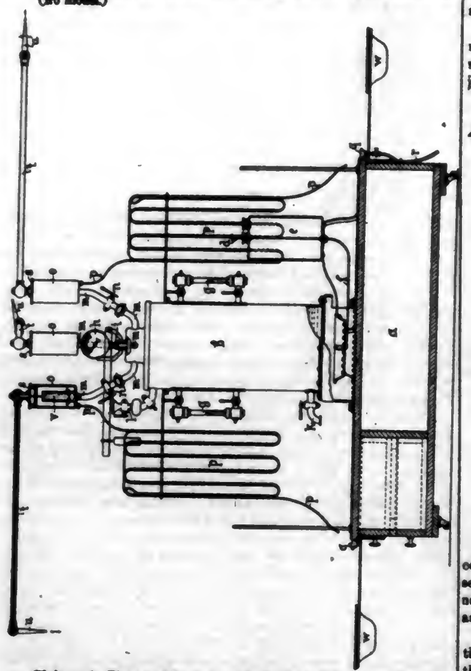
477,841. GUIDING DEVICE FOR SEWING-MACHINES. WILLIAM H. SYMINGTON and WILLIAM ANDERSON, Market-Harborough, England. Filed Dec. 11, 1891. Serial No. 414,709. (No model.)

Claim.—In a sewing-machine, as a means for making the described seams, the combination, with a pair of needles and a feeding mechanism, of a presser-foot having a slot transverse to the line of feed for the upper strip or band, and a needle-plate having a slot transverse to the line of feed for the under strip or band, the combination being and operating as set forth.

477,841.



477,842. INHALING AND DISINFECTING DEVICE. LUDOVICA WALLENER, Dresden, Germany. Filed Apr. 10, 1891. Serial No. 388,404. (No model.)



Claim.—1. The combination, with the boiler *b* and the dome at the upper end, of the pipes *m* and cocks *n*, the dispersion-boxes *o* at the respective ends of the pipes *m*, the pipe for discharging water of condensation, the imperforate vessels *v* for medicinal substances within the boxes *o*, the removable caps or lids *s*, the swinging pipes *t*, and movable nozzles *u*, substantially as set forth.

2. The combination, in a medicinal or disinfecting apparatus, with a boiler, of a steam-pipe rising therefrom, a dispersion-box upon the end of said pipe, an imperforate vessel for medicinal substances within said box and smaller than the same, so as to form a steam-chamber around the vessel, a movable discharge-pipe connected to the top of said dispersion-box, and a serpentine pipe *p*, forming traps and connected to the lower end of the dispersion-box for discharging the water of condensation and preventing the escape of steam, substantially as set forth.

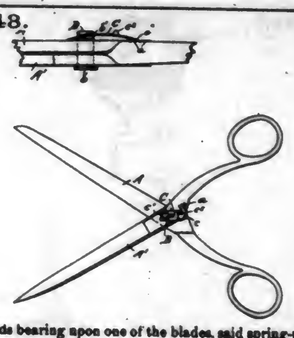
477,848. SHEARS. EDWARD F. WEBER, Reading, Pa. Filed Dec. 30, 1891. Serial No. 416,451. (No model.)

Claim.—1. The combination, with the scissor-blades, of a headed pivot-pin passing through said blades, and the forked spring-plate C, engaging, intermediately, the projecting portion of the pin and having its opposite ends bearing upon one of the blades, said spring-plate being independently removable, substantially in the manner and for the purpose set forth.

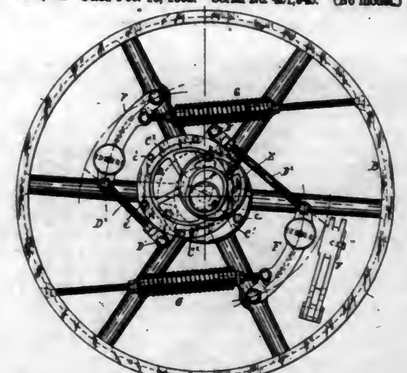
2. The combination, with the scissor-blades, of a headed pivot-pin passing through said blades, and a spring-plate having a forked end engaging the projecting portion of said pin and its opposite end adapted to engage a series of notches *a* in the plate upon which it bears, substantially as and for the purpose set forth.

3. The combination, with the scissor-blades provided with a series of notches *a* and a pivot-pin connecting the same, of the forked spring plate having one end adapted to engage said notches and a projection a^2 thereon whereby to adjust the same, substantially as set forth.

477,848.



477,844. STEAM-ENGINE GOVERNOR. WILLIAM O. WEBBER, Erie, Pa. Filed Feb. 18, 1892. Serial No. 421,945. (No model.)



Claim.—1. In the valve-gear of an automatic-cut-off engine, the combination, with the shaft and governor-wheel, of an eccentric-case secured thereto and moving coincidently therewith, an eccentric journaled in said case and operatively connected with the weight-arms, and the valve-actuating means carried by said eccentric.

2. In the valve-gear of an automatic-cut-off engine, the combination, with the shaft and governor-wheel, of an eccentric-case secured thereto and moving coincidently therewith, an eccentric journaled in said case and operatively connected with the weight-arms, and a valve-moving eccentric attached to or made integral with said incased eccentric and moving coincidently therewith, said connected eccentrics having an elongated shaft-opening A' therethrough.

3. In the valve-gear of an automatic-cut-off engine, the combination of a disk journaled eccentrically to the shaft in a case and movable axially independent of said case and bearing upon its side and moving coincidently therewith, a valve-moving means, and means for moving said disk axially from the vibratory action of the weight-arms.

4. In the valve-gear of an automatic-cut-off engine, the combination, with the wheel B, of the case C, having the eccentric boss or flange C', which is attached to said wheel concentrically, thereby holding said case rigidly and eccentrically upon said wheel, a disk D, journaled in said case and retained therein by the cap-ring C^2 and having arms D', extending outwardly from said case, links D^2, connecting said arms D' with the weight-arms F, and the valve-actuating means E, carried coincidently by said eccentrically-journaled disk D.

477,845. BULB-GUARD FOR ATOMIZERS. MAURICE WERTH, Jersey City, N. J. Filed Feb. 17, 1892. Serial No. 421,847. (No model.)

477,845.

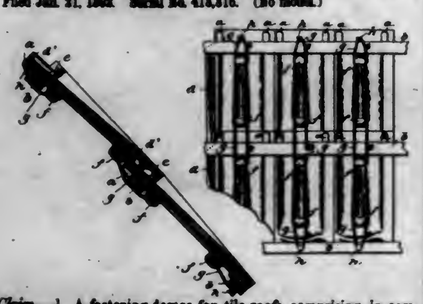


Claim.—1. A guard or casing for the bulbs of atomizers, comprising a fixed shell of rigid material incasing the bulb and provided with an opening therethrough for gaining access to the bulb to compress it, substantially as set forth.

2. A guard or casing for the bulbs of atomizers, comprising a shell of rigid material embracing the bulb and provided with a movable section having a movement toward the interior of the shell to collapse the bulb therein, substantially as set forth.

3. A guard or casing for the bulbs of atomizers, comprising a shell of rigid material embracing the bulb and provided with a movable section hinged to the stationary section and having a swinging movement toward the interior of the shell to collapse the bulb therein, substantially as set forth.

477,846. TILE ROOFING. JOSEPH M. WOOD, Bellaire, Ohio, assignor of two-thirds to Julius Schwab and William Barnard, same place. Filed Jan. 21, 1892. Serial No. 418,816. (No model.)



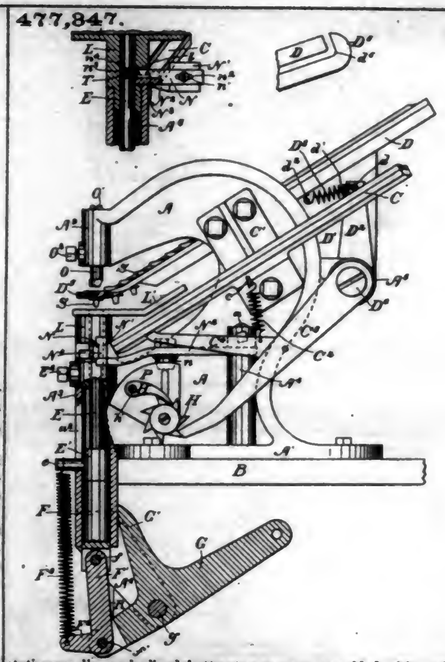
Claim.—1. A fastening device for tile roofs, comprising, in combination, tiles formed with lugs or studs on the inner face near each end and a buckle or loop engaging the lugs or studs at the lapping ends of a pair of tiles in spanning or crossing relation to said lapping ends and beneath a roof stringer or timber, substantially as described, for the purpose stated.

2. Roofing-tile formed at their side and end edges with intermatching lapping grooves and tenons and at their inner faces near each end with hook lugs or studs, in combination with a wire tie looped at each end over and around said lugs in spanning or crossing relation to the lapping ends of said tile and beneath and in contact with a roof-timber interposed between the said connected or engaged lugs, substantially as described.

3. A tile roofing comprising, in combination, tile formed with lapping intermatching grooves and tenons in their side and end edges and at their inner faces at the upper end with abutting corner-lugs and near each end with hook-lugs, wire-ties spanning or crossing the roof-timbers at the eave and at the ridge and engaging the tile hook lugs and nails in said timbers, and wire ties locking and binding the lap-joined ends of the tile in spanning or crossing relation to said lapped ends and beneath and crossing a roof-timber between the said engaged lugs, substantially as described.

477,847. BUTTON-SETTING MACHINE. BRAXTON WOODWARD, Somerville, Mass., assignor to the Consolidated Fastener Company, Portland, Me. Filed Feb. 20, 1892. Serial No. 422,114. (No model.)

Claim.—1. In a button-setting machine, the combination of a



stationary die, an inclined button-top raceway provided with a pivoted bracket, a vibratory actuating-arm having a spring connection with said bracket, and a suitably-guided movable washer-bearing die working in line with said stationary die, substantially as described.

2. In a button-setting machine, the combination of a stationary die O, an inclined vibratory button-top raceway D, having its lower end movable alternately to and from said stationary die, said raceway having a shank-conducting passage-way bent at substantially right angles at d^5 at the bottom thereof, whereby the lowermost button-top is held in the raceway beneath the die, and a suitably-guided movable washer-bearing die, substantially as described.

3. In a button-setting machine, the combination of a stationary die, means for holding a button-head with its clinching-eyelet beneath said die, a sleeve L, having an interior guiding passage-way and an opening *l* on one side of the passage-way, a washer-conducting raceway C, terminating in the opening *l*, a washer-receiving plate N^3 at the bottom of said opening, a movable die E, working in said passage-way, the top of said die being on a level with the outlet of the raceway when said die is at its lowest position, and a laterally-movable reciprocating separator-plate N alternately covering and uncovering the outlet of said raceway, whereby a washer on leaving the raceway passes first into the opening *l* to one side of the guiding passage-way and is then fed onto said die, substantially as and for the purposes described.

4. In a button-setting machine, a washer-separating device consisting of the combination of the button-raceway D, a raceway C, a movable die E, a sleeve L, having an inner guiding passage-way within which said die works and provided with the opening *l*, in which said raceway terminates on one side of said passage-way, and the laterally-movable reciprocating separator-plate N, provided with the finger n^4, engaging with the outlet of the raceway, substantially as and for the purposes described.

477,848. PROCESS OF RECOVERING TIN FROM SCRAPS AND WASTE OF TIN-PLATE. CAMILLE L. G. BERTOG, Paris, France. Filed Apr. 28, 1891. Serial No. 390,838. (No specimens.) Patented in France Aug. 1, 1890, No. 207,269.

Claim.—The improvement in the art of recovering tin from scraps and waste of tin-plate, consisting in first placing the scraps or waste in a bath of a temperature of about 50° centigrade, composed of hydrochloric acid and a nitrate, in which the proportion of the nitrate is about six per cent., by weight, of the acid, then adding more of the scraps or waste in successive charges, and in the meantime gradually raising the temperature of the bath to a point not exceeding 90° centigrade as it becomes more and more saturated with tin and weaker in the nitrate, substantially as herein set forth.

477,849. SAFETY CUFF-BUTTON LINK. JAMES C. BIGGAR, Newark, N. J. Filed Feb. 19, 1892. Serial No. 422,068. (No model.)



Claim.—1. A link for fastening together the eyes of buttons, consisting in a rigid hook provided with a shank with a reflex bend to form an elastic arm having its free end opposed to and in a line with the extremity of the hook, and a guide-loop secured to the said shank and arranged adjacent to and inclosing the free end of the same, substantially as and for the purpose set forth.

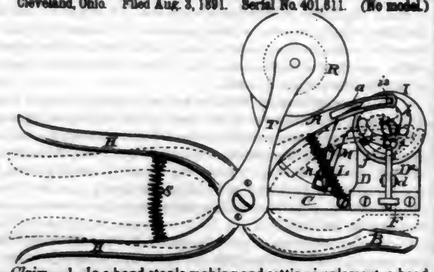
2. The combination, with the button-heads provided with suitable eyes, as described, of the link consisting of the hook *c*, the shank *l* with reflex bend *l'* to form the elastic latch-arm l^3, having its free end opposed to and in a line with the extremity of the hook, and the guide-loop *d*, inclosing the said latch-arm and secured to the rigid portion of the shank adjacent to the hook, as and for the purpose set forth.

3. The combination, with the button-heads provided with suitable eyes, as described, of the link consisting in the hook *c*, the shank *l* with reflex bend *l'* to form the elastic latch-arm l^3, opposed to the hook, and the loops *d* and *d'*, secured to the said shank, as and for the purpose set forth.

477,850. PROCESS OF ELECTROPLATING WITH ALLOYS. EDWARD T. BURROWS, Portland, Me. Filed Nov. 7, 1891. Serial No. 413,338. (No specimens.)

Claim.—The herein-described process for coloring bright wire-setting, which consists in placing it in a solution composed of copper sulphate, caustic potash, zinc sulphate, chloride of tin, sal-ammoniac, and muriate of iron and passing a current to it from an anode of copper, tin, and zinc.

477,851. HAND STAPLING IMPLEMENT. EMANUEL G. COHEN, Cleveland, Ohio. Filed Aug. 3, 1891. Serial No. 401,611. (No model.)

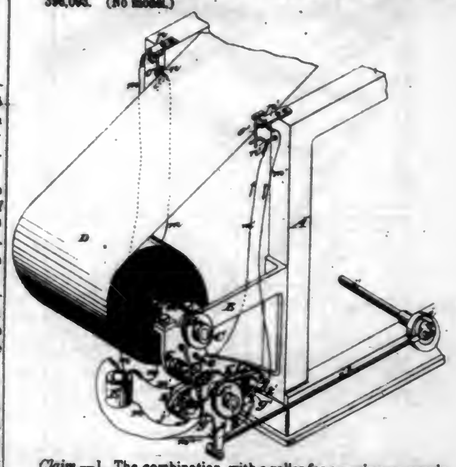


Claim.—1. In a hand staple making and setting implement, a head D, mounted on arm C and having the plunger E and hammer G fixed to play in guides on the front face of said head, a staple-forming block F, movably set in a mortise in the head beneath the plunger and hammer, cam-wheel I, mounted on a journal-pin on the back of the head D and having a pin i^3 engaging with slot *a* in the jaw A and having pins j^3 and k^3 engaging with cam-slots *j* and *k* in said wheel I, a lever D^3, pivoted on back of head D, connected with block F, the projection J on cam-wheel I, and the spring L, connected with the jaw A and arm C, constructed, combined, and operating as and for the purpose specified.

2. In a hand staple forming and setting implement, the lever M, mounted on the head D by a pin M, provided with a retracting-spring O, the short arm of said lever M being depressed by a pin l^3 on the plunger E, the lower end of the lever M having a hole for carrying the blank wire and provided with a spring-pawl *n* for gripping the wire when moving toward the head, and the detent *p*, in combination with the staple forming and setting mechanism, substantially as described.

3. In a hand staple forming and setting implement, the combination of the jaws A and B, an arm T, carrying a wire reel R, an arm C, mounted on the pivot-pin joining the jaws A and B, and supporting-head D, containing the staple forming and setting mechanism, consisting of a plunger E, hammer G, a forming-block F, a cam-wheel I, mounted on back of the head D, connected with and operating the plunger, hammer, and former by its rotations derived by the movements of the jaws A and B by means substantially as described, a feed-lever M, pivotally mounted on said head D and actuated by connection with the plunger, a spring-actuated rod L between the jaw A and arm C and the spring S between the handles H H', and the clinching-anvil on jaw B, all constructed to feed, cut, form, and drive staples, substantially as and for the purpose specified.

477,852. APPARATUS FOR FEEDING PAPER OR OTHER FABRIC FROM ROLLS. EDGAR H. COTTRELL, Stonington, Conn., assignor to C. B. Cottrell & Sons, Westerly, R. I. Filed June 13, 1891. Serial No. 396,093. (No model.)



Claim.—1. The combination, with a roller for carrying or supplying a web of paper or other fabric and bearings for said roller, of actuating mechanism for moving the said roller longitudinally in its bearings, an electric circuit, including an electro-magnet for setting in motion said actuating mechanism and a circuit-closing device adapted to be actuated by the lateral movement of the web, substantially as set forth.

2. The combination, with a roller for carrying or supplying a web of paper or other fabric and bearings for said roller, of actuating mechanism, substantially as herein described, for moving the said roller longitudinally in its bearings, reversing devices, substantially as herein described, for moving said actuating mechanism in one direction or the other, two electric circuits, each including an electro-magnet for throwing one or the other of said reversing devices into engagement, and circuit-closers, one for each of said circuits, arranged one near one edge and the other near the other edge of the web to be operated by the lateral diversion of the web for producing the movement of the roller in the opposite direction to said diversion, substantially as herein set forth.

3. The combination, with the longitudinally-movable roller C, the screw *b*, and the nut *c* on said screw engaging with said roller, of the two ratchet-wheels *f f'* on said screw, having their teeth set in opposite directions, the lever *g g' g²*, fulcrumed on said screw and furnished with pawls *h h'* to engage with said ratchet-wheels, the electro-magnets *k l k' l'* between said lever and pawls, the two electric circuits *m m'*, and the circuit-closers *n o n' o'*, one for each circuit, the web from the roller C being arranged to pass between the movable members of the circuit-closers, whereby the lateral diversion of the web serves to close one or the other circuit, all substantially as and for the purpose herein set forth.

477,853. TYPE-WRITING MACHINE. JOSEPH M. CRARY, Jersey City, N. J. Filed Jan. 3, 1891. Serial No. 376,606. (No model.)

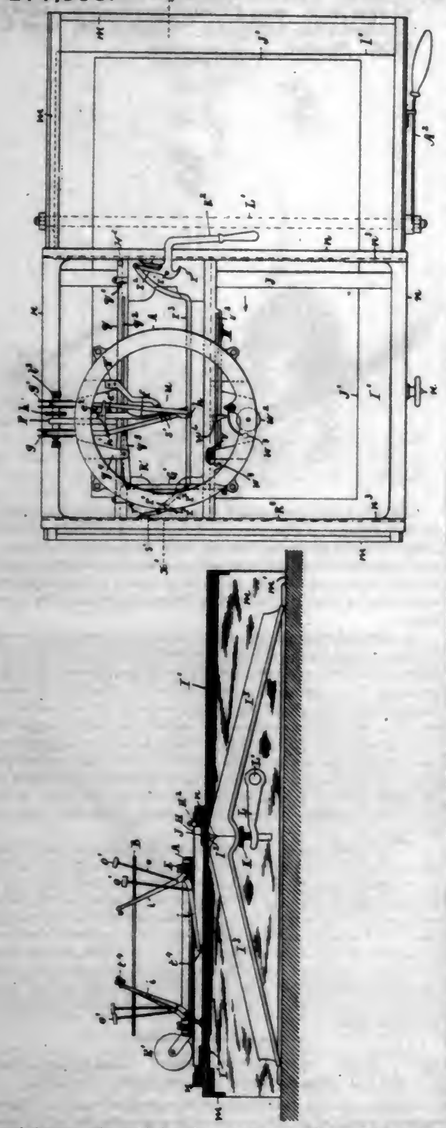
Claim.—1. The combination, with a type-bar hinged at its lower end and a type affixed to its free end, of a spring applied to the pivot of the type-bar to hold the free end normally raised, and a key rod jointed to the bar between the type and the pivot and extended upward, with a button at its upper end to press it downward in opposition to the spring, substantially as herein set forth.

2. A type-bar forked at one end and having its branches j^3 provided internally with conical sockets j^3, in combination with a hanger having a transverse stationary pin d' with conical ends fitted to said sockets, and a screw *a* inserted through the branches to clamp the sockets adjustably upon such pin, substantially as herein set forth.

3. A type-bar forked at one end and having its branches j^3 provided internally with conical sockets j^3, in combination with a hanger having a transverse stationary pin d' with conical ends fitted to said sockets, a screw *a*, inserted through the branches to clamp them adjustably upon such pin, and a pin a', inserted through the branches adjacent to the hinge to receive the end of a key-rod, substantially as herein set forth.

4. A type-bar formed of sheet metal folded together laterally, with both thicknesses of the sheet metal at one end twisted, and a type se-

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cured therein and provided at the opposite end with integral branches having each a conical socket upon its inner side to form a hinged joint with a stationary pivot, substantially as herein set forth.

5. The combination, with the plates A and B and the series of type-bars and key-rods arranged around the entire circle, as set forth, of the series of levers *c* for actuating the feed, the series of segment-levers *b*, operating upon the levers *c* and provided with the segments *b'* at their outer ends, springs to sustain the segment-levers, and the offsets b^3 upon the key rods to press the segments downward, as and for the purpose set forth.

6. The combination, with the plates A and B and the series of type-bars and key-rods arranged around the entire circle, as set forth, of the series of levers *c* for actuating the feed, the series of segment-levers operating upon the levers *c*, the offsets *s* upon the key-rods to press the segments downward, and the spacing-keys *d* with levers *d'* to actuate the levers *c*, substantially as set forth.

7. The combination, with the plates A and B and the series of type-bars and key-rods arranged around the entire circle, as set forth, of the feeding-levers *c*, the link *e*, coupled therewith, and the spacing-lever *f*, actuated by the link and provided with separate pawls to operate the feed and to shift the ribbon, substantially as set forth.

8. The combination, with the plates A and B and the series of type-bars and key-rods arranged around the entire circle, as set forth, of the feeding-levers *c*, the link *e*, coupled therewith, and the spacing-lever *f*, actuated by the link and provided with separate pawls to operate the feed and to shift the ribbon and with an arm carrying a ribbon-twister beneath the type, substantially as set forth.

9. In a type-writing machine, a ribbon-feeding mechanism consisting in the ribbon g^2, the spools *g g'*, journaled side by side, a loop-guide adjacent to the printing-seat, a lever for vibrating the guide to and from the seat, a ribbon-twister pivoted upon the lever, and the ribbon being extended from the same side of both spools over the ribbon-twister and the said guide, substantially as set forth.

10. In a type writing machine, a ribbon-feeding mechanism consisting in the ribbon g^2, the spools *g g'*, journaled side by side, a lever vibrated with the type-bars and sustaining a ribbon-guide and ribbon-twister adjacent to the printing-seat, and a pawl upon the lever to actuate the ribbon-feed, substantially as herein set forth.

11. In a type-writing machine, the means for actuating the ribbon-spools, consisting in the spindle *l*, rotated as set forth, and having the spools fitted thereon near its opposite ends, collars attached to the spindle outside of the spools and grooved for the passage of a feather, a rod inserted through the spindle and provided at each end with a feather having a wedge-shaped end fitted within the grooved collar, and clutch-teeth formed upon each spool adjacent to the collar, substantially as herein set forth.

12. The combination, with the bed *m*, sustaining a platen, with a space beneath the same to receive a book, of a frame adjustable longitudinally upon the bed, means for clamping the frame rigidly thereto in its adjusted position, a carriage movable transversely to the bed upon the frame, and a type-actuating mechanism movable longitudinally upon the carriage and provided with type-bars and finger-keys, and means connected with the keys to feed the carriage to space the type-impressions upon the platen, as and for the purpose set forth.

13. The combination, with the bed *m*, having the platen I' movable longitudinally therein at the level of the printing-impression, of a frame adjustable longitudinally upon the bed, means for clamping the frame rigidly thereto, a carriage movable transversely to the bed upon the frame, and a type-actuating mechanism movable longitudinally upon the carriage to space the type-impressions upon the platen, as and for the purpose set forth.

14. The combination, with the bed *m*, having the platen I', movable longitudinally therein at the level of the printing-impression, of a clamp extended transversely to the bed for pressing the leaf of a book to the edge of the platen, a frame adjustable longitudinally upon the bed, a carriage movable transversely to the bed upon the frame, and a type-actuating mechanism movable longitudinally upon the carriage, with means to space the type-impressions upon the platen, as and for the purpose set forth.

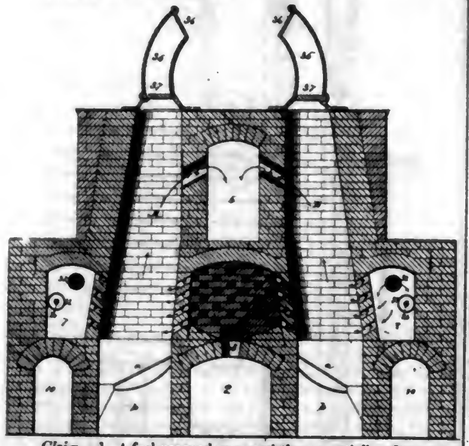
15. The combination, with the bed *m*, having the platen I', movable longitudinally therein at the level of the printing-impression, of a book-lifter actuated within the bed *m* below the platen to raise the book toward the platen, a frame adjustable longitudinally upon the bed, a carriage movable transversely to the bed upon the frame, and a type-actuating mechanism movable longitudinally upon the carriage, with means to space the type-impressions upon the platen, as and for the purpose set forth.

16. The combination, with the bed *m*, provided with longitudinal grooves I, of two platens I', fitted to slide longitudinally within the grooves, the clamp J, extended transversely to the bed between the platens, the frame *n*, adjustable longitudinally upon the bed and provided with means for clamping it thereto, the carriage N, movable transversely to the bed upon the frame, and type-actuating mechanism movable longitudinally upon the carriage, and means for shifting the type-actuating mechanism and carriage for letter-spacing and line-spacing, as and for the purpose set forth.

17. The combination, with the bed *m*, provided with longitudinal grooves I, of two platens I', fitted to slide longitudinally within the groove, the clamp J, extended transversely to the bed between the platens, the frame *n*, adjustable longitudinally upon the bed and provided with means for clamping it thereto, the carriage N, movable transversely to the bed upon the frame, type-actuating mechanism movable longitudinally upon the carriage, means for shifting the type-actuating mechanism and carriage for letter-spacing and line-spacing, and a book-lifter consisting in the transverse bar K, the rock-shaft L', the arms L, and hand-lever A^3, substantially as herein set forth.

18. The combination, with a series of slotted hangers secured adjacent to one another and having the type-bars pivoted thereto, of the binding-screws E, inserted through the slots in the hangers to hold the same, and the washers b^3, formed at one end with the bent ears b^4 and having the other end shaped to fit between the ears on the end of the next adjacent washer to hold the successive washers in the series from turning, as and for the purpose set forth.

477,354. PROCESS OF AND APPARATUS FOR GENERATING FUEL-GAS. JOHN W. CULMER, New Brighton, Pa. Filed June 12, 1890. Serial No. 355,124. (No model.)



Claim.—1. A fuel-gas producer consisting, essentially, of two separate and distinct fuel-containing chambers, a checker-work body between and adjoining the inner wall of said chambers and communicating therewith at said walls, flues at the outer walls of said chambers and communicating therewith on a plane with said checker-work body, an outlet-flue centrally above said checker-work body, communicating with both chambers, and means for controlling the said side and central flues, substantially as described, for the purpose specified.

2. A fuel-gas producer consisting, essentially, of two separate and distinct fuel-containing chambers, a checker-work body between and joining the inner walls of said chambers and communicating therewith at said walls, an outlet-flue centrally above said checker-work body, communicating with both said chambers, flues at the outer walls of said chambers, communicating therewith on a plane with said checker-work body, steam-superheating jacketed pipes within said side flues, the pipes of one flue being heated therein and delivering steam into the other flue, and valves for controlling the said side and center flues and the said steam-pipes, substantially as described, for the purpose specified.

3. In a fuel-gas producer, the combination, with two separate and independent fuel-containing chambers, each having communication with an outlet-flue common to both, of a checker-work body between the inner walls of said chambers, communicating with the latter through downwardly-inclined passages c in said walls and having communication with a bottom-closed archway through openings 3 all along the bottom of said body, substantially as described.

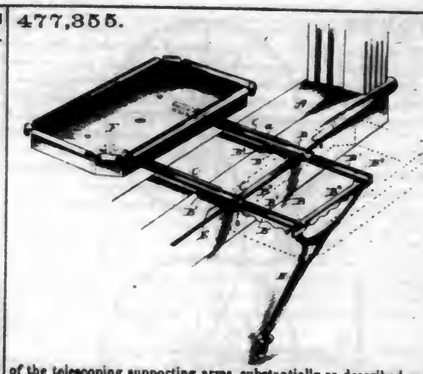
4. In a fuel-gas producer, the combination of the separate and independent fuel-containing chambers, the side flues 7 and 8, communicating therewith by the downwardly-inclined passages 9 in the outer walls of said chambers, with a checker-work body communicating on each side with said chambers by the downwardly-inclined passages c in the inner walls of said chambers, valve-controlled jacketed steam-pipes 32, opening into said side flues, and a top outlet-flue 5, having communication with both chambers, the said side flues and checker-work body being in the same horizontal plane, and suitable valve-controlled outlet-passages for the said flues, substantially as described, for the purpose specified.

5. The herein-described process of generating fuel-gas, the same consisting in subjecting in separate and distinct chambers bodies of fuel respectively and continuously to active and to retarded combustion and at the same time introducing superheated steam into the fuel-bed having the retarded combustion, passing the resultant gases into and through an incandescent checker-work body and into and through the fuel-bed having the active combustion, and thence into the outlet flue, and alternating or reversing the said operations in the generators to render the production continuous, in the way described.

477,355. PLANT-HOLDER FOR WINDOWS. FREDERICK A. CURTIS and HARRY J. SAUTTER, Muskegon, Mich. Filed Sept. 10, 1891. Serial No. 405,308. (No model.)

Claim.—1. In a plant-holder for windows, the combination of a fixed support inside of the window, a tray, T-shaped telescopic supporting-arms interposed between the tray and the fixed support, and means, as the notches and lugs described, for limiting the movements

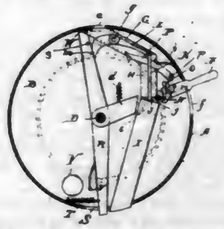
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of the telescoping supporting arms, substantially as described, and for the purpose specified.

2. The combination, with the frame B and its supports, of the movable tray-rests C, seated in longitudinal grooves formed in the upper faces of the strips B' of the frame B, and means, as the lugs D and C', for limiting the movements of the said tray-rests, substantially as and for the purpose described.

477,356. VENDING-MACHINE. ALBERT M. DOCTER, Chicago, Ill., assignor to Samuel C. Rosenberg, same place. Filed Oct. 1, 1891. Serial No. 407,391. (No model.)



Claim.—1. In a vending-machine, the combination, with the merchandise-conveying wheel, of a ratchet and detent for locking said wheel, means for positioning the ratchet so as to avoid contact between its teeth and the detent, and a coin-chute having a movable stop mechanically connected and releasing said detent and actuated by the weight of the coin, substantially as set forth.

2. In a vending-machine, the combination, with the merchandise-carrying wheel, of a ratchet and a nearly-balanced swinging detent for locking said wheel, means for positioning the ratchet so as to avoid contact between its teeth and the detent, and a coin-chute having a movable stop mechanically connected to and releasing said detent and actuated by the weight of the coin, substantially as set forth.

3. The combination, with a vending-machine, of an alarm-bell, a movable lever for sounding such alarm, the spring T, the case having the slot, and notch *s* normally detaining said lever, and cam Q for dislodging the lever, substantially as set forth.

4. The combination, with the wheel, of the movable lever R, having a coin-slot-closing device and bell-hammer mounted thereon, the bell, means for releasing the lever R from its normal position, and means for actuating it to close the slot and sound the bell, substantially as set forth.

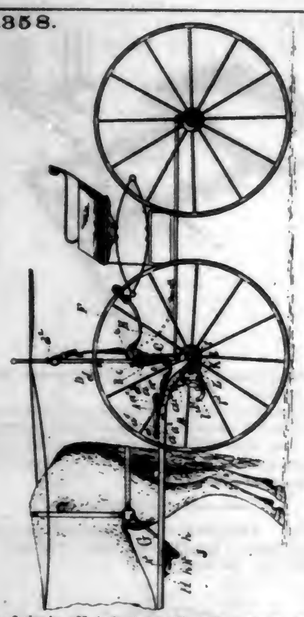
477,357. INCRUSTATION PREVENTIVE. JOHN R. DODDS, Newcastle-on-Tyne, and JOHN R. FOTHERGILL, West Hartlepool, England. Filed May 15, 1891. Serial No. 392,886. (No specimens.) Patented in England June 3, 1889, No. 9,573.

Claim.—The process of preventing or removing corrosion in steam-boilers, which consists in introducing into the boiler a solution of an alkaline zincate.

477,358. HORSE-DETACHING MECHANISM. PHILANDER M. DOGGETT, Campbellsville, Ky. Filed Aug. 13, 1891. Serial No. 402,574. (No model.)

Claim.—1. In a mechanism for detaching a horse from a vehicle, the combination of the singletree A, located and working upon the cross-bar of the vehicle-shafts, the adjustable railing D, located upon the top of the dash-board of the vehicle, the holding-back-strap detacher located near the center and upon the under side of the shaft,

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consisting of the bar H, bolted to said shafts, and the tongue A^3, pivoted upon the under side thereof and working in a slot therein and operated by the spiral spring A^4, located under the same, the forked strap B, secured to the screw-eyes a^4 and extending backward to the base of the dash-board, thence upward to the top of the adjustable railing D, and the shaft-elevator K, located upon the inner end of the bolt that secures the shaft to the axle-bar and adapted to engage the downwardly-projecting bar M of the shaft, all substantially as described, and for the purpose set forth.

2. In combination with a mechanism for detaching a horse from a vehicle, the holding back-strap detacher comprising the bar H, bolted to the shaft, the tongue A^3, pivoted upon the under side thereof and working in a slot therein, and the spiral spring A^4, located in the cavity 8 of the shaft, having its upper end fitting over the projection A^5 of said tongue, in combination with the shaft, substantially as described and set forth.

3. In combination with the co-operating mechanism for detaching a horse from a vehicle, the shaft-elevator located upon the inner end of the bolt which secures the shaft to the axle-bar, said elevator comprising the plate L, having the curved lever or pawl 12, pivoted to the lower front end of the same and adapted to engage the downwardly-projecting bar M, and the said bar M, bolted to the shaft of the vehicle, substantially as shown and described.

4. In combination with the co-operating mechanism for detaching a horse from a vehicle, the forked strap B, secured to the screw-eyes a^4 of the singletree and extending backward to the base of the dash-board, thence upward to the top of the adjustable railing D, the strap E, secured to the strap B at the point *e*, and the singletree A and the adjustable railing D, substantially as described, and for the purpose set forth.

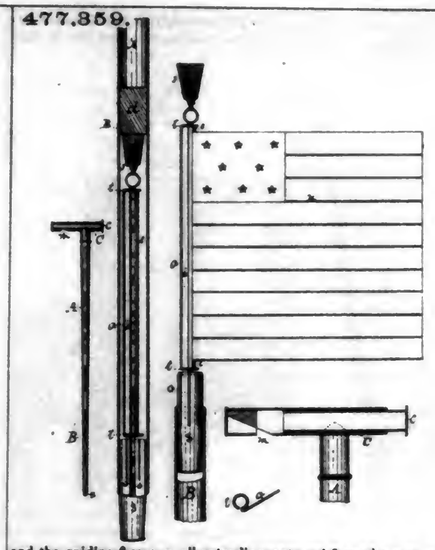
5. In combination with the co-operating mechanism for detaching a horse from a vehicle, the forked strap B, secured to the screw-eyes a^4 of the singletree and extending backward to the base of the dash-board, thence upward to the top of the adjustable railing D, the strap E, secured to the strap B at the point *e*, and the singletree A, substantially as described, and for the purpose set forth.

477,359. COMBINED CANE AND FLAG. EDGAR GANE, Macomb, Ill. Filed Mar. 1, 1892. Serial No. 423,345. (No model.)

Claim.—1. A walking-cane composed of two sections A and B, the section B being composed of a metal tube in which is fitted a flag attachment consisting of a center rod *i*, having an ornament J at the upper end, the lower end being fastened within the slotted reversible ferrule *e*, the rod *c*, rigidly attached thereto, and the guide-frame *a*, loosely fitted to the rod *i* at each end, substantially as shown and described, for the purpose set forth.

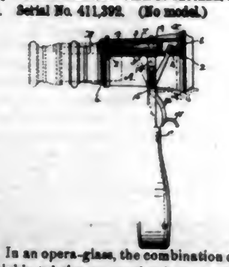
2. In a walking-cane, the combination of the tubular lower section B, the slotted reversible ferrule *e*, having rigidly attached a flag attachment consisting of the center rod *i*, the rod *c*, connected thereto,

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and the guiding-frame *a*, all extending outward from the case when the ferrule *e* is reversed, substantially as shown and described.

477,360. OPERA-GLASS. CARL F. GLOCKER, Albany, N. Y. Filed Nov. 9, 1891. Serial No. 411,392. (No model.)



Claim.—1. In an opera-glass, the combination of a longitudinally-slotted non-revoluble tubular connection between the upper and lower connecting-bars of the outer tubes, a non-revoluble stud which is attached to the connecting-bar of the movable tubes and is fitted to slide telescopically in said tubular connection, and an operating-lever pivoted to the handle of the opera-glass and fitted to engage with said stud for the purpose of effecting the sliding movement of the movable tubes, substantially as herein specified.

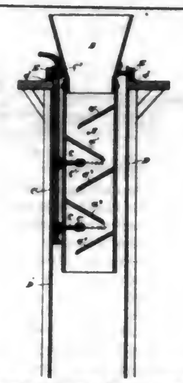
2. The combination of a slotted tubular connection provided with a socket-piece, a detachable handle having a bifurcated end fitted to engage in said socket-piece and having an operating-lever pivoted to said handle, and a stud attached to the movable tubes of an opera-glass and fitted to slide telescopically in said tubular connection, said stud being provided with means, substantially as described, for engaging with the end of said operating lever, as and for the purpose herein specified.

3. In an opera-glass, the combination of a slotted tubular connection between the upper and lower connecting-bars of the outer tubes, an arm attached to said tubular connection for the purpose of holding the opera-glass, and an operating-lever pivoted to said arm and provided with means, substantially as described, for engaging with a stud of the movable tubes of said opera-glass, as and for the purpose herein specified.

477,361. CONCRETE-MIXER. GEORGE F. GRAY and HARRY N. GRAY, San Francisco, Cal. Filed Feb. 10, 1892. Serial No. 421,013. (No model.)

Claim.—1. A concrete-mixer consisting of a vertically-arranged box or casing to receive the material at its upper end and deliver it at its lower end, said box or casing containing a vertical series of oppositely-inclined shelves or platforms projecting from opposite sides thereof and terminating short of the other sides, whereby a tortuous passage is formed within the box or casing, said box or casing being provided with carrying-wheels at its upper portion, whereby it may be suspended

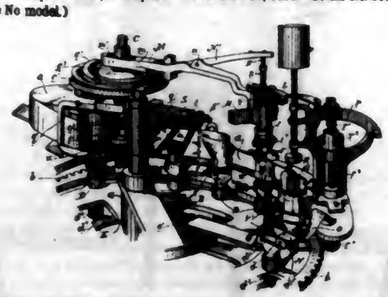
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from and between the walls of a mold for a retaining-wall and travel thereon back and forth, substantially as herein described.

2. A concrete-mixer consisting of a vertically-arranged box or casing provided with wheels at its upper portion adapting it to be mounted upon and between the side walls of a mold for a retaining-wall and to move back and forth thereon, said box or casing having a vertical series of oppositely-inclined shelves or platforms extending from opposite sides and terminating short of the other sides, whereby a tortuous course or passage is formed for the material, and a water-supply pipe connected with the box or casing and having water-discharges within said box or casing adapted to direct the water upon the material as it falls from one shelf or platform to the other, substantially as herein described.

477,362. MACHINE FOR WRAPPING BLOCK-MATCHES. GEORGE GRIBEL and FRANK SEVERIO, San Francisco, Cal., assignors of one-third to Joseph D. Case, same place. Filed Feb. 18, 1891. Serial No. 381,968. (No model.)



Claim.—1. In a machine for wrapping block-matches, the means for cutting the paper strip into lengths, consisting of the vertically-revolving knife S, the horizontal rotary shaft carrying said knife, the opposing vibrating knife S′, the pivoted horizontal arm on which said knife S′ is carried, and mechanism from the power-shaft for rotating the horizontal shaft and vibrating the horizontal arm, substantially as herein described.

2. In a machine for wrapping block-matches, the means for cutting the paper strip into lengths, consisting of the vertically-revolving knife S, the horizontal rotary shaft carrying said knife, the opposing vibrating knife S′, the pivoted spring-controlled horizontal arm, on which said knife S′ is carried, the power-shaft C, gearing between said power-shaft and the horizontal shaft to rotate it, and the pin c^2 on the power-shaft for effecting the vibration of the horizontal arm, substantially as herein described.

3. In a machine for wrapping block-matches, and in combination with traveling match-block holders, a set of swinging and revolving fingers for grasping and twisting the projecting end of the paper down upon the match-blocks, and a swinging arm carrying said fingers, whereby they are moved to meet and then to accompany each advancing match-block, substantially as herein described.

4. In a machine for wrapping block-matches, and in combination with traveling match-block holders, a set of swinging and revolving fingers for grasping and twisting the projecting end of the paper down upon the match-blocks, a stock carrying said fingers, and gearing to rotate the stock, substantially as herein described.

5. In a machine for wrapping block-matches, and in combination with traveling match-block holders, a set of swinging and revolving fingers for grasping and twisting the projecting end of the paper down upon the match-blocks, a swinging arm, a stock carried by the arm and carrying the fingers, and the means for rotating the stock and causing the fingers to be moved to meet and then to accompany the advancing match-blocks, consisting of the pinion on the stock, the fixed rack with which said pinion engages, and means for swinging the arm, substantially as herein described.

6. In a machine for wrapping block-matches, and in combination with traveling match-block holders, a set of swinging and revolving fingers for grasping and twisting the projecting end of the paper down upon the match-blocks, a swinging arm, a stock carried by the arm and carrying the fingers, and means for rotating the stock and causing the fingers to be moved to meet and then to accompany the advancing match-blocks, consisting of the pinion on the stock, the fixed rack with which said pinion engages, and means for swinging the arm, consisting of a rotating shaft, a cam-groove on said shaft, and a link connected with the arm and engaging the cam-groove, substantially as herein described.

7. In a machine for wrapping block-matches, the set of fingers for twisting the projecting end of the paper down upon the top of the match-block, said fingers having bent lower ends curved in the same direction, substantially as herein described.

8. In a machine for wrapping block-matches, the set of fingers for twisting the projecting end of the paper down upon the top of the match-block, said fingers having bent lower ends curved in the same direction, one of said fingers having the wire for folding in the edge of the paper, substantially as herein described.

9. In a machine for wrapping block-matches, the set of swinging twister-fingers, means for opening and closing the same, and the encircling spring to assist in holding said fingers open and closed, substantially as herein described.

10. In a machine for wrapping block-matches, the means for twisting the projecting end of the paper down upon the match-blocks, consisting of the rotating stock, the set of fingers pivoted in its lower end and having toothed heads, and the vertically-movable rod in said stock, having teeth engaging the toothed heads of the fingers, whereby they are spread and closed, and a swinging arm for said stock, whereby the fingers are brought to positions over the match-blocks, substantially as herein described.

11. In a machine for wrapping block-matches, the means for twisting the projecting end of the paper down upon the match-blocks, consisting of the rotating stock, the set of fingers pivoted in its lower end and having toothed heads, and the vertically-movable rod in said stock having teeth engaging the toothed heads of the fingers, whereby they are spread and closed, the spring to hold the rod up, the swinging lever N, bearing on the rod to press it down, and the rotating shaft with cam-track to operate the lever N, and a swinging arm for said stock, whereby the fingers are brought to positions over the match-blocks, substantially as herein described.

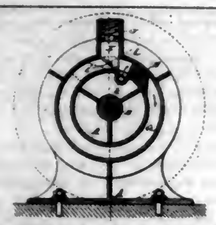
12. In a machine for wrapping block-matches, the means for twisting the projecting end of the paper down upon the match-blocks, consisting of the rotating stock, the set of fingers pivoted in its lower end and having toothed heads, the spring encircling said fingers, whereby they are held open and closed, and the vertically-movable rod in said stock having teeth engaging the toothed heads of the fingers, whereby they are spread and closed, the spring to hold the rod up, the swinging lever N, bearing on the rod to press it down, and the rotating shaft with cam-track to operate the lever N, substantially as herein described.

13. In a machine for wrapping block-matches, and in combination with the series of traveling and rotating match-block holders, the means for twisting the projecting end of the paper down upon the blocks, consisting of the set of swinging fingers, the stock carrying said fingers, the swinging arm carrying the stock, the fixed rack, the pinion on the stock engaging the rack for rotating said stock, the power-shaft C, having the cam-grooves and the link connected with the swinging arm and operated by the cam-groove for swinging the arm and causing the stock and fingers to meet and to accompany the traveling blocks, the movable rod in the stock engaging the fingers for spreading and closing them, the spring for holding the rod up, the pivoted lever N, carried by the link for pressing the rod down, and the cam-track on the power-shaft for operating the lever, substantially as herein described.

14. In a machine for wrapping block-matches, the revolving holder-carrying wheel for effecting the travel of the match-blocks, in combination with the movable gravity-plunger for pressing the paper down upon the blocks and the means for operating said plunger, consisting of the lever having the tappet, the rotating shaft deriving power from the holder-carrying wheel, and the cam of said shaft operating under the tappet of the lever, substantially as herein described.

477,368. ROTARY ENGINE. ERNST HAMMERSEN, Solingen, Germany. Filed Mar. 14, 1891. Serial No. 384,902. (No model.)

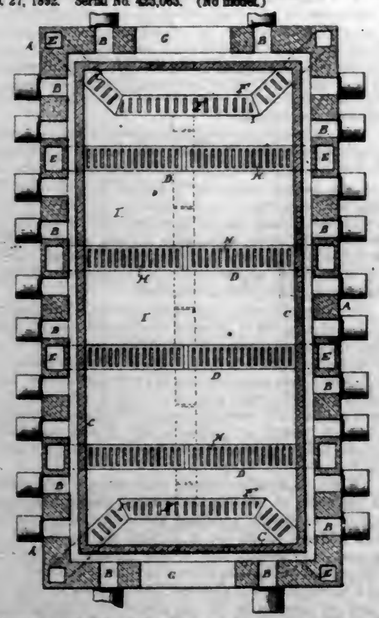
477,868.



Claim.—1. In a rotary engine, the abutment I, having a beveled inner face and channel *i* adjacent to the exhaust-port, in combination with the operating-spring J and with the casting A, having the annular channel *a*, induction-passage *k*, and eduction-passage *l*, and with the piston E, having a beveled front face adapted to act directly on the abutment, and with the ring G, and holding lips A' A^3, all arranged to serve as herein specified.

2. A rotary engine having the casting A, with lips A' A^3, and annular channel *a*, and suitable induction-port *k*, and having an eduction-port *l*, arranged, as shown, so as to be covered by the abutment during the main effective portion of each revolution, in combination with each other and with the abutment I, having a beveled inner face and channel *i* adjacent to the exhaust-port, and the piston E, having a beveled front face adapted to act directly on the abutment, and said piston being rigidly connected to the wheel D, and with the ring G, engaged under the lips A' A^3, all arranged for joint operation, as herein specified.

477,864. BRICK-KILN. JAMES HENNEY, Cloverport, Ky. Filed Feb. 27, 1892. Serial No. 423,063. (No model.)

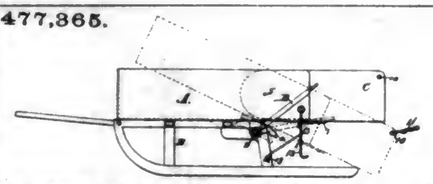


Claim.—A brick-kiln of the character described, consisting of an outer wall within which is arranged a series of furnaces in the sides and ends, a series of chimneys interposed between the furnaces, a series of intermediate transverse flues connected at their opposite ends with the chimneys, flues at the end of the kiln, each having an intermediate transverse portion and opposite diagonal extensions connecting with the corner chimneys of the kiln, and a flash-wall extending around the interior sides of the kiln, between which wall and kiln the furnaces communicate.

477,865. SELF LOADING AND DUMPING SLEIGH. LOUIS HINKELMAN, Albany, N. Y. Filed Aug. 5, 1891. Serial No. 401,742. (No model.)

Claim.—1. In a dumping-sleigh, the combination of a sleigh-box having its rear end open and unobstructed, said box being fitted to tilt in a rearward direction, sleigh-runners whose upper side bars are

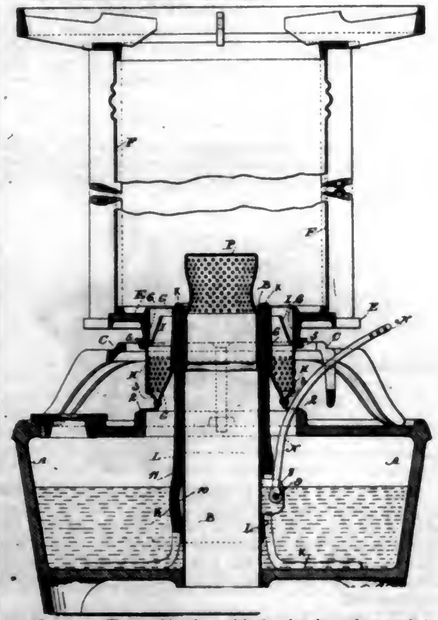
477,865.



shorter than the lower ones, said upper side bars forming a seat for said box when the latter is in its horizontal position, a transverse rock-shaft journaled on said runners and provided with wipers or cams by which the tilting movements of the sleigh-box are effected, and a rearward extension for said sleigh-box, fitted to operate as a scraper or scoop for delivering snow into said sleigh-box, substantially as and for the purpose herein specified.

2. In a dumping-sleigh, the combination of a sleigh-box provided with an open rear end and fitted to tilt rearwardly, sleigh-runners for carrying said box, provided with a rock-shaft having wipers or cams fitted to bear against the under side of said box, and a rearward extension for said box, detachable therefrom and provided with means for securing the same to said sleigh-box, substantially as and for the purpose herein specified.

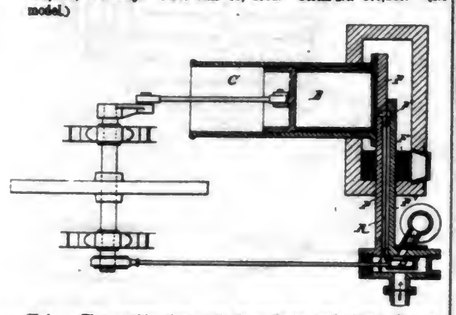
477,866. LAMP. THOMAS HEPWELL, Long Island City, assignor to the Manhattan Brass Company, New York, N. Y. Filed Sept. 24, 1891. Serial No. 406,629. (No model.)



Claim.—1. The combination, with the air tube and reservoir in a lamp-stove, of a wick-tube flaring outwardly at its lower end and having a flange resting upon the reservoir, a perforated air-distributer having a flange and rim at its upper end and contracted at its lower end to set closely upon the wick-tube and permanently connected thereto, and a separate deflector, the flange of which rests upon the flange of the air-distributer, and a stationary surrounding chimney-support with inwardly-projecting fingers to hold the removable parts of the burner in position, substantially as set forth.

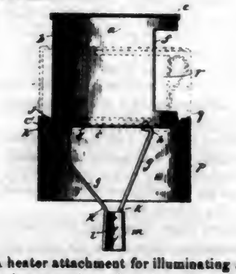
2. The combination, with the air-tube and reservoir in a lamp-stove, of a wick tube flaring outwardly at its lower end and having a flange resting upon the reservoir, a perforated air-distributer having a flange and rim at its upper end and contracted at its lower end to set closely upon the wick-tube and permanently connected thereto, a separate deflector, the flange of which rests upon the flange of the air-distributer, a chimney having a bottom plate with a downwardly-projecting flange over the flange of the conical deflector, and a stationary surrounding chimney-support with inwardly-projecting fingers to hold the removable parts of the burner in position, substantially as set forth.

477,867. ENGINE. MORITZ HOSSMANN, Grevenberg, near Aix-la-Chapelle, Germany. Filed Jan. 15, 1892. Serial No. 418,213. (No model.)



Claim.—The combination, with the cylinder and piston of an engine and a valve for the induction and eduction of the working gas to and from said cylinder, of a heating-body and a furnace interposed between the cylinder and valve, said heating-body being composed of two metal plates arranged face to face, so that channels are formed by their grooves and being arranged partly within and partly outside of the furnace, so that a portion of it constitutes a heater and another portion constitutes a regenerator, substantially as herein set forth.

477,868. HEATER ATTACHMENT FOR ILLUMINATING APPARATUS. SUSAN L. HUBER, York, Pa. Filed Feb. 19, 1892. Serial No. 422,117. (No model.)

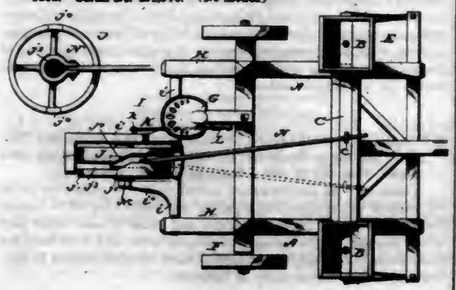


Claim.—1. A heater attachment for illuminating apparatus, comprising a drum having a perforated or foraminous bottom, a closed top, and an opening in its side wall, a tripod for supporting said drum in place above the flame, and a hood fitted telescopically to said drum to conceal the flame more or less, substantially as described.

2. In a heater attachment for illuminating apparatus, the combination, with a drum or heating-chamber and means for supporting the same above a flame, of a hood or shade fitted telescopically to said drum or heating-chamber to conceal the flame more or less, substantially as and for the purpose set forth.

3. A heater attachment for illuminating apparatus, comprising a drum having a chamber to receive a vessel to be heated, a support for such drum, whereby it may be placed upon a heating medium, a hood movable with relation to the drum and heating medium, and interlocking flanges on the bottom and top of the drum and hood, respectively, for supporting the hood in its lowermost position, substantially as described.

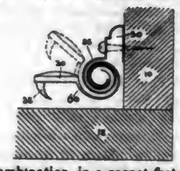
477,869. SEED-PLANTER. JOHN F. HULETT, Excelsior Springs, Mo., assignor of one-half to Hiram Gould, same place. Filed Feb. 15, 1892. Serial No. 421,570. (No model.)



Claim.—1. The combination, substantially as set forth, of a seed-box, a reciprocating slide, a wheel mounted in a pivoted frame and resting on the ground, and a single rod extending into a cam-slot in the wheel and connected at its front end to the slide.

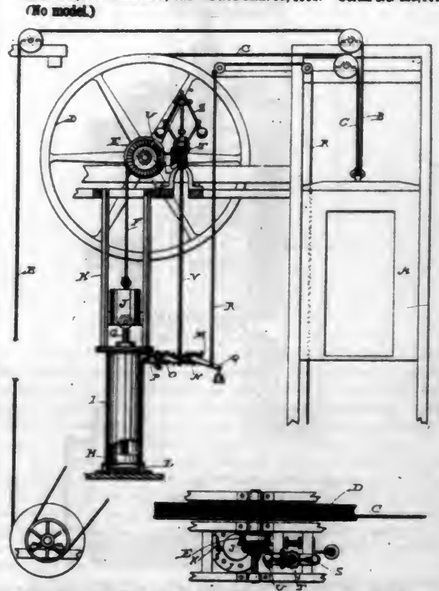
2. The combination of a seed-box, a reciprocating slide, a cam-wheel provided with two or more markers, a pivoted frame in which the cam-wheel is mounted, a scraper formed on the pivoted frame for the cam-wheel, and a rod extending through a slot in the cam-wheel and connected to the axis thereof, substantially as described.

477,870. CARPET-FASTENER. WEBSEL J. JAMISON, Denver, Colo. Filed July 10, 1891. Serial No. 399,080. (No model.)



Claim.—The combination, in a carpet-fastener, of an open-ended spiral tube suitably secured in place and fasteners consisting of plates provided with brads in front to engage the carpet and terminating at the rear in spiral projections adapted to engage the spiral of the tube, with which they interlock and upon which they are adjustable both longitudinally and vertically, substantially as described.

477,871. SAFETY ATTACHMENT FOR ELEVATORS. LEVI M. KELLOGG, San Francisco, Cal. Filed Mar. 16, 1892. Serial No. 425,169. (No model.)



Claim.—1. The combination, with a vertically-moving elevator and its hoisting-rope, of a second rope connected with the elevator-cage, a drum upon which the second rope is coiled, an air-cylinder having a tight-fitting piston moving therein and traveling the length of the cylinder while the cage travels its full distance, means by which the piston-rod is connected with the drum-shaft, so as to be operated simultaneously therewith, a counterpoise-weight attached to the piston-rod, said cylinder having an opening through which air is admitted freely into the lower part of the cylinder and having a discharge-opening from the upper part, and valves whereby said discharge-opening may be closed, so as to prevent the escape of air and check the downward movement of the cage, substantially as herein described.

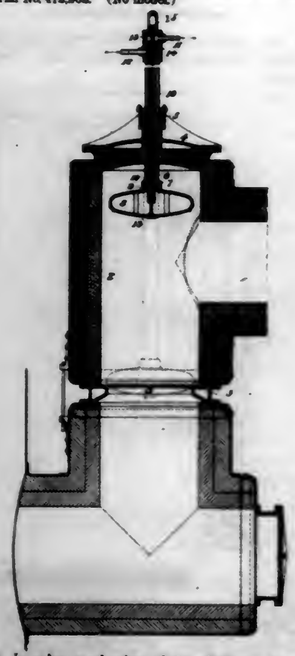
2. The combination, with an elevator-cage and its hoisting-rope, of a supplemental rope connected with the cage, a drum around which it is coiled, a second drum of smaller diameter mounted upon the same shaft, having a rope coiled about it, a retarding-cylinder having air inlet and discharge openings in its lower and upper ends, respectively, a valve in the upper discharge-opening of said cylinder, a rope leading

from said valve over suitable guide-pulleys and passing through the cage, and a piston in the retarding-cylinder, having its rod connected with the rope from the smaller drum, substantially as herein described.

3. The combination, with the elevator-cage and its hoisting-rope, of a supplemental safety-rope connected with the cage, a drum upon which said rope is coiled, a second drum of smaller diameter mounted upon the same shaft, a rope coiled upon this drum and connected with the piston which reciprocates in the short cylinder I, said cylinder having an opening in the bottom through which air is admitted and escapes freely and an opening in the top having valves O and P, and mechanism whereby each of said valves is operated automatically and independently of the other whenever the cage descends too rapidly, substantially as herein described.

4. The combination, with the elevator-cage and the hoisting-rope, a supplemental rope connected with the cage, and intermediate mechanism connecting the supplemental rope with a piston-rod and piston, of a short air-cylinder so adapted in length to the height the elevator-cage is to be hoisted that the piston will be at the bottom of the cylinder when the cage is at the top of the shaft and at the top of the cylinder when the cage is at the bottom of the shaft, said cylinder having an opening in the bottom for the free admission of air and an escape-passage at the top, and automatically-acting valves O and P in the discharge-passage, by which said passage is closed by the too rapid descent of the cage and the air in the cylinder above the piston confined to act as a cushion and stop, substantially as herein described.

477,372. VALVE. JULIAN KENNEDY, Latrobe, Pa. Filed Nov. 17, 1891. Serial No. 412,202. (No model.)



Claim.—1. In valve mechanism of the character described, the combination, with a hollow valve and a hollow stem fitting within a seat on the valve, of a connecting-bolt extending through the stem attached to the valve and provided with means for drawing these parts together, substantially as and for the purposes described.

2. In valve mechanism of the character described, the combination, with a hollow valve and hollow stem fitted together and having a water-supply pipe extending through the stem, of a bolt connecting the valve and stem, extending through the stem and provided with means for drawing these parts together, substantially as and for the purposes described.

477,373. MINING SLUICE-BOX. CHARLES J. KENT, Villa Park, Colo. Filed Dec. 4, 1891. Serial No. 414,010. (No model.)

Claim.—1. The combination, with the well-known inclined-surface sluice-box or flume for washing and collecting mineral deposits, having at its lower end a continuous collecting-surface section of greater inclination and terminating in a settling-table, of a settling-

477,378.

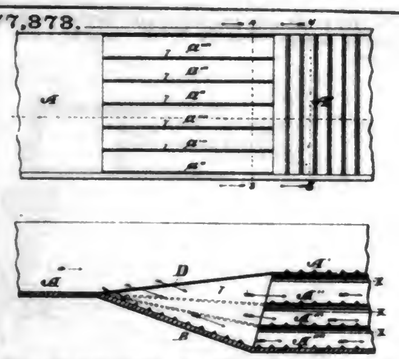


table above said bottom table and a flow-screen extending over the surface-collecting section having the greatest inclination and connecting the said top settling-table with the sluice-surface at its junction with the said surface-section of greatest inclination, substantially as described.

2. The combination, with the well-known inclined-surface sluice-box or flume for washing and collecting mineral deposits, having at its lower end a continuous collecting-surface section of greater inclination, of a working or settling device at the lower end of the latter, consisting of a multiple of horizontal settling-tables arranged at different levels in superposed relation, and a multiple of longitudinal conduits arranged to divide said collecting surface section of greatest inclination at different levels and directly connecting the surface of the sluice-box with the said settling-tables at inclinations varying with the levels of said tables, substantially as described, for the purpose stated.

3. The combination of the sluice or flume with a multiple of longitudinally-arranged conduits arranged at different levels, a multiple of settling-tables, and a screen supplementing said conduits and connecting the upper settling-table with the sluice-bottom, substantially as described, for the purpose stated.

4. In a sluice or flume for washing and concentrating mineral deposits, the combination of the longitudinal conduits, adjustable tables co-operating therewith, and a screen supplementing said conduits arranged to connect the upper table with the sluice-bottom, substantially as described, for the purpose stated.

5. In a sluice or flume for washing and concentrating mineral deposits, a terminal settling-table below the plane of the sluice-bottom, connecting the latter by an incline, a multiple of settling-tables supplementing the said terminal table, a multiple of longitudinal wedge-shaped plates forming conduits on the said incline, terminating at their points flush with the sluice-floor, and a screen supplementing said plates, substantially as described, for the purpose stated.

6. An inclined-surface sluice-box or flume for washing and collecting mineral deposits, having at its lower end a continuous collecting-surface section of greater inclination and terminating in a settling-table, and an overflow-screen connecting the inner edge of the latter table with the sluice-box surface and covering the said box collecting-surface section of greatest inclination, substantially as described.

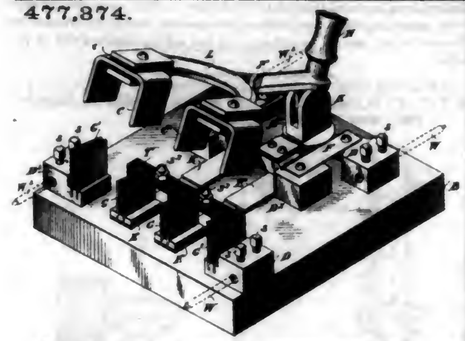
7. In a sluice or flume for washing and concentrating mineral deposits, the combination therewith of a multiple of plates forming narrow conduits declining from the sluice-bottom and terminating at different levels, with a multiple of settling-tables arranged across the delivery ends of said conduits and having an area greater than the combined area of the communicating conduits, substantially as described.

8. An inclined-surface sluice-box or flume for washing and collecting mineral deposits, terminating at its lower end in a section formed of a surface-section of greater inclination than the sluice-box and divided by vertical longitudinal divisions having different bottom-levels, a terminal part abutting said divisions and divided by horizontal transverse superimposed collecting or settling tables of levels corresponding to those of the surface-section divisions of greatest inclination, but of greater area than the said longitudinal divisions, substantially as described, for the purpose stated.

477,374. ELECTRICAL SWITCH. CHARLES J. KLEIN, New York, N. Y., assignor to the Interior Conduit and Insulation Company, same place. Filed May 23, 1891. Serial No. 394,402. (No model.)

Claim.—1. An electric switch having electrodes supported at the free ends of two springs E E, a pair of electrodes adapted to contact therewith, a pivoted operating-handle, and means located in the path of the free ends of the springs and adapted after they have been put under stress by the operating-handle to cause the electrodes to be positively separated, substantially as described.

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2. A pair of elastically-sustained electrodes, corresponding pairs of contacting-electrodes adapted to contact therewith, an operating-handle adapted to place the elastically-sustained electrodes under stress, in combination with means lying in the path of the elastically-sustained electrodes and adapted after said electrodes have been placed under stress by the operating-handle to positively rupture the circuit between the two sets of electrodes and allow the springs to complete the separation, whereby arcing is prevented, substantially as described.

3. A switch having a pivoted electrode and a spring-sustained electrode consisting of one or more yielding conducting-plates adapted to make frictional contact with the pivoted electrode, in combination with a stop or bridge adapted to cause the spring-sustained electrode to be suddenly withdrawn from the pivoted electrode after the former has been put under stress, substantially as described.

4. A switch having a pivoted electrode and a spring-sustained electrode, the latter consisting of one or more pairs of yielding conducting-plates adapted to hold or grasp the pivoted part, in combination with a bridge or stop lying in the path of the yielding electrode, substantially as described.

5. A switch having a pivoted lever carrying one or more conducting bridge-pieces and an operating handle, in combination with two or more pairs of conducting-plates carried by springs and adapted to make frictional and electrical contact with said bridge-pieces, and a stop or bridge-piece lying in the path of the spring-sustained plates, substantially as described.

6. A switch having a pivoted operating-lever carrying a pair of conducting bridge-pieces, in combination with four pairs of conducting-plates, between the free ends of which the bridge-pieces are adapted to have frictional contact, two of the pairs of said plates being attached to the free ends of conducting-springs and the other two pairs being fixedly attached to the base of the switch and of greater length than the first-named pairs, with circuit connections, substantially as described.

7. An electrical switch having a pivoted operating-lever carrying a conducting-electrode and a second conducting-electrode consisting of a pair of conducting-plates secured to the free end of a conducting-spring, a stationary bridge-piece secured to the base of the switch in the path of the free end of the spring which supports the second-named electrode, and circuit connections through the switch, substantially as described.

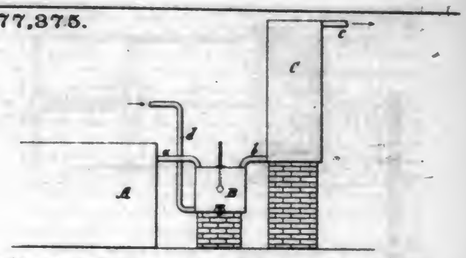
8. An electrical switch having a pair of conducting-plates secured to the free end of a conducting-spring, attached at its other end to the base of the switch, a second electrode attached to an operating-handle and adapted to contact electrically and mechanically with the first-named electrode, a stationary bridge-piece adapted to remove the spring-supported electrode after it has come in contact therewith, and circuit connections, substantially as described.

9. An electrical switch having a pivoted operating-lever carrying a conducting-electrode, a second conducting-electrode consisting of a pair of conducting-plates secured to the free end of a conducting-spring, a stationary bridge-piece secured to the base of the switch and provided with an adjustable stop located in the path of the free end of the spring which supports the second-named electrode, and circuit connections through the switch, substantially as described.

477,375. PROCESS OF MAKING NITRIC ACID. JULIUS LANG, Griesheim, near Frankfort-on-the-Main, assignor to Chemische Fabrik Griesheim, Frankfort-on-the-Main, Germany. Filed Feb. 2, 1891. Serial No. 379,911. (No specimens.)

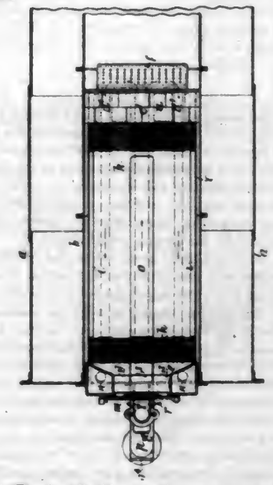
Claim.—The method of obtaining pure nitric acid directly from the generator, consisting in first leading the mixed vapors of the nitric acid, nitrous acid, and other impurities from the generator into a receiver and subjecting them therein to a heat which is not so high as to keep the pure nitric acid vaporized, but is high enough to keep the

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impurities vaporized, thence passing the vaporized impurities, together with any nitric acid that may have been carried off in a vaporized state, into a cooler, which is kept at a temperature low enough to condense the nitric-acid vapors and allowing the condensed acid to flow back into the said receiver, while the vaporized impurities pass off from the cooler uncondensed, substantially as set forth.

477,376. STEAM-BOILER OR OTHER FURNACE. THOMAS G. LISHMAN, Bristol, England. Filed Nov. 13, 1891. Serial No. 411,894. (No model.)



Claim.—1. The described improved grate or grouped fire-bars for steam-boilers or other furnaces, made of a series of bars *h*, placed transversely in the boiler-flue and each having the transverse openings *j*, *j*, and *k* therein, such openings coinciding, respectively, as set forth, when the bars are placed side by side, and thus constituting a system of tubular passages in directions transverse to the bars.

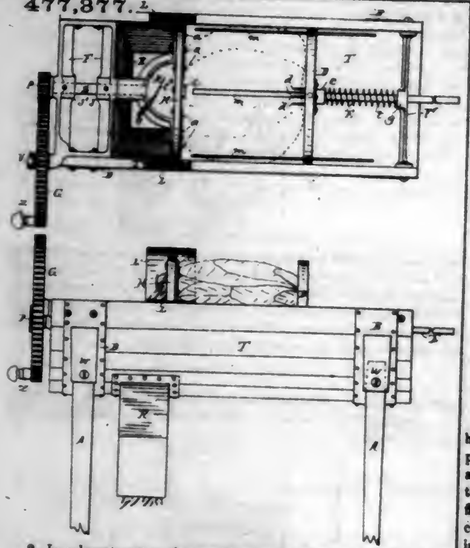
2. A steam-boiler or other furnace having its fire-grate constructed of solid bars placed transversely of the furnace and furnished each with the respective openings *j j k* therein, the central opening *k* constituting a passage having communication between the middle part of an outer chamber *e* and the inner chamber *f*, and the openings *j j* constituting passages effecting communication between the inner chamber *f* and the parts *d' d'* of the outer chamber.

3. In a steam-boiler or other furnace, the combination of air-chambers, such as *e*, *f*, and *l*, with the fire-bars *h*, and curved plate *c* for heating air and distributing it in the furnace, substantially as hereinbefore described, and illustrated in the accompanying drawings.

477,377. KRAUT-CUTTER. CRYSTAL MARTINDALE, Wichita, Kans., assignor to Homer Cresap, same place. Filed Oct. 19, 1889. Renewed Mar. 14, 1892. Serial No. 424,773. (No model.)

Claim.—1. The combination, in the kraut-cutter described, with the trough T, provided with the standards A and hopper R, of the frame F, having the boxes J J', the shaft S, supported in said boxes, the yoke K, fixed on the inner end portion of said shaft, the cutter-head H, having the central opening *h* and radiating openings I, and the cutters *c* and *a*, the follower-head D, provided with the fork-tines *d* and rear extending bar E, the coil-spring *t*, arranged on said bar for forcing said follower forward, and the gearing and crank mechanism for operating the cutter-head, substantially as and for the purpose specified.

477,377.

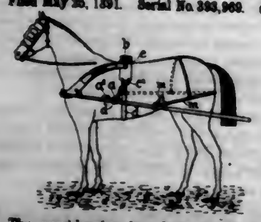


2. In a kraut-cutter, the combination of the trough T, the shaft-bearings J J', the shaft S, mounted in said bearings, the yoke K, provided with the knife c^2 and fixed on said shaft, the cutter-head H, provided with central and radiating openings, and of the knives *c* and *a*, secured to said head adjacent said openings and secured to and rotated with said shaft and yoke, and the spring-follower D, having the fork-tines *d*, and the gearing mechanisms for operating the machine, substantially as and for the purpose specified.

3. In the herein-described kraut-cutter, the combination of the trough T, provided with standards, and the hopper R, and shield L, the shaft-bearings J J', shaft S, and gears P and G, and crank Z, the cutter-head H, supported on shaft S through the medium of yoke K and provided with the openings *h* and I and knives *c* and *a*, and the spring follower-head D, provided with the fork-tines *d*, wherein a cabbage is supported on said tines and centrally presented to said cutter-head and automatically fed forward as the cutting takes place by means of said follower in such manner that the leafy portion of the cabbage is cut and the stump is left uncut, substantially as specified.

4. In the kraut-cutter described and shown, in combination with the trough T and rotary cutter-head H, the follower-head D, provided with the fork-tines *d*, arranged facing the central opening of said cutter-head, and with the rear extending bar E, supported at its outer end in a suitable cross-bearing *g*, and the coil-spring *i*, arranged on said bar between said follower and bearing for automatically pressing forward the said follower, substantially as and for the purpose specified.

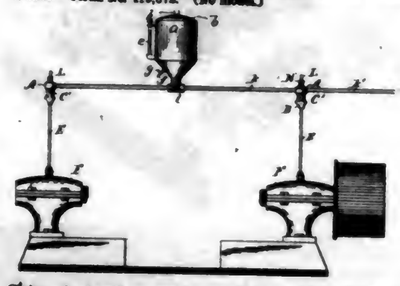
477,378. HARNESS. ALFRED MENDEL, Strehlen, near Dresden, Germany. Filed May 25, 1891. Serial No. 393,969. (No model.)



Claim.—1. The combination, in a harness, of a saddle made in three pieces hinged together at points about midway between the center and ends of said saddle, rings or eyes at the respective ends of the saddle, and a strap through said rings and adapted to pass around beneath the belly of the animal and to be connected to the shaft or pole to support the same and simultaneously hold the saddle in place, substantially as set forth.

2. The combination, in a harness, of a saddle made in three pieces hinged together at points about midway between the center and ends of said saddle, rings or eyes at the respective ends of the saddle, a strap through said rings and adapted to pass around beneath the belly of the animal, said strap being connected to the shaft or pole to support the same and simultaneously hold the saddle in place, and a breeching-strap extending from the shaft or pole around behind the animal to the said strap near its attachment to the saddle, substantially as set forth.

477,379. OIL-CUP. JOHN W. MORGAN, Belleville, Ill. Filed Feb. 1, 1892. Serial No. 419,872. (No model.)

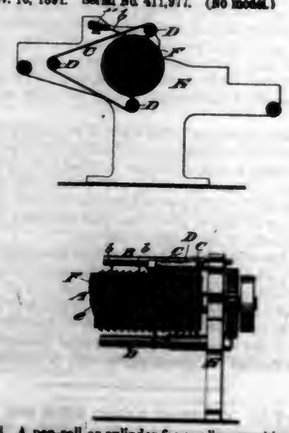


Claim.—1. An oil-cup consisting of the combination of a valve-holder provided with a chamber in the interior thereof and with a passage I' in the side thereof, a valve passing through the top thereof and through a nut which screws upon said valve-holder and surrounds the valve-shank, a ring having upper and lower inwardly-projecting flanges A' and A'', which fit around the said valve-holder to form a chamber P, communicating through the passage mentioned with the inner chamber P', and provided with passage-ways B, opening to the feed-pipes *k*, a delivering-pipe E, a nozzle D, secured to said pipe E and to the lower portion of the valve-holder centrally, and a shoulder G on the said nozzle, and a shoulder C on the said ring, between which shoulders is a glass cylinder C', the valve-holder having a longitudinal hole O in the path of the said valve opening into the said chamber P'.

2. In combination with an oil-cup, an adjustable ring thereon and provided with radial holes, a valve-holder located centrally in said ring and having a valve-chamber communicating with said holes and with the bearing of the machine to be oiled, and a valve controlling the passage-way from the said chamber to the said bearing.

3. An oiling system consisting of the combination of a vessel *a* containing oil, an oil-cup equipped on each of independent bearings of one or more machines, feed-pipes connecting the said vessel with said cups, delivery-pipes connecting said cups with said bearings, and an adjustable ring on each oil-cup and provided with holes in which fit said feed-pipes and which communicate with the said delivery-pipes through a valve-opening, which is provided with a valve.

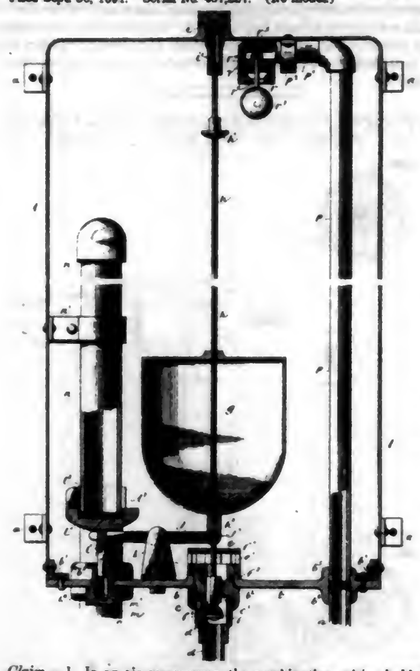
477,380. RULING-MACHINE. JOHN MCADAMS, Brooklyn, N. Y. Filed Nov. 16, 1891. Serial No. 411,977. (No model.)



Claim.—1. A pen-roll or cylinder for a ruling-machine, consisting of an externally-screw-threaded cylinder and a series of internally-screw-threaded paper-supporting rings fitted to the external screw-thread of the cylinder and adjustable thereon to vary their positions lengthwise of the cylinder, substantially as herein set forth.

2. The combination, in the pen-roll or cylinder for a ruling-machine, of an externally-screw-threaded cylinder and a series of internally-threaded rings F, constructed with deep flanges *a*, shallower flanges *c*, and grooves *d* between said flanges and placed adjustably on the screw-thread of the cylinder, substantially as herein set forth.

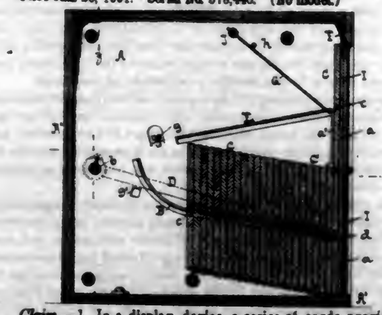
477,381. AIR-COMPRESSOR. ARTHUR O'BRIEN, Helena, Mont. Filed Sept. 30, 1891. Serial No. 407,227. (No model.)



Claim.—1. In an air-compressor, the combination, with a holder, of a water-supply pipe, a vertically-movable valve for controlling same, a rod extending upward from said valve and having the stops thereon, as described, a float thereon for engaging the stops, a siphon discharge-pipe, a valve for controlling the same, a pivoted lever connecting the valve and rod for simultaneously operating both valves, an air-pipe for admitting and discharging air, and a float-valve therefor, all substantially as and for the purposes set forth.

2. In an air-compressor, the combination, with a holder, of a supply-pipe therefor, a perforated cap above the supply-pipe, a valve for controlling the supply, operated by a float, a siphon discharge-pipe the return-bend of which terminates at a point near the base of the holder, a valve for said discharge-pipe, a lever pivoted to a standard above the base connections, between the discharge-valve and the float mechanism, whereby both valves are simultaneously operated, an air-pipe for admitting and discharging air, having its opening near the top of the holder, a seat in said opening, and a float-valve operating therewith, all substantially as and for the purposes set forth.

477,382. DISPLAY DEVICE. HENRY S. PRENTISS, Elizabeth, N. J. Filed Jan. 20, 1891. Serial No. 378,440. (No model.)



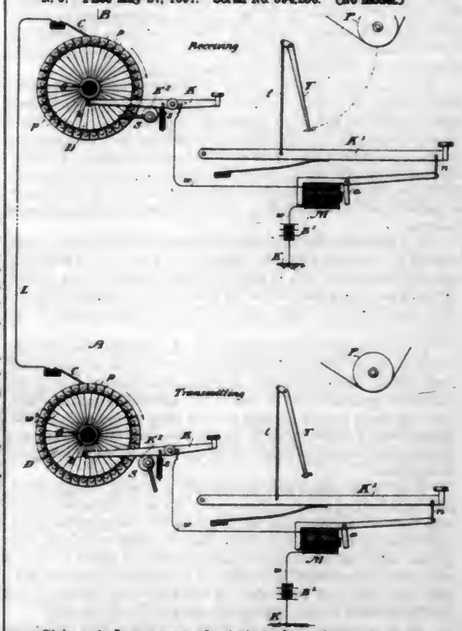
Claim.—1. In a display device, a series of cards provided with central pintles, inclined rails extending from the sight-opening and adapted to support the cards by their pintles, and a lifting device arranged to engage the forward card by its pintles and to raise it above the series, said card being delivered over the series, reversed, and received at the rear of the series, substantially as described.

2. In a display device, a series of cards provided with pintles, inclined rails extending from the sight-opening for supporting the cards by their pintles and feeding the same forward, inclined return-rails located above the supporting-rails, and a lifting device adapted to engage the forward card by its pintles and to deliver the same to the return-rails, said card being reversed in its descent on the return-rails and discharged therefrom upon the supporting-rails at the rear end of the series, substantially as described.

3. In a display device, a series of cards provided with central pintles, inclined rails extending from the sight-opening for supporting the cards by their pintles and for feeding the same forward, inclined return-rails, a lifting device adapted to engage the forward card by its pintles to deliver the same to the return-rails, and pivoted fingers engaging the pintles of the cards for guiding the same while on the return-rail, substantially as described.

4. In a display device, a series of cards provided with pintles, inclined rails for supporting the cards by their pintles and for feeding the same forward, inclined return-rails located above the supporting-rails, and a lifting device adapted to engage the forward card by its pintles to raise it from the series, which latter is caused to advance to bring the next succeeding card under the first to support the same in its elevated position, the subsequent lifting of the second card effecting the delivery of the first card to the return-rails, substantially as described.

477,383. PRINTING-TELEGRAPH. CHARLES J. REED, Orange, N. J. Filed May 27, 1891. Serial No. 394,258. (No model.)



Claim.—1. In a system of printing-telegraphy, two or more distributers united by an electrical conductor, in combination with two or more sets of movable contact-levers having independent circuit connections with the contact-plates of the distributers, and means for simultaneously connecting them all to or disconnecting them from the distributer, two or more sets of electro-magnets corresponding to said contact-levers, electrically connected thereto, and mechanical connections between the armature-levers of said magnets and the key-levers of corresponding type-writing machines, substantially as described.

2. A pair of electrical distributers joined together by an electrical conductor, a series of key-levers for each distributer, each of said key-levers being adapted to make electrical contact with only one of the distributer-plates, a switch bar or shaft for each distributer, located beneath all the key-levers and adapted to hold them either in or out of contact with the distributer at will, an electrical generator connected to all of said key-levers at one station, and a set of electro-magnets

connected to all of the corresponding key-levers at the other station, substantially as described.

3. A pair of electrical distributers joined together by an electrical conductor, the individual contact-plates of each distributer being connected to independent conducting-rings borne by the same shaft with the distributer, an independent key-lever for each of said rings at each station, a switch bar or shaft located beneath all of the key-levers and adapted to place them in contact with their corresponding contact-rings or permit their removal therefrom, an electrical generator connected to earth and to said key-levers at the transmitting-station, and an independent electro-magnet connected to each one of the key-levers at the receiving-stations and to earth, the armatures of said electro-magnets being connected each to one of the key-levers of a type-writing machine, substantially as described.

4. A pair of electrical distributers united by an electrical conductor, the independent contact-plates of each distributer being connected to independent conducting-rings, a series of key-levers for each distributer, corresponding in number to the conducting-rings, a switch bar or shaft for each distributer, located beneath all of said key-levers and adapted to maintain them either in contact with the conducting-rings or permit their withdrawal therefrom at will, and an independent electro-magnet connected to each key-lever at each station, all of said electro-magnets at each station being connected to earth and through an electrical generator, the armature of each electro-magnet being mechanically connected to one of the key-levers of a type-writer, substantially as described.

5. The described apparatus for simultaneously producing duplicate messages at a transmitting and receiving station, consisting of a pair of distributers, one at each station, joined by a main-line conductor, a mechanical type-writer at each station having electrical connections with the individual contact-plates of the distributer at that station, the number of contact-plates in said distributer being equal to the number of key-levers in the type-writing machine, and an eccentric switch-shaft located beneath all of the transmitting key-levers of each instrument and adapted to place them all in contact with or out of contact with the distributers, substantially as described.

6. A main-line conductor joining two electrical distributers at different stations, in combination with a type-writing machine at each station, having its key-levers operatively connected with the individual contact-plates of the distributer, and a series of electro-magnets included in the circuits joining the distributers, and an eccentric switch-bar located beneath the key-levers of each instrument and adapted to lift the free ends of said key-levers into contact with the distributers or permit their withdrawal from contact therewith, substantially as described.

7. A distributer for distributing electrical currents to independent circuits at a receiving-station, consisting of a series of distributing contact-plates united each to an independent conducting-ring carried by the same shaft which carries the distributing-plates, said rings being located adjacent to each other on the shaft, substantially as described.

8. A distributer for distributing electrical currents to independent circuits at a receiving-station, consisting of a series of distributing contact-plates connected each to an independent conducting-ring carried by the same shaft which carries the distributing contact-plates, said rings being located adjacent to each other on the shaft, in combination with a series of pivoted contact-levers, one for each ring, said contact-levers being connected to independent circuits, substantially as described.

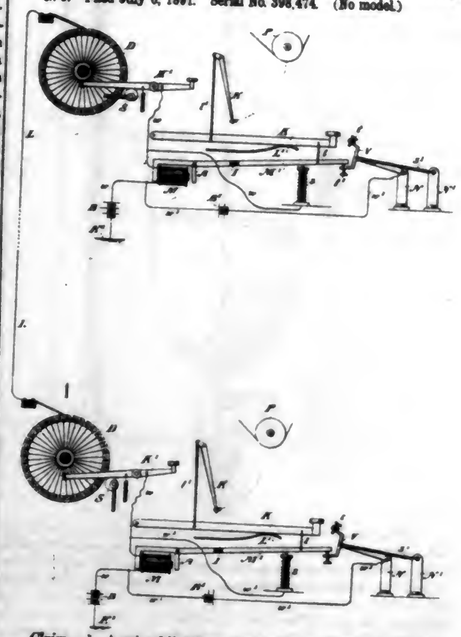
9. A pair of distributers having each a series of contact-plates, said contact-plates being connected each to one of a series of contact-rings borne by the same shaft which carries the contact-plates and located adjacent to each other on the shaft, in combination with independent sets of contact-levers for each distributer, adapted to bear on the contact-rings thereof, but connected to independent circuits, and a main line joining said distributers by contact-brushes bearing on the distributer-plates of each instrument, substantially as described.

10. A distributer carrying a series of contact-plates connected each to an independent conducting-ring borne by the same shaft which carries the plates and located adjacent to each other on the shaft, contact-levers for the rings, connected electrically each to an independent branch circuit, and mechanism operatively connected with all of the contact-levers for simultaneously placing them either in contact with or permitting them to be removed from contact with said conducting-rings, substantially as described.

11. A pair of distributers having corresponding distributing contact-plates, a series of conducting-rings for each distributer, said rings being located adjacent to each other on the shaft which carries the contact-plates, a set of pivoted conducting-levers for each distributer, having their free ends lying adjacent to the aforesaid conducting-rings and their pivoted ends connected through independent electro-magnets, the armatures of which are operatively connected each with the key-lever of a type-writer, mechanism operatively connected with all of the conducting-levers for connecting them to or disconnecting them from the contact-rings at will, and a main line joining the distributers through contact-brushes and one or more electrical generators, substantially as described.

12. Two distributers electrically connected to a single main line, a set of conducting key-levers for each distributer, mechanism operatively connected with all of said key-levers for placing their free ends into or out of contact with the distributers, and independent circuits running from said key-levers to independent electro-magnets, the armatures of which are operatively connected to the key-levers of independent type-writers, one for each distributer, substantially as described.

477,384. PRINTING-TELEGRAPH. CHARLES J. REED, Orange, N. J. Filed July 6, 1891. Serial No. 398,474. (No model.)



Claim.—1. A pair of distributers joined by an electrical conductor, a series of key-levers for each distributer, and a series of relays having local-circuit connections through electro-magnets operatively connected to the key-levers of a type writer at each end of the conductor, said local-circuit connections including means for holding the local circuits closed for a short time after the main circuit is broken, substantially as described.

2. A pair of distributers joined by an electrical conductor and a series of key-levers and relays connected to each distributer, the relays at each station having local electrical and mechanical connections with the key-levers of an independent type-writer, said local connections including means for holding the local circuits closed for a short time after the main circuit is broken, substantially as described.

3. A printing telegraphic receiver consisting of an electrical distributer operatively connected with a series of receiving relays, in combination with a series of local electrical and mechanical connections with the relays and the key-levers of a type-writer, said local connections including means for holding the local circuits closed a short time after the main circuits are broken, whereby the type-writer may be operated from a distant station, substantially as described.

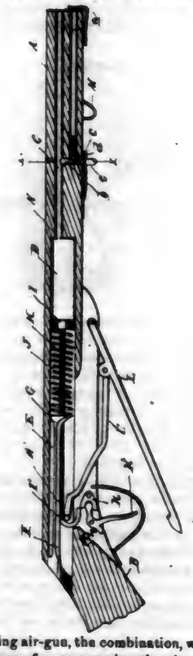
4. A distributer having circuit connections with a single conductor and a series of relays, in combination with a series of local-circuit connections through the relays with the key-levers of a type-writer, said local-circuit connections including means for momentarily holding the local circuits closed after the main circuit has been broken, substantially as described.

5. A type-writer provided with a number of electro-magnets equal to the number of key-levers, the armatures thereof being connected to said key-levers, in combination with circuit connections and automatic circuit-interrupters including spring-actuated levers operatively connected with the armatures of the electro-magnets, whereby the keys may be lightly touched by the operator and caused to complete their stroke through the agency of the magnets and finally returned to normal position, substantially as described.

6. A type-writer provided with an electro-magnet for each key-lever, having its armature connected thereto, an electrical generator, and electrical and mechanical connections including spring-actuated automatic circuit-controlling devices, whereby the keys need only be lightly touched, substantially as described.

7. A pair of type-writers, a pair of distributers, a relay for each key-lever, local circuits and spring-actuated circuit-controlling devices for each relay, and mechanical and electrical connections between the relays, the local circuits, and the key-levers, whereby the transmitting-keys need only be lightly touched, substantially as described.

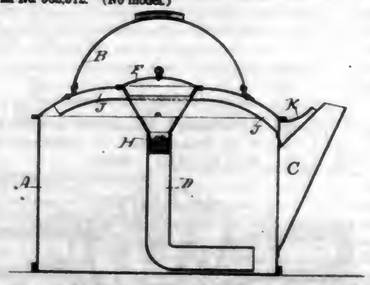
477,385. SPRING AIR-GUN. GEORGE W. SAGE, Plymouth, Mich. Filed Apr. 23, 1891. Serial No. 390,196. (No model.)



Claim.—1. In a spring air-gun, the combination, with the air-compressing cylinder and means for compressing the air, of a true barrel having a seat for the projectile formed at its rear end adjacent to the cylinder, a magazine having communication with the true barrel at a point in advance of the seat and between the seat and muzzle, and means for closing the communication, substantially as described.

2. In a spring air-gun, the combination of the true barrel, the magazine-chamber, connecting-passage *b*, the plug *c*, the actuating-spring *d*, the spring-clamp *e*, and the spring-compressing lever L, adapted to be engaged by said clamp, substantially as described.

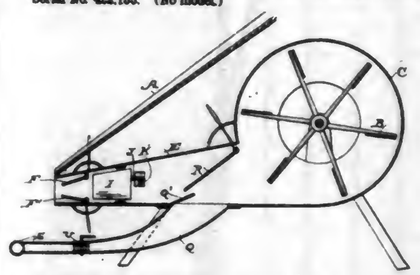
477,386. TEA-KETTLE. WILLIAM W. SCOTT, Algona, Iowa, assignor of one-half to J. F. Gilmore, same place. Filed Feb. 21, 1891. Serial No. 382,312. (No model.)



Claim.—1. A tea-kettle having an open-ended pipe fixed in an opening in the closed top of the kettle and said pipe being conical at its top end and adapted to admit a filter of corresponding shape and size, a detachable filter fitted in said open top, and the lower end of the pipe terminating in close proximity to the opening communicating with the pouring-spout.

2. In a tea-kettle having an open-ended pipe fixed in a central opening in the closed top to project downward, an open-ended tube fixed to the under side of the fixed top and extended from near the open-top end of a pouring-spout around the said fixed downwardly-projecting pipe and across the under side of the top of the kettle, as shown and described, for the purposes stated.

477,387. SAWDUST-BURNING AND AIR-BLAST APPARATUS. THOMAS T. SCOTT and JACOB J. SHRAFOR, Mott, Cal. Filed Feb. 19, 1892. Serial No. 422,133. (No model.)



Claim.—1. In an air-blast and sawdust-burning apparatus, the inclined delivery and distributing chute, in combination with an air-blast apparatus, a wind-box and neck through which the air is delivered from the blast apparatus to the furnace, in combination with the horizontally-adjustable directing-boards F F', fitted in the mouth of the discharge, substantially as and for the purpose herein described.

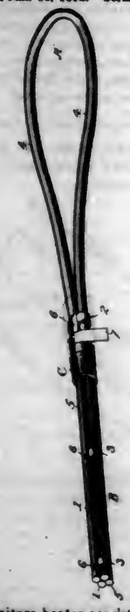
2. In a sawdust-burning and air-blast apparatus, the inclined diverging channeled chute through which the material is delivered to the furnace, an air-blast apparatus and a wind-box through which the air is led from the apparatus to a point beneath the discharge end of the chute, direction-boards F F', having their rear ends hinged, respectively, at the top and bottom of the mouth of the air-discharge, and lever-arms and holding-racks, whereby the outer edges of the direction-boards may be raised or depressed, so as to change the direction of the air-blast, substantially as herein described.

3. In a sawdust-burning and air-blast apparatus, the inclined chute through which the material is delivered to the furnace, an air-blast apparatus, a wind-box through which the air is delivered from the air-blast apparatus to the furnace beneath the discharge end of the chute, horizontal and vertically-journaled direction-boards situated within the wind-box, through which the air is delivered, in combination with supplemental wind passages or trunks Q, having the curved lips Q', projecting into the wind-box, and the vertically-adjustable swinging direction-boards R, whereby a portion of the air is diverted from the wind-box into the supplemental trunk beneath, substantially as herein described.

4. In a sawdust-burning and air-blast apparatus, the inclined delivery-chute through which material is discharged into the furnace, an air-blast apparatus with a wind-box and discharge-neck delivering into the furnace below the feed-chute, vertical and horizontal direction-boards whereby the current of air is delivered so as to discharge the material into any portion of the furnace, in combination with supplemental wind-trunks opening from the bottom of the main wind-box, perforated pipes extending around the front and sides of the furnace, through which air is delivered thereto, supplemental pipes extending from the wind-trunk connecting-pipes, and valves whereby the direction of the current may be wholly or partially changed within said pipes, substantially as herein described.

5. In a sawdust-burning and air-blast apparatus, the inclined delivery-chute discharging into the furnace, a horizontal rotary fan journaled within a fan-case beneath and behind the chute, having a wind-box and discharge-neck through which the air is conveyed and delivered into the furnace beneath the mouth of the discharge-chute, direction-boards I, having vertically-journaled shafts about which they turn, connecting-rods uniting with the rear ends of the direction-boards, extending through the sides of the wind-box, a crank-shaft with which said rods connect and through which an oscillating motion is given the direction-boards from side to side, the pulley M upon the fan-shaft at right angles with the pulley N of the crank-shaft, a belt passing around said pulleys, and the direction-pulleys P, whereby said belt may be thrown off and the movement of the direction-boards stopped, substantially as herein described.

477,388. FURNITURE-BEATER. SAMUEL J. SHAW, Boston, Mass., assignor of two-thirds to Eugene H. Smith and Marshall R. Hunter, same place. Filed Jan. 16, 1892. Serial No. 418,267. (No model.)

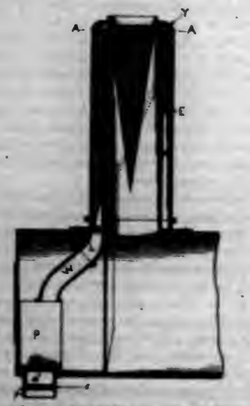


Claim.—1. A furniture-beater consisting of a strip of flexible material bent in the form of a loop and having its ends brought together in the handle, a flexible covering-tube upon the loop portion or head, a band or clamp at the crotch of the loop for retaining the ends of the covering-tube, and a protecting wrapping surrounding said clamp, substantially as described.

2. A furniture-beater consisting of a strip of flexible material bent in the form of a loop and having its ends brought together and secured by clamps to form a handle, a flexible covering-tube upon the loop portion or head, and the additional strips parallel to and between the ends of the loop-strips and bearing on the clamps, substantially as described.

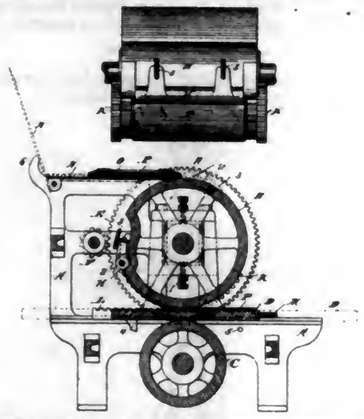
3. The combination of the head and handle portion, the head covered with soft material, a binding material 7, and an overlapping ferrule, substantially as described.

477,389. LOCOMOTIVE SAFETY SMOKE-STACK. JOHN J. SULLIVAN, Scranton, Pa. Filed Jan. 23, 1892. Serial No. 419,095. (No model.)



Claim.—In a locomotive safety smoke-stack, the combination of an inverted perforated cone D, with the inside cylinder H and the outside cylinder E of the smoke-stack connected by the spiral spark-chutes X, the gas and smoke chamber N, the gas and smoke outlet Y, the gas-escape O O, the pipe L and W, the spark-box P, the outlet *d*, the lever *e*, and the slide *f*, all arranged substantially as shown, and for the purposes specified herein.

477,390. MACHINE FOR BENDING METAL PLATES. STEPHEN D. TUCKER, New York, N. Y. Filed Dec. 19, 1890. Serial No. 375,247. (No model.)



Claim.—1. The combination, with rotating bending-cylinder B, having segmental gears K at each end, of table D, against which the plate is bent, one of the members being mounted to move bodily in a plane parallel with the plane tangential to the cylinder at the line of bending pressure between the cylinder and table, and racks L on the table meshing with segmental gears K, whereby the moving member is driven directly from the cylinder during the bending operation and is free to return independently of the other member when the plate is bent, substantially as described.

2. The combination, with rotating bending-cylinder B, having gripper H and segmental gears K, of table D below the cylinder against which the plate is bent, one of the members moving bodily in a plane parallel with the plane tangential to the cylinder at the line of bending pressure between the cylinder and table, racks L on said table meshing with segmental gears K, whereby the moving member is driven directly from the cylinder and is free to return independently of the other member when the plate is bent, and table N above the cylinder for holding the plate in position to be gripped, substantially as described.

3. The combination, with rotating bending-cylinder B, having grip H, of table N above the cylinder for holding the plate in position to be gripped and adjustable away from the surface of the cylinder, so as to permit the bent plate to pass it, substantially as described.

4. The combination, with rotating bending-cylinder B, having grip H, of table N above the cylinder for holding the plate in position to be gripped, said table being pivotally mounted to swing away from the surface of the cylinder to allow the bent plate to pass it, substantially as described.

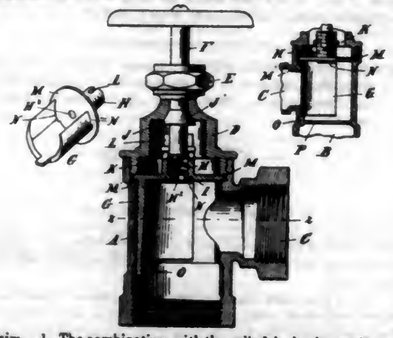
5. The combination, with rotating bending-cylinder B, having grip H and segmental gears K, of table N above the cylinder for holding the plate in position to be gripped and pivotally mounted to swing away from the surface of the cylinder to enable the bent plate to pass it, sliding table D below the cylinder, against which the plate is bent, racks L on said table meshing with segmental gears K, whereby the table is driven directly from the cylinder during the bending operation and is free to move independently of the cylinder when the plate is bent, and supporting-cylinder C below said table, substantially as described.

477,391. ATTACHMENT FOR MOTIVE-POWER MACHINES. JOHN L. WEAVER and HENRY BRENCKE, Jr., Georgetown, Tex. Filed Mar. 10, 1891. Serial No. 384,483. (Model.)



Claim.—The combination of the sliding frame, the support having upon its inner opposite sides guide-bars arranged between the side bars of said sliding frame, the driving-shaft mounted in said support, the wheels having pawl-and-ratchet connection with said shaft, and the spring-metal straps connected at diametrically-opposite points to said wheels and at opposite ends to the respective ends of said frame, substantially as set forth.

477,392. VALVE. ADOLPH WEBER, Detroit, Mich., assignor of two-thirds to Thos. S. Christie and Benjamin Noble, same place. Filed July 27, 1891. Serial No. 400,900. (No model.)



Claim.—1. The combination, with the cylindrical valve-casing and screw-cap through which the valve-stem passes, of a substantially cylindrical valve-plug provided with an annular rim around the top of the plug, the annular shoulder formed on the casing, upon which said rim is seated, the nipple formed in the center of the valve-plug and projecting upwardly into the cap of the valve-casing, the socket formed in said nipple, the coil-spring housed in the lower end of said socket, and the valve-stem projecting into the top of said socket, substantially as described.

2. The combination, with the cylindrical valve-casing and screw-cap through which the valve-stem passes, of a substantially cylindrical valve-plug provided with an annular rim around the top of the plug, the annular shoulder formed on the casing, upon which said rim is seated, the nipple formed in the center of the valve-plug and projecting upwardly into the cap of the valve-casing, the socket formed in said nipple, the coil-spring housed in the lower end of said socket, the valve-stem projecting into the top of said socket, the conical enlargement formed on the valve-stem, and the corresponding conical seat formed in the cap of the valve, substantially as described.

3. As a new article of manufacture, a radiator angle-valve consisting of a valve-casing A, having inlets and outlets B C, the screw-cap D, having stuffing-box E and conical valve-seat J', the valve-stem provided with the conical enlargement J, the valve-plug G, having the segmental cylindrical body of crescent-shaped cross-section and the disk-shaped top of larger diameter to form an annular rim around the plug, the saw-kerfs N, severing the end wings of the body from the top of the plug, the annular shoulder M' on the valve-casing, the nipple H on the valve-plug, forming a cylindrical housing, the spring I, housed in said nipple, the valve-stem projecting into said nipple and provided with the transverse pin K, the guide-slots L in said nipple, the lug O, depending from the valve-plug, and the segmental flange or stop P on the valve-casing, all combined and operated substantially as described.

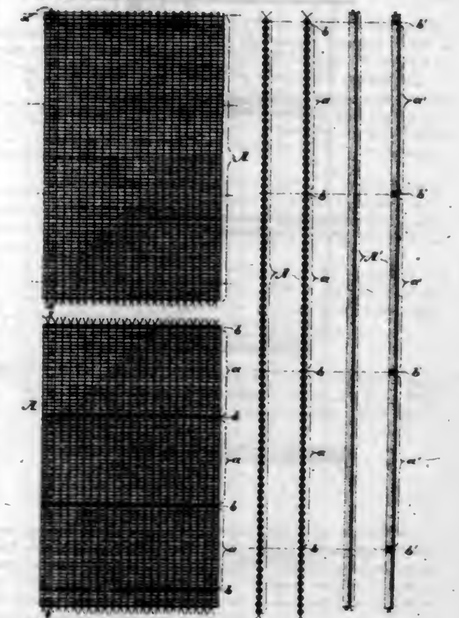
477,393. AUTOMATIC LATCH FOR EXTENSION-LADDERS. JOHN A. WESTON, Providence, R. I. Filed Mar. 8, 1892. Serial No. 424,209. (No model.)



Claim.—1. In a latch for extension-ladders, the combination, with the spring-operated pivoted latch-bar 14, having a cavity 16 for containing the spring, an outwardly-curved latching-jaw 17, an inwardly-curved member 18, and a cam-hook 19 at the lower end of this member, of the pivoted pawl 12, having the cam-shoulder 13, adapted to be engaged by the cam-hook 19, as and for the purpose described.

2. In a latch for extension-ladders, the combination, with a case having the base-plate 6, furnished with the tubular posts 9 9 and 10 and the pivot 11, the cover 5, having the rim 7 and the spar 8 and perforations through which the ends of the posts 9 9 and 10 extend and are secured, of the thrust latch-bar 14, pivoted on the post 10 and having a cavity 16, a spring 15, partially contained therein, the outwardly-curved jaw 17 and the member 18, forming the lower part of said latch-bar, the cam-hook 19, extending from the member 18 and the pawl 12, having the cam-shoulder 13, movable on the pivot 11, as and for the purpose described.

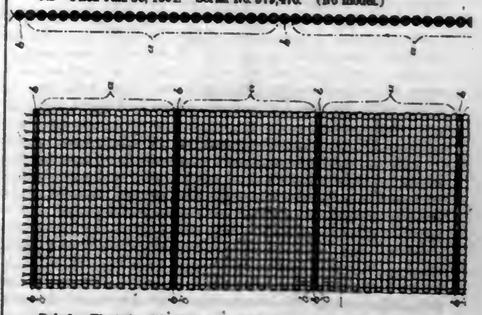
477,394. METHOD OF MANUFACTURING CHENILLE. DAVID S. WILLIAMS, Philadelphia, Pa. Filed Jan. 28, 1891. Serial No. 379,469. (No specimens.)



Brief.—The web from which the chenille is cut is woven in the ordinary manner and certain of the wefts of such web are stiffened by sizing. The web is cut into strips and the stiffened points thereof serve as guides for the hand in adjusting the pattern of the fabric in which the chenille is used as weft.

Claim.—The hereinbefore described method of manufacturing chenille weft, which consists in weaving the chenille web in the ordinary manner, and then stiffening at predetermined intervals threads of the chenille web after the said threads have been thrown, and then cutting the said web into strips.

477,395. WOVEN CHENILLE. DAVID S. WILLIAMS, Philadelphia, Pa. Filed Jan. 28, 1891. Serial No. 379,470. (No model.)

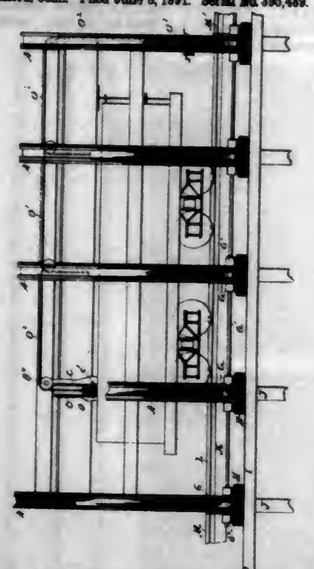


Brief.—The chenille is produced by weaving and is stiffened at equidistant points throughout its length, whereby the manual adjustment of the chenille to cause the pattern of the fabric being woven to register accurately is permitted. The usual colored marking-thread is omitted, the stiffened points serving as a guide for the hand instead of for the eye.

Claim.—1. A new and improved chenille weft which consists of the ordinary chenille weft provided at intervals with threads stiffer, firmer, or more rigid than the intermediate chenille threads.

2. A new and improved chenille weft which consists of the ordinary chenille weft provided at intervals with stiffened thread or threads.

477,396. APPARATUS FOR DUMPING CARS. EUGENE R. WILSON, Milford, Conn. Filed June 8, 1891. Serial No. 395,489. (No model.)



Claim.—1. In an apparatus for dumping freight-cars, a cage composed of a horizontal series of large vertically-arranged wheels, horizontal ties interposed between and attached to the wheels to bind them together, horizontal, vertical, and oblique braces located within the wheels for stiffening them, a section of a railway located within and extending throughout the length of the cage and supported upon the lower horizontal ties of the wheels, adjustable side supports mounted within the wheels in the braces thereof for engagement with the sides of the car run into the cage, adjustable top supports located within the cage near the upper edges of the wheels and constituting horizontal guides, means for fastening the ends of the said guides to the braces of the wheels, and a chute located within the cage and having its sides converging toward the center of the central upper point of the wheels, in combination with means for supporting and rotating the cage, substantially as described.

2. An apparatus for dumping railway-cars, consisting of a cage composed of a horizontal series of large wheels arranged vertically and tied together and braced and containing adjustable side and top supports for securing the car in place and means for lifting the top supports simultaneously, substantially as set forth.

3. In an apparatus for dumping freight-cars, a cage consisting of a horizontal series of large wheels arranged vertically, horizontal ties interposed between and attached to the wheels to bind them together, horizontal, vertical, and oblique braces located within said wheels, a section of a railway extending throughout the length of the cage and located within and near the lower edges of the said wheels, independently-adjustable side and top supports located within the wheels and combined with the braces thereof, the said top supports consisting of vertically-movable horizontal girders, fastening devices for securing the ends of the said girders to the upper ends of the vertical braces, and means located above the said girders for lifting them, in combination with means for supporting and rotating the said cage.

4. In an apparatus for dumping railway-cars, a cage composed of a horizontal series of vertically-arranged large wheels, horizontal ties interposed between and attached to the wheels to bind them together, internal braces for the respective wheels, a section of a railway located within the cage near the lower edges of the said wheels, independently-adjustable side and top supports located within the wheels for engagement with the sides and top of a car when it is in the cage, and fender-plates located within the cage near the upper edges of the wheels and inclined toward each other to form an open chute, in combination with means for supporting and rotating the wheels, substantially as described.

5. In an apparatus for dumping railway-cars, a cage composed of a horizontal series of vertically-arranged wheels, four pairs of horizontal ties interposed between and attached to the wheels at equidistant points in the circumferences of the same to bind them together, a pair of upper and lower horizontal braces, two pairs of perpendicular braces, a pair of upper oblique braces and a pair of lower oblique braces for internally bracing each wheel, a section of railway supported by the lower horizontal braces of the several wheels, adjustable side supports for engagement with the sides of the car in the cage and vertically-adjustable girders for engagement with the top of the car, and means for attaching the ends of the said girders to the upper portions of the perpendicular braces, in combination with two parallel series of small wheels upon which the large wheels rest and by which the cage is rotated, substantially as set forth.

477,397. CYCLE-WHEEL. CHARLES R. W. WOODWARD, Chicopee Falls, Mass., assignor to the Overman Wheel Company, same place, and Hartford, Conn. Filed Apr. 11, 1892. Serial No. 428,627. (No model.)



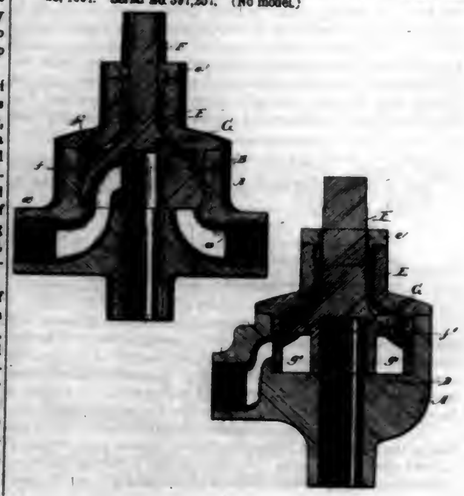
Claim.—1. A removable inner air-tube for pneumatic wheel-tires, having closed concave or slack ends approximating in area to the cross-sectional area of the body of the tube when it is inflated, substantially as set forth, and whereby the tube expands uniformly from end to end.

2. A removable inner air-tube for pneumatic wheel-tires, having closed concave or slack ends approximating in area to the cross-sectional area of the body of the tube when it is inflated, one of the said ends being provided with a small lateral inflation-tube, substantially as set forth, and whereby the tube extends uniformly from end to end.

3. In a cycle-wheel, the combination, with the rim thereof constructed with an opening in its inner periphery, of a tire having its inner periphery constructed with an opening corresponding to that in the rim, an open frame located within the tire and secured to the inner face thereof around the said opening therein, a removable inner air-tube adapted to be introduced into and withdrawn from the tire through the opening in it and the opening in the rim, and means for connecting the said frame with the rim through the said openings, substantially as described.

4. In a wheel, the combination, with the rim thereof constructed with an opening in its inner periphery, of a tire having its inner periphery constructed with an opening corresponding to that in the rim, an open rectangular oblong transversely-bowed frame located within the tire and secured by its sides to the inner face thereof around the said opening therein, a removable inner air-tube adapted to be introduced into and withdrawn from the tire through the said opening therein and the opening in the rim, and means for connecting the said frame with the rim through the opening in it and the opening in the tire, substantially as described.

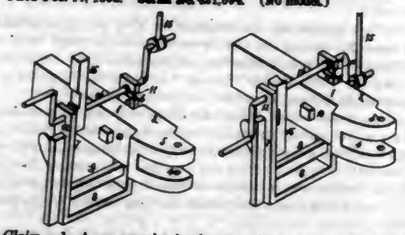
477,398. VALVE. GILBERT ANDERSON, Chicago, Ill. Filed June 23, 1891. Serial No. 397,257. (No model.)



Claim.—1. The valve-casing A, having the cylindrical valve-chamber B, the flat valve-face D, the central outlet-passage *d*, the lateral port *c*, opening into the valve-chamber above the flat valve-face thereof, and the pair of inlet and outlet ports *b b'*, both opening upwardly at different points through the flat valve-face which constitutes the bottom wall of the cylindrical valve-chamber, in combination with the valve-stem F, provided with the vertical central chamber G, the vertical passages *g g'*, arranged round the latter, separated from each other, and closed at their lower ends by the flat valve-face at the bottom of the valve-chamber, and the peripheral groove *f*, opening at opposite sides of the valve-stem into the passages *g'*, substantially as described.

2. The valve-casing A, having the cylindrical valve-chamber B, the flat valve-face D, the central outlet-passage *d*, the port *c*, opening into the valve-chamber above the flat valve-face thereof, and the inlet and outlet ports *b b'*, both opening upwardly at different points through the flat valve-face of the valve-chamber, in combination with the bell-shaped valve-stem F, having a flat lower end and provided with a central chamber G, the passages *g g'*, arranged around the latter and closed by the flat valve-face of the valve-chamber, the peripheral groove *f*, opening at opposite sides into the passages *g'*, and the lip *f'*, located above the peripheral groove for equalizing the pressure and balancing the valve-stem, substantially as described.

477,399. CAR-COUPLING. CHARLES A. ANDERSON, Rockford, Ill. Filed Feb. 17, 1892. Serial No. 421,894. (No model.)



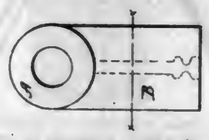
Claim.—1. A car-coupler having two draw-bars, wedging-heads thereon, an inclined shoulder on each bar, a stop for limiting the lateral movement of the draw-bars, and a pivoted arm capable of being placed between one of the draw-bars and the stop.

2. A car-coupler having two draw-bars, wedging-heads and inclined shoulders thereon, a stop for limiting the lateral movement of the draw-bars, a shaft, and an arm rigidly secured thereto, said shaft capable of an oscillatory movement.

3. A car-coupler having two draw-bars, wedging-heads and inclined engaging shoulders thereon, a frame affixed to each draw-bar, a shaft journaled in each frame, and an arm rigidly secured to each shaft, which arms are capable of being placed between the frame and the draw-bar to prevent the lateral movement of the draw-bars.

4. A car-coupler having two draw-bars, wedging-heads and inclined engaging shoulders thereon, a frame affixed to one of the draw-bars, a shaft journaled in the frame, an upwardly-extending connecting-rod for the shaft, an arm rigidly affixed to the shaft, a projection from the frame, and a notch in the arm for engaging the projection.

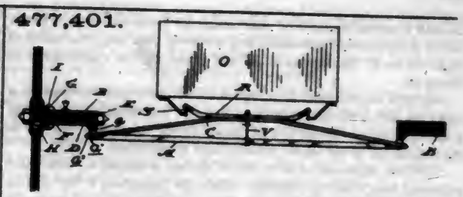
477,400. PITMAN FOR STONE-CRUSHERS. THEODORE A. BLAKE, New Haven, Conn. Filed Aug. 3, 1891. Serial No. 401,508. (No model.)



Claim.—The herein-described pitman for stone-crushers, consisting of the head A, adapted for attachment to the crank and constructed with flanges projecting therefrom in planes substantially parallel with each other, but at right angles to the axis of the head and with a web C extending from the said head toward the end of and between the flanges, the said web at its end constructed with transverse seats D D across its lower end and between the flanges, the said seats being adapted to receive the toggles, and whereby the said seats are brought near together and between the said flanges, substantially as described.

477,401. RUNNING-GEAR. WILLIAM DOWNAR, Moss Mills, Canada. Filed Nov. 23, 1891. Serial No. 412,822. (No model.)

477,401.



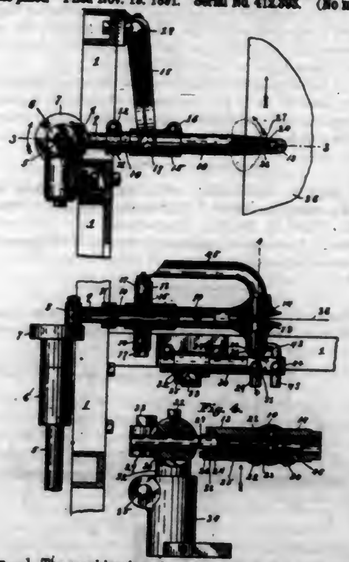
Claim.—1. In a running-gear for vehicles, an axle A, having bearing-boxes B secured thereto above the same, a king-bolt V, and a truss or brace C, extending from the top of the king-bolt to the ends of the axle, thereby bracing the latter, substantially as described.

2. In a running-gear, an axle A, having bearing-boxes secured thereto by necks, and a truss or brace C, extending from the top of a king-bolt and having its ends forked to pass over the necks at the ends of the axle and secured to said necks by clip-bars and nuts, substantially as described.

3. In a running-gear for vehicles, an axle A, a truss or brace C, secured at its ends to the ends of the axle A, a bolster R, secured to the body of the vehicle, a clip T, secured to said bolster R, a clip W, passing over said axle A, and a king-bolt securing the clips V and W together, substantially as described.

4. The clip T, fixed to the bolster R, and the clip W, fixed to the axle A, and king-bolt V, journaled in the ends of the clips T and W, in combination with the hammer-brace X, reach Y, and rod or spindle Z, substantially as and for the purpose specified.

477,402. DEVICE FOR PUNCHING WEBS OF PAPER. JOSEPH BOYER, St. Louis, Mo., assignor to Samuel Cupples and James West, same place. Filed Nov. 19, 1891. Serial No. 412,393. (No model.)



Claim.—1. The combination of a moving carrier having fingers arranged to embrace the edge of a traveling web and provided with a male and female punching-die, and mechanism for moving the dies, when embracing the web, at the same rate of speed as the material, substantially as described.

2. The combination of a moving carrier mounted at one side of a traveling web, having fingers embracing the web, dies carried by the fingers, and an operating device for the dies arranged in the path of the carrier, substantially as described.

3. The combination, with the moving carrier having punching-dies, of an operating device for the dies arranged in the path of the moving carrier and a holding device for the carrier when passing the operating device, substantially as described.

4. The combination, with a moving carrier mounted at one side of a traveling web and punching-dies mounted in the carrier, of mechanism for imparting to said carrier a four-motion to move the punching-dies into and out of the path of the traveling web, substantially as set forth.

5. The combination, with a punch device comprising a punch and

die and a carrier therefor, of mechanism for imparting to said punch device a four-motion movement and means for operating the punch at right angles to the movement of said punch device, substantially as described.

6. The combination of a punch device arranged to embrace a traveling web, a carrier for the punch device, and means for imparting a four-motion movement to said punch device in a plane parallel to the movement of the paper, substantially as described.

7. The combination of a punch device arranged to embrace a traveling web, a carrier therefor, means for imparting a four motion to said punch device in the plane of the traveling web, and means for operating the punch at right angles to the plane of travel of the punch device, substantially as described.

8. The combination, with a punch device comprising the punch and die, a carrier therefor, and a swinging arm in which the carrier is pivotally supported, of a shaft and connections between the shaft and carrier for operating the carrier, whereby the punch device is given a four-motion movement, substantially as described.

9. The combination of a punch device comprising a punch and die, a carrier therefor pivotally connected to a swinging arm, and a crank-arm connected to said carrier, substantially as described.

10. The combination, with a punch device and carrier therefor, of a swinging support for the carrier, a crank-arm for operating the carrier, and a cam in the path of the carrier for operating the punch, substantially as described.

11. The combination of a punch device arranged to embrace a traveling web, a carrier for the punch device, a punch-operating device in the path of the carrier, and a tube for carrying off the punched portions, substantially as described.

12. The combination of a punch device arranged to embrace a traveling web, an adjustable carrier therefor, and means for adjusting the position and rate of travel of the punch device to correspond with the traveling paper, substantially as described.

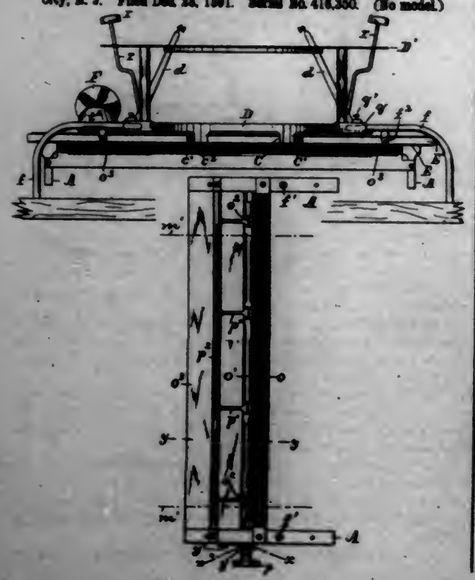
13. A punching device consisting of a carrier having fingers provided with a male and female die, a cam for operating the male die, and a holder for supporting the carrier while the male die is being operated, substantially as described.

14. A punching device comprising the stationary fingers between which the material to be punched passes, a female die secured in one of the fingers, a spring-supported male die secured in the other, and an adjustable cam for operating said male die, substantially as described.

477,408. DETERGENT. WILLIAM B. BRITTINGHAM, New York, N. Y., assignor to Martha E. Brittingham, same place. Filed July 10, 1891. Serial No. 399,060. (No specimens.)

Claim.—A detergent compound containing a tungstate of an alkali, substantially as described.

477,404. TYPE-WRITING MACHINE. JOSEPH M. CRARY, Jersey City, N. J. Filed Dec. 26, 1891. Serial No. 416,350. (No model.)



Claim.—1. In a type-writer, the combination, with the type mechanism and means for moving the type downward, of a carriage with flat under side fitted movably beneath the type mechanism and a stand fitted detachably to the carriage and provided with suitable foot-pieces, with the plates *o* and with paper-feeding devices, and the carriage being thereby adapted when removed from the stand to fit upon a flat surface for printing a single line of characters thereon, substantially as herein set forth.

2. The combination, with the carriage E and the parallel grooves E', of the plate D, carrying type mechanism, guides upon the plate fitted to the grooves, and gibs fitted adjustably to the edge of the carriage, as and for the purpose set forth.

3. The combination, with the carriage E and the parallel grooves E', of the plate D, carrying type mechanism, guides upon the plate fitted to the grooves, and the adjustable roll-gibs o^3, fitted to the edges of the carriage, as set forth.

4. The combination, with the carriage E and the parallel grooves E', of the plate D, carrying type mechanism, the rolls o' upon the plate fitted to the grooves, and the adjustable roll-gibs o^3, fitted to the edge of the carriage, as and for the purpose set forth.

5. In a type-writer, the combination, with the type mechanism and means for moving the type downward, of a carriage fitted movably to the type mechanism, the strip-plates *o* upon the carriage, the paper-feeding roll o', provided with a gage-wheel *y*, as set forth, the springs y', pressing the rolls o^3 upon the top of the roll o', and the table o^5 for guiding the paper beneath the springs y', substantially as herein set forth.

6. In a type-writer, the combination, with the type mechanism and means for moving the type downward, of a carriage fitted movably beneath the type mechanism and the stand fitted detachably to the carriage and provided with the foot-pieces A, the plates *o*, and paper-feeding devices, as and for the purpose set forth.

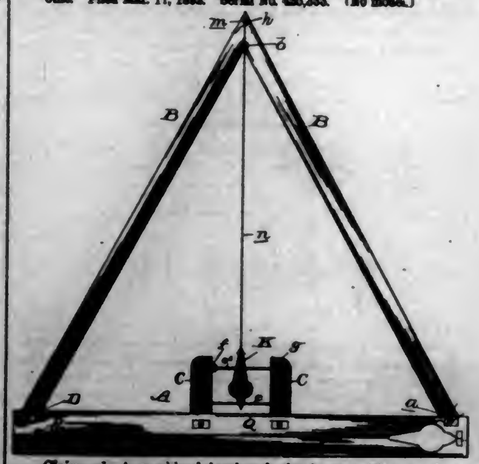
7. In a type-writer, the combination, with the type mechanism and means for moving the type downward, of a carriage with a flat under side fitted movably beneath the type mechanism and a stand fitted detachably to the carriage and provided with suitable foot-pieces with the plates *o*, and with paper-feeding devices and the carriage being provided with a set of detachable feet *f*, as and for the purpose set forth.

8. In a type-writer, the combination, with the spring-drum and a rotary spindle with squared end, of the pivoted arm *n*, pressed normally toward the spindle and provided with the notch having rounded corner *n*, as set forth.

9. As a new article of manufacture, a type-writer ribbon provided upon the ends with a loop of cord, as and for the purpose set forth.

10. In a type-writer, the combination, with the winding-spool, of a ribbon having a loop of cord secured upon the hub by a half-hitch, as set forth.

477,405. LEVEL AND PLUMB. FRANK W. DESHAUX, Defiance, Ohio. Filed Mar. 17, 1892. Serial No. 425,333. (No model.)

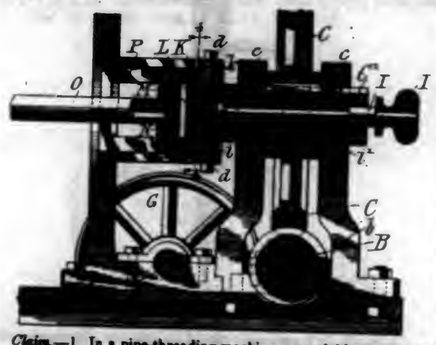


Claim.—1. A combined level and plumb comprising a rule or staff A, a plumb-bob K, and cord *n*, the three devices being constructed to be used as a plumb, in combination with the attachable legs B, whereby the whole may be used as a level, substantially as described.

2. In a combined level and plumb, the rule or staff A, having standards C C, carrying wires *c c*, the legs B, the bob K, and cord *n*, substantially as described.

3. The combination of a plumb-bob and means for hanging the same with guides on opposite sides of and contiguous to the bob, one of which is movable to allow of the ready removal of said bob, substantially as described.

477,406. PIPE-THREADING MACHINE. JEAN B. E. DUBAIN, Chicago, Ill., assignor to Edgar A. Lord, same place. Filed July 18, 1891. Serial No. 399,833. (No model.)



Claim.—1. In a pipe-threading machine, a revoluble cage or die-holder much longer than the thickness of the die and open at one end, in combination with a threading-die set loosely in said holder and free to slide back and forth therein lengthwise of the holder, and a pipe-support in which the pipe to be threaded is rigidly secured, whereby the die is turned upon the end of the pipe by the revolution of the holder and at the same time is automatically fed by moving forward bodily in the cage as the thread is cut on the pipe, substantially as described.

2. In a pipe-threading machine, the cage P, in combination with the die M, plate K, and spindle I, substantially as described.

3. The spindle I, having a knob or handle I', and the plate K, in combination with the die M, substantially as shown and described.

4. In a pipe-threading machine, the worm B, gear-wheel C, journal C', and cage P, rigidly secured to said journal, in combination with the die M and plate K, substantially as shown as described.

5. In a pipe-threading machine, the pulley G, shaft F, gears E and D, worm B, gear-wheel C, and journal C', in combination with the cage P, plate K, spindle I, and die M, substantially as described.

6. The stud-pin H, gears E and D, worm B, gear-wheel C, journal C', and cage P, rigidly secured to said journal, in combination with the plate K, spindle I, knob I', and die M, substantially as shown and described.

477,407. INCANDESCENT-ELECTRIC-LAMP SOCKET. JACOB S. GIBBS, Hartford, Conn., assignor to the Perkins Electric Switch and Manufacturing Company, same place. Filed Feb. 27, 1892. Serial No. 423,004. (No model.)



Claim.—1. A lamp-socket consisting of a shell with a single division of insulating material supporting binding-posts for circuit-wires and contacts for a lamp, one of said contacts being connected with a conductor bearing a sliding piece, and a key adapted to make or break connection between the sliding piece and a part of one binding-post, substantially as specified.

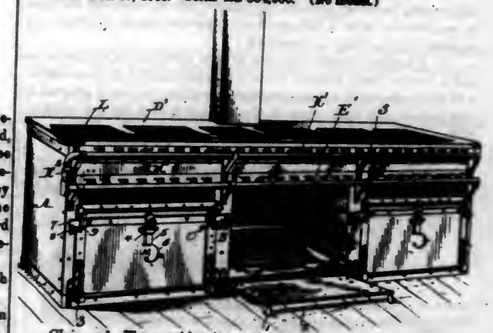
2. A lamp-socket consisting of a shell with a single division of insulating material supporting binding-posts for circuit-wires and contacts for a lamp, one of said contacts being connected with a conductor bearing a spring-actuated sliding piece, and a key with a loosely-held block adapted to make or break connection between the sliding piece and a part of one binding-post, substantially as specified.

3. A lamp-socket consisting of a shell with a division of insulating material supporting binding-posts for circuit-wires and contacts for a lamp, one of said contacts being connected with a yoke-shaped conductor bearing a sliding piece with arms folded around the arms of the yoke, a key adapted to make or break connection between the sliding piece and a part of one binding-post, and a spring thrusting against the sliding piece, substantially as specified.

4. A lamp-socket consisting of a shell with a division of insulating material supporting on one side a binding-post connected with a ring on the opposite side, a binding-post with a spring-arm, a yoke-shaped piece on one side, connected with a screw on the other, said yoke bearing a sliding spring-actuated yoke-shaped piece, and a key the block of which is adapted to make or break connection between the sliding yoke and the arm of the binding-post, substantially as specified.

5. A lamp-socket consisting of a shell with a single partition of insulating material, binding-posts for circuit-wires, and contacts for a lamp supported by the partition, a conductor, a sliding piece carried by said conductor, and a key carrying a block interposed between one of the binding-posts and the conductor to make the circuit when turned in contact with the sliding piece and binding-post.

477,408. GAS-RANGE. WILLIAM W. GOODWIN, Bordentown, N. J. Filed Dec. 23, 1889. Serial No. 334,680. (No model.)



Claim.—1. The combination and arrangement, in a gas-range, of a roasting-chamber with gas-jets supported therein, a perforated non-inflammable top covering to said roasting-chamber supported therein immediately above said gas-jets, and a flue-chamber over said perforated covering and communicating at the rear with an upright flue which communicates, also, with the said roasting-chamber, substantially as described.

2. The combination and arrangement, in a gas-range, of a roasting-chamber with gas jets supported therein, a perforated non-inflammable top covering to the same supported immediately above said gas-jets, a flue-chamber over said perforated covering and leading to a flue-partition communicating with said roasting-chamber, and a second heating-chamber also communicating with said common flue-partition and having one or more openings provided with grated coverings and with a second series of gas-jets supported therein, substantially as described.

3. The combination and arrangement, in a gas-range, of a roasting-chamber with gas-jets supported therein, a perforated non-inflammable top covering to the same supported immediately above said gas-jets, and a flue-chamber over said perforated covering, constructed with a top inclined upward to the back of the chamber, a second heating-chamber over the same having openings provided with grated coverings and inclosing a series of gas-heating burners, and a flue-partition communicating with said chambers, substantially as described.

4. The combination, in a gas-range, with a supporting-frame having a front plate M, slotted at *m* and provided above the slot with a projecting pin *c*, of a gas-supply tube circularly grooved to adapt it to be inserted in said slot *m* and having a hook *d*, adapted to support the device on said pin *c*, substantially as described.

5. The combination and arrangement, with the frame M of a gas-range, having projecting open bell-mouthed mixing-chambers T supported thereon, of a gas-supply tube E', supported from the front of the frame M by brackets S and feeding a series of gas-jets, as N, located opposite the bell-mouthed openings and extending partially within the same, substantially as described.

6. The combination and arrangement, in a gas-range, of a roasting-chamber having the vertical sides and bottom thereof lined with non-heat-conducting material, with gas-jets supported therein, a perforated non-inflammable top covering to each of the same supported immediately above said gas-jets, a flue-chamber above said perforated covering, and a vertical flue-partition communicating directly with said flue-chamber and with said roasting-chamber, substantially as described.

477,409. ELECTRIC SWITCH. EDWIN T. GREENFIELD, New York, N. Y., assignor to the Interior Conduit and Insulation Company, same place. Filed Dec. 16, 1891. Serial No. 415,263. (No model.)



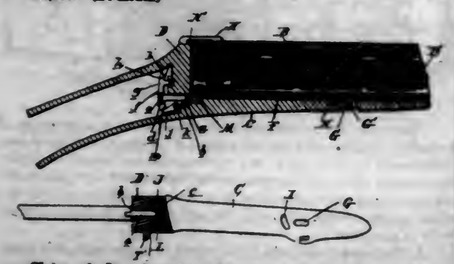
Claim.—1. A pair of snap-acting electrodes, in combination with a spring-actuated arc-interrupter of insulating material for intercepting an arc established between said electrodes, substantially as described.

2. A switch provided with one or more pairs of snap-actuating electrodes, in combination with a spring-actuated arc-interrupter of insulating material for each pair of electrodes.

3. A switch, a pair of spring-actuated electrodes, with their free ends resting normally on a ratchet-block made of insulating material, in combination with a spring-actuated arc-interrupter of insulating material, substantially as described.

4. A switch provided with two pairs of spring-actuated electrodes and a ratchet-block secured to an operating-handle, in combination with spring-actuated arc-interrupters of insulating material adapted to pass between the ends of the electrodes and disrupt the arc, substantially as described.

477,410. BREECH-LOADING FIREARM. ALBERT GROULEFF and ERNEST R. WILLIAMS, Grayling, Mich. Filed Nov. 12, 1891. Serial No. 411,758. (No model.)



Claim.—1. In a breech-loading firearm, the combination, with the fore-arm having the groove J, the breech-block formed with the undercut portion K, and the barrels, of a plate F on the barrels, a pivotal connection between the plate and fore-arm, the locking extension projecting beyond the end of the barrels engaging the groove and undercut portion, a cam formed on the fore-arm, and the lug H, engaging the cam, substantially as described.

2. In a breech-loading firearm, the combination, with the fore-arm and breech-block formed, respectively, with the groove J and undercut portion K, of the barrel, the plate on the under side thereof, a pivotal connection between the plate and fore-arm, a locking extension on the plate engaging in the groove and undercut portion, the hook N on the top of the barrel, and a shoulder on the breech-block having a curved face with which the hook engages, substantially as described.

3. In a breech-loading firearm, the combination, with the fore-arm, of laterally-movable barrels pivoted thereto, a breech-block, a vertically-disposed lip on the side thereof having a curved forward face, and means for locking the barrels, substantially as described.

4. In a breech-loading firearm, the combination, with the fore-arm having the slot R therein, of the laterally-movable barrels pivoted to the fore-arm, the extractor-head Q between the barrels, and the bolt P, engaging the extractor-head, of the arm Q', engaging the slot R of the fore-arm, substantially as described.

5. In a breech-loading firearm, the combination, with the fore-arm, of the laterally-movable barrels pivoted thereto, a reciprocating bolt *a*, engaging the barrels, the lever *f* at the rear of the bolt, the spring *i*, engaging the lever, a pivoted finger engaging the lever at a point opposite the spring, a cam on the lever at the point of engagement between the same and the finger, and the crank *l* for actuating the finger, substantially as described.

477,411. DENTAL PLUGGER. ANDREW J. HARRIS, Chicago, Ill. Original application filed May 5, 1891, Serial No. 391,641. Divided and this application filed July 16, 1891. Serial No. 399,712. (No model.)

477,411.



Claim.—1. In a pneumatic dental plugger, the combination of a cylinder, a tube swiveled to the cylinder and forming part thereof, and a bit secured to the tube, whereby the bit may be revolved without turning the cylinder, substantially as described.

2. In a pneumatic dental plugger, the combination of an outer shell, a cylinder inside thereof, an annular passage between them closed at its ends, one or more orifices connecting this passage with the interior of the cylinder, a mallet sliding in the cylinder, and means for forcing air into the annular passage and cylinder and exhausting it therefrom, whereby the hammer is operated, substantially as described.

3. In a pneumatic dental plugger, the combination of an outer shell, a cylinder inside thereof, an annular passage between them closed at its ends, one or more orifices connecting the passage and the interior of the cylinder, a mallet sliding in such cylinder, a shell J, a tube closing the end of such shell, a spindle reciprocating in such tube and entering the cylinder, and means for pneumatically operating the mallet to cause it to strike upon the spindle, substantially as described.

4. In a pneumatic dental plugger, the combination of a cylinder, a screw-plug closing the end thereof, a rod sliding in such plug, and a beveled split plug mounted upon the rod bearing against a shoulder in the cylinder and compressed upon the rod by the action of the screw-plug to bind such rod and hold it until it is moved by positive force, substantially as described.

5. In a pneumatic dental plugger, the combination of an outer shell and cylinder inside thereof, an annular passage closed at its ends between the shell and cylinder, one or more orifices connecting this passage with the interior of the cylinder, means for forcing air into the passage and exhausting it therefrom to pneumatically operate the mallet, orifices for permitting the air to escape from the interior of the cylinder, and means for controlling the size of such orifices to regulate the force of the blow, substantially as described.

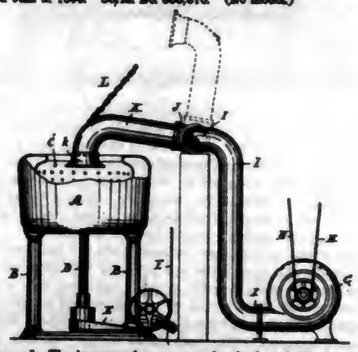
6. In a pneumatic dental plugger, the combination of a cylinder, a shell J, in which it is fastened, a mallet in such cylinder, means for pneumatically operating such mallet, orifices *j* for allowing the entrance and escape of air to and from the shell as the mallet moves back and forth, a sleeve P for regulating the admission of air into the orifices and controlling the blow of the mallet while in use, and a spring normally withdrawing the sleeve to uncover the orifices, substantially as described.

477,412. HANGER FOR GARMENTS. JULIUS C. HAHN, Detroit, Mich. Filed Feb. 15, 1892. Serial No. 421,626. (No model.)



Claim.—A garment-hanger consisting of a single piece of wire formed with a central eye A and horizontal extensions C, extending out on opposite sides, right-angled horizontal extensions on opposite sides of the ends of the extensions C, forming shoulder-supports, and the V-shaped legs D on the right-angled extensions, substantially as described.

477,418. CENTRIFUGAL DRIER. TILLY HAYNES, Boston, Mass. Filed Jan. 2, 1890. Serial No. 335,610. (No model.)



Claim.—1. The improved apparatus for drying clothes, consisting of a centrifugal machine having the casing A and the inclosed basket C, a blower G, a pipe I, leading from said blower and provided with an opening *i*, a T-coupling mounted on said pipe I and adapted to cover the opening *i*, a pipe K, connected with the T-coupling and provided with a flaring mouth, said coupling being rotatable upon the pipe I and the pipe I being extended beyond the opening *i* and left open and unobstructed, whereby a free exit is afforded from the blower when the pipe K is thrown out of register with the opening *i*, and means for raising and lowering the pipe K, substantially as described.

2. The improved apparatus for drying clothes, consisting of a centrifugal machine having the casing A and the basket C, a pipe I, having an opening *i*, a blower connected with said pipe I, a T-coupling J, mounted on said pipe I and adapted to cover the opening *i*, a pipe K, connected to the T-coupling J and having a flaring mouth *k*, means for raising and lowering the pipe K, and means for rotating the centrifugal machine, as set forth.

477,414. CAR-COUPLING. IVORY HAZELTON, Philadelphia, Pa. Filed Feb. 23, 1892. Serial No. 422,808. (No model.)

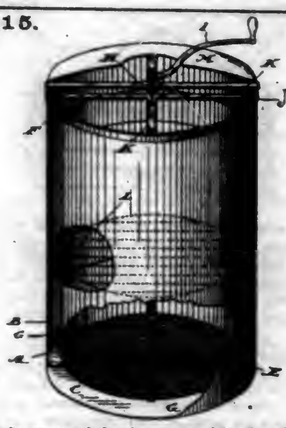
Claim.—1. A draw-head having a knuckle pivoted thereto and provided with a horizontal recess, a heel on the rear of said knuckle, adapted to enter said recess and having a vertical slot, a horizontal shaft journaled in said draw-head in rear of said knuckle, a tongue on said shaft entering said vertical recess, and means for operating said shaft, said parts being combined substantially as described.

2. A draw-head, a knuckle having a heel with slot therein, a shaft journaled in said draw-head, having a tongue adapted to enter said slot, and a shoulder on said draw head, against which said heel is adapted to abut, said parts being combined substantially as described.

477,415. DISH-CLEANER. LESLIE HEGLER, Toronto, Canada. Filed Oct. 22, 1891. Serial No. 408,987. (No model.)

Claim.—In a dish-washing machine, an outer casing B, a dish-receptacle comprising the wire casing A, strengthened by the skeleton frame E F G and pivoted on a pin D in the bottom of the outer casing B, a spindle H, projecting from the cross-bars F of the skeleton frame, the bars K, each hinged at its outer end to the outer casing and having a hole in its outer end, forming a journal for the spindle H, and a crank I, fixed to said spindle, substantially as shown and described.

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477,416. ADDING-MACHINE. JOHN S. HILLIARD, Philadelphia, Pa. Filed Sept. 11, 1891. Serial No. 405,376. (No model.)



Claim.—1. In an adding-machine, a series of spindles, a series of number-wheels rotatably mounted on said spindles, a series of detents for engaging said number-wheels, a series of rotatable hand-levers connected with said spindles, springs connected with said spindles and tending to return the hand-levers to normal position, and pawl-and-ratchet connections between said hand-levers and number-wheels, substantially as and for the purposes set forth.

2. In an adding-machine provided with a housing, a series of rotatable number-wheels mounted in said housing, a series of dials on the exterior of the top plate of said housing, a series of rotatable hand-levers mounted outside of said housing and disposed concentrically with relation to said dials, pins for stopping said hand-levers, springs tending to normally shift said levers into contact with said pins, and pawl-and-ratchet connections between said hand-levers and number-wheels, substantially as and for the purposes set forth.

3. An adding-machine provided with a housing and comprising a series of spindles projecting through the top plate of the housing, a series of rotatable sleeves on said spindles, a series of number-wheels on said sleeves, a series of dials concentric with said spindles, a series of rotatable hand-levers connected with said spindles, pins or stops for engaging said levers, springs connected with said housing and spindles and tending to shift said levers into engagement with said stops or pins, pawl-and-ratchet connections between said sleeves and levers, a series of toothed wheels connected with the lower extremities of said sleeves and disposed in different planes, radial arms extending from each intermediate toothed wheel of the series, and detents for engaging said toothed wheels, substantially as and for the purposes set forth.

4. In an adding-machine, a series of spindles projecting through the top plate of the housing, sleeves rotatably mounted on said spindles, number and toothed wheels connected with said sleeves, hand-levers connected with the projecting extremities of said spindles, springs for actuating said hand-levers, and pawl-and-ratchet connections between said levers and sleeves, substantially as and for the purposes set forth.

477,417. SIGN. FRANK P. HOWARD, Sedalia, Mo., assignor to Geo. P. Brown and Joseph H. Kelly, same place. Filed Sept. 7, 1891. Serial No. 404,905. (No model.)

Claim.—1. The herein-described sign-section, consisting of opposite sheet-metal strips having their opposite ends overlapping each other, the ends of the strips, together with their longitudinal edges, being bent over upon the face of the sign-strip, with the exception of the overlapping end thereof, and the series of character-bearing cards removably mounted between the bent edges of the strips, substantially as specified.

2. The herein-described sign-section, consisting of opposite sheet-

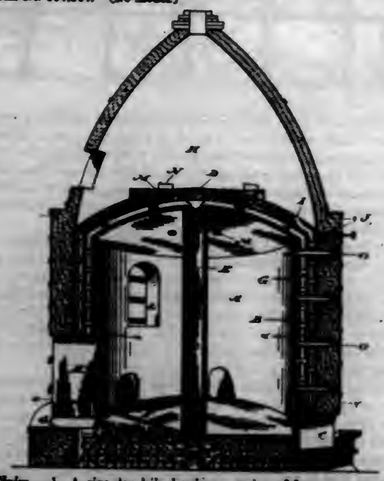
477,417.



metal strips having their opposite ends overlapping each other, the ends of the strips, together with their longitudinal edges, being bent over upon the face of the sign-strip, with the exception of the overlapping end thereof, stops located upon the faces of the strips near their overlapping ends, and the series of character-bearing cards removably mounted between the bent edges of the strips, substantially as specified.

3. In a sign, a series of independent sections, each consisting of a pair of strips placed back to back, soldered together, and having overlapping ends, the edges and unlapped ends of the strips being bent over upon the faces of the strips, the stops located upon the lapped ends of the strips, the series of removable chains loosely engaging eyes formed in the lapping ends of the strips, the suspension-chain, and the series of character-bearing cards removably mounted between the bent edges of the strips, substantially as specified.

477,418. BRICK-KILN. MICHAEL J. HYDE, Toronto, Canada, assignor to John McLean French, same place. Filed June 26, 1891. Serial No. 397,567. (No model.)



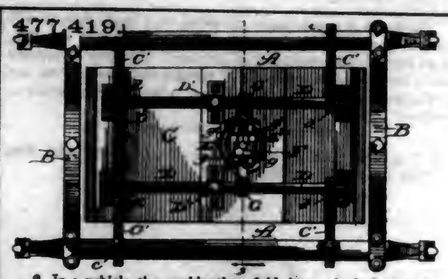
Claim.—1. A circular kiln having a series of furnaces around it, annular flues in its outer wall leading from said furnaces, a central flue, a second annular flue between the first flue and the outer wall of the furnaces, and communications between the first side and central flues and between the center and second side flues, substantially as described.

2. In a circular kiln, a vertical flue E, located in the center of the brick-chamber A and communicating at its top end with an annular flue *a*, extending over the top and around the center of the chamber A and communicating with the furnaces C, in combination with a flue F, formed at the bottom of the chamber A and communicating with the vertical flue E and the annular flue G, arranged between the flue *a* and the outer wall of the kiln and communicating with the dome H through the openings I, regulated by the dampers J, substantially as and for the purpose specified.

477,419. VEHICLE-SPRING. ADOLPH JABROCKY, Burnham, assignor of one-half to Frank Crane, Chicago, Ill. Filed Jan. 19, 1892. Serial No. 418,845. (No model.)

Claim.—1. In a vehicle, the combination of side bars, a body-bed provided with ball-bars connected to such side bars by means of suitable arms, a flat coiled spring engaging with such bed, a cross-head placed beneath each spring and connected thereto, and arms attached to the ball-bars and engaging with such cross-head, substantially as described.

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2. In a vehicle, the combination of side bars, a body-bed, ball-bars journaled in such bed, arms rigidly attached to such bars and loosely attached to the side bars, a spring resting upon such bed, a cross-head placed beneath the spring and secured thereto, and arms rigidly secured to the ball-bars and connected to said cross-head by means of sliding plates working in slots in the cross-head, whereby as the carriage-body is depressed the spring will be distorted and tend to restore the body to its normal position, substantially as described.

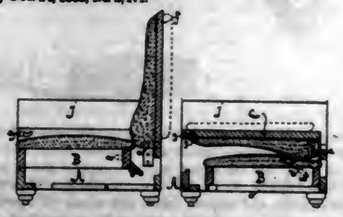
3. In a vehicle-body, the combination of a bed, ball-bars rotatably secured in journals on such bed and provided with spherical bearings between the supporting-journals, a spring engaging with such bed, a cross-head placed beneath such spring and secured thereto by means of a suitable bolt, interlocking plates sliding in suitable slots in such cross-head, arms connecting such plates to the ball-bars, and arms loosely attached to the side bars and rigidly connected to the ball-bars, whereby as the bed is depressed the ball-bars will be revolved and act to draw down the spring against its elastic force, substantially as described.

477,420. HUB-ATTACHING DEVICE. OSCAR JACOBS, Montreal, assignor of one-half to Herbert I. Beatty, Toronto, Canada. Filed Feb. 25, 1892. Serial No. 422,774. (No model.)



Claim.—A hub journaled on the end of an axle having a flange working in a recess in said hub, so as to be flush with the face of the same, in combination with a spring-bolt set in a case projecting from the hub, substantially as and for the purpose specified.

477,421. SOFA-BEDSTEAD. REINHARD JANSEN, Berlin, Germany. Filed Sept. 19, 1891. Serial No. 406,288. (No model.) Patented in England Sept. 1, 1891, No. 14,775; in Austria-Hungary Sept. 2, 1891, No. 41,562 and No. 68,563; in Switzerland Sept. 9, 1891, No. 3,866; in Italy Oct. 3, 1891, No. 30,267; in France Dec. 21, 1891, No. 216,003, and in Norway Feb. 24, 1892, No. 2,471.



Claim.—1. In a sofa-bedstead, the combination of a base, a seat adapted to be lowered into said base, and a back connected to the base and arranged to fold over the seat when the latter is lowered, substantially as described.

2. In a sofa-bedstead, the combination of a hollow base having its end pieces provided with slots having horizontal and inclined portions, a seat provided with pins traveling in said slots, for lowering said seat, and a back hinged to the base and provided on its rear side with a mattress, all substantially as described.

3. In a sofa-bedstead, the combination of the base A, provided with slots *b b*, a seat B, having pins *a a*, engaging said slots, for lowering the seat into the base, a back C, hinged to the base and adapted to fold over the seat, and means for supporting said back when folded over, substantially as described.

477,422. OILING DEVICE. CHARLES F. KELLOM, Dover, N. J., assignor of one-half to Maurice W. Phillips, Philadelphia, Pa. Filed Jan. 28, 1892. Serial No. 419,512. (No model.)



Claim.—1. In an oiling and greasing machine, a reservoir with a follower therein and having a curved bed in one end thereof, a feed-roller journaled in arms having bearings in the sides of the reservoir and rotating in said bed, and an applying-roller adapted to contact with said roller, said reservoir having discharge-ports covered by and leading against said feed-roller, said parts being combined substantially as described.

2. An oiling and greasing machine consisting of a reservoir, an automatically-operating follower therein, an adjustable feed-roller, a spring-controlled applying-roller, and a stop for said applying-roller, said parts being combined substantially as described.

3. In an oiling or greasing apparatus, a reservoir, a follower therein, a slotted handle connected with said reservoir, a stem on said follower entering said handle, a spring bearing against said stem, and a set-screw passing through the handle into a block on the stem, said parts being combined substantially as described.

4. In an oiling or greasing apparatus, a reservoir with a head with opening thereon, a hollow handle with slots in its sides, a follower in said reservoir with a handle in said stem, screws projecting through and guided in said slots and with ends connected with said stem, and a spring bearing against the handle and the said stem, said parts being combined substantially as described.

5. A reservoir, a follower with a stem, a block on said stem, a spring bearing against said block, and a screw in said block for connecting the same with the stem of the follower, said stem having depressions to receive the point of said screw, substantially as described.

477,423. CLOCK ATTACHMENT FOR BICYCLES. ALGERNON S. KETNER, Philadelphia, Pa. Filed Mar. 14, 1892. Serial No. 424,834. (No model.)



Claim.—1. A clock-support for a bicycle, consisting of a sleeve adapted to embrace the standard of a bicycle, means for holding said sleeve in fixed position, a post on said sleeve, a sleeve fitting on said post, a casing connected by a knuckle-joint with said latter sleeve, and clamping means for securing said latter sleeve and said casing in fixed position, said parts being combined substantially as described.

2. A sleeve adjustable on a bicycle-standard and having a post, a sleeve with ears on said post, a casing with a knuckle-joint connection with said latter sleeve, and a screw for clamping said latter sleeve and joint, said parts being combined substantially as described.

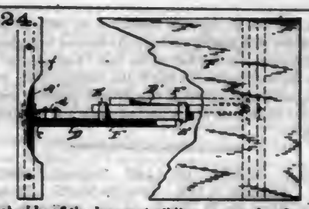
477,424. TABLE. ARNAUD F. KINSLER, San Francisco, Cal. Filed Jan. 5, 1892. Serial No. 417,970. (No model.)

Claim.—1. In a table, the combination, with the supporting-legs, of the sliding extensionable frame detachably pivoted thereto.

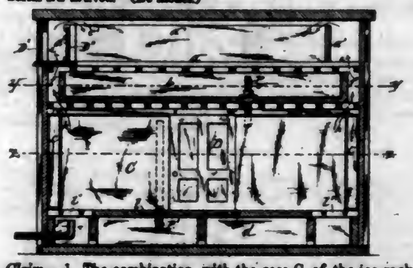
2. In a table, the combination, with the legs thereof, consisting of upper and lower cross-pieces united by a vertical piece, of pintles secured to each side of the legs and sliding connecting-frame provided with small hooks adapted to fit over said pintles, as and for the purpose set forth.

3. The combination of the legs having recesses in their sides, pintles secured to the legs and extending in front of the recesses, and the extensionable frame provided at its ends with hooks fitting loosely over the said pintles.

4. The combination of the legs and the extensionable frames detachably pivoted thereto, the said frames consisting of the sliding bars, clamps or guides holding the same together, vertical end pieces, and braces connecting the end pieces and the sliding bars.



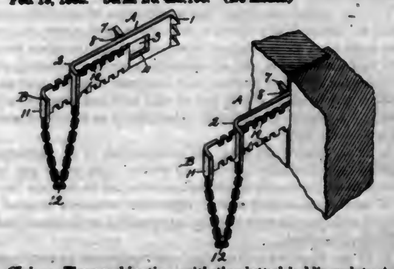
477,425. COOLER. CHRISTOPHER C. KIPP, Syracuse, N. Y., assignor of one-half to Hollie A. Hall, same place. Filed Mar. 14, 1892. Serial No. 424,752. (No model.)



Claim.—1. The combination, with the case C, of the ice-rack *a*, located in the upper part of said case, the tank *b* beneath the ice-rack to receive the drippings from the ice, the tank *c*, extending around the sides of the case, the overflow-pipe P, extending from near the top of the tank *b* into the tank *c*, the tank *d*, extending over the bottom of the interior of the case, the overflow-pipe P', extending from near the top of the tank *c* into the tank *d*, and the waste-pipe P'', having its receiving end near the top of the tank *d*, substantially as described and shown.

2. The combination of the case C, formed air-tight, the ice-rack *a*, located in the upper part of said case and provided with surrounding walls *d'*, forming air-passages *e* and *d*, respectively, up the exterior and over the top of the rack, the tank *b*, immediately under the aforesaid rack and having air-passages *f f* extending around its exterior, the tank *c*, extending around the sides of the case and having its top open and forming air-passages *h h* between its top and bottom of the tank *b*, the tank *d*, extending over the bottom of the interior of the case, overflow-pipes P and P', leading successively from the upper to the lower tanks, and the waste-pipe P'', having its receiving end near the top of the tank *d*, substantially as described and shown.

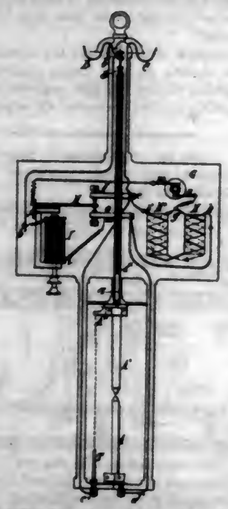
477,426. DOOR-SECURER. AUGUSTUS LOCHMAN, Milton, Pa. Filed Feb. 19, 1892. Serial No. 422,100. (No model.)



Claim.—The combination, with the slotted holding-plate A, having its inner end provided with prongs 1 and its opposite end bent substantially at right angles to the body of the said plate, of the notched sliding bolt B, having its ends bent substantially at right angles to the

body of the bolt and in opposite directions to each other, the inner bent end 7 of the bolt passing through the slot and engaging the edges of the holding-plate, the notches of the bolt being adapted to engage the metal at the opening to the slot in the holding-plate, whereby the parts are adjusted and locked in any desired position, and the chain connecting the outer ends of the holding-plate and bolt, substantially as described.

477,427. ELECTRIC-ARC LAMP. FRÉDÉRIC V. MAGHAIRE, Paris, France. Filed Aug. 13, 1890. Serial No. 361,867. (No model.) Patented in France Apr. 19, 1888, No. 190,089; in Belgium July 11, 1888, No. 82,886; in England July 13, 1888, No. 10,900; in Germany July 21, 1888, No. 46,880; in Spain Sept. 26, 1888, No. 8,886; in Italy Sept. 30, 1888, XLVIII, 304, and in Austria-Hungary Jan. 2, 1890, No. 37,600 and No. 61,945.



Claim.—1. In an electric-arc lamp, the combination of an electromotor adapted to operate both the upper and lower carbon holders and an electro-metric balance adapted to maintain absolutely constant the strength of intensity of the current, the said electromotor having an exciting-circuit formed by two separate conductors through each of the electro-magnets traversed by the main current, substantially as described.

2. In an electric-arc lamp, the combination of an electromotor adapted to operate automatically both the upper and lower carbon holders, and an electro-metric balance adapted to regulate the motion of said electromotor, said electromotor having two distinct exciting-circuits adapted to automatically regulate the movement of both carbon-holders, substantially as described.

3. In an electric-arc lamp provided with two pairs of carbons, the combination of an electromotor adapted to automatically operate and control both upper-carbon holders independently of each other, an electro-metric balance adapted to regulate the motion of said electromotor, and means for adjustably connecting and disconnecting the electromotor from the upper-carbon holders, or either of them, through separate short-circuit contacts, substantially as described, and for the purposes set forth.

4. In an electric-arc lamp, the combination of an electromotor adapted to automatically operate and control both upper and lower carbon holders, an electro-metric balance adapted to regulate the motion of said electromotor, and an adjustable core K, a revolving armature connected with said electromotor, magnetic coils I I', and an adjustable sliding block K within one of said coils and adapted to limit the magnetic current of said coils, substantially as described, and for the purposes set forth.

5. In an electric-arc lamp, the combination of an electromotor adapted to automatically operate and control both upper and lower carbon holders, an electro-metric balance adapted to regulate the motion of said electromotor, and an adjustable armature adapted and arranged with two distinct circuits, substantially as described, and for the purposes set forth.

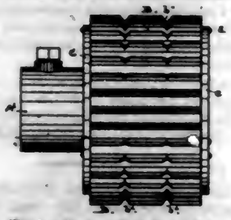
6. In an electric-arc lamp, the combination of an electromotor adapted to automatically operate and control both upper and lower carbon holders, an electro-metric balance adapted to regulate the motion of said electromotor, a magnetic coil I, armature J, insulated pallet M, adapted to close the circuit through the coil I, and a shunt-circuit adapted to pass from the carbons through said magnetic coil, substantially as described, and for the purposes set forth.

7. In an electric-arc lamp, the combination, with a rotating worm-spindle carrier, of a wedge-shaped contact-piece in which the spindle-carrier revolves, an insulated arm connected to said contact-piece, and an electric conductor to said arm and adapted to connect with the lamp-circuit, all said parts being adapted and arranged to protect the wire of the balance when the lamp is extinguished, substantially as described.

8. In an electric-arc lamp provided with two pairs of carbons, the combination, with the electromotor, of a worm gear-wheel secured on a shaft and adapted to be rotated by said motor, loose pinions on the ends of said shaft and connected with the carbon-holders, clutches connected to said worm-wheel and adapted to connect with said loose pinions, a lever connected at one end with a clutch, the other end being adapted as an armature, and an electro-magnet, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

9. In an electric-arc lamp, the combination, with the upper and lower carbons, of a globe-support provided with a vertical central tube adapted to surround the lower carbon, pins, of any material capable of withstanding the heat of the carbon, secured in the upper end of the central tube and adapted to rest upon the upper tapering end of the lower carbon, and a globe arranged in said globe-holder, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

477,428. FEED-ROLL. GEORGE H. MARSH, San Francisco, Cal. Filed Apr. 17, 1891. Serial No. 389,208. (No model.)



Claim.—1. The herein-described feed-roll for wood-working machines, comprising the body A, having slots or grooves extending from end to end and radially around the circumference toward the axis, the inserted removable tooth-plates B in said grooves having nibs or projections *b* on the ends, which project beyond the ends of the body, and the rings C, having grooves in their inner faces, which take the said projections of the tooth-plates, and the screws taking through said rings into the body as a means of securing the rings in place, substantially as set forth.

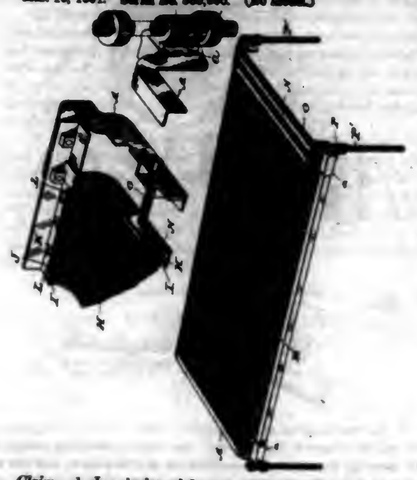
2. The combination, with the body A, of an insertible tooth-plate having a projecting acting portion or edge with alternate smooth or plain sections, and V-shaped notches b^x, which are arranged, as described, to produce separated acting edges with sharp corners on each tooth, as set forth.

477,429. ADVERTISING-SIGN. ARTHUR MARTIN, London, England, assignor to the Rotvoll Manufacturing Company, Buffalo, N. Y. Filed Feb. 1, 1890. Serial No. 419,965. (No model.) Patented in England Dec. 14, 1888, No. 18,944.



Claim.—The method of forming an advertising-sign consisting in molding or stamping in a sheet of ductile or plastic material depressions corresponding to the shape and position of the letters or symbols of the sign to be produced, placing on the back of a sheet of transparent glass a pattern corresponding to the shape of the field surrounding said letters or symbols, and placing said glass with the said pattern upon the aforesaid molded or stamped sheet in such position in relation to the letters or symbols as to cause them to coincide with the openings in the aforesaid pattern, and thus appear through the clear spaces of the glass and sunk away from the same, as set forth and shown.

477,430. COT-BEDSTEAD. JAMES MASSEY, Toronto, Canada. Filed Mar. 19, 1891. Serial No. 385,690. (No model.)



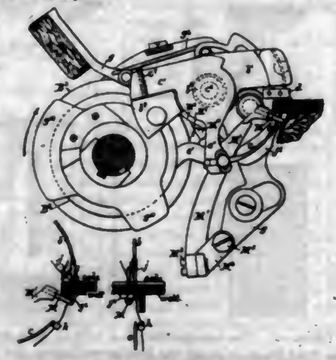
Claim.—1. In a bedstead-frame, a wire mattress, a light frame I, surrounding and secured to said mattress, one end of said frame being movable, rods K, secured to the sides of the bedstead-frame, and rings or loops for securing the light frame I to one end of the bedstead-frame and to the rods K, in combination with an end piece adjustably connecting the free end of the light frame I to the free end of the bedstead-frame, substantially as described.

2. A woven-wire pillow E, secured to the ends of the end pieces F, having the stop *b*, arms G and G', hinged at fixed points to the end pieces and frame A, said arms G and G' being of different lengths, whereby the pillow folds flat against the bedstead when down and sets inclined when raised, substantially as described.

3. A bracket-piece P, having a dovetail side designed to fit into a dovetail recess in the corner-piece *a*, in combination with a threaded leg P' and threaded collars *b* and *d*, arranged to hold said bracket-piece and corner-piece together, substantially as described.

4. A bracket-piece P, having a dovetail side designed to fit into a dovetail recess in the corner-piece *a*, in combination with collars *b* and *d*, secured above and below the said corner-piece and arranged to hold said bracket-piece and corner-piece together, substantially as described.

477,431. BOOT OR SHOE SEWING MACHINE. DANIEL MILLS and DANIEL MILLS, Jr., Philadelphia, Pa. Filed Dec. 1, 1890. Serial No. 373,196. (No model.)



Claim.—1. The combination of the feeding devices, the needle, the looper, the bobbin, and the bobbin-hook with a welt-protector consisting of a finger so located in respect to said hook as to permit of the passage of the work between them, and means for moving said finger so as to cause it to first engage and then release that portion of the thread which is between the stitch being formed and the preceding stitch, substantially as specified.

2. The combination of the feeding devices, the needle, the looper, the bobbin, and the bobbin-hook with the welt-protector consisting of a finger so located in respect to said bobbin-hook as to permit of the passage of the work between them, and means for moving said finger both transversely and longitudinally, substantially as specified.

3. The combination of the feeding devices, the needle, the looper, the bobbin, and the bobbin-hook with the welt-protecting finger, the needle back gage, and a lever carrying said welt-protecting finger and hung to the back-gage carrier, whereby said welt-protecting finger always retains the same relative position to said back gage, irrespective of the thickness of the work, substantially as specified.

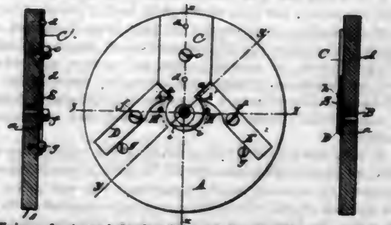
4. The combination of the feeding devices, the needle, the looper, the bobbin, and the bobbin-hook with the welt-protecting finger, the pivoted lever carrying the same, a secondary lever acting on the said welt-protector lever to vibrate the same, a sliding shaft having a head engaging with said welt-protector lever to swing the same longitudinally, and means for operating said secondary lever and sliding shaft, substantially as specified.

5. The combination of the feeding devices, the needle, the looper, the bobbin and bobbin-hook, and the welt-protector with the take-up or pull-back lever, the two-part operating-cam therefor, and means for adjusting the tail part of the cam, whereby the extent of movement of the take-up or pull-back lever for the delivery of slack thread may be regulated, substantially as and for the purpose specified.

6. The combination of the feeding devices, the needle, the looper, the bobbin and bobbin-hook, the pull-back, the tension device, and the welt-protector with a thread-locking device and with means for operating the same, so as to lock the thread during the action of the pull-back and while the looper is applying the thread to the needle, substantially as specified.

7. The combination of the feeding devices, the needle, the looper, the bobbin and bobbin-hook, the welt-protector, the take-up or pull-back lever for the needle-thread, and an operating-cam for said lever, having a spring-tongue, whereby a yielding pressure or draft is imparted to the thread when the looper is laying the same in the barb of the needle, substantially as specified.

477,432. WATCHMAKER'S TOOL. CHARLES H. MILLER, Rockford, Ill. Filed July 15, 1890. Renewed Oct. 5, 1891. Serial No. 407,678. (No model.)



Claim.—1. A tool for bending and forming the over-coil or terminal curve of balance-springs, having a central bridge and two clamping jaws and pins arranged as shown and specified.

2. A tool for bending and forming the over-coil of balance-springs for watches, consisting of a plate to which is attached a central bridge having the curves of said over-coil marked thereon, in combination with jaws and pins arranged as set forth.

3. The combination of a plate A, to which the bridge is attached by pins *d d* and screw *c*, in combination with pins *h* and *h'*, and pivoted jaws D and E, clamped by eccentric screws *g* in the manner shown and described.

4. A watch-maker's tool consisting of a plate A, having the central dished part *a*, and the central bridge C, provided with curves *i i* for indicating right and left hand terminal curves of watch-springs, in combination with the pivoted jaws D E, pins *h h'*, and eccentric screws *g g*, all arranged as described.

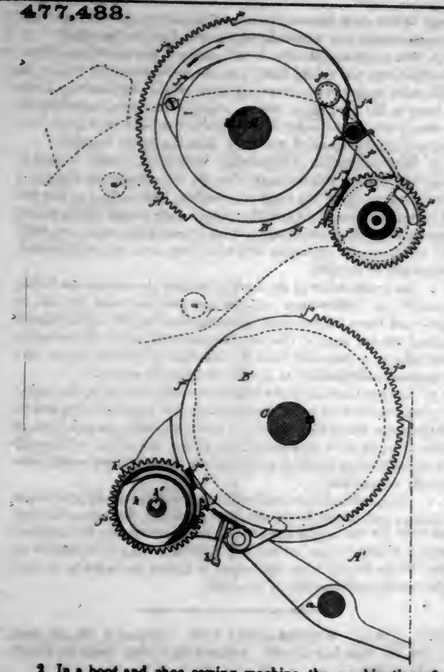
5. The tool herein described, consisting of the dished plate A, to which the bridge is secured, provided with the terminal curves *i i*, in combination with the pivoted jaws D and E, the pins *h h'*, and the eccentric screws *g g* for clamping the spring, as shown and specified.

6. In a tool for forming the over-coil of watch-springs, the combination of the dished plate A, the central bridge, and the pivoted jaws with the eccentric head-screws, the pins *h h'*, and the screws *c* and *f f*, all arranged as specified.

477,433. ROTATING HOOK MECHANISM FOR BOOT OR SHOE SEWING MACHINES. DANIEL MILLS, Philadelphia, Pa. Filed Oct. 6, 1891. Serial No. 407,980. (No model.)

Claim.—1. In a boot and shoe sewing machine, the combination of the needle, the bobbin, the hook, the hook-driving mechanism for intermittently rotating said hook in the same direction around the bobbin, and mechanism for longitudinally reciprocating the hook-shaft in its bearings, substantially as specified.

477,483.



2. In a boot and shoe sewing machine, the combination of the needle, the bobbin, the hook-shaft and its hook, a pinion on the shaft having alternating toothed portion and plain concave segment, a driving-gear having alternating toothed portion and plain convex segment for engaging with the toothed portion and concave segment of the pinion, and means for rotating said drive-gear, whereby the hook-shaft has intermittent forward movements of rotation around the bobbin, with periods of dwell during which it is locked, substantially as specified.

3. In a boot and shoe sewing machine, the combination of the needle, the bobbin, the hook-shaft and its hook, a spur-pinion on said hook-shaft, the spur-segment for engagement with said pinion, and a lever and cam whereby the initial movement is imparted to the hook-shaft before the driving-spur segment engages with the pinion on said shaft, substantially as specified.

4. In a boot and shoe sewing machine, the combination of the needle, the bobbin, the hook-shaft and its hook, a spur-pinion on said hook-shaft, a driving spur-segment, and a lever and cam for starting the movement of the hook-shaft independently of said spur-gears, said cam having a differential pitch, substantially as specified.

5. The combination of the needle, the rotating hook, the hook-shaft free to slide in its bearings and having a cam, a stud or finger engaging with said cam, and screw-stems for adjusting and locking said stud or finger, substantially as specified.

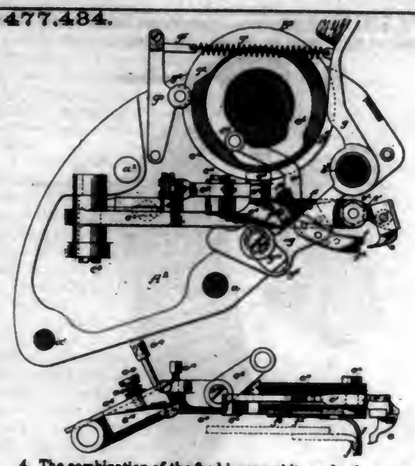
477,484. FEEDING MECHANISM FOR BOOT OR SHOE SEWING MACHINES. DANIEL MILLS, Philadelphia, Pa. Filed Oct. 6, 1891. Serial No. 407,941. (No model.)

Claim.—1. In a boot and shoe sewing machine, the combination of the feed-dog and its operating-lever, the feed back gage mounted on said feed-lever, and a locking device for said feed back gage independent thereof, substantially as specified.

2. The combination, in a boot and shoe sewing machine, of the feed-dog and its lever, the feed back gage having a segmental arm fitted in a segmental recess in said lever concentric with the axis of vibration of the needle, and a back-gage-locking lever independent of the gage, substantially as specified.

3. In a boot and shoe sewing machine, the combination of the pivoted feed-lever having a stud, the regulating-lever, one arm of which is acted upon by the feed-cam and the other arm provided with a regulating set-screw for acting on the stud of the feed-lever, and a sliding wedge for interposition between the regulating-lever and stud to quickly change the extent of lost motion between the feed-lever and regulating-lever independently of the adjustment of the set-screw, substantially as specified.

477,484.

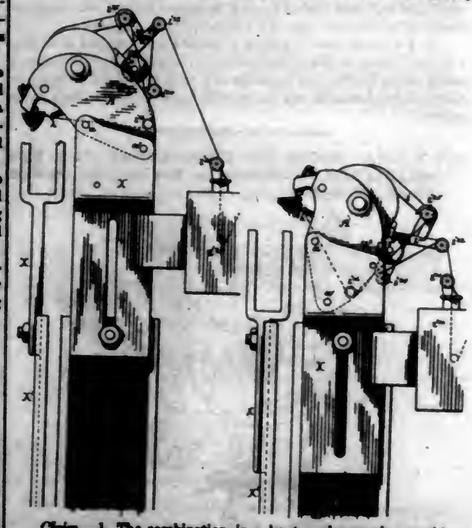


4. The combination of the feed-lever and its studs, the regulating-lever and its set-screw, the feed-cam, the stitch-controlling wedge, the plate carrying the same and mounted on the feed-lever, and the set-screw and spring for retaining said wedge in its adjusted position, substantially as specified.

5. The combination of the feed-dog, the feed-lever, the feed back gage carried by said lever, the needle back gage located in advance of the movable feed back gage, and the back-gage-locking lever, substantially as specified.

6. The combination of the feed-dog, the feed-lever, the feed back gage carried by said lever, the back-gage-locking lever, and a needle back gage located in advance of the feed back gage and providing a bearing therefor, substantially as specified.

477,485. BOOT OR SHOE SEWING MACHINE. DANIEL MILLS, Philadelphia, Pa. Filed Oct. 6, 1891. Serial No. 407,942. (No model.)



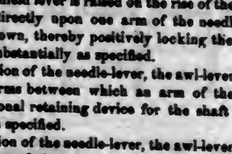
Claim.—1. The combination, in a boot or shoe sewing machine, of the fixed frame or stand, the sewing mechanism, the frame or head carrying the same and mounted upon the fixed frame or stand and adjustable thereon to positions permitting either an upright or a lateral action of the needle, and means for securing the adjustable frame to the fixed frame in its different positions of adjustment, whereby the machine is adapted for performing different classes of work with the sole uppermost, substantially as specified.

2. The combination, in a boot or shoe sewing machine, of the fixed frame or stand, the sewing mechanism, the frame or head carrying the same and pivoted to the fixed frame or stand, so as to be adjustable thereon to positions permitting either an upright or a lateral action of the needle, and means for securing the pivoted frame in either of its two positions of adjustment, substantially as specified.

3. The combination of the shifting head of the machine, the pull-back and tension mechanism, the wax-pot, the stand carrying said head and wax-pot, a thread-guiding roller on the mechanism carried by the shifting-head, and a thread-guide located on the wax-pot and serving to permit the delivery of thread from said wax-pot in the same direction in either position of adjustment of the shifting-head, substantially as specified.

4. The combination of the supporting-stand, comprising a lower fixed member and an upper vertically-adjustable member, with the head carrying the sewing mechanism and mounted upon said upper member of the stand, but adjustable thereon to positions permitting either an upright or lateral action of the needle, means for securing said adjustable head to the stand in its different positions of adjustment, and a wax-pot likewise carried by said upper member of the stand, substantially as specified.

477,486. BOOT OR SHOE SEWING MACHINE. DANIEL MILLS, Philadelphia, Pa. Filed Oct. 6, 1891. Serial No. 407,943. (No model.)



Claim.—1. In a boot or shoe sewing machine, the combination of the needle-lever, the needle-shield and its lever, and a segmental slot and set-screw close to the outer edge of the needle-shield lever for preventing the lateral separation of said levers and consequent displacement of the needle-shield in respect to the needle, substantially as specified.

2. The combination of the needle, the vibrating needle-lever, the needle-shield and its lever, a slotted connection between said levers, whereby the needle-shield lever is raised on the rise of the needle-lever, and a cam bearing directly upon one arm of the needle-shield lever when said shield is down, thereby positively locking the shield in the depressed position, substantially as specified.

3. The combination of the needle-lever, the awl-lever independent thereof and having arms between which an arm of the needle-lever can play, and a frictional retaining device for the shaft of said awl-lever, substantially as specified.

4. The combination of the needle-lever, the awl-lever having arms between which an arm of the needle-lever can play, a grooved disk applied to the shaft of the awl-lever and serving as a longitudinal retainer therefor, and a friction-band applied to the grooved portion of the disk and serving to retain the same and the awl-shaft in circumferential position, substantially as specified.

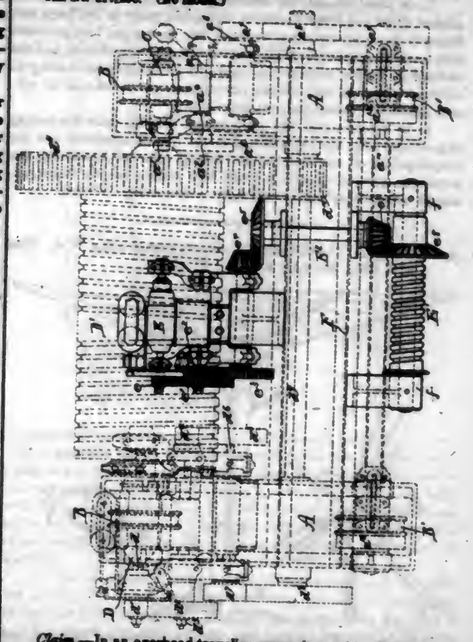
5. The combination, in a boot or shoe sewing machine, of the needle, needle-shield, looper, discoidal bobbin, and rotating hook for carrying the loop of needle-thread over the bobbin, with the laterally-moving thread-holder located above the work and projecting forward in front of the rotating hook to such an extent as to engage with the bobbin-thread and with the discharged loop of needle-thread, whereby they are pushed out of the way of the hook as the latter advances to catch a fresh loop of needle-thread, substantially as specified.

6. The combination, in a boot or shoe sewing machine, of the needle, needle-shield, looper, discoidal bobbin, and rotating hook for carrying the loop of needle-thread over the bobbin, with the laterally-moving thread-holder projecting forward in front of the rotating hook to such an extent as to engage both with the bobbin-thread and the discharged loop of needle-thread and push them out of the way of the hook, said thread-holder having a laterally-projecting finger or hook forming a bearing for the needle and bobbin threads and preserving the same in proper relation to the work while the loop is being drawn, substantially as specified.

7. The combination of the needle, needle-shield, looper, discoidal bobbin, and rotating hook, with the laterally-moving thread-holder projecting forward beyond the hook above the work, so as to catch the loop of needle-thread and the bobbin-thread, said thread-holder having a laterally-projecting finger forming a bearing for the thread, and an outer guard-plate, substantially as specified.

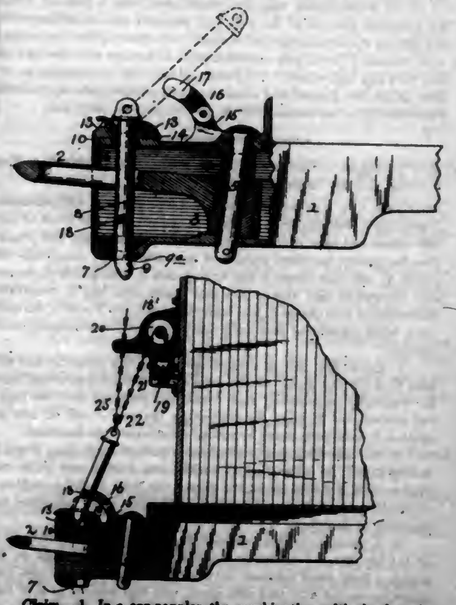
8. The combination of the needle, needle-shield, looper, discoidal bobbin, and rotating hook, with the laterally-moving thread-holder projecting forward beyond the hook above the work and having a projecting spring-finger for engaging with the loop of needle-thread, substantially as specified.

477,487. TRAVELING CRANE. WILLIAM H. MORGAN, Alliance, Ohio, assignor of three-fourths to Thomas R. Morgan, Sr., Thomas R. Morgan, Jr., and John R. Morgan, same place. Filed Jan. 9, 1892. Serial No. 417,490. (No model.)



Claim.—In an overhead traveling crane, in combination with the traveling bridge thereof, a traversing wheeled trolley carrying a main drum and an auxiliary drum, the said drums, as well as the trolley, being actuated each by its own independent motor, substantially as shown and described.

477,488. CAR-COUPLING. JAMES W. MCGILL, Peoria, Ill. Filed Aug. 22, 1891. Serial No. 404,182. (No model.)



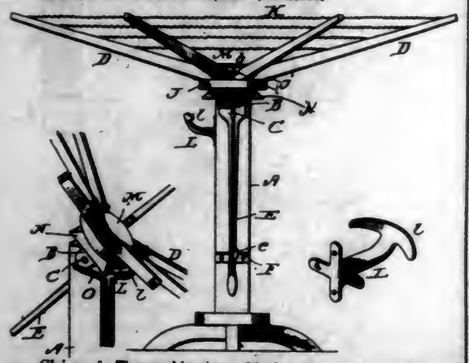
Claim.—1. In a car-coupler, the combination, with the draw-bar having aligned upper and lower apertures, the latter being formed

with a concaved inner face, the sleeve fitting in the upper aperture, and the coupling-link, of the coupling-pin having an enlarged lower end, substantially as and for the purpose described.

2. In a car-coupler, the combination, with the draw-bar having aligned upper and lower apertures, the sleeve made in two parts and fitting in the upper aperture, and the link having the boss provided with a tapering aperture, with tapering sleeve fitting therein, and the inclined pin passing through said sleeve, of the coupling-pin having an enlarged lower end and recesses intermediate of its end and the pivoted pin-holder, substantially as described.

3. In a car-coupler, the combination, with the draw-bar having aligned apertures, the sleeve fitting in one of said apertures, and the coupling-link, of the coupling-pin having enlarged lower end, the housing secured to the car, provided with pulleys, and the chains connected with said pulleys, substantially as described.

477,439. CLOTHES-DRIER. JOHN MCKINNAN, Colfax, Wash. Filed Aug. 3, 1891. Serial No. 401,540. (No model.)



Claim.—1. The combination, with the tilting and rotatable reel, of a ring or band secured to and projected vertically downward from and at right angles to the plane of the said reel, and a combined rest and brake secured to the reel-support and having its outer portion extended laterally and conformed to the circumference of the said band, substantially as and for the purpose described.

2. The combination, with a tilting and rotatable reel and a combined rest and brake, of a counterbalancing-spring, substantially as and for the purpose described.

3. In a clothes-line reel, the combination, with a post, a ⊓-iron set astraddle the end of the post and pivotally connected therewith and having a journal projected vertically therefrom, a lever connected with the said ⊓-iron, and a ratchet-plate to engage with the said lever, of a cap and washer on the said journal, the reel adapted to rotate on the said journal, and a deflector held at the center of the reel, substantially in the manner shown, for the purpose described.

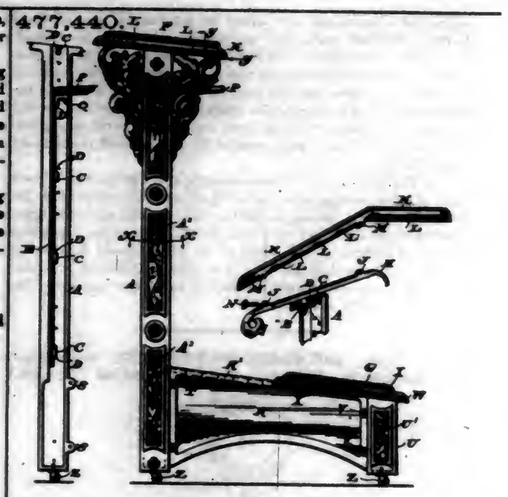
477,440. PRIE-DIEU. JAMES MCBRIDE, Philadelphia, Pa. Filed Aug. 12, 1891. Serial No. 402,356. (No model.)

Claim.—1. A prie-dieu having front side pieces A, with shoulders B and legs C, forming vertical ways D, located near the front of said side pieces and open at the top, panels fitted in said ways and pressed thereby against the front portion of said side pieces, removable side panels A', said side pieces A also having ears S, base-pieces R, removably secured to said ears of the side pieces, rear legs U, removably connected to said pieces R, and removable cushions F and G, the cushion G being adjustable, said parts being combined substantially as described.

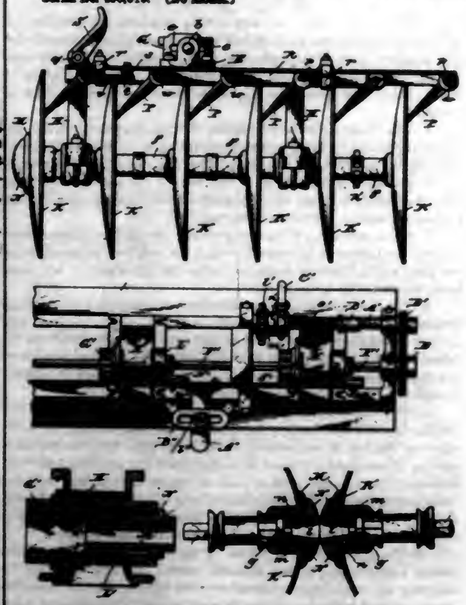
2. A prie dieu having a frame comprising side pieces formed with bars H at top and ears J on said bars and a cushion-supporting frame K, removably surrounding said frame and provided with the legs L and slotted ears M, bolts for connecting the ears J and M, and the cushion G, said parts being combined substantially as described.

3. In a prie-dieu, front side pieces, a cushion-supporting frame K, having legs L for sustaining the cushion and slotted ears M for connection with said side pieces, the ears J, the bolts N, and a cushion F, adjustably mounted on said frame K, said parts being combined substantially as described.

4. A prie-dieu having front side pieces, a cushion-supporting frame at the top thereof, vertically-extending shoulders and legs on said pieces, a front panel retained between said shoulders and legs, base-pieces connected with said side pieces, rear legs secured to said base-pieces, and a cushion-supporting frame secured to said base-pieces and legs, the parts named being combined substantially as described.



477,441. COMBINED HARROW AND SEEDER. WILLIAM H. NAIMAN, Dayton, Ohio, assignor, by direct and mesne assignments, to the Dayton Farm Implement Company, same place. Filed July 20, 1891. Serial No. 400,019. (No model.)



Claim.—1. In a disk harrow, the combination, with the main or cross beam and two or more gangs of disks in contact at their inner ends with means for angling said gangs to the line of draft, of frames to support said gangs and swivels to connect said gang frames to the main beam, one bar of each of which swivels is slotted to allow a horizontal sliding movement of the gangs, whereby upon the angling thereof said gangs of disks will always remain in contact at their inner ends, substantially as shown and described.

2. In a disk harrow, the combination, with the main or cross beam and two or more gangs of disks in contact at their inner ends, with means for angling said gangs to the line of draft, of frames to support said gangs, swivels to connect said gang-frames to the main beam, one bar of each of which swivels is slotted to allow a horizontal sliding movement of the gangs, and a pair of independently-revolving anti-friction heads applied to the abutting ends of the disk gangs, whereby upon the angling of the disk gangs said abutting anti-friction heads may be held together, substantially as shown and described.

3. In a disk harrow, the combination, with the main beam and two or more gangs of disks in contact with each other, of a swivel connection between said gangs and the main beam, one bar of which is slotted to allow horizontal sliding movement of the gangs, and a slotted hinge connection in conjunction therewith, whereby said gangs may be capable of three movements in relation to said main beam, substantially as shown and described.

4. In a disk harrow, the combination, with the main beam and two or more gangs of disks in contact with each other, with means for angling said gangs to the line of draft, of frames to support said gangs, swivel connections between said frames and the main beam, one bar of each of which swivels is slotted to allow a horizontal sliding movement of the gangs, and slotted hinge-joints between the two, whereby upon the angling of the gangs of disks the abutting ends thereof will always remain in contact and can rise and fall with reference to each other, substantially as shown and described.

5. In a disk harrow having one or more pairs of disk gangs whose ends abut, revolving anti-friction heads whose inner ends or necks are provided with circumferential grooves and revolve in cylindrically-recessed clamping-heads, and pins or lugs on the interior faces of said clamping-heads entering said grooves to retain said anti-friction heads in place, substantially as shown and described.

6. In a disk harrow, the combination, with one or more pairs of disk gangs whose ends abut, of independently-revolving anti-friction heads whose necks are provided with circumferential grooves, clamping-heads cylindrically recessed to receive said necks, pins inserted through said clamping-heads into said grooves, and spools or journals for the inner disks, fitting over said clamping-heads to retain the pins in place, all substantially as shown and described.

7. In a disk harrow, the combination, with a sliding bar therefor, of disk scrapers pivoted thereto and independently adjustable thereon both laterally and angularly, substantially as and for the purpose described.

8. In a disk harrow, disk scrapers pivoted to a sliding bar, slotted caps to retain same, and side openings in said caps for the scraper-shanks, whereby the angular adjustment of said scrapers to their respective disks may be varied at will, substantially as shown and described.

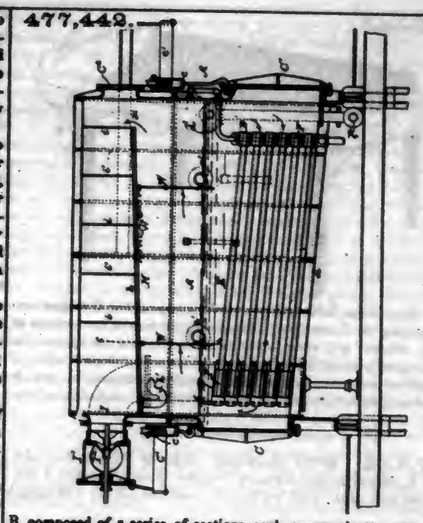
9. In a disk harrow, the combination, with a sliding bar, of disk scrapers pivoted thereto, caps to retain said scrapers, and side openings in said caps for the scraper-shanks wider than said shanks, whereby said scrapers may be made automatic in their action, substantially as shown and described.

10. In a disk harrow, the combination, with a sliding bar, of disk scrapers pivoted thereto in slots therein, slotted caps to retain said scrapers, and side openings in said caps for the scraper-shanks wider than said shanks, whereby said scrapers may be independently adjusted both lengthwise and angularly with reference to said bar and the entire series of scrapers may be simultaneously brought into play and act automatically on the mud to be removed, substantially as shown and described.

11. In a disk harrow and broadcast seeder, the combination, with a seed-box, seed-cups, and feed-shaft therefor, of rotating feed-wheels and non-rotating cylinders sliding thereon, collars grooved at their outer ends, fitting within said feed-wheels and passing through cylindrical recesses in said cylinders, with key-plates entering said grooves to hold said collars, and slotted plates attached to said key-plates and non-rotating cylinders, whereby the feed-wheels may be adjustably coupled to the non-rotating cylinders, substantially as shown and described.

12. In a disk harrow and broadcast seeder, the combination, with the seed-box, seed-cup, and feed-shaft therefor, of rotating feed-wheels and non-rotating cut-off cylinders sliding on said feed-shaft, collars grooved at their outer ends, fitting within said feed-wheels and passing through cylindrical recesses in said cylinders, with key-plates entering said grooves to hold said collars, an independent reciprocating bar, and slotted plates attached to said key-plate and non-rotating cylinder and connecting same to said reciprocating bar, whereby said feed-wheels and cylinders may be adjustably coupled together and likewise adjusted in said seed-cups both independently and in series, substantially as shown and described.

477,442. EVAPORATOR. GEORGE M. NEWHALL and THEIS H. MÜLLER, Philadelphia, Pa., assignors to the George M. Newhall Engineering Company, Limited, same place. Filed Feb. 16, 1891. Serial No. 381,609. (No model.)



Claim.—1. The combination, in an evaporator, of the casing, the submerged steam-boxes comprising opposite headers B and D, the headers B being formed of sections, each communicating separately with the manifold inlet, and the headers D being formed of sections communicating with each other, with a series of concentric tubes extending between said headers, substantially as specified.

2. The combination, in an evaporator, of the casing, the header B, composed of a series of sections, each communicating separately with a manifold inlet G, the manifold inlet G, the header D at the opposite end of the casing, said header D comprising a series of connected and communicating sections *d*, tubes E, extending between the adjacent faces of the headers B and D and communicating therewith, and tubes F, situated within the tubes E and extending from the outer face of one header to the outer face of the opposite header, substantially as specified.

3. The combination of the header B, having front and rear faces, the tubes E and F, connected to said header, the tube F, terminating at the rear wall of the header, packing-rings surrounding the tubes E and F, a sleeve extending between said packing rings, and a follower so arranged as to compress the two packing-rings simultaneously, substantially as specified.

4. A sectional steam-box for evaporators, having, in combination, a series of disconnected sections *b*, comprising a header B, and each of said sections communicating separately with a manifold inlet, a manifold inlet, a series of connected and communicating sections *d*, comprising a header B, a series of tubes E, extending between and connected to the adjacent walls of a section *b* and a section *d*, and a series of tubes F, situated within the tubes E and connected to the outer walls of the same sections *b* and *d*, whereby a portion of the steam-box comprising a section *b*, a section *d*, and their connecting-tubes E and F may be added or removed, substantially as specified.

5. The combination, with the evaporator, of the transverse plate H, arranged in the upper portion of the casing, the perforated plate above said plate H, and vertical deflecting-plates *i i'*, arranged substantially as described, so as to form a tortuous passage for the vapor, with an outlet therefor, substantially as described.

6. The combination, in an evaporator, of the casing, the transverse plate H, inclined toward one end, the perforated plate above said plate H, a trapped outlet from said catchall, and vertical plates arranged substantially as described, forming a tortuous passage for the vapor in its passage to the vapor-outlet, substantially as and for the purpose described.

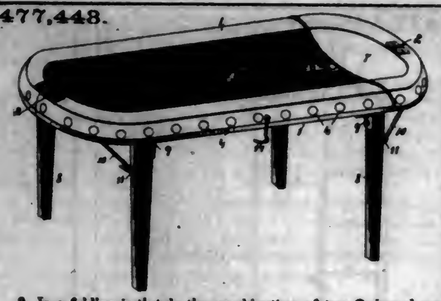
7. The combination, in an evaporator, of the casing, with screens extending transversely across the path of the escaping vapor, said screens being hinged to the casing and capable of being swung out of the way during cleaning or repairs, substantially as specified.

8. The combination, in an evaporator, of the casing, the screens extending transversely across the path of the escaping vapor, said screens being hinged to the casing, with an operating-handle and a retaining-bolt whereby the screens may be held either in or out of operative position.

477,448. FOLDING BATH-TUB. ELIZABETH A. O'BRIEN, Kansas City, Mo. Filed July 22, 1891. Serial No. 400,246. (No model.)

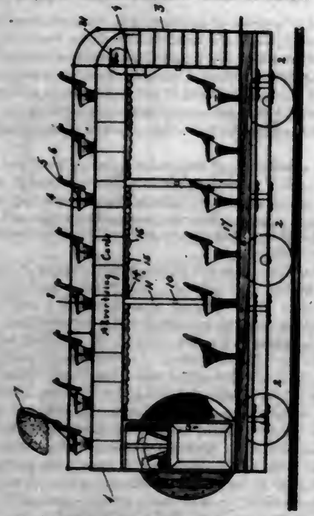
Claim.—1. In a folding bath-tub, the combination of an elongated main frame composed of two C-shaped segments hinged together at their opposite extremities so as to fold lengthwise and forming the sides and ends of the frame, an elongated bowl formed of flexible water-holding material, secured to the frame at the sides and ends, and a head-rest over the bowl at one end of the frame and consisting of flexible material having its edges secured to the frame, substantially as and for the purpose set forth.

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2. In a folding bath-tub, the combination of two C-shaped sections forming the frame, hinges connecting the ends of the sections at the top, whereby said sections are permitted to fold one against the other longitudinally of the tub, and a bowl formed of flexible material the edges of which are secured to said sections, whereby the bowl is adapted to fold within the sections, substantially as shown and described.

477,444. MOTOR TRAM-CAR. JAMES M. O'KELLY, New York, N. Y., assignor of three-fourths to Francisco Gomes and Joaquin A. Hermida, same place. Filed Dec. 27, 1890. Serial No. 375,997. (No model.)



Claim.—1. A passenger-car having seats 4 provided with backs 5 and awning-staples 6, in combination with furling awnings 7 and furling cords, as herein set forth.

2. In combination with a car, an axle, a clutch adapted to throw the axle into and out of gear with the actuating mechanism and provided with a grooved collar, a lever 31, pivoted at one end to the frame and carrying a vertical friction-roller working in the groove of said collar and having an acute-angled slot at its other end, and a pivoted operating-lever 35, provided with a pin which engages in the acute-angle slot of the lever 31, substantially as herein set forth.

3. The combination, with a truck-frame suitably mounted upon wheels, of a longitudinally-movable frame supported upon said truck-frame and carrying a series of brake-blocks, a car-body mounted upon said truck-frame, and means for moving the frame longitudinally for applying the brakes, whereby the weight of the car-body is utilized for the braking pressure, as herein set forth.

4. The combination, with a truck-frame suitably mounted upon wheels, of a longitudinally-movable frame supported upon said truck-frame and carrying a series of brake-blocks, a car-body also mounted upon said truck-frame, springs for holding the frame carrying the brake-blocks normally in disengaged position, and means for moving the frame longitudinally against the action of said springs for applying the brakes, as herein set forth.

5. The combination, with a truck-frame suitably mounted upon wheels, of a longitudinally-movable frame supported upon said truck-frame and carrying a series of brake-blocks, a car-body also mounted upon said truck-frame, springs for holding the frame carrying the brake-blocks normally in disengaged position, drums or wheels 47, mounted upon the truck-frame, a chain 46, carried by said drums and attached to the longitudinally-movable frame, and means for operating said drums for applying the brakes, as herein set forth.

6. The combination, with a truck-frame suitably mounted upon wheels, of a longitudinally-movable frame supported upon said truck-frame and carrying a series of brake-blocks, a car-body also suitably mounted upon said truck-frame above said longitudinally-moving frame, friction-rollers 41 in said movable frame upon which the car-body rests, and means for moving the frame longitudinally, as herein set forth.

7. In combination with a truck-frame, flanged wheels mounted upon suitable axles which are adjustably supported in suitable slots in the truck-frame, mechanism for raising and lowering said flanged wheels, and flat-surface wheels mounted upon suitable axles, which are supported in fixed bearings, for the purpose herein set forth.

8. In combination with a truck-frame, flat-surface wheels mounted in fixed bearings in said truck-frame, flanged wheels which are adjustably journaled in suitable slots in the truck-frame, and an operating-lever pivoted in said truck-frame and engaging the axle of the flanged wheels, whereby they can be raised or lowered, as herein set forth.

9. In combination with a truck-frame, broad-surface wheels mounted in said frame upon a suitable axle, a fifth-wheel provided with a circle of gear-teeth secured to said axle, a lever pivoted to the truck-frame and provided with a quadrant-shaped segment-gear at its lower end for engaging with the gear-circle on the fifth-wheel for controlling the position of the broad-surface wheels, as herein set forth.

477,445. LATCH. ALBERT A. PAGE, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Apr. 11, 1892. Serial No. 428,615. (No model.)



Claim.—The herein-described cupboard-latch, consisting of a case open on the reverse side, combined with the bolt B, hung upon a stationary pivot O in the case and so as to swing in a plane parallel with the plane of the case, the nose of the bolt projecting through an opening in the side of the case, the bolt constructed with an arm H, projecting from its hub, and the said arm constructed with a recess to form with the case a spring-chamber I upon its inside, a spiral spring J, arranged in the said spring-chamber, and a knob E upon the outside of the case, extending through a slot D, formed for it in the case and into connection with the bolt, substantially as described.

477,446. LATCH. ALBERT A. PAGE, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Apr. 11, 1892. Serial No. 428,616. (No model.)

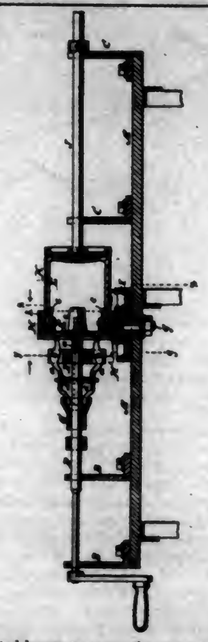


Claim.—In a latch substantially such as described, and in combination with the mechanism of the latch, a hub arranged in the case and by which the mechanism is operated, one end of the hub projecting through an opening in the case, the hub constructed with an extension through said opening and outside the case, the projection turned to one side to form a handle, and the largest diameter of the handle no greater than the diameter of the opening in the case through which the projection extends, the said handle and hub being integral and substantially as described.

477,447. APPARATUS FOR FINISHING THE EDGES OF GLASS VESSELS. JACOB PFAHL, Brooklyn, assignor to William Brookfield, New York, N. Y. Filed Mar. 17, 1892. Serial No. 425,200. (No model.)

Claim.—1. The combination, with a frame A and a rod J, carrying a punty K, of a clamp supported by the frame and composed of two sections H H', pivoted together at one end and adapted to embrace the mouth of a vessel contained within the punty, a lengthwise movable and rotary shaft D, carrying a finishing-disk E and a head F, a series of levers *c*, pivoted between their extremities to the head and having one extremity extending through the finishing-disk and provided with shoes *c*, the springs *d*, acting on the tail ends of the levers to press them in a direction away from each other, and a sleeve G, sliding on the shaft and having a bell-mouth which receives the

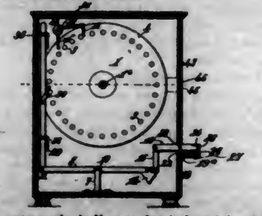
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tail ends of the pivoted levers to press the same toward each other against the tension of the springs, substantially as described.

2. The combination, with a frame A and a rod J, carrying a punty K, of a trough I, adapted to contain a combustible fluid, a clamp located above the trough and composed of two sections H H', pivoted together at one end and adapted to embrace the mouth of a vessel contained in the punty, a lengthwise movable and rotary shaft D, carrying a finishing-disk E and a head F, a series of levers *c*, pivoted between their extremities to the head and having one extremity extending through the finishing-disk and provided with shoes *c*, the springs *d*, acting on the tail ends of the levers to press them in a direction away from each other, and a sleeve G, sliding on the shaft and having a bell-mouth which receives the tail ends of the pivoted levers to press the same toward each other against the tension of the springs, substantially as described.

477,448. WORKMAN'S TIME-INDICATOR. JOÃO L. F. PINTO, Rio de Janeiro, Brazil. Filed Oct. 2, 1890. Serial No. 366,845. (No model.) Patented in Brazil July 1, 1890, No. 826.



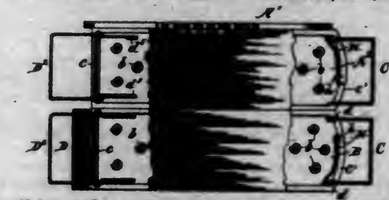
Claim.—1. An automatic indicator for industrial establishments adapted to show with precision the number of days of work and the salary corresponding thereto, the same consisting of a wheel having laterally-projecting pins and provided upon its periphery with a ribbon divided into spaces containing figures indicating the days of successive work and the increase or aggregate of salary due each successive day of work, a transmitter carrying a pawl engaging said pins, an intermediate lever connected with the transmitter and having a counterpoise or weight, an exterior lever connected to the weighted end of the interior lever, and a double-flanged register-plate connecting the outer end of the exterior lever with a rigid stop beneath the same, substantially as described.

2. In an automatic indicator, such as that hereinbefore described, the combination, with a wheel indicating the days of work in succession and the aggregate of salary due each successive day of work, of means for giving intermittent movement to said wheel, an exterior lever to impart such movement, a workman's registry-plate adapted to be removed at the beginning of work and replaced at discontinuance thereof, said plate consisting of two parallel flanges, connected by a face-plate, said plate being adapted to maintain the exterior lever and the operating devices in readiness for operative movement, and when removed to release the exterior or operating lever of the device, substantially as described.

3. In an automatic indicator, the combination, with a series of intermediate levers having weights at their ends, of a series of pawl-carrying transmitters, a corresponding series of wheels, upon the flat faces of which on one side are arranged pins, with which the pawls of the transmitters are adapted to engage, each wheel being provided on its edge with a ribbon having spaces containing numerals, substantially as described, external levers fulcrumed upon an exterior support having a series of outwardly-projecting stops lying beneath the ends of the exterior levers, which are linked to the weighted ends of the levers, and a corresponding series of registry-plates, each having two parallel unequal flanges, one engaging the end of the external lever and the other the stop beneath it, said flanges being connected by a face-plate, substantially as described.

4. In an automatic indicator of the kind described, the combination, with a wheel having a spaced and printed ribbon upon its edge and provided with a circular series of lateral pins, of means, substantially as described, for intermittingly advancing said wheel, a rock-shaft having an opening in its end to admit the angular end of the key, said shaft being provided with radial arms having depending stops upon their ends adapted to engage the pins on the wheel, and with shorter arms hanging from the lower side of said rock-shaft, a pawl-carrying transmitter, a weighted lever pivoted thereto, a second lever connected to one end of the first and having its power end outside a casing inclosing the parts above a rigid stop, and a register-plate provided with flanges at its ends to engage said stop and lever, substantially as described.

477,449. BED-LOUNGE. GEORGE PIERSON and FELIX PIERSON, Ravenswood, Ill. Filed Jan. 21, 1892. Serial No. 418,783. (No model.)



Claim.—1. In a bed-lounge, the combination of the main frame A, having the flooring or frame A^3, having the end pieces *c c'* and rigidly secured thereto, with the frame B, having the end pieces *c c'* and hinged to the frame A^3, the foot-pieces C, having the springs H and secured at one end of the frames, and the pillow-rests secured at the other ends of the frames, all constructed, arranged, and operating substantially as and for the purpose set forth.

2. In a bed-lounge, the combination of the frame A^3, having the end pieces *c c'*, with the frame B, having the pieces *c c'*, the foot-pieces C, made of one piece of wire and secured at one end of the frames, the pillow-rests D, having the lower or spring portion D', having the loops d^5, and the upper portion d^6, having the eyes d^7 to engage the loops and secured at the other ends of the frames, substantially as and for the purpose set forth.

477,450. STAVE-JOINTING MACHINE. JAMES PLUCKHARP, Columbus, Ohio. Filed Apr. 4, 1891. Serial No. 387,615. (No model.)

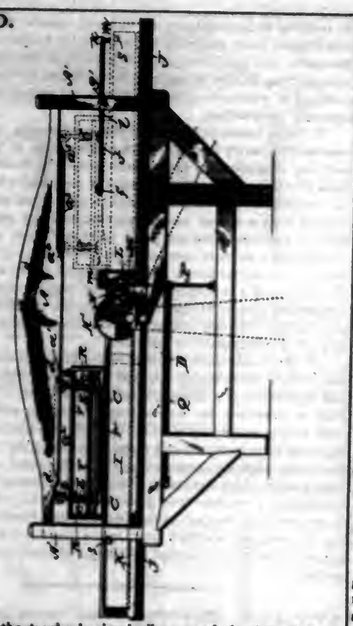
Claim.—1. In a stave-jointing machine, the combination, with the carriage having a former to receive the stave, of vertically-moving shoes located near the ends of the said former, and tracks having inclines at their front ends to effect a pressure on the said shoes to press the stave on the former, substantially as and for the purpose described.

2. In a stave-jointing machine, the combination, with the carriage having a former to receive the stave, of vertically-moving shoes located near the ends of the said former, and tracks having inclines at their front ends to effect a pressure on the said shoes to press the stave on the former and having reverse inclines at their rear ends to permit a release of the stave, substantially as and for the purpose specified.

3. In a stave-jointing machine, the combination, with the carriage having a former and means for holding the stave on the former during the process of jointing and releasing the stave when jointed, of a lever adapted to be struck by the carriage and actuated to throw the stave from the machine, substantially as described.

4. In a stave-jointing machine, the combination, with the carriage having the former *r'* and having a frame over the former, of the bars *b*, mounted in the said frame, the shoes C, pivoted to the lower ends

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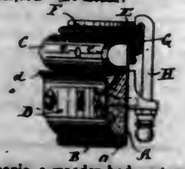


of the bars, and the tracks having inclines *a* and *a'*, substantially as described.

5. In a stave-jointing machine, the combination, with the carriage having the former *r'* and having a frame over the former, of the bars *b*, mounted in the said frame, the shoes C, pivoted to the lower ends of the bars, springs for actuating the bars *b* and holding them at the limit of their upward movement, and tracks having inclines *a* and *a'*, substantially as described.

6. In a stave-jointing machine, the combination, with the carriage having the former *r'* and having a frame over the former, of the bars *b*, mounted in the said frame, the shoes C, pivoted to the lower ends of the bars, and the springs E, of the tracks a^2 a^3, having inclines *a* a^2 and *a'* a^3, respectively, the block *m*, and the lever F, pivoted between its ends, and having the end *z* constructed to be struck by block *m*, substantially as described, for the purpose set forth.

477,451. BANJO. JOHN R. GUERLAIN, Boston, Mass. Filed Dec. 24, 1891. Serial No. 416,094. (No model.)



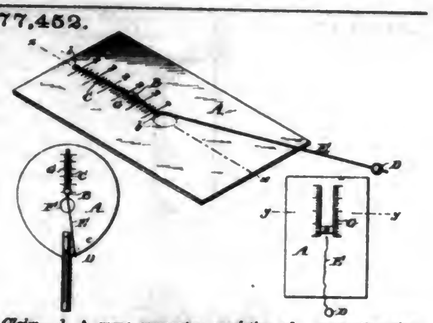
Claim.—1. In a banjo, a wooden body cut away or scalloped on its upper edge, in combination with a resonant ring semicircular or horseshoe-shaped in cross-section, the open portion being on its outer periphery and its inner periphery being formed with a series of small holes, a thin outer ring covering the wooden body and resonant ring, a wire ring arranged on the top of the resonant ring, a head-tightening ring, and screws for stretching the head, substantially as set forth.

2. In a banjo, a wooden body B, cut away or scalloped around its upper edge, in combination with a thin outer metal ring A and a perforated resonant ring C of horseshoe shape, the open portion being on its outer periphery and closed by the said ring A, thus forming a closed chamber with perforations on its inner periphery, substantially as set forth.

3. In a banjo, a wooden body B, cut away or scalloped around its upper edge, in combination with a thin metal ring D, flared at its upper edge *d*, a resonant ring C, and an outer thin metal ring A, substantially as set forth.

477,452. GAME APPARATUS. WILLIAM H. REEVE, Philadelphia, Pa., assignor to Francis Haggerty, same place. Filed Feb. 19, 1892. Serial No. 422,199. (No model.)

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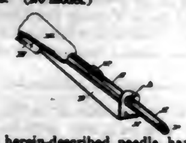
Claim.—1. A game apparatus consisting of a supporting-piece provided with a guide, a movable sliding object-piece movable in the guide of the supporting-piece, a striking-piece adapted to be projected to strike the movable sliding piece and move it bodily in the guide of the supporting-piece, and an elastic connection between the support and striking-piece.

2. A game apparatus consisting of a supporting-piece and a guide thereon, a movable sliding object-piece carried by the supporting-piece and adapted to be moved bodily on the guide thereof, and a striking-piece adapted to be projected to strike the movable piece and move it bodily on the guide of the supporting-piece, said supporting-piece being provided with a scale or indicating-marks adjacent to the guide thereof to indicate the amount of movement of the movable piece.

3. A game apparatus consisting of a supporting-piece having a guide and provided with a graduated scale adjacent to the guide, a movable sliding piece carried by the guide and movable thereon, a striking-piece, and a flexible connection between said striking-piece and support, attached to the latter adjacent to the guide thereon.

4. A game apparatus consisting of a supporting-piece provided with an aperture F, a guide carried by the supporting-piece and having one end adjacent to the aperture F, a movable object-piece supported by the guide, the striking-piece D, and the elastic connection E, carrying the striking-piece D and attached to the supporting-piece adjacent to the end of the guide and to the aperture F.

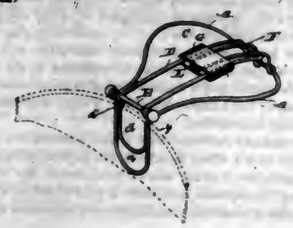
477,453. TURFING IMPLEMENT. LAURENCE R. ROBINSON, Milton, Tex., assignor to Hiram R. Payne, same place. Filed Apr. 22, 1891. Serial No. 390,915. (No model.)



Claim.—1. The herein-described needle, having a tubular body with a slit along one side, the rear end of the body being open on its upper side, and a tongue whose body is bent upwardly and whose extremity is bent downwardly and slightly into the needle, as and for the purpose set forth.

2. In a turfing implement, the combination, with a tubular needle having a longitudinal slit, the outer end of the needle being open and its upper side being formed into a tongue near its inner end, which is bent upwardly and whose extremity projects into the needle, of a handle into which the needle is passed and a presser-foot adjustably connected at its inner end to the handle and having its outer end turned up and provided with an opening having an aperture at one side registering with said slit, as and for the purpose hereinbefore set forth.

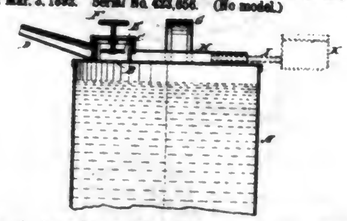
477,454. HOLDER AND SUPPORT FOR MILK-CANS. WILLIAM G. ROBINSON, Morrison, Ill. Filed Jan. 30, 1892. Serial No. 419,794. (No model.)



Claim.—1. A pail holder or support comprising the parallel clamping-loops, one of which is loosely connected to a transverse bar or bolt and the other fast to said bar or bolt, the rearwardly-projecting enlarged supporting-loop, the locking-arm carried by said loop, the loop-arm E, carried by said bar or bolt, and the sliding lock or clasp arranged to engage said arms, substantially as specified.

2. A pail holder or support comprising the parallel depending clamping-loops *a* and *d*, said loop *a* having its upper side portions coiled tightly around a transverse bar or bolt B, and the loop *d*, having its upper side portions loosely coiled around said bar or bolt, the enlarged elongated loop C, projecting rearwardly from said bar or bolt and integral with the loop *a*, the loop-arm E, arranged centrally of the loop C and also carried by said bar or bolt, the locking-arm F, carried by the rear portion of said loop C, and the sliding clasp arranged to lock the arms E and F, substantially as specified.

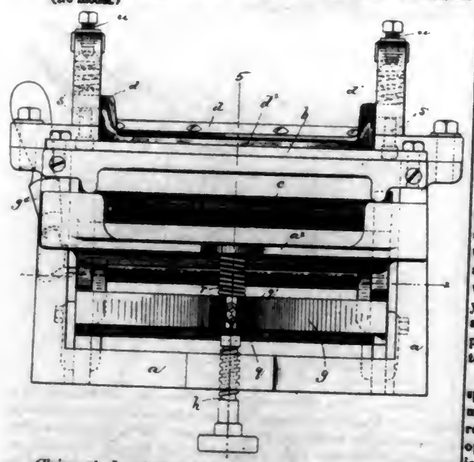
477,455. CAN FOR LIQUIDS. ALBERT ROLFING, Brooklyn, N. Y. Filed Mar. 3, 1892. Serial No. 423,656. (No model.)



Claim.—1. A can having its top wall provided with a discharge-orifice B, a valve-casing C, arranged over the orifice and provided with a projecting pouring-spout D, an adjustable valve E, located in the valve-chamber for opening and closing said orifice, and a tube H, adapted at one end portion to receive a nozzle or funnel I and communicating at its opposite end portion with the interior of the can, substantially as described.

2. The combination, with a can, of a valve-chamber provided with a valve and a spout, and a tube secured to the can and made to communicate with the interior of the can and valve-chamber, substantially as described.

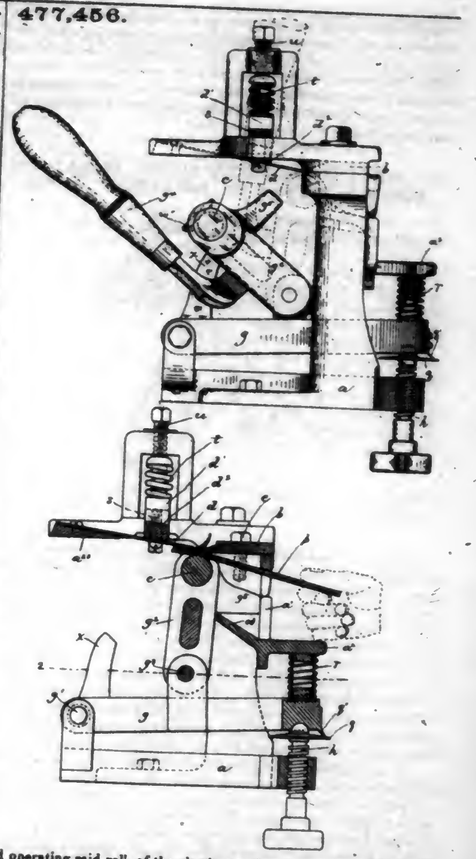
477,456. LEATHER SPLITTING AND SKIVING MACHINE. JOSEPH A. SAFFORD, Boston, Mass. Filed Mar. 31, 1891. Serial No. 387,104. (No model.)



Claim.—1. In a leather splitting and skiving machine, the combination of the fixed splitting-knife, the gage-roll movable toward and from the knife, a gage-roll-carrying frame pivotally connected with the supporting-frame of the machine, means for adjusting said gage-roll-carrying frame to vary the distance between the knife and gage-roll when the latter is in its operative position, a yielding flat pressure-plate mounted on the supporting-frame and arranged to bear with a yielding pressure on the material in close proximity to the cutting-edge of the knife, and adjustable stops for limiting the movement of the free end of the plate toward the gage-roll, as set forth.

2. In a leather splitting and skiving machine, the combination, with the fixed knife, the movable gage-roll, and means for supporting

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and operating said roll, of the elastic metal pressure-plate rigidly attached at one edge to the supporting-frame and free to yield at its other edge, the latter being arranged so that it is in close proximity to the cutting-edge of the knife and over the gage-roll when the latter is in its operative position, and stops adjustably secured to the supporting-frame and adapted to limit the movement of the free edge of the pressure-plate toward the gage-roll, said stops permitting the movement of said edge in the opposite direction, as set forth.

3. In a leather-splitting machine, the combination, with the fixed knife, the movable gage-roll, and means for supporting and operating said roll, of the elastic metal pressure-plate rigidly attached at one edge to the supporting-frame and free to yield at its other edge, a rigid bar attached to said plate between its fixed and free edges and provided with ears projecting from said plate, said bar being parallel with the yielding edge of the plate, adjustable stops on the supporting-frame, arranged to support said ears, and thereby limit the movement of said plate toward the gage-roll, and springs arranged to press said ears toward said stops, as set forth.

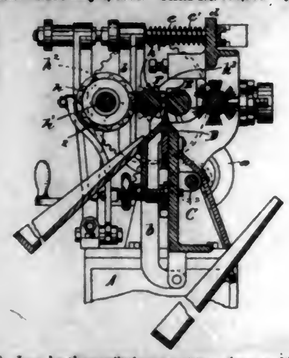
4. In a leather-skiving machine, the combination, with a fixed splitting-knife and a non-rotating pressure device, of an idle gage-roll movable toward and from said knife, a swinging frame carrying said roll and adapted to be swung freely toward and from the knife by the operator, stops to limit the swinging movement of the frame and roll in both directions, and an adjustable stop or support whereby said frame may be held in different positions to vary the distance between the gage-roll and knife when the gage-roll is in its operative position, as set forth.

5. In a leather-skiving machine, the combination, with a fixed splitting-knife and a non-rotating pressure device, of a gage-roll, a swinging frame or carrier, a yoke or secondary frame pivoted to said carrier and directly supporting the gage-roll, said roll being movable both by the independent swinging movements of the yoke and by the movement of both the yoke and carrier, and an adjusting-screw arranged to support and adjust the swinging end of said carrier, as set forth.

6. In a leather-skiving machine, the combination, with the ad-

justably-secured knife, the swinging gage-roll-carrying frame, and a stop to arrest said frame in its operative position, of the gage-roll journaled in said frame and provided with an indicating mark on its periphery, and means for locking the roll to its carrying-frame with the said mark in a predetermined position, whereby the mark is caused to serve as a guide by which the knife may be adjusted to its proper position, as set forth.

477,457. LEATHER-SPLITTING MACHINE. JOSEPH A. SAFFORD, Malden, Mass. Filed May 4, 1891. Serial No. 391,509. (No model.)



Claim.—1. In a leather-splitting machine, the combination of a fixed knife with two rolls adapted to bear on opposite sides of the piece of leather to be split, said rolls being laterally movable with relation to the knife-edge, and a pattern or cam for automatically changing the relative positions of the rolls and knife-edge to vary the thickness of the piece being split, according to the shape of the pattern or cam, substantially as and for the purpose set forth.

2. In a leather-splitting machine, the combination, substantially as hereinbefore set forth, with a fixed knife, a feed-roll, and a gage-roll which is movable toward and from the knife and feed-roll, of a cam moved by the power of the machine and arranged to automatically vary the position of the feed-roll during the cutting operation.

3. In a leather splitting machine, the combination, with a fixed knife, a feed-roll, and a gage-roll which is movable toward and from the knife and feed-roll, of a cam rotated by the power of the machine and arranged to constitute an automatically-movable stop to vary the position of the feed-roll, and automatic mechanism whereby the operation of the machine is stopped when the cam reaches a given point in its movement, as set forth.

477,458. LEATHER-SKIVING MACHINE. JOSEPH A. SAFFORD, Malden, Mass. Filed June 6, 1891. Serial No. 396,223. (No model.)

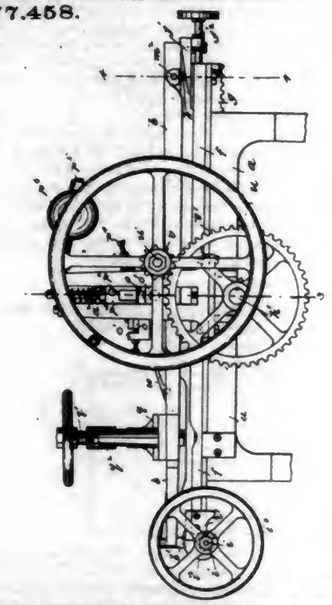
Claim.—1. In a leather-skiving machine, the combination of a fixed knife, a pressure roll or bar movable toward and from the knife, a reciprocatory inclined straight bed or guide movable horizontally under the knife, and a vertically-movable gage roll or bar supported by said bed and interposed between the knife and bed, said roll constituting a rolling support which presents the leather to the knife and abruptly curves the leather at the point of presentation to the knife and is moved toward the knife during the operation of the machine by a longitudinal movement of the inclined bed, whereby the leather is skived or tapered, as set forth.

2. In a leather-skiving machine, the combination of a supporting-frame, a fixed knife thereon, a carrier movable lengthwise on the frame under the knife, a shaft having an adjusting-cam at one end of said carrier, adjustable wedges or inclines at the other end of said carrier, a straight leather-supporting bed bearing at one end on said cam and at the other on the inclines, and yielding hinges securing one end of the bed to the carrier, said hinges permitting the end of the bed with which they are connected to rise and fall, as set forth.

3. The combination of a fixed knife, a gage roll or bar movable toward and from the knife, the inclined bed supporting said gage-roll, the adjustable feet at one end of said bed, said feet being the heads of set-screws adjustably secured to the bed, the carrier under said bed, and inclined supports on said carrier, arranged to support said feet, the latter being independently adjustable to true the bed, as set forth.

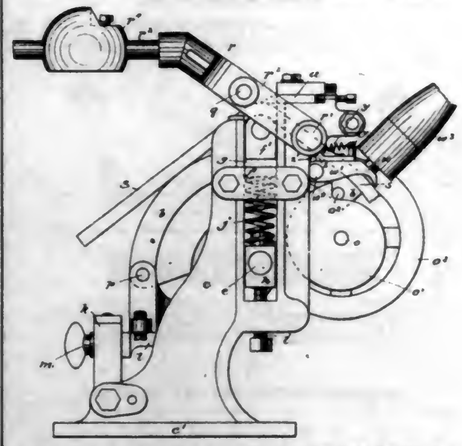
4. In a leather-skiving machine, the combination of a supporting-frame, a fixed knife thereon, a carrier movable on said frame under the knife, adjustable wedges on the carrier supporting one end of the bed, means for adjusting said wedges, bolts suspended from the bed and passing through the carrier, independently-adjustable feet on the bed bearing on said wedges, and springs acting on said bolts to press said feet yieldingly against said wedges, as set forth.

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5. The combination of the supporting-frame, the fixed knife, the movable gage roll or bar, the pressure-roll, a swinging weighted frame supporting said pressure-roll, and spring-pressed boxes, to which said frame is pivoted, as set forth.

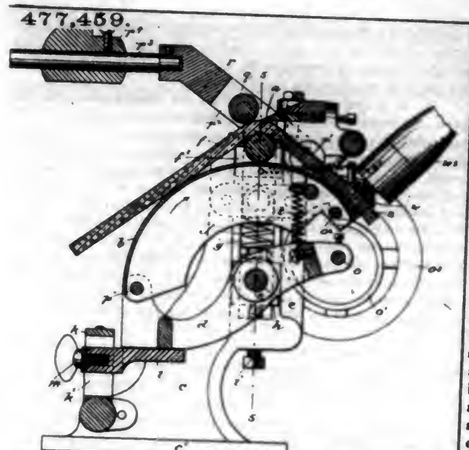
477,459. LEATHER-SKIVING MACHINE. JOSEPH A. SAFFORD, Malden, Mass. Filed June 6, 1891. Serial No. 396,224. (No model.)



Claim.—1. In a leather-skiving machine, the combination of a fixed knife, a supporting-frame therefor, a holder or support pivotally connected to the knife-supporting frame and having an axis movable toward and from the knife, a segmental bed pivotally connected at one end to said holder or support, means for adjusting said bed to make its surface more or less eccentric to the axis of said holder or support, and means for adjusting the axis of said holder toward and from the knife to determine the thickness of the end of the part skived by the action of the machine, as set forth.

2. In a leather-skiving machine, the combination of a fixed knife, a supporting-frame therefor, a holder or support pivotally connected to the knife-supporting frame, a segmental bed pivotally connected at one end to said holder or support, means for adjusting said bed to make its surface more or less eccentric to the axis of said holder or support, boxes receiving the journals of the shaft or rod that pivotally connects said holder to the supporting-frame, adjusting-screws supporting said boxes and adapted to be raised and lowered, and springs which press the boxes against said screws, as set forth.

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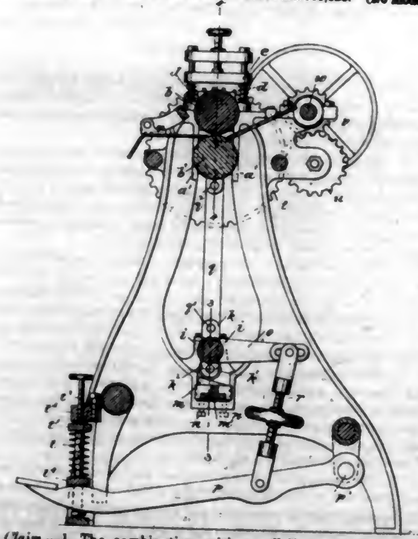


3. In a leather-skiving machine, the combination of a fixed knife, a supporting-frame therefor, a holder or support pivotally connected to the knife-supporting frame, a segmental bed pivotally connected at one end to said holder or support, a shaft journaled in said holder, and cams on said shaft, having their perimeters arranged to support the swinging end of the bed, as set forth.

4. The combination, with the supporting-frame, the knife, the oscillatory segmental bed, and the gage roll or bar supported by said bed, of the weighted swinging frame *r*, mounted to swing in fixed bearings on the supporting-frame, and the pressure roll journaled in bearings in said frame and arranged to hold the leather down upon the gage-roll, as set forth.

5. The combination of the knife, the supporting-frame, the oscillatory segmental bed having an end flange *b'*, a socket affixed to the supporting-frame opposite said flange, and a spring-pressed brake-shoe in said socket adapted to bear yieldingly on said flange, as set forth.

477,460. LEATHER-ROLLING MACHINE. JOSEPH A. SAFFORD, Malden, Mass. Filed June 6, 1891. Serial No. 396,235. (No model.)

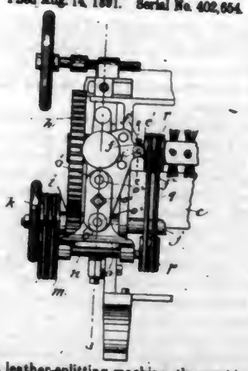


Claim.—1. The combination, with a roll *b'*, movable bearings therefor, and a co-operating roll *b*, of a shaft having two pairs of short arms projecting in opposite directions, said shaft being adapted to move sidewise in a vertical direction toward and from the rolls and arranged substantially parallel therewith, struts connecting two of said arms with the movable bearings, inclined abutments supporting the other two short arms, a longer arm projecting from the shaft substantially at right angles with the shorter arms, a pressure bar or lever, and a connection between it and the longer arm, all arranged and operating substantially as described.

2. The combination, with a roll *b'*, movable bearings therefor, and a co-operating roll *b*, of a shaft having two pairs of short arms projecting in opposite directions, said shaft being adapted to move sidewise toward and from the rolls and arranged substantially parallel therewith, struts connecting two of said arms with the movable bearings, inclined abutments supporting the other two short arms, a longer arm projecting from the shaft substantially at right angles with the shorter arms, a pressure bar or lever, a connection between it and the longer arm, and a spring arranged to press downwardly on the swinging end of said operating lever, and thereby exert a yielding upward pressure on the roll *b'*, as set forth.

3. The combination, with a roll *b'*, movable bearings therefor, and a co-operating roll *b*, of a shaft movable sidewise in a vertical direction and having two pairs of short arms projecting in opposite directions, said shaft being arranged substantially parallel with the rolls, struts connecting two of said arms with the movable bearings, inclined abutments supporting the other two short arms, a longer arm projecting from the shaft substantially at right angles with the shorter arms, a pressure bar or lever, a connection between it and the longer arm, a spring arranged to press downwardly on the swinging end of said operating-lever, and thereby exert a yielding upward pressure on the roll *b'*, and means for adjusting the pressure of said spring, as set forth.

477,461. LEATHER-SPLITTING MACHINE. JOSEPH A. SAFFORD, Malden, Mass. Filed Aug. 14, 1891. Serial No. 402,654. (No model.)



Claim.—1. In a leather-splitting machine, the combination, with an adjustable feed-roll, of an adjustable rotary brush for cleaning said roll and having its axis parallel with that of the said roll and means for rotating said brush, said means being adjustable to compensate for changes in the relative positions of the parts mentioned.

2. In a leather-splitting machine, the combination, with a grooved or fluted feed-roll, of a rotary brush in contact with the feed-roll and having its axis parallel with that of said roll, belts arranged to communicate motion to said brush from a driving-shaft on the machine, and means for tightening said belts, as set forth.

3. In a leather-splitting machine, the combination, with a grooved or fluted feed-roll, of a rotary brush, a movable bracket mounted on fixed guides on the frame of the machine, a shaft supported by said brackets and provided with pulleys connected by belts with pulleys on the brush-shaft and on a driving-shaft, and means for adjusting said bracket to vary the tension of said belts, as set forth.

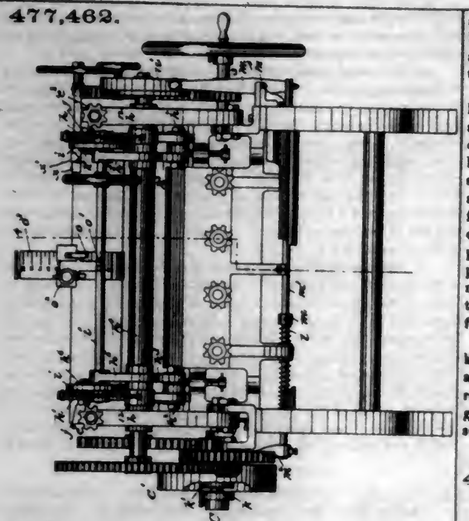
4. In a leather-splitting machine, the combination, with a grooved or fluted feed-roll, of a rotary brush, fixed guides on the frame of the machine, a bracket mounted to slide on said guides and provided with an adjusting-screw, a shaft supported by said bracket and provided with belt-supporting pulleys, and belts connecting said pulleys with a driving-shaft and with the rotary brush, as set forth.

477,462. LEATHER-SPLITTING MACHINE. JOSEPH A. SAFFORD, Malden, Mass. Filed Sept. 21, 1891. Serial No. 406,390. (No model.)

Claim.—1. In a leather-splitting machine, the combination, with a fixed knife, a feed-roll, a gage-roll, which is movable toward and from the knife and feed-roll, of springs arranged to normally move the gage-roll away from the knife and feed-roll, a cam or cams supporting the gage-roll against the pressure of said springs, and mechanism for automatically moving said cams to vary the position of the gage-roll during the cutting operation, as set forth.

2. In a leather-splitting machine, the combination, with a fixed knife, a feed-roll, a gage-roll which is movable toward and from the

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knife and feed-roll, of an automatically-operated cam or cams moved by the power of the machine and governing the position of the gage-roll and mechanism, substantially as described, for automatically stopping the operation of the machine when the cam reaches a given point in its movement, as set forth.

3. In a leather-splitting machine, the combination of a fixed knife, a feed-roll and a gage-roll supported by swinging arms which are movable toward and from the feed-roll, a shaft geared to the driving-shaft of the machine and mounted in swinging arms which permit said shaft to move toward and from the gage-roll and knife, automatically moved came supported by said shaft and adapted to move the gage-roll laterally during the cutting operation, and means for adjusting the cam-shaft-carrying arms to determine the limit of the movement imparted by the cams to the gage-roll toward the knife and the thickness of the reduced end of the piece of leather, as set forth.

4. In a leather-splitting machine, the combination of a fixed knife, a feed-roll and a gage-roll supported by swinging arms which are movable toward and from the feed-roll, a shaft geared to the driving-shaft of the machine and mounted in swinging arms which permit said shaft to move toward and from the gage-roll and knife, automatically-moved came supported by said shaft and adapted to move the gage-roll laterally during the cutting operation, rods connecting the cam-shaft-carrying arms with the frame of the machine, and means for adjusting said rods to determine the movement of the gage-roll toward the knife by the cams, as set forth.

5. In a leather-splitting machine, the combination of a fixed knife, a feed-roll, a gage-roll which is movable toward and from the knife, a shaft geared to the driving shaft of the machine, automatically-moved came pivotally connected to supports on said shaft and arranged to govern the position of the gage-roll, and means for adjusting said cams, as set forth.

6. In a leather-splitting machine, the combination of a fixed knife, a feed-roll, a gage-roll which is movable toward and from the knife, a shaft geared to the driving-shaft of the machine, automatically-moved came pivotally connected to supports on said shaft and arranged to govern the position of the gage-roll, and rotary adjusting-cams carried by supports on said shaft and having their perimeters arranged to support the gage-roll-governing cams, as set forth.

7. In a leather-splitting machine, the combination, with a fixed knife, a feed-roll, a gage-roll movable toward and from the knife and feed-roll, and cams automatically moved by the power of the machine and arranged to govern the position of the gage-roll, of an indicator adapted to indicate the distance between the cutting-edge of the knife and the end of a piece of leather presented to the knife, as set forth.

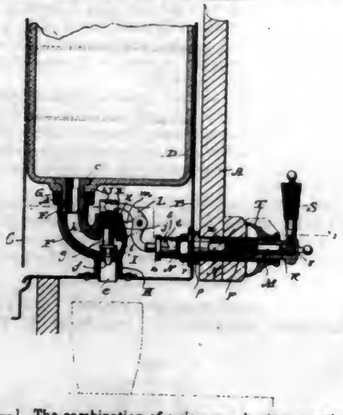
8. In a leather-splitting machine, the combination, with a fixed knife, a feed-roll, a gage-roll movable toward and from the knife and feed-roll, and cams automatically moved by the power of the machine and arranged to govern the position of the gage-roll, of an indicator adapted to determine the extent of movement imparted by the cams to the gage-roll, as set forth.

9. In a leather-splitting machine, the combination, with a fixed knife, a feed-roll, a gage-roll movable toward and from the knife and feed-roll, and adjustable cams automatically moved by the power of the machine and arranged to govern the position of the gage-roll, of an indicator to determine the distance between the cutting-edge of the knife and the end of a piece of leather presented to the knife, and another indicator to determine the extent of movement imparted to the gage-roll by said cams, as set forth.

10. In a leather-splitting machine, the combination, with the knife, the feed-roll, the gage-roll movable toward and from the knife and adjustable cams adapted to vary the position of the gage-roll during the operation of the machine, of means for determining the length of the skived or tapered surface produced on a piece of leather, said means comprising a gage adjustable toward and from the knife and adapted to determine the distance of the end of a piece of leather from the cutting-edge of the knife, and an indicator adapted to indicate the starting position of said cams to give the desired length of tapered surface, said gage denoting the proper position of the end of the piece for a tapered surface of a given length, while the indicator denotes the proper position of the cams to produce a tapered surface of the length required by the position of the end of the piece, as set forth.

11. In a leather-splitting machine, the combination, with the knife, the feed-roll, the gage-roll movable toward and from the knife, and the adjustable cams *h h'*, adapted to vary the position of the gage-roll during the operation of the machine, of an indicator comprising a graduated scale on one of said cams and a pointer affixed to a suitable support, as set forth.

477,463. SODA-FOUNTAIN. ADOLPH SCHIER, Chicago, Ill. Filed Feb. 23, 1892. Serial No. 422,403. (No model.)



Claim.—1. The combination of a sirup-can having an outlet governed by a lever and spring-controlled valve, and a longitudinally-reciprocating rod positioned to have its inner extremity oppose and operate the valve-lever, substantially as set forth.

2. The combination of the sirup-can provided at its bottom with a depending nipple, a casing detachably connected to the nipple and having an outlet governed by a spring-controlled valve, a lever fulcrumed to the casing and connected to the valve, and a longitudinally-reciprocative rod positioned to have its inner extremity oppose and operate the valve-lever, substantially as set forth.

3. The combination of the sirup-can, a casing connected thereto and having an outlet governed by a valve that has a spring-controlled stem provided with an apertured outer end, a curved lever fulcrumed on the casing to have one of its ends engage the aperture in the valve-stem, and a longitudinally-reciprocative rod positioned to have its inner extremity oppose and operate said lever, substantially as set forth.

4. The combination of the sirup-can having an outlet governed by a lever and spring-controlled valve, a rod having one extremity thereof opposed to the valve-lever and provided with cam-lugs, a sleeve forming a bearing for the rod and provided with cam-surfaces in opposition to said lugs, and a turning-handle fast to the other extremity of said rod, substantially as set forth.

5. The combination of the sirup-can having an outlet governed by a lever and spring-controlled valve, a rod having one extremity thereof opposed to the valve-lever and provided with cam-lugs, a sleeve forming a bearing for the rod and provided with cam-surfaces in opposition to said lugs, another sleeve loose within the first and fast on said rod, and a spring arranged to be compressed by a longitudinal movement of the aforesaid rod, substantially as set forth.

6. The combination of the sirup-can having an outlet governed by a lever and spring-controlled valve, a rod having one extremity thereof opposed to the valve-lever and provided with cam-lugs, a sleeve forming a bearing for the rod and provided with cam-surfaces in opposition to said lugs, a set-nut engaging the sleeve in opposition to a wall of a chamber for said sirup-can, another sleeve loose within the first and fast on said rod, and a spring arranged to be compressed by a longitudinal movement of the aforesaid rod, substantially as set forth.

477,464. HEATING APPARATUS FOR CARS. JAMES H. SEWALL, Chicago, Ill., assignor to the Consolidated Car Heating Company, Albany, N. Y. Filed Mar. 6, 1891. Serial No. 383,928. (No model.)



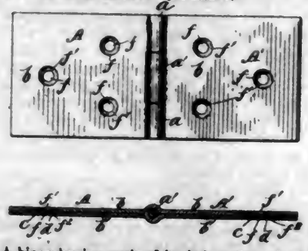
Claim.—1. In a car-heating apparatus, the combination, with the circulating-pipes or radiators within the car and the steam-supply pipe therefor outside of the car, of an overflow or drip pipe extending from the said circulating-pipes outside the car into contact at or near its discharge end with the steam-supply pipe and formed with an unobstructed discharge, substantially as described.

2. In a car-heating apparatus, the combination, with the circulating-pipes within the car, of a steam-supply pipe therefor outside the car, a fitting on said steam-supply pipe, an overflow or drip pipe from said circulating-pipes extending without the car and connected at or near its discharge end into the said fitting on the steam-supply pipe and formed with an unobstructed discharge, substantially as described.

3. In a car-heating apparatus, the combination, with the radiator within the car, of an overflow or drip pipe K, having an unobstructed discharge, the train-pipe A, and coupling M, having the heating-chamber N formed thereon, with inlet-aperture O and exit-aperture P, said drip-pipe K connecting at or near its discharge end into the aperture O, substantially as and for the purpose described.

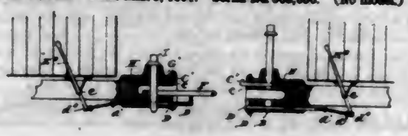
4. In a car-heating apparatus, the combination, with a system of water-circulating pipes within the car, of a steam-heater for said circulating system located therein, a steam-supply pipe beside the car, a branch pipe extending from said supply-pipe to said heater, and a drip-pipe from said heater, having an unobstructed discharge leading outside the car and into contact at or near its discharge end with said supply-pipe, the parts being arranged to operate substantially as and for the purpose described.

477,465. BUTT-HINGE. ROSWELL T. SMITH, Nashua, N. H. Filed Feb. 29, 1892. Serial No. 423,250. (No model.)

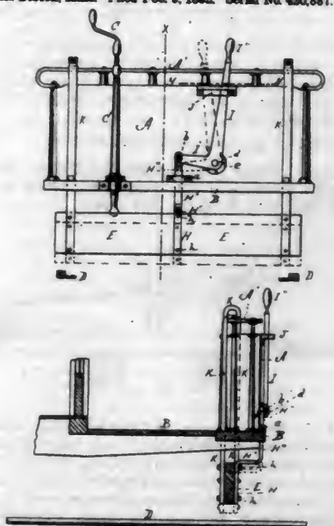


Claim.—A hinge having each of its halves formed of folded or doubled metal, one of the folded portions being provided with a countersunk hole for the reception of a fastening-screw and with a homogeneous riveting-spur and the other folded portion with a rivet-hole which is occupied with the riveting-spur, so that the end of the spur presents a smooth flat surface, flush with the hinge, substantially as and for the purpose described.

477,466. CAR-COUPLING. GEORGE C. SPRING and JOHN C. SMITH, Akron, Ohio. Filed Mar. 5, 1891. Serial No. 383,838. (No model.)



477,467. FENDER FOR STREET-CARS. BARTHOLOMEW SULLIVAN, Boston, Mass. Filed Feb. 9, 1892. Serial No. 420,887. (No model.)



Claim.—In an adjustable street-car fender, the combination of the lifting-board E, the lifting-bar H, secured to said board, the lever I I', pivotally secured to the car and connected with the lifting-bar, the loop or bracket J, provided with the teeth J', and the guiding and stiffening straps K, extending from the lifting-board up over the dash-board, substantially as set forth.

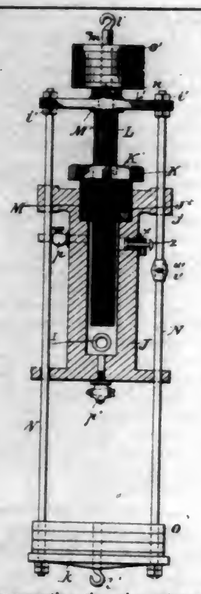
477,468. HYDRAULIC-PRESSURE ACCUMULATOR OR REGULATOR. WILLIAM W. SUTCLIFFE, New Orleans, La. Filed Apr. 26, 1891. Serial No. 390,579. (No model.)

Claim.—1. The combination, with a hydraulic cylinder having a relief-valve therein, of a plunger, a weighted guide-rod connected to said plunger, and means on said guide-rod for operating the relief-valve, substantially as set forth.

2. The combination, with a hydraulic cylinder, piston, and relief-valve in the cylinder, of guide-rod carried by the piston and a sleeve adjustably secured on the rod for operating the relief-valve, substantially as set forth.

3. The combination, with a cylinder having guides formed at opposite ends, a piston or plunger, and a relief-valve located between the guides and in alignment with two of said guides, of guide-rods carried by the piston or plunger and passing through the guides and means

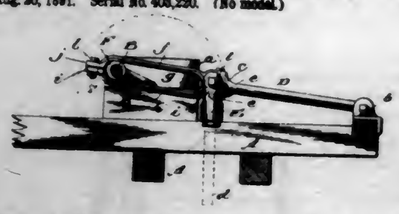
477,468.



on one of the rods for operating the valve, substantially as set forth.

4. The combination, with a hydraulic cylinder and plunger, of a relief-valve in the cylinder communicating with the interior and operated from the exterior by the displacement of the piston within the cylinder, substantially as set forth.

477,469. MEANS FOR TRANSMITTING POWER. CHARLES T. TARPENNING, Fresno, and LINCOLN B. SHERWOOD, Turlock, Cal. Filed Aug. 20, 1891. Serial No. 403,220. (No model.)



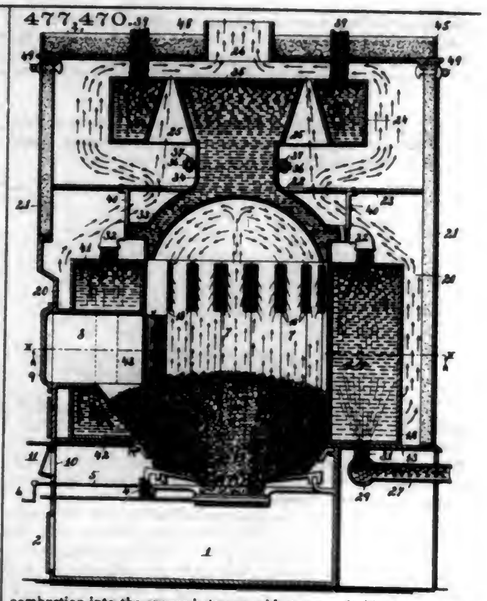
Claim.—1. The combination, with the bifurcated head and the lift-arm pivoted between the bifurcations of said head and formed with enlargement, offset, and half-loop with flat bearing-surfaces, of the half-loop having flat bearing-surfaces and adjustably connected to the flat bearings of the portion of the loop upon the arm, as set forth.

2. The combination, with the pivoted lift-arm having enlargement and shoulder or offset at said enlargement and an integral one-half loop, of the complement of the loop having a portion engaging said shoulder and with flat bearings, and detachable means connecting the parts at said bearings, and the bifurcated head, between the bifurcations of which said lift-rod is pivoted, and the crank-shaft having the collar bearing upon and working in the said loop, substantially as described.

477,470. HOT-WATER OR STEAM BOILER. JOHN M. THATCHER, Kansas City, Mo. Filed Jan. 13, 1892. Serial No. 417,961. (No model.)

Claim.—1. In a steam or hot-water circulating boiler, the combination of a series of vertical hollow staves forming the fire-box, spaces between said staves for the passage of the products of combustion, a surmounting arch-shaped dome having a water-chamber and forming the top of the fire-box for deflecting the products of combustion into the spaces between said staves, and suitable communications between the hollow staves and the water-chamber of said dome, substantially as and for the purpose set forth.

2. In a steam or hot-water circulating boiler, the combination of a series of vertical hollow staves forming the fire-box, spaces between said staves for the passage of the products of combustion, a suitable water-supply to said hollow staves, a hollow surmounting arch-shaped dome forming the top of the fire-box for deflecting the products of



combustion into the spaces between said staves, suitable communications between the hollow staves and said dome for the passage of hot water and steam, and an enlarged auxiliary water-heating reservoir secured to the top of said dome and communicating therewith, substantially as and for the purpose set forth.

3. In a steam or hot-water circulating boiler, the combination of a suitable base portion forming the ash-pit, a grate supported upon said base, a circular base-plate surrounding said grate, a series of vertical hollow staves supported upon said base-plate and arranged to form the fire-box, spaces between said staves for the passage of the products of combustion, water-supply pipes communicating with the lower ends of said staves, an arch-shaped dome surmounting all of said staves and forming the top of the fire-box for deflecting the products of combustion into the spaces between the hollow staves, a water-chamber in said dome, and suitable connections between the water-spaces of the staves and said water-chamber, substantially as and for the purpose set forth.

4. In a steam or hot-water circulating boiler, the combination of a series of hollow staves supported upon a suitable base and forming the fire-box, spaces between said staves for the passage of the products of combustion, suitable water-supply pipes communicating with the lower ends of said staves, a surmounting arch-shaped dome communicating with the upper ends of said staves and forming the top of the fire-box for deflecting the products of combustion through said spaces, a circular auxiliary water-heating reservoir supported above and communicating with said dome and projecting radially beyond the sides of the dome, and a suitable deflecting-plate surrounding the dome for directing the course of the products of combustion, substantially as and for the purpose explained.

5. In a steam or hot-water circulating boiler, the combination of a series of hollow staves forming the fire-box, spaces between said staves for the passage of the products of combustion, a suitable water-supply to said hollow staves, a surmounting dome, pipes communicating between said staves and the dome, a circular deflecting-plate surrounding the dome and having an annular opening for the passage of the products of combustion, and legs 40, depending from said deflecting-plate and resting upon the pipes which form communication between the staves and dome, substantially as and for the purpose set forth.

6. In a steam or hot-water circulating boiler, the combination of a series of staves forming the fire-box, spaces between them for the passage of the products of combustion, a surmounting dome in communication with said staves, an auxiliary water-heating reservoir on top of said dome and of larger diameter than the dome, inverted-cone-shaped openings through said auxiliary reservoir, a surrounding shell, an annular space between the shell and auxiliary reservoir, and a circular deflecting-plate between the shell and dome provided with an annular opening adjacent to the dome, whereby the products of combustion will be deflected around the dome and auxiliary reservoir and through the cone shaped openings, substantially as set forth.

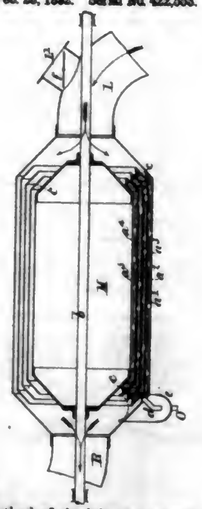
7. In a steam or hot-water circulating boiler, the combination of a series of hollow staves containing hot-water chambers, intermediate

spaces between said chambers, a hollow dome situated over said hollow staves, an auxiliary reservoir situated over said dome and in connection therewith, a deflecting-plate 23, and an annular opening in the same through which the products of combustion pass, substantially as and for the purpose set forth.

8. In a steam or hot-water circulating boiler, the combination of a series of vertical hollow staves containing water-chambers, spaces between said chambers, through which the products of combustion pass, a hollow dome situated over said chambers and having connection therewith, and an auxiliary reservoir connected with said hollow dome, said reservoir having inverted-cone-shaped openings 25, through which a portion of the products of combustion pass, substantially as described, and for the purpose set forth.

9. In a hot-water or steam circulating boiler, the combination of a base, a series of hollow staves resting thereon, a series of detached tubes 29 in connection with said hollow staves, and with a chamber 42, a chamber 41, connected with the chamber 42, a hollow dome with which said staves and chambers are connected, and an auxiliary heating-chamber in connection with said hollow dome, substantially as and for the purpose set forth.

477,471. CONDENSER. EDUARD THEISEN, Sinzig-on-the-Rhine, Germany. Filed Feb. 23, 1892. Serial No. 422,563. (No model.)



Claim.—1. The method of obtaining pure water of condensation from steam or aqueous vapor discharged from a steam-engine or other apparatus, wherein, first, such steam is condensed in an evaporative surface condenser, the outer surface of which is acted upon by currents of air and by the water of condensation derived from the said surface condenser, and, secondly, such air charged with the resulting aqueous vapor is passed in contact with heat-absorbing surfaces which effect the condensation of the aqueous vapor without the use of additional water, substantially as described.

2. In an apparatus for condensing vapor, the combination of an evaporative surface condenser, an air-pump connected with the condenser for withdrawing the water of condensation therefrom, a tank into which the air-pump delivers the water of condensation, a pipe connecting the tank with the evaporative surface condenser for supplying the water to be evaporated in the latter, a secondary condenser having extended heat-absorbing surfaces, and a tube or passage connecting the evaporative surface condenser with the heat-absorbing condenser, through which tube or passage the air and aqueous vapor given off by the evaporative surface condenser is made to pass for the purpose of condensing the vapor by contact with the heat-absorbing surfaces of the secondary condenser, substantially as described.

3. An apparatus for condensing steam or vapor, consisting of a series of horizontal concentric cylinders having narrow annular spaces between them through which the steam or vapor is made to pass, said cylinders being provided with flanges at their ends for retaining a portion of the water of condensation in their lower parts and having rotary motion imparted to them, so as to maintain their surfaces in a wet condition, substantially as described.

4. In apparatus for condensing steam or vapor, the combination of a number of horizontal revolving concentric cylinders having narrow annular spaces between them and provided with inward-directed flanges at their ends to retain water therein, inlets at one end for the vapor to be condensed and for a supply of cold external air, an outlet at the other end for the discharge of air and uncondensed vapor, one or more outlets in the outer cylinder for discharging the water of condensation, and a trough for receiving the discharge from such outlets, substantially as described.

477,472. TRUCK. OTIS D. THOMPSON, Elkhart, Ind. Filed Sept. 26, 1891. Serial No. 406,539. (No model.)



Claim.—1. In combination, a truck-frame constructed to detachably engage a box or other article to be held by the weight thereof, said frame carrying a single truck-wheel journaled thereon intermediate of the points of contact, substantially as described.

2. In combination, a truck-frame consisting of the vertical standard and the arms extending laterally from said standard and forming integral continuations of the same, and the truck-wheel journaled on the frame, substantially as described.

3. In combination, a truck-frame consisting of the vertical standard, arms extending laterally from the standard and forming integral continuations of the same, said arms being continued at right angles at their ends into fingers with spurs thereon, and a single truck-wheel journaled on the frame intermediate of the fingers, substantially as described.

4. In combination, a truck-frame consisting of the central vertical standard, the arms extending on each side thereof, the fingers at the ends of the arms, and the truck-wheel journaled on the frame at the junction of the radiating arms and standard, substantially as described.

5. In combination, the truck-frame consisting of the central standard having an upper extension and the side arms with fingers at their ends, the truck-wheel journaled to the truck-frame, and the handle at the upper end of the extension projecting at right angles thereto, substantially as described.

6. In combination, the truck-frame comprising a vertical standard to fit against the vertical side of a box or the like and the finger portions extending horizontally to fit under the same, and a truck-wheel journaled on the frame with its sides parallel to the front face of the frame and with the side of the box against which the frame bears, substantially as described.

7. In combination, the truck-frame comprising a vertical standard having at its upper end an outwardly-bent arm terminating in a handle and a truck-wheel journaled on the frame.

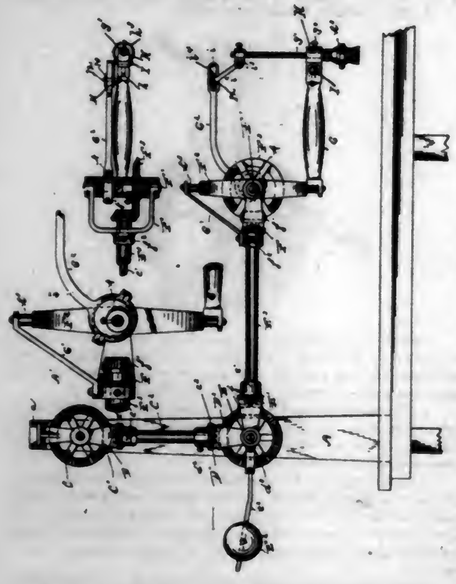
477,473. VEHICLE-WHEEL. ELI A. THURSTON, Avondale, Ala. Filed Feb. 19, 1892. Serial No. 422,108. (No model.)



Claim.—A vehicle-wheel consisting of a wrought-metal rim provided with a series of equidistant tapering apertures, the longest diameter of which extends transversely of the rim, a series of wrought-metal spokes, each having one end compressed to form a tenon which is of greater length than the diameter of the spoke and conforms to the shape of the apertures in the rim, the other ends of the spokes

being perfectly smooth and tapering, and a cast-metal hub engaging the inner tapering ends of the spokes, substantially as described.

477,474. SIGN-STENCILING MACHINE. GEORGE H. TIETJEN, San Francisco, Cal., assignor to the Tietjen Sign Company, same place. Filed May 26, 1891. Serial No. 394,170. (No model.)



Claim.—1. In a sign-stenciling machine, the combination, with the eccentric and mechanisms for imparting motion to the eccentric, of the stenciling-brush suitably connected thereto and adapted by the throw thereof to have a reciprocating motion imparted thereto, as and for the purpose set forth.

2. In a sign-stenciling machine, the combination, with the handle-support, operating-handle, eccentric mounted thereon, and mechanism for imparting motion thereto, of the stenciling-brush suitably connected thereto and adapted to have a reciprocating motion imparted by the throw of the eccentric, as and for the purpose set forth.

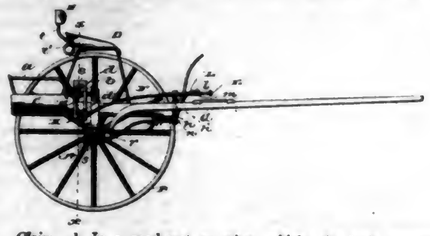
3. The combination of a rotatable rod, a transverse shaft having an eccentric mounted thereon and also provided with a bevel-gear meshing with a pinion upon the end of the rotatable rod, and a stenciling-brush constructed to be operated by the eccentric and to have a horizontal reciprocating motion imparted thereto, substantially as set forth.

4. In a sign-stenciling machine, the combination, with the eccentric, of the forwardly-extending strap passing thereabout, provided with an elongated slot in its outer end for regulating the throw of the stencil-brush, and means for rotating the eccentric, substantially as set forth.

5. In a stenciling-machine of the herein-described nature, the combination, with the forwardly-extending sleeve carrying an operating-rod provided with pinions, of the yoke attached to the forward end axle, having bearings in the arms thereof, gear located thereon and adapted to mesh with the forward pinion of the operating-rod, supporting holder or bracket secured thereon, eccentric mounted upon said axle and adapted to revolve therewith, forwardly-extending strap passing around the eccentric, brace rigidly securing said holder upon the forward end of the sleeve, forwardly-extending handle attached to the holder, operating-rod secured movably to the outer end of the handle, connecting-rod connecting the upper end of said operating rod to the outer end of the eccentric-strap, and the stencil-brush secured to the operating-rod, substantially as set forth and described.

6. In a stenciling-machine, the combination of an eccentric, a forwardly-extending strap passing thereabout, a handle provided with a recess, a bearing-block having a tongue pivoted in said recess, an operating-rod passing through the bearing-block and provided with a brush at its lower end, and a link connecting the end of the forwardly-extending strap with the upper end of the operating-rod.

477,475. VEHICLE. JOHN G. TRUMP, Richville, Mich., assignor of eleven-twelfths to Paul J. Trump, John Jordan, and Christian Hildner, same place, Edward H. Taylor, Robert Preston, Robert V. Bray, John C. Loss, and Richard Morris, Vassar, Martin Reichle and George Reid, Reese, and Silas M. Haight, Denmark, Mich. Filed Oct. 20, 1891. Serial No. 409,305. (No model.)

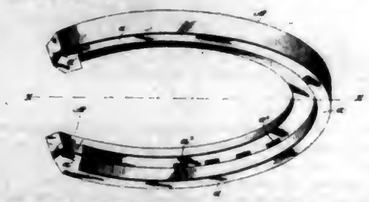


Claim.—1. In a road-cart or other vehicle, the body portion thereof suspended from the main axle, in combination with springs secured to the axle near its center and projecting outwardly beyond the sides of the body and yokes or hangers connecting the free ends of the springs with the body, substantially as herein described.

2. In a road-cart or other vehicle, the main axle and the body, in combination with springs secured at one end near the center of the axle and then coiled and extended outwardly beyond the sides of the body and having the extended portions formed with holes, a plate on the bottom of the body, with its ends extending beyond the sides of the same and provided with holes, and yokes or hangers slotted to receive the projected ends of the springs and plate and provided with pins or lugs or set-screw adapted to engage the holes in said springs and plate, whereby the body is suspended from the springs and the tension of the latter regulated, substantially as herein described.

3. In a road-cart or other vehicle, the body, the main axle, the thills, the bearing-wheels, and the spring-plates F F', in combination with a plate in front of the body, connecting the forward ends of the spring-plates F and provided with a slotted guide, and an angular plate on the body, having its upper horizontal arm working loosely in said guide, substantially as herein described.

477,476. HORSESHOE. GIDEON L. TURCOTT, Newport, assignor to James R. Cutting, Newport Centre, Vt. Filed Dec. 12, 1889. Serial No. 333,491. (No model.)



Claim.—1. A horseshoe having a downwardly-projecting flange from which project calks formed by portions drawn down therefrom, substantially as and for the purpose specified.

2. A horseshoe having a downwardly-projecting flange from which project calks formed by portions drawn down therefrom and at intervals apart to allow the subsequent formation of other calks from such flange, substantially as and for the purpose set forth.

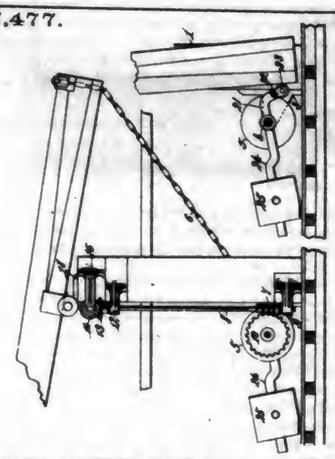
3. A horseshoe having a downwardly-projecting flange from which project calks formed by portions drawn down therefrom, the lower ends of said calks being sharpened and formed on lines that curve in vertical planes, substantially as and for the purpose specified.

477,477. LIFT OR HOIST FOR PLACING SHIPS' MASTS. FRANZ UHLIG, Topkowitz, near Bodenbach, Austria-Hungary. Filed Feb. 24, 1892. Serial No. 422,677. (No model.)

Claim.—1. A lift or hoisting apparatus for raising and lowering ships' masts, comprising chain-drums, a worm-shaft driving the drum-shaft, a fulcrum-shaft arranged in bearings on or near the top of uprights supporting the mechanism, and means for holding the raised mast in an inclined position while it is being lowered, substantially as described.

2. In a lift or hoist for raising and lowering ships' masts, the combination, with a drum-shaft and chain-drums mounted on posts or uprights, of a worm on a vertical shaft and meshing with a worm-gear on the drum-shaft, a fulcrum shaft at or near the tops of the posts, and a counterbalanced lever-arm having a roll journaled on its end and

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adapted to engage and hold the raised mast in a slightly-inclined position while it is being lowered, substantially as described.

3. In a lift or hoist for raising and lowering ships' masts, the combination, with chain-drums mounted on a shaft having support upon uprights or posts, of a vertical shaft geared with the drum-shaft, a driving-shaft, a fulcrum-shaft for the mast arranged at or near the tops of the posts, a lever-arm loosely mounted on the drum-shaft and having a roll journaled on its end and adapted to enter between the posts, and a lever rigid upon the hub of the lever-arm and having an adjustable weight, substantially as described.

477,478. SPRING-MOTOR. WILLIAM A. ULREY, Pipesville, Ohio. Filed Mar. 18, 1892. Serial No. 425,475. (No model.)



Claim.—1. In a spring-motor, the combination, with the power-shaft, the driving-spring connected therewith and wound thereon, and the gearing driven by said shaft, of a fixed rod below the shaft, a long staple seated in an upright and lying across the shaft astride the spring, and a link having hooks at its ends, one of which is adapted to embrace said rod and the other of which is oblique, so as not to fit the rod so closely, as and for the purpose set forth.

2. In a device of the character described, the combination, with a machine-table, of a motor, means for detachably attaching it to the table, rubber blocks between the motor and the table, a brake-lever, a rubber block on the table and over which the brake-lever rocks, a shoe at one end of the lever adapted to make contact with the power-wheel of the motor, a treadle connected with the other end of the lever, and a spring between the other end of said lever and the table, as and for the purpose set forth.

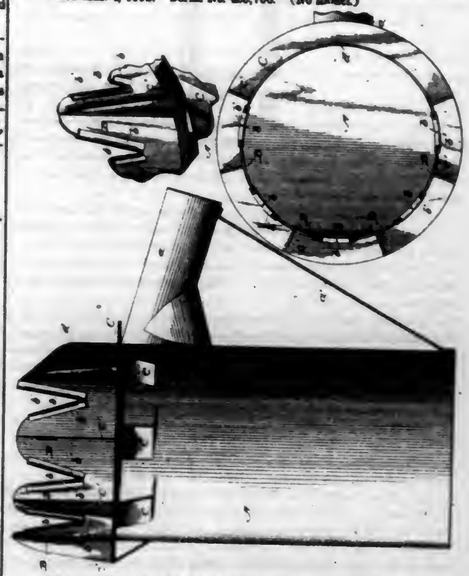
3. In a device of the character described, the combination, with a machine-table, of a motor, means for detachably attaching it to the table, rubber blocks between the motor and the table, a spring-brake lever, a rubber block on the table and over which the brake-lever rocks, a shoe at one end of the lever, adapted to make contact with the power-wheel of the motor, and means for depressing the other end of the lever at will, as and for the purpose set forth.

4. In a motor, the combination, with the driving mechanism, the power-shaft, and a brake-wheel on said shaft, of a brake-lever of spring metal centrally pivoted to a support, a shoe on one end thereof adjacent said wheel, a treadle, a rod connecting this treadle with the opposite end of the brake-lever and passing through a stationary eye, and an expansive coiled spring between this staple and the brake-lever, all as and for the purpose set forth.

5. In a device of the character described, the combination, with a machine-table, a foot-lever pivoted thereto, an eye carried by the front edge of the machine table top, and a rod leading from the foot-lever upwardly through said eye, of a motor-case, a rubber block in the table-top, a spring-brake lever passing centrally over said block, a staple over the lever and block, the front end of this brake-lever passing under a staple in the table-top and being connected with said rod, and a coiled expansive spring between said front end and the eye at the front edge of the table-top, all substantially as and for the purpose set forth.

6. In a device of the character described, the combination, with a machine-table and a motor, of a brake pivoted to the table, a foot-lever, a rod connecting said brake and lever, a clamp detachably secured to the front edge of the table-top and having an eye through which said rod passes, and a spring between said eye and brake, substantially as described.

477,479. FRUIT-GATHERER. WILHELM WARMUTH, Warsaw, Ky. Filed Mar. 4, 1892. Serial No. 423,708. (No model.)



Claim.—1. A fruit-gatherer comprising a receptacle having a series of V-shaped notches forming a series of tapering fingers around its upper edge, the reinforce-strips fastened over the edges of said fingers, an annular brace on the outer side of the receptacle, and the vertical braces rigid with said annular brace and the fingers of the receptacle, substantially as described.

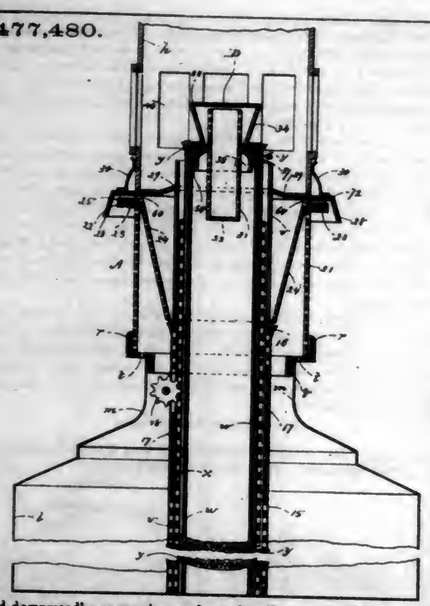
2. A fruit-gatherer comprising a receptacle A, a handle-socket secured thereto, at an acute angle to the side of the receptacle, a series of V-shaped notches *b*, forming a series of tapering fingers B, the reinforcing-strips *b'*, an annular brace C, secured around the receptacle below the notches and fingers, the inclined struts *c*, and the vertical braces *c'*, rigid with the annular brace C, and the tongues or fingers B at right angles thereto, substantially as described.

477,480. LAMP. AUGUSTINE C. WEST, Wakefield, Mass. Filed Feb. 3, 1891. Serial No. 379,967. (No model.)

Claim.—1. In a central-draft lamp, a body, in combination with a perforated burner-socket in the mouth thereof, a cylindrical distributer disposed thereon and attached thereto and provided with an annular perforated lip, and a chimney-holder adapted to rest on said lip and form an outwardly-projecting air-space, substantially as and for the purpose set forth.

2. In a lamp provided with a central draft-tube, a flame-spreader comprising a perforated cylindrical body, a disk on the top thereof,

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and downwardly-converging perforated walls on said disk encircling said body, said walls flaring at their lower ends and provided with a supporting-flange within said draft-tube and leaving a space between, substantially as described.

3. In a central-draft lamp, the combination, with the draft-tube, of the flame-spreader D, comprising the perforated body 31, disk 33, perforated converging walls 34, flaring portion 36, flange 37, and cylindrical perforated extension 38 somewhat larger than said body and standing within said tube, with a space between, substantially as described.

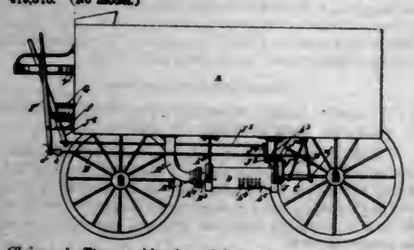
4. In a lamp of the character described, an inner draft-tube secured in the lamp-body, in combination with an outer inclosing tube perforated at points near its bottom and above the oil-level, with an imperforate portion between said points, a feed-wick inclosing said outer tube and connecting said perforated portion, and a wick-tube fitted to slide between said draft-tubes, substantially as described.

5. In a central-draft lamp, a chimney-holder provided with a perforated central portion encircling the draft-tube and a downwardly-flaring imperforate annular rim, in combination with a cylindrical distributer which said rim overlaps, substantially as described.

6. In a burner for central-draft lamps, the cylindrical perforated distributer 21, provided with the annular perforated flange 22, in combination with the inwardly-inclining distributer 24 within said cylindrical distributer, having the annular perforated flange 25 resting on that of the cylindrical distributer, substantially as and for the purpose set forth.

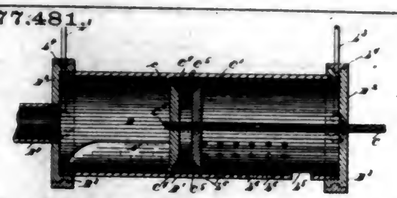
7. In a lamp of the character described, a burner body having an outwardly-projecting perforated flange, in combination with a chimney-holder disposed thereon and forming an air-space between it and said flange, substantially as and for the purpose set forth.

477,481. STREET-SPRINKLING MACHINE. FRED WINKLER and LEHHART WINKLER, South Bend, Ind. Filed Jan. 26, 1892. Serial No. 419,313. (No model.)



Claim.—1. The combination of the tank, a perforated rotatable cylinder suspended thereunder, having a series of perforations and a

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washout-opening between said perforations and one of the heads, and devices, substantially as described, whereby the driver can rotate said cylinder, the piston in the cylinder, and means whereby the driver can shift said piston, substantially as described.

2. The combination of the perforated cylinder, with an adjustable piston therein having a segmental flange, substantially as described.

3. The combination of the stationary hangers, the rotatably-adjustable perforated cylinder connected thereto, and an adjustable piston in said cylinder, having a segmental flange adapted to overlie some of the perforations therein, substantially as set forth.

4. The combination of the piston-rod, the washer-plates on the end of said rod, having their opposed faces oppositely beveled and one of said plates having an exterior projecting segmental flange, and an expansible washer clamped between the beveled portions of the washer-plates and expanded thereby, substantially as and for the purpose described.

5. The combination of the tank, the rotatable sprinkler connected thereto, the crank-arms, link-rods, and lever for adjusting said cylinder, substantially as described.

6. The combination of a rotatable perforated cylinder, its heads, split-ring, hangers therefor, and rib-and-groove connection between said hangers and heads, with a piston having a segmental flange adapted to overlie part of the perforations in the cylinder, substantially as and for the purpose described.

7. The combination of the suspended split-ring fixed hangers, the perforated and rotatably-adjustable cylinder, the cylinder-heads embraced by said hangers, and the crank-shafts, links, rods, and levers, substantially as described, for adjusting said cylinder, and the water-supply pipe, and the adjustable piston in the cylinder having a segmental flange adapted to overlie the lowermost perforations in the cylinder, as and for the purpose set forth.

8. The combination of the tank, the rotatably-adjustable perforated sprinkling-cylinder suspended therefrom, the piston in said cylinder, having a segmental flange adapted to overlie the lowermost perforations in the cylinders, and the rods and levers for adjusting said piston, substantially as described.

9. The combination of the tank, the split rings suspended therefrom, the rotatably-adjustable perforated cylinder supported by said rings and having a flushing-opening near its rear ends, in combination with the adjustable piston having a segmental flange overlying the lowermost perforations in the cylinder, the piston-rod, the lever connected thereto and suspended beneath the tank, the foot-lever at the front of the tank, the spring, and the adjustable pitman-rod connection between said levers, all constructed and arranged to operate substantially as and for the purpose set forth.

477,482. WRITING AND PRINT COPYING MACHINE. MARTIN WRIGHT, Leicester, England. Filed Aug. 22, 1891. Serial No. 403,447. (No model.) Patented in England Nov. 14, 1890, No. 18,392.



Claim.—1. The combination, with a supporting-frame, a paper or sheet carrying cylinder, and inking devices, of a laterally-movable swinging frame carrying a pressure-drum, means for moving the frame laterally as it is swung to raise or lower the drum, and continuously-meshing gears for rotating the cylinder and drum in unison, substantially as described.

2. The combination, with a supporting-frame, of a paper or sheet carrying cylinder having adjustable paper-holding clips, inking devices,

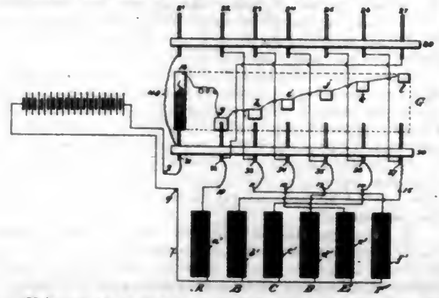
a laterally-movable swinging frame carrying a pressure-drum provided with a gripper, means for moving the frame laterally as it is swung to raise or lower the drum, and continuously-meshing gears for rotating the cylinder and drum in unison, substantially as described.

3. The combination of a supporting-frame having a cross-bar or plate provided with an inclined slot, a paper or sheet carrying cylinder, a laterally-movable swinging frame carrying a pressure-drum and provided at its outer end with a handle extending through the inclined slot, and gears for rotating the cylinder and drum in unison when the drum is raised or lowered, substantially as described.

4. The combination, with a supporting-frame, of a paper or sheet carrying cylinder, clips for holding the paper or sheet on the cylinder, means for adjusting the clips toward each other for stretching the paper or sheet, a swinging frame carrying a pressure-drum, and continuously-meshing gears for rotating the cylinder and drum in unison, substantially as described.

5. The combination, with a supporting-frame, of a paper or sheet carrying cylinder, a driving-wheel mounted on the shaft of the cylinder and having two sets of teeth connected by a web, a laterally-movable frame carrying a pressure-drum, and a gear-wheel mounted on the shaft of the pressure-drum and meshing with one or the other set of teeth on driving-wheel as the frame is moved laterally, substantially as described.

477,483. ELECTRIC MOTOR. FREDERICK YEISER, Tampa, Fla. Filed Sept. 22, 1891. Serial No. 406,458. (No model.)



Claim.—1. In an electric motor, the combination, with the field-magnets and the armature, of the commutator having an annulus, and the spiral plate connected with the terminals of the helix or coil of the armature, and the commutator-brushes included in the circuit of the field-magnets, one brush adapted to have continuous contact with the commutator-band and the other brushes of the series adapted to have contact successively with different parts of the spiral plate during each rotation of the commutator, substantially as described.

2. In an electric motor, a commutator comprising an annulus or band connected with the armature-helix, a spiral plate insulated from the band and having its sections in different vertical planes and out of line longitudinally with each other along the armature-shaft, and two sets of commutator-brushes included in the circuit of the field-magnets and adapted to be independently brought into contact with the commutator, substantially as described.

3. In an electric motor, a commutator consisting of an annulus or band connected with one end of the armature-coils, a spiral plate connected with the other end of the armature-coils and having its connected sections arranged in different vertical planes and out of line longitudinally of the armature-shaft, and the brushes, one of which is connected with one pole of a generator and bears continuously on the annulus and the remaining brushes of the series being connected with the field-magnets and adapted to have contact successively with the different sections of the spiral plate, as and for the purpose specified.

4. In an electric motor, the combination, with the field-magnets and the armature, of the commutator having its band and spiral plate connected with the respective terminals of the armature-coils and two sets of brushes adapted to be independently brought into service, each set of brushes having one brush arranged to have contact continuously with the band and the other brushes of the series connected with the field-magnet coils, substantially as and for the purpose specified.

5. In an electric motor, the combination of the field-magnets having the coils connected by a common conductor leading from a primary generator, an armature arranged to rotate close to the pole-pieces of the field-magnets, the commutator having its band and spiral plate connected with the ends of the armature-helix, and two rock-shafts carrying two series of commutator-brushes arranged in circuit with the field-magnet coils and adapted for operation in the manner and for the purpose set forth.

477,484. TOBACCO CASK OR TIERCE. WILLIAM T. AARON, Collands, Va. Filed Oct. 21, 1891. Serial No. 409,356. (No model.)



Claim.—1. The herein-described improved tobacco cask or tierce having inner brackets or plates secured thereto and provided with slots, the head pivotally and removably connected to said cask or tierce and supported by said brackets or plates, locking-bolts attached to said head and designed to enter said slots, and a hasp pivoted to said cask and designed to be locked to said head, substantially as set forth.

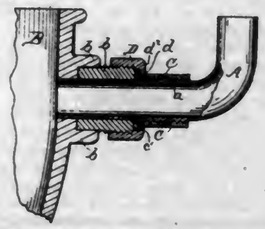
2. A tobacco cask or tierce having one of its staves provided with a pivoted part or section capable of being moved outward to permit of inspection of the central or body portion of the contents of the cask, as set forth.

3. A tobacco cask or tierce having one of its staves formed in two parts or sections pivotally connected together, the upper part or section being capable of outward movement, and the hoops for holding said latter section closed, substantially as set forth.

4. The herein-described improved tobacco cask or tierce, composed of a series of staves, a lower series of rigid hoops, two upper removable hoops, and spring-plates secured to said staves and having their free ends covered by said hoops, substantially as set forth.

5. The combination, with the cask or tierce composed of a series of staves, one of which staves is provided with an upper pivoted or movable part or section, of the lower series of rigid hoops encircling said staves, two upper movable hoops also encircling said staves, spring-plates secured to some of said staves and having free ends designed to bind against said removable hoops, and the head pivotally secured to said cask or tierce and having bolts entering slots or apertures in said cask or tierce, and a hoop pivotally secured to said cask or tierce and designed to be locked to said head, substantially as set forth.

477,485. ATTACHMENT AND COUPLING FOR WATER-CLOSETS. JOHN D. ABRAHAM, Cincinnati, Ohio. Filed Jan. 2, 1892. Serial No. 416,843. (No model.)



Claim.—1. The within described elastic elbow, having molded thereon and integral therewith threads *a*, and threaded sleeves C with short smooth extension *c* and peripheral outwardly-inclined flange *c'*, in combination with nut D, having upper smooth aperture *d* and hollowed lower portion of increased diameter interiorly screw-threaded, said threaded end adapted to intermesh with threaded spud connected to the horn of a closet-bowl, substantially as described.

2. An elastic elbow having outward threads molded upon and integral with the material of which the elbow is composed, said threads increasing in diameter spirally from apex to base, in combination with a metallic sleeve interiorly threaded, said threads being of uniform diameter the full length of said sleeve, substantially as described.

3. In water-closet attachments, an elastic elbow coupled at one end to flush-pipe by insertion of their juxtaposed ends within tubular sleeve T, adjustable telescopically therein at required distances apart, the outflow end of the elbow being inserted within horn of the bowl and adapted to be moved therein to any point of their respective lengths, in combination with flanged sleeve surrounding the elbow end and in-

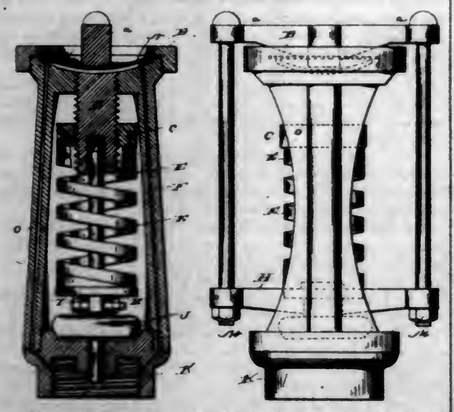
teriorly-threaded nut, the upper end of which nut surrounds the flange of said sleeve, its threaded portion being screwed home upon sped *b'*, whereby the several members are permanently connected and protected by elastic covered joints that will yield to pressure and strain from any direction, substantially as described.

477,486. PHOTOGRAPHIC DEVELOPER. MOSHE ANDERSEN, Berlin, Germany. Filed Oct. 12, 1891. Serial No. 408,484. (No specimens.) Patented in Germany Jan. 27, 1891, No. 60,174; in England Jan. 30, 1891, No. 1,736, and in France Feb. 7, 1891, No. 211,343.

Claim.—1. The herein described mode of developping photographs, which consists in treating the sensitive plates with paramido-phenol or a derivative thereof, substantially as described.

2. The mode of developing photographs, which consists in forming a solution of paramido-phenol, a sulphite of potash, as described, and carbonate of potash, and treating the sensitive plate with such solution, substantially as described.

477,487. SAFETY-VALVE. JOHN W. BALL, Rusk, Tex. Filed Sept. 11, 1891. Serial No. 405,440. (No model.)



Claim.—1. In a safety-valve, the combination, with the valve J, its stem, the guides therefor, the yoke connected to said stem, and the spring, of the flexible metallic disk N, having a bearing against said yoke, substantially as specified.

2. In a safety-valve, the combination, with the valve J, its stem, the yoke connected to said stem, and the guide-block receiving said stem, of the flexible disk having a bearing against said yoke, the resistance spring for the valve and disk, and the pressure-inlet passages leading to said disk, substantially as specified.

3. In a safety-valve, the combination of the valve proper, its stem, the yoke connected to said stem, the flexible convex disk confined at its edges and having a bearing against the yoke, and the pressure-passages leading to said disk, substantially as specified.

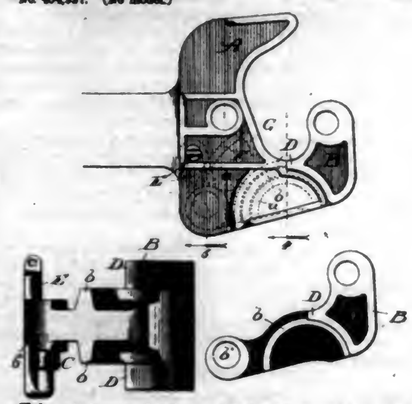
4. The combination, in a safety-valve, with the valve proper and its resistance-spring, of the flexible disk connected to the stem of said valve and the pressure-inlet passages communicating with the under surface of said valve, whereby a conjoint action of said disk and the valve is obtained under excess of pressure, substantially as specified.

5. The combination, with the yoke, the frame, the valve proper seating therein and having its stem connected to said yoke, the guide-block, the adjusting-nut thereon, and the resistance-spring confined between the valve and said nut, of the flexible metallic disk having its edges confined in said frame and having a bearing against the yoke and the passages communicating with the pressure source and the surface of said disk, whereby the action of said disk and valve is compounded, substantially as specified.

477,488. PAINT-PIGMENT. FRANK L. BARTLETT, Portland, Me., assignor to the American Zinc Lead Company, same place. Filed Oct 25, 1890. Serial No. 368,177. (Specimens.)

Claim.—The herein-described pigment, consisting of a stable chemical compound having in combination zinc, lead, sulphur, and oxygen, and composed principally of zinc oxide and sulphate of lead, but having in combination a quantity of oxygen more than sufficient to form the said oxide and sulphate, substantially as described.

477,489. CAR-COUPLING. DAVID L. BARNES, Chicago, Ill., assignor to E. Clinton Clark, Saratoga Springs, N. Y. Filed Sept. 7, 1891. Serial No. 404,937. (No model.)



Claim.—1. In a coupler, the combination of a draw-head, a knuckle provided with ribs interlocking with ribs on the draw-head, and a single-piece vertically-moving coupling-pin traveling with the tail of the knuckle and engaging with an opening in the bottom of the draw-head to lock the knuckle, substantially as described.

2. In a coupler, the combination of a draw-head, a knuckle rotating therein, and a single piece locking-pin traveling with the tail of the knuckle and engaging with an opening in the draw-head to lock the knuckle and adapted to be raised as the knuckle swings open into position to limit the movement of the same, substantially as described.

3. The combination of a draw-head, a knuckle rotating therein, a single-piece locking-pin traveling with the knuckle, and an inclined plane by which the pin is raised as the knuckle swings open, substantially as described.

4. In a coupler, the combination of a draw-head, a knuckle rotating therein, a single-piece locking-pin engaging with an opening in the draw-head to lock the knuckle, means for raising such pin until it registers with the tail of the knuckle, an inclined plane for raising the pin as the knuckle swings open, and a stop above the knuckle against which the pin strikes and whereby the outward motion of the knuckle is limited, substantially as described.

5. In a coupler, the combination of a draw-head, a knuckle provided with ribs engaging with ribs on the draw-head, a single-piece locking-pin traveling with the tail of the knuckle and engaging with an opening in the draw-head to lock the knuckle, and a lifting-hook adjusted to raise the pin to a point where it registers with the tail of the knuckle, substantially as described.

6. The combination of a draw-head having an inclined plane and a knuckle rotating in such head and carrying a locking-pin, the tail of the knuckle being cut away to allow the pin to engage with and be raised by the plane as the knuckle rotates, substantially as described.

7. In a coupler, the combination of a draw-head provided with ribs forming channels in its upper and lower sides and a hole in its lower side to receive the locking-pin, and a knuckle provided with ribs entering the channels in the draw-head and a hole to receive the locking-pin, the draw-head and knuckle being connected solely by means of the respective ribs and the drawing-strain being carried by means of the pin, and thereby prevented from coming upon the ribs, substantially as described.

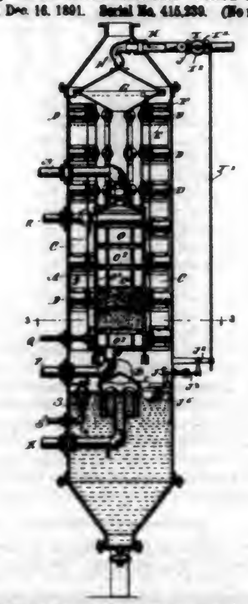
477,490. METHOD OF PURIFYING ALLOYS OF IRON AND CHROMIUM. JOSEPH BEDFORD, Sheffield, England. Filed Nov. 25, 1891. Serial No. 413,092. (No specimens.) Patented in England Dec. 13, 1887, No. 17,156.

Claim.—1. The herein-described method of purifying alloys of iron and chromium containing carbon and other metalloids and manganese, which consists in melting such alloys with ore in a suitably-lined furnace, so as to dissociate the carbon and other metalloids and manganese contained in the alloys, thereby producing a pure alloy of iron and chromium.

2. The herein-described method of purifying alloys of iron and chromium containing carbon and other metalloids and manganese, which consists in melting such alloys with ore in a furnace lined with basic material, so as to dissociate the carbon and other metalloids and manganese contained in the alloys, thereby producing a pure alloy of iron and chromium.

3. The herein-described method of purifying alloys of iron and chromium containing carbon and other metalloids and manganese, which consists in melting such alloys with ores of iron in a furnace lined with basic material, so as to dissociate the carbon and other metalloids and manganese contained in the alloys, thereby producing a pure alloy of iron and chromium.

477,491. FEED-WATER HEATER. JOSEPH BELL, Troutdale, Oreg. Filed Dec. 16, 1891. Serial No. 415,239. (No model.)



Claim.—1. A feed-water heater comprising a casing connected at its lower part with a steam-supply, plates arranged vertically in the said casing and provided with projections, and deflector-plates discharging upon the upper ends of the said vertical plates, substantially as shown and described.

2. A feed-water heater comprising a casing connected at its lower part with a steam-supply, plates arranged vertically in the said casing and provided with projections, deflector-plates discharging upon the upper ends of the said vertical plates, and a water-distributer above the said deflector-plates and discharging thereon, substantially as shown and described.

3. A feed-water heater provided with a casing and vertical plates, each having projections increasing in size from top to bottom, substantially as shown and described.

4. A feed-water heater provided with a casing connected at its lower part with a steam-supply and provided with a series of vertical plates arranged radially on the wall of the said casing, each plate being provided with projections placed suitable distances apart and increasing in size from top to bottom, substantially as shown and described.

5. A feed-water heater provided with a casing connected at its lower part with a steam-supply and provided with a series of vertical plates arranged radially on the wall of the said casing, each plate being provided with projections placed suitable distances apart and increasing in size from top to bottom, the said vertical plates being also provided with perforations below the projections, substantially as shown and described.

6. In a feed-water heater, the combination, with a casing, of plates secured vertically in the said casing and deflector-plates arranged between the upper ends of adjacent plates and made in the shape of frusta of cones, located horizontally, the edges of the cones discharging on the faces of the plates, substantially as shown and described.

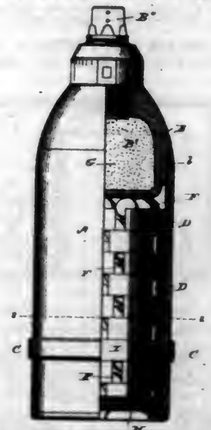
7. A feed-water heater provided with vertically-arranged plates carrying projections made semicircular in form and secured on the said plates one above the other, the said projections increasing in size from top to bottom, and deflector-plates made in the shape of frusta of cones located between two adjacent plates and discharging at their edges on the faces of the vertical plates, substantially as shown and described.

8. A feed-water heater comprising a casing connected in its lower part with a steam-supply, vertical plates secured in the said casing and provided with projections, and a filter arranged within the said casing above the entrance of the said steam-supply to cause the steam to pass upward between the said plates, substantially as shown and described.

9. A feed-water heater provided with a skimmer, comprising an outlet-pipe having an upwardly-projecting extension, a sleeve fitted to slide on the said extension and having a bell-shaped upper end, and floats secured to and projecting from the said sleeve, substantially as described.

10. A feed-water heater provided with a skimmer, comprising an outlet-pipe having an upwardly-projecting extension, a sleeve fitted to slide on the said extension and having a bell-shaped upper end, a clamp secured to the sleeve and provided with arms, and floats secured to the said arms, substantially as herein shown and described.

477,492. PROJECTILE. LAURENCE V. BENET, Paris, France, assignor to the Hotchkiss Ordnance Company, Limited, London, England. Filed Aug. 25, 1890. Serial No. 362,960. (No model.)

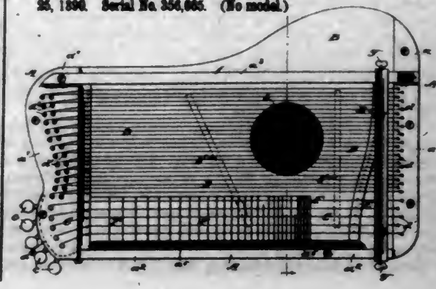


Claim.—1. In an explosive projectile, the combination, with a hollow tubular body, of a packing of frangible or other missiles, a band to receive the rifling located around the tubular chamber forward of the base, and a solid disk so located with respect to said band as to resist the radial pressure given the latter when forced through the rifled bore of the gun.

2. In a projectile having the bursting-charge in its head, the combination, with the tubular body having the base-plate, a packing of missiles, and a rifling band with its supporting-disk, of a nose-piece having an inclosed cavity in its butt to contain the bursting-charge, recessed to form a circumferentially threaded and shouldered cap to receive the tubular body, and a fuse at its point communicating with the charge-chamber, substantially as described.

3. In a projectile having the bursting-charge in its head, the combination, with a packing of missiles, of a tubular body shrunken over the packing, a base-plate, a rifling band and a nose-piece having an inclosed cavity in its butt to contain the bursting-charge, recessed to form a circumferentially threaded and shouldered cap to receive the tubular body, and a fuse at its point communicating with the charge-chamber, whereby when assembled the packing is secured against longitudinal and rotary motion, substantially as described.

477,493. ZITHER. VITAL BIEHLER, Brooklyn, N. Y. Filed June 25, 1890. Serial No. 356,065. (No model.)



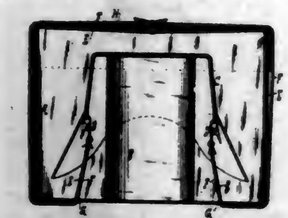
Claim.—1. In a zither, the combination, with a sounding-board, of a fret-board hollowed out on its under side and having its front edge fastened to the front edge of the sounding-board, so that the hollowed-out portion extends transversely over and clear of the sounding-board to form a clear space for the full development of the sounds, substantially as shown and described.

2. In a zither, the combination, with a sounding-board, of a metallic frame secured to the said board and comprising two parallel ends forming the pitch and tuning pin plates, and two parallel sides extending over the sounding-board and attached at their ends to the frame ends, substantially as shown and described.

3. In a zither, the combination, with a metallic frame secured to the sounding-board, of a finger-rest extending transversely and held adjustable on the sides of the said frame, substantially as shown and described.

4. A zither made with a four-sided metal string-frame, a sounding board or box secured thereto, and melody and accompaniment strings on said frame, the frame having a flange receiving the tuning-keys of the melody-strings, substantially as described.

477,494. BOX FOR HATS, BONNETS, &c. WILLIAM H. BICKELHAUPT, New York, N. Y. Filed Dec. 26, 1891. Serial No. 416,207. (No model.)



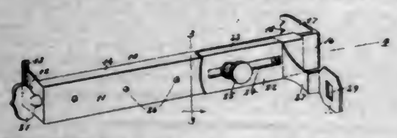
Claim.—1. The combination, with a box having a cover, of a string extending through the wall of the box to connect with and retain an article located therein and adapted to be secured over the box-cover to hold the latter in position, substantially as described.

2. The combination, with a box having a cover, of a string having a portion arranged inside the box to connect with and retain an article located therein, passing through the box to the exterior thereof, and having ends to tie over and hold the box-cover in position, substantially as described.

3. The combination, with a box having a cover, of a string arranged inside the box and having clasps to engage an article within the box, said string passing through the box-wall to the exterior thereof and having ends to tie over and hold the box-cover in position, substantially as described.

4. The combination, with a box having a cover, of a pair of strings having clasps arranged in the box to connect with and retain an article therein, said strings passing through the box-wall to the exterior thereof and adapted to be tied below and above the box-cover, substantially as described.

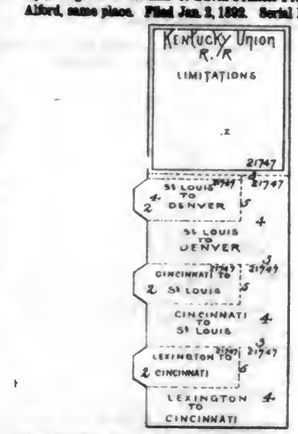
477,495. WINDOW-SHADE FIXTURE. GEORGE BIERN, Tacoma, Wash. Filed Aug. 17, 1891. Serial No. 402,813. (No model.)



Claim.—1. A shade-fixture comprising inner and outer plates 11 16, sliding one upon the other and having inward-bent ends 12 17, a series of threaded apertures 26 in the plate 11, a nut 19 on the inner plate, the screw-rod extending through the end 12 into engagement with said nut, the longitudinally-sliding bracket on the outer face of plate 12 and having a slot 24 and an arm 27, terminating in a head 28, and the set-screw 25, extending through slot 24 into one of the apertures 26, substantially as set forth.

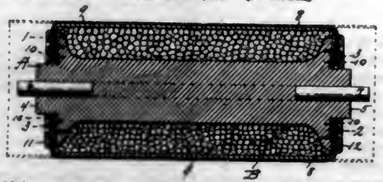
2. A shade-fixture comprising inner and outer plates 11 16, sliding one upon the other and having inward-bent ends 12 17, a series of threaded apertures 26 in the plate 11, a nut 19 on the inner plate, the screw-rod extending through the end 12 into engagement with said nut, the longitudinally-sliding bracket on the outer face of the plate 12 and having a slot 24, vertically-aligned apertured ears 32 above and below the slot, and an outward-projecting arm 27, having a head 28, the set-screw 25, extending through slot 24 into one of the apertures 26 and securing the sliding bracket in place, and the vertical bracket having vertically-aligned pintles on its rear edge, entering the apertures in the ears 32, substantially as and for the purpose set forth.

477,496. RAILROAD-TICKET. HENRY A. BERKLEY, Lexington, Ky., assignor of one-half to David Francis Frasee and Mitchell Carey Alford, same place. Filed Jan. 2, 1892. Serial No. 416,884. (No model.)



Claim.—A railway passenger-ticket comprising a body portion having a distinguishing-number, a series of detachable coupons, each having a detachable way-check, the coupons being provided with the same number as the body portion and printed with the names of the stations between which it is good for passage and each way-check printed and numbered to correspond with the coupon with which it is connected, substantially as and for the purpose specified.

477,497. INKING-ROLLER. CHARLES M. BOWMAN, Lebanon, Pa. Filed Oct. 3, 1891. Serial No. 407,592. (No model.)



Claim.—1. A printer's ink-roller composed of a central stock having annular end flanges, a yielding comminuted or broken packing around the stock between the end flanges, a woven tube over the packing, and a detachable elastic covering over the textile tube, substantially as described.

2. A printer's ink-roller composed of a central stock formed with annular end flanges, a comminuted or broken packing around the stock between the said flanges, a tubular textile covering longer than the body of the stock over the packing, and a removable elastic outer covering longer than the body of the stock, said coverings being adapted to have their projecting ends turned down and fastened to the end faces of the stock.

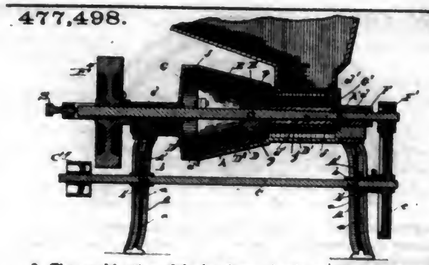
3. A printer's ink-roller composed of a central stock formed with annular end flanges and concaved end faces, a yielding and elastic packing around the stock between the annular flanges, a woven tube over the packing, an elastic tube over the woven tube, said tubes having their ends turned down and secured to the end faces of the stock, and metal disks secured on the end faces of the stock against the turned-down ends of the coverings, substantially as described.

477,498. GRINDING-MILL. NELSON P. BOWSER, South Bend, Ind. Filed Dec. 22, 1891. Serial No. 415,842. (No model.)

Claim.—1. The combination of the leg-frames having vertical slots in their webs, with the journal-boxes lying in said slots and having lateral extensions adjustably connected to the legs, substantially as described.

2. The combination of the leg-frame having a central vertical slot and vertical slits beside the same in its web, with the journal-box having a tubular portion projecting through the slot, and lateral extensions projecting over the slits, and bolts transfixing said ears and slits, substantially as specified.

477,498.



3. The combination of the leg-frames having vertical slots notched at their edges and vertical slits beside said slots in their webs, with the journal-boxes having tubular shaft-receiving portions, lateral extensions overlying said slits, and lugs adapted to engage the notches in the edges of the slots, and the securing-bolts, substantially as set forth.

4. The combination of the casing-shell having a recess for the grinding-shell and upstanding and depending perforated ears at one end of said recess, with the grinding-shell adapted to rest in the recess of the shell and having radial ears on one end arranged to coincide with the ears of the casing, and the bolts transfixing the ears of the shell and casing, substantially as and for the purpose described.

5. For a grinding-mill of the character described, the half casing D, having a semi-cylindrical recess for the reception of the crushing-cylinder, a semi-cylindro-conical recess for the reception of the grinding-shell, externally-projecting perforated ears at the end of the latter recess for attachment of said shell, main-shaft journal-bearings in its ends, and an opening at the bottom and larger end of the conical recess for escape of material, substantially as specified.

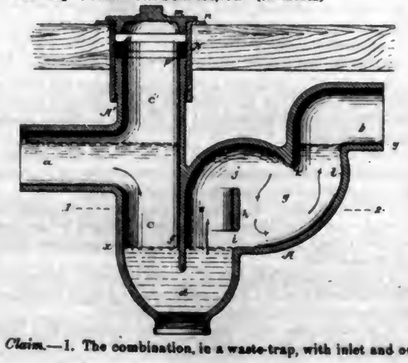
6. The combination of a main shaft and a removable grinding-cone and cylinder rigidly connected together and loosely mounted on said shaft, with a conical collar adjustably mounted on the shaft within the cone and transmitting motion from the shaft to the latter through interlocking lugs and ears, all constructed and arranged to operate substantially as and for the purpose described.

7. The combination of the main shaft having a tapered portion, with the grinding or crushing shell having an interior bore larger than the tapered portion of the shaft and slipped thereon, and a soft-metal bushing, substantially as described, whereby said shell is centered and fitted on said tapered portion of the shaft and may be removed therefrom with the bushing, substantially in the manner and for the purpose specified.

8. The combination of the main tapered shaft, the crushing-cylinder and grinding-cone formed integral and removably fitted on the shaft, the conical-faced collar fixed removably to the shaft within the cone, and the interlocking lugs between said collar and cone, and the bushing between the shaft and cylinder, substantially as and for the purpose described.

9. The combination of the leg-frames, the lower-half of casing having recesses D^7 D^8, and ears D^4 D^5, connecting said frames, the counter-shaft journaled therein, the main shaft journaled on the lower half of the casing, the gearing between said main and counter shafts, the crushing-cylinder and grinding cone on said main shaft, respectively resting in recesses D^7 and D^8, and the grinding-shell E, having ears *e e*, coinciding with ears D^4 D^5 of the casing and bolted thereto, all constructed substantially as and for the purpose set forth.

477,499. WASTE-TRAP. GEORGE F. BROWN, Philadelphia, Pa. Filed July 7, 1891. Serial No. 398,734. (No model.)



Claim.—1. The combination, in a waste-trap, with inlet and outlet passages, of the vertical passage *c*, forming a continuation of the inlet-passage, a cup *d*, passage *e*, a partition *f*, extending into said cup, with the receiver *g* between the passage *e* and the outlet-passage, and a partition *h*, separating the receiver from the passage *e*, whereby the waste water is directed to the dome and from thence to the receiver, substantially as specified.

2. The combination, in a trap, of the inlet and outlet openings and vertical passages *c* and *e* therein communicating at their bases with a receiver *g* between the passages and the waste, said receiver connected at its base with one of said passages, with a passage *j*, forming a communication between the passage *e* and the receiver at the upper end, the dome of said passage *j* being rounded, so as to direct the water which flows through the passage *j* down into the receiver before it passes away from the trap, substantially as described.

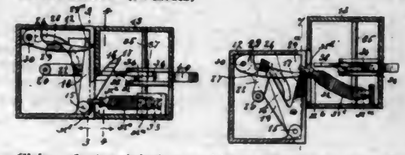
3. The combination, in a trap, of the inlet-passage *a*, a vertical passage *c*, forming a continuation of the inlet-passage, a vertical passage *e*, a partition *f*, separating said passages *c* and *e*, said passages being connected at their lower ends, a receiver *g*, a passage *j*, connecting said receiver with the passage *c* at the top, and a passage *i*, connecting the bottom of the receiver with the passage *e*, a lip *k*, separating the passage *j* and the outlet-passage *b* and acting to direct the water from said passage *j* into the receiver, substantially as described.

4. The combination, in a trap, of the inlets and outlets therefor, passages therein and a cleaning-opening extending above the trap, an adjustable sleeve on said extension, and a cap for said sleeve, substantially as and for the purpose described.

5. The combination, in a trap, of the passages therein, a screw-threaded cleaning extension, a screw-threaded sleeve adapted to said extension, a follower adapted to the screw-threads of said sleeve, packing between the follower and upper edge of the extension, and a cap for said extension, substantially as and for the purpose set forth.

6. The combination, in a trap, of the inlet and outlet passages, vertical passage *c*, communicating with the said inlet-passage, the passage *e*, and receiver *g*, an extension forming a continuation of the passage *c*, a flanged sleeve adjustable on said extension, packing between the extension and sleeve, and a cap adapted to the said flanged sleeve, substantially as described.

477,500. FASTENER FOR THE MEETING-RAILS OF SASHES. LORENZO M. BROWSON, Richmond Hill, N. Y. Filed Nov. 21, 1891. Serial No. 412,679. (No model.)



Claim.—1. A sash-lock comprising two registering cases adapted to be secured to the meeting-rails of a window-sash, a weighted tumbler pivoted in the upper sash-case and adapted to protrude into the lower sash-case, said tumbler having teeth thereon, and a pair of spring-pressed arms pivoted in the lower case and having their inner ends adapted to engage the teeth of the tumbler, substantially as described.

2. A sash-lock comprising two registering cases adapted to be secured to the meeting-rails of a window-sash, a weighted tumbler pivoted in the upper sash-case and adapted to extend into the lower sash-case, said tumbler having teeth thereon, a handled crank adapted to swing against the tumbler and force it into the lower sash-case, a pair of spring-pressed arms mounted in the lower sash-case and having toothed ends to engage the tumbler-teeth, and automatic means for throwing the crank against the tumbler by the closing of the lower sash, substantially as described.

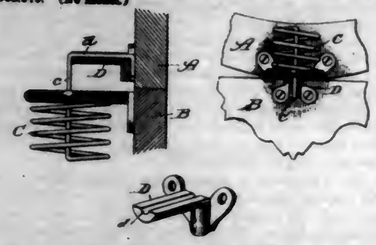
3. A sash-lock comprising two registering cases adapted to be secured to the meeting-rails of a window-sash, a weighted tumbler pivoted in the upper sash-case and adapted to extend into the lower sash-case, the tumbler having teeth thereon, a handled crank pivoted in the upper sash-case and adapted to swing against the tumbler, a spring-pressed arm mounted in the upper sash-case and having a stud thereon to engage an arm on the handled crank and hold the crank in unlocked position, a pair of spring-pressed arms pivoted in the lower sash-case and having inner terminal teeth to engage the teeth of the tumbler, and a tripping-arm pivoted in the lower sash-case and extending into the path of the arm of the upper sash-case, substantially as described.

4. A sash-lock comprising two registering cases adapted to be secured to the meeting-rails of a window-sash, a weighted tumbler pivoted in the upper sash-case and adapted to extend into the lower sash-case, said tumbler having teeth thereon, a handled crank pivoted in the upper sash case and adapted to swing against the tumbler, said crank having an arm at one end, a spring-pressed arm pivoted in one

end of the upper sash-case and having a stud to engage the arm of the handled crank when the latter is swung backward into the case, a pair of spring-pressed arms pivoted in the lower sash-case and adapted to engage the teeth on the tumbler, and a spring-pressed tripping-arm adjustably secured in the lower sash-case and extending into the path of the arm in the upper sash-case, substantially as described.

5. In a sash-lock, the combination of the oppositely-arranged cases carrying locking mechanism, as described, and the protruding and engaging arms adapted to operate the locking mechanism, one of said arms consisting of a rigid inner portion, an outer movable portion, and a spring connecting the two portions, substantially as described.

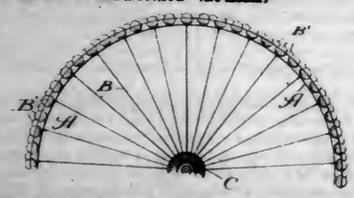
477,501. ROCKING-CHAIR ATTACHMENT. WILLIAM I. BUNKER, La Grange, Ill. Original application filed June 26, 1887, Serial No. 242,797. Divided and this application filed Apr. 29, 1889. Serial No. 308,919. (No model.)



Claim.—1. A spring attachment for platform rocking-chairs, comprising a compressible connecting spiral spring, in combination with a stud or bracket for attaching one of its ends to one of the members of a chair having a groove or channel lengthwise of its top in which the wire connecting it to the coils of the spring fits and is held by the tension of the spring, and means for attaching the other end of the spring to the other member of the chair, substantially as described.

2. In combination with the rocker and base-rail of a platform rocking-chair, a compressible connecting spiral spring and attaching devices for securing the same to the rocker and base-rail, the spring being secured at one of its ends to a bracket on one of the members of the chair and having the wire at its other end bent and extended lengthwise of the spring to a point beyond the end of its coils and then bent and extended crosswise to a point beyond the side of its coils and then bent lengthwise of the spring, and an attaching stud or bracket for the last-mentioned end having grooves to receive such crosswise and last-mentioned lengthwise-projecting portion, substantially as described.

477,502. WHEEL. WILLIAM I. BUNKER, La Grange, Ill. Filed Oct. 7, 1890. Serial No. 367,354. (No model.)



Claim.—1. In a vehicle-wheel, the combination of a rim and an elastic tire secured thereto, such tire being formed into a series of cushions arranged alternately on opposite sides of the center line of the rim, substantially as described.

2. In a vehicle-wheel, the combination of a rim and a series of elastic cushions secured thereto, such cushions being arranged alternately upon opposite sides of the center line of the rim, substantially as described.

3. In a vehicle-wheel, the combination of a rim, a series of elastic cushions secured thereto on either side of the center line thereof, and a band surrounding the rim and arranged to engage with the cushions to retain them in place upon the rim, substantially as described.

477,503. FLEXIBLE TUBE. WILLIAM I. BUNKER, La Grange, Ill. Filed Nov. 7, 1891. Serial No. 411,123. (No model.)

Claim.—1. A flexible tube provided with a series of springs contiguous to each other, the springs being adapted to lean in the same direction and when subjected to pressure in cross-section to fold one upon the other, and thus change the elastic action of the springs from

477,508.

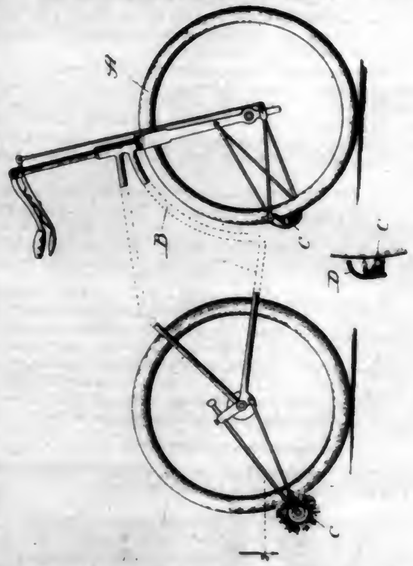


a longitudinal to a transverse direction, and having sufficient resiliency to resume their normal positions when relieved from pressure, substantially as described.

2. A flexible tube provided with a series of springs contiguous to each other, the springs being adapted to lean in the same direction and when subjected to pressure in cross-section to fold one upon the other, and thus change the elastic action of the springs from a longitudinal to a transverse direction, and having sufficient resiliency to resume their normal positions when relieved from pressure to hold the tube out in its original form and being on the inside of the tube, whereby they are concealed from view and a smooth outside surface is presented, substantially as described.

3. In combination with a wheel, a flexible tire of rubber or other suitable material provided with a series of springs contiguous to each other, the springs being adapted to lean in the same direction and when subjected to pressure in cross-section to fold one upon the other, and thus change the elastic action of the springs from a longitudinal to a transverse direction, and having sufficient resiliency to resume their normal positions when relieved from pressure, substantially as described.

477,504. WHEEL-GUARD. WILLIAM I. BUNKER, La Grange, Ill. Filed Feb. 27, 1892. Serial No. 422,906. (No model.)



Claim.—1. In combination with a wheel, a guard and brush adjacent to the periphery of the wheel, the guard serving to arrest upwardly-flying particles and the brush to clean the periphery, substantially as described.

2. In combination with a wheel, a guard and brush adjacent to the periphery of the wheel, at least one of them being set at an angle to arrest upwardly-flying particles, substantially as described.

3. In combination with a wheel, a guard and brush adjacent to the periphery of the wheel and mechanism for bringing the guard and brush into contact with the periphery for braking purposes, substantially as described.

4. In combination with a wheel, a brush adjacent to the periphery of the wheel and set at an angle to arrest upwardly-flying particles and throw the same sidewise, substantially as described.

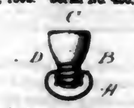
5. In combination with a wheel, a guard provided with a revoluble brush, substantially as described.

6. In combination with a wheel, a revoluble brush and mechanism to hold the brush in position, whereby it is caused to revolve by the revolution of the wheel, substantially as described.

7. In combination with a wheel, a brush adjacent to the periphery of the wheel and mechanism for bringing the brush into contact with the periphery for braking purposes, substantially as described.

8. In combination with a wheel, a guard provided with a brush adjacent to the periphery of the wheel, substantially at the point where centrifugal action causes adhering particles to separate from the wheel, and mechanism for bringing the brush into contact with the periphery for braking purposes, substantially as described.

477,505. WHEEL. WILLIAM I. BUNKER, La Grange, Ill. Original application filed Oct. 7, 1890, Serial No. 367,354. Divided and this application filed Mar. 29, 1892. Serial No. 426,905. (No model.)



Claim.—1. In a wheel, the combination of a rim provided with a series of threaded sockets, and a series of elastic cushions screwed into such sockets, substantially as described.

2. In a wheel, the combination of a rim provided with a series of threaded sockets, a series of elastic cushions provided with spiral springs, such springs being adapted to engage with the threaded sockets, substantially as described.

3. In a wheel, the combination of a rim and a series of spiral springs secured to such rim by means of their coils, substantially as described.

4. In a wheel, the combination of a rim provided with threaded sockets, and a series of spiral springs screwed into such sockets, substantially as described.

477,506. WHEEL. WILLIAM I. BUNKER, La Grange, Ill. Original application filed Oct. 7, 1890, Serial No. 367,354. Divided and this application filed Mar. 29, 1892. Serial No. 426,906. (No model.)



Claim.—1. In a wheel, the combination of a rim, an elastic tire of greater breadth than the rim, secured to such rim, and a band encircling the tire and dividing it into one or more bearing-surfaces, such surfaces being located at either side of the center line of the rim and beyond the outer edges of such rim, substantially as described.

2. In a wheel, the combination of a rim, an elastic tire placed thereon, and a band encircling such rim and tire and holding the two together, such band being the sole means of causing the tire to present one or more bearing-surfaces upon either side of the center line of the rim, substantially as described.

3. In a wheel, the combination of a rim, a tubular tire, and a band encircling the tire, holding it to the rim and dividing it into one or more pneumatic cushions at either side of the center line of the rim, substantially as described.

4. In a wheel, the combination of a concave rim, a tire composed of a flat strip of elastic material, and a band encircling such tire and forcing it into the rim, compelling it to assume a concavo-convex shape, whereby one or more independent and separate bearing-surfaces are formed at either side of the center line of the rim, substantially as described.

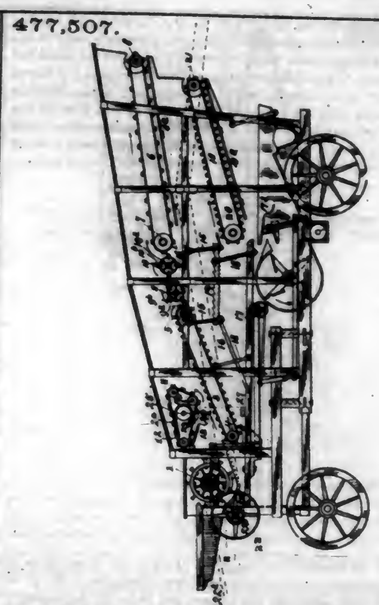
5. In a wheel, the combination of a rim, a series of pneumatic cushions composing the tire, and a band encircling such cushions, securing them to the rim and compressing them to increase their elasticity and regulate the tension of the air, substantially as described.

477,507. THRASHING-MACHINE. WESLEY BUTLER, Litchfield, Ill. Filed Oct. 12, 1891. Serial No. 408,473. (No model.)

Claim.—1. In a thrashing-machine, the combination of the thrashing-cylinder 1, the open endless beater arranged contiguous to or in close proximity to the cylinder, whereby it is adapted to receive the impact of the matter projected from the cylinder, and an open-mouthed case within the endless beater, substantially as set forth.

2. The combination, in a thrashing machine, of the thrashing-cylinder 1, the open endless beater 11, located in close proximity to the cylinder to receive the impact of matter projected by the cylinder, the

477,507.



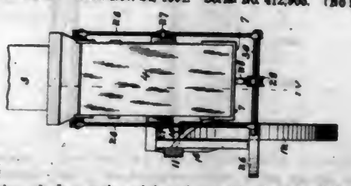
open-mouthed case 24 within the beater 11, and the spiral conveyer 25 and chutes 26, substantially as and for the purpose set forth.

3. The combination, in a thrashing-machine, of the thrashing-cylinder 1, the comb 13, the open endless beater 11, which projects over the comb, the open-mouthed case 24, the spiral conveyer 25, and chutes 26, substantially as and for the purpose set forth.

4. In a thrashing-machine, the combination of the carrier 3, comb 13 above the carrier, open-mouthed case 24 above the comb, the mouth of the case being adjacent to the comb, and an open beater operating in connection with and outside of the case, substantially as and for the purpose set forth.

5. The combination, in a thrashing-machine, of a pulley 22, adapted to act as a tightener to the drive-belt of the thrashing-cylinder, a belt-pulley on the shaft of pulley 22, and a belt passing over the belt-pulley and connected with the drive mechanism of a straw-stacker, whereby the latter is operated by means of the frictional contact of pulley 22 with the drive-belt of the thrasher, substantially as and for the purpose set forth.

477,508. AUTOMATIC GRAIN-WEIGHER. WESLEY BUTLER, Litchfield, Ill. Filed Nov. 24, 1891. Serial No. 412,908. (No model.)

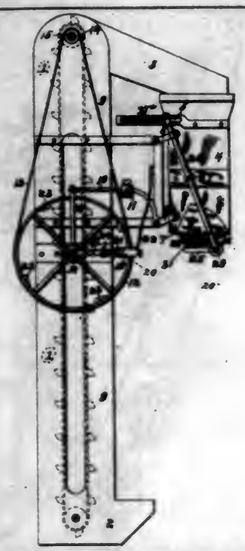


Claim.—1. In a grain-weigher, the combination of a sliding lid 5, hinged bottom 6, provided with an incline 28, and levers fulcrumed to the side of the hopper and connected with the lid, carrying a shaft having a roller 29, adapted to act on the incline, substantially as and for the purpose set forth.

2. The combination, in a grain-weigher, of the hopper supported on links 8, the scale-beam 10, the shaft 18, the loose wheel 12, provided with teeth 23, the bell-crank 16 17 on the shaft, having a sliding-toothed block 19 and spring 21, bearing against the block, the spring 22, bearing against the block when in normal position, crank 17^a, rods 25, levers 26, rods 27^a, lid 5, bottom 6, provided with incline 28, bar 30, and roller 29, all constructed and adapted to operate substantially as set forth.

3. The combination, in a grain-weigher, of a shaft 18, having a crank 17^a, a constantly-rotating wheel having teeth, a scale-beam, a hopper supported on the scale-beam having a lid and bottom, a bell-crank having an arm 16, bearing against the scale-beam when in normal position, and an arm 17, carrying a sliding block 19, provided

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with tooth 20, adapted to engage the teeth of the wheel when the arm 16 is released by the ascent of the scale-beam, levers 26, actuating the lid and bottom of the hopper, and rods 25 connecting the levers 26 to the arm 17 and to the crank 17ª upon the shaft 18, substantially as and for the purpose set forth.

477,509. OFFICE-DESK. LUTHER A. CRANE, Yonkers, N. Y. Filed June 18, 1891. Serial No. 396,791. (No model.)

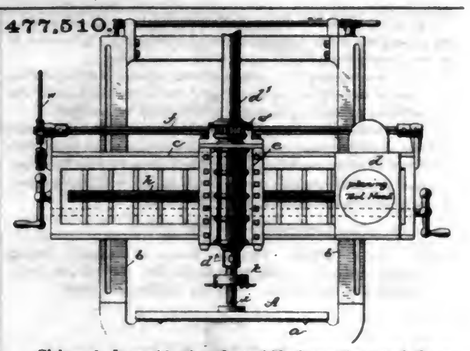


Claim.—1. A desk formed with a vertical well or compartment open at the top and a counterweighted and guided cabinet in said well adapted to be raised and lowered therein, in combination with an independent or unattached lifting strap or cord arranged in the desk, one end accessible from the outside and the other end depending into the well and provided with a lip to engage and raise the cabinet and with a weight to return the strap when released, substantially as shown and described.

2. The combination of a desk, a vertically-movable counterweighted cabinet therein, an independent or unattached lifting-strap mounted in the desk with one end exposed and accessible from the outside, the opposite end being provided with a lip to engage and lift the cabinet when the strap is drawn out, and a weight attached to the inner end of said strap to draw the same back when released, substantially as shown and described.

477,510. METAL-PLANER. THOMAS R. CHERRY, Bath, Me., assignor of one-half to Francis R. Torrey, same place. Filed July 22, 1891. Serial No. 400,280. (No model.)

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Claim.—1. In combination, the tool-block carrying a tool, the reciprocating platen, a rotary platen carried thereby and having gear-teeth, and means for operating said rotary platen, including a gear-wheel meshing with the teeth on the rotary platen, and an extensible shaft carrying the same, substantially as described.

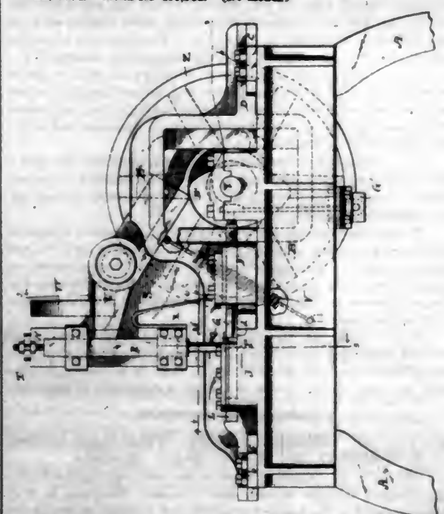
2. In combination, the cross-head carrying a planer-tool and a rotary tool-driver, a horizontal shaft with geared connections to the tool-driver, the vertical shaft *w*, the rotary platen carried by the reciprocating platen, and the connections from the vertical shaft *w* to the rotary platen.

3. In combination, the cross-head carrying a planer-tool and a movable tool-driver, the rotary platen carried by the reciprocating platen, and the driving connections between the rotary platen and the tool-driver, substantially as described.

4. In combination, the cross-head carrying a planer-tool and a movable tool-driver, a shaft *w*, a rotary platen carried by the reciprocating platen, extensible connections between the platen and the driving-shaft, and driving connections from the driving-shaft to the tool driver, substantially as described.

5. In combination, the cross-head carrying a planer-tool and a rotary tool-driver, a rotary platen carried by the reciprocating platen, a vertical driving-shaft *w*, the connections therefrom to the rotary platen and the tool driver, respectively, a supplemental tool-driver carried by the block of the main tool-driver, and geared connections from the main tool-driver to the supplemental tool-driver, substantially as described.

477,511. MACHINE FOR CUTTING AND BENDING NUT-BLANKS. WILLIAM L. CLOUSE and WILLIAM R. ANDERSON, Tiffin, Ohio. Filed Oct. 22, 1891. Serial No. 409,502. (No model.)



Claim.—1. The combination of a circular mandrel, a stationary shear-die, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to said stationary die, an independently-reciprocated clamping-die arranged intermediate of said bending-dies, in opposition to the mandrel, another reciprocative bending-die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, and a stripper reciprocative on said mandrel, substantially as set forth.

2. The combination of a circular mandrel, a stationary shear-die having a notched portion that presents a horizontal edge acute to a vertical edge, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to said stationary die, an independently-reciprocative clamping-die arranged intermediate of said bending-dies in opposition to the mandrel, another reciprocative bending-die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, and a stripper reciprocative on said mandrel, substantially as set forth.

3. The combination of a circular mandrel, a stationary shear-die, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to said stationary die, an independently-reciprocated clamping-die adjustable as to throw and arranged intermediate of said bending-dies in opposition to the mandrel, another reciprocative bending die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, and a stripper reciprocative on said mandrel, substantially as set forth.

4. The combination of a circular mandrel, a stationary shear-die, an adjustable gage at right angles to the mandrel, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to said stationary die, an independently-reciprocated clamping-die arranged intermediate of said bending-dies in opposition to the mandrel, another reciprocative bending-die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, and a stripper reciprocative on said mandrel, substantially as set forth.

5. The combination of a circular mandrel, a stationary shear-die, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to said stationary die, a spring-controlled cam-actuated clamping-die having an independent reciprocation intermediate of said bending-dies in opposition to the mandrel, another reciprocative bending-die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, and a stripper reciprocative on said mandrel, substantially as set forth.

6. The combination of a circular mandrel, a stationary shear-die, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to said stationary die, an independently-reciprocative clamping-die arranged intermediate of said bending-dies in opposition to the mandrel, another reciprocative bending-die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, a sliding block carrying a stripper in loose engagement with said mandrel, and a spring-controlled cam-actuated lever engaging the slide-block, substantially as set forth.

7. The combination of a stationary horizontal bed provided with a standard, a circular mandrel hung from the standard, a block loose in guides on said standard, a stripper carried by the block in loose engagement with the mandrel, a tilting lever connected to said block, a buffer-spring arranged on the aforesaid standard in opposition to the lever, a shear-die fast on said bed, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to the aforesaid shear-die, an independently-reciprocative clamping-die arranged intermediate of said bending-dies in opposition to said mandrel, and another reciprocative die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, substantially as set forth.

8. The combination of a stationary horizontal bed provided with a standard, a circular mandrel hung from the standard, a block loose in guides on the standard, a stripper carried by the block in loose engagement with the mandrel, a cam-actuated lever trunnioned on said standard and connected to said block, a shear-die fast on said bed, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to the aforesaid shear-die, an independently-reciprocative clamping-die arranged intermediate of said bending-dies in opposition to said mandrel, and another reciprocative die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, substantially as set forth.

9. The combination of a stationary horizontal bed provided with a standard, a circular mandrel hung from the standard, a block loose in guides on the standard, a stripper carried by the block in loose engagement with the mandrel, a cam-actuated spring-controlled lever trunnioned on said standard and connected to said block, a shear-die fast on said bed, a pair of reciprocative bending-dies, one of which is also a shear-die, in opposition to the aforesaid shear-die, an independently-reciprocative clamping-die arranged intermediate of said bending-dies in opposition to said mandrel, and another reciprocative die opposed to that side of the mandrel farthest from the aforesaid bending and clamping dies, substantially as set forth.

10. The combination of a stationary horizontal bed, a block integral with the bed and provided with a removable top having a perforated flange, a stationary shear-die arranged in the block, a circular mandrel having the same center as the perforation in the box top flange, a yoke reciprocative on the bed and having a rear extension provided with an integral box, a pair of bending-dies arranged in the yoke-box, one of these dies being also a shear-die, in opposition to the one in the bed-block, an independently-reciprocative clamping-die also arranged in said yoke-box intermediate of the bending-dies in opposition to the mandrel, another bending-die on a front extension of said yoke, a standard on said bed, provided with a support for said mandrel, a slide-block reciprocative on the standard, and a stripper carried by the slide-block in loose engagement with the aforesaid mandrel, and the perforation in said box-top flange, substantially as set forth.

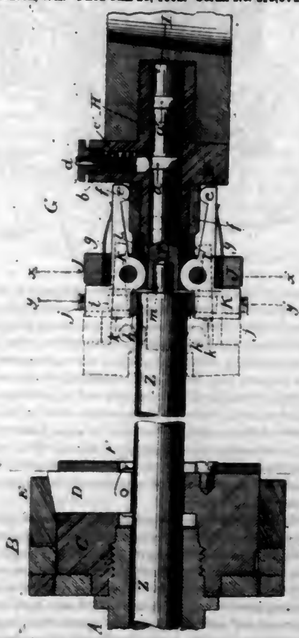
477,512. AWNING. PETER COMBS and WILLIAM H. GRAY, St. Louis, Mo. Filed Oct. 7, 1890. Serial No. 367,363. (No model.)



Claim.—1. The combination of the bushed hanger 20, formed integral with jaws 24, having lips 24ª, and a fixed anti-friction lining—such as glass or porcelain—fitting in a recess in the hanger and its ends being engaged by lips 24ª, said jaws being adapted to receive the awning-roller, so that the awning can pass through the space between the lips of the jaws, substantially as set forth.

2. The combination of the bushed hanger 20, formed integral with jaws 24, such jaws being free from inwardly-projecting side flanges, and an anti-friction lining—such as glass or porcelain—adapted to be slid into position laterally of the jaws, with means for fastening the lining in the hanger, consisting of inwardly-projecting lips 24ª, that engage the ends of the lining, and bolts 26, countersunk in the lining, substantially as set forth.

477,513. FEEDING DEVICE FOR LATHES. CONRAD M. CONRADSON, Madison, Wis. Filed Jan. 29, 1892. Serial No. 419,674. (No model.)



Claim.—1. In a lathe or machine having a hollow arbor through which the material is fed, the combination, with such hollow arbor, of a chuck applied thereto, and a rod-gripping device mounted upon a part of the lathe which is movable toward and from the face of the

chuck, said rod-gripping devices being adapted to take hold of the rod and draw or feed it through the hollow arbor, substantially as shown and described.

2. In combination with the hollow arbor and its chuck, a combined rod-gripping and centering device substantially such as shown and described, movable toward and from the face of the chuck and adapted to take hold of the rod, draw it through the hollow arbor, and center it.

3. In combination with the hollow arbor and its chuck, a tool post or turret movable toward and from the face of the chuck, and rod-gripping devices mounted upon the tool post or turret to take hold of the rod and draw it through the hollow arbor and chuck.

4. In combination with the hollow arbor and its chuck, the rod-gripping device G, having the jaws K, said gripping device comprising two parts H and I, adapted to move lengthwise, one in relation to the other, and thereby actuate the gripper-jaws, all substantially as shown and described.

5. In combination with the hollow arbor and its chuck, the rod-gripping device G, having the jaws K, said gripping device comprising two parts H and I, one of which is adapted to move lengthwise and to rotate relatively to the other, all substantially as shown and described.

6. In combination with a turret, a bushing H, mounted therein and provided with an inclined face or collar *f*, and spindle I, provided with head J and gripping-levers K and moving longitudinally within the bushing, all substantially as shown and described.

7. In combination with bushing H, having pin *d* and collars *f f'*, spindle I, provided with grooves *a a'*, and pivoted gripping-levers K.

8. In combination with the hollow arbor and its chuck, a tool post or turret movable toward and from the face of the chuck, a rod-gripping mechanism carried by the said tool post or turret and provided with gripping-jaws which are automatically thrown into and out of action by the longitudinal movement of said jaws relatively to the tool post or turret.

477,514. FOLDING CHILD'S CARRIAGE. WILLIAM COOK, New York, N. Y. Filed July 15, 1891. Serial No. 399,655. (No model.)



Claim.—1. In a folding carriage, the combination, with the folding running-gear frame consisting of side bars carrying stud-axles having wheels mounted thereon, cross-bars rigid throughout their length, and pivotal connections between all the ends of the cross-bars and said side bars, of a folding body supported on springs secured to the side bars of the running-gear frame and consisting of side members, end members rigid throughout their length, and pivotal connections between all the meeting ends of said members, whereby the corresponding members of the body and the running-gear frame will have corresponding movements and will swing in unison and the carriage may be folded without disconnecting any of the connections between the meeting ends of the side and end members of the body, substantially as shown and described.

2. In a folding carriage, the combination, with the folding running-gear frame consisting of side bars carrying stud-axles having wheels mounted thereon, cross-bars rigid throughout their length, and pivotal connections between all the ends of the cross-bars and said side bars, of a folding body-frame supported on springs secured to the side bars of the running-gear frame and consisting of side bars having panels erected thereon, and end bars rigid throughout their length and having panels erected thereon, and pivotal connections between all the meeting ends of the body-frame and panels, whereby the corresponding members of the body and the running-gear frame will have corresponding movements and will swing in unison and the carriage may be folded without disconnecting any of the connections between the meeting ends of the side and end members of the body, substantially as shown and described.

3. In a folding carriage, a folding body consisting of side and end members having all their meeting ends connected by swinging or pivotal connections, the ends of the side members being extended inwardly and the end member forming the back of the body, being widened at the top so as to project over the inwardly-extended ends of the side members, thereby forming a head-rest for the occupant of the carriage, substantially as shown and described.

4. In a folding carriage, the combination, with a folding body having an open bottom, of a vertically-swinging bottom board held thereto at one side and extending a portion of the length thereof, and a removable seat engaging said bottom board and completing the closure of the bottom, substantially as described.

5. In a folding carriage, the combination, with a folding running-gear, of a folding body thereon comprising a base-frame composed of side bars, and cross-bars pivotally connected at both ends to said side bars, and panels of rattan erected on said side bars and cross-bars, the said panels being intertwined at the adjacent edges to form a loose permanent connection, whereby the panels will follow the movements of the base-frame, substantially as described.

6. In a folding carriage, a folding body formed of side and end members, the latter being pivoted at both their ends to the side members by yielding connections, whereby slight movements of said members are permitted independently of the pivotal movement, substantially as shown and described.

7. A child's carriage comprising a folding running-gear consisting of side bars carrying stud-axles having wheels mounted thereon, cross-bars each pivotally connected at both ends with the side bars, and a folding body having side and end members, the ends of the side members being all extended inwardly, and pivotal connections between each end of each end member and the adjacent inwardly-extended end of the side member, such connections being in alignment with the pivots of the running-gear, whereby the moving parts of the carriage will swing in unison and space will be afforded for the bottom board and upholstery when the carriage is folded, substantially as shown and described.

8. In a body for folding carriages, the combination of the side members and the rigid end members, each end of which is pivotally supported by a corner plate *g*, secured to one of the side members, substantially as shown and described.

9. In a folding carriage, the combination, with the folding running-gear frame consisting of side bars carrying stud-axles having wheels mounted thereon, rigid cross-bars, each pivoted at both ends to the side bars, and pushers having a handle-bar secured thereto by pivots at both ends of the handle-bar, of a folding body supported on said springs, secured to the side bars and consisting of side members and rigid end members, and pivotal connections between all the meeting ends of said members, said connections being in alignment with the pivots of the running-gear frame and handle-bar, whereby the moving parts of the carriage will swing in unison and the complete carriage may be folded or collapsed without disconnecting or dismembering the parts, substantially as shown and described.

477,515. PORTABLE BATH. ALFRED H. COX and ISAAC F. HALEY, New York, N. Y. Filed Aug. 25, 1891. Serial No. 402,674. (No model.)

Claim.—1. In a suspensible bathing device, the combination, with a tub having a concave bottom and a drain-tube extending from said bottom, of a collapsible screen-wall above the tub and flexible rigging adapted to collapse the wall, substantially as described.

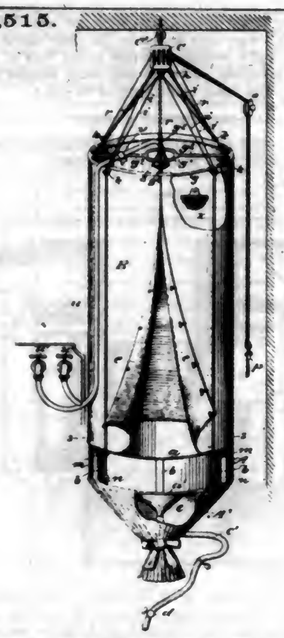
2. In a suspensible bathing device, the combination, with a tub at its lower end having a concave bottom wall and a drain-pipe for the tub, extending from the center of said bottom wall, provided with a stop-cock, of a vertically-collapsible screen-wall having its lower edge joined to the top of the tub, flexible rigging and pulley-blocks for hoisting and lowering the tub and collapsing the screen-wall, and a water-supply device, substantially as described.

3. In a suspensible bathing device, a tub comprising a top and bottom hoop, a water-proof side wall, and a dished or concave bottom wall centrally perforated and provided with a drain-tube, substantially as described.

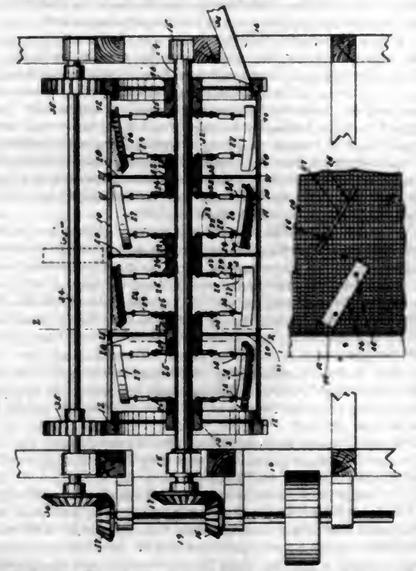
4. In a suspensible bathing device, the combination, with a circular tub having a convex bottom, a drain-pipe for said bottom, provided with a stop-cock, and rigging for raising and lowering the tub, of a water-proof screen-wall suspended from above the tub and attached to the tub by its lower edge, and a clean-water-supply device having a spray-nozzle thereon adapted to discharge water near the top of the screen-wall, substantially as described.

5. In a suspensible bathing device, the combination, with a circular tub having a central hole in its concave bottom wall and a drain-hose tube connected thereto below the bottom, of a collapsible screen-wall supported from above and adapted to inclose the tub and gathered below the tub to retain and conceal the drain-hose, substantially as described.

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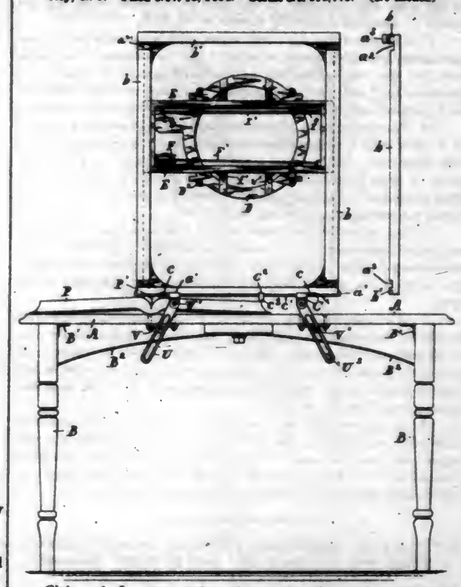
477,516. COAL-SCREEN. JAMES J. COTHE, Old Forge, Pa. Filed Dec. 22, 1891. Serial No. 415,841. (No model.)



Claim.—1. The combination, with the supporting shaft and the screen mounted thereon, said screen having supporting-arms with recessed hubs to turn loosely on the shaft, of paddles and brushes having collars keyed to the shaft, the collars of the brushes and paddles being recessed so as to interlock with the hubs which support the screen, substantially as described.

2. A screening apparatus consisting in the rotary shaft provided with series of interlocking hubs, the central hub of each series being loose on the shaft and the two outer hubs of each series being fixed to the shaft, radial arms projecting from the loose hubs, a tubular screen carried thereby, adjustable radial arms projecting from the fixed hubs, brushes and blades connecting the outer ends of the arms of adjacent fixed disks, and means for operating the shaft and screen, substantially as set forth.

477,517. TYPE-WRITING MACHINE. JOSEPH M. CRARY, Jersey City, N. J. Filed Nov. 13, 1891. Serial No. 411,773. (No model.)



Claim.—1. In a type-writer, the combination, with a table and its supports, of a flat platen adjustable to and from the table-top, type mechanism, and means supported wholly upon the platen for moving the type mechanism transversely and longitudinally over the platen, as and for the purpose set forth.

2. In a type-writer, the combination, with a table and its supports, of a flat platen adjustable to and from the table-top and provided with seats, a bed-frame supported removably upon said seats, and type mechanism, with means for moving the same longitudinally and transversely upon the bed-frame, substantially as set forth.

3. In a type-writer, the combination, with a table and its supports, of a flat platen adjustable to and from the table-top, a clamping-frame resting upon the platen, seats upon the platen and clamping-frame, a bed-frame adapted to hinge upon said seats, and type mechanism and means for moving the same longitudinally and transversely upon the bed-frame, substantially as herein set forth.

4. In a type-writer, the combination, with a table and its supports, of a flat platen adjustable to and from the table-top with seats attached to the platen below its top surface, a rectangular bed-frame surrounding the platen and supported upon said seats with the top of each end of the frame below the top of the platen and the sides of the frame partly below the top of the platen, and type mechanism, with means for moving the same longitudinally and transversely upon the bed-frame, as and for the purpose set forth.

5. The combination, with a supporting-table, of a flat platen adjustable to and from the table-top to support a leaf of the book, clamping-strips extending over the edges of the platen and connected by tie-bars, and a movable clamping-strip adjustable upon the said bars over the surface of the platen, and type mechanism sustained upon the tie-bars and adjustable longitudinally and transversely over the platen, as and for the purpose set forth.

6. In a type-writer, the combination, with a supporting bed-frame having a carriage movable longitudinally therein and having type mechanism movable transversely upon the carriage, of the racks R upon the opposite edges of the frame and the arms *r*, connected by link *r'* and pivoted at the opposite ends of the carriage and provided with the fixed dogs *s* and the pivoted pawls *s'*, with springs for pressing the pawls into the racks, substantially as set forth.

7. In a type-writer, the combination, with a supporting-bed frame having a carriage movable longitudinally thereon and having type mechanism movable transversely upon the carriage, of the racks R upon the opposite edges of the frame, the arms *r*, carrying the dogs *s* and pawls *s'*, as set forth, and the rod *r'*, connected directly to one

of the arms and indirectly to the other by the lever r^6, as and for the purpose set forth.

8. In a type-writer, the combination, with a supporting-bed frame having a carriage movable longitudinally thereon and having type mechanism movable transversely upon the carriage, of the racks R upon the opposite edges of the frame, the arms r, carrying the dogs s and pawls s', as set forth, and the rod r', connected directly to one of the arms and indirectly to the other by the lever r^6, having the handle r^5, attached removably thereto, as set forth.

9. In a type-writer, the combination, with a carriage and a type mechanism movable thereon, of a bell l^3 and the hammer l^2, movable with the type mechanism, the hammer having near its fulcrum the pendent dog l^4 and pin l', and the carriage being provided with the stud l, affixed adjustably in the path of the dog l^4, as herein set forth.

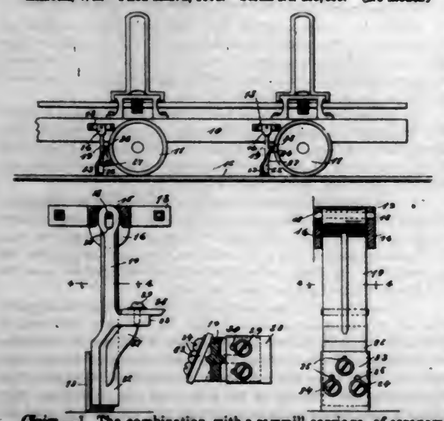
10. The combination, with the carriage of a type-writing machine, of a plate with type mechanism movable upon the carriage, a feed-rack fixed upon the carriage, a slide movable upon the plate with spring to press it toward the feed-rack, a spacing-lever with pawl fitted to the feed-rack, and means for retracting the slide when reversing the carriage, substantially as set forth.

11. In a type-writer, the combination, with a flat platen and type mechanism supported by the platen and movable longitudinally and transversely over the same, of links attached to the platen and adjustable to the thickness of a book upon a table-top, substantially as set forth.

12. In a type-writer, the combination, with a flat platen and type mechanism supported by the platen and movable longitudinally and transversely over the same, of the ears C, attached to the platen, and the links U, attached thereto by clamping-screws and operated as adjustable legs to set the platen to the thickness of the book upon the table-top, substantially as set forth.

13. In a type-writer, the combination, with a flat platen and type mechanism supported by the platen and movable longitudinally and transversely over the same, of ears attached to the platen, and links jointed thereto by clamping-screws, tie-rods connecting such links, and a table with bearings to receive such tie-rods, as set forth.

477,518. SCRAPER FOR SAWMILLS. CHARLES M. CROSKEITH, Kimball, Wis. Filed Mar. 2, 1892. Serial No. 423,463. (No model.)



Claim.—1. The combination, with a sawmill-carriage, of scrapers secured thereto and adapted to scrape the track and wheels thereof, substantially as described.

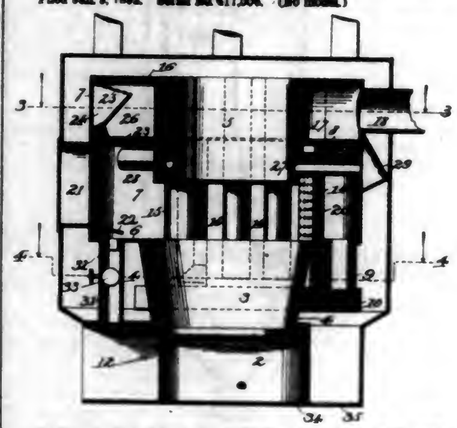
2. The combination, with a sawmill-carriage and its track, of scrapers suspended from the carriage adjacent to the wheels, said scrapers being adapted to frictionally engage the track and wheels, substantially as described.

3. As a new article of manufacture, a scraper comprising a hanger adapted to be secured to a sawmill-carriage, a scraper-body suspended from the hanger, and scraping-surfaces arranged at the lower end of the body and on the back side thereof, substantially as described.

4. The combination, with the sawmill-carriage and its track, of a hanger adapted to be secured to the carriage adjacent to the wheel, a scraper-body pivoted in the hanger and having a ledge on its back side, a wear-plate secured to the lower end of the scraper-body and adapted to engage the rail, and a wear-plate secured to the ledge so as to engage the face of the carriage-wheel, substantially as described.

5. The combination, with the sawmill-carriage and its track, of a hanger adapted to be secured to the carriage adjacent to a wheel, said hanger having parallel flanges arranged on its outer and inner edge, a scraper-body suspended in the hanger and adapted to move vertically therein, said body having its lower end placed at an angle to the track-rail, a wear-plate secured to the lower end of the body to engage a rail, and a wear-plate secured to the back of the body, so as to project therefrom, said wear-plate being adapted to engage the face of a carriage-wheel, substantially as described.

477,519. HOT-AIR FURNACE. JAMES CUNNINGHAM, Dunbore, Pa. Filed Jan. 9, 1892. Serial No. 417,504. (No model.)



Claim.—1. In a heater or air-furnace, the combination, with a fire-box having a horizontal wall extending outward from its top and forming, in conjunction with a vertical and an upper horizontal wall, a draft-space surrounding the top of the fire-box, of a curved draft-chamber extending nearly around the outside of the fire-box, draft-pipes connecting the said chamber with curved draft-chambers above, the bottom of said upper draft-chambers being the top of the draft-space surrounding the top of the fire-box, and drop-pipes opening from space in rear of the top of the fire-box into the top of the lower curved draft-chamber, substantially as and for the purposes set forth.

2. In a heater or furnace, the combination, with an upper and a lower curved draft-chamber connected at the front of the heater by vertical draft-pipes, of a draft-space extending entirely around the open top of the fire-box, and drop-pipes giving communication between said space and the lower draft-chamber, air-pipes traversing said upper chamber, and the draft-space between it and the lower curved draft-chamber, and a damper regulating a draft-opening in the bottom of the upper draft-chamber, the bottom of which chamber forms the top of said draft-space, by which direct communication between the draft-space and said upper draft-chamber may be established and cut off, substantially as and for the purposes set forth.

3. In a heater or furnace, the combination, with a fire-box and with a draft-space surrounding the top thereof, of two partly-circular draft-chambers, one above and one below, air-pipes traversing the upper chamber and the draft-space between it and the lower draft-chamber, draft-pipes connecting the rear portion of the lower draft-chamber with the draft-space around the top of the fire-box, vertical pipes connecting said draft-chambers, a drum surrounded by and dropping below the upper draft-chamber, its closed bottom hanging above the fire-space, and radial pipes giving communication with said drum and the exterior, their outer ends having hoods or screens, and the inner ends opening above the bottom of the drum, substantially as and for the purposes set forth.

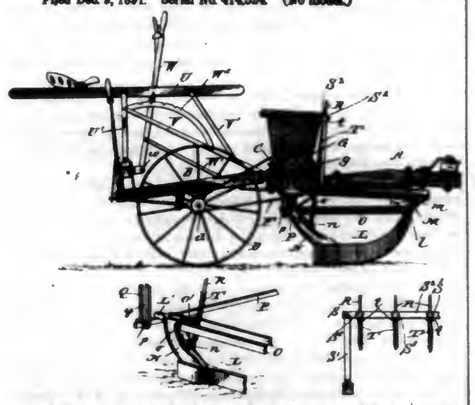
4. In a furnace, the combination, with the fire-chamber and with a circular draft-space surrounding and lying above the upper end of the fire-chamber, of a draft-chamber partly surrounding and lying wholly outside the fire-chamber and below the draft-space, with which it is connected near its middle portion by drop-pipes, draft-pipes connecting the ends of said draft-chamber with semicircular draft-chambers above, concentric air-pipes traversing the draft-pipes and upper draft-chamber, a flue into which the upper semicircular chambers discharge, a draft-damper closing an opening by which the circular draft-space communicates with the semicircular draft-chambers above, an air-drum closed at the bottom and open above, surrounded by and dropping below the semicircular draft-chambers, and radial pipes traversing the circular draft-space and communicating with the interior of the air-drum near its base and with the exterior hot-air space, substantially as and for the purposes set forth.

5. In a furnace or heater, the combination, with a draft-space communicating directly with the fire-chamber, of an air-drum hanging partly within said space and having its closed bottom and lower portion

directly over the fire-chamber, semicircular draft-spaces surrounding the upper portion of said drum and provided with dampered openings communicating with the draft-space below, a flue opposite the dampered openings into which said semicircular spaces discharge, radial air-pipes traversing the draft-passage around the drum and entering the drum near its closed bottom, their outer ends being covered by hoods having a downward inclination and expansion or flare, substantially as and for the purposes set forth.

6. In a furnace or heater, the combination, with an air-drum having its closed lower portion hanging over the fire-chamber and surrounded by a circular draft-space traversed by air-heating pipes, of radial air-heating pipes connecting the interior of said drum with the exterior hot-air space, the exterior ends of said pipes being overhung by hoods opening downward and converging toward the pipe-entrance, substantially as and for the purposes set forth.

477,520. GRAIN-DRILL. WILLIAM H. DAVIS, Fond du Lac, Wis. Filed Dec. 9, 1891. Serial No. 414,594. (No model.)



Claim.—1. In a grain-drill, substantially as described, the combination of the front fluke-frame A, the rear or wheel frame B, an upright, as U', a bar V, connecting the said upright U' with the front frame, the lever W, pivoted at its lower end, and the bar W' extended below the bar V and pivoted at its rear end to the lever W and at its forward end to the fluke-frame, substantially as set forth.

2. In a grain-drill, the combination of the front frame, the rear frame pivotally jointed to the front frame, the seat-bar, the uprights or bars U', pivoted at their lower ends to the rear frame and at their upper ends to the seat-bar, the bars V, pivoted at their rear ends to the uprights U' and at their forward ends to the front frame, the bars V', pivoted at one end to the bars V and at their opposite or upper ends to the seat-bar, the rack W^3, supported on the bars V, the lever W, pivoted at its lower end to the rear frame, and the bar W', connecting said lever with the front frame, substantially as and for the purposes set forth.

3. In a grain-drill, substantially as described, the combination of the flukes pivoted at their forward ends and provided at their rear ends with rearwardly-projected lugs L', a bar P, arranged below the said lugs L', and a support for the said bar P, substantially as set forth.

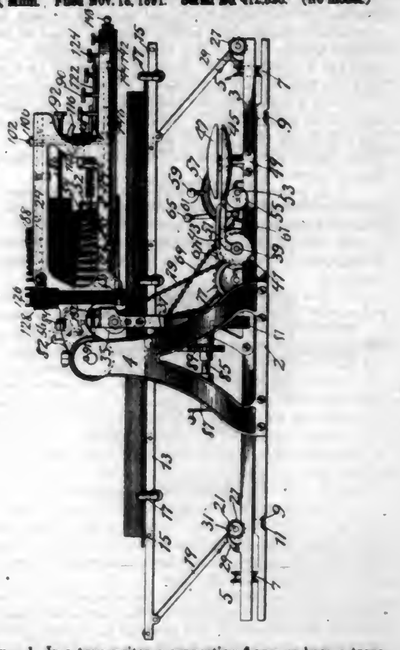
4. The combination, in a grain-drill, of the framing, the bars or frames Q, secured thereto and having slots q, the bar P, fitted at its ends in the slot q, and the flukes pivoted at their front ends and provided at their rear ends with lugs L' to rest upon the bar P, all substantially as and for the purposes set forth.

5. The combination, substantially as described, of the framing, the blocks M, secured to the framing and provided with slots or spaces m^3, and the fluke having its front end fitted in the central slot m^3 and provided with the side braces O, having their front ends fitted in the slots m^3 on opposite sides of the front end of the fluke, and the bolt by which to pivotally secure the front end of the fluke proper and its braces to the block M, all substantially as and for the purposes set forth.

6. The improvement in grain-drills herein described, consisting of the main frame, the seed-box, the flukes having the seed-tubes at their rear ends, the presser-rods R, connected at their lower ends with the said seed-tubes, and a guide-frame for the upper ends of the said rods, such frame being formed with the front and rear sections S^2 S^3, between which the rods R are passed, and pins S^3, arranged on opposite sides of such rods R and extended between the sections S^2, substantially as and for the purposes set forth.

7. The improvement in grain-drills, substantially as herein described and shown, comprising the blocks M, having spaces m^3 m^3 m^3, the flukes having side braces O and pivoted at their front ends to the blocks M and provided at their rear ends with lugs L', the frames or bars Q, having slots q, the bar P, fitted at its ends in slots q and arranged below the lugs L', and the presser-rods, all substantially as and for the purposes set forth.

477,521. TYPE-WRITING MACHINE. SEWARD A. DEAN, Minneapolis, Minn. Filed Nov. 18, 1891. Serial No. 412,330. (No model.)



Claim.—1. In a type-writer, a supporting frame or base, a transversely-movable carriage mounted thereon, and an automatically-adjustable two-part book-support mounted upon said carriage.

2. In a type-writer, the combination of a suitable base or support, a transversely-movable carriage mounted thereon, an automatically-adjustable two-part book-support mounted upon said carriage, a stationary writing mechanism arranged above said book-support, and means for moving said carriage to produce letter and word spacing.

3. In a type-writer, the combination of a suitable base, a transversely-movable carriage mounted thereon, an automatically-adjustable two-part book-support mounted upon said carriage, a stationary writing mechanism arranged above said book-support, and means for moving said carriage laterally to provide letter and word spacing.

4. In a type-writer, the combination of a suitable base or support, a transversely-movable carriage mounted upon said support, an automatically-adjustable two-part book-support upon said carriage for holding the book or material to be written upon, writing mechanism arranged above said carriage, and means for moving said carriage laterally to provide letter and word spacing.

5. In a type-writer, the combination, with a suitable two-part book-support, of a writing mechanism arranged above said book-support and means for adjusting and holding said writing mechanism so as to bring it in position for writing upon either part of said book-support.

6. In a type-writer, the combination of a supporting base or frame, a laterally-movable carriage mounted thereon, an automatically-adjustable two-part book-support arranged above said carriage, a writing mechanism arranged above said book-support and capable of being adjusted so as to bring it over either part of said book-support.

7. In a type-writer, the combination, with a book-support, of a writing mechanism arranged above said book-support and means for adjusting said writing mechanism so as to bring it over either part of said book-support.

8. In a type-writer, the combination of a suitable frame or base, a laterally-movable carriage mounted thereon, a book-support provided upon said carriage, means for moving said carriage laterally, and writing mechanism arranged above said book-support and arranged to print upon a book or other material arranged upon said book-sup-

port, and means for moving said book or material longitudinally upon said book-support.

9. In a type-writer, the combination, with a writing mechanism, of a book-support arranged beneath said writing mechanism, means for moving said book-support laterally, and means for feeding or moving a book or material arranged upon said book-support longitudinally.

10. In a type-writer, the combination, with a suitable base, of a laterally-movable carriage arranged thereon, an automatically-adjustable two-part book-support arranged upon said carriage, and writing mechanism arranged above said book-support, means for moving said carriage laterally as the writing mechanism is operated for producing letter and word spacing, and means for moving the book or material upon said book-support longitudinally for producing line-spacing.

11. In a type-writer, the combination, with the supporting-carriage, of the book-support 13, provided with suitable supporting-rolls and with an operating-roll, and means for turning said operating-roll for moving the material upon said book-support longitudinally for producing line-spacing.

12. In a type-writer, the combination of the book-support 13, the pivoted brackets 19, connected therewith, suitable springs connected with said brackets, and means for adjusting said springs.

13. In a type-writer, the book-support 13, provided with the supporting-rolls 15, the operating-roll 35, and means for driving said operating-roll.

14. In a type-writer, the book-support 13, provided with the supporting-rolls 15 and the guide-rolls 17, substantially as described.

15. In a type-writer, the combination, with the book-support, of the operating-roll 35, the operating-lever 43, and means connecting said lever with said roll for driving the same, substantially as described.

16. In a type-writer, the combination, with the book-support and operating-roll 35, of the operating-lever 43 and means connecting said lever with said roll and means for limiting the movement of said lever.

17. In a type-writer, the combination, with the line-spacing lever 43, provided with a series of dogs 51, and the handle 45, of the stationary plate 47, the eccentric 55, the lever 59, provided with the pointer 61, and the graduated scale 57, substantially as described.

18. In a type-writer, the combination, with the laterally-movable carriage 3, of the book-support thereon, the line-spacing lever 43, provided with a series of dogs 51, a stationary plate 47, a shaft 53, provided with the eccentric 55, the handle 59, pointer 61, and graduated scale 57, substantially as described.

19. The combination, with the book-support 13, of the brackets 19, pivoted thereto, the springs 25, connected to said brackets and to snafts 21, the ratchets 27, and pawls 29 for adjusting the tension of said springs, substantially as described.

20. In a type-writer, the combination, with a suitable two-part support arranged to hold a book or paper in a flat or level position with its upper surface in position to be written upon, of a writing mechanism arranged above said support, means for holding said writing mechanism in a horizontal position, means for moving said writing mechanism laterally to bring it over either part of said support, and means for turning said writing mechanism into a substantially vertical position.

21. In a type-writer, the combination, with a two-part book-support, of writing mechanism arranged above said book-support, means for holding said writing mechanism in position to write upon the book or paper held upon said book-support, means for adjusting said writing mechanism laterally to bring it over either part of said book-support, and means for turning said writing mechanism into an upright position, substantially as described.

22. In a type-writer, the combination, with a suitable base and a two-part book-support arranged thereon, of standards upon said base, a cross-bar supported thereon, and a laterally-movable writing mechanism supported solely from said cross-bar above said book-support, and means for adjusting and holding said writing mechanism in any desired position upon said cross-bar.

23. The combination, with the two-part book-support and the cross-bar 6 and means for supporting said cross-bar, of the writing mechanism supported solely from said cross-bar above said book-support and capable of being laterally adjusted thereon.

24. The combination, with the two-part book-support and the cross-bar 6 and means for supporting the said cross-bar, of the writing mechanism provided with a frame 24, supported solely from said cross-bar above said book-support and arranged to be turned into an upright position and to be laterally adjusted thereon.

25. In a type-writer, the combination, with a two-part book-support and the cross-bar 6 and means for supporting said cross-bar, of the writing mechanism provided with the frame 24, means for supporting said frame in a horizontal position solely from said cross-bar, means for adjusting said frame laterally upon said cross-bar, and means for turning said frame into an upright position.

26. In a type-writer, the combination, with the two-part book-support, the cross-bar 6, and means for supporting said cross-bar, of the laterally-adjustable frame 24, mounted thereon above said book-support and supported solely from said cross-bar, and the writing mechanism supported upon said frame.

27. In a type-writer, the combination, with a suitable base, of a laterally-adjustable carriage mounted thereon, a two-part book-support mounted upon said carriage, a cross-bar 6, extending above said book-support and arranged in suitable standards on said base, and a writing mechanism supported upon said cross-bar and capable of being laterally adjusted thereon so as to bring it over either part of said book-support.

28. In a type-writer, the combination, with the type-bars and the operating-levers 96, provided with the studs 110, of the key-bars 92, the connecting-rods 102, provided with the notches or recesses 104, and the adjustable frame 108, substantially as described.

29. In a type-writer, the combination, with the type-bars and the operating-levers 96, of the key-bars 92, the connecting-rods 102, and means for disengaging said rods from said levers 96, substantially as described.

30. The combination, with the type-bars, of the operating-levers 96, the key-bars 92, the adjustable frame 108, the connecting-rods extending from said key-bars to said operating-levers, and the levers 122, provided with the keys 124, connected to said arm 108, substantially as described.

31. The combination, with the laterally-movable carriage provided with the rack-bar 93, of the stationary writing mechanism, the escapement upon said writing mechanism and means for operating the same, and means for moving said writing mechanism and escapement laterally over said carriage.

32. The combination, with the laterally-movable carriage and an automatically-adjustable book-support arranged thereon, of a rack-bar secured upon said carriage, a writing mechanism arranged above said carriage and book-support, a spring for moving said carriage, and an escapement upon said writing mechanism for releasing said carriage, substantially as described.

33. The combination, with the rack-bar 93, of the pivoted lever 68, provided with the dogs 72, springs 74, connecting said dogs, a spring 70 for depressing one end of said lever, and means for depressing the opposite end of said lever, substantially as described.

34. The combination, with the rack-bar 93, of the pivoted escapement-lever 68, provided with the dog 72 and the connecting-spring 74.

35. The combination, with the carriage provided with the rack-bar 93, of the cross-bar 6, the collar 62, supported thereon, the escapement-lever arranged upon said collar and provided with dogs adapted to engage said rack-bar.

36. The combination, with the carriage provided with the rack-bar 93, of the cross-bar 6, the frame 24, supported upon said cross-bar, the collar 62, provided with the escapement, and means for turning said collar upon said bar, and thereby releasing said escapement from said rack-bar.

37. The combination, with the carriage provided with the rack-bar 93, of the cross-bar 6, the frame 24, arranged thereon and provided with the writing mechanism and movable collar 62, the escapement pivoted upon said collar, the pivoted bar 84, adapted to engage said collar, and the operating-rod 92, engaging said bar.

38. The combination, with the two-part book-support and the cross-bar, of the laterally-adjustable sleeve mounted thereon, the frame mounted upon said sleeve and capable of turning thereon, and the writing mechanism supported upon said frame above said book-support.

39. The combination, with the carriage provided with the rack-bar, of the cross-bar 6, the collar 62, arranged thereon, the escapement-lever pivoted upon said collar, the pivoted frame 60, the shaft 58, mounted upon said frame and provided with the lugs for engaging said escapement, and means for operating said shaft.

40. The combination, in a type-writer, with the ribbon, of the ribbon-guide 138, the frame 142, connected therewith, springs 146, connected with said frame, and the adjusting-screw 148.

477,522. SUSPENSION-CHAIN. ALVAN DRAYTON, New York, N. Y. Filed Jan. 22, 1892. Serial No. 418,913. (No model.)

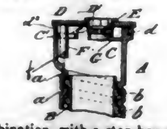
Claim.—1. The combination, with an adjustable suspending-chain doubled at its upper portion to hang on a support, of a sleeve having an arm fastened to one member of the chain and having the other member of the chain passed through the sleeve, whereby the weight of a suspended object will cause the sleeve to cant and hold the member of the chain in the sleeve at any adjusted position, substantially as described.

2. In an adjustable suspension-chain for bird-cages, the chain A, provided with means at one end to connect it to a bird-cage and doubled at its upper portion to hang on a support, combined with a sleeve B, formed with an arm 3, fastened to the free end of the doubled part of the chain and having the other member of the chain passed loosely through the sleeve, substantially as and for the purpose specified.

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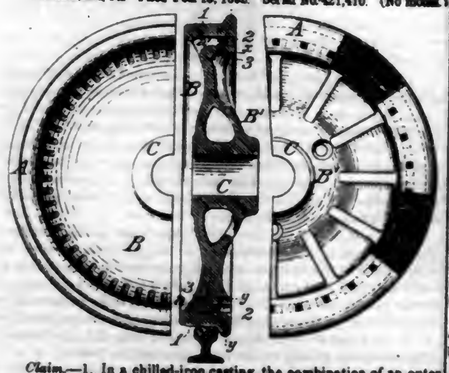


477,523. STOP-BOX. CHARLES G. ETTE, St. Louis, Mo. Filed Oct. 7, 1891. Serial No. 408,051. (No model.)



Claim.—The combination, with a stop-box having on the inside near the top edge a slotted lug and on the outside a peripheral rabbet whose upright wall is inclined inwardly from top to bottom to provide a locking-ledge, of a cover having a downwardly-projecting pin that passes through the slotted lug, and thereby loosely hinges the cover, and having also an encircling flange whose inner wall is inclined for a part of its length and adapted to engage the inclined ledge on the box, and a bolt supported in a perforation in the cover, said bolt having its upper end suitably squared for the application of a wrench thereto and carrying at its lower end a rigid arm, the outer end of which strikes against the inside wall of the box when the bolt is turned, and thus acts to shift the cover sidewise and lock the same, substantially as described.

477,524. CHILLED CAST-IRON CAR-WHEEL. LUTHER R. FADDEN, Philadelphia, Pa. Filed Feb. 13, 1892. Serial No. 421,410. (No model.)



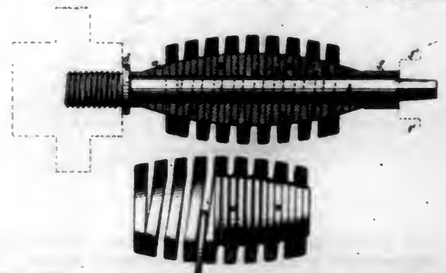
Claim.—1. In a chilled-iron casting, the combination of an outer section having a chilled rim or face, an intermediate cellular section formed of a series of webs or ribs with interposed cells or open spaces, and an inner or base section, substantially as set forth.

2. In a chilled cast-iron railroad-wheel, the combination, with a hub and a connected body-plate or equivalent series of arms, of a rim composed of an outer section having a chilled rim or face, an intermediate cellular section formed of a series of webs or ribs with interposed cells or open spaces, and an inner or base section, substantially as set forth.

3. In a chilled cast-iron railroad-wheel, the combination of an outer section having a chilled rim or face, an inner or base section integral with the main body of the wheel, and a series of webs or ribs projecting in substantially radial planes from the inner section and separated one from another by cored cells or spaces which are interposed between the inner and outer sections, substantially as set forth.

4. In a chilled cast-iron railroad-wheel, the combination of an outer section having a chilled rim or face, an inner or base section integral with the body of the wheel, and a series of webs or ribs projecting in substantially radial planes from the inner section and extending alternately, entirely, and partially across the section, said webs being separated one from another by open-ended cored cells or open spaces which are interposed between the inner and outer sections, substantially as set forth.

477,525. MANDREL FOR BARREL-SHAPED SPRINGS. WILLIAM FERRELL, Philadelphia, Pa., assignor to the Charles Scott Spring Company, same place. Filed Mar. 21, 1892. Serial No. 425,755. (No model.)



Claim.—1. The within-described mandrel for bowed or barrel-shaped springs, said mandrel consisting of a series of washers or disks decreasing in diameter from the center toward each end of the mandrel and removable from the spring after the latter is coiled, and means for retaining said washers or disks in position for use, substantially as specified.

2. The within-described mandrel for bowed or barrel-shaped springs, said mandrel consisting of a removable central stem or core, and a series of washers mounted thereon, said washers decreasing in diameter from the center toward each end of the mandrel and removable from the spring after the latter is coiled, substantially as specified.

3. The within-described mandrel for bowed or barrel-shaped springs, said mandrel consisting of a series of washers or disks decreasing in diameter from the center toward each end of the mandrel, and each of a thickness which will permit of its withdrawal between the coils or convolutions of the spring, substantially as specified.

4. The within-described mandrel for bowed or barrel-shaped springs, said mandrel consisting of a series of washers decreasing in diameter from the center toward each end of the mandrel and strung upon a removable stem or core, each washer being of a thickness which will permit of its withdrawal between the coils or convolutions of the spring, substantially as specified.

477,526. MITER-CUTTER. WILLIAM R. FOX, Grand Rapids, Mich. Filed July 29, 1891. Serial No. 401,056. (No model.)

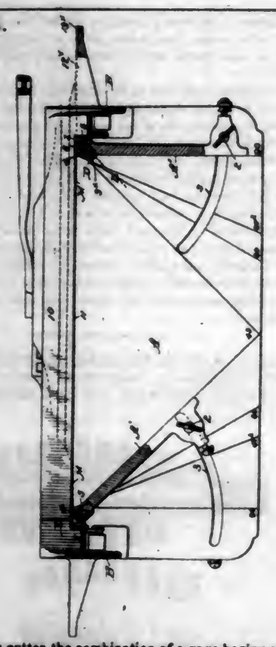
Claim.—1. In a miter-cutter, a gage having a shearing-edge, a post forming a bearing for the gage, and a guiding connection between the horizontal meeting faces on the gage, and frame automatically adjustable in the movement of the gage, so as to cause the shearing-edge to move along the line of the cut, substantially as described.

2. In a miter-cutter, a gage having a shearing-edge, a post forming a bearing for the gage, the inclined guideway between the gage and the machine-frame, the pivot-pin engaging said guideway and automatically adjustable in the movement of the gage to cause the shearing-edge to move along the line of the cut, substantially as described.

3. In a miter cutter, the combination of a gage having a shearing-edge, a post forming a bearing therefor, a guideway in the machine-bed, and a pivot-pin projecting from the lower face of the gage engaging the guideway and automatically adjustable therein in the movement of the gage, substantially as described.

4. In a miter-cutter, the combination of a gage having a shearing-edge, a post forming a bearing for the gage, the inclined guideway adjacent to the shearing-edge, the pivot-pin, and the sliding block in the guideway, substantially as described.

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5. In a miter-cutter, the combination of a gage having a shearing-edge, the guideway and pin connection between the gage and the machine-frame adjacent to the shearing-edge, and the pivoted link connected to the gage and said frame, substantially as described.

6. In a miter-cutter, the combination of the gage having a shearing-edge, the guideway adjacent to the shearing-edge, the link, and the pivot-pin passing through the link into the inclined guideway, substantially as described.

7. In a miter-cutter, the combination of the gage having a shearing-edge and the link pivoted to the machine-frame and to the gage, the rear one of said pivots being adjustable toward and from the line of cut, substantially as described.

8. In a miter-cutter, the combination of the machine-bed, the knife, the gages and posts, and the top cross-bar having its rear face free from projections in rear of the knife, substantially as described.

9. In combination, the frame having a top bar 11, extending across the machine, with a guideway for the knife, the carriage having the knife and moving in suitable ways, and the knife having its upper edge held by the guideway throughout its movement, whereby the knife will be held against springing as it enters the wood at any point in its travel, substantially as described.

10. In combination, the frame, the movable knife, and the stationary shields projecting from and beyond the frame and adjacent to the path of the knife, substantially as described.

11. In combination, the frame, the movable knife, and the stationary shields projecting from the frame close to the path of the knife, said shields being triangular in form, substantially as described.

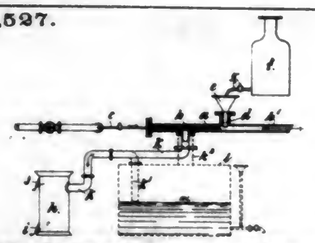
12. In combination, the frame, the movable knife, and the knife-shields projecting from the frame close to the path of the knife, said shields having ribs to protect the edge of the knife, substantially as described.

13. In combination, the frame, the knife, the post having a straight face extending at right angles to the line of cut, the gage having an edge bearing against said face, and means for controlling the movement of the gage and maintaining its shearing-edge at the line of the cut, consisting of a guideway extending at an angle to the line of cut and the bearing-face of the post, and a pin engaging said guideway and automatically adjustable along the same in the movement of the gage.

477,527. APPARATUS FOR VAPORIZING ACIDS IN THE MANUFACTURE OF WHITE LEAD. EDWARD V. GARDNER, London, England. Filed Sept. 10, 1891. Serial No. 405,306. (No model.) Patented in England Mar. 25, 1886, No. 3,839; in France Apr. 2, 1886, No. 168,046; in Germany May 22, 1886, No. 36,319; in Belgium Feb. 12, 1886, No. 71,984, and in Italy Oct. 24, 1888, XXII, 24,348, XLVIII, 185.

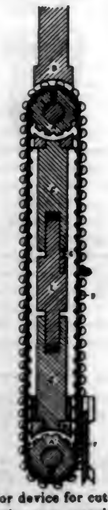
Claim.—Apparatus for effecting the vaporization of acids such as specified, the production of carbonic acid, the introduction of air, and

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the providing of the vapor of water, the mixing of same, and the forcing and introduction into a lead-converting chamber of same, consisting of the combination of the steam-nozzle *a*, fed with steam from a steam-supply pipe *c*, a pipe *b*, inclosing said nozzle *a*, which discharges steam axially along said pipe, a supply-pipe *d*, disposed in front of the discharge-orifice of the nozzle *a* and opening out into the pipe *b* and adapted to deliver acids into the jet of steam which issues therefrom, a carbonic-acid burner *h*, a pipe *k*, connecting said burner and said pipe *b* together and opening out in the latter at the rear of the nozzle *a* and wherethrough carbonic acid is introduced into the pipe *b*, an atmospheric-air-inlet device *j*, and a mixing pipe or chamber *b'*, wherein said steam or vapor of water, acid-vapors, carbonic-acid gas, and air become mixed by the action of said jet of steam and from which they are forced thereby forward into the converting-chamber, all substantially as set forth with reference to the drawing.

477,528. DEVICE FOR CUTTING SQUARE HOLES. GEORGE C. GILLESPIE, Brooklyn, N. Y. Filed Dec. 18, 1890. Serial No. 375,067. (No model.)

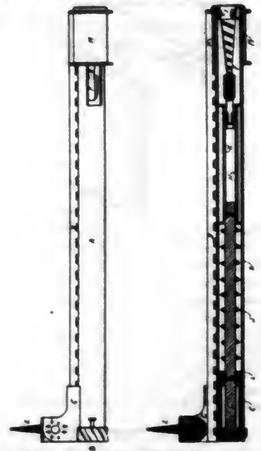


Claim.—1. In a tool or device for cutting square holes, the combination of a stock separating two sprocket-wheels with an endless-bladed belt or chain of cutters so formed that the rear portion of one link shall so closely fit an aperture in the preceding portion of its follower as to form in all its positions a solid continuity of metallic belt regardless of width, each of said links having extended across its width a lateral gouging-blade provided at both ends with vertical spurs or cutters projecting beyond the cutting-edge of the lateral blade, substantially as shown and described.

2. In a tool or device for cutting square holes, the combination of a stock separating sprocket-wheels carrying an endless-bladed belt, with a guide or handle-blade encircling said stock so formed that the stock may slide easily through it and having at one side a handle, and further provided with a blade and tooth projecting downward, the whole to act as guide and support, substantially as shown and described.

3. In a tool or device for cutting square holes, the combination of sprocket-wheels turning in bearing-blocks held in position by an extension rod or stock which is separated and made continuous by a tension-nut having extended from its ends right and left hand screws working in and forming a part of said stock, around said sprocket-wheels a continuously solid-bladed belt being made to pass, and the whole device provided with a guide or support encircling the stock with handle and anchor-blade, all substantially as shown and described.

477,529. LEAD-PENCIL SHARPENER. WILLIAM S. GILLESPIE, Brooklyn, N. Y. Filed Dec. 18, 1890. Serial No. 375,163. (No model.)



Claim.—1. In a lead-pencil sharpener, the combination, with a carrying-frame, of a rack and single gear-wheel having spirally-formed teeth or cogs thereon, whereby a direct rotary motion is imparted to said single gear-wheel by a reciprocating motion of said rack parallel with the axis of rotation, substantially as set forth.

2. The combination, in a lead-pencil sharpener, of a carrying-frame and a screw E with its corrugated-pressure-spring connection C, for the purpose of holding said frame in any desired position, substantially as described.

3. In a lead-pencil sharpener, the combination of a carrying-frame and a sharpener with a feed-spring acting parallel with the axis of rotation of said sharpener and pressing the same onto the pencil as the work of sharpening progresses, substantially as set forth.

4. The sharpener F, having spirally-formed cutters and a spring lead-pointer, substantially as shown, and for the purposes specified.

5. In a lead-pencil sharpener, the combination of the frame A, the gear B, the collar and guide C, the rack D, the screw E, the sharpener F, the rod G, the sleeve H, the collar I, the spring J, the collar L, and the spool M, substantially as shown, described, and set forth in the above specification and drawings.

477,530. SHIP'S LOG OR APPARATUS FOR INDICATING AND RECORDING THE SPEED OF VESSELS. JOSEPH E. GOMBAULT and EUGÈNE C. SOUBRY, Paris, France. Filed Aug. 19, 1891. Serial No. 403,118. (No model.) Patented in France Oct. 6, 1890, No. 206,670.

Claim.—1. A ship's log comprising a movable air-chamber, a pipe connecting the said air-chamber with the water, and a manometric indicating and recording apparatus connected to the air-chamber, all substantially as and for the purposes set forth.

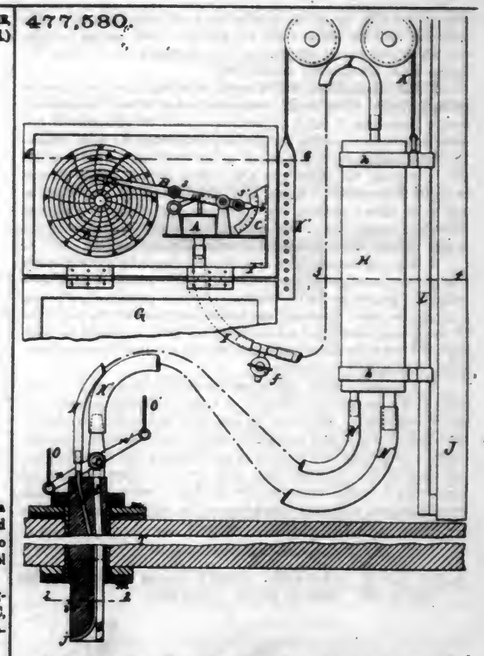
2. A ship's log comprising a movable air-chamber, a pipe connected to the air-chamber and having its extremity beneath the water and bent in the direction of the movement of the ship, a manometer connected to the air-chamber, and a rotating disk and marker therefor, the said marker actuated by the manometer, all substantially as and for the purpose set forth.

3. In a ship's log, the combination of an air-chamber, a fixed support, upon which the air-chamber is adapted to slide to be adjusted on a level with the water-line, a manometric indicating and recording apparatus, a pipe communicating with the water in the direction of the movement of the ship, and flexible tubing connecting the air-chamber with the manometer and with the said pipe, all substantially as and for the purpose set forth.

4. In a ship's log, the combination of an air-pipe provided with a manometer and connected to a pipe having its extremity below the water, with a rotating disk, a fixed dial, and a lever B, actuated by the manometer and provided at one end with a marker adapted to mark upon the rotating disk and at the other end with an indicating-needle for the said dial, all substantially as and for the purposes set forth.

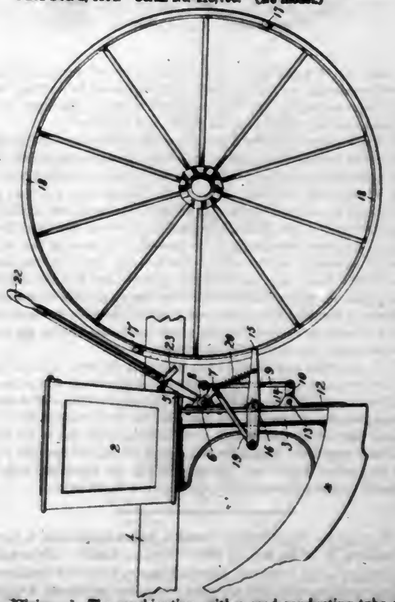
5. A ship's log comprising an adjustable air-chamber, a manometric recording and indicating apparatus, a tube connecting the manometer with the air-chamber and provided with a cock open to the atmosphere, and two pipes each connected to the air chamber and communicating with the water, one in the direction of the movement of the ship, the other in the opposite direction, the latter being provided with a stop-cock, all substantially as and for the purposes set forth.

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6. In a ship's log, the combination of an adjustable air-chamber provided with a manometer, with a piece *i* of triangular section set into the hull of the ship and carrying a water-inlet tube *j* and discharge-tube *l*, each connected to the said air-chamber, all substantially as and for the purposes set forth.

477,531. CORN-PLANTER. JOSEPH G. GOODWIN, Lexington, Ky. Filed Dec. 2, 1891. Serial No. 413,793. (No model.)



Claim.—1. The combination, with a seed-conducting tube and a flap or valve which governs the passage of grain into the furrow, of a shaft 6, having lever-arms 7 and 8, an oscillatory lever 15, pivoted intermediate its extremities to the tube, a link connecting the oscil-

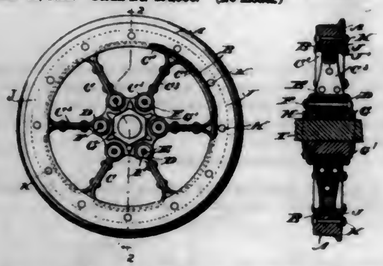
latory lever with one of the lever-arms, a rod connecting the other lever-arm with the flap or valve, and a ground-wheel having a projection which acts on one extremity of the oscillatory lever to open the flap or valve, substantially as described.

2. The combination, with a seed-conducting tube and a pivoted swinging flap or valve at the lower end portion thereof, of a shaft 6, having lever-arms 7 and 8, an oscillatory lever 18, pivoted intermediate its extremities, a link 19, pivotally connecting the front extremity of the oscillatory lever with one of the lever-arms, a rod 9, pivotally connecting the other lever-arm with a portion of the pivoted swinging flap or valve, a spring 20, acting to hold the oscillatory lever in its normal position, and a ground-wheel having a projection which acts on the rear extremity of the oscillatory lever to swing the flap or valve to its open position, substantially as described.

3. The combination, with a seed-conducting tube and a movable flap or valve arranged at the lower end portion thereof to govern the passage of grain from the tube into the furrow, a ground-wheel having a projection, valve-operating mechanism actuated by the projection of the ground-wheel, and a hand-lever and locking devices for holding the valve in its closed position while the machine is moving backward, substantially as described.

4. The combination, with a seed-conducting tube and a movable valve at the lower portion thereof, of a shaft 6, having lever-arms 7 and 8, a hand lever secured to the said shaft, mechanism for holding the hand-lever in a fixed position to lock the shaft stationary, an oscillatory lever pivoted intermediate its extremities, a link connecting one extremity of the oscillatory lever with one of the lever-arms, a rod connecting the other lever-arm with the flap or valve, and a ground-wheel having a projection which acts on the oscillatory lever to open the flap or valve, substantially as described.

477,532. CAR-WHEEL. GEORGE H. GRAHAM, Oak Park, Ill. Filed Mar. 11, 1892. Serial No. 424,536. (No model.)



Claim.—1. A car-wheel comprising a tire formed at its inner surface with segmental recesses, spokes having segmental ends fitting into the said recesses, and a hub carrying pivots engaging the inner ends of the said spokes, substantially as shown and described.

2. A car-wheel comprising a hub, a tire, spokes connecting the said tire with the said hub, and a rubber cushion arranged on the inner end of each of the said spokes, substantially as shown and described.

3. A car-wheel provided with a spoke formed with a shank, an eye arranged on one end of the shank, and a segmental end arranged on the outer end of the shank, substantially as shown and described.

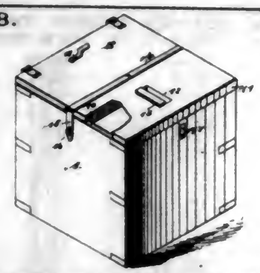
4. A car-wheel comprising a tire formed at its inner surface with segmental recesses, a hub carrying bolts forming pivots, spokes, each formed with a shank, segmental ends projecting from the said shanks and engaging the recesses in the said tire, the inner ends of the said spokes being formed with an eye, and a rubber cylinder fitting in the said eye of each spoke and through which passes the bolt of the said hub, substantially as shown and described.

5. A car-wheel comprising a tire formed at its inner surface with segmental recesses, a hub carrying bolts forming pivots, spokes, each formed with a shank, segmental ends projecting from the said shanks and engaging the recesses in the said tire, the inner ends of the said spokes being formed with an eye, a rubber cylinder fitting in the said eye of each spoke and through which passes the bolt of the said hub, and a ring bolted to the said tire for holding the segmental ends of the spokes in place, substantially as shown and described.

477,533. BALLOT-BOX. VIRGIL A. GRIMES and CHARLES R. LANE, Pittsfield, Ill. Filed Mar. 12, 1892. Serial No. 424,670. (No model.)

Claim.—1. In a ballot-box, the combination, with the body thereof provided upon two sides with a keeper, and a latch connected with the body, said latch being provided with an opening to receive ballots, and a cover adapted to close said opening, of a locking-bar pivoted upon the cover and capable of being carried over the ballot-receiving opening to conceal it and constituting an auxiliary cover for the opening or

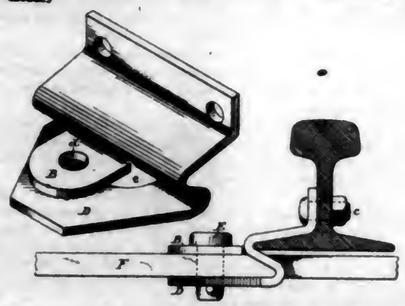
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capable of being carried away from said opening to expose it, the said locking-bar being provided with a latch device for engagement with the keepers, as and for the purpose set forth.

2. In a ballot-box, the combination, with the body thereof, of a cover provided with a marginal rabbet or recess in its under face and an opening for the reception of ballots, and a locking-bar pivoted upon the cover, provided with a hasp at one end, and staples located at one side of the box and at the front and adapted to receive the hasp of the locking-bar, the said locking-bar being capable of being carried over the ballot-receiving opening, concealing said opening, or away from the opening to expose it, as and for the purpose set forth.

477,534. CLIP FOR RAILWAY-SWITCH BARS. FREDERICK S. GUERBER, Allentown, Pa. Filed Nov. 17, 1891. Serial No. 412,182. (No model.)

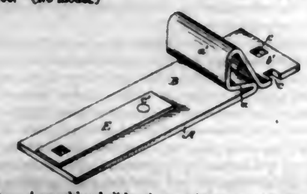


Claim.—1. A clip for uniting switch-rails to the connecting or operating bars, made from a single piece of metal cut to form upper and lower bearings B and D for the connecting-pin, the portion B being cut from the center of the blank and the portion D being formed of the material beyond the cut, said portion D being bent so as to align with the portion B, substantially as specified.

2. The combination, in a clip made from a single piece of metal bent into shape, having a securing-flange, an upper bearing cut from the center of the blank and a lower bearing having an ogee bend to bring it in line with the upper bearing, the open space left by the upper bearing serving as a passage for the operating-bar, substantially as specified.

3. A blank for making clips for uniting switch-rails to their bars, said blank having holes *b b* and having a U-shaped slot extending from one hole to the other, the center portion of the blank forming one bearing and the outer portion the other bearing, substantially as set forth.

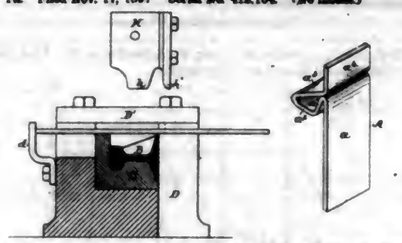
477,535. BRACE AND SLIDE PLATE FOR RAILWAY-SWITCHES. FREDERICK S. GUERBER, Allentown, Pa. Filed Nov. 17, 1891. Serial No. 412,183. (No model.)



Claim.—A combined slide-plate and brace consisting of a portion extending under the main rail and provided in that portion on the inner side of said rail with a slide-plate and having the portion at the outer side of the rail bent to conform to the side of said rail, the re-

maining portion of said outer end being bent downwardly, forming a brace and foot, substantially as specified.

477,536. PROCESS OF MANUFACTURING BRACE AND SLIDE PLATES FOR RAILWAY-RAILS. FREDERICK S. GUERBER, Allentown, Pa. Filed Nov. 17, 1891. Serial No. 412,184. (No model.)



Claim.—1. The process herein described of making rail-braces, said process consisting of utilizing as a die a section of rail of the form which the braces are intended to fit and forcing the blank against said rail so that the inner face of the brace will be shaped to conform to the side of the rail, substantially as described.

2. The process herein described of forming rail-braces, said process consisting in first mounting as the lower die a section of the rail to which the brace is to be applied; second, forcing the blank into the space between the head and base-flange of the rail and against the base of the rail; third, turning a portion of the blank over a former to form the strut, and, fourth, bending the remaining portion of the blank in line with the base-flange of the rail, substantially as described.

3. The process herein described of forming braces for rails, said process consisting in taking a section of the rail for which the braces are intended, planing off a portion of the rail between the head and flange, mounting the said rail so as to form a die, forcing a heated blank into the die thus formed, and shaping the blank substantially as described, so that when the blank is cool it will accurately fit the rail for which it is intended, substantially as described.

4. The combination of the housings, the anvil-block, the rail forming the lower die mounted on said anvil-block, and clamp-blocks for securing the rail to the anvil-block, the rail being free to move longitudinally on the anvil-block when released from the control of the clamp-block, substantially as described.

5. The combination of the housings, the anvil, the rail forming the lower die, clamps for securing the rail to the anvil, and a bar, triangular in cross-section, adapted to rest between the rail and the clamp-blocks, and an anvil on which the blank is formed, with upper dies, substantially as described.

6. The combination of the lower die composed of a section of a rail secured to the anvil-block with a primary upper die having a portion adapted to pass between the head and the flange of the rail, and a portion adapted to pass outside the flange of the rail, so as to shape the blank to the form of the rail, substantially as described.

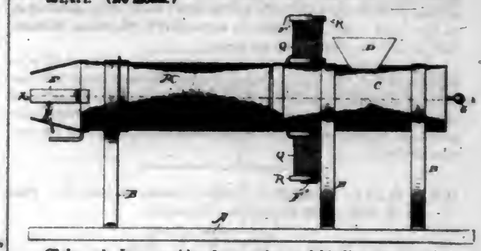
477,537. FASTENER FOR THE MEETING-RAILS OF SASHES. DAVID GUTKNUTH, Petaluma, Cal. Filed Nov. 13, 1891. Serial No. 411,800. (No model.)



Claim.—The combination, with a window-sash having a plate secured to one side thereof provided with a series of openings, of a lock comprising a bolt having shoulders in one side, a spring engaging said bolt, a casing having an apertured, curved, or bulged portion in one side, a hollow boss projecting up in said casing, a top plate, a screw for holding the same working in said boss, and the catch or lock-

ing-head pivoted by said boss and having a narrowed portion projecting through the said apertured, curved, or bulged portion, substantially as set forth.

477,538. MACHINE FOR PRESSING AND BINDING STRAW. FRANK M. HACKETT, Luverne, Minn. Filed Feb. 13, 1892. Serial No. 421,411. (No model.)

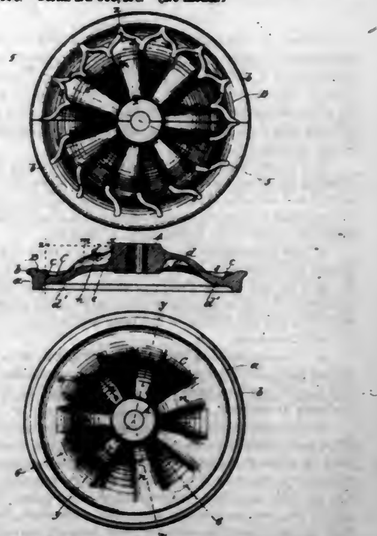


Claim.—1. In a machine for pressing and binding straw and the like, the combination, with the fixed casing, the pressure-follower playing in the said casing, and a suitable means for actuating said follower, of the revoluble binding-casing, the spring-arms connected to the rear end of said casing and extending rearwardly and inwardly therefrom, the binding-wires seated in guides in said casing, and a suitable means for revolving the casing, substantially as and for the purpose specified.

2. In a machine for pressing and binding straw and the like, the combination, with a fixed casing, a pressure-follower playing in said casing, and suitable means for actuating said follower, of a revoluble binding-casing, spring-arms connected to the rear end of said casing and extending rearwardly therefrom, binding-wires seated in guides in said casing, shears for cutting such wires, and means for revolving the casing, substantially as and for the purpose set forth.

3. In a machine for pressing and binding straw and the like, the combination, with a fixed casing provided in its interior with depending strips *a*, a pressure-follower playing within said casing, said follower carrying a notched disk, and suitable means for actuating said follower, of a revoluble binding-casing, spring-arms connected to the rear end of said casing and extending rearwardly therefrom, binding-wires seated in guides in said casing, and means for revolving the casing, substantially as and for the purpose set forth.

477,539. CAR-WHEEL. WILLIAM HAILER, Albany, N. Y. Filed June 8, 1891. Serial No. 395,491. (No model.)



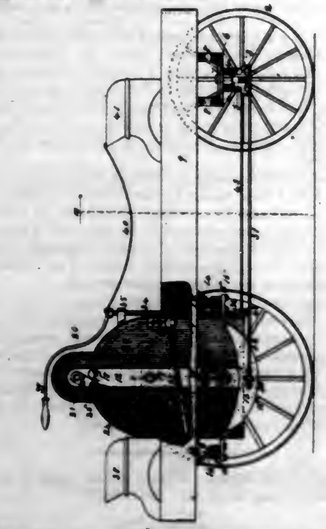
Claim.—1. A cast-iron car-wheel having a single-plate web C, which comprises the series of radial corrugations *d* and *e*, radiating from the hub, and an annular corrugation *c*, neighboring the rim, the said radial corrugations joining and blending with the said annular corrugation at near midway between the hub and rim with which

said single-plate web is integral, substantially as and for the purposes set forth.

2. A cast-iron car-wheel having the single-plate web C integral with both the hub and rim and comprised by two series of radial corrugations, as *d d* and *e e*, neighboring the hub, and an annular corrugation *c*, neighboring the rim, the ridges of one series of said radial corrugations bending forwardly with sharper curves from the hub to the points of their junction and blending with the said annular corrugation than do the ridges of the other series of said radial corrugations, substantially as and for the purposes set forth.

3. A cast-iron car-wheel having a single-plate web C, which is integral with both the hub and rim and comprises around the hub two series of alternating radial corrugations, as *d* and *e*, the corrugations *d* of one series being of an odd number and integral with corrugations *e* in like odd number in the other series, substantially as and for the purpose set forth.

477,540. VELOCIPEDE. JESS J. HARMER, St. Louis, Mo. Filed Jan. 15, 1892. Serial No. 418,128. (No model.)



Claim.—1. The combination, in a velocipede, of two supporting drive-wheels 1 upon a shaft 10, drive mechanism geared with said shaft, guide-wheels 2, with axle 3, having fifth-wheel connection with the body of the velocipede, and a vertical guide-post 34 in proximity to the drive mechanism of the shaft 10 and having a cross-bar connected with the axle 3 through suitable connecting-rods, substantially as and for the purpose set forth.

2. The combination, in a velocipede, of the body 9, the case 29, inclosing the drive mechanism, occupying an aperture in the body-bottom and movable therein, the spring bearing-bars 13, attached to the said case, springs 14, having bearing at the ends of the bars 13 and connected to the body, substantially as set forth.

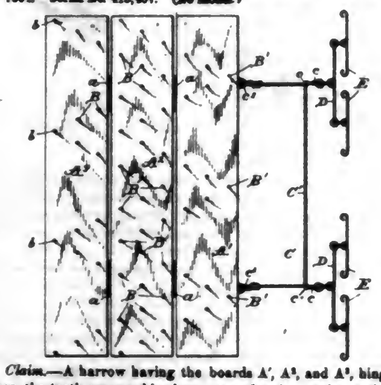
3. The combination, in a velocipede, of a body 9, supported upon springs connected with the four ground-wheels 1 and 2, the axle-shaft 10, carrying the wheels 1 and the drive mechanism geared with the axle-shaft 10, and inclosing and supporting case 29, extending through an aperture in the bottom of the body and having no direct connection with the body.

4. The combination, in a velocipede, of the drive mechanism, a drive-treadle connected with a crank of said mechanism, and a removable handle or winch detachably connected with the crank-shaft, substantially as set forth.

5. The combination, in a velocipede, of the case 29, inclosing the drive mechanism, the said mechanism, the ground-wheels 1, the axle-shaft 10 of the ground-wheels with a gear-wheel engaged by the drive mechanism, the body 9, with an aperture 9^a, occupied by the case 29 and in which the case has movement, the guide-shaft 34, having bearing on the case, a cross-bar 42 on the guide-shaft, the front axle 3, with pivotal connection with the body, rods 43, connecting the cross-bar 42 with the fore axle, and means for turning the guide-shaft in its bearings, substantially as and for the purpose set forth.

6. The combination, in a velocipede, of the body 9, fore axle 3, having pivotal connection with the body, guide-shaft 34, with suitable means for turning the shaft, cross-bar 42 on the shaft, connected by rods 43 with the fore axle, rear wheels 1, fast upon the axle-shaft 10, driving mechanism engaging the axle 10, treadles connected with the drive mechanism, removable handle or winch 23^a, connectible with the drive mechanism, a case 29, containing drive mechanism, the said case extending upward through an aperture in the body 9, and connection by means of the bars 13 and springs 14 between the case and the body, substantially as set forth.

477,541. HARROW. JOHN W. HAYS, Clinton, Ill. Filed Dec. 17, 1891. Serial No. 415,407. (No model.)



Claim.—A harrow having the boards A', A^2, and A^3, hinged together, the teeth arranged in zigzag rows forming angles at the front of the harrow, said teeth being longer in front than in the rear, and the frame formed of the rod C pivoted to the front board of the harrow, with the eyes *c c* upon the said frame and the doubletree connected to the said eyes, substantially as described.

477,542. EXPANSIBLE HORSESHOE-CALK. JOSEPH C. HIGGINS and THOMAS LEA, New Brunswick, N. J., assignors of one-twentieth to A. Van Nest Baldwin, same place. Filed Nov. 13, 1891. Serial No. 411,797. (No model.) Patented in France Dec. 8, 1891, No. 217,927, and in Belgium Dec. 31, 1891, No. 97,490.



Claim.—1. The calk in one piece, having its shank split and expansible, the longitudinal passage through the calk, and the expanding-pin in such passage, combined and arranged to operate as set forth.

2. The calk in one piece, with its shank split longitudinally to render it expansible and having the passage extending longitudinally through the calk and contracted within the shank, and the expanding-pin, combined to operate as set forth.

3. The herein-described horseshoe-calk, having the expansible shank, and the expanding-pin extending from the contact end of the calk longitudinally within the same, said pin being inclosed within the calk, the pin and the portion of the pin-passage within the shank being so relatively formed by a bulge as to expand the shank as the pin is forced inwardly, substantially as described.

477,543. PILLOW-BLOCK. HARRY W. HILL, Cleveland, Ohio. Filed Oct. 1, 1891. Serial No. 407,473. (No model.)

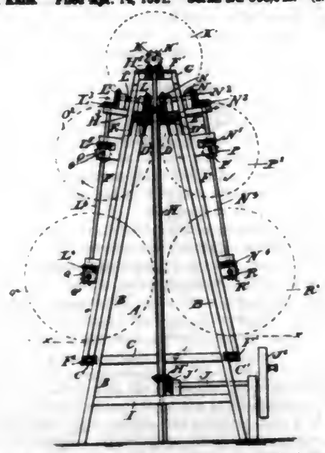


Claim.—1. The combination of the supporting part B, having, first, a vertical cylindrical socket *b*, and, second, the substantially-vertical arms on both sides of said socket, each of which is provided with the vertical slots b^2, a block C, having a concave upper surface seated

in said socket, and a vertical set-screw upon which said block rests with a box A, having a convex projection on its bottom and screw-threaded bosses *a* on its sides, and bolts which pass loosely through the slots b^2 b^2 and screw into said bosses, substantially as set forth.

2. The combination of a standard having a concave depression in its upper side, the parts of said standard on each side of the depression being vertically slotted and having a socket in said upper end, a block having a concave upper surface seated in said socket, and a set-screw which screws through the lower wall of said socket and upon which said block rests with a box having a convex projection upon its lower side, having screw-threaded bosses on both sides, bolts which pass loosely through said slots in the standard and screw into said bosses, and the set-screws which bear on said bolts, substantially as and for the purpose specified.

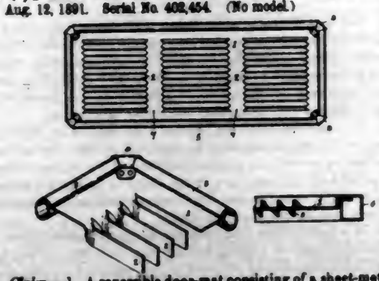
477,544. WIND-MOTOR. JOHN HOFFMAN and HARVEY P. TURNER, Oakley, Kans. Filed Apr. 14, 1891. Serial No. 388,940. (No model.)



Claim.—1. A windmill comprising a tower, a vertical central shaft therein, a turn-table on the top of the tower and connected with said shaft, a rotary frame depending from the turn-table and inclosing the tower, the frame having a ring on its lower end traveling about a circular track on the lower portion of the tower, upper and lower horizontal wind-wheel shafts journaled on said rotary frame, and vertically-extending shafts geared to the horizontal shafts and in turn geared to the central vertical shaft, substantially as set forth.

2. A windmill consisting in a tower A, formed of posts B, connected at their upper converging ends by the plate D', a rotary frame G, inclosing the tower and having a turn-table near its upper end turning on plate D', a plate F' on top of the frame G, a ring F^3 on the lower end of the frame G, a circular track on the lower part of the tower for said ring and formed of anti-friction rollers C', central vertical shaft H, extending down through plate F' and the turn-table to the bottom of the tower, an upper wind-wheel shaft geared to shaft H, horizontal wind-wheel shafts on the rotary frame, and vertically-extending shafts L^4 N^4, connecting said horizontal shafts and geared to the shaft H between the turn-table and plate F', substantially as set forth.

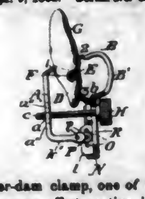
477,545. DOOR-MAT. GEORGE W. HOWELL, Covington, Ky. Filed Aug. 12, 1891. Serial No. 402,454. (No model.)



Claim.—1. A reversible door-mat consisting of a sheet-metal plate having a series of scrapers formed by slitting the metal and axially turning the strips between the slits into an approximately vertical plane, with the longitudinal edges of each strip projecting, respectively, above and below the sheet-metal plate, substantially as and for the purposes described.

2. A reversible door-mat consisting of a sheet-metal plate turned into an enlarged border and having a series of scrapers formed by slitting the metal and axially turning the strips between the slits into an approximately vertical plane, with the longitudinal edges of each strip projecting, respectively, above and below the sheet-metal plate, substantially as and for the purposes described.

477,546. RUBBER-DAM CLAMP. WOODBURY S. HOW, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Apr. 9, 1892. Serial No. 428,633. (No model.)

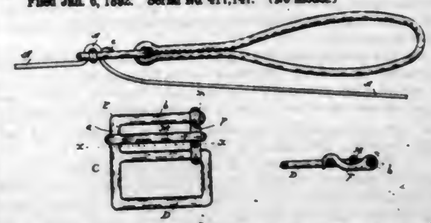


Claim.—1. A rubber-dam clamp, one of the jaws of which has two bearings with the narrow offset portion between them, substantially as set forth.

2. The rubber-dam clamp having the rear-jaw bearing and the two front-jaw bearings and provided with the means for varying the relative positions of the front bearings, substantially as set forth.

3. The combination of the adjustable rear jaw having the bearing, the front jaw consisting of two adjustably-connected sections, each having a bearing, and means by which to connect the jaws and adjust the sections of the front jaw to vary the relative positions of the front and rear bearings, substantially as set forth.

477,547. REIN-HOLDER. CURTIS A. HOGHES, Spokane, Wash. Filed Jan. 6, 1892. Serial No. 417,147. (No model.)



Claim.—1. As an improved article of manufacture, the driving-line holder, substantially as described, comprising the hand-hold and the coupling for effecting a connection of the hand-hold to a line, which coupling is connected to a hand-hold and comprises a body-loop, the angular arm B, a link pivotally connected to the laterally-disposed branch *b* of said arm and adapted to engage the body-loop, and a keeper-bar pivotally connected to the forwardly-extending branch *c* of the angular arm and adapted to engage the link, substantially as and for the purpose set forth.

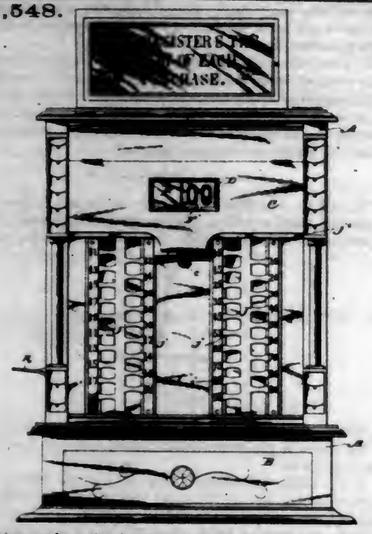
2. As an improved article of manufacture, a coupling for effecting a connection of a hand-hold to a driving-line, comprising a body-loop, the angular arm E, a hook-shaped link pivotally connected to the laterally-disposed branch of the said arm and adapted to engage the body-loop, and a keeper-bar pivotally connected to the forwardly-extending branch of the angular arm and adapted to engage the link, substantially as specified.

477,548. CASH REGISTER AND INDICATOR. THOMAS J. HUBER, Atchison, Kans., assignor of one-half to William F. Guthrie, same place. Filed Sept. 23, 1891. Serial No. 406,575. (No model.)

Claim.—1. In a cash register and indicator, the combination, with a casing having the lower portion of its front wall entirely closed and having an overhanging or projecting upper portion, of suitable registering mechanism within said casing, a rigid longitudinally-movable finger-bar adapted to rest in front of said lower portion of the front wall or to be moved into the projecting upper portion, and a connection solely from the upper end of said finger-bar to the internal registering mechanism, whereby access of dust or other foreign matter to the interior of the casing may be avoided.

2. In a cash indicator and register, the combination, with a frame having a front plate provided with a plurality of reading-openings, of a main shaft carrying indicator-drums and registering-wheels behind

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said openings and a casing having a single reading-opening registering with one of the openings in the said front plate, substantially as described.

3. In a cash indicator and register, the combination, with a casing having the lower portion of its front wall entirely closed and a straight vertically-movable finger-bar outside the casing, of a rack-bar parallel thereto and inside the casing and connected to the finger-bar only at one end, a gear-wheel meshing with the teeth of the rack-bar, an indicator-drum directly connected with the gear to rotate therewith, and registering-wheels indirectly connected with said gear, substantially as described.

4. In a cash indicator and register, the combination, with the casing thereof having guides, of a finger-bar vertically movable in said guides, an indicator-drum, a direct rack-and-gear connection between said finger-bar and drum for imparting a rotary reciprocating motion to the drum, and registering mechanism operated by the said rack-and-gear connection, substantially as described.

5. The combination, with the casing of a cash indicator and register, of a finger-bar vertically movable in guides, a rack-bar connected at one end to said finger-bar, an indicating-drum having a gear meshing with said rack-bar, two registering-wheels, one of which is provided with ratchet-teeth and the other with means for receiving motion from the rack-bar, a weighted arm pivoted at one end and carrying a pawl engaging said teeth, and means carried by the other registering-wheel to elevate said arm, substantially as described.

6. The combination, with the casing of a cash indicator and register, of a finger-bar vertically movable in guides, a rack-bar connected at one end to said finger-bar, an indicating-drum having a gear meshing with said rack-bar, two registering-wheels, one of which is provided with ratchet teeth and the other with means for receiving motion from the rack-bar, a weighted arm pivoted at one end and carrying a pawl engaging said teeth, a cam secured to rotate with the other registering-wheel, and a rigid projecting arm carried by the weighted arm and resting on said cam, substantially as described.

7. In a cash indicator and register, the combination, with an indicating-drum, of two registering mechanisms supported by the drum-shaft, one each side of the drum, a weighted frame extending past the drum and carrying a pawl at one end to operate one registering mechanism, and means operated by the other registering mechanism to lift said weighted frame, substantially as described.

8. The combination, with a rigid and vertically-reciprocating finger-bar and indicating and registering mechanisms operated thereby, of a spring-held controlling-lever having connections for locking and releasing the said finger-bar relative to motion thereof in either direction.

9. The combination, with a rigid and vertically-reciprocating finger-bar and indicating and registering mechanisms operated thereby, of a money-receptacle and a spring-held controlling-lever having connections for locking and releasing the said finger-bar relative to motion thereof in either direction and permitting the opening of the money-receptacle.

10. The combination, with a rigid and vertically-reciprocating finger-bar and indicating and registering mechanisms operated thereby, of a money-receptacle and alarm and a spring-held controlling-lever having connections for locking and releasing the said finger-bar relative to motion thereof in either direction, operating the alarm and permitting the opening of the money-receptacle.

11. In a cash indicator and register, the combination, with a spring-opened money-receptacle, of a lock for holding the receptacle closed, a controlling-lever projecting outside the casing, a spring-held latch-lever pivoted to the controlling-lever and having one end beveled and a recess at its other end, a fixed surface for the beveled end of the latch-lever to ride against, a movable pin adapted to be engaged by the said recess, and a connection from the said pin to the lock of the money-receptacle, substantially as described.

12. In a cash indicator and register, the combination, with a vertically-movable finger-bar having a series of recesses, of a spring-actuated latch adapted to enter any one of said recesses, a movable bar located in the path of movement of the hand of the operator, connections from said bar to the latch, and a spring to cause the said connections to normally hold the latch out of engagement with said recesses, whereby upon lifting said bar the latch will be permitted to enter a recess and momentarily arrest further elevation of the finger-bar.

13. The combination, with two sets of indicating and registering mechanisms, of a peripherally-shouldered disk or wheel connected with one of said sets, a stop-pawl or detent to engage the shoulders of said disk or wheel, and means operated by the other set of said mechanisms for vibrating said stop-pawl or detent, substantially as described.

14. The combination, with a pair of gear-wheels for operating two sets of indicating and registering mechanisms, of a ratchet secured to rotate with one gear and a series of shoulders secured to rotate with the other gear, and a rock-shaft having an arm at one end engaging said ratchet and a stop-pawl at the other end to engage said shoulders, substantially as described.

15. The combination, with a pair of gear-wheels for operating two sets of indicating and registering mechanisms, of a ratchet secured to rotate with one gear and a series of shoulders secured to rotate with the other gear, and a rock-shaft having an arm at one end engaging said ratchet and an arm at the other end carrying a loosely-pivoted gravity-pawl to engage said shoulders, substantially as described.

16. In a registering mechanism consisting of a plurality of wheels with suitable transfer devices, the combination, with the highest registering-wheel of the series, of a pin projecting laterally therefrom and a stop-pin movable into and out of the path of movement of the said wheel-pin, substantially as and for the purpose set forth.

17. In a cash indicator and register, the combination, with a straight vertically-reciprocating finger-bar adapted to operate the parts of the machine to indicate and register any one of a series of different amounts, of mechanism for preventing a second movement of said bar in an operating direction after it has commenced a return movement until said return movement is completed.

18. In a cash indicator and register, the combination, with a straight vertically-reciprocating finger-bar adapted to operate the parts of the machine to indicate and register any one of a series of different amounts, of an alarm and mechanism for preventing a second movement of said bar in an operating direction after it has commenced a return movement until the alarm is operated and the said return movement is completed.

19. In a cash indicator and register, the combination, with a straight vertically-reciprocating finger-bar adapted to operate the parts of the machine to indicate and register any one of a series of different amounts, of mechanism for preventing a single indication resulting from successive operations in the same direction.

20. In a cash indicator and register, the combination, with a straight vertically-reciprocating finger-bar adapted to operate the parts of the machine to indicate and register any one of a series of different amounts, of a controlling device and mechanisms connected therewith to prevent successive operations of the indicator and register in the same direction during a single complete operation of the controlling device.

21. In a cash indicator and register, the combination, with a controlling device having connections for normally holding the indicating mechanism against operation, of a shield normally exposing the indicator and connections between said shield and controlling device, whereby movement of said controlling device in one direction conceals the indicator and releases the indicating mechanism.

22. In a cash indicator and register, the combination, with a controlling-lever having connections for normally holding the indicating and registering mechanism against operation, of an indicator-drum, a shield outside of the periphery of the drum, a spring for normally holding the shield to expose the drum, and connections from said shield to the lever, substantially as described.

23. In a cash indicator and register, the combination, with a pair of indicating-drums, of a casing having front and rear reading-openings and indicating-ribbons attached to and operated by said drums, the characters on the said drums and ribbons being visible through different reading-openings.

24. In a cash indicator and register, the combination, with the casing having front and rear reading-openings, of a pair of indicating-drums visible through one opening and a pair of indicating-ribbons attached at one end to said drums and crossing each other and visible through the other reading-opening beyond the point of crossing.

25. In a cash indicator and register, the combination, with the casing having front and rear reading-openings, of a pair of indicating-drums visible through one opening, a pair of guide-rollers and spring-rollers, and a pair of indicating-ribbons attached to the drums, passing over the guide-rollers, crossing each other, and connected with the spring-rollers and visible below their crossed point through the other opening, substantially as described.

26. In a cash indicator and register, the combination, with a pair of indicating-drums and a pair of crossed indicating-ribbons attached to and operated by said drums, of shields for both the drums and ribbons, substantially as described.

477,549. CHECKREIN WORKER AND HOOK. OLIVER KENNEDY, Brunswick, Ga. Filed Dec. 29, 1891. Serial No. 416,447. (No model.)

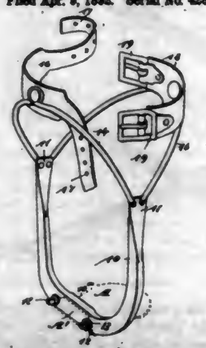


Claim.—1. In a checkrein worker and hook, a base provided at its forward end with a stationary strap-guide, an upward-projecting stationary keeper on the base in rear of the strap-guide, and an upwardly and rearwardly swinging pawl pivoted at its upper end to the keeper and extending at its lower end into a plane lower than that occupied by the strap-guide, substantially as described.

2. In a checkrein worker and hook, a base provided at its forward end with an upward-projecting stationary strap-guide, and a stationary keeper extending upward from the base in rear of the guide and provided with an upwardly and rearwardly swinging pawl having an anti-friction roller projecting below its lower end and in a plane lower than that of the said guide to engage a strap, substantially as set forth.

3. A checkrein worker and hook consisting in a base provided at its forward end with an upwardly-extending stationary strap-guide, a stationary keeper projecting upwardly from the base in rear of the strap-guide, a pawl pivoted at its upper end in the keeper to swing upwardly and rearwardly at its lower end, said lower end being in a lower plane than the strap-guide, and a checkrein-strap extending through the guide downwardly and rearwardly through the keeper under the said pawl and provided on its upper side with a catch or projection engaging the rear face of the lower end of the pawl, substantially as set forth.

477,550. ANKLE-SUPPORT FOR SKATES. LUKE W. KENNEY, New York, N. Y. Filed Apr. 9, 1892. Serial No. 428,515. (No model.)



Claim.—1. An ankle-support for skates, consisting of an essentially-U-shaped body, yokes pivotally attached to the upper ends of the body, the yokes facing one another, and fastening devices carried by the yokes, as and for the purpose specified.

2. An ankle-support for skates, consisting, essentially, of a U-shaped body, yokes pivoted to the upper ends of the body, facing each other, and capable of being carried downward at opposite sides of the body, and straps connected with the yokes and adapted for uniting them and holding them in a predetermined position, as and for the purpose set forth.

3. An ankle-support for skates, consisting of an essentially-U-shaped body provided with set-screws in its lower portion, yokes pivotally attached to the upper ends of the body, facing one another, and adapted to be folded down against opposite sides of the body, a strap secured to one yoke, having apertures at both of its ends, and a second strap attached to the opposite yoke and carrying buckles at its ends, substantially as shown and described.

4. The combination, with the heel-plate of a skate, provided with an upwardly-turned apertured flange at one end, of an ankle-support consisting of an essentially-U-shaped body, set-screws located in the lower portion of the body and adapted to enter the apertures in the flange of the heel-plate, yokes pivoted upon the upper ends of the body, facing one another, and capable of folding downward at opposite sides of the body, and strap-fastening devices secured to the yokes, as and for the purpose specified.

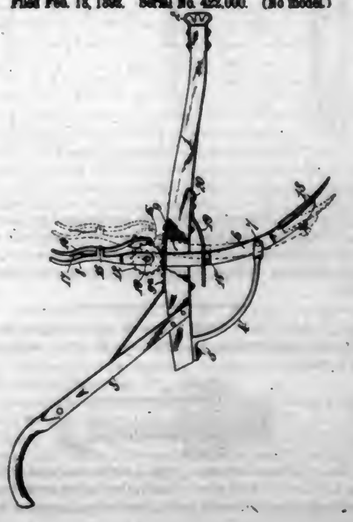
477,551. WEATHER-VANE INDICATOR. CHARLES J. KERR, Reynoldsville, Pa. Filed Dec. 28, 1891. Serial No. 416,318. (No model.)



Claim.—1. In a weather-vane indicator, the combination, with a vertical shaft carrying a bevel-toothed gear-wheel fast thereto and a plurality of short horizontal shafts at right angles to said vertical shaft, and carrying each a bevel-toothed wheel meshing with the wheel of said vertical shaft, of the inclosing box or casing, in which said gear is located, a plurality of dials on the faces of said box or casing, an interior frame forming bearings for said short shafts, and a hand or pointer on the projecting outer end of each short shaft arranged to traverse one of said dials, substantially, as specified.

2. The combination, with the vertical stationary shaft and the bevel-toothed gear-wheel fast thereto, of the casing inclosing said wheel and revolubie on said shaft, a dial on each end of said casing, short shafts at right angles to said stationary shaft within said casing, a bevel gear-wheel on the inner end of each short shaft, a hand or pointer on the outer end of each shaft, and a vane fast to said casing and moving therewith, substantially as specified.

477,552. CULTIVATOR OR PLOW. JOHN L. KERR, Wedowee, Ala. Filed Feb. 18, 1892. Serial No. 422,000. (No model.)



Claim.—1. The combination, with a plow-beam having an attached rack-bar and a pendent brace-arm secured to the plow-beam, of a cultivator or plow standard pivotally connected with the brace-arm, rising above the plow-beam, and capable of swinging forward and backward on its pivot, a rotatable gear journaled on the standard and engaging the rack-bar, and a locking device for holding the gear stationary to secure the standard against forward or backward motion, substantially as described.

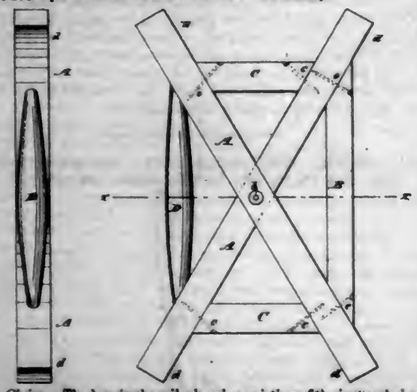
2. The combination, with a plow-beam and a pendent brace-arm secured thereto, of a cultivator or standard pivotally connected with the brace-arm, rising above the plow-beam, and capable of swinging forward and backward on its pivot, a spring acting to press the standard downward, a rack-bar secured to the upper side of the plow-beam, a rotatable gear journaled on the standard and engaging the rack-bar, and a locking device for holding the gear stationary, substantially as described.

477,558. VENTILATOR FOR HATS. MARTIN F. W. KOCHNER, Brooklyn, N. Y. Filed Feb. 17, 1892. Serial No. 421,804. (No model.)



Claim.—The combination, with a hat-crown having an opening of semicircular form produced therein and a face-plate secured to the outer face of the crown and covering the said opening, the said plate being provided with a series of openings, of a back plate attached to the inner face of the crown and provided with an opening corresponding to that in the crown, and a shutter held to revolve between the face and back plate, one-half of which shutter is provided with openings corresponding in number and location to those in the face plate, the other half of the shutter being solid, substantially as and for the purpose specified.

477,554. ROPE-REEL. HERMANN O. KUHATH, Evansville, Ind. Filed Sept. 4, 1891. Serial No. 404,705. (No model.)



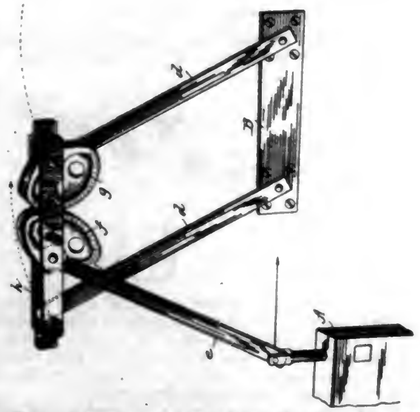
Claim.—The herein-described reel, consisting of the inclined pieces A A, secured together at their centers, the side piece B, the end pieces C C, and the handle D, the said side piece, end pieces, and handle being secured to the inclined pieces a short distance from their ends, as set forth.

477,555. NUT-LOCK. JOHN M. LANE, Morehead, and ISAAC N. PHIPPS, Mount Sterling, Ky. Filed July 27, 1891. Serial No. 400,882. (No model.)



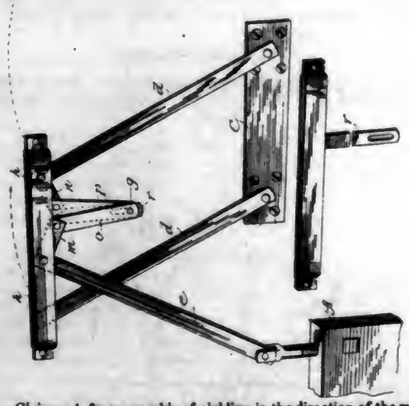
Claim.—The combination, with a screw-threaded bolt, of a nut having a screw-threaded aperture and a horizontal recess in said aperture, closed at the sides and having its bottom eccentric to the axis of the nut, and a soft metal ball or sphere located in said recess, adapted to be free from engagement with the threads on the bolt in screwing the nut on the bolt and to engage with the threads to prevent accidental backward movement of the nut, but capable of being flattened when sufficient force is applied to unscrew the nut, substantially as described.

477,556. SUPPORT FOR MOVING BODIES. WILLIAM J. LANE, Poughkeepsie, N. Y. Filed Nov. 23, 1891. Serial No. 412,816. (No model.)



Claim.—A frame pivoted upon a base and capable of yielding in the plane of movement of the body which it supports, in combination with an arm pivoted upon said frame and connected thereto by segments and ropes or bands, said arm being arranged for connection with said moving body, substantially as described.

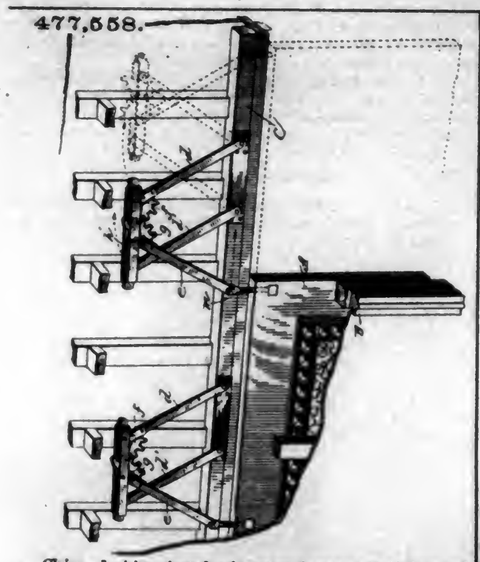
477,557. SUPPORT FOR MOVING BODIES. WILLIAM J. LANE, Poughkeepsie, N. Y. Filed Nov. 23, 1891. Serial No. 412,817. (No model.)



Claim.—A frame capable of yielding in the direction of the movement of the body which it supports, one of the bars of which has an offset, in combination with an arm pivoted on the frame and also provided with a similar offset, links connecting the said offsets, and a device for holding the links against lateral movement, substantially as described.

477,558. SUPPORT FOR MOVING BODIES. WILLIAM J. LANE, Poughkeepsie, N. Y. Filed Nov. 21, 1891. Serial No. 412,626. (No model.)

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Claim.—1. A bar pivoted and supported upon a suitable base and an arm with connections between the bar and arm which maintains the arm at the same angle of inclination as the bar, but in reversed position, substantially as described.

2. A frame capable of yielding in the plane of movement of the body supported thereby, carrying a pivoted arm, and connections between said arm and the frame, whereby the arm is moved and maintained at the same angle with the frame, but in reversed position, substantially as described.

3. In combination with a base, a pair of bars pivoted thereon, a connection between their free ends, a pivoted arm carried by said bars, and connection between said arm and bars, whereby the arm is maintained at the same angle as the bars in reversed position, substantially as described.

4. In combination with a base, a pair of bars pivoted thereon, a connection between their free ends, an arm pivoted on said connection, and a pair of engaging segments—one on the arm and one on a bar—whereby the arm is maintained at the same angle as the bar and in reversed position substantially as described.

5. The frame capable of yielding in the plane of movement of the body supported thereby, the arm pivoted thereon, and connection between the arm and frame, whereby inclination of the frame in one direction moves the arm equally in the opposite, a base for said frame, and connection between the arm and the moving body which it supports, substantially as described.

6. In combination, the door-casing, the door, the frame capable of yielding in the plane of movement of the body supported thereby, pivoted on a base above the door, and the arm connecting the frame with the door, and connection between the frame and arm, whereby the arm is maintained at the same angle of inclination as the frame, but in reversed position, substantially as described.

7. The frame capable of yielding in the plane of movement of the body supported thereby, pivoted on a base, an arm pivoted on the frame and connected to the frame by a pair of toothed segments, and a door pivoted to the arm, substantially as described.

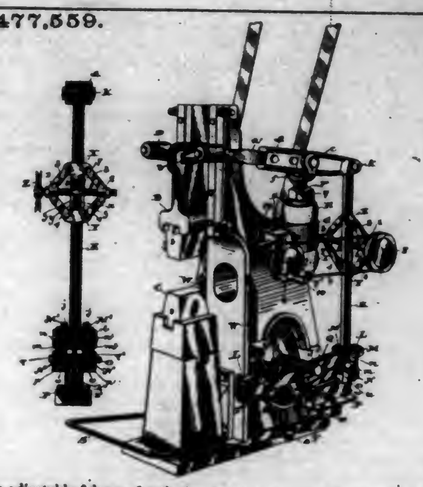
8. A pair of frames capable of yielding in the plane of movement of the body supported thereby pivoted on a suitable base, each carrying an arm pivoted on said frame, with connections between said arms and their respective frames arranged to maintain said arms at the same angle in reversed position in relation to said frame, and connections between the arms and the door, substantially as described.

477,559. POWER-HAMMER. WILLIAM H. LAW, Peterborough, Canada. Filed Dec. 11, 1891. Serial No. 414,694. (No model.)

Claim.—1. In combination, the frame, the upper lever pivotally supported thereby, the ram connected to the upper lever, the lower lever, the pitman connecting the levers, and the crank-shaft in sliding connection with the lower lever to operate thereon, substantially as described.

2. In combination, the frame, the upper lever pivotally supported thereby, the ram carried by the said lever, the lower lever, the pitman connecting the two levers, the means for operating the lower lever, and

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the adjustable fulcrum for the lower lever, movable to and from the pitman, substantially as described.

3. In combination, the frame, the ram and the movable support therefor, the lever J, the pitman connected to said lever and to the movable ram-support, the cross-head movable longitudinally of the lever, the fulcrums of the lever carried by said cross-head, the guideways for the cross-head, and the means for moving the cross-head with the fulcrum along said way to and from the pitman, substantially as described.

4. In combination, in a power-hammer, the frame, the ram, the movable support therefor, the operating-lever J, the means for operating said lever, the pitman connected to the lever and the ram-support, and the fulcrum consisting of the trunnions M M' and the cross-head carrying the same, said cross-head, with the fulcrum, being movable along the lever, substantially as described.

5. In combination, the frame, the ram, the movable support therefor, the operating-lever J, the pitman connected thereto and to the movable support, and the movable fulcrum for the lever, adjustable so as to lie in the vertical plane of the pitman, substantially as described.

6. In combination, the frame, the ram, the upper lever connected thereto and pivotally supported on the frame, the lower lever J, the pitman connecting the two levers, the adjustable fulcrum for the lower lever, and the crank-shaft for operating said lever, connected thereto by the sliding block R, substantially as described.

7. In combination, the frame, the ram, the movable support therefor, the operating-lever J, formed of parallel bars, the pitman connected thereto between the bars and connected also to the ram-support, the adjustable fulcrum engaging the outside of the bars, whereby the longitudinal adjustment along the lever is permitted, and the operating means for the lever J, substantially as described.

8. In combination, the frame, the ram, the movable support therefor, the operating-lever J, composed of parallel bars, the pitman connected to the lever between the bars and connected also to the ram-support, the trunnions M M', grooved on their inner faces to receive the bars and having journals on their outer sides, the cross-head receiving said journals, the guideway for the cross-head, and the operating means for the lever J, substantially as described.

9. In combination, the frame, the ram, the upper lever pivotally supported on the frame and connected to the ram, the lower lever, the pitman connecting the levers, the cross-head movable along the lower lever, the fulcrum carried by the cross-head, the guideway for the cross-head having tongues *p*, said cross-head being grooved to receive said tongues and formed in two parts, the bolt *o* for holding the two parts together, and operating means for the lever J, substantially as described.

10. In combination, the frame, the ram, the upper lever pivotally supported on the frame and connected to the ram, the lower lever J, the pitman connecting the two levers, the adjustable fulcrum, the guideway, and the operating means for the fulcrum, consisting of the treadle, the rock-shaft, the arm U, and link V.

11. In combination, the frame, the ram, the connections thereto, including the pitman, the lever J, connected to said pitman, the adjustable fulcrum comprising the cross-head, the guideway therefor, and the trunnions pivoted to the cross-head and movably engaging the lever and having rounded lower edges to fit corresponding seats in the cross-head, substantially as described.

12. In combination, the frame, the ram, the upper lever connected

thereto, the screw F, to which the lever is pivoted, the said frame having a rear extension G to receive the screw, the nuts *g g'* on the screw, and the cushions H I on each side of the extension G and between the nuts and said extension.

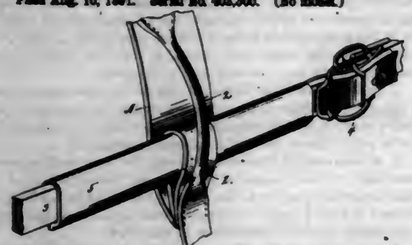
13. In combination, in a power-hammer, the frame, the ram, the upper lever connected to the ram, the pitman connected to the lever for operating it, means for operating the pitman, said pitman being formed of the upper and lower lengths, with the socket connection between them, the right and left hand screw-spindle arranged transversely of the pitman, the nuts 1 2 on the screw, and the links 3 4, connected thereto and to the pitman-sections, said sections having the cross-heads X Y, substantially as described.

14. In combination, the frame, the ram, the pivoted lever connected therewith, the pitman with the operating means therefor for operating the lever, said pitman being formed in two parts, one of which has a socket with slots *y* and the other a reduced end *x*, fitted thereto, the right-and-left screw-spindle extending through the slots and having a ball-bearing 7, engaging with a seat in the end *x*, the nuts 1 2, the links, and means for turning the spindle, substantially as described.

15. In combination, the frame, the ram, the lever A, connected therewith, the pitman, with operating means therefor for moving the lever A, the said pitman being formed in two parts with a sliding connection between them, the transverse right-and-left screw with the toggle mechanism for moving the sections, the pulley Z on said screw, the pulley 9 on the frame, the adjustable support for said pulley, and the belt connection between the pulleys, substantially as described.

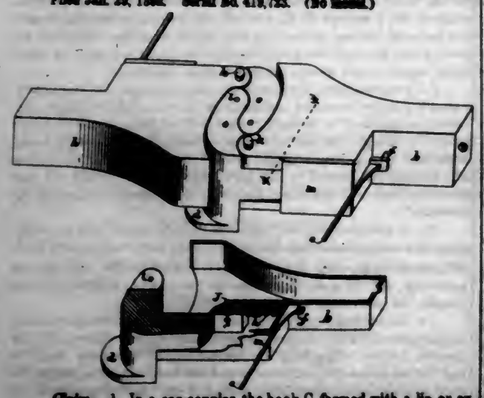
16. In combination, the frame, the ram, the operating-lever J, the pitman connected thereto and in connection with the ram, the adjustable fulcrum comprising the cross-head N, and the trunnions movably engaging the lever, the guideway for the cross-head, having the base-plate P, with an opening therein, and the extension *k'* on the pitman to enter an opening in the plate P, substantially as described.

477,560. TRACE-PROTECTOR. THOMAS H. LEE, Greenup, Ill. Filed Aug. 10, 1891. Serial No. 402,305. (No model.)



Claim.—The combination, with the back-band, trace, and trace-buckle, of a removable protecting-sleeve 5, through which the trace passes, provided with a perforated tongue-extension 6, resting on the inner side of the trace and secured by the trace-buckle, substantially as described.

477,561. CAR-COUPLING. HENRY LESLY, Birmingham, Ala. Filed Jan. 29, 1892. Serial No. 419,723. (No model.)



Claim.—1. In a car-coupler, the hook C, formed with a lip or extension that will prevent the opposite draw-head from falling to the ground when accidentally drawn from the opposite car.

2. The combination, in a car-coupler, of the lever *a*, operated by a forward movement over a short fulcrum to obtain increased leverage for uncoupling under strain, with block *g* and rod *f*.

3. In a car-coupling, the block *g*, provided with the beveled front face and the plain rear face corresponding in width with the tail of the hook, in combination with the wall J within the coupling-head and the spiral spring *h* and suitable means for actuating the said block, all substantially as described.

477,562. SCREEN-DOOR. WILLIAM F. LEFT, Dayton, Ohio, and ELIJAH J. PRESTON, Alexandria, Ky. Filed Mar. 5, 1892. Serial No. 423,843. (No model.)



Claim.—1. An adjustable screen-door consisting of the vertical side rails *a a* and the cross-rails *b b b*, one of the end cross-rails being provided with oppositely-projecting enlarged tenons *b'*, working in closed vertical grooves formed in the inner edges of said side rails, said tenons having frictional adjustment therein, and the other cross-rails being permanently secured to the side rails, a wire-netting secured to the inner edges of frame-bar by strips *c*, one of these strips extending across in front of the adjustable cross-rail, so as to protect the unsecured edge of the netting, substantially as described.

2. A ready-made adjustable screen-door consisting of the side bars *a a* and the cross-rails permanently connecting the said side bars, one of the end cross-rails being adjustably secured between the side rails by means of tenons working in grooves in the inner edges of the same, a wire-netting permanently secured to the door-frame by vertical and transverse strips *c*, one of these strips extending across in front of the adjustable cross-rail and unsecured edge of the wire-netting, but unconnected with the cross-rail, whereby the adjustable rail is free to be adjusted up and down without disturbing the netting and the rail may be secured after adjustment to the screen-strip in front of it, substantially as described.

477,568. ADDING ATTACHMENT FOR CASH-REGISTERING MACHINES. SARAH R. MASSEY and STANLEY A. BRYANT, Mamaroneck, administrators of Gideon B. Massey, deceased, assignors of two-fifths to Alfred B. Darling, New York, N. Y. Filed July 3, 1890. Serial No. 357,631. (No model.)

Claim.—1. The combination, with the rock-shaft and number-wheel shaft, of a series of auxiliary adding-wheels provided with carrying mechanism, pawl-and-ratchet mechanism provided with a limiting device operated by the number-wheel shaft of the cash-register, and number-wheel moving devices connected with the rock-shaft of the printing mechanism of the cash-register for operating the auxiliary adding-wheels, substantially as specified.

2. The combination, with the number-wheel shaft D and rock-shaft I of a cash-register, of the toothed sector J, carried by the shaft I, the pinion E, loosely mounted on the shaft D, the pawl *b*, carried by the said pinion E, the notched and chambered wheel F, provided with the stud *d*, the spring K, contained by the wheel F, and having one end thereof attached to the shaft D, with the other end secured to the stud *d*, the stop-pin *e*, inserted in the shaft D and adapted to engage the stud *d*, the spur-wheel G, and the ratchet-wheel H, rigidly connected with each other and loosely mounted on the shaft D, and a series of number-wheels constructed to be operated by the spur-wheel G, substantially as specified.

3. In an adding attachment for cash-registering machines, the combination, with the number-wheel shaft and operating mechanism of the adding device, of a spring-pressed notched and chambered wheel placed loosely on the number-wheel shaft, and a pin projecting from the said shaft and adapted to set the notched wheel, substantially as specified.

477,564. STAND FOR SIDEBOARDS AND THE LIKE. FERDINAND K. MAXIMILIAN, New York, N. Y. Filed Apr. 5, 1892. Serial No. 428,343. (No model.)



Claim.—1. As a new article of manufacture, a stand of the character described, consisting of a mirror forming the front plate, a back plate having openings formed therein, cup-shaped metallic knobs or legs of sheet metal having offset flanges, the body of the knobs projecting from the back plate and the flanges thereof lying within the same and clamped against movement between the front and back plates, and a ring clamping the said plates together at their edges, substantially as described.

2. As a new article of manufacture, a stand of the character described, consisting of a mirror forming the front plate, a back plate having a series of openings, sheet-metal cup-shaped knobs or legs fitting said openings and formed with flanges that rest against the inner face of the back plate, an interposed protecting-sheet covering said flanges, and a ring serving to hold all the parts together, substantially as described.

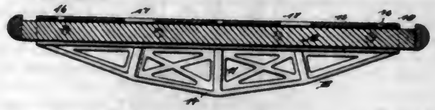
477,565. SMOKE AND CINDER CONDUCTOR FOR RAILWAY-TRAINS. WILLIAM H. MOOR, Atlanta, Ga. Filed Oct. 12, 1891. Serial No. 408,508. (No model.)

Claim.—1. In a device of the class specified, a curved pipe connected at its lower end to the smoke-box and at its upper end to a backwardly-extending pipe, and an opening and door therein vertically over the opening into the smoke-box, said door acting as a cinder-deflector and to close said opening and removable when worn, and a counterbalance-weight projecting downwardly past the pivotal point of said door, forming a counterbalance-weight and a motion-limiting stop for said door in opening, substantially as and for the purpose specified.

2. In a device of the class specified, the conduit having a hole therein, a door adapted to close said hole, a spring-pressed barbed lever pivoted to said pipe and engaging said cover-door, a rock-shaft extending to the cab, having thereon a lever 12, and a cord or chain connected to said barbed lever and to said lever 12.

3. In a device of the class specified, the conduit, an opening therein for exit of smoke, a door adapted to close said opening, an extension 7 thereon, the pitman 8, connected thereto and to the lever 9, the lever 9, and the rod 10, all combined, arranged, and operating substantially as and for the purpose specified.

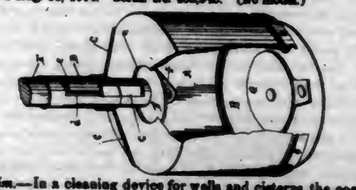
477,566. BRACE FOR PIANO-KEY BOTTOMS. HERMAN MCCLELLAN, Toronto, Canada. Filed Mar. 30, 1892. Serial No. 427,097. (No model.)



Claim.—1. As an improved article of manufacture, a brace for piano-key bottoms, the same consisting of a vertical member shaped at its lower end as an inverted truss and provided upon its inner face with a longitudinal rib, and a horizontal member integral with the upper edge of the vertical member and extending over the rib, the rib being adapted for engagement with the under face of the key-bottom and the horizontal member for engagement with the upper face of the same, as specified.

2. The combination, with a piano-key bottom constructed of wood and provided with a recess in its upper face at the back, of a metal brace comprising a horizontal member entering the recess in the key-bottom, and a vertical member extending downward in engagement with the rear edge of the key-bottom, the lower portion of the said member being of lattice-work and shaped as an inverted truss, the vertical member of the brace being also provided with a rib upon its inner face adapted for engagement with the under face of the key-bottom, substantially as and for the purpose specified.

477,567. CISTERN-CLEANER. GEORGE W. MCCONNELL, Hale, Mo. Filed Aug. 11, 1891. Serial No. 402,345. (No model.)



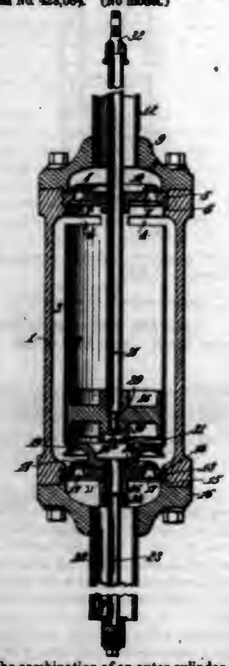
Claim.—In a cleaning device for wells and cisterns, the combination, with the body or casing having a port or opening in its top, the bottom flexibly connected to the body or casing and having a port or opening, a suitable means for normally holding the bottom closed, the inwardly-opening valve covering the port in the bottom, the inwardly-

opening and spring-pressed valve covering the port in the casing-top, the tubular guide having an L-slot, and the arms supporting said guide above the body or casing, of the handle seated in the tubular guide and having a lateral pin or stud to engage the slot thereof, substantially as and for the purpose set forth.

477,568. METHOD OF PRODUCING ORNAMENTAL ENAMEL DESIGNS. FREDERIC B. NICHOLS and ABBIE T. CRANE, New York, N. Y.; said Nichols assignor to said Crane. Filed Aug. 8, 1891. Serial No. 402,153. (No specimens.)

Claim.—The method of producing designs in enamel colors, which consists in the application of soluble glass to the portions of the surface to be enameled, whereby the soluble glass serves first as a binder to hold the vitrifiable materials upon said surface prior to fusing and afterward serves as a flux in the vitrified enamel, substantially as set forth.

477,569. PUMP. JOHN NORTH, Southington, Conn. Filed Apr. 6, 1892. Serial No. 428,084. (No model.)



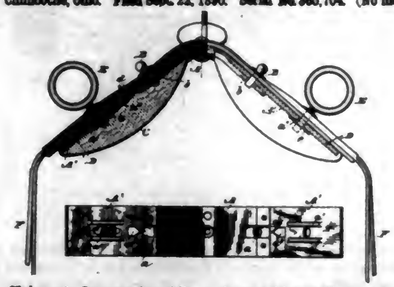
Claim.—1. The combination of an outer cylinder, an inner cylinder arranged therein to provide an intervening water-chamber and having communication at its upper end with the latter, an outlet water-pipe extending from the upper head of the outer cylinder, a valve for controlling the passage of water from the upper portion of the inner cylinder to the outlet water-pipe, a piston arranged in the inner cylinder and having an air-chamber, a tubular piston-rod rising from the piston through the outlet-pipe, a valve located in the air-chamber of the piston for controlling the flow of air from the lower end of the tubular piston-rod to said air-chamber, a water-inlet to the outer cylinder, an air-pipe leading from the lower head of the outer cylinder and adapted to extend downward into the water in the well or cistern, and a valve-chamber containing a valve and interposed between the said air-pipe and the piston, substantially as and for the purposes described.

2. The combination of an outer cylinder having upper and lower heads, an inner cylinder arranged within the outer cylinder to provide an intervening water-chamber and having ports at its upper end, communicating with the said water-chamber, a water-inlet, a water-outlet, a piston working within the inner cylinder and having a tubular piston-rod, a valve for controlling the flow of air from the end of the tubular rod connected to said piston, an air-pipe leading from the center of the lower head of the outer cylinder and designed to extend downward in the water of a well or cistern, and suitable valves arranged at opposite ends of the outer cylinder, substantially as described.

3. The combination, with a pump-cylinder, of an interior concentric shell of such diameter as to leave an annular water-charging chamber outside said shell, an air-pipe tapped into and communicating with a valved passage in the piston, a valve-annulus in a valve-chamber at the lower end of the cylinder and closing inlet-ports in the outer cylinder-head, an inlet-pipe tapped through the head, an air-pipe arranged within the inlet-pipe and having its open end communicating with the closed lower end of the inner cylinder, and a valve-annulus upon the tubular piston, seating over ports in the upper end of the inner cylinder, substantially as described.

4. The combination, with a pump-cylinder composed of an inner and outer inclosing shell or cylinder having an annular space between to form a water-charging chamber, of a valve closing the discharge-ports at the upper end of the inner cylinder, a valve opening to the inlet at the lower end of the outer cylinder, a piston having a tubular rod passing up in the discharge-pipe, an air-pipe in the inlet-pipe, and a valve-passage in the piston between the tubular rod, and an air-chamber communicating with the air-pipe in the inlet, substantially as described.

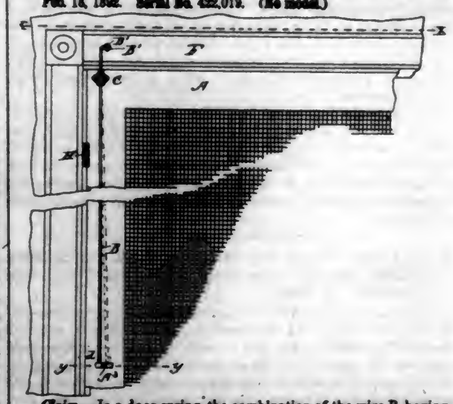
477,570. TRACK-SADDLE. FRANK A. OBERER and JOHN S. KALB, Chillicothe, Ohio. Filed Sept. 22, 1890. Serial No. 365,704. (No model.)



Claim.—1. In a track-saddle, a short rigid metallic tree A, provided with openings *a*, flexible metallic plates A', secured to said tree, said plates being also provided with openings and ribs *a'*, pads C beneath the trees and plates, pad-screws B, line-rings E, secured to the plates, and burrs *b c*.

2. The combination, with the short metallic tree A, of the flexible metallic extensions A', having openings for the line-rings and holes a^3, adjacent thereto, the leather piece D, having the flap *d* to cover the holes a^3, the line-rings E, and the burrs *c*, substantially as described.

477,571. DOOR-SPRING. ABNER W. PAINE, Boston, Mass. Filed Feb. 18, 1892. Serial No. 422,019. (No model.)

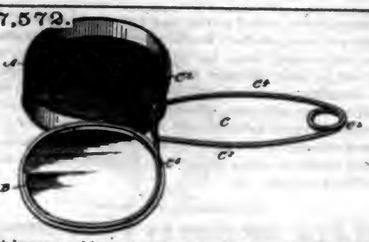


Claim.—In a door-spring, the combination of the wire B, having a flattened or double end, as described, with a socket-piece A^2, having slots A' A^3, situated at right angles to each other, substantially as and for the purpose set forth.

477,572. BOX. FRANK H. PALMER, Brooklyn, N. Y. Filed Sept. 14, 1891. Serial No. 405,631. (No model.)

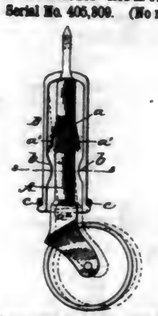
Claim.—1. A box comprising a body, a spring forming a handle and supported from the said box-body, and a cover supported on the said spring and adapted to fit on the said box-body, substantially as shown and described.

477,572.



2. A box comprising a body formed with an outwardly-extending beveled flange, a lid or cover formed with a beveled flange adapted to engage the beveled flange of the said box-body, and a spring formed of a single piece of wire secured at one end to the box-body and supporting at the other end the said cover or lid, the said spring being formed into arms making a handle, substantially as shown and described.

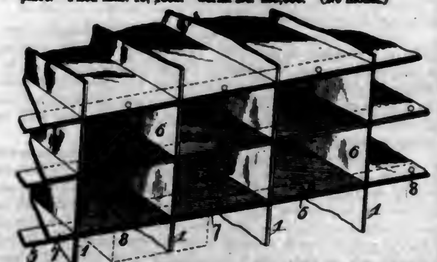
477,573. FURNITURE-CASTER. ROB R. PARRISH, Portland, Oreg. Filed Sept. 15, 1891. Serial No. 405,809. (No model.)



Claim.—1. In a furniture-caster, the combination, with the metal socket B, having the interior rib *b*, of the pintle and ribbon spring which is attached to its upper portion at a point above said rib, and whose arms *a'* project downward at a slight angle and are of less length than the distance between such point of attachment and the rib, so that they are normally out of contact with the latter, as shown and described.

2. In a furniture-caster, the combination, with the pintle-socket having the internal swell or rib *b*, of the pintle having the enlarged shoulder a^2 within the base of the socket, the spring attached to the upper portion of said pintle and whose arms project downward at an angle, but are normally out of contact with the socket, the diameter of said shoulder and body of the pintle relative to that of the contiguous portions of the socket and the rib being such as described, whereby when the pintle is thrown into an inclined position it does not come in contact with the rib, as shown and described.

477,574. FILE-CASE. PETER J. PAULY, Jr., St. Louis, Mo., assignor to the Pauly Jail Building and Manufacturing Company, same place. Filed Mar. 15, 1892. Serial No. 425,093. (No model.)



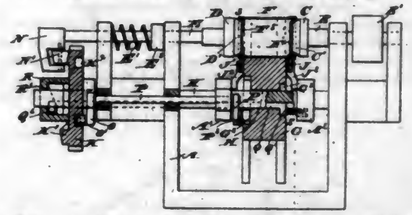
Claim.—1. A file-case having a vertical plate, such as 1, slots or openings 2, formed therein, a bar or bars, such as 5, adapted to fit in said slots or openings, and detachable or removable plates, such as 7, secured or adapted to be secured to said bars interposed between said vertical plates, substantially as set forth.

2. In a file-case, the combination of bars 5, removable plates, such as 7, and rivets 8 for securing said plates 7 to said bars 5, substantially as set forth.

3. In a file-case, a vertical plate, such as 1, having a series of slots 2 formed in the opposite edges thereof, in alignment at relative and predetermined distances apart, horizontal cross-bars 5, located in said slots, perforations formed in the cross-bars, removable plates 7, secured to said bars, and means for securing said plates to said bars, substantially as set forth.

4. The combination of vertical plates, such as 1, having a series of slots or openings 2 formed in the opposite edges thereof, in alignment at relative and predetermined distances apart, horizontal cross-bars 5, located in said slots or openings, perforations formed in said bars, detachable plates 7, superposed on said bars, rivets for securing said plates to said bars, and a bracket 9, having arms 10 and 11, the former of which is secured simultaneously to said bars and plates and the latter secured to the rear wall 3 of the file-case, substantially as set forth.

477,575. CAN-CRIMPING MACHINE. JAMES A. PEEK, Brewster, N. Y. Filed Mar. 7, 1892. Serial No. 424,023. (No model.)



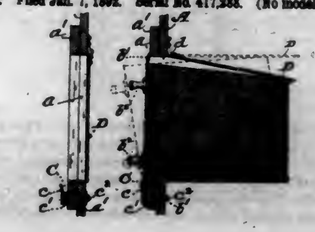
Claim.—1. In a can-crimping machine, the combination, with a vertically-rotating carrier having an intermittent motion and formed with peripheral recesses adapted to receive and discharge the cans, of two dies at opposite ends of the carrier above its axis to align with the said recesses and each having a beveled rim engaging the covers of the can, one of the said dies having a rotary motion, so as to impart a rotary motion to the can, and the other die longitudinally movable, and bevel-wheels journaled in fixed arms at opposite sides of the carrier and engaging the flanges of the said covers opposite the said beveled rims of the dies, substantially as shown and described.

2. In a can-crimping machine, the combination, with a vertically-rotating carrier having an intermittent rotary motion and provided with peripheral recesses adapted to receive and discharge the cans, of two dies arranged on opposite faces of the said carrier above its axis and adapted to engage the covers of the cans held in the carrier, both of the said dies adapted to have a rotary motion and one of them a longitudinal sliding motion, substantially as shown and described.

3. The combination, with the frame, the vertically-rotating peripherally-recessed carrier, the beveled crimping-wheels mounted in stationary bearings at opposite ends of said carrier above its axis, and the rotary clamping-dies above said wheels, one of which dies is adapted to slide toward and from the other, of a pawl-and-ratchet mechanism for operating the said carrier and a cam-wheel actuating the said pawl and the said sliding clamping-disk, substantially as set forth.

4. A can-crimping machine comprising the frame, the vertically-rotating carrier provided with peripheral recesses to receive and discharge the cans as the carrier rotates, a ratchet at one end of the carrier and locking-notches at the other, a sliding locking-rod having a lug to engage said notches and extending through the center of the carrier, a rock-shaft parallel with said locking-rod and having a pawl engaging the said ratchet, the rotary clamping-dies at opposite ends of the said carrier above its axis, a sliding shaft carrying one of said dies, a wheel provided with three cams for actuating, respectively, the rock-shaft, the slide-rod, and the clamping-die shaft, and the crimping-wheels at opposite ends of the carrier below the clamping-die, substantially as set forth.

477,576. GARBAGE-RECEPTACLE. WILLIAM B. ROSE, St. Louis, Mo. Filed Jan. 7, 1892. Serial No. 417,288. (No model.)

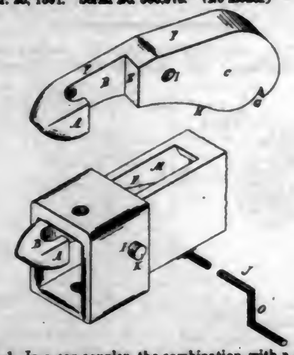


Claim.—1. The combination of the grooved fence or wall and the movable flanged receptacle, substantially as described.

2. The combination of the fence or wall having an opening extending vertically therein, as described, and having a groove beneath said opening, and the flanged removable receptacle, substantially as described.

3. The combination of the fence or wall having an opening extending vertically therein, as described, and having a groove below and in front of said opening, the flanged removable receptacle, and the lid hinged to said fence or wall, substantially as described.

477,577. CAR-COUPLING. ROBERT S. RUSSELL, Brownsville, Texas. Filed Mar. 26, 1891. Serial No. 386,373. (No model.)



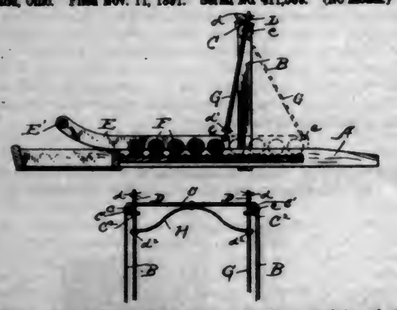
Claim.—1. In a car-coupler, the combination, with a draw-head, of a coupling-jaw pivoted within the draw-head between its ends, the rear portion of said jaw being weighted and the forward portion provided with a hook projecting at right angles to the body of the jaw and adapted to engage a similar hook of an opposing coupler, substantially as shown and described.

2. In a car-coupler, the combination, with a draw-head open at its top and bottom, of a coupling-jaw having a horizontal hook at its forward end and a rock-shaft journaled beneath the draw-head and adapted to work through the opening in bottom of same to contact with rear end of coupling-jaw, substantially as shown and described.

3. The combination, with a draw-head, of coupling-jaw pivoted within the same having a horizontal hook at forward end and a shoulder upon the lower face of rear end, said rear end being weighted, and a rock-shaft journaled beneath the draw-head and carrying an arm adapted to contact with coupling-jaw and shoulder, substantially as shown and described.

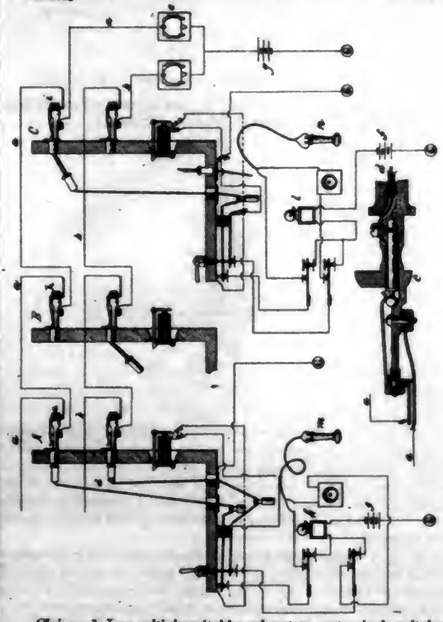
4. The combination, with a draw-head, of the coupling-jaw having a weighted rear portion and a tapering forward portion, said forward portion having a vertical recess produced in its inner side providing a hook at the forward end, a forwardly-projecting shoulder upon the lower rear end of coupling-jaw, the rock-shaft, and elevating-arm, all arranged substantially as shown and described.

477,578. WASHING-MACHINE. SOLOMON H. SCHNUCK, Cleveland, Ohio. Filed Nov. 11, 1891. Serial No. 411,569. (No model.)



Claim.—In a clothes-rubbing attachment for a wash-board, the combination, with standards adapted to be rigidly secured to the side pieces of the wash-board and a yoke having depending arms at its opposite ends pivotally connected with the upper ends of the respective standards, of spring-actuated rods and a reciprocating frame having a suitable rubbing-surface, the yoke aforesaid being perforated for embracing the free ends of said spring-actuated rods, the latter at their opposite ends being pivotally connected with the respective side pieces of the reciprocating frame and having shoulders or stops between which and the yoke aforesaid the spring mechanism is confined, the latter comprising a semi-elliptical or leaf spring secured at its longitudinal center to said yoke, with the ends of the spring embracing the respective spring-actuated rods, the depending arms of the yoke aforesaid terminating at their lower ends in inwardly-projecting members that constitute guides for said spring-actuated rods, substantially as and for the purpose set forth.

477,579. TEST-CIRCUIT FOR MULTIPLE SWITCHBOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed May 12, 1886. Serial No. 166,873. (No model.)



Claim.—1. In a multiple switchboard system, spring-jack switches, one spring-jack switch on each board for each line, each spring-jack switch consisting of a metallic tube or frame and a spring insulated therefrom, the telephone-lines connected through their respective spring-jack switches on the different boards to a ground-circuit including battery, a pair of cords and terminal plugs at each of the boards, one of said plugs being normally grounded, and a switch in connection with each pair of cords for bringing the operator's telephone into the circuit of any particular pair of cords at either of the boards, whereby a test may be made of any board to determine whether any given line is open at any succeeding board.

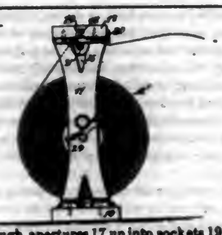
2. The combination, with telephone-lines, each connected with a different spring-jack on each of the switchboards and thence through a battery to ground, of operator's testing apparatus consisting of a telephone to indicate the presence of battery, together with an electro-magnetic signal and a test-battery, whereby a test may be made toward ground and toward the subscriber's station over any line from any board to determine whether a line is busy.

3. Multiple switchboards and telephone-lines connected therewith, a source of electricity for sending electric current upon all the lines of the exchange, and an electro-magnetic device for indicating such current, in combination with an electro-magnetic signal and test-battery to indicate a broken or open circuit existing upon any one of said lines at another board, whereby it may be determined at one board whether any particular line is connected or in use at any other board.

477,580. ROLL-PAPER HOLDER AND CUTTER. EDWIN R. SHUTMAN, Philadelphia, Pa. Filed Apr. 18, 1891. Serial No. 389,412. (No model.)

Claim.—1. The combination, with the roll-paper holder having standards provided with slots 15 and apertures 17, of the cross-piece 13, grooved on its under side and provided with sockets 19, the bolts

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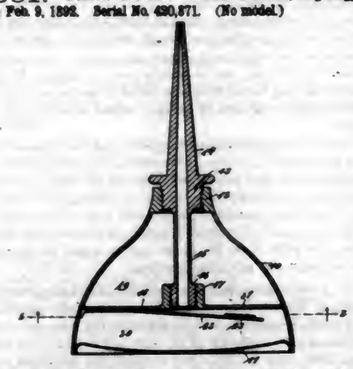


18, extending through apertures 17 up into sockets 19 and having eyes on their lower ends within slots 15 and heads on their upper ends, the springs 20 on the bolts between their heads and the upper surfaces of the standards, and the roller 21, extending along the groove and journaled at its ends in the bolt-eyes, substantially as set forth.

2. In a roll-paper holder and cutter, the combination, with standards containing bearings, of a shaft adapted to pass through the reel and provided at its ends with plates, both plates being provided upon their outer faces with trunnions and upon their inner faces with spurs and a central stud, the stud of one plate being rigidly secured to the shaft and the stud of the opposite plate provided with a key adapted to enter a slot in the shaft, and tension devices located in the standards and adapted to engage with the plates, the said tension devices being provided with a flexible inner surface, as and for the purpose specified.

3. The combination, with the reel-shaft having a slot at its ends, of the plate 28, of greater diameter than the shaft and having a stud 24 on its inner side to enter the end of the reel-shaft and provided with a tongue engaging said slot, parallel penetrating-pins also on the inner face of the plate beyond the reel-shaft, and the trunnion on the outer face of the plate, substantially as set forth.

477,581. SQUIRT OIL-CAN. FRANK E. SMALL, Sing Sing, N. Y. Filed Feb. 9, 1892. Serial No. 420,871. (No model.)



Claim.—1. An oil-can having a flexible bottom and provided with an upper and lower chamber, a downwardly-opening valve for controlling the communication between the two chambers, a spring for holding the valve normally open, and a spout having an unobstructed communication with the lower chamber, substantially as described.

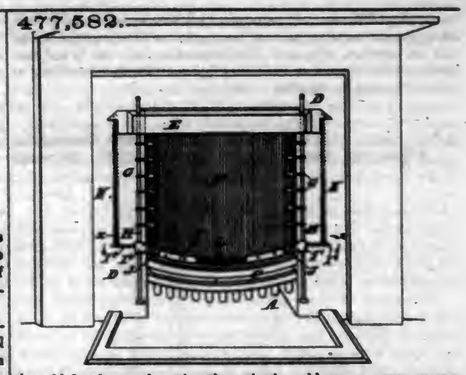
2. In an oil-can, the combination, with the can-body having a flexible bottom and provided with an apertured division-plate, of a spring secured to the division-plate and carrying a valve at its free end for closing the aperture of the division-plate, and a spout projecting down to and secured to the division-plate and having an unobstructed communication with the lower chamber of the can, substantially as described.

3. The herein-described oil can, consisting of a can-body having a flexible bottom, a division-plate dividing the can-body into an upper and lower chamber and having a central screw-threaded boss and an aperture at one side of the boss, a spring secured to the division-plate and provided with a valve at its free end, and a spout screwed into the neck of the can and provided with a downwardly-extending stem screwed into the boss on the division-plate and having an unobstructed communication with the lower chamber of the can, substantially as herein shown and described.

477,582. FIREPLACE-BLOWER. GUIE H. TUTTLE, Shorter's Depot, Ala. Filed Mar. 30, 1891. Serial No. 386,793. (No model.)

Claim.—1. In a fireplace-blower, the combination, with a cap fixed to the fireplace, of vertically-extending rods held on the front of

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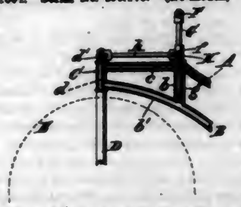
the said fireplace and passing through the said cap, an apron or curtain made of a fire-proof material and secured at its upper end to the inside of the said cap, and eyes secured on the sides of the said curtain or apron and fitted to slide on the said rods, substantially as shown and described.

2. In a fireplace-blower, the combination, with a cap fixed to the fireplace, of vertically-extending rods held on the front of the said fireplace and passing through the said cap, an apron or curtain made of a fire-proof material and secured at its upper end to the inside of the said cap, eyes secured on the sides of the said curtain or apron and fitted to slide on the said rods, and a handled bar connected with the lower end of the said curtain or apron and also fitted to slide on the said rods, substantially as shown and described.

3. In a fireplace-blower, the combination, with a cap fixed to the fireplace, of vertically-extending rods held on the front of the said fireplace and passing through the said cap, an apron or curtain made of a fire-proof material and secured at its upper end to the inside of the said cap, eyes secured on the sides of the said curtain or apron and fitted to slide on the said rods, a handled bar connected with the lower end of the said curtain or apron and also fitted to slide on the said rods, and springs connected with the said bar, substantially as shown and described.

4. In a fireplace-blower, the combination, with a cap fixed to the fireplace, of vertically-extending rods held on the front of the said fireplace and passing through the said cap, an apron or curtain made of a fire-proof material and secured at its upper end to the inside of the said cap, eyes secured on the sides of the said curtain or apron and fitted to slide on the said rods, a handled bar connected with the lower end of the said curtain or apron and also fitted to slide on the said rods, and a locking device, substantially as described, for fastening the said bar to one of the bars of the basket, substantially as set forth.

477,588. BICYCLE. ANDREW VAN RIPER, Cincinnati, Ohio. Filed July 20, 1891. Serial No. 400,178. (No model.)

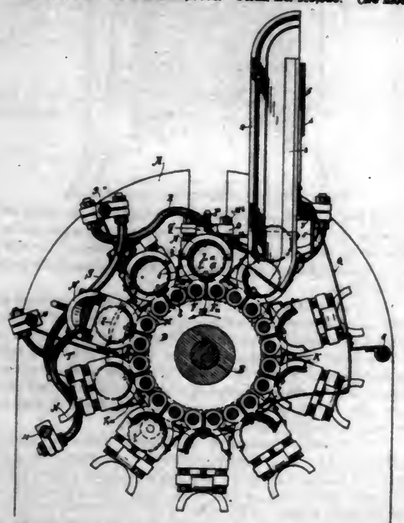


Claim.—1. In a Safety bicycle, the combination, with a skeleton frame, composed of the reach A, rear fork a, branch B, and perpendicular hollow ligament *b*, of a fore extension-frame, formed integral with and of the same tubing as said skeleton frame and composed of the horizontal reach extension *c*, branch extension *b'*, and perpendicular hollow ligament C, said perpendicular hollow ligament *b* forming a bearing for the perpendicular handle-bar standard, said perpendicular hollow ligament C forming a bearing for the perpendicular axis of a perpendicular bearing-fork for the fore wheel, substantially as and for the purpose specified.

2. In a Safety bicycle, the combination of the skeleton frame A *a* B *b*, having the fore extension-frame C *c b'*, formed integral therewith and of the same tubing as said skeleton frame, the parts *b* and C in said skeleton frame and extension-frame, respectively, being hollow and perpendicular, fore wheel E, perpendicular bearing-fork D, supporting said fore wheel and having a perpendicular axis or bearing in said perpendicular hollow ligament C, handle-bar and its perpendicu-

lar standard F G, mounted perpendicularly in said perpendicular hollow ligament *b*, and a transmitter coupling device for said perpendicular fork and standard, composed of the transverse bars *c* and H and connecting rods or links A, or their described equivalents, substantially as and for the purpose specified.

477,584. CAN-HEADING MACHINE. MILTON A. WERNATON, San Francisco, Cal. Filed Nov. 27, 1891. Serial No. 413,233. (No model.)



Claim.—1. In a can-heading machine, the combination of the inner semicircular jaw, which is carried around a central axis without changing its position in the radial line of the circle in which it is carried around, with an outside movable jaw opening about an axis transverse to the central line of the closed jaws to receive the can-head and end of the can-body and again close around them, substantially as and for the purposes herein described.

2. In a can-heading machine, a series of sets of jaws which are carried around a central axis without changing their radial position with relation to such central axis and in which the outside jaw of each such sets opens by moving around an axis that is transverse to said central axis, in combination with mechanism for opening and closing such jaws, substantially as and for the purposes herein set forth.

3. In a can-heading machine, the combination of a set of jaws which are carried around a central axis without changing their position radially from such axis, in combination with mechanism for moving such set of jaws toward another set of similar jaws, substantially as and for the purposes herein set forth.

4. In a can-heading machine, two sets of jaws facing each other and carried around an axis without changing their position radially from such axis, in combination with mechanism by which the jaws are opened and closed, mechanism for forcing the jaws toward each other for putting the can-heads on the can-body, and mechanism, substantially as described, for moving the sets of jaws farther from each other after the heads have been placed upon the can-body.

5. In a can-heading machine having opposing sets of jaws carried around a central axis and in which the outside jaw of each set opens by moving around an axis that is transverse to said central axis, the combination of the rods F and F^5 with the two sets of jaws which they carry, one of said sets of jaws being fastened to one of said rods and the other set of jaws being fastened to the other of said rods, substantially as herein described.

6. In a can-heading machine, opposing sets of jaws carried around a central axis and in which the outside or upper jaw of each set opens by moving around an axis that is transverse to said central axis and remains open while the can-head and end of the can-body are received by the inner or lower jaw and then closes with the inner or lower jaw and is locked therewith while the can-head is forced upon the end of the can-body.

7. In a chute for guiding the can-heads into the jaws of a can-heading machine, the swinging part 16 or its equivalent in the lower part of the chute, whereby the delivery of the can-head from the lower end of the chute to its proper place in the jaw below is more accurately made, substantially as herein described.

8. The combination, with a set of jaws used in a can-heading machine and constructed substantially as shown, of the blocks O O, hinge-bolt A, and screw-bolts M M for the purpose of connecting the two jaws of the set together and adjusting and holding them in their proper positions relatively to each other, substantially as herein described.

9. In a can-heading machine, the combination of opposing sets of jaws carried around a central axis and in which the outside or upper jaw of each set opens about an axis that is transverse to said central axis, a pin P or its equivalent on the outside jaw, and a contact-piece, with which each pin engages to close each set of jaws, substantially as herein described.

10. In a can-heading machine having opposing sets of jaws carried around a central axis and in which the outside or upper jaw of each set opens by moving around an axis that is transverse to said central axis, the combination of said outside jaw of each set, the pin P, carried by said jaw, and the bent rod, with which the pin engages to open the sets of jaws, substantially as herein described.

11. In a can-heading machine having opposing sets of jaws carried around a central axis and in which the outside or upper jaw of each set opens about an axis that is transverse to said central axis, the combination, with said outside jaw, of the latch *i*, pivotally secured contiguous thereto, and a pin or stud on said outside jaw for operating the latch, substantially as herein described.

12. In a can-heading machine having sets of jaws in which the outside jaw of each set opens away from the inside jaw, around an axis that is transverse to the central axis of said sets of jaws, the combination of each one of the supporting-rods that carries one of the sets of jaws with a frictional wheel G or its equivalent and a sectional cam-ring K^5 or its equivalent, for the purpose of moving the sets of jaws, with the supporting-rod, and forcing the can-head upon the end of the can-body, substantially as herein described.

13. In a can heading machine operating substantially as herein described and having sets of jaws in which the outside jaw of each set opens away from the inside jaw, around an axis that is transverse to the central axis of said sets of jaws, the combination of the disks D D with the movable rods F F^5, the sectional cam-rings K K^5 at one side of the machine, and a frictional roller G or its equivalent, substantially as herein described.

14. In a can-heading machine having opposing sets of jaws in which the outside or upper jaw of each set opens about an axis that is transverse to the central axis of said sets of jaws, the combination of the rods F and F^5 for carrying said jaws, a support for said rods means for rotating the support, the collars H for the rods, and the friction-roller G or its equivalent on said collars, substantially as herein described.

15. A can-heading machine consisting of the disks mounted upon a shaft and rotated in unison, rods passing through the disks in pairs near the periphery and parallel with the axis of rotation, and opposing jaws mounted upon the rods and each consisting of an inner half capable of movement parallel with the axis and an outer half movable with the inner half when closed together, said outer half being hinged to open outwardly from the inner half to admit the can heads and bodies, substantially as herein described.

16. A can-heading machine consisting of disks mounted on a shaft to rotate in unison, rods passing through the disks parallel with the axis of rotation, opposing jaws movable to and from each other upon the rods and each consisting of an inner half and an outer half hinged to open away from the inner half to admit the can heads and bodies, blocks to which the outer jaws are hinged, and screw-bolts and nuts by which the blocks are moved and the outer jaws adjusted with relation to the inner ones, substantially as herein described.

17. A can-heading machine consisting of parallel disks rotating in unison, rods passing through the disks parallel with the axis of rotation, opposing jaws movable to and from each other upon the rods and each consisting of an inner half having a single motion parallel with the axis, an outer jaw hinged to open and close about the inner jaw and also partaking of the end motion of the inner jaw, and a latch by which the jaws are locked together when closed, substantially as herein described.

18. In a can-heading machine, the opposing jaws in pairs adapted to receive the can-bodies and the opposite heads thereof and movable to and from each other, said jaws comprising an inner half and an outer half hinged to open and close with relation to the inner half, disks by which the jaws are carried around a common center of rotation, cams fixed with relation to the revolving disks, and pins fixed to the hinged outer jaws to engage the cams and open and close the jaws during their revolution, substantially as herein described.

19. In a can-heading machine, parallel disks rotating in unison about a common center, rods passing through the disks in pairs parallel with and around the center of rotation, opposing two-part jaws with mechanism by which the outer jaw of each set is opened and closed with reference to the inner jaw, fastenings by which one of an opposing set of jaws is secured to one of a pair of rods and the opposite set to the other rod, and mechanism by which the rods are moved longitudinally and the jaws are caused to approach and recede from each other, substantially as herein described.

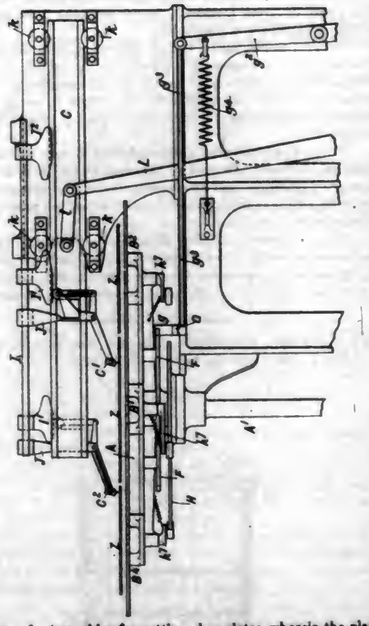
20. In a can-heading machine, the parallel disks rotating in unison about a common center, rods passing through the disks in pairs parallel with and about the center of rotation, opposing two-part jaws with mechanism by which each opposing pair of jaws is opened to receive the can heads and body, fastenings securing one set of jaws to one of the rods and the opposite set to the other rod, collars fixed to the rods and anti-friction rollers journaled thereon, and stationary cam-rings over which the rollers pass to move the rods and cause the opposing jaws to approach and recede from each other, substantially as herein described.

21. In a can-heading machine, the parallel disks rotating in unison about a common center, rods passing through the disks in pairs parallel with and about the center of rotation, opposing two-part jaws, into which can-heads are received and placed upon the ends of can-bodies, each opposing set of jaws being secured to one of a pair of parallel rods, a mechanism by which the rods and opposing jaws are caused to approach and recede from each other as they revolve about the common center, and adjusting screws and nuts by which the sets of jaws may be moved toward or from each other upon their carrying-rods, substantially as herein described.

22. In a can-heading machine, the opposing two-part jaws supported around a common center, mechanism by which the jaws are opened to receive can heads and bodies, closed and moved toward each other to fix the heads upon the ends of the bodies and then retracted from each other, and a lever *m*, fulcrumed so that one end will act to lift the completed cans from the jaws when the latter are opened, and a fixed stud-arm engaging the opposite end of the lever and actuating it, substantially as herein described.

23. In a can-heading machine, the opposing sets of jaws arranged and revolving around a common center and in which the outer half of each jaw opens about an axis that is transverse to said central axis, a mechanism by which the outer half of each set of jaws is opened to receive the ends of the can-bodies, and the heads closed to hold and guide them when they are united together and opened to discharge the completed product, and guide-rods Q, whereby the outer swinging jaws are held open as they pass beneath the supply-chute to receive the can heads and body, substantially as herein described.

477,585. MACHINE FOR CUTTING GLASS PLATES. WILLIAM J. WILSON, Watford, England. Filed Dec. 23, 1891. Serial No. 415,951. (No model.)



Claim.—1. A machine for cutting glass plates, wherein the plates are held and presented in succession to one or more cutters mechanically applied to and removed from the plates at the proper times and wherein the cutting is effected in two directions at right angles to one another by a relative motion of the plate and cutter produced either by the movement of the cutter or of the plate, substantially as herein specified.

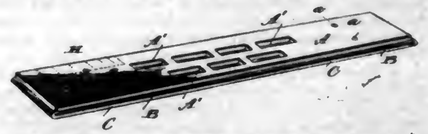
2. In a machine for cutting glass plates in two directions at right angles to one another, the combination, with an intermittently-rotating series of plate-holders, of cutter mechanisms receiving reciprocating rectilinear motion, and mechanism whereby the cutters are brought during their motion in one direction (and during the period of rest of the plate-holders) into operative contact with the plates and during their motion in the other direction out of contact with the plates, as described.

3. In the herein-described machine for cutting glass plates in two directions at right angles, the combination, with the rotating plate-holders B^1 B^2 B^3 B^4, of the locking mechanism, consisting of the notched disk F on the plate-holder shaft A', the lug *g*, and lever G, and the cam G', actuating said lever G at the proper times for holding the plate-holders stationary during the cutting operation, as specified.

4. In the herein-described machine for cutting glass plates in two directions at right angles, the plate-holders, each consisting of a set of radially-movable gripper-jaws operated from a common center by a spring A^4, and a stationary cam H, about which the holder revolves, as and for the purpose specified.

5. In the herein-described machine for cutting glass plates, the combination, with the reciprocating cutter bar or carriage C, and with mechanism consisting of the spring-actuated cutter-lever *e* and its catch mechanism, of the stationary cams I' I^5, and tappet *j*^{5} for putting the cutter into operative contact with the plate during its forward stroke and out of contact therewith during its return stroke, substantially as described.

477,586. COMBINED RULER AND BLOTTER. SAMUEL G. YOUNG, New York, N. Y. Filed Apr. 14, 1892. Serial No. 429,144. (No model.)



Claim.—1. A ruler provided at its ends with transverse passages for the reception and retention of a blotter and a surface for engagement with said blotter upon opposite sides and between which it is held, as set forth.

2. A ruler provided at its ends with transverse passages, combined with a blotter having its ends retained in said passages and held between the walls thereof, as set forth.

3. A ruler provided with transverse passages at its ends, combined with a blotter held at its ends in said passages between the walls thereof, with its sides disconnected from the ruler, as set forth.

4. A bendable ruler having transverse passages at its ends, combined with a blotter having its ends held in said passages in parallel relation with and between the walls thereof, as set forth.

5. A ruler, combined with a blotter held at its ends between said ruler and an independent strip held at a distance from the end to the ruler, as set forth.

6. A combined ruler and blotter consisting of a ruler and a blotter having its edges disconnected from the ruler and its ends detachably held in transverse passages at the ends of the ruler between the same and a part fixed thereto, as set forth.

7. A combined ruler and blotter consisting of a ruler, a blotter having its edges disconnected from the ruler, and a spring-retainer for the ends of the blotter, secured to the ruler at a distance from its ends, as set forth.

8. A flexible ruler, combined with a flexible strip secured to the under side thereof at a distance from its ends and a blotter having its side edges disconnected from the ruler and its ends held by the said strip, as set forth.

9. A combined ruler and blotter consisting of a ruler, a blotter having its edges disconnected from the ruler and held at the ends, end retainers, and an interposed pad, as set forth.

10. A combined ruler and blotter consisting of a ruler having transverse passages at its ends, end retainers between which and the ruler said passages are formed, and a blotter having its ends held in position in said passages between the ruler and the retainers, substantially as specified.

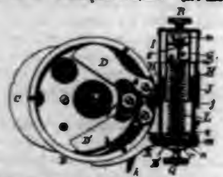
11. A combined ruler and blotter consisting of a ruler having transverse passages at its ends, end retainers between which and the ruler said passages are formed, a blotter having its ends held in position in said passages between the ruler and the retainers, and a pad interposed between the blotter and the ruler, substantially as specified.

477,587. THUMB-TACK. CHARLES R. ALBRIGHT, Tompkinsville, N. Y. Filed Apr. 28, 1892. Serial No. 431,067. (No model.)



Claim.—A thumb-tack composed of a head A, having an opening *a*, with an internal projection or rim *c*, and a pointed shank B, having an enlarged top provided with an internal recess *b*, adapted to engage the internal rim *c* of the head, substantially as described.

477,588. CAMERA-SHUTTER. ASBURY BARKER, Peekskill, N. Y. Filed Nov. 24, 1890. Serial No. 372,421. (No model.)



Claim.—1. The combination, with the light-excluding medium or shutter proper, of the progressively-moving plate of varying width engaging with and operating the shutter in one direction, said plate being adjustable relative to the shutter, whereby the length of the part actuating the shutter may be changed, substantially as described.

2. The combination, with the light-excluding medium or shutter proper, of the progressively-moving plate having shoulders or edges for engaging the shutter, arranged at varying distances apart, said plate being adjustable relative to the shutter, whereby the distance between the portions of the shoulders operating the shutter may be changed, substantially as described.

3. The combination, with the shutter proper, of the progressively-moving plate adjustable relative to the shutter, having shoulders or edges for co-operating with the shutter arranged at varying distances apart in the plane in which it moves, a pneumatic retarding device for regulating the movement of the plate, and an adjustable valve for regulating the operation of the retarding device, substantially as described.

4. The combination, with the shutter proper, of the progressively-moving plate of varying width adjustable relative to the shutter and co-operating therewith to open and maintain it open during its movement and a pneumatic retarding device for regulating the movement of the plate, substantially as described.

5. The combination, with the shutter proper, of the progressively-moving plate of varying width co-operating with and actuating the shutter and adjustable relative thereto and an index for denoting the portion of the plate co-operating with the shutter for regulating the length of the exposure, substantially as described.

6. The combination, with the shutter proper, of the adjustable plate of varying width co-operating with the shutter, a cylinder, a plunger operating in the cylinder, the valve in the plunger connected with the plate, and the spring for retracting the plunger, substantially as described.

7. The combination, with the shutter, of the adjustable plate of varying width co-operating therewith, the cylinder having the exhaust-aperture, the plunger operating in the cylinder, connected with the latter by the flexible diaphragm, the valve in the plunger connected with the plate, and the spring for retracting the piston, substantially as described.

8. The combination, with the cylinder having the exhaust-aperture, the hollow plunger operating therein, the flexible diaphragm connecting the plunger and cylinder, the valve in the plunger and the spring for closing it and retracting the plunger, the outer sleeve, and the plate connected to said sleeve and co-operating with the stem of the valve, of the shutter co-operating with and actuated by the plate connected to the outer sleeve, substantially as described.

9. The combination, with the cylinder having the exhaust-port, the hollow plunger operating therein, the flexible diaphragm between the plunger and cylinder, the valve in the plunger, the spring connecting it with the cylinder, the outer sleeve connected with the valve, and a valve for regulating the exhaust-port, provided with an index, of a photographic shutter connected to the outer sleeve and operated by its movement, substantially as described.

10. The combination, with the shutter-casing and the shutter operating therein, having the projecting lug, and a spring for closing the shutter, of the bracket secured to the casing, the pneumatic regulator mounted on the bracket, embodying a movable plunger, and a connected plate co-operating with the lug on the shutter to open the shutter and maintain it open during the movement of the plunger, substantially as described.

11. The combination, with the shutter-casing and two shutter members therein connected for simultaneous operation in opposite directions, one of them having the projecting lug, of the pneumatic regulating device embodying a movable plate or cam-surface engaging the lug on the shutter and operating the shutter by its movement, substantially as described.

12. The combination, with the shutter having the projecting lug, of the progressively-moving plate of varying width operating on said lug and capable of adjustment in one direction to regulate the length of surface acting on said lug, substantially as described.

13. The combination, with the shutter members connected for simultaneous movement in opposite directions, one of them having the projecting lug, of the progressively-moving cam-plate operating on said lug and capable of adjustment in one direction to regulate the length of surface operating on the shutter-lug, substantially as described.

14. The combination, with a shutter having the projecting lug, of the movable sleeve having the cam-plate thereon co-operating with the lug, the circumferential groove, and a catch for retaining said sleeve with the shutter-lug in the groove, substantially as described.

15. A pneumatic regulating device for photographic shutters, consisting of the following elements: a cylinder, an air-tight plunger operating therein, a valve permitting entrance of air on the outward movement of the plunger, an adjustable valve for regulating the escape of air during the inward motion of the plunger, a spring put under stress by the outward motion of the plunger, a shutter, and connections between the plunger and shutter, whereby the shutter is actuated by the movement of the plunger, substantially as described.

16. A regulating device for photographic shutters, consisting of a cylinder F, plunger G, flexible diaphragm H, ingress-valve *x*, egress-valve *n*, spring L, plate J, connected to plunger G, and a shutter provided with a lug *c*, substantially as described.

17. In a regulating device for photographic shutters, the plate J, of varying width, engaging and actuating the lug *c* of the shutter and capable of adjustment as to the part of its width that engages the lug *c*, and the spring L, connected to the plate J, substantially as described.

18. In a regulating device for photographic shutters, the combination of the cylinder F, the sleeve I, adapted to freely turn and slide on the cylinder, having on its outer surface a shoulder adapted to engage with a lug attached to a shutter, the plunger G, spring L, and a shutter having a lug operating on the shoulder, substantially as described.

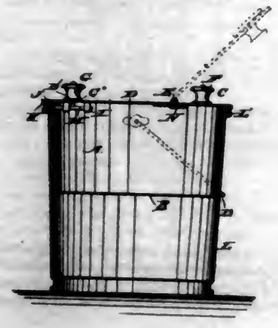
19. In a photographic shutter adapted to open and close a lens-aperture, the combination, with the shutter, the cylinder F, plunger G, and connections between said plunger and the shutter, of the flexible diaphragm H, spring L, screw *v*, disk *u*, and head R for adjusting the spring, substantially as described.

20. In a photographic shutter adapted to open and close a lens-aperture, the combination, with the shutter, the cylinder F, having the wedge-shaped aperture *o*, the plunger G, and connections between the plunger and shutter, of the flexible diaphragm H, spring L, and the escape-valve consisting of the eccentric plate *n*, substantially as described.

21. In a photographic shutter adapted to open and close a lens-aperture, the combination, with the shutter, the cylinder F, having aperture *o*, plunger G, and connections between the latter and the shutter, of the diaphragm H, spring L, valve *n*, and the porous screen *m*, substantially as described.

22. In combination with a photographic shutter, a time-regulating device consisting of the cylinder F, plunger G, diaphragm H, spring L, ingress-valve *x*, egress-valve *n*, outer sleeve I, plate J, retaining-pawl *k'* and lever *k*, and lug *c* on the shutter, substantially as described.

477,589. ASH-SIFTER. JOHANN G. BAST, Brooklyn, N. Y. Filed Feb. 3, 1892. Serial No. 420,140. (No model.)



Claim.—1. In an ash-sifter, the combination, with a pail, of a receptacle fitting into the upper part of the said pail and provided on its upper end with an annular flange extending outward and seated on the top edge of the said pail to support the receptacle and permit of its being turned in the pail, a screen-bottom formed on the said receptacle, a fixed top part, a lid hinged on the said top part, and a bolt for locking the said lid to the receptacle, substantially as shown and described.

2. In an ash-sifter, the combination, with a pail, of a receptacle fitting into the upper part of the said pail and provided on its upper end with an annular flange extending outward and seated on the top edge of the said pail to support the receptacle and permit of its being turned in the pail, a screen-bottom formed on the said receptacle, a fixed top part, a lid hinged on the said top part, and a bolt for locking the said lid to the receptacle, and two knobs for turning the said receptacle within the pail, one of the knobs being secured to the fixed top part and the other to the said bolt, substantially as described.

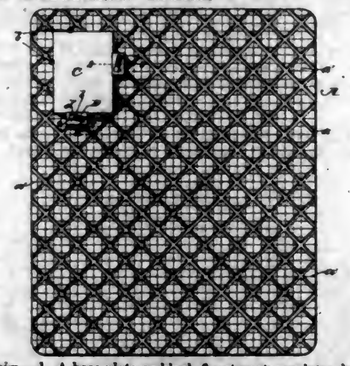
3. In an ash-sifter, the combination, with a pail, of a receptacle fitting into the upper part of the said pail and provided on its upper end with an annular flange extending outward and seated on the top edge of the said pail to support the receptacle and permit of its being turned in the pail, a screen-bottom formed on the said receptacle, a fixed top part, a lid hinged on the said top part, and a bolt for locking the said lid to the receptacle, and a strip for covering the joint between the lid and the fixed top part, substantially as shown and described.

477,590. PIANO-TUNING APPARATUS. ABRAHAM FELLOWS, Auburn, N. Y. Filed Sept. 15, 1891. Serial No. 405,810. (No model.)



Claim.—In a string-tuning apparatus, the combination, with the tension bar and strings, said bar located over the strings, of the adjustable screws fitted in said bar and projecting through the bar, and bearing-pins connected with said screws by a socket in one and a part of the other fitting in said socket, said pins projecting beyond the ends of the screws, substantially as described.

477,591. BLOCK FOR STEREOTYPES, &c. HERMAN FICTION, Jr., Chicago, Ill., assignor to Daniel W. Ryan, same place. Filed Aug. 20, 1888. Serial No. 283,173. (No model.)

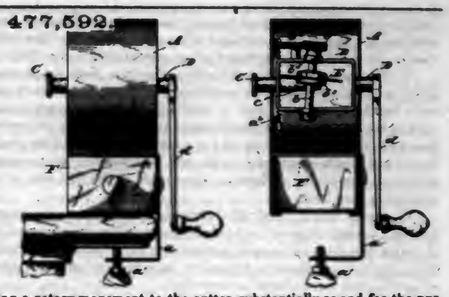


Claim.—1. A base plate or block for stereotype-plates, having a flat top surface provided with a series of dovetail grooves, in combination with locking-pieces adapted to slide in the bottom or lower portion of said grooves and having screws adapted to project through the top or narrow part of said grooves, the heads of the screws overlapping the grooves, substantially as specified.

2. A quoin consisting of a rectangular piece provided with a diagonal slot and a piece *d'* fitted therein and a screw *b* for attaching the piece *d'* to the base-plate, the quoin-piece and piece *d'* being provided with holes *e*, as and for the purpose specified.

477,592. SHARPENING DEVICE. FRANK B. FERRIS, Cincinnati, Ohio. Filed Apr. 11, 1892. Serial No. 428,631. (No model.)

Claim.—1. The combination, in a sharpening device, of a rotatable frame, a cutter carried by the frame, and mechanism for imparting a rotary movement to the cutter, substantially as and for the purpose specified.



2. The combination, in a sharpening device, of a rotatable frame, a cutter carried by the frame, mechanism for imparting a rotary movement to the cutter, and a guard for the object to be sharpened, adapted to rotate with the frame, substantially as and for the purpose specified.

3. The combination, in a sharpening device, of a rotatable frame, a cutter carried by the frame mechanism for imparting a rotary movement to the cutter, and a slotted guard for the object to be sharpened, adapted to rotate with the frame, substantially as and for the purpose specified.

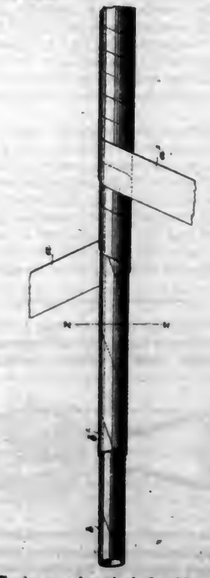
4. The combination, in a sharpening device, of a rotatable frame, a cutter carried thereby, mechanism for imparting a rotary movement to the cutter, and a guard for the object to be sharpened, the guard having a conical internal taper and a longitudinal slot, substantially as and for the purpose specified.

5. The combination, in a sharpening device, of a rotatable frame, a shaft carried thereby, a cutter carried by the shaft, an annular rack upon the casing, and gearing connecting the cutter-shaft with the annular rack, substantially as and for the purpose specified.

6. The combination, in a sharpening device, of the frame B, the shaft *b*, the cutter E, mounted upon said shaft, the gear-wheels *b'* and *b²*, and the rack a^3, substantially as and for the purpose specified.

7. The combination, in a sharpening device, of the frame B, the shaft *b*, the cutter E, mounted upon said shaft, the gear-wheels *b'* and *b²*, the rack a^3, and the guard C, having slot *c'*, substantially as and for the purpose specified.

477,593. ART OF MAKING PAPER OR ANALOGOUS TUBING. EDWIN T. GREENFIELD, New York, N. Y. Filed Jan. 21, 1891. Serial No. 378,516. (No model.)



Claim.—1. The improved method of making a core or tube from two or more strips of paper, consisting in feeding the overlapped strips constantly forward while bending and holding them in tubular form

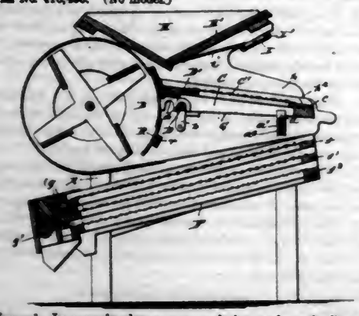
and simultaneously twisting and drawing the same in one direction longitudinally, whereby they are caused to take a spiral tubular form with overlapped and closely-compressed joints, substantially as specified.

2. The improved method of making tubes from paper strips, consisting in feeding two or more overlapped strips constantly forward while bending and holding them in tubular form, simultaneously twisting and drawing the same in one direction and longitudinally, whereby the resultant core is caused to take the spiral tubular form with overlapped and closely-compressed joints, and then winding one or more exterior layers of like material on the outside of the said core, substantially as specified.

3. A tube with a longitudinal core made of two pieces of paper having a twisted or spiral conformation, said pieces being wound in the same direction and being formed so as to break joints throughout their length, in combination with one or more exterior layers of paper wound thereon, substantially as described.

4. A tube having a core constructed of two strips of paper drawn longitudinally and twisted together, said strips being wound in the same direction, breaking joints with each other throughout their length, in combination with two or more spirally-wound exterior strips of similar material, each of said exterior strips breaking joints with the other, substantially as described.

477,594. GRAIN-CLEANER. THOMAS J. HATFIELD, Dublin, Ind., assignor of one-half to J. C. Benson, Alcony, Ohio. Filed Oct. 31, 1891. Serial No. 410,493. (No model.)

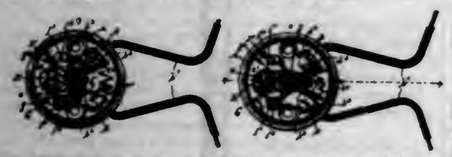


Claim.—1. In a grain-cleaner, an endwise and vertically adjustable upper shoe having a vertically-removable screen C and a fine-mesh wire grain-board secured thereto and located under the upper portion of said screen, substantially as specified.

2. The lower shoe having the series of graded screens therein and the independent discharges therefor, the lower end of said shoe having the convex bearing-blocks, one at each side, and the hangers adjustably secured to the frame and carrying each an anti-friction roller, on which the said bearing-blocks are respectively supported, substantially as specified.

3. In a grain-cleaner, the combination, with the upper and lower shoes, of the mechanism for imparting a vibrating and reciprocating movement thereto, said mechanism comprising the disk M on the fan-shaft, its wrist and pitman M', the longitudinal eccentrically-pivoted bar or lever N, having a vertical arm N', a vertical lever P, pivoted at its lower end to the frame and at its intermediate portion to the lower shoe and connected by a link to the said arm N', and a vibrating connection between the opposite side of said shoe and a transverse loose shaft upon which one end of the upper shoe is supported, substantially as specified.

477,595. ELECTRIC SWITCH. JESSE L. HEINDS, Syracuse, N. Y., assignor to the Electric Engineering and Supply Company, same place. Filed July 23, 1891. Serial No. 400,501. (No model.)



Claim.—1. In an electric switch, the combination of a supporting-post, a spring-plate having its central portion carried by the post and its arms extending in substantially the same direction, a pair of terminals on opposite sides of the free extremities, and a cam for forcing said extremities against the terminals, substantially as set forth.

2. In an electric switch, the combination, with the herein-described post formed with a slot opening from its outer face and a spring-plate having its central portion seated in said slot and its extremities arranged opposite one to the other, of a pair of terminals adapted to be engaged by said arms and a cam for forcing said arms into engagement with the terminals, substantially as described.

3. The combination of a base-plate and a bracket having a vertical arm and a laterally-extending hub, a spring-plate having opposite arms mounted beneath the hub, a support for the central portion of the spring, terminals adapted to be engaged by the free extremities of the spring, and a cam provided with a spindle having one extremity journaled in said hub and the other in the base-plate, substantially as and for the purpose specified.

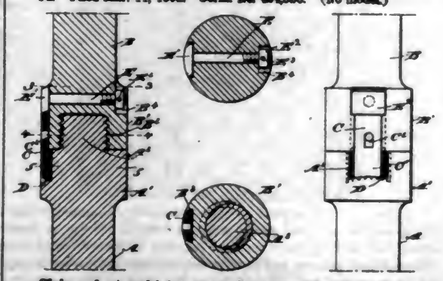
4. In an electric switch, the combination, with a base-plate and a U-shaped bracket having a hub, of a support having its upper extremity slotted, a spring having its central portion seated in said slot and its arms disposed between the arms of the U-shaped bracket, a pair of terminals adapted to be engaged by the free extremities of the spring-plate, and a cam mounted between the free extremities of the springs and provided with a spindle having one extremity journaled in said base-plate and the other in said bracket, substantially as set forth.

5. In an electric switch, the combination, with a base-plate and a U-shaped bracket having a hub, of a support on the base-plate, a spring having its central portion mounted on said support and its arms disposed between the arms of the U-shaped bracket, outwardly-inclining extremities formed on the spring-arms, a pair of terminals adapted to be engaged by said inclining extremities, and a cam mounted between the free extremities of the springs and provided with a spindle having one extremity journaled in said base-plate and the other in said bracket, substantially as and for the purpose set forth.

6. The combination, with a terminal, a spring-arm for engaging the terminal, and a cam for forcing the arm against the terminal, of a spindle for operating the cam, having its free end screw-threaded, a non-conductor handle for the spindle, provided with a central aperture having an enlarged outer end and a recess at its inner face, a sleeve having one end provided with screw-threads for engaging the free end of the spindle, a shoulder on said sleeve for engaging the recess in the inner face of the handle and a screw having a screw-threaded shank for engaging said sleeve, and a head arranged within the enlarged end of said aperture with its outer face within the outer face of the handle, substantially as and for the purpose specified.

7. The combination, with a terminal, a spring-arm, and a cam forcing said spring-arm into engagement with the terminal, of a spindle connected to said cam with a lost motion between the two, a non-conductor handle for the spindle, provided with a central aperture, a sleeve engaged with said spindle and inserted into one extremity of said aperture and formed with a head provided with an angular shoulder adapted to engage a corresponding shoulder on the handle for preventing revolution of the sleeve, a shoulder within the aperture beneath the top face of the handle, and a screw having its shank engaged with the central chamber of the sleeve and its head resting upon said shoulder and arranged beneath the top face of the handle, substantially as and for the purpose specified.

477,596. ROD JOINT OR COUPLING. ISAAC JONES, De Lancey, Pa. Filed Mar. 11, 1892. Serial No. 424,522. (No model.)



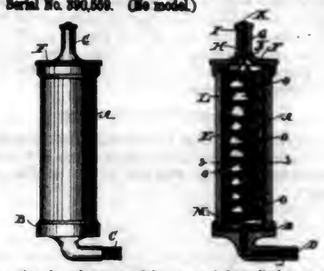
Claim.—1. A rod joint or coupling comprising the rods having a screw-threaded connection and aligning longitudinal dovetail keyways on their outer faces at their abutting ends, a key slid into the said ways, and a bolt the head of which closes the entrance end of the keyway.

2. The combination, with the rods A B, having their abutting threaded ends enlarged or headed, as at A' B', of a dovetail keyway formed longitudinally in the outer faces of the heads and open at one end to admit the key and closed at its opposite end, a key slid into said way and crossing the joint, a transverse bolt the head of which closes the open end of the keyway, and a nut on the opposite end of the bolt and lying within a recess in the rod-head, substantially as set forth.

3. A rod joint or coupling comprising a key fitted to slide in one of the members of the joint and engaging a recess in the other member, a bolt held in one of the members of the joint and extending with its head into the guideway of the said key, so as to lock the latter in place, and sets of liners held in the recess of the second member and engaging the projecting end of the said key, substantially as shown and described.

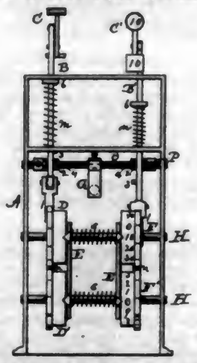
4. In a rod joint or coupling, the combination, with the two members of the joint screwed together and formed with registering recesses on their outer surface, a key fitted to slide in one of the said recesses and engaging with its projecting end the recess in the other member, liners held in the recess of the second member and engaging the sides of the said key, and a bolt held in the first-named member and formed with a head arranged in the path of the said key to lock the latter in place, substantially as shown and described.

477,597. AIR-VALVE. JAMES L. JUDGE, Milwaukee, Wis., assignor of one-half to William K. Downey, same place. Filed Apr. 27, 1891. Serial No. 390,559. (No model.)



Claim.—An air-valve comprising an upright cylinder-case forming a valve-chamber, a duct leading into the bottom of the case from a steam-radiator, a cover detachably secured to the top of the case, which cover is provided with a central upwardly-extending neck having a passage leading from the air-chamber to the valve-seat near its upper extremity, and a discharging-orifice above the valve-seat, a hollow water-tight float in and nearly filling the chamber of the case, which float has corrugated sheet-metal sides, whereby it is adapted to expand and contract longitudinally quickly under change of temperature, a needle-valve secured adjustably in the cover of the float and projecting therefrom into and guided by the neck movably to normally near the valve-seat, and an independent spring interposed between the bottom of the float and the bottom of the case, on which spring the float rests yieldingly, constructed and arranged substantially as described.

477,598. CASH REGISTER AND INDICATOR. JOHN A. KIESARDT, Dayton, Ohio, assignor of one-half to Albert E. Singer, same place. Filed Aug. 22, 1891. Serial No. 404,038. (No model.)



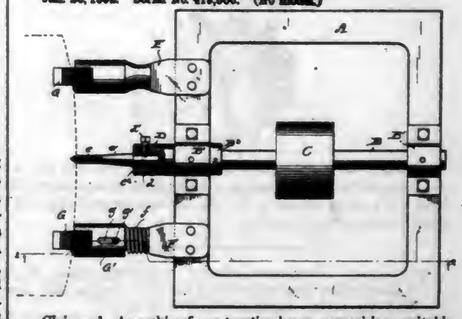
Claim.—1. In a registering and indicating machine, the combination of the operating-key pivoted to standards on the top of the frame, said key provided with fingers and indicating-disks, both having the same number, the same being provided with a slot, the movable bar, with spring to elevate the same and provided with a pin to engage said slot, the gravitating pawl pivoted to the lower end of said bar, and the numbered ratchet-wheel engaged by said pawl, substantially as set forth.

2. In a registering and indicating machine for the purpose of holding the operating-key in position to exhibit the number on the rear disk, the combination of the shaft O, arm G, rigidly attached to said shaft, the spiral spring *a* to partially rotate said shaft, the pawl 7, carried forward by said spring, the notch 5 of the movable bar, and the pivotal operating-key connected with said bar by means of a pin and slot, substantially as set forth.

3. In a registering and indicating machine for the purpose of releasing the operating-key held in position to indicate the amount of purchase, the combination of the operating-key, the shaft O, the pawl 7, rigidly attached thereto, said pawl having a leg with horizontal face, the arm 4, held loosely on said shaft and provided with a lateral lug to engage the top of said pawl, the movable bar provided with pin 3, said bar being other than the one with which the exposed key or number is connected, said bar in its descent releasing the said key that it may resume its normal position by the action of its elevating-spring, substantially as set forth.

4. In a registering-machine, the combination of the binding-plates E E, the spiral springs S S, and the numbered ratchet-wheels D and F, and engaging-wheels D' and F', said binding-plates being provided with indicating-points to designate the numbers to be read on the respective wheels, substantially as set forth.

477,599. MACHINE FOR EXTRACTING BUNGS. JOHN U. KRAFT, Milwaukee, Wis., assignor of one-half to Henry Rave, same place. Filed Jan. 26, 1892. Serial No. 419,306. (No model.)



Claim.—1. A machine for extracting bungs, comprising a suitable frame provided upon one side with brackets carrying supports for opposite ends of the barrels or kegs, a shaft journaled in said frame and carrying a driving-pulley, said shaft being arranged to project beyond the side of the frame between said brackets, and a screw-threaded tool secured to the outer end of said shaft and adapted to engage with the bungs to be extracted, substantially as set forth.

2. An apparatus for extracting bungs from barrels and kegs, comprising a suitable frame, brackets extending from the side of the frame and provided with supports for opposite ends of the barrels or kegs, a shaft journaled in said frame and carrying a driving-pulley, said shaft being arranged to project beyond the side of the frame between the said brackets, and a tool secured to the outer end of said shaft and consisting of a screw-threaded point, and a tapered or frustum-shaped portion gradually increasing in diameter from the termination of the screw-threaded portion of said tool, substantially as set forth.

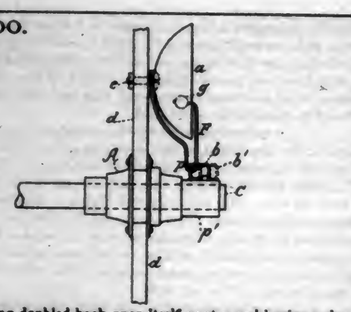
3. An apparatus for extracting bungs from barrels and kegs, comprising a suitable frame, brackets extending therefrom and provided with supports for opposite ends of the barrels or kegs, a shaft journaled in said frame and carrying a driving-pulley, said shaft being arranged to project beyond the side of the frame between the said brackets, a tool secured to the outer end of said shaft and consisting of a screw-threaded point, and a frustum-shaped portion gradually increasing in diameter from the termination of the screw-threaded portion, the support for one end of the barrel being arranged to permit a greater degree of inward movement of said end than the other, substantially as set forth.

477,600. WHEELED SOUNDING-TOY. ALBERT R. LYTLE and BYRON K. COWLES, Chicago, Ill. Filed Feb. 19, 1891. Serial No. 382,096. (No model.)

Claim.—1. In bell or chime attachments for wheels, the combination of a wheel having a series of bells secured thereto and mounted on an axle having movable projections *b*, and the clapper-arms F, having the doubled portion *p* and clapper *g*, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

2. In bell or chime attachments for wheels, the combination of a wheel having one or more bells secured thereto with the clapper-arms F, each having one end secured at the rear or convex portion of the

477,600.



bells *a* and being doubled back upon itself, as at *p*, and having a clapper *g*, whereby the bell is strided by the arm, and the clapper is caused to strike by means of an obstruction on the axle, substantially as and for the purpose set forth.

477,601. BUCKLE. HENRY C. MILLIGAN, South Orange, N. J., assignor to Rudolph Wolff & Co., New York, N. Y. Filed Feb. 6, 1892. Serial No. 420,517. (No model.)



Claim.—The combination of the main body formed with ears, the wire journaled in the ears, having a finger-piece located beyond the body, and a clamp secured to the wire, having a serrated edge and a hook, substantially as described.

477,602. WINDOW-PLATFORM. PETER OTTO, Chicago, Ill., assignor to Henry Otto, Henry Kolbe, and Alvin Wagner, same place. Filed Oct. 14, 1891. Serial No. 408,738. (No model.)



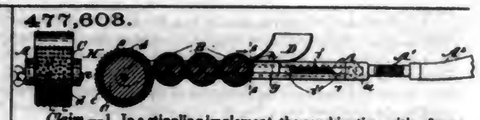
Claim.—1. The combination, with a platform A, consisting of a plain board provided with metallic straps *a'*, looped over and secured to one of its ends, of a cross-bar B, adapted to pass through said loops and be thereby secured to the end of the platform, so as to project beyond the side edges thereof, and rests C, attached to the under side of said platform at its opposite edges, and having inclined edges *c*, adapted to rest upon the outer upper angle of the window-sill when the said bar is brought against the inside of the window-casing, as specified.

2. The combination, with a platform A, provided with metallic straps looped over and secured to one of its ends, of a cross-bar B, adapted to pass through said loops and be thereby secured to the end and project beyond the edges of the platform, and adjustable rests C, attached to the under side of the platform near its opposite edge and having inclined edges *c*, adapted to rest against the outer upper angle of the window-sill, as specified.

3. The combination, with a platform A, consisting of a plain board provided with metallic straps *a'*, looped over and secured to one of its ends, of a cross-bar B, adapted to pass through said loops and be thereby secured to the end of the platform, and rests C, provided with oppositely-inclined edges *c*, terminating in an apex near their mid-length and pivoted to the under side and at opposite edges of said platform by a bolt set to one side of said apex, as specified.

477,603. SKIPPING IMPLEMENT. JOHN B. PAM, and JOHN B. G. GAUSSLAS, New York, N. Y. Filed July 23, 1891. Serial No. 400,904. (No model.)

477,608.

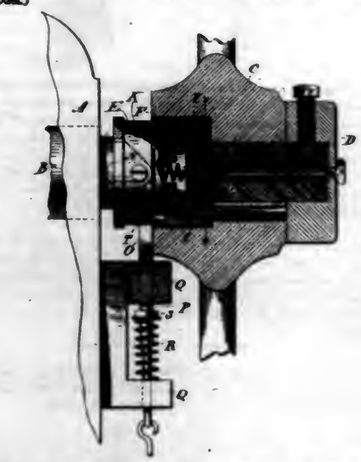


Claim.—1. In a skipping implement, the combination, with a frame having a handle, of a pivoted impression-roller having a papillary surface, sliding ink-distributing rollers, and sliding ink-supplying fount, substantially as described.

2. In a skipping implement, the combination, with a frame, a handle from which the frame is detachable, and a detachable pivoted impression-roller having an enveloping slightly-elastic jacket that is covered with papillary projections, of ink-distributing rollers arranged to slide in sequence on the frame, an ink-fount, also adapted to slide on the frame, and springs that press the fount toward the impression-roller, with the distributing-rollers located intermediately, substantially as described.

3. In a skipping implement, the combination, with a frame having two parallel limbs that are held removably in a fork-handled shank, a series of ink-distributing rollers longitudinally movable in grooves of the frame-limbs, an ink-supplying fount adapted to slide between the frame-limbs, and two springs thereon, of a pivoted removable roller having a slightly-elastic surface which is covered with papillary projections, substantially as described.

477,604. CLUTCH MECHANISM FOR POWER-PRESSES. CHARLES E. POLLARD, Middletown, Conn., assignor to the E. W. Bliss Company, Limited, Brooklyn, N. Y. Filed Mar. 7, 1892. Serial No. 424,065. (No model.)

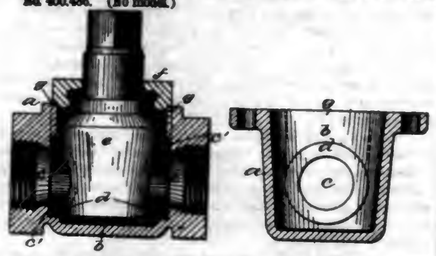


Claim.—1. In a power-press, the driving-wheel arranged loose upon the shaft, the shaft constructed with a diametrical mortise, combined with a key arranged in said mortise and adapted to be moved backward and forward therein, a sleeve on the shaft adapted to engage said key, so as to move it in one direction, a spring arranged to move said key in the opposite direction, and the driving-wheel constructed with one or more projections, with which the said key is adapted to engage under the action of said spring, but from which the key will be disengaged by the movement of the sleeve, substantially as described.

2. In a power-press, the combination of a driving-wheel loose on the shaft of said press, a sleeve arranged upon said shaft and so as to slide backward and forward thereon, the shaft constructed with a diametrical mortise, a key in said mortise narrower than the length of the mortise and connected to said sleeve, whereby longitudinal movement of the sleeve will be imparted to the key, a spring arranged to force said sleeve and key in one direction, a cam on the sleeve, a stationary dog with which said cam on the sleeve is adapted to engage to move the sleeve in the other direction, and the wheel constructed with one or more projections, with which said key is adapted to engage under the action of the spring, substantially as described.

3. In a power-press, the combination of a wheel loose upon the shaft, a sleeve arranged to slide longitudinally on said shaft, the shaft constructed with a diametrical mortise, a key through said mortise narrower than the length of the mortise and connected to said slide, so as to move therewith, a spring operating to move the key and sleeve in one direction, a cam on the sleeve, a dog in the path of said cam and with which said cam is adapted to engage to move the sleeve in the opposite direction, one or more projections on the hub of the wheel, with which the said key is adapted to engage under the action of said spring, the sleeve constructed with an annular groove, and the dog provided with a spring serving to force said dog into the said groove after the action of the sleeve-cam upon the dog, substantially as described.

477,605. VALVE. RUFUS H. PRATT, Hartford, Conn., assignor to The Pratt & Cady Company, same place. Filed July 23, 1891. Serial No. 400,486. (No model.)



Claim.—1. A rotary-plug cock having a body with an annular plug-chamber, ports with enlarged interior extremities leading from the chamber, with seats loosely resting in the enlarged portion of the ports, and a solid rotary plug fitting the seats at all times and holding them in place, substantially as specified.

2. A rotary-plug cock having a body with an annular plug-chamber, ports opening from the chamber, with recesses in the walls of the chamber surrounding the ports, annular seats resting loosely in said recesses, with their outer faces projecting into the chamber, and a solid rotary plug fitting the seats at all times and holding them in place, substantially as specified.

3. A rotary-plug cock having a body with an annular plug-chamber, with recesses in the walls of the chamber surrounding the ports, mortises extending from the recesses to the top of the plug-chamber, seats resting loosely in the recesses, plates loosely fitting said mortises and resting upon the seats, and a rotary plug fitting the seats, substantially as specified.

477,606. COCK. RUFUS H. PRATT, Hartford, Conn., assignor to The Pratt & Cady Company, same place. Filed July 23, 1891. Serial No. 400,487. (No model.)



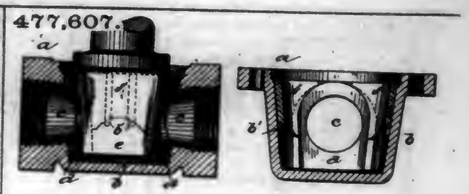
Claim.—1. A rotary-plug fluid-cock having a body with a frusto-conical plug-chamber, cheek-pieces larger than the ports, curved to conform to the interior of the chamber, loosely placed therein adjacent to the ports, and a solid rotary tapered plug smaller in diameter than the plug-chamber, fitting the cheek-pieces at all times and holding them in place, substantially as specified.

2. A rotary-plug fluid-cock having a body with a frusto-conical plug-chamber, cheek-pieces larger than the ports curved to conform to the interior of the chamber adjacent to the ports, loosely placed in the chamber and held from displacement by ribs or lugs projecting into recesses, and a solid rotary tapered plug smaller in diameter than the plug-chamber, fitting the cheek-pieces at all times and holding them in place, substantially as specified.

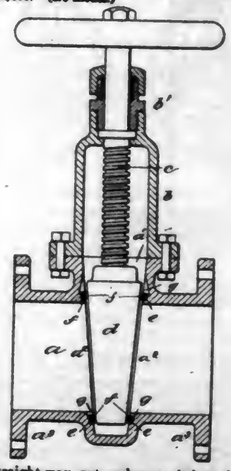
477,607. COCK. RUFUS H. PRATT, Hartford, Conn., assignor to The Pratt & Cady Company, same place. Filed July 23, 1891. Serial No. 400,488. (No model.)

Claim.—A rotary-plug cock having a body with a frusto-conical plug-chamber, faces curved to conform to the interior, loosely resting on the bottom of the chamber adjacent to the ports, curved wedges with ribs projecting into mortises in the walls of the chamber, inserted between the faces to prevent them from rotating, and a rotary plug in contact with the faces and holding them to the wall, substantially as specified.

477,607.

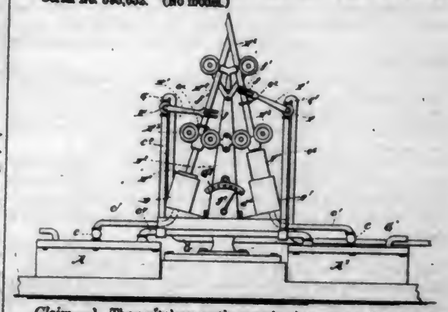


477,608. GATE-VALVE. RUFUS H. PRATT, Hartford, Conn., assignor to The Pratt & Cady Company, same place. Filed Aug. 3, 1891. Serial No. 401,463. (No model.)



Claim.—A straight-way gate-valve consisting of a body, a bonnet secured thereto and bearing a spindle supporting a gate, said body being provided with annular grooves surrounding the ports, mortises opening to the back of the grooves from the interior of the gate-chamber, and annular seats loosely placed in the grooves, substantially as specified.

477,609. RAILWAY-SWITCH. WILLIAM RAAB, Cedar Falls, Iowa, assignor of one-half to Daniel Wild, same place. Filed May 21, 1891. Serial No. 393,632. (No model.)



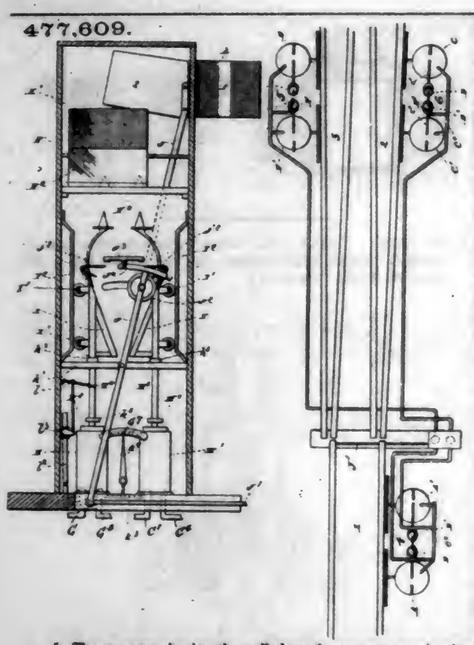
Claim.—1. The switch-operating mechanism actuated by pressure generated by the passage of the train, and time-controlled governors between the generators and the switch-operating mechanism, substantially as specified.

2. The combination, with the pneumatically-operated switch and signal mechanism, of the train-actuated-pumps and the time-controlled governors in connection with said pumps, substantially as specified.

3. The governor having the flexible expansible bags, the pistons operated thereby, and means for preventing more than one piston from being operated at a time, substantially as specified.

4. The governor having the cylinders, the pressure-supply connected therewith, the pistons in said cylinders, and a time-valve in the outlet to said cylinders for controlling the operation of said pistons, each piston when operated effecting a lock to prevent the operation of a second piston, substantially as specified.

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5. The governor having the cylinders, the pressure-supply pipes communicating therewith, the valves therefor, the pistons operating in said cylinders, and the time-valve connected therewith, and means for preventing more than one of said pistons from being operated at once, substantially as specified.

6. The governor having the cylinders, the flexible bags therein, the pistons operated thereby, and the time-valve, and means for preventing more than one of said pistons from being operated at once, substantially as specified.

7. The governor having the cylinders, the pistons operating therein, the piston-rods connected thereto, and means for preventing more than one of said pistons from being operated at once, substantially as specified.

8. The governor having the inclined cylinders, the pistons operating therein, and the piston-rods having the obliquely-beveled upper ends, substantially as specified.

9. The governor having the inclined cylinders, the flexible bags therein, the pistons operated by said bags, the piston-rods so arranged that but one can be operated at the same time, and the time-valve, substantially as specified.

10. The governor having the inclined cylinders, the pressure-pipes communicating therewith, the valves therefor, the flexible bags therein, the pistons operated by said bags, the piston-rods having the meeting beveled upper ends, the pressure-outlets, and the time valve and register connected with said outlets, substantially as specified.

11. The combination, with the pressure-supply, the conducting-pipes connected therewith, and the valves in said pipes, of the governor adapted to operate said valves, and means operated by said governor, whereby but one valve can be opened at once, substantially as specified.

12. The combination, with the pumps, the pipes connected therewith, and the valves in said pipes, of the governor having the pressure-actuated pistons and the piston-rods operated thereby and adapted to operate said valves, and means for preventing more than one of said rods from being operated at the same time, substantially as specified.

13. The combination, with the pumps, the pipes connected therewith, and the valves in said pipes, of the governor having the pressure-actuated pistons, the piston-rods connected therewith and opening and closing said valves, means for preventing more than one of said rods from being operated at the same time, and a time-valve for governing the length of the operation of said rods, substantially as specified.

14. The switch-operating mechanism having the pressure-operated pistons, the rods connected therewith, and the wedge or cam device carried by said rods, said wedges or arms being so arranged that but one piston can be operated at once, substantially as specified.

15. The combination, with the switch-bar and the lever connected therewith, of the piston-actuated rods, and means carried by said rods for operating said lever, and devices on said rods, whereby but one piston can be operated at once, substantially as specified.

16. The combination, with the switch-bar and the lever connected therewith, of the piston-actuated rods, means carried by said rods for operating said lever, and means for preventing more than one rod being operated at a time, substantially as specified.

17. The combination, with the switch-bar and the lever connected therewith, of the piston-actuated rods, the wedge or cam devices carried by said rods and operating said lever, and the catch and catch-releasing devices, substantially as specified

18. The combination, with the switch-bar and the lever connected therewith, of the piston-actuated rods, the wedge or cam devices carried by said rods and operating said lever, the catch and catch-releasing devices, and the escape time-valve, substantially as specified.

19. The combination, with the switch-bar and the switch-lever connected therewith, of the lever-operating mechanism comprising the cylinders, the pipes communicating therewith, the flexible bags therein, the pistons operated by said bags, the piston-rods, the wedge or cam devices carried thereby, the time-valve, and the escape-valve, substantially as specified.

20. In a switch and signal apparatus, the combination, with the piston-rods and the cam or wedge devices carried thereby, of a lever connected to the switch-bar and operated by the movement of said piston-rods, and thereby operating signal devices, said lever and cam mechanism being so arranged that but one piston can be operated at the same time, and time-valves for governing the length of each operation, substantially as specified.

21. In a switch and signal apparatus, the combination, with the piston-actuated rods and the switch-lever operated thereby, of the reciprocating glass-carrying frame actuated by said rods, and means whereby but one of said rods can be operated at once, substantially as specified.

22. In a switch and signal apparatus, the combination, with the piston-actuated rods and the switch-lever operated thereby, of the reciprocating glass-carrying frame operated by said rods, and the targets operated by said lever, the piston-cylinders, the time-gage, and the escape-valve operated by said piston-rods, substantially as specified.

23. The combination, with the piston-actuated rods and the switch-lever operated thereby, of the reciprocating glass-carrying frame operated by said rods, the targets operated by said lever, the piston-cylinders having time-valve-controlled outlets and escape valve mechanism operated by said piston-rods, substantially as specified.

24. The combination, with the pumps, the conducting-pipes having the valves therein, and the governors arranged to operate said valves, said governors having means operated thereby, whereby but one valve can be opened at the same time, of the signals operated by pressure from said pumps in advance of the train, regulated by said governors, substantially as specified.

25. In a switch and signal operating device, the combination, with the piston-cylinders having pressure-outlets, of the pumps, the valved conducting-pipes leading therefrom, switch-operating mechanism connected with said pumps, and the governors arranged to control the admission of pressure through said pipes, and automatically-operated means whereby but one valve and one switch can be operated at once, substantially as specified.

26. The combination, with the cylinders, the pressure-supply pipes, and the valves therefor and the flexible bags therein, of the time-valve having the pipes communicating with said cylinders, and means whereby the piston in any cylinder cannot be operated until the expiration of the time set by said valve, substantially as specified.

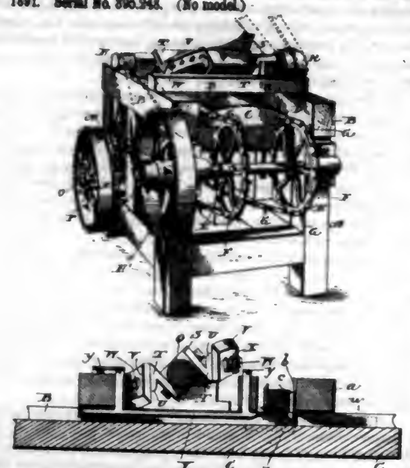
27. The combination, with the pumps and the pipes connected thereto and communicating with switch and signal operating mechanism, of the governors adapted to operate valves in said pipes, said governors comprising a series of pressure-actuated pistons so arranged that but one piston can be operated at the same time, and means for controlling the operation of the governors, substantially as specified.

28. The combination, with the pumps and the pipes connected thereto and communicating with switch and signal operating mechanism, of the governors adapted to operate valves in said pipes, and pipes leading from said pumps to the operating mechanism of said governors, and means for preventing said governor from operating more than one valve at a time, substantially as specified.

29. The herein-described apparatus for operating switch and signals by pressure generated by the passage of the train, comprising a series of pumps operated by the train, pipes leading from said pumps to governors automatically operated by the pressure, valved pipes leading from said governors to the switch and signal operating mechanism, means whereby said governors are prevented from operating more than one valve at a time, and time-valves for governing the length of each operation, substantially as specified.

30. The combination, with the piston-cylinders and the pistons therein, of the piston-rods connected to said cylinders and so arranged that the upward movement of any rod will hold down and prevent all the other rods in the series from being operated, substantially as specified.

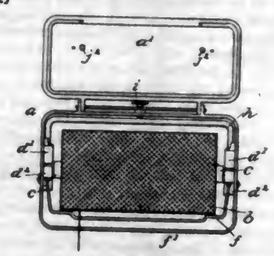
477,610. PLANING-MACHINE. MANLY S. RAWSON, Jamaica, assignor of one-half to H. J. Stewart, Londonderry, Vt. Filed June 5, 1891. Serial No. 395,243. (No model.)



Claim.—1. In a planing-machine, the combination of a frame, a transversely-curved bed-plate supported by said frame, a cutter-shaft supported by said frame and arranged transversely of and above the bed-plate, separated cutting devices mounted on said shaft, having their edges curved to correspond to the curvature of the bed-plate, a presser-bar arranged above the bed-plate and between the cutting devices, and an independent cutting device forward of the presser-bar and in line with it, substantially as described.

2. In a planing machine, the combination of a frame, a vertically-adjustable bed-plate mounted in said frame, a cutter-shaft mounted on said frame transversely of and above the bed-plate, separated cutting devices mounted on said shaft, a pressure-bar mounted above the bed-plate and between the cutting devices, an independent rotary cutter forward of the presser-bar, carrier-chains running in longitudinal grooves in the bed-plate and having the upwardly-projecting lugs, sprocket-wheels for said chains, mounted on transverse shafts in the framing of the machine, and suitable operating mechanism, substantially as described.

477,611. THREAD-UNWINDING DEVICE FOR SEWING-MACHINES. MARK R. REIGN, Boston, Mass., assignor to the Willimantic Linen Company, Hartford, Conn. Filed Nov. 2, 1891. Serial No. 410,626. (No model.)

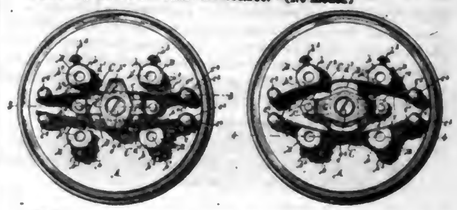


Claim.—1. In combination with a frame adapted to support a mass of thread wound upon a spindle, the spindle-sockets d, formed in part by the side of the support, with a socket part d^3, formed in the end of the clutch part e, the spring-supported clutch part e, and the thread-support f, secured to the clutch parts e on opposite sides of the mass of thread and provided with an offset portion f', all substantially as described.

2. In combination with a case having a cover, the spindle-supports formed within the case at opposite ends, the friction-clutches arranged adjacent to said spindle-supports and forming part of the spindle-sockets, the adjustable clutch-springs, with means for adjusting the tension of the same, the thread-guide secured to the movable parts of the clutch and extending lengthwise of the mass of thread and having the offset portion less in length than the mass of thread, and the clutch-releasing mechanism borne on the cover of the box and having the cam-shaped studs adapted to engage the thread-support, all substantially as described.

3. In combination with a case having a cover, the spindle-supports formed within the case at opposite ends, the friction-clutches arranged adjacent to said spindle-supports and forming part of the spindle-sockets, the adjustable clutch-springs, with means for adjusting the tension of the same, the thread-guide secured to the movable parts of the clutch and extending lengthwise of the mass of thread, and the clutch-releasing mechanism borne on the cover of the box and having the cam-shaped studs adapted to engage the thread-support, all substantially as described.

477,612. ELECTRIC SWITCH. EUGENE A. SNOW, Syracuse, N. Y., assignor to the Electric Engineering and Supply Company, same place. Filed July 23, 1891. Serial No. 400,509. (No model.)



Claim.—1. In an electric switch, the combination, with a pair of terminals, of a pair of supports, a spring supported at its opposite extremities by said supports, and a cam for engaging the spring with the terminals, said cam being adapted to engage the central portion of the spring, substantially as set forth.

2. In an electric switch, the combination, with a pair of terminals, of a spring, supports arranged on opposite sides of the terminals for supporting the opposite extremities of the spring, and a cam for engaging the spring with the terminals, said cam being adapted to engage the spring at a point interposed between the terminals, substantially as specified.

3. In an electric switch, the combination, with a terminal, of a support, a spring composed of a spring-plate folded upon itself and arranged with its ends adapted to lie one against the other and formed with an eye adapted to be mounted on said support, and a cam for engaging said spring with the terminal, substantially as set forth.

4. In an electric switch, the combination, with two pairs of terminals, of a pair of springs mounted between the terminals, each spring being composed of a plate folded upon itself, supports for the opposite extremities of the springs, and a cam for engaging the central portion of said springs and forcing them into contact with the terminals, substantially as and for the purpose set forth.

5. In an electric switch, the combination, with a pair of supports, of separate springs, each composed of a spring-plate folded upon itself and arranged with its ends adapted to lie one against the other, formed with an eye adapted to be mounted on the adjacent support, terminals in proximity to the springs, and a cam for engaging the springs with the terminals, substantially as specified.

6. In an electric switch, the combination, with a pair of terminals, of a pair of supports, a spring supported at its opposite extremities by said supports, a cam for engaging said spring with the terminals, said cam being adapted to engage the central portion of the spring, and a handle connected by a lost motion with said cam, substantially as and for the purpose specified.

7. In an electric switch, the combination, with a pair of springs, each composed of a spring-plate folded upon itself and arranged with its ends adapted to lie closely one against the other for increasing the resiliency of the spring; of a pair of supports at the opposite extremities of said spring, a cam for forcing said springs outward, two pairs of terminals arranged on opposite sides of the pivot-point of said cam and adapted to be engaged by the springs when forced in their outward position, and a handle connected by a lost motion with said cam, substantially as and for the purpose set forth.

8. In an electric switch, the combination, with a spring, of a support for one extremity of the spring and a second support having an engaging face along which the opposite extremity of said spring slides, a cam for forcing the spring outward, and terminals adapted to be engaged by said spring, substantially as set forth.

9. In an electric switch, the combination of a pair of supports, a spring consisting of a spring-plate folded upon itself and formed at one extremity with an eye mounted at one support and having its opposite extremity adapted to slide along the opposite support, a pair of terminals, and a cam for engaging said spring with the terminal, substantially as described.

10. In an electric switch, the combination of a cam, two pairs of terminals on opposite sides of the center of said cam, formed with a substantially-flat engaging face, a pair of springs extending beyond

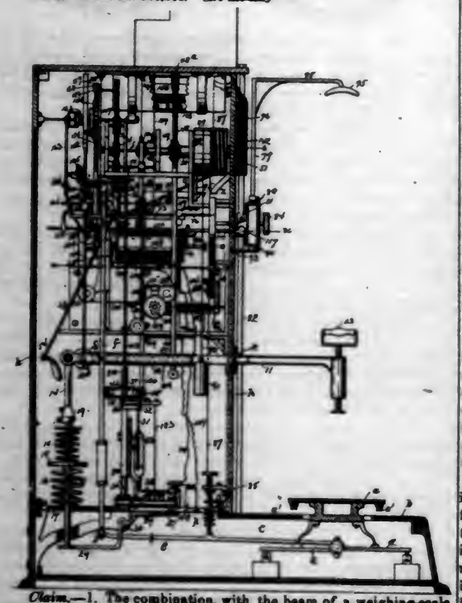
the terminals, and supports for the opposite extremities of the springs, substantially as specified.

11. The combination, with a terminal and a cam, of the herein-described spring for electric switches, the same consisting of a support and a spring-plate folded upon itself and formed at its central portion with an eye for receiving said support, substantially as described.

12. The combination, with a terminal and a cam, of the herein-described spring for electric switches, the same consisting of a support having a pair of oppositely-arranged shoulders, and a spring-plate having its opposite extremities folded upon itself and provided with an eye interposed between the shoulders of the support for securing the spring to said support, substantially as set forth.

13. In an electric switch, the combination of a cam, a porcelain handle connected by a lost motion with the cam, folded springs on opposite sides of the cam, supports having oppositely-arranged shoulders, and an annular recess for receiving the opposite extremities of the spring, and oppositely-arranged terminals consisting of a sleeve having a screw-threaded shank, and a nut movable on said shank, substantially as described.

477,618. COMBINED WEIGHING, LIFTING, MEASURING, AND ELECTRIC MACHINE. AUGUST SIEBE, Yonkers, N. Y. Filed Nov. 4, 1890. Serial No. 370,281. (No model.)



Claim.—1. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, and the coin-receiving tilting lever for actuating said coupling-pin lever, said key-lever adapted to control the weighing, lifting, and other functions of the machine, substantially as described.

2. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, and the pointer and toothed rack and pinion coupling said pointer and key-lever, substantially as described.

3. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the stop for said lever, the locking-plate for securing said stop, and the key for unlocking said stop, said key controlled by the key-lever, substantially as described.

4. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin coupling said key-lever and beam, coin-receiving and tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the stop for said lever, the locking-plate for securing said stop, the key for unlocking said stop and controlled by the key-lever, the pointer-shaft and pointer, and the pinion and toothed rack coupling said pointer-shaft and lifting-lever, substantially as described.

5. The combination, with the beam of a weighing-scale concealed in a case and the scale-platform exterior to said case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving and tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the pointer-shaft and pointer, and the pinion and toothed rack coupling said pointer-shaft and lifting-lever, substantially as described.

6. The combination, with the beam of a weighing-scale concealed in a case and the scale-platform exterior to said case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, the lifting-lever and its opposing springs, the stop for said lever, locking-plate for the stop, locking-key for said plate, the lever suspending said key over the pin projecting from the key-lever, and the elbow-lever subject to the thrust of the lifting-lever for tripping the coupling-pin, substantially as described.

7. The combination, with the lifting-lever and its pivoted stop and thrust-rod, of the lever subject to the action of said thrust-rod, the elbow-lever on the fixed shaft, the lever connected to the stop and connected by the coiled spring to said elbow-lever, the locking-plate and lever actuated by one of the arms of said elbow lever and thrusting against said locking-plate, the yoke connected to said locking-plate by the spring and connected with the lifting-lever stop, and the locking-key suspended from the lever controlled by the key-lever, substantially as described.

8. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, the drum controlling the measuring-cap, the latch-bolt for locking said drum, and the notched slide-bar for reception of the key-lever for locking the latch-bolt, substantially as described.

9. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-lever, the drum controlling the measuring-cap, the latch-bolt for locking said drum, the notched slide-bar for reception of the key-lever for locking the latch-bolt, spring for unlocking the latch-bolt when released by the key-lever, and the rock-shaft and arms actuated by the short arm of the scale-beam for returning the latch-bolt to lock the drum, substantially as described.

10. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving tilting lever for actuating said coupling-pin lever, the drum controlling the measuring-cap, the latch-bolt for locking said drum, the notched slide-bar for reception of the key-lever for locking the latch-bolt, the vertically-sliding measuring-cap coupled with the drum by the endless cord, the retracting-weight suspended from the drum, and the pointer attached to the axis of the drum, substantially as described.

11. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, coin-receiving and tilting lever for actuating said coupling-pin lever, the drum controlling the measuring-cap, the latch-bolt for locking said drum, the notched slide-bar for reception of the key-lever for locking the latch-bolt, the vertical sliding bracket carrying the measuring-cap coupled by the arm extending through the slot in the case with the endless cord connected to the drum, the staff supporting the measuring-cap, mounted to rotate in the sliding bracket, and the spring for retaining said cap against the side of the case, substantially as described.

12. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, the coin-receiving and tilting lever for actuating said coupling-pin lever, lifting-lever, stop, locking-plate for said stop, locking-key controlled by the key-lever, and the music-barrel train coupled by the toothed rack and pinion, with the lifting-lever for setting said music-barrel train for operation by the lifting-lever when relieved of the stop, substantially as described.

13. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, the coin-receiving and tilting lever for actuating said coupling pin lever, lifting-lever, stop, locking-plate for said stop, locking-key controlled by the key-lever, music-barrel train coupled by the toothed rack and pinion with the lifting-lever, the clutch coupling said pinion with the music-barrel-driving shaft, clutch-shifting lever connected with the toothed rack for disconnecting the clutch, the weighted rack geared with the music driving wheel, and the arm of the clutch-lever subject to the weighted rack for connecting the clutch, substantially as described.

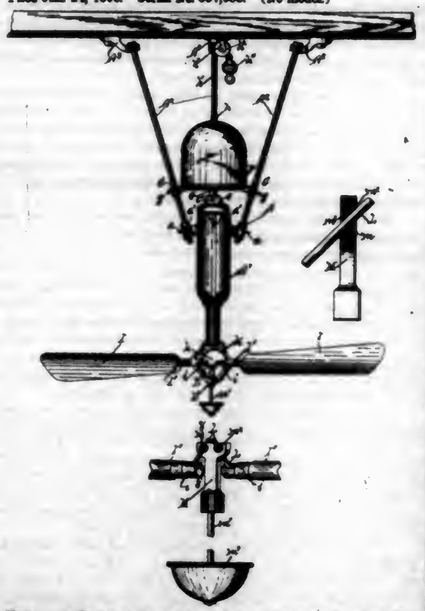
14. The combination, with the beam of a weighing-scale concealed in a case, of the key-lever mounted on a fixed pivot, the lever and pin for coupling said key-lever and beam, the coin receiving and tilting lever for actuating coupling-pin lever, lifting-lever, stop, locking-plate for said stop, locking-key controlled by said key-lever, music-barrel train coupled by the toothed rack and pinion with the lifting-lever, clutch coupling said pinion with the music-barrel-driving shaft, clutch-shifting lever connected with the toothed rack for disconnecting the clutch, the weighted rack geared with the music driving wheel, clock located in the top of the case, cord coiled on the clock-winding shaft, the winding-cord-actuating lever coupled with the weighted music-barrel-driving rack, and the guide-pulley for the cord, said cord looped under said guide-pulley and connected to said lever, substantially as described.

15. The combined coin-actuated weighing and electric machine having the coin-receiving tilting lever, in combination with the scale-beam, key-lever, and lever and pin for coupling said key-lever and beam, and also with the coin-receptacle of the electric machine, in which said coin, having first established operative connection of the weighing-machine, then forms an operative part of said electric machine and prepares it for use subsequent to the use of the weighing-machine, substantially as described.

16. The combined coin-actuated weighing and electric machine having the coin-receiving tilting lever, in combination with the scale-beam, key-lever, and lever and pin for coupling said key-lever and beam, and also with the coin-receptacle of the electric machine, in which the coin forms an operative part of said machine and prepares it for use, said coin-receiving tilting lever adapted while in its normal position for admitting to the coin-receptacle of the electric machine coins of smaller size and lighter weight than such as have the power of operating it, and thus permitting the use of the electric machine independently of the weighing-machine, substantially as described.

17. The combined coin-actuated weighing and lifting machine having the key-lever, coin-receiving tilting lever, and lever and pin for coupling said key-lever and beam by the said coin receiving and tilting lever, also the devices with which through the instrumentality of said key-lever said lifting and weighing mechanisms are each respectively operative for each operation of the coin-receiving tilting lever and are inoperative independently of said tilting lever, substantially as described.

477,614. FAN. FREDERICK W. TUREK, Jr., Fulton, N. Y., assignor of two-thirds to John Hunter and James Hunter, same place. Filed Jan. 24, 1890. Serial No. 337,953. (No model.)



Claim.—1. In a fan, the combination of a rotating fan-shaft, fan-blades revolved by said shaft, projections or pins provided on the adjacent extremities of said fan-blades, and a movable head having openings extending therethrough in a plane at substantially right angles to the longitudinal axes of the blades for receiving said projections or pins, said openings having countersunk extremities, whereby cramping of the pin is prevented when said head is raised so that the said openings are above or below the axis of the fan-blades, substantially as and for the purpose set forth.

2. In a fan, the combination of a rotating fan-shaft, a bracket secured to said fan-shaft, fan-blades supported by said bracket and disposed in parallel planes at one side of each other, projections or pins provided on the adjacent extremities of said fan-blades, a moving head guided in said bracket and having openings extending therethrough on opposite sides of a perpendicular to the fan-blade axes in planes at substantially right angles to said fan-blade axes for receiving said projections or pins, said openings having countersunk extremities, whereby cramping of the pins is prevented, and a rod connected to said head for operating the same, substantially as and for the purpose specified.

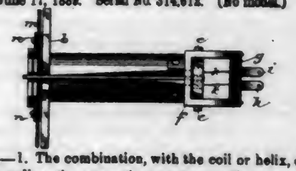
477,615. WATER-PURIFIER AND BOILER-CLEANER. WILLIAM V. WALKER, Moravia, N. Y. Filed Oct. 12, 1891. Serial No. 408,409. (No model.)



Claim.—1. In a boiler-cleaner, the combination, with the boiler and feed-water pipes, of a precipitating apparatus comprising a water-receiver, a water-chamber consisting of continuous zigzag and gradually-diverging side walls and a bottom connected to the side walls and bottom of said receiver, and a sediment-chamber connected to the water-chamber and comprising vertical side walls, a concaved bottom, transverse bridge-walls, and perforations between the side walls and the bridge-walls.

2. In a boiler-cleaner, the combination, with the boiler and feed-water pipe, of a precipitating apparatus comprising a water-receiver, a water-chamber tapering longitudinally and of greater height than depth connected thereto and consisting of continuous zigzag side walls and a bottom connected to the side walls and bottom of said receiver, and a sediment-chamber connected to the water-chamber and comprising vertical side walls, a concaved bottom provided with a blow-off pipe, transverse bridge-walls, and perforations between the side walls and the bridge-walls.

477,616. ELECTRIC-ANNUNCIATOR DROP. JAMES C. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 17, 1889. Serial No. 314,612. (No model.)



Claim.—1. The combination, with the coil or helix, of a soft-iron shield surrounding the same, the armature at the rear of the core of said helix, and the armature-lever extending forward through a slot or opening in the plate *b*, and the drop with which said lever is adapted to be engaged when the drop is lifted and to be disengaged therefrom when the armature is attracted, substantially as and for the purpose specified.

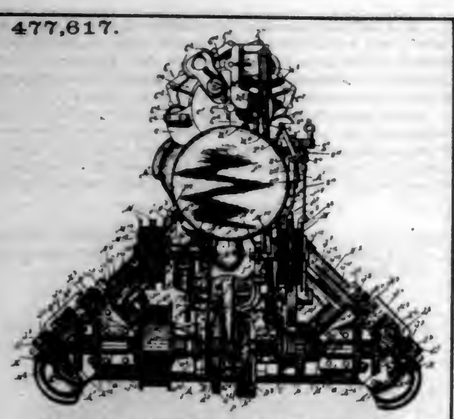
2. The combination, with the coil or helix, of a soft-iron shield surrounding the same, the armature at the rear of the core of said helix, and the armature-lever secured to the armature below the pivotal support thereof and extending forward through a slot or opening in the plate *b*, and the drop with which said lever is adapted to be engaged when the drop is lifted and to be disengaged therefrom when the armature is attracted, substantially as and for the purpose specified.

3. The combination, with the soft-iron shield about the helix of an annunciator, of the frame *f*, mounted thereon and extending to the rear, the armature pivoted to said frame, and the connecting-pieces mounted thereon at the rear, and the different ends of the wire of the helix being connected, respectively, with said connecting-pieces, substantially as and for the purpose specified.

4. The annunciator provided with the armature *d*, provided with openings, the ends of the wire of the helix being carried back through said openings in said armature and connected with insulated connecting-pieces *h i*, substantially as and for the purpose specified.

477,617. BOTTLING-MACHINE. SOL. WILE and HENRY LA CASSE, Rochester, N. Y., assignors to the Bottlers' Specialty Company, same place. Filed Dec. 31, 1890. Serial No. 376,429. (No model.)

477,617.



Claim.—1. In a bottling-machine, the combination of the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose specified.

2. In a bottling-machine, the combination of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for inserting the cork into the bottle, for placing a plate over the cork, for turning the wire over the plate, and for securing the wire in said position, and connected mechanism for operating the foregoing parts conjointly, substantially as set forth.

3. In a bottling-machine, the combination of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for twisting together the projecting extremities of the wire, for inserting the cork into the bottle, for placing a plate over the inserted cork, for turning the projecting extremities over the plate, and for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose set forth.

4. In a bottling-machine, the combination of the herein-described mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for securing a second number of strands to the bottle with their extremities projecting therefrom at an angle with the extremities of the first-secured strands, for inserting a cork into the bottle, for placing a plate above the cork, for turning the wire over the cork and plate, and for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as specified.

5. In a bottling-machine, the combination of the herein-described mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for securing a second number of strands of wire to the bottle with their extremities projecting therefrom at an angle with the extremities of the first-secured strands, for twisting together the projecting extremities of the wire, for placing a plate above the inserted cork, for turning the wire over the plate and for twisting together the projecting previously-twisted extremities of the wire, and connected mechanism between the foregoing parts for operating them in due order, substantially as described.

6. In a bottling-machine, the combination, with a cork-inserter, of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for twisting said projecting strands together with a tight twist immediately adjacent to the bottle, for twisting together the extremities of the wire with a looser twist, for placing a plate at the top of the bottle, for turning the twisted extremities over said plate, and for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as specified.

7. In a bottling-machine, the combination, with a cork-inserter, of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for securing a second number of strands with their extremities projecting from the bottle at an angle with the extremities of the first-secured strands, for twisting the adjacent extremities of said strands together with a tight twist immediately adjacent to the bottle, for twisting together said adjacent extremities of the wire with a looser twist, for placing a plate upon the top of the cork, for turning the twisted extremities over said plate, and for securing the wire in said position, and connected mechanism for operating the foregoing parts in due order, substantially as and for the purpose set forth.

8. In a bottling-machine, the combination of a bottle-support with the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate upon the cork, and for securing strands of wire to the bottle and over the plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose described.

9. In a bottling-machine, the combination, with a bottle-support and a cork-inserter, of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for securing a second number of strands of wire to the bottle with their extremities projecting therefrom at an angle with the extremities of the first-secured strands, for placing a plate above the cork, for turning the wire over the cork and plate, and for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose set forth.

10. In a bottling-machine, the combination of a bottle-support, an inserter for inserting the corks, a movable feed for placing a plate over the cork, mechanism for securing strands of wire to the bottle and over the plate, and connected mechanism between the foregoing parts for operating them in due order, substantially as and for the purpose described.

11. In a bottling-machine, the combination, with a bottle-support, of the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, for securing strands of wire to the bottle and over said cork, for operating the wire-securing mechanism during the operation of said plate-feed, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose specified.

12. In a bottling-machine, the combination, with a cork inserter and a bottle-support movable toward and away from the cork-inserter, of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting therefrom, for securing a second number of strands of wire to the bottle with their extremities projecting therefrom at an angle with the extremities of the first-secured strands, for placing a plate above the cork, for turning the wire over the cork and plate, and for securing the wire" in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose specified.

13. In a bottling-machine, the combination, with a cork-inserter, of a feed having a movement toward and away from the bottle for placing a plate upon the cork, wire-securing mechanism having a movement toward and away from the bottle for securing strands of wire thereto and over the inserted cork and said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose set forth.

14. In a bottling machine, the combination, with a bottle-support, of a cork-inserter having a movement toward and away from the support, a feed having a movement toward and away from the bottle for placing a plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle and over the plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose described.

15. In a bottling-machine, the combination, with a cork-inserter having a movement toward and away from the bottle, of a feed having a movement toward and away from the bottle for placing a plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a second wire-securing mechanism for securing a second number of strands to the bottle with their extremities projecting therefrom at an angle with the extremities of the strands first secured, mechanism for turning the wire over the inserted cork and plate, mechanism for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as described.

16. In a bottling-machine, the combination, with a cork-inserter and wire-securing jaws, of the herein-described mechanisms, to wit: for operating the jaws to encircle the bottle, for placing a plate upon the inserted cork, for withdrawing said jaws to secure strands of wire to the bottle with their extremities projecting therefrom, for turning the projecting extremities over the plate, and for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as specified.

17. In a bottling-machine, the combination, with a cork-inserter, of wire-securing jaws arranged at an angle with each other, mechanism for actuating said jaws toward and away from the bottle for securing strands of wire thereto with their extremities projecting at an angle therefrom, a feed for placing a plate upon the cork, and connected mechanism between the foregoing parts for operating them conjointly, substantially as set forth.

18. In a bottling-machine, the combination, with the cork-inserter, of wire-securing jaws arranged at an angle with each other, mechanism for actuating said jaws toward and away from the bottle for securing strands of wire thereto with their extremities projecting at an angle therefrom, a feed for placing a plate upon the cork, and a feed for feeding the bottles from the wire-securing jaws to said plate-feed, and connected mechanism between the foregoing parts for operating them in due order, substantially as described.

19. In a bottling-machine, the combination, with a cork-inserter, of wire-securing jaws movable toward and away from the bottle for securing strands of wire thereto with their extremities projecting therefrom, mechanism for rotating the jaws to twist together the projecting extremities of the wire, a feed for placing a plate upon the cork, mechanism for turning the projecting extremities over the plate, mechanism for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as described.

20. In a bottling-machine, the combination of a cork-inserter and wire-securing jaws movable toward and away from the bottle for securing strands of wire thereto with their extremities projecting therefrom, with the following mechanisms, to wit: for rotating the jaws to twist together the projecting extremities, for stopping the rotation of the jaws in a horizontal plane, for placing a plate over the cork, for turning the wire over the plate, and for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as described.

21. In a bottling-machine, the combination, with a feed for feeding the corks, of an inserter for inserting the corks into the bottles, a plate-feed for placing a plate over the inserted cork, mechanism for securing strands of wire to the bottle and over the plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as specified.

22. In a bottling-machine, the combination, with a feed for feeding the corks, of a cut-off for preventing the feeding of more than one cork at a time, a cork-inserter for inserting the corks into the bottles, a plate-feed for placing a plate over the inserted cork, mechanism for securing strands of wire to the bottle and over the plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as set forth.

23. In a bottling-machine, the combination of the herein-described mechanisms, to wit: for compressing the cork to the required size, for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose specified.

24. In a bottling-machine, the combination, with a feed for feeding the corks and a cut-off for preventing the feeding of more than one cork at a time, of the following mechanisms, to wit: for compressing the cork to the required size, for inserting it into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as set forth.

25. The combination, with a movable bottle-feed, of the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as specified.

26. The combination of a feed for feeding the bottles, a cork-inserter, and a feed for feeding a plate upon the cork, with the following mechanisms, to wit: for actuating the plate-feed toward and away from the bottle-feed and for securing strands of wire to the bottle and over the inserted cork and plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as described.

27. The combination, with a rotary bottle-feed, of the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose set forth.

28. The combination, with a cork-inserter, of a feed for placing a plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle and over the cork and plate, a bottle-feed having the bottles arranged thereon at intervals corresponding to the distance between the said plate-feed and wire-securing mechanism when in alignment with the bottle, and connected mechanism between the foregoing parts for operating them conjointly, substantially as set forth.

29. In a bottling-machine, the combination, with a cork-inserter, of a feed for placing a plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle and over said cork and plate, a bottle-feed for feeding the bottles from the wire-securing mechanism to the plate-feed, and connected mechanism between the foregoing parts for operating them conjointly, substantially as specified.

30. In a bottling-machine, the combination, with a bottle-feed, of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting, for placing a plate upon the inserted cork, for turning the projecting extremities of the wire over the top of the plate, for securing the wire in said position, said former and latter wire-securing and plate-feeding mechanisms being equidistant from each other when in alignment with the bottle, and connected mechanism between the foregoing parts for operating them in due order, substantially as set forth.

31. In a bottling-machine, the combination, with a bottle-feed having a series of bottles arranged thereon, of the following mechanisms, to wit: for securing strands of wire to the bottle with their extremities projecting, for placing a plate upon the inserted cork, for turning the projecting extremities of the wire over the top of the plate, and for securing the wire in said position, said former and latter wire-securing and plate-feeding mechanisms being arranged in the line of a circle when in alignment with the bottle, and connected mechanism between the foregoing parts for operating them in due order, substantially as described.

32. In a bottling-machine, the combination, with a cork-inserter, of a feed for placing the plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a second wire-securing mechanism for securing a second number of strands with their extremities projecting from the bottle at an angle with the extremities of the first-secured strands, and a bottle-feed having the bottles arranged thereon at intervals corresponding to the distance between the said plate-feed and wire-securing mechanisms when in alignment with the bottle, and connected mechanism between the foreging parts for operating them in due order, substantially as specified.

33. The combination, with a cork-inserter, of a feed for placing a plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a second wire-securing mechanism for securing a second number of strands with their extremities projecting from the bottle at an angle with the extremities of the first-secured strands, mechanism for turning the projecting extremities over the top of the inserted cork and plate, mechanism for securing the wire in said position, and a bottle-feed having the bottles arranged thereon at intervals corresponding to the distance between the positions of said plate-feed and the former and latter wire-securing mechanism when aligned with the bottle, and connected mechanism between the foregoing parts for operating them in due order, substantially as set forth.

34. In a bottling-machine, the combination, with a cork-inserter, of a feed for placing a plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a bottle-feed for feeding the bottles from the wire-securing mechanism to the plate-feed, and movable arms on said bottle-feed for grasping and releasing the bottles, and connected mechanism between the foregoing parts, substantially as and for the purpose described.

35. In a bottling-machine, the combination, with a cork inserter, of a feed for placing the plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a bottle-feed for feeding the bottles from the wire-securing mechanism to the plate-feed, and bottle-grasping arms arranged on the feed at intervals corresponding to the distance between said wire-securing mechanism and plate-feed when in alignment with the bottle, and connected mechanism between the foregoing parts for operating them in due order, substantially as specified.

36. In a bottling-machine, the combination, with a cork-inserter, of a feed for placing a plate upon the cork, wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a second wire-securing mechanism for securing a second number of strands with their extremities projecting from the bottle at an angle with the extremities of the first-secured strands, a bottle-feed for feeding the bottles from the wire-securing mechanism to the plate-feed, and bottle-grasping arms arranged on the feed at intervals corresponding to the distance between said wire-securing mechanism and plate-feed when in alignment with the bottle, and connected mechanism between the foregoing parts for operating them conjointly, substantially as described.

37. In a bottling-machine, the combination, with a bottle-feed having grasping-faces movable toward and away from each other in a coincident plane, of the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose specified.

38. In a bottling-machine, the combination, with jaws for securing strands of wire to the bottle, of the following mechanisms, to wit: for withdrawing the jaws to feed out the wire, for cutting off the wire secured to the bottle from said jaws, for inserting the cork, for placing a plate over the inserted cork, for turning the projecting extremities of the wire over the plate, and for securing the wire in said position, and connected mechanism between the foregoing parts for operating

39. In a bottling-machine, the combination, with jaws arranged at an angle with each other for securing strands of wire to the bottle with their extremities projecting therefrom at an angle, of the following mechanisms, to wit: for withdrawing the jaws to feed out the wire, for cutting off the wire midway between the jaws and bottle, for inserting the cork, for placing a plate over the inserted cork, for turning the projecting extremities of the wire over the plate, and for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose described.

40. In a bottling-machine, the combination, with a feed or carrier and a gage for bringing the bottle to the desired position in the feed, of the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose described.

41. In a bottling-machine, the combination, with a feed or carrier, a gage for bringing the bottles to the desired position in the feed, and a spring-actuated support beneath the gage, of the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose set forth.

42. In a bottling-machine, the combination of a movable feed for feeding the bottles, arms on the feed for holding and releasing the bottles, and a gage for bringing the bottles into the desired position with the following mechanisms, to wit: for inserting the cork into the bottle, for placing a plate over the inserted cork, and for securing strands of wire to the bottle and over said plate, and connected mechanism between the foregoing parts for operating them conjointly, substantially as and for the purpose described.

43. The combination, with a bottle-feed, of wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a movable jaw for elevating the extremities of the wire, a feed for placing the plate over the inserted cork, mechanism for turning the wire over the plate, mechanism for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as specified.

44. The combination, with a bottle-feed, of wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a pair of jaws movable lengthwise of the bottle for elevating the projecting extremities of the wire, a feed for placing a plate upon the top of the bottle, mechanism for turning the elevated projecting extremities of the wire over the bottle, mechanism for securing the wire in said position, and connected mechanism between the foregoing parts for operating them in due order, substantially as and for the purpose set forth.

45. The combination, with a bottle-feed, of wire-securing mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, a pair of jaws movable lengthwise of the bottle for elevating the projecting extremities of the wire, a feed for placing a plate upon the top of the bottle, mechanism for turning the elevated projecting extremities of the wire over the bottle, rotating jaws for twisting together the elevated projecting extremities of the wire, and connected mechanism between the foregoing parts for operating them in due order, substantially as and for the purpose described.

46. In a bottling-machine, the combination of a feed for placing a plate upon the bottle, a feed for feeding the bottles, a lock for locking the carrier, mechanism for securing strands of wire to the bottle and over the plate, and connected mechanism between the foregoing parts for operating them in due order, substantially as and for the purpose set forth.

47. The combination, with a bottle-feed, of a feed for placing a plate upon the bottle, said plate-feed being movable toward the bottle-feed in planes at substantially right angles to each other, and connected mechanism between the foregoing parts for operating them in due order, substantially as and for the purpose specified.

48. The combination, with mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, of arms for elevating the projecting extremities of the wire, guides in said arms, a feed for placing a plate through the guides to the bottle, mechanism for turning the wire over said plate, mechanism for securing the wire in said position, and connected mechanism between the foregoing parts for operating them conjointly, substantially as described.

49. In a bottling-machine, the combination, with mechanism for securing strands of wire to the bottle with their extremities projecting therefrom, of a receptacle for containing a series of plates, a feed movable from said receptacle toward the bottle, mechanism for turning the wire over the plate, mechanism for securing the same in said position, and connected mechanism between the foregoing parts for operating them in due order, substantially as set forth.

50. In a bottling-machine, the combination of a rotary bottle-feed, a feed movable to and from the bottle-feed for placing a plate upon the bottle, and connected mechanism between said parts, substantially as described.

51. In a bottling-machine, the combination of a receptacle for the plates, a feed movable from said receptacle to the bottle for placing a plate upon the bottle, wire-securing mechanism for securing the plate to the bottle, and connected mechanism between the foregoing parts for operating them in due order, substantially as specified.

52. In a bottling-machine, the combination of a receptacle for the plates, a feed movable toward and away from the receptacle for feeding the plates therefrom to the bottle, wire-securing mechanism for securing the plate to the bottle, and connected mechanism between the foregoing parts for operating them in due order, substantially as set forth.

53. In a bottling-machine, the combination of a receptacle for the plate and a feed for feeding a plate to the bottle, with the following mechanisms, to wit: for forcing the feed lengthwise to the receptacle, for forcing said feed horizontally toward the bottle, and for securing the plate upon the bottle, and connected mechanism between the foregoing parts for operating them in due order, substantially as described.

54. In a bottling-machine, the combination of a support for the plate, a tube movable toward and away from said support for placing a plate upon the bottle, a suction device for creating a vacuum in said tube to support the plate in its passage to the bottle, mechanism for securing the plate in said position, and connected mechanism between the foregoing parts for operating them in due order, substantially as specified.

55. In a bottling-machine, the combination of a rotary bottle-feed for feeding the bottles, a support for the plates, a tube movable toward and away from said support for placing a plate upon the bottle, a suction device for creating a vacuum in said tube to support the plate in its passage to the bottle, mechanism for securing the plate in said position, and connected mechanism between the foregoing parts for operating them in due order, substantially as set forth.

56. In a bottling-machine, the combination of a support for the plate, a tube for feeding the plate from said support to the bottle, a vacuum-cylinder for creating a vacuum in the feeding-tube, a flexible connection between said cylinder and tube, mechanism for securing the plate in said position, and connected mechanism between the foregoing parts for operating them in due order, substantially as set forth.

57. In a bottling-machine, the combination, with a plate-support and a tube for feeding the plate to the bottle, of the following mechanisms, to wit: for forcing said tube toward said support in planes at substantially right angles to each other, for intermittently creating a vacuum in the feeding-tube to enable the same to support and release the plate and for securing the plate in said position, and connected mechanism between the foregoing parts for operating them in due order, substantially as described.

58. In a bottling-machine, the combination of a movable bottle-feed, a receptacle for the plate, a plunger movable in said receptacle, and a movable feed for feeding the plates from said receptacle to the bottle, substantially as and for the purpose set forth.

59. In a bottling-machine, the combination of a support for the plates, a tube movable between said support and the bottle for placing the plate in position, and a suction device for creating a vacuum in said tube to support the plate in its passage to the bottle, substantially as and for the purpose described.

60. In a bottling-machine, the combination of a receptacle for the plates, a movable support in said receptacle for feeding the plates outward, a tube movable between said receptacle and the bottle for placing the plate in position, and a suction device for creating a vacuum in said tube to support the plate in its passage to the bottle, substantially as and for the purpose specified.

61. In a bottling-machine, the combination of a receptacle for the plates, a movable plunger within said chamber having a screw-threaded shank, a nut for elevating said shank, and a feed for conveying the plates from said receptacle to the bottle, substantially as set forth.

62. In a bottling-machine, the combination of a receptacle for the plates, a movable plunger within said chamber having a screw-threaded shank, a nut for elevating said shank, a tube movable between said receptacle and the bottle for placing the plate in position, and a suction device for creating a vacuum in said tube to support the plate in its passage to the bottle, substantially as described.

63. In a bottling-machine, the combination, with a movable plunger, of a removable plate-receptacle having a central opening for receiving said plunger, a suitable base on said receptacle for supporting the same when removed, and a feed for feeding the plates from said receptacle to the bottle, substantially as set forth.

64. In a bottling-machine, the combination of a support for the plates, a feed for conveying the plates from said support to the bottle, and a spring for permitting the feed to yield on its support when encountered with the plate, substantially as described.

65. In a bottling-machine, the combination of a support for the plates, a tube for feeding the plates from the support to the bottle, a movable support for said tube for forcing the same toward the plate, and a spring for permitting the tube to yield when encountered with the plate, substantially as specified.

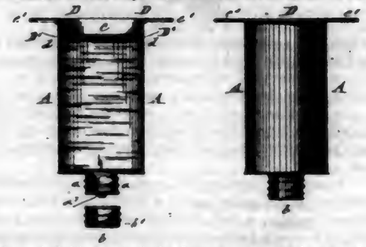
66. In a bottling-machine, the combination of a support for the plate, a feed for feeding the plates from the support to the bottle, a support for the feed, a lever for moving the feed-support toward the plate-support, and a second lever for moving the feed-support toward the bottle, substantially as and for the purpose described.

67. In a bottling-machine, the combination of a support for the plate, a feed for feeding the plates from the support to the bottle, a support for the tube, a lever for moving the feed-support toward the plate-support, a second lever for moving the feed-support toward the bottle, and a spring for permitting the feed to yield on its support when encountered with the plate, substantially as specified.

68. In a bottling-machine, the combination of a support for the plates, a tube movable toward and away from said support, a hinged vacuum-cylinder, a piston movable in said cylinder, a rotary disk secured to said piston, and a connection between said tube and piston for creating a vacuum in the tube, substantially as set forth.

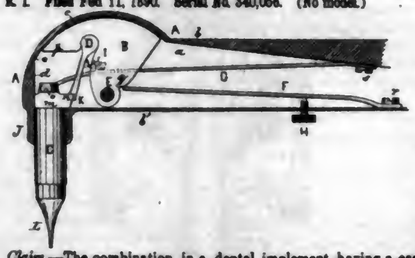
69. In a bottling-machine, the combination of a support for the plates, a tube for feeding the plates to the bottle, a support for said tube, movable toward and away from the plate-support and toward and away from the bottle, a hinged vacuum-cylinder, a flexible connection between the vacuum-cylinder and the tube for creating a vacuum in the tube, a piston movable in the vacuum-cylinder, and a rotary actuator for the piston, substantially as specified.

477,618. FLUID-RECEPTACLE FOR FLY-TRAPS. CARL BECHER, New York, N. Y. Filed Apr. 21, 1892. Serial No. 429,987. (No model.)



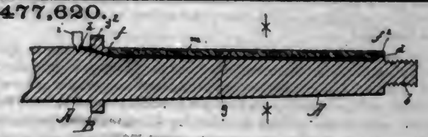
Claim.—A fluid-receptacle for fly-traps, composed of a body provided at the bottom part with a screw-nipple having a central orifice, a threaded upper part, an interior flange or seat at the upper part of the body, a detachable screw-cap adapted to be screwed over the nipple, a detachable cover having a threaded portion with a central perforation, and a water-proof disk interposed between the cover and the flange of the vessel, substantially as set forth.

477,619. DENTAL PLUGGER. MARTIN L. BOSWORTH, Warren, R. I. Filed Feb. 11, 1890. Serial No. 340,056. (No model.)



Claim.—The combination, in a dental implement having a case and handle, of the tubular projection J, the plunger C, movable in the tubular projection and having the head *m* with beveled lip *n*, the plunger L, secured in the plunger C, the pivotally-mounted hammer B, having the recess *q*, the arm D, mounted in the hammer B, so as to have a slight oscillation and provided with a notch K at its end to engage the lip *n* of the head of the plunger C, and the springs F G I, located and operating substantially as described.

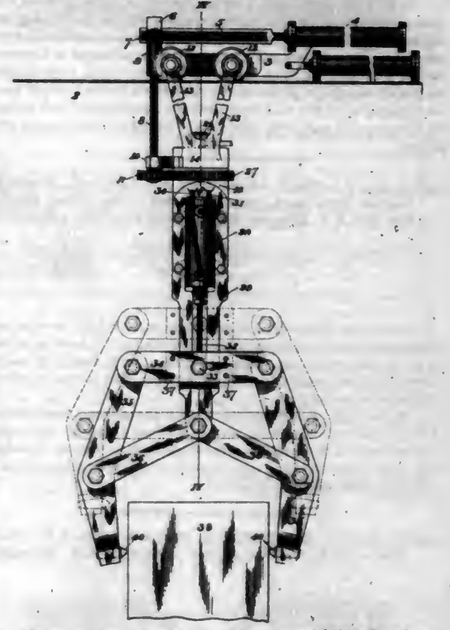
477,620. AXLE-LUBRICATOR. CHARLES W. BREWER, Cambridge, Mass., assignor, by direct and mesne assignments, to the Brewer Longitudinal Axle Lubricator Company, Portland, Me. Filed July 20, 1891. Serial No. 400,011. (No model.)



Claim.—1. A vehicle-axle provided with a longitudinal groove in its journal adapted to receive an absorbent pad and an oil-duct opening into said groove and extending longitudinally thereof beneath the pad for the free passage of oil, said duct opening at one end of the journal for receiving the supply of oil.

2. A vehicle-axle provided with a longitudinal groove in its journal adapted to receive an absorbent pad and an oil-duct opening into said groove and extending longitudinally thereof beneath the pad for the free passage of oil, said duct extending to the periphery of said axle in rear of the hub-flange, substantially as described.

477,621. HYDRAULIC CRANE MECHANISM. GEORGE D. BULKLEY, Duquesne, Pa., assignor of one-half to Frederick Norris, same place. Filed Mar. 11, 1892. Serial No. 424,580. (No model.)



Claim.—1. A water connection for cranes, consisting of two bearing-plates, registering ports in the plates, annular passages communicating with the ports, independent supply and exhaust pipes leading to the ports of one plate, and similar pipes leading from the ports of the other plate to a motive cylinder upon the crane, substantially as and for the purposes described.

2. A water connection for cranes, consisting of two bearing-plates, one having projecting concentric rings working in suitable annular recesses in the other plate, registering ports in the plates, annular concentric grooves communicating with the ports, independent supply and exhaust pipes leading to the ports of one plate, and similar pipes leading from the ports of the other plate to a motive cylinder upon the crane, substantially as and for the purposes described.

3. A water connection for cranes, consisting of two bearing-plates, one having projecting concentric rings working in suitable annular recesses in the other plate, registering ports in the plates, one set between the rings and the other within the inner ring, annular concentric grooves communicating with the ports, independent supply and exhaust pipes leading to the ports of one plate, and similar pipes leading from the ports of the other plate to a motive cylinder upon the crane, substantially as and for the purposes described.

4. In crane mechanism, a trolley having supported beneath the same a plate provided with ports, a second rotatory plate bearing against the first-named plate and having registering ports, and annular grooves communicating with said ports, means for rotating the latter plate, independent supply and exhaust pipes leading to the ports of one plate, and similar pipes leading from the ports of the other plate

to a motive cylinder upon the crane, substantially as and for the purposes described.

5. In crane mechanism, a trolley having supported beneath the same a plate provided with ports, a second rotatory plate bearing against the first-named plate and having registering ports and annular grooves communicating with said ports, a tong mechanism suspended from the rotatory plate, and a cylinder for actuating the same, having passages leading to the ports in the rotatory plate, means for rotating said plate, and independent supply and exhaust pipes leading to the ports in the stationary plate, substantially as and for the purposes described.

6. In crane mechanism, a trolley carrying beneath the same a frame, a hydraulic cylinder carried on the frame, a cross-head actuated thereby, tong-levers pivoted to the ends of the cross-head, and toggle-arms pivoted to the lower end of the frame and to the tong-levers, substantially as and for the purposes described.

7. The combination, with a crane, of a tong mechanism carried thereby and comprising a frame supporting a motive cylinder, a cross-head connected to the piston of said cylinder, tong-levers pivoted to said cross head, and toggle links connecting the lower end of the frame and the tong levers, substantially as and for the purposes described.

8. In crane mechanism, a trolley having supported beneath the same a plate provided with ports, a second rotatory plate bearing against the first-named plate and having registering ports and annular grooves communicating with said ports, a pair of tongs arranged to be actuated by a hydraulic cylinder carried by the lower plate, a rack upon the trolley engaging a pinion upon a shaft which carries a second pinion engaging a circular rack upon the lower bearing-plate, and means for reciprocating said rack, substantially as and for the purposes described.

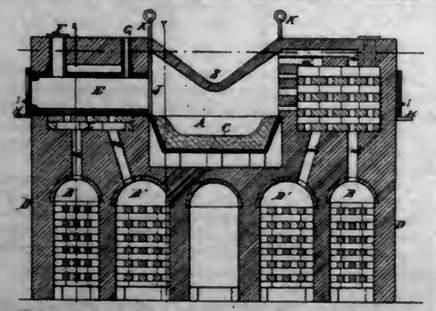
477,622. SPRING ATTACHMENT FOR VEHICLES. George T. Chapman, White Plains, assignor of one-half to Wm. Harvey Merritt, New York, N. Y. Filed Jan. 23, 1892. Serial No. 419,503. (No model.)



Claim.—1. The body of a carriage or other vehicle mounted on a semi-elliptic spring by laterally-extending bearing-brackets connected at or near one end to the spring and at or near the other end to the body with joints permitting said bearing-brackets to vibrate sidewise, substantially as described.

2. The body of a carriage or vehicle mounted on a semi-elliptic spring by laterally-extending bearing-brackets connected at or near one end to the body by a joint permitting vibration and near the other end connected to the spring and thereat having support allowing it lateral play, substantially as described.

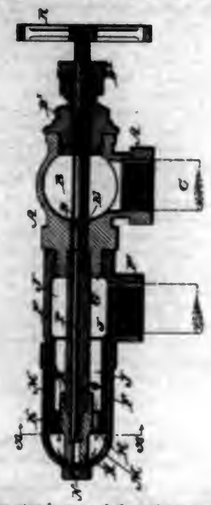
477,623. METALLURGICAL FURNACE. Michael R. Conley, Brooklyn, N. Y. Filed Mar. 26, 1891. Serial No. 386,419. (No model.)



Claim.—1. A metallurgical regenerative furnace having a melting-hearth with regenerators and flues connecting the regenerators with the opposite ends of the said melting-hearth, in combination with retorts having their inner ends opening directly onto the melting-hearth, but normally closed by gates, these retorts being interposed in the said flues between the regenerators and the hearth at the opposite ends of the latter, whereby the same regenerators serve for both melting-hearth and retorts and on the opening of the latter the ore may be pushed directly into the molten metal on the hearth, substantially as described.

2. A metallurgical reverberatory furnace having a melting-hearth and regenerators with flues connecting the regenerators with the hearth, closed deoxidizing-retorts in the said flues having their inner ends opening directly onto the melting-hearth, but normally closed by gates, and checker-work L around the retorts, substantially as set forth.

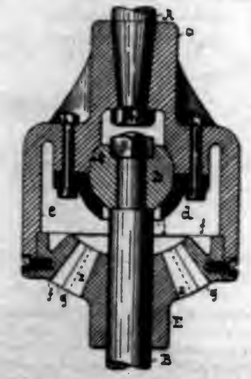
477,624. ATOMIZER FOR LIQUID FUEL. Stephen Cox, Jr., Bridgeton, N. J., assignor to the Cox & Sons Company, of New Jersey. Filed July 13, 1891. Serial No. 399,335. (No model.)



Claim.—1. An atomizer consisting of a casing having a nozzle at one end and provided with a chamber having means to secure an inlet-pipe thereto, a tube in said casing forming a passage from said chamber to said nozzle, a chamber in said casing surrounding said tube and having an inlet thereto, and a valve controlling the outlet of the first-mentioned chamber and having a grooved stem in said tube extending through said nozzle, said parts being combined substantially as described.

2. An atomizer consisting of a casing with an oil-chamber having a discharge-passage, a stem having a groove in its side, a valve controlling said passage, a shell connected with said casing, a tube communicating with said discharge-passage, an inner nozzle supporting said tube within said shell and having openings in its rim, and an outer nozzle adjustably secured to said shell, said parts being combined substantially as described.

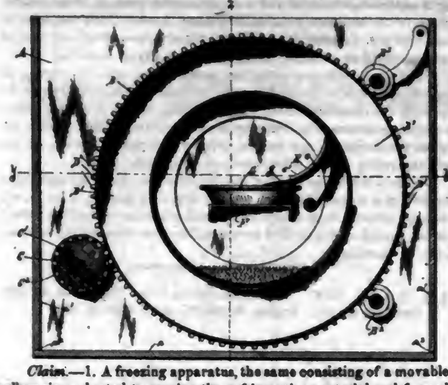
477,625. UNIVERSAL JOINT. Jacob S. Detrick, Baltimore, Md. Filed June 15, 1891. Serial No. 396,251. (No model.)



Claim.—1. In combination with two revoluble shafts, a universal joint which consists of an inclosed ball, whereby the said shafts are connected and adapted to be moved out of alignment without dislocation, and two toothed contact-surfaces independent of the said ball, whereby motion is communicated from one shaft to the other, substantially as and for the purpose specified.

2. In a universal joint, a toothed shell having a socket for one revoluble shaft and a spherical seat with a spherical cap, combined with a ball inclosed in the spherical space between the seat and the cap, to which the second revoluble shaft is secured, and a gear-wheel attached to the second revoluble shaft, in mesh with the toothed shell and susceptible of a swinging movement, substantially as specified.

477,626. FREEZING APPARATUS. Carl A. Burt, Rochester, N. Y., assignor to the Magic Freezer Company, Chicago, Ill. Filed Nov. 17, 1890. Renewed Nov. 23, 1891. Serial No. 412,708. (No model.)



Claim.—1. A freezing apparatus, the same consisting of a movable hollow ring adapted to receive the refrigerating material and formed with a freezing-surface on its inner periphery, and a scraper having one extremity bearing against said inner periphery for removing the frozen material, substantially as described.

2. A freezing apparatus, the same consisting of a revoluble hollow ring having centrally-projecting flanges on the opposite edges of its inner periphery for forming a chamber to receive the material to be frozen, and a scraper having one extremity bearing against said inner periphery for removing the frozen material, substantially as specified.

3. A freezing apparatus, the same consisting of a movable hollow ring adapted to receive the refrigerating material and formed with a freezing-surface on its inner periphery, a scraper having one extremity bearing against said inner periphery for removing the frozen material, and a receptacle within the ring for receiving the frozen material removed by the scraper, substantially as described.

4. In a freezing apparatus, the combination of a revoluble hollow ring for receiving the refrigerating material, centrally-projecting flanges on the inner periphery of the ring for forming the chamber to receive the material to be frozen, a scraper having one extremity bearing against said inner periphery for removing the frozen material, and a shoulder projecting within the ring for supporting the receptacle, adapted to receive the frozen material removed by the scraper, substantially as set forth.

5. A freezing apparatus consisting of a movable hollow annular ring for receiving the refrigerating material, annular hollow shoulders projecting from the periphery of said ring for presenting additional freezing-surface, and a scraper for removing the frozen material from said surface, substantially as and for the purpose set forth.

6. A freezing apparatus consisting of a shell, a hollow ring revoluble within the shell and adapted to receive the refrigerating material, a freezing-surface on said ring, gear-teeth provided on the periphery of said ring, and a gear-wheel journaled in said shell for engaging the gear-teeth and rotating said ring, substantially as and for the purpose set forth.

7. In a freezing apparatus, the combination of a casing, a revoluble ring within the casing, a guide roller or rollers for supporting said ring in its revolution, a chamber in the ring for receiving the refrigerating material, a freezing-surface on said ring, and a scraper having one extremity bearing against said freezing-surface for removing the frozen material, substantially as and for the purpose specified.

8. In a freezing apparatus, the combination of an outer casing, a hollow freezing-ring revoluble within the casing and adapted to receive the refrigerating material, gear-teeth formed of a fluted plate secured to one periphery of said ring, an annular freezing-surface on the opposite periphery, and a scraper having one extremity bearing against said inner periphery for removing the frozen material, substantially as set forth.

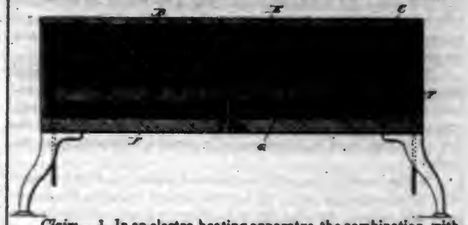
477,627. ELECTRIC EMBOSSING-STAMP. Charles E. Carpenter, Minneapolis, Minn., assignor to the Carpenter-Hovens Electro Heating Company, same place. Filed June 21, 1890. Serial No. 356,202. (No model.)

Claim.—1. In an electric embossing-stamp, the combination, with the heated plate, the compressing-plate secured thereto under pressure, and projections upon the outer face of said compressing-plate, of an electrical conductor or resistance interposed between said plates and an insulation interposed between said resistance and each of said plates, substantially as described.



2. In an electric embossing-stamp, the combination, with the heated plate, the stamp detachably secured thereto, the compressing-plate secured to said heated plate under pressure, and projections on the outer face of said compressing-plate, of an electrical conductor or resistance confined between said heated and compressing plates and an insulation interposed between said resistance and each of said plates, substantially as described.

477,628. ELECTRIC HEATER. Charles E. Carpenter, Minneapolis, Minn. Filed Nov. 26, 1890. Serial No. 373,018. (No model.)

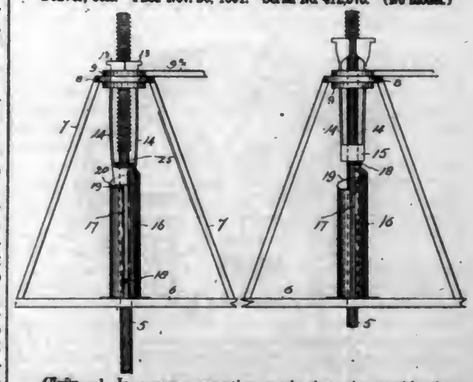


Claim.—1. In an electro-heating apparatus, the combination, with the iron core and the primary coil wound thereon, the convolutions of said coil being insulated from the core and from each other, of the shell surrounding said coil, composed of the parts D and E, constituting the secondary element, substantially as described.

2. In an electro-heating apparatus, the combination, with the iron core and the primary coil wound thereon, the convolutions of which coil are insulated from said core and from each other, of the secondary element composed of the shell D E, surrounding said coil, the part E of which constitutes the heated surface-plate, substantially as described.

3. In an electro-heating apparatus, the combination, with the iron core and the primary coil wound thereon, the convolutions of which are insulated from said core and from each other, of the secondary element composed of the parts D and E, surrounding said coil, the part E constituting the heated surface-plate, a casing inclosing the part D and the ends of the coil, and a non-heat-conducting material interposed between said casing and the parts inclosed thereby, substantially as described.

477,629. PUMP-OPERATING MECHANISM. Frank H. Ober, Denver, Colo. Filed Nov. 20, 1891. Serial No. 412,575. (No model.)



Claim.—1. In a pump-operating mechanism, the combination, with a piston-rod provided with a threaded portion, of a rotary socket swiveled in a suitable support, a divided spring clamp-head interiorly threaded to engage the threaded portion of the rod, and suitable means whereby as the rod is elevated the clamp-head is raised out of its socket and the rod released, substantially as described.

2. In a pump-operating mechanism, the combination, with a piston-rod provided with a threaded portion, of a rotary socket swiveled in a suitable support, a spring clamp-head interiorly threaded to engage the threaded portion of the rod and consisting of twin sections located in the rotary socket, and suitable means whereby as the rod is raised the clamp-head is raised out of its socket and the rod released, substantially as described.

3. In a pump-operating mechanism, the combination, with a pis-

ton-rod partially threaded, of a rotary socket, a two-part threaded clamp located in said socket and engaging the threaded portion of the rod, springs connected with the parts of the clamp, whereby as the same is released from its socket the parts separate and release the rod, and suitable mechanism for raising the clamp out of its socket when the rod has reached a suitable elevation, substantially as described.

4. In a pump-operating mechanism, the combination, with a piston-rod partially threaded, of the swiveled socket, the clamp-head consisting of two interiorly-threaded jaws located in said socket and engaging the threaded portion of the rod, a base for the clamp connected with the jaws by two springs, said base being provided with an aperture, through which the rod passes, and a slotted sleeve supported upon a suitable base and surrounding the rod below the clamp, said sleeve being provided at its top with a winding inclined plane, the rod being provided with a pin or projection traveling in the slot of the sleeve and adapted to engage a catch or stop on the bottom of the clamp as it leaves the slot, whereby the clamp-head is raised out of its socket and the rod released, substantially as described.

5. The combination, with the threaded piston-rod, of a divided screw-head engaging said rod, a rotary socket engaging the screw-head and suitably swiveled for actuating the same, and spring mechanism adapted to separate the parts of the screw-head and release the rod when said head is raised out of its socket, substantially as described.

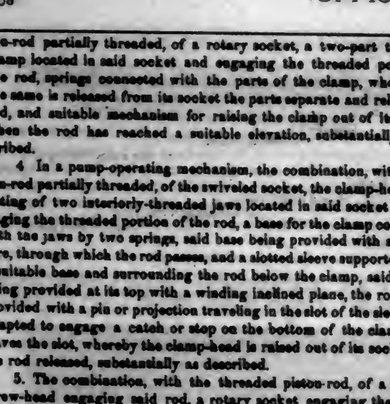
6. The combination, with the threaded piston-rod, of the divided screw-head engaging said rod, a rotary socket engaging the screw-head and suitably swiveled for actuating the same, and mechanism adapted to separate the parts of the screw-head and release the rod when said head is raised out of the socket, substantially as described.

7. In a pump, the combination, with the threaded piston-rod, of the screw-head and the rotary socket for giving it the upward movement, the screw-head being divided and having springs connected with its parts, and means for raising the screw-head out of its socket, whereby the rod is released and its downward movement accomplished by gravity, substantially as described.

477,680. WITHDRAWN.

REISSUES.

11,245. MIDDLINGS-PURIFIER. EDWIN B. WHITMORE, Three Rivers, Mich., assignor of one-half to Lewis Emery, Jr., Bradford, Pa. Filed Mar. 19, 1892. Serial No. 425,651. Original No. 458,511, dated Aug. 25, 1891.



Claim.—1. In a middlings-purifier, a vibrating shoe provided with two oblique series of spaced inclined cant-boards, one series being in advance of the other and the boards of which series are provided at their upper edges with middlings-arresters extending downwardly at right angles thereto and located directly opposite and also at right angles to the boards of the rear series, substantially as and for the purpose set forth.

2. In a middlings-purifier, a vibrating shoe, a fan, a dust-chamber, a conveyer, a spout leading from the dust-chamber to the conveyer, and two series of slats arranged one on each side of an air-channel leading from the fan, substantially as and for the purpose set forth.

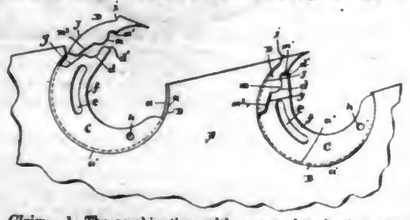
3. In a middlings-purifier, a vibrating shoe, a fan, an air-channel leading from the fan, a divider in front of the mouth of the fan, and a series of dust-arresters on each side of the channel, substantially as and for the purpose set forth.

4. In a middlings-purifier, the combination, with the casing having a separating-chamber and a continuous air-passage, of separating means in the chamber, a fan in the passage having direct communication with the chamber, a dust-chamber, and a short-circuiting damper between the dust-chamber and fan, substantially as described.

5. In a middlings-purifier, the combination, with the casing, of separating means in the casing, a fan, a suction-channel connecting the fan with the chamber, having the separating means, a dust-chamber, a discharge connection from the fan to the same, and a damper between the discharge and suction, located at a point between the fan and separating means, substantially as described.

6. In a middlings-purifier, the combination, with the separating devices, of a channel leading from and returning thereto, a fan in said channel, adapted to circulate the air, and a damper controlling a short circuit, including the fan and excluding the separating device, substantially as described.

11,246. SAW. JOHN CLARK, Canton, Ohio. Filed Feb. 26, 1892. Serial No. 422,941. Original No. 459,477, dated Sept. 15, 1891.



Claim.—1. The combination, with a saw-plate having a socket, of an insertible tooth, a tooth-holding shank having an elongated opening in the portion adjacent to the said tooth forming the spring portions *f* and *g*, and a stop for holding the tooth against inward movement, substantially as set forth.

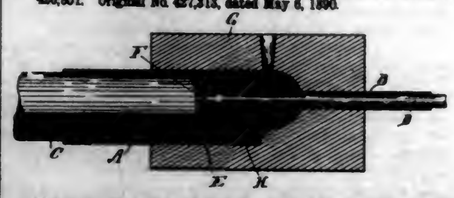
2. The combination, with a saw-plate having a socket, of an insertible tooth, and a holder having the end thereof adjacent to the said tooth inclined from its outer edge inward, and an opening adjacent to the said incline and to its inner edge to form a spring-brace at its inner edge and a yielding connection therefor at its upper end.

3. The combination, with a saw-plate having a socket, of an insertible tooth, and a holder fitting in the socket, having an elongated opening with closed ends adjacent to its inner edge and to the tooth, whereby a spring-brace is formed with a yielding connection at its upper end, and a stop for the tooth, substantially as specified.

4. The combination, with a saw-plate having a socket, of an insertible tooth having a shoulder at its upper end, and a tooth-holding shank having an elongated opening in the portion adjacent to the tooth, forming the spring portions *f* and *g*, substantially as set forth.

5. The combination, with a saw-plate having a circular socket, of an insertible tooth having a shoulder *i* at its upper rear portion, a circular projection *m*, an inclined edge m^3, and a recess *m'* at its front edge, a tooth-holding shank having a circular depression *d*, to take the projection *m*, a rounded projection *d'* to fit the recess *m'*, an inclined edge *g*, and an elongated opening in the portion adjacent to the tooth forming the spring portions *f* and *g*, substantially as set forth.

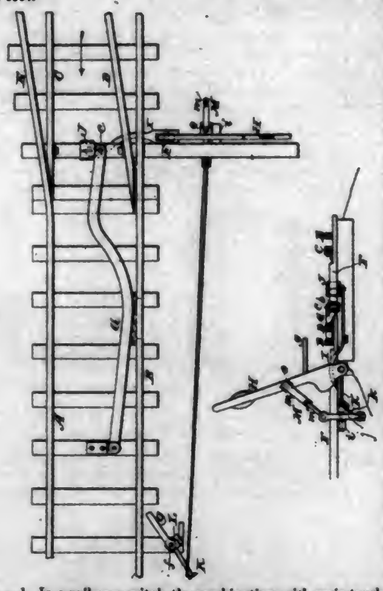
11,247. METHOD OF UNITING BARRELS OF AIR-GUNS. CLARENCE J. HAMILTON, Plymouth, Mich. Filed Mar. 23, 1892. Serial No. 426,851. Original No. 427,313, dated May 6, 1890.



Claim.—1. The herein-described method of uniting the barrels of air-guns, which consists in first arranging the ends of two barrels of different diameters adjacent to but separated from each other, placing suitable mandrels of different diameters in the barrels, extending the end of one of said mandrels beyond its barrel and into contact with the end of the other mandrel, uniting the ends of said barrels by suitable molded metal, and finally removing the mandrels, substantially as specified.

2. The method of uniting the barrels of air-guns, which consists in arranging the ends of two barrels of different diameters so that one barrel extends into the other, but is separated therefrom, placing suitable mandrels in said barrels so that their inner ends are brought into contact, uniting the ends of said barrels by suitable molded metal which incases the smaller barrel and fills the adjacent end of the larger barrel, and finally removing the mandrels, substantially as set forth.

11,248. RAILWAY-SWITCH. JAMES R. SUFFERN, Hilburn, N. Y. Filed Sept. 21, 1889. Serial No. 324,684. Original No. 370,964, dated Oct. 4, 1887.



Claim.—1. In a railway-switch, the combination, with main track and movable switch rails, of a switch-operating bar, a pivoted track-lever having sliding connection with the bar, and a lock for locking the lever and bar together, substantially as set forth.

2. The combination, with the main-track rails and movable switch-rails, of a switch-rail-operating bar, a track-lever having loose connection with said operating-bar, and means for locking the two together automatically by the action of the train, whereby one operates the other, substantially as set forth.

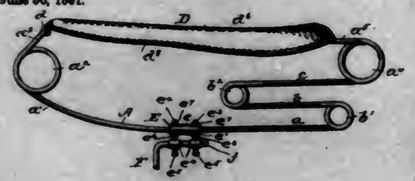
3. The combination, with a switch-rail-operating bar, of a track-lever having loose connection therewith, a slide for locking the lever and bar together, and means for automatically moving and locking said slide, substantially as set forth.

4. The combination, with the slotted switch-rail-operating bar F, of the curved pivoted track-lever G, having a forked end embracing the bar F, the pin *e*, passing through the fork of the said track-lever and through the slot of the bar F, the slide J, and means for moving and locking the said slide, substantially as specified.

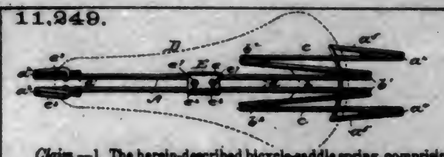
5. The combination, with the curved track-lever G and the slotted switch-operating bar F, of the slide J, yoke I, connected with the slide J, and the cam-lever H, substantially as specified.

6. The combination of the track-lever G, bar F, slide J, yoke I, the toggle M, lever *j*, rod *k*, shaft *f*, provided with the fixed arms K L, the movable arm *g*, and spring *h*, connecting the said arm *g* with the shaft *f*, substantially as specified.

11,249. BICYCLE-SADDLE. RICHARD S. TRUE, Syracuse, N. Y., assignor, by mesne assignments, to the R. S. True Company, same place. Filed Apr. 5, 1892. Serial No. 427,944. Original No. 456,087, dated June 30, 1891.



11,249.



Claim.—1. The herein-described bicycle-saddle spring, comprising a central supporting portion *a*, having a coil a^2 at one extremity thereof, a coil *b'* at its opposite extremity, a coil a^4, and spring-arms *b c*, connecting this coil and the coil *b'*, substantially as and for the purpose described.

2. The herein-described bicycle-saddle spring, comprising a pair of central supporting portions *a*, having coils a^2 at their forward extremities and coils *b'* at their opposite extremities, coils a^4, and spring-arms *b c*, connecting these coils with the coils *b'*, substantially as and for the purpose described.

3. The herein-described bicycle-saddle spring, comprising a central supporting portion *a*, having a coil a^2 at one extremity thereof, a coil *b'* at its opposite extremity, a coil a^4, spring-arms *b c*, connecting coil *b'* with coil a^4, and a coil b^2, connecting said spring-arms, substantially as and for the purpose described.

4. The herein-described bicycle-saddle spring, comprising a central spring-bar *a*, a coil a^2 at one extremity thereof, a pair of coils a^4 *b'* at its opposite extremity, a pair of inwardly-extending spring-arms above the spring-bar *a*, and a coil b^2, connecting the adjacent extremities of the spring-arms, substantially as and for the purpose described.

5. The combination, with a bicycle-saddle, of a spring comprising a spring-bar *a*, coils a^2 *b'*, a coil a^4 above the coil *b'*, spring-arms *b c*, extending from both the coils *b'* a^4 toward the front, and a coil b^2, connecting the forward ends of the arms, substantially as and for the purpose described.

6. The combination, with a bicycle-saddle, of a spring having a coil a^2 in front and a coil *b'* at the rear of the saddle, a second rear coil a^4 above the former rear coil, spring-arms *b c*, extending from the rear end toward the front coil a^2, and a coil b^2 at the forward ends of said spring-arms, substantially as and for the purpose described.

7. The combination, with a saddle, of a supporting-spring, comprising a spring-bar *a* and a pair of spring-arms *b c*, of less length, extending from one extremity thereof toward the other and having a coil b^2 at their inner ends, substantially as and for the purpose described.

8. The combination, with a saddle, of a supporting-spring comprising a spring-bar *a*, coils a^2 *b'* at the end thereof, and a pair of substantially parallel spring-arms *b c*, of less length, above the spring-bar *a* and extending from one extremity thereof toward the other, substantially as and for the purpose described.

9. The combination, with a saddle, of a supporting-spring comprising a pair of spring-bars *a* and a pair of substantially parallel spring-arms *b c*, of less length, extending from one extremity thereof toward the other and having coils a^4 *b'* at their ends, substantially as and for the purpose described.

10. The combination, with a bicycle-saddle, of a supporting-spring comprising a spring-bar, a pair of substantially parallel spring-arms, of less length, above it, extending from one extremity thereof toward the other and having coils a^4 *b'* at their ends, and a supporting-clip E, movable lengthwise on the bar, substantially as and for the purpose described.

11. The combination, with a bicycle-saddle, of a supporting-spring comprising a spring-bar *a*, a pair of substantially parallel spring-arms, of less length, extending from one extremity thereof toward the other and having coils a^4 *b'* at their ends, a supporting-clip E, movable lengthwise on the bar, and a support F for the clip, substantially as and for the purpose described.

12. The combination, with a bicycle-saddle, of a supporting-spring comprising a spring-bar, a pair of spring-arms *b c*, of less length, extending from one extremity thereof toward the other and arranged above it, a supporting-clip E, movable lengthwise on the bar *a*, a support F for the clip, and adjusting devices between the clip and support for varying the position or inclination of the clip and spring, substantially as and for the purpose described.

13. The combination, with a bicycle-saddle, of a supporting-spring comprising a spring-bar *a*, a pair of spring-arms *b c*, of less length, extending from one extremity thereof toward the other above it, a supporting-clip E, comprising separable plates *e e'*, grasping the spring-bar, bolts e^3 e^4, clamping said plates together, and nuts on said bolts raising or lowering the opposite extremities thereof, substantially as and for the purpose described.

14. The combination, with a support, of the herein-described bicycle-saddle having an upper strip d^2 and a lower strip d^3, the latter being of less area than the former and extending inwardly toward the center of the upper strip with its opposite ends secured to the front and rear ends of the former strip, substantially as and for the purpose described.

15. The combination, with a support, of the herein-described bicycle-saddle having an upper strip a^3 and a lower strip a^4, the latter having a central opening, and one or more filling-pieces d^7 between the adjacent surfaces of said strips, substantially as and for the purpose described.

DESIGNS.

21,623. CORNICE. AUGUST CARLEWITZ, Newark, N. J. Filed Feb 13, 1892. Serial No. 421,489. Term of patent 7 years.



Claim.—The design for a cornice, herein shown and described.

21,624. CORNICE. AUGUST CARLEWITZ, Newark, N. J. Filed May 5, 1892. Serial No. 431,962. Term of patent 7 years.



Claim.—The design for a cornice, herein shown and described, the same comprising the upper and lower plain moldings B and C, the intervening plain cove A, in which is the figure of raised leaves and flowers, and seed-pods extending over the moldings B and C, substantially as set forth.

21,625. HUB-BAND. JAMES G. ENGLISH, New Haven, Conn., assignor to English & Mossick, same place. Filed Apr. 4, 1892. Serial No. 427,751. Term of patent 14 years.



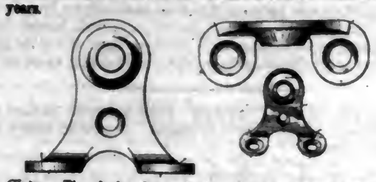
Claim.—The design for a hub-band, as herein shown and described

21,626. PICTURE-FRAME. THOMAS W. NORMAN, Boston, Mass. Filed May 10, 1892. Serial No. 432,514. Term of patent 3½ years.



Claim.—The design for a picture-frame, as herein shown and described.

21,627. SHADE-ROLLER BRACKET. STEPHEN J. MEEKER, Newark, N. J. Filed Jan. 25, 1892. Serial No. 419,231. Term of patent 7 years.



Claim.—The design for a shade-roller bracket, as herein shown and described, the same consisting of a shanked portion *a*, having the feet or ears *b b* extending in a line at right angles thereto, the whole having a scalloped outline formed by the curved lines between the points *a*, *b*, *c*, *d*, and *e*, as set forth.

21,628. JAR OR OINTMENT-POT. FRANCIS M. UNDERHILL, New York, N. Y., assignor to Whitall, Tatum & Co., same place. Filed May 6, 1892. Serial No. 432,064. Term of patent 14 years.



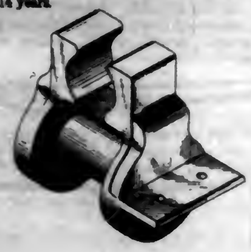
Claim.—The design for an ointment-pot, substantially as herein shown and described.

21,629. BACK FOR A BRUSH OR HAND-MIRROR. HENRY A. WEHMAN, Philadelphia, Pa., assignor to Simons Bro. & Co., same place. Filed Feb. 25, 1892. Serial No. 422,834. Term of patent 7 years.



Claim.—The design for the backs of brushes and hand-mirrors, substantially as shown and described.

21,630. FRAME FOR ELECTRIC MOTORS. PHILIP WURZ, Jr., Philadelphia, Pa., assignor to Christopher J. Hoppe and Florence J. Hoppe, same place. Filed May 12, 1892. Serial No. 432,791. Term of patent 14 years.



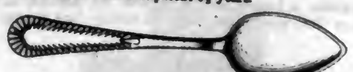
Claim.—The design for the frame of a dynamo or electric motor, as herein shown and described.

21,631. BRICK OR BUILDING-BLOCK. JOSEPH CROSSLEY, Trenton, N. J. Filed May 23, 1892. Serial No. 434,111. Term of patent 7 years.



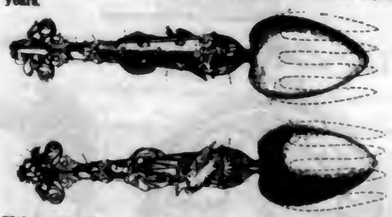
Claim.—The design for a building block or brick, substantially as herein shown and described.

21,632. SPOON, &c. WILLIAM A. JAMESON, Niagara Falls, assignor to the Oneida Community, Limited, Kenwood, N. Y. Filed May 7, 1892. Serial No. 432,210. Term of patent 3½ years.



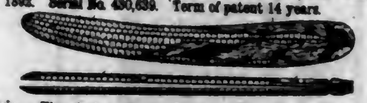
Claim.—The design for the handle of a spoon or fork, herein shown and described.

21,633. SPOON OR FORK HANDLE. GEORGE W. SHIELDS, Brooklyn, N. Y. Filed Mar. 7, 1892. Serial No. 424,086. Term of patent 3½ years.



Claim.—The design of the ornamental shape and configuration of the spoon or fork handle, substantially as shown and set forth.

21,634. RAZOR-HANDLE. JOSEPH R. TORREY, Worcester, Mass., assignor to the J. R. Torrey Razor Company, same place. Filed Apr. 25, 1892. Serial No. 430,639. Term of patent 14 years.



Claim.—The design for a razor-handle, substantially as herein shown and described.

21,635. MATCH-BOX. WILLIAM W. HAYDEN, Newark, N. J. Filed May 13, 1892. Serial No. 432,928. Term of patent 3½ years.



Claim.—The design for a match-box, herein shown and described.

21,636. MATCH-BOX. WILLIAM W. HAYDEN, Newark, N. J. Filed May 13, 1892. Serial No. 432,929. Term of patent 3½ years.



Claim.—The design for a match-box, as herein shown and described.

21,637. MATCH-BOX. WILLIAM W. HAYDEN, Newark, N. J. Filed May 13, 1892. Serial No. 432,930. Term of patent 3½ years.



Claim.—The design for a match-box, substantially as described, and shown in the drawing.

21,638. MATCH-BOX. WILLIAM W. HAYDEN, Newark, N. J. Filed May 13, 1892. Serial No. 432,931. Term of patent 3½ years.



Claim.—The design for a match-box, substantially as shown and described.

21,639. MATCH-BOX. WILLIAM W. HAYDEN, Newark, N. J. Filed May 13, 1892. Serial No. 432,932. Term of patent 3½ years.



Claim.—The design for a match-box, substantially as shown and described

21,640. BADGE. EUGENE H. RICHARDS, Boston, Mass., assignor to the Regular Army and Navy Union of Ohio. Filed Apr. 21, 1892. Serial No. 430,134. Term of patent 3½ years.



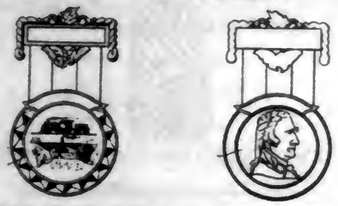
Claim.—The design for a badge, substantially as shown and described.

21,641. BADGE. EUGENE H. RICHARDS, Boston, Mass., assignor to the Regular Army and Navy Union of Ohio. Filed Apr. 21, 1892. Serial No. 430,135. Term of patent 3½ years.



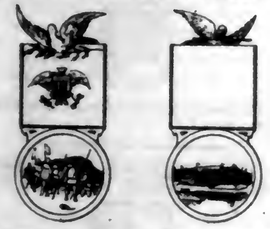
Claim.—The design for a badge, substantially as herein shown and described.

21,642. BADGE. LOUIS A. PLAGET, Paterson, N. J. Filed Apr. 18, 1892. Serial No. 429,683. Term of patent 3½ years.



Claim.—The design for a badge, as herein shown and described.

21,643. BADGE. CHARLES A. BALL, Marion, Ind. Filed Apr. 22, 1892. Serial No. 430,268. Term of patent 3½ years.



Claim.—1. The design for the medal or badge, substantially as herein shown and described.

2. In the design for the medal or badge, the obverse side, substantially as herein shown and described.

3. In the design for the medal or badge, the reverse side, substantially as herein shown and described.

21,644. BADGE. CHARLES A. BALL, Marion, Ind. Filed Apr. 22, 1892. Serial No. 430,267. Term of patent 3½ years.



Claim.—1. The design for the medal or badge, substantially as herein shown and described.

2. In the design for the medal or badge, the obverse side, substantially as herein shown and described.

3. In the design for the medal or badge, the reverse side, substantially as herein shown and described.

21,645. PIN. JULIUS A. REDWELL, Ivanpah, Cal. Filed Apr. 9, 1892. Serial No. 428,536. Term of patent 7 years.



Claim.—The design for a pin, substantially as herein shown and described.

21,646. TRIMMING. ISAAC A. SCHWARZ, Philadelphia, Pa., assignor to Augustus A. Lazarus, Isaac A. Schwarz, and Benjamin Lipper, same place. Filed May 31, 1892. Serial No. 433,915. Term of patent 3½ years.



Claim.—The design for dress-trimming, substantially as described, and as shown in the accompanying drawing.

21,647. TRIMMING. ISAAC A. SCHWARZ, Philadelphia, Pa., assignor to Augustus A. Lazarus, Isaac A. Schwarz, and Benjamin Lipper, same place. Filed May 26, 1892. Serial No. 434,496. Term of patent 3½ years.



Claim.—The design for dress-trimming, substantially as described, and as shown in the accompanying drawing.

21,648. TRIMMING. JOSEPH W. SCHLOSS, New York, N. Y. Filed Apr. 23, 1892. Serial No. 430,412. Term of patent 3½ years.



Claim.—The design for a trimming, substantially as herein described, and as shown in the accompanying drawing.

21,649. TRIMMING. MARK LAZARUS, Philadelphia, Pa., assignor to Augustus A. Lazarus, Isaac A. Schwarz, and Benjamin Lipper, same place. Filed May 21, 1892. Serial No. 433,913. Term of patent 3½ years.



Claim.—The design for dress-trimming, substantially as described, and as shown in the accompanying drawing.

21,650. OIL-STOVE. ISRAEL BLOCK, New York, N. Y. Filed May 9, 1892. Serial No. 432,519. Term of patent 14 years.

Claim.—The design for an oil and gas stove, as shown and described.

21,651. VAPOR-STOVE. LOUIS STOCKSTROM, St. Louis, Mo., assignor of one-half to Charles A. Stockstrom, same place. Filed Feb. 16, 1892. Serial No. 421,752. Term of patent 7 years.



Claim.—The design for a vapor-stove, substantially as shown and described.

21,652. VAPOR-STOVE. LOUIS STOCKSTROM, St. Louis, Mo., assignor of one-half to Charles A. Stockstrom, same place. Filed Feb. 16, 1892. Serial No. 421,753. Term of patent 7 years.



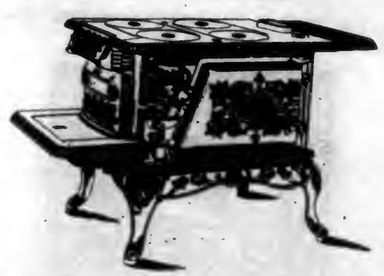
Claim.—The design for a vapor-stove, substantially as shown and described.

21,653. VAPOR-STOVE. LOUIS STOCKSTROM, St. Louis, Mo., assignor of one-half to Charles A. Stockstrom, same place. Filed May 17, 1892. Serial No. 433,370. Term of patent 7 years.



Claim.—The design for a vapor-stove, substantially as shown and described.

21,654. COOKING-STOVE. FRANCIS RITCHIE, Troy, N. Y., assignor to Isaac A. Sheppard, Franklin L. Sheppard, and Howard R. Sheppard, Philadelphia, Pa. Filed May 24, 1892. Serial No. 434,236. Term of patent 14 years.



Claim.—1. The design for a cooking-stove, as herein described, and as shown in the accompanying drawing.

2. In the design for a stove, the door, as herein shown and described.

TRADE-MARKS

REGISTERED JUNE 21, 1892.

21,813. IRON AND STEEL, INCLUDING HAMMER-STEEL AND CAST AND PICK STEEL. DUNHAM, CARRIGAN & HAYDEN COMPANY, San Francisco, Cal., and New York, N. Y. Filed May 14, 1892.

C ◇ C

Essential feature.—The letters "C. O. C." and a diamond-shaped figure. Used since 1849.

21,814. CATCHUP. PLACCUS BROS., Wheeling, W. Va. Filed May 17, 1892.



Essential feature.—A circular figure with an ornamental scroll above it and another traversing the lower portion of said figure, and the representation of a steer's head in the foreground of a landscape within said circular figure. Used since 1880.

21,815. LINEN THREAD. FINLAYSON, BOUSFIELD & Co., Johnstone, Scotland, and Grafton, Mass. Filed May 10, 1892.

DEVON

Essential feature.—The word "DEVON." Used since April, 1889.

21,816. LINEN THREAD. FINLAYSON, BOUSFIELD & Co., Johnstone, Scotland, and Grafton, Mass. Filed May 17, 1892.

DEVONSHIRE

Essential feature.—The word "DEVONSHIRE." Used since November, 1880.

21,817. CRYSTALLINE SUBSTANCE USED AS AN ABRADANT AND FOR OTHER PURPOSES. THE CARBORUNDUM COMPANY, Monongahela City, Pa. Filed May 16, 1892.

CARBORUNDUM

Essential feature.—The word "CARBORUNDUM." Used since September, 1891.

21,818. MINERAL WATERS AND OTHER NON-ALCOHOLIC DRINKS. SAMUEL G. ROGERS and JAMES S. PEARSON, Buffalo, N. Y. Filed July 8, 1891.

HUDOR

Essential feature.—The word "HUDOR." Used since January 15, 1891.

21,819. CERTAIN NAMED TOILET ARTICLES. AMERICAN ENFLEURAGE COMPANY, New York, N. Y. Filed May 16, 1892.

ENFLEURINE

Essential feature.—The word "ENFLEURINE." Used since March 15, 1892.

21,820. EMULSION OF WITCH-HAZEL FOR THE SKIN. MORTIMER H. BACHMAN, Stanton, Mich. Filed May 23, 1892.



Essential feature.—A monogram composed of the letters "B W H E" inclosed in a circular scroll. Used since March 1, 1892.

21,821. SEWING-MACHINES. DIVER, POMEROY & STEWART, Reading, Pa. Filed May 25, 1892.

RIVAL

Essential feature.—The word "RIVAL." Used since January 1, 1892.

21,822. VALVES. DUNHAM, CARRIGAN & HAYDEN COMPANY, San Francisco, Cal., and New York, N. Y. Filed May 24, 1892.

EMPIRE

Essential feature.—The word "EMPIRE." Used since April 1, 1892.

21,823. TURKISH TOWELS. DENNIS HOWARTH, Chester, Pa. Filed Apr. 19, 1892.

ROYAL

Essential feature.—The word "ROYAL." Used since 1889.

21,824. TABLE RELISH. C. W. MORGAN & Co., New York, N. Y. Filed Apr. 4, 1892.



Essential feature.—The words "VIRGINIA RELISH" and the representation of a colored cook standing before a kitchen-table and pouring the contents of a can upon a plate. Used since November 10, 1890.

21,825. MALT LIQUORS. ROBERT PORTER & Co., London, England. Filed May 20, 1892.



Essential feature.—The representation of a bull-dog of a light color with black shadings and upon a black ground and bearing upon its side or flank the words "ROBT. PORTER & Co.," the said figure of a bull-dog bearing such name being surrounded by an oval band bearing in white letters the words "ROBT. PORTER & Co." Used since July 3, 1875.

21,826. INORGANIC SALTS. MAX CARL TRAUB, Basle, Switzerland. Filed May 23, 1892.

ELECTROGEN

Essential feature.—The word "ELECTROGEN." Used since March 14, 1892.

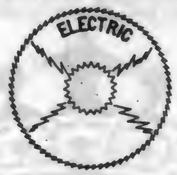
21,827. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING. THE KERR THREAD COMPANY, East Newark, N. J. Filed May 24, 1892.



Essential feature.—The word "MERMAID" and the representation of a piece of rope bent in the form of a capital letter "M." Used since December 1, 1891.

21,828. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING. THE KERR THREAD COMPANY, East Newark, N. J. Filed May 24, 1892.

21,828



Essential feature.—The word "ELECTRIC" and the representation of lightning-flashes. Used since December 1, 1891.

21,829. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING AND FOR MAKING BUTTONHOLES. THE KERR THREAD COMPANY, East Newark, N. J. Filed May 24, 1892.

CLEOPATRA

Essential feature.—The word "CLEOPATRA." Used since December 3, 1891.

21,830. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING. THE KERR THREAD COMPANY, East Newark, N. J. Filed May 24, 1892.



Essential feature.—The word "SPIDER" and the representation of a spider's web. Used since December 1, 1891.

21,831. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING. THE KERR THREAD COMPANY, East Newark, N. J. Filed May 25, 1892.



Essential feature.—The words "AUNT LYDIA'S." Used since May 18, 1892.

21,832. CIGARETTES. WILLIAM P. WARD, New York, N. Y. Filed May 4, 1892.



Essential feature.—The word "IDLER" and the representation of a young man smoking. Used since March 1, 1892.

21,833. PICKLES, CATCHUPS, AND HORSE-RADISH. A. M. ALBERS & Co., Boston, Mass. Filed Nov. 11, 1890.



CROWN

Essential feature.—The word "CROWN" and the representation of the early English crown, having along its margin a succession of upward projections. Used since July 1, 1885.

21,834. LITERARY PUBLICATIONS. ROBERT BONNER'S SONS, New York, N. Y. Filed May 26, 1892.



Essential feature.—The words "THE NEW YORK LEDGER." Used since November 16, 1889.

21,835. REMEDIES FOR NEURALGIA, RHEUMATISM, HEADACHE, HAY-FEVER, ASTHMA, AND FEMALE COMPLAINTS. GUSTAVE A. HILL, New York, N. Y. Filed May 26, 1892.

PAINEPOR

Essential feature.—The word "PAINEPOR." Used since April 1, 1892.

21,836. LIQUID DETERGENT FOR TOILET, BATH, AND HOUSEHOLD PURPOSES. KEYSTONE CHEMICAL COMPANY, Camden, N. J. Filed May 5, 1892.

TRI-PHOSA

Essential feature.—The word "TRI-PHOSA." Used since January 23, 1892.

21,837. BOYS' AND CHILDREN'S SUITS. A. LEVY Co., New York, N. Y. Filed May 26, 1892.

ROUGH AND READY NEVER RIPS

Essential feature.—The words "ROUGH AND READY NEVER RIPS." Used since January 1, 1892.

21,838. SILVER POLISH. WILLIAM H. LEWIS, Philadelphia, Pa. Filed May 26, 1892.



Essential feature.—The word "SILVO." Used since March 15, 1892.

21,839. CERTAIN NAMED REMEDIES. OD CHEM. COMPANY, New York, N. Y. Filed May 9, 1892.

SANMETTO

Essential feature.—The word "SANMETTO." Used since July 15, 1891.

21,840. CANNED VEGETABLES AND FRUITS. OAKFORD & FARNSTOCK, Peoria, Ill. Filed May 19, 1892.

BLUE RIBBON

Essential feature.—The words "BLUE RIBBON." Used since May, 1891.

21,841. PAPER SHOT-SHELLS. THE UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn. Filed Apr. 4, 1892.

SMOKELESS.

Essential feature.—The word "SMOKELESS." Used since March 1, 1892.

21,842. POLISHING-HANDKERCHIEFS FOR HATS. WILLIAM C. VAN VLIET, New York, N. Y. Filed May 26, 1892.

IMPERIAL

Essential feature.—The word "IMPERIAL." Used since May 1, 1891.

21,843. CANNED FISH, FRUITS, VEGETABLES, AND DRIED FRUITS. C. M. WEBBER & COMPANY, Chicago, Ill. Filed May 26, 1892.

PON HONOR

Essential feature.—The words "PON HONOR." Used since September, 1890.

21,844. FLOUR. JAMES BUTLER, New York, N. Y. Filed May 17, 1892.

PRIDE OF ST. LOUIS

Essential feature.—The words "PRIDE OF ST. LOUIS." Used since May 1, 1884.

21,845. PLUG CHEWING-TOBACCO. H. N. MARTIN & Co., Greenville, Ky. Filed Apr. 23, 1892.



Essential feature.—The representation of a flying bird and the word "MARTIN." Used since 1884.

21,846. WOVEN MACHINE-BELTING. F. REDDAWAY & Co., Manchester, England, and New York, N. Y. Filed Aug. 26, 1890.



Essential feature.—The representation of a camel surrounded by a circle, from which extends an endless line to smaller circles on either side, and the words "CAMEL HAIR BELTING." Used since January 1, 1879.

21,847. CORDS, LINES, TWINES, AND ROPES. SILVER LAKE COMPANY, Newton and Boston, Mass. Filed May 27, 1892.



Essential feature.—The representation of a light-house. Used since January 28, 1892.

21,848. CORDS, LINES, TWINES, AND ROPES. SILVER LAKE COMPANY, Newton and Boston, Mass. Filed May 27, 1892.

Eddystone.

Essential feature.—The word "EDDYSTONE." Used since January 28, 1892.

21,849. CORSETS. EMIL SCHWENDENS, New York, N. Y. Filed May 27, 1892.

Clio

Essential feature.—The word "CLIO." Used since July 10, 1891.

21,850. CORSETS. EMIL SCHWENDENS, New York, N. Y. Filed May 27, 1892.

Lakmé

Essential feature.—The word "LAKMÉ." Used since May 21, 1892.

21,851. COTTON GOODS, SUCH AS SHEETINGS, SHIRTINGS, DRESS GOODS, AND COTTON FLANNELS. TREMONT & SUFFOLK MILLS, Lowell, Mass. Filed May 13, 1892.

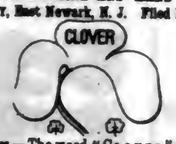


Essential feature.—The representation of a locomotive. Used since 1831.

21,352. RAZORS. THE FIRM OF ALEXANDER COPPEL, Solingen, Germany, and New York, N. Y. Filed May 23, 1892.

Essential feature.—The representation of a pair of scales. Used since January 1, 1892.

21,358. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING. THE KELT THREAD COMPANY, East Newark, N. J. Filed May 24, 1892.



Essential feature.—The word "CLOVER" and the representation of a clover-leaf. Used since December 1, 1891.

PHOTO-LITH. WASHINGTON D.C. THE NORRIS PETERS CO.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

RILEY *v.* BARNARD.

Decided June 2, 1892.

1. INVENTOR—WHO IS, IN CERTAIN CASES.

When a man has suggested the basic idea of a patentable improvement and has made it practicable to any degree and has never abandoned it, he cannot be deprived of the benefit of the invention or of the title of inventor by any other person who subsequently carries out his idea more perfectly and to a greater degree of usefulness.

2. GOVERNMENT EMPLOYÉ AS INVENTOR.

Where one in the employment of the Government experiments and finally perfects an invention, he is entitled to a patent therefor in the absence of an explicit assent and agreement on his part that his invention shall be the property of the Government. (Discussing and distinguishing *Solomons* v. *The United States*, 137 U. S., 342.)

3. CLAIM OF GOVERNMENT TO RIGHTS IN INVENTIONS.

A claim by the Government to an interest in an invention, either as licensee or assignee, will not stay the issue of a patent to an inventor, since that is a question for the courts and not the Patent Office to determine.

IN the matter of the protest of Prof. C. V. Riley against the issuance of a patent to William S. Barnard for emulsion and method of making the same.

SIMONDS, *Commissioner:*

William S. Barnard applied for a patent on application No. 62,872, filed May 31, 1882, for an emulsion and method of making the same. The emulsion consists of a mixture of oil (practically kerosene-oil) and milk, to which water may be added. The method consists in the agitation of these constituents together until the desired results are produced.

On the 14th of October, 1885, the then Commissioner of Agriculture addressed a letter to the Commissioner of Patents, accompanied by a letter from Prof. C. V. Riley, dated October 13, 1885, addressed to the Commissioner of Agriculture. The letter of Professor Riley was in the nature of a protest against the issuance of a patent for the invention above referred to, upon grounds hereinafter stated, and the letter of the Commissioner of Agriculture was an approval of that protest. The grounds upon which Professor Riley bases his protest were set forth by him in a paper dated October 28, 1885, as follows:

First. I assert, both from my own knowledge of what transpired subsequent to this suggestion of Dr. Barnard's and from the testimony of another assistant, Mr. E. A. Schwarz, who was in the field with Dr. Barnard at Selma at the time, that nothing more than the mixing of the two ingredients resulted from Dr. Barnard's efforts.

Second. Mr. H. G. Hubbard, the assistant who subsequently discovered and made a stable and satisfactory emulsion, has more claim to a patent than Dr. Barnard, while my own claim would be equally valid, as the experiments made by Mr. Hubbard were either suggested or made by written or verbal instruction. Hence no single individual can rightfully claim to be discoverer or inventor.

Third. In so far as Dr. Barnard has filed application for a patent he has violated a trust, and in fact has deceived his superiors. I have his own written promise to this effect: "I agree to subscribe to such engagement with the Department as will insure [speaking of his general work under my direction] that the results will not become patented by me and will be public property."

Fourth. The expense incurred by the work and experiment that resulted in the discovery of this emulsion was entirely defrayed by the Government.

These objections can be resolved practically into three propositions:

1. Barnard is not legally the inventor of the improvement in controversy.

2. Barnard's application for a patent is a violation of his agreement that his improvement should become public property.

3. If Barnard is the inventor, the invention is nevertheless the property of the Government.

IS BARNARD THE INVENTOR?

The Original Suggestion.—Professor Riley says in his letter dated October 13, 1885, already referred to, as follows:

Dr. Barnard, while working under my direction, and specially instructed to experiment with a view to discovering improved methods of applying kerosene-oil as an insecticide, suggested in August, 1880, the use of milk wherewith to mix the kerosene. * * * Dr. Barnard deserves whatever credit there was in this suggestion, and, as entomologist of the Department, I have always in my published writings accorded him this credit.

Again, in the Agricultural Report for 1882, page 127, Professor Riley says:

Mr. Hubbard's experiments would indicate, however, that for insecticide purposes nothing equals the milk emulsions, which were first suggested by Professor Barnard during our work on the cotton-worm at Selma, Ala., in 1880.

In view of these statements by Professor Riley it must be held that the first suggestion of the improvement in controversy was made by the applicant Barnard.

The Development of the Suggestion.—The following is an excerpt from an affidavit made by Henry G. Hubbard, and submitted by Professor Riley:

The use of milk in this connection, as suggested by Dr. W. S. Barnard, had been communicated to me the previous year at Selma, Ala., by Professor Riley, and one of the first steps in my orange-insect investigation at Crescent City, Fla., was experiment with a view of producing a perfect and stable emulsion of milk and kerosene, which all previous efforts had failed to accomplish. Persistent experiment ended in success, and a perfectly stable emulsion of milk and kerosene was obtained, which, to distinguish from the unstable mixtures obtained by others, I called "kerosene-butter." All my efforts to produce a stable emulsion in an ordinary churn, or by shaking the liquids in a bottle, resulted in failure, and it is my belief that the successful issue of my experiments was due to the use of a good force-pump and a proper regard to proportions in combining the liquids.

The following is a copy of an affidavit made by E. A. Schwarz, and submitted by Professor Riley:

I, the undersigned, am the same person who accompanied Dr. W. S. Barnard when he made his experiment of mixing kerosene with milk at Selma, Alabama, during the first days of September, 1880. I then assisted Dr. Barnard in carrying out his experiment, and have on March 17, 1886, repeated the same at the rooms of the Entomological Division, U. S. Department of Agriculture. The conditions under which I made this experiment were, to the best of my recollection, substantially the same as in

Dr. Barnard's experiment, with the exception that the temperature in the room was from 10 to 15 degrees lower than that at Selma in September, 1880, and further that the kerosene I used was of lighter color and apparently more refined than that used at Selma. I put in a glass vial a quantity of common cow's milk and added thereto some kerosene, estimating by sight the quantity of the kerosene as about one-third of that of the milk. I then closed the vial with a rubber stopple and began to shake the vial in my hand. The shaking was continued for a time estimated at about 5 minutes duration, Mr. L. O. Howard, acting U. S. entomologist, assisting me in this tiresome operation. Upon examination an apparent homogeneous mixture was produced which looked exactly like that produced by Dr. Barnard, excepting that its color was almost white, whereas Dr. Barnard's mixture had a faint-yellow color, owing, undoubtedly, to the darker color of the kerosene we used at Selma. The vial was then put aside and examined from time to time. After the lapse of about one-half hour it could be seen that a separation of the two substances had commenced, the upper half of the fluid being of whitish-gray color, whereas the lower half remained pure white. About 20 hours afterward this separation proved to be considerably advanced, the upper third of the fluid being already semi-transparent. About 48 hours afterwards the kerosene had nearly entirely separated from the milk and resumed its original transparent condition.

The proposition of fact which these two affidavits present is that the emulsion produced by Barnard in his first experiment, although it had some degree of stability, did not have that degree which was found to flow afterward from more complete and longer continued agitation of the constituents of the emulsion.

It is apparent from a paper in evidence, signed and sworn to by Barnard, and filed in the Patent Office January 16, 1886, that he had a very thorough knowledge, practical and scientific, of the whole matter; but that paper will not be considered in coming to a conclusion upon the question now under consideration. The improvement in stability, set forth in Hubbard's affidavit, is not the kind of a thing which amounts to a patentable invention. When a man has suggested the basic idea of a patentable improvement, and has made it practicable to any degree, and has never abandoned it, he cannot be deprived of the benefit of the invention, or of the title of inventor, by any other person who subsequently carries out his idea more perfectly and to a greater degree of usefulness.

Morse's right to the title of the inventor of the electric telegraph was challenged upon much the same grounds as Barnard's right is now challenged, and thereof the Supreme Court said:

Neither can the inquiries he made nor the information or advice he received from men of science in the course of his researches impair his right to the character of an inventor. (*O'Reilly* v. *Morse*, 15 How., 62.)

In another case the Supreme Court said:

Where a person has discovered an improved principle in a machine, manufacture, or composition of matter, and employs other persons to assist him in carrying out that principle, and they in the course of experiments arising from that employment make valuable discoveries ancillary to the plan and preconceived design of the employer, such suggested improvements are in general to be regarded as the property of the party who discovered the original improved principle, and may be embodied in his patent as a part of his invention. (*Agawam Co.* v. *Jordan*, 7 Wall., 583.)

The underlying principle of both these decisions makes Barnard the inventor of this emulsion, giving full force and credit to every allegation of fact contained in the affidavits of Hubbard and Schwarz.

VIOLATION OF AGREEMENT BY BARNARD.

Barnard's application for patent was filed May 31, 1882. The written agreement to which Professor Riley refers was contained in a letter dated May 22, 1884, and related to future improvements. It had no application to this invention.

DOES THE GOVERNMENT OWN THE INVENTION?

It is contended, as a part of the protest under consideration, that if Barnard is the inventor the invention is, nevertheless, the property of the Government. The principal case upon which this contention is founded as a matter of law is that of *Solomons* v. *United States*, (54 O. G., 265, 137 U. S., 342,) wherein Solomons, claiming under one Spencer M. Clark, sought to recover from the Government compensation for the use of a die which had been patented to Clark. The Court stated the facts of that case thus:

Clark was in the employ of the Government when he made this invention. His experiments were wholly at the expense of the Government. He was consulted as to the proper stamp to be used, and it was adopted on his recommendation. He notified the Government that he would make no charge if it adopted his recommendation and used his stamp.

The Court made the following statement applicable to these facts:

When one is in the employ of another in a certain line of work, and devises an improved method or instrument for doing that work, and uses the property of his employer and the services of other employés to develop and put in practicable form his invention, and explicitly assents to the use by his employer of such invention, a jury or a court trying the facts is warranted in finding that he has so far recognized the obligations of service flowing from his employment and the benefits resulting from his use of the property and the assistance of the co-employés of his employer as to have given to such employer an irrevocable license to use such invention.

When Clark—

notified the Government that he would make no charge if it adopted his recommendation and used his stamp,

he did that in the doing of which the Supreme Court describes him as one who—

explicitly assents to the use by his employer of such invention.

There is nothing in Barnard's case answering to Clark's *explicit assent*. Therefore this decision of the Supreme Court does not hold that the Government has a license, irrevocable or otherwise, to practice Barnard's improvement if a patent shall be issued therefor.

The Supreme Court in the case just quoted from said some other things which were *obiter dicta*. The following is one of them:

The Government has no more power to appropriate a man's property invested in a patent than it has to take his property invested in real estate; nor does the mere fact that an inventor is at the time of his invention in the employ of the Government transfer to it any title to or interest therein. An employé, performing all the duties assigned to him in his department of service, may exercise his inventive faculties in any direction he chooses, with the assurance that whatever invention he may thus conceive and perfect is his individual property. There is no difference between the Government and any other employer in this respect.

The foregoing is a general proposition. Unqualified and unmodified it establishes Barnard's right to a patent for this improvement. But the Court did not let it go unqualified and unmodified. It said this:

But this general rule is subject to these limitations: If one is employed to devise or perfect an instrument or a means for accomplishing a prescribed result, he cannot, after successfully accomplishing the work for which he was employed, plead title thereto as against his employer. That which he has been employed and paid to accomplish becomes, when accomplished, the property of his employer. Whatever rights as an individual he may have had in and to his inventive powers and that which they are able to accomplish he has sold in advance to his employer.

This is a part of the *obiter dicta*. It was not necessary to say it in order to decide the case in hand, because Clark's *explicit assent* was a pertinent fact in that case, and the quotation last made omits all mention thereof.

The allegations of fact disclosed in the papers on file and bearing upon the nature of Barnard's employment by the Government are these: In an unsworn paper, dated October 13, 1885, Professor Riley says:

Dr. Barnard, while working under my direction, and specially instructed to experiment with a view to discovering improved methods of applying kerosene-oil as an insecticide, suggested, in August, 1880, the use of milk wherewith to mix the kerosene.

Barnard in his affidavit says:

He (Barnard) invented the emulsion by his own independent study and knowledge. The emulsion was first made by him and he was the first to suggest its general use for insecticide purposes. Riley and others had no part in the inventing of the milk-kerosene emulsion. It was conceived by Barnard in the winter of 1879-'80. During the academic years 1879-'80 and 1880-'81 Barnard occupied the professorship of economic entomology and general invertebrate zoology in the Cornell University at Ithaca, N. Y. His special skill and knowledge led to a short engagement, for his summer vacation of 1880, as special agent for the temporary U. S. Entomological Commission under the Geological Survey. This Commission consisted of three chief members, Riley, Thomas, and Packard, and many special agents elected by them. Barnard did not engage to give away his inventions, nor would he have done so for such meager salary as was accepted from the Commission. As special agent of the Commission he was not instructed concerning emulsification or emulsives, and nothing on this subject was imparted to him by any member of the Commission. * * *

The following may be noticed as bearing on what Barnard did or was to do in the summer of 1880:

* * * Prof. C V. Riley * * * arrived in the city yesterday. * * * He is accompanied by W. S. Barnard, professor of entomology and invertebrate zoology at Cornell University. In an interview Professor Riley gave us the following: * * * Professor Barnard will make his headquarters at Vidalia, La., so as to fully study those portions of Louisiana and Mississippi which were neglected in 1878 and 1879 on account of yellow fever.—(*The Selma Times*, July 21, 1880.)

This Barnard did, observing and collecting cotton insects in the malarial regions of Louisiana, Arkansas, and the Yazoo. In the latter part of the season he received word to go to Selma to co-operate with Mr. Schwarz in testing a great quantity of plant decoctions and extracts which others had prepared and deposited there for the Commission. No kerosene mixtures existed among them. No emulsion work had been planned for Barnard to do for the Commission. * * * Barnard's engagement on the Commission ended on September 30, 1880, and he then resumed his chair at Cornell University.

Professor Riley, in an affidavit executed February 25, 1886, says of Barnard:

He was engaged by me, and working under instructions, on the investigation then being carried on as to the cotton-worm and the best means of counteracting its ravages. * * * He was directed (by letter, August 16, 1880) to proceed from Vidalia, Miss., to Selma, Ala., and join Mr. E. A. Schwarz, who was then and there engaged in special work on insecticides and insecticide machinery. He was directed, as all other agents employed for this special work were at the time, to pay particular attention to insecticides; and one of the more promising and more important was kerosene, which was to be tested with a view of obtaining some improved means of applying it diluted, so as not to injure plants and still destroy the insect. * * *

Barnard as one of my assistants and working under my special direction, was instructed to endeavor to discover improved insecticides. Among such, improved methods of using kerosene were specially mentioned. He suggested about September 8, 1880, the use of milk to emulsify kerosene, and tried it, as set forth by Mr. Schwarz, who was an eye-witness to what was done.

There is no suggestion in all this either that Barnard was hired to invent anything or that any inventions which he might make should be the property of his employer, the Government.

Accepting the statements last quoted from the decision of the Supreme Court as being settled law, it would be still true that they are principles and rules which work a forfeiture and as such are to be strictly construed. If strictly construed, is it not essential, in order to make a forfeiture effectual, that the contract of employment shall very clearly point out that the making of inventions for the benefit of the employer is within the range of the employment? The existence of any such contract is not suggested in this case. The supposition is a reasonable one that no such thing was thought of by the employer or employé in the case under consideration when Barnard accepted the Government employment.

But let us go further and proceed, for the time being, upon the assumption that Barnard's invention was one in which the Government had an interest. Would that prevent Barnard from taking a patent for his improvement, subject to whatever interest the Government might have in it? The Supreme Court, in the case above cited, said:

There is no difference between the Government and any other employer in this respect.

It has never been contended, and cannot reasonably be contended, that an inventor may not take a patent for his invention, although the entirety of that patent when once issued may belong to some one else.

What is the extent of the Government's interest in the invention and patent of Barnard, if there be any? Is it that of a mere licensee or is it that of an assignee? Providing it is that of an assignee of the whole interest, does that mean that every person in the United States may use the invention after a patent has issued to the Government as assignee of Barnard?

These are questions proper for the courts to settle, and not proper for the Patent Office to determine. Whenever the Supreme Court has spoken clearly by way of decision, it is the duty of this Office to obey its direction; but when this Office has before it the question whether or not a patent should issue to an applicant, and the courts have spoken with no clear voice upon that question, a decent regard for that liberality of treatment of inventors which the courts enjoin should incline the Office to grant the patent and leave the courts to settle the questions which cluster around it. Especially is that practice sound and just when, as in this case, the right of the Office to withhold a patent by reason of the existence of the question now under consideration is, to say the least, extremely doubtful.

It may be true that these protest-papers have been offered only as preliminary to a fuller presentation of the facts in the case; but the reasons above given for allowing the issue of Barnard's patent would apply if everything which is alleged in the protest-papers should be shown and established in full evidence.

The issue of this patent will not be stayed on account of the protest.

RILEY *v.* BARNARD.

Decided June 2, 1892.

PROTEST AGAINST ISSUANCE OF PATENT ON PENDING APPLICATION—WHAT IT MUST EMBODY.

A protest against the issuance of a patent to an applicant is fatally defective unless it embodies something equivalent to a distinct denial of the applicant's sworn statement of invention.

IN the matter of the protest of Prof. C. V. Riley against the issuance of a patent to William S. Barnard for an invention in fluid-distributers.

SIMONDS, *Commissioner:*

William S. Barnard applied for a patent on application No. 68,466, filed August 4, 1882, for improvements in fluid-distributers. Prof. C. V. Riley, with the approval of the then Commissioner of Agriculture, filed a protest in this office against the issuance of a patent for the said invention, the nature of which is set forth in the following affidavit made by Professor Riley March 16, 1886:

I know from personal admissions made by W. S Barnard to myself that he has applied for patent upon the so-called "cyclone"

or "eddy-chamber" nozzle, a device in which a stream of water entering a flattened chamber tangentially is distributed in spray through an opening whether at the periphery or at the center of one of the flat sides. This device has been gradually evolved in the course of the investigation on the cotton-worm of which I have had charge, whether as chief of the U. S. Entomological Commission or as entomologist of the Department of Agriculture.

I claim that a patent on this device should not be issued to said Barnard for the reason that he is not the rightful or sole inventor of it. The true history of the invention is, in brief, as follows:

The principle involved was first conceived in September, 1880, in my discussions with said Barnard as to the best means of throwing a spray up from the ground and first demonstrated by my instructing him to improvise a disk with two watch-crystals in which we could watch the motion of the water thus tangentially admitted. The nozzle was perfected during the next two years through numberless experiments made by my direction, and often under my direct supervision, and with my thought and suggestion.

Said Barnard never paid a dollar to the mechanics employed to do the work up to the time of his application or caveat, which was not filed till the results of nearly two years' experimentation had been obtained. He was during most of this time employed by the Government for this very work which I had directed him to superintend.

The invention belongs to the Government, and I have as much or even more right and claim to a patent on it than Barnard.

The device has been illustrated and described in various of my official reports, and corroborative evidence and testimony as to the truth of all here stated can be furnished if opportunity be offered.

Another affidavit made by Professor Riley April 14, 1886, contains the following:

In the summer of 1880, W. S. Barnard was employed by me on the U. S. Entomological Commission as one of my agents and sent South some time in August. He was at first directed to make special observations on the habits of the worm, etc., in Mississippi and Louisiana; but later in the season I directed him to proceed to Selma, Ala., and join those already there, as I made Selma a sort of headquarters for experimentation. On September 11 I arrived myself at Selma to examine into the work and to personally superintend. The question of throwing a spray upward was then uppermost in my mind, and one evening, in discussion with Barnard, the question arose between us as to what would be the effect of forcing liquid tangentially into a chamber instead of having it forced outward through eccentric orifices in a revolving chamber, as in the "Perfection" revolving lawn-sprinkler, the question being whether this same principle of revolving water could not be utilized in a different way. I particularly recollect that the question was an open one between us, and from the whole tenor of the conversation I had every reason to believe that it was then first brought to Barnard's mind by my general conversation and that he was in as much doubt as I was as to how the liquid would act under such circumstances. He was, however, inclined to believe that it would rotate, and I at once directed him to improvise a chamber with a watch-crystal with tangential inlet and outlet at the periphery, so that the motion of the water could be seen and the question decided. The first aim was to ascertain how the water would act within the chamber, and, second, how it would act in issuing from the chamber. This experiment was performed by Barnard in pursuance of my direction and in accordance with my general plan as to the glass and the inlet and outlet orifices. The result of the experiment showed a very decided eddy or cyclone motion of the water within the chamber, and I at once realized that important results would follow, and took steps in my instructions to Barnard to have the experiments continued in order to ascertain how the water would act in different kinds of chambers and with different kinds of outlets.

Professor Riley has also submitted the affidavit of L. O. Howard and also of E. A. Schwarz, neither of whom professes to have any knowledge as to who actually suggested the basic idea of this improvement.

In making application for a patent Barnard made this oath;

That he verily believes himself to be the original and first inventor of the improvement in fluid distributers described in the accompanying specification; that he does not know or believe that the same was ever before known or used; that the same has not been patented in any foreign country with his knowledge or consent; that the same has not been in public use or on sale in the United States for more than two years prior to this application, and that he is a citizen of the United States.

There is no distinct denial of the statements of this oath in the statements filed by Professor Riley. The vital parts of Professor Riley's two affidavits are these:

The principle involved was first conceived in September, 1880, in my discussions with said Barnard as to the best means of throwing a spray up from the ground, (affidavit of March 18, 1886;)

and—

the question of throwing a spray upward was then uppermost in my mind, and one evening, in discussion with Barnard, the question arose between us as to what would be the effect of forcing liquid tangentially into a chamber instead of having it forced outward through eccentric orifices. (Affidavit of April 14, 1886.)

Here, then, there is on one side a distinct statement under oath that Barnard was the inventor of the improvement in dispute and on the other side no distinct statement that he was not the inventor of the thing in dispute. On such evidence it must be held that Barnard originated the basic idea of the improvement in question.

The discussion of the questions as to Barnard's right to the practical development of that idea, of his right to take a patent for an invention made by him while he was an employé of the Government, and of the Government's rights in the premises because of expenses it may have defrayed in the same connection, had with reference to Barnard's application for patent filed May 31, 1882, decision whereupon is of even date herewith, is equally applicable to this case.

The issuance of this patent will not be stayed by reason of this protest.

EX PARTE HUNTER.

Decided June 2, 1892.

DIVISION—RULE 42.

Under Rule 42 when an application is divided the applicant will be required, so far as is practicable, to cancel all matter in the original specification, descriptive or otherwise, which has been eliminated therefrom by division, and when the drawings in the case admit of canceling such eliminated subject-matter such cancellation of the drawings will be required.

ON petition.

ELECTRIC RAILWAY.

Application of Rudolph M. Hunter filed September 4, 1890, No. 363,900.

Mr. R. M. Hunter pro se.

SIMONDS, *Commissioner:*

This is a petition asking that the Examiner be instructed to the effect that the above application is properly a division of a former application filed September 23, 1886, No. 214,309. The said original application illustrated, described, and claimed several subjects-matter of invention, among which were included suspended line conductors and double contact devices for engagement therewith. In all but one of the forms illustrated the contact devices were under running trolleys and served to raise the line conductors from the brackets on which they were normally supported. The exception does not figure in the present case and need not be considered.

In the original case both the line conductors and the contact devices in the overhead system were arranged one above the other in the same vertical plane, but in the conduit system the conductors and contact devices were shown as differently arranged. One of such forms is shown in Figure 4 of the drawings of the present case, except that the supporting-arm is so shown that it might be applied to either an overhead or a conduit system.

This application being directed solely to the overhead system, the Examiner holds that the device illustrated in Fig. 4 of the drawings is improperly included therein.

The Examiner's action would be correct if this application were to be treated as a division of the application filed September 23, 1886; but it is not a division thereof. For one thing, its new matter prevents it from being such a division. The Examiner's action should have been a requirement that the statement in the specification to the effect that this is a divisional application be canceled.

It is pertinent here to say that when an application for patent is divided the applicant will be required to cancel all matter in the original specification in the nature of a statement of invention equivalent to the claims eliminated by division. He will be required to cancel all words in the specification descriptive of the subject-matter eliminated by division when such cancellation is practicable; and when the drawings admit of canceling the subject-matter thus eliminated such cancellation of the drawings will be required. Such is the real meaning of Rule 42.

EX PARTE COVENTRY MACHINIST COMPANY, LIMITED.

Decided May 12, 1892.

TRADE-MARK—RULE 224—REFUNDING OF FEE.

The agent of a foreign corporation filed an application for the registration of a Trade-Mark used by the corporation, which was refused on the ground that he was not the exclusive owner. Subsequently the corporation by its proper officer filed its application as "exclusive owner." *Held*, upon a request for the refunding of the fee paid by Hill, as having been "paid by mistake," that the mistake, being one of law and not of fact, is not within Rule 224, and that Hill's application having been rejected on the merits he is not entitled to have the fee refunded.

IN the matter of the request of the Coventry Machinist Company, Limited, for the return of the fee heretofore paid by Alick S. Hill on an application filed August 8, 1891, for the registration of a Trade-Mark.

FROTHINGHAM, *Assistant Commissioner:*

This is in substance a request for the return of the amount of the fee previously paid by Alick S. Hill on the above-mentioned application for the registration of a Trade-Mark which was refused registration on the ground that said Hill was not the exclusive owner of said mark.

It appears that subsequently to said refusal of the Office to register said mark the Coventry Machinist Company, Limited, filed an application for the same mark and has paid the usual fee in such cases. It further appears that a certificate of registration for said mark has been granted to said company. It is stated in the petition that Hill "was and is the agent and representative in the United States" of said company.

It is contended on behalf of the petitioner that the fee above referred to should be returned on the ground that the same was paid by mistake, as set forth in the following words:

There was apparently an innocent error in filing the original application to register this mark, in that the agent instead of the principal signed the paper, the former supposing that he was the proper person to sign for registration in the United States.

It is contended in support of the petition that to refuse to return the fee paid by Hill on his application, as requested, would be to take advantage of a technical error, in that it would be requiring a second fee to be paid for registering a single Trade-Mark to practically the same parties and in advance of any action implying that the mark would be registered. To this it is stated in reply that the mistake, if any, is a mistake of law and not one of fact, consisting of the agent thinking that he had the right to apply for and register the mark, when in fact his principal was the proper person to apply for and register such mark.

While it may be true that no examination of the application filed by Hill has been made with reference to prior registration, yet it is clear that the action of the Examiner in refusing him registration was an action on the merits, in that he held that Hill was not entitled to register the mark because he was not the owner of it as against the world.

To allow the fee paid by Hill to be returned, as requested, would simply lead to endless confusion in cases which are not different in principle from the present case.

The petition is denied.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

UNTERMEYER *v.* FREUND *et al.*

Decided April 18, 1892.

1. DESIGN PATENTS—INFRINGEMENT—ACT OF FEBRUARY 4, 1887, IS CONSTITUTIONAL.

The act of Congress (February 4, 1887) fixing a liability of $250 against every infringer of a Design patent is within the authority conferred by article 8, section 1, of the Constitution, and therefore valid.

2. SAME—ACT CONSTRUED.

The language of the act being "that hereafter, during the term of Letters Patent for a Design, it shall be unlawful," &c., makes no exception as to cases commenced before the approval of the act.

3. SAME—DAMAGES.

The act provides that an infringer shall be further liable for all profits in excess of $250 made from the sale "of the article or articles" to which the Design is applied. *Held*, that the court cannot limit damages to the profits due merely to the Design, but must take into account all profits made on the sale of the article made thereunder.

SUIT by Henry Untermeyer against Max Freund *et al.* for infringement of a patent. Heard on exceptions to the master's report. Overruled.

STATEMENT OF THE CASE.

This action was begun December 30, 1886, for the infringement of Letters Patent No. 15,121, granted to complainant July 1, 1884, for a Design for a watch-case. A decision sustaining the patent was filed January 15, 1889. (47 O. G., 527; 37 Fed. Rep., 342.) An interlocutory decree adjudging that the complainant recover damages and profits, "together with any penalty incurred," and referring it to a master to take the account, was entered January 24, 1889. On the 6th of May, 1891, the master filed his report, in which he found nominal damages, and no profits prior to February 4, 1887, the date of the act relating to Design patents. (24 Stats. at Large, 387.) He did find, however, that the complainant was entitled to recover $250 as provided by said act and the profits in excess of $250 since February 4, 1887, on each watch-case to which the Design was applied, amounting to $889.02. In brief, the master holds that the act of February, 1887, applies to this cause and under it the complainant is entitled to recover $250 and $889 02. If the act does not apply, the complainant, under the rule of the *Carpet Cases*, (31 O. G., 787; 114 U. S., 439; 5 Sup. Ct. Rep., 945; 35 O. G., 750; 118 U. S., 10; 6 Sup. Ct. Rep., 946,) would be entitled to nominal damages only.

The defendants filed exceptions to the report, and now urge the following propositions:

First. That the act of February, 1887, is unconstitutional because it imposes a penalty without due process of law, in contravention of article 3, section 2,

clause 8, of the Constitution, and also of the fifth, sixth, seventh, and eighth amendments.

Second. That the act does not apply, for the reason that this suit was commenced one month and five days before the act was approved.

Third. That Congress did not intend to change the rule as laid down in the Carpet Cases, the object of the act being to give the patentee $250 in every case and the profits in excess of that sum, if he can prove them under the rules established by the Supreme Court.

Mr. Rowland Cox for the complainant.

Mr. Frederic H. Betts and *Samuel R. Betts* for the defendants.

COXE, *D. J.:*

The act of 1887 is constitutional. Article 1, section 8, of the Constitution gives Congress the power—

to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

The practical result of the decision in *Dobson* v. *Carpet Co.* (31 O. G., 787; 114 U. S , 439; 5 Sup. Ct. Rep., 945, decided April 20, 1885) was to deprive the owner of a Design Patent of all redress against infringers. The attention of Congress being called to this condition of affairs, the act of 1887 was passed to remedy what seemed to the law-makers a gross injustice. Congress evidently thought that existing law was inadequate to secure to inventors of Designs the exclusive right to their discoveries. The two hundred and fifty dollars which the act permits the owner of the patent to recover is in the nature of a penalty, it is true; but so are the provisions permitting punitive damages in sections 4919 and 4921 of the Revised Statutes. It seems clear that Congress had power, under the constitutional provision quoted, to protect a meritorious inventor from the depredations of an intentional infringer even to the extent of designating a fixed sum which, at the expense of perfect accuracy, has frequently been denominated "liquidated damages." In other words, Congress had the power to say to the wrong-doer:

You have, with full knowledge of the patentee's rights, appropriated his property and caused him injury; hitherto you have escaped, because he could not show the extent of his loss. This shall not continue; we know he has suffered damage by your act and if you continue to use his property you must pay him at least two hundred and fifty dollars.

As the law existed prior to February 4, 1887, the inventor was remediless. It was the purpose of Congress to afford him some relief, and nothing short of the provisions of the act in question seemed adequate for this purpose. But even though the court should entertain doubt upon the question of constitutionality it would still be its duty to resolve the doubt in favor of the validity of the law. In this connection it may not be inappropriate to quote the language used when a similar argument was addressed to this Court. In *Sarony* v. *Lithographic Co.* (17 Fed. Rep., 591) it was said:

The Court should hesitate long and be convinced beyond a reasonable doubt before pronouncing the invalidity of an act of Congress. The argument should amount almost to a demonstration. If doubt exists, the act should be sustained. The presumption is in favor of its validity. This has long been the rule—a rule applicable to all tribunals, and particularly to courts sitting at *nisi prius*. Were it otherwise endless complications would result, and a law which, in one circuit, was declared unconstitutional and void, might, in another, be enforced as valid.

The point that the act of 1887 does not apply because the action was commenced before the approval of the act is not well taken. The language of the first section is unmistakable. It says—

that hereafter, during the term of Letters Patent for a Design, it shall be unlawful, etc.

There is no exception regarding existing suits. As plainly as language can state it Congress has declared that after February 4, 1887, the provisions of the act shall apply to patents for Designs. The master has carefully restricted the recovery to infringements occurring after the approval of the act. The defendants have no valid complaint in this regard.

The remaining question relates to the proper construction of the act. It is argued that it was not the intention of Congress to give to the owner of a Design patent the entire profits made from the manufacture or sale of the article to which the Design has been unlawfully applied. That the act says that the owner is entitled to these profits cannot be denied. There is no ambiguity in the language employed; but it is urged that the court is at liberty to place a construction upon the act which will prevent results thought to be unjust and absurd. The act provides:

And in case the total profit made by him [the infringer] from the manufacture or sale, as aforesaid, of the article or articles to which the Design, or colorable imitation thereof, has been applied exceeds the sum of two hundred and fifty dollars, he shall be further liable for the excess of such profit over and above the said sum of two hundred and fifty dollars.

Nothing can be plainer than this. It is the profit on the sale of the article for which the infringer must account, and not alone the profit which can be demonstrated as due to the Design. Having ascertained what the law means, the duty of the court seems clear. It must be enforced. Whether the law is wise or unwise is not a question for the court. Arguments of this character should be addressed to the legislative and not to the judicial branch of the Government. Discussion might well stop the moment the plain meaning of the law is ascertained.

But if we go a step farther and examine the situation at the time the law was passed the conclusion cannot be resisted that the law says precisely what Congress intended to say and accomplishes precisely what Congress intended to accomplish—no more and no less. As has been seen, the task to which the law-makers were addressing themselves was to find some remedy for a consummated infringement. Without legislation the rights of owners of Design patents were null. If the recovery against infringers were confined to profits due to the Design, the patentee was without redress. It was to remedy this well-recognized evil that the act was passed. Is it likely that Congress expected to remedy the evil by re-enacting the precise rule of damage which produced the evil? If it were intended that the profits should be confined to the value imparted by the Design, no legislation was necessary. The paragraph above quoted might well have been omitted. The report of the committee and the debates in Congress are all in consonance with this view. The precise objection now urged was sharply pointed out in Congress, and, with full and exact knowledge of the radical change which it would produce, the bill was passed.

Suppositive cases have been suggested for the purpose of showing how the act may produce unjust results, requiring the payment of large profits in no way due to the Design, but actually due to other and perhaps patented features. On the other hand, the hardship to the patentee of the situation as it existed prior to the act has been enlarged upon. With full knowledge of the situation pro and con Congress attempted to solve the problem. The act proceeds upon the idea that a willful infringer is not entitled to the same consideration as a meritorious inventor; that if one or the other must suffer it shall be he who by his wrongful act has produced the situation in which exact justice is impossible. By analogy to a well-known principle of equity the theory of the law seems to be that where an infringer intentionally appropriates the Design and so mixes up the patentee's profits with his own that it is impossible to apportion them the loss must fall upon the guilty and not upon the innocent party. The exceptions must be overruled and the report of the master confirmed. If the foregoing views are correct, it follows that the defendants must pay the master's fees. The master has done his work ably and well, and it is hoped that there will be no difficulty in arriving at a satisfactory compensation. Any difference on the subject may, perhaps, be adjusted by a reference to *Doughty* v. *Manufacturing Co.*, (8 Blatchf., 107.)

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 59—No. 13. TUESDAY, JUNE 28, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the inventors and manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Changes in Classification.

(ORDER No. 764.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 15, 1892.

The following changes are hereby directed in Division XXXII.

In Class 150, Packing and Storing Vessels, sub-class 179, Portfolios and Pocket-books, is abolished. The following sub-classes are established in the same class:

180. Pocket-book holders.
181. Pocket-books.
182. Pocket-book fasteners and frames.
183. Portfolios.
184. Portfolios, rolls.
185. Purses.

In Class 40, Advertising, the following sub-classes are abolished:

2. Automatic devices.
19. Counters and shelves.
5. Door and drawer plates.
6. Dummies and hangers.
18. Indicators, time.
11. Picture-exhibitors.
12. Show boxes and cards.
16. Show stands and racks.

The following sub classes are established in the same class:

18. Card-exhibitors—
19. Droppers,
20. Rotary,
21. Sliding.
22. Change-receivers.
23. Coat-hangers.
24. Counters.
25. Display-box covers.
26. Display-boxes—
27. Sample-holders.
28. Display-cards.
29. Display-racks—
30. Adjustable arm,
31. Enclosed,
32. Hanging,
33. Roll,
34. Rope,
35. Rotary—
36. Enclosed,
37. Sample-sheet—
38. Rotary.
39. Display-stands.
40. Display-trays.
41. Drawer-plates.
42. Dummies.
43. Embroidery-cases.
44. Garment-loops.
Indicators—
45. Barbers' turns,
46. Identity,
47. Office,
Indicators—
48. Peg,
49. Rotary,
50. Sliding.
51. Paper-bag holders.
52. Pattern exhibitors.
Show-cases—
53. Cabinet,
54. Revolving,
55. Lid-lifters.
56. Sign-letters.
Signs—
57. Automatic figure,
58. Belt,
59. Endless-belt,
60. Guide-post.
61. Illuminated,
62. Interchangeable-letter—
63. Slide,
64. Mechanically-rotated,
65. Rotatable,
66. Street-lamp,
67. Vibrating.
68. Store-shelving.
69. Trousers hangers.
70. Vending devices—
71. Bins,
72. Grocers' cabinets,
73. Ribbon holders,
74. Spool-cabinets.

The sub-class Lard-Coolers is transferred from Class 87, Oils, Fats, and Glue, Division XXXI, to Class 62, Refrigeration, Division XXVIII.

W. E. SIMONDS,
Commissioner.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Copies of Decisions Furnished.

Hereafter an uncertified copy of every decision or action by any tribunal in this Office will be furnished by such tribunal to the interested party or parties without charge.

This order does not include the written statements of the grounds of decisions made by Examiners to the appellate tribunal in *ex parte* cases.

Issue of June 28, 1892.

Patents	444	No. 477,631 to No. 478,074, inclusive.
Designs	20	No. 21,655 to No. 21,674, inclusive.
Trade-Marks	45	No. 21,354 to No. 21,398, inclusive.
Labels	None.	
Reissues	3	No. 11,250 to No. 11,252, inclusive.
Total issue	512	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nevada	....	....
Arizona Territory	....	....	New Hampshire	2	1
Arkansas	2	....	New Jersey	23	2
California	10	1	New Mexico Territ'y	1	....
Colorado	7	....	New York	70	4
Connecticut	23	1	North Carolina	....	....
Delaware	2	....	North Dakota	....	....
District of Columbia	3	....	Ohio	23	3
Florida	....	....	Oregon	3	....
Georgia	3	1	Pennsylvania	55	2
Idaho	....	....	Rhode Island	5	....
Illinois	42	7	South Carolina	1	....
Indian Territory	1	....	South Dakota	1	....
Indiana	16	....	Tennessee	4	2
Iowa	5	1	Texas	5	....
Kansas	4	....	Utah Territory	1	....
Kentucky	7	....	Vermont	2	....
Louisiana	3	....	Virginia	3	1
Maine	4	1	Washington	2	1
Maryland	4	2	West Virginia	1	....
Massachusetts	38	4	Wisconsin	9	1
Michigan	14	1	Wyoming	....	....
Minnesota	7	....	U. S. Army	....	....
Mississippi	....	....	U. S. Navy	1	....
Missouri	10	1			
Montana	....	....	Total to citizens of the United States	434	37
Nebraska	1	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	2	....	Netherlands	....	....
Barbadoes	....	....	Newfoundland	....	....
Belgium	1	1	New South Wales	....	....
Bermuda	....	....	New Zealand	....	....
Brazil	....	....	Norway	....	....
Canada	4	....	Queensland	....	....
Chile, Republic of	....	....	Roumania	....	....
Cuba	....	....	Russia	....	....
Denmark	....	....	Scotland	....	2
Egypt	....	....	South Australia	....	....
Ecuador	....	....	Spain	....	....
England	10	4	Sweden	....	....
France	2	1	Switzerland	1	....
Germany	9	....	Victoria	....	....
Guatemala	....	....	West Australia	....	....
Italy	....	....			
Ireland	1	....	Total to citizens of foreign countries	30	8
Japan	....	....			

APPLICATIONS UNDER EXAMINATION.

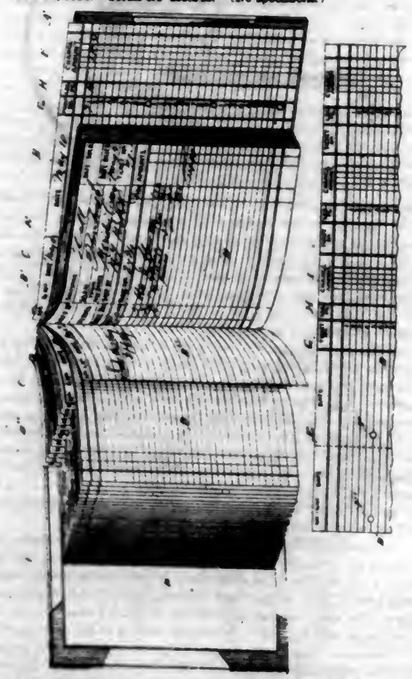
Condition at Close of Business June 21, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	May 7	June 20	201
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	May 5	June 11	131
7	Harvesters, Games and Toys	Apr. 25	June 10	251
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Apr. 23	June 7	217
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Apr. 29	June 4	183
5	Fine Arts, Stationery, Book-Binding, Music, etc.	May 2	June 2	232
	Between two and three months in arrears.			
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Apr. 6	June 20	125
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Apr. 12	June 17	190
18	Steam-Engineering, etc	Mar. 24	June 14	274
17	Paper-Manufactures and Printing.	Apr. 13	June 11	201
2	Farm Stock, Products, etc	Apr. 7	June 9	291
24	Sewing-Machines and Apparel	Mar. 29	June 9	100
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Mar. 21	June 9	271
23	Instruments of Precision, Acoustics, Optics, etc.	Apr. 5	June 9	278
12	Mechanical Engineering, Stores-Service, etc.	Apr. 12	June 7	215
21	Textiles, etc	Apr. 5	June 4	217
8	Furniture, Toilet, Umbrellas and Canes, etc.	Apr. 12	June 2	382
10	Carriages and Wagons and Railway-Cars.	Mar. 30	June 1	637
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Mar. 24	May 28	199
22	Fire-Arms, Navigation, Signals, etc.	Apr. 4	May 25	208
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Apr. 1	May 25	188
9	Hydraulics, Fire-Extinguishers, etc.	Mar. 21	May 25	375
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Mar. 21	May 23	322
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Mar. 26	Apr. 30	396
1	Tillage and Fences	Mar. 31	Apr. 15	385
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Mar. 1	May 16	334
4	Civil Engineering, etc	Mar. 18	May 9	463
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Mar. 10	May 9	387
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Feb. 20	June 1	479
26	Electricity, Generation, Distribution, etc.	Jan. 28	May 26	347
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Feb. 9	Apr. 15	394
19	Stoves and Furnaces	Feb. 19	Mar. 22	359
	Total number of applications awaiting action			9,222
	Under one month in arrears.			
	Designs	June 16	June 16	21
	Trade-Marks	June 18	June 21	26

PATENTS

GRANTED JUNE 28, 1892.

477,631. ACCOUNT-BOOK. JAMES E. ARMS, Boston, Mass. Filed Feb. 29, 1892. Serial No. 423,343. (No specimens.)



Claim.—1. The herein-described interleaf, comprising a footing and posting sheet provided with means for its separation into two or more parts and adapted to be temporarily or permanently bound with sales-sheets herein described, in a manner to extend beyond said sheets and expose its lettered headings and figure-columns, substantially as specified.

2. In combination with an order-book, substantially as hereinbefore described, an interleaf footing and posting sheet adapted to be divided into two parts, one of said parts bearing marginal daily dates on both sides for ready reference while bound, the second part bearing on its face the "Daily date," "Ticket No.," "Ledger page," and "Charge amount," adapted to be perpetually exposed for reference while bound and before division, as specified.

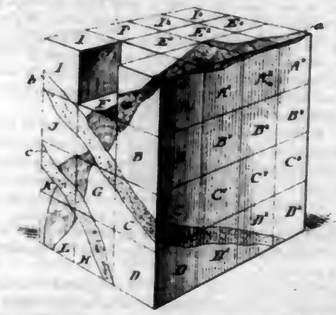
3. In combination with a binder and sales-sheets, a footing and posting sheet provided with printed margins and headings, as previously described, adapted in its integral form as an interleaf and after division for use as a reference and a stub-book, as set forth.

4. An interleaf combining a stub sheet B', a footing and a posting sheet B, the former sheet provided with duplicate headings C, printed on its top margins, the latter sheet having three or more headings "G" "H" "I" duplicated over footing columns, said interleaf further provided with a perforated line E for its division into two parts B' B, each of said parts provided with duplex perforations F' F to receive a spindle when binding into separate parts, the integral interleaf designed, arranged, and adapted to be employed in combination with the ordinary binders in commercial use, substantially in the manner and for the purpose specified.

477,632. COMPOSITION OF MATTER FOR BRICKS. ARMORE S. BAKER, Sandy Creek, N. Y., assignor of one-half to George J. Woodard, same place. Filed Nov. 12, 1891. Serial No. 411,737. (No specimens.)

Claim.—A composition of matter for bricks, composed of gravel and sand, Portland cement, pulverized iron ore, salt, and graphite, combined in substantially the proportions specified.

477,633. APPARATUS FOR ILLUSTRATING GEOLOGICAL FORMATIONS. DANIEL M. BARRINGER, Philadelphia, Pa. Filed June 15, 1891. Serial No. 396,284. (No model.)



Claim.—The combination of a series of uniform blocks having upon their respective sides the outlines of successive sections of given geological formation, substantially as set forth.

477,634. HITCHING DEVICE. CHARLES BEILE, Chicago, Ill. Filed Jan. 7, 1891. Serial No. 376,943. (No model.)

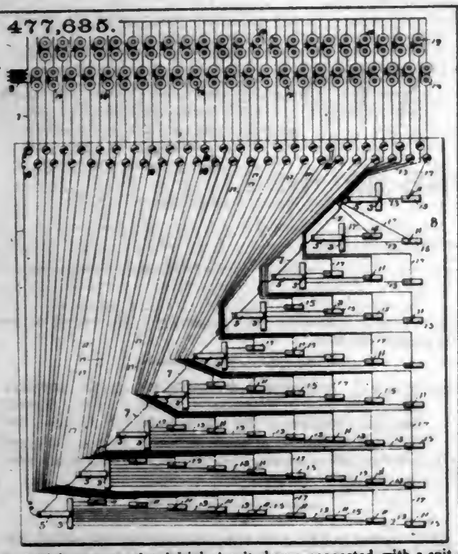


Claim.—The combination, with a cylindrical casing having movable heads and a bolt passing axially therethrough and binding the members of said casing together, of a spool loosely journaled upon said bolt, a strap wound upon said spool, having one end secured thereto and the other end working through an opening in the casing, a spring secured at its ends, respectively, to one end of said spool and the casing, a ratchet-wheel secured to the other end of said spool, and a dog pivoted in the casing and provided with an external thumb-piece for causing the engagement of the dog with the ratchet-wheel, substantially as described.

477,635. ELECTRICAL KEYBOARD. WILLIAM E. BLODGETT, Faribault, Minn. Filed Mar. 17, 1890. Serial No. 344,074. (No model.)

Claim.—1. The combination, with a series of keys or levers, of

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an initial contact-point, initial circuit-closers connected with a suitable battery and adapted to be brought in contact with said initial contact-point by the operation of one of said keys or levers, secondary contact-points for each of said other keys or levers, all connected with said initial contact-point, secondary circuit-closers adapted to be brought in contact with said secondary contact-points by operating said keys or levers, and independent partial electrical circuits connected with said secondary circuit-closers and each having a battery connection, substantially as described.

2. The combination, with a series of keys or levers, of a series of initial contact-points for each of said keys, except one, a corresponding initial circuit-closer for each of said initial contacts, a battery connection for each of said initial circuit-closers, secondary contact-points for each of the other keys, connected with each of said initial contact-points, secondary circuit-closers for each of said secondary contact-points, and partial independent electrical circuits connected with said secondary circuit-closers and each having a battery connection, for the purpose set forth.

3. The combination, with a series of independent electrical circuits, each having two breaks therein, of initial and secondary circuit-closers adapted to close said breaks, battery connection for each of said initial circuit-closers, and independent partial electrical circuits, each having a battery connection and each connected to one of said secondary circuit-closers, for the purpose set forth.

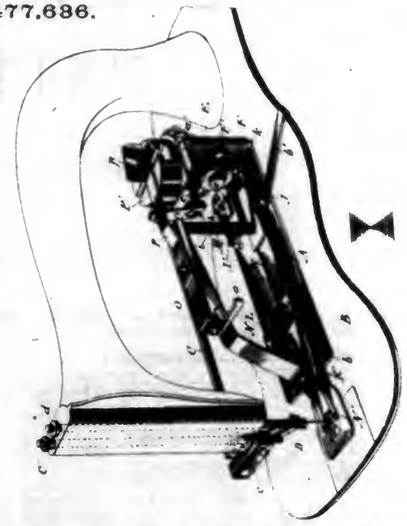
4. The combination, with a series of independent electrical circuits, each having two breaks therein, of initial and secondary circuit-closers adapted to close said breaks, battery connection for each of said initial circuit-closers, independent partial electrical circuits, each having a battery connection and each connected to one of said secondary circuit-closers, magnets in said partial circuits, an independent series of magnets, and a switch arranged to cut out one set of magnets and connect the other set with said partial circuits, for the purpose set forth.

477,686. TACKING ATTACHMENT FOR SEWING-MACHINES. JOHN W. BLODGETT, Chicago, Ill., assignor to himself and the Abbott Machine Company, same place. Filed Apr. 13, 1891. Serial No. 388,662. (No model.)

Claim.—1. The combination, with a base-plate A, of a transversely-sliding plate F, means for actuating the latter, a swinging lever K, having at its outer end a cloth-plate K', a cloth-plate N', means for longitudinally reciprocating the swinging lever and cloth-plates, a guide *l*, constituting a pivot for the swinging lever between its ends, devices for adjusting the guide along the swinging lever to vary its pivotal point, a lever H, having an adjustable pivotal connection with the transversely sliding plate, a lever J, pivoted to the base-plate and provided with an adjustably-pivoted guide *k* for the inner end of the swinging lever, and a connecting-link *j* between the levers H and J, substantially as described.

2. The combination, with a base-plate A, having an upright portion *a*, provided with a bolt *c*, of a transversely-sliding plate F, guided by the said bolt, means for actuating the sliding plate, a swinging lever K, having at its outer end a cloth-plate K', a cloth-plate N', means for

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longitudinally reciprocating the swinging lever and the cloth-plates, a pivotal bearing for the swinging lever between its ends, devices for adjusting the pivotal bearing to vary the pivotal point of the swinging lever, a pivoted lever H, an arm *h*, secured to the transversely-sliding plate and adjustably pivoted to the lever H, a lever J, pivoted to the base-plate and provided with a guide *k*, in which moves the inner end of the swinging lever K, and a link *j*, connecting the levers H and J, substantially as described.

3. The combination of a base-plate A, a transversely-sliding plate F, devices for actuating the sliding plate, a swinging lever K, having at its outer end a cloth-plate K', a cloth-plate N', mechanism for longitudinally reciprocating the swinging lever and the cloth-plates, a pivot-bearing *l* for the swinging lever between its ends, means for adjusting the pivot-bearing to vary the pivotal point of the swinging lever, a lever H, pivoted to the base-plate and connected with the transversely-sliding plate, a lever J, pivoted intermediate its ends to the base-plate and provided with a guide *k* for the inner end of the swinging lever, a connecting-link *j*, and means for varying the extent of each movement of the two levers H and J, substantially as described.

4. The combination of a base-plate A, a transversely-sliding plate F, means for actuating the sliding plate, a swinging lever K, having at its end a cloth-plate K', a cloth-plate N', an intermittently-rotating clutch-head P', a vibrating clutch-operating lever R, clutch connections between the clutch-operating lever and the clutch-head, a rock-shaft C, having an arm S, a link *r*, connecting the arm of the rock-shaft with the clutch-operating lever, a pitman P, connected with the swinging lever and adjustably engaged with the clutch-head, and connections between the transversely-sliding plate and the swinging lever, substantially as described.

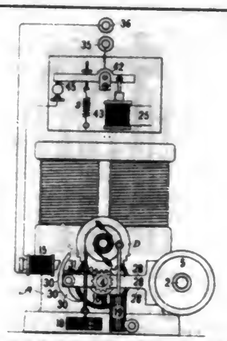
5. The combination of a base-plate A, a transversely-sliding plate F, a swinging lever K, having a cloth-plate K', a cloth-plate N', means for longitudinally reciprocating the swinging lever and the cloth-plates, connections between the inner end of the swinging lever and the transversely-sliding plate, a rotating cam-wheel E, acting on the sliding plate and provided with a ratchet-wheel E', a rock-shaft C, having an arm C', provided with a pawl *c'* to engage the ratchet-wheel and rotate the cam-wheel, and means for rocking the rock-shaft, substantially as described.

477,687. ELECTRIC REGULATING APPARATUS. JULIUS M. BRADFORD, Portland, Me. Filed Sept. 29, 1890. Serial No. 366,606. (No model.)

Claim.—1. In a current-regulator, the combination of a brush-shifter or current-varying device, regulating devices arranged to move said brush shifter in one direction, mechanism responsive to incipient increase and decrease of line-current for controlling said regulating devices, a traction device attached to said brush-shifter to move it in the opposite direction, and auxiliary means operating independently of variations of line-current to cause said brush-lifter to be moved progressively to positions where sufficient current will be taken up.

2. In a current-regulator, the combination of a current-varying device, regulating devices arranged to move said current-varying device in one direction, an electro-magnet and local circuit to control

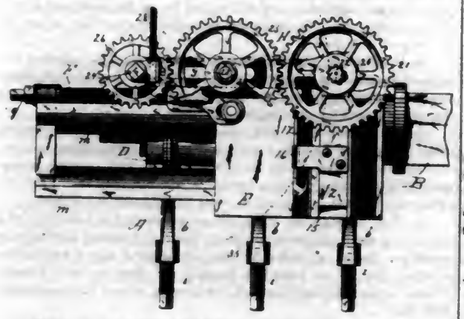
477,687.



said regulating devices, a line-current indicator to break and close local circuit, a traction device attached to said current-varying device to move it in the opposite direction, and driving-eccentrics angularly arranged to cause said current-varying device to be moved progressively, thereby preventing development of variations of current in the line-circuit.

3. In an electric-current regulator, the combination of a friction-wheel, regulating devices in constant contact with said friction-wheel, eccentrics and circuit-shifters operated by a driving-shaft, and electro-magnets and electric circuits to control said regulating devices through incipient increase of current, thereby causing said friction-wheel to move progressively.

477,688. MACHINE FOR FORMING LUBRICATOR-GROOVES IN VEHICLE-AXLES. CHARLES W. BREWER, Cambridge, Mass., assignor, by direct and mesne assignments, to the Brewer Longitudinal Axle Lubricator Company, Portland, Me. Filed Apr. 14, 1891. Serial No. 388,887. (No model.)



Claim.—1. In a device for forming lubricating-grooves in vehicle-axles, the combination of a clamp adapted to be secured to an axle, a carriage longitudinally adjustable thereon, a frame mounted in vertical ways on said carriage and carrying a rotary cutter, and driving mechanism for actuating said cutter, the said frame, cutter, and driving mechanism being vertically adjustable on the carriage, substantially as described.

2. In a device of the character described, a body attachable to the axle-journal, in combination with a carriage adjustable longitudinally on said body, a horizontally-arranged rotary shaft vertically adjustable on said carriage and bearing a cutter-wheel and pinion, crank-actuated gears for driving said shaft, and a large gear detachably mounted on the crank-shaft and meshing with said pinion for speeding the cutter-shaft, substantially as specified.

3. In a device of the character described, a body comprising a series of loops for encircling the axle-journal, a screw-actuated cradle for clamping said journal to said loop, a screw-actuated carriage fitted to travel longitudinally in ways on said loops, a shaft-bracket adjustable vertically on said carriage, a crank cutter-shaft mounted in said bracket, and a rotary cutter-wheel on said shaft, all being combined and arranged to operate substantially as described.

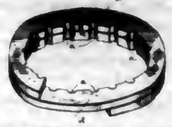
4. In a device for forming lubricating-grooves in vehicle-axles, the combination, with the cutter-wheel, of a gage comprising an eccentrically-shaped disk adjustably mounted on the hub of said wheel, substantially as described.

5. In a device of the character described, the clamping-body A and detachable guide-plate C, in combination with the carriage E and actuating mechanism, the rotary cutter-shaft vertically adjustable on said carriage, and actuating mechanism for said shaft, substantially as described.

6. In a device of the character described, the body A, comprising the loops *b* and screw-actuated clamping-cradle D, in combination with the detachable slotted guide-plate C, arranged substantially as set forth.

7. In a device of the character described, the clamping-body and detachable guide-plate, in combination with the screw-actuated carriage fitted to slide on said body, the screw-actuated plate *z*, fitted to slide vertically on said carriage, the bracket H, mounted on said carriage and bearing intermeshing gears, the rotary shaft 19, journaled in bearings secured to said bracket, and the rotary cutter *g*, mounted on said shaft, substantially as described.

477,689. AXLE-WASHER. NELSON M. BRINKERHOFF, Bloomville, Ohio. Filed July 8, 1891. Serial No. 398,787. (No model.)



Claim.—1. An adjustable wooden axle-washer closely fitting the spindle and having a receptacle opening onto the spindle to collect foreign accumulations, substantially as set forth.

2. In an adjustable axle-washer, a spirally-arranged wooden strip provided around its entire inner periphery with a series of grooves or notches for collecting and retaining accumulations of oil or dirt within the hub and on the axle-spindle, substantially as and for the purpose set forth.

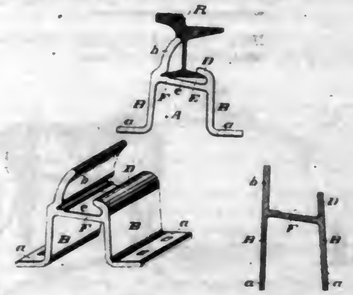
477,640. STEAM-JOINT PACKING. JOHN G. BROMAN, Chicago, Ill. Filed Dec. 22, 1890. Renewed Feb. 20, 1892. Serial No. 422,195. (No model.)



Claim.—1. The packing for steam and other joints, consisting of the inclosing soft metal, having ridges *c*, and a twisted fibrous asbestus filling, substantially as set forth.

2. The packing for steam and other joints, consisting of an inclosing tube having ridges *c* at either side and an elastic filling, substantially as set forth.

477,641. BRACE-CHAIR FOR RAILROAD-RAILS. WILLIAM M. BROWN, Johnstown, Pa., assignor to the Johnson Company, same place. Filed Feb. 20, 1890. Serial No. 341,122. (No model.)



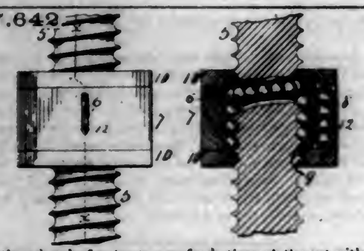
Claim.—1. A box-chair for girder-rails, provided with a side rail-brace, an inclined floor, and a wedge-shaped piece, as E.

2. A box-chair for girder-rails, provided with a side brace, as *b*, a side clip, as D, an inclined floor, as F, and a wedge-shaped piece, as E, as and for the purposes set forth.

477,642. BALL-BEARING FOR SCREW-NUTS. CHARLES E. BRUSTMAYER, Washington, D. C. Filed Sept. 19, 1891. Serial No. 406,224. (No model.)

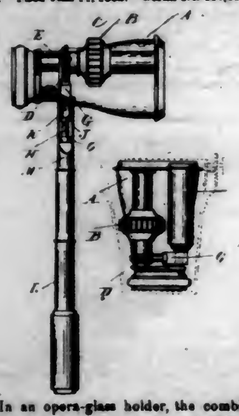
Claim.—The combination of a screw-threaded nut, a screw of

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similar thread and of a size to pass freely through the nut without engaging the threads, and a series of balls fitting the spaces between the threads of the screw and nut, the said nut being provided with a return-passage for the balls and with plow-pointed lips extending from the wall of the passage between the threads of the screw, substantially as described, whereby the further passage of the balls along the screw-thread is interrupted and the balls are wedged radially away from the body of the screw and deflected into the return-passage.

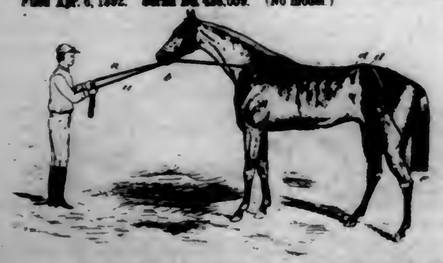
477,643. OPERA-GLASS HOLDER. ADOLPH W. BUCHBINDER, Jr., Detroit, Mich. Filed Jan. 11, 1892. Serial No. 417,854. (No model.)



Claim.—1. In an opera-glass holder, the combination, with an extensible handle, of an attaching device, a longitudinally-movable hinged connection between the handle and the attaching device, and a lock for the hinge, substantially as described.

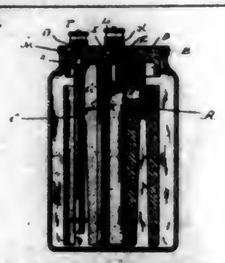
2. In an opera-glass holder, the combination, with an extensible handle, of an attaching device, a hinged connection between the handle and the attaching device, and a lock for the hinge, formed by the upper section of the handle, substantially as described.

477,644. HALTER. ALFRED E. CHAMBERS, Jr., Petersburg, Ky. Filed Apr. 6, 1892. Serial No. 428,059. (No model.)



Claim.—A halter for horses, consisting of a suitable headstall, and a strap or rope *a*, passing through rings *b* of said headstall, and a chain *c* for extending under the buttock of the horse, and cross-straps *d d* for connecting the ends of strap or rope *c* with the ends of the chain *c*, substantially as described.

477,645. BATTERY. WILLIAM A. CHILDS, Englewood, N. J., assignor of one-half to Frank Shaw, New York, N. Y. Filed Dec. 27, 1888. Serial No. 294,776. (No model.)



Claim.—1. In a battery, a metal screw bolt or rod having a carbon head, said bolt or rod passing upward through an opening in the negative element and through the battery-cover.

2. In a battery, the combination, with the negative element, of a rod E, integral throughout and passing through a perforation or opening at the top of said element and through the cover-plate, an attached head or enlargement which seats against the carbon element when the rod is raised, a clamping-nut K, engaging with the rod at its outer end outside the battery and adapted to raise the element and other parts connected with the rod tightly against the lower surface of the cover-plate, and a supplemental clamping-nut L for clamping the battery-wire, as and for the purpose described.

3. In a battery, the combination, with a battery element, of a supporting rod or bolt having a non-corrodible head attached to and removable with the rod, as and for the purpose described.

4. In a battery, a metal supporting-bolt having a carbon head and passing up through the negative element of the battery-cover, in combination with a tightening-nut on the outside of the cover, as and for the purpose described.

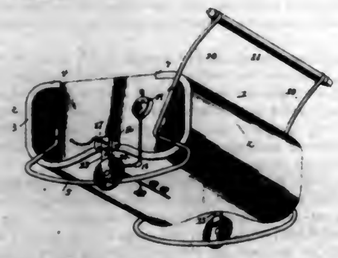
5. The combination, with the negative or carbon element, of a metal supporting-rod seated in a vertical opening in the paraffined carbon and having a projection upon its lower end engaging with the carbon and protected against corrosion, a perforated battery-cover, a tightening-nut applied to said rod on the top of the cover, and a protecting elastic washer between the cover and the element, as and for the purpose described.

6. In a battery, the combination, with the negative element, of a supporting metal rod seated in a mass of carbon treated with paraffine, a perforated battery-cover, and a washer surrounding said rod beneath the cover, as and for the purpose described.

7. The combination, with the carbon element, of a supporting metal rod passing through a vertical opening in said element and surrounded at its lower end by carbon saturated with paraffine, a supporting battery-cover, and a washer surrounding the said metal rod between the lower surface of the cover and the battery element.

8. The combination, with the carbon element in a battery, of a supporting metal rod protected at its lower end against corrosion by paraffined carbon, a perforated supporting-plate, and a washer surrounding the rod, as described, beneath the plate, so as to be compressed against the same around the opening, as and for the purpose described.

477,646. WASHING-MACHINE. WILLIAM R. CHISHAM and SAMUEL R. ABBOTT, Hannibal, Mo. Filed June 12, 1891. Serial No. 396,001. (No model.)



Claim.—1. In a washing-machine, the combination of the body comprising the sides having their lower edges convexly curved at the ends and concavely curved at the middle and the sheet-metal bottom secured to the edges of the sides and conforming to the configuration of the same and being convexly curved at the ends and concavely curved at the middle, the rockers secured to and supporting the body, the reservoir located on one side of the body, and the burners arranged beneath the bottom and communicating with the reservoir, substantially as described.

2. The combination of the body, the rockers supporting the body, the plates secured to the body and provided with sockets, the standards adjustably secured in the sockets, and the rollers arranged at the lower ends of the standards and adapted to be adjusted below the rockers, substantially as described.

477,647. NON-CONDUCTING COVERING FOR STEAM-PIPES, &c. BENJAMIN J. CHESTER, Leadville, Colo. Filed Feb. 19, 1892. Serial No. 422,161. (No specimens.)

Claim.—The above-described composition of matter to be used for covering steam-pipes, boilers, T-joints, elbows, valves, domes of boilers, and other vessels for generating, holding, and carrying steam to prevent the escape or waste of heat, which composition consists of water, cotton-dust, or refuse from cotton-mills, fire-clay, sawdust, plaster-of-paris, alum, flaxseed, and rusty water in the proportions specified above.

477,648. COMBINED WAIST AND SUSPENDERS. HARRIET M. CLARK, Flushing, N. Y. Filed Apr. 4, 1892. Serial No. 427,611. (No model.)

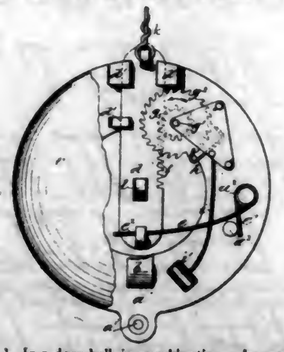


Claim.—1. The garment having straps attached thereto at the shoulders and extending down the back, where they are provided with attaching means, in combination with the elastic M-shaped suspenders having means for attaching one of the upwardly-extending folds to the strap extending from one shoulder only and the other fold to the other shoulder-strap and means for attaching the two downwardly-extending ends and the middle fold to the nether garment, substantially as described.

2. The garment having shoulder-straps attached and extending down the back, as described, and provided at the lower ends with tabs and buttons, in combination with the M-shaped elastic suspenders having loops at the two upper folds, through which the said tabs extend, said suspenders having means for attaching the two pendent ends and the pendent middle fold to the nether garment, substantially as described.

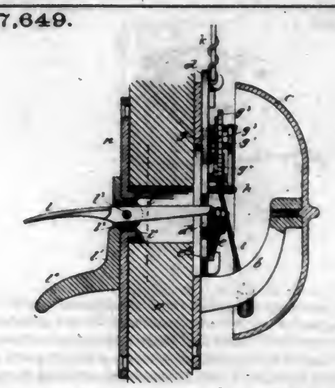
3. The shirt-waist described, having attached inside shoulder-straps extending down the back, provided with tabs, as described, and having holes below said shoulder-straps for the passage of the suspenders, in combination with the M-shaped suspenders connected at their upper folds to said tabs and having their lower ends and folds extending through the holes in the shirt and provided with means for attachment to a nether garment, substantially as described.

477,649. GONG DOOR-BELL. JOHN P. CONNELL, Kensington, Conn. Filed June 7, 1890. Serial No. 354,845. (No model.)



Claim.—1. In a door-bell, in combination, a base-piece, a reciprocating slide attached to the base-piece and provided with a rack, the mainspring *e*, operating to retract the slide, a cog-wheel of the bell-operating mechanism borne on an arbor secured at the base and in engagement with the rack, the ratchet-wheel g^3, secured to the

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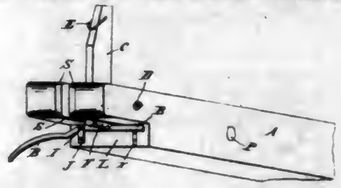


cog-wheel and with its teeth in engagement with the spring-pawl g^4, the spring-pawl g^4, the ratchet-wheel g^3, fast to the shaft, with its teeth in engagement with a pallet, the pallet rigidly connected with the swinging hammer *i*, secured to the base, and means for withdrawing the slide, all substantially as described.

2. In a gong-bell, in combination with a reciprocating slide in operative engagement with the hammer-operating mechanism, a base-piece, and a thumb-lever fulcrumed on the base-piece, which has an integral finger-hold and with one end in operative engagement with the slide, all substantially as described.

3. In combination with a gong-bell, the hammer-operating mechanism located within the gong, a latch-plate adapted to be secured to a door, the base-piece secured to the latch-plate and having an integral finger-hold, the clamping-piece *h* for securing the base-piece to the latch-plate, and the thumb-lever pivoted in the base-piece and with one end in engagement with the slide of the hammer-operating mechanism, all substantially as described.

477,650. BOLSTER-STANDARD. LUDLOW G. COOK, Minneapolis, Minn. Filed Mar. 2, 1891. Serial No. 383,497. (No model.)



Claim.—1. The combination, with the bolster having the slotted end, of a stake or standard pivoted therein and adapted to swing in a plane parallel with said bolster, a lever having an end arranged transversely with respect to the bolster and arranged to engage the lower end of said standard, and said lever adapted to be moved out of engagement therewith to allow said stake to be swung down, substantially as described.

2. The combination, with the slotted end of the bolster, of a stake C arranged therein, a bolt D for pivoting the same and passing transversely through the end of the bolster, said stake C provided with a lower end having ratchet-teeth F, and a locking device adapted to engage the same, whereby said stake may be locked in any desired position, substantially as described.

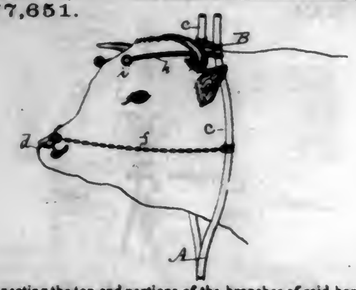
3. The combination, with the bolster, of a shoulder L thereof, the stake C, having its lower end provided with the ratchet-teeth F, said stake arranged in a vertical slot in the end of the bolster, a bolt D for pivoting said stake therein, the locking-lever B, pivoted on said shoulder, and said teeth adapted to stand below the upper surface of the bolster when the stake C is swung down, substantially as described.

477,651. ANIMAL-POKE. WILLIAM T. ELLIOT, Kent, Iowa. Filed Jan. 28, 1891. Serial No. 379,479. (No model.)

Claim.—1. An improved animal-poke comprising a forked bar, a cross-bar connecting the top-end portions of the branches of the said forked bar, chains attached to the central part of the said branches and connected with a ring, which is to connect with another ring in an animal's nose, to operate in the manner set forth, for the purposes stated.

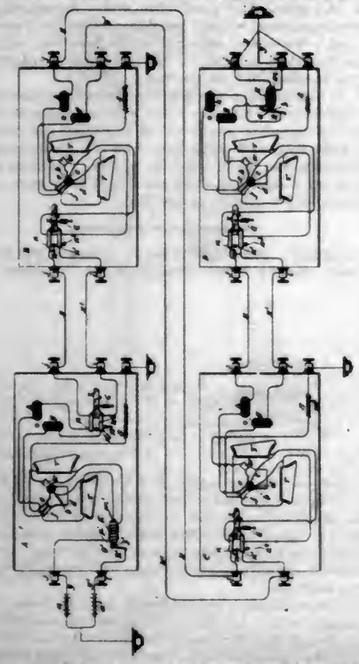
2. An improved animal-poke comprising a forked bar, a cross-bar

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for connecting the top-end portions of the branches of said bar, prongs or artificial horns fixed to the top portions of the said branches of the forked bar to project forward, and chains attached to the central parts of the said branches, connected with a ring, which ring is to connect with a ring in an animal's nose, arranged and combined to operate in the manner set forth.

477,652. WRITING-TELEGRAPH SYSTEM. HARRY BYRKBECK, Pittsburg, Pa., assignor to the Writing Telegraph Company, New York, N. Y. Filed Sept. 10, 1890. Serial No. 364,582. (No model.)



Claim.—1. The combination, with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of two automatically and consecutively acting circuit-closing means arranged one in each circuit for closing said two circuits, substantially as described.

2. In combination with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of two electro-magnets and armatures for closing said circuits, arranged one in one circuit at the first instrument and the other in the other circuit at the last instrument, and means at each instrument for temporarily grounding at said instrument one of said circuits, whereby the other circuit is automatically closed throughout, thus energizing its electro-magnet for closing automatically the first-named circuit throughout, substantially as described.

3. In combination with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of an electro-magnet and armature in each circuit, the armature of each magnet closing the other circuit from that in which the coil of the magnet is included, substantially as described.

4. In combination with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of an electro-magnet and armature therefor in each circuit, the armature and core of each magnet being included in the other circuit from that in which the coil of the magnet is included, substantially as described.

5. In combination with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of an electro-magnet and armature arranged with the coil of the magnet in one circuit and its core and armature in the other circuit, said core and armature provided with platinum contact-surfaces, substantially as described.

6. The combination, with two circuits normally broken, of an electro-magnet and armature in each circuit, the armature and core of each magnet arranged in the other circuit from that in which the coil of the magnet is included, substantially as described.

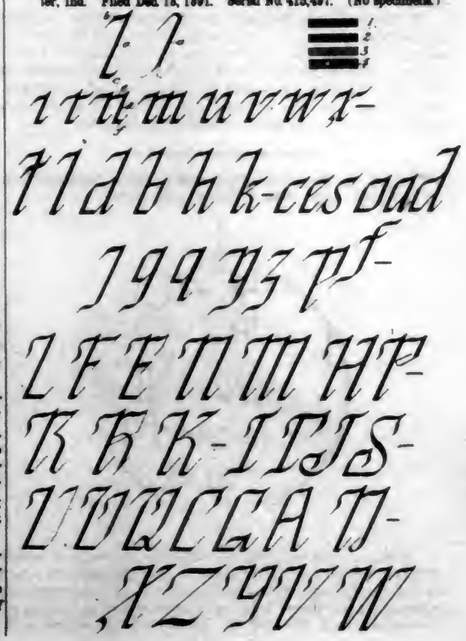
7. The combination, with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of two consecutively-acting circuit-closing means arranged one in each circuit for closing said two circuits, a separate grounded conductor located at each instrument and connectible with one of said two circuits, and connecting means for electrically connecting said conductor to said circuit, substantially as described.

8. The combination, with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of a number of separate grounded conductors located one at each instrument and connectible with one of said two circuits, each conductor provided with a resistance decreasing with the increase of the distance of its instrument from the battery, and connecting means for electrically connecting said conductors to said circuit, substantially as described.

9. The combination, with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of an electro-magnet and armature in each circuit, the armature of each magnet closing the other circuit from that in which the coil of the magnet is included, a separate grounded conductor located at each instrument and connectible with one of said two circuits, and connecting means for electrically connecting said conductor to said circuit, substantially as described.

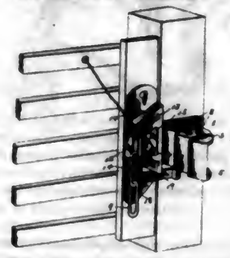
10. The combination, with a number of autographic-telegraph instruments arranged in series on two circuits, both of which are normally broken, of consecutively-acting circuit-closing means for closing said two circuits, and resistances, one for each instrument, decreasing with the increase of distance from the battery.

477,658. SYSTEM OF PENMANSHIP. HARVEY B. FULLER, Butler, Ind. Filed Dec. 18, 1891. Serial No. 415,497. (No specimens.)



Claim.—As a means of teaching penmanship, a book, page, or chart having letters or characters thereon shaded and hatched in part in various distinctive ways, whereby the number of portions, the relative positions of the shaded and hatched portions, and the beginning and ending of each part is indicated by the letters or characters themselves, substantially as set forth.

477,654. GATE-LATCH. ALLEN R. GRIMM, Port Royal, Ky. Filed Apr. 22, 1892. Serial No. 430,286. (No model.)



Claim.—1. A latch comprising a keeper provided with a vertically-disposed tooth, a casing, and a disk loosely mounted in the casing and capable of extension and retraction and adapted to engage the tooth, substantially as described.

2. A latch comprising a keeper provided with a series of vertically-disposed teeth or shoulders, a casing having an opening, and a disk loosely mounted in the casing and provided with a stud arranged in the opening, substantially as described.

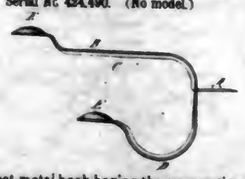
3. A latch comprising a keeper provided with a vertical tooth or shoulder, a casing, a disk loosely mounted in the casing and adapted to engage the tooth or shoulder, and a stop-plate having an arm arranged to engage the bottom of the keeper to prevent the disk being lifted out of engagement with the same, substantially as described.

4. A latch comprising a keeper provided with a vertical tooth or shoulder and having flanges provided with registering perforations, a casing, a disk loosely mounted in the casing and adapted to engage the tooth or shoulder, and a chain attached to the casing and adapted to be secured to the keeper by having the shackle of a lock passed through one of its links and the perforations of the flanges, substantially as described.

5. A latch having a keeper provided with a securing-plate having an opening in it, an eccentrically-arranged disk, and a screw passing through the disk at an eccentric point and through the opening of the keeper, substantially as described.

6. A latch comprising a keeper composed of a securing-plate having an opening, a ratchet-plate having teeth or shoulders and flanges connecting the plates, a casing provided with an opening, a disk loosely mounted in the casing and provided with a stud arranged in said opening, an eccentrically-arranged disk mounted on the keeper, and a screw passing through the disk and the opening of the keeper, substantially as described.

477,655. HOOK. HOWARD S. HART, New Britain, Conn. Filed Mar. 11, 1892. Serial No. 424,490. (No model.)

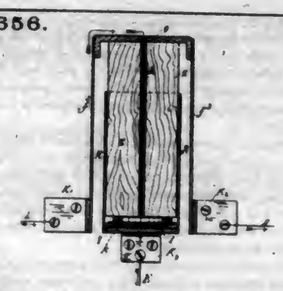


Claim.—A sheet-metal hook having the corrugation C, adapted to form, as described, the partially-rounded surface of a double-prong fastener A A, stamped out and integral with the hook-body, all substantially as and for the purpose specified.

477,656. LIGHTNING-ARRESTER. FREDERIC HASELWANDER, Frankfort, Germany. Filed Oct. 2, 1891. Serial No. 407,508. (No model.) Patented in Germany Oct. 15, 1891, No. 56,944.

Claim.—1. The combination, with an automatic circuit-breaker having circuit-terminals and an earth connection, of an explosive cartridge interposed between said terminals and the earth connection.

2. The combination, with an automatic circuit-breaker having circuit-terminals and an earth connection, of an explosive cartridge interposed between said terminals and the earth connection, and a conductor upon said cartridge through which the circuit is completed.



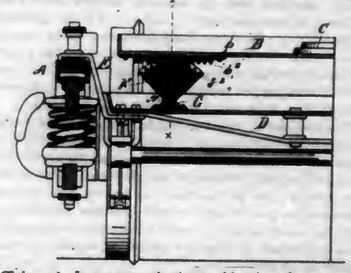
3. The combination of an automatic circuit-breaker having circuit-terminals and an earth connection, with a cartridge connecting the circuit-terminals and insulating them from said earth connection.

4. The combination, with an automatic circuit-breaker having circuit-terminals and an earth connection, of a cartridge constructed of insulating material, said cartridge containing an explosive and having upon it a conductor connecting the terminals of the working circuit, the cartridge insulating the said circuit from the earth connection.

5. An automatic circuit-breaker, comprising a support upon which the terminals of the circuit are held a connection to earth, and a cartridge through which the working circuit is completed and through which the disruptive discharge passes to earth, an explosive in the cartridge to be ignited by the passage of the disruptive discharge, the explosion of which breaks the main circuit.

6. For the protection of electric conductors against currents proceeding from atmospheric discharges, apparatus comprising a cylinder R, connected with earth and containing an explosive charge, and a piston Z, which makes contact between the pins K' and K² by a cross-bar *g*, and is provided with a rod *h*, extending from the cross-bar to a point near the explosive charge, substantially as described.

477,657. CAR-TRUCK. HENRY C. HODGE and CLARENCE R. HODGE, Detroit, Mich. Filed Mar. 9, 1892. Serial No. 424,836. (No model.)



Claim.—1. In a car-truck, the combination of a supporting-truss, a bolster movable laterally with reference to said truck, and a rolling support between said truss and bolster, the said rolling support being provided with a smooth bearing-surface adapted to engage with and roll upon a smooth plate on the bolster, and being also provided with a toothed part sunk beneath the smooth surface of the bearing part and adapted to engage with raised teeth upon the said plate, substantially as and for the purpose described.

2. In a car-truck, the combination of a supporting-truss, a bolster adapted to move laterally with reference to said truck, a rolling-support between said parts having a smooth bearing-surface, and a toothed holding surface having the radius of the extreme outer edge of the teeth the same as the radius of said smooth bearing-surface and being adapted to engage with the teeth of a rack secured to said transverse member, whereby the weight to be supported is carried on said smooth surfaces, but side slip is prevented by the engagement of the toothed parts, substantially as and for the purpose described.

3. In a car-truck, the combination of a supporting-truss, a supporting-bar transverse the truck, a bolster movable laterally with reference to said truck, and a rolling support interposed between said bolster and said transverse bar in the form of a quadrant provided with central bearing-supports and adapted to rotate on such central support, provided, also, with a smooth outer bearing-surface and with sunken teeth in its periphery, adapted to engage with a corresponding smooth bearing-surface and with raised teeth on a rack secured to said bolster, substantially as and for the purpose described.

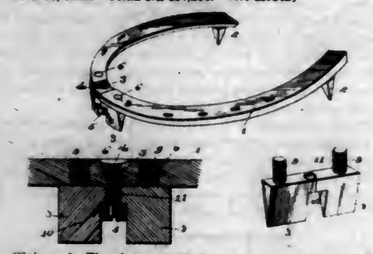
4. In a car-truck, the combination of a transverse member secured

to the truck, a laterally-movable bolster secured to the car-body, a rolling support made in the form of a quadrant, a bearing secured to the transverse member, adapted to receive the axial part of the quadrant, and a smooth bearing secured to said bolster, adapted to engage with the periphery of said quadrant-block, substantially as and for the purpose described.

5. In a car-truck, the combination of a transverse supporting member, a bolster, a centrally-supported sector-block, and a bearing-plate upon said bolster having both a toothed surface and a smooth surface adapted to engage with corresponding toothed and smooth surfaces on the periphery of said sector-block, the said bearing-block being concavely curved with a radius greater than the sector-block, substantially as and for the purpose described.

6. In a car-truck, the combination, with a supporting member laterally rigid with reference to said truck, a transverse member laterally movable with reference to said truck, and a rolling bearing-support in the form of a sector, of a cylinder with a radius equal to the distance between the rigid and movable parts and having a pivotal bearing upon one of said parts and a rolling bearing on the other, substantially as and for the purpose described.

477,658. HORSESHOE. FREDERICK A. HOOVER, Rockton, Pa. Filed Mar. 31, 1892. Serial No. 427,256. (No model.)



Claim.—1. The shoe provided at the central portion of its tread with a threaded perforation and at opposite sides of the same with perforations, combined with the toe-calk sections each having a threaded tenon on its upper side for taking in the side perforations, said sections having their lower inner corners cut away or recessed, the bottoms of the recesses at their adjacent edges being provided with half-round openings, and a screw passed through the openings and into the central perforation of the shoe and having its head taking against the bottom of the recess, substantially as specified.

2. The combination, with the shoe having the central and oppositely-threaded side perforations located at the toe portion of the tread thereof, of the triangular-shaped toe-calk sections, each provided upon its upper side with a threaded tenon adapted to take into the oppositely-threaded side perforations, said calk-sections having their lower inner corners provided with angular recesses and their meeting edges with half-round openings, and the headed screw located in the openings and threaded through the central perforation of the shoe, substantially as specified.

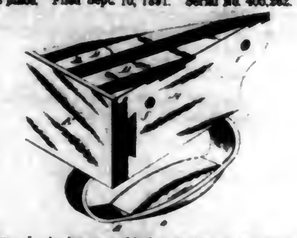
477,659. VEHICLE-WHEEL. FELIX J. HUELSEN and JACOB NAGAL, Cleveland, Ohio. Filed Oct. 31, 1891. Serial No. 410,429. (No model.)



Claim.—1. A wheel having an expansible tube around its periphery and a rim for said tube having circumferential beads on each side of its center, in combination with a flexible cover stretched over the said tube and overlapping the said beads on the inside of the rim and expansible locking-rings on the inside of said rim constructed with grooves adapted to said beads and having edges bearing on the overlapping edges of the said cover, substantially as described.

2. A wheel having a rim with circumferential beads on both sides of its center, a tube surrounding said rim, a flexible cover over said tube having its edges lapped over on the inside of the said rim, and expanding band-rings inside of said rim bearing on said overlapping edges of the cover, said rings having each a central groove and sharp edges on each side of the groove to engage the cover, substantially as described.

477,660. SAD-IRON. WILLIAM HUNTER, Haverhill, Mass., assignor of nine-sixteenths to Hattie L. Elkins and Rufus P. Tapley, Jr., same place. Filed Sept. 10, 1891. Serial No. 405,262. (No model.)



Claim.—1. An iron provided on its face with separable removable ribs, substantially as and for the purposes described.

2. An iron provided with dovetailed grooves in its face and interchangeable strips adapted to be secured in said grooves, whereby ribs may be formed on portions of the ironing-face, leaving the remaining portions smooth or unobstructed, substantially as and for the purposes described.

3. An iron provided with longitudinal dovetailed grooves in its face, strips conforming in cross-section to the contour of the grooves, and ribs on the faces of said strips, substantially as and for the purposes described.

4. In an iron, the combination of the body portion having grooves in its lower face, strips in said grooves, said strips being provided with cross-grooves in their rear ends, and a removable ironing-plate on the rear of the iron, provided with a tenon on its lower edge adapted to slide in the cross-grooves in the strips, substantially as and for the purposes specified.

477,661. VIBRATOR FOR REED MUSICAL INSTRUMENTS. HENRY JAMES, Waterbury, Vt. Filed Apr. 29, 1891. Serial No. 390,999. (No model.)



Claim.—1. The thin and light vibrator A, formed with one or more longitudinal corrugations of curved or angular cross-section, as shown and described, said corrugations being for the purpose of stiffening the vibrator from its free end throughout a large part of its length, and thus diminishing or preventing the partial vibrators which generate the very high pitched inharmonious overtones so noticeable in the thin reeds of most reed instruments.

2. The vibrators A, made as shown and described throughout the entire register of the same or nearly the same width, for the purpose of giving greater fullness and roundness to the higher notes of the scale.

477,662. COILED-WIRE BED-BOTTOM. THOMAS W. KLIPPEL, Chicago, Ill. Filed May 11, 1891. Serial No. 392,292. (No model.)

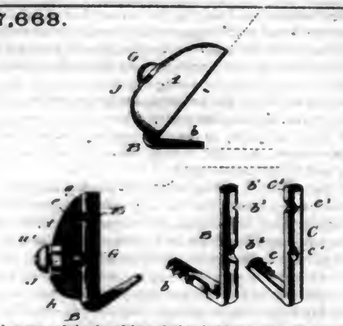


Claim.—A bed-bottom composed of spiral springs, each having on their end coils lateral bends, in combination with tie-wires for connecting the springs in rows, said tie-wires having bends opposing those of the springs and overlapping them, and spur-wires for connecting the rows of the springs, the spur-wires having their ends formed into coils the turns of which are perpendicular to the plane of the bed-bottom and lie substantially in the plane of the tie-wires, whereby the tie-wires and springs may be interlocked by turning or screwing the spur-wire coils into the apertures between the overlapped portion of the tire-wires and springs, substantially as described.

477,668. TOE-WEIGHT. THOMAS KEODER, Auburn, Ind. Filed Mar. 21, 1892. Serial No. 426,330. (No model.)

Claim.—1. The combination, with a toe-weight having a longitudinal bore, of disconnected holding-arms having portions parallel

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with the bottom of the hoof detachably held within said bore and serrated on the outer edges of these portions, and means passing into the weight and engaging said arms to spread the same, substantially as specified.

2. The combination, with the toe-weight having a longitudinal bore, of the arms having acute-angled portions serrated on their outer edges and parallel with the bottom of the hoof and the main portions provided with registering notches on their inner faces, and a screw passing into the weight and engaging said notches, as set forth.

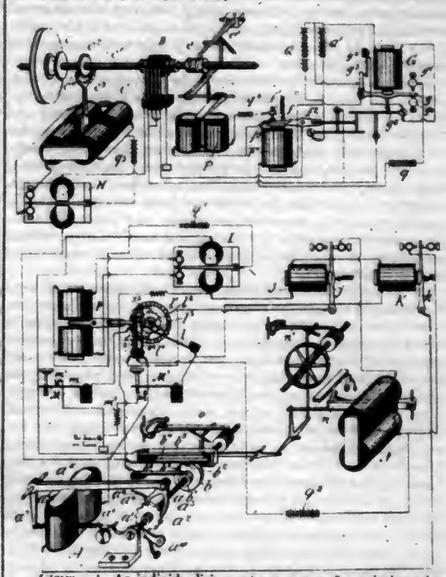
3. The combination, with a toe-weight having a longitudinal bore, of arms having portions at acute angles to their length parallel with the bottom of the hoof and serrated on their outer edges, with the longer portions provided with both concave and V-shaped notches on their adjacent faces, which are fitted to one another, and a screw passing into the weight and engaging the concave notches of the said arms, as set forth.

477,664. HORSE-DETACHER. JOHN H. LANE, Belmont, Va. Filed Aug. 18, 1891. Serial No. 403,046. (No model.)



Claim.—A horse-detaching device consisting of a whiffletree having a forwardly-extending stationary hook at each end, in combination with a rotatable rod having rearwardly-extending hooks held in keepers on the whiffletree, said rod being provided with a lever adapted to be operated by a suitable device for raising the same and turning the rearwardly-extending hooks forward to allow the traces to be readily attached and detached, both stationary and movable hook being adapted to be inserted in the slit in the trace, substantially as described, and for the purpose set forth.

477,665. INDIVIDUALIZING CUT-OUT FOR PRINTING-TELEGRAPHS. SAMUEL R. LINVILLE, Philadelphia, Pa. Filed Feb. 10, 1892. Serial No. 420,937. (No model.)



Claim.—1. An individualizing cut-out system for printing-telegraphy, comprising a line, source of electric energy, means for transmitting normal and abnormal electric impulses through said line, a series of receiving-instruments included in said line and having type-wheels and shafts controlled by normal currents, circuit-switching devices controlled by said shafts, and individualizing-switches actuated by electro-magnets responding only to abnormal line-currents to render inoperative by normal currents any and all receivers included in said line.

2. An individualizing cut-out system for printing-telegraphs, comprising a line, means for transmitting normal and abnormal electrical currents, and a series of receiving-instruments included in said line and each provided with a type-wheel shaft operating to cut-out magnets and include individualizing line cut-out mechanism and with electrical devices responding to abnormal line-currents and operating the individualizing cut-out devices to include and exclude the required instrument or instruments in or from the line.

3. In an individualizing cut-out system for printing telegraphs, a line and source of energy, means for transmitting normal and abnormal currents over said line, receivers having type-wheels and shafts therefor included in said line and adapted to be positioned only in response to normal currents over said line, switching devices in receivers operative at determinate cut-out positions, and individualizing switching devices actuated by magnets in circuits controlled only by magnets responding to abnormal line-currents operating to exclude or to include the circuit controlling any or all of the type-wheels of receivers in line.

4. In an individualizing cut-out system for printing-telegraphs, a line and source of energy, telegraphic receivers included in said line, circuits and appliances at receivers for positioning type-wheels and making impressions, local-circuit switching devices operative at determinate positions of said type-wheels, individualizing electro-magnets, and mechanism, substantially as described, and magnets in said line responding only to stronger than the normal operating-currents to control said individualizing mechanism, whereby said type-wheels are rendered inoperative except in response to abnormal currents over said line.

5. In an individualizing cut-out system for printing-telegraphs, a series of telegraphic receivers having type-wheels, line-relays, and local circuits for positioning said type-wheels and making impressions therefrom, switching devices and local circuits operative at determinate positions of said type-wheels, individualizing-magnets, and devices controlled by said local circuits closed through relays in a line-circuit, said relays responding only to strong currents sent over said line operating to short-circuit through a resistance the relays controlling said type-wheels.

6. In an individualizing cut-out system for printing-telegraphs, sources of electric energy, a line, circuits, transmitters, and receivers in

said line, type-wheels in receivers, type-wheel shafts adapted to actuate switching devices at determinate positions, individualizing-magnets, and electrical and mechanical devices actuated thereby, said magnets responding only to abnormally-strong currents at determinate positions of said type-wheels and operating to arrest at a cut-out position any or all of the said type-wheels and to prevent their movement by normal operating-currents.

7. An individualizing cut-out system for printing-telegraphs, comprising a line, means for alternating and varying the strength of the current in the line, transmitters included in the line and provided with keys for breaking and closing the line, receivers included in the line and provided with shafts carrying type-wheels, electro-magnetic devices responding to currents in the line and controlling the type-wheel shafts, printing devices, local-battery circuits, local-circuit switches controlled by the type-wheel shafts, individualizing circuit-switching devices actuated by an electro-magnet, and a relay responding to abnormal currents in the line and closing said local circuit at its front stop through the individualizing-magnets to permit of the operation of the individualizing-switch.

8. An individualizing cut-out system for printing-telegraphs, comprising sources of electric energy and electrical and mechanical devices located at a station for alternating and varying the strength of current in a single line, transmitters included in said line and provided with keys for breaking and closing said line, receivers included in said line and provided with shafts carrying type-wheels, electro-magnetic devices responding to currents in said line and controlling said type-wheel shafts, local-battery circuits, mechanical circuit-switching devices controlled by said shafts and adapted to control said local-battery circuit, individualizing circuit-switching devices, a shaft having contacts actuated by an individualizing electro-magnet, and a relay responding to intermittent currents in said line and closing said local circuits at its front stop through the individualizing-magnets during the arrest of the type-wheels at a cut-out position to permit of the rotation of the individualizing-shaft and of actuation of the individualizing circuit-switch operating to cut out of circuit the electro-magnetic devices controlling the type-wheels of any or all of the receivers included in said line.

9. An individualizing cut-out for printing-telegraphs, comprising sources of electric energy, a main line, transmitters included in said line and provided with pole-changers and with keys and devices for breaking, including and permitting of abnormal currents in said line, receivers provided with power-impelled shafts carrying type-wheels, unison devices, electro-magnetic devices responding to line-currents and controlling said shafts, local-circuit-changing switches actuated by said shafts at a determinate position thereof, individualizing-switches, shafts carrying devices for actuating said individualizing-switches, electrical and mechanical devices for releasing said unison devices, individualizing-magnets in local circuits controlled by said circuit-changing switches, and relays responding to abnormal intermittent currents in said line to close said local-battery circuits through the individualizing-magnets to effect the rotation of said individualizing-shafts, thereby actuating said individualizing-switches in response to intermittent currents included by keys at any transmitter in line.

10. An individualizing cut-out for printing-telegraphs, comprising sources of electric energy, a main line, transmitters included in said line and provided with pole-changers and with keys and devices for breaking, including and intermitting abnormal currents in said line, receivers provided with power-impelled type-wheel shafts, unison devices, electro-magnetic devices responding to line-currents and controlling said shafts, local-circuit-changing switches actuated by said shafts, individualizing-switches provided with unison devices, electrical and mechanical devices for releasing said unison devices, magnets in local circuits controlled by said local-circuit switches, and relays responding to abnormal currents in line to control the operation of line-switching devices.

11. In a cut-out for printing-telegraphs, a main line, a source of electric energy, transmitters provided with means for alternating, breaking, intermitting, and varying the strength of the current in said line, receivers having power-impelled type-wheel shafts, electrical devices actuated by line currents for controlling said shafts, local-battery circuits normally energizing printing-magnets, means adapted to short-circuit the same and energize individualizing cut-out magnets, circuit-switches actuated by a cam on the type-wheel shaft at a determinate position thereof for including the individualizing cut-out magnets in said local circuit, individualizing-switches, shafts, contacts, and ratchets, a relay responding to intermittent strong currents in line and closing said local circuits through the individualizing-magnets previously included in the local circuit by the operation of the local-circuit switch to actuate said individualizing-shaft, and switches to effect the inclusion and exclusion of the electrical devices for controlling the type-wheel in and from the line-circuit.

12. In an individualizing cut-out for printing-telegraphs, sources of electric energy, a main line having devices included therein for alternating, breaking, and varying the current to receivers included in the line, type-wheel shafts, escapements controlling said shafts, electro-magnets actuating the escapements, printing electro-magnets and devices, local-circuit switches actuated at a determinate position of the type-wheel shafts, relays responding only to line currents stronger than the currents actuating the escapement-magnets, individualizing line-switches located at receivers and provided with unison devices and latches, means controlled by the printing electro-magnets for releasing the unison-latches, and local circuits closed by said relays and controlling said line-circuit switches.

13. In an individualizing cut-out for printing-telegraphs, sources of electric energy, a main line having devices included therein for alternating, breaking, and varying the current to receivers included in said line, power-impelled shafts having type-wheels and cams mounted thereon at receivers, escapements controlling said shafts, electro-magnets actuating the escapements, printing electro-magnets and devices, local-circuit switches actuated at a determinate position by said cams, relays in line responding to stronger currents than the currents actuating the escapement-magnets, individualizing circuit-preserving switches located at receivers and comprising shafts and ratchet-wheels, circuit-contacts and interrupters and unison devices mounted on said shafts, unison-latches and electro-magnetic devices, means for releasing said latches, and local circuits normally closed through said printing-magnets and adapted to be closed through the front contact of said relays to energize the individualizing-magnets for operating said contacts and shafts before and after the latter have been rotated to unison and released and to short-circuit and restore successively the circuit of the escapement electro magnets in line.

14. In an individualizing cut-out for printing-telegraphs, the combination, with sources of electric energy, a main line, and devices for alternating, breaking, and varying the strength of the current, of pole-changers, receivers included in said line, power-impelled shafts having cams and type-wheels mounted thereon, escapements controlling said shafts, electro-magnets and devices actuating said escapements, local batteries and circuits for said magnets, polarized relays in line adapted to close said circuits, local printing-batteries and circuits, circuit-controlling switches actuated by said cams at a determinate position of said type-wheels, relays in line responding only to currents stronger than the currents normally actuating said polarized relays, individualizing circuit-preserving switches at receivers, shafts therefor, ratchet-wheels, circuit contacts and interrupters and unison devices mounted thereon, unison-latches, electro-magnetic devices, means for releasing said latches, and local circuits closed through the front contact of said relay when the type-wheels stand at a determinate position and operating when said shafts are rotated to unison said shafts, release said unison-latches, and to short-circuit and to restore successively the circuits of the polarized relay controlling the escapements of receivers.

15. In a printing-telegraph system, a source of electric energy, a main line, devices included therein for alternating and varying the strength of current, electro-magnets in said main line controlling type-wheels and printing devices, circuit-preserving switches, type-wheel shafts actuating said switches at a determinate position, electro-magnets included in a circuit closed by said switches and responding to currents stronger than currents controlling the type-wheels, individualizing cut-out switches, and devices actuated by said magnets, responding only to strong currents and operating, substantially as described, to short-circuit the electro-magnets controlling said type-wheels.

16. In a printing-telegraph system, an individualizing cut-out switching device, a source of electric energy, a main-line type-wheel, circuit devices included therein for alternating and increasing the strength of current, polarized relays in said line, local batteries and circuits controlling type-wheels and printing devices, local circuits closed by said polarized relay, circuit-preserving switches, type-wheel shafts actuating said switches at a determinate position of said shafts, electro-magnets included in circuits closed by said switches and actuating said individualizing cut-out device, a relay in line responding only to abnormally strong currents, and means for vibrating said relay to make and break the circuit through the electro-magnets operating the individualizing-switches.

17. In a printing-telegraph system, an individualizing cut-out switching device, a source of electric energy, a main-line type-wheel circuit, devices included therein for alternating and increasing the strength of current, polarized relays included in the line and closing local-battery circuits through escapement, electro-magnets, local printing-circuits, local-circuit switches closing printing-circuits, and a relay included in line responding to strong currents.

18. The combination, in an individualizing cut-out apparatus, of a shaft, a unison device, a unison-latch, a ratchet-wheel, and a circuit-contacting disk mounted on said shaft, a circuit-preserving switch actuated by said contacting disk, and an electro-magnet and its complemental devices for rotating said shaft.

19. The combination, in an individualizing cut-out apparatus, of a cut-out shaft, a unison device, a unison-latch, a ratchet, a circuit-contact disk, a notched disk on the cut-out shaft, a type-wheel shaft provided with an arm engaging the notched disk to lock the type-wheels, a circuit-preserving switch actuated by said contact-disk, and an electro-magnet and its complemental devices for operating the cut out shaft.

20. In a printing-telegraph, an individualizing device provided with means for locking the type wheels, a source of electric energy, a main-line type-wheel circuit, devices included in the line for alternating and increasing the strength of the current, polarized relays in said line, local batteries and circuits controlling type-wheels and printing devices, local circuits closed by said polarized relay, local-circuit-preserving switches, type-wheel shafts actuating said switches at a determinate position of said shafts, and electro-magnets included in circuits closed by said switches and actuating said individualizing device to cause the same to lock the type-wheels and short-circuit the magnets controlling said type-wheels.

21. In an individualizing cut out for printing-telegraphs, the combination, with a source of electric energy and line and a circuit having means interposed therein for alternating and varying the strength of current, of receivers having type-wheel shafts, type-wheels, and impression devices, polarized relays in the line-circuit controlling local circuits actuating said type-wheels, circuit-switches operated by said shafts, individualizing-switches, magnets, and devices adapted to operate said switches and relays in line-circuit responding to strong intermittent currents to short-circuit the polar relays controlling the type-wheel circuits of any or all receivers in the line.

22. In an individualizing cut-out for printing-telegraphs, the combination, with a source of electric energy and a line-circuit provided with means for alternating and varying the strength of current, of receivers included in said line and having type-wheel shafts, type-wheels, and means for setting and effecting impressions therefrom, circuit-switches controlled by said shafts, individualizing-switches and actuating devices therefor, electro-magnets adapted to operate said switches and devices, and relays in said line responding to strong intermittent currents to short-circuit the electro-magnets controlling the type-wheels of any or all receivers.

23. In an individualizing cut-out for printing-telegraphs, a source of electric energy and line-circuit, pole-changers, and means for alternating and varying the strength of current and breaking the line-circuit of receivers included therein, type-wheel shafts, type-wheels, means for setting and effecting impressions therefrom, circuit-switches controlled by said shafts, individualizing-switches and actuating devices therefor, electro-magnets adapted to operate said switches and devices, and relays in said line responding to strong intermittent currents to short-circuit the electro-magnets controlling the type-wheels of any or all receivers.

24. In an individualizing cut-out system, the combination, with a source of electric energy, a line-circuit, and means included therein for pulsating and varying the strength and alternating the current, of receivers in circuit having type-wheel shafts, type-wheels, and magnetic devices for rotating and positioning said type-wheels, and individualizing devices operated by abnormal currents to short-circuit the magnetic devices controlling the type-wheels of any required instrument or instruments.

25. In an individualizing cut-out system for printing-telegraphs, a type-wheel shaft provided with an arm, a shaft operating a switching device, and a notched disk on said shaft, said arm adapted to pass through the notch in said disk during the operation of printing and to be arrested by said disk in the cut-out position of said type-wheel shaft.

26. In an individualizing cut-out system for printing-telegraphs, a type-wheel shaft provided with an arm, a shaft for operating a line-preserving switch, and a disk mounted on the switch-operating shaft and provided with a recess for the reception of said arm.

27. In an individualizing cut-out system embracing a receiver having a type-wheel shaft, means for positioning the same, a shaft provided with a unison-screw and adapted to operate a circuit-preserving switch, an electro-magnetic device and its accessories actuating said shaft and responding to abnormal line-currents, a disk on said shaft provided with notches in alignment with the terminal of the unison-screw, and a type-wheel shaft provided with an arm adapted to enter the recesses of the disk, operating to lock the type-wheel shaft at a determinate position.

28. In an individualizing cut-out system for printing-telegraphs, comprising a source of electric energy and line, a circuit having means interposed therein for alternating and varying the strength of current, receivers having type-wheel shafts, type-wheels, and impression devices, polarized relays in the line-circuit controlling local circuits actuating said type-wheels, circuit-switches operated by said shafts, individualizing-switches, magnets, and devices adapted to operate said switches and relays in the line-circuit responding to strong intermittent currents to short-circuit through a resistance the polarized relays controlling the type-wheel circuits of the receiver or receivers in line.

29. In an individualizing cut-out for printing-telegraphs, comprising a source of electric energy, and a line-circuit provided with means for alternating and varying the strength of current, receivers included in said line and having type-wheel shafts, type-wheels, and means for setting and effecting impressions therefrom, circuit-switches controlled by said shafts, individualizing-switches and actuating devices therefor, electro-magnets adapted to operate said switches, and devices and relays in said line responding to strong intermittent currents to short-circuit through a resistance the electro-magnets controlling the type-wheels of any or all receivers in line.

30. In an individualizing cut-out for printing-telegraphs, the combination, with a source of electric energy and circuit, of pole-changers, means for alternating and varying the strength of current and breaking the circuit of receivers included therein, type-wheel shafts and type-wheels, means for effecting impressions therefrom, circuit-switches controlled by said shafts, individualizing-switches and actuating devices therefor, electro-magnetic devices adapted to operate said switches, and devices and relays in said line responding to strong intermittent currents to short-circuit through a resistance the electro-magnets controlling the type-wheels of the receiver or receivers in circuit.

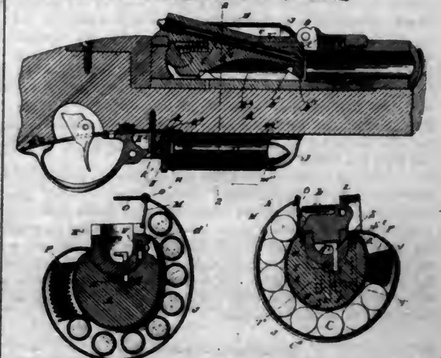
31. In an individualizing cut-out system for printing-telegraphs, a source of electric energy, a line-circuit, means including therein for pulsating and varying the strength and alternating the current, receivers in circuit having shafts carrying type-wheels, magnetic devices for rotating and positioning the type-wheels, and individualizing devices operated by abnormal currents to short-circuit through resistance the magnetic devices controlling the type-wheel of any instrument or instruments.

32. In an individualizing cut-out system for printing-telegraphs, a source of electric energy and line-circuit, means for transmitting normal and abnormal electric currents, receivers included in said line and provided with shafts having type-wheels mounted thereon, magnetic devices for controlling said type-wheels, and electrical devices responding to abnormal currents and operating individualizing cut-out devices to short circuit through resistances the type-wheels of the required instrument or instruments included in the line-circuit.

33. In an individualizing cut-out system, the combination, with a source of electric energy, a circuit, and means included therein for pulsating and varying the strength and alternating the current, of receivers in circuit having type-wheel shafts provided with type-wheels, magnetic devices for rotating and positioning said type-wheels, and individualizing devices operated by abnormal currents to short-circuit through a resistance the magnetic devices controlling the type-wheels of any required instrument or instruments.

34. In a printing-telegraph system, a source of electric energy, a main line, devices included therein for alternating and varying the strength of current, electro-magnets in said main line controlling type-wheels and printing devices, circuit-preserving switches, type-wheel shafts actuating said switches at a determinate position, electro-magnets included in a circuit closed by said switches and responding to currents stronger than currents controlling the type-wheels, individualizing cut-out switches, and devices actuated by said electro-magnets, responding only to strong currents and operating, substantially as described, to short-circuit through a resistance the electro-magnets controlling said type-wheels.

477,666. MAGAZINE-GUN. WEBSTER R. LOOMIS, Springfield, Ill. Filed May 12, 1888. Serial No. 273,748. (No model.)



Claim.—1. A detachable annular magazine of elastic material provided with means for engaging with supports on the sides of a fire-arm and adapted to spring apart for the adjustment of the magazine on said arm, also adapted to be held in position on said firearm by the resilient action of the material of which said magazine is made, in

combination with a firearm provided with means for supporting the magazine and means for conveying the cartridge from the magazine to the firing-chamber of the arm, as set forth, and for the purpose stated.

2. An annular detachable magazine of elastic material provided at its forward end with an internal convex corrugation adapted to support the point of the cartridge and provided at its rear end with an internal concave corrugation adapted to receive the rim of the cartridge and having its upper ends adapted to engage with and rest upon supports on the sides of the firearm, in combination with a firearm having on its sides means for supporting said magazine and means for successively feeding the cartridges from said magazine into the firing-chamber of said firearm, as set forth, and for the purpose stated.

3. In a firearm, the combination of a detachable annular magazine of elastic material having convex and concave corrugations and having its upper ends adapted to engage with and rest upon supports on the sides of said firearm, the hinged door at the upper end of said annular magazine, the finger connected with said door adapted to push the cartridges successively into the receiving-chamber of the firearm, the coiled spring within the annular magazine, the lugs on the sides of the receiver, adapted to support the annular magazine, the hinged breech-block adapted to engage with said door and hold it closed, and the mechanism operating said breech-block, as set forth, and for the purpose stated.

4. In a firearm, the combination of the stock, the barrel, a hinged breech-block, a receiving-chamber, and mechanism for conveying the cartridge from the receiving-chamber into the firing-chamber of the barrel, said mechanism consisting of a longitudinal rack within the stock, and a vertical cam secured to the pivotal pin of the hinged breech-block, actuated by the breech-block, engaging with and operating a lower vertical cam provided with a segmental cog-wheel, said cog-wheel meshing with a pinion secured to one end of a transverse shaft supported within the stock, said transverse shaft having at its other end a cog-pinion meshing with a second cog-pinion which drives said longitudinal rack, as set forth, and for the purpose stated.

5. In a firearm, the combination of the stock, the barrel, the cartridge-receiver having on its outside lugs adapted to support a detachable magazine, the hinged breech-block, the detachable annular magazine having an internal spring and provided at its upper end with a hinged door, the curved finger connected with the hinged door, the lug on the breech-block, engaging with the door to hold the door closed, the vertical cam secured to the pivotal pin of the breech-block, engaging with a lower vertical cam provided with a segmental cog-wheel, the casing inclosing said cams, and the transverse shaft within the stock, supporting at one end a pinion driven by said segmental cog-wheel and at the other end a pinion meshing with a second pinion driving a longitudinal rack within the stock, provided at its upper end with a vertical finger, as set forth, and for the purpose stated.

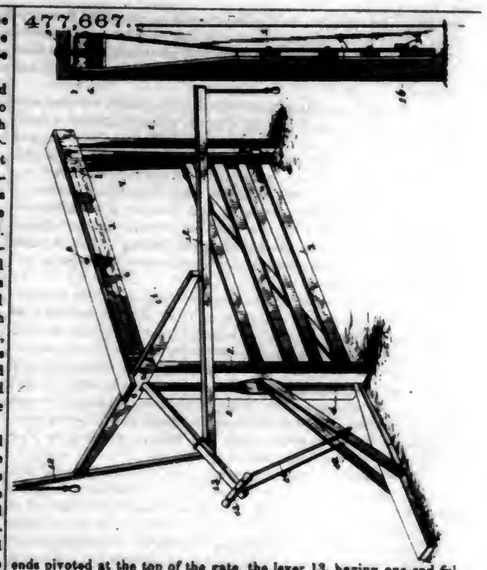
6. In a firearm, the combination of the stock, the barrel, the receiving-chamber, the annular magazine inclosing the stock and supported on lugs on the outside of the receiver, the hinged breech-block, the mechanism for conveying the cartridge from the receiver into the firing-chamber of the barrel, the firing-pin and means for operating the same, and the means for ejecting the empty shell from the firing-chamber, as set forth, and for the purpose stated.

7. In a firearm, the mechanism for locking the door of the annular magazine, consisting of a locking-bolt pivotally supported on the receiver having a central longitudinal slot, having at one end an upturned lug adapted to engage with the lower edge of the door and at the other end a lateral lug adapted to be engaged by the lower end of the shell-extractor and the lower annular end of the breech-block, in combination with the stock, the barrel, the receiver, the hinged breech-block, the annular magazine supported by lugs on the sides of the receiver, the shell-extractor actuating the locking-bolt to disengage it from the door, and the angular lower end of the breech-block, engaging with the lateral lug of the locking-bolt to engage the bolt with the door, as set forth, and for the purpose stated.

8. The mechanism for retaining the magazine in position on the firearm, to wit: the trigger-guard provided with a shoulder against which the end of the magazine abuts, the trigger-guard plate having a hole adapted to receive a pin on the magazine, and the pin projecting upward from the inner shell of the magazine, in combination with the annular detachable magazine, and the firearm provided with means for supporting the magazine, and mechanism for conveying the cartridge from the magazine to the firing-chamber of said firearm, as set forth, and for the purpose stated.

477,667. GATE. FREDERICK R. R. MALKE, Chrisney, Ind. Filed Jan. 13, 1892. Serial No. 417,973. (No model.)

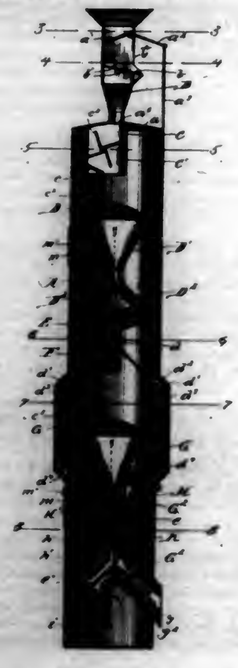
Claim.—1. The combination of a frame having a horizontal track-bar, a gate having its outer end suspended from the track-bar, the oscillating levers 10, having their lower ends fulcrumed and their upper


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ends pivoted at the top of the gate, the lever 13, having one end fulcrumed on the frame, the links connecting the other end of the lever 13 with the oscillating levers, and the operating-levers having their inner ends connected to the lever 13, substantially as described.

2. The combination of a frame, a horizontal track-bar, a central supporting-bolt depending from the frame and secured to the track-bar, a gate, vertical bars 4, rising from the gate and having their upper portions diverging and arranged on opposite sides of the track-bar, the triangular block spacing the bars 4, and the rollers journaled on the inner faces of the upper ends of the bar 4 and arranged on the track-bar, substantially as described.

477,668. GRAIN-PURIFIER. FRED P. MANNING, Turner, Ill. Filed Feb. 5, 1892. Serial No. 420,402. (No model.)



Claim.—1. In a grain-purifier, the combination of a casing adapted to receive the grain at its upper portion and provided with an outlet therefor in its lower part, with a revoluble fan located beneath the receiving-opening within the casing, and a series of convexed sieves having funnels secured to their edges or periphery located one above the other within the casing, and a series of concaved sieves having pipes for the separate conveyance of the dust and grain, located within the casing one above the other and around the necks of the funnels of the convexed sieves, substantially as and for the purpose set forth.

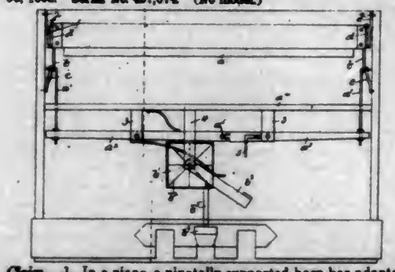
2. In a grain-purifier, the combination of a casing having an opening at its top to receive the grain and openings at its bottom for the removal of dust and discharge of grain, with a receiving-spout secured at its top, having a trap door to control the flow of grain, the convexed sieve D, having the funnel D', having the bifurcated ends D^2, the concave sieve E, having the pipe d, the inclined floor F, the tubes d^2, the convexed sieve G, having the funnel G', grain channel or pipe G^2, and spout g^2, and the concave sieve H, having the funnel H', having the neck h, all constructed, arranged, and operating substantially as and for the purpose set forth.

3. In a grain-purifier, the combination of a casing having an opening at its top to receive the grain and openings at its bottom for the removal of dust and discharge of grain, with a receiving-spout B, secured to the top of the casing and having a trap-door to control the flow of grain, the sieve C, having the floor c, the revoluble fan C', the convex sieve D, having the funnel D', having the bifurcated ends D^2, the concave sieve E, having the pipe d, the inclined floor F, the tubes d^2, the convex sieve G, having the funnel G' and grain channel or pipe G^2, and the concave sieve H, having the funnel H', having the neck A, all constructed, arranged, and operating substantially as and for the purpose set forth.

4. In a grain-purifier, the combination of the casing A, having the openings m, k, i, and a^6, and the bracket a^4, with the receiving-spout B, having the trap door a' and lever a^3, the opening b^3 and floor b, the operating-rod a^2, having the crook a^4 and weight a^7, the sleeve C, having the floor c and fan C', the convex sieve D, having the funnel D', having the bifurcated ends D^2, the concave sieve E, having the pipe d, the inclined floor F, the tubes d^2, the convex sieve G, having the funnel G' and grain channel or pipe G^2, and the concave sieve H, having the funnel H', having the neck A, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

5. In a grain-purifier, the combination of the casing A, having the openings m, k, i, and a^6, and the bracket or catch a^5, with the receiving-spout B, having the trap-door a' and lever a^3, the opening b^3 and floor b, the operating-rod a^2, having the crook a^4 and weight a^7, the sleeve C, having the revoluble fan C', the convex sieve D, having the disk c^2, and funnel D', having the bifurcated ends D^2, the concave sieve E, having the pipe d, the inclined floor F, the tubes d^2, the convex sieve G, having the disk c^2, the funnel G', and grain channel or pipe G^2, and the concave sieve H, having the funnel H', having the neck A, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

477,669. PIANO. NORMAN MARSTON, Hampton, N. H. Filed Mar. 30, 1892. Serial No. 427,074. (No model.)



Claim.—1. In a piano, a pivotally-supported harp-bar adapted to be moved into and out of engagement with the strings, combined with the vertical rods a' a', pivoted levers connected therewith for simultaneously moving them, a rotatable cam-block for moving said levers, a pedal, and interposed connections between said pedal and cam-block, whereby the latter is rotated by the operation of the former, substantially as described.

2. In a piano, a harp-bar adapted to be moved into and out of engagement with the strings, combined with the vertical rods a' a', connected therewith, pivoted levers a^9 a^3, and cam-block for moving them, and means for moving said cam-block, controlled by the pedal, substantially as described.

3. In a piano, a harp-bar adapted to be moved into and out of engagement with the strings, the vertical rods a' a', connected therewith, pivoted levers a^3 a^3, cam-block b', quadrangular in shape and having a toothed face, and a pawl and pawl-carrying arm connected with the pedal, substantially as described.

4. In a piano, a harp-bar adapted to be moved into and out of engagement with the strings, the vertical rods a' a', connected therewith, pivoted levers a^3 a^3, one of which is recessed at the end to receive the adjacent end of the other, the quadrangular block b', having a toothed face, and a pawl and pawl-carrying arm connected with the pedal, substantially as described.

5. In a piano, a harp-bar adapted to be moved into and out of engagement with the strings, pivoted levers with which said harp-bar is connected, combined with a cam-block for moving said levers, and an operating device for moving said cam-block which is connected with the pedal, and a stop for said operating device, substantially as described.

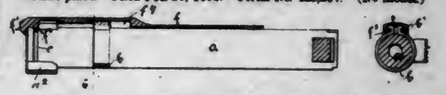
6. In a piano, the harp-bar a, links d, to the upper ends of which said harp-bar is pivoted, pivoted arms c, to the lower ends of which said links d are pivoted, pivoted links e, to which said harp bar is also pivotally and detachably connected, and means for moving said harp-bar, connected with and operated by the pedal, substantially as described.

7. In a piano, the harp-bar a, pivotal supports therefor, combined with the latches f, substantially as described.

477,670. PROCESS OF REFINING RAW SUGAR. FRANK O. MATTHIESEN, Irvington, N. Y. Filed Oct. 24, 1891. Serial No. 409,708. (No specimens.)

Claim.—The herein-described method of effecting the refining of raw sugar by progressive purification, which consists, first, in forming the raw sugar into a magma by mixing it with water, white liquor, or sirup, and in draining the resulting magma in a centrifugal machine in the ordinary manner; secondly, in removing the wall of sugar from the centrifugal machine and forming it into a second magma by mixing it with water, white liquor, or sirup, and in subsequently draining the second magma in a centrifugal machine; thirdly, in removing the wall of sugar from the centrifugal machine after the second draining and forming it into a third magma, and subsequently draining the third magma in a centrifugal machine, as before, preparatory to manufacturing the purified product into merchantable sugar by the usual processes.

477,671. SHELL-EXTRACTOR FOR BOLT-GUNS. PAUL MAUSER, Oberndorf-on-the-Neckar, Germany, assignor to Waffenfabrik Mauser, same place. Filed Feb. 29, 1892. Serial No. 423,237. (No model.)



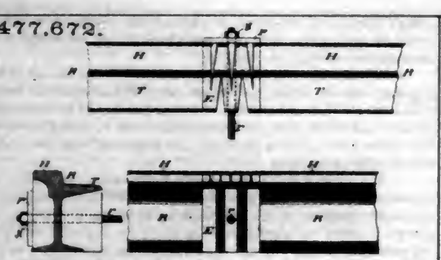
Claim.—1. The combination, with an oscillatory bolt having a groove c near its front end and constructed with an annular groove surrounding its body, of a ring engaging said annular groove in the bolt and having laterally-projecting shoulders, and a shell-extractor consisting of an elongated metal body adapted to rest against the side of the bolt, having an extracting-claw at its front end, a cross-rib f^3 rearwardly thereof and adapted to engage said groove c, and lateral shoulders constructed to engage the lateral shoulders of said ring, and thereby to lock said extractor to said bolt.

2. The combination, with an oscillatory bolt having an annular groove surrounding its body, of a ring engaging said annular groove and having projecting shoulders b', and a shell-extractor consisting of an elongated metal body adapted to rest against the side of the bolt, having an extracting-claw at its front end and constructed with shoulders f^3, adapted to engage the shoulders on said ring when the extractor is moved longitudinally relatively to said bolt, and thereby to lock said parts together, and means on said extractor and bolt constructed to normally prevent the longitudinal movement of the former relatively to the latter, whereby said parts are normally locked together.

3. The combination, with an oscillatory bolt constructed with an annular groove surrounding its body, of a split ring engaging said groove and having outwardly-turned hooked ends b', constituting shoulders, and a shell-extractor consisting of an elongated metal body adapted to rest against the side of the bolt, having an extracting-claw at its front end and constructed with ribs f^3, adapted to embrace exteriorly and engage the shoulders b' of said ring, and thereby to lock the said extractor to said bolt and to prevent the expansion of said ring.

477,672. EXPANSION-RAIL FOR RAILROADS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,402. (No model.)

477,672.



Claim.—1. The combination of railway-rails, an expansion and contraction piece secured between the ends of said rails, and a transverse tie-rod secured to said piece.

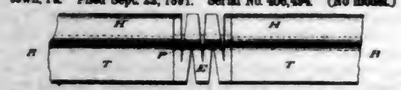
2. The combination of railway-rails, an expansion and contraction piece welded to the end of said rails and a transverse tie-rod secured to said piece between said ends.

3. The combination of railway rails, a serrated expansion and contraction piece secured between the ends of said rails, and a transverse tie-rod passing through said piece and secured thereto.

4. The combination, with parallel rails of a railroad-track having expansion and contraction portions secured thereto, of a transverse tie-rod secured to said portions and tying said rails together.

5. The combination, with parallel rails of a railroad-track having expansion and contraction portions welded thereto, of a transverse tie-rod passing through said portions and tying said rails together.

477,673. RAIL FOR RAILROADS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,494. (No model.)



Claim.—1. A railway-rail provided with an expansion and contraction piece secured at the end of said rail, said piece having a stiffening rod or portion inserted therein.

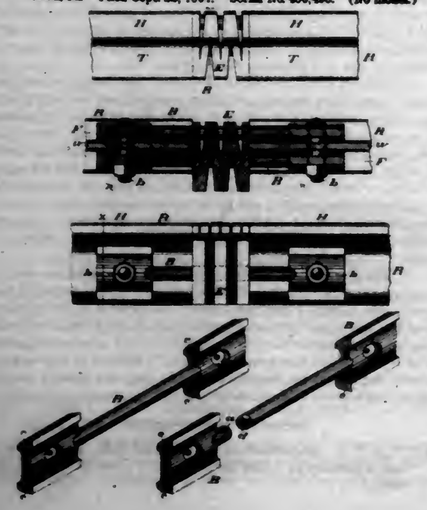
2. A railway-rail provided with an expansion and contraction piece welded at the end of said rail, said piece having a stiffening rod or portion inserted therein.

3. In combination with railway-rails, an expansion and contraction piece secured between the ends of said rails and provided with a stiffening rod or portion.

4. In combination with railway-rails, a serrated expansion and contraction piece welded to the ends of said rails and provided with a stiffening rod or portion.

5. A serrated expansion and contraction piece for railway-rails provided with a stiffening portion inserted in a hole in said piece.

477,674. RAIL FOR RAILROADS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,495. (No model.)



Claim.—1. A railway-rail having a part of its web recurved or bent upon itself to form an expansion and contraction portion.

2. A railway-rail having a part of its upper surface cut away and its web bent or buckled, so as to form an expansion and contraction portion.

3. An expansion railway-rail having a portion of its head cut away and a portion of its web recurved or corrugated, as set forth.

Claim.—1. The combination of railway-rails, an expansion and contraction portion secured between the ends of said rails, and a longitudinal stiffening piece or pieces passing through said portion on the side of said rails.

2. The combination of railway-rails, an expansion and contraction piece welded to the ends of said rails, and a longitudinal stiffening piece or pieces passing through said piece on the side of said rails.

3. The combination of railway-rails, an expansion and contraction portion secured between the ends of said rails, and a longitudinal stiffening piece or pieces passing through said portion and secured to said rails.

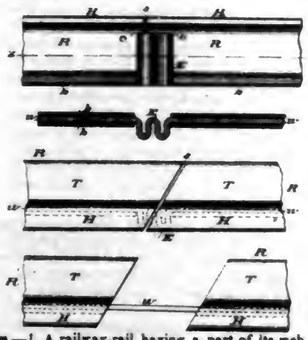
4. The combination of railway-rails, an expansion and contraction piece between said rails, and a longitudinal stiffening piece or pieces passing through said piece and provided with plates at their ends.

5. The combination of railway-rails, an expansion and contraction piece between said rails, and a longitudinal stiffening piece or pieces passing through said piece and provided with plates at their ends secured to said rails.

6. The combination of railway-rails, an expansion and contraction piece between said rails, and a longitudinal stiffening piece or pieces passing through said piece and provided with bearing-plates at their ends.

7. The combination of railway-rails, a serrated expansion and contraction piece welded to the ends of said rails, and a longitudinal stiffening piece or pieces passing through said piece and provided with bearing-plates at their ends.

477,675. EXPANSION-RAIL FOR RAILROADS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,491. (No model.)



477,676. RAILROAD-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,496. (No model.)

Claim.—1. In a railroad-crossing, a guard-piece between the through-rails composed of channel-bars curved at their ends.

2. In a railroad-crossing, in combination with two crossing-rails between the through-rails, a guard-piece composed of channel-bars curved and united at their ends.

3. In a railroad-crossing, in combination with two crossing-rails between the through-rails, a guard-piece composed of channel-bars curved at their ends, the upper surfaces of said bars being provided with recesses, as *d*.

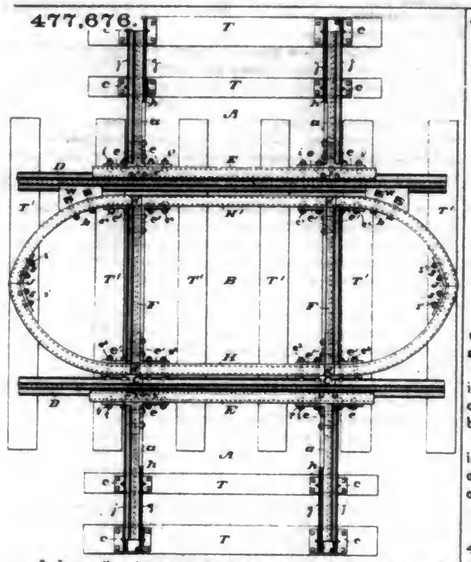
4. In a railroad-crossing, in combination with through and crossing rails, a guard-piece composed of channel-bars curved at their ends, said guard-piece being connected to the through-rails, substantially as described.

5. In a railroad-crossing, a guard-piece composed of channel-bars curved at their ends to form the same, in combination with a through-rail and an adjustable chock, as W, between said rail and said guard-piece.

6. In a railroad-crossing, a guard-piece composed of channel-bars curved at their ends and provided with attached or fixed chocks, and adjustable chocks between said guard-piece and the through-rails, as and for the purposes set forth.

7. In a railroad-crossing, a channel-bar, as E, parallel to the through-rails, for the purposes set forth.

477,676.



8. In a railroad-crossing, in combination with two crossing-rails, a channel-bar, as E, for the purposes set forth.

9. In a railroad-crossing, in combination with the through and crossing rails, channel-bars, as E, for the purposes set forth.

10. In a railroad-crossing, the combination of a through-rail, a crossing-rail, a channel-bar, as E, and a chock or chocks between said bar and said through-rail, for the purposes set forth.

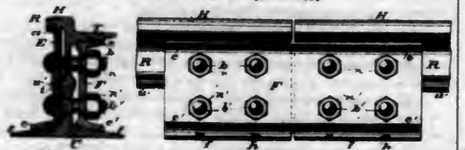
11. In a railroad-crossing, the combination, with the through and crossing rails, of channel-bars, as E, and chocks between said through-rails and said bars, for the purposes set forth.

12. In a railroad-crossing, the combination, with the through and crossing rails, of channel-bars, as E, a curved guard-piece, and a chock or chocks between said through-rails and said guard-piece.

13. In a railroad-crossing, the combination, with the through and crossing rails, of channel-bars, as E, a curved guard-piece, and chocks between said bars and said through-rails and between said through-rails and said guard-piece.

14. In a railroad-crossing, the combination, with the through and crossing rails, of channel-bars, as E, a curved guard-piece, chocks between said bars and said through-rails, and fixed and adjustable chocks between said through-rails and said guard-piece.

477,677. RAIL-JOINT. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,490. (No model.)



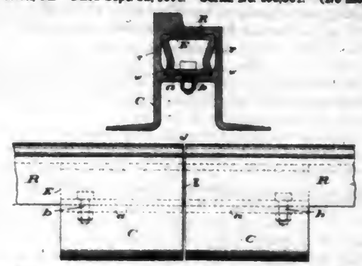
Claim.—1. In a rail-joint, the combination of two contiguous rails, each provided with a bulb on its web, a corrugated splice-bar, and a plain splice-bar, said splice-bars being secured at the joint, substantially as described.

2. In a rail-joint, the combination of two contiguous rails, each provided with a bulb on its web, a corrugated splice-bar, and a plain splice-bar, said bars being angled or offset at top and bottom, one or both, and secured at the joint, substantially as described.

3. In a rail-joint, the combination of two contiguous rails, each having a base or support welded thereto, a corrugated splice-bar, and a plain splice-bar, said splice-bar being secured at the joint, substantially as described.

4. In a rail-joint, the combination of two contiguous rails, each having a base or support welded thereto, a corrugated splice-bar, and a plain splice-bar, said bars being angled or offset at top and bottom to fit under the upper surfaces of the rails and over said bases or supports and secured at the joint, substantially as described.

477,678. RAILROAD-RAIL JOINT. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,501. (No model.)



Claim.—1. In a railroad-rail joint, the combination of two double-webbed rails, each provided with a chair at their contiguous ends, and an interior splice-bar of hollow or box form.

2. A railroad-rail joint consisting of the following-named elements, in combination: two double-webbed rails, a chair at the end of each of said rails, provided with a top surface, as *a*, and an interior splice-bar of hollow or box form.

3. A railroad-rail joint consisting of the following-named elements, in combination: two double-webbed rails, a chair at the end of each of said rails, provided with a top surface, as *a*, an interior splice-bar of hollow or box form, and bolts for securing said bar within said rails.

477,679. COMBINED RAIL AND CROSS-TIE. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 21, 1891. Serial No. 406,486. (No model.)



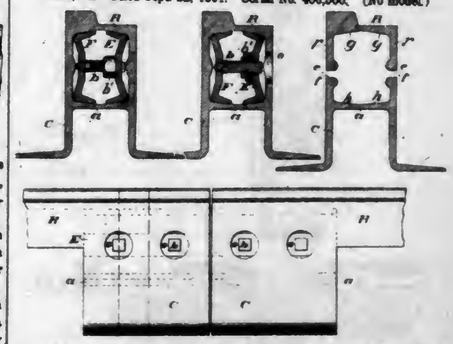
Claim.—1. A railroad-rail having a cross-tie welded thereto, so as to form an integral structure.

2. A railroad-rail having a bead or bulb at the bottom of its web united by welding to a cross-tie having a corresponding bead or bulb.

3. A railroad-rail having interposed between rail and cross-tie an intermediate piece, said piece being welded to both the rail and cross-tie.

4. A railroad-rail having welded thereto a cross-tie of channel form.

477,680. RAILROAD-RAIL JOINT. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,500. (No model.)



Claim.—1. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair secured to the end of each of said rails, and internal splice-bars.

2. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair welded to the end of each of said rails, and internal splice-bars.

3. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, internal splice-bars, and a chair se-

cured to the end of each of said rails, provided with a seat at or near its top for said bars.

4. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair secured to the end of each of said rails, internal splice-bars, and adjusting-bolts for said bars.

5. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, internal splice-bars, a chair secured to the end of each of said rails, provided with a seat at or near its top for said bars, and adjusting-bolts for said bars.

6. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair secured to the end of each of said rails, internal splice-bars, and adjusting-bolts for said bars, the sides of said rails being provided with holes for access to said bolts.

7. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, internal splice-bars, a chair secured to the end of each of said rails, provided with a seat at or near its top for said bars, and adjusting-bolts for said bars, the sides of said rails being provided with holes for access to said bolts.

8. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair secured to the end of each of said rails, and internal splice-bars having upper and lower bevel-bearings, one or both.

9. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair secured to the end of each of said rails, and internal splice-bars, said rails and chairs, one or both, being provided with beveled bearing-surfaces for said splice-bars.

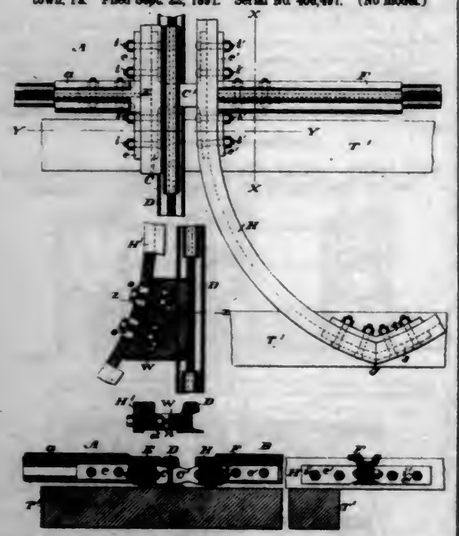
10. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair secured to the end of each of said rails, internal splice-bars, and adjusting-bolts for said bars, said rails and chairs, one or both, being provided with beveled bearing-surfaces for said splice-bars.

11. A rail-joint consisting of the following-named parts, in combination: two double-webbed rails, a chair secured to the end of each of said rails and having a top surface, as *a*, and internal splice-bars, the under sides of the heads of said rails and said top surfaces of said chairs, one or both, being beveled.

12. In a rail-joint, in combination with a double-webbed rail, a chair secured to said rail and provided with an inclined internal top surface.

13. In a rail-joint, the combination of a double-webbed rail having the under portion of its head beveled and a chair having its upper surface beveled.

477,681. RAILROAD-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,497. (No model.)



Claim.—1. In a railroad-crossing, guard rails or bars between the through-rails, curved and welded together at their ends.

2. In a railroad-crossing, L-shaped guard-pieces between the through-rails, each having its ends curved and one of its sides horizontal and flush with the upper surface of said through-rails.

3. In a railroad-crossing, L-shaped bars between the through-rails, curved and united at their ends into a guard-piece.

4. In a railroad-crossing, L-shaped bars between the through-rails, curved and united at the ends by welding into a guard-piece complete for either direction.

5. In a railroad-crossing, in combination with two crossing-rails between the through-rails, a guard-piece composed of L-shaped bars curved and united at their ends into a guard-piece complete for either direction.

6. In a railroad-crossing, in combination with through and crossing rails, a guard piece composed of L-shaped bars curved at their ends into a guard-piece complete for either direction, said guard-piece being provided with chocks between it and the through-rails.

7. In a railroad-crossing, a guard-piece composed of L-shaped bars curved at their ends to form the same, in combination with a through-rail and a removable chock, as W, having one straight and one curved face and provided with a recess or recesses for the purposes set forth.

8. In a railroad-crossing, a guard-piece provided with a chock or chocks between said guard-piece and the through-rail, welded to said guard-piece.

9. In a railroad-crossing, a guard-piece composed of L-shaped bars curved at their ends to form the same and provided with a chock or chocks between said guard-piece and the through-rail, welded to said guard-piece.

10. In a railroad-crossing, a guard-piece provided with chocks welded thereto and removable chocks, said chocks being located between said guard-piece and the through-rails.

11. In a railroad-crossing, a guard-piece composed of L-shaped bars curved at their ends to form the same and provided with chocks secured thereto and with removable chocks between said guard-piece and the through-rails.

12. In a railroad-crossing, an L-shaped bar, as E, located outside of and parallel to the through-rails and having its upper surface flush with the upper surface of said through-rails.

13. In a railroad-crossing, the combination of an L-shaped bar, as E, and a chock or chocks between said bar and the through-rail, welded to said bar.

14. In a railroad-crossing, in combination with two crossing-rails, an L-shaped bar, as E, located outside of and parallel to the through-rail and having its upper surface flush with the upper surface of said through-rail.

15. In a railroad-crossing, an L-shaped bar, as E, connecting the crossing-rails and welded to one or both of said rails.

16. In a railroad-crossing, the combination of a through-rail, an L-shaped bar, as E, having its upper surface flush with the upper surface of said through-rail, a crossing-rail, and a chock between said bar and through-rail.

17. In a railroad-crossing, the combination of an L-shaped bar, as E, a crossing-rail welded to said bar, a through-rail, and a chock between said bar and through-rail, for the purposes set forth.

18. In a railroad-crossing, the combination of a through-rail, a crossing-rail, an L-shaped bar, as E, and a chock or chocks between said bar and through-rail, welded to said bar, for the purposes set forth.

19. In a railroad-crossing, the combination of an L-shaped bar, as E, a through-rail, a crossing-rail, and a chock or chocks between said bar and through-rail, said crossing-rail and said chocks being welded to said bar.

20. In a railroad-crossing, the combination, with the through and crossing rails, of L-shaped bars, as E, a curved guard-piece, and chocks between said guard-piece and the through-rails.

21. In a railroad-crossing, the combination of through and crossing rails, L-shaped bars, as E, a curved guard-piece, chocks welded to said guard-piece, and removable chocks, as W, said chocks being located between said guard-piece and the through-rails.

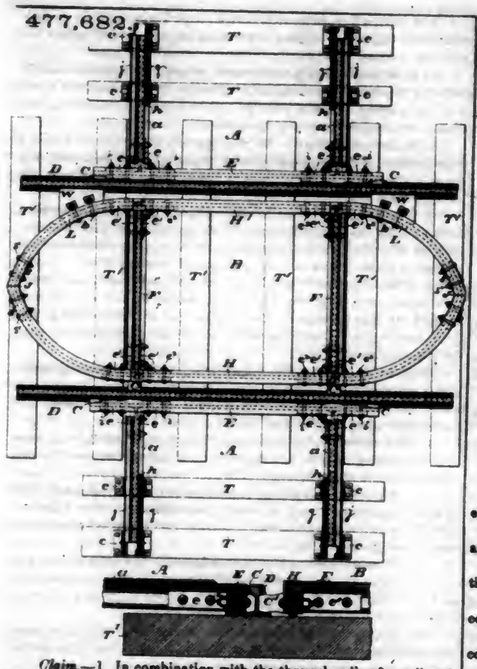
22. In a railroad-crossing, the combination, with the through and crossing rails, of L-shaped bars, as E, a curved guard-piece, chocks between said bars and the through-rails, and chocks between said guard-piece and the through-rails.

23. In a railroad-crossing, the combination of through and crossing rails, L-shaped bars, as E, chocks between said bars and the through-rails, welded to said bars, a curved guard-piece, and chocks between said guard-piece and the through-rails, welded to said guard-piece.

24. In a railroad-crossing, the combination, with the through and crossing rails, of L-shaped bars, as E, a curved guard-piece, chocks between said bars and the through-rails, and fixed and removable chocks between said guard-piece and the through-rails.

25. In a railroad-crossing, the combination of through and crossing rails, L-shaped bars, as E, chocks between said bars and the through-rails, welded to said bars, a curved guard-piece, chocks between said guard-piece and one through-rail, welded to said guard-piece, and removable chocks between said guard-piece and the other through-rail.

477,682. RAILROAD-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,498. (No model.)



Claim.—1. In combination with the through-rails of a railroad-crossing, guard-pieces composed of metal bars of T shape devoid of lower flanges, located between said through-rails and curved at their ends, for the purposes set forth.

2. In a railroad-crossing, T-bars between the through-rails, curved and united at their ends into a guard-piece.

3. In a railroad-crossing, in combination with two crossing-rails between the through-rails, a guard-piece composed of T-bars curved and united at their ends.

4. In a railroad-crossing, in combination with two crossing-rails between the through-rails, a guard-piece composed of T-bars curved at their ends, the upper surfaces of said bars being provided with recesses, as *d*.

5. In a railroad-crossing, in combination with through and crossing rails, a guard-piece composed of T-bars curved at their ends, said guard-piece being provided with chocks between it and the through-rails.

6. In a railroad-crossing, a guard-piece composed of T-bars curved at their ends to form the same, in combination with a through-rail and a removable chock, as W, between said rail and said guard-piece.

7. In a railroad-crossing, a guard-piece composed of T-bars curved at their ends and provided with attached or fixed chocks, and removable chocks between said guard-piece and the through-rails, as and for the purposes set forth.

8. In a railroad-crossing, a T-bar, as E, devoid of lower flanges on one or both sides and located parallel to the through-rails, for the purposes set forth.

9. In a railroad-crossing, in combination with two crossing-rails, a T-bar, as E, devoid of lower flanges on one or both sides, for the purposes set forth.

10. In a railroad-crossing, in combination with the through and crossing rails, T-bars, as E, devoid of lower flanges on one or both sides and located parallel to said through rails, for the purposes set forth.

11. In a railroad-crossing, the combination of a through-rail, a crossing-rail, a T-bar, as E, and a chock or chocks between said bar and said through-rail, for the purposes set forth.

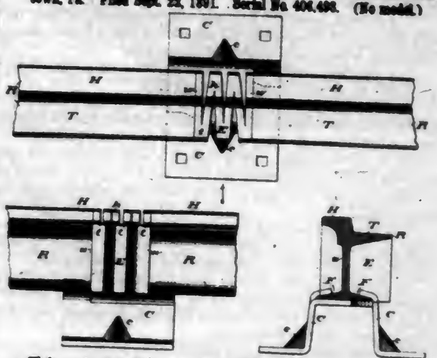
12. In a railroad-crossing, the combination, with the through and crossing rails, of T-bars, as E, and chocks between said through-rails and said bars, for the purposes set forth.

13. In a railroad-crossing, the combination, with the through and crossing rails, of T-bars, as E, a curved guard-piece, and a chock or chocks between said through-rails and said guard-piece.

14. In a railroad-crossing, the combination, with the through and crossing rails, of T-bars, as E, a curved guard-piece, and chocks between said bars and said through-rails and between said through-rails and said guard-piece.

15. In a railroad-crossing, the combination, with the through and crossing rails, of T-bars, as E, a curved guard-piece, chocks between said bars and said through-rails and fixed and removable chocks between said through-rails and said guard-piece.

477,688. RAIL FOR RAILROADS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,492. (No model.)



Claim.—1. A railway-track provided at intervals with flexible expansion and contraction portions integral with the rails of said track.

2. A railway-track provided at intervals with flexible expansion and contraction portions welded to the rails of said track.

3. A railway-track provided with serrated expansion and contraction pieces integral with the rails of said track.

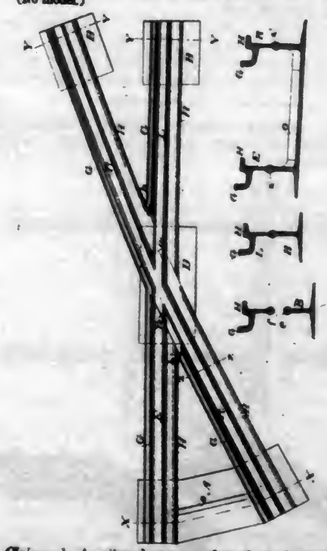
4. In combination with two railway-rails, a flexible expansion and contraction portion integral with said rails.

5. In combination with two railway-rails, a flexible expansion and contraction portion welded to the ends of said rails.

6. In combination with two railway-rails, a serrated expansion and contraction piece integral with said rails.

7. A railway-track provided with serrated expansion and contraction pieces secured to the rails, said serrated pieces forming a surface for the wheels of the vehicle to run upon.

477,684. FROG OR CROSS FOR RAILROAD-CROSSINGS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,489. (No model.)



Claim.—1. A railroad cross or frog formed of rails welded together at the point at which they cross each other.

2. In a railroad cross or frog, a through-rail having welded thereto two pieces of rail forming the crossing-rail.

3. A railroad cross or frog formed of rails welded at the crossing-point, the upper surfaces of said rails at said point being cut away, as described.

4. In a railroad cross or frog, a through-rail having welded thereto two pieces of rail forming the crossing-rail, the upper surfaces of said rails at the point of junction being cut away, as described.

5. A railroad cross or frog having a support welded thereto at the junction of the rails.

6. A railroad cross or frog having supports or chairs welded to the rails at their divergent ends.

7. A railroad cross or frog formed of a through-rail and two rail-pieces forming the crossing-rail and supports or chairs welded to said through and crossing rails at their divergent ends.

8. A railroad cross or frog having a double-webbed chair or support welded to the rails at their divergent ends.

9. A railroad cross or frog formed of a through-rail and two rail-pieces forming the crossing-rail and a double-webbed chair or support welded to said through and crossing rails at their divergent ends.

10. A railroad cross or frog formed of a through-rail and two rail-pieces forming the crossing-rail and a support or chair welded to both pieces of said crossing-rail at or about the juncture with the through-rail.

11. A railroad cross or frog formed of a through-rail and two rail-pieces forming the crossing-rail and supports welded to said through-rail on both sides of its juncture with the crossing-rail.

12. A railroad cross or frog formed of a through-rail and two rail-pieces forming the crossing-rail and a chair or support provided with a web, said web being welded to said through-rail on both sides of its juncture with the crossing-rail.

13. A railroad cross or frog composed of three parts, consisting of a through-rail and two pieces of crossing-rail welded together at their common junction and having a support welded to one or more of said parts at said junction.

14. A railroad cross or frog provided with a chair having crossing-webs welded to said cross.

15. A railroad cross or frog formed of a through-rail and two rail-pieces forming the crossing-rail and a chair or support provided with two crossing-webs, one of which is welded to the two pieces forming the crossing-rail, the other welded to the through-rail on each side of the juncture with the crossing-rail

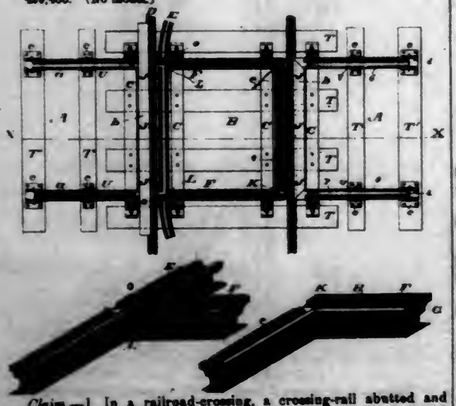
16. A railroad cross or frog having a support welded thereto at the crossing-point of the rails and supports or chairs welded to said rails at their divergent ends.

17. A railroad cross or frog formed of a through-rail having welded thereto two rail-pieces forming the crossing-rail, a support welded thereto at the juncture of the through and crossing rails, and supports or chairs welded to said rails at their divergent ends.

18. A railroad cross or frog having a support welded thereto at the crossing-point of the rails and a double webbed support welded to said rails at their divergent ends.

19 A railroad cross or frog formed of a through-rail having welded thereto two rail-pieces forming the crossing-rail, a support welded thereto at the juncture of the through and crossing rails, and a double-webbed support welded to said rails at their divergent ends.

477,685. RAILROAD-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Dec. 5, 1890. Renewed Apr. 16, 1892. Serial No. 429,433. (No model.)



Claim.—1. In a railroad-crossing, a crossing-rail abutted and welded to a rail parallel with one of the through-rails, so as to form a continuous whole at the angle or corner adjacent to the through-rail.

2. A railroad-crossing constructed of crossing-rails abutted and welded to rails parallel with the through-rails, so as to form a continuous whole at the angles or corners adjacent to the through-rails.

3. A railroad-crossing constructed of girder guard-rails parallel with the through-rails abutted and welded to girder guard-rails in line with the crossing-rails.

4. A railroad-crossing constructed of girder guard-rails parallel with the through-rails abutted and welded to girder guard-rails in line with the crossing-rails, the through-rails and crossing-rails being connected together, substantially as described.

5. In combination with the through-rails of a railroad-track, a street-railroad crossing consisting of three parts, each of said parts constructed of crossing-rails abutted and welded to rails parallel to the through-rails.

6. In combination with the through-rails of a railroad-track, a street-railroad crossing consisting of three parts, each of said parts constructed of girder guard-rails parallel to the through-rails abutted and welded to girder guard-rails in line with the crossing-rails.

7. A street-railroad crossing consisting of three parts, each of said parts constructed of girder guard-rails parallel to the through-rails abutted and welded to girder guard-rails in line with the crossing-rails, the through-rails and crossing-rails being connected together, substantially as described.

8. In a railroad-crossing, in combination with the through-rails, girder guard-rails, as *a*, having portions of their guards cut away, and girder guard-rails, as *b*, having their heads and guards cut away, said girder-rails being abutted and welded to each other.

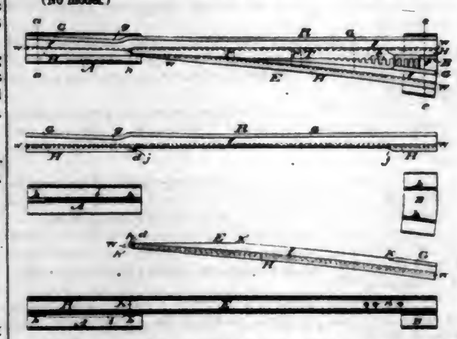
9. In a railroad-crossing, in combination with the through-rails, interior crossing-rails, as F, abutted and welded to a rail or rails, as *c*, adjacent to one of the through-rails.

10. In a railroad-crossing, in combination with the through-rails, interior crossing-rails, as F, abutted and welded to a rail or rails having their ends bent so as to form guides for the flanges of wheels passing on said through-rails.

11. In combination with the through-rails of a railroad-track, a street railroad-crossing consisting of three parts, as A A B, each of said parts composed of girder guard-rails welded together and having their upper surfaces cut away, as described.

12. In combination with the through-rails of a railroad-crossing, girder-rails laid parallel to the through-rails, having their ends beveled and welded to similarly-beveled ends of girder-rails in line with the crossing-rails, so as to form angles or corners adjacent to the through-rails, substantially as set forth.

477,686. SWITCH-PIECE FOR RAILROAD-TRACKS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,488. (No model.)



Claim.—1. A railroad switch-piece having its component parts formed of two or more rails welded together at a common point of union.

2. A railroad switch-piece formed of rails welded together and to a connecting-piece at their divergent ends.

3. A railroad switch-piece provided with transverse stiffening-pieces between the switch-rails thereof welded to one or both of said rails.

4. A railroad switch-piece formed of three rails welded together to form a common point of juncture.

5. A railroad switch-piece formed of rails welded together and provided with stiffening-pieces between said rails welded to one or both of said rails.

6. A railroad switch-piece composed of girder-rail pieces having the web of one of the rail-pieces bent over at one end at or near a right angle for making a short abutting contact at said point with another rail-piece.

7. A railroad switch piece formed of rails, the web at the end of one of said rails being bent over and welded to form a short weld at said point to another rail.

8. A railroad switch-piece formed of rails welded together at their point of juncture, one of said rails extending beyond said juncture, and a support welded to said rail beyond the point of juncture.

9. A railroad switch-piece formed of rails welded together, one of said rails extending beyond their point of juncture, and a single-webbed chair or support welded to said rail beyond said juncture.

10. A railroad switch-piece formed of rails welded together, one of said rails extending beyond the point of juncture, and a single-webbed chair or support welded to said rail beyond said juncture and to the webs at said juncture.

11. A railroad switch-piece formed of rails welded together and a support welded to each of said rails at their divergent ends.

12. A railroad switch-piece formed of rails welded together and a double-webbed chair or support welded to said rails at their divergent ends.

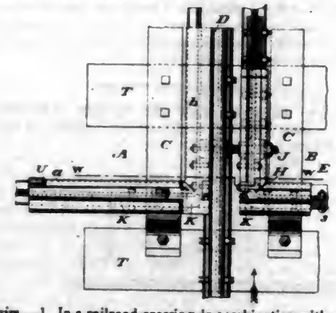
13. A railroad switch-piece formed of rails welded together, one of said rails extending beyond their point of juncture, a support or chair welded to said rail beyond said juncture, and a support or supports welded to said rails at their divergent ends.

14. A railroad switch-piece formed of rails welded together, one of said rails extending beyond their point of juncture, a single-webbed support or chair welded to said rail beyond said juncture and to the rails at their juncture, and supports or chairs welded to said rails at their divergent ends.

15. A railroad switch-piece formed of rails welded together, one of said rails extending beyond their point of juncture, a support or chair welded to said rail beyond said juncture, and a double-webbed chair or support welded to said rails at their divergent ends.

16. A railroad switch-piece formed of rails welded together, one of said rails extending beyond their point of juncture, a single-webbed support or chair welded to said rail beyond said juncture and to the rails at their point of juncture, and a double-webbed chair or support welded to said rails at their divergent ends.

477,687. RAILROAD-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Dec. 5, 1890. Serial No. 373,660. (No model.)



Claim.—1. In a railroad-crossing, in combination with a through-rail, a crossing track-rail bent at the desired angle for the cars to cross, so that a continuous rail is formed at the angles or corners adjacent to said through-rail.

2. In a railroad-crossing, the combination, with through-rails, of crossing track-rails bent at the desired angles for the cars to cross, so that a continuous rail is formed at the angles or corners adjacent to said through-rails.

3. In a railroad-crossing, in combination with through-rails, outer rails bent to lie parallel and adjacent said through-rails and in line with the crossing-rails.

4. A street-railroad crossing consisting of three parts, each of said parts constructed of a rail or rails bent at the desired angles, so as to form a continuous whole at the angles or corners adjacent to the through-rail.

5. A railroad-crossing for steam-railroad tracks, constructed of girder guard rails bent at the desired angle, so that the parallel rails and their respective connecting-rails form a continuous whole at the angles or corners adjacent to the through-rails.

6. A railroad-crossing constructed of girder guard-rails bent to lie parallel and adjacent to the through-rails and in line with the crossing-rails, the through-rails and crossing-rails being connected together, substantially as described.

7. A street-railroad crossing consisting of three parts, each of said parts constructed of a girder guard rail or rails bent at the desired angles, so as to form a continuous whole at the angles or corners adjacent to the through-rails.

8. A railroad-crossing constructed of rails outside of the through-rails bent so as to lie parallel with the through-rails and in line with the crossing-rails, and rails within the through-rails bent so as to lie parallel with the through-rails and in line with the crossing-rails.

9. A railroad-crossing constructed of rails outside of the through-rails bent so as to lie parallel and adjacent to the through-rails and in line with the crossing-rails, and rails within the through-rails bent so as to lie parallel and adjacent to the through-rails and in line with the crossing-rails, and chocks interposed between the through-rails and those portions of the crossing adjacent thereto.

10. In a railroad-crossing, in combination with the through-rails of a steam-railroad track, a crossing track rail or rails, as A, bent at the desired angles to form a guard rail or rails, as described.

11. In a railroad-crossing, in combination with the rails of a steam-railroad track, girder guard-rails outside of said steam-railroad rails, having their upper surfaces cut away and their ends bent at right angles to said steam-railroad rails.

12. In combination with the rails of a steam-railroad track, a street-railroad crossing consisting of three parts, as A A B, each of said parts composed of a girder guard rail or rails bent at the desired angle and having their upper surfaces cut away, as described.

13. A railroad-crossing constructed of girder guard-rails bent to lie parallel and adjacent to the through-rails and in line with the crossing-rails, the guard portions of said crossing-rails in line with the crossing-rails being cut away, as described, and the guard and head portion of said guard-rails on that portion of the crossing outside of and parallel to the through-rails being cut away to the level of the heads of the through-rails.

14. A railroad-crossing constructed of girder guard-rails bent to lie parallel and adjacent to the through-rails and in line with the crossing-rails, the guard portions of said crossing-rails in line with the crossing-rails being cut away, as described, and the guard and head portion of said guard-rails on that portion of the crossing outside of and parallel to the through-rails being cut away to the level of the floor of said guard-rails, the through-rails and crossing-rails being connected together, substantially as described.

15. A railroad-crossing constructed of rails outside of the through-rails bent so as to lie parallel with and adjacent to the through-rails and in line with the crossing-rails and rails within the through-rails bent so as to lie parallel with the through-rails and in line with the crossing-rails, that portion of the crossing outside of the through-rails having its guard cut away, as described, on that portion of the rail in line with the crossing-rails and having its guard and head cut away, as described, on that portion of the crossing parallel to the through-rail, and the guard portion of the crossing-rail within the through-rail being cut away, as described.

16. A railroad-crossing constructed of the parts A outside of the through-rails, consisting of girder guard-rails bent so that one portion thereof will lie parallel and adjacent to the through-rails, the other in line with the crossing-rails, the guard of that portion in line with the crossing-rails being cut away, as described, and the heads and guards of the rails parallel with the through-rails being cut away, as described, a portion within the through-rails consisting of girder guard-rails bent so as to lie parallel with the through-rails and in line with the crossing-rails, the through-rails and crossing-rails being connected together, substantially as described.

17. In a railroad-crossing, an inner portion consisting of a rail or rails bent so as to form both a guard-rail and a crossing-rail, as and for the purposes set forth.

18. In a railroad-crossing, the combination of steam-railroad through-rails and street-railroad-crossing rails and interposed chocks, as J, secured to the webs of the street-railroad rails where parallel with said through-rails, whereby said through-rails are braced, as and for the purposes set forth.

19. In a railroad-crossing, the combination of movable chocks and plates, as C, as and for the purposes set forth.

20. In a railroad-crossing, in combination with a bent-girder crossing-rail, angle chocks or bars secured to the web of the same at the bend or angle adjacent to the through-rail, for the purposes set forth.

21. In a railroad-crossing, a crossing-rail having an L-shaped cut in its upper portion and bent thereon, for the purposes set forth.

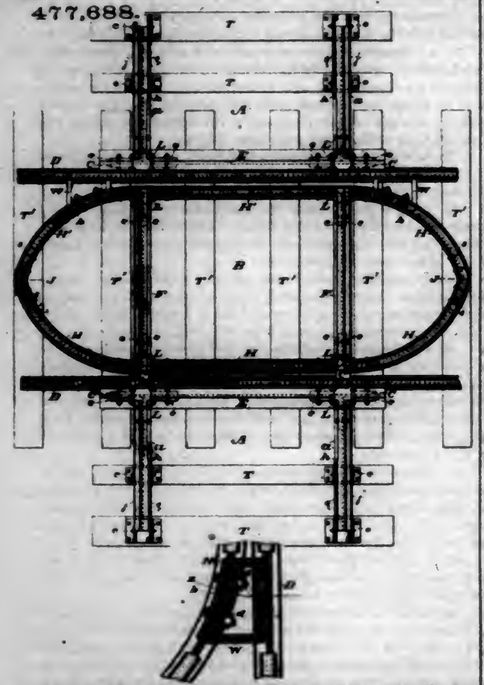
22. In a railroad-crossing, a crossing-rail having a vertical cut in its head and a miter cut in its side and bent thereon, for the purposes set forth.

477,688. RAILROAD-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Dec. 5, 1890. Serial No. 373,662. (No model.)

Claim.—1. In a railroad-crossing, guard-rails between the through-rails curved and united at the ends into a guard-piece complete for either direction.

2. In a railroad-crossing, in combination with two crossing-rails, as F F, between the through-rails, a guard-piece composed of rails curved and united at their ends into a guard-piece complete for either direction.

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3. In a railroad-crossing, in combination with through and crossing rails, as D F, a guard-piece composed of rails curved and united at their ends into a guard-piece complete for either direction.

4. In a railroad crossing, in combination with through and crossing rails, as D F, a guard-piece composed of rails curved and united at their ends into a guard-piece complete for either direction, said guard-piece being provided with chocks between it and the through-rails.

5. In a railroad-crossing, a removable chock, as W, having one straight and one curved face shaped respectively to fit the shapes of the rails and provided with a vertical recess or recesses for inserting and tightening up the bolts securing said chock to one of said rails.

6. In a railroad-crossing, a guard-piece composed of rails curved and united at their ends to form the same, in combination with a through-rail and a removable chock, as W, having one straight and one curved face and provided with a recess or recesses, for the purposes set forth.

7. In a railroad-crossing, a guard-piece provided with attached or fixed chocks and removable chocks, as and for the purposes set forth

8. In a railroad crossing, a Z-shaped bar, as E, outside of the through-rail, for the purposes set forth.

9. In a railroad-crossing, in combination with two crossing-rails, as *a a*, a Z-shaped bar, as E, outside of the through-rail, for the purposes set forth.

10. In a railroad-crossing, in combination with two crossing-rails, as *a a*, a Z-shaped bar, as E, outside of the through-rail, and chocks, as C, for the purposes set forth.

11. In a railroad-crossing, in combination with the through and crossing rails, Z-shaped bars, as E, outside of the through-rails, for the purposes set forth.

12. In a railroad-crossing, the combination, with the through and crossing rails, of Z-shaped bars, as E, outside of the through-rails, and chocks, as C, for the purposes set forth

13. In a railroad-crossing, the combination, with the through and crossing rails, of Z-shaped bars, as E, a curved guard-piece, and chocks, as C C.

14. In a railroad-crossing, the combination, with the through and crossing rails, of Z-shaped bars, as E, a curved guard-piece, and chocks, as C W.

15. In a railroad-crossing, the combination, with the through and crossing rails, of Z-shaped bars, as E, a curved guard-piece, and chocks, as C C W.

477,689. RAILROAD-RAIL JOINT. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 22, 1891. Serial No. 406,490. (No model.)

Claim.—1. A railroad-rail joint consisting of two rails, each provided at its end with a foot or support welded thereto and having a

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bead at the welding-point, and splice-bars provided with a corrugation to pass around said bead.

2. A railroad-rail joint consisting of two rails, each provided at its end with a foot or support welded thereto and having a bead at the welding-point, and splice-bars provided with a corrugation to pass around said bead and bearing against the under part of the heads and the upper surfaces of the feet of the rails.

3. A railroad-rail joint consisting of two rails, each provided with a bead on its vertical web and having a foot or support welded to its bead, and flanged splice-bars provided with a corrugation to pass around said beads, the flange portions being adapted to rest upon said foot and under the head, respectively.

4. A girder-rail provided with a single head and a double web integral therewith, having the under portion of its head and the upper portion of its base, one or both, beveled, for the purpose set forth.

5. In a railroad-rail joint, the combination, with a girder-rail provided with a single head and double web integral therewith, of interior splice-bars provided with bearings above and below.

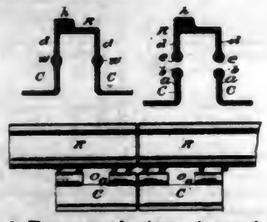
6. In a railroad-rail joint, the combination of internal splice-bars and thrust-bolts for securing the same.

7. In a railroad-rail joint, the combination of internal splice-bars with adjusting mechanism within the rail for adjusting said splice-bars.

8. A girder-rail provided with a single head and a double web integral therewith, having the under portion of its head and the upper portion of its base, one or both, beveled, in combination with internal splice-bars bearing against said beveled surfaces.

9 A double-webbed girder-rail having the under portion of its head and the upper portion of its base, one or both, beveled, in combination with internal splice-bars bearing against said beveled surfaces and thrust-bolts for adjusting said bars.

477,690. RAILROAD-RAIL AND PROCESS OF MAKING THE SAME. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Mar. 31, 1892. Serial No. 426,734. (No model.)



Claim.—1. The process of making an improved railroad-rail and support, which consists in forming a rail provided with a head and web and a bulb or projection upon said web and welding to said web a base or support also provided with a bulb or projection, the point of welding being at the point of contact of the two bulbs.

2. The process of making an improved railroad-rail and support, which consists in forming a rail provided with a head and double web throughout its length and bulbs or projections upon each of said webs and welding to said webs a base or support also provided with bulbs or projections, the points of welding being at the points of contact of said bulbs.

3. The process of making an improved railroad-rail and support, which consists in rolling a rail provided with a head and double web throughout its length and bulbs or projections upon each of said webs and welding to said webs a base or support also provided with bulbs or projections, the points of welding being at the points of contact of said bulbs.

4. The process of making an improved railroad-rail, which consists in forming a rail with a head and web and abutting and welding to said web a base or support, a portion of one of said abutting surfaces being cut away, as described.

5. The process of making an improved railroad-rail, which consists in forming a rail provided with a head and web and a bulb or projection upon said web and welding to said web a base or support also provided with a bulb or projection, a portion of one of said bulbs being cut away, as described, and the point of welding being at the point of contact of the two bulbs.

6. A railroad-rail provided with a head and web, the web terminating in a bulb, and a base or support having a bulb, the two bulbs being welded together.

7. A railroad-rail provided with a rolled head and web, the web terminating in a bulb, and a base or support also having a bulb, the two bulbs being welded together.

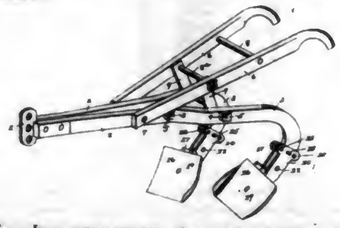
8. A railroad-rail provided with a head and double web throughout its length, each web terminating in a bulb, and with a base or support also having bulbs, said bulbs being welded together.

9. A railroad-rail provided with a rolled head and double web throughout its length, each web terminating in a bulb, and with a base or support also having bulbs, said bulbs being welded together.

10. A railroad-rail provided with a head and web and having abutted and welded to said web a base or support, a portion of one of said abutting surfaces being cut away, as described.

11. A railroad-rail provided with a head and web, the web terminating in a bulb, and a base or support also having a bulb, a portion of one of said bulbs being cut away, as described, and the two bulbs being welded together.

477,691. COTTON-SCRAPER. JAMES R. MCALISTER and THOMAS W. WADDELL, Clinton, Ark. Filed Dec. 24, 1891. Serial No. 416,075. (No model.)



Claim.—In a cotton-scraper, the combination, with the plow-beams terminating at their rear ends in goose-neck standards and the bifurcated U-shaped feet embracing and having their terminals between their ends pivoted to the standards and provided at their upper ends above their points of pivots with transverse heads, any pair of the perforations of which are adapted to be thrown into register with perforations formed in the standards, brake-pins passed through the perforations in the standards and feet, and opposite scrapers having their inner edges forwardly bent, of inverted-L-shaped fasteners located upon the upper edges and at the backs of the scrapers, each of said fasteners being provided upon its rear side at a point near its middle with a rearwardly-disposed rectangular tenon fitting the slot of the foot below the plow-standard, and bolts passed through the scrapers, the lower ends of the fasteners below the tenons, and through the slots of the feet, whereby the fasteners may be vertically adjusted within the feet, substantially as specified.

477,692. PNEUMATIC CONVEYER. EPHRAIM MCCONNELL, Daleville, Ind. Filed July 2, 1891. Serial No. 398,292. (No model.)

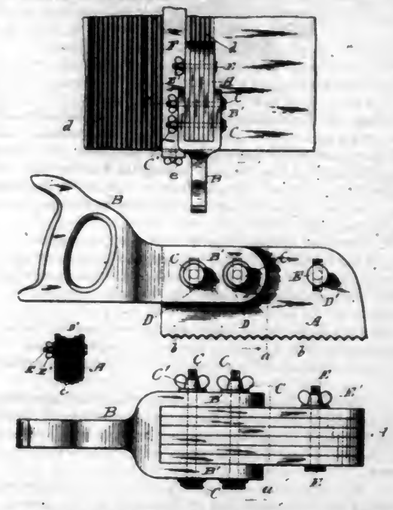


Claim.—1. In a pneumatic conveyer, the combination of a tube, a blower connected to one end thereof, a hopper communicating with said tube, a fixed forwardly-inclined deflector arranged beneath said hopper, an adjustable wind-guide arranged in rear of said deflector, and a lip depending from the forward bottom edge of the hopper, substantially as described.

2. The combination, with the blower A, of the tube B, the hopper C, provided with a fixed inclined deflector D and an adjustable wind-guide E, hinged at its upper end within the tube and provided with bolts F, projecting through elongated slots in the sides of the tube and carrying elongated washers covering said slots, and thumb-screw *f* for holding said wind-guide in its adjusted position, and the lip H, depending from the forward bottom edge of the hopper, substantially as described.

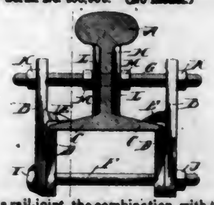
3. The combination, with the tube and blower, of the hopper C, provided with a fixed inclined deflector I and an adjustable inclined deflector K, the lip H, depending from the forward bottom edge of the hopper, the inclined deflector D, arranged beneath said hopper, and the adjustable wind-guide E, hinged in rear of said deflector, all constructed and arranged substantially as shown and described.

477,698. HAND IMPLEMENT FOR TOOLING STONE-SURFACES. WILLIAM F. NICHOLSON, Worcester, Mass. Filed Feb. 17, 1892. Serial No. 421,864. (No model.)



Claim.—A hand implement for tooling stone-surfaces, comprising the series of blades A, placed side by side, and having curved teeth or cutting-edges on the bottom coming in line transversely, as described, and also having vertical slots extending transversely through all the blades, in combination with a suitable handle B, adapted to receive one end of the blades when bunched together, and suitable bolts and nuts for fastening the parts after adjustment, substantially as shown and specified.

477,694. RAIL-JOINT. MILTON C. NILES, Oak Park, Ill. Filed July 28, 1891. Serial No. 400,956. (No model.)



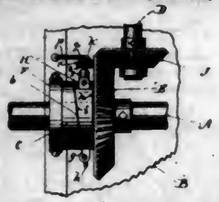
Claim.—1. In a rail-joint, the combination, with the rails, of clamping-plates having ledges engaging the flanges of the rails and being held asunder and away from the webs of the rails by the said rail-flanges, the lower ends or edges of said plates being connected together below the rail-flanges and their upper ends or edges being adjustably tied together, substantially as set forth.

2. In a rail-joint, the combination, with the rails, of upright substantially straight clamping-plates having ledges engaging the flanges of the rails, the bolts passing through said plates above and below the rail-flanges, substantially as set forth.

3. In a rail-joint, the combination, with the rails, of upright clamping-plates having ledges engaging the flanges of the rails and being connected together below the said rail-flanges, fish-plates arranged between the said clamping-plates and the webs of the rails, and bolts above the rail-flanges for forcing all of said plates toward the rails, substantially as set forth.

4. In a rail-joint, the combination, with the rails, a pair of vertical clamping-plates, and ledges and projections on said plates, between which the flanges of the rails fit and wedge, of a screw-bolt connecting said plates below the rails, fish-plates fitting between the top and flanges of the rails, and screw-bolts connecting the clamping-plates passing through the rail-web and the fish-plates and nuts on said bolts binding the fish-plates against the rail, substantially as described.

477,695. THRUST-COLLAR FOR AXLES OF ELECTRICALLY-PROPELLED VEHICLES. RICHARD P. OSGOOD, Methuen, Mass. Filed Mar. 14, 1892. Serial No. 424,771. (No model.)



Claim.—1. The combination, with the axle and motor-stand supported thereon, of a drive-gear on said axle, a thumb-collar loose on said axle between the stand-support and gear, said collar having a wedge-face for engaging the gear or support, whereby the relative position of the stand to said gear may be regulated as the collar is rotated, and mechanism for securing said collar to the stand, substantially as described.

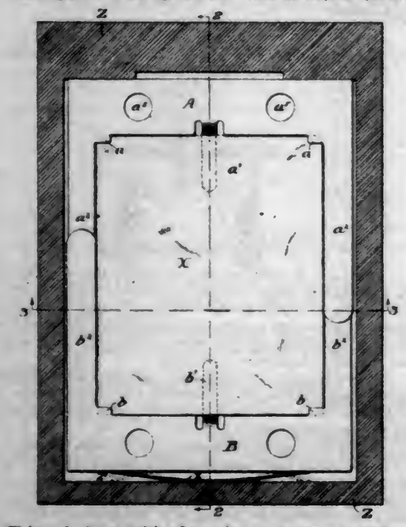
2. The collar H, comprising the members *d f*, having the wedge-faces *i j*, and mechanism for securing said members on a car-axle, the segmental flange *k* on the member *f*, and mechanism for securing said flange to a motor-stand supported by said axle, substantially as described.

3. The thrust-collar H, comprising the members *d f*, having the wedge-faces *i j* and lugs *g*, and the flange *k* on the member *f*, provided with the pin-holes *m*, substantially as and for the purpose set forth.

4. The combination of the axle, motor-stand, and supporting-box having a beveled inner face, as *b*, with the gear on said axle, the thrust-collar H, loose on said axle between said box and gear, and mechanism for securing said collar to the motor-stand, substantially as described.

5. The combination of the axle, motor-stand, and supporting-box C for said stand, provided with the beveled face *b*, the gear on said axle, the thrust-collar H, loose on said axle between said gear and box and provided with a flange *k*, and mechanism for securing said flange to a projection on the motor-stand, substantially as described.

477,696. PHOTOGRAPHIC-PLATE HOLDER. ARTHUR R. PAIGE, Philadelphia, Pa. Filed Apr. 22, 1891. Serial No. 389,966. (No model.)

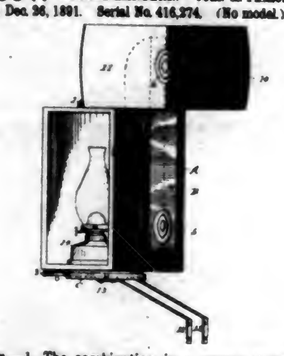


Claim.—1. As an article of manufacture, a carrier or kit for use in a camera, adapted to be at will placed in and removed from a holder, said carrier being constructed as a rectangular frame, the opposite sides of which each embody a projecting arm or member, and the opposing arms or members being arranged free for sliding movement past each other, whereby the frame may be lengthened or shortened without interrupting its continuity, substantially as set forth.

2. As an article of manufacture, a carrier or kit for use in a camera, adapted to be at will placed in and removed from a holder, said carrier being constructed as a rectangular frame, two of the opposite sides of which each embody two projecting arms or members, and the opposing arms or members of the respective sides being arranged free for sliding movement past each other, whereby the frame may be lengthened or shortened without interrupting its continuity, substantially as set forth.

3. As an article of manufacture, a carrier or kit for use in a camera and adapted to be at will placed in and removed from a holder, and consisting of two parts, each part comprising an end member and two side members, the side members of one part overlapping and being supported in telescopic relationship with the corresponding members of the other part, whereby the kit may be extended or shortened, and a spring adapted to force the two parts together, substantially as set forth.

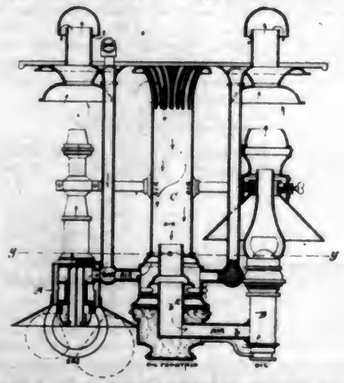
477,697. SIGNAL-LANTERN. JOHN H. PARSONS, Wichita, Kans. Filed Dec. 26, 1891. Serial No. 416,274. (No model.)



Claim.—1. The combination, in a railway-station lamp-case, of the vertical projecting back B, supporting the vane 10 11 and provided with green glass over the opening 5, colorless glass over the opening 6, hood-reflector 8 8, and reflector 7, substantially as described.

2. The combination of the lamp-case A, provided with a vertical rim underneath its bottom and the spring-bolt 3, and the base C, supported by brackets, said base having the notched vertical flange to inclose the said rim, and to be engaged by the spring-bolt, substantially as set forth.

477,698. LAMP. REUBEN H. PLAIN, Brooklyn, N. Y. Filed Sept. 11, 1889. Serial No. 323,694. (No model.)

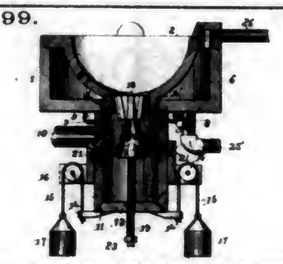


Claim.—The combination, in the same fixture with a regenerative gas-lamp, of an oil-lamp, there being a common air-supply duct leading from the top of the apartment in which the fixture is located to both the regenerative gas-lamp and the oil-lamp, the oil-lamp being closed to admission of air, except by the common duct, substantially as described.

477,699. BLACKSMITH'S FORGE. WILLIAM J. PYONEY, McCracken, Kans. Filed Nov. 10, 1891. Serial No. 411,491. (No model.)

Claim.—1. In a blacksmith's forge, the combination of the tuyere-box, a tubular cinder-box removably connected to the under side of the tuyere-box and provided with a blast-pipe, said box being designed

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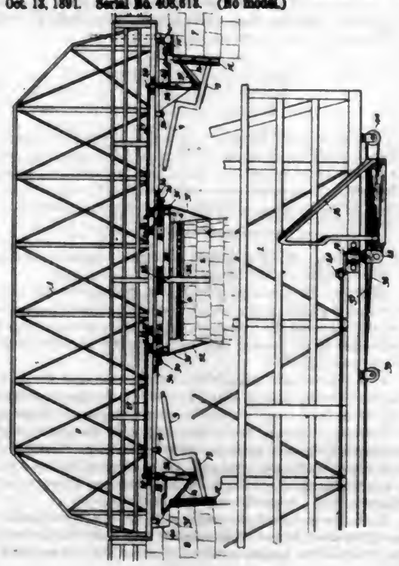
to be circularly adjusted beneath the tuyere-box to accommodate the blast, a cover or bottom normally closing said cinder-box, and weights flexibly connected with said cover and suspended to draw the same against the cinder-box, substantially as set forth.

2. In a blacksmith's forge, the combination of a tuyere and fire box having a bottom opening, a tubular cinder-box removably connected to the lower or under side of said tuyere-box and provided with a lower beveled seat, a conical cover fitting said beveled seat or lowered end, pulleys secured to opposite sides of said cinder-box, and weighted cords connected to said bottom or cover and passing over said pulleys, substantially as set forth.

3. In a blacksmith's forge, the combination of a tuyere and fire box having a bottom opening, a tubular cinder-box having a blast-pipe and removably connected to the lower under side of said tuyere-box, a cover or bottom normally closing the bottom of said cinder-box, suspended weights connected with said cover to hold the same against the cinder-box, a rotary grate located in said bottom opening and having an operating-rod extending down through said cinder-box and the bottom or cover thereof, and a conical guide-block suspended centrally within said cinder-box and adapted to receive said grate-operating rod, substantially as set forth.

4. In a blacksmith's forge, the combination of a combined tuyere and fire box having an inclosed water-space, a blast-receiving and cinder box removably secured to the under side of said tuyere and fire box, a cover normally closing the lower end of said cinder-box, weights suspended from the sides of the cinder-box and flexibly connected with said cover or bottom, a water tank or reservoir adjacent to said tuyere and located above the same, a supply-pipe connecting the lower ends of said reservoir with said inclosed water-space, a draw-off cock connected with said supply-pipe below the tank, circulating and return pipes connected to the top of said water-space and projecting within the top of said tank or reservoir, and draw-off cocks connected with said circulating and return pipes at their lowest points, substantially as set forth.

477,700. BRIDGE-GATE. JOHN W. RHODES, Havana, Ill. Filed Oct. 13, 1891. Serial No. 408,618. (No model.)



Claim.—1. The combination, with the piers 7 and 8 and a swing-bridge 1, of gates hinged or pivoted at their lower ends to the inner sides of the piers and swung downward away from the piers to a position over the water and beneath the ends of the swing-bridge by the closing of the latter, substantially as described.

2. The combination, with the piers 7 and 8 and a swing-bridge 1, of gates hinged or pivoted at their lower ends to the inner sides of the piers to swing downward away from the piers into a position over the water, and devices carried by the swing-bridge for swinging the gates downward to positions beneath the ends of the swing-bridge when the latter closes, substantially as described.

3. The combination, with a swing-bridge and piers, of gates hinged or pivoted at their lower ends to the piers to swing downward away from the piers into a position over the water, and arms carried by the bridge and projecting laterally therefrom to swing the gates downward away from the piers into a position under the bridge as the latter closes, substantially as described.

4. The combination, with a swing-bridge and arms 16 carried thereby, of piers 7 and 8 and gates 9, mounted upon said piers and adapted to be engaged by said arms and turned downward under the bridge as it closes, substantially as described.

5. The combination, with a swing-bridge and arms 16 carried thereby, of piers 7 and 8, gates 9, hinged at their lower ends upon said piers, springs 11 for lifting said gates, and rollers 13 on said gates, substantially as described.

6. The combination, with a swing-bridge and arms 16 carried thereby, of piers 7 and 8, gates 9, hinged at their lower ends upon said piers, springs 11 for lifting said gates, rollers 13, and devices for locking said gates in their upright position, said locking devices being adapted to be released by the operation of the arms 16, substantially as described.

7. The combination, with a swing-bridge and piers, of gates hinged or pivoted at their lower ends to the piers to swing downward away from the piers into a position over the water, laterally-projecting arms carried by the bridge for swinging the gates downward away from the piers when the bridge closes, and mechanism for turning said arms so that they will lie parallel to the bridge when it is open, substantially as described.

8. The combination, with a swing-bridge, of gates adapted to close the roadways leading to the bridge when it is open, laterally-projecting arms carried by the bridge, adapted to turn said gates down when the bridge closes, and automatically-operating mechanism for turning said arms so that they will lie parallel to the bridge when it is open, substantially as and for the purpose specified.

9. The combination, with a swing-bridge, of gates adapted to close the roadways leading to the bridge when it is open, laterally-projecting arms carried by the bridge, adapted to turn said gates down when the bridge closes, and mechanism for turning said arms to a vertical position, substantially as and for the purpose specified.

10. The combination, with a swing-bridge, of gates adapted to close the roadways leading to the bridge when it is open, laterally-projecting arms carried by the bridge, adapted to turn said gates down when the bridge closes, and automatically-operating mechanism for first turning said arms so that they will lie parallel to the bridge when it is open and then turning said arms to a vertical position, substantially as and for the purpose specified.

11. The combination, with the bridge 1, having spur-wheel 24, crank-shafts 25, connecting-rods 27, and arms 16, having rods 19 and cranks 20, of a pier 2, and wheel 21, supported thereupon, said wheel having cogged sections 22 on its periphery adapted to be engaged by the wheels 24, substantially as and for the purpose specified.

12. The combination, with the bridge 1, having crank-arms 35, cross-bars 36, arms 16, and ropes 37 and 38, adapted to raise or lower said arms 16, of a pier 2, and cam-groove 29, mounted thereupon, substantially as and for the purpose specified.

477,701. PORTABLE ROOF. JOHN H. RICE, Henderson County, Ill. Filed Oct. 9, 1890. Serial No. 367,501. (No model.)



Claim.—1. For sustaining and connecting the boards of a portable roof, an improved supporting device consisting of a chain of short links and holders adapted to receive the lower edges of the boards and

hold them in position, said holders being attached to and detachable from the links of the chain, substantially as described, and for the purpose herein set forth.

2. The chain B, having short links and provided with the holders C for sustaining the covering-boards A of a portable roof, said holders being formed of stout wire and having the connecting part D, by which they are connected with the links of the chain, substantially as described, and for the purpose herein set forth.

3. The combination, with a chain having short links, of holders adapted to receive the lower edges of the boards of a portable roof and hold them in position, each of said holders having a connecting part by which it is connected with the links of the chain and detachable therefrom, and the covering-boards resting in said holders, substantially as described, and for the purpose herein set forth.

4. The combination, with the chain B, having short links, of the holders C, formed of stout wire and adapted to receive the lower edges of the boards A of a portable roof and hold them in position, each of which holders having the connecting part D, by which it is attached to the links of the chain and detachable therefrom, and the covering-boards A, resting in said holders, substantially as described, and for the purpose herein set forth.

477,702. DUMPING-CART. LEONHARD RODENHAUSER, Philadelphia, Pa. Filed Nov. 10, 1891. Serial No. 411,427. (No model.)



Claim.—1. In a dumping-wagon, the combination, with the running gear and body part, of links or arms positively connected at one end with the running-gear and at the other end with the body part, links or arms positively connected at one end with one of said parts and at the other end with the other part by a movable connection, power devices for moving one or more of the links or arms, and an adjustable supporting and elevating bar between the forward end of the body part and the running-gear, whereby said supporting-bar when adjusted limits the extent of the elevation of the forward part of the body, supports said forward part, and causes the elevation of the rear of the body.

2. In a dumping-wagon, the combination, with the running-gear and body part, of elevating-arms positively connected with the running-gear and body part, power devices to operate said elevating-arms, connecting-arms positively connected at one end with the running-gear and having a sliding connection at the other end with the body part, and a supporting and elevating bar pivotally connected at one end with the body part and having an adjustable connection with the running-gear at its other end, whereby said supporting-bar when adjusted controls the amount of sliding movement of the connecting-arms and limits the elevation of the wagon-body.

3. In a dumping-wagon, the combination, with the running-gear and wagon-body, of the elevating-arms G, connected with the running-gear and wagon-body, the forward connecting-arms H, pivotally connected with the running-gear, the slotted plate I on the wagon-body, in which the upper ends of the connecting-arms H are received and free to slide, and the supporting-bar J, pivotally connected at one end to the forward part of the wagon-body and at the other end with an adjustable connection to the forward end of the running-gear.

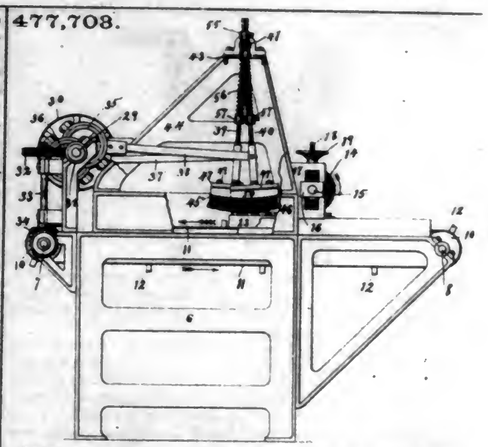
477,708. CAN-CLEANING MACHINE. GEORGE ROTH, Highland, Ill. Filed July 3, 1891. Serial No. 398,336. (No model.)

Claim.—1. A can-cleaning machine embodying a suitably-driven endless conveyer for feeding the cans, a rotary brush driven by the apparatus, and yielding reciprocating brushes suitably actuated, whereby the cans are subjected to a sweeping and scrubbing action and are permitted to yield when obstructions are encountered.

2. A rotary brush for a can-cleaning machine, made up of bristles mounted upon a flexible backing, having one end thereof fixedly secured to and coiled around a cylinder and the other end thereof attached to a movable piece, whereby the coils of the brush may be tightened or loosened, substantially as and for the purpose described.

3. A rotary brush for a can-cleaning machine, made up of bristles mounted upon a flexible backing, having one end thereof fixedly secured to and coiled around a cylinder and the other end thereof attached to a movable piece journaled upon a shaft projecting from said

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cylinder and provided with a spring-bolt adapted to register with perforations in the end of the cylinder, substantially as and for the purpose described.

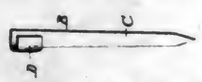
4. An oscillating or reciprocating brush for a can-cleaning machine, comprising a spring-pressed adjustable brush-handle freely suspended at its upper end and carrying a spring-pressed adjustable brush at the lower end thereof, substantially as described.

5. An oscillating or reciprocating brush for a can-cleaning machine, comprising a brush-handle suspended at its upper end, a plate connected to the lower end thereof, and means for movably uniting the brush to said plate, and a spring between said plate and brush, substantially as and for the purpose described.

6. An oscillating or reciprocating brush for a can-cleaning machine, comprising a brush-handle suspended at its upper end, a plate 47, connected to the lower end thereof, rods 48 for uniting the base 50 of the brush to said plate and passing freely through the latter, and a spring 51, contained in a socket 52 on the base of said brush, interposed between the plate and brush, substantially as described.

7. The combination, to form a can-cleaning machine, of an endless conveyer for feeding the cans, a rotary adjustable brush arranged above the travel of the cans and suitably driven by the apparatus, and reciprocating brushes driven by eccentrics from a suitably-actuated shaft of the machine, the said latter brushes freely suspended at their upper ends and provided with yielding connections, substantially as described

477,704. STEMMING DEVICE FOR FLOWERS. SULLIVAN J. RUSSELL, Jersey City, N. J. Filed Aug. 22, 1891. Serial No. 403,430. (No model.)



Claim.—The herein-described stemming device for flowers, consisting of a blank cut or stamped from pliant sheet metal and formed with a shank to constitute an artificial stem and with a laterally-extending wing at the upper end of said shank and integral therewith to grasp the flower-stem, substantially as shown and described.

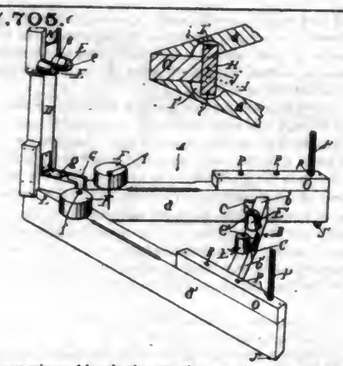
477,705. BICYCLE-STAND. MADISON J. RUSSELL, Los Angeles, Cal. Filed Mar. 9, 1892. Serial No. 424,355. (No model.)

Claim.—1. A bicycle-stand comprising the combination of a suitable supporting-frame comprising a base and a standard and a series of eccentrically-journaled wheel-clamping rollers arranged oppositely in pairs upon such base and standard to receive the wheel of the bicycle between them.

2. A bicycle-stand comprising the combination of the A-shaped base-frame having its side members hinged to each other near the apex of the frame and having the cross-bar arranged near the broad end of the frame and formed of two sections hinged to the side members of the frame and to each other to fold inward toward the apex of the frame, a standard hinged at the apex of the frame and adapted to project upward therefrom, and means arranged upon such base and standard for securing a bicycle to such base and standard.

3. In a bicycle-stand, the combination set forth of the apex-block, the side members hinged thereto and provided with the pin-receiving holes, the standard hinged to the top of such block and provided with

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means for securing a bicycle thereto, the cross-bar arranged near the broad end of the frame and formed of two sections hinged to the side members and to each other to fold toward the apex of the frame, the pins set in the side members to receive the handle of the bicycle, and means for securing the standard in an upright position.

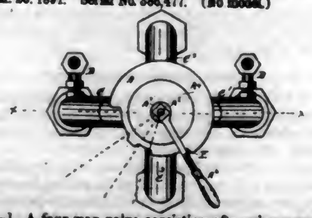
4. In a bicycle-stand, the combination set forth of the apex block, the side members thereto and provided with the pin-receiving holes, the standard hinged to the top of such block and provided with means for securing a bicycle thereto and provided with the projecting arms L, arranged to clasp the ends of the side members against the apex-block, the cross-bar arranged near the broad end of the frame and formed of two sections hinged to the side members and to each other to fold toward the apex of the frame, the pins set in the side members to receive the handle of the bicycle, and means for securing the standard in an upright position.

5. In a bicycle-stand, the combination of the apex-block provided in its end with the saw-kerf I, and the side members beveled at one end and provided at the base of the bevel with the saw-kerfs I', the perforated hinge-plate set in such saw-kerfs, and the pins set in such block and side members and passed through the perforations in the plate.

6. In a bicycle-stand, the A-shaped base-frame comprising the combination of the apex-block, the side members respectively beveled at one end and hinged to such apex-block near the base of such bevel and provided with the cross-bar formed of two members hinged, respectively, to the two side members and to each other and arranged to fold against each other, the standard hinged to the apex-block and projecting upward therefrom and provided with the downwardly-projecting arms arranged to engage the ends of the side members of the A-shaped frame, and the wheel-engaging devices arranged upon such frame and standard to receive and support the bicycle.

7. In a bicycle-stand, the A-shaped base-frame comprising the combination of the side members hinged to each other near the apex of the frame, the cross-bar formed of two sections hinged, respectively, to the side members of the frame and to each other and having their abutting ends slightly beveled away from their connecting-hinge and of a combined length slightly greater than the space between such side members at the point where the sections of the cross-bar are attached thereto, a standard arranged to project upward at the apex of the frame, and suitable devices arranged upon the base and standard to receive and support a bicycle.

477,706. FOUR-WAY VALVE. WILLIAM RYMER, Detroit, Mich. Filed Mar. 26, 1891. Serial No. 386,477. (No model.)



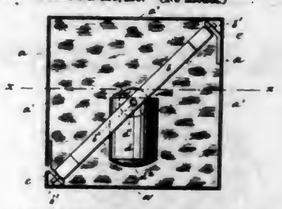
Claim.—1 A four-way valve consisting of a valve-case provided with a valve-seat having in combination therewith a rotatable valve located upon the seat, said seat constructed with ports a a' a^3 a^5 and said valve with ports a^4 a^6 a^8 a^7, and two of said valve-ports a^6 and a^7 each being large enough to communicate with two of the seat-ports at the same time, and the remaining two a^4 and a^8 not being large enough to communicate with two of the seat-ports at the same time, and a channel in the valve connecting the ports a^4 and a^8, substantially as described.

2. A four-way valve consisting of a valve-case provided with a valve-seat having in combination therewith pipes C C' C³ C⁵, ports communicating through said seat with said pipes, a rotatable and reciprocating valve located upon said seat and constructed with ports a^4 a^6 a^8 a^7, and a channel a^9, connecting the ports a^4 and a^8, two of said valve-ports being large enough to communicate with two of the seat-ports at the same time and the other two being of the same size as the seat-ports, the large and the small ports of the valve alternating with each other respectively, substantially as described.

3. A four-way valve consisting of a valve-case provided with a valve-seat having in combination therewith a rotatable and reciprocatory valve located upon said valve-seat, said seat being constructed with ports a, a', a^3, and a^5, and the valve with ports a^4, a^6, a^8, and a^7, and a channel a^9, connecting the ports a^4 and a^8, said case forming a chamber above the valve within which the valve may reciprocate, two of said ports a^4 and a^7 each being large enough to communicate with two of the seat-ports at the same time and one of them a^6 extending through the valve, whereby communication is established with the interior of the chamber and back-pressure is overcome, and a spring within the chamber pressing against the top of the valve, substantially as described.

4. A four-way valve consisting of a case provided with a valve-seat and having its upper rim recessed, said case having in combination therewith a valve and valve-stem projecting through said case, a lever secured to the stem, and a spring secured to the lever, the lower end of which is adapted to engage with the recesses of the rim of the case for holding the valve in a desired position, said seat being provided with ports a, a', a^3, and a^5 and the valve being provided with communicating ports a^4 and a^8 and with ports a^6 and a^7, substantially as described.

477,707. INKSTAND. PHILIP W. SALIAS, Jersey City, N. J. Filed Apr. 16, 1892. Serial No. 429,420. (No model.)



Claim.—1. The combination of a cubical shell having perforated sides with an interior pivoted supporting-frame and with an ink-holding receptacle pivoted to said frame, substantially as specified.

2. The combination of a cubical shell having perforated sides with a diagonal pivoted supporting-frame and with an ink-holding receptacle having a weighted bottom and pivotally suspended within said frame, substantially as specified.

477,708. ELECTRIC-CURRENT REGULATOR. CHARLES D. SIGSBEE, U. S. Navy, and THOMAS S. HAYWARD and FRANK S. ANDERSON, Boston, Md. Filed Sept. 11, 1891. Serial No. 405,435. (No model.)



Claim.—1. A resistance device or mass of compound structure for electric currents, composed of electric conductive material and one or more perforated regulating-plates of lower conductivity, substantially as set forth.

2. A resistance device or mass of compound structure for electric currents, composed of electric conductive material arranged in alternate layers with one or more perforated regulating-plates of lower conductivity, substantially as set forth.

3. A resistance device or mass of compound structure for electric currents, composed of powdered graphite and one or more regulating-plates of perforated mica, substantially as set forth.

4. A resistance device or mass of compound structure for electric currents, composed of powdered graphite arranged in alternate layers with one or more regulating-plates of perforated mica, substantially as set forth.

5. In a rheostat, the resistance device or mass of compound structure, composed of electric conductive material and one or more perforated regulating-plates of lower conductivity and in combination therewith the contact-plates at the terminals of said structure, substantially as set forth.

6. In a rheostat, the resistance device or mass of compound structure, composed of electric conductive material and one or more perforated regulating-plates, together with the contact-plates at the terminals of the resistance device, in combination with the compressor-screw and the coil or receptacle, substantially as set forth.

7. In a rheostat, the combination, with the compressor, the coil, and the resistance device or material contained in the coil, of one or more elastic packing-pads and one or more presser-plates, substantially as set forth.

8. In a rheostat, the combination, with the compressor, the coil, and the resistance device or material contained in the coil, of one or more packing-pads of asbestus, and presser-plates B^3 and conductor-pieces J, substantially as set forth.

9. In a rheostat, the combination, with the compressor, the coil, the contact plates, and the resistance device or material contained in the coil, of one or more packing-pads of asbestus fiber carrying a conductive substance, and of one or more presser-plates, substantially as set forth.

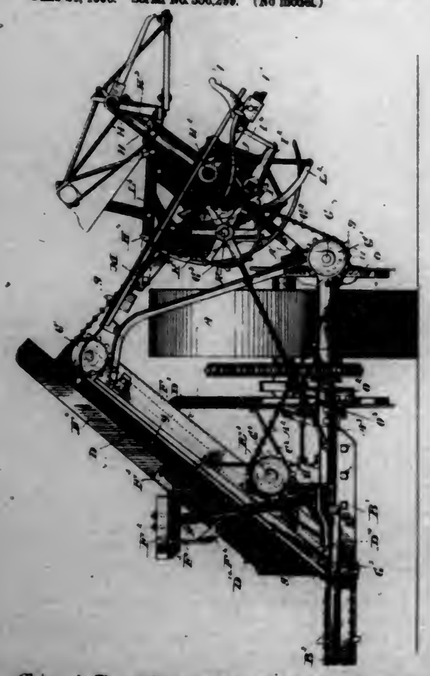
10. In a rheostat, a perforated regulating-plate of low conductivity, substantially as set forth.

11. In a rheostat, a perforated regulating-plate of mica, substantially as set forth.

12. In a rheostat, a regulating-plate composed of two or more layers of material of low conductivity, perforated, relatively, in a manner whereby the common aperture or apertures through said plates may be varied in area by varying the relative positions of contact of said plates, substantially as set forth.

13. In a rheostat, two or more regulating-plates perforated, relatively, in a manner to direct the electric current flowing through said perforations in a more or less devious route through the conductive material of said rheostat, substantially as set forth.

477,709. HARVESTER. JOHN F. STEWARD, Chicago, Ill. Filed June 21, 1890. Serial No. 356,299. (No model.)



Claim.—1. The combination of the open-end elevator, the binder having a supplementary table by which it is made extensible in a rearward direction relative to the main binder-frame and having a rearwardly-extended knotter-driving shaft, by means of which the knotting devices may be moved rearwardly relative to the main binder-frame, and the long needle-shaft whereby the needle may be moved to a rearward position and the binder thus made extensible in a rearward direction, all of said extensions and adjustments in a rearward direction being made relative to the main binder-frame, whereby long crops may be handled without adjusting the main binder-frame rearward, substantially as described.

2. In combination with an open-end elevator, a binder-frame secured to the said harvester-frame and having a long needle-shaft and a long knotter-driving shaft, a needle and a knotting device secured to said shafts and adapted to be moved to a rearward position relative to the main binder-frame, so as to overreach the butts of very long grain, said harvester having a reel adapted to be moved to a high position to overstep long grain, the extensibility of the reel and the extensibility of the needle and the knotting devices in a rearward direction accomplished by interposing between the reel-adjusting devices a lengthening-piece, and lengthening-pieces between the said needle and said knotting devices and the main binder-frame, substantially as described.

3. In a harvester, the combination of a reel having an extension-piece E^3, said extension-piece rigidly secured to the reel-bracket and to a supplemental bracket secured to the reel-lever, whereby the said extension E^3 is by means of the reel-lever prevented from rotating around the reel-post, and the reel-bracket is thus prevented from rotating or swinging around the said post, substantially as described.

4. A grain harvesting and binding machine adapted to operate upon corn or sorghum and other high crops by means of an extension-piece, whereby the reel may be supported in and be adjustable in a higher position than that in which it is held for binding grain and there controlled by an extension-support that shall also prevent the reel-bearing from swinging on the reel-post, an elevator spanning the butts of the stalks, and the self-binder provided with an elongated needle-shaft and an extension-piece that may be placed between the needle and the main binder-frame, and an elongated knotter-driving shaft having an extension-piece that may be placed between the main binder-frame and the said knotting devices and hold the latter in position, substantially as described.

5. In a binding attachment, the combination, with the main frame, of the shaft H′, the band-uniting devices mounted thereon, and the sleeve H^4, the said sleeve and knotting device transposable in their positions, in combination with band-placing mechanism adapted to be moved on its support to a proper position relative to the said band-uniting mechanism, substantially as described.

6. In a binding attachment, the transposable knotting device and sleeve H^4, in combination with the band-placing mechanism and transposable packers and tripping-arms, substantially as described.

7. In a self-binding harvester, the packer-shaft having two or more sets of packers, and the band-uniting and band-placing mechanism adapted to be moved to the proper positions relative to the said packers, substantially as described.

8. In a self-binding harvester, a main binder-frame upon one end of which the driving-gearing of the said binder is sustained and having arms adapted to overreach the butts of the grain and having journaled therein a rearwardly-extending needle-shaft, a rearwardly-extending knotter-driving shaft, and a binding-table extending to the rear, said table having a slot through which the needle may move when placed in its rearmost position relative thereto, band-uniting devices, and a sleeve H^4, the said band-uniting devices and sleeve transposable in their positions relative to the binder-frame and to a position opposing the needle when rearwardly placed, and the rearwardly-extended finger-support for yielding fingers to sustain the long grain to be handled when brought down by the packers, substantially as described.

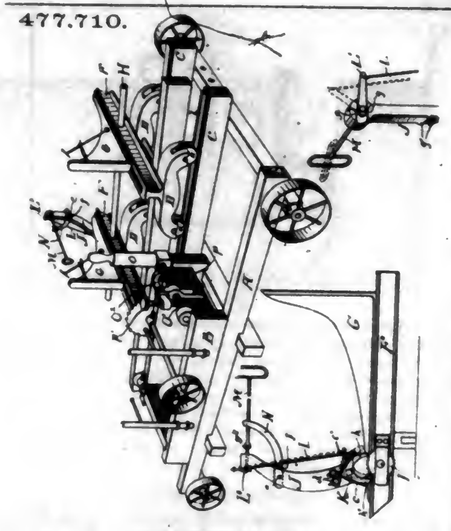
9. In a harvester, the combination of the driving-chain, as G^3, with the various parts of the binding and elevating mechanism and having the tightening sprocket-wheel G^2, the said wheel mounted upon a shaft extending from rear to front and at its rear end having an adjustable bearing and at its front end having an adjustable bearing E^5, and means for sustaining it in position, whereby it may serve as a chain-tightener, and having at its front end a sprocket-wheel adapted to give motion to the reel, substantially as described.

477,710. PAWL AND RATCHET FOR SAWMILLS. GEORGE W. STINEBRING, Shreve, Ohio, assignor of one-half to Alexander Carl, George Carl, and Willie H. Carl, same place. Filed Mar. 12, 1892. Serial No. 424,660. (No model.)

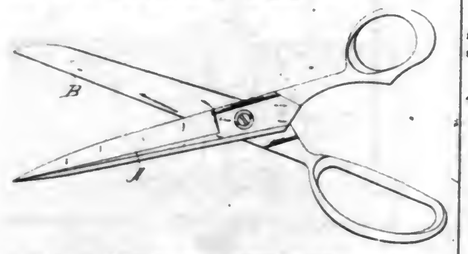
Claim.—1. The combination of the lever J, provided with the shoulders or stops *g*, the arm L′, fixed to the handle M, the connecting-rod L, the double pawl K, located above the ratchet-wheel I, and the springs *e* and *e′*, substantially as and for the purpose specified.

2. The combination of the shaft H, having mounted thereon the ratchet-wheel I, the operating-lever J, provided with the stops *g* and having attached thereto the operating-handle M, the adjustable segment N, provided with the slot *f*, the arm L′, the connecting-rod L, the springs *e* and *e′*, having different degrees of tension, and the double pawl K, substantially as and for the purpose specified.

477,710.



477,711. SHEARS. JOHN H. STRATTON, Holyoke, Mass. Filed Jan. 4, 1892. Serial No. 416,966. (No model.)



Claim.—1. Shears or scissors comprising blades mounted on a pivot consisting of a screw-threaded bolt, one of said blades being fast to said bolt and the companion blade fitted to work on said thread.

2. A pivot for shears, comprising a hollow exteriorly-screw-threaded bolt having its head split and adapted to receive a wedge or spreading-screw, substantially as described.

3. A pivot for shears, comprising a screw threaded in opposite directions from its center, substantially as described.

4. A pivot for shears, comprising a hollow bolt having tapering inner walls, a screw-threaded shank, a smooth head, a slit or kerf through said head, and a wedge or spreading-screw in said head, substantially as described.

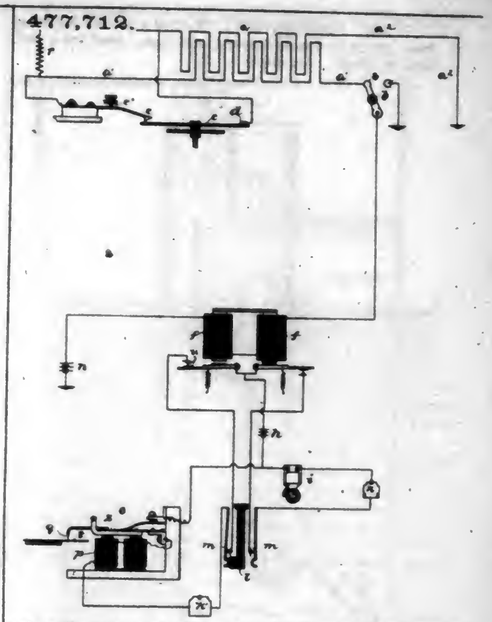
5. Shears having their blades tapped and threaded in the inner faces of their pivot portions, and a right and left hand screw inserted in the openings thus formed, whereby the blades may be adjusted in relation to each other, substantially as described.

477,712. AUTOMATIC TEST FOR BURGLAR-ALARM SYSTEMS. ALFRED STROMBERG, Chicago, Ill., assignor of one-half to Mark Simons, same place. Filed Mar. 17, 1892. Serial No. 425,264. (No model.)

Claim.—1. In an automatic alarm system, the combination, with a normally-closed metallic circuit through the district to be protected, of a resistance connected between the two sides of said metallic circuit, a periodical contact-closing mechanism adapted to temporarily short-circuit said resistance, central-office apparatus adapted to respond to changes of the condition of the district circuit resulting from the opening, grounding, or crossing of the circuit through said district, and recording apparatus adapted to respond only upon the operation of the periodical contact-closing mechanism, substantially as described.

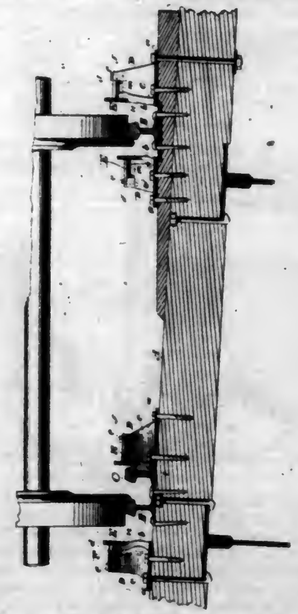
2. In combination, the double circuit $a' a^2$, the resistance *r* in branch thereof, the rotating wheel *e*, and the adjustable contact-spring *e*, the conducting-wire a', a double relay adapted to close a local circuit at the office whenever said circuit-wires $a' a^2$ are crossed, grounded, or opened, the switch *l*, shutter-drop *k*, bell *i*, test-responding device *o*,

477,712.



and auxiliary shutter-drop *k′*, substantially as and for the purpose specified.

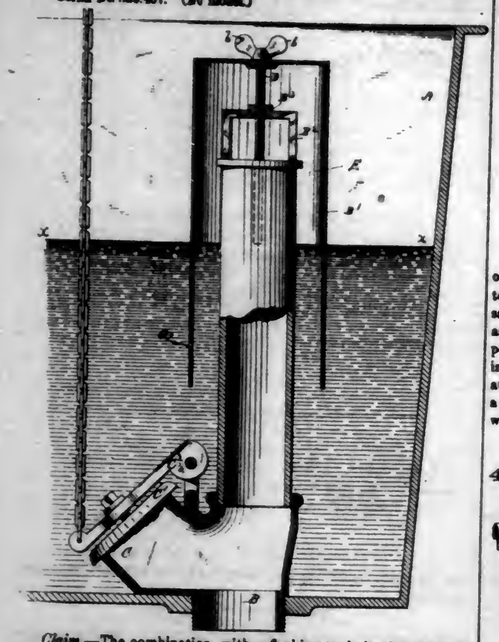
477,713. GUARD-RAIL FOR RAILWAYS. EDWARD A. TRAPP, Jersey City, N. J. Filed Oct. 1, 1891. Serial No. 407,371. (No model.)



Claim.—1. A guard-rail, combined with the chairs supporting said rail, with the tread of the rail facing the usual track-rails, and the clip-plates bolted to said chairs and overlapping said guard-rail, substantially as and for the purposes set forth.

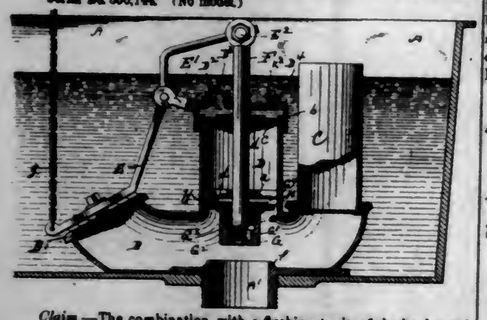
2. The J guard-rail, combined with the chairs having the recess to receive said rail, the clip-plate, and the ears on said chairs to retain said plate, substantially as set forth.

477,714. FLUSHING-VALVE. WILLIAM A. TURNER, Worcester, Mass., assignor to Edmund Converse, same place. Filed Nov. 6, 1889. Serial No. 329,437. (No model.)



Claim.—The combination, with a flushing-tank having an opening B, of the stand-pipe B', extending vertically into said tank, lateral pipe C, valve C', closing said lateral pipe, support B^2, provided with a screw-threaded boss B^3, screw D, and inverted cup D', attached to said screw and provided with the opening *a*, said inverted cup extending over the end of the stand-pipe B' and below the high-water line in the tank and being vertically adjustable by means of said screw D, substantially as described.

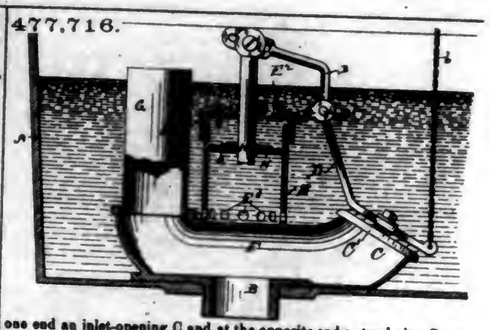
477,715. FLUSHING-VALVE. WILLIAM A. TURNER, Worcester, Mass., assignor to Edmund Converse, same place. Filed Nov. 13, 1889. Serial No. 330,144. (No model.)



Claim.—The combination, with a flushing-tank, of the horizontal pipe B, valve B', and overflow-pipe C, placed at opposite ends of said pipe B, an outlet-opening A', extending downward from the central section of pipe B, a cylinder D, communicating with pipe B and closed at its top and provided with an inlet-valve D^2 and a variable outlet D^4, said cylinder being in alignment with the outlet-opening A', valve-stem F, carrying a yielding valve H, arranged to close the outlet A', and a piston *b*, inclosed in said cylinder, and a bent lever E, carrying the valve B' and having a swiveled connection with the valve-stem F, substantially as described.

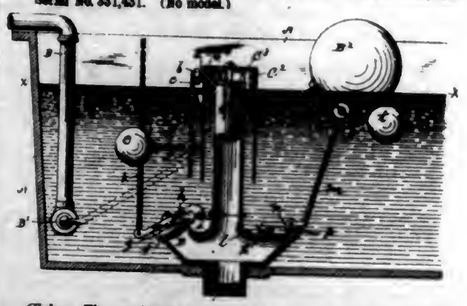
477,716. WILLIAM A. TURNER, Worcester, Mass., assignor to Edmund Converse, same place. Filed Nov. 13, 1889. Serial No. 330,485. (No model.)

Claim.—The combination, with a flushing-tank, of the horizontal pipe F, provided at its central section with the exit-opening B and at



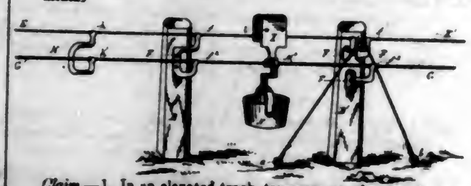
one end an inlet-opening C and at the opposite end a stand-pipe G, extending vertically above the high-water line, a cylinder E, resting upon said horizontal pipe and communicating with the tank at its lower end, an inlet-valve E^2 and a restricted outlet-opening *c*, placed at the upper end of said cylinder, an arm D^2, projecting from the side of the cylinder H, and a bent lever D, pivoted in said arm, a valve-disk C', attached at one arm of said lever and arranged to close the opening C by gravity, a piston H, inclosed in the cylinder E, and piston-stem H', connected with the opposite end of said lever, substantially as described.

477,717. FLUSHING-VALVE. WILLIAM A. TURNER, Worcester, Mass., assignor to Edmund Converse, same place. Filed Nov. 26, 1889. Serial No. 331,431. (No model.)



Claim.—The combination, with a flushing-tank, of the shell A', provided with a screw-threaded pipe C, and openings D and E, stand-pipe C', inverted cup C^3, inclosing said stand-pipe and forming a siphon, bracket *n*, spur *p*, formed on the shell A', bent lever *m*, provided with a valve-disk, by which the opening E is closed, a float *l*, adjustably connected with said bent lever, and a valve *g*, by which the opening D is closed, substantially as described.

477,718. ELEVATED TRACK OR TRAMWAY. WILLIAM P. WALLEN, Santa Monica, Cal. Filed July 13, 1891. Serial No. 399,376. (No model.)

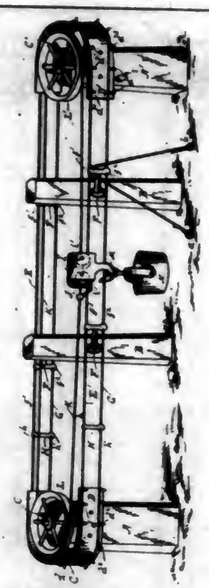


Claim.—1. In an elevated track, tramway, or wireway, the combination of a single line of posts, brackets F, projecting from each side thereof, semicircular bands D D' about the end posts, and wires or ways held by said brackets and bands, substantially as set forth.

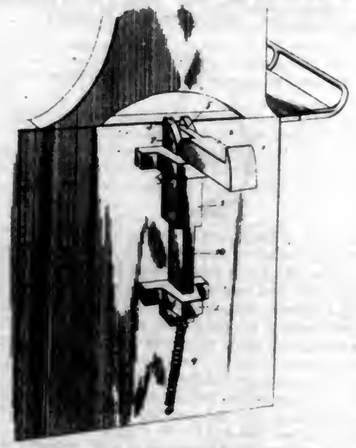
2. The track or wire supporting bracket F, consisting of a horizontal arm, a cross-arm perpendicular thereto, and clips *f f'* at the ends of said cross-arm, substantially as set forth.

3. The combination, in an elevated track, tramway, or wireway, of a line of posts, pillars, or uprights, semicircular bands at the ends of said line, brackets laterally projecting from the intermediate posts, a wire or way supported on the upper ends of said brackets and around the upper outer edge of said bands, an under wire or way supported on the lower ends of said brackets and around the lower outer edge of said bands, and ties to unite both said wires or ways at points between said posts, substantially as set forth.

477,718.



477,719. VEHICLE-STEP. SAMUEL H. WALTON and JAMES H. SMITH, Belton, Tex. Filed Nov. 2, 1891. Serial No. 410,668. (No model.)



Claim.—1. A step for vehicles, comprising guides or keepers, a sliding bar arranged in the guides or keepers, and a step hinged to the upper end of the sliding bar and adapted to be swung down in a horizontal position when the bar is raised and to be maintained in a vertical position when the bar is lowered, substantially as described.

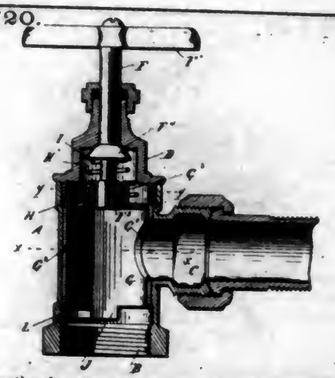
2. A step for vehicles, comprising guides or keepers, a bar sliding in the same, a step hinged to the upper end of the bar and adapted to be lowered to a horizontal position, and a spring attached to the sliding bar to hold the latter normally lowered, substantially as described.

3. A step for vehicles, comprising guides or keepers, a bar sliding in the same and provided with shoulders to limit its movement, a step hinged to the upper end of the bar and adapted to be lowered to a horizontal position, and a spring connected with the bar, substantially as and for the purpose described.

477,720. VALVE. ADOLPH WEBER, Detroit, Mich., assignor of one-half to Thos. S. Christie and Benjamin Noble, same place. Filed Nov. 28, 1890. Serial No. 372,940. (No model.)

Claim.—1. In a valve, the combination, with the casing, having an inlet and outlet opening at right angles to each other, and a movable cap, of a cylindrical hollow plug formed with a cap having a series

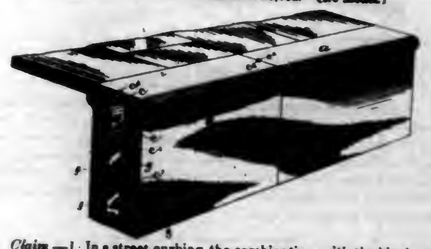
477,720.



of perforations therein and edges extending beyond the walls of the plug, a ledge on which said edges rest, a valve-stem loosely engaging with the cap of the plug, and a spiral spring interposed between the caps of the plug and casing, substantially as described.

2. In a valve, the combination, with the casing, having an inlet and outlet opening at right angles to each other, of a lateral ledge L on the interior of the casing extending partly around the same and formed at its ends into suitable abutments extending inwardly, a cylindrical plug within the casing, having an open bottom and a side port and a depending lug J on the lower end of the plug extending down below the plane of the stop on the casing, substantially as described.

477,721. STREET-CURBING BLOCK. SCOTT A. WEBB, Columbus, Ohio. Filed July 16, 1891. Serial No. 399,782. (No model.)



Claim.—1. In a street-curbing, the combination, with the blocks *a*, having their ends abutting, as described, longitudinal channels through said blocks, bevels *c* at the mouth sides of each of said channels, tarways c^3, leading thereto, and bevel-connecting grooves *c'*, of joint-bricks formed separately from said blocks and supported, as described, within the channel-mouths of two adjoining blocks, and a filling of tar or similar substance in said way c^3, bevels *c*, and grooves *c'*, substantially as specified.

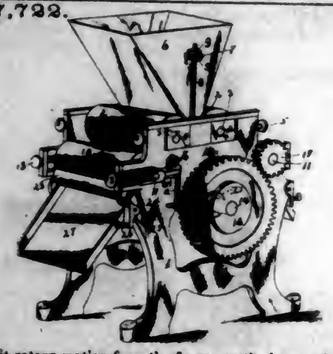
2. In a street-curbing, the combination, with the end-abutting blocks *a*, having longitudinal channels *b*, bevels *c* on the mouth-edges of said block-channels, notches *e*, formed in said channel-edges at the centers of said bevels, and grooves *c'* in said block ends connecting the bevels *c* of the various channels, of joint-bricks *f*, formed separately from said blocks and inclosed partially by the channels of one and partially by the channels of the other of two of said abutting blocks, and a filling of tar or other similar substance in said bevels, notches, and grooves, as described, substantially as and for the purpose specified.

3. In a street-curbing, the combination, with the end-abutting blocks *a*, having longitudinal channels *b*, bevels *c* on the mouth-edges of said block-channels, notches *e*, formed in said channel-edges at the centers of said bevels, and grooves *c'* in said block ends connecting the bevels *c* of the various channels, of joint-bricks *f*, formed separately from said blocks and inclosed partially by the channels of one and partially by the channels of the other of two of said abutting blocks, side tarways *g* in said joint-bricks, as described, and a filling of tar or other similar substance in said bevels, notches, and grooves, as described, substantially as and for the purpose specified.

477,722. COLOR-GRINDING MACHINE. HERMANN J. WICHAUF, Rhoydt, Germany. Filed Oct. 16, 1891. Serial No. 408,963. (No model.)

Claim.—In a paint-grinding machine, the combination, with the drive-shaft, the curvilinear cam-wheel fixed thereon, a grinding-roller, a collar fixed on the shaft of said roller adjacent to the end thereof, and gearing intermediate of the drive-shaft and grinding-roller, adapted.

477,722.



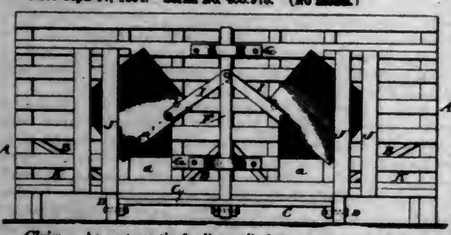
to transmit rotary motion from the former to the latter, of the longitudinal rock-shaft B, having its inner end slotted and straddling the curvilinear cam on the drive-shaft, the bifurcated arm A, straddling the roller-shaft and engaging the collar thereon, and the vertically-disposed branch *a*, journaled in suitable bearings and connecting the shaft B and arm A, substantially as and for the purpose specified.

477,723. PLOW-POINT. GEORGE C. WESTERVELT, South Bend, Ind. Filed Mar. 5, 1892. Serial No. 423,834. (No model.)



Claim.—The reversible plow-point shown and described, having a wedge-shaped toe and a rearwardly-extending tang or shank B, having the longitudinal offsets C, the offsets on one side being reversed from those on its opposite side and having the rearwardly and laterally extending flanges V for fitting a corresponding recess in a plowshare and having the angled shoulders S and pin-groove *r*, substantially as and for the purpose set forth.

477,724. FEED-TROUGH. JOSEPH A. WHITMORE, Canton, Ill. Filed Sept. 17, 1891. Serial No. 406,973. (No model.)



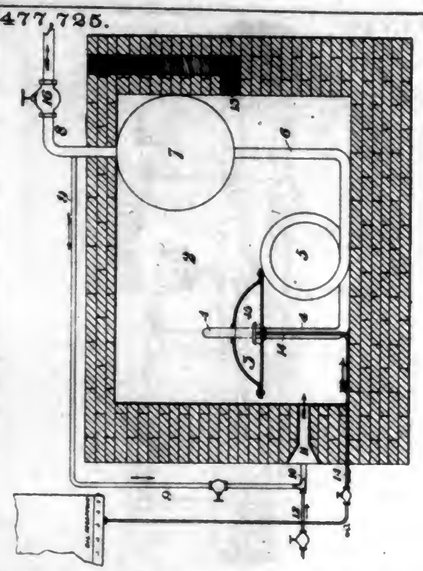
Claim.—An automatic feeding-crib for swine provided with the openings *a*, hoods *a'*, hoppers B, corner-pivoted doors H, vertical rods F, pivoted arms I, connecting the rods F with the doors H, and the rear pivoted platform C, supported in front on the spring E, all substantially as shown and described.

477,725. APPARATUS FOR MAKING GAS. JOSEPH WILLIAMS, Jr., and ERASMUS O. PEOPLES, Allegheny, Pa. Filed Feb 2, 1891. Serial No. 379,897. (No model.)

Claim.—1. A gas-manufacturing apparatus comprising a combustion-chamber, a closed retort set therein, an oil reservoir above the level of the retort, a pipe leading from the oil-reservoir to a point within the retort, and a coiled pipe within the combustion-chamber, connecting with the retort and with a gas-holder, also within the combustion-chamber, substantially as and for the purposes described.

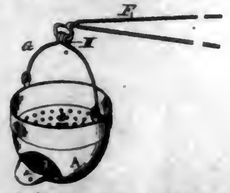
2. In a gas-generating apparatus, the combination of a combustion-chamber, a retort, and a reservoir having an uninterrupted chamber located in the upper part of the combustion-chamber above the retort, an oil-supply pipe entering the retort, a coiled pipe connecting

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the retort and reservoir, and a discharge-pipe leading from said reservoir, substantially as described.

477,726. TEA-STRAINER. FRANK J. WILLS, Winchester, Mass. Filed Apr. 28, 1891. Serial No. 390,858. (No model.)



Claim.—1. A tea-strainer consisting of a hemispherical shell or its equivalent in shape or proportions, preferably of metal, suspended so as to swing freely in a perpendicular plane passing through the axis of the spout and tea-pot, to which it is attached in the usual manner, with an annular ring or shoulder about a third of the way down, upon which rests a strainer slightly dished, and an opening in the shell, forming a lip below the strainer, also a hook or projection on the side opposite the said orifice and on the side nearest the tea-pot when in position for use, this hook being for the purpose of arresting the descent of the strainer into the cup on the side to which it is attached, while permitting the other side to drop lower, all substantially as shown and described, and for the purposes mentioned.

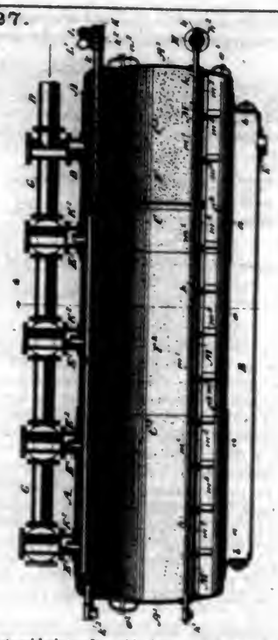
2. In a tea-strainer, a projection or hook attached to the shell near the bottom and on the side opposite to the orifice, arranged to depress the lip by coming in contact with the edge of the tea-cup while in use, substantially as shown and described.

477,727. FILTERING APPARATUS. DAVID WILLIAMSON, New York, N. Y., assignor, by mesne assignments, to the Continental Filter Company, of West Virginia. Filed July 3, 1891. Serial No. 398,345. (No model.)

Claim.—1. In a filtering apparatus, the combination, substantially as hereinbefore set forth, with the discharge-chamber, of a perforated interior discharge-pipe extending throughout the entire length of the chamber, a manifold discharge-pipe on the exterior of the same, extending longitudinally along the same throughout the length of the chamber and parallel with the interior discharge-pipe, a series of vertical branch pipes connecting the manifold pipe with the interior of the shell, and a vertical pipe passing from the interior discharge-pipe and discharging within each of the vertical branch pipes, substantially as set forth.

2. In a filtering apparatus, a floor for supporting the filter-bed, composed of a series of movable perforated sheet-metal plates, and independent frames of angle-iron fitting into the shell of the filtering ap-

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paratus into which said plates fit, said plates and frames being of such shape and size that the plates may be used interchangeably.

3. In a filtering apparatus, the combination, with the shell, of a floor for the filter-beds, composed of a series of independent movable rectangular frames made of angle-iron and provided with longitudinal cross-girders of angle-iron and a plate of perforated metal fitting into each frame.

4. In a filtering apparatus, the combination, with the shell, of a horizontal exterior settling-trough placed beneath the shell on the outside of the same and extending through its length and connected therewith by suitable openings for retaining the finer material passing through the primary filter-bed, and an opening for removing the accumulated material from time to time.

5. In a filtering apparatus, the combination, with the independent filter-beds, of the washout-pipes placed at the bottom of the beds, extending longitudinally through the end walls of the apparatus and arranged to be opened and cleaned from the outside, and the independent blow-off pipes at the top of the beds similar in construction, whereby the wash-water from each chamber may be removed separately.

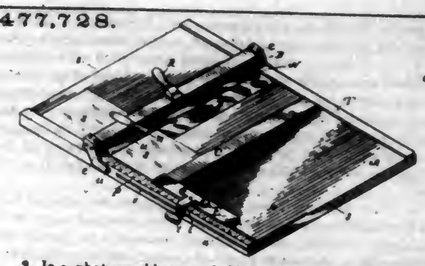
6. In a filtering apparatus, the combination, with the filter-beds, of the washout-pipes *k*, placed at the top of the chamber C, the pipes *k' k'*, passing through the chamber C into the secondary chamber C' and perforated only in the latter chamber and extending longitudinally through the end walls of the apparatus and arranged to be opened and cleaned from the outside, and an exterior discharge-pipe in which said discharge-pipes terminate.

7. In a filtering apparatus, the combination, substantially as hereinbefore set forth, of a horizontal cylindrical shell divided into two adjacent vertical filtering-chambers, a horizontal settling-chamber in the bottom of the shell, placed under the filter-beds and connecting the two chambers, and an auxiliary settling-trough outside of and below the shell, extending longitudinally throughout its length and connected with the settling-chamber by suitable openings, and an opening in the exterior trough for removing the accumulated material therefrom.

477,728. PHOTOGRAPHIC-PAPER HOLDER AND CUTTER. THOMAS R. WOOD, Kalamazoo, Mich. Filed July 9, 1891. Serial No. 398,980. (No model.)

Claim.—1. In a photographic-paper holder and cutter, the combination of a pressure-plate having two converging sides or walls forming an acute or V-shaped angle in cross-section, a pressure-bar adapted to engage the inner angle of the two converging sides of said pressure-plate, one of the sides of said pressure-plate being secured to said pressure-bar, said pressure-bar having a portion cut away at the vertex of the angle engaging said pressure-plate to allow said pressure-plate to have an elastic or spring movement, substantially as shown and set forth.

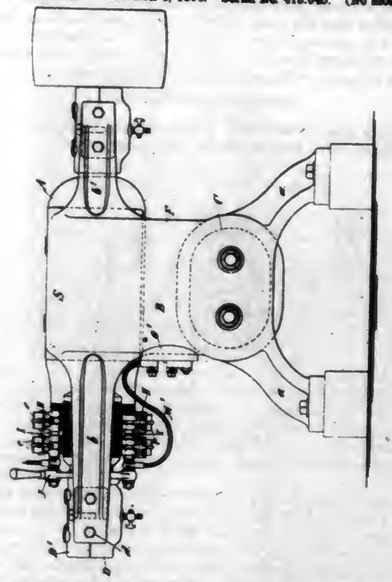
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2. In a photographic-paper holder and cutter, the combination of the board A, the guide-strip P, having a graduated scale, the squaring-gage C E, the clamp *i*, thumb-screw *t*, and groove *v*, substantially as shown and specified.

3. In a photographic-paper holder and cutter of the character herein described, a clamping-bar fulcrumed thereto and provided with a metallic spring or yielding pressure-plate having an acute or V-shaped angle the vertex of which shall press upon the paper for the purpose of holding it from displacement and serve as a guide for the cutting-tool, substantially as shown and described.

477,729. DYNAMO-ELECTRIC MACHINE. JAMES J. WOOD, Fort Wayne, Ind. Filed Dec. 1, 1891. Serial No. 413,645. (No model.)



Claim.—1. In a dynamo or motor, a field-magnet the poles of which are formed with bearing-arms projecting laterally from them parallel with the axis of rotation, spaced wider apart than the diameter of the armature, and the polar faces and inner end faces of said arms bored cylindrically concentric with said axis, the said inner end faces being bored of a larger radius than the polar faces, combined with bearing-heads of non-magnetic material having their ends turned as segments of cylinders to fit between the bored ends of said arms, and bolted thereto.

2. In a dynamo or motor, the combination of the commutator-brush yoke and the adjacent bearing, the one formed with a concentric cylindrical-projecting flange and the other with a corresponding groove embracing said flange, and a fastening applied to hold said parts together and prevent the disengagement of the groove and flange.

3. In a dynamo or motor, the commutator-brush yoke, having a concentric cylindrically-projecting flange, an armature-shaft bearing formed with a groove to receive the flange on said yoke, and a removable fastening applied to the end of the bearing and overhanging the yoke to hold the latter with its flange in said groove.

4. In a dynamo or motor, the commutator-brush yoke, an armature-shaft bearing having a bearing-cap and the bearing but not the cap formed on its end with a groove to receive the yoke, and a fastening applied to the bearing to hold the yoke in engagement with

said groove, whereby the yoke is supported independently of the bearing-cap and the latter may be taken off without disturbing the yoke.

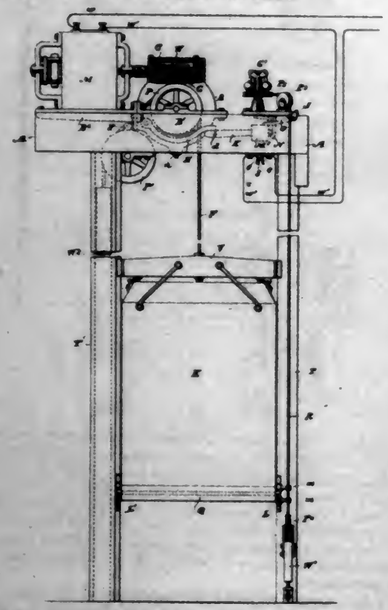
5. In a dynamo or motor, the commutator-brush yoke having a concentric cylindrically-projecting flange, an armature-shaft bearing having a bearing-cap, and the bearing but not the cap formed with a groove in its end to receive said flange, and a removable plate fastened to the end of the bearing to hold the yoke with its flange in said groove, whereby the yoke is supported independently of the bearing-cap, and the latter may be taken off without disturbing the yoke.

6. The commutator-brush yoke having brush-carrying studs fixed to but insulated from it, and conducting-cables connected to said studs, respectively, combined with a terminal connection for joining said cables to said studs, consisting each of a socket applied to the end of the cable and formed with a boss embracing the stud, confined between opposite shoulders thereon, and slitted to render its faces against said shoulders yielding and enable them to adapt themselves to said shoulders and make an extended contact therewith.

7. In a dynamo or motor, a terminal connection for the flexible conducting-cables leading from the brush-holders, consisting of a socket-piece having at its outer end a large socket receiving and fitting the insulated end portion of the cable, and a deeper socket of smaller diameter fitting and united to the conducting portion only of the cable, whereby the end of the insulation of the cable is fastened tightly in said outer socket and flexure of the cable at the denuded portion is prevented.

8. The combination of a brush-holder, a stud on which it is pivoted, an arm fixed to and projecting from the stud, a retractile device for drawing back the brush-holder reacting against said arm, and a spring *k* for pressing the brush-holder toward the commutator, consisting of a looped wire with its loop engaging said arm, coiled thence around the stud, and its ends engaging the brush-holder.

477,780. ELEVATOR. PARVIN WRIGHT, Denver, Colo. Filed May 13, 1891. Serial No. 393,152. (No model.)

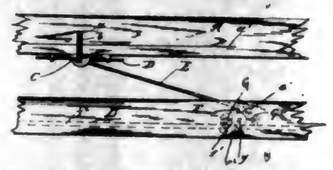


Claim.—1. An elevator having an electric motor located at the top of the shaft, a speed-governor geared to the car, and a switch connected in circuit with the motor and lying in the path of a weighted lever operatively connected with a brake, and a speed-governor whereby the car may be automatically checked when running at abnormal speed, substantially as described.

2. A safety device for an elevator, consisting of a governor operatively connected with the car, a brake held normally out of action by a detent operatively controlled by the governor, and a second brake carried by the car and connected to a rope or cord which drives the governor, substantially as described.

3. A safety device for an elevator, consisting of a gripping device carried by the car and held normally out of action by a fragile pin, in combination with a governor connected by a rope to the gripping-lever, and a second gripping-lever for gripping the rope, substantially as described.

477,781. WEFT STOP-MOTION FOR LOOMS. HORACE WYMAN and JOHN A. CLARK, Worcester, Mass., assignors to the Crompton Loom Works, same place. Filed June 19, 1890. Serial No. 355,968. (No model.)



Claim.—1. The combination of the feeler-fork attached to and carried by the lay, the vertically-sliding bar pivoted to the feeler-fork, the horizontally-sliding bar provided with cam-surfaces and the notch *e*, the rod connecting the horizontally-sliding bar with the two-armed lever, and the two-armed lever provided with a hub having inclined surfaces supported by a plate attached to the breast-beam, substantially as and for the purposes described.

2. The combination of a feeler-fork attached to and carried by the lay with the vertically-sliding bar, the horizontally-sliding bar having cam-surfaces and provided with means of engagement with the vertically-sliding bar, the connecting-rod, the two-armed lever having a hub provided with inclined surfaces to fit the supporting-plate, the supporting-plate, and the shipping-rod provided with a dog, whereby the shipping-rod may be moved by the lever upon the engagement of the vertical bar and horizontal bar, substantially as and for the purposes described.

3. The combination, with the lay of the loom, having a transverse slot to receive the feeler-fork, of a vertically-sliding bar pivoted to the feeler-fork, the feeler-fork pivoted to a plate on the lay and adapted to be supported by the filling-thread, the horizontally-sliding bar provided with a notch to be engaged by the vertical bar, the connecting-rod, the two-armed lever, and the supporting-plate, the lever and plate each provided with correspondingly-inclined surfaces, and the shipping-rod having a dog mounted thereon, substantially as and for the purposes described.

4. The weft stop-motion device comprising a feeler-fork, a vertically-sliding bar connected to said fork, and a horizontally-sliding bar provided with an upper and a lower cam-surface and with means to be engaged by the vertically-sliding bar, all these parts carried by the lay, a lever pivoted on the breast-beam, and a rod connecting the sliding bar on the lay with the lever on the breast-beam, substantially as and for the purposes described.

5. In a stop motion for looms, the combination of a two-armed lever having a hub provided with inclined surfaces with a supporting-plate provided with correspondingly-inclined surfaces attached to the breast-beam by a pivot-pin passing through the hub of the lever, the shipping-rod having a dog, with which one end of the lever is arranged to contact, and weft-detecting mechanism carried by the lay of the loom in operative connection with the other end of said lever, substantially as and for the purposes set forth.

6. In a stop-motion for looms, the combination of the shipping-rod provided with a dog with the two-armed lever having a hub with inclined surfaces, a supporting-plate attached to the breast-beam by a pivot-pin and having correspondingly-inclined surfaces, a feeler-fork arrangement on and carried by the lay, and a connection between said lever and said arrangement, substantially as and for the purposes set forth.

477,782. METHOD OF INSULATING ELECTRIC CONDUCTORS. ARTHUR V. ABBOTT, Chester, N. J. Filed Mar. 12, 1892. Serial No. 424,869. (No specimens.)

Claim.—1. In the construction of electrical apparatus or machinery, the method of insulating the wire or other parts, consisting in applying one or more coats of a vitreous enamel, holding the same in place by a wrapper of organic substance, and vitrifying the enamel and destroying the organic material by firing, substantially as specified.

2. In the construction of electrical apparatus or machinery, the method of insulating the wire or other parts thereof, consisting in coating the same with a vitreous enamel in plastic or paste-like condition, holding the same in position by a wrapper of organic material, then giving the wire or part the desired shape and position, and then vitrifying the enamel and destroying the organic material by firing, substantially as and for the purposes set forth.

3. A wire or other part of an electrical machine or apparatus insulated by a coating of vitrified enamel, separated by a space from said part, substantially as set forth.

477,788. FIRE-PROOF BUILDING. CHARLES AIKIN, Evanston, Ill. Filed Aug. 30, 1891. Serial No. 403,980. (No model.)

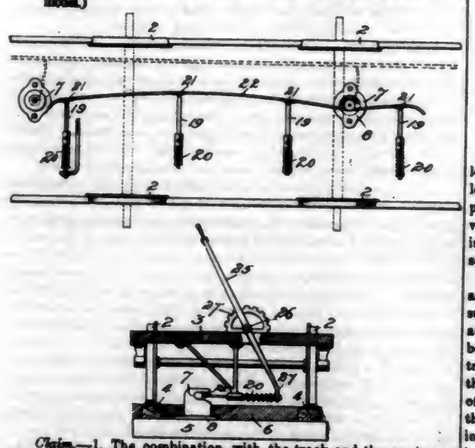


Claim.—1. Fire-proof casings or coverings for wooden members of buildings, so formed as to be threaded in series upon such wooden members, and thereby protect them from fire, the casings being formed with shoulders or projections, so as to serve as a support for the ceiling members, all substantially as set forth.

2. The combination, with a fire-proof casing for wooden members of buildings, constructed and arranged thereon as described, of plates C, adapted to rest upon said sections and bridge the space between the said inclosing members, all substantially as set forth.

3. The combination, with the fire-proof casing for wooden members of buildings arranged thereon as described and provided with shoulders near their lower faces, of plates B, adapted to rest upon said shoulders and bridge the space between, all substantially as set forth.

477,784. ELECTRIC RAILWAY. JOSEPH W. BATES, Minneapolis, Minn., assignor to the Bates & Blake Electric Railway Conduit Company, same place. Filed Mar. 17, 1892. Serial No. 425,235. (No model.)



Claim.—1. The combination, with the track and the car to run thereon, of a series of posts projecting above the surface of the road-bed and having slotted openings, contact rollers or pulleys insulated from the posts and arranged in said openings, a feed-wire connection with each of said pulleys, and a flexible contact-cable carried upon the car and adapted to successively engage the several contact-pulleys, substantially as and for the purpose specified.

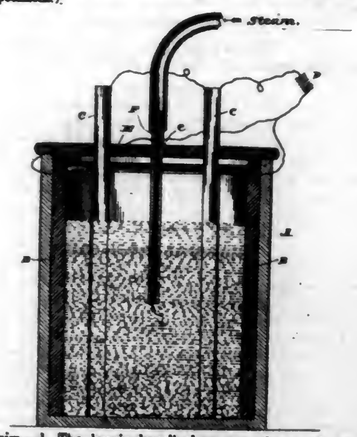
2. The combination, with the track and the car to run thereon, of a series of posts arranged between the rails of said track and projecting above the surface of the road-bed, said posts provided with openings or slots in their inner sides, contact pulleys or rollers arranged in said posts and upon vertical axes, electrical connections with each of said pulleys, and a flexible contact-cable dependingly and yieldingly arranged upon said car and adapted to engage said pulleys, substantially as described.

3. The combination, with the street-car track and an electric car to run thereon, of a series of contact-posts arranged between the rails of said track, said posts having slots or openings in their inner sides, said posts projecting above the surface of the road-bed, and a flexible cable carried on said car, the horizontal spring arms or rods connected with said cable, and the brackets for supporting the same, substantially as described.

4. The combination, with the track, of the electric car to run thereon, the cross-ties of said track, the posts 7, arranged on said cross-ties and projecting above the surface of the road, said posts having openings in their sides, contact-rolls arranged in said openings, feed-wire connections with said rollers, the flexible cable, the arms 19 thereof, the springs upon said arms, the sleeves wherein said arms are secured, the supports for said sleeves, and means for shifting the end of the cable, as and for the purpose specified.

5. The combination, with the track and the car to run thereon, of a flexible contact-cable carried by said car and dependingly and yieldingly secured thereon, with the contact-posts 7 projecting above the surface of the road and arranged between the rails of the track, said posts having openings 11 in their sides, the overhanging tops of said posts, and the insulated contact rollers or pulleys arranged in said openings, a source of electricity being connected therewith, substantially as described, and for the purpose set forth.

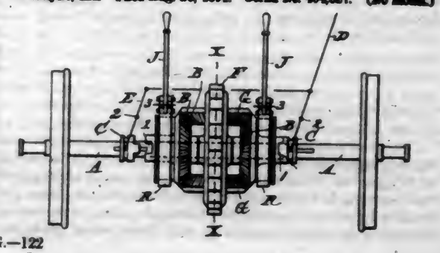
477,785. PROCESS OF MAKING WHITE PIGMENTS. JOHN BLAIR, Spokane, Wash. Filed July 17, 1891. Serial No. 399,842. (No specimens.)



Claim.—1. The herein-described process of corroding metallic lead into an amorphous powder, consisting in first placing the metallic lead in an acid-proof vessel or vat, adding a chemical charge composed of sulphuric acid, an alkaline nitrate, and water, heating the vessel or vat until reaction sets in and is completed, and finally washing the powder or reduced lead in a solution of an alkaline hydrate, substantially as set forth.

2. The herein-described process of corroding metallic lead into an amorphous powder for a pigment, consisting in first placing within a suitable vessel or vat a chemical charge composed of sulphuric acid, an alkaline nitrate, and water, placing within said vessel lead and carbon plates, thus establishing a galvanic circuit between the same, introducing within the vessel loose quantities of lead and then covering the same with a covering of the same substance, then raising the heat of the vessel by the action of steam introduced through the mixture therein to a sufficient degree to cause reaction and decomposition to set in and be completed, and finally washing the powder or reduced lead in a solution of an alkaline hydrate, substantially as described.

477,786. APPLICATION OF DIFFERENTIAL POWER. FRANK BURGER, Sterling, Ill., assignor of one-half to Henry M. Williams, Fort Wayne, Ind. Filed Aug. 26, 1891. Serial No. 404,027. (No model.)



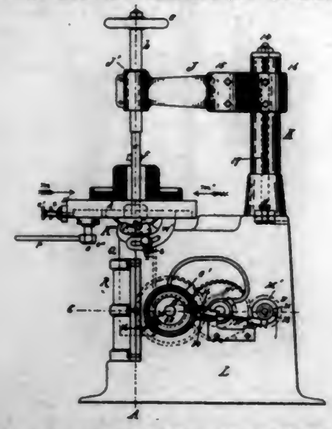
Claim.—1. The combination of a continuously-rotating wheel F, gear-wheel G, carried therein, axle A, gear-wheels B, seated thereon in position to engage wheel G, and means, substantially as shown, for optionally locking either of said wheels B, for the purpose described.

2. The combination of the continuously-rotating wheel F, gear G, seated therein and carried thereby, axle A, wheels B, seated thereon, means for optionally locking either of wheels B to said axle, and means, substantially as shown, for retarding the rotation of the disconnected wheel B, substantially as shown, and for the purpose described.

3. The combination of gears B, axle A, and the continuously-driven wheel F, seated loosely centrally thereon, gear-wheels G, seated transversely therein and carried thereby between gears B, carried on axle A laterally to wheel F, and adapted to engage wheels G, means for optionally locking either of wheels B upon said axle, and means, substantially as shown, for retarding the rotation of the unlocked wheel B, for the purpose described.

4. The combination of a rotating axle A, motor-wheel F, seated loosely and centrally thereon, gear-wheels G, seated within and carried by said wheel F, gear-wheels B, seated loosely on axle A at each side of wheel F, adapted to be coincidently engaged by wheels G, means for optionally locking either of the wheels B rigidly upon said axle, and means for restricting or retarding the rotation of the wheel B not locked to said axle, substantially as shown, and for the purpose described.

477,737. SLOTTING-MACHINE. LESLIE H. COLBURN, Toledo, Ohio. Filed May 27, 1891. Serial No. 394,300. (No model.)



Claim.—1. In a slotting-machine, a horizontally-moving table adapted to rigidly hold articles to be operated upon by a vertically-moving cutter-bar and a vertically-moving lower guide-bar adapted to be secured to the lower extremity of said cutter-bar by means of a key passing through the upper extremity of the said guide-bar and impinging upon a flattened side of said cutter-bar.

2. In a slotting-machine, a horizontally-moving table adapted to rigidly hold articles to be operated upon by a vertically-moving cutter-bar, a vertically-moving lower guide-bar adapted to be secured to the lower extremity of said cutter-bar and adapted to operate through means of the said cutter-bar, and an upper guide-bar secured to the extremity of the said cutter-bar by means of a screw upon the upper extremity of said cutter-bar threaded in the lower extremity of said upper guide-bar.

3. In a slotting-machine, a horizontally-moving table adapted to rigidly hold articles to be operated upon by a vertically-moving cutter-bar, a vertically-moving lower guide-bar adapted to be secured to the lower extremity of said cutter-bar by means of a key passing through the upper extremity of said guide-bar and impinging upon a flattened side of said cutter-bar and adapted to operate through means of the said cutter-bar, and an upper guide-bar secured to the upper extremity of the said cutter-bar by means of a screw upon the upper extremity of said cutter-bar threaded in the lower extremity of said upper guide-bar, the said guide-bars being secured in suitable guide-ways and thereby suitedly adapted to guide in a substantially true line the said cutter and cutter-bar, substantially as shown.

4. In a slotting-machine, a horizontally-moving table and a cutter-bar adapted to be moved in angular positions therewith and secured at its upper and lower extremities to correspondingly-moving guide-bars operating in fixed bearings located in the common frame of the mechanism, the bearings in which the upper guide-bar moves being secured to an upper extension of said frame, which extension is adapted to be vertically adjusted with respect to the vertical center of said cutter-bar, substantially as shown.

5. In a slotting-machine, a horizontally-moving table and a cutter-bar adapted to be moved in angular positions therewith and secured at its upper and lower extremities to correspondingly-moving guide-bars operating in fixed bearings located in the common frame of the mechanism, the bearings in which the upper guide-bar moves being secured to an upper extension of said frame, which extension is adapted to be radially adjusted with respect to the vertical center of said cutter-bar, substantially as shown.

6. In a slotting-machine, a horizontally-moving table and a cutter-bar adapted to be moved in angular positions therewith and secured at its upper and lower extremities to correspondingly-moving guide-bars operating in fixed bearings located in the common frame of the mechanism, the bearings in which the upper guide-bar moves being secured to an upper extension of said frame, which extension is adapted to be circumferentially adjusted with respect to the vertical center of said cutter-bar, substantially as shown.

7. In a slotting-machine, a horizontally-moving table and a cutter-bar adapted to be moved in angular positions therewith and secured at its upper and lower extremities to correspondingly-moving guide-bars operating in fixed bearings located in the common frame of the mechanism, the bearings in which the upper guide-bar moves being secured to an upper extension of said frame, which extension is adapted to be vertically and radially adjusted with respect to the vertical center of said cutter-bar, substantially as shown.

8. In a slotting-machine, a horizontally-moving table and a cutter-bar adapted to be moved in angular positions therewith and secured at its upper and lower extremities to correspondingly-moving guide-bars operating in fixed bearings located in the common frame of the mechanism, the bearings in which the upper guide-bar moves being secured to an upper extension of said frame, which extension is adapted to be vertically and circumferentially adjusted with respect to the vertical center of said cutter-bar, substantially as shown.

9. In a slotting-machine, a horizontally-moving table and a cutter-bar adapted to be moved in angular positions therewith and secured at its upper and lower extremities to correspondingly-moving guide-bars operating in fixed bearings located in the common frame of the mechanism, the bearings in which the upper guide-bar moves being secured to an upper extension of said frame, which extension is adapted to be radially and circumferentially adjusted with respect to the vertical center of said cutter-bar, substantially as shown.

10. In a slotting-machine, a horizontally-moving table and a cutter-bar adapted to be moved in angular positions therewith and secured at its upper and lower extremities to correspondingly-moving guide-bars operating in fixed bearings located in the common frame of the mechanism, the bearings in which the upper guide-bar moves being secured to an upper extension of said frame, which extension is adapted to be vertically, radially, and circumferentially adjusted with respect to the vertical center of said cutter-bar, substantially as shown.

11. In a slotting machine, a vertically-moving cutter-bar, a table adapted to be moved toward and from the vertical center thereof, a centering-rest superimposed upon said table and consisting of an angular face-piece adapted to be moved upon the plane of the surface of said table toward and from the vertical center of said cutter-bar, and a face-plate having angular wings, either acute or obtuse to each other, attached to the said angular face-piece and adapted to be adjusted transversely of the plane of the vertical center of said cutter-bar and with the said angular piece to adjust toward and from the said vertical center of said cutter-bar, substantially as shown.

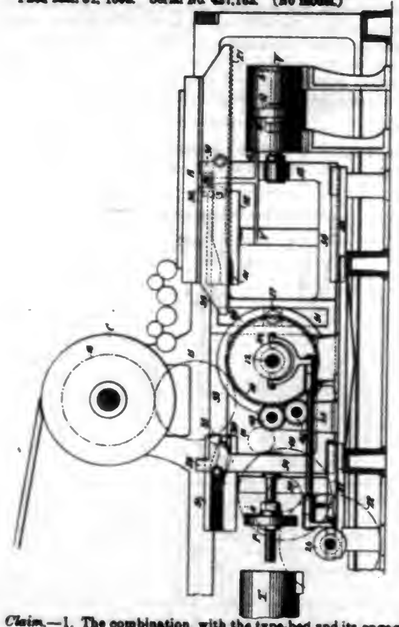
12. In a slotting-machine, a reciprocating cutter-bar and a table adapted to be alternatingly adjusted thereto, the said alternating adjustments on the said table being controlled in their extent by a screw, in combination with a second screw adapted to gage at one setting the entire desired extent of the movement of said table and the sum of the alternating adjustments of the said first micrometer-screw, substantially as shown.

13. In a slotting-machine, a reciprocating cutter-bar and a table adapted to be alternatingly adjusted thereto, the said alternating adjustments on the said table being controlled in their extent by a screw, in combination with a second screw, and with a graduated dial and pointer adapted to gage at one setting the entire desired depth of the movement of said table and the sum of the alternating adjustments of the said first micrometer-screw, substantially as shown.

14. In a slotting-machine, a vertically-moving cutter-bar and a table adapted to be adjusted thereto by means of a rack and pinion, the pinion being adapted to be operated by means of a reciprocating wrench irremovably attached to an extension of said gear and adapted to engage a nut thereto, substantially as shown.

15. In a slotting-machine, a supporting-table adapted to rigidly hold articles to be operated upon by a vertically-moving cutter-bar, in combination with vertically-moving and vertically-adjusting lower and upper guide-bars, and an upper supporting-arm, the said upper supporting-arm being adapted to be vertically adjusted to correspond with the varying adjustments of the said guide-bars, substantially as shown.

477,738. BED-MOTION FOR CYLINDER PRINTING-MACHINES. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Mar. 31, 1892. Serial No. 427,162. (No model.)



Claim.—1. The combination, with the type-bed and its engaging-lug 29, of the crank-operated carrying-frame having rods 33 34 projecting from the upper end of its yoke and supporting the controlling-arms 28 30 near the under surface of the bed, substantially as described.

2. The combination, with the type-bed and its engaging-lug 29, of the controlling-arm-carrying frame, its top guides 31 32, and bottom guides 57 58, substantially as described.

3. The combination, with the moving bed, a rack-and-pinion mechanism for imparting to it the major part of its movement in either direction, and a controlling-arm moved to and fro and automatically engaged with the bed to retard, stop, start, and accelerate the same, of an air-cushion oo operating with said arm, substantially as described.

4. The combination, with the moving bed, a rack-and-pinion mechanism for imparting to it the major part of its reciprocation, and a crank-operated reversing mechanism, of the air-cushion take-up, substantially as described.

5. The combination, with the moving bed, rack-and-pinion mechanism for imparting to it the major part of its reciprocation, a crank-operated reversing mechanism, and an air-cushion take-up, of a valve-operating mechanism and means for automatically closing said valve during the operative movement of said reversing mechanism, substantially as described.

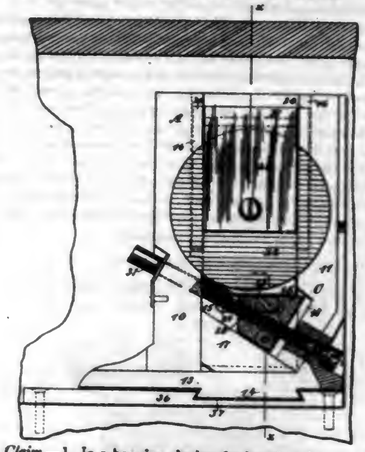
6. The combination, with the valves 4, the air-cylinder pistons, and the reciprocating bed, of the arms 6 7, carried by the bed, substantially as described.

7. The combination, with the bed and its single driving-rack, of two pinions on a common axis and revolved in opposite directions and means for shifting said pinions laterally, so that they shall alternately engage said rack to drive the bed in opposite directions, substantially as described.

8. The combination of the bed, its single driving-rack, two pinions 10 11, intermediates 43 44 45, and means for alternately shifting said pinions into the path of travel of the said rack, substantially as described.

9. The combination, with the type-bed, its single driving-rack, two pinions on a common axis and revolved in opposite directions, means for shifting said pinions laterally, so that they shall alternately engage said rack to drive the bed during the major part of its run in opposite directions, of a reversing mechanism moving in harmony with said pinions and operating to retard and stop the bed in one direction and start and accelerate it in a contrary direction at each end of its run, substantially as described.

477,739. DOOR-HANGER. AUGUST G. DANNER, Alameda, Cal. Filed June 29, 1891. Serial No. 397,331. (No model.)



Claim.—1. In a hanging device for hanging doors and for like purposes, the combination, with a suspension-frame provided with an opening having an inclined plane at its bottom, of a hanger upon which the suspension-frame has sliding movement, provided with a shoulder near its lower end and a transverse slot near the shoulder, a wedge-block adapted to travel in engagement with the inclined plane of the frame and the shoulder of the hanger and having a stud projection extending through the slot in the hanger, and an adjusting-screw regulating the movements of the wedge-block to raise and lower the suspension-frame, as and for the purpose specified.

2. In a hanging device for doors and for like purposes, the combination, with a suspension-frame provided with an opening and an inclined plane at its base, of a hanger loosely fitted in the opening of the frame, provided with a transverse shoulder and a transverse slot adjacent to the shoulder and also provided with a wheel adapted to travel upon a support, a wedge-block having a threaded bore held to slide in engagement with the hanger and the inclined plane, an adjusting-screw turning in the frame and passing through the bore in the block, an extension from the block passed through the slot in the hanger, and a friction-wheel carried by the block, as and for the purpose specified.

477,740. WHEEL. FULLER S. DEER and GEORGE W. HESS, Westontown, Pa. Filed Jan. 6, 1892. Serial No. 417,180. (No model.)



Claim.—1. In a wheel, the combination, with felly-sections, the ends of which are provided with mortises, of an interposed sinuous spring, means for securing the spring in position, and a tire having a channeled inner surface embracing the rim, substantially as specified.

2. In a wheel, the combination, with the fellies having mortised ends, of the W-shaped spring, the ends of which terminate in securing-plates and are flush with the outer face of the rim, means for securing the spring in position, and a rim-encircling tire, substantially as specified.

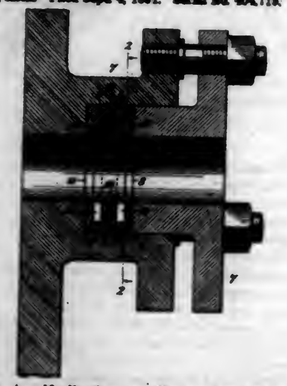
3. In a wheel, the combination, with the tire, of series of felly-sections combining to form a rim and inclosed by a tire, with which they are loosely connected, and springs adapted to spread the felly-sections at the expansion of the tire and located between the adjacent ends of the sections, substantially as specified.

4. In a wheel, the combination, with the opposite fellies channeled at their ends and outer sides and provided with elongated openings, of the W-shaped spring interposed between the ends and having its terminals laterally and oppositely disposed to form securing-plates seated in the other mortises of the fellies and perforated to agree with the perforation of the fellies, the felly-plate embracing the rim and having the transverse clip-bar connecting its edges and arranged across the spring, said felly-plate being provided with perforations agreeing

with those in the follies and spring, bolts passed through the perforation of the spring, folly, and folly-plate, and a tire mounted upon the rim, substantially as specified.

5. In a wheel, the combination, with the opposite follies channeled at their ends and outer sides and provided with elongated openings, of the W-shaped spring interposed between the ends and having its terminals laterally and oppositely disposed to form securing-plates seated in the outer mortises of the follies and perforated to agree with the perforation of the follies, the folly-plate embracing the rim and having the transverse clip-bar connecting its edges and arranged across the spring, said folly-plate being provided with perforations agreeing with those in the follies and spring, bolts passed through the perforation of the spring, folly, and folly-plate, and the tire having its inner face channeled so as to embrace and receive the outer periphery of the rim, said tire being imperforate and the rim being provided with opposite beveled edges, substantially as specified.

477,741. METALLIC ROD-PACKING. GEORGE R. DOLF, Iron Mountain, Mich. Filed Sept. 4, 1891. Serial No. 404,719. (No model.)

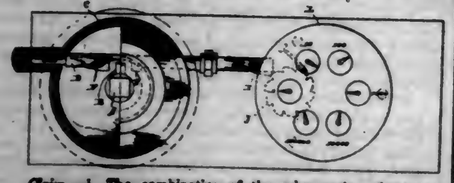


Claim.—1. A self-adjusting metallic packing consisting in the combination, with a stuffing-box, of a divided outer ring formed upon its interior with continuous grooves, an inner packing-ring formed in sections having end lap-joints, with the outer faces or peripheries of the sections provided with circumferential ribs adapted to take into the grooves upon the inner face of said outer ring, and a spring interposed between the outer ring and the sectional packing-ring for holding the sections against the piston-rod.

2. A self-adjusting metallic packing consisting in the combination, with the stuffing-box, of an outer divided ring formed upon its interior with annular grooves, an inner packing-ring made up of sections provided with peripheral ribs for taking into the grooves of the said outer ring and each section provided at one end with a centrally-disposed tongue and at the other end with a groove for interlocking and forming a lap-joint with said tongue, and a spring interposed between the outer ring and the sectional packing-ring for holding the sections together and against the piston-rod.

3. A self-adjusting metallic packing consisting in the combination, with a stuffing-box, of an outer divided ring seated within the stuffing-box and formed upon its interior with continuous parallel grooves, an inner sectional packing-ring arranged within said divided ring and formed in sections having peripheral parallel ribs extending into the grooves of said divided ring, and a spring placed between the divided ring and the sectional ring and disposed between the said ribs of the latter, substantially as and for the purpose set forth.

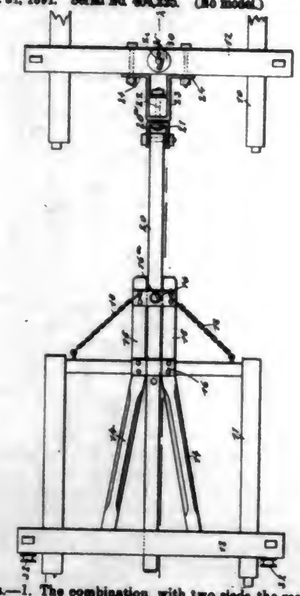
477,742. VALVE-REGISTER. JOHN W. DUNBAR, Columbus, Ohio. Filed May 7, 1891. Serial No. 391,947. (No model.)



Claim.—1. The combination of the valve-casing, the rotary valve-stem therein having the radial lug, the tubular bearing extending transversely through the casing beside and at right angles to said stem, a registering mechanism having a ratchet-wheel, and the rod confined to reciprocate in said bearing having a spring-pawl mounted in its outer end to operate said ratchet-wheel, and the two opposite spring-pawls mounted in the rod and projecting into the path of said lug, combined and arranged to operate as set forth.

2. The combination of a valve-casing, a rotary valve-stem therein having the radial lug, the reciprocating rod transversely located in said casing beside the valve-stem, with its outer end projecting from the casing and provided with a spring-pawl, the registering mechanism operated by said pawl, said rod having a side recess beside said stem, and the two opposite spring-pawls extending into the path of said lug and mounted in the rod at said recess with a space between their ends, arranged to operate as set forth.

477,748. BOB-SLED. ROBERT DOUGLASS, Tara, Canada. Filed Aug. 31, 1891. Serial No. 404,235. (No model.)



Claim.—1. The combination, with two sleds, the rear sled having a recessed bolster, of hounds secured to the bolster and extending forwardly therefrom, said hounds having their front ends connected as described, the reach swiveled to the bolster of the front sled and extending longitudinally between the hounds and through the recess of the rear bolster, means for securing the reach between the hounds, and a chain connection between the hounds and the roller of the sled, substantially as described.

2. The combination, with two sleds, of the bolster of the front sled connected thereto by a ball-and-socket joint, and a reach swiveled to the said bolster and connected to the rear sled, substantially as described.

3. The combination, with two sleds, of a bolster connected to the front sled by a ball-and-socket joint, hounds secured to the rear bolster and connected together at their forward ends by straps, and a reach swiveled to the front bolster and adjustably secured between the hounds, substantially as herein shown and described.

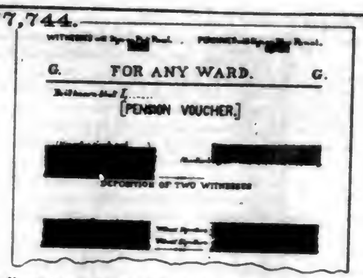
4. The combination, with two sleds, the rear sled being provided with hounds, of the front bolster connected to its sled by a ball-and-socket joint, a clip secured to the front bolster, a reach provided with a clevis at its front end, a bolt connecting the clevis and clip, means for securing the reach between the hounds, and chains connected to the hounds and to the rear sled, substantially as herein shown and described.

477,744. BLANK WITH SIGNATURE-CONTROLLING INDICIA. EDWARD A. DUDLEY, Brooklyn, N. Y. Filed Feb. 13, 1891. Serial No. 381,163. (No specimens.)

Claim.—1. A documentary blank having the places for signatures indicated by different colors spread over such places, whereby the respective places for signatures are plainly exhibited and designated, substantially as described.

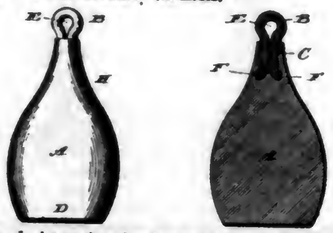
2. A documentary blank having the places for signatures indicated by different colors spread over such places and explanations on the blank of the meanings of the colors to guide the signers both visually

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and by direct instruction in the proper execution of the document, substantially as described.

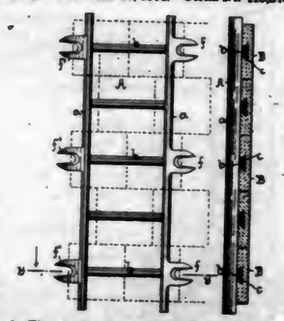
477,745. ANCHOR. CHARLES H. EATON, Batavia, Ill. Filed Apr. 16, 1891. Serial No. 389,238. (No model.)



Claim.—1. A pear-shaped anchor having an eye connected thereto by casting the metal around it, the eye being of greater diameter than the adjacent end of the anchor to which it is attached, whereby no obstruction is presented, substantially as and for the purpose set forth.

2. The combination, with an anchor, of an eye constructed of wire bent, as shown, to form a double shank, and having laterally-extending ends, and connected to the anchor by casting the metal thereof around it while forming the anchor, the eye being of equal or greater diameter than the smaller end of the anchor and thus avoiding a flat surface or projection for the catching of articles, substantially as and for the purpose described.

477,746. TILE-FRAME. OTTO P. ELTERICH and GOTTHOLD O. ELTERICH, Maywood, N. J., assignors to the Elterich Art Tile Company, of New Jersey. Filed Dec. 16, 1891. Serial No. 415,275. (No model.)



Claim.—1. The frame A, provided with means for attaching the tiles thereto and with slotted lugs arranged thereon, substantially as and for the purpose set forth.

2. The frame A, provided with slotted lugs arranged on opposite sides and in different planes, substantially as and for the purpose set forth.

3. The frames A, provided with slotted lugs on opposite sides, the several lugs being arranged to overlap each other when the frames are placed together, combined with screws or equivalent means passing through said lugs, substantially as described.

4. The frames A, provided with slotted wedge-shaped lugs arranged on opposite sides, the lugs of the several frames being constructed to overlap each other, combined with screws or equivalent means passing through said lugs, substantially as described.

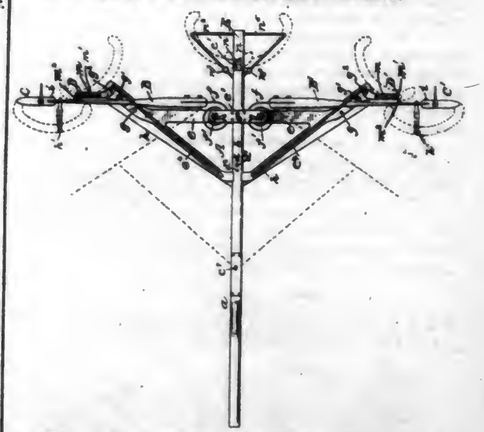
5. A tile-frame formed integral with means for securing thereto two or more rows of tiles arranged adjacent to each other, and with lugs projecting outside of the frame for securing the frame in position, substantially as described.

6. A tile-frame formed of longitudinal bars *a*, and superimposed cross-bars integral therewith made tapering in cross-section and distributed at intervals on said longitudinal bars, and means for securing the frame in position, substantially as described.

7. A wall or floor facing consisting of tile-frames provided with lugs projecting outside of the frames for securing the same in place and with two or more lines of projecting parts made integral with said frames, and tiles having grooves or sockets into which said projecting parts are sunk, substantially as described.

8. A wall or floor facing consisting of tile-frames provided with projecting parts, tiles having grooves or sockets therein, into which the projecting parts are sunk, and strips or wedges inserted between the projecting portions and the tiles, substantially as described.

477,747. BOOMERANG-GUN. CHARLES H. EMERSON, Yonkers, N. Y. Filed Apr. 8, 1891. Serial No. 388,071. (No model.)



Claim.—1. In a boomerang gun or projector, the combination, substantially as hereinbefore described, of a gunstock, a holding-jaw provided with coincident engaging-surfaces adapted to frictionally grasp and maintain a boomerang in proper position for making a flight, and means for projecting the boomerang from the holder in a right line and with a gyratory movement.

2. In a boomerang-gun, the combination, substantially as hereinbefore described, of two boomerang-holders and a spring-actuated swinging arm carrying at its outer end one of said holders and operating as a striker in connection with the second holder.

3. In a boomerang-gun, the combination, substantially as hereinbefore described, of a pair of swinging spring-arms, each having at its outer end a boomerang-holder, and both swinging in the same plane, but in opposite directions, for securing a practically simultaneous flight of two boomerangs in parallel lines, but with opposite gyratory movements.

4. In a boomerang-gun, the combination, substantially as hereinbefore described, of a suitable gunstock, several holders for variably maintaining an equal number of boomerangs in position for flight, spring-arms, and a plunger carried with said holders on said stock and adapted to simultaneously project all of the boomerangs from said holders in parallel lines, but causing some of them to gyrate in one direction and others in an opposite direction.

5. In a boomerang-gun, the combination, substantially as hereinbefore described, of a holder having coincident straight parallel holding-faces for receiving and accurately maintaining a boomerang in position for flight and a forcibly-actuated plunger for projecting a boomerang from said holder in a right-line movement and with rapid gyrations, said plunger being restricted in its forward movement to the rear portion of said holder and the coincident faces at the front portion of the holder serving to maintain the boomerang in a fixed plane after leaving the plunger and until it leaves the gun.

6. In a boomerang-gun, the combination, with a suitable boomerang-holder, of a striker for projecting a boomerang from said holder and means for varying or limiting the movement of the striker toward the holder, substantially as described.

7. In a boomerang-gun, the combination of a swinging spring-arm having a boomerang-holder at its outer end and an adjustable abutment or stop for said arm, substantially as described.

8. In a boomerang-gun, the combination, with a suitable holder

for a boomerang, of an arm or striker and a tensionally-adjustable spring, substantially as described, whereby the projecting power of the gun may be varied, as well as the gyratory motion of a boomerang.

9. In a boomerang-gun, the combination, with a suitable boomerang-holder, of a projector or striker for discharging a boomerang from said holder, a spring for actuating said striker, a trigger, and means for variably coupling the striker therewith for correspondingly varying the force of the striker against the boomerang.

10. In a boomerang-gun, a holder having jaws provided with parallel contact-faces for receiving and grasping a boomerang flatwise and provided with a transverse clamp for varying the grip of said jaws, substantially as described.

11. In a boomerang-gun, a holder having jaws for receiving a boomerang and provided with an abutment, against which a boomerang will strike when swung in said holder for effecting its release therefrom, substantially as described.

12. In a boomerang-gun, a holder having jaws for receiving a boomerang and an adjustable abutment for varying the point at which a boomerang will strike said abutment just prior to making a flight, substantially as described.

13. In a boomerang-gun, a holder having jaws for receiving a boomerang, a cam-lever for varying the relations of the jaws and also serving as an abutment for a boomerang when swinging in the holder and enabling the boomerang to swing said lever in one direction, and thereby secure an automatic release from the jaws, substantially as described.

14. In a boomerang-gun, a jaw-shaped holder for receiving a boomerang and having on the inner faces of the jaws coincident convex or inwardly-projecting surfaces for affording a pivotal grip upon a boomerang when held therein, substantially as described.

15. In a boomerang-gun, a swinging spring-arm, in combination with a jaw-shaped boomerang-holder adjustably hinged to said arm by means of a clamping pivot-bolt, which is parallel with the plane in which the arm swings, substantially as described.

477,748. BOOMERANG. CHARLES H. EMERSON, Yonkers, N. Y. Filed Apr. 14, 1891. Serial No. 388,892. (No model.)



Claim.—1. A boomerang longitudinally curved in cycloidal lines, substantially as and for the purpose specified.

2. A boomerang chamfered at its inner edge near one end and correspondingly chamfered at its outer edge near its other end, substantially as described.

3. A boomerang cycloidal in outline, substantially flat on both of its sides, uniform in thickness throughout its length, and free from warp or twist.

4. A boomerang cycloidal in its outline and provided with spurs at its ends, substantially as described.

5. A boomerang provided at its interior edge with a longitudinal groove, substantially as described.

6. A boomerang provided with adjusting gage-marks near its ends, substantially as described, whereby it may be accurately adjusted in the holder of a gun or projector.

7. A boomerang cycloidal in outline and constructed of layers of thin material firmly united, substantially as described.

8. A boomerang having a cycloidal outline and pointed ends or spurs.

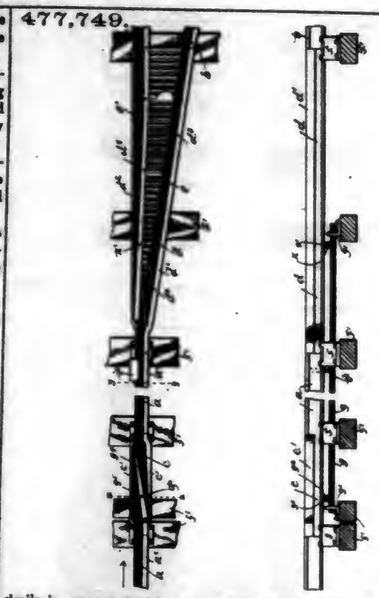
9. A boomerang uniform in thickness and having flat sides, a cycloidal outline, and pointed ends or spurs.

10. A boomerang uniform in thickness, flat on both sides, and having a cycloidal outline, and a longitudinal groove at its inner edge, substantially as described.

477,749. AUTOMATIC TRAMWAY-SWITCH. WALDO G. FAY, Columbus, Ohio. Filed Nov. 16, 1891. Serial No. 412,089. (No model.)

Claim.—1. In an automatic railway-switch, the combination, with the main and branch track, of a switch-plate connecting said tracks, a pivoted switch-tongue on said plate, a plate *c* between sections of one of the main-track rails, a pivoted lever-bar g^4 normally crossing said plate, a shaft journaled beneath said switch-plate, main-track rail, and plate *c*, a stud g^5, connecting said lever-bar g^4 and shaft through a slotted opening in said plate *c*, and the opposite end of said shaft

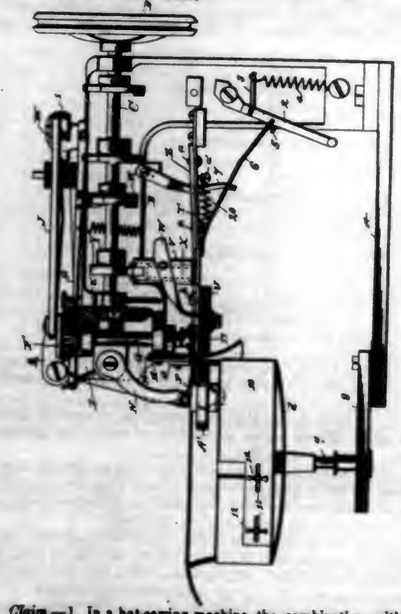
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similarly connected with the switch-tongue, substantially as specified.

2. In an automatic railway-switch, the combination, with the main and branch track rails, a switch-plate connecting said rails, a pivoted switch tongue on said plate, a plate *c* between sections of one of the main-track rails, and a pivoted lever-bar g^4 on said plate, of a shaft journaled beneath said switch-plate, main-track rail, and plate *c*, a stud connecting said switch-tongue and shaft, a stud connecting said lever-bar and shaft, and a trigger-plate supported from said shaft between the switch-point and lever-bar adjacent to the main-track rail and out of the path of the usual wheel-flange, substantially as described.

477,750. MACHINE FOR SEWING SWEAT-BANDS IN HATS. WELCOME P. GARNSEY, Jr., New York, N. Y. Filed May 27, 1891. Serial No. 394,201. (No model.)



Claim.—1. In a hat-sewing machine, the combination, with the main shaft and with the sewing mechanism, of spring-supported feed

and guide wheels, a cam on the main shaft for depressing said wheels at intervals, and a pawl for engaging the feed-wheel and a support for said pawl, substantially as shown and described.

2. In a hat-sewing machine, the combination, with the main shaft and with the sewing mechanism, of rotatable guide and feed wheels to clamp and hold the hat to be sewed, a spring-support for said wheels, a cam on the main shaft for depressing said support and wheels at intervals, and a pawl pivoted on a branch depending from the overhanging arm B of the machine for rotating the feed-wheel, substantially as shown and described.

3. In a sewing-machine, the combination, with a rotatable friction feed-wheel and a guide-wheel arranged adjacent thereto and mounted on yielding supports, of a plunger interposed between a cam and the supports for said wheels, and the cam adapted to contact with the plunger and depress said wheels at intervals, substantially as specified.

4. In a sewing-machine, the combination, with the main frame and power-shaft, of the resilient plate connected at one end to the frame, devices intermediate of the power-shaft and plate adapted at intervals to depress the latter, a friction feed-wheel journaled on the plate and having ratchet-teeth on its upper side, a pivotally-mounted depending pawl adapted to engage and move the friction-wheel after each depression of the plate, the support for said pawl, and a guide-wheel arranged adjacent to the feed-wheel, substantially as and for the purpose described.

5. In a sewing-machine, the combination, with the main frame and a resilient or spring plate connected at one end thereto and carrying a friction feed-wheel and a guide-wheel adjacent thereto, of the power-shaft, a vertically-movable pin seated in a sleeve and bearing at its lower end upon the plate, a cam fixed on the shaft in alignment with the pin and adapted to engage the same to depress the plate, and a pawl pivoted to a stationary part of the frame and engaging ratchet-teeth on the feed-wheel, substantially as specified.

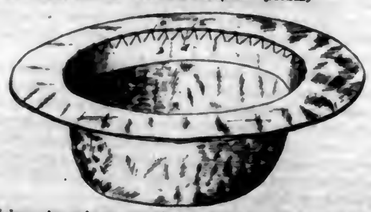
6. In a sewing-machine, the combination, with the main frame and a horizontal plate carrying a rotatable feed-wheel, of a second plate movably connected to the first plate and carrying a guide-wheel, a lever pivotally connected at one end to the frame and also connected with the movable plate, a plate connected to the lower end of said lever, a lever pivotally connected at one end to the machine and bearing against the lower end of said last-named plate, a coiled spring connected at one end to the last-named lever and at its opposite end to the frame, and the coiled spring connected at one end to the supporting-plate and at its opposite end to the movable plate, substantially as specified.

7. In a sewing-machine, the combination, with the main frame and a slotted bar connected thereto, of a hat-support comprising a standard adapted to be adjustably fixed in said slotted bar and an expansible band connected with said standard, substantially as and for the purpose described.

8. In a machine for sewing sweat-bands in hats, the combination, with the sewing mechanism, of a feed-wheel arranged to rotate in a horizontal plane, a yielding support for said feed-wheel, whereby it is adapted to be moved vertically, a guide-wheel carried by the same support and capable of being moved from and toward the feed-wheel, and means for operating said feed and guide wheels, substantially as shown and described.

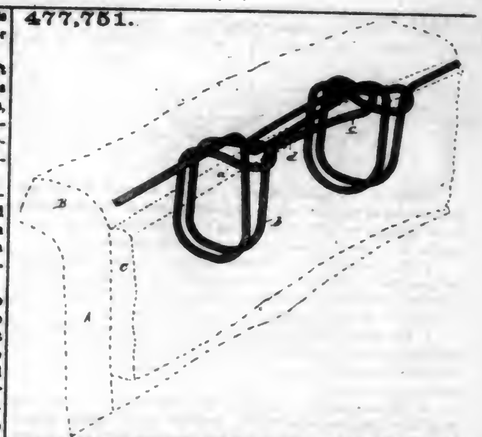
9. In a machine for sewing sweat-bands in hats, a feed-wheel and a guide-wheel, both arranged to rotate in the same horizontal plane, a yielding support for said wheels, whereby they are adapted to be moved vertically, the guide wheel being journaled on a plate attached to and movable on said yielding support, whereby it is adapted to be moved from and toward the feed-wheel, and means for operating said wheel, substantially as shown and described.

477,751. SEAM FOR SECURING SWEAT-BANDS TO HAT-BODIES. WELCOME P. GARNSEY, Jr., New York, N. Y. Filed Feb. 26, 1891. Renewed May 31, 1892. Serial No. 434,976. (Model.)



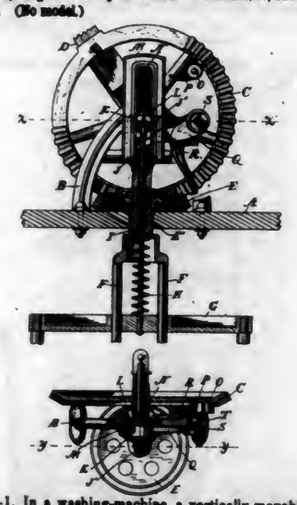
Claim.—As an improvement in seams of sewed articles, a fold of one part, an edge of another part applied to the fold, and a thread arranged to form parallel stitches through the edge part and the fold, a loop for each pair of stitches traversing the edge, and loops connect-

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ing the transverse loops and lying on the edge, whereby the parts are united and the edge covered, substantially as shown and specified.

477,752. WASHING-MACHINE. OSCAR F. GLIDDEN, Grand Rapids, Mich., assignor to Mary A. Glidden. Filed Mar. 20, 1891. Serial No. 385,817. (No model.)



Claim.—1. In a washing-machine, a vertically-movable agitator having a suspension-rod attached, an arm pivoted to the frame at one side of said rod and connected to the same, a lever attached to said arm, and a projection on the driving-wheel engaging said lever, substantially as described.

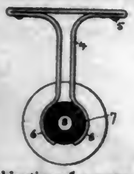
2. In a washing-machine, a vertically-movable agitator having a suspension-rod attached, a vertically-movable plate having studs engaging said rod, an arm pivoted to the frame at one side of said plate and connected to the same, a lever attached to said arm, and a roll on the driving-wheel engaging said lever, substantially as described.

3. In a washing-machine, a vertically-movable agitator, a suspension-rod attached to the same at its lower end and engaging studs on a vertically-movable plate, said plate having a tongue engaging a vertical groove, and a friction-roll engaging a pivoted lever, having attached an arm adapted to engage a roll and curved plate on the driving-wheel, substantially as described.

4. In a washing-machine, an arm adapted to lift the agitator, a lever connected to said arm by bosses having a tongue and groove in their adjacent surfaces, a bolt through the same, said bosses serving to pivot the arm and lever to the frame, and a projection on the driving-wheel adapted to engage said lever, substantially as described.

477,758. INSULATOR. FREDERICK D'A. GOULD, New York, N. Y., assignor to the Edison General Electric Company, same place. Filed Oct. 24, 1891. Serial No. 409,646. (No model.)

477,758.



Claim.—1. The combination of a support, a hanger on said support, having at its lower end a spring-holder, and an insulating-body in and clamped by said holder, having a passage through it for the reception of a wire to be supported, substantially as described.

2. The combination of a hanger having at its outer end a spring-holder, and an insulating-body in said holder, having a passage through it for the reception of a wire to be supported, said body being clamped and held by the spring-holder, substantially as described.

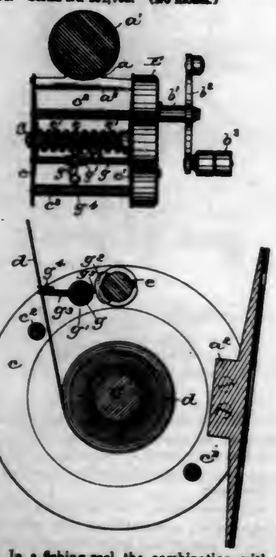
3. The combination of several hangers having spring-holders on a suitable support and insulating spools or bodies on a wire, said spools or bodies being inserted in and supported by said spring-holders, substantially as described.

4. The combination of a hanger or bracket having a spring-holder at its outer end, means for bracing the same, and an insulating-body having a passage for a wire in said holder, substantially as described.

5. A hanger for insulators, consisting of a single strip of metal bent to form a base and two spring-arms, the latter constituting a holder for said insulator, substantially as described.

6. A hanger for insulators, consisting of a single strip of metal bent to form a base, two spring-arms, the latter constituting a holder for said insulator, and a brace for one of said arms, substantially as described.

477,754. FISHING-REEL. THOMAS GREASON, Newark, N. J. Filed Aug. 5, 1891. Serial No. 401,762. (No model.)



Claim.—1. In a fishing-reel, the combination, with the reel and its intermediately-arranged operating mechanism, of a line-guide consisting of a cylinder *c*, provided with double-crossed threads or grooves, and a follower *g'*, provided with arms g^3 and g^4, said arm g^3 having a loop or eye for the line, and said arm g^3 being pivoted to said follower, and the point thereof being adapted to move backward and forward on a rod *g*, all of said parts—viz., the reel, cylinder *c*, and rod *g*—being arranged between the same plates *c* and *d'*, substantially as and for the purposes set forth.

2. In a fishing-reel, in combination, a case E, provided with gears for operating the reel, a shaft b', projecting into said case, and means for operating the same, a gear b^4 on said shaft, a pivoted lever *f*, provided with a gear *f'* to be thrown into or out of engagement with said gear b^4, and a line-guide consisting of a cylinder *c*, provided with double-crossed threads, a follower *g'*, provided with an arm g^3, pivoted thereto, the free end of which projects between said crossed threads, adapted to move backward or forward on a rod *g*, and an arm g^3 on said follower, having a loop or eye for the line, all of said parts—viz., the reel, cylinder *c*, and rod *g*—being arranged between the plates *c* and *d'*, substantially as and for the purposes set forth.

477,755. BOILING AND PRECIPITATING TOWER. GUSTAV R. HAENSEL, Beuthen, Germany. Filed Mar. 3, 1890. Serial No. 342,400. (No model.)



Claim.—1. A boiling and precipitating tower consisting of a shaft E, provided with fittings, one side of which shaft communicates with an air-tight chamber or shaft and is composed of removable tightly-closing plates located one above another, substantially as described and shown.

2. In a boiling and precipitating tower having a shaft E, provided with fittings, a side or wall composed of removable tightly-closing plates located one above another, in combination with a fixed bearer to each set of from four to six plates, substantially as described and shown.

3. In a boiling and precipitating tower, a shaft E, with a side or wall composed of separate removable tightly-closing plates located one above another, in combination with parallel wood bars located with their ends pointing toward said side or wall of shaft E, substantially as described and shown.

477,756. CUT-OFF SAW. ELI B. HAYES, Oshkosh, Wis. Filed Sept. 7, 1891. Serial No. 405,008. (No model.)

Claim.—1. In a cut-off saw, the combination, with the saw proper and a movable frame or support therefor, of mechanism for actuating the saw, a vacuum device connecting said support with a relatively fixed object for controlling the movement of the saw, and means independent of said vacuum device for moving said support with the saw, substantially as set forth.

2. In a cut-off saw, the combination, with the saw proper and a movable frame or support therefor, of mechanism for actuating the saw, means for moving said support with the saw, and a double cylinder and pistons connecting said support with a relatively fixed object for controlling the movement of the saw, substantially as set forth.

3. In a cut off saw, the combination of the saw proper, a movable support therefor, mechanism for actuating the saw, means for moving said support with the saw, and a controlling device for said support, consisting of large and small cylinders and pistons fitting the same, substantially as set forth.

4. In a cut-off saw, the combination of the saw proper, a movable support therefor, mechanism for actuating the saw, a vacuum cylinder and piston interposed between said support and a relatively fixed object and adapted to arrest the backward movement of the support, a valve for controlling the communication of the cylinder with the atmosphere and means for operating said valve, and means independent of said cylinder and piston for moving said support with the saw, substantially as set forth.

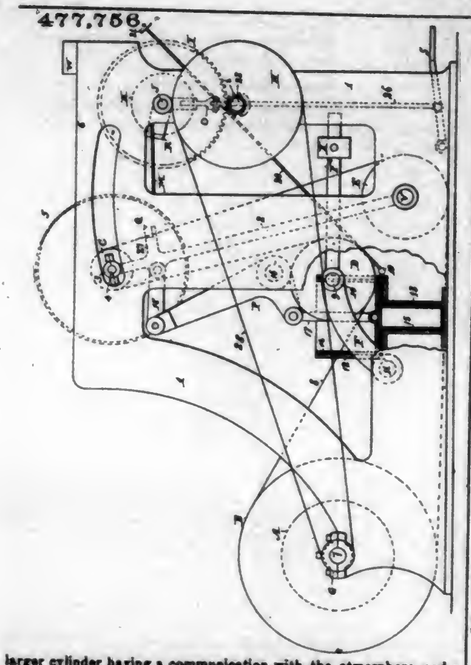
5. In a cut-off saw, the combination of the saw proper, a movable support therefor, mechanism for actuating the saw, means for moving said support with the saw, and a controlling device for said support, consisting of large and small cylinders and pistons fitting the same, the larger cylinder having a communication with the atmosphere, and a valve for controlling the same, substantially as set forth.

6. In a cut-off saw, the combination of the saw proper and its shaft, a movable support for the same, means for retracting the support, a friction-wheel K', connected with said support, a power-shaft parallel with the saw-shaft, a friction-wheel K on the power-shaft and adapted to engage the wheel K', one of said wheels being movable longitudinally and having connected with it a cam or projection, and a projection carried by said support and adapted to engage the first projection and disconnect said wheels, substantially as set forth.

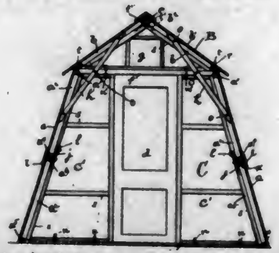
7. The combination, with the saw-support 2, of the cylinders 12 and 13, with their pistons, the valve 19 and actuating-rod 20, the lever P, connected with said pistons and with the frame 2, and means for operating the saw and advancing its support, substantially as set forth.

8. The combination, with the saw-support 2, of the shaft J, the friction-wheel K thereon, the sleeve L and wheel K', connected with said support, the collar N, having a projection R, the lever O, connected with said sleeve, means for forcing the friction-wheels together, and the projection Q on the saw-support, substantially as set forth.

477,756.

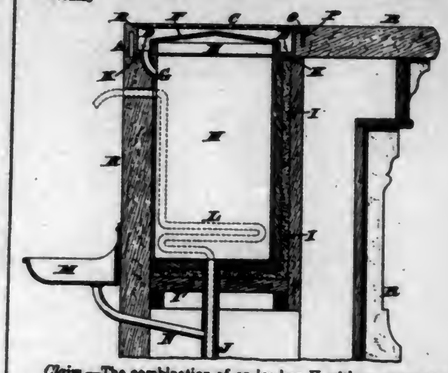


477,757. PORTABLE HOUSE. ORRIN P. HOWE, Augusta, Me. Filed Nov. 30, 1891. Serial No. 413,484. (No model.)



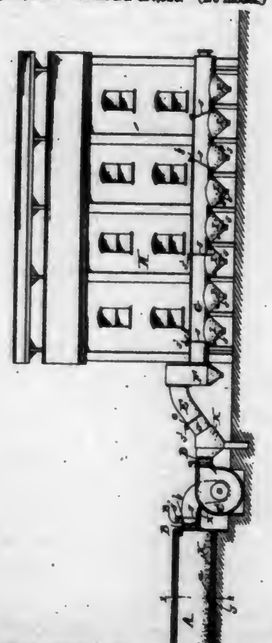
Claim.—A portable house consisting of the folding sides formed of studs and plates and covered with sheathing, a pitch-roof formed of rafters and sheathing, said roof being adapted to fold on the ridge-pole line, cross-pieces, the ends of which rest on the plates and extend from one side to the other, the connection of the side and roof being made by pins passing through the plates, the lower end of the rafters, and the end of the cross-pieces, and braces secured by pins at their middle points to said cross-pieces and by their ends to the studs and rafters, substantially as described.

477,758. COMBINED BAR DRAINER AND COOLER. WILLIAM C. HUSS, Cincinnati, Ohio. Filed Dec. 14, 1891. Serial No. 415,083. (No model.)



Claim.—The combination of an ice-box H with an upper frame A, provided with a removable drainer C, annular gutter D, and detachable lid F, the lid being located under said drainer and the gutter D being connected with said ice-box H by a wasteway G, substantially as herein described.

477,759. FIRE-INDICATOR. MALVERN W. ILES, Denver, Colo. Filed Apr. 1, 1892. Serial No. 427,326. (No model.)



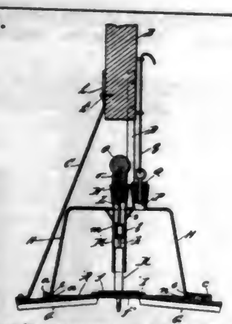
Claim.—In combination with a screen system for the gases from metallurgical furnaces and the mains leading thereto, a series of fusible metallic rods J, extending into those portions of the main where dust and fume accumulate and having handles J', extending through the sides of the main.

477,760. CISTERN-CLEANER. CHANCY R. JESSE, Fort Wayne, Ind. Filed Aug. 7, 1891. Serial No. 402,047. (No model.)

Claim.—1. In a device for cleaning wells, &c., the combination, with the removable bucket, of a perforated base-plate extending beyond the lower margin of the bucket, a staff or handle, and braces for connecting the base-plate with said staff, substantially as and for the purposes set forth.

2. In combination with the staff and bucket, the base-plate, concaved as explained, having an opening therein, ribs on its lower sur-

477,760.



face, and buttons on its upper surface, substantially as and for the purpose set forth.

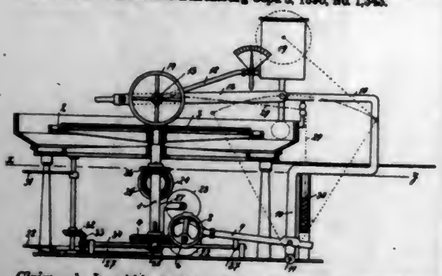
3. In a device for cleaning wells, &c., the combination, with the base-plate supporting a removable bucket and the staff or handle, of the straps for securing the base-plate and handle together, one of said straps being slotted, as explained, and adjustably mounted on the staff, for the purposes and objects named.

4. In a device for cleaning wells, &c., including a staff, base-plate screwed thereto, and removable bucket, the combination, with the removable bucket, of the valve for covering the opening in the base-plate, said valve being mounted upon an adjustable stem in two parts linked together, substantially as set forth.

5. In a device for cleaning wells, &c., including a staff, base-plate secured thereto, and a removable bucket, the combination, with the bucket, of the valve, two-part valve-stem, and the tube inclosing said stem, the latter being braced to the top of the bucket, substantially as set forth.

6. The herein-described device for cleaning wells, &c., the same comprising the removable bucket having an air-opening therein and a plug for closing the same, a perforated and concaved base-plate, means for securing the bucket thereon, the automatically-operating valve, the staff, and straps for uniting the base-plate and staff, all combined and arranged substantially as shown and described.

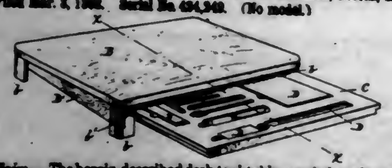
477,761. MACHINE FOR COLORING LEATHER, SKINS, &c. CARL KRAHE, Osterwieck, Germany. Filed Dec. 18, 1890. Serial No. 375,147. (No model.) Patented in Luxemburg Sept. 8, 1890, No. 1,343.



Claim.—1. In a hide or skin dyeing machine, the combination of a table and means for rotating the same with a coloring-drum mounted on a frame and means for drawing the drum to and fro across the face of the table.

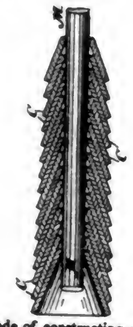
2. In a hide or skin dyeing machine, the combination of a coloring-drum composed of a finely-perforated metal cylinder covered with cloth and a hollow shaft perforated in a screw-like helical line and provided with disks with means, substantially as described, for imparting motion to the drum.

477,762. DESK TOOL-TABLE. GUSTAF LARSSON, Boston, Mass. Filed Mar. 3, 1892. Serial No. 424,249. (No model.)



Claim.—The herein-described desk tool-table, consisting of a work-table B, having inclined ribs B' B' on its under side, adapted to rest on an inclined desk, and having angle-pieces *b b b b*, adapted to hold it in place on the latter, and having a sliding tool-holding shelf or drawer C, substantially as and for the purpose set forth.

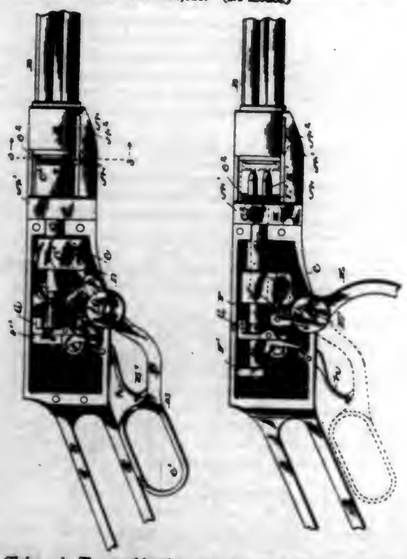
477,768. MANUFACTURE OF GUN-BARRELS. FRANZ MEIXNER, Hernals, near Vienna, Austria-Hungary. Filed June 4, 1891. Serial No. 395,115. (No model.)



Claim.—1. The mode of constructing guns which consists in assembling a series of frusta of cones upon a tubular mandrel by telescoping said cones one into another, subjecting the whole to a welding heat, uniting the cones into a homogeneous body by pressure applied externally, and boring out the tubular mandrel and forming the breech-chamber at the base of the initial cone frustum of the series, substantially as and for the purpose set forth.

2. The mode of constructing guns which consists in assembling on a tubular mandrel a series of frusta of cones by telescoping them one into another, the length of said cones being gradually reduced from the breech to the muzzle of the gun, subjecting the whole to a welding heat, uniting the cones into a homogeneous body by pressure applied externally, and boring out the mandrel, substantially as and for the purpose set forth.

477,764. MAGAZINE-GUN. ALFONSO MERCER, Norfolk, Va. Filed Oct. 6, 1891. Serial No. 407,925. (No model.)



Claim.—1. The combination of a breech-loading gun having a longitudinally-movable abutment cartridge-holding block, with a feed-plate loosely connected to said abutment-block and movable therewith, and means, substantially as described, for causing said plate to move laterally in relation to the said block during its forward and backward movement therewith, substantially as described.

2. The combination of a breech-loading gun having a longitudinally-movable abutment cartridge holding and carrying block, with a slotted feed-plate loosely connected to said abutment-block and

movable therewith, and a fixed pin, substantially as described, for causing said plate to reciprocate laterally in relation to the said block during its forward and backward movement therewith, substantially as specified.

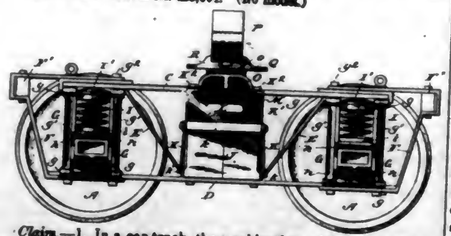
3. In a breech-loading firearm, the combination of the barrel, a longitudinally-movable block lying in rear thereof and movable toward or from the breech and having guides or flanges on its front end adapted to receive a cartridge-holding strip and to introduce a cartridge on the same into the barrel and hold it until exploded, and to then withdraw it, and means for shifting said block and exploding the cartridge, and laterally-reciprocating mechanism for laterally feeding the cartridge-holding strip through the guides on said block, substantially as specified.

4. In a breech-loading firearm, the combination of the barrel, a longitudinally-movable block lying in rear thereof and movable toward or from the breech, having cartridge-holding strip-guides on its front end, the lever and link for operating said block, the spring-controlled firing-pin playing in said block and cocked by the backward movement thereof, and the trigger devices for releasing said firing-pin after the block has been moved forward, and a laterally-reciprocating feed mechanism for directing the cartridge-holding strip through the guides on the block, substantially as described.

5. The combination of the barrel, the stock, the movable breech-block C, having cartridge-holding flanges c^6 on its front end, the spring-controlled firing-pin F, playing through said block, having its pin *f* and notch *f'*, the cocking-dog H, the trigger engaging said dog, and the lever and links for reciprocating said breech-block, substantially as set forth.

6. The combination of the barrel, the breech-block C, having flanges c^6 on its front end, and head-piece C' on its inner end, the pivoted lever E, having short arm *e*, the link D, pivotally connected to arm *e* and head C', the firing-pin F, playing through the breech-block, having pin *f* and notch *f'*, the pivoted dog H, springs H' and *g'*, and the trigger, all substantially as described.

477,765. CAR-TRUCK. ARNOLD MILLER, Medford, Wis. Filed Mar. 4, 1892. Serial No. 423,691. (No model.)



Claim.—1. In a car-truck, the combination, with the side frames consisting of an upper and a lower plate and an intermediate plate extending up from the lower plate in opposite directions to and parallel with the upper plate and bent over the upper plate, of the end plates F, having pockets therein and projecting above and below the upper and lower plates, respectively, and tie-bolts rigidly uniting the several plates, substantially as described.

2. In a car-truck, the combination, with the frame of the truck, of a trussed cross-beam secured thereon, having an elongated central slot, a guide-rail on said beam, formed with grooves in its outer edges and an elongated central slot, a sliding plate fitted on said rail, having depending tongues engaging in said grooves, bearings formed in said sliding plates, a central bearing-block on the sliding plate, anti-friction bearing-blocks on the outer ends of the sliding plate, a bolster, a bearing secured on the lower side thereof engaging the bearing on the sliding plate, shoes on the bolster, resting on the anti-friction blocks, and a king-bolt passing through the bolster, sliding plate, and rail, substantially as described.

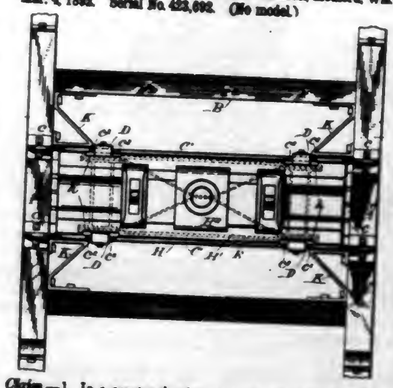
3. In a car-truck, the combination, with a supporting-beam, of a guide-rail mounted thereon, having longitudinal grooves in its outer edges, a sliding plate mounted on said rail, formed with depending flanges engaging in said grooves, a bearing-block centrally arranged on said plate, anti-friction blocks arranged on the opposite sides of said bearing-block, a bolster having a bearing-plate on its lower edge, engaging with said bearing-block, and shoes on the bolster, resting on said anti-friction blocks, substantially as described.

4. In a car-truck, the combination, with a supporting-beam, of a guide-rail thereon, a sliding plate on the rail, having oil-boxes formed therein, a bolster mounted on said plate, and longitudinally-sliding covers on the plate over the apertures leading to the oil-boxes, formed with elongated slots in their centers and upturned ends, a bolt passing through said cover and plate, and a spring interposed between the cover and cap of the bolt, substantially as described.

5. In a car-truck, the combination, with the supporting-beam, of a guide-rail thereon, having bearing-surfaces at its edges and grooves in the outer faces of the bearing-surfaces, a sliding plate having tongues engaging in said grooves, a bearing-block on the plate, having a central bearing and an aperture therein, anti-friction bearing-blocks on the outer edges of the plates, rolls in said blocks, a bolster consisting of an upper plate and a truss-plate, means for uniting the two plates, a bearing on the truss-plate, having an extension fitting in the bearing of the bearing-block, and shoes on the bolster, resting on said anti-friction blocks, substantially as described.

6. In a car-truck, the combination, with a supporting-beam, of a laterally-moving plate on the beam, bearings on the plate, a bolster consisting of two plates, the upper plate having its ends bent down and around the lower plate, a bearing on the lower plate, suitable supports interposed between the plates, bolts passing through the plates, supports, and bearings, sleeves interposed between the plates, shoes on the lower plate, and bolts passing through said plates, sleeves, and shoes, substantially as described.

477,766. CAR-TRUCK. ARNOLD MILLER, Medford, Wis. Filed Mar. 4, 1892. Serial No. 423,692. (No model.)



Claim.—1. In a car-truck, the combination, with the side beams of the frame, of cross-supporting yokes, links on the yokes extending below the same, a metallic frame below the yokes, channeled bearings on the ends of the frames, rods passing through said bearings, sleeves on the rods located in the links, springs having retaining-blocks fitted in said channels, a supporting-beam mounted on the springs, and plates on the under side of said beam, in which the upper blocks of the springs are located.

2. In a car-truck, the combination, with the frame, of a movable supporting-beam, springs supporting said beam, consisting of two members, blocks through which the members are passed, and keys for locking the members in the box, substantially as described.

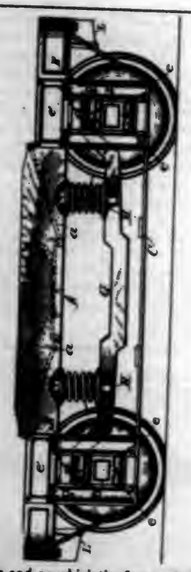
477,767. CAR-TRUCK. ARNOLD MILLER, Medford, Wis. Filed Mar. 4, 1892. Serial No. 423,693. (No model.)

Claim.—1. In a car-truck, the combination, with the truck-frame, of guide-castings secured at opposite ends thereof and consisting of two independent members having depending arms formed with upper and lower flanges thereon projecting inwardly, bolts securing the respective members together on opposite sides of the side beams of the frame, and bolts passing through the frames and upper portions of the castings, and axle-boxes having lateral offsets engaging the sides of the depending arms of the castings, substantially as described.

2. In a car-truck, the combination, with the side bars of the frame, of guide castings consisting of two like members having depending arms on opposite sides thereof formed with guide-faces, overlapping flanges at the ends of the arms, flanges at the upper ends of the arms arranged to engage each other as the castings are placed in position and forming in conjunction with the castings a pocket in which the side beams are placed, bolts passing through the side beams and castings, bolts securing the lower ends of the castings together, reinforcing-webs on the arms, and axle-boxes having lateral offsets engaging over the edges of the bearing-faces of the arms, whereby the boxes are allowed a vertical movement only, substantially as described.

3. In a car-truck, the combination, with the truck-frame, of guide-castings supported thereby, consisting of two or more members located on opposite sides of the side bars of the frame and bolts passing through the castings and frame for uniting the same together, axle-boxes located within the guides, a longitudinal cross-bar having its ends supported directly by the axle-boxes, and springs on the cross-

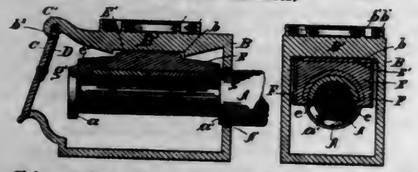
477,767.



bar between the boxes and on which the frame of the truck rests, substantially as described.

4. In a car-truck, the combination, with the frame, of the axle-boxes having dovetailed grooves in their upper faces, guides for the boxes, and cross-bars uniting the boxes on the respective sides of the truck, having their ends formed into dovetails and fitted in said grooves of the axle-boxes, and springs supported on said bars at or near their ends and between the boxes and on which the frame rests, substantially as described.

477,768. AXLE-BOX. ARNOLD MULLER, Medford, Wis. Filed Mar. 4, 1892. Serial No. 423,004. (No model.)



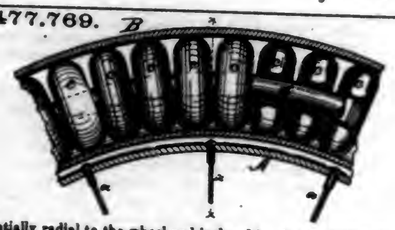
Claim.—1. In an axle-box, the combination, with the axle and top of the box formed with a transverse recess in its under side, of an arch-shaped bearing-block fitting over the axle and having inwardly-extending flanges on its lower edges, a plate on the upper face of the bearing-block having a curved face adapted to slidingly engage in the recess in the top of the box, and a bushing for the under side of the block, resting on the flanges, substantially as described.

2. In an axle-box, the combination, with the axle having a reduced portion near its outer end, forming shoulders, and the top of the axle-box, having a transverse recess in its under side, of an arch-shaped bearing-block fitting over the axle and having grooves formed therein around the under faces of the ends thereof, inwardly-extending flanges at the lower edges of the bearing-block, a plate on the upper face of the bearing-block having a curved upper face and adapted to slidingly engage in the recess in the top, a bushing for the bearing-block, divided into two sections having outwardly-extending flanges at their outer ends engaging in the grooves at the ends of the bearing-block, the lower edges of the bushing resting against the flanges at the lower edges of the block and held in place by the shoulders on the axle, and reinforcing-blocks on the sides of the bearing-block, substantially as described.

477,769. BICYCLE-TIRE. CHARLES W. MILLET, Dolgeville, N. Y., Filed Mar. 14, 1892. Serial No. 424,907. (No model.)

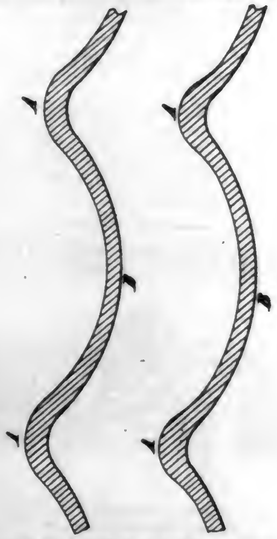
Claim.—1. In a bicycle-tire, the combination, with the tire and rim, of the hollow elastic rings inclosed between them and arranged side by side.

2. In a bicycle-tire, the combination, with the tire and rim, of tubular elastic rings disposed upon the rim side by side in lines substantially radial to the wheel and inclosed by the tire detachably connected to the rim.



3. In a bicycle-tire, the combination, with the tire and rim, of hollow elastic rings arranged side by side upon the rim, a cord upon which they are strung, and a tire inclosing them and detachably connected to the rim.

477,770. STEAM-BOILER FLUE AND FIRE-BOX. DONALD B. MORISON, Hartlepool, England. Filed Sept. 10, 1890. Serial No. 364,572. (Model.) Patented in England Mar. 27, 1890, No. 4,906.



Claim.—1. A corrugated steam-boiler flue or fire-box in which the material between the supporting curved ridges is disposed in the form of corrugations of much less curvature than the supporting-ridges and following, substantially, the line of a catenary curve between the ridges, substantially as described.

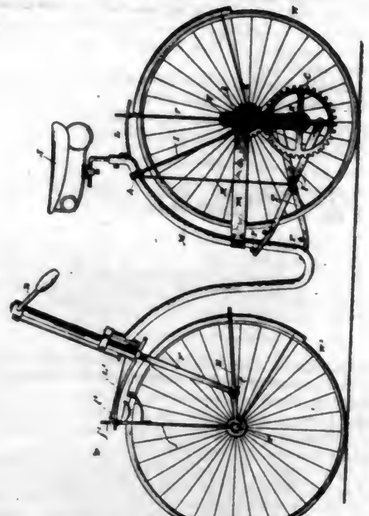
2. A corrugated steam-boiler flue or fire-box in which the material between the curved supporting-ridges is disposed in the form of corrugations of much less curvature than said ridges and following, substantially, the line of a catenary curve, the supporting-ridges being of greater thickness on their crowns than the intervening parts, substantially as described.

477,771. LIFTING-JACK. CHARLES MORRILL, New York, N. Y. Filed Apr. 30, 1892. Serial No. 429,853. (No model.)



Claim.—The combination, with the standard, of a metal lever having a seat at its extreme forward end and an elongated vertical opening, a fulcrum-pin arranged transversely therein and integral with the walls thereof, depending ears, also integral with said lever, a bearing-pin received by said ears, the brace-link, the pin integral with one end of said brace-link, and the rung integral with the other end of the same, substantially as shown and described.

477,772. BICYCLE. SAMUEL E. MOSHER, Chillicothe, Ohio. Filed June 27, 1891. Serial No. 397,093. (No model.)

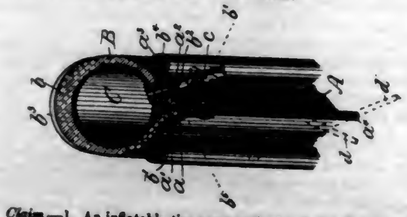


Claim.—1. In a bicycle, the combination, with the main frame having a rearwardly-extending strap-frame provided with vertical slots and the rear wheel, whose axle is mounted in said slots, of a leaf-spring extending rearwardly from said main frame and a supplemental fork whose ends are connected with the axle and whose body engages said spring, substantially as described.

2. In a bicycle, the combination, with the rear wheel having a driving-gear on its shaft, a hanger from the axle of said wheel, and a crank-gear journaled in said hanger, engaging said driving-gear and having an inwardly-extending crank-pin, of a treadle connected to said crank and a swinging support for said treadle, substantially as described.

3. In a bicycle, the combination, with the main frame having a rearwardly-extending strap-frame provided with vertical slots, the rear wheel whose axle is mounted in said slots, a supplemental fork rising from the axle, a spring on the frame engaging the upper end of said fork, and a hanger depending from the axle, of a crank-gear journaled in said hanger, a driving-gear on the shaft with which said crank-gear intermeshes, a treadle connected to said crank, and a swinging support for said treadle, substantially as hereinbefore set forth.

477,773. WHEEL-TIRE. HENRY MYERS, Philadelphia, Pa. Filed Mar. 2, 1892. Serial No. 423,453. (No model.)

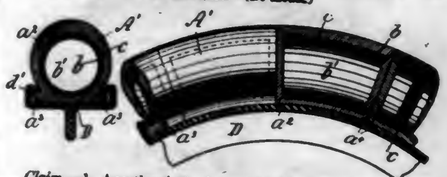


Claim.—1. An inflatable tire composed of a flat endless sheet of elastic material adapted to be sprung into a V-shaped metal felly, said felly provided with projections adapted to engage similar projections on the flat endless elastic sheet to form an air-tight continuous inflatable tire, substantially as and for the purposes set forth.

2. An inflatable tire composed of a flat endless sheet of elastic material having beveled-off edges, said edges provided with projections adapted to engage similar projections on a V-shaped metal felly to form a continuous air-tight inflatable tire, substantially as and for the purposes set forth.

3. An inflatable tire composed of a flat endless sheet of elastic material adapted to be sprung into a V-shaped metal felly and held therein by scarf-joints formed by projections or spurs on the tire and felly, so as to form an air-tight continuous tube, and an inflatable tube located within said tire, substantially as and for the purposes set forth.

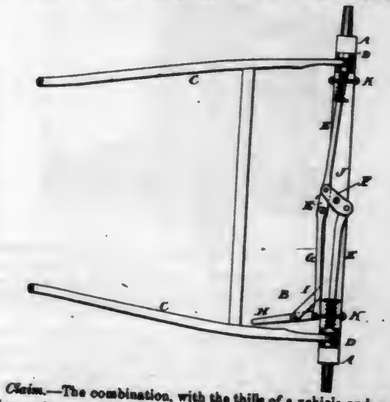
477,774. WHEEL-TIRE. HENRY MYERS, Philadelphia, Pa. Filed Mar. 2, 1892. Serial No. 423,454. (No model.)



Claim.—1. A sectional wheel-tire comprising a number of sections, each composed of an elastic inner tube, an elastic-webbed metal tube, and an outer casing cast to said tubes and completely inclosing the same, said outer casting provided with flanges adapted to hold said sections onto a metal tire, substantially as and for the purposes set forth.

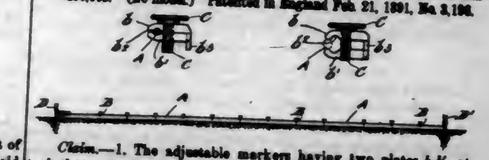
2. A wheel-tire comprising a number of sections, each composed of an elastic inner tube, an elastic webbed metal tube, and an outer casing cast to said tubes and completely inclosing the same, said casing provided with flanges adapted to readily engage and disengage the flanges of a felly, substantially as and for the purposes set forth.

477,775. HORSE-DETACHER. GEORGE W. MCALISTER, Jake's Prairie, Mo. Filed Feb. 29, 1892. Serial No. 423,296. (No model.)



Claim.—The combination, with the thills of a vehicle and an axle having on its upper face the eyes D D D D, of the spring-bolts E E, middle-fulcrumed lever F, levers G H, and brace I, one of said levers G H being end-pivoted to an extension E' of one of the spring-bolts, as and for the purpose set forth.

477,776. GUIDE-LINE FOR PLANTING PURPOSES. HENRY NICHOLS, Hunslet, near Leeds, England. Filed Sept. 26, 1891. Serial 407,005. (No model.) Patented in England Feb. 21, 1891, No. 3,198.

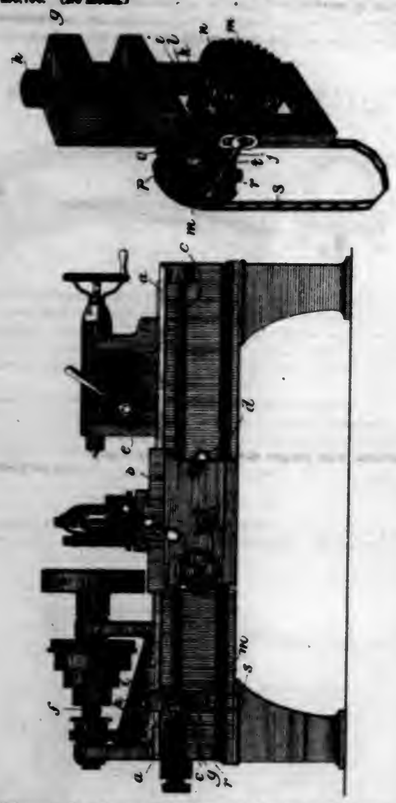


Claim.—1. The adjustable markers having two plates *b b'*, attached together by a screw C at one end and by a sliding heel-piece *b²*, substantially as shown, for the purposes specified.

2. The combination, in a guide-line for planting purposes, of the line A, having a fibrous center or body portion and a metallic covering, and the adjustable and detachable markers B, secured to said line

A by screws C and adapted to be independently fixed at intervals thereon, substantially as herein set forth.

477,777. LATHE ATTACHMENT FOR CUTTING SCREWS. RICHARD HORWELL, South Norwalk, Conn. Filed Feb. 8, 1892. Serial No. 420,756. (No model.)



Claim.—1. In a device of the character described, the combination of the lead-screw, the shaft, the worm-wheel mounted on said shaft and meshing with said screw, the sprocket-wheel also mounted on said shaft, and the chain carried by the sprocket, substantially as set forth.

2. The combination of the rotatory shaft carrying the worm-wheel and sprocket-wheel with the lead-screw, with which said worm engages, and the chain carried by said sprocket, and means, as a stationary pointer, with which the links of said chain register, substantially as set forth.

3. In a lathe, the combination, with the lead-screw and the tool-carriage, which carries the lead-nut, of the hanger secured to the lathe-bed, the shaft journaled in said hanger and extending at right angles to the lead-screw, the worm mounted on said shaft and engaged with said screw, whereby rotation is imparted to the shaft, and a device carried by and revolving in harmony with said shaft and adapted to register at certain designated intervals with a stationary object, whereby the relative positions of said nut and screw proper for immediate engagement are predetermined, substantially as set forth.

477,778. THREAD-CUTTER FOR SPOOLS. HENRY OAKES, Silver City, N. Mex., and BEN OAKES, Chicago, Ill. Filed Jan. 22, 1892. Serial No. 418,967. (No model.)

Claim.—1. A thread-cutter consisting of a metal disk having an axial spool-support and a downwardly-bent lip on its periphery, a tongue mounted on the disk, extending over the lip and combining therewith to form a thread-holder, and a cutter located at one side of the lip, substantially as specified.

2. A thread-cutter consisting of a metal disk provided with a peripheral extension, one edge of which is straight and downwardly bent to form a cutting-edge and the opposite edge of which is struck up,

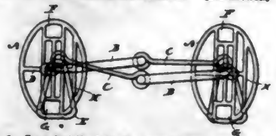


a thread-holder projecting from the periphery, and a spool-support upon the disk, substantially as specified.

3. A thread-cutter consisting of a disk provided at its center with a slit, an inverted-V-shaped spring having one of its terminals passed downwardly through the slit and laterally bent under the disk, a plate provided at its edges with tongues, said plate being located under the disk and having its tongues extending upwardly through slits formed in the disk and engaging said disk, and a cutter mounted on the disk, substantially as specified.

4. A thread-cutter consisting of a disk having an axial spool-support, a thread-holder located upon the disk, and a triangular wing extending from the periphery, said wing having a straight edge downwardly bent and serrated, substantially as specified.

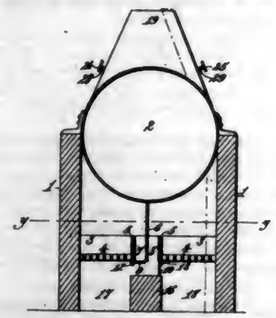
477,779. BRIDLE-BIT. GEORGE S. PARSONS, Cherry Flats, Pa. Filed Mar. 11, 1891. Serial No. 384,549. (No model.)



Claim.—1. In a bridle-bit, the combination of cheek-pieces, main links pivotally connected at their outer ends to the cheek-pieces, and auxiliary links pivotally connected with the inner ends of the main links and having a sliding connection with the cheek-pieces at their outer ends, said main links being of larger diameter than said auxiliary links, substantially as described.

2. In a bridle-bit, the combination of cheek-pieces and separate bits or mouth-pieces connected thereto, each bit-piece being formed of two links pivoted together at or near the center and one of the links of each bit being larger in diameter than the other, substantially as described.

477,780. SMOKE-CONSUMING FURNACE. GEORGE S. RILEY, Rochester, N. Y. Filed Oct. 3, 1891. Serial No. 408,189. (No model.)



Claim.—1. The combination, in a steam-boiler furnace, of twin fireplaces open at their tops and provided at their adjacent sides with vertical walls, a vertical partition extending from the boiler down between the said vertical walls to provide opposite longitudinal flues or passage-ways 7 and 8, and a pair of adjustable valves, dampers, or gates arranged, respectively, below the twin fireplaces at the adjacent sides thereof, substantially as described.

2. The combination, in a steam-boiler furnace, of twin fireplaces open at their tops and provided at their adjacent sides with vertical walls, a vertical partition extending from the boiler down between the said vertical walls to provide opposite longitudinal flues or passage-ways 7 and 8, a pair of adjustable valves, dampers, or gates arranged, respectively, below the fireplaces at the adjacent sides thereof, a smoke-stack containing a partition which forms a continuation of the partition beneath the boiler for dividing a portion of the smoke-stack into two flues, and a pair of adjustable valves, dampers, or gates arranged, respectively, in the said flues, substantially as described.

477,781. DEVICE FOR SUSPENDING TROLLEY-WIRES. JOSEPH SACHS, New York, N. Y., assignor of one-half to Charles S. Van Nuis, same place. Filed Oct. 26, 1891. Serial No. 410,106. (No model.)



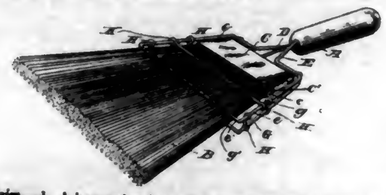
Claim.—1. In a wire-supporting device, the combination of a body with a dovetail socket or recess, the narrow open side of which faces downward, and corresponding wedge clamping-plates in the same and adapted to clamp a wire, whereby the weight of the wire tends to force the clamping-plates together, substantially as described.

2. In a wire-supporting device, the combination of a body with a socket or recess, clamping-plates with inclined sides in the same, and a device passing through the body and pressing on the clamping-plates, substantially as described.

3. In a wire-supporting device, the combination of an insulator, a body with a socket or recess, clamping-plates with inclined sides in the same, and a bolt extending from the insulator, passing through the body and pressing down on the clamping-plates, whereby the device is supported and the clamp locked by the same bolt, substantially as described.

4. The combination of a body consisting of a single casting having a socket with inclined sides and with a bolt-hole through its top, two wedge-shaped clamping-plates in the socket, said plates having grooves at their outer edges to receive the wire to be supported, and a bolt in said hole and pressing on the plates, substantially as described.

477,782. BROOM. ALFRED MCP. SANDERS, Morristown, Tenn. Filed July 16, 1891. Serial No. 399,747. (No model.)
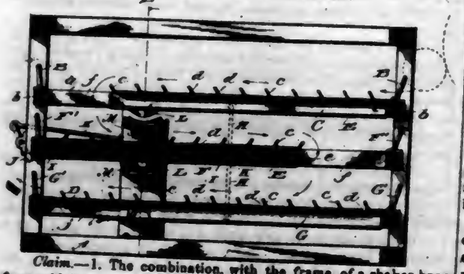


Claim.—1. A broom-head consisting of two wire frames having parallel side bars and hinged together, a cap between the frames, in which the end of the brush is placed, a spiral shank formed by the united ends of one of the frames, cross-bars at and between the ends of the frames, and sliding hooks pivotally secured to the side bars of one frame and removably engaging the bars of the other frame, substantially as described.

2. In a broom, the combination, with a brush, of a frame having its ends extending up and toward each other above the center of the brush, a stiffening-rod passing into the brush, a screw-shank formed of the united ends of the frame and stiffening-rod, and means for uniting the brush to the frame, substantially as described.

3. In a broom, the combination, with a brush, of a cap for the ends of the brush, a frame extending above the brush, a stiffening-rod passing through the cap into the brush, a shank formed by the ends of the frame and stiffening-rod, a frame hinged to the other frame on the opposite side of the brush, and hooks uniting the lower ends of the frame, substantially as described.

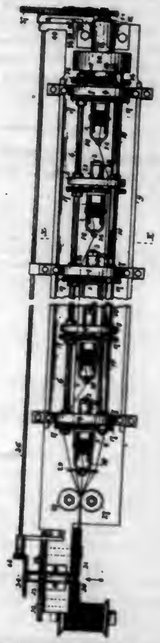
477,783. GRAIN-SEPARATOR. GEORGE A. SCHRAUD, Seneca, Ill. Filed Jan. 23, 1892. Serial No. 419,542. (No model.)



Claim.—1. The combination, with the frame, of a shaker hung from said frame to move in the direction of its length and having integral transverse ribs and openings formed by the upturning of the material which forms the ribs, with an integral chamber beneath the openings, with a side discharge and an opening in the bottom of the chamber, an opening into the side of the chamber, and a vertical conduit which discharges through said opening into the chamber, substantially as specified.

2. In a grain-separator, the combination, with the shakers, each provided with transverse ribs and openings, and a chamber beneath the same with side discharge and the lowermost one having an opening at one end of its chamber also, of the vertical conduit and the spout formed by a portion of the bottom of the chamber conducting the material to the lower shaker, as set forth.

477,784. MACHINE FOR MAKING WIRE CORDS AND CABLES. WILLIAM H. H. SIBUM, Brooklyn, N. Y. Filed Dec. 10, 1890. Serial No. 374,147. (No model.)



Claim.—1. The combination of a frame rotating on its axis, a number of spool-frames arranged in line within the rotating frame, a shaft carried by said rotating frame, a single gear on each of the spool-supporting frames, gears on said shaft engaging with the gears on the spool-supporting frames, another gear on the outer end of said shaft, and a non-rotary gear arranged opposite the center of the rotating frame to engage with the last-named gear, substantially as specified.

2. The combination of a frame rotating on its axis, a number of spool-frames arranged in line within the rotating frame, shafts arranged at opposite points on the rotating frame and extending the entire length of the spool-frames, a single gear on each end of the spool-supporting frames, and gears on said shafts engaging therewith, substantially as specified.

3. The combination of a frame rotating on its axis, a number of spool-frames arranged in line within the rotating frame, shafts extending the entire length of and carried by said rotating frame, a single gear on each of the spool-supporting frames, gears on said shafts engaging therewith, other gears on the outer ends of said shafts, and a non-rotary gear arranged central with the rotating frame to engage with the last-named gears, substantially as specified.

4. The combination, with a number of spool-frames, of a rotary frame, take-up rollers 30 31, a shaft 12, connected with the said frame, gearing substantially such as described between said shaft 12 and the rollers 30 31, and means for shifting the bearing of certain of said gearing, substantially as specified.

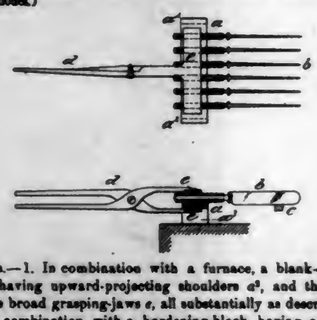
5. The combination of a main frame rotating on its axis, a number of smaller frames carried by said main frame and rotating independently on their own axes, frames for supporting spools and connected with said smaller independent frames, so that there may be a relative movement between the latter and them, shafts arranged and ex-

tending the entire length of the smaller independent frames, gears carried by said shafts in the smaller independent frames and engaging gears on the spool-frame-supporting shafts, non-rotary wheels with which said gears on the smaller independent frames are engaged, eyes or guides in said smaller independent frames receiving wires, threads, or like material from said spool, and tubular studs arranged forward of the foremost spools within said smaller independent frames, substantially as specified.

6. The combination of a main frame rotating on its axis, a number of smaller frames carried by said main frame and rotating independently on their own axes, spool-supporting frames arranged within the smaller independent frames, shafts arranged in and extending the entire length of the smaller independent frames and geared to the spool-supporting frames, gears 15, gear-wheels on said shafts engaging with the gears 15, shafts 58, cranks 64 on these shafts, and a ring 65, substantially as specified.

7. The combination of a main frame rotating on its axis, a number of smaller frames carried by said main frame and rotating independently on their own axes, spool-supporting frames arranged within the smaller independent frames, shafts arranged in the smaller independent frames and geared to the spool-supporting frames, gears 15, gear-wheels on said shafts engaging with said gears 15, shafts 58, cranks 64 on these shafts, a ring 65, and stops or rollers 66, substantially as specified.

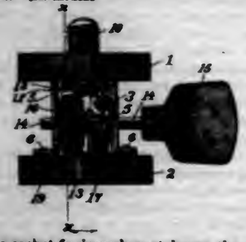
477,785. APPARATUS FOR HARDENING CUTLERY. GEORGE R. SMITH, Glastonbury, Conn. Filed Aug. 17, 1891. Serial No. 402,331. (No model.)



Claim.—1. In combination with a furnace, a blank-supporting block *a*, having upward-projecting shoulders a^3, and the tongs *d*, having the broad grasping-jaws *e*, all substantially as described.

2. In combination with a hardening-block having on its upper surface a series of sockets adapted to hold in an edgewise position the handles of a series of knife-blanks and having on the under side the supporting-legs, a pair of tongs having a jaw adapted to overlie a series of the knife-blanks located in the blank-holding sockets, and an opposing jaw adapted to grasp the under side of the hardening-block, all substantially as described.

477,786. SOCKET FOR INCANDESCENT LAMPS. EVELYN L. SMITH and GEORGE C. H. FOURNE, Bridgeport, Conn., assignors to the Crown Electric Manufacturing Company, same place. Filed Sept. 7, 1891. Serial No. 405,006. (No model.)



Claim.—1. In a socket for incandescent lamps, the combination of the upper and lower insulating-disks having secured thereto, respectively, the metal terminals, the yoke to which said disks are secured, the socket-screw secured to the bridge of said yoke, the contact-springs secured, respectively, to said screw and the lower terminal, the rotatory stem journaled in said yoke, and the cam carried by said stem, substantially as set forth.

2. The combination of the upper insulating-disk, the yoke-bridge having a slot therein, the socket-screw shank fitted closely within said slot, the upper contact-spring, and the nut whereby said screw and spring are secured together and to said disk, substantially as shown and described.

3. The combination of the upper insulating-disk having openings therein, as described, the yoke extending through said openings and having a bridge which is countersunk within said disk, the socket-screw extending through said yoke and disk, and the nut on the lower end of said screw, whereby said disk is secured between said bridge and nut, substantially as shown and described.

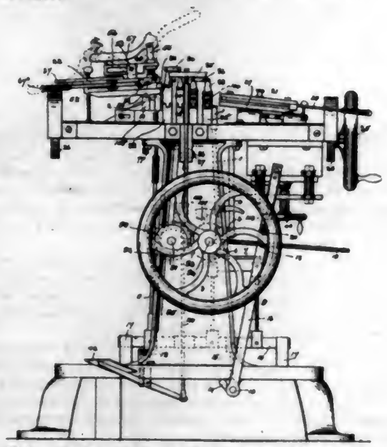
477,787. ELECTRIC CONDUCTOR. CHARLES T. SNEDEKOR, Worcester, Mass., assignor to the Washburn & Moen Manufacturing Company, same place. Filed Oct. 17, 1891. Serial No. 409,093. (No model.)



Claim.—1. In an insulated electric conductor, the combination, with a metallic conductor, of a fire-proof compound consisting of calcined magnesia, china-clay, and silicate of soda applied to the metallic conductor, of a coating consisting of a compound of rubber applied to said fire-proof compound and a second fire-proof compound applied directly to said rubber compound, substantially as set forth.

2. The combination, with a metallic electric conductor, of means for insulating the same, consisting of, first, a fire-proof compound of calcined magnesia and silicate of soda applied directly to the metallic conductor; second, a compound of rubber applied directly to the first-mentioned fire-proof compound, and, third, said fire-proof compound applied directly to said compound of rubber, substantially as set forth.

477,788. LASTING-MACHINE. ALBERT E. STICKLER, Northampton, England, assignor, by mesne assignments, to the Chase Lasting Machine Company, Portland, Me. Filed Nov. 1, 1889. Serial No. 328,905. (No model.) Patented in Germany Mar. 13, 1886, No. 38,949, and Jan. 8, 1888, No. 45,963; in France Mar. 16, 1886, No. 174,797, and May 17, 1887, No. 183,641, and in England Dec. 21, 1887, No. 17,581, and Oct. 10, 1888, No. 14,536.



Claim.—1. In a machine for lasting boots or shoes, the clamp or head 21, wiper-plates carried thereby, the horizontally-sliding frame 41, upon which it is pivoted, the vertically-sliding frame 43, which guides the frame 41, combined with a screw to adjust the frame 43 vertically, and means to sustain the said screw, substantially as described.

2. In a machine for lasting boots or shoes, the clamp or head 21, wiper-plates carried thereby, the horizontally-sliding frame 41, upon which it is pivoted, the vertically-sliding frame 43, which guides the frame 41, combined with a screw to adjust the frame 43 vertically and means to sustain the said screw, and adjustable stops 48 to determine the descent of the vertically-movable frame 43, substantially as described.

3. In a machine for lasting boots or shoes, the clamp or head 21, wiper-plates carried thereby, the horizontally-sliding frame 41, upon which it is pivoted, the vertically-sliding frame 43, which guides the frame 41, combined with a screw to adjust the frame 43 vertically and means to sustain the said screw, and the screw 23 and nut 49 to adjust the frame 41 longitudinally, substantially as described.

4. In a machine for lasting boots or shoes, the combination, with a last, supports therefor, and a toe clamp or head 22, of the spring 12

for forcing the last against the wiper plates carried by the said clamp or head, and the presser having a yielding plate connected therewith and provided with points or projections 5 upon its under side to engage the edge of the upper being lasted, substantially as described.

5. In a machine for lasting boots or shoes, the following instrumentalities, viz: two pivoted blocks, supports therefor, a pivoted equalizer, connections extending from opposite sides the center of the equalizer to the said pivoted blocks, two nipper-wipers carried by the said pivoted blocks, and an adjustable stop 105, co-operating with one of the said blocks, whereby one of the said nipper-wipers may be positively arrested in its upward movement in advance of the arrest of the other of the said nipper-wipers, as and for the purpose set forth.

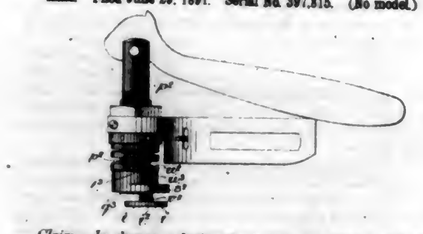
6. In a lasting-machine, the shafts 91 and 94, gearing to connect them, and the dog or detent 107, combined with the lever 16, adapted to raise and lower the last-supporting rods, whereby when the said lever is turned to lower the last the said dog will be automatically released, substantially as described.

7. In a machine for lasting boots or shoes, the following instrumentalities, viz: two pivoted blocks, supports therefor, a pivoted equalizer, connections extending from opposite sides the center of the equalizer to the said pivoted blocks, two nipper-wipers carried by the said pivoted blocks, an adjustable stop 105, co-operating with one of the said blocks, whereby one of the said nipper-wipers may be positively arrested in its upward movement in advance of the arrest of the other of the said nipper-wipers, and the adjustable stop 103 to adjust the height of the nipper-wipers to conform to different-shaped lasts, as and for the purpose set forth.

8. In a lasting-machine for boots or shoes, the vertically and horizontally adjustable toe clamp or head 22 and the toe-wipers carried thereby, means for actuating them, an upright mounted on the said clamp or head, a lever 54, a vertically adjustable post 56, carried by the said lever, and an upper-clamping device to hold the toe of the upper, as described, combined with a lever 57, to operate substantially as set forth.

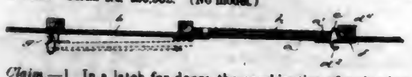
9. In a lasting-machine, a series of nipper-wipers and devices to move the same vertically, the said devices including an equalizer and connections from its opposite ends, combined with a positively-acting adjustable stop for arresting the vertical movement of one or more of the said nipper-wipers at a predetermined point while others continue to move, to thus limit the amount of draft or upward movement of any one or more of the nipper-wipers to particular parts of the upper, as required, substantially as described.

477,789. LASTING-MACHINE. ALBERT E. STICKLER, Northampton, England, assignor to the Chase Lasting Machine Company, Boston Mass. Filed June 29, 1891. Serial No. 397,815. (No model.)



Claim.—In clamping devices for holding the upper while the last is being forced thereinto, the upper plate provided with a series of openings, and interchangeable pressing-plates of different sizes having pins thereon to enter the openings of the upper plate registering therewith, and pins or projections extending from the under side of said pressing-plates, the said pins being independently adjustable at right angles thereto to project more or less therefrom, substantially as and for the purpose described.

477,790. DOOR-LATCH. HARRY D. WHEATLEY, Union City, Ind., assignor of one-half to G. Lambert & Son, Ohio City, Ohio. Filed Feb. 4, 1892. Serial No. 420,362. (No model.)



Claim.—1. In a latch for doors, the combination of main plate *c*, provided with a pair of inwardly-projecting arms c', a spring-actuated latch-plate *d*, pivoted between the inner ends of the arms c' and formed with a latching-shoulder, and a hook d^3, projecting outwardly through and working in a slot in the main plate between the arms, substantially as described.

2. The combination of a hinged door and adjacent structure, a latch secured to the door, said latch consisting of a main plate secured on the exterior of the door near its edge and provided with a slot and an arm c', formed on the inner side of the plate and projecting inwardly through a slot in the door, and a latch-plate *d*, pivoted on the inner end of said arm c' and having an inclined edge d^2, projecting beyond the edge of the door, and a hook d^3, projecting outwardly through the slot in the main plate, means on the adjacent structure in line with the latch for engaging the hook d^3 when the door is open, an operating-rod *h*, connected to the latch-plate inside of the door, and means on the adjacent structure to engage the latching-shoulder when the door is closed, substantially as described.

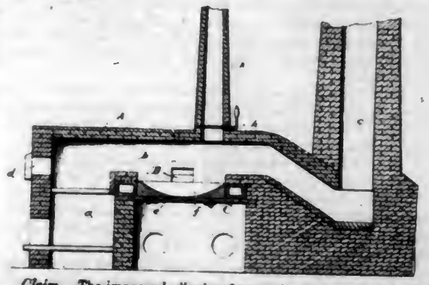
3. The combination of a hinged door and a support or structure therefor, a main plate attached to the edge of the door and provided with an arm extending inwardly and passing through a slot in the door, a pivoted latch-plate on the inner end of said arm and provided with a hook on its outer end, said hook projecting outwardly beyond the door, a spring for actuating the plate, and an inclined catch-bar secured to the structure in line with the latch, this bar being supported away from the structure to prevent the hook d^3 from striking the same when the door is thrown open, as and for the purpose set forth.

477,791. DENTAL REFLECTOR AND TONGUE-GUARD. WALTER R. ANDREWS, New York, N. Y. Filed Feb. 25, 1892. Serial No. 422,817. (No model.)



Claim.—The reflector and guard A and the backing-piece B, with its clasps C C formed of a single piece of metal and adapted to be secured to a dental mouth-mirror, substantially in the manner described.

477,792. FURNACE FOR ALLOYING METALS. WILLIAM A. BALDWIN, New York, N. Y. Filed Feb. 13, 1891. Serial No. 381,333. (No model.)



Claim.—The improved alloying-furnace herein described, having the reverberating-flue *b*, with the stack *c* at the deepest portion thereof, the uptake K in the arch of said flue and above the metal-receiving portion of the furnace, the damper A in the uptake and close to the base thereof, the molten-metal-receiving aperture D in one of the side walls, the incline aperture F, having the hopper G therein for the introduction of ore and reducing agents, the drawing-off aperture H, and the aperture I for drawing off slag, all constructed and arranged substantially as specified.

477,793. ADDRESSING-MACHINE. FRANK D. BELKNAP, New York, N. Y. Filed Aug. 15, 1891. Serial No. 402,704. (No model.)

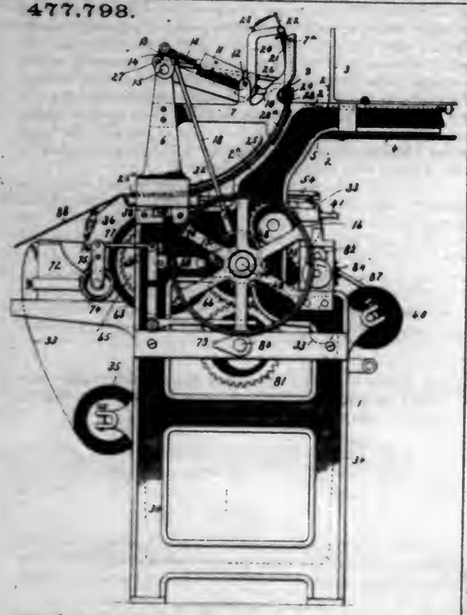
Claim.—1. In an addressing-machine, the combination of the table, the horizontal feeding-slide, the vibrating carrier which runs along a curved runway the upper portion of which is at right angles to the line of motion of the feeding-slide, and the suction-holder, substantially as described.

2. In an addressing-machine, the combination of the table, the feeding-slide, the vibrating carrier, the suction-holder, and the air-pump connected to said suction-holder and operated in unison with the movements of the vibrating slide, substantially as described.

3. In an addressing-machine, the combination of the table, the feeding-slide, the vibrating carrier, the suction-holder, the oscillating frame on which said suction-holder is mounted, the shaft which operates said vibrating carrier, and connecting mechanism whereby said shaft causes said oscillating frame to move backward or forward at the proper moment, substantially as described.

4. In an addressing-machine, the combination of the table with

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a curved runway, the vibrating carrier traveling along said runway, the feeding-slide at one end of said runway, and the printing device at the other end, substantially as described.

5. In an addressing-machine, the combination of the table with a curved runway, the vibrating carrier traveling along said runway, having the spring-fingers mounted thereon, the feeding-slide at one end of said runway, and the printing device at the other end, substantially as described.

6. In an addressing-machine, the combination of the table with a curved runway, the vibrating carrier traveling along said runway and having the spring-fingers mounted thereon, the feeding-slide, the separating-plate, and the suction-holder, substantially as described.

7. In an addressing-machine, the combination of the table with a curved runway, the vibrating carrier traveling along said runway and having the spring-fingers mounted thereon, the feeding-slide, the separating-plate, the hooks on the carrier for lifting said plate, the suction-holder, and the return cam-track for the spring-fingers, substantially as described.

8. In an addressing-machine, the combination of the table, the vibrating carrier having the spring-fingers mounted thereon, the return cam-track for said fingers, the sliding separating-plate, the hooks on the carrier, which operate said plate, and the cams which lift said hooks out of the way of the envelope, substantially as described.

9. In an addressing-machine, the combination of the stationary platen, a vibrating carrier which places the envelope below said platen, the stencil, a cam mechanism by which said stencil may be pressed against the envelope under the platen, and an inking apparatus which rolls over said stencil while in this position, substantially as described.

10. In an addressing-machine, the combination of a stationary platen, a stencil beneath said platen, a stationary inking drum, one or more inking-rollers which revolve around said drum, a cam by which said rollers are lifted off the drum and forced against the stencil, the ink fountain and roll, and the driving-gears, substantially as described.

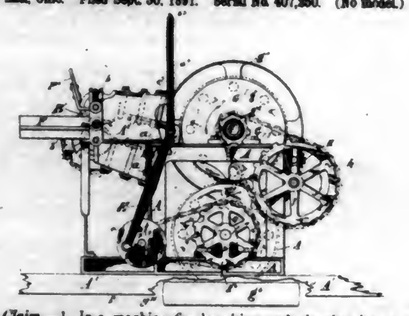
11. In an addressing-machine, the combination of a stationary platen, a stencil beneath said platen, a stationary inking-drum flattened at that portion of its circumference opposite the stencil, one or more inking-rollers which revolve around said drum, a yielding cam-track which lifts said rollers off said drum when opposite said platen, the ink-fountain, and driving-gears, substantially as described.

12. In an addressing-machine, the combination of a stationary platen, a movable skeleton platen opposite thereto, a continuous stencil which runs between, and a set of inking-rolls, and mechanism which causes said inking-rolls to come up under the skeleton platen and press ink through the same and through the stencil, substantially as described.

13. In an addressing-machine, the combination of a continuous stencil which has regularly-spaced perforations therein, a tumbler which is pivoted to the main frame and which has projections that fall into said perforations, a reciprocating stencil-feed on the other side of the stencil, pins connected therewith, which register with the above-mentioned perforations, and mechanism for raising and lowering said pins, substantially as described.

14. In an addressing-machine, the combination of the continuous stencil which has regularly-spaced perforations therein, the stencil-feed slide, the bell-crank mounted thereon, the link by which the lower arm of said bell-crank is connected to the driving-gear, the projections on the upper arms of said bell-crank, which enter the perforations in the stencil, and the stops by which the play of said bell-crank is limited, substantially as described.

477,794. MACHINE FOR BREAKING AND CLEANING HEMP. JOSEPH BERELIN, Newport, Ky., assignor to Henry S. Livingston, Cincinnati, Ohio. Filed Sept. 30, 1891. Serial No. 407,280. (No model.)



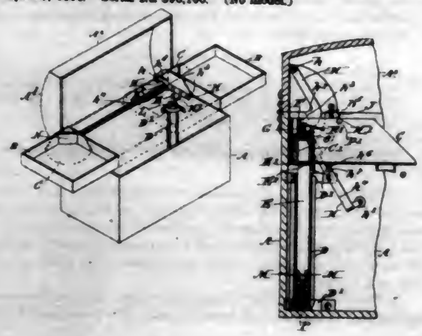
Claim.—1. In a machine for breaking and cleaning hemp, the combination of the feed-rolls, two series of fixed break-bars arranged one above the other back of said feed-rolls, a vibrating frame carrying an upper and lower series of break-bars arranged to alternately pass the upper and lower fixed bars, revolving beater-bars in the rear of the vibrating brake to free the stalk from hurds, and corrugated delivery-rolls to hold the leading end of the stalk while the tail end is acted on by the beaters and deliver the clean stalk from the machine, substantially as shown and described.

2. The combination, substantially as specified, of the frame, the feed-rolls B B', mounted in the front thereof, the fixed brake-bars D D' back of said rolls, the beating-cylinders G G', armed with beater-bars g', geared together and mounted in the frame back of the brake, the corrugated rolls H H, mounted in the frame back of the revolving beaters, and gearing connecting the operative parts to cause them to move together, for the purpose specified.

3. The combination of the frame, the feed-roll B, mounted in fixed bearings, and separable feed-roll B', the adjustable breakers D D', the vibrating breaker-arm C, the adjustable breakers C', secured therein, pitmen E, disks e, and wrist-pins connecting breaker-arms and disks, the beater-cylinders G G', armed with beater-bars g', geared to revolve together, the corrugated rolls H, the sprocket-wheels, and driving chains and pulley for imparting motion to the parts, substantially as shown and described.

4. The combination, in a machine for breaking and cleaning hemp, of the apron, separable feed-rolls, fixed and vibrating breakers back of the feed-rolls, two revolving beater-cylinders arranged one above the other and geared together to revolve in opposite directions, the said cylinder composed of heads g, connected together by rods g', and delivery rolls in rear of said beater-cylinders, substantially as shown and described.

477,795. TRUNK. JOHN T. DWYER, Montreal, Canada. Filed Apr. 23, 1891. Serial No. 390,160. (No model.)



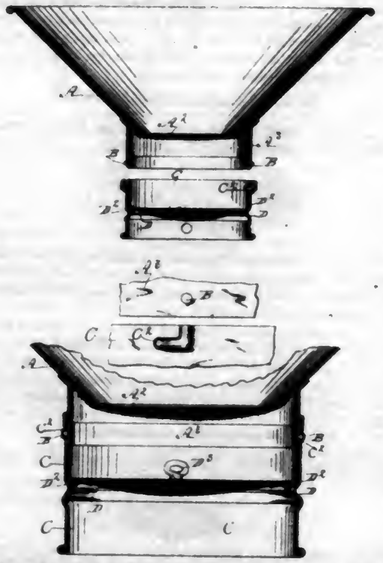
Claim.—1. The combination, with the body and lid of a trunk, of a tray or trays pivotally connected with said body and means for automatically elevating and swinging such tray or trays outward over the end or ends of the trunk upon the raising of the lid of same, as set forth.

2. The combination of a trunk-tray pivotally connected with a vertical plunger rod located in the body of the trunk, means for elevating such rod, and a spring for turning said tray outward over the end of the trunk, as and for the purpose set forth.

3. The combination of a trunk-tray pivotally connected with a vertical plunger-rod located in the body of the trunk, a lever-bar pivoted in the lid of the trunk, suitably guided and having a free end adapted to bear beneath said tray and elevate the same upon the raising of such lid, and a spring for turning said tray outward over the end of the trunk, said lever-bar being also shaped to bear upon and return said tray inward against the force of said spring, as and for the purpose set forth.

4. The combination, with the trunk-body and its lid, of a locking-bar shaped to correspond with and fit the angles formed by the edges of the back pieces of said trunk and lid when the same are situated at approximately right angles to each other, one end of such bar being pivoted within said lid and the other end located and working within a confining-strap in the trunk-body, as and for the purpose set forth.

477,796. MILK-STRAINER. WILLOM L. FLEMING, Humboldt, Iowa. Filed Jan. 18, 1892. Serial No. 418,513. (No model.)

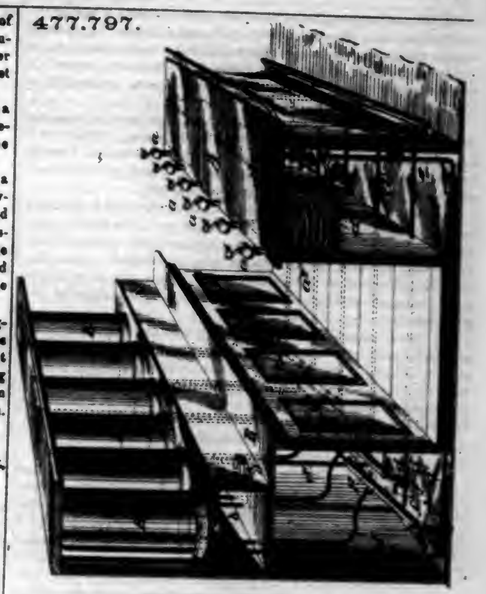


Claim.—A duplex milk-strainer comprising a funnel-shaped device having a wire-strainer permanently fixed to its bottom, a cylindrical rim extending downward from the bottom, lugs fixed to the outer sides of the said rim, an auxiliary sheet-metal cylinder having an annular shoulder formed on its inner central portion and grooves formed by bending the metal outward at the top of the cylinder, which grooves extend downward and then at right angles thereto and are adapted to admit the said lugs, a wire ring adapted to enter the said cylinder and rest upon the said shoulder and having a loop formed integral therewith adapted to serve as a handle, and a cloth-strainer connected with the said ring, substantially as shown and described.

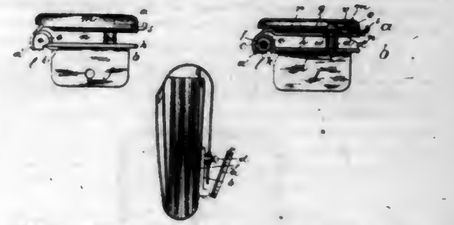
477,797. APPARATUS FOR DISPENSING DRINKS. WILLIAM M. FOWLER, Milford, Conn. Filed Sept. 24, 1891. Serial No. 406,646. (No model.)

Claim.—The combination, with a front and back bar and a liquid-dispensing apparatus located on each, of a supply-reservoir, a conduit leading from the supply-reservoir to each of the dispensing apparatuses and provided with a permanently-closed wall wherever exposed to the bar-tender, a movable pressure device in open communication with the liquid, and means for operating the pressure device, substantially as set forth.

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477,798. POCKET-BOOK FASTENING. AUGUST GORETZ, Newark, N. J. Filed Nov. 14, 1891. Serial No. 411,933. (No model.)



Claim.—1. The combination, with the plate b, having a stud d, hinge-bearings, and means for fastening the same to the pocket-book, of an outer plate a, hinged to said plate b and having a sliding catch adapted to lock said plate to the said stud, substantially as and for the purposes set forth.

2. The combination of sections h i, united by a stud d, and sections m n, hinged to said sections h i and having an interposed catch adapted to enter into locked relation to the stud, substantially as set forth.

3. The combination, in a pocket book fastener or catch, with the part or section b, consisting of sections h i, having a hinge-pin socket e, and a section i, provided with hinge-ears j j, and a stud d, provided with a notched extremity, of a part or section b, consisting of united plates or sections, of which latter the section n is provided with co-operating ears g g and a perforation w to receive the stud, and the section m is provided with ornamentation and covers said perforation w, spring-catch q, interposed between said plates m n and adapted to enter into holding relation to the stud, a hinge-pin adapted to hold the parts or sections a and b together, and a spring tending to open or separate said parts a b, substantially as and for the purposes set forth.

4. The combination, in a pocket-book fastener, with the part or section b, having a notched stud d, pliable ears j, and hinge-ears, of a section a, having co-operating hinge-ears, a perforation to receive the notched end of the stud, and a spring-catch to enter into locking engagement with said stud, substantially as set forth.

5. The combination, in a pocket-book fastener, with an inner plate or part b, having a notched stud d, of an outer plate hinged to said inner plate and comprising a recessed section n, provided with a perforation w to receive the end of the stud, an ornamental section covering said perforation, and a sliding catch and spring arranged in the recess of the section n, the said catch being perforated to receive the notched end of the stud and admit of a locking engagement, substantially as set forth.

6. In a purse-catch, the combination, with the plate *b*, having the notched stud, of a plate *a*, hinged to said plate *b* and having a sliding catch *q*, adapted to engage said stud and having a wedge-shaped part *t* and a finger-piece *s*, and a spring having its ends bearing oppositely on the opposite inclines of the said wedge-shaped part, substantially as and for the purposes set forth.

7. In a purse-catch, the combination, with the plate *b*, having the notched stud *d*, of a plate *a*, comprising sections *m n o*, the section *n* being provided with a shallow recess closed by the plate *o*, and a spring and catch arranged in said recess and adapted to engage the notched stud, substantially as and for the purposes set forth.

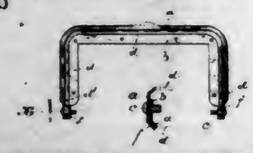
8. In a purse-catch, the combination, with the plate *b*, having a notched stud, of a plate *a*, comprising sections *m n o*, the section *n* being recessed, as at *p*, perforated, as at *w*, and provided with stop-walls *u' u'*, a sliding catch *q*, having bearings *u u*, a perforation *v*, registering with the perforation *w*, and spring-bearings and a spring, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

9. The combination, in a purse-catch, with the plate *a*, having a spring-operated catch and hinge-ears *g g*, and a limiting-stop *a'*, of a plate *b*, comprising sections *h i*, the section *h* having a socket *c* to receive the hinge-pin and pliable lugs *l l*, and a section *i*, having ears or extension *k k*, adapted to close said sockets and be held by said pliable lugs *l*, a hinge-pin and a spring, as *c*, and a stud *d*, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

10. The combination, in a purse-catch, with a plate *b*, provided with a notched stud, of a plate *a*, hinged to said plate *b* and provided with a sliding catch *q*, having a wedge-shaped portion *t* with opposite inclines, and a U-shaped spring *r*, having its opposite extremities *t' t'* bearing toward one another against said inclines, all said parts being arranged and operating substantially as and for the purposes set forth.

11. The combination, with the plate *b*, having pliable ears *j* and a stud *d*, of a plate *a*, hinged to said section *b* and comprising sections *m n o*, of which *n* is a recessed section, providing bearings for a spring-catch adapted to engage the stud *o*, a plate to hold said catch in proper operative relation in the recess of said section *n*, and *m* is an ornamental outer plate turned at its edges and holding said sections together, substantially as and for the purposes set forth.

477,799. PURSE AND POCKET-BOOK FRAME AND CATCH. AUGUST GOERTZ, Newark, N. J. Filed Jan. 14, 1892. Serial No. 418,014. (No model.)



Claim.—1. In combination with an inner section having a beveled corner, an outer section hinged to said inner section and having at the hinged end a lateral extension bent or turned to engage the said beveled edge, substantially as and for the purposes set forth.

2. The purse-frame of two hinged sections, one of which at its hinged extremity is provided with an extension projecting in a direction at right angles to the pivotal center line and bent to engage the outer face of the inner frame near the corner thereof, as described, and to enter between the sections when opened.

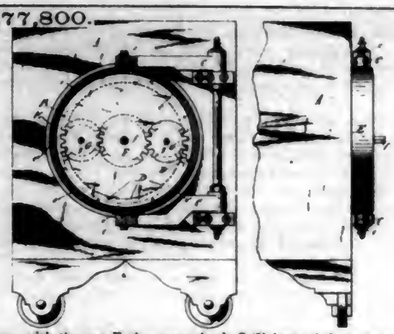
3. The improved purse or pocket-book frame consisting of two sheet-metal sections having face-flanges *d* and edge portions *c*, giving thickness to the frame, the opposite ends of said frame having depending portions pivoted together and one of said sections having at the pivotal joint a laterally-extending tongue bent to engage the beveled or rounded corner of the other section and having rounded edges to enter the open angle between said sections, and the said other section having said beveled or rounded corner to receive said laterally-projecting tongue, substantially as set forth.

477,800. SAFE. MAX S. GOLDSMITH, Cincinnati, Ohio. Filed Feb. 18, 1892. Serial No. 421,967. (No model.)

Claim.—1. The combination of the safe-body having a circular door-opening, the circular door, and screw-threaded connection between the door and body with the internally-toothed ring secured to the outer face of the door, the cap covering said ring and secured to it, so that the ring is free to revolve within the cap, the gear-wheels secured to the inner face of the cap, the shaft of the driving-gear projecting through the cap and having its end formed to receive a key for revolving the ring and door, the crane-hinge, and pivot-pins connecting the hinge-arms and cap, substantially as shown and described.

2. The combination of the safe-body, circular door, and crane-

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hinge, with the cap E, the gear-wheels G G', journaled upon studs secured to the inner face of the cap, the shaft *f*, journaled in the cap and having its outwardly-extended end formed to receive a lever, the cog F, secured upon the shaft and intermeshed with the wheels G G', the pivot-pins *c*, connecting the cap and the arms of the crane-hinge, the ring D, internally toothed, exteriorly grooved, and secured to the door, and the pointed pins *e*, passing through the flange of the cap and entering groove in ring, substantially as shown and described.

3. In a safe of the character described, the combination of the circular door, the internally-toothed gear-ring secured to the door, the door-supporting cap covering said ring, means to secure the cap and ring together, so that the ring may revolve within the cap, the crane-hinge, and the pins for hanging the cap to said hinge, and the gearing mounted on the inner face of the cap for revolving the ring and door, substantially as shown and described.

477,801. SASH-HOLDER. HENRY B. HAYES, Woburn, Mass. Filed Dec. 26, 1891. Serial No. 416,158. (No model.)



Claim.—1. The window-fastener composed of the base *c*, cover *d*, sliding bolt *f*, cam *g*, operating to force said bolt positively outward into engagement with a window-sash, and spring *p* for retracting the bolt, substantially as described.

2. The window-fastener composed of the base *c*, formed with the post *l* and the lugs *h h*, the cover *d*, formed with lugs *K K*, the sliding bolt *f*, the cam *g*, pivoted on post *l* and operating to positively press the bolt outward into engagement with a window-sash, the spring *p* for retracting the bolt, and the screws *n* and *r*, substantially as described.

477,802. BUTTON. GUSTAV HEUSER, Brooklyn, N. Y. Filed May 26, 1891. Serial No. 394,126. (No model.)



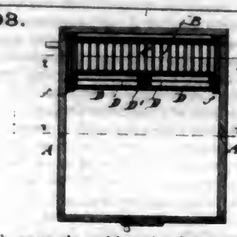
Claim.—In a button, the combination of a back-plate provided with a central aperture, an inturned flange at its outer and upper edge, and an exterior annular groove near its outer edge, a filling disposed in said back-plate and projecting through said central aperture, a lower filling-piece also disposed in said back-plate over said filling and under the flange of said back-plate, an upper filling-piece mounted on said lower filling-piece, and a cloth-covered front plate covering said upper filling-piece and provided with an inturned flange shutting over the upper edge of the back-plate and pressed into said groove, substantially as described.

477,808. REFRIGERATOR. VALENTINE HOERSCHELMANN, Brooklyn, N. Y. Filed Oct. 26, 1891. Serial No. 409,764. (No model.)

Claim.—1. In a refrigerator for butchers' and others' use, the combination, with an ice-chamber having a grate-like bottom and auxiliary walls arranged parallel with the wall of the ice-chamber, extending somewhat below the bottom of the same, of a gate provided with registers arranged in front of the air-outlet opening at the lower part of the ice-chamber, substantially as set forth.

2. In a refrigerating structure, the combination of an ice-chamber arranged at one end of the same, said ice-chamber having a grated bottom and a drip-pan below the same, auxiliary walls formed of hinged sections and arranged parallel with the wall of the ice-chamber

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so as to form air-spaces therewith, and a detachable gate in front of the air-opening at the lower part of the ice-chamber, said gate being provided with openings and registers for the escape of the chilled air, substantially as set forth.

477,804. REFRIGERATOR. VALENTINE HOERSCHELMANN, Brooklyn, N. Y. Filed Feb. 6, 1892. Serial No. 420,532. (No model.)



Claim.—1. The combination, with an ice-chamber arranged transversely in a refrigerator, so as to form a smaller chill-room and a larger provision-chamber, the wall of the ice-chamber facing the provision-chamber being formed of several partitions forming air-chambers between said partitions, of an inclined drip-pan extending from the lower end of the partition-wall to the opposite wall of the ice-chamber, so as to form an air-opening between the grated bottom of the ice chamber and the lower part of the drip-pan, and a gate having openings, and a sliding register arranged between the lower part of said drip-pan and the bottom of the refrigerator, so as to establish communication between the chill-room and the provision-chamber and regulate the temperature in either chamber, substantially as set forth.

2. The combination of a refrigerator, an ice-chamber extending transversely across the same intermediately between the end walls, so as to form a smaller chill-room and a larger provision-chamber, an inclined drip-pan extending from the lower edge of the wall of the ice-chamber facing the provision-chamber toward the opposite wall of the ice-chamber, the lower end of the drip-pan forming an air-discharge opening between it and the lower edge of the wall facing the chill-room, and a gate arranged between the lower end of the drip-pan and the bottom of the refrigerator and provided with openings and a sliding register, substantially as set forth.

477,805. FRUIT-CANNING DEVICE. JOHN J. ISLER, Elk Rapids, Mich. Filed June 4, 1891. Serial No. 395,043. (No model.)

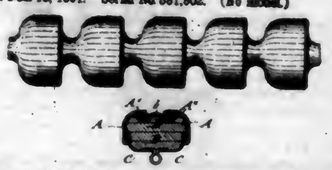


Claim.—1. The combination of the can having an annular recess in its upper edge, a packing-ring in said recess, the cover having a depending flange that enters the recess in the upper edge of the can and bears upon said packing-ring, said cover also having an opening therein, and a valve to close said opening, the stem of which extends downward therethrough, the spring attached to the under face of said cover and engaging said valve-stem, substantially as set forth.

2. The combination of a jar or can with an elastic packing-ring thereon, and a cover fitted to the jar or can and ring thereon, adapted for preserving fruit and other purposes, the said cover having an opening therein for the extraction of air by pumping, and a valve fitted to close the same, and a spring within the cover under the opening arranged to hold the valve on its seat and to permit the valve to open for the escape of air during its extraction and so as to allow the pressure of the external air to hold the valve closed after the operation of canning or sealing is completed.

3. A jar or can having a cover with a hole therein and a valve to close the same, and a spring under the hole arranged to hold the valve on its seat and to permit it to open for the extraction of air and to close it to prevent the re-entry of air when the operation of canning or sealing is completed.

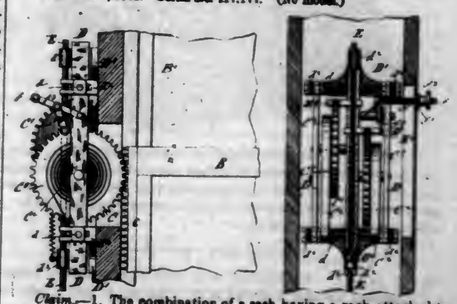
477,806. CROCHET-BUTTON. CHRISTIAN KREBLER, Brooklyn, N. Y. Filed Feb. 18, 1891. Serial No. 381,802. (No model.)



Claim.—1. A crochet-button composed of an inverted-cup-shaped shell having an aperture in the bottom of the cup, a braided covering applied to said shell and turned in over the edges thereof, a covered center-piece closing said aperture, a filling, and an eye-plate sprung into the open back of the shell and pressing the filling against the center-piece, substantially as set forth.

2. The method herein described of making crochet-buttons, which consists in braiding a tubular web over a series of centrally-apertured bulbous shells, cutting off the web at points between said shells, folding the edges of the covering over the edge of the central aperture and the outer edge of the shell, inserting a covered center-piece into the shell, backing up the center-piece by filling layers of pasteboard or other material, and springing the closing bottom plate into the lower edge of the covered shell, substantially as set forth.

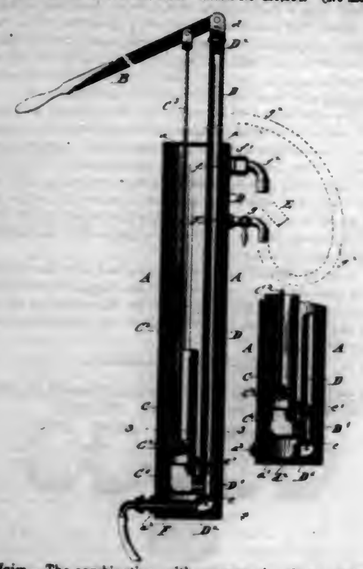
477,807. SASH-BALANCE. ANTON LANG, New Brunswick, N. J. Filed Jan. 6, 1892. Serial No. 417,177. (No model.)



Claim.—1. The combination of a sash having a rack attached to its side rail, a rectangular frame supported in brackets and provided with parallel side bars, and a vertical middle bar, sleeves on said middle bar, a vertically-movable spring-actuated rod guided in said sleeves, a pinion meshing with the sash-rack, pawls on said vertically-movable bar engaging said pinions, and means for operating said pawls.

2. The combination of a sash having a rack attached to its side rail, a frame supported in brackets and provided with side bars and a vertical middle bar, guide-sleeves on said middle bar, a spring-actuated rod guided in said sleeves, a spring-actuated pinion meshing with the sash-rack, pawls on said vertically-movable rod engaging said pinions, an arm, as *f'*, attached to the rectangular frame, a link connecting said arm and pawl, a crank-pin connected to the outer end of said arm and projecting through the window-casing, and a nut on the outer end of said crank-pin

477,808. PLUMBER'S FORCE-PUMP. JOHN H. LAWLESS, Jersey City, N. J. Filed Mar. 17, 1892. Serial No. 425,251. (No model.)



Claim.—The combination, with a reservoir, of an opening in its lower part, a pump in said reservoir, a stand-pipe also located in the reservoir, a valve-chamber at the lower end of the stand-pipe, having valves for establishing communication between the pump-cylinder and the reservoir and stand-pipe, respectively, a discharge-pipe connected with the stand-pipe at the upper part of the reservoir, a foot attached to the lower end of the valve-chamber, a coupling-pipe inserted into the foot of the stand-pipe and provided with an exterior collar for closing the opening in the base of the reservoir, and a suction-pipe connected with the outer end of the coupling-pipe, substantially as set forth.

477,809. CARPET-STRETCHING DEVICE. JOHN T. LENOX, Columbus, Ohio. Filed May 25, 1891. Serial No. 393,942. (No model.)



Claim.—A carpet-stretching device consisting of a lever *c*, having two integrally-formed arms which are substantially at right angles with each other, a series of teeth projecting from one of said arms, and an eye formed in the outer end of said toothed arm, substantially as and for the purpose specified.

477,810. RECEPTACLE FOR PORTABLE ELECTRIC LAMPS. HERMAN MOLDENHAUER, New York, N. Y. Filed Apr. 21, 1892. Serial No. 429,999. (No model.)

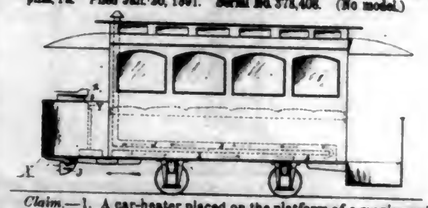


Claim.—1. A receptacle for portable electric lamps, composed of a base, parallel blocks attached to said base, and metallic angle-pieces attached to the base and extending over the inner faces of the blocks, said angle-pieces being connected with the conducting-wires at their outer ends and provided at their inner ends with pivots arranged in line with each other, substantially as set forth.

2. The combination of a receptacle composed of a base, parallel blocks on said base, and conducting angle-pieces attached to the base and extending over the inner faces of the blocks, said angle-pieces being provided with pivots at their inner ends and in line with each other, with a hook-shaped conductor formed of two hook-shaped pieces insulated from each other, and provided with conducting-wires, said hook-shaped pieces being adapted to be placed over the pivots of the angle-pieces, substantially as set forth.

3. A hook-shaped conductor for making connection with receptacles for portable electric lamps, said conductor being composed of two hook-shaped pieces which are insulated from each other, a handle for said hook-shaped pieces, conducting-wires applied to the shanks of the hooks, and flat springs attached to the hook-shaped pieces and extended into the bent ends of the same, so as to produce the contact of said bent ends with the pivots of the receptacle, substantially as set forth.

477,811. HEATER FOR VEHICLES. EDMOND MOLLOY, Philadelphia, Pa. Filed Jan. 30, 1891. Serial No. 378,408. (No model.)



Claim.—1. A car-heater placed on the platform of a moving vehicle, consisting of a stove portion placed above the platform and provided with flues leading from said stove portion downward toward the platform and along the platform and through the vehicle and emerging sufficiently high to produce a draft through the stove-walls and forming an air-chamber in which the air is kept in a substantially thin layer between the walls and the stove, an air-inlet furnishing draft to the fire, a hot-air flue substantially level with the platform, discharging the heated air into the car above the level of the air-inlet, and circulating devices placed in the air-chamber between the air-inlet and the hot-air flue, substantially as described.

2. In a heater placed on the platform of a moving vehicle and provided with hot-air flues leading into said vehicle and radiating conductors carrying the heated gases from the fire-box through the vehicle, the combination, with a fire-box, of a flue leading from said fire-box toward the platform and connecting with a flue running along the platform and connecting with a flue leading into the vehicle-body, an inclosed ash-pit beneath the fire-box, in the bottom of which is an air-inlet, walls surrounding said fire-box and forming an air-chamber and being in sufficient proximity thereto to keep the air to be heated in a comparatively thin layer between the fire-box and walls, an air-inlet into the fire-box, a hot-air outlet in said air-chamber on a level with the platform and connecting with the flue leading into the vehicle, and a screen placed between said inlet and said outlet and extending from the bottom toward the top of said air chamber, substantially as described.

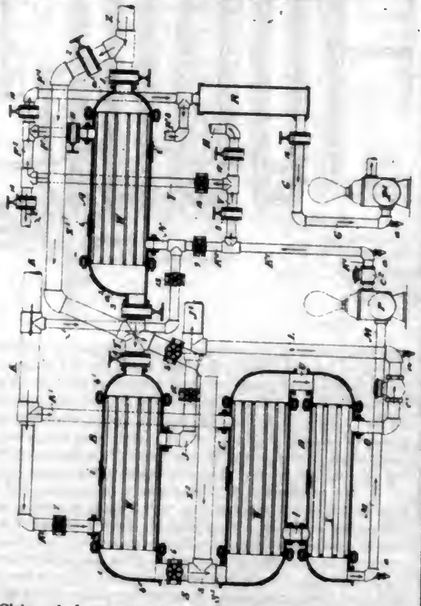
3. In a heater placed above the platform of a moving vehicle and provided with flues leading into the vehicle, the combination of an inner stove portion mounted on said platform and provided with flues leading from said stove portion near its top to the platform and connecting with the radiating flues passing through the vehicle, and walls surrounding said stove portion and forming a chamber in which the air is heated, said walls consisting of an upright piece D, to which are secured a shell *s* and a shell *s'*, surrounding said shell *s* and leaving an air-space between the two shells, an air-inlet admitting air into the air-chamber, an air-exit connecting with flues leading into the interior of the car-body, and a screen M, placed between the entrance and exit openings for the air, substantially as described.

4. In a heater for moving vehicles, placed above the platform of the vehicle and having an air-chamber inclosed with walls formed of two shells having an intervening air-space and an upright piece D, of a seat placed on said heater and a coal-box placed between said seat and said heater, substantially as described.

5. In heaters for moving vehicles that have a platform, the combination of a stove-body placed above the platform, an air-inlet from the platform into the ash-pit, a pan fitting into said ash-pit and provided with an opening in its bottom calendering with said air-inlet and covered with a protecting-hood, an air-chamber surrounding the stove portion and formed of two shells having an intermediate air-space between the same, an air-inlet leading from beneath the platform into the air-chamber, and flues leading from the air-chamber and from the stove portion into the body of the vehicle.

6. The combination, in a heater for moving vehicles, adapted to be placed on the platforms thereof and having the draft introduced into the stove portion by means of an opening through the platform, of an ash-pan fitting into said ash-pit and having the draft introduced by means of an opening calendering with the draft-inlet in the bottom of the ash-pit and provided with a perforated hood placed over said opening, substantially as described.

477,812. SECTIONAL SURFACE CONDENSER. ELIHU NELSON, New York, N. Y., assignor of one-half to William M. Macbean, same place. Filed Aug. 1, 1891. Serial No. 401,408. (No model.)



Claim.—1. In a sectional surface condenser wherein a series of condensing-sections are arranged consecutively, the combination, with a large center tube, of smaller tubes surrounding the same in every section, the center tube in the last section of the series being diminished in size and having a smaller number of tubes surrounding it as compared with the other sections, substantially as shown and described.

2. In a sectional surface condenser, a series of tubular steam-condensing sections, each section having a center tube larger than the surrounding tubes and the last section having a center tube reduced in size as compared with the preceding sections, substantially as shown and described.

3. In a sectional surface condenser, a series of sections, the first two or more of which are of the same dimensions, while the last section or sections are diminished in size, in combination with suitable by-passes whereby either of the first group of sections can be cut out at will, substantially as shown and described.

4. In a sectional surface condenser, a series of sections connected by suitable pipes containing valves, one of the said sections being provided with an exit both to the boiler and to the open air, whereby the said section can be used either as a heating or a condensing section, substantially as shown and described.

5. In a sectional surface condenser, a series of sections connected by suitable pipes containing valves, one of the said sections being provided with exits both to the boiler and to the open air, and the same section being also provided with inlets connecting both with the induction water-pipe and with the pipe conveying the water of condensation, substantially as and for the purpose set forth.

6. In a sectional surface condenser, a receiver located between the exit-valve for the water of condensation and the boiler-pump, the receiver having a vent to the open air and being adapted to receive the water of condensation after it has passed through the heating-section and before it goes to the boiler-pump, substantially as shown and described.

7. In a sectional surface condenser, a receiver located in the exit-pipe before it reaches the boiler-pump, in combination with a safety branch pipe F^v open to the air and situated above the receiver, as and for the purpose set forth.

8. In a sectional surface condenser, a receiver located between the heating-section and the boiler-pump, in combination with a by-pass around the said heating-section, substantially as shown and described, whereby the water of condensation can be passed into the receiver without traversing the heating-section.

9. In a sectional surface condenser, a series of sections connected by suitable pipes containing valves, one of the said sections being provided with exits both to the open air and to the pipe which leads toward the boiler-pump, the said last named pipe containing a receiver and a valve for closing or opening the passage through the same and also being joined to a pipe which I call a "safety branch" pipe opening to the air and situated above the receiver, substantially as shown and described.

10. In a sectional surface condenser, a series of sections connected by suitable pipes containing valves, one of the said sections being joined to the inlet-pipe for the water of condensation and also to a branch from the main induction water pipe.

11. In a sectional surface condenser, a heating-section which is connected by a branch pipe with the main induction water-pipe, and an exit for the said heating-section leading toward the boiler-pump, whereby, if desired, the water of induction can be heated for passing to the boiler, substantially as described.

12. In a sectional surface condenser, a series of sections connected by suitable pipes, an outlet for the water of condensation, the said outlet-pipe being led directly to the heating-section, and a branch of the said outlet-pipe, forming a by-pass which connects with the exit-pipe from the heating-section beyond the said section and another branch of the said outlet-pipe leading to the open air, all in combination with suitable valves for shutting off the water of condensation from any one or more of the said pipes or branches and allowing it to pass through any other of the said pipes or branches, substantially as shown and described.

13. In a sectional surface condenser, a series of sections connected by suitable pipes, in combination with by-pass pipes which cut out one or more of the said sections, while leaving the others operating, substantially as shown and described.

14. In a sectional surface condenser, a series of condensing-sections connected by suitable pipes, in combination with a main induction water-pipe having branches which run directly to two or more of the said sections, whereby the full effect of the cold water of induction may be brought to bear upon the steam at several different points and at several degrees of condensation, substantially as shown and described.

15. In a sectional surface condenser, a series of condensing-sections, in combination with the main induction water-pipe having three branches, one of which is connected to the first section, another to the second section, and the third to the remaining sections, substantially as shown and described.

16. In a sectional surface condenser, the hoods having one side flat and located horizontally and opposite each other, the corresponding flat sides facing each other, as shown, so that they can be connected by a straight vertical pipe, whereby the water of condensation will flow of its own gravity from one hood to the next, as set forth.

17. In a sectional surface condenser, a receiver constructed of a section of pipe placed in a vertical position and having a reducing-coupling screwed upon its upper end and on its lower end a cap with a side opening, as and for the purpose set forth.

18. In a sectional surface condenser, a receiver having a vent to the open air and being located in the exit-pipe for the water of condensation, and a boiler-pump located in a position below the said receiver, as and for the purpose set forth.

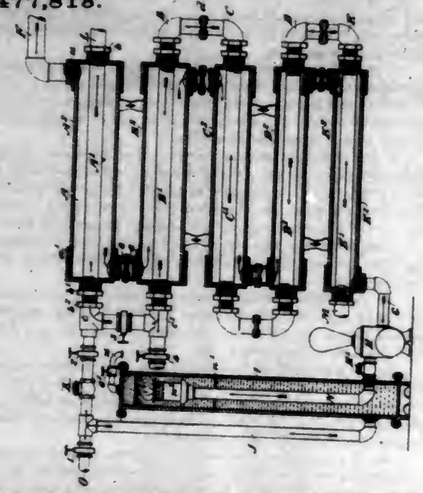
19. In a sectional surface condenser, a heating-section, and a steam-exhaust pipe leading thereto and containing a valve, in combination with a by-pass, also containing a valve, whereby the amount of steam passing into the heating section may be regulated, as and for the purpose set forth.

477,813. SECTIONAL SURFACE CONDENSER. ELIHU NELSON, New York, N. Y., assignor of one-half to William M. Macbean, same place. Filed Aug. 1, 1891. Serial No. 401,407. (No model.)

Claim.—1. In a double-chambered-pipe sectional surface condenser, each section consisting of a pipe within a pipe, the combination of the different sections, the first two sections being of the same dimensions and the remaining sections gradually diminishing in size, the central pipe of the first section being joined to the water-induction pipe coming from the second section as a continuation thereof and being also joined to the pipe which carries off the water of condensation and both the connected pipes having suitable valves and connections, substantially as shown and described.

2. In a double-chambered-pipe sectional surface condenser, a se-

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ries of sections the first of which has a central pipe which is connected both to the water-induction pipe and to the pipe which carries off the water of condensation, suitable valves being interposed, and the said pipe which carries off the water of condensation having, also, an outlet through the separate valve to the air.

3. In a double-chambered-pipe sectional surface condenser, a series of sections through all of which the steam is adapted to pass successively, an air-pump beyond the last section, and a pipe connected beyond the said air-pump and passing vertically through an oil-extractor to a point about two-thirds of the way up the inside of the said oil-extractor, the exit from the said oil-extractor being by means of a pipe, as J, which pipe is branched at the top to pass through a valve to the open air in one direction or through a pipe-section connected to the center pipe of the first section, substantially as described.

4. In a double-chambered-pipe sectional surface condenser, a series of sections, each consisting of a pipe within a pipe, the center pipe having a running thread cut on each end and extending at both ends through the outside pipe, T's that screw on both ends of the outside and inside pipe together, lock-nuts screwing on the end of the inside pipe, and T's or L's screwing on the end of the inside pipe beyond the lock-nuts for making connections between succeeding sections, as and for the purpose set forth.

5. In a double-chambered-pipe sectional surface condenser, a condensing-section consisting of a pipe within a pipe, the central pipe being longer than the outer pipe and the two pipes having screw-threads of similar pitch, in combination with T's or other couplings for making a closed chamber of the outer pipe.

6. In a double-chambered-pipe sectional surface condenser, a condensing-section consisting of a pipe within a pipe, the central pipe being longer than the outer pipe and the two pipes having screw-threads of similar pitch, in combination with T's or other couplings for making a closed chamber of the outer pipe and with T's or other couplings with interposed lock-nuts for making connection between the central pipe and succeeding pipes, substantially as described.

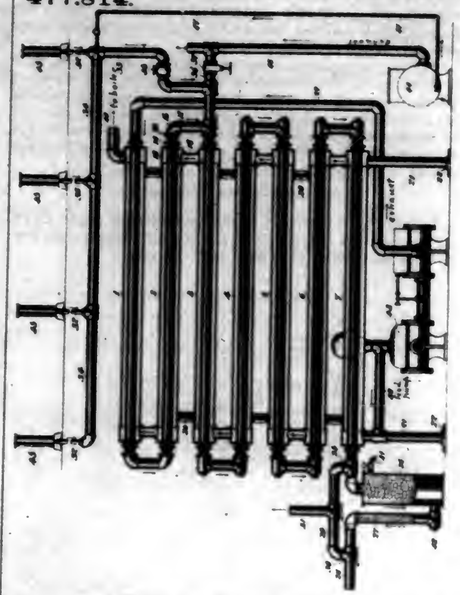
7. In a double-chambered-pipe sectional surface condenser, a condensing-section consisting of a pipe within a pipe, the central pipe being longer than the outer pipe and the two pipes having screw-threads of similar pitch, in combination with T's or other couplings with interposed lock-nuts for making connection between the central pipe and the central pipe of the adjoining section, the last-named T's or couplings being provided with plugs, as and for the purpose set forth.

477,814. FEED-WATER HEATER AND CONDENSER. ELIHU NELSON, New York, N. Y., assignor of one-half to William M. Macbean, same place. Filed Aug. 31, 1891. Serial No. 404,173. (No model.)

Claim.—1. The combination, with an engine, a boiler-pump, and one or more radiators, of a feed-water-heating apparatus consisting of a series of sections intermediate between the said engine and the said boiler-pump and radiator or radiators, the said boiler-pump having its exhaust joined to the first section, and the said radiator or radiators having its or their returns joined to an intermediate section of the said heating apparatus, as and for the purpose set forth.

2. The combination, with an engine, a boiler-pump, and one or more radiators and one or more engine-drips, of a feed-water-heating

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apparatus, consisting of a series of sections intermediate between the said engine, the said radiator or radiators, and the said engine drip or drips, the said boiler-pump having its exhaust joined to the first section, and the said radiator or radiators and the said drip or drips having their returns joined to an intermediate section of the said heating apparatus, and the exhaust from the engine being also joined to an intermediate section, while the inlet for the feed-water is at the last section of the said heating apparatus, as and for the purpose set forth.

3. The combination, with an engine, a boiler-pump, and one or more radiators, of a sectional feed-water-heating apparatus, the said boiler-pump having its exhaust joined to the first section of the said heating apparatus and the said radiator or radiators having its or their returns joined to an intermediate section of the said heating apparatus, and the inlet-pipe for the feed-water being joined to the last section of the said heating apparatus, as and for the purpose set forth.

4. The combination, with an engine and with radiators, of an intermediate sectional feed-water heater, the inlet-pipe for the feed-water being joined to the last section of the said heater, and the returns from the radiators being joined to an antecedent section of the said heater, as and for the purpose set forth.

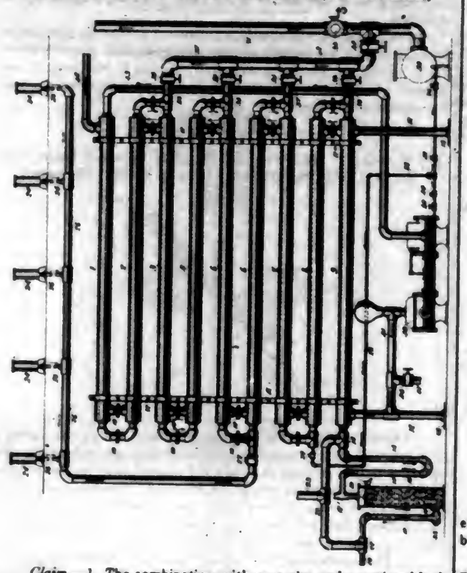
5. The combination, with an engine, a boiler-pump and radiators and engine-drips, of a sectional feed-water-heating apparatus, the first section thereof being joined to the exhaust-pipe from the boiler-pump and an intermediate section thereof being joined both to the drips and returns and to the exhaust-pipes from the engine, a valve in the connecting-pipe, and a check-valve in the pipe joining the returns to the intermediate section, the inlet-pipe for the feed-water being joined to the last section of the said heating apparatus, as and for the purpose set forth.

6. The combination, with an engine and a boiler-pump, of an intermediate sectional feed-water heater, each section consisting of a double-chambered pipe forming an interior cylindrical and outer annular chamber, the first section of the said heater being joined through its inner pipe to the exhaust from the boiler-pump, and the last section of the said heater being joined through its outer pipe to the inlet-pipe for the feed-water, as and for the purpose set forth.

7. In a feed-water heater consisting of a series of sections, the main drip-pipe 33, in combination with the branches 32 32 32 32 and 34, the said main drip being connected to one of the intermediate sections through a check-valve, the same intermediate section being joined to the exhaust-pipe from the engine, as and for the purpose set forth.

8. In a sectional feed-water heater, the main drip-pipe 33, in combination with the branch pipes 32 32 32 32 and 34, the said main drip-pipe being connected to one of the intermediate sections, in combination with a boiler-pump joined to the first section, all the sections beyond the said intermediate section being provided with removal plugs, as and for the purpose set forth.

477,815. FEED-WATER HEATER AND CONDENSER. ELIHU NELSON, New York, N. Y., assignor of one-half to William M. Macbean, same place. Filed Oct. 28, 1891. Serial No. 410,132. (No model.)



Claim.—1. The combination, with an engine and a sectional feed-water heater, of an exhaust-pipe from the engine connected to different sections of the said feed-water heater by separate connecting-pipes, each connecting-pipe containing a valve for controlling the amount supplied to each section, as and for the purpose set forth.

2. The combination, with an engine and a sectional feed water heater, of an exhaust-pipe from the engine joined to different sections of the said feed-water heater, as and for the purpose set forth.

3. The combination, with an engine, a boiler-pump, and an intermediate feed-water heater, of a drip-pipe common to both the engine and the boiler-pump, the said drip-pipe being connected to the said feed-water heater, as and for the purpose set forth.

4. The combination, with an engine, a boiler-pump, and an intermediate sectional feed-water heater, of an exhaust-pipe from the engine joined to different sections of the said heater and a common drip-pipe from the boiler-pump and the engine, the said drip-pipe entering the feed-water heater at the end opposite to that at which the exhaust from the engine communicates therewith and at a section with which the said exhaust from the engine does not directly communicate, as and for the purpose set forth.

5. The combination, with an engine, a boiler-pump, and an intermediate feed-water heater, the said feed-water heater communicating with the engine-exhaust, of a drip-pipe common to the said engine and the said boiler-pump, the said drip-pipe entering the said feed-water heater through a check-valve, as and for the purpose set forth.

6. The combination, with an engine and one or more radiators, of an intermediate feed-water heater through which the radiator-returns pass, a steam-exhaust pipe from the engine communicating with the said feed-water heater at one end, and a pipe joining the said radiator or radiators to the said heater at the opposite end, as and for the purpose set forth.

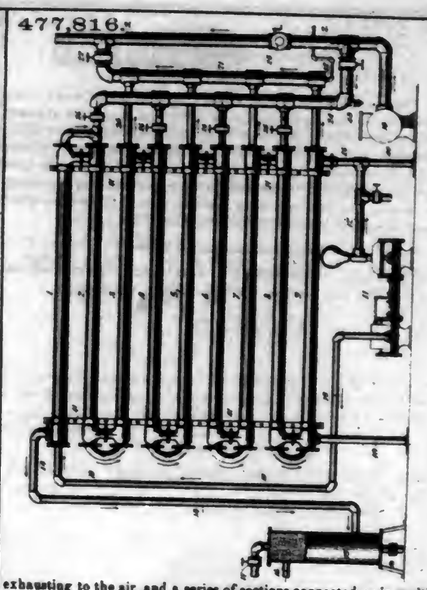
7. The combination, with an engine and one or more radiators, of an intermediate feed-water heater joined to the said radiator or radiators by means of a pipe in which is a check-valve, and an exhaust-pipe from the engine communicating with several sections of the said heater, the communication from the steam-exhaust pipe being made at one end of the heater and that from the radiator return-pipe being made at the other end of the heater and at a section with which the steam-exhaust pipe from the engine does not directly communicate.

8. The combination, with an engine and a boiler-pump, of an intermediate sectional feed-water heater and an exhaust-steam pipe from the engine connected to alternate sections of the said heater, as and for the purpose set forth.

477,816. SECTIONAL FEED-WATER HEATER. ELIHU NELSON, New York, N. Y. Filed Feb. 4, 1892. Serial No. 420,321. (No model.)

Claim.—1. In a sectional feed-water heater, a steam-pipe, a pipe

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exhausting to the air, and a series of sections connected up in multiple between the two pipes aforesaid, as and for the purpose set forth.

2. In a sectional feed-water heater, an exhaust-pipe from the engine, a second pipe exhausting to the air, and a series of sections connected up in multiple between the two pipes aforesaid, as and for the purpose set forth.

3. In a sectional feed-water heater, a main exhaust-pipe from the engine opening to the air, a branch exhaust-pipe from the engine, and a series of sections connected up in multiple between the two pipes aforesaid, as and for the purpose set forth.

4. In a sectional feed-water heater, a steam-pipe, a pipe exhausting to the air, and a series of sections connected up in multiple between the two pipes aforesaid, all in combination with a boiler-pump and an exhaust-pipe therefrom joined to the last section or sections of the feed-water heater, as and for the purpose set forth.

5. In a sectional feed-water heater, an exhaust-pipe from the engine, a second pipe exhausting to the air, and a series of sections connected up in multiple between the two pipes aforesaid, all in combination with a boiler-pump and an exhaust-pipe therefrom joined to the last section or sections of the feed-water heater, as and for the purpose set forth.

6. In a sectional feed-water heater, a main exhaust-pipe from the engine opening to the air, a branch exhaust-pipe from the engine, and a series of sections connected up in multiple between the two pipes aforesaid, all in combination with a boiler-pump and an exhaust-pipe therefrom joined to the last section or sections of the feed-water heater, as and for the purpose set forth.

7. In a sectional feed-water heater, a main exhaust-pipe from the engine opening to the air, a branch exhaust-pipe from the engine, an adjustable valve in the main exhaust-pipe beyond the branching point, and a series of sections connected up in multiple between the two pipes aforesaid, as and for the purpose set forth.

8. In a sectional feed-water heater, a main exhaust-pipe from the engine opening to the air, a branch exhaust-pipe from the engine, an adjustable valve in the main exhaust-pipe beyond the branching point, and a series of sections connected up in multiple between the two pipes aforesaid, all in combination with a boiler pump and an exhaust-pipe therefrom joined to the last section or sections of the feed-water heater, as and for the purpose set forth.

9. In a sectional feed-water heater, a series of sections, each consisting of a pipe within a pipe, and a coupling for joining two succeeding sections, consisting of a return-bend having internally-screw-threaded openings for receiving the ends of the pipes, a goose-neck joining the ends of the interior pipes, and an internal passage joining the ends of the outer pipes, as and for the purpose set forth.

10. A pipe-coupling having internal screw-threads for receiving pipes of different diameters and provided with flanges in planes at right angles to each other, as and for the purpose set forth.

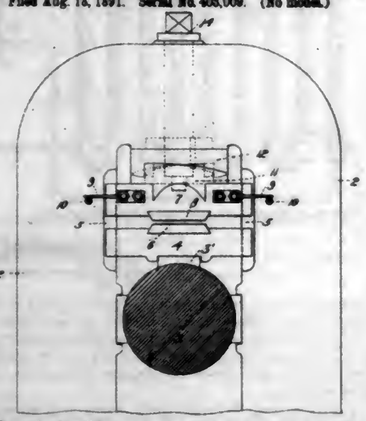
477,817. KNIFE. HIRAM P. HIBLER, Terre Haute, Ind. Filed Mar. 26, 1892. Serial No. 426,346. (No model.)

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Claim.—The combination, with a blade, the tang of which is provided with an opening through it and is beveled at its sides and base, of a two-part handle, one part of which is provided with an undercut socket to receive the handle, and a spring-actuated lever pivoted in a hub, one end of said lever being provided with a bevel-nosed catch adapted to ride up the bevel at the base of the tang and engage the opening, the other end being provided with a finger-piece which passes through an opening in the other side of the handle.

477,818. ROLL-BEARING. ALEXANDER PATERSON, Allegheny, Pa. Filed Aug. 18, 1891. Serial No. 403,009. (No model.)



Claim.—1. A roll-bearing comprising a movable bearing-block having a flat upper bearing-surface, a second movable block having a mating bearing-surface engaging therewith, a helical surface upon the second block, and a revoluble adjusting-piece having a helical surface engaging the same, substantially as and for the purposes described.

2. A roll-bearing comprising a movable bearing-block, a second movable block bearing upon the first and having a helical surface thereon, a revoluble ring having a helical surface engaging the helical surface on the block, and a shaft for turning the ring, substantially as and for the purposes described.

3. A roll-bearing comprising a movable bearing-block having an upper bearing-face, a second spring-supported block adapted to bear upon the first block and having an upper helical surface, a ring resting thereon and provided with a mating helical surface, a shaft passing through and keyed to the ring and stepped in the second bearing-block, and means for turning said shaft, substantially as and for the purposes described.

477,819. CORSET-CLASP. GEORGE J. PFOEH, Chicago, Ill. Filed May 18, 1891. Serial No. 393,124. (No model.)

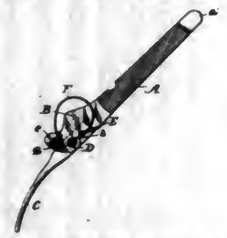


Claim.—1. In a clasp, the combination of two members B B', one of which has side flanges *b'* turned upward and inward and the other has a projecting tongue having a neck as narrow as the distance between the overhanging portions of the said flanges, terminating in heads *b²*, adapted to slide beneath the overhanging portions of the said flanges, a stud upon one of said members, means for engagement therewith upon the other, and a spring adapted to engage the two, whereby the two members may be engaged by pressing them together and afterward disengaged by pressing them still farther in the same direction, substantially as described.

2. In a clasp, the combination of two members, one of which has side flanges turned upward and inward to form overhanging portions *b'* and the other member has a projecting tongue with a neck as narrow as the distance between the overhanging portions *b'* and a head of greater width adapted to slide beneath the overhanging portions, a stud upon one of the members, having a beveled edge in the direction from which the other member approaches in fastening the clasp, means upon the other member for engagement with said stud, and a spring adapted to effect such engagement, whereby the two members may be engaged by pressing them together and afterward disengaged by pressing them still farther in the same direction, substantially as described.

3. In a clasp, the combination of a plate B, having the side flanges *b'* turned upward and inward, and the stud or hook *b²*, with the member B', having the projecting tongue terminating in the heads *b²*, and the strip *b³*, secured to the plate at one end and containing the hole *b⁴*, substantially as described.

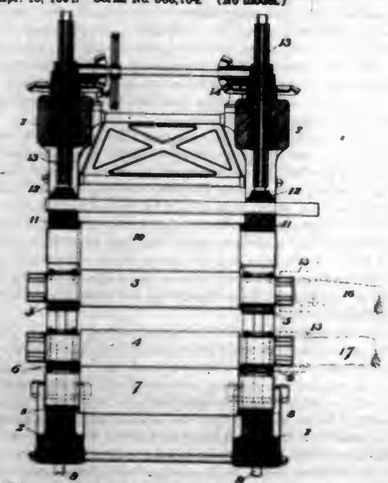
477,820. FORK FOR HAY-TEDDERS. ALBERT R. PIXLEY, Vineland, N. J. Filed Mar. 23, 1892. Serial No. 426,056. (No model.)



Claim.—1. A fork for hay-tedders, consisting of an arm having a slot near one end, the prongs pivoted near their rear ends to the sides of the arm near said end thereof, a rod secured to or formed integral with the rear ends of said prongs and connecting the same, and a curved spring located within said slot in the arm and having its ends secured to transverse rods, said spring engaging near one end the under side of the rod connecting said prongs, substantially as shown and described.

2. The herein-described fork for hay-tedders, consisting of an arm having a slot near one end and recesses in its under side, the prongs, a rod E, secured to or formed integral with the rear ends of said prongs and connecting the same, said rod being normally located within said recesses, a transverse rod D, secured to or formed integral with said prongs and serving as a pivot therefor, a curved spring located within said slot engaging near its under forward end the under side of said rod E and having its respective ends secured to a transverse rod located in the forward end of said arm and the rod D, and stops for said forks, all combined and operating substantially as described.

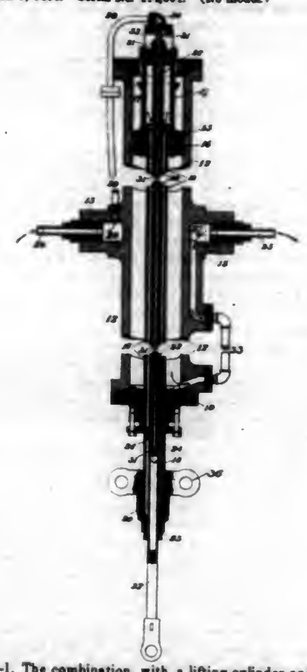
477,821. ROLLING-MILL. JOHN A. POTTER, Munhall, Pa. Filed Apr. 13, 1891. Serial No. 388,704. (No model.)



Claim.—1. In a rolling-mill, the combination of two horizontal working rolls, one of which is vertically adjustable, mechanism by which said rolls are directly rotated, and supporting-rolls of larger diameter situate on the outer sides of the working rolls, bearing frictionally thereon and driven only by such frictional contact, substantially as and for the purposes described.

2. In a rolling-mill, the combination of two working rolls, one of which is vertically adjustable, mechanism for rotating said rolls directly, and supporting-rolls bearing upon the outer sides of the working rolls and driven by frictional contact therewith, substantially as and for the purposes described.

477,822. MILL APPLIANCE. JOHN A. POTTER, Munhall, Pa. Filed Dec. 5, 1891. Serial No. 414,091. (No model.)



Claim.—1. The combination, with a lifting-cylinder and plunger having a hollow plunger-rod projecting therefrom, of a second cylinder fixed to said plunger and having a plunger and a plunger-rod extending through the hollow plunger-rod first named, substantially as and for the purposes described.

2. The combination, with a lifting-cylinder and plunger having a hollow plunger-rod projecting therefrom, of a second cylinder fixed to said plunger and having a plunger and a plunger-rod extending through the hollow plunger-rod first named, and a fluid-supply pipe extending longitudinally through the plunger-rod of the second cylinder and discharging thereinto, the plunger-rod last named being perforated to permit passage of the fluid into the outer plunger-rod and thence into the second cylinder, substantially as and for the purposes described.

3. The combination, with a pivoted lifting-cylinder and plunger having a hollow plunger-rod projecting therefrom, of a second cylinder fixed to said plunger and having a plunger and a plunger-rod extending through the hollow plunger-rod first named, a fluid-supply pipe extending longitudinally through the plunger-rod of the second cylinder and discharging thereinto, the plunger-rod last named being perforated to permit passage of the fluid into the outer plunger-rod and thence into the second cylinder, and water-supply passages extending through the trunnions of the pivoted lifting-cylinder, substantially as and for the purposes described.

477,823. METHOD OF PREPARING MALT FOR BREWING. ERNST RICHTER and ADAM SCHAEFER, New York, N. Y. Filed Dec. 7, 1891. Serial No. 414,301. (No specimens.)

Claim.—The method of preparing barley for the manufacture of malt liquors, which consists in causing the germs of the grains to develop, drying the grains to check the growth of the germs, removing the husks from the kernels of the malted grains, and removing the germs which were within the husks, separating the kernels from the dust and chaff, and subdividing the kernels by cutting, substantially as shown and described.

477,824. REDUCER AND NOZZLE FOR HOSE. CYRUS B. ROBINSON, East Concord, N. H. Filed Dec. 26, 1890. Serial No. 376,791. (No model.)

477,824.



Claim.—The combination of a short reducer for fire-hose, having an internal thread at one end and an external thread at the other, and a short tip or nozzle provided with a swivel-band near each end, connected by pliable bands of some suitable material, forming handles for said nozzle.

477,825. FINGER-RING. CHARLES A. RUSSELL, Providence, R. I. Filed Feb. 24, 1891. Serial No. 382,659. (No model.)



Claim.—The combination of the finger-ring A, having the walls *a* and the detachable head B, having perforations *c* and sides adapted to fit snugly upon and to engage frictionally with said walls *a*, substantially as specified.

477,826. FRUIT OR VEGETABLE CUTTER OR GRATER. ELIAS SAMSON, New York, N. Y., assignor of one-half to Davis Louden, same place. Filed Feb. 27, 1892. Serial No. 423,068. (No model.)



Claim.—An improved article of manufacture, consisting of the grater-sheet A, having parallel semicircular sides *a a*, and the ball B, constructed of a single piece of rattan circular in cross-section and having its free parallel ends suitably secured in the semi-cylindrical sides *a a* of the grater sheet A, substantially as shown and described.

477,827. DREDGING-MACHINE. CHARLES H. SOUTHER, Boston, Mass. Filed Jan. 26, 1891. Serial No. 379,205. (No model.)

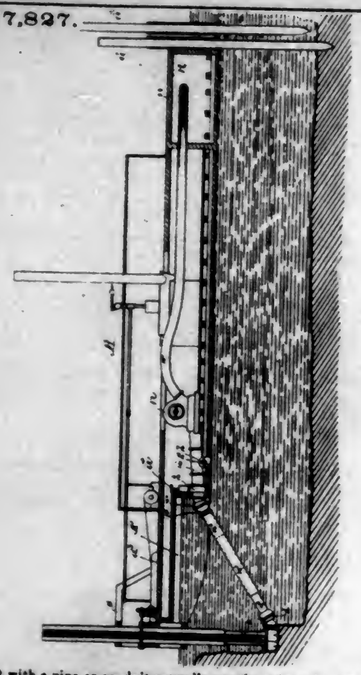
Claim.—1. A dredging-boat having a scoop or bucket having an operative mouth or section at each end thereof and a discharge-outlet adapted to be alternately connected with each of said operative mouths or sections, substantially as described.

2. A dredging scoop or bucket having an operative mouth or section at each end, a discharge-outlet common to both mouths or sections, and a gate or valve for connecting either section or mouth with the discharge-outlet and cutting out the other section or mouth, substantially as described.

3. A dredging bucket or scoop having two operative mouths or sections, a discharge-outlet common to both operative mouths or sections, a valve or gate for cutting out one section or mouth and connecting the other section or mouth with the discharge-outlet, and devices for moving the said valve or gate from without the scoop or bucket, as and for the purposes described.

4. In a dredging apparatus, the combination of a scoop or bucket having two operative mouths or sections, a discharge-outlet common to both mouths or sections, an exhaust pump or apparatus, and an extensible pipe connected at one end with the discharge-outlet of the bucket or scoop by a universal joint and at the other end by a univer-

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sal joint with a pipe or conduit extending to the exhausting apparatus, substantially as described.

5. The combination of a hull or boat, a scoop or bucket, a steadying and suspending structure or support for the same, provided with vertical movement in a frame attached to the hull or boat, and to the lower end of which support the scoop or bucket is hinged to be movable upon a vertical arc, a discharge-outlet in said bucket or scoop, an exhaust pump or apparatus on said boat, a conduit connecting said discharge-outlet of the scoop or bucket with the exhausting apparatus, a pivot or spud upon which the hull or boat is adapted to be turned, and means for drawing the bucket and swinging the end of the boat upon said pivot or spud as a center, as and for the purposes described.

6. The combination of a hull or boat, a spud or pivot upon which one end of the hull or boat is adapted to be swung, a scoop or bucket having an operative mouth or section at each end thereof and connected with the swinging or movable end of the boat by two suspending supports to which the bucket or scoop is pivoted, as specified, an exhausting apparatus or pump carried by the boat, and a conduit or suction-pipe connecting the said apparatus with the operative mouths or sections of the scoop or bucket, as and for the purposes described.

7. The combination of a hull or boat, a spud or pivot upon which one end of the hull or boat is adapted to be swung, a scoop or bucket having an operative mouth or section at each end thereof and connected with the swinging or movable end of the boat by two suspending supports to which the bucket or scoop is pivoted, as specified, an exhausting apparatus or pump carried by the boat, a conduit or suction-pipe connecting the said apparatus with the operative mouths or sections of the scoop or bucket, and means for varying the longitudinal inclination of the bucket, as and for the purposes described.

8. The combination of a hull or boat, a spud or pivot upon which one end of the boat is adapted to be swung, a bucket or scoop having two operative mouths or sections secured to the movable end of the dredging-boat to be vertically movable or adjustable in relation thereto, and rack-bars connected with said scoop or bucket and pinions for engaging said bars, an exhaust pump or apparatus upon the boat, and a conduit or suction-pipe connecting the two mouths or sections of the scoop or bucket therewith, as and for the purposes described.

9. The combination of a hull or boat, one or more spuds or pivots upon which one end of the boat is adapted to be turned or swung, a scoop or bucket having two operative mouths or sections arranged back to back in a common non-rotating frame suspended from the movable or swinging end of said boat, an exhaust pump or apparatus carried by said boat, a suction-pipe connecting the operative mouths or sections of said dredge with the exhaust-pump, and one or more draw chains or ropes extending from the bucket or scoop to one or more power-driven windlasses or winding-drums, as and for the purposes described.

10. The combination of a boat or hull, one or more spuds upon which one end of the boat is adapted to be swung or moved, a suspended bucket or scoop having two operative mouths or sections carried by the swinging or movable end of the boat, one of which mouths or sections is operative when the boat is movable in one direction and the other of which mouths or sections is operative when the boat is movable in the opposite direction, an exhaust pump or apparatus carried by the boat, a suction-pipe or conduit connecting the mouths or chambers alternately as they are operated with said exhaust apparatus, and draw chains or ropes extending from each end of the scoop or bucket to anchored sheaves or pulleys located in relation to the operative end of the dredging-boat, as specified, and thence to the windlasses or winding-drums upon the said dredge or boat, as and for the purposes described.

11. In combination, a dredging-boat one end of which is movable, a scoop or bucket having two operative mouths or sections suspended from the movable end of said boat and adapted to be longitudinally inclined to depress either end thereof, an exhaust pump or apparatus carried by the boat, a conduit or suction-pipe connecting both operative mouths or sections of the scoop or bucket with the said apparatus, and drawing devices for drawing the end of the dredge or boat successively in opposite directions, as and for the purposes described.

12. A swinging or movable dredging-boat having a suspended vertically-movable longitudinally-tipping scoop or bucket provided with two operative mouths or sections back to back and a discharging apparatus therefor, as and for the purposes described.

13. A swinging or movable dredging-boat having a suspended vertically-movable longitudinally-tipping scoop or bucket provided with two operative mouths or sections back to back and a discharging apparatus therefor and also movable toward and from the end of the boat, substantially as described.

14. The combination of a boat or hull, a suspended bucket or scoop of the character specified, hold with its mouth always pointed and opened in the direction in which the bucket is moved, a discharge-opening, passage, or conduit therefor, and a sheave anchored at one end of the cut which the said scoop or bucket is to make and upon or approximating the line of said cut, and a draft chain or rope extending from said scoop or bucket over said sheave thus located to a windlass or winding-drum, as and for the purposes described.

15. The combination of a boat or hull having a suspended bucket or scoop provided with a discharge or suction pipe or conduit, a sheave or pulley located upon or near the line in which the bucket is moved, a draft chain or rope extending from the bucket over said sheave or pulley, and devices for adjusting or moving the sheave or pulley vertically, as and for the purposes described.

16. The combination of a dredging-boat, a scoop or bucket carried thereby, a scow anchored at or near one end of the cut or path of the scoop or bucket, a spud carried thereby, a sheave or pulley attached to said spud, and a draw chain or rope extending from the bucket or scoop over said sheave or pulley to a windlass or winding-drum, substantially as described.

17. The combination of a hull or boat having a suspended scoop or bucket, a discharge or exhaust passage or conduit connected therewith, a scow or ponton anchored at one side of the dredge, a spud carried thereby, a collar or support vertically movable upon said spud, a sheave or pulley attached to said movable collar or support, and a draw chain or rope extending from said scoop or bucket over said sheave or pulley to a windlass or winding-drum, substantially as described.

18. The combination of a hull or boat having a suspended bucket, a discharge or exhaust pipe or conduit extending from the bucket, an anchored ponton or scow, a sheave or pulley attached to the scow or ponton or a post or spud secured thereto to be beyond the side thereof, and a draft chain or cord extending from the bucket or scoop over the said sheave or pulley to a windlass or winding-drum, substantially as described.

19. The combination of a dredging-boat, a dredging apparatus carried by said boat, having two oppositely arranged or located scooping-mouths or operating-sections adjustable in relation to said boat and provided with suitable discharge or exhaust passage or passages, an anchored ponton or scow upon each side of the dredge, a pulley or sheave for each ponton or scow, supported in whole or in part thereby, and two draw cords or chains, one of which extends from one end of the apparatus over one of the sheaves or pulleys to a windlass or winding-drum and serves to operate or draw the dredge in one direction, and the other of which chains or ropes extends from the other end of the apparatus over the other sheave or pulley to a windlass or winding-drum and serves to draw the dredge in the opposite or reverse direction, as and for the purposes described.

20. The combination of the scoop or bucket C, having the operative mouths or sections H H′, the vertically-movable suspending bars b^{20} b^{21}, attached to the scoop or bucket, respectively, at each end thereof, as specified, the rack-bars and racks thereon, the pinions b^{22} b^{23}, the shafts b^{19} b^{21}, the worm-wheels b^{16} b^{14} thereon, the worms b^{15} b^{13} loose upon the shaft b^{17} and having members b^{18} b^{21} of clutches, and the members b^{19} b^{20} of clutches independently secured to said shaft b^{17} to be engaged, respectively, with the members b^{18} b^{21}, as and for the purposes described.

21. The scoop or bucket C, having the mouths or operative sections H H′, the outlet m^3, and the partial partition M and the valve M′, hinged to said partition, and stops m^2 m^7 therefor, substantially as described.

22. The scoop or bucket C, having the operative mouths or sections H H′, the discharge-outlet m^3, centrally located in relation to both mouths or sections, the partial partition M, having the curved surfaces m', and the valve M′, substantially as described.

23. The bucket or scoop C, having the operative mouths or sections H H′ and the curved outer side and corner c^2, as and for the purposes described.

24. The scoop or bucket C, having the operative mouths or sections H H′ and formed, substantially as specified, with the reinforcing scoop end pieces c^2, substantially as described.

25. The scoop or bucket C, having the operative mouths or sections H H′ and the independent teeth or points E, shaped substantially as specified and extending from each mouth near and at the bottom thereof, as and for the purposes described.

26. A bucket having an end mouth H, a discharge-outlet m^3, and the teeth or picks E, having the straight or substantially straight lower surfaces e, which extend below the line of the under surface of the scoop and act as feet or shoes, as and for the purposes described.

27. A bucket having an end mouth H, a discharge-outlet m^3, and the teeth or picks E, having the straight or substantially straight lower surfaces e, which extend below the line of the under surface of the scoop and act as feet or shoes and also having the inclined surfaces e', extending from their points e^3 to or substantially to the mouth of the bucket, as and for the purposes described.

28. The scoop or bucket having the discharge-outlet m^3 and picks or teeth E, extending therefrom, having wide tapering points e^3 and decreased in thickness from their lower sides upward, inclined from their points upward to the point e^3, and then downward, as and for the purposes described.

29. The bucket or scoop having an opening at one end, the discharge-outlet m^3, and the stationary separators F, substantially as described.

30. The bucket or scoop having an end opening, a discharge-outlet m^3, the scoop end c^4, the picks or teeth E, shaped as specified, and the separators F, substantially as described.

31. The combination of the bucket having an end opening, the outlet m^3, and the rotary separator G, substantially as described.

32. A bucket having an end receiving-opening, a side discharge-outlet m^3, the teeth or picks E, the stationary separators F, and the rotary breakers G, substantially as described.

33. A combined bucket or scoop having two operative mouths or sections H H′, a separate outlet for each mouth or section, and picks or teeth and separators in each mouth or section, as and for the purposes described.

34. The combination of the slide-scoop or bucket having a receiving-mouth at one end, the rotary breaker G, and a vertical movable rotary shaft connected with the shaft of said breaker to rotate it, as and for the purposes described.

35. The scoop or bucket having the side discharge-outlet and a section of a ball-joint secured to the side of the bucket about said outlet, and a conduit or suction-pipe having at its end the other section of the ball-and-socket joint connected with the first-named section of said joint, as and for the purposes described.

36. A dredging-boat having at one end the section or extension a^2, supporting the frame B, a bucket or scoop and its suspending bars carried by said frame B, a suction pipe or conduit connecting the bucket or scoop with an exhaust-pump upon the scow, extending through the end a^4 of the boat, as specified, and a compartment in the other end of said boat, adapted to be filled with water to depress said end of the boat and elevate the bucket end, as and for the purposes described.

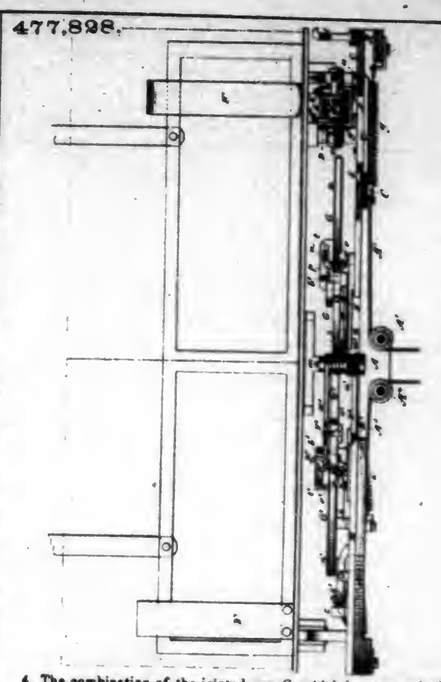
477,828. **MUSIC-LEAF TURNER.** ERWIN VON TRAUTVETTER, Brooklyn, N. Y. Filed Oct. 21, 1891. Serial No. 409,408. (No model.)

Claim.—1. The combination of the slide C with the rotary drum D, means for turning the same, substantially as described, shaft E, having curling-head E′ swiveled in said drum, and means for turning said shaft on its own axis when elevated, substantially as specified.

2. The drum D, having cam f and movable cam-section f', combined with the slide C, having a pin a and post l, and with the ratchet g' and pawl g^2, spring i, stop j K, and swiveled shaft E, having arm h' and head E′, all arranged substantially as herein shown and described.

3. The combination of the swiveled shaft E, having elastic head E′, with means, substantially as described, for raising, turning, and lowering it, and with the spring F, against which sheets to be curled are pressed by said head E′ when raised, as specified.

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4. The combination of the jointed arm G, which is composed of two members o and n, with mechanism, substantially as described, for revolving both members around their vertical pivot m and for turning the outer member n on its horizontal pivot p, as specified.

5. The combination of the slide H and its pusher l, pin b^2, and rack z with the jointed arm G, pinion a^2, spring-pressed locking-arm w, pivot p, and claws u and v, substantially as herein shown and described.

6. The combination of the slide O^2 and its spring-pressed pivoted pusher o^3 with the loop 2, slide H^2, pawl 4 on said slide H^2, stationary pins 7 and 8, and jointed leaf-turning arm G^2, and mechanism, substantially as described, for transmitting motion to said arm G^2 from slide H^2, all as specified.

477,829. **PARTITION.** ARTHUR J. WELLS, Syracuse, N. Y. Filed Mar. 29, 1892. Serial No. 426,969. (No model.)



Claim.—1. The combination, with a supporting-wall, of a support having an attaching-arm secured to the wall and an engaging-arm projecting outwardly from said wall and a partition removably supported by the engaging-arm of the support, substantially as and for the purpose set forth.

2. The combination, with a supporting-wall, of a support secured to the wall and provided with a pair of projecting engaging-arms extending outwardly from the wall and a partition having its end interposed between said arms for holding the same in its normal position, substantially as and for the purpose specified.

3. The combination, with a supporting-wall, of a support having a projecting attaching-arm secured to the wall and having a pair of engaging-arms projecting outwardly from the wall and a partition supported between the outwardly-projecting engaging-arms, substantially as and for the purpose set forth.

4. The combination, with a supporting-wall, of a support having two of its edges turned outwardly for forming engaging-arms and having a projecting attaching-arm arranged between said edges and

secured to the supporting-wall and a partition interposed between said outturned edges, substantially as and for the purpose specified.

5. The combination, with a supporting-wall, of a support having a projecting attaching-arm arranged between its upper and lower edges and secured to said wall and having its opposite side edges turned outwardly from the wall for forming engaging-arms and a partition interposed between said outwardly-turned edges, substantially as and for the purpose set forth.

6. The combination, with a pair of opposite supporting-walls, of supports having an attaching-arm secured to the adjacent faces of the wall and an engaging-arm projecting outwardly from said faces of the walls, and a partition having its ends removably engaged with the projecting arms, substantially as and for the purpose specified.

7. The combination, with a supporting-wall, of a support formed of a folded plate and provided with attaching projections extending outwardly from its opposite extremities secured to the supporting-wall and a partition having one extremity removably supported by the support, substantially as and for the purpose set forth.

8. The combination, with a supporting-wall, of a support secured to said wall and provided with a pair of projecting spring-engaging arms and a partition removably engaged by said arms, substantially as and for the purpose specified.

9. The combination, with a supporting-wall, of a support having a projecting attaching-arm secured to the wall, a pair of projecting spring-attaching arms projecting outwardly from the wall, and a partition removably engaged by said spring-arms, substantially as and for the purpose set forth.

10. The combination, with a pair of opposite supporting-walls, of a support on each wall composed of a U-shaped spring-plate having a projecting attaching-arm secured to one of the supporting-walls and a partition interposed between said opposite walls and arranged with its ends removably engaged by the supports, substantially as and for the purpose specified.

11. The herein-described support, the same being composed of a plate having a pair of projecting engaging-arms and a projecting attaching-arm adapted to be secured to a suitable support, substantially as and for the purpose set forth.

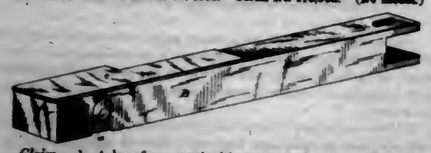
12. The herein-described support, the same being composed of a spring-plate having its opposite extremities folded toward each other for forming yielding engaging-arms, and having a projecting attaching arm adapted to be secured to a suitable support, substantially as and for the purpose set forth.

13. The herein-described support, the same composed of a pair of corresponding projecting engaging-arms for supporting articles interposed between the same and a rearwardly-extending projection or attaching-arm formed integral with the body of the support and extending outwardly therefrom and adapted to be secured to a suitable support, substantially as and for the purpose specified.

14. The herein-described support, the same composed of a pair of corresponding projecting spring-arms for yieldingly supporting articles interposed between the same and a rearwardly-extending projection or attaching-arm formed integral with the body of the support and extending outwardly therefrom and adapted to be secured to a suitable support, substantially as and for the purpose set forth.

15. The combination, with a supporting-wall, of a support having an attaching-arm secured to the wall and an engaging-arm projecting outwardly from the wall and a partition formed with a groove for receiving the engaging-arm of the support, substantially as and for the purpose specified.

477,830. KEY FOR MUSICAL INSTRUMENTS. CHARLES H. WHITNEY, Boston, Mass., assignor to the Estey Organ Company, Brattleborough, Vt. Filed Jan. 19, 1892. Serial No. 418,582. (No model.)



Claim.—1. A key for a musical instrument, having in the bottom of the key-body a guide-slot for the front guide pin and a hole extending across and communicating with the inner portion of said guide-slot within the key-body, substantially as set forth.

2. A key for a musical instrument, having an unbroken and imperforate top surface to its body for the reception of the celluloid or ivory covering, having a felted guide-slot in its bottom for the front guide-pin, the felts for said guide-slot being applied to the key-body, and having a space for the guide-pin within the key-body, extending across and communicating with the inner portion of said guide-slot, substantially as set forth.

3. A key for a musical instrument, having in the bottom of the key-body a guide-slot for the front guide-pin and a hole open at one end at least and extending from one of the walls of the key-body across and communicating with the said guide-slot within said key-body, substantially as set forth.

4. A key for a musical instrument, having at its bottom a guide-slot for the front guide-pin and a hole open at one end at least and extending from one of the walls of the key-body across and communicating with the said guide-slot within said key-body and a plug covering the open end of said hole, substantially as set forth.

5. A key for a musical instrument, having at its bottom a guide-slot for the front guide-pin and a hole extending transversely from one side (at least) of the key-body across and communicating with said guide-slot within the key-body and a plug covering the open end of said hole, substantially as set forth.

6. A key for a musical instrument, having an unbroken and imperforate top surface to the key-body for the reception of the celluloid or ivory covering, having a felted guide-slot for the front guide-pin in the bottom of the key-body, with the felts for said guide-slot applied to the key-body, having a hole open at one end extending transversely partly through the key-body from one side thereof and extending across and communicating with the inner end of said guide-slot, and having a plug filling and closing the open end of said hole, substantially as set forth.

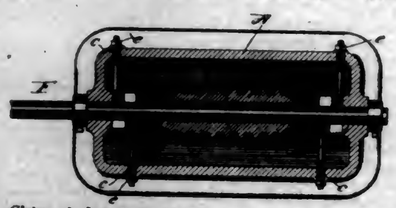
7. In the method of forming the front end of a key for a musical instrument, forming a guide-slot in the bottom of the key-body by forcing and pressing inwardly the wood where the slot is to be formed and then boring a hole into the key-body perpendicularly to the axis of the guide slot, substantially as set forth.

8. In the method of forming the front end of a key for a musical instrument, forming a guide-slot in the bottom of the key-body by forcing and pressing inwardly the wood where the slot is to be formed and then boring a hole laterally from one side of the key perpendicularly to the axis of the guide-slot and across the bottom of the guide-slot, substantially as set forth.

9. In the method of forming the front ends of keys for musical instruments, forming a series of guide-slots in the bottom of a key-blank by forcing and pressing inwardly the wood at the points where the guide-slots are to be formed, subsequently dividing the key-blank into individual keys, then boring a hole into the side of each key transversely across the inner end of the guide-slot, and then filling the open end of said hole with a plug, substantially as set forth.

10. The method of forming the guide-pin-retaining holes in the key-frame of a musical instrument, which consists in securing the key-blank to the upper side of the key-frame, boring holes down through the key-blank and into the key-frame to form the rear-guide-pin-retaining holes for all the keys and the front-guide-pin-retaining holes for the black keys, then separating the key-frame and key-blank, and then boring directly into the key-frame to form the front-guide-pin-retaining holes for the white keys, substantially as set forth.

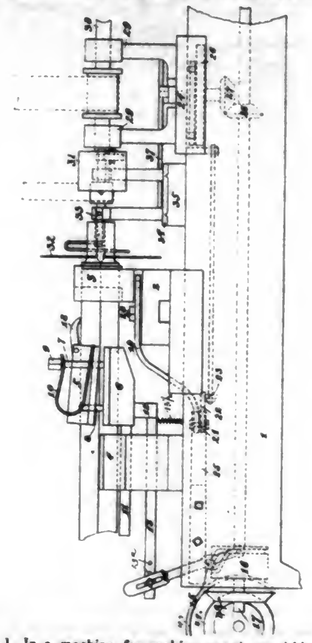
477,831. DEVICE FOR TAKING UP WEAR. HERBERT A. BEIDLER, Chicago, Ill. Filed Jan. 21, 1892. Serial No. 418,774. (No model.)



Claim.—1. In a device for taking up wear, the combination of a gear-box, a perpetual screw and wheel, a set of two wedge-shaped pieces located at each end of said screw between it and the casing of said gear-box, said wedge-shaped pieces being beveled or inclined upon one side only and at such angle that their exterior opposite faces will be in parallel planes, and means whereby said wedge-shaped pieces may be relatively adjusted and thereby fix and preserve the adjustment of the screw, all substantially as described.

2. In a device for taking up wear, the combination of a gear-box, a perpetual screw and wheel, and a set of two wedge-shaped pieces located at each end of said screw between it and the casing of said gear-box, said pieces being beveled or inclined upon one side only and at such angle that their exterior or opposite faces will be in parallel planes, each wedge-shaped piece provided with a screw-threaded stem passing through the casing of the gear-box and secured by nuts, whereby said wedge-shaped pieces may be relatively adjusted and thereby fix and preserve the adjustment of the screw, all substantially as shown.

477,832. SPOOL-ROUGHING MACHINE. JAMES M. BROWN, Bethel, Me. Filed Nov. 11, 1890. Serial No. 371,110. (No model.)



Claim.—1. In a machine for making rough spool-blanks, the combination, with the feeding-jaws, of the standards extending upward from the lower jaw, springs operating to normally close these jaws, spindles connected to the lower jaw and serving as guides, and mechanism for reciprocating the jaws, consisting of a rocking bar operated by cam mechanism with the main shaft and a rod connecting such bar and jaws, substantially as shown and described.

2. In a machine for making rough spool-blanks, the combination, with the feeding-jaws, of mechanism for reciprocating said jaws, consisting of a rocking bar pivoted to the main frame and having a slot therein, a cam on the main shaft, having a cam-groove engaging a pin on the lower end of said bar, a post on the lower jaw, and a rod connecting the post and the upper end of the bar and having a series of holes, whereby an adjustment of the throw of the jaws is permitted, substantially as described.

3. In a machine for making rough spool-blanks, the combination, with the gripping-jaws, of mechanism for operating said jaws, consisting of levers pivoted to the carriage and having connection at their outer ends with said jaws, a spindle operated by the movement of the cutter-head carriage and having toggle connection with the inner ends of the said levers, and springs, as described, secured to the frame and having connection with the inner ends of the pivoted levers, substantially as described.

4. In a machine for making rough spool-blanks, the combination, with a sliding bed having a circular saw mounted thereon and a pin, as described, of a rocking lever pivoted to the main frame and having connection with the cutter-head carriage and having the outer end thereof in engagement with said pin, substantially as described, and for the purposes set forth.

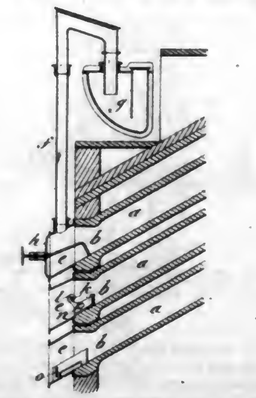
5. In a machine for making rough spool-blanks, the combination, with a sliding bed having a circular saw mounted thereon, of a rocking lever pivoted to the main frame and having connection at its inner end with the cutter-head carriage and at its outer end with the sliding bed, a spring on the main frame, having connection with the sliding bed and adapted to return said bed, the link pivoted to the frame, the post moving in an opening in the frame, and a spring connected with the post and with the link, the combination being and operating substantially as described, and for the purposes set forth.

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securing the free end of said band in different positions of adjustment, combined with a strip constituting the drapery, said strip being attached at its lower portion to the skirt, but having its upper portion free and being adjustably and detachably secured at its upper end to said waistband, so as to overlie and cover the placket and be capable of movement to the right or left thereof to bring it into symmetrical relation with respect to the other parts of the skirt, substantially as set forth.

477,834. GAS-RETORT. ANDRÉ COZE, Rheims, France, assignor, by direct and mesne assignments, to Socrates Newman and James Green, St. Louis, Mo. Filed Dec. 21, 1891. Serial No. 415,834. (No model.) Patented in France Feb. 14, 1885, No. 167,044; in Germany Mar. 27, 1885, No. 33,959; in Belgium June 17, 1885, No. 69,316; in England June 20, 1885, No. 7,563; in Italy June 30, 1885, No. 433; in Austria-Hungary Oct. 30, 1885, No. 23,286 and No. 57,022, and in Spain Dec. 22, 1885, No. 7,837.



Claim.—The combination of an inclined gas-retort located at the angle of repose for the material treated and constructed and arranged to be charged from the upper end, a retort-mouthpiece upon the lower end of said inclined retort, a removable stop-plate at the lower end of said inclined retort for retaining the coal within the retort and preventing it from entering the retort-mouthpiece, and a gas-ascension pipe leading from said retort-mouthpiece to an hydraulic main, whereby when the stop-plate is removed the retorts may be readily discharged.

477,885. PHONOPORIC TELEGRAPHY. CHARLES LABORDE-DAVIES, London, England, assignor to the Phonopore Syndicate, Limited, same place. Filed Apr. 20, 1892. Serial No. 429,876. (No model.) Patented in France June 23, 1891, No. 214,350.

Claim.—1. A phonopore-transmitter comprising primary and secondary coils, a battery, a vibrator, a primary circuit in which the battery is included and which includes the primary coils, an open secondary or phonopore circuit of which the secondary coils form a part, a key for opening and closing the primary circuit, and means for closing a circuit through the primary coils when the key is not in use to open and close the primary circuit.

2. A phonopore-transmitter comprising primary coils and open-circuit or phonopore secondary coils, a transmitting-battery, a key for connecting the battery with the primary coils, and means for closing the circuit, excluding the battery, through the primary coils when the key is not in use to connect the transmitting-battery therewith.

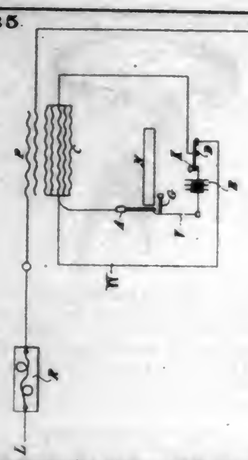
3. A phonopore-transmitter comprising a primary circuit including a battery or source of electricity, a vibrating tongue, and primary

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477,888. SKIRT. CATHERINE COLGAN, New York, N. Y., assignor to Louis Dryfoos, same place. Filed Aug. 8, 1891. Serial No. 402,063. (No model.)

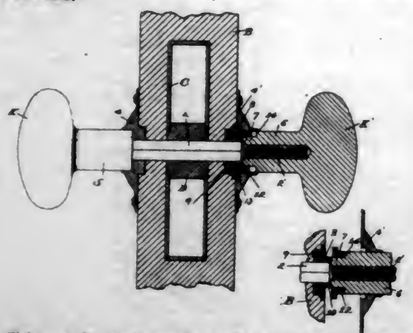
Claim.—A skirt having a placket at the appropriate place therein and provided with a waistband somewhat longer than the width of the portion to which it is to be attached, and means for adjustably

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coils, secondary open-circuit or phonopore coils, a key for opening and closing the primary circuit, and devices connected with the key for closing a circuit through the primary coils, excluding the battery.

477,886. KNOB ATTACHMENT. CHARLES F. DOEBLER and CHARLES K. BRYANT, Hartford Conn. Filed Nov. 5, 1891. Serial No. 410,924. (No model.)



Claim.—1. In a knob attachment, the combination, with the spindle having a squared portion and a threaded portion, of the knob-stem fitting the threaded portion, the spindle-collar fitting the squared portion, a clutch in sliding engagement with said stem for engaging and disengaging said collar, and means, substantially as described, for holding said clutch in engagement with the spindle-collar, substantially as described.

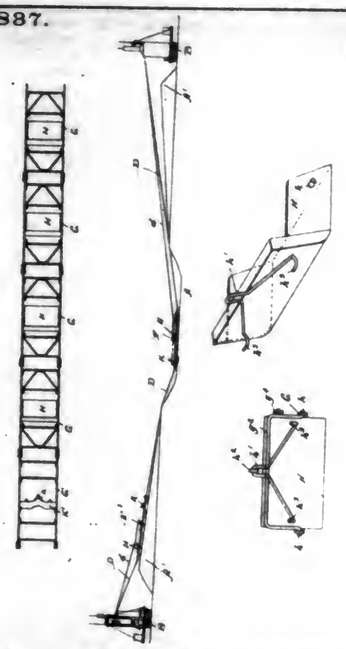
2. In a knob attachment, the combination, with the spindle having a squared portion and a threaded portion, of the knob-stem fitting the threaded portion of the spindle and having the squared end, the spindle-collar fitting the squared portion of the spindle to slide thereon and having a squared portion corresponding to the squared portion of the knob-stem, and the clutch fitting upon the squared portion of the knob-stem and spindle-collar and having the flange, and the bearing-plate engaging the flange of the clutch-ring, substantially as described.

477,887. EXCAVATING APPARATUS. JAMES T. DODGE, Chicago, Ill. Filed June 13, 1891. Serial No. 396,072. (No model.)

Claim.—1. An excavating or earth-moving apparatus comprising, in combination, two gangs of plow and scraper frames, said frames in each gang being connected together pivotally in tandem to form a flexible carriage, plows and scrapers mounted pivotally in said frames, devices or shoes on said frames to limit the depth of cut of the scrapers and plows, a pair of windlasses, and a draft-cable connecting said gangs of frames together and attached at its opposite ends to the windlasses, whereby said gangs may be drawn back and forth across the work or cut, substantially as specified.

2. An excavating or earth-moving apparatus comprising, in combination, two gangs of plow and scraper frames, said frames in each gang being connected together pivotally in tandem to form a flexible carriage, plows and scrapers mounted pivotally in said frames, devices

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or shoes on said frames to limit the depth of cut of the scrapers and plows, a pair of windlasses and a draft cable connecting said gangs of frames together and attached at its opposite ends to the windlasses, whereby said gangs may be drawn back and forth across the work or cut, and operating-cables connected to each gang of scrapers, a winding-drum for said operating-cable traveling at uniform speed with the windlass of the draft-cable, and means for tightening and slackening said operating-cable to tilt the scrapers to cause them to fill or dump, substantially as specified.

3. An excavating or earth-moving apparatus comprising, in combination, two windlasses, a draft-cable connected at its opposite ends to said windlasses, and two gangs of scraper-frames connected to said cable, said frames of each gang being connected together pivotally in tandem to form a flexible carriage, scrapers mounted pivotally in said frames, the scrapers in the two gangs facing in opposite directions, so that the gangs fill and return alternately as they are drawn back and forth across the cut, substantially as specified.

4. An excavating or earth-moving apparatus comprising, in combination, two windlasses, a draft-cable connected at its opposite ends to said windlasses, and two gangs of scraper-frames connected to said cable, said frames of each gang being connected together pivotally in tandem to form a flexible carriage, scrapers mounted pivotally in said frames, the scrapers in the two gangs facing in opposite directions, so that the gangs fill and return alternately as they are drawn back and forth across the cut, said gangs of pivoted frames being provided with devices for limiting the depth of cut, substantially as specified.

5. An excavating or earth-moving apparatus comprising, in combination, two windlasses, a draft-cable connected at its opposite ends to said windlasses, and two gangs of scraper-frames connected to said cable, said frames of each gang being connected together pivotally in tandem to form a flexible carriage, scrapers mounted pivotally in said frames, the scrapers in the two gangs facing in opposite directions, so that the gangs fill and return alternately as they are drawn back and forth across the cut, and operating-cables for tilting or reversing the scrapers, substantially as specified.

6. The combination, with a scraper-frame G, furnished with a shoe or device for limiting the depth of the cut, of a scraper H, pivoted to said frame, a pair of winding-drums or windlasses, and a draft-cable connected to said scraper-frame with each of said windlasses, whereby the scraper may be drawn back and forth across the work or cut, and an operating-cable for tilting the scraper to reverse or fill the same, substantially as specified.

7. The combination, with a scraper-frame G, furnished with a shoe or device for limiting the depth of the cut, of a scraper H, pivoted to said frame, a pair of winding-drums or windlasses, and a draft-cable connected to said scraper-frame and with each of said windlasses, whereby the scraper may be drawn back and forth across the work

or cut, and an operating-cable for tilting the scraper to reverse or fill the same, and a winding-drum for said operating-cable, driven at the same speed as the windlass for said draft-cable, and a movable or take-up pulley for deflecting the path of said operating-cable to take up or slack the same, substantially as specified.

8. The combination of scraper-frame G, furnished with a shoe or device for limiting the depth of cut, a scraper H, pivoted to said frame, a pair of winding-drums or windlasses, and a draft-cable connected to said scraper-frame with each of said windlasses, whereby the scraper may be drawn back and forth across the work or cut, and an operating-cable for tilting the scraper to reverse or fill the same, and a winding-drum for said operating-cable, driven at the same speed as the windlass for said draft-cable, and a movable or take-up pulley for deflecting the path of said operating-cable to take up or slack the same, said scraper being furnished with a locking arm or projection and said scraper-frame having a holding ball or catch engaging said locking arm or projection on the scraper for holding the scraper in its filling position, substantially as specified.

9. The combination of a gang of scraper-frames G, pivoted together in tandem, each frame having a scraper H, mounted pivotally therein, furnished with a locking arm or projection h^3, said scraper-frames having movable balls or catches g^6, having lines g^5 g^6, and levers g^3 g^4, connecting said balls, so that the same may all be operated simultaneously, a pair of winding-drums or windlasses, and a draft-cable connecting said scraper-frames with each of said windlasses, substantially as specified.

10. The combination of a gang of scraper-frames G, pivoted together in tandem, each frame having a scraper H, mounted pivotally therein, furnished with a locking arm or projection h^3, said scraper-frames having movable balls or catches g^6, lines g^5 g^6, and levers g^3 g^4, connecting said balls, so that the same may all be operated simultaneously, a pair of winding-drums or windlasses, and a draft-cable connecting said scraper-frames with each of said windlasses, an operating-cable, a winding-drum for said operating-cable, driven at the same speed as the windlass for said draft-cable, and a movable or take-up pulley for tightening or slackening said operating-cable, substantially as specified.

11. The combination of scraper-frame G, furnished with a shoe or device for limiting the depth of cut, a scraper H, pivoted to said frame, a pair of winding-drums or windlasses, and a draft-cable connected to said scraper-frame with each of said windlasses, whereby the scraper may be drawn back and forth across the work or cut, and an operating-cable for tilting the scraper to reverse or fill the same, and a winding-drum for said operating-cable, driven at the same speed as the windlass for said draft-cable, and a movable or take-up pulley for deflecting the path of said operating-cable to take up or slack the same, a motor for driving said windlasses, and mechanism for communicating motion to said take-up pulley, substantially as specified.

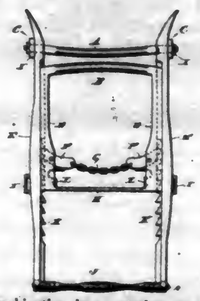
12. An excavating or earth-moving apparatus comprising, in combination, two gangs of plow and scraper frames, said frames being connected together pivotally in tandem to form a flexible carriage, plows and scrapers mounted pivotally in said frames, devices or shoes on said frames to limit the depth of cut of the scrapers and plows, a pair of windlasses and a draft-cable connecting said gangs of frames together and attached at its opposite ends to windlasses, whereby said gangs may be drawn back and forth across the work or cut, the frames for said windlasses being provided with a movable slide or frame *b*, carrying a guide-pulley for deflecting the line of draft of the cable, substantially as specified.

13. An excavating or earth-moving apparatus comprising, in combination, two windlasses, a draft-cable connected at its opposite ends to said windlasses, and two gangs of scraper-frames connected to said cable, said frames of each gang being connected together pivotally in tandem to form a flexible carriage, scrapers mounted pivotally in said frames, the scrapers in the two gangs facing in opposite directions, so that the gangs fill and return alternately as they are drawn back and forth across the cut, the frames for said windlasses being each provided with a movable slide or frame *b*, carrying a guide-pulley for deflecting the line of draft of the cable, substantially as specified.

14. An excavating or earth-moving apparatus comprising, in combination, two windlasses, a draft-cable connected at its opposite ends to said windlasses, and two gangs of scraper-frames connected to said cable, said frames of each gang being connected together pivotally in tandem to form a flexible carriage, scrapers mounted pivotally in said frames, the scrapers in the two gangs facing in opposite directions, so that the gangs fill and return alternately as they are drawn back and forth across the cut, and operating-cables for tilting or reversing the scrapers, the frames for said windlasses being each provided with a movable slide or frame *b*, carrying a guide-pulley b' for deflecting the line of draft of said cables, a second guide-pulley b^2, and a movable or take-up pulley b^3, substantially as specified.

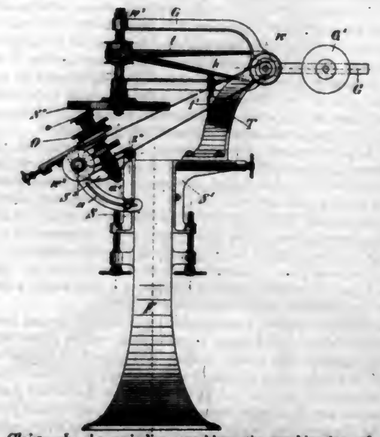
15. An excavating or earth-moving apparatus comprising, in combination, two windlasses, a draft-cable connected at its opposite ends to said windlasses, and two gangs of scraper-frames connected to said cable, said frames of each gang being connected together pivotally in tandem to form a flexible carriage, scrapers mounted pivotally in said frames, the scrapers in the two gangs facing in opposite directions, so that the gangs fill and return alternately as they are drawn back and forth across the cut, and operating-cables for tilting or reversing the scrapers, the frames for said windlasses being each provided with a movable slide or frame *b*, carrying a guide-pulley b' for deflecting the line of draft of said cables, a second guide-pulley b^2, and a movable or take-up pulley b^3, said pulley b^3 being mounted in a slide connected by a cord to a winding-drum, and friction mechanism for operating said last-mentioned winding-drum, substantially as specified.

477,888. VETERINARY MOUTH-SPECULUM. CHARLES S. ELLIOTT, Greenville, Ohio. Filed Mar. 21, 1892. Serial No. 425,874. (No model.)



Claim.—The combination, in a veterinary mouth-speculum, of the rectangular frame, with the bars A and B of its upper part adapted to enter the horse's mouth, with the bar J in the lower part serving as a handle, with the ratchets K K on the inner sides of the bars E E of the upright frame, the interior sliding frame with its spring-pawls joined by the chain G and connected to the bars D D of said sliding frame, and with the bar H, also serving as a handle, and the straps M M, attached to said device, substantially as described.

477,889. GLASS-GRINDING MACHINERY. ROBERT FRIEDEL, Stuttgart, Germany. Filed Nov. 3, 1891. Serial No. 410,754. (No model.)

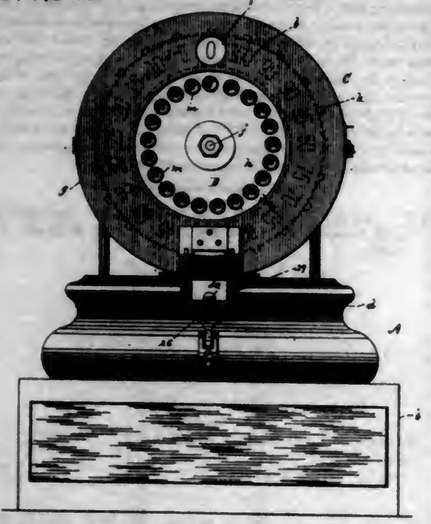


Claim.—In glass-grinding machines, the combination of a machine-support, a table vertically adjustable thereon, and a support, as S^2, pivoted thereon and bearing a glass-holding chuck, with segmental strips and thumb-screws for securing the chuck-support in various positions of adjustment, substantially as set forth.

477,840. CASH INDICATOR, REGISTER, AND CHECK-PRINTER. WILLARD H. GILMAN, Boston, Mass., assignor to the United States Cash Register Company, Portland, Me. Filed Jan. 13, 1891. Serial No. 377,584. (No model.)

Claim.—1. In a cash-register, the combination of a case provided with a spring-pressed money-drawer, locking mechanism therefor, a rotary indicator disk provided with a series of openings and having a

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series of numerals on its face and a corresponding series of type-numerals on its periphery, a pin or key adapted to be inserted in a determined opening in said series, mechanism for engaging said pin and locking the disk at a determined point of its rotation, mechanism actuated by said locking mechanism for automatically releasing said drawer, and mechanism for carrying a check or card into contact with said type-numerals, substantially as described.

2. In a cash-register, the combination of the case, a spring-pressed money-drawer, locking mechanism therefor, a rotary indicator-disk provided with a series of numerals on its face, a pin or key adapted to be inserted in a determined opening in said series, mechanism for releasing said spring-pressed money-drawer and locking the disk at a determined point of its rotation, and an adding mechanism actuated by the rotary indicator, substantially as described.

3. In a cash-register, the combination of a rotary indicator-disk provided with a series of openings and having a series of numerals on its face and a corresponding series of type-numerals on its periphery, a pin or key adapted to be inserted in a determined opening in said series, mechanism for engaging said pin and locking the disk at a determined point of its rotation, and a vertically-movable card-drawer, and mechanism for operating said drawer to carry a card into engagement with said type-numerals, substantially as described.

4. In a cash-register, the combination of a case, a spindle journaled therein, a rotary indicator mounted on the spindle, said indicator being provided with a series of openings, a spring-pressed money-drawer, locking mechanism therefor, an adding mechanism mounted on the said spindle and engaging a second adding-wheel and actuated by said rotary indicator, a pin or key adapted to be inserted in a determined opening in the series of openings in the rotary indicator, and mechanism for releasing said spring-pressed money-drawer and engaging said pin, thereby locking the indicator at a determined point of its rotation, substantially as described.

5. In a cash-register, a case provided with a spring-pressed money-drawer and locking mechanism, in combination with a rotary indicator-disk provided with a series of openings, a pin or key adapted to be inserted in a determined opening in said series, a pivoted notched lever for engaging said pin and locking the disk at a determined point of its rotation, and mechanism connected to and actuated by said pivoted lever for automatically releasing the drawer when the disk is rotated, substantially as described.

6. In a cash-register, the combination, with the rotary indicator-disk provided with a series of numerals on its face and a corresponding series of type-numerals on its periphery, of the vertically-movable card-drawer adapted to contain a stack of cards and having its side walls slotted, as shown, and mechanism for raising said drawer to bring the cards into contact with the type-numerals on the indicator-disk, substantially as described.

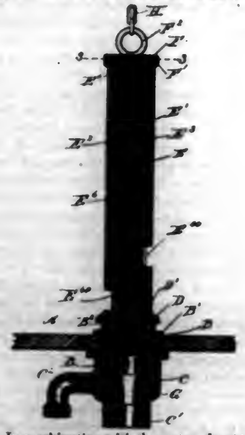
7. In a cash-register, the combination of the rotary indicator-disk provided with a series of numerals on its face and a corresponding series of type-numerals on its periphery, mechanism for actuating said disk, the vertically-movable card-drawer adapted to contain a stack of cards and having its side walls slotted, as shown, mechanism for raising said drawer to bring the cards into contact with the type-numerals on the indicator-disk, and an inking-roller revolving in contact with the said type-numerals, substantially as described.

8. In a cash-register, the combination of the rotary indicator-disk provided with a series of numerals on its face and a corresponding series of type-numerals on its periphery, mechanism for actuating said disk, the vertically-movable card-drawer adapted to contain a stack of cards and having its side walls slotted, as shown, mechanism for automatically locking said drawer until the indicator-disk has been rotated, mechanism for raising said drawer to bring the cards into contact with the type-numerals, and mechanism for automatically releasing said drawer after such impression, substantially as described.

9. In a cash-register, the combination, with the rotary indicator-disk provided with a series of numerals on its face and a corresponding series of type-numerals on its periphery, and mechanism for actuating said disk, of the vertically-movable card-drawer having lateral projections, racks having oppositely disposed teeth engaging said projections and automatic locking and actuating mechanism for said racks, and means for raising said drawer to bring the cards into contact with said type-numerals, substantially as described.

10. The check-drawer having lateral projections, racks having oppositely-disposed teeth engaging said projections, and automatic actuating and locking mechanism for said racks, in combination with the rotary disk provided with type-numerals, means for actuating said disk, and a pin on said disk for releasing the drawer-locking rack as the disk is rotated, substantially as described.

477,841. SIPHON FOR WATER-CLOSET TANKS. PATRICK HARVEY, Chicago, Ill. Filed June 29, 1891. Serial No. 397,572. (No model.)

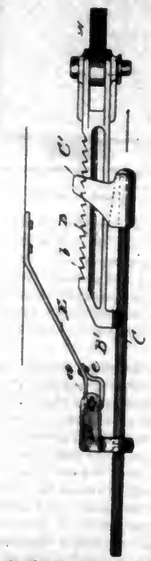


Claim.—1. In combination with the water-closet tank and the service-pipe leading therefrom to the closet, the compound siphon and valve comprising the cylinder E, subdivided by two intersecting longitudinal partitions into four passages, the passages on the same side of one of said partitions communicating at their upper ends across the other partition, whereby said communicating passages constitute two non-communicating siphons, the intake of one of said siphons through the wall of the cylinder being at a higher level than at the other, substantially as set forth.

2. A water-closet tank, a valve closing the discharge-aperture thereof, a service-pipe leading from said aperture, a siphonic duct having its discharge-limb leading through the valve, the funnel G, connected to the valve at the lower side thereof and receiving the discharge from the siphonic duct and adapted to pass freely through the valve-seat, combined with the fitting C, having direct downward connection with the flushing-pipe and lateral connection for the air, by-pass, or vent pipe, the funnel extending past the opening to the latter pipe, whereby when the valve is seated the funnel directs the flow to the flushing-pipe only and is removable with the valve to permit the water to enter the by-pass or vent pipe, substantially as set forth.

3. In a water-closet tank, a valve which closes the discharge-aperture thereof, and the service-pipe leading from said aperture, and two siphonic ducts having their discharge-limbs leading through the valves and their intakes at different levels, the combined capacity of said ducts being greater than that of the discharge-passage, and the capacity of the one which has the lower intake being less than that of the discharge-passage, the funnel G, connected to the lower side of the valve and receiving the discharge from both siphonic ducts and terminating in position to direct said discharge into the service-pipe, combined with the air, by-pass, or vent pipe O², leading off from the service-pipe in such position that the funnel diverts the water past its intake when the valve is seated, said funnel being removable with the valve, substantially as set forth.

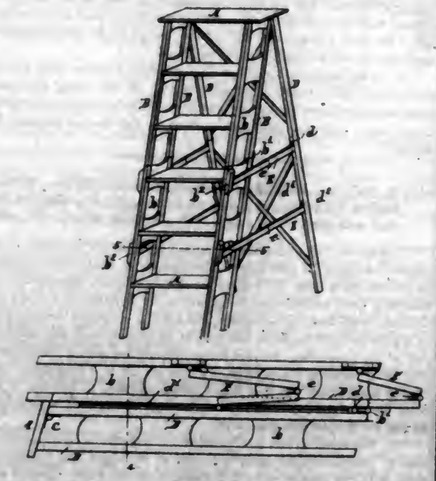
477,842. SLACK-ADJUSTER FOR CAR-BRAKES. GEORGE L. HARVEY, Chicago, Ill. Filed Dec. 19, 1891. Serial No. 415,575. (No model.)



Claim.—1. In a slack-adjuster for car-brakes, the combination, with a divided tension-rod the members whereof are adjustable with relation to each other, and means for locking them in their adjusted position, of a sliding clutch carried by one of the members, and means independent of the brake-gear, whereby to limit the throw of the clutch, substantially as described.

2. In a slack-adjuster for car-brakes, the combination, with a divided tension-rod the members whereof are adapted to be adjusted with relation to each other, and means for locking them in their adjusted position, of a clutch carried by one of said members, and a variable connection between the clutch and a fixed part of the car, substantially as described.

477,843. STEP-LADDER. SQUIRE KEELING, Springfield, Ill., assignor of one-half to James Wheatly, same place. Filed Jan. 23, 1892. Serial No. 419,007. (No model.)



Claim.—In a step-ladder, the combination of the side rails, the blocks joining the side rails, the steps secured to the side rails, the standards hinged to the step-frame, the hinges midway of the standards, the blocks secured to the side rails, the hinges connecting the extension-arms with the blocks, the extension-arms, the hinges midway of the extension-arms, and the hinges connecting the extension-arms with the standards, substantially as set forth, and for the purpose stated.

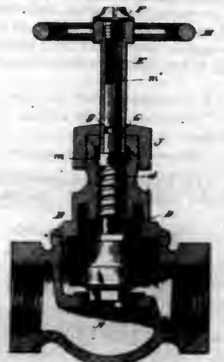
477,844. PRESERVATION OF MEAT. WILLIAM LAUBHEIMER and HENRY SALZER, Baltimore, Md.; said Laubheimer assignor to said Salzer. Filed Aug. 8, 1891. Serial No. 402,061. (No specimens.)

Claim.—1. The described process of preserving meat by steaming or partially cooking the same, cooling, compressing while cold for a sufficient space of time, as specified, to produce a coherent mass, and then applying a plastic envelope or shell, such as plaster-of-paris, allowing the same to harden around the mass, as set forth.

2. The described process of preserving meat by steaming in a close vessel with high-temperature steam, cooling, compressing while cold, applying an envelope of fabric impregnated with plaster-of-paris, and sterilizing in a bath of plastic substance, as set forth.

3. The described process of preserving meat by successive steps of steaming, cooling, compressing while cold, enveloping in a shell of fabric and plaster-of-paris, and when the latter has hardened placing in a can, with the natural fat of the meat surrounding the package, heating and sealing the can, as set forth.

477,845. VALVE. MICHAEL LONG, Middletown, Conn. Filed Dec. 8, 1891. Serial No. 414,363. (No model.)



Claim.—In a valve-operating mechanism normally out of engagement, a hollow stem E, provided with a pin G, and a valve-stem D, concentric to said hollow stem and having a recessed end *m'* and provided with a groove *g* to receive the pin G, in combination with a screw-cap F, substantially as described.

477,846. TELLURIAN. JOHN E. RAMSWEILER, Wheaton, Ill. Filed July 13, 1891. Serial No. 399,291. (No model.)



Claim.—1. The combination, with the plane A and the ring D, of the ring B, interposed between the two and slidingly secured to one and pivoted to the other, substantially as described.

2. The combination, with the board A, having a peripheral groove *a*, of an encircling ring B, having three or more inward projections adapted to slide in said groove, and a ring D, pivoted to the ring B, substantially as described.

3. The combination, with the board A, having the peripheral groove *a*, of the ring B, three or more screws C, threaded to the same and adapted to slide in said groove, and the ring D, pivoted to the ring B, substantially as described.

4. The combination, with the ring D, having the undercut groove

d^3, of the sliding block F, mounted in said groove, and a globe G, mounted upon a spindle g, threaded to said block, substantially as described.

5. The combination, with the ring D, having the undercut groove d^3, of the block F, slidingly mounted in said groove, and a globe G, mounted upon a spindle g, threaded to said block, and having a head g' within the undercut portion of the groove, substantially as described.

477,847. MANUFACTURE OF ARTIFICIAL STONE. WILHELM REISSIG, Munich, Germany. Filed Jan. 26, 1892. Serial No. 419,253. (No specimens.) Patented in Luxemburg Aug. 11, 1891, No. 1,490; in England Aug. 14, 1891, No. 13,736; in Belgium Aug. 31, 1891, No. 95,961, and in France Dec. 3, 1891, No. 215,881.

Claim.—1. The process of producing artificial stone, which consists in mixing powdered earthenware with burnt slaked lime, burnt gypsum, and water, and then treating the mixture with a solution that will convert the gypsum into an insoluble compound, substantially as set forth.

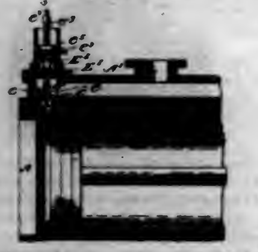
2. The process of producing artificial stone, which consists in mixing powdered earthenware with burnt slaked lime, burnt gypsum, and water, then treating with a solution of barium hydrate to destroy the solubility of the gypsum, and finally subjecting the mixture to the action of carbonic acid.

3. The process of producing artificial stones, which consists in mixing powdered earthenware, such as bricks, terra-cotta, &c., with burnt slaked lime, burnt gypsum, and water, then suitably shaping the cement or mixture so formed, and then treating with a solution of barium hydrate to destroy the solubility of the gypsum.

4. The process of producing artificial stones, which consists in mixing powdered earthenware, such as brick, terra-cotta, &c., with burnt slaked lime, burnt gypsum, and water, adding powdered burnt lime, then suitably shaping the cement or mixture so formed, and then treating with a solution of barium hydrate to destroy the solubility of the gypsum.

5. A compound for artificial stones, &c., consisting of the combination of silicate of aluminium, silicate of lime, sulphate of barium, and carbonate of lime.

477,848. VALVE-GEAR. GEORGE ROTHENSCHER, New York, N. Y. Filed Apr. 28, 1891. Serial No. 390,802. (No model.)



Claim.—1. The combination, with a steam-cylinder and steam-chest, of spring-pressed rectilinear reciprocating inlet-valves, valve-stems on said inlet-valves, oscillating spindles having toes for engaging recesses of said valve-stems, pistons on said valve-stems, and guide-cylinders having air-openings and forming air-cushions for the inlet-valves, substantially as set forth.

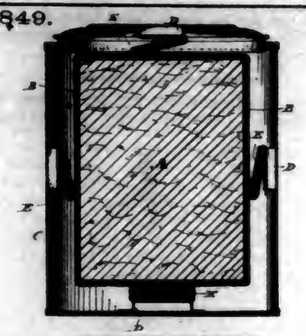
2. The combination, with a steam-cylinder and steam-chest, of spring-pressed rectilinear reciprocating inlet-valves, valve-stems on said inlet-valves, oscillating spindles having toes for engaging recesses of said valve-stems, stuffing-boxes for said stems, pistons on said valve-stems, and guide-casings provided with partitions and air-openings, so as to form air-cushions for the pistons of the inlet-valves, substantially as set forth.

3. The combination, with a steam-cylinder and steam-chest, of steam inlet valves guided in the inlet-ports of the cylinder, valve-stems provided with recesses, oscillating spindles operated by bell-crank connections with the wrist-plate, and toes on said spindles for engaging the recesses of the inlet, substantially as set forth.

477,849. MEANS FOR PACKING FOOD ARTICLES. HENRY SALZER, Baltimore, Md. Filed July 16, 1891. Serial No. 399,760. (No model.)

Claim.—A food-package comprising a germ-proof shell or wrap of non-metallic substance tightly inclosing an article of food, an inclosing metallic can sealed air-tight, and contact-pieces of non-conducting substance separating the inner shell or wrap and the metallic can, substantially as described.

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477,850. ART OF PRESERVING MEAT. HENRY SALZER, Baltimore, Md. Filed Oct. 21, 1891. Serial No. 409,408. (No specimens.)

Claim.—1. The improvement in the art of preserving meat, which consists in surrounding it with a wrapper of plaster-of-paris, sterilizing it in melted animal fat, then applying a coating of absorbent material, then a wrap of pliable material impermeable to air and water, and finally subjecting a second time to a sterilizing heat, substantially as described.

2. In the art of preserving meat, the improvement consisting in immersing a piece of meat surrounded by a plaster shell in heated animal fat, removing it therefrom after thorough sterilization, applying around it while hot an absorbent coating, inclosing in a wrap of metal foil, and finally sterilizing a second time, as set forth.

3. In the art of preserving meat, the improvement consisting in surrounding a piece of meat in a shell composed of fabric and plaster-of-paris, heating in a bath of animal fat, wrapping it in a pliable material impermeable to air and water, and finally subjecting a second time to a sterilizing heat, substantially as described.

4. A food-package comprising a piece of meat inclosed in a plaster shell impregnated with the fat of the meat and having around said plaster shell a coating of absorbent material, and an external wrapper of tin foil, substantially as described.

477,851. RUBBER SHOE. BENNETT A. SAUNDERS, Naugatuck, Conn., assignor to the Goodyear's Metallic Rubber Shoe Company, same place. Filed July 31, 1891. Serial No. 401,274. (No model.)



Claim.—1. As an improved article of manufacture, a rubber shoe having an internal hollow elastic projection formed of the lining depressed from the exterior and sufficiently stiff to stand out from the line of the shoe and having the "outer" bridging said projection, substantially as and for the purposes described.

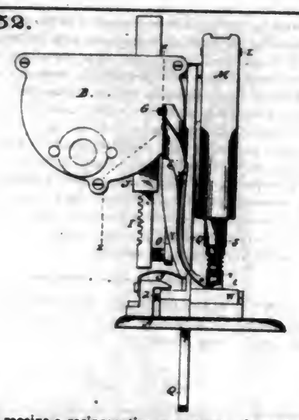
2. As an improved article of manufacture, a rubber shoe having an internal hollow elastic projection formed of the lining depressed from the exterior and bridged by a separate external strip supplemental to the outer, and said outer, substantially as and for the purposes described.

477,852. MACHINE FOR SETTING LACING-STUDS. EDWIN D. WELTON, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Aug. 31, 1891. Serial No. 404,199. (No model.)

Claim.—1. In a machine for setting lacing-studs, a hopper, a conductor leading from said hopper, mechanism in said hopper adapted to deliver studs from the hopper to said conductor, mechanism substantially such as described to impart to the delivery end of the conductor a reciprocating movement, and a finger arranged to reciprocate in a path at right angles to the path of reciprocation of the said lower end of the conductor, the said finger constructed with a transverse recess at its forward end to engage a stud on the said conductor with a setting mechanism, the said finger being adapted to transfer a stud from the said conductor to the said setting mechanism, substantially as and for the purpose described.

2. The combination of a conductor X, adapted to receive a succession of hooked-shaped studs upon one of its edges and present the same with the prongs upward, the said conductor being adapted at its

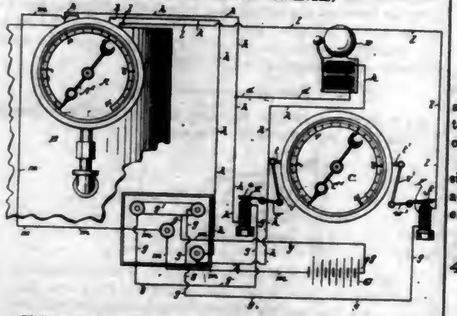
477,852.



delivery end to receive a reciprocating movement, a finger i, arranged to reciprocate in a path at right angles to the path of reciprocation of said conductor and at its forward end constructed to engage a stud on the conductor and between the prongs of the stud, a lever m in connection with said finger, the said lever extending upward above its fulcrum and at a point above its fulcrum provided with a swinging cam s, and a vertically-swinging lever K, provided with a bearing p, adapted to engage the said swinging cam s with setting mechanism, all substantially as and for the purposes described.

3. In a machine for setting lacing-studs, a conductor adapted to receive a succession of lacing studs and deliver them with their prongs upward, the said conductor having a reciprocating movement imparted to its lower or delivery end, and the stationary dog y in rear of said conductor and over the nose of which the conductor passes in its retreat, the said dog being adapted to engage the lowermost studs in such retreat, combined with transferring and setting mechanisms, substantially such as described, and all as and for the purpose specified.

477,858. ELECTRIC TELEMETER. CORNELIUS T. BARRETT, Brooklyn, N. Y., assignor of one-third to Harry W. Douty, Jersey City, N. J. Filed Nov. 5, 1891. Serial No. 410,923. (No model.)



Claim.—1. In combination, an indicator-hand, a ratchet-wheel adapted to move therewith, two oppositely-arranged pawls r r', two arms q q', upon which said pawls are mounted, two levers t t', two links u u', whereby said levers and said pawls are respectively coupled together, and two armatures and two magnets whereby said levers are operated, substantially as described.

2. In an electric alarm for steam-boilers, in combination, a steam-gage, a double set of contact points on the same, mechanism whereby an electrical contact is made between the index-hand of the gage and one set of points as the hand moves in one direction and between the index-hand and the other set of points as the hand moves in the opposite direction, and an indicator electrically connected with the steam-gage, substantially as described.

3. In an electric alarm for steam-boilers, in combination, a steam-gage, an arm mounted on the spindle of the same and arranged to move with the index-hand of the gage, a double set of contact-points on the gage, means whereby as the arm moves in one direction an electrical contact is made with one set of points and as it moves in the opposite direction an electrical contact is made with the other set of points, and an indicator having a hand electrically connected with the arm and contact-points on the gage, whereby the hand on the indicator moves with the hand on the steam-gage, substantially as described.

4. In an electric alarm for steam-boilers, in combination, a steam-gage, an arm mounted on the spindle of the same and arranged to move with the index-hand of the gage, a double series of contact-points on the gage, means whereby as the arm moves in one direction an electrical contact is made with one set of points and as it moves in the opposite direction an electrical contact is made with the other set of points, a recording-dial having a hand electrically connected with the arm and contact-points on the gage, whereby the hand on the indicator moves with the hand on the gage, and an electric bell connected with the steam-gage, substantially as described.

5. In combination, a steam-gage having two series of pins H, K, and L corresponding with the degrees on the dial, and the arm M, provided with the roller N, whereby connection is made with one series of pins and the arm when the arm moves in one direction and with the other series of pins when the arm moves in the other direction and electrically connected with the magnets E and F, the electro-magnet E, electrically connected with the series of pins H K, the electro-magnet F, electrically connected with the series of pins L, the alarm-bell D, electrically connected with the series of pins K and with the magnet E, the indicator C, having the hands C', and means whereby the charging of the electro-magnets E and F moves the hand C', substantially as described.

6. In an electric indicator, the contact-arm M, having the roller N revolubly mounted on the same, provided with the pins o and o' and notches n and n', and the fixed piece N' N^2, having the notches n' n^2, whereby the roller is caught and held when the pins o and o' are turned in position to form a contact, substantially as described.

7. In an electric indicator, in combination, a double series of contact-points, an arm moving laterally over them, a rotatable sleeve on said arm, and contact-points arranged at varying points circumferentially of said sleeve, whereby by the rotation of said sleeve one contact-point thereof will be brought into contact with one series or another contact-point with another series as said arm moves in one direction or the other, substantially as described.

8. In an electric indicator, in combination, a double series of contact-points, an arm moving laterally over them, and mechanism whereby said arm when moving in one direction makes contact with one series and when moving in the opposite direction makes contact with the other series, substantially as described.

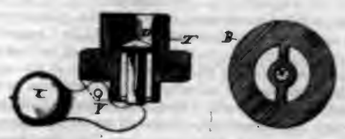
477,854. FOUNTAIN-PEN. CHARLES E. BROWNING, Toledo, Ohio. Filed May 14, 1890. Serial No. 351,747. (No specimens.)



Claim.—1. In a fountain-pen, the combination, with the nozzle, of a feed-plug having flat sides, upper and lower feed-tongues formed integral with the plug, and an air-duct extending throughout the length of the said plug and lower tongue.

2. As an article of manufacture, a feed-plug for fountain-pens, consisting of a single piece of hard rubber having flattened sides, upper and lower feed-tongues formed integral with the plug, and an air-duct extending throughout the length of the said plug and lower tongue.

477,855. STEAM-TRAP. ROBERT M. DIXON, East Orange, N. J., assignor to The Safety Car Heating and Lighting Company, of New York. Filed Sept. 9, 1891. Serial No. 405,302. (No model.)

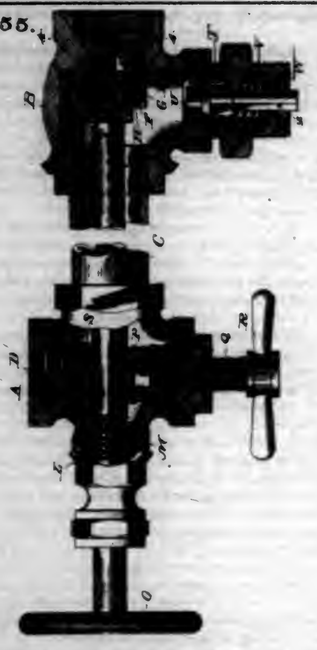


Claim.—1. A steam-trap having a valve adapted to automatically operate by expansion and contraction under changes of temperature and an auxiliary valve adapted to close under pressure of steam and to open when pressure is relieved, substantially as set forth.

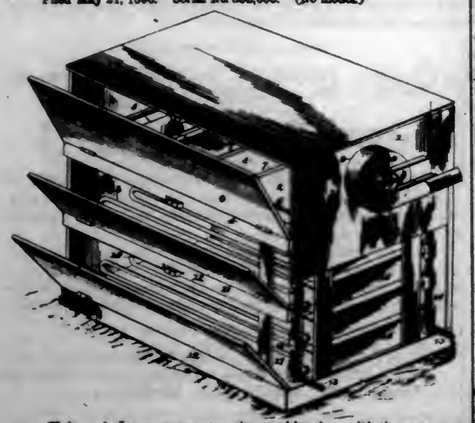
2. A steam-trap having a horizontally-opening valve adapted to be operated by expansion and contraction under changes of temperature and a vertically-opening auxiliary valve adapted to close under pressure of steam and to open when pressure is relieved, substantially as set forth.

3. In a trap, the combination, with a movable part and shell, of a flexible plate tightly fitted in the shell and a screw suitably carried therein above the plate to grip the movable part through the plate, substantially as set forth.

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477,856. FRUIT-EVAPORATOR. JOSEPH W. DOTY, Lockport, N. Y. Filed May 21, 1890. Serial No. 352,633. (No model.)



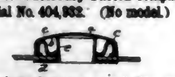
Claim.—1. In an evaporator, the combination, with the outer casing, of a vertical series of horizontally-disposed hollow headers spaced apart, each subdivided by a horizontal partition into non-communicating compartments, a supply-pipe connected to each of the upper compartments of the headers, an exhaust-pipe connected to each of the lower compartments, a series of horizontal coils laterally disposed and having their upper terminals connected to the upper compartment of their respective header and their lower terminals to the opposite compartment, and a series of pans mounted upon the coils between their branches, substantially as specified.

2. In an evaporator, the combination, with a series of horizontally-disposed coils connected with a steam-supply, of an evaporating-pan mounted within and supported by the series of coils and comprising a perforated bottom and opposite metallic L-shaped flanges projecting above and below the bottom and adapted to rest upon the coils, substantially as specified.

3. The combination, with the case of an evaporator having an opening at one end, of a steam-supply and a steam-exhaust pipe vertically disposed and arranged opposite each other at the sides of the opening and connected with a boiler a series of horizontal headers spaced apart and subdivided into non-communicating compartments, pipes connecting the upper compartment with the supply-pipe, similar pipes connecting the lower compartments with the exhaust-pipe, and series of U-shaped coils having their upper terminals connected with the upper compartments and their lower terminals with the lower compartment of their respective headers, substantially as specified.

4. In a drier, the combination, with a casing provided with a horizontal partition dividing the casing into an upper and lower drying-compartment, and below said partition provided at one end with an opening, of a series of heating-coils located in the lower compartment opposite the opening and terminating at their opposite ends vertically below an opening formed in the partition, and an escape located in the end wall of the upper compartment above the opening in the lower compartment and at the opposite side of the casing, at which the partition has its opening, substantially as specified.

477,857. GLOVE-FASTENER. CHARLES H. GOODWIN, Waterbury, Conn., assignor to the Waterbury Button Company, same place. Filed Sept. 7, 1891. Serial No. 404,932. (No model.)



Claim.—1. In a glove-fastener consisting of a socket and stud member, the socket member composed of a cap having a central opening in its under side, the sides of the cap around the opening diverging so as to produce substantially a conical surface around the opening into the cap, combined with a disk having a central opening through it of smaller diameter than the opening in the cap, with a flange around the said opening in the disk, the flange diverging from the disk so as to gradually increase its external diameter from the disk toward the edge of the flange, the larger external diameter of the flange corresponding substantially to the internal diameter of the opening in the cap, substantially as described, and whereby the cap set over the flange of the disk and a pressure applied thereto the conical portion of the cap is adapted to contract around the smaller diameter of the flange or tubular portion of the collar and thereby secure the two parts together and to the glove.

2. A socket member of a glove-fastener, consisting of a cap composed of a collet *b* of conical shape, having an opening through its smaller diameter and with the part *a* closed thereon so as to cover the larger diameter, combined with a collar *d*, having a central opening of less diameter than the diameter of the opening in the cap and with a flange around said opening forming a tubular projection *e*, the projection expanding in diameter from the collar, its larger diameter corresponding substantially to the internal diameter of the collet, substantially as described, the said cap and collar being adapted to be set together, and so that under pressure the conical portion of the cap will be deflected or turned inward so as to contract around the smaller diameter of the projection on the collar.

477,858. SWING. NATHAN B. GREGORY, Joplin, Mo. Filed Nov. 24, 1891. Serial No. 412,907. (No model.)

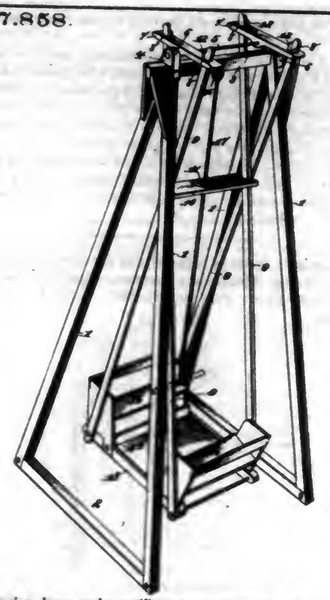


Claim.—1. In a swing, the combination, with the cross-beam and supports for the same and the bearings thereon, of the rock-shaft journaled in the bearings, the rocking heads mounted on the shaft, the hanging bars depending from the ends of the heads, the fulcrum-bar connecting the hanging bars, the car supported by the hanging bars, and the pivoted operating-lever passed through the fulcrum-bar and loosely connected to the cross-beam, substantially as specified.

2. The combination, with the opposite standards, the cross-beam and bearings mounted thereon, of the rock-shaft journaled in the bearings, the cross-heads mounted on the shaft and provided with mortises at their ends, the hanging bars let into the mortises and crossing each other below the beam, the wedge-shaped keys driven into the mortises to secure the bars, the fulcrum-bar bolted to the hanging bars at their points of intersection and provided with an opening, a car supported by the hanging bars, and a lever pivoted to the cross-beam depending through an opening formed in the fulcrum-bar and terminating above the carriage, substantially as specified.

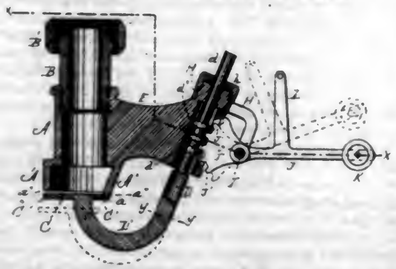
3. The combination, with the opposite standards, the cross-beam and bearings mounted thereon, of the rock-shaft journaled in the bearings, the cross-heads mounted on the shaft and provided with mortises at their ends, the hanging bars let into the mortises and crossing each other below the beam, the wedge-shaped keys driven into the mortises to secure the bars, the fulcrum-bar bolted to the hanging bars at their points of intersection and provided with an opening, a car supported

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by the hanging bars, and a resilient lever pivoted to the cross-beam depending through an opening formed in the fulcrum-bar and terminating above the carriage, substantially as specified.

477,859. SPRAYING DEVICE FOR COOLING BEER, &c. CLARENCE C. HANFORD, Medford, Mass., assignor to Herbert C. Hanford, same place. Filed Apr. 7, 1892. Serial No. 428,237. (No model.)



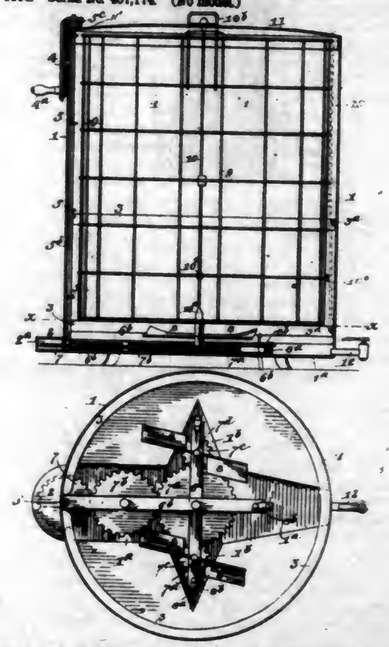
Claim.—1. A spraying device comprising a discharge-pipe or delivery-tube and a valve placed at the end thereof and provided with a valve-stem set at an angle with the delivery-tube and adapted to be moved in the line of the same angle, whereby the movement of the valve from and toward its seat is at an angle with the line of direction of said delivery-tube, substantially as described.

2. The herein-described improved spraying device, comprising the delivery-tube A, the end of whose lower portion A' is formed into the semicircular outer edge *a'* and the straight or diametral inner edge *a*, and the valve C; whose outer edge C' is curved to correspond with the outer lower edge of the delivery-tube and whose inner edge C is straight or diametral to correspond with the inner lower edge of the delivery-tube, said valve being adapted to be moved in a line at an angle with the line of direction of the delivery-tube, substantially as set forth.

3. The herein-described improved spraying device, comprising the delivery-tube A, the end of whose lower portion A' is formed into the raised semicircular outer edge *a'*, and the straight or diametral inner edge *a*, extending to a lower point than said outer edge and forming a seat for the corresponding edge of the valve, and the valve C, whose outer edge C' is curved to correspond with the outer lower edge of the delivery-tube and whose inner edge C is straight or diametral to correspond with the inner lower edge or valve-seat of the delivery-tube, said valve being adapted to be moved in a line at an angle with the line of direction of the delivery-tube, substantially as described.

4. The herein-described improved spraying device, consisting, essentially, of the delivery-tube A, the integral web E, the valve C, provided with the diagonally-placed valve-stem D D' *d*, supported by and moving in said web, said portion *d* being provided with the disks or rack-teeth *d'*, the bracket H, supported by said web, and the lever J, whose short arm J' is provided with segment-gear for engaging said rack-teeth, substantially as set forth.

477,860. DISH-CLEANER. SAMUEL W. HARMAN and JOHN B. POLK, Rogers, Ark.; said Polk assignor to said Harman. Filed Sept. 28, 1891. Serial No. 407,174. (No model.)



Claim.—1. In a washing-machine, the combination, with a vessel having a depressed bottom, of a frame-work adapted to be removably secured within the depressions therein, the said frame-work carrying water-lifting blades and actuating gear-wheels therefor, a recessed projection upon one side of the base of the said vessel, the recess therein communicating with the depression in the bottom of the said vessel and adapted to partially contain one of the said actuating-wheels, a vertical shaft removably mounted within the said vessel and to one side thereof, having a beveled gear-wheel upon its upper end and its lower end adapted to drive the last-named actuating-wheel, and a beveled gear-wheel mounted upon the outside of the said vessel and gearing with the wheel upon the said vertical shaft, substantially as described.

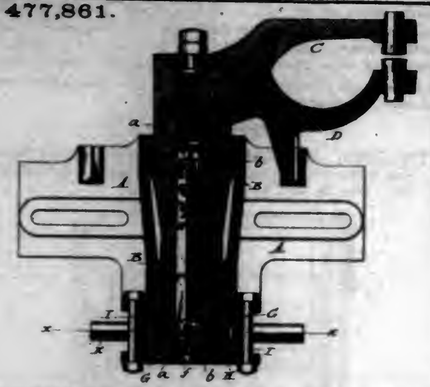
2. In a washing-machine, the combination, with a vessel having annular ledges upon its sides and having water-lifting mechanism in the base thereof, of a crate adapted to be contained in the said vessel and having spring-actuated arms, having shoes upon their lower ends, pivoted thereto, substantially as described.

477,861. SAW-GUIDE. GEORGE M. HEISLEY, Milwaukee, Wis., assignor of one-half to the Edward P. Allis Company, same place. Filed Mar. 31, 1892. Serial No. 426,757. (No model.)

Claim.—1. In a saw-guide, the combination, with the base frame or plate having a cylinder B, of a pair of saw-guide arms C and D, journaled in the cylinder, and means for expanding and separating those portions of said arms within the cylinder, whereby compensation may be made for wear of the arms or the cylinder, all substantially as shown and described.

2. In a saw-guide, the combination, with the base frame or plate A, having a cylinder B, of the saw-guide arm C, provided with a shank or stem *a*, a guide-arm D, provided with a stem or shank *b*, which is seated within the stem or shank *a* and is provided with a longitudinal groove *c*, a block or bar E, mounted within the slot or groove *c* and provided with an incline or inclines *d*, a screw F, swiveled in the shank or stem *b*, and blocks or nuts *e*, through which the screw passes, bear-

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ing at opposite faces against the bottom wall of the slot and the inclined faces of the bar.

3. In a saw-guide, the combination, with a base frame or plate, of a pair of guide-arms journaled therein and one of which is threaded externally, and a nut mounted upon the ends of the guide-arms and prevented from moving longitudinally with reference thereto, said nut being made in two parts or sections adjustable one with reference to the other, whereby compensation may be made for the wear of the threads upon the arms and in the nut.

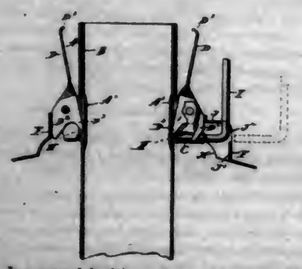
4. In combination with base frame or plate A, having a bearing or cylinder B, the guide-arms C D, journaled therein and one of which is threaded externally, and a nut G, mounted thereon and made in two sections *g* and A, one of said sections being provided with a threaded collar to enter or engage a threaded socket formed in the other section.

5. In a saw-guide, the combination, with a frame or plate A, of the guide-arms C D, journaled therein and one of which is threaded externally, a nut G, applied to the end of the bearing for the arms and engaging the thread on the latter, a cap-plate H, bearing upon the outer face of the nut, and bolts I, connecting the cap-plate to the bed or frame.

6. In combination with bed or frame A, the guide-arms C D, journaled therein and one of which is threaded externally, the two-part nut and worm-wheel mounted upon the ends of the arms, the worm engaging the said worm-wheel, and the shaft detachably connected with the worm-wheel.

7. In combination with bed or frame A, provided with cylinder B and bearings J J, the guide-arms C D, mounted in the cylinder B and one of which is threaded externally, the two-part nut and worm-wheel G, mounted upon the ends of the arms between the end of the cylinder and a cap-plate H, bolted to the latter, a shaft K, mounted in the bearings J J, and worm-wheel L, feathered to the shaft and embraced by the bearings J J, all substantially as shown and described.

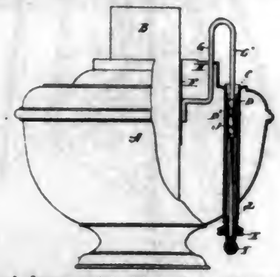
477,862. WICK-RAISER FOR CENTRAL-DRAFT LAMPS. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Oct. 19, 1891. Serial No. 409,206. (No model.)



Claim.—1. In a central-draft lamp, the combination, with a wick-carrier adapted to be applied to the draft-tube of a lamp and constructed with an outwardly-projecting horizontal radial socket forming a long bearing, of a draw-bar having its lower end constructed to form a foot shaped to enter the said socket, and a closed guide forming a vertical bearing for the said bar, secured to the top of the lamp-fount at the inner edge thereof and furnished at its upper outer corner with an opening facing upwardly and outwardly, whereby the straight portion of the bar is permitted to play up and down in the guide and its foot to be moved laterally thereto, substantially as set forth.

2. In a central-draft lamp, the combination, with a wick-carrier comprising a band encircling the draft-tube, a horizontal radial socket located at the lower end of the said band and forming a long bearing, and means carried by the band for securing the wick thereto, of a draw-bar having a horizontal inwardly-turned foot at its lower end to enter the said socket and a closed guide secured to the top of the lamp-fount at the inner edge thereof and shaped to form a vertical bearing for the said bar and constructed with an opening located at its upper outer corner and facing both upwardly and outwardly, substantially as set forth.

477,868. WICK-RAISER FOR CENTRAL-DRAFT LAMPS. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Nov. 30, 1891. Serial No. 413,574. (No model.)



Claim.—1. In a central-draft lamp, the combination, with the fount and draft-tube thereof, of a bearing-tube mounted in the fount to one side of the said draft-tube and projecting at its upper and lower ends through the fount, a long rotatable sleeve having an internal thread located within the said tube, in which it is held against longitudinal movement, a centrally-perforated operating-nut rigidly connected with the lower end of the sleeve, a wick-band encircling the draft-tube, a bowed adjusting-bar having its short leg attached to the said band and its long leg passed downward through the said sleeve, through the centrally-perforated nut connected with the lower end thereof, and provided with a coarse thread taking into the internal thread of the sleeve, and a removable retaining-button attached to the projecting lower end of the long leg of the said bar, the threads of the sleeve and bar being constructed so coarse in pitch as to permit the bar to be vertically reciprocated manually by direct or plunging movement from its upper and its lower end, substantially as set forth.

2. In a central-draft lamp, the combination, with the fount and draft-tube thereof, of a bearing-tube mounted in the fount to one side of the draft-tube and projecting at its open upper and lower ends from the fount, a long internally-screw-threaded rotary sleeve located within the said tube and constructed at its lower end with a neck which projects from the lower end of the bearing-tube, a centrally-perforated nut attached to the said neck at the lower end of the sleeve, a wick-band encircling the draft-tube, a bowed adjusting-bar having a short leg and a long leg, the former being attached to the said band and the latter being passed downward through the said sleeve projecting through the centrally-perforated nut at the lower end thereof and provided with a coarsely pitched double thread co-operating with the internal thread of the sleeve, and a retaining-button removably attached to the said projecting lower end of the long leg of the bar, the threads of the sleeve and bar being so coarsely pitched as to permit the same to be operated manually by direct or plunging movement from its upper and its lower end, substantially as described.

477,864. LAMP-FOUNT FOR CENTRAL-DRAFT LAMPS. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Nov. 30, 1891. Serial No. 413,575. (No model.)

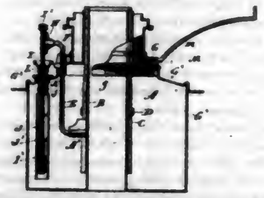


Claim.—1. A central-draft-lamp fount constructed with a removable ring forming the inner portion of its top and secured to the outer portion thereof, the meeting edge of one of the said parts being slotted for the bar of the wick-adjuster to play through, and the said ring being independent of the lamp-burner and the open end of the slot being closed when the ring is in place, substantially as described.

2. A central-draft-lamp fount constructed with a removable ring forming the inner portion of its top and secured to the outer portion thereof, the outer edge of the ring being slotted and the inner edge of the outer portion of the top being provided with a stop located under one edge of the slot when the ring is in place for engagement by the bar of the wick-adjuster, substantially as set forth.

3. A central-draft-lamp fount constructed with a removable ring forming the inner portion of its top and secured to the outer portion thereof, the said ring and outer portion of the top having their meeting edges provided with the respective members of a bayonet-lock, and the meeting edge of one of the said parts being slotted for the bar of the wick-adjuster to play through and the open end of the slot being closed when the ring which is independent of the lamp-burner is in place, substantially as described.

477,865. CENTRAL-DRAFT LAMP. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Jan. 4, 1892. Serial No. 416,962. (No model.)



Claim.—1. In a wick-adjuster for central-draft lamps, the combination, with a wick-band, of a draw bar attached thereto, a stem connected at its upper end with the upper end of the said bar and provided at its lower end with coarse screw-threads, a tube having a centrally-perforated knurled operating-nut located at its upper end and constructed with internal screw-threads corresponding in pitch to the threads of the stem aforesaid, and a rotatable suspension-sleeve mounted on the tube below the said nut and adapted to be removably secured to the lamp-fount in which it suspends the said tube, substantially as described.

2. In a central-draft lamp, the combination, with the fount thereof, of a removable ring forming the inner portion of its top and having an open slot formed in its outer edge, a central draft-tube, a wick-band encircling the same, a draw-bar attached to the said band and at its lower end and passing upward through the slot in the said ring, a stem connected at its upper end with the upper end of the said bar and provided at its lower end with coarse screw-threads, a tube having a centrally-perforated knurled operating-nut located at its upper end and constructed with internal screw-threads corresponding in pitch to the threads of the stem aforesaid, and a rotatable suspension-sleeve mounted on the tube below the said operating-nut and adapted to be removably secured to the lamp-fount in which it suspends the said tube, substantially as described.

3. In a central-draft lamp, the combination, with the fount thereof having a removable ring forming the inner portion of its top and made with an open slot formed in its outer edge and constructed to be secured in place by a rotary movement, of a draft-tube, a wick-band encircling the same, a draw-bar attached to the said band and passing through the said slot, a stem separably connected at its upper end with the upper end of said bar and provided at its lower end with coarse screw-threads, a tube having a centrally-perforated knurled operating-nut located at its upper end and constructed with internal screw-threads corresponding in pitch to the stem aforesaid, and a rotatable suspension-sleeve mounted on the tube below the said nut and adapted to be removably secured to the said lamp-fount in which it suspends the said tube, substantially as described.

4. In a wick-adjusting device for central-draft lamps, the combination, with a wick-holder, of a draw-bar attached thereto, a stem suspended in the lamp-fount parallel with the said bar and having its upper end threaded, a union or coupler having a lateral opening to receive the upper end of the draw-bar and a vertical opening to receive the threaded upper end of the stem, a removable nut for the projecting upper end of the stem, whereby the same is secured to the coupler and hence to the draw-bar, and means applied to the stem for raising and lowering it and hence the draw-bar, substantially as set forth, the stem being removable from the union by taking off the said nut.

5. In a central-draft lamp, the combination, with a fount thereof, having a removable ring forming the inner portion of its top and constructed with an open slot formed in its outer edge, of a central draft-tube, a wick-band encircling the same, a draw-bar attached at its lower end to the said band and passing upward through the said slot, and a shade-holder provided in its outer edge with a grooved boss forming a long vertical bearing for the said bar, substantially as described.

477,866. TELEPHONY. ROBERT HORN-JONES, Birtenhead, England. Filed Sept. 17, 1891. Serial No. 405,960. (No model.)



Claim.—1. In an apparatus for magnifying minute vibrations or impulses of the kind described, the combination of an electric conductor moving in a constant direction, a magnetic field varying as the vibrations or impulses to be magnified and opposing to the movement of said conductor correspondingly-varying amounts of electro-magnetic retardation, a body capable of vibrating, as described, and means whereby there is applied to said vibratory body successive portions of the motive power of the conductor varying in accordance with the power absorbed in overcoming said varying amounts of retardation.

2. In an apparatus for magnifying minute vibrations or impulses of the kind described, the combination of the transforming device, whereby the vibrations to be magnified are transformed into a corresponding series of electrical impulses, an electro-magnet capable of producing a magnetic field varying in accordance with such impulses, an electric conductor passing through the magnetic field and driven in a constant direction by an extraneous force, a vibratory body, as described, conveniently mounted with respect to said magnet and conductor, and means whereby the said body is vibrated in accordance with the varying amounts of power expended by the moving conductor in overcoming the varying retarding force opposed to it by the said magnetic field, substantially as described.

3. In an apparatus of the kind described, the combination, with an electro-magnet having a magnetic field varying in accordance with the electrical impulses passing round its core, of a vibratory diaphragm and an electric conductor moving through the magnetic field in a constant direction under the influence of an extraneous force and adapted to impart to the diaphragm a series of pulls or pushes varying in amount as the varying amounts of retarding force opposed to the movement of the conductor by the said varying magnetic field, substantially as described.

4. In an apparatus of the kind described, the combination, with an electro-magnet having a magnetic field varying in accordance with the electrical impulses passing round its core, of a device creating a second but constant magnetic field, a vibratory diaphragm, and an electric conductor moving in a constant direction through both magnetic fields under the influence of an extraneous force and normally exerting a constant pull or push on said diaphragm by reason of the retarding force opposed to the conductor by the said second magnetic field, whereby the variations in the first magnetic field produce corresponding variations in the amount of said pull or push and cause the diaphragm to be vibrated, substantially as described.

5. In an apparatus of the kind described, the combination of an electric conductor moving in a constant direction and exerting a constant but slight push or pull on a diaphragm, tending to distort the same, and a magnetic field varying as the vibrations or impulses to be magnified and opposing to said conductor correspondingly-varying amounts of retarding force, substantially as and for the purpose described.

6. In an apparatus of the kind described, the combination, with an electro-magnet having its magnetic field varying as the vibrations or impulses to be magnified, of an electric conductor moving in a constant direction through said field, a support for said conductor in proximity to the magnet, and a vibratory diaphragm connected to and movable with said magnet or support, substantially as described.

7. In an apparatus of the kind described, the combination, with an electro-magnet having a magnetic field varying as described, of an electric conductor moving through said field in a constant direction, a vibratory diaphragm, and a bracket mounted upon said diaphragm and serving as a support for said conductor, substantially as described.

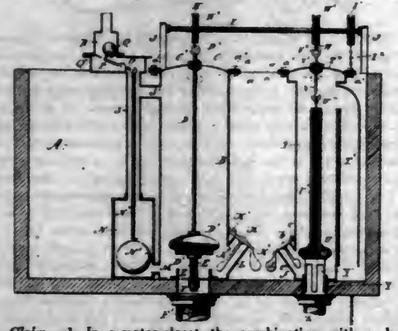
8. In an apparatus of the kind described, the combination of an electro-magnet having a magnetic field, varying as described, of an electric conductor moving through said field in a constant direction and a vibratory diaphragm movable with said magnet, substantially as described.

9. In an apparatus of the kind described, the combination of the electro-magnet Q, having a varying magnetic field, as described, the disk R, of electric conducting material, rotating between the magnet-poles, the bracket r^4, supporting the disk, and the vibratory diaphragm L, supporting the bracket, substantially as described.

10. The combination of the electro-magnet Q, metallic disk R, rotating between the poles thereof, diaphragm L, bracket r^4, mounted on diaphragm and supporting disk R, band-wheels r^7 r^7, one on each side of the disk and revolving therewith, driving-bands r^8, and driving-wheels r^9, substantially as described.

11. The combination of the electro-magnet Q, metallic disk R, rotating between the poles thereof, diaphragm L, supporting the magnet, and driving mechanism for rotating the disk in a constant direction, substantially as described.

477,867. WATER CLOSET. ROBERT MORGAN and JOHN MENKINS, New Haven, Conn. Filed Nov. 3, 1891. Serial No. 410,570. (No model.)



Claim.—1. In a water-closet, the combination, with a double-trapped siphon-bowl, of a tank located close to the same, a normally-empty exhaust-chamber located in the said tank, connection between the said chamber and the closed air-space of the bowl, a normally-open outlet-valve between the said chamber and the said connection, and a normally-closed inlet-valve between the tank and the chamber, the said valves being operated reversely, means for arresting the exhaust action of the said chamber, and independent water-discharge mechanism located in the tank and connected with the flushing-rim of the bowl, substantially as described, and whereby the contents of the bowl are expelled by the action of the said chamber and the bowl flushed and refilled by the action of the said independent water-discharge mechanism.

2. In a water-closet, the combination, with a double-trapped siphon-bowl, of a tank located close to the bowl, a normally-empty exhaust-chamber, and a normally-empty siphon located in the tank, normally open outlet-valves respectively leading from the said chamber and siphon to the closed air-space and flushing-rim of the bowl, normally-closed inlet-valves leading from the tank to the said chamber and the long leg of the siphon, a float and an air-valve co-operating with the said exhaust-chamber, and means for operating the said outlet and inlet valves, substantially as described, and whereby the outlet-valves are closed and the inlet-valves opened for filling the said chamber and siphon and then reversed to discharge them.

3. In a water-closet, the combination, with a double-trapped siphon-bowl, of a tank located close to the bowl, a normally-empty exhaust-chamber and a normally-empty siphon located in the tank, a float and an air-valve co-operating with the exhaust-chamber, normally-open outlet-valves located within the said chamber and siphon and leading therefrom to the closed air-space and flushing-rim of the bowl, normally-closed inlet-valves leading from the tank into the said chamber and the long leg of the siphon and constructed and arranged to be automatically opened by the outlet-valves when the same are closed, and means for operating the said outlet and inlet valves, substantially as described, whereby the outlet-valves are closed and the inlet-valves opened for filling the said chamber and siphon from the tank and then reversed to discharge them.

4. In a water-closet, the combination, with a double-trapped siphon-bowl, of a seat normally supported just above the same, a tank located close to the bowl and seat, a normally-empty exhaust-chamber and a normally-empty siphon located in the tank, a float-chamber communicating with the upper and lower ends of the exhaust-chamber, a float located in the float-chamber, an air-valve controlling the outlet and inlet of air from and into the float-chamber and hence the exhaust-chamber, connection between the float and air-valve, normally-open outlet-valves located within the said exhaust-chamber and siphon and respectively leading therefrom to the closed air-space and flushing-rim of the bowl, normally-closed inlet-valves leading from the tank into the lower ends of the exhaust-chamber and the long leg of the siphon, and connections between the said outlet and inlet valves and the seat, substantially as described, and whereby the outlet-valves are closed and the inlet-valves opened when the seat is depressed and reversed when it is allowed to return to its normal position, substantially as described.

5. In a water-closet, the combination, with a double-trapped siphon-bowl, of a tank located close to the bowl, a normally-empty exhaust-chamber and a normally-empty siphon located in the tank, a float and an air-valve co-operating with the exhaust-chamber, normally-closed inlet-valves leading from the tank into the lower ends of the exhaust-chamber and the long leg of the siphon, normally-open outlet-valves located in the lower end of the exhaust-chamber and in the lower end of the long leg of the siphon and respectively leading to the closed air-space and the flushing-rim of the bowl, valve-stems connected with the outlet-valves and leading up out of the said exhaust-chamber and siphon, which are thereto provided with movable air-tight tops, and operating connections attached to the projecting upper ends of the said stems, substantially as described, and whereby the outlet-valves are closed and the inlet-valves opened for filling the chamber and siphon from the tank and then reversed for discharging them.

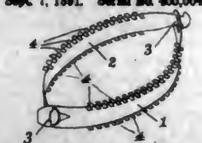
6. In a water-closet, the combination, with a double-trapped siphon-bowl, of a seat normally supported just above the same, a tank located close to the bowl and seat, a normally-empty exhaust-chamber and a normally-empty siphon located in the tank, normally-open outlet-valves respectively leading from the said chamber and siphon to the closed air-space and flushing-rim of the bowl, normally-closed inlet-valves leading from the tank to the said chamber and siphon, a float and an air-valve co-operating with the said exhaust-chamber, and connections between the seat and outlet and inlet valves, substantially as described, and whereby the outlet-valves are closed and the inlet-valves opened when the seat is depressed and reversed when it is allowed to return to its normal position.

7. In a water-closet, the combination, with a bowl, of a tank, a normally-empty chamber located in the tank, connection between the said chamber and the bowl, a normally-open outlet-valve located between the said chamber and connection, a normally-closed inlet-valve between the said chamber and the tank, one of the said valves having an arm which co-operates with the other valve in opening it, means for operating the outlet-valve from without the tank, a float-chamber connected with the upper and lower ends of the said chamber, a float located in the said float-chamber, and an air-valve connected with the said float and controlling the egress of air from and into the said float-chamber, substantially as set forth.

8. In a water-closet tank, the combination, with a siphon located therein, of an outlet-valve located within the long leg of said siphon and leading therefrom, an inlet-valve leading from the tank into the said leg of the siphon, a hollow stem for the outlet-valve which has an open passage through it, and means for raising and lowering the said stem, substantially as described, the said hollow stem forming an outlet for air and an overflow-outlet for water.

9. In a water-closet, the combination, with a bowl, of a seat normally supported above the same, a tank, a normally-empty siphon located in the tank, a normally-open outlet-valve leading out of the tank to the bowl, a normally-closed inlet-valve leading into the siphon from the tank, an air-escape for the siphon, and connection between the said valves and the seat, substantially as described, and whereby the valves are reversed in position when the seat is depressed and returned to their normal positions again when it is allowed to resume its normal position, substantially as described.

477,868. HAT-PACKING RING. SAMUEL T. NEWMAN, Danbury, Conn. Filed Sept. 7, 1891. Serial No. 405,004. (No model.)



Claim.—1. A hat-packing ring and stay composed of sections joined together by flexible connections, substantially as shown.

2. A hat-packing ring and stay composed of sections joined together and flexible in a direction transverse to the horizontal plane of the ring, substantially as set forth.

3. A hat-ring whose upper and lower edges are cut at regular intervals, the divisions thus formed being alternately bent in opposite directions to form a ledge, substantially as set forth.

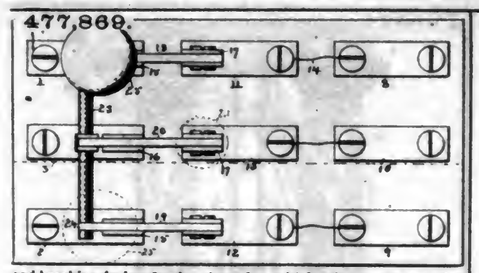
4. A hat packing ring having ledges formed by cutting and bending in reverse directions, said ledges being faced in their bent condition with any suitable material, substantially as set forth.

477,869. ELECTRIC SWITCH. HERBERT M. PILKINGTON and ROGER S. WHITE, Brooklyn, N. Y. Filed Oct. 8, 1891. Serial No. 408,187. (No model.)

Claim.—1. The combination, in a switch, of several switch-blades or members movable both together and independently and having a common operating-handle and separate handles for operating said members separately, substantially as described.

2. A switch having positive, negative, and neutral circuit making and breaking devices for the wires of a multiple-wire or compensating system and means for moving all the positive and negative devices simultaneously, the devices being also independently movable, whereby by operating the handle all the wires are simultaneously disconnected and by moving the other devices separately one or the other side of the system is thrown out of operation, substantially as described.

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3. A switch having positive, negative, and neutral circuit making and breaking devices for the wires of a three-wire or compensating system and means for moving all the devices simultaneously, the positive and negative devices being also independently movable, whereby by operating the handle all the wires are simultaneously disconnected and by moving the other devices separately one or the other side of the system is thrown out of operation, substantially as described.

4. A switch having positive, negative, and neutral circuit making and breaking devices for the wires of a three-wire or compensating system and means for moving all the devices simultaneously, the positive and negative devices being also independently movable, whereby by operating the handle all the wires are simultaneously disconnected and by moving the other devices separately one or the other side of the system is thrown out of operation and fuses in circuit with the switch, substantially as described.

5. The combination, in a switch, of a positive and negative switch-blade, a neutral blade, and a handle and cross-rod on or connected to the latter, the positive and negative blades having parts engaging with the rod, so as to be moved thereby, said positive and negative blades being also separately movable, substantially as described.

477,870. ANTI-INDUCTIVE DEVICE FOR TELEPHONES. SIMON POLLAK, Prague, Austria-Hungary, assignor to Emil Friedheim, New York, N. Y. Filed Nov. 11, 1891. Serial No. 411,549. (No model.) Patented in Germany Nov. 12, 1890, No. 53,513.



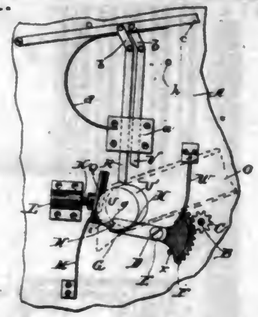
Claim.—1. The combination, with a telephone-transmitter on a line-circuit provided with an induction-coil, of a telephone-receiver adapted to receive and be operated by an inductive current, and an induction-coil on said telephone-receiver circuit adapted and arranged to receive an induction-current from the coil on the line-circuit and transmit the same to the receiver, one of said coils being adjustable as to its distance from the other, substantially as described, and for the purposes set forth.

2. The combination, with a telephone-receiver and its coil S' on an induction-circuit connected with said receiver, a telephone-transmitter on a line-circuit, and a coil S on said line-circuit, both said coils being movable and adapted and arranged to be brought into and out of alignment with each other to any desired degree, substantially as described, and for the purposes set forth.

477,871. COIN-CONTROLLED MECHANISM. GUY H. POWELL and ALFRED B. CHANDLER, Chicago, Ill., assignors of one-third to C. T. Chandler, Jr., same place. Filed Mar. 11, 1892. Serial No. 424,508. (No model.)

Claim.—1. In a coin-actuated mechanism having a latch for locking such mechanism, the combination of a plunger for disengaging said latch through the medium of one coin and a second plunger for operating the mechanism through the medium of a second coin, substantially as set forth.

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2. In a coin-actuated mechanism, the combination of a lever, a latch for locking said lever, a plunger for disengaging said latch through the medium of one coin, and a plunger for operating or oscillating said lever through the medium of a second coin, substantially as set forth.

3. In a coin-actuated mechanism having a latch for locking it against movement, the combination of means for holding the coin against said latch, means for disengaging said latch through the medium of said coin, means for holding a second coin, and means for operating the mechanism through the medium of said second coin, substantially as set forth.

4. In a coin-actuated mechanism having a latch for locking it against movement, the combination of a lever, means for lodging a coin upon said lever, means for lodging a coin against said latch, and plungers for operating upon said coins successively, substantially as set forth.

5. In a coin-actuated mechanism, the combination of the lever D, having a shoulder N, means for lodging a coin upon said shoulder, a latch for locking said lever, having a shoulder Q, means for lodging a coin against said shoulder Q, a second lever, and plungers connected with said second lever and being adapted to impinge said coins successively, substantially as set forth.

6. In a coin-actuated mechanism, the combination, with the shaft B, having a pinion C, of a toothed lever engaging said pinion, said lever having a shoulder N, adapted to support a coin, a latch for locking said lever, having a shoulder Q, adapted to support a second coin, and plungers having their ends arranged at different distances from said coins and adapted to impinge the latter successively, substantially as set forth.

7. In a coin-actuated mechanism having a latch for locking it against movement, the combination of means for supporting a number of coins and means for disengaging said latch through the medium of one and operating the mechanism through the medium of another of said coins, substantially as set forth.

8. In a coin-actuated mechanism having a latch for locking it against movement, the combination of a number of coin-chutes and means for disengaging said latch through the medium of a coin in one of said chutes and operating the mechanism through the medium of a coin in another of said chutes, substantially as set forth.

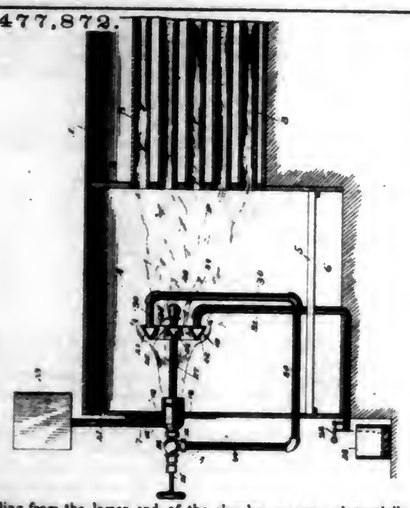
9. In a coin-actuated mechanism having a latch for locking it against movement, the combination of a coin-chute adapted to lodge a coin against said latch, a lever, a second coin-chute adapted to lodge a coin against said lever, and means for actuating said latch and lever through the medium of such coins, respectively, substantially as set forth.

10. In a coin-actuated mechanism, the combination of a lever having a shoulder, a latch adapted to engage said lever, having a flange or shoulder Q, a coin-chute having a stop at one end and an opening through its bottom for the passage of a coin, arranged over the shoulder on said lever, a second coin-chute adapted to lodge a coin against said shoulder or flange Q, the lip or projection P, extending between said second chute and latch, and means for applying pressure to coins while lodged against said lever and latch, respectively, substantially as set forth.

477,872. HYDROCARBON-OIL VAPORIZER AND BURNER. HENRY P. ROBERTS, Jamestown, N. Y. Filed May 17, 1889. Renewed Dec. 5, 1891. Serial No. 414,191. (No model.)

Claim.—1. The combination, with the fire-box of a boiler, of a mixing-chamber and burner mounted in the end wall thereof, a retort having a continuous circular passage, a central concave cap, and a transverse chamber communicating with the circular passage, mounted in the box in line with the chamber, a supply-pipe communicating with the cap, a vapor-pipe communicating with the circular passage and with a valve-chamber mounted on the mixing-chamber, and a tar-pipe

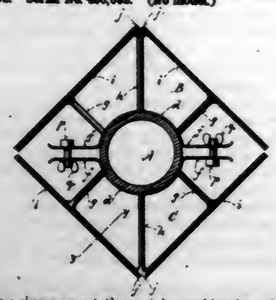
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leading from the lower end of the circular passage, substantially as specified.

2. The combination, with the fire-box 4, having the door 7, perforated at 17 and 18, of a mixing-chamber 8, mounted in the perforation 17 and having the open end 9, the perforated conical end 11, the intermediate perforated diaphragm 10, and terminating in the valve-seat portion 13, exteriorly screw-threaded, as at 12, the valve-chamber 14, mounted on the threads and carrying valve-stem 15 and valve 16, the retort 19, mounted in line with the chamber 8 within the boiler and having the annular passage 22, cap 23, intermediate space 34, and cap and passage connecting-arms 24, and having the central tube 25 and coupling 26, the supply-pipe 27, having the cut-off 28 and reservoir 29, and the vapor-pipe 30, leading from the passage 22 to the valve-chamber 14, and the tar-pipe 31, leading from the lower end of the passage and terminating in the valve 32 and adapted to discharge tar into the receptacle 33, substantially as specified.

477,873. STREET-SIGN. ENOCH J. SHAW, Boston, Mass. Filed Feb. 5, 1892. Serial No. 420,692. (No model.)



Claim.—In a sign-support, the post, in combination with the clamp members B C, having the arc-shaped straps *d*, provided with clamping-arms *f*, the nuts and bolts for locking the arms of opposite members together, the radiating supporting-arms on said straps, and the horizontally-arranged sign frames or slides *i*, secured to the outer ends of said arms, all being arranged to operate substantially as described.

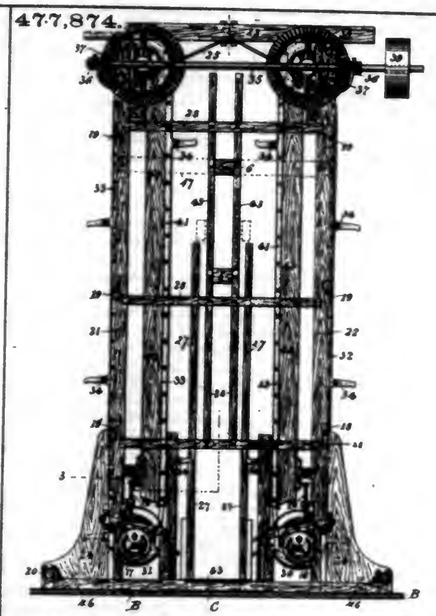
477,874. BARREL-ELEVATOR. CHARLES A. STERLING, Orange, N. J. Filed June 12, 1891. Serial No. 396,050. (No model.)

Claim.—1. An elevator comprising elevating endless chains having a package-space between and provided with carriers projecting into said space, the respective parts located and operating at and above the level at which the package is received and in the same vertical plane, whereby the usual well-hole is dispensed with and the package received or discharged from either side, as set forth.

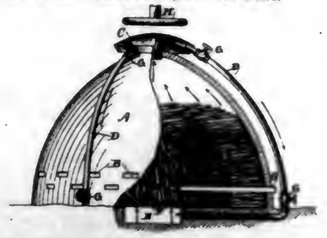
2. The combination, in an elevator, of elevating endless chains arranged with a package space between and provided with carriers projecting into said space, and a loading-platform adapted to receive the package from either side on a level therewith, and mechanism to elevate the platform into the path of the carriers, the respective parts all operating at and above said level, as set forth.

3. An elevator comprising elevating endless chains arranged with an intermediate package-space and provided with carriers relatively arranged in the same plane, whereby an open space is provided, so that the package may be delivered from either side without changing the direction of motion of the elevating-chains, in combination with an intersecting abutment, substantially as described.

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477,875. METHOD OF ARRESTING AND EXTINGUISHING COMBUSTION IN CHARCOAL-KILNS. ALBERT VICKERS, Baltimore, Md. Filed Feb. 16, 1891. Serial No. 381,580. (No model.)



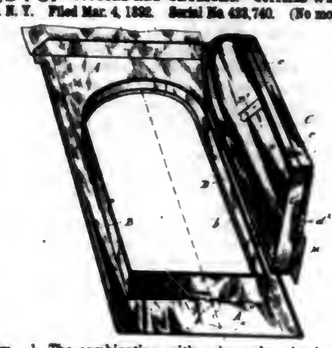
Claim.—1. The method of arresting combustion in charcoal-kilns after firing has reached the desired point, which consists in introducing from outside the kiln into the interior of the mass of burning coal sulphuric acid or like substance decomposable into non-combustible gases under the action of the heat and carbon present, as set forth.

2. The method of arresting and extinguishing combustion in charcoal-kilns, which consists in introducing sulphuric acid into the kiln in contact with the glowing coal when the firing has reached the desired point, whereby said acid is decomposed into non-combustible gases acting to extinguish combustion.

3. The method of arresting and extinguishing combustion in charcoal-kilns, which consists in introducing into the kiln after firing has reached the desired point sulphuric acid or like liquid decomposable into non-combustible gases under the action of the heat and carbon present and causing the said generated gases to circulate continuously through the charcoal from top to bottom of the kiln.

4. The method of arresting and extinguishing the combustion in charcoal-kilns, which consists in introducing into the kiln after firing has reached the desired point sulphuric acid or like liquid decomposable into gases under the action of the heat and carbon present, causing said generated gases to circulate continuously through and around the kiln and cooling them by exposure to a cooling medium while being returned from top to bottom of the kiln.

477,876. SCUTTLE AND SKYLIGHT. GOTTLIEB WEBER, Brooklyn, N. Y. Filed Mar. 4, 1892. Serial No. 423,740. (No model.)

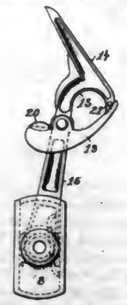


Claim.—1. The combination, with a base-plate having a light-opening, of an upright frame extending around said opening, a window-frame hinged to said frame, said window-frame being formed with double walls, and an upward extension of the outer wall along three of the sides and provided with an elastic gasket at the interior of said walls, and a glass pane supported by elastic strips on the frame and retained thereon by strips secured in position by bent lugs passing through the frame and passing through slits in the strips, substantially as set forth.

2. In a scuttle or roof-light, a glass-covered window the pane of which is supported on an elastic strip of the window-frame and retained in position by a bent-up keeper applied to the lower part of the frame and by a lead strip that extends along the sides and upper part of the frame and the glass pane, which lead strip is attached to the window-frame by means of lugs which are passed through slits of the lead strip and bent in opposite directions over the strip, substantially as set forth.

3. The combination of a base-plate having an opening of the size of the roof-light, an upright frame extending around said opening, a gutter extending from the inner lower edge of the frame and communicating with openings at the lower part of the frame, and a window hinged to said frame and provided with a glass pane retained on the frame of the window, and an elastic gasket or packing inserted into the double frame of the window, substantially as set forth.

477,877. EXTENSION-LADDER HOOK. JOHN A. WESTON, Providence, R. I. Filed Mar. 23, 1892. Serial No. 426,066. (No model.)

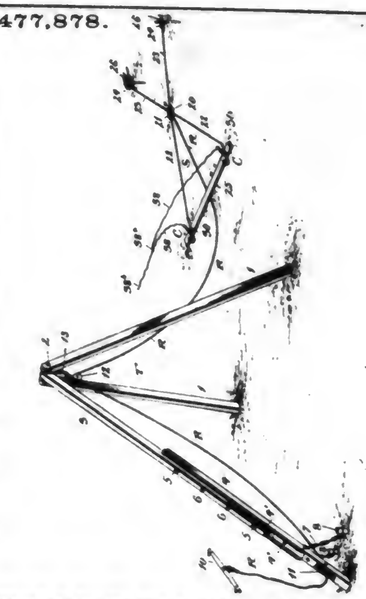


Claim.—In an extension-ladder hook, the combination, with the casing 8, having the spurs 9 9, ribs 10 10, and a central tubular post 11, of the hook 13, provided with the counterweighted lever 19, pivoted thereto and having a stop 20, a perforated shank on said hook pivoted on the post 11, a spring 19, surrounding said post and bearing against the lug 17 on said shank, the plate 22 for closing the open side of said casing, and the screw 23, extending through the perforated post 11 and adapted to secure the casing to a ladder-frame, as described.

477,878. HAY-STACKER. FRANK W. WHITNEY, Wessington Springs, S. D. Filed Apr. 30, 1892. Serial No. 431,343. (No model.)

Claim.—1. In a hay-stacker, the combination, with the elevating device, of a hay-sling consisting of a central ring, an elevating-rope secured to a cross-bar therein, radiating lines leading from said ring, eyes at the free ends of half of said lines, peg-hooks adapted to engage said eyes and to be seated in the ground, and catches carried by the outer ends of the other half of said lines and also adapted to engage said eyes, the whole operating substantially as described.

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2. In a hay-stacker, the combination, with the elevating device, of a hay-sling consisting of four lines radiating from a common point to which the elevating-rope is secured, eyes at the free ends of two said lines, catches having eyes, to which the outer ends of the other lines are secured, a bar across which said catches are secured near its ends, and a forked trip-rope leading to said catches, substantially as described.

3. In a hay-stacker, the combination, with the elevating devices and a sling comprising an X-shaped figure of rope, having eyes at two of its feet, of two catches, each consisting of a stationary member having an eye in one end, to which the outer end of the rope forming the other foot is connected and having its other end hooked, a pivoted member, also having an eye at one end and a hook at the other, a pivot between these members at the extremities of their hooks, and a trip-rope leading from the eye in the pivoted member, all substantially as and for the purpose set forth.

4. In a hay-stacker, the combination, with a sling having eyes at its ends and means for elevating it, of catches for the eyes of said sling, each catch consisting of a stationary member having an eye in one end, a hook at the other end, and a spur within said hook, a pivoted member, also having an eye at one end and a hook at the other, this member being double and standing astride the stationary member, its sides connected at a point above said spur and the tip of its hook pivoted to that of the other hook, and a trip-rope leading from the eye of the pivoted member, all substantially as set forth.

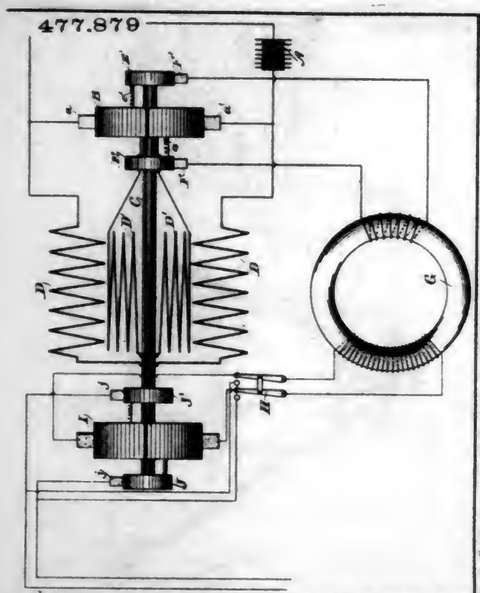
477,879. ELECTRIC-CURRENT TRANSFORMER. NORMAN T. WILCOX, Meriden, Conn. Filed Aug. 20, 1891. Serial No. 403,253. (No model.)

Claim.—1. The combination of a direct-current generator, a direct-current motor, a transformer, and collecting-rings to which one of the windings of the transformer is connected, with a single commutator having opposite segments connected to the collecting-rings and serving also to commute the current flowing through one part of the motor, as described.

2. The combination of an electric motor with its commutator B, having segments of opposite polarity connected, respectively, to collecting-rings, brushes bearing on said rings, a transformer having its primary in circuit with the current taken off by said brushes, and a current-rectifier for rectifying the current generated in the secondary of the transformer, as set forth.

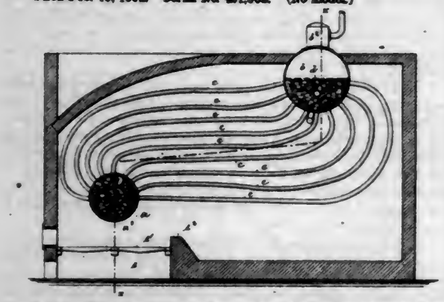
3. The combination, with a direct-current electric motor and its commutator, of collecting-rings in circuit with segments of the commutator of relatively-opposite polarity, a transformer adapted to transform from low to high tension, having its primary in circuit with the rings, and a second commutator and set of rings likewise driven by the motor and in circuit with the secondary winding of the transformer

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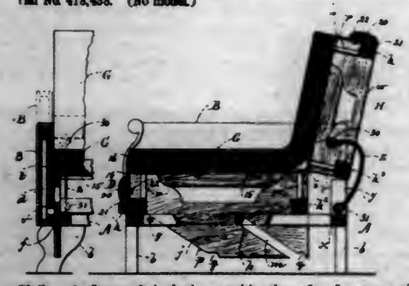
and reconverting the alternating current into a direct current, as set forth.

477,880. STEAM-BOILER. HERMANN WOJAR, Brooklyn, N. Y. Filed Feb. 13, 1892. Serial No. 421,382. (No model.)



Claim.—The combination of a pair of cylinders placed at different elevations with a grate, over which the lower cylinder and in the rear of which the upper cylinder is placed, and with a series of horizontal connecting-tubes, of which the upper tubes are bent down at the front and the lower tubes are bent up at the rear, the curvature diminishing from tube to tube, substantially as and for the purpose specified.

477,881. SOFA-BED. WILLIAM ANDERSON, Boston, Mass., assignor to Harriett E. Anderson, same place. Filed Jan. 18, 1892. Serial No. 418,438. (No model.)



Claim.—1. In a sofa-bed, the combination of a frame provided with transverse slots at its opposite ends, studs in said slots, a movable bottom section provided with dependent wings at its opposite ends playing in said slots of the end frame, said wings being provided with inclined ways which ride on said studs, a back section hinged to said bottom section and a lever connecting said back to said bottom.

2. In a sofa-bed, the combination of a frame provided with transverse slots at its opposite ends, studs in said slots, a movable bottom section provided with dependent wings at its opposite ends playing in said slots of the end frame, said wings being provided with inclined ways which ride on said studs and with notches at the lower ends of said ways which engage said studs when the bottom section is in elevated position, a back section hinged to said bottom section, and a lever connecting said bottom with said back section.

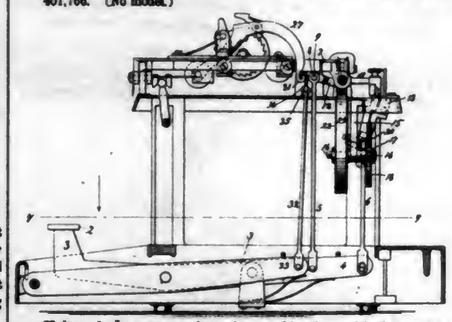
3. In a sofa-bed, the combination of a frame provided with vertical end pieces, arms fitted to slide thereon, a bottom section fitted to slide vertically and laterally on said frame, a movable back section hinged to said bottom section, a lever connecting said back section and said bottom section, dependent wings attached to the ends of said bottom sections, and flanges on said wings adapted to engage said arms.

4. In a sofa-bed, the combination of a frame provided with end pieces, hollow arms fitted to slide thereon, the inner portions of said arms being shorter than the outer portions thereof, a bottom section fitted to slide vertically and laterally on said frame, a movable back section hinged to said bottom section, a lever connecting said back section to said bottom section, dependent wings attached to the ends of said bottom sections, and flanges on said wings adapted to rest under the shorter portion of said hollow arms.

5. A sofa-bed comprising a frame, a bottom section fitted to slide vertically and laterally therein, a movable back section hinged to said bottom section, dependent wings attached to the ends of the bottom section, a stud on the rear portion of said frame, and levers attached to the movable back section and to said stud.

6. In a sofa-bed, the combination of the frame, the bottom section, the movable back section, clamping-bars hinged to said bottom and back sections provided with hooks, loops on the upper portions of said sections, a mattress provided with pockets adapted to engage said loops, and flaps on said mattress provided with eyelets adapted to engage the hooks on said clamping-bars.

477,882. TYPE-WRITING MACHINE. HOWARD E. BLAUVELT and JOHN A. POLHEMUS, Nyack, N. Y. Filed Aug. 5, 1891. Serial No. 401,766. (No model.)



Claim.—1. In a type-writer, the combination, with the carriage and feed mechanism, of a return-spring for the carriage, a spur-wheel secured to the shaft of the return-spring, a cog-wheel meshing therewith, and a key-lever for winding the spring and connected with the cog-wheel, substantially as set forth.

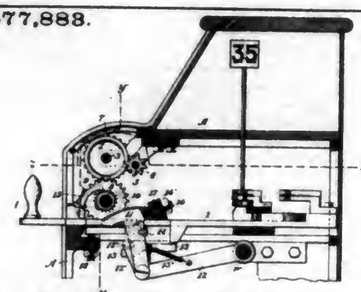
2. In a type-writer, the combination, with the carriage and feed mechanism, of a return-spring for the carriage, a key-lever on the key-board, the operation of which winds the return-spring and means connecting the key-lever to said return-spring, a release device for the feed mechanism, and means connecting the key-lever with the release device for the feed mechanism, substantially as set forth.

3. In a type-writer, the combination of a keyboard-lever with the paper-roll-shifting device and the paper-holding carriage and an intermediate channeled pivoted lever with which the lever of the shifting device and connecting rod to the keyboard-lever are engaged for causing the paper-roll to move a spacing distance, substantially as described.

477,888. ACTUATING DEVICE FOR CASH-REGISTERS. GEORGE BORNEMANN, Brooklyn, N. Y. Filed Sept. 21, 1891. Serial No. 406,289. (No model.)

Claim.—1. In a registering apparatus, the combination, with a sliding pull and an adding-wheel to be rotated by the operation of said

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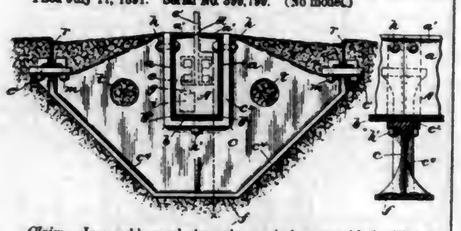


pull, of a shaft arranged transversely over the pull and geared to the adding-wheel, a pinion on said shaft, a swinging rack adapted to gear with said pinion and to be actuated by the pull, and means, substantially as described, for putting said rack into gear with said pinion when the pull is drawn out, substantially as set forth.

2. In a registering apparatus, the combination, with a sliding pull provided with a cam 13 and stud 14 and an adding-wheel to be rotated by the drawing out of the pull, of the shaft 8, arranged over the pull, mechanism which gears said shaft with the adding-wheel, a pinion 10 on said shaft adjacent to the pull, a swinging arm 12, provided with a stud which engages the cam on the pull, whereby the arm is raised when the pull is drawn out, a rack or sector 11, pivotedly attached to said arm and adapted to be put into gear with the pinion 10 by the raising of the arm, said rack having a stud arranged in the path of the stud 14 on the pull, a spring which retracts the rack, and a back stop for said rack.

3. In a registering apparatus, the combination, with two or more sliding pulls arranged abreast and an adding-wheel to be actuated by the drawing out of either of said pulls, of a shaft arranged transversely over said pulls and geared to the adding-wheel, a series of pinions on said shaft, one at each pull, a series of vibrating racks 11, one for each pull, means carried by the pulls for lifting their respective racks into gear with their respective pinions when the pulls are drawn out, back stops for the respective racks, and retracting-springs for the same, substantially as set forth.

477,884. CABLE-RAILWAY CONDUIT. MILTON H BROMDON, Providence, R. I., assignor of one-half to Walter Richmond, same place. Filed July 17, 1891. Serial No. 399,799. (No model.)



Claim.—In a cable road, the yoke or chair *c*, provided with integrally-formed oppositely-arranged ends adapted to receive and carry the two track-rails and having a flanged central opening extending downwardly from the top of the yoke, in combination with the tunnel or cable-conduit A, composed of oppositely-arranged rolled angle-iron plates *a* and bottom plate *b*, secured to said yokes, and having the top members *a'* of the plates *a* separated from each other to form the central longitudinal slot *d*, substantially as described, and for the purpose set forth.

477,885. CARRIER-PULLEY FOR CABLE ROADS. MILTON H. BROMDON, Providence, R. I., assignor of one-half to Walter Richmond, same place. Filed Aug. 19, 1891. Serial No. 403,115. (No model.)



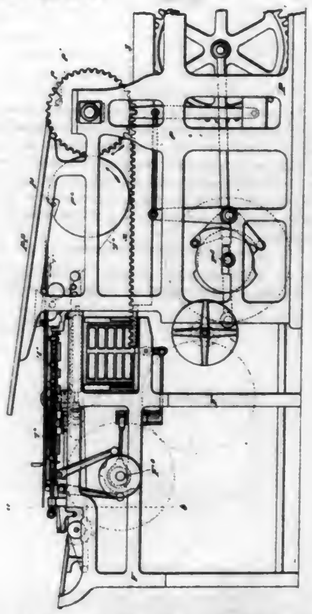
Claim.—1. In a cable road, the combination, with the curb-basin A, arranged to be secured to the cable-tunnel, of the holder or yoke *c*, adapted to axial and lateral movement, supported in a bottom step or bearing, a freely-turning carrier-pulley mounted in said holder, and means for locking the holder to the basin-frame, substantially as hereinbefore described, and for the purpose set forth.

2. The combination, with a curb-basin provided with a covered manhole and arranged to be secured to a cable-tunnel frame and having a step, as c^4, and ribs c^4, of a U-shaped or two-armed holder *c*, fitted to the said step and arranged to bear against said ribs, a carrier-pulley secured to a shaft mounted to revolve in the holder, the pulley being located between the said two arms, and a key for locking the holder to the basin-frame, substantially as hereinbefore described.

3. In a cable road, the combination, with the cable, cable-conduit, and curb-basin, of a carrier-pulley supporting said cable, a pivotally-mounted yoke or holder carrying the pulley, having the yoke-pivot below and at substantially right angles to the longitudinal axis of the cable, and a loose key arranged to lock the yoke to the basin when in use, substantially as described.

4. In a cable road, the combination, with the cable, cable-tunnel, and curb-basin provided with a manhole, of a pulley supporting said cable, a hinged or jointed yoke or holder mounted in the curb-basin and carrying said pulley, and a stop or abutment located at the forward side of the holder to receive the thrust or pressure of the latter, substantially as hereinbefore described.

477,886. COMBINED PRINTING AND FOLDING MACHINE. CYRUS CRAMBERS, Jr., Philadelphia, Pa. Filed June 12, 1885. Serial No. 168,439. (No model.)



Claim.—1. The combination of the stop-cylinder printing-press and the folding-machine arranged and driven with relation to each other, as shown and specified, together with the tapes arranged and adapted to operate to convey the printed sheets from the press to the folding-machine, so as to be in register with the first folding devices at the instant the sheet is brought to rest by the stopping of the cylinder of the printing-press, substantially as and for the purpose set forth.

2. The combination, with a folding-machine and printing-press of the class recited, with means, such as the tapes, for conveying the printed sheets from the printing-machine to the folding-machine, of laterally-adjustable first folding-rollers and folding-blade whereby compensation may be made for inaccurate lateral adjustments of the form on the printing-press, substantially as and for the purpose set forth.

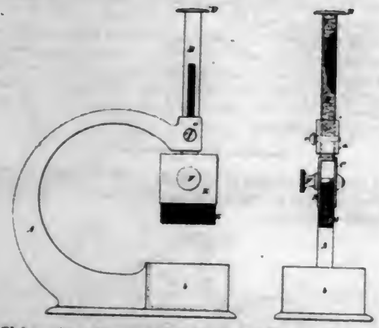
3. The combination of a folding-machine and a printing-press of the class recited, having its second set of folding-rolls and folding-blade adjustable to and from the printing-press to compensate for inaccurate placement of the form lengthwise of the press or the distance the sheets

may be carried by the press, substantially as and for the purpose set forth.

4. In a combined folding-machine and printing-press of the recited class, the combination therewith of the first and second adjustable folding rollers and blades for the purpose of obtaining accurate register in printed sheets delivered directly from the printing-press, substantially as and for the purpose described.

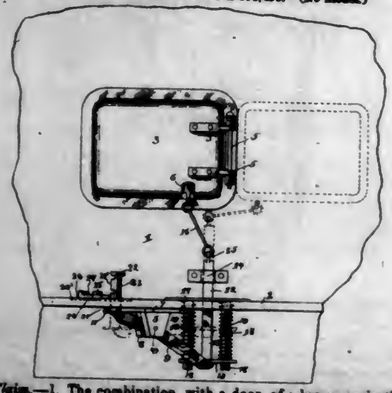
5. The combination of the stop-cylinder printing-press and folding-machine in relation to each other, as shown and described, the mechanism for operating said press and machine concertedly, and the tapes for conveying the printed sheets from the press to the folding-machine, all constructed and adapted to operate substantially as and for the purposes set forth.

477,887. STAMP AND ENVELOPE GUM MOISTENER. WILLIAM R. COLE, Pottsville, Pa. Filed Oct. 23, 1891. Serial No. 410,120. (No model.)



Claim.—As an improved article of manufacture, a stamp and envelope gum moistener having a receptacle for moistening pads, adapted to be screwed into the lower end of a spring-plunger and consisting of the shaft and plate E and the movable plate C, secured to each other by the screw F, in combination with the strip of felt or cloth G, attached to a plunger suspended by an arm of a stand over a stationary water-cup, substantially as herein shown and described, and for the purposes set forth.

477,888. FURNACE-DOOR OPENER. DAVID CURRY, New York, N. Y. Filed Nov. 10, 1891. Serial No. 411,435. (No model.)



Claim.—1. The combination, with a door, of a lug or projection extending therefrom, a lever pivotally supported, a foot-bolt engaging with one end of said lever, an upwardly-extending bar engaging with the other end, and a link extending between said bar and the projection on the door, the said link being disposed at an oblique angle between said lug and said bar, substantially as described.

2. The combination, with a pivoted door, of a lever pivotally supported, a foot-bolt engaging with one end of said lever, an upright bar with springs adapted to coact with said lever and bar, a lug on the door, and a link disposed at an oblique angle, connecting said upright bar and said lug, substantially as described.

3. The combination, with a pivoted door, of a lever pivotally supported, a foot-bolt engaging the said lever, means adapted to engage said foot-bolt to prevent its movement, an upwardly-extending bar engaging with the other end of the lever, springs adapted to coact with said lever and bar, a lug on the door, and a link disposed at an oblique angle, connecting said upright bar and said lug, substantially as described.

4. The combination, with a pivoted door, of a lever having a long and short arm, a foot-bolt engaging with the short arm of said lever, articulated devices in connection with the door and lever, and springs engaging with the said articulated devices and the long arm of said lever, substantially as described.

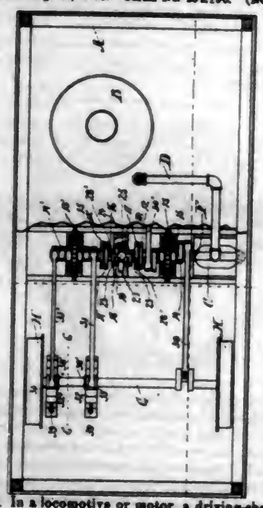
5. The combination, with a pivoted door, of the bracket 7, secured to the platform 2, the lever 9, fulcrumed in said bracket, the foot-bolt 21, supported on one end of said lever, the upright bar 12, having the plate 13 thereon engaging with the other end of said lever, the guide-rods 18, secured to the platform upon which the said plate 13 is adapted to move, springs 19 on said rods, and the link 16, uniting the door and the upright bar, substantially as described.

6. The combination, with a pivoted door, of the bracket 7, supported on the platform 2, the lever 9, fulcrumed in said bracket, a foot-bolt 21, having the enlarged head 22, engaging with the lever 9, notche 27 in the bolt 21, a sliding bolt 24, adapted to enter said notches, an upright bar 12 and a link 16, secured to the door, the rods 18, springs 19 on said rods, and a plate 13 on the bar 12, adapted to move on the said rods and engage with the said springs, the plate 13 resting on the lever 9, substantially as described.

7. The combination of the lever 9, pivoted to the platform 1, the pivoted door, articulated devices between the door and said lever, a foot-bolt 21 on said lever, said foot-bolt having the feather 21', and the plate 20' on the platform 2, having a groove adapted to engage with said feather, substantially as described.

8. The combination, with the plate 17, secured to the platform, having the depending rods 18, springs 19 about said rods, the upright bar 12, having the plate 13 engaging the rods and springs, the link 16, uniting the door and bar, and a lever 9, having a long and short arm, the long arm engaging the plate 13 and the short arm with a foot-bolt, substantially as described.

477,889. STREET-LOCOMOTIVE. ERRA DEDERICK, Milwaukee, Wis. Filed Aug. 31, 1891. Serial No. 404,190. (No model.)



Claim.—1. In a locomotive or motor, a driving-shaft and collar having gear loose on the shaft, a double-cranked shaft geared to the collar, rods connecting the cranks of the shaft to the wrists of cranked axles, one in front and the other in the rear of the shaft, and means for clutching the collar to the shaft revolubly, combined substantially as described.

2. In a locomotive or motor, a driving-shaft, a collar having gear loose on but arranged to be clutched to the shaft, a cranked shaft geared to the collar, and a rod connecting the crank on the cranked shaft to a radial lever loose on an axle and arranged to engage the axle revolubly in one direction, combined substantially as described.

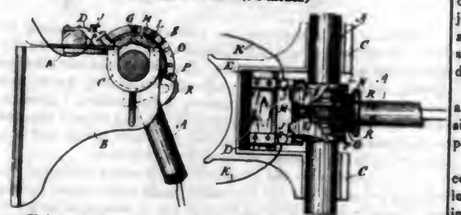
3. In the running-gear of a locomotive or motor, the combination, with an axle and ratchet-wheel thereon, of a radial lever connected at its outer extremity to the crank of a revoluble shaft, pawls movable in the case and adapted to engage the ratchet-wheels revolubly, respectively, in opposite directions, a lever-handle pivoted in the case, arms thereto entering slots therefor in the pawls and adapted by the shifting of the handle to raise one or the other of the pawls out of engagement with its ratchet-wheel, and springs interposed between the arms and pawls to hold the pawl yieldingly toward and separately in engagement with its ratchet-wheel, substantially as described.

4. In running-gear for a locomotive or motor, the combination, with a driving-shaft and a collar splined thereon, adapted to be shifted endwise into engagement with gears on the shaft, of keys having beveled heads movable endwise in the collar and a collar-shifting lever having a yoke, one leg on one side of which is arranged to be held up to the revolving collar and as the collar revolves to bear against the beveled heads of the keys and force them outwardly into engagement with the gears on the shaft, substantially as described.

5. In running-gear for a locomotive or motor, the combination, with a driving-shaft and a collar splined thereon, adapted to be shifted endwise into engagement with gears on the shaft, of keys having beveled heads movable endwise in the splined collar and a collar-shifting lever having a yoke provided with two legs on one side of the lever, which are arranged to be held up to the revolving collar and as the collar revolves to bear against the beveled heads of the keys and force them inwardly out of engagement with the gears on the shaft, substantially as described.

6. In running-gear for a locomotive or motor, the combination, with a driving-shaft and a collar splined thereon, of a lever adapted to shift the collar into and out of engagement with the locomotive-moving mechanism and a brake-rod connecting one extremity of the lever to brake mechanism, whereby the shifting-lever is adapted to shift the collar out of engagement with the driving mechanism and at the same moment to set the brake, substantially as described.

477,890. MAST-ARM ELECTRIC SWITCH. THOMAS DILLON, Indianapolis, Ind., assignor of one-half to John Caven, same place. Filed Mar. 31, 1892. Serial No. 427,170. (No model.)

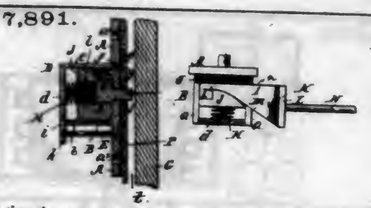


Claim.—1. In an electric switch for electric-light mast-arms, the combination of the bracket adapted to support the mast-arm, the mast-arm arranged to swing in a vertical plane on said bracket, the pair of pivoted arms forming terminals for the electric line-circuit mounted upon the bracket and arranged to be held normally in contact with each other, the electric lamp-circuit mounted on the mast-arm, and the pair of plates forming the terminals of said lamp-circuit and mounted on the mast-arm so as to turn therewith in a plane between the opposed edges of said pivoted arms, all arranged to co-operate substantially as set forth, whereby the lamp-circuit terminals are forced between the opposed edges of the arms forming the terminals of the line-circuit by the rotation of the mast-arm upon its axis when the arm is raised and are withdrawn therefrom when the arm is lowered, as set forth.

2. In an electric switch for electric-light mast-arms, the combination of the pair of pivoted arms forming the terminals of the line-circuit and arranged to swing toward each other by the force of gravitation, whereby they are held normally in contact with each other, the block of non-conducting material mounted upon the mast-arm concentric with the axis thereof, so as to rotate therewith in a vertical plane, which passes between the opposed edges of said pivoted arms, the metallic point mounted in said block, and the pair of metallic plates secured to the sides of said block and forming the terminals of a lamp-circuit mounted upon the arm and moving therewith, all arranged to co operate substantially as and for the purpose set forth.

3. In an electric switch for electric-light mast-arms, the combination, with the pair of line-circuit terminals arranged adjacent to the axis of the mast-arm and the pair of lamp-circuit terminals arranged on the mast-arm so as to be projected between said line-circuit terminals by the upward movement of the mast-arm, of the metallic point arranged between said lamp-circuit and said line-circuit terminals, whereby the lamp-circuit is protected from induced currents, substantially as set forth.

477,891. SASH-FASTENER. JAMES N. BOWER, New Castle, Pa. Filed July 22, 1891. Serial No. 400,275. (Model.)



Claim.—1. In a lock or fastener, the plate A, having aperture *g*, and the casing B, composed of side plates *a a* and bottom plate *b*, combined with the cover D, having back plate *d* and projection *h* thereon, top plate *c*, having projection *f* to enter the aperture *g*, and rod E, connecting the projection *h* with the plate A and with a bolt carried by the casing, substantially as described.

2. In a lock or fastener, the plate A and a casing carried thereby, combined with a sliding bolt within said casing, said bolt having a recess *l* and with a coiled spring within said recess, and a rod with a beveled part for actuating said bolt, substantially as described.

3. In a lock or fastener, the combination of the casing with a bolt sliding therein and having a stationary projection J thereon, the wearing side of said projection being curved or rounded, combined with a bar I, having an inclined edge *m* to engage the projection J to move the bolt, substantially as described.

4. In a lock or fastener, the combination of a casing and its front plate, a sliding bolt within said casing and having a recess *l*, a coiled spring within said recess, said bolt projecting through said front plate, a projection J on said bolt, a rod with a beveled part I to engage said projection to move the bolt, and a rod, as N, for moving the rod I, substantially as described.

5. In a lock or fastener, the combination of a casing having a front plate and a ledge *o* within said casing, a sliding bolt within said casing, said bolt having a recess *l*, a spring H in said recess, and a projection J on said bolt, a rod I, having an inclined side to move the bolt, and a straight side that rides on the ledge *o*, said rod I having a hook-shaped end to engage the projection J to prevent the rod I from being detached from the bolt, substantially as described.

6. In a lock or fastener, a casing, a projection M on the same, and a sliding bolt within the same, combined with a bar having an inclined side to move said bolt, a projection L on said bar, and a spring interposed between the projections L and M, substantially as described.

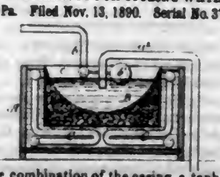
7. In a sash-fastener, a casing and a sliding bolt within the same, combined with a bar having an inclined side to move said bolt and an independent spring to move said inclined bar, and with a rod for moving the latter, but detached therefrom and adapted to be pushed through the frame-work of the window to operate the inclined rod, substantially as described.

477,892. DOLL. JULIUS FLEISCHMANN and PAUL FLEISCHMANN, Sonneberg, Germany. Filed Jan. 26, 1892. Serial No. 419,307. (No model.)



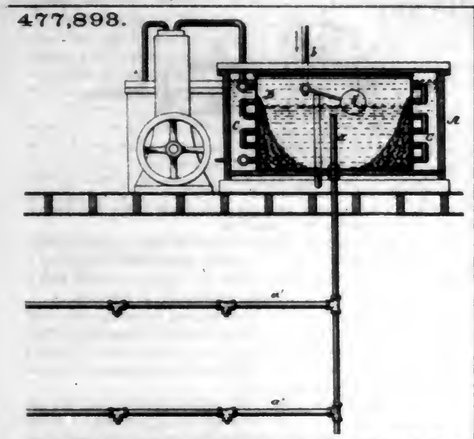
Claim.—The combination of the molded body portions A A^2 A^3, arranged so that the edges of said portions meet, with the wire staples B, connecting said portions at their point of junction, and with metallic eyelets D, placed in the perforations of said portions A A^2 A^3, substantially as set forth.

477,893. APPARATUS FOR COOLING WATER. HENRY B. FORD, Philadelphia, Pa. Filed Nov. 13, 1890. Serial No. 371,302. (No model.)



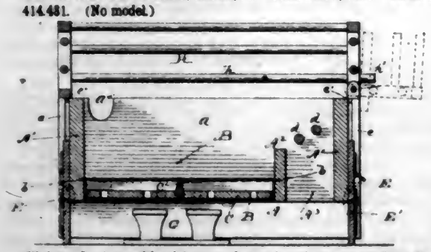
Claim.—The combination of the casing, a tank within said casing for containing the water to be cooled, a pipe for distributing the cold water, and an outlet from the center of the tank leading to said pipe,

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with a coil between the tank and the casing through which the refrigerating medium passes, substantially as described.

477,894. COMBINED SHEEP BOX AND VAT. GEORGE G. GAYMAN and SAMUEL B. GAYMAN, Racine, Pa. Filed Dec. 9, 1891. Serial No. 414,481. (No model.)



Claim.—1. A combined box and vat for the purpose described, consisting of the box-walls A A A' A', a fire-proof pan B, covering a portion of the bottom of said box and forming the vat, a partial-height partition A^2 at the front of the vat, and an open space between said partition and one end wall of the box, as set forth.

2. A device for cleaning sheep's feet, consisting of the box-walls, as described, having adjustable supports at the ends thereof, a partial-height partition, and a pan-bottom covering the space between one end wall and the partial-height partition, an open space between the partial-height partition and the other end wall, and bars across said open space, as set forth.

3. A sheep-box consisting of the side walls A A, the end walls A' A', a partial-height partition A^2, and a fire-proof pan B, having a flange b all around the top thereof inserted in a groove or channel in one end wall, the side walls, and the partial-height partition, as set forth.

4. A sheep-box consisting of the walls A A A' A', a partial-height partition A^2, a fire-proof pan B, forming a bottom for the box between one end wall and the partial-height partition, and the open rack hinged to the top of the box at one end, as set forth.

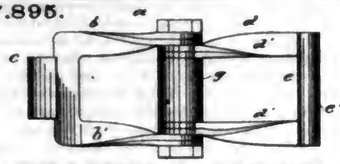
5. A box for treating sheep's feet, consisting of the box-walls having a fire-proof pan and partial-height partition forming a vat, adjustable supports at the ends of said box, and a hinged door or doors on the side or sides of said box, as set forth.

6. A box for treating sheep's feet, consisting of the side walls A A, having notches or cut-away portions, as described, at one end thereof, the end walls A' A', the partial-height partition A^2, and a fire-proof pan B, and a hinged rack on top of the box, as set forth.

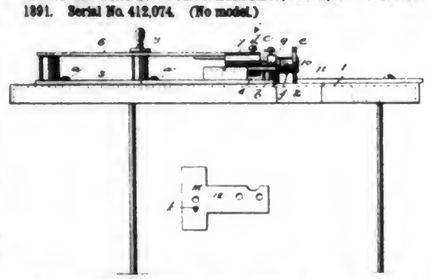
477,895. DRIVE-CHAIN COUPLING-LINK. CHARLES E. HART, New Britain, Conn., assignor to the Stanley Works, same place. Filed Feb. 1, 1892. Serial No. 419,870. (No model.)

Claim.—In combination, in a coupling-link for a drive-chain, a knuckle-section formed of a single piece of metal folded into U shape, with a folded edge forming the edge of the knuckle and the inner ends bent at right angles to the plane of the link, with the opening through the ends for the passage of a pivot-bolt, a pintle-section formed of a single piece of metal folded into U shape, with the folded end forming a pintle and with the inner ends of the side parts of the frame bent at right angles to the plane of the link and having openings for the passage of a pivot-bolt, and the pivot-bolt extending transversely of the link through the ends of the link-sections and through the sleeve supported between these ends, all substantially as described.

477,895.



477,896. WORK GUIDING AND GROOVING ATTACHMENT FOR SEWING-MACHINES. JOHN S. HENDERSON, Macon, Ga. Filed Nov. 16, 1891. Serial No. 412,074. (No model.)



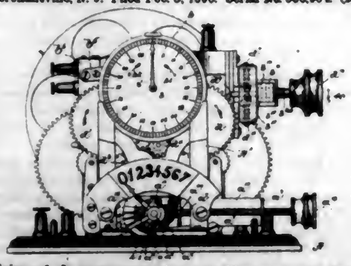
Claim.—1. In combination, the platform having an opening for the throat of the machine and adapted to be supported on the machine-frame, a frame on the platform adjustable toward and from the opening thereof, the adjustable guide-roller carried by the forward end of the frame adjacent to the opening in the platform, a pressure-roller, and a channeling-spur carried by a swinging support attached to the frame 3, said spur and roller being adjustable toward and from the opening in the platform, substantially as described.

2. In combination, the guide-rollers adjustably supported, the swinging support 6, and the spur and pressure-roller carried thereby and adjustable in relation to each other and in relation to the guide-rollers, substantially as described.

3. In combination, the frame carrying the guide-rollers, the spring-arm 6, the block 7, mounted on said spring-arm and carrying a spindle adjustable therein, and the collar 9, adjustably mounted on said spindle, and the channeling-spur carried thereby, substantially as described.

4. In combination, the frame carrying the spring-arm 6, pivoted at its rear end and provided with a block 7, arranged to swing into position between the blocks which carry the guide-rollers 4 and 5, said block 7 carrying, also, the flanged pressure-roller and the upper spur, the said spring-arm being provided, also, with a button 8, all substantially as described.

477,897. ELECTRIC LOCK. WILLIAM H. HOLLAR, Elizabeth, N. J., and FREDERICK S. HOLMES, Malden, Mass., assignors to James W. Torrey, Merchantville, N. J. Filed Feb. 3, 1890. Serial No. 338,954. (No model.)



Claim.—1. In an apparatus for controlling an electrically-actuated combination-lock, a commutator or break wheel, and a co-operating pen or wiper, and a propelling mechanism for said break-wheel, combined with a pole-changer to automatically alternately make and break an electric circuit, substantially as and for the purpose specified.

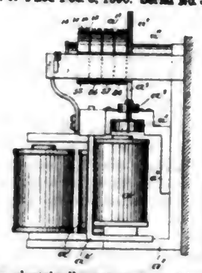
2. In an apparatus for controlling an electric combination-lock, the combination, with a motor mechanism, of a commutator or break wheel, a pointer to indicate upon a graduated dial the number of times the commutator has closed and broken an electric circuit during a revolution or part revolution, and a mechanism suitable for reversing

the direction of motion of the commutator and pointer, substantially as and for the purpose specified.

3. In an apparatus for controlling an electric combination-lock, the combination, with a motor mechanism, of a commutator or break wheel, a pointer to indicate upon a graduated dial the number of times the commutator closes and breaks an electric circuit during a revolution or part revolution, a mechanism suitable for reversing the direction of motion of the commutator and pointer, and a pole-changer designed to be operated by the same mechanism and synchronously with the reversing mechanism, substantially as and for the purpose specified.

4. In an apparatus for controlling an electric combination-lock, the combination, with a motor mechanism, of a commutator or break wheel, a pointer to indicate upon a graduated dial the number of times the commutator has closed and broken an electric circuit during a revolution or part revolution, a mechanism suitable for reversing the direction of motion of the commutator and pointer, a pole-changer designed to be operated by the same mechanism and synchronously with the reversing mechanism, a lever or shaft designed to operate the reversing mechanism and the pole-changer through intermediary mechanical power-transmitting elements, means for manually controlling the mechanical and electrical sections of the machine, substantially as and for the purpose specified, and an electric circuit through which the lock is to be controlled.

477,898. ELECTRIC LOCK. WILLIAM H. HOLLAR, Elizabeth, N. J., and FREDERICK S. HOLMES, Malden, Mass., assignors to James W. Torrey, Merchantville, N. J. Filed Feb. 3, 1890. Serial No. 338,956. (No model.)



Claim.—1. In an electrically-actuated combination-lock, a series of tumblers loosely connected, a bolt-locking lever or device operatively controlled by said tumblers, a single ratchet-wheel controlling the said tumblers, combined with an electro-magnet, its armature, and a pawl or pawls to operate said ratchet-wheel, substantially as and for the purpose specified.

2. In an electrically-actuated combination-lock, the combination, with a bolt-locking lever or device, of an auxiliary electro-magnet and its armature, a series of electric-current-transmitting tumblers, a ratchet-wheel to control the position of said tumblers, an electro-magnet, its armature, and pawl or pawls for operating the said ratchet-wheel, an electric circuit for carrying the current to operate said electro-magnet, and an electric circuit for carrying a current to operate the auxiliary electro-magnet, substantially as and for the purpose specified.

3. In an electrically-actuated combination-lock, the combination, with a bolt-locking lever or device, of an auxiliary electro-magnet and its armature, a series of electric-current-transmitting tumblers, a ratchet-wheel to control the position of said tumblers, a polarized electro-magnet, its armature and pawl or pawls for operating the said ratchet wheel, an electric circuit for carrying the current to operate said polarized electro-magnet, and an electric circuit for carrying a current to operate the auxiliary electro-magnet, substantially as and for the purpose specified.

477,899. MACHINE FOR PUNCHING FLANGE-PLATES. HENRY C. JOHNS, Wilmington, Del. Filed Feb. 25, 1892. Serial No. 422,771. (No model.)

Claim.—1. The combination, in a machine for punching flanged plates, of the frame, a horizontally-reciprocated plunger, a punch carried by said plunger, an overhanging bracket, a die therein for receiving the plunger, a bed, a carriage on said bed on which is mounted the flanged disk to be punched, and mechanism for revolving said disk, substantially as described.

2. The combination of the frame, the punch, a bed, mechanism for vertically moving said bed so as to raise and lower it in respect to said punch, a carriage on said bed, mechanism for moving said carriage toward or from the punch, and a plate-carrier adapted to bearings on the carriage, substantially as described.

3. The combination, in a punching-machine, of the punch, a vertically-movable bed, a carriage mounted on said bed, mechanism for moving said carriage toward and from the punch, and a plate-carrier mounted on said carriage, with mechanism for turning said plate-carrier, substantially as described.

4. The combination of the frame, a punch-plunger and its punch, a bracket, an extension on said bracket, a bed, a carriage on said bed, a plate-carrier carried by said carriage, composed of a vertical spindle and disk, and a clamping-disk above the plate-carrier, with a device for clamping said disk between the plate and the extension of the bracket, substantially as described.

5. The combination of the frame, a punch-plunger, a bracket carrying the punch-die, a vertically-movable bed, a carriage thereon, mechanism for moving said carriage on the bed, a vertical spindle in the carriage, a plate-supporting disk on said shaft, a feed-shaft geared to said vertical shaft, and a feed-handle with intervening change-gearing between the feed-handle and the shaft, substantially as described.

6. The combination, in a machine for punching flanged plates, of the frame, the horizontal punch-plunger therein, a bracket arched over the punch, a die in said bracket, an extension of said bracket, a vertically-adjustable bed, a carriage adjustable on said bed toward and from the punch, a plate-carrier, mechanism for giving the plate-carrier a positive motion, and clamping mechanism for the plate, situated between the plate and the extension, substantially as described.

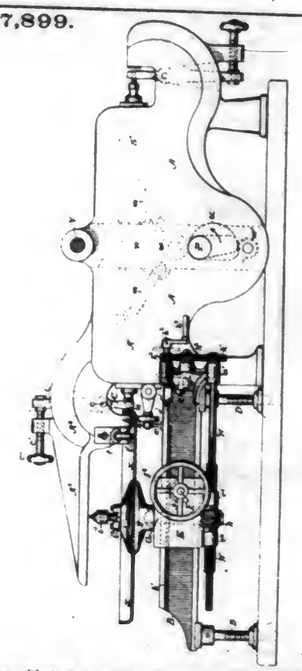
7. The combination of the frame, a punch-plunger, a bracket, a die therein, the bed, a carriage thereon, and a plate-carrier adapted to revolve in said carriage, with a supporting device for supporting the plate at the punch, said supporting device being adjustable, so that it can be moved to allow the plate to be arranged in respect to the punch, substantially as described.

8. The combination of the frame, a punch, a bracket, a die therein, a bed, a carriage thereon, a plate-carrier adapted to revolve on the said carriage, and a support for the plate at the punch, with adjustable pressers adapted to hold the plate down upon the support, substantially as described.

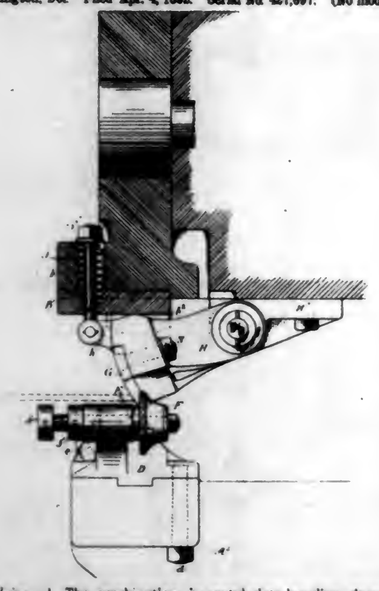
9. The combination of the punching mechanism, the bed, a carriage thereon, the vertical spindle rounded at its upper end, a disk g, loosely mounted on said spindle, but connected so as to positively turn therewith, with mechanism for clamping the plate on the disk, and mechanism for holding the plate in proper relation to the punch, substantially as described.

10. The combination, in a punching-machine, of the frame, the vertically-guided slide, projections thereon, a cam working between said projections, mechanism for driving said cam, the punch-plunger connected to said slide by links, and punches carried by said plunger, with dies for each punch, substantially as set forth.

477,899.



477,900. BEVEL-SHEARING MACHINE. HENRY C. JOSEE, Wilmington, Del. Filed Apr. 4, 1892. Serial No. 427,697. (No model.)



Claim.—1. The combination, in metal-plate-beveling shears, of the frame, a lower block, an inclined blade mounted thereon, with a slide reciprocating within the frame, a pivoted arm, an upper blade carried by said arm and acting in conjunction with the lower blade, the face of the blade being curved on a line struck from the pivot-point of the arm, and a pivot for said arm, said pivot being at the side and on a line parallel with the blades, the arm being acted upon by the slide, substantially as described.

2. The combination, in beveling-shears, of the lower stationary blade, a block upon which said blade is mounted, a bracket at one side of the blade, an arm pivoted to the bracket, a blade carried by said pivoted arm, the pivot being on a line substantially parallel with the blades, and a reciprocating slide acting upon the arm with a device by which the arm is attached to the slide, so as to positively move therewith, substantially as set forth.

3. The combination of the frame having the extended base portion and the overhanging portion, a reciprocating slide in said head portion, a bracket attached to the under side of the overhanging head, an arm pivoted to said bracket, a blade secured to said arm, a yielding connection between the arm and the slide, a lower blade, and a block carrying said lower blade, said block being mounted upon the extended base, substantially as described.

4. The combination of the frame having an extended base and overhanging head portion, the reciprocating slide, a bracket secured to the head portion, an arm pivoted to said bracket, a blade on the arm and a rod carried by said arm and extending through an opening in the reciprocating slide, and a spring mounted between the rod and the slide, with a lower blade mounted upon the extended base, substantially as described.

5. The combination of the head, reciprocating slide, a bracket mounted on the head, an arm pivoted to said bracket, a blade thereon, and a yielding connection between the slide and the arm, with a plate B', interposed between the slide and the arm and secured to the slide, a leg b^3 on the plate to resist the side pressure of the arm, and a lower shear blade and block to which said blade is secured, substantially as described.

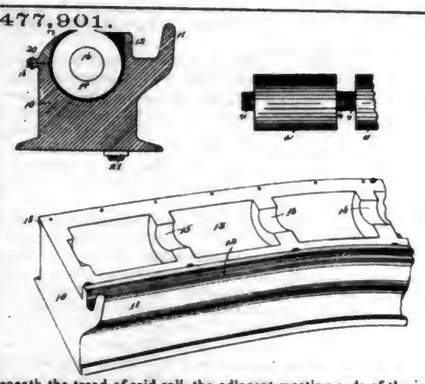
477,901. RAILWAY-RAIL CURVE. JAMES G. JORDAN, Des Moines, Iowa. Filed July 22, 1891. Serial No. 400,379. (No model.)

Claim.—1. In a railway-curve rail, the combination, with the tread of the rail, of rollers arranged longitudinally of and journaled in said rail, the rotary path of which rollers is in a transverse plane of the rail.

2. In a railway-curve rail, the combination, with a rail horizontally divided into two sections, of a guard-rail formed integrally with one of said sections and elongated rollers journaled between said sections and projecting through slots in the top section longitudinally of said rail.

3. The combination, in a railway-curve rail, of rollers journaled

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beneath the tread of said rail, the adjacent meeting ends of the journals of said rollers being respectively convex and concave, one fitting within the other, and means for holding said rollers in position, as set forth.

4. The combination, with a railway-curve rail horizontally divided into two sections and means for connecting the same, of rollers journaled between said sections and extending upwardly through slots in the upper section, their peripheries being in the plane of the tread of the rail, said rollers rotating on a fixed axis in a direction transversely of said rail, as set forth.

5. The combination, in a railway-curve rail, of a rail having rollers arranged longitudinally of and journaled in the tread thereof and a face-rail disposed between said rollers and the path of advancement of the wheel-flanges, whereby said rollers are guarded against injury by said flanges.

6. The combination, in a railway-curve rail, of a rail formed in two sections, a guard-rail formed integral with one of said sections, rollers arranged longitudinally of and journaled between said sections and projecting upward flush with the top of the upper section, a face-rail formed integrally with one section and projecting upwardly between the guard-rail and the rollers, and means for joining the said sections.

7. The combination, in a railway-curve rail, of a rail formed in two sections, a guard-rail formed integral with one of said sections, rollers arranged longitudinally of and journaled between said sections, a face-rail formed integral with one of said sections, and oil-cups formed in the upper one of said rail-sections, which oil-cups lead from the exterior of the rail to the journal-bearings of said rollers.

477,902. RAZOR-STROP. FREDERICK KAMPFE, RICHARD KAMPFE, and OTTO KAMPFE, Brooklyn, N. Y. Filed Aug. 25, 1891. Serial No. 403,654. (No model.)



Claim.—1. A leather razor-strop provided on its face with alternate groups of smooth portions of the strop and with grooved portions, substantially as set forth.

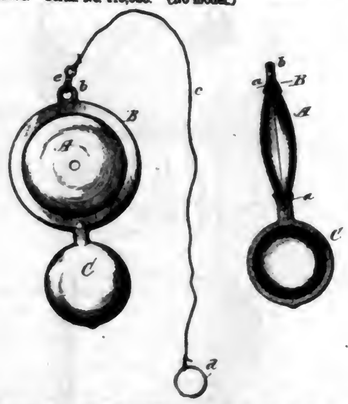
2. A strop provided on its face with a series of groups of grooves and intermediate ridges inclined to the longitudinal axis of the strop, said groups of grooves and intermediate ridges being separated by smooth portions of the face of the strop, substantially as set forth.

477,903. EYE FOR LACING-STRINGS OF SHOES. WILLIAM LANG, Brooklyn, N. Y. Filed Apr. 3, 1891. Serial No. 387,690. (No model.)



Claim.—A lacing-eye for shoes, comprising an eye composed of a loop and ring-shaped base, one half of the base being attached to one leg of the loop and the other half to the other leg of the loop, said ring and base being composed of wire in one piece, and an eyelet consisting of a tubular shank having an enlarged socket at its upper end for receiving said ring-shaped base, the metal of said socket being clinched over said base, substantially as described.

477,904. TOY. EUGENE LAWSON, Wilkes-Barre, Pa. Filed Dec. 18, 1891. Serial No. 415,523. (No model.)

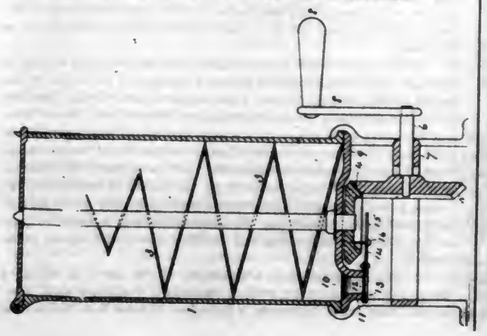


Claim.—1. In a toy, the combination of an elastic frame of soft rubber and a whistle removably held therein by the elasticity of the material and a string attached to the frame for swinging it around, substantially as and for the purpose specified.

2. In a toy, the combination of a whistle with a suitable frame of elastic material having a ball or other counter-balance of like material depending therefrom and a string for swinging the frame around, substantially as and for the purpose set forth.

3. A toy consisting of a whistle, a frame therefor of soft rubber, a counter-balance depending from the frame, and a string attached thereto, substantially as and for the purpose described.

477,905. BUTTER-CUTTER. LEOPOLD LINKIEWICZ, Minneapolis, Minn. Filed Jan. 16, 1891. Serial No. 377,987. (No model.)



Claim.—1. In a butter-cutter, a cylindrical case, a central shaft therein journaled in the cylinder-heads, a spiral conveyer carried by and encircling the shaft, a gear-wheel fixed to the exposed end of the shaft, a cutter pivoted eccentrically to said wheel, guides therefor, a neck extending from the cylinder-head and having an opening in the path of the cutter reciprocations, and means for rotating said gear-wheel, substantially as set forth.

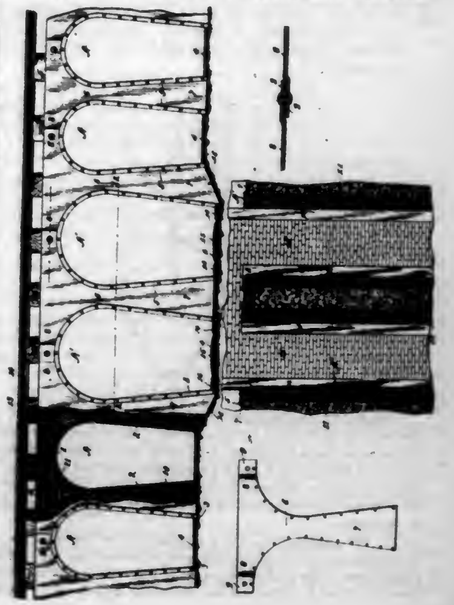
2. In a butter-cutter, a base, a vertical cylinder supported thereon, a shaft journaled in the cylinder-heads and carrying a spiral conveyer, a hollow neck extending beneath the lower cylinder-head, a cutter and guides for causing it to reciprocate across the mouth of said neck, a gear-wheel to which said shaft is centrally attached and said cutter eccentrically pivoted, a second gear in mesh with the former, and connections for turning it to operate both the conveyer and cutter, substantially as set forth.

477,906. RECLINING-CHAIR. CHARLES C. LOCKHARDT, Chicago, Ill. Filed Dec. 18, 1891. Serial No. 415,456. (No model.)



Claim.—A chair comprising a base, a seat supported thereby, a back hinged to the rear of the seat, arms pivotally connected to the back, levers pivotally connected to the arms and to the seat, a leg-rest having pivotal connection with the seat, and links pivotally connected to the levers and to the leg-rest, the said pivotal connection of the link with the leg-rest being in alignment with or to one side of the pivotal connection of the leg-rest to the base and the link when the back is in its normal position, whereby the leg-rest and the back are secured against movement when these parts are in such normal position, substantially as described.

477,907. ELEVATED STRUCTURE. CHARLES C. LOCKHARDT, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,852. (No model.)



Claim.—1. A viaduct or elevated structure consisting of a plurality of sheet-metal arches located transversely to the length of the same and upon which the road-bed is built.

2. A viaduct or elevated structure consisting of a plurality of sheet-metal arches located transversely to the length of the same and a filling of earth, concrete, or analogous material between and upon said arches and upon which the road-bed is built.

3. A viaduct or elevated structure consisting of a plurality of sheet-metal arches located transversely to the length of the same, plates located between the arches and at the ends of the same and extending above said arches, and a filling of earth, concrete, or analogous material between and upon said arches, upon which the road-bed is built.

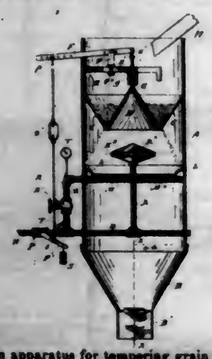
4. A viaduct or elevated structure consisting of a plurality of sheet-metal arches located transversely to the length of the same and having outwardly-turned flanges at the ends thereof, plates located between the arches at the ends thereof and extending above said arches and secured to said flanges and to each other, and a filling of earth, concrete, or analogous material between and upon said arches and upon which the road-bed is built.

477,908. DEVICE FOR CLEANING CISTERNS, &c. WILLIAM J. MALTBY and ALEXANDER BELCHER, New Orleans, La. Filed Nov. 24, 1891. Serial No. 412,993. (No model.)



Claim.—The combination, with a reservoir or cistern, of the conical vessels 2 and 5, the pipe 7, connected with the lower vessel and provided with a stop-cock, and the siphon connected with said pipe, provided with a hole or aperture, substantially as and for the purpose specified.

477,909. PROCESS OF AND APPARATUS FOR DAMPENING GRAIN PREPARATORY TO GRINDING. BRAT MEIER and LOUIS E. PFEUCHE, Minneapolis, Minn. Filed Sept. 21, 1891. Serial No. 406,316. (No model.)



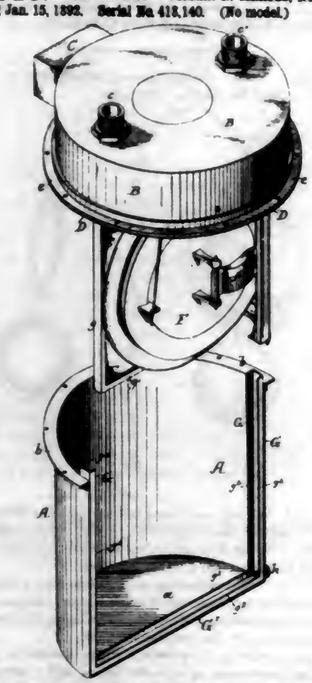
Claim.—1. An apparatus for tempering grain, comprising a suitable case through which the grain is fed, a steam-supply pipe having one or more discharge-sections within said case, an automatic feeding device for distributing the grain within the case, and a valve in said steam-supply pipe operated by said feeding device, whereby the supply of steam is varied according to the feed of the grain, substantially as described.

2. The combination, with a suitable case, of the supply-pipe H, having one or more discharge-sections within the case, the truncated feed-hopper C, the conical feed-gate D, the valve P, having a valve-lever P', a lever F, having one end connected to the head of the feed-gate and the other end connected to the valve-lever P, and a counterpoise S, operating on said levers to hold said gate and valve normally in their closed positions, substantially as described.

3. The combination, with the case A, of the hopper C, the conical feed-gate D, the pipe H, having discharge-sections within the case, the support E, with guide *g*, the lever F, fulcrumed to the standard F', adjustably seated in the support E, the valve P, having the lever P', the plunger G, working through the guide *g*, the link G', connecting the said plunger with said lever F, the link R, with swivel-nut R', connecting the free ends of the levers F and P', and a counterpoise S, acting to hold said gate and valve in their closed position, substantially as described.

4. The combination, with a suitable case, of a truncated feed-hopper near the head of the case, a counterpoised conical feed-gate or distributing-head working in the discharge-opening of said hopper, a fluid-supply pipe having one or more discharge-sections within the case below the said hopper in position to discharge the fluid on the shower of material falling from the hopper, and a valve in the supply-pipe controlled by said feed-gate, substantially as described.

477,910. GAS-METER. WILLIAM H. MILSTED, New York, N. Y. Filed Jan. 15, 1892. Serial No. 418,140. (No model.)



Claim.—1. The combination, in a gas-meter, of the casing, a vertical partition separating the casing into two chambers, a horizontal partition separating the registering-chamber from the measuring-chambers, a channel between the vertical edges of the vertical partition and the casing, a channel between the bottom of the said partition and the bottom of the casing, and packing in said channel, with packing between the horizontal partition-plate and the casing, substantially as described.

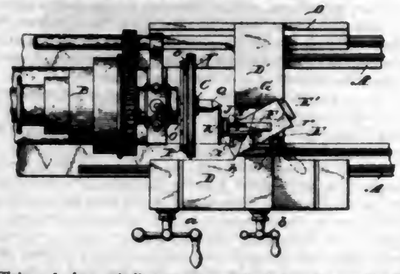
2. The combination, in a gas-meter, of a metal casing having on its inner side vertical channels for the reception of the edges of the partition-plate and at the base a horizontal channel for the reception of the lower edge of the partition-plate and having two interior horizontal shelves or flanges *a'* on the same horizontal plane on opposite sides from and facing each other and connected at their ends with the tops of the vertical flanges constituting the above-described channels, and a vertical partition-plate carrying the bellows and separating the casing below the plane of the above-described flanges into two parts, with packing introduced into the channels, forming a gas-proof joint at the junction of the casing and partition-plate, substantially as described.

3. The combination, in a gas-meter, of the casing A, having a flange *b* at its upper edge, vertical channels G G opposite each other on the inner side of the casing, a horizontal channel G' on the bottom of the casing, a horizontal partition-plate D, and a vertical partition-plate E, adapted to the channels in the casing, with packing introduced in said channels and under and over the edges of said horizontal partition-plate, substantially as described.

4. The combination, in a gas-meter, of a metal casing having on its inner side vertical channels for the reception of the edges of the partition and at the base a horizontal channel for the reception of the lower edge of the partition-plate and having two interior horizontal shelves or flanges *a'* on the same horizontal plane on opposite sides from and facing each other and connected at their ends with the tops of the vertical flanges constituting the above-described channels, a horizontal partition-plate, a vertical partition-plate depending therefrom and adapted to the channels in the sides and bottom of the casing, and packing introduced in said channels and between said horizontal partition-plate and the horizontal shelves or flanges, substantially as described.

5. The combination of the casing A, channels on the inner side of the casing and on the bottom of the casing, with a vertical partition-plate adapted to the channels, packing in said channels, forming a gas-tight joint between the partition and the casing, with an opening in line with the bottom channel, and a cap for said opening, substantially as set forth.

477,911. GRINDING ATTACHMENT FOR LATHES. GEORGE A. MUELLER and OSCAR W. MUELLER, Cincinnati, Ohio, assignors to said George A. Mueller and George A. Muenzenmaier, same place. Filed Feb. 1, 1892. Serial No. 419,976. (No model.)



Claim.—1. In a grinding attachment for lathes, the combination of a detachable chuck-pulley on the live-spindle, a support mounted to reciprocate upon the slide-rest in grinding relation to the lathe-center, and a grinding-wheel journaled on said support and driven by the pulley on the live-spindle, substantially as described.

2. In a grinding attachment for lathes, the combination of a detachable chuck-pulley on the live-spindle, a grinding-wheel journaled on a support movable in grinding relation to the lathe-center and driven by the pulley on the live-spindle, and a guide upon the slide-rest, on which guide the support is reciprocated, substantially as described.

3. In a grinding attachment for lathes, the combination of a detachable chuck-pulley on the live-spindle, a grinding-wheel journaled upon a support movable in grinding relation to the lathe center, two pulleys movable with said support, driven by the pulley on the live-spindle and driving the grinding-wheel, and a guide upon the slide-rest, upon which the support for the grinding-wheel is reciprocated, substantially as described.

4. In a grinding attachment for lathes, the combination of a detachable chuck-pulley on the live-spindle, two pulleys carried upon a post and driven by said pulley, a grinding-wheel journaled on said post and driven by one of the post-pulleys, an adjustable support for said post, and a fixed guide fast to the slide-rest and upon which said support is reciprocated, substantially as described.

5. In a grinding attachment for lathes, the combination of a detachable chuck-pulley on the live-spindle, two pulleys carried upon a post and driven by said chuck-pulley, a grinding-wheel journaled on said post and driven by one of the post-pulleys, an adjustable support for said post, a fixed guide fast to the slide-rest and upon which said support is reciprocated, and a rack and pinion for reciprocating said support, substantially as described.

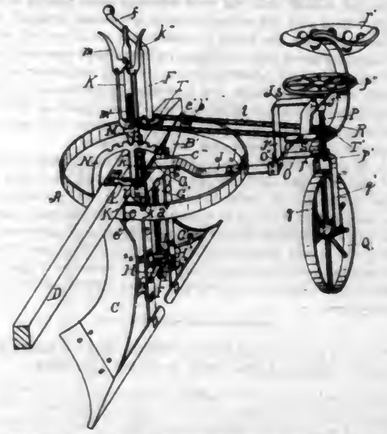
6. In a grinding attachment for lathes, the combination of a grinding-wheel supported and capable of reciprocating motion on the slide-rest, a detachable chuck-pulley on the live-spindle, and driving connections between the grinding-wheel and chuck-pulley.

7. In a grinding attachment for lathes, the combination of a pulley on the live-spindle, a grinding-wheel supported on the slide-rest and capable of reciprocating motion at an angle to the axis of the live-spindle and with the grinding-line in a plane coincident therewith, and driving connections between said pulley and grinding-wheel.

8. In a grinding attachment of the character described, the base-plate E, carrying the guide E' and provided with the adjustable gage *t*, substantially as described.

9. In a grinding attachment of the character described, the reciprocating support F G, provided with the vertical slot *g*, and the grinding-wheel and pulley-carrying post H, adjustably secured to the support G through the slot *g*, substantially as described.

477,912. REVERSIBLE PLOW. AUGUST PIRCH, Los Angeles, Cal. Filed Mar. 17, 1892. Serial No. 425,283. (No model.)



Claim.—1. In a plow, the combination set forth of a plow-beam pivoted to the plow, a circular guide and rack fixed to the plow, means for locking the beam to the rack and releasing it therefrom to allow its rotation, a sulky-wheel connected with the guide and rack by a suitable arm, and means for depressing and elevating the points of the plow.

2. The combination set forth of the plow-beam, the plows pivoted thereto, the thrust-nuts attached to the beam, the screw-stem arranged to screw through the thrust-nuts and connected by suitable means to the pivoted plows near the base of the plow-standards, and means for rotating the screw-stem to draw the standards together or to force them apart to depress or elevate the points of the plows.

3. The combination of a reversible plow having its beam journaled to revolve, a sulky-wheel arranged at one side of such beam and attached thereto by intermediate means, a seat arranged above such sulky-wheel and journaled to revolve, suitable intermediate means connecting the plow-beam and the seat to cause the seat to rotate in correspondence with the plow-beam when such beam is rotated, and means for locking the beam with relation to the plow.

4. The combination, in a plow, of a horizontally-arranged circular beam-guide, a truss extending across the center of such guide and secured at each end to such guide, a right and a left hand plow placed rear to rear and having their standards pivotally secured to such truss, a plow-beam arranged substantially in line with such truss and pivoted thereto by a pivot arranged at the center of the circular guide, suitable means for guiding such plow-beam around such circular guide, means for locking such beam upon such guide, and means for depressing and elevating the points of such plows to cause them to enter or withdraw from the soil.

5. In a reversible plow, the combination of a circular beam guide or brace, a truss extending across the center of such guide and having its ends attached to such guide, a plow-beam pivoted to such truss at the center of the circular guide and provided with guiding devices arranged to engage such guide and slide thereabout, a right and a left hand plow placed rear to rear and having their standards pivotally secured to the truss, a sulky-arm having its inner end secured to the truss, extending outward under the circular guide and attached thereto, a supporting-wheel adjustably secured to the outer end of such sulky-arm, a seat-bow provided with a seat and pivotally attached to such sulky-arm, a sprocket-wheel fixed to such seat-bow at its pivotal point, a sprocket-wheel attached to the plow-beam at its pivotal point, a sprocket-chain connecting such sprocket-wheels, means for locking the plow-beam upon the circular guide, and means for depressing and elevating the points of such plows to cause them to enter or to withdraw from the ground.

6. The combination of the plowshare and the mold-board, the standard secured thereto, the beam-guide attached to such standard and provided with a suitable pawl-receiving notch and arranged to allow lateral movement of such beam, the plow-beam provided with

suitable guideways arranged to engage such guide to allow lateral movement of the beam, the beam-adjusting lever pivotally secured to such plow-beam and provided with the pawl arranged to engage the guide and also provided with the pawl arranged to engage a suitable rack secured to the beam, such rack, and means for operating the pawls.

7. In a reversible plow, the combination of the circular beam-guide, the truss extending across the axis of such guide, the right and left hand plows placed rear to rear and having their standards pivotally secured to such truss, the plow-adjusting screw passing through the plow-beam and the screw-nuts, such screw-nuts arranged above and below the truss, the collar journaled upon the lower end of such plow-adjusting screw, the thrust-nuts rigidly secured upon such screw above and below such collar, the braces pivotally connecting such collar with the plow-standards, the plow-beam provided with suitable guiding devices arranged to engage the circular guide to allow the beam to rotate upon the plow-adjusting screw-stem, and means for locking the plow-beam upon such circular guide.

8. In a reversible plow, the combination of the circular guide provided with the pawl-notch having a narrow mouth, the plow-beam pivoted to such circular guide, the beam-shifting lever pivoted to such beam and provided with the pawl having a cylindrical head connected to the shank of the pawl by a neck and arranged to engage such notch in the guide, a rack attached to such beam, suitable means arranged upon such beam-shifting lever to engage such rack, and a right and a left hand plow placed rear to rear and having their standards secured to such guide.

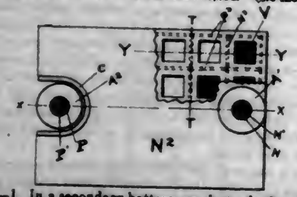
477,918. VOLTAIC BODY-BATTERY. WILSON F. POTTER, Albany, N. Y. Filed Apr. 4, 1892. Serial No. 427,673. (No model.)



Claim.—1. A voltaic body-battery consisting of two or more plates, each plate having ears on its edge or periphery and spaces between the ears, and between the plates a body holding particles of any matter forming an electrical excitant, arranged to produce by its contact with the plates a current of electricity, the ears on the plates being arranged to turn over and overlap the portion of the body of the opposite plate, and thus hold the plates and the intervening body together, for the purposes described.

2. A voltaic body-battery consisting of two or more plates, each plate having ears on its edge or periphery and spaces between the ears, and when the plates are placed together the ears on each plate turned down to overlap a portion of the body of the opposite plate, and thus hold the plates together, for the purposes described.

477,914. SECONDARY BATTERY. WILLIAM L. SILVEY, Lima, Ohio. Filed June 15, 1891. Serial No. 396,261. (No model.)



Claim.—1. In a secondary battery, an electrode therefor, consisting of a number of plates, and in combination therewith a connecting-rod consisting of a central core of high conductivity inoxidizable in sulphuric acid, an outer covering therefor of low conductivity, cast round the central core, forming a bar or rod, with a continuous screw-thread on its surface, the battery-plates having two plain surfaces, and a series of nuts between the plates for binding them together and to the screw-rod, as set forth.

2. In a secondary battery, the combination, with the active plates, of rods for connecting the plates to the external circuit, the rods having a continuous central core, of a metal indestructible in the electrolyte and an outer continuous envelope cast round it, having a screw-thread on its surface, and nuts, as set forth.

3. In a secondary battery, the combination of a series of metal plates, a continuous screw-threaded rod having a central core and metal nuts, the plates having holes extending through them for the easy admission of the rod, the two being clamped together by the nuts pressed against the sides of the plates and engaging the screws on the rod.

4. In a secondary-battery connecting device, the combination of a rod having an external surface of a metal having a continuous screw-thread on its length, an internal core having a higher conductivity than the outer metal, the two cast together, and a series of nuts engaging the screw-rod, with the battery-plates pressed between them, as set forth.

5. In a secondary battery, the metal battery-plates of the positive and negative electrodes respectively arranged alternately, having holes in them, through the medium of which the several plates of each electrode are connected together, in combination with a continuous screw-threaded rod having a central core, and plates of a porous separating medium placed between the plates having notches, and metal nuts engaging the screw-threaded rod on both sides of the metal plates and located in the notches in the porous plates, as set forth.

6. In a secondary battery, the combination of the positive and negative battery plates, a separating material therefor, consisting of two or more separable plates of a liquid-absorbing material having notches in them, and the screw-threaded rods and nuts, to which the plates are connected, located in notches in both the plates and the separating material and engaging the rods on both sides of the metal plates, as set forth.

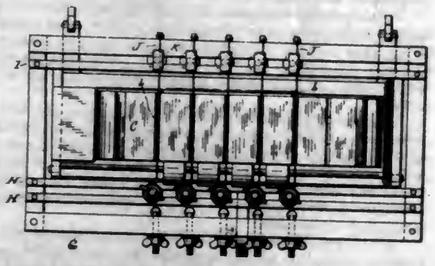
7. In a secondary battery, the metal conductor-plates P^2 N^2, of the positive and negative electrodes and a liquid-absorbing separating medium C between the plates, having notches, in combination with screw-threaded connecting-rods P N, having metal nuts $A' A^2$, the nuts located in the separating medium and engaging the rods on both sides of the conductor-plates, as set forth.

8. In a secondary battery, a connecting-bar therefor, having a central core cast therein, said bar consisting of a continuous central core, an outer covering of metal having a screw-thread thereon, battery-plates with holes therein, the connecting-bar passing through the holes, and the plates made fast to the connecting-bar by means of nuts pressed against the opposite faces of the plates, as specified.

9. In a secondary battery, a plate element or electrode consisting of a central grating of wires of aluminum, an outer covering for the central grating of a soft metal, such as lead, and an active material consisting of a metallic oxide supported thereby.

10. In a secondary battery, the combination, with the battery-plates of the positive and negative electrodes, of a separating material for the electrodes, consisting of two or more layers of wood-pulp board, having parallel sides in contact with each other and with the sides of the electrodes, which they separate, and having notches in their edges, with rods and metal nuts, to which the battery-plates are connected, located in the notches in the pulp-board, as set forth.

477,915. BRICK-CUTTING MACHINE. JACOB A. SHELL, Barrington, R. I. Filed Jan. 7, 1892. Serial No. 417,262. (No model.)



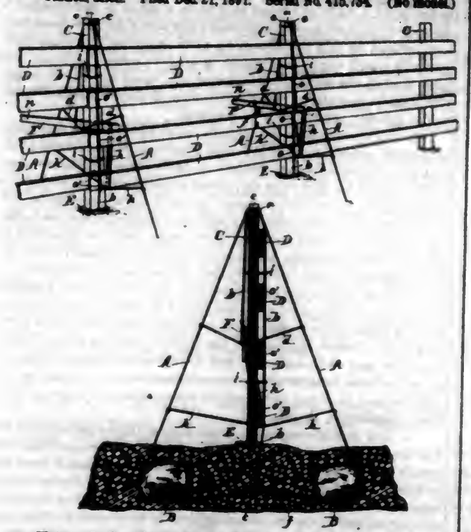
Claim.—1. In a brick-cutting machine, the endless slotted belt A, operating upon drums B B for receiving and conveying the clay to a position to be operated upon by the cutting-wires, and a brush secured at an angle to the frame between the bottom thereof and the inner surface of the belt as it passes from the lower surface of one of the drums B to the lower surface of the other drum, as and for the purposes specified.

2. In a brick-cutting machine, an endless belt A of leather or other flexible material and having a series of slots L in combination with a lever D and rod E for controlling the movement of the belt, as and for the purposes specified.

3. In a brick-cutting machine, the combination, with the cutting-wires J, of a series of clamps K K for the better holding and securing of the wires, for the purposes substantially as described.

4. In a brick-cutting machine, the combination, with the main frame, of a swinging frame hinged thereto, said swinging frame being provided with longitudinal bars H and I, forming channels in the frame, clamps in the channels, and cutting-wires secured at their ends to the swinging frame and having their intermediate portions passed under said clamps, as and for the purpose set forth.

477,916. FENCE CONSTRUCTION. GEORGE F. ST. JOHN, Highland Station, Mich. Filed Dec. 21, 1891. Serial No. 415,734. (No model.)



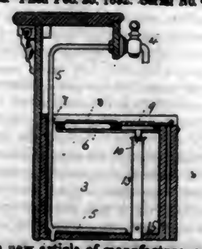
Claim.—1. In a fence, the combination of the post, the guys attached thereto, the series of bars having overlapping ends, the vertical wire wound around the lapped ends of each series of bars, the lever, and the transverse tension-wire attached to the lever and crossed under said bars, its ends being attached to the guys.

2. In a fence, the combination of the post, the guys, the lever, the cross-wire on which the lever is fulcrumed, attached to the guys, the tension-wire attached to the guys and looped around the end of said lever, and means for locking said lever, substantially as specified.

3. In a fence, the combination of the post, the triangular guy-wire attached thereto, the lever, the vertical wire attached at its lower end to the horizontal portion of the guy and passing over the post, its other end being attached to the lever, the tension-wire attached to the lever and its ends attached to the guy, and means for locking said lever, substantially as set forth.

4. In a fence, the combination of the post, the guys, the bars, the lever, the vertical supporting-wire wound around said bars and attached at its free end to said lever, the cross-wire on which the lever is fulcrumed, and the tension-wire attached to the lever and having its ends coupled to the guys, substantially as specified.

477,917. DRAINER FOR DRAFT APPARATUS. HERMAN STRATER, Boston, Mass. Filed Feb. 25, 1892. Serial No. 422,737. (No model.)

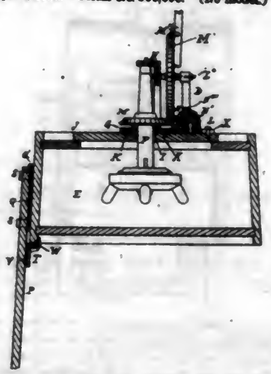


Claim.—1. As a new article of manufacture, a drainer-box composed of a rectangular receptacle or ice-chamber adapted to receive coils of pipe and closed by a removable cover provided with transverse corrugations on the rear portion and with longitudinal drainage apertures in the front portion and a single waste-pipe communicating with the ice-chamber and with the drainer-plate, substantially as described.

2. In combination with a group of open and closed water-tight receptacles and draft-faucets thereabove from a suitable supply, a transversely-corrugated plate lengthwise of the closed receptacles at the top rear portion, a series of drainer-plates composed of longitudinal bars with apertures therebetween and flush with the corrugated plate, and means for discharging waste beverage and melted ice through a common pipe, substantially as stated and explained.

3. In a drainer, a group of open and closed vessels, conveying-pipes in part within the closed vessels, and the draft-faucets therefor, combined with a removable cover for the closed vessels, a transversely-corrugated plate secured on the rear part of said cover, and detachable drainer-plates raised above the front portion of said cover, with a waste-pipe common to the drainer-plate and the closed receptacle, substantially as described and set forth.

477,918. WASHING-MACHINE. JAMES H. TAYLOR, Toledo, Ohio. Filed Apr. 8, 1891. Serial No. 388,093. (No model.)

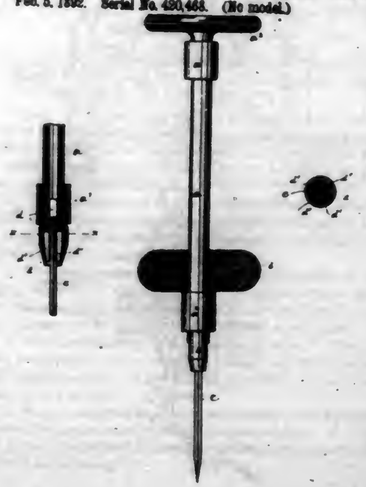


Claim.—1. A tub, a clasp secured on the exterior thereof and having looped bands on its outer face, a leg removably inserted through said bands from below, and a hook secured on the inner face of the leg and taking under the chine of the tub, the angle of the hook having a fin, as and for the purpose set forth.

2. A tub, a plate secured on its cover and having an upturned lip, a stationary bearing having two boxes, a dasher-shaft journaled through the plate and in one box of this bearing and having a driving-gear, a second bearing having a depending leg adjustably connected with said lip, this bearing also having a shoulder, a horizontal rock-shaft journaled in the second box of the stationary bearing and in the adjustable bearing, and an operating-gear on the rock-shaft meshing with said driving-gear, the shoulder bearing against the back of the operating-gear, as and for the purpose set forth.

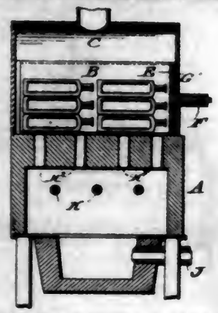
3. A tub, a plate secured on its cover and having an upturned lip at one edge, a stationary bearing on said cover, a dasher-shaft journaled through the plate and in said bearing and having a driving-gear above the cover, an L-shaped bearing having its foot adjustably secured to the cover, threaded connections between said lip and bearing for drawing the latter toward the shaft, a rock-shaft carried at the upper end of the stationary and adjustable bearings, and an operating-gear on this shaft meshing with the driving-gear, subtantially as described.

477,919. ICE-PICK. ERNEST WEINGARTH, New York, N. Y. Filed Feb. 5, 1892. Serial No. 420,468. (No model.)



Claim.—The combination of a rod with a surrounding annular hammer, a coupling for the attachment of an awl, and a nut that constitutes a shoulder for the hammer, and a means for attaching the rod to the coupling, substantially as specified.

477,920. OVEN FOR ANNEALING GLASS. JOHN P. WHITNEY, Glassborough, N. J., assignor to the Whitney Glass Works, of New Jersey. Filed Jan. 14, 1891. Serial No. 377,748. (No model.)

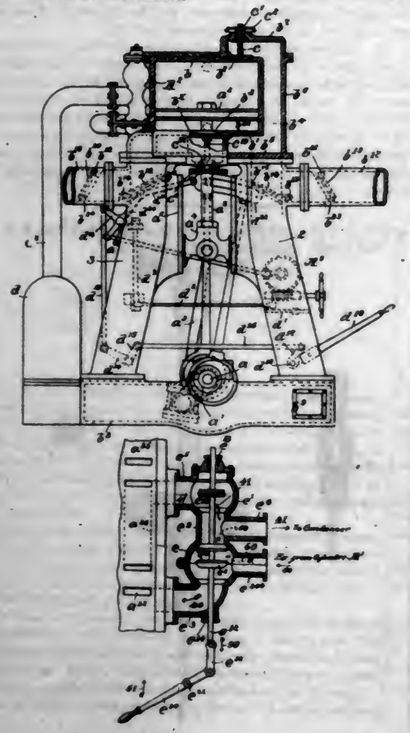


Claim.—1. A glass-furnace having a tray open at top, and a hood surrounding said tray and having air-passages between it and the sides of said tray leading into the open top of said tray, said tray and hood being located above the furnace and extending beyond the sides of said furnace, and the parts combined substantially as described.

2. A furnace having above the same a tray open at top and at one end and provided with a slide, substantially as described.

3. A furnace, a tray open at top and at one end, a hood above said tray having depending sides forming air-passages between it and the sides of the tray, and a slide in said tray, said parts being combined substantially as described.

477,921. ENGINE. JOHAN M. ANDERSEN, Boston, Mass., assignor of one-half to Albert Anderson, same place. Filed Mar. 18, 1892. Serial No. 425,434. (No model.)



Claim.—1. In a steam-engine, the combination of the following instrumentalities, viz: a steam-cylinder provided with steam inlet and outlet ports, a valve to control said ports, a piston in said cylinder, a main or crank shaft to which the said valve and piston are connected, a water-port for said cylinder, and a valve to control said water-port, normally closed when the cylinder is used as a steam-cylinder and opened when the said cylinder is used as a water cylinder or pump, and means to operate the steam-valve to cut off the admission of steam to the cylinder, substantially as described.

2. In a steam-engine, the combination of the following instrumentalities, viz: a steam-cylinder provided with steam inlet and outlet ports, a valve to control said ports, a piston in said cylinder, a main or crank shaft to which the said valve and piston are connected, water-ports at opposite ends of the said cylinder, valves to control said ports, normally closed when the cylinder is used as a steam-cylinder, and gearing to connect the said water-valves, whereby they may be opened by one actuating mechanism, and means to operate the steam-valve to cut off admission of steam to the cylinder, substantially as described.

3. In an engine, the combination of the following instrumentalities, viz: a plurality of cylinders provided with pistons, a main or crank shaft to which the said pistons are connected, one or more ports in one of the said cylinders additional to the regular ports, one or more valves to control said additional ports, and mechanism to disconnect the said ported cylinder from the remaining cylinders, whereby the said ported cylinder may be driven as a pump by the remaining cylinder or cylinders, substantially as described.

4. In a multiple-expansion steam-engine, the combination of the following instrumentalities, viz: a plurality of cylinders provided with pistons and connected together for expansion of the steam from one cylinder to another, valves for each of said cylinders to control the admission of steam to the cylinders, a main or crank shaft to which the said pistons and valves are connected, one or more ports in one of said cylinders additional to the ports controlled by the steam-valves, one or more valves to control said additional ports, and valves to control the passages leading to the cylinder provided with the said additional ports, whereby the said multiple-expansion steam-engine may be converted into a combination steam-engine and pump, substantially as described.

5. In a steam-engine, the combination of the following instrumentalities, viz: a high-pressure cylinder and a low-pressure cylinder, valves to control the admission of steam to the said cylinders, a rock-shaft to which the valve of the high-pressure cylinder is connected, a second rock-shaft to which the valve of the low-pressure cylinder is connected, a clutch mechanism to couple the said rock-shafts together, a main or crank shaft to which the said rock-shafts are connected, an additional or water port in the low-pressure cylinder, a valve to control said port, and valves to open and close the inlet and outlet passages to the low-pressure cylinder, whereby the low-pressure cylinder may be converted into a pump driven by the high-pressure cylinder, substantially as described.

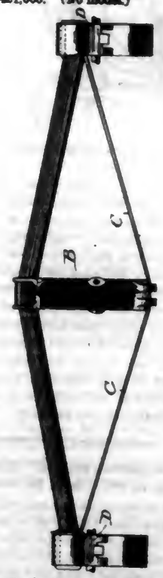
6. In a steam-engine, the combination of the following instrumentalities, viz: a high-pressure cylinder and a low-pressure cylinder provided with pistons and with valves to control the admission of steam into said cylinders, columns to support the said cylinders, the column of the low-pressure cylinder being made hollow and provided with a water-inlet port, a valve in said hollow column, a discharge-pipe connected to said hollow column, a rock-shaft to which the steam-valve of the high-pressure cylinder is connected, a second rock-shaft to which the steam-valve of the low-pressure cylinder is connected, means to detachably couple the said rock-shafts together, a main or crank shaft to which the pistons of the said cylinders are connected, means to connect the rock-shafts to the crank-shaft, a water-port in the low-pressure cylinder communicating with the hollow column, a valve to control said port, and valves to control the inlet and outlet passages for the low-pressure cylinder, whereby the low-pressure cylinder may be converted into a pump, substantially as described.

7. In a multiple-expansion engine, the combination of the following instrumentalities, viz: a high-pressure cylinder A, a low-pressure cylinder A^2, and an intermediate cylinder A', a bed-frame, columns A^4 A^5 to support the cylinders A A', and a hollow column A^6, provided with legs 2 3 to support the low-pressure cylinder, a main or crank shaft, pistons in the said cylinders connected to the said crank-shaft, valves to control the admission of steam into said cylinders, a rock-shaft a^{10}, to which the valves of the cylinders A A' are connected, a rock-shaft a^{12}, to which the valve of the cylinder A^2 is connected, means to move said shaft to place the valve of the cylinder A^2 in its central position, a clutch to couple the said shafts together, and means to operate said clutch, water-ports in the cylinder A^2, a passage connecting one of said ports with the hollow leg 2 of the column A^6, a second passage to connect the other water-port to the hollow leg 3 of the said column, valves in the said hollow legs, valves b^3 b^4 to control the water-ports, and means to operate said valves, a valve-casing intermediate of the cylinders A' A^2 and having ports or passages connected to the exhausts of the cylinders A' A^2 and to the inlet of the cylinder A^2, and valves to control said passages, whereby the cylinder A^2 may be converted into a pump, substantially as described.

8. In a steam-engine, the combination of the following instrumentalities, viz: the steam-cylinder A^2, provided with a piston a^3, a crank-shaft to which said piston is connected, steam-ports for said cylinder, and a valve to control said ports, means to operate said valve to cut off admission of steam to the cylinder, additional water-ports at the opposite ends of the cylinder, and valves to control the same, a passage b^4, communicating with the port b^3, and a passage b^{11}, communicating with the port b^2, substantially as described.

9. In a steam-engine, the combination of the following instrumentalities, viz: the steam-cylinder A^2, provided with a piston a^3, a crank-shaft to which said piston is connected, steam-ports for said cylinder, and a valve to control said ports, means to operate said valve to cut off admission of steam to the cylinder, additional water-ports at the opposite ends of the cylinder, and valves to control the same, a passage b^4, communicating with the port b^3, and a passage b^{18}, communicating with the port b^2, a hollow column 2, communicating with the passage b^4, a valve b^{19} in said column, a branch pipe b^{17}, and a valve b^{19} in said branch pipe, a hollow column 3, communicating with the passage b^{18}, a valve b^{12} in said column, a branch pipe b^{14}, and a valve b^{20} in said branch pipe, substantially as described.

477,922. CAR-BRAKE. DAVID L. BARNES, Chicago, Ill., assignor to the Northwestern Equipment Company, same place. Filed Feb. 15, 1892. Serial No. 421,605. (No model.)



Claim.—1. The method of securing the truss-strap to the compression member of a brake-beam, which consists in bending the ends of such strap entirely around the ends of the member and passing the brake-heads over both strap and member, whereby the strap is bound between the brake-head and the member on both sides of the latter and held in place without the use of bolts, substantially as described.

2. In a brake-beam, the combination of a compression member, a strut, a truss-strap passing over the strut and having its ends bent around the ends of the compression member, and brake-heads fitting over the ends of the compression member and strap and holding the parts together, substantially as described.

3. In a brake-beam, the combination of a compression member, a truss rod or strap the ends whereof are bent over the ends of such member, brake-heads inclosing the ends of the truss-rod and member and securing the rod in place, and a strut interposed between the compression member and truss-rod, substantially as described.

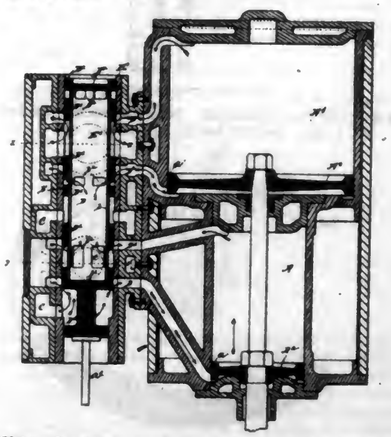
477,923. FASTENING FOR BOOTS OR SHOES. WALTER R. BENNETT, Boston, Mass. Filed Aug. 28, 1891. Serial No. 403,948. (No model.)

Claim.—The combination, with a boot or shoe having at each side of its opening opposing series of permanently-attached studs, of a series of flexible and elastic strips of varying lengths, each having at both ends eyes for removable engagement with opposite pairs of the studs, substantially as described.

477,923.



477,924. BALANCED PISTON-VALVE FOR COMPOUND ENGINES. HOBART CANFIELD, Morristown, N. J. Filed Apr. 23, 1891. Serial No. 390,077. (No model.)



Claim.—In a balanced valve, the combination of a steam-chest, a valve-casing open to the atmosphere at both its ends, a hollow piston-valve having end closures, and a number of piston-heads on said valve, the head at one end having a less diameter than the other heads and the head adjacent to said end head having a greater bearing-surface for steam than the other heads, substantially as specified.

477,925. STRUCTURAL COLUMN. AMORY COFFIN, Phœnixville, assignor to The Phœnix Iron Company, Philadelphia, Pa. Filed Mar. 5, 1892. Serial No. 423,859. (No model.)

Claim.—1. The combination, in a sectional column made up of a series of segments secured together, of a bracket-plate mounted between two or more of the segments and extending beyond the line of the column with a seat-bracket secured to said plate to support a girder or beam, substantially as described.

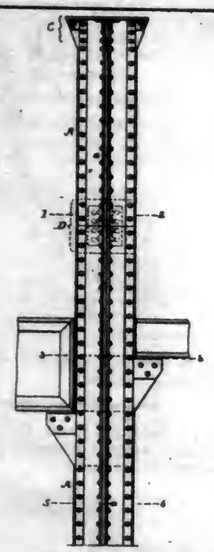
2. The combination of two abutting segmental columns and filler-plates between the segments with a coupling made of plates, said coupling extending into the two columns between the segments and bolted to said segments, substantially as described.

3. The combination of the two abutting columns and the plate extending into the two columns and secured to each column and having a projection or projections extending beyond the line of the column for supporting girders or beams, substantially as specified.

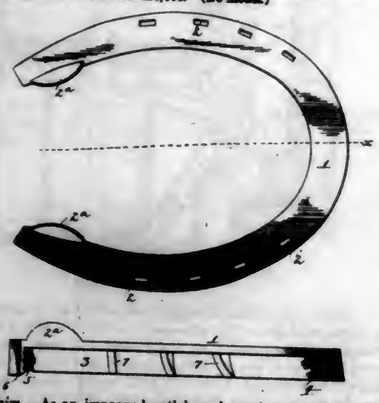
4. The combination of a segmental column and a plate secured between the segments and extending on each side of the column with seat-brackets secured to the plate on each side of the column, substantially as described.

5. The combination of a segmental column with a plate secured between the segments and having extension-brackets out of line with each other to accommodate beams or girders of different heights, substantially as set forth.

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477,926. HORSESHOE. George Custer, Brumond, Tex. Filed Feb. 2, 1892. Serial No. 420,101. (No model.)



Claim.—As an improved article, a horseshoe consisting of the plate 1, having nail-holes 2, the depending flange 3, located on the under side of said plate, extending from end to end thereof and having triangular recesses 5 near each end, the triangular toe-calk, and the upwardly-extending beveled flanges at the rear or heel portion of plate 1, substantially as described.

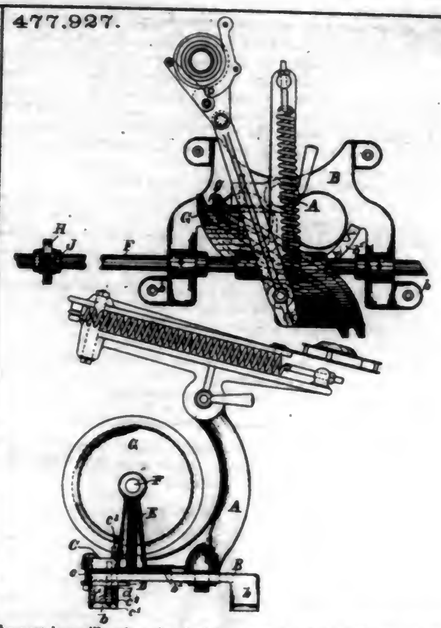
477,927. TARGET-TRAP. Frederick G. Dahn, Findlay, assignor to the Cleveland Target Company, Cleveland, Ohio. Filed June 27, 1891. Serial No. 397,676. (No model.)

Claim.—1. In a target-trap, the combination of a base and a post carrying the throwing-arm and its actuating mechanism pivoted to said base with a rotatable shaft, means for rotating it, a cam secured to said shaft, an arm rigidly connected with the post, and suitable connections between the said arm and cam, substantially as set forth.

2. The combination of a base, a post carrying the throwing-arm and its operating mechanism pivoted to said base, and an arm rigid with said post with standards secured to said base, a shaft mounted in said standards, a cam secured to said shaft and engaging with said arm, and means for rotating said shaft step by step, substantially as and for the purpose specified.

3. The combination of a base, a post pivoted thereto carrying the throwing-arm and its operating mechanism, an arm rigid with said post, and a friction-roller mounted on said arm with standards secured to said base, a shaft mounted in said standards, means for revolving said shaft step by step, a piece secured to said shaft having in its periphery an endless cam-groove in which the friction-roller is held, whereby

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the post is oscillated as the shaft is revolved, substantially as and for the purpose specified.

4. The combination of a base, a post carrying the throwing-arm and its operating mechanism pivoted to said base, and an arm rigid with said post with standards secured to said base, a shaft mounted in said standards, a cam secured to said shaft engaging with said arm, a ratchet-wheel secured to the shaft, a lever loosely mounted on the shaft, a pawl attached to the lever, and a spring for moving said lever in one direction, substantially as and for the purpose specified.

5. The combination of a base a part of the edge of which is in the form of a circular arc, a post carrying the throwing-arm and its operating mechanism pivoted to said base at the center of curvature of said curved part, and an arm rigid with said post and extending over the curved part of said base with a spring-actuated pressure-piece carried by said arm and adapted to press against said curved part of the base, substantially as set forth.

477,928. PLANING-MACHINE. William H. Doane, Cincinnati, Ohio. Filed Aug. 13, 1891. Serial No. 402,496. (No model.)

Claim.—1. A feed-roller planing-machine having upper and lower feed-rollers, upper and lower cutting-cylinders, and a presser-bar over the lower cylinder, independent mechanisms for raising the upper feed-rollers, the upper cutting-cylinder, and the presser-bar over the lower cylinder, a common shaft extending into proximity to and operatively connected with each of said mechanisms, and means for operating said shaft, substantially as described.

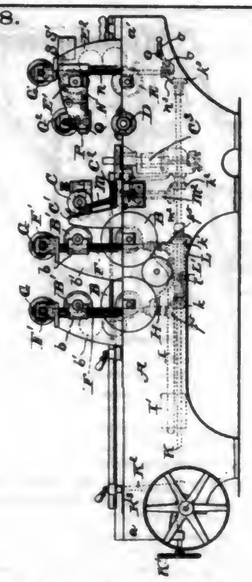
2. A feed-roller planing-machine having upper and lower feed-rollers, upper and lower cutting-cylinders, and a presser-bar over the lower cylinder, independent mechanisms for raising the upper feed-rollers, the upper cutting-cylinder, and the presser-bar over the lower cylinder, a common shaft extending into proximity to and operatively connected with each of said mechanisms, means for operating said shaft, and means for disconnecting each of said mechanisms and operating the same independently, substantially as described.

3. In a feed-roller planing-machine, the combination, with the upper feed-rollers, the presser-bar, and their bearings, of a pair of screw-shafts for each roller and for the presser-bar, the screws of each pair being operatively connected, and a common shaft extending into proximity to and operatively connected with the one of each pair of screw-shafts, substantially as described.

4. In a feed-roller planing-machine, the combination, with the lumber-supporting bed-plate of the upper planing-cylinder, of a pair of inclined screw-shafts journaled in and supported by said bed-plate, a cross-shaft connecting said screw-shafts beneath said bed-plate, a vertical shaft for imparting motion to said cross-shaft, and means for actuating said vertical shaft, substantially as described.

5. In a feed-roller planing-machine, the combination, with the lower planing-cylinder, of the upper feeding-out roller and the support-

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ing-frame therefor, the presser-bar and its supports, said supports being connected to the frame of the feeding-out roller by horizontal pivots, and means for securing said presser-bar in position above said planing-cylinder, whereby said presser-bar may be released and turned on its pivots to remove it from above the planing-cylinder, said presser-bar moving within the planes of the sides of the machine, substantially as described.

6. In a feed-roller planing-machine, the combination, with the upper feeding-in rollers, of a pair of screw-shafts for each of said rollers for adjusting said rollers vertically, a weight at each side of the machine connected with one of each pair of screw-shafts by an evening connection, and means for simultaneously turning said shafts to adjust said rollers, whereby each one of each pair of screw-shafts is permitted to move independently against the tension of said weight, substantially as described.

7. In a feed-roller planing-machine, the combination, with the upper feeding-in rollers, of screw shafts for raising and lowering the bearings of said rollers, comprising a pair of shafts for each roller connected for joint operation, said screw-shafts being movable vertically, a yoke connecting the shafts at each side of the machine, a weight connected with said yoke, and means for simultaneously turning the screw-shafts at one side of the machine to adjust said roller-bearings, substantially as described.

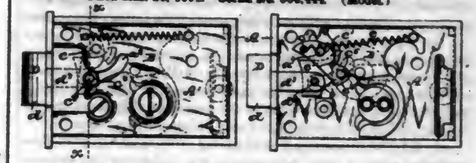
8. In a feed-roller planing-machine, the combination, with the feeding-in rollers, of the screw-shafts for adjusting said rollers vertically, comprising a pair of shafts for each roller connected for joint movement, weights connected with said shafts, gears mounted to turn with said shafts but capable of sliding thereon, and a shaft provided with gears meshing with the gears on said screw-shaft for turning the same to adjust said rollers, substantially as described.

9. In a feed-roller planing-machine, the combination, with the feeding-in rollers, of the screw-shafts for adjusting said rollers vertically, comprising a pair of shafts for each roller connected for joint movement, one shaft of each pair being provided with a gear, a shaft provided with driving-gears mounted to revolve therewith but capable of moving longitudinally thereof, and means for moving said driving-gears into and out of mesh with the gears of the worm-shafts, substantially as described.

10. In a feed-roller planing-machine, the combination, with the feeding-in rollers, of screw-shafts for adjusting said rollers vertically, comprising a pair of said shafts for each roller connected for joint movement, a gear on one shaft of each pair, a shaft provided with driving-gears mounted to turn with said shaft but movable longitudinally thereof, a yoke connecting said driving-gears, and a shaft provided with an eccentric engaging said yoke for moving said driving-gears into and out of mesh with the gears of the driving-shaft, substantially as described.

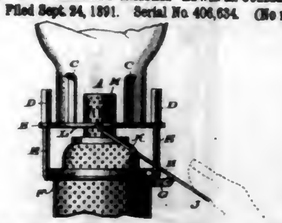
11. In a feed-roller planing-machine, the combination, with the upper planing-cylinder, the fixed bed-plate, upper and lower feeding-rollers, the lower planing-cylinder, and presser-bar mounted above the same, of a single continuous shaft for simultaneously or independently adjusting said upper feed-rollers, upper cylinder, and presser-bar, and the matchers located adjacent to the travel of the lumber through the machine, substantially as described.

477,929. REVERSIBLE LATCH. Albert A. Dovey, Newark, N. J. Filed Mar. 26, 1891. Serial No. 386,444. (Model.)



Claim.—As an improved article of manufacture, a night-latch provided with a reversible bolt consisting, essentially, of a casing A, a bolt-operating mechanism B, a back plate A', having a curved slot a^3, a bolt D, projecting from said casing and having a shank with a perforation directly in front of said slot a^3, removably attached to a pin or post on said bolt-operating mechanism B, a lever c, provided with a perforated post for pivoting the same to a post a' in the casing A, and said lever having an upwardly-extending portion chamfered, as at a^4, and normally projecting over and in engagement with said pin b on the bolt-operating mechanism B, a finger-piece c^4 on said lever extending into said slot a^3, and a spring c, secured at one end to a post c^3 on said lever and at the other end to the bolt-operating mechanism, all of said parts being arranged substantially as and for the purposes set forth.

477,930. LAMP-CHIMNEY RAISER. Edwin M. Goldsmith, Philadelphia, Pa. Filed Sept. 24, 1891. Serial No. 406,634. (No model.)



Claim.—1. In a lamp-chimney raiser, the combination of a plate for supporting a chimney, having sleeves thereon and pins projecting from the edge thereof, rods supported by the lamp-neck and freely passing through said sleeves, and a bifurcated lever pivotally connected to the lamp-neck and adapted to bear against the pins on said plate to raise the chimney and plate, said lever having lips at its ends to prevent disengagement of said lever from the plate when the latter is raised, substantially as described.

2. A stationary collar having rods and an ear secured thereto, a burner with a surrounding ring having sleeves guided on said rods, pins on said ring, and a lever pivoted to said ear and having a limb with upturned ends adapted to engage said pins, said parts being combined substantially as described.

477,931. TELEPHONE-TABLET. Joseph S. Gold, Columbus, Ohio, assignor to the Gold Telephone Tablet Company, same place. Filed Jan. 25, 1892. Serial No. 419,184. (No model.)



Claim.—1. A tablet comprising a shelf supported in an inclined position, vertical walls at opposite sides of its upper end, and a vertical partition supported between the walls, with its lower edge slightly separated from the inclined shelf, whereby a roll of paper is placed and supported above the vertical partition and passes down through the space between the partition and inclined shelf, substantially as described.

2. A tablet comprising a shelf, a partition at its upper end extending outward therefrom and supported with its lower edge slightly above

the said shelf, a cutter extending transverse its lower edge, and a yielding device for holding the cutter in contact with the shelf, whereby a roll of paper is supported above the outwardly-extending shelf and passes under it and under the cutter, substantially as shown.

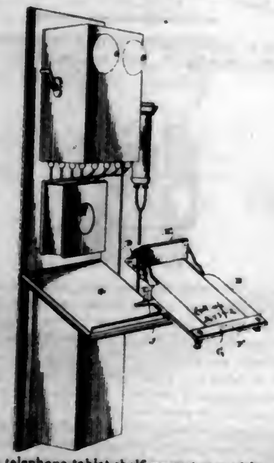
3. A tablet comprising a shelf having at its upper end a support for a roll of paper and clamps extending transverse the said shelf and adjustably secured directly thereto, the outer ends of the clamps having downward and inwardly extending hooks, substantially as specified.

4. A telephone-tablet comprising a shelf, a vertical partition supported at its upper end slightly above the said shelf for supporting a roll of paper which passes down over the shelf, a cutter at the lower end of the shelf under which the paper passes, and adjustable clamps secured directly and transversely to the under side of the shelf, having each inwardly-bent ends to form hooks, substantially as specified.

5. A tablet comprising a shelf having at its upper end a shelf for supporting a roll of paper, a transverse groove between its ends for adjustable clamps, and a transverse groove below the clamp-groove for the bead at the lower end of the telephone-battery-box lid, substantially as specified.

6. A tablet comprising a shelf having at its upper end a support for a roll of paper, a cutter extending transverse its lower end, bolts passing vertically through opposite ends of the cutter and the shelf, and spring or yielding devices placed upon the bolts for holding the cutter upon the shelf, substantially as described.

477,932. TELEPHONE-TABLET SUPPORT. JOSEPH S. GOLD and ADAM H MCALPINE, Columbus, Ohio, assignors to the Gold Telephone Tablet Company, same place. Filed Mar. 26, 1892. Serial No. 426,507. (No model.)



Claim.—1. A telephone-tablet-shelf support comprising a jaw having upper and lower projecting arms, one of said arms having a clamping-screw, and longitudinally-projecting arms to which the shelf is attached, substantially as specified.

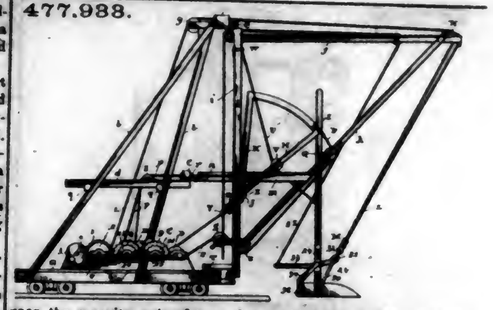
2. A telephone-tablet-shelf support comprising a jaw having upper and lower projecting arms, the inner lower arm being short, for the purpose described, and the outer lower arm being long and provided with a clamping-screw, and projecting arms which support the shelf, substantially as set forth.

477,933. EXCAVATING AND SHOVELING MACHINE. EDWARD RESSEMANN, Duluth, Minn. Filed Feb. 1, 1892. Serial No. 419,949. (No model.)

Claim.—1. In an apparatus of the character described, a bucket-lever mechanism, combined with an operating mechanism comprising three spools, shafts upon which they are placed, the gear-wheels 5, 6, and 9, rigidly secured to their shafts and intermeshing, and the gear-wheels 11 and 13 and an idler between them, the gear 11 being fast upon its shaft and the gear 13 loose, whereby the gears 6 and 13 upon the same shaft have reverse revolutions, and an endwise-sliding spool upon the shaft of the wheels 11 and 13, provided with clutches for engaging and disengaging alternately clutches upon the wheels 6 and 13, and ropes running to the said spools from different parts of the bucket mechanism, substantially as described.

2. In an apparatus of the character described, a bucket-lever mechanism and a crane, combined with an operating mechanism comprising three shafts carrying gear-wheels upon one end, which intermesh and are rigidly secured to their shafts, the wheels 11 and 13

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upon the opposite ends of two of the said shafts, an idler between them, one of the last said gear-wheels being loose upon its shaft for the purpose described, spools upon the shafts 14 and 15 of the said mechanism, which have endwise movements, and clutches for engaging the ends of the spools with their adjacent gear-wheels, substantially as set forth.

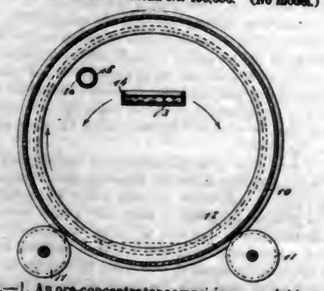
3. In an apparatus of the character described, the combination, with a bucket-lever mechanism and a laterally-swinging crane, of an operating mechanism comprising shafts 4, 14, and 15, the gear-wheels 5, 6, 9, and 11, rigidly secured thereto and the first three intermeshing, a gear-wheel 13, loosely placed upon the opposite end of the shaft 14, and an idler placed between gears 11 and 13 and meshing therewith for the purpose described, spools A, B, and C, placed upon the shafts 4, 14, and 15 and operating substantially as described, the spool C having a friction-disk, and a spool D, journaled in movable bearings and provided with a friction-disk engaging the friction-disk of spool C, all combined to operate substantially as and for the purpose set forth.

4. The combination, with a bucket-lever mechanism and a laterally-swinging crane, of an operating mechanism comprising three shafts having gear-wheels rigidly secured to one end and intermeshing, a gear-wheel upon the opposite end of one of the shafts and rigidly secured thereto, and a gear loosely placed upon the same end of an adjacent shaft, an idler between the two for the purpose described, spools placed loosely upon the shafts and having an endwise movement, as set forth, clutches and friction-disks, as described, and a means for moving the spools endwise, and a brake mechanism for the spools, substantially as specified.

5. A bucket for an excavating-machine, comprising a bucket pivoted between arms of a bucket-lever, a bail at the pivotal point to which an operating-rope is attached, arms pivoted to the bucket in rear of the bail, and an operating-lever pivoted at its forward end to the bail and to the arms between its ends, and an operating-rope connected to the free end of the lever, substantially as set forth.

6. In an excavating-machine, a bucket-lever and a means for operating it, arms extending outward from the outer end of the bucket-lever, a bucket pivoted between the arms by means of a bail which passes through the arms and the bucket, a lever pivotally connected at its forward end to the upper end of the bail, arms pivoted at their lower ends to the bucket in rear of the bail and at their upper ends to the lever between its ends, and an operating-rope connected with the free end of the lever, substantially as described.

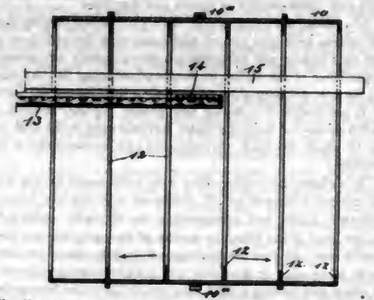
477,934. ORE-CONCENTRATOR. HORATIO F. HICKS, Ashland, Oreg. Filed Oct. 7, 1891. Serial No. 408,058. (No model.)



Claim.—1. An ore-concentrator comprising a revolubie open-ended cylinder having internal flanges and a feed-flume arranged to deliver centrally in the cylinder, said flume having a series of side openings at its delivery end, substantially as described.

2. In an ore-concentrator, the open-ended cylinder having a series of flanges therein, the flanges being highest in the middle and

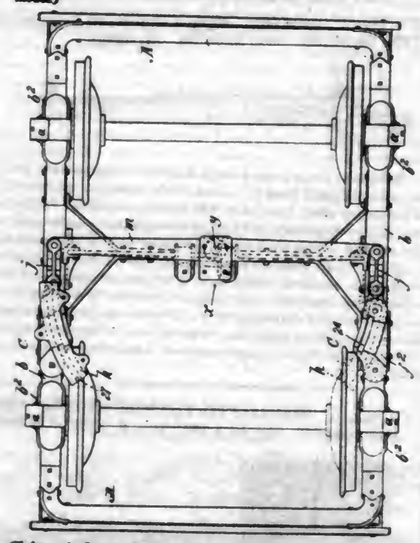
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gradually diminishing in height toward the ends of the cylinder, substantially as described.

3. An ore-concentrator comprising an open-ended cylinder having a series of internal flanges, which flanges are highest in the middle of the cylinder and diminish in height toward the end, and a feed-flume arranged to deliver centrally within the cylinder, substantially as described.

477,935. RAILWAY-CAR. GEORGE M. HOADLEY and SUMNER A. BERRI, Springfield, Mass. Filed Mar. 16, 1892. Serial No. 425,197. (No model.)



Claim.—1. In a railway-car, a truck having a car-body-supporting structure comprising a truck-frame embodying beam-united yokes arranged sidewise longitudinally of the truck and supported on the journals, bolsters which are spring-supported above the truck-frame at each side of the truck nearer the one pair of the wheels than the other and having curved ways, the car-body connected for a swiveling movement with a suitable part of the truck, and receiving supports at and by and having sliding engagements with said opposing bolsters, substantially as described.

2. In a railway-car, a truck having at each side thereof and nearer one pair of wheels than the other bolsters which at their upper portions have curved ways or bearing-surfaces generated from a common center, the car-body having its support upon said bolsters and a sliding engagement with said curved ways, and links connected to and extended longitudinally from said bolsters, and a beam pivotally connected to said links and extended from the one to the other transversely of the truck farther from the bolsters than the center from which said curved ways are generated, and the car-body pivotally connected upon said transverse beam, substantially as and for the purposes set forth.

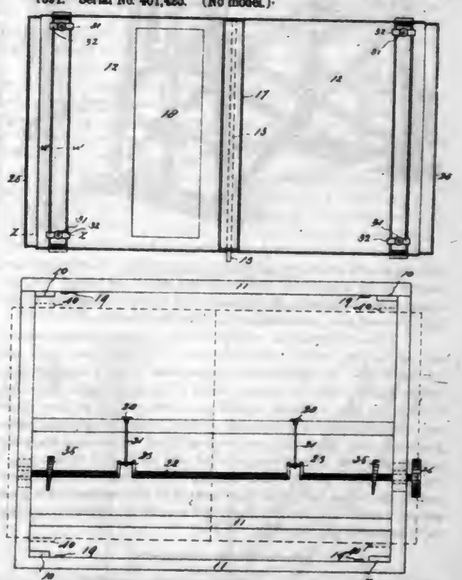
3. In a railway-car, the combination, with a truck-frame having separate bolsters oppositely supported on side portions of said frame nearer one end pair of the car-wheels than the other and having the arc-formed channels in their tops, of the car-body having arc-formed ribs at lateral portions of its bottom for sliding engagements with said bolster arcways, substantially as described.

4. In a railway-car, the combination, with a truck-frame having mounted on opposite side members thereof the separate bolster-base castings, each comprising the upwardly-opening hollow body and spring-seats 12 12, of the upper bolster-sections, each having at its top the curved way 24 and provided with a pending body adapted for a vertical sliding engagement with the hollow body of said base-casting and having the spring-seats 16 16, the bolster-springs *g*, and the car-body having the pending arc-formed ribs 27, substantially as described.

5. In a railway-car, the combination, with a truck-frame comprising opposite longitudinal side beams, of the opposing bolster-bases *d d*, each comprising a bottom 10, the pending side flanges 11 11, the upwardly-open spring-seats 12 12 at the ends of the said bases and intermediate thereof the upwardly-open hollow body, the upper bolster-sections each comprising a member having in its top the curved way 24, the downwardly-opening spring-seats 16 16, and the pending body 17, the bolster-springs *g g*, and the car-body having at lateral portions of its bottom the castings *h*, each provided with the pending arc rib 27, and all arranged substantially as described.

6. In a railway-car, the combination, with the longitudinal side beams, of the truck-frame, the bolsters mounted thereon nearer one of the pair of wheels than the other, having the arc channels in their tops, the links *j j*, connected to the bolsters, the transverse beam connected to the links, and the car-body having on its under side the bracket *n*, as shown, upon which the said transverse beam is intermediately thereof pivotally connected, and the said body having the pending ribs 27 27, substantially as described.

477,936. ORE-CONCENTRATOR. EDGAR A. HOCKLEY, Ouray, Colo., assignor of one-half to Roselle W. Haskins, same place. Filed Aug. 1, 1891. Serial No. 401,425. (No model.)



Claim.—1. The combination, with a concentrating-table, of oscillating supporting-arms therefor, means for actuating said arms, a spring-supported movable trough for the concentrates, said trough having an opening, a spring-actuated slide normally closing said opening, and means for opening the slide and discharging the concentrates, substantially as described.

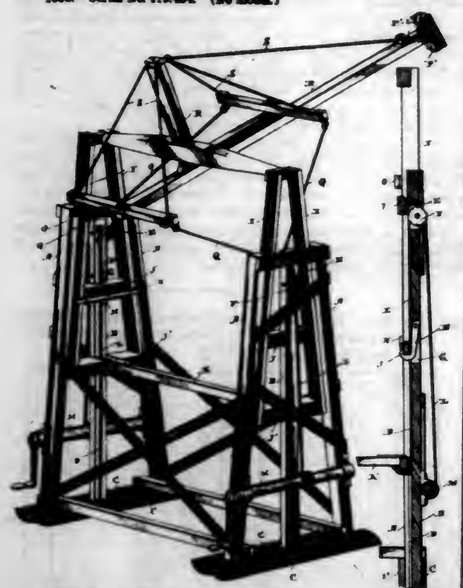
2. The combination, in a concentrating-table, of two hinged oppositely-inclined sections, springs supporting the table, means for oscillating the same upon the springs, vertically-movable troughs located at the outer edges of the sections and provided with openings, spring-actuated slides normally closing said openings, and means for opening the slides and discharging the concentrates as the troughs are lowered by their gravity, substantially as described.

3. In a concentrator, the combination of a spring-supported oscillating table consisting of hinged oppositely-inclined sections provided with movable troughs for the concentrates, said troughs having slots in the bottom normally closed by spring-actuated slides, laterally-movable arms connected with the troughs and projecting downward,

rods connecting these arms with said slides, and rotating cams located below the troughs, whereby when a sufficient quantity of concentrates has settled in the troughs they move downwardly by gravity, bringing said arms in the path of the cams, when the slides are opened and the concentrates discharged, substantially as described.

4. A concentrating-table provided with a vertically-movable trough for collecting the concentrates, a yielding support for said trough, and means for automatically discharging the concentrates from the trough at intervals regulated by their gravity, substantially as described.

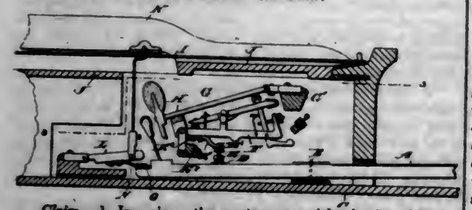
477,937. STACKER. JACOB HOLMAN, Liberty, Ill. Filed Jan. 27, 1892. Serial No. 419,434. (No model.)



Claim.—1. In a stacker, the combination, with a tower and a vertically-adjustable arm-carrying frame moving therein, of horizontal bars secured to the sides of the said frame and which are formed with upturned ends and loops on the tower-frame, which are engaged by the said upturned ends, substantially as shown and described.

2. The combination of a support and vertically-recessed posts B secured thereto, having transverse slots G between their ends and transverse slots E adjacent their upper ends, both of the said slots communicating with the vertical recess of the posts, rollers journaled in the upper slots, inwardly-extending hooks pivoted at their upper ends in the lower slots, a vertically-moving frame, recessed end cross-pieces thereon, which move on the posts B and which when the frame is being elevated move freely past the said hooks, but which engage the same in their downward movement, ropes connected at their inner ends to the frame and which pass upward in the recesses of the posts and outward over the said pulleys, and a winding apparatus, substantially as shown and described.

477,938. PIANO. ANDERS HOLMSTROM, New York, N. Y. Filed Feb. 24, 1892. Serial No. 423,600. (No model.)



Claim.—1. In a piano, the combination, with a keyboard having straight keys, of actions arranged out of alignment with the said keys and a lifter for each action and comprising a bar pivotally connected with the hopper-lever of the action to permit of swinging the bar sidewise to bring its free end over the corresponding key, and means for fastening the bar in place after it is swung into proper position relative to its key, substantially as shown and described.

2. In a piano, the combination, with a keyboard having straight keys, of actions arranged out of alignment with the said keys and a lifter for each action and comprising a bar pivotally connected with the hopper-lever of the action to permit of swinging the bar sidewise to bring its free end over the corresponding key, means for fastening the bar in place after it is swung into proper position relative to its key, and a screw-rod having a head and screwing in the free end of said bar to adjust the head relative to the key, substantially as shown and described.

3. In a piano, the combination, with a keyboard having straight keys, of actions arranged out of alignment with the said keys and a lifter for each action and comprising a bar pivotally connected with the hopper-lever of the action to permit of swinging the bar sidewise to bring its free end over the corresponding key, means for fastening the bar in place after it is swung into proper position relative to its key, a screw-rod having a head and screwing in the free end of the said bar to adjust the head relative to the key, and a jam-nut to lock the said screw-rod in place after adjustment, substantially as shown and described.

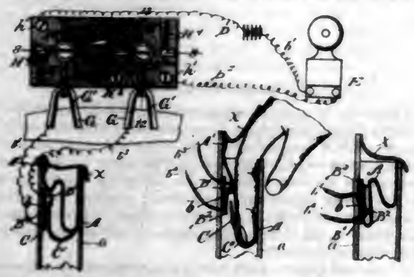
4. In a piano, the combination, with a keyboard having straight keys, of a damper-lever arranged out of alignment with the corresponding key, a bar pivoted to the said lever and to permit of swinging it sidewise to bring the free end of the bar over the end of the corresponding key, and means for fastening the bar in place on the said lever after it is adjusted relative to the keyboard, substantially as shown and described.

477,939. TREE-PROP. THOMAS J. HUBBELL, San Bernardino, Cal. Filed Dec. 22, 1891. Serial No. 415,906. (No model.)



Claim.—In a tree-prop, a single standard having a broad foot or base, a double guide fixed to the top of the standard, extending out and forming a clasp upon each side thereof, two sliding bars fitting within said guiding-clasps and moving vertically and parallel with the main standard, a clasp fixed to the bottom of each of these bars and encircling the main standard one above the other, pawls fulcrumed to the top of the standard, projecting so as to impinge against and bind the two sliding bars, and hook-shaped reversible limb-supports fulcrumed to the top of the sliding bars with interior protecting-cushions, whereby the single standard may be moved so as to support two limbs at the same time from a single standard, substantially as herein described.

477,940. PICKPOCKET AND COAT-THIEF DETECTOR. JOHN F. HURD, Chicago, Ill. Filed Oct. 2, 1891. Serial No. 407,553. (No model.)



Claim.—1. In combination with a garment, an electric circuit, the generator which energizes such circuit, an alarm-bell in the circuit, such circuit comprising a circuit making and breaking device secured to the garment, and a flexible partition interposed between the pocket-entrance and such circuit making and breaking device and completely obstructing access to the said device through the pocket-entrance and connected to said circuit making and breaking device and adapted when depressed to operate the same to close the circuit, substantially as set forth.

2. In combination with a garment, an electric circuit leading to a pocket of the garment, and a generator which energizes such circuit, and an alarm-bell in the circuit, said circuit comprising two contact-making pieces secured to the same side of the pocket within the latter, a contact-breaking piece adapted to be inserted and withdrawn from

between said contact-making pieces, a flexible connection from said insulating-piece to the opposite side of the pocket, and the muffle or false pocket A, located within the pocket above said flexible connection piece and adapted to be depressed thereonto to cause it to withdraw the insulating-piece by the intrusion of a hand into the pocket, substantially as set forth.

3. In combination with a garment, an electric circuit extending into a pocket of the garment and comprising a circuit making and breaking device adapted to be operated to close the circuit by intrusion into the pocket, a generator which energizes said circuit, an alarm-bell in said circuit, two suspending-loops attached to the garment and made of or comprising in their inner surfaces electrically-conducting material which forms part of the circuit, said loops being insulated from each other, whereby the circuit is interrupted or closed between said loops, according as said loops are or are not connected by electrical conductors, substantially as set forth.

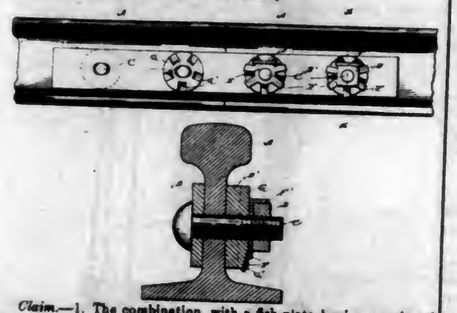
4. In combination with a garment, an electric circuit comprising two parts, one of said parts comprising a battery and an alarm and the other part comprising a circuit making and breaking device at the pocket of the garment, and a suspending device consisting of two insulated parts which respectively connect the two lines of the divided circuit, and a spring which is put under tension by the weight of the garment and when relieved thereof reacts against one of said insulated parts to bring it into electrical connection with the other, whereby a short circuit is closed through the battery and bell, substantially as set forth.

5. In combination with a garment, an electric circuit comprising contact-making pieces adapted to be separated to break the circuit, and connections by which they are operated at the pocket, electrically-insulated suspension-loops on the garment, made of or lined with electrically-conducting material, forming part of the circuit, a pair of suspension-hooks adapted to receive the two loops, respectively, of the garment, said hooks being electrically insulated and connected by a portion of the electric circuit, and a generator and an alarm-bell in said connecting portion of the circuit, substantially as set forth.

6. In combination, substantially as set forth, a garment-suspension hook, a base to which it is pivoted, a spring tending to tilt the hook when relieved of the weight of the garment, an electric circuit of which the hook constitutes one terminal, a generator and an alarm-bell in said circuit, and a contact-making piece insulated from the hook and constituting the other terminal of the circuit, the hook having a tail-piece adapted to make contact with the other terminal during the upward-tilting movement of the hook, whereby the circuit is closed and the alarm operated when the garment is lifted from the hook.

7. In combination, substantially as set forth, a pair of garment-supporting hooks insulated from each other, springs pertaining to the hooks, respectively, to tilt them upward when relieved of the weight of the garment, and an electric circuit connected to both hooks, said hooks having tail-pieces adapted to make electrical connection with the other hook or some part electrically connected therewith during the upward-tilting movement of the hook, whereby either hook, being relieved of the garment's weight, operates to close the circuit and sound the alarm.

477,941. NUT-LOCK. JEFFERSON D. JOLLEY, Warrenton, Va., assignor of one-half to William H. Selden, Washington, D. C. Filed June 25, 1890. Serial No. 356,601. (No model.)



Claim.—1. The combination, with a fish-plate having a series of depressions about each bolt-hole, of a washer having an arm bent into the plane of the nut resting against the washer and a series of arms adapted to be bent into said depressions, said depressions and said arms being differently spaced in angular distance from each other, substantially as set forth.

2. The combination, with the fish-plate having the bosses surrounding the bolt-holes and provided with the radial depressions, of the washer having radial arms spaced differently from said depressions and adapted to be bent into them, and, further, having the arm bent into the path of the angles of a nut resting upon the washer in the usual manner.

3. The combination, with the fish-plate having the bosses about the bolt-holes and the radial depressions in the bosses of a depth less than the thickness of the latter, of the washers having radial arms projecting beyond the bosses and an arm in the path of the angles of a nut placed upon a bolt passing through the washer, said arms differing in angular spacing from the depressions and being adapted for bending into the latter, substantially as set forth.

477,942. SLIP-HOLDER. SAMUEL J. KELSO, Detroit, Mich. Filed Nov. 10, 1891. Serial No. 411,450. (No model.)



Claim.—1. A slip-holder comprising an open-top case adapted to receive the slips and having a spring-pressed follower to press the slips outward, and a holder into which the case is passed and provided with flanges overlapping the longitudinal edges of the sides of the said case, substantially as set forth.

2. A slip-holder comprising a case having slots in its sides and open at its top and a spring-pressed follower or tablet in the case and having pins projecting through the said slots, substantially as set forth.

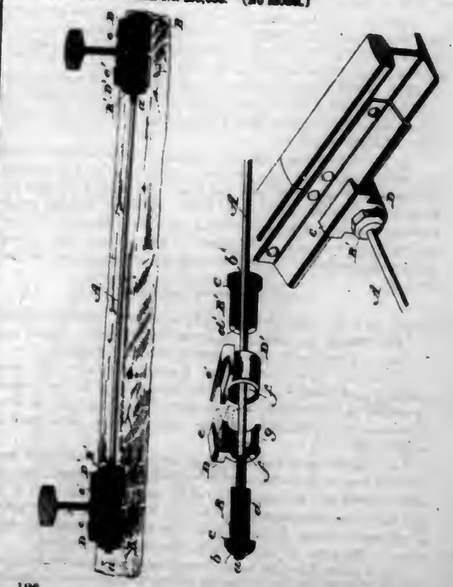
3. A device of the character described, comprising an open-topped case, a spring-pressed tablet mounted in the case and having guide-posts extending through the case-bottom, and a holder for the case, said holder having cross-strips extending across the case-top, substantially as described.

4. A device of the character described, comprising an open-topped case having one end cut away or recessed, a spring-pressed tablet mounted in the case, and a holder for the case, said holder having cross-strips extending across the case-top, substantially as described.

5. A device of the character described, comprising an open-topped case, a spring-pressed tablet mounted in the case and having posts extending through the case-bottom, a holder for the case, having cross-strips extending across the case-top, and pins secured to the sides of the case and extending outward through slots in the case and holder, substantially as described.

6. A device of the character described, comprising an open-topped case, a spring-pressed tablet mounted therein, and a holder for the case, said holder having side flanges to embrace the top and bottom of the case and having cross-strips extending across the case, one of said cross-strips having openings therein, substantially as described.

477,943. TRACK-CLAMP. JAMES P. KIMBLE, Rose Hill, Iowa. Filed Mar. 3, 1892. Serial No. 423,633. (No model.)



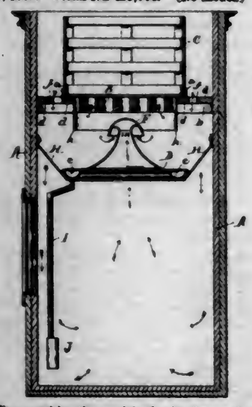
Claim.—1. The combination, in a clamp for railway-rails, of a rod having threaded ends, clamp-nuts threaded for engagement therewith and with each other, and clamping-heads apertured for the passage of the clamp-nuts, said heads having jaws, substantially as shown, and for the purpose set forth.

2. The combination, in a clamp for railway-rails, of a rod A, an adjustable clamp-nut adapted to engage with the threaded portion of the rod, and a head having jaws, and a portion which encircles the clamp-nut, said encircling portion being cut away to provide for placing the same upon the rod, substantially as shown, and for the purpose set forth.

3. The combination, with a rod A, having threaded ends, of clamp-nuts B and B', threaded for engagement with each other and provided with shoulders *c c*, and clamps D and D', apertured for the passage of the clamp-nuts, the shoulders *c c* of the clamp-nuts bearing against the outer edges of the clamps, substantially as shown, and for the purpose set forth.

4. In a rail-clamp, the combination of a rod having a threaded end, an adjustable clamp-nut threaded for engagement therewith and provided with a shoulder *c* and an inwardly-extending portion, a clamp carrying jaws and provided with an aperture through which the inwardly-projecting portion of the clamp-nut passes, the shoulder *c* thereof bearing against the exterior portion of the clamp adjacent to said aperture, substantially as shown.

477,944. REFRIGERATOR. BERNARD W. KOLB, Detroit, Mich. Filed Mar. 21, 1892. Serial No. 426,760. (No model.)



Claim.—1. The combination, with the ice-box, of the transverse open frame supported near the upper portion thereof, the grate mounted on said frame and having the depending flange *h*, and upwardly-extending flange *a*, substantially as set forth.

2. In an ice-box, the combination of the grate, the drip-pan supported below said grate, said pan having a raised conical center with an opening at the top and having a gutter around the base thereof, substantially as specified.

3. The combination, with the ice-box, of the grate and its open supporting-frame therein, the deflecting drip-pan having a raised conical center with an opening at the top, said pan being supported centrally within the box and directly below the grate, whereby the descending cold air is thrown outward around the walls of the box and the warm air is caused to rise under the drip-pan and pass through the central opening at the top, substantially as and for the purposes set forth.

477,945. SAFETY-VALVE AND MUFFLER. ERASTUS B. KUHLER, Fort Wayne, Ind., assignor to himself and William D. Bostick, same place. Filed Mar. 26, 1892. Serial No. 426,562. (No model.)

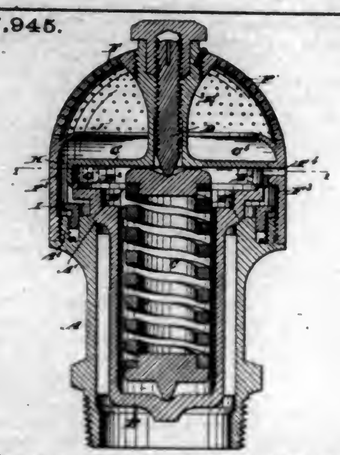
Claim.—1. A safety-valve and muffler provided with a semi-spherical perforated cap having inlet passage-ways and an annular lip formed on the inside of the cap above the passage-ways to direct the stream to the middle of the cap, substantially as shown and described.

2. A safety-valve and muffler provided with a perforated semi-spherical cap formed with a bottom having passage-ways near the edges thereof and an annular curved lip formed on the inside of the cap above the passage-ways and bottom to direct the steam toward the center of the cap before it passes upward and through the perforation to the outer air, substantially as shown and described.

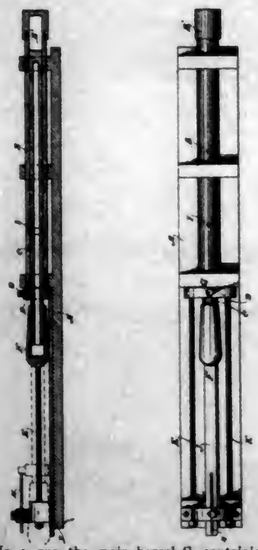
3. A safety-valve and muffler comprising a perforated semi-spherical cap formed with an annular curved lip, a hub secured in the middle of the said cap, and a disk attached to the said hub and forming a bottom for the said cap, the said disk forming at its outer edge, with the said cap, a passage-way for the steam, and the said disk being located below the said annular lip, substantially as shown and described.

4. In a safety-valve and muffler, the combination, with a valve-body and a spring-pressed cup-valve held in the said valve-body and formed with an annular flange, a perforated cap secured to the said valve-body and formed with an inwardly and upwardly extending curved annular lip, a hub secured to the said cap in the center thereof, a disk secured or formed on the lower end of the said hub and forming passage-ways with the said cap below the said annular lip, and an annular flange extending downward from the said disk and engaging the annular flange of the said cup-valve, the said flange being formed with apertures registering with apertures in lugs formed on the inside of the said cap, substantially as shown and described.

477,945.



477,946. GUN. ANDREW W. LIVINGSTON and STEPHEN E. STARRETT, San Francisco, Cal. Filed Nov. 11, 1891. Serial No. 411,630. (No model.)



Claim.—1. In a gun, the main barrel C, containing a powder charge, a projectile fitting over said barrel, guides upon which the barrel is supported and directed, and a second barrel within which the rear end of the first barrel is adapted to reciprocate, whereby an explosive charge may be applied to first impel the barrel and projectile at a low degree of speed and a higher explosive charge applied from the sliding barrel to impel the projectile, substantially as herein described.

2. A gun consisting of a fixed barrel with a chamber for a low explosive charge, a second barrel adapted to receive an explosive charge by which a projectile is impelled, said barrel sliding within the first one, guides by which the front of said barrel is caused to move in a direct line, a hollow elongated projectile fitting over the front end of the second barrel, and a mechanism by which the charge within the second barrel is exploded at the instant when said barrel reaches the end of its forward movement caused by the explosion of the charge within the first barrel, substantially as herein described.

3. In a gun, a stationary barrel having a chamber at the rear for the reception of an explosive charge, a second barrel having its front end supported and traveling upon guides parallel with the axis of the first and its rear end extending into the first barrel, so as to be acted upon by the explosive charge therein, a hollow elongated projectile fitting over the front end of the second barrel so as to be propelled by the explosion of a charge within said second barrel, a standard mounted upon a second barrel movable therewith, and a primer or connection between said standard and the powder charge within the barrel, and a firing-pin fixed upon the supports at the front, whereby the charge within the second barrel is exploded by contact with said pin when the barrel reaches the end of its forward movement, substantially as herein described.

477,947. BUCKLE. MARTIN LOGAN, New York, N. Y. Filed Apr. 9, 1891. Renewed Feb. 17, 1892. Serial No. 421,809. (No model.)

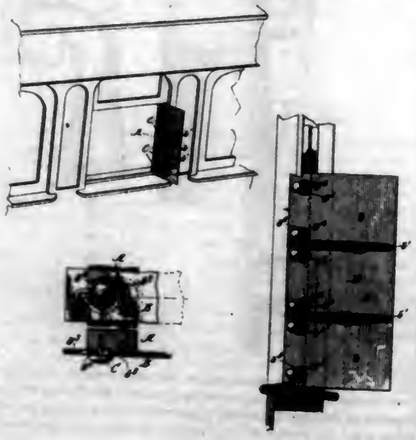


Claim.—1. In a clasp-buckle for the purpose specified, the combination, with the pendent hinged frame having lateral projections *h* and a lifter at its lower end, of a spring clamping-piece for carrying the suspender-ends, the same consisting of a coiled spring whose upper extremities are provided with knobs that are held pressed inward or toward each other and thus adapted to be sprung over or off the central shank of the aforesaid frame, as shown and described.

2. The combination of the body A, having a loop-frame *b*, clamping-bar *c*, slide *d*, and outer or lower shank-like lifter *b'*, constructed substantially as described, and the independent loop-piece B, constructed to form spring-coils *i i*, the outer or upper portions of which are extended to form arms *k k*, provided with balls or knobs *l l*, arranged to lie in the same place and adjacent to each other for engagement with the shank portion of the lifter *b'*, essentially as herein set forth.

3. In a clasp-buckle, substantially as herein described, the frame portion *b* of the buckle-body A, provided with tubes *a'*, having springs *c'* within them, in combination with the lifter *b'*, having side arms *c'*, controlled by said springs, and the loop-piece B, having spring-coils *i i*, with attached arms *k k*, and balls or knobs *l l*, adapted to engage with said lifter, as herein set forth.

477,948. DUST AND CINDER PROTECTOR FOR CAR-WINDOWS. EDWARD B. LOOMIS, Memphis, Tenn. Filed Mar. 21, 1892. Serial No. 425,868. (No model.)

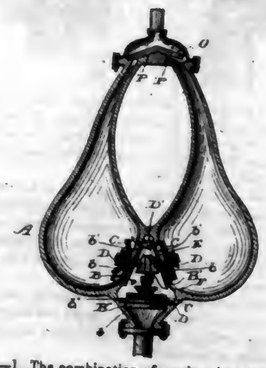


Claim.—1. The combination, with a sectional folding stick having buttons arranged upon each section, of a sectional folding deflector plate or wing having a series of apertures adapted to receive the buttons, one of the sections being adapted to receive buttons upon opposite sides of the joint, substantially as shown and described.

2. The combination, with a sectional folding stick, of a sectional folding wing or plate, the wing folding at right angles to the direction the stick folds, whereby the stick and wing tend to hold each other in position, substantially as shown and described.

3. The combination, with a sectional folding stick having prongs at its ends, buttons upon its face, and the hook and pin at its joint, of the sectional folding deflector-wing having a series of keyhole-shaped apertures in each section and the eyelets for protecting the apertures, substantially as shown and described.

477,949. STEAM-PUMP. JOHN MARLIN, Jersey City, N. J. Filed Feb. 25, 1892. Serial No. 422,807. (No model.)

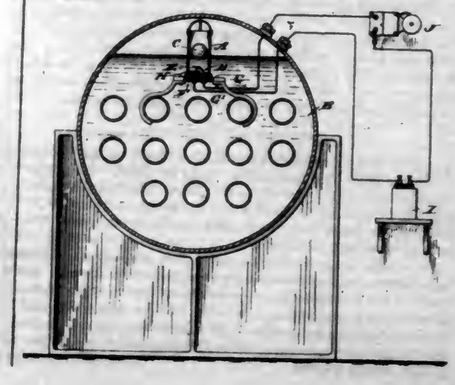


Claim.—1. The combination of a valve-chamber having openings to receive removable valve-seats with a plurality of removable valve-seats, each provided with a projecting part entering said openings and a rim resting against the walls of the valve-chamber surrounding said openings, a wedge set between said valve-seat, and a screw for forcing said wedge between the valve-seats, and thus holding them in position, substantially as described.

2. The combination of a valve-chamber having openings to receive removable valve-seats with a plurality of valve-seats B, adapted to rest against the walls of said valve-chamber around said openings and having grooved bosses D', a wedge E set between the bosses, and a screw for forcing said wedge between said bosses, substantially as shown and described.

3. The combination of a valve-chamber having three openings arranged in a triangle to receive movable valve-seats with three valve-seats pressed against the walls of said chamber around said openings, two of the valve-seats having each a grooved projection D' on its back, a wedge set between said projections and having a threaded aperture, and a bolt screwed into said aperture and supported by the third valve-seat, substantially as described.

477,950. ELECTRIC ALARM. STEPHEN M. MATHEWS, Rat Portage, Ontario, Canada. Filed Nov. 16, 1891. Serial No. 411,991. (No model.)



Claim.—An electric alarm comprising the vertical tube or casing A within the water-space of the boiler, open at its upper end, closed at its lower end, and provided with apertures through its sides for the water, a cage on the upper end of the tube or casing, brackets or arms connecting its lower end with the boiler flues or tubes, a float within the casing, electric wires entering the bottom of the casing, a spring to connect them when depressed by the fall of the float, and a battery and alarm in the circuit, substantially as described.

477,951. COMPOSITE ELECTRIC CONDUCTOR. CHARLES A. MEES, Brooklyn, N. Y. Filed Oct. 30, 1891. Serial No. 410,232. (No model.)



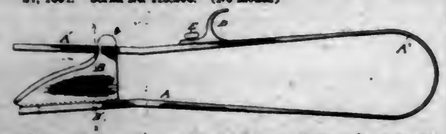
Claim.—1. A composite electric conductor made up of sections, each section comprising two concentric conductor mediums that are tubular, a solid center conductor and an intermediate insulating material that separates the conductors, and threaded connections for said sections, substantially as described.

2. A composite electric conductor composed of a series of concentric conductor mediums that are tubular, a solid center conductor that is cylindric, and annular insulations interposed between adjacent conductors that are graded for length at the ends, the longest being central and all the ends externally threaded to engage with a composite coupling, substantially as described.

3. A coupling for composite conductor-sections, composed of concentric tubular pieces that are graded in length and diameter and have annular insulating mediums intervening between adjacent coupling-pieces, substantially as described.

4. A coupling for composite conductor-sections, that is composed of T-pieces which are hollow and internally threaded at the ends, said pieces being graded for length and diameter and held concentric by interposed insulations that completely fill spaces between the T-pieces, substantially as described.

477,952. GRAPE-PICKER. GEORGE L. MOORE and CHARLES JORY, Stockton, Cal., assignors to Woodson T. Harris, same place. Filed Nov. 27, 1891. Serial No. 413,298. (No model.)



Claim.—1. As an improved article of manufacture, the grape-cutter described, composed of the strip of steel or other suitable material having the edges at opposite ends cut away and a cutter secured to one of said cut-away ends on the inner side thereof, so as to form lateral jaws on one side of the cutter, whereby a bunch of grapes may be held after being cut, substantially as specified.

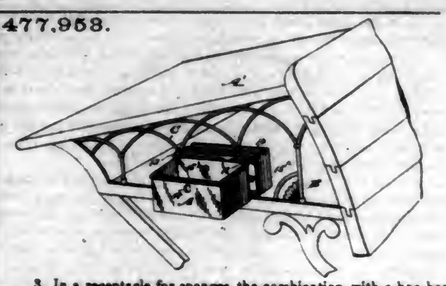
2. The grape cutter described, composed of a bar or strip of steel or other material thinned or tempered at or about midway of its length and looped so as to form a finger branch and a thumb branch, each branch being cut away at its terminal end on corresponding edges and one branch having the slot at the base of its cut-away portion, a cutter secured to one of the jaws or branches and having an extension to enter the slot in the opposite branch, and a thumb-piece secured to the outer side of one of the branches, substantially as specified.

477,953. SPONGE-CUP FOR SCHOOL-DESKS. JAMES S. MCCLURE, Pueblo, Colo. Filed Dec. 10, 1891. Serial No. 414,626. (No model.)

Claim.—1. As an improved article of manufacture, a sponge-cup provided with an inclined bottom and an opening at the lowest point in the bottom and a head overhanging the cup at the back, substantially as shown and described.

2. As an improved article of manufacture, a sponge-cup provided with a bottom inclined downwardly from the back in direction of the front and also provided with an opening in the bottom at the front and a head located longitudinally at the back of the cup, which head is elevated above the upper edge of the sides of the ends and front, the said head extending over in direction of the interior of the cup, as and for the purpose specified.

477,953.



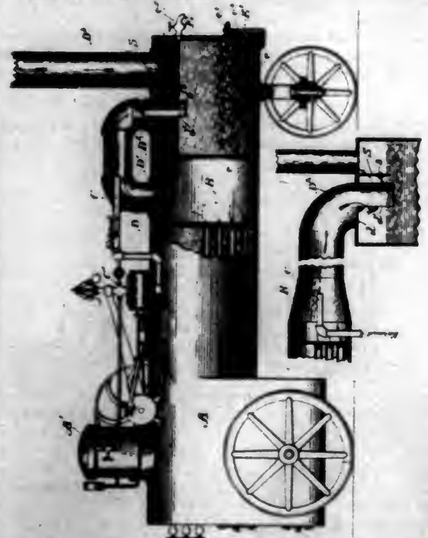
3. In a receptacle for sponges, the combination, with a box having a bottom inclined downward from the back in direction of the front and an opening in the bottom near the front, of a supporting-block having sundry of its surfaces formed as a rack and means, substantially as described, for connecting the cup with the block, as and for the purpose set forth.

4. The combination, with a sponge-cup provided with a head located at the back and extending over the interior portion of the cup and also provided with a bottom inclined from the back downward in direction of the front and an opening in the bottom near the front, of a presser comprising a plate and a handle attached to the plate, the plate of the presser being adapted to engage with the head formed upon the cup and the sponge located within the cup, substantially as shown and described.

5. The combination, with a sponge-cup provided with an inclined bottom and an opening in said bottom, of a presser comprising a plate and a handle projected from the plate, the plate of the presser being adapted to compress a sponge when placed in the cup, substantially as described.

6. The combination, with a sponge-cup provided with a head formed longitudinally upon the back and extending over in direction of the interior of the cup and further provided with an inclined bottom and an opening in the lowest point in the bottom, of a support consisting of a block having its surfaces formed as a rack, a presser adapted to compress a sponge when located in the cup, the said presser comprising a body-plate adapted at its upper edge to engage with the head formed upon the cup, and a handle projected outward from the plate, and a fastening device, substantially as described, whereby the box or cup may be secured to a desk, as and for the purpose specified.

477,954. SPARK-ARRESTER. JAMES L. OWEN, Cummings, S. C., assignor of one-half to James L. Johnson, same place. Filed Dec. 2, 1891. Serial No. 413,800. (No model.)



Claim.—1. In a steam-engine, the combination, with the boiler and smoke-box, of the pipe leading from said smoke-box to the upper portion of the tank E, the said pipe being cut away along its rear portion above the surface of the water in the said tank, the tank E, having water therein covering the lower protruding end of the said pipe, the smoke-stack D^3, opening into the air-space formed by the upper portion of the tank E, and the steam-pipe C, with suitable valves for injecting steam into said pipe leading from the boiler to the tank E, substantially as described.

2 In a steam-engine, the combination, with the tubular boiler and smoke-box, of the pipe leading from said smoke box to the upper portion of the tank E, the said pipe being cut away along its rear portion above the surface of the water in the said tank, the tank E, having water therein covering the lower protruding end of the said pipe, the smoke-stack D^3, opening into the air-space formed by the upper portion of the tank E, and the steam-pipe C, with suitable valves for injecting steam into said pipe D', and the rotatable wire screen S, all substantially as and for the purposes described.

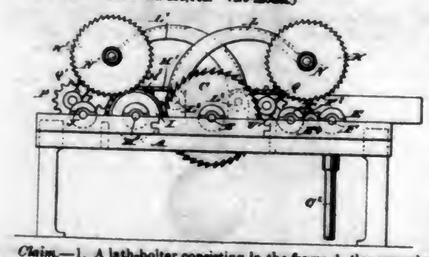
477,955. JAR-FASTENING. ROBERT I. PATTERSON, Muncie, Ind. Filed Mar. 12, 1892. Serial No. 424,711. (No model.)



Claim.—1. In a jar-fastener, the combination, with a metallic band adapted to be sprung about the neck of a jar and consisting of an open loop slightly exceeding a semicircle, the opposite ends of which are bent upwardly and rearwardly and bent to form journal eyes or loops, of a locking-bail consisting of a wire bent into substantially a semicircle and having its ends bent to form cams, the extreme ends thereof being bent outward in opposite directions to form journals, which are supported in the eyes or loops formed on the clamping-band, substantially as described.

2. In a jar-fastener, the combination, with an open spring-loop E, slightly exceeding a semicircle, adapted to be sprung around the neck of a jar and having its ends bent upwardly and rearwardly, forming parallel arms F, provided on their extreme ends with journal eyes or loops *f*, located at points opposite the center of the jar, of a substantially semicircular wire-locking bail G, having its ends bent to form cams *g* and its extreme ends bent outward at right angles to the cams and in opposite directions to form journals *g'*, which are supported in the journal-eyes *f*, substantially as shown and described.

477,956. LATH-BOLTER. JOHN H. PETERSON, Portland, Oreg. Filed Feb. 3, 1892. Serial No. 420,162. (No model.)

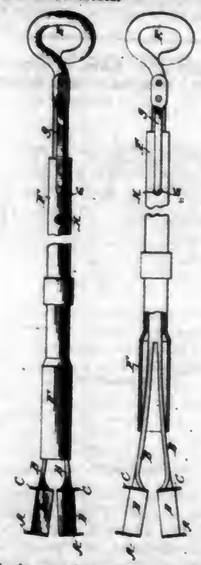


Claim.—1. A lath-bolter consisting in the frame A, the saw-arbor B, carrying saws, the parallel lower feed-rolls E E' in front of the saws and having gearing $F' F^2 F^3$, connecting them, the roller-shaft F, also having a sprocket-wheel H, a gear-wheel G, and a pinion T, the spreader I, having a shaft H^2, provided with a sprocket-wheel H^2 and a pinion T', the chain H', connecting said sprockets, the two vertically-swinging frames L L', pivoted at L^2 to the upper side of the frame and carrying the shafts N N', provided with the upper feed-rolls K K' over feed-rolls E E' and spreader I, respectively, gear-wheels O O' on the rear ends of shafts N N', arms or links U U', S S', and Q Q', and gearing R R' P P', connecting the pinions T T', respectively, with the gear-wheels O O', respectively, and means for adjusting the shafts N N' in their respective frames, substantially as set forth.

2. A lath-bolter provided with a top feed-roll, an eccentric box, and a ball-and-socket box for the respective ends of the shaft of the said top feed-roll, substantially as shown and described.

3. In a lath-bolter, the combination, with an arched pivoted frame provided with an eccentric box and a ball-and-socket box, of a shaft journaled in the said boxes and a top feed-roll held on the said shaft, substantially as shown and described.

477,957. FLUE-CLEANER. WALTER PEARE, Bartlett, Tex., assignor of one-half to W. T. Carter, same place. Filed Sept. 22, 1891. Serial No. 406,464. (No model.)



Claim.—1. An improved flue-cleaner comprising a hollow stock and the expansible cleaner-head having spring-arms and a rod on which the stock is mounted, said arms being movable within said stock and out of one end thereof and arranged to be pressed toward each other by such end of the stock as they are drawn therein and to expand as they are pushed out of such end of the stock, all substantially as and for the purposes set forth.

2. In a flue-cleaner, substantially as described, the combination of a stock having an opening and the expansible cleaner head comprising spring-arms and a rod on which the stock is mounted, said arms being movable longitudinally in said opening, such arms being drawn together at one end and normally flared at their other or outer ends and adapted to be compressed by the walls of said opening as they are drawn thereinto, substantially as set forth.

3. A flue-cleaner consisting of a hollow tubular stock open at both ends and a handle-rod on which said stock is mounted, said rod movable longitudinally in said stock and protruding at one end beyond one end thereof and provided at its opposite end with spring-arms protruding from the other end of the stock and flared at their outer ends, whereby they may be compressed by the engagement of the walls of said end of the stock when drawn thereinto, all substantially as and for the purposes set forth.

4. A flue-cleaner comprising the hollow stock and the handle-rod sliding in said stock and having the spring-arms and the cleaner-section supported thereon, the hollow stock being mounted on the rod, all substantially as and for the purposes set forth.

5. In a flue-cleaner, the combination of the hollow stock having a guide-slot and the handle sliding in the said stock and having a pin or projection entering the guide-slot of the stock and provided with spring-arms having the cleaner-head sections, the hollow stock being mounted on the rod, all substantially as and for the purposes set forth.

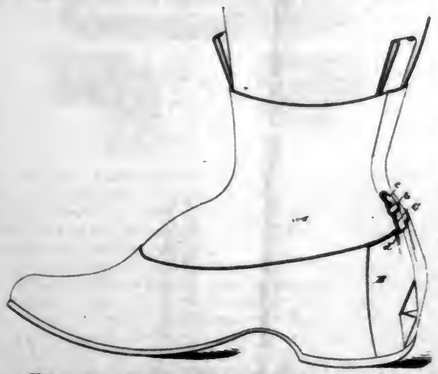
6. An improved flue-cleaner consisting of the hollow stock and the handle-rod sliding in said stock and projected at both ends beyond the stock, one of such ends having a hand-hold and the other being bifurcated, forming spring-arms supporting cleaner-sections, substantially as and for the purposes set forth.

7. In a flue-cleaner, a cleaner head comprising two semi-cylindrical sections, each provided at one end with outwardly-projected serrations or teeth and at the other end with an outwardly-projected flange or scraper-plate having its edge uninterrupted or unserrated, all substantially as and for the purposes set forth.

8. The combination, in a flue-cleaner, of the hollow stock, the expansible cleaner-head having its support movable in the said stock, and the latch by which to hold such head in its expanded position, substantially as set forth.

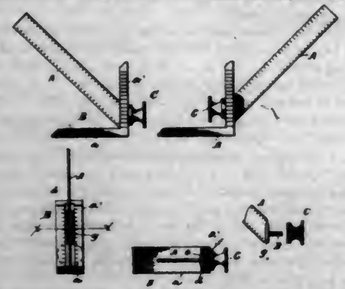
9. The improved flue-cleaner consisting of the hollow stock having an opening for the latch-pin, the handle-rod sliding in the said stock and having an opening movable into register with the opening in the stock and also provided with spring-arms supporting the segmental cleaning-sections, and the latch comprising a spring-shank fixed at one end and provided at its other or free end with a pin movable into the openings in the stock and handle-rod when such openings are registered, substantially as set forth.

477,958. RUBBER SHOE. SAMUEL W. POWELL and JOHN W. MARSHALL, Richmond, Mo. Filed Mar. 1, 1892. Serial No. 423,392. (No model.)



Claim.—As an improved article of manufacture, a rubber shoe formed at its heel with a pocket *d*, open at its upper end, an elastic strip concealed within the pocket and having its lower end fixedly secured at the base of the pocket, and a fastening device on the upper end of the elastic strip, projecting above the upper edge of the rubber to engage a projection on a shoe, substantially as set forth.

477,959. CENTER AND KEY-SEATING SQUARE. JOHN B. PRICE, Wollaston, Mass. Filed Mar. 30, 1892. Serial No. 427,111. (No model.)



Claim.—1. A bevel consisting of a right-angled base having the two rigidly-joined arms and one of its arms slotted longitudinally, an adjustable blade fitted in said slotted arm, and means for clamping said blade rigidly to the arm, as and for the purpose described.

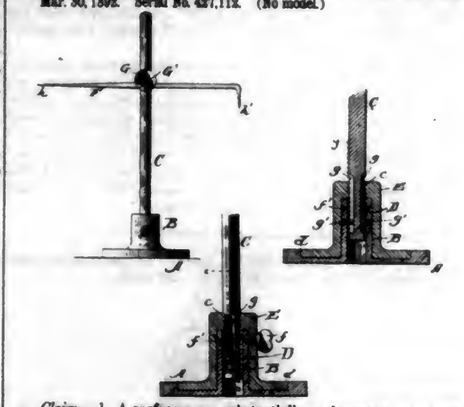
2. A bevel comprising a right-angled base having its two arms made in a single piece and with one of said arms provided with a longitudinal slot and a blade arranged or held at an angle of forty-five degrees to said slotted arm and adjustably clamped thereon, as and for the purpose described.

3. A bevel comprising a right-angled base having one of its arms slotted longitudinally and provided with parallel seats on both the inner and outer surfaces thereof, a blade adapted to be fitted in either seat of the slotted arm, and means for clamping the blade rigidly to said arm, as described.

4. A bevel comprising a right-angled base having one of its arms provided with a seat and a slot, a blade with an angular head which fits in the seat and carrying a stud that enters the slot, and a clamping-nut, as and for the purpose described.

5. A bevel comprising a right-angled base having one of its arms provided with a slot, a blade with a right-angled threaded stud adapted to pass through said slot and having a bearing against one side of the slotted arm, and a thumb-nut screwed on the stud to bear against the other side of the slotted arm, substantially as described.

477,960. SURFACE-GAGE. JOHN B. PRICE, Wollaston, Mass. Filed Mar. 30, 1892. Serial No. 427,112. (No model.)



Claim.—1. A surface-gage, substantially as described, consisting of a base provided with a tubular stud or boss, a nut fitted on the base and arranged to turn freely around its stud without displacement thereon, and a stem having its threaded end screwed into one of said parts and splined to the other part, as and for the purpose described.

2. A surface-gage consisting of a recessed base having the tubular central boss or stud, a nut fitted in the recess of said base and having the sleeve which fits around said boss of the base, the groove-and-pin connection between the base and nut to permit one part to turn freely around the other, and a vertical threaded stem splined to the non-rotatable part and having a screw-threaded connection with the rotatable part, substantially as described.

3. The combination of a base provided with the central tubular stud, the internally-threaded nut fitted on the base and connected directly thereto by the pin and groove, and the vertical stem which is externally screw-threaded and grooved at its lower end, the threaded part of the stem working in the threaded part of the nut and the grooves of said stem receiving fixed studs on the base, as and for the purpose described.

477,961. FILLING SYRINGES. LEWIS S. RICOU, Selma, Ala., assignor of two-thirds to Allen P. Howison and John G. Murray, same place. Filed Nov. 20, 1891. Serial No. 412,493. (No model.)



Claim.—1. An improved apparatus, substantially as described, comprising the cork having a longitudinal opening and provided at its outer end surrounding such opening with an annular bead and the syringe having its nozzle formed to fit in the said opening in the cork and provided at the base of such nozzle with a bearing arranged to bear against the annular bead on the outer end of the cork, all substantially as and for the purposes set forth.

2. In an apparatus, substantially as described, the improved cork provided with a longitudinal opening, having such opening enlarged at its inner end and provided on the outer end of the cork with a rib or bead surrounding such opening, in combination with the syringe having a bearing arranged to form in connection with the bead a tight joint, all substantially as and for the purposes set forth.

477,962. WHEEL FOR VELOCIPEDES. JOSEPH B. ROBERTSON, Belfast, Ireland. Filed Mar. 29, 1892. Serial No. 426,915. (No model.)



Claim.—1. The herein-described method of securing a pneumatic tire to the rim of a wheel by inflating air-channels formed near the edges of the tire-cover within tubular channels formed at the edges of the rim with narrow slits, through which the channeled edges of the cover are inserted before they are inflated.

2. For securing a pneumatic tire to the rim of a wheel in the manner above referred to, in combination with the bladder, a cover having air-channels near its edges, and a rim having tubular channels with narrow slits to admit the edges of the cover, substantially as herein described.

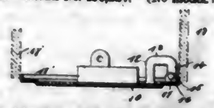
477,963. MEANS FOR LOCKING AND UNLOCKING MAIL-POUCHES. ARTHUR J. SHAW, Spokane, Wash. Filed Nov. 12, 1891. Serial No. 411,668. (No model.)



Claim.—1. The combination, in a mail-pouch, of a rubber or like flexible frame attached to the back of the mouth of the pouch, a series of locking devices embedded in said frame, a flap, a series of studs connected with the flap, and snap-catches inclosed in the flexible frame.

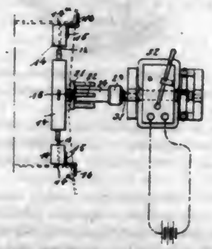
2. The combination, in a mail-pouch, of a flap, a series of studs connected with the flap, snap-catches consisting of spring-jaws *b b*, having pins or projections 1 1, a series of cam-levers, as *d*, a key-operated ring or tumbler, and straps or links connecting said cam-levers and ring or tumbler, substantially as described.

477,964. LETTER-BOX. WILLIAM H. SHEFFIELD, Brooklyn, N. Y. Filed Apr. 22, 1892. Serial No. 430,227. (No model.)



Claim.—The combination, with the letter-box and the door, of the U-shaped arm formed integral with the door and having its inner end pivoted to the box, substantially as described.

477,965. HAT POLISHING AND CLEANING MACHINE. CÆSAR SIMS, Brooklyn, N. Y. Filed Mar. 14, 1892. Serial No. 424,790. (No model.)



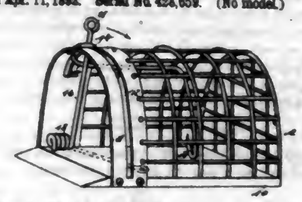
Claim.—1. A machine for cleaning and polishing hats, comprising a motor having a driven shaft and an expansible or adjustable hat holder or carrier provided with a stem or shaft, and means for detachably coupling said stem or shaft with the said driven shaft, substantially as set forth.

2. In a hat cleaning and polishing machine, the rotary expansible hat holder or carrier to fit within the wearer's hat and rotate it and provided with a shaft or stem having a socket and set-screw to connect with a motor or power shaft, substantially as set forth.

3. A rotary expansible hat-holder for hat polishing and cleaning machines, comprising a plate having radial channels or grooves, arms sliding therein and having curved blocks or heads on their outer ends, a rotary cam-disk parallel with the said plate and engaging said sliding arms with its cam-surfaces to slide the same and expand the holder, a shaft or stem secured to the center of the said plate and adapted to be connected with a motor or power shaft for rotating the holder, and the stop projections extending outward from the back or rear sides of the blocks or heads to engage the hat-brim and limit the entrance of the holder into the hat, substantially as set forth.

4. The combination, with the plate and its carrying-shaft, of the sliding arms having blocks at their outer ends and studs on their exposed faces, and the cam having grooves into which said studs project, and a hand-hold formed by pins 22, parallel with said shaft, substantially as set forth.

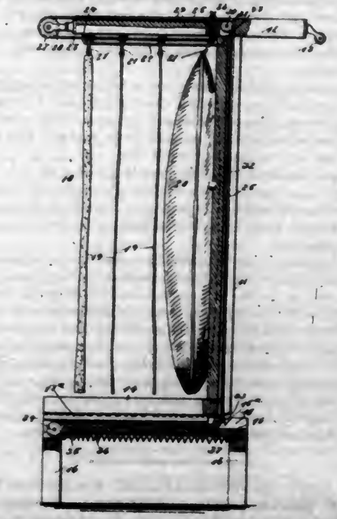
477,966. ANIMAL-TRAP. HENRY J. STEINER, Jersey City, N. J. Filed Apr. 11, 1892. Serial No. 428,659. (No model.)



Claim.—1. The herein-described trap, comprising a body or cage having an opening for the animal, a spring-actuated executing-arm secured to the body at one end and adapted to move across the body at right angles to its opening and strike the animal across the back or neck, the upper or outer end of the said arm being external to the body or cage, and a trigger-lever pivoted to the body or cage and having one end provided with a detent or head to engage the free end of the lever and hold it retracted and the opposite end of the lever being adapted to hold the bait in front of the path crossed by the executing-arm, substantially as set forth.

2. In a trap, the combination, with the body thereof, the said body being provided with a slot extending upward from its base, of a combined trip and bait lever fulcrumed upon the body, the said lever being provided with a head which extends over the outer portion of the body adjacent to the body-slot, and an arm of execution, spring-controlled and connected with the body opposite the lower portion of the body-slot, which arm extends outward through the body-slot and is adapted to be engaged by the head of the combined trip and bait lever, whereby the trap may be set entirely from the exterior, and when the arm of execution is released it will be instantly and automatically forced downward over the body of the animal disturbing the bait or trip lever, as and for the purpose set forth.

477,967. FOLDING BED. HUGH STEVENSON, New York, N. Y. Filed Mar. 11, 1892. Serial No. 424,541. (No model.)



Claim.—1. The combination, with a folding bed and the bedding thereof, of a cable mechanism for separating and lowering the bedding by the rise and fall of the bed, substantially as described.

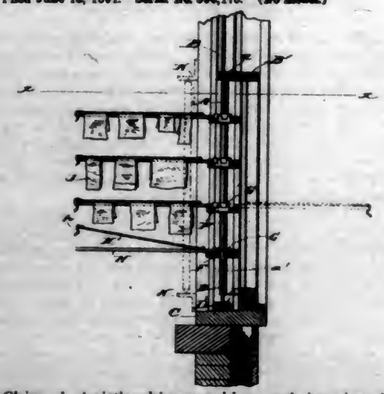
2. The combination, with a folding bed, of the bedding held at one end to move on slide-rods and a cable mechanism for separating and lowering the bedding by the rise and fall of the bed, substantially as described.

3. The combination, with the folding bed and its stationary base, of the bedding and a cable connection between the bedding and the base, whereby the bedding will be separated and suspended by the rising of the bed, substantially as described.

4. The combination, with the tilting bedstead mounted on a suitable base, of a cable extending vertically at one end of the bedstead and connected with the base, means for tightening and loosening the cable by the movement of the bedstead, and the several pieces of bedding connected at one end to the cable, substantially as described.

5. The combination, with the bedstead and its supporting-base, of slide-rods secured vertically to one end of the bedstead, the bedding having its pieces held to slide on the rods, and a cable connected with the bedstead and the base and also with the bedding, the cable extending over suitable guide-pulleys so as to be tightened and loosened by the rise and fall of the bedstead, substantially as described.

477,968. CLOTHES-DRIER. HUGH STEVENSON, New York, N. Y. Filed June 13, 1891. Serial No. 396,175. (No model.)



Claim.—1. A clothes-drier comprising a main bar adapted to be secured in a support and having circular racks thereon and horizontally-swinging arms held to slide on the main bar and adapted to engage the racks, substantially as described.

2. In a clothes-drier, the combination, with the main bar having toothed racks thereon, of horizontally-swinging arms held to slide on the main bar and adapted to engage the rack-teeth, said arms having bars pivoted to their upper sides and provided at their free ends with catches adapted to engage the ends of the arms, substantially as shown and described.

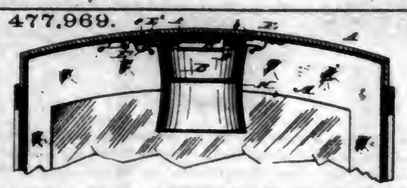
3. A clothes-drier comprising a main bar having a longitudinally-extending adjusting-screw and a circular rack and a horizontally-swinging arm engaging said rack and having a sliding connection at its inner end with the bar to permit it to be engaged with different teeth of the rack, substantially as set forth.

4. A clothes-drier comprising a main bar adapted to be secured in a support and provided with toothed racks, collars held to slide on the bar above the racks, arms secured to the collars and adapted to engage the rack-teeth, and a clothes-fastener for the arms, substantially as described.

5. A clothes-support comprising a vertical bar having racks thereon, the racks comprising disks with vertical toothed flanges, collars held to slide on the bar and rest between the flanges of the racks, arms secured to the collars and adapted to engage the rack-teeth, and bars pivoted on the tops of the arms and provided at their free ends with catches to engage the ends of the arms, substantially as described.

6. In a clothes-drier, the combination, with the main bar having a longitudinally-extending adjusting-screw turning in one end and provided with a support having a socket, in which the head of the screw swivels, whereby the screw may be turned to adjust the bar without rotating the bar or the socket, substantially as set forth.

477,969. HAT HOLDER AND CASE. HUGH STEVENSON, New York, N. Y. Filed June 13, 1891. Serial No. 396,174. (No model.)



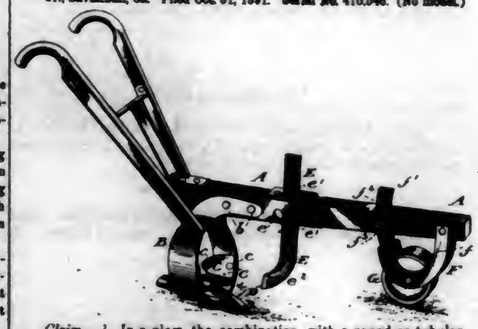
Claim.—The herein-described hat-holder, comprising a receptacle B, hinged at the edge of its upper open end to swing downward and provided with a catch, a finger E, secured adjacent to the upper edge of the receptacle, and a second hook at the opposite side of the receptacle and movable toward and away therefrom to secure the hat upon the exterior of said receptacle or permit its removal therefrom, substantially as set forth.

477,970. DEVICE FOR CARRYING KEYS. JAMES C. TAYLOR, Chattanooga, Tenn. Filed Dec. 12, 1891. Serial No. 414,853. (No model.)



Claim.—The herein-described key-carrier, consisting of the U-shaped clamp which grasps the waistband of the trousers, the legs of the clamp tending to spring together at their lower ends and provided with means to grasp the cloth, and the key-ring-receiving hook stamped out from the metal outer leg of said clamp in the form of an S-shaped tongue having its upper and lower ends bulged outwardly, as shown.

477,971. TRUCK OR RICE FARM PLOW. JOSEPH A. TAYLOR, Jr., Savannah, Ga. Filed Oct. 31, 1891. Serial No. 410,546. (No model.)



Claim.—1. In a plow, the combination, with a round or tubular hoe, of shares attached to its inner surface on opposite sides thereof, substantially as described.

2. In a plow, the combination, with a round hoe, of shares attached to its inner surface on opposite sides thereof, the rear ends of said shares being curved inwardly and downwardly, substantially as described.

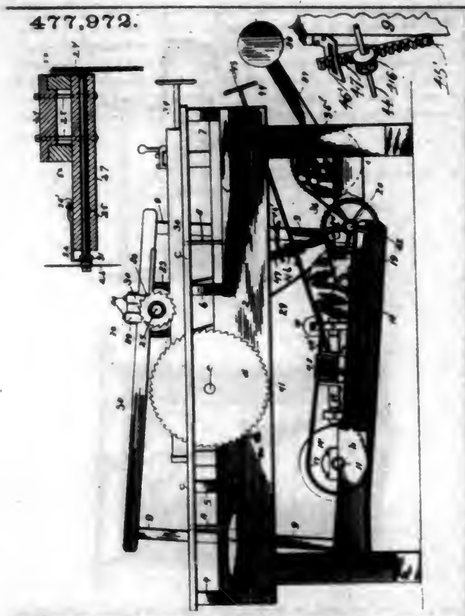
3. In a plow, the combination, with a round hoe, of shares attached to its inner surface on opposite sides thereof and a point secured to the bottom of the hoe, substantially as described.

4. In a plow, a round hoe, combined with shares attached to its inner surface on opposite sides thereof and a point adjustably secured to the bottom of the hoe, substantially as described.

477,972. SAWING-MACHINE. FREEMAN M. TREGARDEN, Colfax, Ind., assignor to the Chief Manufacturing Company, same place. Filed May 7, 1891. Serial No. 391,896. (No model.)

Claim.—1. In a sawing-machine, a main frame and saw, in combination with a vertically-swinging counterweighted frame, and the feed-wheel, and the driving and speed-regulating mechanism carried thereby, substantially as described.

2. In a sawing-machine, in combination, the rotary saw and its frame and driving mechanism, the vertically-movable feed-wheel for said saw and its driving and speed-regulating mechanism, and a vertically-swinging frame carrying the feed-wheel and its driving and speed-regulating mechanism, as and for the purposes set forth.



3. In a sawing-machine, the combination of the main frame, the rotary saw, the vertically-swinging frame near one end pivoted to the main frame, a counter-weight for the opposite end thereof, a rotary feed-wheel carried by said movable frame so as to freely rise and fall above the saw-table in advance of said saw, and variable speed-gearing carried by such swinging frame for rotating such feed-wheel, whereby the speed of the feed-wheel can be varied, as and for the purpose substantially as set forth.

4. In combination, the main frame and saw-table, a saw and its driving mechanism, a frame mounted in the main frame at or near one end to swing vertically and counterweighted at its opposite end, a feed-wheel over the saw-table and carried by such movable frame to swing therewith, and a variable speed-gear carried by the movable frame to vary the speed of the feed wheel.

5. In combination, the main frame, the saw, a counterweighted swinging frame carried by the main frame, a feed-wheel carried by and moving with said frame, variable gearing driving said feed-wheel, and means, such as described, controlling said gearing and controlled by the vertical swing of said movable frame, substantially as set forth.

6. In combination, the main frame, saw-table, saw, and its driving mechanism, a vertically-swinging frame and feed-wheel carried thereby, variable and driving gearing for said feed-wheel comprising a pair of opposite cone-pulleys carried by said movable frame, a belt for connecting said pulleys, a belt-shifter for said belt, and a shaft for controlling the belt-shifter, substantially as and for the purpose set forth.

7. The main frame having a saw-table and the rotary saw and its driving mechanism, in combination with the swinging frame at one end pivoted in the main frame, an eccentric wheel in the main frame provided with a weighted arm and connected with the free end of said movable frame to counterweight the same, the feed-wheel carried by said movable frame, and driving mechanism therefor.

8. In combination, the main frame and the saw, the swinging feed-frame mounted in the main frame, the feed-wheel carried thereby, tubular journals forming the pivot of said swinging frame, a drive-shaft extending through said journals and provided with a cone-pulley within the swinging frame, another and opposite cone-pulley mounted in the swinging frame, gearing therefrom to rotate the feed-wheel, a belt connecting said two cone-pulleys, and a belt-shifter therefor.

9. In combination, the main frame, the saw, the vertical movable swinging feed-frame mounted in the main frame, the feed-wheel carried thereby, variable gearing to rotate the feed-wheel, and a belt-shifter controlling said gearing, a shaft controlling said belt-shifter, and gearing on said shaft, and a vertical rack meshing with said gear and located on the upright at the movable end of said movable frame.

10. In combination, the main frame, the saw, adjustable feed-wheel, variable gearing therefor comprising opposite cone-pulleys, a belt connecting the same, a belt-shifter on said belt, a rope having its opposite ends secured to said shifter and passing around a pulley secured at one side of the shifter and wound on the spool at the opposite side thereof, and means for rotating the spool.

11. In a sawing-machine, the combination of the main frame, the saw-mandrel and its saw, the transverse horizontal beams of the main frame, and the saw-table carried thereby, the outer portion of the saw-table beyond the saw being removable and provided with swinging clamp-arms pivoted to said removable portion of the saw-table to swing under or from said transverse beams of the main frame, substantially as described.

12. In combination, a main frame carrying the sawing mechanism, a vertically-swinging frame pivoted in the main frame and having the rectangular lower portion, the feed-wheel and its shaft carried by said swinging frame above the main frame, and the gearing for driving and regulating the speed of said feed-wheel mounted in and carried by the rectangular lower portion of said swinging frame, substantially as described.

13. The combination, with the main frame and sawing mechanism, of the vertically-swinging frame mounted in the main frame, the feed-wheel and its shaft carried by said swinging frame above the main frame, the two cone-pulleys connected by a belt and carried by said swinging frame and connected to drive and vary the speed of the feed-wheel, means to drive said pulleys, and a belt-shifter for said belt carried by said swinging frame, and means, substantially as described, controlling said shifter.

14. The combination, with a main frame and the sawing mechanism, of a vertically and freely swinging frame pivoted in the main frame, the feed-wheel and its shaft carried by said swinging frame over the main frame so as to rise and fall to accommodate various-sized pieces of wood, driving and speed-regulating gearing for said feed-wheel, and controlling mechanism therefor connected by gearing with said swinging frame so that the speed of the feed-wheel will be controlled by the vertical movement of said swinging frame, as and for the purpose set forth.

15. The combination, with a main frame and the sawing mechanism, of the vertically-swinging frame pivoted in the main frame, the feed-wheel carried thereby, the driving and speed-regulating gearing for said wheel carried by the swinging frame and comprising opposite cone-pulleys and a belt, a belt-shifter therefor, a shaft extending forwardly and upwardly for operating the belt-shifter, having the joint and at one end mounted on the swinging frame, the rack pivotally secured to an upright of the swinging frame, and the gear on said shaft meshing with said rack, whereby the vertical swing of said frame controls the speed of the feed-wheel, as set forth.

16. The combination, with a main frame and the sawing mechanism, of the vertically-swinging frame pivoted in the main frame and having parallel separated top beams located above the plane of the saw-table, the feed-wheel shaft extending horizontally over the saw-table and carrying the feed-wheel, a bearing-box for said shaft extending across said beams, a clamping-block extending across the opposite sides of said beams, and bolts removably securing said block and box together, whereby said box can be moved longitudinally of said beams to adjust the feed-wheel toward or from the saw, and movable driving mechanism for rotating said shaft, substantially as set forth.

17. In a sawing-machine, the combination of the main frame and the saw, the vertically-swinging frame, the feed-wheel and its shaft carried by the movable frame and extending over the saw-table, the grooved hub or sleeve of the feed-wheel, the forked rod engaging said grooved hub to move the feed wheel laterally, as set forth, the lever for operating said forked rod, and operating means to drive the feed-wheel, as described.

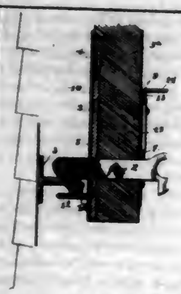
18. In combination, the main frame, the saw and its mandrel, the vertically-swinging frame at the lower corner of one end pivoted in the main frame, the vertically-swinging weighted arm having the wheel at its inner end pivoted in the frame and loosely connected to the free end of said swinging frame to counterweight the same, the feed-wheel and its shaft carried by the swinging frame, and the driving and speed-regulating gearing for said wheel carried by said swinging frame, substantially as set forth.

19. In combination, a main frame, a saw-table, the circular saw, the vertically-swinging frame pivoted at its lower portion in the lower part of the main frame beneath the plane of the saw-table and provided with the top beams above the plane of the saw-table, the shaft extending from said top beams over the saw-table and provided with the feed-wheel, the bearing-box for said shaft clamped adjustably to said top beams so as to be adjustable longitudinally thereof for the purpose described, driving means in the lower portion of the swinging frame, and a loose driving-chain therefrom to said shaft.

477,973. SHUTTER-FASTENER. MARIUS P. TEN EYCK, Clifton, N. J. Filed Jan. 9, 1892. Serial No. 417,565. (No model.)

Claim.—The combination, with a shutter provided with a vertical groove, of a gravity-latch mounted on the shutter and composed of

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a slide arranged in the groove and a horizontal bar exteeding through the shutter and provided at each end with a hook, an outer plate secured to the shutter and provided with a slot to receive the bar and having a horizontal flange, and a keeper adapted to be engaged by the hook and the flange, substantially as described.

477,974. STEW-PAN. CALVIN TURNER, Bangor, Me. Filed Dec. 14, 1891. Serial No. 415,069. (No model.)

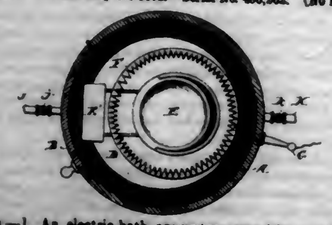


Claim.—1. An improved stew-pan consisting of the combination of a pan provided with bail-ears and protruding hinge-lugs connected by a rivet, with a detachably-hinged cover having a hinge projection with a curved slot and a reverse curved extension beyond said slot, and a curved bail attached to the bail-ears provided with a right-angle portion containing an eye adapted to engage the extension on the cover to operate the latter, substantially in the manner shown and described.

2. In a stew-pan having a hinged cover provided with a reverse curved extension protruding from the hinged side, an improved operating-bail having means for connecting with the bail-ears, said bail curved for a sufficient height over the top of pan and having one of its ends terminating for a short distance in a plane at right angles with the projection of the bail, and a hollow casting provided with an eye located upon the right-angle portion, for the purpose described, and substantially as shown and set forth.

3. In combination with a pan or other kettle provided with a bail and having hinge-lugs connected by a rivet near said bail, a detachably-hinged cover for the same, consisting of a cover provided with a casting D, having a slot therein adapted to engage the rivet in the hinge-lugs, said casting having a further extension beyond said slot, for the purpose described, and substantially as shown and set forth.

477,975. ELECTRIC-BATH APPARATUS. HENRY R. WAITE, New York, N. Y. Filed May 17, 1892. Serial No. 433,262. (No model.)

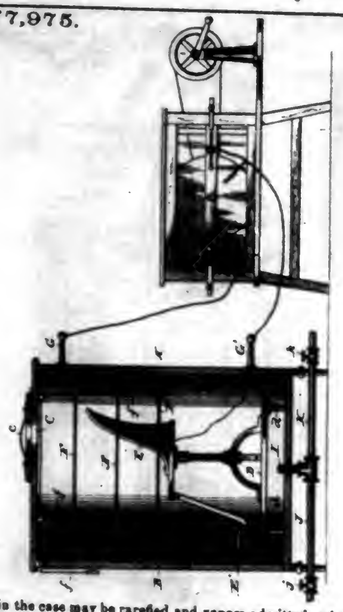


Claim.—1. An electric-bath apparatus comprising an inclosing case, an insulated support within the case, a chair for the patient, and a series of rings having inwardly-projecting teeth arranged to surround the patient, and connections between the rings and an influence-machine, substantially as described.

2. In an electric-bath apparatus, the combination, with the case, of a series of annular rings having inwardly-projecting teeth, substantially as described.

3. In an electric-bath apparatus, the combination, with an inclosing case, of a series of rings having inwardly-projecting teeth, and a pipe connected to the case, and connections with the pipe whereby

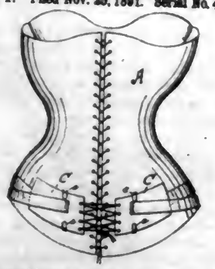
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the air in the case may be rarefied and vapors admitted, substantially as described.

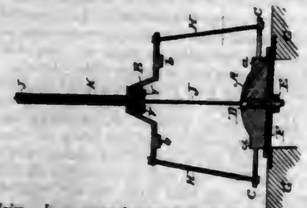
4. The combination, with an influence-machine, of an inclosing case, an insulating-support, annular rings mounted in the case and connected to the influence-machine, and means for exhausting the air in the case, substantially as described.

477,976. ABDOMINAL BELT FOR CORSETS. AMANDA L. WEEKS, New York, N. Y. Filed Nov. 25, 1891. Serial No. 413,117. (No model.)



Claim.—The combination, with a corset, of a supporting device consisting of two retaining-slips laced together and removably attached to the back of the corset, and two bands, each having an elastic portion and each being divided into two sections, one end of each of the four sections being connected to the retaining-slips and the other ends of each pair being united by a buckle, and hooks the on front of the corset to prevent the upward movements of the bands, substantially as specified.

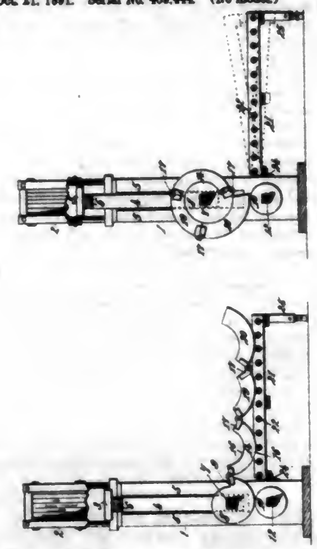
477,977. CESSPOOL-VALVE. ROBERT WELLING, Covington, Ky. Filed Feb. 17, 1892. Serial No. 421,858. (No model.)



Claim.—In a cesspool or catch-basin, the combination of the following elements: the valve-plate A, having the lugs *a a*, the square-

headed pin D, gasket F, secured by the nut E to fit close in socket G, the rod J, fastened to pin D and passing through the gas-pipe K, that is fastened above to the seat and by a swivel to the under part of plate B, so that when said rod J is raised the lugs *a a* will mesh in lugs *b b* of the plate B, hence the rods H, fixed in ring C and plate B, can be rotated horizontally to free it of obstructions, substantially as shown and described.

477,978. EXTENSION-CAM. BENJAMIN F. WHITE, Monroe, La. Filed Oct. 21, 1891. Serial No. 409,444. (No model.)



Claim.—1. A multiple-face or extension cam or eccentric consisting of a rotary support and one or more curved extension-pieces pivotally connected or articulated to the rotary support, substantially as described.

2. A multiple-face or extension cam or eccentric consisting of a rotary support and one or more curved extension-pieces connected or articulated to the rotary support, in combination with an anti-friction support, substantially as described.

3. A multiple-face or extension cam or eccentric consisting of a rotary support having an eccentric working face and a series of extension-pieces connected or articulated to the highest point of the working face of the support and to each other, substantially as described.

4. A pulley or roll having a rigid journal-support, a cam or eccentric resting on said pulley or roll and having a movable journal-support, and a series of extension-pieces pivotally connected or articulated to each other and to the cam or eccentric, in combination with an anti-friction support for said extension-pieces, substantially as described.

5. The combination, with two shafts, of a pulley mounted on one, a cam or eccentric mounted on the other, a series of extension-pieces pivoted or articulated to each other end to end and one of the series having a similar attachment to the highest point of the cam or eccentric, and means for operating the pulley, substantially as described.

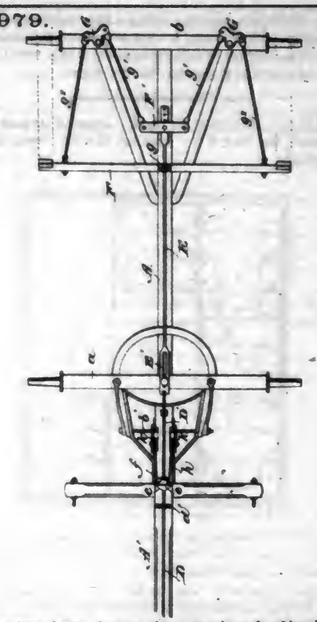
6. The combination of two shafts, one having a rigid and the other a movable journal-support, a pulley mounted on one shaft and a cam or eccentric on the other, and a series of extension pieces consisting of curved plates of increasing width from end to end, one of said plates being pivoted or articulated by its narrow end to the highest point of the cam or eccentric and the others similarly connected to each other and to the first extension-piece, substantially as described.

7. A multiple-face cam or eccentric consisting of a rotary support and a series of connected extension-pieces connected to the rotary support at one end of the series, in combination with an anti-friction support upon which the extension-pieces move, said support being capable of inclination to aid the movement of the parts by gravity, substantially as described.

477,979. WAGON-BRAKE. JAMES A. WHITCOMB, Columbus, Nebr. Filed Feb. 26, 1892. Serial No. 422,763. (No model.)

Claim.—1. In an automatic brake mechanism, the combination of a movable brake-bar, rods connecting the same to bell-crank levers

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which are pivoted directly upon the rear axle, rods of less length connecting the inner ends of the bell-crank levers to a movable bar, said bar being held in sliding engagement with the forward axle and connected to a rod carried by the tongue, the forward end of said rod being flexibly connected to the neck-yoke, a singletree movably secured to the tongue so as to slide thereon and connected with the rod carried by the under side of the tongue, and a movable plate, to which the singletree is attached, having an upwardly-projecting portion, which is adapted to be engaged by a retaining-pawl, said pawl being normally elevated and being provided with a flexible connection for manipulating the same to hold it in engagement with the projecting portion of the plate, substantially as shown, and for the purpose set forth.

2. In an automatic brake mechanism, the combination of the rods or bars D and E, connected to each other by a link and to the running-gear and tongue, as shown, a brake-bar connected by rods to bell-crank levers carried by the rear axle, rods of less length, also connected to said bell-crank levers and to transverse bars which are adjustably attached to the rod E, the forward end of the tongue carrying a fixture or socket B, with a roller, and apertures through which pass a flexible connection attached at one end to the rod D and at the other end to the neck-yoke, a plate I, movably attached to the rear end of the tongue, said plate carrying the singletree, an upwardly-projecting portion *l*, formed on the plate rear of the singletree, flexible connections attached to the singletree and extending therefrom around guide-pulleys to the rear end of the bar D, to which they are attached, a pawl or catch held normally elevated by spring-pressure, and a flexible connection attached thereto and passed around and through suitable guides to a fixture O for throwing the pawl in engagement with the projecting portion of the sliding plate, substantially as shown, and for the purpose set forth.

477,980. INSULATOR. HERBERT C. WIRT, Boston, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 21, 1890. Serial No. 341,357. (No model.)

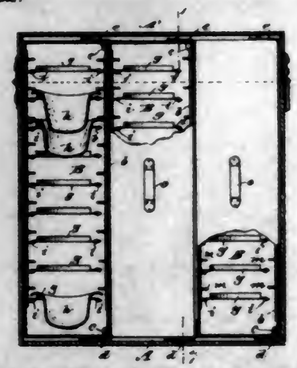


Claim.—1. The combination, with two line-wires, of an insulator having a knob at each end insulated from one another, around which the wires are wound, and having a central base portion projecting between the wires and provided with means of attachment to a wall.

2. The combination, with two line-wires, of an insulator comprising a central base portion projecting between the wires and having a side resting against the wall, and end wise-projecting knobs at each end of said base portion, around which the wires are wound and which are insulated from one another.

3. The double-line insulator having a central base portion with a side for resting on the wall and a knob at each end projecting in line with the wall and having annular contracted necks, with the central insulating base portion projecting between them.

477,981. HAT PACKING-CASE. JOSEPH S. ABRAMS and JOHN LAUENROOF, New York, N. Y. Filed Apr. 16, 1892. Serial No. 429,260. (No model.)



Claim.—1. A packing-case for hats, comprising a box opening on the side and spaced carrier-bows within the box supported at their ends and bow portions, substantially as described.

2. A packing-case for hats, comprising a rectangular elongated box, a lid forming one side wall of the case, and a series of spaced carrier-bows that are elastic and each secured within the box so as to spread when a hat is inserted, substantially as described.

3. A packing-case for hats, comprising an elongated rectangular box, a lid forming one side of the case hinged at one end and securable at the other end, a series of spaced elastic carrier-bows within the box, a series of fingers projected above the carrier-bow, and a series of similar fingers oppositely located on the lid of the case, substantially as described.

477,982. SPRING-GUN. JAMES W. ATKINSON, Milpitas, Cal. Filed Feb. 10, 1892. Serial No. 421,049. (No model.)



Claim.—1. In an animal-gun, the combination of a base-plate having the forked and slotted standard and a second standard having in its top a support and a breech-block with firing-pin, the gun-barrel mounted in the support and forked standard and having side trunnions fitting the slots of the latter, and a lug with locking-pin for holding it in the support, a pivoted hammer, said mechanism comprising a longitudinally-moving trip-rod and links interposed between the same and the trigger for operating the latter upon either the forward or rear movement of the trip-rod, and a tripping mechanism for operating said hammer, substantially as herein described.

2. In an animal-gun, and in combination with its barrel and spring-controlled hammer, the spring-controlled trigger for holding and tripping the hammer, the longitudinally-moving trip-rod extending forwardly beyond the barrel, and the links connecting said trip-rod with the trigger, one of said links operating to trip the trigger upon either a forward or rear movement of the trip-rod, substantially as herein described.

3. In an animal-gun, and in combination with its barrel and spring-controlled hammer, the spring-controlled trigger for holding and tripping the hammer, the longitudinally-movable trip-rod extending forwardly beyond the barrel, the pivoted lever G, connected with the rear end of the trip-rod, the link H, connecting the other end of the lever G with the rear end of the trigger, and the link I, connecting said trip-rod with said trigger, whereby the trigger is tripped upon either movement of the trip-rod, substantially as herein described.

4. In an animal-gun, and in combination with its barrel and spring-controlled hammer, the spring-controlled trigger for holding and tripping the hammer, the longitudinally-movable trip-rod extending forwardly beyond the barrel, the pivoted lever G, connected with the rear end of the trip-rod, the link H, connecting said lever with the trigger, the link I, connecting the trip-rod directly with the trigger, and the sliding connections between said links and trigger, whereby they operate thereon without interference to trip the hammer upon either movement of the rod, substantially as herein described.

5. An animal-gun consisting of a base-plate having suitable standards rising therefrom, a barrel pivoted in one of said standards and removably locked in another, whereby its breech may be exposed and covered, a firing-pin, a hammer pivoted to a standard of a base-plate and having a spring controlling it, a trigger pivoted to said standard, engaging the hammer and having a spring controlling it, a longitudinally-movable trip-rod extending forwardly of the barrel, a pivoted vertical lever at the rear of the base-plate, having its lower end connected with the trip-rod, and the links H and I, connecting the lever and trip rod, respectively, with the trigger, substantially as herein described.

477,983. GUIDE-MARKER FOR CORN-PLANTERS. HERRMAN A. BEHRNS, Orchard, Iowa. Filed Mar. 3, 1892. Serial No. 423,601. (No model.)



Claim.—1. A marker for corn-planters, consisting of a bar rigid throughout its length and provided with marking shoes or points at its extremities, a yoke spanning the central portion of the bar, provided with a hand-grip, the said yoke being attached to the bar at each side of its center, latches pivoted to the members of the yoke, and trip-levers connected with the latches and extending upward adjacent to the grip device of the yoke, the said levers being capable of independent manipulation, as and for the purpose specified.

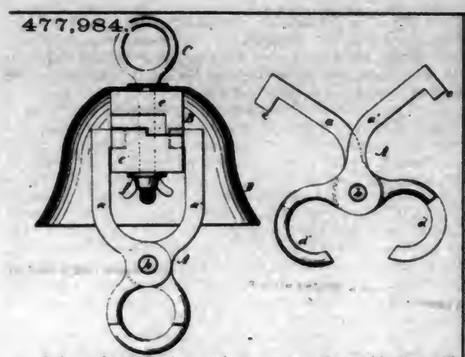
2. The combination, with a seed-planter provided with an extension at its rear, of a marker comprising a bar passed through the extension of the planter and having guided movement in said extension, the bar being provided with marking-shoes at its extremities, a hand-yoke attached to the bar at opposite sides of its center, latches pivoted upon the hand-yoke and adapted for engagement with the extension of the planter, one latch only being in locking engagement when the marker is in use, trip-levers having guided movement on the yoke and connected with the latch, and a guide rope or chain connected with the ends of the marker and having directed movement upon the body of the planter, as and for the purpose specified.

477,984. ELECTRIC LAMP OR CONDUCTOR SUPPORT. CHARLES BELL, Stroudsburg, Pa. Filed Mar. 23, 1892. Serial No. 426,047. (No model.)

Claim.—1. In an electric lamp or conductor support, the combination of a clip formed of two similar arms *a a'*, pivoted together, curved inward at one end and angled at the other end, and an insulating-support adapted to receive the clip and hold it in a closed position, substantially as specified.

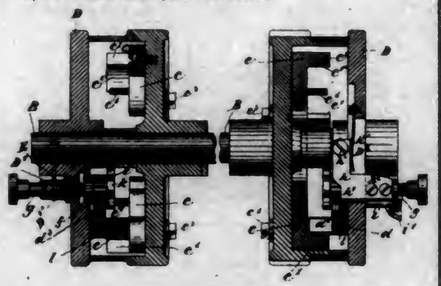
2. In an electric lamp or conductor support, the combination of the clip A, provided with the angled ends *c*, with the insulating-support B, formed of the parts *c c'*, the part *c'* having notches *g g'*, the part *c* having recesses *h h'*, and the eye C, substantially as specified.

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3. In an electric lamp or conductor support, the combination, with the clip A, provided with the angled ends *c*, of the insulating-support B, formed of the parts *c c'*, the part *c'* having notches *g g'*, the part *c* having recesses *h h'*, the eye C, and the bell-shaped protector D, substantially as specified.

477,985. CLUTCH. GEORGE BENDER, Brooklyn, N. Y. Filed Feb. 18, 1891. Serial No. 381,824. (No model.)



Claim.—1. In a positive friction-clutch, the combination, with the driving element provided with one member or shoe of the clutch, of the driven or machine shaft provided with the other member or shoe of the clutch, said shoes being provided with eccentrically-set clutch-faces, substantially as described, and moving and adapted to engage one another in a path at right angles to the axis of rotation, and means, substantially as described, for throwing said shoes into or out of engagement, substantially as and for the purposes set forth.

2. In a positive friction-clutch, the combination, with the driving element provided with one set of shoes or members of the clutch, of the driven or machine shaft provided with the other member or shoe of the clutch, said shoes being provided with eccentrically-set clutch-faces, substantially as described, and moving and adapted to engage one another in a path at right angles to the axis of rotation, means, substantially as described, for setting either of the shoes on the driving element into or out of operative position, and means, substantially as described, for throwing said shoe on the driven shaft into or out of operative position, substantially as and for the purposes set forth.

3. In a positive friction-clutch, the combination, with wheel C, provided with clutch members or shoes *c*, of the disk D, fixed on the machine-shaft and carrying the clutch member or shoe *d*, said shoes being provided with eccentrically-set clutch-faces, substantially as described, and moving and adapted to engage one another in a path at right angles to the axis of rotation, and means, substantially as described, for throwing said shoes into and out of engagement, said wheel C and disk D forming, substantially, an inclosing casing for the working parts of the clutch, as set forth.

4. In a positive friction-clutch, the combination, with the rotating driving element provided with one member or shoe of the clutch secured thereto and rotating therewith, of the driven or machine shaft provided with the other member or shoe of the clutch, said shoes provided with coinciding clutch-faces, means for raising said shoe on the driven shaft into engagement with the shoe on the driving element, and means for lowering said shoe to its inoperative position after each operation of the clutch, substantially as and for the purposes set forth.

5. In a positive friction-clutch, the combination, with the rotating driving element provided with one member or shoe of the clutch secured thereto and rotating therewith, of the machine-shaft provided with the other member or shoe of the clutch, said shoes provided with coinciding clutch-faces, the shoe on the driven shaft provided with two projections, the toothed wheel between the teeth of which one of said projections rests when the clutch is in its inoperative position, means for rotating said wheel and raising said shoe, the pivoted lever arranged to take under the other projection on said shoe when the same is elevated by said toothed wheel, and the spring arranged behind said lever for throwing same out, all arranged to operate substantially as set forth.

6. In a positive friction-clutch, the combination, with the rotating driving element provided with one member or shoe of the clutch secured thereto and rotating therewith, of the machine-shaft provided with the other member or shoe of the clutch, said shoes provided with coinciding clutch-faces, the shoe on the driven shaft provided with a projecting toe, the toothed wheel between the teeth of which said projecting toe rests when the clutch is in its inoperative position, means for rotating said toothed wheel and raising said shoe, means for supporting said shoe in operative position when raised, and means, substantially as described, for varying the rotation of said toothed wheel, substantially as and for the purposes set forth.

7. In a positive friction-clutch, the combination, with the rotating driving element provided with one member or shoe of the clutch secured thereto and rotating therewith, of the driven or machine shaft provided with the other member or shoe of the clutch, said shoes provided with coinciding clutch-faces, the shoe on the driven shaft provided with two projections, the toothed wheel between the teeth of which one of said projections rests when the shoe is in its inoperative position, means for rotating said wheel and raising said shoe, the pivoted lever arranged to take under said other projection on said shoe when the same is elevated, the spring arranged behind said lever for throwing same under said shoe, the tripper-plate on the end of said lever, and the incline on the machine-frame over which said plate rides as the shaft rotates, releasing said shoe, all arranged to operate substantially as set forth.

8. In a positive friction-clutch, the combination, with the rotating driving element provided with one member or shoe of the clutch secured thereto and rotating therewith, of the driven or machine shaft provided with the other member or shoe of the clutch, said shoes provided with coinciding clutch-faces, the shoe on the driven shaft provided with two projections, the toothed wheel between the teeth of which one of said projections rests when the shoe is in its inoperative position, the star-wheel mounted on the shaft of said toothed wheel, the pin mounted on the driving member and adapted to strike and rotate said star-wheel in its rotation, whereby the rotation of said star-wheel raises said shoe, means for holding said shoe in position when raised, and means for automatically releasing said shoe after each operation of the clutch, substantially as set forth.

9. In a positive friction-clutch, the combination, with the pulley C, provided with the clutch members or shoes *c*, of the disk D, fixed on the machine-shaft and carrying the clutch member or shoe *d*, said shoes having coinciding clutch-faces, means for throwing one or more of shoes *c* into operative position, the star-wheel and toothed wheels *e* and *f*, said toothed wheels each having a different number of teeth all mounted on stem *g*, said shoe *d* provided with a projection arranged to take between the teeth of one of said toothed wheels when the shoe is in inoperative position, means for shifting either of said wheels into engagement with said projection, whereby the raising of said shoe is varied, means for holding said shoe in its operative position when raised, and automatic means for releasing said shoe after each operation of the clutch, substantially as set forth.

477,986. ELECTRICAL STOP-MOTION FOR KNITTING-MACHINES. ALBIN BEYER, Brooklyn, N. Y., assignor to Henry Gernshym & Brother, same place. Filed Oct. 5, 1891. Serial No. 407,694. (No model.)

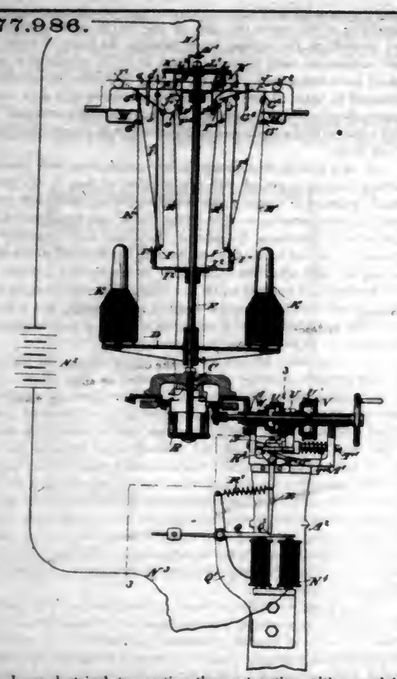
Claim.—1. An electrical stop-motion for knitting-machines, provided with an electric-circuit closer attached to the revolving spool-carrier and moving with the same, substantially as shown and described.

2. In an electrical stop-motion for knitting-machines, the combination, with a frame attached to the spool-carrier and moving with the same, of a spring attached to the frame and formed on its free end with an eye for the passage of the yarn, and a catch supported from the spool-carrier and insulated from the said frame and adapted to be engaged by the said spring when the tension on the yarn ceases, substantially as described.

3. An electrical stop-motion comprising a frame supported on the spool-carrier, a spring supported on but insulated from the spool-carrier, and a ring through which passes the yarn, made of non-conducting material and adapted to be interposed between the said spring and the said frame, substantially as shown and described.

4. An electrical stop-motion provided with a stationary circuit-wire, a hub for the end of the said wire, and an insulated support carrying one member of a circuit-closer and having a bearing for the hub, substantially as shown and described.

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5. In an electrical stop-motion, the combination, with a revoluble wheel, of a fixed hub having a bearing in the said wheel and a circuit-wire having one end fastened in the said hub, substantially as shown and described.

6. In a stop-motion, a yarn-paying-out device comprising a ring, through which passes the yarn, and a spring-catch for holding the said ring in position under normal tension of the yarn and releasing it when under undue tension, substantially as shown and described.

7. In a stop-motion, a yarn-paying-out device comprising a ring, through which passes the yarn, a spring-catch for holding the said ring in position under normal tension of the yarn and releasing it when under undue tension, and a guide-rod for the said ring, substantially as shown and described.

8. In an electrical stop-motion, the combination, with a ring of non-conducting material and through which passes the yarn, of a frame connected with one pole of the electric supply and a spring connected with the other pole of the electric supply and held separated from the said frame by the said ring until undue tension on the yarn pulls the ring from between the spring and frame and permits the spring to connect with the frame, substantially as described.

9. In an electrical stop-motion, the combination, with a ring of non-conducting material and through which passes the yarn, of a frame connected with one pole of the electric supply and a spring connected with the other pole of the electric supply and held separated from the said frame by the said ring until undue tension on the yarn pulls the ring from between the spring and frame and permits the spring to connect with the frame, and a hook on the said frame to catch and support the said ring after leaving the spring, substantially as shown and described.

10. In an electrical stop-motion, the combination, with a ring of non-conducting material and through which passes the yarn, of a frame connected with one pole of the electric supply and a spring connected with the other pole of the electric supply and held separated from the said frame by the said ring until undue tension on the yarn pulls the ring from between the spring and frame and permits the spring to connect with the frame and a slotted plate through which passes the yarn previous to its passing through the said ring, the said plate being adapted to catch a knot in the yarn and hold the yarn, thus creating undue tension on the yarn and ring to pull the latter from the spring, substantially as shown and described.

11. In an electrical stop-motion, the combination, with a ring of non-conducting material and through which passes the yarn, of a frame connected with one pole of the electric supply and a spring connected with the other pole of the electric supply and held separated from the said frame by the said ring until undue tension on the yarn pulls the ring from between the spring and frame and permits the spring to connect with the frame, and a yarn-paying-out device comprising a ring, through which passes the yarn previous to passing through the first-named ring, and a spring-catch for holding the said second ring under a tension somewhat higher than the first-named ring is held by its spring, substantially as shown and described.

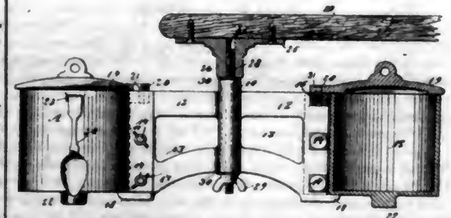
12. In an electrical stop-motion, the combination, with a ring of non-conducting material and through which passes the yarn, of a frame connected with one pole of the electric supply and a spring connected with the other pole of the electric supply and held separated from the said frame by the said ring until undue tension on the yarn pulls the ring from between the spring and frame and permits the spring to connect with the frame, a yarn-paying-out device comprising a ring through which passes the yarn previous to passing through the first-named ring, a spring-catch for holding the said second ring under a tension somewhat higher than the first-named ring is held by its spring, and a slotted plate for catching knots and through which passes the yarn previous to passing to the said ring of the paying-out device, substantially as shown and described.

13. In an electrical stop-motion for knitting-machines, the combination of the driving-shaft, the electro-magnets, and devices controlled by the latter for effecting the stoppage of the driving-shaft, with the spool-carrier and frames supported from the spool-carrier, said frames being provided with circuit-closers adapted to be operated by the yarns, substantially as shown and described.

14. In an electrical stop-motion for knitting-machines, the combination, with a main driving-shaft, of a driving-pulley held loosely on the said shaft, a hub mounted to slide on and to turn with the said shaft and provided with two pulleys, of which one engages the said driving-pulley, a fixed brake-pulley adapted to be engaged by the other hub-pulley, a spring-pressed shifting mechanism for operating the said hub to disengage one hub-pulley from the driving-pulley and to engage the other hub-pulley with the fixed brake-pulley, a tripping mechanism connected with the said shifting mechanism, and means for controlling the said tripping mechanism by an electric circuit to release the said shifting mechanism, substantially as shown and described.

15. In an electrical stop-motion, a circuit-closer comprising a frame, a spring adapted to make contact on the said frame to close the circuit, and a ring through which passes the yarn, made of a non-conducting material and adapted to be interposed between the said spring and frame, substantially as shown and described.

477,987. BAR-FIXTURE. ALEXANDER BRANDON, New York, N. Y. Filed Mar. 17, 1892. Serial No. 425,317. (No model.)



Claim.—1. A bar-fixture comprising an attaching device for the under side of the bar, a bolt or rod depending therefrom, a frame turning upon the bolt or rod, and receptacles having vertically-extended flanges on their outer sides removably bolted to the outer vertically-extending edges of the frame, substantially as set forth.

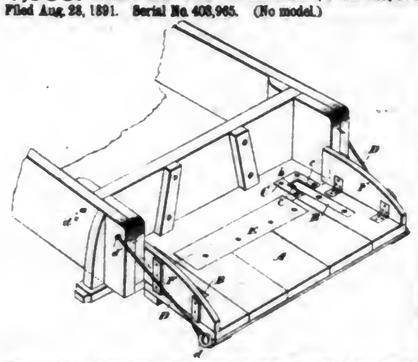
2. A bar-fixture comprising a pivot-pin adapted for attachment to a bar or other support, a frame provided with a sleeve intermediate of its ends and adapted to turn upon the pivot-pin, the said frame being provided with outwardly-projecting feet at its lower portions, and receptacles removably attached to the frame and resting upon the feet thereof, the said receptacles being provided with lugs formed upon the lower portions thereof, as and for the purpose specified.

3. A bar-fixture consisting of a pivot-pin adapted for attachment to a bar or other support, a frame having a sleeve intermediate of its ends and adapted to turn upon the pivot-pin, which sleeve is removable from said pin, receptacles provided with exterior lugs, bolts removably connecting the lugs of the receptacles with the frame at its extremities, and feet carried by the frame and engaging with the under surface of the receptacles, as and for the purpose specified.

4. A bar-fixture consisting of a pivot-pin adapted for secure attachment to a bar or other support, a frame having a sleeve intermediate of its ends, adapted to receive the pivot-pin and removably held thereon, receptacles provided with lugs, which lugs are removably connected with the frame at its ends, feet projecting outward from the under portion of the frame at its ends and engaging with the lower portions of the receptacles, the said receptacles being provided with removable lids, and a keeper for the reception of a spoon, said keeper being exteriorly located, as and for the purpose specified.

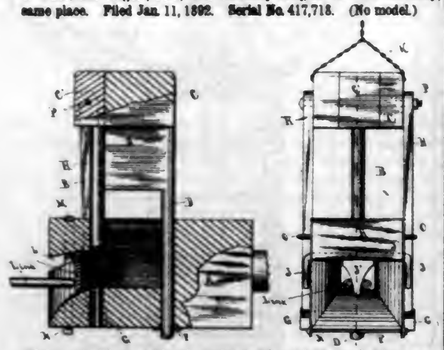
5. A bar-fixture consisting of a pivot-pin adapted for attachment to a bar or other support, a frame provided with a sleeve intermediate of its ends, adapted to receive the pivot-pin, receptacles provided with exterior lugs, locking-bolts removably connecting the lugs of the receptacles with the end portions of the frame, feet carried by the frame and supporting the lower portions of the receptacles, the upper portion of the frame being essentially straight, hinged covers adapted to slide over the receptacles and also over the straight upper portions of the frame, and keepers exteriorly located upon the receptacles and adapted to receive and hold a spoon, substantially as and for the purpose set forth.

477,988. WAGON END-GATE. JAMES BUTLER, Greenwich, N. J. Filed Aug. 28, 1891. Serial No. 403,965. (No model.)



Claim.—In combination with a wagon-body, a platform adapted to form a continuation of its bottom, attaching devices consisting of two bars fixed to the platform on its upper side and each having portions of its length in two parallel planes, and a plate for each bar provided with an opening and secured to the upper side of the wagon-bottom over an opening within the rear edge thereof, said bars being adapted to engage the under and upper sides of said plate and having portions passing through the openings therein, a chain extending from each side of the wagon to the platform, a lip or plate attached to the platform and overlapping the wagon-bottom, and the hinged pieces at the sides of said platform, substantially as and for the purpose shown.

477,989. CAR-COUPLING. WILLIAM H. CALLAWAY and CHARLES G. WEST, San Angelo, Tex.; said Callaway assignor to H. S. Callaway, same place. Filed Jan. 11, 1892. Serial No. 417,718. (No model.)



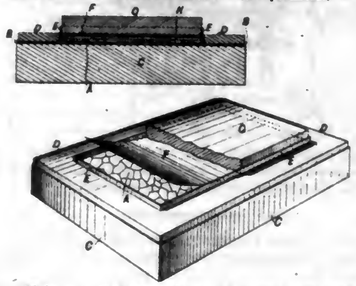
Claim.—1. The combination, with the draw-head having lugs upon each side of the same, of the vertical coupling-pin, the pivoted pin-supporting arms arranged to contact with the lugs, and tripping-arms adapted to be operated by the centering-link and throw the arms from the lugs, substantially as shown and described.

2. The combination, with the draw-head having side lugs, of the coupling-pin having a head, supporting-arms pivoted to sides of head and adapted to rest upon the lugs, and a transverse rock-shaft carrying a central operating-arm and the side tripping-arms, all adapted to operate substantially as shown and described.

3. The combination, with the draw-head, of the coupling-pin, the bar, and the web, all secured together and sliding vertically in the draw-head, the pivoted arms arranged to support said sliding parts when resting upon projections upon the draw-head, and the transverse revoluble rod provided with the central arm obstructing the link-opening in the draw-head and with end arms operating to displace said supporting arms when the central arm is swung inward by the entering link.

4. The combination, with the draw-head slotted at its mouth, of the transverse rock-shaft journaled and carrying the operating and tripping arms on said slot, the retaining-band, the coupling-pin detachably secured in its head, and the supporting arms and lugs, all arranged substantially as shown and described.

477,990. MANUFACTURE OF STAINED GLASS FOR WINDOWS &c. ARTHUR R. CARTER and HENRY C. HUGHES, London, England. Filed Jan. 25, 1892. Serial No. 419,196. (No specimens.)



Claim.—1. In the manufacture of stained-glass panels, the herein-described step which consists in juxtaposing and welding together by heat the contiguous edges of variously-colored pieces of glass, substantially in the manner specified.

2. In the manufacture of stained-glass panels, the herein-described step which consists in juxtaposing and welding together by heat the contiguous edges of variously-colored pieces of glass pressed between sheets of platinum and confined within a marginal frame, substantially in the manner specified.

3. The herein-described process of making stained-glass panels, which consists in juxtaposing and uniting by welding together by heat the contiguous edges of the elements of a stained-glass mosaic in the manner described and then welding to the said mosaic a covering-sheet of white glass, as described.

4. The herein-described process of making stained-glass panels, which consists in juxtaposing and uniting by welding together by heat the contiguous edges of the elements of a stained-glass mosaic in the manner described, then painting on the mosaic with vitrifiable enamel colors to give the artistic details of treatment and again firing to fix the colors, and then applying upon and welding by heat to the artistically-treated surface of the mosaic a covering-sheet of white glass, substantially as specified.

5. The herein-described process of making stained-glass panels, which consists in juxtaposing and uniting by welding together by heat the contiguous edges of the elements of a stained-glass mosaic in the manner described, and then welding to the said mosaic a covering-sheet of white glass, upon which the artistic details of treatment have been applied with enamel colors and fixed by firing, so that the artistically-treated surface shall be imprisoned between the two thicknesses of glass, substantially as described.

6. A stained-glass panel consisting in a mosaic composed of pieces of stained glass welded together and a single sheet of glass covering and welded to the whole mosaic and of an intermediate design executed in vitrifiable enamel color upon one of the juxtaposed surfaces and imprisoned between the glass mosaic and the covering-sheet of glass, substantially as specified.

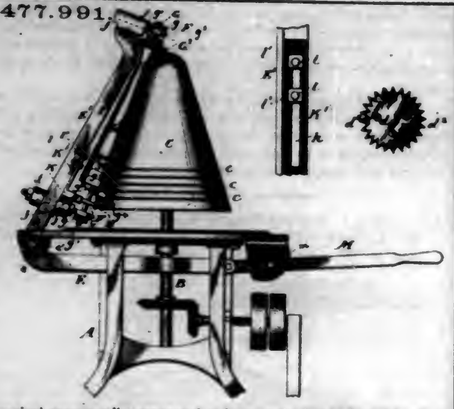
477,991. HAT-ROUNDING MACHINE. ABRAHAM T. CLASON, Danbury, Conn. Filed Oct. 26, 1891. Serial No. 410,053. (No model.)

Claim.—1. The combination, with a revoluble cone adapted to receive a hat-body and a conical presser-roller supported to bear on the hat-body, of a cutting device supported to cut the edge of the hat-body on the cone and suitable means to give the cutting device lateral and vertical adjustment relative to the cone, substantially as described.

2. The combination, with a revoluble cone adapted to receive a hat-body and provided with a series of circumferential grooves, of a conical presser-roller supported to bear on the hat-body and a cutting device adjustable to either of the grooves on said cone, substantially as described.

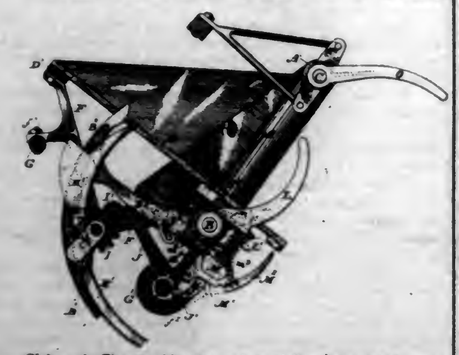
3. The combination, with a revoluble cone adapted to receive a hat-body and provided with a series of circumferential grooves, of a

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conical presser-roller supported to bear on the hat-body and having a series of removable sections and a cutting device adjustable to either of the grooves on said cone, substantially as described.

477,992. GRAIN-BINDER. PETER P. COLER, Clyman, Wis. Filed Oct. 4, 1888. Renewed May 7, 1892. Serial No. 432,139. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the packers, the trip-finger, the trip-cam which supports it, the interposed spring, the subjacent trip-lever spring-pressed against the cam, and the clutch-tripping mechanism controlled by said lever.

2. The combination, substantially as hereinbefore set forth, of the trip-finger, the peripheral trip-cam which supports it, the interposed spring, the subjacent trip-lever having its end resting against said cam, and the spring which presses said lever against the cam, with means for adjusting the stress of said last-named spring.

3. The combination, substantially as hereinbefore set forth, of the trip-finger, the trip-cam which supports it, having a straight bearing-track with a notch at the outer end, and the trip-lever spring-pressed against the cam and yielding to it when in contact with the straight track, but positively locking it when resting in the notch.

4. The combination, substantially as hereinbefore set forth, of the trip-finger with its stop, the trip-cam with its shoulder, a bearing to which they are independently pivoted in the same axial line, the spring interposed between the finger and the cam to support the former yieldingly, and a trip-lever against which the lower periphery of the cam rests.

5. The combination, substantially as hereinbefore set forth, of the pivoted trip-finger, the pivoted trip-cam which supports it, having a straight track with notch at the end, the trip-lever spring-pressed against the cam and normally bearing against its straight track, and the spring interposed between the cam and trip-finger.

6. The combination, substantially as hereinbefore set forth, of the trip-finger, the trip-cam with its notch, the trip-lever spring-pressed into the notch to lock the cam, and the pawl operating to force the lever out of the recess and release the cam to permit it and the trip-finger to swing below the plane of the binding-table.

7. The combination, substantially as hereinbefore set forth, of the needle and its shaft, the trip-finger, the trip-cam pivoted on said shaft and when released swinging below the plane of the binding-table, and the lug on the needle and offset on the cam, by which the needle as it retreats from the binding-receptacle will restore the trip-finger and trip-cam to their normal upright position.

8. The combination, substantially as hereinbefore set forth, of the trip-finger, the trip-cam, the trip-lever spring-pressed against the cam, the clutch-tripping mechanism controlled by the lever, and the guard extension on the cam, whereby the lever is held depressed and the trip-latch held out of engagement until the cam and trip-finger are restored to their normal position.

9. The combination, substantially as hereinbefore set forth, of the needle, the trip-finger, the notched trip-cam, the trip-lever and trip-latch rigidly connected together, and the spring which acts on said trip-lever, with the trip-clutch, the crank-arm on the needle-shaft, and the pawl pivoted on said crank-arm and acting to unlock the trip-lever from the trip-cam.

10. The combination, substantially as hereinbefore set forth, of the needle-shaft, the trip-finger loosely pivoted thereon and having an offset from its hub or shank, the needle provided with a lug arranged to strike said offset in the retreating movement, and mechanism operating to withdraw said needle past its normal position of rest and then to return it to said normal position, whereby the finger is first restored to its effective station and then the lug on the needle separated from the offset on the finger to permit the latter to yield before incoming grain.

11. The combination, substantially as hereinbefore set forth, of the binding-table slotted for the passage of the needle and cord which it carries, with leaves forming the sides of the slot, hinged at their inner edges, and capable of vertical adjustment at their outer edges, and means for adjusting the height of said outer edges.

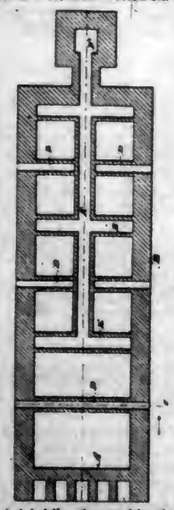
12. The combination, substantially as hereinbefore set forth, of the binding-table, the cord-slot therein, the laterally-hinged leaves forming the sides of the slot, and lifting-arms which raise the free sides of said leaves to compress the under side of the gavel.

13. The combination, substantially as hereinbefore set forth, of the binding-table, the cord-slot therein, and the laterally-hinged leaves which form the sides of the slots, the needle, and the wipers thereon that strike against and raise the outer or free edges of the leaves to compress the under side of the gavel.

14. The combination, substantially as hereinbefore set forth, of the binding-table, the cord-slot therein, the laterally-hinged leaves which form the sides of the slot, the needle, and the wipers mounted thereon, with means for adjusting the wipers upon the needle that they may raise the exposed edges of the leaves more or less.

15. The combination, substantially as hereinbefore set forth, of the binding-table, the cord-slot therein, and the hinged leaves at the sides of the slot, with the adjusting-screws which support the inner edges of the leaves at any desired normal height.

477,993. BRICK-KILN. JOSEPH COMLEY and JAMES M. WOLFE, Tarkio, Mo. Filed Mar. 12, 1892. Serial No. 424,714. (No model.)



Claim.—1. In a brick-kiln, the combination of a furnace having grate-bars at one end and a chimney at the other, transverse partitions extending from one of the longitudinal side walls to the other for dividing the kiln temporarily into sections, each section having underground transverse induction and eduction flues connected to the chimney, said transverse flues having openings in their upper portions, and transverse dampers adapted to be operated from without the side walls, substantially as shown, and for the purpose set forth.

2. In a brick-burning furnace or kiln, the combination of a rectangular structure having at one end a starting-furnace and at the opposite end a chimney, a longitudinal underground flue connected with the chimney, a series of underground transverse flues opening through the side walls and communicating with the interior of the kiln to admit cold air thereto, intermediate underground hot-air flues connecting with the longitudinal flue, which communicates with the chimney, the transverse flues having dampers, and removable partitions for separating the body of the kiln into sections, substantially as shown, and for the purpose set forth.

3. In combination with a brick-burning furnace constructed substantially as shown, having a furnace at one end, with grate-bars and a chimney at the other, which connects with central and laterally-extending underground flues, air-supply flues arranged alternately with the transverse flues connected with the chimney, and fuel-feeding receptacles supported by the top of the kiln, substantially as shown, and for the purpose set forth.

4. The combination, with a furnace or kiln constructed substantially as shown and adapted to be separated by transverse partitions, of a removable board *d'*, forming a part of each of the partitions, transverse underground flues below the removable board, and a furnace located at the opposite end of the structure from the chimney, substantially as shown, and for the purpose set forth.

477,994. BRICK-KILN. JOSEPH COMLEY and JAMES M. WOLFE, Tarkio, Mo. Filed Mar. 12, 1892. Serial No. 424,715. (No model.)



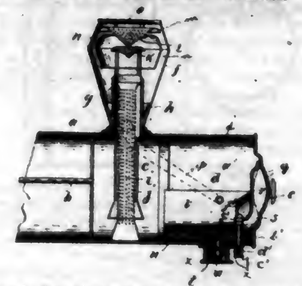
Claim.—1. In a circular kiln for burning bricks, the combination of the outer and inner circular walls and a central chimney, said walls having doorways through which access can be had to the space between the inner and outer walls, said space being connected by flues with the central chimney, substantially as shown, and for the purpose set forth.

2. The combination, in a circular kiln, of the inner and outer walls *a* and *a'*, a central chimney A, connected with the space between the inner and outer walls by flues having dampers *e*, and a single furnace C, substantially as shown, and for the purpose set forth.

3. In a brick-burning furnace or kiln, the combination of the inner and outer walls *a* and *a'*, having doorways through the same, flues with apertures and dampers above the same, a furnace C, communicating with the space B, in which the bricks are placed to be burned, and a temporary partition-wall E, adjacent to the furnace, extending from the outer to the inner wall, substantially as shown, and for the purpose set forth.

4. In a furnace for burning brick, the combination of the inner and outer walls *a* and *a'*, flues having dampers communicating with the central chimney and with a space B, in which the bricks to be burned are placed, flues *f*, extending through the walls *a* and *a'* and provided with apertures and dampers for communicating with the compartment B, a temporary partition-wall E between the walls *a* and *a'* and adjacent to the furnace C, and means, substantially as set forth, for dividing the space B into separate compartments, for the purpose set forth.

477,995. SPARK-ARRESTER. JOHN W. CURRAN, Marshall, Tex. Filed Feb. 18, 1892. Serial No. 422,082. (No model.)



Claim.—1. A smoke-stack having the barrel and cinder-pocket around the barrel, the pipes for conveying said cinders from said pockets, the deflector arranged above the barrel to deflect the cinders downwardly, the inverted finely-perforated cone above the deflector, having the downwardly-curved upper edges to deflect the cinders downwardly which do not pass through the cone and form a passage around the cone, and the passage for conveying the cinders down from said cone.

2. In a locomotive, in combination, the smoke-box having the front extension, the lift-pipe in the smoke-box, the stack having the perforated and deflecting surfaces to prevent escape of cinders which are not pulverized and having a cinder-pocket into which said cinders are thrown, and one or more pipes to convey the cinders from said pocket into the said end extension, whereby the cinders are kept agitated and are carried back to the lift-pipe in the smoke-box, substantially as set forth.

3. In combination, a smoke-box having a front end extension, the stack having a cinder-pocket, the lift-pipe, means to prevent passage of cinders from said stack and to deflect the same to said pocket, pipes from said pocket to discharge the cinders into the front end extension, and openings and a passage in the front end of said extension, whereby air is admitted which will carry the cinders from said front end back to the lift-pipe.

4. A locomotive provided with the front end extension of the smoke-box, means to convey the cinders from the smoke-stack into said extension, air-passages from the exterior into said extension, whereby currents of air are maintained which will carry the cinders rearwardly and will prevent them from congregating in the upper portion of the extension and will prevent them from remaining within the extension.

5. A locomotive having the front end extension, wherein the cinders from the smoke-stack are deposited, the front openings and air-passages into said extension, whereby a rearward current of air in the lower portion of the extension is maintained, passages from the exterior, whereby a current of air is discharged into opposite sides of the front end extension, and the pipe from the exterior, whereby air is discharged within the extension a distance from the bottom and sides thereof, substantially as and for the purposes set forth.

6. In a locomotive, the combination of the stack-barrel, the perforated pipe extending from the bottom of the smoke-box up into said barrel, so that the sparks, &c., are forced through the same, the lift-pipe around said pipe, a stack-shell forming a spark-pocket around said barrel, discharge-pipes from said pocket, the solid deflector above said barrel, the inverted perforated cone directly above said deflector, and the annular down passage within the shell from the outer edge of said inverted cone, substantially as described.

7. A locomotive having the forward extension, means for discharging cinders thereinto, a double bottom therefor forming an air-space opening into the outer air and discharging into the extension at the sides thereof, and an air-inlet into the front portion of the extension above said bottom, substantially as described.

8. A locomotive having the forward extension, means for discharging cinders thereinto, openings in the front end of said extension, and a downwardly-extending passage therefrom into said extension, substantially as described.

9. A locomotive having a forward extension, means for discharging cinders thereinto, means for discharging air into the sides of said extension, and the air-pipe having a funnel at its outer end and extending up within the extension and provided with deflectors, substantially as set forth.

477,996. PNEUMATIC TIRE. THOMAS DUNN, London, England. Filed Dec. 10, 1891. Serial No. 414,577. (No model.)

Claim.—1. In a pneumatic tire, a protecting-band capable of readily undergoing slight contraction and expansion of length when in use

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at a number of points and flat or straight in cross-section and a strip of elastic material, such as india-rubber, of plano-convex form in cross-section, secured at its flat side to said protecting-band, so as to form therewith a combined protecting-band and elastic strip, substantially as herein described, for the purpose specified.

2. In a pneumatic tire, a protecting-band composed of sheet metal corrugated transversely throughout its length and flat or straight in cross-section and an outer elastic strip of plano-convex form in cross-section and in which said protecting-band is molded or embedded, so as to form therewith a combined protecting-band and elastic strip, substantially as herein described, for the purpose specified.

3. In a pneumatic tire, a combined protecting-band composed of sheet metal corrugated transversely throughout its length and flat or straight in cross-section and an outer elastic strip of plano-convex form in cross-section and in which said protecting-band is molded or embedded, substantially as herein described, for the purpose specified.

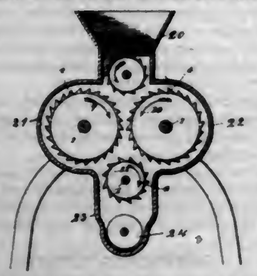
4. In a pneumatic tire, the combination, with an outer covering or tube forming or inclosing the air tube or chamber of the tire and an inner protecting-band capable when said tire is in use of readily undergoing slight longitudinal contraction and expansion at a number of places throughout its length, of an elastic strip arranged between the protecting-band and the outer covering or tube, so as to be constantly subjected to the pressure of air within said air tube or chamber, substantially as herein described, for the purposes specified.

5. In a pneumatic tire, the combination of an outer covering forming or inclosing the air tube or chamber, a protecting-band composed of transversely-corrugated sheet metal, and an elastic strip of plano-convex cross-section arranged between said air tube or chamber and outer covering and surrounding said protecting-band, substantially as herein described, for the purpose specified.

6. In a pneumatic tire, the combination of an outer tubular covering forming the wall of an air tube or chamber, a strip of flexible material located within and secured at its edges to said tubular covering, a protecting-band capable when in use of readily undergoing contraction and expansion at a number of points throughout its length and arranged between said tubular covering and said strip of flexible material, and an elastic strip of plano-convex cross-section arranged between said protecting-band and outer tubular covering, substantially as herein described.

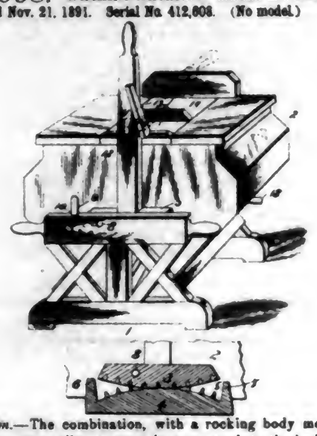
7. A pneumatic tire comprising a tubular covering composed of a spirally-wound ribbon of suitable material, such as canvas, having on each side a layer of india-rubber and forming an air tube or chamber, a strip of flexible material located within and secured at its edges to said tubular covering, a strip of india-rubber arranged between said flexible strip and tubular covering, and a protecting-band composed of transversely-corrugated sheet metal arranged within said strip of india-rubber, substantially as herein described, for the purposes specified.

477,997. COTTON-SEED HULLER. JAMES J. FAULKNER, Memphis, Tenn., assignor to the National Cotton Seed Oil and Huller Company, same place. Filed Dec. 24, 1890. Serial No. 375,687. (No model.)



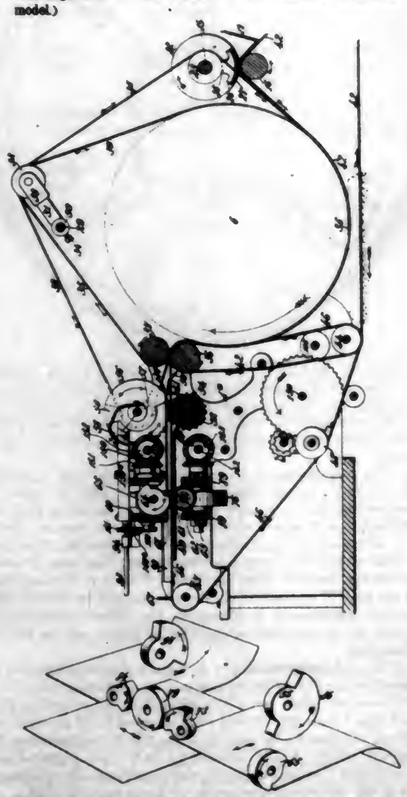
Claim.—A cotton-seed huller consisting of a casing formed with a hopper, with expanded portions beneath the hopper and with a drop portion beneath the expanded portions, the feed-roller located within the hopper, the slow and fast cylinders located within the expanded portions, and the finishing-cylinder and the conveyer located in the drop portion, substantially as described.

477,998. WASHING-MACHINE. GEORGE L. FISHER, Amboy, Ill. Filed Nov. 21, 1891. Serial No. 412,608. (No model.)



Claim.—The combination, with a rocking body mounted on a base, of corresponding convex cleats secured to the body and base, respectively, and raised portions formed on each end of the cleats that are secured to the base, whereby the body is prevented from rocking off, substantially as described.

477,999. PERFECTING PRINTING-PRESS. JOSEPH C. FOWLER, Washington, D. C. Filed July 7, 1891. Serial No. 398,708. (No model.)



Claim.—1. The combination, in a perfecting-press, of an impression-cylinder, means for feeding a continuous web of paper to said cylinder at substantially less speed than the surface speed of the cylinder, a perforator to form successive transverse series of perforations at regular intervals in the web, an intermittently-acting breaker arranged behind the press and having intermittent engagement with the web at the speed of the cylinder, a supporting-roll beneath the paper and breaker and having the speed of the latter, tapes traveling over the supporting-roll and impression-cylinder, and independent tapes traveling on said cylinder and over rolls on the shaft of the breaker, substantially as described.

2. The combination, in a perfecting-press, of feeding and holding rolls advancing a continuous web, a perforator in contact with one of said rolls for weakening said web at intervals, breaking devices having a speed in excess of that of the feed-rolls, said devices having intermittent engagement with the web, a supporting-roll beneath the web and breaker, tapes running over rolls behind and in front of the impression-cylinder and over the lower portion of the latter, a second series of tapes supported by a roll over the cylinder, and running over the lower face of the latter in line with the first series, and a third series of tapes running upon supports over the cylinder and over the shaft of the breaker, the latter series being between the two first, which engage the margins of the paper, which is grasped as it comes on the surface of the cylinder at or an instant before the intermittent engagement of the separating device, substantially as described.

3. In a perfecting-press, the combination, with an impression-cylinder, of feed-rolls having a constant speed to advance a continuous web, separating devices located behind and having the speed of the cylinder, which is accelerated relatively to the feed-rolls, tapes binding the single sheets upon one portion of the cylinder successively, feed devices to withdraw the once-impressed sheet from the cylinder upon a table, transfer devices removing the withdrawn sheet laterally, return-feed devices feeding the transferred sheets back upon a second portion of the impression-cylinder, an offset web clothing said portion, and tapes hugging the clothed portion, substantially as described.

4. In a perfecting-press, the combination, with feeding devices advancing a continuous web, of sheet-separating devices arranged behind the press, means for holding the sheets upon one portion of the impression-cylinder while they are printed on one side, a delivery-feed, a transfer-feed, an offset web clothing a second portion of the impression-cylinder, means for drawing and holding the sheet thereon while making the second impression, and a folding mechanism to which the sheet is delivered as it leaves the offset web, substantially as described.

5. In a perfecting-press, the combination, with an impression-cylinder, of means for feeding single sheets from behind the press beneath one portion of said cylinder, a transfer-feed removing said sheets laterally, a return feed placing the once-printed sheets upon a second portion of the impression-cylinder, and whipper-plates acting upon the edges of said sheets to permit the superimposition of the succeeding sheets, substantially as described.

6. In a perfecting-press, the combination, with an impression-cylinder having two different portions, beneath which are formed the first and second impressions, of a delivery-feed consisting of a feed-segment and a roll, a transfer-feed consisting of a series of devices acting successively upon the sheet, and a return-feed consisting of a feed-segment and roll, substantially as described.

7. In a perfecting-press, the combination, with a single impression-cylinder having two portions for effecting the first and second impressions, of a transfer-table, a delivery-feed, a transfer-feed, a return-feed, and whipper-plates co-operating with said feed devices to permit the superimposition of the sheets, substantially as described.

8. In a perfecting-press, the combination, with an impression-cylinder having two separate portions for forming the first and second impressions, of a transfer-table formed in two parts, the edge of the second being below that of the first part, the first part being provided with a depressed portion behind its receiving-edge, and whipper-plates co-operating with the delivery-feed and transfer-feed devices to depress the edges of the delivered sheets to permit the superimposition of those following, substantially as described.

478,000. PIPE OR FLUE REAMER AND EXPANDER. CHARLES A. PRAYER, Kettlesburg, Ill. Filed Aug. 3, 1891. Serial No. 401,543. (No model.)



Claim.—1. In a device substantially as described, in combination with a frame carrying vertical rolls horizontally beaded and a central stem in said frame operating said rolls, an inclined and tapered pin fitting into said frame and acting to cause said rolls to impinge on said stem, all as and for the purposes set forth.

2. In combination with a frame A and the beaded rolls B therein, projecting outwardly from and inwardly into the central opening, the central operating-stem E, extending through the frame, and the tapered pin F, acting by the inclination of its axis to feed in while in operation, and thus to force the rolls outwardly, substantially as described.

3. The frame A, composed of the head-piece a and main part a', the latter having sockets open on the outside and inside, and the rolls B in said sockets, combined with a central operative stem E and an inclined taper pin F, substantially as set forth.

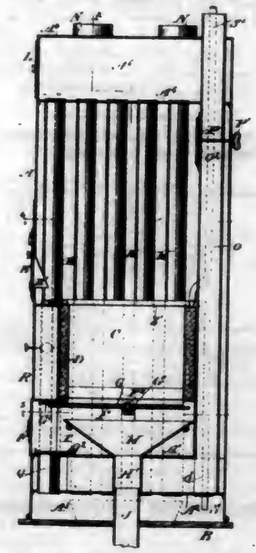
4. The frame A, the parts a and a' of which are held together by headed tie-bolts and nuts and having sockets a^4 open on the outside and inside, and the central stem E, and loose pin F for operating said rolls by impingement.

5. In a tube-expanding device, as set forth, and in combination with its rolls and operating-stem, an inclined tapering pin acting as and for the purposes set forth.

6. In a tube-expander having rolls and a central operating-stem and an opening at one side through the interior of its frame for reception of a pin F, substantially as set forth.

7. In a tube-expander, the combination of the rolls B with the stem E and the taper pin F, in the manner and for the purposes described.

478,001. HOT-AIR FURNACE. JOHN W. FRIBERG, Brainerd, Minn. Filed July 14, 1891. Serial No. 399,517. (No model.)



Claim.—1. A hot-air furnace comprising the outer casing A, a closed hot-air chamber A^2 in the upper end thereof provided with outlets, a closed cold-air chamber A^3 in the bottom of the casing, a series of vertical spaced pipes K around the interior of the casing connecting the two chambers, a fire-pot C between the two chambers A^2 A^3, and within the series of pipes, a closed ash-pit beneath the fire-box, a space being formed between the upper edge of the fire-pot and the outer casing to permit a downward draft around the pipes and sides of the fire-pot into the space between the ash-pit bottom A' and the top of the cold-air chamber A^3, a smoke-pipe O, having an opening O' communicating with the said space under the ash-pit bottom, and a second valved opening O^2 near the upper end of the combustion chamber, substantially as set forth.

2. The combination, with the ash-pit having a door and an opening in its bottom, of a sectional removable hopper H, having an outlet to carry off the ashes, whereby an ordinary ash-pan may be substituted for the hopper, substantially as set forth.

3. A hot-air furnace having a cold-air chamber at its bottom, the vertical series of heating-pipes leading up therefrom, the fire-pot having an ash-pit provided with a door, a pipe Q, connecting the front end of the ash-pit and said cold-air chamber, a valve Q^2 on the ash-pit floor over the pipe Q and having a handle next to the ash-pit door, and two other vertical pipes leading up from said cold-air chamber to the upper edge of the fire-pot to check the draft, and having dampers provided

with handles projecting through the front side of the casing, substantially as set forth.

478,002. COUNTER. JOHN GAETJE, Fort Wayne, Ind. Filed Mar 31, 1892. Serial No. 427,206. (No model.)



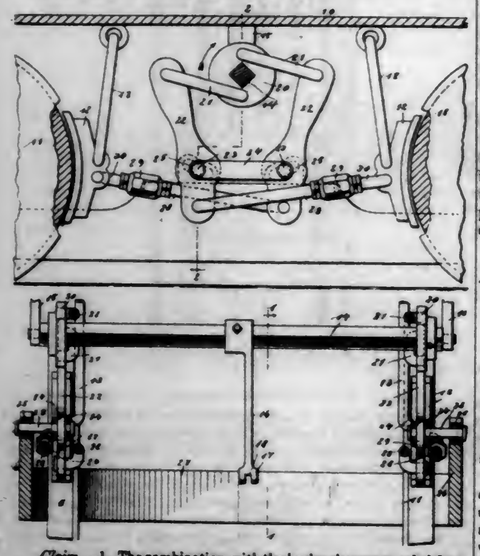
Claim.—1. In combination with a counter, a foot-railing having a longitudinal and a rotary adjustment and horizontally-disposed supports connected to said railing and movable inward and outward through the counter, substantially as described.

2. In combination with a counter, a foot-railing having a longitudinal and a rotary adjustment, sleeves mounted in said counter, and supports adjustably mounted in said sleeves and connected to said foot-railing, substantially as described.

3. In combination with a counter, a foot-railing having a longitudinal and a rotary adjustment, supports carrying said foot-railing and movable outward from and inward to the counter, and a catch adapted to engage one of said supports, substantially as described.

4. In combination with a counter, a foot-railing having feet or legs and rotatably and longitudinally adjustable pins projecting from said railing and supports therefor, one of which has notches adapted to be engaged by said pins, substantially as described.

478,003. CAR-BRAKE. WILLIAM F. GIBBS, Auburn, N. Y. Filed Mar. 10, 1892. Serial No. 424,413. (No model.)



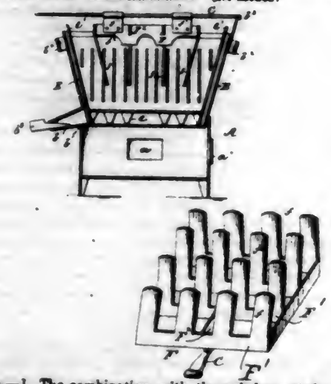
Claim.—1. The combination, with the brake-shoes suspended from the car and adapted to engage the wheels, of levers arranged between the front and rear wheels and having connected fulcrums, adjustable rods connecting the lower ends of the levers with the brake-shoes, a crank-shaft journaled beneath the car-bottom and provided with disks, and oppositely-extending arms secured to opposite sides of the disks and also to the free ends of the levers, substantially as described.

2. A car-brake comprising brake-shoes suspended from the car-bottom adjacent to the wheels, levers arranged in pairs on opposite sides of the car and between the front and rear wheels, said levers having movable and connected fulcrums, rods connecting the lower ends of the levers with the brake-shoes, and a crank mechanism for operating the levers, substantially as described.

3. A car-brake comprising brake-shoes suspended adjacent to the wheels, levers arranged in pairs on opposite sides of the car between the front and rear wheels, pins forming the fulcrums of the levers and held to slide in bearings, straps connecting the pins of each pair of levers, adjustable rods connecting the lower ends of the levers with the brake-shoes, and a crank mechanism for operating the levers, substantially as described.

4. A car-brake comprising brake-shoes suspended from the car so as to engage the wheels, levers arranged in pairs on opposite sides of the car and between the wheels, said levers having movable and connected fulcrums, adjustable rods connecting the lower ends of the levers with the brake-shoes, a crank-shaft journaled beneath the car and having disks at each end, and oppositely-extending arms secured to each disk and to the free ends of the levers, substantially as described.

478,004. WASHING-MACHINE. SALLIE R. GIBSON, Princess, Ky. Filed Sept. 9, 1890. Serial No. 364,429. (No model.)



Claim.—1. The combination, with the suds-box, of the pounder composed of an open frame, cross-bars, a brace-bar extended at right angles to the cross-bars, and fingers or prongs depending from the cross-bars and end bars of the frame, a lever pivotally attached to the suds-box, and clips connecting the lever with the pounder, substantially as set forth

2. In combination, a boiler B, supported on a furnace A, a clothes-basket E, placed in the boiler and provided with elongated slots or water-openings, and a pounder-head F, supported on the operating-lever and arranged near the top of the boiler and having long depending fingers extended nearly to the bottom of the clothes-basket, forming an open presser or clothes-cleansing frame, whereby the water is prevented from being splashed or forced out at the top of the boiler, substantially as set forth.

478,005. VIOLET DYE. ROBERT GNEHM and JAKOB SCHMID, Basle, Switzerland, assignors to the Society of Chemical Industry, same place. Filed Jan. 14, 1892. Serial No. 418,082. (Specimens.) Patented in Germany Dec. 28, 1890, No. 58,689, and in France May 2, 1891, No. 213,211.

Claim.—1. The process of producing a new dye-stuff, which process consists in treating a mixture consisting of tetra alkylized diamido-benzophenone, sulphuric acid, and pyrogallol with a condensing agent, such as muriatic acid, diluting the product obtained with water, neutralizing the excess of acid with soda-salt, dissolving the neutralized product, and precipitating the filtered solution with common salt, substantially as described.

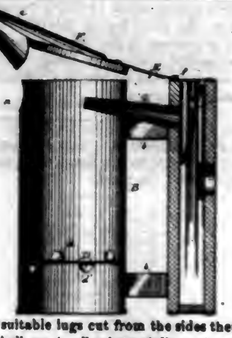
2. As a new product, the violet coloring-matter obtained by the condensation of pyrogallol with a tetra alkylized diamido-benzophenone, which is a greenish glittering crystalline powder of an intense metallic luster, difficultly soluble in cold water, easily soluble in hot water, practically insoluble in benzine and ether, soluble in alcohol, and also in muriatic and concentrated sulphuric acids.

478,006. BEE-SMOKING APPARATUS. ALANSON G. HILL, Kendallville, Ind. Filed Sept. 12, 1891. Serial No. 405,552. (No model.)

Claim.—1. A bee-smoking apparatus consisting of the cylinder B, provided with a lid F, having a smoke-funnel *e*, and pivoted to the bellows A by the hinge E, a blast-tube C, and a raised bottom D, secured thereon by suitable lugs and having vents *d* and *d'* above and below, all of said parts being adapted to operate in connection with the bellows A, all substantially as set forth and described.

2. In a bee-smoking apparatus, the combination of the stove or fire-cylinder B, having a lid F, having the smoke funnel *e* hinged or pivoted to bellows A by the hinge E and provided with a raised bottom

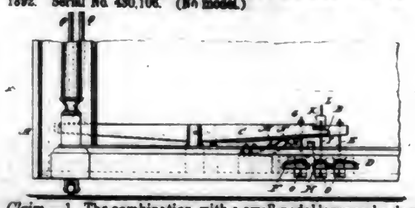
478,006.



D, secured therein by suitable lugs cut from the sides thereof, and the blast-tube C with the bellows A, all substantially as described.

3. The combination, in a bee-smoking apparatus, of a fire-cylinder B, having a hinged lid F, having the smoke-funnel *e*, an opening *n*, a draft or blast funnel C, and a raised bottom D, secured therein by suitable lugs or ears cut from the sides thereof and having perforations or vents *d* and *d'*, with the bellows A, all substantially as set forth and described.

478,007. PIANO-FORTE PEDAL. HUBERT A. HAMBLOCH, New York, N. Y., assignor to Hamilton S. Gordon, same place. Filed Apr. 21, 1892. Serial No. 430,106. (No model.)



Claim.—1. The combination, with a swell-pedal lever and a damper-pedal lever, of a pedal for each of said levers and a pedal common to both levers, substantially as described.

2. The combination, with a swell-pedal lever and a damper-pedal lever, of a pedal H, having a rod or connection I, provided with a head made to engage or overlie both of said levers, substantially as described.

3. The combination, with a swell-pedal lever and a damper-pedal lever, of a pedal H, having a rod or connection I, provided with a head made to engage or overlie both of said levers, said head being adjustably mounted on the rod, substantially as described.

4. The combination, with a swell-pedal lever and a damper-pedal lever, of a pedal H, having a rod or connection I, provided with a head made to engage or overlie both of said levers and having an adjustable finger or presser for engaging one of the levers, substantially as described.

5. The combination, with a swell-pedal lever and a damper-pedal lever, of a pedal for each of said levers, a pedal common to both levers, and a stop or rest P for one of said levers, substantially as described.

6. The combination, with a loud or swell pedal and a soft or damper pedal, of an intermediate or medium pedal so adjusted as to produce a partial damping effect as compared with the soft pedal, substantially as described.

478,008. NECKTIE. HENRY HEATH, Brooklyn, assignor to Henry G. Fisk, Thomas R. Clark, and Thomas J. Flagg, New York, N. Y. Filed May 17, 1892. Serial No. 433,315. (No model.)



Claim.—A four-in-hand scarf having on its surface a series of plaits longitudinally disposed and alternately reversed, substantially as described.

478,008.



478,009. CLOCK-HAND REMOVER. GUY R. HOLLIS, Benton Harbor, Mich. Filed Aug. 24, 1891. Serial No. 403,623. (No model.)



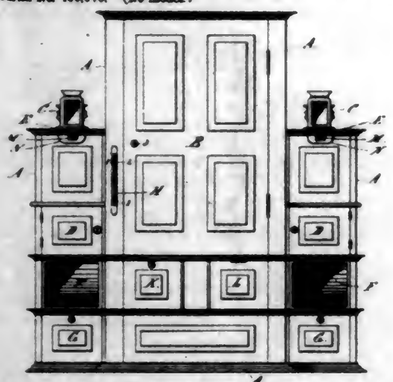
Claim.—In a watchmaker's tool, the combination, with a lower member or jaw having a lug or projection on its upper face, of an upper member or jaw having a socket in its lower face pivotally engaged by said lug or projection, a pivot-pin extending through said lug or projection and through the socket and forming a connection between said members or jaws, whereby when their handle portions are brought together their claw portions are spread, coincident V-shaped recesses in the forward ends of said jaws, and a spring seated between said members at the rear of their pivotal connection, substantially as specified.

478,010. WAISTCOAT-PROTECTOR. WILLIAM G. HOWARD and CHARLES E. NORTH, London, England. Filed Feb. 29, 1892. Serial No. 423,316. (No model.) Patented in England Nov. 20, 1891, No. 20,212.



Claim.—As an improved article of manufacture, a waistcoat-protector consisting of a piece of material of substantially triangular shape, having its lower portion cut away to form two diverging ends *h i* of sufficient length to be turned up under the waistcoat, and fastening devices upon the said ends and the body of the protector, substantially as and for the purposes hereinbefore set forth.

478,011. AUTOMATIC ELECTRIC CHANGE-MAKER AND CHECK RECEIVER. THOMAS MAHAN, New Orleans, La. Filed Sept. 26, 1891. Serial No. 406,970. (No model.)



Brief.—A store-service cabinet with various compartments, in some of which are deposited checks to indicate the amount of each sale, and others, which contain packages of change adapted to be released and delivered by electric circuits, being closed by the deposit of a coin, the size of which regulates the circuit closed and the amount of change delivered.

Claim.—1. The combination, with the main frame, of a check-receptacle arranged therein, a passage arranged above the receptacle, a door pivoted above the passage and adapted to close the top of the same, a check-tube on the door adapted to open into the passage, and a slotted slide on the door held by a spring and having a slot, whereby said tube may be placed in communication with the passage and also cut out of communication therewith, substantially as specified.

2. The combination, with a money drawer or receptacle, of a box arranged above the same and in an electrical circuit, a bell arranged in the circuit, a pivoted plate arranged in an opening between the money-box and the box above the same, a pivoted door, and a curved coin-receiving arm secured to the door and connected to the pivoted plate and adapted to close the electric circuit when the door has been raised and simultaneously therewith discharge any coins which may be on the pivoted plate into the box or receptacle beneath, substantially as specified.

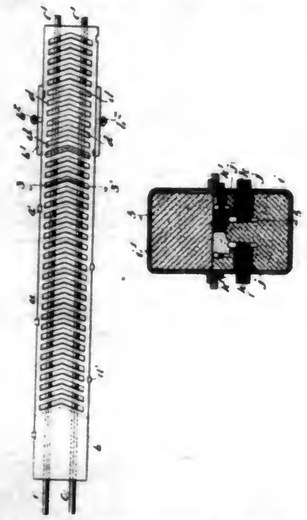
3. The combination, with the box G, of the box above the same and having the sight-glasses therein, the plate 13, pivoted in the opening in the top of the box G, the spring 14, secured to one end of said plate and adapted to keep the same normally closed, the door E, the curved metallic arm 11, secured to said door, the chain 12, secured at one end to the pivoted plate 13 and its opposite end to said arm 11, and the strips 16, secured to the side walls of the box above the money-box, said strips being arranged in an electric circuit, whereby the arm 11 may make and break the circuit to sound an alarm at the opening and closing of the door E, substantially as specified.

478,012. TRACE-SUPPORTER. JOHN G. MILLER, Champaign, Ill. Filed June 30, 1891. Serial No. 398,047. (No model.)



Claim.—A buckle comprising a skeleton frame comprising parallel side bars *a a*, united by transverse end bars *b b'*, one of said bars having on its upper surface a stud or projection *d*, serving as a tongue, transverse portions *c c'*, connecting the side bars at points intermediate of said end bars and above the plane thereof, said portions having integral therewith a longitudinal upwardly-curved bridge-piece, forming a bearing for the strap, and an anti-friction roller journaled between upward projections on the side bars between the end bar *b* and the transverse portion *c*, said roller being in a plane intermediate of said end bar and transverse portion to allow said strap to pass thereunder, substantially as specified.

478,013. GRATE-BAR. JAMES MONTGOMERY, Jersey City, N. J., assignor of one-half to Richard Grant, same place. Filed Jan. 23, 1892. Serial No. 418,993. (No model.)



Claim.—1. A pattern for shaping molds for grate-bars, consisting of a top plate having core-print-forming projections at each end thereof and of removable sliding longitudinal pieces fitted to slide through such core-print-forming projections and against the under surface of such top plate and meeting and abutting against each other at a point between such core-print-forming projections, substantially as set forth.

2. A pattern for shaping molds for grate-bars, consisting of an apertured top plate having a core-print-forming projection fixed at one end thereof and an adjustable core-print forming projection fitted to slide thereon, removable sliding longitudinal pieces fitted to slide through such core-print-forming projections and against the under surface of the top plate and meeting and abutting against each other at a point between such core-print-forming projections, and removable pieces fitted in and closing the apertures of the top plate above such adjustable core-print forming projection, substantially as set forth.

3. The core-box for forming the end cores of a grate-bar, consisting of the apertured top piece *e*, the side pieces *f f*, the end pieces *f' f'*, and the longitudinal ribs *g g*, substantially as shown and described.

4. The pattern for shaping molds for grate-bars, consisting of the apertured top plate *a*, the fixed core-print-forming projection *b*, the adjustable core-print-forming projection *b'*, the longitudinal sliding pieces *c c'*, the removable pieces *d d* for closing apertures in the top plate, and the removable wedge-shaped pieces *a'*, fitted in slots in the sides of the top plate *a*, substantially as shown and described.

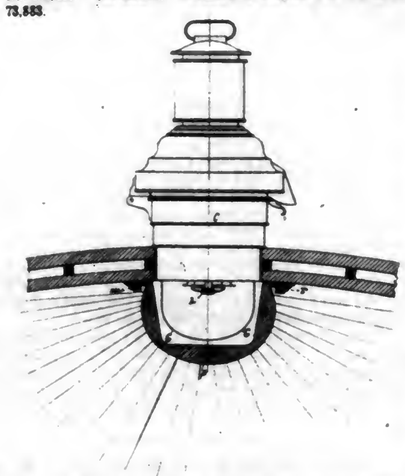
5. The combination, with the two-part flask *i i'*, the sand mold formed therein, and the openings in the sides of such flask, of the tubes *j* and *j'*, each extending from the side of the flask to the side of the mold, and the cylindrical cores *k* and *k'*, respectively fitting within the tubes *j* and *j'*, substantially as shown and described.

478,014. DRAWER. CHARLES W. NEVEL, Towanda, Pa. Filed Sept. 16, 1891. Serial No. 405,896. (No model.)



Claim.—The combination of a frame, a sliding drawer arranged within the same and the vertical and horizontal strips arranged at the front of the frame and hinged thereto and interposed between the same and the drawer and forming a rectangular frame around the front of the drawer, and springs arranged between the strips and the frame and forcing the former against the drawer, substantially as and for the purpose described.

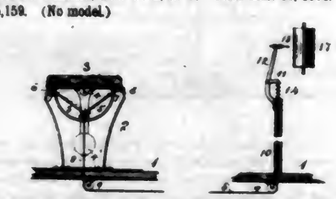
478,015. DIOPTRIC LENS FOR RAILWAY-CARRIAGE LIGHTS. AUGUSTE NIEUWENHUYS, Brussels, Belgium. Filed Jan. 27, 1892. Serial No. 419,423. (No model.) Patented in Belgium Jan. 11, 1892, No. 73,883.



Claim.—1. The combination, with any suitable lighting apparatus, of an annular lens combined with a plano-convex lens, the surface being that of a sphere, substantially as set forth.

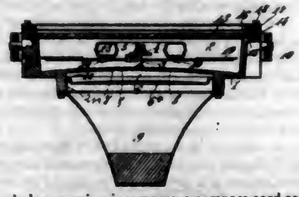
2. The combination, with any suitable lighting apparatus, of an annular lens combined with a plano-convex lens, the walls of lenticular form causing the light to be projected in all directions, the surface of the whole being that of a sphere, substantially as set forth.

478,016. PASSENGER-RECORDER FOR PUBLIC VEHICLES. JAMES M. O'KELLY, New York, N. Y. Filed Mar. 16, 1891. Serial No. 385,159. (No model.)



Claim.—In a passenger-recording device, the combination of depressible seat 3, levers 5 5, cord 8, pencil-holder 11 12, spring 14, tablet 15, strip or blank 16, spool 17, drum 19, cog-gearing 20, and clock mechanism 21, all arranged substantially as and for the purposes set forth.

478,017. MARINER'S COMPASS. ROBERT OLIVER, Brooklyn, N. Y. Filed Mar. 7, 1892. Serial No. 424,047. (No model.)



Claim.—1. In a mariner's compass, a compass-card consisting of a card-annulus having bridge-pieces on opposite sides of its center, their ends upon the surface of the card, and magnetized needles passing through openings in angular strips forming part of said bridge-pieces and extending at suitable intervals over and upon the surface of the card, the terminals of said needles being substantially coincident with the periphery of the card, substantially as described.

2. In a liquid-compass, the combination, with a bowl, of an expansion-chamber with which the bowl communicates, the expansion-chamber having a bottom which is convex upon its inner or liquid-containing surface, said bottom having an integral surrounding rim which is bent over outwardly upon itself to form an outer rim or flange, by which the bottom of the chamber is attached beneath the compass-bowl, and to provide an elastic ring between the outer rim or flange and the convex bottom of the expansion-chamber, which will yield outwardly when pressure is applied to the convex face of the bottom of said expansion-chamber, substantially as described.

3. In a mariner's compass, the combination, with a card having a card-annulus, of a series of magnetized needles arranged in parallelism and supported in bridge-pieces extending on opposite sides of the equatorial center, a ring air-chamber mounted on said bridge-pieces, and a pivot-bearing having a detachable agate seat for the pin, substantially as described.

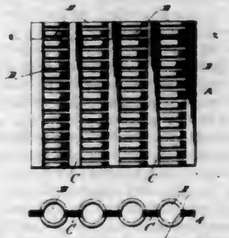
4. In a mariner's compass, a compass-card composed of a card-annulus, magnetized needles arranged in bridge-pieces lying parallel with the equatorial line and having angular strips provided with openings to receive the needles, the latter having their ends coincident with the periphery of the card, a compass-bowl having a central pivotal bearing entering a seat attachably and detachably mounted on the needles of the card, and a body of juniper or other oil contained in the bowl, substantially as described.

5. In a mariner's compass, a closed compass-bowl having an expansion-chamber, the bottom of which is convex on its upper face and provided with an elastic circumferential rim uniting said bottom to an outer rim or flange, by which said bottom may be secured in position, substantially as described.

6. In a mariner's compass, the combination, with a compass-bowl, of a communicating expansion-chamber, the bottom of which is slightly convex on its liquid-containing face and provided with a circumferential rim or flange, between which and the bottom of said chamber is an elastic rim rising above the floor and formed by bending the metal upon itself to form the flange, the circumferential rim or flange being rigidly attached to a circular flange depending from the compass-bowl, substantially as described.

7. In a mariner's compass, the combination, with a card, of a series of magnetized needles arranged in parallelism and supported in bridge-pieces extending on opposite sides of the equatorial center, an attachable and detachable ring air-chamber mounted on said bridge-pieces, and a pivot-bearing having a detachable agate seat, substantially as described.

478,018. ELECTRODE FOR SECONDARY BATTERIES. HARRY G. OSBURN, Chicago, Ill. Filed Apr. 7, 1891. Serial No. 387,921. (No model.)



Claim.—1. An electrode-plate for storage-batteries formed from a single piece of material and comprising the independent longitudinal slotted receptacles and the thin connecting pliable webs intermediate of said receptacles and between the terminals of the slots, substantially as and for the purposes described.

2. An electrode-plate formed from a single piece of material and having its independent cells or receptacles joined by thin pliable webs, on the lines of which the plate is free to yield or give, and thereby preserve the receptacles and active materials intact, substantially as described.

478,019. NUT-LOCK. SWITHEN C. PETTIGREW, Bayard, Kans., assignor of one-half to Drury E. Vandegrift, same place. Filed June 1, 1891. Serial No. 394,781. (Model.)

Claim.—1. The combination of the bolt 1, a portion 3 of which is threaded in one direction, as shown, an inner nut placed on said portion, an outer portion 5 of less diameter than the inner portion and having its thread running in the opposite direction from the inner portion, a permanent outer nut placed thereon, and a lateral fixed extension 6, formed with and projecting permanently from said outer nut

478,019.

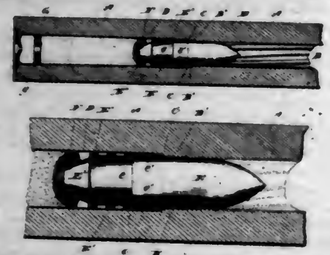


and adapted to project over the inner nut when the outer nut has been screwed into place, substantially as described, and for the purpose set forth.

2. The combination of the bolt 1, having a nut secured to a portion of the same, said portion having a thread running in one direction, an outer portion 5, having a thread running in the opposite direction and being of less diameter than the inner portion, and nuts secured to said portions, said outer nut having a lateral fixed extension 6, the said extension having an under beveled face 7 and side beveled faces 8, substantially as and for the purpose set forth.

3. The combination of the bolt 1, having a portion threaded in one direction, an outer portion of less diameter than the inner portion, having its thread running in the opposite direction, and nuts screwed onto the threaded portions, the inner nut being rounded or beveled off and the outer nut having an extension 6, the said extension having an under beveled face 7 and side beveled faces 8, substantially as and for the purpose set forth.

478,020. CARTRIDGE. JAMES M. POLLARD, Washington, D. C., assignor of one-half to George S. Prindle and Philip G. Russell, same place. Filed Jan. 17, 1889. Renewed Nov. 20, 1891. Serial No. 412,471. (No model.)



Claim.—1. In a cartridge, in combination with the shell of larger caliber than the bore of the gun with which the cartridge is to be used, the projectile having a body adapted to fit the bore of the gun and provided with a gas-ring or band of greater diameter than said bore, substantially as and for the purpose described.

2. In a cartridge, in combination with the shell of larger caliber than the bore of the gun with which the cartridge is to be used, the projectile having a body adapted to fit the bore of the gun and provided with a gas-ring or band of greater diameter than said bore and fitting the cartridge-shell, substantially as and for the purpose shown.

3. In a cartridge, in combination with the shell of larger caliber than the bore of the gun with which it is to be used, the projectile of hard metal having its body adapted to fit the gun bore and provided with a gas-ring of softer material and of larger diameter than the projectile-body, substantially as and for the purpose specified.

4. In a cartridge, in combination with the shell of larger caliber than the bore of the gun with which the cartridge is to be used, a projectile adapted to fit said bore and provided with a projecting gas-ring, and lubricant surrounding the projectile-body in front of the ring, substantially as and for the purpose shown.

5. In a cartridge, in combination with the projectile having a body adapted to fit the bore of the gun, the gas-ring on the projectile, the cartridge-shell of larger diameter than the projectile-body and crimped at its forward end down upon such body, and lubricant within the shell in front of the gas-ring or band, substantially as and for the purpose set forth.

6. In a cartridge, in combination with the cartridge-shell of greater caliber than the bore of the gun for which it is intended and the projectile provided with a conical or rounded base, a cup-shaped wad on such base fitting the cartridge-shell, substantially as and for the purpose specified.

7. In a cartridge, in combination with the shell having its forward portion of greater caliber than the bore of the gun, the projectile and the wad at the base thereof, both fitting the shell and larger in diameter than the bore of the gun, substantially as and for the purpose shown.

8. In a cartridge, in combination with the projectile having a conical base, the shell having a caliber greater than the body of the projectile and its forward edge crimped in on such body, and the cup-shaped wad on the projectile-base and fitting the shell, substantially as and for the purpose set forth.

9. In a cartridge, a body of non-fouling clearing-powder situated in the rear portion of the cartridge and separated from the main charge of explosive by a wad, substantially as and for the purpose described.

10. In a cartridge, in combination with the body of explosive filling the forward and main portion of the shell, the body of non-fouling explosive at the rear end of the cartridge-shell, and a wad dividing the two explosives, substantially as and for the purpose specified.

11. In a cartridge, in combination with the body of black powder and the body of Bracket powder at the rear end of the cartridge-shell, a wad dividing the two powders, substantially as and for the purpose shown.

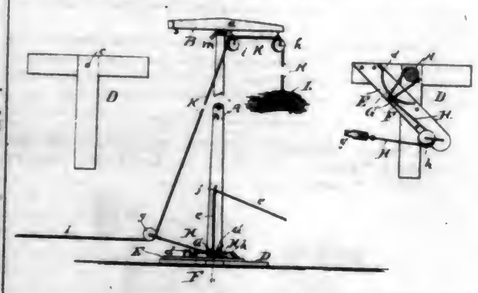
12. In combination with a gun having a cartridge-chamber adapted to receive a cartridge-shell of greater caliber than the bore and a conical forwardly-tapering passage leading from such chamber to the bore proper, a cartridge fitting the chamber and having a projectile provided with a gas-ring or bearing-surface of greater diameter than the bore of the gun, substantially as and for the purpose set forth.

13. In combination with the gun having at the rear end of its bore a forwardly-tapering passage, a projectile having a bearing portion of greater diameter than the forward end of such passage, and a body of lubricant surrounding the projectile in front of such bearing portion, substantially as and for the purpose described.

14. In combination with a gun having its cartridge chamber adapted to receive a cartridge-shell of larger caliber than its bore and a forwardly-contracting passage from such chamber to the bore proper, a projectile having a bearing-surface of greater diameter than the bore, and a wad at the base of the projectile also larger than the bore of the gun, substantially as and for the purpose shown.

15. In combination with a gun having a forwardly-contracting passage leading to the bore proper, a projectile having a gas-ring or bearing portion of greater diameter than the bore and a tapering or conical base, and a cup-shaped wad on such base also greater in diameter than the bore of the gun, substantially as and for the purpose set forth.

478,021. HAY-STACKER. CHARLES A. PURVIS, Purvis, Mo. Filed Apr. 15, 1892. Serial No. 429,343. (No model.)



Claim.—1. In a hay-stacker, the combination of the catch-rod, the latch pivoted to the upright of the stacker, the hoisting-rope operatively connected with the latch, and means, substantially as shown and described, for operating the said latch, for the purpose set forth.

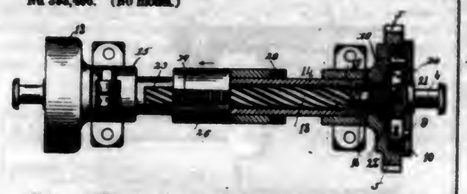
2. In a hay-stacker, the combination of the base, the catch-rod connected thereto, and the latch pivoted to the upright of the stacker, so as to engage the catch in the said rod, the hoisting-rope operatively connected with the latch, substantially as and for the purpose set forth.

3. In a hay-stacker, the combination of the catch-rod, the latch, the fixed pulley, the latch-pulley cord, the free pulley, the hoisting-rope adapted to be operated by engaging the free pulley, and the latch-cord for operating the latch, whereby the upright of the stacker is kept in a fixed position while the hay is being raised and released and left free to turn after the hay is raised, substantially as set forth.

4. In a hay-stacker, the combination of the latch, the latch-cord and the pulley-cord, both connected to the free end of the latch of the base, the pulley secured to the base, the free pulley secured to the free end of the latch-pulley cord, the hoisting-rope adapted to be operated by engaging the free pulley, and the arc-shaped catch-rod, substantially as and for the purpose set forth.

5. In a hay-stacker, the combination of the upright A, the cross-beam B, the T-shaped base, in which is journaled the upright, and the bar E, secured to one arm of the cross portion of the base and to the middle of the long arm of the base, with the catch-rod secured upon the bar E, the latch pivoted to the said upright so as to swing in a vertical plane, and means, such as shown, for operating the latch, for the purpose set forth.

478,022. VALVE-GEAR. JOHN RIDDELL, Lynn, assignor of one-half to Guyon F. Greenwood, Boston, Mass. Filed May 30, 1891. Serial No. 393,466. (No model.)



Claim.—1. The combination of the valve-rod wrist-pin, driving-gear therefor, oscillating arm whereto said pin is fixed and which is mounted eccentrically on said driving-gear, and means for oscillating said arm in an arc which intersects the axis of said driving-gear, substantially as set forth.

2. The combination of the valve-rod wrist-pin, driving-gear therefor, an oscillating arm wherein said pin is fixed and which is mounted eccentrically on said driving-gear, and means for oscillating said arm, substantially as set forth.

3. The combination, with driving-gear 5, of the oscillating arm, the wrist-pin 4 thereupon, shiftable to right or left to and from concentricity with said driving-gear, the worm-shaft 18, and the nut 24 on said worm-shaft having means of operation, substantially as described.

4. The combination of the oscillating arm 8 on driving-gear 5, the wrist-pin 4 on said arm, shiftable to and from the center of said driving-gear, the worm-shaft 18, the nut 24, the sleeve 26, and means for operating said sleeve, substantially as set forth.

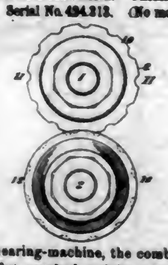
5. The combination of worm-shaft 18, hollow shaft 14, having slots 23, nut 24 24ª, having flanges 25, and sleeves 26, having recesses wherein said flanges run, substantially as set forth.

6. The combination of wrist-pin 4, wheel 5, receiving motion from the main crank-shaft, arm 8, pivotally mounted on said wheel eccentric of its axis and carrying said wrist-pin, and means for oscillating said arm and wrist-pin, substantially as set forth.

7. The combination of the wrist-pin 4, wheel 5, receiving motion from main crank-shaft, hollow shaft 14, carrying said wheel, worm-shaft 18 within said hollow shaft, having operative connection with said wrist-pin, and hand-controlled nut 24 24ª for operating said worm-shaft, substantially as set forth.

8. The combination of wrist-pin 4, the wheel 5, receiving motion from the main crank-shaft, the pivoted arm 8, carrying said wrist-pin, the worm-shaft 18, having means of operation, substantially as described, the disk or arm 19, having wrist-pin 20, and the sliding block 21, adapted to engage with said arm 8, all substantially as and for the purposes set forth.

478,023. SHEARING-MACHINE. PHILIP ROHAN, St. Louis, Mo. Filed Mar. 9, 1892. Serial No. 424,213. (No model.)



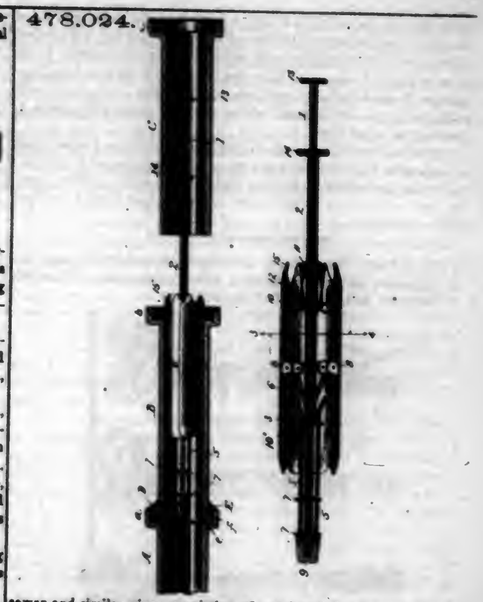
Claim.—1. In a shearing-machine, the combination of a circular plate or disk having a flat notched periphery free from sharp points between the notches, a plate or disk having a flat periphery and fitting on one side only of the notched plate or disk, and operating mechanism, substantially as and for the purpose set forth.

2. In a shearing-machine, the combination of an upper circular plate or disk having a flat notched periphery, a lower circular plate or disk having a flat notched periphery and fitting on one side only of the upper plate or disk, and operating mechanism, the parts of said plates or disks between the notches being plain or free from sharp points, and the plates or disks being so arranged that the notches of one disk will come opposite the plain parts of the other disk, substantially as and for the purpose set forth.

478,024. SEWER, WATER, AND DRAIN PIPE LAYING DEVICE. EDWIN H. ROSE, Colton, Cal. Filed June 26, 1891. Serial No. 397,643. (No model.)

Claim.—1. An expansible core adapted for use in the laying of

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sewer and similar pipes, consisting of a series of plates arranged to lie side by side and form a substantially unbroken surface, whereby the core conforms to the interior surface of the pipe, the said plates being straight throughout a considerable portion of their length and parallel with the interior surface of the pipe, whereby the core is adapted to be used to align the pipes and also to project beyond the end thereof in line with the interior surface to serve as a support for the cement, substantially as set forth.

2. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of the central support, a series of plates arranged around the support to form a core adapted to conform to the interior of the said pipes, and the springs which yieldingly hold the said plates outward, substantially as set forth.

3. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of the central support and a collapsible and expansible core carried thereby, consisting of a series of imbricated plates, substantially as set forth.

4. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of a central support, a contractible and expansible core consisting of a series of imbricated plates, and the tongues or strips 12, carried by the underlying edges of the plates and projecting inward and beyond the edges of plates, substantially as set forth.

5. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of a central support, the series of plates forming a core, the rods 5, to which the plates are secured, attached at one end to the said central support, the plates 3, supported upon the said central support and provided with a series of perforations through which pass the said rods 5, and means for moving the said plate longitudinally upon its central support to adjust the size of the core, substantially as set forth.

6. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of the central rod 1, the sleeve 2, movable thereon, the plate 3, carried by the sleeve, a series of rods 5, each secured at one end to the rod 1 and passing through the perforations in the plate 3, and the series of plates 6, carried by the rods 5 and forming a cylindrical core surrounding the central rod 1, substantially as set forth.

7. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of the central support, the series of rods 5, carried by the central support, the series of plates 6, flexibly supported at the ends of the said rods, and the springs which tend to force outward the said plates, substantially as set forth.

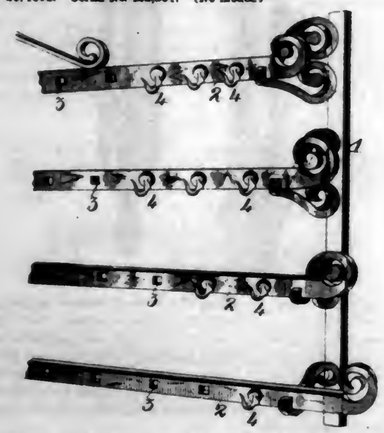
8. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of the central support, a core consisting of a series of plates arranged around the said support, means for moving outward and inward the said plates to expand and contract the said core, and the springs which tend to force outward the plates, substantially as set forth.

9. In a device adapted for use in the laying of sewer, drain, and water pipes, the combination of the central rod 1, the sleeve 2, mounted

upon the rod, the perforated plate 3, carried by the sleeve, the series of rods 5, arranged around the central rod 1, to which they are secured at their ends and passing through the perforations in the plate 3, the series of plates 6, supported upon the free ends of the rods 5, and the springs 10, connected each with one of the plates and to a thimble surrounding the sleeve 2 and tending to force outward the plates 6, substantially as set forth.

10. In a device for use in the laying of sewer, drain, and water pipes, an expansible core consisting of a series of plates adapted to conform to the interior surface of the pipes, held outward with a yielding pressure and having their forward ends curved or bent inward, substantially as set forth.

478,025. MEAT-RACK. FREDERICK SCHRAUDNER, St. Louis, Mo., assignor of one-half to Gustavus A. V. Brecht, same place. Filed Feb. 20, 1892. Serial No. 423,251. (No model.)



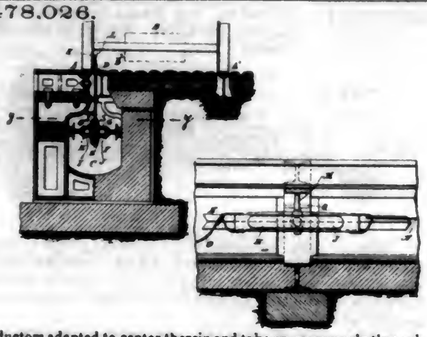
Claim.—1. In a meat-rack, the combination, with a rail, of a hook provided with a shank passing through said rail and carrying a T-head at its outer end and a washer disposed in rear of the rail and provided with a T-shaped opening, substantially as and for the purpose set forth.

2. A meat-rack comprising a hook, a shank formed on the same provided with a T-shaped extension, a washer provided with an inclined outer surface, and a T-shaped opening formed in the said washer, through which the T-shaped extension of said shank is passed for locking and clamping the said hook to the rail of said rack, substantially as described.

3. A meat-rack comprising a hook, a square shank 9, formed on the same and adapted to be inserted in a corresponding opening formed in the rail of the rack, a T-shaped extension formed on the said shank, a washer 14, having an inclined flat surface 15, and a T-shaped opening formed in the said inclined surface of the washer for receiving the T-shaped extension formed on the said shank of the hook for locking and clamping said hooks to the rail of the rack, substantially as described.

4. A meat-rack comprising a hook, an enlargement 5, formed on the same, a square shank 9, formed on the said hook and adapted to be passed through a corresponding opening formed in the rail of the rack, decreased portion 10, formed on the said shank, a T-shaped extension 11, leading from the said decreased portion, extensions 12, formed by the said T-shaped extension 11, beveled surfaces 13, formed on the said last-named extension, a washer 14, having an inclined flat surface 15, a T-shaped opening formed in the said inclined surface for receiving the T-shaped extension formed on the shank 9, and solid extensions 19, formed on the said washer and oppositely located, substantially as described.

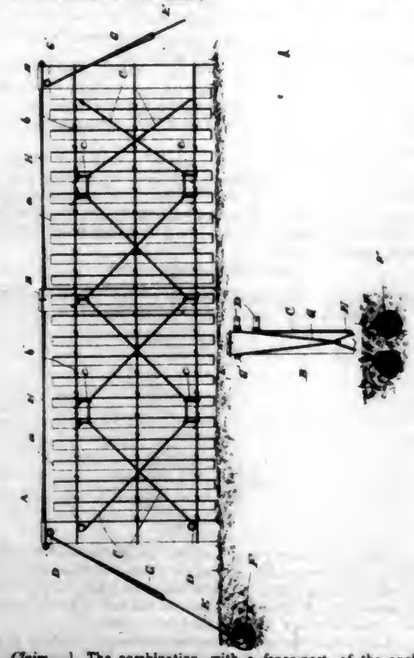
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conductors adapted to center therein and take up wear evenly throughout, substantially as herein described.

2. In an electrical railway, the combination, with a subway provided with a slot communicating with the street-surface, of two conductors of V-shaped cross-section opening oppositely to one another in the same horizontal plane beneath said slot, and a traveling contact-making device located wholly within the subway and electrically connected with the motor, and mechanism between said motor and contact-making device, whereby the contact-making device is moved in a constant horizontal plane independent of the car, for the purpose described.

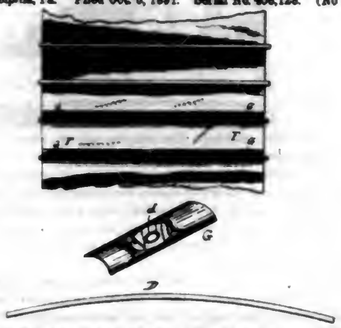
478,027. ADJUSTABLE BRACE FOR SLAT AND WIRE AND PICKET FENCES. THOMAS H. SMITH, Owosso, Mich. Filed Jan. 16, 1892. Serial No. 418,308. (No model.)



Claim.—1. The combination, with a fence-post, of the anchor therefor underground, the wire or cable secured thereto at its ends and having its intermediate portion above ground in the shape of a V-shaped loop, a second wire or cable secured to the post at one end, looped through said V shaped loop and back to the post, and a tightening peg or pin in the post around which said wire passes, substantially as specified.

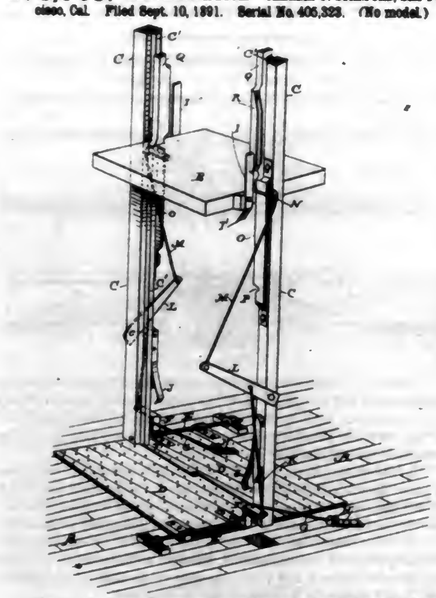
2. A fence or fence-section comprising the supporting-posts, the pickets or slats held together by intertwisted looped wires *b*, secured to said posts, the brace-wires C C, secured to the end posts and passing loosely through loops or eyes on the intermediate posts and pickets, said wires extending along one side of the fence in opposite zigzag courses and crossing each other at intervals, the pegs or pins for tightening said wires, and the truss-braces comprising wires secured at their ends to the end posts of the fence or fence-section and connected to or passing through eyes or loops in the upper portions of the intermediate posts, said wires extending horizontally above the upper ends of the pickets and intercrossing each other between each adjacent pair of posts, substantially as specified.

478,028. STAIR-CARPET FASTENER. THOMAS H. SPURRIER, Philadelphia, Pa. Filed Oct. 8, 1891. Serial No. 408,128. (No model.)



Claim.—The herein-described stair-carpet fastener, comprising a normally-curved rod, but capable of being bent to lie flat against the carpet, strengthening-caps concaved to conform to the outer face of the rod and arranged at each end of the same, and screws to secure said rod, substantially as specified.

478,029. ELEVATOR-HATCH. CHARLES P. STANFORD, San Francisco, Cal. Filed Sept. 10, 1891. Serial No. 405,323. (No model.)



Claim.—1. In an elevator, the guide-posts situated upon opposite sides of the rectangular well, having the central guide-flanges upon which the cage travels, doors each of which is adapted to close one-half of the opening through which the cage passes, hinge-shafts journaled upon the opposite sides of the opening, each having one of the doors attached to it, boxes in which said shafts have an end motion, and shifting devices connecting the doors with a stationary point, whereby when the doors are opened they are moved outwardly from their meeting line, so as to pass the guide-posts when fully opened, and are correspondingly moved toward each other as they close, substantially as herein described.

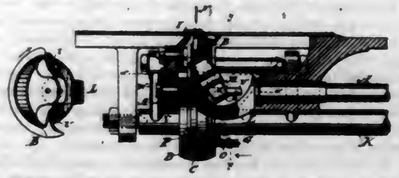
2. In an elevator, the guide-posts set centrally in opposite sides of the rectangular elevator-well with guide-flanges projecting from their adjacent faces, upon which the elevator-cage travels, doors hinged to opposite sides of the floor-opening, each of which closes one-half the opening, angular extensions from the inner hinges of said doors, levers fulcrumed to the guide-posts and connected with said hinges by rods, supplemental guides fixed to the main guide-posts above these levers, rods connected with the outer ends of the levers, having loops N, which clasp the supplemental guides O and travel upon them, and lugs R upon the cage, which engage these loops after the cage has passed above them to allow the doors to be closed gradually by gravitation and which act through the loops upon the doors to open them when the cage is moving downward and before it reaches the door, substantially as herein described.

3. In an elevator, the guide-posts set upon opposite sides of the elevator-well, having the projecting central flanges upon which the elevator-cage is guided, side bars fixed to the cage a little to one side of the line of the guide-posts, having the upper ends arched and curving toward each other, the doors hinged at their outer ends and slidable laterally upon their hinge-rods, whereby they are moved out of contact with the guide-posts, said arched upper ends acting upon the lower surfaces of the doors to open them gradually when the cage is rising, and acting in the same manner to allow the doors to gradually close after the cage has passed below the doors in its descent, substantially as herein described.

4. In an elevator, the guide-posts set centrally in opposite sides of the rectangular elevator-well, having the central flanges upon which the cage is guided, the doors each occupying one half of the elevator-well and having a sliding hinge connection at their outer ends, the supplemental bars fixed to the sides of the cage, having the upper ends arched to form contact with the lower sides of the doors to open them when the cage rises and to allow them to close as it descends, extensions I' of these bars beneath the bottom of the cage inclining inwardly and engaging the edges of the doors as the cage reaches them in its descent, whereby the doors are fully opened for the passage of the cage, substantially as herein described.

5. In an elevator, the guide-posts situated upon opposite sides of the elevator-well, a cage adapted to rise and fall between said guides, doors each of which closes one-half of the opening through which the cage passes, hinge-shafts above the rear edges of the doors, whereby the doors are moved out of contact with the guide-posts when they commence to open, and mechanism by which they are moved sidewise along the hinge-rods as they are opened, substantially as herein described.

478,030. SEWING-MACHINE. JAMES P. STILES, New York, N. Y. Filed May 21, 1891. Serial No. 393,606. (No model.)



Claim.—1. In a sewing-machine, the combination, with an annular shuttle-race seat and an annular shuttle-race provided with a needle-opening, both arranged in a vertical plane at right angles to the longitudinal axis of the shuttle-driving shaft, of an oscillating shuttle-driving shaft having a crank bend or offset and extending at right angles to the race-seat and race, a shuttle arranged in the shuttle-race, engaged by the crank bend or offset of the shuttle-driving shaft, a bobbin inclined relatively to the shuttle and arranged at an obtuse angle to the longitudinal axis of the shaft, and a locking-ring carried by the race for retaining the shuttle therein, substantially as described.

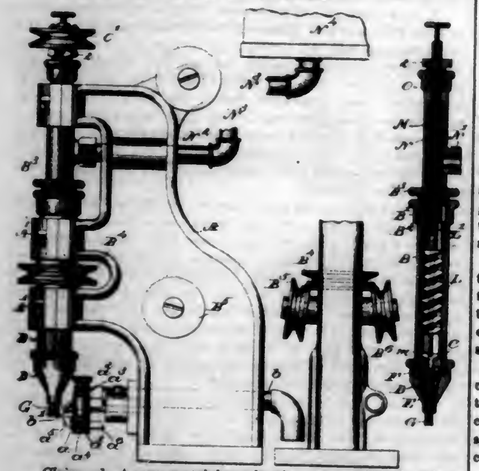
2. In a sewing-machine, the combination, with an annular shuttle-race seat, of a shuttle-race, a shuttle in the race, an oscillating shuttle-driving shaft extending through the shuttle-race and formed with a crank bend or offset having arms or prongs which engage the shuttle, the said shuttle carrying a bobbin provided with a delivery-opening in the axial line of the shuttle-driving shaft, whereby twisting of the thread is avoided, and a feed connected with the extremity of the oscillating shaft extending through the shuttle-race, substantially as described.

3. In a sewing-machine, the combination, with an oscillating shuttle-driving shaft, of the annular shuttle-race C, having the catch-lug Q, the shuttle B, moving in the race, the shuttle-retaining ring F, hinged to a part of the shuttle-race and having the slotted plate T, and the elastic plate H, secured at one end to such ring and having its opposite end movable to and from the center thereof to engage and disengage the catch-lug and provided with the stop projection S to abut the slotted plate, substantially as described.

4. The combination, with the vertically-arranged shuttle-race and a shuttle oscillating in a vertical plane in said race, of a horizontal

oscillating shuttle-driving shaft provided with a crank bend or offset in which the shuttle is sustained so as to receive its motion directly from the shaft and a bobbin arranged in the shuttle in an inclined position relatively to the shuttle and at an obtuse angle to the longitudinal axis of the shaft, the said bobbin provided with a delivery-opening in the axial line of the shuttle-driving shaft, substantially as described.

478,081. MACHINE FOR APPLYING CEMENT, &c. HENRIE D. STONE, Boston, Mass., assignor to George A. White, same place. Filed Feb 8, 1892. Serial No. 420,631. (No model.)



Claim.—1. A nose containing a brush, a connected hollow sleeve and a contained auger-like feeder, and means to rotate one of them, whereby the material contained in the sleeve may be forced therefrom through the nose and be delivered by the brush, substantially as described.

2. The hollow sleeve, the nose connected thereto, a valve-seat, and a valve, combined with a feeder having a hollow shank and the valve-rod extending therethrough, to operate substantially as described.

3. A pipe, as N, a suitable tank in communication therewith, a hollow sleeve in communication with said pipe, a movable feeder contained within the sleeve, a nose, a brush attached to the delivery end thereof, and valve carried by the sleeve between said feeder and nose, combined with actuating means whereby the feeder may be moved in said sleeve and made to force the material through the valve and nose and draw the material from the tank into the pipe N, the combination being and operating substantially as described.

4. In a machine for applying cementitious material to leather, a nose containing a brush and means to supply the said nose with cementitious material, combined with a bearing, a shank therein having a bifurcated end, and an edge-gage held in said bifurcated end and against which the edge of the sole of the shoe may be held while a part thereof is being cemented, substantially as described.

5. In a machine for applying cementitious material to a channel in a sole, a nose containing a brush and means, including an auger-like feeder, to supply the said nose with cementitious material, combined with an edge-gage against which the edge of the sole of the shoe may be held while the channel thereof is being cemented and with an air-pipe having its outlet adjacent to the brush to conduct air to the material being treated at or near the point where the cementitious material is applied to the work, substantially as described.

6. In a machine for cementing channels of boots and shoes, the following instrumentalities, viz: a rotating sleeve containing a valve-seat, a nose, and pipes intermediate the said sleeve, and a source of supply for cementitious material, and an auger-like feeder in said sleeves, and means to rotate the sleeve and brush, to operate substantially as described.

478,082. ELECTRICAL ORGAN. RICHARD P. STRAUB, St. John, Canada. Filed Mar. 23, 1892. Serial No. 426,119. (No model.)

Claim.—1. The combination, with an electro-magnet and an armature-lever adapted to actuate the valve or pallet, of a key having an inward extension and a fixed arm or bar adapted to rest upon said arm or bar, and an electrical connection between said parts, substantially as set forth.

2. The combination, with the keys, of an electric coupler therefor, comprising rock-bars and means for actuating said rock-bars, and



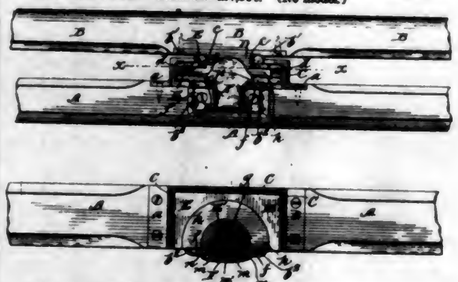
electric connections between said coupler and the keys, substantially as and for the purpose specified.

3. The combination, with the keys, of an electric coupler therefor, comprising rock-bars and means for actuating said rock-bars, the series of springs having metal contact with said rock-bars, and the groups of wires between said parts and the electro-magnets and battery, with the armature-levers adapted to actuate the valves or pallets, substantially as set forth.

4. The combination of the keys having inwardly-extended portions, the fixed arms or bars and bracket having metal contact with the latter, the electro-magnets and the armature-levers connected to the pallets or valves, and the electric connections between said key extensions, said arms or bars, and the electro-magnets, substantially as set forth.

5. The combination of the electrically-connected keys, the electric coupler therefor, the electro-magnets, the armature-levers connected to the pallets or valves, the series of springs or plates having electric connection with said coupler, the pedal adapted to have contact with said springs or plates, and the electric connections between said keys, coupler, and electro-magnets, substantially as set forth.

478,083. WHIFFLETREE-CENTER. HORACE SWAN, Rutland, Vt. Filed Apr. 2, 1892. Serial No. 427,531. (No model.)



Claim.—1. The fastening confining-plate C, having segmental bearing-recesses *b* and *d*, open at back, the plate D, having segmental neck *g* and segmental head A, and the confining-stop and bearing-plate F, having curved or beveled surfaces with a scale-beam-like bearing-edge between them, substantially as described.

2. The plate C, having segmental bearing-recesses *b* and *d* and open at back, the plate D, having segmental neck *g* and head A, packing E, applied between the points of contact of the plates with one another, and the confining-stop and bearing-plate F, substantially as described.

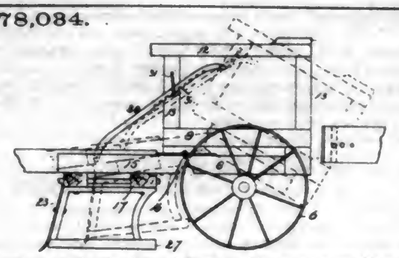
3. The combination, with the plates D and F, of the removable confining-stop and bearing-plate F, fastened on the cross-bar, formed with beveled surfaces and a bearing-edge at the back of the plates C and D, and packed at E, substantially as described.

478,084. MACHINE FOR FORMING IRRIGATING-LATERALS. ANDREW J. THOMPSON, Montrose, Colo. Filed Mar. 14, 1892. Serial No. 424,918. (No model.)

Claim.—1. The combination, with the axle mounted upon wheels, of the rear frame supported thereon, the forward frame hinged to the rear frame, and suitable means for adjusting the two hinged frames, whereby the forward frame and its attachments are raised from the ground, substantially as described.

2. The combination, with the axle mounted upon wheels, of the rear frame supported thereon and secured thereto, the forward frame hinged to the rear frame, the depending metal frame 18, rigidly secured to the forward frame, and suitable means for adjusting the two hinged

478,084.



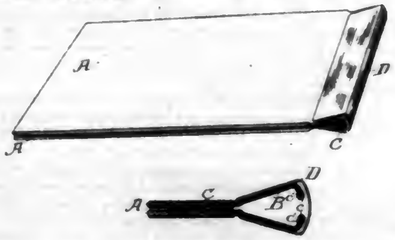
frames, so as to raise the forward frame and its attachments from the ground, substantially as described.

3. The combination of the pivoted rear frame, the axle, and the supporting-wheels, of the forward frame hinged thereto, the adjoining extremities of the framing-beams being oppositely beveled to permit movement, depending frames 18, secured to the forward frame and provided with shoes secured to their bottoms, and means for adjusting the hinged frames, consisting of a ratchet-arm pivoted to the tongue and engaging a catch secured to the rear frame, substantially as described.

4. The combination of the rear pivoted frame, suitably mounted, the forward frame hinged thereto, the depending frames 18, having shovels in front and concavo-convex shoes on the bottom, formed smallest in front and gradually increasing in size toward the rear, and means for relatively adjusting the two hinged frames, substantially as described.

5. The combination of the axle, wheels laterally adjustable thereon by means of set-collars, the rear frame secured to the axle, the front frame hinged to the rear frame, depending frames secured to the front supporting-frame and laterally adjustable thereon, and suitable attachments for the depending frames, whereby suitable irrigating-laterals may be formed, and means for adjusting the two hinged frames, substantially as described.

478,085. ORDER-HOLDER. JOHAN A. THUSE, Chicago, Ill., assignor to Alfred W. Rasmussen, same place. Filed Nov. 19, 1891. Serial No. 412,411. (No model.)



Claim.—1. The combination, with the covers, a flexible back, and a back spring, as described, secured between the layers of fabric composing said back, of a spring-clamp consisting of a single strip of metal bent laterally, so that its longitudinal side edges are near together, and which embraces said back, as set forth.

2. The combination, with the covers and a flexible back connecting the same, consisting of an inner and an outer fabric envelope having, respectively, the longitudinal tongues *c'* and *c*, of a back spring consisting of one piece of metal bent laterally, so that its longitudinal side edges are near together, and inclosed between said fabric envelopes and having a longitudinal slot therein, said tongues being located with reference to the slot in said back spring and being lapped through said slot and then back over the edges of the same and suitably cemented.

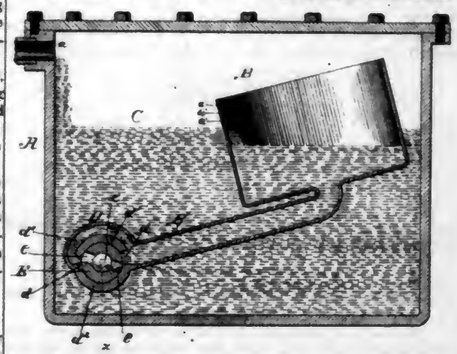
478,086. GATE. JAMES H. TUDOR, Lexington, assignor of one-half to J. O. Brooks, Union City, Ky. Filed Nov. 9, 1891. Serial No. 411,325. (No model.)

Claim.—The herein-described improved gate, consisting of the stationary hinging-post having a series of holes or openings therein, the rod secured to said post, the gate having hinging eyes or plates movable on said rod, the chain connected to said gate and to said stationary hinging-post, the post having upper and lower catches projecting therefrom, the latch-rods for engaging said catches, and the pin suspended from said hinging-post and designed to be inserted in any one of said holes or openings and to support one of said hinging eyes or plates, substantially as set forth.

478,086.



478,037. STEAM-TRAP. BYRON E. VAN AUKEN, Chicago, Ill., assignor, by mesne assignments, to the Van Auken Steam Specialty Company, same place. Filed Aug. 11, 1891. Serial No. 402,360. (No model.)



Claim.—1. A steam-trap comprising a receiving-chamber provided with a suitable inlet, an open float arranged within the receiving-chamber and provided with restricted side portage, substantially as set forth, for the inflow of water from the receiving-chamber into the float, and a balance discharge-valve operated by the float and formed with oppositely-arranged ports, through which the discharge from the float is effected proportional to and continuously during the flow of water into the receiving-chamber, substantially as described.

2. In a steam-trap, the open float provided with restricted side portage, through which the water enters the float, carried by a hollow vibratory arm for discharging from the float, and a balance-valve D, arranged for discharging from the hollow vibratory arm and constructed with bearing portions $d' d^3$, arranged upon a hollow stem provided with ports *e*, a part annular passage d^3, and ports *d*, arranged diametrically opposite one another and respectively at opposite ends of passage d^3, which forms a prolongation of the passage through the hollow arm, substantially as described.

478,038. STORE-SERVICE APPARATUS. ROBERT B. WILSON, Cincinnati, Ohio, assignor, by direct and mesne assignments, to the Wilson Improved Store Service Company, of Kentucky. Filed Aug. 27, 1891. Serial No. 403,898. (No model.)

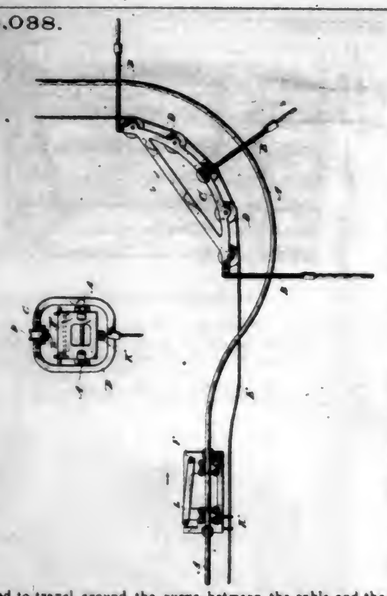
Claim.—1. In a store-service apparatus, the combination of the tracks-rails A A, the carrier F between them, the rocking plates H, and the four sets of rollers G, mounted upon said plates and embracing the track-rails, substantially as and for the purpose described.

2. In a store-service apparatus, the combination of the track-rails A A, the carrier F, traveling between them, the rock-shafts I, the plates H, fast upon the rock-shafts, and the four sets of rollers G, four rollers in each set, mounted upon the plates H and embracing the track-rails, substantially as and for the purpose described.

3. In a store-service apparatus, the combination of the track-rails A A, the carrier F, traveling between them, the rocking plates H, the four sets of rollers G, mounted upon said plates and embracing the track-rails, and the four rollers J, bearing against the inner sides of the track-rails, substantially as and for the purpose described.

4. In a store-service apparatus, the combination of the track-rails A A, having the upward curve therein, the brackets B, supporting the rails, the frame C, connecting the brackets, the rollers D, mounted in the frame C on axes substantially parallel with the plane of the track-rails A A, the cable E, passed around the curve upon the rollers, and the carrier F, embraced by the track-rails and gripped to the cable

478,088.



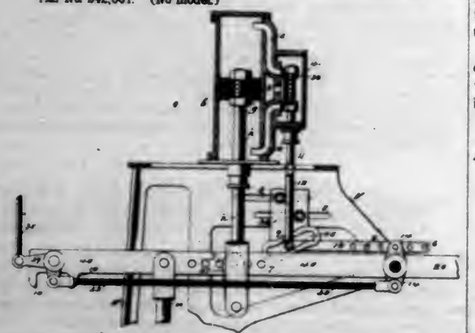
and adapted to travel around the curve between the cable and the rollers D, substantially as described.

478,089. ARTIFICIAL FUEL. HENRY ZANE, Denver, Colo. Filed Feb. 28, 1889. Serial No. 301,546. (No specimens.)

Claim.—1. An artificial fuel consisting of the herein-described geyserite jelly and a solid combustible substance, such as coal-dust mixed together, as and for the purpose stated.

2. An artificial fuel consisting of geyserite jelly, coal-dust, and a hydrocarbon, such as crude petroleum, from which the light hydrocarbon has been distilled, mixed together, as and for the purpose stated.

478,040. ELEVATOR. CYRUS W. BALDWIN, Yonkers, N. Y., assignor to the National Company, Chicago, Ill. Filed June 21, 1887. Serial No. 242,061. (No model.)



Claim.—1. The combination, with the car, motor, and main valve of an elevator, of an auxiliary cylinder having a piston connected to said main valve to operate or assist in operating the same, a valve for controlling the movements of said auxiliary piston, operating devices for the auxiliary valve arranged to be controlled from the car, and actuating connections between the main valve and said operating devices, constructed to communicate the movement of the operating devices directly to the main valve after the auxiliary valve has been operated, substantially as described.

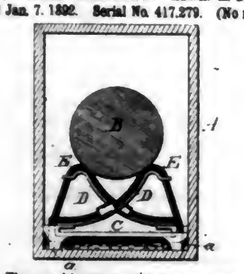
2. The combination, with the car, motor, and main valve of an elevator, of an auxiliary cylinder having a piston connected to said main valve to operate or assist in operating the same, a valve for controlling the movements of said auxiliary piston, an operating-rope connected to said auxiliary valve and arranged to be controlled from the car, and connections between said rope and the main valve, whereby the continued movement of the rope after operating the auxiliary valve is communicated directly to the main valve, substantially as described.

3. The combination, with the car, motor, and main valve of an elevator, of an auxiliary cylinder having a piston connected to said main valve to operate or assist in operating the same, a valve for controlling the movements of the auxiliary piston, an operating-rope arranged to be controlled from the car and connected to both the main and auxiliary valves, and means for permitting an amount of lost motion between said rope and the main valve, substantially as described.

4. The combination, with the car, motor, and main valve of an elevator and a lever for operating the same, of an auxiliary cylinder having a piston connected to said lever to operate or assist in operating the valve, a valve for controlling the movements of the auxiliary piston, an operating-rope arranged to be controlled from the car and connected to the auxiliary valve, and connections between said rope and the lever of the main valve, whereby the continued movement of the rope after operating the auxiliary valve operates the main valve, substantially as described.

5. The combination, with the car, motor, and main valve of an elevator and the lever 40 for operating the same, of the auxiliary cylinder G, having the piston *g* connected to said lever, the lever 39, pivoted to the lever 40 and arranged to vibrate between stops on the latter, an operating-rope connected to the lever 39 and arranged to be controlled from the car, and connections between the lever 39 and the valve of the auxiliary cylinder G, substantially as described.

478,041. AXLE-LUBRICATOR. EDWIN H. BENNERS, Elizabeth, N. J. Filed Jan. 7, 1892. Serial No. 417,279. (No model.)

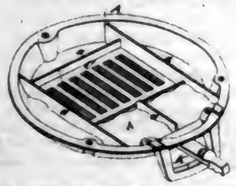


Claim.—1. The combination, with a receptacle and a plate fitted therein, said plate having recessed ends and furnished with legs on the bottom, of a yielding plate connected to the former plate and a wick passed over this yielding plate through the recessed ends and between the legs, substantially as set forth.

2. The combination, with a receptacle and a plate fitted therein, said plate having recessed ends, of a yielding plate connected with the former plate and a wick passed over the yielding plate and through the ends of the main plate, substantially as set forth.

3. The combination, with a base-plate having guides in its ends, of a yielding plate connected at one end to the base-plate and provided with guides at its free end and an endless wick passed over the yielding plate and through the guides, substantially as set forth.

478,042. STOVE-GRATE. ENERY D. NELLIS, St. Louis, Mo. Filed Aug. 18, 1891. Serial No. 402,998. (No model.)



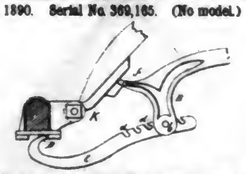
Claim.—1. The combination, with a fire-box bottom plate having a grate-opening, of a reciprocating grate adapted to close the opening in the bottom plate, a grid arranged to reciprocate transversely of the grate and adapted to close the grate, and means for actuating the grate and the grid, substantially as and for the purposes specified.

2. The combination, with a fire-box bottom plate having a grate-opening, of a reciprocating grate adapted to close the opening in the bottom plate, a grid mounted on the grate and arranged to reciprocate transversely thereof, and a bar or lever mounted on the grate and adapted to actuate both the grate and grid, substantially as and for the purposes specified.

3. The combination, with the fire-box bottom plate having a grate-opening and provided on its upper surface with ribs to support the fuel, of a sliding grate adapted to close the grate-opening of the bottom plate and a movable grid adapted to close the grate-openings, substantially as and for the purposes specified.

4. In a stove, fire-box bottom plate A, formed with opening B and lips *b*, grate plate C, formed with lips *c* and pivotal stud H, grate-plate F, formed with pivotal stud I, lever-bar G, pin A, and handle L, combined and operating substantially as described, and for the purposes specified.

478,043. THILL-COUPLING JACK. ALVIN A. BRAY, Lynn, Mass. Filed Oct. 24, 1890. Serial No. 369,165. (No model.)

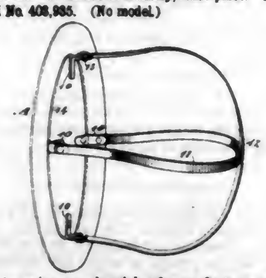


Claim.—1. In a coupling-tool, the combination, with a lever having a downwardly-projecting fulcrum, of the hook C, having an extended portion provided with a series of indentations *d*, each adapted to receive the said fulcrum, whereby the lever may be adjustably connected with the hook, as set forth.

2. In a coupling-tool, the combination, with a lever provided with a downwardly-projecting fulcrum having a bifurcated lower portion and a bearing-pin passing through the said bifurcated portion, of a hook having an extended portion provided with the indentations *d*, adapted to receive the said bearing-pin, as set forth.

3. In a coupling-tool, the combination, with the hook C, having indentations *d*, of a lever provided with a downwardly-projecting fulcrum adapted to engage the said indentations and having an enlarged extremity provided with the points *a* and the outwardly-projecting pins *f*, and means for connecting the end of the lever with a vehicle-shaft, as set forth.

478,044. FLUE-STOPPER. JOSEPH A. BROWN, Riverhead, N. Y., assignor of one-half to Clifford B. Ackerly, same place. Filed Aug. 26, 1891. Serial No. 403,935. (No model.)



Claim.—1. As an improved article of manufacture, a flue-stopper comprising a body portion and two bow-springs pivoted to the body at right angles to each other, as specified.

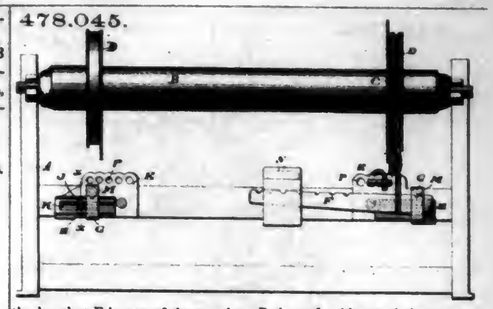
2. As an improved article of manufacture, a flue-stopper consisting of a body-section, angle-brackets arranged opposite each other, one set horizontally and the other vertically and secured to the body, and bow-springs the members of each of which are pivotally attached to one aligning set of the brackets, whereby the springs may be folded down upon the body when not in use and carried upward, crossing one another when required for use, as and for the purpose specified.

478,045. FRICTION LET-OFF MOTION FOR LOOMS. THOMAS S. BROWN, Philadelphia, Pa., assignor to the Fairmount Machine Company, of Pennsylvania. Filed Nov. 21, 1891. Serial No. 412,665. (No model.)

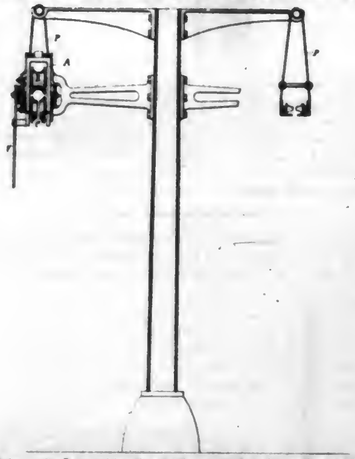
Claim.—1. A warp-tension for a loom, consisting of a warp-beam having flanges, brackets adapted to be secured to the loom-frame and having grooves, a slot and eyes, pockets with ears fitting in said grooves and with depending teeth, securing-bolts for said pockets and brackets, levers fulcrumed in said pockets, and cords passing around said flanges and secured to the eyes of said brackets and to levers, said parts being combined substantially as described.

2. The bracket E, provided with the groove H^3, the slot K, and a series of openings P, the pocket G, with the depending tooth M within the same at the upper end thereof and the tongued ear H at the rear, said ear entering said groove H^3, the bolt J, passing through the ear E and slot K, the lever F, fulcrumed in said pocket on the tooth M thereof, the beam B, the flange D on said beam, and the rope C on said flange connected with the fulcrum end of the lever and with the bracket E in one of the openings P thereof, said parts being combined substantially as described.

478,045.



478,046. MECHANISM FOR CABLE TRACTION. WILLIAM A. BUTLER, New York, N. Y., assignor to John H. Haar and Joseph A. Cassidy, same place. Filed Oct. 13, 1891. Serial No. 408,629. (No model.)



Claim.—1. In combination with an overhead traction-cable, a pair of vertically-adjustable pulleys, the lower one of which is divided to permit of the passage of the grip-supporting arm or arms and the upper one of which is arranged above the cable, substantially as and for the purpose described.

2. In combination with an overhead traction-cable, a pair of friction-pulleys made adjustable vertically, so as to permit of the free passage between them of the gripping devices.

3. In combination with the pulleys B C, the parallel-motion frame D for varying the relative distance apart of the pulleys.

4. In combination with the pulleys B C, the parallel-motion frame D and the lever F, substantially as and for the purpose described.

5. In combination with an overhead traction-cable, the supporting-guide L, provided with the flanges L' L', separated by a longitudinal slot-space of approximately the thickness of the arm or arms that carry the gripping devices, and divided cable-carrying rolls M M, pivotally supported in said guide, substantially as and for the purpose set forth.

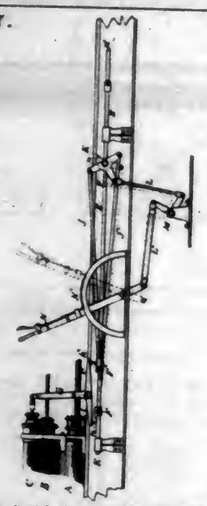
6. In combination with the slotted longitudinal guide above described, an auxiliary supporting rod or cable with connecting hangers or braces, substantially as and for the purpose stated.

478,047. ADJUSTABLE CUT-OFF-VALVE GEAR. HARRY T. CLARKE, Portland, Oreg., assignor to the Portland Iron Works, same place. Filed Mar. 17, 1891. Serial No. 385,432. (No model.)

Claim.—1. In a valve-gear, the combination of a rock-lever G, the upper end of which is pivotally connected with the cut-off-valve stem, a rod E, reciprocated by suitable means and provided with adjustable lifters F F' for rocking said lever G, suitable bearings for said reciprocating rod E, and suitable mechanism for adjusting said lifters F F', substantially as set forth.

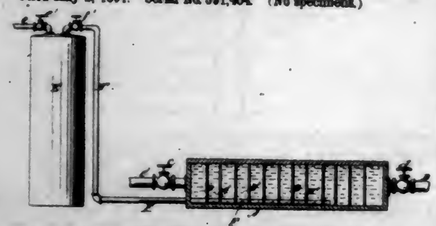
2. The combination with the cut-off valve in horizontal engines, of an adjustable gear for operating the same, consisting of a rock-lever,

478,047.



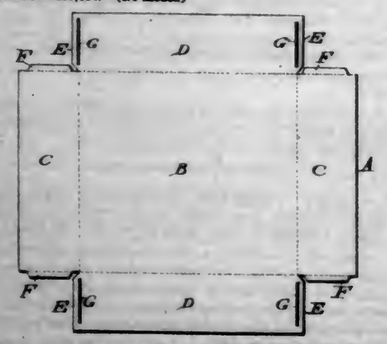
G, pivotally connected with the cut-off-valve stem, said lever G having toes *h h'* under each of its arms, a rod E, reciprocated by suitable means, having adjustable lifters F F' for rocking said lever G, suitable bearings for said reciprocating rod, and an adjusting mechanism for said lifters F F', consisting of rods J J', T-crank K, connections L L', and bell-crank M or their equivalents, and quadrant and lever N N', substantially as set forth.

478,048. PROCESS OF PURIFYING WATER. CALEB G. COLLINS, Kearney, N. J., assignor to Calvin Amory Stevens, New York, N. Y. Filed May 2, 1891. Serial No. 391,404. (No specimens.)



Claim.—The continuous process of purifying water herein set forth, consisting in rendering impurities contained therein insoluble or destroying them by the action simultaneously of a supply of free oxygen independently introduced and the decomposing action of an electric current, substantially in the manner set forth.

478,049. SHEET-METAL BOX. GEORGE B. COOPER, Philadelphia, Pa., assignor to Robert Porter's Sons, same place. Filed Mar. 5, 1892. Serial No. 423,857. (No model.)



Claim.—A sheet-metal box having its side pieces provided with tongues at their sides, one of each adjacent pair of tongues having a slit at its connection with its side receiving the other tongue of said pair, and said tongues being in contact with the outer faces of the adjacent sides, substantially as described.

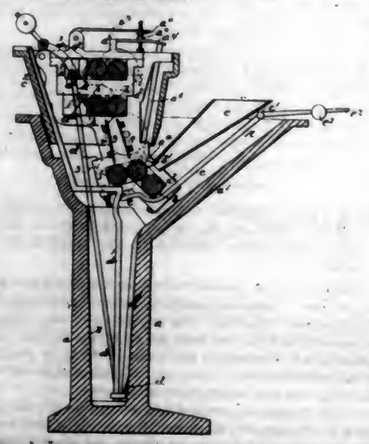
478,050. JACKETED CAN. GEORGE B. COOPER, Philadelphia, Pa., assignor to Robert Porter's Sons, same place. Filed Mar. 5, 1892. Serial No. 423,858. (No model.)



Claim.—1. A can having a jacket with a hoop on its outer face and a clip having an ear secured to the outer surface of the can and a tongue passing over the body of the jacket downward on the inner side of the hoop and then upward on the outer side thereof, said parts being combined substantially as described.

2. A can with a jacket, said jacket having a hoop secured to the outer side thereof and said can having a clip secured thereto and provided with a flexible tongue embracing the top of the jacket and the under and opposite faces of the hoop, said parts being combined substantially as described.

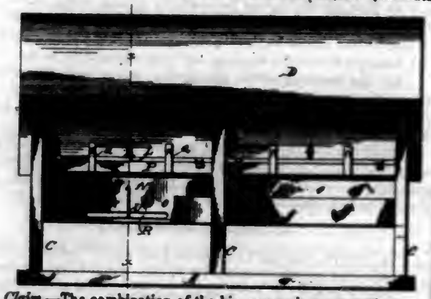
478,051. APPARATUS FOR COATING TIN PLATES. ALBERT T. DAVIES, Morriston, England. Filed July 24, 1891. Serial No. 400,649. (No model.) Patented in England Feb. 22, 1886, No. 2,560; in France Nov. 23, 1886, No. 172,835; in Belgium Nov. 23, 1886, No. 75,345, and in Germany Nov. 24, 1886, No. 39,483.



Claim.—1. In an apparatus for coating and finishing tin and terne plates at one operation, the combination of a vertical pot for the molten coating metal, a flux-box located above the tinning-pot, feeding-rolls located above a cradle, said counterbalanced cradle immersed in the pot and adapted to be depressed by the impact of the incoming plate and to be automatically elevated again, a pivoted weighted arm constructed and arranged to transfer the plate to the delivery-rolls, a superimposed chamber, and delivery-rolls, one of which is provided with longitudinal grooves located therein, and means for driving the said rolls.

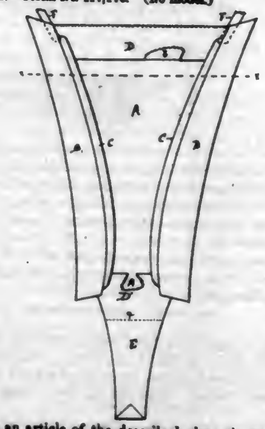
2. In an apparatus for coating and finishing tin and terne plates at one operation, the combination of a vertical pot for the molten coating metal, a counterbalanced cradle adapted to be depressed by the impact of the incoming plate and to be automatically elevated again, a weighted arm constructed and arranged to transfer the plate to the delivery-rolls, three longitudinal friction-rolls located above the cradle, one provided with a grooved surface, two of which form receiving-rolls and two of which serve as delivery-rolls, and an adjustable spring-arm constructed and arranged to keep the central roll engaged with each of the outer ones, and means for driving said rolls.

478,052. FEED-TROUGH. GEORGE W. DUREE, Hope, Kans. Filed Mar. 19, 1890. Renewed June 6, 1892. Serial No. 435,648. (No model.)



Claim.—The combination of the bin, square in cross-section, supported on the supporting-frame with two of its opposite longitudinal corners in the same vertical plane and having the bottom slots G, the slides controlling said slots, the longitudinal inverted-V-shaped partition M, the longitudinal partitions N, formed with the bottom slots R, the slides controlling the said slots, the troughs O, the transverse rods T, and the spring-agitators U, substantially as and for the purpose set forth.

478,053. CATAMENIAL SACK. NELSON M. DYER, Louisville, Ky., assignor to Alphonse Bourrier and Emile Bourrier, same place. Filed Jan. 6, 1892. Serial No. 417,176. (No model.)

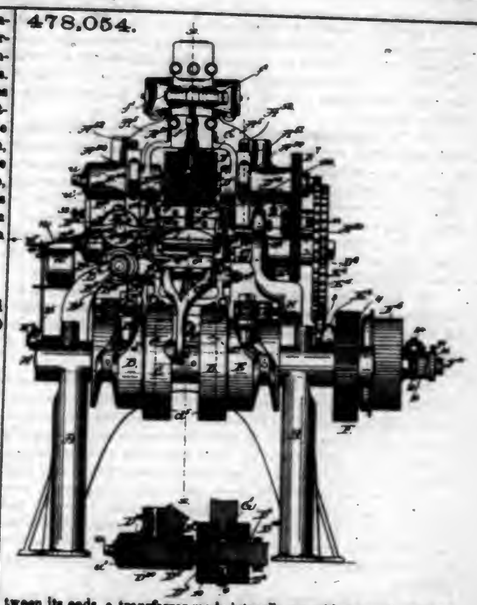


Claim.—In an article of the described class, the central sack of impervious material, the side cords C and C, the end pouches D D', stiffening-piece *b*, and wings B B, in combination with suitable supporting-straps, substantially as and for the purpose set forth.

478,054. NAIL-MAKING MACHINE. LOUIS GOSSE, Winchester, assignor to James W. Brooks, Cambridge, and Frank F. Stanley, Swampscott, Mass., trustees. Filed Dec. 12, 1890. Serial No. 374,436. (No model.)

Claim.—1. An organized machine for manufacturing nails, it comprehending a pair of rotating die-rolls having grooves out of line, substantially as described, for the reception of a double blank offset between its ends, a transferrer made laterally movable toward and from one of said die-rolls to act on and move a blank laterally into the offset grooves of one of said die-rolls, the carriers and their point-forming cutting-dies, and means to actuate the said carriers, combined with a nail-breaker to separate the nails point from point while yet in the die-grooves in case the blank should not be fully severed by the point-forming cutting-dies, substantially as described.

478,054.



3. The die-rolls, the bending devices to offset the blank, a transferrer, a horizontally-sliding carriage to which the said transferrer is adjustably attached, guides for the said carriage, and means to reciprocate the said carriage horizontally, substantially as described.

4. The die-rolls, the carriers having point-forming cutters, and the carriage c^{14} and its attached bender c^3, combined with the lever *d*, its toothed portions 3 and 16 to actuate one of the said carriers, and the said carriage, substantially as described.

5. The bender c^3 and the carriage to which it is attached, combined with the bender *c'*, and the horizontally-adjustable bed-bar *e*, and means to hold the said bed-bar in adjusted position, adjustment of the said bed-bar enabling the pressure to be more or less upon the metal blank at the point where it is offset, substantially as described.

6. The two die-rolls having offset grooves, gears E' and D' to cause the rotation of said rolls in unison, and the benders, combined with the ratchet-wheel e^2, adjustably mounted on the shaft of one of said die-rolls, and means to move the said wheel intermittingly, substantially as described.

7. The two die-rolls having offset grooves, gears E' and D' to cause the rotation of said rolls in unison, and the benders, combined with the ratchet-wheel adjustably mounted on the shaft of one of the said die-rolls, the toothed wheel E^{12}, the pawl and dog, and means to actuate the said pawl, substantially as described.

8. Wire-feeding devices, and a feeler to bear on the wire, and a shipper-lever, and a rod to which it is attached, combined with friction-pulleys and means actuated by the said rod to cause the said pulleys to be engaged when the feeler bears on the wire or to be disengaged in the absence of the wire, substantially as described.

9. A feeler adapted to contact with the wire and shipper mechanism controlled by said feeler, combined with a lever controlled as to its position by the wire on its way to the feed-rolls, whereby when the wire fails to be delivered properly the said lever is moved to disengage the feeler from contact with the wire and stop the machine, substantially as described.

10. The combination, with a pair of sectional die-rolls, substantially as described, and double-point-forming cutters and their carriers, of means for actuating and connecting the said carriers and means to adjust said actuating and connecting means independently, as described, whereby the movement of the said carriers may be controlled with relation to the center of the wire to be cut, substantially as described.

11. The combination, with the sectional die-rolls, of a clearer 38 to act upon and remove from the grooves of the said rolls any pieces of wire caught therein and not headed, substantially as described.

12. The die-roll made in sections, the point-cutting die-carrier arranged between the said sections, and the bender-plates and transferrer, combined with a directing-piece located between said sections to prevent the leading end of the wire from striking against the side of one of the said sections, substantially as described.

13. Wire-feeding devices, a feeler, a shipper-lever, a carriage, and a transferrer connected thereto frictionally and having a rest, combined with a lever supported at one end by the said rest and acting at its other end on the said feeler, whereby when two wires get wrongfully in place before the transferrer the latter slips on the carriage and permits the lever to act and lift the said feeler, substantially as described.

14. The feed-roll B^{12} and the eccentric stud to support it, combined with the transferrer and intermediate devices between it and the said stud to partially rotate the latter, and thereby remove the feed-wheel from feeding contact with and stop the feed of the wire when the transferrer meets with unusual obstructions, substantially as described.

15. The die-carriers having rack-teeth, as described, levers f^3 and d, and toothed surfaces actuated thereby and to operate the said carriers, combined with the cam D, an adjustable cross-bar or roll-carrier d^5, and means for adjustably connecting the said levers, whereby the meeting point of the cutting-dies may be adjusted as desired.

16. An organized machine for manufacturing nails, it comprehending a pair of rotating die-rolls having grooves out of line, substantially as described, for the reception of a double blank offset between its ends, a transferrer made laterally movable toward and from one of said die-rolls to act on and move a blank laterally into the offset grooves of one of the said die-rolls, means to retain the said blank in the grooves of said die-roll until the said blank has been carried opposite the co-operating offset groove of the other of said die-rolls, point-forming dies or cutters to sever the offset blank through its offset portion, carriers for the said dies slotted to embrace the shafts of the die-rolls between their ends, and heading tools or devices set out of line and co-operating with the same pair of rolls to head the nails in the grooves of said rolls, the said nails being out of line with each other equal to the offset of the grooves, combined with vertical shafts 30 and 31 and their toothed gears H' and H^3 to operate the said headers, all substantially as and for the purpose set forth.

17. The pair of die-rolls, the cutter-carriers and cutters co-operating therewith, and the toothed header-carriers and headers arranged at the opposite ends of the said pair of die-rolls, combined with the vertical shafts 30 and 31 and their toothed gears H' and H^3, and means to actuate said shafts and to actuate the cutter-carriers to separate them slightly to partially release the offset portion of the blanks as the headers act to head the said blanks for nails, substantially as described.

18. The lower die-roll, the benders, and transferrer, combined with the gages 34 to position the said blanks on their way into the grooves of the die-roll, substantially as described.

19. The die-rolls having grooves 104 in their faces between their die-grooves, to operate substantially as described.

20. The die-rolls having grooves out of line, as described, for the reception of the opposite ends of the offset blanks and gages to co-operate with the ends of the offset blanks to thereby place their offset portions in exactly proper position to be acted upon by the point-forming cutting-dies, combined with the die-carriers fitted into the space between the inner ends of the sections of the die-rolls and the cutting-dies having a cutting-edge, point-forming recesses, and body-grooves to receive part of the blank near and beyond the offset portion, substantially as described.

21. The two sectional or two-part die-rolls and two shafts, each receiving the two parts of one of said die-rolls, combined with die-carriers slotted to surround the said shafts and fitted to slide between the said sections and to cut a blank centrally as to its length and at its offset portion, substantially as described.

22. The sectional die-roll, the shouldered shaft common to both sections of the die-roll, and the bearing D^{26}, combined with the tube surrounding said shaft beyond the die-roll and extending through and beyond the bearing, the plate n', and the screw extended through said plate into the shaft, to operate substantially as described.

23. In a nail-making machine, a feed-roll to act on the wire when the same is to be fed, and an eccentric stud on which the said feed-roll is mounted, a pivoted yoke to carry said stud, and means to adjust the yoke to regulate the effective pressure of said roll upon the wire, combined with means to turn said stud in the yoke and lift the feed-roll bodily from feeding engagement from the wire when the wire is not to be fed, substantially as described.

24. The feeler to bear on the wire, combined with the spring-controlled lever 70, adapted to lift the said feeler from the wire when the stress of the spring controlling the said lever is overcome by the wire as it approaches the said lever, substantially as described.

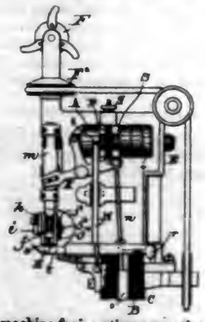
25. The slotted die-carriers, the sectional die-rolls between which they are placed, and the dies 5 6, having serrated sides, combined with the clamping-screws to retain the said dies in place, substantially as described.

26. The lower die-roll, the pivoted head A^3, having the lugs A^{36}, and the upper die-roll carried by said head, combined with a set-screw A^{35}, and a holding device for the said screw and engaging the said lug, rotation of the said screw holding the head and roll in proper position, and independent limiting-stops for said lugs, substantially as described.

27. The herein-described cutting-dies, having a cutting-edge of substantially uniform width, point-forming recesses, and body-grooves extending from the said recesses to the ends of the dies, and shoulders or side walls r', substantially as described.

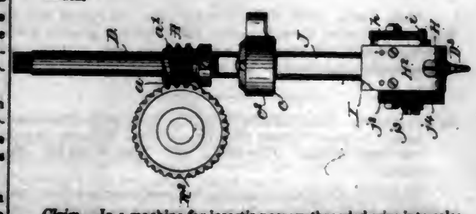
28. The herein-described cutting-dies, having a cutting-edge of substantially uniform width, point-forming recesses, and body-grooves extending from the said recesses to the ends of the dies, the said grooves having convexed surfaces r, substantially as described.

478,055. MACHINE FOR INSERTING SCREW-THREADED WIRE INTO THE SOLES OF BOOTS OR SHOES. LOUIS GODDU, Winchester, assignor to James W. Brooks, Cambridge, and Frank P. Stanley, Swampscott, Mass., trustees. Filed Sept. 14, 1891. Serial No. 405,663. (No model.)



Claim.—In a machine for inserting screw-threaded wire into soles of boots and shoes, the following instrumentalities, viz: a rotating wire-containing spindle, gripping and feeding rolls carried by said spindle and adapted to grip and feed the threaded wire longitudinally, a cam-shaft, the lever V, a double cam to actuate it twice during each rotation of the cam-shaft, the rocking sleeve N^3, a double cam to rock it twice during each rotation of the cam-shaft, a lever M, and projections 7 7 to actuate it twice during each rotation of the said cam-shaft, substantially as described.

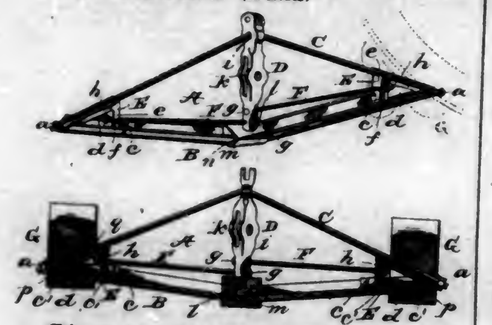
478,056. MACHINE FOR INSERTING SCREW-THREADED WIRE INTO THE SOLES OF BOOTS OR SHOES. LOUIS GODDU, Winchester, assignor to James W. Brooks, Cambridge, and Frank P. Stanley, Swampscott, Mass., trustees. Filed Sept. 14, 1891. Serial No. 405,664. (No model.)



Claim.—In a machine for inserting screw-threaded wire into soles of boots and shoes, the following instrumentalities, viz: a rotating wire-

containing spindle, gripping and feeding rolls carried thereby and adapted to grip and feed the threaded wire longitudinally, wire-cutting devices, a cam-shaft having a worm-toothed gear and cams thereon, as L, V^2, and O, means operated by said cams to actuate the said gripping and feeding rolls, the said cutting mechanism and the said head-vibrating mechanism to feed the work intermittingly, and a double-threaded worm carried by the said spindle and rotating the said cam-shaft, to operate substantially as described.

478,057. BRAKE-BEAM. JOHN GREEN, Renovo, Pa., assignor of one-half to John W. Forster and Irene Forster, same place. Filed Feb. 26, 1892. Serial No. 422,759. (No model.)



Claim.—1. A brake-beam for railway-cars, consisting of a bar, a truss-rod, a post or strut, and a tie-rod between said bar and truss-rod.

2. A brake-beam for railway-cars, consisting of a bar, a truss-rod, a post or strut, and a tie-rod in a plane substantially coincident with the plane of said bar and connected to said post.

3. A brake-beam for railway-cars, consisting of a bar, a truss-rod, a post or strut, supports between the bar and the truss-rod, and a tie-rod connected to the post and the supports.

4. A brake-beam for railway-cars, consisting of a bar, a truss-rod, and a post in two separable parts, one of which engages the bar and is provided with a socket and the other part engaged by the truss-rod and provided with a dowel-pin loosely engaging said socket.

5. A brake-beam for railway-cars, consisting of a continuous bar of angle-iron, a truss-rod, and a post or strut in two separable parts, one provided with a dowel-pin and the other with a socket in its upper surface and having an aperture through it conforming to the angle of the bar and engaging said bar on both sides.

6. A brake-beam having castings or supports permanently secured at its ends and provided with inclined and grooved upper surfaces, in combination with a truss-rod engaging said grooves, and brake-shoe holders engaging the bar and said castings.

7. A brake-beam for railway-cars, consisting of a bow-shaped bar curved in the direction of the strain of the beam, a truss-rod, a post or strut, and a tie-rod between the bar and the post and between the bar and the truss-rod.

8. A brake-beam for railway-cars, consisting of a bow-shaped bar of angle-iron, curved in the direction of the strain of the beam, a truss-rod, a post or strut, angular supports between the bar and the truss-rod, and tie-rods, one each side of the beam, connected to the post and the supports.

9. A brake-beam for railway-cars, consisting of a bar, castings, or supports permanently secured to the ends of the bar and each provided with an outwardly-inclined upper surface having a longitudinal groove, and a truss-rod engaging said groove, in combination with brake-shoe holders engaging the bar and said casting.

10. A brake-beam having castings provided with inclined upper surfaces secured in its ends, a truss-rod, and a post or strut, in combination with tie-rods attached to said castings and posts.

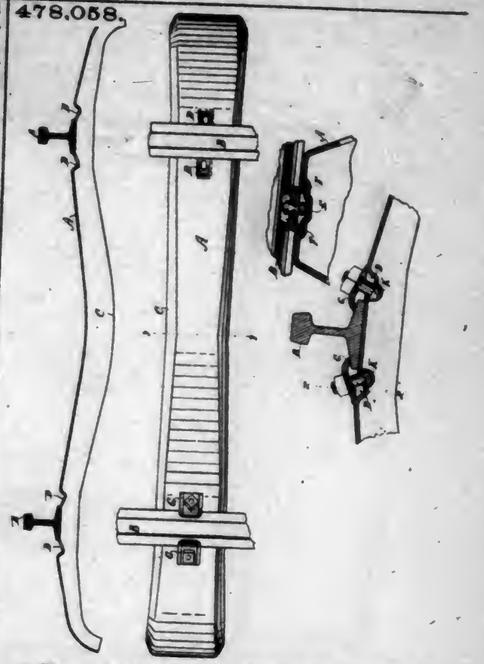
478,058. RAILROAD-TIE. ARTHUR J. HARTFORD, New York, N. Y., assignor to the Railway Improvement Company, of Illinois. Filed Mar. 25, 1891. Serial No. 386,292. (No model.)

Claim.—1. A metal tie for railroads, having pockets D, the bottom of said pockets being at an angle to the base of the rail and below the surface of the tie, thereby enabling a lateral adjustment of the rail by straight bolts, substantially as described.

2. In a metallic tie, a pocket D, having depressions E F, in combination with the clip G, substantially as and for the purposes described.

3. The combination of the tie A, having pockets D therein, the bottom of said pockets being at an angle to the base of the rail and below the surface of the tie, and clips G, fitting said pockets, substantially as described.

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4. The combination of the tie A, having pockets D, and rail B, the clips G G, and straight bolts K, the whole enabling both a lateral and vertical adjustment of the rail B, substantially as described.

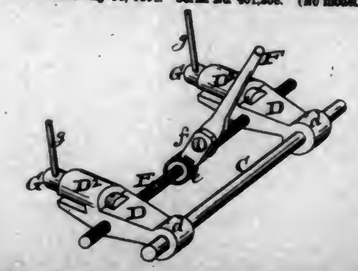
478,059. COMBINATION SAFETY RAILWAY-TRACK. SOLON G. HOWE, Detroit, Mich., assignor of one-half to John B. Howarth, same place. Filed Nov. 11, 1890. Serial No. 371,021. (No model.)



Claim.—1. The combination, with a tread, of a longitudinal support consisting of two interlocking plates bolted to said tread, one of said plates channeled to form a safety-groove.

2. A rail consisting of a tread and longitudinal supports engaging said tread, one of said supports formed with a safety-groove and one of the supports with a tram-flange.

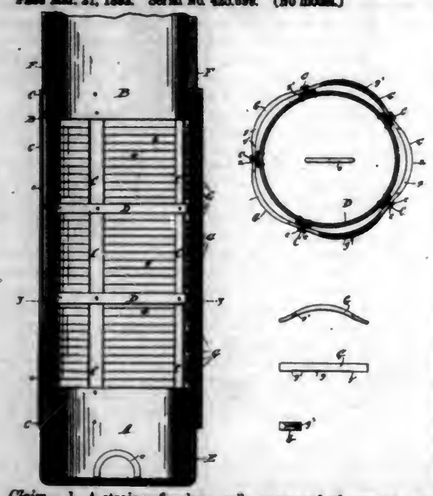
478,060. BELT-STRETCHER. GILBERT P. KENEHAN, Cleveland, Ohio. Filed July 30, 1891. Serial No. 401,238. (No model.)



Claim.—In a belt-clamp, the bars D D, having sockets *d d* and movably placed on guide bar C, right-and-left screw E, also playing

through the clamp-bars D D and provided with a lever F and pawl and ratchet *f e*, and the bars D D, having slotted heads D^2 D^2, containing cam-pins G G, provided with levers *g g*, all constructed and combined to operate substantially as and for the purpose set forth.

478,061. SAND-STRAINER FOR DEEP WELLS. JOHN H. KING, Cincinnati, Ohio, assignor of one-half to Ross W. Dugan, Covington, Ky. Filed Mar. 21, 1892. Serial No. 425,699. (No model.)



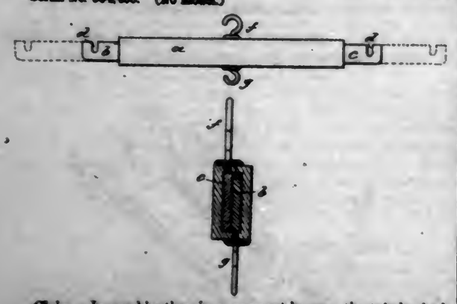
Claim.—1. A strainer for deep wells, composed of separate segmental pieces of hard non-corrodible metal, the edges of said pieces being formed to leave strainer-openings between the separate pieces when clamped together and the whole forming a strainer-shell substantially cylindrical, substantially as shown and described.

2. The combination of the frame composed of the tubes A B and channeled bars C, the cap E upon tube A, the separate segments G, placed in the channels of bars C, and the tube F to clamp the segments between it and the cap E, substantially as shown and described.

3. The combination of the tubes A B, the channeled bars C, uniting said tubes, and the hoops D, secured to the channel-bars, the cap E upon tube A, the segments G, depressed upon one edge and adapted to fit in the channels of bars C, and the tube F, screwed upon tube B to hold the segments in place, substantially as and for the purpose specified.

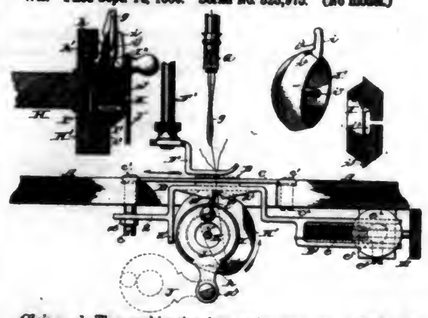
4. The combination, in a deep-well strainer, of the tubes A B, externally screw-threaded, the bars C, uniting said tubes and having their opposite edges provided with channels *c*, the screw-threaded cap E, screwed upon tube A against the ends of bar C, the segments G, fitted in the channels *c*, the internally-screw-threaded tube F to force and hold said segments in place, and the hoops D, secured to the base of bars C, substantially as and for the purpose set forth.

478,062. GARMENT-HANGER. CHARLES W. LAUBIE, Thomaston, Conn., assignor to Nellie Laubie, Meridian, Miss. Filed June 6, 1890. Serial No. 354,483. (No model.)



Claim.—In combination, in a garment-hanger, the tubular body part, the extensible and adjustable arms having sliding movement therein and having one or more notches in their upper edge near the outer ends of the arms, the screw threaded hook *f*, projecting through the body part with its lower end adapted to engage the adjustable arms, whereby they are clamped in any desired position, and the hook *g*, also screw-threaded, projecting through the body part and with its inner end adapted to engage the adjustable arms, whereby they may be clamped in any desired position, all substantially as described.

478,063. SEWING-MACHINE. FREDERICK LICHTENFELDT, Milwaukee, Wis. Filed Sept. 14, 1889. Serial No. 323,975. (No model.)



Claim.—1. The combination, in a sewing-machine, with the switch-forming mechanism, of a bed-plate having a recess for the reception of the throat-plate, a throat-plate provided with a slot for the passage of the feeder and secured in said recess by means of screws *d'* and *d^1*, passing into the upper ends, respectively, of the differential screws *e* and *e^1*, the differential screws *e* and *e^1* passing up through the bed-plate and adapted to adjust the throat-plate in a vertical direction with reference to the upper surface of the bed-plate and to the feeder, as shown and described.

2. The combination, in a sewing-machine, with the stitch-forming mechanism, of a revolving hook having an internal peripheral groove, a bobbin-case formed of two truncated cones, their bases meeting in a flange, an opening 12 for the passage of the needle and the extension of the circular tension-spring, a circular tension-spring adapted to fit in said bobbin-case, having an extension projecting into a suitable bearing in the feeder, whereby said bobbin-case has its bearing in said peripheral groove and is prevented from turning, substantially as shown and described.

3. The combination, in a sewing-machine, with the stitch-forming mechanism, of a revolving hook, bobbin-case, and circular tension-spring, the former provided with a suitable recess for the reception of the bobbin-case, a bobbin-case having beveled sides and a flange upon its periphery which has its seat in the revolving hook, the circular tension-spring which fits within the bobbin-case and which is provided with extensions that pass up through the opening in the edge of the bobbin-case, the circular tension-spring extensions provided with a fold for the protection of the thread, substantially as and for the purposes set forth.

4. The combination, in a sewing-machine, with the stitch-forming mechanism comprising a revolving hook and feeder, said hook provided with an eccentric periphery for moving the feeder in an upward and forward direction, the latter provided with a spring for retracting its forward movement, and means for adjusting said feeder vertically, substantially as and for the purposes set forth.

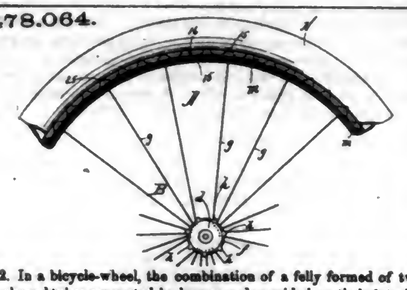
5. The combination, in a sewing-machine, with the stitch-forming mechanism comprising a revolving hook, bobbin-case, with its circular tension-spring, and the feeder, said hook provided with an eccentric periphery for moving the feeder upward and forward, said feeder provided with a spring for retracting its forward movement, means for adjusting it vertically, and detainers, in conjunction with the circular tension-spring, to prevent the revolution of the bobbin-case, substantially as and for the purposes set forth.

6. The combination, in a sewing-machine, with the stitch-forming mechanism, of a revolving hook having an eccentric periphery, a feeder constructed so as to be operated by said eccentric and provided with a spring for retracing its forward movement, the screw *c*, with nut *a'*, which serves as a guide for the forward portion of the feeder, and the stud *c^2* as a guide for the rearward portion, stud *c^2* also constituting a bearing for the stitch-regulating screw, substantially as and for the purposes set forth.

478,064. BICYCLE-WHEEL. CHARLES H. METZ, Highlandville, Mass. Filed Sept. 18, 1891. Serial No. 406,091. (No model.)

Claim.—1. A bicycle-wheel provided with two follies disposed apart from each other and a tire disposed on said follies and spanning the space between them, the periphery of said tire being beyond the peripheries of the follies.

478.064.



2. In a bicycle-wheel, the combination of a felly formed of two hoop-shaped tubes connected by braces and provided on their interior with slide-nuts and spokes fitting into said slide-nuts.

3. In a bicycle-wheel, the combination of a felly formed of two hoop-shaped tubes connected by braces, a bicycle-tire provided with two sets of hooks on each side, and a lacing-cord passing around the hoop-shaped tubes and connecting the upper and lower hooks of each side.

4. In a bicycle-wheel, the combination of a felly formed of two hoop-shaped tubes, braces connecting said tubes, a tire resting on said braces between said tubes, and lacing-cords for attaching said tire to the tubes.

5. In a bicycle-wheel, a felly formed of two parallel rims connected by brace-rods, in combination with a hub, spokes connecting the hub ends with opposite felly-rims, said spokes being arranged in lines approximately tangent to said hub, substantially as set forth.

6. The wheel A, provided with felly D, having rims *m' m''*, in combination with the hub, and the crossed spokes *g*, connecting said hub and rims, each pair of spokes being strapped or secured together at or near their center portion by a band, substantially as described.

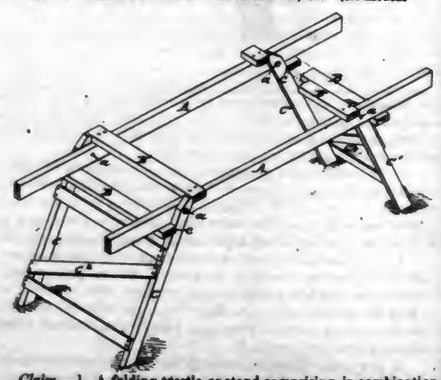
7. A bicycle-wheel the spokes of which are arranged in sets or groups at the hub, the spokes of each set being disposed at different angles to the radii of the wheel.

8. A bicycle-wheel the spokes of which are arranged in sets or groups at the hub and at the same distances apart at the felly, spokes of each set being disposed at different angles to the radii of the wheel.

9. A bicycle-wheel having a felly formed of two parallel rims connected by brace-rods, a hub, and spokes connecting the hub ends with opposite felly-rims, said spokes being arranged in sets or groups at the hub, spokes of each set being disposed at different angles to the radii of the wheel.

10. A bicycle-wheel having a felly formed of two hoop-shaped tubes connected by braces, a tire resting on said braces between said tubes, lacing-cords for attaching said tire to the tubes, a hub, and spokes connecting the hub ends with opposite felly-rims, said spokes being arranged in sets or groups at the hub and at regular or nearly regular intervals at the follies, so that said spokes are approximately tangent to the hub.

478,065. FOLDING STAND OR TRESTLE. JOHN T. MILLER, Chicago, Ill. Filed Feb. 17, 1890. Serial No. 340,782. (No model.)

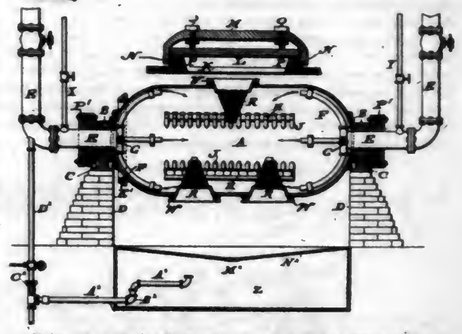


Claim.—1. A folding trestle or stand comprising, in combination, the longitudinal bars A, the cross bars B, arranged on the under side of the bars A and connecting the same together to form the body of the trestle or stand, with the ends of such bars arranged to overhang the bars A to form stops, and the legs C, pivoted to the bars A and provided with notches *c*, adapted to embrace the overhanging portion of the bars B when the legs are unfolded, essentially as herein described.

2. A folding trestle or stand comprising, in combination, the longitudinal bars A, the cross-bars B B', arranged, respectively, on the under and upper sides of the bars A and connecting the same together to form the body of the trestle or stand, and the legs C, pivoted to the bars A and provided with notches *c c'*, adapted to embrace the bottom and side of said bars when the legs are unfolded, essentially as herein described.

3. A folding trestle or stand comprising, in combination, the longitudinal bars A, the cross-bars B B', arranged, respectively, on the under and upper sides of the bars A and connecting the same together to form the body of the trestle or stand, and the pair of legs C C, one pair of which is pivoted on the outside of the bars A and the other on the inside of the same, so as to be capable of folding past each other on opposite sides of said bars, as set forth.

478,066. WASHER FOR PAPER-STOCK. WALTER MOORHOUSE, Philadelphia, Pa., assignor to Marguerite J. Lenhart and Marguerite J. Moorhouse, same place. Filed Mar. 26, 1891. Serial No. 386,464. (No model.)



Claim.—1. A washer for treating paper-stock, provided with journals at its ends and openings in the sides thereof, and conical hoods or strainers removably fitted in said openings for the purpose set forth, substantially as described.

2. The combination of a rotatable washer having openings in its sides, supply-pipes leading into the said washer through the journals thereof, strainers of reticulated material filling said openings, a vat below said washer, and a pipe leading from the vat and communicating with one of the supply-pipes of the washer, said parts being combined substantially as described.

3. The combination of a rotatable washer provided with openings in its sides, water-supply pipes leading into said washer through the journals thereof, a vat below said washer, a discharge-pipe leading from said vat, and a lifting-injector communicating with said vat-discharge-pipe and having a pipe leading into one of the water-supply pipes, substantially as described.

4. A rotatable washer having openings in its sides, reticulated strainers fitted in said openings, water-supply pipes leading into said washer through the journals thereof, a series of pipes secured within the washer and communicating with the supply-pipes, a vat below said washer, a steam-supply pipe leading into one of said water-supply pipes, and a discharge-pipe for said vat, communicating with one of said supply-pipes of the washer, said parts being combined substantially as described.

5. A washer for paper-stock, having openings in its sides and reticulated strainers of conical form removably secured in said openings of the washer, said parts being combined substantially as described.

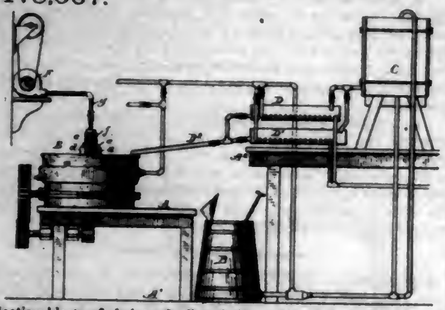
6. In a device of the character set forth, a vat having a discharge-pipe with a rotatable end portion within said vat, substantially as and for the purpose described.

478,067. METHOD OF MANUFACTURING NITRATE OF AMMONIA. RUSSELL S. PENNIMAN, Dover, N. J., assignor of two-thirds to John C. Schrader, same place, and William G. Wood, Washington, D. C. Original application filed July 11, 1888, Serial No. 279,649. Divided and this application filed Aug. 20, 1890. Serial No. 362,484. (No specimens.)

Claim.—1. The improvement in dehydrating nitrate of ammonia, which consists in reducing the nitrate to and maintaining it in a liquefied or melted condition under high temperatures approximating to the decomposing limit and then injecting into the mass blasts of air for conveying therefrom all watery matter.

2. The improvement in dehydrating nitrate of ammonia, which consists in reducing the nitrate to a liquefied or melted condition under high temperature, then mechanically agitating the mass and also

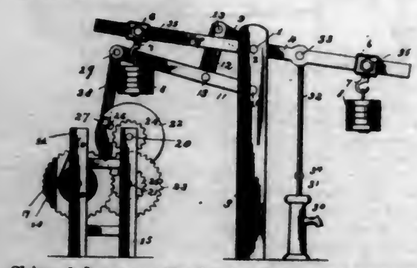
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injecting blasts of air into the liquefied mass for obviating liability of injury to the nitrate by decomposition from overheating, and also for fully eliminating watery vapors, substantially as described.

3. The improvement in the process of manufacturing nitrate of ammonia, which consists in dehydrating the nitrate while in a melted condition by mechanical agitation accompanied with the injection of air into the mass for obviating liability of injury to the nitrate from overheating, and also for speedily eliminating watery vapors, then cutting off the air, cooling the nitrate, and developing it into grains by mechanical agitation while cooling, substantially as described.

478,068. MOTOR. SWAN PETERSON, Gibson City, Ill., assignor of one-half to Andrew Johnson, same place. Filed Mar. 16, 1892. Serial No. 425,133. (No model.)



Claim.—1. In a motor of the class described, the combination, with the frame-work, the walking-beam fulcrumed therein and provided with opposite counterbalancing-weights, and a connecting-rod extending from the beam and adapted to be connected with devices to be operated, of a train of spring-actuated speed-increasing gearing terminating in a crank-disk, a wrist-pin extending from the crank-disk, a lever fulcrumed at its upper end between the beam and crank-disk, an arm extending from the fulcrum of the beam and moving with the latter, a link pivotally connecting the outer end of the arm with the lever, and a link connecting the outer end of the lever with the aforesaid crank-disk, substantially as specified.

2. In a motor of the class described, the combination, with the suitable frame-work comprising the uprights 3, 14, and 15, the shaft 1, mounted in the uprights 3, the walking-beam fulcrumed at its center upon the shaft, the arm 9, the connecting-rod 32, loosely connected at its upper end to the walking-beam at one side of its fulcrum, the sleeves 6, mounted on the beam at opposite sides of the fulcrum and terminating in hooks 7, the weights loosely hung upon the sleeves, the set-screws 35, passing through the sleeves and bearing on the beam, the winding-shaft 16, terminating at one end in a crank-key, journaled in the uprights 14, the gear 17 on the shaft, the coiled spring 18, secured to and wound upon the shaft and having its outer end connected to the uprights 14, the upper and lower shafts 20 and 21, the gear 23, mounted on the shaft 21, the small gear 25, mounted on the shaft 21 and engaged by the gear 17, the crank-disk 22, having slot 26 mounted on the shaft 20, and the small gear 24, mounted on the shaft 20 at one side of the gear 22 and engaged and driven by the large gear 23, of the lever 11, located between the disk 22 and the inner end of the beam 4 and having its inner end pivoted, as at 10, to the standards 3, the link 12, loosely connected, as at 13, to the lever 11 and to the free end of the arm 9, and the link 28, loosely connected to the outer end of the lever 11 and to the wrist-pin 27, loosely and adjustably mounted in the slot 26 of the disk, substantially as specified.

3. In a motor of the class described, the combination, with the shaft 1 and its bearings, of the walking-beam fulcrumed at its center thereon, a rock-arm mounted on the fulcrum and adapted to move with the beam, a connecting-rod connected with the outer end of the beam and adapted to be connected with the device to be operated, a train of speed-increasing gears terminating in a crank-disk, a spring for actuating the same, the lever pivoted at its inner end, a link between the lever and rock-arm, and a link between the crank-disk and the outer end of the lever, substantially as specified.

478,069. EXPANDING REAMER. JOHN H. PHILLIPS, Wheeling, W. Va., assignor of two-thirds to William Davis, same place, and Job Ablett, Pittsburg, Pa. Filed Oct. 3, 1889. Serial No. 325,903. (No model.)

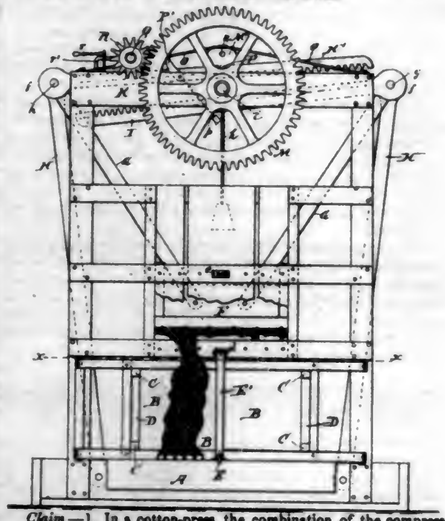


Claim.—1. An expanding screw-tap or reamer having its dies provided in their inner faces with an adjustable shoe, substantially as set forth.

2. A shank provided with radial slots and a die, each slot having an adjusting block or piece engaging with the die and adapted to confine liners between the ends of the dies and the shank for the longitudinal adjustment of the dies, substantially as set forth.

3. An expanding screw-tap or reamer comprising a shank having slots, the dies arranged in said slots, adjusting pieces or blocks movable in said shank and adapted to connect with said dies to limit the outward or radial movement of the dies, substantially as set forth, and a collar on the shank for keeping the said blocks in operative position.

478,070. COTTON-PRESS. JOHN L. FRIDEMORE, Linn, Ind. Ter. Filed Jan. 9, 1892. Serial No. 417,455. (No model.)



Claim.—1. In a cotton-press, the combination of the compressing-chamber having its sides formed by hinged doors and its ends pivoted to the doors on one side of the press with the locking device, substantially as and for the purpose set forth.

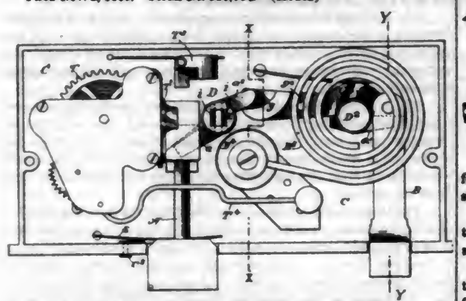
2. The combination, in a cotton-press, of a compressing-chamber comprising the hinged doors B, having the opening D, the hinged doors A', and the ends B', pivoted in the said doors A', so that the free edge of the ends engage the said opening when the doors upon both sides of the press are closed, substantially as shown and described.

3. The combination, with a cotton-press, of the hinged doors A' and B, the portions pivoted in the doors B, and the plate-springs secured at one end to the said doors B and their other end left free to engage the pivoted portions, so that when all the doors are closed they with the pivoted portions will form a compressing-chamber, substantially as shown and described.

4. In a cotton-press, the combination, with the compressing-chamber, the follower, and the connections from the base of the compressing-chamber and follower to the rack-bars, of the shaft *i*, the large gear-wheel located upon the shaft, the three pinions secured upon the shaft, the double rack-bar engaging two of the pinions below the shaft, the single rack-bar engaging the other pinion above the said shaft, the supplemental shaft, the small gear-wheel secured upon the supplemental shaft and engaging the said large gear-wheel, and means, substantially

as shown and described, for operating both shafts, for the purpose set forth.

478,071. ALARM-LOCK. ROBERT G. VARNAR, New York, N. Y. Filed Nov. 2, 1889. Serial No. 329,004. (Model.)



Claim.—1. The combination, with the lock-bolt having a catch for holding it retracted and the knob-latch having a knob for throwing it back, of a lever connected with the latter and engaged on its rear side by a part connected with the lock-bolt when the latter is thrown back, whereby the knob-latch will be retracted simultaneously with said lock-bolt when the latter is thrown back and the knob-latch may be operated freely when the lock-bolt is held back by the catch.

2. The combination, substantially as described, of a lock-bolt, the roll-back acting upon the same, an arm extending from said roll-back, a lever engaged by the said arm, and the knob-latch connected with said lever, as described, so as to be retracted when the roll-back is turned to retract the lock-bolt.

3. The combination of a lock-bolt, a knob-latch having a suitable knob whereby it may be retracted independently of the lock-bolt, and the roll-back or its equivalent, as described, having one arm engaging with the lock-bolt and an opposite arm for operating said knob-latch, and a key for the lock-bolt engaging with said roll-back for turning the same.

4. The combination, substantially as described, of a lock-bolt, a roll-back having an arm engaging therewith and a slot in its face for engagement by a key, a knob-latch having a suitable knob whereby it may be retracted independently of the lock-bolt, and a lever pivoted between the knob-latch and the lock-bolt, engaging at one end with the knob-latch and at its other engaged by an arm or projection from the roll-back which operates on the lock-bolt, as and for the purpose described.

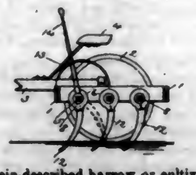
5. In a mortise-lock, the combination of the escutcheon or sleeve in which the rotary barrel is mounted, and the lock or casing interlocking with said sleeve or escutcheon by sidewise movement when it is slipped into its mortise, as and for the purpose described.

6. In a mortise-lock, the combination, with the escutcheon, of the lock-bed plate or casing, and the intermediate adjustable locking pin or stud adjustable on one of the said parts and engaging with the other, so as to prevent detachment of the escutcheon.

7. In a mortise alarm-lock, the gong or bell mounted on a stud which is fastened to the bed-plate, but is separated therefrom, except at the point of attachment, to one side of said stud, said stud or bolt projecting slightly beyond the bed-plate, so as to bear firmly against the woodwork in which the mortise is formed.

8. The combination, with the knob and the hub, of the connecting-spindle formed in three longitudinal sections the outer two of which are notched for engagement with pins of the hub, while the center section is adapted to be inserted between the two hubs and to hold them engaged, as and for the purpose described.

478,072. HARROW OR CULTIVATOR. WILLIAM H. BAKER and BENJAMIN A. OBDEN, Etna, Pa. Filed Mar. 21, 1892. Serial No. 425,631. (No model.)



Claim.—The herein-described harrow or cultivator, consisting of the frame 1, the bars 5, secured therein, the teeth 12, secured in the casing 6, the bushings 8 to render the said casings loose on the bars 5, the springs 10, one end of which is attached to the bars 5 and the other to the tooth 12, the lever 14, and the rack-bar 13 for elevating and lowering the said teeth, all arranged and combined for service substantially as and for the purpose described.

478,078. PENHOLDER. EZRA N. GIFFORD, Chicago, Ill., assignor of one-half to Lewis W. Pitcher, same place. Filed Mar. 21, 1892. Serial No. 425,853. (No model.)



Claim.—1. A penholder having a stem provided with an inclined forwardly-facing shoulder near its forward end and a longitudinally-sliding sleeve upon said stem.

2. A penholder having a stem reduced near its forward end portion, as at 8, a seat 9, located in the rear of said reduced portion 8, and a longitudinally-sliding sleeve upon said stem.

3. A penholder having a stem reduced near its forward end portion, as at 8, a seat 9, located in the rear of said reduced portion, a forwardly-facing shoulder 10 in the rear of said seat, and a longitudinally-sliding sleeve upon said stem.

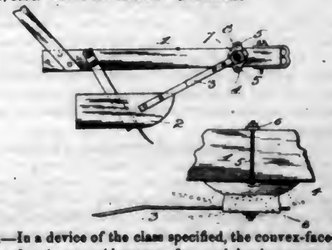
4. A penholder having a stem reduced near its forward end portion, as at 8, a seat 9, located in the rear of said reduced portion, an inclined forwardly-facing shoulder 10 in the rear of said seat, and a longitudinally-sliding sleeve upon said stem.

5. A penholder consisting of a handle A, secured at its forward end to a stem B, which is of less diameter than the forward end of said handle and thereby providing a forwardly-facing stop 3, a longitudinally-sliding sleeve C upon said stem, said sleeve being about the same length as said stem, an interior projection 1 on said sleeve, a spring located between said stop 3 and projection 1, and a rearwardly-facing stop 4 upon said stem, located practically as described to engage said projection 1 to hold the rear end of said sleeve slightly overlapping the forward end of said handle, whereby the greater portion of the handle will be exposed, substantially as described.

6. A penholder consisting of a handle A, secured at its forward end to a stem B, which is of less diameter than the forward end of said handle and thereby providing a forwardly-facing stop 3 and a guide for said sleeve, a longitudinally-sliding sleeve C upon said stem, said sleeve being about the same length as said stem, an interior projection 1 on said sleeve, a spring located between said stop 3 and projection 1, and an enlargement near the forward end of said stem, forming a rearwardly-facing stop 4, a forwardly-facing shoulder 10, and a guide 6 for said sleeve, said rearwardly-facing stop being located practically as described to engage said projection 1 to hold the rear end of said sleeve slightly overlapping the forward end of said handle, whereby the greater portion of the handle will be exposed, substantially as described.

7. A penholder consisting of a handle A, secured at its forward end to a stem B, which is of less diameter than the forward end of said handle and thereby providing a forwardly-facing stop 3, a longitudinally-sliding sleeve C upon said stem, said sleeve being about the same length as said stem, an interior projection 1 on said sleeve, a rearwardly-facing stop 4 upon said stem, located practically as described to engage said projection 1 to hold the rear end of said sleeve slightly overlapping the forward end of said handle, whereby the greater portion of the handle will be exposed, substantially as described.

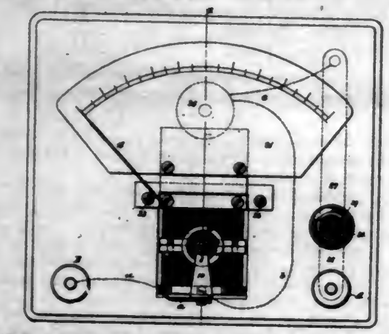
478,074. PLANT-FENDER. REUBEN JOHNS, Atlanta, Ga. Filed Nov. 17, 1891. Serial No. 412,234. (No model.)



Claim.—In a device of the class specified, the convex-faced plate, a casting conforming to said convex face and having a transversely-extending slot and longitudinally-extending recess, a perforated arm inserted in said recess, and a bolt passing through said plate, slot, and the perforation in the said arm, and a plate secured to the back end of said arm, substantially as and for the purpose specified.

REISSUES.

11,250. ELECTRICAL MEASURING-INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed Feb. 5, 1892. Serial No. 420,481. Original No. 438,687, dated Aug. 5, 1890.



Claim.—1. In an electrical measuring-instrument, a stationary coil, a coil movable in the field of said stationary coil, and a spring opposing and counterbalancing the impressed action of said movable coil, the said coils and spring being connected in circuit.

2. In an electrical measuring-instrument, a stationary coil, a coil pivoted and vibrating in the field of said stationary coil, and a spring opposing and counterbalancing the impressed action of said movable coil, the said coils and spring being in circuit.

3. In an electrical measuring-instrument, a stationary coil, a coil movable in the field of said stationary coil, and two springs opposing and counterbalancing the impressed action of said movable coil, the said coils and springs being in circuit and the said springs being disposed, respectively, to lead the actuating-current into and out of said movable coil.

4. In an electrical measuring-instrument, a fixed coil, a movable coil in the field of said fixed coil, an index showing the extent of movement of said movable coil, and a spring opposing and counterbalancing the movement of said movable coil and in circuit therewith, the said elements being constructed and arranged so that said index will be moved directly to show the extent of motion of said movable coil and by the counterbalancing effect of said spring be maintained in such position.

5. In an electrical measuring-instrument, a fixed coil, a movable coil in the field of said fixed coil, an index controlled by said movable coil, a scale graduated in definite electrical units, and a spring opposing and counterbalancing the movement of said movable coil and in circuit therewith, the said elements being constructed and arranged so that by the actuating-current said index will be moved directly to give a definite reading on said scale and be maintained at such reading by the counterbalancing effect of said spring.

6. In an electrical measuring-instrument, the combination of a movable conductor actuated by the current to be measured in a field of force maintained by the said current, and a means of indicating the extent of movement of said conductor, the said conductor being constructed to offer such electrical resistance and of such light weight and so freely movable as that the error due to the disturbing effect of self-induction of the actuating-current in said conductor shall bear an infinitesimal ratio to the actual indication and be practically *nil*.

7. In an electrical measuring-instrument, a stationary coil and a coil oscillating or vibrating on inclosed pivots in the field of force of said stationary coil, said coils being electrically connected.

8. In an electrical measuring-instrument, a stationary coil, a coil vibrating or oscillating on inclosed pivots in the field of force of said stationary coil, and a coiled spring connected to a coil-pivot and to an abutment and opposing the motion of said movable coil, said coils being electrically connected.

9. In an electrical measuring-instrument, a stationary coil, a coil supported on diametral inclosed pivots and vibrating or oscillating in the field of force of said stationary coil, a coiled spring concentric with the axis of rotation of said vibrating coil having one end connected to said coil and the other end to an abutment, and means for varying the resiliency of said spring, said coils being electrically connected.

10. In an electrical measuring-instrument, a stationary coil, a coil vibrating or oscillating in the field of force of said stationary coil, and a spring of conducting material opposing the movement of said vibrating coil, the said coils and springs being electrically connected.

11. In an electrical measuring-instrument, a spool or bobbin having an interior chamber, a coil surrounding said spool, a coil supported within said chamber on diametrally-disposed pivots extending through opposite sides of said spool, supports outside of said spool receiving said pivots, and a coiled spring connected at one end to one of said pivots outside of said spool and at the other end to a fixed abutment, the said coils being electrically connected.

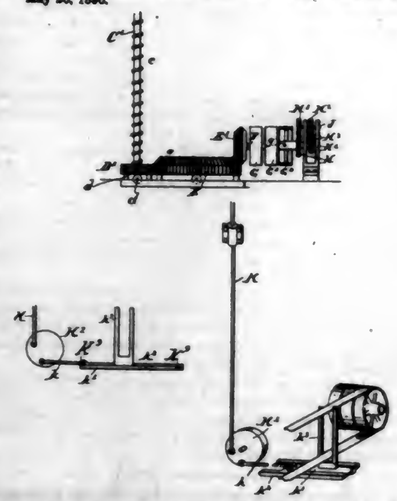
12. In an electrical measuring-instrument, a stationary coil, a coil vibrating or oscillating in the field of force of said stationary coil, two coiled springs of conducting material combined with said movable coil, and circuit connections, whereby said springs and movable coil are connected in circuit.

13. In an electrical measuring-instrument, a stationary coil, a coil vibrating or oscillating in the field of force of said stationary coil, two springs of conducting material connected, respectively, to the coil-pivots and to abutments, and circuit connections whereby the current is led first through one spring, then through the coil, and then through the other spring.

14. In an electrical measuring-instrument, the combination of the spool or bobbin of non-inductive material, a coil surrounding said spool, a coil supported within said spool on diametral pivots 6 and 7, arms or brackets 10 and 11 outside of said spool and receiving said pivots, spirals springs 14 and 15, surrounding said pins 6 and 7, and arms 16 and 17, pivoted at the extremities of said arms 10 11, the said springs being connected, respectively, at one end to said pivots 6 and 7 and at the other end to arms 16 and 17, and the said springs and coils being electrically connected in circuit.

15. In an electrical measuring instrument, the combination of a spool or bobbin of non-inductive material, a coil surrounding said spool, a coil supported within said spool on diametral pivots 6 and 7, arms or brackets 10 and 11 outside of said spool and receiving said pivots, spiral springs 14 and 15, surrounding said pins 6 and 7, and arms 16 and 17, pivoted at the extremities of said arms 10 11, the said springs being connected, respectively, at one end to said pivots 6 and 7 and at the other end to arms 16 and 17, and a resistance-coil H, the said stationary coil, movable coil, springs, and resistance-coil being connected in series.

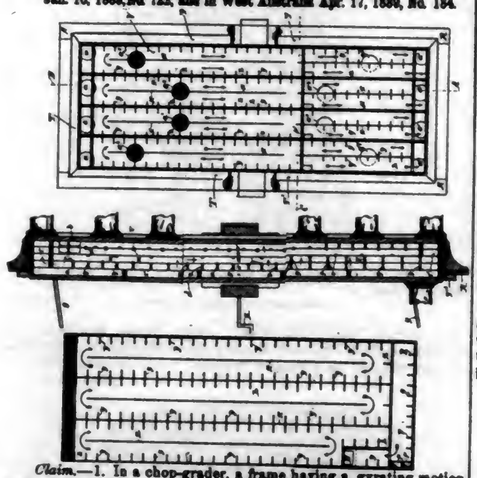
11,251. REVERSING MECHANISM FOR ELEVATORS. EDWARD T. YOUNG, Detroit, Mich., assignor of one-half to Wm. Scott, same place. Filed Feb. 23, 1892. Serial No. 422,583. Original No. 438,196, dated May 20, 1890.



Claim.—1. A reversing mechanism for elevators consisting of the gears D D', wheels rigidly attached to the base of the shafts, gear-wheels E E', meshing therewith and adapted to actuate the same, and the pulleys G G², and gearing H H' H³ H⁴ H⁵, all adapted and arranged to rotate the wheel E in different directions at will without reversing the engine, substantially as described.

2. The combination of the driving-shaft, the fast pulley on said shaft near one end thereof, the gear fast on said shaft at its opposite end, the intermediate pulley G', loosely mounted on said shaft, the loose gear H, attached to said loose pulley, the counter-shaft, the pinions H' H³, fast thereon, said pinion H' meshing directly with the gear attached to the loose pulley, and the idle or transmitting pinion H², meshing with the pinion H³ and with the fast gear on the driving-shaft, as and for the purpose specified.

11,252. APPARATUS FOR SIFTING AND SORTING MEAL AND FLOUR. CARL HAGENMACHER, Bude-Pesth, Austria-Hungary. Filed May 26, 1892. Serial No. 434,492. Original No. 432,907, dated May 27, 1890. Patented in France Mar. 30, 1887, No. 183,555; in Germany May 27, 1887, No. 46,900; in Belgium June 27, 1887, No. 77,970, Aug. 31, 1887, No. 78,584, and June 4, 1888, No. 83,088; in England Aug. 2, 1887, Nos. 10,644 and 10,645, and June 11, 1888, No. 8,858; in Austria-Hungary Sept. 20, 1887, No. 37,090 and No. 37,941, and Oct. 12, 1887, No. 31,783 and No. 36,203; in Italy Sept. 30, 1887, XXI, 22,085, and XLIV, 91, and XXI, 22,488, and XLIV, 312, and June 30, 1888, XXII, 23,634, and XLVI, 405; in Luxemburg Nov. 24, 1887, Nos. 921 and 922, and June 5, 1888, No. 966; in Spain Dec. 20, 1887, No. 11,808, Mar. 15, 1888, No. 12,146, and June 12, 1888, No. 8,970; in Norway Apr. 12, 1888, No. 953; in Sweden Apr. 16, 1888, No. 1,736; in Portugal Sept. 20, 1888, No. 1,288; in Brazil Sept. 28, 1888, No. 635; in India Oct. 22, 1888, No. 91; in South Australia Oct. 24, 1888, No. 1,128; in Victoria Oct. 27, 1888, No. 6,298; in New South Wales Oct. 27, 1888, No. 1,037; in Tasmania Nov. 1, 1888, No. 634/10; in Cape of Good Hope Nov. 15, 1888, No. 425; in Switzerland Dec. 1, 1888, No. 149; in Argentine Republic Jan. 10, 1889, No. 723, and in West Australia Apr. 17, 1889, No. 184.



Claim.—1. In a chop-grader, a frame having a gyrating motion and provided with guides in line with the desired main direction of travel of the material, and cross-slats *y*, extending part way across its surface between said guides for causing the material to travel over the said surface, substantially as set forth.

2. In a chop-grader, a frame having a gyrating motion and provided with a sifting-surface of perforate material, the guide-slats *x* upon its sifting-surface in line with the desired main direction of travel of the material, and cross-slats *y*, extending part way between said slats *x* for causing the material to travel, substantially as set forth.

3. In a chop-grader, a frame having a gyrating motion and provided with guide-slats *x* upon its surface in line with the desired direction of travel of the material, the cross-slats *y*, extending part way between said slats for causing the material to travel, and the ridges *u* and bridges *v* for turning over and evening the material, substantially as set forth.

4. In a chop-grader, the combination, with a frame-box provided with an inlet at its upper and outlets at its lower part, of rods pivotally supporting said box, a revoluble device, such as a crank, for imparting a continuous gyrating movement to said box, and a frame supported in said box and provided with a perforate sifting-surface and with guide slats *x* and with cross-slats *y*, arranged on said surface, substantially as and for the purpose set forth.

5. In a chop-grader, the combination, with a gyrating frame-box, of a series of superposed frames in said box, said frames being provided with guide-slats *x* and cross-slats *y* for directing the material over their surfaces, and with openings through which the material may pass from the upper to the lower frames of the series, substantially as and for the purpose set forth.

6. In a chop-grader, the combination, with a gyrating frame-box, of a series of superposed frames in said box, some of said frames being provided with perforate sifting-surfaces of various fineness for sifting and grading the material and alternating with other frames having imperforate conveying-surfaces, all of the said frames being provided with guide-slats *x* and cross-slats *y* for causing the material to travel over their surfaces, substantially as and for the purpose set forth.

7. In a chop-grader, the combination, with a gyrating frame-box provided with an inlet at its upper and an outlet at its lower part, of a series of superposed sifting and grading frames in said box, each frame being provided with guide-slats *x* and cross-slats *y* for traveling the material, the inlet-chamber secured to the frame-box above said inlet and provided with cross-slats *y* for breaking up and traveling the material, and the outlet-chamber secured below the box-outlets and also provided with cross-slats *y* and with outlets spaced wider apart than the outlets of said box, substantially as and for the purpose set forth.

8. In a chop-grader, the combination, with a horizontally-gyrating rectangular frame-box, of a series of rectangular frames superposed one above the other in said box, said frames being provided with straight guide-slats *x*, arranged parallel to their sides and dividing their surfaces into separate channels, and the cross-slats extending part way across said channels for causing the material to travel over the surfaces of the frames, substantially as and for the purpose set forth.

9. In a chop-grader, the combination, with a horizontally-gyrating frame-box, of the series of frames I II III IV V, superposed one above the other in said box and provided with guide-slats *x* and cross-slats *y* for causing the material to travel, frames I, II, and IV being further provided with perforate sifting-surfaces and separate discharge-openings for unbolted material, frame III with an imperforate collecting-surface and the opening E, discharging into said frame IV, and the frame V with an imperforate surface and partitions for conveying the different grades of material to separate outlet-openings, substantially as set forth.

10. In a chop-grader, the combination, with a horizontally-gyrating frame-box, of the series of frames superposed one above the other in said box, some of said frames being provided with perforate sifting-surfaces of various fineness for sifting and grading the material, and these frames being further provided with openings for the introduction and discharge of granular cleaning substances adapted to mingle with the material being operated on, and others of the said frames being provided with imperforate conveying-surfaces, and all of the said frames in the series being provided with guide-slats *x* and cross-slats *y* for causing the material to travel over their surfaces, substantially as set forth.

11. A sieve having a gyrating motion and provided with line-guides in the desired main direction of travel for determining the path or paths of the stock's travel, and with propelling-surfaces between the said guides for effecting the travel of the stock under the gyrating motion of the sieve.

DESIGNS.

21,655. SPOON. FRANK E. LADD, Springfield, Mass. Filed Sept. 19, 1891. Serial No. 406,265. Term of patent 3½ years.



Claim.—The design for a spoon, substantially as herein shown and described.

21,656. SPOON. LEO HOLLANDER, Salt Lake City, Utah. Filed May 26, 1892. Serial No. 434,502. Term of patent 3½ years.



Claim.—The design for a spoon, substantially as herein shown and described.

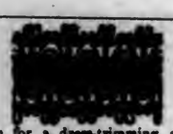
21,657. SPOON. WILLIAM SHAW, Ballard Vale, Mass. Filed Apr. 21, 1892. Serial No. 430,133. Term of patent 7 years.



Claim.—The design for spoons, as herein shown and described.

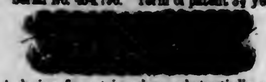
21,658. DRESS-TRIMMING. BENJAMIN LIPPER, Philadelphia, Pa., assignor to Augustus A. Lazarus, Isaac A. Schwarz, and Benjamin Lipper, same place. Filed May 31, 1892. Serial No. 435,077. Term of patent 3½ years.

21,658.



Claim.—The design for a dress-trimming, substantially as described, and as shown in the accompanying drawing.

21,659. TRIMMING. EDWIN ROBINSON, Camden, N. J. Filed May 28, 1892. Serial No. 434,796. Term of patent 3½ years.



Claim.—A design for a trimming, substantially as shown and described.

21,660. TRIMMING. JACOB HARTENSTEIN, Philadelphia, Pa. Filed May 28, 1892. Serial No. 434,802. Term of patent 3½ years.



Claim.—The design for a trimming, substantially as shown and described.

21,661. FRINGE. JOSEPH LOEB, Philadelphia, Pa. Filed May 23, 1892. Serial No. 434,797. Term of patent 3½ years.



Claim.—The design for a fringe, substantially as shown and described.

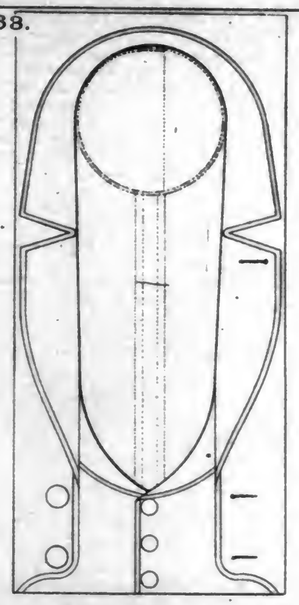
21,662. DRESS-SHIELD. ABRAHAM P. RINDSKOPF and HENRY P. RINDSKOPF, Brooklyn, N. Y. Filed Jan. 7, 1892. Serial No. 417,319. Term of patent 7 years.



Claim.—The design for dress-shields herein shown and described.

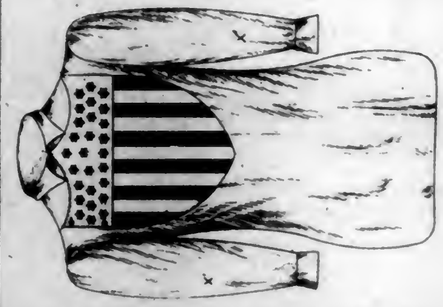
21,663. SHIRT ENVELOPE OR HOLDER. LOUIS TIE, New York, N. Y. Filed Apr. 18, 1892. Serial No. 429,817. Term of patent 7 years.

21,663.



Claim.—The design for a shirt envelope or holder herein shown and described.

21,664. CAMPAIGN-SHIRT. JOSEPH SCHLOSS, New York, N. Y., assignor to H. Wallach's Sons, same place. Filed May 16, 1892. Serial No. 433,223. Term of patent 14 years.



Claim.—The design for a shirt, substantially as herein shown and described.

21,665. EASEL. THOMAS HUMMEL, Jr., Peoria, Ill. Filed May 19, 1892. Serial No. 433,634. Term of patent 3½ years.



Claim.—The design for an easel, as herein shown and described.

21,666. DENTAL CABINET. JOHAN O. KELLER, Fort Wayne, Ind. Filed May 14, 1892. Serial No. 433,060. Term of patent 14 years.



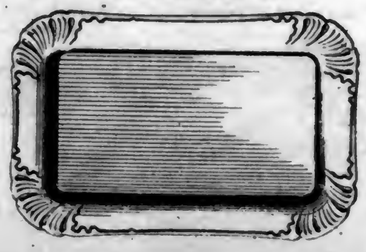
Claim.—The design for a dental cabinet herein shown and described.

21,667. PIANO-STOOL. LOUIS H. MARSTON, Chicago, Ill., assignor to the Tonk Manufacturing Company, same place. Filed Dec. 15, 1891. Serial No. 415,191. Term of patent 3½ years.



Claim.—The design for piano-stools, substantially as herein shown and described.

21,668. ORNAMENTATION OF DISHES. EMILE GÉRARD, Limoges, France, assignor to O. A. Gager & Co., New York, N. Y. Filed Mar. 23, 1892. Serial No. 426,153. Term of patent 7 years.



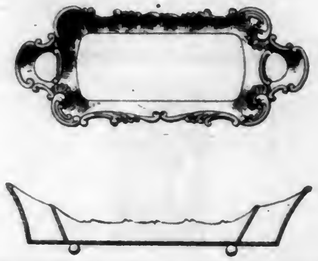
Claim.—The design for the ornamentation of dishes, substantially as shown and described.

21,669. BOTTLE. LEOPOLD KAHN, New York, N. Y. Filed May 21, 1892. Serial No. 433,914. Term of patent 3½ years.



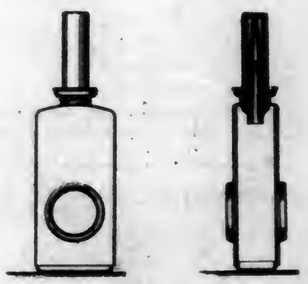
Claim.—The design for a bottle herein shown and described.

21,670. CIGAR-TRAY. GEORGE H. WILCOX, Meriden, Conn., assignor to the Meriden Britannia Company, same place. Filed May 31, 1892. Serial No. 435,073. Term of patent 3½ years.



Claim.—The design for a cigar-tray, as described and shown in the accompanying illustrations.

21,671. OILER. ALVIN L. FISHER, New Brunswick, N. J., assignor to the Consolidated Fruit Jar Company, New York, N. Y. Filed May 26, 1892. Serial No. 434,481. Term of patent 14 years.



Claim.—The design for an oiler, substantially as shown and described.

21,672. COACH-LAMP. WILLIAM R. DEMAREST and HENRI VAN HERCK, New Haven, Conn., assignors to Aaron T. Demarest, New York, N. Y. Filed May 31, 1892. Serial No. 435,075. Term of patent 3½ years.

21,672.



Claim.—The design for a coach-lamp, as herein shown and described.

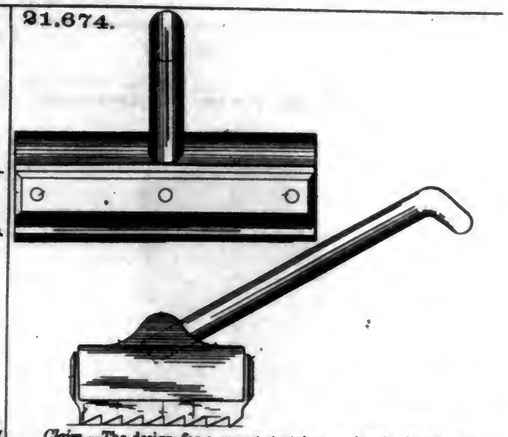
21,673. SCREW-STUD. JONATHAN TURNER, New Bedford, Mass. Filed Jan. 11, 1892. Serial No. 417,732. Term of patent 14 years.



Claim.—The design for a screw-stud, as shown and described.

21,674. CARPET-STRETCHER. JOSEPH A. IRWIN and MARY A. IRWIN, Iuka, Ill. Filed May 31, 1892. Serial No. 435,085. Term of patent 14 years.

21,674.

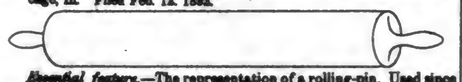


Claim.—The design for a carpet-stretcher, as herein shown and described.

TRADE-MARKS

REGISTERED JUNE 28, 1892.

21,854. CLEANED CURRANTS. CHAPMAN & SMITH COMPANY, Chicago, Ill. Filed Feb. 12, 1892.



Essential feature.—The representation of a rolling-pin. Used since November, 1890.

21,855. REMEDIES FOR DISEASES OF THE STOMACH, LIVER, BLADDER, AND SKIN. WILLIAM H. DANIELS, Dubuque, Iowa. Filed May 17, 1892.

W. W. W.

Essential feature.—The three letters "W. W. W." Used since 1876.

21,856. LINEN AND HEMP YARN AND THREAD. FINLAYSON, BOUSFIELD & Co., Johnstone, Scotland, and Grafton, Mass. Filed Dec. 17, 1889.

STAR

Essential feature.—The word "STAR." Used since April, 1876.

21,857. INTERNAL AND EXTERNAL REMEDIES FOR DISEASES. HOWARDS & SONS, London, England. Filed May 13, 1892.



Essential feature.—A fanciful rectangular border inclosing at opposite ends representations of obverse and reverse faces of medals, with the firm's name "HOWARDS & SONS" located between and printed in script. Used since January 1, 1857.

21,858. FINE SHOES, SLIPPERS, AND SHOE-UPPERS. JOHN M. MOORE SHOE COMPANY, Atlanta, Ga. Filed Apr. 11, 1892.



Essential feature.—The representation of a circle within a circle, with the sole of a shoe across both, with the figures "1891" on the heel, and the words "JOHN M. MOORE SHOE COMP'Y." Used since November 1, 1891.

21,859. NIGHT-ROBES. E. ROSENFELD & Co., Baltimore, Md. Filed Feb. 24, 1892.



Essential feature.—The figure of a female clothed in a night-robe. Used since January, 1892.

21,860. SMOKING AND CHEWING TOBACCO. EDWIN R. W. THOMAS, Clarksville, Tenn. Filed May 23, 1892.

BLUE HENS CHICKEN

Essential feature.—The words "BLUE HENS CHICKEN." Used since April 20, 1892.

21,861. SMOKING AND CHEWING TOBACCO. EDWIN R. W. THOMAS, Clarksville, Tenn. Filed May 23, 1892.

Country Gentleman

Essential feature.—The words "COUNTRY GENTLEMAN." Used since April 20, 1892.

21,862. CIGARETTE-PAPER. BRAUNSTEIN FRÈRES, Paris, France. Filed May 7, 1892.



Essential feature.—The word "DOROBANTUL" and the representation of a soldier identified by his uniform and flag as connected with the Dorobantal Regiment. Used since March 4, 1879.

21,863. CASTILE SOAP. JOSEPH BURCHELL SOAP Co., Canton, Ohio. Filed May 9, 1892.



Essential feature.—The words "MARSEILLES COCHIN CASTILE" and the representation of a horse. Used since January 15, 1872.

21,864. CASTILE SOAP. JOSEPH BURCHELL SOAP Co., Canton, Ohio. Filed May 9, 1892.



Essential feature.—The words "GENUINE HORSE BRAND" and the representation of a horse. Used since January 15, 1872.

21,365. PREPARATION FOR DESTROYING VERMIN ON THE HUMAN BODY. FRED WILFORD BAKER and HENRY LEVY, Chicago, Ill. Filed Apr. 9, 1892.



Essential feature.—The representation of an insect and the words "KILL 'EM." Used since August 1, 1891.

21,366. TOILET SOAP. HERMAN R. DICK, Chicago, Ill. Filed Apr. 12, 1892.



Essential feature.—The word "BROWNIE." Used since April 2, 1892.

21,367. RUBBER STAMPS. HERMAN R. DICK, Chicago, Ill. Filed June 1, 1892.



Essential feature.—The words "BROWNIE STAMPS." Used since May 23, 1892.

21,368. GARMENT-STAYS. PERRIN & DE LONG, New York, N. Y. Filed May 26, 1892.

DE LONG

Essential feature.—The word "DE LONG." Used since May 1, 1892.

21,369. GOLD, SILVER, PLATED, FLAT, AND TABLE WARE AND JEWELRY. WILLIAM B. DURGIN, Concord, N. H. Filed May 28, 1892.

WATTEAU.

Essential feature.—The word "WATTEAU." Used since April 1, 1892.

21,370. GINGHAMS. JOHN FARNUM & Co., Philadelphia, Pa. Filed May 24, 1892.



Essential feature.—The word "HOUSEKEEPER," upon a colored oval field. Used since 1888.

21,371. CEMENT. GIBBS & COMPANY, Limited, London, England. Filed June 2, 1892.



Essential feature.—The representation of a diamond figure and a letter "G" thereon. Used since April 15, 1875.

21,372. TOPICAL REMEDIES. M. GERHART & SON, Baltimore, Md. Filed May 27, 1892.

PANCURA.

Essential feature.—The word "PANCURA." Used since May 15, 1892.

21,373. COUGH SIRUP. FOSTER, MILBURN & Co., Buffalo, N. Y. Filed Sept. 17, 1891.

21,378.



Essential feature.—The representation of a group of pine trees and the words "DR. WOOD'S NORWAY PINE SYRUP." Used since October, 1890.

21,374. TIN AND TERNE PLATES. C. S. MERRICK & Co., New Haven, Conn. Filed Jan. 2, 1892.

STANDARD

Essential feature.—The word "STANDARD" inclosed in an elliptical figure or outline. Used since June 1, 1890.

21,375. COMPOSITION TABLETS FOR FEMALE COMPLAINTS. FRANK PLUMB, Saginaw, Mich. Filed May 27, 1892.



Essential feature.—The word "OTONGA" on a black background. Used since June 1, 1891.

21,376. HARD SOAP. THE STANTON MANUFACTURING COMPANY, Portland, Me., and Philadelphia, Pa. Filed May 10, 1892.



Essential feature.—A Maltese cross having curved outlines and being inclined an eighth of a turn from the upright, together with a letter "N." in the center and letters "S.," "MFG.," "CO.," "S." arranged in the arms of the cross. Used since February 1, 1892.

21,377. REMEDIES FOR DISEASES OF THE BLOOD, LIVER, KIDNEYS, AND STOMACH, AND SKIN DISEASES. EDWARD C. VICK, Newark, N. J. Filed May 26, 1892.

ROOT, BARK AND BLOSSOM.

Essential feature.—The words "ROOT, BARK AND BLOSSOM." Used since June, 1891.

21,378. CANNED FISH, FRUITS, AND VEGETABLES. WHITNEY BROS., Waterford, Wash. Filed May 31, 1892.



Essential feature.—A pictoral representation of Faneuil Hall. Used since April 30, 1892.

21,379. ASPHALT. EDWARD G. CHURCH, Kansas City, Mo. Filed May 10, 1892.



Essential feature.—The representation of a square section of asphalt pavement with the words "STANDARD ASPHALT" in plain letters thereon. Used since May 6, 1892.

21,380. HATS, CAPS, AND BONNETS. JEREMIAH A. HARRINGTON, Boston, Mass. Filed Apr. 25, 1892.



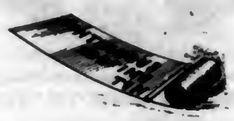
Essential feature.—The representation of a wreath of ivy leaves and a six-pointed shield. Used since January 1, 1883.

21,381. FINISHED LEATHER. E. G. PLACE & Co., Boston, Mass. Filed May 25, 1892.



Essential feature.—The word "POCAHONTAS" and the representation of an Indian. Used since April 1, 1892.

21,382. TIN AND TERNE PLATES. THE AMERICAN TIN PLATE MACHINE AND MANUFACTURING COMPANY, Philadelphia, Pa. Filed May 28, 1892.



Essential feature.—The representation of a partially-open roll. Used since May 16, 1892.

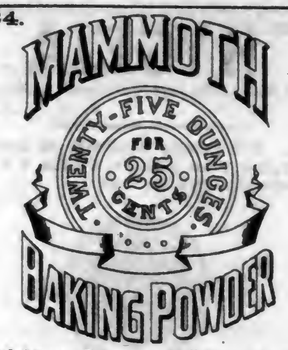
21,383. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING. THE KERR THREAD COMPANY, East Newark, N. J. Filed May 26, 1892.

MERLIN

Essential feature.—The word "MERLIN." Used since May 10, 1892.

21,384. BAKING-POWDER. ATWOOD & STEELE, Chicago, Ill. Filed May 26, 1892.

21,384.



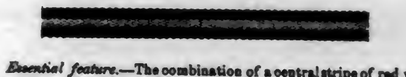
Essential feature.—The words and figures "MAMMOTH BAKING POWDER TWENTY-FIVE OUNCES FOR 25 CENTS." Used since June, 1890.

21,385. PORTLAND CEMENT. T. PICHA & CIE., Ghent, Belgium. Filed Apr. 25, 1892.



Essential feature.—The representation of an old castle with a square and a pair of compasses thereunder. Used since January, 1882.

21,386. FIRE-HOSE. F. REDDAWAY & Co., Manchester, England, and New York, N. Y. Filed May 18, 1892.



Essential feature.—The combination of a central stripe of red with a stripe of blue of equal width lying adjacent to and on each side thereof and parallel therewith running throughout the length of the fabric. Used since 1878.

21,387. FRUITS, NUTS, ORANGES, LEMONS, OLIVE-OIL, AND PICKLED OLIVES. L. J. ROSE & COMPANY, Limited, San Gabriel, Cal., and London, England. Filed May 10, 1892.



Essential feature.—The words "SUNNY SLOPE." Used since January 1, 1887.

21,388. ANTISEPTICS. CHARLES TRUAX, GREENE & COMPANY, Chicago, Ill. Filed June 4, 1892.

MICROZOTOL

Essential feature.—The word "MICROZOTOL." Used since February, 15, 1892.

21,389. WIRE NAILS. THE BAACKES WIRE NAIL COMPANY, Cleveland, Ohio. Filed May 2, 1892.

PURPLE-BLUE

Essential feature.—The word "PURPLE-BLUE." Used since April 7, 1892.

21,390. PHOSPHATED EXTRACT OF WILD CHERRY. ARCHD G. THOMPSON, Chicago, Ill. Filed May 24, 1892.

21,890.

HYGEIA

Essential feature.—The word "HYGEIA." Used since May 2, 1892.

21,891. WOODWORKING MACHINERY OR MACHINES. THE BERLIN MACHINE WORKS, Beloit, Wis., New York, N. Y., Chicago, Ill., and Cincinnati, Ohio. Filed May 7, 1892.



Essential feature.—The representation of a cogged wheel with a seal superimposed thereon, so that the rim and cogs of the wheel and the outer ends of its spokes appear beyond the points of the seal which has on its face the word "INVINCIBLE." Used since May 1, 1892.

21,892. LINEN AND HEMP YARN AND THREAD. FINLAYSON, BOUSFIELD & Co., Johnstone, Scotland, and Grafton, Mass. Filed Dec. 17, 1889.



Essential feature.—The representation of a star. Used since July, 1871.

21,893. VELVETEENS. HARLAN'S LIMITED, Manchester, England. Filed Mar. 23, 1892.

WHITE STAR

Essential feature.—The words "WHITE STAR." Used January 1, 1892.

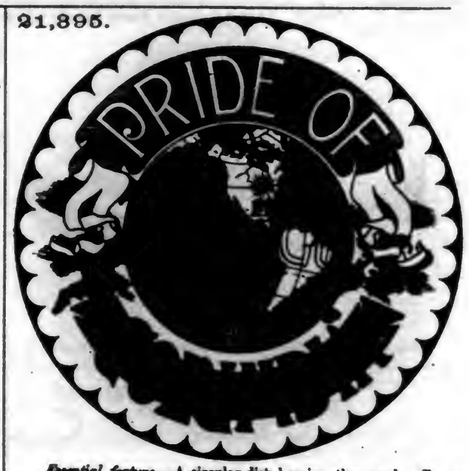
21,894. BOOTS AND SHOES. ISAAC PROUTY & Co., Spencer and Boston, Mass. Filed June 6, 1892.



Essential feature.—The words "WALRUS CALF" and the representation of a walrus. Used since November 13, 1889.

21,895. SHIRTINGS, CAMBRICS, MUSLINS, AND DRESS GOODS. PAUL WHITIN MANUFACTURING COMPANY, Northbridge, Mass. Filed May 31, 1892.

21,895.



Essential feature.—A circular disk bearing the words "PRIDE OF COLUMBIA." Used since January 1, 1892.

21,896. PLUSHES. SIR TITUS SALT, BART., SONS & COMPANY, Limited, Saltaire, England, and Bridgeport, Conn. Filed May 20, 1892.



Essential feature.—A circular figure having radiating points upon its periphery and having thereon in relief the words "SALT'S INDESTRUCTIBLE SILK SEALS." Used since April 15, 1892.

21,897. EXTRACTS, COLOGNES, SACHET-POWDERS, AND TOILET SOAP. THE FIRM OF SOLON PALMER, New York, N. Y. Filed May 9, 1892.

INDIA BOUQUET

Essential feature.—The words "INDIA BOUQUET." Used since August 14, 1878.

21,898. LAGER-BEER. THE VIRGINIA BREWING COMPANY, Roanoke, Va. Filed May 21, 1892.



Essential feature.—A monogram of the letters "VBC" upon the figure of a globe having extended wings at its sides. Used since August, 1890.

THE NORRIS PETERS CO.
PHOTO-LITH. WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE GOLD.

Decided June 2, 1892.

PRACTICE—AN APPLICATION WILL NOT ORDINARILY BE WITHDRAWN FROM ISSUE FOR AMENDMENT OF CLAIMS BY APPLICANT.

The rule that an application will not be withdrawn from issue for the purpose of allowing an applicant to amend his claims is subject to exception only in cases where its enforcement would work irremediable injury.

ON petition.

DRAINAGE-TRAP FOR STEAM-PIPES.

Application of Edward E. Gold filed December 12, 1891, No. 414,808.

Messrs. Arthur C. Fraser & Co. for the applicant.

SIMONDS, *Commissioner:*

This is a petition asking, to quote a part of its words, that the—

above-entitled application be remanded from the Issue Division to the Primary Examiner, and that the annexed amendment be admitted and acted upon. In support of this petition it is submitted that on examination of the claims as allowed it is believed that they do not exactly and definitely express that which is essential to my invention and by which it is distinguished from the prior art, and that they are subject to an inadvertent and unessential limitation.

So far as appears in the showing made this application has had one fair and full examination by the Office, in the course of which applicant has presented certain claims and had them allowed. Now he asks that the case be withdrawn from issue, reopened, and that he be allowed to go into the matter anew. It is a matter of course that an applicant is ordinarily entitled to but one such full and fair consideration and treatment of his application for patent. It is the duty of an applicant not to permit his application to go to allowance unless he is prepared to acquiesce in the claims allowed. The statute gives him rights of appeal both in and out of the Patent Office. If in the prosecution of his application he fails to present claims fully covering his invention according to his idea thereof, or if, having presented them, he fails to insist upon them through the appeals allowed him by the statute, and thereupon his application goes to allowance, his day in court is ordinarily at an end.

The foregoing is the rule. It is subject to exception in cases where the insistence thereupon by the Office would work irremediable injury. No such showing appears in this case.

The petition is denied.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Western District of Pennsylvania.

J. L. MOTT IRON WORKS *v.* STANDARD MANUFACTURING COMPANY.

Decided May 28, 1892.

1. PATENT—INFRINGEMENT—WASTE-VALVES AND OVERFLOWS FOR BATHS AND BASINS.

Letters Patent No. 170,709, for an improvement in waste-valves and overflows for baths and basins, granted to William S. Carr December 7, 1875, *Held*, in view of the state of the art at the time of issue, to be limited to the specific forms of mechanism shown. Claim 2 of Letters Patent No. 358,147, to John Demarest, February 22, 1887, for a kindred improvement, *Held* to cover a mere aggregation and not a patentable combination, and that neither patent is infringed by defendants.

2. PATENTEE LIMITED STRICTLY BY HIS GRANT.

Where an applicant has acquiesced in the rejection by the Patent Office of his original claims by submitting amended claims and taking a patent therefor, the court will limit him to a strict construction of the allowed claims.

Mr. Francis Forbes and *Messrs. W. Bakewell & Sons* for the complainant.

Messrs. Connolly Bros. for the defendant.

ACHESON, *J.:*

The defendant is charged with the infringement of Letters Patent No. 170,709, for an improvement in waste-valves and overflows for baths and basins, granted to William S. Carr December 7, 1875, and No. 358,147, for a kindred improvement, granted to John Demarest February 22, 1887.

The specification of the Carr patent states that overflows for baths and basins have been made of a vertical pipe passing through the woodwork or slab and connected at its bottom end with the sewer-pipe and with a branch to the bath or basin, and at the intersection is a seat for a valve on the lower end of an overflow-pipe within the vertical pipe. Then follow in succession these two clauses:

In this character of overflow the cap for the vertical pipe has been connected to the slab by bolts; and the rod that is used to lift the overflow pipe and valve has passed through this cap.

My invention is made for dispensing entirely with the cap, and allowing the upper end of the vertical tube to be filled by a tube that is lifted with the overflow-pipe, and which is capable of being withdrawn whenever it is necessary to take out the valve for cleaning.

Here succeeds a reference to the accompanying drawings, and then come some explanations of parts theretofore in use—namely, the exterior vertical pipe and its connections at the lower end, and the valve and valve-seat and valve-stem; and it is explained that when the valve is upon its seat water accumulates in

the bath or basin until it flows over the upper edge of or through apertures in the hollow valve-stem, (the overflow-pipe;) but when the valve is raised from its seat the contents of the bath or basin flow off by the escape-pipe. Then follows this clause:

My improvement relates to a flange, *i*, applied around the upper end of the cylinder *a*, and a lock-nut, *l*, at the upper end thereof, whereby the table or slab *m* is clamped between such lock-nut and the flange *i*.

The "cylinder *a*" is the "vertical pipe" already mentioned—the stand-pipe which incloses the overflow-pipe. In the patent drawing the lock-nut *l* is shown to be a flanged thimble with a top opening screwed upon the outside of the upper end of the cylinder *a* and resting upon the upper side of the slab *m*, and the "flange *i*" is shown as seated against the under side of the slab *m*. The experts on both sides state that the drawing represents the flange *i* to be integral with the cylinder *a*. Manifestly upon the face of the drawing this is so, and nothing in the specification suggests any different construction of those parts.

The specification states:

The tubular stem *f* of the valve *e* is continued through the lock-nut, and of a size to fit the interior thereof loosely; and in this enlarged portion *n* of such stem there is an L-shaped slot, as seen in Fig. 2, so that a screw or pin, *o*, passing through the lock-nut, may enter this slot, in order that the valve may be held up, after it has been raised, by partially turning the tubular stem, for the pin to enter the horizontal portion of that slot. I remark, however, that a spring-catch in the tube *n* might be employed to hold the valve up, the end of said spring-catch resting upon the upper end of the lock-nut. * * *

If desired, an oval stem, with a neck therein, might be employed if a movable cover is placed inside the lock-nut, through which this stem passes.

In Carr's original application the first two claims read thus:

1. The lock-nut *l* and collar *i*, in combination with the tube *a*, pipes *b* and *c*, and removable tubular stem *f*, and valve *e*, substantially as set forth.
2. The tubular stem *n*, passing through the lock-nut *l* and provided with means for sustaining said stem when elevated, in combination with the valve *e*, stem *f*, and tube *a*, substantially as set forth.

The Patent Office rejected those claims on a reference to the patent of Foley, and Carr then amended his application by striking out said two claims and substituting the following disclaimer and claim:

I do not claim an overflow-tube, valve, and tubular stem; nor the device shown in the patent of J. T. Foley, July 21, 1874.

I claim as my invention—

1. The tube *a*, provided with the collar *i* and lock-nut *l*, for clamping the slab *m*, in combination with the tubular stem *f* of the valve *e*, passing through the lock-nut *l*, and means for sustaining the tube *f* when elevated, substantially as set forth.

This claim was allowed and the patent issued.

The Foley patent, which was for an improvement in this class of waste-valves and overflows, was granted originally July 21, 1874, and was reissued November 16, 1875. In his specification, after mentioning an objection arising from the difficulty in removing the tube and valve for cleansing, Foley says:

My invention relates to an improvement that is made for allowing the valve and overflow to be easily removed. For this purpose the valve and its tubular stem is continued up through the marble or wooden slab or table contiguous to the basin or bath, and provided with a removable cap, through which the stem to the handle passes.

The special features of Foley's improvement are thus explained in his specification: "The stand-pipe *f*" of the bath or basin overflow passes up through the slab and is provided with a removable cap, "preferably screwed upon the tube *f*," and through this cap is a rod *m*, with a "handle *n*" at the upper end, and the lower end of the rod is connected by a bridge or bail with the "tubular stem *o*," which is within the tube *f* or stand-pipe and forms the overflow-pipe. The rod *m* is so made that when it is raised and partially revolved it will suspend the tubular stem and valve. For this purpose the rod *m* is made "oval sectionally, with a circular neck at a proper place," to allow a turning motion when the valve has been lifted the proper distance. If necessary to remove an obstruction, or for cleansing purposes, the stem and valve may be drawn out by removing the cap. The drawing shows a screw connection between the removable cap and the tube or stand-pipe *f*.

The defendant's stand-pipe is not provided with the flange or collar *i* of the Carr patent, or with any equivalent thereof, but is the same as the Foley stand-pipe. There is in the defendant's structure a tubular flanged sleeve, which screws upon the upper threaded end of the stand-pipe, and this screw connection is substantially identical with the connection between the corresponding parts shown in the Foley patent. This tubular flanged sleeve is exteriorly screw-threaded to receive a nut to clamp the sleeve to the table or slab, and this attachment of the sleeve to the table or slab is secured irrespective of whether the sleeve is attached to the stand-pipe or not. The upper portion of the defendant's overflow-tube is screw-threaded, and to it is screwed a handle-cylinder having thereon two diametrically-opposite projecting vertical lugs at different heights, and this handle-cylinder extends up through the tubular flanged sleeve. This sleeve has an inwardly-projecting annular flange, which acts as a cap or cover for the annular space between the stand-pipe and the overflow-tube within it. The inwardly-projecting flange has extending through it a vertical groove, which co-operates with the projecting lugs on the handle-cylinder, thus: When the overflow-tube is lifted, the upper lug passes through the vertical groove, and if the handle-cylinder is then turned the upper lug will rest upon the upper surface of the tubular sleeve and support the overflow-tube and valve in a raised position; but if it is desired to withdraw the overflow-tube and valve altogether this can be done by turning the handle-cylinder until the lower lug registers with the vertical groove. These devices for manipulating and sustaining the overflow-tube when elevated, we think, are substantially different from the means shown or suggested in the Carr patent.

We now turn to a consideration of the construction to be given to the Carr patent. A careful study of the proofs has convinced us that Carr's invention was by no means one of any primary character. He was an improver simply, and if his improvement called into exercise inventive genius at all the advance made was not great. Undoubtedly Foley had previously conceived the idea of making the valve and its tubular stem easily removable from the stand-pipe and had devised means to accomplish that result. Hence when Carr's original claims were rejected on the Foley patent he struck out the word "removable" as applied to his "tubular stem *f*," and also discarded the "tubular stem *n*" as a distinct element of his combination.

Again, it is worthy of notice that in his second original claim the flange or collar *i* was not mentioned; but in his claim as finally formulated he inserted the words—

the tube *a*, provided with the collar *i*.

Clearly this became an essential part of the combination. Indeed, it seems to us that the specific devices disclosed for connecting the slab and stand-pipe constitute the especial feature of the invention as finally claimed. This view is greatly strengthened when we read, in connection with Carr's disclaimer and amended claim, the declaration contained in his specification:

My improvement relates to a flange, *i*, applied around the upper end of the cylinder *a*, and a lock-nut, *l*, at the upper end thereof, whereby the table or slab *m* is clamped between such lock-nut and the flange *i*.

We have already adverted to the fact that the patent drawing plainly shows that the flange or collar *i* on the stand-pipe is rigid, and no hint to the contrary is discoverable in the specification. Nor is any alternative device for securing the stand-pipe to the slab *m* suggested, although we do find several different suggestions as to means for sustaining the overflow-tube when elevated. It is therefore quite inadmissible to adopt the theory of the plaintiff's expert that the described means for clamping the slabs were merely illustrative of any suitable means. (*Snow* v. *Lake Shore, etc., Railway Co.*, 39 O. G., 1081; 121 U. S., 617, 630.) Again, the action of the patentee upon the rejection of his original claims requires that his claim as allowed shall be construed strictly against him and in favor of the public. (*Sargent* v. *Hall Safe and Lock Co.*, 31 O. G., 661; 114 U. S., 63; *Roemer* v. *Peddie*, 49 O. G., 2151; 132 U. S., 313.) Finally, in view of the previous state of the art, especially as found in the Foley patent, we are of the opinion that the plaintiff must be restricted to the specific forms of mechanism shown in Carr's patent, (*Chicago and Northwestern Railway Company* v. *Sayles*, 15 O. G., 243; 97 U. S., 554; *Bragg* v. *Fitch*, 39 O. G., 829; 121 U. S., 478,) but, as we have seen, the defendant's structure does not contain the flange or collar *i* or any equivalent therefor, and in other respects his devices are not colorably but materially different from those of the Carr patent.

The claim of the Demarest patent which it is alleged the defendant infringes is as follows:

2. The combination, with the horizontal waste-pipe C and vertical stand-pipe E, of the socket G, screwed upon the exterior of the stand-pipe E, and having a flange resting upon the slab, and an inwardly-projecting pin, 17, the overflow-pipe and valve within the stand-pipe, the tubular cap P, screwed upon the exterior of the overflow-pipe and slotted for the reception of the pin 17, and the lock-nut 16 at the lower end of the tubular cap P, substantially as and for the purposes set forth.

In our apprehension we have here several groups of devices performing distinct functions without co-operative action. The particular means for attaching together the socket G and the stand-pipe E are quite independent in operation and function of the devices for sustaining the overflow-pipe when raised—namely, the pin 17 and the communicating slots in the cap P. So, too, the means by which the screw attachment of the cap P to the overflow-pipe is effected and kept secured by the lock-nut 16 are distinct from and independent of either of the other two groups of devices. Guided by the rulings in *Pickering* v. *McCullough*, (21 O. G., 73; 104 U. S., 310,) *Hendy* v. *Miners' Iron Works*, (43 O. G., 1117; 127 U. S., 370,) *Royer* v. *Roth*, (49 O. G., 1987; 132 U. S., 201,) *Union Edge Setter Co.* v. *Keith*, (55 O. G., 285; 139 U. S., 530,) and other cases, we reach the conclusion that this claim is for a mere aggregation of parts and not a patentable combination; but if a different view of this claim were allowable, and patentable novelty were conceded, still no infringement of the combination is shown, for the defendant does not employ the inwardly-projecting pin 17 and the slots in the tubular cap P, but means substantially different. It may be added that if Carr's invention was not a primary one much less was Demarest's, and therefore the principle of the cases of *Railway Company* v. *Sayles*, *supra*, and *Bragg* v. *Fitch*, *supra*, has here full application.

We are of the opinion that the plaintiff's case fails as to both the patents sued on.

Let a decree be drawn dismissing the bill of complaint, with costs.

Buffington, *J.*, concurs.

U. S. Circuit Court—Northern District of Illinois.

LEE *et al. v.* NORTHWESTERN STOVE REPAIR COMPANY *et al.*

Decided May 3, 1892.

PATENT—INFRINGEMENT—STOVE-FIXTURES.

Patent No. 289,802, for improvements in a heating-stove, issued December 11, 1883, to Philo D. Beckwith, is for an invention designed to convert a wood-burning stove into a coal-burner and covers the different devices and fixtures necessary to accomplish this result. Sustained, and *held* infringed by the sale of the different fixtures by defendants, though they do not sell a complete set of such fixtures to any one person and sell no stoves with them.

BILL by Fred E. Lee and William G. Howard against the Northwestern Stove Repair Company and others to restrain the infringement of a patent.

Messrs. Howard & Roos and *Messrs. Banning, Banning & Payson* for the complainants.

Messrs. Offield, Towle & Linthicum for the defendants.

BLODGETT, *J.*:

An injunction and accounting are sought for by the bill in this case for the alleged infringement of Patent No. 289,802, granted December 11, 1883, to Philo D. Beckwith, for a "heating-stove." The patentee, Beckwith, several years before the granting of this patent, obtained three or more patents, under which he manufactured a heating-stove which obtained a wide reputation and sale as a wood-burner by the name of "Round Oak Stove." It consisted of a vertical sheet-iron cylinder mounted on a cast-iron base and fire-pot supported by legs in the usual manner, the fire-pot resting on the base, and a door above the fire-pot for putting in the fuel, with an ash-pit and a shaking-grate at the bottom of the fire-pot, and the usual air-inlets for a draft up through the grate and fire-pot. In April, 1874, he obtained a patent on a modification of his stove to convert it into a coal-burner; but, however well this may have operated as a soft-coal burner, it was not, as the proof shows, well adapted to the burning of hard coal, and the purpose of the device now in question was to change his form of stove into a hard-coal burner. The patent in question is upon a set of fixtures which, being inserted in the cylinder of a Round Oak stove, change it from a wood or soft-coal burner to a hard-coal burner. The patentee says in regard to his device:

My present invention consists in the arrangement of a basket, a shaking-grate, and the means employed for supporting the parts within the fire-pot of the stove; also, in the construction of the parts that enables me to use a coal-basket cast integral, one that may be readily inserted or taken out through the ordinary stove-door, as set forth in the following specification.

This invention is designed as an improvement upon my Letters Patent, dated April 28, 1874, No. 150,277, and is designed for burning hard and soft coal.

Briefly described, the device consists of a flaring ring cast in two sections, which fit into the top of the fire-pot in which the coal-basket, cast integral, is suspended, this ring having holes in its periphery, into which pintles cast on the under side of the flaring ring of the coal-basket pass, so that when the coal-basket is seated in the ring the ring, although cast in two sections, is made integral or held together by these pintles. This sectional ring is also provided with legs which extend downward to and rest on an annular flange at the base of the fire-pot. A grate rests on shoulders or notches cut in the lower ends of the legs of the annular ring, so that it forms the bottom of the coal-basket, with reciprocating shaking-bars resting upon it. The claims of the patent are:

1. The sectional flaring ring, fitting within the top of the fire-pot of the herein-described stove, being adapted to encircle and support the basket, (cast integral,) as and for the purposes set forth.
2. In a heating-stove, the combination of the sectional ring having leg-supports attached thereto, being adapted to fit within the fire-pot of the stove, said leg-supports resting upon the horizontal flange of the fire-pot, substantially as set forth.
3. The coal-basket, cast integral, having a flaring flange with a series of pintles projecting downward from said flange, for the purposes specified.
4. The combination of the sectional ring with leg-supports attached thereto, said supports resting upon the flange of the fire-pot, being also provided with horizontal supports for receiving and retaining the reciprocating grate, substantially as set forth.

Infringement is charged as to all these claims.

The defenses are: (1) That the patent is void for want of novelty; (2) that the sole business of defendant is that of furnishing repairs or parts of stoves to replace parts which have been worn or burned out by use, and that it does not sell, as a rule, the entire set of fixtures called for by this patent to a customer at the same time.

It is conceded (but if it were not the proof shows) that defendant obtained a complete set of the parts or fixtures called for by the patent and has made castings from them, which it offers for sale to customers as ordered, so that the charge of infringement may be considered as established. To sustain the defense of want of novelty, defendants have put in evidence a large number of prior patents on stoves, and have also examined at considerable length a well-known expert in the art, who testified that in view of the art all the patentee did in the production of this device was in the line of improvements by the exercise of mere mechanical skill on older and well-known devices. A careful study of the older patents put in evidence fails to show to my satisfaction that there was no invention called for to produce the device covered by this patent. It is true that annular rings and coal-baskets and fire-pots are severally shown in these old patents, but in no such relations nor with the functions they bear in the device in question. The problem this patentee set himself about was to devise a set of fixtures which when coacting would convert his wood-burning stove into a successful stove for burning hard coal. His patent of 1874 was, I conclude from the proof, a partial success, burning soft coal as well as wood; but it was a failure for burning hard coal, the main cause of the failure in that regard probably being the oval openings left between the upper part of the fire-pot and the coal-basket, which prevented a sufficiently-strong draft through the hard coal to secure combustion. To remedy this defect in the 1874 patent, he devised the flaring sectional ring fitting closely to the top of the fire-pot, and as this ring was of the same diameter as that of the fire-pot at the top, and so would not pass into the door entire, he was obliged to have it made in sections, so that it could be readily put in place through the stove-door, and then so arranged the holes in the ring and the pintles on the under side of the flaring rim of the coal-basket that they connected with the ring through these holes, and thereby held the ring firmly together in place. This sectional ring had to be supported in its position at the top of the fire-pot, and to do this legs are attached to its under side, which extend down to and rest on the annular flange at the base of the fire-pot, and notches in the feet or lower ends of these legs furnish a seating for the grate at the bottom of the coal-basket. The expert argues that this flaring sectional ring could have been held at the top of the fire-pot by an inwardly-extending flange at that point; but the structure of the stove as a wood-burner not only did not require such a flange, but such a flange would undoubtedly have been objectionable in that place as a wood-burner, as it would have been an obstruction to the placing of the wood in the fire-pot.

What Beckwith was seeking to do was to adapt his wood-burning stove so that the burning of hard coal could be accomplished by the use of these fixtures, and yet the stove be readily restored to its old function of a wood-burner by the removal of these fixtures, and to meet this requirement he supported the ring upon these legs instead of reconstructing his original stove by casting an inwardly-projecting flange at the top of the fire-pot, as the expert says he might have done. As a device, then, for suspending the coal-basket in the fire-pot, it seems very clear to me, this sectional ring involved invention. In construing this patent due consideration must be given to the object the patentee was seeking to accomplish, which was not to make a new stove, but to impart a new function to an old one, and this, it seems to me, he did by the introduction of these fixtures into his old wood-burner. The first claim of the patent is on this sectional ring adapted to encircle and support the coal-basket. This, as I construe it, necessarily reads into this claim the legs, as without them or their equivalent the ring could not support the basket. The second claim is substantially the same as the first, being in terms for the ring and the leg-supports; and the fourth claim is, in my estimation, only another form of statement for the first and second claims. The third claim is for the coal-basket cast integral with flaring flange and a series of pintles projecting downward from the flange. The proof shows coal-baskets cast integral, and in the Johnston patent shows a coal-basket for a grate or open fire, with a pintle projecting downward from the ring for the purpose of holding it in place. But this coal-basket does more than hold itself in place by its pintles. It holds

the sectional ring in which it is seated in place by its series of pintles; and while it may be said that one pintle would suggest more, if more were needed, I do not think it would suggest a series of pintles to make a sectional ring practically integral. I therefore, though with less confidence than in regard to the other claims, feel constrained to hold this claim also valid.

As to the second point—that defendants do not infringe because they only sell such of these fixtures as each customer may call for, and that they do not infringe unless they sell them all to one customer—it seems enough to say that these four claims are, with some variations in phraseology in the first, second, and fourth, for the sectional ring with its supporting-legs and the coal-basket cast integral, with flaring ring and the pintles as separate parts. If defendants sell a sectional ring such as is described in this patent to a customer, they infringe upon the claims which cover this ring. If they sell a coal-basket such as is described in the patent, so arranged as to be seated in this ring, with pintles to hold the ring together, they infringe on the claim which covers the coal-basket—that is, these claims are upon these separate fixtures, the sectional ring and the coal-basket, as described in the patent, and the patent is infringed by the making or selling of either of these fixtures covered by these claims, respectively.

As to the argument advanced at the hearing that a stove must be read into each of these claims to make the fixtures covered by this patent operative, and hence that defendants do not infringe because they do not make Round Oak stoves, I will only say the patent covers these fixtures specifically, and it is no more necessary to read a stove into these claims than it would be to read a railroad into a patent on a car-truck or a locomotive. Of course, we all know that these fixtures are only adapted to certain uses; but the presumption is that if defendants make and sell them they do so only that the purchaser may apply them to such uses. The Howe sewing-machine needle was only useful in connection with a sewing-machine; but that did not make it necessary that a man should make an entire sewing-machine in order to infringe the Howe patent.

A decree may be prepared finding that defendants infringe, and for an injunction and accounting. No decree as to individual defendants.

U. S. Circuit Court—Eastern District of New York.

AMERICAN AUTOMATON WEIGHING MACHINE COMPANY *et al. v.* BLAUVELT.

Decided April 29, 1892.

PATENT—INFRINGEMENT—AUTOMATIC WEIGHING-MACHINE.

Patent No. 336,042, for an automatic weighing-machine, issued February 9, 1886, to Percival Everett, claims "a weighing-machine having an aperture for receiving a coin, a weighted lever, a dial and index-hand, and intermediate mechanism connected with the same and whereby the coin, when deposited in the receiver shall operate the lever and cause the hand to indicate the weight of the person or body being weighed." *Held* that the patent is for a machine as a whole having those parts with such other known parts necessary to constitute such a machine, and that as such other necessary parts are described or referred to in the patent the claim must be read with reference to them, and therefore covers an operative machine.

BILL by the American Automaton Weighing Machine Company and the National Weighing Machine Company against James M. S. Blauvelt for infringement of a patent. Decree for complainant.

Mr. Edwin H. Brown for the complainant.

Mr. Theron G. Strong and *Mr. Charles F. Mathewson* for the defendant.

WHEELER, *J.*:

This suit is brought for infringement of the first claim of Letters Patent No. 336,042, granted February 9, 1886, to Percival Everett for a weighing-machine that will indicate weight on a dial only when a coin is put into a slot and falls upon a weighted lever and by intervening mechanism carries an index over the dial until it is stopped by the weighing mechanism, where it will indicate the weight. This claim is for—

A weighing-machine having an aperture for receiving a coin, a weighted lever, a dial and index-hand, and intermediate mechanism connected with the same and whereby the coin, when deposited in the receiver, shall operate the lever and cause the hand to indicate the weight of the person or body being weighed.

The defenses, in substance, are lack of patentable invention, want of novelty, and non-infringement. The patent is not for any weighing apparatus, nor for the slot, or weighted lever, or dial and index, or mechanism between the lever and index, but is for a weighing-machine as a whole, having those parts with such other known parts as are necessary to constitute such a machine. If no parts were to go into the machine but those mentioned in this claim, it would, as argued, be wholly inoperative; but the patent describes or refers to all such other parts as are necessary to make it complete and operative, and the claim is to be read with reference to such other described or known parts. (*Loom Co.* v. *Higgins*, 105 U. S., 580.) When so read, it seems to well set out and cover an operative machine containing these several parts working together to accomplish the result sought. It appears to be as specific and to as well describe these parts as operating in this machine for its purposes as either of the four claims sustained in *Morley S. M. Co.* v. *Lancaster* (129 U. S., 263; 9 Sup. Ct. Rep., 299) did the patented parts of the machines there for their purposes. Each of these parts was old, was referred to as known, and had been in use before; but no such machine had ever been made before and they had never been brought together for that or any other purpose before. They were not merely made to act as they had separately done before, but were made to act together in this new machine to accomplish its purposes as they had never done before. Contriving such a machine from these and other things seems clearly to have been invention and making it, if new, a patentable invention.

The prior things relied upon to show want of novelty are chiefly ancient vessels from which holy water would be released by a coin put through a slot and falling upon a weighted lever and opening a valve, and vending-machines in which the coin by operating a weighted lever releases a drawer. In all of them there were the weighted lever operated by a coin put through a slot and other necessary parts for such contrivances, but no weighing mechanism, index, or dial. None of them was or was at all like a weighing-machine, and causing such simple movements as those

by a coin and weighted lever was very different from so connecting weighing mechanism with an index and dial as to show varying weights on the dial by a coin put through a slot and moving a weighted lever. Neither of them nor anything else produced seems to come anywhere near anticipating the invention covered by this claim.

The defendant's structure is a weighing-machine having a slot for a coin, a weighted lever, a dial and index, and intermediate mechanism connected with them whereby the coin operates the lever and causes the index to indicate the weight on the dial, the lever releases a part of the intermediate mechanism, which by gravity follows the weighing mechanism as it is moved downward by what is being weighed, and by the other intermediate mechanism carries the index over the dial. The machinery by which the weighted lever operates the index is very different in form from that of the patent; but the claim is not for any particular intermediate mechanism there. Neither is new, and for this purpose one appears to be the equivalent of the other. As a weighing-machine the defendant's structure accomplishes the same thing in substantially the same way as that of the patent and embodies all the elements of this claim of the patent. Upon these considerations it appears to be an infringement. (*Morley Sewing Machine Co.* v. *Lancaster*, 47 O. G., 267; 129 U. S., 263; 9 Sup. Ct. Rep., 299.) And on the whole the orators appear to be entitled to a decree for an injunction and an account, according to the prayer of the bill.

Let there be a decree for the orators that the first claim of the patent is valid, that the defendant has infringed, and for an injunction and an account, with costs.

U. S. Circuit Court—Eastern District of Louisiana.

BATTLE *et al. v.* FINLAY *et al.*

Decided April 8, 1892.

TRADE-MARK—JURISDICTION OF FEDERAL COURTS.

The decision of the Supreme Court in *Trade-Mark Cases* (100 U. S., 82) does not affect the jurisdiction of Federal courts in matters relating to Trade-Marks where the jurisdiction is otherwise secured by reason of diverse citizenship of the parties, since property-rights in Trade-Marks come from the common law and not from the statute.

BILL by Battle & Co. against Finlay & Brunswig for injunction against the infringement of a Trade-Mark. Injunction allowed.

Messrs. Denegre & Bayne for the complainants.
Mr. B. R. Forman for the defendants.

BILLINGS, *J.*:

This cause is submitted upon bill, answer, depositions, and exhibits for a final decree. Upon the motion for an injunction *pendente lite* an opinion was rendered by the circuit judge, Pardee, reported in 45 *Federal Reporter*, 796, which states the facts and the law of the case as they were presented at that preliminary hearing with completeness. The proofs have not varied the case from its features as then presented, and I have only to refer to that opinion and adopt it, as, in my view, the law of the case is correctly stated. The solicitor for the defendants has submitted views and authorities upon one or two points not then presented, which I will consider. It is urged that since the decision of the *Trade-Mark Cases* (100 U. S., 82) this court can derive no jurisdiction from the United States statute concerning Trade-Marks, and therefore that the equity jurisdiction can exist only in case of fraud upon and intended deceit of the public by the defendants, which the solicitor urges are wanting upon the proofs in this case. The first proposition is correct; but the jurisdiction of the court is derived from the citizenship of the parties, the complainants being citizens of the State of Missouri and the defendants being citizens of Louisiana. The equity jurisdiction of these Trade-Mark cases is founded upon a long line of English and American cases, even when the rights of the parties are to be determined entirely by the written and unwritten laws of the States. See *Trade-Mark Cases*, 100 U. S., 82, where the Court say:

> The right to adopt and use a symbol or a device to distinguish the goods or property made or sold by the person whose mark it is, to the exclusion of use by all other persons, has been long recognized by the common law and the chancery courts of England and of this country, and by the statutes of some of the States. It is a property-right for the violation of which damages may be recovered in an action at law, and the continued violation of it will be enjoined by a court of equity, with compensation for past infringement. This exclusive right was not created by the act of Congress, and does not now depend upon it for its enforcement. The whole system of Trade-Mark property and the civil remedies for its protection existed long anterior to that act, and have remained in full force since its passage.

(See, also, 2 Kent Com., 8th ed., p. 453, marg. p. 372; *Taylor* v. *Carpenter*, 11 Paige, 292; *Partridge* v. *Menck*, 2 Barb. Ch., 101, and cases cited in the last case.) In these cases equity jurisdiction was maintained because the right on the part of merchants to use certain marks, whereby the public are informed that goods or products are made or selected for sale by them, is recognized as being a species of property, and because the wrongful interference with or employment of such marks by others injured a business. Undoubtedly there must be imitation or simulation—

> in such a manner as to be likely to deceive and impose upon the complainant's customers or the patrons of his trade or business.

This is stated to be the test by Chancellor Walworth in *Partridge* v. *Menck*, (2 Barb. Ch., at page 103,) and in this connection may be noticed the fact urged by defendants' solicitors—that defendants' name was printed upon the label. The answer to this suggestion is that the employment of the arbitrary term "Bromidia," coined by the complainants, which has no meaning of itself, and is used solely to indicate in the trade the complainants' compound, is a simulation not overcome by the fact that the defendants printed their own name on each label. As to the effect to be given to the printing of the name of the person who appropriates the Trade-Mark along with it, the Supreme Court (46 O. G., 971; *Menendez* v. *Holt*, 128 U. S., 521; 9 Sup. Ct. Rep., 143) say:

> That is an aggravation and not a justification, for it is openly trading in the name of another upon the reputation acquired by the device of the true proprietor.

Unless a simulation was intended, it is difficult to see why the name "Bromidia" should be adopted by defendants, which has no meaning whatever, except as connected with complainants' business and as associated with and indicative of a soothing or soporific mixture prepared and sold by them.

I think the complainants are entitled to a decree perpetuating the injunction.

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DIGEST OF DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

OFFICIAL GAZETTE—April–June, 1892.

DIGEST OF DECISIONS.

[Decisions of United States courts are indicated by an asterisk (*) and of the State courts by a double dagger (‡).]

ABANDONED APPLICATIONS.

FILES OF, NOT OPEN TO THE PUBLIC

Abandoned applications on file in the Patent Office are not open to public inspection.

[*Ex parte* Wyckoff, 1104.

ABANDONMENT.

(See Reissues, 2.)

ABANDONMENT—REDUCTION TO PRACTICE.

W. filed an application in 1884, which became abandoned November 17, 1887, by reason of two years' lack of prosecution. In March, 1887, he had reduced the improvement to practice in public, and in January, 1889, his present application was filed. *Held* that the reduction to practice before the abandonment of the first application and the filing of the second application within two years thereafter saved his rights from dedication to the public.

[Witherow *v.* Robert, 787.

ACCESS TO THE FILES OF THE PATENT OFFICE.

(See Abandoned Applications; Assignments, 1.]

AGREEMENTS.

(See Assignments, 1.)

AMENDMENTS.

(See Withdrawal of Case from Issue.)

ANALOGOUS DEVICES.

(See Invention, 1.)

ANSWER TO BILL.

(See Infringement, 1; Suits for Infringement.)

ANTICIPATION.

ANTICIPATION—WHAT IS NOT.

It is not sufficient to constitute anticipation that the device relied upon might by modification be made to accomplish the function performed by the patent in question if it were not designed by its maker nor adapted nor actually used for the performance of such functions.

[*Topliff *v.* Topliff *et al.*, 1257.

APPEAL TO EXAMINERS-IN-CHIEF.

(See Appeal to the Commissioner, 2.)

PRACTICE—"INCOMPLETE COMBINATION"—FUNCTION—COURSE OF APPEAL.

The question of "incomplete combination of elements" and an objection that a claim covers only the function of a machine involve the merits and are appealable to the Examiners-in-Chief in the first instance.

[*Ex parte* McClellan, 1763.

APPEAL TO THE COMMISSIONER.

(See Interference, 12.)

1. APPEALS ON INTERLOCUTORY MOTIONS.

No appeal lies to the Commissioner from a decision of the Examiner of Interferences affecting the evidence before his own tribunal; but a motion to take additional testimony is not within this rule, and an appeal from the Examiner's adverse decision thereon is properly taken to the Commissioner.

[Guerrant *v.* Cable *v.* Coffee, 629.

2. OBJECTION TO NEW MATTER—COURSE OF APPEAL.

When the objection to new matter is that it is merely in the descriptive part of the specification or drawing and does not affect the scope of the claims, an interlocutory appeal lies from the Examiner to the Commissioner; but when new matter appears in or affects a claim or claims the appeal lies to the Examiners-in-Chief.

[*Ex parte* Suter, 1431.

APPLICATIONS.

(See Abandoned Applications; Assignees; Divisional Applications; Division of Applications.)

ARCHIVES OF THE OFFICE.

(See Caveats.)

ASSETS.

(See Assignees in Bankruptcy.)

BANKRUPT—UNPRODUCTIVE PROPERTY LEFT OUT OF SCHEDULE OF ASSETS.

Where a bankrupt purposely leaves out of his schedule of assets certain property which he regards as unproductive and valueless, and his assignee in bankruptcy is a whole year winding up the estate and gives no sign of his wish to assume the property, *Held*, in view of all the facts, a plain election within the discretion of the assignee not to accept the property, and that a transfer by the party himself some time subsequent to the winding up of his affairs vests a good and valid title in the purchaser.

[*Sessions *v.* Romadka *et al.*, 939.

ASSIGNEES.

(See Power of Attorney.)

ASSIGNMENT BEFORE APPLICATION IS MADE—ASSIGNEE CANNOT APPLY IF INVENTOR DIES—REVISED STATUTES, SECTION 4896.

The assignee of an inventor who died before making his application has no standing as an applicant before the Patent Office, and this is true where the application sought to be made by the assignee is a division of one properly filed by the inventor.

[*Ex parte* Stevens, 299.

ASSIGNEES IN BANKRUPTCY.

(See Assets.)

STATUTE OF LIMITATIONS UNDER SECTION 5057 OF THE REVISED STATUTES—EFFECT OF ABANDONMENT OF A CLAIM BY BANKRUPT'S ASSIGNEE UPON.

Where an assignee in bankruptcy elects to abandon property to the bankrupt before the expiration of the period of limitation within which he may bring suit under section 5057, the effect is as if the property abandoned had never been included in the assignment, and the statute of limitations is not pleadable in bar of a subsequent action for infringement by the owner of the patent.

[*Sessions *v.* Romadka *et al.*, 939.

ASSIGNMENTS.

(See Reissues, 3.)

1. WHAT DOES NOT AMOUNT TO.

A party who bases his rights as an assignee upon an instrument recorded in the Patent Office before application was made and not specifically identifying the invention will not be permitted to examine the files because such an instrument is not an assignment, but a mere executory agreement.

[*Ex parte* Lorentz, 159.

2. QUESTIONS OVER WHICH THE COMMISSIONER HAS NO JURISDICTION.

The Commissioner of Patents has no judicial authority to take action in disputed questions of title under an assignment, nor is it ordinarily within his discretion to interfere to prevent the revocation of a power of attorney by an applicant.

[*Ex parte* Gallatin, 1104.

ATTORNEYS.

(See Assignments, 2; Power of Attorney.)

BANKRUPTCY.

(See Assets.)

BAR TO PATENT.

(See Public Use or Sale.)

BILL IN EQUITY.

(See Suits for Infringement.)

BURDEN OF PROOF.

(See Interference, 5, 11; Priority of Invention, 1.)

CAVEATS.

SECTION 4902 OF THE REVISED STATUTES—CAVEAT.
Section 4902 of the Revised Statutes provides for the filing of caveats and limits their operative term to one year; but it does not limit the condition of secrecy on the part of the Office to that term.
[*Ex parte* Pollok *et al.*, 939.

CHANGE OF STRUCTURE.

(See Invention, 3.)

CLAIMS.

(See Appeal to Examiners-in-Chief; Combinations; Construction of Specifications and Patents; Examination of Applications, 1.)

COMBINATIONS.

(See Appeal to Examiners-in-Chief; Examination of Applications, 1.)

DEFINITE STATUS IN ART AND MANUFACTURE.
Where a certain claim was considered as a *combination* claim and not a claim for *some of the elements* of the combination, *Held* that the subject-matter of the claim had not acquired a definite status in art and manufacture.
[*Ex parte* Connelly, 787.

COMMISSIONER OF PATENTS.

(See Assignments, 2; Interference, 12; Petition to Commissioner.)

CONCEPTION OF INVENTION.

(See First and Original Inventor.)

CONCESSION OF PRIORITY OF INVENTION.

(See Interference, 2.)

CONSTRUCTION OF CLAIMS.

A PATENTEE BOUND BY THE RESTRICTIONS IMPOSED BY THE PATENT OFFICE.
A restricted claim as finally formulated by an applicant for a patent and allowed by the Office after the rejection of broader claims is strictly binding upon the patentee, and he is precluded from afterward insisting on a broader construction.
[*Lane v. Park *et al.*, 788.

CONSTRUCTION OF RULES.

(See Divisional Application; Examination of Applications, 2; Interference, 1, 3, 7, 9; Petition to Commissioner.)

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Anticipation; Disclaimers; Invention; Priority of Invention.)

PATENTEE LIMITED STRICTLY BY HIS GRANT.
Where an applicant has acquiesced in the rejection by the Patent Office of his original claims by submitting amended claims and taking a patent therefor, the court will limit him to a strict construction of the allowed claims.
[*J. L. Mott Iron Works *v.* Standard Manufacturing Company, 2067.

CONSTRUCTION OF STATUTES.

(See Assignees in Bankruptcy; Assignees; Caveats; Damages and Profits, 2, 3, 4; Depositions; Disclaimers; Public Use or Sale; Suits for Infringement, 1.)

CONTRACTS.

(Suits for Infringement, 2.)

1. CONTRACTS AGAINST PUBLIC POLICY.
A contract wherein one party, in consideration of receiving a license from the other party to use certain patents during the life of said patents, agrees never to dispute or contest the validity of certain other patents or the licensor's title thereto, is a contract against public policy.
[*Pope Manufacturing Company *v.* Gormully, 464.

2. SPECIFIC PERFORMANCE—WHEN EQUITY WILL NOT INTERFERE TO ENFORCE.
Such a contract, entirely aside from any question of its validity in law, is not enforcible in equity, since it is unusual and oppressive in its terms.
[*Id.

3. SAME—MATTER OF JUDICIAL DISCRETION.
Specific performance is not an absolute right, but rests entirely in judicial discretion. (Citing *Hennessy* v. *Woolworth*, 128 U. S., 438.)
[*Id.

4. BREACH OF CONTRACT—LICENSE.
A contract provided that a corporation should employ a certain patentee as its general manager for ten years, subject to termination by either party on one year's notice, or by the patentee's death or inability to act, and that, in the event of a termination of the agreement, the corporation should have a license to use his patents on payment of a certain royalty. *Held* that a wrongful discharge of the patentee by the corporation was a mere breach of contract, and did not terminate the agreement so as to render the corporation liable to pay the royalty. (*Johnson* v. *Signal Co.*, (N. Y. App.,) 29 N. E. Rep., 964, followed.)
[‡Miller *v.* Union Switch and Signal Company, 633.

COPIES OF DECISIONS.

FEES NOT REQUIRED IN CERTAIN CASES WHERE UNCERTIFIED COPIES ARE FURNISHED.
A single uncertified copy of a decision or action by any tribunal of this Office will be furnished to an interested party without charge.
[*Ex parte* Failor, 630.

DAMAGES AND PROFITS.

1. INFRINGEMENT—MEASURE OF DAMAGES.
Where an infringer has not sold the infringed device as a separate article, but has manufactured and used it upon certain articles sold by him, the proper measure of damages is not the profits on the entire article sold, but the defendant's savings from the use of the infringed device over what was known and open to the public before, and in such a case the question of defendant's profit or loss in the sale of the entire article is immaterial.
[*Sessions *v.* Romadka *et al.*, 930.

2. DESIGN PATENTS—INFRINGEMENT—ACT OF FEBRUARY 4, 1887, IS CONSTITUTIONAL.
The act of Congress (February 4, 1887) fixing a liability of $250 against every infringer of a design patent is within the authority conferred by article 8, section 1, of the Constitution, and therefore valid.
[*Untermeyer *v.* Freund *et al.*, 1023.

3. SAME—ACT CONSTRUED.
The language of the act being "that hereafter, during the term of Letters Patent for a design, it shall be unlawful," etc., makes no exception as to cases commenced before the approval of the act.
[*Id.

4. SAME—DAMAGES.
The act provides that an infringer shall be further liable for all profits in excess of two hundred and fifty dollars made from the sale "of the article or articles" to which the design is applied. *Held* that the court cannot limit damages to the profits due merely to the design, but must take into account all profits made on the sale of the article made thereunder.
[*Id.

DECISIONS.

(See Copies of Decisions.)

DEDICATION TO THE PUBLIC.

(See Abandonment.)

DELAY.

(See Reduction to Practice.)

DEPOSITIONS.

PARTY AS A WITNESS UNDER SECTION 863, REVISED STATUTES.
H., a party to an interference, served notice on P., the opposing party, that he would take the testimony of certain persons named therein upon a certain day. When the testimony was taken, the party P., who had not been named as a witness in the notice, was called upon by H. and testified under protest. Upon motion here made to suppress his deposition, *Held* that P. as a witness for H. stands in the same position as any other witness under the rule regulating the taking of depositions, that the same formalities of notice must be observed, and the deposition having been taken informally should be suppressed.
[Hill *v.* Parmelee, 631.

DESIGNS.

(See Damages and Profits, 2, 3, 4.)

DILIGENCE.

(See Interference, 4, 10; Reduction to Practice; Preliminary Statement; Reissues, 1.)

DISCLAIMERS.

1. SECTION 4917 OF THE REVISED STATUTES CONSTRUED.
Section 4917 of the Revised Statutes, relating to disclaimers, is broad enough to cover disclaimers made to avoid the effect of having included in the patent more devices than could properly be made the subject of a single patent.
[*Sessions *v.* Romadka *et al.*, 939.

2. EFFECT OF DELAY UNTIL AFTER COMMENCEMENT OF SUIT.
Section 4917 of the Revised Statutes must be construed with reference to section 4922, and when so read the only effect of delaying a disclaimer until after the commencement of a suit upon the patent containing the disclaimed subject-matter is to prevent the recovery of costs.
[*Id.

DIVISIONAL APPLICATION.

(See Interference, 11.)

RULE 42.
Under Rule 42 when an application is divided the applicant will be required, so far as is practicable, to cancel all matter in the original specification, descriptive or otherwise, which has been eliminated therefrom by division, and when the drawings in the case admit of canceling such eliminated subject-matter such cancellation of the drawings will be required.
[*Ex parte* Hunter, 1022.

DIVISION OF APPLICATION.

PRACTICE OF THE OFFICE—DIVISION.
Where applicant's machine was in its entirety a mangle or froning-machine, *Held* that the Examiner properly required division as to certain claims in the application which related purely to a belt-shifting device.
[*Ex parte* Wendell, 630.

DRAWINGS.

(See Divisional Application.)

EMPLOYÉ.

INTERFERENCE—SUGGESTIONS BY AN EMPLOYÉ.
Where an employer discloses the general idea and plan of his invention to an employé, no suggestion from the latter which does not involve a radical departure therefrom will give him any rights as an inventor. (Citing *Agawam Company* v. *Jordan*, 7 Wall., 583.)
[Hayes *v.* Hopkins, 157.

EMPLOYÉ OF THE GOVERNMENT AS AN INVENTOR.

1. GOVERNMENT EMPLOYÉ AS INVENTOR.
Where one in the employment of the Government experiments and finally perfects an invention, he is entitled to a patent therefor in the absence of an explicit assent and agreement on his part that his invention shall be the property of the Government. (Discussing and distinguishing *Solomons* v. *The United States*, 137 U. S., 342.)
[Riley *v.* Barnard, 1919.

2. CLAIM OF GOVERNMENT TO RIGHTS IN INVENTIONS.
A claim by the Government to an interest in an invention, either as licensee or assignee, will not stay the issue of a patent to an inventor, since that is a question for the courts and not the Patent Office to determine.
[Id.

ENLARGEMENT OF CLAIMS.

(See Reissues, 1.)

EQUIVALENTS.

(See Invention, 3.)

ESTOPPEL.

(See Infringement, 3; Interference, 2.)

EVIDENCE.

(See Depositions; Priority of Invention, 1, 3; Reduction to Practice.)

EXAMINATION OF APPLICATIONS.

(See Appeal to Examiners-in-Chief.)

1. DIVISION—ELEMENTS OF A COMBINATION CLAIM.
The Office has no right to say that an element of a combination claim is not a part of the combination in advance of an action on the merits thereof.
[*Ex parte* Connelly, 787.

2. CONFLICTING APPLICATIONS UNDER RULE 106.
Action should not be suspended on an application under Rule 106 when it appears that its claims are patentable over all the disclosures of a prior application by the same applicant in interference and over all the disclosures of the interfering applications.
[*Ex parte* Willson, 1257.

EXAMINER.

(See Interference, 8; Petition to Commissioner.)

EXAMINER OF INTERFERENCES.

(See Appeal to the Commissioner, 1; Interference, 8.)

EXAMINERS-IN-CHIEF.

(See Appeal to the Commissioner, 2; Appeal to Examiners-in-Chief.)

EXCEPTIONS TO MASTER'S REPORT.

(See Master's Report.)

FIRST AND ORIGINAL INVENTOR.

(See Employé; Invention, 4, 5; Priority of Invention, 1, 3.)

INVENTOR—WHO IS, IN CERTAIN CASES.
When a man has suggested the basic idea of a patentable improvement and has made it practicable to any degree and has never abandoned it, he cannot be deprived of the benefit of the invention or of the title of inventor by any other person who subsequently carries out his idea more perfectly and to a greater degree of usefulness.
[Riley *v.* Barnard, 1919.

FOREIGN USE.

(See Public Use or Sale.)

FORMER DECISIONS REFERRED TO.

FORMER CASES DISTINGUISHED.
Hartell v. *Tilghman* (99 U. S., 547) and *Wilson* v. *Sandford* (10 How., 101) distinguished.
[*White v. Rankin *et al.*, 1606.

GOVERNMENT EMPLOYÉ.

(See Employé of the Government as an Inventor, 1.)

INFRINGEMENT.

(See Assignees in Bankruptcy; Injunction; Particular Patents, 3, 4. 5, 8, 9, 11, 12, 14, 15; Suits for Infringement.)

1. SAFETY-VALVES AND MUFFLERS FOR SAFETY-VALVES.
In an action for infringement of Letters Patent No. 200,119, February 12, 1878, for an improvement in safety-valves, and No 299,503, June 3, 1884, for a muffler for safety-valves, *Held* as to the first patent that the test of infringement lay in the pop-valve used and that defendant did not use the peculiar form used by the complainant, and as to second patent that the muffler patent, No. 297,066, granted to Coale April 15, 1884, in conformity with which defendant's device was made, is a sufficient answer.
[*Ashton Valve Company v. Coale Muffler and Safety Valve Company, 300.

2. LICENSE.
The defendants were not bound to inquire whether their purchasers were licensed by the plaintiff to use the invention, and having done no wrong themselves they are not answerable for the unlawful acts of others.
[*Lane and Park *et al.*, 788.

3. ESTOPPEL—AN INFRINGER CANNOT DENY THE UTILITY OF THE INFRINGED INVENTION.
One who has adopted and used in the manufacture of an article some feature covered by a patent is estopped from afterward denying the utility of the invention.
[*Gandy *et al.* v. Main Belting Company *et al.*, 1106.

INJUNCTION.

TEMPORARY INJUNCTION.
When the court has a real doubt whether there is any infringement, and assurances have been given that a prompt final hearing shall be had, temporary injunction will not issue.
[*Hammond Buckle Company v. Goodyear Rubber Company, 301.

INTERFERENCE.

(See Employé; Examination of Applications, 2.)

1. MOTIONS TO DISSOLVE AFTER ADMISSION OF NEW CLAIMS UNDER RULE 109.
When new claims are admitted, either under the original issue or under a new issue, in accordance with the provisions of Rule 109, *Held* that any or all motions provided for in Rule 122 may be brought in connection with the new claims and the issue including the same, even though such motions were brought and the questions raised thereby decided under the interference as originally declared.
[Jenne v. Brown v. Booth, 158.

2. CONCESSION OF PRIORITY—ESTOPPEL.
Where one party to an interference makes a formal concession of priority to his opponent and a judgment of the Examiner of Interferences is based thereon, such party is estopped from afterward claiming the conceded subject-matter
[*Ex parte* Eddy, 298.

3. PRELIMINARY STATEMENT—RULE 113.
Where one party to an interference has taken his testimony, the Office will not permit the other party to amend his preliminary statement in the absence of positive proof that the proposed amendatory matter or some material part of it was not within his knowledge when the statement was originally filed. (Affirming *Washburn* v. *Hadfield*. 57 O. G., 1719.)
[Washburn v. Hadfield, 463.

4. MOTION TO DISSOLVE MUST BE MADE WITH DILIGENCE.
A motion to dissolve an interference will not be allowed unless made with due diligence, and this is a question of fact to be passed upon according to the circumstances surrounding the particular case.
[Hall v. Latta, 463.

5. BURDEN OF PROOF.
Where an attorney and skilled expert of a company made application for certain patents with the full knowledge of the company and the president of the company applied for patents for the same invention, sixteen and seven months, respectively, later than the senior party, *Held* that the presumption and probabilities are all with the senior party and can only be rebutted by the strongest possible proof.
[Tompkins v. Selkirk, 629.

6. PATENTABLE NOVELTY IS AN EX PARTE QUESTION AND NOT A SUBJECT FOR CONSIDERATION IN AN INTERFERENCE.
In an interference proceeding the contention by one of the parties that the issue is devoid of patentable novelty is not a proper one for consideration, since it is *ex parte* in character.
[Benjamin v. Searle, 630.

7. RULE 122—TIME WITHIN WHICH A MOTION TO DISSOLVE INTERFERENCE SHOULD BE MADE.
The twenty days within which, under Rule 122, a motion to dissolve an interference for certain specified causes should be made runs from the day when the original preliminary statements are received and approved, and a subsequent amendment of a preliminary statement does not of itself operate to extend this time.
[Scribner and Warner v. Childs v. Balsley, 1103.

8. TRANSMISSION OF MOTION TO PRIMARY EXAMINER.
The transmission of such a motion to the Primary Examiner is discretionary with the Examiner of Interferences.
[Id.

9. MOTION TO DISSOLVE INTERFERENCE—RULE 122.
The pendency of other motions in an interference case is no excuse for delaying a motion to dissolve the interference beyond the twenty days limited by the rule.
[Hall v. Latta, 1431.

10. AMENDMENT OF PRELIMINARY STATEMENT.
An amendment to a preliminary statement which takes the amending party's date back of the corresponding date of his opponent will not be allowed upon a state of facts consistent with the supposition that the party seeking to amend might have presented this earliest date in his original statement if he had used the utmost care and diligence.
[Henderson v. Noakes, 1431.

11. DIVISIONAL APPLICATION—BURDEN OF PROOF.
Where a party to an interference in which his divisional application is involved relies on an alleged statement of invention in his original application for the purpose of determining where the burden of proof lies, such statement must clearly and definitely cover the invention claimed in the divisional application.
[Sprague v. Hunter, 1605.

12. QUESTION ON THE MERITS NOT PROPER SUBJECT OF INTERLOCUTORY APPEAL TO THE COMMISSIONER
Objections to the operativeness or patentability of the subject-matter of the issue of an interference are not proper subjects for an interlocutory appeal to the Commissioner from an Examiner's refusal to dissolve the interference.
[Lossier v. Willson v. Cowles and Cowles v. Rogers v. Darling v. Boguski v. Gratzel, 1605.

13. PRIORITY OF INVENTION IS THE PRIMARY QUESTION IN AN INTERFERENCE.
Whether or not a statutory bar exists against the grant of a patent to an applicant is immaterial upon a motion to dissolve an interference, since priority of invention is the primary question in an interference.
[Id.

14. AMENDMENT OF PRELIMINARY STATEMENT.
The Office acts judicially rather than ministerially in permitting or denying the amendment of a preliminary statement.
[Henderson v. Noakes, 1762.

INVALID PATENTS.

(See Void Patents.)

INVENTION.

(See Employé; First and Original Inventor.)

1. ANALOGOUS USE—MECHANICAL SKILL.
The use of a mechanical contrivance for subjecting bretzels to a hot alkaline bath, when an analogous appliance has long been employed for steaming crackers, shows nothing more than ordinary mechanical skill.
[*Stauffer v. Spangler *et al.*, 632.

2. PUBLIC FAVOR AS EVIDENCE OF PATENTABILITY.
The fact that a device has gone into extensive public use is entitled to great weight in determining the question of patentable novelty.
[*Dederick v Gardiner *et al.*, 790.

3. DOCTRINE OF EQUIVALENTS—WHEN NOT APPLICABLE.
Where change of form or combination only is involved, the doctrine of equivalents cannot be invoked to suppress improvements, and each inventor must be content with the mechanism claimed by him.
[*Id.

4. PATENTABLE DISCOVERY—WHAT IS.
Whoever discovers a previously-unknown mode of action in the world of physical things and reduces it to practice, getting a novel product or process within the range of patentable subject-matter, distinctly useful and lying outside the range of experience and skill, makes a patentable discovery, even though the discovery be entirely accidental.
[Vollrath v. Comstock, 1105.

5. PUBLIC FAVOR AS EVIDENCE OF NOVELTY AND UTILITY.
Where there had been several unsuccessful attempts to produce a satisfactory article in the trade, and the plaintiff, who had been experimenting with the subject for years, finally produced a device which when patented was at once largely adopted and went into and remains in general use, *Held* sufficient evidence of novelty and utility.
[*Gandy *et al.* v. Main Belting Company *et al.*, 1106.

6. PUBLIC FAVOR WILL SOMETIMES RESOLVE A DOUBT AS TO PATENTABILITY IN FAVOR OF THE PATENT.
Where the question of patentable novelty in a device sued upon is not free from doubt, a general and extensive use by the public will incline the court to resolve the doubt in favor of the patent.
[*Topliff v. Topliff *et al.*, 1257.

JOINT APPLICATIONS.

(See Power of Attorney.)

JURISDICTION.

(See Assignments, 2.)

JURISDICTION OF UNITED STATES COURTS.

(See Suits for Infringement, 2, 3.)

LICENSES.

(See Contracts, 3; Infringement, 2.)

LIMITATION IMPOSED BY THE PATENT OFFICE.

(See Construction of Claims; Construction of Specifications and Patents.)

MASTER'S REPORT.

EXCEPTIONS TO MASTER'S REPORT MUST BE TAKEN IN LOWER COURT.
The Supreme Court will not review a master's report upon objections first taken before it, the proper place for exceptions being in the court below.
[*Topliff v. Topliff *et al.*, 1257.

MEASURE OF DAMAGES.

(See Damages and Profits, 1.)

MECHANICAL SKILL.

(See Invention, 1.)

MISTAKE.

(See Reissues, 1.)

MOTION TO DISSOLVE AN INTERFERENCE.

(See Interference, 1, 4, 7, 8, 9, 12, 13.)

NEW CLAIMS.

(See Interference, 1.)

NEW MATTER.

(See Appeal to the Commissioner, 2.)

NOTICE TO THE PUBLIC.

(See Suits for Infringement, 1.)

PARTICULAR PATENTS.

1. ASMUS—BLAST-FURNACE.
The first claim of reissued Letters Patent No. 3,204, granted to George Asmus November 24, 1868, on the surrender of original Letters Patent No. 70,447, issued to F. W. Lürmann November 5, 1867, for an improvement in blast-furnaces, is invalid, because it is not for the same invention as the original patent.
[*Freeman v. Asmus, 1432.

2. AUGUR—CARRIAGE-SPRING.
Letters Patent No. 108,085, granted October 11, 1870, to John B. Augur, for an improvement in gearing for wagons, and Letters Patent No. 122,079, issued December 19, 1871, to John A. Topliff and George H. Ely, for an improvement in connecting carriage-springs, (reissued March 28, 1876, No. 7,017,) sustained and the reissue upheld.
[*Topliff v. Topliff *et al.*, 1257.

3. BECKWITH—STOVE-FIXTURES.
Patent No. 289,802, for improvements in a heating-stove, granted December 11, 1883, to Philo D. Beckwith, is for an invention designed to convert a wood-burning stove into a coal-burner and covers the different devices and fixtures necessary to accomplish this result. Sustained, and *Held* infringed by the sale of the different fixtures by defendants, though they do not sell a complete set of such fixtures to any one person and sell no stoves with them.
[*Lee *et al.* v. Northwestern Stove Repair Company *et al.*, 2069.

4. CARR—WASTE-VALVES AND OVERFLOWS FOR BATHS AND BASINS.
Letters Patent No. 170,709, for an improvement in waste-valves and overflows for baths and basins, granted to William S. Carr December 7, 1875. *Held*, in view of the state of the art at the time of issue, to be limited to the specific forms of mechanism shown. Claim 2 of Letters Patent No. 358,147, to John Demarest, February 22 1887, for a kindred improvement. *Held* to cover a mere aggregation and not a patentable combination, and that neither patent is infringed by defendants.
[*J. L Mott Iron Works v. Standard Manufacturing Company, 2067.

5. DEDERICK—BALING-PRESES.
Letters Patent No. 341,559 and No. 415,029, granted to Peter K Dederick May 29, 1886, and November 12, 1889, respectively, for improvements in baling-presses, *Held* infringed, and Letters Patent No. 232,400, for an improvement in baling-presses, granted to complainant September 21, 1880, *Held* not infringed by defendants.
[*Dederick v. Gardiner *et al.*, 790.

6. DUNKS AND RYAN.—WOVEN-WIRE BED-BOTTOMS.
Letters Patent No. 241,321, issued May 10, 1881, to Charles H. Dunks and James B. Ryan, for improvements in swing woven-wire bed-bottoms, is substantially anticipated by Letters Patent No. 101,089, issued March 22, 1870, to George W. Loomis, for an improved spring bed-bottom, and the mere substitution of woven wire for canvas, particularly as the complainants were not the first to introduce woven wire into the art, does not involve patentable invention.
[*Ryan *et al.* v. Hard *et al.*, 1435.

7. EVERETT—AUTOMATIC WEIGHING-MACHINE.
Patent No. 336,042, for an automatic weighing-machine, issued February 9, 1886, to Percival Everett, claims "a weighing-machine having an aperture for receiving a coin, a weighted lever, a dial and index-hand, and intermediate mechanism connected with the same and whereby the coin when deposited in the receiver shall operate the lever and cause the hand to indicate the weight of the person or body being weighed." *Held* that the patent is for a machine as a whole having those parts with such other known parts necessary to constitute such a machine, and that as such other necessary parts are described or referred to in the patent the claim must be read with reference to them, and therefore covers an operative machine.
[*American Automaton Weighing Machine Company *et al.* v. Blauvelt, 2071.

8. GANDY—BELT FOR MACHINERY.
Letters Patent No. 228,186, issued June 1, 1880, to Maurice Gandy, for an improved non-elastic canvas or duck belt for driving machinery, *Held* valid and infringed.
[*Gandy *et al.* v. Main Belting Company *et al.*, 1106.

9. HOYT—RAG-ENGINE.
Letters Patent No. 303,374, issued August 12, 1884, to John Hoyt, for a rag-engine for paper-making, sustained, and held infringed by Letters Patent No. 347,043, issued August 10, 1886, to John H. Horne.
[*Hoyt *et al.* v. Horne, 1764.

10. LANE—PLOWS AND CULTIVATORS.
In Letters Patent No. 82,130, to John Lane, September 15, 1868, the claim for "the improvement herein described in the manufacture of plows and cultivators—that is to say, the making of them of metal plates having a center layer of soft iron or steel, with exterior layers of cast-steel, substantially as and for the purposes described," *Held* that, soft-center steel plates themselves being old, the patent was not infringed by the defendants, who as steel manufacturers made plates to order for certain persons other than the plaintiff and cut them into shapes proper for plow mold-boards.
[*Lane v. Park *et al.*, 788.

11. PAGE AND LAMB—WIRE FENCE MACHINES.
Claim 12 of Letters Patent No. 414,844, granted November 12, 1889, to John Wallace Page and Charles M. Lamb, for a new and useful improvement in wire-fence machines, sustained, and *Held* infringed by a machine constructed in accordance with Letters Patent No. 435,042, granted to Abel Land August 26, 1890.
[*Page Woven Wire Fence Company *v.* Land, 159.

12. STAUFFER—APPARATUS FOR TREATING UNBAKED BRETZELS.
Letters Patent No 345,186, July 6, 1886, to David F. Stauffer, for improvements in apparatus for treating unbaked bretzels, *Held* not infringed by defendants.
[*Stauffer *v.* Spangler *et al.*, 632.

13. SAME—CLAIMS ANALYZED.
Claims 1 and 2 of plaintiff's device being for the combination, with a vapor-generator, of a perforated pipe extending from near the bottom of the generator through it and to a perforated spray-pipe above, are old as to all the devices entering therein, operating in the old way, and practically anticipated by prior patents. Claim 3 is not infringed, since defendant's device does not contain the perforated drum, or any equivalent salting device, which is the essential feature thereof. [*Id.

14. TAYLOR—TRUNK-FASTENERS
Claim 3 of Letters Patent No. 128,925, issued July 9, 1872, to Charles A. Taylor, for an improvement in trunks, the claim being for a trunk-catch, *Held* valid and infringed by the defendant's device.
[*Sessions *v.* Romadka *et al.*, 939.

15. VEEDER—BICYCLES.
Patent No. 252,280, to Curtis H. Veeder, January 10, 1882, for bicycle-saddle seat, *Held* not infringed by defendant's device. Patent No. 197,289, to Peters, November 20, 1877, for improvement in antifriction journal-boxes, *Held* anticipated by patent to Alcott, of March 29, 1870. Patent to Moran, No. 245,542, August 9, 1881, for velocipede-handles, *Held* anticipated by English patent to Harrison, July, 1877. Patent No. 310,776, to Benham, for a method of attaching the handle-bar to the steering-head of a bicycle, *Held* not infringed by defendants. Patent No. 323,162, July 28, 1885, to Latta, for form of protecting or cushioning pedals of velocipedes with india rubber, *Held* of doubtful validity, but of such narrow construction in view of the prior state of the art that defendant does not infringe.
[*Pope Manufacturing Company *v.* Gormully & Jeffery Manufacturing Company *et al.*, 464.

16. WALLACE—BEARINGS FOR BICYCLE-WHEELS.
Patent No. 249,278, to Albert E. Wallace, November 8, 1881, for an axle-bearing for vehicle-wheels, *Held* anticipated by the English patent to Bate, November 14, 1878.
[*Pope Manufacturing Company *v.*, Gormully & Jeffery Manufacturing Company *et al*, 473.

17. SAME—SAME.
Claims 2 and 3 of Patent No. 280,421, to Albert E. Wallace, July 3, 1883, for an improvement upon the device covered by his prior patent, *Held* anticipated by English patents to Monks, 1880, Salamon, 1880, and Jeffery, 1883, and that both patents to Wallace are mere mechanical adaptations of or variations from the English patents. [*Id.

PATENTABILITY.

(See Interference, 6; Invention.)

PATENTS.

(See Construction of Specifications and Patents; Employé of the Government as an Inventor, 1; Priority of Invention, 1; Protest Against Issuance of Patent; Valid Patents; Void Patents.)

PETITION TO COMMISSIONER.

PETITION TO COMMISSIONER FROM EXAMINER—RULE 145.
A petition to the Commissioner under Rule 145 will not lie unless the question appealed has been twice acted upon by the Examiner.
[*Ex parte* Auchu, 1761.

POWER OF ATTORNEY.

(See Assignments, 2.)

POWER OF ATTORNEY—JOINT APPLICANTS.
Where one of two joint applicants subsequently files a sole application for the same improvement, a power of attorney, executed by the other of the joint applicants and their assignee, will be accepted by this Office as sufficient.
[*Ex parte* Benjamin and Bailey, 298.

PRACTICE IN THE COURTS

(See Contracts, 3; Infringement, 1; Injunction; Invention, 6; Master's Report; Suits for Infringement, 2.)

PRACTICE IN THE PATENT OFFICE.

(See Appeal to the Commissioner, 1; Assignments; Examination of Applications, 1; Interference; Petition to Commissioner; Priority of Invention, 3; Protest Against Issuance of Patent.)

PRELIMINARY STATEMENT.

(See Interference, 3, 10.)

DEGREE OF DILIGENCE REQUIRED.
"The utmost care and diligence," rather than mere "reasonable diligence," are required in the making of a preliminary statement.
[Henderson *v.* Noakes, 1762.

PRIMA-FACIE EVIDENCE.

(See Priority of Invention, 1, 2.)

PRIORITY OF INVENTION.

(See Interference, 5.)

1. PATENTEE PRESUMED TO BE THE FIRST INVENTOR UNTIL THE CONTRARY IS PROVED—BURDEN OF PROOF.
The rule is well settled that complainant's introduction in evidence of his patent in due form is sufficient to show that he is the first and original inventor of his device or improvement, as defined and construed by the courts, unless sufficient evidence to overcome that presumption and to establish the contrary allegation of the answer is exhibited in the record. The burden of proof is on the defendant to show that the patentee was not the original and first inventor.
[*Page Woven Wire Fence Company *v.* Land, 159.

2. SAME—SUBSEQUENT PATENT TO DEFENDANT.
A patent subsequently granted to the defendant does not overcome this *prima facie* presumption in favor of the prior patentee. (Citing *Goodyear Dental Co.* v. *Gardner*, 4 Fish., 224.)
[*Id.

3. EVIDENCE OF PATENTABILITY.
Where several inventors are striving for the same end and all of them fall just a little short of its attainment, the existence of that state of facts is practically conclusive evidence that he who attains the whole measure of success does so by doing something that was not obvious, and that involves patentable invention.
[*Ex parte* Shannon, 297.

PROTEST AGAINST ISSUANCE OF PATENT.

PROTEST AGAINST ISSUANCE OF PATENT ON PENDING APPLICATION—WHAT IT MUST EMBODY.
A protest against the issuance of a patent to an applicant is fatally defective unless it embodies something equivalent to a distinct denial of the applicant's sworn statement of invention.
[Riley *v.* Barnard, 1921.

PUBLIC POLICY.

(See Contracts, 1, 2.)

PUBLIC RECOGNITION EVIDENCE OF INVENTION.

(See Invention, 2, 5, 6.)

PUBLIC USE OR SALE.

TWO YEARS' PUBLIC USE OR SALE—SECTION 4886 OF THE REVISED STATUTES.
Sections 4886 and 4887 of the Revised Statutes must be construed together, and when this is done the two years' prior public use or sale, which under section 4886 operates as a bar to the grant of a patent, is such a use or sale within the United States and has no reference to foreign countries.
[*Gandy *et al* *v.* Main Belting Company *et al.*, 1106.

REDUCTION TO PRACTICE.

(See Abandonment; Priority of Invention, 3.)

REDUCTION TO PRACTICE—WHAT IS REASONABLE DILIGENCE IN.
Where an applicant delays for more than two years after his conception of invention before reducing it to practice, and where it appears that he had abundant means and was busy meanwhile upon other inventions, and the actual reduction to practice was a simple matter and one not involving great time or expense, *Held* applicant was not reasonably diligent.
[Thomson *v.* Ries, 298.

REFUNDMENT OF FEES.

(See Trade-Marks, 3.)

REISSUES.

(See Particular Patents, 1.)

1. A REISSUE MAY BE HAD FOR AN ENLARGED CLAIM.
It is the obvious intent of the statute that a reissue may be had for an enlarged claim, provided it is evident that there has been a mistake and that the applicant has been guilty of no want of reasonable diligence in discovering it and that no third persons have meanwhile acquired rights to manufacture or sell what he had failed to claim.
[*Topliff *v.* Topliff *et al.*, 1237.

2. PRESUMPTION ARISING FROM TWO YEARS' DELAY IN APPLYING FOR REISSUE.
If a reissue be sought to enlarge a claim, a delay of two years from the original grant in applying therefor will ordinarily, though not always, be treated as evidence of abandonment of the new matter to the public. [*Id.

3. REISSUES APPLIED FOR BY ASSIGNEE AS FOR PATENT GRANTED BEFORE 1870.
Where an applicant for a patent in assigning his invention said that it was "fully described in the specification pertaining to said application, which I have signed under oath," and his assignee applied for a reissue at a time when the law did not require the inventor's oath to the reissue specification, *non sequitur* that the inventor himself would ever have asserted that the original application contained error arising from fraud, accident, or mistake, and this fact taken into consideration by the Court in determining that question.
[*Freeman *v.* Asmus, 1432.

STATUTE OF LIMITATION.

(See Assignees in Bankruptcy.)

SUITS FOR INFRINGEMENT.

(See Assignees in Bankruptcy; Disclaimers, 2; Infringement, 3.)

1. NOTICE TO THE PUBLIC—SECTION 4900 OF THE REVISED STATUTES—PRESUMPTION.
Where there is any question under section 4900 of sufficiency of notice to the public that the device sued upon was a patented article, the presumption against the public arising from the record of the Letters Patent in the United States Patent Office requires the averment of want of knowledge on the part of the defendant in his answer to the bill.
[*Sessions *v.* Romadka *et al.*, 939.

2. JURISDICTION OF FEDERAL COURTS—CONTRACT.
Where a plaintiff's bill in equity is purely a bill for the infringement of patent-rights, asking for the usual relief in the usual form, and containing no suggestion of contract relations between plaintiff and defendant, the mere fact that the defendant's answer sets up an alleged contract gives the Court no warrant to dismiss the case for want of jurisdiction on the ground that the rights of the parties are governed by contract.
[*White *v.* Rankin *et al.*, 1606.

3. TEST OF JURISDICTION.
In such a case the question is upon the infringement of the patent, and the subject-matter of the action is disclosed in the bill, the defendant's answer being in effect a mere denial of infringement, and raising an issue clearly within the jurisdiction of the court.
[*Id.

TITLE TO PATENT.

(See Employé of the Government as an Inventor, 1; Protest Against Issuance of Patent.)

TRADE-MARKS.

1. "ROYAL VELLUM."
The words "*Royal Vellum*," as applied to a certain class of fine stationery, are not anticipated by the registered Trade-Mark "*Royal Irish Linen*," since, though the word "*Royal*" is prominent in each case, enough of the distinguishing features of the registered mark are not found in the mark under discussion to work deception upon a purchaser using ordinary caution.
[*Ex parte* George B. Hurd & Co., 1763.

2. INCIDENTAL PROTECTION OF, BY SECTION 3449 OF THE REVISED STATUTES NOT UNCONSTITUTIONAL.
The purpose of section 3449 of the Revised Statutes of the United States, prohibiting the shipment of spirituous liquors, etc, under any other than their proper name or brand as known to the trade, is solely to facilitate the enforcement of the revenue laws, and the fact that the statute may sometimes operate for the incidental protection of a Trade-Mark does not affect its constitutionality within the meaning of the *Trade-Mark Cases*, 100 U. S., 82.)
[*United States *v.* Loeb, 1766.

3. RULE 224—REFUNDING OF FEE.
The agent of a foreign corporation filed an application for the registration of a Trade-Mark used by the corporation, which was refused on the ground that he was not the exclusive owner. Subsequently the corporation by its proper officer filed its application as "exclusive owner." *Held*, upon a request for the refunding of the fee paid by Hill, as having been "paid by mistake," that the mistake, being one of law and not of fact, is not within Rule 224, and that Hill's application having been rejected on the merits he is not entitled to have the fee refunded.
[*Ex parte* Coventry Machinist Company, Limited, 1923.

4. JURISDICTION OF FEDERAL COURTS.
The decision of the Supreme Court in *Trade-Mark Cases* (100 U. S., 82) does not affect the jurisdiction of Federal courts in matters relating to Trade-Marks where the jurisdiction is otherwise secured by reason of diverse citizenship of the parties, since property-rights in Trade-Marks come from the common law and not from the statute.
[Battle *et al.* *v.* Finlay *et al.*, 2072.

UNITED STATES SUPREME COURT.

(See Master's Report.)

VALID PATENTS.

(See Particular Patents, 2, 3, 4, 7, 8, 9, 10, 11, 14.)

VOID PATENTS.

(See Particular Patents, 1, 6, 15, 16, 17.)

WITHDRAWAL OF CASE FROM ISSUE.

AN APPLICATION WILL NOT ORDINARILY BE WITHDRAWN FROM ISSUE FOR AMENDMENT OF CLAIMS BY APPLICANT.
The rule that an application will not be withdrawn from issue for the purpose of allowing an applicant to amend his claims is subject to exception only in cases where its enforcement would work irremediable injury.
[*Ex parte* Gold, 2067.

WITNESSES.

(See Depositions.)

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING JUNE 30, 1892.

[Claims and drawings of Designs do not appear in the Monthly Volumes. Separate indexes for Designs, Trade-Marks, Labels, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Specification.	Drawing.	Volume.	Page.
A. G. Spalding & Brothers *et al.* (See Perkins, Albert, assignor.)						
Aaron, William T., Callands, Va. Tobacco cask or tierce	477,484	June 21	2000	497	59	1859
Abbe, James T., *et al.* (See Ball, James, assignor.)						
Abbott, Albert R., Boston, Mass. Cash register and recorder	474,278	May 3	600	149, 150	59	754
Abbott, Arthur V., Closter, N. J. Insulating electric conductors	477,732	June 28	2408	.....	59	1958
Abbott, Benjamin J., Chicago, Ill., assignor to Abbott Metal Dressing Company, of Illinois. Cam-clutch for rotating shafts	474,312	May 3	678	176	59	767
Abbott, Frank E., Chicago, Ill. Nutmeg-grater	473,051	Apr. 19	1606	409	59	331
Abbott, Leonard G., Syracuse, N. Y., assignor of two-fifths to W. W. Guilford, West Medford, and Cummer, Jones & Co., Boston, Mass. Garment-supporting loop	474,313	May 3	679	176	59	768
Abbott Machine Company. (See Blodgett, John W., assignor.)						
Abbott Metal Dressing Company. (See Abbott, Benjamin J., assignor.)						
Abbott, Samuel E. (See Chisham and Abbott.)						
Abel, Henry, Carlstadt, N. J. Low-pressure steam-boiler	475,479	May 24	2540	647	59	1171
Abendroth Brothers. (See Fisher, George A., assignor.)						
Abernathy, William M., *et al.* (See Prescott, George A., assignor.)						
Ablett, Job, *et al.* (See Phillips, John H., assignor.)						
Abraham, John D., Cincinnati, Ohio. Attachment and coupling for water-closets	477,485	June 21	2001	497	59	1859
Abrahamson, Axel F., Madrid, Spain. Pump	472,156	Apr. 5	228	61	59	43
Abrams, George, Philadelphia, Pa. Violin	473,439	Apr. 26	2257	569	59	477
Abrams, Joseph S., and J. Langsdorf, New York, N. Y. Hat packing-case	477,981	June 28	2798	701	59	2034
Acheson, Edward G., Pittsburg, Pa. Telephone-transmitter	472,243	Apr. 5	367	94	59	69
Acker, Frank C., Ionia, Mich. Cracker-cabinet	472,020	Apr. 5	1	1	59	3
Ackerly, Clifford B. (See Brown, Joseph A., assignor.)						
Acland, Francis E. D., and C. Holmström, London, England. Gun	472,244	Apr. 5	369	95, 96, 97, 98	59	69
Acme Railway Signal and Manufacturing Company. (See Bevington, James H., assignor.)						
Acosta, John L., Vera Cruz, Mexico. Fiber-preparing machine	474,052	May 3	273	66, 67	59	690
Acuff, John, Kilgore, Tex. Car-coupling	476,768	June 14	815	201	59	1613
Adair, William A., Moline, Kans. Truss	473,807	Apr. 26	2860	718	59	592
Adams, Charles F., assignor to S. S. Jewett & Co., Buffalo, N. Y. Gas-burning cooking stove or range	472,842	Apr. 12	1264	324	59	252
Adams, E. G. H., *et al.* (See Taylor, Barnett, assignor.)						
Adams, Frederick G., and F. T. Henshaw, London, England. Driving mechanism for velocipedes	477,095	June 14	1358	330, 331	59	1722
Adams, John P., Fargo, N. D. Flue-thimble	476,111	May 31	3554	894	59	1382
Adams, John S., Elgin, Ill. Clutch-shifter	474,203	May 3	492	118	59	733
Adams, John S., New Orleans, La. Clutch	477,163	June 14	1458	358	59	1742
Adams, Stephen J., Pittsburg, Pa. Gate for molds and castings formed thereby	477,320	June 21	1741	426	59	1809
Adams, Thomas E., Cleveland, Ohio, assignor to Brush Electric Company. Electric-arc lamp	473,283	Apr. 19	1998	502, 503	59	405
Adams, Thomas E., Cleveland, Ohio, assignor to Brush Electric Company. Electric locomotive	476,437	June 7	328	75	59	1501
Adams, W. Q. (See Simpson, Charles E., assignor.)						
Adams, Walter S. (See Brill and Adams.)						
Adams, William C., Sturgis, Ky. Grain-binder	474,801	May 17	1471	375	59	947
Adgie, William. (See Yeadon and Adgie.)						
Adler, Carl. (See Blinsdorf and Adler.)						
Adler, Friedrich, Prague, Austria-Hungary. Tramway-brake	475,171	May 17	2053	516	59	1060
Adler, Simon. (See Rothschild and Van Cott, assignors.)						
Adriance, Benjamin, assignor to Mersereau Manufacturing Company, Brooklyn, N. Y. Can-heading machine	472,284	Apr. 5	432	111, 112	59	81
Aerated Fuel Company. (See Bullard, James H., assignor.) (Reissue.)						
Agin, George W., Pekin, Ill. Ice-velocipede	475,744	May 31	2959	751	59	1265
Agricola, William H. (See La Burt, John, assignor.)						
Ahrens, John H., and H. Oostendorp, assignors to C. Schmidt & Co., Cincinnati, Ohio. Switch for overhead tracks	477,240	June 21	1613	395	59	1784

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Spec.	Dr'g.	Vol.	Page.
Aiken, Henry, Pittsburg, Pa. Apparatus for extracting ingots	475,027	May 17	1834	465	59	1017
Aiken, James A., Jackson, Mich. Device for forming the ends of handles	476,220	May 31	3743	945 946	59	1419
Aikin, Charles, Evanston, Ill. Fireproof building	477,733	June 28	2409	602	59	1959
Air Shaft Protector and Manufacturing Company. (See Wieland, Ludwig, assignor.)						
Airey, George G., and W. W. Uhl, Mount Savage, Md. Marine vessel	475,172	May 17	2055	517	59	1060
Akin, James H., assignor of one-half to J. M. Palm, Arkansas City, Kans. Attachment for vehicles	472,843	Apr. 12	1266	324	59	252
Albach, Wilhelm, Höchst-on-the-Main, Germany. Apparatus for use in barreling beer or other liquids	477,096	June 14	1360	33[illegible]	59	1722
Albee, William H. (See Colomy and Albee.)						
Albert, William. (See Price, George W., assignor.)						
Albornoz, Isaac C. de, New York, N. Y. Machine for propelling vessels	474,939	May 17	1689	431	59	990
Albrecht, Charles R., Tompkinsville, N. Y. Thumb-tack	477,587	June 21	2161	536	59	1892
Albrecht, Julius R., and E. Ortmann, New York, N. Y. Photographic shutter	475,654	May 24	2809	712	59	1234
Alden Type Machine Company. (See Johnson, Louis K., assignor.)						
Aldrich, George W., assignor to himself, J. Clayton, and T. Hudson, Brooklyn, N. Y. Collar for pipes, rods, &c	474,511	May 10	1006	259	59	842
Aldrich, George W., and J. Hueston, Brooklyn, N. Y. Water-closet cistern	475,371	May 24	2368	606	59	1139
Alexander, James, assignor of one-half to A. F. Koontz, Altoona, Pa. Combined settee and bed	473,863	Apr. 26	2951	744	59	610
Alexander, Phœbus H. (See Dey, Harry E., assignor.)						
Alexander, William R. H. (See Wiggington, John R., assignor.)						
Alford, Mitchell C., *et al.* (See Bierley, Henry A., assignor.)						
Allan, John W., Minneapolis, Minn. Relief-valve	474,711	May 10	1323	337	59	903
Allason, William J., Chicago, Ill. Nut-lock	476,769	June 14	817	201	59	1613
Allbright, John G., Boston, Mass., and W. B. Allbright, Chicago, Ill. Sash-holder	473,137	Apr. 19	1752	442	59	357
Allbright, William B. (See Allbright, John G. and W. B.)						
Allcroft, Herbert, assignor to H. Rigby, Paterson, N. J. Whirl for filler-frames	472,844	Apr. 12	1267	324	59	253
Allen, Aaron, Philadelphia, Pa. Machine for trimming wall-paper, &c	473,411	Apr. 19	2220	557	59	418
Allen, Alfred J., Essex, Canada, assignor to C. A. Gould, New York, N. Y. Car-coupling	472,245	Apr. 5	375	98	59	70
Allen, Chancellor C. (See Crockett and Allen.)						
Allen, Charles F., North St. Paul, Minn. Horse-collar	475,430	May 24	2461	627	59	1155
Allen, Charles O., Grand Rapids, Mich. Drawer for furniture	476,770	June 14	818	201	59	1613
Allen, Edward B., Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Buttonhole sewing-machine	473,564	Apr. 26	2480	627 628 629	59	590
Allen, J. M., *et al.* (See Campbell, Cydnor B., assignor.)						
Allen, James F., Elyria, Ohio. Mail-bag	473,603	Apr. 26	2352	644	59	534
Allen, Leicester, New York, N. Y. Gas-pump	474,512	May 10	1007	259	59	842
Allen, Lewellyn J. (See Warner and Allen.)						
Allen, Orren C., *et al.* (See Cobham, Frederick P., assignor.)						
Allen, Oscar M., Sr. (See Harris, Levi, assignor.)						
Allen, Stephen S. (See Lewis and Allen.)						
Allen, William A., Hartford, Conn. Watch-regulator indicator	474,789	May 10	1448	367	59	928
Allingham, James, Minneapolis, Minn. Street-car heater	472,778	Apr. 12	1178	302	59	235
Allis, F. H. (See Altman, Emil, assignor.)						
Allison, William D. (See Leonard, Roberts, and Allison.)						
Allred, Edward, Indianapolis, Ind. Sheet-metal package	476,353	June 7	197	47	59	1474
Alteman, Charles, and D. C. C. Macdonald, assignors of one-third to J. Grant, London, Canada. Sash-fastener	472,325	Apr. 5	497	129	59	93
Altham, George J., Swansea, Mass. Steam-turbine	475,957	May 31	3313	836	59	1334
Altham, George J., Swansea, Mass. Motor	475,958	May 31	3315	837	59	1334
Altman, Emil, New Haven, assignor of one-half to F. H. Allis, New Britain, Conn. Display-rack	476,029	May 31	3416	863	59	1355
Alzugaray, José B., Porto, Portugal. Metallurgical process	472,422	Apr. 5	644	.....	59	121
Ambler, William S., *et al.* (See Weaver and Manypenny, assignors.)						
American Balance-Slide-Valve Company. (See Thomas, William J., assignor.)						
American Bell Telephone Company. (See Hayes, Hammond V., assignor.)						
American Bell Telephone Company. (See Wilson, Charles H., assignor.)						
American Electrical Works. (See Sawyer, William H., assignor.)						
American Loop Fabric Company. (See Urbahn, Alwill, assignor.)						
American Patents Company. (See Malings, Charles, assignor.)						
American Postal Machines Company. (See Ethridge, Martin V. B., assignor.)						
American Press Association. (See Cummings, John R., assignor.)						
American Soda Fountain Company. (See Johnston and Barton, assignors.)						
American Soda Fountain Company. (See Johnston and Hallett, assignors.)						
American Telephone and Telegraph Company. (See Dunbar, Francis W., assignor.)						
American Zinc Lead Company. (See Bartlett, Frank L., assignor.)						
Ames, Franklin, Chicago, Ill. Suspending-clamp for use with carpet-sewing machines	472,779	Apr. 12	1180	302	59	236
Ames, Jesse E., Boston, Mass. Account-book	477,631	June 28	2257	565	59	1927
Amos, George W., Chicago, Ill. Mechanical movement	476,112	May 31	3555	894	59	1383
Amraytoon Paper Tube Company. (See Coram and Huntoon, assignors.)						
Ams, Max, New York, N. Y. Wall-facing	476,354	June 7	198	47	59	1474
Ams, Max, New York, N. Y. Cap for mustard-bottles	476,771	June 14	819	202	59	1613
Amspcher, Wesley B. (See Sterner and Amspcher.)						
Amundson, Hans. (See Kurz and Amundson.)						
Andersen, Albert. (See Andersen, Johan M., assignor.)						
Andersen, Albert, assignor of one-half to J. M. Andersen, Boston, Mass. Insulating-coupling	474,569	May 10	1106	282	59	861
Andersen, Johan M. (See Andersen, Albert, assignor.)						
Andersen, Johan M., assignor of one-half to A. Andersen, Boston, Mass. Trolley-wire-circuit breaker	474,037	May 3	242	58	59	684
Andersen, Johan M., assignor of one-half to A. Anderson, Boston, Mass. Engine	477,921	June 28	2715	680	59	2016
Andersen, Richard C., Pawnee City, Nebr. Device for watering stock	474,621	May 10	1187	301	59	876
Andersen, Richard C., Pawnee City, Nebr. Cooking-vessel	474,622	May 10	1188	302	59	876
Andersen, Richard C., Pawnee City, assignor of one-half to J. L. Marshall, Lincoln, Nebr. Cooking utensil	474,619	May 10	1184	301	59	875
Andersen, Richard C., Pawnee City, assignor of one-half to J. L. Marshall, Lincoln, Nebr. Apparatus for cooking by steam	474,620	May 10	1185	301	59	875
Anderson, Albert. (See Andersen, Johan M., assignor.)						
Anderson, Alfred H. (See Todd and Anderson.)						
Anderson, Annie L., *et al.*, administrators. (See Anderson, Frank.)						
Anderson, Benjamin C., Brooklyn, N. Y. Plumber's trap	473,993	May 3	169	40	59	671

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Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
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Anderson, Charles, assignor to South Bend Iron Works, South Bend, Ind. Sulky-plow	476,355	June 7	199	48	59	1474
Anderson, Charles A., Rockford, Ill. Cultivator-shovel	472,970	Apr. 19	1463	375	59	305
Anderson, Charles A., Rockford, Ill. Car-coupling	477,399	June 21	1865	459	59	1833
Anderson, David, and J. Naylor, Stowell, Victoria. Spark-extinguisher and smoke-consumer	472,568	Apr. 12	871	224	59	180
Anderson, Edward C., Boston, Mass., assignor to Invisible Eyelet Company, Portland, Me. Shoe	475,073	May 17	1903	483	59	1030
Anderson, Frank, deceased, Peekskill, N. Y.; A. L., G. H., and H. Anderson, administrators. Automatic telegraph	472,326	Apr. 5	498	130	59	93
Anderson, Frank S. (See Sigsbee, Hayward, and Anderson.)						
Anderson, Furn L., Audubon, Iowa. Draft-equalizer	473,895	May 3	1	1	59	637
Anderson, George A., Greenwood, Mass. Double door	475,531	May 24	2636	668	59	1187
Anderson, George E. and M. J., Grantsburg, Wis. Potato-digger	475,373	May 24	2370	606 607	59	1140
Anderson, Gilbert, Chicago, Ill. Valve	477,398	June 21	1863	458 459	59	1832
Anderson, Gilbert H., *et al.*, administrators. (See Anderson, Frank.)						
Anderson, Harriett E. (See Anderson, William, assignor.)						
Anderson, Homer, *et al.*, administrators. (See Anderson, Frank.)						
Anderson, John A., assignor of one-half to D. Mackenzie, Wakefield, Mass. Plate-securing device	475,745	May 31	2960	751	59	1265
Anderson, John N., Chicago, Ill. Stretcher for the paper or canvas of pictures	472,021	Apr. 5	2	1	59	3
Anderson, John S., Corsicana, Tex. Feed-trough	472,971	Apr. 19	1463	375	59	305
Anderson, Lee, Paris, Tex. Stirrup	475,374	May 24	2372	607	59	1140
Anderson, Martin J. (See Anderson, George E. and M. J.)						
Anderson, Peter, Fort Wayne, Ind. House-door letter-box	473,138	Apr. 19	1753	442	59	357
Anderson, Valerius D., Cleveland, Ohio. Press	474,802	May 17	1473	375	59	947
Anderson, William. (See Symington and Anderson.)						
Anderson, William, assignor to H. E. Anderson, Boston, Mass. Sofa-bed	477,881	June 28	2657	664	59	2004
Anderson, William A., assignor of one-third to R. Burns, Chicago, Ill. Sectional canteen or coffee-flask	475,231	May 17	2145	543	59	1079
Anderson, William R. (See Clouse and Anderson.)						
Anderson, William W., New York, N. Y. Cuff-holder	474,803	May 17	1474	375	59	947
André, Ulysse, and O. Durand, Barcelona, Spain. Cock or tap	476,113	May 31	3557	895	59	1383
Andresen, Momme, Berlin, Germany. Developing photographic pictures	475,372	May 24	2369	.....	59	1139
Andresen, Momme, Berlin, Germany. Photographic developer	477,486	June 21	2003	.....	59	1860
Andress, Thomas, Pittsville, Wis. Whiffletree-hook	472,491	Apr. 5	754	192	59	143
Andrews, Albert A., Whitinsville, Mass. Top roll	474,204	May 3	493	118	59	733
Andrews, Brainard A., *et al.* (See Parks, Dana, assignor.)						
Andrews, Daniel L., Denison, Tex. Wick-trimmer	476,114	May 31	3557	895	59	1383
Andrews, Joseph D. F., London, England, assignor, by mesne assignments, to Curtis Electric Manufacturing Company, of West Virginia. Dynamo-electric machine or motor	474,024	May 10	1191	302	59	876
Andrews, Walter E., New York, N. Y. Dental reflector and tongue-guard	477,791	June 28	2502	627	59	1975
Andrews, William, Aston, near Birmingham, England. Velocipede	475,959	May 31	3318	837	59	1334
Andrews, William S., assignor to Edison General Electric Company, New York, N. Y. Circuit-controller for electric motors	474,023	May 10	1190	302	59	876
Andross, Edward B., Brockport, N. Y. Automatic twine-holder	475,173	May 17	2057	517	59	1061
Angell, Edwin E. (See Burton and Angell.)						
Angois, Paul. (See Woodhead and Angois.)						
Annable, George G., assignor of one-half to H. Lacy, Syracuse, N. Y. Governor	476,356	June 7	201	48, 49	59	1475
Ansley, Frank and G. W., Medical Lake, Wash. Combined milk pail and strainer	475,375	May 24	2373	607	59	1140
Ansley, George W. (See Ansley, Frank and G. W.)						
Ansonia Clock Company. (See Davies, Walter D., assignor.)						
Anthony, Jacob L., Celina, Ohio. Fastening or locking device for stovepipes	473,052	Apr. 19	1606	409	59	331
Anthony, Mark, Berkeley, assignor to Golden Gate Safety Faucet Company, San Francisco, Cal. Means for protecting the bungways of barrels	476,180	May 31	3669	927	59	1405
Anthony, William H. (See Goode and Anthony.)						
Anton, John C., assignor of one-half to P. G. Anton, St. Louis, Mo. Repetition piano-action	476,115	May 31	3558	895	59	1383
Anton, Philip G. (See Anton, John C., assignor.)						
Antonini, Frank E. (See Watson and Antonini.)						
Apfelbaum, Morris, New York, N. Y. Button	472,845	Apr. 12	1268	325	59	253
Appert, Léon, Paris, France. Apparatus for molding curved hollow glass articles	476,772	June 14	819	202	59	1614
Apple, Charles S., Bellaire, Ohio. Potato-masher	472,515	Apr. 12	799	205	59	165
Appleby, John F., assignor to William Deering & Company, Chicago, Ill. Winch	475,376	May 24	2374	607	59	1140
Appleby, John F., Santa Cruz, Cal., and J. F. Steward, assignors to William Deering & Company, Chicago, Ill. Mechanical movement	472,972	Apr. 19	1464	375	59	305
Appleton Machine Company *et al.* (See Goodrick, Edward W., assignor.)						
Arave, Daniel W., assignor of one-half to E. A. Barnes, Ogden, Utah Ter. Combined step-ladder and ironing-board	473,896	May 3	2	1	59	637
Archbold, Israel N., Ridge Farm, Ill. Machine-gun	476,590	June 7	546	130	59	1545
Archbold, Israel N., Ridge Farm, Ill. Revolving firearm	476,591	June 7	550	131	59	1545
Archer, Francis M., Fountaintown, Ind. Press for honey-sections	476,116	May 31	3561	895	59	1384
Archer, George W., assignor to Archer Manufacturing Company, Rochester, N. Y. Elevator-door-operating device	476,773	June 14	821	202	59	1614
Archer, George W., assignor to Archer Manufacturing Company, Rochester, N. Y. Barber's chair	476,774	June 14	822	203	59	1614
Archer Manufacturing Company. (See Archer, George W., assignor.)						
Archibald, William W., Newport News, Va. Clamp for molders' flasks	474,352	May 10	763	199	59	795
Ardrey, Robert, assignor to D. Wistar, Philadelphia, Pa. Umbrella-runner	475,074	May 17	1904	483	59	1030
Arens, August, assignor to P. & F. Corbin, New Britain, Conn. Lock	475,914	May 31	3246	819	59	1390
Arey, Clarence O., Cleveland, Ohio. Furnace or setting for steam-generators	473,053	Apr. 19	1607	409	59	331
Armas, Fabricio L., Pescadero, Cal. Crupper-strap fastener	475,655	May 24	2813	713	59	1225
Arment, Samuel B., Bloomsburg, Pa. Lawn-mower grass-receptacle	474,804	May 17	1476	376	59	948
Armstrong, Edwin E. Detroit, Mich. Horse-collar fastener	474,712	May 10	1324	338	59	904
Arnaud, Samuel, Maidenhead, England. Meat-crusher, &c	472,973	Apr. 19	1466	375 376	59	305
Arne, George H. (See Kint, Daniel, assignor.)						
Arnett, William D., Caldwell, Idaho. Grading-machine	472,569	Apr. 12	872	224	59	180
Arno, Oliver H., Boston, Mass. Magazine spring-gun	473,808	Apr. 26	2461	718	59	593
Arnold, Alexius H., Chicago, Ill. Adjustable angular and circular composing-bar	474,649	May 10	1227	314	59	884
Arnold, Benjamin, East Greenwich, R. I. Endless-chain elevator	473,203	Apr. 19	1809	471	59	378
Arnold, Benjamin, East Greenwich, R. I. Endless-chain elevator	476,507	June 7	428	100	59	1521
Arnold, Clarence R., assignor to H. M. Arnold, Wellsville, Ohio. Tricycle	474,279	May 3	606	150	59	755
Arnold, Craig R., Sharon Hill, Pa. Incandescent-electric-lamp socket	473,373	Apr. 19	2156	542	59	436

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Arnold, Craig R., Sharon Hill, Pa. Junction-box	476,970	June 14	1157	279	59	1680
Arnold, Eliphalet L., Georgetown, Tex. Elevated railway	476,720	June 7	734	181, 182	59	1583
Arnold, Helen M. (See Arnold, Clarence R., assignor.)						
Arnold, John T. (See Roney and Arnold.)						
Arnold, Phineas, Canal Dover, Ohio. Preparing clay	475,915	May 31	3247	820	59	1321
Arnold, Wellington A., and E. M. Babcock, Moravia, N. Y. Carpet-stretcher	472,204	Apr. 5	312	80	59	59
Arnold, Willis E., Danville, Ill. Wire-staple making and driving machine	472,516	Apr. 12	799	205, 206	59	165
Ascough, Jesse, Handsworth, England. Making borax	476,592	June 7	554	.....	59	1546
Ash, Joseph H., Brooklyn, N. Y. Plumber's clamp	474,713	May 10	1325	338	59	904
Ashurst, John L., Havana, assignor to L. B. Ashurst, Kilbourn, Ill. Grain-drill	475,532	May 24	2027	668, 669	59	1187
Ashurst, Louis B. (See Ashurst, John L., assignor.)						
Ashurst, Robert P., Blackburn, Mo. Cultivator	475,843	May 31	3132	794	59	1298
Ashworth, Granville H., assignor of two-thirds to H. B. Wieman and J. J. Shrike, Sedalia, Mo. Bee-escape for hives	473,284	Apr. 19	2002	503	59	406
Ashworth, James W., Camden, N. J. Stretcher for necktie-bows	473,687	Apr. 26	2680	675	59	558
Askam, William F., Shelton, Conn. Letter-box	476,971	June 14	1159	280	59	1681
Assorati, Antenor, New York, assignor to himself, and E. L. Desvernine, Bensonhurst, N. Y. Bolt	475,746	May 31	2960	751	59	1265
Atchinson, Mattie, administratrix. (See Watson, Charles W.)						
Ateliers de Constructions Mecaniques. (See Sprenger, Jean, assignor.)						
Atherton, Garrick M., Longton, Kans., assignor of one-half to F. A. Du Bois. Speed-controller	472,598	Apr. 12	909	233	59	187
Atherton, Stillman M., assignor to Baldwin Refrigerator Company, Burlington, Vt. Lever-latch for refrigerators	472,938	Apr. 12	1407	360	59	281
Atkins, George J., London, England. Amalgamating apparatus for separating gold and other metals from their ores	473,104	Apr. 19	1681	427	59	344
Atkins, George J., London, England. Electrolytic apparatus for separating gold and other metals from their ores	473,105	Apr. 19	1684	427, 428	59	345
Atkins, John, Cincinnati, Ohio. Vehicle-shaft	475,916	May 31	3248	820	59	1321
Atkinson, Claude W. (See Atkinson and Goolden.)						
Atkinson, Claude W. and L. B., London, England. Machinery for cutting coal or other minerals	476,594	June 7	556	132, 133	59	1546
Atkinson, James W., Milpitas, Cal. Spring-gun	477,982	June 28	2799	701	59	2034
Atkinson, Llewelyn B. (See Atkinson, Claude W. and L. B.)						
Atkinson, Llewelyn B. and C. W., and W. T. Goolden, London, England. Machinery for cutting coal and other minerals	476,593	June 7	555	131, 132	59	1546
Atkinson, William H., and D. M. Somers, Brooklyn, N. Y. Apparatus for pickling metal plates	473,106	Apr. 19	1688	428, 429, 430	59	345
Atmospheric Paint Compound Company. (See Frederick, William B., assignor.)						
Atwater, Randolph K. (See Langdon, George W., assignor.)						
Atwood, William W., and W. C. Orcutt, San Francisco, Cal. Sole-inking tool	475,377	May 24	2375	608	59	1140
Audette, Henry E. (See Petterson, Charles E., assignor.)						
Auger, Charles L., Paterson, N. J. Dye-tub	472,327	Apr. 5	502	130	59	95
Augir, Viola J., Springfield, Mo. Photograph-holder	476,357	June 7	203	49	59	1475
Augustin, Francis E. and W. F., Chicago, Ill. Pool-table	472,423	Apr. 5	645	164, 165	59	121
Augustin, William F. (See Augustin, Francis E. and W. F.)						
Auld, Benjamin F., deceased, Phœnixville, Pa.; E. M. Auld, administratrix. Umbrella	475,028	May 17	1835	465	59	1017
Auld, Emily M., administratrix. (See Auld, Benjamin F.)						
Aultman, Riley J., Shanesville, Ohio. Corn-harvester	476,595	June 7	558	133	59	1546
Austin, Eugene A., Boulder, Colo. Screen for clay, ores, &c	476,438	June 7	333	75, 76	59	1502
Austin, Frederick C. (See Hinman and Bunnell, assignors.)						
Austin, John T., assignor to D. L. Bartlett, T. J. Hayward, and E. L. Bartlett, Baltimore, Md. Magazine-stove	474,769	May 10	1412	359	59	921
Automatic Time, Stamp and Register Company. (See Martin, Morris, assignor.)						
Avery, Amos L., Bradford, Pa. Gas and air mixer	477,288	June 21	1690	414	59	1799
Avery, Chancy, Pleasant Lake, Ind. Shingling-gage	472,846	Apr. 12	1268	325	59	253
Avery, John T., assignor to Avery Lasting Machine Company, St. Louis, Mo. Lasting machine	472,509	Apr. 12	910	234, 235, 236	59	187
Avery Lasting Machine Company. (See Avery, John T., assignor.)						
Avery, Thomas E., Danbury, Conn. Machine for curling hat-brims	472,974	Apr. 19	1467	376, 377	59	305
Avery, Thomas E., Danbury, Conn. Drainage-trap	474,205	May 3	493	119	59	733
Avis, Walter H. (See Munro and Avis.)						
Ayers, George M., Pittsfield, Pa. Whiffletree	476,117	May 31	3563	896	59	1384
Ayers, James R., Petersburg, Va. Check-row corn-planter	472,246	Apr. 5	376	99	59	70
Ayres, Andrus D., Kalamazoo, Mich. Electro-magnet	476,236	June 7	1	1	59	1439
Ayres, Ruben B., New York, N. Y. Station-indicator	475,378	May 24	2376	608, 609	59	1141
Azo, Emile, Chicago, Ill., assignor of one-half to J. S. Mackaye, New York, N. Y. Sash-fastener	474,570	May 10	1107	283	59	861
B. Avery & Sons. (See Holsclaw, Wilford H., assignor.)						
B. F. Cummins Company. (See Cummins and Stenwall, assignors.)						
Babcock, Edwin H. (See Arnold and Babcock.)						
Babcock, Francis G. (See Ingraham, Thomas J., assignor.)						
Babcock, Henry D., Leonardsville, N. Y. Grate-support for furnaces	472,780	Apr. 12	1182	302	59	236
Babcock, Henry D., Leonardsville, N. Y. Hot-air furnace	476,775	June 14	825	203	59	1615
Babcock, Henry D., Leonardsville, assignor of one-half to C. H. Childs & Co., Utica, N. Y. Cultivator	473,491	Apr. 26	2355	597	59	496
Babcock, Henry D., Leonardsville, assignor of one-half to C. H. Childs & Co., Utica, N. Y. Straw-cutter	473,492	Apr. 26	2355	597	59	496
Babcock, Stephen E., Little Falls, N. Y. Sewerage system	473,489	Apr. 26	2352	596, 597	59	495
Babcock, Stephen E., Little Falls, N. Y. Sewerage system and hollow tile for use in same	473,490	Apr. 26	2353	597	59	495
Babcock, William W., Galesburg, Ill. Machine for loading cartridge-shells	473,440	Apr. 26	2258	569, 570, 571, 572, 573	59	477
Babis, John, Philadelphia, Pa. Bottle-washing brush	474,625	May 10	1192	303	59	877

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bacallado y Sanchez, Luis, Matanzas, Cuba. Fiber-machine	474,714	May 10	1326	338, 339	59	904
Bachert, Edward C., Canton, Ohio. Combined match-box and holder	472,022	Apr. 5	3	1	59	3
Backhaus, Anton, Altenburg, Saxe-Altenburg, Germany. Alarm for hot axles	472,688	Apr. 12	1041	269	59	209
Backus Water Motor Company. (See Shepperd, Sylvanus D., assignor.)						
Badiam, Edgar B., San Francisco, Cal. Carburetor	475,972	May 31	3337	842	59	1338
Bagley, Martin J., assignor of one-half to J. S. Crane, Lake Village, N. H. Last	476,858	June 14	971	236	59	1644
Bagnasco, Frank A., Long Island City, N. Y. Pneumatic tool	474,154	May 3	413	100	59	718
Baier, Frederick A., assignor to Brownell Car Company, St. Louis, Mo. Car-truck	476,596	June 7	560	133	59	1547
Bailey, Archibald, Philipsburg, assignor of seventeen twenty-fourths to Bigler, Reed & Co., G. A. Read, Clearfield, and C. E. Glenn, Butler, Pa. Coal-mining machine	473,604	Apr. 26	2553	644	59	534
Bailey, Fortune L., Freeport, Ind. Metal wheel	476,118	May 31	3564	896	59	1384
Bailey, John G., Rogers, Ark. Stirrup-strap connection	474,715	May 10	1333	339	59	905
Bailey, Leonard, Hartford, Conn. Ribbon for type-writing machines	472,847	Apr. 12	1270	325	59	254
Bailey, Samuel R., Amesbury, Mass. Carriage end-gate	474,353	May 10	763	199	59	795
Bailey, Wilber N., and C. F. Tilton, assignors to Eureka Tape and Belt Fastening Company, Bay City, Mich. Belt-fastener	473,864	Apr. 26	2953	745	59	610
Baillard, George C., New York, N. Y. Incandescent electric lamp	472,800	Apr. 12	1207	310	59	241
Baillard, George C., New York, N. Y. Incandescent electric lamp	472,801	Apr. 12	1209	310	59	241
Baillie, William E. (See Godfrey, Jonathan, assignor.)						
Baird, Addison W., *et al.*, executors. (See Baird, John.)						
Baird, Archibald, *et al.* (See Rose, George, assignor.)						
Baird, John, deceased, New York, N. Y.; J. S. and A. W. Baird and J. E. Parsons, executors. Steam-boiler	476,181	May 31	3670	928	59	1405
Baird, John S., *et al.*, executors. (See Baird, John.)						
Baird, Matthew B., *et al.* (See Rose, George, assignor.)						
Baker, Albert R. (See Brown, John F., assignor.)						
Baker, Ambrose S., assignor of one-half to G. J. Woodard, Sandy Creek, N. Y. Composition of matter for bricks	477,632	June 28	2258	.....	59	1927
Baker, Charles F. (See Thompson, James F., assignor.)						
Baker, Charles H., Lake Geneva, Wis. Electric railway	474,355	May 10	766	199	59	795
Baker, Charles H., Bay City, Mich. Lawn-sprinkler	477,164	June 14	1460	358	59	1742
Baker, Conrad and I., Santa Ana, Cal. Truck-elevator	473,441	Apr. 26	2269	573	59	479
Baker, Eri G., assignor to Baker Telephone Index and Tablet Company, Lowell, Mass. Tablet-displaying device	476,182	May 31	3672	928	59	1405
Baker, George A., South Bend, Ind. Letter-file	474,280	May 3	608	151	59	755
Baker Heater Company. (See Baker, William C., assignor.)						
Baker, Henry H., Jr., assignor of one-half to H. D. Blakeslee, Buffalo, N. Y. Book-holder	472,247	Apr. 5	377	99	59	70
Baker, Henry W., and W. J. Stump, Keyser, W. Va. Hinge	473,688	Apr. 26	2680	675	59	558
Baker, Isaiah. (See Baker, Conrad and I.)						
Baker, James E., Brooklyn, N. Y. Paper box	476,237	June 7	2	1	59	1439
Baker, John T., Chicago, Ill. Awning-worker	476,119	May 31	3565	896	59	1385
Baker, John W., *et al.* (See Hall, George F., assignor.)						
Baker, Joseph M., Louisville, Ky. Box	476,121	May 31	3567	897	59	1385
Baker, Julius, Pittsburg, Pa. Fence	476,120	May 31	3567	896	59	1385
Baker, Seth H., and J. H. Verity, Rapidan, Minn. Middlings-purifier	474,354	May 10	764	199	59	795
Baker Telephone Index and Tablet Company. (See Baker, Eri G., assignor.)						
Baker, Thomas J. (See Parry and Baker.)						
Baker, Thomas J., Findlay, Ohio. Boiler-scraper	473,809	Apr. 26	2863	719	59	593
Baker, William C., New York, N. Y. Car-heating apparatus	472,689	Apr. 12	1042	269	59	209
Baker, William C., New York, N. Y. Heating apparatus for cars or buildings	476,972	June 14	1160	280	59	1681
Baker, William C., New York, N. Y. Car-heater	476,973	June 14	1161	280, 281	59	1681
Baker, William C., assignor to Baker Heater Company, New York, N. Y. Railway-car heater	473,721	Apr. 26	2732	687	59	567
Baker, William C., assignor to Baker Heater Company, New York, N. Y. Safety-vent for steam apparatus	473,722	Apr. 26	2733	688	59	568
Baker, William H., assignor to Pioneer Manufacturing Company, Des Moines, Iowa. Mechanical movement	475,379	May 24	2383	609	59	1142
Baker, William H., and B. A. Oborn, Etna, Pa. Harrow or cultivator	478,072	June 28	2950	737	59	2061
Baldwin, A. Van Nest. (See Higgins and Lee, assignors.)						
Baldwin, Charles E., Newark, N. J. Package-carrier	473,897	May 3	3	1	59	637
Baldwin, Cyrus W., Yonkers, N. Y., assignor to National Company, Chicago, Ill. Elevator	478,040	June 28	2900	724, 725	59	2052
Baldwin, Frank S., Newark, N. J., assignor of one-half to J. W. Tilley, Castleton, N. Y. Roundabout	476,597	June 7	562	134	59	1547
Baldwin, George W., assignor to Edward Miller & Company, Meriden, Conn. Lamp-suspending device	472,468	Apr. 5	719	183	59	136
Baldwin, John T., Petaluma, Cal. Propeller	473,374	Apr. 19	2158	542	59	436
Baldwin, Judson A., Burlington, Vt. Sash-holder	473,898	May 3	3	1	59	637
Baldwin, Le Roy W. (See Spiegel, William G., assignor.)						
Baldwin, Le Roy W., New York, N. Y. Time-lock for toy banks	477,321	June 21	1743	427	59	1809
Baldwin, Ozro J., Youngsville, assignor of one-half to W. A. and G. W. Louden, Allegheny, Pa. Device for holding and operating the jaws or ends of the reins of a temper-screw	476,721	June 7	737	182	59	1584
Baldwin Refrigerator Company. (See Atherton, Stillman M., assignor.)						
Baldwin, William A., New York, N. Y. Furnace for alloying metals	477,792	June 28	2502	627	59	1975
Ball, James, assignor of two-thirds to J. T. Abbe and G. N. Tyner, Holyoke, Mass. Incandescent lamp	476,183	May 31	3674	928	59	1406
Ball, John W., Rusk, Tex. Safety-valve	477,487	June 21	2004	497	59	1860
Ball, Royal E., New York, N. Y. Electric-arc lamp	472,747	Apr. 12	1136	291, 292	59	227
Ball, William P., Fresno, assignor to T. Hooker & Co., San Francisco, Cal. Dirt-scraper	474,896	May 17	1626	415	59	977
Ballantine, Alexander T., assignor to Domestifroid Company, Cleveland, Ohio. Portable or domestic refrigerator	476,358	June 7	205	49, 50, 51	59	1476
Ballantine, Alexander T., assignor to Domestifroid Company, Cleveland, Ohio. Reciprocating hydraulic motor	476,359	June 7	209	51, 52	59	1476
Ballard, Loring C. (See Shepherd and Ballard.)						
Ballman, John H., St. Louis, Mo. Photographic-plate holder	474,571	May 10	1110	283	59	862
Ballew, John C., Evansville, Ind. Machine for removing knots from poles	476,859	June 14	972	236	59	1644
Ballou, Russell A., assignor to Chemical Hand Fire Extinguisher Company, Boston, Mass. Chemical fire-extinguisher	475,050	May 17	1869	474	59	1024
Ballou, Waldo R., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	474,281	May 3	609	151	59	756

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Balmore, John, and E. E. Gold, New York, N. Y.; said Balmore assignor to said Gold. Hose-coupling	475,738	May 24	2942	746	59	1247
Balshaw, David, Nacogdoches, Tex. Cotton-chopper	472,975	Apr. 19	1478	377, 378	59	308
Bancroft, Ashley, Portland, Oreg. Traveling-bag	476,598	June 7	563	134	59	1548
Bancroft, Gideon K., Philadelphia, Pa. Device for operating awnings	476,439	June 7	333	76	59	1502
Banghart, Andrew B. (See Treat and Banghart.)						
Bangs, Edwin D., Milwaukee, and A. L. Waite, deceased, (A. L. Waite, administratrix,) Baraboo, assignor of one-fifth to M. H. Case, Milwaukee, Wis. Brake and heating system for railway-cars	472,424	Apr. 5	649	165, 166	59	121
Banker, George W., Brooklyn, N. Y. Paint-oil	474,434	May 10	888	.....	59	820
Banks, Jennie H. (See Unger, Charles W., assignor.)						
Barber, Earl E. (See Eaton and Barber.)						
Barber, Luther A. (See Twiss and Barber.)						
Barber, Ohio C., Chicago, Ill. Automatic fire-extinguisher	473,442	Apr. 26	2271	573	59	480
Barber, Ohio C., Chicago, Ill. Water-tube boiler	473,443	Apr. 26	2272	573	59	480
Barbour, Fred E., Washington, D. C. Luggage-carrier for bicycles	475,174	May 17	2058	517	59	1061
Barclay, James, Sioux City, Iowa. Wrist-plate	473,810	Apr. 26	2264	719	59	594
Barcroft, Henry, Newry, Ireland. Apparatus for propelling vessels	476,122	May 31	3569	897	59	1385
Bardons, George C., Cleveland, Ohio. Machine for turning irregular shapes	475,917	May 31	3249	820	59	1321
Bareis, Karl G., Madison, Wis. Check-hook	473,107	Apr. 19	1693	430	59	346
Barker, Albert A. (See Houghton and Barker.)						
Barker, Asbury, Peekskill, N. Y. Camera-shutter	477,588	June 21	2161	536	59	1892
Barker, Douglas, Riverside, Cal. Tree-prop	473,412	Apr. 19	2221	558	59	448
Barker, John A., Pasadena, Cal. Head-rest	477,197	June 21	1525	373	59	1769
Barker, Joseph H., New York, N. Y. Mailing or salesman's box	475,918	May 31	3251	821	59	1321
Barkley, Richard W., Brooklyn, N. Y. Electric railway	476,776	June 14	926	203, 204, 205	59	1615
Barler, Augustus C., Fremont, Nebr., assignor to Huette-Barler Manufacturing Company, Chicago, Ill. Stove or heater	475,029	May 17	1837	466	59	1017
Barlow, John W., Quincy, Ill. Check-row mechanism for planters	472,976	Apr. 19	1479	378	59	308
Barnard, William, *et al.* (See Wood, Joseph M., assignor.)						
Barnes, Charles O. and L., Sr., Syracuse, N. Y. Bicycle-wheel	474,897	May 17	1627	415	59	977
Barnes, David L., Chicago, Ill., assignor to E. C. Clark, Saratoga Springs, N. Y. Car-coupling	477,489	June 21	2006	498	59	1860
Barnes, David L., assignor to Northwestern Equipment Company, Chicago, Ill. Car-brake	477,922	June 28	2720	680	59	2017
Barnes, Edward A. (See Arave, Daniel W., assignor.)						
Barnes, G. H., *et al.* (See Hoff, Peter, assignor.)						
Barnes, George A., New Haven, Conn. Machine for making box-covers	473,184	Apr. 19	1841	463, 464	59	373
Barnes, George Z., Pekin, Ill. Mouth-speculum for horses	472,939	Apr. 12	1409	360	59	282
Barnes, John L., Kendallville, Ind. Feed mechanism for sawmills	474,435	May 10	888	211	59	820
Barnes, Joshua, Green Lawn, N. Y. Pocket-case for bottles	474,940	May 17	1691	431	59	991
Barnes, Lucien, Sr. (See Barnes, Charles O. and L., Sr.)						
Barnes, Lucien, Syracuse, N. Y. Car-coupling	474,466	May 10	940	242	59	829
Barnett, David, and D. Black, Bradford, England. Machine for combing fiber	474,513	May 10	1012	260	59	843
Barnett, Harry T. (See Pyke and Barnett.)						
Barnett, Otto R., trustee. (See Marsh, James P., assignor.)						
Barnett, Thomas, San Francisco, Cal. Broiler and toaster	476,508	June 7	429	100	59	1521
Barney, Finis M., Kearney, Nebr. Hydraulic clutching mechanism	473,444	Apr. 26	2273	574	59	480
Barnhart, Harvey P., assignor to Thatcher Manufacturing Company, Potsdam, N. Y. Milk-jar and closing device therefor	474,436	May 10	890	232	59	821
Barnhart, James H. (See Kidd, Gideon P., assignor.)						
Barnum, William H., assignor to C. H. Merritt, Danbury, Conn. Machine for stiffening hats	476,860	June 14	973	236	59	1644
Barraclough, Thomas C., London, England. Machinery for rolling and expanding metal tubes	473,651	Apr. 26	2627	662	59	548
Barrett, Cornelius T., Brooklyn, N. Y., assignor of one-third to H. W. Douty, Jersey City, N. J. Electric telemeter	477,853	June 28	2609	654	59	1905
Barril, Robert de, New York, N. Y. Photographic camera	475,919	May 31	3252	821	59	1322
Barringer, Daniel M., Philadelphia, Pa. Apparatus for illustrating geological formations	477,633	June 28	2259	565	59	1927
Barron, Walter J., Brooklyn, N. Y. Type-writing machine	472,023	Apr. 5	4	2	59	3
Barrow, Jacob, Windfall, Ind. Oil-burner	474,282	May 3	612	151	59	756
Barrows, John F. (See Lockwood, George F., assignor.)						
Barry, John F., *et al.* (See Slaymaker, Samuel R., assignor.)						
Barry, Joseph E., New York, N. Y. Hydraulic elevator	473,811	Apr. 26	2266	719	59	594
Bartholomew, Albert W., assignor of one-half to T. B. Kennedy, Boston, Mass. Puzzle	474,941	May 17	1692	432	59	991
Bartlett, Almin F., *et al.* (See Bennett, William H., assignor.)						
Bartlett, David L., *et al.* (See Austin, John T., assignor.)						
Bartlett, Edward L., *et al.* (See Austin, John T., assignor.)						
Bartlett, Frank L., assignor to American Zinc Lead Company, Portland, Me. Paint-pigment	477,488	June 21	2005	.....	59	1860
Bartlett, George F., and A. J. O'Neill, Butte City, Mont. Ore-roasting furnace	472,848	Apr. 12	1271	325, 326	59	254
Bartlett, Henry F., Springfield, Mo. Can-screw and faucet	472,157	Apr. 5	229	61	59	43
Barton, George E. (See Johnston and Barton.)						
Bartusch, Oswald, Brooklyn, N. Y., assignor to J. Wetter, Memphis, Tenn. Numbering hand-stamp	473,605	Apr. 26	2557	645	59	535
Bassett, Charles W., Newton, assignor to Washburn & Moen Manufacturing Company, Worcester, Mass. Electric conductor	475,920	May 31	3254	821	59	1322
Bassett, Horace P., Warren, Ohio. Car-brake	473,606	Apr. 26	2559	645	59	535
Bassett, Norman C., Chicago, Ill., assignor to Otis Brothers & Company, New York, N. Y. Operating mechanism for hydraulic-elevator valves	476,861	June 14	975	236, 237	59	1644
Bassford, Isaac F., assignor of one-half to A. Docter, Milwaukee, Wis. Mowing-machine cutter	476,030	May 31	3418	863	59	1356
Bast, Johann G., Brooklyn, N. Y. Ash-sifter	477,589	June 21	2165	537	59	1892
Bastian, Charles L., assignor to L. M. Ennis, Chicago, Ill. Valve	477,192	June 14	1507	369	59	1753
Bateman, Edward S., *et al.* (See Bateman, Frank, assignor.)						
Bateman, Frank, assignor to himself, E. S. Bateman, Grenloch, and E. C. Wilson, Blackwood, N. J. Wheel-cultivator	472,781	Apr. 12	1183	303	59	236
Bates, Albert J., Joliet, Ill. Steam dash-pot	473,994	May 3	170	40	59	671

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bates & Blake Electric Railway Conduit Company. (See Bates, Joseph W., assignor.)						
Bates, Hervey, Jr., Indianapolis, Ind. Process of and apparatus for the manufacture of alimentary products from corn	476,599	June 7	565	134	59	1548
Bates, James P., assignor of one-half to A. Doneghy, Springfield, Mo. Manhole and sewer connection	476,440	June 7	334	76	59	1502
Bates, John L., Brooklyn, N. Y., assignor of one-half to H. Brooke, Jersey City, N. J. Collapsing satchel	476,862	June 14	977	237	59	1645
Bates, Joseph W., Minneapolis, Minn. Wall-covering	476,360	June 7	213	52	59	1477
Bates, Joseph W., assignor to Bates & Blake Electric Railway Conduit Company, Minneapolis, Minn. Electric railway	477,734	June 28	2409	602	59	1959
Batters, Edward, Toronto, Canada. Milk-receiver	477,289	June 21	1691	415	59	17 9
Battersby, Benjamin F. (See Browning and Battersby.)						
Batzel, Frank, Riverside, N. J. Folding umbrella	474,467	May 10	942	243	59	829
Bauer, August, Sandusky, Ohio. Vehicle-wheel	473,812	Apr. 26	2267	720	59	594
Bauer, Charles A., assignor to Warder, Bushnell & Glessner Company, Springfield, Ohio. Harvester-seat	476,238	June 7	3	1	59	1439
Bauer, Gotthilf, Esslingen, Germany. Slide-gage	474,111	May 3	357	85	59	706
Bauer, Henry, Philadelphia, Pa., assignor, by mesne assignments, to Climax Cigarette and Cigar Machine Company, of Pennsylvania. Cigarette-machine	473,108	Apr. 19	1694	430, 431	59	346
Bäuerlein-Germann, G. (See Wassermann, Georg, assignor.)						
Baugh, Frederick, Alliance, Ohio. Land-roller	474,038	May 3	244	58	59	685
Baum, Christian, St. Genevieve, Mo. Adjustable store-shelf	472,469	Apr. 5	720	183	59	136
Baum, Gustav, and J. Müller, Berlin, Germany. Album	472,470	Apr. 5	721	184	59	137
Baumann, Rodolphe, Geneva, Switzerland. Governor	472,690	Apr. 12	1042	269	59	210
Baumert, Paul. (See Wegener, Carl, assignor.)						
Baunach, John, assignor to J. F. Kitchell, Newark, N. J. Bag-fastening	477,097	June 14	1362	331	59	1723
Bayha, George, St. Louis, Mo. Railway-car	475,844	May 31	3133	794	59	1298
Bayless, William, Brantford, Canada. Honey-extractor	476,722	June 7	738	183	59	1584
Bayless, William C. (See Watkins and Bayless.)						
Baylor, James. (See Baylor, Thomas J. and J.)						
Baylor, Thomas J. and J., Canton, Ill. Car-coupling	472,328	Apr. 5	504	131	59	95
Baynes, Frederick, and J. Whalley, Blackburn, England; said Baynes assignor to said Whalley. Shuttle-binder for looms	475,380	May 24	2384	610	59	1142
Beach, Calvin R., *et al.* (See Franklin, Benjamin, assignor.)						
Beal, Francis R., Northville, Mich. School-seat	475,076	May 17	1906	484	59	1031
Beal, George W., Highlands, Colo. Axle-lubricator	475,051	May 17	1870	474	59	1025
Beale, Alfred G., and T. Nesbitt, Tunbridge Wells, England. Machine for creasing powder-papers	474,716	May 10	1334	339, 340	59	905
Beale, Oscar J., assignor to Brown & Sharpe Manufacturing Company, Providence, R. I. Worm and worm-shaft	472,517	Apr. 12	802	206	59	165
Beaman, John W., Mount Ayr, Iowa. Dividers	472,977	Apr. 19	1481	378, 379	59	309
Bean, Frederick W., Ogden, Utah Ter. Gas-stove	473,285	Apr. 19	2004	504	59	406
Bearse, Ephraim L., Brooklyn, N. Y. Lamp-shade	476,239	June 7	5	1	59	1439
Beasley, James E., Savannah, Ga. Mattress-making device	473,204	Apr. 19	1871	471, 472	59	379
Beatty, Herbert L. (See Jacobi, Oscar, assignor.)						
Beaumont, Thomas C. assignor to Henry Huber Company, New York, N. Y. Periodical flushing-tank	475,533	May 24	2629	669	59	1188
Becher, Carl, New York, N. Y. Fluid-receptacle for fly-traps	477,618	June 21	2231	557	59	1905
Becher, Carl, assignor of one-half to J. Moskowitz, New York, N. Y. Fly-trap	474,514	May 10	1014	260	59	843
Beck, Albert P., Cleveland, Ohio. Disinfecting device	475,431	May 24	2462	627	59	1156
Beck, Bruno, assignor of one-half to P. J. Cook, Chicago, Ill. Automatic air-compressor	476,723	June 7	739	183	59	1584
Beck, Charles, Philadelphia, Pa. Box-stapling machine	473,813	Apr. 26	2268	720	59	594
Beck, J. L., *et al.* (See Coleman, John, assignor.)						
Becker, Charles M. (See Hofheimer, Maurice, assignor.)						
Becker, George H., *et al.* (See Lish, William H., assignor.)						
Becker, John, Newton, Mass. Milling-machine	474,898	May 17	1628	416	59	977
Becker, John J., Fort Wayne, Ind., assignor to Wayne Oil Tank Company. Self-measuring pump	473,891	Apr. 26	3004	758	59	620
Beckwith, Eugene K., Niantic, Conn. Shingling-bracket	472,633	Apr. 12	966	250	59	197
Beckwith, Seth R. (See Uhlig, Richard W., assignor.)						
Beckwith, Theodore A., assignor of part to R. P. Tapley, Jr., C. E. Clogston, F. R. Hilliard, G. H. Leighton, J. and F. Callahan, C. L. Hoyt, A. McLeod, G. C. Greely, W. H. Ruddock, C. M. Hoyt, T. J. Neagle, G. A. Tuxbury, R. B. Day, J. J. Vaughn, J. McDonald, D. W. Hopkinson, M. J. Kiley, M. F. Brady, H. Tattersall, G. A. Sampson, C. F. Brown, and T. P. Dutra, Haverhill, J. J. and F. Molloy, M. J. Shea, M. G. Tenney, Georgetown, M. J. Walsh, Lawrence, and D. P. McCarthy, Danvers, Mass. Car-coupling	475,103	May 17	1953	495	59	1040
Bedell, Thomas R., Grand Rapids, Mich. Coin-operated vending device	474,588	May 10	1134	289	59	866
Bedford, Alma, Coldwater, Mich. Spoke for vehicle-wheels	477,290	June 21	1692	415	59	1799
Bedford, Joseph, Sheffield, England. Purifying alloys of iron and chromium	477,490	June 21	2008	.....	59	1[illegible]
Beebee, James H., Rochester, N. Y. Flexible shafting and hanger therefor	475,104	May 17	1955	495	59	10[illegible]
Beekman, John C., New York, N. Y., assignor to Beekman Salutary System Company, of New Jersey. Water-closet bowl. (Reissue)	11,242	June 7	808	199	59	1599
Beekman Salutary System Company. (See Beekman, John C., assignor.) (Reissue.)						
Beerbower, George M., Washington, D. C. Type-writing machine	472,024	Apr. 5	8	2	59	4
Beers, Frank W. (See Spears, Ralph R., assignor.)						
Beers, Louis G., Chicago, Ill. Wire desk-basket	473,054	Apr. 19	1608	410	59	331
Beers, Louis G., Chicago, Ill. Marginal binding or rim	475,973	May 31	3340	842	59	1338
Beesley, Edward, Sr., Ellis, Jr., and Edward, Jr., assignors to T. and G. M. Stone, Newark, N. J. Machine for opening fur-dags	472,025	Apr. 5	9	3	59	4
Beesley, Ellis, Jr. (See Beesley, Edward, Sr., Ellis, Jr., and Edward, Jr.						
Beeton, Edward, Toronto, Canada. Watchmaker's gage	473,286	Apr. 19	2005	504	59	406
Begg, Alexander, assignor of one-half to D. E. Durie, Seattle, Wash. Automatic apparatus for the sale of newspapers	472,492	Apr. 5	755	192	59	143
Beggs, Johnston, and T. A. Gordon, St. Louis, Mo. Hydraulic brick-machine	475,747	May 31	2962	751, 752	59	1265
Behne, Ernst, St. Louis, Mo. Box or basket	472,849	Apr. 12	1273	326	59	254
Behr, Hans C., San Francisco, Cal. Steam-engine valve-gearing	474,717	May 10	1336	340	59	906
Behringer, Edward A. (See Chadbourne, Behringer, and McCoy.)						
Behrns, Herrman A., Orchard, Iowa. Guide-marker for corn-planters	477,983	June 28	2801	702	59	2034
Beidler, Herbert A., Chicago, Ill. Device for taking up wear	477,831	June 28	2574	644	59	1988
Belle, Charles, Chicago, Ill. Hitching device	477,634	June 28	2260	563	59	1927

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Beindorf, Frederick, *et al.* (See Nicholson, James C., assignor.)						
Beindorf, William C., *et al.* (See Nicholson, James C., assignor.)						
Belcher, Alexander. (See Maltby and Belcher.)						
Belding Manufacturing Company. (See Ranney, Fred. E., assignor.)						
Belding, Thomas C., assignor to Canton Steel Roofing Company, Canton, Ohio. Sheet-metal-folding machine	474,283	May 3	613	152	59	756
Belknap, Frank D., New York, N. Y. Addressing-machine	477,793	June 28	2504	627, 628, 629	59	1975
Bell, Arthur F. L. (See Bishop and Bell.)						
Bell, Arthur F. L., San Francisco, Cal. Valve	472,914	Apr. 12	1370	351	59	275
Bell, Charles, Stroudsburg, Pa. Electric lamp or conductor support	477,984	June 28	2802	702	59	2034
Bell, George E., West Somerville, Mass. Smoke-conveyer	472,650	Apr. 12	986	255	59	200
Bell, John P. (See Decker and Bell.)						
Bell, Joseph, Troutdale, Oreg. Feed-water heater	477,491	June 21	2009	498	59	1861
Bell, Oro A., New York, N. Y., assignor to Western Electric Company, of Illinois. Key-board-circuit for multiple switchboards	476,509	June 7	430	101	59	1521
Bell, Thomas H. (See Filkins, Adelbert, assignor.)						
Bellamy, Charles L., Arlington, N. J. Ice-cream freezer	475,748	May 31	2965	752	59	1266
Belt, Jared E., Minneapolis, Minn. Running-water motor	472,467	Apr. 5	718	183	59	136
Bemis, Albert T., Louisville, Ky. Kiln for drying lumber	472,600	Apr. 12	917	236	59	188
Bemis, Albert T., Louisville, Ky. System of pipes for heating lumber-kilns	475,480	May 24	2541	647	59	1171
Bemis, Sumner A. (See Hoadley and Bemis.)						
Bemis, Sumner A. (See Pfingst and Bemis.)						
Bender, George, Brooklyn, N. Y. Clutch	477,985	June 28	2803	702, 703	59	2035
Benedict, Allard E., Cairo, Nebr. Type-writing machine	476,724	June 7	741	183, 184	59	1585
Benedict & Burnham Manufacturing Company. (See Morse, Charles S., assignor.)						
Benedict, Heman A., assignor of one-half to T. W. Meachem, Syracuse, N. Y. Pencil-sharpener	476,361	June 7	214	53	59	1477
Benét, Laurence V., Paris, France, assignor to Hotchkiss Ordnance Company, Limited, London, England. Projectile	477,492	June 21	2012	499	59	1861
Benham, Herbert A., and W. H. Tomson, London, England. Candle-lamp for use in photographic dark-rooms	473,814	Apr. 26	2870	720	59	595
Benjamin, Edgar P., Boston, Mass. Trousers-protector	475,749	May 31	2967	752	59	1266
Benjamin, Edwin, South Evanston, Ill. Matcher	476,221	May 31	3745	946	59	1419
Benjamin, Frank P., New York, N. Y. Railway signaling system	476,240	June 7	6	2	59	1439
Benjamin, George H., New York, N. Y. Making tin plates	472,691	Apr. 12	1044	269	59	210
Benn, Alfred R. (See Bryson, Pendleton, and Benn.)						
Benners, Edwin H., Elizabeth, N. J. Axle-lubricator	478,041	June 28	2903	725	59	2052
Bennett, Albert, Quincy, Mich. Tug-securing device	473,815	Apr. 26	2873	721	59	595
Bennett, Charles M., Logansport, Ind. Hydraulic gas-pump	474,053	May 3	275	67	59	691
Bennett, Cornelia E., *et al.* (See Bennett, William H., assignor.)						
Bennett, Leonard E., McHenry, Ill. Tripod-head	476,863	June 14	978	237	59	1645
Bennett, Noble E., assignor to Bloomington Manufacturing Company, Bloomington, Ill. Cycle-wheel	473,995	May 3	172	41	59	671
Bennett, Thomas G., assignor to Winchester Repeating Arms Company, New Haven, Conn. Shell	472,782	Apr. 12	1184	303	59	237
Bennett, Walter E. (See Hardman, Fred. H., assignor.)						
Bennett, Walter E., Boston, Mass. Fastening for boots or shoes	477,923	June 28	2721	681	59	2017
Bennett, William H., Chicago, Ill., assignor to C. E. Bennett and A. F. Bartlett. Tenoning-machine	474,515	May 10	1015	261	59	843
Bensinger, Moses, Chicago, Ill. Valve for beer-coolers	473,248	Apr. 19	1942	488	59	393
Benson, J. C. (See Hatfield, Thomas J., assignor.)						
Benson, Marcus E., West Plains, Mo. Elevated carrier	476,600	June 7	566	135	59	1548
Bente, Henry F., St. Louis, Mo. Label-holder	472,248	Apr. 5	379	99	59	71
Bentley, A. F., *et al.* (See Jackson and Reiger, assignors.)						
Benton, C. A. (See Coffman, John R., assignor.)						
Benton, John L. (See Browne and Benton.)						
Berbecker & Co., Julius. (See Morris, Thomas, assignor.)						
Berdan, Marvin, Plymouth, Mich. Wire-tightener	473,899	May 3	5	2	59	638
Berdux, Valentin, Heilbronn, Germany. Repetition-action for pianos	474,112	May 3	358	85	59	706
Berger, Christian L., Boston, Mass. Engineer's transit	476,510	June 7	433	101	59	1522
Bergfels, Henry, Newark, N. J. Bicycle-saddle spring	473,493	Apr. 26	2356	598	59	496
Bergmann, Sigmund, assignor, by mesne assignments, to Interior Conduit and Insulation Company, New York, N. Y. Switch and switch-box	472,027	Apr. 5	12	3	59	5
Bergmann, Sigmund, and G. A. Scott, assignors, by mesne assignments, to Interior Conduit and Insulation Company, New York, N. Y. Galvanometer	472,026	Apr. 5	11	3	59	5
Bergquist, Frank, Beloit, Wis., assignor to Moline Pump Company, Moline, Ill. Fastening for tank-bands	472,723	Apr. 12	1101	283	59	221
Bering, James E., assignor to Chambers, Bering, Quinlan Company, Decatur, Ill. Corn-planter	473,413	Apr. 19	2222	558, 559	59	448
Berliner Maschinenbau Actien-Gesellschaft, vormals L. Schwartzkopff. (See Scheibel, Adolf, assignor.)						
Bernard, Ernest. (See Bernard, Myrthil and E.)						
Bernard, Myrthil and E., Paris, France. Process of and apparatus for the extraction of aluminium	476,914	June 14	1064	256	59	1662
Bernauer, Albert, assignor of one-half to J. E. Waugh, Chicago, Ill. Fence-making machine	472,663	Apr. 12	1001	259, 260	59	204
Berney, Thomas, Tidionte, Pa. Wall-paper cutter	474,899	May 17	1630	416	59	978
Bernhardt, Herman V., Brooklyn, N. Y. Apparatus for forming rings	472,959	Apr. 12	1443	368	59	288
Bernhardt, Herman V., assignor to J. B. Bowden, Brooklyn, N. Y. Apparatus for forming rings	473,139	Apr. 19	1754	442	59	357
Bernheim, Gustav. (See Flocke, Robert, assignor.)						
Bernitt, Wilhelm H. C., Hamburg, Germany. Coin-operated photographic apparatus	473,375	Apr. 19	2159	542, 543	59	436
Bernstein, Benny, New York, N. Y. Shutter-fastener	475,921	May 31	3255	821	59	1322
Bernstein, Benny, New York, N. Y. Spring-bolt	475,922	May 31	3256	822	59	1322
Bernstein, Benny, New York, N. Y. Car-coupling	476,864	June 14	980	238	59	1646
Bernstein, Benny, New York, N. Y. Fastening for satchels, hand-bags, &c.	476,865	June 14	982	238	59	1646
Berrenberg, William, Boston, Mass., assignor of one-half to A. L. Reinmann, New York, N. Y. Lubricating-piston	474,075	May 3	305	74	59	696
Berridge, Thomas, Sturgis, Mich. Shears	474,284	May 3	615	152	59	756

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Berry, Charles A., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	474,790	May 10	1448	367, 368	59	928
Berry, Marcellus F., Brooklyn N. Y. Paper-holder	474,516	May 10	1017	261	59	844
Berst, Conrad, Kansas City, Mo. Churn-dasher	473,900	May 3	6	2	59	638
Bertels, Charles E., Wilkes-Barré, Pa. Seam for sheet metal	475,656	May 24	2814	713	59	1225
Bertenshaw, Silas, *et al.* (See Parkison, John E., assignor.)						
Bertenshaw, Silas, Denver, assignor of one-half to W. S. Parkison, Glenwood Springs, Colo. Bed-bottom	472,978	Apr. 19	1483	379	59	309
Bertermann, Benedict, Indianapolis, Ind. Valve-gear for steam-engines	472,100	Apr. 5	138	37, 38	59	27
Berton, Camille L. C., Paris, France. Recovering tin from scraps and waste of tin-plate	477,348	June 21	1781	.....	59	1816
Bervin, John, Durango, Colo. Rock-drill support	474,206	May 3	495	119	59	733
Besly, Charles H., Chicago, Ill. Die-stock	474,805	May 17	1478	376, 377	59	948
Besse, Lyman W., *et al.* (See Brosnan, Cornelius J., assignor.)						
Bessler, Vetal, Brooklyn, N. Y. Zither	477,493	June 21	2013	499	59	1861
Best, Thomas C., Chicago, Ill. Steam-boiler	474,517	May 10	1018	262	59	844
Betham, William R., Chicago, Ill. Car-coupling	474,806	May 17	1479	377	59	948
Betts, William H., Brooklyn, N. Y. Bolt-heading machine	475,657	May 24	2816	713	59	1225
Beucke, August. (See Fitz Gerald and Beucke.)						
Beust, Max, New Albany, Ind. Combined cork and corkscrew	476,777	June 14	833	205	59	1616
Beverly, David S., *et al.* (See Campbell, Cydnor B., assignor.)						
Bevington, James H., Chicago, Ill. Umbrella-locking device	474,356	May 10	768	200	59	796
Bevington, James H., Peoria, assignor, by mesne assignments, to Acme Railway Signal and Manufacturing Company, Galesburg, Ill. Torpedo	474,718	May 10	1339	340	59	906
Bew, Charles, Angola, Ind. Door-check	475,105	May 17	1957	496	59	1041
Beyer, Albin, assignor to H. Gernsheim & Brother, Brooklyn, N. Y. Electrical stop-motion for knitting-machines	477,986	June 28	2807	703	59	2035
Bibb, John T., and A. T. Timewell, Spokane Falls, Wash. Automatic sack filling and sewing machine	476,778	June 14	834	205, 206	59	1616
Bickel, John F. (See Diehl, John, assignor.)						
Bickelhaupt, William H., New York, N. Y. Box for hats, bonnets, &c.	477,494	June 21	2014	499	59	1862
Biddlecome, Hannah J. (See Evans, Owen F., assignor.)						
Bidwell, George A., Pittsfield, Mass. Fire-escape	475,175	May 17	2059	518	59	1061
Biehn, George, Tacoma, Wash. Window-shade fixture	477,495	June 21	2015	499, 500	59	1862
Bierley, Henry A., Lexington, Ky. Cash-register	473,723	Apr. 26	2734	688	59	568
Bierley, Henry A., assignor of one-half to D. F. Frazee and M. C. Alford, Lexington, Ky. Railway-ticket	477,496	June 21	2017	500	59	1862
Biffar, Charles F. (See Haight and Biffar.)						
Bigelow, Frank R., Gloucester City, N. J. Differential gear for bicycles	476,031	May 31	3419	863	59	1356
Bigler, Reed & Co., *et al.* (See Bailey, Archibald, assignor.)						
Bigney, Sidney O., Attleborough, Mass. Swaging-machine	475,077	May 17	1907	484	59	1031
Bills, James A., assignor to himself and J. Varty, Chicago, Ill. Steam-jet pump	475,716	May 24	2904	736	59	1241
Bilz, John A., Pleasonton, Cal. Two-wheeled vehicle	475,974	May 31	3341	842	59	1339
Binder, Carl. (See Meyer and Binder.)						
Bingham, Harry F., Pittsburg, Pa. Gage-cock	476,222	May 31	3746	946	59	1419
Bingham, Tracy F., Abronia, Mich. Bee-smoker	473,724	Apr. 26	2736	689	59	568
Binns, Leedham, Philadelphia, Pa. Sash-cord	473,287	Apr. 19	2006	504	59	407
Binns, William H., assignor to Chicago Sewing Machine Company, Chicago, Ill. Ball-bearing for bicycles	473,816	Apr. 26	2874	721	59	595
Binns, William H., assignor to Chicago Sewing Machine Company, Chicago, Ill. Chain adjustment for bicycles	473,817	Apr. 26	2874	721	59	595
Binns, William H., assignor to Chicago Sewing Machine Company, Chicago, Ill. Hub and shaft coupling for bicycles	473,818	Apr. 26	2875	721	59	596
Bioren, James C., Newark, N. J. Safety cuff-button link	477,349	June 21	1782	436	59	1817
Bird, Horace G. (See Burling and Bird.)						
Bird, John L. (See Bird, Robert L. and J. L.)						
Bird, Robert L. and J. L., Durango, Tex. Car-coupling	473,445	Apr. 26	2275	574	59	481
Birkery, Cornelius, assignor to Birkery Manufacturing Company, Hartford, Conn. Valve	476,511	June 7	435	102	59	1522
Birkery Manufacturing Company. (See Birkery, Cornelius, assignor.)						
Birmingham, William, Philadelphia, Pa. Eyeglass or spectacle case	475,995	May 31	3369	849	59	1345
Bishop, George W., deceased; S. E. Bishop, Springfield, Mass., administratrix. Case for ribbons	474,518	May 10	1021	262	59	845
Bishop, Ira, and A. F. L. Bell, San Francisco, Cal. Cable-railway switch	473,652	Apr. 26	2629	662, 663	59	548
Bishop, Sarah E., administratrix. (See Bishop, George W.)						
Bissell Carpet Sweeper Company. (See Stinson, Charles K., assignor.)						
Bissell, Isaac F. (See Reeves, Thomas H., assignor.)						
Bissell, Torrence E., administrator. (See Hill, Andrew G.)						
Bithorn, Richard, assignor to H., M., and W. Eltbogen, Vienna, Austria-Hungary. Sliding ladder	475,287	May 17	2231	572	59	1097
Bitner, David P. (See Colvin, Robert J., assignor.)						
Bjorlin, Carl G., Stockholm, Sweden, assignor to himself and R. D. Harris, New York, N. Y. Centrifugal apparatus for cooling or heating liquids	476,441	June 7	335	76	59	1502
Bjorlin, Carl G., Stockholm, Sweden, assignor to himself and R. D. Harris, New York, N. Y. Butter-cutter	476,442	June 7	337	77	59	1503
Black, David. (See Barnett and Black.)						
Black, John, and F. C. A. Natius, South Chicago, Ill. Tea-kettle	473,819	Apr. 26	2876	722	59	596
Black, John J., Cleveland, Ohio. Vehicle running-gear	474,113	May 3	359	86	59	706
Blackerby, Thomas W., Mackville, Ky. Animal-trap	472,651	Apr. 12	989	255, 256	59	201
Blackmore, George C., assignor to Blackmore Heating Company, Newark, N. J. Pipe-hanger	475,006	May 17	1805	457	59	1011
Blackmore Heating Company. (See Blackmore, George C., assignor.)						
Blackstone, George V., Jamestown, N. Y. Washing-machine	472,979	Apr. 19	1485	379, 380	59	309
Blackwell, Thomas M. (See Stretch and Blackwell.)						
Blades, Robert T. (See Farren, James, assignor.)						
Blades, William C., Brooklyn, N. Y. Base-ball apparatus	475,432	May 24	2463	628	59	1156
Bladholm, Axel L., Chicago, Ill. Steam-boiler	475,288	May 24	2233	575	59	1113
Blair, James L. (See Tate, Frank R., assignor.)						
Blair, John, Spokane, Wash. Making white pigments	477,735	June 28	2411	602	59	1950
Blake, John W., and J. T. Sackett, assignors of one-third to F. St. Aubyn, Kansas City, Mo. Carbureted-hydrogen-gas generator and burner	475,381	May 24	2385	610	59	1142

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Blake, Theodore A., New Haven, Conn. Pitman for stone-crushers	477,400	June 21	1866	459	59	1833
Blakeslee, Ezra. (See Sundwall and Blakeslee.)						
Blakeslee, Harvey D. (See Baker, Henry H., Jr., assignor.)						
Blanchard, George W., Waterville, Me. Electric wheel-locking device	472,329	Apr. 5	507	131	59	95
Blanchard, Lewis D. (See Nunamaker and Blanchard.)						
Blanchard, Virgil W., New York, N. Y. Milk-creamer	475,658	May 24	2817	713, 714	59	1225
Blanke, Ferdinand J., Cold Spring, Wis. Plow-beam attachment	476,779	June 14	837	207	59	1617
Blanther, Joseph E., Chicago, Ill. Manufacture of contour relief-maps	473,901	May 3	7	2	59	638
Blattner, Joseph, Allegheny, Pa. Air and steam coupling	474,207	May 3	497	119	59	734
Blauvelt, Howard E., and J. A. Polhemus, Nyack, N. Y. Type-writing machine	477,882	June 28	2658	664, 665	59	2004
Blechschmidt, Gustav and P., Quincy, Ill. Vehicle-hub	473,607	Apr. 26	2560	645	59	535
Blechschmidt, Paul. (See Blechschmidt, Gustav and P.)						
Blickensderfer, George C., Stamford, Conn., assignor to Blickensderfer Manufacturing Company, New York, N. Y. Type-writing machine	472,692	Apr. 12	1045	270, 271, 272	59	210
Blickensderfer, George C., Stamford, Conn., assignor to Blickensderfer Manufacturing Company, New York, N. Y. Type-writing machine	472,693	Apr. 12	1054	273	59	212
Blickensderfer, George C., Stamford, Conn., assignor to Blickensderfer Manufacturing Company, New York, N. Y. Type-writing machine	472,694	Apr. 12	1059	273	59	213
Blickensderfer, George C., Stamford, Conn., assignor to Blickensderfer Manufacturing Company, New York, N. Y. Attachment for type-writing machines	472,695	Apr. 12	1060	274	59	213
Blickensderfer, George C., Stamford, Conn., assignor to Blickensderfer Manufacturing Company, New York, N. Y. Type-writing machine	472,696	Apr. 12	1062	274	59	213
Blickensderfer, George C., Stamford, Conn., assignor to Blickensderfer Manufacturing Company, New York, N. Y. Type-writing-machine attachment	472,850	Apr. 12	1273	326	59	254
Blickensderfer Manufacturing Company. (See Blickensderfer, George C., assignor.)						
Blinsdorf, Anton S. von, and C. Adler, Baden, Austria-Hungary. Railway-signal	476,866	June 14	983	238	59	1646
Bliss, Eliphalet W., New Utrecht, assignor to United States Projectile Company, Bay Ridge, N. Y. Gear-wheel	472,664	Apr. 12	1005	260	59	204
Bliss, George H. (See Root, Francis H., assignor.)						
Bliss, Mary M., Pawtucket, R. I. Corset	472,613	Apr. 12	938	242	59	192
Blodgett, John W., assignor to himself and Abbott Machine Company, Chicago, Ill. Tacking attachment for sewing-machines	477,636	June 28	2263	566, 567	59	1928
Blodgett, William E., Faribault, Minn. Electrical keyboard	477,635	June 28	2261	566	59	1927
Bloebaum, William H. F., Cincinnati, Ohio. Printer's miter-tool	473,689	Apr. 26	2681	675	59	558
Boemermann, George, Brooklyn, N. Y. Actuating device for cash-registers	477,883	June 28	2660	665	59	2004
Boeselager, Otto J. B., Mount Angel, Oreg. Warehouse gang-plank	476,601	June 7	567	135	59	1549
Blood, Eben D. (See Keyes, Atwood B., assignor.)						
Bloomer, Stephen H., East Portland, Oreg. Rotary engine	475,176	May 17	2061	518, 519	59	1062
Bloomington Manufacturing Company. (See Bennett, Noble E., assignor.)						
Bloomsburg, Harry. (See Bloomsburg, Peter and H.)						
Bloomsburg, Peter and H., Wilmington, Del. Water-circulator	472,915	Apr. 12	1372	351, 352	59	275
Blount, William C., Ebenezer, assignor of one-third to J. P. Coffin, Florence, S. C. Scythe attachment	472,652	Apr. 12	990	256	59	201
Blumer, Jacob, Brooklyn, and C. Schlagenhaufer, New York, N. Y. Manufacture of yeast	474,942	May 17	1693	.....	59	991
Blumer, Jacob, Brooklyn, and C. Schlagenhaufer, New York, N. Y. Making yeast	474,943	May 17	1695	.....	59	991
Blundstone, Benjamin. (See Moseley and Blundstone.)						
Boardman, Alphonso F., Brooklyn, N. Y. Fishing-reel	475,030	May 17	1838	466	59	1018
Böcher, Adam, New York, N. Y. Darning implement	475,659	May 24	2818	714	59	1225
Boeck, Charles H., Jackson, Mich., assignor to Central Oilgas Stove Company, of Maine. Oil-stove	475,262	May 17	2191	558	59	1088
Boeckh, Charles, Jr., Toronto, Canada. Bridle for paint-brushes	472,425	Apr. 5	652	166	59	122
Boeckh, Charles, Port Royal, S. C. Device for regulating the flow of streams	473,205	Apr. 19	1873	472	59	379
Boehncke, Max A. T., Centinela, Cal. Continuous kiln	474,807	May 17	1480	378, 379	59	948
Boehncke, Max A. T., Centinela, Cal., and D. D. McLean, Underwood, Canada. Brick-kiln	475,433	May 24	2464	628	59	1156
Boenning, William M., Port Washington, Wis. Rocker	472,330	Apr. 5	510	132	59	96
Boettiger, John P., Cold Spring, N. Y. Vacuum-pump	472,802	Apr. 12	1210	310	59	242
Bogardus, Evva W. (See Little and Bogardus.)						
Bogga, Joseph O., Fayetteville, Pa., assignor of one-half to G. W. Bothwell, Jersey City, N. J. Coin-handling facilitator	475,660	May 24	2819	714	59	1225
Bohls Cigarette Machine Company. (See Bohls, Henry, assignor.)						
Bohls, Henry, San Francisco, Cal., assignor to Bohls Cigarette Machine Company, Lynchburg, Va. Cigarette-machine	472,101	Apr. 5	140	38, 39	59	27
Boldt, Charles, Annapolis, Md. Refrigerator	474,357	May 10	769	200	59	796
Bolte, Frank H., assignor to Sercombe-Bolte Manufacturing Company, Milwaukee, Wis. Bicycle-frame	476,974	June 14	1163	281	59	1681
Bolling, Allen G., Denison, Tex. Fish and game trap	475,845	May 31	3134	795	59	1298
Bolton, George and J. R., Detroit, Mich. Boiler	473,055	Apr. 19	1609	410, 411	59	332
Bolton, James R. (See Bolton, George and J. R.)						
Bolton, William E. (See Padgett and Bolton.)						
Boltz, Jacob W., Galesburg, Ill. Brick and tile cutter	473,446	Apr. 26	2277	574, 575	59	481
Bolus, William G., assignor to Gravity Twine Box Company, Cleveland, Ohio. Gravity twine-box	474,076	May 3	306	74	59	697
Bomar, William A., Metropolis City, Ill. Sash-holder	477,291	June 21	1693	415	59	1799
Bond, Elijah J., *et al.* (See Plunkett, Michael H., assignor.)						
Bond, John R., *et al.* (See Morgan, Joseph U., assignor.)						
Bonnar, William, Mono Mills, Canada. Running-gear	477,401	June 21	1867	459, 460	59	1833
Bonwell, William H., Jr. (See Smolley and Bonwell.)						
Bonwill, William G. A., Philadelphia, Pa. Ear-trumpet	473,608	Apr. 26	2561	645	59	535
Bonwill, William G. A., Philadelphia, Pa. Ear-trumpet	473,865	Apr. 26	2954	745	59	611
Booher, Everett L., Tippecanoe City, Ohio. Bending machinery	474,358	May 10	770	200, 201	59	796
Boone, Sarah, New Haven, Conn. Ironing-board	473,653	Apr. 26	2631	663	59	549
Boosa, Catharina, New York, N. Y. Guiding attachment for fur-sewing machines	476,725	June 7	747	184	59	1586
Booth, Charles P., Camden, N. J., assignor to Magic Introduction Company, of New Jersey, Tape-winding mechanism for lighting devices or other articles	475,996	May 31	3370	850	59	1345

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Booth, Edgar H., San Francisco, Cal. Stone or ore crushing machine	473,725	Apr. 26	2737	689	59	568
Borden, William J., Hico, and J. W. Johnson, Houston, Tex. Type-writing machine	477,165	June 14	1461	359	59	1743
Borgfeldt, Nicholas H., Brooklyn, N. Y. Cigar-bunching machine	472,331	Apr. 5	511	132	59	96
Borgner, Cyrus, Philadelphia, Pa. Brick	474,285	May 3	616	152	59	756
Borsch, John L., Philadelphia, Pa. Artificial eye	474,208	May 17	1483	379	59	949
Borton, Stockton. (See Willcox and Borton.)						
Bostick, William D. (See Kunkle, Erastus B., assignor.)						
Boston Electric Company. (See Crockett and Allen, assignors.)						
Boston Lasting Machine Company. (See Copeland, George W., assignor.)						
Boston Manufacturing Company. (See Coult, Walter, assignor.)						
Boston Woven Hose Company. (See Cowen, Robert, assignor.)						
Bostwick, Joseph M., Janesville, Wis. Safety device for railway-trucks	476,123	May 31	3571	897	59	1386
Bostwick Metal Lath Company. (See Ohl, George A., assignor.)						
Boswell, Henry L., Chase City, Va., assignor of one-fourth to R. T. Barton, Philadelphia, Pa. Packing-receptacle	476,223	May 31	3747	946	59	1419
Bosworth, Charles B., Everett, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Governor for heaters	473,056	Apr. 19	1611	411	59	332
Bosworth, Charles B., Everett, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Automatic governor for regulating the supply of gas to burners	473,447	Apr. 26	2280	576	59	482
Bosworth, Charles B., Everett, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Device for testing pressure-gages	476,512	June 7	436	102, 103	59	1523
Bosworth, Martin L., Warren, R. I. Dental plugger	477,619	June 21	2232	558	59	1905
Bosworth, Wendell P., Brockton, Mass. Leather-cutting die	473,690	Apr. 26	2683	675	59	559
Bothwell, George W. (See Bogga, Joseph O., assignor.)						
Bothwell, William T. (See Hill, Thomas E., assignor.)						
Botof, Peter H., Utica, Ind. Attachment for harvesters	475,434	May 24	2466	628, 629	59	1156
Botsford, George, and W. Holtz, Nineveh, Ind. Axle-bearing	476,602	June 7	569	136	59	1549
Bott, Joseph E., Stockport, England. Fire-extinguisher	474,208	May 3	499	119	59	734
Bott, Joseph E., Stockport, England. Automatic fire-extinguishing apparatus	474,209	May 3	500	120	59	734
Bott, Joseph E., Stockport, and G. H. Cammell, Hathersage, England. Shell or other projectile	472,748	Apr. 12	1138	292	59	228
Bottlers' Specialty Company. (See Wile and La Casse, assignors.)						
Botton, Georges A., Beaumont-du-Perigord, France. Type-setting machine	473,691	Apr. 26	2684	676	59	559
Bouck, Philip, Trent, S. D. Draft-equalizer	473,902	May 3	9	3	59	638
Boughton, William, Mansfield, Ohio. Vehicle-spring coupling	472,724	Apr. 12	1101	283	59	221
Boulter, William E., administrator. (See Rudolph, Ernst B.)						
Bourlier, Alphonse, *et al.* (See Dyer, Nelson M., assignor.)						
Bourlier, Emile, *et al.* (See Dyer, Nelson M., assignor.)						
Bouscaren, Gustave, Cincinnati, Ohio. Railway-rail joint	476,241	June 7	9	2	59	1440
Boutell, William H., Fort Payne, Ala. Apple-corer	474,077	May 3	307	74	59	697
Bovy, Victor, New York, N. Y. Revolving firearm	473,903	May 3	9	3	59	639
Bowden, Joseph B. (See Bernhardt, Herman V., assignor.)						
Bowen, Eugene B., Centreville, Md. Corn-harvester	474,359	May 10	774	201, 202	59	797
Bowen, James H., Philadelphia, Pa. Cigar-cutter	474,626	May 10	1192	303	59	877
Bower, Jacob, Newark, N. J. Fire-escape	474,155	May 3	415	100	59	719
Bowerbank, John W., New York, N. Y. Hinge for pail-lids	476,632	May 31	3420	864	59	1356
Bowers, Riley, Springfield, Ill. Rapid-firing gun	476,242	June 7	11	2, 3	59	1440
Bowie, Washington, *et al.* (See Plunkett, Michael H., assignor.)						
Bowin, Edward, deceased, McKeesport, Pa.; M. A. Bowin, administratrix. Tag for butt-weld tubing	476,124	May 31	3571	898	59	1386
Bowin, Martha A., administratrix. (See Bowin, Edward.)						
Bowman, Charles M., Lebanon, Pa. Inking roller	477,497	June 21	2018	500	59	1862
Bowman, Frank, Brooklyn, N. Y. Scrap-book	477,040	June 14	1261	305	59	1702
Bowman, George W., and J. C. Godfrey, Red Cliff, Colo. Pipe cutter and threader	472,426	Apr. 5	653	166	59	122
Bowring, Henry E., Mole Bank, East Molesey, England. Boat-davit	475,923	May 31	3257	822	59	1323
Bowsher, Nelson P., South Bend, Ind. Grinding-mill	477,498	June 21	2019	500, 501	59	1862
Bowyer, John A., and U. L. Hull, assignors of one-eighth to T. Carson, Chicago, Ill. Vending-machine	476,513	June 7	438	103	59	1523
Boyd, William, *et al.* (See Wright, Samuel, assignor.)						
Boyer, Joseph, assignor to S. Cupples and J. West, St. Louis, Mo. Device for punching webs of paper	477,402	June 21	1868	460	59	1833
Boyle, James E., Jr., administrator. (See Boyle, James E.)						
Boyle, James E., deceased; J. E. Boyle, Jr., Brooklyn, N. Y., administrator. Siphon water-closet	476,867	June 14	983	239	59	1646
Boyles, William M., assignor to Jackson and Woodin Manufacturing Company, Berwick, Pa. Die for making links	476,514	June 7	440	104	59	1523
Boynton, Eben M., West Newbury, Mass. Bicycle electric car	474,331	May 3	715	186, 187	59	774
Boynton, Edward S., assignor to E. T. Wilkinson, Brooklyn, N. Y. Means for surface-printing	475,534	May 24	2630	669	59	1188
Brack, John, Albany, N. Y. Truck	474,360	May 10	776	202	59	797
Bradbury, John F., Bombay, India. Carding-engine	472,653	Apr. 12	991	256	59	201
Bradbury, John M., and A. B. Griswold, Bunker Hill, Kans. Automatic damper	472,102	Apr. 5	144	39	59	27
Bradford, John, Jr., Winslow, Ill. Thill-coupling	476,443	June 7	339	77	59	1503
Bradford, Julien M., Portland, Me. Electric regulating apparatus	477,637	June 28	2266	567, 568	59	1928
Bradley, Charles S., Yonkers, assignor to G. P. Lowrey, New York, N. Y. Obtaining metals from their ores or compounds	473,866	Apr. 26	2955	745	59	611
Bradley, Christopher C., Syracuse, N. Y. Spring-vehicle	472,518	Apr. 12	804	206	59	166
Bradley, Henry. (See Hill, Elias M., assignor.)						
Bradley, Henry L., New Haven, Conn. Wire shelf-bracket	472,285	Apr. 5	436	113	59	82
Bradley & Hubbard Manufacturing Company. (See Jauch, Joseph, assignor.)						
Bradley & Hubbard Manufacturing Company. (See Upson, Waldo L., assignor.)						
Bradley, James, assignor of one-half to H. W. Bullock, Albany, N. Y. Bicycle	477,292	June 21	1694	415, 416	59	1799
Bradley, Stephen R., Nyack, N. Y. Electrical surgical instrument	472,968	Apr. 12	1454	371	59	290
Bradley, William, Fort Wayne, Ind. Conduit for electric railways	476,603	June 7	570	136	59	1549
Bradley, William E., Roscoe, N. Y. Tether	476,726	June 7	748	185	59	1586
Brady, Michael F., *et al.* (See Beckwith, Theodore A., assignor.)						
Brady, Thomas H., New Britain, Conn. Insulator-bracket	476,604	June 7	571	136	59	1550
Brahe, Frederick H., Chicago, Ill. Combined wash-stand and chamber-pail	475,052	May 17	1872	475	59	1025

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Brainard, Amos H., Hyde Park, Mass. Gear-cutting machine	472,519	Apr. 12	805	207	59	166
Brambach, Aloys, New York, N. Y. Upright-piano case	476,915	June 14	1066	257	59	1662
Bramma, Arthur J. (See Campbell and Bramma.)						
Brampton, Walter, Birmingham, England. Saddle for bicycles	473,609	Apr. 26	2563	646	59	536
Brand, Silas H., Chicago, Ill. Blacksmith's and hand bellows	472,187	Apr. 5	277	72	59	52
Brande, Wilhelm H. E., Hamburg, Germany. Clamp	474,719	May 10	1340	341	59	907
Brandley, Arnold, Cherryvale, Kans., assignor of one-half to W. P. Hammon, Oakland, Cal. Hand-setting mechanism for timepieces	476,515	June 7	441	104	59	1523
Brandon, Alexander, New York, N. Y. Bar-fixture	477,987	June 28	2811	704	59	2036
Brasfield, James L. (See Scott and Brasfield.)						
Brasington, John M., Morven, N. C. Electric railway-signal	473,288	Apr. 19	2007	504, 505	59	407
Braun, Henry, *et al.* (See Ells, Josiah W., assignor.)						
Braun, John, and H. Deck, assignors to J. Braun & Sons, Philadelphia, Pa. Lawn-mower	476,184	May 31	3675	929	59	1406
Braun, Samuel J. (See Moskowitz, Jacob D., assignor.)						
Braun & Sons, John. (See Braun and Deck, assignors.)						
Bray, Alvin A., Lynn, Mass. Thill-coupling jack	478,043	June 28	2906	726	59	2053
Bray, Robert V., *et al.* (See Trump, John G., assignor.)						
Bray, William C., Newton Centre, Mass. Lacing-hook	477,242	June 21	1616	395	59	1785
Bray, William C., Newton Centre, and E. A. Hemmenway, Boston, Mass., assignors to Tubular Rivet Company, New Haven, Conn. Rivet-setting tool	477,241	June 21	1615	395	59	1784
Brayton, George B., Chicago, Ill. Frictional gearing for street-cars	476,343	June 7	13	3	59	1441
Brazelle, Benjamin, St. Louis, Mo. Distilling carbonaceous material	472,614	Apr. 12	939	242	59	192
Brecher, Philip, Louisville, Ky. Ash and coal guard for Franklin stoves	473,057	Apr. 19	1612	411	59	332
Brecht, Gustavus A. V. (See Schraudner, Frederick, assignor.)						
Breden, Stephen, and J. Sheridan, Franklin, Pa. Paving-block	475,924	May 31	3260	822	59	1323
Bredenberg, Alfred. (See Lovell and Bredenberg.)						
Breed, Zephaniah, North Weare, N. H. Sulky cultivator and weeder	473,289	Apr. 19	2009	505	59	407
Breinig, Granville M., New Milford, Conn. Check-book	475,661	May 24	2820	714	59	1226
Breisch, Michel, New York, N. Y. Stud or button	476,362	June 7	215	53	59	1478
Bremner, John A. (See Lefever and Bremner.)						
Brencke, Henry, Jr. (See Weaver and Brencke.)						
Brenkert, J. W. (See Hood, Willis F., assignor.)						
Brennan & Company Southwestern Agricultural Works. (See Munn and Christman, assignors.)						
Brennan, Henry A., Jersey City, N. J. Transom-lifter	474,720	May 10	1341	341	59	907
Brent, Edwin. (See Brent, Richard and E.)						
Brent, Richard and E., Wilkes-Barré, Pa. Wheel-hub	473,904	May 3	10	3	59	639
Breslin, Joseph, Newport, Ky., assignor to H. S. Livingston, Cincinnati, Ohio. Machine for breaking and cleaning hemp	477,794	June 28	2507	629	59	1976
Brewer, Albert G. (See Stewart and Brewer.)						
Brewer, Charles W., Cambridge, Mass., assignor to Brewer Longitudinal Axle Lubricator Company, Portland, Me. Axle-lubricator	477,620	June 21	2233	558	59	1905
Brewer, Charles W., Cambridge, Mass., assignor to Brewer Longitudinal Axle Lubricator Company, Portland, Me. Machine for forming lubricator-grooves in vehicle-axles	477,638	June 28	2269	568	59	1929
Brewer Longitudinal Axle Lubricator Company. (See Brewer, Charles W., assignor.)						
Brewers and Distillers CO$_2$ Company. (See Tichborne, Darley, Purcell, and Geoghegan, assignors.)						
Brewster, Robert. (See Johnson and Brewster.)						
Brewster, Robert, New Barnet, England. Step and bearing for machinery	474,286	May 3	617	153	59	757
Brewster, Robert, New Barnet, England. Artificial tooth	476,605	June 7	572	136	59	1550
Brianne, Lucien, Paris, France. Electric-arc lamp	475,289	May 24	2234	575	59	1113
Brice, John F., Cantril, Iowa. Temporary binder	476,444	June 7	340	77	59	1503
Bricker, Moses. (See McIntosh, John, assignor.)						
Bricker, William H., Canton, Ohio. Permutation-lock	474,078	May 3	308	74	59	697
Bridegum, Cyrus W., North Hector, N. Y. Dumping-car	476,780	June 14	838	207	59	1617
Bridgeport Brass Company. (See Morton, Augustus, assignor.)						
Bridges, Charles L. (See Crocker and Bridges.)						
Brien, James T., Hoosick Falls, N. Y. Water-trap	476,224	May 31	3748	947	59	1420
Briggs, Arthur E., assignor to Post & Company, Cincinnati, Ohio. Bracket and supporting device for railings	473,376	Apr. 19	2162	543	59	437
Briggs, George T. (See Burton, Eddy, and Briggs.)						
Briggs, La Mont L., New Hampton, Iowa. Broiler	476,916	June 14	1068	257	59	1662
Brigham, Joseph, Northampton, Mass. Last	473,654	Apr. 26	2632	663	59	549
Brill, John A., and W. S. Adams, Philadelphia, Pa. Equalizing device for car-trucks	476,244	June 7	15	4	59	1441
Brine, Henry J., Chicago, Ill. Butter-packing machine	473,494	Apr. 26	2358	598	59	496
Brinkerhoff, George, Brooklyn, N. Y. Joint for woodwork	475,997	May 31	3372	850	59	1345
Brinkerhoff, Nelson M., Bloomville, Ohio. Axle-washer	477,639	June 28	2271	569	59	1929
Brinkman, George P., Eureka, Cal. Lifting-jack	473,206	Apr. 19	1875	472	59	380
Brinkman, Herman M., assignor to Harrow Spring Company, Kalamazoo, Mich. Machine for bending harrow-teeth	472,960	Apr. 12	1445	369	59	288
Brintnell, Archibald H., Toronto, Canada. Thermostat	474,542	May 10	1059	271	59	851
Brintnell, Archibald H., Toronto, Canada. Rotary engine	476,868	June 14	986	239	59	1647
Brittain, Howard M., Martin's Creek, Pa. Egg-beater	472,803	Apr. 12	1212	311	59	242
Brittingham, Martha E. (See Brittingham, William B., assignor.)						
Brittingham, William B., assignor to M. E. Brittingham, New York, N. Y. Detergent	477,403	June 21	1870	.....	59	1834
Britton, Samuel H., Muskegon, Mich. Rod and broom-handle turning machine	472,332	Apr. 5	514	133	59	96
Broadnax, Francis, New York, N. Y. Electric switch	476,781	June 14	840	207	59	1618
Brock, William E., Plainfield, N. J. Gluing-machine	474,572	May 10	1111	284	59	862
Brock, William E., Plainfield, N. J. Implement for veneering lumber	476,782	June 14	841	208	59	1618
Brock, William E., Plainfield, N. J. Gluing-table	476,975	June 14	1164	281	59	1682
Broda, Joseph, Mannheim, Germany. Machine for pressing and bundling cigars	475,290	May 24	2235	575	59	1113
Brohard, Joseph M., Clarksburg, W. Va. Sash-holder	472,851	Apr. 12	1274	326	59	255
Brokaw, Norman H., Kaukauna, Wis. Making paper-pulp	474,944	May 17	1697	.....	59	992
Broman, John G., Chicago, Ill. Steam-joint packing	477,640	June 28	2271	569	59	1929
Bromiley, William I. (See Dobson and Bromiley.)						
Bronsdon, Milton H., assignor of one-half to W. Richmond, Providence, R. I. Cable-railway conduit	477,884	June 28	2662	666	59	2005
Bronsdon, Milton H., assignor of one-half to W. Richmond, Providence, R. I. Carrier-pulley for cable roads	477,885	June 28	2663	666	59	2005
Bronson, Charles E. (See Heiland and Bronson.)						
Bronson, Lorenzo M., Richmond Hill, N. Y. Sash-fastener	477,500	June 21	2023	501, 502	59	1863

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Brooke, Edward B., Huddersfield, England. Machine for molding earthenware-pipes, &c.	475,481	May 24	2542	647, 648	59	1171
Brooke, Homer. (See Bates, John L., assignor.)						
Brooke, Robert G., Blackpool, England. Injector	474,361	May 10	777	202, 203	59	797
Brookfield, William. (See Pease, Jacob, assignor.)						
Brooke, Byron A., Brooklyn, N. Y. Type-writing machine	476,941	June 14	1110	268	59	1672
Brooke, Byron A., Brooklyn, N. Y. Type-writing machine	476,942	June 14	1113	268	59	1672
Brooks, J. O. (See Tudor, James H., assignor.)						
Brooks, James W., *et al.*, trustees. (See Goddu, Louis, assignor.)						
Brooks, James W., trustee. (See Brown and McCoy, assignors.)						
Brooks, James W., trustee. (See Harrigan and Packard, assignors.)						
Brooks, James W., trustee. (See Packard, Jerome L., assignor.)						
Brooks, James W., trustee. (See Wead, Charles K., assignor.)						
Brooks, John C., Paterson, N. J., assignor to G. Draper & Sons, Hopedale, Mass. Shuttle-supplying mechanism for looms	473,377	Apr. 19	2162	543, 544	59	437
Brooks, John C., Paterson, N. J., assignor to G. Draper & Sons, Hopedale, Mass. Electric stop-motion for looms	473,378	Apr. 19	2166	544, 545	59	437
Brooks, John C., Paterson, N. J., assignor to G. Draper & Sons, Hopedale, Mass. Loom-shuttle	473,414	Apr. 19	2226	559	59	449
Brooks, William S., Toronto, Canada. Saddle for bicycles	472,427	Apr. 5	655	167	59	123
Brosnan, Cornelius J., assignor of three-fifths to F. M. Coe, H. A. Chapin, and L. W. Besse, Springfield, Mass. Bicycle-wheel lock	473,867	Apr. 26	2956	745	59	611
Broström, Carl F., assignor of one-half to W. S. Minty, Chicago, Ill. Oil-burner	476,445	June 7	341	77, 78	59	1504
Brothwell, John G., Torrington, Conn., assignor to Turner & Seymour Manufacturing Company, New York, N. Y. Extension-bracket	476,446	June 7	342	78	59	1504
Broughton, William, Oberlin, Ohio. Brick and tile cutter	473,565	Apr. 26	2491	629	59	522
Brouillard, Anthony J., New Britain, Conn. Gong door-bell	475,960	May 31	3321	838	59	1335
Brousseau, Harry, and G. Patterson, Newberry, Mich. Valveless engine	477,041	June 14	1262	306	59	1703
Brower, Bloomfield, New York, N. Y. Letter-file	473,448	Apr. 26	2281	576	59	482
Brower, John H., assignor of one-half to R. S. Sargent, Waupun, Wis. Wire-fence stay	475,717	May 24	2906	737	59	1241
Brower, John H., and H. C. Ross, assignors of one-third to F. L. Stiles, Minneapolis, Minn. Automatic envelope-feeder for type-writing machines	476,727	June 7	749	185	59	1586
Brown, Alexander E., Cleveland, Ohio. Hoisting and conveying machine	474,494	May 10	979	252, 253	59	836
Brown, Alexander T., Syracuse, N. Y. Vehicle-tire	474,589	May 10	1135	290	59	866
Brown, Charles, Naples, Italy, and G. J. Melms, Chicago, Ill. Electric locomotive	474,984	May 17	1769	448	59	1005
Brown, Charles D., Minneapolis, Minn. Safety attachment for overhead electric wires	472,784	Apr. 12	1186	304	59	237
Brown, Charles F., assignor to Royal Machine Company, Yonkers, N. Y. Cash register, indicator, and recorder	474,791	May 10	1450	368, 369, 370, 371	59	929
Brown, Charles H., and A. B. McCoy, Burlington, N. J., assignors to J. W. Brooks, trustee, Cambridge, Mass. Heel-nailing machine	477,098	June 14	1363	332	59	1723
Brown, Charles T. (See Jackson, Henry, assignor.)						
Brown, Charles T. (See Wilson, David H., assignor.)						
Brown, Charles T., *et al.* (See Hebron, Charles B., assignor.)						
Brown, Chester F., *et al.* (See Beckwith, Theodore A., assignor.)						
Brown, Daniel. (See Deats and Brown.)						
Brown, Francis R., assignor to Globe Manufacturing Company, Denver, Colo. Car-coupling	472,103	Apr. 5	145	39	59	27
Brown, Francis R., assignor, by mesne assignments, to Globe Manufacturing Company, Denver, Colo. Car-coupling	472,249	Apr. 5	380	100	59	71
Brown, Frank O., Dallas, Tex. Apparatus for boring Artesian wells	472,493	Apr. 5	758	193	59	144
Brown, Frederick T., Colorado Springs, Colo., assignor of one-half to W. F. Stearns, Cambridge, Mass. Device for preserving dried flowers	472,980	Apr. 19	1486	380	59	310
Brown, George F., Philadelphia, Pa. Waste-trap	477,499	June 21	2021	501	59	1863
Brown, George T., *et al.* (See Howard, Frank P., assignor.)						
Brown, George W., Galesburg, Ill. Corn-planter	474,363	May 10	781	303, 304	59	798
Brown, George W., and O. A. Johnson, Galesburg, Ill. Cultivator	476,976	June 14	1164	282	59	1682
Brown, Horace F., assignor to M. C. Brown, Butte City, Mont. Ore-roasting furnace	474,573	May 10	1113	284, 285	59	862
Brown, Jesse M., Bethel, Me. Spool-roughing machine	477,832	June 28	2575	644, 645	59	1989
Brown, John E., Washington Court-House, Ohio. Seam-pressing device	476,606	June 7	573	137	59	1550
Brown, John E., Washington Court-House, Ohio. Beading and turning machine	476,869	June 14	987	239	59	1647
Brown, John F., assignor to A. R. Baker, Indianapolis, Ind. File-binder	475,750	May 31	2967	753	59	1266
Brown, Joseph A., assignor of one-half to C. B. Ackerly, Riverhead, N. Y. Flue-stopper	478,044	June 28	2907	726	59	2053
Brown, Laurice L., Patmos, Kans. Automatic transporter and exploder for explosives for aiding rain-fall	473,820	Apr. 26	2877	722	59	596
Brown, Mary C. (See Brown, Horace F., assignor.)						
Brown, Nat E., Anoka, Minn. Sled-starter	473,905	May 3	11	3	59	639
Brown, Sabin F., Denver, Colo. Gage	473,290	Apr. 19	2011	505	59	408
Brown, Sampson H., Lockhart, Tex. Device for marking goods	474,079	May 3	310	75	59	697
Brown, Samuel S. (See Kell and Westerdahl, assignors.)						
Brown & Sharpe Manufacturing Company. (See Beale, Oscar J., assignor.)						
Brown, Thomas S., Philadelphia, Pa., assignor to Fairmount Machine Company, of Pennsylvania. Friction let-off motion for looms	478,045	June 28	2908	726	59	2053
Brown, Tristram D. (See Lisk and Brown.)						
Brown, Walter E. (See Frazer and Brown.)						
Brown, William, Reily Springs, Tex. Gate-latch	474,362	May 10	780	203	59	798
Brown, William M., assignor to Johnson Company, Johnstown, Pa. Brace-chair for railway-rails	477,641	June 28	2272	569	59	1929
Brown, William N., Quincy, Ill. Account-file	474,287	May 3	618	153	59	757
Browne, James E. (See Browne and Tidnam, assignors.)						
Browne, James E., and F. H. Tidnam, assignors to J. E. Browne, Elizabeth, N. J. Lightning-arrester	475,482	May 24	2545	648	59	1172
Browne, James R., assignor to R. R. Hunt, J. M. Upfill, London, England, and W. J. Hunt, Wellington, New Zealand. Bottle or similar vessel	473,379	Apr. 19	2169	545	59	438
Browne, William G., and J. L. Benton, Meriden, Conn. Can-opener	475,222	May 17	2128	538	59	1076
Brownell Car Company. (See Baier, Frederick, assignor.)						
Brownell, Frank A., assignor to Eastman Company, Rochester, N. Y. Photographic-roll holder	477,243	June 21	1617	395, 396	59	1785

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Browning, Charles E., Toledo, Ohio. Fountain-pen	477,854	June 28	2612	654	59	1995
Browning, Lewis S., Montreal, Canada. Fifth-wheel	474,332	May 3	717	187	59	775
Browning, Robert S., Jr., and B. F. Battersby, Philadelphia, Pa. Combined tamper and shovel	474,495	May 10	981	253	59	837
Brubaker, Henry, *et al.* (See Lish, William H., assignor.)						
Bruchmann, Frederick W. (See Prickett, Frank C., assignor.)						
Bruner, Augustus, Indianapolis, Ind. Electric conduit	474,468	May 10	943	243	59	829
Brunnell, Arthur B., Worcester, Mass. Combined corer, parer, and slicer	475,031	May 17	1839	466	59	1018
Brunthaver, Charles E., Washington, D. C. Ball-bearing for screw-nuts	477,642	June 28	2273	569	59	1929
Brush Electric Company. (See Adams, Thomas E., assignor.)						
Brush Electric Company. (See Pfannkuche, Gustav, assignor.)						
Brush Electric Company. (See Pfannkuche, Gustav and A., assignors.)						
Brush, George E., Danbury, Conn. Machine for blocking and banding hats	475,662	May 24	2822	715	59	1226
Brusie, James, Oakland, Cal. Pneumatic clutch	473,380	Apr. 19	2171	545	59	439
Bruso, John E., Worcester, Mass. Oven screen or mat	474,364	May 10	783	204	59	799
Bruzon, Richard, London, England. Boot or shoe	474,574	May 10	1116	285	59	863
Bryant, Charles K. (See Doebler and Bryant.)						
Bryant, Ed. E., *et al.* (See Hoff, Peter, assignor.)						
Bryant, Emory A., Aspen, Colo. Dental-flask holder	476,125	May 31	3572	898	59	1386
Bryant, Stanley A., *et al.*, administrators. (See Massey, Gideon B.)						
Bryant, Thomas W., Torrington, Conn. Skate	475,926	May 31	3263	823	59	1324
Bryant, Thomas W., Torrington, Conn. Roller-skate	475,927	May 31	3264	823	59	1324
Bryson, Andrew, Jr., New York, J. H. Pendleton and A. R. Benn, Brooklyn, assignors to Rapid Transit Cable Company, New York, N. Y. Grip mechanism for duplex cables	475,846	May 31	3135	795, 796	59	1298
Bryson, John A. (See Leavitt and Bryson.)						
Buchanan, Lawrence J. (See Page and Buchanan.)						
Buchbinder, Adolph W., Jr., Detroit, Mich. Opera-glass holder	477,643	June 28	2274	570	59	1930
Buck, R. M. (See Johnson, Ira H., assignor.)						
Buckeye Car Seal and Manufacturing Company. (See Foote, Lewis A., assignor.)						
Buckwell, William, Brighton, England. Apparatus for the transference of hydrocarbon oils	476,977	June 14	1166	282	59	1683
Bucyrus Steam Shovel and Dredge Company. (See Douglas, William M., assignor.)						
Buda Foundry and Manufacturing Company. (See Smyser, Louis B., assignor.)						
Buell, Lillian H., Boston, Mass. Clasp	474,156	May 3	416	100	59	719
Buesching, Fredrick. (See Nye, Herman M., assignor.)						
Buhoup, John J., assignor of three-fourths to M. A. and W. J. Sheppard, Cleveland, Ohio, and R. B. Tate, Pittsburg, Pa. Oil-burner	477,193	June 14	1509	370	59	1753
Bulford, John H., *et al.* (See Griffin, Thomas W., assignor.)						
Bull, James E., Tracy City, Tenn. Horseshoe	472,520	Apr. 12	806	207	59	166
Bullard, James H., assignor to Aerated Fuel Company, Springfield, Mass. Apparatus for burning hydrocarbon. (Reissue)	11,236	Apr. 26	3016	760	59	623
Bullock, Edwin B., Attleborough, Mass. Ornamental chain link or tip	474,792	May 10	1459	371	59	931
Bullock, Harrison W. (See Bradley, James, assignor.)						
Bullock, Lothrop L. (See Mullaly and Bullock.)						
Bullock, Milan C. (See Douglass, Samuel W., assignor.)						
Bullock, Milan C., Chicago, Ill. Valve-gear for steam-engines	473,906	May 3	13	4	59	639
Bullock, Milan C., Chicago, Ill. Rock-core drill	473,908	May 3	20	4, 5	59	640
Bullock, Milan C., Chicago, Ill. Rock-drilling apparatus	473,909	May 3	25	5	59	641
Bullock, Milan C., Chicago, Ill. Rock-core drilling	473,910	May 3	28	6	59	642
Bullock, Milan C., and S. W. Douglass, Chicago, Ill.; said Douglass assignor to said Bullock. Drilling apparatus	473,907	May 3	16	4	59	640
Bullock, Milan C., and S. W. Douglass, Chicago, Ill.; said Douglass assignor to said Bullock. Rock-drilling apparatus	474,080	May 3	311	75	59	697
Bulmer, George D., assignor of one-half to F. Norris, Duquesne, Pa. Hydraulic-crane mechanism	477,621	June 21	2234	558, 559	59	1905
Bültzingslöwen, Bruno von, assignor of one-half to M. Rodding, New York, N. Y. Pocket-knife	472,104	Apr. 5	147	40	59	28
Bültzingslöwen, Bruno von, assignor of one-half to A. Weck, New York, N. Y. Pocket-knife	476,245	June 7	19	4	59	1442
Bunch, Henry G., New York, assignor to D. L. Dresser, Flushing, N. Y., and E. R. Goodridge, Newport, R. I. Decorating fabrics	476,033	May 31	3422	864	59	1356
Bunker, William I., La Grange, Ill. Rocking-chair attachment	477,501	June 21	2025	502	59	1864
Bunker, William I., La Grange, Ill. Wheel	477,502	June 21	2026	502	59	1864
Bunker, William I., La Grange, Ill. Flexible tube	477,503	June 21	2027	502	59	1864
Bunker, William I., La Grange, Ill. Wheel-guard	477,504	June 21	2028	503	59	1864
Bunker, William I., La Grange, Ill. Wheel	477,505	June 21	2029	503	59	1865
Bunker, William I., La Grange, Ill. Wheel	477,506	June 21	2030	503	59	1865
Bunn, Simeon, Belleville, Ill. Furnace	472,697	Apr. 12	1066	275	59	215
Bunnell, Morton G. (See Hinman and Bunnell.)						
Bunsen, William M., Galesville, assignor of one-half to J. W. Skinner, La Crosse, Wis. Blow-gun	477,322	June 21	1745	427	59	1809
Bunting, William, Jr., Flushing, assignor to Meyer-Sniffen Company, Limited, New York, N. Y. Water-closet apparatus	474,985	May 17	1773	448	59	1005
Buob, Frederick. (See Reed and Buob.)						
Burch, Samuel H., Russellville, Ark. Animal-trap	472,832	Apr. 12	1276	327	59	255
Burden, William H., Cleveland, Ohio. Smoke-consumer	472,981	Apr. 19	1487	380	59	310
Burdett, George. (See Lambur and Burdett.)						
Burdge, Robert H., Kansas City, Mo. Clothes-drier	472,188	Apr. 5	279	73	59	53
Burdick, Charles L., Chicago, Ill. Air-brush	474,157	May 3	417	101	59	719
Burdick, Charles L., Chicago, Ill. Air-brush	474,158	May 3	420	101	59	720
Burdick, Hiram M. (See Ward and Burdick.)						
Burdick, Lindon P., Minneapolis, Minn. Ice-cream freezer	477,184	June 14	1495	366	59	1750
Burg, Lewis, Dallas City, Ill. Wagon-bolster	475,292	May 24	2237	576	59	1113
Burger, Franz, Sterling, Ill., assignor of one-half to H. M. Williams, Fort Wayne, Ind. Application of differential power	477,736	June 28	2412	603	59	1959
Burgess, Andrew, Oswego, N. Y. Breech-loading magazine-gun	476,246	June 7	21	5	59	1443
Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Knob attachment	472,725	Apr. 12	1102	284	59	221
Burgess, George, Jr., Sheffield, England. Bottle-washing machine	476,126	May 31	3573	898, 899, 900	59	1386
Burgess, Joseph E. (See Russell, Irvin A., assignor.)						
Burgher, Charles, Newton, Mass. Automatic fire-alarm system	475,925	May 31	3260	823	59	1323
Burke, Frank S. (See Griggs, George B., assignor.)						
Burke, Ira N. (See Burke, Jabez N. and I. N.)						
Burke, Jabez N. and I. N., Forest Hill, Cal. Elastic trace connection	472,783	Apr. 12	1185	303	59	237

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Burke, Mary C., Montpelier, Idaho. Wash-board	475,663	May 24	2925	715	59	1227
Burke, Ricard O., *et al.* (See Dyer, Isaac T., assignor.)						
Burke, Stephen E., Edon, Ohio. Whiffletree	472,853	Apr. 12	1277	327	59	255
Burkhard, Thomas, Brooklyn, N. Y. Confectioner's kettle	476,917	June 14	1068	257	59	1663
Burkholder, John, assignor of one-half to D. Jennings, Centreburg, Ohio. Pump	475,847	May 31	3141	796, 797	59	1300
Burkman, Walfrid, San Francisco, Cal. Clay-reducer	475,483	May 24	2547	648, 649	59	1172
Burleigh, Joseph A., Gilford, N. H. Making stockings	475,263	May 17	2192	559	59	1088
Burling, William S., and H. G. Bird, Chicago, Ill. Side bearing for cars	473,610	Apr. 26	2564	646	59	536
Burnap, Charles F., Warren, Ohio. Steam cooking utensil	475,435	May 24	2467	629	59	1156
Burnett, George S., and T. Sweeney, San Francisco, Cal. Curry-comb	472,521	Apr. 12	807	208	59	166
Burnett, Henry D., Lynn, and S. E. Doane, Swampscott, Mass., assignors to Thomson-Houston Electric Company, of Connecticut. Seal for leading-in wires	475,998	May 31	3373	850	59	1345
Burnett, William, *et al.* (See Sleno, Leonard, assignor.)						
Burnett, William H., Danbury, Conn. Puzzle	474,627	May 10	1193	303	59	877
Burnham, Walter, Chicago, Ill. Steam-loop connection for steam-engines	474,437	May 10	892	232	59	821
Burnham, Walter, Chicago, Ill. Steam-loop connection for engines	474,438	May 10	894	232	59	821
Burnham, Walter, Chicago, Ill. Steam-loop system	474,439	May 10	895	232, 233	59	821
Burnham, Walter, Chicago, Ill. Combined steam-loop	474,440	May 10	898	233, 234	59	822
Burnham, Walter, Chicago, Ill. Steam-radiator governor	474,441	May 10	905	234	59	822
Burns, Robert. (See Anderson, William A., assignor.)						
Burr, Augustus W. (See Richards and Burr.)						
Burr, George S., and J. M. Cummings, Schocholi, Ky. Land-roller attachment	475,291	May 24	2236	576	59	1113
Burr, Theodore. (See Heath and Burr.)						
Burr, William, *et al.* (See Murray, Stephen D., assignor.)						
Burrell & Co., D. H. (See Hart, Frederick, assignor.)						
Burrell & Co., D. H. (See Wormsley, William, assignor.)						
Burris, James W., Uvalde, Tex. Blank book	473,291	Apr. 19	2012	506	59	408
Burris, James W., Uvalde, Tex. Blank book	477,166	June 14	1468	360	59	1744
Burritt, Harvey H., Bellerille, N. J. Method of and apparatus for tapping water-mains	473,997	May 3	175	41, 42	59	672
Burron, Paterick. (See Rees, David, assignor.)						
Burrowes, Edward T., Portland, Me. Shade attachment	476,783	June 14	842	208	59	1618
Burrowes, Edward T., Portland, Me. Electroplating with alloys	477,350	June 21	1783	.....	59	1817
Burt, Austin, assignor of one-half to H. E. Burt, Black River Falls, Wis. Temporary binder	476,363	June 7	216	53	59	1478
Burt, Carl A., Rochester, N. Y., assignor to Magic Freezer Company, Chicago, Ill. Freezing apparatus	477,626	June 21	2240	561	59	1907
Burt, Chauncey I., Jefferson, Iowa. Automatic stock-fountain	474,986	May 17	1775	449	59	1005
Burt, Horace E. (See Burt, Austin, assignor.)						
Burton, Augustus G., assignor to C. R. Hadley and W. A. Vawler, Chicago, Ill. Temporary binder	472,665	Apr. 12	1006	261	59	204
Burton, Augustus G., assignor of one-half to G. A. Marshall and F. H. Lewis, Chicago, Ill. Leather-gage	473,892	Apr. 26	3006	758	59	620
Burton, Charles F., *et al.* (See Osborn, Francis C., assignor.)						
Burton, Charles M., and J. C. Gould, New Haven, Conn. Device for operating clocks	472,028	Apr. 5	13	4	59	5
Burton, George D. (See Burton, John M., assignor.)						
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Bracket for electric heaters	472,634	Apr. 12	966	251	59	197
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electrical forge	475,178	May 17	2065	519, 520	59	1062
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Distributing apparatus for heating-currents	475,179	May 17	2067	520	59	1062
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electric connector for converters	475,180	May 17	2068	521	59	1063
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electrical metal-heater	475,181	May 17	2068	521	59	1063
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electrical metal-working	475,182	May 17	2070	521, 522	59	1063
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electric metal-working	475,183	May 17	2071	522	59	1064
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electrical converter	475,184	May 17	2072	522, 523	59	1064
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electric metal-heater	475,264	May 17	2194	559	59	1089
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric metal-heater	475,185	May 17	2075	523, 524, 525	59	1064
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric forge	475,186	May 17	2078	525	59	1065
Burton, George D., Boston, and E. E. Angell, Somerville Mass., assignors to Electrical Forging Company, of Maine. Apparatus for cooking by electricity	475,187	May 17	2080	526	59	1066
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Metal-heating apparatus	475,188	May 17	2081	526	59	1066
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric heater	475,189	May 17	2082	527	59	1066
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric cooking apparatus	475,190	May 17	2084	527	59	1067
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Flexible electrode	475,191	May 17	2085	527	59	1067
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric metal-heater	475,192	May 17	2087	528	59	1067
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric wire-twister	475,193	May 17	2088	528	59	1068
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric metal-bending apparatus	475,194	May 17	2089	528	59	1068
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electrical forge	475,195	May 17	2091	529	59	1068
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Automatic electric forge	475,196	May 17	2092	529	59	1068
Burton, George D., Boston, Mass., A. H. Eddy, Hartford, and G. T. Briggs, Windsor, Conn., assignors to Electrical Forging Company, of Maine. Converting system for electric metal-heating	475,232	May 17	2145	544, 545	59	1079

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Burton, John M., Wichita, Kans. Freight-car	472,158	Apr. 5	229	61, 62	59	43
Burton, John M., Wichita, Kans. Stock-car	473,998	May 3	177	42	59	672
Burton, John M., Wichita, Kans., assignor, by mesne assignments, to himself, and G. D. Burton, Boston, Mass. Car-coupling	476,784	June 14	843	208	59	1618
Burton, Robert T. (See Boswell, Henry L., assignor.)						
Busacker, Carl J. J., Goslar, Germany. Toy	474,543	May 10	1062	271	59	851
Buschner, Carl F., New York, N. Y. Anti-friction bearing for cars	475,007	May 17	1806	458	59	1011
Busell, James H., Boston, and E. H. Taylor, Lynn, Mass., assignors to J. H. Busell Manufacturing Company, Nashua, N. H. Burnishing-machine	475,032	May 17	1841	467	59	1018
Busfield, James and W., Haverhill, Mass. Nailing-jack	474,081	May 3	318	76	59	698
Busfield, James P. (See Langley, Thomas F., assignor.)						
Busfield, Walter. (See Busfield, James and W.)						
Bush, Martin L., assignor of one-half to A. S. Lang, Lawrence, Mass. Die-sharpening machine	473,249	Apr. 19	1943	488	59	394
Bush, William C., Wilmington, Del. Cartridge	475,008	May 17	1807	458	59	1011
Bushnell, Edwin L., and G. W. Dryer, assignors to E. L. Bushnell Spring Company, Limited, Poughkeepsie, N. Y. Car-seat	476,728	June 7	751	185	59	1586
Bushnell, Edwin L., and G. W. Dryer, assignors to E. L. Bushnell Spring Company, Limited, Poughkeepsie, N. Y. Car-seat	476,729	June 7	752	186	59	1587
Bussard, William, Port Jefferson, Ohio. Combined collection and delivery letter-box	472,105	Apr. 5	148	40	59	28
Bussey, John M., Edgefield, S. C. Sawmill-carriage	473,726	Apr. 26	2739	689, 690	59	569
Butler, Benjamin F., Rockford, Ill. Riding-cultivator	477,194	June 14	1510	370	59	1753
Butler, Calvin L., Greenfield, Mass. Screw-cutting die	477,293	June 21	1696	416	59	1800
Butler, James, Greenwich, N. J. Wagon end-gate	477,988	June 28	2813	704	59	2037
Butler, Lafayette W., Williamsburg, Iowa. Tool or reaper-knife holder	473 058	Apr. 19	1613	412	59	333
Butler, Wesley, Litchfield, Ill. Thrashing-machine	477,507	June 21	2031	503	59	1865
Butler, Wesley, Litchfield, Ill. Automatic grain-weigher	477,508	June 21	2033	504	59	1865
Butler, William A., assignor to J. H. Haar and J. A. Cassidy, New York, N. Y. Mechanism for cable traction	478,046	June 28	2909	726, 727	59	2053
Büttel, Johann, Newark, N. J. Apparatus for making ultramarine-blue	476,447	June 7	343	78	59	1504
Butterfield-Mitchell Electric Heating Company. (See Mitchell, Willis, assignor.)						
Button, Eugene L., Brooklyn, N. Y. Foot-rest	472,205	Apr. 5	313	81	59	59
Butts, Frank E., assignor of one-half to I. P. Watts, Winchester, Ind. Measuring-funnel	474,575	May 10	1117	286	59	863
Byck, Moses S. (See Reuter, John C., assignor.)						
Byers, Andrew C. and J. L., Forreston, Ill. Eaves-trough	474,442	May 10	908	234	59	823
Byers, Joseph L. (See Byers, Andrew C. and J. L.)						
Bynum, Green H., Murray, Ky. Beehive	472,726	Apr. 12	1103	284	59	221
Byram, Frank A., Philadelphia, Pa. Railway cross-tie	475,999	May 31	3374	850	59	1346
Byrkit, George E. (See Milburn, Byrkit, and Crabbs.)						
Byrne, John T., and W. J. Lafferty, Philadelphia, Pa. Picker-spindle stand	475,484	May 24	2549	649	59	1172
Byrnes, Anthony. (See Byrnes, William, assignor.)						
Byrnes, William, assignor of one-half to A. Byrnes, Chicago, Ill. Grip-car brake	474,900	May 17	1631	416	59	978
C. G. Hutchinson Shoe Blacking Machine Company. (See Hutchinson, Charles G., assignor.)						
Cabana, Leon M., Buffalo, N. Y. Leather-washer	475,053	May 17	1874	475	59	1025
Cabus, Joseph, New York, N. Y. Shutter-fastener	476,978	June 14	1160	283	59	1683
Cadman, George. (See Kieckhefer and Cadman.)						
Cafferty, Ridner P., Jr., and W. N., assignors of one-half to C. Grimmer, G. H. Gillette, and J. W. Grimmer, New York, N. Y. Swimming attachment	476,000	May 31	3376	851	59	1346
Cafferty, William N. (See Cafferty, Ridner P., Jr., and W. N.)						
Cahall, Charles L. (See Hollis, Albert D., assignor.)						
Cain, Michael H. (See Stacey, Henry, assignor.)						
Caird, David, Ulverston, England. Manufacture of metal barrels, &c	473,495	Apr. 26	2360	598, 599	59	497
Cairns, Charles L., Jersey City, N. J. Centrifugal apparatus	476,979	June 14	1170	283	59	1683
Calder, George, Jr., Lancaster, Pa. Matrix-making machine	474,809	May 17	1484	379, 380	59	949
Calder, Robert, Rochester, assignor to F. T. Giblin, Utica, N. Y. Heating apparatus	472,940	Apr. 12	1410	360	59	282
Caldwell, Edward P., assignor of one-half to E. J. Edwards, Minneapolis, Minn. Combination-padlock	473,059	Apr. 19	1615	412	59	333
Caldwell, Frank G., assignor to Caldwell & Peterson Manufacturing Company, Wheeling, W. Va. Sheet-metal ceiling-panel	476,185	May 31	3676	929	59	1406
Caldwell, John H., Philadelphia, Pa. Electric-light mast-arm	476,607	June 7	574	137	59	1550
Caldwell & Peterson Manufacturing Company. (See Caldwell, Frank G., assignor.)						
Calkins, Addison N., Quincy, Ill. Grain-meter	476,608	June 7	575	137	59	1550
Callahan, Frank, *et al.* (See Beckwith, Theodore A., assignor.)						
Callahan, John, *et al.* (See Beckwith, Theodore A., assignor.)						
Callaway, N. S. (See Callaway and West, assignors.)						
Callaway, William H., and C. C. West; said Callaway assignor to N. S. Callaway, San Angelo, Tex. Car-coupling	477,989	June 28	2815	704	59	2037
Calm, Elizabeth, New York, N. Y. Sewing-machine	472,333	Apr. 5	515	133	59	97
Calmer, G. G., *et al.* (See Fitzwater, William M., assignor.)						
Calver, Washington I., assignor of one-half to A. W. Miller, Hagerstown, Md. Seat and luggage-carrier attachment for bicycles	477,042	June 14	1263	306	59	1703
Cameron, Allan B., Williamsport, Pa. Ornamental wood and metal work	473,185	Apr. 19	1844	464	59	373
Cameron, Ezra G., Cleveland, Ohio, assignor of one-half to D. M. Foote, Eaton Rapids, Mich. Blacking-case	475,294	May 24	2243	578	59	1115
Cameron, James W., New York, N. Y. Preserving animal food	473,893	Apr. 26	3008	758	59	621
Cammell, George H. (See Bott and Cammell.)						
Campbell, Charles H., New York, N. Y., and W. Whigham, Pittsburg, Pa. Apparatus for loading cars	475,293	May 24	2238	576, 577, 578	59	1114
Campbell, Cydnor B., assignor of two-thirds to D. S. Beverly and J. M. Allen, Glouster, Ohio. Combined pencil holder, sharpener, and eraser	475,485	May 24	2550	649	59	1173
Campbell, David E., Cincinnati, Ohio. Cash and package carrier apparatus	475,265	May 17	2195	559, 560, 561	59	1089
Campbell, George H. (See Sterling, Walter A., assignor.)						
Campbell, Henry, Baltimore, Md. Penholder	475,033	May 17	1842	467	59	1019
Campbell, John, and A. J. Bramma, Bradford, England. Apparatus for actuating dabbing-brushes for combing-machines	475,034	May 17	1844	467	59	1019
Campbell, Joseph, W. H., and R. J., Toronto, Canada. Covering for wagons	473,292	Apr. 19	2013	506	59	408
Campbell, Malcolm Y., Chicago, Ill. Coupling for hoops, &c	476,001	May 31	3377	851	59	1346

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Campbell, Mark, Chicago, Ill. Curling-iron. (Reissue)	11,237	Apr. 26	3018	760	59	623
Campbell Printing Press and Manufacturing Company. (See Huson, Winfield S., assignor.)						
Campbell Printing Press and Manufacturing Company. (See Southgate, Louis W., assignor.)						
Campbell, Robert J. (See Campbell, Joseph, W. H., and R. J.)						
Campbell, William H. (See Campbell, Joseph, W. H., and R. J.)						
Canciani, Canciano, Udine, Italy. Extension truck-ladder	474,628	May 10	1194	304	59	877
Canda, Ferdinand E., New York, N. Y. Under-trussing for railway-cars	472,854	Apr. 12	1278	327	59	255
Candee, Charles E., Brooklyn, N. Y. Lock	474,519	May 10	1022	262, 263	59	845
Canet, Jean B. G. A., Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, Limited, Openshaw, England. Breech-loading gun	474,288	May 3	619	153, 154	59	757
Canet, Jean B. G. A., Paris, France, assignor to Sir Joseph Whitworth & Company, Limited, Openshaw, England. Breech-loading ordnance	474,289	May 3	622	154, 155, 156, 157	59	758
Canet, Jean B. G. A., Paris, France, assignor to Sir Joseph Whitworth & Company, Limited, Openshaw, England. Mounting for turret and other guns	474,290	May 3	628	157, 158, 159	59	759
Canet, Jean B. G. A., Paris, France, assignor to Sir Joseph Whitworth & Company, Limited, Openshaw, England. Torpedo-launching apparatus	474,291	May 3	633	160	59	760
Canfield, Horace G. (See Cushman and Canfield.)	477,924	June 28	2722	681	59	2017
Canton Steel Roofing Company. (See Belding, Thomas C., assignor.)						
Canty, John W., Youngstown, Iowa. Attachment for mining-cages	472,159	Apr. 5	233	62	59	44
Capelle, Catharine, Rondout, N. Y. Parcel-carrier	473,566	Apr. 26	2492	630	59	522
Capwell, Roy P., Linden, N. J. Cylinder drain-cock	472,855	Apr. 12	1279	327	59	256
Carbis, Michael J., Bingham, Utah Ter. Flue-cleaner	473,821	Apr. 26	2878	722	59	596
Cardwell, Addison A., Clarenceville, N. Y. Stair-carpet button	472,250	Apr. 5	381	100	59	71
Carel, Frederick, and W. F. Davidson, Charleston, W. Va. Grate	476,127	May 31	3578	900	59	1387
Carew, James M., New York, N. Y. Machine for applying adhesive material to the surface of paper, &c	474,292	May 3	635	160	59	760
Carey, Augustus C., Lake Pleasant, Mass. Manifolding-pen	475,535	May 24	2631	669, 670	59	1188
Carey, Augustus C., Lake Pleasant, Mass. Incandescent electric lamp	473,207	Apr. 19	1876	472	59	380
Carey, Augustus C., Lake Pleasant, Mass. Rheostat	473,208	Apr. 19	1877	473	59	380
Carey, Robert, London, England. Hydraulic lift	473,209	Apr. 19	1879	473	59	380
Carl, Alexander, *et al.* (See Stinebring, George W., assignor.)	477,294	June 21	1697	416	59	1800
Carl, George, *et al.* (See Stinebring, George W., assignor.)						
Carl, Willie H., *et al.* (See Stinebring, George W., assignor.)						
Carle, Amos D., Malden, Mass. Sash-balance						
Carleton, Milton E., Canton, Mich. Implement handle	477,099	June 14	1363	332	59	1723
Carley, Horace S., New York, N. Y. Child's chair	473,250	Apr. 19	1944	489	59	394
Carlin, William P., assignor of one-half to J. M. Marlin, Jeffersontown, Ky. Pump-plunger	476,034	May 31	3422	864	59	1357
Carll, Addison B., Jersey City, N. J. Wrench	474,365	May 10	785	204	59	799
Carll, Charles W., and J. W. Phillips, Trenton, N. J. Conduit and trolley for electric railway systems	474,810	May 17	1487	380	59	950
Carlson, Andrew, Gilbert, Mich. Pump	472,982	Apr. 19	1488	380, 381	59	810
Carlson, Gustave, Sparks, assignor of one-half to C. H. Cornell, Valentine, Nebr. Potato-bug gatherer	475,536	May 24	2634	670	59	1189
Carman, Thomas H. (See Ellis, Arthur W., assignor.)	472,428	Apr. 5	656	167	59	123
Carmont, Hazlewood, London, England. Vehicle-wheel	472,856	Apr. 12	1281	328, 329	59	256
Carnegie, Phipps & Company. (See Wood, Ezra F., assignor.)						
Carnell, George, Philadelphia, Pa. Brick-mold sander	472,334	Apr. 5	518	134	59	97
Carney, Thomas, assignor to National Cash Register Company, Dayton, Ohio. Cash register and indicator	473,170	Apr. 19	1802	455, 456	59	367
Caron, Arreatide, Minneapolis, Minn. Clothes-drier	475,751	May 31	2968	753	59	1267
Carpenter, Charles E., Minneapolis, Minn. Electric heater	477,628	June 21	2243	562	59	1907
Carpenter, Charles E., assignor to Carpenter-Nevens Electro Heating Company, Minneapolis, Minn. Electric embossing-stamp						
Carpenter, Charles W., *et al.* (See Crowell, Luther C., assignor.)	477,627	June 21	2242	561	59	1907
Carpenter & Dyett. (See Griffith, William P., assignor.)						
Carpenter, Edwin Z., executor. (See Ladd, Daniel E.)						
Carpenter, Francis W., Harrison, N. Y. Toy						
Carpenter, J. Ross, Monmouth, Ill. Gate	475,486	May 24	2550	650	59	1173
Carpenter, Joseph B., Marietta, S. C. Car-coupling	472 592	Apr. 12	808	208	59	166
Carpenter-Nevens Electro Heating Company. (See Carpenter, Charles E., assignor.)	472,857	Apr. 12	1283	329	59	256
Carpenter, William A., *et al.* (See Coleman, John, assignor.)						
Carper Railway Engine Company. (See Strouse and Griffin, assignors.)						
Carr, Albert C., Middlesborough, Ky. Kitchen cabinet						
Carr, Charles B., St. Johnsbury, Vt. Telegraph-instrument	475,197	May 17	2094	529	59	1069
Carr, John M., Knohnoster, Mo. Barrel-truck	476,730	June 7	753	186	59	1587
Carr, Walter F., and C. F. Ferrin, Minneapolis, Minn. Conduit for electric railways	473,381	Apr. 19	2172	545	59	459
Carrington, Harry T., assignor to H. G. Sterne and M. Karger, Birmingham, Ala. Locomotive-ash-pan scraper	476,128	May 31	3579	901	59	1387
Carroll, Craft C., New York, N. Y. Composition of matter and producing the same	473,692	Apr. 26	2688	676, 677	59	560
Carroll, Craft C., New York, N. Y. Vocal sounding-board	475,382	May 24	2389	.....	59	1143
Carroll, Henry L., *et al.* (See Jones, John B., assignor.)	475,928	May 31	3365	823	59	1324
Carson, Theron. (See Bowyer and Hull, assignors.)						
Carroll, William C., Chicago, Ill. Surgical pump	473,546	Apr. 26	2442	618	59	519
Carroll, William T., Worcester, Mass. Non-metallic bearing	475,929	May 31	3366	824	59	1324
Carson, Manly T., Jackson, Tenn., and J. D. Gurganus, Whistler, Ala. Car-door	472,858	Apr. 12	1284	329, 330	59	257
Carstarphen, William P., Jr., assignor to Electric Reciprocating Company, Denver, Colo. Electrical reciprocating tool						
Carter, Alexander G., Fresno, Cal. Fruit-pitter	476,225	May 31	3749	947	59	1490
Carter, Arthur R., and H. C. Hughes, London, England. Manufacture of stained glass for windows, &c	474,901	May 17	1632	417	59	978
Carter, Edward, D., Celeste, Tex. Cotton-baling apparatus	477,990	June 28	2816	705	59	2037
Carter, John T., Danville, Va. Tobacco-casing machine	474,293	May 3	636	161	59	760
Carter, Stephen J., Chicago, Ill. Apparatus for coating moldings	474,650	May 10	1228	314	59	894
	476,002	May 31	3377	851	59	1347

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Carter, W. T. (See Pharr, Walter, assignor.)						
Carter, William, Albion, N. Y. Musical instrument	477,167	June 14	1469	360	59	1744
Carter, Willis S., Woburn, Mass. Advertising-wagon	474,366	May 10	786	204	59	799
Cartwright, Robert, Rochester, assignor to Thomson Meter Company, New York, N. Y. Index-hand for counting-registers	476,129	May 31	3582	902	59	1388
Carty, John J., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange apparatus	473,911	May 3	32	6, 7	59	642
Carver, George H., assignor to Plano Manufacturing Company, Plano, Ill. Horse hay-rake	473,496	Apr. 26	2362	509	59	497
Cascaden, Thomas, Jr., Waterloo, Iowa. Food-steamer	476,247	June 7	24	5	59	1444
Case, Cromwell O., assignor to P. & F. Corbin, New Britain, Conn. Pneumatic door-check	475,930	May 31	3267	824	59	1324
Case, Ensley J., Peoria, Ill. Polisher for metal castings	476,248	June 7	25	5	59	1444
Case, George, assignor of seven-eighths to W. McKee, Paterson, N. J. Apparatus for igniting fire under steam-boilers of steam fire-engines	473,415	Apr. 19	2228	560	59	449
Case, Joseph D. (See Grisel and Severio, assignors.)						
Case, Manning H. (See Bangs and Waite, assignors.)						
Cash, Francis C., assignor of one-half to C. B. Lord, Lynn, Mass. Safety-gate for cars	473,210	Apr. 19	1880	473	59	381
Cashell, George W., assignor of one-half to S. Myers, Nevada, Mo. Cattle-guard	475,233	May 17	2153	545	59	1080
Caskey, Samuel S., and J. M. Dodge, assignors to Link-Belt Engineering Company, Philadelphia, Pa. Molding-flask	474,210	May 3	500	120	59	734
Casella & Co., Leopold. (See Hoffmann, Meinhard, assignor.)						
Casella & Co., Leopold. (See Weinberg, Arthur, assignor.)						
Cassidy, Joseph A., *et al.* (See Butler, William A., assignor.)						
Castro, Damaso, Brooklyn, N. Y. Cigar-perforator	474,793	May 10	1459	371	59	931
Cate, William H. M., Henniker, assignor to Universal Weeder Company, Weare, N. H. Weeder and cultivator	473,868	Apr. 26	2959	746	59	611
Cathcart, Alexander T. and W. L., Gwynedd, Pa. Circular-knitting machine	472,029	Apr. 5	14	4, 5	59	5
Cathcart, William L. (See Cathcart, Alexander T. and W. L.)						
Catlin, Charles A., assignor to Rumford Chemical Works, Providence, R. I. Baking-powder	474,811	May 17	1488	.....	59	950
Caughy, Frank J. (See Caughy, John H., assignor.)						
Caughy, John H., assignor of one-half to F. J. Caughy, Baltimore, Md. Automatic electric-lamp lighter and extinguisher	472,494	Apr. 5	759	193	59	144
Caven, John. (See Dillon, Thomas, assignor.)						
Cayce, Robert W., Gatesville, Tex. Tire-tightener	476,870	June 14	988	239	59	1647
Cedervall, Frans R., Göteborg, Sweden. Lubricator for propeller-shafts	475,436	May 24	2469	629	59	1157
Central Oilgas Stove Company. (See Boeck, Charles H., assignor.)						
Chabot, Joseph A., Somerville, and J. Jacobs, Boston, Mass. Combined work-holder and drill	475,664	May 24	2826	715	59	1227
Chadbourne, Zebulon L., E. A. Behringer, Brooklyn, N. Y., and H. J. McCoy, Orange, N. J. Device for securing hose to couplings	477,043	June 14	1264	307	59	1703
Chaddock, David C., Minerva, Ohio. Hay rake and loader	475,752	May 31	2970	{753 {754	59	1267
Chadwick, Charles T. (See Haskins, Schulenburg, and Chadwick.)						
Chain, Charles H., Alliance, Ohio. End-gate	472,523	Apr. 12	810	208	59	167
Chalfant, Levi, Alexandria, Ind. Scaffold	475,665	May 24	2827	716	59	1227
Chamberlain, Daniel, Boston, Mass. Stove-grate	474,367	May 10	787	205	59	800
Chamberlain, John A., Kennard, Nebr. Alarm-bell trip	472,030	Apr. 5	28	6	59	8
Chamberlain, Manasseh A., Keats, Kans. Weed-cutter for listed corn	473,912	May 3	34	7	59	642
Chamberlain, Orange M., assignor to Wheelock & Brigham, Boston, Mass. Ruffling mechanism for sewing-machines	472,431	Apr. 5	660	168	59	124
Chamberlin, Charles, Kansas City, assignor of one-half to W. J. Conkle, Jackson, Mo. Pump	475,296	May 24	2245	579	59	1113
Chambers, Alfred E., Jr., Petersburg, Ky. Halter	477,644	June 28	2275	570	59	1930
Chambers, Bering, Quinlan Company. (See Bering, James E., assignor.)						
Chambers, Cyrus, Jr., Philadelphia, Pa. Combined printing and folding machine	477,886	June 28	2665	{666 {667	59	2005
Chambers, John S., Jr., Allegheny, Pa. Railway-gate	473,823	Apr. 26	2882	723	59	597
Chambers, William, St. Clairsville, Ohio. Gate	475,198	May 17	2095	530	59	1069
Champion, Jeremiah W., Rocheport, Mo. Hand corn-planter	474,721	May 10	1342	341	59	907
Champlin, John F., Cedar Vale, Kans. Hedge-cutting machine	477,198	June 21	1527	373	59	1769
Chandler, Alfred B. (See Powell and Chandler.)						
Chandler, Alfred D., Chelmsford, Mass. Yarn-separator for spinning-frames	476,731	June 7	754	186	59	1587
Chandler, C. T., Jr. (See Powell and Chandler, assignors.)						
Chanler, John A., New York, N. Y. Pavement	475,234	May 17	2154	545	59	1080
Chanler, John A., New York, N. Y. Pavement	475,235	May 17	2156	546	59	1080
Chapin, Henry A., *et al.* (See Brosnan, Cornelius J., assignor.)						
Chapin, Louis N. (See Webb and Chapin.)						
Chapin, William G., Brooklyn, N. Y. Machine for feeding and cutting paper and like sheet materials	475,931	May 31	3269	825	59	1325
Chaplin, Joseph, assignor of one-half to W. Voght, North Manchester, Ind. Fence-machine	474,794	May 10	1460	371	59	931
Chapman, Anna, Jersey City, N. J. Catamenial bandage	475,199	May 17	2097	530	59	1069
Chapman, Charles H., Groton, Mass. Spinning ring and traveler	473,824	Apr. 26	2883	723	59	597
Chapman, Eugene F., Keyteaville, Mo. Washing-machine	473,140	Apr. 19	1755	443	59	357
Chapman, Frank L. G. (See Hoeffler and Chapman.)						
Chapman, George T., White Plains, assignor of one-half to W. H. Merritt, New York, N. Y. Spring attachment for vehicles	477,622	June 21	2235	559	59	1906
Chapman, George T., White Plains, assignor of three-fourths to W. H. Merritt, New York, N. Y. Hoof-spreader	476,732	June 7	757	186	59	1588
Chapman, Henry P. (See Plummer and Chapman.)						
Chapman, John G. (See Fraser, William, assignor.)						
Chapman, Robert A., Glymont, Md. Figure toy	472,429	Apr. 5	657	{167 {168	59	123
Chapman, William. (See O'Neill, Charles, Z., assignor.)						
Charest, John T., Red Bluff, Cal. Water-front and fire-box for boilers	475,035	May 17	1845	468	59	1019
Charles Scott Spring Company. (See Ferrell, William, assignor.)						
Charles Truax, Green & Company. (See Scheffer, David M., assignor.)						
Charles Warner Company. (See Warner and Curry, assignors.)						
Charlton, John, Chicago, Ill. Motor or treadle-power	474,054	May 3	278	67	59	691
Charter, James A., Sterling, Ill. Gas-engine	473,293	Apr. 19	2014	506	59	408
Charter, James A., assignor of one-half to J. Charter, Sterling, Ill. Gas-engine	477,295	June 21	1699	416	59	1800
Charter, John. (See Charter, James A., assignor.)						
Charter, John, Sterling, Ill. Gas-engine	472,106	Apr. 5	149	40	59	28

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Chase, Eli S., and C. E. Smock, Minneapolis, Minn. Pendulum scale	475,295	May 24	2244	578	59	1115
Chase, George S., *et al.* (See Hunt, Franklin B., assignor.)						
Chase, Henry A., assignor to A. Watts, Boston, Mass. Signaling system	472,983	Apr. 19	1489	{381 {382	59	310
Chase, Henry A., assignor to A. Watts, Boston, Mass. System of signaling	474,945	May 17	1697	432	59	992
Chase, James, Rochester, N. Y. Portable device for moistening the fingers or adhesive surfaces	474,812	May 17	1489	381	59	950
Chase, John F., assignor of one-half to E. W. Whitehouse, Augusta, Me. Fresh-water condenser	475,036	May 17	1847	468	59	1020
Chase Lasting Machine Company. (See Strickler, Albert E., assignor.)						
Chase, Lewis W., Kirksville, Mo. Blackboard-eraser	475,753	May 31	2971	754	59	1267
Chase, Luther A., Yonkers, N. Y. Office-desk	477,509	June 21	2034	504	59	1666
Chase, Maxon, Lucerne, Mo. Hay-ricker	475,200	May 17	2097	530	59	1070
Cheatham, Heston A. (See Reed, George T., assignor.)						
Chemberlin, Josiah E., Scranton, Pa. Surgical and gynecological table	476,516	June 7	442	{104 {105	59	1524
Chemical Hand Fire Extinguisher Company. (See Ballou, Russell A., assignor.)						
Chemische Fabrik Griesheim. (See Lang, Julius, assignor.)						
Chenette, Joseph E., assignor of one-half to J. M. C. Walker, Johnstown, N. Y. Sewing-machine needle	474,211	May 3	502	120	59	735
Cherry, Thomas E., assignor of one-half to F. B. Torrey, Bath, Me. Metal-planer	477,510	June 21	2035	505	59	1666
Chesebrough, Robert A., New York, N. Y. Extracting perfumes	475,437	May 24	2470	630	59	1157
Chicago Foundation Pavement Company. (See Curtis, George S., assignor.)						
Chicago Sash Pulley Company. (See Phillips, Francis V., assignor.)						
Chicago Sewing Machine Company. (See Binns, William H., assignor.)						
Chicago Street Indicator and Advertising Company. (See Foote, Delavan S., assignor.)						
Chidley, Richard, London, England. Tea-pot	473,727	Apr. 26	2741	690	59	570
Chief Manufacturing Company. (See Teeguarden, Freeman M., assignor.)						
Childs, Charles V. (See Kindl and Childs.)						
Childs & Co., Charles H. (See Babcock, Henry D., assignor.)						
Childs, Ebenezer M., Elgin, Ill. Carpet-fastener	477,323	June 21	1746	427	59	1809
Childs, William A., Englewood, N. J., assignor of one-half to F. Shaw, New York, N. Y. Battery	477,645	June 28	2275	570	59	1930
Chiles, Edward. (See Hill, Warren, assignor.)						
Chisham, William R., and S. E. Abbott, Hannibal, Mo. Washing-machine	477,646	June 28	2278	571	59	1930
Choate, Parker C., Brooklyn, N. Y. Producing metallic zinc	473,186	Apr. 19	1844	464	59	373
Christ, Rinehart. (See Kahn and Christ.)						
Christensen, Emil Portland, Oreg. Saw filing and setting machine	472,031	Apr. 5	29	6	59	8
Christian, E. P. (See Reed and Buob, assignors.)						
Christie, Benjamin J., Leadville, Colo. Non-conducting covering for steam-pipes, &c	477,647	June 28	2279	.....	59	1931
Christie, Henry P., San Francisco, Cal. Friction-coupling	472,432	Apr. 5	662	169	59	124
Christie, J. T. (See Downs, Eugene, assignor.)						
Christie, Thomas S., *et al.* (See Weber, Adolph, assignor.)						
Christman, Edward. (See Munn and Christman.)						
Christopher, Calvin F., Spartanburg, S. C. Reversing-valve for engines	474,212	May 3	502	121	59	735
Christy, Charles, Jr., assignor of one-half to W. E. King, Canton, Ohio. Hose-coupling	472,471	Apr. 5	722	184	59	137
Church, Charles E., assignor to Hancock Inspirator Company, Boston, Mass. Injector	475,201	May 17	2099	531	59	1070
Church, Duane H., Newton, Mass. Making bimetallic balances for watches	474,590	May 10	1136	290	59	866
Church, Duane H., Waltham, Mass. Machine for making gears or pinions	476,953	June 14	1131	{272 {273 {902 {903 {904 {905	59	1676
Church, Walter C., Brixton, England. Slide-valve for steam-engines	476,130	May 31	3583		59	1388
Church, William, St. Paul, Minn. Wrench	474,987	May 17	1776	449	59	1005
Claggett, Charles E. (See Dennis and Claggett.)						
Clancy, J. Richard. (See Redfield, Lewis H., assignor.)						
Clancy, William, Anaconda, Mont. Apparatus for cleaning and concentrating ores	476,035	May 31	3424	{864 {865	59	1357
Clapp, Charles W. (See Westervelt and Clapp.)						
Clapp, Edward D. (See Horning and Clapp.)						
Clapp, Edwin P., Rush, N. Y. Steam-boiler	474,039	May 3	245	59	59	685
Clark, Albert M., Ann Arbor, Mich. Attachment for windmills	475,009	May 17	1808	459	59	1011
Clark, Charles A., assignor, by mesne assignments, to Combination Roll and Rubber Company, Bloomfield, N. J. Rubber belting	472,601	Apr. 12	918	236	59	188
Clark, Charles W. (See Clark, William E. and C. W.)						
Clark, Clarence S., *et al.* (See Lawrence, George A., assignor.)						
Clark, E. Clinton. (See Barnes, David L., assignor.)						
Clark, Earl E., Canton, Ohio. Friction-clutch	477,244	June 21	1621	396	59	1785
Clark, George S., Philadelphia, Pa. Safety-vault. (Reissue.)	11,240	May 24	2955	{748 {749	59	1949
Clark, H. P. (See Kerslake, Harry A., assignor.)						
Clark, Harriet M., Flushing, N. Y. Combined waist and suspenders	477,648	June 28	2280	571	59	1931
Clark, Henry A. (See Lombard, Nathaniel, assignor.)						
Clark, Henson L., Russiaville, Ind. Scaffold	472,160	Apr. 5	235	62	59	44
Clark, James, Jr. (See Maxwell and Clark.)						
Clark, Jay W. (See Wheeler, Clarence L., assignor.)						
Clark, John, and F. W. Floyd, Detroit, Mich. Quarter-boot for horses	476,517	June 7	443	105	59	1524
Clark, John A. (See Wyman and Clark.)						
Clark, John H., assignor to Whittier Machine Company, Boston, Mass. Electric elevator	477,100	June 14	1364	332	59	1723
Clark, John K., assignor, by mesne assignments, to M. K. Clark, Buffalo, N. Y. Latch	472,430	Apr. 5	659	168	59	124
Clark, Joseph, San Francisco, Cal. Safety gas-cock	473,611	Apr. 26	2565	646	59	536
Clark, Martin M., Chicago, Ill. Galvanic battery	476,733	June 7	758	187	59	1588
Clark, Mary K. (See Clark, John K., assignor.)						
Clark, Melville, Chicago, Ill. Organ	472,032	Apr. 5	32	7	59	8
Clark, Melville, Chicago, Ill. Reed-organ	473,383	Apr. 19	2174	{546 {547	59	439
Clark, Robert. (See Cox and Clark.)						
Clark, Thomas, Quincy, Ill. Corn-popper	475,666	May 24	2827	716	59	1227
Clark, Thomas F., Lancaster, N. H. Car-brake	476,871	June 14	969	240	59	1647
Clark, Thomas R., *et al.* (See Heath, Henry, assignor.)						
Clark, William E. and C. W., McLuney, Ohio. Jar, jug, or can	475,078	May 17	1909	484	59	1031
Clark, William L., Sioux City, Iowa. Method of and apparatus for making metal castings	473,382	Apr. 19	2173	545	59	439
Clark, William P., Elberton, Ga. Car-coupling	477,168	June 14	1470	360	59	1745

Alphabetical list of patentees, April to June, inclusive—Continued.

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Clarke, Harry T., assignor to Portland Iron Works, Portland, Oreg. Adjustable cut-off-valve gear	476,047	June 28	2911	727	59	2053
Clarke, Louis S., Pittsburg, Pa. Phonograph	474,946	May 17	1701	433	59	902
Clarkson, Edward, Bradford, England, assignor of one-half to E. Farnell, Woonsocket, R. I. Gill-faller	476,785	June 14	845	208	59	1619
Clarkson, Edward H. N., Baltimore, Md. Shingle-planing machine	474,544	May 10	1062	271, 272	59	852
Clarkson, Frank S., assignor of three-fourths to F. B. Sloan, Baltimore, Md. Sash-cord guide	475,202	May 17	2103	531	59	1071
Clarkson, Nicholas, New York, N. Y. Ice-cream freezer	476,518	June 7	444	105	59	1524
Clarkson, Thomas, London, England. Machine for classifying or sizing ores and like materials	472,433	Apr. 5	663	169	59	124
Clason, Abraham T., Danbury, Conn. Hat-rounding machine	477,991	June 28	2818	705	59	2037
Class, John, Canton, Ohio. Saw. (Reissue)	11,246	June 21	2248	563	59	1908
Claus, Hubert, Thale, Germany. Enameling sheet-metal articles	472,033	Apr. 5	36	.....	59	9
Clause, John J., assignor to F. Rudolph, Chicago, Ill. Apparatus for applying varnish	472,286	Apr. 5	437	113	59	82
Clay, Edward C. (See Sencenbaugh, John J., assignor.)						
Claypool, William, Cozad, Nebr. Water-elevator	472,602	Apr. 12	919	236, 237	59	188
Clayton, James, *et al.* (See Aldrich, George W., assignor.)						
Clayton, Thomas G. (See Johnson and Clayton.)						
Cleaveland, John B., Indianapolis, Ind. Wire-stretcher and tension device	475,383	May 24	2390	610	59	1143
Cleaveland, John B., assignor to M. E. Cleaveland, Indianapolis, Ind. Fence-wire	475,718	May 24	2907	737	59	1242
Cleaveland, John B., assignor to M. E. Cleaveland, Indianapolis, Ind. Wire fence	475,719	May 24	2908	737	59	1242
Cleaveland, Mary E. (See Cleaveland, John B., assignor.)						
Clegg, Wilfrid, assignor to John Hope & Sons Engraving and Manufacturing Company, Providence, R. I. Pantograph engraving-machine	476,186	May 31	3677	929	59	1407
Clements, James and J., and F. H. Rollins, Lake City, Iowa. Corn-harvesting machine	477,169	June 14	1471	360, 361	59	1745
Clements, John. (See Clements and Rollins.)						
Clements, John T., *et al.* (See Hunt, Franklin B., assignor.)						
Clements, Masten L., Indianapolis, Ind. Wire fence	474,813	May 17	1491	381	59	950
Clements, Oliver B., and J. I. Smith, Madison, Mo. Gate	474,213	May 3	504	121	59	735
Clemes, William H., assignor to Taylor & Boggis Foundry Company, Cleveland, Ohio. Design for a wick-tube and burner-plate. (Reissue)	11,239	May 17	.....	.....	59	1098
Clemons, Maynard E., Attleborough, Mass. Chair for railway-rails	475,539	May 24	2639	671	59	1189
Clemson, George N., Middletown, assignor to National Saw Company, New York, N. Y. Saw-filing machine	473,204	Apr. 19	2015	506, 507	59	409
Cleveland Targ-t Company. (See Damm, Frederick C., assignor.)						
Cliff, Edward, Newark, N. J. Semi-elliptic spring	474,159	May 3	422	101	59	720
Clifford, John, and J. H. Gavin, assignors to L. Wolff Manufacturing Company, Chicago, Ill. Needle-bath apparatus	475,754	May 31	2972	754	59	1267
Climax Cigarette and Cigar Machine Company. (See Bauer, Henry, assignor.)						
Cline, George A., and W. Trimble, Toronto, Canada. Voting-machine	473,913	May 3	35	7, 8	59	643
Cline, George J., Goshen, Ind. Attachment for corn-planters	476,036	May 31	3425	865, 866	59	1357
Clinton, Charles M., and J. McNamara, Ithaca, N. Y. Type-writing machine	474,333	May 3	718	187, 188	59	775
Clippinger, Amos R., Centralia, Kans. Corn-harvester	472,916	Apr. 12	1373	352	59	276
Clive, Albert A., Ilion, N. Y. Magazine breech-loading gun	472,251	Apr. 5	382	100	59	71
Clock, Jesse M., New York, N. Y. Tool-grinder	476,872	June 14	991	240	59	1648
Clogston, Charles E., *et al.* (See Beckwith, Theodore A., assignor.)						
Close, Walter R., assignor of one-half to C. E. Hill, Bangor, Me. Fog-signal	472,335	Apr. 5	519	135	59	97
Clough, Francis W., Springfield, Mass. Gear-cutter	476,734	June 7	759	187, 188	59	1588
Clough, William E., Cincinnati, Ohio. Speculum	475,975	May 31	3342	843	59	1339
Clough, William R., Alton, N. H. Corkscrew	474,055	May 3	281	68	59	691
Clouse, William L., and W. R. Anderson, Tiffin, Ohio. Machine for cutting and bending nut-blanks	477,511	June 21	2037	505, 506, 507	59	1866
Cloutier, Bernard. (See Dean, James H., assignor.)						
Clow, William, *et al.* (See Young, Charles H., assignor.)						
Clute, Andrew J., Jr. (See Stulken and Clute.)						
Coates, Clinton T., and W. R. Helton, Terre Haute, assignors to I. Fechheimer, Vigo county, Ind. Oil-burner	475,297	May 24	2347	579	59	1116
Coates, Robert, Washington, D. C. Overboot for horses	473,295	Apr. 19	2018	507	59	409
Cobham, Frederick P., assignor of one-half to F. E. Windsor, Warren, Pa. Bag-lock	475,037	May 17	1848	469	59	1020
Cobham, Frederick P., assignor of one-half to O. C. Allen and G. H. Higgins, Warren, Pa. Extension-table	473,060	Apr. 19	1617	412, 413	59	334
Coburn, Byron, Le Roy, N. Y. Fly-wheel	477,324	June 21	1747	427, 428	59	1810
Coburn, Edward D. (See Hornbeck, Cornelius F., assignor.)						
Cochran, Andrew, and E. C. Stover, Trenton, N. J. Flushing device for water-closet bowls	475,537	May 24	2636	670	59	1189
Cochran, Arthur D., Indianapolis, Ind. Street-car curtain	474,902	May 17	1634	417	59	979
Cochran, Henry, Chester, Pa. Gate for car-platforms	472,727	Apr. 12	1104	284	59	221
Cochran, Henry, and J. L. Hardie, Chester, Pa. Dust-collar for vehicle-axles	473,612	Apr. 26	2567	647	59	536
Cochran, Samuel D., assignor, by mesne assignments, to A. H. Walton, trustee, Wyoming, Ohio. Autographic register	475,487	May 24	2552	650	59	1173
Cochrane, David, assignor to Harrison Safety Boiler Works, Philadelphia, Pa. Separator for purifying steam	474,160	May 3	423	101	59	720
Cockburn, John, assignor to North British Rubber Company, Limited, Edinburgh, Scotland. Flexible hose or tubing	475,384	May 24	2391	611	59	1143
Coe, Frank M., *et al.* (See Brosnan, Cornelius J., assignor.)						
Coe, Walter H., Providence, R. I. Packing decorative films	472,252	Apr. 5	385	101	59	72
Coe, Walter H., Providence, R. I. Device for applying decorative films	474,629	May 10	1196	304	59	878
Coëtlogon, Arthur A. C. de, Paris, France. Preparing celluloid and similar materials for printing	474,814	May 17	1493	.....	59	950
Coffey, Charles, *et al.* (See Loomis, George L., assignor.)						
Coffey, John A., Washington, D. C. Grave-marker	473,296	Apr. 19	2020	507	59	409
Coffey, John R., *et al.* (See Dyer, Isaac T., assignor.)						
Coffin, Amory, Phœnixville, assignor to Phœnix Iron Company, Philadelphia, Pa. Structural column	477,925	June 28	2723	681, 682	59	2017
Coffin, Charles L., Detroit, Mich. Hoop-welding apparatus	475,667	May 24	2628	716	59	1227
Coffin, Charles L., Detroit, Mich. Commutator-brush	475,668	May 24	2629	716	59	1228

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Coffin, Charles L., Detroit, Mich. Electric welding	477,101	June 14	1367	333	59	1724
Coffin, John P. (See Blount, William C., assignor.)						
Coffman, John R., assignor of one-half to C. A. Benton, Detroit, Mich. Brush-holder	472,435	Apr. 5	665	170	59	125
Coffman, Lucinda, Monroe City, Mo. Carpet-stretcher	472,434	Apr. 5	664	170	59	125
Coffman, M. D., *et al.* (See Johnson, Charles J. W., assignor.)						
Cogan, Robert B., W. M. Pierce, and J. C. F. Jones, Braddock, Pa. Axle cooler and lubricator	474,294	May 3	639	161	59	761
Cohen, Emanuel G., Cleveland, Ohio. Hand stapling implement	477,351	June 21	1784	436	59	1817
Colahan, Charles, Cleveland, Ohio. Cord-knotter for grain-binders	476,519	June 7	445	105, 106	59	1524
Colburn, Leslie H., Toledo, Ohio. Slotting-machine	477,737	June 28	2414	603, 604	59	1960
Colby, Edward J., assignor to Colby Specialty Supply Company, Chicago, Ill. Locking-rack for umbrellas, coats, hats, &c.	475,720	May 24	2909	738	59	1242
Colby Specialty Supply Company. (See Colby, Edward J., assignor.)						
Colclough, Charles. (See Roche and Colclough.)						
Coldwell, Thomas, Newburg, N. Y. Lawn-mower	475,976	May 31	3344	843	59	1339
Coldwell, Thomas, and W. H., Newburg, N. Y. Lawn-mower	475,669	May 24	2629	717	59	1228
Coldwell, William H. (See Coldwell, Thomas and W. H.)						
Cole, George P., Saratoga Springs, N. Y. Hopple	472,961	Apr. 12	1446	369	59	289
Cole, James A., San Jacinto, Cal. Plow	474,651	May 10	1229	314	59	884
Cole, William R., Pottsville, Pa. Stamp and envelope gum moistener	477,887	June 28	2667	667	59	2006
Coleman, Arnold D., assignor of one-half to M. Cudaby, Chicago, Ill. Machine for capping and seaming the ends of cans	473,171	Apr. 19	1811	456, 457, 458	59	368
Coleman, John, assignor of three-fourths to J. L. Beck, W. A. Carpenter, E. P. Lee, Lynchburg, and F. Huger, Roanoke, Va. Nut-lock	473,613	Apr. 26	2568	647	59	537
Coleman, William S., *et al.* (See McKercher, George, assignor.)						
Coler, Peter P., Clyman, Wis. Grain-binder	477,992	June 28	2819	705, 706	59	2038
Coles, Charlie H., Owosso, Mich. Cash-recorder	472,336	Apr. 5	520	135, 136	59	98
Colgan, Catherine, assignor to L. Dryfoos, New York, N. Y. Skirt	477,833	June 28	2577	645	59	1969
Collier, Arthur T., Caterham Valley, England. Telephone-receiver	474,214	May 3	505	121, 122	59	735
Colling, Charles J., assignor to J. M. Robinson & Co., Cincinnati, Ohio. Metal-shears	472,107	Apr. 5	150	40	59	29
Colling, Charles J., assignor to J. M. Robinson & Co., Cincinnati, Ohio. Machine for bending sheet metal	475,299	May 24	2250	580	59	1116
Collins, Caleb G., Kearney, N. J., assignor to C. A. Stevens, New York, N. Y. Purifying water	478,048	June 28	2911	727	59	2054
Collins, Charles M., South Bend, Ind. Device for controlling the water-jets of street-sprinklers	476,187	May 31	3679	929	59	1407
Collins, Charles M., assignor of one-half to J. M. Studebaker, South Bend, Ind. Toy cart	474,215	May 3	507	122	59	736
Collins, Charles R., assignor to United Gas Improvement Company, Philadelphia, Pa. Gas-making apparatus	472,785	Apr. 12	1187	304	59	237
Collins, Frank W., Cortland, N. Y. Stove-grate	475,298	May 24	2248	579	59	1116
Collins, Jeremiah W., Sherrill, N. Y. Snap-hook	472,962	Apr. 12	1447	369	59	289
Collins, John W., Ludington, Mich. Belaying-pin	474,792	May 10	1344	341	59	907
Collins, Samuel, Philadelphia, Pa. Umbrella-notch	476,364	June 7	216	53	59	1478
Collins, Varnum D., Princeton, N. J. Mosquito or fly net	474,947	May 17	1706	434	59	993
Colomy, James D., and W. H. Albee, Brookfield, Mass. Die-press	472,337	Apr. 5	523	136	59	98
Coltman, Richard S. (See Quinn, Michael, assignor.)						
Colton, George A., Chicago, Ill. Transom-lifter	476,037	May 31	3427	866	59	1357
Colton, George A., Chicago, Ill. Transom-lifter	476,365	June 7	218	54	59	1478
Colton, George H., Hiram, Ohio. Fuel-feeding device	475,203	May 17	2104	531	59	1071
Columbia Powder Manufacturing Company. (See Maxim, Hudson, assignor.)						
Colves, Charles, assignor of one third to H. C. Myer, Beardstown, Ill. Truss	477,044	June 14	1965	307	59	1703
Colvin, Robert J., assignor of one-half to D. P. Bitner, Lancaster, Pa. Metallic railway tie and stringer	474,216	May 3	509	122, 123	59	736
Comas, Francisco, *et al.* (See O'Kelly, James M., assignor.)						
Combination Roll and Rubber Company. (See Clark, Charles A., assignor.)						
Combis, Peter, and W. H. Gray, St. Louis, Mo. Awning	477,512	June 21	2040	507	59	1867
Comba, Orrin, Walnut Grove, Ill. Bridle-bit	477,102	June 14	1368	333	59	1734
Comes Automatic Steamer Lighter Company. (See Comes, Keros L., assignor.)						
Comes, Keros L., assignor to Comes Automatic Steamer Lighter Company, Danbury, Conn. Fire-lighting attachment for steam fire-engines	476,249	June 7	26	6	59	1444
Comfort, John W., *et al.* (See Weaver and Manypenny, assignors.)						
Compton, Richard W., Moberly, assignor of one-half to B. F. Heirs, St. Louis, Mo. Car-loading apparatus	475,236	May 17	2157	546, 547	59	1081
Comstock, Cheney & Company. (See Shaller, William W., assignor.)						
Comstock, Harry, Fulton, N. Y. Split pulley	475,204	May 17	2105	532	59	1071
Comstock, Harry, Fulton, N. Y. Attachment for pipe-cutters. (Reissue)	11,243	June 7	809	199	59	1599
Conant, Frank B., Reed City, Mich. Lattice-gate	474,161	May 3	424	102	59	720
Concannon, Sherman, Lenexa, Kans. Hay-stacking machine	472,338	Apr. 5	525	136	59	99
Conder, Francis R., Guilford, England. Purifying sewage	475,670	May 24	2632	.....	59	1228
Condon, Richard, Lyons, Iowa. Car-coupling	474,815	May 17	1494	381	59	951
Condon, Richard, Lyons, Iowa. Wagon-tongue	474,816	May 17	1495	381	59	951
Condon, Richard, Lyons, Iowa. Wagon-body	474,817	May 17	1496	382	59	951
Condon, Richard, Lyons, Iowa. Vehicle	474,818	May 17	1497	382, 383	59	951
Congelton, Osborn, Philadelphia, Pa. Construction of vessels	472,859	Apr. 12	1285	330	59	257
Conger, Patrick H., Waterloo, Iowa. Seal-lock	476,250	June 7	28	6	59	1444
Conkle, Harry C. (See Wilson, Stephen, assignor.)						
Conkle, Walton J. (See Chamberlin, Charles, assignor.)						
Conklin, Joseph I., Brooklyn, N. Y. Electric locomotive	473,693	Apr. 26	2089	677	59	560
Conley, John, Denver, Colo. Fastening railway-rails to metal sleepers	472,034	Apr. 5	37	7	59	9
Conley, Joseph, and J. M. Wolfe, Tarkio, Mo. Brick-kiln	477,993	June 28	2823	706	59	2038
Conley, Joseph, and J. M. Wolfe, Tarkio, Mo. Brick-kiln	477,994	June 28	2824	707	59	2039
Conley, Michael R., Brooklyn, N. Y. Metallurgical furnace	477,623	June 21	2236	559	59	1906
Conley, Oliver P., Eaton, Ohio. Car-coupling	476,786	June 14	846	209	59	1619
Conn, Andrew H., Wilton Junction, Iowa. Bridle-bit	474,368	May 10	788	205	59	800
Connecticut Pipe Manufacturing Company. (See Phipps, Edward H, assignor.)						
Connell, John P., Kensington, Conn. Gong door-bell	477,649	June 28	2281	571	59	1931
Connelly, James T., Milton, Pa. Device for tapping stay-bolt holes	475,672	May 24	2634	717	59	1229

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Connelly, John S., Plainfield, N. J. Speed-governor for gas-engines	475,385	May 24	2392	611	59	1143
Connor, Joseph, assignor of one-half to A. J. Fuller, Philadelphia, Pa. Pipe-coupling	476,188	May 31	3680	930	59	1407
Conradson, Conrad M., Madison, Wis. Feeding device for lathes	477,513	June 21	2040	508	59	1867
Conrady, Eugene, Keighley, England. Lathe	475,671	May 24	2833	717	59	1228
Conrath, Julius H., Jefferson City, Mo. Folding guard for bedsteads	475,932	May 31	3273	826	59	1325
Consolidated Button Hole Finishing Machine Company. (See Phelps and Thomson, assignors.)						
Consolidated Car Heating Company. (See McElroy, James F., assignor.)						
Consolidated Car Heating Company. (See Sewall, James H., assignor.)						
Consolidated Fastener Company. (See Dowse, William B. H., assignor.)						
Consolidated Fastener Company. (See Woodward, Erastus, assignor.)						
Constantine, Thomas S. (See Groth, William, assignor.)						
Continental Filter Company. (See Williamson, David, assignor.)						
Converse, Edmund. (See Turner, William A., assignor.)						
Conway, David B., Moorland, Iowa. Change-receiver	475,673	May 24	2836	718	59	1228
Conway, Edward C., assignor of one-third to W. C. Walker, Rochester, N. Y. Window-frame	475,438	May 24	2471	630	59	1157
Cook, Charles J., Montreal, Canada. Tail-piece for stringed musical instruments	475,674	May 24	2837	718	59	1228
Cook, Douglas D., assignor to W. S. Gunn, Grand Rapids, Mich. Wardrobe-bed	476,008	May 31	3379	851, 852	59	1347
Cook, Hugo, Dayton, Ohio. Cash indicator and register	473,694	Apr. 26	2690	677, 678	59	560
Cook, Jerome Q., Huntington, Ind. Boiler-cleaner	474,369	May 10	788	205	59	800
Cook, Ludlow G., Minneapolis, Minn. Bolster-standard	477,650	June 28	2282	571	59	1931
Cook, Philip J. (See Beck, Bruno, assignor.)						
Cook, Samuel, Little Valley, N. Y. Washing-machine	473,914	May 3	45	8	59	645
Cook, Sheldon E., Chicago, Ill. Suspender-buckle	475,386	May 24	2394	611	59	1143
Cook, Thomas G., Brockville, Canada. Sulky spring-tooth harrow	473,141	Apr. 19	1756	443	59	358
Cook, Victor A., New York, N. Y. Extension-transmitter for telephones	475,300	May 24	2251	580	59	1116
Cook, Walter E., assignor to Novelty Pearl Company, Providence, R. I. Sleeve-button	472,941	Apr. 12	1411	360	59	282
Cook, William, New York, N. Y. Folding child's carriage	477,514	June 21	2042	508, 509	59	1868
Cook, William H., assignor of one-half to E. B. Staggers, Jr., Philadelphia, Pa. Puzzle	476,980	June 14	1172	283	59	1683
Cooke, Ernest W., Chicago, Ill. Alloy	474,443	May 10	909	.....	59	823
Cooley, Fred W., Minneapolis, Minn. Blank-cabinet	474,948	May 17	1707	434	59	993
Cooley, Orville, Batavia, N. Y. Mowing-machine	472,654	Apr. 12	993	256	59	202
Coons, Rollin L., Honesdale, Pa. Box-making machine	474,545	May 10	1063	272, 273	59	852
Cooper, Dyer, Philadelphia, Pa. Steam-actuated valve	476,609	June 7	577	138	59	1551
Cooper, George B., assignor to R. Porter's Sons, Philadelphia, Pa. Sheet-metal box	478,049	June 28	2913	727	59	2054
Cooper, George B., assignor to R. Porter's Sons, Philadelphia, Pa. Jacketed can	478,050	June 28	2914	728	59	2054
Cooper, John B., Winder, Va. Coop	472,615	Apr. 12	941	242, 243	59	192
Cooper, William S., Philadelphia, Pa. Water-closet reservoir	474,217	May 3	511	123	59	736
Copeland, George H., Rich Hill, Mo. Clothes-line reel	475,038	May 17	1850	469	59	1020
Copeland, George W., Malden, assignor to Boston Lasting Machine Company, Boston, Mass. Tack-driving machine	475,488	May 24	2554	650, 651	59	1173
Copeland, George W., Malden, and J. E. Crisp, Somerville, Mass.; said Crisp assignor to said Copeland. Shoe-tressing machine	472,108	Apr. 5	152	41, 42	59	29
Copeland, James S., Hartford, Conn. Type-writing machine	476,251	June 7	29	6, 7, 8	59	1445
Copeland, Robert J. (See Vawter and Copeland.)						
Coram, John C., and F. D. Huntoon, assignors to Amraytoon Paper Tube Company, Lowell, Mass. Machine for making paper tubes	475,721	May 24	2911	738, 739, 740, 741	59	1242
Coram, John C., and F. D. Huntoon, assignors to Amraytoon Paper Tube Company, Lowell, Mass. Paper-cutting device	475,722	May 24	2918	741	59	1243
Coram, John C., and F. D. Huntoon, assignors to Amraytoon Paper Tube Company, Lowell, Mass. Paper-feeding device	475,723	May 24	2920	742	59	1244
Corbett, Joseph, assignor to T. F. Shaw, New York, N. Y. Creasing and folding machine	472,253	Apr. 5	386	101	59	72
Corcoran, Thomas J., Peru, Ind. Loom	476,918	June 14	1069	257, 258	59	1663
Cornelius, William A., Pittsburg, assignor of one-half to J. Purves, Munhall, Pa. Tongs	472,436	Apr. 5	667	170, 171	59	125
Cornell, Charles H. (See Carlson, Gustave, assignor.)						
Corporan, Charles E., Colorado City, Colo. Electric railway-signal	473,614	Apr. 26	2569	647	59	537
Corscaden, Thomas, New Britain, Conn. Blind-fastener	472,635	Apr. 12	967	251	59	197
Corscaden, Thomas, New Britain, Conn. Sheet-metal pulley	474,546	May 10	1069	274	59	853
Corscaden, Thomas, New Britain, Conn. Sheet-metal pulley and the manufacture thereof	474,547	May 10	1070	274	59	853
Corscaden, Thomas, assignor to Stanley Works, New Britain, Conn. Anti-friction hinge	475,439	May 24	2472	630	59	1157
Corscaden, Thomas, assignor to Stanley Works, New Britain, Conn. Shelf-bracket	476,520	June 7	447	106	59	1525
Corscaden, Thomas, assignor to Stanley Works, New Britain, Conn. Manufacture of hinges	476,521	June 7	448	106	59	1525
Corser, John B., Towanda, Pa. Strap-fastener	473,297	Apr. 19	2021	507	59	410
Corthell, Fred H., New Haven, Conn. Music-box	474,370	May 10	790	205	59	800
Coryell, Bingham H., *et al.* (See Stutzman, Frank, assignor.)						
Coryell, John G., *et al.* (See Stutzman, Frank, assignor.)						
Cosgrove, James J., Jr., Philadelphia, Pa. Conduit-trolley	474,218	May 3	512	123	59	737
Costa, Salvatore, Brooklyn, N. Y. Aspirator or ventilator	475,010	May 17	1809	459	59	1012
Cotton, Charles W., Indianapolis, Ind. Tire-setting machine	474,162	May 3	425	102	59	721
Cottrell, Calvert B., Westerly, R. I. Printing-machine	472,206	Apr. 5	314	81	59	59
Cottrell, Calvert B., Westerly, R. I. Inking apparatus for printing-machines	472,666	Apr. 12	1007	261, 262	59	204
Cottrell, Calvert B., Westerly, R. I. Inking apparatus for printing-machines	473,142	Apr. 19	1757	443	59	358
Cottrell, Calvert B., Westerly, R. I. Cylinder printing-machine	474,056	May 3	282	68	59	691
Cottrell, Edgar H., Stonington, Conn., assignor to C. B. Cottrell & Sons, Westerly, R. I. Apparatus for feeding paper or other fabric from rolls	477,352	June 21	1785	436	59	1817
Cottrell, George, assignor to Joseph Wagner Manufacturing Company, San Francisco, Cal. Differential gear	474,903	May 17	1635	417	59	979
Cottrell & Sons, C. B. (See Cottrell, Edgar H., assignor.)						
Couch, George S., Minneapolis, Minn. Addressing-machine	475,755	May 31	2973	755	59	1268
Coulon, Georges, Paris, France. Bolt-lock	474,444	May 10	909	235	59	823
Coulson, William, Spring Valley, Ill. Smoke-consuming furnace	475,205	May 17	2107	532	59	1071
Coult, Walter, assignor to Boston Manufacturing Company, Waltham, Mass. Straight-knitting machine	472,698	Apr. 12	1068	275	59	215

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Coultas, James W., Havana, Ill. Book-support	475,933	May 31	3274	826	59	1326
Courtney, John J., Minneapolis, Minn. Bundle-carrier	476,981	June 14	1172	283, 284	59	1683
Courtright, Charles D., and C. A. Powell, Kenesaw, Nebr. Corn-harvester	473,298	Apr. 19	2022	508	59	410
Couse, Fredrich P., Westfield, Mass. Whip	473,695	Apr. 26	2697	678	59	561
Cousen, Alfred, Detroit, Mich. Mangle	476,004	May 31	3381	852	59	1347
Cover, Adam J., Broken Sword, Ohio. Car-coupling	476,919	June 14	1071	258	59	1663
Covert, David F., Rapid City, S. D. Clothes-line	475,675	May 24	2838	718	59	1229
Cowan, James C., Chicago, Ill. Shifting mechanism for type-writing machines	477,199	June 21	1528	373	59	1770
Cowan, McClellan, and J. G. Ragains, Wichita, Kans. Grain-meter	477,245	June 21	1622	396	59	1786
Cowan, William, Edinburg, Scotland. Coin-freed gas-meter	474,219	May 3	513	123, 124, 125, 126	59	737
Cowden, James P., Cedar Rapids, Iowa. Barrel	474,723	May 10	1346	342	59	908
Cowdery, John S. (See Liedke, Charles H., assignor.)						
Cowdery, John S., H. J. Curtis, and E. L. Liedke, Sandusky, Ohio; said Curtis and Liedke assignors to said Cowdery. Crayon-machine	476,038	May 31	3428	866	59	1358
Cowen, Robert, Cambridge, assignor to Boston Woven Hose Company, Boston, Mass. Belting	473,696	Apr. 26	2698	679	59	561
Cowgill, Milo J., Omaha, Nebr. System of electric lighting	475,538	May 24	2637	670	59	1189
Cowles, Byron K. (See Lytle and Cowles.)						
Cowles, George A., Rochester, N. Y. Sole	476,448	June 7	344	78	59	1504
Cowley, James T., Lowell, Mass., assignor, by mesne assignments, to Lamson Consolidated Store Service Company, of New Jersey. Store-service apparatus	474,040	May 3	247	59, 60, 61	59	685
Cox, Alfred H., and I. N. Haley, New York, N. Y. Portable bath	477,515	June 21	2045	509	59	1868
Cox, Robert M., and R. Clark, Peoria, Ill. Steam-heater	473,251	Apr. 19	1945	489	59	394
Cox, Robert S., Terre Haute, Ind. Dump-car	476,366	June 7	219	54	59	1478
Cox & Sons Company. (See Cox, Stephen, Jr., assignor.)						
Cox, Stephen, Jr., Bridgeton, N. J., assignor to Cox & Sons Company, of New Jersey. Furnace for burning liquid fuel	473,252	Apr. 19	1946	489	59	394
Cox, Stephen, Jr., Bridgeton, N. J., assignor to Cox & Sons Company, of New Jersey. Atomizer for liquid fuel	477,624	June 21	2238	560	59	1906
Cox, William H., Virden, Ill. Lifting-jack	475,934	May 31	3277	827	59	1326
Coyne, James J., Old Forge, Pa. Coal-screen	477,516	June 21	2047	589	59	1869
Coze, André, Rheims, France, assignor to S. Newman and J. Green, St. Louis, Mo. Gas-retort charger	473,143	Apr. 19	1760	444	59	358
Coze, André, Rheims, France, assignor to S. Newman and J. Green, St. Louis, Mo. Gas-retort.	477,834	June 28	2579	645, 646	59	1989
Coze, André, Paris, France, assignor to S. Newman and J. Green, St. Louis, Mo. Apparatus for discharging gas-retorts	475,540	May 24	2640	671	59	1190
Coze, André, and A. Lencauchez, Paris, France, assignors to S. Newman and J. Green, St. Louis, Mo. Apparatus for charging gas-retorts	473,144	Apr. 19	1761	444, 445	59	359
Coze, André, and A. Lencauchez, Paris, France, assignors to S. Newman and J. Green, St. Louis, Mo. Gas-retort	473,145	Apr. 19	1763	445, 446	59	359
Crabbs, John C. (See Milburn, Byrket, and Crabbs.)						
Craighead & Kintz Company. (See Hofmann, Emil, assignor.)						
Crain, E. H., *et al.* (See Taylor, Barnett, assignor.)						
Crane, Abbie T. (See Nichols and Crane.)						
Crane Company. (See Hayden, James T., assignor.)						
Crane Elevator Company. (See Rountree, Harold, assignor.)						
Crane Elevator Company. (See Rountree and Veeder, assignors.)						
Crane, Frank. (See Jabroczky, Adolph, assignor.)						
Crane, John S. (See Bagley, Martin J., assignor.)						
Crane, Spencer C., Philadelphia, Pa. Trolley-support	476,367	June 7	220	54	59	1479
Crary, Joseph M., Jersey City, N. J. Type-writing machine	477,353	June 21	1787	436, 437, 438, 439	59	1817
Crary, Joseph M., Jersey City, N. J. Type-writing machine	477,404	June 21	1870	460, 461	59	1834
Crary, Joseph M., Jersey City, N. J. Type-writing machine	477,517	June 21	2048	510, 511	59	1869
Crary, Thomas F., assignor of one-half to F. W. McLean, Middleport, Ohio. Self-measuring store-case	476,610	June 7	579	138	59	1551
Crawford, Harvey F., and R. C. Lambert, Brockton, Mass.; said Lambert assignor of one-third to said Crawford. Hydraulic engine	472,942	Apr. 12	1412	361	59	282
Crawford, James H., Afton, Iowa. Rack	473,825	Apr. 26	2885	723	59	597
Crawley, Edwin, Sr., Newport, Ky. Mechanism for rounding and backing books	474,819	May 17	1498	383, 384	59	952
Crecelius, Louis J., assignor of one-half to C. E. Pearce, St. Louis, Mo. Wheel	473,728	Apr. 26	2742	690, 691	59	570
Cregier, De Witt C. (See Cregier, Nathaniel B., assignor.)						
Cregier, Nathaniel B., assignor of one-half to D. C. Cregier, Chicago, Ill. Electric train-signal	476,873	June 14	992	241	59	1648
Cresap, Homer. (See Martindale, Crvatal, assignor.)						
Crews, Dayton H., Ladonia, Tex. Extension-ladder	475,935	May 31	3278	827	59	1326
Crisenberry, Benjamin F., Boyleston, Ind. Washing-machine	477,246	June 21	1625	396, 397	59	1786
Crisp, Joseph E. (See Copeland and Crisp.)						
Critcher, John M., Bolivar, Mo. Churn	475,848	May 31	3142	797	59	1300
Crocker, John L., and C. L. Bridges, St. Joseph, Mo. Horseshoe with detachable ice-calks	473,384	Apr. 19	2180	548	59	440
Crockett, Charles H., and C. C. Allen, assignors to Boston Electric Company, Boston, Mass. Electric lock	473,061	Apr. 19	1620	413	59	334
Cromer, Harry I., Rapid City, S. D. Registering attachment for type-writers	476,735	June 7	762	188	59	1589
Crompton, Frederick, Toronto, Canada. Machine for drying garment-stays	476,252	June 7	38	9	59	1445
Crompton Loom Works. (See Wyman and Clark, assignors.)						
Crone, Anthony W. (See Eckes and Crone.)						
Cronkhite, Charles M., Kimball, Wis. Scraper for sawmills	477,518	June 21	2051	511	59	1870
Crooker, Alfred M., assignor, by mesne assignments, of one-half to D. J. Griffin, Boston, Mass. Saw cotton-gin	475,206	May 17	2108	532, 533	59	1072

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Crooker, William W., Lynn, Mass., assignor, by mesne assignments, to Electric Boot and Shoe Finishing Company, of Maine. Buffing-wheel	472,267	Apr. 5	439	113	59	83
Cropper, Joseph C., Cedar Falls, Iowa. Axle-lubricator	474,652	May 10	1230	315	59	885
Crosby Steam Gage and Valve Company. (See Bosworth, Charles B., assignor.)						
Crosier, Charles, *et al.* (See Kendall, Francis B. and J. T., assignors.)						
Cross, Fredrick A., Cincinnati, Ohio. Stringed musical instrument	475,541	May 24	2641	671	59	1190
Cross, Thomas A., assignor of four-fifths to W. L. Mosby, S. Pollivick, W. Webb, and R. J. Young, Bardwell, Ky. Trace-carrier	474,820	May 17	1505	384	59	953
Crossan, Bayard. (See Gooding and Crossan.)						
Crossley, Joseph, Trenton, N. J. Pug-mill	473,497	Apr. 26	2363	599, 600	59	497
Crossley, Joseph, Trenton, N. J. Apparatus for molding earthenware, &c	474,496	May 10	983	253, 254	59	837
Crossman, Alonzo G., Huntington, N. Y. Shallow-water indicator	474,221	May 3	521	8, 127	59	738
Crossman, Milledge A., Hyde Park, assignor of one-half to G. W. Emerson, Boston, Mass. Apparatus for holding horses while being shod	472,917	Apr. 12	1374	352, 353	59	276
Crowe, Frederick C., Chicago, Ill. Rotary observatory	474,220	May 3	519	126, 127	59	737
Crowell, Albert I., assignor of one-half to F. B. Goddard, New York, N. Y. Shoe-lace fastening	473,615	Apr. 26	2573	648	59	537
Crowell, Gilmer, Brooklyn, N. Y. Cylinder for rotary blowers or engines	475,301	May 24	2252	560	59	1117
Crowell, Gilmer, Brooklyn, N. Y. Rotary blower or engine	475,302	May 24	2253	581	59	1117
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Folding-machine	472,472	Apr. 5	722	184, 185, 186	59	137
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Bed-motion for cylinder printing machines	477,045	June 14	1266	307, 308, 309	59	1704
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Bed-motion for cylinder printing-machines	477,200	June 21	1531	373, 374, 375	59	1770
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Bed-motion for cylinder printing-machines	477,738	June 28	2418	604, 605	59	1961
Crowley, John S. (See Foster and Crowley.)						
Crown Electric Manufacturing Company. (See Smith and Foster, assignors.)						
Crozier, John H., Bean's Station, Tenn. Hot-air evaporator or drier	473,452	Apr. 26	2287	578	59	483
Crull, Solomon F. (See Moore and Crull.)						
Crumlic, William, assignor of one-half to J. G. Shea, Decatur, Ill. Brick-kiln	475,237	May 17	2158	547	59	1081
Cruttenden, Henry L., Northfield, Minn. Carburetor	473,498	Apr. 26	2365	600	59	497
Cruzan, Garrett H., Edinburg, Ill. Scrap-cabinet	474,904	May 17	1636	417	59	979
Cryer, Henry M., Goldthwaite, Tex. Post-hole auger	472,339	Apr. 5	526	136	59	99
Cubbage, Charles A., Pittsburg, Pa. Barrow-wheel	472,570	Apr. 12	873	225	59	180
Cudahy, Michael. (See Coleman, Arnold D., assignor.)						
Cudner, Gustavis L., assignor of four-fifths to J. Ruppert, Jr., G. E. Metz, and A. E. Schatz, New York, N. Y. Ore-concentrator	473,449	Apr. 26	2283	577	59	482
Cudner, Gustavis L., assignor of four-fifths to J. Ruppert, Jr., G. E. Metz, and A. E. Schatz, New York, N. Y. Combined ore separator and amalgamator	473,450	Apr. 26	2284	577	59	482
Cudner, Gustavis L., assignor of four-fifths to J. Ruppert, Jr., G. E. Metz, and A. E. Schatz, New York, N. Y. Placer distintegrator and amalgamator	473,451	Apr. 26	2285	577	59	483
Cuendet-Develay Fils & Co. (See Cuendet, Samuel, assignor.)						
Cuendet, Samuel, assignor to Cuendet-Develay Fils & Co., Ste. Croix, Switzerland. Musical box	474,520	May 10	1024	263, 264	59	845
Culbertson, James C., Oakland, Pa. Hay-elevator	473,915	May 3	46	8	59	645
Culmer, John W., New Brighton, Pa. Process of and apparatus for generating fuel-gas	477,354	June 21	1793	439, 440	59	1819
Culver, John P., Los Angeles, Cal. Machine for making asphalted sheet-metal pipe	472,984	Apr. 19	1499	382	59	312
Culver, Moses M., Glidden, Iowa. Machine for spooling and unspooling barbed fence-wire	477,185	June 14	1496	366	59	1750
Culver, William K., Chicago, Ill. Pencil-sharpener	472,161	Apr. 5	236	63	59	45
Cummer, Jones & Co., *et al.* (See Abbott, Leonard G., assignor.)						
Cummings, Charles A., and W. H. Hill, Worcester, Mass. House-door letter-box	474,949	May 17	1708	434	59	993
Cummings, George K., Chicago, Ill. Rheostat	477,247	June 21	1626	397	59	1786
Cummings, George L., New York, N. Y. Clock-chime	474,371	May 10	791	206	59	800
Cummings, John M. (See Burr and Cummings.)						
Cummings, John R., New York, N. Y., assignor to American Press Association, Chicago, Ill. Stereotype-casting apparatus	472,473	Apr. 5	729	186	59	138
Cummings, John R., New York, N. Y., assignor to American Press Association, Chicago, Ill. Stereotype plate and base	472,474	Apr. 5	730	186	59	138
Cummings, John R., assignor to American Press Association, Chicago, Ill. Stereotyper's casting apparatus	472,475	Apr. 5	731	187	59	138
Cummins, Benjamin F., and J. Stenwall, Jr., assignors to B. F. Cummins Company, Chicago, Ill. Perforating, dating, and receipting stamp	475,440	May 24	2473	631	59	1158
Cummins, Lawson C., Montpelier, Vt. Telescopic rifle-sight	476,874	June 14	995	241, 242	59	1648
Cunningham, James, Dushore, Pa. Steam-generator	476,611	June 7	580	138, 139	59	1552
Cunningham, James, Dushore, Pa. Hot-air furnace	477,519	June 21	2053	511, 512	59	1870
Cunningham, John, Jr., *et al.* (See Weaver and Manypenny, assignors.)						
Cunningham, Robert H., *et al.* (See Zimmermann, Peter, Jr., assignor.)						
Cunny, Alexander D., Cincinnati, Ohio. Machine for stamping cigars	474,163	May 3	426	102	59	721
Cupples, Samuel, *et al.* (See Boyer, Joseph, assignor.)						
Curran, John W., Marshall, Tex. Spark-arrester	477,995	June 28	2826	707	59	2039
Curran, Martin, Jr., Deering, Me. Hoisting-machine	473,655	Apr. 26	2633	664	59	549
Curran, Patrick, Hoquiam, Wash. Swimming equipment	476,039	May 31	3431	867	59	1358
Curran, Patrick, Hoquiam, Wash. Leg attachment for swimmers' use	476,040	May 31	3432	867	59	1359
Curry, David, New York, N. Y. Furnace-door opener	477,888	June 28	2668	667, 668	59	2006
Curry, John F. (See Warner and Curry.)						
Curry, William, Brooklyn, N. Y. Flue-protector and wind-guard	474,057	May 3	283	68	59	692
Curtis, Charles G., New York, N. Y., assignor to Curtis Electric Manufacturing Company, of West Virginia. Commutator connection for electric motors or generators	473,567	Apr. 26	2493	630	59	522
Curtis, Charles G., New York, N. Y., assignor to Curtis Electric Manufacturing Company, of West Virginia. Armature for dynamo-electric machines or motors	473,568	Apr. 26	2494	630, 631	59	522

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Curtis & Curtis. (See Curtis, Roderick P., assignor.)						
Curtis & Curtis. (See Curtis, Roderick P. and L. B., assignors.)						
Curtis Electric Manufacturing Company. (See Andrews, Joseph D. F., assignor.)						
Curtis Electric Manufacturing Company. (See Curtis, Charles G., assignor.)						
Curtis, Frank G., New York, N. Y. Apparatus for propelling vessels	472,907	Apr. 5	316	81	59	59
Curtis, Frederick A., and H. J. Sautter, Muskegon, Mich. Plant-holder for windows	477,355	June 21	1797	440	59	1819
Curtis, George S., assignor to Chicago Foundation Pavement Company, Chicago, Ill. Street-pavement	475,724	May 24	2923	742	59	1244
Curtis, Gilbert, Crown Point, N. Y. Blind-stile-boring machine	474,222	May 3	524	127, 128	59	739
Curtis, Howard J. (See Cowdery, Curtis, and Liedke.)						
Curtis, Lewis B. (See Curtis, Roderick P. and L. B.)						
Curtis, Roderick P., Southport, assignor to Curtis & Curtis, Bridgeport, Conn. Pipe-threading machine	477,297	June 21	1703	417	59	1801
Curtis, Roderick P. and L. B., Southport, assignors to Curtis & Curtis, Bridgeport, Conn. Pipe-threading machine	477,296	June 21	1702	417	59	1801
Curtis, Wallace B., and E. Long, Pomeroy, Ohio. Lubricator	476,253	June 7	39	9	59	1445
Cushing, Alvin M., *et al.* (See Holly, Edgar P., assignor.)						
Cushman, Calvin B., and H. G. Canfield, Akron, Ohio. Fare-register	472,035	Apr. 5	37	7, 8	59	9
Cushman, Henry D., Three Rivers, Mich. Inhaler	476,131	May 31	3586	905	59	1389
Cushman, Henry D., Three Rivers, Mich. Inhaler	476,132	May 31	3587	905	59	1389
Cushman, Henry S., Milford, Mass. Whip	472,918	Apr. 12	1378	353	59	277
Cushman, Henry S., Milford, Mass. Whip	472,919	Apr. 12	1378	353	59	277
Cushman Paper Box Machine Company. (See Taylor, Eugene H., assignor.)						
Cussen, William J., Richmond, Va. Tobacco-pouch	475,676	May 24	2839	718, 719	59	1229
Cussen, William J., assignor of three-fifths to M. Millhiser & Co., Richmond, Va. Machine for packing tobacco	477,186	June 14	1498	367	59	1750
Custer, George, Bremond, Tex. Horseshoe	477,926	June 28	2724	682	59	2018
Cutler Electric and Manufacturing Company. (See Stanley, Lucius T., assignor.)						
Cutter, Martin A., Allegheny, Pa. Caster	474,576	May 10	1118	286	59	863
Cutter, Martin A., Allegheny, Pa. Street-railway switch	477,046	June 14	1274	309	59	1705
Cutting, James R. (See Turcott, Gédéon L., assignor.)						
Cuttriss, Charles, New York, N. Y. Telegraphic relay	475,441	May 24	2476	631	59	1159
Cuttriss, Charles, New York, N. Y. Sealing device	475,442	May 24	2478	632	59	1159
Cyclone Pulverizer Company. (See Sahlin, Axel, assignor.)						
Daggett, Frank B., St. Joseph, Mo. Brush-holder for dynamo-electric machines and motors	476,368	June 7	223	55	59	1479
Dahlem, Charles, New York, N. Y. Window-frame	476,612	June 7	583	139	59	1552
Dahmer, August G., Alameda, Cal. Door-hanger	477,739	June 28	2421	605	59	1961
Daily, Hiram, assignor of one-half to D. F. Kline, Lancaster, Pa. Railway-tie	473,999	May 3	179	42	59	673
Dake, Charles W., Grand Haven, and E. B. Dake, Muskegon, Mich. Reciprocating rotary engine	476,369	June 7	227	56	59	1480
Dake, Edward B. (See Dake, Charles W. and E. B.)						
Dale, David E., Syracuse, N. Y. Device for transporting materials	476,787	June 14	847	209	59	1610
Dahmer, Christian, Nuremberg, Germany. Receptacle for mucilage, &c	476,254	June 7	41	9	59	1446
Daly, Frank A., Lowell, Mass. Photographic-printing frame	476,041	May 31	3433	867	59	1359
Dalzell, Samuel S. (See Gard, Dalzell, and Shafer.)						
Damm, Frederick C., Findlay, assignor to Cleveland Target Company, Cleveland, Ohio. Target-trap	477,927	June 28	2725	682	59	2018
Damm, John, New York, N. Y. Street-sweeper	472,437	Apr. 5	669	171	59	125
Damon, Lorenzo, West Chester, Pa. Sash-holder	477,103	June 14	1369	333, 334	59	1724
Damus, Benno, Cincinnati, Ohio. Wood-cutting machine	477,201	June 21	1536	375	59	1771
Danforth, Eugene H., Colebrook, N. H. Horse-blanket fastener	473,916	May 3	47	9	59	645
Daniel, George E., Thompson, Mo. Wagon-seat	473,211	Apr. 19	1881	473	59	381
Daniels, Charles T., and G. O. Wickers, Lawrence, Mass. Cloth-napping machine	474,334	May 3	724	189	59	776
Daniels, David G., Grand Tunnel, Pa. Broadcast seeder	477,325	June 21	1749	428	59	1810
Dankworth, William J., Gatesville, Tex. Trace-iron	473,299	Apr. 19	2023	508	59	410
Dannenberg, Edward, Chicago, Ill. Tobacco-pipe	473,212	Apr. 19	1882	474	59	381
Danzer, Albert, Hagerstown, Md. Water-tight skylight	472,438	Apr. 5	670	172	59	125
Darbee, William W., Oneonta, N. Y. Recorder for cash-tills	472,860	Apr. 12	1286	330	59	257
Darkin, Frank, Passaic, N. J. Machine for extracting fiber	473,826	Apr. 26	2886	723, 724	59	598
Darley, Alfred E. (See Tichborne, Darley, Purcell, and Geoghegan.)						
Darling, Alfred B. (See Massey, Gideon B., assignor.)						
Darling, Brown & Sharpe. (See McLane, George D., assignor.)						
Darling, Samuel, Providence, R. I. Caliper-rule	477,104	June 14	1370	334	59	1724
Darling, Samuel, Providence, R. I. Caliper-rule	477,105	June 14	1371	334	59	1724
Darnellle, P. A., *et al.* (See Webb, Samuel D., assignor.)						
Darr, William A. (See Fridley, Jacob, assignor.)						
Darrow, Charles E., *et al.* (See Haley, Fred H., assignor.)						
Darrow, Wilton E., Amador, Cal. Amalgamator	473,385	Apr. 19	2181	548	59	440
Dash and Carriage Goods Company. (See Hawes, William L., assignor.)						
Daudeteau, Louis M. R., Vannes, France. Repeating firearm	473,927	Apr. 26	2889	724, 725	59	598
Daugherty, Joseph M., Uhrichsville, Ohio. Oil-cup	475,387	May 24	2395	612	59	1144
Davenport, Charles F. (See Tripold and Davenport.)						
Davenport, Louie E., New York, N. Y. Illuminating-tile	472,699	Apr. 12	1072	275	59	215
David, Isaac, Bladen, Nebr. Car-coupling	477,047	June 14	1276	309	59	1705
Davidson, Harry, New York, N. Y. Construction of checkers	477,248	June 21	1627	397	59	1787
Davidson, Robert M., *et al.* (See Koontz, John P., assignor.)						
Davidson, Wayland F. (See Carel and Davidson.)						
Davies, Albert T., Morriston, England. Apparatus for coating tin plates	478,051	June 28	2914	728	59	2054
Davies, David E. (See Williams and Davies.)						
Davies, Edward, Gravelly Hill, near Birmingham, England. Clock-case	472,162	Apr. 5	237	63	59	45
Davies, Walter D., Brooklyn, assignor to Ansonia Clock Company, New York, N. Y. Clock	474,058	May 3	284	68	59	692
Davis, Adolphus, London, England. Elevated railway	476,982	June 14	1174	284	59	1684
Davis, Charles, Easton, Pa. Attachable blotter for use in bank-books, &c	472,700	Apr. 12	1073	276	59	215
Davis, Charles E., Chicago, Ill. Electric switch	476,613	June 7	584	139	59	1552
Davis, Charles E., Boston, Mass. Chair	477,106	June 14	1371	334	59	1724
Davis, Clarence L., New York, N. Y. Ticket case or holder	476,005	May 31	3382	852	59	1348
Davis, Daniel V., Fork Church, N. C. Tobacco-hanger	472,861	Apr. 12	1288	330	59	257

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Davis, Francis G., Watertown, N. Y. Device for packing vehicle-wheels	476,522	June 7	449	107	59	1525
Davis, Frederick C., Austin, Tex. Side guide for printing and lithographic presses	475,677	May 24	2940	719	59	1229
Davis, George H., Washington, D. C. Pillow-sham holder	472,036	Apr. 5	38	8	59	9
Davis, Henry O., Annisquam, Mass. Adjustable bit	476,614	June 7	586	139	59	1553
Davis, James, San Francisco, Cal. Pocket cash-accountant	473,656	Apr. 26	2634	664	59	549
Davis, James E., Milwaukee, Wis. Machine for hulling oats, barley, and other grains	474,164	May 3	428	103	59	721
Davis, John H., *et al.* (See Sleno, Leonard, assignor.)						
Davis, John O., Goodhue, Minn. Cattle-tie	476,523	June 7	450	107	59	1525
Davis, Jordan G., Waco, Tex. Clothes-pounder	474,223	May 3	525	128	59	739
Davis, Orin C., assignor of one-half to T. Smurthwaite, Manistee, Mich. Holdback	473,569	Apr. 26	2496	631	59	523
Davis, Thomas J. (See Ingleaby and Davis.)						
Davis, Thomas L., Azalia, Ind. Weeder	472,749	Apr. 12	1139	292	59	228
Davis, Walter L., Chicago, Ill. Motor for propelling cars	472,524	Apr. 12	812	209	59	167
Davis, William, *et al.* (See Phillips, John H., assignor.)						
Davis, William H., Fond du Lac, Wis. Grain-drill	477,520	June 21	2055	512	59	1871
Davis, William H. H., Oakfield, Mich. Device for cementing walls and cisterns	473,828	Apr. 26	2892	725	59	599
Dawson, Chalkley. (See Jones, Dawson, and Stanton.)						
Day Elevated Railway Plant Company. (See Day, St. John V., assignor.)						
Day, Henry L., Minneapolis, Minn. Dust-collector	476,524	June 7	451	107	59	1526
Day, Herbert L., Cherryfield, Me. Spring-bed	473,729	Apr. 26	2744	691	59	570
Day, Quintis V. P., Dinuba, Cal. Harness-hook	472,863	Apr. 12	1292	332	59	258
Day, Randall B., *et al.* (See Beckwith, Theodore A., assignor.)						
Day, St. John V., assignor to Day Elevated Railway Plant Company, Chicago, Ill. Elevated railway	472,862	Apr. 12	1289	331	59	258
Dayton Farm Implement Company. (See Nauman, William H., assignor.)						
Dayton Manufacturing Company. (See Silvey, William L., assignor.)						
Dayton Printing and Manufacturing Company. (See Reynolds, Lewis G., assignor.)						
Dayton, William H., assignor to Excelsior Needle Company, Torrington, Conn. Swaging-machine	474,548	May 10	1071	275	59	854
DeWitt, William H., Wilkes-Barré, Pa. Bicycle	472,528	Apr. 12	824	210	59	170
Deal, Charlie T. (See Mitchell and Deal.)						
Dean, Cyrus S., Fort Erie, Canada. Car-heater	474,225	May 3	527	129	59	739
Dean, Francis W., Cambridge, Mass. Intercepting-valve for compound engines	474,000	May 3	181	43	59	674
Dean, George A., Ranger, Tex. Wire-stretcher	474,224	May 3	526	128	59	739
Dean, James H., assignor of one-half to B. Cloutier, Minneapolis, Minn. Station-indicator	474,001	May 3	183	43	59	674
Dean, Seward A., Minneapolis, Minn. Type-writing machine	477,521	June 21	2057	512, 513, 514	59	1871
Deane, Ezra L., Holyoke, Mass. Square with adjustable heads	472,525	Apr. 12	819	209	59	169
Deane, Herbert C., North Raynham, assignor to E. Sawtelle, Brockton, Mass. Caster	472,254	Apr. 5	389	101	59	72
Dearborn, Gilbert K., assignor, by mesne assignments, to W. A. Muzzy, Somerville, Mass. Water-supply apparatus for water-closets	474,372	May 10	792	206	59	801
Deardorff, Benton, Hagerstown, Ind., assignor of two-thirds to J. H. Kidwell and W. G. Mathews. Corn-planter	475,266	May 17	2199	561	59	1090
Deats, Wallen S., and D. Brown, Laredo, Tex. Blind-stop	472,985	Apr. 19	1503	383	59	312
Debes, Roman. (See Wilson, John, assignor.)						
Dechanx, Frank W., Defiance, Ohio. Level and plumb	477,405	June 21	1874	461	59	1834
Deck, Henry. (See Braun and Deck.)						
Deckebach, Henry E., Cincinnati, Ohio. Apparatus for cooling and aerating malt liquors	474,630	May 10	1197	304	59	878
Decker, Alexander C., Keokuk, Iowa. Curry-comb	476,189	May 31	3681	930	59	1407
Decker, Ward, Owego, N. Y. Dynamo-electric machine	473,547	Apr. 26	2443	618	59	512
Decker, Ward, and J. P. Bell, Owego, N. Y. Furnace	472,728	Apr. 12	1107	284	59	222
Dederick, Ezra, Milwaukee, Wis. Street-locomotive	477,889	June 28	2670	668	59	2006
Deegan, J. L. (See Jobling, Lance L., assignor.)						
Deems, John H., *et al.* (See Murray, Stephen D., assignor.)						
Deering, James E., Chicago, Ill. Harvester	473,300	Apr. 19	2025	508	59	410
Deffenbaugh, Benjamin, Wichita, Kans. Door-check	475,388	May 24	2396	612	59	1144
Deffler, John B., Johnstown, Pa. Apparatus for elevating bags, barrels, &c.	474,653	May 10	1232	315	59	885
Deflector Safety Lamp and Miner's Appliance Company. (See Howat, Andrew, assignor.)						
Deitz, Henry, Denver, Colo. Baling-press	476,954	June 14	1135	273, 274	59	1676
Delaney, Thomas A., and R. E. Hills, Chicago, Ill. Low-water alarm	474,631	May 10	1199	305	59	878
Delano, Charles H., Woburn, Mass. Circuit-closer	473,499	Apr. 26	2366	600	59	498
Dellinger, John, Buffalo, N. Y. Lead trap	473,062	Apr. 19	1623	414	59	334
Deloe, Edward G., Knox, Pa. Boat-propeller	472,526	Apr. 12	822	209	59	169
Demange, August V., and J. M. R. Hervieu, Paris, France. Glove-fastening	476,736	June 7	764	188	59	1589
Demarest, John, assignor to J. L. Mott Iron Works, New York, N. Y. Flushing cistern or tank for water-closets	475,489	May 24	2556	651	59	1174
Demary, George T., Boston, Mass., assignor to National Heeling Machine Company, Portland, Me. Last or support	474,335	May 3	727	190	59	777
Denham, William G., Monticello, Fla. Sponge-dredger	476,920	June 14	1072	258	59	1664
Denison, Charles A. (See Lines, Thomas D., assignor.)						
Denison, Mary J., Johnsville, Ohio. Culinary article	472,527	Apr. 12	823	209	59	170
Dennis, Edson B., *et al.* (See Dowling, Robert H., assignor.)						
Dennis, Richard M., and C. E. Claggett, Louisville, Ky. Riding-saddle	474,226	May 3	529	129	59	740
Densmore, Amos, New York, N. Y. Type-writing machine	475,443	May 24	2479	632	59	1159
Derham, Samuel G., assignor of one-half to D. Weiskopf, Cincinnati, Ohio. Bushing and venting apparatus for barrels	475,756	May 31	2975	755	59	1268
Derr, Fuller S., and G. W. Hess, Watsontown, Pa. Wheel	477,740	June 28	2423	605	59	1961
Derr, William R., Baltimore, Md. Blacking-brush	476,449	June 7	345	79	59	1504
Derry, John D., Horsham, Victoria. Dam, weir, or retaining-wall	474,988	May 17	1777	449	59	1006
Des Rivieres, Joseph A., and J. P. Prud'homme, Ottawa, Canada. Document-file	472,920	Apr. 12	1379	353	59	277
Desisle, Leonard H. (See Palmer and Desisle.)						
Desjardin, Joseph, and W. J. Stewart; said Desjardin assignor to L. S. Hogeboom, Minneapolis, Minn. Grader and scalper	473,500	Apr. 26	2367	600	59	498
Desvernine, Edward L. (See Assorati, Antenor, assignor.)						
Detrick, Jacob S., Baltimore, Md. Metal-planer	472,804	Apr. 12	1212	311, 312	59	242
Detrick, Jacob S., Baltimore, Md. Metal-planer	475,542	May 24	2642	672	59	1190
Detrick, Jacob S., Baltimore, Md. Metal-planer	475,543	May 24	2643	672	59	1191
Detrick, Jacob S., Baltimore, Md. Universal joint	477,625	June 21	2238	560	59	1906
Deutsch, William M., Elizabeth, assignor, by mesne assignments, to New York Filter Company, Newark, N. J. Filter	476,737	June 7	765	188	59	1590

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Devenish, Eliza A. (See Paschal, Ezekiel F., assignor.)						
Devine, James E., assignor of one-half to F. H. Samstag, Baltimore, Md. Composition for cleaning wall-paper and for other purposes	476,788	June 14	850	.....	59	1620
Devlin, Frank X. (See Lafean and Devlin.)						
Devlin, William H. (See Watkins, Richard, assignor.)						
Devore, Levi M., assignor of one-half to M. H. Wilcoxon, Freeport, Ill. Damper	475,079	May 17	1910	485	59	1032
Devore, Levi M., assignor of one-half to M. H. Wilcoxon, Freeport, Ill. Spring-hinge	475,080	May 17	1912	485	59	1032
Dewey Corporation. (See Dewey, Mark W., assignor.)						
Dewey, Denison D., North East, Pa. Vineyard weed-cutter	477,298	June 21	1704	417	59	1801
Dewey, Francis O., Reading, Mass. Lamp-holder	474,082	May 3	319	76	59	699
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Converter system for electric railways	473,253	Apr. 19	1947	489, 490	59	394
Dewitt, David M., Bee Branch, Ark. Railway-gate	476,738	June 7	767	189	59	1580
Dexter, Charles H., Annapolis, Md. Combined steam and hot-air cooking apparatus	475,678	May 24	2942	719	59	1230
Dexter, Simon B., Glendale, Mont. Water-cooled damper	474,227	May 3	530	129	59	740
Dexter, Simon B., Glendale, Mont. Slag-car	474,228	May 3	531	130	59	740
Dey, Harry E., assignor to P. H. Alexander, New York, N. Y. Secondary battery	473,146	Apr. 19	1764	446	59	360
Dey, Harry E., assignor to P. H. Alexander, New York, N. Y. Secondary battery	473,147	Apr. 19	1766	446	59	360
Diamond, James, Aston, near Birmingham, assignor to R. E. King, Birmingham, England. Bicycle	473,829	Apr. 26	2893	726	59	599
Diamond Suspender Company. (See Springer, William A., assignor.)						
Dibble, Fernando J., Peabody, Mass., assignor to Telemeter Company, of New York. Telethermometer	474,771	May 10	1413	360	59	921
Dibble, Orlando V. (See James, David and T., assignors.)						
Dibble, Wesley, Middletown, N. Y. Bee-swarmer	474,115	May 3	361	86	59	707
Dick, Angelo D. (See Houghton and Dick.)						
Dickens, Samuel T., Eureka Springs, Ark. Display-stand	476,133	May 31	3587	905	59	1389
Dickerman, Benjamin, *et al.* (See Miller, George E., assignor.)						
Dickerson, Edward N., New York, N. Y., assignor to Thermo Electric Company, of West Virginia. Thermo-electric element	472,037	Apr. 5	39	8	59	10
Dickerson, Freeman B. (See Shawhan, Jabez F., assignor.)						
Dickerson, Malcolm, Fort Wayne, Ind. Lightning-arrester	474,469	May 10	944	243	59	829
Dickerson, Simeon, Franklin, La. Stubble shaver and cultivator	474,336	May 3	728	190	59	777
Dickinson, Daniel A., St. Paul, Minn. Steam or hot-water generator	473,109	Apr. 19	1705	432	59	348
Dickson, Charles H., and M. S. Hopkins, Washington, D. C. Manufacture of gas-governors	473,063	Apr. 19	1623	414	59	334
Diehl, John, assignor of one-half to J. F. Bickel, Racine, Wis. Vehicle-spring	476,921	June 14	1074	259	59	1665
Diel, Joseph H., Stockton, Cal. Conveyer	474,002	May 3	186	44	59	674
Dietz, Charles, Chicago, Ill. Bridge-gate	472,208	Apr. 5	317	82	59	60
Dill, Frank S. (See Felsberg and Dill.)						
Dillie, George W. (See Lee, Patrick, assignor.)						
Dillingham, Edward, Chelsea, Mass. Hand-trunk or valise	475,977	May 31	3346	843	59	1339
Dillman, William C., Brooklyn, assignor to O. Walsh, New York, N. Y. Annunciator	472,439	Apr. 5	671	172	59	126
Dillman, William C., Brooklyn, assignor to O. Walsh, New York, N. Y. Annunciator	472,440	Apr. 5	672	172	59	126
Dillon, Thomas, assignor of one-half to J. Caven, Indianapolis, Ind. Mast-arm electric switch	477,890	June 28	2673	668	59	2007
Dills, Elbert, Sprague, Wash. Electric-lamp hanger	474,003	May 3	187	44	59	675
Dimick, Augustus D., Wakefield, Mass. Piano-action	472,109	Apr. 5	157	43	59	30
Dimick, Charles. (See Long and Dimick.)						
Dimmick, Albert M., assignor of one-half to J. T. Morgan, Wilkes-Barré, Pa. Steam-boiler	475,850	May 31	3145	797, 798	59	1301
Dimmick, Albert M., and J. T. Morgan, Wilkes-Barré, Pa. Radiator	475,849	May 31	3143	797	59	1300
Dimond, George H., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Tension-releasing device for sewing-machines	473,869	Apr. 26	2950	746	59	612
Dimpfl, Anton, Munich, Germany, assignor to A. Poletti, West Hoboken, N. J., and J. Kohn, New York, N. Y. Brick-kiln	475,267	May 17	2201	562	59	1090
Dinsmore, Adriance S., *et al.* (See Molloy, Frank, assignor.)						
Dirkes, Henry A., New York, N. Y. Ventilator for cars	475,389	May 24	2397	612	59	1144
Divine, Fred D., Utica, N. Y. Fishing-rod	476,370	June 7	229	56	59	1481
Dixon, George E., Beacon, Iowa. Wire reel and stretcher	476,525	June 7	453	108	59	1526
Dixon, Maynard L., assignor to F. H. La Pierre, New York, N. Y. Cigar-cutter	477,249	June 21	1628	397	59	1787
Dixon, Robert M., East Orange, N. J., assignor to Safety Car Heating and Lighting Company, of New York. Steam-trap	477,855	June 28	2613	654, 655	59	1995
Doane, Samuel E. (See Burnett and Doane.)						
Doane, William H., Cincinnati, Ohio. Planing-machine	477,928	June 28	2726	683, 684	59	2018
Dobbie, Robert S., Brooklyn, assignor to Edison General Electric Company, New York, N. Y. Electric-arc lamp	475,544	May 24	2645	673	59	1191
Dobson & Barlow. (See Dobson and Bromiley, assignors.)						
Dobson, Benjamin A., and W. I. Bromiley, assignors to Dobson & Barlow, Bolton, England. Mechanism for grinding the traveling flats of carding-engines	473,187	Apr. 19	1847	465	59	374
Docter, Adolph. (See Bassford, Isaac F., assignor.)						
Docter, Albert M., assignor to S. C. Rosenberg, Chicago, Ill. Vending-machine	477,356	June 21	1799	441	59	1819
Dodd, Charles E., assignor to G. Stiger, Williamsport, Pa. Clothes-drier	474,950	May 17	1710	435	59	994
Doddridge, James M., Milton, Ind. Harvester	476,296	May 31	3754	948	59	1421
Dodds, James H., assignor of one-half to J. H. Roberts, Eau Claire, Wis. Hot-water heater	476,526	June 7	454	108	59	1526
Dodds, John B., Newcastle-on-Tyne, and J. R. Fothergill, West Hartlepool, England. Incrustation preventive	477,357	June 21	1801	.....	59	1819
Dodge, James M. (See Caskey and Dodge.)						
Dodge, James M., Philadelphia, Pa. Grip-pulley	473,254	Apr. 19	1953	490	59	396
Dodge, James M., Philadelphia, Pa. Conveying mechanism	476,615	June 7	587	140	59	1553
Dodge, James M., Philadelphia, Pa. Conveying mechanism	476,616	June 7	588	140, 141	59	1553
Dodge, Miles B., San Francisco, Cal. Engine	473,657	Apr. 26	2635	664	59	550
Doebler, Charles F., and C. K. Bryant, Hartford, Conn. Knob attachment	477,836	June 28	2582	646	59	1990
Doering, Edman, *et al.* (See Fisher, James W., assignor.)						
Doering, Herman, Reedsburg, Wis. Stitching-horse	474,041	May 3	254	62	59	686
Doerr, Henry C., Macksville, Kans. Trace-carrier	473,830	Apr. 26	2895	726	59	599
Dolan, Lyons A., Alexandria, Va. Hand-stamp	474,724	May 10	1347	342	59	908
Dolf, George R., Iron Mountain, Mich. Metallic rod-packing	477,741	June 28	2424	606	59	1902
Dolge, Alfred. (See Millet, John W., assignor.)						
Doll, Louis, Danbury, Conn. Clamp for finishing shades	473,917	May 3	49	9	59	645
Dolle, Louis J. (See Shipley, Thomas, assignor.)						
Domeier, Albert, and O. C. Hagemann, London, England, assignors, by mesne assignments, to J. S. Kirk & Co., Chicago, Ill. Recovering glycerine and salt from spent soap-lye	475,757	May 31	2976	.....	59	1268

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Domeier, Albert, and O. C. Hagemann, London, England, assignors, by mesne assignments, to J. S. Kirk & Co., Chicago, Ill. Recovering crude glycerine from spent soap-lye	475,758	May 31	2977	.....	59	1268
Domestifroid Company. (See Ballantine, Alexander T., assignor.)						
Donahue, Daniel, New York, N. Y. Car-coupling	474,373	May 10	793	206	59	801
Donahue, Daniel, New York, N. Y. Car-coupling	476,450	June 7	346	79	59	1504
Donahue, Michael J., Boston, Mass. Letter-box	474,229	May 3	532	130	59	740
Donaldson, John, Chiswick, England. Apparatus for bending tubes	472,969	Apr. 12	1456	372	59	291
Donaldson, John E., Montezuma, Ind. Die for roofing-tiles	472,189	Apr. 5	279	73	59	53
Donavin, G. B., *et al.* (See Lugenbell, Peter, assignor.)						
Donavin, J. W., *et al.* (See Lugenbell, Peter, assignor.)						
Donavin, L. K., *et al.* (See Lugenbell, Peter, assignor.)						
Doneghy, Alexander. (See Bates, James P., assignor.)						
Donnell, Charles K., Webster, Me. Combined burglar-alarm and door-fastener	472,340	Apr. 5	527	137	59	99
Donovan, Dennis. (See Reed and Donovan.)						
Dorchester, Edward G., Geneva, N. Y. Bicycle-tire	472,786	Apr. 12	1189	305	59	238
Dorchester, Edward G., Geneva, N. Y. Bicycle-tire	477,048	June 14	1277	310	59	1705
Dore, Herman R., Ossipee, N. H. Car-coupling	473,213	Apr. 19	1883	474	59	381
Doremus, William T., Flatbush, N. Y. Check, draft, or other money order or instrument	472,864	Apr. 12	1292	332	59	258
Doren, Dennis, New York, N. Y. Insulator-support	472,529	Apr. 12	825	210	59	170
Dorgan, John W., Columbus, Ohio. Valve-register	477,742	June 28	2425	606	59	1962
Dorman, George E., Chicago, Ill., assignor to Standard Electric Company, of Illinois. Dynamo-electric machine	472,943	Apr. 12	1413	361	59	283
Doty, Joseph W., Lockport, N. Y. Fruit-evaporator	477,856	June 28	2614	655	59	1996
Doubler, John W. H., assignor of one-half to R. W. Raymond, Rockford, Ill. Rocking-chair	474,314	May 3	680	176	59	768
Doughty, Philander M., Campbellsville, Ky. Horse-detaching mechanism	477,358	June 21	1802	441	59	1819
Dougine, James T., Chicago, Ill. Excavating apparatus	477,837	June 28	2584	647, 648	59	1900
Douglas, Frank, Chicago, Ill. Vehicle-tire	472,341	Apr. 5	528	137	59	99
Douglas, William B., Phenix, R. I. Spindle-bearing	473,214	Apr. 19	1885	475	59	382
Douglas, William G., assignor to National Cash Register Company, Dayton, Ohio. Cash register and indicator	473,172	Apr. 19	1818	458	59	369
Douglas, William M., Galveston, Tex., assignor of one-half to Bucyrus Steam Shovel and Dredge Company, Bucyrus, Ohio. Hydraulic excavator	475,936	May 31	3281	828	59	1327
Douglass, Edwin T., Brooklyn, N. Y. Indexed book	472,441	Apr. 5	673	172	59	126
Douglass, Leon F., assignor to E. D. Easton, Washington, D. C. Method of and means for duplicating or transferring phonographic records	475,490	May 24	2558	651	59	1174
Douglass, Robert, Tara, Canada. Bob-sled	477,743	June 28	2426	606	59	1962
Douglass, Samuel W. (See Bullock and Douglass.)						
Douglass, Samuel W., assignor to M. C. Bullock, Chicago, Ill. Water-swivel for drilling apparatus	473,918	May 3	50	9	59	645
Douglass, Samuel W., Fort Collins, Colo., assignor to M. C. Bullock Manufacturing Company, Chicago, Ill. Core-barrel for rock-drills	474,337	May 3	729	190	59	777
Douty, Harry W. (See Barrett, Cornelius T., assignor.)						
Dovey, Albert A., Newark, N. J. Reversible latch	477,929	June 28	2730	684	59	2019
Dow, Alonzo, Wooster, assignor of one-half to S. J. Spalding, Canton, Ohio. Inhaler	476,190	May 31	3683	930	59	1408
Dow, Herbert H., Midland, Mich., assignor to Midland Chemical Company, Midland, Mich., and Cleveland, Ohio. Extracting bromine. (Reissue)	11,232	Apr. 12	1459	372, 373	59	291
Dowling, John, Altoona, Pa. Seal-lock	476,617	June 7	591	141	59	1554
Dowling, Robert H., assignor of seven-twelfths to C. H. Stimson and E. B. Dennis, Newark, Ohio. Car-coupling	474,772	May 10	1417	361	59	922
Downey, Silas C., Chicago, Ill., assignor of one-half to Richards & Ruthhauser. Bevel and try square	475,390	May 24	2399	613	59	1145
Downey, William K. (See Judge, James L., assignor.)						
Downing, Fremont O. (See Lewis, Andrew T., assignor.)						
Downing, William C., San Francisco, Cal. Ticket-punch	477,107	June 14	1372	335	59	1725
Downs, Eugene, assignor of one-half to J. T. Christie, Vinton, Iowa. Windmill	476,875	June 14	996	242	59	1649
Dowse, William B. H., Newton, Mass., assignor to Consolidated Fastener Company, Portland, Me. Glove-fastening	476,255	June 7	41	9	59	1446
Doyle, Patrick J., F. E. Thrall, and M. B. Wilkinson, Asheville, N. C. Sawmill-dog	473,658	Apr. 26	2637	664, 665	59	550
Doyle, William. (See Flanagan, Michael, assignor.)						
Drake, Charles E., *et al.* (See Tyler, Harry L., assignor.)						
Drake, Francis J., Belleville, Canada. Machine for sharpening saws	472,865	Apr. 12	1295	332	59	259
Drake, George W., *et al.* (See Tyler, Harry L., assignor.)						
Drake, John E., Quincy, Mass. Boot or shoe shaping device	475,679	May 24	2844	719	59	1230
Drake & Wood Company. (See Leonard, Charles N., assignor.)						
Draper & Sons, George. (See Brooks, John C., assignor.)						
Draper & Sons, George. (See McDavitt, William H., assignor.)						
Draper & Sons, George. (See Rigby, Richard, assignor.)						
Draper, William F., Hopedale, Mass. Lamp-wick	472,750	Apr. 12	1141	292	59	228
Draudt, Albert. (See Draudt, Edward and A.)						
Draudt, Edward and A., Cleveland, Ohio. Hose-coupling	472,342	Apr. 5	531	138	59	99
Drawbaugh, Daniel, Eberly's Mill, Pa. Pneumatic tool	472,495	Apr. 5	761	193	59	145
Drawdy, Richard A., Jacksonville, Fla. Brick and tile cutting machine	473,301	Apr. 19	2096	509	59	411
Drayton, Alvan, New York, N. Y. Suspension-chain	477,522	June 21	2064	514	59	1872
Dredge, Edgar, London, England. Folding box or crate	473,730	Apr. 26	2745	691	59	570
Dresser, Daniel L., *et al.* (See Bunch, Henry G., assignor.)						
Drew, Emanuel C. (See Slaughter and Drew.)						
Dreyfous, Alida, New York, N. Y. Supplemental top for gas-stoves	474,497	May 10	986	254	59	838
Drigga, William H., U. S. Navy. Breech-loading ordnance	475,545	May 24	2646	673, 674	59	1191
Drota, Peter, *et al.* (See Gunnarson, Wahltzer, assignor.)						
Dryer, George W. (See Bushnell and Dryer.)						
Dryfoos, Louis. (See Colgan, Catherine, assignor.)						
Du Bois, Franklin A. (See Atherton, Garrick M., assignor.)						
Du Bois, Frederick N. (See Renton, George W., assignor.)						
Du Bois, Frederick N., New York, N. Y. Waste-pipe trap	475,546	May 24	2650	674	59	1192
Du Bois, John L., Doylestown, Pa. Pen-wiper	473,148	Apr. 19	1767	446	59	360
Du Bois-Reymond, Alard E., assignor to Siemens & Halske, Berlin, Germany. Distribution of rotary electric currents	477,250	June 21	1629	398	59	1787
Du Laney, Charles F. (See Du Laney, James W. and C. F.)						
Du Laney, James W., Canton, Ohio. Mail-bag	473,616	Apr. 26	2573	648	59	537
Du Laney, James W. and C. F., Canton, Ohio. Electric clock-synchronizer	477,049	June 14	1278	310	59	1706

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Du Shane, James, South Bend, Ind. Plow	475,681	May 24	2847	720	59	1231
Dubey, Edward A., Brooklyn, N. Y. Blank with signature-controlling indicia	477,744	June 28	2427	606	59	1962
Dudley E. Jones Company. (See Sailor, David A., assignor.)						
Dudley, Milton L., Des Moines, Iowa. Sash fastener	475,739	May 24	2946	747	59	1248
Duer, Albert, assignor of one-half to O. L. Phillis, Fombell, Pa. Nut-lock	474,315	May 3	681	176	59	768
Duesterwald, Frank, Brooklyn, N. Y. Ventilator	476,134	May 31	3588	906	59	1389
Duffy, James F., Chicago, Ill. System of ventilation	472,163	Apr. 5	238	63	59	45
Dugan, Reis W. (See King, John H., assignor.)						
Duggan, John A., Quincy, Mass. Street-railway track	472,164	Apr. 5	239	64	59	45
Duggan, John A., Quincy, Mass. Fastening and seating of guard-rails, &c., for street-railways	472,165	Apr. 5	240	64	59	45
Duisberg, Carl, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany, Tetrazo blue dye	476,371	June 7	230	.....	59	1481
Dulitz, Paul C. (See Sherman, George H., assignor.)						
Dumais, Jean B. Z., assignor to E. A. Lord, Chicago, Ill. Pipe-threading machine	477,406	June 21	1875	461, 462	59	1835
Dunbar, Francis W., Newark, N. J., assignor to American Telephone and Telegraph Company, of New York. Apparatus and system for compound telegraphy and telephony	476,618	June 7	502	142	59	1554
Duncan, George S., Melbourne, Victoria. Lubricator	473,064	Apr. 19	1624	414	59	334
Duncan, John A., *et al.* (See Livengood, Winfield S., assignor.)						
Duncan, John A., Kansas City, Mo. Grate-bar	474,116	May 3	362	86	59	707
Dunham, Charles H., deceased; D. T. Dunham, administratrix, and assignor to I. Veeder, trustee, Chicago, Ill. Sliding car-door	475,680	May 24	2845	720	59	1230
Dunham, Dorothy T., administratrix. (See Dunham, Charles H.)						
Dunks, George W., Hope, Kans. Feed-trough	478,052	June 28	2916	729	59	2055
Dunlap, Benjamin H., assignor to W. W. Dunlap, St. Louis, Mo. Socket-wrench	473,617	Apr. 26	2575	648, 649	59	538
Dunlap, William W. (See Dunlap, Benjamin H., assignor.)						
Dunlop, John B., Belfast, assignor to Pneumatic Tyre and Booth's Cycle Agency, Limited, Dublin, Ireland. Tire for wheels of velocipedes	473,831	Apr. 26	2896	727	59	599
Dunn, Claudius A., assignor of three-sixths to W. Smith, W. A. C. McDonald, and B. Griffith, Denver, Colo. Car-coupling	475,268	May 17	2203	562, 563	59	1091
Dunn, Dennis, Mahanoy City, Pa. Compressor for air-brakes	473,302	Apr. 19	2028	509, 510	59	411
Dunn, Hugh V., Huntington, W. Va. Calculator	473,833	Apr. 26	2899	727	59	600
Dunn, J. W. (See Hall, Andrew J., assignor.)						
Dunn, Lawrence, Fort Smith, Ark. Electric signal for railway-trains	473,832	Apr. 26	2897	727	59	600
Dunn, Thomas, London, England. Pneumatic tire	477,996	June 28	2829	708	59	2039
Dunne, Hugh T., New York, N. Y. Railway system	474,951	May 17	1711	435	59	994
Dunning, Jonah D., Athens, Pa. Pipe-hanger	476,227	May 31	3755	948	59	1421
Durand, Oliver. (See André and Durand.)						
Durfee, Edgar G. (See Gibson, Everett, assignor.)						
Durie, D. E. (See Begg, Alexander, assignor.)						
Durning, Joseph S., Emsworth, Pa. Tempering and hardening metals	475,725	May 24	2925	.....	59	1344
Durston, Herbert, Carlinville, Ill. Mole-trap	472,038	Apr. 5	40	8	59	10
Duryea, Edwin G., Riverhead, N. Y. Weather-strip	475,391	May 24	2400	613	59	1145
Dutra, Theodore P., *et al.* (See Beckwith, Theodore A., assignor.)						
Duval, Jennie P., Richmond, Mo. Bed-protector	473,065	Apr. 19	1625	415	59	335
Dwigans, Andrew B., Chicago, Ill. Perpetual calendar and key-ring	474,725	May 10	1349	342	59	908
Dwiggins, John W., Frankton, assignor of one-half to J. V. Keck, Arcadia, Ind. Wire fence	474,952	May 17	1713	436	59	994
Dwight, Lorenzo, and A. A. Jepson, San Francisco, Cal. Waste-water gate for washing-machines	472,530	Apr. 12	826	210	59	170
Dwyer, Cornelius. (See Reid, Andrew, assignor.)						
Dwyer, John T., Montreal, Canada. Trunk	477,795	June 28	2509	629, 630	59	1976
Dyer, Isaac T., assignor of two-thirds to R. O. Burke and J. R. Coffey, Chicago, Ill. Fluid-pressure apparatus	474,059	May 3	285	69	59	692
Dyer, Isaac T., assignor of two-thirds to R. O. Burke and J. R. Coffey, Chicago, Ill. Automatic water-lifting apparatus	474,338	May 3	731	191	59	777
Dyer, Nelson M., assignor to A. and E. Bourlier, Louisville, Ky. Catamenial sack	478,053	June 28	2917	729	59	2055
E. L. Bushnell Spring Company. (See Bushnell and Dryer, assignors.)						
E. W. Bliss Company. (See Pollard, Charles E., assignor.)						
Eagle Lock Company. (See Roche, James, assignor.)						
Earle, John, Primos, Pa. Penmanship-guide	472,751	Apr. 12	1142	293	59	228
Eastman Company. (See Brownell, Frank A., assignor.)						
Eastman Company. (See Edwards, Benjamin J., assignor.)						
Eastman, William E., Boston, Mass. Thermostatic governor and motor	476,372	June 7	231	56	59	1481
Eastman, William E., Boston, Mass. Sliding-door lock and fixture	476,373	June 7	234	57	59	1482
Eastman, William E., Boston, Mass. Recording thermometer	476,374	June 7	235	57	59	1482
Easton, Edward D. (See Douglass, Leon F., assignor.)						
Easton, Lucien F., La Crosse, Wis. Temperature-regulator	472,255	Apr. 5	390	102	59	72
Easton, Lucien F., La Crosse, Wis. Temperature-regulator	472,256	Apr. 5	391	102	59	73
Eastwick, Edward P., Jr., New York, N. Y. Car-coupling	475,662	May 24	2849	720	59	1231
Eastwick, Edward P., Jr., New York, N. Y. Car-coupling	475,663	May 24	2850	721	59	1231
Eaton, Charles H., Batavia, Ill. Anchor	477,745	June 28	2428	607	59	1963
Eaton & Co., George H. (See Eaton and Barber, assignors.)						
Eaton, George H., and E. E. Barber, assignors to G. H. Eaton & Co., Boston, Mass. Clutch	475,238	May 17	2160	548, 549	59	1081
Eavenson, Frank V., Philadelphia, Pa. Candlestick	473,149	Apr. 19	1768	447	59	360
Eberhardt, Louis A., Brooklyn, N. Y. Bottle-stopper	477,202	June 21	1538	376	59	1771
Ecaubert, Frederic. (See Wilhelm, Charles, assignor.)						
Eccleston, Noyes B., Oxford, assignor of one-half to E. Smith, Elmira, N. Y. Cuff-holder	472,343	Apr. 5	532	138	59	99
Eckerson, Albert W., Schenectady, N. Y. Door-guard	472,110	Apr. 5	160	43	59	30
Eckes, John, and A. W. Crone, Jersey City, N. J. Ash-sifter	474,083	May 3	321	76	59	699
Eclipse Wind Engine Company. (See Ford and Ferguson, assignors.)						
Economic Gas and Coke Company. (See Jones, Frederick J., assignor.)						
Economist Plow Company. (See Tower, Caleb E., assignor.)						
Eddy, Arthur H. (See Burton, Eddy, and Briggs.)						
Edgar, Butler, and L. T. Rohrbach, assignors to said Rohrbach, J. Haas, Sunbury, C. Q. McWilliams, W. C. McConnell, and G. O. Martz, Shamokin, Pa. Mail-pouch	472,963	Apr. 12	1447	369, 370	59	289
Edgar, Dennis P., Manchester, Mich. Refrigerator-building	475,851	May 31	3146	798	59	1301
Edgar, Selwyn C., St. Louis, Mo. Furnace for smelting zinc ores	476,789	June 14	851	210	59	1620
Edge, William C., Montrose, N. J. Jeweler's spring-snap	472,616	Apr. 12	943	243	59	193

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Edgerly, Joseph H., Morrilton, Ark. Churn-dasher	474,117	May 3	363	87	59	707
Edgerly, Joseph H., Morrilton, Ark. Combined fishing-rod and cane	475,852	May 31	3150	799	59	1302
Edison Electric Light Company. (See Edison, Thomas A., assignor.)						
Edison General Electric Company. (See Andrews, William S., assignor.)						
Edison General Electric Company. (See Dobbie, Robert S., assignor.)						
Edison General Electric Company. (See Goold, Frederick D., assignor.)						
Edison General Electric Company. (See Meyer and Binder, assignors.)						
Edison, Thomas A., Llewellyn Park, N. J. Dust-proof bearing for shafts	472,288	Apr. 5	440	113	59	83
Edison, Thomas A., Llewellyn Park, N. J. Dust-proof journal-bearing	472,752	Apr. 12	1144	293	59	228
Edison, Thomas A., Llewellyn Park, N. J. Ore-screening apparatus	472,753	Apr. 12	1144	293	59	229
Edison, Thomas A., Llewellyn Park, N. J. Extracting gold from sulphide ores	474,591	May 10	1138	.....	59	867
Edison, Thomas A., Llewellyn Park, N. J. Ore-conveying apparatus	474,592	May 10	1139	290	59	867
Edison, Thomas A., Llewellyn Park, N. J. Dust-proof swivel-shaft bearing	474,593	May 10	1140	290	59	867
Edison, Thomas A., Llewellyn Park, N. J. Incandescent electric lamp	476,530	June 7	459	109	59	1528
Edison, Thomas A., Llewellyn Park, N. J. Ore-screening apparatus	476,532	June 7	462	110	59	1528
Edison, Thomas A., Llewellyn Park, N. J. Pyromagnetic generator	476,963	June 14	1176	285	59	1684
Edison, Thomas A., Llewellyn Park, N. J. Expansible pulley	476,964	June 14	1179	285	59	1685
Edison, Thomas A., Llewellyn Park, N. J. Trolley for electric railways	476,965	June 14	1179	285	59	1685
Edison, Thomas A., Llewellyn Park, N. J. Means for propelling electric cars	476,966	June 14	1180	285 286	59	1685
Edison, Thomas A., Llewellyn Park, N. J. Electric locomotive	476,967	June 14	1182	286	59	1686
Edison, Thomas A., Llewellyn Park, N. J. Lightning-arrester	476,968	June 14	1183	286	59	1686
Edison, Thomas A., Llewellyn Park, N. J. Conductor for electric railways	476,969	June 14	1184	286 287	59	1686
Edison, Thomas A., Llewellyn Park, N. J. Electric meter	476,990	June 14	1185	287	59	1686
Edison, Thomas A., Llewellyn Park, N. J. Method of and apparatus for separating ores	476,991	June 14	1187	288	59	1687
Edison, Thomas A., Llewellyn Park, N. J. Incandescent electric lamp	476,992	June 14	1188	288	59	1687
Edison, Thomas A., Llewellyn Park, N. J. Electric-arc lamp	476,993	June 14	1189	288 289	59	1688
Edison, Thomas A., Menlo Park, N. J. System of electrical distribution	476,529	June 7	458	109	59	1527
Edison, Thomas A., Menlo Park, N. J., assignor to Western Union Telegraph Company, New York, N. Y. Speaking-telegraph	474,230	May 3	534	130	59	741
Edison, Thomas A., Menlo Park, N. J., assignor to Western Union Telegraph Company, New York, N. Y. Speaking-telegraph	474,231	May 3	535	130	59	741
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. System of electric lighting	476,527	June 7	455	108	59	1527
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Incandescent electric lamp	476,528	June 7	457	109	59	1527
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric-lighting system	476,531	June 7	461	109	59	1528
Edison, Thomas A., Llewellyn Park, N. J., assignor to Western Union Telegraph Company, New York, N. Y. Speaking-telegraph	474,232	May 3	536	131	59	741
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric locomotive	475,491	May 24	2559	652	59	1175
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric locomotive	475,492	May 24	2562	652	59	1175
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric locomotive	475,493	May 24	2563	653	59	1175
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric railway	475,494	May 24	2565	653	59	1176
Edmiston, Leslie, Bangor, Pa. Combined washer and nut-lock	474,821	May 17	1506	385	59	953
Edsall, William H., Brooklyn, N. Y. Adjustable joint for display-frames	473,919	May 3	55	10	59	646
Edward Best Car Axle Box and Lubricator Company. (See Spencer, Henry B., assignor.)						
Edward Miller & Company. (See Baldwin, George W., assignor.)						
Edward Miller & Company. (See Homan, William C., assignor.)						
Edward Miller & Company. (See Rhind, Frank, assignor.)						
Edward Miller & Company. (See Williams, Frank T., assignor.)						
Edward P. Allis Company. (See Hinkley, George M., assignor.)						
Edwards, Archer and R. J., London, England. Machinery or apparatus for cutting paper or other substances into sheets	473,731	Apr. 26	2746	691 692	59	570
Edwards, Benjamin J., London, England, assignor to Eastman Company, Rochester, N. Y. Photographic camera	472,257	Apr. 5	393	102	59	73
Edwards, Daniel R., assignor of one-half to M. D. La Due, Saginaw, Mich. Block-sawing machine	474,233	May 3	538	131 132	59	741
Edwards, Edward J. (See Caldwell, Edward P., assignor.)						
Edwards, Joseph H., Giddings, Tex. Insect-trap	473,920	May 3	56	10	59	647
Edwards, Oliver, *et al.* (See Myers, Orlando R., assignor.)						
Edwards, Richard J. (See Edwards, Archer and R. J.)						
Edwards, Richard J., Galena, Ill. Scraper attachment for shovels	475,208	May 17	2112	534	59	1072
Edwards, William J., assignor to Union Manufacturing and Plating Company, Chicago, Ill. Velocipede	475,207	May 17	2110	534	59	1072
Edwards, William J., assignor to Union Manufacturing and Plating Company, Chicago, Ill. Safety bicycle	475,444	May 24	2480	632	59	1159
Edwards, William J., assignor to Union Manufacturing and Plating Company, Chicago, Ill. Velocipede	475,445	May 24	2482	633 634	59	1160
Edwards, Willie M., Atlanta, Ga. Car-coupling	475,269	May 17	2205	563	59	1091
Eells, Dan P. (See Morrison, Robert T., Jr., assignor.)						
Egan, John R., New York, N. Y. Cabinet for coal and wood	475,303	May 24	2255	581	59	1117
Egge, Frederick, Bridgeport, Conn., assignor to Smidt & Pupke Manufacturing Company, New York, N. Y. Machine for making lacing-hooks	473,215	Apr. 19	1887	475 476	59	382
Egge, Frederick, Bridgeport, Conn., assignor to Smidt & Pupke Manufacturing Company, New York, N. Y. Machine for setting lacing-hooks	476,006	May 31	3383	852 853 854	59	1348
Eggers, Anton C., Brooklyn, N. Y. Sinker for syringe-tubes	475,495	May 24	2568	654	59	1176
Eggers, William. (See Mueller, Matchett, and Eggers.)						
Eggleston, Joseph W., Ithaca, N. Y. Breast-collar	472,866	Apr. 12	1297	333	59	259
Egly, John C., assignor, by mesne assignments, to T. A. Pearce and R. E. Egly, Philadelphia, Pa. Knitting-machine needle	473,097	Apr. 26	2699	679	59	562
Egly, Rose E., *et al.* (See Egly, John C., assignor.)						
Ehrenberg, Eduard, Hamburg, Germany. Brush or broom	472,986	Apr. 19	1504	383	59	313
Elbee, Carl, Brooklyn, N. Y. Coal-cart	474,374	May 10	795	207	59	801
Eickemeyer, Rudolf, Yonkers, N. Y. Dynamo-electric machine	473,618	Apr. 26	2578	649 650	59	538
Eickemeyer, Rudolf, Yonkers, N. Y. Dynamo-electric machine	473,619	Apr. 26	2581	650	59	539

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Eickershoff, John H., J. and H. Knost, Cincinnati, Ohio. Educational appliance	474,773	May 10	1419	361	59	923
Eisenhardt, George F., Philadelphia, Pa. Apparatus for printing oil-cloth	476,135	May 31	3589	906 907 908	59	1389
Eisenstaedt, Isidore, Chicago, Ill. Box for blacking, &c	476,619	June 7	595	142	59	1555
Eissner, Frederick, New York, N. Y. Surgical needle and holder	472,258	Apr. 5	396	102	59	74
Elbe, Henry, Niagara Falls, N. Y., assignor of one-half to F. E. Grice, Washington, D. C. Indicating device for guns	477,187	June 14	1501	367 368	59	1751
Electric Boot and Shoe Finishing Company. (See Crooker, William W., assignor.)						
Electric Engineering and Supply Company. (See Hinds, Jesse L., assignor.)						
Electric Engineering and Supply Company. (See Snow, Eugene A., assignor.)						
Electric Gas Lighting Company. (See Lane, Thomas W., assignor.)						
Electric Heat Alarm Company. (See Palmer and Desisle, assignors.)						
Electric Reciprocating Company. (See Carstarphen, William, Jr., assignor.)						
Electric Secret Service Company. (See Moore, William C., assignor.)						
Electric Storage Battery Company. (See Lloyd, Henry H., assignor.)						
Electric Typographic Company. (See Schuckers, Jacobs W., assignor.)						
Electrical Forging Company. (See Burton, George D., assignor.)						
Electrical Forging Company. (See Burton and Angell, assignors.)						
Electrical Forging Company. (See Burton, Eddy, and Briggs, assignors.)						
Elkins, Hattie L., *et al.* (See Hunter, William, assignor.)						
Elkins, William H., Cambridge, Mass. System of electrical distribution	474,166	May 3	432	104	59	722
Elkins, William H., Boston, Mass., assignor to H. E. Irvine, New York, N. Y. Regulator for dynamos and motors	474,165	May 3	430	103 104	59	721
Fillinger, Wilam H., Ni Wot, Colo. Band-cutter and feeder	473,620	Apr. 26	2584	651	59	539
Elliot, Henry, East St. Louis, Ill. Spring-rail frog	474,726	May 10	1350	342	59	908
Eliot, Henry, East St. Louis, Ill. Railway-frog crossing, &c	474,727	May 10	1352	343	59	909
Elliot, William T., Kent, Iowa. Animal-poke	477,651	June 28	2384	572	59	1931
Elliott, Charles B., assignor to Revere Rubber Company, Boston, Mass. Hanger for electric-railway wires	476,192	May 31	3688	931	59	1408
Elliott, Charles B., assignor to Revere Rubber Company, Boston, Mass. Swivel pull-off for overhead wires	476,193	May 31	3688	932	59	1408
Elliott, Charles S., Greenville, Ohio. Veterinary mouth-speculum	477,838	June 28	2588	648	59	1991
Elliott, Elmore H., Truebada, W. Va. Apple parer, corer, and cutter	473,621	Apr. 26	2585	651	59	539
Elliott, George E., Grosvenor Dale, Conn. Spoke connection for vehicle-wheels	477,203	June 21	1538	376	59	1771
Elliott, George F., United States Navy. Cable-grip	475,684	May 24	2852	721	59	1232
Elliott, Robert C., Prairie Creek, Ind. Nut-lock	472,111	Apr. 5	161	43	59	30
Elliott, Simon G., Quincy, Mass. Ore-separator	473,066	Apr. 19	1626	415	59	335
Ellis, Alvinis L., Chicago, Ill. Automatic potential-regulator for electric currents	474,953	May 17	1713	436	59	995
Ellis, Arthur W., London, England, assignor of one-half to T. H. Carman, London, England, and Montreal, Canada. Distillation and apparatus used therefor	473,659	Apr. 26	2637	665 666	59	550
Ellis, Frederick L., Milldale, Conn. Shelf-bracket	476,994	June 14	1191	289	59	1688
Ellis, George W. (See Gilpatrick, George, assignor.)						
Ellis, John S. (See Schuman, John, assignor.)						
Ellis, Orville C. R., Chicago, Ill. Picture-frame	477,188	June 14	1502	368	59	1751
Ellrich, Robert C., Plantsville, Conn. Nail-extractor	474,594	May 10	1141	291	59	867
Ellrich, Robert C., Plantsville, Conn. Meat-cutter	474,595	May 10	1142	291	59	868
Ellrich, Robert C., Plantsville, Conn. Combined standard and clamp	475,054	May 17	1875	475	59	1025
Ellrich, Robert C., Plantsville, Conn. Tool-chuck	475,055	May 17	1876	475	59	1026
Ells, Josiah W., assignor to O. and H. Kleber and H. Braun, Pittsburg, Pa. Machine for making hobnails	476,191	May 31	3684	930 931	59	1408
Elmore, Alexander S. (See Elmore, Francis E. and A. S.)						
Elmore, Francis E. and A. S., Leeds, assignors to Elmore's American and Canadian Patent Copper Depositing Company, Limited, London, England. Loosening tubes from mandrels	473,732	Apr. 26	2749	.....	59	571
Elmore's American and Canadian Patent Copper Depositing Company. (See Elmore, Francis E. and A. S., assignors.)						
Elrick, George, Joliet, Ill. Rotary engine	476,451	June 7	347	79	59	1505
Eltbogen, Hermann, *et al.* (See Bithorn, Richard, assignor.)						
Eltbogen, Moritz, *et al.* (See Bithorn, Richard, assignor.)						
Eltbogen, Wilhelm, *et al.* (See Bithorn, Richard, assignor.)						
Elterich Art Tile Company. (See Elterich, Otto P. and G. O., assignors.)						
Elterich, Gotthold O. (See Elterich, Otto P. and G. O.)						
Elterich, Otto P. and G. O., Maywood, N. J., assignors to Elterich Art Tile Company, of New Jersey. Tile-frame	477,746	June 28	2429	607	59	1963
Ely, Edward O., trustee. (See Forbes, Silas H., assignor.)						
Ely, Edward O., Boston, Mass. Deodorizing device	475,547	May 24	2651	674	59	1192
Embley, William. (See Shobe and Embley.)						
Emerson, Charles H., Yonkers, N. Y. Boomerang-gun	477,747	June 28	2430	607 608 609	59	1963
Emerson, Charles H., Yonkers, N. Y. Boomerang	477,748	June 28	2438	609	59	1964
Emerson, Charles M., Eau Claire, Wis. Band-saw mill	477,299	June 21	1705	417 418	59	1801
Emerson, George W. (See Crossman, Milledge A., assignor.)						
Emerson, Talcott & Company. (See Jones, James H., assignor.)						
Emery, Charles E., Brooklyn, N. Y. Apparatus for controlling and indicating steam-supply	473,733	Apr. 26	2749	692 693	59	571
Emery, Charles G., trustee. (See Shortt, Edward G., assignor.)						
Emery, Charles H., assignor to himself and C. P. Libby, Chicago, Ill. Process of and machine for soldering cans	473,216	Apr. 19	1888	476 477 478	59	382
Emery, Charles H., assignor to himself and C. P. Libby, Chicago, Ill. Can-holding frame for use with can-testing machines	475,446	May 24	2487	634	59	1161
Emery, Lewis, Jr. (See Whitmore, Edwin B., assignor.) (Reissue.)						
Emley, James E., Laredo, Tex. Electric battery	473,386	Apr. 19	2182	548	59	441
Emme, Michael, Atlanta, Ga. Method of and apparatus for extracting aluminium	476,256	June 7	42	10	59	1446
Emmert, Frederick, Kansas City, Kans. Barrel-heading machine	474,596	May 10	1144	291	59	868
Emmons, Charles C., Pittsburg, Pa. Plaiter-blade	473,303	Apr. 19	2029	510	59	411
Endemann, Hermann, Brooklyn, N. Y., assignor to W. Zahn, Newark, N. J. Tawing hides	472,701	Apr. 12	1073	.....	59	215
Enegren, William L., Franklin, Mass. Apparatus for dispensing beverages	476,452	June 7	348	79, 80	59	1505
Engelhardt, Johann M., Bremen, Germany. Washing-machine	476,995	June 14	1192	289	59	1688
Engels, Charles T. N., Middlesborough, Ky., assignor of one-half to J. W. Forrest, Cumberland Gap, Tenn. Pantaloons-hanger	477,170	June 14	1475	361	59	1746

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Engle, Horace M., *et al.* (See Groff, Sylvanus E., assignor.)						
English, David B., Guerneville, Cal. Hillside-plow	472,112	Apr. 5	162	44	59	30
English, Matthew K., Columbus, Ohio. Folding bed	476,876	June 14	997	242	59	1649
Engsberg, Karl, New York, N. Y. Loom for weaving fringe	477,904	June 21	1539	376, 377	59	1771
Engstrom, Jacob B., Manchester, Iowa. Hay-rake	473,416	Apr. 19	2230	560	59	450
Ennis, Lawrence M. (See Bastian, Charles L., assignor.)						
Eno, Joseph A., Newark, N. J. Game apparatus	472,289	Apr. 5	440	114	59	83
Entz, Justus B. (See Waddell, Entz, and Phillips.)						
Ephraim, Ferdinand, San Francisco, Cal. Sole	473,304	Apr. 19	2030	510	59	412
Epple, Albert, Providence, R. I. Scarf-pin	474,004	May 3	188	44	59	675
Epple, Magnus, Augsburg, Bavaria, Germany. Clasp	474,521	May 10	1026	264	59	846
Epps, Henry G., Cameron, La. Floor-layer	474,654	May 10	1235	315	59	885
Epting, Max, assignor to Farbwerke, vormals Meister, Lucius and Brüning, Hochst-on-the-Main, Germany. Red dye	473,453	Apr. 26	2289	.....	59	4-3
Erdmann, William J., assignor to V. D. Fischbeck, Milwaukee, Wis. Fly-net	475,496	May 24	2568	654	59	1176
Ericson, Charles J., Salt Lake City, Utah Ter. Gate-latch	475,270	May 17	2206	563	59	1091
Ericson, Charles J., Salt Lake City, Utah Ter. Gate-hinge	475,271	May 17	2207	563	59	1092
Ericson, Lars G., New York, N. Y. Stocking-stretcher	474,954	May 17	1714	436	59	995
Ericsson, Oscar, Sioux Falls, S. D. Electric meter	475,759	May 31	2979	755	59	1269
Erlanger, Charles, Baltimore, Md. Button	474,445	May 10	910	235	59	823
Erskine & Co., John. (See Erskine, William B., assignor.)						
Erskine, William B., assignor to J. Erskine & Co., New York, N. Y. Machine for folding tubular fabrics	475,272	May 17	2208	564, 565	59	1092
Ernst, Clare, Bay City, Mich. Vise	475,760	May 31	2980	755, 756	59	1269
Ervin, Charles E., Princeton, Ind. Artificial leg	472,443	Apr. 5	678	173	59	127
Eshelman, Henry R., Reading, Pa. Protractor	472,531	Apr. 12	826	210	59	170
Estey Organ Company. (See Whitney, Charles E., assignor.)						
Etheridge, Harry, Pittsburg, Pa., assignor to Writing Telegraph Company, New York, N. Y. Writing-telegraph system	477,652	June 28	2284	572	59	1932
Ethridge, Martin V. B., Everett, Mass. Waiter-signal	475,937	May 31	2983	898	59	1398
Ethridge, Martin V. B., Everett, assignor to American Postal Machines Company, Boston, Mass. Packing device for machines for marking mail-matter	473,660	Apr. 26	2641	666	59	651
Ette, Charles G., St. Louis, Mo. Stop-box	477,523	June 21	2064	514	59	1873
Ettien, James, Utica, Mont. Irrigating head-gate	474,549	May 10	1072	275	59	854
Ettlinger, Frederick V., West Brighton, N. Y. Box-cover	476,453	June 7	349	81	59	1505
Etzkorn, Herman C., assignor of one-half to J. R. Schulte, Fort Madison, Iowa. Horse-collar	475,039	May 17	1850	469	59	1020
Eureka Tape and Belt Fastening Company. (See Bailey and Tilton, assignors.)						
Eustis, John P., New York, N. Y. Graduated measuring-vessel	476,136	May 31	3583	908	59	1390
Eustis, John P., New York, N. Y. Cooking or culinary vessel	476,137	May 31	3594	908	59	1390
Euwer, James N., New Castle, Pa. Sash-fastener	477,891	June 28	2674	669	59	2007
Evans, David, E. H. Percy, and B. Perry, Eureka, Cal. Skid for loading and handling logs	475,011	May 17	1811	459, 460	59	1012
Evans, Frank A., Waterville, Minn. Wheat-steamer	476,138	May 31	3595	908, 909	59	1391
Evans, George, New York, N. Y. Metal tooth-crown	472,344	Apr. 5	533	138	59	100
Evans, George W., Brooklyn, N. Y. Paper-cutting machine	475,761	May 31	2982	756	59	1269
Evans, Owen F., assignor of one-fourth to H. J. Biddlecome, Columbus, Ohio. Trolley-wire support	474,375	May 10	796	207	59	802
Even, Charlie, Davenport, Iowa. Lawn-mower grass-receptacle	474,234	May 3	540	138	59	742
Everson, Carrie J., *et al.* (See Hebron, Charles B., assignor.)						
Ewell, Herbert P., Rochester, Mich. Truss	477,951	June 21	1632	398	59	1787
Ewers, George I., San Francisco, Cal. Gas-burner	475,012	May 17	1812	460	59	1012
Ewing, William W., Butler, Pa. Door-securer	473,305	Apr. 19	2030	510	59	412
Excelsior Needle Company. (See Dayton, William H., assignor.)						
Exline, Marcus P., Galveston, Tex. Cabinet for holding postage-stamps, &c	475,685	May 24	2854	721	59	1232
Eyre, George L. P., London, and T. J. Hopkins, Trowbridge, England. Apparatus for treating wool or like substances	475,106	May 17	1958	496	59	1041
Fach, Charles, St. Louis, Mo., and F. Hottes, Mascoutah, Ill. Wire-screen-cloth holder	474,577	May 10	1120	286	59	863
Fahnestock, George E., *et al.* (See Iake, Albert, assignor.)						
Fairchild, Ben L., executor. (See Norton, Francis L.)						
Faire, Watkin L., London, England. Boot-stretcher	474,376	May 10	797	208	59	802
Fairmount Machine Company. (See Brown, Thomas S., assignor.)						
Faich, Charles H. (See Fenner, Richard E., assignor.)						
Fales, Eben C., Foxborough, and H. Prendiville, Worcester, Mass. Rest or support for music-books, &c	473,150	Apr. 19	1769	447	59	361
Falk, Gustav, New York, N. Y. Hand of leaf-tobacco	476,943	June 14	1117	269	59	1673
Fancher, Alton H., Canton, Conn., assignor to Universal Selling Machine Company, New York, N. Y. Package adapted for automatic delivery	474,167	May 3	433	104	59	722
Farbenfabriken, vormals Fr. Bayer & Co. (See Duisberg, Carl, assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Lauch, Richard, assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Runkel, Friedrich, assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Schmidt, Robert E., assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Ulrich, Moritz, assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Ulrich and Lauch, assignors.)						
Farbwerke, vormals Meister, Lucius & Brüning. (See Epting, Max, assignor.)						
Farbwerke, vormals Meister, Lucius & Brüning. (See Kuzel, Hans, assignor.)						
Farbwerke, vormals Meister, Lucius & Brüning. (See Kuzel, Hans, assignor.) (Reissue.)						
Faris, Joseph S. (See Shepherd, Francis H., assignor.)						
Farland, Antoine, Southbridge, Mass. Adjustable staging or scaffolding	472,867	Apr. 12	1298	333	59	259
Farley, Cyrus H., Portland, Me. Eyeglass-case	474,235	May 3	541	133	59	742
Farmer, James, Salford, England. Machine for printing or embossing fabrics	477,905	June 21	1540	377, 378	59	1772
Farmer's Friend Manufacturing Company. (See Waters, Frank M., assignor.)						
Farnell, Edwin. (See Clarkson, Edward, assignor.)						
Farnham, John R., Brooklyn, N. Y. Vacuum-pan	472,909	Apr. 5	390	82, 83	59	60
Farquher, John D., assignor of one-third to H. E. Long, Des Moines, Iowa. Anti-friction car-wheel	472,944	Apr. 12	1414	361	59	283
Farrall, George A., assignor to Johnston Harvester Company, Batavia, N. Y. Mower	472,754	Apr. 12	1146	294	59	229
Farrell, Franklin. (See Pollard, William, assignor.)						
Farren Brothers Company. (See King, Charles, assignor.)						
Farren, James, assignor of one-half to R. T. Blades, Roxbury, Conn. Road-cart	475,273	May 17	2211	565	59	1093

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Farrington, Clarence H., assignor to F. W. Mann, Milford, Mass. Hand bone-cutter	474,728	May 10	1352	343	59	909
Farrington, William P., New York, N. Y. Powder-box	472,532	Apr. 12	827	211	59	170
Farwell, Pulaski, Frederick, Ill. Door-fastener	473,548	Apr. 26	2444	619	59	512
Faske, Joseph, assignor to National Hardware Company, Cincinnati, Ohio. Spring-gear for vehicles	475,304	May 24	2256	581	59	1117
Faught, John. (See Overton and Faught.)						
Faught, Luther R., Philadelphia, Pa. Chilled cast-iron car-wheel	477,524	June 21	2066	514	59	1873
Faulkner, James J., assignor to National Cotton Seed Oil and Huller Company, Memphis, Tenn. Cotton-seed huller	477,997	June 28	2832	708, 709	59	2040
Faure, Pierre P., Limoges, France. Machine for decorticating ramie, &c	473,110	Apr. 19	1708	432	59	348
Faust, Jacob N., Rockford, Ill. Suspender-clasp	474,060	May 3	287	69	59	692
Faw, Jack A., Bristol, Tenn. House-door letter-box	476,139	May 31	3597	909	59	1391
Fawkes, Jacob H., New York, N. Y. Pocket-lamp	476,042	May 31	3435	867	59	1359
Fawkes, Joseph W., Sr., Burbank, Cal. Cultivator	474,377	May 10	798	208, 209	59	802
Fay, Waldo G., Columbus, Ohio. Automatic tramway-switch	477,740	June 28	2441	609	59	1964
Fechheimer, Isaac. (See Coates and Helton, assignors.)						
Fefel, Henry H., New York, N. Y., assignor to Union Special Sewing Machine Company, of Illinois. Overstitch binding for edges of fabrics	476,454	June 7	350	81	59	1505
Fefel, Henry H., New York, N. Y., assignor to Union Special Sewing Machine Company, of Illinois. Sewing-machine	476,455	June 7	351	81, 82	59	1505
Fefel, Henry H., New York, N. Y., assignor to Union Special Sewing Machine Company, of Illinois. Sewing-machine	476,456	June 7	353	82	59	1506
Fehr, Louis A., New York, N. Y. Electrical switchboard	474,632	May 10	1200	305, 306	59	879
Feigenspan, Christian, assignor to Universal Carbonating Company, Newark, N. J. Manufacturing beer	475,853	May 31	3150	799	59	1302
Feindt, Frank S. (See Whelan, Andrew, assignor.)						
Felidin, Abraham, Auburn, N. Y. Piano-tuning apparatus	477,590	June 21	2166	537	59	1893
Fellows, Byron W., assignor of one-half to C. Murphy, Beverly, Mass. Steam steering apparatus	476,020	June 7	596	142, 143	59	1555
Fellows, Jerome B., North Conway, N. H. Traveling lawn-sprinkler	473,454	Apr. 26	2289	578	59	488
Felsberg, Edward, and F. S. Dill, Montgomery Station, Pa. Gag-runner	475,392	May 24	2401	613	59	1145
Fenner, Richard E., assignor of one-half to C. H. Falch, Chicago, Ill. Fishing-reel	476,621	June 7	597	143	59	1555
Fennerty, Barbara, administratrix. (See Fennerty, John M.)						
Fennerty, John M., deceased, Washington, D. C.; B. Fennerty, administratrix. Railway-spike	477,171	June 14	1476	362	59	1746
Fenno, Charles C., Grinnell, Iowa. Corn-harvester and feed-cutter	473,111	Apr. 19	1709	432, 433	59	348
Féret, Ernest, Paris, France. Permutation-lock	472 868	Apr. 12	1298	333	59	259
Fergus, William L., Chicago, Ill. Ash or garbage receptacle	472,667	Apr. 12	1011	262	59	205
Ferguson, George C., Odell, Nebr. Tool for dressing saw-teeth	473,622	Apr. 26	2587	651	59	539
Ferguson, Hannah F., Fort Erie, Canada. Catamenial sack	474,378	May 10	801	209	59	863
Ferguson, James R. and J., Chester, Conn. Book-leaf holder	472,571	Apr. 12	874	225	59	180
Ferguson, John. (See Ferguson, James R. and J.)						
Ferguson, Richard M. (See Ford and Ferguson.)						
Ferguson, William W., Bloomdale, Ohio. Beer-cooler	475,548	May 24	2652	674, 675	59	1192
Ferrell, Alfonso. (See Rogers, Timothy, assignor.)						
Ferrell, William, assignor to Charles Scott Spring Company, Philadelphia, Pa. Mandrel for barrel-shaped springs	477,525	June 21	2068	515	59	1873
Ferres, Jeffery T., Anderson, Ind. Veneer box	476,622	June 7	598	143	59	1556
Ferrin, Charles F. (See Carr and Ferrin.)						
Ferris, Sherwood B., Lakewood, N. J. Garment-supporter	474,379	May 10	803	209	59	803
Fey, Johann, Offenbach-on-the-Main, Germany. Apparatus for pickling meat	473,623	Apr. 26	2587	651	59	540
Fichtner, Friedrich A., Dresden, Germany. Photographic plate-changing apparatus	474,446	May 10	911	235	59	823
Fickett, William S., assignor of one-half to N. P. Matthews, Rochester, N. Y. Picket fence	472,702	Apr. 12	1074	276	59	215
Field, Alfred, *et al.* (See Woods, Robert, assignor.)	472,636	Apr. 12	969	251	59	198
Field, Benjamin P., Babylon, N. Y. Can-stopper						
Field, Thomas, Brooklyn, N. Y. Nether garment	476,623	June 7	599	143	59	1556
Field, Walter D., Millburn, N. J., assignor to Tannette Manufacturing Company, of New Jersey. Compound of sulphureted oils	474,550	May 10	1075	275	59	854
Fields, Charles C., New Haven, W. Va. Car-coupling	473,306	Apr. 19	2031	.....	59	412
Fietsch, Herman, Jr., assignor to D. W. Ryan, Chicago, Ill. Block for stereotypes, &c	475,040	May 17	1852	470	59	1021
Filkins, Adelbert, assignor of one-half to T. H. Bell, Round Lake, N. Y. Snap-hook	477,591	June 21	2167	537	59	1893
Finch, Henry, Michigan City, Ind. Submarine telephone	473,173	Apr. 19	1620	459	59	369
Finch, John I. (See Finch, Thomas J., assignor.)	476,007	May 31	3387	854	59	1349
Finch, Thomas J., Leona, Tex., assignor of one-half to J. I. Finch, Union City, Tenn. Hay-press	474,498	May 10	986	254	59	838
Finmand, John J., Hopkins, Minn. Siding-holder	476,257	June 7	44	10	59	1446
Finmant, John J., and J. J. Nissen, Hopkins, Minn. Level attachment	472,345	Apr. 5	534	138	59	100
Firnstein, George A., Cincinnati, Ohio. Punch for cutting out shapes from sheets of plastic material	475,549	May 24	2654	675	59	1193
Fischbeck, Victor D. (See Erdmann, William J., assignor.)						
Fischer, Albert, Philadelphia, Pa. Bottler's apron	473,698	Apr. 26	2700	679	59	562
Fischer, Emil, Hallsville, Ill. Sliding gate	476,375	June 7	236	57	59	1482
Fischer, John H. (See Struck, Charles E., assignor.)						
Fischer, John U., New York, N. Y. Sounding-board and resonant chamber for pianofortes	473,307	Apr. 19	2034	511	59	412
Fischer, John U., New York, N. Y. Upright piano	473,308	Apr. 19	2035	511, 512	59	412
Fish, George M., *et al.* (See Fish, John, assignor.)	474,005	May 3	189	44, 45	59	675
Fish, John, South Bend, Ind., assignor of one-half to G. M. and M. Fish, Joliet, Ill. Electric mining pick and drill	472,444	Apr. 5	678	174	59	127
Fish, Manning, *et al.* (See Fish, John, assignor.)						
Fisher, Elben C., Sissonville, W. Va. Corn-planter	476,624	June 7	600	144	59	1556
Fisher, George A., assignor to Abendroth Brothers, New York, N. Y. Stove or range	474,729	May 10	1353	343	59	909
Fisher, George L., Amboy, Ill. Washing-machine	477,998	June 28	2833	709	59	2040
Fisher, James, New Orleans, La. Belt-and-pulley gearing	477,108	June 14	1374	335	59	1725
Fisher, James W., assignor of one-half to F. C. McLam, Palouse, Wash. Water-supply system	476,043	May 31	3436	868	59	1359
Fisher, James W., assignor to himself, F. McLam, E. and W. Jones, and E. Doering, Palouse, Wash. Car-brake	477,172	June 14	1478	362	59	1746

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Fisher, John A., Pittsburg, Pa. Car-brake	473,501	Apr. 26	2170	601	59	498
Fisher, Sarah M., assignor to herself and M. L. Jennings, Spencer, N. Y. Shutter-worker	476,044	May 31	3437	868	59	1360
Fisk, Henry G., *et al.* (See Heath, Henry, assignor.)						
Fiske, Bradley A., U. S. Navy. Method of and apparatus for finding the position of distant objects	472,617	Apr. 12	944	243 244	59	193
Fitch, Francis E. (See Horton and Fitch.)						
Fitch, Nathan T., assignor to Salisbury Manufacturing Company, Salisbury, Md. Truck or fruit basket	472,964	Apr. 12	1449	370	59	289
Fithian, Frank L., Haddonfield, N. J. Game apparatus or puzzle	473,217	Apr. 19	1896	478	59	384
Fithian, Frank L., Haddonfield, N. J. Game apparatus	473,218	Apr. 19	1897	478 479	59	384
Fitz Gerald, Walter H., and A. Beucke, Newark, N. J. Watch-case	475,209	May 17	2113	534 535	59	1073
Fitzgerald, James. (See Pelton, George W., assignor.)						
Fitzgerald, John. Montreal, Canada. Combined gas and electric-light bracket	473,661	Apr. 26	2643	666	59	551
Fitzwater, William M., Berryville, assignor of seven-tenths to H. L. D. Lewis, S. J. C. and A. Moore, Jr., C. Kownslar, G. G. Calmer, Clarke county, and M. McCormick, Berryville, Va. Street letter-box	476,996	June 14	1193	290	59	1689
Fix, F. William, Jr. (See Snell, Levi W., assignor.)						
Flagg, Thomas J., *et al.* (See Heath, Henry, assignor.)						
Flaherty, Thomas, Pittsburg, Pa. Electric-street-lamp post	476,739	June 7	708	189	59	1590
Flanagan, Michael, assignor of one-half to W. Doyle, Milwaukee, Wis. Car-coupling	476,008	May 31	3388	855	59	1349
Flanders, William G., New York, N. Y. Combined vaporizer, inhaler, and atomizer	475,274	May 17	2211	565 566	59	1093
Flannery, Michael, North Towanda, Pa. Puzzle	475,210	May 17	2114	535	59	1073
Fleckenstein, Cornelius, assignor to F. X. Wagner, New York, N. Y. Type-writing machine	472,445	Apr. 5	680	174 175	59	127
Fleischer, Emil, Wiesbaden, Germany. Making aluminates of alkalies	472,668	Apr. 12	1012	.....	59	205
Fleischmann, Julius and P., Sonneberg, Germany. Doll	477,892	June 28	2676	669	59	2007
Fleischmann, Paul. (See Fleischmann, Julius and P.)						
Fleming, Charles F. (See Fleming, George A. and C. F.)						
Fleming, George A. and C. F., San José, Cal. Fruit-grader	475,497	May 24	2569	654	59	1176
Fleming, Will A., assignor of one-half to G. W. Morrison, Lewiston, Idaho. Vehicle-wheel	476,533	June 7	463	110	59	1529
Fleming, William B., Philadelphia, Pa. Electrically-controlled valve	476,376	June 7	237	58	59	1483
Fleming, Willom L., Humboldt, Iowa. Milk-strainer	477,796	June 28	2511	636	59	1977
Fletcher, Andrew H., assignor of one-half to E. E. Harris, Kingsville, Canada. Thill-support	472,476	Apr. 5	732	187	59	139
Fletcher, David H., *et al.* (See Franklin, Benjamin, assignor.)						
Flinn, William H., Nashua, N. H. Tool for cutting sheet metal and wire	472,210	Apr. 5	322	81	59	60
Flint, Edwin H., Cincinnati, Ohio. Stem winding and setting watch	472,987	Apr. 19	1504	383	59	313
Flocke, Robert, Newark, N. J., assignor to G. Bernheim, New York, N. Y. Satchel or bag frame	477,109	June 14	1375	335	59	1725
Floersheim, Berthold, Allegheny, Pa. Nut-lock	472,637	Apr. 12	970	251	59	198
Floyd, Frank W. (See Clark and Floyd.)						
Flynn, Edward W., Clinton, Iowa. Implement for chipping ice	475,978	May 31	3346	843	59	1340
Flynn, Henry, Leavenworth, Kans. Lock	474,955	May 17	1716	436	59	995
Foerster, Henry. (See Hirschmann, Christoph, assignor.)						
Folded Paper Carpet Lining Company. (See Gibb, Austin, assignor.)						
Foley, Frank, assignor of one-half to P. H. Kerwin, Westfield, Mass. Whip	472,869	Apr. 12	1300	334	59	260
Foley, Nelson, Naples, Italy. Lubricator	473,921	May 3	57	10	59	647
Folk, Deborah C. (See Wilcox, Curtis N., assignor.)						
Follett, Joseph L., New York, N. Y. Composite metal wheel	475,305	May 24	2256	581	59	1117
Fontaine, Eugene, assignor to Union Novelty Company, Auburndale, Ohio. Curling-tongs	472,446	Apr. 5	685	175	59	129
Foote, David M. (See Cameron, Ezra G., assignor.)						
Foote, Delavan S., assignor of one-half to Chicago Street Indicator and Advertising Company, Chicago, Ill. Advertising-card rack	475,726	May 24	2926	742	59	1244
Foote, John B., Hamilton, Ohio. Shearing-machine	474,522	May 17	1507	385	59	953
Foote, John B., Hamilton, Ohio. Can-seaming machine	476,258	June 7	44	10	59	1446
Foote, Lewis A., Austin, Minn., assignor to Buckeye Car Seal and Manufacturing Company, Cleveland, Ohio. Car-seal press	475,211	May 17	2115	535	59	1073
Foote, Walter E., assignor to G. N. Todd, Chicago, Ill. Cotton-harvester	475,979	May 31	3348	844	59	1340
Forbes, Alexander C., Corry, Pa., assignor of three-sevenths to G. T. Hanning, New York, N. Y. Tube-cutter	474 823	May 17	1508	385	59	953
Forbes, Silas H., Clarendon Hill, assignor to E. O. Ely, trustee, Boston, Mass. Disinfecting device	474,597	May 10	1146	291	59	868
Ford, Edward C., and G. T. Jacobs, Washington, D. C. Roll-paper holding and severing machine	474,551	May 10	1076	275	59	855
Ford, Edward L. (See Ray, Miles E., assignor.)						
Ford, Eugene A., New York, N. Y. Type-writing machine	472,870	Apr. 12	1301	334	59	260
Ford, Henry B., Philadelphia, Pa. Apparatus for cooling water	477,893	June 28	2676	669	59	2007
Ford, Henry W., and R. M. Ferguson, assignors to Eclipse Wind Engine Company, Beloit, Wis. Hoop-coupling	477,173	June 14	1480	362	59	1747
Ford, Henry W., and R. M. Ferguson, assignors to Eclipse Wind Engine Company, Beloit, Wis. Hoop-coupling	477,174	June 14	1481	363	59	1747
Ford, William H., Watertown, N. Y., assignor to New York Air Brake Company. Locomotive-brake	473,119	Apr. 19	1710	433	59	349
Forest, William E., New York, N. Y. Muscle-roller	472,572	Apr. 12	875	225	59	181
Forney, Matthias N., New York, N. Y. Fire-grate	472,039	Apr. 5	41	9	59	10
Forrest, Alfred, *et al.* (See Sleno, Leonard, assignor.)						
Forrest, Earnest J., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Knob	472,805	Apr. 12	1214	312	59	242
Forrest, John W. (See Engels, Charles T. N., assignor.)						
Forrester, Peter C., Wilkeson, Wash. Mining coal	473,734	Apr. 26	2758	693	59	572
Forster, Ferdinand E., New York, N. Y. Petroleum-burner	473,067	Apr. 19	1628	415	59	335
Forster, Henry, New York, N. Y. Insertible tooth for diamond saws	474,084	May 3	322	76	59	699
Forster, Irene, *et al.* (See Greer, John, assignor.)						
Forster, John W., *et al.* (See Green, John, assignor.)						
Forster, Thomas V., Avalon, assignor to W. & H. Walker, Allegheny, Pa. Ornamenting candles	472,945	Apr. 12	1416	362	59	983
Forsyth, Robert H., Washington, D. C. Box for holding coin	476,625	June 7	601	144	59	1556
Fort Wayne Organ Company. (See Trainer, John W., assignor.)						
Foss, John F., Lowell, Mass. Spinning machinery	472,477	Apr. 5	733	187	59	139
Foster, Benjamin O., Chicago, Ill. Attachment for suspenders	472,040	Apr. 5	43	9	59	10
Foster, George C. H. (See Smith and Foster.)						
Foster, Horatio A., New York, N. Y. System of arc lighting	472,346	Apr. 5	535	139	59	100

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Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
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Foster, John W., assignor to Foster Machine Company, Westfield, Mass. Spooling-machine	473,417	Apr. 19	2231	560	59	450
Foster Machine Company. (See Foster, John W., assignor.)						
Foster, Parks, *et al.* (See Weller, George L., assignor.)						
Foster, Percy R., Buffalo, N. Y. Valve for steam-engines	476,457	June 7	355	82	59	1506
Foster, Reginald L., Bradford, near Manchester, and J. S. Crowley, Paignton, England. Bottle-stopper	472,041	Apr. 5	44	9	59	10
Foster, William, Tungamah, Victoria. Machine for molding or shaping butter	472,921	Apr. 12	1380	354	59	277
Fothergill, John R. (See Dodds and Fothergill.)						
Fowler, Charles S., Brooklyn, N. Y. Cracker-machine	474,168	May 3	434	105	59	722
Fowler, Charles W., Baltimore, Md. Elevator	472,113	Apr. 5	163	44	59	31
Fowler, Herbert E., New Haven, Conn. Metal-bending machine	473,455	Apr. 26	2290	578 579 580	59	483
Fowler, John. (See Wood and Fowler.)						
Fowler, John, Louisville, Ky. Antifriction alloy	474,295	May 3	640	.....	59	761
Fowler, John E., Chicago, Ill. Mouthpiece for musical instruments	474,118	May 3	364	87	59	707
Fowler, Jonathan O., Jr., New York, N. Y., assignor to A. E. Hunt, Scranton, Pa. Glass-tube cutter	476,626	June 7	603	144	59	1556
Fowler, Joseph C., Washington, D. C. Paper-folding mechanism	473,068	Apr. 19	1629	415 416	59	335
Fowler, Joseph C., Washington, D. C. Perfecting printing-press	477,999	June 28	2833	709 710 711	59	2040
Fox Solid Pressed Steel Company. (See Mackenzie-Hughes, Edward W., assignor.)						
Fowler, Thomas W., Washington, D. C. Document-file	475,212	May 17	2116	535 536	59	1073
Fowler, William M., Milford, Conn. Apparatus for dispensing drinks	477,797	June 28	2512	630	59	1977
Fox, Henry. (See Kellogg, Fortunatus G., assignor.)						
Fox, William R., Grand Rapids, Mich. Miter-cutter	476,045	May 31	3439	868	59	1360
Fox, William R., Grand Rapids, Mich. Miter-cutter	477,526	June 21	2069	515	59	1873
Fraley, Joseph C., Philadelphia, Pa. Rendering iron, steel, and other similar metals homogeneous	475,498	May 24	2571	654	59	1177
Fralinger, Joseph F., assignor of one-half to L. A. Haines, Atlantic City, N. J. Cable roundabout	472,211	Apr. 5	323	83, 84	59	61
Fralinger, Joseph F., assignor of one-half to L. A. Haines, Atlantic City, N. J. Roundabout	472,212	Apr. 5	324	84	59	61
Francis, Edward W. (See Thayer and Francis.)						
François, Hector. (See Rolland and François.)						
Frank, Gustave, New York, N. Y. Fuel press and cutter	473,634	Apr. 26	2901	728	59	600
Frank, Salomon. (See Rosenthal and Frank.)						
Frankel, Alexander C., Newark, N. J. Leaf-turner	475,393	May 24	2401	613	59	1145
Frankel, Jacob, Baltimore, Md. Roll-paper holder and cutter	474,598	May 10	1147	292	59	868
Frankey, James F., Dodge City, Kans. Type-writing machine	472,042	Apr. 5	45	10 11 12	59	10
Franklin, Benjamin, assignor of three-fourths to D. H. Fletcher, C. R. Beach, and G. H. Merriell, Chicago, Ill. Electric alarm-clock	477,206	June 21	1543	378	59	1772
Franklin, Rhodolph H., Brooklyn, N. Y. Pocket-knife	475,306	May 24	2257	582	59	1118
Frantz, Amandes. (See Frantz, Hiram A., assignor.)						
Frantz, Hiram A., Tamaqua, assignor of one-half to A. Frantz, Lehigh county, Pa. Car-coupling	472,290	Apr. 5	442	114	59	83
Fraser & Chalmers. (See Ross, Frank A., assignor.)						
Fraser, William, Sparkbrook, near Birmingham, assignor of one-half to J. G. Chapman, Birkenhead, England. Hose-pipe fitting	475,213	May 17	2118	536	59	1074
Frayer, Charles A., Keithsburg, Ill. Pipe or flue beader and expander	474,956	May 17	1717	437	59	995
Frayer, Charles A., Keithsburg, Ill. Pipe or flue beader and expander	478,000	June 28	2843	711	59	2041
Frazee, David F., *et al.* (See Bierley, Henry A., assignor.)						
Frazer, Walter L., and W. E. Brown, National City, Cal. Adjustable spindle-nut	475,762	May 31	2984	757	59	1270
Frear, William H. (See Germann, Frank C., Jr., assignor.)						
Frederick, William B., assignor to Atmospheric Paint Compound Company, San Francisco, Cal. Paint compound	477,110	June 14	1377	.....	59	1725
Free, John R., Ovid, Mich. Inking device for type-writers	474,236	May 3	542	133	59	742
Freelove, Carrie H., and C. E. Welch, McPherson, Kans. Stove	472,755	Apr. 12	1148	294	59	229
Freeman, Simon J., Bradford, Pa. Car-coupling	474,730	May 10	1355	344	59	910
Freese, Egbert M., Plymouth, Ohio. Tile or brick cutter	476,627	June 7	604	144 145 146	59	1557
Fremerey, Felix B., Galveston, Tex. Machine for decorticating jute, ramie, and other fibrous plants	472,988	Apr. 19	1506	383 384 385	59	313
French, Earl B., Oakland, Cal. Feed-trough	473,735	Apr. 26	2760	694	59	572
French, Frank B., Cincinnati, Ohio. Sharpening device	477,592	June 21	2168	537	59	1893
French, George F., assignor to L. E. French, Evanston, Ill. Heating-furnace	474,316	May 3	681	177	59	768
French, John M. (See Hynes, Michael J., assignor.)						
French, Lulu E. (See French, George F., assignor.)						
French, Philo N., assignor to Morris Box Lid Company, Pittsburg, Pa. Axle-box lid	476,194	May 31	3689	932	59	1408
French, Zachary T., and W. C. Meyer, Boston, Mass., assignors to Goodyear Shoe Machinery Company, Hartford, Conn. Sole-sewing machine	473,870	Apr. 26	2963	746 747 748	59	612
French, Zachary T., and W. C. Meyer, Boston, Mass., assignors to Goodyear Shoe Machinery Company, Hartford, Conn. Sole-sewing machine	474,774	May 10	1420	361	59	923
Frey, James A., and J. Thompson, assignors to Frey-Scheckler Company, Bucyrus, Ohio. Re-pressing brick-machine	472,618	Apr. 12	946	244 245	59	194
Frey-Scheckler Company. (See Frey and Thompson, assignors.)						
Friant, Thomas, *et al.* (See Raymond, Silas H., assignor.)						
Fridley, Jacob, assignor of one-half to W. A. Darr, Carlisle, Pa. Hot-air furnace	476,877	June 14	999	243	59	1649
Friedel, Robert, Stuttgart, Germany. Glass-grinding machine	474,119	May 3	364	87	59	707
Friedel, Robert, Stettgart, Germany. Glass-grinding machinery	477,839	June 28	2589	648	59	1991
Friedheim, Emil. (See Pollak, Simon, assignor.)						
Friedly, Michael, assignor of one-half to H. Schindewolf, Ada, Ohio. Collar	477,207	June 21	1545	379	59	1773
Friel, Charles E., Boston, Mass. Trolley for electric railways	474,552	May 10	1077	276	59	855
Fries, Charles, W. H. Richardson, and I. W. Hackett, assignors of one-fourth to A. H. Lunneman, Philadelphia, Pa. Car-brake	472,965	Apr. 12	1450	370	59	289

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Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
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Frigon, Louis A., assignor of one-half to F. C. Smith, Baltimore, Md. Spring-bed	475,763	May 31	2985	757	59	1270
Frisbie, Henry R., assignor of one-half to F. Kinsley, Bridgeport, Conn. Chime-whistle	472,946	Apr. 12	1416	362	59	983
Frisbie, Russel, Cromwell, Conn. Toy pistol	472,573	Apr. 12	876	225	59	181
Fritsche, Louis E. (See Meier and Fritsche.)						
Fritz, Joseph, Baltimore, Md. Suspender-buckle	474,599	May 10	1149	292	59	869
Fritzsch, Oswald, Annaberg, Germany. Manufacturing pearl ribbons	473,309	Apr. 19	2040	512	59	413
Frizzell, John W., Brainerd, Minn. Hot-air furnace	478,001	June 28	2845	{711 712}	59	2041
Frizzell, Nathen L., Fair Dealing, Ky. Tobacco-hoisting device	476,140	May 31	3598	909	59	1391
Froehley, William C. (See Hardenbergh and Froehley.)						
Frommel, Julius. (See Hoff and Frommel.)						
Frost, Artemesia F., Shubert, Nebr. Holder for fruit-jars	476,790	June 14	852	210	59	1620
Frost, Eli C., assignor to N. J. Thompson, Elmira, N. Y. Cooking-stove	472,533	Apr. 12	828	211	59	171
Frost, Robert, Olympia, Wash. Blotting-pad	474,237	May 3	543	131	59	743
Fry, Edwin C., Sherman, Tex. Docket, record, or similar book	473,219	Apr. 19	1899	479	59	385
Fry, William V. Lambayeque, Peru. Purifying cane-juice	472,989	Apr. 19	1509	.....	59	313
Fryer, William J., New York, N. Y. Clay pipe	474,006	May 3	190	45	59	675
Fugman, Godfrey, Cleveland, Ohio. Roof, floor, or ceiling	475,854	May 31	3151	799	59	1302
Fuld, William, Baltimore, Md. Game-board	476,046	May 31	3441	869	59	1360
Fuller, Allen J. (See Connor, Joseph, assignor.)						
Fuller, Andrew, Buffalo, N. Y. Combined spittoon lifter and cleaner	475,275	May 17	2213	566	59	1093
Fuller, Harvey R., Butler, Ind. System of penmanship	477,653	June 28	2286	572	59	1932
Fuller, Samuel B. (See Miller, Lee A., assignor.)						
Funk, Charles E. (See Schnarrenberger, John F., assignor.)						
Fustian Cutting Machine Company. (See Smith, Goddard, Higginbottom, and Mannock, assignors.)						
Fyfe, John C., Denver, Colo. Inclosed supply system for electric railways	472,447	Apr. 5	686	{175 176}	59	129
Gaetje, John, Fort Wayne, Ind. Counter	478,002	June 28	2846	712	59	2042
Gaige, Joseph M. (See Gribben and Gaige.)						
Galbraith, Robert S., *et al.* (See Stewart, James, assignor.)						
Galbraith, William A., San Diego, Cal. Ratchet-washer for bolt-nuts	474,731	May 10	1356	344	59	910
Galbreath, George W., Sedalia, Mo. Toy	473,736	Apr. 26	2761	694	59	573
Galland-Henning Pneumatic Malting Drum Manufacturing Company. (See Giesler, Franklin B., assignor.)						
Galland-Henning Pneumatic Malting Drum Manufacturing Company. (See Giesler and Smith, assignors.)						
Gallup, Henry J., Poquetanuck, Conn. Cartridge-reloading tool	472,990	Apr. 19	1510	385	59	313
Gambee, William Y. (See Macdonell and Gambee.)						
Gamble, James N. (See Strong, George S., assignor.)						
Gamble, Joseph W., assignor of one-half to J. T. R. Green, Des Moines, Iowa. Draft-equalizer	472,448	Apr. 5	690	176	59	130
Gamlen, George, Scipioville, N. Y. Combined fruit squeezer and strainer	473,220	Apr. 19	1900	479	59	385
Gammons, Welcome P., Jr., New York, N. Y. Machine for sewing sweat-bands in hats	477,750	June 28	2443	610	59	1964
Gammons, Welcome P., Jr., New York, N. Y. Seam for securing sweat-bands to hat-bodies	477,751	June 28	2446	610	59	1965
Ganss, Albert, Austin, Tex. Stringed instrument	474,120	May 3	365	87, 88	59	707
Garbutt, James, *et al.* (See Woods, Robert, assignor.)						
Gard, William J., S. S. Dalzell, and W. A. Shafer, Moab, Utah Ter. Amalgamator	476,955	June 14	1137	274	59	1677
Gardiner, Charles B., *et al.* (See Keith, Jeremiah, assignor.)						
Gardiner, James C. (See Scott and Gardiner.)						
Gardner, Edward V., London, England. Apparatus for vaporizing acids in the manufacture of white lead	477,527	June 21	2072	515	59	1874
Gardner, Fulton, Chicago, Ill. Apparatus for sinking shafts	473,570	Apr. 26	2499	631	59	523
Gardner, Fulton, Chicago, Ill. Electrically-propelled vehicle	473,871	Apr. 26	2968	749	59	613
Gardner, George C., Hinsdale, Ill. Sash-cord fastener	474,522	May 10	1028	264	59	846
Gardner, John W., Atkins, Mich. Car-coupling	474,553	May 10	1078	276	59	855
Gardner, Levi S., Detroit, Mich. Railway surface stock-guard	472,574	Apr. 12	877	226	59	181
Gardner, Prince A., Spartanburg, S. C. Oscillating hydraulic motor	474,238	May 3	544	134	59	743
Gardner, Sylvanus A. (See Groves, Thomas F., assignor.)						
Garcia, John G., Brooklyn, N. Y. Bellows	476,740	June 7	769	189	59	1591
Garey, Caleb E., assignor of one-half to W. White, New York, N. Y. Railway-switch	473,387	Apr. 19	2184	{548 549 550}	59	441
Garford, Arthur L., Elyria, Ohio. Velocipede-saddle	473,388	Apr. 19	2190	550	59	442
Garland, Frank M., New Haven, Conn. Machine-gun	475,276	May 17	2214	{566 567 568}	59	1093
Garland, John W., Pittsburg, Pa. Chain-link	472,166	Apr. 5	241	64	59	46
Garlick, Reuben L., Watertown, S. D. Car-coupling	472,534	Apr. 12	829	211	59	171
Garren, Edward, Glenwood, Ill. Lifting-jack	475,764	May 31	2987	757	59	1270
Garrett, Henry H., Pittsburg, Pa. Guide for molder's flasks	477,300	June 21	1709	418	59	1802
Garrett, John T. (See McLeod and Garrett.)						
Garrett, Noah P., Covington, Tenn. Nut-lock	474,380	May 10	803	210	59	803
Garsed, Robert P., Norristown, Pa. Ship	472,991	Apr. 19	1511	386	59	314
Garstang, William. (See Goode and Anthony, assignors.)						
Gash, Edgar, Macomb, Ill. Combined cane and flag	477,359	June 21	1804	441	59	1820
Gashill, Alfred, Millville, N. J. Fountain-inkstand	472,703	Apr. 12	1076	276	59	216
Gass, Henry, Mobile, Ala. Box	472,114	Apr. 5	165	45	59	31
Gaston Electric Head Light Company. (See Gaston, James E., assignor.)						
Gaston, James E., assignor to Gaston Electric Head Light Company, Sparta, Ill. Electric-arc lamp	475,727	May 24	2927	743	59	1244
Gastrell, James P. H., Wiesbaden, Germany. Sash-fastener	475,765	May 31	2988	{757 758}	59	1271
Gates, Curtis, Lyndon, Vt. Car-coupling	472,871	Apr. 12	1303	334	59	961
Gates, George, Jackson, Cal. Concentrator	477,111	June 14	1377	336	59	1726
Gates, Philemon T., New York, N. Y. Applying ferrules to handles	474,061	May 3	287	69	59	693
Gates, Merrit C., Denison, Kans. Corn-harvester	474,007	May 3	192	45	59	675
Gates, William T., and G. H. Sharp, Fairchance, Pa. Coke-oven	472,115	Apr. 5	166	45	59	31
Gaudelas, John B. G. (See Pabl and Gaudelas.)						
Gaudin, Eugène, Paris, France. Device for waving or crimping hair	472,449	Apr. 5	691	176	59	130
Gaunt, John W., Bramley, England. Automatic stop mechanism for drawing-frames, &c.	472,043	Apr. 5	53	12	59	13
Gaus, Henry, Jr. (See Mark, Henry J., assignor.)						
Gautschi, Henry A., assignor to H. Gautschi & Sons, Philadelphia, Pa. Musical box	476,458	June 7	357	83	59	1506

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Gautschi & Sons, Henry. (See Gautschi, Henry A., assignor.)						
Gavin, John H. (See Clifford and Gavin.)						
Gay, Isaac E., Camden, S. C. Cotton-chopper	476,628	June 7	609	146	59	1558
Gaylord, Charles H., Cleveland, Ohio. Detachable-commutator	477,175	June 14	1482	363	59	1747
Gayman, George G. and S. B., Racine, Pa. Combined sheep box and vat	477,894	June 28	2677	669	59	2008
Gayman, Samuel B. (See Gayman, George G. and S. B.)						
Gaynor, Peter F., Greenbush, N. Y. Beer-drawing apparatus	473,737	Apr. 26	2762	694	59	573
Gayon, Leon, Paris, France. Handle attachment for shovels, hoes, &c	474,121	May 3	366	88	59	708
Gearty, Hugh, Springfield, Ill. Barb for wire fences	472,044	Apr. 5	54	13	59	13
Geertz, Charles, Brooklyn, N. Y. Adjustable couch	476,922	June 14	1075	259	59	1685
Gehring, William, San Diego, Cal. Chiseling, drilling, or prospecting machine	473,549	Apr. 26	2445	619	59	512
Gehrke, Heinrich C. J., Berlin, Germany. Beer-filter	477,308	June 21	1546	379	59	1773
Gendron Iron Wheel Company. (See Gendron, Peter, assignor.)						
Gendron, Peter, assignor to Gendron Iron Wheel Company, Toledo, Ohio. Wrench	476,629	June 7	610	146	59	1558
Gentry, James C., Monroe City, Mo. Rail-joint	474,499	May 10	988	255	59	838
Geo. W. Stafford Manufacturing Company. (See Morton, James, assignor.)						
Geoghegan, Samuel. (See Tichborne, Darley, Purcell, and Geoghegan.)						
George, Charles. Berlin, Germany. Manufacturing artificial granite and marble	477,326	June 21	1750	.....	59	1811
George, Cortis K. (See Perry and George.)						
George, James C., Coffeyville, Kans. Churn	476,047	May 31	3442	869	59	1360
George M. Newhall Engineering Company. (See Newhall and Müller, assignors.)						
Georgii, Max, Washington, D. C. Means for justifying matrices	472,966	Apr. 12	1451	371	59	290
Gereke, Edward G., assignor of one-half to C. E. Witball, St. Louis, Mo. Combined ink-stand, envelope, and card holder	474,317	May 3	683	177	59	769
Gerlach, Christian S., Elgin, Ill. Indicator for doors	472,787	Apr. 12	1191	305	59	238
Germann, Frank C., Jr., assignor of one-half to W. H. Frear, Albany, N. Y. Trousers-hanger	476,195	May 31	3690	932	59	1409
Gernsbym & Brother, Henry. (See Beyer, Albin, assignor.)						
Gerstle & Löffler. (See Meier, Silvan, assignor.)						
Geschwindner, Charles, Brooklyn, assignor of one-half to A. Sinn, New York, N. Y. Car-coupling	472,992	Apr. 19	1513	386	59	314
Giant Powder Company. (See Roller, Frank, assignor.)						
Gibb, Austin, Milwaukee, Wis., assignor to Folded Paper Carpet Lining Company, of Illinois. Machine for making box-platted paper for carpet-linings, &c	476,791	June 14	853	{210 211 212}	59	1620
Gibboney, John W., Lynn, Mass. Apparatus for maintaining constant speed in motor mechanisms	474,008	May 3	194	46	59	675
Gibboney, John W., Lynn, Mass. Electric speed-regulator	474,447	May 10	912	235	59	824
Gibboney, John W., Lynn, Mass. Electrical indicator	474,523	May 10	1028	264	59	846
Gibbs, Frank, Bridgeton, Me. Shelf-support	472,347	Apr. 5	538	139	59	100
Gibbs, Jacob S., assignor to Perkins Electric Switch and Manufacturing Company, Hartford, Conn. Incandescent-electric-lamp socket	477,407	June 21	1876	462	59	1835
Gibbs, Robert R., *et al.* (See McNally, Richard J., assignor.)						
Gibbs, William F., Auburn, N. Y. Car-brake	478,003	June 28	2847	712	59	2042
Gibson, Everett, Providence, R. I. Top-flat-adjusting device for carding-machines	474,349	May 3	752	196	59	780
Gibson, Everett, assignor of one-half to E. G. Durfee, Providence, R. I. Card-stripping apparatus	474,318	May 3	684	178	59	769
Gibson, Gerolt, St. Louis, Mo. Sash-fastener	473,389	Apr. 19	2191	550	59	443
Gibson, Gerolt, St. Louis, Mo. Sash-fastener	473,390	Apr. 19	2192	550	59	443
Gibson, Gerolt, St. Louis, Mo. Sash-fastener	473,418	Apr. 19	2233	561	59	450
Gibson, Levi L. (See Nixon and Gibson.)	473,419	Apr. 19	2234	561	59	451
Gibson, Nat. B., Thorp's Spring, Tex. Adjustable fire guard and screen	474,239	May 3	545	134	59	743
Giddens, Abraham, Gypsum, Kans. Tenoning-machine	478,004	June 28	2849	712	59	2042
Giddings, Myron A., *et al.* (See Kendall, Francis B. and J. T., assignors.)	475,447	May 24	2488	635	59	1161
Giese, Henry. (See Schauman, John, assignor.)						
Giese, Robert W., Philadelphia, Pa. Hoisting-hook	476,534	June 7	465	110	59	1529
Giesler, Franklin B., assignor to Galland-Henning Pneumatic Malting Drum Manufacturing Company, Milwaukee, Wis. System of pneumatic malting	475,550	May 24	2656	675	59	1193
Giesler, Franklin B., and H. Smith, assignors to Galland-Henning Pneumatic Malting Drum Manufacturing Company, Milwaukee, Wis. Pneumatic malting-drum	476,997	June 14	1195	{290 291}	59	1689
Giessenbier, Henry, St. Louis, Mo. Pressure-regulator	473,069	Apr. 19	1632	416	59	336
Giffard, Paul, Paris, France, assignor to International (Giffard) Gun and Ordnance Company, Limited, London, England. Apparatus for charging magazines with liquefied gas	475,728	May 24	2931	744	59	1245
Gifford, Ezra N., assignor of one-half to L. W. Pitcher, Chicago, Ill. Penholder	478,073	June 28	2950	738	59	2061
Gilberds, James, Jamestown, N. Y. Bottle and stopper-cap for the same	475,448	May 24	2490	635	59	1161
Gilbert, Abijah H., Birmingham, Conn. Stallion-guard	476,998	June 14	1198	291	59	1689
Gilbert, Charles P., and H. W. Thomas, assignors to Union Metallic Cartridge Company, Bridgeport, Conn. Tool for finishing edges of cartridge shells and heads	476,009	May 31	3389	855	59	1349
Gilbert, Frank C. (See Jeffery, John W., assignor.)						
Gilbert, Jacob P., New York, N. Y. Horseshoe	474,554	May 10	1079	276	59	855
Gilfillan, William, New Britain, Conn. Combined door spring and check	473,456	Apr. 26	2297	{580 581}	59	485
Gilgenberg, Martin, Cologne, Germany. Apparatus for cutting off angle-iron	475,214	May 17	2119	536	59	1074
Gillespie, Edwin G., Artesia, Cal. Music-leaf turner	476,956	June 14	1138	275	59	1677
Gillespie, George C., Brooklyn, N. Y. Device for cutting square holes	472,170	Apr. 5	248	65, 66	59	47
Gillespie, William S., Brooklyn, N. Y. Lead-pencil sharpener	477,528	June 21	2073	516	59	1874
Gillette, George H., *et al.* (See Cafferty, Ridner P., Jr., and W. N., assignors.)	477,529	June 21	2074	516	59	1875
Gillette, Luther. (See Snell and Gillette.)						
Gillischewski, Gustav. (See Schmidt, Carl, assignor.)						
Gillman, Ed. H., *et al.* (See Hoff, Peter, assignor.)						
Gillpatrick, George, Martinez, assignor of one-half to G. W. Ellis, Oakland, Cal. Animal-exterminator	473,872	Apr. 26	2969	749	59	613
Gilman, Lewell J., assignor of one-half to A. Westrup, Santa Rosa, Cal. Pruning implement	474,085	May 3	322	76	59	699
Gilman, Willard H., Boston, Mass., assignor to United States Cash Register Company, Portland, Me. Cash indicator, register, and check-printer	477,840	June 28	2589	640	59	1991
Gilmore, J. F. (See Scott, William W., assignor.)						
Gilmore, William M., Valley Stream, N. Y. Interchanging word or number chart	474,732	May 10	1357	344	59	910
Gintz, Benjamin V., Akron, Ohio. Tea-pot or coffee-pot handle	474,905	May 17	1637	418	59	979
Girard, Charles, Paris, France. Ungumming and decorticating textile material	475,551	May 24	2658	.....	59	1193

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Glaï, Emile. (See Rahn, Rudolph, assignor.)						
Glader, William, Chicago, and H. Schmidt, Elgin, Ill.; said Glader assignor to said Schmidt. Trussing-machine	477,195	June 14	1511	370, 371	59	1753
Glasgow, William, Chicago, Ill. Signaling appliance for railway-trains	474,578	May 10	1120	287	59	864
Glave, Frederick C., Irving Park, Ill. Tag	476,259	June 7	46	10	59	1447
Glazier, George W., Salem, assignor of one-half to H. Lockwood, Boston, and J. B. Rollins, Lynn, Mass. Door-guard	474,633	May 10	1201	306	59	879
Gleason, Duane N., Brooklyn, N. Y. Globe or shade holder	473,550	Apr. 26	2447	619	59	512
Gleason, John, deceased, Dearborn, Mich.; M. Gleason, administrator. Mail-bag catcher	475,307	May 24	2258	582	59	1118
Gleason, Marcellus, administrator. (See Gleason, John.)						
Glenn, Chester E., *et al.* (See Bailey, Archibald, assignor.)						
Glenn, Coulter E. (See Glenn, Harve S. and C. E.)						
Glenn, George P., Jacksonville, Fla. Tank-feeder	473,571	Apr. 26	2502	632	59	524
Glenn, Harve S. and C. E., Butler, Pa. Portable drilling apparatus	472,619	Apr. 12	948	245	59	194
Glenn, William F., Lexington, assignor of one-half to H. A. Vose, Natick, Mass. Overhead trolley-carrier	472,756	Apr. 12	1149	294	59	230
Glidden, Darwin H., Brooklyn, Wis. Corn-harvester	477,050	June 14	1280	311	59	1706
Glidden, Joseph F., De Kalb, Ill. Horse-collar pad	474,524	May 10	1032	265	59	847
Glidden, Mary A. (See Glidden, Oscar F., assignor.)						
Glidden, Oscar F., Grand Rapids, Mich., assignor to M. A. Glidden. Washing-machine	477,752	June 28	2447	611	59	1965
Globe Manufacturing Company. (See Brown, Francis R., assignor.)						
Glocker, Carl F., Albany, N. Y. Opera-glass	477,360	June 21	1804	442	59	1820
Glover, John M. (See Lundstedt, Olof E., assignor.)						
Gnehm, Robert, and J. Schmid, assignors to Society of Chemical Industry, Basle, Switzerland. Violet dye	478,005	June 28	2850	.....	59	2042
Goddard, Andrew. (See Smith, Goddard, Higginbottom, and Mannock.)						
Goddard, Frederick B. (See Crowell, Albert L., assignor.)						
Goddu, Louis, Winchester, assignor to J. W. Brooks, Cambridge, and F. F. Stanley, Swampscott, Mass., trustees. Work-holding device	475,729	May 24	2933	744	59	1245
Goddu, Louis, Winchester, assignor to J. W. Brooks, Cambridge, and F. F. Stanley, Swampscott, Mass., trustees. Nail-making machine	478,054	June 28	2919	729, 730	59	2055
Goddu, Louis, Winchester, assignor to J. W. Brooks, Cambridge, and F. F. Stanley, Swampscott, Mass., trustees. Machine for inserting screw-threaded wire into the soles of boots or shoes	478,055	June 28	2926	731	59	2056
Goddu, Louis, Winchester, assignor to J. W. Brooks, Cambridge, and F. F. Stanley, Swampscott, Mass., trustees. Machine for inserting screw-threaded wire into the soles of boots or shoes	478,056	June 28	2928	731	59	2056
Godfrey, Alexander, assignor of one-half to J. A. Godfrey, Haverhill, Mass. Bead attachment	474,122	May 3	367	88	59	708
Godfrey, Charles B., Milford, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Tack or nail driver	473,873	Apr. 26	2970	749	59	613
Godfrey, John A. (See Godfrey, Alexander, assignor.)						
Godfrey, John C. (See Bowman and Godfrey.)						
Godfrey, Jonathan, assignor of one-half to W. E. Baillie, Bridgeport, Conn. Machine for stripping paste or straw board boxes	475,552	May 24	2658	676, 677	59	1193
Goertz, August, Newark, N. J. Pocket-book fastening	477,798	June 28	2513	631	59	1977
Goertz, August, Newark, N. J. Purse and pocket-book frame and catch	477,799	June 28	2515	631	59	1978
Goese, Hermann, Milwaukee, Wis. Window-frame	472,757	Apr. 12	1150	295	59	230
Goff, Hubbard S., Arch Beach, Cal. Trap	475,215	May 17	2120	536	59	1074
Gold, Edward E. (See Balmore and Gold.)						
Gold, Edward E., New York, N. Y. Steam-trap	472,116	Apr. 5	168	46	59	32
Gold, Joseph S., assignor to Gold Telephone Tablet Company, Columbus, Ohio. Telephone-tablet	477,931	June 28	2732	685	59	2019
Gold, Joseph S., and A. H. McAlpine, assignors to Gold Telephone Tablet Company, Columbus, Ohio. Telephone-tablet support	477,932	June 28	2734	685	59	2020
Gold Telephone Tablet Company. (See Gold, Joseph S., assignor.)						
Gold Telephone Tablet Company. (See Gold and McAlpine, assignors.)						
Goldberg, Harry, *et al.* (See Parks, Dana, assignor.)						
Golden, Charles, assignor of one-half to S. Jacobson, Chicago, Ill. Mock pistol	476,878	June 14	1001	243	59	1650
Golden Gate Safety Faucet Company. (See Anthony, Mark, assignor.)						
Golding, Charles T., Newton, Iowa. Camp-stool cane	474,240	May 3	546	134	59	743
Goldman, Moses, Pittsfield, Mass. Sprinkler	473,310	Apr. 19	2041	512	59	413
Goldsmith, Edwin M., Philadelphia, Pa. Lamp-chimney raiser	477,930	June 28	2731	684	59	2019
Goldsmith, Jacob M., Chicago, Ill. Gas or steam generator	476,260	June 7	47	11	59	1447
Goldsmith, Jacob M., Chicago, Ill. Gas-generator	476,261	June 7	50	11	59	1447
Goldsmith, Max S., Cincinnati, Ohio. Safe	477,800	June 28	2516	631	59	1978
Goldstein, Phillip, Newark, N. J. Machine for pointing and punching shoe-laces	476,999	June 14	1199	291	59	1690
Gombault, Joseph E., and E. C. Sonnet, Paris, France. Ship's log or apparatus for indicating and recording the speed of vessels	477,530	June 21	2075	516	59	1875
Good, Charles E., and C. S. Whipple, Sunbury, Pa. Table	473,151	Apr. 19	1770	447	59	361
Goodacre, Henry, Lexington, Ky. Flower-pot	473,536	Apr. 26	2904	729	59	601
Goode, Joseph H., and W. H. Anthony, assignors of one-third to W. Garstang, Richmond, Va. Car-coupling	477,176	June 14	1483	363	59	1747
Goodell, Albert D. and H. E., Shelburne Falls, Mass. Shoe float or rasp	472,259	Apr. 5	397	103	59	74
Goodell Company. (See Thompson, Edward J., assignor.)						
Goodell, Henry E. (See Goodell, Albert D. and H. E.)						
Goodhue, Charles F., Boston, Mass. Automatic heat-regulating apparatus	473,699	Apr. 26	2701	679, 680	59	562
Gooding, Charles W., and B. Crossan, Wilmington, Del. Dash-board	472,450	Apr. 5	692	176	59	131
Goodman, Henry M. (See Goodman, John and H. M.)						
Goodman, John and H. M., Louisville, Ky. Water or gas meter	474,341	May 3	548	134, 135	59	744
Goodman, William R., *et al.* (See Kemmerer, John N., assignor.)						
Goodrich, Charles F., Chicago, Ill., assignor of one-half to J. G. Thompson, Milwaukee, Wis. Insulator	474,319	May 3	687	178	59	709
Goodrick, Edward W., assignor to Appleton Machine Company and S. R. Wagg, Appleton, Wis. Paper-pulp screen	475,041	May 17	1853	470	59	1021
Goodridge, Charles L., Portland, Me. Keyhole-guard	474,906	May 17	1638	418	59	980
Goodridge, Ezra R., *et al.* (See Bunch, Henry G., assignor.)						
Goodridge, Henry W., and C. Jonsson, Chicago, Ill. Smoke-funnel	477,209	June 21	1547	380	59	1773
Goodridge, William M., Highland Park, assignor to Western Electric Company, Chicago, Ill. Cable-rack	472,947	Apr. 12	1418	362, 363	59	284
Goodridge, William M., Highland Park, assignor to Western Electric Company, Chicago, Ill. Electric switch	476,792	June 14	861	212	59	1621

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Goodridge, William M., Highland Park, assignor to Western Electric Company, Chicago, Ill. Metallic-circuit house-telephone system	476,793	June 14	862	212, 213	59	1622
Goodson, George A., Minneapolis, Minn. Toy boat	472,291	Apr. 5	443	114	59	84
Goodson, George A., Minneapolis, Minn. Puzzle	472,292	Apr. 5	445	115	59	84
Goodspeed, Charles E., Chicago, Ill. Leggin	476,377	June 7	238	58	59	1483
Goodwin, Charles H., assignor to Waterbury Button Company, Waterbury, Conn. Glove-fastener	477,857	June 28	2616	655	59	1996
Goodwin, Henry D., *et al.* (See Wickham, Horace, assignor.)						
Goodwin, Joseph G., Lexington, Ky. Corn-planter	477,531	June 21	2078	517	59	1875
Goodwin, William W., Bordentown, N. J. Gas-range	477,408	June 21	1877	462	59	1835
Goodyear Shoe Machinery Company. (See French and Meyer, assignors.)						
Goodyear's Metallic Rubber Shoe Company. (See Saunders, Emmett A., assignor.)						
Goold, Frederick D., assignor to Edison General Electric Company, New York, N. Y. Insulator	477,753	June 28	2448	611	59	1965
Goolden, Walter T. (See Atkinson and Goolden.)						
Gordon, Edward Y., assignor to C. F. Wilkin, Rochester, N. Y. Apparatus for weighing liquors	472,535	Apr. 12	830	212	59	171
Gordon, Hamilton S. (See Hambloch, Hubert A., assignor.)						
Gordon, Joseph, and C. R. Perkins, Pioneer, Ohio. Folding or knockdown box	477,051	June 14	1282	311	59	1707
Gordon, Thomas A. (See Beggs and Gordon.)						
Gordon, William M., assignor of one-half to J. W. Hoffman, Chicago, Ill. Apparatus for producing manifold copies	477,000	June 14	1201	291	59	1690
Gore, William G. (See Scott and Brasfield, assignors.)						
Gorrell, Charles L., assignor of three-fourths to Gorrell Manufacturing Company, Belair, Md. Can-labeling machine	476,879	June 14	1002	244, 245	59	1650
Gorrell Manufacturing Company. (See Gorrell, Charles L., assignor.)						
Gorton, Robert, Plainfield, N. J. Hook	472,948	Apr. 12	1420	363	59	284
Goshen Folding Bed Company. (See Ru Ton, Hiram W., assignor.)						
Gosling, Charles, *et al.* (See Hall, George F., assignor.)						
Goss, Franklin, New London, Conn. Sink connection	472,045	Apr. 5	54	13	59	13
Gothorpe, Thomas, Rye, N. H. Telegraphy	475,938	May 31	3284	829	59	1328
Gott, Clarence P., New York, N. Y. Apparatus for registering sales of tickets, &c	473,113	Apr. 19	1710	433	59	349
Gould, Charles A. (See Allen, Alfred J., assignor.)						
Gould, Hiram. (See Hulett, John F., assignor.)						
Gould, John C. (See Burton and Gould.)						
Gould, John C., assignor to S. I. Gould, Chicago, Ill. Animal-trap	472,213	Apr. 5	326	84	59	61
Gould, Susan I. (See Gould, John C., assignor.)						
Gould, Thomas E., Brooklyn, N. Y. Bill and letter holder or file	473,635	Apr. 26	2902	728	59	601
Gove, Horace D. (See Ramsey, Jonathan, assignor.)						
Graban, Hans E., assignor of one-half to E. G. Soltmann, New York, N. Y. Surveying-instrument	472,451	Apr. 5	693	177	59	131
Graeber, William A., Shenandoah, Pa. Metallic railway-tie	477,112	June 14	1379	336	59	1726
Graeme, Patrick J. F., Beulah, Canada. Lamp-burner	473,738	Apr. 26	2764	694, 695	59	573
Graff, George E., assignor to S. T. McCormick, Williamsport, Pa. Type-cleaning appliance for type-writing machines	474,733	May 10	1360	345	59	910
Graff, George J. (See Slack, Graff, and Paxton.)						
Graham, Edmund H., Biddeford, Me., assignor of one-half to L. Woodbury, Washington, D. C. Positive shuttle-motion for looms	474,555	May 10	1080	276	59	855
Graham, George H., Oak Park, Ill. Car-wheel	477,532	June 21	2079	517	59	1876
Graham, George M., Houston, Tex. Artificial-stone block	474,339	May 3	733	191	59	778
Graham, John M., Johnstown, Mo. Fence-building machine	474,448	May 10	915	236	59	824
Graham, Orpheus J., Farwell, Mich. Floor-clamp	474,009	May 3	196	46	59	676
Grammer, John, Houston, Va. Shaft-tug	475,855	May 31	3152	799	59	1302
Grant, James. (See Alteman and Macdonald, assignors.)						
Grant, James A., Mount Pleasant, Iowa. Earth-scraper	473,624	Apr. 26	2589	652	59	540
Grant, John, Windsor, Canada. Last-supporter	476,262	June 7	53	11	59	1447
Grant, Richard. (See Montgomery, James, assignor.)	477,210	June 21	1548	380	59	1774
Grant, William H., Waltham, Me. Vehicle-brake	472,575	Apr. 12	878	226	59	181
Grantham, Harry M., assignor of one-fourth to A. Scott, Wilmington, Ohio. Ticket-punch	476,378	June 7	239	58	59	1483
Grantland, John W. (See Kennedy and Grantland.)						
Grantland, John W., Philadelphia, Pa. Nut-fastening device	472,788	Apr. 12	1193	306	59	238
Grantland, John W., assignor to A. J. Ingraham, Philadelphia, Pa. Inkstand	473,551	Apr. 26	2447	620	59	512
Grantland, John W., assignor to G. L. Parker, Philadelphia, Pa. Electric railway	475,107	May 17	1961	497	59	1041
Graveline, David U., Granby, Canada. Car-coupling	474,123	May 3	368	89	59	708
Graves, Ephraim H., Appleton, Wis. Veterinary parturition-hook	472,536	Apr. 12	831	212	59	171
Gravity Twine Box Company. (See Bolus, William G., assignor.)						
Gray, George F. and H. N., San Francisco, Cal. Concrete-mixer	477,361	June 21	1806	442	59	1820
Gray, George J., assignor to F. W. McGahan, Rochester, N. Y. Gas sad-iron	474,470	May 10	945	243	59	830
Gray, George S., Beloit, Wis. Paper-holder	475,308	May 24	2260	582	59	1118
Gray, Harry N. (See Gray, George F. and H. N.)						
Gray, Thomas F., Monroeville, Ohio. Automatic grain-scale	472,872	Apr. 12	1304	335	59	261
Gray, William H. (See Combis and Gray.)						
Grayson, William H., Carter, Tex. Pea or bean thrasher	472,452	Apr. 5	694	177	59	131
Greason, Thomas, Newark, N. J. Fishing-reel	477,754	June 28	2449	611, 612	59	1966
Greaves, William A., Cincinnati, Ohio. Lock for adjustable machine-tables	475,553	May 24	2664	678	59	1194
Greely, Gayton C., *et al.* (See Beckwith, Theodore A., assignor.)						
Green, George F., Kalamazoo, Mich. Photographic shutter	473,188	Apr. 19	1848	465	59	374
Green, Henry, assignor of one-half to G. S. Miller, Hartford, Conn. Incandescent electric lamp	475,394	May 24	2402	614	59	1145
Green, James, *et al.* (See Coze, André, assignor.)						
Green, James, *et al.* (See Coze and Lencauchez, assignors.)						
Green, James T. R. (See Gamble, Joseph W., assignor.)						
Green, John, assignor of one-half to W. L. Holman and J. McCord, Renovo, Pa. Car-coupling	476,630	June 7	611	146	59	1558
Green, John, assignor of one-half to J. W. and I. Forster, Renovo, Pa. Brake-beam	478,057	June 28	2930	731	59	2057
Green, Richard, Birmingham, England. Hub	473,837	Apr. 26	2904	729	59	601
Green, Samuel F., Salamanca, N. Y. Car-coupling	474,124	May 3	369	89	59	709
Greene, Grant P., assignor of one-half to M. A. Knapp, Chicago, Ill. Hotel call system	474,907	May 17	1639	418	59	980
Greene, Henry D., Philadelphia, Pa. Portable fire-extinguisher	474,042	May 3	255	62	59	687
Greene, James G., Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Overedge sewing-machine	472,046	Apr. 5	55	13, 14	59	13

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Greene, James G., Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Overseam for fabrics	472,117	Apr. 5	170	46	59	32
Greene, John W., Louisville, Ky. Grate	472,171	Apr. 5	251	66	59	47
Greenfield, Edwin T., New York, N. Y. Making paper or analogous tubing	477,593	June 21	2169	538	59	1893
Greenfield, Edwin T., assignor to Interior Conduit and Insulation Company, New York, N. Y. Electric switch	477,409	June 21	1879	463	59	1836
Greenleaf, Joseph H., New Haven, Conn. Fare-register	476,741	June 7	771	189	59	1591
Greenlees, William, Brookland, D. C. Car-coupling	476,742	June 7	774	190	59	1591
Greenwood, Guyon F. (See Riddell, John, assignor.)	477,001	June 14	1202	292	59	1690
Gregg, Richard, Randolph, Ind. Hay-carrier	473,625	Apr. 26	2591	652	59	540
Gregg, William T., Lakeport, Cal. Door	477,858	June 28	2617	656	59	1996
Gregory, Nathan B., Joplin, Mo. Swing	477,327	June 21	1751	428	59	1811
Gribben, William, and J. M. Gaige, Croswell, Mich. Feed-regulator	476,631	June 7	612	147	59	1558
Grice, Francis E. (See Elbe, Henry, assignor.)	472,922	Apr. 12	1382	354	59	277
Grier, William W., Hulton, Pa. Machine for graining wood	475,499	May 24	2572	655	59	1177
Griffin, Dennis J. (See Crooker, Alfred M., assignor.)	476,743	June 7	775	190	59	1592
Griffin, James F. (See Staats, William H., assignor.)	477,654	June 28	2288	573	59	1933
Griffin, Roger B., Auburndale, Mass. Recovering grease, &c., from wool-washings	477,533	June 21	2080	517	59	1876
Griffin, Thomas W., assignor of one-half to R. H. Nesbit and J. H. Bulford, New Haven, Conn. Funnel for filling lamps	476,794	June 14	865	213	59	1692
Griffin, Winfield. (See Strouse and Griffin.)	477,002	June 14	1203	292	59	1690
Griffith, Benjamin, *et al.* (See Dunn, Claudius A., assignor.)	476,631	June 7	612	147	59	1558
Griffith, Joseph T., Orangeburg, S. C. Fertilizer-distributer	472,922	Apr. 12	1382	354	59	277
Griffith, William, Pittston, Pa. Device for conveying bricks	475,499	May 24	2572	655	59	1177
Griffith, William P., assignor to Carpenter & Dyett, Rome, N. Y. Folding bed	476,743	June 7	775	190	59	1592
Griggs, George B., Ada, Ohio, assignor of one-fourth to F. S. Burke, Houston, Tex. Saddle	477,654	June 28	2288	573	59	1933
Grimes, Allen R., Port Royal, Ky. Gate-latch	477,533	June 21	2080	517	59	1876
Grimes, Virgil A., and C. R. Lame, Pittsfield, Ill. Ballot-box	476,794	June 14	865	213	59	1692
Grimm, Philip H., and F. J. Willard, Ashland, Wis. Heating-drum						
Grimmer, Charles, *et al.* (See Cafferty, Ridner P., Jr., and W. N., assignors.)						
Grimmer, John W., *et al.* (See Cafferty, Ridner, P., Jr., and W. N., assignors.)						
Grimmesey, Hiram F. (See McNutt and Grimmesey.)						
Grimmesey, O. R. (See McNutt and Grimmesey, assignors.)						
Grisel, George, and F. Severio, assignors of one-third to J. D. Case, San Francisco, Cal. Machine for wrapping block-matches	477,362	June 21	1807	442	59	1821
Grisham, Wiley M., assignor of one-half to A. C. Palmer, Winchester, Ill. Gate	476,379	June 7	240	58	59	1483
Griswold, Alanson B. (See Bradbury and Griswold.)						
Griswold, Henry J., Leicester, England. Stocking	472,873	Apr. 12	1307	336	59	261
Griswold, Henry J., Madison, Conn. Device for transferring knitted fabrics	472,874	Apr. 12	1308	336	59	262
Griswold, Henry J., Madison, Conn. Knitted goods and manufacturing the same	472,875	Apr. 12	1309	336	59	262
Griswold, Henry J., Madison, Conn. Manufacture of hosiery	472,876	Apr. 12	1311	336	59	262
Griswold, Horace P., Providence, R. I. Adjustable sight	472,609	Apr. 12	1015	337	59	205
Griswold, John W., Troy, N. Y. Barbed-wire fence	472,496	Apr. 5	764	262	59	145
Griswold, Matthew and M., Jr., Erie, Pa. Gridiron	472,537	Apr. 12	832	263	59	171
Griswold, Milton O., Rock Island, Ill. Coin-controlled picture or surface exhibitor	472,704	Apr. 12	1077	194	59	216
Groff, Sylvanus E., Marietta, assignor of two-thirds to H. C. Musser, Schock's Mills, Pa., and H. M. Engle, Roanoke, Va. Nail-machine	476,632	June 7	613	276	59	1559
Groom, Richard C., Cobb, Ky. Catching-tool	473,719	Apr. 26	2766	147	59	574
Groom, Wallace P., Brooklyn, N. Y. Process of and apparatus for harvesting cotton	477,177	June 14	1484	695	59	1747
Groshon High Duty Pumping Engine Company. (See Groshon, John A., assignor.)				364	59	
Groshon, John A., assignor to Groshon High Duty Pumping Engine Company, New York, N. Y. Direct-acting steam-engine	474,775	May 10	1422	362	59	923
Gross, Joseph, Milwaukee, Wis. Whiffletree-hook	473,311	Apr. 19	2043	513	59	414
Grossman, Samuel, Chicago, Ill. Fruit-press	475,856	May 31	3153	800	59	1303
Groth, William, Seattle, Wash., assignor of five-sixths to T. S. Constantine, New York, N. Y. Postmarking and stamp-canceling machine	472,497	Apr. 5	764	194	59	145
Grouleff, Albert, and H. B. Williams, Grayling, Mich. Breech-loading firearm	477,410	June 21	1880	463	59	1836
Grove, Samuel, Coalport, Pa. Automatic switch-lock	475,740	May 24	2947	747	59	1248
Grove, William A., Tionesta, Pa. Bit-truck	472,538	Apr. 12	833	213	59	172
Groves, Thomas F., assignor of one-half to S. A. Gardner, Kokomo, Ind. Step-ladder	475,857	May 31	3154	800	59	1303
Grube, Jefferson, Auburn, Ind., assignor to Newark Machine Company, Columbus, Ohio. Straw-stacker	474,010	May 3	199	47	59	676
Gruber, Moritz. (See Lindner, Josef, assignor.)						
Gruenhagen, Willie H. (See Held and Gruenhagen.)						
Grüneberg, Friedrich A., New York, N. Y. Ball-bearing	477,113	June 14	1380	336	59	1726
Grusonwerk. (See Martin, Carl, assignor.)						
Grymes, John R., Danville, Va. Guard attachment for penholders	474,824	May 17	1510	385	59	953
Guerber, Frederick S., Allentown, Pa. Clip for railway-switch bars	477,534	June 21	2082	517	59	1876
Guerber, Frederick S., Allentown, Pa. Brace and slide plate for railway-switches	477,535	June 21	2082	518	59	1876
Guerber, Frederick S., Allentown, Pa. Manufacturing brace and slide plates for railway-rails	477,536	June 21	2083	518	59	1877
Guernsey, Jane M. (See Guernsey, William B., assignor.)						
Guernsey, William B., assignor to J. M. Guernsey, Norwich, N. Y. Automatic car-brake	473,457	Apr. 26	2301	582	59	485
Guerra, Asterio, Philadelphia, Pa. Toboggan-slide	475,081	May 17	1913	485	59	1032
Guerra, Elias R., Hoboken, N. J. Cable-grip	473,221	Apr. 19	1903	480	59	385
Guerrant, Corneline W. (See Guerrant, George M. and C. W.)						
Guerrant, George M., New York, N. Y., and C. W. Guerrant, Danville, Va. Machine for attaching tags to plug-tobacco	476,010	May 31	3390	855	59	1349
Guerre, Charles E., and G. H. Martin, Rouen, France. Musical instrument	472,453	Apr. 5	695	177	59	131
Guklinger, Joseph, Los Angeles, Cal. Perpetual monthly calendar	476,963	June 7	54	12	59	1448
Guild, George M., assignor, by mesne assignments, to L. A. Guild, Boston, Mass. Upright-piano action	472,478	Apr. 5	735	187	59	139
Guild, L. A. (See Guild, George M., assignor.)						
Guilford, William W., *et al.* (See Abbott, Leonard G., assignor.)						
Guinn, John A., Perry, Iowa. Railway time-signal	475,108	May 17	1964	497	59	1042

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gülcher, Robert J., Berlin, Germany. Thermo-electric battery	472,261	Apr. 5	400	104	59	74
Gumaer, Frederick F., Trenton, N. J. Match-machine	473,922	May 3	58	11, 12	59	647
Gunckel, Patrick H. (See Smith, John H., assignor.)						
Gunder, James H., Homer, Ill. Automatic grain-weighing scale	474,825	May 17	1511	386	59	954
Gunn, James, *et al.* (See Knowlton, Ephriam H. B., assignor.)				387		
Gunn, William S. (See Cook, Douglas D., assignor.)						
Gunn, William S., Grand Rapids, Mich. Wardrobe-bed	476,744	June 7	776	191	59	1592
Gunnarson, Wahltzer, assignor of one-half to P. Sandberg and P. Drots, Jamestown, N. Y. Fire-escape	473,572	Apr. 26	2504	632	59	525
Gunther, George P. A., New York, N. Y. Fish-tank or aquarium	475,082	May 17	1915	487	59	1033
Günther, Ludwig, Schwerin, Germany. Timepiece for boiling eggs	477,252	June 21	1633	398	59	1788
Gurganus, James D. (See Carson and Gurganus.)						
Gurnee, Orlando. (See Reed and Gurnee.)						
Gurnett, Michael, Binghamton, N. Y. Adjustable track-gage	475,309	May 24	2261	583	59	1118
Guthrie, William F. (See Hume, Thomas J., assignor.)	477,537	June 21	2085	518	59	1877
Gutman, Harry J., Des Moines, Iowa. Incandescent-lamp socket	474,826	May 17	1515	387	59	954
Guttmann, Oscar, London, England. Apparatus for condensing nitric acid	472,498	Apr. 5	772	196	59	146
H. J. Heinz Company. (See Mueller, Matchett, and Eggers, assignors.)						
Haake, Julius, Radebeul, near Dresden, Germany. Paint	473,391	Apr. 19	2193	.....	59	443
Haar, John H., *et al.* (See Butler, William A., assignor.)						
Haas, Ernst F., Burlington, Iowa. Saddle	472,993	Apr. 19	1513	386	59	314
Haas, John, *et al.* (See Edgar and Rohrbach, assignors.)						
Haberlin, Herman, assignor to Webster, Camp & Lane Machine Company. Akron, Ohio. Machine for planing circular guides for engine-beds	475,939	May 31	3286	829	59	1328
Haberman, Frederick, New York, and E. Sifferlen, Maspeth, assignors to Haberman Manufacturing Company, Berlin, N. Y. Handle for vessels	475,216	May 17	2121	537	59	1074
Haberman Manufacturing Company. (See Haberman and Sifferlen, assignors.)						
Hackett, Frank M., Luverne, Minn. Machine for pressing and binding straw	477,538	June 21	2085	519	59	1877
Hackett, Isaac W. (See Fries, Richardson, and Hackett.)						
Hackh, Eugen, Stuttgart, Germany. Magnesium-light composition	476,264	June 7	55	.....	59	1448
Haddad, Antoun F. (See Khetralla and Haddad.)						
Hadley, Charles R., *et al.* (See Burton, Augustus G., assignor.)						
Hadley, Charles R., *et al.* (See Thuge, Johan A., assignor.)						
Hadley, Charles R., *et al.* (See Turck, Frederick M., assignor.)						
Hadlund, Gustaf E., Portland, Oreg. Boot or shoe	475,858	May 31	3155	800	59	1303
Haeckler, Philip, Minneapolis, Minn. Dust-collector and grain-cleaner	473,662	Apr. 26	2644	666	59	551
Haendler, Marie, New York, N. Y. Manufacture of wire ornaments	472,758	Apr. 12	1152	295	59	230
Haerem, Ommund, Houston, Tex. Pier	474,734	May 10	1361	345	59	910
Haff, Edward P. (See Lane, Spencer B., assignor.)						
Hafner, Frederick J., Philadelphia, Pa. Stringed musical instrument	474,242	May 3	550	135	59	744
Hagadorn, Frank H., and M. J. Nicol, Rochester, N. Y. Tension device for shoe-sewing machines	474,381	May 10	804	210	59	803
Hagan, William E. (See Van Patten, John, assignor.)						
Hagelin, Frank, Cleveland, Ohio. Hydrocarbon-oil burner	475,277	May 17	2217	568	59	1094
Hagemann, Otto C. (See Domeier and Hagemann.)						
Hagen, Augustus A., New York, N. Y., assignor, by mesne assignments, of seven-eighths to F. Storsberg, Newark, N. J. Fire-shield for buildings	472,479	Apr. 5	738	188	59	140
Hagen & Reid. (See Reid, James, Jr., assignor.)						
Haggar, Morya, Marshall, Tex. Gate-latch	475,554	May 24	2665	678	59	1194
Haggenmacher, Carl, Buda-Pesth, Austria-Hungary. Apparatus for sifting and sorting meal and flour. (Reissue)	11,252	June 28	2958	739, 740, 741, 742, 743, 744	59	2063
Haggerty, Francis. (See Reiff, William H., assignor.)						
Haight, Henry J., New York, N. Y. Electric indicating system and instrument	473,174	Apr. 19	1821	459	59	369
Haight, Henry J., New York, N. Y. Electric wind-vane indicator	474,735	May 10	1362	460	59	911
Haight, Oscar M., and C. F. Biffar, Rock Valley, N. Y. Boot-jack	473,740	Apr. 26	2767	345	59	574
Haight, Silas M., *et al.* (See Trump, John G., assignor.)				346		
Hailes, William, Albany, N. Y. Car-wheel	477,539	June 21	2087	519	59	1877
Haiman, Elias, assignor to S. Landauer, Atlanta, Ga. Whiffletree	475,730	May 24	2934	744	59	1245
Haines, John H. J., New York, N. Y. Packer's funnel	474,382	May 10	805	210	59	803
Haines, Louis A. (See Fralinger, Joseph F., assignor.)						
Hale, David, Boston, Mass. Valve for air-cushions	476,957	June 14	1140	275	59	1677
Hale, Francis W., Boston, Mass. Pianoforte	474,827	May 17	1518	387	59	955
Hale, Henry S., Philadelphia, Pa., assignor to Hale & Kilburn Manufacturing Company, of Pennsylvania. Car-seat	475,109	May 17	1966	388	59	1042
Hale, James W., Newburyport, Mass. Game apparatus	473,114	Apr. 19	1712	498	59	349
Hale & Kilburn Manufacturing Company. (See Hale, Henry S., assignor.)						
Hale, Perley, Chicago, Ill., assignor to C. H. Sparks, St. Louis, Mo. Safety-door for jail-corridors	475,556	May 24	2668	433	59	1195
Hale, Perley, Chicago, Ill., and C. H. Sparks, St. Louis, Mo., assignors of part to W. S. Hull, Sheffield, Ala. Electric jail	477,301	June 21	1710	678	59	1192
Haley, Fred H., Manitowoc, Wis., assignor, by mesne assignments, to I. M. Haley, Hamilton, Ill., and C. E. Darrow, Kirksville, Mo. Revolving book-case	474,556	May 10	1082	419	59	856
Haley, Ida M., *et al.* (See Haley, Fred H., assignor.)				277		
Haley, Isaac N. (See Cox and Haley.)						
Haley, Joseph A., Fort Wayne, Ind. Slide-valve	473,152	Apr. 19	1771	447	59	361
Hall, Andrew J., Carmel, Tenn., assignor of one-half to J. W. Dunn. Corn-planter	473,663	Apr. 26	2645	667	59	552
Hall, Elias S., Somerville, N. J. Manger	476,265	June 7	56	12	59	1448
Hall, Frank H. (See Klar and Hall.)						
Hall, George F., Newark, N. J. Adjustable bracket for supporting inkstands	475,056	May 17	1877	476	59	1026
Hall, George F., Newark, assignor of two-thirds to J. W. Baker, South Orange, N. J., and C. Goaling, New York, N. Y. Sole	473,214	Apr. 5	327	83	59	62
Hall, Henry B., Hero, Pa. Puddling-furnace	472,759	Apr. 12	1153	295	59	230
Hall, Joseph C., London, England. Pneumatic wheel for vehicles	476,764	June 7	803	197	59	1598
Hall, Major, assignor of one-half to J. W. Thompson, St. Paul, Minn. Well-fishing tool	477,178	June 14	1487	198, 364	59	1748

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hall, Milton, San Francisco, Cal. Bumper for vehicle-springs	477,114	June 14	1381	337	59	1726
Hall, Nellie A. (See King, Christopher C., assignor.)						
Hall, Reynold T., Merchantville, N. J. Ship's log	473,222	Apr. 19	1905	480	59	386
Hall, Walter R., San Francisco, Cal. Filing physicians' prescriptions	473,532	Apr. 26	2449	620	59	513
Hall, William S., Tokio, Japan. Wire ropeway	475,766	May 31	2990	758	59	1271
Halladay, Lewis P., Chicago, Ill., assignor to Marion Cycle Company, Marion, Ind. Bicycle	477,179	June 14	1489	364	59	1749
Hallenbeck, William, G. W. Witt, and W. Pattison, Hammondsport, N. Y. Butter stamp and cutter	474,243	May 3	551	135	59	744
Hallett, Nelson F. (See Johnston and Hallett.)						
Halstead, Benton, Riverside, Ohio. Automatic ballasting device	472,994	Apr. 19	1514	387	59	314
Halvorson, Cromwell A. B., Saugus, Mass. Incandescent-lamp socket	475,555	May 24	2666	678	59	1195
Hamann, Carl, Reinbeck, and J. A. Schmidt, Barmen, Germany. Shears	476,459	June 7	359	83	59	1507
Hambay, James T., Pittsburg, Pa. Signal	472,499	Apr. 5	773	{196 197}	59	147
Hamblen, William H., Huntsville, Tex. Tool for tightening wheel-tires	473,223	Apr. 19	1907	480	59	386
Hambloch, Hubert A., assignor to H. S. Gordon, New York, N. Y. Pianoforte-pedal	478,007	June 28	2852	713	59	2043
Hamilton, Ayrus, Fort Garland, Colo. Car-coupling	476,633	June 7	615	148	59	1559
Hamilton, Clarence J., Plymouth, Mich. Uniting barrels of air-guns. (Reissue)	11,247	June 21	2249	563	59	1908
Hamilton, James, assignor to Hunter, Patchen & Havens, Bridgeport, Conn. Piston-valve	476,228	May 31	3756	943	59	1421
Hamilton, James, assignor to Hunter, Patchen & Havens, Bridgeport, Conn. Valve-gear for engines	476,229	May 31	3757	{948 949}	59	1421
Hamilton, James B., London, England. Reed-organ	472,789	Apr. 12	1194	{306 307}	59	239
Hamilton, John H., Detroit, Mich. Water-closet	476,011	May 31	3392	856	59	1350
Hamilton, John W., Springfield, Ohio. Folding chair	472,603	Apr. 12	921	237	59	189
Hamilton, William J., assignor of two-thirds to J. W. Hoey and F. A. Wilke, Richmond, Ind. Machine for pulling driven-well pipes out of the ground	476,196	May 31	3691	{932 933}	59	1409
Hamlin, John, Washington, D. C. Veterinary tooth-cutter	475,940	May 31	3387	829	59	1329
Hammelmann, Charles, Buffalo, N. Y. Horseshoe	472,262	Apr. 5	402	104	59	75
Hammelmann, Charles, Buffalo, N. Y. Horseshoe	473,923	May 3	60	12	59	648
Hammer, Jens J., St. Louis, Mo. Velocipede	477,540	June 21	2089	{519 520}	59	1878
Hammesfahr, Ernst, Solingen, Germany. Rotary engine	477,363	June 21	1811	443	59	1821
Hammill, Charles, assignor to M. E. Page Confectionery Company, Chicago, Ill. Ice-cream dasher	474,989	May 17	1778	450	59	1006
Hammon, W. P. (See Brandley, Arnold, assignor.)						
Hammond, John, San Francisco, Cal. Railway-car	474,736	May 10	1367	346	59	912
Hammond, Joseph C., Jr., Rockville, Conn. Rubber sandal	472,118	Apr. 5	171	47	59	32
Hammond Type Writer Company. (See Pratt, John, assignor.)						
Hamner, William H., Fort Assinaboine, Mont. Cartridge-loader	476,048	May 31	3443	{869 870}	59	1361
Hanauer, Joseph, *et al.* (See Tatro, Charles P., assignor.)						
Hancock Inspirator Company. (See Church, Charles E., assignor.)						
Hand, David, Neatherwood, N. J. Rein-support	474,737	May 10	1368	346	59	912
Hand Method Finishing Machine Company. (See Thompson and Phelps, assignors.)						
Hanes, James D. (See Orton, Hanes, and Orton.)						
Hanford, Clarence C., assignor to H. C. Hanford, Medford, Mass. Spraying device for cooling beer, &c	477,859	June 28	2618	656	59	1997
Hanford, Herbert C. (See Hanford, Clarence C., assignor.)						
Hanford, Samuel, Binghamton, N. Y. Hydraulic air-compressor	474,296	May 3	640	162	59	761
Hanford-Stanford Company. (See Stanford, Charles D., assignor.)						
Hänisch, Gustav E., Benthen, Germany. Boiling and precipitating tower	477,755	June 28	2450	612	59	1966
Hankel, August, Hampton, Nebr. Device for spooling and stretching fence-wires	472,047	Apr. 5	57	14, 15	59	13
Hanley, John, Terre Haute, Ind. Folding election-booth	475,013	May 17	1815	460	59	1013
Hanney, David, Turner, Ill. Air-brake	476,880	June 14	1008	245	59	1651
Hanning, George T. (See Forbes, Alexander C., assignor.)						
Hansen, Jens, Helsingör, Denmark. Apparatus for smelting cast-iron borings, turnings, and shavings	473,741	Apr. 26	2768	695	59	574
Hansen, Marius H. and W. J., Chicago, Ill. Folding seat	475,310	May 24	2261	583	59	1119
Hansen, William J. (See Hansen, Marius H. and W. J.)						
Hansing, Siegfried, New York, N. Y. Tone-sustaining attachment for pianos	474,990	May 17	1779	450	59	1006
Hanson, James P., Oshkosh, Wis. Sawmill-carriage	472,995	Apr. 19	1517	387	59	315
Hanson, Ole, Lake Crystal, Minn. Car-coupling	473,742	Apr. 26	2769	696	59	574
Hanson, Thomas, New York, N. Y. Fluid-pressure regulator	474,244	May 3	552	136	59	745
Harbaugh, Frank P., Chambersburg, Pa. Ice-cream freezer	477,211	June 21	1549	380	59	1774
Harden, William H., assignor of one-half to W. L. Wilkinson and W. W. Walker, Quitman, Ga. Animal-trap	473,312	Apr. 19	2044	513	59	414
Hardenbergh, Abner, and W. C. Froehley, Hamburg, N. Y. Caster	473,924	May 3	61	12	59	648
Hardesty, Lorin Q. (See Summers, Kings, and Hardesty.)						
Hardie, James L. (See Cochran and Hardie.)						
Hardie, Robert W., Albany, N. Y. Disk harrow	473,115	Apr. 19	1712	434	59	349
Harding, Legrand D., Colfax, Wash. Grinding-mill	475,859	May 31	3156	{800 801}	59	1303
Harding, Thomas, San José, Cal. Machine for pitting fruit	473,838	Apr. 26	2905	730	59	601
Hardman, Fred. H., Beverly, assignor to W. E. Bennett, Boston, Mass. Button-machine	474,320	May 3	688	{178 179}	59	769
Hardman, Fred. H., Beverly, assignor to W. E. Bennett, Boston, Mass. Feed mechanism for punching-machines	474,321	May 3	692	180	59	770
Hardman, Fred. H., Beverly, assignor to W. E. Bennett, Boston, Mass. Button-machine	477,115	June 14	1382	337	59	1727
Hardman, Fred. H., Beverly, assignor to W. E. Bennett, Boston, Mass. Blank-conveyer	477,116	June 14	1384	337	59	1727
Harison, William B., New York, N. Y. Blank for book-cover protectors	473,502	Apr. 26	2370	601	59	499
Harkness, Sumner J. (See Morris and Harkness.)						
Harman, Samuel W., and J. D. Polk, Rogers, Ark.; said Polk assignor to said Harman. Dish-cleaner	477,860	June 28	2620	{656 657}	59	1997
Harper, William T., assignor to J. W. Hazen, Cambridge, Mass. Pan-conveying device	474,340	May 3	734	{191 192}	59	778
Harpin, Louis, Carrow, Ill. Check-row attachment for planters	472,996	Apr. 19	1518	387	59	315
Harrigan, Michael T., Wollaston, and J. L. Packard, Boston, assignors to J. W. Brooks, trustee, Cambridge, Mass. Rotary trimmer	473,874	Apr. 26	2972	749	59	614
Harriman, John E., Jr., Dallas, Tex., assignor of one-fourth to J. N. Webb, Washington, D. C. Mechanical attachment for pianos and organs	476,197	May 31	3692	{933 934}	59	1409
Harrington, George W., Wakefield, Mass. Lead-lined pipe	474,322	May 3	695	180	59	771
Harrington, Hiram A., Anoka, Minn. Metallic fence-post	473,925	May 3	62	12	59	648

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Harris, Andrew J., Chicago, Ill. Dental plugger	477,411	June 21	1882	463	59	1636
Harris, Benjamin S. H. (See Harris, William A. and B. S. H.)						
Harris, Charles R., Williamsport, Pa. Clasp for suspenders	473,458	Apr. 26	2309	583	59	487
Harris, Charles R., Williamsport, Pa. Suspender-buckle	475,860	May 31	3159	801	59	1304
Harris, Edward S. (See Pyke and Barnett, assignors.)						
Harris, Edwin E. (See Fletcher, Andrew H., assignor.)						
Harris, Henry H. (See Sailer, John M., assignor.)						
Harris, Hilry, Kremmlin, Colo. Water-elevator	473,573	Apr. 26	2507	633	59	525
Harris, James C., Londonderry, Pa. Butter-print machine	476,634	June 7	616	148	59	1559
Harris, John, Chicago, Ill. Boring-machine	473,153	Apr. 19	1773	448	59	361
Harris, John F., Jr. (See Lawrence, Charles P., assignor.)						
Harris, Joseph, Boston, Mass. Engine	474,557	May 10	1084	277	59	856
Harris, Levi, assignor of one-half to O. M. Allen, Sr., Kalamazoo, Mich. Vehicle-wheel box	474,245	May 3	553	136	59	745
Harris, Levi, assignor of one-half to O. M. Allen, Sr., Kalamazoo, Mich. Wheel box and axle	476,198	May 31	3697	934	59	1410
Harris, Levi, assignor of one-half to O. M. Allen, Sr., Kalamazoo, Mich. Hub-attaching device	476,199	May 31	3698	934	59	1410
Harris, Levi O., Cadillac, Mich. Cut-off governor	473,743	Apr. 26	2769	696	59	575
Harris, Orrin C., assignor of one-half to C. L. Petree, Little Falls, N. Y. Car-coupling	473,574	Apr. 26	2508	633	59	526
Harris, Richard D. (See Bjorlin, Carl G., assignor.)						
Harris, William A. and B. S. H., assignors of one-third to W. S. Thomason, Spartanburg, S. C. Air-brake coupling	472,190	Apr. 5	281	74	59	53
Harris, William T., Baltimore, Md. Metallic packing	473,313	Apr. 19	2046	513	59	414
Harris, Woodson T. (See Moore and Jory, assignors.)						
Harrison, Almer M., Columbus, Ohio. Dental tool	474,011	May 3	202	47	59	677
Harrison, Edmund, Tulare, Cal. Incubator	473,664	Apr. 26	2647	667	59	552
Harrison, Edward M., Fort Smith, Ark. Telephone	476,200	May 31	3699	935	59	1410
Harrison, George, Cleveland, Ohio, assignor to C. E. Lamb, Winthrop, Mass. Mechanism for operating brakes	473,553	Apr. 26	2450	620	59	513
Harrison Safety Boiler Works. (See Cochrane, David, assignor.)						
Harrison, William T., assignor to himself and J. Smith, Pooler, Ga. Balanced slide-valve	473,744	Apr. 26	2770	696	59	575
Harrold, Ernest E., *et al.* (See Russell, William R., assignor.)						
Harrow Spring Company. (See Brinkman, Herman M., assignor.)						
Harsh, Samuel E. (See Harter and Harsh.)						
Hart, Charles E., assignor to Stanley Works, New Britain, Conn. Drive-chain	473,392	Apr. 19	2194	551	59	443
Hart, Charles E., assignor to Stanley Works, New Britain, Conn. Drive-chain	476,635	June 7	617	{148 149}	59	1560
Hart, Charles E., assignor to Stanley Works, New Britain, Conn. Latch-handle	476,636	June 7	619	149	59	1560
Hart, Charles E., assignor to Stanley Works, New Britain, Conn. Drive-chain	476,637	June 7	620	149	59	1560
Hart, Charles E., assignor to Stanley Works, New Britain, Conn. Drive-chain coupling-link	477,895	June 28	2679	670	59	2008
Hart, Charles E., and C. A. Taplin, assignors to Stanley Works, New Britain, Conn. Drive-chain	476,201	May 31	3702	935	59	1411
Hart, Frank L., Augusta, Wis. Portable grate and mantle	474,655	May 10	1235	{315 316}	59	886
Hart, Frederick, Poughkeepsie, N. Y. Adjustable bearing	475,311	May 24	2264	583	59	1119
Hart, Frederick, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Governor	472,293	Apr. 5	448	116	59	84
Hart, George P., New Britain, Conn. Manufacture of drive-chain links	474,086	May 3	323	77	59	699
Hart, Howard S., New Britain, Conn. Hinge	473,175	Apr. 19	1826	460	59	376
Hart, Howard S., New Britain, Conn. Hook	477,655	June 28	2289	573	59	1933
Hart, Thomas J., assignor to Sherwood Manufacturing Company, Buffalo, N. Y. Injector	474,991	May 17	1780	450	59	1007
Harter, John M., and S. E. Harsh, Wabash, Ind. Overcheck-loop for bridles	476,638	June 7	621	149	59	1560
Hartford, Arthur J., New York, N. Y., assignor to Railway Improvement Company, of Illinois. Railway-tie	478,058	June 28	2931	732	59	2057
Hartford Sanitary Manufacturing Company. (See Millard, Herbert B., assignor.)						
Hartley, William, Jr., Lonsdale, R. I. Machine for drying textile fiber	474,087	May 3	325	77, 78	59	700
Hartman, Benjamin F. (See Harvey and Hartman.)						
Hartman, Henry A., Philadelphia, Pa. Holding-strap for cars	473,255	Apr. 19	1954	490	59	396
Harvey, Charles A., New York, N. Y., assignor to Harvey Fastening Company, of New Jersey. Shoe-fastening	474,043	May 3	256	62	59	687
Harvey Fastening Company. (See Harvey, Charles A., assignor.)						
Harvey, Francis B., Pickering, Pa. Harrow and roller	473,746	Apr. 26	2772	697	59	575
Harvey, Francis B., and B. F. Hartman, Pickering, Pa. Combined harrow and corn-planter	476,141	May 31	3599	{909 910}	59	1392
Harvey, Francis B., and B. F. Hartman, Pickering, Pa. Combined roller and harrow	476,142	May 31	3601	910	59	1392
Harvey, George H., Philadelphia, Pa. Ingrain carpet fabric	472,215	Apr. 5	328	85	59	62
Harvey, George H., Philadelphia, Pa. Woven fabric and weaving the same	472,216	Apr. 5	330	85	59	62
Harvey, George L., Chicago, Ill. Slack-adjuster for car-brakes	477,842	June 28	2595	650	59	1993
Harvey L. Hopkins Company. (See Hopkins, Harvey L., assignor.)						
Harvey, Patrick, Chicago, Ill. Siphon for water-closet tanks	477,841	June 28	2592	650	59	1992
Haselwander, Frederic, Frankfort, Germany. Lightning-arrester	477,656	June 28	2290	573	59	1933
Haskell, Charles P., Wichita, Kans. Corn-harvester	473,926	May 3	63	13	59	648
Haskins, Alfonzo, A. R. Schulenburg, and C. T. Chadwick; said Haskins assignor of one-eighth to C. C. Loomis, San Diego, Cal. Bituminous-rock-disintegrating steam-boiler	475,278	May 17	2218	569	59	1094
Haskins, Roselle W. (See Hockley, Edgar A., assignor.)						
Haslam, Henry, assignor to J. A. Traut, New Britain, Conn. Beam-compasses	476,380	June 7	241	59	59	1484
Haslup, Gilbert A., Laurel, Md. Car-coupling	472,877	Apr. 12	1312	337	59	902
Hassé, Julius C., Detroit, Mich. Hanger for garments	477,412	June 21	1884	463	59	1936
Hastings, Henry M., Cooksville, Ill. Grain-conveyer	472,454	Apr. 5	696	178	59	131
Haswell, Alexander E. and A. G., Vienna, Austria-Hungary. Coating metals and alloys with oxides	476,639	June 7	621	.....	59	1560
Haswell, Arthur G. (See Haswell, Alexander E. and A. G.)						
Hatch, Charles J., Bayonne, N. J. Seesaw	477,052	June 14	1283	{311 312}	59	1707
Hatch, John R., Sugar Lake, Mo. Traction-engine	474,738	May 10	1369	347	59	912
Hatfield, Albert L., Newark, N. J. Bottle-filling machine	476,795	June 14	866	213	59	1622
Hatfield, James I., Irwinton, Ga. Plow	472,348	Apr. 5	538	139	59	100
Hatfield, Thomas J., Dublin, Ind., assignor of one-half to J. C. Benson, Alcony, Ohio. Grain-cleaner	477,594	June 21	2170	538	59	1894
Hathaway, Philip, New York, N. Y. Medical battery	474,828	May 17	1521	388	59	955
Hauck, Albert, Jewett, Ohio. Door-stop	475,686	May 24	2355	721	59	1232

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Haug, John, Norristown, Pa. Propeller-dam for twin screw vessels	473,745	Apr. 26	2771	696, 697	59	575
Hausold, Alwin. (See Palmer, Arthur, assignor.)						
Haven, James L. (See Matthews, Edwin S., assignor.)						
Havenstrite, David J. (See Hodges and Havenstrite.)						
Hawes, William L., Cincinnati, Ohio. Running-gear for vehicles	476,535	June	466	111	59	1529
Hawes, William L., assignor to Dash and Carriage Goods Company, Cincinnati, Ohio. Dash for vehicles	474,634	May 10	1202	306	59	879
Hawk, Hale E., Bucyrus, Ohio. Weighing and bagging machine	472,455	Apr. 5	697	178, 179	59	132
Hawkins, Edward S., assignor of one-half to E. G. S. Miller, Buffalo, N. Y. Car-coupling	474,992	May 17	1783	450, 451	59	1007
Hawkins, Frederick H., New York, N. Y. Combined sink and washtub	475,941	May 31	3288	830	59	1329
Hawkins, John T., Taunton, Mass. Combined calendar and desk article	474,449	May 10	920	236	59	825
Hawkins, William C., Taunton, Mass. Calendar	475,500	May 24	2573	655	59	1177
Hawkins, William C., Taunton, Mass. Calendar	475,501	May 24	2574	656, 657	59	1178
Hawkins, William C., Taunton, Mass. Calendar	475,502	May 24	2582	657	59	1179
Hawley, Lew M., Schenectady, N. Y. Trap and siphon	475,396	May 24	2404	614	59	1146
Hawley, Mary A., Dixon, Ill. Device for applying insecticides	472,456	Apr. 5	702	179	59	133
Hawley, Robert C., Pueblo, Colo. Ore-sampling device	475,557	May 24	2679	679	59	1195
Haworth, Charles N., Promise City, Iowa. Hay-stacker	474,246	May 3	554	136	59	745
Haworth, George D., Chicago, Ill. Fertilizer-distributer	474,635	May 10	1203	307	59	879
Haworth, William M., Decatur, Ill. Flushing apparatus for waste-pipes	476,012	May 31	3393	856	59	1350
Hawthorne, Samuel R., Middlebury, Vt. Roof	476,381	June 7	242	59	59	1484
Hay, A. W., *et al.* (See Starks, John, assignor.)						
Hay, Gilbert, assignor to himself and E. Jacobs, Madison, Nebr. Staple-driving machine	477,117	June 14	1396	337	59	1727
Hay, John C., assignor to himself and S. Oettinger, Kinston, N. C. Lumber-drier	473,116	Apr. 19	1714	434	59	349
Hayden, James, Philadelphia, Pa. Necktie-fastener	473,154	Apr. 19	1777	449	59	362
Hayden, James T., assignor to Crane Company, Chicago, Ill. Valve-indicator	477,003	June 14	1204	292	59	1691
Hayden, James T., assignor to Crane Company, Chicago, Ill. Low-water alarm	477,004	June 14	1205	292, 293	59	1691
Hayes, Calvin Q., Sioux City, Iowa. Self-loading cart	475,687	May 24	2855	722	59	1232
Hayes, Charles E., and H. L. Millay, Springview, Nebr. Folding umbrella or parasol	472,457	Apr. 5	703	179	59	133
Hayes, Edward, Rochester, N. Y. Regulator	477,253	June 21	1634	398	59	1788
Hayes, Eli B., Oshkosh, Wis. Sash-machine	476,202	May 31	3703	935, 936	59	1411
Hayes, Eli B., Oshkosh, Wis. Cut-off saw	477,756	June 28	2452	613	59	1966
Hayes, Hammond V., Cambridge, assignor to American Bell Telephone Company, Boston, Mass. Telephone-circuit	474,323	May 3	696	181	59	771
Hayes, Henry B., Woburn, Mass. Sash-holder	477,801	June 28	2517	632	59	1978
Hayes, John A., Rogers, Ark. Hay-press	472,349	Apr. 5	540	139, 140	59	101
Hayes, Thomas R. (See Stetson, Alva M., assignor.)						
Haynes, Tilly, Boston, Mass. Centrifugal drier	477,413	June 21	1885	464	59	1837
Haynes, William, Chicago, Ill. Bridge-gate	474,125	May 3	370	89	59	709
Hays, John W., Clinton, Ill. Harrow	477,541	June 21	2090	520	59	1878
Hays, Morris, Monmouth, Ill. Hand fence-machine	472,167	Apr. 5	242	64	59	46
Hayton, John W., and S. H. Swift, Taylor, Tex. Cabinet-bed	476,923	June 14	1077	259, 260	59	1665
Hayward, Isaac H., Lawrence, Mich. Wheel-chock	472,997	Apr. 19	1519	388	59	315
Hayward, Thomas J., *et al.* (See Austin, John T., assignor.)						
Hayward, Thomas S. (See Sigsbee, Hayward, and Anderson.)						
Hazelton, Ivory, Philadelphia, Pa. Car-coupling	477,414	June 21	1886	464	59	1837
Hazen, James W. (See Harper, William T., assignor.)						
Hazzard, Miley, Kansas City, Mo. Coin-mailing grip	475,397	May 24	2406	614	59	1146
Head, Winfield S. (See Thurston, James B., assignor.)						
Heaphy, John W., Jr., assignor to F. G. Kimman, Rochester, N. Y. Stove-door knob	474,471	May 10	946	244	59	830
Heard, James, Delta, Colo. Tool for operating on wires of fences	477,005	June 14	1208	293	59	1691
Heartfield, Charles H., *et al.* (See Heartfield, Henry, assignor.)						
Heartfield, Henry, Croydon, assignor of two-thirds to T. Webb, Stockport, England, and C. H. Heartfield, New York, N. Y. Machine for filling and corking bottles	474,044	May 3	258	63	59	687
Heartley, George W., Toledo, Ohio. Eaves-trough hanger	472,294	Apr. 5	449	116	59	85
Heath, Clarence V., and A. G. Milzer, Sacramento, Cal. Car-ventilator	474,247	May 3	555	136, 137	59	745
Heath, Edward E. (See Richard, Ogden, and Heath.)						
Heath, Frederick H., Minneapolis, Minn., assignor to Heath Rail Joint Company, Waterloo, Iowa. Truss-rail-joint fastening	474,126	May 3	373	90	59	709
Heath, Frederick H., Minneapolis, Minn., assignor to Heath Rail Joint Company, Waterloo, Iowa. Rail-chair, tie-plate, truss-joint, and joint-fastening	474,127	May 3	374	90	59	710
Heath, Frederick H., Minneapolis, Minn., assignor to Heath Rail Joint Company, Waterloo, Iowa. Combined rail-brace and truss-fastening for rail-joints	474,128	May 3	376	90	59	710
Heath, Frederick H., Minneapolis, Minn., assignor to Heath Rail Joint Company, Waterloo, Iowa. Rail-joint	474,129	May 3	378	91	59	711
Heath, George S., Springfield, Mass. Type-writing machine	475,057	May 17	1879	476	59	1026
Heath, Henry, Brooklyn, assignor to H. G. Fisk, T. R. Clark, and T. J. Flagg, New York, N. Y. Necktie	478,008	June 28	2853	713	59	2049
Heath Rail Joint Company. (See Heath, Frederick H., assignor.)						
Heath, Samuel P., Saginaw, Mich. Car-coupling	472,350	Apr. 5	541	140	59	101
Heath, Samuel P., Saginaw, and T. Burr, Detroit, Mich.; said Burr assignor to said Heath. Car-coupling	475,239	May 17	2162	550	59	1062
Heaton, Eva, Holly Beach, N. J. Stage effect	473,927	May 3	67	13	59	649
Hebron, Charles R., assignor of five-sevenths to C. J. Everson, Denver, Colo., M. W. Hutchinson, Topeka, Kans., and C. T. Brown, Chicago, Ill. Concentrating ores	474,829	May 17	1523	388, 389	59	956
Heckert, Frank L. (See Heckert, Thomas, and Heckert.)						
Heckert, William, W. J. Thomas and F. L. Heckert, Findlay, Ohio. Furnace for iron-working	475,398	May 24	2408	614	59	1146
Heckman, John K., *et al.* (See Kemmerer, John N., assignor.)						
Heckman, Milton O., Reading, Pa. Hatchet	474,908	May 17	1640	419	59	980
Hecox, John H., Westborough, Mass. Machine for softening cotton braid	473,747	Apr. 26	2774	697	59	576
Hedgeland, Frederick W., Chicago, Ill. Pneumatic action for organs	476,796	June 14	867	214	59	1623
Hedgeland, Frederick W., Chicago, Ill. Miter-clamp	477,254	June 21	1636	399	59	1788
Hedgeland, Frederick W., assignor to W. W. Kimball Company, Chicago, Ill. Qualifying-box for bass-reeds of organs	472,998	Apr. 19	1519	388	59	316

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Hedgeland, Frederick W., assignor to W. W. Kimball Company, Chicago, Ill. Device for throwing couplers of organs into action	476,266	June 7	57	12	59	1449
Hedgeland, Frederick W., assignor to W. W. Kimball Company, Chicago, Ill. Organ-coupler	476,267	June 7	58	12	59	1449
Hedin, Nels P. (See Quarnström, Charles E., assignor.)						
Hegler, Lizzie, Toronto, Canada. Dish-cleaner	477,415	June 21	1886	464	59	1837
Helland, Lawrence, and C. E. Bronson, Defiance, Ohio. Fence-post	472,705	Apr. 12	1079	277	59	216
Heirs, Benjamin F. (See Compton, Richard W., assignor.)						
Heisler, Charles L., Dunkirk, N. Y. Boot-treeing machine	476,460	June 7	359	84	59	1507
Heithecker, August, Long Island City, N. Y. Pressure-regulating valve	475,217	May 17	2122	537	59	1074
Heithersay, William, *et al.* (See Russell, William R., assignor.)						
Helbing, Theodore O., assignor of one-fourth to D. Roach, Cadillac, Mich. Fireman's respirator	472,048	Apr. 5	58	15	59	14
Held, Heinrich G., Zwolle, Netherlands. Means for preventing collisions on railways	477,212	June 21	1550	380, 381, 382, 383	59	1774
Held, Julious H., and W. H. Gruenhagen, St. Paul, Minn. Heating-drum	474,656	May 10	1237	316	59	886
Heliocaustic Art Company. (See Müller-Jacobs, Armand, assignor.)						
Hellinger, Adolph, St. Louis, Mo. Regulating propellers of vessels	474,169	May 3	436	105, 106	59	722
Helms, Allen W., Aylesworth, Ind. Bridle-bit	475,110	May 17	1967	498	59	1043
Helton, Walter R. (See Coates and Helton.)						
Hemingway, William, Philadelphia, Pa. Baling-press	472,049	Apr. 5	59	15	59	14
Hemmenway, Edward A. (See Bray and Hemmenway.)						
Hendershot, Theodore H., Griswold, Iowa. Grain-adjuster	475,861	May 31	3160	802	59	1304
Henderson, James, assignor to Sheffield Velocipede Car Company, Three Rivers, Mich. Car-truck	472,923	Apr. 12	1384	355	59	278
Henderson, John H., and E. Schutz, Sierra City, Cal. Hydraulic air-compressor	475,111	May 17	1968	498, 499	59	1043
Henderson, John S., Macon, Ga. Work guiding and grooving attachment for sewing-machines	477,896	June 28	2680	670	59	2008
Henderson, John W., assignor to Wharton Railroad Switch Company, Philadelphia, Pa. Electrical indicator	472,500	Apr. 5	774	197	59	147
Henderson, Thomas, Dallas, Tex. Combined pump and motor	474,248	May 3	556	137	59	746
Hendryx, Andrew B., New Haven, Conn. Fishing-reel	473,665	Apr. 26	2648	668	59	552
Hendryx, Andrew B., New Haven, Conn. Fishing-reel	473,700	Apr. 26	2704	680	59	562
Hendryx, Andrew B., New Haven, Conn. Fishing-reel	476,536	June 7	467	111	59	1529
Henger, Paul, Stuttgart, Germany. Surgical instrument	474,130	May 3	381	91	59	712
Henley, Hattie M. (See Kayne, Thomas Y., assignor.)						
Henneberg, Hermann O., assignor to Siemens & Halske, Berlin, Germany. Adjustable microphone	472,806	Apr. 12	1215	312	59	243
Henneberg, Wilhelm. (See Pape and Henneberg.)						
Hennebery, Edward, Duluth, Minn. Excavating and shoveling machine	477,933	June 28	2735	685	59	2020
Hennegin, Herbert H., St. Louis, Mo. Sand-box for cars	473,070	Apr. 19	1634	416	59	336
Henney, James, Cloverport, Ky. Brick-kiln	477,364	June 21	1813	443	59	1822
Henney, John W. (See Saladee, Cyrus W., assignor.)						
Hennig, Henry, Paterson, N. J. Tea or coffee strainer	473,626	Apr. 26	2593	652	59	541
Henning, Carl. (See Michaëlis and Henning.)						
Henry Huber Company. (See Beaumont, Thomas C., assignor.)						
Henry, James E., Zealand, N. H. Logging-car	473,748	Apr. 26	2775	698	59	576
Henry, William G. (See Stringer, William G., assignor.)						
Henshaw, Francis T. (See Adams and Henshaw.)						
Henson, Joseph W., assignor of one-half to N. E. Jennison, La Grange, Ill. Bill and letter file	474,776	May 10	1423	362	59	923
Heppe, Alexander, Bradford, Pa. Range or stove	476,143	May 31	3603	911	59	1393
Heraeus, Heinrich, *et al.* (See Küch, Richard, assignor.)						
Heraeus, Wilhelm, *et al.* (See Küch, Richard, assignor.)						
Heraeus, Wilhelm C., *et al.* (See Küch, Richard, assignor.)						
Herlt, Franz, and J. Hirschmann, Philadelphia, Pa. Valve-gear for engines	475,942	May 31	3290	830, 831	59	1329
Hermida, Joaquin A., *et al.* (See O'Kelly, James M., assignor.)						
Herman, Charles F., Tobias, Nebr. Cut-off for watering-troughs	473,749	Apr. 26	2776	698	59	576
Hermann, Samuel, Cincinnati, Ohio. Trunk or case	472,119	Apr. 5	172	47	59	32
Herndon, George P., Birmingham, Ala. Upper for boots or shoes	473,314	Apr. 19	2047	514	59	415
Héroult, Paul, Lauffen, Switzerland, assignor to United States Aluminium Metal Company, of New York. Apparatus for producing aluminium or other metals	473,118	Apr. 19	1716	435	59	350
Héroult, Paul, Neuhausen, Switzerland, assignor to United States Aluminium Metal Company, of New York. Electrode for use in electro-metallurgical processes	473,117	Apr. 19	1715	434	59	350
Héroult, Paul L. T., Schaffhausen, Switzerland, assignor to United States Aluminium Metal Company, of New York. Electrode	473,393	Apr. 19	2195	551	59	443
Herran y Bolado, José, Aguas Calientes, Mexico. Calculator	475,177	May 17	2063	519	59	1062
Herrenschmidt, Henri L., Petit Quevilly, near Rouen, France. Treating mattes and ores	475,558	May 24	2672	.....	59	1196
Herrick, Albert B. (See Hutchinson and Herrick.)						
Herrick, Albert B., Bayonne, N. J. Rheostat	474,957	May 17	1718	437	59	996
Herring, Rudolph, Jr., Brooklyn, N. Y. Swivel for fishing-lines	473,503	Apr. 26	2371	601	59	499
Herrington, Charles R., assignor to J. K. Mower, Springfield, Ohio. Cash-carrier	472,924	Apr. 12	1385	355, 356	59	278
Hersey Manufacturing Company. (See Winton, Henry D., assignor.)						
Hertwig, Theodor, New York, N. Y. Slip cover-fastener	474,525	May 10	1033	265	59	847
Hervieu, Jules M. R. (See Demange and Hervieu.)						
Herzberg, Morris, Chambers county, Ala. Combination implement	474,012	May 3	263	47, 48	59	677
Hess, Alice G. (See Hess, Emil G. and W., assignors.)						
Hess, Edwin C., Camden, N. J. Telephone-receiver	473,256	Apr. 19	1955	490	59	396
Hess, Emil G. and W., assignors to A. G. Hess, West Toronto Junction, Canada. Machine for finting wooden knobs	474,383	May 10	807	211	59	804
Hess, George W. (See Derr and Hess.)						
Hess, William. (See Hess, Emil G. and W.)						
Hessong, James, Chillicothe, Ohio. Device for adjusting the pitch of sulky-bodies	475,218	May 17	2124	537	59	1075
Hetherington, Frederick A., assignor of one-half to T. E. Hibben, Indianapolis, Ind. Film or plate carrier	476,208	May 31	3706	936	59	1412
Heuser, Gustav, Brooklyn, N. Y. Button	477,802	June 28	2518	632	59	1978
Hewitt, William, assignor to Trenton Iron Company, Trenton, N. J. Grip mechanism for cable-ways	474,249	May 3	557	137, 138	59	746

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Heydenreich, Ernst C., Mount Clemens, Mich. Plug-cutter	475,559	May 24	2673	679	59	1196
Heydenreich, Ernst C., Mount Clemens, Mich. Plug-cutter	475,560	May 24	2674	679	59	1196
Hibben, Thomas E. (See Hetherington, Frederick A., assignor.)						
Hickerson, Samuel C., assignor of one-half to E. L. James, Malta, Ohio. Nut-lock	476,382	June 7	243	59	59	1484
Hickman, James W. (See Reed, Lewis M., assignor.)						
Hickman, Willie, Cherry Camp, W. Va. Life boat and raft	473,294	Apr. 19	1908	481	59	386
Hicks, Henry C., St. Paul, Minn. Combined bench and truck	476,268	June 7	59	13	59	1449
Hicks, Horatio F., Ashland, Oreg. Ore-concentrator	477,334	June 28	2737	686	59	2020
Hien, Phillip, Chicago, Ill. Car-coupling	476,958	June 14	1141	275	59	1677
Hieronymus, Jasper N., Fairbury, Ill. Wood-joint	477,118	June 14	1387	338	59	1727
Higgens, John L., Diona, Ill. Gate	474,250	May 3	560	138	59	747
Higginbottom, Lloyd. (See Smith, Goddard, Higginbottom, and Mannock.)						
Higgins, Charles S., assignor to M. F. B. Higgins, Brooklyn, N. Y. Coupling-hook	476,013	May 31	3394	856	59	1350
Higgins, Charles S., assignor to M. F. B. Higgins, Brooklyn, N. Y. Soap-holder	476,014	May 31	3395	856	59	1350
Higgins, Crafts W., assignor to Schuttler Manufacturing Company, Chicago, Ill. Ratchet-drill	472,120	Apr. 5	173	47	59	32
Higgins, Edward S., and H. C. Jenkins, London, England. Inking device for type-writing machines	472,909	Apr. 19	1520	388	59	316
Higgins, George H., *et al.* (See Cobham, Frederick P., assignor.)						
Higgins, Joseph C., and T. Lea, assignors of one-twentieth to A. V. Baldwin, New Brunswick, N. J. Expansible horseshoe-calk	477,542	June 21	2091	520	59	1878
Higgins, Mary F. B. (See Higgins, Charles S., assignor.)						
Higham, Charles C., St. Louis, Mo., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Locomotive-engine frame	475,112	May 17	1972	499	59	1043
Higham, John, Oakland, Cal. Baby-jumper	472,351	Apr. 5	542	140	59	101
Hilborn, Louis B., assignor of one-half to H. G. Underwood, Milwaukee, Wis. Inhaler and vaporizer	473,225	Apr. 19	1909	481	59	386
Hildner, Christian, *et al.* (See Trump, John G., assignor.)						
Hilgard, Ernest F. (See Smith, Stephen R., assignor.)						
Hill, Alanson G., Kendallville, Ind. Bee-smoking apparatus	478,006	June 28	2851	713	59	2042
Hill, Andrew G., deceased, Prescott, Canada; T. E. Bissell, administrator. Disk cultivator	473,257	Apr. 19	1957	491	59	397
Hill, Charles B. (See Stokoe, John M., assignor.)						
Hill, Charles E. (See Close, Walter R., assignor.)						
Hill, David H., Philadelphia, Pa. Circular-knitting machine	475,058	May 17	1880	476, 477	59	1026
Hill, Edgar J., Troy, Pa. Reel	472,263	Apr. 5	403	104	59	75
Hill, Elias M., assignor of one-half to H. Bradly, Pittsburg, Pa. Nut-lock	472,706	Apr. 12	1080	277	59	216
Hill, Elijah W. (See Wyatt, Daniel M., assignor.)						
Hill, George W., Brooklyn, N. Y. Waxing or waterproofing shoe-counters	474,013	May 3	205	48	59	677
Hill, Harry J., Perry's Mills, N. Y. Poison-distributer	477,119	June 14	1389	338	59	1728
Hill, Harry W., Cleveland, Ohio. Clutch	476,640	June 7	622	150	59	1560
Hill, Harry W., Cleveland, Ohio. Clutch	476,641	June 7	625	151	59	1561
Hill, Harry W., Cleveland, Ohio. Pillow-block	477,543	June 21	2092	520	59	1878
Hill, Hugh W., Decatur, Ill. Hog-ring pinchers	475,767	May 31	2992	759	59	1271
Hill, James F., Fleetwood, Pa. Air and steam coupling for railway-cars	472,807	Apr. 12	1216	312, 313	59	243
Hill, James W., St. Louis, Mo. Combined order-book, file, and coupon system	473,875	Apr. 26	2973	750	59	614
Hill, John W., Chicago, Ill. Mechanical movement	472,539	Apr. 12	834	213	59	172
Hill, Louis, Waterbury, Conn. Compound for insulating electric wires	472,352	Apr. 5	543	.....	59	101
Hill, Nicholas S. (See Swain, James E., assignor.)						
Hill, Thomas E., Railway, assignor of one-half to W. T. Bothwell, Jersey City, N. J. Railway signal mechanism	472,808	Apr. 12	1218	313	59	243
Hill, Warren, Chicago, Ill. Toilet powder-box	472,217	Apr. 5	332	85	59	62
Hill, Warren, assignor of one-third to E. Chiles, Chicago, Ill. Perfume-holder	476,269	June 7	61	13	59	1450
Hill, William H. (See Cummings and Hill.)						
Hill, William H., Atlanta, Ga. Gold-concentrator	474,014	May 3	206	48	59	677
Hilliard, Frank R., *et al.* (See Beckwith, Theodore A., assignor.)						
Hilliard, John S., Philadelphia, Pa. Adding-machine	477,416	June 21	1887	464	59	1837
Hillhouse, Charles B. (See Stoner, John B., assignor.)						
Hills, Addison K., Erie, Pa. Coal-cleaner	474,045	May 3	262	64	59	688
Hills, James E. (See Williams, Frank E., assignor.)						
Hills, Robert E. (See Delaney and Hills.)						
Hilton, Frederick S., South Framingham, Mass. Fall-hook	472,353	Apr. 5	544	141	59	102
Hilton, John. (See Ratcliffe, Hilton, and Mellor.)						
Him, Jean J., Paris, France. Walking-stick, &c	476,015	May 31	3397	857	59	1351
Hinckley, Howard, Trenton, N. J. Slack take-up for car-brakes	475,014	May 17	1816	460, 461	59	1013
Hinckley, Howard, Trenton, N. J. Automatic car-brake attachment	475,015	May 17	1818	461	59	1014
Hindman, Joseph A., Iuka, Ill. Device for securing animals	474,251	May 3	561	138	59	747
Hinds, Jesse L., assignor to Electric Engineering and Supply Company, Syracuse, N. Y. Electric switch	477 595	June 21	2172	539	59	1894
Hine, Charles M., Pittsburg, assignor to H. D. Shields, Allegheny county, Pa. Sewing-machine	477,302	June 21	1714	419, 420	59	1803
Hines, Amos J. (See Nolley, David D., assignor.)						
Hinkelman, Louis, Albany, N. Y. Self loading and dumping sleigh	477,365	June 21	1814	443	59	1822
Hinkle, Leonard, Indianapolis, Ind. Combination-tool	474,384	May 10	808	211	59	804
Hinkley, George M., assignor of one-half to Edward P. Allis Company, Milwaukee, Wis. Saw-guide	477,861	June 28	2622	657	59	1997
Hinman, Clement F., and M. G. Bunnell, assignors to F. C. Austin, Chicago, Ill. Dumping-wagon	475,312	May 24	2264	583, 584	59	1119
Hinman, Clement F., and M. G. Bunnell, assignors to F. C. Austin, Chicago, Ill. Fifth-wheel	475,313	May 24	2267	584	59	1118
Hinman, Portus M., Rochester, N. Y., and J. B. Thompson, assignors to said Thompson and W. F. Smith, Providence, R. I. Ice-cream freezer	475,240	May 17	2163	550	59	1082
Hinsdale, William R., Newark, N. J. Ingot-protector	476,383	June 7	245	59	59	1484
Hinze, Carl, Des Moines, Iowa. Sounding-board for pianos	472,878	Apr. 12	1314	337	59	263
Hipwell, Harry H., Long Island City, N. Y. Lamp-wick raiser	472,354	Apr. 5	544	141	59	102
Hipwell, Thomas, Long Island City, assignor to Manhattan Brass Company, New York, N. Y. Lamp-shade support	472,790	Apr. 12	1195	307	59	239
Hipwell, Thomas, Long Island City, assignor to Manhattan Brass Company, New York, N. Y. Lamp	477,366	June 21	1815	443, 444	59	1822
Hirsch, Isaac, Chicago, Ill. Manufacturing cutlery	475,314	May 24	2268	.....	59	1120
Hirsch, Isaac, Chicago, Ill. Die and machine for rolling cutlery	475,315	May 24	2269	584	59	1120

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Hirsch, Robert, and H. Meminger, Milwaukee, Wis. Commutator-brush	474,600	May 10	1150	.....	59	869
Hirschmann, Christoph, assignor to H. Foerster, Newark, N. J. Skate	475,241	May 17	2165	550	59	10c2
Hirschmann, Josef. (See Herlt and Hirschmann.)						
Hiss, William J., *et al.* (See Spofford, Charles, assignor.)						
Hitchcock, Halbert K., Louisville, Ky., assignor of one-half to C. W. Kellogg, Brookline, Mass. Electric switch	473,504	Apr. 26	2372	601, 602	59	490
Hitchcock, J. W. (See Strant, Hooper B., assignor.)						
Hixson, Robert O., Russellville, Ind. Grain-door for cars	475,449	May 24	2490	635	59	1161
Hoadley, George M., and S. A. Bemis, Springfield, Mass. Railway-car	477,935	June 28	2738	686	59	2021
Hoadley, Joseph H., San Francisco, Cal. Steam-generator	474,385	May 10	809	211	59	804
Hoadley, Joseph H., San Francisco, Cal. Porcupine steam-generator	474,386	May 10	811	212	59	804
Hobart, Alvah S., Yonkers, N. Y. Combination-lock	476,642	June 7	627	151	59	1561
Hobrecker, John, Jr. (See Newby, Albert S., assignor.)						
Hochheimer, John, Hamilton, Ohio. Calendar	476,461	June 7	362	84	59	1507
Hochheimer, John, Hamilton, Ohio. Calendar	476,462	June 7	365	85	59	1508
Hock, Henry W., assignor of one-half to W. S. McManus, Chester, Pa. Grinding attachment for sewing-machines	473,000	Apr. 19	1523	389	59	316
Hock, Henry W., assignor of one-half to W. S. McManus, Philadelphia, Pa. Safety attachment for purses	475,503	May 24	2583	657	59	1179
Hockley, Edgar A., assignor of one-half to R. W. Haskins, Ouray, Colo. Ore-concentrator	477,936	June 28	2741	687	59	2021
Hodges, Clarence B. (See Hodges, Henry C. and C. B.)						
Hodges, Henry C. and C. B., Detroit, Mich. Car-truck	477,657	June 28	2291	574	59	1933
Hodges, Horace F., and D. J. Havenstrite, Boston, Mass. Condenser for refrigerating or ice-making machines	473,876	Apr. 26	2975	750	59	614
Hodgson, William H., Winona, Minn. Furnace	476,270	June 7	62	13	59	1450
Hodgson, William H., Winona, Minn. Mold-board-shaping press	476,271	June 7	63	13	59	1450
Hoe, Robert, *et al.* (See Crowell, Luther C., assignor.)						
Hoeffler, Adolph, and F. L. G. Chapman, Stevens Point, Wis. Vehicle-axle	473,189	Apr. 19	1849	466	59	374
Hoeller, Otto A., Cincinnati, Ohio. Surgical knife	476,272	June 7	65	14	59	1450
Hoelscher, Herman M., assignor to L. Wolff Manufacturing Company, Chicago, Ill. Portfolio	472,264	Apr. 5	406	104	59	76
Hoerschelmann, Valentine, Brooklyn, N. Y. Refrigerator	477,803	June 28	2519	632	59	1978
Hoerschelmann, Valentine, Brooklyn, N. Y. Refrigerator	477,804	June 28	2520	632	59	1979
Hoey, John W., *et al.* (See Hamilton, William J., assignor.)						
Hoff, Bogdan, Jaroslau, and J. Frommel, Pawlosiow, Austria-Hungary. Rectifying apparatus	475,961	May 31	3322	838	59	1335
Hoff, Charles, Cincinnati, Ohio. Soap-press	473,505	Apr. 26	2375	602	59	499
Hoff, Peter, assignor of three-fourths to E. E. Bryant, G. H. Barnes, and E. H. Gillman, Detroit, Mich. Car-coupling	476,016	May 31	3398	857	59	1351
Hoffman, John, and H. F. Turner, Oakley, Kans. Wind-motor	477,544	June 21	2093	521	59	1879
Hoffman, John W. (See Gordon, William M., assignor.)						
Hoffman, Rose J., Binghamton, N. Y. Speed-regulator	472,355	Apr. 5	545	141	59	102
Hoffmann, Carl, Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Apparatus for rock-boring	474,297	May 3	642	162	59	761
Hoffmann, Hermann H., Chicago, Ill. Bill-holder	472,576	Apr. 12	880	226	59	182
Hoffmann, Meinhard, Mainkur, near Frankfort-on-the-Main, assignor to L. Cassella & Co., Frankfort-on-the-Main, Germany. Manufacture of yellow dyes	472,121	Apr. 5	175	.....	59	33
Hoffmann, Meinhard, Mainkur, near Frankfort-on-the-Main, assignor to L. Cassella & Co., Frankfort-on-the-Main, Germany. Dyeing black	473,928	May 3	68	.....	59	649
Hofheimer, Maurice, assignor of one-half to C. M. Becker, New York, N. Y. Street-sign	472,050	Apr. 5	61	16	59	14
Hofman, John, Rochester, N. Y. Show-case corner	474,015	May 3	208	48, 49	59	678
Hofmann, Emil, assignor to Craighead & Kintz Company, Ballard Vale, Mass. Adjustable armature for electro-magnets	472,480	Apr. 5	740	188	59	140
Hogan Engineering Company. (See Hogan, John J., assignor.)						
Hogan, George P., Chicago, Ill. Spool for carrying and applying gold-leaf	472,051	Apr. 5	62	16	59	14
Hogan, James T., Jersey City, N. J., assignor to National Machine Company, Troy, N. Y. Sewing-machine for stitching buttonholes	472,501	Apr. 5	775	197, 198	59	147
Hogan, John J., Brooklyn, assignor to Hogan Engineering Company, New York, N. Y. Split-pulley clamp	473,459	Apr. 26	2309	584	59	487
Hogan, John J., Brooklyn, assignor to Hogan Engineering Company, New York, N. Y. Plumber's-safe connection	473,460	Apr. 26	2310	584	59	487
Hogan, John J., Brooklyn, assignor to Hogan Engineering Company, New York, N. Y. Tank connection	473,461	Apr. 26	2311	584	59	488
Hogan, John J., Brooklyn, assignor to Hogan Engineering Company, New York, N. Y. Coupling for pipes with flared ends	473,462	Apr. 26	2312	585	59	488
Hogan, John J., Brooklyn, assignor to Hogan Engineering Company, New York, N. Y. Pipe-turning tool	473,877	Apr. 26	2977	750	59	615
Hogan, Thomas J., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Air-brake	473,839	Apr. 26	2908	731	59	602
Hogarth, James, Kirkcaldy, Scotland. Mechanism for testing and recording the properties of flour	474,636	May 10	1205	307, 308, 309	59	880
Hogeboom, Levi S. (See Desjardin and Stewart, assignors.)						
Hogle, Thomas C., Grand Rapids, Mich. Metallic-vessel closure	476,745	June 7	778	191	59	1502
Hoke, John I., South Bend, Ind. Harrow	473,155	Apr. 19	1778	449	59	362
Hoke, Quinton J., assignor of one-half to S. L. Miller, Yorkville, and J. W. Roddey, Rock Hill, S. C. Car-coupling	474,909	May 17	1641	419	59	980
Holden, Daniel L., New York, N. Y. Refrigerating-machine	473,156	Apr. 19	1779	449	59	362
Holden, Daniel L., New York, N. Y. Refrigerating apparatus	473,157	Apr. 19	1781	449	59	363
Holden, Daniel L., New York, N. Y. Refrigerating apparatus	473,176	Apr. 19	1826	460	59	370
Holden, Elbridge G., Fulton, Tex. Mosquito-bar frame	472,879	Apr. 12	1316	338	59	263
Holden, George W., Springfield, Mass. Book-cover	473,575	Apr. 26	2509	633	59	526
Holden, William H. (See Verburg, Simon, assignor.)						
Holdsworth, Nathan B., Spencerville, Ohio. Leather-splicing device	472,052	Apr. 5	63	16	59	15
Holland, John P., Newark, N. J. Submergible torpedo-boat	472,670	Apr. 12	1018	263	59	205
Hollar, William H., Elizabeth, N. J., and F. S. Holmes, Malden, Mass., assignors to J. W. Torrey, Merchantville, N. J. Electric lock	477,897	June 28	2681	670, 671	59	2008
Hollar, William H., Elizabeth, N. J., and F. S. Holmes, Malden, Mass., assignors to J. W. Torrey, Merchantville, N. J. Electric lock	477,898	June 28	2683	671	59	2009
Holler, John M., Albany, N. Y. Wagon running-gear	472,295	Apr. 5	450	116	59	85
Holley, Clarence E., Fort Fairfield, Me. Wagon running-gear	472,053	Apr. 5	64	16	59	15
Hollinger, Isaac K., Weaver's Station, Ohio. Fence-stay	473,001	Apr. 19	1525	389	59	316
Hollingsworth, Charles M., Cleveland, Ohio. Passenger-railway system	474,657	May 10	1238	316, 317	59	886

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Hollingsworth, Charles M., Cleveland, Ohio. Roundabout	474,658	May 10	1243	317, 318	59	887
Hollingsworth, Charles M., Cleveland, Ohio. Rotary pavilion	474,659	May 10	1245	318	59	887
Hollingsworth, Charles M., Cleveland, Ohio. Railway-car	474,660	May 10	1246	318	59	888
Hollingsworth, Gibson R., Hagerstown, Md. Bridle appliance for subduing horses	474,739	May 10	1371	347	59	913
Hollingsworth, Sidney P., Washington, D. C. Car-brake	474,958	May 17	1720	437	59	996
Hollingsworth, Thomas H., assignor of two-thirds to N. B. Josey and A. McDowell, Scotland Neck, N. C. Attachment for knitting-machines	475,113	May 17	1973	438, 499, 500	59	1044
Hollis, Albert D., deceased; A. M. Hollis, administratrix, assignor to C. L. Cahall, Philadelphia, Pa. Measuring-vessel	474,959	May 17	1723	438	59	997
Hollis, Annie M., administratrix. (See Hollis, Albert D.)						
Hollis, Frank J., Kansas City, Mo. Combined self-feeding coffee-mill and storage-receptacle	473,394	Apr. 19	2196	551	59	443
Hollis, Guy E., Benton Harbor, Mich. Clock-hand remover	478,009	June 28	2853	714	59	2043
Hollis, Henry L., Chicago, Ill. Elevator	476,017	May 31	3399	857, 858	59	1352
Holly, Edgar P., assignor to himself, A. M. Cushing, and W. B. C. Pearsons, Springfield, Mass. Valve-packing device	473,554	Apr. 26	2451	620	59	513
Holman, Jacob, Liberty, Ill. Stacker	477,937	June 28	2743	687	59	2022
Holman, William L., *et al.* (See Green, John, assignor.)						
Holmes, Buckley H., and J. H. Ralston, Goshen, Ind. Type-cleaner for type-writing machines	472,760	Apr. 12	1154	296	59	231
Holmes Fibre Graphite Manufacturing Company. (See Howson, Henry, assignor.)						
Holmes, Frederick S. (See Hollar and Holmes.)						
Holmes, Harry W. (See Stephens and Holmes.)						
Holmes, Watson M., Hoosick Falls, N. Y. Apparatus for raising and lowering harvester-platforms	475,862	May 31	3161	802	59	1304
Holmqvist, Victor, Chicago, Ill. Extension-ladder	475,279	May 17	2219	569	59	1095
Holmstrom, Anders, New York, N. Y. Piano	477,938	June 28	2744	688	59	2022
Holmström, Carl. (See Acland and Holmström.)						
Holsclaw, Wilford H., assignor to B. F. Avery & Sons, Louisville, Ky. Whiffletree	473,226	Apr. 19	1910	481	59	387
Holt, Charles F., assignor of one-half to W. S. Starr, New London, Conn. Electric actuator for registering mechanisms	475,399	May 24	2410	615	59	1147
Holt, George, Philadelphia, Pa. Tile-stand	475,980	May 31	3352	845	59	1341
Holter, Christian C., Roland, Iowa. Farm-gate	475,316	May 24	2270	585	59	1120
Holtz, William. (See Botsford and Holtz.)						
Holwell, Jeremiah J., New York, N. Y. Door-check	472,880	Apr. 12	1317	338	59	263
Holzapfel, Albert C. A., London, England. Portable punching and riveting machine	472,356	Apr. 5	546	141	59	102
Holzapfel, Albert C. A., London, England. Portable punching and riveting machine	472,357	Apr. 5	547	142	59	102
Holzapfel, Albert C. A., London, England. Machine for shaping and flanging metal plates	474,661	May 10	1249	318	59	888
Holzapfel, Albert C. A., London, England. Construction of vessels	476,643	June 7	628	152	59	1561
Homan, William C., assignor to Edward Miller & Company, Meriden, Conn. Wick-raiser for central-draft lamps	477,862	June 28	2024	657	59	1998
Homan, William C., assignor to Edward Miller & Company, Meriden, Conn. Wick-raiser for central-draft lamps	477,863	June 28	2025	657	59	1998
Homan, William C., assignor to Edward Miller & Company, Meriden, Conn. Lamp-fount for central-draft lamps	477,864	June 28	2027	658	59	1998
Homan, William C., assignor to Edward Miller & Company, Meriden, Conn. Central-draft lamp	477,865	June 28	2029	658	59	1999
Homer, Chauncey S., and W. H. Pickett, Warren, Pa. Extension-table	472,881	Apr. 12	1318	338, 339	59	263
Honigmann, Moritz, Grevenberg, near Aix-la-Chapelle, Germany. Engine	477,367	June 21	1817	444	59	1623
Hood, Willis F., assignor of one-half to J. W. Brenkert, Detroit, Mich. Game apparatus	475,561	May 24	2675	679	59	1196
Hooker & Co., Truman. (See Ball, William P., assignor.)						
Hooper, George, 2d, Marblehead, Mass. Shoe-sewing machine	474,450	May 10	921	237	59	825
Hoopes, David J., Philadelphia, Pa. Driving mechanism for bicycles	474,740	May 10	1373	347	59	913
Hoover, Frederick A., Rockton, Pa. Horseshoe	477,658	June 28	2293	574	59	1934
Hoover, Joseph, and A. W. Jay, Minerva, Iowa. Cow-milker	474,830	May 17	1527	389	59	956
Hope, Charles H., assignor to J. Hope & Sons, Providence, R. I. Pantograph engraving-machine	474,324	May 3	699	181	59	771
Hope-Jones, Robert, Birkenhead, England. Telephony	477,866	June 28	2631	658	59	1999
Hope & Sons, John. (See Hope, Charles H., assignor.)						
Hopkins, Adelbert C., Ashippun, Wis. Railway	473,227	Apr. 19	1912	482	59	387
Hopkins, Andrew J., Beaver Falls, Pa. Pump-valve	474,579	May 10	1122	287	59	864
Hopkins, Harvey L., assignor to Harvey L. Hopkins Company, Chicago, Ill. Automatic bearing-box adjuster	472,122	Apr. 5	176	48	59	33
Hopkins, Marcus S. (See Dickson and Hopkins.)						
Hopkins, Thomas J. (See Eyre and Hopkins.)						
Hopkinson, Daniel W., *et al.* (See Beckwith, Theodore A., assignor.)						
Horan, Patrick H., Boston, Mass. Apparatus for baking altar-bread	474,601	May 10	1151	292, 293	59	869
Hornbeck, Cornelius F., assignor of one-half to E. D. Coburn, Owego, N. Y. Lifting-jack	473,002	Apr. 19	1526	389	59	317
Horneyer, Charles, St. Louis, Mo. Harness-saddle	473,627	Apr. 26	2593	652	59	541
Horning, Jacob E., and E. D. Clapp, Washington, D. C. Lock-up mechanism for printers' forms	473,750	Apr. 26	2777	698	59	576
Horton, A. M. (See Parker, Joseph R., assignor.)						
Horton, Emmet, Dundee, and F. E. Fitch, Elmira, N. Y.; said Horton assignor to said Fitch. Steam boiler and generating appliance	474,795	May 10	1462	371, 372	59	931
Horton, Erastus J., *et al.* (See Raymond, Silas H., assignor.)						
Horton, Thomas. (See Thornton, Edward S., assignor.)						
Hosford, Henry H., Cleveland, Ohio. Solenoid and its electrical connections	473,929	May 3	69	13	59	649
Hosford, William B., Mishawaka, Ind. Journal-box	472,729	Apr. 12	1106	285	59	222
Hotchkiss Ordnance Company. (See Benét, Laurence V., assignor.)						
Hottes, Frederick. (See Fach and Hottes.)						
Houck, Oliver W., *et al.* (See Snyder, Oswill P., assignor.)						
Houghton, Charles E., assignor of one-half to H. R. Johnson, Northumberland, Pa. Nail-machine	472,604	Apr. 12	922	237, 238, 239	59	189
Houghton, Charles E., assignor of one-half to H. R. Johnson, Northumberland, Pa. Nail-machine	472,605	Apr. 12	924	237, 238, 239	59	189
Houghton, Charles E., assignor of one-half to H. R. Johnson, Northumberland, Pa. Nail-machine	472,892	Apr. 12	1321	339	59	264
Houghton, Charles E., assignor of one-half to H. R. Johnson, Northumberland, Pa. Die for cut-nail machines	475,768	May 31	2993	759	59	1271

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Houghton, Lewis T., and A. A. Barker, Worcester, Mass. Snow-guard	472,296	Apr. 5	452	116	59	85
Houghton, Thomas, and A. D. Dick, Philadelphia, Pa. Identity-indicator	475,400	May 24	2411	615	59	1147
Hourtney, Rudolph G., Chicago, Ill. Station-indicator	476,537	June 7	468	111, 112	59	1530
House, James A., Bridgeport, Conn. Corset-boning implement	475,502	May 24	2676	680	59	1197
Houser, Frank B., Felicity, Ohio. Hasp-lock	475,902	May 31	3323	838	59	1335
Houser, William C., Utica, Ohio. Corn-harvester	473,840	Apr. 26	2911	731, 732	59	603
Housh, Frank E., Brattleborough, Vt. Trousers-stretcher	472,655	Apr. 12	994	257	59	202
Housman, Ernest, New York, N. Y., assignor to W. J. Smith, Philadelphia, Pa. Coloring or moistening device for paper	476,204	May 31	3707	936	59	1412
Housman, Moses, Brooklyn, N. Y. Colored transparency	477,120	June 14	1391	338	59	1728
How, Woodbury S., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Rubber-dam clamp	477,546	June 21	2095	521	59	1879
Howard, Charles D., Syracuse, N. Y. Heating and ventilating apparatus	472,054	Apr. 5	65	17	59	15
Howard, Frank P., assignor to G. T. Brown and J. H. Kelly, Sedalia, Mo. Sign	477,417	June 21	1890	465	59	1837
Howard, Henry, Halesowen, near Birmingham, England. Carbon-holder	472,055	Apr. 5	66	17	59	15
Howard, Henry, Halesowen, near Birmingham, England. Heating and welding by electricity	473,003	Apr. 19	1527	389, 390	59	317
Howard, Herbert R. (See Howard, James and H. R.)						
Howard, James and H. R., Englewood, N. J. Brake mechanism for cars	474,451	May 10	924	238	59	825
Howard, James H., Medford, Mass. Plunge-battery	473,463	Apr. 26	2314	585	59	488
Howard, Robert A., Richmond, Ind. Race-track	475,769	May 31	2995	760	59	1272
Howard, Rufus P., La Crosse, Wis. Disk harrow	472,656	Apr. 12	994	257	59	202
Howard, William G., and C. E. North, London, England. Waistcoat-protector	478,010	June 28	2854	714	59	2043
Howarth, John B. (See Howe, Solon G., assignor.)						
Howat, Andrew, assignor to Deflector Safety Lamp and Miner's Appliance Company, Limited, Manchester, England. Lamp for burning mineral oils	472,056	Apr. 5	67	17, 18	59	15
Howe, Charles F., *et al.*, trustees. (See Severy, Melvin L., assignor.)						
Howe, Eugene L., Cleveland, Ohio. Snap-hook	473,315	Apr. 19	2048	514	59	415
Howe, Eugene L., Cleveland, Ohio. Hame	475,863	May 31	3162	802	59	1305
Howe, Eugene L., Cleveland, Ohio. Hame-tug	476,881	June 14	1010	245	59	1652
Howe, Henry E., Merrill, Wis. Coin-holder	475,563	May 24	2677	680	59	1197
Howe, Hermon A., Middletown, Conn. Window-sash	472,458	Apr. 5	704	180	59	133
Howe, Orrin P., Augusta, Me. Portable house	477,757	June 28	2454	613	59	1967
Howe, Patrick, Boston, Mass. Cloth-cutting machine	472,172	Apr. 5	252	66	59	47
Howe, Patrick, Boston, Mass. Cloth-laying machine	472,173	Apr. 5	253	66, 67	59	47
Howe, Solon G., assignor of one-half to J. B. Howarth, Detroit, Mich. Combination safety railway-track	478,059	June 28	2932	732	59	2057
Howe, Theodore C., Genesee Fork, Pa. Register	473,751	Apr. 26	2778	698	59	576
Howell, Clara S. (See Odell and Howell.)						
Howell, Commodore P., Chattanooga, Tenn. Railway tie and chair	473,071	Apr. 19	1636	416	59	337
Howell, George W. Covington, Ky. Door-mat	477,545	June 21	2094	521	59	1879
Howes, Albert P., Worcester, Mass. Automatic sprinkler	473,698	Apr. 26	2594	653	59	541
Howison, Allen P., *et al.* (See Riggs, Lewis S., assignor.)						
Howson, Henry, Philadelphia, Pa., assignor to Holmes Fibre Graphite Manufacturing Company, Chicago, Ill. Bearing	476,144	May 31	3604	911	59	1393
Howson, Henry, Philadelphia, Pa., assignor to Holmes Fibre Graphite Manufacturing Company, Chicago, Ill. Making composition bearings	476,145	May 31	3605	911	59	1393
Howze, William, Cairo, Ga. Well-bucket sinker	473,576	Apr. 26	2510	633	59	526
Hoyt, Albert W. (See Hoyt and Leffler, assignors.)						
Hoyt, Alphonso O., and P. W. Leffler, assignors of one-third to A. W. Hoyt, Minneapolis, Minn. Switch for overhead wires	475,504	May 24	2584	658	59	1179
Hoyt, Charles M., *et al.* (See Beckwith, Theodore A., assignor.)						
Hoyt, Charles N., Brooklyn, N. Y. Calendar	474,602	May 10	1152	293	59	869
Hoyt, Clarence L., *et al.* (See Beckwith, Theodore A., assignor.)						
Hoyt, Frank R., Watkins, N. Y. Photographic shutter	472,883	Apr. 12	1323	339	59	265
Hoyt, Fred J., Chicago, Ill. Gravel-screen	474,662	May 10	1250	319	59	889
Hoyt, James T., New York, N. Y. Cabinet for toilet-paper	476,644	June 7	629	152	59	1562
Hubbard, Arthur, Buffalo, N. Y. Lever for starting cars	475,770	May 31	2996	760	59	1272
Hubbard, Eber, Chicago, Ill., assignor to Standard Fiber-Ware Company, Mankato, Minn. Machine for making vessels from fibrous pulp	474,637	May 10	1209	309, 310	59	880
Hubbard, Moses G., Jr. (See McGuire and Hubbard.)						
Hubbell, Thomas J., San Bernardino, Cal. Tree-prop	477,939	June 28	2745	688	59	2022
Hubbell, William W., Appomattox county, Va. Car-coupling	476,273	June 7	66	14	59	1451
Huber, John P., St. Louis, Mo. Vehicle-seat	475,083	May 17	1916	488	59	1033
Huber, Susan L., York, Pa. Heater attachment for illuminating apparatus	477,368	June 21	1818	445	59	1823
Huck, Louis C., Chicago, Ill. Apparatus for purifying, moistening, and attemperating air	476,274	June 7	68	14, 15	59	1451
Hucks, William, London, England. Method of and apparatus for aerating beverages	476,645	June 7	630	152, 153	59	1562
Hudgens, Charles W., Elizabeth, Ark. Thread-cabinet	476,924	June 14	1078	260	59	1665
Hudson, Thomas, *et al.* (See Aldrich, George W., assignor.)						
Hudson, William B., Orwell, Ohio. Fence	475,865	May 31	3164	803	59	1306
Hudson, William E., Washington, D. C. Draft-bridle	475,864	May 31	3163	802	59	1305
Huebel, Otto H. (See Manger and Huebel.)						
Hueg, Herman, New York, N. Y. Razor-guard	473,464	Apr. 26	2315	585	59	488
Huelsen, Felix J., and J. Nagal, Cleveland, Ohio. Vehicle-wheel	477,650	June 28	2294	575	59	1934
Huestis, Harvey, Providence, R. I. Finger-ring	474,638	May 10	1214	310	59	881
Hueston, James. (See Aldrich and Hueston.)						
Huette-Barler Manufacturing Company. (See Barler, Augustus C., assignor.)						
Huff, Charles C. (See Huff, William, assignor.)						
Huff, Charles H., Tropico, Cal. Music-leaf turner	475,317	May 24	2271	585	59	1121
Huff, William, assignor of one-half to C. C. Huff, Landess, Ind. Gate	473,752	Apr. 26	2779	699	59	577
Huger, Frank, *et al.* (See Coleman, John, assignor.)						
Hugershoff, William. (See Laubensdorfer and Lipp, assignors.)						
Hugershoff, William, and F. Lipp, New York, N. Y. Atomizer-nozzle	474,526	May 10	1034	265	59	847
Hughes, Curtis A., Spokane, Wash. Rein-holder	477,547	June 21	2097	521	59	1879
Hughes, Edmund, Cockport, Pa. Fence-machine	473,930	May 3	71	14	59	650
Hughes, Henry C. (See Carter and Hughes.)						
Hughes, William B., Newark, N. J. Tobacco-pipe	473,666	Apr. 26	2649	668	59	553
Hulett, John F., assignor of one-half to H. Gould. Excelsior Springs, Mo. Seed-planter	477,309	June 21	1819	445	59	1823
Hulin, Léon, Froges, France, assignor to G. P. Lowrey, New York, N. Y. Manufacture of carbon blocks	473,841	Apr. 26	2913	732	59	603
Hull, Abijah H., Odebolt, Iowa. Shutter-worker	474,831	May 17	1598	390	59	957

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hull, Andrew J., Newark, N. J. Grate	477,866	May 31	3165	803	59	1305
Hull, Charles C. (See Parry and Hull.)						
Hull, Herbert H., Cleveland, Ohio. Combined dust-pan and support	473,004	Apr. 19	1528	390	59	317
Hull, James H., Lennoxville, Canada. Weather-strip	476,646	June 7	633	153	59	1562
Hull, Uriah L. (See Bowyer and Hull.)						
Hull, William S. (See Hale and Sparks, assignors.)						
Hult, Carl A., Stockholm, Sweden. Centrifugal cream-separator	473,005	Apr. 19	1530	390 391	59	318
Hult, John, Burlington, Iowa. Wire-fence gate	475,867	May 31	3167	803 804	59	1306
Hume, Thomas J., assignor of one-half to W. F. Guthrie, Atchison, Kans. Cash indicator and register	474,558	May 10	1085	277 278	59	857
Hume, Thomas J., assignor of one-half to W. F. Guthrie, Atchison, Kans. Cash register and indicator	477,548	June 21	2098	522 523	59	1879
Hume, William W., Chicago, Ill. Medal	476,538	June 7	470	119	59	1530
Hummel, Louis, New York, N. Y. Pocket-book	472,174	Apr. 5	254	67	59	48
Humphrey, James D., Towanda, Pa. Numbering and marking machine	475,688	May 24	2857	722 723	59	1233
Humphrey, William H., New York, N. Y. Paint-brush bridle	475,114	May 17	1974	500	59	1044
Humphreys, Andrew J., Pomeroy, Ohio. Belt-stretcher	474,832	May 17	1529	390	59	957
Hunersdorff, Oscar von, Philadelphia, Pa. Game apparatus	476,146	May 31	3606	911 912	59	1393
Hungerford, Maurice C., Huntington, W. Va. Gutter-former	475,318	May 24	2276	586	59	1122
Hunt, Alexander E. (See Fowler, Jonathan O., Jr., assignor.)						
Hunt, Charles B., London, England. Sewing-machine	474,663	May 10	1252	320	59	889
Hunt, Charles B., London, England. Sewing-machine	476,647	June 7	635	154	59	1563
Hunt, Charles W., West New Brighton, N. Y. Coupling	472,707	Apr. 12	1080	277	59	217
Hunt, Ferdinand S., Chicago, Ill. Cash register and indicator	472,123	Apr. 5	179	48	59	33
Hunt, Franklin B., assignor of one-half to J. T. Clements and G. S. Chase, Washington, D. C. Thill-coupling	477,053	June 14	1286	312	59	1707
Hunt, Jesse, Baltimore, Md. Compound steam-engine	477,006	June 14	1209	293	59	1691
Hunt, Richard R., *et al.* (See Browne, James R., assignor.)						
Hunt, Thomas M., Caldwell, Tex. Staple-extractor	475,689	May 24	2861	724	59	1233
Hunt, Walter J., *et al.* (See Browne, James R., assignor.)						
Hunter, Charles S., Rock Creek, Kans. Sampling device for baled material	473,316	Apr. 19	2048	514	59	415
Hunter, Della R. (See Hunter, William A., assignor.)						
Hunter, James, *et al.* (See Tuerk, Frederick W., Jr., assignor.)						
Hunter, John, *et al.* (See Tuerk, Frederick W., Jr., assignor.)						
Hunter, Joseph H., Pittsburg, Pa. Electric chime or bell	476,463	June 7	366	85	59	1508
Hunter, Marshall E., *et al.* (See Shaw, Samuel J., assignor.)						
Hunter, Patchen & Havens. (See Hamilton, James, assignor.)						
Hunter, Rudolph M., Philadelphia, Pa. Dental engine	476,944	June 14	1117	269	59	1673
Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electric motor or generator	472,708	Apr. 12	1081	277	59	217
Hunter, Rudolph M., Philadelphia, Pa., assignor, by mesne assignments, to Thomson-Houston Electric Company, Boston, Mass. Cleaning-brush for electric railways	474,472	May 10	947	244	59	330
Hunter, William, assignor of nine-sixteenths to H. L. Elkins and R. P. Tapley, Jr., Haverhill, Mass. Sad-iron	477,660	June 28	2295	575	59	1934
Hunter, William A., assignor to D. R. Hunter, Terre Haute, Ind. Harness	476,797	June 14	869	214	59	1623
Huntoon, Frank D. (See Coram and Huntoon.)						
Hunzinger, George, New York, N. Y. Combined table and chair	475,505	May 24	2586	658	59	1179
Hurd, George B., New York, N. Y. Box for stationery, &c.	474,002	May 3	288	69	59	693
Hurd, John F., Chicago, Ill. Pickpocket and coat-thief detector	477,940	June 28	2746	688 689	59	2022
Hurd, Lewis C., Durango, Colo. Wrench	474,741	May 10	1374	348	59	913
Hurd, Lorenzo D., Wellsville, N. Y. Running-gear for wagons	473,577	Apr. 26	2511	634	59	527
Hurley, John M., and J. R. Westing, Lancaster, Wis. Subsoil attachment	475,042	May 17	1854	470	59	1021
Hurson, Gregory, Milwaukee, Wis. Cabin roof and deck for boats	472,884	Apr. 12	1324	340	59	265
Husnik, Jacob, Prague, Austria-Hungary. Making relief-plates by photography	473,753	Apr. 26	2780	.....	59	577
Huson, Winfield S., Taunton, Mass., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Mechanical movement	475,771	May 31	2997	760 761	59	1272
Huson, Winfield S., Taunton, Mass., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Mechanical movement	475,772	May 31	3000	761	59	1273
Huss, William C., Cincinnati, Ohio. Combined bar drainer and cooler	477,758	June 28	2455	614	59	1967
Husselbee, Alfred, assignor to D. Rylands, Stairfoot, Barnsley, England. Glass-lined bend, elbow, or pipe-fitting	476,648	June 7	637	155	59	1563
Hussey, George B., Providence, R. I. Metallic bale-covering	474,046	May 3	263	64	59	698
Hussey, Silvanus, Brant, N. Y. Wrench	475,450	May 24	2491	635	59	1161
Hustvedt, H. B., *et al.* (See Wheelock, Willis W., assignor.)						
Hutcheson, William, Baltimore, Md. Screw-cutting tool	475,564	May 24	2679	680	59	1197
Hutchins, Eugene R., assignor to Hutchins Refrigerator Car Company, Chicago, Ill. Refrigerator-tank car	474,603	May 10	1154	293 294	59	870
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Swivel-loom	474,170	May 3	438	106 107	59	723
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Swivel-loom	477,180	June 14	1489	365	59	1749
Hutchins, George K., Baltimore, Md. Electric snap-switch	474,473	May 10	948	244	59	839
Hutchins Refrigerator Car Company. (See Hutchins, Eugene R., assignor.)						
Hutchinson, Charles G., New York, N. Y., assignor to C. G. Hutchinson Shoe Blacking Machine Company. Blacking-machine	475,773	May 31	3002	762	59	1273
Hutchinson, Joseph, New York, N. Y., and A. B. Herrick, Bayonne, N. J. Terminal and safety-catch connection	474,960	May 17	1794	438 439	59	997
Hutchinson, Mamie W., *et al.* (See Hebron, Charles B., assignor.)						
Hyde, George H., Indianapolis, Ind. Latch and lock combined	472,620	Apr. 12	950	246	59	194
Hyde, William J., Traer, Iowa. Harrow	473,754	Apr. 26	2781	699	59	577
Hyndman, Nathan P. (See Wilson, John R., assignor.)						
Hynes, Michael J., assignor to J. M. French, Toronto, Canada. Brick-kiln	477,418	June 21	1891	465 466	59	1838
Hyslop, John, Jr., Abington, Mass. Pegging-machine	472,638	Apr. 12	971	252	59	198
Hyslop, John, Jr., Abington, Mass. Feeding mechanism for pegging-machines	475,868	May 31	3168	804	59	1306
Ideal Toy Company. (See Smith, Frank H., assignor.)						
Iden, John H., Bourbon, Ind. Photographic kit	474,833	May 17	1531	390	59	957
Ihlenfeldt, August, Bloomington, Ill. Gate	473,578	Apr. 26	2513	634	59	527
Iler, Frank M., Marion, Ohio. Ore-concentrator	473,506	Apr. 26	2379	603	59	500
Iler, Joseph D., Kansas City, Mo. Receptacle for aerated liquids	473,006	Apr. 19	1533	391	59	318

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Iler, Joseph D., Kansas City, Mo. Receptacle for aerated liquids	474,387	May 10	812	212	59	805
Iles, Malvern W., Denver, Colo. Apparatus for conducting and screening gases from metallurgical furnaces	475,774	May 31	3004	762	59	1274
Iles, Malvern W., Denver, Colo. Furnace-buckstave	476,275	June 7	70	15	59	1451
Iles, Malvern W., Denver, Colo. Fire-indicator	477,759	June 28	2456	614	59	1967
Ilgenfritz, William D. (See Phegley, William T., assignor.)						
Illing, Charles, and A. Stoppenbach, Jefferson, Wis. Shuttle-box for looms	473,878	Apr. 26	2978	751	59	615
Illingworth, George M., *et al.* (See Jones, John B., assignor.)						
Illingworth, John, Newark, N. J. Ingot-mold	473,579	Apr. 26	2515	634 635	59	527
Ilsley & Co., S. A. (See Macarthy, Henry, assignor.)						
Imbach, Martin G., Jr., Brooklyn, N. Y. Coin-controlled game apparatus	476,384	June 7	246	60	59	1484
Imeson, Thomas, L. D. Tibbets, and C. L. F. Kellogg, Seattle, Wash. Hanger for electric wires	473,158	Apr. 19	1784	450	59	363
Imig, Philip, Minier, Ill. Dumping apparatus	475,565	May 24	2680	680	59	1197
Inglesby, Thomas P., St. Louis, Mo., and T. J. Davis, Richmond, Va. Rope clamp and stopper	475,115	May 17	1975	500	59	1044
Ingraham, Arthur J. (See Grantland, John W., assignor.)						
Ingraham, Thomas J., assignor of one-half to F. G. Babcock, Hornellsville, N. Y. Wire fence	472,639	Apr. 12	973	252	59	198
Ingraham, Thomas J., assignor of one-half to F. G. Babcock, Hornellsville, N. Y. Wire fencing	475,116	May 17	1976	500	59	1045
Insinger, Alfred, assignor to B. La Rue, Philadelphia, Pa. Shuttle-box-operating mechanism for looms	473,507	Apr. 26	2380	603	59	500
Interior Conduit and Insulation Company. (See Bergmann, Sigmund, assignor.)						
Interior Conduit and Insulation Company. (See Bergmann and Scott, assignors.)						
Interior Conduit and Insulation Company. (See Greenfield, Edwin T. assignor.)						
Interior Conduit and Insulation Company. (See Klein, Charles J., assignor.)						
International Cigarette Machine Company. (See Pollard, James B., assignor.)						
International (Giffard) Gun and Ordnance Company. (See Giffard, Paul, assignor.)						
Invisible Eyelet Company. (See Anderson, Edward C., assignor.)						
Irvine, Henry E. (See Elkins, William H., assignor.)						
Irwin, George B., Toronto Junction, Canada. Potato-harvester	473,317	Apr. 19	2049	514	59	415
Irwin, John S., Saltsburg, Pa. Label-former for glass molds	476,649	June 7	638	155	59	1563
Isaacs, Augusta R., New York, N. Y. Cooking utensil	476,746	June ,	779	191	59	1592
Isbell, Charles W., New York, N. Y. Apparatus for manufacturing gas	472,191	Apr. 5	282	74.75	59	54
Ishe, Albert, Lancaster, Pa. Door-bell handle	473,879	Apr. 26	2979	751	59	615
Ishe, Albert, assignor to G. E. Fahnestock and C. G. Landis, Lancaster, Pa. Call-bell	473,880	Apr. 26	2981	751	59	615
Isler, John J., Elk Rapids, Mich. Fruit-canning device	477,805	June 28	2592	633	59	1979
Israel, Oscar J., Charlton, Iowa. Spool-holder	477,328	June 21	1753	429	59	1811
Israel, Robert O. (See Murrey, Thomas J., assignor.)						
Itjen, Martin, Jacksonville, Fla. Device for dispensing beer or other liquids	472,356	Apr. 5	548	142	59	103
Ivens, Edmund M., New Orleans, La. Apparatus for baling cotton	475,117	May 17	1977	501	59	1045
Ives, Frederic E., Philadelphia, Pa. Camera	475,684	May 17	1918	488	59	1034
Ives, Henry, assignor to A. W. Sanborn, San Francisco, Cal. Lubricator-cup	473,755	Apr. 26	2782	699	59	577
Ivory, James W., Philadelphia, Pa. Dental cervix-clamp	474,131	May 3	381	91	59	712
Ivory, James W., Philadelphia, Pa. Dental matrix-retainer	474,132	May 3	382	92	59	712
J. H. Busell Manufacturing Company. (See Busell and Taylor, assignors.)						
J. I. Case Plow Works. (See Sobey, William, assignor.)						
J. L. Mott Iron Works. (See Demarest, John, assignor.)						
J. L. Perry Machine Company. (See Perry, James L., assignor.)						
Jabroczky, Adolph, Burnham, assignor of one-half to F. Crane, Chicago, Ill. Vehicle-spring	477,419	June 21	1892	466	59	1838
Jackson and Woodin Manufacturing Company. (See Boyles, William M., assignor.)						
Jackson-Cady Electric Railway Signal Company. (See Jackson, Uriah S., assignor.)						
Jackson, Charles E., Boston, Mass. Metallic-circuit cable	476,464	June 7	367	85	59	1508
Jackson, Henry, assignor of one-half to C. T. Brown, Chicago, Ill. Disinfectant	476,276	June 7	71	.....	59	1451
Jackson, John, London, England. Type-writing machine	472,481	Apr. 5	741	189	59	141
Jackson, John P. (See Kirk, Wallace R., assignor.)						
Jackson, Luther C., Wolfe City, and J. F. Reiger, Dallas, Tex.; said Reiger assignor to G. E. Willcox; said Jackson and Willcox assignors of five-twelfths to L. R. Wade, A. M. Kellar, J. E. Moore, A. F. Bentley, and J. B. Nunneley. Plow	475,731	May 24	2834	745	59	1246
Jackson, Samuel C., Haverhill, Mass. Automatic fire-kindler for steam fire-engines	476,539	June 7	472	112	59	1531
Jackson, Uriah S., Ossipee, N. H., assignor to Jackson-Cady Electric Railway Signal Company, Portland, Me. Railway-signal	473,190	Apr. 19	1851	466	59	375
Jackson, Wallace E., Waterbury, Conn. Button	474,252	May 3	562	138	59	747
Jacobi, Oscar, Montreal, assignor of one-half to H. L. Beatty, Toronto, Canada. Hub-attaching device	477,420	June 21	1893	466	59	1838
Jacobs, Charles, Hyde Park, Mass. Feed-water heater	472,671	Apr. 12	1021	263 264	59	206
Jacobs, Edward. (See Hay, Gilbert, assignor.)						
Jacobs, George T. (See Ford and Jacobs.)						
Jacobs, John M., De Witt, Iowa. Mask for firemen, &c	474,500	May 10	989	255	59	838
Jacobs, Joseph. (See Chabot and Jacobs.)						
Jacobson, Solomon. (See Golden, Charles, assignor.)						
Jaeger, Charles L., New York, N. Y. Electric recording device for compasses	472,124	Apr. 5	180	48.49	59	34
Jackel, Richard, Berlin, Germany. Sofa-bedstead	477,421	June 21	1894	466	59	1838
Jager, Simon de, Denver, Colo. Emulsion	472,925	Apr. 12	1387	.....	59	278
Jaggard, Robert W., Philadelphia, Pa. Electric indicator for railway-blocks	472,359	Apr. 5	549	142	59	103
James, David. (See James, John A. and D.)						
James, David and T., assignors of one-third to O. V. Dibble, Wadsworth, Ohio. Safety-catch for inclined railways	473,842	Apr. 26	2915	732	59	603
James, Elmer L. (See Hickerson, Samuel C., assignor.)						
James, John A. and D., Coffeyville, Kans. Register for grain-measures	473,465	Apr. 26	2315	586	59	488
James Reynolds Manufacturing Company. (See O'Connor and McNamara, assignors.)						
James, Thomas. (See James, David and T.)						
James, Will S., Abilene, Tex. Steam cooking-stove	472,730	Apr. 12	1107	285	59	222
Jamison, James A., Russellville, Ark. Book or sheet-music holder and leaf-turner	472,125	Apr. 5	182	49	59	34
Jamison, James A., Russellville, Ark. Harness-saddle	472,360	Apr. 5	551	143	59	103
Janes, Henry, Waterbury, Vt. Vibrator for reed musical instruments	477,661	June 28	2296	575	59	1934
Janin, Alexis, San Francisco, Cal. Amalgamating silver ores	473,395	Apr. 19	2197	551	59	413
Janisch, Wenzel J., Denver, Colo. Carpet-fastener	477,370	June 21	1820	445	59	1823
Janiszewski, Wladyslaw, Cincinnati, Ohio. Vehicle-hub	476,018	May 31	3400	858	59	1252
Jankó, Paul v., Buda-Peath, Austria-Hungary. Keyboard for musical instruments	474,016	May 3	209	49	59	678

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Janssen, William, Chemnitz, Germany. Knitted fabric	473,580	Apr. 26	2517	635	59	598
Japhet, Charles A. (See O'Neil, Stephen A., assignor.)						
Jaquish, Louis C., Chicago, Ill. Bicycle	473,931	May 3	73	14, 15	59	650
Jardine, Charles K., Georgetown, British Guiana. Automatic electric time-check	475,566	May 24	2681	681	59	1198
Jarrett, Floyd, Socorro, N. Mex. Ter., and L. Peyton, Rich Hill, Mo. Heating and gas-generating stove	474,742	May 10	1374	348	59	913
Jarvis, George R., Chicago, Ill. Drilling for minerals	475,319	May 24	2277	586	59	1122
Jauch, Joseph, assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Central-draft lamp	473,667	Apr. 26	2650	668	59	553
Jauch, Joseph, assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Wick-raiser for central-draft lamps	474,171	May 3	445	108	59	724
Jay, Allen W. (See Hoover and Jay.)						
Jeavons, William R. (See Lannert and Jeavons.)						
Jeavons, William R., assignor of one-half to J. A. Lannert, Cleveland, Ohio. Oil-burner	475,401	May 24	2412	615	59	1147
Jedlicka, Hugo, Bihac, Austria-Hungary. Ice-creeper	477,255	June 21	1637	399	59	1789
Jeffers, John F., assignor of one-half to G. Letcher, Kansas City, Mo. Stable	476,925	June 14	1080	{260 261}	59	1666
Jeffery, John W., assignor to himself and F. C. Gilbert, Canton, N. Y. Vehicle-pole	474,743	May 10	1376	348	59	914
Jeffery, Thomas B., Chicago, Ill. Tire-inflating device	477,007	June 14	1212	294	59	1692
Jeffrey, Albert D., assignor of two-thirds to M. C. Kelsey and W. Krymer, Brooklyn, N. Y. Horseshoe	476,798	June 14	870	214	59	1624
Jeffreys, Lemuel A. (See Williams, Henry B., assignor.)						
Jeffries, Van O., Coshocton, Ohio. Vehicle-spring	476,385	June 7	248	60	59	1485
Jehle, Gottlieb, Long Island City, assignor to Manhattan Brass Company, New York, N. Y. Coin-actuated vending apparatus	475,567	May 24	2683	681	59	1198
Jenkins, Benjamin B., Barrie, Canada. Absorbent for fire-kindlers	472,540	Apr. 12	836	213	59	172
Jenkins, C. H. (See Piper, James S., assignor.)						
Jenkins, Charles S., Lansdale, Pa. Exhibiting apparatus	473,508	Apr. 26	2383	{603 604}	59	501
Jenkins, Edward H., Kalamazoo, Nebr. Cultivator	472,361	Apr. 5	552	143	59	104
Jenkins, Elizabeth F., Dewcese, Nebr. Barrel-fastener	474,133	May 3	388	92	59	712
Jenkins, Henry C. (See Higgins and Jenkins.)						
Jenkins, Thomas W., Philadelphia, Pa. Non-conducting casing for heaters, flues, pipes, &c.	474,639	May 10	1215	311	59	881
Jenks, Charles F., assignor of two-thirds to P. B. Shaw and F. R. Sackett, Williamsport, Pa. Link cuff-fastener	476,540	June 7	473	112	59	1531
Jenne, Chancy R., Fort Wayne, Ind. Cistern-cleaner	477,760	June 28	2457	614	59	1967
Jenney, Charles D., assignor to Jenney Electric Motor Company, Indianapolis, Ind. Dynamo-electric machine or motor	474,388	May 10	814	{212 213}	59	805
Jenney Electric Motor Company. (See Jenney, Charles D., assignor.)						
Jennings, Daniel. (See Burkholder, John, assignor.)						
Jennings, Mary L. (See Fisher, Sarah M., assignor.)						
Jennings, Peter, Menasha, Wis. Valve-gear	474,452	May 10	926	238	59	826
Jennison, Nahum E. (See Henson, Joseph W., assignor.)						
Jepson, Arthur A. (See Dwight and Jepson.)						
Jerger, Henry, Norwood, South Australia. Water-engine	477,256	June 21	1638	{399 400}	59	1789
Jetter, Gottlieb. (See Schafhaus, Jean, assignor.)						
Jewell, Augustus, Dowagiac, Mich. Sheaf-carrier for self-binding harvesters	472,885	Apr. 12	1325	{340 341}	59	265
Jewell, Major R. (See Lomb and Jewell.)						
Jewell, Omar H., Chicago, Ill. Filter	477,213	June 21	1557	383	59	1774
Jewett & Co., Sherman S. (See Adams, Charles F., assignor.)						
Jewett & Co., Sherman S. (See Walther, Charles F., assignor.)						
Jewett Nathan, Chicago, Ill. Apparatus for cleaning and grading gravel, ore, &c	475,568	May 24	2685	681	59	1198
Jimenes, Lino J., Baltimore, Md. Curb-bit	472,297	Apr. 5	453	117	59	85
Jobling, Lance L., Houston, assignor to J. L. Deegan, Galveston, Tex. Locomotive headlight	475,242	May 17	2166	551	59	1082
Johannigman, Henry H., Cincinnati, Ohio. Letter-pouch	472,791	Apr. 12	1196	307	59	239
Johansen, Rudolph L., Los Angeles, Cal. Machine for utilizing ocean-power, &c	475,451	May 24	2493	636	59	1162
Johansson, Samuel A., assignor of one-half to A. and J. Sandberg, Everett, Mass. Currying and brushing machine	474,325	May 3	701	181	59	772
John Hope & Sons Engraving and Manufacturing Company. (See Clegg, Wilfrid, assignor.)						
John Lighton Machine Company. (See Lighton, John B., assignor.)						
Johns, Henry W., New York, N. Y. Non-conducting material	474,834	May 17	1532	.....	59	957
Johns, Will R., assignor of two-thirds to P. F. Keegan and C. H. Little, Boston, Mass., Cash register and indicator	473,555	Apr. 26	2453	{621 622 623 624}	59	513
Johnson, Abijah, Montrose, Colo. Automatic measuring-weir	472,127	Apr. 5	188	50	59	35
Johnson, Albert E., Samantha, Ohio. Broom-holder	475,569	May 24	2686	681	59	1199
Johnson, Andrew. (See Peterson, Swan, assignor.)						
Johnson, Andrew, Chicago, Ill. Eccentric coupling and tool and work holder	472,126	Apr. 5	183	49, 50	59	34
Johnson, Andrew, Calliope, Iowa. Windmill	475,869	May 31	3170	804	59	1307
Johnson, Axel, Oakland, assignor to Marshall Improved Window Furniture Company, San Francisco, Cal. Sash-fastener	472,886	Apr. 12	1327	341	59	265
Johnson, Axel, Oakland, assignor to Marshall Improved Window Furniture Company, San Francisco, Cal. Sash-balance	472,887	Apr. 12	1329	341	59	266
Johnson, Charles J. W., assignor of one-half to T. P. Self and M. D. Coffman, Temple, Tex. Locomotive ash-pan	476,147	May 31	3608	912	59	1394
Johnson, Charles R., New York, N. Y., assignor to Johnson Railroad Signal Company, Rahway, N. J. Railway-signal	476,926	June 14	1082	261	59	1666
Johnson Company. (See Brown, William M., assignor.)						
Johnson, Dawson. (See Marsh, Harvey S., assignor.)						
Johnson, Edward H., New York, N. Y. Electric switch	473,228	Apr. 19	1913	482	59	387
Johnson, Frank G., New York, N. Y. Rail-holding splice	472,168	Apr. 5	244	65	59	46
Johnson, George B., West Chester, Pa. Automatic mail-bag fastener	473,258	Apr. 19	1958	491	59	397
Johnson, George W. (See Knowles, Daniel, assignor.)						
Johnson, Harry C., Washington, D. C. Type-writing machine	477,054	June 14	1287	312	59	1707
Johnson, Henry, New York, N. Y. Automatically-closing can, bottle, &c	475,775	May 31	3006	762	59	1274
Johnson, Horace R. (See Houghton, Charles E., assignor.)						
Johnson, Ira H., assignor of one-half to R. M. Buck, Paw Paw, Mich. Vehicle	473,881	Apr. 26	2982	752	59	615
Johnson, Jahu W. (See Borden and Johnson.)						
Johnson, James B., Memphis, Tenn. Shirt	477,124	June 14	1395	330	59	1729

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Johnson, James L. (See Owen, James L., assignor.)						
Johnson, James T. (See Wantling and Johnson.)						
Johnson, John C., and W. Smith, Drake's Creek, Ark. Draft-spring	474,910	May 17	1642	419	59	981
Johnson, John W., Leavenworth, Kans. Hydraulic motor for organs	475,776	May 31	3007	763	59	1274
Johnson, Moses C., Hartford, assignor to T. & B. Tool Company, Danbury, Conn. Boring-tool	472,541	Apr. 12	836	214	59	172
Johnson, Moses T. (See Pentz, Charles B., assignor.)						
Johnson, Louis K., Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Slug for type-containing channels	477,008	June 14	1215	294	59	1693
Johnson, Louis K., Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type-distributing apparatus	477,009	June 14	1215	294	59	1693
Johnson, Olof A. (See Brown and Johnson.)						
Johnson Railroad Signal Company. (See Johnson, Charles R., assignor.)						
Johnson, Robert M., Flemington, N. J. Dumping freight-car	474,744	May 10	1377	348	59	914
Johnson, Rose A., Manchester, and R. Brewster, New Barnet, England. Composition of matter for spinning-rings, &c	474,253	May 3	564	139	59	747
Johnson, Samuel W., Nottingham, and T. G. Clayton, Normanton, England. Combined cock and coupling	477,125	June 14	1396	339	59	1729
Johnson, Warren S., Milwaukee, Wis. Automatic temperature-regulating system	477,121	June 14	1391	338	59	1728
Johnson, Warren S., Milwaukee, Wis. Bicycle	477,122	June 14	1393	339	59	1729
Johnson, Warren S., Milwaukee, Wis. Saddle-support for bicycles	477,123	June 14	1394	339	59	1729
Johnson, William, Leeds, England, assignor of one-half to Somerset and Johnsonburg Manufacturing Company, Somerset, Mass. Continuous brick-kiln	472,926	Apr. 12	1388	356	59	278
Johnston, Alexander M., Homestead, Pa. Safety-valve	475,320	May 24	2279	586	59	1123
Johnston, Allen, Ottumwa, Iowa. Process of and machine for making emery-wheels	476,799	June 14	872	{214 215}	59	1624
Johnston, Frederic J., Cambridge, and N. F. Hallett, assignors to American Soda Fountain Company, Boston, Mass. Machine for bottling aerated liquids	472,362	Apr. 5	553	{143 144}	59	104
Johnston, Frederic J., Cambridge, and G. E. Barton, Somerville, assignors to American Soda Fountain Company, Boston, Mass. Siphon-bottle-filling machine	474,326	May 3	701	{181 182}	59	772
Johnston Harvester Company. (See Farrall, George A., assignor.)						
Jolley, Jefferson D., Warrenton, Va., assignor of one-half to W. H. Selden, Washington, D. C. Nut-lock	477,941	June 28	2750	689	59	2023
Jones, Albert F., Salem, Mass. Machine for cutting tan-bark	474,745	May 10	1378	349	59	914
Jones, Augustus H., assignor to Meriden Bronze Company, Meriden, Conn. Central-draft lamp	476,541	June 7	474	113	59	1531
Jones, Earnest, *et al.* (See Fisher, James W., assignor.)						
Jones, Edward, C. Dawson, Bellaire, and H. Stanton, Flushing, Ohio. Journal-box	477,329	June 21	1754	429	59	1811
Jones, Edward K., Fort Bragg, Cal. Plant-frame	473,756	Apr. 26	2783	699	59	577
Jones, Edwin R., Swissvale, Pa. Apparatus for coating metal plates	472,502	Apr. 5	778	199	59	147
Jones, Francis F., Comber, Canada. Leak-stopper or breach-plate	472,888	Apr. 12	1330	{341 342}	59	266
Jones, Frederick J., Bedford, assignor to Economic Gas and Coke Company, Limited, London, England. Making coke	472,621	Apr. 12	952	{246 247}	59	194
Jones, George S., Philadelphia, Pa. Type-writing machine	475,085	May 17	1921	{488 489}	59	1034
Jones, Henry A., and J. E. Marcy, New York, N. Y. Apparatus for heating and circulating water	474,961	May 17	1727	439	59	997
Jones, Henry C., Wilmington, Del. Machine for punching flange-plates	477,899	June 28	2685	{671 672}	59	2009
Jones, Henry C., Wilmington, Del. Bevel-shearing machine	477,900	June 28	2687	672	59	2010
Jones, Isaac, Delancey, Pa. Rod joint or coupling	477,596	June 21	2174	539	59	1894
Jones, Isaac B., assignor to himself and R. E. Richardson, Xenia, Ohio. Mechanism for propelling vehicles	473,843	Apr. 26	2916	{732 733}	59	603
Jones, James and James, Jr., Brooklyn, N. Y. Time-call	474,835	May 17	1533	391	59	958
Jones, James H., assignor to Emerson, Talcott & Company, Rockford, Ill. Guard-finger	475,118	May 17	1979	502	59	1045
Jones, John B., assignor of one-half to G. M. Illingworth, Chicago, Ill. Spring bed-bottom	474,911	May 17	1643	419	59	981
Jones, John B., assignor of two-thirds to G. M. Illingworth and H. L. Carroll, Chicago, Ill. Nut-lock	477,010	June 14	1216	295	59	1693
Jones, John C. F. (See Cogan, Pierce, and Jones.)						
Jones, John C. F., Braddock, Pa. Packing	475,870	May 31	3171	805	59	1307
Jones, Lorenzo D., assignor to Kenosha Novelty Company, Kenosha, Wis. Bridle	473,396	Apr. 19	2300	552	59	444
Jones, Oliver L., Cold Spring Harbor, N. Y. Spring conveyer	473,318	Apr. 19	2050	515	59	415
Jones, Philip R., Lyndhurst, N. J. Sporting-trap	472,709	Apr. 12	1083	278	59	217
Jones, Reuben, Atlanta, Ga. Plant-fender	476,074	June 28	2952	738	59	2061
Jones, Richard W., Syracuse, N. Y. Clip	472,298	Apr. 5	454	117	59	86
Jones, T. M. (See Miller, Lawrence B., assignor.)						
Jones, Thomas, Netherton, England. Apparatus for galvanizing wrought or cast iron and steel	476,651	June 7	640	{155 156}	59	1564
Jones, Wiley M., assignor of one-half to E. W. Smith, Webb City, Ark. Pegging-jack	476,650	June 7	639	155	59	1563
Jones, Winfield, *et al.* (See Fisher, James W., assignor.)						
Jonesson, Charles. (See Goodridge and Jonesson.)						
Jordan, Edmund, Brooklyn, assignor, by mesne assignments, to Pneumatic Press Company, New York, N. Y. Machine for cutting and shaping crackers or other plastic material	475,280	May 17	2220	{569 570}	59	1095
Jordan, Edward B. (See Schmiedl, Anton J., assignor.)						
Jordan, Frank B., Auburn, Me. Wrench	476,465	June 7	367	85	59	1502
Jordan, Green H., Talbotton, Ga. Plow-line	475,570	May 24	2688	682	59	1190
Jordan, James G., Des Moines, Iowa. Railway-rail curve	477,901	June 28	2689	673	59	2010
Jordan, John, *et al.* (See Trump, John G., assignor.)						
Jory, Charles. (See Moore and Jory.)						
Joseph Wagner Manufacturing Company. (See Cottrell, George, assignor.)						
Josey, Napoleon B., *et al.* (See Hollingsworth, Thomas H., assignor.)						
Joyce, Hanson B., Boston, Mass. Water-heater	472,128	Apr. 5	189	51	59	35
Judd, Thomas L., East Orange, N. J. Gripper for scaling-ladders, &c	473,581	Apr. 26	2518	635	59	528
Judge, James L., assignor of one-half to W. K. Downey, Milwaukee, Wis. Air-valve	477,597	June 21	2175	539	59	1895
Judson, Charles N., Brooklyn, N. Y. Device for closing elevator-gates	476,386	June 7	249	60	59	1485
Judson, Charles N., Brooklyn, N. Y. Elevator	476,387	June 7	251	60, 61	59	1486
Judson, Charles N., Brooklyn, N. Y. Apparatus for closing elevator-doors	476,388	June 7	255	61	59	1487
Judson, Whitcomb L., New York, N. Y. Vacuum-pump	473,509	Apr. 26	2386	604	59	501
Juel, John, Larchwood, Iowa. Self-feeder for thrashing-machines	474,254	May 3	565	139	59	747
Justesen, Christen, Audubon, Iowa. Post-hole auger	474,664	May 10	1253	320	59	889
Kading, Charles H., Tripoli, Iowa. Harrow	472,129	Apr. 5	191	51	59	35
Kaempen, Folkert, Jr., Quincy, Ill. House-door letter-box	475,119	May 17	1980	502	59	1046

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Kahn & Bros., F. & L. (See Kahn and Christ, assignors.)						
Kahn, Lazard, and R. Christ, assignors to F. & L. Kahn & Bros., Hamilton, Ohio. Ash-box for stoves	472,577	Apr. 12	881	227	59	182
Kallor, John N., assignor to Reeves & Co., Columbus, Ind. Clover-hulling machine	472,218	Apr. 5	333	86	59	62
Kallor, John N., assignor to Reeves & Co., Columbus, Ind. Clover-huller frame	472,792	Apr. 12	1198	308	59	239
Kallor, John N., assignor to Reeves & Co., Columbus, Ind. Feed-table for clover-hulling machines	474,134	May 3	384	92	59	712
Kallor, John N., assignor to Reeves & Co., Columbus, Ind. Blast-board for clover-hulling machines	474,604	May 10	1157	294	59	870
Kallor, John N., and E. L. Williams, assignors to Reeves & Co., Columbus, Ind. Casing for clover-hullers	473,259	Apr. 19	1960	492	59	397
Kallor, John N., and E. L. Williams, assignors to Reeves & Co., Columbus, Ind. Rake mechanism for clover-hullers	473,701	Apr. 26	2705	681	59	562
Kalb, John S. (See Oberer and Kalb.)						
Kales, John W., Franklinville, N. Y. Automatic safety-switch for railways	474,474	May 10	949	{244 {245	59	830
Kalisch, Paul, Jetsch, near Golssen, Germany. Means for instruction in arithmetic	472,057	Apr. 5	69	18, 19	59	16
Kampfe, Frederick, R., and O., Brooklyn, N. Y. Razor-strop	477,902	June 28	2690	673	59	2010
Kampfe, Otto. (See Kampfe, Frederick, R., and O.)						
Kampfe, Richard. (See Kampfe, Frederick, R., and O.)						
Kane & Co., Thomas. (See Marks, Solomon, assignor.)						
Kane, John, Philadelphia, Pa. Sash-fastener	473,757	Apr. 26	2784	700	59	578
Kaplan, Hirsch, New York, N. Y. Oil-can	474,172	May 3	446	108	59	724
Karger, Morris, *et al.* (See Carrington, Harry T., assignor.)						
Karr, Francis, Chicago, Ill. Pillow-sham holder	476,882	June 14	1011	245	59	1652
Kass, John, Menominee, Mich. Beer-racking trough	476,652	June 7	642	156	59	1564
Kastler, George. (See Randall, Timothy P., assignor.)						
Kastner, John, Jr., Evansville, Ind. Safety appliance for steam-boilers	474,135	May 3	385	92, 93	59	713
Kato, Jesse J., and T. H. Rhodes, Los Angeles, Cal. Toll-collecting apparatus for telephones	472,169	Apr. 5	245	65	59	46
Kay, Joshua A. (See Topliss and Kay.)						
Kayne, Thomas Y., assignor to H. M. Henley, Chicago, Ill. Truss	474,088	May 3	326	78	59	700
Kealy, James P., New Haven, Conn. Lubricator	475,690	May 24	2863	724	59	1233
Keating, Alphonso S., assignor of one-half to H. W. Thayer, Corry, Pa. Electric battery	474,912	May 17	1644	420	59	981
Keatinge, John R., Brooklyn, N. Y. Type-cleaner for type-writing machines	475,777	May 31	3009	763	59	1274
Keck, Christian, Cincinnati, Ohio. Electroplate attachment	476,653	June 7	644	156	59	1564
Keck, James V. (See Dwiggins, John W., assignor.)						
Keegan, Peter F., *et al.* (See Johns, Will R., assignor.)						
Keeler, H. F., *et al.* (See Starks, John, assignor.)						
Keeling, Squire, assignor of one-half to J. Wheatly, Springfield, Ill. Step-ladder	477,843	June 28	2596	651	59	1993
Keen, Edwin R., assignor to Western Publishing House, Chicago, Ill. Device for atomizing or spraying liquids	475,452	May 24	2496	637	59	1162
Keen & Hagerty. (See Wagandt, Charles L., assignor.)						
Keenan, Charles G., and W. J. Morris, Allegheny, Pa. Slate-pencil sharpener	474,136	May 3	386	93	59	713
Kegel, Fritz, Breslau, Germany. Means for setting diamonds and other stones for cutting purposes	475,778	May 31	3010	763	59	1275
Keifer, Frank H., and G. H. Thompson, Howard, Kans. Bill-of-fare indicator	475,871	May 31	3172	805	59	1307
Keil, Adam, McKeesport, and A. R. Westerdahl, assignors to S. S. Brown, Pittsburg, Pa. Mining-machine	472,363	Apr. 5	555	144	59	104
Keil, Adam, McKeesport, and A. R. Westerdahl, assignors to S. S. Brown, Pittsburg, Pa. Mining-machine	472,503	Apr. 5	779	199	59	148
Keiper, Henry B., Lancaster, Pa. Screw-cutting plate	473,582	Apr. 26	2520	636	59	528
Keith, Harrison T., Vincennes, Ind. Holder for postmarking stamps	476,049	May 31	3447	879	59	1361
Keith, Jeremiah, North Middleborough, assignor of one-half to C. B. Gardiner and D. F. Ranney, Raynham, Mass. Machine for automatically weighing tacks	474,777	May 10	1427	363	59	924
Kelch, Frans, Berlin, Germany. Injector	472,949	Apr. 12	1421	363	59	284
Kellar, A. M., *et al.* (See Jackson and Reiger, assignors.)						
Kelleher, Daniel, New Bedford, Mass. Bomb-lance	472,889	Apr. 12	1333	342	59	267
Keller, Frank, Culbertson, Nebr. Lubricator	474,069	May 3	327	78	59	700
Keller, Leo, Chicago, Ill. Can forming and soldering machine	476,927	June 14	1084	{261 {262	59	1667
Keller, Peter S. (See Knowels, John S. and G. S., assignors.)						
Kelley, Harry H., Willoughby, Ohio. Brake mechanism for street-cars	473,510	Apr. 26	2388	605	59	502
Kelley, John E., Philadelphia, Pa. Valve-gear for direct-acting steam-engines	476,148	May 31	3609	912	59	1394
Kellogg, Charles L. F. (See Imeson, Tibbets, and Kellogg.)						
Kellogg, Charles S., Chesterton, Ind. Device for keeping stalls clean	474,559	May 10	1095	278	59	859
Kellogg, Charles W. (See Hitchcock, Halbert K., assignor.)						
Kellogg, Dan. W., Auburn, N. Y. Reversible eccentric for engines	472,542	Apr. 12	837	214	59	172
Kellogg, Fortunatus G., assignor of one-half to H. Fox, Brainerd, Minn. Lubricator-gland	476,747	June 7	780	192	59	1593
Kellogg, Levi M., San Francisco, Cal. Safety attachment for elevators	477,371	June 21	1821	{445 {446	59	1823
Kellom, Charles F., Delair, N. J., assignor of one-half to M. W. Phillips, Philadelphia, Pa. Oiling device	477,422	June 21	1895	467	59	1839
Kelly, Edward K., New York, N. Y. Clasp	473,629	Apr. 26	2598	653	59	542
Kelly, George A. (See Scott, Eugene C., assignor.)						
Kelly, George A., Stillwater, Minn. Steam-cylinder valve	475,321	May 24	2280	587	59	1123
Kelly, John F., New York, N. Y. Electrical meter	472,265	Apr. 5	407	105	59	76
Kelly, Joseph H., *et al.* (See Howard, Frank P., assignor.)						
Kelly, O. W., *et al.* (See Neer, Harry M., assignor.)						
Kelsey, Frank N., Florence, Mass. Lock-hinge	476,466	June 7	368	86	59	1508
Kelsey Furnace Company. (See Kelsey, William W., assignor.)						
Kelsey, Myron C., *et al.* (See Jeffrey, Albert D., assignor.)						
Kelsey, William W., Cortland, N.Y., assignor to Kelsey Furnace Company. Hot-air furnace	476,230	May 31	3759	949	59	1422
Kelso, Samuel J., Detroit, Mich. Slip-holder	477,942	June 28	2751	689	59	2023
Kemmerer, John N., Loganton, Pa., assignor of three-fifths to J. K. Heckman, W. R. Goodman, and J. Kemmerer. Steam-engine	473,844	Apr. 26	2918	{733 {734	59	604
Kemmerer, Joseph, *et al.* (See Kemmerer, John N., assignor.)						
Kempton, George, *et al.*, trustees. (See Severy, Melvin L., assignor.)						
Kendall, Charles B. (See Schaake, Henry, assignor.)						
Kendall, Francis B. and J. T., assignors of one-half to M. A. Giddings and C. Crosier, and said J. T. Kendall assignor of his remaining one-fourth to said Francis B. Kendall, M. A. Giddings, and C. Crosier, Monmouth, Ill. Corn-shocker	476,389	June 7	258	61	59	1488
Kendall, John T. (See Kendall, Francis B. and J. T.)						
Kendrick, Hiland H., Fulton, N. Y. Pulley	473,119	Apr. 19	1718	435	59	350

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Kenehan, Gilbert P., Cleveland, Ohio. Belt-stretcher	478,060	June 28	2933	732	59	2057
Kennedy, Charles W., and J. W. Grantland, Philadelphia, Pa.; said Grantland assignor to said Kennedy. Manufacture of steel ingots	473,466	Apr. 26	2317	586	59	489
Kennedy, Hugh, Sharpsburg, assignor to Riter & Conley, Pittsburg, Pa. Valve for hot-blast stoves	472,640	Apr. 12	974	252	59	198
Kennedy, Julian, Latrobe, Pa. Valve	477,372	June 21	1823	446	59	1824
Kennedy, Oliver, Brunswick, Ga. Checkrein worker and hook	477,549	June 21	2105	523	59	1881
Kennedy, Theodore A., Des Moines, Iowa. Glove for base-ball catchers	472,482	Apr. 5	743	189	59	141
Kennedy, Thomas B. (See Bartholomew, Albert W., assignor.)						
Kennet, John H., Huntington, W. Va. Shaft or pole support	476,390	June 7	259	62	59	1488
Kenney, Luke W., New York, N. Y. Ankle-support for skates	477,550	June 21	2106	523	59	1881
Kenney, Samuel M. (See Russell, William, assignor.)						
Kenosha Novelty Company. (See Jones, Lorenzo D., assignor.)						
Kent, Charles J., Villa Park, Colo. Mining sluice-box	477,373	June 21	1824	446	59	1824
Kepner, Eugene T., Helena, Mont. Shipping case or box	473,702	Apr. 26	2706	681	59	563
Ker, Charles A., Glasgow, Scotland. Engraving-machine	477,257	June 21	1641	{400 {401	59	1789
Kern, August, St. Louis, Mo. Swivel-stand for barbers' chairs	473,397	Apr. 19	2200	552	59	444
Kerr, Benjamin S., Monroe, Wis. Washing-machine	474,746	May 10	1379	349	59	914
Kerr, Charles J., Reynoldsville, Pa. Weather-vane indicator	477,551	June 21	2107	524	59	1881
Kerr, George A., Columbus, Ind. Centrifugal machine for refining starch	473,511	Apr. 26	2389	605	59	502
Kerr, George W., New Haven, Conn. Shifting-seat vehicle	475,059	May 17	1881	477	59	1027
Kerr, John L., Wedowee, Ala. Cultivator or plow	477,552	June 21	2108	524	59	1881
Kerslake, Harry A., Auburn, assignor to H. P. Clark, New York, N. Y. Vapor-burner or plumber's torch	473,159	Apr. 19	1784	450	59	363
Kerwin, Patrick H. (See Foley, Frank, assignor.)						
Kesling, Perry, assignor to King Drill Company, Logansport, Ind. Grain-drill	476,391	June 7	260	62	59	1488
Kessler, Charles E., Decatur, Ill. Check-row corn-planter	476,149	May 31	3611	{912 {913	59	1394
Kessler, Christian, Brooklyn, N. Y. Crochet-button	477,806	June 28	2523	633	59	1979
Ketchem, John E., and T. C. Nixon, Morrilton, Ark. Watch-case spring	476,748	June 7	781	192	59	1593
Ketchum, Frank S., New York, N. Y. Railway-tie	475,981	May 31	3352	845	59	1341
Keyes, Atwood B., Princeton, assignor of one-half to E. D. Blood, Sterling, Mass. Two-wheeled vehicle	475,943	May 31	3293	831	59	1330
Keyser, Algernon S., Philadelphia, Pa. Clock attachment for bicycles	477,423	June 21	1896	467	59	1839
Keyser, George W., Indianapolis, Ind. Flushing-tank	473,882	Apr. 26	2983	752	59	616
Keystone Mast Arm Company. (See Kim, George M., assignor.)						
Keystone Watch Case Company. (See Mink, Fritz, assignor.)						
Kheiralla, Ibrahim G., and A. F. Haddad, Cairo, Egypt. Book or envelope for theaters or other places of amusement	473,703	Apr. 26	2707	681	59	563
Kibby, Alex. S., Chicago, Ill. Combined whip-socket and lock for lap-robes	475,982	May 31	3353	845	59	1341
Kibby, Alexander S., Chicago, Ill. Whip-socket	472,543	Apr. 12	838	214	59	173
Kibler, John B., Minneapolis, Minn. Toy	473,556	Apr. 26	2466	624	59	517
Kidd, Gideon P., Roann, assignor of one-half to J. H. Barnhart, Wabash county, Ind. Wire stretcher	472,927	Apr. 12	1391	356	59	279
Kidd, William H., Santa Rosa, Cal. Saw-handle	472,890	Apr. 12	1335	342	59	267
Kidwell, John H., *et al.* (See Deardorff, Benton, assignor.)						
Kieckhefer, August, and G. Cadman, Milwaukee, Wis.; said Cadman assignor to said Kieckhefer. Elevator-valve	477,055	June 14	1288	313	59	1708
Kiefer, Peter, Jr., Cincinnati, Ohio. Furnace	474,173	May 3	447	108	59	724
Kienardt, John A., assignor of one-half to A. E. Singer, Dayton, Ohio. Cash register and indicator	477,598	June 21	2176	539	59	1895
Kies, Harry E., assignor of one-half to B. J. Walker, Erie, Pa. Car-coupling	477,258	June 21	1643	401	59	1789
Kieser, Charles, Baltimore, Md., assignor to St. Louis Improved Shear and Tool Manufacturing Company, St. Louis, Mo. Shearing-machine	472,928	Apr. 12	1392	357	59	279
Kiley, John, Boston, Mass. Staircase	475,016	May 17	1821	{461 {462	59	1014
Kiley, Michael J., *et al.* (See Beckwith, Theodore A., assignor.)						
Kilmer, Irving A., Newburg, N. Y. Bale-tie	476,654	June 7	645	157	59	1565
Kim, George M., assignor to Keystone Mast Arm Company, Allegheny, Pa. Electric-light support	473,229	Apr. 19	1916	482	59	388
Kimball, Frank A., *et al.* (See Turner, Alonzo G., assignor.)						
Kimble, James P., Rose Hill, Iowa. Track-clamp	477,943	June 28	2752	689	59	2023
Kimman, Frederick G. (See Heaphy, John W., Jr., assignor.)						
Kindl, Frederick H., and C. V. Childs, Pittsburg, Pa. Builder's chart	472,266	Apr. 5	408	105	59	76
King, Charles, Detroit, Mich., assignor to Farrell Brothers Company, New Haven, Conn. Bed-spring	477,181	June 14	1491	365	59	1749
King, Charles A., Jacksonville, N. J. Grubbing-machine	473,191	Apr. 19	1852	{466 {467	59	375
King, Charles E. (See Peirce and King.)						
King, Christopher C., assignor of one-half to N. A. Hall, Syracuse, N. Y. Cooler	477,425	June 21	1898	{467 {468	59	1839
King, Daniel, Finksburg, Md. Steam-boiler	472,731	Apr. 12	1109	285	59	222
King Drill Company. (See Kesling, Perry, assignor.)						
King, Frank. (See King, James, assignor.)						
King, James, assignor of one-half to F. King, Gaines Station, Mich. Buggy-top attachment	473,758	Apr. 26	2785	700	59	578
King, James L. O., Fair Play, S. C. Plow-handle clamp	472,657	Apr. 12	996	257	59	202
King, James M., Rochester, Minn. Grain-separator	475,779	May 31	3010	763	59	1275
King, John H., Cincinnati, Ohio, assignor of one-half to R. W. Dugan, Covington, Ky. Sand-strainer for deep wells	478,061	June 28	2933	732	59	2058
King, John O., Altamont, Kans. Broom-head	472,365	Apr. 5	559	145	59	105
King, Richard E. (See Diamond, James, assignor.)						
King, William E. (See Christy, Charles, Jr., assignor.)						
King, William E., and W. R. Walpole, Chicago, Ill. Combination-tool for bicyclists	475,780	May 31	3011	764	59	1275
King, William H., New Haven, Conn. Sash-fastener	476,050	May 31	3448	870	59	1361
Kings, Andrew J. (See Summers, Kings, and Hardesty.)						
Kingsbury, Charles, Yonkers, N. Y. Device for repairing tape-measures	475,944	May 31	3294	831	59	1330
Kingsland, Philip S., Chicago, Ill. Elastic scraper for flue-cleaners	475,506	May 24	2587	658	59	1180
Kingsley, Elisha L., assignor of one-half to E. I. Rice, Syracuse, N. Y. Device for dampening envelopes	474,174	May 3	448	108	59	724
Kinley, Edward A., Bressport, N. Y. Car-brake	473,319	Apr. 19	2051	515	59	416
Kinney, William A. (See Shaffer, John D., assignor.)						
Kinsey, Joseph W. (See Wright, Parvin, assignor.)						
Kinsley, Frank. (See Frisbie, Henry R., assignor.)						
Kinsman, James W., San Francisco, Cal. Hoisting apparatus	475,963	May 31	3325	839	59	1335

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Kint, Daniel, assignor of one-eighth to G. H. Arne, Alpena, S. D. Car-coupling	476,749	June 7	782	192	59	1593
Kintner, Alcuin E., Palmesville, Ohio. Wire-tension device	476,655	June 7	646	157	59	1565
Kintner, Charles J., New York, N. Y. System of electrical conductors	473,942	May 3	76	15, 16	59	651
Kinzler, Armand F., San Francisco, Cal. Table	477,424	June 21	1897	467	59	1839
Kirby, John, Jr. (See Kittredge and Kirby.)						
Kirby, Remembrance L., Pomeroy, Wash. Riding-harrow	473,933	May 3	81	16	59	652
Kirby, Remembrance L., Pomeroy, Wash. Clevis	474,747	May 10	1381	349	59	915
Kirchner, Louis, Poughkeepsie, N. Y. Funnel	477,011	June 14	1217	295	59	1694
Kirk & Co., James S. (See Domeier and Hagemann, assignors.)						
Kirk, John, and B. Lee, Leeds, England. Apparatus for finishing cloth	473,398	Apr. 19	2202	552	59	444
Kirk, Wallace R., Kansas City, Mo. Railway-siding	474,665	May 10	1254	320, 321	59	890
Kirk, Wallace R., Kansas City, assignor of one-half to J. P. Jackson, Independence, Mo. Car wheel and axle	474,836	May 17	1535	391	59	958
Kirkpatrick, Edgar T., assignor of one-half to J. Scudder, Adrian, Mo. Billet-loop	477,056	June 14	1291	313	59	1708
Kirkpatrick, George W., Macedon, N. Y. Seeding-machine	472,891	Apr. 12	1336	342	59	267
Kirwin, Eliza, Indianapolis, Ind. Pessary	475,453	May 24	2499	637	59	1163
Kitchell, Joseph F. (See Baunach, John, assignor.)						
Kitsmiller, Joel, Chicago, Ill. Tool for upsetting ends of metal tubes	472,504	Apr. 5	782	200	59	148
Kitson Machine Company. (See Morton, Albert H., assignor.)						
Kitten, Florens, Ferdinand, Ind. Gearing for traction-engines	477,057	June 14	1291	313	59	1708
Kittredge, Arthur M., and J. Kirby, Jr., Dayton, Ohio. Vestibule connection for cars	474,796	May 10	1464	372	59	932
Kjellström, Mary S., New York, N. Y. Street-sweeper	472,366	Apr. 5	561	145	59	105
Klapperich, John W., assignor of one-half to J. H. Thomas, Chicago, Ill. Sash-fastener	472,364	Apr. 5	559	144	59	105
Klar, Joseph, and F. H. Hall, Anna, Ill. Animal-trap	477,126	June 14	1397	340	59	1729
Kleb, Fred W. (See Kleb, Johann H., assignor.)						
Kleb, Johann H., assignor of one-half to F. W. Kleb, Newark, N. J. Artificial stone	476,542	June 7	475	113	59	1531
Kleber, Harry, *et al.* (See Ells, Josiah W., assignor.)						
Kleber, Oscar, *et al.* (See Ells, Josiah W., assignor.)						
Klein, Anthony N., San Francisco, Cal. Letter-box	476,657	June 7	648	157	59	1565
Klein, Charles J., assignor to Interior Conduit and Insulation Company, New York, N. Y. Electrical switch	477,374	June 21	1826	447	59	1824
Klein, Henry C., Muncie, Ind. Cannon-pinion for timepieces	476,656	June 7	647	157	59	1565
Klein, John S., Oil City, Pa. Atomizer	473,759	Apr. 26	2786	700, 701	59	578
Kleinsorge, August, Ballwin, Mo. Brake for wagons	476,658	June 7	650	158	59	1566
Kline, David F. (See Daily, Hiram, assignor.)						
Kline, Winfield S., Bolivar, Ohio. Fence	472,578	Apr. 12	882	227	59	182
Klingenberg, Ernest J., Eau Claire, Wis. Stand or rack for hand-stamps	475,120	May 17	1981	502	59	1046
Klipfel, Thomas W., Chicago, Ill. Coiled-wire bed-bottom	477,662	June 28	2297	575	59	1934
Klumpp, Louis R. (See Rose, James E., assignor.)						
Knabe, Carl, Osterwieck, Germany. Machine for coloring leather, skins, &c	477,761	June 28	2458	614, 615	59	1968
Knapp, Adam, Jr., Strykersville, N. Y. Combined hand corn-planter and fertilizer-distributer	473,760	Apr. 26	2787	701	59	579
Knapp, Benjamin F., Madison, N. J. Machine for pulverizing soda, manure, &c	473,421	Apr. 19	2236	562	59	451
Knapp, Edgar, Middleport, N. Y. Bean picker and sorter	472,299	Apr. 5	455	117, 118	59	86
Knapp, Edmond B., assignor of one-half to H. B. White, Riverside, Cal. Trace	473,490	Apr. 19	2235	561	59	451
Knapp, George S., Chicago, Ill. Crushing and grinding mill	472,367	Apr. 5	563	145	59	106
Knapp, Gilbert P., New York, N. Y. Display-package	476,765	June 7	805	198	59	1598
Knapp, Myron A. (See Greene, Grant P., assignor.)						
Knapper, Joseph. (See Nelson, Knapper, and Taylor.)						
Kneip, William F., Ypsilanti, Mich. Undershirt	472,672	Apr. 12	1022	264	59	206
Knight, Charles A., Brooklyn, assignor to New York Condensed Milk Company, New York, N. Y. Bottle-basket	476,150	May 31	3615	913	59	1395
Knight, George E., Boston, Mass. Canister	472,892	Apr. 12	1337	343	59	268
Knippe, Henry, Poland, Ind. Scaffold	474,255	May 3	566	139	59	748
Knoder, Tomas, Auburn, Ind. Toe-weight	477,663	June 28	2297	576	59	1934
Knost, Hermann. (See Eickershoff and Knost.)						
Knost, Julius. (See Eickershoff and Knost.)						
Knowels, George S. (See Knowels, John S. and G. S.)						
Knowels, John S. and G. S., assignors of one-fourth to P. S. Keller, Buffalo, Mo. Music-leaf turner	475,322	May 24	2281	587	59	1123
Knowles, Daniel, assignor of one-fourth to G. W. Johnson, Norfolk, Va. Fire-escape	472,950	Apr. 12	1422	363, 364	59	284
Knowles, George, Jr., Milwaukee, Wis. Electric controlling apparatus for fire-alarms	477,214	June 21	1558	383, 384	59	1775
Knowles, Justus E., Lynn, Mass. Combination-lock	474,017	May 3	210	50	59	678
Knowles Loom Works. (See Hutchins, George F., assignor.)						
Knowlton, Ephriam H. B., assignor of two-thirds to J. Gunn and P. McGuire, West Superior, Wis. Car-coupling	473,761	Apr. 26	2789	701	59	579
Knowlton, George K., Hamilton, Mass. Draining-bucket for wash-boilers	475,571	May 24	2689	682	59	1199
Knox, Orville M., Oneida, N. Y. Railway-tie	473,934	May 3	82	17	59	652
Knutson, Ole, Herman, Minn. Harvester-reel	473,072	Apr. 19	1637	417	59	337
Koch, John C., Berlin, Germany. Paper box for chess, checkers, &c	476,019	May 31	3402	858	59	1352
Kochendarfer, Sirus E., Hollidaysburg, Pa. Watch-regulator	473,422	Apr. 19	2236	562	59	451
Kochner, Martin F. W., Brooklyn, N. Y. Ventilator for hats	477,553	June 21	2110	524	59	1882
Koedding, William, assignor of one-half to E. Verstraete, St. Louis, Mo. Dynamo-electric machine	476,151	May 31	3616	914	59	1395
Koehler, Martin, Toledo, Ohio. Hot-air furnace	472,219	Apr. 5	334	86	59	63
Koenen, William, Cleveland, Ohio. Sash-fastener	475,572	May 24	2690	682	59	1200
Köhler, Rudolph, Lipine, Germany. Revolving roaster	475,060	May 17	1883	477, 478	59	1027
Kohn, Jacob, *et al.* (See Dimpfl, Anton, assignor.)						
Kohn, Moritz. (See Schubert, Max, assignor.)						
Kolb, Bernard W., Detroit, Mich. Refrigerator	477,944	June 28	2753	690	59	2024
Kolb, Joseph, Belfast, Pa. Snow-plow	476,800	June 14	874	215	59	1624
Kolbe, Henry, *et al.* (See Otto, Peter, assignor.)						
Kollas, Frederick, *et al.* (See Saxton, Harry J., assignor.)						
Kolts, William J., Rondout, N. Y. Bottle-stopper	472,761	Apr. 12	1156	296	59	231
Koons, John W., Lehighton, Pa. Lock and latch	475,121	May 17	1982	502	59	1046
Koonts, A. F. (See Alexander, James, assignor.)						
Koonts, Ezra P., Ligonier, Ind. Rocking-chair	476,152	May 31	3619	915	59	1396

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Koontz, John P., assignor of one-half to E. H. Smith and R. M. Davidson, Newark, Ohio. Nut-lock	474,837	May 17	1538	391	59	958
Koplin, Lebbeus A., Akron, Ohio. Bottle-washing machine	472,368	Apr. 5	564	146	59	106
Körber, Johann W. (See Steuth and Körber.)						
Korda, Louis M., Munich, Germany. Camera-shutter	477,012	June 14	1218	295	59	1694
Korell, Henry, Hamilton, Ohio. Folding shelf	475,323	May 24	2282	583	59	1124
Kownslar, C., *et al.* (See Fitzwater, William M., assignor.)						
Kraft, Benjamin F., Reading, Pa. Burglar-alarm	476,945	June 14	1120	269	59	1673
Kraft, John U., assignor of one-half to H. Rave, Milwaukee, Wis. Machine for extracting bungs	477,599	June 21	2178	540	59	1895
Krämer, Franz, assignor to L. Merkleim, New York, N. Y. Apparatus for sterilizing milk	475,122	May 17	1984	503	59	1046
Krans, Edward L., Slatington, Pa. Slate-muffler	473,120	Apr. 19	1720	435	59	350
Krause, Frank B., Cleveland, Ohio. Erasing attachment for penholders	473,423	Apr. 19	2237	562	59	451
Krehbiel, John, Cleveland, Ohio. Car-seat	474,666	May 10	1257	321	59	890
Krehbiel, John, Cleveland, Ohio. Car-coupling	475,573	May 24	2691	682	59	1200
Kreuter, Adam. (See Nelson and Kreuter.)						
Kriebs, John. (See Pfiffner and Kriebs.)						
Krieg, Eugene J., Marquette, Mich. Life-preserver	476,277	June 7	71	15	59	1451
Kringel, Frank W., Los Angeles, Cal. Touch-regulating device for pianos	476,766	June 7	806	198	59	1598
Kriz, Francis C., Milwaukee, Wis. Rein-support	473,583	Apr. 26	2522	636	59	529
Krnka, Karl, assignor to Krnka Repeating Rifle Company, Limited, London, England. Magazine-gun	475,061	May 17	1884	478, 479	59	1027
Krnka Repeating Rifle Company. (See Krnka, Karl, assignor.)						
Krotz, Alvaro S., assignor to H. J. Smith, Defiance, Ohio. Valve-gearing	475,691	May 24	2866	725	59	1234
Krueger, John M., and F. Wunderlich, Shiner, Tex. Poison-distributer	477,127	June 14	1400	340	59	1730
Krumscheid, Jacob, Boston, Mass. Service-pipe water-heater	473,762	Apr. 26	2790	701	59	579
Kruse, Charles. (See Weiss, Moritz, assignor.)						
Krymer, William, *et al.* (See Jeffrey, Albert D., assignor.)						
Küch, Richard, assignor to W. C., W., and H. Heraeus, Hanau-on-the-Main, Germany. Sulphuric-acid pan and making the same	474,527	May 10	1035	265	59	847
Kuen, Charles W., Chicago, Ill. Ticket-punch	472,793	Apr. 12	1199	308	59	239
Kufs, Richard, New York, N. Y. Labeling-machine	476,392	June 7	261	62	59	1488
Kuhn, Michael G., New York, N. Y. Spool-holder	476,883	June 14	1013	246	59	1652
Kuhns, George F., *et al.* (See Miller, Allen T., assignor.)						
Kuhns, Harry B., *et al.* (See Miller, Allen T., assignor.)						
Kuhns, William N., *et al.* (See Miller, Allen T., assignor.)						
Kunath, Hermann O., Evansville, Ind. Rope-reel	477,554	June 21	2111	524	59	1882
Kunkle, Erastus B., assignor to himself and W. D. Bostick, Fort Wayne, Ind. Safety valve and muffler	477,945	June 28	2754	690	59	2024
Kurz, William D., and H. Amundson, La Crosse, Wis. Electric-lamp socket	474,667	May 10	1257	321	59	890
Kužel, Hans, assignor to Farbwerke, vormals Meister, Lucius & Brüning, Hochst-on-the-Main, Germany. Azo dye. (Reissue)	11,231	Apr. 5	796	.....	59	151
Kužel, Hans, assignor to Farbwerke, vormals Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Making naphthosultondisulphonic acid	473,467	Apr. 26	2319	.....	59	489
Kyser, Oren A., Lisbon, Ill. Fire-grate	472,058	Apr. 5	71	19	59	16
L. B. Gatcomb Company. (See Shattuck, Burt E., assignor.)						
L. L. F. Fixture Company. (See Wythe, William W., assignor.)						
L. Wolff Manufacturing Company. (See Clifford and Gavin, assignors.)						
L. Wolff Manufacturing Company. (See Hoelscher, Herman M., assignor.)						
L'Eplattenier, Arnold, Brooklyn, N. Y. Magazine-camera	472,442	Apr. 5	674	173	59	127
La Burt, John, New York, assignor of one-half to W. H. Agricola, Brooklyn, N. Y. Car-coupling	475,219	May 17	2125	537	59	1075
La Casse, Henry. (See Wile and La Casse.)						
La Chapelle, Israel. (See Paquette and La Chapelle.)						
La Due, Maryette D. (See Edwards, Daniel R., assignor.)						
La Pierre, F. H. (See Dixon, Maynard L., assignor.)						
La Rue, Baker. (See Insinger, Alfred, assignor.)						
Lactoserine Company. (See Rehnström, Albert W., assignor.)						
Lacy, Henry. (See Annable, George G., assignor.)						
Lacy, William, Jr., Los Angeles, Cal. Coated metal pipe and manufacturing the same	475,454	May 24	2500	637	59	1163
Ladd, Daniel E., deceased; E. Z. Carpenter, Glenville, executor, assignor to C. H. C. Morris, J. and E. G. Wheeler, Amsterdam, N. Y. Tie for bags, bales, and bundles	473,822	Apr. 26	2280	722	59	597
Lafean, Daniel F., and F. X. Devlin, York, Pa. Box-covering machine	475,324	May 24	2283	587	59	1124
Lafferty, Hugh W., Wilmington, Del. Centrifugal machine	474,389	May 10	816	213	59	805
Lafferty, William J. (See Byrne and Lafferty.)						
Lahman, Edgar R., *et al.* (See Pleukharp, Ezra, assignor.)						
Lahman, Joshua E., *et al.* (See Pleukharp, Ezra, assignor.)						
Laidlaw, John, Glasgow, Scotland. Centrifugal machine	473,322	Apr. 19	2058	517, 518	59	417
Laidlaw, William A., Cherokee, Kans. Baling-press	473,320	Apr. 19	2052	515	59	416
Laidlaw, William A., Cherokee, Kans. Machine for making bale-ties	473,321	Apr. 19	2054	516, 517	59	416
Laird, John M., Huntingdon, Pa. Snow-iron for roofs	473,512	Apr. 26	2392	606	59	502
Laird, Robert W. (See Sweeney and Laird.)						
Lake, Benjamin, Concordia, Kans. Hame-tug attachment	475,325	May 24	2285	588	59	1124
Laliberte, Albina, Albany, N. Y. Cushion for bed-slats	474,018	May 3	211	50	59	678
Lamar, Charles P., Lyndon, Kans. Tension device for fence-machines	474,137	May 3	386	93	59	713
Lamb, Charles E. (See Harrison, George, assignor.)						
Lamb, George M., and H. R., Hillsdale, Mich. Device for joining intersecting wires	472,059	Apr. 5	72	20	59	16
Lamb, Hiram R. (See Lamb, George M. and H. R.)						
Lamb, John A., Euclid, Ohio. Sulky-hoe for vineyards	473,513	Apr. 26	2393	606	59	502
Lamb Knitting Machine Manufacturing Company *et al.* (See Perkins, Albert, assignor.)						
Lamb, Wilmer S., Freeport, Ill. Windmill	475,872	May 31	3172	805	59	1307
Lamberger, Simon, Buda-Pesth, Austria-Hungary. Combined lamp and cane or umbrella	473,763	Apr. 26	2791	702	59	579
Lambert, John W., Ohio City, Ohio. Carburetor	474,838	May 17	1539	391	59	958
Lambert, Richard C. (See Crawford and Lambert.)						
Lambert & Son, G. (See Wheatley, Harry D., assignor.)						
Lambing, Isaac P., Golden, Colo. Excavating apparatus	476,750	June 7	783	192, 193	59	1593
Lambur, Edward C., and G. Burdett, Waukesha, Wis. Fire-kindler	475,123	May 17	1985	503	59	1047
Lame, Charles R. (See Grimes and Lame.)						
Lame, John M., Morehead, and I. N. Phipps, Mount Sterling, Ky. Nut-lock	477,555	June 21	2112	525	59	1882
Lamphear, Edson, New Almelo, Kans. Windmill	474,839	May 17	1540	392	59	958

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Lamport, Abraham N., New York, N. Y. Safety-car	473,323	Apr. 19	2060	518, 519	59	418
Lamson Consolidated Store Service Company. (See Crowley, James T., assignor.)						
Landauer, Sigmund. (See Haiman, Elias, assignor.)						
Landauer, Sigmund, Atlanta, Ga. Cultivator	476,659	June 7	651	158	59	1566
Landis, Clayton G., *et al.* (See Iske, Albert, assignor.)						
Landis, Johann H., Oerlikon, near Zurich, Switzerland. Band-saw machine	473,468	Apr. 26	2320	586, 587	59	489
Lane, Almeron M., Meriden, Conn. Calendar-clock	473,424	Apr. 19	2238	562, 563	59	451
Lane, Charles F., Tulare, Cal. Washing-machine	477,013	June 14	1220	296	59	1094
Lane, Frederic A., New Haven, Conn. Turret-lathe	476,205	May 31	3707	937	59	1412
Lane, John H., Esmont, Va. Horse-detacher	477,664	June 28	2299	576	59	1935
Lane, Spencer B., Waterbury, Conn., assignor to E. P. Haff, New York, N. Y. Pen and pencil clasp	473,230	Apr. 19	1919	483	59	389
Lane, Thomas W., Boston, Mass., assignor to Electric Gas Lighting Company, of Maine. Electrical annunciator	473,121	Apr. 19	1720	435	59	351
Lane, William J., Poughkeepsie, N. Y. Support for moving bodies	477,556	June 21	2112	525	59	1882
Lane, William J., Poughkeepsie, N. Y. Support for moving bodies	477,557	June 21	2113	525	59	1882
Lane, William J., Poughkeepsie, N. Y. Support for moving bodies	477,558	June 21	2114	525	59	1882
Lang, Albert S. (See Bush, Martin L., assignor.)						
Lang, Anton, New Brunswick, N. J. Sash-balance	477,807	June 28	2524	633	59	1979
Lang, Julius, Griesheim, near Frankfort-on-the-Main, assignor to Chemische Fabrik Greisheim, Frankfort-on-the-Main, Germany. Making nitric acid	477,375	June 21	1829	447	59	1825
Lang, William, Brooklyn, N. Y. Eye for lacing strings of shoes	477,903	June 28	2691	673	59	2011
Langdon-Davies, Charles, assignor to Phonopore Syndicate, Limited, London, England. Phonoporic telegraphy	477,835	June 28	2581	646	59	1989
Langdon, George W., assignor of one-half to R. K. Atwater, Greene, N. Y. Clothes-drier	475,243	May 17	2167	551	59	1083
Lange, Herman O. (See Weir, Robert, assignor.)						
Lange, Robert, Columbus, Ohio. Vapor-bathing apparatus	473,935	May 3	83	17	59	652
Lange, Theodor, Brieg, Germany. Obtaining metallic zinc from sulphite of zinc by electrolysis	475,402	May 24	2414	616	59	1147
Langet, François P., Paris, France. Beading attachment for embroidering-machines	473,936	May 3	84	17, 18	59	652
Langford, Thomas B., Fort Meade, Fla. Orange-clipper	472,459	Apr. 5	705	180	59	133
Langley, Thomas F., East Kingston, N. H., assignor of one-fourth to J. P. Busfield, Haverhill, Mass. Ice-cutting machine	474,962	May 17	1729	439	59	998
Langschmidt, John H., Chicago, Ill. Car-coupling	472,505	Apr. 5	783	200	59	148
Langsdorf, John. (See Abrams and Langsdorf.)						
Langstroth, John A., San Francisco, Cal. Combined card ledger and index	475,043	May 17	1855	471	59	1021
Langville, Louis S., Troy, N. Y. Carbon product	475,092	May 17	1888	.....	59	1027
Lannert, John A. (See Jeavons, William R., assignor.)						
Lannert, John A., and W. R. Jeavons, Cleveland, Ohio. Vapor-burner	474,175	May 3	449	109	59	725
Lannert, John A., and W. R. Jeavons, Cleveland, Ohio. Vapor-burner	476,543	June 7	476	113	59	1531
Lantz, Franklin W., Washington, D. C. Magazine-gun	477,128	June 14	1401	340, 341	59	1730
Lanyon, Robert H., Nevada, Mo., and W. Lanyon, Pittsburg, Kans. Apparatus for roasting and smelting	474,019	May 3	213	50, 51	59	679
Lanyon, William. (See Lanyon Robert H., and W.)						
Larrabee, Charles S., trustee. (See Smith, William J., assignor.)						
Larson, Charles A., Kewanee, Ill. Padlock	473,192	Apr. 19	1854	467	59	375
Larsson, Gustaf, Boston, Mass. Desk tool-table	477,762	June 28	2460	615	59	1908
Latimer Cash Register Company. (See Latimer, William G., assignor.)						
Latimer, William G., assignor to Latimer Cash Register Company, Detroit, Mich. Cash register and indicator	474,993	May 17	1784	451	59	1007
Latimer, William G., assignor to National Match Selling Machine Company, Detroit, Mich. Vending-machine	475,281	May 17	2223	570	59	1095
Latta, Emmit G., Friendship, N. Y. Velocipede-saddle	472,732	Apr. 12	1112	295, 296	59	223
Latta, Joshua W., Sherman, Wyo. Car-coupling	475,326	May 24	2286	588	59	1125
Latulip, Fredrick, Syracuse, N. Y. Bushing for journal-bearings	475,983	May 31	3356	846	59	1342
Laubensdorfer, George, and F. Lipp, assignors to W. Hugershoff, New York, N. Y. Atomizer	474,605	May 10	1157	294	59	870
Laubheimer, William, and H. Salzer, Baltimore, Md.; said Laubheimer assignor to said Salzer. Preservation of meat	477,844	June 28	2597	.....	59	1993
Laubin, Charles W., Thomaston, Conn., assignor to N. Laubin, Meridian, Miss. Garment-hanger	478,062	June 28	2935	733	59	2038
Laubin, Nellie. (See Laubin, Charles W., assignor.)						
Lauch, Richard. (See Ulrich and Lauch.)						
Lauch, Richard, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Dye-stuff	476,393	June 7	263	.....	59	1469
Laude, Joseph, Monticello, Ark. Seed-planter and fertilizer-distributer	474,256	May 3	567	140	59	748
Laude, Joseph, Monticello, Ark. Seed-planter and fertilizer-distributer	474,748	May 10	1382	349	59	915
Laufenburg, Michael N., Stockton, Cal. Finger-bar	475,964	May 31	3327	839	59	1336
Lauferty, David A., New York, N. Y. Purse, card-case, and bill-holder	476,278	June 7	72	15	59	1452
Laughton, George L., Reno, Nev. Derrick	477,129	June 14	1406	341	59	1731
Laurence, Henry J. (See Vance and Laurence.)						
Lavigne, Hector, New York, N. Y. Combined table, prie-dieu, and confessional	476,394	June 7	264	63	59	1489
Lavinia, Mary B., administratrix. (See Lavinia, William H.)						
Lavinia, William H., deceased, Chicago, Ill.; M. B. Lavinia, administratrix. Secondary valve	475,455	May 24	2501	637, 638	59	1163
Law, William H., Peterborough, Canada. Power-hammer	477,559	June 21	2116	526	59	1883
Lawing, Samuel N., assignor of one-half to A. P. Smith and C. L. Walsh, Chattanooga, Tenn. Door-fastener	473,668	Apr. 26	2651	668	59	553
Lawles, Joseph H., New York, N. Y. Machine for turning patterns on pearl, ivory, or other substances	477,130	June 14	1407	341	59	1731
Lawless, John H., Jersey City, N. J. Plumber's force-pump	477,808	June 28	2526	634	59	1980
Lawrence, Alfred C., Toronto, assignor of one-half to E. J. Wheeler, Port Perry, Canada. Combination-lock	476,751	June 7	785	193	59	1504
Lawrence, Charles P., Mechanic Falls, Me., assignor to J. F. Harris, Jr., Boston, Mass. Lasting-machine	476,206	May 31	3713	938, 939	59	1413
Lawrence, George A., assignor of three-tenths to C. S. Clark and H. D. Treadwell, Salem, Mass. Air-tight vessel	472,460	Apr. 5	705	180	59	134
Lawrence, Sebern T. (See Ratcliff and Lawrence.)						
Lawrence, William B., Columbus, Ohio. Printing-press	475,327	May 24	2289	589	59	1125

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Lawson, Eugene, Wilkes-Barré, Pa. Toy	477,904	June 28	2692	674	59	2011
Lawton, Albert L. (See Lawton, Charles F., A. W., and A. L.)						
Lawton, Arthur W. (See Lawton, Charles F., A. W., and A. L.)						
Lawton, Charles F., Rochester, N. Y. Facing compound	472,369	Apr. 5	565	.....	59	106
Lawton, Charles F., A. L., and A. W., Rochester, N. Y. Apparatus for the manufacture of salt	475,575	May 24	2693	683	59	1200
Lawton, Charles F., A. W., and A. L., Rochester, N. Y. Apparatus for manufacturing salt	475,574	May 24	2692	683	59	1200
Lawton, Charles F., A. W., and A. L., Rochester, N. Y. Manufacturing salt	475,576	May 24	2694	683	59	1201
Lawton, Charles F., A. W., and A. L., Rochester, N. Y. Salt	475,577	May 24	2697	683	59	1201
Laycock, Ed. L. (See Leach, Charles, assignor.)						
Le Boeuf, Zepherin, *et al.* (See Smith, William D. C., assignor.)						
Le Count, Thomas J., New York, N. Y. Folding chair	473,704	Apr. 26	2709	681	59	563
Le Moult, Adolph. (See Spiegel, William G., assignor.)						
Lea, Thomas. (See Higgins and Lea.)						
Leach, Charles, assignor of one-half to E. L. Laycock, McCook, Nebr. Wrench	473,007	Apr. 19	1534	391	59	318
Leach, William W., Springtown, Ark. Tree-cultivator	475,124	May 17	1986	503	59	1047
Leak Advertising Company. (See Leak, Mondula, assignor.)						
Leak, Mondula, assignor to Leak Advertising Company, San Francisco, Cal. Exhibition-car	472,300	Apr. 5	459	118	59	86
Leary, William A., Norfolk, Va. Lumber-drying truck	476,801	June 14	875	215	59	1624
Leavitt, Frank M., Brooklyn, N. Y., assignor to Vulcan Company, Philadelphia, Pa. Corrice-press	476,946	June 14	1121	269, 270	59	1674
Leavitt, Harry W., and J. A. Bryson, Hammond, Ill. End-gate	477,131	June 14	1408	342	59	1732
Lee, Benjamin. (See Kirk and Lee.)						
Lee, Edward P., *et al.* (See Coleman, John, assignor.)						
Lee, Francis W., Woodend, Victoria. Potato-harvester	472,370	Apr. 5	567	146	59	106
Lee, Frank A., Des Moines, Iowa. Rein-support	473,584	Apr. 26	2523	636	59	529
Lee, Joseph G., assignor of one-half to G. T. Macon, Dallas, Tex. Well-drilling machinery	476,467	June 7	370	86	59	1509
Lee, Leighton, Wilmington, Del. Paper-making machine	476,153	May 31	3620	915	59	1396
Lee, Patrick, assignor to himself and G. W. Dillie, Boise City, Idaho. Cooking-utensil attachment	473,399	Apr. 19	2202	553	59	445
Lee, Thomas H., Greenup, Ill. Trace-protector	477,560	June 21	2120	526	59	1884
Lee, William R., Nelsonville, Tex. Plow	476,802	June 14	876	216	59	1625
Leech, William, New Haven, Conn. Removable folding frame for wagon-tops	474,390	May 10	817	213	59	806
Leech, William H. (See Welman, Frederick C., assignor.)						
Leek, John W., Cincinnati, Ohio. Running-gear for vehicles	475,518	May 24	2698	684	59	1201
Leek, William H., Quincy, Cal. Educational apparatus	476,468	June 7	370	86	59	1509
Lees, John, Jr., assignor of one-half to E. T. Ludecke, Adrian, Mich. Dust-pan	472,371	Apr. 5	569	147	59	107
Lees, Ralph. (See Lees, Thomas, R., and W., Jr.)						
Lees, Thomas, R., and W., Jr., Hollinwood, near Oldham, England. Cut-off-valve gear	472,658	Apr. 12	996	257, 258	59	903
Lees, William, Jr. (See Lees, Thomas, R., and W., Jr.)						
Lefever, Daniel M., Syracuse, N. Y. Lock and ejector mechanism for breakdown guns	475,873	May 31	3174	805, 806	59	1307
Lefever, Edward, and J. A. Bremner, Syracuse, N. Y. Shell for high explosives	476,395	June 7	265	63	59	1469
Leffel, Uriah H., Troy, Ohio. Plug-cutter	473,231	Apr. 19	1919	483	59	389
Leffingwell, William W., Dalton City, Ill. Barrel-roller	473,630	Apr. 26	2598	654	59	542
Leffler, Paul W. (See Hoyt and Leffler.)						
Legg, Albert, and C. W. Weston, Milton, N. Y. Sewing-machine	474,840	May 17	1542	392, 393, 394	59	959
Legg, Albert, Milton, and C. W. Weston, New York, N. Y. Sewing-machine needle	474,841	May 17	1544	394	59	959
Legg, Albert, Milton, and C. W. Weston, New York, N. Y. Sewing-machine	474,842	May 17	1545	394, 395	59	960
Leggett, Walter I., Galesburg, Ill. Fruit-jar filler	475,874	May 31	3179	806	59	1309
Lehmann, Robert E., Philadelphia, Pa. Axle	472,762	Apr. 12	1157	296	59	231
Lehmann, Rudolf, Chicago, Ill. Combined chair and sofa-bed	473,937	May 3	85	19	59	653
Leibe, Hugo, Baltimore, Md. Crimping-machine for cruppers	477,014	June 14	1221	296	59	1694
Leidich, Peter C., Ashland, Pa. Box for packing and shipping bottles	475,456	May 24	2502	638	59	1164
Leighton, George H., *et al.* (See Beckwith, Theodore A., assignor.)						
Leimberger, Frederick W. (See Seward and Leimberger.)						
Lemaire, Timothy, Troy, N. Y. Fishing-rod holder	473,073	Apr. 19	1637	417	59	337
Lemon, John T., Columbus, Ohio. Carpet-stretching device	477,809	June 28	2527	634	59	1980
Lemp, Hermann, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Induction-discharge protector for welding apparatus	473,514	Apr. 26	2395	606, 607	59	503
Lencauchez, Alexandre. (See Coze and Lencauchez.)						
Lenderoth, William, Rosebank, N. Y. Baker's oven	475,403	May 24	2415	616	59	1147
Lenhart, Marguerite J., *et al.* (See Moorhouse, Walter, assignor.)						
Lenty, Joseph, Troy, N. Y. Hose-coupling	476,752	June 7	788	194	59	1504
Leonard, Ben S. (See Platt, William M., assignor.)						
Leonard, Charles N., assignor to Drake & Wood Company, Indianapolis, Ind. Surgical chair	472,372	Apr. 5	569	147	59	107
Leonard, Charles N., R. B. Roberts, and W. D. Allison, Indianapolis, Ind.; said Leonard and Roberts assignors to said Allison. Surgical table	473,122	Apr. 19	1722	436	59	351
Leonard, Harry W., New York, N. Y. System of electrical distribution	476,544	June 7	478	113, 114	59	1532
Leslie, James W., Everett, Mass. Hanger for curtains	476,469	June 7	372	86	59	1509
Leslie, James W., Everett, Mass. Measuring device for liquids	476,470	June 7	373	87	59	1510
Lesly, Henry, Birmingham, Ala. Car-coupling	477,561	June 21	2120	526	59	1884
Lester, Henry G. (See Miller and Lester.)						
Lester, James S., Atlanta, Ga. Window-screen	476,154	May 31	3622	915	59	1397
Lester Piano Company. (See Trefz, Otto R., assignor.)						
Lester, Thomas S. (See Miller and Lester.)						
Letalle, Léon, Beauvais, France. Loom for weaving chenille webs	473,260	Apr. 19	1961	492	59	397
Letalle, Léon, Beauvais, France. Loom for weaving chenille carpets	473,261	Apr. 19	1963	493	59	398
Letalle, Léon, Beauvais, France. Loom-shuttle	475,125	May 17	1967	503	59	1047
Letcher, George. (See Jeffers, John F., assignor.)						
Letta, Walter M., Sedalia, Mo. Spark-arrester and draft-regulator	475,579	May 24	2699	684	59	1201
Leuckert, William, Brooklyn, N. Y. Fastener for clothes-lines	476,471	June 7	374	87	59	1510
Levey, John, assignor of one-half to G. E. Martin, Lindsay, Canada. Regulator for steam-furnaces	472,373	Apr. 5	575	148	59	108
Levin, William, New York, N. Y. Pruning implement	476,279	June 7	73	16	59	1452

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Levy, Alexander, *et al.* (See Turner, Alonzo G., assignor.)						
Levy, Ezekiel J. (See Mahle, Langford C., assignor.)						
Lewing, Louis R., Cincinnati, Ohio. Combination wash-stand and close stool	472,673	Apr. 12	1025	264	59	206
Lewis, Andrew T., East Portland, assignor to himself, and F. O. Downing, Portland, Oreg. Magazine tack-hammer	472,374	Apr. 5	576	148	59	108
Lewis, Edward F., assignor to Waterbury Farrel Foundry and Machine Company, Waterbury, Conn. Pressure-plate	472,301	Apr. 5	462	119	59	87
Lewis, Elliott L., Troy, N. Y. Animal-trap	472,733	Apr. 12	1114	286	59	223
Lewis, Frank H., *et al.* (See Burton, Augustus G., assignor.)						
Lewis, George A. (See Steele, Elbridge J., assignor.)						
Lewis, H. L. D., *et al.* (See Fitzwater, William M., assignor.)						
Lewis, John N., Coulee City, Wash. Rail-joint	476,753	June 7	789	194	59	1594
Lewis, Ledyard V., and S. S. Allen, Sun Prairie, Wis. Corn-harvester	477,132	June 14	1409	342, 343	59	1732
Lewis, Leroy S., East Hartford, Conn., assignor to H. B. Mitchel, Malden, Mass. Apparatus for purifying water	472,641	Apr. 12	975	253	59	199
Lewis, Leroy S., East Hartford, Conn., assignor to Sanitary Manufacturing Company, Cattlettsburg, Ky. Vaporizer	474,640	May 10	1215	311	59	881
Lewis, Mortimer G., New York, N. Y. Bench-vise	472,674	Apr. 12	1025	264	59	206
Lewis, Thomas S., Wilmington, Del. Ice-cream freezer	474,475	May 10	951	245	59	831
Lewis, Walter C., Boston, Mass. Right and left stocking	474,391	May 10	818	214	59	806
Lewis, William E., Pemaquid, Me. Culinary apparatus	473,400	Apr. 19	2203	553	59	445
Lewis, William G., Caledonia, Iowa. Colter attachment for plows	476,396	June 7	270	63	59	1490
Lewis, William M., New Hartford, Iowa. Mechanical motor	475,580	May 24	2700	684	59	1202
Leyden, Edward. (See Meiga and Leyden.)						
Libby, Charles P. (See Emery, Charles H., assignor.)						
Libbey, Hosea W., Boston, Mass. Evaporator attachment for stovepipes	472,060	Apr. 5	74	20	59	16
Libby, Charles P. (See Emery, Charles H., assignor.)						
Lichtfeldt, Fredrick, Milwaukee, Wis. Sewing-machine	478,063	June 28	2935	733	59	2058
Liebe, Charles, New York, N. Y. Fastening device	475,581	May 24	2701	685	59	1202
Liebmann, Rudolph, New York, N. Y. Button	472,375	Apr. 5	579	148	59	109
Liedel, Henry A., Haywards, Cal. Safety watch-pocket	475,017	May 17	1822	462	59	1014
Liedke, Charles H., assignor to J. S. Cowdery, Sandusky, Ohio. Crayon-machine	476,051	May 31	3450	870, 871	59	1362
Liedke, Edward L. (See Cowdery, Curtis, and Liedke.)						
Lighte, Ferdinand C., Florence, S. C. Touch-regulator	472,376	Apr. 5	580	149	59	109
Lighton, John B., assignor to John Lighton Machine Company, Syracuse, N. Y. Lock	473,401	Apr. 19	2204	553, 554	59	445
Ligon, James R., Sr., Branchville, S. C. Window-shade bracket	473,402	Apr. 19	2207	554	59	446
Liles, John M., and J. B. Williams, assignors of one-third to W. A. Williams, Rockingham, N. C. Tire-shrinker	474,392	May 10	819	214	59	806
Lilly, William H., Lancaster, Pa. Cigar-tip cutter	476,660	June 7	652	158	59	1566
Linberg, Lars, Galesburg, Ill. Last	474,994	May 17	1786	451, 452	59	1008
Lincoln Road Grader Manufacturing Company. (See Pugsley, William E., assignor.)						
Lindemeyer, Philip, Baltimore, Md. Paper box	476,661	June 7	653	158	59	1566
Lindemuth, Gotthard, Hohenkirchen, Germany. Straight-bar knitting-frame	476,397	June 7	271	64	59	1490
Lindgren, August, Moline, Ill., assignor to Moline Plow Company, of Illinois. Seeding-machine	473,324	Apr. 19	2063	519	59	418
Lindner, Josef, assignor of one-half to M. Gruber, New York, N. Y. Sign	473,883	Apr. 26	2984	752, 753	59	616
Lindner, Otto, Brussels, Belgium. Pneumatic tire for wheels	474,453	May 10	928	238	59	836
Lindskog, Charles G., Salt Lake City, Utah Ter. Sash-fastener	476,947	June 14	1123	270	59	1674
Linebarger, Jonathan H., Clarion, Iowa. Plow	472,302	Apr. 5	465	119	59	87
Lines, Thomas D., assignor to C. A. Denison, Syracuse, N. Y. Thill-coupling	475,507	May 24	2588	658	59	1180
Lines, Thomas D., assignor to C. A. Denison, Syracuse, N. Y. Thill-coupling	475,508	May 24	2590	659	59	1180
Lines, Thomas D., assignor to C. A. Denison, Syracuse, N. Y. Thill-coupling	475,509	May 24	2591	659	59	1180
Linham Dado Machine Company. (See Linham, Robert E., assignor.)						
Linham, Hermie, administratrix. (See Linham, Robert E.)						
Linham, Robert E., deceased; H. Linham, executrix, and assignor, by mesne assignments, to Linham Dado Machine Company, Mansfield, Ohio. Molding-cutter	472,675	Apr. 12	1027	265	59	207
Linham, Robert E., deceased; H. Linham, executrix, and assignor, by mesne assignments, to Linham Dado Machine Company, Mansfield, Ohio. Molding-cutter	472,676	Apr. 12	1027	265	59	207
Linham, Robert E., deceased; H. Linham, executrix, and assignor, by mesne assignments, to Linham Dado Machine Company, Mansfield, Ohio. Molding-cutter	472,677	Apr. 12	1028	265	59	207
Linham, Robert E., deceased; H. Linham, executrix, and assignor, by mesne assignments, to Linham Dado Machine Company, Mansfield, Ohio. Molding-cutter	472,678	Apr. 12	1029	265	59	207
Linham, Robert E., deceased; H. Linham, executrix, and assignor, by mesne assignments, to Linham Dado Machine Company, Mansfield, Ohio. Molding-cutter	472,679	Apr. 12	1030	266	59	207
Linindoll, Charles C., Fort Edward, N. Y. Hasp-lock	474,021	May 3	218	52	59	680
Link-Belt Engineering Company. (See Caskey and Dodge, assignors.)						
Linkiewicz, Leopold, Minneapolis, Minn. Butter-cutter	477,905	June 28	2693	674	59	2011
Linkletter, Robert, Jersey City, N. J. Hinge	472,622	Apr. 12	954	247	59	195
Linville, Samuel R., Philadelphia, Pa. Individualizing cut-out for printing-telegraphs	477,665	June 28	2299	576, 577	59	1935
Lipe, Charles E., Syracuse, N. Y. Machine for making insulated magnetic coils	473,123	Apr. 19	1725	436, 437	59	351
Lipe, Charles E., and J. A. Pross, Syracuse, N. Y. Process of and apparatus for welding metals	473,884	Apr. 26	2985	753	59	616
Lipp, Frederick. (See Hugershoff and Lipp.)						
Lipp, Frederick. (See Laubensdorfer and Lipp.)						
Lipp, William F., Dayton, Ohio, and E. J. Preston, Alexandria, Ky. Screen-door	477,562	June 21	2121	527	59	1884
Lippitt, Theodore C., Shenandoah, Iowa. Hay-loader	474,476	May 10	953	245	59	831
Lish, William H., assignor to G. H. Becker and H. Brubaker, York, Pa. Combined step-ladder and ironing-board holder	472,303	Apr. 5	466	119	59	87
Lishman, Thomas G., Bristol, England. Steam-boiler or other furnace	477,376	June 21	1829	447, 448, 449	59	1825
Lisk, David A., and T. D. Brown, Clifton Springs, N. Y. Bottom for metallic vessels	476,280	June 7	74	16	59	1452
Lisk, David A., and T. D. Brown, Clifton Springs, N. Y. Vent for shipping-cans	476,281	June 7	75	16	59	1452
Lisle, Edward, Wolverhampton, England. Velocipede	476,884	June 14	1014	246	59	1652
Little, Charles H., *et al.* (See Johns, Will R., assignor.)						
Little, James R., Quincy, Ill. Manufacture of metal wheels	472,893	Apr. 12	1338	343, 344	59	968

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Little, James R., Quincy, Ill. Metal wheel	475,582	May 24	2703	685	59	1202
Little, James R., Quincy, Ill. Metal wheel	475,583	May 24	2704	685	59	1203
Little, James R., Quincy, Ill. Constructing metal wheels	475,584	May 24	2705	686	59	1203
Little, Piercy, Mount Vernon, N. Y. Barrel-contractor	473,764	Apr. 26	2791	702	59	679
Little, Piercy, Mount Vernon, N. Y. Barrel-expander	474,020	May 3	216	51	59	679
Little, Reuben H., Red Oak, Ga. Cultivator	472,734	Apr. 12	1115	286	59	223
Little, William D., Syracuse, and E. W. Bogardus, Port Byron, N. Y. Adjuster and leveler for billiard and pool tables	474,750	May 10	1385	350	59	915
Livengood, Winfield S., assignor to J. A. Duncan and W. Masters, Kansas City, Mo. Wire-supporting reel	473,160	Apr. 19	1786	450	59	364
Livingston, Andrew W., and S. E. Starrett, San Francisco, Cal. Gun	477,946	June 28	2756	690	59	2024
Livingston, Henry S. (See Breslin, Joseph, assignor.)						
Livingston, Murray V. (See Toney and Livingston.)						
Livsey, John B., Allenton, R. I. Belt-shifter for carding-machines	476,282	June 7	76	16	59	1452
Ljung, Gustaf. (See Nicol and Ljung.)						
Lloyd, Charles A., Baltimore, Md. Ventilating-awning	476,662	June 7	665	159	59	1566
Lloyd, Edwin L., Philadelphia, Pa. Bottle-stopper	474,642	May 10	1217	311	59	882
Lloyd, Edwin L., Philadelphia, Pa. Electric-wire holder	475,781	May 31	3013	764	59	1275
Lloyd, Henry H., Philadelphia, Pa., assignor to Electric Storage Battery Company, Gloucester City, N. J. Secondary battery	477,182	June 14	1492	365	59	1749
Lobet, Jean, Flémalle-Liege, Belgium. Machine for cutting lamp-chimneys	477,133	June 14	1411	343	59	1732
Lochman, Augustus, Milton, Pa. Door-securer	477,426	June 21	1899	468	59	1839
Lochmann, Ernst G., Gohlis-Leipsic, Germany. Picture-aquarium	475,404	May 24	2416	617	59	1148
Locke, Fred M., Victor, N. Y. Insulator-pin	476,207	May 31	3716	939	59	1413
Locke, Nathaniel C., Salem, Mass. Reducing-valve	475,585	May 24	2706	686	59	1203
Lockstaedt, Charles C., Chicago, Ill. Reclining-chair	477,906	June 28	2694	674	59	2011
Lockstaedt, Charles C., Chicago, Ill. Elevated structure	477,907	June 28	2694	674	59	2011
Lockwood, Frederic A., Boston, Mass. Dredging apparatus	472,735	Apr. 12	1116	286	59	224
Lockwood, George F., assignor of one-half to J. F. Barrows, Saginaw, Mich. Insulated gear-wheel	474,913	May 17	1645	420	59	981
Lockwood, George M., Washington, D. C. Coin-delivering apparatus	475,086	May 17	1933	490	59	1035
Lockwood, Hamilton, *et al.* (See Glazier, George W., assignor.)						
Lockwood, John M., San Francisco, Cal. Electric-lighting system	472,623	Apr. 12	955	247	59	195
Lockwood, Morris C., assignor of five-sixths to J. Shiner and J. Northrup, Vineland, N. J. Heel-breasting machine	472,736	Apr. 12	1118	287	59	224
Loepere, Hugo F., assignor of one-half to Z. L. H. Loepere, Buffalo, N. Y. Fumigator	473,631	Apr. 26	2599	654	59	542
Loepere, Zelmir L. H. (See Loepere, Hugo F., assignor.)						
Lofton, Herbert M., Savannah, Ga. Brake	476,283	June 7	77	17	59	1453
Loftus, James F., and E. B. Williams, Thorndike, Mass. Combination ice-pick	476,052	May 31	3453	871	59	1363
Logan, Martin, New York, N. Y. Buckle	477,947	June 28	2757	691	59	2025
Logan, William L. (See Wertsbaugher, Judson S., assignor.)						
Lomb, Carl F., and M. R. Jewell, Rochester, N. Y., assignors to Office Specialty Manufacturing Company, of New York. Check and bill file	474,501	May 10	990	255	59	838
Lombard, Nathaniel, Boston, Mass. Automatic weighing-scale	475,405	May 24	2417	617	59	1148
Lombard, Nathaniel, assignor of one-half to H. A. Clark, Boston, Mass. Lawn-mower	473,845	Apr. 26	2990	734, 735	59	604
Long, Charles B., Shrewsbury, Mass. Band-saw mill	475,328	May 24	2293	589, 590	59	1125
Long, Daniel W., and C. Dimick, Lockport, Ill. Parcel-holder or advertising-valise	476,803	June 14	877	216	59	1635
Long, David F., Wadsworth, Ohio. Combined child's wagon, velocipede, and baby-walker	474,138	May 3	388	94	59	713
Long, Edward M., Worcester, Mass. Protractor and bevel	474,393	May 10	820	214	59	806
Long, Edwin C., Manchester, N. Y. Garment-supporter	473,232	Apr. 19	1921	483	59	389
Long, Eugene. (See Curtis and Long.)						
Long, Henry E. (See Farquher, John D., assignor.)						
Long, Michael, Middletown, Conn. Valve	477,845	June 28	2598	651	59	1993
Long, Montgomery, assignor to O. P. Morgan and L. W. Osborne, Spartanburg, S. C. Hydraulic force-pump	476,398	June 7	273	64	59	1491
Longmore, James, and W. L. Watson, London, England. Machine for decorticating rhea, &c.	472,606	Apr. 12	926	239	59	190
Look, John C., San José, Cal. Car-coupling	474,090	May 3	328	78, 79	59	700
Loomis, Charles C. (See Haskins, Schuleburg, and Chadwick, assignors.)						
Loomis, Chester P., *et al.* (See Loomis, George L., assignor.)						
Loomis, Edward B., Memphis, Tenn. Dust and cinder protector for car-windows	477,948	June 28	2759	691	59	2025
Loomis, George L., Northampton, Mass., assignor to himself, J. N. and C. P. Loomis, W. R. Stults, and C. Coffey, Granby, Conn. Lock-hinge	472,483	Apr. 5	744	190	59	141
Loomis, James N., *et al.* (See Loomis, George L., assignor.)						
Loomis, Webner E., Springfield, Ill. Magazine-gun	477,666	June 28	2308	577	59	1937
Lord, Charles B. (See Cash, Francis C., assignor.)						
Lord, Edgar A. (See Dumais, Jean B. Z., assignor.)						
Lord, Isaac W., Cucamonga, Cal. Indicating-funnel	475,875	May 31	3179	806	59	1309
Lorenz, William A., Hartford, Conn. Music-desk	475,126	May 17	1988	504	59	1047
Loring, Francis W., Boston, Mass. Hinge	472,192	Apr. 5	287	75	59	54
Loss, Henry W., Philadelphia, Pa. Machine for forging eye-bars	476,155	May 31	3623	916	59	1397
Loss, John C., *et al.* (See Trump, John G., assignor.)						
Lothinière, Alain J. de, Quebec, Canada. Stirrup	475,127	May 17	1989	504	59	1047
Lotinga, Eleanor, Ely, near Cardiff, England. Convertible child's carriage	474,641	May 10	1217	311	59	881
Loud, Herbert, Everett, Mass. Pulley-block	475,692	May 24	2868	725	59	1234
Louden, George W., *et al.* (See Baldwin, Ozro J., assignor.)						
Louden, William, Fairfield, Iowa. Hay-carrier	472,175	Apr. 5	255	67, 68	59	48
Louden, William A., *et al.* (See Baldwin, Ozro J., assignor.)						
Loudon, Davis. (See Samson, Elias, assignor.)						
Loughran, Stephen J., Des Moines, Iowa. Boiler-furnace	475,329	May 24	2294	590	59	1126
Louthian, John E., Etiwanda, assignor of two-fifths to R. York, San Bernardino, Cal. Hose-coupling	475,406	May 24	2418	618	59	1148
Lovell, Albert K., Jackson, Mich. Wrench	476,767	June 7	807	199	59	1598
Lovell, Charles W., and A. Bredenberg, Brooklyn, assignors of one-third to J. W. Lovell, New York, N. Y. Book binding and covering machine	476,208	May 31	3717	939, 940, 941, 942	59	1414
Lovell, John W. (See Lovell and Bredenberg, assignors.)						
Lowe, Braxton B., Key West, Fla. Wrench	474,477	May 10	955	246	59	831
Lowe, John T., Seattle, Wash. Device for producing blasts of air for ventilation, &c.	472,544	Apr. 12	840	214	59	173
Lowengrund, Isaac M., Philadelphia, Pa. Toilet-paper case	477,215	June 21	1564	384	59	1776
Lowrey, Bill. G., Blue Mountain, Miss. Transom-lifter	474,298	May 3	643	162	59	761

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lowrey, Bill G., Blue Mountain, Miss. Sash-fastener	474,299	May 3	644	163	59	762
Lowrey, Bill G., Blue Mountain, Miss. Latch and lock combined	476,663	June 7	656	159	59	1567
Lowrey, Grosvenor P. (See Bradley, Charles S., assignor.)						
Lowrey, Grosvenor P. (See Hulin, Léon, assignor.)						
Lowry, George, Northampton, England. Stone-crusher	475,330	May 24	2297	590, 591	59	1126
Lowry, George A., Des Moines, Iowa. Nippers for twine-making machines	474,580	May 10	1123	267	59	864
Loyd, William F., Canal Dover, Ohio. Fire-escape and fireman's ladder	476,885	June 14	1016	246	59	1653
Lucas, Austin H., assignor of two-thirds to G. P. Shane, Pittsburg, and E. G. Miller, Wilkinsburg, Pa. Support for lamps	473,846	Apr. 26	2922	735	59	605
Lucas, John M., Cadiz, Ohio. Bouquet-holder	475,220	May 17	2126	538	59	1075
Luce, A. Charles, *et al.* (See McNally, Richard J., assignor.)						
Luce, William B., Brookline, Mass. Electric-arc lamp	474,091	May 3	332	79, 80	59	701
Luckenbach, Marcus A., Denver, Colo. Treating wood to prevent decay	473,705	Apr. 26	2710	682	59	563
Ludecke, Ernest T. (See Lees, John, Jr., assignor.)						
Ludlow Manufacturing Company. (See Ludlow, William E., assignor.)						
Ludlow, Rodney F., Springfield, Ohio. Car-coupling	473,938	May 3	87	19, 20	59	653
Ludlow, William E., Toledo, assignor to Ludlow Manufacturing Company, Cleveland, Ohio. Automatic trip for dumping-buckets	476,284	June 7	78	17	59	1453
Ludlow, William E., Toledo, assignor to Ludlow Manufacturing Company, Cleveland, Ohio. Dumping-bucket	476,285	June 7	79	18	59	1453
Ludwig, Friedrich A., Chemnitz, Germany. Needle-rail for Cotton's knitting-frames	476,959	June 14	1142	275	59	1678
Lugenbell, J. S., *et al.* (See Lugenbell, Peter, assignor.)						
Lugenbell, Peter, Greensburg, Ind., assignor of three-fourths to J. S. Lugenbell, J. W., L. K., and G. B. Donivan, Delaware, Ohio. Fifth-wheel	472,894	Apr. 12	1341	344	59	968
Luger, Louis, North St. Paul, Minn. Wood-working machine	475,782	May 31	3014	764	59	1276
Lührig, Carl, Dresden, Germany, assignor to Lührig Coal and Ore Dressing Appliances, Limited, of England. Separating and cleaning coal and other minerals	474,022	May 3	219	52, 53	59	680
Lührig, Carl, Dresden, Germany, assignor to Lührig Coal and Ore Dressing Appliances, Limited, of England. Apparatus for washing, separating, and concentrating ores of different specific gravity	474,023	May 3	221	53	59	680
Lührig Coal and Ore Dressing Appliances. (See Lührig, Carl, assignor.)						
Lum, George E. (See McManes and Lum.)						
Lumley, William, Chicago, Ill. File-holder	474,478	May 10	955	246	59	831
Lundstedt, Olof E., Brooklyn, N. Y., assignor, by mesne assignments, to New York Electrical Device Company, of Virginia. Electro-magnetic valve-controller	472,461	Apr. 5	707	180	59	134
Lundstedt, Olof E., Brooklyn, N. Y., assignor, by mesne assignments, to New York Electrical Device Company, of Virginia. Electro-magnetic valve-controller	472,579	Apr. 12	883	227	59	182
Lundstedt, Olof E., Brooklyn, N.Y., assignor to J. M. Glover, St. Louis, Mo. Postal date and time stamping machine	472,951	Apr. 12	1425	364, 365	59	285
Lundwall, Nelson, Brooklyn, N. Y. Horseshoe	474,751	May 10	1387	350	59	915
Lungren, Charles M., Brooklyn, N. Y. Atmospheric gas-burner	474,063	May 3	289	70	59	693
Lunkenheimer, Edmund, Cincinnati, Ohio. Steam-whistle	476,472	June 7	375	87	59	1510
Lunneman, August H. (See Fries, Richardson, and Hackett, assignors.)						
Luraschi, Carlo, Milan, Italy. Sewing-machine	476,664	June 7	657	159, 160	59	1567
Luscomb, Henry H., Boston, Mass. Hanger for electric wires	472,220	Apr. 5	335	87	59	63
Lusk, Lewis N., Kalamazoo, Mich. Detachable bail and ear therefor	472,130	Apr. 5	193	51	59	36
Lütcke, Carl, Jr., Berlin, Germany. Exciting-fluid for galvanic batteries	474,454	May 10	929	.....	59	826
Luther, Benjamin G., Worcester, Mass. Gluing attachment for matching-machines	474,092	May 3	334	80	59	701
Luthman, Carl G., Altoona, Pa. Spark-arrester	477,058	June 14	1293	314	59	1709
Lutz, George, Lancaster, Ohio. Saw-setting device	473,515	Apr. 26	2397	607	59	503
Lycan, Albert E., Paris, Ill. Swinging gate	476,399	June 7	274	64	59	1491
Lyford, Charles C., Minneapolis, Minn. Veterinary impregnator	473,632	Apr. 26	2600	654	59	542
Lyman, Fordyce A., Cleveland, Ohio. Combined wheel lift and washer	474,394	May 10	821	214	59	806
Lynch, John F., Philadelphia, Pa. Packing-tool	473,008	Apr. 19	1535	391	59	319
Lynch, William H., Denison, Tex. Sash-fastener	473,557	Apr. 26	2466	624	59	517
Lynn, Michael J., Rochester, N. Y. Automatic smoke-consuming furnace	475,876	May 31	3181	807	59	1309
Lyon, Alvin S., Lowell, Mass. Apparatus for skein-dyeing	476,286	June 7	80	18, 19	59	1453
Lyon, Charles H., Ballance, near Ballan, Victoria. Method of and apparatus for lining water-channels	473,009	Apr. 19	1536	392	59	319
Lyon, Charles L. (See Williams, Harry J., assignor.)						
Lytle, Albert E., and B. K. Cowles, Chicago, Ill. Wheeled sounding toy	477,600	June 21	2179	540	59	1895
M. C. Bullock Manufacturing Company. (See Douglass, Samuel W., assignor.)						
M. E. Page Confectionery Company. (See Hammill, Charles, assignor.)						
Mabie, Langford C., assignor of one-half to E. J. Levy, Richmond, Va. Spark-arrester	473,847	Apr. 26	2923	736	59	605
MacCormack, John, Albany, N. Y. Steam-boiler	476,053	May 31	3454	871, 872	59	1363
MacKay, Charles D., Toronto, Canada. Dress-stay	473,161	Apr. 19	1787	450, 451	59	364
MacWaters, David G., Saginaw, Mich. Ware-exhibitor	473,403	Apr. 19	2208	554	59	446
Macarthy, Henry, assignor to S. A. Ilsley & Co., New York, N. Y. Label-holder for canisters	472,794	Apr. 12	1200	308	59	240
Macbean, William M. (See Nelson, Elihu, assignor.)						
Macdonald, Duncan C C. (See Alteman and Macdonald.)						
Macdonell, Allan G., and W. Y. Gambee, New York, N. Y. Window-screen	474,668	May 10	1258	322	59	890
Mack, John J. (See Wall and Mack.)						
Mackay, William M., Newark, N. J., assignor to Richardson & Boynton Company, New York, N. Y. Sectional steam-boiler	476,804	June 14	878	216, 217	59	1625
Mackaye, James S. (See Aze, Emile, assignor.)						
Mackenzie, Donald. (See Anderson, John A., assignor.)						
Mackenzie-Hughes, Edward W., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Cylinder-casing	473,469	Apr. 26	2323	587	59	490
Macleod, William A., *et al.* (See Miller, George E., assignor.)						
Macneal, Charles B., Philadelphia, Pa. Umbrella or parasol frame	473,470	Apr. 26	2323	587	59	490
Macomber, Zebedee, Bedford, assignor to Union Manufacturing Company, Battle Creek, Mich. Thrashing-machine tooth	472,131	Apr. 5	193	52	59	36
Macon, Gideon T. (See Lee, Joseph G., assignor.)						
Macphail, Neil, assignor to A. C. Whyte, Glasgow, Scotland. Envelope-gum moistener	475,693	May 24	2870	726	59	1235
Macqueen, William N., Baltimore, Md. Oyster-washing machine	477,134	June 14	1414	344	59	1732
Madden, Joseph, Providence, R. I. Graining mechanism	474,093	May 3	335	80	59	702
Madden, Oscar E. (See McGovern, Bernard, assignor.)						
Maercklein, Bernhard G., Milwaukee, Wis. Railway-rail	474,094	May 3	336	80	59	702
Magenis, James P., North Adams, Mass. Telephonograph	476,054	May 31	3456	872	59	1363

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Magic Freezer Company. (See Burt, Carl A., assignor.)						
Magic Introduction Company. (See Booth, Charles P., assignor.)						
Magney, Joseph P., San Francisco, Cal. Sash-balance	476,287	June 7	84	20	59	1454
Mahaffey, James B., Baltimore, Md. Cable system	473,233	Apr. 19	1921	483, 484	59	389
Mahan, Thomas F., Phillips, Wis. Sand-pump	474,843	May 17	1547	395	59	960
Mailloux, Cyprien O., New York, N. Y. System of electrical distribution	475,877	May 31	3184	807, 808	59	1309
Mailman, Albert, Liverpool, Canada. Car-coupling	475,331	May 24	2300	591	59	1127
Maina, Samuel C., Glendon, Iowa. Carpet-stretcher	474,176	May 3	450	109	59	725
Maitland, George, *et al.* (See Osborn, Francis C., assignor.)						
Malings, Charles, Chicago, Ill., assignor, by mesne assignments, to American Patents Company, Philadelphia, Pa. Tennis-racket	472,659	Apr. 12	997	258	59	203
Malke, Frederick E. R., Chrisney, Ind. Gate	477,667	June 28	2311	578	59	1938
Mallén, Rafael, Mexico, Mexico. Recoil-operated magazine-gun	472,377	Apr. 5	581	149	59	109
Mallon, James, New Orleans, La. Neck-yoke	474,749	May 10	1384	350	59	915
Malm, Alexander, New York, N. Y. Paper-cutter	474,341	May 3	735	192	59	778
Malm, Louis L., Cleveland, Ohio. Lubricator	476,886	June 14	1017	240	59	1653
Malmborg, Ernst R. (See Martindale and Malmborg.)						
Malmborg, Ernst R., St. Louis, Mo., assignor, by mesne assignments, to New York Electrical Device Company, of Virginia. Compensation-pendulum	472,624	Apr. 12	956	248	59	195
Malmström, Peter E., New York, N. Y. Apparatus for carbonating and dispensing beverages	475,128	May 17	1900	504	59	1048
Maloney, Thomas J., Jersey City, N. J. Tobacco wrapper and package	477,015	June 14	1222	296	59	1695
Maltby, Clark O., Philadelphia, Pa. Type-writing machine	474,395	May 10	822	215	59	807
Maltby, William J. (See Terry and Maltby.)						
Maltby, William J., and A. Belcher, New Orleans, La. Device for cleaning cisterns, &c.	477,908	June 28	2696	675	59	2012
Mancini, Louis A., Mont Clair, N. J. Harness-saddle	474,752	May 10	1388	350	59	916
Mangan, Thomas, New Orleans, La. Automatic electric change-maker and check-receiver	478,011	June 28	2855	714, 715	59	2044
Manger, Frederick W., and O. H. Huebel, Brooklyn, N. Y. Contact-post for electric bells	475,783	May 31	3015	764	59	1276
Manggang, George, assignor to Syracuse Specialty Manufacturing Company, Syracuse, N. Y. Shoe-clasp	474,914	May 17	1646	420	59	982
Manhattan Brass Company. (See Hipwell, Thomas, assignor.)						
Manhattan Brass Company. (See Jehle, Gottlieb, assignor.)						
Manifold, Richard G., San Francisco, Cal. Governor for steam-engines	472,378	Apr. 5	584	149	59	110
Manlove, Joseph W., Foster, Mo. Letter-box	475,694	May 24	2871	726	59	1235
Mann, Charles L., Colma Station, Cal. Pruning implement	472,304	Apr. 5	467	120	59	88
Mann, Franklin W. (See Farrington, Clarence H., assignor.)						
Mann, Henry L., Minneapolis, Minn. Adjustable mandrel for wabbling saws	474,844	May 17	1547	395	59	960
Manning, Charles W., Graham, Va. Box and fastening	475,129	May 17	1991	504	59	1048
Manning, Fred P., Turner, Ill. Grain-purifier	477,668	June 28	2312	578	59	1938
Mannlicher, Ferdinand, Vienna, Austria-Hungary. Repeating firearm	472,795	Apr. 12	1201	308, 309	59	240
Mannock, Thomas. (See Smith, Goddard, Higginbottom, and Mannock.)						
Manny, Eugène S., Montreal, Canada. Hot-water furnace	475,878	May 31	3193	808	59	1310
Mansfield, Frank, New York, N. Y. Street-car door	472,737	Apr. 12	1119	287	59	224
Mansfield, William, Ashville, Pa. Nut-lock	473,193	Apr. 19	1855	467	59	376
Manton, Joseph P., Providence, R. I. Means for towing vessels	473,471	Apr. 26	2324	588	59	490
Manwaren, Albert H., Philadelphia, Pa. Device for testing arc-light circuits	476,156	May 31	3024	917	59	1397
Manypenny, Gustavus B. (See Weaver and Manypenny.)						
Maquaire, Frédéric V., Paris, France. Electric-arc lamp	477,427	June 21	1900	468, 469	59	1840
Maranville, Franklin, Clinton, Ohio. Oil-can	473,516	Apr. 26	2398	607	59	508
Marble, Albert D., Winfield, Kans. Reaping-machine	477,189	June 14	1503	368	59	1751
Marble, Edwin H. (See Marble, Edwin T. and E. H.)						
Marble, Edwin T. and E. H., Worcester, Mass. Machine for finishing velvets and other pile fabrics	474,396	May 10	823	215	59	807
Marcy, Joseph E. (See Jones and Marcy.)						
Marinovitch, Bélizaire, and G. Szarvady, Paris, France. Telephone system	476,887	June 14	1018	247	59	1653
Marion Cycle Company. (See Halladay, Lewis P., assignor.)						
Mariosa, José, assignor of one-half to J. P. Tebyrica, San Paulo, Brazil. Preserving meat	474,581	May 10	1124	.....	59	864
Mark, Henry J., assignor of one-half to H. Gaus, Jr., St. Louis, Mo. Bottle-wrapper	472,462	Apr. 5	708	181	59	134
Mark, Henry J., assignor of one-half to H. Gaus, Jr., St. Louis, Mo. Bottle-wrapper	472,463	Apr. 5	710	181	59	135
Markee, Reuel T., Philadelphia, Pa. Brake-beam	474,669	May 10	1260	322	59	891
Markham, William F., Plymouth, Mich. Spring air-gun	473,633	Apr. 26	2601	654	59	542
Marks, David. (See Smith, Marks, and Watson.)						
Marks, Solomon, Cincinnati, Ohio, assignor to T. Kane & Co. Double slate	473,404	Apr. 19	2210	555	59	446
Marlin, Jesse M. (See Carlin, William P., assignor.)						
Marquart, Friedrich, Cleveland, Ohio. Cooking stove or range	477,216	June 21	1566	385	59	1776
Marsh, George A., Jr., Sandusky, Ohio. Apparatus for grinding and polishing glass	477,303	June 21	1716	420, 421	59	1803
Marsh, George A., Jr., Sandusky, Ohio. Apparatus for placing plate-glass on grinding and polishing tables	477,304	June 21	1720	421	59	1804
Marsh, George A., Jr., Sandusky, Ohio. Glass grinding or polishing table	477,305	June 21	1721	421	59	1805
Marsh, George A., Jr., Sandusky, Ohio. Table for holding plate-glass	477,306	June 21	1723	422	59	1805
Marsh, George H., San Francisco, Cal. Feed-roll	477,428	June 21	1905	469	59	1840
Marsh, Harvey S., Bass River, Canada, assignor of one-half to D. Johnson, Boston, Mass. Dowel	475,407	May 24	2421	618	59	1148
Marsh, James P., assignor to O. R. Barnett, trustee, Chicago, Ill. Carpet-sweeper	473,766	Apr. 26	2794	703	59	580
Marsh, John Q., Erie, Pa. Dead-pulley rigging	473,765	Apr. 26	2792	702, 703	59	580
Marsh, Joseph A., *et al.* (See Osborn, Francis C., assignor.)						
Marshall, Charles, Camden, N. J. Knob attachment	473,262	Apr. 19	1967	493	59	398
Marshall, Edward R., assignor of one-half to F. J. Marshall, Turner's Falls, Mass. Pulp beating and refining engine	475,063	May 17	1889	479	59	1027
Marshall, Frank J. (See Marshall, Edward R., assignor.)						
Marshall, George A., *et al.* (See Burton, Augustus G., assignor.)						
Marshall, Ianthus E., Martinez, Cal. Portable stacker	474,963	May 17	1730	440	59	998
Marshall Improved Window Furniture Company. (See Johnson, Axel, assignor.)						
Marshall, James, Plains, assignor of one-half to W. J. Parmelee, Wilkes-Barré, Pa. Furnace	475,984	May 31	3357	846	59	1342
Marshall, John L. (See Andersen, Richard C., assignor.)						
Marshall, John W. (See Powell and Marshall.)						
Marshall, Richard A., Russellville, Ky. Clevis	472,132	Apr. 5	195	52	59	36

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Marshall, William, New York, N. Y. System of electrical distribution	472,193	Apr. 5	287	75	59	54
Marshall, William, New York, N. Y. Production and distribution of electricity	472,379	Apr. 5	586	149	59	110
Marshall, Winfield S., Centralia, Ill. Saddle-bags and hand-case	476,545	June 7	481	114	59	1533
Marston, Norman, Hampton, N. H. Piano	477,669	June 28	2314	578	59	1939
Marthaler, John, Jersey City, N. J. Hinge	473,194	Apr. 19	1856	467	59	376
Martin, Alexander C., Chicago, Ill. Car-coupling	472,580	Apr. 12	885	227	59	182
Martin, Alexander C., Chicago, Ill. Car-coupling	472,581	Apr. 12	886	228	59	183
Martin, Alexander C., Chicago, Ill. Car-coupling	472,582	Apr. 12	887	228	59	183
Martin, Arthur H., Toledo, Ohio. Index or directory	474,479	May 10	957	{246 / 247}	59	832
Martin, Carl, assignor to Grusonwerk, Magdeburg, Germany. Apparatus for pointing guns	472,895	Apr. 12	1342	{344 / 345}	59	269
Martin, Gaston H. (See Guerre and Martin.)						
Martin, George E. (See Levey, John, assignor.)						
Martin, James B., Grand Rapids, Mich. Combined scalper and grader	473,425	Apr. 19	2240	563	59	452
Martin, Joel W., Hartford, Conn. Apparatus for boiling soap	475,784	May 31	3017	765	59	1276
Martin, Joseph C., Florence, Mass. Cash-carrier apparatus	475,879	May 31	3193	{808 / 809}	59	1311
Martin, Morris, Malden, Mass., assignor, by mesne assignments, to J. F. Nielson, Elizabeth, N. J. Automatic fire-alarm	474,670	May 10	1260	{322 / 323}	59	891
Martin, Morris, Malden, Mass., assignor to Automatic Time Stamp and Register Company, Portland, Me. Workmen's time-recorder	475,457	May 24	2504	{638 / 639}	59	1164
Martin, Morris, Malden, Mass., assignor to Automatic Time Stamp and Register Company, Portland, Me. Workmen's time-recorder	475,458	May 24	2506	639	59	1164
Martin, William H., Covington, Ky. Brick-kiln furnace	472,738	Apr. 12	1122	287	59	225
Martindale, Crystal, assignor to H. Cresap, Wichita, Kans. Kraut-cutter	477,377	June 21	1832	{449 / 450}	59	1825
Martindale, Warren B., Kenosha, Wis., and E. R. Malmborg, St. Louis, Mo., assignors, by mesne assignments, to New York Electrical Device Company, of Virginia. Calendar-clock	472,952	Apr. 12	1433	366	59	286
Marty, George, Cleveland, Ohio. Steam-injector	473,010	Apr. 19	1538	392	59	319
Martyn, Arthur, London, England, assignor to G. J. B. Rodwell, Buffalo, N. Y. Frame for mirrors, &c	473,706	Apr. 26	2711	682	59	563
Martyn, Arthur, London, England, assignor to Rodwell Manufacturing Company, Buffalo, N. Y. Advertising-sign	477,429	June 21	1906	470	59	1840
Martz, George O., *et al.* (See Edgar and Rohrbach, assignors.)						
Maslin, John, Jersey City, N. J. Steam-pump	477,949	June 28	2759	691	59	2025
Mason, Charles F., Akron, Ohio. Inkstand	476,288	June 7	87	20	59	1455
Mason, Frank H., Akron, Ohio. Bicycle-tire	475,785	May 31	3018	765	59	1276
Mason, George H., Rochester, N. Y. Rail-brace	474,560	May 10	1096	279	59	859
Mason, Herbert E. N., Birmingham, England. Lamp	476,055	May 31	3458	{872 / 873}	59	1364
Mason, John, New York, N. Y. Ordnance	473,939	May 3	89	20	59	654
Mason, John, New York, N. Y. Pump	473,940	May 3	91	20	59	654
Mason, John R. (See Whiton, Walter F., assignor.)						
Mason, Lewis D., Buffalo, N. Y. Folding camp-stool	476,805	June 14	884	217	59	1627
Massey, Albert P., Watertown, N. Y., assignor to New York Air Brake Company. Car-brake	472,929	Apr. 12	1303	357	59	279
Massey, Albert P., Watertown, N. Y., assignor to New York Air Brake Company. Engineer's valve	475,695	May 24	2873	726	59	1235
Massey, Gideon B., deceased; S. R. Massey and S. A. Bryant, Mamaroneck, administrators, and assignors of two-fifths to A. B. Darling, New York, N. Y. Adding attachment for cash-registering machines	477,563	June 21	2122	{527 / 528}	59	1884
Massey, Sarah R., *et al.*, administrators. (See Massey, Gideon B.)						
Massie, James, Toronto, Canada. Cot-bedstead	477,430	June 21	1907	470	59	1841
Masson, John, Haslach, Baden, Germany. Bottle-washing machine	474,397	May 10	825	216	59	807
Masters, George A., Chicago, Ill. School-desk	473,074	Apr. 19	1649	417	59	337
Masters, William, *et al.* (See Livengood, Winfield S., assignor.)						
Masury, James R., Providence, R. I., assignor of one-half to L. J. McCarty, Boston, Mass. Rheostat	472,062	Apr. 5	78	21	59	17
Matchett, Albert R. (See Mueller, Matchett, and Eggers.)						
Mather, Alonzo C., Chicago, Ill. Water-power	473,941	May 3	92	21	59	654
Mathews, Stephen M., Rat Portage, Ontario, Canada. Electric alarm	477,950	June 28	2760	691	59	2025
Mathews, William G., *et al.* (See Deardorff, Benton, assignor.)						
Matson, Anders, Moline, Ill. Seed-planter	476,056	May 31	3460	873	59	1364
Matthews, Ambrose T., Worcester, Mass. Sheet-metal knob	475,880	May 31	3200	809	59	1312
Matthews, Edwin S., assignor of one-half to J. L. Haven, Cincinnati, Ohio. Controller for elevators	472,930	Apr. 12	1394	357	59	279
Matthews, Edwin S., assignor of one-half to J. L. Haven, Cincinnati, Ohio. Safety device for elevators	476,289	June 7	88	20	59	1455
Matthews, Nellie P. (See Fickett, William S., assignor.)						
Matthies, Henry W., New York, N. Y. Check-receptacle	476,888	June 14	1020	247	59	1653
Matthiessen, Franz O., Irvington, N. Y. Refining raw sugar	477,670	June 28	2316	.....	59	1939
Mattison, James D., Saginaw, Mich. One-wheeled cycle	475,130	May 17	1994	505	59	1048
Mauro, Philip, administrator. (See White, William.)						
Mauser, Alfons, Oberndorf, Germany. Surface-gage	476,806	June 14	885	{217 / 218}	59	1627
Mauser, Paul, assignor to Waffenfabrik Mauser, Oberndorf-on-the-Neckar, Germany. Cartridge-stop for magazine-guns	476,290	June 7	91	21	59	1456
Mauser, Paul, assignor to Waffenfabrik Mauser, Oberndorf-on-the-Neckar, Germany. Shell-extractor for bolt-guns	477,671	June 28	2317	579	59	1939
Maxim, Hiram S., London, England. Apparatus for the manufacture of explosives	474,561	May 10	1096	{279 / 280}	59	859
Maxim, Hudson, assignor to Columbia Powder Manufacturing Company, New York, N. Y. Making nitro-cellulose	474,778	May 10	1431	363	59	925
Maximilian, Ferdinand K., New York, N. Y. Glass-polishing machine	477,135	June 14	1416	{344 / 345}	59	1733
Maximilian, Ferdinand K., New York, N. Y. Stand for sideboards, &c	477,564	June 21	2124	528	59	1885
Maxon, Thomas, Dayton, Ohio. Disk harrow	472,710	Apr. 12	1085	278	59	218
Maxwell, George S., and J. Clark, Jr., Louisville, Ky. Automatic railway-switch	472,063	Apr. 5	80	22	59	17
Maxwell, Jacob B., Middletown, Del. Gravity-railway	477,059	June 14	1294	314	59	1709
Maxwell, Jesse W., Fair River, Miss. Wagon-tongue	474,582	May 10	1125	287	59	864
May, Henry, Scranton, Pa. Watchman's time-recorder	472,896	Apr. 12	1343	345	59	269
May, Rudolph A., Akron, Ohio. Draft-regulator for heating-furnaces	472,305	Apr. 5	468	120	59	88
Mayell, Tenbroeck B., Albany, N. Y. Safety-loop for harness-checks	474,845	May 17	1549	395	59	960

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Mayer, Albert, San Francisco, Cal. Stirrup	473,075	Apr. 19	1640	417	59	337
Mayer, John B., assignor of one-half to J. Meier, Newark, N. J. Electric switchboard	473,848	Apr. 26	2927	737	59	606
Mayhall, William A., assignor of one-half to H. L. Van Norman, Gloster, Miss. Car-coupling	475,696	May 24	2875	727	59	1235
Mayhew, Christopher J., Walmer, England. Tap-socket for barrels, &c	476,665	June 7	650	160	59	1567
Mayo, George D. (See Mayo, William H. and G. D.)						
Mayo, James, Pottstown, Pa. Damper	475,131	May 17	1995	505	59	1049
Mayo, Thaddeus, *et al.* (See Smith, William D. C., assignor.)						
Mayo, Walter E., Gloucester, Mass. Blind-hinge	475,332	May 24	2301	591	59	1127
Mayo, William H. and G. D., Franklin, N. H. Knitting-machine	474,671	May 10	1264	{323 / 324}	59	891
McAdam, Alexander J., San Francisco, Cal. Wick-adjuster for lamps	476,477	June 7	391	90	59	1512
McAdams, John, New York, N. Y. Valve for hydraulic elevators	476,023	May 31	3406	{859 / 860}	59	1353
McAdams, John, Brooklyn, N. Y. Feeding apparatus for ruling and printing machines	476,476	June 7	388	89, 90	59	1512
McAdams, John, Brooklyn, N. Y. Ruling-machine	477,380	June 21	1836	451	59	1826
McAleenan, William J., Peoria, Ill. Steam-boiler	475,409	May 24	2424	619	59	1149
McAlister, George W., Jake's Prairie, Mo. Horse-detacher	477,775	June 28	2478	620	59	1971
McAlister, James R., and T. W. Waddell, Clinton, Ark. Cotton-scraper	477,691	June 28	2347	587	59	1947
McAlpine, Adam H. (See Gold and McAlpine.)						
McArthur, Warren, Chicago, Ill., assignor to Steam Gauge and Lantern Company, Syracuse, and R. E. Dietz Company, New York, N. Y. Tubular lantern	476,478	June 7	392	90	59	1513
McBean, Robert S. (See Miller, McBean, and McBurnett.)						
McBride, Charles H., Champlain, assignor of one-half to M. F. Stowe, Mooers, N. Y. Whiffletree	475,699	May 24	2878	727	59	1236
McBride, Edward H., Springfield, Mo. Horse-detacher	475,140	May 17	2008	507	59	1051
McBurnett, John W. (See Miller, McBean and McBurnett.)						
McCallip, William W., Columbus, Ohio. Tree-protector	472,137	Apr. 5	200	54	59	37
McCallum, Irving, Philadelphia, Pa. Woven fabric	475,466	May 24	2519	642	59	1167
McCarthy, Dennis P., *et al.* (See Beckwith, Theodore A., assignor.)						
McCarthy, John, Syracuse, N. Y. Casket-handle	472,195	Apr. 5	200	76	59	55
McCarty, Lawrence J. (See Masury, James R., assignor.)						
McClellan, Herman, Toronto, Canada. Brace for piano-key bottoms	477,566	June 21	2127	529	59	1885
McClelland, Robert E., Williamsville, Ill. Balance-scale	475,792	May 31	3030	768	59	1279
McClintock, Charles T., Oil City, Pa. Penholder	474,644	May 10	1290	312	59	882
McClintock, Joseph, Indianapolis, Ind. Wire fence	472,585	Apr. 12	893	229	59	184
McClung, James S., Pueblo, Colo. Sponge-cup for school-desks	477,953	June 28	2764	692	59	2026
McCluaky, Henry. (See Nickerson, Freeman, Jr., assignor.)						
McConalogue, Charles, Red Jacket, Mich. Compound cooker	472,384	Apr. 5	593	151	59	112
McConalogue, Charles, Cheboygan, Mich. Roaster and baker	475,946	May 31	3297	832	59	1330
McConnell, Ephraim, Daleville, Ind. Pneumatic conveyer	477,692	June 28	2348	587	59	1947
McConnell, Frank, Chicago, Ill. Damper for fireplace chimney-flues	475,985	May 31	3358	846	59	1349
McConnell, George W., Hale, Mo. Cistern-cleaner	477,567	June 21	2128	529	59	1885
McConnell, W. C., *et al.* (See Edgar and Rohrbach, assignors.)						
McCord, John, *et al.* (See Green, John, assignor.)						
McCormack, William, and R. M. Patton, Otwell, Ind. Wagon-lock	477,330	June 21	1755	{429 / 430}	59	1812
McCormick, Marshall, *et al.* (See Fitzwater, William M., assignor.)						
McCormick, Seth T. (See Graff, George E., assignor.)						
McCormick, Thomas, Brooklyn, N. Y. Tricycle	474,096	May 3	338	81	59	702
McCormick, Willoughby M., Baltimore, Md. Bottle-filling machine	474,965	May 17	1733	{440 / 441}	59	999
McCoy, Alonzo B. (See Brown and McCoy.)						
McCoy, Elijah, Detroit, Mich. Lubricator	472,066	Apr. 5	85	23, 24	59	18
McCoy, Henry J. (See Chadbourne, Behringer, and McCoy.)						
McCoy, John, Pasadena, Cal. Pocket perfume-case	477,217	June 21	1567	385	59	1776
McCoy, William A., Beman, Kans. Weed-cutter	474,399	May 10	828	217	59	808
McCoy, William D., Orange, N. J. Saddle for velocipedes	476,479	June 7	393	90, 91	59	1513
McCracken, Thomas E., Washington, D. C. Saw-clamp	473,518	Apr. 26	2401	608	59	504
McCrone, John W., Kansas City, Mo. Letter-copying press	476,061	May 31	3470	875	59	1367
McCully, William F. (See Smith, Harper F., assignor.)						
McDavitt, William H., Lawrence, assignor to G. Draper & Sons, Hopedale, Mass. Banding-machine	473,886	Apr. 26	2996	756	59	619
McDonald, Alexander, Cambridge, Mass. Machine for cutting and dressing stone	473,850	Apr. 26	2930	738	59	606
McDonald, Alexander E., Brooklyn, N. Y. Implement for ironing hats	476,403	June 7	280	66	59	1493
McDonald, Donald, Louisville, Ky. Proportional fluid-meter	475,596	May 24	2724	690	59	1206
McDonald, George, Troy, N. Y. Stone-dressing hammer	477,017	June 14	1224	297	59	1695
McDonald, James, *et al.* (See Beckwith, Theodore A., assignor.)						
McDonald, John, Tokio, Japan. Balanced-slide valve	477,307	June 21	1724	422	59	1805
McDonald, John J., Louisville, Ky. Knockdown box	472,797	Apr. 12	1204	309	59	240
McDonald, William A. C., *et al.* (See Dunn, Claudius A., assignor.)						
McDonald, William M. (See Wight, Ronell L. and H. F., assignors.)						
McDonough, Martin, Winchester, Ill. Gate	472,905	Apr. 12	1332	348	59	271
McDougall, Archie, Salt Lake City, Utah Ter. Tricycle	477,140	June 14	1420	346	59	1734
McDowell, Archibald, *et al.* (See Hollingsworth, Thomas H., assignor.)						
McEachran, Andrew, Fitchburg, Mass. Elevator	472,768	Apr. 12	1164	298	59	233
McElroy, James F., Albany, N. Y. Vestibule for cars	474,966	May 17	1736	441	59	999
McElroy, James F., Albany, N. Y., assignor to Consolidated Car Heating Company, Wheeling, W. Va. System of charging car-heating apparatus with heating mediums	473,635	Apr. 26	2603	{655 / 656}	59	543
McElroy, James F., Albany, N. Y., assignor to Consolidated Car Heating Company, Wheeling, W. Va. Temperature-regulator	473,636	Apr. 26	2606	656	59	543
McElroy, James F., Albany, N. Y., assignor to Consolidated Car Heating Company, Wheeling, W. Va. Coupling for electric wires	473,637	Apr. 26	2607	656	59	544
McElroy, James F., Albany, N. Y., assignor to Consolidated Car Heating Company, Wheeling, W. Va. Temperature-regulator	475,513	May 24	2596	660	59	1161
McElroy, James F., Albany, N. Y., assignor to Consolidated Car Heating Company, Wheeling, W. Va. Electric car-lighting system	475,514	May 24	2597	{660 / 661}	59	1162
McEntee, Frank J., *et al.* (See McKercher, George, assignor.)						
McEwen, James H., Ridgway, Pa. Coal-cutting machine	476,162	May 31	3638	921	59	1400
McFarland, James M., Virginia City, Nev. Faucet	477,308	June 21	1726	422	59	1806
McGahan, Frank W. (See Gray, George J., assignor.)						
McGahan, Fred L. (See Meyer, George, assignor.)						
McGahan, Fred S., Indianapolis, Ind. Oil-burner	476,294	June 7	97	22	59	1457

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
McGee, Albert M. (See Newton, William H., assignor.)						
McGervey, James L., Xenia, Ohio. Check-book holder	474,917	May 17	1651	422	59	982
McGeure, Patrick, *et al.* (See Knowlton, Ephriam H. B., assignor.)						
McGill, James W., Peoria, Ill. Car-coupling	477,438	June 21	1923	474, 475	59	1843
McGovern, Bernard, Norwalk, assignor to O. E. Madden, Boston, Mass. Machine for setting tires	473,948	May 3	101	23, 24	59	656
McGovern, Thomas A., Bolinas, Cal. Oil-gage for lamps	475,967	May 31	3330	840	59	1337
McGowan, John H., Cincinnati, Ohio. Mechanism for raising water	473,949	May 3	104	24	59	657
McGrath, Cyrus D., Anthony, Ohio. Inhaler	472,176	Apr. 5	258	68	59	49
McGrath, John T., Palmyra, Ill. Tank-heater	472,798	Apr. 12	1205	309	59	241
McGregor, Bradford, Covington, Ky., assignor of one-third to Wood & Boyd, Cincinnati, Ohio. Gas-burner	472,385	Apr. 5	595	151	59	112
McGrew, Jasper H., Chicago, Ill. Stereoscopic album	472,196	Apr. 5	290	76	59	55
McGuire, William A., and M. G. Hubbard, Jr., Chicago, Ill. Motor-truck for cars	476,480	June 7	396	91, 92	59	1514
McHenry, David B., Grenada, Miss. Artificial tooth	475,141	May 17	2010	508	59	1051
McIlhenny, Richard J., Wilmington, N. C. Engine-governor	474,678	May 10	1281	326	59	894
McIntire, William L. (See Sockman, Bryant R., assignor.)						
McIntosh, John, Port Elgin, assignor of one-half to M. Bricker, Listowel, Canada. Saw-set	476,235	May 31	3769	951	59	1424
McIntosh, Sarah E., Almond, N. Y. Flavoring-powder	477,141	June 14	1421	.....	59	1734
McIntyre, David A., Newark, N. J. Check-book	472,087	Apr. 5	87	24	59	18
McIntyre, John W., Philadelphia, Pa. Vise	472,311	Apr. 5	478	123	59	90
McKay, Andrew D., Liverpool, England. Medicinal food	473,331	Apr. 19	2063	.....	59	422
McKay & Copeland Lasting Machine Company. (See Godfrey, Charles B., assignor.)						
McKay, George D., Aurora, Ill. Underwaist	474,679	May 10	1283	327	59	895
McKay, Henry S., Boston, Mass. Electric mechanism for reciprocating motion	475,410	May 24	2426	619	59	1149
McKean, John T., Santa Cruz, Cal. Opera-chair	475,019	May 17	1824	462, 463	59	1015
McKee, James W., Brooklyn, N. Y. Latch and lock combined	477,142	June 14	1422	346	59	1734
McKee, Thomas F., Bloomville, Ohio. Vehicle-spring	476,062	May 31	3471	876	59	1367
McKee, Wood. (See Case, George, assignor.)						
McKeen, Thomas L., New York, N. Y., assignor to Thurmond Car Coupling Company, of West Virginia. Lifting device for twin-jaw car-couplings	472,627	Apr. 12	959	248, 249	59	196
McKeen, Thomas L., New York, N. Y., assignor to Thurmond Car Coupling Company, of West Virginia. Car-coupling	472,799	Apr. 12	1206	310	59	241
McKelvey, Samuel P., Chicago, Ill. Mold for forming castings from cement	474,143	May 3	397	96	59	715
McKenna, Alexander G., Allegheny, Pa., and H. T. Weed, Brooklyn, N. Y. Electric meter	475,411	May 24	2430	620	59	1150
McKenna, John, Johnstown, Pa. Bed for metal-working machines	472,712	Apr. 12	1087	279	59	218
McKenna, Thomas E., Newark, N. J. Bicycle	474,400	May 10	828	217	59	808
McKenzie, Dougal J., Chicago, Ill. Furnace	477,263	June 21	1650	403	59	1791
McKeon, John H. (See Rockteacher and McKeon.)						
McKercher, Edward, *et al.* (See McKercher, George, assignor.)						
McKercher, George, assignor of three-fourths to E. McKercher, W. S. Coleman, and F. J. McEntee, Jonesville, Mich. Pipe-wrench	474,300	May 3	644	163	59	762
McKinnan, John, Colfax, Wash. Clothes-drier	477,439	June 21	1924	475	59	1844
McKinnon, Hector, Eureka, Cal. Bag-lock	477,331	June 21	1756	430	59	1812
McLam, Frank, *et al.* (See Fisher, James W., assignor.)						
McLam, Franklin C. (See Fisher, James W., assignor.)						
McLane, George D., assignor to Darling, Brown & Sharpe, Providence, R. I. Caliper-rule	477,183	June 14	1494	365	59	1750
McLaughlin, Dennis W., San Leandro, Cal. Combined weighing and advertising device	475,968	May 31	3331	840	59	1337
McLaughlin, James F., Philadelphia, Pa. Manufacture of electrodes for secondary batteries	475,335	May 24	2310	593	59	1129
McLean, Donald D. (See Boehncke and McLean.)						
McLean, Frank W. (See Crary, Thomas F., assignor.)						
McLeod, Alfred, *et al.* (See Beckwith, Theodore A., assignor.)						
McLeod, Charlie M., and J. T. Garrett, Cooper, Tex. Animal-trap	472,386	Apr. 5	596	152	59	112
McLeod, John D., Milwaukee, Wis. Cable junction-box	477,218	June 21	1567	385	59	1776
McLoughlin, John E., Utica, N. Y. Cap	473,427	Apr. 19	2242	564	59	452
McManes, William, and G. E. Lum, Summit, N. J. Metallic railway cross-tie	476,404	June 7	280	66	59	1493
McManus, William S. (See Hock, Henry W., assignor.)						
McMenimen, George A., East Cambridge, Mass. Tramway-switch	472,381	Apr. 5	589	150	59	111
McMillan, Frederick R., Jacksonville, Ill. Cross water-tube steam-boiler	475,947	May 31	3298	832	59	1331
McNally, Richard J., assignor to A. C. Luce and R. R. Gibbs, Utica, N. Y. Manufacturing turned shoes	473,851	Apr. 26	2932	738	59	607
McNamar, Julius J. D., Newark, Ohio. Traction-engine	475,597	May 24	2726	690	59	1207
McNamara, James. (See Clinton and McNamara.)						
McNamara, John F. (See O'Connor and McNamara.)						
McNany, John. (See Van Why, Joseph M., assignor.)						
McNaull, William D., Ronceverte, W. Va. Radial drilling-machine	472,546	Apr. 12	843	215	59	173
McNellis, Charles, Chicago, Ill. Carbon-rod contact for arc lamps	477,219	June 21	1569	386	59	1776
McNutt, John F., and H. F. Grimmesey, assignors of one-third to O. R. Grimmesey, Warren, Ohio. Flue-cleaner	475,733	May 24	2936	745	59	1246
McPartland, John, Wakefield, R. I. Vehicle-seat	474,007	May 3	340	81	59	703
McPherson, Donald H., Le Roy, N. Y. Steering mechaniam for bicycles	475,142	May 17	2011	508	59	1051
McPherson, Donald H., Le Roy, N. Y. Book-support	477,018	June 14	1225	297	59	1695
McPherson, Horace, Crete, Ill. Side-delivery horse hay-rake	476,961	June 14	1144	276	59	1678
McPherson, Thomas C., Beaver Falls, Pa. Wire mat	475,598	May 24	2727	691	59	1207
McPherson, Thomas C., Beaver Falls, Pa. Wire mat	475,599	May 24	2728	691	59	1207
McQuaid, James W., Calloway county, Ky. Floor-clamp	474,180	May 3	455	110	59	726
McQuillan, John, Hecker, Ill. Extensible ladder	473,852	Apr. 26	2933	732	59	607
McQuillan, John, Hecker, Ill. Attachment for straw-carriers	474,181	May 3	456	110	59	726
McShea, James, Philadelphia, Pa. Prie-dieu	477,440	June 21	1925	475	59	1844
McVickar, Matthew, *et al.* (See Stewart, James, assignor.)						
McWilliam, James E., Hubbardston, Mass. Condenser for wool-carding machines	472,740	Apr. 12	1125	289	59	225
McWilliams, C. Q., *et al.* (See Edgar and Rohrbach, assignors.)						
Meachem, T. W. (See Benedict, Heman A., assignor.)						
Mead, Theodore H., *et al.* (See Crowell, Luther C., assignor.)						
Mears, Robert S., Newton, Kans. Electric body-wear	476,473	June 7	378	88	59	1510
Meagher, John. (See Taylor, Kenner, assignor.)						
Medart, Frederick, St. Louis, Mo. Horizontal-bar exercising apparatus	475,697	May 24	2876	727	59	1236
Meech, Harrison B., Chicago, Ill. Incandescent electric lamp	475,698	May 24	2877	727	59	1236
Meier, Beat, and L. E. Fritsche, Minneapolis, Minn. Process of and apparatus for dampening grain preparatory to grinding	477,909	June 28	2696	675	59	2012

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Meier, Joseph. (See Mayer, John B., assignor.)						
Meier, Silvan, assignor to Gerstle & Löffler, Munich, Germany. Corset	472,931	Apr. 12	1396	358	59	280
Meigs, George W. and J. W., Reading, Pa. Spectacle-lens	474,024	May 3	222	54	59	681
Meigs, George W., and E. Leyden, Reading, Pa. Crank mechanism	473,942	May 3	93	21, 22	59	655
Meigs, George W., and J. G. Ziegler, Reading; said Meigs assignor to E. E. Ziegler, Philadelphia, Pa. Bicycle	474,327	May 3	703	182	59	772
Meigs, John W. (See Meigs, George W. and J. W.)						
Meigs, John W. (See Temple and Meigs.)						
Meikle, Thomas, Cleveland, Ohio. Heating-boiler	475,459	May 24	2509	639, 640	59	1165
Meissner, William E., Rockaway, N. Y. Roundabout	473,177	Apr. 19	1827	460	59	370
Meixner, Franz, Hernals, near Vienna, Austria-Hungary. Manufacture of gun-barrels	472,380	Apr. 5	587	150	59	110
Mellor, Edwin. (See Ratcliffe, Hilton, and Mellor.)	477,763	June 28	2461	615	59	1968
Melms, Gustav J. (See Brown and Melms.)						
Meminger, Herman. (See Hirsch and Meminger.)						
Mendel, Alfred, Strehlen, near Dresden, Germany. Harness	477,378	June 21	1834	450	59	1896
Mendelson, David, Eureka, Utah Ter. Watch-makers' pliers	474,257	May 3	571	140	59	749
Mendelson, David, Eureka, Utah Ter. Jeweler's forceps	476,754	June 7	790	194	59	1595
Mendenhall, Allen, Earlham, Iowa. Mechanism for operating washing-machines, &c	474,915	May 17	1647	420	59	982
Meneely, Charles D., Albany, N. Y. Making tubular rollers	473,943	May 3	95	22	59	655
Mentzel, Daniel E., Spangle, Wash. Brake attachment for the steer-wheels of headers	477,136	June 14	1417	345	59	1733
Menzies, John. (See Morgan and Menzies.)						
Mercer, Alfonso, Norfolk, Va. Magazine-gun	477,764	June 28	2462	615, 616	59	1968
Mercer Bros. & Co. (See Reaman, Abram G., assignor.)						
Meriden Bronze Company. (See Jones, Augustus H., assignor.)						
Merkel, Frederick E., assignor to Merkel & Gransam, New York, N. Y. Picture-exhibitor	477,259	June 21	1644	401	59	1790
Merkel & Gransam. (See Merkel, Frederick E., assignor.)						
Merkel, Louis C., assignor of one-half to A. A. and F. C. Mersman, St. Louis, Mo. Upright-piano action	473,944	May 3	96	22	59	655
Merkleim, Ludwig. (See Krämer, Franz, assignor.)						
Merrell, Gaius L., Syracuse, N. Y. Can-filling machine	472,583	Apr. 12	888	228, 229	59	183
Merrell, Gaius L., assignor to himself, O. F. and F. C. Soule, Syracuse, N. Y. Apparatus for canning corn	473,885	Apr. 26	2987	754, 755	59	617
Merriam, Henry P., New York, N. Y. Fuse	475,786	May 31	3019	765, 766	59	1276
Merrick Sewing Machine Company. (See Woodward, Erastus, assignor.)						
Merridith, Samuel H., West Liberty, Iowa. Tilting gate	475,132	May 17	1996	505	59	1049
Merrill, George H., *et al.* (See Franklin, Benjamin, assignor.)						
Merrill, Curtis W., Malden, Mass. Vaporizer	472,133	Apr. 5	196	52	59	36
Merrill, George H., Nangatuck, Conn. Button and pin clasp	474,025	May 3	223	54	59	681
Merrill, Parker, St. Louis, Mo. Cattle-guard	472,897	Apr. 12	1345	345	59	269
Merrill, Samuel I., Los Angeles, Cal. Faucet	473,325	Apr. 19	2064	519	59	419
Merrill, William, East Saginaw, Mich. Wood-cutting machine	475,881	May 31	3201	809	59	1312
Merritt, Cassius C. (See Wolfe, John B., assignor.)						
Merritt, Charles H. (See Barnum, William H., assignor.)						
Merritt, Grant, Frankfort, Ind. Fence	474,455	May 10	930	239	59	826
Merritt, William H. (See Chapman, George T., assignor.)						
Merserean Manufacturing Company. (See Adriance, Benjamin, assignor.)						
Mersman, Arthur A., *et al.* (See Merkel, Louis C., assignor.)						
Mersman, Frederick C., *et al.* (See Merkel, Louis C., assignor.)						
Mesick, William H., Long Island City, N. Y. Stench-trap	474,342	May 3	737	192	59	779
Mesick, William H., Long Island City, N. Y. Sink and rack	477,137	June 14	1417	345	59	1733
Messenger, Ralph, Unadilla, N. Y. Milk-tester	472,382	Apr. 5	591	150	59	111
Messick, George A., Wilmington, Del. Diffusion-battery	475,587	May 24	2708	687	59	1204
Messina, John A., assignor of one-half to W. H. Williams, "T.," Key West, Fla. Blind-stop	474,258	May 3	572	140	59	749
Mestayer, Albert, Lorcauville, La. Harrow	476,020	May 31	3403	859	59	1352
Metal Base Electrotype Company. (See Wolfe, Jacob C., assignor.)						
Metal, Max., New York, N. Y. Window-chair	472,898	Apr. 12	1346	345	59	269
Metcalf, Charles A. (See Tyson, Bryan, assignor.)						
Metcalfe, Wooster B., and F. A. Ziegler, Hanover, Pa. Cash-recorder	474,672	May 10	1271	324	59	892
Metz, Charles H., Highlandville, Mass. Bicycle-wheel	478,064	June 28	2937	733, 734	59	2058
Metz, George E., *et al.* (See Cudner, Gustavis L., assignor.)						
Metz, Henry, Philadelphia, Pa. Combined newspaper-holder and door-plate	475,460	May 24	2512	640	59	1165
Metz, Rudolph, Philadelphia, Pa. Oil-purifier	473,326	Apr. 19	2065	520	59	419
Meyberg, Maude, New York, N. Y., Facial hygenic steaming apparatus	472,134	Apr. 5	196	52, 53	59	36
Meyer, George, assignor to F. L. McGahan, Indianapolis, Ind. Commutator-brush	473,195	Apr. 19	1857	468	59	376
Meyer, Gottfried, Schaffhausen, Switzerland. Carding-machine	473,585	Apr. 26	2523	636, 637, 638, 639	59	529
Meyer, Joseph, Jersey City, N. J. Electric heat-alarm	474,673	May 10	1274	325	59	893
Meyer, Julius, New York, N. Y., and C. Binder, Chicago, Ill., assignors to Edison General Electric Company, New York, N. Y. Pole for electric wires	476,889	June 14	1021	247, 248	59	1653
Meyer, Lucy R., Chicago, Ill. Syringe and syringe-box	476,402	June 7	278	65	59	1492
Meyer, Ludwig, Berlin, Germany. Improving oil-paintings by photography	473,767	Apr. 26	2795	.....	59	580
Meyer, Peter, Metamora, Ill. Display-rack	475,787	May 31	3024	766	59	1277
Meyer-Sniffen Company. (See Bunting, William, Jr., assignor.)						
Meyer-Sniffen Company. (See Tabele, Joseph H., assignor.)						
Meyer, William C. (See French and Meyer.)						
Metzger, Charles A., Brooklyn, N. Y. Composite electric conductor	477,951	June 28	2761	692	59	2026
Michaëlis, Ernst, and C. Henning, Cottbus, Prussia, Germany. Dyeing	472,267	Apr. 5	409	.....	59	76
Middlekauff, Ellsworth D., Stockton, Cal. Riveting-machine	474,177	May 3	451	109	59	725
Middleton, Robert, Leeds, England. Hydraulic apparatus for moving loads	475,588	May 24	2709	687, 688	59	1204
Midland Chemical Company. (See Dow, Herbert H., assignor.) (Reissue.)						
Milburn, Charles F., G. E. Byrkit, Toledo, and J. C. Crabbs, Auburndale, Ohio. Lathe for turning wagon-axles	474,995	May 17	1787	452	59	1006
Miles, Elbridge G., San Francisco, Cal. Shoe	472,711	Apr. 12	1086	278	59	218
Miles, Nancy E., Indianapolis, Ind. Corset	475,882	May 31	3203	810	59	1312
Miley, William H., Fall River, Mass. Let-off for looms	475,590	May 24	2714	688	59	1205

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Millard, Herbert B., assignor to Hartford Sanitary Manufacturing Company, Hartford, Conn. Cuspidor	473,634	Apr. 26	2602	655	59	543
Millard, Martin S., Kansas City, Mo. Refrigerator	475,591	May 24	2715	689	59	1205
Millard, Martin S., Kansas City, Mo. Refrigerator	475,592	May 24	2717	389	59	1205
Millard, Martin S., Kansas City, Mo. Construction of walls	475,593	May 24	2719	689	59	1206
Millard, Norman L. (See Sleeper, George W., assignor.)						
Millay, Harvey L. (See Hayes and Millay.)						
Miller, A. W. (See Calver, Washington I., assignor.)						
Miller, Allen T., assignor to G. F., W. N., and H. B. Kuhns, Dayton, Ohio. Valve	476,668	June 7	662	161	59	1568
Miller, Amanuel M., Fairfield, Tex. Sweep-plow	475,461	May 24	2513	640	59	1166
Miller, Arnold, Medford, Wis. Car-truck	477,765	June 28	2465	616	59	1969
Miller, Arnold, Medford, Wis. Car-truck	477,766	June 28	2467	616, 617	59	1969
Miller, Arnold, Medford, Wis. Car-truck	477,767	June 28	2468	617	59	1969
Miller, Arnold, Medford, Wis. Axle-box	477,768	June 28	2470	617	59	1970
Miller, Augustus M., *et al.* (See Zimmermann, Peter, Jr., assignor.)						
Miller, Charles, assignor to J. Richens, Auburn, N. Y. Machine for winding bandages	476,667	June 7	660	160	59	1568
Miller, Charles A., Brooklyn, N. Y. Registering measuring-faucet	475,945	May 31	3295	832	59	1330
Miller, Charles H., Rockford, Ill. Watchmaker's tool	477,432	June 21	1913	471	59	1841
Miller, David M., Fairfield, Cal. Car-axle	475,965	May 31	3328	839	59	1376
Miller, Dora R., New Orleans, La. Rubber for blackboards	473,558	Apr. 26	2467	624	59	518
Miller, Edward G. *et al.* (See Lucas, Austin H., assignor.)						
Miller, Edward G., Wilkinsburg, Pa. Lightning-arrester	472,135	Apr. 5	198	53	59	37
Miller, Edwin G. S. (See Hawkins, Edward S., assignor.)						
Miller, Elmer E., Canton, Ohio. Mechanism for propelling cars	477,260	June 21	1646	402	59	1790
Miller, Frederic S., Mendota, Ill. Wheel	475,510	May 24	2592	659	59	1180
Miller, Fredrick C., Newport, Ky. Cigar-mold	476,666	June 7	660	160	59	1567
Miller, George A., Colfax, Wash. Well-boring and prospecting	476,757	June 7	793	195	59	1595
Miller, George E., Lynn, assignor to W. A. Macleod and B. Dickerman, Boston, Mass. Recording device for scales	472,642	Apr. 12	977	253	59	199
Miller, George S. (See Green, Henry, assignor.)						
Miller, George W., Kalamazoo, Mich. Surface cattle-guard	473,327	Apr. 19	2067	520	59	419
Miller, George W., Kalamazoo, Mich. Railway-velocipede	473,586	Apr. 26	2532	639	59	530
Miller, George W., Kalamazoo, Mich. Car-wheel	475,018	May 17	1823	462	59	1015
Miller, John A., T. S. and H. G. Lester, Marine City, Mich. Nautical course-indicator	474,846	May 17	1549	396	59	961
Miller, John G., Champaigne, Ill. Trace-supporter	478,012	June 28	2858	715	59	2044
Miller, John T., Chicago, Ill. Folding stand or trestle	478,065	June 28	2939	734	59	2059
Miller-Knoblock Wagon Company. (See Miller, William H., assignor.)						
Miller, Lawrence B., Enterprise, assignor of one-half to T. M. Jones, Abilene, Kans. Draft-equalizer	475,133	May 17	1908	506	59	1049
Miller, Lee A., Milwaukee, assignor of one-half to S. B. Fuller, Watertown, Wis. Spool-holder for sewing-machines	475,511	May 24	2593	660	59	1181
Miller, Rufus B., Sprague, Wash. Horse-power	475,044	May 17	1859	471, 472	59	1022
Miller, Samuel L., *et al.* (See Hoke, Quinton J., assignor.)						
Miller, Thomas, Jersey City, N. J. Valved funnel	474,674	May 10	1275	325	59	893
Miller, Thomas, Jersey City, N. J. Urn	477,261	June 21	1647	402	59	1790
Miller, Thomas, Tyrone, Pa. Butter-knife	475,789	May 31	3025	766	59	1277
Miller, Thomas B. (See Young, Robert G., assignor.)						
Miller, Thomas S., New York, N. Y. Conveying apparatus	474,047	May 3	264	64	59	688
Miller, Webb, Chicago, Ill. Spring and canvas cot	475,788	May 31	3024	766	59	1277
Miller, William B., *et al.* (See Zimmermann, Peter, Jr., assignor.)						
Miller, William G., *et al.* (See Sweet, Larntine C., assignor.)						
Miller, William H., assignor to Miller-Knoblock Wagon Company, South Bend, Ind. Sprinkler-head and valve therefor	475,244	May 17	2168	551	59	1083
Miller, William J., R. S. McBean, and J. W. McBurnett, Colorado, Tex. Vehicle-axle	472,545	Apr. 12	841	215	59	173
Millet, Charles W., Dolgeville, N. Y. Bicycle-tire	477,769	June 28	2471	618	59	1970
Millet, John W., Dolgeville, assignor to A. Dolge, New York, N. Y. Felt roller	472,899	Apr. 12	1346	346	59	270
Millet, John W., assignor to A. Dolge, Dolgeville, N. Y. Fulling-mill	472,900	Apr. 12	1347	346, 347	59	270
Millhiser & Co., M. (See Cuasen, William J., assignor.)						
Millian, John A., Dexter, Kans. Whiffletree attachment	474,026	May 3	224	54	59	681
Milligan, Henry C., South Orange, N. J., assignor to R. Wolff & Co., New York, N. Y. Buckle	477,601	June 21	2180	541	59	1896
Milligan, Thomas G., Washington, D. C. House-door letter-box	476,669	June 7	663	161	59	1568
Millis, Hiram S., Detroit, Tex. Extinguishing fire	477,138	June 14	1419	345	59	1734
Mills, Daniel, Philadelphia, Pa. Rotating hook mechanism for boot or shoe sewing machines	477,433	June 21	1913	472	59	1841
Mills, Daniel, Philadelphia, Pa. Feeding mechanism for boot or shoe sewing machines	477,434	June 21	1915	472	59	1842
Mills, Daniel, Philadelphia, Pa. Boot or shoe sewing machine	477,435	June 21	1918	473	59	1842
Mills, Daniel, Philadelphia, Pa. Boot or shoe sewing machine	477,436	June 21	1919	473	59	1843
Mills, Daniel, and Daniel, Jr., Philadelphia, Pa. Boot or shoe sewing machine	477,431	June 21	1908	470, 471	59	1841
Mills, Frank W., assignor to Mills Improved Pneumatic Brake Company, Chicago, Ill. Air-brake	476,546	June 7	482	114	59	1533
Mills Improved Pneumatic Brake Company. (See Mills, Frank W., assignor.)						
Mills Improved Pneumatic Brake Company. (See Mills, Mortimer B., assignor.)						
Mills, Jonathan, Cleveland, Ohio. Bolting-reel	474,916	May 17	1647	421, 422	59	982
Mills, Jonathan, Columbus, Ohio. Purifier and separator	476,231	May 31	3760	949	59	1422
Mills, Mortimer B., assignor to Mills Improved Pneumatic Brake Company, Chicago, Ill. Safety-valve	476,755	June 7	791	194	59	1595
Mills, Mortimer B., assignor to Mills Improved Pneumatic Brake Company, Chicago, Ill. Air-pump for brake mechanisms	476,756	June 7	792	195	59	1595
Mills, Norman T., Boston, Mass. Watch-case pendant	475,064	May 17	1491	480	59	1028
Mills, Ralph, New York, N. Y. Cash register and indicator	475,408	May 24	2422	618	59	1149
Mills, William H., Portland, N. Y. Grape-vine clamp	475,569	May 24	2713	688	59	1205
Milne, James, assignor of two-thirds to J. J. Milne, Scotch Grove, Iowa. Rope-hook	474,675	May 10	1276	325	59	893
Milne, James, assignor of two-thirds to J. J. Milne, Scotch Grove, Iowa. Stump-puller	475,333	May 24	2302	501	59	1127
Milne, Joseph J. (See Milne, James, assignor.)						
Milsted, William N., New York, N. Y. Gas-meter	477,910	June 28	2698	675, 676	59	2012
Milser, August G. (See Heath and Milser.)						
Minaker, S. J. (See Powell, Henry S., assignor.)						
Minard, Russell W., Larned, Kans. Trace-support	474,753	May 10	1389	351	59	916

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Miner, Howard A., Philadelphia, Pa. Electric-light shade, &c	476,021	May 31	3404	859	59	1353
Miner, William H., Chicago, Ill. Draft-rigging for cars	474,996	May 17	1788	452, 453	59	1008
Minga, George W., New Castle, Colo. Motor	473,328	Apr. 19	2068	590, 591	59	419
Mink, Fritz, assignor to Keystone Watch Case Company, Philadelphia, Pa. Watch-bow fastener	472,764	Apr. 12	1159	297	59	232
Minty, William S (See Broström, Carl F., assignor.)						
Mirfield, Samuel, assignor of one-half to W. H. Oliphant, Toronto, Canada. Thill-coupling	476,758	June 7	794	195	59	1596
Mitchel, Harris B. (See Lewis, Leroy S., assignor.)						
Mitchell, Claudius H., and R. M. Veitch, Oakland, Cal. Bicycle-tire	476,670	June 7	665	161	59	1569
Mitchell, Elma M. (See Mitchell, John E. and E. M.)						
Mitchell, Frank. O., Middletown, Conn. Sap-spout	472,306	Apr. 5	469	120	59	88
Mitchell, Fred B., *et al.* (See Spurr, George W., assignor.)						
Mitchell, James F., Titusville, Fla. Ladder	473,768	Apr. 26	2796	703	59	581
Mitchell, James H., Philadelphia, Pa. Knife cleaning and flouring device	472,194	Apr. 5	289	76	59	54
Mitchell, James H., Philadelphia, Pa. Continuous dough-press for form-making	472,765	Apr. 12	1160	297	59	232
Mitchell, John A., and C. T. Deal, Scottsburg, Ind. Feed-trough	477,139	June 14	1419	346	59	1734
Mitchell, John E. and E. M., Salem, Iowa. Plow	473,517	Apr. 26	2399	607, 608	59	504
Mitchell, John J., Avondale, Ala. Fire-guard for grates	474,562	May 10	1099	281	59	860
Mitchell, Robert C., *et al.* (See Spurr, George W., assignor.)						
Mitchell, Thomas S., Pittsburg, Pa. Switch mechanism	475,087	May 17	1936	490	59	1036
Mitchell, Willis, Malden, assignor to Butterfield-Mitchell Electric Heating Company, Boston, Mass. Electrically-heated vessel	474,398	May 10	1926	216, 217	59	808
Mitchell, Willis, Malden, assignor to Butterfield-Mitchell Electric Heating Company, Boston, Mass. Electrical heater	474,797	May 10	1465	372	59	932
Mitchell, Willis, Malden, assignor to Butterfield-Mitchell Electric Heating Company, Boston, Mass. Electrically-heated matrix-press	474,964	May 17	1732	440	59	998
Mitchill, Cornelius S. (See Walker, Louis A., assignor.)						
Mitzlaff, Hermann von, Berlin, Germany. Hydraulic press	475,224	May 17	2130	539, 540	59	1076
Mitzlaff, Hermann von, Berlin, Germany. Slide-valve	477,088	June 14	1349	328	59	1720
Moe, Alfred, Jersey City, N. J. Whirligig	475,504	May 24	2721	690	59	1206
Moeller, Frederick W., Washington, D. C. Wall-paper-trimming machine	475,134	May 17	2000	506	59	1049
Moeller, Johan, Boston, Mass. Beer-filter	476,671	June 7	666	162	59	1569
Moews, Paul, Newark, N. J., assignor to J. S. Spencer, New York, N. Y. Opera-glass attachment	475,462	May 24	2513	641	59	1166
Moews, Paul, Newark, N. J., assignor to J. S. Spencer, New York, and J. E. Spencer, Brooklyn, N. Y. Opera-glass attachment	475,463	May 24	2515	641	59	1166
Moffat, Edward S., and T. G. Wolf, Scranton, Pa. Railway-tie	472,901	Apr. 12	1348	347	59	270
Mohan, Michael J. (See Mohan, William J. and M. J.)						
Mohan, William J and M. J., Covington, Ky. Riding-saddle	477,016	June 14	1223	296	59	1695
Mohle, Henry. (See Newell and Mohle.)						
Moir, Henry C. Summer Hill, near Sydney, New South Wales. Reversible seat	476,474	June 7	380	88	59	1511
Molendo, Herman, New York, N. Y. Receptacle for portable electric lamps	477,810	June 28	2528	634	59	1980
Moline Plow Company. (See Lindgren, August, assignor.)						
Moline Pump Company. (See Bergquist, Frank, assignor.)						
Molloy, Edmond, Philadelphia, Pa. Heater for vehicles	477,811	June 28	2529	634, 635	59	1980
Molloy, Frank, *et al.* (See Beckwith, Theodore A., assignor.)						
Molloy, Frank, assignor of eleven-twentieths to A. S. Dinsmore and W. S. Peters, Haverhill, Mass. Heel-burnishing machine	472,307	Apr. 5	470	120, 121	59	88
Molloy, John J., *et al.* (See Beckwith, Theodore A., assignor.)						
Molt, Heinrich, Westerrade, Germany. Box-closure	475,135	May 17	2001	506	59	1050
Monfort, Abram C., Pawtucket, R. I. Spirit-lamp	472,506	Apr. 5	785	200	59	149
Montague, Thomas E., West Lorne, Canada. Machine for bending vehicle-shafts	473,329	Apr. 19	2071	521, 522, 523	59	420
Monteith, George, Cincinnati, Ohio. Hub-band	474,754	May 10	1390	351	59	916
Montgomery, Archibald, Philadelphia, Pa. Adjusting-pin for molding-flasks	475,088	May 17	1937	490	59	1036
Montgomery, J. E., *et al.* (See Tatro, Charles P., assignor.)						
Montgomery, James, *et al.* (See Tatro, Charles P., assignor.)						
Montgomery, James, assignor of one-half to R. Grant, Jersey City, N. J. Grate-bar	478,013	June 28	2858	715, 716	59	2044
Montgomery, Thomas J., *et al.* (See Woolf, Albert E., assignor.) (Reissue.)						
Montrose, Levi H., Camden, N. J. Roofing-tile	472,680	Apr. 12	1030	266	59	207
Moodie, Thomas S., South Walpole, Mass. Harness attachment	475,282	May 17	2225	571	59	1096
Moody, Charles D. (See Moody, David J., assignor.)						
Moody, David J., St. Louis, assignor to C. D. Moody, Webster Groves, Mo. Velocipede	473,196	Apr. 19	1858	468	59	376
Moore, Frederick L. (See Spaulding and Moore.						
Moody, George A. (See Pitcher and Moody.)						
Moody, Nathan W. (See Taylor, Horace H., assignor.)						
Moomy, Samuel C., assignor of one-half to W. A. Schoenfield, Erie, Pa. Ice-cream freezer	476,232	May 31	3765	950	59	1423
Moon, George R., Wilmington, Ohio. Oven	476,291	June 7	92	21	59	1456
Mooney, Benjamin F., assignor of one-half to I. F. Pratt and E. Troy, Olean, N. Y. Rope or cord fastening	475,245	May 17	2169	532	59	1083
Moor, William H., Atlanta, Ga. Smoke and cinder conductor for railway-trains	477,565	June 21	2125	528, 529	59	1885
Moore, A., Jr., *et al.* (See Fitzwater, William M., assignor.)						
Moore, Albert H., Gloucester, Mass. Carpet-stretcher	476,960	June 14	1143	276	59	1678
Moore, Charles J., Toledo, Ohio. Wheel	475,464	May 24	2517	641	59	1166
Moore, Frederic H., Boston, Mass. Expanding conductor	474,563	May 10	1100	281	59	860
Moore, George H., Norwich, Conn. Collecting-tube for filters	473,011	Apr. 19	1539	392	59	319
Moore, George L., and C. Jory, assignors to W. T. Harris, Stockton, Cal. Grape-picker	477,952	June 28	2763	692	59	2026
Moore, George R., Philadelphia, Pa. Oil-burner attachment for stoves or heaters	472,268	Apr. 5	410	105	59	77
Moore, J. E., *et al.* (See Jackson and Reiger, assignors.)						
Moore, James H., assignor to Nashua Lock and Hardware Company, Nashua, N. H. Hinge	473,012	Apr. 19	1540	393	59	320
Moore, Joseph B., Minneapolis, Minn. Electric-lamp holder	475,286	May. 17	2229	572	59	1097
Moore, S. J. C., *et al.* (See Fitzwater, William M., assignor.)						
Moore, Thomas C., and S. F. Crull, Dublin, Ind. Bicycle	476,157	May 31	3627	917	59	1396
Moore, William, Kokomo, Ind. Apparatus for separating natural gas from oil, water, &c	473,013	Apr. 19	1541	393	59	320
Moore, William C., Kansas City, Mo., assignor to Electric Secret Service Company, New York, N. Y. Electric signaling apparatus	475,334	May 24	2303	592	59	1128

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Moorfield, Frank, Brooklyn, N. Y. Apparatus for forming or shaping hollow articles	476,058	May 31	3464	874	59	1365
Moorhouse, Marguerite J., *et al.* (See Moorhouse, Walter, assignor.)						
Moorhouse, Walter, assignor to M. J. Lenhart and M. J. Moorhouse, Philadelphia, Pa. Washer for paper-stock	478,066	June 28	2940	734	59	2059
Moran, Charles A., New York, N. Y. Candle-shade holder	475,790	May 31	3026	767	59	1277
Moran, John H., Licking, Mo. Caster attachment	475,136	May 17	2003	506	59	1050
Moran, Robert, Seattle, Wash. Coin-actuated vending-machine	472,507	Apr. 5	785	201	59	149
Morford, Charles H., Allentown, Pa. Cash-recorder	476,890	June 14	1022	248	59	1654
Morgan, Alfred W., Washington, D. C. Well-boring apparatus	476,475	June 7	382	88, 89	59	1511
Morgan, Edmund C., Chicago, Ill. Standard for electric wires	474,847	May 17	1552	396	59	961
Morgan, Edmund C., Chicago, Ill. Armature for electric motors	474,848	May 17	1553	396	59	961
Morgan, Henry P., South Norwalk, Conn. Fishing-rod	472,766	Apr. 12	1161	298	59	232
Morgan, Jesse T. (See Dimmick, Albert M., assignor.)						
Morgan, Jesse T. (See Dimmick and Morgan.)						
Morgan, John. (See Purcell and Morgan.)						
Morgan, John R. (See Morgan, Thomas R., Sr., and J. R.)						
Morgan, John R., *et al.* (See Morgan, William H., assignor.)						
Morgan, John R., assignor of three fourths to T. R., Sr., and T. R. Morgan, Jr., and W. H. Morgan, Alliance, Ohio. Friction-clutch	472,739	Apr. 12	1123	288, 289	59	225
Morgan, John W., Belleville, Ill. Oil-cup	477,379	June 21	1835	450	59	1826
Morgan, Joseph U., Dublin, assignor of one-half to M. Shew and J. R. Bond, Cambridge City, Ind. Bicycle-hub	473,426	Apr. 19	2241	564	59	452
Morgan, O. P., *et al.* (See Long, Montgomery, assignor.)						
Morgan, Robert, New Haven, Conn. Siphon for water-closet tanks	475,512	May 24	2594	660	59	1181
Morgan, Robert, and J. Menzies, New Haven, Conn. Water-closet	477,867	June 28	2634	659	59	2000
Morgan, Robert W. (See Stafford and Morgan.)						
Morgan, Thomas R., *et al.* (See Morgan, William H., assignor.)						
Morgan, Thomas R., Jr., *et al.* (See Morgan, John R., assignor.)						
Morgan, Thomas R., Sr., *et al.* (See Morgan, John R., assignor.)						
Morgan, Thomas R., Sr., and J. R., assignors of one-fourth to T. R., Jr., and W. H. Morgan, Alliance, Ohio. Overhead traveling crane	475,883	May 31	3204	810, 811	59	1312
Morgan, William H., *et al.* (See Morgan, John R., assignor.)						
Morgan, William H., *et al.* (See Morgan, Thomas R., Sr., and J. R., assignors.)						
Morgan, William H., assignor of three-fourths to T. R. Morgan, Sr. and Jr., and J. R. Morgan, Alliance, Ohio. Traveling crane	477,437	June 21	1922	474	59	1843
Morgan, William R., and C. S. Osborn, Grand Rapids, Mich.; said Morgan assignor to said Osborn. Folding table	476,400	June 7	375	65	59	1492
Morgans, William H., Pontiac, Mich. Gas-generating apparatus	474,178	May 3	452	109, 110	59	725
Morganthaler, Frederick, Brooklyn, N. Y. Electric lock	475,137	May 17	2003	507	59	1050
Morison, Donald B., Hartlepool, England. Steam-boiler flue and fire-box	477,770	June 28	2472	618	59	1970
Morrell, James A., New Orleans, La. Process of and apparatus for evaporating sugar solutions	476,891	June 14	1024	248	59	1654
Morrell, William N., Waterloo, N. Y. Phaeton	473,330	Apr. 19	2082	524	59	422
Morrill, Charles, New York, N. Y. Lifting-jack	477,771	June 28	2473	618	59	1970
Morrill, George P., Canterbury, N. H. Ax or tool wedge	477,262	June 21	1649	403	59	1791
Morris Box Lid Company. (See French, Philo N., assignor.)						
Morris, Charles H. C., *et al.* (See Ladd, Daniel E., assignor.)						
Morris, George, Libertyville, Ill. Cherry-picker	476,059	May 31	3468	875	59	1366
Morris, James M., and S. J. Harkness, Scofield, Utah Ter. Car-replacer	473,587	Apr. 26	2533	639	59	530
Morris, John B., Philadelphia, Pa. Combination-lock, packing-box, and savings-bank	472,136	Apr. 5	199	53, 54	59	37
Morris, John H., Maquoketa, Iowa. Fence-machine	474,179	May 3	454	110	59	725
Morris, Matthias K., Holiday's Cove, W. Va. Type-writing machine	473,945	May 3	97	22, 23	59	655
Morris, Richard, *et al.* (See Trump, John G., assignor.)						
Morris, Thomas. Brooklyn, assignor to J. Berbecker & Co., New York, N. Y. Extension-bracket	476,892	June 14	1026	248	59	1654
Morris, William J. (See Keenan and Morris.)						
Morris, William L., Cleveland, Ohio. Ore-pulverizer	474,095	May 3	336	81	59	702
Morrison, Chester L., West Point, Va. Smoke-conduit for railway-trains	473,769	Apr. 26	2797	703	59	581
Morrison, George W. (See Fleming, Will A., assignor.)						
Morrison, James. (See Shipe, Walter S., assignor.)						
Morrison, James D., Reinbeck, Iowa. Railway-car	475,791	May 31	3027	767	59	1278
Morrison, James F. (See Painter, Gwynne E., assignor.)						
Morrison, Robert T., Jr., assignor of one-half to D. P. Eells, Cleveland, Ohio. Car-coupling	475,283	May 17	2226	571	59	1096
Morse, Alfred B., Easton, Mass. Heat-regulating device	474,139	May 3	389	94	59	713
Morse, Alfred B., Easton, Mass. Thermostat	474,140	May 3	393	95	59	714
Morse, Charles S., assignor to Benedict & Burnham Manufacturing Company, Waterbury, Conn. Charging-wagon	476,547	June 7	483	115	59	1533
Morse, Thomas S., Lenox, Mass. Folding framing-square	472,902	Apr. 12	1349	347	59	270
Mortimer, John D. D., Stockton, Cal. Hotel-desk	476,807	June 14	887	218	59	1627
Morton, Albert H., assignor to Kitsou Machine Company, Lowell, Mass. Clearer for spike-cylinders and spike-aprons	475,246	May 17	2170	552	59	1083
Morton, Augustus, assignor to Bridgeport Brass Company, Bridgeport, Conn. Fly-fan	474,141	May 3	395	95	59	714
Morton, Frank, St. Louis, Mo. Ventilating apparatus for grain-bins	474,676	May 10	1277	325	59	893
Morton, James, Valley Falls, assignor to Geo. W. Stafford Manufacturing Company, Providence, R. I. Let-off mechanism for looms	475,595	May 24	2723	690	59	1206
Morton, Matthew, Romeo, Mich. Reversible universal shaper	472,061	Apr. 5	75	20, 21	59	16
Morton, Samuel S., York, Pa. Journal-box bearing	476,158	May 31	3628	917, 918	59	1398
Morton, William M., New Haven, Conn. Sash-fastener	475,966	May 31	3329	840	59	1337
Mosby, William L., *et al.* (See Cross, Thomas A., assignor.)						
Moseley, Joseph, and B. Blundstone, Manchester, England. India-rubber tire	475,732	May 24	2935	745	59	1246
Moses, Philo, Fremont, Ohio. Apparatus for trimming carbon points	476,292	June 7	93	21	59	1456
Mosher Arc Lamp Company. (See Mosher, John A., assignor.)						
Mosher, Charles D., New York, N. Y. Steam-separator	472,308	Apr. 5	472	121	59	89
Mosher, Charles D., Amesbury, Mass. Steam-generator	472,309	Apr. 5	474	122	59	89
Mosher, Charles D., Amesbury, Mass. Steam-separator	472,310	Apr. 5	476	122, 123	59	89
Mosher, George D., assignor of one-half to S. Novitsky, Birmingham, Conn. Thermostatic fire-alarm	473,669	Apr. 26	2652	669	59	553
Mosher, John A., Chicago, Ill., assignor to Mosher Arc Lamp Company, Abilene, Kans. Electric-arc lamp	472,064	Apr. 5	81	22, 23	59	17
Mosher, Samuel E., Chillicothe, Ohio. Bicycle	477,772	June 28	2474	619	59	1971

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Moskowitz, Jacob. (See Becher, Carl, assignor.)						
Moskowitz, Jacob D., assignor of one-fourth to S. J. Braun, Toledo, Ohio. Bicycle	472,796	Apr. 12	1203	309	59	240
Mosler Bank Safe Company. (See Mosler, Moses, assignor.)						
Mosler Bank Safe Company. (See Peck, Franklin H., assignor.)						
Mosler, Moses, assignor to Mosler Bank Safe Company, Cincinnati, Ohio. Safe-door	472,584	Apr. 12	892	229	59	184
Moulton, Luther V., Grand Rapids, Mich. Folding bed	474,027	May 3	226	54	59	681
Moulton, Luther V., Grand Rapids, Mich. Folding bed	474,849	May 17	1554	396, 397	59	962
Mower, Jacob K. (See Herrington, Charles R., assignor.)						
Mower, Samuel E., assignor to H. G. Thompson & Sons, New Haven, Conn. Electric-motor mechanism	474,328	May 3	706	182	59	772
Moxham, Arthur J., Johnstown, Pa. Box brace-chair for girder-rails	472,767	Apr. 12	1164	298	59	233
Moxham, Arthur J., Johnstown, Pa. Expansion-rail for railways	477,672	June 28	2319	579	59	1939
Moxham, Arthur J., Johnstown, Pa. Rail for railways	477,673	June 28	2320	579	59	1940
Moxham, Arthur J., Johnstown, Pa. Rail for railways	477,674	June 28	2321	580	59	1940
Moxham, Arthur J., Johnstown, Pa. Expansion-rail for railways	477,675	June 28	2322	580	59	1940
Moxham, Arthur J., Johnstown, Pa. Railway-crossing	477,676	June 28	2323	580	59	1940
Moxham, Arthur J., Johnstown, Pa. Rail-joint	477,677	June 28	2325	581	59	1941
Moxham, Arthur J., Johnstown, Pa. Railway-rail joint	477,678	June 28	2326	581	59	1941
Moxham, Arthur J., Johnstown, Pa. Combined rail and cross-tie	477,679	June 28	2326	581	59	1941
Moxham, Arthur J., Johnstown, Pa. Railway-rail joint	477,680	June 28	2327	581	59	1941
Moxham, Arthur J., Johnstown, Pa. Railway-crossing	477,681	June 28	2328	582	59	1942
Moxham, Arthur J., Johnstown, Pa. Railway-crossing	477,682	June 28	2331	582	59	1942
Moxham, Arthur J., Johnstown, Pa. Rail for railways	477,683	June 28	2333	583	59	1943
Moxham, Arthur J., Johnstown, Pa. Frog or cross for railway-crossings	477,684	June 28	2334	583	59	1943
Moxham, Arthur J., Johnstown, Pa. Railway-crossing	477,685	June 28	2336	584	59	1944
Moxham, Arthur J., Johnstown, Pa. Switch-piece for railway-tracks	477,686	June 28	2338	584	59	1944
Moxham, Arthur J., Johnstown, Pa. Railway-crossing	477,687	June 28	2340	584, 585	59	1945
Moxham, Arthur J., Johnstown, Pa. Railway-crossing	477,688	June 28	2342	585	59	1945
Moxham, Arthur J., Johnstown, Pa. Railway-rail joint	477,689	June 28	2344	586	59	1946
Moxham, Arthur J., Johnstown, Pa. Railway-rail and making the same	477,690	June 28	2346	586	59	1946
Moyer, Mahlon. (See Stiles, William E., assignor.)						
Moyers, James M., assignor of one-half to W. J. Payne, Richmond, Va. Loom-shuttle threader	473,849	Apr. 26	2928	737	59	606
Mueller, Emil T., La Crosse, Wis. Cleaner for barrel-bushings	472,065	Apr. 5	84	23	59	18
Mueller, Frank, Albany, N. Y. Labeling-machine	474,677	May 10	1278	326	59	894
Mueller, George A. and O. W., assignors to said George A. Mueller and G. A. Muenzenmaier, Cincinnati, Ohio. Grinding attachment for lathes	477,911	June 28	2700	676	59	2013
Mueller, Oscar W. (See Mueller, George A. and O. W.)						
Mueller, Sebastian, Sharpsburg, A. R. Matchett, and W. Eggers, assignors to H. J. Heinz Company, Allegheny, Pa. Packing-case	474,755	May 10	1391	351, 352	59	917
Muenzenmaier, George A. (See Mueller, George A. and O. W., assignors.)						
Muir, James, *et al.* (See Wright, Samuel, assignor.)						
Mullaly, John, and L. L. Bullock, New York, N. Y. Surface-printing plate	476,759	June 7	796	195	59	1596
Mullaney, Edmond D., Badus, S. D. Belt-reel for thrashing-machines	473,946	May 3	99	23	59	656
Mullaney, John E., assignor of one-half to L. R. Thian, Minneapolis, Minn. Chain coupling for cars	473,014	Apr. 19	1543	393, 394	59	320
Müller, Frederick, Philadelphia, Pa. Pocket-book, &c.	476,150	May 31	3630	918	59	1398
Müller-Jacobs, Armand, assignor to Heliocaustic Art Company, New York, N. Y. Producing photographs on hard surfaces	474,850	May 17	1556	.....	59	962
Müller, Jean, Baltimore, Md. Apparatus for conveying meat through smoke-houses	474,606	May 10	1158	294, 295	59	871
Müller, Julius. (See Baum and Müller.)						
Müller, Telle H. (See Newhall and Müller.)						
Mumbrauer, Edmund. (See Mumbrauer, Wilhelm and E.)						
Mumbrauer, Wilhelm and E., New York, N. Y. Apparatus for measuring and drawing off liquids	472,625	Apr. 12	957	248	59	195
Mumford, Lucian C., New York, N. Y. Cork-extractor	474,480	May 10	959	247	59	832
Munger, Henry C., Chicago, Ill. Poultry-crate	472,903	Apr. 12	1350	348	59	271
Munn, William G., and E. Christman, assignors to Brennan & Company Southwestern Agricultural Works, Louisville, Ky. Grain-drill	473,234	Apr. 19	1923	484	59	390
Munro, Daniel, and W. H. Avis, Toronto, Canada. Spinning-machine	475,138	May 17	2004	507	59	1050
Munson Type Writer Company. (See Seifried, Samuel J., assignor.)						
Muntzenberger, Adolph, Harvard, Ill. Malt-plow	476,293	June 7	95	21, 22	59	1456
Murchland, William, Kilmarnock, Scotland. Cow-milker	473,770	Apr. 26	2799	704	59	581
Murdoch, Alexander. (See Xander, George A., assignor.)						
Murdock, Harvey, Brooklyn, N. Y. Window-blind	474,259	May 3	573	141	59	749
Murdock, Harvey, Brooklyn, N. Y. Oven-thermometer	477,143	June 14	1424	346	59	1735
Murphey, Charles H., Madisonville, Ky. Faucet bottle-washer	473,947	May 3	100	23	59	656
Murphy, Cornelius. (See Fellows, Byron W., assignor.)						
Murphy, John F., Paterson, N. J. Compound engine	474,643	May 10	1218	312	59	882
Murphy, Junius A., New Orleans, La. Traverse-motion for bobbins in winding-machines	472,383	Apr. 5	592	151	59	111
Murphy, Michael L., Coraopolis, Pa. Glass-furnace	476,672	June 7	667	162	59	1569
Murray, Archibald B., San Rafael, Cal. Water-motor	474,851	May 17	1557	397	59	962
Murray, John G., *et al.* (See Riggs, Lewis S., assignor.)						
Murray, Stephen D., assignor to W. Burr, Dallas, Tex., and J. H. Deems, St. Louis, Mo. Apparatus for elevating, distributing, and feeding seed-cotton to gins	472,607	Apr. 12	928	240	59	190
Murray, William J. (See Tholen and Murray.)						
Murrey, Thomas J., New York, assignor of one-half to R. O. Israel, Brooklyn, N. Y. Toaster	475,884	May 31	3207	811	59	1313
Musgrave, Thomas H. (See Senger, Henry, assignor.)						
Musser, Henry C., *et al.* (See Groff, Sylvanus E., assignor.)						
Mussey, Eugene K., *et al.* (See Weller, George L., assignor.)						
Muzzy, William A. (See Dearborn, Gilbert K., assignor.)						
Myer, Henry C. (See Colvee, Charles, assignor.)						
Myers, Augustus, Toronto, Canada. Derrick	474,142	May 3	396	96	59	715
Myers, Charles F., McKinstry's Mills, Md. Adjustable brush-handle	476,060	May 31	3469	875	59	1366
Myers, Clark C., New Richmond, Ohio. Scythe-snath	472,626	Apr. 12	959	248	59	196
Myers, Frederick, New York, N. Y. Banjo	472,904	Apr. 12	1351	348	59	271
Myers, George D., *et al.* (See Myers, Orlando E., assignor.)						
Myers, Henry, Philadelphia, Pa. Wheel-tire	477,773	June 28	2475	619	59	1971
Myers, Henry, Philadelphia, Pa. Wheel-tire	477,774	June 28	2477	619	59	1971
Myers, James L., Boston, Mass. Roller-compressor	476,233	May 31	3766	950	59	1423
Myers, James L., Boston, Mass. Leaf-stripping machine	476,234	May 31	3767	950	59	1423
Myers, James L., New Orleans, La., assignor to Tropical Fibre Machine and Process Company, Portland, Me. Machine for treating fibrous plants	476,160	May 31	3631	918, 919	59	1399

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Myers, James L., New Orleans, La., assignor to Tropical Fibre Machine and Process Company, Portland, Me. Machine for treating fibrous plants	476,161	May 31	3634	990	59	1399
Myers, John, Welsh Run, Pa. Brooder	475,139	May 17	2007	507	59	1051
Myers, John H., Philadelphia, Pa. Sleeping-car	476,022	May 31	3405	859	59	1353
Myers, Orlando R., Warsaw, assignor of three-fourths to E. H. Porter, O. Edwards, and G. D. Myers, Hancock county, Ill. Car-coupling	476,401	June 7	277	65	59	1492
Myers, Sheridan J., Hebron, Miss. Rein-support	475,465	May 24	2518	642	59	1167
Myers, Soloman. (See Cashell, George W., assignor.)						
Myers, William B., Sterling, Ill. Wind-wheel	472,763	Apr. 12	1157	297	59	232
Naef, John J., Paterson, N. J. Recovering tin from scrap	477,220	June 21	1571	386	59	1776
Naeglin, Charles. (See Sharp, Abel B., assignor.)						
Nagal, Jacob. (See Huelsen and Nagal.)						
Narracott, Samuel J. (See Oetzmann and Narracott.)						
Nashua Lock and Hardware Company. (See Moore, James H., assignor.)						
Nate, John J., Chicago, Ill. Cable-hanger	475,600	May 24	2728	691	59	1207
National Cash Register Company. (See Carney, Thomas, assignor.)						
National Cash Register Company. (See Douglas, William G., assignor.)						
National Company. (See Baldwin, Cyrus W., assignor.)						
National Company. (See Venn, Isaac H., assignor.)						
National Cotton Seed Oil and Huller Company. (See Faulkner, James J., assignor.)						
National Hardware Company. (See Faske, Joseph, assignor.)						
National Heeling Machine Company. (See Demary, George T., assignor.)						
National Hollow Brake Beam Company. (See Robischung, Henry B., assignor.)						
National Machine Company. (See Hogan, James T., assignor.)						
National Match Selling Machine Company. (See Latimer, William G., assignor.)						
National Saw Company. (See Clemson, George N., assignor.)						
National Switch and Signal Company. (See Pfeil, George H., assignor.)						
National Switch and Signal Company. (See Pfeil, Henry S., assignor.)						
National Type Writer Company. (See Unz, Henry H., assignor.)						
Natius, Fred. C. A. (See Black and Natius.)						
Nauman, William H., assignor to Dayton Farm Implement Company, Dayton, Ohio. Combined harrow and seeder	477,441	June 21	1927	475, 476	59	1844
Naylor, John. (See Anderson and Naylor.)						
Naylor Manufacturing Company. (See Naylor, William H., assignor.)						
Naylor, William H., Philadelphia, Pa., assignor to Naylor Manufacturing Company, Camden, N. J. Sash cord and securer	476,163	May 31	3639	921	59	1400
Neagle, Thomas J., *et al.* (See Beckwith, Theodore A., assignor.)						
Needham, John O. (See Needham, William, assignor.)						
Needham, William, assignor of one-half to J. O. Needham, Tampico, Ill. Hog-nose cutter	472,932	Apr. 12	1396	358	59	280
Neef, Charles J., Texarkana, Ark. Motor	472,906	Apr. 12	1354	348	59	271
Neely, Austin, Greenville, Miss. Seed-planter	473,124	Apr. 19	1728	437	59	352
Neely, William A., Lynn, Mass. Stay for boots or shoes	472,197	Apr. 5	292	76	59	55
Neer, Harry M., assignor to himself, O. W. Kelly, and T. Reynolds, Springfield, Ohio. Cash register and indicator	476,295	June 7	98	22, 23, 24, 25	59	1457
Neffien, P. H., *et al.* (See Thrush, John W., assignor.)						
Neidhardt, Friedrich C., Dusseldorf, Germany. Device for filling coal into regulation stoves	475,885	May 31	3208	811	59	1313
Neidhardt, William A., New York, N. Y. Towel-bracket	474,260	May 3	574	141	59	749
Neidhardt, William A., New York, N. Y. Towel-bracket	477,144	June 14	1425	347	59	1735
Neill, James W., Leadville, Colo. Treating and concentrating pyritiferous ores	472,387	Apr. 5	597	152	59	112
Neill, Julia L. (See Pickett and Neill.)						
Nellis, Emery D., St. Louis, Mo. Stove-grate	478,042	June 28	2904	725	59	2052
Nelson, Andrew L., J. Knapper, and I. Taylor, Dunbar, Pa. Safety miner's lamp	474,182	May 3	457	111	59	726
Nelson, Elihu, New York, N. Y. Sectional feed-water heater	477,816	June 28	2546	637	59	1963
Nelson, Elihu, assignor of one-half to W. M. Macbean, New York, N. Y. Sectional surface condenser	477,812	June 28	2532	635	59	1961
Nelson, Elihu, assignor of one-half to W. M. Macbean, New York, N. Y. Sectional surface condenser	477,813	June 28	2537	635, 636	59	1961
Nelson, Elihu, assignor of one-half to W. M. Macbean, New York, N. Y. Feed-water heater and condenser	477,814	June 28	2540	636	59	1962
Nelson, Elihu, assignor of one-half to W. M. Macbean, New York, N. Y. Feed-water heater and condenser	477,815	June 28	2543	636	59	1963
Nelson, Irenæus P., Muncie, Ind. Jar-sealing device	474,756	May 10	1392	352	59	917
Nelson, John, West Bay City, Mich. Rail-joint	473,162	Apr. 19	1788	457	59	364
Nelson, Joseph M., Coleman, Mich. Station-indicator	472,221	Apr. 5	337	87	59	63
Nelson, Peter H., assignor to S. H. Sinclair Company, Chicago, Ill. Gas-burner for heating purposes	472,198	Apr. 5	293	77	59	55
Nelson, Robert S., and A. Kreuter, Chicago, Ill. Ironing-machine	473,950	May 3	106	24	59	657
Nelson, Robert W., Hartford, Conn. Type setting and distributing machine	473,405	Apr. 19	2212	555	59	446
Nelson, T. J. (See Stracener, Upton W., assignor.)						
Nelson, Thomas G., and W. P. Gelabert, Sweet Springs, Mo. Billet-loop	476,673	June 7	668	162	59	1509
Nelson, Thomas P., Harrisburg, Pa. Target	473,332	Apr. 19	2084	524	59	422
Nerta, Oehlmann von, Washington, D. C. Dry-dock	472,566	Apr. 12	868	223	59	179
Nesbitt, Robert H., *et al.* (See Griffin, Thomas W., assignor.)						
Nesbitt, Thomas. (See Beale and Nesbitt.)						
Neuert, Jacob, Cleveland, Ohio. Clutch	474,183	May 3	459	111	59	726
Neumann, John, Brooklyn, N. Y. Cooling and dispensing device for liquors	473,333	Apr. 19	2086	524, 525	59	422
Neumann, John, Brooklyn, N. Y. Sectional interchangeable bar-fixtures	473,771	Apr. 26	2799	704	59	582
Neumann, John W., and J. R. Pfianz, Louisville, Ky. Car-brake	474,261	May 3	575	141	59	750
Neustadt, Conrad, Dayton, Ohio. Butter-cutter	477,019	June 14	1227	297	59	1696
Nevel, Charles W., Towanda, Pa. Drawer	478,014	June 28	2860	716	59	2044
New Departure Bell Company. (See Rockwell, Edward D., assignor.)						
New, Edward, Hamilton, Canada. Loading-barrow for brick-machines	472,138	Apr. 5	201	54	59	38
New York Air Brake Company. (See Ford, William H., assignor.)						
New York Air Brake Company. (See Massey, Albert P., assignor.)						
New York Belting and Packing Company. (See Straus, Alexander, assignor.)						
New York Condensed Milk Company. (See Knight, Charles A., assignor.)						
New York Electrical Device Company. (See Lundstedt, Olof E., assignor.)						
New York Electrical Device Company. (See Malmborg, Ernst R., assignor.)						
New York Electrical Device Company. (See Martindale and Malmborg, assignors.)						
New York Filter Company. (See Deutsch, William M., assignor.)						
Newark Machine Company. (See Grube, Jefferson, assignor.)						
Newbury, Alonzo, assignor to E. A. Newbury, Coxsackie, N. Y. Pipe-hanger	472,058	Apr. 5	88	24	59	19

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Newbury, Emma A. (See Newbury, Alonzo, assignor.)						
Newby, Albert S., Kansas City, Mo. Grate for cook-stoves or ranges	474,502	May 10	991	255	59	839
Newby, Albert S., Kansas City, Mo., assignor to J. Hobrecker, Jr., Omaha, Nebr. Stove-pipe-damper	476,674	June 7	669	163	59	1569
Newcomb, Harry H., Boston, Mass. Apparatus for trimming photographic prints	476,481	June 7	397	92	59	1514
Newcomb, Obadiah W., Welda, Kans. House-door letter-box	473,334	Apr. 19	2090	525	59	423
Newell, Frank. P., and H. Mohle, Stevens Point, Wis. Railway-switch stand	473,335	Apr. 19	2091	526	59	423
Newgard, Gustav. (See Thorsen, Ludwig, assignor.)						
Newhall, George M., and T. H. Müller, assignors to George M. Newhall Engineering Company, Limited, Philadelphia, Pa. Evaporator	477,442	June 21	1931	477, 478	59	1845
Newhouse, John W., Indianapolis, Ind. Trolley for electric railways	475,467	May 24	2521	642	59	1167
Newman, Nelson, assignor of two-thirds to G. A. Sanders and S. J. Willett, Springfield, Ill. Manhole-cover for steam-boilers	474,028	May 3	228	55	59	682
Newman, Samuel T., Danbury, Conn. Hat-packing ring	477,868	June 28	2638	659	59	2000
Newman, Socrates, *et al.* (See Coze, André, assignor.)						
Newman, Socrates, *et al.* (See Coze and Lencauches, assignors.)						
Newton, Alvin E., Brooklyn, N. Y. Can-opener	476,164	May 31	3640	921	59	1401
Newton, Miron W., Battle Creek, Mich. Hydrostatic scale	473,772	Apr. 26	2801	704	59	582
Newton, William H., assignor of one-half to A. M. McGee, Decatur, Ill. Dehorner	472,139	Apr. 5	202	54	59	88
Newton, William H., assignor of one-half to A. M. McGee, Decatur, Ill. Thill-coupling	474,503	May 10	992	256	59	839
Nichol, John, Chicago, Ill. Steam-shovel	476,808	June 14	888	218	59	1628
Nichols, Frederic B. (See Wellstood and Nichols.)						
Nichols, Frederic B., and A. T. Crane, New York, N. Y.; said Nichols assignor to said Crane. Producing ornamental enamel designs	47,568	June 21	2129	.....	59	1886
Nichols, George, Hailey, Idaho. Snow-plow	476,063	May 31	3472	876	59	1367
Nichols, Henry, Hunslet, near Leeds, England. Guide-line for planting purposes	477,776	June 28	2478	620	59	1971
Nicholson, Charles W., Assamoosick, Va. Water-wheel	473,773	Apr. 26	2802	704	59	582
Nicholson, James C., assignor of one-half to W. C. and F. Beindorf, Litchfield, Ill. Reversible valve-gear	475,601	May 24	2729	691, 692	59	1208
Nicholson, William F., Worcester, Mass. Hand implement for tooling stone surfaces	477,693	June 28	2250	587	59	1947
Nickerson, Freeman, Jr., assignor to himself and H. McClusky, Fall River, Mass. Tail-board spring	473,774	Apr 26	2803	705	59	583
Nicol, Henry, and G. Ljung, San Francisco, Cal. Horseshoe-machine	474,918	May 17	1652	422, 423	59	983
Nicol, Mathew J. (See Hagadorn and Nicol.)						
Niederer, John J., New York, N. Y. Fabric-holding frame for embroidering-machines	476,809	June 14	891	218	59	1628
Niederer, John J., New York, N. Y. Fabric-holding frame for embroidering-machines	477,264	June 21	1651	403	59	1791
Nielsen, Niels P., Terre Haute, Ind. Knife	477,817	June 28	2548	637	59	1983
Nielson, John F. (See Martin, Morris, assignor.)						
Niermann, Franz H., Jefferson City, Mo. Revolving wood-working rasp	474,680	May 10	1283	327	59	895
Niese, Elise. (See Niese, Julius, assignor.)						
Niese, Julius, assignor to E. Niese, St. Louis, Mo. Box-fastener	473,436	Apr. 19	2250	567	59	454
Nieuwenhuyse, Auguste, Brussels, Belgium. Dioptric lens for railway-carriage lights	478,015	June 28	2861	716	59	2045
Niles, Milton C., Oak Park, Ill. Rail-joint	473,638	Apr. 26	2608	657	59	544
Niles, Milton C., Oak Park, Ill. Rail-joint	477,694	June 28	2351	587	59	1947
Nillier, Charles J., assignor to Novelty Electric Company, Philadelphia, Pa. Wire-gage	476,957	May 31	3462	874	59	1365
Nilson, Nils, Minneapolis, assignor of one-fourth to E. F. Quackenbush, Le Sueur, Minn. Automatic weighing-scale	476,810	June 14	892	219	59	1628
Nirdlinger, Max, Minneapolis, Minn. Brick or fuel press	477,060	June 14	1295	315	59	1710
Nissen, John J. (See Finmant and Nissen.)						
Nixon, Arthur F., and L. L. Gibson, Everton, Mo. Latch and lock	475,089	May 17	1938	491	59	1037
Nixon, John, Farmland, Ind. Depurator	476,548	June 7	485	115	59	1533
Nixon, Thomas C. (See Ketchem and Nixon.)						
Noble, Benjamin, *et al.* (See Weber, Adolph, assignor.)						
Noble, Edward H., Salem, Mass. Insole	472,713	Apr. 12	1088	279	59	218
Nolan, Patrick, Birmingham, Ala. Nut-locking washer	477,090	June 14	1228	294	59	1696
Nolen, Stephen A., McCrory, Ark. Bridle	476,675	June 7	670	163	59	1570
Nolley, David D., assignor of one-half to A. J. Hines, Wilson, N. C. Cable-car grip	475,143	May 17	2012	508	59	1052
Noppel, Emil, Philadelphia, Pa. Apparatus for purifying oil	477,061	June 14	1297	315	59	1710
Nordtmeyer, Hermann, Breslau, Germany. Filter-pump	472,547	Apr. 12	843	215, 216	59	174
Normand, Desiré, Providence, R. I. Envelope	476,549	June 7	486	115	59	1534
Norris, James M., Pierceton, Ind. Plow-clevis	474,681	May 10	1284	327	59	895
Norris, Frederick. (See Bulmer, George D., assignor.)						
North British Rubber Company. (See Cockburn, John, assignor.)						
North, Charles E. (See Howard and North.)						
North, Edward, Newhall, Cal. Check-book	472,741	Apr. 12	1126	280	59	226
North, John, Southington, Conn. Pump	477,569	June 21	2130	529, 530	59	1886
Northrup, John, *et al.* (See Lockwood, Morris C., assignor.)						
Northwestern Equipment Company. (See Barnes, David L., assignor.)						
Norton, Benjamin F., assignor of one-half to J. H. Pattee, Perry, Iowa. Eaves-trough hanger	474,184	May 3	460	111	59	727
Norton, Edwin, Maywood, assignor to himself and O. W. Norton, Chicago, Ill. Tin can	475,336	May 24	2312	563	59	1129
Norton, Francis L., deceased, New York, N. Y.; B. L. Fairchild, executor. Vessel	473,406	Apr. 19	2213	555, 556	59	447
Norton, Harlan P. (See Street and Norton.)						
Norton, Oliver W. (See Norton, Edwin, assignor.)						
Norwell, Richard, South Norwalk, Conn. Lathe attachment for cutting screws	477,777	June 28	2479	620	59	1972
Novelty Electric Company. (See Nillier, Charles J., assignor.)						
Novelty Pearl Company. (See Cook, Walter E., assignor.)						
Novitsky, Simon. (See Mosher, George D., assignor.)						
Now, Frederick E., Cleveland, Ohio. Electrical transmitting system	475,468	May 24	2523	642	59	1167
Noxon, Thomas H., Ingersoll, Canada. Cultivator	474,144	May 3	399	96, 97	59	715
Noyes, Bernice J., Boston, Mass. Signaling apparatus	474,852	May 17	1558	397	59	962
Noyes, Bernice J., Boston, Mass. Signaling apparatus	474,853	May 17	1560	397	59	963
Noyes, La Verne W., Chicago, Ill. Shaft-bearing for windmills	472,809	Apr. 12	1220	313	59	244
Nunamaker, Henry S., and L. D. Blanchard, Canton, Ohio. Thill-coupling	475,896	May 31	3208	812	59	1313
Nunneley, J. B., *et al.* (See Jackson and Reiger, assignors.)						
Nye, Herman M., assignor to himself and F. Buesching, Avoca, Nebr. Measuring-faucet	475,144	May 17	2014	509	59	1052
Nygaard, Knut S., Kelly's, N. D. Mower	474,798	May 10	1466	373	59	932
O'Brien, Arthur, Helena, Mont. Water-closet	474,682	May 10	1286	327, 328	59	895

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
O'Brien, Arthur, Helena, Mont. Flushing apparatus for water-closets	474,683	May 10	1287	328, 329	59	896
O'Brien, Arthur, Helena, Mont. Air-compressor	477,381	June 21	1837	451	59	1827
O'Brien, Elizabeth A., Kansas City, Mo. Folding bath-tub	477,443	June 21	1933	478	59	1845
O'Brien, John. (See Pickles, Charles K., assignor.)						
O'Brien, John. (See Pickles and O'Brien.)						
O'Brien, John, and C. K. Pickles, St. Louis, Mo. Steam-boiler attachment	477,145	June 14	1426	347, 348	59	1735
O'Brien, John F., Montreal, Canada. Avertising-program holder	474,919	May 17	1655	421	59	983
O'Brien, Michael D., Lorain, Ohio. Valve	473,707	Apr. 26	2713	683	59	564
O'Brien, William P., St. Paul, Minn. Adjustable pipe-closer	475,793	May 31	3031	768	59	1279
O'Connell, Joseph J., assignor to Western Electric Company, Chicago, Ill. Trunk-line system	474,854	May 17	1561	398	59	963
O'Connor, Patrick, and J. F. McNamara, assignors to James Reynolds Manufacturing Company, New Haven, Conn. Molding-machine	472,312	Apr. 5	479	123, 124	59	90
O'Connor, Thomas F., New York, N. Y., assignor to Standard Underground Cable Company, Pittsburg, Pa. Joint for electric conductors	472,933	Apr. 12	1397	358	59	280
O'Gorman, Michael, Jersey City, N. J. Gas-regulator	474,481	May 10	959	247, 248	59	833
O'Kelly, James M., New York, N. Y. Passenger-recorder for public vehicles	478,016	June 28	2862	716	59	2045
O'Kelly, James M., assignor of three-fourths to F. Comas and J. A. Hermida, New York, N. Y. Motor tram-car	477,444	June 21	1934	478, 479, 480	59	1846
O'Neil, Stephen A., assignor of one-half to C. A. Japhet, Burlington, Kans. Pruning implement	474,505	May 10	995	256	59	839
O'Neill, Augustus J. (See Bartlett and O'Neill.)						
O'Neill, Charles Z., assignor to W. Chapman, New York, N. Y. Street-sweeping machine	473,163	Apr. 19	1789	451	59	364
O'Neill, James F., assignor to Whiffen-Lake Lasting Machine Company, Hornellsville, N. Y. Lasting-nippers	473,015	Apr. 19	1545	394	59	321
O'Rourke, John, Mandan, N. D. Journal-page file	473,775	Apr. 26	2804	705	59	583
O'Shea, John T., Cleveland, Ohio. Rail for railways	476,165	May 31	3642	922	59	1401
Oakes, Ben. (See Oakes, Henry and B.)						
Oakes, Henry, Silver City, N. Mex. Ter., and B. Oakes, Chicago, Ill. Thread-cutter for spools	477,778	June 28	2480	621	59	1972
Oakley, George F., Toronto, Canada. Measuring-faucet	474,343	May 3	738	193	59	779
Ober, Frank H., Denver, Colo. Pump-operating mechanism	477,629	June 21	2244	562	59	1907
Oberbeck, George, Hoboken, N. J. Lock-hinge	475,145	May 17	2015	509	59	1052
Oberer, Frank A., and J. S. Kalb, Chillicothe, Ohio. Track-saddle	477,570	June 21	2131	530	59	1886
Oberly, Virginia H., Washington, D. C. Corset	475,337	May 24	2315	593	59	1129
Oborn, Benjamin A. (See Baker and Oborn.)						
Ochs, Fritz, Fürth, Germany. Machine for interlacing curled horse-hair, &c	476,405	June 7	222	66	59	1493
Odell, Jacob, Dresden, Tex. Washing compound	474,262	May 3	576	.....	59	750
Odell, Roza I., and C. S. Howell, Baltimore, Md. Catamenial sack	476,676	June 7	671	163	59	1570
Oettinger, Solomon. (See Hay, John C., assignor.)						
Oetzmann, Arthur S., and S. J. Narracott, London, county of Middlesex, England. Apparatus for the manufacture of coverings for floors and other surfaces	473,519	Apr. 26	2402	608, 609	59	504
Office Specialty Manufacturing Company. (See Lomb and Jewell, assignors.)						
Ogden, Herbert G. (See Richard, Ogden, and Heath.)						
Ogilvie, Frank P., Metropolis City, Ill. Steam-engine	474,456	May 10	931	239	59	826
Ohl, George A., Newark, N. J., assignor, by mesne assignments, to Bostwick Metal Lath Company, of New York. Machine for making metal lathing	475,700	May 24	2879	728	59	1236
Ohmen, William H., San Francisco, Cal. Compound steam-engine	474,757	May 10	1393	352	59	917
Oldham, Carrick P., Knoxville, Tenn. Advertising-machine	474,504	May 10	993	256	59	839
Olds, Charles H., Sayre, Pa. Car-coupling	473,051	May 3	107	25	59	657
Oleson, Carl, Roland, Iowa. Vehicle-seat	476,811	June 14	895	219	59	1629
Olm, Millard M., Lanark, Ill. Clothes-pounder	475,887	May 31	3209	812	59	1313
Oliphant, William H. (See Mirfield, Samuel, assignor.)						
Oliver, Charles H., Sedalia, Mo. Furnace door opener	475,338	May 24	2317	594	59	1130
Oliver, Doctor F., Oakland, Cal. Paper-holder	476,482	June 7	398	92	59	1515
Oliver, Elam A., Belleville, Wis. Sulky	474,684	May 10	1288	329	59	896
Oliver, Joseph W., Grand Rapids, Mich. Dado-head	476,677	June 7	672	163	59	1570
Oliver, Robert, Brooklyn, N. Y. Mariner's compass	478,017	June 28	2862	717	59	2045
Oostendorp, Hubert. (See Ahrens and Oostendorp.)						
Oppenheimer, Milton E., New York, N. Y. Shirt-stud	473,336	Apr. 19	2092	526	59	423
Orcutt, Jerome, assignor to Union Metallic Cartridge Company, Bridgeport, Conn. Cartridge-priming pin	474,607	May 10	1160	295	59	871
Orcutt, William C. (See Atwood and Orcutt.)						
Ord, Edward O. C., U. S. Army. Front sight in small-arms	472,069	Apr. 5	89	24	59	19
Ordway, Arthur D., Newburyport, Mass. Baker's oven	475,045	May 17	1860	472	59	1022
Orndorff, Thomas C., Worcester, Mass. Embossing-machine	477,002	June 14	1298	315, 316	59	1710
Orr, James M., New York, N. Y. Coach-door latch	472,388	Apr. 5	600	152	59	112
Ortmann, Emil. (See Albrecht and Ortmann.)						
Orton, George H. (See Orton, Hanes, and Orton.)						
Orton, William H., J. D. Hanes, and G. H. Orton, Glens Falls, N. Y. Automatic weather-strip	474,920	May 17	1656	423	59	983
Osborn, Clinton S. (See Morgan and Osborn.)						
Osborn, Francis C., Detroit, Mich., assignor of three-fourths to G. Maitland, J. A. Marsh, R. A. Parker, and C. F. Burton. Power-transmitter	472,222	Apr. 5	339	88	59	63
Osborn, Francis C., Detroit, Mich., assignor of three-fourths to G. Maitland, J. A. Marsh, R. A. Parker, and C. F. Burton. Power-transmitter	472,223	Apr. 5	340	88	59	64
Osborne, Frank F., Sharpsville, Pa. Blotter-bath for copying-presses	472,681	Apr. 12	1031	266	59	207
Osborne, L. W., *et al.* (See Long, Montgomery, assignor.)	478,013	June 28	2865	717	59	2045
Osburn, Harry G., Chicago, Ill. Electrode for secondary batteries	476,296	June 7	106	25	59	1459
Osgood, Richard P., Methuen, Mass. Electric battery	477,695	June 28	2352	588	59	1948
Osgood, Richard P., Methuen, Mass. Thrust-collar for axles of electrically-propelled vehicles	474,758	May 10	1395	353	59	917
Outen, George, Denver, Colo. Seeding-machine						
Otis Brothers & Company. (See Bassett, Norman C., assignor.)						
Ottawa Glass Company. (See Zellers, Theodor A., assignor.)						
Otto, Friedrich E., Dortmund, Germany. Apparatus for drying spent grain and the like	475,602	May 24	2731	692	59	1208
Otto, Henry, *et al.* (See Otto, Peter, assignor.)						
Otto, Josiah J., Altoona, Pa. Washing-machine	475,339	May 24	2318	594	59	1130
Otto, Peter, assignor to H. Otto, H. Kolbe, and A. Wagner, Chicago, Ill. Window-platform	477,602	June 21	2181	541	59	1896

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Otto, Theodor, Schkeuditz, assignor to J. Pohlig, Cologne, Germany. Cable-grip	474,185	May 3	461	112	59	727
Oven, John von, and C. F. Panknin, Charleston, S. C. Machine for decorticating fiber-bearing plants	475,794	May 31	3032	768	59	1279
Over, Willis D., Bryan, Ohio. Dry closet	476,166	May 31	3643	922	59	1401
Overman Wheel Company. (See Woodward, Charles E. W., assignor.)						
Oyers, Curtis F., Ashland, Ohio. Bicycle-support	476,297	June 7	107	25	59	1459
Overton, Frank, and J. Faught, La Grange, Ind. Cistern-cleaner	476,678	June 7	673	164	59	1571
Owen, James L., assignor of one-half to J. L. Johnson, Cummings, S. C. Spark-arrester	477,954	June 28	2766	692	59	2026
Ozley, John H., Cane Ridge, La. Fertilizer-distributer	473,952	May 3	110	25	59	658
P. & F. Corbin. (See Arens, August, assignor.)						
P. & F. Corbin. (See Case, Cromwell O., assignor.)						
Pabl, John B., and J. B. G. Gaudelas, New York, N. Y. Stippling implement	477,603	June 21	2182	541	59	1896
Packard, Jerome L. (See Harrigan and Packard.)						
Packard, Jerome L., Boston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Rand-guard	473,428	Apr. 19	2243	564	59	452
Paddon, Edwin F., London, England. Furnace	475,603	May 24	2733	692	59	1208
Padgett, John C., Alta Vista, and W. E. Bolton, Greensburg, Kans. Printing-press	473,520	Apr. 26	2405	609, 610	59	505
Page, Albert A., assignor to Sargent & Company, New Haven, Conn. Latch	477,445	June 21	1936	480	59	1846
Page, Albert A., assignor to Sargent & Company, New Haven, Conn. Latch	477,446	June 21	1937	480	59	1846
Page, Arthur T., Minneapolis, Minn. T-square and drawing-board attachment	475,741	May 24	2948	747	59	1248
Page, William E., and L. J. Buchanan, Kansas City, Mo. Pneumatic letter-press	474,401	May 10	831	218	59	809
Pagett, Philip C., Wilmington, Ohio. Plow	475,604	May 24	2734	693	59	1208
Paige, Arthur E., Philadelphia, Pa. Photographic-plate holder	477,696	June 28	2353	588	59	1948
Paige, Frederick O., Detroit, Mich. Moth-proof bag	473,337	Apr. 19	2093	526	59	423
Paige, William H., Brockton, Mass. Sole fitting and channeling machine	474,608	May 10	1161	295, 296	59	871
Paine, Ansel W., Boston, Mass. Door-spring	477,571	June 21	2132	530	59	1886
Paine, Channing, New York, N. Y. Check-printing machine	475,605	May 24	2735	693, 694	59	1209
Painter, Gwynne E., assignor of one-half to J. F. Morrison, Baltimore, Md. Electric-lamp-socket switch	477,146	June 14	1428	348	59	1736
Painter, William, Baltimore, Md. Method of and means for bottling liquids and sealing bottles	473,776	Apr. 26	2805	705, 706, 707	59	583
Palm, Carl S., near Foster, La. Derrick	475,221	May 17	2127	538	59	1075
Palm, John M. (See Akin, James H., assignor.)						
Palmer, Alexander C. (See Grisham, Wiley M., assignor.)						
Palmer, Amos B., Port Allegany, Pa. Sawmill-carriage feed	475,046	May 17	1862	472, 473	59	1023
Palmer, Arthur, assignor of two-thirds to A. Hausold, Pittsburg, Pa. Merry-go-round	475,742	May 24	2952	748	59	1249
Palmer, Charles O., Cleveland, Ohio. Mining-machine	472,177	Apr. 5	259	68, 69	59	49
Palmer, Charles O., Cleveland, Ohio. Driving-machine	472,178	Apr. 5	263	69, 70	59	50
Palmer, Elizabeth R., Philadelphia, Pa. Trunk-elevator	474,145	May 3	400	97	59	715
Palmer, Frank H., Brooklyn, N. Y. Box	477,572	June 21	2133	530	59	1886
Palmer, Fred S., Boston, Mass., and L. H. Desisle, Lamoine, assignors to Electric Heat Alarm Company, Bangor, Me. Automatic electric heat-alarm	475,340	May 24	2320	594	59	1130
Palmer, Henry H., deceased, (S. D. Palmer, administrator,) and S. D. Palmer, Rockford, Ill. Washing-machine	473,521	Apr. 26	2407	610	59	505
Palmer, Isaac E., Middletown, Conn. Woven valance for hammocks	474,997	May 17	1789	453	59	1008
Palmer, Joel R., assignor of one-half to O. Palmer, Salisbury, Mo. Gravity-latch	474,263	May 3	577	142	59	750
Palmer, John F., Riverside, Ill. Pneumatic tire	476,679	June 7	674	164	59	1571
Palmer, John F., Riverside, Ill. Pneumatic tire	476,680	June 7	676	164	59	1571
Palmer, John F., Riverside, Ill. Pneumatic tire	476,681	June 7	679	164, 165	59	1572
Palmer, Oscar. (See Palmer, Joel R., assignor.)						
Palmer, Raymond L., Tacoma, Wash. Safety-lock for hammerless guns	476,064	May 31	3473	876	59	1368
Palmer, Samuel D. (See Palmer, Henry H. and S. D.)						
Palmer, Samuel D., administrator. (See Palmer, Henry H. and S. D.)						
Panchaud, Robert A., and W. G. Temple, London, England; said Temple assignor to said Panchaud. Apparatus for dispensing liquids	476,760	June 7	797	196	59	1596
Pancoast, Richard M., Camden, N. J. Ventilator or chimney-cowl	476,682	June 7	681	165	59	1572
Panknin, Charles F. (See Oven and Panknin.)						
Pape, Hermann, and W. Henneberg, Hamburg, Germany. Means for dry separation of materials of different specific weight and different size	472,682	Apr. 12	1032	266, 267	59	207
Paquette, Octave, and I. La Chapelle, Haverhill, Mass. Machine for pulling tacks	473,708	Apr. 26	2714	683	59	564
Paramore, Edward C., Philadelphia, Pa., assignor, by mesne assignments, to Paramore Electric Company, of West Virginia. Secondary-battery plate	476,483	June 7	399	92	59	1515
Paramore Electric Company. (See Paramore, Edward C., assignor.)						
Parish, Newton J., Blair, Nebr. Car-coupling	473,588	Apr. 26	2534	639	59	530
Parish, Rufus A., Yorkville, S. C. Measuring-faucet	474,583	May 10	1126	288	59	865
Parisher, Lemuel A., Shreveport, La. Compressing apparatus	473,472	Apr. 26	2325	588, 589	59	490
Park, Harvey S., Chicago, Ill. Faucet	476,167	May 31	3645	922	59	1401
Parker, Daniel H., Pleasantville, Pa. Churn	477,063	June 14	1301	316	59	1711
Parker, George W., San Francisco, Cal. Floor or roof for buildings	477,147	June 14	1429	348	59	1736
Parker, George W., San Francisco, Cal. Light-transmitting floor or sidewalk	477,148	June 14	1430	349	59	1736
Parker, Gilbert L. (See Grantland, John W., assignor.)						
Parker, Joseph R., assignor of one-half to A. M. Horton, Milford, Tex. Hand-car	474,855	May 17	1563	398	59	963
Parker, Lemon, St. Louis, Mo. Electric-arc lamp	477,221	June 21	1571	386	59	1777
Parker, Ralzemond A., *et al.* (See Osborn, Francis C., assignor.)						
Parker, Rienzi B., Vernon, Conn. Spindle-lubricator	472,269	Apr. 5	410	105	59	77
Parker, Thomas M. (See Vining, George, assignor.)						
Parker, William D., assignor of three-fourths to E. H. White, Meriden, Conn. Automatic governor for pneumatic motors	473,338	Apr. 19	2095	526	59	424
Parkin, Joseph W., Philadelphia, Pa. Pulley	472,769	Apr. 12	1165	298	59	233
Parkison, John E., Denver, assignor of two-thirds to W. S. Parkison, Glenwood Springs, and S. Bertenshaw, Denver, Colo. Hitching device	472,934	Apr. 12	1400	358, 359	59	280
Parkison, John E., Aspen, assignor of two-thirds to S. Bertenshaw, Denver, and W. S. Parkison, Glenwood Springs, Colo. Hitching device	476,812	June 14	895	220	59	1629
Parkison, Will S. (See Bertenshaw, Silas, assignor.)						
Parkison, Will S., *et al.* (See Parkison, John E., assignor.)						
Parks, Dana, assignor of four-fifths to M. Stone, C. H. Scofield, H. Goldberg, and B. A. Andrews, Boston, Mass. Automatic leveling ship's berth	472,070	Apr. 5	90	25	59	19

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Parmelee, Wolcott J. (See Marshall, James, assignor.)						
Parmelee, Wolcott J., Wilkes-Barré, Pa. Manufacture of axles	472,389	Apr. 5	602	152	59	113
Parrish, Rob Roy, Portland, Oreg. Furniture-caster	477,573	June 21	2134	531	59	1887
Parrot, Waters B., Elizabeth, N. J. Nut-lock	477,149	June 14	1431	349	59	1737
Parry, Augustus N., Amesbury, Mass. Carriage	474,029	May 3	229	55	59	662
Parry, Augustus N., Amesbury, Mass. Carriage	476,298	June 7	109	26	59	1459
Parry Manufacturing Company. (See Parry and Baker, assignors.)						
Parry Manufacturing Company. (See Parry and Hull, assignors.)						
Parry, Thomas H., and C. C. Hull, assignors to Parry Manufacturing Company, Indianapolis, Ind. Valance for vehicle-tops	474,457	May 10	932	239	59	827
Parry, Thomas H., and T. J. Baker, assignors to Parry Manufacturing Company, Indianapolis, Ind. Iron for vehicle-tongues	475,986	May 31	3359	847	59	1342
Parsons, Frank W. (See Safford and Parsons.)						
Parsons, George S., Cherry Flats, Pa. Bridle-bit	477,779	June 28	2482	621	59	1972
Parsons, John E., *et al.*, executors. (See Baird, John.)						
Parsons, John H., Wichita, Kans. Signal-lantern	477,697	June 28	2354	588	59	1948
Pascalar, Fridolin, Rochester, N. Y. Fountain	475,146	May 17	2016	509	59	1053
Paschal, Ezekiel F., assignor of one-half to E. A. Devenish, High Point, N. C. Andiron	475,701	May 24	2880	728	59	1237
Pass, James, and A. P. Seymour, Syracuse, N. Y. Porcelain insulator	476,813	June 14	897	220	59	1630
Patenall, Thomas H., Rahway, N. J. Locking device for switch and signal operating mechanism	474,528	May 10	1036	266	59	847
Paterson, Alexander, Allegheny, Pa. Roll-bearing	477,818	June 28	2549	638	59	1984
Paterson, Mark P., New Rochelle, N. Y. Carpenter's square	476,663	June 7	682	165	59	1572
Patin, Octave, Paris, France. Electric-arc lamp	473,076	Apr. 19	1641	413	59	338
Pattee, Davis, Des Moines, Iowa. Valve for steam-engines	473,953	May 3	111	26	59	658
Pattee, Herbert H., Washington, D. C. Umbrella-support	473,016	Apr. 19	1546	394	59	321
Pattee, John H. (See Norton, Benjamin F., assignor.)						
Patten, James S., Baltimore, Md. Axle-lubricator	475,147	May 17	2017	509	59	1053
Patterson, Elisha G., Titusville, Pa. Supporter for railway-rails	472,071	Apr. 5	91	25	59	19
Patterson, Elisha G., Titusville, Pa. Tamping railway-ties	472,072	Apr. 5	93	25	59	19
Patterson, Gilbert. (See Brousseau and Patterson.)						
Patterson, James W., New York, N. Y. Opera-glass-rental apparatus	475,412	May 24	2431	620	59	1150
Patterson, Ralph J., Gertrude, Ga. Ventilated barrel	473,589	Apr. 26	2535	640	59	531
Patterson, Robert I., Muncie, Ind. Jar-fastening	477,955	June 28	2766	693	59	2027
Patterson, William R., Chicago, Ill. Electric conductor	472,643	Apr. 12	979	253	59	199
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Electric cable	476,484	June 7	400	93	59	1515
Pattison, Walter. (See Hallenbeck, Witt, and Pattison.)						
Patton, John M., Hannibal, Mo. Voting-booth	472,907	Apr. 12	1356	349	59	272
Patton Motor Company. (See Patton, William H., assignor.)						
Patton, Robert M. (See McCormack and Patton.)						
Patton, William H., Chicago, Ill., assignor to Patton Motor Company, Pueblo, Colo. Electric-motor car	475,702	May 24	2882	729	59	1237
Paul, Michel J., London, England. Hoisting apparatus	475,888	May 31	3210	812	59	1313
Paull, Archibald W., Wheeling, W. Va. Lamp	477,332	June 21	1758	430	59	1812
Paullin, Joseph A., Kansas City, Mo. Spark-arrester	473,235	Apr. 19	1924	484	59	390
Pauls, August, Brooklyn, N. Y. Pocket-knife	472,390	Apr. 5	604	153	59	113
Pauly Jail Building and Manufacturing Company. (See Pauly, Peter J., Jr., assignor.)						
Pauly, Peter J., Jr., assignor to Pauly Jail Building and Manufacturing Company, St. Louis, Mo. File-case	477,574	June 21	2135	531	59	1887
Paxton, John B. (See Slack, Graff, and Paxton.)						
Payler, John W., Detroit, Mich. Handle for files or other tools	472,140	Apr. 5	203	55	59	38
Payn, Lucien, Paris, France. Captive balloon	476,893	June 14	1028	249	59	1655
Payne, Hiram E. (See Robinson, Laurence B., assignor.)						
Payne, Joseph, Dwight, Ill. Dental process	474,967	May 17	1738	441	59	999
Payne, Joseph, Dwight, Ill. Dental articulator	474,968	May 17	1742	442	59	1000
Payne, Richard H., Aquone, N. C. Steam-engine governor	475,148	May 17	2018	510	59	1053
Payne, William J. (See Moyers, James M., assignor.)						
Peacock, Benjamin F., Anniston, Ala., and F. T. Peacock, Sparrow's Point, Md. Manufacture of axles, shafts, &c.	475,969	May 31	3332	840	59	1337
Peacock, Edward F., *et al.* (See Reagan, Harry C., Jr., assignor.)						
Peacock, Francis T. (See Peacock, Benjamin F. and F. T.)						
Pearce, Charles E. (See Crecelius, Louis J., assignor.)						
Pearce, Thomas A., *et al.* (See Egly, John C., assignor.)						
Pearce, William J., Pilot Point, Tex. Gate	473,777	Apr. 26	2815	707	59	584
Peare, Joseph, *et al.* (See Witte, Frank, assignor.)						
Pearson, Harriet N., Corsicana, Tex. Stovepipe attachment	475,149	May 17	2020	510	59	1054
Pearsons, William B. C., *et al.* (See Holly, Edgar P., assignor.)						
Pease, Allen, Trumansburg, N. Y. Combined cultivator, harrow, horse-hoe, and vine-puller	476,209	June 7	109	26	59	1459
Pease, Jacob, Brooklyn, assignor to W. Brookfield, New York, N. Y. Apparatus for finishing the edges of glass vessels	477,447	June 21	1938	480	59	1846
Pease, James L., Louisville, Ky. Rack for doors	475,948	May 31	3300	833	59	1331
Pease, Lewis E., Cambridge, Mass. Electrically-heated sand-box	475,703	May 24	2885	730	59	1237
Peck, Anna C., San Francisco, Cal. Carving-brace	472,742	Apr. 12	1127	289	59	236
Peck, Franklin H., Des Moines, Iowa, assignor to Mosler Bank Safe Company, Cincinnati, Ohio. Time-lock attachment	472,224	Apr. 5	341	89	59	64
Peck, James A., Brewster, N. Y. Can-crimping machine	477,575	June 21,	2136	531	59	1887
Peck, Leman B., and F. L. Sterner, Cardington, Ohio. Nut-lock	477,222	June 21	1576	387	59	1777
Peck, Melinda. (See Peck, Orrin B., assignor.)						
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Machine for centrifugally treating molten material	473,473	Apr. 26	2327	589	59	491
Pedersēn, Johannes T., assignor to W. E. Wells, New York, N. Y. Coupling for dental-engine shafts and hand-pieces	472,683	Apr. 12	1034	267	59	208
Pederson, Ole, Aurora, Ill. Radiator	476,894	June 14	1029	249	59	1655
Peebles, Joseph N., Danville, Ill. Blowpipe	473,197	Apr. 19	1861	469	59	376
Peek, Samuel W., Hartwell, Ga. Check-punch	472,391	Apr. 5	604	153	59	113
Peirce, Almy L., Grand Rapids, Mich., assignor to Wilson Improved Store Service Company, of Kentucky. Autographic copying and recording apparatus	472,743	Apr. 12	1128	290	59	236
Peirce, Almy L., Grand Rapids, Mich., and C. E. King, Cincinnati, Ohio. Registering-faucet	474,564	May 10	1101	281	59	860
Pelton, George W., assignor of one-half to J. Fitzgerald, Muscatine, Iowa. Domestic press	473,407	Apr. 19	2214	556	59	447
Pence, Charles, Galena, Kans. Truss	474,402	May 10	833	218	59	809
Pendleton, John H. (See Bryson, Pendleton, and Bean.)						
Penman, William, London, England. Note-book or the like	472,073	Apr. 5	94	25	59	20

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Penn, Alfred E. (See Penn, Thomas and A. E.)						
Penn Lamp and Lighting Company. (See Penn, Thomas and A. E., assignors.)						
Penn, Thomas, Reidsville, N. C. Car-coupling	476,168	May 31	3647	923	59	1402
Penn, Thomas and A. E., London, assignors to Penn Lamp and Lighting Company, Limited, Abchurch, England. Device for controlling the distribution of oils to lamps and means for lighting and extinguishing the same	477,150	June 14	1433	349, 350	59	1737
Pennebaker, Francis M. (See Stoner and Pennebaker.)						
Pennell, Arthur, Kansas City, Mo. Water-purifier	474,685	May 10	1289	329	59	896
Penniman, Russell S., assignor of two-thirds to J. C. Schrader, Dover, N. J., and W. C. Wood, Washington, D. C. Manufacturing nitrate of ammonia	478,067	June 28	2941	734	59	2059
Pents, Charles B., assignor of one-half to M. T. Johnson, Walton, Kans. Car-coupling	476,169	May 31	3648	923	59	1402
Pents, James A. (See Reckenzaun, Anthony, assignor.)						
Peoples, Erasmus O. (See Williams and Peoples.)						
Pepper, David, Jr., Philadelphia, Pa. Armature-core for electric motors	473,077	Apr. 19	1643	418	59	338
Pepper, David, Jr., Philadelphia, Pa. Armature-ring	473,078	Apr. 19	1644	418	59	338
Pepper, William H., Lake Village, N. H. Knit fabric	473,474	Apr. 26	2328	589, 590	59	491
Pequegnat, Frank, St Louis, Mich. Chronometer-escapement	474,301	May 3	646	163	59	762
Percy, Edwin H. (See Evans, Percy, and Perry.)						
Perino, David M., Baltimore, Md. Cash-dish	473,339	Apr. 19	2096	527	59	424
Perkes, Thomas, London, England. Ejector mechanism for breech-loading guns	476,485	June 7	401	93	59	1515
Perkins, Albert, Chicopee, Mass., assignor to A. G. Spalding & Brothers, New York, N. Y., and Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Bicycle-brake	474,759	May 10	1398	354	59	918
Perkins, Alfred T., Alameda, Cal. Fruit-car	474,998	May 17	1790	453, 454	59	1009
Perkins, Amos H., Chicago, Ill., assignor to Western Paving and Supply Company, of Illinois. Asphalt-paving apparatus	476,814	June 14	898	220, 221	59	1630
Perkins, Charles R. (See Gordon and Perkins.)						
Perkins Electric Switch and Manufacturing Company. (See Gibbs, Jacob S., assignor.)						
Perkins, Nathaniel S. (See White, Albert M., assignor.)						
Perkins, William C., New Haven, Conn. Coat-hanger	472,508	Apr. 5	788	201	59	150
Perry, Bethune. (See Evans, Percy, and Perry.)						
Perry, Edward L., Paterson, N. J. Manufacturing hollow rubber articles	472,225	Apr. 5	344	89	59	64
Perry, Edward L., Paterson, N. J. Bellows-fold coupling for car-vestibules	473,954	May 3	112	26	59	658
Perry, Frank X., Worcester, Mass. Hame	472,270	Apr. 5	411	106	59	77
Perry, George R. and W. H., and C. K. George, Concord, N. H. Adjustable saddle-bar for bicycles	475,020	May 17	1826	463	59	1015
Perry, James L., assignor to J. L. Perry Machine Company, Chicago, Ill. Sandpapering-machine	474,686	May 10	1290	330, 331	59	897
Perry, Richard D., Elyria, Ohio. Clamp for luggage-carriers for velocipedes	476,948	June 14	1125	270	59	1674
Perry, William H. (See Perry and George.)						
Peteler, Frank C., Minneapolis, Minn. Combination hot-water and hot-air heater	473,475	Apr. 26	2330	590	59	491
Peterlein, Charles F. E., Binghamton, N. Y. Back-knife gage-lathe	474,856	May 17	1563	398, 399	59	964
Peters, Fred A., Scio, Mich. Thimble for stove-pipes	476,300	June 7	111	26, 27	59	1460
Peters Pump Company. (See Wistrand, Peter E., assignor.)						
Petera, Winfield S., *et al.* (See Molloy, Frank, assignor.)						
Petersen, Edward A. C., Chicago, Ill. Revolving dough-divider	475,607	May 24	2739	695	59	1210
Petersen, Ernest, Kertch, Russia. Tubular steam-boiler	475,150	May 17	2021	510	59	1054
Petersen, Henry, New York, N. Y. Propeller	473,017	Apr. 19	1548	394	59	321
Peterson, Charles H., and O. C. Ruge, St. Louis, Mo. Compound for cleaning and scouring	475,413	May 24	2434	.....	59	1150
Peterson, John H., Portland, Oreg. Lath-bolter	477,956	June 28	2768	693	59	2027
Peterson, Swan, assignor of one-half to A. Johnson, Gibson City, Ill. Motor	478,068	June 28	2943	735	59	2060
Peterson, Theodore, assignor to Schumacher Gymnasium Company, Akron, Ohio. Line-fastener for exercising apparatus	474,760	May 10	1399	354	59	918
Petit, Theodore F., Hudsondale, Pa. Music-leaf turner	474,458	May 10	933	239, 240	59	827
Petree, Charles L. (See Harris, Orrin C., assignor.)						
Pettegrew, Swithen C., assignor of one-half to D. E. Vandegrift, Bayard, Kans. Nut-lock	478,019	June 28	2866	717	59	2045
Petterson, Albert, St. Paul, Minn. Adjustable stovepipe-support	476,815	June 14	900	221	59	1630
Petterson, Charles E., assignor to himself and H. E. Audette, Providence, R. I. Hose-coupling	475,704	May 24	2886	730	59	1238
Pettle, Charles A., Brooklyn, N. Y. Horse-collar	475,606	May 24	2738	694	59	1210
Pettingill, William A., Knowlesville, N. Y. Axle-cutter	473,340	Apr. 19	2097	527	59	424
Pettit, Elihu R., Philadelphia, Pa. Anti-rattler	476,406	June 7	283	67	59	1493
Peyton, Lilburn. (See Jarrett and Peyton.)						
Pfaltzgraff & Co., J. K. (See Yingling, George S., assignor.)						
Pfannkuche, Alfred. (See Pfannkuche, Gustav and A.)						
Pfannkuche, Gustav, assignor to Brush Electric Company, Cleveland, Ohio. Electric switch	474,921	May 17	1657	423, 424	59	984
Pfannkuche, Gustav, Exeter, N. H., and A. Pfannkuche, assignors to Brush Electric Company, Cleveland, Ohio. Electric converter	476,816	June 14	901	221, 222	59	1631
Pfeiffer, John W., New York, N. Y. Feed-bag support	472,908	Apr. 12	1357	349	59	272
Pfeil, George H., assignor to National Switch and Signal Company, Easton, Pa. Interlocking switch and signal mechanism	472,393	Apr. 5	608	154	59	114
Pfeil, George H., assignor to National Switch and Signal Company, Easton, Pa. Switch and signal operating apparatus	472,464	Apr. 5	711	181	59	135
Pfeil, Henry S., Philadelphia, assignor of one-half to National Switch and Signal Company, Easton, Pa. Tang-end jaw	472,392	Apr. 5	607	154	59	114
Pfenninger, John J., St. Louis, Mo. Baker's oven	473,018	Apr. 19	1550	395	59	321
Pfiffner, Jacob, and J. Kriebs, Dubuque, Iowa. Harness ornament	473,079	Apr. 19	1645	419	59	338
Pfingst, Louis, Boston, Mass. Truck for electrically-propelled vehicles	474,403	May 10	834	218	59	809
Pfingst, Louis, Boston, and S. A. Bemis, Springfield, Mass. Truck for railway-cars	472,271	Apr. 5	413	106	59	77
Pfanz, John R. (See Neumann and Pfanz.)						
Pfluger, Charles A., Chicago, Ill., assignor to Standard Electric Company, of Illinois. Arc-light hanger	472,935	Apr. 12	1403	359	59	281
Pfluger, Charles A., Chicago, Ill., assignor to Standard Electric Company, of Illinois. Electric-arc lamp	473,955	May 3	113	26	59	659
Pfluger, Charles A., Chicago, Ill., assignor to Standard Electric Company, of Illinois. Electric-arc lamp	473,956	May 3	114	26, 27	59	659
Pforr, George J., Chicago, Ill. Corset-clasp	477,819	June 28	2550	638	59	1984
Pharr, Walter, assignor of one-half to W. T. Carter, Barnum, Tex. Flue-cleaner	477,957	June 28	2769	694	59	2027

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Phegley, William T., assignor of one-half to W. D. Ilgenfritz, Sedalia, Mo. Soot-removing compound	477,333	June 21	1759	.....	59	1812
Phelps, Edwin S., Leavenworth, Kans. Cover for barrels, &c	476,407	June 7	284	67	59	1493
Phelps, Eugene M. (See Thomson and Phelps.)						
Phelps, Eugene M., and R. W. Thomson, Lynn, Mass., assignors to Consolidated Button Hole Finishing Machine Company, Nashua, N. H. Sewing-machine for finishing button-holes	473,178	Apr. 19	1828	461	59	370
Phelps, Lucius J., Passaic, N. J. Pneumatic tire	472,484	Apr. 5	746	190	59	142
Phelps, Lucius J., Passaic, N. J. Inflatable tube	472,485	Apr. 5	747	190	59	142
Philadelphia Textile Machinery Company. (See Proctor, Josiah K., assignor.)						
Philes, Charles E., assignor of one-half to J. J. Smith, Stockton, Cal. Crushing-mill	475,284	May 17	2227	571	59	1096
Philipsborn, Alexander, and W. Reichel, assignors to Siemens & Halske, Berlin, Germany. Electric-railway-wire suspension	472,810	Apr. 12	1221	313	59	244
Philleo, William M., *et al.* (See Scofield, Charles H., assignor.)						
Phillips, Elbert B., Cleveland, Ohio. Electric-motor mechanism	474,857	May 17	1567	399, 400	59	964
Phillips, Francis V., assignor to Chicago Sash Pulley Company, Chicago, Ill. Sash-pulley	472,074	Apr. 5	95	26	59	20
Phillips, James W. (See Carll and Phillips.)						
Phillips, John H., assignor of two-thirds to W. Davis, Wheeling, W. Va., and J. Ablett, Pittsburg, Pa. Expanding-reamer	478,069	June 28	2944	735	59	2060
Phillips, Joseph A., Baltimore, Md. Adjusting-strap for garments	475,515	May 24	2601	661	59	1182
Phillips, Maurice W. (See Kellom, Charles F., assignor.)						
Phillips, Peter, assignor to S. Phillips, Toronto Junction, Canada. Mitering-machine	473,429	Apr. 19	2244	564, 565	59	453
Phillips, Solomon. (See Phillips, Peter, assignor.)						
Phillips, William A. (See Waddell, Entz, and Phillips.)						
Phillips, William A., U. S. Army. Electric odometer and speed-indicator	473,341	Apr. 19	2099	527	59	424
Phillis, O. L. (See Duer, Albert, assignor.)						
Phipps, Edward H., New Haven, assignor to Connecticut Pipe Manufacturing Company, West Haven, Conn. Bell-and-spigot joint for cement-lined pipes	474,779	May 10	1433	363	59	925
Phipps, Isaac N. (See Lame and Phipps.)						
Phœnix Iron Company. (See Coffin, Amory, assignor.)						
Phonopore Syndicate. (See Langdon-Davies, Charles, assignor.)						
Piatt, William M., assignor of one-third to B. S. Leonard, West Liberty, Ohio. Corn-harvester	474,761	May 10	1400	354, 355	59	919
Piccard, Paul, Geneva, Switzerland. Governor	474,064	May 3	289	70	59	693
Pichno, Wasili, Kiev, Russia. Spade-plow	476,684	June 7	684	165	59	1573
Pickering, Barton, Dayton, Ohio. Detachable suspension-catch	475,516	May 24	2602	661	59	1183
Pickett, William H. (See Homer and Pickett.)						
Pickett, William H., Warren, Pa. Water-cooling refrigerator	475,414	May 24	2435	620, 621	59	1150
Pickett, William H., and J. L. Neill, Warren, Pa. Baking-pan	472,811	Apr. 12	1222	314	59	244
Pickles, Charles K. (See O'Brien and Pickles.)						
Pickles, Charles K., assignor of one-half to J. O'Brien, St. Louis, Mo. Attachment for steam-boilers	477,151	June 14	1436	351	59	1737
Pickles, Charles K., and J. O'Brien, St. Louis, Mo. Steam-boiler attachment	477,152	June 14	1437	351	59	1737
Pielsticker, Carl M., London, England. Distillation of hydrocarbon or other oils	477,153	June 14	1438	352, 353	59	1738
Piera y de Mata, Francisco, Havana, Cuba. Making portraits or other pictures	472,812	Apr. 12	1224	.....	59	244
Pierce, Butler & Pierce Manufacturing Company. (See Waggoner, Edward P., assignor.)						
Pierce, Joseph H., Glenwood Springs, Colo. Water-wheel	474,098	May 3	341	82	59	703
Pierce, William M. (See Cogan, Pierce, and Jones.)						
Pierpoint, James, Pittsburg, Pa. Tubular boiler	472,660	Apr. 12	998	258	59	203
Pierre, Joseph M., Fort Wayne, Ind. Spool-holder	473,080	Apr. 19	1647	419	59	338
Piers, Benjamin, Xenia, Ohio. Lock	473,125	Apr. 19	1729	437, 438	59	352
Piers, Benjamin, Xenia, Ohio. Latch	473,126	Apr. 19	1733	438	59	353
Pietschmann, Ferdinand, Berlin, Germany. Mechanical musical instrument	474,999	May 17	1792	454, 455	59	1009
Pigot, Martin, Brussels, Belgium. Protecting device for horses' feet	476,301	June 7	112	27	59	1460
Pilet, Joseph, Liege, Belgium. Governor equilibrium-valve	476,550	June 7	487	116	59	1534
Pilkington, Herbert M., and R. S. White, Brooklyn, N. Y. Electric switch	477,869	June 28	2639	659	59	2000
Pilkington, Herbert M., and R. S. White, Brooklyn, N. Y. Means for operating ammeters and other electrical apparatus	477,223	June 21	1576	387	59	1778
Pinto, João L. F., Rio de Janeiro, Brazil. Workman's time-indicator	477,448	June 21	1939	481	59	1847
Pioneer Manufacturing Company. (See Baker, William H., assignor.)						
Piper, James S., assignor of one-half to C. H. Jenkins, Louisville, Ky. Machine for cutting circular pieces from lumber or other materials	475,247	May 17	2172	553	59	1084
Pirch, August, Los Angeles, Cal. Reversible plow	477,912	June 28	2702	677	59	2013
Pirrung, Felix. (See Pirrung, George and F.)						
Pirrung, George and F., Ravenswood, Ill. Bed-lounge	477,449	June 21	1942	481	59	1847
Pitcher, Charles H., and G. A. Moody, Red Bank, N. J. Horse-blanket fastener	474,264	May 3	579	142	59	750
Pitcher, Frank C. (See Wellman, Willard F., assignor.)						
Pitcher, Lewis W. (See Gifford, Ezra N., assignor.)						
Pitkin, Clarence H., Berlin, Vt. Sawmill-dog	474,687	May 10	1294	331	59	897
Pitkin, Julian H., Chicago, Ill. Harvester-elevator	476,302	June 7	113	27	59	1460
Pitman, George W., Salem, Mass. Refrigerator-switch	476,902	June 14	1146	276	59	1678
Pitt, William, assignor to Sectional Standards, Limited, London, England. Telegraph or other pole	473,522	Apr. 26	2408	610, 611	59	505
Pixley, Albert B., Vineland, N. J. Fork for hay-tedders	477,820	June 28	2551	638	59	1984
Piano Manufacturing Company. (See Carver, George H., assignor.)						
Plant, Stephen J., Momence, assignor of one-half to Tiffany Pressed Brick Company, Chicago, Ill. Brick-kiln	474,922	May 17	1660	424	59	984
Plass, Reuben H., Brooklyn, N. Y. Governor	476,408	June 7	286	67	59	1494
Plass, Reuben H., Brooklyn, N. Y. Lamp	477,698	June 28	2355	589	59	1948
Platt, Corwin H., Cleveland, Ohio. Drill-stock	475,949	May 31	3301	833	59	1331
Pleadwell, William E., Bridgeport, Conn. Manufacture of plated articles	477,265	June 21	1652	404	59	1791
Plecker, William J., Galesburg, Ill. Corrugating-machine	473,019	Apr. 19	1552	395	59	322
Plecker, William J., Peoria, Ill. Corrugating pipes	473,020	Apr. 19	1554	396	59	322
Pletcher, Levi L., McConnelsville, Ohio. Head and shoulder rest	474,688	May 10	1295	331	59	898
Pleukharp, Ezra, assignor to J. E. and E. R. Lahman, Rockford, Ill. Slide for extension-tables	474,186	May 3	464	113	59	728
Pleukharp, James, Columbus, Ohio. Stave-jointing machine	477,450	June 21	1944	481, 482	59	1847

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Plumb, Frank, Sunfield, Mich. Washing-machine	477,334	June 21	1759	431	59	1812
Plumb, George T., Danbury, Nebr. Carcass-spreader	473,127	Apr. 19	1735	438	59	353
Plummer, John F., Paris, Me., and H. P. Chapman, Ivoryton, Conn. Self-locking nut	472,465	Apr. 5	713	189	59	135
Plummer, John W., Somerville, Mass. Tool-holder	474,302	May 3	646	163	59	702
Plunkett, Michael H., assignor of fifty-one one-hundredths to W. Bowie and E. J. Bond, Baltimore, Md. Water-tube boiler	474,645	May 10	1222	312, 313	59	882
Pneumatic Press Company. (See Jordan, Edmund, assignor.)						
Pneumatic Tyre and Booth's Cycle Agency. (See Dunlop, John B., assignor.)						
Poh, Louis, Chicago, Ill. Liquid-measure	474,048	May 3	266	65	59	689
Pohl, Eduard, Louisville, Ky. Merry-go-round	476,551	June 7	488	116	59	1534
Pohlig, Julius. (See Otto, Theodor, assignor.)						
Poletti, Amedee, *et al.* (See Dimpfl, Anton, assignor.)						
Polhemus, John A. (See Blauvelt and Polhemus.)						
Polk, John B. (See Harman and Polk.)						
Polka, Ferdinand A., Oakes, N. D. Draft-equalizer	477,064	June 14	1302	316	59	1711
Pollak, Simon, Prague, Austria-Hungary, assignor to E. Friedheim, New York, N. Y. Anti-inductive device for telephones	477,870	June 28	2640	660	59	2001
Pollard, Charles E., Middletown, Conn., assignor to E. W. Bliss Company, Limited, Brooklyn, N. Y. Clutch mechanism for power-presses	477,604	June 21	2184	541, 542	59	1896
Pollard, James B., assignor to International Cigarette Machine Company, Roanoke, Va. Cigarette-machine	475,341	May 24	2321	595, 596	59	1130
Pollard, James M., assignor of one-half to G. S. Prindle and P. G. Russell, Washington, D. C. Cartridge	478,020	June 28	2867	717, 718	59	2046
Pollard, William, assignor of one-half to F. Farrell, Ansonia, Conn. Rolling-mill roll	476,552	June 7	489	116	59	1534
Pollivick, Steve, *et al.* (See Cross, Thomas A., assignor.)						
Pollock, James, Wilkes-Barré, Pa. Coal washing and separating machine	473,957	May 3	116	27	59	659
Pomeroy, George M. D., and G. H. Webber, Lebanon, Ind. Potato-digger	477,266	June 21	1653	404	59	1791
Pomeroy, Noah G., New Haven, Conn. Oil-can	475,151	May 17	2023	511	59	1054
Pomeroy, Willis N., *et al.* (See Wead, Andrew M., assignor.)						
Pomroy, John, Lake Linden, Mich. Stop-block for wagons	476,065	May 31	3475	876	59	1368
Ponton, Leon E., Corwin, Tex. Cultivator	472,813	Apr. 12	1226	314	59	245
Pool, William H. (See Richardson and Pool.)						
Pope, Charles A., Cleveland, Ohio. Vapor-burner	472,394	Apr. 5	609	154, 155	59	114
Pope Manufacturing Company. (See Rice, Charles D., assignor.)						
Popoff, Matilda A., Brooklyn, N. Y. Blacking-receptacle for blacking-stands	476,066	May 31	3476	877	59	1368
Popp, Hermann S., Philadelphia, Pa. Type-casting machine	475,517	May 24	2603	661, 662	59	1183
Porter, Ephraim H., *et al.* (See Myers, Orlando R., assignor.)						
Porter, James A., Greenfield, Ohio. Poultry-brooder	477,309	June 21	1727	422, 423	59	1806
Porter, Lansing, Auburn, N. Y. Lock-hinge	475,415	May 24	2437	621	59	1151
Porter's Sons, Robert. (See Cooper, George B., assignor.)						
Portland Iron Works. (See Clarke, Harry T., assignor.)						
Post & Company. (See Briggs, Arthur E., assignor.)						
Poth, Henry, Crafton, Pa. Whiffletree	474,565	May 10	1102	281	59	860
Potter, Gideon, Osceola, Ill. Animal-trap	472,814	Apr. 12	1227	314, 315	59	245
Potter, John A., Munhall, Pa. Rolling-mill	477,821	June 28	2552	639	59	1984
Potter, John A., Munhall, Pa. Mill appliance	477,822	June 28	2553	639, 640	59	1985
Potter, Joseph L., Fort Wayne, Ind. Pulley	476,303	June 7	114	27	59	1460
Potter, Morgan, Fishkill-on-the-Hudson, N. Y. Vehicle-brake	472,075	Apr. 5	96	26	59	20
Potter, Wilson F., Albany, N. Y. Voltaic body-battery	477,913	June 28	2706	677	59	2014
Powell, Clarence A. (See Courtright and Powell.)						
Powell, George W., Pine Hill, Ala. Car-coupling	472,509	Apr. 5	789	202	59	150
Powell, Guy H., and A. B. Chandler, assignors of one-third to C. T. Chandler, Jr., Chicago, Ill. Coin-controlled mechanism	477,871	June 28	2641	660	59	2001
Powell, Henry S., assignor of one-half to S. J. Minaker, Yates Centre, Kans. Horse hay-rake	475,342	May 24	2326	596	59	1131
Powell, Samuel W., and J. W. Marshall, Richmond, Mo. Rubber shoe	477,958	June 28	2770	694	59	2028
Powers, George W. and J. M., Streator, Ill. Chimney-top	474,689	May 10	1296	332	59	898
Powers, James M. (See Powers, George W. and J. M.)						
Pozdena, Gustave, Chicago, Ill. Respirator	476,486	June 7	402	93, 94	59	1515
Prail, William E., Washington, D. C. Apparatus for condensing steam	475,795	May 31	3033	768	59	1279
Pratt & Cady Company. (See Pratt, Rufus N., assignor.)						
Pratt, Charles F., East Buffalo, N. Y. Engraving-tool	476,817	June 14	908	222	59	1631
Pratt, Charles L., Minneapolis, Minn. Cigar-refrigerator	474,923	May 17	1662	425	59	985
Pratt, Charles R., New York, N. Y. Electric elevator	472,909	Apr. 12	1358	349, 350	59	272
Pratt, Charles R., assignor to Sprague Electric Elevator Company, New York, N. Y. Ball-bearing nut	476,304	June 7	114	28	59	1461
Pratt, Charles T., assignor to Pratt Chuck Company, Clayville, N. Y. Sleeve for taper drills	473,639	Apr. 26	2609	657	59	544
Pratt, Charles W., Muskegon, Mich. Invalid-bedstead	474,690	May 10	1297	332	59	898
Pratt Chuck Company. (See Pratt, Charles T., assignor.)						
Pratt, I. F., *et al.* (See Mooney, Benjamin F., assignor.)						
Pratt, John, Gadsden, Ala., assignor to Hammond Type Writer Company, New York, N. Y. Type-writing machine	477,224	June 21	1578	387, 388	59	1778
Pratt, Rufus N., assignor to Pratt & Cady Company, Hartford, Conn. Valve	477,605	June 21	2187	542	59	1897
Pratt, Rufus N., assignor to Pratt & Cady Company, Hartford, Conn. Cock	477,606	June 21	2188	542	59	1897
Pratt, Rufus N., assignor to Pratt & Cady Company, Hartford, Conn. Cock	477,607	June 21	2189	542	59	1897
Pratt, Rufus N., assignor to Pratt & Cady Company, Hartford, Conn. Gate-valve	477,608	June 21	2190	543	59	1897
Pray, Thomas, Jr., *et al.* (See Reagan, Harry C., Jr., assignor.)						
Preble, Amaziah M., *et al.* (See Reed, James H., assignor.)						
Preble, Josiah H., *et al.* (See Reed, James H., assignor.)						
Preis, Joseph, *et al.* (See Witte, Frank, assignor.)						
Prendiville, Harry. (See Fales and Prendiville.)						
Prenties, Henry S., Elizabeth, N. J. Display device	477,382	June 21	1839	452	59	1827
Prescott, De Witt C., Marinette, Wis. Band-saw mill	472,586	Apr. 12	895	229, 230	59	184
Prescott, George A., assignor of three-fourths to W. M. Abernathy and W. Wadsworth, Topeka, Kans. Car-heating apparatus	474,404	May 10	835	219	59	810
Preston, Almon E., Battle Creek, Mich. Apparatus for and method of gaining wood for seats and backs	476,305	June 7	116	28	59	1461

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Preston, Elijah J. (See Lipp and Preston.)						
Preston, Leonard Z., and O. H. Wirsig, Champion, Nebr. Car-coupling	474,691	May 10	1300	332	59	898
Preston, Leonidas M., Bonham, Tex. Stocking	472,815	Apr. 12	1228	315	59	945
Preston, Othniel, Hornellsville, N. Y. Machine for making hollow wire cable	475,889	May 31	3211	813	59	1314
Preston, Robert, *et al.* (See Trump, John G., assignor.)						
Price, Benjamin F., Bloomington, Ill. Drive-gate	473,958	May 3	118	27	59	660
Price, George W., assignor of one-half to W. Albert, Baltimore, Md. Fountain attachment for pens	475,285	May 17	2229	571	59	1097
Price, Jacob, San Leandro, Cal. Cotton-press	474,482	May 10	963	248 249	59	833
Price, John A., Scranton, Pa. Grate	476,963	June 14	1148	277	59	1679
Price, John B., Wollaston, Mass. Bobbin-winder	474,187	May 3	466	113	59	728
Price, John B., Wollaston, Mass. Combined paper-weight, letter-scale, and calendar	476,067	May 31	3477	877	59	1369
Price, John B., Wollaston, Mass. Cylinder-lock	477,021	June 14	1229	298	59	1696
Price, John B., Wollaston, Mass. Lamp-extinguisher	477,267	June 21	1654	404	59	1792
Price, John B., Wollaston, Mass. Center and key-seating square	477,959	June 28	2771	694	59	2028
Price, John B., Wollaston, Mass. Surface-gage	477,960	June 28	2772	694	59	2028
Prickett, Frank C., assignor of one-half to F. W. Bruchmann, Kansas City, Kans. Trolley-wire support	472,953	Apr. 12	1435	366	59	287
Prickett, George W., Waverly, Ill. Vehicle-wheel	475,152	May 17	2024	511	59	1054
Pridemore, John L., Linn, Indian Ter. Cotton-press	478,070	June 28	2946	735 736	59	2060
Priestley, Forrest M., Denver, Colo. Roller-blotter ruler	472,510	Apr. 5	790	202	59	150
Prindle, George S., *et al.* (See Pollard, James M., assignor.)						
Proctor, Josiah K., Philadelphia, Pa., assignor to Philadelphia Textile Machinery Company, of Pennsylvania. Drying-machine	473,263	Apr. 19	1968	494	59	399
Pross, John A. (See Lipe and Pross.)						
Prouty, Theodore C., and C. W. Turner, Evanston, Ill. Door-hanger	476,068	May 31	3479	877	59	1369
Prud'homme, Joseph P. (See Des Rivieres and Prud'homme.)						
Ptomey, William J., McCracken, Kans. Blacksmith's forge	477,699	June 28	2356	589	59	1948
Pückler, Heinrich v., Oberweistritz, Germany. Insect-trap	473,778	Apr. 26	2816	708	59	584
Pudan, Herbert W., Sacramento, Cal. Machine for cutting screw-threads on bolts	473,640	Apr. 26	2610	657 658	59	544
Puddifoot, Charles, Morrison, Ill. Display-rack	473,709	Apr. 26	2715	683	59	564
Pugsley, William E., assignor to Lincoln Road Grader Manufacturing Company, Lincoln, Nebr. Extensible axle	475,248	May 17	2173	553	59	1084
Pullman Sash Balance Company. (See Rose, Byron H., assignor.)						
Purcell, Frank A., and J. Morgan, Vincennes, Ind. Chalk-sharpener	477,310	June 21	1729	423	59	1806
Purcell, Marmaduke F. (See Tichborne, Darley, Purcell, and Geoghegan.)						
Purple, Charles W., Minneapolis, Minn. Separable water back or heater for stoves	474,459	May 10	934	240	59	827
Purves, James. (See Cornelius, William A., assignor.)						
Purvis, Charles A., Purvis, Mo. Hay-stacker	478,021	June 28	2872	718	59	2046
Putman, Gideon V., Gloversville, N. Y. Cut-off valve	477,022	June 14	1233	298	59	1697
Putnam, Oliver K., Worcester, Mass. Sash-fastener	474,405	May 10	840	220	59	810
Putney, Edwin B., Lyons, N. Y. Bill-file	476,487	June 7	403	94	59	1515
Pyke, Lazarus S. M., and E. S. Harris, Loudon, England. Magnetic inductor for dynamo-electric machines	476,818	June 14	908	222	59	1631
Pyke, Lazarus S. M., and E. S. Harris, London, England. Field-magnet for dynamo-electric machines	476,819	June 14	909	222	59	1631
Pyke, Lazarus S. M., and H. T. Barnett, assignors to said Pyke and E. S. Harris, London, England. Dynamo-electric machine	472,028	Apr. 12	961	249	59	196
Pyle, Edwin I., Bridgeport, Conn. Mechanical toy	476,895	June 14	1030	250	59	1655
Quackenbush, Edward F. (See Nilson, Nils, assignor.)						
Quarnström, Charles E., assignor of one-half to N. P. Hedin, Chicago, Ill. Ironing-machine	472,954	Apr. 12	1437	366	59	287
Quealy, John T., South Coventry, Conn. Monocycle	473,959	May 3	119	28	59	660
Quein, Hannah F., Odell, Nebr. Clasp	477,154	June 14	1441	353	59	1738
Quinn, Michael, assignor of one-half to R. S. Coltman, Westborough, Mass. Machine for blocking and pressing hats	473,641	Apr. 26	2613	658	59	545
Quinlan, John E., Boston, Mass. Banjo	477,451	June 21	1945	482	59	1848
Quittner, Josef and L., Vienna, Austria-Hungary. Automatic coin-freed seat	473,264	Apr. 19	1970	494	59	399
Quittner, Leopold. (See Quittner, Josef and L.)						
R. E. Dietz Company, *et al.* (See McArthur, Warren, assignor.)						
R. E. Dietz Company, *et al.* (See Wright, Frederick K., assignor.)						
R. S. True Company. (See True, Richard S., assignor.) (Reissue.)						
Raab, George, Cleveland, Ohio. Coin-controlled music-box	473,342	Apr. 19	2102	528	59	425
Raab, William, assignor of one-half to D. Wild, Cedar Falls, Iowa. Railway-switch	477,600	June 21	2190	543 544 545	59	1897
Rabiger, Emil. (See Rabiger, Robert and E.)						
Rabiger, Robert and E., Philadelphia, Pa. Game apparatus	474,188	May 3	469	113	59	728
Rachelman, Max and S., St. Paul, Minn. Trousers	475,416	May 24	2438	621	59	1151
Rachelman, Samuel. (See Rachelman, Max and S.)						
Radcliffe, Charles, Newark, N. J. Button	474,969	May 17	1744	442	59	1000
Rider, Alexius, Christiania, Norway. Soldering metal for aluminium	476,896	June 14	1031	.....	59	1656
Raff, Edward S., Canton, Ohio. Inkstand. (Reissue)	11,233	Apr. 26	3012	759	59	622
Raff, Edward S., Canton, Ohio. Inkstand. (Reissue)	11,234	Apr. 26	3013	759	59	622
Ragains, James G. (See Cowan and Ragains.)						
Rahn, Rudolph, assignor of one-fourth to E. Gisi, St. Louis, Mo. Funnel	473,061	Apr. 19	1648	419	59	338
Railsback, Jacob T., Kansas City, Kans. Car-coupling	475,796	May 31	3035	769	59	1279
Railway Improvement Company. (See Hartford, Arthur J., assignor.)						
Ralston, J. Huss. (See Holmes and Ralston.)						
Ramsay, Henry A., Baltimore, Md. Apparatus for generating heat	474,344	May 3	739	193	59	779
Ramsey, Jonathan, assignor of one-third to H. D. Gove, Boston, Mass. Soda-fountain	475,890	May 31	3212	813	59	1314
Ramsey, Marcellus, Miles Grove, Pa. Scaffold-bracket	474,406	May 10	841	220	59	810
Rand, William W., Minneapolis, Minn. Toy marble-shooter	472,608	Apr. 12	931	240	59	191
Randall, Benjamin F., Fall River, Mass. Metallic fence-post	476,069	May 31	3481	877	59	1369
Randall, Don W., Wapakoneta, Ohio. Game-board	472,816	Apr. 12	1230	315	59	945
Randall, George W. and G. H., Plympton, Mass. Bobbin-winder	474,924	May 17	1664	425	59	985
Randall, Gilbert H. (See Randall, George W. and G. H.)						
Randall, Timothy P., assignor of one-half to G. Kastler, Adrian, Mich. Wagon-brake	476,553	June 7	490	117	59	1534
Randolph, George F., Little Genesee, N. Y. Apparatus for converting petroleum, &c., into gas and burning the same	476,554	June 7	491	117	59	1535
Randolph, George W. F., Salem, W. Va. Heel	473,590	Apr. 26	2536	640	59	531

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Rankin, Alexander C., Glenfield, Pa. Meat-chopper	473,779	Apr. 26	2817	708	59	584
Rankin, Edmund, Jr., Lincoln, Ill. Portable roof	473,128	Apr. 19	1736	438	59	354
Rankin, Thomas V., Cincinnati, Ohio. Sawing-machine	474,189	May 3	470	114	59	729
Rankin, Washington M., Little Rock, Ark. Axle	472,587	Apr. 12	898	230	59	185
Ranney, David F., *et al.* (See Keith, Jeremiah, assignor.)						
Ranney, Fred. E., Belding, Mich., assignor to Belding Manufacturing Company, Chicago, Ill. Lock-strike	475,000	May 17	1797	456	59	1009
Rapid Transit Cable Company. (See Bryson, Pendleton, and Benn, assignors.)						
Rapp, William, Terre Haute, Ohio. Clod-crusher	472,770	Apr. 12	1166	299	59	233
Rappleye, Frank A., Farmer Village, N. Y. Fruit-basket handle and cover-fastener	474,925	May 17	1666	425	59	985
Rasmussen, Alfred W. (See Thuge, Johan A., assignor.)						
Rasmussen, Rasmus, Tacoma, Wash. Saw set and clamp	474,460	May 10	935	240	59	827
Rasner, Franklin, *et al.* (See Snyder, Oswill P., assignor.)						
Rasner, Henry C., San Francisco, Cal. Vise	473,343	Apr. 19	2105	528	59	426
Rasseweiler, John K., Wheaton, Ill. Tellurian	477,846	June 28	2599	651	59	1993
Ratcliff, Benjamin, and S. T. Lawrence, Coushatta, La. Shovel-plow	472,817	Apr. 12	1231	316	59	246
Ratcliffe, John, J. Hilton, and E. Mellor, New Bedford, Mass. Spinning-mule	476,308	June 7	120	29	59	1462
Rau, Charles. (See Reisky, Emil, assignor.)						
Rauhe, Carl, Dusseldorf, Germany. Dental drill	477,225	June 21	1585	388	59	1779
Rave, Henry. (See Kraft, John U., assignor.)						
Rawlings, Samuel T., Frome, England. Fire-escape	476,409	June 7	287	68	59	1494
Rawson, Manly S., Jamaica, assignor of one-half to H. J. Stewart, Londonderry, Vt. Planing-machine	477,610	June 21	2198	545	59	1899
Ray, Jessie L., administratrix. (See Ray, Simeon.)						
Ray, Miles E., assignor of one-half to E. L. Ford, Toledo, Ohio. Hydrocarbon-burner	472,226	Apr. 5	344	80	59	65
Ray, Simeon, deceased, St. Louis, Mo.; J. L. Ray, administratrix. Newspaper-file	473,476	Apr. 26	2332	590	59	492
Rayl, James S., Green Camp, Ohio. Harrow	474,692	May 10	1301	333	59	899
Raymond, Charles W., Dayton, Ohio. Brick-pressing machine	476,928	June 14	1087	262 263	59	1667
Raymond, Freeborn F., 2d, Newton, Mass. Attachment of heels to the soles of boots or shoes	474,146	May 3	402	97	59	716
Raymond, Freeborn F., 2d, Newton, Mass. Heeling-machine	474,407	May 10	844	220 221	59	811
Raymond, Freeborn F., 2d, Newton, Mass. Heel-randing machine	474,408	May 10	846	221 222	59	812
Raymond, Freeborn F., 2d, Newton, Mass. Attaching heels	475,001	May 17	1798	456	59	1009
Raymond, Freeborn F., 2d, Newton, Mass. Comb-strip of heel-nails	474,858	May 17	1570	400	59	965
Raymond, Freeborn F., 2d, Newton, Mass. Nailing-machine	475,417	May 24	2439	622	59	1152
Raymond, Freeborn F., 2d, Newton, Mass. Gluing attachment for heel-nailing machines	476,306	June 7	119	29	59	1461
Raymond, Freeborn F., 2d, Newton, Mass. Shoe-nail	476,307	June 7	120	29	59	1462
Raymond Manufacturing Company. (See Raymond, Murray M., assignor.)						
Raymond, Murray M., assignor to Raymond Manufacturing Company, Corry, Pa. Chimney-top	473,853	Apr. 26	2936	739	59	607
Raymond, Pierre A., Grenoble, France. Glove-fastening	472,272	Apr. 5	415	106	59	78
Raymond, Robert W. (See Doubler, John W. H., assignor.)						
Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper	476,209	May 31	3731	942	59	1416
Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper	476,210	May 31	3732	942	59	1416
Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper	476,211	May 31	3733	943	59	1416
Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper	476,212	May 31	3734	943	59	1417
Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper	476,213	May 31	3735	943	59	1417
Raymond, Silas H., assignor to W. B. Remington, E. J. Horton, F. C. Remington, S. S. White, and T. Friant, Grand Rapids, Mich. Carpet-sweeper	476,214	May 31	3736	943 944	59	1417
Read, Glasgow A., *et al.* (See Bailey, Archibald, assignor.)						
Reade, Charles A., Chicago, Ill. Vehicle	473,438	Apr. 19	2254	568	59	455
Reagan, Harry C., Jr., assignor of two-thirds to E. F. Peacock, Philadelphia, Pa., and T. Pray, Jr., New York, N. Y. Compound locomotive	475,891	May 31	3214	813	59	1314
Reagan, William S., Myra, Kans. Automatic cut-off for water-troughs	473,437	Apr. 19	2251	567 568	59	454
Reaman, Abram G., Ringwood, assignor to Mercer Bros. & Co., Allieton, Canada. Harvest-binder	477,226	June 21	1585	388	59	1779
Reamer, George W., Forest Hill, Cal. Preparing figs	473,780	Apr. 26	2820	708 709	59	585
Reams, Levi B., Cassopolis, Mich. Wagon-jack	474,099	May 3	343	.....	59	703
Reaney, Charles H., Washington, D. C. Paint	475,021	May 17	1827	463	59	1016
Reardon, Robert, Savannah, Ga. Car-coupling	474,693	May 10	1303	.....	59	899
Reckenzaun, Anthony, Stockwell, England, assignor of one-half to J. A. Pentz, Philadelphia, Pa. Electric-clock motor	475,153	May 17	2025	511	59	1054
Reckenzaun, Anthony, London, England. Secondary-battery electrode and making the same	473,960	May 3	122	28	59	661
Record, George J., Conneaut, Ohio. Fastening for the caps of cans, &c	475,797	May 31	3038	769	59	1280
Redfield, Lewis H., assignor of one-half to J. R. Clancy, Syracuse, N. Y. Hose-clamp	476,309	June 7	121	29	59	1462
Reed, Alanson H., and D. Donovan, Chicago, Ill.; said Donovan assignor to said Reed. Piano-pin block	477,227	June 21	1586	389	59	1779
Reed, Charles H., Boston, Mass. Glove-fastener	473,523	Apr. 26	2409	611	59	506
Reed, Charles J., Orange, N. J. Attachment for type-writing machines	474,409	May 10	851	222	59	813
Reed, Charles J., Orange, N. J. Attachment for type-writing machines	473,236	Apr. 19	1926	485	59	390
Reed, Charles J., Orange, N. J. Printing-telegraph	473,237	Apr. 19	1929	485	59	391
Reed, Charles J., Orange, N. J. Printing-telegraph	477,383	June 21	1840	453	59	1827
Reed, David E., and O. Gurnee, New Hudson, Mich. Axle-cutter	477,384	June 21	1843	453	59	1828
Reed, George T., assignor of one-half to H. A. Cheatham, Baltimore, Md. Cushioned tire	477,268	June 21	1656	405	59	1792
Reed, George T., assignor of one-half to H. A. Cheatham, Baltimore, Md. Bicycle-wheel	476,215	May 31	3737	944	59	1417
Reed, James D., Eagle, Mich. Washing-machine	476,216	May 31	3739	944	59	1417
Reed, James H., assignor to A. M. and J. H. Preble, Lynn, Mass. Sole-trimming machine	472,227	Apr. 5	346	89	59	85
Reed, John W., Chicago, Ill. Piano-back	475,606	May 24	2743	695	59	1211
Reed, Lewis M., assignor of one-half to J. W. Hickman, Patterson, Kans. Feeding device for animals	473,082	Apr. 19	1649	419	59	339
Reed, Robert N., Covington, Ky., and F. Buob; said Buob assignor to E. P. Christian, Cincinnati, Ohio. Clothes-drier	476,310	June 7	122	30	59	1462
	473,781	Apr. 26	2822	709	59	585

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Reed, Theodore J., assignor to L. Scheer, Leavenworth, Kans. Machine for cleaning corn-chaff or cellulose	472,548	Apr. 12	845	216	59	174
Reefy, Solomon L., Edinburg, Ill. Bracket-lamp for vehicles	475,798	May 31	3040	760	59	1280
Rees, David, Pittsburg, assignor of one-half to P. Burron, Allegheny county., Pa. Baby-carriage	472,714	Apr. 12	1089	279	59	218
Rees, Frank, South Orange, N. J. Repeating firearm	473,179	Apr. 19	1829	461, 462	59	371
Reeves & Co. (See Kailor, John N., assignor.)						
Reeves & Co. (See Kailor and Williams, assignors.)						
Reeves, Milton O., assignor to Reeves Pulley Company, Columbus, Ind. Securing pulleys to shafts	473,594	Apr. 26	2410	611	59	506
Reeves Pulley Company. (See Reeves, Milton O., assignor.)						
Reeves, Thomas H., Minneapolis, Minn., assignor of one-fourth to I. F. Bissell, Trenton, N. J. Ice-plow	473,782	Apr. 26	2822	709	59	585
Regan, Daniel S., assignor to Regan Vapor Engine Company, San Francisco, Cal. Transmitting power to propellers	474,926	May 17	1667	426	59	986
Regan Vapor Engine Company. (See Regan, Daniel S., assignor.)						
Regester, Thomas L., Tekamah, Nebr. Windmill-governor	473,549	Apr. 12	847	217	59	175
Rehnström, Albert W., Mälhammar, Sweden. Manufacture of soap	476,556	June 7	493	.....	59	1535
Rehnström, Albert W., Mälhammar, Sweden. Soap	476,557	June 7	494	.....	59	1535
Rehnström, Albert W., Mälhammar, assignor to Lactoserine Company, Limited, Stockholm, Sweden. Manufacture of soap with whey	476,555	June 7	492	.....	59	1535
Reichel, Walter. (See Philipsborn and Reichel.)						
Reichelt, Bruno, South Bend, Ind. Motor for sewing-machines	473,818	Apr. 12	1232	316	59	246
Reichert, Louis, Scranton, Pa. Toy for emitting sound	476,024	May 31	3409	860	59	1354
Reichle, Martin, *et al.* (See Trump, John G., assignor.)						
Reichwein, Herman, Spring Lake, N. J. Lawn-tennis-court marker	475,154	May 17	2027	511	59	1055
Reid, Andrew, assignor of one-half to C. Dwyer, Amsterdam, N. Y. Dyeing apparatus	475,065	May 17	1892	480	59	1028
Reid, Charles H., Danbury, Conn. Hat-rounding machine	473,238	Apr. 19	1931	485, 486	59	391
Reid, George, *et al.* (See Trump, John G., assignor.)						
Reid, James, Jr., West Troy, assignor to Hagen & Reid, Troy, N. Y. Nail-drawing implement	474,859	May 17	1570	401	59	965
Reid, John S., Muncie, Ind. Radial-center sawing-machine	476,820	June 14	910	223	59	1632
Reiff, William H., assignor to F. Haggerty, Philadelphia, Pa. Game apparatus	477,452	June 21	1946	482	59	1848
Reiger, John F. (See Jackson and Reiger.)						
Reigh, Mark B., Boston, Mass., assignor to Willimantic Linen Company, Hartford, Conn. Thread-unwinding device for sewing-machines	477,611	June 21	2200	546	59	1899
Reilly, James, Brooklyn, N. Y. Device for separating oil from feed-water	473,591	Apr. 26	2537	640	59	531
Reinmann, Albert L. (See Berrenberg, William, assignor.)						
Reisky, Emil, assignor to C. Rau, Rochester, N. Y. Game apparatus	473,265	Apr. 19	1972	494	59	399
Reissig, Wilhelm, Munich, Germany. Manufacture of artificial stone	477,847	June 28	2600	.....	59	1994
Remington, Fred. C., *et al.* (See Raymond, Silas H., assignor.)						
Remington Standard Type Writer Manufacturing Company. (See Webb and Chapin, assignors.)						
Remington, William B., *et al.* (See Raymond, Silas H., assignor.)						
Reno, Griffin, New York, N. Y. Truss	477,335	June 21	1760	431	59	1813
Renton, George W., Brooklyn, assignor to F. N. Du Bois, New York, N. Y. Faucet	476,170	May 31	3649	923	59	1402
Replogle, Mark A., Mattawana, Pa. Electrical governor	476,311	June 7	123	30	59	1462
Resche, Friedrich E., Duluth, Minn. Plug-cutting tool	476,312	June 7	126	30	59	1462
Reusch, Christian. (See Wagner, Oscar, assignor.)						
Reuter, John C., assignor of one-eighth to M. S. Byck, Savannah, Ga. Motor	475,799	May 31	3042	770, 771	59	1280
Reuther, John. (See Reuther, William and J.)						
Reuther, William and J., Elma, N. Y. Potato-digger	473,083	Apr. 19	1650	420	59	339
Reuther, William and J., Elma, N. Y. Potato-digger	473,084	Apr. 19	1652	420	59	339
Revere Rubber Company. (See Elliott, Charles B., assignor.)						
Rew, Henry C., Chicago, Ill. Regenerative metallurgical furnace	472,076	Apr. 5	98	26	59	20
Rew, Henry C., Chicago, Ill. Apparatus for the manufacture of gas	472,077	Apr. 5	100	27, 28	59	21
Reymond, Adrien, New York, N. Y. Stop-watch	474,100	May 3	344	82	59	703
Reynolds, Arthur J., assignor to Stanley Works, New Britain, Conn. Drive-chain link	475,705	May 24	2887	730	59	1238
Reynolds, George L., Auburn, N. Y. Game apparatus	475,469	May 24	2525	643	59	1168
Reynolds, Lewis G., assignor to Dayton Printing and Manufacturing Company, Dayton, Ohio. Manifold-copying device	475,155	May 17	2028	512	59	1055
Reynolds, Thomas, *et al.* (See Neer, Harry M., assignor.)						
Rheobottom, Frank C., Union City, Mich. Grave-vault	476,171	May 31	3651	923	59	1402
Rhett, Charles H., Baltimore, Md. Air-valve for traps and waste-pipes	473,961	May 3	124	29	59	661
Rhind, Frank, assignor of one-half to Edward Miller & Company, Meriden, Conn. Gas-burner	475,800	May 31	3046	771	59	1281
Rhoada, William M. (See Sears, Willard T., assignor.)						
Rhodes, John W., Havana, Ill. Bridge-gate	477,700	June 28	2358	590	59	1949
Rhodes, Thomas H. (See Kato and Rhodes.)						
Rice, Charles D., Hartford, Conn., assignor to Pope Manufacturing Company, Portland, Me. Wheel for velocipedes	473,408	Apr. 19	2216	556	59	447
Rice, Charles D., Hartford, Conn., assignor to Pope Manufacturing Company, Boston, Mass. Repairing pneumatic tires	475,343	May 24	2327	597	59	1132
Rice, Charles D., Hartford, Conn., assignor to Pope Manufacturing Company, Boston, Mass. Device for repairing tires	475,344	May 24	2328	597	59	1132
Rice, Edward I. (See Kingsley, Elisha L., assignor.)						
Rice, John H., Henderson county, Ill. Portable roof	477,701	June 28	2361	590	59	1949
Rice, Richard H., Providence, R. I. Cut-off-valve gear	473,085	Apr. 19	1655	421	59	340
Rich, Henry M. (See Taft, Edward L., assignor.)						
Rich, Peter S., Sparta, Wis. Machine for preparing green corn for domestic use	474,702	May 10	1402	355	59	919
Richard, Jean E., New York, N. Y., assignor to J. Scott. Machine for cracking ice	475,518	May 24	2606	663	59	1183
Richard, William, H. G. Ogden, and E. E. Heath, Bloomville, Ohio. Washer for vehicle-axles	477,065	June 14	1303	317	59	1711
Richards, Francis H., Hartford, Conn. Drawing-rolls for spinning-machines	474,030	May 3	230	55	59	682
Richards, Francis H., Hartford, Conn., assignor to W. Wood, Philadelphia, Pa. Valve-gate	476,313	June 7	128	31	59	1462
Richards, Henry J., Wilkes-Barré, Pa. Miner's safety-lamp	476,488	June 7	404	94	59	1516
Richards, Hubert P., assignor to Trant & Hine Manufacturing Company, New Britain, Conn. Suspender-buckle	476,172	May 31	3652	924	59	1403
Richards, Josias H., and A. W. Burr, Philadelphia, Pa. Loose-pulley oiler	476,173	May 31	3653	924	59	1403

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Richards & Rutihauser. (See Downey, Silas C., assignor.)						
Richardson, Aaron, Uniontown, and F. E. Richardson, Manchester, Iowa; said Aaron Richardson assignor to said F. E. Richardson. Latch	476,070	May 31	3483	878	59	1369
Richardson & Boynton Company. (See Mackay, William M., assignor.)						
Richardson, Charles B., and W. H. Pool, Springfield, Mass. Dandy-roll	473,180	Apr. 19	1836	462	59	372
Richardson, Frederick A., London, England. Glove-fastening	476,410	June 7	289	68	59	1494
Richardson, Frederick E. (See Richardson, Aaron and F. E.)						
Richardson, Jeremiah J., Brooklyn, N. Y. Fireplace-heater	477,155	June 14	1441	353, 354	59	1738
Richardson, Newton C., *et al.* (See Tarris, Andrew, assignor.)						
Richardson, Robert E. (See Jones, Isaac B., assignor.)						
Richardson, William H. (See Fries, Richardson and Hackett.)						
Richens, James. (See Miller, Charles, assignor.)						
Richmond, Walter. (See Bronsdon, Milton H., assignor.)						
Richords, Benjamin, Middle Bank, Swansea, England. Copper-smelting furnace	475,609	May 24	2744	696	59	1211
Richter, Ernst, and A. Schaefer, New York, N. Y. Preparing malt for brewing	477,823	June 28	2555	.....	59	1985
Rickard, Charles S., Grand Rapids, Mich. Folding crib	472,819	Apr. 12	1233	316	59	246
Ricketson, James C., Milwaukee, Wis. Electric signal for engines	477,311	June 21	1730	423	59	1806
Riddell, De Witt C. (See Staniford, Frank C., assignor.)	475,066	May 17	1894	480	59	1028
Riddell, John, Lynn, assignor of one-half to G. F. Greenwood, Boston, Mass. Valve-gear	478,022	June 28	2873	718	59	2047
Riddick, James E. R., Wakefield, Va. Combination-lock	476,821	June 14	912	223	59	1632
Riddle, Frank C., St. Louis, Mo. Coffin-fastener	476,315	June 7	130	31	59	1463
Riddle, William N., Crowley, Tex. Aerial ship	473,344	Apr. 19	2106	529	59	426
Rider, Ebenezer W., Racine, Wis. Water-cooler for use in refrigerators	476,314	June 7	129	31	59	1463
Rider, Ebenezer W., Racine, Wis. Wrench	477,228	June 21	1587	389	59	1779
Ridge, Joseph, Chicago, Ill. Vehicle-wheel	473,525	Apr. 26	2411	611	59	506
Rieckert, Herman A. J., New York, N. Y. Knockdown exhibition-stand	473,783	Apr. 26	2823	709	59	585
Riedel, J. D. (See Scholvien, Ludwig, assignor.)						
Rigby, Holden. (See Allcroft, Herbert, assignor.)						
Rigby, Richard, Fall River, assignor of one-half to G. Draper & Sons, Hopedale, Mass. Weft fork or feeler	474,780	May 10	1434	364	59	926
Riggins, Paden B., Sheffield, Iowa. Pump	473,345	Apr. 19	2108	529	59	426
Riggs, Lewis S., assignor of two-thirds to A. P. Howison and J. G. Murray, Selma, Ala. Filling syringes	477,961	June 28	2774	695	59	2028
Riley, George S., Rochester, N. Y. Smoke-consuming furnace	477,780	June 28	2483	621	59	1972
Rimmelin, August, St. Louis, Mo. Shears	473,710	Apr. 26	2716	683	59	564
Rimmer, Joseph, Malden, Mass. Sofa-bed	474,970	May 17	1746	442, 443	59	1000
Ripley, Daniel C., Pittsburg, Pa. Manufacture of glassware	477,336	June 21	1762	431	59	1813
Ripley, James G., Boston, Mass. Hoof-expander	475,801	May 31	3047	771	59	1282
Ripp, Ernst L., Schönau, near Chemnitz, Germany. Ladder	472,141	Apr. 5	204	55	59	38
Ripp, Ernst L., Schönau, near Chemnitz, Germany. Ladder	476,897	June 14	1032	250	59	1656
Risdon, Hugh C., assignor to J. H. Risdon, Philadelphia, Pa. Game apparatus	475,067	May 17	1895	481	59	1029
Risdon, John H. (See Risdon, Hugh C., assignor.)						
Ritchie, John, Beamsville, Canada. Manufacture of pulley-wheels	476,489	June 7	406	95	59	1516
Ritchie, Walter S. (See Van Voorhis, William H., assignor.)						
Riter & Conley. (See Kennedy, Hugh, assignor.)						
Rittenhouse, Silas B., Liberty Mills, Ind. Wrench	474,566	May 10	1103	282	59	861
Ritter, Anton, Milwaukee, Wis. Horse-collar fastener	474,147	May 3	402	98	59	716
Ritzell, A. P., *et al.* (See Thrush, John W., assignor.)						
Rivers, Thomas L., assignor of one-third to J. Thieleman, Newark, N. J. Car-coupling	472,395	Apr. 5	611	155	59	114
Rivnác & Co., K. (See Rivnác and Vojácek, assignors.)						
Rivnác, Karel, and L. Vojácek, assignors to K. Rivnác & Co., Prague, Austria-Hungary. Apparatus for heating, &c	474,694	May 10	1303	333	59	899
Roach, Dennis. (See Helbing, Theodore O., assignor.)						
Robbins, John W., Boston, Mass. Producing metallic relief-plates for pictorially burning or searing wood	475,047	May 17	1864	473	59	1023
Robbins, Josiah S., Allentown, N. J. Potato-planter and fertilizer-distributer	475,519	May 24	2608	663	59	1184
Robbins, Lorenzo M., Elizabeth, Ark. Vehicle pole or shaft	477,269	June 21	1657	405	59	1792
Robbins, Richard B., Adrian, Mich. Corn or cane harvester	475,418	May 24	2441	622, 623	59	1152
Roberts-Brevoort Electric Company. (See Roberts, Isaiah L., assignor.) (Reissue.)						
Roberts, Cyrus, Three Rivers, Mich. Rail-joint	472,228	Apr. 5	346	90	59	65
Roberts, Cyrus, Three Rivers, Mich. Track-gage and level	472,229	Apr. 5	348	90	59	65
Roberts, Cyrus, Three Rivers, Mich. Track gage and level	474,646	May 10	1224	313	59	883
Roberts, Edwin H., New York, N. Y. Sidewalk-hole guard	472,661	Apr. 12	999	259	59	203
Roberts, Elmer H., Meriden, Conn. Shoe-lace fastener	472,078	Apr. 5	104	28	59	21
Roberts, George W., Chisholm's Island, S. C. Phosphate-washing machine	472,820	Apr. 12	1235	317	59	246
Roberts, Henry P., Jamestown, N. Y. Hydrocarbon-oil vaporizer and burner	477,872	June 28	2644	660, 661	59	2001
Roberts, Isaiah L., assignor to Roberts-Brevoort Electric Company, Limited, New York, N. Y. Secondary battery. (Reissue.)	11,238	Apr. 26	3020	761	59	623
Roberts, Jay H. (See Dodds, James H., assignor.)						
Roberts, John W., assignor of one-half to Sherwin-Williams Company, Cleveland, Ohio. Can-crimping machine	476,558	June 7	495	117, 118	59	1535
Roberts, Richard B. (See Leonard, Roberts, and Allison.)						
Roberts, William M., Joliet, Ill. Self-closing gas-burner	474,695	May 10	1304	333	59	899
Robertson, Joseph B., Belfast, Ireland. Wheel for velocipedes	477,962	June 28	2774	695	59	2028
Robertson, Richard A., Jr., Providence, R. I. Apparatus for casting cannon	474,860	May 17	1572	401	59	965
Robertson, Robert A. (See Yeakley, Melvin A., assignor.)						
Robertson, William F., Cincinnati, Ohio. Hoop-fastener	472,142	Apr. 5	205	55	59	39
Robinett, William H., Kansas City, Mo. Hydraulic motor	476,174	May 31	3654	924, 925	59	1403
Robinson & Co., J. M. (See Colling, Charles J., assignor.)						
Robinson, Cyrus R., East Concord, N. H. Reducer and nozzle for hose	477,824	June 28	2556	640	59	1985
Robinson, Frank, Sand Lake, Mich. Potato-planter	475,610	May 24	2746	696	59	1211
Robinson, George F., New York, N. Y. Feed-trough	476,071	May 31	3483	878	59	1370
Robinson, James J., River View, W. Va. Elevated carrier	476,072	May 31	3484	878	59	1370
Robinson, Laurence B., assignor to H. E. Payne, Milton, Tex. Turfing implement	477,453	June 21	1947	482	59	1848
Robinson, Walter, Syracuse, N. Y. Wall-plaster	472,511	Apr. 5	792	.....	59	151
Robinson, William D., assignor of one-third to W. H. Savage, El Paso, Tex. Nut-lock	473,430	Apr. 19	2245	565	59	453
Robinson, William G., Morrison, Ill. Holder and support for milk-cans	477,454	June 21	1948	483	59	1848
Robinson, William N., Galt, Canada. Car-coupling	473,346	Apr. 19	2109	529	59	427

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Robischung, Henry B., Kalamazoo, Mich., assignor to National Hollow Brake Beam Company, Chicago, Ill. Brake-beam	475,802	May 31	3048	771	59	1282
Roche, Herrick H., assignor of two-thirds to M. M. Roche, Brooklyn, N. Y. Bookbinding	474,483	May 10	965	249	59	834
Roche, James, assignor to Eagle Lock Company, Terryville, Conn. Permutation-lock	475,520	May 24	2609	663	59	1184
Roche, James, assignor to Eagle Lock Company, Terryville, Conn. Lock	476,559	June 7	500	118	59	1537
Roche, Mary M. (See Roche, Herrick H., assignor.)						
Roche, Patrick C., and C. Colclough, Gertrude, Ga. Canting-block for sawmill-carriages	472,821	Apr. 12	1237	317	59	247
Rochlitz, William, Chicago, Ill. Apparatus for distilling water	473,164	Apr. 19	1791	452	59	365
Rockenfield, George W., Parkersburg, W. Va. Punching and shearing machine	474,971	May 17	1748	443	59	1001
Rockteacher, Martin C., and J. H. McKeon, Eagle, Wis. Plumb-level	477,312	June 21	1731	424	59	1807
Rockwell, Albert F., Bristol, Conn. Animal-trap	474,303	May 3	648	164	59	763
Rockwell, Edward D., Bristol, Conn., assignor to New Departure Bell Company, of Connecticut. Bell	473,854	Apr. 26	2937	740, 741	59	607
	475,345	May 24	2330	597	59	1133
Rockwell, Frederick C., Hartford, Conn. Incandescent-lamp socket						
Roddey, Joseph W., *et al.* (See Hoke, Quinton J., assignor.)						
Rodding, Max. (See Bülltzingslöwen, Bruno von, assignor.)						
Rodenhausen, Leonhard, Philadelphia, Pa. Dumping-cart	477,702	June 28	2363	591	59	1950
Rodes, Philip, Greenfield, Va. Still and process	476,073	May 31	3486	878, 879	59	1370
Rodgers, John, New York, N. Y. Cart-saddle	473,962	May 3	125	29	59	661
Rodgers, William D., Warrenton, N. C. Nut-lock	476,316	June 7	132	32	59	1463
Rodwell, George J. B. (See Martyn, Arthur, assignor.)						
Rodwell Manufacturing Company. (See Martyn, Arthur, assignor.)						
Roe, Fayette W., United States Army. Perpetual calendar for watch-charms	475,156	May 17	2029	512	59	1055
Roe, Justus, Patchogue, N. Y. Tape-measure reel	475,470	May 24	2527	643	59	1168
Roe, William C., Honolulu, Hawaii. Lathe-center	474,265	May 3	580	143	59	750
Röell, Cornelis F. A., London, England. Coin-operated toy	474,304	May 3	648	164, 165, 166, 167	59	763
Roenigk, Edwin O., Pittsburg, Pa. Awning	476,074	May 31	3467	879	59	1371
Rogers, Charles A., Chicago, Ill. Trick egg	472,822	Apr. 12	1239	318	59	247
Rogers, Charles S., San Antonio, Tex. Clamp or fastener for wire fences	476,411	June 7	290	68	59	1494
Rogers, Timothy, Springfield, Ohio. Cash-register	473,887	Apr. 26	2997	756, 757	59	619
Rogers, Timothy, assignor of one-half to A. Ferrell, Springfield, Ohio. Water-heating device	476,949	June 14	1126	270, 271	59	1674
Rogowski, Hermann G., New York, N. Y. Cloth-cutting machine	472,715	Apr. 12	1090	280	59	219
Rohan, Philip, St. Louis, Mo. Shearing-machine	478,023	June 28	2875	719	59	2047
Rohan, Philip, assignor to St. Louis Improved Shear and Tool Manufacturing Company, St. Louis, Mo. Sheet-metal trimmer and cutter	476,075	May 31	3489	879, 880	59	1371
Rohlfing, William, Jr., Milwaukee, Wis. Piano-forte	472,588	Apr. 12	899	231	59	185
Rohlfs, Dietrich, *et al.* (See Sommer, Jacques, assignor.)						
Rohlmann, Joseph, St. Joseph, Mo. Attachment for carving-machines	477,229	June 21	1588	389	59	1779
Rohr, Herman J., Alexis, Ill. Wire-stretcher	475,892	May 31	3215	813	59	1314
Rohrbach, Lloyd T. (See Edgar and Rohrbach.)						
Rolfing, Albert, Brooklyn, N. Y. Can for liquids	477,455	June 21	1949	483	59	1849
Rolland, Nestor, and H. François, Brussels, Belgium. Churn	475,346	May 24	2331	597, 598	59	1132
Roller, Frank, West Berkeley, assignor to Giant Powder Company, San Francisco, Cal. Manufacture of explosives	474,529	May 10	1039	.....	59	847
Rollins, Fred. H. (See Clements and Rollins.)						
Rollins, John B., *et al.* (See Glazier, George W., assignor.)						
Romaine, Charles N., Petersburg, Va. Trunk	474,148	May 3	403	98	59	716
Roney, William R., Chicago, Ill. Furnace-grate	474,346	May 3	743	194	59	779
Roney, William R., Chicago, Ill., assignor to Westinghouse, Church, Kerr & Company, New York, N. Y. Grate	473,963	May 3	126	29	59	662
Roney, William R., and J. T. Arnold, Chicago, Ill. Grate	474,345	May 3	740	193	59	779
Roos, Edward, Chicago, Ill. Hook-rack	477,270	June 21	1658	405	59	1793
Root, Francis H., assignor to G. H. Bliss, Chicago, Ill. Automatic gas-extinguisher	476,412	June 7	290	69	59	1495
Root, Sanford O., Lodi, N. Y. Pliers	477,066	June 14	1304	317	59	1711
Rose, Byron H., assignor to Pullman Sash Balance Company, Rochester, N. Y. Sash-balance	474,329	May 3	708	183	59	773
Rose, Edwin H., Colton, Cal. Sewer, water, and drain pipe laying device	478,024	June 28	2875	719	59	2047
Rose, George, assignor of two-thirds to A. and M. B. Baird, Glasgow, Scotland. Apparatus for burning hydrocarbon or other oils for lighting and heating	477,271	June 21	1659	405, 406	59	1793
Rose, James E., assignor of one-half to L. R. Klumpp, Weedsport, N. Y. Sash-holder	473,711	Apr. 26	2717	684	59	565
Rose, Jeffrey H. and W. A., Brooklyn, N. Y. Transom-lifter	474,065	May 3	291	70	59	693
Rose, William A. (See Rose, Jeffrey H. and W. A.)						
Rose, William B., St. Louis, Mo. Garbage-receptacle	477,576	June 21	2138	531	59	1887
Rosenberg, Samuel C. (See Docter, Albert M., assignor.)						
Rosenfeld, William, Manistee, Mich. Heel-plate and ice-creeper	472,396	Apr. 5	612	155	59	114
Rosenfeld, William, Manistee, Mich. Heel-plate-attaching machine	472,397	Apr. 5	613	155	59	115
Rosenbolz, Alfred, Wardner, Idaho. Wave-power motor	472,398	Apr. 5	614	156	59	115
Rosenstock, Moritz, New York, N. Y. Suspenders	474,530	May 10	1040	266	59	847
Rosenthal, Gunther F. C., Philadelphia, Pa. Draft-guard for cars	475,611	May 24	2747	606	59	1212
Rosenthal, Louis, and S. Frank, Frankfort-on-the-Main, Germany. Apparatus for reproducing sounds	474,410	May 10	852	222	59	813
Ross, Alva, Virden, Ill. Swinging gate	472,716	Apr. 12	1092	280, 281	59	219
Ross, Charles, Milwaukee, Wis. Elevator	474,609	May 10	1165	296	59	872
Ross, David C. H., Cedar Rapids, Iowa. Combined blotter and ruler	472,079	Apr. 5	104	28	59	21
Ross, Frank A., assignor to Fraser & Chalmers, Chicago, Ill. Ore-crusher	475,347	May 24	2333	598	59	1132
Ross, Herbert C. (See Brower and Ross.)						
Ross, Simon, Cincinnati, Ohio. Sole-trimming machine	472,399	Apr. 5	615	156, 157	59	115
Ross, Simon, Jr., Cincinnati, Ohio. Abrading and finishing tool	472,823	Apr. 12	1240	318	59	247
Ross, Simon, Jr., Cincinnati, Ohio. Press for attaching abrasive material to tools	472,824	Apr. 12	1241	318	59	247
Ross, William, Willard, Tex. Grinding-machine	477,067	June 14	1306	317, 318	59	1711
Rossberg, Godfrey, Brooklyn, N. Y. Button	476,076	May 31	3490	880	59	1371
Roth, George, Highland, Ill. Can-cleaning machine	477,703	June 28	2364	591	59	1950
Rothan, George J., Peoria, Ill. Adjustable screen-frame	476,077	May 31	3490	880	59	1371

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Rothenbücher, George, New York, N. Y. Valve-gear	477,848	June 28	2601	652	59	1994
Rothfuss, Michael, Williamsport, Pa. Engine-governor	473,712	Apr. 26	2718	684	59	565
Rothfuss, Michael, Williamsport, Pa. Rotary valve	472,717	Apr. 12	1094	281	59	219
Rothschild, Isaac, and E. F. Van Cott, assignors to S. Adler, New York, N. Y. Detachable music rest or holder	475,249	May 17	2174	553	59	1084
Rouse, Seymour A., Indianapolis, Ind. Windmill-hinge	472,825	Apr. 12	1242	318	59	248
Rousseau, Frank X., Detroit, Mich. Tackle-block	476,078	May 31	3492	880	59	1372
Routh, Oswald R., Jersey City, N. J. Apparatus for burning petroleum-oils, &c	476,560	June 7	503	118	59	1537
Rowand, Lewis G., Camden, N. J., assignor to H. C. Terry, Philadelphia, Pa. Thermostat	474,149	May 3	404	98	59	717
Rowand, Lewis G., Camden, N. J., assignor to H. C. Terry, Philadelphia, Pa. Fire-alarm system	477,068	June 14	1308	318, 319	58	1712
Rowand, Lewis G., Camden, N. J., assignor to H. C. Terry, Philadelphia, Pa. Fire-alarm system	477,069	June 14	1320	320	59	1714
Rowand, Lewis G., Camden, N. J., assignor to H. C. Terry, Philadelphia, Pa. Fire-alarm system	477,070	June 14	1322	320	59	1715
Rowand, Lewis G., Camden, N. J., assignor to H. C. Terry, Philadelphia, Pa. Annunciator	477,071	June 14	1324	321	59	1715
Rowe, Elijah F., Granite Falls, Minn. Combined scrubber and mop-head	472,486	Apr. 5	748	190	59	142
Rowe, George H., Belton, Tex. Peg for violins	473,347	Apr. 19	2110	530	59	427
Rowell, Benton C., Boston, Mass. Device for automatically operating power car-brakes	475,893	May 31	3217	814	59	1315
Rowlett, James H., Ludlow, Mo. Replanting attachment for cultivators	473,964	May 3	129	29	59	662
Rowntree, Harold, Kansas City, Mo., assignor to Crane Elevator Company, Chicago, Ill. Elevator-controlling device	473,198	Apr. 19	1862	469	59	377
Rowntree, Harold, Kansas City, Mo., and I. Veeder, assignors to Crane Elevator Company, Chicago, Ill. Elevator-controller	473,199	Apr. 19	1864	469, 470	59	377
Roxby, Richard, Dartmouth, Canada. Rail-joint	477,156	June 14	1443	354	59	1739
Royal Machine Company. (See Brown, Charles F., assignor.)						
Royau, Alexandre A., Châtillon-Sous-Bagneux, near Paris, France. Candle-molding machine	475,521	May 24	2612	664, 665	59	1184
Royse, John, Bonham, Tex. Ant-trap	473,965	May 3	131	30	59	602
Ru Ton, Hiram W., assignor to Goshen Folding Bed Company, Goshen, Ind. Attachment for folding beds	475,250	May 17	2175	554	59	1085
Rubenstein, Nathan, New York, N. Y. Automatic alarm	476,217	May 31	3740	944, 945	59	1418
Rudd, Charles H., assignor to Western Electric Company, Chicago, Ill. System of testing electric circuits	476,317	June 7	133	32	59	1464
Rudd, Charles H., Evanston, assignor to Western Electric Company, Chicago, Ill. System of testing for electric circuits	476,490	June 7	407	95	59	1516
Ruddock, William H., *et al.* (See Beckwith, Theodore A., assignor.)						
Rudolph, Alexander J., San Francisco, Cal. Continuous revolving file and index	473,348	Apr. 19	2111	530	59	427
Rudolph, Ernst B., deceased; W. E. Boulter, Washington, D. C., administrator. Leading-in device for overedge sewing-machines	473,996	May 3	174	41	59	672
Rudolph, Franklin. (See Clause, John J., assignor.)						
Rudrof, George R., St. Louis, Mo. Support for chamber-vessels	472,826	Apr. 12	1243	319	59	248
Rueter, Henry A., Boston, Mass. Covered electric wire	473,713	Apr. 26	2719	684	59	565
Ruge, Orlando C. (See Peterson and Ruge.)						
Rulofson, Alfred C., San Francisco, Cal. Curry-comb	472,550	Apr. 12	848	217	59	175
Rumely, William N., Laporte, Ind. Journal-bearing	477,272	June 21	1662	406	59	1793
Rumford Chemical Works. (See Catlin, Charles A., assignor.)						
Rumsey, Charles B., assignor to Wire Fabric Company, Homer, N. Y. Galvanizing or tinning wire-cloth	474,567	May 10	1104	282	59	861
Rundell, W. G., *et al.* (See Taylor, Barnett, assignor.)						
Runkel, Friedrich, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Triphenylmethane dye	476,413	June 7	292	.....	59	1495
Runkel, Friedrich, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Triphenylmethane dye	476,414	June 7	293	.....	59	1495
Runkel, John P., Milwaukee, Wis. Device for operating doors to elevator-wells	475,022	May 17	1828	463	59	1016
Ruple, Daniel B., Columbus, Ohio. Vehicle-gearing	476,822	June 14	914	224	59	1632
Ruppert, Jacob, Jr., *et al.* (See Gudner, Gustavis L., assignor.)						
Rupprecht, George J., Philadelphia, Pa. Tronsers	472,273	Apr. 5	416	107	59	78
Ruscoe, John, Hyde, England. Apparatus for charging gas-retorts	476,685	June 7	685	166, 167	59	1573
Ruscoe, John, Hyde, England. Apparatus for drawing gas-retorts	476,686	June 7	688	168, 169	59	1573
Rusden, Ethelbert A., Providence, R. I. Machine for cleaning and soaping fabrics	473,266	Apr. 19	1873	494, 495	59	400
Rush, William, assignor of one-half to S. L. Smith, Tyrone, Pa. Level	474,861	May 17	1575	401	59	966
Rushmore, Samuel W., Brooklyn, N. Y. Electric-arc lamp	472,274	Apr. 5	417	107	59	78
Russell, Charles A., Providence, R. I. Finger-ring	477,825	June 28	2557	640	59	1985
Russell, Charles F., New Haven, Conn. Sash-fastener	473,670	Apr. 26	2654	669	59	553
Russell & Erwin Manufacturing Company. (See Burgess, Charles M., assignor.)						
Russell & Erwin Manufacturing Company. (See Forrest, Earnest J., assignor.)						
Russell, Henry T., Chicago, Ill. Oil-burning device	473,165	Apr. 19	1793	452, 453	59	365
Russell, Irvin A., assignor of one-half to J. E. Burgess, Minneapolis, Minn. Vehicle-wheel	476,415	June 7	295	69	59	1495
Russell, John, Richmond, Ind. Bed-lounge	472,589	Apr. 12	900	231	59	185
Russell, John A., Chicago, Ill. Loop-taker for sewing-machines	472,512	Apr. 5	792	203	59	151
Russell, Madison J., Los Angeles, Cal. Bicycle-stand	477,705	June 28	2367	592	59	1950
Russell, Nathan B. (See Tomey, John J., assignor.)						
Russell, Philip G., *et al.* (See Pollard, James M., assignor.)						
Russell, Robert S., Brownsville, Tenn. Car-coupling	477,577	June 21	2139	532	59	1888
Russell, Sullivan J., Jersey City, N. J. Stemming device for flowers	477,704	June 28	2366	591	59	1950
Russell, William, assignor of one-half to S. M. Kenney, Hamilton, Canada. Machine for shocking grain	475,612	May 24	2748	697	59	1212
Russell, William R., assignor of one-half to E. E. Harrold, Adelaide, and W. Heithersay, Petersburg, South Australia. Plowshare	472,400	Apr. 5	618	157	59	116
Russell, Willis W., Norwood, and J. Walt, Cincinnati, Ohio. Shutter-fastener	472,551	Apr. 12	849	217	59	175
Rutherford, Norman F., Bathurst, New South Wales. Electric-arc lamp	477,273	June 21	1663	406	59	1793
Rutschman, George B., Philadelphia, Pa. Slate-pencil sharpener	472,313	Apr. 5	480	124	59	90
Ryan, Daniel W. (See Fietsch, Herman, Jr., assignor.)						
Ryan, Hugh, *et al.* (See Wickham, Horace, assignor.)						
Ryan, John, New York, N. Y. Wrench	476,079	May 31	3494	881	59	1372
Ryder, Andrew V., Unionport, Ohio. Spring harrow-tooth	474,461	May 10	936	240	59	828

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ryder, Charles J., Patchogue, N. Y. Safety-vessel for oils	472,910	Apr. 12	1364	350	59	274
Rylands, Dan. (See Husselbee, Alfred, assignor.)						
Rylands, Dan, Barnsley, England. Fruit-jar	472,401	Apr. 5	619	158	59	116
Rylands, Dan, Stairfoot, England. Receptacle for preserved meat	473,349	Apr. 19	2113	530	59	428
Rymer, William, Detroit, Mich. Four-way valve	477,706	June 28	2369	592	59	1951
S. H. Sinclair Company. (See Nelson, Peter H., assignor.)						
S. S. White Dental Manufacturing Company. (See How, Woodbury S., assignor.)						
Sachs, Albert, Hamilton, Ohio. Calendar	476,929	June 14	1089	263	59	1667
Sachs, Joseph, assignor of one-half to C. S. Van Nuis, New York, N. Y. Device for suspending trolley-wires	477,781	June 28	2484	622	59	1973
Sack, Carl, Berlin, Germany. Canterizing-point holder	474,972	May 17	1749	443	59	1001
Sackett, Frank R., *et al.* (See Jenks, Charles F., assignor.)						
Sackett, Joseph T. (See Blake and Sackett.)						
Sadd, Clarence R., Ellington, Conn. Cash-carrier	474,973	May 17	1750	443	59	1001
Sadler, Clarence W. (See Tibbits and Sadler.)						
Sadler, Samuel, St. Louis, Mo. Machine for rolling glass	474,484	May 10	966	249	59	834
Safety Car Heating and Lighting Company. (See Dixon, Robert M., assignor.)						
Safford, James B., Chicago, Ill., and F. W. Parsons, Boston, Mass. Draw-bar	474,862	May 17	1576	402	59	966
Safford, Joseph A., Boston, Mass. Leather splitting and skiving machine	477,456	June 21	1950	{483 484}	59	1849
Safford, Joseph A., Malden, Mass. Leather-splitting machine	477,457	June 21	1952	484	59	1850
Safford, Joseph A., Malden, Mass. Leather-skiving machine	477,458	June 21	1954	{484 485}	59	1850
Safford, Joseph A., Malden, Mass. Leather-skiving machine	477,459	June 21	1956	{485 486}	59	1850
Safford, Joseph A., Malden, Mass. Leather-rolling machine	477,460	June 21	1959	486	59	1851
Safford, Joseph A., Malden, Mass. Leather-splitting machine	477,461	June 21	1960	487	59	1851
Safford, Joseph A., Malden, Mass. Leather-splitting machine	477,462	June 21	1962	{487 488}	59	1851
Sage, George W., Plymouth, Mich. Spring air-gun	477,385	June 21	1845	454	59	1829
Sahlfeld, Fritz, Hanover, Germany. Fire-lighter and receptacle	474,190	May 3	473	114	59	729
Sahlin, Axel, New Brighton, assignor to Cyclone Pulverizer Company, New York, N. Y. Pulverizing-machine	475,471	May 24	2528	{643 644}	59	1168
Sailer, John M., assignor of one-half to H. H. Harris, Janesville, Wis. Wire-fence gate	473,855	Apr. 26	2940	741	59	608
Sailor, David A., assignor to Dudley E. Jones Company, Little Rock, Ark. Condenser for cotton-gins	474,799	May 10	1467	373	59	932
Saladee, Cyrus W., Cleveland, Ohio, assignor to J. W. Henney, Freeport, Ill. Saddle for cycles	475,613	May 24	2752	698	59	1213
Salenius, Erik G. N., Stockholm, Sweden. Shaking sieve for winnowers	472,275	Apr. 5	418	{107 108}	59	78
Sallas, Philip W., Jersey City, N. J. Inkstand	477,707	June 28	2371	592	59	1951
Salinger, Sally, New York, N. Y. Pocket attachment	476,687	June 7	690	170	59	1574
Salisbury Manufacturing Company. (See Fitch, Nathan T., assignor.)						
Salomon, Carl, Brunswick, Germany. Roasting coffee	474,531	May 10	1040	.....	59	848
Salzer, Henry. (See Laubheimer and Salzer.)						
Salzer, Henry, Baltimore, Md. Means for packing food articles	477,849	June 28	2602	652	59	1994
Salzer, Henry, Baltimore, Md. Preserving meat	477,850	June 28	2603	.....	59	1994
Sample, Newton C., Philadelphia, Pa. Plow	477,230	June 21	1591	390	59	1780
Sampson, George T., Dayton, Ohio. Clothes-drier	476,416	June 7	296	69	59	1496
Sampson, Gilbert A., *et al.* (See Beckwith, Theodore A., assignor.)						
Samsel, Elwood M., Marceline, Mo. Dehorning implement	474,696	May 10	1305	333	59	900
Samson, Elias, assignor of one-half to D. Loudon, New York, N. Y. Fruit or vegetable cutter or grater	477,826	June 28	2558	640	59	1985
Samstag, Frederick H. (See Devine, James E., assignor.)						
Samuel, David, New York, N. Y. Cap	473,784	Apr. 26	2825	710	59	586
Samuel, Lawrence, London, England. Door-check	473,785	Apr. 26	2825	710	59	586
Sanborn, A. W. (See Ives, Henry, assignor.)						
Sanche, Hercules, Detroit, Mich. Electric terminal	476,080	May 31	3496	881	59	1372
Sandall, John, New York, N. Y. Lubricator	472,827	Apr. 12	1244	319	59	248
Sandberg, Alexander, *et al.* (See Johansson, Samuel A., assignor.)						
Sandberg, John, *et al.* (See Johansson, Samuel A., assignor.)						
Sandberg, Peter, *et al.* (See Gunnarson, Wahltzer, assignor.)						
Sanders, Adolphus M., Reedsburg, Wis. Stitching-horse	476,898	June 14	1032	250	59	1656
Sanders, Alfred M., Morristown, Tenn. Broom	477,782	June 28	2485	622	59	1973
Sanders, George A., *et al.* (See Newman, Nelson, assignor.)						
Sanderson, Frederick, Chicago, Ill. Type-writing machine	475,894	May 31	3218	814	59	1315
Sanderson, James G., New York, N. Y. Drier	474,305	May 3	654	167	59	764
Sanderson, Samuel, Barton, Canada. Fishway	474,863	May 17	1578	402	59	966
Sandford, William P., *et al.* (See Spofford, Charles, assignor.)						
Sands, George, Beaver Falls, Pa. Car-brake shoe	472,955	Apr. 12	1439	367	59	287
Sanford, William R., Brooklyn, N. Y. Advertising-sign	473,239	Apr. 19	1932	486	59	391
Sanitary Manufacturing Company. (See Lewis, Leroy S., assignor.)						
Sankey, William J., assignor to S. C. Sweet, Des Moines, Iowa. Scaffold	472,514	Apr. 5	794	203	59	151
Sargent & Company. (See Page, Albert A., assignor.)						
Sargent, Richard S. (See Brower, John H., assignor.)						
Sater, Hans H., Madison, Wis. Plow-beam	474,465	May 10	969	249	59	834
Satter, Jakob, Annweiler, Germany. Folding rule	475,419	May 24	2446	624	59	1153
Sauer, John H., Stacy, Minn. Potato-digger	472,552	Apr. 12	850	{217 218}	59	175
Sault, Thomas, New Haven, Conn. Photographic film-holder	477,337	June 21	1763	432	59	1813
Saunders, Charles A. L. (See Saunders, Samuel L. and C. A. L.)						
Saunders, Emmett A., assignor to Goodyear's Metallic Rubber Shoe Company, Naugatuck, Conn. Rubber shoe	477,851	June 28	2605	652	59	1994
Saunders, Samuel L., Lynn, Mass. Spring for ships' berths, car-seats, &c	476,823	June 14	916	224	59	1633
Saunders, Samuel L. and C. A. L., Lynn, Mass. Book-mark	475,348	May 24	2334	598	59	1133
Saunders, Samuel Q., New Bridge, Oreg. Car-coupling	475,706	May 24	2888	730	59	1238
Saurbrey, George J., Columbus, Ohio. Hasp-seal	474,411	May 10	854	224	59	818
Sautter, Harry J. (See Curtis and Sautter.)						
Savage, Edmund, Albany, N. Y. Device for operating elevator-doors	474,066	May 3	292	71	59	694
Savage, James, Canarsie, N. Y. Steering mechanism for boats	475,420	May 24	2447	624	59	1153
Savage, William H. (See Robinson, William D., assignor.)						
Saville, Clifford, New York, N. Y. Food product	472,644	Apr. 12	980	.....	59	199
Savits, Samuel F., Plimpton, Ohio. Plow attachment	472,179	Apr. 5	267	70	59	50

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Sawtelle, Edwin. (See Deane, Herbert C., assignor.)						
Sawyer, Annette F., administratrix. (See Sawyer, William A.)						
Sawyer, William A., deceased; A. F. Sawyer, Danvers, Mass., administratrix. Hoop	474,101	May 3	346	82	59	704
Sawyer, William H., assignor to American Electrical Works, Providence, R. I. Electric cable	473,267	Apr. 19	1974	495	59	400
Sawyer, William H., assignor to American Electrical Works, Providence, R. I. Electric cable	473,351	Apr. 19	2118	532	59	428
Sawyer, William H., assignor to American Electrical Works, Providence, R. I. Electric cable	473,352	Apr. 19	2119	532	59	428
Sawyer, William H., assignor to American Electrical Works, Providence, R. I. Electric cable	473,353	Apr. 19	2120	532	59	429
Saxby, George, East Bloomfield, N. Y. Clevis	476,899	June 14	1034	251	59	1656
Saxton, Harry J., assignor to F. Kollas and J. V. Saxton, St. Louis, Mo. Shutter-fastener	473,888	Apr. 26	3000	757	59	619
Saxton, James V., *et al.* (See Saxton, Harry J., assignor.)						
Scanlan, Edward, Louisville, Ky. Combined stove and grate	474,191	May 3	474	114	59	730
Scarles, Benjamin, Clinton, Mass. Dress-shield or protector	475,803	May 31	3050	772	59	1282
Scelley, Mary L., New York, N. Y. Hair-waver	476,824	June 14	916	224	59	1633
Schaake, Henry, Baltimore, Md., assignor to C. B. Kendall, Newton, Mass. Press-stripper	473,889	Apr. 26	3002	757	59	690
Schade, Edmund A., assignor to Stanley Rule and Level Company, New Britain, Conn. Plane-iron	473,087	Apr. 19	1658	422	59	340
Schaefer, Adam. (See Richter and Schaefer.)						
Schaf, Joseph, Geneva, Nebr. Buckle	473,477	Apr. 26	2333	591	59	492
Schafhaus, Jean, assignor of one-half to G. Jetter, New York, N. Y. Distilling and rectifying apparatus	476,830	June 14	1091	{263 264}	59	1668
Scharfe, Gottlieb, Annapolis, Md. Apparatus for the manufacture of gas	473,350	Apr. 19	2115	531	59	428
Scharling, John H., assignor to Wymble Manufacturing Company, Newark, N. J. Decorating glass	472,230	Apr. 5	349	90	59	65
Schatz, Adam E., *et al.* (See Cudner, Gustavis L., assignor.)						
Schaum & Uhlinger. (See Wagner, August, assignor.)						
Schauman, John, Anaheim, assignor of one-half to H. Giese, Los Angeles, Cal. Orchard-cultivator	474,763	May 10	1403	356	59	919
Schauweker, William, Pittsburg, Pa. Nut-lock	473,642	Apr. 26	2614	658	59	545
Scheer, Louis. (See Reed, Theodore J., assignor.)						
Scheffer, David M., New Castle, Ind., assignor to Charles Truax, Green & Company, Chicago, Ill. Veterinary dental forceps	476,688	June 7	691	170	59	1574
Scheibel, Adolf, assignor to Berliner Maschinenbau Actien-Gesellschaft, vormals L. Schwartzkopff, Berlin, Germany. Torpedo-launching apparatus	472,553	Apr. 12	851	218	59	176
Scheibel, Charles, San Francisco, Cal. Sash-holder	473,354	Apr. 19	2121	532	59	429
Scherer, Charles, Brooklyn, assignor to Scheuer & Brother, New York, N. Y. Belt	472,402	Apr. 5	620	158	59	116
Scheuer & Brother. (See Scherer, Charles, assignor.)						
Schiele, John. (See Steiner and Schiele.)						
Schier, Adolph, Chicago, Ill. Soda-fountain	477,463	June 21	1966	488	59	1852
Schiller, Engelbert J., Grant, Nebr. Pump	475,895	May 31	3219	814	59	1315
Schindewolf, Henry. (See Friedly, Michael, assignor.)						
Schirmer, Valentine, New York, N. Y. Window	476,081	May 31	3498	{881 882}	59	1373
Schirra, Julius, Pittsburg, Pa. Cable-grip	475,896	May 31	3220	814	59	1316
Schissel, John G. (See Sellers and Schissel.)						
Schlagenhaufer, Charles. (See Blumer and Schlagenhaufer.)						
Schleicher, Schumm & Co. (See Winand, Paul A. N., assignor.)						
Schlich, Josef, Philadelphia, Pa. Combined carriage and cradle	472,314	Apr. 5	482	{124 125}	59	91
Schlosser, George J., Leadville, Colo. Wagon-jack	476,417	June 7	297	70	59	1496
Schmid, Carl, Seeburg, Germany. Apparatus for stretching the vertebral column	474,486	May 10	969	250	59	834
Schmid, Jakob. (See Guehm and Schmid.)						
Schmid, John, Eatontown, N. J. Artificial leg	473,671	Apr. 26	2655	669	59	553
Schmid, Mathew, Philadelphia, Pa. Building	474,647	May 10	1225	313	59	883
Schmidt, Carl, assignor to G. Gilliachewski, Berlin, Germany. Fireworks	475,897	May 31	3221	....	59	1316
Schmidt & Co., C. (See Ahrens and Oostendorp, assignors.)						
Schmidt, Frederick M., Brooklyn, N. Y. Electric self-winding clock	475,809	May 31	3070	777	59	1286
Schmidt, George A., Chicago, Ill. Toilet-soap fixture	472,315	Apr. 5	482	125	59	91
Schmidt, Henry. (See Glader and Schmidt.)						
Schmidt, Jacob A. (See Hamann and Schmidt.)						
Schmidt, Johann P., Jersey City, N. J. Machine for forming fuel-bricks	474,412	May 10	855	224	59	814
Schmidt, Otto, Berlin, Germany. Catch for rib-points of umbrellas	476,561	June 7	505	119	59	1537
Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Alizarine derivative	476,418	June 7	299	.....	59	1496
Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Alizarine dye	476,419	June 7	300	.....	59	1496
Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Alizarine derivative	476,420	June 7	301	.....	59	1497
Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Alizarine dye	476,491	June 7	409	.....	59	1517
Schmiedl, Anton J., assignor to E. B. Jordan, Philadelphia, Pa. Leather-beading machine	472,609	Apr. 12	933	241	59	191
Schmuck, Solomon H., Cleveland, Ohio. Washing-machine	477,578	June 21	2141	532	59	1888
Schmucker, Lewis G. (See Steel, Robert, assignor.)						
Schnarrenberger, John F., assignor to C. E. Funk, Chicago, Ill. Cash-register	476,900	June 14	1034	{251 252}	59	1657
Schneible, Carl A. (See Schneible, Joseph and C. A.)						
Schneible, Carl A., New York, and J. Schneible, Brooklyn, N. Y. Apparatus for aerating liquids	474,414	May 10	859	225	59	814
Schneible, Joseph. (See Schneible, Carl A. and J.)						
Schneible, Joseph, Brooklyn, and C. A. Schneible, New York, N. Y. Art of and apparatus for aerating liquids	474,413	May 10	857	224	59	814
Schneider, Frederick W. A., Toronto, Canada. Rheostat	475,898	May 31	3221	815	59	1316
Schneider, Leopold E., Galena, Ill. Permutation-lock	473,786	Apr. 26	2827	{710 711}	59	586
Schoch, Martin L., New Berlin, Pa. Bicycle-support	474,415	May 10	861	225	59	814
Schoder, Herman, *et al.* (See Sommer, Jacques, assignor.)						
Schoen, Charles T., Philadelphia, Pa. Car-bolster	475,023	May 17	1830	464	59	1016
Schoenfield, William A. (See Moomy, Samuel C., assignor.)						
Schofield, Albert B., Brooklyn, N. Y. Gage-knife	474,532	May 10	1042	267	59	848
Schofield, John, New York, N. Y. Fraud-preventive device for slot-machines	475,899	May 31	3222	815	59	1316

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Scholvien, Ludwig, assignor to J. D. Riedel, Berlin, Germany. Iodine derivatives of acetyl paramido-phenetole	472,828	Apr. 12	1245	.....	59	248
Schoonmaker, Cornelius L., Kingston, N. Y. Horse-boot	475,421	May 24	2448	624	59	1153
Schorn, Frederik M., Buffalo, N. Y. Steam-actuated valve	475,900	May 31	3223	815, 816	59	1316
Schrader, George H. F., New York, N. Y. Valve	473,672	Apr. 26	2656	669	59	554
Schrader, George H. F., New York, N. Y. Valve for pneumatic tires	473,673	Apr. 26	2658	670	59	554
Schrader, George H. F., New York, N. Y. Valved stopper for water-bags	476,421	June 7	301	70	59	1497
Schrader, John C., *et al.* (See Penniman, Russell S., assignor.)						
Schraud, George A., Seneca, Ill. Grain-separator	477,783	June 28	2487	622	59	1973
Schraudner, Frederick, assignor of one-half to G. A. V. Brecht, St. Louis, Mo. Meat-rack	478,025	June 28	2878	719	59	2048
Schrib, Juni, McGregor, Tex. Provision-safe	473,478	Apr. 26	2334	591	59	492
Schroeder, Richard D., San Francisco, Cal. Drink-mixer	473,643	Apr. 26	2615	658, 659	59	545
Schroeder, William S., Chicago, Ill. Grain-car door	475,422	May 24	2449	624	59	1153
Schubert, George, Walnut, Tex. Grain-binder	472,143	Apr. 5	207	55, 56	59	39
Schubert, George, Walnut, Tex. Compressor and discharging mechanism for grain-binders	473,021	Apr. 19	1556	396	59	323
Schubert, George, Walnut, Tex. Butt-board for grain-binders	473,550	Apr. 26	2468	625	59	518
Schubert, George, Walnut, Tex. Grain-conveyer for harvesters and binders	474,416	May 10	862	225	59	815
Schubert, George, Walnut, Tex. Grain-conveyer for binders, &c	475,423	May 24	2450	625	59	1153
Schubert, George, Walnut, Tex. Vertical gearing for harvesters and binders	476,901	June 14	1037	252	59	1657
Schubert, George, Walnut, Tex. Raising and lowering mechanism for harvesters	476,902	June 14	1041	253	59	1658
Schubert, Max, Cottbus, assignor of one-half to M. Kohn, Berlin, Germany. Water-closet cover	473,714	Apr. 26	2720	684, 685	59	565
Schuckers, Jacobs W., Philadelphia, Pa., assignor to Electric Typographic Company New York, N. Y. Mechanism for justifying composed lines of type	474,306	May 3	656	167, 168, 169, 170, 171	59	764
Schulenburg, Adolph, San Francisco, Cal. Concentrator	473,644	Apr. 26	2616	659, 660	59	546
Schulenburg, Albert R. (See Haskins, Schulenburg, and Chadwick.)						
Schulhoff, John F., New Bremen, Ohio. Tobacco-pipe	473,088	Apr. 19	1659	422	59	340
Schülke, Julius, Gross Lichterfelde, Germany. Regenerative hydrocarbon-lamp	474,192	May 3	475	115	59	730
Schulte, John R. (See Etzkorn, Herman C., assignor.)						
Schults, Charles A., Ames, N. Y. Counter-protector	472,771	Apr. 12	1167	299	59	233
Schultze, Gustav F. W., San Francisco, Cal. Coin-controlled apparatus	475,743	May 24	2953	748	59	1249
Schumacher, Adam J., Butte City, Mont. Fore-hearth	475,614	May 24	2755	698	59	1213
Schumacher, Gymnasium Company. (See Peterson, Theodore, assignor.)						
Schuman, John, assignor to J. S. Ellis, Detroit, Mich. Game apparatus	474,102	May 3	347	83	59	704
Schuttler Manufacturing Company. (See Higgins, Crafts W., assignor.)						
Schutz, Emile. (See Henderson and Schutz.)						
Schwab, Julius, *et al.* (See Wood, Joseph M., assignor.)						
Schwaner, Christian C., Winterset, Iowa. Winker-brace support and buckle	473,022	Apr. 19	1560	397	59	323
Schwartz, Charles, Brooklyn, N. Y. Spinning toy	476,825	June 14	917	224	59	1633
Schwedtmann, Ferdinand. (See Wagner and Schwedtmann.)						
Schwieger, Carl T. H., assignor to Siemens & Halske, Berlin, Germany. Conduit for electric railways	478,026	June 28	2880	720	59	2048
Schwitter, Charles, Brooklyn, N. Y. Watch-case pendant	477,338	June 21	1765	432	59	1814
Scofield, Charles H., *et al.* (See Parks, Dana, assignor.)						
Scofield, Charles H., assignor of one-half to J. T. Stevens and W. M. Philleo, Utica, N. Y. House-door letter-box	475,810	May 31	3072	777, 778	59	1287
Scollay, George W., New York, N. Y. Treating cotton-seed oil	474,864	May 17	1579	.....	59	967
Scolley, Thomas F., Memphis, Tenn. Measuring-funnel	477,072	June 14	1325	321	59	1715
Scorer, William, Havant, England. Photographic camera	476,562	June 7	506	119	59	1537
Scott, Adam. (See Grantham, Harry M., assignor.)						
Scott, Charles A., and J. C. Gardiner, Davey, Nebr. Earth-auger	472,403	Apr. 5	621	158	59	117
Scott, David W., Cozad, Nebr. Ditching-machine	473,023	Apr. 19	1560	397	59	324
Scott, Eben M., Shelton, Conn. Knockdown paper box	474,610	May 10	1166	296	59	872
Scott Electrical Manufacturing Company. (See Ward, Barton B., assignor.)						
Scott, Eugene C., Elderville, assignor of one-half to G. A. Kelly, Longview, Tex. Cotton-gin attachment	475,987	May 31	3360	847	59	1343
Scott, Eugene C., Elderville, assignor of one-half to G. A. Kelly, Longview, Tex. Roll-box for cotton-gins	475,988	May 31	3361	847	59	1343
Scott, George A. (See Bergmann and Scott.)						
Scott, George H., Worcester, Mass. Hydrocarbon-burner	472,231	Apr. 5	350	90	59	65
Scott, John. (See Richard, Jean E., assignor.)						
Scott, Josiah, Toledo, Ohio. Combined washer-plate and nut-lock	473,086	Apr. 19	1657	422	59	340
Scott, Matthew T., and J. L. Brasfield, assignors of one-third to W. G. Gore, Blue Springs, Mo. Car-coupling	475,707	May 24	2889	731	59	1238
Scott, Robert D., Pontiac, Mich. Two-wheeled vehicle	474,611	May 10	1167	296	59	872
Scott, Robert W., assignor of one-half to L. N. D. Williams, Philadelphia, Pa. Stocking and making same	473,787	Apr. 26	2830	711	59	587
Scott, Thomas T., and J. J. Sheafor, Mott, Cal. Sawdust-burning and air-blast apparatus	477,387	June 21	1847	454	59	1829
Scott, Walter, Plainfield, N. J. Printing-machine	472,554	Apr. 12	852	219	59	176
Scott, Walter, Hoosick Falls, N. Y. Mowing-machine	475,472	May 24	2530	644	59	1169
Scott, William. (See Young, Edward T., assignor.) (Reissue.)						
Scott, William W., assignor of one-half to J. F. Gilmore, Algona, Iowa. Tea-kettle	477,386	June 21	1847	454	59	1829
Scovill, George W., assignor of one-half to W. T. Thomson, Chicago, Ill. Safety-envelope	473,431	Apr. 19	2246	565	59	453
Scovill Manufacturing Company. (See Welton, Edwin D., assignor.)						
Scoville, Nathan S., Warsaw, N. Y. Salt-grainer	473,560	Apr. 26	2471	625	59	518
Scribner, Charles E. (See Seely and Scribner.)						
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Canopy telephone-exchange switchboard	472,956	Apr. 12	1440	367	59	987
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Testing apparatus for trunk-lines of telephone exchanges	473,089	Apr. 19	1660	422	59	341
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-switch	473,906	May 3	131	30	59	662
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. House-telephone system	474,067	May 3	294	72	59	694
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Circuit for test-batteries and cords of multiple switchboards	476,492	June 7	409	95	59	1517

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Electric-arc lamp	476,493	June 7	411	96	59	1517
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test-circuit for multiple switchboards	477,579	June 21	2142	532	59	1888
Scriven, Jeremiah A., New York, N. Y. Undergarment	472,555	Apr. 12	854	219	59	177
Scudder, Jotham. (See Kirkpatrick, Edgar T., assignor.)						
Seabury, Samuel, U. S. Navy. Means for propelling vessels	472,199	Apr. 5	295	77, 78	59	56
Seabury, Samuel, U. S. Navy. Breech-loading cannon	474,974	May 17	1751	444, 445	59	1001
Seaman, Henry B., New York, N. Y. Float bridge or platform	474,487	May 10	970	250	59	834
Searing, James E., Mount Vernon, N. Y. Frame for eyeglasses and spectacles	475,615	May 24	2756	698	59	1213
Searle, John Q. C., Chicago, Ill. Apparatus for heating railway-cars	474,417	May 10	864	226	59	815
Searls, Anson, Newark, N. J. Clip for dash-bars	475,811	May 31	3075	778	59	1287
Sears, Charles, South Evanston, Ill. Matrix-making machine	475,804	May 31	3051	772, 773, 774	59	1282
Sears, Charles, South Evanston, Ill. Matrix-making machine	475,805	May 31	3060	774, 775, 776	59	1284
Sears, Charles, South Evanston, Ill. Matrix-making machine	475,806	May 31	3065	776	59	1285
Sears, Charles, South Evanston, Ill. Type-writing attachment for matrix-making machines	475,807	May 31	3067	776	59	1286
Sears, Frederick W., Prophetstown, Ill. Heat-indicator	477,313	June 21	1732	424	59	1807
Sears, Willard T., assignor of one-half to W. M. Rhoads, Philadelphia, Pa. Pill or tablet machine	473,432	Apr. 19	2247	565, 566	59	453
Seavey, George F., Boston, Mass. Lamp-shade and holder for incandescent lamps	473,240	Apr. 19	1933	486	59	392
Sechrist, Albert, Denver, Colo. Electric-lighting system	476,422	June 7	304	70	59	1497
Secor, George D., South Bend, Ind. Doffing attachment for spinning-mules	475,808	May 31	3068	777	59	1286
Sectional Standards. (See Pitt, William, assignor.)						
Sedmihradsky, Adolf. (See Tabor and Sedmihradsky.)						
See, Horace. (See Yarrow, Alfred F., assignor.)						
Seely, John A., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Keyboard system for metallic circuits	476,494	June 7	412	96	59	1517
Seely, John A., Brooklyn, N. Y., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange apparatus	476,826	June 14	918	225	59	1633
Seely, John A., New York, N. Y., and C. E. Scribner, assignors to Western Electric Company, Chicago, Ill. Circuit for multiple-switchboard systems of telephone-exchanges	472,772	Apr. 12	1169	299	59	234
Sehon, Lee, Denver, Colo. Hotel-ledger	473,856	Apr. 26	2941	741	59	608
Selberling, John F., Akron, Ohio. Mowing-machine	476,318	June 7	135	32, 33	59	1464
Seibert, Nicholas, Boston, Mass. Sanding mechanism for cars	473,090	Apr. 19	1662	423	59	341
Seiffert, August, Frankenstein, Germany. Apparatus for melting tallow, wax, &c	477,023	June 14	1235	299	59	1697
Seifried, Samuel J., assignor to Munson Type Writer Company, Chicago, Ill. Type-writing machine	474,350	May 3	753	196, 197	59	781
Seiler, Carl, Philadelphia, Pa. Furniture attachment	472,200	Apr. 5	298	78	59	56
Sekofsky, Louis, San Francisco, Cal. Folding bed	473,355	Apr. 19	2122	533	59	429
Selden, Charles, Baltimore, Md. District-telegraph box	473,024	Apr. 19	1563	398	59	324
Selden, William H. (See Jolley, Jefferson D., assignor.)						
Self, T. P., *et al.* (See Johnson, Charles J. W., assignor.)						
Selkreg, John H., Ithaca, N. Y. Fly and insect escape for doors, windows, &c	476,025	May 31	3409	860	59	1354
Selleck, Silas E., West Troy, N. Y. Trammel	472,829	Apr. 12	1246	319	59	248
Selleck, William E., Chicago, Ill. Carrier	474,975	May 17	1755	445	59	1002
Sellers, Frederick L., and J. G. Schissel, Quimby, Iowa. Gate	475,708	May 24	2890	731	59	1238
Sellon, Charles A., Pike, N. Y. Pump-handle	476,082	May 31	3501	882	59	1373
Sellstrom, Gustaf F., Jamestown, N. Y. Meat-saw	473,130	Apr. 19	1738	439	59	354
Selover, Charles B., Owasco, N. Y. Baling-press	475,002	May 17	1709	456	59	1010
Semler, Max A., Kappel, Germany. Knitting-machine	475,989	May 31	3363	848	59	1343
Sencenbaugh, John J., assignor to E. C. Clay, Chicago, Ill. Combined inhaler and medicator	473,526	Apr. 26	2412	612	59	506
Senger, Henry, assignor of one-third to T. H. Musgrave, Baltimore, Md. Gymnastic striking-bag	475,252	May 17	2178	554	59	1085
Senger, Robert, New York, N. Y. Induline dye	475,616	May 24	2757	.....	59	1213
Sentman, Edwin E., Philadelphia, Pa. Roll-paper holder and cutter	476,689	June 7	694	170	59	1575
Sentman, Edwin E., Philadelphia, Pa. Roll-paper holder and cutter	477,580	June 21	2143	532	59	1888
Sequeira, Augustus, Hartford, Conn. Bicycle	474,764	May 10	1405	356	59	920
Sercombe-Bolte Manufacturing Company. (See Bolte, Frank H., assignor.)						
Sercombe, William, Hamworthy, Poole, England. Brick-kiln	472,404	Apr. 5	621	158, 159	59	117
Servus, Ferdinand, Berlin, Germany. Photographic shutter	473,356	Apr. 19	2123	533	59	429
Servus, Ferdinand, Berlin, Germany. Support for cameras or other purposes	473,357	Apr. 19	2126	533	59	430
Servus, Ferdinand, Berlin, Germany. Photographic camera	473,358	Apr. 19	2128	534	59	430
Servus, Ferdinand, Berlin, Germany. Plate-holder	473,359	Apr. 19	2131	534	59	430
Severio, Frank. (See Grisel and Severio.)						
Severy, Melvin L., assignor to C. F. Howe, Boston, and G. Kempton, Sharon, Mass, trustees. Type-writing machine	476,319	June 7	137	33, 34, 35	59	1464
Sewall, James H., Chicago, Ill., assignor to Consolidated Car Heating Company, Albany, N. Y. Heating apparatus for cars	477,464	June 21	1968	488	59	1853
Seward, Henry C., Budd's Lake, N. J. Mucilage bottle and brush	473,025	Apr. 19	1565	398	59	324
Seward, Simon E. V., and F. W. Leimberger, Petersburg, Va.; said Leimberger assignor to said Seward. Trunk	475,617	May 24	2758	699	59	1214
Seymour, Albert P. (See Pass and Seymour.)						
Seymour, Albert P., Syracuse, N. Y. Wire-cleat	476,827	June 14	919	225	59	1633
Seymour, Albert P., Syracuse, N. Y. Circuit-breaking insulator	476,828	June 14	920	225	59	1634
Seymour, Albert P., Syracuse, N. Y. Electric switch	476,829	June 14	921	225	59	1634
Seymour, Albert P., Syracuse, N. Y. Insulating-tube for electric conductors	476,964	June 14	1149	277	59	1679
Seymour, Henry J., Niagara, Canada. Pump-piston	475,812	May 31	3076	778	59	1287
Shafer, William A. (See Gard, Dalzell, and Shafer.)						
Shaffer, Henry E., Rochester, N. Y. Wick-raiser	474,488	May 10	971	250	59	835
Shaffer, John D., Salt Lake City, Utah Ter., assignor of one-half to W. A. Kinney. Animal-trap	473,967	May 3	132	30	59	663
Shaller, William W., assignor to Comstock, Cheney & Company, Ivoryton, Conn. Flange for piano-actions	473,241	Apr. 19	1934	486	59	392
Shaller, William W., assignor to Comstock, Cheney & Company, Ivoryton, Conn. Flange for pianos	473,242	Apr. 19	1936	487	59	392

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Shallenberger, Oliver B., Rochester, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Compensating alternating-current dynamo	476,830	June 14	922	226	59	1634
Shambaugh, Alexander H., assignor of one-half to I. Shambaugh, Avilla, Ind. Washing-machine	477,073	June 14	1326	321	59	1715
Shambaugh, Isaac. (See Shambaugh, Alexander H., assignor.)						
Shanafelt, John E., Lawrence, Kans. Revolving shield for cars	475,157	May 17	2030	512	59	1055
Shanahan, James, Port Gibson, Miss. Wood-sawing machine	476,831	June 14	924	226	59	1634
Shane, George P., *et al.* (See Lucas, Austin H., assignor.)						
Shanks, John, Barrhead, Scotland. Flushing device for urinals and closets	473,715	Apr. 26	2721	685	59	565
Shannon, Adam E., Findlay, Ohio. Writing-desk	475,813	May 31	3077	778	59	1288
Shannon, Jefferson C., Round Rock, Tex. Gate	472,080	Apr. 5	105	29	59	21
Shannon, John, Pittsburg, Pa. Wood-graining machine	474,307	May 3	668	171, 172	59	765
Shants, Dilman B., Berlin, Canada. Machine for polishing buttons	477,274	June 21	1664	406	59	1793
Sharp, Abel B., assignor to himself and C. Naeglin, Durango, Colo. Boring and tenoning machine	475,158	May 17	2032	512	59	1056
Sharp, George H. (See Gates and Sharp.)						
Sharp, James L., New Rochelle, N. Y. Gas-stove	472,144	Apr. 5	211	56	59	39
Sharp, Philip H., Philadelphia, Pa. Apparatus for forming sand molds for pipes, &c	475,349	May 24	2334	598, 599	59	1133
Sharp, William, Allegheny, Pa. Vehicle-spring	476,931	June 14	1094	264	59	1668
Sharpneck, Eliel L., Denver, and W. G. Shedd, Leadville, Colo. Securing carbons	473,479	Apr. 26	2335	591	59	492
Shattuc, William B., Cincinnati, Ohio. Railway-ticket	473,592	Apr. 26	2538	640	59	531
Shattuck, Burt E., assignor to L. B. Gatcomb Company, Boston, Mass. Banjo	476,083	May 31	3502	882	59	1374
Shaver, George F. (See Sherman, Stephen F., assignor.)						
Shaw, Andrew M., Larkin, Kans. Stretcher for wire fences	474,068	May 3	295	72	59	694
Shaw, Arthur J., Spokane, Wash. Means for locking and unlocking mail-pouches	477,963	June 28	2775	695	59	2029
Shaw, Edgar, Swampscott, Mass. Lasso	474,103	May 3	347	83	59	704
Shaw, Enoch J., Boston, Mass. Street-sign	477,873	June 28	2645	661	59	2002
Shaw, Frank. (See Childs, William A., assignor.)						
Shaw, George E., Berlin, Wis. Commode	473,360	Apr. 19	2132	535	59	431
Shaw, Herbert S., Dudley, Mass. Wire-stretcher	473,527	Apr. 26	2413	612	59	506
Shaw, Philip B., *et al.* (See Jenks, Charles F., assignor.)						
Shaw, Samuel J., assignor of two-thirds to E. H. Smith and M. E. Hunter, Boston, Mass. Furniture-beater	477,388	June 21	1849	455	59	1830
Shaw, Thomas F. (See Corbett, Joseph, assignor.)						
Shaw, William C., Chicago, Ill. Cuff-holder	474,648	May 10	1226	314	59	884
Shawhan, Jabez F., assignor, by mesne assignments, to F. B. Dickerson, Detroit, Mich. Electric-railway motor	475,970	May 31	3333	841	59	1337
Shea, J. G. (See Crumlic, William, assignor.)						
Shea, Michael J., *et al.* (See Beckwith, Theodore A., assignor.)						
Sheafor, Jacob J. (See Scott and Sheafor.)						
Shealy, Fred, Jr., Bucyrus, Ohio. Sash-holder	472,276	Apr. 5	419	108	59	79
Shedd, William G. (See Sharpneck and Shedd.)						
Sheedy, Dennis, Denver, Colo. Apparatus for separating matte from slag	475,522	May 24	2613	665	59	1185
Sheeley, Rebecca C., Lyons, Kans. Canning or preserving jar	476,690	June 7	695	170	59	1575
Sheffield Velocipede Car Company. (See Henderson, James, assignor.)						
Sheffield, William H., Brooklyn, N. Y. Letter-box	477,964	June 28	2776	695	59	2029
Shepard, Alfred L., London, England. Electric-arc lamp	474,966	May 3	581	143, 144, 145	59	751
Shepard, Amos, Plantsville, Conn. Meat-cutter	473,166	Apr. 19	1796	453	59	366
Shepard, Herbert L., Cincinnati, Ohio. Gearing	475,901	May 31	3225	816	59	1317
Shepardson, Arioul A., Worcester, Mass. Grate	474,462	May 10	937	241	59	828
Shepherd, David C., and L. C. Ballard, Gardiner, Me. Apparatus for loading vessels	475,814	May 31	3078	779	59	1288
Shepherd, Francis H., assignor to J. S. Faris, Davenport, Iowa. Paste-making machine	476,320	June 7	145	35	59	1466
Sheppard, Charles S., Pittston, Pa. Coal-drill	473,788	Apr. 26	2832	711	59	587
Sheppard, James W., Rochester, N. Y. Sash-balance	473,129	Apr. 19	1737	439	59	354
Sheppard, Mary A., *et al.* (See Buhoup, John J., assignor.)						
Sheppard, William J., *et al.* (See Buhoup, John J., assignor.)						
Shepperd, Sylvanus D., assignor to Backus Water Motor Company, Newark, N. J. Water-motor	474,347	May 3	745	194	59	780
Sheridan, James. (See Breden and Sheridan.)						
Sherman, George H., assignor of one-half to P. C. Dulitz, Detroit, Mich. Hydraulic air-compressor	475,251	May 17	2176	554	59	1085
Sherman, Stephen F., New York, assignor of one-half to G. F. Shaver, Yonkers, N. Y. Telephone	476,026	May 31	3410	861	59	1354
Sherwin-Williams Company. (See Roberts, John W., assignor.)						
Sherwood, Lincoln B. (See Tarpenning and Sherwood.)						
Sherwood Manufacturing Company. (See Hart, Thomas J., assignor.)						
Shew, Matt, *et al.* (See Morgan, Joseph U., assignor.)						
Shields, Helen D. (See Hine, Charles M., assignor.)						
Shigley, Joseph L., Hart, Mich. Sap-bucket cover	472,180	Apr. 5	268	70	59	50
Shiley, Richard G., Marietta, Ohio. Drawing-board	475,350	May 24	2336	599	59	1133
Shimer, John N. M., Philadelphia, Pa. Spade and pick	474,697	May 10	1307	334	59	900
Shimer, Porter W., Easton, Pa. Microscopic sediment-filter	474,267	May 3	586	145	59	751
Shimer, Samuel J., Milton, Pa. Cutter-head	476,563	June 7	507	119, 120	59	1537
Shindle, Michael G., Mountville, Pa. Separating corn-sheller	472,181	Apr. 5	269	70	59	51
Shiner, Joseph, *et al.* (See Lockwood, Morris C., assignor.)						
Shipe, Walter S., Minerva, Ohio. Construction of boilers	473,167	Apr. 19	1798	454	59	366
Shipe, Walter S., assignor to J. Morrison, Toronto, Canada. Machine for heading water-boilers	472,957	Apr. 12	1441	367, 368	59	288
Shipley, Thomas, assignor of one-half to L. J. Dolle, Cincinnati, Ohio. Apparatus for making ice	476,832	June 14	926	226	59	1634
Shobe, Abraham A., and W. Embley, Jerseyville, Ill. Insulating-support for electric-railway wires	474,049	May 3	268	65	59	689
Shoemaker, John, Putneyville, Pa. Lamp-chimney attachment	472,405	Apr. 5	623	159	59	117
Sholes, Frederick, St. Louis, Mo. Type-writing machine	474,533	May 10	1043	267	59	848
Shorey, Samuel W., Boston, Mass. Button	474,150	May 3	405	99	59	717
Short Electric Railway Company. (See Short, Sidney H., assignor.)						
Short, Sidney H., Cleveland, Ohio. Armature for dynamo-electric machines	473,363	Apr. 19	2135	536	59	431
Short, Sidney H., Cleveland, Ohio. Armature for dynamo-electric machines	473,364	Apr. 19	2138	536	59	432

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Short, Sidney H., Cleveland, Ohio. Gearless motor for electric-railway cars	473,365	Apr. 19	2139	536	59	432
Short, Sidney H., Cleveland, Ohio. Armature for electric generators or motors	473,366	Apr. 19	2141	537	59	433
Short, Sidney H., Cleveland, Ohio. Dynamo-electric machine	473,367	Apr. 19	2142	537	59	433
Short, Sidney H., Cleveland, Ohio. Gearless propelling mechanism for electric-railway cars	473,368	Apr. 19	2144	537	59	433
Short, Sidney H., Cleveland, Ohio. Electric locomotive	473,674	Apr. 26	2661	670	59	554
Short, Sidney H., Cleveland, Ohio. Arresting electric locomotives	474,031	May 3	231	56	59	692
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Multiple-arc railway system	473,361	Apr. 19	2133	535	59	431
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Trolley-switch	473,362	Apr. 19	2134	535	59	431
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Armature for dynamo-electric machines	475,159	May 17	2034	513	59	1056
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Electric-railway motor	475,160	May 17	2035	513	59	1056
Shortt, Edward G., Carthage, assignor to C. G. Emery, trustee, New York, N. Y. Automatic brake mechanism	473,789	Apr. 26	2833	712	59	587
Shrawder, John S., Norristown, assignor to Vacuum Door Check Company, Collegeville, Pa. Pneumatic door check and closer	476,932	June 14	1094	264, 265	59	1669
Shrike, John J., *et al.* (See Ashworth, Granville H., assignor.)						
Shuart, Benjamin F., Billings, Mont. Scraper	476,661	June 7	697	171	59	1575
Shultz, Daniel J., Spruce Creek, Pa. Lock for buggy-tops	474,193	May 3	478	115	59	730
Shultz, Llewellyn B., St. Louis, Mo. Flue-brush	477,074	June 14	1327	321	59	1716
Shuman, Charles, St. Louis, Mo. Letter-box	476,692	June 7	697	171	59	1575
Sichel, Albert, New York, N. Y. Zinc-foil and manufacturing the same	473,790	Apr. 26	2835	.....	59	588
Sichel, Albert, New York, N. Y. Zinc-foil and manufacturing the same. (Reissue)	11,241	May 24	2956	.....	59	1250
Sickels, Frederick E., Kansas City, Mo. Method of and means for building and anchoring bridge-piers	472,277	Apr. 5	420	108	59	79
Siddell, Job B. (See Wilson, Alexander, assignor.)						
Sidenstricker, William H., Moberly, Mo. Door-spring	474,268	May 3	588	146	59	751
Sidman, George D., Washington, D. C. House-door letter-box	475,473	May 24	2331	645	59	1189
Sidway, Henry T., Chicago, Ill. Biscuit-cutter	475,815	May 31	3080	779	59	1288
Siegel, John, Montreal, Canada. Pencil-sharpener	474,418	May 10	866	226	59	815
Siemens Brothers & Company. (See Williamson, Alfred D., assignor.)						
Siemens, Carl, St. Petersburg, Russia. Metallurgical furnace	475,351	May 24	2337	599	59	1134
Siemens & Halske. (See Du Bois-Reymond, Alard E., assignor.)						
Siemens & Halske. (See Henneberg, Hermann O., assignor.)						
Siemens & Halske. (See Hoffmann, Carl, assignor.)						
Siemens & Halske. (See Philipsborn and Reichel, assignors.)						
Siemens & Halske. (See Schwieger, Carl T. H., assignor.)						
Siemens & Halske. (See Wesslau, Bror H., assignor.)						
Sifferlen, Ernest. (See Haberman and Sifferlen.)						
Sigsbee, Charles D., U. S. Navy, T. S. Hayward, and F. S. Anderson, Easton, Md. Electric-current regulator	477,708	June 28	2371	593	59	1951
Silberberg, Nathan, Jassy, Roumania. Winding mechanism for watches	473,675	Apr. 26	2662	670	59	554
Silberzahn, Charles and C. A., West Bend, Wis. Hay-tedder fork	473,243	Apr. 19	1937	487	59	392
Silberzahn, Charles A. (See Silberzahn, Charles and C. A.)						
Silen, Eric, Kelso, Wash. Combined churn and butter-worker	472,830	Apr. 12	1247	319	59	249
Silvey, William L., Lima, Ohio. Secondary battery	477,914	June 28	2707	678	59	2014
Silvey, William L., Lima, assignor to Dayton Manufacturing Company, Dayton, Ohio. Fare-register	472,292	Apr. 5	351	91	59	66
Silvey, William O., Middleport, Ohio. Harrow attachment for plows	474,269	May 3	589	146	59	752
Silvey, William O., Middleport, Ohio. Portable oven	475,161	May 17	2038	514	59	1057
Simis, Cæsar, Brooklyn, N. Y. Hat polishing and cleaning machine	477,965	June 28	2777	696	59	2029
Simmers, Charles S., Schuylkill, Pa. Cold-saw for metal	473,480	Apr. 26	2336	591	59	493
Simmonds, Francis N., San Francisco, Cal. Punch	473,791	Apr. 26	2837	712	59	588
Simmons, Frank W., Blue Mound, Kans. Handle for wrenches or other tools	472,556	Apr. 12	855	219	59	177
Simmons, Frank W., Blue Mound, Kans. Wrench	476,693	June 7	700	171	59	1576
Simmons, James D., Hagerstown, Md. Cultivator	476,834	June 14	930	227	59	1635
Simmons, Ross C., East Tawas, Mich. Refrigerator	475,816	May 31	3081	780	59	1289
Simms, George W. M., De Soto, Mo. Car-mover	475,902	May 31	32..	816	59	1317
Simms, William, Minneapolis, Minn. Refrigerator	472,773	Apr. 12	1171	300	59	234
Simons, Frederick W., assignor of one-half to C. Wilson, Philadelphia, Pa. Knitting hose	476,084	May 31	3503	883	59	1374
Simons, Mark. (See Stromberg, Alfred, assignor.)						
Simpson, Charles E., assignor of one-half to W. Q. Adams, Portsmouth, Ohio. Interlocking block for building, paving, &c	472,590	Apr. 12	902	211	59	185
Sims, Frederick L. H., Toronto, Canada. Type-writing machine	476,833	June 14	929	227	59	1635
Sims, James, D. J. Wood, and J. W. Sims, Bentonville, Ark. Bed-spring	476,835	June 14	931	227	59	1635
Sims, John W. (See Sims, Wood, and Sims.)						
Sincennes, Charles H. D., Montreal, Canada. Rolling step-ladder	476,564	June 7	509	120	59	1538
Sinclair, William W., Phœnix, N. Y. Table or stool top or chair-bottom	472,911	Apr. 12	1366	350	59	274
Singer, Albert E. (See Kienardt, John A., assignor.)						
Singer Manufacturing Company of New Jersey. (See Allen, Edward B., assignor.)						
Singer Manufacturing Company of New Jersey. (See Greene, James G., assignor.)						
Sinn, Augustus. (See Geschwindner, Charles, assignor.)						
Sinning, Charles, assignor to Sinning Lasting Machine Company, St. Louis, Mo. Tacking mechanism for lasting-machines	476,695	June 7	702	172	59	1576
Sinning Lasting Machine Company. (See Sinning, Charles, assignor.)						
Sir Joseph Whitworth & Company. (See Canet, Jean B. G. A., assignor.)						
Sirrine, John, Trumansburg, N. Y. Ice-cream freezer	475,817	May 31	3083	780	59	1289
Sisum, William H. H., Brooklyn, N. Y. Machine for making wire cords and cables	477,784	June 28	2488	622, 623	59	1973
Sitlington, Thomas O. O., Independence, Mo. Earth-scraper	475,818	May 31	3084	780, 781	59	1289
Sittig, Lena, Brooklyn, N. Y. Skirt-protecting garment	476,761	June 7	799	196	59	1597
Skillin, James L., New York, N. Y. Phonograph	472,684	Apr. 12	1035	267, 268	59	908
Skinner, John, Flint, Mich. Mixing-machine for concrete, mortar, &c	475,618	May 24	2759	699	59	1214
Skinner, Joseph W. (See Bunsen, William M., assignor.)						
Skyrme, William, San Francisco, Cal. Safety-car	477,075	June 14	1328	322	59	1716
Slack, James M., deceased, (J. M. Slack, Bristol, administratrix,) G. J. Graff and J. B. Paxton, Philadelphia, Pa.; said Paxton assignor to said J. M. Slack, administratrix, and G. J. Graff. Circular-knitting machine	474,330	May 3	708	183, 184, 185, 186	59	773

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Slack, Julia M., administratrix. (See Slack, Graff, and Paxton.)						
Slagle, Lemuel H., East Brady, Pa. Machine for wiring fence-pickets	443,792	Apr. 26	2837	713	59	588
Slama, Oscar von, Jersey City, N. J. Composition for use as ornamental moldings, &c	474,865	May 17	1581	.....	59	967
Slaughter, Triplett L., and E. C. Drew, Arcadia, La. Detachable planer-bit for saws	473,968	May 3	134	30	59	663
Slaymaker, Samuel R., assignor to himself, J. F. Barry, and W. F. Troast, Lancaster, Pa. Padlock	476,495	June 7	413	96	59	1518
Sleeper, Charles W., Island Pond, Vt., assignor to Sleeper Machine Company, of Maine, Machine for heading cans	474,534	May 10	1045	267, 268	59	848
Sleeper, George W., assignor to N. L. Millard, North Adams, Mass. Upper	475,619	May 24	2760	699	59	1214
Sleeper Machine Company. (See Sleeper, Charles W., assignor.)						
Sleno, Leonard, West Bay City, assignor of two-thirds to J. H. Davis, W. Burnett, Bay City, and A. Forrest, West Bay City, Mich. Valve for safety-plugs for steam-boilers	472,233	Apr. 5	353	91	59	66
Sloan, Frank B. (See Clarkson, Frank S. assignor.)						
Sloan, Wesley, Peoria, Ill. Furnace	473,268	Apr. 19	1975	495	59	400
Small, Frank E., Sing Sing, N. Y. Squirt oil-can	477,561	June 21	2145	533	59	1889
Small, Henry J., Sacramento, Cal. Label-holder	472,278	Apr. 5	422	109	59	79
Smalley, Martin D., Chicago, Ill. Bicycle	472,487	Apr. 5	749	191	59	142
Smead, Edwin B., Hartford, Conn. Detachable fender for vehicle-wheels	473,971	May 3	138	31	59	664
Smidt & Pupke Manufacturing Company. (See Egge, Frederick, assignor.)						
Smiser, James W., Cynthiana, Ky. Bier	476,423	June 7	305	71	59	1497
Smith, Albert, New York, N. Y. Can for the manufacture of ice	472,407	Apr. 5	625	160	59	117
Smith, Albion, Richmond, Ind. Game-counter	475,162	May 17	2040	514	59	1057
Smith, Alfred E., Bronxville, N. Y. Journal-bearing	475,990	May 31	3364	848	59	1343
Smith, Amelia K. (See Smith, Ezra B., assignor.)						
Smith, August P., *et al.* (See Lawing, Samuel N., assignor.)						
Smith, Austin J., Coal City, Ill. Bridge-gate	474,420	May 10	869	227	59	816
Smith, Charles A., Lynn, Mass. Fire-escape	476,965	June 14	1151	277, 278	59	1679
Smith, Charles A., assignor of one-half to G. Worts, Toledo, Ohio. Receptacle for feeding grain to live stock	472,316	Apr. 5	484	125	59	91
Smith, Charles G., Detroit, Mich. Excelsior-cutting machine	474,866	May 17	1581	402	59	967
Smith, Charles H., Lansingburg, N. Y. Signal for street-cars	475,474	May 24	2533	645	59	1169
Smith, Charles W., Norwalk, Ohio. Curtain-fixture	477,232	June 21	1595	391	59	1780
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	476,565	June 7	510	121	59	1538
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	476,566	June 7	512	121	59	1539
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	476,567	June 7	514	121	59	1539
Smith, Dwight L., assignor of one-half to E. A. Smith, Waterbury, Conn. Buckle	477,024	June 14	1235	299	59	1697
Smith, Earl A. (See Smith, Dwight L., assignor.)						
Smith, Earle H., New York, N. Y. Sewing-machine	473,894	Apr. 26	3009	759	59	621
Smith, Edward F., Cincinnati, Ohio. Electric-arc lamp	476,425	June 7	307	71	59	1497
Smith, Elias, Peoria, Ill. Velocipede-saddle	477,277	June 21	1668	407	59	1794
Smith, Elijah W. (See Jones, Wiley M., assignor.)						
Smith, Elizabeth L. (See Smith, Hiram M., assignor.)						
Smith, Eugene. (See Eccleston, Noyes B., assignor.)						
Smith, Eugene C., assignor to Universal Lock Company, New York, N. Y. Lock	473,857	Apr. 26	2942	742	59	609
Smith, Eugene C., assignor to Universal Lock Company, New York, N. Y. Cylinder-lock	474,348	May 3	747	194, 195	59	780
Smith, Eugene C., assignor to Universal Lock Company, New York, N. Y. Lock	476,086	May 31	3505	884	59	1374
Smith, Eugene H., *et al.* (See Shaw, Samuel J., assignor.)						
Smith, Evelyn L., and G. C. H. Foster, assignors to Crown Electric Manufacturing Company, Bridgeport, Conn. Socket for incandescent lamps	477,786	June 28	2492	624	59	1974
Smith, Ezra B., assignor to A. K. Smith, Cincinnati, Ohio. Fifth-wheel	474,151	May 3	407	99	59	717
Smith, Ezra H., *et al.* (See Koontz, John P.)						
Smith, Ferdinand C. (See Frigon, Louis A., assignor.)						
Smith, Frank H., assignor to Ideal Toy Company, Chicago, Ill. Game apparatus and sample-exhibitor	472,408	Apr. 5	626	160	59	117
Smith, George, London, England. Curtain supporter and fittings	473,131	Apr. 19	1739	439	59	354
Smith, George A., Paulding, Ohio. Grain cleaner and scourer	473,794	Apr. 26	2841	713, 714	59	588
Smith, George E., Glastonbury, Conn. Apparatus for hardening cutlery	477,785	June 28	2491	624	59	1974
Smith, George W., Montpelier, Ind. Swing	473,168	Apr. 19	1800	454	59	366
Smith, Harper F., assignor to W. F. McCully, Philadelphia, Pa. Gas-burner	476,694	June 7	701	171	59	1576
Smith, Heman P., Brooklyn, N. Y., assignor to B. H. Toquet, Westport, Conn. Blackboard-compasses	473,244	Apr. 19	1938	487	59	393
Smith, Henry. (See Giesler and Smith.)						
Smith, Henry, London, England. Catamenial sack	475,820	May 31	3090	782	59	1290
Smith, Henry J. (See Krotz, Alvaro S., assignor.)						
Smith, Hiram M., assignor to E. L. Smith, Richmond, Va. Straw or feed cutter	477,339	June 21	1766	432, 433	59	1814
Smith, Isaac E., St. Johnsville, N. Y. Sleeping and parlor car coupon-ticket	475,424	May 24	2453	625	59	1154
Smith, Isaac I., Setauket, N. Y. Machine for attaching knobs to shanks	473,091	Apr. 19	1663	423	59	341
Smith, Isaiah, Nashville, Tenn. Scaffold	472,406	Apr. 5	624	159	59	117
Smith, James B., Falls City, Nebr. Wrench	473,026	Apr. 19	1567	399	59	325
Smith, James H. (See Walton and Smith.)						
Smith, James H., Little Rock, Ark. Peach cutter and stoner	474,927	May 17	1668	426	59	986
Smith, James H., Longsight, A. Goddard, Stockport, L. Higginbottom and T. Mannock, Longsight, assignors to Fustian Cutting Machine Company, Limited, Salford, England. Apparatus for cutting pile fabrics	475,620	May 24	2761	700	59	1214
Smith, James H., Longsight, A. Goddard, Stockport, L. Higginbottom and T. Mannock, Longsight, assignors to Fustian Cutting Machine Company, Limited, Salford, England. Knife for cutting pile fabrics	475,709	May 24	2891	731	59	1239
Smith, James I. (See Clements and Smith.)						
Smith, James J. (See Philes, Charles E., assignor.)						
Smith, Jay H., Rochester, N. Y. Sticky fly-paper	476,087	May 31	3508	884	59	1375
Smith, Jeremiah W., Athens, Ga. Gin-saw gummer	475,621	May 24	2763	700	59	1215
Smith, John. (See Harrison, William T., assignor.)						
Smith, John C. (See Spreng and Smith.)						
Smith, John J. C. and V. E., Passaic, N. J.; said John J. C. Smith assignor to said V. E. Smith. Apparatus for casting metals	477,231	June 21	1592	390	59	1780
Smith, John M., assignor of one-half to P. H. Gunckel, Minneapolis, Minn. Flax-puller	472,234	Apr. 5	355	91, 92	59	66
Smith, John S., London, England. Elastic tire	476,085	May 31	3505	883	59	1374
Smith, John T., Sabula, Iowa. Snap-hook	472,718	Apr. 12	1095	281	59	220
Smith, John T., Heron Lake, Minn. Flax and hemp brake	475,819	May 31	3087	781, 782	59	1290

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Smith, Joshua, Casco, Mich. Floating tea or coffee extractor	476,568	June 7	515	121	59	1539
Smith, Kirk A., *et al.* (See Wead, Andrew M., assignor.)						
Smith, Levi F., Philadelphia, Pa. Furnace-damper regulator	477,275	June 21	1665	407	59	1794
Smith, Levi F., Philadelphia, Pa. Pipe-damper regulator	477,276	June 21	1667	407	59	1794
Smith, Peter, Detroit, Mich. Feed-water heater for fire-engines	473,593	Apr. 26	2540	641	59	531
Smith, Richard, Sherbrooke, Canada. Agitator	473,530	Apr. 26	2415	613	59	507
Smith, Roswell T., Nashua, N. H. Butt-hinge	477,465	June 21	1969	488	59	1853
Smith, S. L. (See Rush, William, assignor.)						
Smith, Sherman L., Plymouth, Pa. Cooling apparatus	473,793	Apr. 26	2839	713	59	588
Smith, Stephen D., Spotswood, N. J. Car-coupling	472,958	Apr. 12	1442	368	59	288
Smith, Stephen R., assignor of one-half to E. F. Hilgard, Belleville, Ill. Parcel-carrier	473,433	Apr. 19	2248	566	59	453
Smith, Thomas, Allegheny, Pa. Movable rig or derrick	474,463	May 10	937	241	59	828
Smith, Thomas H., Owosso, Mich. Adjustable brace for slat and wire and picket fences	478,027	June 28	2881	720	59	2048
Smith, Thomas M., Baltimore, Md. Making fertilizers	474,419	May 10	868	226	59	816
Smith, Victor E. (See Smith, John J. C. and V. E.)						
Smith, Walton D., Prophetstown, Ill. Bag fastener and support	473,969	May 3	135	31	59	663
Smith, Wilbur F. (See Hinman and Thompson, assignors.)						
Smith, Will E., Chicago, Ill. Coasting-railway	474,351	May 3	760	198	59	763
Smith, William. (See Johnson and Smith.)						
Smith, William, *et al.* (See Dunn, Claudius A., assignor.)						
Smith, William, D. Marks, and R. Watson, Keighley, England. Tool for cutting keyways in wheel-hubs	475,352	May 24	2339	600	59	1134
Smith, William B., Savannah, Tenn. Metaphone or transposition-indicator	475,253	May 17	2179	555	59	1085
Smith, William C., Goshen, Ind. Handle for bicycles	476,424	June 7	306	71	59	1497
Smith, William D. C., Sulphur City, assignor to Z. Le Boeuf and T. Mayo, Calcasieu Parish, La. Letter-box	476,321	June 7	147	36	59	1466
Smith, William F. (See Wherry and Smith.)						
Smith, William J. (See Housman, Ernest, assignor.)						
Smith, William J., assignor to C. S. Larabee, trustee, Boston, Mass. Machine for boring and shaping	473,027	Apr. 19	1569	399	59	325
Smock, Calvin E. (See Chase and Smock.)						
Smolley, Silvanus L., and W. H Bonwell, Jr., Brookville, Ind. Wind-wheel	474,308	May 3	670	172, 173	59	766
Smurthwaite, Thomas. (See Davis, Orin C., assignor.)						
Smyser, Louis B., Chicago, assignor to Buda Foundry and Manufacturing Company, Harvey, Ill. Car-wheel	474,421	May 10	870	227	59	816
Snead, Charles S., assignor to Snead & Co. Iron Works, Louisville, Ky. Sand-molding machine	475,523	May 24	2614	665	59	1185
Snead & Co. Iron Works. (See Snead, Charles S., assignor.)						
Sneckner, William, New York, N. Y. Sleeping-car	477,157	June 14	1444	354	59	1739
Snedekor, Charles T., assignor to Washburn & Moen Manufacturing Company, Worcester, Mass. Electric conductor	477,787	June 28	2493	624	59	1974
Snell, George I., and L. Gillette, Little Falls, N. Y. Horse-collar	476,569	June 7	516	122	59	1539
Snell, Jacob A., Barrington, R. I. Brick-cutting machine	477,915	June 28	2709	678	59	2014
Snell, Levi W., assignor of one-half to F. W. Fix, Jr., Utica, N. Y. Cake-cutter	477,278	June 21	1669	407	59	1795
Snellenberger, Cora B. and J., Paulding, Ohio. Feed-trough	474,867	May 17	1582	403	59	967
Snellenberger, Jonathan. (See Snellenberger, Cora B. and J.)						
Snider, Gabriel F., Abingdon, Iowa. Burglar-alarm and door-closing device	475,903	May 31	3230	817	59	1317
Snively, Russell H., Louisville, Ky. Switch for street-railways	475,475	May 24	2534	645	59	1170
Snow, Eugene A., assignor to Electric Engineering and Supply Company, Syracuse, N. Y. Electric switch	477,612	June 21	2201	546	59	1899
Snow, Thomas, Batavia, Ill. Windmill	472,557	Apr. 12	857	220	59	177
Snowden, Thomas J. (See Snowden, William D. and T. J.)						
Snowden, William D. and T. J., Lerna, Ill. Fence	473,092	Apr. 19	1665	423	59	342
Snyder, Oswill P., assignor of two-thirds to O. W. Houck and F. Rasner, Bangor, Pa. Hose-coupling	475,254	May 17	2180	555	59	1086
Snyder, Waldo V., Canton, Ohio. Toy	473,970	May 3	137	31	59	664
Snyder, Waldo V., Canton, Ohio. Tricycle	475,622	May 24	2764	700	59	1215
Snyder, William D., Chicago, Ill. Folding bedstead	472,558	Apr. 12	858	220	59	177
Snyder, William D., Chicago, Ill. Folding bedstead	474,868	May 17	1584	403	59	967
Snyder, William D., Chicago, Ill. Wardrobe-bedstead	474,869	May 17	1584	403	59	968
Sobey, William, assignor to J. I. Case Plow Works, Racine, Wis. Cultivator	474,309	May 3	671	173	59	766
Society of Chemical Industry. (See Gnehm and Schmid, assignors.)						
Sockman, Bryant R., assignor of one-half to W. L. McIntire, Mount Vernon, Ohio. Self-locking pulley	473,093	Apr. 19	1666	423	59	342
Soden, Francis H., Chicago, Ill. Electric switch	473,132	Apr. 19	1739	439, 440	59	354
Soden, Francis H., Chicago, Ill. Electro-therapeutic heating-pad	473,133	Apr. 19	1742	440	59	355
Soden, Francis H., Chicago, Ill. Electric switch	473,134	Apr. 19	1743	440	59	355
Soltmann, Edward G. (See Grabau, Hans E., assignor.)						
Somers, Daniel M. (See Atkinson and Somers.)						
Somerset and Johnsonburg Manufacturing Company. (See Johnson, William, assignor.)						
Sommer, Jacques, assignor of one-tenth to D. Rohlfs and H. Schoder, Seattle, Wash. Vehicle	474,535	May 10	1049	268	59	849
Sonnet, Eugen C. (See Gombault and Sonnet.)						
Soper, J. R., *et al.* (See Starks, John, assignor.)						
Souknp, Albert H., Kansas City, Mo. Miter-machine	477,233	June 21	1596	391	59	1780
Soule, Frank C., *et al.* (See Merrell, Gaius L., assignor.)						
Soule, Oscar F., *et al.* (See Merrell, Gaius L., assignor.)						
South Bend Iron Works. (See Anderson, Charles, assignor.)						
Souther, Charles H., Boston, Mass. Dredging-machine	477,827	June 28	2558	641, 642	59	1985
Southgate, Louis W., Worcester, Mass., assignor to Campbell Printing Press and Manufacturing Company, of New York. Printing-press	474,032	May 3	234	56	59	683
Southwestern Supply Company. (See Stowe, William J., assignor.)						
Southwick, Albert N., Boston, Mass. Lock-stub for sale-checks	472,235	Apr. 5	357	92	59	67
Southwick, Plin C., Newark, Ill. Baling-press power	473,645	Apr. 26	2619	660	59	546
Spalding, Samuel J. (See Dow, Alonzo, assignor.)						
Sparks, Charles H. (See Hale, Perley, assignor.)						
Sparks, Charles H. (See Hale and Sparks.)						
Sparks, Phineas M., Zanesville, Ind. Stock-fence	474,464	May 10	939	241	59	828
Sparrow, Seth E., Norwalk, Ohio. Safety attachment for trunks	475,950	May 31	3303	833	59	1339
Spaulding, George H., Chicago, Ill. Pitman connection for mowing-machines	474,767	May 10	1410	358	59	921

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Spaulding, George H., and F. L. Moore, Norwich, Conn. Cord-machine	473,369	Apr. 19	2146	537, 538	59	434
Speakman, William M., Philadelphia, Pa. Handpiece for dental engines	476,496	June 7	414	96	59	1518
Spears, Ralph R., Wheeling, W. Va., assignor to F. W. Beers, Bridgeport, Conn. Lathe for turning axles	475,163	May 17	2041	514	59	1057
Speed, Fred H., Rockland, Me., assignor to E. N. Wilcox, Meriden, Conn. Device for stretching wire	473,528	Apr. 26	2414	612	59	506
Speer, William W., Pittsburg, Pa. Letter-box	472,182	Apr. 5	271	71	59	51
Speer, William W., Pittsburg, Pa. Letter-box	473,676	Apr. 26	2664	671	59	555
Spence, William F., Pass Christian, Miss. Oar-lock	473,972	May 3	139	32	59	664
Spencer, Charles, Grand Rapids, Mich. Hose-nozzle	474,194	May 3	479	116	59	730
Spencer, Henry B., assignor to Edward Best Car Axle Box and Lubricator Company, Ottawa, Canada. Car-axle box	476,966	June 14	1151	278	59	1679
Spencer, Henry E., Spencer, Miss. Dental-engine attachment	473,529	Apr. 26	2415	612	59	506
Spencer, James E., *et al.* (See Moewa, Paul, assignor.)	477,076	June 14	1330	322	59	1716
Spencer, John S. (See Moewa, Paul, assignor.)						
Spencer, Walter M., Chicago, Ill. Spark-arrester for electric lamps	476,933	June 14	1097	265	59	1669
Spencer, William B., Chicago, Ill. Vaginal syringe	474,506	May 10	996	257	59	840
Spencer, William H., St. Leonard's-on-Sea, England. Vaporizer	472,645	Apr. 12	981	254	59	199
Sperry, Elmer A., Chicago, Ill. Electric generator or motor	476,426	June 7	310	71, 72	59	1498
Sperry, Elmer A., Chicago, Ill. Fuse-block for electric circuits	476,570	June 7	516	122	59	1539
Spiegel, William G., assignor to A. Le Moult, New York, N. Y. Magic-lantern advertising apparatus	472,912	Apr. 12	1368	351	59	275
Spiegel, William G., assignor to L. W. Baldwin, New York, N. Y. Time-lock for savings-banks	474,870	May 17	1585	403	59	968
Spiegel, William G., assignor to L. W. Baldwin, New York, N. Y. Time-lock	474,871	May 17	1587	404	59	968
Spilsbury, Edmund G., and S. S. Webber, Trenton, N. J. Hoisting and conveying device	475,710	May 24	2892	731, 732, 733	59	1239
Spiro, Charles, New York, N. Y. Type-writing machine	475,623	May 24	2765	700, 701	59	1215
Spiro, Charles, New York, N. Y. Type-writing machine	476,903	June 14	1044	253	59	1658
Spiro, Emanuel, Krumau, Austria-Hungary. Fluid-meter	476,934	June 14	1098	265	59	1669
Spofford, Charles, assignor to W. J. Hiss and W. P. Sandford, New York, N. Y. Cutting plates, dishes, or bowls from wood	474,765	May 10	1407	357	59	920
Spofford, Charles, assignor to W. J. Hiss and W. P. Sandford, New York, N. Y. Machine for cutting plates or dishes from wood	474,766	May 10	1408	357, 358	59	920
Sprague Electric Elevator Company. (See Pratt, Charles R., assignor.)						
Sprague, Francis S., Federal Point, Fla. Ladder	475,164	May 17	2042	514	59	1058
Spreng, George C., and J. C. Smith, Akron, Ohio. Car-coupling	477,466	June 21	1970	489	59	1853
Sprenger, Jean, assignor to Ateliers de Constructions Mécaniques, Vevay, Switzerland. Rock-drill	474,069	May 3	297	72	59	695
Sprewitz, Charles, New York, N. Y. Veneering-machine	477,158	June 14	1447	355, 356	59	1740
Springer, Clifton F., Des Moines, Iowa. Car-coupling	476,322	June 7	148	36	59	1466
Springer, William A., assignor to Diamond Suspender Company, Des Moines, Iowa. Suspender-buckle	473,409	Apr. 19	2218	557	59	448
Sprinkle, John, Walton, Ind. Grain-weighing machine	476,427	June 7	314	72	59	1498
Sproat, Josephus C., Grand Rapids, Mich. Daily sheet and record-book for delivery systems	473,973	May 3	140	32	59	664
Spurgeon, William A., Muncie, Ind. Thermometer-case	476,571	June 7	518	122	59	1539
Spurr, George W., New Britain, Conn., assignor of one-half to R. C. Mitchell, New York, N. Y., and F. B. Mitchell, New Britain, Conn. Cash register and indicator	477,340	June 21	1768	433	59	1814
Spurrier, Thomas H., Philadelphia, Pa. Stair-carpet fastener	478,028	June 28	2882	720	59	2049
Squier, Horace S., Newark, N. J. Bridle-bit	472,145	Apr. 5	212	56	59	40
Squire, Charles A., Bradford, Mass. Check-hook	474,612	May 10	1168	297	59	872
St. Aubyn, Frank. (See Blake and Sackett, assignors.)						
St. John, George F., Highland Station, Mich. Fence construction	477,916	June 28	2710	678	59	2015
St. Louis Improved Shear and Tool Manufacturing Company. (See Kieser, Charles, assignor.)						
St. Louis Improved Shear and Tool Manufacturing Company. (See Rohan, Philip, assignor.)						
Staats, William H., assignor of one-half to J. F. Griffin, Chicago, Ill. Money-changer	472,719	Apr. 12	1096	282	59	220
Stacey, Henry, assignor of one-half to M. H. Cain, Indianapolis, Ind. Coal-oil burner	473,858	Apr. 26	2944	742	59	609
Stackhouse, George, Pittsburg, Pa. Game-board	475,624	May 24	2769	701	59	1216
Stackhouse, Thomas H., Philadelphia, Pa. Type-cleaning device for type-writing machines	472,720	Apr. 12	1098	282	59	220
Stafford, George W., Providence, R. I. Shedding mechanism for looms	475,625	May 24	2770	701	59	1216
Stafford, George W., Providence, R. I. Jacquard mechanism	475,711	May 24	2896	733	59	1240
Stafford, George W., Providence, R. I. Shedding mechanism for looms	475,712	May 24	2898	733, 734	59	1240
Stafford, George W., Providence, R. I. Jacquard mechanism for looms	476,428	June 7	315	72	59	1498
Stafford, Marshall B., and R. W. Morgan, New York, N. Y. Antifriction journal-box	473,974	May 3	141	32	59	664
Staggers, Edward B., Jr. (See Cook, William H., assignor.)						
Stahley, Harry O., Pittsburg, Pa. Trace connection	473,094	Apr. 19	1667	424	59	342
Stahley, Harry O., Pittsburg, Pa. Hame-tug	475,951	May 31	3304	833	59	1332
Standard Electric Company. (See Dorman, George E., assignor.)						
Standard Electric Company. (See Pfluger, Charles A., assignor.)						
Standard Fiber-Ware Company. (See Hubbard, Eber, assignor.)						
Standard Sewing Machine Company. (See Whitney, Ruel W., assignor.)						
Standard Underground Cable Company. (See O'Connor, Thomas F., assignor.)						
Standing, Herbert F., Bournemouth, England. Apparatus for producing stencils	475,165	May 17	2043	515	59	1058
Stanford, Charles D., Boston, Mass., assignor to Hanford-Stanford Company, Portland, Me. Cooling-room for breweries	472,936	Apr. 12	1404	359	59	281
Stanford, Charles P., San Francisco, Cal. Elevator-hatch	478,029	June 28	2883	720, 721	59	2049
Staniford, Frank C., Gilroy, assignor of one-half to D. C. Riddell, Santa Cruz, Cal. Fruit-pitting machine	475,048	May 17	1865	473	59	1023
Stanley, Colon M., Montezuma, Ga. Railway-signal	475,166	May 17	2046	515	59	1058
Stanley, Frank F., *et al.*, trustees. (See Goddu, Louis, assignor.)						
Stanley, Lucius T., Brooklyn, N. Y., assignor to Cutter Electric and Manufacturing Company, Philadelphia, Pa. Electric switch	472,610	Apr. 12	935	241	59	191
Stanley, Lucius T., Brooklyn, N. Y., assignor to Cutter Electric and Manufacturing Company, Philadelphia, Pa. Flexible supporting-arm for electric lamps	472,611	Apr. 12	936	241	59	192
Stanley, Reginald, Nuneaton, England. Tunneling or mining machine	476,836	June 14	932	228	59	1636

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stanley Rule and Level Company. (See Schade, Edmund A., assignor.)						
Stanley Works. (See Corscaden, Thomas, assignor.)						
Stanley Works. (See Hart, Charles E., assignor.)						
Stanley Works. (See Hart and Taplin, assignors.)						
Stanley Works. (See Reynolds, Arthur J., assignor.)						
Stanton, Henry. (See Jones, Dawson, and Stanton.)						
Stanwood, Frank H., Chicago, Ill. Car-step	476,323	June 7	149	36	59	1466
Staples, John A., Newburg, N. Y. Support for chair-seat springs	474,536	May 10	1050	269	59	849
Starin, John H., Fultonville, N. Y. Apparatus for steaming clams, oysters, &c	475,353	May 24	2340	600	59	1134
Stark, Andrew, Chicago, Ill., assignor of one-half to Warder, Bushnell & Glessner Company, Springfield, Ohio. Cord-knotter for grain-binders	475,821	May 31	3091	782, 783	59	1290
Stark, Andrew, Chicago, Ill., assignor of one-half to Warder, Bushnell & Glessner Company, Springfield, Ohio. Cord-knotter for grain-binders	475,822	May 31	3094	783, 784	59	1291
Stark, Andrew, Chicago, Ill., assignor of one-half to Warder, Bushnell & Glessner Company, Springfield, Ohio. Harvester-gearing	477,077	June 14	1331	322, 323	59	1717
Stark, Frederick G., Manchester, N. H. Nail-puller	474,698	May 10	1307	334	59	900
Starks, John, Fairview, assignor to A. W. Hay, J. R. Soper, and H. F. Keeler, Jones county, Iowa. Grubbing-machine	472,279	Apr. 5	423	109	59	79
Starks, Nils O., Madison, Wis. Game-board	476,324	June 7	150	37	59	1466
Starr, William S. (See Holt, Charles F., assignor.)						
Starrett, Laroy S., Athol, Mass. Bevel-protractor	474,699	May 10	1309	334	59	901
Starrett, Stephen E. (See Livingston and Starrett.)						
Stauber, Edwin B., Stoddard, Nebr. Combined cattle-dehorner and plant-pruner	472,146	Apr. 5	213	57	59	40
Stave Jointer and Planer Company. (See Wright, William J., assignor.)						
Steam Gauge and Lantern Company *et al.* (See McArthur, Warren, assignor.)						
Steam Gauge and Lantern Company *et al.* (See Wright, Frederick K., assignor.)						
Stearns, William F. (See Brown, Frederick T., assignor.)						
Stedman, John J., La Porte, Ind. Artificial denture	474,104	May 3	348	83	59	704
Steeg, Frederick W., St. Paul, Minn. Electrical annunciator	473,975	May 3	142	33	59	665
Steel, Robert, assignor of one-half to L. G. Schmucker, Philadelphia, Pa. Snow and ice melting machine	472,831	Apr. 12	1249	320	59	249
Steele, Elbridge J., assignor of one-half to G. A. Lewis, Naugatuck, Conn. Clasp	474,537	May 10	1052	269	59	850
Steele, Marlin E., Argentine, Kans. Horse-hitching device	474,928	May 17	1670	426	59	986
Steffen, Fred, Burlington, Wis. Corn-harvester	473,095	Apr. 19	1668	424	59	342
Steiner, Diethelm, and J. Schiele, Philadelphia, Pa. Permutation-lock	476,904	June 14	1047	253, 254	59	1659
Steiner, Henry J., Jersey City, N. J. Animal-trap	477,966	June 28	2778	696	59	2029
Steinwald, Franz J., Dresden, Germany. Dust and ash receptacle	473,561	Apr. 26	2475	625, 626	59	519
Stenwall, John, Jr. (See Cummins and Stenwall.)						
Stephani, John, Manitowoc, Wis. Mower	475,823	May 31	3097	784	59	1291
Stephens, Daniel M., Thrall, Iowa. Hay-stacker	474,422	May 10	873	227, 228	59	817
Stephens, James G., and H. W. Holmes, Pittsburg, Pa., assignors to Welsbach Incandescent Gas Light Company, Gloucester City, N. J. Gas-mixer	474,781	May 10	1435	364	59	926
Stephenson, Harvey A., Allegheny, Pa. Index	472,629	Apr. 12	962	249	59	196
Stephenson, Harvey A., Crafton, Pa. Index	472,630	Apr. 12	963	250	59	197
Sterick, Sylvester T. F., Gaithersburg, Md. Game apparatus	474,310	May 3	674	174	59	767
Sterling, Charles A., Orange, N. J. Barrel-elevator	477,874	June 28	2646	661, 662	59	2002
Sterling, Isaac F., Texarkana, Tex. Churn-dasher	472,081	Apr. 5	106	29	59	22
Sterling, Walter A., assignor of one-half to G. H. Campbell, Denver, Colo. Rheostat	475,255	May 17	2181	555	59	1086
Stern, Marcus, New York, N. Y. Ear-ring	477,025	June 14	1237	299	59	1698
Sterne, Henry G., *et al.* (See Carrington, Harry T., assignor.)						
Sterner, Emanuel, and W. B. Amspoker, Glenville, Pa. Elevated kettle-carrier	475,167	May 17	2048	515	59	1059
Sterner, Frank L. (See Peck and Sterner.)						
Stetson, Alva M., assignor of one-half to T. R. Hayes, Oakland, Cal. Amalgamator	476,497	June 7	416	97	59	1518
Steudle, John, Chicago, Ill. Household press	472,559	Apr. 12	859	220	59	178
Steuth, Wilhelm, and J. W. Körber, Dusseldorf, Germany. Regenerating gas-lamp	477,314	June 21	1733	424	59	1807
Stevens, Calvin A. (See Collins, Caleb G., assignor.)						
Stevens, Daniel B., Corning, N. Y. Brake for baby-carriages	476,325	June 7	151	37	59	1467
Stevens, George W., San Francisco, Cal. Fruit-carrier	474 105	May 3	349	83	59	704
Stevens, John C., Hartford, Conn. Ice-velocipede	473,434	Apr. 19	2249	566	59	454
Stevens, Joseph A., Springfield, Mass. Hose-pipe	473,716	Apr. 26	2723	685, 686	59	566
Stevens, Judson T., *et al.* (See Scofield, Charles H., assignor.)						
Stevens, Wilbur N., Ellenville, N. Y. Leg for radiators or other articles	474,270	May 3	591	146	59	752
Stevenson & Co. (See Stevenson, William G., assignor.)						
Stevenson, Hugh, New York, N. Y. Folding bed	477,967	June 28	2780	696	59	2029
Stevenson, Hugh, New York, N. Y. Clothes-drier	477,968	June 28	2781	697	59	2030
Stevenson, Hugh, New York, N. Y. Hat holder and case	477,969	June 28	2782	697	59	2030
Stevenson, John W. (See Thomas, Henry O., assignor.)						
Stevenson, William G., assignor to Stevenson & Co., Wellsville, Ohio. Lubricator for upright shafts	473,269	Apr. 19	1976	495	59	401
Steward, John F. (See Appleby and Steward.)						
Steward, John F., Chicago, Ill. Screw-driver	472,591	Apr. 12	903	231	59	186
Steward, John F., Chicago, Ill. Grain-harvester	474,700	May 10	1310	334	59	901
Steward, John F., Chicago, Ill. Harvester	476,326	June 7	152	37	59	1467
Steward, John F., Chicago, Ill. Harvester	477,709	June 28	2374	593, 594	59	1952
Stewart, Benjamin F., Canton, Ohio. Mechanical movement for grain-binders	473,976	May 3	143	33	59	665
Stewart, George E., Ashland, and A. G. Brewer, Hopkinton, Mass. Vamp marking and throating machine	475,952	May 31	3305	834	59	1332
Stewart, H. J. (See Rawson, Manly S., assignor.)						
Stewart, J. Hammond. (See Stewart, William C., assignor.)						
Stewart, James, assignor to M. McVickar and R. S. Galbraith, Philadelphia, Pa. Compound for waterproofing	475,713	May 24	2899	.....	59	1240
Stewart, Joseph B. (See Watson, William G., assignor.)						
Stewart, Richard C., Jr., and W. A., Wichita, Kans. Iron fence	473,028	Apr. 19	1570	399	59	325
Stewart, Wallace A. (See Stewart, Richard C., Jr., and W. A.)						
Stewart, Walter G., Reading, Pa. Dumping-wagon	474,872	May 17	1589	404, 405	59	969
Stewart, William C., assignor of one-half to J. H. Stewart, Lynn, Mass. Bullet-greasing machine	476,175	May 31	3661	906	59	1403

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stewart, William J. (See Desjardin and Stewart.)						
Stewart, William J., Chicago, Ill. Tension for sewing-machines	477,078	June 14	1334	323	59	1717
Stickney, Charles W., Butte City, Mont. Roasting ores	475,824	May 31	3098	784, 785	59	1292
Stiger, George. (See Dodd, Charles E., assignor.)						
Stikeman, George, Brooklyn, N. Y. Adjustable book-shelving	475,627	May 24	2773	702	59	1217
Stiles, Franklin L. (See Brower and Ross, assignors.)						
Stiles, Henry, Cleveland, Ohio. Spout for cans	474,507	May 10	998	257	59	840
Stiles, James P., New York, N. Y. Sewing-machine	478,030	June 28	2885	721	59	2049
Stiles, William E., assignor of one-half to M. Moyer, Philadelphia, Pa. Dental flask	476,068	May 31	3510	885	59	1375
Stillwell, Elias, Dadeville, Mo. Evaporator	476,837	June 14	936	228	59	1637
Stilwell & Bierce Manufacturing Company. (See Stilwell, Edwin R., assignor.)						
Stilwell, Charles B., Wayne, assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machinery	473,977	May 3	144	33, 34	59	665
Stilwell, Edwin R., assignor to Stilwell & Bierce Manufacturing Company, Dayton, Ohio. Feed-water heater	476,089	May 31	3511	885	59	1375
Stimpson, Walter F., Milan, Mich. Means for raising and lowering harvester-reels	476,027	May 31	3411	861	59	1354
Stimson, Charles H., *et al.* (See Dowling, Robert H., assignor.)						
Stinson, Charles K., Chelsea, Mass., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper	475,626	May 24	2773	702	59	1217
Stinebring, George W., assignor of one-half to A., G., and W. H. Carl, Shreve, Ohio. Pawl and ratchet for sawmills	477,710	June 28	2378	594	59	1952
Stirckler, Albert E., Northampton, England, assignor, by mesne assignments, to Chase Lasting Machine Company, Portland, Me. Lasting-machine	477,788	June 28	2494	624, 625, 626	59	1974
Stirckler, Albert E., Northampton, England, assignor to Chase Lasting Machine Company, Boston, Mass. Lasting-machine	477,789	June 28	2500	626	59	1975
Stirk, David P., and J. Summers, Indianapolis, Ind. Gas-burner for stoves	473,410	Apr. 19	2219	557	59	448
Stix & L'Allemand. (See Walters, Thomas F., assignor.)						
Stockton, James S., Cherry Grove, Ark. Double plow	475,825	May 31	3100	785	59	1292
Stoddard, Hiram D., Binghamton, N. Y. Breast-strap slide	477,079	June 14	1335	323, 324	59	1717
Stoddard, Oren, Busti, N. Y. Basket	476,498	June 7	417	97	59	1518
Stokes, Joseph F., Philadelphia, Pa. Machine for cleaning streets	472,646	Apr. 12	983	254	59	200
Stokoe, John M., assignor of one-half to C. B. Hill, Canandaigua, N. Y. Drum and chimney for oil-stoves	474,782	May 10	1436	364	59	926
Stombs, Daniel S., Stillwater, Minn. Portable log-carrier	475,628	May 24	2775	702, 703	59	1217
Stone, Carl O., New York, N. Y. Snow-shoe	476,572	June 7	519	122	59	1540
Stone, Charles E., Toronto, Canada. Paper-file	472,561	Apr. 12	862	221	59	178
Stone, George M., *et al.* (See Beesley, Edward, Sr., Ellis, Jr., and Edward, Jr., assignors.)						
Stone, Henrie D., assignor to G. A. White, Boston, Mass. Machine for applying cement, &c.	478,031	June 28	2887	721	59	2050
Stone, Mark, *et al.* (See Parks, Dana, assignor.)						
Stone, Richard L., Chicago, Ill. Floor-arch	475,354	May 24	2341	600	59	1134
Stone, Thomas, *et al.* (See Beesley, Edward, Sr., Ellis, Jr., and Edward, Jr., assignors.)						
Stone, Willard, Hartford, Conn. Package-carrier	473,531	Apr. 26	2417	613	59	507
Stonemetz, John H., assignor to Stonemetz Printers' Machinery Company, Millbury, Mass. Paper-folding machine	472,317	Apr. 5	483	125, 126	59	91
Stonemetz, John H., assignor to Stonemetz Printers' Machinery Company, Millbury, Mass. Printing-press	472,318	Apr. 5	486	126, 127	59	91
Stonemetz, John H., assignor to Stonemetz Printers' Machinery Company, Millbury, Mass. Cylinder printing-press	472,319	Apr. 5	490	127	59	92
Stonemetz, John H., assignor to Stonemetz Printers' Machinery Company, Millbury, Mass. Mechanical movement	473,562	Apr. 26	2476	626, 627	59	519
Stonemetz Printers' Machinery Company. (See Stonemetz, John H., assignor.)						
Stoner, Abraham, Stony Point, La., and F. M. Pennebaker, Pleasant Hill, Ky. Wood-turning machine	476,696	June 7	703	172, 173	59	1576
Stoner, John B., assignor to C. B. Hillhouse, New York, N. Y. Letter-box	472,560	Apr. 12	860	221	59	178
Stoner, John B., assignor to C. B. Hillhouse, New York, N. Y. Horseshoe and calk	472,562	Apr. 12	863	222	59	178
Stoppenbach, August. (See Illing and Stoppenbach.)						
Storsberg, Fritz. (See Hagen, Augustus A., assignor.)						
Story, Albert P., Richland, Minn. Cross-line buckle	474,195	May 3	480	116	59	731
Story, Alexander, Washington, Iowa. Metal railway-tie	474,873	May 17	1590	405	59	969
Stout, John V., Easton, Pa. Electrical valve-controller	476,573	June 7	520	123	59	1540
Stout, William H. B., Chicago, Ill. Apparatus for treating ores	477,026	June 14	1237	299, 300	59	1698
Stover, Edward C. (See Cochran and Stover.)						
Stover, Henry, Lanark, Ill. Clothes-pounder	475,090	May 17	1939	491	59	1037
Stowe, Millard F. (See McBride, Charles H., assignor.)						
Stowe, William J., assignor to Southwestern Supply Company, St. Louis, Mo. Attachment for plow-colters	472,082	Apr. 5	107	29	59	22
Stracener, Upton W., assignor of one-half to T. J. Nelson, Bettie, Tex. Animal-poke	475,091	May 17	1940	491	59	1037
Strain, Emma R. (See Strain, Murtagh J., assignor.)						
Strain, Murtagh J., assignor to E. R. Strain, New York, N. Y. Cigar-case	474,613	May 10	1169	297	59	872
Strait, William, Elmira, N. Y. Horse hay-rake	473,795	Apr. 26	2842	714	59	589
Strait, William, Elmira, N. Y. Harrow	473,796	Apr. 26	2845	714	59	589
Strand, Richard P., St. John, Canada. Electrical organ	478,032	June 28	2889	721, 722	59	2050
Strasser, Rupert, Fort Wayne, Ind. Motor for fans	473,029	Apr. 19	1571	400	59	325
Strater, Herman, Boston, Mass. Drainer for draft apparatus	477,917	June 28	2711	679	59	2015
Stratton, John H., Holyoke, Mass. Shears	477,711	June 28	2379	594	59	1953
Straus, Alexander, assignor to New York Belting and Packing Company, Limited, New York, N. Y. Rubber tire for bicycles	474,423	May 10	874	228	59	817
Straut, Hooper B., assignor of one-fourth to J. W. Hitchcock, Lincoln, Nebr. Welding compound	475,355	May 24	2342	.....	59	1134
Straut, Hooper B., assignor of one-fourth to J. T. Vought, Lincoln, Nebr. Door-spring	475,356	May 24	2343	600	59	1134
Streator, Henry D., Kalamazoo, Mich. Tobacco-moistening case	474,424	May 10	875	228	59	817
Street, Joseph C., Boston, Mass., and H. P. Norton, St. Joseph, Mich. Screw-propeller	475,826	May 31	3101	785	59	1292
Streeter, Daniel A., Waterbury, Conn. Pipe-plug	474,196	May 3	481	116	59	731
Streeter, Theodore, Tunkhannock, Pa. Arm-rest for corpses	473,200	Apr. 19	1866	470	59	378
Streit, Anton, Cincinnati, Ohio. Loose pulley	472,083	Apr. 5	108	29	59	22
Stretch, Joseph, Newark, and T. M. Blackwell, East Orange, N. J. Hame-fastener	475,953	May 31	3308	834	59	1333
Strickler, Wilson H., Dodge City, Kans. Lubricant	476,574	June 7	522	.....	59	1540
Stringer, Charles A., Munnsville, N. Y. Plow-jointer	476,090	May 31	3513	885	59	1375

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Stringer, William G., assignor of one-fourth to W. G. Henry, New Orleans, La. Crane	475,092	May 17	1941	491	59	1037
Strom, Axel A., Austin, assignor to Strom Manufacturing Company, Chicago, Ill. Derailing-switch	474,976	May 17	1756	445	59	1002
Strom Manufacturing Company. (See Strom, Axel A., assignor.)						
Strombeck, Hans von, New York, N. Y. Purifying ammonia	477,089	June 14	1350	.....	59	1720
Stromberg, Alfred, assignor of one-half to M. Simons, Chicago, Ill. Automatic test for burglar-alarm systems	477,712	June 28	2380	595	59	1953
Strong, Abner D., Ashtabula, Ohio. Self-cleaning cistern	472,488	Apr. 5	750	191	59	142
Strong, George S., New York, N. Y., assignor to J. N. Gamble, Cincinnati, Ohio. Boiler-furnace	475,357	May 24	2343	601	59	1135
Strong, George S., New York, N. Y., assignor to J. N. Gamble, Cincinnati, Ohio. Steam-engine	477,234	June 21	1598	391, 392	59	1781
Strong, George S., New York, N. Y., assignor to J. N. Gamble, Cincinnati, Ohio. Compound engine	477,279	June 21	1670	408, 409	59	1795
Strong, Levi C., Brooklyn, N. Y. Whetstone-holder	472,685	Apr. 12	1037	268	59	208
Strong, Samuel D., Chelsea, Mich. Oil-stove	474,874	May 17	1591	405	59	969
Stroaberg, Fritz, *et al.* (See Wieland, Ludwig, assignor.)						
Stronse, Demetrious B. and W. Griffin, assignors to Carper Railway Engine Company, Salem, Va. Spark-arrester	476,176	May 31	3662	926	59	1404
Struck, Charles E., assignor of one-half to J. H. Fischer, New York, N. Y. Ice-can	475,629	May 24	2776	703	59	1217
Strüver, Frederick R. C., Pine Creek, Queensland. Butter-worker	476,429	June 7	318	73	59	1499
Stubblefield, Charnel F., assignor to himself, R. N., E. L., and E. Stubblefield, Wood River, Nebr. Corn-harvester	475,223	May 17	2129	538	59	1076
Stubblefield, Edward, *et al.* (See Stubblefield, Charnel F., assignor.)						
Stubblefield, Edward L., *et al.* (See Stubblefield, Charnel F., assignor.)						
Stubblefield, Robert N., *et al.* (See Stubblefield, Charnel F., assignor.)						
Studebaker, John M. (See Collins, Charles M., assignor.)						
Stuhr, Herman F., Cleveland, Ohio. Building-column	476,905	June 14	1051	254	59	1659
Stukey, Joseph A., Columbus, Ohio. Bottle-stopper	475,631	May 24	2779	703	59	1218
Stulken, George D., and A. J. Clute, Jr., McCook, Nebr. Hame-tug clip	473,978	May 3	146	34	59	666
Stull, Herbert L., Stoddartsville, Pa. Measuring-reel	475,630	May 24	2777	703	59	1218
Stults, William R., *et al.* (See Loomis, George L., assignor.)						
Stump, William J. (See Baker and Stump.)						
Sturtevant, Thomas L., Framingham, Mass. Steam-generator	473,979	May 3	147	35	59	666
Stut, John C. H., San Francisco, Cal. Cable-railway grip	474,875	May 17	1592	405, 406	59	970
Stutzman, Frank, assignor of one-half to B. H. and J. G. Coryell, Williamsport, Pa. Roundabout	475,256	May 17	2182	556	59	1086
Sucro, George C., Baltimore, Md. Lock	476,575	June 7	523	123	59	1540
Sucro, George C., Baltimore, Md. Bottle-case	476,697	June 7	706	173	59	1577
Suess, Max, Chicago, Ill. Machine for decorating glass and the like	474,701	May 10	1312	335	59	901
Suffern, James B., Hillburn, N. Y. Railway-switch. (Reissue)	11,248	June 21	2250	564	59	1909
Sullivan, Bartholomew, Boston, Mass. Fender for street-cars	477,467	June 21	1971	489	59	1853
Sullivan, Jeremiah F., Brooklyn, N. Y. Combination-tool	472,147	Apr. 5	214	57	59	40
Sullivan, John J., Scranton, Pa. Locomotive safety smoke-stack	477,389	June 21	1850	455	59	1830
Sullivan, Joseph H., assignor to William D. Gibson Company, Chicago, Ill. Spring	475,904	May 31	3231	817	59	1318
Sullivan, Timothy J. (See Van Patten, John, assignor.)						
Sulzer, Hans, Winterthur, Switzerland. Pen	477,080	June 14	1336	324	59	1717
Summers, George H., A. J. Kings, and L. Q. Hardesty, Mitchell, S. D. Drill-operating device	473,201	Apr. 19	1867	470	59	378
Summers, George H., A. J. Kings, and L. Q. Hardesty, Mitchell, S. D. Drill-operating device	473,202	Apr. 19	1868	470	59	378
Summers, Jacob. (See Stirk and Summers.)						
Summers, John, San Francisco, Cal. Horse-boot	475,827	May 31	3103	786	59	1292
Sumner, William F., West Valley, N. Y. Two-wheeled vehicle	474,197	May 3	482	116	59	731
Sundh, August, Yonkers, N. Y. Combined weighing, lifting, measuring, and electric machine	477,613	June 21	2204	547, 548	59	1900
Sundwall, Frank O., Chicago, and E. Blakeslee, Neponset, Ill. Steam-cooker	473,096	Apr. 19	1669	424	59	343
Surprenant, Edward, Cohoes, N. Y. Car-coupling	475,168	May 17	2048	515	59	1059
Sutcliffe, William W., New Orleans, La. Hydraulic-pressure accumulator or regulator	477,468	June 21	1972	489	59	1853
Sutherland, Thomas, Stillwater, Minn. Vehicle running-gear	472,290	Apr. 5	494	109	59	79
Sutter, Joseph, New York, N. Y. Tide and current wheel	475,632	May 24	2780	704	59	1218
Sutton, Simon T., Chicago, Ill. Knit nether garment	475,734	May 24	2937	745	59	1246
Swain, James E., assignor to N. S. Hill, Baltimore, Md. Composition for leather-dressing	474,702	May 10	1313	.....	59	902
Swan, Horace, Rutland, Vt. Whiffletree-center	478,033	June 28	2891	722	59	2050
Swannell, Frederick O., Chicago, Ill. Linseed-cake stripper	476,327	June 7	153	38	59	1467
Swartz, Hiram B., Wooster, Ohio. Window-blind	472,592	Apr. 12	904	232	59	186
Sweeney, Hugh M., Boston, Mass. Curtain-fixture	472,832	Apr. 12	1250	320	59	249
Sweeney, James B., and R. W. Laird, St. Johnsbury, Vt. Power-hammer	477,159	June 14	1451	356	59	1740
Sweeney, Thomas. (See Burnett and Sweeney.)						
Sweet, Larntine C., assignor of two-thirds to W. G. Miller, Loami, and E. R. Thayer, Chatham, Ill. Pitman-rod connection for harvesters	475,358	May 24	2345	601	59	1135
Sweet, S. S. (See Sankey, William J., assignor.)						
Sweetland, Frank, Angola, N. Y. Bicycle-pedal	473,030	Apr. 19	1572	400	59	325
Sweetland, Frank, Angola, N. Y. Bicycle-saddle	474,106	May 3	351	84	59	705
Sweetland, Frank, Angola, N. Y. Bicycle-fork	475,633	May 24	2781	704	59	1218
Sweetland, Frank, Angola, N. Y. Bicycle-saddle	476,838	June 14	937	228	59	1637
Sweetland, William P., San Francisco, Cal. Nut-lock	472,489	Apr. 5	751	191	59	143
Swift, Lester C., Plano, Ill. Check-bit	475,634	May 24	2782	704	59	1219
Swift, Samuel H. (See Hayton and Swift.)						
Swindley, Harry J., Barnes, England. Wheel for velocipedes	475,828	May 31	3104	786, 787	59	1293
Swinscoe, Henry K., Clinton, Mass. Loom-shuttle	473,677	Apr. 26	2665	671	59	555
Swisher, Isaac C., Coffeyville, Kans. Automatic metal boring and turning lathe	472,833	Apr. 12	1251	320, 321	59	249
Swope, Zuriel, Lancaster, Pa. Door-check	476,328	June 7	154	38	59	1467
Sydney, James, London, England. Portable appliance for supporting and suspending candles, lamps, or flowers	475,093	May 17	1942	492	59	1037
Sykes, William L., Benzinger, Pa. Drive-chain	472,563	Apr. 12	864	222	59	179
Symington, William H., and W. Anderson, Market-Harborough, England. Guiding device for sewing-machines	477,341	June 21	1771	433	59	1814
Symonds, Thomas, Leominster, Mass. Friction device for windlasses	472,564	Apr. 12	866	222, 223	59	179

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Syracuse Specialty Manufacturing Company. (See Manggang, George, assignor.)						
Szarvady, Géza. (See Marinovitch and Szarvady.)						
Szigethy, Stephan, New York, N. Y. Candlestick	473,797	Apr. 26	2846	715	59	590
T. & B. Tool Company. (See Johnson, Moses C., assignor.)						
Tabele, Joseph H., Jersey City, N. J., assignor to Meyer-Sniffen Company, Limited, New York, N. Y. Tank or cistern for water-closets	473,980	May 3	149	35	59	666
Tabor, Levi L., and A. Sedmihradsky, Milwaukee, Wis.; said Sedmihradsky assignor to said Tabor. Glove	474,929	May 17	1671	427	59	986
Tabor, Lorin R., Westford, Vt. Sap-spout	473,270	Apr. 19	1977	496	59	401
Tache, Augustus, San Francisco, Cal. Chalk-line holder	472,593	Apr. 12	904	232	59	186
Taft, Edward L., assignor of one-half to H. M. Rich, Gardner, Mass. Knit rattan fabric	472,320	Apr. 5	491	127	59	92
Taft, Frank. (See Taft, George L. and F.)						
Taft, George L. and F., Ionia, Mich. Feed-rack	473,245	Apr. 19	1939	487	59	393
Taintor, Charles C., Elizabeth, N. J., assignor to Taintor Manufacturing Company, New York, N. Y. Saw-set	475,359	May 24	2346	601	59	1135
Taintor, Giles, Keene, N. H. Two-wire-telephone system	473,532	Apr. 26	2418	613	59	507
Taintor Manufacturing Company. (See Taintor, Charles C., assignor.)						
Tait, James F., Evanston, Ill. Holdback for vehicles	476,839	June 14	939	229	59	1637
Talbert, Daniel H., Spiceland, Ind. Bottle-stopper	473,031	Apr. 19	1573	400	59	326
Talbot, Benjamin, Chattanooga, Tenn. Purifying metals	476,091	May 31	3514	.....	59	1375
Talbot, Benjamin, Chattanooga, Tenn. Refining metals	476,092	May 31	3516	.....	59	1376
Talbott, Willard, Oaksdale, Wash. Fire-escape	474,876	May 17	1594	406	59	970
Taliaferro, Charles K. (See Taliaferro, William B. and C. K.)						
Taliaferro, William B. and C. K., Middlesborough, Ky. Combined folding couch and cradle	473,181	Apr. 19	1838	462	59	372
Tandy, John L., Columbia, Mo. Corn-thinner	473,678	Apr. 26	2667	672	59	555
Tangenberg, Christiaan, Chicago, Ill. Flour-bin	476,430	June 7	320	73	59	1499
Tanner, George W., Providence, R. I. Cigar-wrapper-cutting machine	474,107	May 3	352	84	59	705
Tanner, Ulysses, Minneapolis, Minn. Artificial leg	473,097	Apr. 19	1671	424	59	343
Tannette Manufacturing Company. (See Field, Walter D., assignor.)						
Tapley, Rufus P., Jr., *et al.* (See Beckwith, Theodore A., assignor.)						
Tapley, Rufus P., Jr., *et al.* (See Hunter, William, assignor.)						
Tapley, Walter H., assignor to Ware Automatic Heat Generator and Regulator Company, Chicago, Ill. Thermotic circuit-closer	477,315	June 21	1734	425	59	1807
Taplin, Clarence A. (See Hart and Taplin.)						
Tarbell, Wendell P., Milford, N. H. Mirror-hinge	472,409	Apr. 5	629	161	59	118
Tarpenning, Charles T., Fresno, and L. B. Sherwood, Turlock, Cal. Means for transmitting power	477,469	June 21	1974	490	59	1854
Tarris, Andrew, Marion, Ind., assignor to N. C. Richardson and L. J. Tarris. Swinging gate	474,489	May 10	972	251	59	835
Tarris, Lavina J., *et al.* (See Tarris, Andrew, assignor.)						
Tate, Frank R., assignor of one-half to J. L. Blair, St. Louis, Mo. Buckle	474,198	May 3	483	117	59	731
Tate, John M., New York, N. Y. Stationery-box	476,576	June 7	524	123	59	1541
Tate, Richard B., *et al.* (See Buhoup, John J., assignor.)						
Tatro, Charles P., assignor of three-fifths to J. Hanauer, Spokane, Wash., and J. E. and J. Montgomery, Chicago, Ill. Electric railway	476,935	June 14	1101	266	59	1670
Tattersall, Hargreaves, *et al.* (See Beckwith, Theodore A., assignor.)						
Taylor, Augustus G., Claremont, N. H. Plumb-level	474,152	May 3	411	99	59	718
Taylor, Barnett, Forestville, assignor to W. G. Rundell, E. H. Crain, and E. G. H. Adams, Spring Valley, Minn. Swarm-catcher	476,762	June 7	799	197	59	1597
Taylor & Boggis Foundry Company. (See Clemes, William H., assignor.) (Design reissue.)						
Taylor, Daniel B., St. Louis, Mo. Apparatus for elevating and moving grain	475,635	May 24	2783	705	59	1219
Taylor, Edward H., *et al.* (See Trump, John G., assignor.)						
Taylor, Edward W., Salt Lake City, Utah Ter. Nut-lock	475,094	May 17	1942	492	59	1038
Taylor, Emery E., Minneapolis, Minn. Journal-box lifter	472,835	Apr. 12	1256	321	59	250
Taylor, Esau D., Hornellsville, N. Y. Manufacture of trunks, &c	476,840	June 14	939	229	59	1637
Taylor, Eugene H. (See Busell and Taylor.)						
Taylor, Eugene H., Lynn, Mass., assignor to Cushman Paper Box Machine Company, Portland, Me. Corner-cutter for paper-box blanks	473,859	Apr. 26	2945	742, 743	59	609
Taylor, Eugene H., Lynn, assignor to J. Q. A. Wittemore, Boston, Mass. Heel-making machine	475,714	May 24	2900	734, 735	59	1240
Taylor, Ezekiel F., Washington, Ky. Metal railway-tie	474,877	May 17	1595	406	59	970
Taylor, George, Atlanta, Ga. Machine for edging and surfacing marble tiles	474,033	May 3	237	57	59	683
Taylor, Horace H., assignor of one-half to N. W. Moody, Fresno, Cal. Pessary	476,698	June 7	706	173	59	1577
Taylor, Isaac. (See Nelson, Knapper, and Taylor.)						
Taylor, James C., Chattanooga, Tenn. Device for carrying keys	477,970	June 28	2783	697	59	2030
Taylor, James H., Toledo, Ohio. Washing-machine	477,918	June 28	2713	679	59	2015
Taylor, James W., Vermillion, S. D. Fifth-wheel for vehicles	472,834	Apr. 12	1255	321	59	250
Taylor, John, Troy, N. Y. Car-truck	472,236	Apr. 5	358	92, 93	59	67
Taylor, Joseph A., Jr., Savannah, Ga. Truck or rice farm plow	477,971	June 28	2784	697	59	2030
Taylor, Kenner, assignor of one-half to J. Meagher, Frankfort, Ky. Tester for spirituous liquors	476,093	May 31	3517	885	59	1376
Taylor, Lawrence H., Muscatine, Iowa. Sleeve and cuff holder	475,905	May 31	3231	817	59	1318
Taylor, Louis C., Trenton, N. J. Library-furniture	477,190	June 14	1506	369	59	1752
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	474,783	May 10	1437	364, 365	59	926
Taylor, William, Allegheny, Pa. Nail or spike	472,913	Apr. 12	1370	351	59	275
Teachout, Samuel T., Cohoes, N. Y. Elevator	475,524	May 24	2616	666	59	1185
Teal, Benjamin F., Chicago, Ill. Air-compressor	474,034	May 3	239	57	59	684
Tebyrica, José P. (See Mariosa, José, assignor.)						
Teeguarden, Freeman M., assignor to Chief Manufacturing Company, Colfax, Ind. Sawing-machine	477,972	June 28	2785	698	59	2030
Teel, Joseph, Kunkletown, Pa. Car-coupling	475,829	May 31	3107	787	59	1293
Telemeter Company. (See Dibble, Fernando J., assignor.)						
Temple, Edward B., Philadelphia, and J. W. Meigs, Reading, Pa. Machine for grinding spectacle and eyeglass lenses	475,068	May 17	1896	481	59	1029
Temple, William G. (See Panchand and Temple.)						
Ten Eyck, Maning F., Clifton, N. J. Shutter-fastener	477,973	June 28	2789	699	59	2031
Tenney, Milton G., *et al.* (See Beckwith, Theodore A., assignor.)						
Terens, Nicholas H., Mishicot, Wis. Milk-can cover and cooler	473,481	Apr. 26	2337	592	59	493
Terpening, Charles S., Prescott, Wash. Supporter for the rear flap of trousers	476,699	June 7	708	174	59	1577
Terry, David C., and W. J. Maltby, Baird, Tex. Nut-lock	475,636	May 24	2784	705	59	1219
Terry, Henry C. (See Rowand, Lewis G., assignor.)						
Tewksbury, Andrew J., Haverhill, Mass. Leather-skiving machine	472,148	Apr. 5	215	57	59	40

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Thatcher, John M., Kansas City, Mo. Hot-water or steam boiler	477,470	June 21	1975	490	59	1854
Thatcher Manufacturing Company. (See Barnhart, Harvey P., assignor.)						
Thatcher, Thomas, Elizabethport, N. J. Divided-cylinder steam-engine	477,027	June 14	1239	300, 301	59	1698
Thayer, Edward R., *et al.* (See Sweet, Larntine C., assignor.)						
Thayer, Fred N., and E. W. Francis, Binghamton, N. Y. Magazine-pistol	477,280	June 21	1672	409, 410	59	1795
Thayer, H. W. (See Keating, Alphonso S., assignor.)						
Thayer, William H., Weymouth, Mass. Ticket-holder	473,135	Apr. 19	1746	441	59	356
Thedens, Ferdinand F., Lyons, Iowa. Furnace	472,183	Apr. 5	272	71	59	51
Theisen, Eduard, Sinzig-on-the-Rhine, Germany. Condenser	477,471	June 21	1977	491	59	1855
Thermo Electric Company. (See Dickerson, Edward N., assignor.)						
Thian, Louis R. (See Mullaney, John E., assignor.)						
Thieleman, Jonas. (See Rivers, Thomas L., assignor.)						
Thielen, John, Fremont, Nebr. Horse-collar fastener	474,878	May 17	1597	407	59	971
Thierry, Louis, Detroit, Mich. Vehicle chafe-iron	476,677	June 7	525	124	59	1541
Thies, John B., Dayton, Ohio. Autographic registering apparatus. (Reissue)	11,235	Apr. 26	3014	759, 760	59	622
Tholen, William A., and W. J. Murray, Leavenworth, Kans. Folding-machine	476,329	June 7	156	38, 39, 40	59	1467
Thomas, Francis, San Francisco, Cal. Cupping-glass with electrical attachment	474,977	May 17	1757	445	59	1002
Thomas, Henry O., Fremont, Nebr. Shrub-binder	475,361	May 24	2349	602	59	1136
Thomas, Henry O., assignor of one-half to J. W. Stevenson, North Bend, Nebr. Machine for baling trees	473,482	Apr. 26	2338	592	59	493
Thomas, Henry W. (See Gilbert and Thomas.)						
Thomas, Lancaster, Philadelphia, Pa. Compound microscope	475,362	May 24	2350	602	59	1136
Thomas, J. H. (See Klapperich, John W., assignor.)						
Thomas, Thomas C. J., London, England. Lamp	477,081	June 14	1337	324, 325	59	1718
Thomas, William J. (See Heckert, Thomas, and Heckert.)						
Thomas, William J., Sausalito, assignor of one-half to J. T. Wilson, San Francisco, Cal. Balanced piston	473,032	Apr. 19	1574	401	59	326
Thomas, William J., Sausalito, assignor to American Balance-Slide-Valve Company, San Francisco, Cal. Balance slide-valve	474,153	May 3	412	100	59	718
Thomason, Sue, Itasca, Tex. Sad-iron heater	472,149	Apr. 5	217	58	59	41
Thomason, Whitefoord S. (See Harris, William A. and B. S. H., assignors.)						
Thomassen, Ole K., Christiania, Norway. Apparatus for purifying oil	477,281	June 21	1675	410	59	1796
Thompson, Andrew J., Montrose, Colo. Machine for forming irrigating laterals	478,034	June 28	2892	723	59	2050
Thompson, Edward J., assignor to Goodell Company, Antrim, N. H. Hydrocarbon-burner	476,177	May 31	3665	927	59	1404
Thompson, Frank H., and G. P. Tormey, Philadelphia, Pa. Wedging device for tool-handles	477,082	June 14	1341	325	59	1718
Thompson, George H. (See Keifer and Thompson.)						
Thompson, Horace B., Brooklyn, N. Y. Rotary printing-machine	476,906	June 14	1052	254, 255	59	1659
Thompson, Jacob W. (See Hall, Major, assignor.)						
Thompson, James F., Rockland, assignor of one-half to C. F. Baker, Boston, Mass. Coloring and burnishing composition	473,679	Apr. 26	2668	.....	59	556
Thompson, James M., San Francisco, Cal. Amalgamator	475,360	May 24	2348	602	59	1136
Thompson, John. (See Frey and Thompson.)						
Thompson, John G. (See Goodrich, Charles F., assignor.)						
Thompson, Joseph B. (See Hinman and Thompson.)						
Thompson, Norman J. (See Frost, Eli C., assignor.)						
Thompson, Otis D., Elkhart, Ind. Truck	477,472	June 21	1980	492	59	1855
Thompson, Ross. (See Thompson, Thomas J., assignor.)						
Thompson & Sons, Henry G. (See Mower, Samuel E., assignor.)						
Thompson, Thomas J., Greystones, Ireland, assignor to R. Thompson, Port Arthur, Canada. Bicycle	474,784	May 10	1439	365	59	927
Thomson Electric Welding Company. (See Lemp, Hermann, assignor.)						
Thomson Electric Welding Company. (See Thomson, Elihu, assignor.)						
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Safety device for electric motors	476,330	June 7	163	40	59	1468
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Dynamo electric machine	476,331	June 7	166	40	59	1469
Thomson, Elihu, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Manufacture of axes	476,967	June 14	1153	278	59	1680
Thomson-Houston Electric Company. (See Burnett and Doane, assignors.)						
Thomson-Houston Electric Company. (See Hunter, Rudolph M., assignor.)						
Thomson-Houston Electric Company. (See Thomson, Elihu, assignor.)						
Thomson-Houston Electric Company. (See Wightman, Merle J., assignor.)						
Thomson-Houston Electric Company. (See Wirt, Herbert C., assignor.)						
Thomson, John, Brooklyn, N. Y. Proportional water-meter	476,099	May 31	3530	888	59	1378
Thomson, John, Brooklyn, N. Y. Gearing	476,101	May 31	3534	888	59	1378
Thomson, John, Brooklyn, N. Y. Disk water-meter	476,102	May 31	3534	889	59	1378
Thomson, John, Brooklyn, N. Y. Positive proportional meter	476,103	May 31	3537	890, 891	59	1379
Thomson, John, Brooklyn, N. Y. Proportional water-meter	476,104	May 31	3542	891	59	1380
Thomson, John, Brooklyn, N. Y. Pointer and dial for counting-registers	476,105	May 31	3543	891	59	1380
Thomson, John, Brooklyn, assignor to Thomson Meter Company, New York, N. Y. Proportional water-meter	476,094	May 31	3519	886	59	1376
Thomson, John, Brooklyn, assignor to Thomson Meter Company, New York, N. Y. Apparatus for calibrating water-meters	476,095	May 31	3520	886	59	1376
Thomson, John, Brooklyn, assignor to Thomson Meter Company, New York, N. Y. Positive proportional water-meter	476,096	May 31	3521	886	59	1377
Thomson, John, Brooklyn, assignor to Thomson Meter Company, New York, N. Y. Proportional water-meter	476,097	May 31	3524	886	59	1377
Thomson, John, Brooklyn, assignor to Thomson Meter Company, New York, N. Y. Method of and apparatus for maintaining a proportional flow of fluids through separate chambers	476,098	May 31	3526	887	59	1377
Thomson, John, Brooklyn, assignor to Thomson Meter Company, New York, N. Y. Positive proportional water-meter	476,100	May 31	3532	888	59	1378
Thomson, McLeod W. (See Vaughan, David F., assignor.)						
Thomson Meter Company. (See Cartright, Robert, assignor.)						
Thomson Meter Company. (See Thomson, John, assignor.)						
Thomson, Robert W. (See Phelps and Thomson.)						
Thomson, Robert W., and E. M. Phelps, Lynn, Mass., assignors to Hand Method Finishing Machine Company, Nashua, N. H. Sewing-machine for finishing buttonhole-pieces	477,028	June 14	1241	301, 302	59	1698

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Thomson, Warren T. (See Scovill, George W., assignor.)						
Thorn, Frederick A. and G., Salt Lake City, Utah Ter. Decoy	477,084	June 14	1342	325	59	1719
Thorn, George. (See Thorn, Frederick A. and G.)						
Thorn, George, Salt Lake City, Utah Ter. Grater	477,083	June 14	1341	325	59	1718
Thornton, Edward S., assignor of one-half to T. Horton, Troy, N. Y. Game-counter	472,744	Apr. 12	1131	290	59	226
Thornton, William C., Jefferson City, Mo. House-door letter-box	475,095	May 17	1943	492	59	1038
Thornton, William C., Jefferson City, Mo. House-door letter-box	475,096	May 17	1945	493	59	1038
Thorp, Thomas J., Chicago, Ill. Magazine-gun	473,370	Apr. 19	2147	538, 539	59	434
Thorpe, Vincent, Fall River, Mass. Shuttle-binder for looms	475,069	May 17	1898	482	59	1029
Thorsen, Ludwig, assignor of one-half to G. Newgard, St. Paul, Minn. Shingle-basket	474,800	May 10	1469	373	59	932
Thrall, Forrest E. (See Doyle, Thrall, and Wilkinson.)						
Throop, John H., Evansville, Ind. Boat-lowering apparatus	472,410	Apr. 5	630	161	59	118
Thrush, John W., assignor of two-thirds to A. P. Ritzell and P. H. Neffien, Keyser, W. Va. Reversible double-shovel plow	476,578	June 7	526	124	59	1541
Thuge, Johan A., assignor to A. W. Rasmussen, Chicago, Ill. Order-holder	478,035	June 28	2893	723	59	2051
Thuge, Johan A., assignor to C. R. Hadley and W. A. Vawter, Chicago, Ill. Temporary holder	475,257	May 17	2183	556	59	1086
Thum, Mandeville, Louisville, Ky. Safety cut-out	472,084	Apr. 5	110	30	59	22
Thum, Mandeville, Louisville, Ky. Electric-circuit-controlling device	473,594	Apr. 26	2542	641	59	532
Thum, Mandeville, Louisville, Ky. Circuit-controlling device	473,595	Apr. 26	2544	641	59	532
Thurber, Alfred, San Pablo, Cal. Slate-cleaner	473,033	Apr. 19	1576	401	59	326
Thurmond Car Coupling Company. (See McKeen, Thomas L., assignor.)						
Thurston, Eli A., Avondale, Ala. Vehicle-wheel	477,473	June 21	1981	492	59	1855
Thurston, Harrison F., Centre Bartlett, N. H. Evaporating-pan	476,701	June 7	709	174	59	1578
Thurston, Henry W., Brooklyn, N. Y. Machine for making fish or other nets	477,085	June 14	1343	326, 327	59	1719
Thurston, James B., Concord, assignor of one-half to W. S. Head, Hooksett, N. H. Joint-clamp for fishing-rods	475,024	May 17	1831	464	59	1016
Thurston, Robert H., Ithaca, N. Y. Electric-arc lamp	476,700	June 7	708	174	59	1578
Tibbets, Lewis D. (See Imeson, Tibbets, and Kellogg.)						
Tibbits, Edwin A., and C. W. Sadler, Sutter Creek, Cal. Cigar and ash holder	473,646	Apr. 26	2620	660	59	546
Tibbits, Jonathan H., San Diego, Cal. Bass-bar for violins, tenor-viols, and bass-viols	476,907	June 14	1053	255	59	1660
Tichborne, Charles R. C., A. E. Darley, M. F. Purcell, and S. Geoghegan, Dublin, Ireland, assignors to Brewers and Distillers CO_2 Company, Limited, Westminster, England. Method of and appliance for the collection and utilization of carbonic-acid gas and other products given off during the process of fermentation	472,085	Apr. 5	111	30	59	22
Tidnam, Frederick H. (See Browne and Tidnam.)						
Tietjen, George H., assignor to Tietjen Sign Company, San Francisco, Cal. Sign-stencil-ing machine	477,474	June 21	1982	492	59	1856
Tietjen Sign Company. (See Tietjen, George H., assignor.)						
Tiffany Pressed Brick Company. (See Plant, Stephen J., assignor.)						
Tilley, John W. (See Baldwin, Frank S., assignor.)						
Tillinghast, Pardon W., Providence, R. I. Pneumatic tire	473,798	Apr. 26	2847	715	59	590
Tillinghast, Pardon W., Providence, R. I. Pneumatic tire and means for inflating the same	477,316	June 21	1736	425	59	1808
Tillou, William H. Le Roy, N. Y. Supplementary seat for vehicles	475,954	May 31	3309	835	59	1353
Tilton, Charles F. (See Bailey and Tilton.)						
Timby, Theodore R., Washington, D. C. Revolving-tower fortification	474,271	May 3	592	147, 148	59	752
Timby, Theodore R., Washington, D. C. Apparatus for evaporating brine	475,637	May 24	2785	705, 706	59	1219
Timewell, Arthur T. (See Bibb and Timewell.)						
Timmerman, Jason D., Spring Lake, N. Y. Bag-holder	477,235	June 21	1601	392	59	1782
Tinsman, Samuel H., Morris, Ill. Sulky-plow	476,579	June 7	527	124	59	1541
Tobey, Charles W., New Bedford, Mass. Connection for electric conductors	474,584	May 10	1128	288	59	865
Todd, George N. (See Foote, Walter E., assignor.)						
Todd, Herman A., and A. H. Anderson, Shelton, Wash. Journal-bearing	472,150	Apr. 5	218	58	59	41
Todd, Herman A., and A. H. Anderson, Shelton, Wash. Center-plate for logging-cars	472,151	Apr. 5	219	58	59	41
Todd, Herman A., and A. H. Anderson, Shelton, Wash. Chock-block for logging-cars	472,152	Apr. 5	220	58, 59	59	41
Tolliner, Charles, Pulaski, N. Y. Trick savings-bank	475,525	May 24	2617	666	59	1186
Tomey, John J., assignor of one-half to N. B. Russell, Washington, Ind. Pipe and rod wrench	472,153	Apr. 5	222	59	59	42
Tomey, John J., assignor of one-half to N. B. Russell, Washington, Ind. Wrench	476,841	June 14	942	229	59	1638
Tomson, William H. (See Benham and Tomson.)						
Toney, George W., Westborough, and M. V. Livingston, Newton, Mass. Pneumatic tire	472,411	Apr. 5	632	161	59	118
Tonkin, John J., assignor to W. G. Warden, Philadelphia, Pa. Steam-boiler	474,785	May 10	1441	365, 366	59	927
Topham, Henry, Philadelphia, Pa. Heddle for cross-weaving looms	472,412	Apr. 5	633	162	59	118
Topliss, John R., and J. A. Kay, Melbourne, Victoria. Machine for nicking printing-type	473,271	Apr. 19	1978	496	59	401
Topping, George W., San Mateo, Cal. Ice-pick	474,879	May 17	1597	407	59	971
Toquet, Benjamin H. (See Smith, Heman P., assignor.)						
Torney, George P. (See Thompson and Torney.)						
Torrance, George J., Harrison, N. J. Balling-machine	472,774	Apr. 12	1173	300	59	234
Torrey, Francis B. (See Cherry, Thomas E., assignor.)						
Torrey, James W. (See Hollar and Holmes, assignors.)						
Tosh, James B., Valley Falls, Kans. Corn-harvester	477,317	June 21	1738	426	59	1808
Towar, George W., Jr., Detroit, Mich. Centrifugal machine for emulsifying liquids	474,880	May 17	1598	407	59	971
Tower, Caleb E., assignor to Economist Plow Company, South Bend, Ind. Sulky-plow	475,638	May 24	2787	706, 707	59	1220
Town, Jane, Dekorra, Wis. Shoulder-brace	472,086	Apr. 5	112	30	59	23
Townsend, Crighton R., Idaho Springs, Colo. Ore-concentrator	474,272	May 3	595	148	59	753
Townsend, John J., Portsmouth, Va., assignor to Townsend Marine Invention Company, Baltimore, Md. Recording-compass	477,282	June 21	1676	410, 411	59	1796
Townsend, John J., Portsmouth, Va., assignor to Townsend Marine Invention Company, Baltimore, Md. Automatic recording-compass	477,283	June 21	1680	411, 412	59	1797
Townsend, John J., Portsmouth, Va., assignor to Townsend Marine Invention Company, Baltimore, Md. Automatic course, speed, and time recorder for vessels	477,284	June 21	1682	412	59	1797
Townsend Marine Invention Company. (See Townsend, John J., assignor.)						
Townsend, Philip S., Rochester, N. Y. Safety attachment for street-cars	472,184	Apr. 5	273	71	59	52
Tracy, Doria, Toledo, Ohio. Rolling blower for fireplaces and grates	474,978	May 17	1759	446	59	1002
Tracy, William P., Grand Rapids, Mich. Folding bed	472,321	Apr. 5	492	128	59	92
Trainer, John W., assignor to Fort Wayne Organ Company, Fort Wayne, Ind. Reed-organ	472,201	Apr. 5	299	79	59	56
Trainer, John W., assignor to Fort Wayne Organ Company, Fort Wayne, Ind. Stop-action for organs	474,881	May 17	1599	408	59	971

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Trapp, Edward A., Jersey City, N. J. Guard-rail for railways	477,713	June 28	2381	595	59	1953
Traut & Hine Manufacturing Company. (See Richards, Hubert P., assignor.)						
Traut, Justus A. (See Haslam, Henry, assignor.)						
Traut, Justus A., Hartford, Conn. Suspender-buckle	474,199	May 3	484	117	59	731
Trantvetter, Erwin von, Brooklyn, N. Y. Music-leaf turner	477,828	June 28	2565	642, 643	59	1987
Travis, Charles L., Minneapolis, Minn. Machine for removing superfluous material from thread	477,285	June 21	1684	412, 413	59	1798
Travis, Charles L., assignor to Union Stock Car Company, Minneapolis, Minn. Stock-car	475,258	May 17	2185	556, 557	59	1087
Traylor, John H., Richmond, Va. Plate-lifter	475,363	May 24	2352	603	59	1136
Treadwell, Harry D., *et al.* (See Lawrence, George A., assignor.)						
Treadwell, Levi P., Danbury, Conn. Sash-fastener	476,431	June 7	321	73	59	1500
Treadwell, Levi P., Danbury, Conn. Sash-fastener	476,432	June 7	322	74	59	1500
Treat, Charles H., and A. B. Banghart, Baltimore, Md.; said Banghart assignor to said Treat. Machine for cutting veneer dish-blanks	477,086	June 14	1346	327, 328	59	1720
Treat, Joseph A., Stuart, Iowa. Cash-register	474,614	May 10	1170	297, 298, 299	59	873
Treat, Joseph A., Stuart, Iowa. Monument	475,003	May 17	1801	456	59	1010
Tree, Thomas, Ithaca, N. Y. Hot-water heater	476,218	May 31	3741	945	59	1418
Trefz, Otto R., assignor to Lester Piano Company, Philadelphia, Pa. Muffling attachment for upright pianos	476,842	June 14	943	230	59	1638
Trench, Ira J., Middletown, Conn. Adjustable nut for axles	473,272	Apr. 19	1981	497	59	402
Trenton Iron Company. (See Hewitt, William, assignor.)						
Tresidder, Tolmie J., Sheffield, England. Manufacture of armor-plates	475,364	May 24	2353	603	59	1136
Trew, Charles R., Dunbar, Pa. Safety-catch for mining-cars	475,639	May 24	2789	707	59	1220
Trewhella, Benjamin, Jr. (See Trewhella, William, assignor.)						
Trewhella, William, assignor of one-half to B. Trewhella, Jr., Blackwood, Victoria. Lever-jack	476,702	June 7	710	174, 175	59	1578
Trexler, Milton W., East Greenville, Pa. Car-coupling	474,703	May 10	1314	335	59	902
Triant, Thomas, *et al.* (See Raymond, Silas H., assignor.)						
Trimble, William. (See Cline and Trimble.)						
Trimby, Thomas W., Rochester, N. Y. Sole	476,499	June 7	418	97	59	1519
Tripold, Ambrose A., and C. F. Davenport, Brooklyn, N. Y. Packing for pistons	473,182	Apr. 19	1839	463	59	372
Tripp, Seth D., Lynn, Mass. Wrapping-machine	472,202	Apr. 5	303	79, 80	59	57
Troast, William F., *et al.* (See Slaymaker, Samuel R., assignor.)						
Tropical Fibre Machine and Process Company. (See Myers, James L., assignor.)						
Trottier, Joseph A., Valleyfield, Canada. Bottle-alarm	475,526	May 24	2619	666	59	1186
Troy, Edward, *et al.* (See Mooney, Benjamin F., assignor.)						
Troy Laundry Machinery Company. (See Wiles and Wendell, assignors.)						
True, Moses E., Batavia, N. Y. Crosscut-saw handle	476,936	June 14	1104	266	59	1670
True, Richard S., assignor, by mesne assignments, to R. S. True Company, Syracuse, N. Y. Bicycle-saddle. (Reissue)	11,249	June 21	2252	564	59	1909
Trumbull, Hugh, Hartford, Conn. Band-marker for backs of books	475,830	May 31	3108	787	59	1294
Trump, John G., assignor of eleven-twelfths to P. J. Trump, J. Jordan, C. Hildner, Richville, E. H. Taylor, R. Preston, R. V. Bray, J. C. Loss, R. Morris, Vassar, M. Reichle, G. Reid, Reese, and S. M. Haight, Denmark, Mich. Vehicle	477,475	June 21	1984	492	59	1856
Trump, Paul J., *et al.* (See Trump, John G., assignor.)						
Tubbs, Dean C., Detroit, Mich. Ironing-machine	476,332	June 7	168	41	59	1469
Tubular Rivet Company. (See Bray and Hemmenway, assignors.)						
Tuck, Josiah H. L., San Francisco, assignor of one-half to E. E. Tucker, Stockton, Cal. Conveyer	474,786	May 10	1443	366	59	927
Tucker, Andrew J., Springfield, Mass. Dandy-roll	476,968	June 14	1155	278, 279	59	1680
Tucker, E. E. (See Tuck, Josiah H. L., assignor.)						
Tucker, Junius E., Memphis, Tenn. Perforating attachment	473,483	Apr. 26	2341	593	59	494
Tucker, Stephen D., *et al.* (See Crowell, Luther C., assignor.)						
Tucker, Stephen D., New York, N. Y. Double-cylinder flat-bed printing-machine	473,484	Apr. 26	2342	593, 594	59	494
Tucker, Stephen D., New York, N. Y. Machine for bending metal plates	477,390	June 21	1851	455	59	1830
Tucker, Thomas J., Weanbleau, Mo. Lawn-mower	476,908	June 14	1054	255	59	1660
Tudor, James H., Lexington, assignor of one-half to J. O. Brooks, Union City, Ky. Gate	478,036	June 28	2894	723	59	2051
Tuerk, Frederick W., Jr., assignor of two-thirds to J. and J. Hunter, Fulton, N. Y. Fan	477,614	June 21	2210	549	59	1901
Tuerk, Samuel O., Fulton, N. Y. Fare-box	473,680	Apr. 26	2669	672, 673	59	556
Tuerk, Samuel O., Fulton, N. Y. Checking device	476,333	June 7	169	41	59	1469
Tulloch, James, Angel's Camp, Cal. Concentrator	476,500	June 7	419	97	59	1519
Tulloch, Louis R., Angel's, Cal. Stamp-mill attachment	473,371	Apr. 19	2150	540	59	434
Tunnicliff, John C., Galesburg, Ill. Corn-planter	472,281	Apr. 5	425	109, 110	59	79
Turck, Frederick M., assignor to C. R. Hadley and W. A. Vawter, Chicago, Ill. Temporary holder	475,259	May 17	2187	557	59	1087
Turcott, Gédéon L., Newport, assignor to J. R. Cutting, Newport Centre, Vt. Horseshoe	477,476	June 21	1985	493	59	1856
Turner, Alonzo G., assignor of two-thirds to F. A. Kimball, Durango, and A. Levy, Walsenburg, Colo. Nut-lock	477,318	June 21	1740	426	59	1808
Turner-Beard Automatic Brake Company. (See Turner, William B., assignor.)						
Turner, Calvin, Bangor, Me. Stew-pan	477,974	June 28	2789	699	59	2032
Turner, Claude W. (See Prouty and Turner.						
Turner, Harvey F. (See Hoffman and Turner.)						
Turner & Seymour Manufacturing Company. (See Brothwell, John G., assignor.)						
Turner, William A., assignor to E. Converse, Worcester, Mass. Flushing-valve	477,714	June 28	2383	595	59	1954
Turner, William A., assignor to E. Converse, Worcester, Mass. Flushing-valve	477,715	June 28	2384	596	59	1954
Turner, William A., assignor to E. Converse, Worcester, Mass. Flushing-valve	477,716	June 28	2385	596	59	1954
Turner, William A., assignor to E. Converse, Worcester, Mass. Flushing-valve	477,717	June 28	2386	596	59	1954
Turner, William B., Boston, Mass., assignor to Turner-Beard Automatic Brake Company, New York, N. Y. Power-transmitting device for car-brakes	474,615	May 10	1179	299	59	874
Tuttle, Gutle H., Shorter's Depot, Ala. Fireplace-blower	477,582	June 21	2146	533	59	1889
Tuxbury, George A., *et al.* (See Beckwith, Theodore A., assignor.)						
Twiss, Freeman L., and L. A. Barber, Groton, N. Y. Type-writer carriage	473,485	Apr. 26	2345	594	59	494
Twiss, Nelson W., New Haven, Conn. Steam-engine valve	473,486	Apr. 26	2347	595	59	494
Tyler, Harry L., assignor of two-thirds to G. W. and C. E. Drake, Corning, N. Y. Current-alternator	476,843	June 14	944	230	59	1639
Tyler, Vernon A., Morris Park, N. Y. Thill-coupling	474,070	May 3	298	72	59	695

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Tyler, William D., Denver, Colo. Belt-tightener	472,967	Apr. 12	1452	371	59	290
Tym, John, North Bend, Nebr. Ant-hill cutter	473,799	Apr. 26	2848	715	59	590
Tyner, George N., *et al.* (See Ball, James, assignor.)						
Tyson, Bryan, assignor of one-tenth to C. A. Metcalf, Washington, D. C. Amalgamator	473,533	Apr. 26	2420	614	59	507
Tyson, James R., Reading, Pa. Umbrella drip-cup	474,616	May 10	1180	300	59	874
Uchtmann, Weet R., New York, N. Y. Change receiver and transfer table	476,703	June 7	711	175	59	1578
Uhl, William W. (See Airey and Uhl.)						
Uhlig, Franz, Topkowitz, near Bodenbach, Austria-Hungary. Lift or hoist for placing ships' masts	477,477	June 21	1986	493	59	1856
Uhlig, Richard W., College Point, N. Y., assignor to S. R. Beckwith, East Orange, N. J. Automatic vending-machine	477,029	June 14	1245	302	59	1700
Ulbricht, Emil, Chicago, Ill. Pneumatic tire	473,034	Apr. 19	1576	401	59	326
Ulfig, Charles, Martin's Ferry, Ohio. Manufacture of hollow glass articles	472,631	Apr. 12	964	250	59	197
Ullman, Morris, Washington, D. C. Base-ball game	476,334	June 7	170	41, 42	59	1469
Ulrey, William A., Pipesville, Ohio. Spring-motor	477,478	June 21	1988	493, 494	59	1857
Ulrich, Moritz, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Violet azo dye	476,335	June 7	173	.....	59	1470
Ulrich, Moritz, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Black azo dye	476,336	June 7	174	.....	59	1470
Ulrich, Moritz, and R. Lauch, assignors to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Blue dye	476,337	June 7	175	.....	59	1470
Underwood, Harold G. (See Hilborn, Louis B., assignor.)						
Underwood, John K., Geneva, N. Y. Astigmascope	476,704	June 7	713	175	59	1579
Underwood, Robert A., Chattanooga, Tenn. Weather-board gage	473,098	Apr. 19	1673	425	59	343
Unger, Charles W., assignor of one-half to J. H. Banks, Salt Lake City, Utah Ter. Gun-rest	476,580	June 7	522	125	59	1541
Union Manufacturing and Plating Company. (See Edwards, William J., assignor.)	475,640	May 24	2790	707	59	1220
Union Manufacturing Company. (See Macomber, Zebedee, assignor.)						
Union Metallic Cartridge Company. (See Gilbert and Thomas, assignors.)						
Union Metallic Cartridge Company. (See Orcutt, Jerome, assignor.)						
Union Novelty Company. (See Fontaine, Eugene, assignor.)						
Union Paper Bag Machine Company. (See Stillwell, Charles B., assignor.)						
Union Special Sewing Machine Company. (See Fefel, Henry H., assignor.)						
Union Stock Car Company. (See Travis, Charles L., assignor.)						
United Gas Improvement Company. (See Collins, Charles R., assignor.)						
United States Aluminium Metal Company. (See Héroult, Paul, assignor.)						
United States Alnminium Metal Company. (See Héronlt, Paul L. T., assignor.)						
United States Cash Register Company. (See Gilman, Willard H., assignor.)						
United States Projectile Company. (See Bliss, Eliphalet W., assignor.)						
Universal Carbonating Company. (See Feigenspan, Christian, assignor.)						
Universal Lock Company. (See Smith, Eugene C., assignor.)						
Universal Selling Machine Company. (See Fancher, Alton H., assignor.)						
Universal Weeder Company. (See Cate, William H. M., assignor.)						
Unz, Henry H., New York, N. Y., assignor to National Type Writer Company, of Pennsylvania. Type-writing machine	472,836	Apr. 12	1257	322	59	251
Unzicker, Hermann, Chicago, Ill. Steam-engine	475,365	May 24	2356	603, 604	59	1137
Updike, Edward J., Mishawaka, Ind. Planter	474,425	May 10	876	228	59	818
Upfill, James M., *et al.* (See Browne, James R., assignor.)						
Upson, Waldo L., assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Wick-raiser for central-draft lamps	473,681	Apr. 26	2672	673	59	556
Upton, Charles S., New York, N. Y. Lamp-stove	472,594	Apr. 12	905	232	59	186
Upton, Charles S., New York, N. Y. Lamp	474,979	May 17	1760	446	59	1003
Urbahn, Alwill, assignor to American Loop Fabric Company, Brooklyn, N. Y. Loom for weaving ornamental fabrics	474,882	May 17	1602	408, 409, 410	59	972
Urbahn, Alwill, assignor to American Loop Fabric Company, Brooklyn, N.Y. Woven fabric	474,883	May 17	1604	410	59	973
Vacuum Door Check Company. (See Shrawder, John S., assignor.)						
Vacher, Jerome, Paterson, N. J. Jacquard connection for looms	472,513	Apr. 5	793	203	59	151
Valentine, Waldo W., Washington, D. C. Vehicle-wheel	475,906	May 31	3232	817	59	1318
Van Auken, Byron E., assignor, by mesne assignments, to Van Auken Steam Specialty Company, Chicago, Ill. Steam-trap	478,037	June 28	2895	723	59	2051
Van Auken, Clarence E., Chicago, Ill. Valve	476,844	June 14	946	230	59	1639
Van Auken Steam Specialty Company. (See Van Auken, Byron E., assignor.)						
Van Bibber, Andrew, Cincinnati, Ohio. Bicycle	477,583	June 21	2147	533	59	1889
Van Broek, Wilhelm J., Cologne, Germany. Safe-lock	473,800	Apr. 26	2849	715	59	590
Van Cott, Edward F. (See Rothschild and Van Cott.)						
Van Deusen, Charles H., Verona, Ill. Leaf-turner	473,246	Apr. 19	1940	488	59	393
Van Dyke, John W., Brooklyn, N. Y. Steam-generator	474,508	May 10	1000	257	59	840
Van Gilder, William H., Perrysville, Ohio. Folding stool	473,534	Apr. 26	2427	614, 615	59	508
Van Hoevenbergh, Henry, New York, N. Y. Unison apparatus for printing-telegraphs	472,237	Apr. 5	361	93	59	67
Van Horn, George, Wallis Run, Pa. Farm-gate	474,426	May 10	878	229	59	818
Van Kooy, Abram, Holland, Mich. Rafting logs	476,106	May 31	3544	891	59	1380
Van Loozen, Fred H., Cleveland, Ohio. Feeding mechanism for printing-presses	474,884	May 17	1605	410, 411	59	973
Van Norman, Charles E., Springfield, Mass. Work-clamping block for engravers	476,951	June 14	1128	271	59	1675
Van Norman, Hiram L. (See Mayhall, William A., assignor.)						
Van Nuis, Charles S. (See Sachs, Joseph, assignor.)						
Van Oostrum, Otte, Portland, Oreg. Dam	476,706	June 7	717	176	59	1579
Van Orden, John M., New York, N. Y. Inhaler	472,238	Apr. 5	362	93	59	68
Van Ormer, Harry H., Edwardsburg, Mich. Wire-stretcher	476,338	June 7	176	42	59	1471
Van Patten, Frederick, Auburn, N. Y. Spring-tooth harrow	472,185	Apr. 5	275	72	59	52
Van Patten, John, West Troy, assignor of one-half to W. E. Hagan, Troy, N. Y. Button-hook	473,035	Apr. 19	1579	402	59	326
Van Patten, John, West Troy, assignor of one-half to T. J. Sullivan, Albany, N. Y. Dipper-dredger	473,535	Apr. 26	2428	615	59	509
Van Voorhis, William H., Spearville, Kans., assignor of one-third to W. S. Ritchie, Aspen, Colo. Potato-digger	476,763	June 7	800	197	59	1597
Van Vradenburg, Peter D., Binghamton, N. Y. Vehicle-starter	474,538	May 10	1053	269, 270	59	850
Van Why, Joseph M., assignor of one-half to J. McNany, Elmira, N. Y. Anchor for brick walls	473,273	Apr. 19	1984	497	59	402

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Van Winkle, Franklin, Paterson, N. J. Rotary transmitting-dynamometer	472,466	Apr. 5	713	182	59	135
Vance, Daniel B., and H. J. Laurence, Woodbury, Tenn. Side-hill plow	473,487	Apr. 26	2349	596	59	495
Vandecar, Israel D., Stockton, Cal. Voting-booth	475,641	May 24	2791	707	59	1221
Vandegrift, Drury E. (See Pettegrew, Swithen C., assignor.)						
Vanes, John, Brazil, Ind. Crane	473,682	Apr. 26	2673	673	59	557
Vanneman, William C., Anderson, Ind. Brick-machine	476,705	June 7	715	175, 176	59	1579
Vant Woud, Victor C., Brooklyn, N. Y. Atomizer	474,035	May 3	240	57	59	684
Varty, John. (See Bills, James A., assignor.)						
Varley, Richard, Jr., Englewood, N. J. Electric-contact protector	473,717	Apr. 26	2724	686	59	566
Varley, Richard, Jr., Englewood, N. J. Limiting-stop for armatures	476,845	June 14	948	230	59	1639
Vasaly, Stephen C., St. Paul, Minn. Type-writing machine	472,612	Apr. 12	937	241	59	192
Vassar Burglar Alarm Manufacturing Company. (See Vassar, Robert G., assignor.)						
Vassar, Robert G., New York, N. Y. Alarm-lock	478,071	June 28	2947	736, 737	59	2061
Vassar, Robert G., New York, N. Y., assignor to Vassar Burglar Alarm Manufacturing Company, of New Jersey. Burglar-alarm	474,980	May 17	1761	446	59	1003
Vaughan, David F., Haddonfield, N. J., assignor of one-half to M. W. Thomson, Altoona, Pa. Railway-frog	474,200	May 3	486	117	59	732
Vaughan, Fred W., San Francisco, Cal. Wheel-cultivator	476,707	June 7	718	177	59	1579
Vaughn, James J., *et al.* (See Beckwith, Theodore A., assignor.)						
Vawter, William A., *et al.* (See Burton, Augustus G., assignor.)						
Vawter, William A., *et al.* (See Thuge, Johan A., assignor.)						
Vawter, William A., *et al.* (See Turck, Frederick M., assignor.)						
Vawter, William A., and R. J. Copeland, Chicago, Ill. Temporary holder	475,425	May 24	2454	625	59	1154
Veeder, Irwin. (See Rowntree and Veeder.)						
Veeder, Irwin, trustee. (See Dunham, Charles H., assignor.)						
Veenschoten, William, Hornellsville, N. Y. Elevator	473,036	Apr. 19	1580	402, 403	59	327
Veitch, Richard M. (See Mitchell and Veitch.)						
Venen, Albert P., Seattle, Wash. Musical instrument	473,981	May 3	150	35	59	666
Venn, Isaac H., Yonkers, N. Y., assignor, by mesne assignments, to National Company, of Illinois. Hydraulic elevator	476,581	June 7	530	125, 126	59	1542
Verburg, Simon, assignor of one-half to W. H. Holden, Detroit, Mich. Portable measuring-faucet	472,775	Apr. 12	1174	300	59	235
Verity, James H. (See Baker and Verity.)						
Vernon, Miles, Brooklyn, N. Y. Movable index for letter-copy books	476,708	June 7	719	177	59	1580
Verstraete, Edmond. (See Koedding, William, assignor.)						
Very, Alpha O., Boston, Mass. Trimmer for sewing-machines	476,339	June 7	177	42	59	1471
Vetterlein, John, North Plainfield, N. J. Wheel for cycles	476,433	June 7	323	74	59	1500
Vickers, Albert, Baltimore, Md. Arresting and extinguishing combustion in charcoal-kilns	477,875	June 28	2649	602	59	2002
Viehofer, Carl R., Berlin, Germany. Corset-fastening	472,087	Apr. 5	113	30	59	23
Viel, Arthur H., Fenton, Mich. Spring-bed	476,178	May 31	3667	927	59	1405
Vietl, Emile T., Charleston, S. C. Stone-lifter	474,885	May 17	1610	411	59	974
Vincentz, Theodore J., Orange, N. J. Appliance for holding paper sheets in quantity	473,099	Apr. 19	1675	425	59	343
Vining, George, assignor to T. M. Parker, Hartford, Conn. Printing-machine	474,108	May 3	353	84	59	705
Violet, Richard J. G. (See Willing and Violet.)						
Viser, William M., Clarksville, Tenn. Tablet for use in letter-writing	477,087	June 14	1348	328	59	1720
Vogel & Brothers, William. (See Vogel, Henry J., assignor.)						
Vogel, Carl, Stuttgart, Germany. Self marking and indicating target	474,109	May 3	355	85	59	705
Vogel, Henry J., assignor to W. Vogel & Brothers, Brooklyn, N. Y. Breast or top for metallic vessels	473,274	Apr. 19	1983	497	59	402
Voght, William. (See Chaplin, Joseph, assignor.)						
Vogt, August, Willow Point, Tex. Fruit-jar	473,100	Apr. 19	1676	425	59	344
Vogt, Cæsar, Posen, Germany. Microphone	476,582	June 7	534	127	59	1543
Vogt, Cæsar, Posen, Germany. Magnetic telephone	476,583	June 7	535	127	59	1543
Vogt, Theodore G. P., Passaic N. J. Land and water velocipede	477,160	June 14	1453	356, 357	59	1740
Vohringer, Frederick, Louisville, Ky. Manufacturing sheet-metal articles	475,642	May 24	2793	708	59	1221
Vojàcek, Ladislav. (See Rivnàc and Vojàcek.)						
Volkten, Theodor, Washington, D. C. Sash-cord fastener	472,565	Apr. 12	867	223	59	179
Vose, Harry A. (See Glenn, William F., assignor.)						
Votey, Edwin S., and W. D. Wood, Detroit, Mich. Wind-chest for pipe-organs	475,831	May 31	3110	787, 788	59	1294
Votey, Edwin S., and W. D. Wood, Detroit, Mich. Fresh-wind box for pipe-organs	475,832	May 31	3112	788, 789	59	1294
Vought, Jennie T. (See Straut, Hooper B., assignor.)						
Vulcan Company. (See Leavitt, Frank M., assignor.)						
W. W. Kimball Company. (See Hedgeland, Frederick W., assignor.)						
Wachs, William, Covington, Ky. Baking pan	472,595	Apr. 12	906	232	59	186
Waddell, Montgomery, J. B. Entz, New York, and W. A. Phillips, Brooklyn, N. Y. Method of and apparatus for deoxidizing metals	475,260	May 17	2188	558	59	1087
Waddell, Thomas W. (See McAlister and Waddell.)						
Wade, L. R., *et al.* (See Jackson and Reiger, assignors.)						
Wadsworth, William, *et al.* (See Prescott, George A., assignor.)						
Waeber, Gustavus A., New York, N. Y. Sheet-metal can	474,427	May 10	879	229	59	818
Waffenfabrik, Mauser. (See Mauser, Paul, assignor.)						
Wagandt, Charles L., assignor to Keen & Hagerty, Baltimore, Md. Baking-plate for pies, &c	476,340	June 7	178	42	59	1471
Wagandt, Charles L., assignor of one-half to Keen & Hagerty, Baltimore, Md. Soldering apparatus	477,090	June 14	1351	328	59	1721
Wagenführ, Charles, Brooklyn, N. Y. Button-die	475,476	May 24	2536	646	59	1170
Wagg, S. R., *et al.* (See Goodrick, Edward W., assignor.)						
Waggoner, Edward P., assignor of one-half to Pierce, Butler & Pierce Manufacturing Company, Syracuse, N. Y. Sectional heater	474,311	May 3	675	174, 175	59	767
Wagler, John A., New York, N. Y. Web for bookbinding, &c	474,509	May 10	1002	258	59	841
Wagner, Alvin, *et al.* (See Otto, Peter, assignor.)						
Wagner, August, assignor to Schaum & Uhlinger, Philadelphia, Pa. Swivel-loom	473,563	Apr. 26	2479	627	59	520
Wagner Electric Manufacturing Company. (See Wagner and Schwedtmann, assignors.)						
Wagner, Frans X. (See Fleckenstein, Cornelius, assignor.)						
Wagner, Herbert A., and F. Schwedtmann, assignors to Wagner Electric Manufacturing Company, St. Louis, Mo. Electric machine	474,787	May 10	1444	366	59	928
Wagner, Jackob, Brooklyn, N. Y. Sad-iron	474,704	May 10	1315	335	59	902
Wagner, Oscar, assignor of one-half to C. Reusch, Dayton, Ohio. Window	472,239	Apr. 5	363	93	59	68

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wagner, William. (See Williams, Charles J., assignor.)						
Wainwright, William, San Francisco, Cal. Spray-rod	473,037	Apr. 19	1586	403	59	327
Waite, Annie L., administratrix. (See Bangs and Waite.)						
Waite, Arthur L. (See Bangs and Waite.)						
Waite, Henry E., New York, N. Y. Electric-bath apparatus	477,975	June 28	2791	699	59	2032
Wakefield, Thomas, Ely, Minn. Elevator for mining-cars	473,275	Apr. 19	1983	497, 498	59	402
Walker, Benjamin J. (See Kies, Harry E., assignor.)						
Walker, Edward A., Philadelphia, Pa. Belt-shifter	472,745	Apr. 12	1133	291	59	227
Walker, Edward A., Philadelphia, Pa. Planing-machine	475,004	May 17	1801	457	59	1010
Walker, Frank. (See Walker, Joseph J., W. H., and F.)						
Walker, Frederick H., Philadelphia, Pa. House-door letter-box	477,091	June 14	1352	329	59	1721
Walker, George A., *et al.* (See Westgate, Joseph D., assignor.)						
Walker, George D., Cleveland, Ohio. Crib attachment for beds	472,647	Apr. 12	983	254	59	200
Walker, George W., Tama, Iowa. Grate-bar and shaker attachment for furnaces	476,584	June 7	536	127, 128	59	1543
Walker, James M. C. (See Chenette, Joseph E., assignor.)						
Walker, John, Cleveland, Ohio. Device for operating sliding sleeves	474,428	May 10	881	229	59	818
Walker, John, Cleveland, Ohio. Clutch	474,429	May 10	882	230	59	819
Walker, Joseph J., W. H., and F., St. Helier's, England. Recording money-till	475,643	May 24	2794	708	59	1221
Walker, Lewis C., Indianapolis, Ind. Sash-fastener	472,088	Apr. 5	114	31	59	23
Walker, Louis A., Brooklyn, assignor to himself as trustee, and C. S. Mitchill, New York, N. Y. Bag-fastener	476,219	May 31	3742	945	59	1418
Walker, W. & H. (See Forster, Thomas V., assignor.)						
Walker, Walter, London, England. Process of and apparatus for making silicates and hydrochloric acid	474,539	May 10	1054	270	59	850
Walker, William, Sydney, New South Wales. Tube-expander	476,107	May 31	3545	892	59	1381
Walker, William C. (See Conway, Edward C., assignor.)						
Walker, William H. (See Walker, Joseph J., W. H., and F.)						
Walker, William V., Moravia, N. Y. Water-purifier and boiler-cleaner	477,615	June 21	2211	549	59	1901
Walker, William W., *et al.* (See Harden, William H., assignor.)						
Wall, John, and J. J. Mack, Terre Haute, Ind. Railway-frog	474,705	May 10	1316	335	59	902
Wallace, Amos, Little Rock, Iowa. Windmill	473,982	May 3	152	36	59	667
Wallace, Casper D., Bridgeport, Conn., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	474,981	May 17	1764	447	59	1003
Wallace, William T., Beloit, Wis. Hay-rack	477,161	June 14	1455	357	59	1741
Walleiser, Ludovica, Dresden, Germany. Inhaling and disinfecting device	477,342	June 21	1772	434	59	1815
Walling, William P., Santa Monica, Cal. Elevated track or tramway	477,718	June 28	2388	596	59	1954
Wallis, Howard R., Muncy, Pa. Nut-lock	472,413	Apr. 5	634	162	59	119
Walls, Cyrus N., Taylorville, Ill. Feeding attachment for paper-folders	475,644	May 24	2796	708	59	1221
Walpole, William R. (See King and Walpole.)						
Walsh, Clarence L., *et al.* (See Lawing, Samuel N., assignor.)						
Walsh, Maurice J., *et al.* (See Beckwith, Theodore A., assignor.)						
Walsh, Owen. (See Dillman, William C., assignor.)						
Walsh, Thomas J., Priceburg, Pa. Railway-switch	473,801	Apr. 26	2849	716	59	591
Walt, John. (See Russell and Walt.)						
Walter, George, Duluth, Minn. Dust-collector	474,490	May 10	973	251	59	835
Walter, George, Thief River Falls, Minn. Dust-collector	474,491	May 10	974	251	59	835
Walter, William, Saltsburg, Pa. Churn	475,097	May 17	1946	493	59	1038
Waltera, Thomas F., Brooklyn, assignor to Stix & L'Allemand, New York, N. Y. Support for tilting vessels	474,886	May 17	1611	411	59	974
Walther, Charles F., assignor to S. S. Jewett & Co., Buffalo, N. Y. Non-conducting lining for stoves or heaters	472,414	Apr. 5	635	162	59	119
Walton, Albert H., trustee. (See Cochran, Samuel D., assignor.)						
Walton, Samuel H., and J. H. Smith, Belton, Tex. Vehicle-step	477,719	June 28	2389	597	59	1955
Wandel, Christian, Reutlingen, Germany. Rotary strainer	472,089	Apr. 5	115	31	59	23
Wanda, John C., St. Louis, Mo. Grain-door for railway-cars	477,092	June 14	1351	329	59	1721
Wantling, Isaac, and J. T. Johnson, Peoria, Ill. Coal-cutting machine	475,833	May 31	3114	789	59	1295
Ward, Barton B., New York, N. Y. Alternating-current arc lamp	473,536	Apr. 26	2430	615	59	509
Ward, Barton B., New York, N. Y., assignor, by mesne assignments, to Scott Electrical Manufacturing Company, of New Jersey. Electric search-light	472,721	Apr. 12	1099	282, 283	59	220
Ward, Daniel, Peoria, Ill. Tongue-support	475,366	May 24	2358	604	59	1137
Ward, Herbert E., Newark, N. J. Sweat-band for hats	474,540	May 10	1056	270	59	850
Ward, John H., Trevorton, Pa. Music-leaf turner	473,802	Apr. 26	2851	716	59	591
Ward, Joseph G., Irvington, N. J. Name-plate for hats	476,937	June 14	1104	266	59	1670
Ward, Josiah O., Orange, N. J. Hemp-brake	474,273	May 3	596	148	59	753
Ward, Wilfred, Buda, Ill. Car-wheel	472,415	Apr. 5	636	162	59	119
Warden, William G. (See Tonkin, John J., assignor.)						
Warder, Bushnell & Glessner Company. (See Baner, Charles A., assignor.)						
Warder, Bushnell & Glessner Company. (See Stark, Andrew, assignor.)						
Wardman, Palmer, East Saginaw, Mich. Rail-cleaning attachment for cars	476,909	June 14	1056	255	59	1660
Ware Automatic Heat Generator and Regulator Company. (See Tapley, Walter H., assignor.)						
Waring, William G., Silver City, New Mexico. Refining silver sulphides	475,907	May 31	3235	818	59	1318
Warner, Edward T., and J. F. Curry, assignors to Charles Warner Company, Wilmington, Del. Making mortar	473,860	Apr. 26	2946	743	59	609
Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Electric switch	473,435	Apr. 19	2249	566, 567	59	454
Warner, George B., and L. J. Allen, Woodbury, Conn. Rope-holder	476,969	June 14	1156	279	59	1680
Warner, Isaac M., Bronson, Mich. Vehicle-hub	473,506	Apr. 26	2545	641	59	532
Warner, James C., assignor to Western Electric Company, Chicago, Ill. Electric-annunciator drop	477,616	June 21	2212	549	59	1901
Warren, George E., Detroit, Mich. Railway signaling-lantern	476,585	June 7	536	128	59	1543
Warren, Joel R., Kalamazoo, Mich. Sulky-plow	472,240	Apr. 5	364	94	59	68
Warrington, Thomas F., Philadelphia, Pa. Stop-motion device for revolving-box looms	475,477	May 24	2537	646	59	1170
Washburn, Lorenzo S., New Orleans, La. Drag-saw	475,098	May 17	1947	493	59	1039
Washburn & Moen Manufacturing Company. (See Bassett, Charles W., assignor.)						
Washburn & Moen Manufacturing Company. (See Snedekor, Charles T., assignor.)						
Waxmuth, Wilhelm, Warsaw, Ky. Fruit-gatherer	477,479	June 21	1990	494	59	1857
Wassermann, Georg, Hottingen, assignor to G. Bäuerlein-Germann, Unterstrass, Zurich, Switzerland. Machine for filling sausage-guts	475,367	May 24	2360	604, 605	59	1138
Waterbury Brass Company. (See Wooster, Frederick J., assignor.)						
Waterbury Button Company. (See Goodwin, Charles H., assignor.)						
Waterbury Farrel Foundry and Machine Company. (See Lewis, Edward F., assignor.)						
Waterhouse, Addison G., Hartford, Conn. Lightning-arrester	475,645	May 24	2797	709	59	1221

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Waters, Frank M., assignor to Farmer's Friend Manufacturing Company, Dayton, Ohio. Lawn-mower clutch	477,030	June 14	1247	302	59	1700
Watkins, James T., and W. C. Bayless, Mossy Creek, Tenn. Buggy-top	472,154	Apr. 5	223	59	59	42
Watkins, Richard, assignor of one-half to W. H. Devlin, Sacramento, Cal. Automatic repeater	474,706	May 10	1318	336	59	902
Watson, Arthur H., and F. E. Antonini, London, England. Electrically-heated curling-iron	475,169	May 17	2050	516	59	1059
Watson, Charles W., deceased; M. Atchinson, Oakland, Cal., administratrix. Gas-burning heater	474,895	May 17	1625	415	59	977
Watson, Clarence L., Attleborough, Mass. Book-mark	472,632	Apr. 12	965	250	59	197
Watson, Edward, Grand Rapids, Mich. Composition for retarding the solidification of calcined gypsum	472,322	Apr. 5	493	.....	59	93
Watson, James A., Washington, D. C. Type-writing machine	477,236	June 21	1604	393	59	1782
Watson, James A., Washington, D. C. Type-writing machine	477,237	June 21	1606	393	59	1783
Watson, James T., St. Louis, Mo. Bath-tub	476,950	June 14	1127	271	59	1675
Watson, Robert. (See Smith, Marks, and Watson.)						
Watson, William L. (See Longmore and Watson.)						
Watts, Albert. (See Chase, Henry A., assignor.)						
Watts, Isaiah P. (See Butts, Frank E., assignor.)						
Wattson, William G., Tappan, assignor of one-half to J. B. Stewart, Haverstraw, N. Y. Railway signal system	475,955	May 31	3310	835	59	1333
Waugh, John E. (See Bernauer, Albert, assignor.)						
Wayman, John, Ford City, Pa. Boiler	474,887	May 17	1612	412	59	974
Wayne Oil Tank Company. (See Becker, John J., assignor.)						
Wayne, William J., Decatur, Ill. Sulky	475,991	May 31	3365	848	59	1344
Wead, Andrew M., assignor to K. A. Smith and W. N. Pomeroy, Kalamazoo, Mich. Horse-power	473,683	Apr. 26	2674	673, 674	59	557
Wead, Charles K., Malone, N. Y., assignor to J. W. Brooks, trustee, Cambridge, Mass. Nail-arranging device	477,093	June 14	1355	330	59	1722
Weatherill, Henry G., Elgin, Ill. Rein-holder	473,684	Apr. 26	2675	674	59	557
Weaver, Ephraim E., and G. B. Manypenny, Philadelphia, assignors of one-fourth to J. W. Comfort, W. S. Ambler, Jenkintown, and J. Cunningham, Jr., Philadelphia, Pa. Incandescent electric lamp	476,501	June 7	420	98	59	1519
Weaver, George W., Greensburg, Pa. Carburetor and purifier	476,709	June 7	720	177	59	1580
Weaver, John L., and H. Brencke, Jr., Georgetown, Tex. Attachment for motive-power machines	477,391	June 21	1854	456	59	1830
Weaver, Julius M., Ashland, Mass. Yarn-clearer	477,031	June 14	1248	302	59	1700
Weaver, Robert D., Washington, D. C. Centrifugal machine	475,225	May 17	2133	540	59	1076
Webb, Andrew B., *et al.* (See Webb, Samuel D., assignor.)						
Webb, Arthur P., Hoboken, N. J. Elevator	475,834	May 31	3116	789	59	1295
Webb, Frederic E., Boston, Mass. Carriage-axle	476,108	May 31	3547	892	59	1381
Webb, George B., New York, N. Y. Check-perforating machine	473,647	Apr. 26	2620	661	59	547
Webb, George B., New York, and L. N. Chapin, Brooklyn, assignors to Remington Standard Typewriter Manufacturing Company, New York, N. Y. Type-writing machine and ribbon-holder thereof	473,718	Apr. 26	2726	686	59	566
Webb, John N. (See Harriman, John E., Jr., assignor.)						
Webb, Martin V., *et al.* (See Webb, Samuel D., assignor.)						
Webb, Samuel D., assignor of nineteen twenty-fourths to A. B. and M. V. Webb and P. A. Darnielle, Washington, D. C. Device for extracting corks	474,788	May 10	1446	366, 367	59	928
Webb, Scott A., Columbus, Ohio. Street-curbing block	477,751	June 28	2391	597	59	1955
Webb, Thomas, *et al.* (See Heartfield, Henry, assignor.)						
Webb, Wallace, *et al.* (See Cross, Thomas A., assignor.)						
Webb, Watson T., Salt Lake City, Utah Ter. Combined eccentric, counterbalancing-collar, and shaper-guard	474,274	May 3	597	148	59	753
Webb, Wilkins J., Hillsborough, Ill. Railway-gate and danger-signal	476,846	June 14	949	231	59	1640
Webber, George H. (See Pomeroy and Webber.)						
Webber, Samuel S. (See Spilsbury and Webber.)						
Webber, William O., Erie, Pa. Steam-engine governor	477,344	June 21	1775	434	59	1815
Weber, Adolph, assignor of two-thirds to T. S. Christie and B. Noble, Detroit, Mich. Valve	477,392	June 21	1854	456	59	1831
Weber, Adolph, assignor of one-half to T. S. Christie and B. Noble, Detroit, Mich. Valve	477,720	June 28	2390	597	59	1955
Weber, Edward F., Reading, Pa. Shears	477,343	June 21	1774	434	59	1815
Weber, George A., New York, N. Y. Rail-fastening	472,090	Apr. 5	116	32	59	23
Weber, Gottlieb, Brooklyn, N. Y. Scuttle and skylight	477,876	June 28	2651	663	59	2003
Weber, Henry, Chicago, Ill. Transom-lifter	477,032	June 14	1249	303	59	1700
Webster, Camp & Lane Machine Company. (See Haberlin, Herman, assignor.)						
Webster, Fredrick M., Somerville, Mass. Washing-machine	477,102	June 14	1457	357	59	1742
Webster, Walter R., Pine Grove, Cal. Device for automatically closing the covers of water-closets or other receptacles	475,170	May 17	2051	516	59	1059
Webster, Warren, Philadelphia, Pa. Feed-water heater	475,992	May 31	3366	849	59	1344
Weck, Albert. (See Bültzingslöwen, Bruno von, assignor.)						
Weckauf, Hermann J., Rheydt, Germany. Color-grinding machine	477,722	June 28	2393	597, 598	59	1955
Weed, Henry T. (See McKenna and Weed.)						
Weeks, Amanda L., New York, N. Y. Abdominal belt for corsets	477,976	June 28	2792	699	59	2032
Weeks, George C., Boston, Mass. Shutter-fastener	473,648	Apr. 26	2623	661	59	547
Wegener, Carl, assignor of one-half to P. Baumert, Berlin, Germany. Firing apparatus for use with coal-dust	475,715	May 24	2902	735, 736	59	1241
Weldaw, Frank T., Syracuse, N. Y. Hose-clamp	473,537	Apr. 26	2432	616	59	510
Weil, Abraham, Brunswick, Germany. Swimming or diving suit	476,341	June 7	179	43	59	1471
Weiman, Frederick C., assignor of one-half to W. H. Leech, Pittsburg, Pa. Washing-machine	472,937	Apr. 12	1406	359	59	281
Weinberg, Arthur, assignor to L. Cassella & Co., Frankfort-on-the-Main, Germany. Manufacture of blue dye	472,091	Apr. 5	116	.....	59	24
Weinrich, Moriz, St. Louis, Mo. Cleaning and washing raw sugar	474,585	May 10	1129	288	59	865
Weinrich, Moriz, St. Louis, Mo. Purifying and manufacturing saccharine solutions	475,025	May 17	1832	.....	59	1017
Weir, Robert, assignor of one-half to H. O. Lange, Muskegon, Mich. Lever for steam-valves	475,908	May 31	3237	818	59	1319
Weiskopf, Dennis. (See Derham, Samuel G., assignor.)						
Weiss, Carl W., Brooklyn, N. Y. Gas-engine	473,685	Apr. 26	2676	674	59	557
Weiss, Moritz, Brooklyn, assignor of one-half to C. Kruse, New York, N. Y. Time-stamp	473,598	Apr. 26	2547	642	59	533
Welch, Clementine E. (See Freelove and Welch.)						
Welch, Frank E., Trinity College, N. C. Door-check	475,368	May 24	2361	605	59	1138
Welch, James S., Fort Elliott, Tex. Blotter-holder	473,983	May 3	153	36	59	667
Weller, George L., assignor to P. Foster and E. K. Mussey, Elyria, Ohio. Splitting rock	475,647	May 24	2800	709	59	1222
Weller, James C., Defiance, Ohio. Grain drier or moistener	474,568	May 10	1105	282	59	861

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Weller, John, Funkstown, Md. Thrashing-machine	474,275	May 3	597	149	59	753
Welling, Robert, Covington, Ky. Cesspool-valve	477,977	June 28	2793	700	59	2032
Wellman, Willard F., Belfast, Me., assignor to F. C. Pitcher, Medford, Mass. Antifriction-bearing	475,835	May 31	3117	789	59	1295
Wells, Arthur J., Syracuse, N. Y. Partition	477,829	June 28	2567	643	59	1967
Wells, Charles T., Ohio Falls, Ind. Door-check	476,910	June 14	1060	256	59	1661
Wells, Frederick L., Aurora, Ill. Lantern	475,646	May 24	2799	709	59	1222
Wells, Philip R., Detroit, Mich. Spring-hoe for seed-drills	474,430	May 10	884	230	59	819
Wells, William E. (See Pedersën, Johannes S., assignor.)						
Wells, William E., New York, N. Y. Dental mallet	472,686	Apr. 12	1038	268	59	209
Wellstood, William, Jersey City, N. J., and F. J. Nichols, New York, N. Y.; said Nichols assignor to said Wellstood. Fac-simile of engraved steel-plates	474,888	May 17	1613	.....	59	975
Welsbach Incandescent Gas Light Company. (See Stephens and Holmes, assignors.)						
Welton, Edwin D., assignor to Scovill Manufacturing Company, Waterbury, Conn. Machine for setting lacing-studs	477,852	June 28	2606	652, 653	59	1994
Wendell, Menzo E. (See Wiles and Wendell.)						
Wenigmann, Ernest, New York, N. Y. Portable mosquito-net	473,599	Apr. 26	2548	642	59	533
Wenigmann, Ernest, New York, N. Y. Chamber-vessel	474,617	May 10	1181	300	59	875
Wenigmann, Ernest, New York, N. Y. Ice-pick	477,919	June 28	2714	679	59	2015
Werle, Albert W., New Haven, Conn. Coach-hinge	475,993	May 31	3367	849	59	1344
Werlé, William, Cleveland, Ohio. Pressure-regulator	472,241	Apr. 5	365	94	59	68
Werneth, Francis J., Baltimore, Md. Umbrella-holder for bicycles	472,282	Apr. 5	429	110	59	80
Wertsbaugher, Judson S., assignor of one-half to W. L. Logan, Fort Wayne, Ind. Hair-curler	473,101	Apr. 19	1677	425	59	344
Weser, John A., New York, N. Y. Music-rack for musical-instrument cases	475,369	May 24	2363	605	59	1138
Wesslan, Bror H., Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Anti-inductive conductor	475,648	May 24	2801	709	59	1222
West, Augustine C., Wakefield, Mass. Lamp	477,480	June 21	1991	494	59	1857
West, Charles C. (See Callaway and West.)						
West, Forrest W., Philadelphia, Pa. Bottle-stopper and measuring device	476,342	June 7	181	43	59	1471
West, James, *et al.* (See Boyer, Joseph, assignor.)						
Westberg, Charles A., Chicago, Ill. Latch	476,434	June 7	325	74	59	1500
Westerdahl, Anton R. (See Keil and Westerdahl.)						
Westerfield, Eugene T., New York, N. Y. Street-sprinkler	474,465	May 10	939	242	59	828
Western Electric Company. (See Bell, Oro A., assignor.)						
Western Electric Company. (See Carty, John J., assignor.)						
Western Electric Company. (See Goodridge, William M., assignor.)						
Western Electric Company. (See O'Connell, Joseph J., assignor.)						
Western Electric Company. (See Patterson, William R., assignor.)						
Western Electric Company. (See Rudd, Charles H., assignor.)						
Western Electric Company. (See Scribner, Charles E., assignor.)						
Western Electric Company. (See Seely, John A., assignor.)						
Western Electric Company. (See Seely and Scribner, assignors.)						
Western Electric Company. (See Warner, Ernest P., assignor.)						
Western Electric Company. (See Warner, James C., assignor.)						
Western Paving and Supply Company. (See Perkins, Amos H., assignor.)						
Western Publishing House. (See Keen, Edwin R., assignor.)						
Western Union Telegraph Company. (See Edison, Thomas A., assignor.)						
Westervelt, Edmund C., and C. W. Clapp, South Bend, Ind. Wheel-plow	473,803	Apr. 26	2852	716, 717	59	591
Westervelt, George C., South Bend, Ind. Plow-point	477,723	June 28	2394	508	59	1956
Westervelt, Jesse, Butler, N. J. Faucet	473,600	Apr. 26	2549	642	59	530
Westgate, Joseph D., assignor to C. H. Woodcock, Worcester, and G. A. Walker, Boston, Mass. Mechanical movement	477,191	June 14	1506	369	59	1752
Westing, John R. (See Hurley and Westing.)						
Westinghouse Air Brake Company. (See Higham, Charles C., assignor.)						
Westinghouse Air Brake Company. (See Hogan, Thomas J., assignor.)						
Westinghouse Air Brake Company. (See Westinghouse, Henry H., assignor.)						
Westinghouse, Church, Kerr & Company. (See Roney, William R., assignor.)						
Westinghouse Electric and Manufacturing Company. (See Shallenberger, Oliver B., assignor.)						
Westinghouse Electric and Manufacturing Company. (See Wurts, Alexander, assignor.)						
Westinghouse, Henry H., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Triple valve for automatic air-brakes	475,099	May 17	1948	494	59	1039
Weston, Charles W. (See Legg and Weston.)						
Weston, Charles W., San Francisco, Cal. Fruit-box	474,276	May 3	599	149	59	754
Weston, Edward, Newark, N. J. Electrical measuring instrument	473,538	Apr. 26	2433	616	59	510
Weston, Edward, Newark, N. J. Electrical measuring instrument	473,539	Apr. 26	2434	616	59	510
Weston, Edward, Newark, N. J. Electrical measuring-instrument. (Reissue)	11,250	June 28	2954	738	59	2062
Weston, John A., Providence, R. I. Automatic latch for extension-ladders	477,393	June 21	1856	456	59	1831
Weston, John A., Providence, R. I. Extension-ladder hook	477,877	June 28	2652	663	59	2003
Westrup, Alexander. (See Gilman, Lewell J., assignor.)						
Westwood, Frederick, Birmingham, England. Crank for velocipedes	476,911	June 14	1060	256	59	1661
Wetmore, Jerome W., Erie, Pa. Wagon-tongue support	475,836	May 31	3118	790	59	1296
Wetter, Joseph. (See Bartusch, Oswald, assignor.)						
Weyer, David A., *et al.* (See Young, Charles H., assignor.)						
Whaley, Barnett B., Brooklyn, N. Y. Toy pistol	474,707	May 10	1319	336	59	903
Whalley, Joshua. (See Baynes and Whalley.)						
Wharton Railroad Switch Company. (See Henderson, John W., assignor.)						
Whearty, James. (See Keeling, Squire, assignor.)						
Wheatley, Harry D., Union City, Ind., assignor of one-half to G. Lambert & Son, Ohio City, Ohio. Door-latch	477,790	June 28	2501	626	59	1975
Wheatley, Thomas, Syracuse, N. Y. Oil-cup for bicycles	472,837	Apr. 12	1258	322	59	251
Wheaton, Milton A., San Francisco, Cal. Can-heading machine	477,584	June 21	2149	534, 535	59	1890
Wheelan, Fairfax H., Santa Barbara, Cal. Separator	474,930	May 17	1671	427	59	986
Wheeler, Clarence L., assignor of one-half to J. W. Clark, Marion, Ind. Melting-furnace	475,070	May 17	1899	482	59	1030
Wheeler, Earl G., *et al.* (See Ladd, Daniel E., assignor.)						
Wheeler, Earl G., Amsterdam, N. Y. Shawl-strap	474,071	May 3	299	73	59	695
Wheeler, Edward J. (See Lawrence, Alfred C., assignor.)						
Wheeler, Helen D., Chicago, Ill. Music-holder	473,540	Apr. 26	2435	616	59	510
Wheeler, Holland, Lawrence, Kans. Siphon	474,889	May 17	1614	412	59	975
Wheeler, Jarus, *et al.* (See Ladd, Daniel E., assignor.)						
Wheeler, William B., Madison, Wis. Mixing-machine	472,092	Apr. 5	117	32	59	24

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wheeler & Wilson Manufacturing Company. (See Dimond, George H., assignor.)						
Wheelock & Brigham. (See Chamberlain, Orange M., assignor.)						
Wheelock, E. M., *et al.* (See Wheelock, Willis W., assignor.)						
Wheelock, Willis W., assignor to E. M. Wheelock and H. B. Hustvedt, Decorah, Iowa. Weed and root puller	473,890	Apr. 26	3003	757	59	630
Whelan, Andrew, assignor of one-half to F. S. Feindt, South Orange, N. J. Hose-coupling	476,711	June 7	722	178	59	1580
Whelan, Robert and R. A., Chicago, Ill. Furnace-grate	474,931	May 17	1673	427, 428	59	987
Whelan, Robert A. (See Whelan, Robert and R. A.)						
Wherry, William B., and W. F. Smith, Overton, Tex. Cotton cleaner and condenser	476,710	June 7	721	177	59	1580
Whiffen-Lake Lasting Machine Company. (See O'Neill, James F., assignor.)						
Whigham, William. (See Campbell and Whigham.)						
Whipple, Charles E., Severy, Kans. Sash-balance	473,169	Apr. 19	1801	454	59	367
Whipple, Charles S. (See Good and Whipple.)						
Whipple, Henry J. P., New Haven, Conn. Knob attachment	473,988	May 3	160	38	59	669
Whitcomb, Howard S., Chicago, Ill. Umbrella	473,649	Apr. 26	2624	661	59	547
Whitcomb, James A., Columbus, Nebr. Wagon-brake	477,979	June 28	2796	700, 701	59	2033
White, Albert M., Waterbury, assignor of one-half to N. S. Perkins, New London, Conn. Leader for fish-lines	473,038	Apr. 19	1587	403	59	327
White, Amanda J., Wilkes-Barré, Pa. Mining-machine	474,110	May 3	356	85	59	706
White, Arthur S., Grand Rapids, Mich. Combined folding-bed case and wardrobe	473,984	May 3	154	36	59	667
White, Benjamin F., Monroe, La. Extension-cam	477,978	June 28	2793	700	59	2033
White, Edward H. (See Parker, William D., assignor.)						
White, Frank, Pomona, Cal. Snap-hook	475,971	May 31	3336	841	59	1338
White, George, New York, N. Y. Compositor's case	476,847	June 14	951	231	59	1640
White, George A. (See Stone, Henrie D., assignor.)						
White, George H., administrator. (See White, George W.)						
White, George W., deceased; G. H. White, San Francisco, Cal., administrator. Door for catch-basins of street-sewers	472,567	Apr. 12	870	224	59	180
White, Helen. (See White, William, assignor.)						
White, Horace B. (See Knapp, Edmond B., assignor.)						
White, James, Chicago, Ill. Device for holding milk-tickets	476,343	June 7	182	43	59	1472
White, John, Memphis, Tenn. Reservoir cooking-stove	475,100	May 17	1949	494	59	1039
White, John H., Washington, D. C. Machine for sticking match-splints	473,372	Apr. 19	2152	540, 541	59	435
White, John W., Burlington, Kans. Trace-carrier	476,344	June 7	183	43	59	1472
White, Richard, London, England. Drying apparatus	472,323	Apr. 5	494	128, 129	59	93
White, Roger S. (See Pilkington and White.)						
White, S. Stewart, *et al.* (See Raymond, Silas H., assignor.)						
White, T. Stewart, *et al.* (See Raymond, Silas H., assignor.)						
White, Wells H., Los Angeles, Cal. Vehicle-hub	473,985	May 3	155	37	59	668
White, William. (See Garey, Caleb E., assignor.)						
White, William, deceased; P. Mauro, Washington, D. C., administrator, and assignor to H. White, Woodside Villa, England. Solidifying liquid acids	475,586	May 24	2708	.....	59	1204
Whitehead, Benjamin S., Newark, N. J. Emblematic society badge and rosette	476,939	June 14	1107	267	59	1671
Whitehouse, Eugene W. (See Chase, John F., assignor.)						
Whitehurst, Robert W., assignor of one-half to M. L. Wrenn, Norfolk, Va. Ladder	476,179	May 31	3668	927	59	1405
Whitelock, Verdi E., Mortimer, Ohio. Nut-lock	472,242	Apr. 5	366	94	59	69
Whitman, Henry L., St. Louis, Mo. Baling-press	472,838	Apr. 12	1259	322, 323	59	251
Whitmore, Edwin B., Three Rivers, Mich., assignor of one-half to L. Emery, Jr., Bradford, Pa. Middlings-purifier. (Reissue)	11,245	June 21	2246	562, 563	59	1908
Whitmore, Joseph A., Canton, Ill. Feed-trough	477,724	June 28	2395	598	59	1956
Whitner, Hiram K., Chicago, Ill. Safety apparatus for window-cleaners	474,586	May 10	1131	289	59	865
Whitney, Arthur E., Winchester, Mass. Hide-fleshing machine	473,039	Apr. 19	1587	403, 404	59	328
Whitney, Arthur E., Winchester, Mass. Device for grinding the blades of rotary cylinders	476,938	June 14	1106	267	59	1670
Whitney, Charles E., Boston, Mass., assignor to Estey Organ Company, Brattleborough, Vt. Key for musical instruments	477,830	June 28	2570	644	59	1988
Whitney, Frank W., Wessington Springs, S. D. Hay-stacker	477,878	June 28	2653	663	59	2003
Whitney, Fred C., Detroit, Mich. Stage appliance	473,986	May 3	157	37	59	668
Whitney Glass Works. (See Whitney, John P., assignor.)						
Whitney, John P., Glassborough, N. J., assignor to Whitney Glass Works, of New Jersey. Oven for annealing glass	477,920	June 28	2714	679	59	2016
Whitney, Ruel W., San Francisco, Cal. Cash-register	473,719	Apr. 26	2728	686, 687	59	567
Whitney, Ruel W., assignor to Standard Sewing Machine Company, Cleveland, Ohio. Embroidering attachment for sewing-machines	475,426	May 24	2456	626	59	1155
Whitney, William F., Waukesha, Wis. Boiler-flue cleaner	473,987	May 3	158	38	59	669
Whiton, Walter F., assignor of one-fourth to J. R. Mason, Bangor, Me. Thill-coupling	476,345	June 7	184	44	59	1472
Whittemore, E. L. (See Willcox, Alfred B., assignor.)						
Whittier, Charles, Boston, Mass. Elevator	474,431	May 10	885	230	59	819
Whittier, Joseph G., Attica, Ind. Reclining rocking-chair	475,370	May 24	2365	606	59	1139
Whittier Machine Company. (See Clark, John H., assignor.)						
Whyte, Andrew C. (See Macphail, Neil, assignor.)						
Wiard, Harry, Syracuse, N. Y. Plow	473,989	May 3	162	38, 39	59	669
Wiard, Harry, and H. M. Burdick, Syracuse, N. Y. Disk harrow	476,435	June 7	325	74	59	1500
Wiberg, Charles, North Platte, Nebr. Lawn-mower	475,649	May 24	2802	710	59	1223
Wichard, Frank F., St. Louis, Mo. Wood-working machine for shaping closet-seats	473,276	Apr. 19	1985	498	59	403
Wickers, George O. (See Daniels and Wickers.)						
Wickey, Edward W., Chicago, Ill. Block-dropper for baling-presses	475,837	May 31	3119	790	59	1296
Wickham, Dennis, Ware, England. Apparatus for applying bottle stoppers or caps	476,712	June 7	723	178	59	1581
Wickham, Horace, assignor to H. Ryan and H. D. Goodwin, Milwaukee, Wis. Coin-controlled electrical apparatus	475,527	May 24	2690	667	59	1186
Widmer, Heinrich, West Hoboken, N. J. Loom	477,094	June 14	1357	330	59	1722
Wieland, Ludwig, New York, N. Y., assignor to F. Strosberg and Air Shaft Protector and Manufacturing Company, Newark, N. J. Fire-shutter for ventilating-shafts of buildings	474,890	May 17	1615	412	59	975
Wieland, Ludwig, New York, N. Y., assignor to Air Shaft Protector and Manufacturing Company, Newark, N. J. Fire-shutter for ventilating-shafts of buildings	474,982	May 17	1766	447	59	1004
Wieman, Henry B., *et al.* (See Ashworth, Granville H., assignor.)						
Wierda, Ubel, Winsum, Netherlands. Skate	475,650	May 24	2804	710	59	1223

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wiest, John F., Huntington, Ind. Solar camera	474,708	May 10	1320	336, 337	59	903
Wigger, David, New York, N. Y. Axle-bearing	474,709	May 10	1321	337	59	903
Wiggins, Alfred, Worcester, Mass. Toy	472,722	Apr. 12	1100	283	59	221
Wigginton, John R., assignor of one-half to W. R. H. Alexander, Washington, D. C. Tramway-switch	476,713	June 7	784	178, 179	59	1581
Wight, Henry F. (See Wight, Ronell L. and H. F.)						
Wight, Ronell L., Bridgton, Me., and H. F. Wight, Malden, assignors of one-third to W. M. McDonald, Somerville, Mass. Can-labeling machine	474,618	May 10	1181	300, 301	59	875
Wightman, Daniel A., Allegheny, Pa. Boiler-brace	473,183	Apr. 19	1840	463	59	372
Wightman, Merle J., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Alternating-current motor	476,346	June 7	185	44	59	1472
Wilcox, Curtis N., assignor to D. C. Folk, Brooklyn, N. Y. Fishing-reel	477,196	June 14	1521	371	59	1756
Wilcox, Edmund N. (See Speed, Fred H., assignor.)						
Wilcox, Lewis T., Jackson, Mich. Track for sliding doors	472,662	Apr. 12	1000	259	59	203
Wilcox, Norman T., Meriden, Conn. Electric-current transformer	477,879	June 28	2655	663	59	2003
Wilcox, Theodore B., Newark, N. J. Syringe	475,909	May 31	3239	818	59	1319
Wilcox, William R., Ridgway, Colo. Wheel-tire	476,714	June 7	725	179	59	1581
Wilcoxon, Mitchell H. (See Devore, Levi M., assignor.)						
Wild, Daniel. (See Raab, William, assignor.)						
Wilder, Atwood E., Homer, La. Cultivator	472,416	Apr. 5	636	163	59	119
Wilder, Deel R., Los Angeles, Cal. Teeth-regulator	473,040	Apr. 19	1590	405	59	328
Wilder, Moses G., Philadelphia, Pa. Plug-cock	472,093	Apr. 5	118	32	59	24
Wile, Sol, and H. La Casse, assignors to Bottlers' Specialty Company, Rochester, N. Y. Bottling-machine	477,617	June 21	2214	549, 550, 551, 552, 553, 554, 555, 556, 557	59	1901
Wiles, Thomas S., Albany, and M. E. Wendell, assignors to Troy Laundry Machinery Company, Limited, Troy, N. Y. Mangle	473,834	Apr. 26	2853	717	59	591
Wilfert, Andreas, Fabacher, Lq. Harrow	473,041	Apr. 19	1593	405	59	329
Wilhelm, Charles, New York, assignor to F. Ecaubert, Brooklyn, N. Y. Ornamenting watch-cases	472,490	Apr. 5	752	191	59	143
Wilke, Frederick A., *et al.* (See Hamilton, William J., assignor.)						
Wilkin, Charles F. (See Gordon, Edward Y., assignor.)						
Wilkinson, Benjamin F., Kansas City, Mo. Window-curtain roller	473,990	May 3	165	39	59	670
Wilkinson, Charles E., New Haven, Conn. Cop for sewing-machines	476,436	June 7	327	75	59	1501
Wilkinson, Edward T. (See Boynton, Edward S., assignor.)						
Wilkinson, Marvin B. (See Doyle, Thrall, and Wilkinson.)						
Wilkinson, William L., *et al.* (See Harden, William H., assignor.)						
Willans, Peter W., London, England. Electric clutch	473,042	Apr. 19	1591	405	59	329
Willcox, Alfred B., Chicago, Ill., assignor of one-half to E. L. Whittemore, Toledo, Ohio. Mechanical movement	476,715	June 7	726	179, 180	59	1581
Willcox, Charles H., New York, N. Y., and S. Borton, Providence, R. I., assignors to Willcox & Gibbs Sewing Machine Company, New York, N. Y. Sewing-machine	472,094	Apr. 5	120	32, 33, 34, 35	59	24
Willcox, Charles H., New York, N. Y., and S. Borton, Providence, R. I., assignors to Willcox & Gibbs Sewing Machine Company, New York, N. Y. Sewing-machine	472,095	Apr. 5	127	35, 36	59	25
Willcox, Charles H., New York, N. Y., and S. Borton, Providence, R. I., assignors to Willcox & Gibbs Sewing Machine Company, New York, N. Y. Sewing-machine needle	472,096	Apr. 5	133	36	59	26
Willcox, Charles H., New York, N. Y., and S. Borton, Providence, R. I., assignors to Willcox & Gibbs Sewing Machine Company, New York, N. Y. Tension apparatus for sewing-machines	472,097	Apr. 5	134	37	59	26
Willcox, George E., *et al.* (See Jackson and Reiger, assignors.)						
Willcox & Gibbs Sewing Machine Company. (See Willcox and Borton, assignors.)						
Willett, Samuel J., *et al.* (See Newman, Nelson, assignor.)						
William D. Gibson Company. (See Sullivan, Joseph H., assignor.)						
William Deering & Company. (See Appleby, John F., assignor.)						
William Deering & Company. (See Appleby and Steward, assignors.)						
Williams, Charles D., Philadelphia, Pa. Cylinder-lock	477,036	June 14	1255	304	59	1701
Williams, Charles J., assignor of one-half to W. Wagner, Milwaukee, Wis. Cooling iron structures	472 746	Apr. 12	1135	291	59	227
Williams, Charles W., Montgomery, La. Cotton-chopper	476,586	June 7	538	128	59	1543
Williams, David S., Philadelphia, Pa. Manufacturing chenille	477,394	June 21	1857	457	59	1831
Williams, David S., Philadelphia, Pa. Woven chenille	477,395	June 21	1858	457	59	1831
Williams, Eben B. (See Lofius and Williams.)						
Williams, Elmer L. (See Kallor and Williams.)						
Williams Folding Feed Basket Company. (See Williams, John H., assignor.)						
Williams, Francis C., Philadelphia, Pa. Rubber shoe	473,650	Apr. 26	2626	661	59	548
Williams, Frank A., Clarendon, N. Y. Fence	474,072	May 3	300	73	59	695
Williams, Frank E., New York, assignor of one-half to J. E. Hills, Brooklyn, N. Y. Button	473,861	Apr. 26	2949	744	59	610
Williams, Frank T., assignor to Edward Miller & Company, Meriden, Conn. Lamp-burner	477,034	June 14	1252	303	59	1701
Williams, Frank T., assignor to Edward Miller & Company, Meriden, Conn. Lamp-burner	477,035	June 14	1253	303, 304	59	1701
Williams-Foote, Ambrose C. G., Duluth, Minn. Game-board	473,992	May 3	167	40	59	670
Williams, George H., Boston, Mass. Dial-knob for combination-locks	473,686	Apr. 26	2678	674	59	558
Williams, George M., St. Louis, Mo. Combined fence-post and wire-stretcher	473,102	Apr. 19	1678	426	59	344
Williams, Harry J., New Haven, assignor of one-half to C. L. Lyon, Meriden, Conn. Lemon-squeezer	473,043	Apr. 19	1595	406	59	329
Williams, Henry B. (See Gronleff and Williams.)						
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Pilot for railway-cars	473,277	Apr. 19	1988	499	59	403
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Antifriction-bearing for car-axles	477,037	June 14	1256	304	59	1702
Williams, Henry M. (See Burger, Franz, assignor.)						
Williams, Horace E. (See Williams, James H. and H. E.)						
Williams, Horace G., Lykens, Pa. Rock-drill	475,910	May 31	3240	818	59	1319

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Williams, James B. (See Liles and Williams.)						
Williams, James H. and H. E., Fayetteville, Ark. Cotton-cultivator	475,101	May 17	1950	494	59	1639
Williams, John D., and D. E. Davies, Nanticoke, Pa. Gas-cap	476,852	June 14	961	233	59	1642
Williams, John H., assignor to Williams Folding Feed Basket Company, Boston, Mass. Feed-bag	476,952	June 14	1130	271, 272	59	1675
Williams, Joseph, Jr., and E. O. Peoples, Allegheny, Pa. Apparatus for making gas	477,725	June 28	2396	598, 599	59	1956
Williams, Lewis N., Aberdare, England. Miner's safety-lamp	472,098	Apr. 5	136	37	59	26
Williams, Louis N. D. (See Scott, Robert W., assignor.)						
Williams, "T.," W. H. (See Messina, John A., assignor.)						
Williams, Thomas E., London, England. Tea or coffee pot	476,851	June 14	960	233	59	1641
Williams, William D., Ogden, Utah Ter. Car-coupling	472,840	Apr. 12	1262	323	59	252
Williams, William F., Kansas City, Mo. Cornstalk-harvester	476,849	June 14	954	232, 233	59	1641
Williams, William H., Long Island City, N. Y. Veneer-machine	472,839	Apr. 12	1261	323	59	251
Williams, Willie A. (See Liles and Williams, assignors.)						
Williamson, Alfred D., assignor to Siemens Brothers & Company, Limited, London, England. Device for heating metal rods	475,651	May 24	2806	711	59	1223
Williamson, David, New York, N. Y., assignor, by mesne assignments, to Continental Filter Company, of West Virginia. Filtering apparatus	477,727	June 28	2397	599	59	1956
Williamson, George W., *et al.* (See Williamson, John D., assignor.)						
Williamson, Henry, Bay City, Mich. Saw-swaging device	476,850	June 14	959	233	59	1641
Williamson, John D., assignor to himself, G. W. and W. C. Williamson, Philadelphia, Pa. Steering apparatus	472,324	Apr. 5	495	129	59	93
Williamson, Richard H., Ashton, England. Mechanical stoker	476,848	June 14	953	232	59	1640
Williamson, Samuel S., Bridgeport, Conn. Punch for bank-checks	474,932	May 17	1676	428, 429	59	988
Williamson, Wallace W., Syracuse, N. Y. Dental engine	472,776	Apr. 12	1175	301	59	235
Williamson, William C., *et al.* (See Williamson, John D., assignor.)						
Williard, Frank J. (See Grimm and Williard.)						
Willimantic Linen Company. (See Reigh, Mark B., assignor.)						
Willing, Carl A. P., and R. J. G. Violet, Berlin, Germany. Electric switch	474,541	May 10	1058	271	59	851
Wilms, Charles, Baltimore, Md. Rheostat	475,528	May 24	2621	667	59	1186
Wilms, Charles, Baltimore, Md. Rheostat	475,529	May 24	2623	667	59	1187
Wilson, Richard D., Vincennes, Ind. Cabinet	473,541	Apr. 26	2436	617	59	510
Wilson, Thomas L., Brooklyn, N. Y. Cannon	475,071	May 17	1900	482	59	1030
Wills, Frank J., Winchester, Mass. Tea-strainer	477,726	June 28	2397	599	59	1956
Willyard, Oscar A., Allegan, Mich. Harness	475,911	May 31	3242	819	59	1320
Willyard, Oscar A., Hamilton, Mich. Harness	475,912	May 31	3243	819	59	1320
Wilson, Alexander, Rising Sun, Md., assignor of one-half to J. B. Siddell, Sylmar, Pa. Sash-cord fastener	475,956	May 31	3312	835	59	1333
Wilson, Carrie. (See Simons, Frederick W., assignor.)						
Wilson, Charles F., Breckenridge, Colo. Device for dumping cars	472,648	Apr. 12	984	254	59	200
Wilson, Charles H., Chicago, Ill., assignor to American Bell Telephone Company, Boston, Mass. Conduit for electric wires	473,044	Apr. 19	1596	406	59	329
Wilson, David H., assignor of one-tenth to C. T. Brown, Chicago, Ill. Electric motor	476,347	June 7	187	44, 45	59	1472
Wilson, Edgar C., *et al.* (See Bateman, Frank, assignor.)						
Wilson, Edward L., New York, N. Y. Coin-controlled apparatus for gramophones	472,417	Apr. 5	637	163	59	119
Wilson, Eugene B., Milford, Conn. Apparatus for dumping cars	477,396	June 21	1859	458	59	1832
Wilson, Frank H., Cooper, Mich. Head-light for steam-thrashers	473,991	May 3	166	39	59	670
Wilson, George H., Louisville, Ky. Artificial ear-drum	476,853	June 14	963	234	59	1642
Wilson Improved Store Service Company. (See Peirce, Alvy L., assignor.)						
Wilson Improved Store Service Company. (See Wilson, Robert B., assignor.)						
Wilson, Isaac S., Cedar Gap, Mo. Planing attachment for saws	474,492	May 10	977	252	59	836
Wilson, James, Columbia, Mo. Blind-stop	474,891	May 17	1617	413	59	975
Wilson, John, assignor to R. Debes, New York, N. Y. Furnace for the incineration of garbage	474,933	May 17	1677	429	59	988
Wilson, John, assignor to R. Debes, New York, N. Y. Hydrocarbon-oil burner for furnaces	475,478	May 24	2539	646	59	1171
Wilson, John H., Carmi, Ill. Car-coupling	472,418	Apr. 5	639	163	59	120
Wilson, John R., Pittsburg, Pa. Axle-lubricator	477,319	June 21	1740	426	59	1808
Wilson, John R., assignor of one-half to N. P. Hyndman, Pittsburg, Pa. Dumping apparatus	475,049	May 17	1866	473, 474	59	1024
Wilson, John T. (See Thomas, William J., assignor.)						
Wilson, Milford J., Painesville, Ohio. Pipe-wrench	473,542	Apr. 26	2437	617	59	511
Wilson, Morten C., Malden, Mass. Device for converting motion	473,720	Apr. 26	2731	687	59	567
Wilson, Robert B., Cincinnati, Ohio, assignor to Wilson Improved Store Service Company, of Kentucky. Store-service apparatus	478,038	June 28	2898	724	59	2051
Wilson, Stephen, Philadelphia, assignor of one-half to H. C. Conkle, Wayne, Pa. Bicycle	477,033	June 14	1250	303	59	1701
Wilson, William J., Watford, England. Machine for cutting glass plates	477,585	June 21	2157	535, 536	59	1891
Winand, Paul A. N., assignor to Schleicher, Schumm & Co., Philadelphia, Pa. Apparatus for making gas	474,201	May 3	487	117	59	732
Winand, Paul A. N., assignor to Schleicher, Schumm & Co., Philadelphia, Pa. Gas-producer	474,202	May 3	490	118	59	732
Winans, Edwin, New York, N. Y. Power-transmitting clutch	474,934	May 17	1678	429	59	988
Winchester Repeating Arms Company (See Bennett, Thomas G., assignor.)						
Wind, William H., Philadelphia, Pa. Educational appliance	472,419	Apr. 5	640	164	59	120
Windle, Howard, Fairville, Pa. Milk-can attachment	476,502	June 7	421	98	59	1519
Windle, John E., Worcester, Mass. Cloth-guiding machine	472,203	Apr. 5	310	80	59	58
Windsor, Fred E. (See Cobham, Frederick P., assignor.)						
Windus, Werner, Baltimore, Md. Toy fence	473,247	Apr. 19	1941	488	59	393
Winfield, William N., Detroit, Mich. Exhibiting device	475,005	May 17	1804	457	59	1010
Wing, Leander J., Lexington, Mass. Clutch	475,838	May 31	3121	790, 791	59	1296
Winge, Hagbarth, Miles City, Mont. Wind-motor	476,716	June 7	729	180	59	1582
Winkler, Fred and L., South Bend, Ind. Street-sprinkling machine	477,481	June 21	1993	495	59	1858
Winkler, George, San Francisco, Cal. Animal-trap	472,687	Apr. 12	1040	268	59	209
Winkler, Lenhart. (See Winkler, Fred and L.)						
Winn, William A., White Hall, Ill. Link valve-gear	473,278	Apr. 19	1989	499	59	403
Winterros, Claes E., Brooklyn, N. Y. Filter	477,238	June 21	1607	393, 394	59	1783
Wintrode, Charles E., Huntington, Ind. Brace for fence-posts	472,841	Apr. 12	1263	323	59	252

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Winton, Henry D., Wellesley, Mass., assignor to Hersey Manufacturing Company, Portland, Me. Device for bending electric trolley-wires	475,261	May 17	2190	558	59	1088
Wire Fabric Company. (See Rumsey, Charles B., assignor.)						
Wirsching, Aloys, New York, N. Y. Electric resistance-box	474,073	May 3	301	73	59	696
Wirsig, Oswald H. (See Preston and Wirsig.)						
Wirt, Herbert C., Boston, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Insulator	477,980	June 28	2797	701	59	2033
Wirths, Maurice, Jersey City, N. J. Bulb-guard for atomizers	477,345	June 21	1776	434	59	1815
Wishard, James J., Sacramento, Cal. Ditching-machine	473,279	Apr. 19	1991	499, 500	59	404
Wiss, Peter, Chicago, Ill. Fishing apparatus	476,940	June 14	1108	267	59	1671
Wistar, Dillwyn. (See Ardrey, Robert, assignor.)						
Wistrand, Peter E., assignor to Peters Pump Company, Kewanee, Ill. Corn-planter wheel	476,348	June 7	189	45	59	1473
Wiswell, Frederick A., Lynn, Mass. Crushing-mill	473,280	Apr. 19	1995	500, 501	59	404
Withall, Charles E. (See Gereke, Edward G., assignor.)						
Withrow, John M., Bentonville, Ark. Elevating mechanism for fruit-evaporators	474,892	May 17	1618	413	59	975
Witt, George W. (See Hallenbeck, Witt, and Pattison.)						
Witt, Julius F., Chicago, Ill. Detachable umbrella-cover	475,072	May 17	1902	483	59	1030
Witte, Frank, Cincinnati, Ohio, assignor of two-thirds to J. Peare, Covington, Ky., and J. Preis, Chicago, Ill. Barber's register	474,935	May 17	1679	430	59	988
Wittemann, Jacob F., Fort Hamilton, N. Y. Bottle-washing machine	474,510	May 10	1003	258	59	841
Wittenmore, John Q. A. (See Taylor, Eugene H., assignor.)						
Wohlgemuth, Frederick, Philadelphia, Pa. Theatrical appliance	475,226	May 17	2134	540	59	1076
Wojan, Hermann, Brooklyn, N. Y. Steam-boiler	477 880	June 28	2656	664	59	2004
Wolf, Theodore G. (See Moffat and Wolf.)						
Wolfe, Jacob C., assignor to Metal Base Electrotype Company, New York, N. Y. Mold for electrotype-shells and similar articles	476,717	June 7	730	180, 181	59	1582
Wolfe, James M. (See Conley and Wolfe.)						
Wolfe, John B., assignor of one-fourth to C. C. Merritt, West Duluth, Minn. Clothes-drier	473,601	Apr. 26	2549	642	59	533
Wolff, Abraham W., Chicago, Ill. Combined flour bin and sieve	473,543	Apr. 26	2438	617	59	511
Wolff & Co., Rudolph. (See Milligan, Henry C., assignor.)						
Wolfram, Theodor, Columbus, Ohio. Guitar-bridge	474,432	May 10	886	231	59	820
Wolfrom, Eli J., Mayaville, Colo. Tramway	475,102	May 17	1952	494, 495	59	1039
Womersley, William, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Paper-feeding machine	475,839	May 31	3123	791, 792	59	1296
Wood, Albana P., Atlanta, Ga. Funnel	474,036	May 3	241	58	59	684
Wood & Boyd. (See McGregor, Bradford, assignor.)						
Wood, David J. (See Sims, Wood, and Sims.)						
Wood, Ezra F., Munhall, assignor to Carnegie, Phipps & Company, Limited, Pittsburg, Pa. Manufacturing alloys of iron or steel and nickel	476,913	June 14	1062	.....	59	1662
Wood, Frank S., Greece, N. Y. Fence-post	476,912	June 14	1061	256	59	1661
Wood, Fred W., and J. Fowler, Los Angeles, Cal. Brake for street-cars	472,597	Apr. 12	908	233	59	187
Wood, James J., Fort Wayne, Ind. Electric switch	474,050	May 3	269	65	59	689
Wood, James J., Fort Wayne, Ind. Dynamo-electric machine	477,729	June 28	2401	600, 601	59	1957
Wood, Joseph M., assignor of two-thirds to J. Schwab and W. Barnard, Bellaire, Ohio. Tile roofing	477,346	June 21	1777	435	59	1816
Wood, Montraville M., Chicago, Ill. Trolley-wire clamp	472,596	Apr. 12	907	233	59	186
Wood, Montraville M., Chicago, Ill. Lightning-arrester	473,045	Apr. 19	1599	407	59	330
Wood, Robert, Syracuse, N. Y. Valve	473,488	Apr. 26	2351	596	59	495
Wood, Thomas E., Kalamazoo, Mich. Photographic paper holder and cutter	477,728	June 28	2400	600	59	1957
Wood, Walter. (See Richards, Francis H., assignor.)						
Wood, William C., *et al.* (See Penniman, Russell S., assignor.)						
Wood, William D. (See Votey and Wood.)						
Wood, William W., Elbridge, N. Y. Bank-note	477,038	June 14	1257	305	59	1702
Woodard, George J. (See Baker, Ambrose S., assignor.)						
Woodbury, Levi. (See Graham, Edmund H., assignor.)						
Woodcock, Charles H., *et al.* (See Westgate, Joseph D., assignor.)						
Woodhead, Richard M., and P. Angois, Nottingham, England. Brake for cycles	474,051	May 3	272	65, 66	59	690
Woodman, Daniel T., Blocksburg, Cal. Horse-controlling device	476,109	May 31	3548	890	59	1381
Woodman, Frank B., Cedar Rapids, Iowa. Car-coupling	476,349	June 7	191	45	59	1473
Woodmancy, Henry F., Whitinsville, Mass. Support for spinning-spindles	475,994	May 31	3369	849	59	1344
Woodmancy, Henry F., Whitinsville, Mass. Support for spinning-spindles	476,587	June 7	539	129	59	1544
Woodruff, Edmund W., Washington, D. C. Holder for letters, files, &c	476,854	June 14	964	234	59	1642
Woods, James T., Manti, Utah. Machine for coating pop-corn	475,840	May 31	3127	792	59	1297
Woods, John F. M., Oakland, Cal. Reversing-gear	475,026	May 17	1833	464, 465	59	1017
Woods, Robert, assignor of one-half to J. Garbutt and A. Field, Minto, N. D. Bundle carrier and shocker	472,155	Apr. 5	224	59, 60	59	42
Woods, Samuel W., Anita, Iowa. Draft-equalizer	474,493	May 10	978	252	59	836
Woodward, Charles E. W., assignor to Overman Wheel Company, Chicopee Falls, Mass., and Hartford, Conn. Cycle-wheel	477,397	June 21	1861	458	59	1832
Woodward, Erastus, Somerville, Mass. Pegging-machine	473,136	Apr. 19	1747	441, 442	59	356
Woodward, Erastus, Somerville, assignor to Merrick Sewing Machine Company, Boston, Mass. Eyeleting-machine	476,504	June 7	424	98, 99	59	1520
Woodward, Erastus, Somerville, Mass., assignor to Consolidated Fastener Company, Portland, Me. Button-setting machine	477,347	June 21	1779	435	59	1816
Woodward, Frank R., Hill, N. H. Cake-cutter	473,281	Apr. 19	1996	502	59	405
Woodward, Robert P., Brooklyn, N. Y. Shirt and chest protector	476,503	June 7	422	98	59	1519
Woolard, Jesse H. and J. L., Williamston, N. C. Peanut-cleaner	474,893	May 17	1619	413, 414	59	976
Woolard, Josephus L. (See Woolard, Jesse H. and J. L.)						
Woolf, Albert E., assignor, by mesne assignments, to R. Woolf and T. J. Montgomery, New York, N. Y. Process of and apparatus for bleaching by electrolysis. (Reissue)	11,244	June 7	810	199	59	1599
Woolf, Ellis J., Minneapolis, Minn. Single-cylinder compound engine	475,427	May 24	2457	626	59	1155
Woolf, Rosamond, *et al.* (See Woolf, Albert E., assignor.) (Reissue.)						
Woollens, Theodore, Jr., Cheyenne, Wyoming. Rotary water-meter	473,046	Apr. 19	1600	407	59	330
Woolley, James P., Simcoe, Canada. Cut-off for electrical machines	473,282	Apr. 19	1997	502	59	405
Wooster, Frederick J., assignor to Waterbury Brass Company, Waterbury, Conn. Mold for casting	475,652	May 24	2807	711	59	1223

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Worden, George W., Dover, Del. Crate for shipping baskets	473,047	Apr. 19	1601	407, 408	59	330
Worn, Mary E., Philadelphia, Pa. Pencil-sharpener	472,420	Apr. 5	641	164	59	120
Worthington, Charles C., Irvington, N. Y. Engine-register	476,588	June 7	540	129	59	1544
Worthington, Lewis N., Canandaigua, N. Y. Creating memorials of deceased persons	473,597	Apr. 26	2546	.....	59	533
Worts, George. (See Smith, Charles A., assignor.)						
Wrenn, McD. L. (See Whitehurst, Robert W., assignor.)						
Wright, Frederic W., Great Neck, N. Y. Hose-coupling	474,894	May 17	1621	414, 415	59	976
Wright, Frederic W., Great Neck, N. Y. Hose-coupling	477,239	June 21	1610	394	59	1784
Wright, Frederick K., assignor to Steam Gauge and Lantern Company, Syracuse, and R. E. Dietz Company, New York, N. Y. Tubular lantern	476,505	June 7	426	99	59	1520
Wright, Frederick K., assignor to Steam Gauge and Lantern Company, Syracuse, N. Y. Wick-raiser attachment for lanterns	476,506	June 7	427	100	59	1521
Wright, Joseph W., Guion, Tex. Adding-machine	476,350	June 7	192	45, 46	59	1473
Wright, Martin, Leicester, England. Writing and print copying machine	477,482	June 21	1995	495, 496	59	1858
Wright, Parvin, Denver, Colo. Elevator	477,730	June 28	2404	601	59	1958
Wright, Parvin, assignor of one-half to J. W. Kinsey, Denver, Colo. Switch-box for electric motors	472,283	Apr. 5	430	110	59	80
Wright, Samuel, Mountain Grove, Mo. Tanning compound	473,805	Apr. 26	2857	.....	59	592
Wright, Samuel, assignor to himself, J. Muir, and W. Boyd, Glasgow, Scotland. Machine for turning or shaping the heads of casks	477,039	June 14	1258	305	59	1702
Wright, William, Newburg, N. Y. Engine cross-head	475,428	May 24	2459	626, 627	59	1155
Wright, William A., Centreton, N. J. Speed-changing mechanism	475,735	May 24	2938	746	59	1246
Wright, William J., Cooperstown, assignor to Stave Jointer and Planer Company, Oil City, Pa. Stave trimming and jointing machine	475,227	May 17	2135	541, 542	59	1077
Wrigley, William H., New Orleans, La. Bed-fan	474,710	May 10	1322	337	59	903
Wrigley, William H., New Orleans, La. Coffee-pot	476,718	June 7	732	181	59	1583
Writing Telegraph Company. (See Etheridge, Harry, assignor.)						
Wunderlich, Fritz. (See Krueger and Wunderlich.)						
Wurts, Alexander, assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Lightning-arrester	476,855	June 14	967	235	59	1643
Wyatt, Daniel M., assignor of one-half to E. W. Hill, Covington, Ohio. Umbrella-lock	475,736	May 24	2940	746	59	1247
Wyman, Horace, and J. A. Clark, assignors to Crompton Loom Works, Worcester, Mass. Weft stop-motion for looms	477,731	June 28	2406	601	59	1958
Wymble Manufacturing Company. (See Scharling, John H., assignor.)						
Wyns, Alfred, Münster, Germany. Tracing apparatus	472,099	Apr. 5	137	37	59	96
Wythe, William W., Orange, N. J., assignor to L. L. F. Fixture Company, of New Jersey. Window-shade fixture	475,228	May 17	2141	543	59	1078
Xander, George A., assignor of one-half to A. Murdoch, Hamburg, Pa. Railway time-signal	473,862	Apr. 26	2950	744	59	610
Yackee, August A., Roberts, Ill. Colter for plows	472,186	Apr. 5	277	72	59	52
Yale & Towne Manufacturing Company. (See Ballou, Waldo R., assignor.)						
Yale & Towne Manufacturing Company. (See Berry, Charles A., assignor.)						
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.)						
Yarrow, Alfred F., London, England, assignor to H. See, New York, N. Y. Water-tube boiler	472,777	Apr. 12	1176	301	59	235
Yates, Marcus R., Burrows, Mo. Fence-wire twister	476,856	June 14	969	235	59	1643
Yeadon, John A., and W. Adgie, Leeds, England. Retort-furnace	477,286	June 21	1686	413, 414	59	1798
Yeager, James E., Waco, Tex. Folding bed	474,587	May 10	1133	289	59	866
Yeakley, Melvin A., assignor of one-half to R. A. Robertson, Cleveland, Ohio. Safety attachment for railway-trolleys	476,028	May 31	3412	861, 862, 863	59	1354
Yeiser, Frederick, Tampa, Fla. Electric motor	477,483	June 21	1997	496, 497	59	1859
Yingling, George S., Tiffin, Ohio, assignor of one-half to J. K. Pfaltzgraff & Co., York, Pa. Chemical compound for treating tobacco	475,737	May 24	2942	.....	59	1247
York, Robert. (See Louthian, John E., assignor.)						
Yorke, Patrick, Washington, Pa. Apparatus for drilling Artesian wells	475,913	May 31	3244	819	59	1320
Yost, George W. N., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	474,936	May 17	1682	430	59	989
Yost, George W. N., assignor, by mesne assignments, to Yost Writing Machine Company, New York, N. Y. Type-writing machine	474,937	May 17	1684	430	59	989
Yost, George W. N., assignor, by mesne assignments, to Yost Writing Machine Company, New York, N. Y. Type-writing machine	474,938	May 17	1687	431	59	990
Yost Writing Machine Company. (See Wallace, Casper D., assignor.)						
Yost Writing Machine Company. (See Yost, George W. N., assignor.)						
Young, Annie M., Providence, R. I. Dress facing and protector	474,074	May 3	303	73	59	696
Young, Charles E., Sabetha, Kans. Trace-guide	476,719	June 7	733	181	59	1583
Young, Charles H., assignor to D. A. Weyer, Kansas City, and W. Clow, Independence, Mo. Cloth-measuring machine	473,103	Apr. 19	1679	426	59	344
Young Coloring Company. (See Young, James A., assignor.)						
Young, Edward T., assignor of one-half to W. Scott, Detroit, Mich. Reversing mechanism for elevators. (Reissue)	11,251	June 28	2957	738, 739	59	2002
Young, George H., Davenport, Iowa. Neck-yoke	475,841	May 31	3128	792	59	1297
Young, James A., assignor to Young Coloring Company, Boston, Mass. Apparatus for disintegrating, mixing, and other purposes	472,421	Apr. 5	642	164	59	120
Young, James A., assignor to Young Coloring Company, Boston, Mass. Dyeing wool	475,229	May 17	2142	543	59	1078
Young, James D., Elgin, Tex. Car-coupling	476,351	June 7	194	46	59	1474
Young, James F., Manhasset, N. Y. Candle-holder	474,768	May 10	1411	359	59	921
Young, John A., Fulbright, Tex. Rein-holder	474,433	May 10	887	231	59	820
Young, John S., Brooklyn, N. Y. Clasp	474,277	May 3	600	149	59	754
Young, Robert G., assignor of one-half to T. B. Miller, Helena, Mont. Ink-well	472,649	Apr. 12	985	255	59	200
Young, Robert J., *et al.* (See Cross, Thomas A., assignor.)						
Young, Samuel G., New York, N. Y. Combined ruler and blotter	477,586	June 21	2159	536	59	1891
Youngs, Fred E., Allegheny, Pa. Proportional meter	473,544	Apr. 26	2439	617, 618	59	511
Youngs, Fred E., Pittsburg, Pa. Proportional meter	473,545	Apr. 26	2441	618	59	511
Zahn, Benjamin J., Roberts, Ill. Horse-collar	473,050	Apr. 19	1604	408, 409	59	331
Zahn, Henry, Denver, Colo. Artificial fuel	478,039	June 28	2899	.....	59	2052

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Zahn, William. (See Endemann, Hermann, assignor.)						
Zähner-Mösli, Johann J., Rehetobel, Switzerland. Cloth-winding machine	473,602	Apr. 26	2550	643	59	533
Zalsman, John F., Holland, Mich. Ice-velocipede	476,857	June 14	970	235	59	1643
Zander, Johan A., San Francisco, Cal. Wrench	473,048	Apr. 19	1602	408	59	330
Zeilman, Charles G., Albany, N. Y. Urinal	473,806	Apr. 26	2858	718	59	592
Zeiser, Jennie E., Schenectady, N. Y. Scrubbing-pail	475,429	May 24	2460	627	59	1155
Zellers, Theodor A., assignor to Ottawa Glass Company, Ottawa, Ill. Carrier for conveying glass from flatting-ovens	474,983	May 17	1768	447, 448	59	1004
Zellers, William H., Philadelphia, Pa. Circular-knitting machine	476,110	May 31	3550	893, 894	59	1382
Ziegler, Edward E. (See Meigs and Ziegler, assignors.)						
Ziegler, Frank A. (See Metcalfe and Ziegler.)						
Ziegler, John G. (See Meigs and Ziegler.						
Zies, Charles, Baltimore, Md. Rotary knife	473,049	Apr. 19	1603	408	59	331
Zimmerling, August F., Jackson, Mich. Oil-stove	476,352	June 7	196	47	59	1474
Zimmerling, Charles, Philadelphia, Pa. Game apparatus	475,653	May 24	2808	712	59	1224
Zimmerling, Charles, Philadelphia, Pa. Game apparatus	477,287	June 21	1689	414	59	1798
Zimmermann, Peter, Jr., assignor to himself, A. M. and W. B. Miller, New York, N. Y., and R. H. Cunningham, Paterson, N. J. Stop-cock or analogous valve	475,530	May 24	2625	668	59	1187
Zogmann, Henry, New York, N. Y. Building	475,842	May 31	3129	793, 794	59	1298
Zumdick, John B., assignor of one-half to J. H. Zumdick, Covington, Ky. Guide for furniture-drawers	475,230	May 17	2143	543	59	1078
Zumdick, John H. (See Zumdick, John B., assignor.)						
Zwietusch, Otto, Milwaukee, Wis. Soda-fountain	476,589	June 7	542	129, 130	59	1544

ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

Name, residence, and design.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Abbot, Edgar W., Brooklyn, assignor to O. A. Gager & Co., New York, N. Y. Reception-plate	21,498	Apr. 26	59	624
Adams, Caleb C., Brooklyn, N. Y. Spoon, &c	21,460	Apr. 12	59	293
Adams, Peter. (See Shepard and Adams.)				
Adams, Thomas, assignor to Hensel-Calladay Company, Philadelphia, Pa. Dress-trimming	21,504	Apr. 26	59	625
Adams, Thomas, assignor to Hensel-Calladay Company, Philadelphia, Pa. Dress-trimming	21,505	Apr. 26	59	625
Adams, Thomas, assignor to Hensel-Calladay Company, Philadelphia, Pa. Dress-trimming	21,506	Apr. 26	59	625
Adams, Thomas, assignor to Hensel-Calladay Company, Philadelphia, Pa. Dress-trimming	21,507	Apr. 26	59	625
Andrews, John H., New York, N. Y. Bird-cage	21,569	May 24	59	1252
Back, Albert, New York, N. Y., assignor to the Estate of T. Back. Ruffling or ruching	21,493	Apr. 19	59	458
Back, Estate of Tillie. (See Back, Albert, assignor.)				
Bainbridge, John G., New York, N. Y. Sponge-cup	21,589	May 31	59	1425
Ball Charles A., Marion, Ind. Badge	21,643	June 21	59	1912
Ball, Charles A., Marion, Ind. Badge	21,644	June 21	59	1912
Banghart, Andrew B. (See Treat and Banghart.)				
Barbero, Mamie C., Magnon, Ill. Badge	21,585	May 31	59	1424
Bascom, Henry C., Lansingburg, N. Y., assignor to S. B. Sexton & Son, Baltimore, Md. Range	21,599	May 31	59	1426
Bascom, Henry C., and R. Galbraith, Lansingburg, N. Y., assignors to said Bascom. Dwarf parlor-stove	21,598	May 31	59	1426
Baumgarten, Albert, *et al.* (See Morgan and Redlinger, assignors.)				
Bean, George W., assignor to Bean & Vail Bros., Philadelphia, Pa. Bottle	21,553	May 24	59	1250
Bean & Vail Bros. (See Bean, George W., assignor.)				
Beeman, Charles H., North Fairfax, Vt. Potato-baker	21,597	May 31	59	1426
Benfield, Thomas, Newark, N. J. Watch-case	21,478	Apr. 19	59	456
Benfield, Thomas, Newark, N. J. Watch-case	21,479	Apr. 19	59	456
Benfield, Thomas, Newark, N. J. Watch-case	21,480	Apr. 19	59	456
Benfield, Thomas, Newark, N. J. Watch-case	21,481	Apr. 19	59	456
Benfield, Thomas, Newark, N. J. Watch-case	21,482	Apr. 19	59	456
Benfield, Thomas, Newark, N. J. Watch-case	21,483	Apr. 19	59	457
Benfield, Thomas, Newark, N. J. Watch-case	21,484	Apr. 19	59	457
Benfield, Thomas, Newark, N. J. Watch-case	21,485	Apr. 19	59	457
Benfield, Thomas, Newark, N. J. Watch-case	21,486	Apr. 19	59	457
Benfield, Thomas, Newark, N. J. Watch-case	21,487	Apr. 19	59	457
Benfield, Thomas, Newark, N. J. Watch-case	21,488	Apr. 19	59	457
Benfield, Thomas, Newark, N. J. Watch-case	21,489	Apr. 19	59	457
Bennett, Benjamin, Jeannette, and H. S. McKee, Allegheny, Pa. Glass dish	21,620	June 14	59	1756
Berger, Leander D., Philadelphia, Pa. Bucket-ear	21,567	May 24	59	1251
Best, Daniel, San Leandro, Cal. Engine-frame	21,545	May 17	59	1099
Bidwell, Julius A., Ivanpah, Cal. Pin	21,645	June 21	59	1912
Blair, George W., Pittsburg, Pa. Lamp-chimney	21,616	June 7	59	1601
Blair, George W., Pittsburg, Pa. Lamp-chimney	21,617	June 7	59	1601
Block, Israel, New York, N. Y. Oil-stove	21,650	June 21	59	1912
Bowen, William F., Chicago, Ill. Badge	21,443	Apr. 5	59	152
Brooks, John J., assignor of one-half to F. E. Goldsberry, Athens, Ohio. Sad-iron	21,593	May 31	59	1425
Brown, Charles W., Troy, N. H., assignor to L. C. Chase & Co., Boston, Mass. Printed fabric	21,541	May 17	59	1098
Brown, Edward C., Chicago, Ill. Picture-frame	21,610	June 7	59	1600
Brunswick, Anthony A., San Francisco, Cal. Button	21,440	Apr. 5	59	152
Bryant, Solon, Worcester, Mass. Corset	21,544	May 17	59	1099
Buchholtz, John P., Philadelphia, Pa. Lantern-body	21,518	May 3	59	784
Carlewitz, August, Newark, N. J. Cornice	21,579	May 24	59	1253
Carlewitz, August, Newark, N. J. Cornice	21,580	May 24	59	1253
Carlewitz, August, Newark, N. J. Cornice	21,623	June 21	59	1910
Carlewitz, August, Newark, N. J. Cornice	21,624	June 21	59	1910
Chase & Co., L. C. (See Brown, Charles W., assignor.)				
Cheney Brothers. (See Thyng, Annie G., assignor.)				
Cherry, Joseph P., Nashville, Tenn. Bottle	21,500	Apr. 26	59	624
Clark & Co., T. B. (See Wood, Walter A., assignor.)				
Consolidated Fruit Jar Company. (See Fisher, Alvin L., assignor.)				
Cooke, Daniel, Camden, N. J. Toy money-bank	21,457	Apr. 12	59	292
Corby, Edward T., Carbondale, Pa. Cuff-button, &c	21,586	May 31	59	1424
Crawford, John, Brooklyn, N. Y. Penholder	21,538	May 17	59	1098
Crosby, Joseph H., Jr., *et al.* (See Crowell, Gilbert L., Jr., assignor.)				
Crossley, Joseph, Trenton, N. J. Brick or building-block	21,631	June 21	59	1911
Crowell, Gilbert L., Jr., Arlington, N. J., assignor to D. Greenleaf and J. H. Crosby, Jr., Jacksonville, Fla. Spoon or similar article	21,560	May 24	59	1250
Crowell, Gilbert L., Jr., Arlington, N. J., assignor to D. Greenleaf and J. H. Crosby, Jr., Jacksonville, Fla. Spoon, &c	21,601	June 7	59	1599
Culver, Walter L., St. Louis, Mo. Furnace	21,467	Apr. 19	59	455
Demarest, Aaron T. (See Demarest and Van Herck, assignors.)				
Demarest, William R., and H. Van Herck, New Haven, Conn., assignors to A. T. Demarest, New York, N. Y. Coach-lamp	21,672	June 28	59	2065
Dobson, W. E. & F. (See Heald, Francis B., assignor.)				
Drew, George H., Boston, Mass. Advertising-coupon	21,584	May 31	59	1424
Dueber, John C., Canton, Ohio. Watch-case	21,548	May 17	59	1099
Dueber, John C., Canton, Ohio. Watch-case	21,549	May 17	59	1099
Edward Miller & Company. (See Homan, William C., assignor.)				
English, James G., assignor to English & Mersick, New Haven, Conn. Hub-band	21,625	June 21	59	1910
English & Mersick. (See English, James E., assignor.)				
Fenwick, Edward T., Washington, D. C. Spoon or similar article	21,554	May 24	59	1250
Fenwick, Edward T., Washington, D. C. Spoon or similar article	21,565	May 24	59	1251
Fisher, Alvin L., New Brunswick, N. J., assignor to Consolidated Fruit Jar Company, New York, N. Y. Oiler	21,671	June 28	59	2065

Alphabetical list of patentees of designs, April to June, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Fitch, William E., Louisville, Ky. Fireplace-front	21,444	Apr. 5	59	152
Forster, Thomas V., New Utrecht, N. Y. Hose-reel spool	21,622	June 14	59	1757
Freer, Charles S., Brooklyn, assignor to E. Todd & Co., New York, N. Y. Pencil-case	21,572	May 24	59	1252
Fuchs & Brothers, Ferdinand. (See Graff, Charles, assignor.)				
Fuller, Marie L., New York, N. Y. Dancing-dress	21,458	Apr. 12	59	292
Fuller, Marie L., New York, N. Y. Dancing-dress	21,526	May 10	59	934
Fuller, Marie L., New York, N. Y. Dancing-dress	21,527	May 10	59	934
Gager & Co., O. A. (See Abbott, Edgar W., assignor.)				
Gager & Co., O. A. (See Gérard, Emile, assignor.)				
Galbraith, Robert. (See Bascom and Galbraith.)				
Geraci, Ignatius, Baltimore, Md. Tailor's gage	21,568	May 24	59	1251
Gérard, Emile, Limoges, France, assignor to O. A. Gager & Co., New York, N. Y. Ornamentation of dishes	21,668	June 28	59	2065
Goldsberry, Frank E. (See Brooks, John J., assignor.)				
Gorham Manufacturing Company. (See Wilkinson, George, assignor.)				
Graff, Charles, assignor to F. Fuchs & Brothers, New York, N. Y. Holder for matches and cigarettes	21,468	Apr. 19	59	292
Graham, William H., St. Louis, Mo. Sink-trap	21,528	May 10	59	934
Graham, William H., St. Louis, Mo. Sink-trap	21,529	May 10	59	934
Greenleaf, Damon, *et al.* (See Crowell, Gilbert L., Jr., assignor.)				
Griffin, William B., Glens Falls, N. Y. Vehicle-body	21,453	Apr. 12	59	455
Griffith, Frank C., Boston, Mass. Condiment-holder for plates	21,539	May 17	59	1098
Guilleaume, Franz, Bonn, Germany. Plate or similar article	21,476	Apr. 19	59	456
Guilleaume, Franz, Bonn, Germany. Vase	21,477	Apr. 19	59	456
Guilleaume, Franz, Bonn, Germany. Vase or similar article	21,491	Apr. 19	59	458
Guilleaume, Franz, Bonn, Germany. Vase or similar article	21,494	Apr. 19	59	458
Hannahs, Fred C., assignor of one-half to J. A. Jackson, Kenosha, Wis. Crib or cradle body	21,530	May 10	59	934
Hannahs, Fred C., assignor of one-half to J. A. Jackson, Kenosha, Wis. Crib or cradle body	21,531	May 10	59	935
Hart, Alexander, New York, N. Y. Fur trimming	21,547	May 17	59	1099
Hartenstein, Jacob, Philadelphia, Pa. Trimming	21,660	June 28	59	2064
Hayden, William W., Newark, N. J. Match-box	21,611	June 7	59	1600
Hayden, William W., Newark, N. J. Match-box	21,635	June 21	59	1911
Hayden, William W., Newark, N. J. Match-box	21,636	June 21	59	1911
Hayden, William W., Newark, N. J. Match-box	21,637	June 21	59	1911
Hayden, William W., Newark, N. J. Match-box	21,638	June 21	59	1911
Hayden, William W., Newark, N. J. Match-box	21,639	June 21	59	1911
Headley & Carrow Manufacturing Company. (See Weber, Anton, assignor.)				
Heald, Francis B., Nottingham, England, assignor to W. E. & F. Dobson, New York, N. Y. Bedspread or similar article	21,535	May 10	59	935
Heer, David, Philadelphia, Pa. Badge	21,574	May 24	59	1252
Hemphill, Edward A., Elizabeth, N. J. Calendar and inkstand holder	21,587	May 31	59	1424
Hendryx, Andrew B., New Haven, Conn. Fishing-reel	21,546	May 17	59	1099
Henkel, John, Hoboken, N. J., assignor to J. Mehl & Co., New York, N. Y. Pocket-book	21,542	May 17	59	1098
Hensel-Calladay Company. (See Adams, Thomas, assignor.)				
Heppe, Christopher J., *et al.* (See Wuest, Philip, Jr., assignor.)				
Heppe, Florence J., *et al.* (See Wuest, Philip, Jr., assignor.)				
Hill, Charles G., Nottingham, England. Ruffling or ruching	21,447	Apr. 5	59	152
Hill, Harry W., Cleveland, Ohio. Pillow-block standard	21,613	June 7	59	1601
Hoffman, Elvira C., New York, N. Y. Dancing-dress	21,609	June 7	59	1600
Holbrook, Will F., Seward, Nebr. Spoon	21,496	Apr. 26	59	624
Hollander, Leo, Salt Lake City, Utah Ter. Spoon	21,656	June 28	59	2063
Homan, William C., assignor to Edward Miller & Company, Meriden, Conn. Lamp-burner	21,521	May 10	59	933
Homan, William C., assignor to Edward Miller & Company, Meriden, Conn. Lamp-burner	21,534	May 10	59	935
Horton, Louis R., assignor to J. B. & S. M. Knowles Company, Providence, R. I. Spoon	21,461	Apr. 12	59	293
Houtain, Emile, Brussels, Belgium. Diaphragm for tobacco-pipes	21,552	May 17	59	1099
Howard, William G., *et al.*, executors. (See Ireland, David M., assignor.)				
Hummel, Thomas, Jr., Peoria, Ill. Easel	21,665	June 28	59	2064
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	21,606	June 7	59	1600
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	21,607	June 7	59	1600
Ireland, David M., Detroit, Mich., assignor to W. G. Howard and F. E. Lee, executors. Ornamental top for stoves	21,501	Apr. 26	59	624
Irons, Charles F., Providence, R. I. Badge	21,512	May 3	59	784
Irwin, Joseph A. and M. A., Inka, Ill. Carpet-stretcher	21,674	June 28	59	2066
Irwin, Mary A. (See Irwin, Joseph A. and M. A.)				
J. B. & S. M. Knowles Company. (See Horton, Louis R., assignor.)				
J. R. Torrey Razor Company. (See Torrey, Joseph R., assignor.)				
Jackson, Austin F., Taunton, Mass. Spoon, &c	21,513	May 3	59	784
Jackson, Johnson A. (See Hannahs, Fred C., assignor.)				
Jameson, William A., Niagara Falls, N. Y. Spoon, &c	21,555	May 24	59	1250
Jameson, William A., Niagara Falls, assignor to Oneida Community, Limited, Kenwood, N. Y. Spoon, &c	21,632	June 21	59	1911
Johnson, Martin A., Stoughton, Wis. Tongue-cap	21,459	Apr. 12	59	292
Josselyn, Benage S., Denver, Colo. Spoon	21,469	Apr. 19	59	455
Josselyn, Benage S., Denver, Colo. Spoon	21,519	May 10	59	933
Kahn, Leopold, New York, N. Y. Bottle	21,669	June 28	59	2065
Kain, William D., Amesbury, Mass. Indicator-body	21,523	May 10	59	934
Keller, Josiah O., Fort Wayne, Ind. Dental cabinet	21,666	June 28	59	2065
Kiechle, Brentano & Oberdorfer. (See McAdams, Charles R., assignor.)				
Kubin, William K., New York, N. Y. Badge	21,573	May 24	59	1252
La Ment, James H., East Troy, Pa. Lamp-chimney	21,556	May 24	59	1250
Ladd, Frank E., Springfield, Mass. Spoon	21,655	June 28	59	2063
Lanyon, Ned. V. (See Lanyon, William, Jr., assignor.)				
Lanyon, William, Jr., assignor to N. V. Lanyon, Pittsburg, Kans. Paper-weight	21,497	Apr. 26	59	624
Lazarus, Augustus A., *et al.* (See Lazarus, Mark, assignor.)				
Lazarus, Augustus A., *et al.* (See Lipper, Benjamin, assignor.)				
Lazarus, Augustus A., *et al.* (See Schwarz, Isaac A., assignor.)				
Lazarus, Mark, assignor to A. A. Lazarus, I. A. Schwarz, and B. Lipper, Philadelphia, Pa. Trimming	21,649	June 21	59	1912
Lee, Fred E., *et al.*, executors. (See Ireland, David M., assignor.)				
Leiter, Isaac H., New York, N. Y. Gimp	21,532	May 10	59	935
Lewis, Eugene H., assignor to Michigan Sand Brick Company, St. Joseph, Mich., and Chicago, Ill. Building-block	21,522	May 10	59	933

Alphabetical list of patentees of designs, April to June, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Lipper, Benjamin, *et al.* (See Lazarus, Mark, assignor.)				
Lipper, Benjamin, *et al.* (See Schwarz, Isaac A., assignor.)				
Lipper, Benjamin, assignor to himself, A. A. Lazarus, and I. A. Schwarz, Philadelphia, Pa. Dress-trimming	21,575	May 24	59	1252
Lipper, Benjamin, assignor to himself, A. A. Lazarus, and I. A. Schwarz, Philadelphia, Pa. Dress-trimming	21,576	May 24	59	1252
Lipper, Benjamin, assignor to A. A. Lazarus, I. A. Schwarz, and B. Lipper, Philadelphia, Pa. Dress-trimming	21,658	June 28	59	2063
Loeb, Joseph, Philadelphia, Pa. Fringe	21,661	June 28	59	2064
Ludwig, Adolph, Brooklyn, N. Y. Tray or receptacle	21,621	June 14	59	1757
MacKellar, Smiths & Jordan Company. (See Ihlenburg, Herman, assignor.)				
Maillot, John W., assignor to F. M. Whiting, North Attleborough, Mass. Spoon, &c	21,470	Apr. 19	59	455
Marston, Louis H., assignor to Tonk Manufacturing Company, Chicago, Ill. Piano-stool	21,667	June 28	59	2065
May, Charles A., Trenton, N. J. Ewer	21,591	May 31	59	1425
McAdams, Charles R., assignor to Kiechle, Brentano & Oberdorfer, Evansville, Ind. Stove-door	21,514	May 3	59	784
McCarthy, Oliver, assignor to Meriden Britannia Company, Meriden, Conn. Coffin-handle	21,499	Apr. 26	59	624
McCarthy, Oliver, assignor to Meriden Britannia Company, Meriden, Conn. Coffin-plate	21,508	Apr. 26	59	625
McKee, Henry S. (See Bennett and McKee.)				
McLeod, Adolphus A., Cheraw, S. C. Pan-handle	21,614	June 7	59	1601
McLewee, William S., Trenton, N. J. Lamp-shade	21,577	May 24	59	1252
McLewee, William S., Trenton, N. J. Lamp-shade	21,581	May 24	59	1253
McLewee, William S., Trenton, N. J. Lamp-shade	21,588	May 31	59	1425
Meeker, Stephen J., Newark, N. J. Shade-roller bracket	21,627	June 21	59	1910
Meese, Jacob W., Harrisburg, Pa. Statue	21,533	May 10	59	935
Mehl & Co., John. (See Henkel, John, assignor.)				
Meriden Britannia Company. (See McCarthy, Oliver, assignor.)				
Meriden Britannia Company. (See Wilcox, George H., assignor.)				
Michigan Sand Brick Company. (See Lewis, Eugene H., assignor.)				
Morgan, Charles, *et al.* (See Morgan and Redlinger, assignors.)				
Morgan, Charles, and M. Redlinger, Jr., assignors to said C. Morgan, E. H. Morgan, and A. Baumgarten, Freeport, Ill. Box for coffee-mills	21,619	June 7	59	1601
Morgan, Edgar H., *et al.* (See Morgan and Redlinger, assignors.)				
Murray, Daniel I., Dayton, Ohio. Spoon	21,595	May 31	59	1425
Myers, Samuel F., New York, N. Y. Spoon	21,462	Apr. 12	59	293
Nelson, Octavius E. (See Strom, Olaf, assignor.)				
Norman, Thomas W., Boston, Mass. Picture-frame	21,626	June 21	59	1910
Oberfelder, Max, Chicago, Ill. Bottle	21,509	Apr. 26	59	625
Oneida Community. (See Jameson, William A., assignor.)				
Osborne, Frank N., New York, N. Y., assignor to Towle Manufacturing Company, Newburyport, Mass. Spoon or similar article	21,596	May 31	59	1425
Perry, William H., Concord, N. H. Monument	21,451	Apr. 5	59	153
Perry, William H., Concord, N. H. Monument	21,474	Apr. 19	59	455
Perry, William H., Concord, N. H. Monument	21,475	Apr. 19	59	456
Perry, William H., Concord, N. H. Monument	21,536	May 10	59	935
Perry, William H., Concord, N. H. Monument	21,571	May 24	59	1252
Pfenninger, Jacob, St. Louis, Mo. Bretzel	21,450	Apr. 5	59	152
Piaget, Louis A., Paterson, N. J. Badge	21,642	June 21	59	1912
Plumb, William H., Ansonia, Conn. Sachet or pincushion	21,490	Apr. 19	59	457
Prahar, Louis B., Brooklyn, N. Y. Buckle	21,448	Apr. 5	59	152
Provenzano, Joseph N., New York, N. Y. Corner for pocket-book flaps, &c	21,471	Apr. 19	59	455
Redlinger, Mathias. (See Morgan and Redlinger.)				
Reed, Alanson H., Chicago, Ill. Piano-pedal	21,537	May 10	59	935
Regular Army and Navy Union of Ohio. (See Richards, Eugene H., assignor.)				
Requa, Emma M., Harrison, N. Y. Badge	21,618	June 7	59	1601
Richards, Eugene H., Boston, Mass., assignor to Regular Army and Navy Union of Ohio. Badge	21,640	June 21	59	1911
Richards, Eugene H., Boston, Mass., assignor to Regular Army and Navy Union of Ohio. Badge	21,641	June 21	59	1911
Richardson, Chauncey E., Duluth, Minn. Spoon, &c	21,602	June 7	59	1599
Richardson, Jeremiah J., Brooklyn, assignor to Richardson & Morgan Company, New York, N. Y. Fireplace-heater	21,515	May 3	59	784
Richardson & Morgan Company. (See Richardson, Jeremiah J., assignor.)				
Richter, Carl, Chicago, Ill. Bottle	21,495	Apr. 19	59	458
Rickert, August, Newark, N. J. Watch-chain	21,557	May 24	59	1250
Rindskopf, Abraham P. and H. P., Brooklyn, N. Y. Dress-shield	21,662	June 28	59	2064
Rindskopf, Henry P. (See Rindskopf, Abraham P. and H. P.)				
Ritchie, Francis, Troy, N. Y., assignor to I. A., F. L., and H. R. Sheppard, Philadelphia, Pa. Cooking-stove	21,520	May 10	59	933
Ritchie, Francis, Troy, N. Y., assignor to I. A., F. L., and H. R. Sheppard, Philadelphia, Pa. Cooking-stove	21,615	June 7	59	1601
Ritchie, Francis, New York, N. Y., assignor to I. A., F. L., and H. R. Sheppard, Philadelphia, Pa. Cooking-stove	21,654	June 21	59	1913
Robinson, Edwin, Camden, N. J. Trimming	21,659	June 28	59	2064
Rogers & Brother. (See Shannon, Edward W., assignor.)				
Runkle, Howard A., Reading, Pa. Drip-cup	21,590	May 31	59	1425
Sanborn, George O., Petaluma, Cal. Bottle	21,524	May 10	59	934
Schloss, Joseph, assignor to H. Wallach's Sons, New York, N. Y. Campaign-shirt	21,664	June 28	59	2064
Schloss, Joseph W., New York, N. Y. Trimming	21,648	June 21	59	1912
Schmidt, Jacob C., Reading, Pa. Spoon	21,540	May 17	59	1098
Schwarz, Isaac A., *et al.* (See Lazarus, Mark, assignor.)				
Schwarz, Isaac A., *et al.* (See Lipper, Benjamin, assignor.)				
Schwarz, Isaac A., assignor to himself, A. A. Lazarus, and B. Lipper, Philadelphia, Pa. Dress-trimming	21,578	May 24	59	1252
Schwarz, Isaac A., assignor to A. A. Lazarus, I. A. Schwarz, and B. Lipper, Philadelphia, Pa. Trimming	21,646	June 21	59	1912
Schwarz, Isaac A., assignor to A. A. Lazarus, I. A. Schwarz, and B. Lipper, Philadelphia, Pa. Trimming	21,647	June 21	59	1912
Sexton & Son, S. B. (See Bascom, Henry C., assignor.)				
Shannon, Edward W., assignor to Rogers & Brother, Waterbury, Conn. Spoon	21,472	Apr. 19	59	455
Shaw, William, Ballard Vale, Mass. Spoon	21,657	June 28	59	2063
Shepard, Charles G., and P. Adams; said Adams assignor to W. J. Shepard, Buffalo, N. Y. Toy savings-bank	21,594	May 31	59	1425
Shepard, Walter J. (See Shepard and Adams, assignors.)				
Sheppard, Franklin L., *et al.* (See Ritchie, Francis, assignor.)				
Sheppard, Howard R., *et al.* (See Ritchie, Francis, assignor.)				
Sheppard, Isaac A., *et al.* (See Ritchie, Francis, assignor.)				
Shiebler, George W., Brooklyn, N. Y. Spoon or fork handle	21,633	June 21	59	1911

Alphabetical list of patentees of designs, April to June, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Simons Bro. & Co. (See Weihman, Henry A., assignor.)				
Slensby, Patrick, Brooklyn, N. Y. Needle-threader frame	21,600	May 31	59	1426
Small, Mary A., Dime, Pa. Chandelier-pendant	21,543	May 17	59	1098
Smedes, Levi K., assignor to Taylor Company, New York, N. Y. Burial-casket	21,582	May 24	59	1253
Southworth, Dean, Braintree, Mass. Spoon	21,463	Apr. 12	59	293
Stiles, Sidney L., Watseka, Ill. Hinge	21,558	May 24	59	1250
Stockstrom, Charles A. (See Stockstrom, Louis, assignor.)				
Stockstrom, Louis, assignor of one-half to C. A. Stockstrom, St. Louis, Mo. Vapor-stove	21,651	June 21	59	1913
Stockstrom, Louis, assignor of one-half to C. A. Stockstrom, St. Louis, Mo. Vapor-stove	21,652	June 21	59	1913
Stockstrom, Louis, assignor of one-half to C. A. Stockstrom, St. Louis, Mo. Vapor-stove	21,653	June 21	59	1913
Strom, Olaf, assignor of one-half to O. E. Nelson, Brooklyn, N. Y. Match-stand	21,511	May 3	59	783
Taylor Company. (See Smedes, Levi K., assignor.)				
Terhune, James L., Harrison, N. J. Badge	21,608	June 7	59	1600
Thyng, Annie G., New York, N. Y., assignor to Cheney Brothers, South Manchester, Conn. Textile fabric	21,525	May 10	59	934
Tilton, George P., assignor to Towle Manufacturing Company, Newburyport, Mass. Spoon, &c	21,566	May 24	59	1251
Tim, Louis, New York, N. Y. Shirt envelope or holder	21,663	June 28	59	2064
Todd & Co., Edward. (See Freer, Charles S., assignor.)				
Tonk Manufacturing Company. (See Marston, Louis H., assignor.)				
Torrey, Joseph R., assignor to J. R. Torrey Razor Company, Worcester, Mass. Razor-handle	21,634	June 21	59	1911
Towle Manufacturing Company. (See Osborne, Frank N., assignor.)				
Towle Manufacturing Company. (See Tilton, George P., assignor.)				
Traut, Justus A., New Britain, Conn. Buckle	21,517	May 3	59	784
Treat, Charles H., Georgetown, Del., and A. B. Banghart, Baltimore, Md. Dish	21,583	May 24	59	1253
Turner, Jonathan, New Bedford, Mass. Screw-stud	21,673	June 28	59	2066
Underhill, Francis M., assignor to Whitall, Tatum & Co., New York, N. Y. Jar	21,612	June 7	59	1601
Underhill, Francis M., assignor to Whitall, Tatum & Co., New York, N. Y. Jar or ointment-pot	21,628	June 21	59	1910
Van Eps, Henry R., Peoria, Ill. Gate	21,502	Apr. 26	59	624
Van Herck, Henri. (See Demarest and Van Herck.)				
Verpillier, Paul, Newark, N. J. Finger-ring	21,570	May 24	59	1252
Verschuur, Justus, Jersey City, N. J. Spoon	21,550	May 17	59	1099
Wallach's Sons, H. (See Schloss, Joseph, assignor.)				
Ward, Frank K., Washington, D. C. Jar	21,464	Apr. 12	59	293
Ward, Frank K., Washington, D. C. Jar-stopper	21,465	Apr. 12	59	293
Ward, Frank K., Washington, D. C. Chair	21,503	Apr. 26	59	624
Weber, Anton, assignor to Headley & Carrow Manufacturing Company, Philadelphia, Pa. Silversmith's stock	21,510	Apr. 26	59	625
Weihman, Henry A., assignor to Simons Bro. & Co., Philadelphia, Pa. Metallic box	21,473	Apr. 19	59	455
Weihman, Henry A., assignor to Simons Bro. & Co., Philadelphia, Pa. Back for a brush or hand-mirror	21,629	June 21	59	1910
Weinberg, Charles, assignor to C. Weinberg & Co., New York, N. Y. Galloon	21,516	May 3	59	784
Weinberg & Co., C. (See Weinberg, Charles, assignor.)				
Westmeyer, Adolph, Pacific, Mo. Wire-stretcher shank	21,502	May 31	59	1425
Weston, Edward, Newark, N. J. Case for electrical measuring-instruments	21,445 / 21,446	Apr. 5	59	152
Whitall, Tatum & Co. (See Underhill, Francis M., assignor.)				
Whiting, Frank M. (See Maillot, John W., assignor.)				
Whiting, Frank M., North Attleborough, Mass. Spoon, &c	21,559	May 24	59	1250
Whitney, Thomas J., Philadelphia, Pa. Comb-case	21,456	Apr. 12	59	292
Wightman, John, Nottingham, England. Ruffling and ruching	21,562	May 24	59	1251
Wightman, John, Nottingham, England. Ruffling and ruching	21,563	May 24	59	1251
Wilcox, George H., assignor to Meriden Britannia Company, Meriden, Conn. Cigar-tray	21,670	June 28	59	2065
Wilkinson, George, assignor to Gorham Manufacturing Company, Providence, R. I. Spoon	21,603	June 7	59	1600
Wilkinson, George, assignor to Gorham Manufacturing Company, Providence, R. I. Spoon	21,604	June 7	59	1600
Wilkinson, George, assignor to Gorham Manufacturing Company, Providence, R. I. Spoon	21,605	June 7	59	1600
Wilkinson, William, Philadelphia, Pa. Heater, water, or steam pipe	21,561	May 24	59	1251
Windmayer, Alexander J., Fort Madison, Iowa. Pedestal	21,492	Apr. 19	59	458
Wirt, Charles, Chicago, Ill. Insulator-bracket	21,454	Apr. 12	59	292
Wirt, Charles, Chicago, Ill. Insulator-bracket	21,455	Apr. 12	59	292
Wolfsky, Louis, Chicago, Ill. Picture-frame bracket	21,452	Apr. 5	59	153
Wood, Walter A., assignor to T. B. Clark & Co., Honesdale, Pa. Ornamentation of glassware	21,466	Apr. 12	59	293
Wuest, Philip, Jr., assignor to C. J. and F. J. Heppe, Philadelphia, Pa Frame for electric motors	21,630	June 21	59	1910
Young, Eben, New York, N. Y. Garment	21,564	May 24	59	1251
Young, Frank E., Canton, Ohio. Rectal dilator	21,551	May 17	59	1099

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Aarons & Bro., Elias, New Orleans, La. Cigars	21,203	May 31	59	1429
Abraham, John S., Sydney, New South Wales. Pills	21,048	Apr. 26	59	628
Abraham, John S., Sydney, New South Wales. Pills	21,280	June 14	59	1758
Aktiebolaget Separator, Stockholm, Sweden. Centrifugal creamers	20,967	Apr. 12	59	295
Aktiebolaget Separator, Stockholm, Sweden. Centrifugal creamers	20,968	Apr. 12	59	295
Aldrich & Co., A. M., Boston, Mass. Pickles, catchups, and horse-radish	21,333	June 21	59	1916
Aleve, Frank, St. Louis, Mo. Specific for neuralgia, rheumatism, and gout	21,234	May 31	59	1427
Allen, Field & Lawrence, Boston, Mass. Leather for the uppers of boots and shoes and for boots and shoes	20,959	Apr. 12	59	294
Allen, Field & Lawrence, Boston, Mass. Leather for the uppers of boots and shoes and for boots and shoes	21,235	May 31	59	1429
Allsop & Sons, Limited, Samuel, Burton-on-Trent, England. Malt liquors	21,204	May 31	59	1427
Alvarez, Casimiro, Havana, Cuba. Cigars	20,998	Apr. 19	59	460
American Enfleurage Company, New York, N. Y. Certain named toilet articles	21,319	June 21	59	1914
American Milk and Kumyss Company, Rutherford, N. J., and New York, N. Y. Fermented beverages or nutrient beverages of fermented milk	20,970	Apr. 19	59	459
American Pin Company, Waterbury, Conn., New York, N. Y., Boston, Mass., and Chicago, Ill. Silvered metal pins and black pins	21,264	June 7	59	1603
American Tailoring Co., St. Louis, Mo. Men's and boys' clothing, including coats, pants, vests, and overcoats	21,097	May 10	59	937
American Tin Plate Machine and Manufacturing Company, Philadelphia, Pa. Tin and terne plates	21,382	June 28	59	2069
Anderson Preserving Company, Camden, N. J. Canned or preserved fruits, vegetables, soups, oysters, catsup, and sauces	20,980	Apr. 19	59	459
Angier Chemical Company, Boston, Mass. Refined petroleum for internal and external use as a remedy for disease	21,224	May 31	59	1428
Arkell & Douglas, New York, N. Y. Refined petroleum	21,060	May 3	59	785
Arnold, Firm of Friedrich, Greiz, Germany. Wool dress goods	21,075	May 3	59	786
Arnold, Friedrich, Greitz, Germany. Wool dress goods	20,925	Apr. 5	59	154
Arnstein, Samuel, New York, N. Y. Cigars	21,135	May 17	59	1101
Art Lithographic Publishing Company, Munich, Germany. Art lithographs	21,154	May 17	59	1102
Atwood & Steele, Chicago, Ill. Baking-powder	21,384	June 28	59	2069
Aucoin, Breaux & Renoudet, New Iberia, La. Cypress shingles	21,168	May 24	59	1254
Austin, Aronamona B., Fort Wayne, Ind. Boot and shoe polish	20,978	Apr. 19	59	459
Avila, Eduardo, New York, N. Y. Liquid extract of beef	20,997	Apr. 19	59	460
Baackes Wire Nail Company, Cleveland, Ohio. Wire nails	21,389	June 28	59	2069
Bachman, Mortimer H., Stanton, Mich Emulsion of witch-hazel for the skin	21,320	June 21	59	1914
Bailey & Co., Samuel R., Amesbury, Mass. Two-seated carriages	20,981	Apr. 19	59	459
Bailie, Wilton A., Shreveport, La. Mixed paint and white lead	21,087	May 10	59	936
Baker, Fred W., and H. Levy, Chicago, Ill. Preparation for destroying vermin on the human body	21,365	June 28	59	2068
Ball, Webster C., Cleveland, Ohio. Watches and portable clocks	21,169	May 24	59	1254
Ball, Webster C., Cleveland, Ohio. Watches and portable clocks	21,308	June 14	59	1760
Ball, Webster C., Cleveland, Ohio. Watches and portable clocks	21,309	June 14	59	1760
Bapterosses & Cie., F., Paris, France. Buttons and beads	21,086	May 10	59	936
Baron & Co., Baltimore, Md. Cigarettes	21,021	Apr. 26	59	626
Beaumont & Co., S., Roubaix, France. Hair-pins	21,184	May 24	59	1255
Beckermann & Co., New York, N. Y. Tailors' trimmings, including buttons, buckles, clasps, and hooks and eyes	21,236	June 14	59	1758
Bedford Mineral Springs Company, Bedford, Pa. Mineral-spring water	21,109	May 10	59	938
Belden, Alfred G., New York, N. Y. Olive oil	20,984	Apr. 19	59	459
Bergstresser, Edwin L., Lykens, Pa. Remedy for dyspepsia or stomach troubles	20,983	Apr. 19	59	459
Berkshire Manufacturing Company, Limited, Philadelphia, Pa. Ginghams	20,971	Apr. 12	59	295
Berlin Machine Works, Beloit, Wis., New York, N. Y., Chicago, Ill., and Cincinnati, Ohio. Woodworking machinery or machines	21,391	June 28	59	2070
Berry, Goss & Co., Boston, Mass. Clothes-sprinklers	21,185	May 24	59	1255
Betterton & Co., Knoxville, Tenn. Whisky	21,281	June 14	59	1758
Biechele Soap Co., Joseph, Canton, Ohio. Castile-soap	21,363	June 28	59	2067
Biechele Soap Co., Joseph, Canton, Ohio. Castile-soap	21,364	June 28	59	2067
Bippus, Charles W., and C. H. Breidenbach, Dayton, Ohio. Cosmetic or liquid face preparation	21,225	May 31	59	1429
Birney Catarrhal Powder Company, Omaha, Nebr. Catarrhal and like remedies	21,095	May 10	59	937
Blankenheym & Nolet, Rotterdam, Netherlands. Geneva cordials, brandies, gins, and whiskies	21,170	May 24	59	1254
Bliss, Mary M., Pawtucket, R. I. Corsets	21,035	Apr. 26	59	627
Bliven & Carrington, New York, N. Y. Lubricating-oils	21,049	Apr. 26	59	628
Blondeau et Cie, New York, N. Y. Cosmetics, salves, and ointments	21,085	May 10	59	936
Bloomingdale, Emanuel W., New York, N. Y. Buttons, braids, bindings, and buckles	20,982	Apr. 19	59	459
Blumenthal & Co., F., New York, N. Y. Leather of all kinds	21,096	May 10	59	937
Bode, Christoph F., New York, N. Y. Bottled wines and whiskies	20,945	Apr. 5	59	156
Boker & Co., Hermann, New York, N. Y. Shears, scissors, and pocket-knives	21,248	June 7	59	1602
Boldrick, Callaghan Company, Lebanon and Calvary, Ky. Whisky	21,162	May 24	59	1254
Boldrick, Callaghan Company, Lebanon and Calvary, Ky. Whisky	21,163	May 24	59	1254
Bonner's Sons, Robert, New York, N. Y. Literary publications	21,334	June 21	59	1916
Borgfeldt & Co., Geo., New York, N. Y. Dishes and plates	21,120	May 17	59	1100
Borgfeldt & Co., Geo., New York, N. Y. Dishes and plates	21,121	May 17	59	1100
Borgfeldt & Co., Geo., New York, N. Y. Dishes and plates	21,122	May 17	59	1100
Borgfeldt & Co., Geo., New York, N. Y. Dishes and plates	21,123	May 17	59	1100
Borgfeldt & Co., Geo., New York, N. Y. Dishes and plates	21,124	May 17	59	1100
Borgfeldt & Co., Geo., New York, N. Y. Dishes and plates	21,125	May 17	59	1100
Boston Cash Register Company, Northampton, Mass. Key-operated cash-registering machines having visual indicators	21,236	May 31	59	1429
Bradshaw Manufacturing Company, Boston, Mass. Bicycles made partly of wood	21,068	May 3	59	785
Braunstein Frères, Paris, France. Cigarette-paper	21,362	June 28	59	2067

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Breidenbach, Charles H. (See Bippus and Breidenbach.)				
Bretz & Curtis Manufacturing Company, Philadelphia, Pa. Bicycle saddles or seats	21,101	May 10	59	937
Brewer, William N., Cleveland, Ohio. Chewing-gum	21,020	Apr. 26	59	626
Bridge & Beach Manufacturing Company, St. Louis, Mo. Cooking-stoves	21,029	Apr. 26	59	626
Bright, Joseph T., and W. D. Howe, Lexington, Ky. Aerated phosphated beverages	21,197	May 24	59	1256
Brook and Brothers, Jonas, Meltham, England, and New York, N. Y. Cotton thread	21,054	Apr. 26	59	628
Brook and Brothers, Jonas, Meltham, England, and New York, N. Y. Cotton thread	21,055	Apr. 26	59	628
Brooklyn Shield Co., Brooklyn, N. Y. Armpit-shields	20,970	Apr. 12	59	295
Brown, Marie, and C. Quesnel, New York, N. Y. Fountain-pens	21,297	June 14	59	1759
Brown, Robert B., New York, N. Y. Compound of suet or beef-fat and cotton-seed oil for cooking purposes	20,944	Apr. 5	59	156
Bruton & Condon, Davidson county, near Nashville, Tenn. Snuff	21,012	Apr. 19	59	461
Bühring & Co., C., Hamburg, Germany. Water-filters	21,274	June 7	59	1604
Buntin Drug Co., Terre Haute, Ind. Antiseptic, antizymotic, deodorizing, and parasiticide compounds	21,192	May 24	59	1256
Burbank & Ryder, Boston and Middleborough, Mass. Substitute for shellac	20,960	Apr. 12	59	294
Burgoyne, Burbidges, Cyriax & Farries, London, England. Hypnotic compounds for internal and external use	21,295	June 14	59	1759
Burham Brick, Lime and Cement Company, Limited, Burham and London, England. Cement	20,950	Apr. 5	59	156
Burlington Blanket Company, Burlington, Wis. Horse blankets or covers	21,249	June 7	59	1602
Burt Shirt Manufacturing Co., Poughkeepsie, N. Y. Men's shirts	21,133	May 17	59	1101
Butler, James, New York, N. Y. Oats, wheat, and buckwheat	21,020	Apr. 26	59	627
Butler, James, New York, N. Y. Tomato catsup	21,258	June 7	59	1602
Butler, James, New York, N. Y. Flour	21,344	June 21	59	1917
Butz, John D., Wilkes-Barré, Pa. Stove-polish	21,136	May 17	59	1101
C. M. Webber & Company, Chicago, Ill. Canned fish, fruits, vegetables, and dried fruits	21,343	June 21	59	1916
C. T. Roenitz Leather Company, Sheboygan, Wis. Leather and boots and shoes made thereof	21,003	Apr. 19	59	461
Cable Specialty Co., Pittsburg, Pa. Remedy for rheumatism, neuralgia, and headache	21,293	June 14	59	1759
Cafazol Co., Boston, Mass. Headache medicine	21,069	May 3	59	785
Canfield Rubber Company, Bridgeport, Conn., and New York, N. Y. Dress-shields	21,118	May 17	59	1100
Canfield Rubber Company, Bridgeport, Conn., and New York, N. Y. Dress-shields	21,119	May 17	59	1100
Capital Drug Company, Augusta, Me. Remedy for asthma, hay fever, bronchitis, croup, and nasal catarrh	21,150	May 17	59	1102
Capitol Manufacturing Company, Springfield, Mass. Harness-soap	20,946	Apr. 5	59	156
Carborundum Company, Monongahela City, Pa. Crystalline substance used as an abradant and for other purposes	21,317	June 21	59	1914
Carleton & Huckins, Danvers, Mass. Children's school-shoes	21,126	May 17	59	1101
Ceballos & Co., J. M., New York, N. Y. Lard	21,296	June 14	59	1759
Central Oilgas Stove Company, Northampton and Boston, Mass. Oil and gas stoves	21,250	June 7	59	1602
Chadborn & Coldwell Manufacturing Company, Newburg, N. Y. Lawn-mowers	20,936	Apr. 5	59	155
Chandler & Rudd Company, Cleveland, Ohio. Candies	21,017	Apr. 19	59	462
Chapman & Smith Company, Chicago, Ill. Cleaned currants	21,354	June 28	59	2067
Charles Marvin Stock Food Company, Newport, Ky., and Franklin, Pa. Prepared food for horses and cattle	20,973	Apr. 12	59	295
Charles Truax, Greene & Company, Chicago, Ill. Antiseptica	21,388	June 28	59	2069
Chicago Dipsocura Company, Chicago, Ill. Medicine for the treatment of drunkenness, opium, morphine, and tobacco habits and kindred diseases	21,311	June 14	59	1760
Chryst, Mathew J., Syracuse, N. Y. Flavoring extracts for foods	20,955	Apr. 12	59	294
Church, Edward G., Kansas City, Mo. Asphalt	21,379	June 28	59	2069
Clay, Edward C., Chicago, Ill. Preparation to beautify the complexion	20,937	Apr. 5	59	155
Clinton Pharmaceutical Company, Syracuse, N. Y. Antiseptics	21,228	May 31	59	1429
Clippinger, David A., Chicago, Ill. Remedy against blood-poisoning	20,951	Apr. 5	59	156
Confectioners' Vegetable Colours and Fruit Essences Company, Limited, London, England. Extract or coloring material for pastry	21,127	May 17	59	1101
Conger, Estate of Walter M., Jr., Newark, N. J. Tea-trays	21,036	Apr. 26	59	627
Cook, Lyman & Selxas, Chicago, Ill. Hats	20,972	Apr. 12	59	295
Coppel, Firm of Alexander, Solingen, Germany, and New York, N. Y. Razors	21,352	June 21	59	1918
Corbin & Son, B. A., Webster, Mass. Boots and shoes	21,226	May 31	59	1429
Coventry Machinists' Company, Limited, Coventry, England. Bicycles	21,201	May 24	59	1256
Crandall & Godley, New York, N. Y. Cleaned currants or similar prepared fruits or vegetables	20,938	Apr. 5	59	155
Culshaw, William H., Chicago, Ill. Puzzle	20,954	Apr. 12	59	294
Culver, Newton H., Detroit, Mich. Fireproof backing slabs and sheets	21,227	May 31	59	1429
Curfew, Charles H., Providence, R. I. Stove-polish	21,061	May 3	59	785
Cushman & Co., Albany, N. Y. Rye and bourbon whisky	21,010	Apr. 19	59	461
Dallemand & Co., Chicago, Ill. Whisky	21,237	May 31	59	1430
Daniels & Co., Geo. F., Boston, Mass. Women's, misses', and children's lace and button shoes	21,177	May 24	59	1255
Daniels, William H., Dubuque, Iowa. Remedies for diseases of the stomach, liver, bladder, and skin	21,355	June 28	59	2067
Davidson, Latham A., West Milford, W. Va. Specific for cholera infantum	20,985	Apr. 19	59	459
Davis Chemical Co., Ypsilanti, Mich. Laxative	21,056	Apr. 26	59	628
De Grauw, Aymar & Co., New York, N. Y. Oars, handspikes, and capstan-bars	21,081	May 10	59	936
Dearth & Smith, Jasper, Ala. Remedies put up in the form of a powder, liquid, and salve for catarrh, sore eyes, and diseases of the blood	21,276	June 7	59	1604
Deere & Company, Moline, Ill. Plows	20,974	Apr. 12	59	295
Diamond Lustre Polish Co., Boston Mass. Metal-burnishing powder	21,031	Apr. 26	59	627
Dick, Herman E., Chicago, Ill. Toilet soap	21,366	June 28	59	2068
Dick, Herman E., Chicago, Ill. Rubber stamps	21,367	June 28	59	2068
Dinkelaker, William, Sindelfingen, Germany. Cotton and linen textile goods	21,022	Apr. 26	59	626
Dives, Pomeroy & Stewart, Reading, Pa. Sewing-machines	21,321	June 21	59	1914
Dolloff, Estate of William P., New York, N. Y. Remedy for rheumatism	21,176	May 24	59	1255
Douglas & Kingsland, Middletown, Conn. Stove-polish	21,110	May 10	59	938
Dryfoos & Co., A., New York, N. Y. Whisky	20,961	Apr. 12	59	294
Duncan, Alderdice & Company, Limited, Newry, Ireland. Whisky	21,275	June 7	59	1604
Dunham, Carrigan & Hayden Company, San Francisco, Cal., and New York, N. Y. Iron and steel, including hammer-steel and cast and pick steel	21,313	June 21	59	1914
Dunham, Carrigan & Hayden Company, San Francisco, Cal., and New York, N. Y. Valves	21,322	June 21	59	1914
Durell, George B., Harriman, Tenn. Hoes	21,013	Apr. 19	59	461
Durgin, William B., Concord, N. H. Gold, silver, plated, flat, and table ware and jewelry	21,369	June 28	59	2068
E. Godel & Sons, Peoria, Ill. Lard	20,928	Apr. 5	59	154
Eberhard Manufacturing Company, Cleveland, Ohio. Saddlery hardware	21,019	Apr. 26	59	626
Eberhard Manufacturing Company, Cleveland, Ohio. Malleable castings	21,059	Apr. 26	59	628
Eburnea Co., Lancaster, England. Artificial ivory and articles made or formed thereof	21,008	Apr. 19	59	461
Eburnea Co., Lancaster, England. Artificial ivory and articles made or formed thereof	21,053	Apr. 26	59	628
Elmenhorst & Co., New York, N. Y. Coffee	20,926	Apr. 5	59	154

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Escher & Co., Sonneberg, Germany. Hones	20,986	Apr. 19	59	459
Everitt, Walter E., Buffalo, N. Y. Liniment	20,927	Apr. 5	59	154
F. & M. Schaefer Brewing Company, New York, N. Y. Lager-beer	21,004	Apr. 19	59	461
Fahys Watch Case Company, Sag Harbor, N. Y. Watch-cases	20,990	Apr. 19	59	460
Farnum & Co., John, Philadelphia, Pa. Cotton goods, including tickings, cheviots, ginghams, and sheetings	21,186	May 24	59	1255
Farnum & Co., John, Philadelphia, Pa. Ginghams	21,305	May 31	59	1427
Farnum & Co., John, Philadelphia, Pa. Ginghams	21,370	June 28	59	2068
Ferris & De Long, New York, N. Y. Garment-stays	21,368	June 28	59	2068
Fible & Crabb Distilling Company, Eminence, Ky. Whisky	21,078	May 3	59	786
Finlayson, Bousfield & Co., Johnstone, Scotland, and Grafton and Boston, Mass. Linen thread	21,145	May 17	59	1102
Finlayson, Bousfield & Co., Johnstone, Scotland, and Grafton, Mass. Linen thread	21,315	June 21	59	1914
Finlayson, Bousfield & Co., Johnstone, Scotland, and Grafton, Mass. Linen thread	21,316	June 21	59	1914
Finlayson, Bousfield & Co., Johnstone, Scotland, and Grafton, Mass. Linen and hemp yarn and thread	21,356	June 28	59	2067
Finlayson, Bousfield & Co., Johnstone, Scotland, and Grafton, Mass. Linen and hemp yarn and thread	21,392	June 28	59	2070
Fish, Charles S., Salamanca, N. Y. Cigars	21,137	May 17	59	1101
Fitzherbert, James G., Newark, N. J. Eye-washes	21,265	June 7	59	1603
Frictionless Metal Company, Chattanooga, Tenn. Alloy	20,952	Apr. 5	59	156
Flaccus Bros., Wheeling, W. Va. Catchup	21,314	June 21	59	1914
Flexible Door and Shutter Company, Portland, Me., and Worcester, Mass. Flexible doors, blinds, and shutters	21,259	June 7	59	1602
Foote & Jenks, Jackson, Mich. Toilet preparations	21,067	May 3	59	785
Forchheimer & Co., M., Mobile, Ala. Wheat-flour	21,116	May 10	59	938
Foster, Milburn & Co., Buffalo, N. Y. Cough sirup	21,373	June 28	59	2068
Fuchs & Lang, New York, N. Y. Bronze paints	21,242	May 31	59	1430
Gavin & Co., E. F., Chicago, Ill. Confectionery or candies	20,939	Apr. 5	59	155
Gebhart & Son, M., Baltimore, Md. Topical remedies	21,372	June 28	59	2068
Genesee Salt Company, New York, N. Y. Salt	21,198	May 24	59	1256
Gérard, Charles, and J. S. Letord, Kansas City, Mo. Aluminium solder for dental plates and other uses	20,929	Apr. 5	59	154
Gibbs & Company, Limited, London, England. Cement	21,371	June 28	59	2068
Girard & Cie., L., Epernay, France, and New York, N. Y. Champagne	21,298	June 14	59	1759
Glasgo Yarn Mills Company, Glasgo, Conn. Thread	21,062	May 3	59	785
Glazier-Strong Oil Stove Co., Chelsea, Mich. Stoves, heaters, and furnaces	20,991	Apr. 19	59	460
Gloude, Ephram, Rondout, N. Y. Medicine to purify the blood and to cure rheumatism	21,277	June 7	59	1604
Goetting, Adolf L., New York, N. Y. Liquid dressing for curling, crimping, and frizzing the hair	21,193	May 24	59	1256
Goldstein, Philip, Newark, N. J. Leather shoe-laces	21,171	May 24	59	1254
Groff, Charles R., St. Paul, Minn. Baking-powder	21,023	Apr. 26	59	626
Gump & Sons, G., Baltimore, Md. Whisky	21,229	May 31	59	1429
Gunn, Firm of Mrs. B. J., New York, N. Y. Improved and reformed baby-clothes	21,287	June 14	59	1758
Gunn, Firm of Mrs. B. J., New York, N. Y. Improved patterns for baby-garments and undergarments	21,288	June 14	59	1758
Guthmann, Carpenter & Telling, Chicago, Ill. Leather boots and shoes	20,920	Apr. 5	59	154
Hall & Hayward Company, Louisville, Ky. Confectionery	21,024	Apr. 26	59	626
Hall & Hayward Company, Louisville, Ky. Confectionery	21,025	Apr. 26	59	626
Hall & Hayward Company, Louisville, Ky. Confectionery	21,026	Apr. 26	59	626
Hall & Hayward Company, Louisville, Ky. Candies, licorice, and chewing-gum	21,194	May 24	59	1256
Hall & Hayward Company, Louisville, Ky. Nuts	21,302	June 14	59	1759
Hallworth & Son, J., Manchester, England. Braidings and trimmings for wearing-apparel	21,260	June 7	59	1603
Hammesfahr, Firm of Gottlieb, Solingen-Foche, Germany. Steel knives, forks, and scissors and analogous small metal articles	21,240	May 31	59	1430
Hanna & Abbott Manufacturing Company, Columbus, Ohio. Liquid paint	20,935	Apr. 5	59	155
Hanrahan, Joseph F., Chicago, Ill. Refrigerators and refrigerator-cars	21,301	June 14	59	1759
Harrington, Jeremiah A., Boston, Mass. Hats, caps, and bonnets	21,380	June 28	59	2069
Hart & Duff Hat Company, St. Louis, Mo. Hats and caps	21,243	May 31	59	1430
Hart & Duff Hat Company, St. Louis, Mo. Hats and caps	21,282	June 14	59	1758
Hart & Duff Hat Company, St. Louis, Mo. Hats and caps	21,283	June 14	59	1758
Hart & Duff Hat Company, St. Louis, Mo. Hats and caps	21,284	June 14	59	1758
Haslam's Limited, Manchester, England. Velveteens	21,393	June 28	59	2070
Hattie & Mylius, Halifax, Canada. Pills	21,299	June 14	59	1759
Hauthaway & Sons, C. L., Boston, Mass. Liquid cement	21,151	May 17	59	1102
Hayden & Derby Manufacturing Company, New York, N. Y. Stationary and locomotive injectors and ejectors	21,221	May 31	59	1428
Healey, Emily. (See Healey, Mary and E.)				
Healey, Mary and E., Washington, D. C. Mat gold for gilding and the porcelain to which it is applied	21,199	May 24	59	1256
Heller & Merz Company, New York, N. Y., and Newark, N. J. Wash-blue in balls	21,129	May 17	59	1101
Heller & Merz Company, New York, N. Y., and Newark, N. J. Shoe-dressing	21,130	May 17	59	1101
Henderson, Laws & Co., Baltimore, Md. Crackers and cakes	21,300	June 14	59	1759
Heywood Boot and Shoe Company, Worcester, Mass. Shoes and shoe-lasts	21,134	May 17	59	1101
Highland Mineral Spring Water Company, Lewiston, Me., and New York, N. Y. Natural mineral water	20,992	Apr. 19	59	460
Hill, George A., New York, N. Y. Remedies for neuralgia, rheumatism, headache, hay-fever, asthma, and female complaints	21,335	June 21	59	1916
Hobson, Seaman & Co., Francis, Sheffield, England. Steel in bars, rods, and sheets for tools, dies, and for other purposes	21,182	May 24	59	1255
Horstmann Bros. & Co., Philadelphia, Pa. Naval, military, society, and theatrical uniforms	21,304	June 14	59	1760
Howard Bros., Chester, Pa. Vinegar	21,111	May 10	59	938
Howards & Sons, London, England. Internal and external remedies for diseases	21,357	June 28	59	2067
Howarth, Dennis, Chester, Pa. Turkish towels	21,323	June 21	59	1915
Howe & Dills, Carlisle, Ky. Local anesthetic for painless extraction of teeth	21,230	May 31	59	1429
Howe, William D. (See Bright and Howe.)				
Humanitas Company, Lakewood, N. Y. Remedies for alcoholism, morphine, opium, and tobacco habit, consumption, and for diseases of the throat and lungs	21,183	May 24	59	1255
Hurd & Co., George B., New York, N. Y. Writing-paper and envelopes	21,132	May 17	59	1101
Hurd & Co., George B., New York, N. Y. Writing-paper and envelopes	21,138	May 17	59	1101
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,155	May 17	59	1102
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,156	May 17	59	1102
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,157	May 17	59	1102
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,158	May 17	59	1102
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,159	May 17	59	1102
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,160	May 17	59	1102

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Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,161	May 17	59	1102
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,187	May 24	59	1255
Hurd & Co., Geo. B., New York, N. Y. Writing-paper and envelopes	21,206	May 31	59	1427
Hurd & Lawrie, Brooklyn, N. Y. Washing-powder	21,188	May 24	59	1255
Hyman, Manie, Denver, Colo. Cigars	21,270	June 7	59	1603
Improved Natural Stone Filter Company, Newark, N. J., and New York, N. Y. Water filters and coolers	21,117	May 17	59	1100
J. J. & W. Wilson, Limited, Kendal, England. Clothing for men, women, and boys, and for hats, caps, and flannel shirts	21,099	May 10	59	937
J. J. & W. Wilson, Limited, Kendal, England. Piece goods of woollen, silk, linen, cotton, jute, and mixed materials, rugs, horse-clothing, wools, worsteds, yarns, and threads	21,100	May 10	59	937
J. & M. Schwabacher, Limited, New Orleans, La. Wheat-flour	21,255	June 7	59	1602
J. S. Smith, Druce & Company, Limited, London, England. Gin	21,294	June 14	59	1759
Jacobs & Isenberg, Wheeling, W. Va. White muslin	21,088	May 10	59	936
Jacoby & Wester, New York, N. Y. Edge tools, cutlery, and instruments and implements of steel for surgical, toilet, domestic, and other purposes	20,953	Apr. 5	59	156
James Chambers, Limited, New York, N. Y. Boots and shoes	21,102	May 10	59	937
Jamison, Alcinous B., New York, N. Y. Anal or rectal salve	21,063	May 3	59	785
John M. Moore Shoe Company, Atlanta, Ga. Fine shoes, slippers, and shoe-uppers	21,358	June 28	59	2067
Johnston & Murphy, Newark, N. J. Boots and shoes	21,207	May 31	59	1427
Jones, Flora A., South Bend, Ind. Toilet wash for the complexion	20,921	Apr. 5	59	154
Jones & Hill Company, Elkhart, Ind. Chewing-gum	21,112	May 10	59	938
Jowitt & Son, J., Stanley, N. J. Waterproofed carbolized paper	21,310	June 14	59	1760
Kansas Salt Company, Hutchinson, Kans. Salt for table and other use	21,195	May 24	59	1256
Kayser, William J., Milwaukee, Wis. Fabric-cleansing compounds of semi-liquid or liquid form	21,050	Apr. 26	59	628
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing	21,327	June 21	59	1915
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing	21,328	June 21	59	1915
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing and for making buttonholes	21,329	June 21	59	1915
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing	21,330	June 21	59	1915
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing	21,331	June 21	59	1915
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing	21,353	June 21	59	1918
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing	21,383	June 28	59	2069
Kersten & v. N. Rosenegk, Henrico county, near Richmond, Va. Beer	21,002	Apr. 19	59	461
Keystone Chemical Company, Camden, N. J. Liquid detergent for toilet, bath, and household purposes	21,336	June 21	59	1916
Kirby, Beard & Company, Limited, Birmingham, England. Pins	21,289	June 14	59	1758
Kingsley, Charles B., Northampton, Mass. Remedy for the cure of headache, colds, neuralgia, or similar ailments	21,051	Apr. 26	59	628
Kinkead, Allan, Virginia City, Nev. Medical capsules	21,098	May 10	59	937
Koenig Medicine Company, Chicago, Ill. Line of proprietary medicines	21,103	May 10	59	937
L. J. Rose & Company, Limited, San Gabriel, Cal., and London, England. Wines and brandies	21,217	May 31	59	1428
L. J. Rose & Company, Limited, San Gabriel, Cal., and London, England. Fruits, nuts, oranges, lemons, olive-oil, and pickled olives	21,387	June 28	59	2069
Lahann, Reimer, Monmouth, Ill. Cigars	21,189	May 24	59	1256
Landesmann, Max, New York, N. Y. Tarletan, lace-net, and all other cotton dress goods	20,975	Apr. 12	59	296
Lea & Perrins, Worcester, England. Sauce for meats, fish, game, gravies, and soups	21,208	May 31	59	1427
Leggett & Co., Francis H., New York, N. Y. Wheat-flour	21,178	May 24	59	1255
Letord, Joseph S. (See Gérard and Letord.)				
Levi, Jacob, Paterson, N. J. Shirts, overalls, and pantaloons for mechanics' working-clothes	21,071	May 3	59	786
Levy Co., A., New York, N. Y. Boys' and children's suits	21,337	June 21	59	1916
Levy, Henry. (See Baker and Levy.)				
Lewis Medicine Co., A. H., Bolivar, Mo. Liver-regulator and blood-purifier	21,202	May 24	59	1256
Lewis, William H., Philadelphia, Pa. Silver polish	21,338	June 21	59	1916
Liebman, Mario, New York, N. Y. Cotton-seed oil, crude and refined	21,052	Apr. 26	59	628
Lilly, Alonzo, Baltimore, Md. Dentifrice	20,999	Apr. 19	59	460
Lippmann, Phillipp, New York, N. Y. Corset-springs	21,104	May 10	59	938
Logan, William B., Cincinnati, Ohio. Hair-tonic	20,940	Apr. 5	59	155
Lyon, Hall & Co., Baltimore, Md. Fabric for window-shades	21,303	June 14	59	1759
MacLaren, Alexander F., Stratford, Canada. Fancy full-cream Canadian cheese	21,000	Apr. 19	59	460
Macowsky, Isaac, New York, N. Y. Writing-pens	21,179	May 24	59	1255
Magic Clothes Cleaner Co., Portland, Me. Cleaning compound for removing grease from clothing	21,011	Apr. 19	59	461
Mahr & Sons, John C., New York, N. Y. Butter and eggs	21,290	June 14	59	1758
Majestic Perfume Co., New York, N. Y. Perfumery	21,251	June 7	59	1602
Manley & Turner, Elmira, N. Y. Polish for wood and metal work	20,930	Apr. 5	59	154
Marshall & Co., W. G., Cleveland, Ohio. Cigars	20,988	Apr. 19	59	459
Martin & Co., H. N., Greenville, Ky. Plug chewing-tobacco	21,345	June 21	59	1917
Mason & Co., Marcus, New York, N. Y. Coffee-polishers	21,164	May 24	59	1254
Mason & Co., Marcus, New York, N. Y. Coffee-hullers	21,165	May 24	59	1254
May & Co., Madame, Boston, Mass. Toilet soap, cosmetics, cream, lotion, hair dye and bleach, and similar preparations	21,210	May 31	59	1427
May & Fiebeger, Akron, Ohio. Hot-air furnaces	21,241	May 31	59	1430
McGrath, Henry J., Baltimore, Md. Canned oysters, fruits, and vegetables	21,144	May 17	59	1101
McKee, John L., Chicora, Pa. Proprietary medicine for the cure of headache	20,987	Apr. 19	59	459
McKesson & Robbins, New York, N. Y. Boxes, bottles, tubes, atomizers, and powder-distributers used for dispensing powders, liquids, and semi-liquids	21,072	May 3	59	786
McKinnie & Cheseman Manufacturing Co., Pittsburg, Pa. Remedy for the cure of rheumatism, gout, and lumbago	21,273	June 7	59	1604
McKnight & Co., Wichita, Kans., and New York, N. Y. Edge tools and cutlery of all kinds	20,976	Apr. 12	59	296
McMartin's Sons, J. I., Johnstown, N. Y. Gloves and mittens	21,147	May 17	59	1102
Meisselbach & Bro., A. F., Newark, N. J. Can-openers	21,022	May 10	59	936
Meredith-Jones & Sons, J., Wrexham, England. Leather of all kinds, skins unwrought and wrought, and articles made of leather	21,070	May 3	59	785
Mersick & Co., C. S., New Haven, Conn. Tin and terne plates	21,374	June 28	59	2068
Messner & Co., Ch., Trossingen, Germany. Mouth-harmonicas	21,001	Apr. 19	59	460
Meyer Brothers Drug Company, St. Louis and Kansas City, Mo., and Dallas, Tex. Ethyl nitrite	21,146	May 17	59	1102
Meyer Brothers Drug Company, St. Louis and Kansas City, Mo., and Dallas, Tex. Corks	21,209	May 31	59	1427
Meyerhof, Marx & Simonsen, Manchester, England. Velveteen	21,238	May 31	59	1430

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Miami Powder Company, Xenia, Ohio. Sporting-powder	21,252	June 7	59	1602
Millar, Thomas D., Ingersoll, Canada. Cheese	21,361	June 7	59	1603
Miller & Co., John, Boston, Mass. Whisky	21,366	June 7	59	1603
Miller & Newton, South Bend, Ind. Medicine for the blood and digestive system	21,089	May 10	59	936
Monroe, Edward N., Unionville, Mo., and Lexington, Ky. Whisky	21,140	May 17	59	1101
Montmorency Cotton Manufacturing Company, Montmorency, Canada. Sheetings, shirtings, muslins, and cotton dress fabrics	21,244	May 31	59	1430
Moore, Martin L. (See Sawyer and Moore.)				
Morgan & Co., C. W., New York, N. Y. Table relish	21,394	June 21	59	1915
Morrell, James C., Manchester, England. Game for outdoor and indoor use	21,064	May 3	59	785
Moulié, Eugène, Jacksonville, Fla. Certain perfumery	21,090	May 10	59	936
Murray, Daniel D. (See Slaughter and Murray.)				
Napheys, Edward C., Philadelphia, Pa. Preparation of corn for culinary purposes	21,172	May 24	59	1254
National Card Company, Indianapolis, Ind., Jersey City, N. J., and New York, N. Y. Playing-cards	21,084	May 10	59	936
National Starch Manufacturing Company, Covington, Ky., and New York, N. Y. Laundry starch	21,083	May 10	59	936
National Starch Manufacturing Company, Covington, Ky., New York, N. Y., and Cincinnati, Ohio. Preparation of starch for laundry or food purposes	20,943	Apr. 5	59	156
National Starch Manufacturing Company, Covington, Ky., Indianapolis, Ind., and New York, N. Y. Laundry starch	21,257	June 7	59	1602
National U. S. Stamp Delivery Company, Portland, Me., and Boston, Mass. Cylindrical frangible boxes for use in coin-controlled vending-machines	21,271	June 7	59	1603
Nelson Glass Company, Muncie, Ind. Glass bottles, jars, and other glass receptacles and tableware	20,931	Apr. 5	59	155
Neumann, August W., New York, N. Y. Dye-stuffs for dyeing textile fabrics	21,141	May 17	59	1101
New Home Sewing Machine Company, New York, N. Y. Sewing-machines and attachments	21,272	June 7	59	1604
New York Consolidated Card Company, New York, N. Y. Playing-cards	21,093	May 10	59	937
Nicholson & Co., J. & W., London, England. Gin	21,200	May 24	59	1256
Noble & Strecter, New York, N. Y. Composition for polishing metals	21,253	June 7	59	1602
North Packing and Provision Company, Boston, Mass. Packed meat, hams, shoulders, bacon sides, and sausages	21,245	May 31	59	1430
Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour	21,306	June 14	59	1760
Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour	21,307	June 14	59	1760
Oakford & Fahnestock, Peoria, Ill. Canned vegetables and fruits	21,340	June 21	59	1916
Oberly, John L., New York, N. Y. Periodicals	21,027	Apr. 26	59	626
Occidental Oil Company, Brooklyn and New York, N. Y. Cotton-seed oil for culinary purposes and for food	21,190	May 24	59	1256
Od Chem. Company, New York, N. Y. Certain named remedies	21,339	June 21	59	1916
Ormes, Upsdale & Co., London, England. Gloves	20,922	Apr. 5	59	154
Page, George W., Hawthorne, N. J., and New York, N. Y. Remedy for certain named diseases	21,213	May 31	59	1428
Page, George W., Hawthorne, N. J., and New York, N. Y. Remedy for certain named diseases	21,214	May 31	59	1428
Page & Son, J., Cohoes, N. Y. Batting or bats of cotton	21,262	June 7	59	1603
Palmer, Firm of Solon, New York, N. Y. Extracts, colognes, satchet-powders, and toilet soap	21,397	June 28	59	2070
Pan Confection Company, Chicago, Ill. Confections and candies	20,957	Apr. 12	59	294
Parker, Elijah S., New York, N. Y. Salve	20,989	Apr. 19	59	459
Parsons & Co., W. H., New York, N. Y. Paper for printing and lining strawboards used in making boxes	20,947	Apr. 5	59	156
Paul Whitin Manufacturing Company, Northbridge, Mass. Shirtings, cambrics, muslins, and dress goods	21,395	June 28	59	2070
Paxton & Gallagher, Omaha, Nebr. Tea	21,267	June 7	59	1603
Paxton & Gallagher, Omaha, Nebr. Tea	21,268	June 7	59	1603
Pearson, James S. (See Rogers and Pearson.)				
Peavey & Co., F. H., Minneapolis, Minn. Wheat, corn, barley, and rye	21,191	May 24	59	1256
Perkins & Co., New York, N. Y. Coal	21,254	June 7	59	1602
Peter Schoenhofen Brewing Company, Chicago, Ill. Lager-beer	21,279	June 7	59	1604
Peterson & Co., J. H., Albion, N. Y. Natural mineral water	21,180	May 24	59	1255
Pettijohn California Breakfast Food Company, Minneapolis, Minn. Rolled wheat	21,166	May 24	59	1254
Pettijohn California Breakfast Food Company, Minneapolis, Minn. Rolled wheat	21,215	May 31	59	1428
Pettijohn California Breakfast Food Company, Minneapolis, Minn. Rolled wheat	21,216	May 31	59	1428
Pettijohn California Breakfast Food Company, Minneapolis, Minn. Rolled wheat	21,231	May 31	59	1429
Pettijohn California Breakfast Food Company, Minneapolis, Minn. Rolled wheat	21,232	May 31	59	1429
Phelps, Dodge & Co., New York, N. Y. Tin and other metal plates	20,956	Apr. 12	59	294
Picha & Cie., T., Ghent, Belgium. Portland cement	21,385	June 28	59	2069
Pings & Pinner, New York, N. Y. Kid and other gloves	21,028	Apr. 26	59	626
Pings & Pinner, New York, N. Y. Kid and other gloves	21,037	Apr. 26	59	627
Pings & Pinner, New York, N. Y. Kid and other gloves	21,038	Apr. 26	59	627
Pings & Pinner, New York, N. Y. Kid and other gloves	21,039	Apr. 26	59	627
Pings & Pinner, New York, N. Y. Kid and other gloves	21,040	Apr. 26	59	627
Pings & Pinner, New York, N. Y. Kid and other gloves	21,041	Apr. 26	59	627
Pings & Pinner, New York, N. Y. Kid and other gloves	21,211	May 31	59	1427
Pings & Pinner, New York, N. Y. Kid and other gloves	21,212	May 31	59	1427
Place & Co., E. G., Boston, Mass. Finished leather	21,381	June 28	59	2069
Plumb, Frank, Saginaw, Mich. Composition tablets for female complaints	21,375	June 28	59	2068
Porter & Co., Robert, London, England. Malt liquors	21,325	June 21	59	1915
Prouty & Co., Isaac, Spencer and Boston, Mass. Boots and shoes	21,394	June 28	59	2070
Quadrant Cycle Co., Birmingham, England. Bicycles and tricycles	21,066	May 3	59	785
Quesnel, Camille. (See Brown and Quesnel.)				
R. H. Horne Produce Company of Indiana, Union City, Ind. Eggs	21,016	Apr. 19	59	462
Ransom & Randolph, Toledo, Ohio. Razors	21,077	May 3	59	786
Raymond & Co., Brooklyn, N. Y. Medicated plasters	21,173	May 24	59	1254
Reddaway & Co., F., Manchester, England, and New York, N. Y. Woven machine-belting	21,346	June 21	59	1917
Reddaway & Co., F., Manchester, England, and New York, N. Y. Fire-hose	21,386	June 28	59	2069
Read Holliday & Sons, Limited, New York, N. Y. Wool-coloring matter	21,105	May 10	59	938
Renz & Henry, Louisville, Ky. Stomach bitters and a compound of sarsaparilla and potash	21,263	June 7	59	1603
Rice & Hutchins, Boston, Mass. Boots and shoes and leather for the uppers of boots and shoes	20,962	Apr. 12	59	294
Richardson & De Long Bros., Philadelphia, Pa. Hooks and eyes for garments	20,923	Apr. 5	59	154
Richardson & De Long Bros., Philadelphia, Pa. Hooks and eyes	20,994	Apr. 19	59	460
Richardson & De Long Bros., Philadelphia, Pa. Hooks and eyes	20,995	Apr. 19	59	460
Richardson & De Long Bros., Philadelphia, Pa. Hooks and eyes	20,996	Apr. 19	59	460
Richardson & De Long Bros., Philadelphia, Pa. Hooks and eyes	21,076	May 3	59	786
Rieflin, George T., Mount Vernon, N. Y. Perspiration-powders	21,079	May 3	59	786
Robert Smith India Pale Ale Brewing Company, Philadelphia, Pa. Ale and stout	21,043	Apr. 26	59	627
Robertson, Thomas S., New York, N. Y. Medicine for the cure of the alcohol habit	21,239	May 31	59	1430

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Rockwood Brothers, Chicago, Ill. Canned fruits, vegetables, fish, and meats, catsup, pickles, sauces, and olives	21,091	May 10	59	936
Rockwood Brothers, Chicago, Ill. Canned fruits, vegetables, fish, and meats, and bottled catsups, sauces, pickles, and olives	21,092	May 10	59	937
Rogers, Samuel C., and J. S. Pearson, Buffalo, N. Y. Mineral waters and other non-alcoholic drinks	21,318	June 21	59	1914
Rosenfeld & Co., E., Baltimore, Md. Night-robes	21,359	June 28	59	2067
Ryan, Charles, Springfield, Ill. Preparation for healing wounds, chaps, or other excoriations by external application	21,181	May 24	59	1255
Sagar, Charles H., Auburn, N. Y. Neuralgic remedies	20,941	Apr. 5	59	155
Sawyer, John B., and M. L. Moore, Memphis, Tenn. Antiseptic for the prevention of gonorrhea, syphilis, and all contagious venereal diseases	21,065	May 3	59	785
Schaefer & Co., Cleveland, Ohio. Vegetable oil used as a remedy for rheumatism or pains in the back and limbs	20,958	Apr. 12	59	294
Scheirer, Franklin B., Philadelphia, Pa. Salves, ointments, or liniments, and cough mixture	20,924	Apr. 5	59	154
Scheirer, Franklin B., Philadelphia, Pa. Salves, ointments, or liniments, and cough mixture	21,080	May 3	59	786
Schultz, Robert A., Oak Park, Ill. Polish for wood, glass, and metal	21,067	Apr. 19	59	461
Schwarzschild & Sulzberger, New York, N. Y. Fresh, cured, and salt meats, sausages, bolognas, and food products in which meat is the principal ingredient	21,005	Apr. 19	59	461
Schweinburg, Emil, New York, N. Y. Corsets	21,006	Apr. 19	59	461
Schweinburg, Emil, New York, N. Y. Corsets	21,349	June 21	59	1917
Schweinburg, Emil, New York, N. Y. Corsets	21,350	June 21	59	1917
Seeman Brothers, New York, N. Y. Canned vegetables and fish	20,942	Apr. 5	59	155
Sercombe-Bolte Manufacturing Company, Milwaukee, Wis. Bicycles	21,014	Apr. 19	59	461
Sharpless & Carpenter, Philadelphia, Pa. Ground-bone fertilizers	20,932	Apr. 5	59	155
Sheffield Velocipede Car Company, Three Rivers, Mich. Tramway-trucks	21,057	Apr. 26	59	628
Shull, William A., Philadelphia, Pa., Razor-strops	21,073	May 3	59	786
Siebenborn, Henry A. D., New York, N. Y. Insecticide	21,212	May 31	59	1428
Sierra Lumber Company, San Francisco, Cal. Sugar-pine doors	21,305	June 14	59	1760
Silver Lake Company, Newton and Boston, Mass. Cords, lines, twines, and ropes	21,347	June 21	59	1917
Silver Lake Company, Newton and Boston, Mass. Cords, lines, twines, and ropes	21,348	June 21	59	1917
Simms & Co., James, Philadelphia, Pa. Rye whisky	21,167	May 24	59	1254
Sir Titus Salt, Bart., Sons & Company, Limited, Saltaire, England, and Bridgeport, Conn. Plushes	21,396	June 28	59	2070
Slaughter, Charles, and D. D. Murray, Duluth, Minn. Specific for nerve exhaustion	20,964	Apr. 12	59	295
Southall Bros. & Barclay, Birmingham, England. Cod-liver oil and preparations of cod-liver oil	21,106	May 10	59	938
Southall Bros. & Barclay, Birmingham, England. Cod-liver oil and preparations of cod-liver oil	21,107	May 10	59	938
Southall Bros. & Barclay, Birmingham, England. Cod-liver oil and preparations of cod-liver oil	21,108	May 10	59	938
Souvenir Manufacturing Co., Providence, R. I. Toilet soap	21,058	Apr. 26	59	628
Spielmann & Co., New York, N. Y. Swiss ribbed underwear	21,278	June 7	59	1604
Stanton Manufacturing Company, Portland, Me., and Philadelphia, Pa. Hard soap	21,376	June 28	59	2068
Stearns Manufacturing Company, Erie, Pa. Stationary steam-engines	21,256	June 7	59	1602
Stevens, Janina M., Brooklyn, N. Y. Antiseptics	20,963	Apr. 12	59	294
Stewart, Estate of Daniel, Indianapolis, Ind. Triple extracts	21,148	May 17	59	1102
Stewart, Estate of Daniel, Indianapolis, Ind. Triple extracts	21,149	May 17	59	1102
Stinson, George, Philadelphia, Pa. Irish whisky	21,246	May 31	59	1430
Strassheim & Jaeger, Chicago, Ill. Sugar, sirup, and molasses	21,139	May 17	59	1101
Strassheim & Jaeger, Chicago, Ill. Canned vegetables and fruits	21,174	May 24	59	1254
Strassheim & Jaeger, Chicago, Ill. Flour, cereals, and farinaceous goods in barrels, kegs, and sacks	21,175	May 24	59	1255
Strassheim & Jaeger, Chicago, Ill. Plug-tobacco, cigars, and cigarettes	21,219	May 31	59	1428
Strassheim & Jaeger, Chicago, Ill. Hollow and other wooden ware for household use, and for buckets, tubs, and receptacles or work made by coopers	21,220	May 31	59	1428
Stuart, Peter, London, England, and Philadelphia, Pa. Artificial stone pavements, paving-blocks, copings, and analogous structures	21,015	Apr. 19	59	461
Sutton, Lewis B., New Canaan, Conn. Compound for removing grease-spots and stains from fabrics, wood, glass, or marble	21,128	May 17	59	1101
Sylvan Toilet Co., Port Huron, Mich. Oil for toilet and medicinal use by external application	21,152	May 17	59	1102
Taylor Co., N. & G., Philadelphia, Pa. Tin and terne plate and coated and uncoated sheet metal	21,285	June 14	59	1758
Thatcher, Charles A., Chicago, Ill. Local anæsthetic in liquid form	21,045	Apr. 26	59	628
Thibouville-Lamy, Jérôme, Paris, France. Musical instruments	21,291	June 14	59	1759
Thibouville-Lamy, Jérôme, Paris, France. Musical instruments	21,292	June 14	59	1759
Thomas, Edwin R. W., Clarksville, Tenn. Smoking and chewing tobacco	21,360	June 28	59	2067
Thomas, Edwin R. W., Clarksville, Tenn. Smoking and chewing tobacco	21,361	June 28	59	2067
Thompson, Amund G., Chicago, Ill. Phosphated extract of wild cherry	21,390	June 28	59	2069
Thompson, James, Chicago, Ill. Remedies for gonorrhea, gleet, and similar diseases	21,074	May 3	59	786
Traub, Max C., Basle, Switzerland. Inorganic salts	21,326	June 21	59	1915
Tremont & Suffolk Mills, Lowell, Mass. Cotton goods, such as sheetings, shirtings, dress goods, and cotton flannels	21,351	June 21	59	1917
Trujillo & Sons, D. L., Key West, Fla., and New York, N. Y. Cigars	20,948	Apr. 5	59	156
Tucker & Moulton, Boston, Mass. Shoes	21,044	Apr. 26	59	627
Udell & Co., S. R., Chicago, Ill. Cheese	21,046	Apr. 26	59	628
Ulmer Manufacturing Co., Boston, Mass. Blacking and other dressing for shoes and leather	21,247	May 31	59	1430
Union Metallic Cartridge Company, Bridgeport, Conn. Paper shot-shells	21,222	May 31	59	1428
Union Metallic Cartridge Company, Bridgeport, Conn. Paper shot-shells	21,341	June 21	59	1916
United States Printing Company, Cincinnati, Ohio. Playing-cards	20,965	Apr. 12	59	295
United States Printing Company, Cincinnati, Ohio. Playing-cards	20,966	Apr. 12	59	295
United States Printing Company, Cincinnati, Ohio. Playing-cards	21,113	May 10	59	938
United States Printing Company, Cincinnati, Ohio. Playing-cards	21,114	May 10	59	938
United States Printing Company, Cincinnati, Ohio. Playing-cards	21,115	May 10	59	938
Van Vliet, William C., New York, N. Y. Polishing-handkerchiefs for hats	21,342	June 21	59	1916
Vick, Edward C., Newark, N. J. Remedies for diseases of the blood, liver, kidneys, and stomach, and skin diseases	21,377	June 28	59	2068
Virginia Brewing Company, Roanoke, Va. Lager-beer	21,398	June 28	59	2070
Virginia Chemical & Manufacturing Company, Portsmouth, Va. Baking-powders	21,094	May 10	59	937
Von Lengerke & Detmold, New York, N. Y. Paper shot-shells	21,131	May 17	59	1101
Walter A. Wood Harvester Company, St. Paul and Minneapolis, Minn. Harvesters and harvester-binders	21,153	May 17	59	1102
Wampole & Co., Henry K., Philadelphia, Pa. Remedy for diseases of the uterine organs and similar ailments	21,233	May 31	59	1429
Ward, William P., New York, N. Y. Cigarettes	21,332	June 21	59	1915
Watkins, John B., New York, N. Y. Paper for printing and writing purposes	20,969	Apr. 12	59	295
Wayne Knitting Mills, Fort Wayne, Ind. Hosiery	20,993	Apr. 19	59	460
Weis, Henry, Waterloo, Iowa. Egg carriers and cases, egg-case fillers, and fruit-carriers	21,047	Apr. 26	59	628
Welde & Thomas, Philadelphia, Pa. Beer	21,223	May 31	59	1428
White Rock Oil Co., Toledo, Ohio. Hair-restorative consisting of a natural white oil	20,934	Apr. 5	59	155

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Wilkes-Barré Lace Manufacturing Company, Wilkes Barré, Pa. Pillow-shams	21,196	May 24	59	1256
Wilkins & Beckner, Greenfield, Ind. Kidney and liver cure, blood-purifier, pills, and ointment	20,977	Apr. 12	59	296
Wilkinson, Harris C., Chicago, Ill. Pills	21,312	June 14	59	1760
Williams, Homer, San Francisco, Cal. Veterinary remedies	21,009	Apr. 19	59	461
Wilson, William, New York, N. Y. Remedies in the form of tablets for rheumatism and diseases of the kidneys	21,269	June 7	59	1603
Winkelmann & Brown Drug Company, Baltimore, Md. Perfumery	21,033	Apr. 26	59	627
Winkelmann & Brown Drug Company, Baltimore, Md. Perfumery	21,034	Apr. 26	59	627
Winsor, John J., Saginaw, Mich. Remedy for rheumatism	21,142	May 17	59	1101
Winter Bros., Waterford, Wash. Canned fish, fruits, and vegetables	20,949	Apr. 5	59	156
Wolff & Randolph, Philadelphia, Pa. Paints, stains, and varnishes	21,378	June 28	59	2068
Wood, John J., Liverpool, England. Optical instruments for improving eyesight	21,143	May 17	59	1101
Wrage, Gustav R., Berlin, Iowa. Medical composition for removing fungus growths from the jaws and bones of animals and warts from persons	21,032	Apr. 26	59	627
	20,933	Apr. 5	59	155

ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Hope Mills Manufacturing Company, Fayetteville, N. C. "Housekeepers' Gingham Aprons." (For aprons.)	6,545	June 14	59	1612

DISCLAIMERS.

Name, residence, and invention.	No.	Filed.	Official Gazette. Vol.	Page.
Kenega, Martin H., Momence, Ohio; disclaimer filed by assignee, the Acme Harvester Company. Horse hay-rake	259,550	May 14, 1892	59	1112
McBride, Thomas, Philadelphia, Pa., and Ebenezer Fisher, Kinkardine, Ontario, Canada; disclaimer filed by patentees. Spectacle-bridges	461,364	Apr. 15, 1892	59	475
Slemmer, Frank G., Marydell, Md.; disclaimer filed by patentee. Soldering-machine	466,580	June 11, 1892	59	1612
Thompson, James F., Rockland; disclaimer filed by patentee and his assignee, Charles F. Baker, Boston, Mass. Coloring and burnishing compositions	473,679	June 11, 1892	59	1768
Woll, Peter, Jr., Philadelphia, Pa.; disclaimer filed by patentee. Manufacturing curled hair	458,721	May 5, 1892	59	794

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Drawing.	Official Gazette. Volume.	Page.
Abrading and finishing tool	S. Ross, Jr.	472,823	Apr. 12	1240	318	59	247
Accountant. Pocket cash-	J. Davis	473,656	Apr. 26	2634	664	59	549
Acid. Apparatus for condensing nitric	O. Guttmann	472,498	Apr. 5	772	196	59	146
Acid. Making naphthosultondisulphonic	H. Kuzel	473,467	Apr. 26	2319	.....	59	489
Acid. Making nitric	J. Lang	477,375	June 21	1829	447	59	1825
Acid pan and making the same. Sulphuric-	R. Küch	474,527	May 10	1035	265	59	847
Acids. Solidifying liquid	W. White	475,586	May 24	2708	.....	59	1304
Adding-machine	J. S. Hilliard	477,416	June 21	1857	464	59	1837
Adding-machine	J. W. Wright	476,350	June 7	192	45, 46	59	1473
Addressing-machine	F. D. Belknap	477,793	June 28	2504	627, 628, 629	59	1975
Addressing-machine	G. S. Couch	475,755	May 31	2973	755	59	1268
Adjustable bit	H. O. Davis	476,614	June 7	586	139	59	1553
Adjustable bracket for supporting inkstands	G. F. Hall	475,056	May 17	1877	476	59	1026
Advertising apparatus. Magic-lantern	W. G. Spiegel	472,912	Apr. 12	1368	351	59	275
Advertising-card rack	D. S. Foote	475,726	May 24	2926	742	59	1244
Advertising-machine	C. P. Oldham	474,504	May 10	993	256	59	839
Advertising-program holder	J. F. O'Brien	474,919	May 17	1655	423	59	983
Advertising-sign	A. Martyn	477,429	June 21	1906	470	59	1840
Advertising-sign	W. R. Sanford	473,239	Apr. 19	1932	486	59	391
Advertising-wagon	W. S. Carter	474,366	May 10	786	204	59	799
Aerated liquids. Receptacle for	J. D. Iler	474,387	May 10	812	212	59	805
Aerating liquids. Apparatus for	C. A. and J. Schneible	474,414	May 10	850	225	59	814
Aerating liquids. Art of and apparatus for	J. and C. A. Schneible	474,413	May 10	857	224	59	814
Aerial ship	W. N. Riddle	473,344	Apr. 19	2106	529	59	426
Agitator	R. Smith	473,530	Apr. 26	2415	613	59	507
Air and steam coupling	J. Blattner	474,207	May 3	497	119	59	734
Air. Apparatus for purifying, moistening, and attemperating	L. C. Huck	476,274	June 7	68	14, 15	59	1451
Air-brake	D. Hanney	476,880	June 14	1008	245	59	1651
Air-brake	T. J. Hogan	473,839	Apr. 26	2908	731	59	602
Air-brake	F. W. Mills	476,546	June 7	482	114	59	1533
Air-brake coupling	W. A. and B. S. H. Harris	472,190	Apr. 5	281	73, 74	59	53
Air-brakes. Compressor for	D. Dunn	473,302	Apr. 19	2028	509, 510	59	411
Air-compressor	A. O'Brien	477,381	June 21	1837	451	59	1827
Air-compressor	B. F. Teal	474,034	May 3	239	57	59	684
Air-compressor. Automatic	B. Beck	476,723	June 7	739	183	59	1584
Air-compressor. Hydraulic	S. Hanford	474,296	May 3	640	162	59	761
Air-compressor. Hydraulic	J. H. Henderson and E. Schutz	475,111	May 17	1968	498, 499	59	1043
Air-compressor. Hydraulic	G. H. Sherman	475,251	May 17	2176	554	59	1085
Alarm: *See* Axle-alarm. Automatic alarm. Burglar-alarm. Electric alarm. Fire-alarm. Heat-alarm. Low-water alarm.							
Alarm-lock	R. G. Vassar	478,071	June 28	2947	736, 737	59	2061
Album	G. Baum and J. Müller	472,470	Apr. 5	721	184	59	137
Album. Stereoscopic	J. H. McGrew	472,196	Apr. 5	290	76	59	55
Alizarine. Derivative	R. E. Schmidt	476,418	June 7	299	.....	59	1496
Alizarine. Derivative	R. E. Schmidt	476,420	June 7	301	.....	59	1497
Alkalies. Making aluminates of	E. Fleischer	472,668	Apr. 12	1012	.....	59	205
Alloy	E. W. Cooke	474,443	May 10	909	.....	59	823
Alloy. Antifriction	J. Fowler	474,295	May 3	640	.....	59	761
Alloys of iron and chromium. Purifying	J. Bedford	477,490	June 21	2008	.....	59	1860
Alloys of iron or steel and nickel. Manufacturing	E. F. Wood	476,913	June 14	1062	.....	59	1602
Alloying furnace. Metal-	W. A. Baldwin	477,792	June 28	2502	627	59	1975
Aluminium. Method of and apparatus for extracting	M. Emme	476,256	June 7	42	10	59	1446
Aluminium or other metals. Apparatus for producing	P. Héroult	473,118	Apr. 19	1716	435	59	350
Aluminium. Process of and apparatus for the extraction of	M. and E. Bernard	476,914	June 14	1064	256	59	1602
Amalgamating apparatus for separating gold and other metals from their ores.	G. J. Atkins	473,104	Apr. 19	1681	427	59	344
Amalgamating silver ores	A. Janin	473,395	Apr. 19	2197	551	59	443
Amalgamator	W. E. Darrow	473,385	Apr. 19	2181	548	59	440
Amalgamator	W. J. Gard, S. S. Dalzell, and W. A. Shafer.	476,955	June 14	1137	274	59	1677
Amalgamator	A. M. Stetson	476,497	June 7	416	97	59	1518
Amalgamator	J. M. Thompson	475,360	May 24	2348	602	59	1136
Ammeters and other electric apparatus. Means for operating	B. Tyson	473,533	Apr. 26	2420	614	59	507
Ammonia. Manufacturing nitrate of	H. M. Pilkington and R. S. White	477,223	June 21	1576	387	59	1778
Ammonia. Purifying	R. S. Penniman	478,067	June 28	2941	734	59	2059
	H. von Strombeck	477,089	June 14	1350	.....	59	1790

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Anchor	C. H. Eaton	477,745	June 28	2428	607	59	1963
Anchor for brick walls	J. M. Van Why	473,273	Apr. 19	1982	497	59	402
Andiron	E. F. Paschal	475,701	May 24	2880	728	59	1237
Angle-iron. Apparatus for cutting off	M. Gilgenberg	475,214	May 17	2119	536	59	1074
Animal-exterminator	G. Gillpatrick	473,872	Apr. 26	2969	749	59	613
Animal-securing device	J. A. Hindman	474,251	May 3	561	138	59	747
Animal-trap	T. W. Blackerby	472,651	Apr. 12	989	255, 256	59	201
Animal-trap	S. H. Burch	472,852	Apr. 12	1276	327	59	255
Animal-trap	J. C. Gould	472,213	Apr. 5	336	84	59	61
Animal-trap	W. H. Harden	473,312	Apr. 19	2044	513	59	414
Animal-trap	J. Klar and F. H. Hall	477,126	June 14	1397	340	59	1729
Animal-trap	E. L. Lewis	472,733	Apr. 12	1114	286	59	223
Animal-trap	C. M. McLeod and J. T. Garrett	472,386	Apr. 5	596	152	59	112
Animal-trap	G. Potter	472,814	Apr. 12	1227	314, 315	59	245
Animal-trap	A. F. Rockwell	474,303	May 3	648	164	59	763
Animal-trap	J. D. Shaffer	473,967	May 3	132	30	59	663
Animal-trap	H. J. Steiner	477,966	June 28	2778	696	59	2029
Annunciator	G. Winkler	472,687	Apr. 12	1040	268	59	209
Annunciator	W. C. Dillman	472,439	Apr. 5	671	172	59	126
Annunciator	W. C. Dillman	472,440	Apr. 5	672	172	59	126
Annunciator drop. Electric	L. G. Rowand	477,071	June 14	1394	321	59	1715
Annunciator. Electrical	J. C. Warner	477,616	June 21	2212	540	59	1901
Annunciator. Electrical	T. W. Lane	473,121	Apr. 19	1720	435	59	351
Ant-hill cutter	F. W. Steeg	473,975	May 3	142	33	59	665
Ant-trap	J. Tym	473,799	Apr. 26	2848	715	59	590
Anti-rattler	J. Royse	473,965	May 3	131	30	59	662
Aquarium. Picture	E. R. Pettit	476,406	June 7	283	67	59	1493
Arc-light circuits. Device for testing	E. G. Lochmann	475,404	May 24	2416	617	59	1148
Arc-light hanger	A. H. Manwaren	476,156	May 31	3624	917	59	1397
Arch. Floor	C. A. Pfluger	472,935	Apr. 12	1403	359	59	281
Arithmetic. Means for instruction in	R. L. Stone	475,354	May 24	2341	600	59	1134
Armature-core for electric motors	P. Kalisch	472,057	Apr. 5	69	18, 19	59	16
Armature for dynamo-electric machines	D. Pepper, Jr.	473,077	Apr. 19	1643	418	59	338
Armature for dynamo-electric machines	S. H. Short	473,363	Apr. 19	2135	536	59	431
Armature for dynamo-electric machines	S. H. Short	473,364	Apr. 19	2138	536	59	432
Armature for dynamo-electric machines or motors	S. H. Short	475,159	May 17	2034	513	59	1056
Armature for electric generators or motors	C. G. Curtis	473,568	Apr. 26	2494	630, 631	59	522
Armature for electric motors	S. H. Short	473,366	Apr. 19	2141	537	59	433
Armature for electro-magnets. Adjustable	E. C. Morgan	474,848	May 17	1553	396	59	961
Armature-ring	E. Hofmann	472,480	Apr. 5	740	188	59	140
Armatures. Limiting-stop for	D. Pepper, Jr.	473,078	Apr. 19	1644	418	59	338
Armor-plates. Manufacture of	R. Varley, Jr.	476,845	June 14	948	230	59	1639
Ash or garbage receptacle	T. J. Tresidder	475,364	May 24	2353	603	59	1136
Aspirator or ventilator	W. L. Fergus	472,667	Apr. 12	1011	262	59	205
Astigmascope	S. Costa	475,010	May 17	1809	459	59	1012
Atomizer	J. K. Underwood	476,704	June 7	713	175	59	1579
Atomizer	J. S. Klein	473,759	Apr. 26	2786	700, 701	59	578
Atomizer	G. Laubensdorfer and F. Lipp	474,605	May 10	1157	294	59	870
Atomizer bulb-guard	V. C. Vant Wond	474,035	May 3	240	57	59	684
Atomizer for liquid fuel	M. Wirths	477,345	June 21	1776	434	59	1815
Atomizer-nozzle	S. Cox, Jr.	477,624	June 21	2238	560	59	1906
Atomizing or spraying liquids. Device for	W. Hugershoff and F. Lipp	474,526	May 10	1034	265	59	847
Auger. Earth	E. R. Keen	475,452	May 24	2496	637	59	1162
Auger. Post-hole	C. A. Scott and J. C. Gardiner	472,403	Apr. 5	621	158	59	117
Auger. Post-hole	H. M. Cryer	472,339	Apr. 5	596	136	59	99
Autographic register	C. Justesen	474,664	May 10	1253	320	59	889
Automatic alarm	S. D. Cochran	475,487	May 24	2552	650	59	1173
Automatic sprinkler	N. Rubenstein	476,217	May 31	3740	944, 945	59	1418
Awning	A. P. Howes	473,628	Apr. 26	2594	653	59	541
Awning	P. Combis and W. H. Gray	477,512	June 21	2040	507	59	1867
Awning. Ventilating	E. O. Koenigk	476,074	May 31	3487	879	59	1371
Awning-worker	C. A. Lloyd	476,662	June 7	655	159	59	1566
Awnings. Device for operating	J. T. Baker	476,119	May 31	3565	896	59	1385
Axes. Manufacture of	G. K. Bancroft	476,439	June 7	333	76	59	1502
Axle	E. Thomson	476,967	June 14	1153	278	59	1680
Axle	R. E. Lehmann	472,762	Apr. 12	1157	296	59	231
Axle alarm. Hot	W. M. Rankin	472,587	Apr. 12	898	230	59	185
Axle-bearing	A. Backhaus	472,688	Apr. 12	1041	269	59	209
Axle-bearing	G. Botsford and W. Holtz	476,602	June 7	569	136	59	1549
Axle-box	D. Wigger	474,709	May 10	1321	337	59	903
Axle box. Car	A. Miller	477,768	June 28	2470	617	59	1970
Axle-box lid	H. B. Spencer	473,529	Apr. 26	2415	612	59	506
Axle. Car	P. N. French	476,194	May 31	3689	932	59	1408
Axle. Carriage	D. M. Miller	475,965	May 31	3328	839	59	1336
Axle cooler and lubricator	F. E. Webb	476,108	May 31	3547	892	59	1381
Axle-cutter	R. B. Cogan, W. M. Pierce, and J. C. F. Jones	474,294	May 3	639	161	59	761
Axle-cutter	W. A. Pettingill	473,340	Apr. 19	2097	527	59	424
Axle. Extensible	D. E. Reed and O. Gurnee	477,268	June 21	1656	405	59	1792
Axle-lubricator	W. E. Pugsley	475,248	May 17	2173	553	59	1084
Axle-lubricator	G. W. Beal	475,051	May 17	1870	474	59	1025
Axle-lubricator	E. H. Benners	478,041	June 28	2903	725	59	2052
Axle-lubricator	C. W. Brewer	477,620	June 21	2233	558	59	1905
Axle-lubricator	J. C. Cropper	474,652	May 10	1230	315	59	885
Axle-lubricator	J. S. Patten	475,147	May 17	2017	509	59	1053
Axle. Vehicle	J. R. Wilson	477,319	June 21	1740	436	59	1808
Axle. Vehicle	A. Hoeffler and F. L. G. Chapman	473,180	Apr. 19	1849	466	59	374
Axle-washer	W. J. Miller, R. S. McBean, and J. W. McBurnett	472,545	Apr. 12	841	215	59	173
	N. M. Brinkerhoff	477,639	June 28	2271	569	59	1929

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Axle washer. Vehicle	W. Richard, H. G. Ogden, and E. E. Heath	477,065	June 14	1303	317	59	1711
Axles. Adjustable nut for	I. J. Trench	473,272	Apr. 19	1981	497	59	402
Axles. Antifriction-bearing for car	H. B. Williams	477,037	June 14	1256	304	59	1702
Axles. Dust-collar for vehicle	H. Cochran and J. L. Hardie	473,612	Apr. 26	2567	647	59	536
Axles. Machine for forming lubricator-grooves in vehicle	C. W. Brewer	477,638	June 28	2269	568	59	1929
Axles. Manufacture of	W. J. Parmelee	472,389	Apr. 5	602	152	59	113
Axles of electrically-propelled vehicles. Thrust-collar for	R. P. Osgood	477,095	June 28	2352	588	59	1948
Axles, shafts, &c. Manufacture of	B. F. and F. T. Peacock	475,969	May 31	3332	840	59	1337
Baby-jumper	J. Higham	472,351	Apr. 5	542	140	59	101
Badge and rosette. Emblematic society	B. S. Whitehead	476,939	June 14	1107	267	59	1671
Bag: *See* Feed-bag. Mail-bag. Moth-proof bag. Saddle-bag. Striking-bag. Traveling-bag.							
Bag, bale, and bundle tie	D. E. Ladd	473,822	Apr. 26	2880	722	59	597
Bag-fastener	L. A. Walker	476,219	May 31	3742	945	59	1418
Bag fastener and support	W. D. Smith	473,969	May 3	135	31	59	663
Bag-fastening	J. Baunach	477,097	June 14	1302	331	59	1722
Bag-holder	J. D. Timmerman	477,235	June 21	1601	392	59	1782
Bag-lock	F. P. Cobham	475,037	May 17	1848	469	59	1020
Bag-lock	H. McKinnon	477,331	June 21	1756	430	59	1812
Bail and ear therefor. Detachable	L. N. Lusk	472,130	Apr. 5	193	51	59	36
Baking-pan	W. H. Pickett and J. L. Neill	472,811	Apr. 12	1222	314	59	244
Baking-pan	W. Wache	472,595	Apr. 12	906	232	59	186
Baking-plate for pies, &c	C. L. Wagandt	476,340	June 7	178	42	59	1471
Baking-powder	C. A. Catlin	474,811	May 17	1488	.....	59	950
Bale-covering. Metallic	G. B. Hussey	474,046	May 3	263	64	59	688
Bale-tie	I. A. Kilmer	476,654	June 7	645	157	59	1565
Bale-ties. Machine for making	W. A. Laidlaw	473,321	Apr. 19	2054	516, 517	59	416
Baled material. Sampling device for	C. S. Hunter	473,316	Apr. 19	2048	514	59	415
Baling apparatus. Cotton	E. D. Carter	474,293	May 3	636	161	59	760
Baling apparatus. Cotton	E. M. Ivens	475,117	May 17	1977	501	59	1045
Baling-press	H. Deitz	476,954	June 14	1135	273, 274	59	1676
Baling-press	W. Hemingway	472,049	Apr. 5	59	15	59	14
Baling-press	W. A. Laidlaw	473,320	Apr. 19	2052	515	59	416
Baling-press	C. B. Sclover	475,002	May 17	1799	456	59	1010
Baling-press	H. L. Whitman	472,838	Apr. 12	1259	322, 323	59	251
Baling-press block-dropper	E. W. Wickey	475,837	May 31	3119	790	59	1296
Baling-press power	P. C. Southwick	473,645	Apr. 26	2619	660	59	546
Ballasting device. Automatic	B. Halstead	472,994	Apr. 19	1514	387	59	314
Balling-machine	G. J. Torrance	472,774	Apr. 12	1173	300	59	234
Balloon. Captive	L. Payn	476,893	June 14	1028	249	59	1655
Ballot-box	V. A. Grimes and C. R. Lame	477,533	June 21	2080	517	59	1876
Band-cutter and feeder	W. H. Ellinger	473,620	Apr. 26	2584	651	59	539
Bandages. Machine for winding	C. Miller	476,667	June 7	660	160	59	1568
Banding-machine	W. H. McDavitt	473,886	Apr. 26	2996	756	59	619
Banjo	F. Myers	472,904	Apr. 12	1351	348	59	271
Banjo	J. E. Quinlan	477,451	June 21	1945	492	59	1848
Banjo	B. E. Shattuck	476,083	May 31	3502	882	59	1374
Bank-note	W. W. Wood	477,038	June 14	1257	305	59	1702
Bank. Trick savings	C. Tollner	475,525	May 24	2617	666	59	1186
Bar-fixture	A. Brandon	477,967	June 28	2811	704	59	2036
Bar-fixtures. Sectional interchangeable	J. Neumann	473,771	Apr. 26	2799	704	59	582
Barber's chair	G. W. Archer	476,774	June 14	822	203	59	1614
Barbers' chairs. Swivel-stand for	A. Kern	473,397	Apr. 19	2200	552	59	444
Barber's register	F. Witte	474,935	May 17	1679	430	59	988
Bark-cutting machine. Tan	A. F. Jones	474,745	May 10	1378	349	59	914
Barrel	J. P. Cowden	474,723	May 10	1346	342	59	908
Barrel-bushings. Cleaner for	E. T. Mueller	472,065	Apr. 5	84	23	59	18
Barrel-contractor	P. Little	473,764	Apr. 26	2791	702	59	579
Barrel-elevator	C. A. Sterling	477,874	June 28	2646	661, 662	59	2002
Barrel-expander	P. Little	474,020	May 3	216	51	59	679
Barrel-fastener	E. F. Jenkins	474,133	May 3	383	92	59	712
Barrel-heading machine	F. Emmert	474,596	May 10	1144	291	59	868
Barrel-roller	W. W. Leffingwell	473,630	Apr. 26	2598	654	59	542
Barrel. Ventilated	R. J. Patterson	473,589	Apr. 26	2535	640	59	531
Barrels, &c. Cover for	E. S. Phelps	476,407	June 7	284	67	59	1493
Barrels, &c. Manufacture of metal	D. Caird	473,495	Apr. 26	2360	598, 599	59	497
Barrels. Means for protecting the bungways of	M. Anthony	476,180	May 31	3669	927	59	1405
Barrels, &c. Tap-socket for	C. J. Mayhew	476,665	June 7	650	160	59	1567
Barrow-wheel	C. A. Cubbage	472,570	Apr. 12	873	225	59	180
Base-ball apparatus	W. C. Blades	475,432	May 24	2463	628	59	1156
Basket	O. Stoddard	476,498	June 7	417	97	59	1518
Basket. Bottle	C. A. Knight	476,150	May 31	3015	913	59	1395
Basket handle and cover-fastener. Fruit	F. A. Rappleye	474,925	May 17	1666	425	59	985
Basket. Truck or fruit	N. T. Fitch	472,964	Apr. 12	1449	370	59	289
Basket. Wire desk	L. G. Beers	473,054	Apr. 19	1608	410	59	331
Bath: *See* Portable bath.							
Bath apparatus. Electric	H. E. Waite	477,975	June 28	2791	699	59	2032
Bath apparatus. Needle	J. Clifford and J. H. Gavin	475,754	May 31	2972	754	59	1267
Bath-tub	J. T. Watson	476,950	June 14	1127	271	59	1675
Bath-tub. Folding	E. A. O'Brien	477,443	June 21	1933	478	59	1845
Bathing apparatus. Vapor	R. Lange	473,935	May 3	83	17	59	652
Batteries. Exciting fluid for galvanic	C. Lütcke, Jr.	474,454	May 10	929	.....	59	826

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Battery: *See* Diffusion-battery. Plunge-battery. Electric battery. Secondary battery. Galvanic battery. Voltaic body-battery. Medical battery.							
Battery	W. A. Childs	477,645	June 28	2275	571	59	1930
Bead attachment	A. Godfrey	474,122	May 3	367	88	59	708
Beading and turning machine	J. E. Brown	476,809	June 14	987	239	59	1647
Bean picker and sorter	E. Knapp	472,299	Apr. 5	455	117, 118	59	86
Bearing	H. Howson	476,144	May 31	3604	911	59	1393
Bearing. Adjustable	F. Hart	475,311	May 24	2264	583	59	1119
Bearing. Antifriction	W. F. Wellman	475,835	May 31	3117	789	59	1295
Bearing. Ball	F. A. Grüneberg	477,113	June 14	1380	336	59	1726
Bearing-box adjuster. Automatic	H. L. Hopkins	472,122	Apr. 5	176	48	59	33
Bearing. Dust-proof swivel shaft	T. A. Edison	474,593	May 10	1140	290	59	867
Bearing for screw-nuts. Ball	C. E. Brunthaver	477,642	June 28	3273	569	59	1929
Bearing. Non-metallic	W. T. Carroll	475,929	May 31	3266	824	59	1324
Bearing. Roll	A. Paterson	477,818	June 28	3349	638	59	1984
Bearings. Making composition	H. Howson	476,145	May 31	3605	911	59	1393
Bed attachment. Folding	H. W. Ru Ton	475,250	May 17	2175	554	59	1085
Bed-bottom	S. Bertenshaw	472,958	Apr. 19	1483	379	59	709
Bed-bottom. Coiled-wire	T. W. Klipfel	477,662	June 28	3297	575	59	1934
Bed-bottom. Spring	J. B. Jones	474,911	May 17	1643	419	59	981
Bed. Cabinet	J. W. Hayton and S. H. Swift	476,923	June 14	1077	259, 260	59	1665
Bed case and wardrobe. Combined folding	A. S. White	473,984	May 3	154	36	59	667
Bed. Folding	M. K. English	476,876	June 14	997	242	59	1649
Bed. Folding	W. P. Griffith	475,499	May 24	2572	655	59	1177
Bed. Folding	L. V. Moulton	474,027	May 3	226	54	59	681
Bed. Folding	L. V. Moulton	474,849	May 17	1554	396, 397	59	962
Bed. Folding	L. Sekofsky	473,355	Apr. 19	2122	533	59	429
Bed. Folding	H. Stevenson	477,967	June 28	2780	696	59	2029
Bed. Folding	W. P. Tracy	472,321	Apr. 5	492	128	59	92
Bed. Folding	J. E. Yeager	474,587	May 10	1133	289	59	866
Bed-lounge	G. and F. Pirrung	477,449	June 21	1942	481	59	1847
Bed-lounge	J. Russell	472,589	Apr. 12	900	231	59	185
Bed-protector	J. P. Duval	473,065	Apr. 19	1625	415	59	335
Bed-slat cushion	A. Lalliberte	474,018	May 3	211	50	59	678
Bed. Sofa	W. Anderson	477,881	June 28	2657	664	59	2004
Bed. Sofa	J. Rimmer	474,970	May 17	1746	442, 443	59	1000
Bed. Spring	H. L. Day	473,729	Apr. 26	2744	691	59	570
Bed. Spring	L. A. Frigon	475,763	May 31	2985	757	59	1270
Bed. Spring	A. H. Viel	476,178	May 31	3647	927	59	1405
Bed-spring	C. King	477,181	June 14	1491	365	59	1749
Bed-spring	J. Sims, D. J. Wood, and J. W. Sims	476,835	June 14	931	227	59	1635
Bed. Wardrobe	D. D. Cook	476,003	May 31	3379	851, 852	59	1347
Bed. Wardrobe	W. S. Gunn	476,744	June 7	776	191	59	1592
Beds. Crib attachment for	G. D. Walker	472,647	Apr. 12	983	254	59	200
Bedstead. Cot	J. Massie	477,430	June 21	1907	470	59	1841
Bedstead. Folding	W. D. Snyder	472,558	Apr. 12	858	220	59	177
Bedstead. Folding	W. D. Snyder	474,868	May 17	1584	403	59	967
Bedstead folding guard	J. H. Conrath	475,932	May 31	3273	826	59	1325
Bedstead. Invalid	C. W. Pratt	474,690	May 10	1297	332	59	898
Bedstead. Sofa	R. Jaekel	477,421	June 21	1894	466	59	1838
Bedstead. Wardrobe	W. D. Snyder	474,869	May 17	1584	403	59	968
Bee-escape for hives	G. H. Ashworth	473,284	Apr. 19	2002	503	59	406
Bee-smoker	T. F. Bingham	473,724	Apr. 26	2736	689	59	568
Bee-smoking apparatus	A. G. Hill	478,006	June 28	2851	713	59	2042
Bee-swarmer	W. Dibble	474,115	May 3	361	86	59	707
Beehive	G. H. Bynum	472,726	Apr. 12	1103	284	59	221
Beer-cooler	W. W. Ferguson	475,548	May 24	2652	674, 675	59	1192
Beer-drawing apparatus	P. F. Gaynor	473,737	Apr. 26	2762	694	59	573
Beer. Manufacturing	C. Feigenspan	475,853	May 31	3150	799	59	1302
Beer or other liquids. Apparatus for use in barreling	W. Albach	477,096	June 14	1360	331	59	1722
Beer or other liquids. Device for dispensing	M. Itjen	472,358	Apr. 5	548	142	59	103
Beer-racking trough	J. Kass	476,652	June 7	642	156	59	1564
Belaying-pin	J. W. Collins	474,722	May 10	1344	341	59	907
Bell	E. D. Rockwell	473,854	Apr. 26	2937	740, 741	59	607
Bell. Call	A. Iake	473,880	Apr. 26	2981	751	59	615
Bell. Gong door	A. J. Brouillard	475,960	May 31	3321	838	59	1335
Bell. Gong door	J. P. Connell	477,649	June 28	3231	571	59	1931
Bell handle. Door	A. Iake	473,879	Apr. 26	2979	751	59	615
Bell trip. Alarm	J. A. Chamberlain	472,030	Apr. 5	28	6	59	8
Bells. Contact-post for electric	F. W. Manger and O. H. Huebel	475,783	May 31	3015	764	59	1276
Bellows	J. G. Garels	476,740	June 7	769	189	59	1591
Bellows. Blacksmith's and hand	S. H. Brand	472,187	Apr. 5	277	72	59	52
Belt	C. Scherer	472,402	Apr. 5	620	158	59	116
Belt-and-pulley gearing	J. Fisher	477,108	June 14	1374	335	59	1725
Belt-fastener	W. N. Bailey and C. F. Tilton	473,864	Apr. 26	2953	745	59	610
Belt-shifter	E. A. Walker	472,745	Apr. 12	1133	291	59	227
Belt-shifter for carding-machines	J. B. Livsey	476,292	June 7	76	16	59	1459
Belt-stretcher	A. J. Humphreys	474,832	May 17	1529	390	59	957
Belt-stretcher	G. P. Kenehan	478,060	June 28	2933	732	59	2057
Belt-tightener	W. D. Tyler	472,967	Apr. 12	1452	371	59	290
Belting	R. Cowen	473,696	Apr. 26	2698	679	59	561
Belting. Rubber	C. A. Clark	472,601	Apr. 12	918	236	59	188
Bench and truck. Combined	H. C. Hicks	476,268	June 7	59	13	59	1449

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bending machinery	E. L. Booher	474,358	May 10	770	200, 201	59	796
Berth. Automatic leveling ship's	D. Parks	472,070	Apr. 5	90	25	59	19
Berths, car-seats, &c. Spring for ships'	S. L. Saunders	476,823	June 14	916	224	59	1633
Beverage carbonating and dispensing apparatus	P. E Malmström	475,128	May 17	1990	504	59	1048
Beverage-dispensing apparatus	W. L. Enegren	476,452	June 7	348	79, 80	59	1505
Beverages. Method of and apparatus for aerating	W. Hucks	476,645	June 7	630	152, 153	59	1562
Bicycle	J. Bradley	477,292	June 21	1694	415, 416	59	1799
Bicycle	W. H. De Witt	472,598	Apr. 12	824	210	59	170
Bicycle	J. Diamond	473,829	Apr. 26	2893	726	59	599
Bicycle	L. P. Halladay	477,179	June 14	1489	364	59	1749
Bicycle	L. C. Jaquish	473,931	May 3	73	14, 15	59	650
Bicycle	W. S. Johnson	477,122	June 14	1393	339	59	1729
Bicycle	T. E. McKenna	474,400	May 10	828	217	59	808
Bicycle	G. W. Meigs and J. G. Ziegler	474,327	May 3	703	182	59	772
Bicycle	T. C. Moore and S. F. Crull	476,157	May 31	3627	917	59	1398
Bicycle	S. E. Mosher	477,772	June 28	2474	619	59	1971
Bicycle	J. D. Moskowitz	472,796	Apr. 12	1203	309	59	240
Bicycle	A. Sequeira	474,764	May 10	1405	356	59	920
Bicycle	M. D. Smalley	472,487	Apr. 5	749	191	59	142
Bicycle	T. J. Thompson	474,784	May 10	1439	365	59	927
Bicycle	A. Van Bibber	477,583	June 21	2147	533	59	1889
Bicycle	S. Wilson	477,033	June 14	1250	303	59	1701
Bicycle ball-bearing	W. H. Binns	473,816	Apr. 26	2874	721	59	595
Bicycle-brake	A. Perkins	474,759	May 10	1398	354	59	918
Bicycle chain adjustment	W. H. Binns	473,817	Apr. 26	2874	721	59	595
Bicycle clock attachment	A. S. Keyser	477,423	June 21	1896	467	59	1839
Bicycle driving mechanism	D. J. Hoopes	474,740	May 10	1373	347	59	913
Bicycle-fork	F. Sweetland	475,633	May 24	2781	704	59	1218
Bicycle-frame	F. H. Bolte	476,974	June 14	1163	281	59	1681
Bicycle-handle	W. C. Smith	476,424	June 7	306	71	59	1497
Bicycle hub and shaft coupling	W. H. Binns	473,818	Apr. 26	2875	721	59	596
Bicycle luggage-carrier	F. E. Barbour	475,174	May 17	2058	517	59	1061
Bicycle-pedal	F. Sweetland	473,030	Apr. 19	1572	400	59	325
Bicycle-saddle	W. Brampton	473,609	Apr. 26	2563	646	59	536
Bicycle-saddle	W. S. Brooks	473,427	Apr. 5	655	167	59	123
Bicycle-saddle	F. Sweetland	474,106	May 3	351	84	59	705
Bicycle-saddle	F. Sweetland	476,838	June 14	937	228	59	1637
Bicycle-saddle spring	R. S. True. (Reissue)	11,249	June 21	2252	564	59	1909
Bicycle saddle support	H. Bergfels	473,493	Apr. 26	2356	598	59	496
Bicycle. Safety	W. S. Johnson	477,123	June 14	1394	339	59	1729
Bicycle seat and luggage-carrier attachment	W. J. Edwards	475,444	May 24	2480	632	59	1159
Bicycle-stand	W. I. Calver	477,042	June 14	1263	306	59	1703
Bicycle steering mechanism	M. J. Russell	477,705	June 28	2367	592	59	1950
Bicycle-support	D. H. McPherson	475,142	May 17	2011	508	59	1051
Bicycle-support	C. E. Overs	476,297	June 7	107	25	59	1459
Bicycle-wheel	M. L. Schoch	474,415	May 10	861	225	59	814
Bicycle-wheel	C. O. and L. Barnes, Sr	474,897	May 17	1627	415	59	977
Bicycle-wheel	C. H. Metz	478,064	June 28	2937	733, 734	59	2058
Bicycle-wheel lock	G. T. Reed	476,216	May 31	3739	944	59	1417
Bicycles. Adjustable saddle-bar for	C. J. Brosnan	473,867	Apr. 26	2956	745	59	611
Bicycles. Differential gear for	G. R. and W. H. Perry and C. K. George.	475,020	May 17	1626	463	59	1015
Bicycles. Oil-cup for	F. R. Bigelow	476,031	May 31	3419	863	59	1356
Bicycles. Umbrella-holder for	T. Wheatley	472,637	Apr. 12	1258	322	59	251
Bicyclist's combination-tool	F. J. Werneth	472,282	Apr. 5	429	110	59	80
Bier	W. E. King and W. R. Walpole	475,780	May 31	3011	764	59	1275
Bill and letter holder or file	J. W. Smiser	476,423	June 7	305	71	59	1497
Bill-holder	T. E. Gould	473,835	Apr. 26	2902	728	59	601
Bill-of-fare indicator	H. H. Hoffmann	472,576	Apr. 12	880	226	59	182
Billet-loop	F. H. Keifer and G. H. Thompson	475,871	May 31	3172	805	59	1307
Billiard and pool table adjuster and leveler	E. T. Kirkpatrick	477,056	June 14	1291	313	59	1708
Bin: *See* Flour-bin.	W. D. Little and E. W. Bogardus	474,750	May 10	1385	350	59	915
Binder. Harvest	A. G. Reaman	473,780	Apr. 26	2820	708, 709	59	585
Binder. Shrub	H. O. Thomas	475,361	May 24	2349	602	59	1136
Binder. Temporary	J. F. Brice	476,444	June 7	340	77	59	1503
Binder. Temporary	A. Burt	476,363	June 7	216	53	59	1478
Binders, &c. Grain-conveyer for	A. G. Burton	472,665	Apr. 12	1006	261	59	204
Binding or rim. Marginal	G. Schubert	475,423	May 24	2450	625	59	1153
Biscuit-cutter	L. G. Beers	475,973	May 31	3340	842	59	1338
Bit: *See* Adjustable bit. Check-bit. Bridle-bit. Curb-bit.	H. T. Sidway	475,815	May 31	3060	779	59	1288
Blackboard-rubber	D. R. Miller	473,558	Apr. 26	2467	624	59	518
Blacking-case	E. G. Cameron	475,294	May 24	2243	578	59	1115
Blacking-machine	C. G. Hutchinson	475,773	May 31	3002	762	59	1273
Blacking-stand blacking-receptacle	M. A. Popoff	476,066	May 31	3476	877	59	1368
Bleaching by electrolysis. Processes of and apparatus for	A. E. Woolf. (Reissue)	11,244	June 7	810	199	59	1599
Blind-fastener	T. Corscaden	472,635	Apr. 12	967	251	59	197
Blind-stile-boring machine	G. Curtis	474,222	May 3	524	127, 128	59	739
Blind-stop	W. S. Deats and D. Brown	472,985	Apr. 19	1503	383	59	312
Blind-stop	J. A. Messina	474,258	May 3	572	140	59	749
Blind. Window	J. Wilson	474,891	May 17	1617	413	59	975
	H. Murdock	474,259	May 3	573	141	59	749

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Blind. Window	H. B. Swartz	472,592	Apr. 12	904	232	59	186
Block:							
See Curbing-block. Engraver's work-clamping block. Interlocking block. Paving-block. Piano pin-block. Pulley-block. Tackle-block. Wagon stop-block.							
Blotter and ruler. Combined	D. C. H. Ross	472,079	Apr. 5	104	28	59	21
Blotter for use in bank-books, &c. Attachable	C. Davis	472,700	Apr. 12	1073	276	59	215
Blotter-holder	J. S. Welch	473,983	May 3	153	36	59	667
Blotting-pad	R. Frost	474,237	May 3	543	133	59	743
Blower. Fireplace	G. H. Tuttle	477,582	June 21	2146	533	59	1889
Blower for fireplaces and grates. Rolling	D. Tracy	474,978	May 17	1759	446	59	1002
Blower or engine. Rotary	G. Crowell	475,302	May 24	2253	581	59	1117
Blowers or engines. Cylinder for rotary	G. Crowell	475,301	May 24	2252	580	59	1117
Blowpipe	J. N. Peebles	473,197	Apr. 19	1861	469	59	376
Blue. Apparatus for making ultramarine	J. Büttel	476,447	June 7	343	78	59	1504
Board:							
See Dash-board. Drawing-board. Electrical keyboard. Electrical switch-board. Game-board. Ironing-board. Multiple switchboard. Piano sounding-board. Sounding-board. Telephone-exchange switchboard. Wash-board.							
Boat:							
See Life-boat. Torpedo-boat. Toy boat.							
Boat-lowering apparatus	J. H. Throop	472,410	Apr. 5	630	161	59	118
Boats. Cabin roof and deck for	G. Hurson	472,884	Apr. 12	1324	340	59	265
Bobbin-winder	J. B. Price	474,187	May 3	466	113	59	728
Bobbin-winder	G. W. and G. H. Randall	474,924	May 17	1664	425	59	985
Boiler:							
See Heating-boiler. Hot-water or steam boiler. Steam-boiler. Tubular boiler. Water-tube boiler.							
Boiler	G. and J. R. Bolton	473,055	Apr. 19	1609	410, 411	59	332
Boiler	J. Wayman	474,887	May 17	1612	412	59	974
Boiler-brace	D. A. Wightman	473,183	Apr. 19	1840	463	59	372
Boiler-cleaner	J. Q. Cook	474,369	May 10	788	205	59	800
Boiler-furnace	S. J. Loughran	475,329	May 24	2294	590	59	1126
Boiler-furnace	G. S. Strong	475,357	May 24	2343	601	59	1135
Boiler or other furnace. Steam	T. G. Lishman	477,376	June 21	1829	447, 448, 449	59	1825
Boiler safety appliance. Steam	J. Kastner, Jr	474,135	May 3	385	92, 93	59	713
Boiler-scraper	T. J. Baker	473,809	Apr. 26	2663	719	59	593
Boiler water-front and fire-box	J. T. Charest	475,035	May 17	1845	468	59	1019
Boilers. Construction of	W. S. Shipe	473,167	Apr. 19	1798	454	59	366
Boilers. Machine for heading water	W. S. Shipe	472,957	Apr. 12	1441	367, 368	59	288
Boilers. Manhole-cover for steam	N. Newman	474,028	May 3	228	55	59	682
Boiling and precipitating tower	G. E. Hänisch	477,755	June 28	2450	612	59	1966
Bolster-standard	L. G. Cook	477,650	June 28	2262	571	59	1931
Bolt:							
See Spring-bolt.							
Bolt	A. Assorati	475,746	May 31	2960	751	59	1265
Bolt-heading machine	W. H. Betts	475,657	May 24	2816	713	59	1225
Bolt holes. Device for tapping stay	J. T. Connelly	475,672	May 24	2834	717	59	1228
Bolt-lock	G. Coulon	474,444	May 10	909	235	59	823
Bolts. Machine for cutting screw-threads on	H. W. Pudan	473,640	Apr. 26	2610	657, 658	59	544
Bolting-reel	J. Mills	474,916	May 17	1647	421, 422	59	982
Bomb-lance	D. Kelleher	472,889	Apr. 12	1333	342	59	267
Bone-cutter. Hand	C. H. Farrington	474,728	May 10	1352	343	59	909
Book. Account	J. E. Ames	477,631	June 28	2257	565	59	1927
Book-back hand-marker	H. Trumbull	475,830	May 31	3108	787	59	1294
Bookbinding	H. H. Roche	474,483	May 10	965	249	59	834
Book binding and covering machine	C. W. Lovell and A. Bredenberg	476,208	May 31	3717	939, 940, 941, 942	59	1414
Bookbinding, &c. Web for	J. A. Wagler	474,509	May 10	1002	258	59	841
Book. Blank	J. W. Burris	473,291	Apr. 19	2012	506	59	408
Book. Blank	J. W. Burris	477,166	June 14	1468	360	59	1744
Book-case. Revolving	F. H. Haley	474,556	May 10	1082	277	59	856
Book. Check	G. M. Breinig	475,661	May 24	2820	714	59	1226
Book. Check	D. A. McIntyre	472,067	Apr. 5	87	24	59	18
Book. Check	E. North	472,741	Apr. 12	1126	289	59	226
Book-cover	G. W. Holden	473,575	Apr. 26	2509	633	59	526
Book-cover protectors. Blank for	W. B. Harison	473,502	Apr. 26	2370	601	59	499
Book, file, and coupon system. Combined order	J. W. Hill	473,875	Apr. 26	2973	750	59	614
Book-holder	H. H. Baker, Jr	472,247	Apr. 5	377	99	59	70
Book holder. Check	J. L. McGervey	474,917	May 17	1651	422	59	982
Book. Indexed	E. T. Douglass	472,441	Apr. 5	673	172	59	126
Book-leaf holder	J. R. and J. Ferguson	472,571	Apr. 12	874	225	59	180
Book-mark	S. L. and C. A. L. Saunders	475,348	May 24	2334	598	59	1133
Book-mark	C. L. Watson	472,632	Apr. 12	965	250	59	197
Book or envelope for theaters or other places of amusement.	I. G. Kheiralla and A. F. Haddad	473,703	Apr. 26	2707	681	59	563
Book or sheet-music holder and leaf-turner	J. A. Jamison	472,125	Apr. 5	182	49	59	34
Book or the like. Note	W. Penman	472,073	Apr. 5	94	25	59	20

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Book rounding and backing mechanism	E. Crawley, Sr	474,819	May 17	1498	383, 384	59	952
Book. Scrap	F. Bowman	477,040	June 14	1261	305	59	1702
Book-support	J. W. Coultas	475,933	May 31	3274	826	59	1326
Book-support	D. H. McPherson	477,018	June 14	1225	297	59	1695
Boomerang	C. H. Emerson	477,748	June 28	2438	609	59	1964
Boomerang-gun	C. H. Emerson	477,747	June 28	2430	607, 608, 609	59	1963
Bootjack	O. M. Haight and C. F. Riffar	473,740	Apr. 26	2767	695	59	574
Boot or shoe	R. Bruzon	474,574	May 10	1116	285	59	863
Boot or shoe	G. E. Hadlund	475,858	May 31	3155	800	59	1303
Boot or shoe fastening	W. E. Bennett	477,923	June 28	2721	681	59	2017
Boot or shoe shaping device	J. E. Drake	475,679	May 24	2844	719	59	1230
Boot or shoe stay	W. A. Neely	472,197	Apr. 5	292	76	59	55
Boot or shoe upper	G. P. Herndon	473,314	Apr. 19	2047	514	59	415
Boot-stretcher	W. L. Faire	474,376	May 10	797	208	59	802
Boot-treeing machine	C. L. Heisler	476,460	June 7	359	84	59	1507
Boots or shoes. Attaching heels to the soles of	F. F. Raymond, 2d	474,146	May 3	402	97	59	716
Boots or shoes. Machine for inserting screw-threaded wire into the soles of	L. Goddu	478,055	June 28	2926	731	59	2056
Boots or shoes. Machine for inserting screw-threaded wire into the soles of	L. Goddu	478,056	June 28	2928	731	59	2056
Borax. Making	J. Ascough	476,592	June 7	554		59	1546
Boring and shaping machine	W. J. Smith	473,027	Apr. 19	1569	399	59	325
Boring and tenoning machine	A. B. Sharp	475,158	May 17	2032	512	59	1056
Boring-machine	J. Harris	473,153	Apr. 19	1773	448	59	361
Boring-tool	M. C. Johnson	472,541	Apr. 12	836	214	59	172
Bottle-alarm	J. A. Trottier	475,526	May 24	2619	666	59	1186
Bottle and brush. Mucilage	H. C. Seward	473,025	Apr. 19	1565	398	59	324
Bottle and stopper-cap for the same	J. Gilberds	475,448	May 24	2490	635	59	1161
Bottle-case	G. C. Sucro	476,697	June 7	706	173	59	1577
Bottle-case. Pocket	J. Barnes	474,940	May 17	1691	431	59	991
Bottle filling and corking machine	H. Heartfield	474,044	May 3	258	63	59	687
Bottle-filling machine	A. L. Hatfield	476,795	June 14	866	213	59	1622
Bottle-filling machine	W. M. McCormick	474,965	May 17	1733	440, 441	59	999
Bottle-filling machine. Siphon	F. J. Johnston and G. E. Barton	474,326	May 3	701	181, 182	59	772
Bottle or similar vessel	J. R. Browne	473,379	Apr. 19	2169	545	59	438
Bottle packing and shipping box	P. C. Leidich	475,456	May 24	2502	638	59	1164
Bottle-stopper	L. A. Eberhardt	477,202	June 21	1538	376	59	1771
Bottle-stopper	R. L. Foster and J. S. Crowley	472,041	Apr. 5	44	9	59	10
Bottle-stopper	W. J. Kolts	472,761	Apr. 12	1156	296	59	231
Bottle-stopper	E. L. Lloyd	474,642	May 10	1217	311	59	882
Bottle-stopper	J. A. Stukey	475,631	May 24	2779	703	59	1218
Bottle-stopper and measuring device	D. H. Talbert	473,031	Apr. 19	1573	400	59	326
Bottle-stoppers or caps. Apparatus for applying	F. W. West	476,342	June 7	181	43	59	1471
Bottle-washer. Faucet	D. Wickham	476,712	June 7	723	178	59	1581
Bottle-washing machine	C. H. Murphey	473,947	May 3	100	23	59	656
Bottle-washing machine	G. Burges, Jr	476,126	May 31	3573	898, 899, 900	59	1386
Bottle-washing machine	L. A. Koplin	472,368	Apr. 5	564	146	59	106
Bottle-washing machine	J. Masson	474,397	May 10	825	216	59	807
Bottle-wrapper	J. F. Wittemann	474,510	May 10	1003	258	59	841
Bottle-wrapper	H. J. Mark	472,462	Apr. 5	708	181	59	134
Bottler's apron	H. J. Mark	472,463	Apr. 5	710	181	59	135
Bottles. Cap for mustard	A. Fischer	473,698	Apr. 26	2700	679	59	562
Bottling aerated liquids. Machine for	M. Ame	476,771	June 14	819	202	59	1613
Bottling liquids and sealing bottles. Method of and means for	F. J. Johnston and N. F. Hallett	472,362	Apr. 5	553	143, 144	59	104
	W. Painter	473,776	Apr. 26	2805	705, 706, 707	59	583
Bottling-machine	S. Wile and H. La Casse	477,617	June 21	2214	549, 550, 551, 552, 553, 554, 555, 556, 557	59	1901
Bouquet-holder	J. M. Lucas	475,220	May 17	2126	538	59	1075
Box:							
See Axle-box. Ballot-box. Bottle packing and shipping box. Coin-holding box. Fare-box. Folding box. Folding or knock-down box. Fruit-box. Journal-box. Junction-box. Knockdown box. Letter-box. Loom-shuttle box. Mailing and salesman's box. Match-box. Music-box. Musical box. Packing-box. Paper box. Power-box. Sheet-metal box. Sluice-box. Stationery-box. Telegraph-box. Twine-box. Veneer box.							
Box	J. M. Baker	475,121	May 31	3567	897	59	1385
Box	H. Gass	472,114	Apr. 5	165	45	59	31
Box	F. H. Palmer	477,572	June 21	2133	530	59	1886

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Box and fastening	C. W. Manning	475,129	May 17	1991	504	59	1048
Box-closure	H. Molt	475,135	May 17	2001	506	59	1050
Box-cover	F. V. Ettlinger	476,453	June 7	349	81	59	1505
Box-covers. Machine for making	G. A. Barnes	473,184	Apr. 19	1841	463, 464	59	373
Box-covering machine	D. F. Lafean and F. X. Devlin	475,324	May 24	2283	587	59	1124
Box-fastener	J. Niese	473,436	Apr. 19	2250	567	59	454
Box for blacking, &c	I. Eisenstaedt	476,619	June 7	595	142	59	1555
Box for hats, bonnets, &c	W. H. Bickelhaupt	477,494	June 21	2014	499	59	1862
Box for stationery, &c	G. B. Hurd	474,062	May 3	288	69	59	693
Box-making machine	R. L. Coons	474,545	May 10	1063	272, 273	59	852
Box or basket	E. Behne	472,849	Apr. 12	1273	326	59	254
Box-stapling machine	C. Beck	473,813	Apr. 26	2268	720	59	594
Boxes. Machine for stripping paste or straw board	J. Godfrey	475,552	May 24	2658	676, 677	59	1193
Brace: *See* Boiler-brace. Carving-brace. Fence-post brace. Rail-brace. Shoulder-brace.							
Bracket: *See* Adjustable bracket. Electric-heater bracket. Extension-bracket. Gas and electric-light bracket. Insulator-bracket. Scaffold-bracket. Shade-bracket. Shelf-bracket. Shingling-bracket. Towel-bracket. Wire shelf-bracket.							
Braid. Machine for softening cotton	J. H. Hecox	473,747	Apr. 26	2774	697	59	576
Brake: *See* Air-brake. Bicycle-brake. Car-brake. Carriage-brake. Cycle-brake. Flax and hemp brake. Hemp-brake. Locomotive-brake. Tramway-brake. Vehicle-brake. Wagon-brake.							
Brake	H. M. Lofton	476,283	June 7	77	17	59	1453
Brake-beam	J. Green	477,057	June 28	2930	731	59	2057
Brake-beam	R. T. Markee	474,669	May 10	1260	322	59	891
Brake-beam	H. B. Robischung	475,802	May 31	3048	771	59	1282
Brake mechanism. Automatic	E. G. Shortt	473,789	Apr. 26	2333	712	59	587
Brake mechanisms. Air-pump for	M. B. Mills	476,756	June 7	792	195	59	1595
Brake-operating mechanism	G. Harrison	473,553	Apr. 26	2450	620	59	513
Bread. Apparatus for baking altar-	P. H. Horan	474,601	May 10	1151	292, 293	59	869
Breast-strap slide	H. D. Stoddard	477,079	June 14	1335	323, 324	59	1717
Breweries. Cooling-room for	C. D. Stanford	472,936	Apr. 12	1404	359	59	281
Brick	C. Borgner	474,285	May 3	616	152	59	756
Brick and tile cutter	J. W. Boltz	473,446	Apr. 26	2277	574, 575	59	481
Brick and tile cutter	W. Broughton	473,565	Apr. 26	2491	629	59	522
Brick and tile cutting machine	R. A. Drawdy	473,301	Apr. 19	2026	509	59	411
Brick-cutting machine	J. A. Snell	477,915	June 28	2709	678	59	2014
Brick-kiln	M. A. T. Boehncke and D. D. McLean.	475,433	May 24	2464	628	59	1156
Brick-kiln	J. Conley and J. M. Wolfe	477,993	June 28	2823	706	59	2038
Brick-kiln	J. Conley and J. M. Wolfe	477,994	June 28	2824	707	59	2039
Brick-kiln	W. Crumlic	475,237	May 17	2158	547	59	1081
Brick-kiln	A. Dimpfl	475,267	May 17	2201	562	59	1090
Brick-kiln	J. Henney	477,364	June 21	1813	443	59	1822
Brick-kiln	M. J. Hynes	477,418	June 21	1891	465, 466	59	1838
Brick-kiln	S. J. Plant	474,922	May 17	1660	424	59	984
Brick-kiln	W. Sercombe	472,404	Apr. 5	621	158, 159	59	117
Brick-kiln. Continuous	W. Johnson	472,926	Apr. 12	1388	356	59	278
Brick-kiln furnace	W. H. Martin	472,738	Apr. 12	1122	287	59	225
Brick-machine	W. C. Vanneman	473,705	June 7	715	175, 176	59	1579
Brick-machine. Hydraulic	J. Beggs and T. A. Gordon	475,747	May 31	2962	751, 752	59	1265
Brick-machine. Re-pressing	J. A. Frey and J. Thompson	472,618	Apr. 12	946	244, 245	59	194
Brick-machines. Loading-barrow for	E. New	472,138	Apr. 5	201	54	59	38
Brick-mold sander	G. Carnell	472,334	Apr. 5	518	134	59	97
Brick or fuel press	M. Nirdlinger	477,060	June 14	1295	315	59	1710
Brick-pressing machine	C. W. Raymond	476,928	June 14	1067	262, 263	59	1667
Bricks. Composition of matter for	A. S. Baker	477,632	June 28	2258	.....	59	1927
Bricks. Device for conveying	W. Griffith	472,922	Apr. 12	1382	354, 355	59	277
Bridge-gate	C. Dietz	472,208	Apr. 5	317	82	59	60
Bridge-gate	W. Haynes	474,125	May 3	370	89	59	709
Bridge-gate	J. W. Rhodes	477,700	June 28	2358	590	59	1943
Bridge-gate	A. J. Smith	474,420	May 10	869	227	59	816
Bridge or platform. Float	H. B. Seaman	474,487	May 10	970	250	59	834
Bridge-piers. Method of and means for building and anchoring	F. E. Sickels	472,277	Apr. 5	420	108	59	79
Bridle	L. D. Jones	473,396	Apr. 19	2200	552	59	444
Bridle	S. A. Nolen	476,675	June 7	670	163	59	1570
Bridle appliance for subduing horses	G. R. Hollingsworth	474,739	May 10	1371	347	59	913
Bridle-bit	O. Combs	477,102	June 14	1368	333	59	1794
Bridle-bit	A. H. Conn	474,368	May 10	788	205	59	800

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bridle-bit	A. W. Helms	475,110	May 17	1967	498	59	1043
Bridle-bit	G. S. Parsons	477,779	June 28	2482	621	59	1972
Bridle-bit	H. S. Squier	472,145	Apr. 5	212	56	59	40
Bridle. Draft	W. E. Hudson	475,864	May 31	3163	802	59	1305
Bridles. Overcheck-loop for	J. M. Harter and S. E. Harsh	476,638	June 7	621	149	59	1560
Broiler	L. L. Briggs	476,916	June 14	1068	257	59	1662
Broiler and toaster	T. Barnett	476,508	June 7	429	100	59	1521
Bromine. Extracting	H. H. Dow. (Reissue)	11,232	Apr. 12	1459	372, 373	59	291
Brooder	J. Myers	475,139	May 17	2007	507	59	1051
Brooder. Poultry	J. A. Porter	477,309	June 21	1727	422, 423	59	1806
Broom	A. M. Sanders	477,782	June 28	2485	622	59	1973
Broom-head	E. Ehrenberg	472,986	Apr. 19	1504	383	59	313
Broom-holder	A. E. Johnson	475,569	May 24	2686	681	59	1199
Brush. Air	C. L. Burdick	474,157	May 3	417	101	59	719
Brush. Air	C. L. Burdick	474,158	May 3	420	101	59	720
Brush. Blacking	W. R. Derr	476,449	June 7	345	79	59	1504
Brush. Bottle-washing	J. Babia	474,025	May 10	1192	303	59	877
Brush bridle. Paint	W. H. Humphrey	475,114	May 17	1974	500	59	1044
Brush. Fine	L. B. Shultz	477,074	June 14	1327	321	59	1716
Brush handle. Adjustable	C. F. Myers	476,060	May 31	3469	875	59	1366
Brush-holder	J. O. King	472,365	Apr. 5	559	145	59	105
Brush or broom	J. R. Coffman	472,435	Apr. 5	665	170	59	125
Brushes. Bridle for paint	C. Boeckh, Jr	472,425	Apr. 5	652	166	59	122
Bucket cover. Sap	J. L. Shigley	472,180	Apr. 5	268	70	59	50
Bucket. Dumping	W. E. Ludlow	476,285	June 7	79	18	59	1453
Bucket sinker. Well	W. Howze	473,576	Apr. 26	2510	633	59	526
Buckets. Automatic trip for dumping	W. E. Ludlow	476,284	June 7	78	17	59	1453
Buckle	M. Logan	477,947	June 28	2757	691	59	2025
Buckle	H. C. Milligan	477,601	June 21	2180	541	59	1896
Buckle	J. Schaf	473,477	Apr. 26	2333	591	59	492
Buckle	D. L. Smith	476,565	June 7	510	121	59	1538
Buckle	D. L. Smith	476,566	June 7	512	121	59	1539
Buckle	D. L. Smith	476,567	June 7	514	121	59	1539
Buckle	D. L. Smith	477,024	June 14	1235	299	59	1697
Buckle. Cross-line	F. R. Tate	474,198	May 3	483	117	59	731
Buckle. Suspender	A. P. Story	474,195	May 3	480	116	59	731
Buckle. Suspender	S. E. Cook	475,386	May 24	2394	611	59	1143
Buckle. Suspender	J. Fritz	474,599	May 10	1149	292	59	869
Buckle. Suspender	C. R. Harris	475,860	May 31	3159	801	59	1304
Buckle. Suspender	H. P. Richards	476,172	May 31	3652	924	59	1403
Buckle. Suspender	W. A. Springer	473,409	Apr. 19	2218	557	59	448
Buffing-wheel	J. A. Traut	474,199	May 3	484	117	59	731
Buggy-top	W. W. Crooker	472,287	Apr. 5	439	113	59	83
Buggy-top attachment	J. T. Watkins and W. C. Bayless	472,154	Apr. 5	223	59	59	42
Buggy-top lock	J. King	473,758	Apr. 26	2785	700	59	578
Building	D. J. Shultz	474,193	May 3	478	115	59	730
Building	M. Schmid	474,647	May 10	1225	313	59	883
Buildings. Fire-shield for	H. Zogmann	475,842	May 31	3129	793, 794	59	1298
Bullet-greasing machine	A. A. Hagen	472,479	Apr. 5	738	188	59	140
Bundle-carrier	W. C. Stewart	476,175	May 31	3661	926	59	1403
Bundle carrier and shocker	J. J. Courtney	476,981	June 14	1172	283, 284	59	1683
Bung-extracting machine	R. Woods	472,155	Apr. 5	224	59, 60	59	42
Burglar-alarm	J. U. Kraft	477,599	June 21	2178	540	59	1895
Burglar-alarm	B. F. Kraft	476,945	June 14	1120	269	59	1673
Burglar-alarm and door-closing device	R. G. Vassar	474,980	May 17	1761	446	59	1003
Burglar-alarm and door-fastener. Combined	G. F. Snider	475,903	May 31	3230	817	59	1317
Burglar-alarm systems. Automatic test for	C. K. Donnell	472,340	Apr. 5	527	137	59	99
Burner: *See* Gas-burner. Hydrocarbon-burner. Hydrocarbon-oil burner. Lamp-burner. Oil-burner. Petroleum-burner. Vapor-burner.	A. Stromberg	477,712	June 28	2380	595	59	1953
Burnishing-machine	J. H. Busell and E. H. Taylor	475,032	May 17	1841	467	59	1018
Bushing and venting apparatus for barrels	S. G. Derham	475,756	May 31	2975	755	59	1208
Butter-cutter	C. G. Bjorlin	476,442	June 7	337	77	59	1503
Butter-cutter	L. Linkiewicz	477,905	June 28	2693	674	59	2011
Butter-knife	C. Neustadt	477,019	June 14	1227	297	59	1696
Butter molding or shaping machine	T. Miller	475,789	May 31	3025	766	59	1277
Butter-packing machine	W. Foster	472,921	Apr. 12	1380	354	59	277
Butter-print machine	H. J. Brine	473,494	Apr. 26	2358	598	59	496
Butter stamp and cutter	J. C. Harris	476,634	June 7	616	148	59	1559
Butter-worker	W. Hallenbeck, G. W. Witt, and W. Pattison.	474,243	May 3	551	135	59	744
Button	F. R. C. Struver	476,429	June 7	318	73	59	1499
Button	M. Apfelbaum	472,845	Apr. 12	1268	325	59	253
Button	C. Erlanger	474,445	May 10	910	235	59	823
Button	G. Heuser	477,802	June 28	2518	632	59	1978
Button	W. E. Jackson	474,252	May 3	562	138	59	747
Button	R. Liebmann	472,315	Apr. 5	579	148	59	109
Button	C. Radcliffe	474,969	May 17	1744	442	59	1000
Button	G. Rossberg	476,076	May 31	3490	880	59	1371
Button	S. W. Shorey	474,150	May 3	405	99	59	717
Button	F. E. Williams	473,861	Apr. 26	2949	744	59	610
Button and pin clasp	G. H. Merrill	474,025	May 3	223	54	59	681
Button. Crochet	C. Kessler	477,806	June 28	2523	633	59	1979
Button-die	C. Wagenführ	475,476	May 24	2536	646	59	1170
Button-hook	J. Van Patten	473,635	Apr. 19	1579	402	59	326
Button link. Safety cuff	J. C. Bloren	477,349	June 21	1782	436	59	1817

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Button-machine	F. H. Hardman	474,320	May 3	688	178, 179	59	769
Button-machine	F. H. Hardman	477,115	June 14	1382	337	59	1727
Button-polishing machine	D. B. Shantz	477,274	June 21	1664	406	59	1793
Button-setting machine	E. Woodward	477,347	June 21	1779	435	59	1816
Button. Sleeve	W. E. Cook	472,941	Apr. 12	1411	360	59	282
Cabinet	R. D. Willson	473,541	Apr. 26	2436	617	59	510
Cabinet. Blank	F. W. Cooley	474,948	May 17	1707	434	59	993
Cabinet for holding postage-stamps, &c	M. P. Exline	475,685	May 24	2854	721	59	1232
Cabinet. Scrap	G. H. Cruzan	474,904	May 17	1636	417	59	979
Cable-grip	G. F. Elliott	475,684	May 24	2852	721	59	1232
Cable-grip	E. R. Guerra	473,221	Apr. 19	1903	480	59	385
Cable-grip	T. Otto	474,185	May 3	461	112	59	727
Cable-grip	J. Schirra	475,896	May 31	3220	814	59	1316
Cable-hanger	J. J. Nate	475,600	May 24	2728	691	59	1207
Cable junction-box	J. D. McLeod	477,218	June 21	1567	385	59	1776
Cable. Machine for making hollow wire	O. Preston	475,889	May 31	3211	813	59	1314
Cable. Metallic-circuit	C. E. Jackson	476,464	June 7	367	85	59	1508
Cable-rack	W. M. Goodridge	472,947	Apr. 12	1418	362, 363	59	284
Cable-road carrier-pulley	M. H. Bronsdon	477,885	June 28	2663	666	59	2005
Cable system	J. B. Mahaffey	473,233	Apr. 19	1921	483, 484	59	389
Cable-traction mechanism	W. A. Butler	478,046	June 28	2909	726, 727	59	2053
Cable-way grip mechanism	W. Hewitt	474,249	May 3	557	137, 138	59	746
Cables. Grip mechanism for duplex	A. Bryson, Jr., J. H. Pendleton, and A. R. Benn.	475,846	May 31	3135	795, 796	59	1298
Cake-cutter	L. W. Snell	477,278	June 21	1669	407	59	1795
Cake-cutter	F. R. Woodward	473,281	Apr. 19	1996	502	59	405
Calculator	H. V. Dunn	473,833	Apr. 26	2899	727	59	600
Calculator	J. Herran y Bolado	475,177	May 17	2063	519	59	1062
Calendar	W. C. Hawkins	475,500	May 24	2573	655	59	1177
Calendar	W. C. Hawkins	475,501	May 24	2574	656, 657	59	1178
Calendar	W. C. Hawkins	475,502	May 24	2582	657	59	1179
Calendar	J. Hochheimer	476,461	June 7	362	84	59	1507
Calendar	J. Hochheimer	476,462	June 7	365	85	59	1508
Calendar	C. N. Hoyt	474,602	May 10	1152	293	59	869
Calendar	A. Sachs	476,929	June 14	1089	263	59	1667
Calendar and desk article. Combined	J. T. Hawkins	474,449	May 10	920	216	59	825
Calendar and key-ring. Perpetual	A. B. Dwigans	474,725	May 10	1349	342	59	908
Calendar for watch-charms. Perpetual	F. W. Roe	475,156	May 17	2029	512	59	1055
Calendar. Perpetual monthly	J. Gnidinger	476,263	June 7	54	12	59	1448
Cam. Extension	B. F. White	477,978	June 28	2793	700	59	2033
Camera: *See* Magazine-camera. Solar camera. Photographic camera.							
Camera	F. E. Ives	475,084	May 17	1918	488	59	1034
Camera-shutter	A. Barker	477,588	June 21	2161	536	59	1892
Camera-shutter	L. M. Korda	477,012	June 14	1218	295	59	1694
Cameras or other purposes. Support for	F. Servus	473,357	Apr. 19	2126	533	59	430
Can: *See* Ice-can. Sheet-metal can. Jacketed can. Tin can. Oil-can.							
Can, bottle, &c. Automatically-closing	H. Johnson	475,775	May 31	3006	762	59	1274
Can-cleaning machine	G. Roth	477,703	June 28	2364	591	59	1950
Can cover and cooler. Milk	N. H. Terens	473,481	Apr. 26	2337	592	59	493
Can-crimping machine	J. A. Peck	477,575	June 21	2136	531	59	1887
Can-crimping machine	J. W. Roberts	476,558	June 7	495	117, 118	59	1535
Can-filling machine	G. L. Merrell	472,583	Apr. 12	888	228, 229	59	183
Can for liquids	A. Rolfing	477,455	June 21	1949	483	59	1849
Can forming and soldering machine	L. Keller	476,927	June 14	1084	261, 262	59	1667
Can-heading machine	B. Adriance	472,284	Apr. 5	432	111, 112	59	81
Can-heading machine	C. W. Sleeper	474,534	May 10	1045	267, 268	59	848
Can-heading machine	M. A. Wheaton	477,584	June 21	2149	534, 535	59	1890
Can-opener	W. G. Browne and J. L. Benton	475,222	May 17	2128	538	59	1076
Can-opener	A. E. Newton	476,164	May 31	3640	921	59	1401
Can-screw and faucet	H. F. Bartlett	472,157	Apr. 5	229	61	59	43
Can-spout	H. Stiles	474,507	May 10	998	257	59	840
Can-stopper	B. P. Field	476,623	June 7	599	143	59	1556
Can-testing machines. Can-holding frame for use with	C. H. Emery	475,446	May 24	2487	634	59	1161
Cans, &c. Fastening for the caps of	G. J. Record	476,309	June 7	121	29	59	1462
Cans. Machine for capping and seaming the ends of	A. D. Coleman	473,171	Apr. 19	1811	456, 457, 458	59	368
Cans. Vent for shipping	D. A. Lisk and T. D. Brown	476,281	June 7	75	16	59	1452
Canning apparatus. Corn	G. L. Merrell	473,895	Apr. 26	2987	754, 755	59	617
Canning device. Fruit	J. J. Isler	477,805	June 28	2522	633	59	1979
Canning or preserving jar	R. C. Sheeley	476,690	June 7	695	170	59	1575
Candle-holder	J. F. Young	474,708	May 10	1411	359	59	921
Candle-molding machine	A. A. Royau	475,521	May 24	2612	664, 665	59	1184
Candle-shade holder	C. A. Moran	475,790	May 31	3026	767	59	1277

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Candles, lamps, or flowers. Portable appliance for supporting and suspending	J. Sydney	475,093	May 17	1942	492	59	1037
Candles. Ornamenting	T. V. Forster	472,945	Apr. 12	1416	362	59	283
Candlestick	F. V. Eavenson	473,149	Apr. 19	1768	447	59	360
Candlestick	S. Szigethy	473,797	Apr. 26	2846	715	59	500
Cane and flag. Combined	E. Gash	477,359	June 21	1804	441	59	1820
Cane-juice. Purifying	W. V. Fry	472,989	Apr. 19	1509	.....	59	313
Canister	G. E. Knight	472,892	Apr. 12	1337	343	59	268
Canisters. Label-holder for	H. Macarthy	472,794	Apr. 12	1300	308	59	240
Cannon	T. L. Willson	475,071	May 17	1900	482	59	1030
Cannon. Breech-loading	S. Seabury	474,974	May 17	1751	444, 445	59	1001
Canteen or coffee-flask. Sectional	W. A. Anderson	475,231	May 17	2145	543	59	1079
Cap	J. E. McLoughlin	473,427	Apr. 19	2242	564	59	452
Cap	D. Samuel	473,784	Apr. 26	2825	710	59	586
Car. Bicycle electric	E. M. Boynton	474,331	May 3	715	186, 187	59	774
Car-bolster	C. T. Schoen	475,023	May 17	1830	464	59	1016
Car-brake	D. L. Barnes	477,922	June 28	2720	680	59	2017
Car-brake	H. P. Bassett	473,606	Apr. 26	2559	645	59	535
Car-brake	T. F. Clark	476,871	June 14	989	240	59	1647
Car-brake	J. A. Fisher	473,501	Apr. 26	2370	601	59	498
Car-brake	W. Fisher	477,172	June 14	1478	362	59	1746
Car-brake	C. Fries, W. H. Richardson, and I. W. Hackett.	472,965	Apr. 12	1450	370	59	289
Car-brake	W. F. Gibbs	478,003	June 28	2847	712	59	2042
Car-brake	S. P. Hollingsworth	474,958	May 17	1720	437, 438	59	996
Car-brake	E. A. Kinley	473,319	Apr. 19	2051	515	59	416
Car-brake	A. P. Massey	472,929	Apr. 12	1393	357	59	279
Car-brake	J. W. Neumann and J. R. Pflanz	474,261	May 3	575	141	59	750
Car-brake attachment. Automatic	H. Hinckley	475,015	May 17	1818	461	59	1014
Car-brake. Automatic	W. B. Guernsey	473,457	Apr. 26	2301	582, 583	59	485
Car brake. Grip	W. Byrnes	474,900	May 17	1631	416	59	978
Car-brake mechanism	J. and H. R. Howard	474,451	May 10	924	238	59	825
Car-brake mechanism. Street	H. H. Kelley	473,510	Apr. 26	2388	605	59	502
Car-brake shoe	G. Sands	472,955	Apr. 12	1438	367	59	287
Car-brake slack-take-up	H. Hinckley	475,011	May 17	1816	460, 461	59	1013
Car brake. Street	F. W. Wood and J. Fowler	472,597	Apr. 12	908	233	59	187
Car-brakes. Device for automatically operating power	B. C. Rowell	475,893	May 31	3217	814	59	1315
Car-brakes. Power-transmitting device for	W. B. Turner	474,615	May 10	1179	299	59	874
Car-brakes. Slack-adjuster for	G. L. Harvey	477,842	June 28	2595	650	59	1993
Car-coupling	J. Acuff	476,768	June 14	815	201	59	1613
Car-coupling	A. J. Allen	472,245	Apr. 5	375	98	59	70
Car-coupling	C. A. Anderson	477,399	June 21	1865	459	59	1833
Car-coupling	D. L. Barnes	477,489	June 21	2006	498	59	1860
Car-coupling	L. Barnes	474,466	May 10	940	242	59	829
Car-coupling	T. J. and J. Baylor	472,328	Apr. 5	504	131	59	95
Car-coupling	T. A. Beckwith	475,103	May 17	1953	495	59	1040
Car-coupling	B. Bernstein	476,864	June 14	980	238	59	1646
Car-coupling	W. R. Betham	474,806	May 17	1479	377	59	948
Car-coupling	R. L. and J. L. Bird	473,445	Apr. 26	2275	574	59	481
Car-coupling	F. R. Brown	472,103	Apr. 5	145	39	59	27
Car-coupling	F. R. Brown	472,249	Apr. 5	380	100	59	71
Car-coupling	J. M. Burton	476,784	June 14	843	208	59	1618
Car-coupling	W. H. Callaway and C. C. West	477,989	June 28	2815	704	59	2037
Car-coupling	J. B. Carpenter	472,857	Apr. 12	1283	329	59	256
Car-coupling	W. P. Clark	477,168	June 14	1470	360	59	1745
Car-coupling	R. Condon	474,815	May 17	1494	381	59	951
Car-coupling	O. P. Conley	476,786	June 14	846	209	59	1619
Car-coupling	A. J. Cover	476,919	June 14	1071	258	59	1663
Car-coupling	I. David	477,047	June 14	1276	309	59	1705
Car-coupling	D. Donahue	474,373	May 10	793	206	59	801
Car-coupling	D. Donahue	476,450	June 7	346	79	59	1504
Car-coupling	H. R. Dore	473,213	Apr. 19	1883	474	59	381
Car-coupling	R. H. Dowling	474,772	May 10	1417	361	59	922
Car-coupling	C. A. Dunn	475,268	May 17	2203	562, 563	59	1091
Car-coupling	E. P. Eastwick, Jr	475,682	May 24	2849	720	59	1231
Car-coupling	E. P. Eastwick, Jr	475,683	May 24	2850	721	59	1231
Car-coupling	W. M. Edwards	475,269	May 17	2205	563	59	1091
Car-coupling	C. C. Fields	475,040	May 17	1852	470	59	1021
Car-coupling	M. Flanagan	476,068	May 31	3388	855	59	1349
Car-coupling	H. A. Frantz	472,290	Apr. 5	442	114	59	83
Car-coupling	S. J. Freeman	474,730	May 10	1355	344	59	910
Car-coupling	J. W. Gardner	474,553	May 10	1078	276	59	855
Car-coupling	R. L. Garlick	472,534	Apr. 12	829	211	59	171
Car-coupling	C. Gates	472,871	Apr. 12	1303	334	59	261
Car-coupling	C. Geschwindner	472,992	Apr. 19	1513	386	59	314
Car-coupling	J. H. Goode and W. H. Anthony	477,176	June 14	1483	363	59	1747
Car-coupling	D. U. Graveline	474,123	May 3	368	89	59	708
Car-coupling	J. Green	476,630	June 7	611	146	59	1558
Car-coupling	S. F. Green	474,124	May 3	369	89	59	709
Car-coupling	W. Greenlees	476,742	June 7	774	190	59	1591
Car-coupling	A. Hamilton	476,633	June 7	615	148	59	1559
Car-coupling	O. Hanson	473,742	Apr. 26	2769	696	59	574
Car-coupling	O. C. Harris	473,574	Apr. 26	2508	633	59	526
Car-coupling	G. A. Haslup	472,877	Apr. 12	1312	337	59	262
Car-coupling	E. S. Hawkins	474,992	May 17	1783	450, 451	59	1007
Car-coupling	I. Hazelton	477,414	June 21	1886	464	59	1637

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Car-coupling	S. P. Heed	472,350	Apr. 5	541	140	59	101
Car-coupling	S. P. Heath and T. Burr	475,239	May 17	2162	550	59	1082
Car-coupling	P. Hien	476,958	June 14	1141	275	59	1677
Car-coupling	P. Hoff	476,016	May 31	3398	857	59	1351
Car-coupling	O. J. Hoke	474,909	May 17	1641	419	59	980
Car-coupling	W. W. Hubbell	476,273	June 7	66	14	59	1451
Car-coupling	H. E. Kies	477,258	June 21	1643	401	59	1789
Car-coupling	D. Kint	476,749	June 7	782	192	59	1593
Car-coupling	E. H. B. Knowlton	473,761	Apr. 26	2789	701	59	579
Car-coupling	J. Krehbiel	475,573	May 24	2691	682	59	1200
Car-coupling	J. La Burt	475,219	May 17	2125	537	59	1075
Car-coupling	J. H. Langschmidt	472,505	Apr. 5	783	200	59	148
Car-coupling	J. W. Latta	475,326	May 24	2286	588	59	1124
Car-coupling	H. Leely	477,561	June 21	2120	526	59	1884
Car-coupling	J. C. Look	474,090	May 3	328	78, 79	59	700
Car-coupling	R. F. Lndlow	473,938	May 3	87	19, 20	59	653
Car-coupling	A. Mailman	475,331	May 24	2300	591	59	1127
Car-coupling	A. C. Martin	472,580	Apr. 12	885	227	59	182
Car-coupling	A. C. Martin	472,581	Apr. 12	886	228	59	183
Car-coupling	A. C. Martin	472,582	Apr. 12	887	228	59	183
Car-coupling	W. A. Mayhall	475,696	May 24	2875	727	59	1235
Car-coupling	J. W. McGill	477,438	June 21	1923	474, 475	59	1843
Car-coupling	T. L. McKeen	472,799	Apr. 12	1206	310	59	241
Car-coupling	R. T. Morrison, Jr.	475,283	May 17	2226	571	59	1096
Car-coupling	O. R. Myers	476,401	June 7	277	65	59	1492
Car-coupling	C. H. Olds	473,951	May 3	107	25	59	657
Car-coupling	N. J. Parish	473,588	Apr. 26	2534	639	59	530
Car-coupling	T. Penn	476,168	May 31	3647	923	59	1402
Car-coupling	C. B. Pentz	476,169	May 31	3648	923	59	1402
Car-coupling	G. W. Powell	472,509	Apr. 5	789	202	59	150
Car-coupling	L. Z. Preston and O. H. Wirsig	474,691	May 10	1300	332	59	898
Car-coupling	J. T. Railsback	475,796	May 31	3035	769	59	1279
Car-coupling	R. Reardon	475,153	May 17	2025	511	59	1054
Car-coupling	T. L. Rivers	472,395	Apr. 5	611	155	59	114
Car-coupling	W. N. Robinson	473,346	Apr. 19	2109	529	59	427
Car-coupling	R. S. Russell	477,577	June 21	2139	532	59	1888
Car-coupling	S. Q. Saunders	475,706	May 24	2888	730	59	1238
Car-coupling	M. T. Scott and J. L. Brasfield	475,707	May 24	2889	731	59	1238
Car-coupling	S. D. Smith	472,958	Apr. 12	1442	368	59	288
Car-coupling	G. C. Spreng and J. C. Smith	477,466	June 21	1970	489	59	1853
Car-coupling	C. F. Springer	476,322	June 7	148	36	59	1466
Car-coupling	E. Surprenant	475,168	May 17	2048	515	59	1059
Car-coupling	J. Teel	475,829	May 31	3107	787	59	1293
Car-coupling	M. W. Trexler	474,703	May 10	1314	335	59	902
Car-coupling	W. D. Williams	472,840	Apr. 12	1262	323	59	252
Car-coupling	J. H. Wilson	472,418	Apr. 5	639	163	59	120
Car-coupling	F. B. Woodman	476,349	June 7	191	45	59	1473
Car-coupling	J. D. Young	476,351	June 7	194	46	59	1474
Car-couplings. Lifting device for twin-jaw	T. L. McKeen	472,627	Apr. 12	959	248, 249	59	196
Car curtain. Street	A. D. Cochran	474,902	May 17	1634	417	59	979
Car-door	M. T. Carson and J. D. Gurganus	472,858	Apr. 12	1284	329, 330	59	257
Car door. Grain	R. O. Hixson	475,449	May 24	2490	635	59	1161
Car door. Grain	W. S. Schroeder	475,422	May 24	2449	624	59	1153
Car door. Grain	J. C. Wands	477,092	June 14	1354	329	59	1721
Car-door. Sliding	C. H. Dunham	475,680	May 24	2845	720	59	1230
Car door. Street	F. Mansfield	472,737	Apr. 12	1119	287	59	224
Car draft-guard	G. F. C. Rosenthal	475,611	May 24	2747	696	59	1212
Car draft-rigging	W. H. Miner	474,996	May 17	1788	452, 453	59	1008
Car. Dump	R. S. Cox	476,366	June 7	219	54	59	1478
Car. Dumping	C. W. Bridegum	476,780	June 14	838	207	59	1617
Car-dumping apparatus	E. B. Wilson	477,396	June 21	1859	459	59	1832
Car-dumping device	C. F. Wilson	472,648	Apr. 12	984	254	59	200
Car. Dumping freight	R. M. Johnson	474,744	May 10	1377	348	59	914
Car. Electric-motor	W. H. Patton	475,709	May 24	2882	729	59	1237
Car. Exhibition	M. Leak	472,309	Apr. 5	459	118	59	86
Car fender. Street	B. Sullivan	477,467	June 21	1971	489	59	1853
Car. Freight	J. M. Burton	472,158	Apr. 5	229	61, 62	59	43
Car. Fruit	A. T. Perkins	474,998	May 17	1790	453, 454	59	1009
Car grip. Cable	D. D. Nolley	475,143	May 17	2012	508	59	1052
Car. Hand	J. R. Parker	474,855	May 17	1563	398	59	963
Car-heater	W. C. Baker	476,973	June 14	1161	280, 281	59	1681
Car-heater	C. S. Dean	474,225	May 3	527	129	59	739
Car heater. Railway	W. C. Baker	473,721	Apr. 26	2732	687	59	567
Car heater. Street	J. Allingham	472,778	Apr. 12	1178	302	59	235
Car-heating apparatus	W. C. Baker	472,689	Apr. 12	1042	269	59	209
Car-heating apparatus	G. A. Prescott	474,404	May 10	835	219	59	810
Car-heating apparatus	J. H. Sewall	477,464	June 21	1968	488	59	1853
Car-heating apparatus. Railway	J. Q. C. Searle	474,417	May 10	864	226	59	815
Car-heating apparatus with heating mediums. System of charging	J. F. McElroy	473,635	Apr. 26	2603	655, 656	59	543
Car-lighting system. Electric	J. F. McElroy	475,514	May 24	2597	660, 661	59	1182
Car-loading apparatus	C. H. Campbell and W. Whigham	475,293	May 24	2238	576, 577, 578	59	1114
Car-loading apparatus	R. W. Compton	475,236	May 17	2157	546, 547	59	1081
Car. Logging	J. E. Henry	473,748	Apr. 26	2775	698	59	576

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Car. Motor tram	J. M. O'Kelly	477,444	June 21	1934	478, 479, 480	59	1846
Car-mover	G. W. M. Simms	475,902	May 31	3228	816	59	1317
Car pilot. Railway	H. B. Williams	473,277	Apr. 19	1988	499	59	403
Car-platform gate	H. Cochran	472,727	Apr. 12	1104	284	59	221
Car-propelling mechanism	E. E. Miller	477,260	June 21	1646	402	59	1790
Car rail-cleaning attachment	P. Wardman	476,909	June 14	1056	255	59	1660
Car. Railway	G. Bayha	475,844	May 31	3133	794	59	1298
Car. Railway	J. Hammond	474,736	May 10	1367	346	59	912
Car. Railway	G. M. Hoadley and S. A. Bemis	477,935	June 28	2738	686	59	2021
Car. Railway	C. M. Hollingsworth	474,660	May 10	1246	318	59	888
Car. Railway	J. D. Morrison	475,791	May 31	3027	767	59	1278
Car-replacer	J. M. Morris and S. J. Harkness	473,587	Apr. 26	2533	639	59	530
Car. Safety	A. N. Lamport	473,323	Apr. 19	2060	518, 519	59	418
Car. Safety	W. Skyrme	477,075	June 14	1328	322	59	1716
Car safety-catch. Mining	C. R. Trew	475,639	May 24	2789	707	59	1220
Car-seal press	L. A. Foote	475,211	May 17	2115	535	59	1073
Car-seat	E. L. Bushnell and G. W. Dryer	476,728	June 7	751	185	59	1586
Car-seat	E. L. Bushnell and G. W. Dryer	476,729	June 7	752	186	59	1587
Car-seat	H. S. Hale	475,109	May 17	1966	498	59	1042
Car-seat	J. Krehbiel	474,666	May 10	1257	321	59	890
Car-shield. Revolving	J. E. Shanafelt	475,157	May 17	2030	512	59	1059
Car signal. Street	C. H. Smith	475,474	May 24	2533	645	59	1169
Car. Slag	S. B. Dexter	474,238	May 3	531	130	59	740
Car. Sleeping	J. H. Myers	476,022	May 31	3405	859	59	1353
Car. Sleeping	W. Sneckner	477,157	June 14	1444	354	59	1739
Car-step	F. H. Stanwood	476,323	June 7	149	36	59	1466
Car. Stock	J. M. Burton	473,998	May 3	177	42	59	672
Car. Stock	C. L. Travis	475,258	May 17	2185	556, 557	59	1087
Car-ventilator	H. A. Dirkes	475,389	May 24	2397	612	59	1144
Car-ventilator	C. V. Heath and A. G. Milzer	474,247	May 3	555	136, 137	59	745
Car-vestibule	J. F. McElroy	474,966	May 17	1736	441	59	999
Car vestibule connection	A. M. Kittredge and J. Kirby, Jr.	474,796	May 10	1464	372	59	932
Car-vestibules. Bellows-fold coupling for	E. L. Perry	473,954	May 3	112	26	59	658
Car-wheel	G. H. Graham	477,532	June 21	2079	517	59	1876
Car-wheel	W. Hailes	477,539	June 21	2087	519	59	1877
Car-wheel	G. W. Miller	475,018	May 17	1823	462	59	1015
Car-wheel	L. B. Smyser	474,421	May 10	870	227	59	816
Car-wheel	W. Ward	472,415	Apr. 5	636	162	59	119
Car wheel and axle	W. R. Kirk	474,636	May 17	1535	391	59	958
Car-wheel. Antifriction	J. D. Farquher	472,944	Apr. 12	1414	361	59	283
Car-wheel. Chilled cast-iron	L. R. Faught	477,524	June 21	2066	514	59	1873
Car-window dust and cinder protector	E. B. Loomis	477,948	June 28	2759	691	59	2025
Cars. Air and steam coupling for railway	J. F. Hill	472,807	Apr. 12	1216	312, 313	59	243
Cars. Antifriction-bearing for	C. T. Buschner	475,007	May 17	1806	458	59	1011
Cars. Brake and heating system for railway	E. D. Bangs and A. L. Waite	472,424	Apr. 5	649	165, 166	59	121
Cars. Center-plate for logging	H. A. Todd and A. H. Anderson	472,151	Apr. 5	219	58	59	41
Cars. Chain-coupling for	J. E. Mullaney	473,014	Apr. 19	1543	393, 394	59	320
Cars. Chock-block for logging	H. A. Todd and A. H. Anderson	472,152	Apr. 5	220	58, 59	59	41
Cars. Frictional gearing for street	G. B. Brayton	476,243	June 7	13	3	59	1441
Cars. Gearless motor for electric-railway	S. H. Short	473,365	Apr. 19	2139	536	59	432
Cars. Gearless propelling mechanism for electric-railway	S. H. Short	473,368	Apr. 19	2144	537	59	433
Cars. Holding-strap for	H. A. Hartman	473,255	Apr. 19	1954	490	59	396
Cars. Lever for starting	A. Hubbard	475,770	May 31	2996	760	59	1272
Cars. Means for propelling electric	T. A. Edison	476,986	June 14	1180	285, 286	59	1685
Cars. Motor for propelling	W. L. Davis	472,594	Apr. 12	812	209	59	167
Cars. Safety attachment for street	P. S. Townsend	472,184	Apr. 5	273	71	59	52
Cars. Safety-gate for	F. C. Cash	473,210	Apr. 19	1880	473	59	381
Cars. Sand-box for	H. H. Hennegin	473,070	Apr. 19	1634	416	59	336
Cars. Sanding mechanism for	N. Seibert	473,090	Apr. 19	1662	423	59	341
Cars. Side bearing for	W. S. Burling and H. G. Bird	473,610	Apr. 26	2564	646	59	536
Cars. Under-trussing for railway	F. E. Canda	472,854	Apr. 12	1278	327	59	255
Carbon blocks. Manufacture of	L. Hulin	473,841	Apr. 26	2913	732	59	603
Carbon-holder	H. Howard	472,055	Apr. 5	66	17	59	15
Carbon points. Apparatus for trimming	P. Moses	476,292	June 7	93	21	59	1456
Carbon product	L. S. Langville	475,062	May 17	1888	.....	59	1027
Carbons. Securing	E. L. Sharpneck and W. G. Shedd	473,479	Apr. 26	2335	591	59	492
Carburetor	E. B. Badlam	475,972	May 31	3337	842	59	1338
Carburetor	H. L. Cruttenden	473,498	Apr. 26	2365	600	59	497
Carburetor	J. W. Lambert	474,838	May 17	1539	391	59	958
Carburetor and purifier	G. W. Weaver	476,709	June 7	780	177	59	1580
Carcass-spreader	G. T. Plumb	473,127	Apr. 19	1735	438	59	353
Card-stripping apparatus	E. Gibson	474,318	May 3	684	178	59	769
Carding-engine	J. F. Bradbury	472,653	Apr. 12	991	256	59	201
Carding-engines. Mechanism for grinding the traveling flats of	B. A. Dobson and W. I. Bromiley	473,187	Apr. 19	1847	465	59	374
Carding-machine	G. Meyer	473,585	Apr. 26	2523	636, 637, 638, 639	59	529
Carding machines. Condenser for wool	J. E. McWilliam	472,740	Apr. 12	1125	289	59	225
Carding-machines. Top-flat-adjusting device for	E. Gibson	474,349	May 3	752	196	59	780
Carpet button. Stair	A. A. Cardwell	472,250	Apr. 5	381	100	59	71
Carpet fabric. Ingrain	G. H. Harvey	472,215	Apr. 5	398	85	59	62
Carpet-fastener	E. M. Childs	477,323	June 21	1746	427	59	1809
Carpet-fastener	W. J. Janisch	477,370	June 21	1820	445	59	1823

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Carpet fastener. Stair	T. H. Spurrier	478,028	June 28	2882	720	59	2049
Carpet-stretcher	W. A. Arnold and E. M. Babcock	472,204	Apr. 5	312	80	59	59
Carpet-stretcher	L. Coffman	472,434	Apr. 5	664	170	59	125
Carpet-stretcher	S. C. Mains	474,176	May 3	450	109	59	725
Carpet-stretcher	A. H. Moore	476,960	June 14	1143	276	59	1678
Carpet-stretching device	J. T. Lemon	477,809	June 28	2527	634	59	1980
Carpet-sweeper	J. P. Marsh	473,766	Apr. 26	2794	703	59	580
Carpet-sweeper	S. H. Raymond	473,438	Apr. 19	2254	568	59	455
Carpet-sweeper	S. H. Raymond	476,209	May 31	3731	942	59	1416
Carpet-sweeper	S. H. Raymond	476,210	May 31	3732	942	59	1416
Carpet-sweeper	S. H. Raymond	476,211	May 31	3733	943	59	1416
Carpet-sweeper	S. H. Raymond	476,212	May 31	3734	943	59	1417
Carpet-sweeper	S. H. Raymond	476,213	May 31	3735	943	59	1417
Carpet-sweeper	S. H. Raymond	476,214	May 31	3736	943, 944	59	1417
Carpet-sweeper	C. K. Stinson	475,626	May 24	2773	702	59	1217
Carriage	A. N. Parry	474,029	May 3	229	55	59	682
Carriage	A. N. Parry	476,298	June 7	109	26	59	1459
Carriage and cradle. Combined	J. Schlich	472,314	Apr. 5	482	124, 125	59	91
Carriage. Baby	D. Rees	472,714	Apr. 12	1089	279	59	218
Carriage brake. Baby	D. B. Stevens	476,325	June 7	151	37	59	1467
Carriage. Convertible child's	E. Lotinga	474,641	May 10	1217	311	59	881
Carriage. Folding child's	W. Cook	477,514	June 21	2042	508, 509	59	1868
Carrier: *See* Bicycle luggage-carrier. Bundle-carrier. Cash-carrier. Elevated carrier. Film or plate carrier. Fruit-carrier. Hay-carrier. Kettle-carrier. Log-carrier. Package-carrier. Parcel-carrier. Trace-carrier. Trolley-carrier.							
Carrier	W. E. Selleck	474,975	May 17	1755	445	59	1002
Cart. Coal	C. Elbee	474,374	May 10	795	207	59	801
Cart. Dumping	L. Rodenhausen	477,702	June 28	2363	591	59	1950
Cart. Road	J. Farren	475,273	May 17	2211	565	59	1093
Cart. Self-loading	C. Q. Hayes	475,687	May 24	2855	722	59	1232
Cartridge	W. C. Bush	475,008	May 17	1807	458	59	1011
Cartridge	J. M. Pollard	478,020	June 28	2867	717, 718	59	2046
Cartridge-loader	W. H. Hamner	476,048	May 31	3443	869, 870	59	1361
Cartridge-priming pin	J. Orcutt	474,607	May 10	1160	295	59	871
Cartridge-reloading tool	H. J. Gallup	472,990	Apr. 19	1510	385	59	313
Cartridge shells and heads. Tool for finishing edges of	C. P. Gilbert and H. W. Thomas	476,009	May 31	3389	855	59	1349
Cartridge-shells. Machine for loading	W. W. Babcock	473,440	Apr. 26	2258	569, 570, 571, 572, 573	59	477
Carving-brace	A. C. Peck	472,742	Apr. 12	1127	289	59	226
Carving-machine attachment	J. Rohlmann	477,229	June 21	1588	389	59	1779
Case: *See* Bed-case. Blacking-case. Book-case. Bottle-case. Cigar-case. Clock-case. Compositor's case. Eyeglass-case. Eyeglass and spectacle case. File-case. Hat packing-case. Packing-case. Paper-case. Perfume-case. Piano-case. Ribbon-case. Shipping-case. Thermometer-case. Ticket-case.							
Cash and package carrier apparatus	D. E. Campbell	475,265	May 17	2195	550, 560, 561	59	1089
Cash-carrier	C. R. Herrington	472,924	Apr. 12	1385	355, 356	59	278
Cash-carrier	C. R. Sadd	474,973	May 17	1750	443	59	1001
Cash-carrier apparatus	J. C. Martin	475,879	May 31	3193	808, 809	59	1311
Cash-dish	D. M. Perine	473,339	Apr. 19	2096	527	59	424
Cash indicator and register	H. Cook	473,694	Apr. 26	2690	677, 678	59	560
Cash indicator and register	T. J. Hume	474,558	May 10	1085	277, 278	59	857
Cash indicator, register, and check-printer	W. H. Gilman	477,840	June 28	2589	649	59	1991
Cash-recorder	C. H. Coles	472,376	Apr. 5	520	135, 136	59	98
Cash-recorder	W. B. Metcalfe and F. A. Ziegler	474,672	May 10	1271	324	59	892
Cash-recorder	C. H. Morford	476,890	June 14	1022	248	59	1654
Cash-register	H. A. Bierley	473,723	Apr. 26	2734	688	59	568
Cash-register	T. Rogers	473,887	Apr. 26	2997	756, 757	59	619
Cash-register	J. F. Schnarrenberger	476,900	June 14	1034	251, 252	59	1657
Cash-register	J. A. Treat	474,614	May 10	1170	297, 298, 299	59	873
Cash-register	R. W. Whitney	473,719	Apr. 26	2728	686, 687	59	567
Cash-register actuating device	G. Boemermann	477,883	June 28	2660	665	59	2004
Cash register and indicator	T. Carney	473,170	Apr. 19	1802	455, 456	59	367

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cash register and indicator	W. G. Douglas	473,172	Apr. 19	1818	458	59	369
Cash register and indicator	T. J. Hume	477,548	June 21	2098	522, 523	59	1879
Cash register and indicator	F. S. Hunt	472,123	Apr. 5	179	48	59	33
Cash register and indicator	W. R. Johns	473,555	Apr. 26	2453	621, 622, 623, 624	59	513
Cash register and indicator	J. A. Kienardt	477,598	June 21	2176	539	59	1895
Cash register and indicator	W. G. Latimer	474,993	May 17	1784	451	59	1007
Cash register and indicator	R. Mills	475,408	May 24	2422	618	59	1149
Cash register and indicator	H. M. Neer	476,295	June 7	98	22, 23, 24, 25	59	1457
Cash register and indicator	G. W. Spurr	477,340	June 21	1768	433	59	1814
Cash register and recorder	A. R. Abbott	474,278	May 3	600	149, 150	59	754
Cash register, indicator, and recorder	C. F. Brown	474,791	May 10	1450	368, 369, 370	59	929
Cash-registering machines. Adding attachment for	G. B. Massey	477,563	June 21	2122	527, 528	59	1884
Cash-till recorder	W. W. Darbee	472,860	Apr. 12	1286	330	59	257
Casket-handle	J. McCarthy	472,195	Apr. 5	290	76	59	55
Caster	M. A. Cutter	474,576	May 10	1118	286	59	863
Caster	H. C. Deane	472,254	Apr. 5	389	101	59	72
Caster	A. Hardenbergh and W. C. Frechley	473,924	May 3	61	12	59	648
Caster attachment	J. H. Moran	475,136	May 17	2003	506	59	1050
Caster Furniture	R. R. Parrish	477,573	June 21	2134	531	59	1887
Casting apparatus. Stereotype	J. R. Cummings	472,473	Apr. 5	729	186	59	138
Casting apparatus. Stereotyper's	J. R. Cummings	472,475	Apr. 5	731	187	59	138
Casting cannon. Apparatus for	R. A. Robertson, Jr	474,860	May 17	1572	401	59	965
Casting machine. Type	H. S. Popp	475,517	May 24	2603	661, 662	59	1183
Casting metals. Apparatus for	J. J. C. and V. E. Smith	477,231	June 21	1592	390	59	1780
Casting. Mold	F. J. Wooster	475,652	May 24	2807	711	59	1223
Castings. Method of and apparatus for making metal	W. L. Clark	473,382	Apr. 19	2173	546	59	439
Castings. Polisher for metal	E. J. Case	476,248	June 7	25	5	59	1444
Catamenial bandage	A. Chapman	475,199	May 17	2097	530	59	1069
Catamenial sack	N. M. Dyer	472,053	June 28	2917	729	59	2055
Catamenial sack	H. F. Ferguson	474,378	May 10	801	209	59	803
Catamenial sack	R. I. Odell and C. S. Howell	476,676	June 7	671	163	59	1570
Catamenial sack	H. Smith	475,820	May 31	3090	782	59	1290
Catching-tool	R. C. Groom	473,739	Apr. 26	2766	695	59	574
Cattle dehorner and plant-pruner. Combined	E. B. Stauber	472,146	Apr. 5	213	57	59	40
Cattle-guard	G. W. Cashell	475,233	May 17	2153	545	59	1080
Cattle-guard	P. Merrill	472,897	Apr. 12	1345	345	59	269
Cattle-guard. Surface	G. W. Miller	473,327	Apr. 19	2067	520	59	419
Cattle-tie	J. O. Davis	476,523	June 7	450	107	59	1525
Cauterizing-point holder	C. Sack	474,972	May 17	1749	443	59	1001
Ceiling-panel. Sheet-metal	F. G. Caldwell	476,185	May 31	3676	929	59	1406
Cement, &c. Machine for applying	H. D. Stone	478,031	June 28	2887	721	59	2050
Cement. Mold for forming castings from	S. P. McKelvey	474,143	May 3	397	99	59	715
Cementing wells and cisterns. Device for	W. H. H. Davis	473,628	Apr. 26	2892	725	59	599
Centrifugal apparatus	C. L. Cairns	476,979	June 14	1170	283	59	1683
Centrifugal drier	T. Haynes	477,413	June 21	1885	464	59	1837
Centrifugal machine	H. W. Lafferty	474,389	May 10	816	213	59	805
Centrifugal machine	J. Laidlaw	473,322	Apr. 19	2058	517, 518	59	417
Centrifugal machine	R. D. Weaver	475,225	May 17	2133	540	59	1076
Chain coupling-link. Drive	C. E. Hart	477,895	June 28	2679	670	59	2008
Chain. Drive	C. E. Hart	473,392	Apr. 19	2194	551	59	443
Chain. Drive	C. E. Hart	476,635	June 7	617	148, 149	59	1560
Chain. Drive	C. E. Hart	476,637	June 7	620	149	59	1560
Chain. Drive	C. E. Hart and C. A. Taplin	476,201	May 31	3702	935	59	1411
Chain. Drive	W. L. Sykes	472,563	Apr. 12	864	222	59	179
Chain elevator. Endless	B. Arnold	473,203	Apr. 19	1869	471	59	378
Chain-link	J. W. Garland	472,166	Apr. 5	241	64	59	46
Chain link. Drive	A. J. Reynolds	475,705	May 24	2887	730	59	1238
Chain link or tip. Ornamental	E. B. Bullock	474,792	May 10	1459	371	59	931
Chain links. Manufacture of drive	G. P. Hart	474,086	May 3	323	77	59	699
Chain. Suspension	A. Drayton	477,522	June 21	2064	514	59	1872
Chair: *See* Barber's chair. Child's chair. Folding chair. Opera-chair. Rocking-chair. Surgical chair. Window-chair.							
Chair	C. E. Davis	477,106	June 14	1371	334	59	1724
Chair and sofa-bed. Combined	R. Lehmann	473,937	May 3	85	19	59	653
Chair-seat-spring support	J. A. Staples	474,536	May 10	1050	269	59	849
Chalk-line holder	A. Tache	472,593	Apr. 12	904	232	59	186
Chalk-sharpener	F. A. Purcell and J. Morgan	477,310	June 21	1729	423	59	1806
Chamber-vessel	E. Wenigmann	474,617	May 10	1181	300	59	875
Chamber-vessel support	G. R. Rudrof	472,926	Apr. 12	1243	319	59	248
Change-maker and check-receiver. Automatic electric	T. Mangan	478,011	June 28	2855	714, 715	59	2044
Change receiver	D. B. Conway	475,673	May 24	2836	718	59	1228
Change receiver and transfer table	W. R. Uchtmann	476,703	June 7	711	175	59	1578
Charcoal-kilns. Arresting and extinguishing combustion in	A. Vickers	477,875	June 28	2649	662	59	2002
Chart. Builder's	F. H. Kindl and C. V. Childs	472,266	Apr. 5	408	105	59	76
Chart. Interchanging word or number	W. M. Gilmore	474,732	May 10	1357	344	59	910
Check-bit	L. C. Swift	475,634	May 24	2782	704	59	1213

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Check, draft, or other money order or instrument	W. T. Doremus	472,864	Apr. 12	1292	332	59	258
Check-book	K. G. Bareis	473,107	Apr. 19	1693	430	59	346
Check-book	C. A. Squire	474,612	May 10	1168	297	59	872
Check-receptacle	H. W. Matthies	476,888	June 14	1020	247	59	1653
Checks. Lock-stub for sale	A. N. Southwick	472,235	Apr. 5	357	92	59	67
Checkers. Construction of	H. Davidson	477,248	June 21	1627	397	59	1787
Checking device	S. O. Tuerk	476,333	June 7	169	41	59	1469
Checkrein worker and hook	O. Kennedy	477,549	June 21	2105	523	59	1881
Chenille. Manufacturing	D. S. Williams	477,394	June 21	1857	457	59	1831
Chenille. Woven	D. S. Williams	477,395	June 21	1858	457	59	1831
Cherry-picker	G. Morris	476,059	May 31	3468	875	59	1366
Child's chair	H. S. Carley	476,034	May 31	3422	864	59	1357
Chime or bell. Electric	J. H. Hunter	476,463	June 7	366	85	59	1508
Chimney-top	G. W. and J. M. Powers	474,689	May 10	1296	332	59	898
Chimney-top	M. M. Raymond	473,853	Apr. 26	2936	739	59	607
Chiseling, drilling, or prospecting machine	W. Gehring	473,549	Apr. 26	2445	619	59	512
Chopper: *See* Cotton-chopper. Meat-chopper.							
Chronometer-escapement	F. Pequegnat	474,301	May 3	646	163	59	762
Chuck. Tool-	R. C. Eilrich	475,055	May 17	1876	475	59	1026
Churn	J. M. Critcher	475,848	May 31	3142	797	59	1300
Churn	J. C. George	476,047	May 31	3442	869	59	1360
Churn	D. H. Parker	477,063	June 14	1301	316	59	1711
Churn	N. Rolland and H. François	475,346	May 24	2331	597; 598	59	1132
Churn	W. Walter	475,097	May 17	1946	493	59	1038
Churn and butter-worker. Combined	E. Silen	472,830	Apr. 12	1247	319	59	249
Churn-dasher	C. Berat	473,900	May 3	6	2	59	638
Churn-dasher	J. H. Edgerly	474,117	May 3	363	87	59	707
Churn-dasher	I. F. Sterling	472,081	Apr. 5	106	29	59	22
Cigar and ash holder	E. A. Tibbits and C. W. Sadler	473,646	Apr. 26	2620	660	59	546
Cigar-bunching machine	N. H. Borgfeldt	472,331	Apr. 5	511	132	59	96
Cigar-case	M. J. Strain	474,613	May 10	1169	297	59	872
Cigar-cutter	J. H. Bowen	474,626	May 10	1192	303	59	877
Cigar-cutter	M. L. Dixon	477,249	June 21	1628	397	59	1787
Cigar-mold	F. C. Miller	476,666	June 7	660	160	59	1567
Cigar-perforator	D. Castro	474,793	May 10	1493	371	59	931
Cigar pressing and bundling machine	J. Broda	475,290	May 24	2235	575	59	1113
Cigar-stamping machine	A. D. Cunny	474,163	May 3	426	102	59	721
Cigar-tip cutter	W. H. Lilly	476,660	June 7	652	158	59	1566
Cigar-wrapper-cutting machine	G. W. Tanner	474,107	May 3	352	84	59	705
Cigarette-machine	H. Bauer	473,108	Apr. 19	1694	430; 431	59	346
Cigarette-machine	H. Bohls	472,101	Apr. 5	140	38, 39	59	27
Cigarette-machine	J. B. Pollard	475,341	May 24	2321	595; 596	59	1130
Circuit-closer	C. H. Delano	473,499	Apr. 26	2366	600	59	498
Circuit-closer. Thermotic	W. H. Tapley	477,315	June 21	1734	425	59	1807
Circuit-controlling device	M. Thum	473,595	Apr. 26	2544	641	59	532
Circuits. Keyboard system for metallic	J. A. Seely	476,494	June 7	412	96	59	1517
Cistern-cleaner	C. R. Jenne	477,760	June 28	2457	614	59	1967
Cistern-cleaner	G. W. McConnell	477,567	June 21	2128	529	59	1885
Cistern-cleaner	F. Overton and J. Faught	476,678	June 7	673	164	59	1571
Cistern. Self-cleaning	A. D. Strong	472,488	Apr. 5	750	191	59	142
Cisterns, &c. Device for cleaning	W. J. Maltby and A. Belcher	477,908	June 28	2696	675	59	2012
Clamp: *See* Fence-clamp. Plumber's clamp. Fishing-rod joint-clamp. Pulley-clamp. Rope-clamp. Floor-clamp. Rubber-dam clamp. Grape-vine clamp. Saw-clamp. Hose-clamp. Shade-finishing clamp. Miter-clamp. Track-clamp. Molder's-flask clamp. Trolley-wire clamp. Plow-handle clamp.							
Clamp	W. H. E. Brande	474,719	May 10	1340	341	59	907
Clasp: *See* Corset-clasp. Shoe-clasp. Pen and pencil clasp. Suspender-clasp.							
Clasp	L. H. Buell	474,156	May 3	416	100	59	719
Clasp	M. Epple	474,521	May 10	1026	264	59	846
Clasp	E. K. Kelly	473,629	Apr. 26	2598	653	59	542
Clasp	H. F. Quein	477,154	June 14	1441	353	59	1738
Clasp	E. J. Steele	474,537	May 10	1052	269	59	850
Clasp	J. S. Young	474,277	May 3	600	149	59	754
Clay, ores, &c. Screen for	E. A. Austin	476,438	June 7	333	75, 76	59	1502
Clay pipe	W. J. Fryer	474,006	May 3	190	45	59	675
Clay. Preparing	P. Arnold	475,915	May 31	3247	820	59	1321
Clay-reducer	W. Burkman	475,483	May 24	2547	648; 649	59	1172
Cleaner: *See* Boiler-cleaner. Flue-cleaner. Coal-cleaner. Grain-cleaner. Cistern-cleaner. Peanut-cleaner. Cotton-cleaner. Slate-cleaner. Dish-cleaner.							
Cleaning and scouring compound	C. H. Peterson and O. C. Ruge	475,413	May 24	2434	.....	59	1150
Cleat. Wire-	A. P. Seymour	476,827	June 14	919	225	59	1633
Clevis	R. L. Kirby	474,747	May 10	1361	349	59	915
Clevis	R. A. Marshall	472,132	Apr. 5	195	52	59	36
Clevis	G. Saxby	476,899	June 14	1034	251	59	1656
Clevis. Plow-	J. M. Norris	474,681	May 10	1284	327	59	895
Clip: *See* Dash-bar clip. Tug-clip.							
Clip	R. W. Jones	472,298	Apr. 5	454	117	59	86

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Clock	W. D. Davies	474,858	May 3	284	68	59	692
Clock. Calendar-	A. M. Lane	473,424	Apr. 19	2238	562; 563	59	451
Clock. Calendar-	W. B. Martindale and E. R. Malmborg.	472,952	Apr. 12	1433	366	59	286
Clock-case	E. Davies	472,162	Apr. 5	237	63	59	45
Clock-chime	G. L. Cummings	474,371	May 10	791	206	59	800
Clock. Electric alarm	B. Franklin	477,206	June 21	1543	378	59	1772
Clock. Electric self-winding	F. M. Schmidt	475,809	May 31	3070	777	59	1286
Clock-hand remover	G. E. Hollis	478,009	June 28	2859	714	59	2043
Clock-motor. Electric	A. Reckenzaun	473,960	May 3	122	28	59	661
Clock-operating device	C. M. Burton and J. C. Gould	472,028	Apr. 5	13	4	59	5
Clock-synchronizer. Electric	J. W. and C. F. Du Laney	477,049	June 14	1278	310	59	1706
Clod-crusher	W. Rapp	472,770	Apr. 12	1166	299	59	233
Closet: *See* Dry closet. Water-closet.							
Closet-seats. Wood-working machine for shaping	F. F. Wichard	473,276	Apr. 19	1985	498	59	403
Cloth-cutting machine	P. Howe	472,172	Apr. 5	252	66	59	47
Cloth-cutting machine	H. G. Rogowski	472,715	Apr. 12	1090	280	59	219
Cloth-finishing apparatus	J. Kirk and B. Lee	473,398	Apr. 19	2202	552	59	444
Cloth-guiding machine	J. E. Windle	472,203	Apr. 5	310	80	59	56
Cloth-laying machine	P. Howe	472,173	Apr. 5	253	66, 67	59	47
Cloth-napping machine	C. T. Daniels and G. O. Wickers	474,334	May 3	724	189	59	776
Cloth-winding machine	J. J. Zähner-Mösli	473,602	Apr. 26	2550	643	59	533
Clothes-drier	R. H. Burdge	472,188	Apr. 5	279	73	59	53
Clothes-drier	A. Caron	475,751	May 31	2968	753	59	1267
Clothes-drier	C. E. Dodd	474,950	May 17	1710	435	59	994
Clothes-drier	G. W. Langdon	475,243	May 17	2167	551	59	1083
Clothes-drier	J. McKinnan	477,439	June 21	1924	475	59	1844
Clothes-drier	R. N. Reed and F. Buob	473,781	Apr. 26	2822	709	59	585
Clothes-drier	G. T. Sampson	476,416	June 7	296	69	59	1496
Clothes-drier	H. Stevenson	477,968	June 28	2781	697	59	2030
Clothes-drier	J. B. Wolfe	473,601	Apr. 26	2549	642	59	533
Clothes-line	D. F. Covert	475,675	May 24	2838	718	59	1229
Clothes-line fastener	W. Lenckert	476,471	June 7	374	87	59	1510
Clothes-line reel	G. H. Copeland	475,038	May 17	1850	469	59	1020
Clothes-pounder	J. G. Davis	474,223	May 3	525	128	59	739
Clothes-pounder	M. M. Olin	475,887	May 31	3209	812	59	1313
Clothes-pounder	H. Stover	475,090	May 17	1939	491	59	1037
Clover-huller casing	J. N. Kallor and E. L. Williams	473,259	Apr. 19	1960	492	59	397
Clover-huller frame	J. N. Kallor	472,792	Apr. 12	1198	308	59	239
Clover-hullers. Rake mechanism for	J. N. Kallor and E. L. Williams	473,701	Apr. 26	2705	681	59	562
Clover-hulling machine	J. N. Kallor	472,218	Apr. 5	333	86	59	62
Clover-hulling-machine blast-board	J. N. Kallor	474,604	May 10	1157	294	59	870
Clover-hulling machines. Feed-table for	J. N. Kallor	474,134	May 3	384	92	59	712
Clutch	J. S. Adams	477,163	June 14	1458	358	59	1742
Clutch	G. Bender	477,985	June 28	2803	702; 703	59	2035
Clutch	G. H. Eaton and E. E. Barber	475,238	May 17	2160	548; 549	59	1081
Clutch	H. W. Hill	476,640	June 7	622	150	59	1560
Clutch	H. W. Hill	476,641	June 7	625	151	59	1561
Clutch	J. Nenert	474,183	May 3	459	111	59	726
Clutch	J. Walker	474,429	May 10	882	230	59	819
Clutch	L. J. Wing	475,838	May 31	3121	790; 791	59	1296
Clutch. Electric	P. W. Willans	473,042	Apr. 19	1594	405	59	329
Clutch. Friction	E. E. Clark	477,244	June 21	1621	396	59	1785
Clutch. Friction	J. R. Morgan	472,739	Apr. 12	1123	288; 289	59	225
Clutch. Power-transmitting	E. Winans	474,934	May 17	1678	429	59	988
Clutch. Pneumatic	J. Brusie	473,380	Apr. 19	2171	545	59	439
Clutch-shifter	J. S. Adams	474,203	May 3	492	118	59	735
Clutching mechanism. Hydraulic	F. M. Barney	473,444	Apr. 26	2273	574	59	480
Coal and other minerals. Machinery for cutting	L. B. and C. W. Atkinson and W. T. Goolden.	476,593	June 7	555	131; 132	59	1546
Coal and other minerals. Separating and cleaning	C. Lührig	474,022	May 3	219	52, 53	59	680
Coal and wood cabinet	J. R. Egan	475,303	May 24	2255	581	59	1117
Coal-cleaner	A. K. Hills	474,045	May 3	262	64	59	688
Coal-cutting machine	J. H. McEwen	476,162	May 31	3638	921	59	1400
Coal-cutting machine	I. Wantling and J. T. Johnson	475,833	May 31	3114	789	59	1295
Coal-drill	C. S. Sheppard	473,788	Apr. 26	2832	711	59	587
Coal or other minerals. Machinery for cutting	C. W. and L. B. Atkinson	476,594	June 7	556	132; 133	59	1546
Coal-screen	J. J. Coyne	477,516	June 21	2047	509	59	1869
Coal washing and separating machine	J. Pollock	473,957	May 3	116	27	59	659
Coat-hanger	W. C. Perkins	472,508	Apr. 5	788	201	59	150
Cock	R. N. Pratt	477,606	June 21	2188	542	59	1807
Cock	R. N. Pratt	477,607	June 21	2189	542	59	1807
Cock and coupling. Combined	S. W. Johnson and T. G. Clayton	477,125	June 14	1396	339	59	1729
Cock. Cylinder drain-	R. P. Capwell	472,855	Apr. 12	1279	327	59	256
Cock. Gage-	H. F. Bingham	476,222	May 31	3746	946	59	1419
Cock or analogous valve. Stop-	P. Zimmermann, Jr	475,530	May 24	2625	668	59	1187
Cock or tap	U. André and O. Durand	476,113	May 31	3557	895	59	1383
Cock. Plug-	M. G. Wilder	472,003	Apr. 5	118	32	59	24
Cock. Safety gas-	J. Clark	473,611	Apr. 26	2565	646	59	536
Coffee-mill and storage-receptacle. Combined self-feeding	F. J. Hollis	473,394	Apr. 19	2196	551	59	443
Coffee-pot	W. H. Wrigley	476,718	June 7	732	181	59	1583
Coffee. Roasting	C. Salomon	474,531	May 10	1040	.....	59	848
Coffin-fastener	F. C. Riddle	476,315	June 7	130	31	59	1463
Coin-controlled apparatus	G. F. W. Schultze	475,743	May 24	2953	748	59	1249
Coin-controlled mechanism	G. H. Powell and A. B. Chandler	477,871	June 28	2641	660	59	2001
Coin-delivering apparatus	G. M. Lockwood	475,086	May 17	1933	490	59	1035
Coin-freed seat. Automatic	J. and L. Quittner	473,264	Apr. 19	1970	494	59	399

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Coin-handling facilitator	J. O. Boggs	475,660	May 24	2819	714	59	1225
Coin-holder	H. E. Howe	475,563	May 24	2677	640	59	1197
Coin-holding box	R. H. Forsyth	476,625	June 7	601	144	59	1556
Coin-mailing grip	M. Hazzard	475,397	May 24	2406	614	59	1146
Coke. Making	F. J. Jones	472,621	Apr. 12	952	246, 247	59	194
Coke-oven	W. T. Gates and G. H. Sharp	472,115	Apr. 5	166	45	59	31
Collar	M. Friedly	477,207	June 21	1545	379	59	1773
Collar, and shaper-guard. Combined eccentric, counterbalancing-	W. T. Webb	474,274	May 3	597	148	59	753
Collar. Breast	J. W. Eggleston	472,866	Apr. 12	1297	333	59	259
Collar fastener. Horse	E. E. Armstrong	474,712	May 10	1324	338	59	904
Collar fastener. Horse	A. Ritter	474,147	May 3	402	98	59	716
Collar fastener. Horse	J. Thielen	474,878	May 17	1597	407	59	971
Collar. Horse	C. F. Allen	475,430	May 24	2461	627	59	1155
Collar. Horse	H. C. Etzkorn	475,049	May 17	1830	469	59	1020
Collar. Horse	C. A. Pettle	475,606	May 24	2738	694	59	1210
Collar. Horse	G. I. Snell and L. Gillette	476,509	June 7	516	122	59	1539
Collar. Horse	B. J. Zahn	473,050	Apr. 19	1604	408, 409	59	331
Collar pad. Horse	J. F. Glidden	474,524	May 10	1032	265	59	847
Color-grinding machine	H. J. Weckauf	477,722	June 28	2393	597, 598	59	1955
Coloring and burnishing composition	J. F. Thompson	473,679	Apr. 26	2668	.....	59	556
Colter attachment. Plow	W. G. Lewis	476,396	June 7	270	68	59	1490
Colter attachment. Plow	W. J. Stowe	472,082	Apr. 5	107	29	59	22
Colter. Plow	A. A. Yackee	472,186	Apr. 5	277	72	59	52
Column. Building	H. F. Stuhr	476,905	June 14	1051	254	59	1659
Column. Structural	A. Coffin	477,925	June 28	2723	681, 682	59	2017
Combing machine. Fiber	D. Barnett and D. Black	474,513	May 10	1012	260	59	843
Combing-machines. Apparatus for actuating dabbing-brushes for	J. Campbell and A. J. Bramma	475,044	May 17	1844	467	59	1019
Combination-lock	A. S. Hobart	476,642	June 7	627	151	59	1561
Combination-lock	J. E. Knowles	474,017	May 3	210	50	59	678
Combination-lock	A. C. Lawrence	476,751	June 7	785	193	59	1594
Combination-lock	J. E. R. Riddick	476,821	June 14	912	223	59	1632
Commode	G. E. Shaw	473,360	Apr. 19	2132	535	59	431
Commutator-brush	C. L. Coffin	475,668	May 24	2829	716	59	1228
Commutator-brush	R. Hirsch and H. Meminger	474,600	May 10	1150	.....	59	869
Commutator-brush	G. Meyer	473,195	Apr. 19	1257	468	59	376
Commutator connection for electric motors or generators.	C. G. Curtis	473,567	Apr. 26	2493	630	59	522
Commutator. Detachable	C. H. Gaylord	477,175	June 14	1482	363	59	1747
Compass. Automatic recording	J. J. Townsend	477,283	June 21	1680	411, 412	59	1797
Compass. Mariner's	R. Oliver	478,017	June 28	2862	717	59	2045
Compass. Recording	J. J. Townsend	477,282	June 21	1676	410, 411	59	1796
Compasses. Beam	H. Haslam	476,390	June 7	241	59	59	1484
Compasses. Blackboard	H. P. Smith	473,244	Apr. 19	1938	487	59	393
Compasses. Electric recording device for	C. L. Jaeger	472,124	Apr. 5	180	48, 49	59	34
Composing-bar. Adjustable angular and circular	A. H. Arnold	474,649	May 10	1227	314	59	884
Composition of matter and producing the same	C. C. Carroll	475,392	May 24	2389	.....	59	1143
Compositor's case	G. White	476,847	June 14	951	231	59	1640
Compressing apparatus	L. A. Parisher	473,472	Apr. 26	2325	588, 589	59	490
Compound engine	J. F. Murphy	474,643	May 10	1218	312	59	882
Compound engine	G. S. Strong	477,279	June 21	1670	408, 409	59	1795
Compound engine. Single-cylinder	E. J. Woolf	475,427	May 24	2457	626	59	1155
Compressor. Roller	J. L. Myers	476,233	May 31	3766	950	59	1423
Concentrator	G. Gates	477,111	June 14	1377	336	59	1726
Concentrator	A. Schulenburg	473,644	Apr. 26	2616	659, 660	59	546
Concentrator	J. Tulloch	476,500	June 7	419	97	59	1519
Concrete-mixer	G. F. and H. N. Gray	477,361	June 21	1806	442	59	1820
Concrete, mortar, &c. Mixing-machine for	J. Skinner	475,618	May 24	2759	699	59	1214
Condenser	E. Theisen	477,471	June 21	1977	491	59	1855
Condenser. Fresh-water	J. F. Chase	475,036	May 17	1847	468	59	1020
Condenser. Sectional surface	E. Nelson	477,812	June 28	2532	635	59	1981
Condenser. Sectional surface	E. Nelson	477,813	June 28	2537	635, 636	59	1981
Condensing apparatus. Steam	W. E. Prall	475,795	May 31	3033	768	59	1279
Conductor. Anti-inductive	B. H. Wesslau	475,648	May 24	2801	709	59	1222
Conductor. Expanding	F. H. Moore	474,563	May 10	1100	281	59	860
Conveyer	J. H. Diel	474,002	May 3	186	44	59	674
Conveyer	J. H. L. Tuck	474,786	May 10	1443	366	59	927
Conveyer. Blank	F. H. Hardman	477,116	June 14	1384	337	59	1727
Conveyer. Pneumatic	E. McConnell	477,692	June 28	2148	587	59	1947
Conveyer. Spring	O. L. Jones	473,318	Apr. 19	2050	515	59	415
Conveying apparatus	T. S. Miller	474,047	May 3	264	61	59	688
Conveying mechanism	J. M. Dodge	476,615	June 7	587	140	59	1553
Conveying mechanism	J. M. Dodge	476,616	June 7	588	140, 141	59	1553
Cooker. Compound	C. McConalogue	472,384	Apr. 5	393	151	59	112
Cooker. Steam	F. O. Sundwall and E. Blakealee	473,096	Apr. 19	1669	424	59	343
Cooking apparatus. Combined steam and hot-air	C. H. Dexter	475,678	May 24	2842	719	59	1230
Cooking apparatus. Electric	G. D. Burton and E. E. Angell	475,190	May 17	2084	527	59	1067
Cooking apparatus. Steam	R. C. Andersen	474,620	May 10	1185	301	59	875
Cooking by electricity. Apparatus for	G. D. Burton and E. E. Angell	475,187	May 17	2080	525	59	1066
Cooking or culinary vessel	J. P. Eustis	476,137	May 31	3594	908	59	1390
Cooking utensil	R. C. Andersen	474,619	May 10	1184	301	59	875
Cooking utensil	A. R. Isaacs	476,746	June 7	779	191	59	1592
Cooking-utensil attachment	P. Lee	473,399	Apr. 19	2202	553	59	445

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cooking utensil. Steam	C. F. Burnap	475,435	May 24	2467	629	59	1156
Cooking-vessel	R. C. Andersen	474,622	May 10	1188	302	59	876
Cooler: *See* Axle-cooler. Refrigerator water-cooler. Beer-cooler.							
Cooler	C. C. King	477,425	June 21	1898	467, 468	59	1839
Cooling apparatus	S. L. Smith	473,793	Apr. 26	2839	713	59	588
Coop	J. B. Cooper	472,615	Apr. 12	941	242, 243	59	192
Copies. Apparatus for producing manifold	W. M Gordon	477,000	June 14	1201	291	59	1690
Copying and recording apparatus Autographic	A. L. Peirce	472,743	Apr. 12	1128	290	59	226
Copying device. Manifold	L. G. Reynolds	475,155	May 17	2028	512	59	1055
Copying machine. Writing and print	M. Wright	477,482	June 21	1995	495, 496	59	1858
Copying press. Letter	J. W. McCrone	476,061	May 31	3470	875	59	1367
Copying-presses. Blotter-bath for	F. F. Osborne	472,681	Apr. 12	1031	266	59	207
Cord-machine	G. H. Spaulding and F. L. Moore	473,369	Apr. 19	2146	537, 538	59	434
Corer. Apple	W. H. Boutell	474,077	May 3	307	74	59	697
Corer, parer, and slicer. Combined	A. B. Brunell	475,031	May 17	1839	466	59	1018
Cork and corkscrew. Combined	M. Beust	476,777	June 14	833	205	59	1616
Cork-extracting device	S. D. Webb	474,788	May 10	1446	366, 367	59	928
Cork-extractor	L. C. Mumford	474,480	May 10	959	247	59	832
Corkscrew	W. R. Clough	474,055	May 3	281	68	59	691
Corn-chaff or cellulose. Machine for cleaning	T. J. Reed	472,548	Apr. 12	845	216	59	174
Corn for domestic use. Machine for preparing green	P. S. Rich	474,762	May 10	1402	355	59	919
Corn-popper	T. Clark	475,666	May 24	2627	716	59	1227
Corn. Process of and apparatus for the manufacture of alimentary products from	H. Bates, Jr	476,599	June 7	565	134	59	1548
Corn-sheller. Separating	M. G. Shindle	472,181	Apr. 5	269	70	59	51
Corn-shocker	F. B. and J. T. Kendall	476,389	June 7	258	61	59	1488
Corn-thinner	J. L. Tandy	473,678	Apr. 26	2667	672	59	555
Cornice-press	F. M. Leavitt	476,946	June 14	1121	269, 270	59	1674
Corpses. Arm-rest for	T. Streeter	473,200	Apr. 19	1866	470	59	378
Corrugating-machine	W. J. Plecker	473,019	Apr. 19	1552	395	59	322
Corset	M. M. Bliss	472,613	Apr. 12	938	242	59	192
Corset	S. Meier	472,931	Apr. 12	1396	358	59	280
Corset	N. E. Miles	475,882	May 31	3203	810	59	1312
Corset	V. H. Oberly	475,337	May 24	2315	593	59	1129
Corset-boning implement	J. A. House	475,562	May 24	2676	640	59	1197
Corset-clasp	G. J. Pforr	477,819	June 28	2550	638	59	1984
Corset-fastening	C. R. Viehofer	472,087	Apr. 5	113	30	59	23
Corsets. Abdominal belt for	A. L. Weeks	477,976	June 28	2792	699	59	2032
Cot. Spring and canvas	W. Miller	475,788	May 31	3024	766	59	1277
Cotton-chopper	D. Balshaw	472,975	Apr. 19	1478	377, 378	59	305
Cotton-chopper	I. E. Gay	476,628	June 7	609	146	59	1558
Cotton-chopper	C. W. Williams	476,586	June 7	538	128	59	1543
Cotton cleaner and condenser	W. B. Wherry and W. F. Smith	476,710	June 7	721	177	59	1580
Cotton-gin attachment	E. C. Scott	475,987	May 31	3360	847	59	1343
Cotton-gin condenser	D. A. Sailor	474,799	May 10	1467	373	59	932
Cotton-gin roll-box	E. C. Scott	475,988	May 31	3361	847	59	1343
Cotton-gin. Saw	A. M. Crooker	475,206	May 17	2108	532, 533	59	1072
Cotton-press	J. Price	474,482	May 10	963	248, 249	59	833
Cotton-press	J. L. Pridemore	478,070	June 28	2946	735, 736	59	2060
Cotton to gins. Apparatus for elevating, distributing, and feeding seed-	S. D. Murray	472,607	Apr. 12	928	240	59	190
Couch. Adjustable	C. Geertz	476,922	June 14	1075	259	59	1665
Couch and cradle. Combined folding	W. B. and C. K. Taliaferro	473,181	Apr. 19	1838	462	59	372
Counter	J. Gaetje	478,002	June 28	2846	712	59	2042
Counter-protector	C. A. Schulte	472,771	Apr. 12	1167	299	59	233
Coupling: *See* Air and steam coupling. Friction-coupling. Hose-coupling. Air-brake coupling. Pipe-coupling. Car-coupling. Thill-coupling. Eccentric-coupling. Vehicle-spring coupling. Electric-wire coupling.							
Coupling	C. W. Hunt	472,707	Apr. 12	1080	277	59	217
Coupling-hook	C. S. Higgins	476,013	May 31	3394	856	59	1350
Cover fastener. Slip	T. Hertwig	474,525	May 10	1033	265	59	847
Cracker-cabinet	F. C. Acker	472,020	Apr. 5	1	1	59	3
Cracker-machine	C. S. Fowler	474,168	May 3	434	105	59	722
Crackers, &c. Machine for cutting and shaping	E. Jordon	475,280	May 17	2220	569, 570	59	1095
Crane	W. G. Stringer	475,092	May 17	1941	491	59	1037
Crane	J. Vanes	473,682	Apr. 26	2673	673	59	557
Crane mechanism. Hydraulic	G. D. Bulmer	477,621	June 21	2234	558, 559	59	1905
Crane. Overhead traveling	T. R., Sr., and J. R. Morgan	475,883	May 31	3204	810, 811	59	1312
Crane. Traveling	W. H. Morgan	477,437	June 21	1922	474	59	1843
Crank mechanism	G. W. Meigs and E. Leyden	473,942	May 3	93	21, 22	59	655
Crate for shipping baskets	G. W. Worden	473,047	Apr. 19	1601	407, 408	59	330
Crate. Poultry	H. C. Munger	472,903	Apr. 12	1350	348	59	271
Crayon-machine	J. S. Cowdery, H. J. Curtis, and E. L. Liedke.	476,038	May 31	3428	866	59	1358
Crayon-machine	C. H. Liedke	476,051	May 31	3450	870, 871	59	1362

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cream-separator. Centrifugal	C. A. Hult	473,005	Apr. 19	1530	390, 391	59	318
Creamer. Milk-	V. W. Blanchard	475,638	May 24	2817	713, 714	59	1225
Creasing and folding machine	J. Corbett	472,238	Apr. 5	386	101	59	72
Crib. Folding	C. S. Rickard	477,311	June 21	1730	423	59	1806
Crupper-strap fastener	F. L. Armas	475,655	May 24	2813	713	59	1225
Cruppers. Crimping-machine for	H. Leibe	477,014	June 14	1221	296	59	1694
Crusher: *See* Clod-crusher. Ore crusher. Meat-crusher. Stone-crusher.							
Crushing and grinding mill	G. S. Knapp	472,367	Apr. 5	563	145	59	106
Crushing-mill	C. E. Philes	475,284	May 17	2227	571	59	1096
Crushing-mill	F. A. Wiswell	473,280	Apr. 19	1995	500, 501	59	404
Cuff-fastener. Link	C. F. Jenks	476,540	June 7	473	112	59	1531
Cuff-holder	W. W. Anderson	474,803	May 17	1474	375	59	947
Cuff-holder	N. B. Eccleston	472,343	Apr. 5	532	138	59	99
Cuff-holder	W. C. Shaw	474,648	May 10	1226	314	59	884
Culinary apparatus	W. E. Lewis	473,400	Apr. 19	2203	553	59	445
Culinary article	M. J. Denison	472,527	Apr. 12	823	209	59	170
Cultivator	R. P. Ashurst	475,843	May 31	3139	794	59	1298
Cultivator	H. D. Babcock	473,491	Apr. 26	2355	597	59	496
Cultivator	G. W. Brown and O. A. Johnson	476,976	June 14	1164	282	59	1682
Cultivator	J. W. Fawkes, Sr	474,377	May 10	798	208, 209	59	802
Cultivator	E. H. Jenkins	472,361	Apr. 5	552	143	59	104
Cultivator	S. Landauer	476,659	June 7	651	158	59	1566
Cultivator	R. H. Little	472,734	Apr. 12	1115	286	59	223
Cultivator	T. H. Noxon	474,144	May 3	399	96, 97	59	715
Cultivator	L. E. Ponton	472,813	Apr. 12	1226	314	59	245
Cultivator	J. D. Simmons	476,834	June 14	930	227	59	1635
Cultivator	W. Sobey	474,309	May 3	671	173	59	766
Cultivator	A. E. Wilder	472,416	Apr. 5	636	163	59	119
Cultivator and weeder. Sulky	Z. Breed	473,289	Apr. 19	2009	505	59	407
Cultivator. Cotton-	J. H. and H. E. Williams	475,101	May 17	1950	494	59	1039
Cultivator. Disk	A. G. Hill	473,257	Apr. 19	1957	491	59	397
Cultivator, harrow, horse-hoe, and vine-puller. Combined	A. Pease	476,299	June 7	109	26	59	1459
Cultivator or plow	J. L. Kerr	477,552	June 21	2108	524	59	1881
Cultivator. Orchard-	J. Schauman	474,763	May 10	1403	356	59	919
Cultivator replanting attachment	J. H. Rowlett	473,964	May 3	129	29	59	602
Cultivator. Riding-	B. F. Butler	477,194	June 14	1510	370	59	1753
Cultivator-shovel	C. A. Anderson	472,970	Apr. 19	1463	375	59	305
Cultivator. Tree-	W. W. Leach	475,124	May 17	1986	503	59	1047
Cultivator. Wheel-	F. Bateman	472,781	Apr. 12	1183	303	59	236
Cultivator. Wheel-	F. W. Vaughan	476,707	June 7	718	177	59	1579
Cup: *See* Lubricator-cup. Sponge-cup. Oil-cup. Umbrella drip-cup.							
Cupping-glass with electrical attachment	F. Thomas	474,977	May 17	1757	445	59	1002
Curb-bit	L. J. Jimenez	472,297	Apr. 5	453	117	59	85
Curbing block. Street-	S. A. Webb	477,721	June 28	2391	597	59	1955
Curling-iron	M. Campbell. (Reissue)	11,237	Apr. 26	3018	760	59	623
Curling-iron. Electrically-heated	A. H. Watson and F. E. Antonini	475,169	May 17	2050	516	59	1059
Curling-tongs	E. Fontaine	472,446	Apr. 5	685	175	59	129
Current-alternator	H. L. Tyler	476,843	June 14	944	230	59	1639
Current motor. Alternating-	M. J. Wightman	476,346	June 7	185	44	59	1472
Curry-comb	G. S. Burnett and T. Sweeney	472,521	Apr. 12	807	208	59	166
Curry-comb	A. C. Decker	476,189	May 31	3681	930	59	1407
Curry-comb	A. C. Rulofson	472,550	Apr. 12	848	217	59	175
Currying and brushing machine	S. A. Johansson	474,325	May 3	701	181	59	772
Curtain-fixture	C. W. Smith	477,232	June 21	1595	391	59	1780
Curtain-fixture	H. M. Sweeney	472,832	Apr. 12	1250	320	59	249
Curtain-hanger	J. W. Leslie	476,469	June 7	372	86	59	1509
Curtain roller. Window-	B. F. Wilkinson	473,990	May 3	165	39	59	670
Curtain supporter and fittings	G. Smith	473,131	Apr. 19	1739	439	59	354
Cushion: *See* Bed-slat cushion.							
Cuspidor	H. B. Millard	473,634	Apr. 26	2602	655	59	543
Cut-off for watering-troughs	C. F. Herman	473,749	Apr. 26	2776	698	59	576
Cut-off for water-troughs. Automatic	W. S. Reagan	477,226	June 21	1585	388	59	1779
Cut-out. Safety	M. Thum	472,084	Apr. 5	110	30	59	22
Cutlery. Die and machine for rolling	I. Hirsch	475,315	May 24	2269	584	59	1120
Cutlery-hardening apparatus	G. E. Smith	477,785	June 28	2491	624	59	1974
Cutlery. Manufacturing	I. Hirsch	475,314	May 24	2268	.....	59	1120
Cutter: *See* Ant-hill cutter. Kraut-cutter. Axle-cutter. Meat-cutter. Band-cutter. Miter-cutter. Biscuit-cutter. Molding-cutter. Bone-cutter. Paper-cutter. Brick and tile cutter. Peach-cutter. Butter-cutter. Pipe-cutter. Cake-cutter. Plug-cutter. Cigar-cutter. Straw-cutter. Cigar-tip cutter. Straw or feed cutter. Fruit or vegetable cutter. Thread-cutter. Tile or brick cutter. Gear-cutter. Wall-paper cutter. Glass-tube cutter. Weed-cutter. Hog-nose cutter.							
Cutter-head	S. J. Shimer	476,563	June 7	563	119, 120	59	1537

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cutting circular pieces from lumber or other materials. Machine for	J. S. Piper	475,247	May 17	2172	553	59	1084
Cutting square holes. Device for	G. C. Gillespie	477,528	June 21	2073	516	59	1874
Cycle-brake	R. M. Woodhead and P. Angois	474,051	May 3	272	66	59	690
Cycle. One-wheeled	J. D. Mattison	475,130	May 17	1994	505	59	1048
Cycle-saddle	C. W. Saladee	475,613	May 24	2752	698	59	1213
Cycle-wheel	N. E. Bennett	473,995	May 3	172	41	59	671
Cycle-wheel	J. Vetterlein	476,433	June 7	323	74	59	1500
Cycle-wheel	C. E. W. Woodward	477,397	June 21	1861	458	59	1832
Cylinder-casing	E. W. Mackenzie-Hughes	473,469	Apr. 26	2323	587	59	490
Cylinder-lock	J. B. Price	477,021	June 14	1229	298	59	1696
Cylinder-lock	E. C. Smith	474,348	May 3	747	194, 195	59	780
Cylinder-lock	C. D. Williams	477,036	June 14	1255	304	59	1701
Dado-head	J. W. Oliver	476,677	June 7	672	163	59	1570
Dam	O. Van Oostrum	476,706	June 7	717	176	59	1579
Dam, weir, or retaining-wall	J. D. Derry	474,988	May 17	1777	449	59	1006
Damper	L. M. Devore	475,079	May 17	1910	485	59	1032
Damper	J. Mayo	475,131	May 17	1995	505	59	1049
Damper. Automatic	J. M. Bradbury and A. B. Griswold	472,102	Apr. 5	144	39	59	27
Damper. Fireplace chimney-flue	F. McConnell	475,985	May 31	3358	846	59	1342
Damper regulator. Furnace-	L. F. Smith	477,275	June 21	1665	407	59	1794
Damper regulator. Pipe-	L. F. Smith	477,276	June 21	1667	407	59	1794
Damper. Stovepipe-	A. S. Newby	476,674	June 7	669	163	59	1569
Damper. Water-cooled	S. B. Dexter	474,227	May 3	530	129	59	740
Dandy-roll	C. B. Richardson and W. H. Pool	473,180	Apr. 19	1836	462	59	372
Dandy-roll	A. J. Tucker	476,968	June 14	1155	278, 279	59	1680
Darning implement	A. Böcher	475,659	May 24	2818	714	59	1225
Dash-bar clip	A. Searls	475,811	May 31	3075	778	59	1287
Dash-board	C. W. Gooding and B. Crossan	472,450	Apr. 5	692	176	59	131
Dash-pot. Steam	A. J. Bates	473,994	May 3	170	40	59	671
Dash. Vehicle-	W. L. Hawes	474,634	May 10	1202	306	59	879
Davit. Boat-	H. E. Bowring	476,923	May 31	3257	822	59	1323
Decorative films. Device for applying	W. H. Coe	474,629	May 10	1196	304	59	878
Decorative films. Packing	W. H. Coe	472,252	Apr. 5	385	101	59	72
Decorticating fiber-bearing plants. Machine for	J. von Oven and C. F. Pauknin	475,794	May 31	3032	768	59	1279
Decorticating jute, ramie, and other fibrous plants. Machine for	F. B. Fremerey	472,988	Apr. 19	1506	383, 384, 385	59	313
Decorticating ramie, &c. Machine for	P. P. Faure	473,110	Apr. 19	1708	432	59	348
Decorticating rhea, &c. Machine for	J. Longmore and W. L. Watson	472,606	Apr. 12	926	239	59	190
Decoy	F. A. and G. Thorn	477,084	June 14	1342	325	59	1719
Dehorner	W. H. Newton	472,139	Apr. 5	202	54	59	38
Dehorning implement	E. M. Samsel	474,696	May 10	1305	333	59	900
Delivery systems. Daily sheet and record-book for	J. C. Sproat	473,973	May 3	140	32	59	664
Dental articulator	J. Payne	474,968	May 17	1742	442	59	1000
Dental cervix-clamp	J. W. Ivory	474,131	May 3	381	91	59	712
Dental drill	C. Rauhe	477,225	June 21	1585	388	59	1779
Dental engine	R. M. Hunter	476,944	June 14	1117	269	59	1673
Dental engine	W. W. Williamson	472,776	Apr. 12	1175	301	59	235
Dental-engine attachment	H. E. Spencer	477,076	June 14	1330	322	59	1716
Dental-engine handpiece	W. M. Speakman	476,496	June 7	414	96	59	1518
Dental-engine shafts and handpieces. Coupling for	J. T. Pedersen	472,683	Apr. 12	1034	267	59	208
Dental flask	W. E. Stiles	476,088	May 31	3510	885	59	1375
Dental-flask holder	E. A. Bryant	476,125	May 31	3572	898	59	1386
Dental mallet	W. E. Wells	472,686	Apr. 12	1038	268	59	209
Dental matrix-retainer	J. W. Ivory	474,132	May 3	382	92	59	712
Dental plugger	M. L. Bosworth	477,619	June 21	2232	558	59	1905
Dental plugger	A. J. Harris	477,411	June 21	1882	463	59	1836
Dental process	J. Payne	474,967	May 17	1738	441	59	999
Dental reflector and tongue-guard	W. E. Andrews	477,791	June 28	2502	627	59	1975
Dental tool	A. M. Harrison	474,011	May 3	202	47	59	677
Denture. Artificial	J. J. Stedman	474,104	May 3	348	83	59	704
Deodorizing device	E. O. Ely	475,547	May 24	2651	674	59	1192
Depurator	J. Nixon	476,548	June 7	485	115	59	1533
Derailing-switch	A. A. Strom	474,976	May 17	1756	445	59	1002
Derrick	G. L. Laughton	477,129	June 14	1406	341	59	1731
Derrick	A. Myers	474,142	May 3	396	96	59	715
Derrick	C. S. Palm	475,221	June 14	2127	538	59	1075
Desk. Hotel-	J. D. D. Mortimer	476,807	June 14	887	218	59	1627
Desk. Office-	L. A. Chase	477,509	June 21	2034	504	59	1866
Desk. School-	G. A. Masters	473,074	Apr. 19	1639	417	59	337
Desk tool-table	G. Larsson	477,762	June 28	2460	615	59	1968
Desk. Writing-	A. E. Shannon	475,813	May 31	3077	778	59	1288
Detector: *See* Pickpocket and coat-thief detector.							
Detergent	W. B. Brittingham	477,403	June 21	1870	.....	59	1834
Diamonds and other stones for cutting purposes. Means for setting	F. Kegel	475,778	May 31	3010	763	59	1275
Die: *See* Leather-cutting die. Screw-cutting die.							
Die-press	J. D. Colomy and W. H. Albee	472,337	Apr. 5	523	136	59	98
Die-sharpening machine	M. L. Bush	473,249	Apr. 19	1943	488	59	394
Die-stock	C. H. Besly	474,805	May 17	1478	376, 377	59	948
Diffusion-battery	G. A. Messick	475,587	May 24	2708	687	59	1204
Digger: *See* Potato-digger.							
Dish-cleaner	S. W. Harman and J. B. Polk	477,860	June 28	2620	656, 657	59	1997
Dish-cleaner	L. Hegler	477,415	June 21	1886	464	59	1837
Disinfectant	H. Jackson	476,276	June 7	71	.....	59	1451
Disinfecting device	A. P. Beck	475,431	May 24	2462	627	59	1156

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Disinfecting device	S. H. Forbes	474,597	May 10	1146	291	59	868
Disintegrating, mixing, and other purposes. Apparatus for	J. A. Young	472,421	Apr. 5	642	164	59	120
Disintegrator and amalgamator. Placer	G. L. Cudner	473,451	Apr. 26	2285	577	59	483
Display device	H. S. Prentiss	477,382	June 21	1839	452	59	1827
Display-frames. Adjustable joint for	W. H. Edsall	473,919	May 3	55	10	59	646
Display-package	G. P. Knapp	476,765	June 7	805	198	59	1598
Display-rack	E. Altman	476,029	May 31	3416	863	59	1355
Display-rack	P. Meyer	475,787	May 31	3024	766	59	1277
Display-rack	C. Puddifoot	473,709	Apr. 26	2715	683	59	564
Display-stand	S. T. Dickens	476,133	May 31	3587	905	59	1389
Distillation and apparatus used therefor	A. W. Ellis	473,659	Apr. 26	2637	{665, 666}	59	550
Distillation of hydrocarbon or other oils	C. M. Pielsticker	477,153	June 14	1438	{352, 353}	59	1738
Distilling and rectifying apparatus	J. Schafhaus	476,930	June 14	1091	{263, 264}	59	1668
Distilling apparatus. Water-	W. Rochlitz	473,164	Apr. 19	1791	452	59	365
Distilling carbonaceous material	B. Brazelle	472,614	Apr. 12	939	242	59	192
Ditching-machine	D. W. Scott	473,023	Apr. 19	1560	397	59	324
Ditching-machine	J. J. Wishard	473,279	Apr. 19	1991	{499, 500}	59	404
Dividers	J. W. Beaman	472,977	Apr. 19	1481	{378, 379}	59	309
Dock. Dry-	O. von Nerta	472,566	Apr. 12	868	223	59	179
Docket, record, or similar book	E. C. Fry	473,219	Apr. 19	1899	479	59	385
Doll	J. and P. Fleischmann	477,892	June 28	2676	669	59	2007
Domestic press	G. W. Pelton	473,407	Apr. 19	2214	556	59	447
Door	W. T. Gregg	473,625	Apr. 26	2591	652	59	540
Door-check	C. Bew	475,105	May 17	1957	496	59	1041
Door-check	B. Deffenbaugh	475,388	May 24	2396	612	59	1144
Door-check	J. J. Holwell	472,880	Apr. 12	1317	338	59	263
Door-check	L. Samuel	473,785	Apr. 26	2825	710	59	586
Door-check	Z. Swope	476,328	June 7	154	38	59	1467
Door-check	F. E. Welch	475,368	May 24	2361	605	59	1138
Door-check	C. T. Wells	476,910	June 14	1060	256	59	1661
Door check and closer. Pneumatic	J. S. Shrawder	476,932	June 14	1094	{264, 265}	59	1669
Door-check. Pneumatic	C. O. Case	475,930	May 31	3267	824	59	1324
Door. Double	G. A. Anderson	475,531	May 24	2696	668	59	1187
Door-fastener	P. Farwell	473,548	Apr. 26	2444	619	59	512
Door-fastener	S. N. Lawing	473,668	Apr. 26	2651	668	59	553
Door-guard	A. W. Eckerson	472,110	Apr. 5	160	43	59	30
Door-guard	G. W. Glazier	474,633	May 10	1201	306	59	879
Door-hanger	A. G. Dahmer	477,739	June 28	2421	605	59	1961
Door-hanger	T. C. Prouty and C. W. Turner	476,068	May 31	3479	877	59	1369
Door-indicator	C. S. Gerlach	472,787	Apr. 12	1191	305	59	238
Door lock and fixture. Sliding-	W. E. Eastman	476,373	June 7	234	57	59	1482
Door-mat	G. W. Howell	477,545	June 21	2094	521	59	1679
Door-rack	J. L. Pease	475,948	May 31	3300	833	59	1331
Door. Screen-	W. F. Lipp and E. J. Preston	477,562	June 21	2121	527	59	1684
Door-securer	W. W. Ewing	473,305	Apr. 19	2030	510	59	412
Door-securer	A. Lochman	477,426	June 21	1899	468	59	1639
Door-spring	A. W. Paine	477,571	June 21	2132	530	59	1686
Door-spring	W. H. Sidenstricker	474,268	May 3	588	146	59	751
Door-spring	H. B. Straut	475,356	May 24	1243	600	59	1134
Door spring and check. Combined	W. Gilfillan	473,456	Apr. 26	2297	{580, 581}	59	485
Door-stop	A. Hauck	475,686	May 24	2855	721	59	1232
Door track. Sliding-	L. T. Wilcox	472,662	Apr. 12	1000	259	59	203
Dough-divider. Revolving	E. A. C. Petersen	475,607	May 24	2739	695	59	1210
Dough-press for form-making. Continuous	J. H. Mitchell	472,765	Apr. 12	1160	297	59	232
Dowel	H. S. Marsh	475,407	May 24	2421	618	59	1148
Draft-equalizer	F. L. Anderson	473,895	May 3	1	1	59	637
Draft-equalizer	P. Bouck	473,902	May 3	9	3	59	638
Draft-equalizer	J. W. Gamble	472,448	Apr. 5	690	176	59	130
Draft-equalizer	L. B. Miller	475,133	May 17	1998	506	59	1049
Draft-equalizer	F. A. Polka	477,064	June 14	1302	316	59	1711
Draft-equalizer	S. W. Woods	474,493	May 10	978	252	59	836
Draft-spring	J. C. Johnson and W. Smith	474,910	May 17	1612	419	59	981
Drainage-trap	T. E. Avery	474,205	May 3	493	119	59	733
Drainer and cooler. Combined bar	W. C. Huss	477,758	June 28	2455	614	59	1967
Drainer for draft apparatus	H. Strater	477,917	June 28	2711	679	59	2015
Draw-bar	J. B. Safford and F. W. Parsons	474,862	May 17	1576	402	59	906
Drawer	C. W. Nevel	478,014	June 28	2860	716	59	2044
Drawer. Furniture-	C. O. Allen	476,770	June 14	818	201	59	1613
Drawer guide. Furniture-	J. B. Zumdick	475,230	May 17	2143	543	59	1078
Drawing-board	R. G. Shiley	475,350	May 24	2336	599	59	1133
Drawing-frames, &c. Automatic stop mechanism for	J. W. Gaunt	472,043	Apr. 5	53	12	59	13
Dredger. Dipper-	J. Van Patten	473,535	Apr. 26	2428	615	59	509
Dredging apparatus	F. A. Lockwood	472,735	Apr. 12	1116	286	59	224
Dredging-machine	C. H. Souther	477,827	June 28	2558	{641, 642}	59	1985
Dress facing and protector	A. M. Young	474,074	May 3	303	73	59	696
Dress-shield or protector	B. Scarles	475,803	May 31	3050	772	59	1282
Drier: *See* Centrifugal drier. Grain-drier. Clothes-drier. Lumber-drier.							
Drier	J. G. Sanderson	474,305	May 3	654	167	59	764
Drill: *See* Coal-drill. Ratchet-drill. Dental drill. Rock-drill. Grain-drill. Rock-core drill.							
Drill-operating device	G. H. Summers, A. J. Kings, and L. Q. Hardesty.	473,201	Apr. 19	1867	470	59	378

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Drill-operating device	G. H. Summers, A. J. Kings, and L. Q. Hardesty.	473,202	Apr. 19	1868	470	59	378
Drill-stock	C. H. Platt	475,949	May 31	3301	833	59	1331
Drills. Sleeve for taper	C. T. Pratt	473,639	Apr. 26	2609	657	59	544
Drilling apparatus	M. C. Bullock and S. W. Douglass	473,907	May 3	16	4	59	640
Drilling apparatus. Portable	H. S. and C. E. Glenn	472,619	Apr. 12	948	245	59	194
Drilling apparatus. Water-swivel for	S. W. Douglass	473,918	May 3	50	9	59	645
Drilling for minerals	G. R. Jarvis	475,319	May 24	2277	586	59	1122
Drilling-machine. Radial	W. D. McNaull	472,546	Apr. 12	842	215	59	173
Drink-mixer	R. D. Schroeder	473,643	Apr. 26	2615	{658, 659}	59	545
Drinks. Apparatus for dispensing	W. M. Fowler	477,797	June 28	2512	630	59	1977
Drive-gate	B. F. Price	473,958	May 3	118	27	59	660
Driving mechanism	C. O. Palmer	472,178	Apr. 5	263	69, 70	59	50
Drum. Heating-	P. H. Grimm and F. J. Williard	476,794	June 14	865	213	59	1622
Drum. Heating-	J. H. Held and W. H. Gruenhagen	474,656	May 10	1237	316	59	886
Dry closet	W. D. Over	476,166	May 31	3643	922	59	1401
Drying apparatus	R. White	472,323	Apr. 5	494	{128, 129}	59	93
Drying-machine	J. K. Proctor	473,263	Apr. 19	1968	494	59	399
Drying-machine. Rotary	R. E. Fischer	474,005	May 3	189	44, 45	59	675
Drying spent grain and the like. Apparatus for	F. E. Otto	475,602	May 24	2731	692	59	1208
Drying textile fiber. Machine for	W. Hartley, Jr	474,087	May 3	325	77, 78	59	700
Dumping apparatus	P. Imig	475,565	May 24	2680	680	59	1197
Dumping apparatus	J. R. Wilson	475,049	May 17	1866	{473, 474, 625, 626}	59	1024, 519
Dust and ash receptacle	F. J. Steinwald	473,561	Apr. 26	2475			
Dust-collector	H. L. Day	476,524	June 7	451	107	59	1526
Dust-collector	G. Walter	474,490	May 10	973	251	59	835
Dust-collector	G. Walter	474,491	May 10	974	251	59	835
Dust-collector and grain-cleaner	P. Haeckler	473,662	Apr. 26	2644	666	59	551
Dust-pan	J. Lees, Jr	472,371	Apr. 5	569	147	59	107
Dust-pan and support. Combined	H. H. Hull	473,004	Apr. 19	1528	390	59	317
Dye. Alizarine	R. E. Schmidt	476,419	June 7	300	.....	59	1496
Dye. Alizarine	R. E. Schmidt	476,491	June 7	409	.....	59	1517
Dye. Azo	H. Kužel. (Reissue)	11,231	Apr. 5	796	.....	59	151
Dye. Black azo	M. Ulrich	476,336	June 7	174	.....	59	1470
Dye. Blue	M. Ulrich and R. Lauch	476,337	June 7	175	.....	59	1470
Dye. Induline	R. Senger	475,616	May 24	2757	.....	59	1213
Dye. Manufacture of blue	A. Weinberg	472,091	Apr. 5	116	.....	59	24
Dye. Red	M. Epting	473,453	Apr. 26	2289	.....	59	483
Dye-stuff	R. Lauch	476,393	June 7	263	.....	59	1489
Dye. Tetrazo blue	C. Duisberg	476,371	June 7	230	.....	59	1481
Dye. Triphenylmethane	F. Runkel	476,413	June 7	292	.....	59	1495
Dye. Triphenylmethane	F. Runkel	476,414	June 7	293	.....	59	1495
Dye-tub	C. L. Anger	472,327	Apr. 5	502	130	59	95
Dye. Violet	R. Gnehm and J. Schmid	478,005	June 28	2850	.....	59	2042
Dye. Violet azo	M. Ulrich	476,335	June 7	173	.....	59	1470
Dyes. Manufacture of yellow	M. Hoffmann	472,121	Apr. 5	175	.....	59	33
Dyeing	E. Michaëlis and C. Henning	472,267	Apr. 5	409	.....	59	76
Dyeing apparatus	A. Reid	475,065	May 17	1892	480	59	1028
Dyeing apparatus	G. M. Undy	476,580	June 7	528	125	59	1541
Dyeing. Apparatus for skein-	A. S. Lyon	476,286	June 7	80	18, 19	59	1453
Dyeing black	M. Hoffmann	473,928	May 3	68	.....	59	649
Dyeing wool	J. A. Young	475,229	May 17	2142	543	59	1078
Dynamo and motor regulator	W. H. Elkins	474,165	May 3	430	{103, 104}	59	721
Dynamo. Compensating alternating-current	O. B. Shallenberger	476,830	June 14	922	226	59	1634
Dynamometer. Rotary transmitting	F. Van Winkle	472,466	Apr. 5	713	182	59	135
Ear-drum. Artificial	G. H. Wilson	476,853	June 14	963	234	59	1642
Ear-ring	M. Stern	477,025	June 14	1237	299	59	1698
Ear-trumpet	W. G. A. Bonwill	473,608	Apr. 26	2561	645	59	575
Ear-trumpet	W. G. A. Bonwill	473,865	Apr. 26	2954	745	59	611
Earthenware, &c. Apparatus for molding	J. Crossley	474,496	May 10	983	{253, 254}	59	837
Earthenware pipes, &c. Machine for molding	E. B. Brooke	475,481	May 24	2542	{647, 648}	59	1171
Eaves-trough	A. C. and J. L. Byers	474,442	May 10	908	234	59	823
Eaves-trough hanger	G. W. Heartley	472,294	Apr. 5	449	116	59	85
Eaves-trough hanger	B. F. Norton	474,184	May 3	460	111	59	727
Eccentric coupling and tool and work holder	A. Johnson	472,126	Apr. 5	183	49, 50	59	34
Educational apparatus	W. H. Leek	476,468	June 7	370	86	59	1509
Educational appliance	J. H. Eickershoff, J. and H. Knost	474,773	May 10	1419	361	59	923
Educational appliance	W. H. Wind	472,419	Apr. 5	640	164	59	120
Egg-beater	H. M. Brittain	472,803	Apr. 12	1212	311	59	242
Election-booth. Folding	J. Hanley	475,013	May 17	1815	460	59	1013
Electric alarm	S. M. Mathews	477,950	June 28	2760	691	59	2025
Electric battery	J. E. Emley	473,386	Apr. 19	2182	548	59	441
Electric battery	A. S. Keating	474,912	May 17	1644	420	59	981
Electric battery	R. P. Osgood	476,296	June 7	106	25	59	1459
Electric battery. Thermo-	R. J. Gülcher	472,261	Apr. 5	400	104	59	74
Electric body-wear	R. S. Mears	476,473	June 7	378	88	59	1510
Electric cable	W. R. Patterson	476,484	June 7	400	93	59	1515
Electric cable	W. H. Sawyer	473,267	Apr. 19	1974	495	59	400
Electric cable	W. H. Sawyer	473,351	Apr. 19	2118	532	59	428
Electric cable	W. H. Sawyer	473,352	Apr. 19	2119	532	59	428
Electric cable	W. H. Sawyer	473,353	Apr. 19	2120	532	59	429
Electric-circuit-controlling device	M. Thum	473,594	Apr. 26	2542	641	59	532
Electric circuits. Fuse-block for	E. A. Sperry	476,570	June 7	516	122	59	1539
Electric circuits. System of testing	C. H. Rudd	476,317	June 7	133	32	59	1464
Electric circuits. System of testing	C. H. Rudd	476,490	June 7	407	95	59	1516
Electric conductor	C. W. Bassett	475,920	May 31	3274	821	59	1322
Electric conductor	W. R. Patterson	472,643	Apr. 12	979	253	59	199

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Electric conductor	C. T. Snedekor	477,787	June 28	2493	624	59	1974
Electric conductor. Composite	C. A. Mezger	477,951	June 28	2761	692	59	2026
Electric-conductor connection	C. W. Tobey	474,584	May 10	1128	288	59	865
Electric-conductor joint	T. F. O'Connor	472,933	Apr. 12	1397	358	59	280
Electric conduit	A. Bruner	474,468	May 10	943	243	59	829
Electric connector for converters	G. D. Burton	475,180	May 17	2068	521	59	1063
Electric-contact protector	R. Varley, Jr	473,717	Apr. 26	2724	686	59	566
Electric converter	G. and A. Pfannkuche	476,816	June 14	901	221, 222	59	1631
Electric-current regulator	C. D. Sigsbee, T. S. Hayward, and F. S. Anderson.	477,708	June 28	2371	593	59	1951
Electric-current transformer	N. T. Wilcox	477,879	June 28	2655	663	59	2003
Electric currents. Automatic potential-regulator for	A. L. Ellis	474,953	May 17	1713	436	59	995
Electric currents. Distribution of rotary	A. E. Du Bois-Reymond	477,250	June 21	1629	398	59	1787
Electric element. Thermo-	E. N. Dickerson	472,037	Apr. 5	39	8	59	10
Electric elevator	J. H. Clark	477,100	June 14	1364	332	59	1723
Electric elevator	C. R. Pratt	472,909	Apr. 12	1358	349, 350	59	272
Electric generator or motor	E. A. Sperry	476,426	June 7	310	71, 72	59	1498
Electric heater	G. D. Burton and E. E. Angell	475,189	May 17	2082	526	59	1066
Electric heater	C. E. Carpenter	477,624	June 21	2243	562	59	1907
Electric-heater bracket	G. D. Burton	472,634	Apr. 12	966	251	59	197
Electric indicating system and instrument	H. J. Haight	473,174	Apr. 19	1821	459, 460	59	369
Electric-light mast-arm	J. H. Caldwell	476,607	June 7	574	137	59	1550
Electric-light shade, &c	H. A. Miner	476,021	May 31	3404	859	59	1353
Electric-light support	G. M. Kim	473,229	Apr. 19	1916	482	59	388
Electric-lighting system	M. J. Cowgill	475,538	May 24	2637	670	59	1189
Electric-lighting system	T. A. Edison	476,527	June 7	455	108	59	1527
Electric-lighting system	T. A. Edison	476,531	June 7	461	109	59	1528
Electric-lighting system	J. M. Lockwood	472,623	Apr. 12	955	247	59	195
Electric-lighting system	A. Sechrist	476,422	June 7	304	70	59	1497
Electric lock	C. H. Crockett and C. C. Allen	473,061	Apr. 19	1620	413	59	334
Electric lock	W. H. Hollar and F. S. Holmes	477,897	June 28	2681	670, 671	59	2008
Electric lock	W. H. Hollar and F. S. Holmes	477,898	June 28	2682	671	59	2009
Electric lock	F. Morgenthaler	475,137	May 17	2003	507	59	1050
Electric machine	H. A. Wagner and F. Schwedtmann	474,787	May 10	1444	366	59	928
Electric machine. Dynamo-	W. Decker	473,547	Apr. 26	2443	618	59	512
Electric machine. Dynamo-	G. E. Dorman	472,943	Apr. 12	1413	361	59	283
Electric machine. Dynamo-	R. Eickemeyer	473,618	Apr. 26	2578	649, 650	59	538
Electric machine. Dynamo-	R. Eickemeyer	473,619	Apr. 26	2581	650	59	539
Electric machine. Dynamo-	W. Koedding	476,151	May 31	3616	914	59	1395
Electric machine. Dynamo-	L. S. M. Pyke and H. T. Barnett	472,628	Apr. 12	961	249	59	196
Electric machine. Dynamo-	S. H. Short	473,367	Apr. 19	2142	537	59	433
Electric machine. Dynamo-	E. Thomson	476,331	June 7	166	40	59	1469
Electric machine. Dynamo-	J. J. Wood	477,729	June 28	2401	600, 601	59	1957
Electric machine or motor. Dynamo-	J. D. F. Andrews	474,624	May 10	1191	309	59	876
Electric machine or motor. Dynamo-	C. D. Jenney	474,388	May 10	814	212, 213	59	805
Electric machines and motors. Brush-holder for dynamo-	F. B. Daggett	476,368	June 7	223	55	59	1479
Electric machines. Magnetic inductor for dynamo-	L. S. M. Pyke and E. S. Harris	476,818	June 14	908	222	59	1631
Electric meter	T. A. Edison	476,990	June 14	1185	287	59	1686
Electric meter	O. Ericsson	475,759	May 31	2979	755	59	1269
Electric meter	A. G. McKenna and H. T. Weed	475,411	May 24	2430	620	59	1150
Electric motor	D. H. Wilson	476,347	June 7	187	44, 45	59	1472
Electric motor	F. Yeiser	477,483	June 21	1997	496, 497	59	1859
Electric-motor mechanism	S. E. Mower	474,328	May 3	706	182	59	772
Electric-motor mechanism	E. B. Phillips	474,857	May 17	1567	399, 400	59	964
Electric motor or generator	R. M. Hunter	472,708	Apr. 12	1081	277	59	217
Electric-motor safety device	E. Thomson	476,330	June 7	163	40	59	1468
Electric motors. Circuit-controller for	W. S. Andrews	474,623	May 10	1190	302	59	876
Electric motors. Switch-box for	P. Wright	472,283	Apr. 5	430	110	59	80
Electric regulating apparatus	J. M. Bradford	477,637	June 28	2266	567, 568	59	1928
Electric resistance-box	A. Wirsching	474,073	May 3	301	73	59	696
Electric search-light	B. B. Ward	472,721	Apr. 12	1099	282, 283	59	220
Electric snap-switch	G. K. Hutchins	474,473	May 10	948	244	59	830
Electric switch	F. Broadnax	476,781	June 14	840	207	59	1618
Electric switch	C. E. Davis	476,613	June 7	584	139	59	1532
Electric switch	E. T. Greenfield	477,409	June 21	1879	463	59	1836
Electric switch	W. M. Goodridge	476,792	June 14	861	212	59	1621
Electric switch	J. L. Hinds	477,595	June 21	2172	539	59	1894
Electric switch	H. K. Hitchcock	473,504	Apr. 26	2372	601, 602	59	499
Electric switch	E. H. Johnson	473,228	Apr. 19	1913	482	59	387
Electric switch	G. Pfannkuche	474,921	May 17	1657	427, 428	59	984
Electric switch	H. M. Pilkington and R. S. White	477,869	June 28	2639	659	59	2000
Electric switch	A. P. Seymour	476,829	June 14	921	225	59	1634
Electric switch	E. A. Snow	477,612	June 21	2201	546	59	1890
Electric switch	F. H. Soden	473,132	Apr. 19	1739	439, 440	59	354
Electric switch	F. H. Soden	473,134	Apr. 19	1743	440	59	355
Electric switch	L. T. Stanley	472,610	Apr. 12	935	241	59	191
Electric switch	E. P. Warner	473,435	Apr. 19	2249	566	59	454
Electric switch	C. A. P. Willing and R. J. G. Violet	474,541	May 10	1058	271	59	851
Electric switch	J. J. Wood	474,050	May 3	269	65, 66	59	689

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Electric switch. Mast-arm	T. Dillon	477,890	June 28	2673	668	59	2007
Electric switchboard	J. B. Mayer	473,848	Apr. 26	2927	737	59	606
Electric terminal	H. Sanche	476,080	May 31	3490	881	59	1372
Electric-wire conduit	C. H. Wilson	473,044	Apr. 19	1596	406	59	329
Electric-wire coupling	J. F. McElroy	473,637	Apr. 26	2607	656	59	544
Electric wire. Covered	H. A. Rueter	473,713	Apr. 26	2719	684	59	565
Electric-wire hanger	T. Imeson, L. D. Tibbets, and C. L. F. Kellogg.	473,158	Apr. 19	1784	450	59	363
Electric-wire hanger	H. H. Luscomb	472,220	Apr. 5	335	87	59	63
Electric-wire holder	E. L. Lloyd	475,781	May 31	3013	764	59	1275
Electric-wire pole	J. Meyer and C. Binder	476,889	June 14	1021	247, 248	59	1653
Electric-wire standard	E. C. Morgan	474,847	May 17	1552	396	59	961
Electric wires. Safety attachment for overhead	C. D. Brown	472,784	Apr. 12	1186	304	59	237
Electrical apparatus. Coin-controlled	H. Wickham	475,527	May 24	2620	667	59	1186
Electrical-conductor system	C. J. Kintner	473,932	May 3	76	15, 16	59	651
Electrical converter	G. D. Burton	475,184	May 17	2072	522, 523	59	1064
Electrical distribution. System of	W. H. Elkins	474,166	May 3	432	104	59	732
Electrical distribution. System of	T. A. Edison	476,529	June 7	458	109	59	1527
Electrical distribution. System of	H. W. Leonard	476,544	June 7	478	113, 114	59	1532
Electrical distribution. System of	C. O. Mailloux	475,877	May 31	3184	807, 808	59	1309
Electrical distribution. System of	W. Marshall	472,193	Apr. 5	287	75	59	54
Electrical heater	W. Mitchell	474,797	May 10	1465	372	59	932
Electrical indicator	J. W. Gibboney	474,523	May 10	1028	264	59	846
Electrical indicator	J. W. Henderson	472,500	Apr. 5	774	197	59	147
Electrical keyboard	W. E. Blodgett	477,635	June 28	2261	566	59	1927
Electrical machines. Cut-off for	J. P. Woolley	473,282	Apr. 19	1997	502	59	405
Electrical meter	J. F. Kelly	472,265	Apr. 5	407	105	59	76
Electrical reciprocating tool	W. P. Carstarphen, Jr	476,225	May 31	3749	947	59	1420
Electrical switch	C. J. Klein	477,374	June 21	1826	447	59	1894
Electrical switchboard	L. A. Fehr	474,632	May 10	1200	305, 306	59	879
Electrical transmitting system	F. E. Now	475,468	May 24	2523	642	59	1167
Electrically-heated vessel	W. Mitchell	474,398	May 10	826	216, 217	59	808
Electricity. Production and distribution of	W. Marshall	472,379	Apr. 5	586	149	59	110
Electrode	P. L. T. Héroult	473,393	Apr. 19	2195	551	59	443
Electrode. Flexible	G. D. Burton and E. E. Angell	475,191	May 17	2085	527	59	1067
Electrode for secondary batteries. Making	A. Reckenzaun	475,797	May 31	3038	769	59	1280
Electrode for use in electro-metallurgical processes	P. Héroult	473,117	Apr. 19	1715	434	59	350
Electrode. Secondary-battery	H. G. Osburn	478,018	June 28	2865	717	59	2045
Electrodes for secondary batteries. Manufacture of	J. F. McLaughlin	475,335	May 24	2310	593	59	1129
Electroplate attachment	C. Keck	476,653	June 7	644	156	59	1564
Electroplating with alloys	E. T. Burrowes	477,350	June 21	1783	.....	59	1817
Electrotype-shells and similar articles. Mold for	J. C. Wolfe	476,717	June 7	730	180, 181	59	1582
Elevated carrier	M. E. Benson	476,600	June 7	566	135	59	1548
Elevated carrier	J. J. Robinson	476,072	May 31	3484	878	59	1370
Elevated structure	C. C. Lockstaedt	477,907	June 28	2694	674	59	2011
Elevating bags, barrels, &c. Apparatus for	J. B. Deffler	474,653	May 10	1232	315	59	885
Elevator: *See* Barrel-elevator. Chain elevator. Electric elevator. Endless-chain elevator. Harvester-elevator. Hay-elevator. Hydraulic elevator. Truck-elevator. Trunk-elevator. Water-elevator.							
Elevator	C. W. Baldwin	478,040	June 28	2900	724, 725	59	2052
Elevator	C. W. Fowler	472,113	Apr. 5	163	44	59	31
Elevator	H. L. Hollis	476,017	May 31	3399	857, 858	59	1352
Elevator	C. N. Judson	476,387	June 7	251	60, 61	59	1486
Elevator	A. McEachran	472,768	Apr. 12	1164	298	59	233
Elevator	C. Ross	474,609	May 10	1165	296	59	872
Elevator	S. T. Teachout	475,524	May 24	2616	666	59	1185
Elevator	W. Veenschoten	473,036	Apr. 19	1580	402, 403	59	327
Elevator	A. P. Webb	475,834	May 31	3116	789	59	1295
Elevator	C. Whittier	474,431	May 10	885	230	59	819
Elevator	P. Wright	477,730	June 28	2404	601	59	1958
Elevator-controller	E. S. Matthews	472,930	Apr. 12	1394	357	59	279
Elevator-controller	H. Rowntree and I. Veeder	473,199	Apr. 19	1864	469, 470	59	377
Elevator-controlling device	H. Rountree	473,198	Apr. 19	1862	469	59	377
Elevator-door-closing apparatus	C. N. Judson	476,388	June 7	255	61	59	1487
Elevator-door-operating device	G. W. Archer	476,773	June 14	821	202	59	1614
Elevator-door-operating device	E. Savage	474,066	May 3	202	71	59	694
Elevator-gates. Device for closing	C. N. Judson	476,386	June 7	249	60	59	1485
Elevator reversing mechanism	E. T. Young. (Reissue)	11,251	June 28	2957	738, 739	59	2002
Elevator safety attachment	L. M. Kellogg	477,371	June 21	1821	445, 446	59	1823
Elevator safety device	E. S. Matthews	476,289	June 7	88	20	59	1455
Elevator-wells. Device for operating doors to	J. P. Runkel	475,022	May 17	1828	463	59	1016
Embossing-machine	T. C. Orndorff	477,062	June 14	1298	315, 316	59	1710
Embroidering-machine beading attachment	F. P. Langet	473,936	May 3	84	17, 18	59	652
Embroidering-machines. Fabric-holding frame for	J. J. Niederer	476,809	June 14	891	218	59	1628
Embroidering-machines. Fabric-holding frame for	J. J. Niederer	477,264	June 21	1851	403	59	1791

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Emery-wheels. Process of and machine for making	A. Johnston	476,799	June 14	872	214, 215	59	1624
Emulsifying liquids. Centrifugal machine for	G. W. Towar, Jr	474,880	May 17	1398	407	59	971
Emulsion	S. de Jager	472,925	Apr. 12	1387	.....	59	278
Enamel designs. Producing ornamental	F. B. Nichols and A. T. Crane	477,568	June 21	2129	.....	59	1886
End-gate	C. H. Chain	472,523	Apr. 12	810	208	59	167
End-gate	H. W. Leavitt and J. A. Bryson	477,131	June 14	1408	342	59	1732
End-gate. Carriage	S. R. Bailey	474,353	May 10	763	199	59	795
End-gate. Wagon	J. Butler	477,988	June 28	2813	704	59	2037
Endless-chain elevator	B. Arnold	476,507	June 7	428	100	59	1521
Engine: *See* Carding-engine. Rotary engine. Compound engine. Steam-engine. Dental engine. Traction-engine. Gas-engine. Valveless engine. Hydraulic engine. Water-engine. Pulp beating and refining engine.							
Engine	J. M. Andersen	477,921	June 28	2715	680	59	2016
Engine	M. B. Dodge	473,657	Apr. 26	2635	664	59	550
Engine	J. Harris	474,557	May 10	1084	277	59	856
Engine	M. Honigmann	477,367	June 21	1817	444	59	1823
Engine-beds. Machine for planing circular guides for	H. Haberlin	475,939	May 31	3286	829	59	1328
Engine cross-head	W. Wright	475,428	May 24	2459	626, 627	59	1155
Engine frame. Locomotive	C. C. Higham	475,112	May 17	1972	499	59	1043
Engine-register	C. C. Worthington	476,588	June 7	540	129	59	1544
Engine-signal. Electric	J. C. Ricketson	475,066	May 17	1894	480	59	1028
Engines. Reversible eccentric for	D. W. Kellogg	472,542	Apr. 12	837	214	59	172
Engines. Steam-loop connection for	W. Burnham	474,438	May 10	894	232	59	821
Engines. Steam-loop connection for steam	W. Burnham	474,437	May 10	892	232	59	821
Engraved steel plates. Fac-simile of	W. Wellstood and F. B. Nichols	474,868	May 17	1613	.....	59	975
Engraver's work-clamping block	C. E. Van Norman	476,951	June 14	1128	271	59	1675
Engraving-machine	C. A. Ker	477,257	June 21	1641	400, 401	59	1789
Engraving-machine. Pantograph	W. Ciegg	476,186	May 31	3677	929	59	1407
Engraving-machine. Pantograph	C. H. Hope	474,324	May 3	699	181	59	771
Engraving-tool	C. F. Pratt	476,817	June 14	908	222	59	1631
Envelope	D. Normand	476,549	June 7	486	115	59	1534
Envelope-dampening device	E. L. Kingsley	474,174	May 3	448	108	59	724
Envelope-gum moistener	N. Macphail	475,693	May 24	2670	726	59	1235
Envelope. Safety	G. W. Scovill	473,431	Apr. 19	2246	565	59	453
Eraser. Blackboard	L. W. Chase	475,753	May 31	2971	754	59	1967
Evaporating apparatus. Brine	T. R. Timby	475,637	May 24	2785	705, 706	59	1219
Evaporating-pan	H. F. Thurston	476,701	June 7	709	174	59	1578
Evaporator: *See* Fruit-evaporator. Hot-air evaporator.							
Evaporator	G. M. Newhall and T. H. Müller	477,442	June 21	1931	477, 478	59	1845
Evaporator	E. Stillwell	476,837	June 14	936	228	59	1637
Evaporators. Elevating mechanism for fruit	J. M. Withrow	474,892	May 17	1618	413	59	975
Excavating and shoveling machine	E. Hennebery	477,933	June 28	2735	685	59	2020
Excavating apparatus	J. T. Dougine	477,837	June 28	2584	647, 648	59	1990
Excavating apparatus	I. P. Lambing	476,750	June 7	783	192, 193	59	1593
Excavator. Hydraulic	W. M Douglas	475,936	May 31	3281	828	59	1327
Excelsior-cutting machine	C. G. Smith	474,866	May 17	158	402	59	967
Exercising apparatus. Horizontal-bar	F. Medart	475,697	May 24	2676	727	59	1236
Exercising apparatus. Line-fastener for	T. Peterson	474,760	May 10	1399	354	59	918
Exhibiting apparatus	C. S. Jenkins	473,508	Apr. 26	2383	603, 604	59	501
Exhibiting device	W. N. Winfield	475,005	May 17	1804	457	59	1010
Exhibition-stand. Knockdown	H. A. J. Rieckert	473,783	Apr. 26	2823	709	59	585
Exhibitor. Ware	D. G. MacWaters	473,403	Apr. 19	2208	554	59	446
Explosives. Apparatus for the manufacture of	H. S. Maxim	474,561	May 10	1096	279, 280	59	859
Explosives for aiding rain-fall. Automatic transporter and exploder for	L. L. Brown	473,820	Apr. 26	2877	722	59	596
Explosives. Manufacture of	F. Roller	474,529	May 10	1039	.....	59	847
Extension-bracket	J. G. Brothwell	476,446	June 7	342	78	59	1504
Extension-bracket	T. Morris	476,892	June 14	1026	248	59	1654
Extension-table	F. P. Cobham	473,060	Apr. 19	1617	412, 413	59	334
Extension-table	C. S. Homer and W. H. Pickett	472,881	Apr. 12	1318	338, 339	59	263
Extractor: *See* Cork-extractor. Nail-extractor. Honey-extractor. Staple-extractor.							
Eye. Artificial	J. L. Borsch	474,808	May 17	1483	379	59	949
Eyeglass and spectacle frame	J. E. Searing	475,615	May 24	2756	698	59	1213
Eyeglass-case	C. H. Farley	474,235	May 3	541	133	59	742
Eyeglass or spectacle case	W. Birmingham	475,995	May 31	3369	849	59	1345
Eyeleting-machine	E. Woodward	476,504	June 7	424	98, 99	59	1520
Fabric: *See* Carpet fabric. Rattan fabric. Knit fabric. Woven fabric. Knitted fabric.							
Fabrics. Decorating	H. G. Bunch	476,033	May 31	3422	864	59	1356
Fabrics. Machine for cleaning and soaping	E. A. Rusden	473,266	Apr. 19	1973	494, 495	59	400
Fabrics. Overstitch binding for edges of	H. H. Fefel	476,454	June 7	350	81	59	1505

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Facial hygienic steaming apparatus	M. Meyberg	472,134	Apr. 5	196	52, 53	59	36
Facing compound	C. F. Lawton	472,369	Apr. 5	565	.....	59	106
Fall-hook	F. S. Hilton	472,253	Apr. 5	544	141	59	102
Fan	F. W. Tuerk, Jr	477,614	June 21	2210	549	59	1901
Fan. Bed	W. H. Wrigley	474,710	May 10	1322	337	59	903
Fan. Fly	A. Morton	474,141	May 3	395	95	59	714
Fan-motor	R. Strasser	473,029	Apr. 19	1571	400	59	325
Fare-box	S. O. Tuerk	473,680	Apr. 26	2669	672	59	556
Fare-register	C. B. Cushman and H. G. Canfield	472,035	Apr. 5	37	7, 8	59	9
Fare-register	J. H. Greenleaf	476,741	June 7	771	189, 190	59	1591
Fare-register	W. L. Silvey	472,232	Apr. 5	351	91	59	66
Farm-gate	C. C. Holter	475,316	May 24	2270	585	59	1120
Farm-gate	G. Van Horn	474,426	May 10	878	229	59	818
Fastening device	C. Liebe	475,581	May 24	2701	685	59	1202
Faucet	J. M. McFarland	477,308	June 21	1726	422	59	1806
Faucet	S. I. Merrill	473,325	Apr. 19	2064	519	59	419
Faucet	H. S. Park	476,167	May 31	3645	922	59	1401
Faucet	G. W. Renton	476,170	May 31	3649	923	59	1402
Faucet	J. Westervelt	473,600	Apr. 26	2549	642	59	533
Faucet. Measuring	H. M. Nye	475,144	May 17	2014	509	59	1052
Faucet. Measuring	G. F. Oakley	474,343	May 3	738	193	59	779
Faucet. Measuring	R. A. Parish	474,583	May 10	1126	288	59	865
Faucet. Portable measuring	S. Verburg	472,775	Apr. 12	1174	300	59	235
Faucet. Registering	A. L. Peirce and C. E. King	474,464	May 10	1101	281	59	860
Faucet. Registering measuring	C. A. Miller	475,945	May 31	3295	832	59	1330
Feed-bag	J. H. Williams	476,952	June 14	1130	271, 272	59	1675
Feed-bag support	J. W. Pfeiffer	472,908	Apr. 12	1357	349	59	272
Feed-rack	G. L. and F. Taft	473,245	Apr. 19	1939	487	59	393
Feed-regulator	W. Gribben and J. M. Gaige	477,327	June 21	1751	428, 429	59	1811
Feed-roll	G. H. Marsh	477,428	June 21	1905	469	59	1840
Feed-trough	J. S. Anderson	472,971	Apr. 19	1463	375	59	305
Feed-trough	G. W. Dunks	478,052	June 28	2916	729	59	2055
Feed-trough	E. B. French	473,735	Apr. 26	2760	694	59	572
Feed-trough	J. A. Mitchell and C. T. Deal	477,139	June 14	1419	346	59	1734
Feed-trough	G. F. Robinson	476,071	May 31	3483	878	59	1370
Feed-trough	C. B. and J. Snellenberger	474,867	May 17	1582	403	59	967
Feed-trough	J. A. Whitmore	477,724	June 28	2395	598	59	1956
Feed-water. Device for separating oil from	J. Reilly	473,591	Apr. 26	2537	640	59	531
Feed-water heater	J. Bell	477,491	June 21	2009	498	59	1861
Feed-water heater	C. Jacobs	472,671	Apr. 12	1021	263, 264	59	206
Feed-water heater	E. R. Stilwell	476,069	May 31	3511	885	59	1375
Feed-water heater	W. Webster	475,992	May 31	3366	849	59	1344
Feed-water heater and condenser	E. Nelson	477,814	June 28	2540	636	59	1982
Feed-water heater and condenser	E. Nelson	477,815	June 28	2543	636	59	1983
Feed-water heater. Sectional	E. Nelson	477,816	June 28	2546	637	59	1983
Feeding device for animals	L. M. Reed	476,310	June 7	122	30	59	1462
Feeding grain to live stock. Receptacle for	C. A. Smith	472,316	Apr. 5	484	125	59	91
Felt roller	J. W. Millet	472,899	Apr. 12	1346	346	59	270
Fence	J. Baker	476,120	May 31	3567	896	59	1385
Fence	W. B. Hudson	475,865	May 31	3164	803	59	1305
Fence	W. S. Kline	472,578	Apr. 12	882	227	59	182
Fence	G. Merritt	474,455	May 10	930	239	59	826
Fence	W. D. and T. J. Snowden	473,092	Apr. 19	1665	423	59	342
Fence	F. A. Williams	474,072	May 3	300	73	59	695
Fence. Barbed-wire	J. W. Griswold	472,496	Apr. 5	764	194	59	145
Fence-building machine	J. M. Graham	474,009	May 3	196	46	59	676
Fence clamp or fastener. Wire	C. S. Rogers	476,411	June 7	290	68	59	1494
Fence construction	G. F. St. John	477,916	June 28	2710	678	59	2015
Fence gate. Wire	J. Hult	475,867	May 31	3167	803, 804	59	1306
Fence gate. Wire	J. M. Sailer	473,855	Apr. 26	2940	741	59	608
Fence. Iron	R. C., Jr., and W. A. Stewart	473,028	Apr. 19	1570	399	59	325
Fence-machine	J. Chaplin	474,794	May 10	1460	371	59	931
Fence-machine	E. Hughes	473,930	May 3	71	14	59	650
Fence-machine	J. H. Morris	474,179	May 3	454	110	59	725
Fence-machine. Hand	M. Hays	472,167	Apr. 5	242	64	59	46
Fence-machine tension device	C. P. Lamar	474,137	May 3	386	93	59	713
Fence-making machine	A. Bernauer	472,663	Apr. 12	1001	259, 260	59	204
Fence. Picket	W. S. Fickett	472,636	Apr. 12	969	251	59	198
Fence-pickets. Machine for wiring	L. H. Slagle	473,792	Apr. 26	2837	713	59	588
Fence-post	L. Heiland and C. E. Bronson	472,705	Apr. 12	1079	277	59	216
Fence-post	F. S. Wood	476,912	June 14	1061	256	59	1661
Fence-post and wire-stretcher. Combined	G. M. Williams	473,102	Apr. 19	1678	426	59	344
Fence-post brace	C. E. Wintrode	472,841	Apr. 12	1263	323	59	252
Fence-post. Metallic	H. A. Harrington	473,925	May 3	62	12	59	648
Fence-post. Metallic	B. F. Randall	476,069	May 31	3481	877	59	1369
Fence-stay	I. K. Hollinger	473,001	Apr. 19	1525	389	59	316
Fence stay. Wire	J. H. Brower	475,717	May 24	2906	737	59	1241
Fence. Stock	P. M. Sparks	474,464	May 10	939	241	59	828
Fence stretcher. Wire	A. M. Shaw	474,068	May 3	295	72	59	694
Fence-wire	J. B. Cleaveland	475,718	May 24	2907	737	59	1242
Fence-wire	J. B. Cleaveland	475,719	May 24	2908	737	59	1242
Fence. Wire	M. L. Clements	474,813	May 17	1491	381	59	950
Fence. Wire	J. W. Dwiggins	474,952	May 17	1713	436	59	994
Fence. Wire	T. J. Ingraham	472,639	Apr. 12	973	252	59	198
Fence. Wire	J. McClintock	472,585	Apr. 12	893	229	59	184
Fence-wire. Machine for spooling and unspooling barbed	M. M. Culver	477,185	June 14	1496	366	59	1750
Fence-wire twister	M. R. Yates	476,856	June 14	969	235	59	1643

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fence-wires. Device for spooling and stretching	A. Hankel	472,047	Apr. 5	57	14, 15	59	13
Fences. Adjustable brace for slat and wire and picket	T. H. Smith	478,027	June 28	2881	720	59	2048
Fences. Barb for wire	H. Gearty	472,044	Apr. 5	54	13	59	13
Fences. Tool for operating on wires of	J. Heard	477,005	June 14	1208	293	59	1691
Fencing. Wire	T. J. Ingraham	475,116	May 17	1976	500	59	1045
Fender: *See* Car-fender. Plant-fender.							
Ferrules to handles. Applying	P. T. Gates	474,061	May 3	287	69	59	693
Fertilizer-distributer	J. T. Griffith	476,631	June 7	612	147	59	1558
Fertilizer-distributer	G. D. Haworth	474,635	May 10	1203	307	59	879
Fertilizer-distributer	J. H. Ozley	473,952	May 3	110	25	59	658
Fertilizers. Making	T. M. Smith	474,419	May 10	868	226	59	816
Fiber-extracting machine	F. Darkin	473,826	Apr. 26	2886	{723, 724}	59	598
Fiber-machine	L. Bacallado y Sanchez	474,714	May 10	1326	{338, 339}	59	904
Fiber-preparing machine	J. L. Acosta	474,052	May 3	273	66, 67	59	690
Fibrous plants. Machine for treating	J. L. Myers	476,160	May 31	3631	{918, 919}	59	1399
Fibrous plants. Machine for treating	J. L. Myers	476,161	May 31	3634	920	59	1399
Fifth-wheel	L. S. Browning	474,332	May 3	717	187	59	775
Fifth-wheel	C. F. Hinman and M. G. Bunnell	475,313	May 24	2967	584	59	1120
Fifth-wheel	P. Lugenbell	472,894	Apr. 12	1341	344	59	268
Fifth-wheel	E. B. Smith	474,151	May 3	407	99	59	717
Fifth-wheel. Vehicle	J. W. Taylor	472,834	Apr. 12	1255	321	59	250
Figs. Preparing	G. W. Reamer	474,099	May 3	343	.....	59	703
File. Account	W. N. Brown	474,287	May 3	618	153	59	757
File and index. Continuous revolving	A. J. Rudolph	473,348	Apr. 19	2111	530	59	427
File. Bill	E. B. Putney	476,487	June 7	403	94	59	1515
File. Bill and letter	J. W. Henson	474,776	May 10	1423	362	59	923
File-binder	J. F. Brown	475,750	May 31	2967	753	59	1266
File-case	P. J. Pauly, Jr	477,574	June 21	2135	531	59	1887
File. Check and bill	C. F. Lomb and M. R. Jewell	474,501	May 10	990	255	59	838
File. Document	J. A. Des Rivieres and J. P. Prud'homme.	472,920	Apr. 12	1379	353	59	277
File. Document	T. W. Fowler	475,212	May 17	2116	{535, 536}	59	1073
File-holder	W. Lumley	474,478	May 10	955	246	59	831
File. Journal-page	J. O'Rourke	473,775	Apr. 26	2804	705	59	583
File. Letter	G. A. Baker	474,280	May 3	608	151	59	755
File. Letter	B. Brower	473,448	Apr. 26	2281	576	59	482
File. Newspaper	S. Ray	473,476	Apr. 26	2332	590	59	492
File. Paper	C. E. Stone	472,561	Apr. 12	862	221	59	178
Files or other tools. Handle for	J. W. Payler	472,140	Apr. 5	203	55	59	38
Filing physicians' prescriptions	W. R. Hall	473,552	Apr. 26	2449	620	59	513
Filler-frames. Whirl for	H. Allcroft	472,844	Apr. 12	1267	324	59	253
Film or plate carrier	F. A. Hetherington	476,203	May 31	3706	936	59	1412
Filter	W. M. Deutsch	476,737	June 7	765	188	59	1590
Filter	O. H. Jewell	477,213	June 21	1557	383	59	1774
Filter	C. E. Winterros	477,238	June 21	1607	{393, 394}	59	1783
Filter. Beer	H. C. J. Gehrke	477,208	June 21	1546	379	59	1773
Filter. Beer	J. Moeller	476,671	June 7	666	162	59	1569
Filter. Microscopic sediment	P. W. Shimer	474,267	May 3	586	145	59	751
Filters. Collecting-tube for	G. H. Moore	473,011	Apr. 19	1539	392	59	319
Filtering apparatus	D. Williamson	477,727	June 28	2397	590	59	1956
Finger-bar	M. N. Laufenburg	475,964	May 31	3327	839	59	1336
Finger-ring	H. Huestis	474,638	May 10	1214	310	59	881
Finger-ring	C. A. Russell	477,825	June 28	2557	640	59	1995
Fire-alarm. Automatic	M. Martin	474,670	May 10	1260	{322, 323}	59	891
Fire-alarm system	L. G. Rowand	477,068	June 14	1308	{318, 319}	59	1712
Fire-alarm system	L. G. Rowand	477,069	June 14	1320	320	59	1714
Fire-alarm system	L. G. Rowand	477,070	June 14	1322	320	59	1715
Fire-alarm system. Automatic	C Burgher	475,925	May 31	3260	823	59	1323
Fire-alarm. Thermostatic	G. D. Mosher	473,669	Apr. 26	2652	669	59	553
Fire-alarms. Electric controlling apparatus for	G. Knowles, Jr	477,214	June 21	1558	{383, 384}	59	1775
Firearm. Breech-loading	A. Grouleff and H. B. Williams	477,410	June 21	1880	463	59	1836
Firearm. Repeating	L. M. R. Daudeteau	473,827	Apr. 26	2889	{724, 725}	59	598
Firearm. Repeating	F. Mannlicher	472,795	Apr. 12	1201	{308, 309}	59	240
Firearm. Repeating	F. Rees	473,179	Apr. 19	1629	{461, 462}	59	371
Firearm. Revolving	I. N. Archbold	476,501	June 7	550	131	59	1545
Firearm. Revolving	V. Bovy	473,903	May 3	9	3	59	639
Fire-engines. Apparatus for igniting fire under steam-boilers of steam	G. Case	473,415	Apr. 19	2228	560	59	449
Fire-engines. Automatic fire-kindler for steam	S. C. Jackson	476,539	June 7	472	112	59	1531
Fire-engines. Feed-water heater for	P. Smith	473,593	Apr. 26	2540	641	59	531
Fire-engines. Fire-lighting attachment for steam	K. L. Comes	476,249	June 7	26	6	59	1444
Fire-escape	G. A. Bidwell	475,175	May 17	2059	518	59	1061
Fire-escape	J. Bower	474,155	May 3	415	108	59	719
Fire-escape	W. Gunnarson	473,572	Apr. 26	2504	632	59	525
Fire-escape	D. Knowles	472,950	Apr. 12	1422	{363, 364}	59	284
Fire-escape	S. T. Rawlings	476,409	June 7	287	68	59	1494
Fire-escape	C. A. Smith	476,965	June 14	1151	{277, 278}	59	1679
Fire-escape	W. Talbott	474,876	May 17	1594	406	59	970
Fire-escape and fireman's ladder	W. F. Loyd	476,885	June 14	1016	246	59	1653

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fire-extinguisher	J. E. Bott	474,208	May 3	490	119	59	734
Fire-extinguisher. Automatic	O. C. Barber	473,442	Apr. 26	2271	573	59	480
Fire-extinguisher. Chemical	R. A. Ballou	475,050	May 17	1869	474	59	1024
Fire-extinguisher. Portable	H. D. Greene	474,042	May 3	255	62	59	687
Fire. Extinguishing	H. S. Millis	477,138	June 14	1419	345	59	1734
Fire-extinguishing apparatus. Automatic	J. E. Bott	474,209	May 3	500	120	59	734
Fire guard and screen. Adjustable	N. B. Gibson	474,239	May 3	545	134	59	743
Fire-indicator	M. W. Iles	477,759	June 28	2456	614	59	1967
Fire-kindler	E. C. Lambur and G. Burdett	475,123	May 17	1985	503	59	1047
Fire-kindlers. Absorbent for	B. B. Jenkins	472,540	Apr. 12	836	213	59	172
Fire-lighter and receptacle	F. Sahlfeld	474,190	May 3	473	114	59	729
Fireman's respirator	T. O. Helbing	472,048	Apr. 5	58	15	59	14
Fireplace-heater	J. J. Richardson	477,155	June 14	1441	{353, 354}	59	1738
Fireproof building	C. Aikin	477,733	June 28	2409	602	59	1959
Fire-shutter for ventilating-shafts of buildings	L. Wieland	474,890	May 17	1615	412	59	975
Fire-shutter for ventilating-shafts of buildings	L. Wieland	474,962	May 17	1766	447	59	1004
Fireworks	C. Schmidt	475,897	May 31	3221	.....	59	1316
Firing apparatus for use with coal-dust	C. Wegener	475,715	May 24	2902	{735, 736}	59	1941
Fish and game trap	A. G. Bolling	475,845	May 31	3134	795	59	1298
Fish-lines. Leader for	A. M. White	473,038	Apr. 19	1587	403	59	327
Fish-tank or aquarium	G. P. A. Gunther	475,082	May 17	1915	487	59	1033
Fishway	S. Sanderson	474,863	May 17	1578	402	59	966
Fishing apparatus	P. Wise	476,940	June 14	1108	267	59	1671
Fishing-lines. Swivel for	R. Herring, Jr	473,503	Apr. 26	2371	601	59	499
Fishing-reel	A. F. Boardman	475,030	May 17	1838	466	59	1018
Fishing-reel	R. E. Fenner	476,621	June 7	597	143	59	1555
Fishing-reel	T. Greason	477,754	June 28	2449	{611, 612}	59	1966
Fishing-reel	A. B. Hendryx	473,665	Apr. 26	2648	668	59	552
Fishing-reel	A. B. Hendryx	473,700	Apr. 26	2704	680	59	562
Fishing-reel	A. B. Hendryx	476,536	June 7	467	111	59	1529
Fishing-reel	C. N. Wilcox	477,196	June 14	1521	371	59	1756
Fishing-rod	F. D. Divine	476,370	June 7	229	56	59	1481
Fishing-rod	H. P. Morgan	472,766	Apr. 12	1161	298	59	232
Fishing-rod and cane combined	J. H. Edgerly	475,852	May 31	3150	799	59	1302
Fishing-rod holder	T. Lemaire	473,073	Apr. 19	1637	417	59	337
Fishing-rod joint-clamp	J. B. Thurston	475,024	May 17	1831	464	59	1016
Flask: *See* Dental flask. Molding-flask.							
Flavoring-powder	S. E. McIntosh	477,141	June 14	1421	.....	59	1734
Flax and hemp brake	J. T. Smith	475,819	May 31	3087	{781, 782}	59	1290
Flax-puller	J. M. Smith	472,234	Apr. 5	355	91	59	66
Flexible tube	W. I. Bunker	477,503	June 21	2027	502	59	1864
Floor-clamp	O. J. Graham	475,855	May 31	3152	799	59	1302
Floor-clamp	J. W. McQuaid	474,180	May 3	455	116	59	726
Floor-layer	H. G. Epps	474,654	May 10	1235	315	59	885
Floor or roof for buildings	G. W. Parker	477,147	June 14	1429	348	59	1736
Floor or sidewalk. Light-transmitting	G. W. Parker	477,148	June 14	1430	349	59	1736
Floors and other surfaces. Apparatus for the manufacture of coverings for	A. S. Oetzmann and S. J. Narracott	473,519	Apr. 26	2402	{608, 609}	59	504
Flour-bin	C. Tangenberg	476,430	June 7	320	73	59	1499
Flour bin and sieve. Combined	A. Wolff	473,543	Apr. 26	2438	617	59	511
Flour. Mechanism for testing and recording the properties of	J. Hogarth	474,636	May 10	1205	{307, 308, 309}	59	880
Flower-pot	H. Goodacre	473,836	Apr. 26	2804	729	59	601
Flower-stemming device	S. J. Russell	477,704	June 28	2366	591	59	1950
Flowers. Device for preserving dried	F. T. Brown	472,980	Apr. 19	1486	380	59	310
Flue and fire-box. Steam-boiler	D. B. Morison	477,770	June 28	2472	618	59	1970
Flue-cleaner	M. J. Carbis	473,821	Apr. 26	2878	722	59	596
Flue-cleaner	J. F. McNutt and H. F. Grimmesey	475,733	May 24	2936	745	59	1246
Flue-cleaner	W. Pharr	477,957	June 28	2769	694	59	2027
Flue cleaner. Boiler	W. F. Whitney	473,987	May 3	158	38	59	669
Flue-cleaners. Elastic scraper for	P. S. Kingsland	475,506	May 24	2587	658	59	1180
Flue-protector and wind-guard	W. Curry	474,057	May 3	283	68	59	692
Flue-stopper	J. A. Brown	478,044	June 28	2907	726	59	2053
Flue-thimble	J. P. Adams	476,111	May 31	3554	894	59	1382
Fluid-meter	E. Spiro	476,934	June 14	1098	265	59	1669
Fluid-meter. Proportional	D. McDonald	475,596	May 24	2724	690	59	1206
Fluids through separate chambers. Method of and apparatus for maintaining a proportional flow of	J. Thomson	476,098	May 31	3526	887	59	1377
Flushing apparatus. Waste-pipe	W. M. Haworth	476,012	May 31	3393	856	59	1350
Flushing device for urinals and closets	J. Shanks	473,715	Apr. 26	2721	685	59	565
Flushing-tank	G. W. Keyser	473,882	Apr. 26	2983	752	59	616
Flushing-tank. Periodical	T. C. Beaumont	475,533	May 24	2629	669	59	1188
Fly and insect escape for doors, windows, &c	J. H. Selkreg	476,025	May 31	3409	860	59	1354
Fly-paper. Sticky	J. H. Smith	476,087	May 31	3508	884	59	1375
Fly-trap	C. Becher	474,514	May 10	1014	260	59	843
Fly-traps. Fluid-receptacle for	C. Becher	477,618	June 21	2231	557	59	1905
Fly-wheel	B. Coburn	477,324	June 21	1747	{427, 428}	59	1810
Fog-signal	W. R. Close	472,335	Apr. 5	519	135	59	97
Folding box or crate	E. Dredge	473,730	Apr. 26	2745	691	59	570
Folding chair	J. W. Hamilton	472,603	Apr. 12	921	237	59	189
Folding chair	T. J. Le Count	473,704	Apr. 26	2709	681	59	563
Folding-machine	L. C. Crowell	472,472	Apr. 5	722	{184, 185, 186}	59	137
Folding-machine	W. A. Tholen and W. J. Murray	476,329	June 7	156	{38, 39, 40}	59	1467
Folding or knockdown box	J. Gordon and C. R. Perkins	477,051	June 14	1282	311	59	1707

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Folding seat	M. H. and W. J. Hansen	475,310	May 24	2261	583	59	1119
Folding stand or treatle	J. T. Miller	478,065	June 28	2939	734	59	2059
Folding table	W. R. Morgan and C. S. Osborn	476,400	June 7	275	65	59	1492
Folding tubular fabrics. Machine for	W. B. Erskine	475,272	May 17	2208	564, 565	59	1092
Food articles. Means for packing	H. Salzer	477,849	June 28	2602	652	59	1994
Food product	C. Saville	472,644	Apr. 12	980	.....	59	199
Foot-rest	E. L. Button	472,205	Apr. 5	313	81	59	59
Forge. Automatic electric	G. D. Burton and E. E. Angell	475,196	May 17	2092	529	59	1068
Forge. Blacksmith's	W. J. Ptomey	477,609	June 28	2356	589	59	1948
Forge. Electric	G. D. Burton and E. E. Angell	475,186	May 17	2078	525	59	1065
Forge. Electrical	G. D. Burton	475,178	May 17	2065	519, 520	59	1062
Forge. Electrical	G. D. Burton and E. E. Angell	475,195	May 17	2091	529	59	1068
Forging eye-bars. Machine for	H. W. Loss	476,155	May 31	3623	916	59	1397
Fork: *See* Hay-tedder fork. Weft-fork.							
Fortification. Revolving-tower	T. R. Timby	474,271	May 3	592	147, 148	59	752
Fountain: *See* Soda-fountain. Stock-fountain.							
Fountain	F. Pascalar	475,146	May 17	2016	509	59	1053
Frame: *See* Bicycle-frame. Satchel or bag frame. Clover-huller frame. Tile-frame. Knitting-frame. Umbrella or parasol frame. Mosquito-bar frame. Window-frame. Plant-frame.							
Fraud-preventive device for slot-machines	J. Schofield	475,899	May 31	3222	815	59	1316
Freezing apparatus	C. A. Burt	477,626	June 21	2240	561	59	1907
Friction-coupling	H. P. Christie	472,432	Apr. 5	662	169	59	124
Fruit-box	C. W. Weston	474,276	May 3	599	149	59	754
Fruit-carrier	G. W. Stevens	474,105	May 3	349	83	59	704
Fruit-evaporator	J. W. Doty	477,856	June 28	2614	655	59	1996
Fruit-gatherer	W. Wasmuth	477,479	June 21	1990	494	59	1857
Fruit-grader	G. A. and C. F. Fleming	475,497	May 24	2569	654	59	1176
Fruit-jar	D. Rylands	472,401	Apr. 5	619	158	59	116
Fruit-jar	A. Vogt	473,100	Apr. 19	1676	425	59	344
Fruit or vegetable cutter or grater	E. Samson	477,826	June 28	2558	640	59	1985
Fruit-pitter	A. G. Carter	474,901	May 17	1632	417	59	978
Fruit-pitting machine	T. Harding	473,838	Apr. 26	2005	730	59	691
Fruit-pitting machine	F. C. Staniford	475,048	May 17	1865	473	59	1023
Fruit-press	S. Grossman	475,856	May 31	3153	800	59	1303
Fruit squeezer and strainer. Combined	G. Gamlen	473,220	Apr. 19	1900	479	59	385
Fuel. Artificial	H. Zahn	478,039	June 28	2899	.....	59	2032
Fuel-bricks. Machine for forming	J. P. Schmidt	474,412	May 10	855	224	59	814
Fuel-feeding device	G. H. Colton	475,203	May 17	2104	531	59	1071
Fuel press and cutter	G. Frank	473,834	Apr. 26	2001	728	59	600
Fulling-mill	J. W. Millet	472,900	Apr. 12	1347	346, 347	59	270
Fumigator	H. F. Loepere	473,631	Apr. 26	2599	654	59	542
Funnel	L. Kirchner	477,011	June 14	1217	295	59	1694
Funnel	R. Rahn	473,081	Apr. 19	1648	419	59	338
Funnel	A. P. Wood	474,036	May 3	241	58	59	684
Funnel for filling lamps	T. W. Griffin	477,002	June 14	1203	292	59	1690
Funnel. Indicating	I. W. Lord	475,875	May 31	3179	806	59	1309
Funnel. Measuring	F. E. Butts	474,575	May 10	1117	286	59	863
Funnel. Measuring	T. F. Scolley	477,072	June 14	1325	321	59	1715
Funnel. Packer's	J. H. J. Haines	474,392	May 10	805	210	59	803
Funnel. Valved	T. Miller	474,674	May 10	1275	325	59	893
Fur-dags. Machine for opening	Edward, Sr., Ellis, Jr., and Edward Beesley, Jr.	472,025	Apr. 5	9	3	59	4
Furnace: *See* Alloying-furnace. Melting-furnace. Boiler-furnace. Metallurgical furnace. Boiler or other furnace. Ore-roasting furnace. Puddling-furnace. Brick-kiln furnace. Retort-furnace. Glass-furnace. Smelting-furnace. Heating-furnace. Smoke-consuming furnace. Hot-air furnace. Hot-water furnace.							
Furnace	S. Bunn	472,697	Apr. 12	1066	275	59	215
Furnace	W. Decker and J. P. Bell	472,728	Apr. 12	1105	284	59	222
Furnace	W. H. Hodgson	476,270	June 7	62	13	59	1450
Furnace	P. Kiefer, Jr.	474,173	May 3	447	108	59	734
Furnace	J. Marshall	475,964	May 31	3357	846	59	1342
Furnace	D. J. McKenzie	477,263	June 21	1650	403	59	1791
Furnace	E. F. Paddon	475,603	May 24	2733	692	59	1208
Furnace	W. Sloan	473,268	Apr. 19	1975	495	59	400
Furnace	F. E. Thedens	472,183	Apr. 5	272	71	59	51
Furnace-buckstave	M. W. Iles	476,275	June 7	70	15	59	1451
Furnace-door opener	D. Curry	477,888	June 28	2668	667, 668	59	2006
Furnace-door opener	C. H. Oliver	475,338	May 24	2317	594	59	1130
Furnace for burning liquid fuel	S. Cox, Jr	473,252	Apr. 19	1946	489	59	394
Furnace for iron-working	W. Heckert, W. J. Thomas, and F. L. Heckert.	475,398	May 24	2408	614	59	1146
Furnace for the incineration of garbage	J. Wilson	474,933	May 17	1677	429	59	988
Furnace-grate	W. R. Roney	474,346	May 3	743	194	59	779
Furnace-grate	R. and R. A. Whelan	474,931	May 17	1673	427, 428	59	987
Furnace-grate support	H. D. Babcock	472,780	Apr. 12	1182	302	59	236
Furnace regulator. Steam	J. Levey	472,373	Apr. 5	575	148	59	108

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Furnaces. Apparatus for conducting and screening gases from metallurgical	M. W. Iles	475,774	May 31	3004	702	59	1274
Furnaces. Draft-regulator for heating	R. A. May	472,305	Apr. 5	468	120	59	88
Furnaces. Grate-bar and shaker attachment for	G. W. Walker	476,584	June 7	536	127, 128	59	1543
Furnaces. Hydrocarbon-oil burner for	J. Wilson	475,478	May 24	2539	646	59	1171
Furniture attachment	C. Seller	472,200	Apr. 5	298	78	59	56
Furniture-beater	S. J. Shaw	477,388	June 21	1849	455	59	1830
Furniture. Library	L. C. Taylor	477,190	June 14	1506	369	59	1752
Fuse	H. P. Merriam	475,786	May 31	3019	765, 766	59	1276
Gag-runner	E. Felsberg and F. S. Dill	475,392	May 24	2401	613	59	1145
Gage: *See* Lamp oil-gage. Track-gage. Leather-gage. Watchmaker's gage. Shingling-gage. Weather-board gage. Sliding gage. Wire-gage. Surface-gage.							
Gage	S. F. Brown	473,290	Apr. 19	2011	505	59	408
Gage-knife	A. B. Schofield	474,532	May 10	1042	267	59	848
Galvanic battery	M. M. Clark	476,733	June 7	758	187	59	1588
Galvanometer	S. Bergmann and G. A. Scott	472,026	Apr. 5	11	3	59	5
Game apparatus	J. A. Eno	472,289	Apr. 5	440	114	59	83
Game apparatus	F. L. Fithian	473,218	Apr. 19	1897	478, 479	59	384
Game apparatus	J. W. Hale	473,114	Apr. 19	1712	433	59	349
Game apparatus	W. F. Hood	475,561	May 24	2675	679	59	1196
Game apparatus	O. von Hunersdorff	476,146	May 31	3606	911, 912	59	1393
Game apparatus	R. and E. Rabiger	474,188	May 3	469	113	59	728
Game apparatus	W. H. Reiff	477,452	June 21	1946	482	59	1848
Game apparatus	E. Reisky	473,265	Apr. 19	1972	494	59	399
Game apparatus	G. L. Reynolds	475,469	May 24	2525	643	59	1168
Game apparatus	H. C. Risdon	475,067	May 17	1895	481	59	1029
Game apparatus	J. Schuman	474,102	May 3	347	83	59	704
Game apparatus	S. T. F. Sterick	474,310	May 3	674	174	59	767
Game apparatus	C. Zimmerling	475,653	May 24	2808	712	59	1224
Game apparatus	C. Zimmerling	477,287	June 21	1689	414	59	1798
Game apparatus and sample-exhibitor	F. H. Smith	472,408	Apr. 5	696	160	59	117
Game apparatus. Coin-controlled	M. G. Imbach, Jr	476,384	June 7	246	60	59	1464
Game apparatus or puzzle	F. L. Fithian	473,217	Apr. 19	1896	478	59	384
Game. Base-ball	M. Ullman	476,334	June 7	170	41, 42	59	1469
Game-board	W. Fuld	476,046	May 31	3441	869	59	1360
Game-board	D. W. Randall	472,816	Apr. 12	1230	315	59	245
Game-board	G. Stackhouse	475,624	May 24	2769	701	59	1216
Game-board	N. O. Starks	476,324	June 7	150	37	59	1466
Game-board	A. C. G. Williams-Foote	473,992	May 3	167	40	59	670
Game-counter	A. Smith	475,162	May 17	2040	514	59	1057
Game-counter	E. S. Thornton	472,744	Apr. 12	1131	290	59	226
Gang-plank. Warehouse	O. J. B. Boeselager	476,601	June 7	567	135	59	1549
Garbage-receptacle	W. B. Rose	477,576	June 21	2138	531	59	1887
Garment-hanger	J. C. Hasse	477,412	June 21	1884	463	59	1836
Garment-hanger	C. W. Laubin	478,062	June 28	2935	733	59	2058
Garment. Skirt-protecting	L. Sittig	476,761	June 7	799	196	59	1597
Garment-supporter	S. B. Ferris	474,379	May 10	803	209	59	803
Garment-supporter	E. C. Long	473,232	Apr. 19	1921	483	59	389
Garment-supporting loop	L. G. Abbott	474,313	May 3	679	176	59	768
Garments. Adjusting-strap for	J. A. Phillips	475,515	May 24	2601	661	59	1182
Gas and air mixer	A. L. Avery	477,288	June 21	1690	414	59	1799
Gas and burning the same. Apparatus for converting petroleum, &c., into	G. F. Randolph	476,554	June 7	491	117	59	1535
Gas and electric-light bracket. Combined	J. Fitzgerald	473,661	Apr. 26	2643	666	59	551
Gas and other products given off during the process of fermentation. Method of and appliance for the collection and utilization of carbonic-acid	C. R. C. Tichborne, A. E. Darley, M. F. Purcell, and S. Geoghegan	472,085	Apr. 5	111	30	59	22
Gas. Apparatus for charging magazines with liquefied	P. Giffard	475,728	May 24	2931	744	59	1245
Gas. Apparatus for the manufacture of	H. C. Rew	472,077	Apr. 5	100	27, 28	59	21
Gas. Apparatus for the manufacture of	G. Scharfe	473,350	Apr. 19	2115	531	59	428
Gas-burner	G. I. Ewers	475,012	May 17	1812	460	59	1012
Gas-burner	B. McGregor	472,385	Apr. 5	595	151	59	112
Gas-burner	F. Rhind	475,800	May 31	3046	771	59	1281
Gas-burner	H. F. Smith	476,694	June 7	701	171	59	1576
Gas-burner. Atmospheric	C. M. Lungren	474,063	May 3	289	70	59	693
Gas-burner for heating purposes	P. H. Nelson	472,198	Apr. 5	293	77	59	55
Gas-burner. Self-closing	W. M. Roberts	474,695	May 10	1304	333	59	899
Gas-burning heater	C. W. Watson	474,895	May 17	1625	415	59	977
Gas-cap	J. D. Williams and D. E. Davies	476,852	June 14	961	233	59	1642
Gas-engine	J. Charter	472,106	Apr. 5	149	40	59	28
Gas-engine	J. A. Charter	473,293	Apr. 19	2014	506	59	408
Gas-engine	J. A. Charter	477,295	June 21	1699	416	59	1800
Gas-extinguisher. Automatic	C. W. Weiss	473,685	Apr. 26	2676	674	59	557
Gas from oil, water, &c. Apparatus for separating natural	F. H. Root	476,412	June 7	290	69	59	1495
Gas-generating apparatus	W. Moore	473,013	Apr. 19	1541	393	59	320
Gas-generator	W. H. Morgans	474,178	May 3	452	109, 110	59	725
Gas generator and burner. Carbureted-hydrogen	J. M. Goldsmith	476,261	June 7	50	61	59	1447
Gas-governors. Manufacture of	J. W. Blake and J. T. Sackett	475,381	May 24	2385	610	59	1142
Gas-making apparatus	C. H. Dickson and M. S. Hopkins	473,063	Apr. 19	1623	414	59	334
Gas-making apparatus	C. R. Collins	472,785	Apr. 12	1187	304	59	237
Gas-making apparatus	J. Williams, Jr., and E. O. Peoples	477,725	June 28	2396	598, 599	59	1956
Gas-making apparatus	P. A. N. Winand	474,201	May 3	487	117	59	732

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Gas-manufacturing apparatus	C. W. Isbell	472,191	Apr. 5	282	74, 75	59	54
Gas-meter	W. N. Milsted	477,910	June 28	2698	675, 676	59	2012
Gas-meter. Coin-freed	W. Cowan	474,219	May 3	513	123, 124, 125, 126	59	737
Gas-mixer	J. G. Stephens and H. W. Holmes	474,781	May 10	1435	364	59	926
Gas or steam generator	J. M. Goldsmith	476,260	June 7	47	11	59	1447
Gas. Process of and apparatus for generating fuel	J. W. Culmer	477,354	June 21	1793	439, 440	59	1819
Gas-producer	P. A. N. Winand	474,202	May 3	490	118	59	732
Gas-pump	L. Allen	474,512	May 10	1007	259	59	842
Gas-pump. Hydraulic	C. M. Bennett	474,053	May 3	275	67	59	691
Gas-regulator	M. O'Gorman	474,481	May 10	959	247, 248	59	833
Gas-retort	A. Coze	477,834	June 28	2579	645, 646	59	1989
Gas-retort	A. Coze and A. Lencauchez	473,145	Apr. 19	1763	445, 446	59	359
Gas-retort charger	A. Coze	473,143	Apr. 19	1760	444	59	358
Gas-retorts. Apparatus for charging	A. Coze and A. Lencauchez	473,144	Apr. 19	1761	444, 445	59	359
Gas-retorts. Apparatus for charging	J. Ruscoe	476,685	June 7	685	166, 167, 168	59	1573
Gas-retorts. Apparatus for discharging	A. Coze	475,540	May 24	2640	671	59	1190
Gas-retorts. Apparatus for drawing	J. Ruscoe	476,686	June 7	688	168, 169	59	1573
Gas to burners. Automatic governor for regulating the supply of	C. B. Bosworth	473,447	Apr. 26	2280	576	59	482
Gate: *See* Bridge-gate. Car-platform gate. Drive-gate. End-gate. Farm-gate. Fence-gate. Irrigating head-gate. Lattice-gate. Railway-gate. Sliding gate. Swinging gate. Tilting gate. Valve-gate.							
Gate	C. Cardwell	476,127	May 31	3578	900	59	1387
Gate	J. R. Carpenter	472,522	Apr. 12	808	208	59	166
Gate	W. Chambers	475,198	May 17	2095	530	59	1069
Gate	O. B. Clements and J. I. Smith	474,213	May 3	504	121	59	735
Gate	W. M. Grisham	476,379	June 7	240	58	59	1483
Gate	J. L. Higgens	474,250	May 3	560	138	59	747
Gate	W. Huff	473,752	Apr. 26	2779	699	59	577
Gate	A. Ihlenfeldt	473,578	Apr. 26	2513	634	59	527
Gate	F. E. R. Malke	477,667	June 28	2311	578	59	1938
Gate	M. McDonough	472,905	Apr. 12	1352	348	59	271
Gate	W. J. Pearce	473,777	Apr. 26	2815	707	59	584
Gate	F. L. Sellers and J. G. Schlissel	475,708	May 24	2890	731	59	1238
Gate	J. C. Shannon	472,080	Apr. 5	105	29	59	21
Gate	J. H. Tudor	478,036	June 28	2894	723	59	2051
Gear-cutter	F. W. Clough	476,734	June 7	759	187, 188	59	1588
Gear-cutting machine	A. H. Brainard	472,519	Apr. 12	805	207	59	166
Gear. Differential	G. Cottrell	474,903	May 17	1635	417	59	979
Gear. Reversing	J. F. M. Woods	475,026	May 17	1833	464, 465	59	1017
Gear-wheel	E. W. Bliss	472,664	Apr. 12	1005	260	59	204
Gears or pinions. Machine for making	D. H. Church	476,953	June 14	1131	272, 273	59	1676
Gearing	H. L. Shepard	475,901	May 31	3225	816	59	1317
Gearing	J. Thomson	476,101	May 31	3534	888	59	1378
Generator: *See* Electric generator. Gas-generator. Gas or steam generator. Pyromagnetic generator. Steam-generator. Steam or hot-water generator.							
Geological formations. Apparatus for illustrating	D. M. Barringer	477,633	June 28	2259	565	59	1927
Gill-faller	E. Clarkson	476,785	June 14	845	208	59	1619
Gin-saw gummer	J. W. Smith	475,621	May 24	2763	700	59	1215
Glass: *See* Cupping-glass.							
Glass-annealing oven	J. P. Whitney	477,920	June 28	2714	679	59	2016
Glass articles. Apparatus for molding curved hollow	L. Appert	476,772	June 14	819	202	59	1614
Glass articles. Manufacture of hollow	C. Ulig	472,631	Apr. 12	964	250	59	197
Glass. Decorating	J. H. Scharling	472,230	Apr. 5	349	90	59	65
Glass for windows, &c. Manufacture of stained	A. R. Carter and H. C. Hughes	477,900	June 28	2816	705	59	2037
Glass from flatting-ovens. Carrier for conveying	T. A. Zellers	474,983	May 17	1768	447, 448	59	1004
Glass-furnace	M. L. Murphy	476,672	June 7	667	162	59	1569
Glass grinding and polishing apparatus	G. A. Marsh, Jr	477,308	June 21	1716	420, 421	59	1803
Glass-grinding machine	R. Friedel	474,119	May 3	364	87	59	707
Glass-grinding machinery	R. Friedel	477,839	June 28	2589	648	59	1991
Glass grinding or polishing table	G. A. Marsh, Jr	477,305	June 21	1721	421	59	1805
Glass-lined bend, elbow, or pipe-fitting	A. Husselbee	476,648	June 7	637	155	59	1563
Glass, &c. Machine for decorating	M. Suess	474,701	May 10	1312	335	59	901
Glass-molds. Label-former for	J. S. Irwin	476,649	June 7	638	155	59	1563
Glass on grinding and polishing tables. Apparatus for placing plate	G. A. Marsh, Jr	477,304	June 21	1720	421	59	1804
Glass plates. Machine for cutting	W. J. Wilson	477,585	June 21	2157	535, 536	59	1891

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Glass-polishing machine	F. K Maximilian	477,135	June 14	1416	344, 345	59	1733
Glass-rolling machine	S. Sadler	474,484	May 10	966	249	59	834
Glass. Table for holding plate	G. A. Marsh, Jr	477,306	June 21	1723	422	59	1805
Glass-tube cutter	J. O. Fowler, Jr	476,626	June 7	603	144	59	1556
Glass vessels. Apparatus for finishing the edges of	J. Pease	477,447	June 21	1938	480	59	1846
Glassware. Manufacture of	D. C. Ripley	477,336	June 21	1762	431	59	1813
Globe or shade holder	D. N. Gleason	473,550	Apr. 26	2447	619	59	512
Glove	L. L. Tabor and A. Sedmibradsky	474,929	May 17	1671	427	59	986
Glove-fastener	C. H. Goodwin	477,857	June 28	2616	655	59	1996
Glove-fastener	C. H. Reed	474,409	May 10	851	222	59	813
Glove-fastening	A. V. Demange and J. M. R. Hervieu	476,736	June 7	764	188	59	1589
Glove-fastening	W. B. H. Dowse	476,255	June 7	41	9	59	1446
Glove-fastening	P. A. Raymond	472,272	Apr. 5	415	106	59	78
Glove-fastening	F. A. Richardson	476,410	June 7	289	68	59	1494
Glove for base-ball catchers	T. A. Kennedy	472,482	Apr. 5	743	189	59	141
Gluing-machine	W. E. Brock	474,572	May 10	1111	284	59	862
Gluing-table	W. E. Brock	476,975	June 14	1164	281	59	1682
Glycerine and salt from spent soap-lye. Recovering	A. Domeier and O. C. Hagemann	475,757	May 31	2976	.....	59	1268
Glycerine from spent soap-lye. Recovering crude	A. Domeier and O. C. Hagemann	475,758	May 31	2977	.....	59	1268
Gold and other metals from their ores. Electrolytic apparatus for separating	G. J. Atkins	473,105	Apr. 19	1684	427, 428	59	345
Gold-concentrator	W. H. Hill	474,014	May 3	206	48	59	677
Gold from sulphide ores. Extracting	T. A. Edison	474,591	May 10	1138	.....	59	867
Gold-leaf. Spool for carrying and applying	G. P. Hogan	472,031	Apr. 5	62	16	59	14
Governor	G. G. Annable	476,356	June 7	201	48, 49	59	1475
Governor	R. Baumann	472,690	Apr. 12	1042	269	59	210
Governor	F. Hart	472,293	Apr. 5	448	116	59	84
Governor	P. Piccard	474,064	May 3	289	70	59	693
Governor	R. H. Plass	476,408	June 7	286	67	59	1494
Governor and motor. Thermostatic	W. E. Eastman	476,372	June 7	231	56	59	1481
Governor. Cut-off	L. O. Harris	473,743	Apr. 26	2769	696	59	575
Governor. Electrical	M. A. Repiegle	476,311	June 7	123	30	59	1462
Governor. Engine	R. J. McIlhenny	474,678	May 10	1281	326	59	894
Governor. Engine	M. Rothfuss	473,712	Apr. 26	2718	684	59	565
Governor for gas-engines. Speed	J. S. Connelly	475,385	May 24	2392	611	59	1143
Governor for pneumatic motors. Automatic	W. D. Parker	473,338	Apr. 19	2095	526	59	424
Governor. Steam-engine	R. G. Manifold	472,378	Apr. 5	584	149	59	110
Governor. Steam-engine	R. H. Payne	475,148	May 17	2018	510	59	1053
Governor. Steam-engine	W. O. Webber	477,344	June 21	1775	434	59	1815
Governor. Steam-radiator	W. Burnham	474,441	May 10	905	234	59	822
Grader and scalper	J Desjardin and W. J. Stewart	473,500	Apr. 26	2367	600	59	498
Grading-machine	W. D. Arnett	472,569	Apr. 12	872	224	59	180
Grain-adjuster	T. H. Hendershot	475,861	May 31	3160	802	59	1304
Grain-binder	W. C. Adams	474,801	May 17	1471	375	59	947
Grain-binder	P. P. Coler	477,992	June 28	2819	705, 706	59	2038
Grain-binder	G. Schubert	472,143	Apr. 5	207	55, 56	59	39
Grain-binder butt-board	G. Schubert	473,559	Apr. 26	2468	625	59	518
Grain-binder cord-knotter	C. Colahan	476,519	June 7	445	105, 106	59	1524
Grain-binder cord-knotter	A. Stark	475,821	May 31	3091	782, 783	59	1290
Grain-binder cord-knotter	A. Stark	475,822	May 31	3094	783, 784	59	1291
Grain-binders. Compressor and discharging mechanism for	G. Schubert	473,021	Apr. 19	1556	396	59	323
Grain-binders. Mechanical movement for	B. F. Stewart	473,976	May 3	143	33	59	665
Grain-cleaner	T. J. Hatfield	477,594	June 21	2170	538	59	1894
Grain cleaner and scourer	G. A. Smith	473,794	Apr. 26	2841	713, 714	59	588
Grain-conveyer	H. M. Hastings	472,454	Apr. 5	696	178	59	131
Grain drier or moistener	J. C. Weller	474,568	May 10	1105	282	59	861
Grain-drill	J. L. Ashurst	475,532	May 24	2627	668, 669	59	1187
Grain-drill	W. H. Davis	477,520	June 21	2055	512	59	1871
Grain-drill	P. Kesling	476,391	June 7	260	62	59	1488
Grain-drill	W. G. Munn and E. Christman	473,234	Apr. 19	1923	484	59	300
Grain elevating and moving apparatus	D. B. Taylor	475,635	May 24	2763	705	59	1219
Grain-meter	A. N. Calkins	476,608	June 7	575	137	59	1550
Grain-meter	M. Cowan and J. G. Ragains	477,245	June 21	1622	396	59	1786
Grain preparatory to grinding. Process of and apparatus for dampening	B. Meier and L. E. Fritsche	477,909	June 28	2796	675	59	2012
Grain-purifier	F. P. Manning	477,668	June 28	2312	578	59	1938
Grain-separator	J. M. King	475,779	May 31	3010	763	59	1275
Grain separator	G. A. Schraud	477,783	June 28	2487	622	59	1973
Grain-shocking machine	W. Russell	475,612	May 24	2748	697	59	1212
Graining mechanism	J. Madden	474,093	May 3	335	80	59	702
Gramophones. Coin-controlled apparatus for	E. L. Wilson	472,417	Apr. 5	637	163	59	119
Granite and marble. Manufacturing artificial	C. George	477,326	June 21	1750	.....	59	1811
Grape-picker	G. L. Moore and C. Jory	477,952	June 28	2763	692	59	2026
Grape-vine clamp	W. H. Mills	475,589	May 24	2713	688	59	1205
Grate	F. Carel and W. F. Davidson	474,292	May 3	635	160	59	760
Grate	J. W. Greene	472,171	Apr. 5	251	66	59	47
Grate	A. J. Hull	475,866	May 31	3165	803	59	1305
Grate	J. A. Price	476,963	June 14	1148	277	59	1679
Grate	W. R. Roney	473,963	May 3	126	29	59	662
Grate	W. R. Roney and J. T. Arnold	474,345	May 3	740	193	59	779
Grate	A. A. Shepardson	474,462	May 10	937	241	59	828
Grate and mantel. Portable	F. L. Hart	474,655	May 10	1235	315, 316	59	886
Grate-bar	J. A. Duncan	474,116	May 3	362	86	59	707

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Grate-bar	J. Montgomery	478,013	June 28	2858	715, 716	59	2044
Grate. Fire-	M. N. Forney	472,039	Apr. 5	41	9	59	10
Grate. Fire-	O. A. Kyser	472,058	Apr. 5	71	19	59	16
Grate fire-guard	J. J. Mitchell	474,562	May 10	1099	281	59	860
Grater	G. Thorn	477,083	June 14	1341	325	59	1718
Grater. Nutmeg-	F. E. Abbott	473,051	Apr. 19	1606	409	59	331
Grave-marker	J. A. Coffey	473,206	Apr. 19	2020	507	59	409
Gravel, ore, &c. Apparatus for cleaning and grading	N. Jewett	475,568	May 24	2685	681	59	1198
Gravel-screen	F. J. Hoyt	474,662	May 10	1250	319	59	889
Grease, &c., from wool-washings. Recovering	R. B. Griffin	475,395	May 24	2403	.....	59	1146
Gridiron	M. and M. Griswold, Jr	472,537	Apr. 12	832	212	59	171
Grinder. Tool-	J. M. Clock	476,872	June 14	991	240	59	1648
Grinding-machine	W. Ross	477,067	June 14	1306	317, 318	59	1711
Grinding-mill	N. P. Bowsher	477,498	June 21	2019	500, 501	59	1862
Grinding-mill	L. D. Harding	475,859	May 31	3156	800, 801	59	1303
Grinding the blades of rotary cylinders. Device for	A. E. Whitney	476,938	June 14	1106	267	59	1670
Grubbing-machine	C. A. King	473,191	Apr. 19	1852	466, 467	59	375
Guard: *See* Bedstead folding guard; Cattle-guard; Door-guard; Fire-guard; Grate fire-guard; Keyhole-guard; Railway surface stock-guard; Rand-guard; Razor-guard; Sidewalk-hole guard; Snow-guard; Stallion-guard; Wheel-guard.	J. Starks	472,279	Apr. 5	423	109	59	79
Guard-finger	J. H. Jones	475,118	May 17	1979	502	59	1045
Guitar-bridge	T. Wolfram	474,432	May 10	886	231	59	820
Gun	F. E. D. Acland and C. Holmström	472,244	Apr. 5	369	95, 96, 97, 98	59	69
Gun	A. W. Livingston and S. E. Starrett	477,946	June 28	2756	690	59	2024
Gun barrels. Manufacture of	F. Meixner	477,763	June 28	2461	615	59	1968
Gun barrels. Uniting air-	C. J. Hamilton. (Reissue)	11,247	June 21	2249	563	59	1908
Gun. Blow-	W. M. Bunsen	477,322	June 21	1745	427	59	1809
Gun. Breech-loading	J. B. G. A. Canet	474,288	May 3	619	153, 154	59	757
Gun. Breech-loading magazine	A. Burgess	476,246	June 7	21	5	59	1443
Gun indicating device	H. Elbe	477,187	June 14	1501	367, 368	59	1751
Gun. Machine-	I. N. Archbold	476,590	June 7	516	130	59	1545
Gun. Machine-	F. M. Garland	475,276	May 17	2214	566, 567, 568	59	1093
Gun. Magazine-	K. Krnka	475,061	May 17	1884	478, 479	59	1027
Gun. Magazine-	F. W. Lantz	477,128	June 14	1401	340, 341	59	1730
Gun. Magazine-	W. E. Loomis	477,666	June 28	2308	577	59	1937
Gun. Magazine-	A. Mercer	477,764	June 28	2462	615, 616	59	1968
Gun. Magazine breech-loading	T. J. Thorp	473,370	Apr. 19	2147	538, 539	59	434
Gun. Magazine spring-	A. A. Clive	472,251	Apr. 5	382	100	59	71
Gun. Rapid-firing	O. H. Arno	473,808	Apr. 26	2861	718	59	593
Gun. Recoil-operated magazine-	R. Bowers	476,242	June 7	11	2, 3	59	1440
Gun-rest	R. Mallen	472,377	Apr. 5	581	149	59	109
Gun. Spring-	C. W. Unger	475,640	May 24	2790	707	59	1220
Gun. Spring air-	J. W. Atkinson	477,982	June 28	2799	701	59	2034
Gun. Spring air-	W. F. Markham	473,633	Apr. 26	2601	654	59	542
Guns. Apparatus for pointing	G. W. Sage	477,385	June 21	1845	454	59	1829
Guns. Cartridge-stop for magazine-	C. Martin	472,895	Apr. 12	1342	344, 345	59	989
Guns. Ejector mechanism for breech-loading	P. Mauser	476,290	June 7	91	21	59	1456
Guns. Lock and ejector mechanism for breakdown	T. Perkes	476,485	June 7	401	93	59	1515
Guns. Mounting for turret and other	D. M. Lefever	475,873	May 31	3174	805, 806	59	1307
Guns. Safety-lock for hammerless	J. B. G. A. Canet	474,290	May 3	628	157, 158, 159	59	759
Guns. Shell-extractor for bolt-	R. L. Palmer	476,064	May 31	3473	876	59	1368
Gutter-former	P. Mauser	477,671	June 28	2317	579	59	1939
Gypsum. Composition for retarding the solidification of calcined	M. C. Hungerford	475,315	May 24	2276	586	59	1122
Hair-curler	E. Watson	472,392	Apr. 5	493	.....	59	93
Hair-waver	J. S. Wertsbaugher	473,101	Apr. 19	1677	425	59	344
Hair waving or crimping device	M. L. Scelley	476,824	June 14	916	224	59	1633
Halter	E. Gaudin	472,449	Apr. 5	601	176	59	130
Hame	A. E. Chambers, Jr	477,644	June 28	2275	570	59	1930
Hame	E. L. Howe	475,863	May 31	3162	802	59	1305
Hame-fastener	F. X. Perry	472,270	Apr. 5	411	106	59	77
Hammer. Magazine tack-	J. Stretch and T. M. Blackwell	475,953	May 31	3308	834	59	1333
Hammer. Power-	A. T. Lewis	472,374	Apr. 5	576	148	59	108
Hammer. Power-	W. H. Law	477,559	June 21	2116	526	59	1883
Hammer. Stone-dressing	J. B. Sweeney and R. W. Laird	477,159	June 14	1451	356	59	1740
Hammocks. Woven valance for	G. McDonald	477,017	June 14	1224	297	59	1605
	I. E. Palmer	474,997	May 17	1789	453	59	1008

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Handle: *See* Basket-handle; Bell-handle; Bicycle-handle; Brush-handle; Casket-handle; Implement-handle; Latch-handle; Pump-handle; Saw-handle; Tea-pot and coffee-pot handle.							
Handle attachment for shovels, hoes, &c	L. Gayon	474,121	May 3	366	88	59	708
Handle for wrenches or other tools	F. W. Simmons	472,556	Apr. 12	855	219	59	177
Handle. Vessel-	F. Haberman and E. Sifferlen	475,218	May 17	2121	537	59	1074
Handles. Device for forming the ends of	J. A. Aiken	476,220	May 31	3743	945, 946	59	1419
Hanger: *See* Arc-light hanger; Cable-hanger; Coat-hanger; Curtain-hanger; Door-hanger; Eaves-trough hanger; Electric-wire hanger; Garment-hanger; Lamp-hanger; Pipe-hanger; Tobacco-hanger; Trousers-hanger.							
Harness	W. A. Hunter	476,797	June 14	869	214	59	1023
Harness	A. Mendel	477,378	June 21	1834	450	59	1826
Harness	O. A. Willyard	475,911	May 31	3242	819	59	1320
Harness attachment	O. A. Willyard	475,912	May 31	3243	819	59	1320
Harness-check safety-loop	T. S. Moodie	475,282	May 17	2225	571	59	1096
Harness-hook	T. B. Mayell	474,845	May 17	1549	395	59	960
Harness ornament	O. V. P. Day	472,863	Apr. 12	1292	332	59	258
Harrow	J. Pfiffner and J. Kriebs	473,079	Apr. 19	1645	419	59	338
Harrow	J. W. Hays	477,541	June 21	2090	520	59	1878
Harrow	J. I. Hoke	473,155	Apr. 19	1778	449	59	362
Harrow	W. J. Hyde	473,754	Apr. 26	2781	699	59	577
Harrow	C. H. Kading	472,120	Apr. 5	191	51	59	35
Harrow	A. Mestayer	476,020	May 31	3403	859	59	1352
Harrow	J. S. Ravl	474,692	May 10	1301	333	59	899
Harrow	W. Stralt	473,796	Apr. 26	2845	714	59	589
Harrow	A. Wilfert	473,041	Apr. 19	1593	405	59	329
Harrow and corn-planter. Combined	F. B. Harvey and B. F. Hartman	476,141	May 31	3509	909, 910	59	1392
Harrow and roller	F. B. Harvey	473,746	Apr. 26	2772	697	59	575
Harrow and seeder. Combined	W. H. Nauman	477,441	June 21	1927	475, 476	59	1844
Harrow. Disk	R. W. Hardie	473,115	Apr. 19	1712	434	59	349
Harrow. Disk	R. P. Howard	472,656	Apr. 12	994	257	59	202
Harrow. Disk	T. Maxon	472,710	Apr. 12	1085	278	59	218
Harrow. Disk	H. Wiard and H. M. Burdick	476,435	June 7	325	74	59	1500
Harrow or cultivator	W. H. Baker and B. A. Oborn	478,072	June 28	2950	737	59	2061
Harrow. Riding-	R. L. Kirby	473,933	May 3	81	16	59	652
Harrow. Spring-tooth	F. Van Patten	472,185	Apr. 5	275	72	59	52
Harrow. Sulky spring-tooth	T. G. Cook	473,141	Apr. 19	1756	443	59	358
Harrow-teeth. Machine for bending	H. M. Brinkman	472,960	Apr. 12	1445	369	59	288
Harrow-tooth. Spring	A. V. Ryder	474,461	May 10	936	240	59	928
Harvester	J. E. Deering	473,300	Apr. 19	2025	508	59	410
Harvester	J. M. Doddridge	476,226	May 31	3754	948	59	1421
Harvester	J. F. Steward	476,326	June 7	152	37	59	1467
Harvester	J. F. Steward	477,709	June 28	2374	593, 594	59	1952
Harvester and feed-cutter. Corn-	C. C. Fenno	473,111	Apr. 19	1709	432, 433	59	348
Harvester attachment	P. H. Botof	475,434	May 24	2466	628, 629	59	1156
Harvester. Corn-	R. J. Aultman	476,595	June 7	558	133	59	1546
Harvester. Corn-	E. B. Bowen	474,359	May 10	774	201, 202	59	797
Harvester. Corn-	A. B. Clippinger	472,916	Apr. 12	1373	352	59	276
Harvester. Corn-	C. D. Courtright and C. A. Powell	473,298	Apr. 19	2022	508	59	410
Harvester. Corn-	M. C. Gates	474,007	May 3	192	45	59	675
Harvester. Corn-	D. H. Glidden	477,050	June 14	1280	311	59	1703
Harvester. Corn-	C. P. Haskell	473,926	May 3	63	13	59	648
Harvester. Corn-	W. C. Houser	473,840	Apr. 26	2911	731, 732	59	603
Harvester. Corn-	L. V. Lewis and S. S. Allen	477,132	June 14	1409	342, 343	59	1732
Harvester. Corn-	W. M. Platt	474,761	May 10	1400	354, 355	59	919
Harvester. Corn-	F. Steffen	473,095	Apr. 19	1668	424	59	342
Harvester. Corn-	C. F. Stubblefield	475,223	May 17	2129	538	59	1076
Harvester. Corn-	J. B. Tosh	477,317	June 21	1738	426	59	1808
Harvester. Corn or cane	R. B. Robbins	475,418	May 24	2441	622, 623	59	1152
Harvester. Cornstalk-	W. F. Williams	476,849	June 14	954	232, 233	59	1641
Harvester. Cotton-	W. E. Foote	475,979	May 31	3348	844	59	1340
Harvester-elevator	J. H. Pitkin	476,302	June 7	113	27	59	1460
Harvester-gearing	A. Stark	477,077	June 14	1331	322, 323	59	1717
Harvester. Grain-	J. F. Steward	474,700	May 10	1310	334	59	901
Harvester pitman-rod connection	L. C. Sweet	475,358	May 24	2345	601	59	1135
Harvester-platforms. Apparatus for raising and lowering	W. M. Holmes	475,862	May 31	3161	802	59	1304
Harvester. Potato-	G. B. Irwin	473,317	Apr. 19	2049	514	59	415
Harvester. Potato-	F. W. Lee	472,370	Apr. 5	567	146	59	106
Harvester-reel	O. Knutson	473,072	Apr. 19	1637	417	59	337
Harvester-reels. Means for raising and lowering	W. F. Stimpson	476,027	May 31	3411	861	59	1354

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Harvester-seat	C. A. Bauer	476,238	June 7	3	1	59	1439
Harvesters and binders. Grain-conveyer for	G. Schubert	474,416	May 10	862	225	59	815
Harvesters and binders. Vertical gearing for	G. Schubert	476,901	June 14	1037	252	59	1657
Harvesters. Raising and lowering mechanism for	G. Schubert	476,902	June 14	1041	253	59	1658
Harvesters. Sheaf-carrier for self-binding	A. Jewell	472,885	Apr. 12	1325	340, 341	59	965
Harvesting cotton. Process of and apparatus for	W. P. Groom	477,177	June 14	1484	364	59	1747
Harvesting machine. Corn-	J. and J. Clements and F. H. Rollins	477,169	June 14	1471	360, 361	59	1745
Hasp-lock	F. B. Houser	475,962	May 31	3233	838	59	1335
Hasp-lock	C. C. Llnindoll	474,021	May 3	218	52	59	680
Hat blocking and banding machine	G. E. Brush	475,662	May 24	2822	715	59	1226
Hat blocking and pressing machine	M. Quinn	473,641	Apr. 26	2613	658	59	545
Hat-bodies. Seam for securing sweat-bands to	W. P. Gammons, Jr	477,751	June 28	2446	610	59	1965
Hat-brims. Machine for curling	T. E. Avery	472,974	Apr. 19	1467	376, 377	59	305
Hat holder and case	H. Stevenson	477,969	June 28	2782	697	59	2030
Hat-ironing implement	A. E. McDonald	476,403	June 7	280	66	59	1403
Hat packing-case	J. S. Abrams and J. Langsdorf	477,981	June 28	2798	701	59	2034
Hat-packing ring	S. T. Newman	477,868	June 28	2638	659	59	2000
Hat polishing and cleaning machine	C. Simis	477,965	June 28	2777	696	59	2029
Hat-rounding machine	A. T. Clason	477,991	June 28	2818	705	59	2037
Hat-rounding machine	C. H. Reid	473,238	Apr. 19	1931	485, 486	59	391
Hat-stiffening machine	W. H. Barnum	476,860	June 14	973	236	59	1644
Hat sweat-band	H. E. Ward	474,540	May 10	1056	270	59	850
Hat-ventilator	M. F. W. Kochner	477,553	June 21	2110	524	59	1882
Hats. Name-plate for	J. G. Ward	476,937	June 14	1104	266	59	1670
Hatch. Elevator-	C. P. Stanford	478,029	June 28	2883	720, 721	59	2049
Hatchet	M. O. Heckman	474,908	May 17	1640	419	59	980
Hay-carrier	R. Gregg	477,001	June 14	1202	292	59	1690
Hay-carrier	W. Louden	472,175	Apr. 5	255	67, 68	59	48
Hay-elevator	J. C. Culbertson	473,915	May 3	46	8	59	645
Hay-loader	T. C. Lippitt	474,476	May 10	953	245	59	831
Hay-press	T. J. Finch	474,498	May 10	986	254	59	838
Hay-press	J. A. Hayes	472,349	Apr. 5	540	139, 140	59	101
Hay-rack	W. T. Wallace	477,161	June 14	1455	357	59	1741
Hay-rake	J. B. Engstrom	473,416	Apr. 19	2230	560	59	450
Hay rake and loader	D. C. Chaddock	475,752	May 31	2970	753, 754	59	1267
Hay-rake. Horse	G. H. Carver	473,496	Apr. 26	2362	599	59	497
Hay-rake. Horse	H. S. Powell	475,342	May 24	2226	596	59	1131
Hay-rake. Horse	W. Strait	473,795	Apr. 26	2342	714	59	589
Hay-rake. Side-delivery horse	H. McPherson	476,961	June 14	1144	276	59	1678
Hay-ricker	M. Chase	475,200	May 17	2097	530	59	1070
Hay-stacker	C. N. Haworth	474,946	May 3	554	136	59	745
Hay-stacker	C. A. Purvis	478,021	June 28	2872	718	59	2046
Hay-stacker	D. M. Stephens	474,422	May 10	873	227, 228	59	817
Hay-stacker	F. W. Whitney	477,878	June 28	2653	663	59	2003
Hay-stacking machine	S. Concannon	472,338	Apr. 5	525	136	59	99
Hay-tedder fork	A. B. Pixley	477,820	June 28	2551	638	59	1984
Hay-tedder fork	C. and C. A. Silberzahn	473,243	Apr. 19	1937	487	59	302
Head and shoulder rest	L. L. Pletcher	474,688	May 10	1295	331	59	898
Head-light. Locomotive	L. L. Jobling	475,242	May 17	2166	551	59	10-2
Head-rest	J. A. Barker	477,197	June 21	1525	373	59	1769
Headers. Brake attachment for the steer-wheels of	D. E. Mentzel	477,136	June 14	1417	345	59	1733
Hearth. Fore-	A. J. Schumacher	475,614	May 24	2755	698	59	1213
Heat-alarm. Automatic electric	F. S. Palmer and L. H. Desisle	475,340	May 24	2320	594	59	1130
Heat-alarm. Electric	J. Meyer	474,673	May 10	1274	325	59	893
Heat-indicator	F. W. Sears	477,313	June 21	1732	424	59	1807
Heat-generating apparatus	H. A. Ramsay	474,344	May 3	739	193	59	779
Heat-regulating apparatus. Automatic	C. F. Goodhue	473,699	Apr. 26	2701	679, 680	59	562
Heat-regulating device	A. B. Morse	474,139	May 3	389	94	59	713
Heater: *See* Car-heater. Electric heater. Electrical heater. Feed-water heater. Fireplace-heater. Gas-burning heater. Hot-water heater. Hot-water and hot-air heater. Metal-heater. Sad-iron heater. Sectional heater. Steam-heater. Tank-heater. Vehicle heater. Water-heater.							
Heater attachment for illuminating apparatus	S. L. Huber	477,368	June 21	1818	445	59	1823
Heaters. Governor for	C. B. Bosworth	473,056	Apr. 19	1611	411	59	332
Heating and ventilating apparatus	C. D. Howard	472,054	Apr. 5	65	17	59	15
Heating and welding by electricity	H. Howard	473,003	Apr. 19	1527	389, 390	59	317
Heating apparatus	R. Calder	472,940	Apr. 12	1410	360	59	282
Heating, &c. Apparatus for	K. Rivnác and L. Vojácek	474,694	May 10	1303	333	59	899
Heating apparatus for cars or buildings	W. C. Baker	476,972	June 14	1160	280	59	1681
Heating-boiler	T. Meikle	475,459	May 24	2509	639, 640	59	1165
Heating-currents. Distributing apparatus for	G. D. Burton	475,179	May 17	2067	520	59	1062
Heating-furnace	G. F. French	474,316	May 3	681	177	59	768
Heating-pad. Electro-therapeutic	F. H. Soden	473,133	Apr. 19	1742	440	59	355
Hedge-cutting machine	J. F. Champlin	477,198	June 21	1527	373	59	1769
Heel	G. W. F. Randolph	473,590	Apr. 26	2536	640	59	531
Heel-breasting machine	M. C. Lockwood	472,736	Apr. 12	1118	287	59	224

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Heel-burnishing machine	F. Molloy	472,307	Apr. 5	470	120, 121	59	88
Heel-making machine	E. H. Taylor	475,714	May 24	2900	734, 735	59	1240
Heel-nailing machine	C. H. Brown and A. B. McCoy	477,098	June 14	1363	332	59	1723
Heel-nailing machines. Gluing attachment for	F. F. Raymond, 2d	476,306	June 7	119	29	59	1461
Heel-plate and ice-creeper	W. Rosenfield	472,396	Apr. 5	612	155	59	114
Heel-plate-attaching machine	W. Rosenfield	472,397	Apr. 5	613	155	59	115
Heel-randing machine	F. F. Raymond, 2d	474,408	May 10	846	221, 222	59	812
Heels. Attaching	F. F. Raymond, 2d	475,001	May 17	1798	456	59	1009
Heeling-machine	F. F. Raymond, 2d	474,407	May 10	844	220, 221	59	811
Hemp-brake	J. O. Ward	474,273	May 3	596	148	59	753
Hemp breaking and cleaning machine	J. Breslin	477,704	June 28	2507	629	59	1976
Hide-fleshing machine	A. E. Whitney	473,039	Apr. 19	1587	403, 404	59	328
Hides. Tawing	H. Endemann	472,701	Apr. 12	1073	.....	59	215
Hinge	H. W. Baker and W. J. Stump	473,688	Apr. 26	2680	675	59	558
Hinge	H. S. Hart	473,175	Apr. 19	1826	460	59	370
Hinge	R. Linkletter	472,622	Apr. 12	954	247	59	195
Hinge	F. W. Loring	472,192	Apr. 5	287	75	59	54
Hinge	J. Marthaler	473,194	Apr. 19	1856	467	59	376
Hinge	J. H. Moore	473,012	Apr. 19	1540	393	59	320
Hinge. Antifriction-	T. Corscaden	475,439	May 24	2472	630	59	1157
Hinge. Blind-	W. E. Mayo	475,332	May 24	2301	591	59	1127
Hinge. Butt-	R. T. Smith	477,465	June 21	1969	488	59	1853
Hinge. Coach-	A. W. Werle	475,993	May 31	3367	849	59	1344
Hinge. Gate-	C. J. Ericson	475,271	May 17	2207	563	59	1092
Hinge. Lock-	F. N. Kelsey	476,466	June 7	368	86	59	1508
Hinge. Lock-	G. L. Loomis	472,483	Apr. 5	744	190	59	141
Hinge. Lock-	G. Oberbeck	475,145	May 17	2015	509	59	1059
Hinge. Lock-	L. Porter	475,415	May 24	2437	621	59	1151
Hinge. Mirror-	W. P. Tarbell	472,409	Apr. 5	629	161	59	118
Hinge. Pail-lid	J. W. Bowerbank	476,032	May 31	3420	864	59	1356
Hinge. Spring-	L. M. Devore	475,060	May 17	1912	485	59	1032
Hinge. Windmill-	S. A. Rouse	472,825	Apr. 12	1242	318	59	248
Hinges. Manufacture of	T. Corscaden	476,521	June 7	448	106	59	1525
Hitching device	C. Belle	477,634	June 28	2260	565	59	1927
Hitching device	J. E. Parkison	472,934	Apr. 12	1400	358, 359	59	280
Hitching device	J. E. Parkison	476,812	June 14	895	220	59	1629
Hoe for vineyards. Sulky-	J. A. Lamb	473,513	Apr. 26	2393	606	59	502
Hog-nose cutter	W. Needham	472,932	Apr. 12	1396	358	59	280
Hoisting and conveying device	E. G. Spilsbury and S. S. Webber	475,710	May 24	2892	731, 732, 733	59	1239
Hoisting and conveying machine	A. E. Brown	474,494	May 10	979	252, 253	59	836
Hoisting apparatus	J. W. Kinsman	475,963	May 31	3395	839	59	1335
Hoisting apparatus	M. J. Paul	475,888	May 31	3210	812	59	1313
Hoisting-hook	R. W. Giese	476,534	June 7	465	110	59	1529
Hoisting-machine	M. Curran, Jr	473,655	Apr. 26	2633	664	59	549
Holdback	O. C. Davis	473,569	Apr. 26	2496	631	59	522
Holdback. Vehicle-	J. F. Tait	476,639	June 14	939	229	59	1637
Holder: *See* Advertising-program holder. Bag-holder. Bill-holder. Bill and letter holder. Book-holder. Book-leaf holder. Book or sheet-music holder. Bouquet-holder. Broom-holder. Brush-holder. Candle-holder. Candle-shade holder. Carbon-holder. Canterizing-point holder. Chalk-line holder. Cigar and ash holder. Coin-holder. Cuff-holder. Dental-flask holder. Electric-wire holder. File-holder. Fishing-rod holder. Globe or shade holder. Hat-holder. Jar-holder. Label-holder. Lamp-holder. Milk-can holder. Music-holder. Newspaper-holder. Opera-glass holder Order-holder. Paper-holder. Parcel-holder. Penholder. Perfume-holder. Photograph-holder. Photographic-plate holder. Photographic-roll holder. Pillow-sham holder. Plant-holder. Plate-holder. Rein-holder. Rope-holder. Sash-holder. Siding-holder. Sleeve and cuff holder. Slip-holder. Soap-holder. Spool-holder. Temporary holder. Ticket-holder. Tool-holder. Tool or reaper-knife holder. Twine-holder. Whetstone-holder. Work-holder. Wire-screen-cloth holder.							
Hollow articles. Apparatus for forming or shaping	F. Moorfield	476,058	May 31	3464	874	59	1365
Honey-extractor	W. Bayless	476,722	June 7	738	183	59	1584
Honey-section press	F. M. Archer	476,116	May 31	3561	895	59	1384
Hoof-expander	J. G. Ripley	475,801	May 31	3047	771	59	1292
Hoof-spreader	G. T. Chapman	476,732	June 7	757	186	59	1588

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hook: *See* Button-hook. Check-hook. Coupling-hook. Fall-hook. Harness-hook. Hoisting-hook. Lacing-hook. Ladder-hook. Rope-hook. Snap-hook. Veterinary parturition-hook. Whiffletree-hook.							
Hook	R. Gorton	472,948	Apr. 12	1420	363	59	284
Hook	H. S. Hart	477,655	June 28	2289	573	59	1933
Hook-rack	E. Roos	477,270	June 21	1658	405	59	1793
Hoop	W. A. Sawyer	474,101	May 3	346	82	59	704
Hoop-coupling	H. W. Ford and R. M. Ferguson	477,173	June 14	1480	362	59	1747
Hoop-coupling	H. W. Ford and R. M. Ferguson	477,174	June 14	1481	363	59	1747
Hoop-fastener	W. F. Robertson	472,142	Apr. 5	205	55	59	39
Hoops, &c. Coupling for	M. Y. Campbell	476,001	May 31	3377	851	59	1346
Hopple	G. P. Cole	472,961	Apr. 12	1446	369	59	289
Horse-blanket fastener	E. H. Danforth	473,916	May 3	47	9	59	645
Horse-blanket fastener	C. H. Pitcher and G. A. Moody	474,264	May 3	579	142	59	750
Horse-boot	C. L. Schoonmaker	475,421	May 24	2448	624	59	1153
Horse-boot	J. Summers	475,827	May 31	3103	786	59	1292
Horse-controlling device	D. T. Woodman	476,109	May 31	3548	893	59	1381
Horse-detacher	J. H. Lane	477,664	June 28	2299	576	59	1935
Horse-detacher	G. W. McAlister	477,775	June 28	2478	620	59	1971
Horse-detacher	E. H. McBride	475,140	May 17	2008	507	59	1051
Horse-detaching mechanism	P. M. Doughty	477,358	June 21	1802	441	59	1819
Horse-hair, &c. Machine for interlacing curled	F. Ochs	476,405	June 7	282	66	59	1493
Horse-hitching device	M. E. Steele	474,928	May 17	1670	426	59	986
Horse-power	R. B. Miller	475,044	May 17	1859	471, 472	59	1022
Horse-power	A. M. Wead	473,683	Apr. 26	2674	673, 674	59	557
Horse's feet. Protecting device for	M. Pigot	476,301	June 7	112	27	59	1460
Horses. Mouth-speculum for	G. Z. Barnes	472,939	Apr. 12	1409	360	59	282
Horses. Overboot for	R. Coates	473,295	Apr. 19	2018	507	59	409
Horses. Quarter-boot for	J. Clark and F. W. Floyd	476,517	June 7	443	105	59	1524
Horses while being shod. Apparatus for holding	M. A. Crossman	472,917	Apr. 12	1374	352, 353	59	276
Horseshoe	J. E. Bull	472,520	Apr. 12	806	207	59	166
Horseshoe	G. Custer	477,926	June 28	2724	682	59	2018
Horseshoe	J. P. Gilbert	474,554	May 10	1079	276	59	855
Horseshoe	C. Hammelmann	472,262	Apr. 5	402	104	59	75
Horseshoe	C. Hammelmann	473,923	May 3	60	12	59	648
Horseshoe	F. A. Hoover	477,658	June 28	2293	574	59	1934
Horseshoe	A. D. Jeffrey	476,798	June 14	870	214	59	1624
Horseshoe	N. Lundwall	474,751	May 10	1367	350	59	915
Horseshoe	G. L. Turcott	477,476	June 21	1985	493	59	1856
Horseshoe and calk	J. B. Stoner	472,562	Apr. 12	863	222	59	178
Horseshoe-calk. Expansible	J. C. Higgins and T. Lea	477,542	June 21	2091	520	59	1878
Horseshoe-machine	H. Nicol and G. Ljung	474,918	May 17	1652	422, 423	59	983
Horseshoe with detachable ice-calks	J. L. Crocker and C. L. Bridges	473,384	Apr. 19	2180	548	59	440
Hose-clamp	L. H. Redfield	477,227	June 21	1586	389	59	1779
Hose-clamp	F. T. Weidaw	473,537	Apr. 26	2432	616	59	510
Hose-coupling	J. Balmore and E. E. Gold	475,738	May 24	2942	746	59	1247
Hose-coupling	C. Christy, Jr	472,471	Apr. 5	722	184	59	137
Hose-coupling	E. and A. Draudt	472,342	Apr. 5	531	138	59	99
Hose-coupling	J. Lenty	476,752	June 7	788	194	59	1594
Hose-coupling	J. E. Louthian	475,406	May 24	2418	618	59	1148
Hose-coupling	C. E. Petterson	475,704	May 24	2886	730	59	1238
Hose-coupling	O. P. Snyder	475,254	May 17	2180	555	59	1086
Hose-coupling	A. Whelan	476,711	June 7	722	178	59	1580
Hose-coupling	F. W. Wright	474,894	May 17	1621	414, 415	59	976
Hose-coupling	F. W. Wright	477,239	June 21	1610	394	59	1784
Hose-nozzle	C. Spencer	476,966	June 14	1151	278	59	1679
Hose or tubing. Flexible	J. Cookburn	475,384	May 24	2391	611	59	1143
Hose-pipe	J. A. Stevens	473,716	Apr. 26	2723	685, 686	59	566
Hose-pipe fitting	W. Fraser	475,213	May 17	2118	536	59	1074
Hose. Reducer and nozzle for	C. R. Robinson	477,824	June 28	2556	640	59	1985
Hose to couplings. Device for securing	Z. L. Chadbourne, E. A. Behringer, and H. J. McCoy.	477,043	June 14	1264	307	59	1703
Hosiery. Manufacture of	H. J. Griswold	472,876	Apr. 12	1311	336, 337	59	262
Hot-air evaporator or drier	J. H. Crozier	473,452	Apr. 26	2287	578	59	483
Hot-air furnace	H. D. Babcock	476,775	June 14	825	203	59	1615
Hot-air furnace	J. Cunningham	477,519	June 21	2053	511, 512	59	1870
Hot-air furnace	J. Fridley	476,877	June 14	999	243	59	1649
Hot-air furnace	J. W. Frizzell	478,001	June 28	2845	711, 712	59	2041
Hot-air furnace	W. W. Kelsey	476,230	May 31	3759	949	59	1422
Hot-air furnace	M. Koehler	472,219	Apr. 5	334	86	59	63
Hot-water and hot-air heater. Combination	F. C. Peteler	473,475	Apr. 26	2230	590	59	491
Hot-water furnace	E. S. Manny	475,878	May 31	3193	808	59	1310
Hot-water heater	J. H. Dodds	476,596	June 7	454	108	59	1526
Hot-water heater	T. Tree	476,218	May 31	3741	945	59	1418
Hot-water or steam boiler	J. M. Thatcher	477,470	June 21	1975	490	59	1854
Hotel call system	G. P. Greene	474,907	May 17	1639	418	59	960
House: *See* Portable house.							
Household press	J. Steudle	472,559	Apr. 12	859	220	59	178
Hub	R. Green	473,837	Apr. 26	2904	729	59	601

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hub-attaching device	L. Harris	476,199	May 31	3698	934	59	1410
Hub-attaching device	O. Jacobi	477,420	June 21	1893	466	59	1838
Hub-band	G. Monteith	474,754	May 10	1390	351	59	916
Hub. Bicycle	J. U. Morgan	473,426	Apr. 19	2241	564	59	452
Hub. Vehicle	G. and P. Blechschmidt	473,607	Apr. 26	2560	645	59	535
Hub. Vehicle	W. Janiszewski	476,018	May 31	3400	858	59	1352
Hub. Vehicle	I. M. Warner	473,596	Apr. 26	2545	641	59	532
Hub. Vehicle	W. H. White	473,985	May 3	155	37	59	668
Hub. Wheel	R. and E. Brent	473,904	May 3	10	3	59	639
Hubs. Tool for cutting keyways in wheel	W. Smith, D. Marks, and R. Watson	475,352	May 24	2339	600	59	1134
Huller: *See* Seed-huller.							
Hulling oats, barley, and other grains. Machine for	J. E. Davis	474,164	May 3	428	103	59	721
Hydraulic elevator	J. E. Barry	473,811	Apr. 26	2866	719	59	594
Hydraulic elevator	I. H. Venn	476,581	June 7	530	125, 126	59	1542
Hydraulic engine	H. F. Crawford and R. C. Lambert	472,942	Apr. 12	1412	361	59	282
Hydraulic lift	R. Carey	477,294	June 21	1697	416	59	1800
Hydraulic motor	W. H. Robinett	476,174	May 31	3654	924, 925	59	1403
Hydraulic motor. Oscillating	P. A. Gardner	474,238	May 3	544	134	59	743
Hydraulic motor. Reciprocating	A. T. Ballantine	476,359	June 7	209	51, 52	59	1476
Hydraulic press	H. von Mitzlaff	475,224	May 17	2130	539, 540	59	1076
Hydraulic-pressure accumulator or regulator	W. W. Sutcliffe	477,468	June 21	1972	489	59	1853
Hydrocarbon-burner	M. E. Ray	472,226	Apr. 5	344	89	59	65
Hydrocarbon-burner	G. H. Scott	472,231	Apr. 5	350	90	59	65
Hydrocarbon-burner	E. J. Thompson	476,177	May 31	3665	927	59	1404
Hydrocarbon-burning apparatus	J. H. Bullard. (Reissue)	11,636	Apr. 26	3016	760	59	623
Hydrocarbon-oil burner	F. Hagelin	475,277	May 17	2217	568	59	1094
Ice-can	C. E. Struck	475,629	May 24	2776	703	59	1217
Ice. Can for the manufacture of	A. Smith	472,407	Apr. 5	625	160	59	117
Ice-chipping implement	E. W. Flynn	475,978	May 31	3346	843	59	1340
Ice-cracking machine	J. E. Richard	475,518	May 24	2606	663	59	1183
Ice-cream dasher	C. Hammill	474,989	May 17	1778	450	59	1006
Ice-cream freezer	C. L. Bellamy	475,748	May 31	2965	752	59	1266
Ice-cream freezer	L. P. Burdick	477,184	June 14	1495	366	59	1750
Ice-cream freezer	N. Clarkson	476,518	June 7	444	105	59	1524
Ice-cream freezer	F. P. Harbaugh	477,211	June 21	1549	380	59	1774
Ice-cream freezer	P. M. Hinman and J. B. Thompson	475,240	May 17	2163	550	59	1082
Ice-cream freezer	T. S. Lewis	474,475	May 10	951	245	59	831
Ice-cream freezer	S. C. Moomy	476,282	May 31	3765	950	59	1423
Ice-cream freezer	J. Sirrine	475,517	May 31	3063	780	59	1289
Ice-creeper	H. Jedlicka	477,255	June 21	1637	399	59	1789
Ice-cutting machine	T. F. Langley	474,962	May 17	1729	439	59	998
Ice-making apparatus	T. Shipley	476,832	June 14	926	226	59	1634
Ice-pick	G. W. Topping	474,879	May 17	1597	407	59	971
Ice-pick	E. Wenigmann	477,919	June 28	2714	679	59	2015
Ice-pick. Combination	J. F. Loftus and E. B. Williams	476,052	May 31	3453	871	59	1363
Ice-plow	T. H. Reeves	473,782	Apr. 26	2822	709	59	585
Identity-indicator	T. Houghton and A. D. Dick	475,400	May 24	2411	615	59	1147
Implement. Combination	M. Herzberg	474,012	May 3	203	47, 48	59	677
Implement-handle	M. E. Carleton	473,250	Apr. 19	1944	489	59	391
Incrustation preventive	J. B. Dodds and J. R. Fothergill	477,357	June 21	1801		59	1819
Incubator	E. Harrison	473,664	Apr. 26	2647	667	59	552
Index	H. A. Stephenson	472,629	Apr. 12	962	249	59	196
Index	H. A. Stephenson	472,630	Apr. 12	963	250	59	197
Index for letter-copy books. Movable	M. Vernon	476,708	June 7	719	177	59	1580
Index or directory	A. H. Martin	474,479	May 10	957	246, 247	59	832
Indicator: *See* Bill-of-fare indicator. Cash-indicator. Door-indicator. Electrical indicator. Fire-indicator. Heat-indicator. Identity-indicator. Nautical course-indicator. Station-indicator. Time-indicator. Valve-indicator. Watch-regulator indicator. Water-indicator. Weather-vane indicator. Wind-vane indicator.							
Indicia. Blank with signature-controlling	E. A. Dubey	477,744	June 28	2427	606	59	1963
Inflatable tube	L. J. Phelps	472,485	Apr. 5	747	190	59	142
Ingot-mold	J. Illingworth	473,579	Apr. 26	2515	634, 635	59	527
Ingot-protector	W. R. Hinsdale	476,383	June 7	245	59	59	1484
Ingots. Apparatus for extracting	H. Aiken	475,027	May 17	1834	465	59	1017
Ingots. Manufacture of steel	C. W. Kennedy and J. W. Grantland	473,468	Apr. 26	2317	586	59	480
Inhaler	H. D. Cushman	476,131	May 31	3586	905	59	1389
Inhaler	H. D. Cushman	476,132	May 31	3587	905	59	1389
Inhaler	A. Dow	476,190	May 31	3683	930	59	1408
Inhaler	C. D. McGrath	472,176	Apr. 5	256	68	59	49
Inhaler	J. M. Van Orden	472,238	Apr. 5	362	93	59	68
Inhaler and medicator. Combined	J. J. Sencenbaugh	473,526	Apr. 26	2412	612	59	506
Inhaler and vaporizer	L. B. Hilborn	473,225	Apr. 19	1900	481	59	386
Inhaling and disinfecting device	L. Walleiser	477,342	June 21	1772	434	59	1815
Injector	R. G. Brooke	474,361	May 10	777	302, 303	59	797
Injector	C. E. Church	475,201	May 17	2099	531	59	1070
Injector	T. J. Hart	474,991	May 17	1780	450	59	1007
Injector	F. Kelch	472,949	Apr. 12	1421	363	59	284
Injector. Steam	G. Marty	473,010	Apr. 19	1538	392	59	310
Ink-well	R. G. Young	472,649	Apr. 12	943	255	59	200
Inking-roller	C. M. Bowman	477,497	June 21	2018	501	59	1862
Inkstand	J. W. Grantland	473,551	Apr. 26	2447	620	59	512

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Inkstand	C. F. Mason	476,288	June 7	87	20	59	1455
Inkstand	E. S. Raff. (Reissue)	11,233	Apr. 26	3012	750	59	622
Inkstand	E. S. Raff. (Reissue)	11,234	Apr. 26	3013	750	59	622
Inkstand	P. W. Salias	477,707	June 28	2371	592	59	1951
Inkstand, envelope, and card holder. Combined	E. G. Gereke	474,317	May 3	683	177	59	709
Inkstand. Fountain	A. Gaskill	472,708	Apr. 12	1076	276	59	216
Insect-trap	J. H. Edwards	473,920	May 3	56	10	59	647
Insect-trap	H. v. Pückler	473,778	Apr. 26	2816	708	59	584
Insecticides. Device for applying	M. A. Hawley	472,456	Apr. 5	702	179	59	133
Insole	E. H. Noble	472,713	Apr. 12	1068	279	59	218
Insulated gear-wheel	G. F. Lockwood	474,913	May 17	1645	420	59	981
Insulated magnetic coils. Machine for making	C. E. Lipe	473,123	Apr. 19	1725	436, 437	59	351
Insulating-coupling	A. Anderson	474,569	May 10	1106	282	59	861
Insulating electric conductors	A. V. Abbott	477,732	June 28	2408	.....	59	1958
Insulating electric wires. Compound for	L. Hill	472,352	Apr. 5	543	.....	59	101
Insulating-support for electric-railway wires	A. A. Shobe and W. Embley	474,049	May 3	268	65	59	689
Insulating-tube for electric conductors	A. P. Seymour	476,964	June 14	1149	277	59	1679
Insulator	C. F. Goodrich	474,319	May 3	687	178	59	709
Insulator	F. D. Goold	477,753	June 28	2448	611	59	1965
Insulator	H. C. Wirt	477,980	June 28	2797	701	59	2033
Insulator-bracket	T. H. Brady	476,604	June 7	571	136	59	1550
Insulator. Circuit-breaking	A. P. Seymour	476,828	June 14	920	225	59	1634
Insulator. Porcelain	J. Pass and A. P. Seymour	476,813	June 14	897	220	59	1630
Insulator-pin	F. M. Locke	476,907	May 31	3716	939	59	1413
Insulator-support	D. Doren	472,529	Apr. 12	825	210	59	170
Interlocking block for building, paving, &c	C. E. Simpson	472,590	Apr. 12	902	231	59	185
Iodine derivates of acetyl paramido-phenetole	L. Scholvien	472,898	Apr. 12	1245	.....	59	248
Iron: *See* Curling-iron. Sad-iron. Plane-iron. Trace-iron.							
Iron and steel. Apparatus for galvanizing wrought or cast	T. Jones	476,651	June 7	640	155, 156	59	1564
Iron, steel, and other similar metals homogeneous. Rendering	J. C. Fraley	475,498	May 24	2571	654	59	1177
Iron structures. Cooling	C. J. Williams	472,746	Apr. 12	1135	291	59	227
Ironing-board	S. Boone	473,653	Apr. 26	2631	663	59	549
Ironing-machine	R. S. Nelson and A. Kreuter	473,920	May 3	106	24	59	657
Ironing-machine	C. E. Quarnström	472,954	Apr. 12	1437	366	59	287
Ironing-machine	D. C. Tubbs	476,392	June 7	168	41	59	1469
Irrigating head-gate	J. Ettien	474,549	May 10	1072	275	59	854
Irrigating-laterals. Machine for forming	A. J. Thompson	478,034	June 28	2892	723	59	2050
Jack: *See* Bootjack. Pegging-jack. Lever-jack. Thill-coupling jack. Lifting-jack. Wagon-jack. Nailing-jack.							
Jacketed can	G. B. Cooper	478,050	June 28	2914	728	59	2054
Jacquard mechanism	G. W. Stafford	475,711	May 24	2296	733	59	1240
Jail-corridors. Safety-door for	P. Hale	475,556	May 24	2668	678	59	1195
Jail. Electric	P. Hale and C. H. Sparks	477,301	June 21	1710	419	59	1802
Jar: *See* Canning or preserving jar. Fruit-jar.							
Jar-fastening	R. I. Patterson	477,955	June 28	2766	693	59	2027
Jar filler. Fruit	W. I. Leggett	475,874	May 31	3179	806	59	1309
Jar holder. Fruit	A. F. Frost	476,790	June 14	852	210	59	1620
Jar, jug, or can	W. E. and C. W. Clark	475,078	May 17	1909	484	59	1031
Jar-sealing device	I. P. Nelson	474,756	May 10	1392	352	59	917
Jeweler's forceps	D. Mendelson	476,754	June 7	790	194	59	1595
Jeweler's spring-snap	W. C. Edge	472,616	Apr. 12	943	243	59	193
Joint: *See* Electric-conductor joint. Rod-joint. Universal joint. Rail-joint. Wood-joint. Railway-rail joint. Woodwork-joint.							
Journal-bearing	W. N. Rumely	477,272	June 21	1662	406	59	1793
Journal-bearing	A. E. Smith	475,990	May 31	3364	848	59	1343
Journal-bearing	H. A. Todd and A. H. Anderson	472,150	Apr. 5	218	58	59	41
Journal-bearing. Dust-proof	T. A. Edison	472,752	Apr. 12	1144	293	59	228
Journal-bearings. Bushing for	F. Latulip	475,981	May 31	3356	846	59	1342
Journal-box	W. B. Hosford	472,729	Apr. 12	1106	285	59	222
Journal-box	E. Jones, C. Dawson, and H. Stanton.	477,329	June 21	1754	429	59	1811
Journal-box. Antifriction	M. B. Stafford and R. W. Morgan	473,974	May 3	141	32	59	664
Journal-box lifter	E. E. Taylor	472,835	Apr. 12	1256	321	59	250
Journal box or bearing	S. S. Morton	476,158	May 31	3628	917, 918	59	1398
Junction-box	C. R. Arnold	476,970	June 14	1157	279	59	1680
Kettle-carrier. Elevated	E. Sterner and W. B. Amspcher	475,167	May 17	2048	515	59	1059
Kettle. Confectioner's	T. Burkhard	476,917	June 14	1068	257	59	1663
Keyhole-guard	C. L. Goodridge	474,906	May 17	1638	418	59	980
Keys. Device for carrying	J. C. Taylor	477,970	June 28	2783	697	59	2030
Kiln: *See* Brick-kiln. Lumber-drying kiln.							
Kiln. Continuous	M. A. T. Boehncke	474,807	May 17	1480	378, 379	59	948
Kilns. System of pipes for heating lumber	A. T. Bemis	475,480	May 24	2541	647	59	1171
Kitchen-cabinet	A. C. Carr	475,197	May 17	2094	529	59	1069
Knife: *See* Butter-knife. Rotary knife. Gage-knife. Surgical knife. Pocket-knife.							
Knife	N. P. Nielsen	477,817	June 28	2548	637	59	1963

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Knife cleaning and flouring device	J. H. Mitchell	472,194	Apr. 5	289	76	59	54
Knit fabric	W. H. Pepper	473,474	Apr. 26	2328	589, 590	59	491
Knit nether garment	S. T. Sutton	475,734	May 24	2237	745	59	1246
Knitted fabric	W. Janssen	473,580	Apr. 26	2517	635	59	522
Knitted fabrics. Device for transferring	H. J. Griswold	472,874	Apr. 12	1308	336	59	262
Knitted goods and manufacturing the same	H. J. Griswold	472,875	Apr. 12	1309	336	59	262
Knitting-frame. Straight-bar	G. Lindemuth	476,397	June 7	271	64	59	1490
Knitting-frames. Needle-rail for Cotton's	F. A. Ludwig	476,959	June 14	1142	275	59	1678
Knitting hose	F. W. Simons	476,084	May 31	3503	883	59	1374
Knitting-machine	W. H. and G. D. Mayo	474,671	May 10	1264	322, 324	59	891
Knitting-machine	M. A. Seiller	475,989	May 31	3363	848	59	1343
Knitting-machine attachment	T. H. Hollingsworth	475,113	May 17	1973	499, 500	59	1044
Knitting machine. Circular	A. T. and W. L. Cathcart	472,029	Apr. 5	14	4, 5	59	5
Knitting machine. Circular	D. H. Hill	475,058	May 17	1880	476, 477	59	1026
Knitting machine. Circular	J. M. Slack, G. J. Graff, and J. B. Paxton.	474,330	May 2	708	183, 184, 185, 186	59	773
Knitting machine. Circular	W. H. Zellers	476,110	May 31	3550	893, 894	59	1382
Knitting-machine needle	J. C. Egly	473,697	Apr. 26	2699	679	59	562
Knitting machine. Straight	W. Coult	472,698	Apr. 12	1068	275	59	215
Knitting-machines. Electrical stop-motion for	A. Beyer	477,986	June 28	2807	703	59	2035
Knob	E. J. Forrest	472,805	Apr. 12	1214	312	59	242
Knob attachment	C. M. Burgess	472,725	Apr. 12	1102	284	59	221
Knob attachment	C. F. Doebler and C. K. Bryant	477,836	June 28	2582	646	59	1990
Knob attachment	C. Marshall	473,202	Apr. 19	1967	493	59	398
Knob. Sheet-metal	H. J. P. Whipple	473,988	May 3	160	38	59	669
Knobs to shanks. Machine for attaching	A. T. Matthews	475,880	May 31	3200	809	59	1312
Knockdown box	I. I. Smith	473,091	Apr. 19	1663	423	59	341
Kraut-cutter	J. J. McDonald	472,797	Apr. 12	1204	309	59	240
Label-holder	C. Martindale	477,377	June 21	1832	449, 450	59	1825
Label-holder	H. F. Bente	472,248	Apr. 5	379	99	59	71
Labeling-machine	H. J. Small	472,278	Apr. 5	422	109	59	79
Labeling-machine	R. Kufs	476,392	June 7	261	62	59	1488
Labeling machine. Can	F. Mueller	474,677	May 10	1278	326	59	894
Labeling machine. Can	C. L. Gorrell	476,879	June 14	1002	244, 245	59	1650
Lace fastener. Shoe	R. L. and H. F. Wight	474,618	May 10	1181	300, 301	59	875
Lace fastening. Shoe	E. H. Roberts	472,078	Apr. 5	104	28	59	21
Laces. Machine for pointing and punching shoe	A. I. Crowell	473,615	Apr. 26	2573	648	59	537
Lacing-hook	P. Goldstein	476,999	June 14	1199	291	59	1690
Lacing-hooks. Machine for making	W. C. Bray	477,242	June 21	1616	395	59	1785
Lacing-hooks. Machine for setting	F. Egge	473,215	Apr. 19	1887	475, 476	59	382
Lacing-strings of shoes. Eye for	F. Egge	476,006	May 31	3383	852, 853, 854	59	1348
Lacing-studs. Machine for setting	W. Lang	477,903	June 28	2691	673	59	2011
Ladder	E. D. Welton	477,852	June 28	2606	652, 653	59	1994
Ladder	J. F. Mitchell	473,768	Apr. 26	2796	703	59	581
Ladder	E. L. Ripp	472,141	Apr. 5	204	55	59	38
Ladder	E. L. Ripp	476,897	June 14	1032	250	59	1656
Ladder	F. S. Sprague	475,164	May 17	2049	514	59	1058
Ladder	R. W. Whitehurst	476,179	May 31	3668	927	59	1405
Ladder and ironing-board. Combined step	D. W. Arave	473,896	May 3	2	1	59	637
Ladder and ironing-board holder. Combined step	W. H. Lish	472,303	Apr. 5	466	119	59	87
Ladder. Extensible	J. McQuillan	473,852	Apr. 26	2933	739	59	907
Ladder. Extension	D. H. Crews	475,835	May 31	3278	827	59	1336
Ladder. Extension	V. Holmqvist	475,279	May 17	2219	569	59	1095
Ladder. Extension truck	C. Canciani	474,62[illegible]	May 10	1194	304	59	877
Ladder hook. Extension	J. A. Weston	477,877	June 28	2652	663	59	2003
Ladder. Rolling step	C. H. D. Sincennes	476,564	June 7	509	120	59	1538
Ladder. Sliding	R. Bithorn	475,287	May 17	2231	572	59	1097
Ladder. Step	T. F. Groves	475,857	May 31	3154	800	59	1303
Ladder. Step	S. Keeling	477,843	June 28	2596	651	59	1993
Ladders. Automatic latch for extension	J. A. Weston	477,393	June 21	1856	456	59	1831
Ladders, &c. Gripper for scaling	T. L. Judd	473,581	Apr. 26	2518	635	59	528
Lamp	T. Hipwell	477,366	June 21	1815	443, 444	59	1822
Lamp	H. E. N. Mason	476,055	May 31	3458	872, 873	59	1364
Lamp	A. W. Paull	477,332	June 21	1758	430	59	1812
Lamp	R. H. Plass	477,696	June 28	2355	589	59	1948
Lamp	T. C. J. Thomas	477,081	June 14	1337	324, 325	59	1718
Lamp	C. S. Upton	474,979	May 17	1760	446	59	1003
Lamp. Alternating-current arc	A. C. West	477,460	June 21	1991	494	59	1857
Lamp and cane or umbrella. Combined	B. B. Ward	473,536	Apr. 26	2430	615	59	509
Lamp-burner	S. Lamberger	473,763	Apr. 26	2791	702	59	579
Lamp-burner	P. J. F. Graeme	473,738	Apr. 26	2764	694, 695	59	773
Lamp-burner	F. T. Williams	477,034	June 14	1252	303	59	1701
Lamp. Central-draft	F. T. Williams	477,035	June 14	1253	303, 304	59	1701
Lamp. Central-draft	W. C. Homan	477,865	June 28	2629	658	59	1999
	J. Jauch	473,667	Apr. 26	2650	668	59	553

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Invention.	Name.	No.	Date.	Monthly volume.		Official Gazette.	
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Lamp. Central-draft	A. H. Jones	476,541	June 7	474	113	59	1531
Lamp-chimney attachment	J. Shoemaker	472,405	Apr. 5	623	159	59	117
Lamp-chimney raiser	E. M. Goldsmith	477,930	June 28	2731	684	59	2019
Lamp-chimneys. Machine for cutting	J. Lobet	477,133	June 14	1411	343	59	1732
Lamp. Electric-arc	T. E. Adams	473,283	Apr. 19	1998	502, 503	59	405
Lamp. Electric-arc	R. E. Ball	472,747	Apr. 12	1136	291, 292	59	227
Lamp. Electric-arc	L. Brianne	475,299	May 24	2234	575	59	1113
Lamp. Electric-arc	R. S. Dobbie	475,544	May 24	2645	673	59	1191
Lamp. Electric-arc	T. A. Edison	476,993	June 14	1189	288, 289	59	1688
Lamp. Electric-arc	J. E. Gaston	475,727	May 24	2227	743	59	1244
Lamp. Electric-arc	W. B. Luce	474,091	May 3	332	79, 80	59	701
Lamp. Electric-arc	F. V. Maquaire	477,427	June 21	1900	468, 469	59	1840
Lamp. Electric-arc	J. A. Mosher	472,064	Apr. 5	81	22, 23	59	17
Lamp. Electric-arc	L. Parker	477,221	June 21	1571	386	59	1777
Lamp. Electric-arc	O. Patin	473,076	Apr. 19	1641	418	59	338
Lamp. Electric-arc	C. A. Pfluger	473,955	May 3	113	26	59	659
Lamp. Electric-arc	C. A. Pfluger	473,956	May 3	114	26, 27	59	659
Lamp. Electric-arc	S. W. Rushmore	472,274	Apr. 5	417	107	59	78
Lamp. Electric-arc	N. F. Rutherford	477,273	June 21	1663	406	59	1793
Lamp. Electric-arc	C. E. Scribner	476,493	June 7	411	96	59	1517
Lamp. Electric-arc	A. L. Shepard	474,266	May 3	581	143, 144, 145	59	751
Lamp. Electric-arc	E. F. Smith	476,425	June 7	307	71	59	1497
Lamp. Electric-arc	R. H. Thurston	476,700	June 7	708	174	59	1578
Lamp-extinguisher	J. B. Price	477,267	June 21	1654	404	59	1792
Lamp for burning mineral oils	A. Howat	472,056	Apr. 5	67	17, 18	59	15
Lamp-fount for central-draft lamps	W. C. Homan	477,864	June 28	2627	658	59	1998
Lamp hanger. Electric	E. Dills	474,003	May 3	187	44	59	675
Lamp-holder	F. O. Dewey	474,082	May 3	319	76	59	699
Lamp holder. Electric	J. B. Moore	475,286	May 17	2229	572	59	1097
Lamp. Incandescent	J. Ball	476,183	May 31	3674	928	59	1406
Lamp. Incandescent electric	G. C. Baillard	472,800	Apr. 12	1207	310	59	241
Lamp. Incandescent electric	G. C. Baillard	474,801	Apr. 12	1209	310	59	241
Lamp. Incandescent electric	A. C. Carey	473,208	Apr. 19	1877	473	59	380
Lamp. Incandescent electric	T. A. Edison	476,528	June 7	457	109	59	1527
Lamp. Incandescent electric	T. A. Edison	476,530	June 7	459	109	59	1528
Lamp. Incandescent electric	T. A. Edison	476,992	June 14	1188	288	59	1687
Lamp. Incandescent electric	H. Green	475,394	May 24	2402	614	59	1145
Lamp. Incandescent electric	H. B. Meech	475,698	May 24	2677	727	59	1236
Lamp. Incandescent electric	E. E. Weaver and G. B. Manypenny	476,501	June 7	420	98	59	1519
Lamp lighter and extinguisher. Automatic electric	J. H. Caughy	472,494	Apr. 5	759	193	59	144
Lamp. Miner's safety	H. J. Richards	476,488	June 7	404	94	59	1516
Lamp. Miner's safety	L. N. Williams	472,098	Apr. 5	136	37	59	26
Lamp oil-gage	T. A. McGovern	475,967	May 31	3330	840	59	1337
Lamp or conductor support. Electric	C. Bell	477,984	June 28	2802	702	59	2034
Lamp. Pocket	J. H. Fawkes	476,042	May 31	3435	867	59	1359
Lamp post. Electric-street	T. Flaherty	476,739	June 7	768	189	59	1590
Lamp. Regenerating gas	W. Stenth and J. W. Körber	477,314	June 21	1733	424	59	1807
Lamp. Regenerative hydrocarbon	J. Schülke	474,192	May 3	475	115	59	730
Lamp. Safety miner's	A. L. Nelson, J. Knapper, and I. Taylor.	474,182	May 3	457	111	59	726
Lamp-shade	E. L. Bearse	476,239	June 7	5	1	59	1439
Lamp-shade support	T. Hipwell	472,790	Apr. 12	1195	307	59	239
Lamp socket. Electric	W. D. Kurz and H. Amundson	474,667	May 10	1257	321	59	890
Lamp socket. Incandescent	H. J. Gutman	474,826	May 17	1515	387	59	954
Lamp socket. Incandescent	C. A. B. Halvorson	475,555	May 24	2666	678	59	1195
Lamp socket. Incandescent	F. C. Rockwell	475,345	May 24	2330	597	59	1132
Lamp socket. Incandescent	E. L. Smith and G. C. H. Foster	477,786	June 28	2492	624	59	1974
Lamp socket. Incandescent-electric	C. R. Arnold	473,373	Apr. 19	2156	542	59	436
Lamp socket. Incandescent-electric	J. S. Gibbs	477,407	June 21	1876	462	59	1835
Lamp-socket switch. Electric	G. E. Painter	477,146	June 14	1428	348	59	1736
Lamp. Spirit	A. C. Monfort	472,506	Apr. 5	785	200	59	149
Lamp-support	A. H. Lucas	473,846	Apr. 26	2922	735	59	605
Lamp-suspending device	G. W. Baldwin	472,468	Apr. 5	719	183	59	136
Lamp. Vehicle bracket	S. L. Reefy	475,798	May 31	3040	769	59	1280
Lamp-wick raiser	H. H. Hipwell	472,354	Apr. 5	544	141	59	102
Lamps and means for lighting and extinguishing the same. Device for controlling the distribution of oils to	T. and A. E. Penn	477,150	June 14	1433	349, 350	59	1737
Lamps. Carbon-rod contact for arc	C. McNellis	477,219	June 21	1569	386	59	1776
Lamps. Flexible supporting-arm for electric	L. T. Stanley	472,611	Apr. 12	936	241	59	192
Lamps. Lamp-shade and holder for incandescent	G. F. Seavey	473,240	Apr. 19	1933	486	59	392
Lamps. Receptacle for portable electric	H. Molendo	477,910	June 28	2528	634	59	1980
Lamps. Spark-arrester for electric	W. M. Spencer	476,933	June 14	1097	265	59	1669
Lamps. Wick-raiser for central-draft	W. C. Homan	477,862	June 28	2624	657	59	1998
Lamps. Wick-raiser for central-draft	W. C. Homan	477,863	June 28	2625	657	59	1998
Lamps. Wick-raiser for central-draft	J. Jauch	474,171	May 3	445	108	59	724
Lamps. Wick-raiser for central-draft	W. L. Upson	473,681	Apr. 26	2672	673	59	556
Land-roller	F. Baugh	474,038	May 3	244	58	59	685
Land-roller attachment	G. S. Burr and J. M. Cummings	475,291	May 24	2236	576	59	1113
Lantern	F. L. Wells	475,646	May 24	2799	709	59	1222
Lantern. Signal	J. H. Parsons	477,697	June 28	2354	588	59	1948
Lantern. Tubular	W. McArthur	476,478	June 7	392	90	59	1513
Lantern. Tubular	F. K. Wright	476,505	June 7	426	99	59	1520
Lanterns. Wick-raiser attachment for	F. K. Wright	476,506	June 7	427	100	59	1521
Lasso	E. Shaw	474,103	May 3	347	83	59	704
Last	M. J. Bagley	476,868	June 14	971	236	59	1644
Last	J. Brigham	473,654	Apr. 26	2632	663	59	549

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Invention.	Name.	No.	Date.	Monthly volume.		Official Gazette.	
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Last	L. Linberg	474,994	May 17	1746	451, 452	59	1008
Last or support	G. T. Demary	474,335	May 3	727	190	59	777
Last-supporter	J. Grant	477,210	June 21	1548	380	59	1774
Lasting-machine	J. T. Avery	472,599	Apr. 12	910	234, 235, 236	59	187
Lasting-machine	C. P. Lawrence	476,206	May 31	3713	938, 939	59	1413
Lasting-machine	A. E. Stirckler	477,788	June 28	2494	624, 625, 626	59	1974
Lasting-machine	A. E. Stirckler	477,789	June 28	2500	626	59	1975
Lasting-machines. Tacking mechanism for	C. Sinning	476,695	June 7	702	172	59	1576
Lasting-nippers	J. F. O'Neill	473,015	Apr. 19	1545	394	59	321
Latch	J. K. Clark	472,430	Apr. 5	659	168	59	124
Latch	A. A. Page	477,445	June 21	1936	480	59	1846
Latch	A. A. Page	477,446	June 21	1937	480	59	1846
Latch	B. Piers	473,126	Apr. 19	1733	438	59	353
Latch	A. and F. E. Richardson	476,070	May 31	3483	878	59	1369
Latch	C. A. Westberg	476,434	June 7	325	74	59	1500
Latch and lock	A. F. Nixon and L. L. Gibson	475,089	May 17	1938	491	59	1037
Latch and lock combined	G. H. Hyde	472,620	Apr. 12	950	246	59	194
Latch and lock. Combined	B. G. Lowrey	476,663	June 7	656	159	59	1567
Latch and lock. Combined	J. W. McKee	477,142	June 14	1422	346	59	1734
Latch. Coach-door	J. M. Orr	472,388	Apr. 5	600	152	59	112
Latch. Door	H. D. Wheatley	477,790	June 28	2501	626	59	1975
Latch. Gate	W. Brown	474,302	May 10	780	203	59	798
Latch. Gate	C. J. Ericson	475,270	May 17	2206	563	59	1091
Latch. Gate	A. R. Grimes	477,654	June 28	2388	573	59	1833
Latch. Gate	M. Haggar	475,554	May 24	2665	678	59	1194
Latch. Gravity	J. R. Palmer	474,263	May 3	577	142	59	750
Latch-handle	C. E. Hart	476,636	June 7	619	149	59	1560
Latch. Reversible	A. A. Dovey	477,929	June 28	2730	684	59	2019
Lath-bolter	J. H. Peterson	477,956	June 28	2768	693	59	2027
Lathing. Machine for making metal	G. A. Ohl	475,700	May 24	2879	728	59	1236
Lathe	E. Conrady	475,671	May 24	2833	717	59	1228
Lathe. Automatic metal boring and turning	I. C. Swisher	472,833	Apr. 12	1251	320, 321	59	249
Lathe. Axle-turning	R. R. Spears	475,163	May 17	2041	514	59	1057
Lathe. Back-knife gage	C. F. E. Peterlein	474,856	May 17	1563	398, 399	59	964
Lathe-center	W. C. Roe	474,265	May 3	580	143	59	750
Lathe feeding device	C. M. Conradson	477,513	June 21	2040	508	59	1867
Lathe for turning wagon-axles	C. F. Milburn, G. E. Byrkit, and J. C. Crabbs.	474,995	May 17	1787	452	59	1008
Lathe grinding attachment	G. A. and O. W. Mueller	477,911	June 28	2700	676	59	2013
Lathe. Turret	F. A. Lane	476,205	May 31	3707	937	59	1412
Lattice-gate	F. B. Conant	474,161	May 3	494	102	59	720
Lawn-sprinkler	C. H. Baker	477,164	June 14	1460	358	59	1742
Lawn-sprinkler. Traveling	J. B. Fellows	473,454	Apr. 26	2289	578	59	483
Lead-lined ipe	G. W. Harrington	474,322	May 3	695	180	59	771
Leaf-stripping machine	J. L. Myers	476,234	May 31	3767	950	59	1423
Lead trap	J. Dellinger	473,062	Apr. 19	1623	414	59	334
Leaf-turner	A. C. Frankel	475,393	May 24	2401	613	59	1145
Leaf-turner	C. H. Van Deusen	473,246	Apr. 19	1940	488	59	393
Leak-stopper or breach-plate	F. F. Jones	472,888	Apr. 12	1330	341, 342	59	906
Leather-beading machine	A. J. Schmiedl	472,609	Apr. 12	933	241	59	191
Leather-cutting die	W. P. Bosworth	473,690	Apr. 26	2663	675	59	559
Leather-dressing composition	J. E. Swain	474,702	May 10	1313	.....	59	902
Leather-gage	A. G. Burton	473,892	Apr. 26	3006	758	59	620
Leather-rolling machine	J. A. Safford	477,460	June 21	1959	486	59	1851
Leather, skins, &c. Machine for coloring	C. Knabe	477,761	June 28	2458	614, 615	59	1968
Leather-skiving machine	J. A. Safford	477,458	June 21	1954	484, 485	59	1850
Leather-skiving machine	J. A. Safford	477,459	June 21	1956	485, 486	59	1850
Leather-skiving machine	A. J. Tewksbury	472,148	Apr. 5	215	57	59	40
Leather-splicing device	N. B. Holdsworth	472,052	Apr. 5	63	16	59	15
Leather splitting and skiving machine	J. A. Safford	477,456	June 21	1950	483, 484	59	1849
Leather-splitting machine	J. A. Safford	477,457	June 21	1952	484	59	1850
Leather-splitting machine	J. A. Safford	477,461	June 21	1960	487	59	1851
Leather-splitting machine	J. A. Safford	477,462	June 21	1962	487, 488	59	1851
Leather washer	L. M. Cabana	475,053	May 17	1874	475	59	1025
Ledger and index. Combined card	J. A. Langstroth	475,043	May 17	1855	471	59	1021
Ledger. Hotel	L. Sehon	473,856	Apr. 26	2941	741	59	608
Leg. Artificial	C. E. Ervin	472,443	Apr. 5	678	173	59	127
Leg. Artificial	J. Schmid	473,671	Apr. 26	2655	669	59	553
Leg. Artificial	U. Tanner	473,097	Apr. 19	1671	424	59	343
Leggin	C. E. Goodspeed	476,377	June 7	238	58	59	1483
Lemon-squeezer	H. J. Williams	473,043	Apr. 19	1505	406	59	320
Letter-box	W. F. Askam	476,971	June 14	1150	280	59	1660
Letter-box	M. J. Donahue	474,229	May 3	532	130	59	740
Letter-box	A. N. Klein	476,657	June 7	648	157	59	1565
Letter-box	J. W. Manlove	475,694	May 24	2671	726	59	1235
Letter-box	W. H. Sheffield	477,964	June 28	2776	695	59	2029
Letter-box	C. Shuman	476,692	June 7	697	171	59	1575
Letter-box	W. D. C. Smith	476,321	June 7	147	36	59	1466
Letter-box	W. W. Speer	472,182	Apr. 5	271	71	59	51
Letter-box	W. W. Speer	473,676	Apr. 26	2664	671	59	555

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Letter-box	J. B. Stoner	472,560	Apr. 12	660	221	59	178
Letter-box and post thereof	W. W. Speer	473,972	May 3	139	32	59	664
Letter-box. Combined collection and delivery	W. Bussard	472,105	Apr. 5	148	40	59	28
Letter-box. House-door	P. Anderson	473,138	Apr. 19	1753	442	59	357
Letter-box. House-door	C. A. Cummings and W. H. Hill	474,940	May 17	1708	434	59	993
Letter-box. House-door	J. A. Faw	476,139	May 31	3597	909	59	1301
Letter-box. House-door	F. Kaempen, Jr	475,110	May 17	1980	502	59	1046
Letter-box. House-door	T. G. Milligan	476,669	June 7	663	161	59	1568
Letter-box. House-door	O. W. Newcomb	473,334	Apr. 19	2090	525	59	423
Letter-box. House-door	C. H. Scofield	475,810	May 31	3072	777 / 778	59	1287
Letter-box. House-door	G. D. Sidman	475,473	May 24	2531	645	59	1169
Letter-box. House-door	W. C. Thornton	475,095	May 17	1943	492	59	1038
Letter-box. House-door	W. C. Thornton	475,096	May 17	1945	493	59	1038
Letter-box. Street	F. H. Walker	477,091	June 14	1352	329	59	1721
Letter-pouch	W. M. Fitzwater	476,996	June 14	1193	290	59	1689
Letter-press. Pneumatic	H. H. Johannigman	472,791	Apr. 12	1196	307	59	230
Letters, files, &c. Holder for	W. E. Page and L. J. Buchanan	474,401	May 10	831	218	59	809
Level	E. W. Woodruff	476,854	June 14	164	234	59	1642
Level and plumb	W. Rush	474,861	May 17	1575	401	59	966
Level attachment	F. W. Dechaux	477,405	June 21	1874	461	59	1834
Level. Plumb	J. J. Finmant and J. J. Nissen	472,345	Apr. 5	534	138	59	100
Level. Plumb	M.C. Rockteacher and J.H. McKeon	477,312	June 21	1731	424	59	1807
Lever-jack	A. G. Taylor	474,152	May 3	411	99	59	718
Life boat and raft	W. Trowhella	476,702	June 7	710	174 / 175	59	1578
Life-preserver	W. Hickman	473,224	Apr. 19	1906	481	59	386
Lifter. *See* Journal-box lifter. Plate-lifter. Stone-lifter. Transom-lifter.	E. J. Krieg	476,277	June 7	71	15	59	1451
Lifting-jack	G. P. Brinkman	473,206	Apr. 19	1875	472	59	380
Lifting-jack	W. H. Cox	475,934	May 31	3277	827	59	1326
Lifting-jack	E. Garren	475,764	May 31	2987	757	59	1270
Lifting-jack	C. F. Hornbeck	473,002	Apr. 19	1526	389	59	317
Lifting-jack	C. Morrill	477,771	June 28	2473	618	59	1970
Light. *See* Electric search-light. Head-light.							
Lighting devices, &c. Tape-winding mechanism for	C. P. Booth	475,996	May 31	3370	850	59	1345
Lighting. System of arc	H. A. Foster	472,346	Apr. 5	535	139	59	100
Lightning-arrester	J. E. Browne and F. H. Tidnam	475,482	May 24	2545	648	59	1172
Lightning-arrester	M. Dickerson	474,460	May 10	944	243	59	829
Lightning-arrester	T. A. Edison	476,982	June 14	1183	286	59	1686
Lightning-arrester	F. Haselwander	477,656	June 28	2290	573	59	1933
Lightning-arrester	E. G. Miller	472,135	Apr. 5	198	53	59	37
Lightning-arrester	A. G. Waterhouse	475,645	May 24	2797	709	59	1221
Lightning-arrester	M. M. Wood	473,045	Apr. 19	1369	407	59	330
Lightning-arrester	A. Wurts	476,855	June 14	967	235	59	1643
Line. Flow	G. H. Jordan	475,570	May 24	2688	682	59	1199
Links. Die for making	W. M. Boyles	476,514	June 7	440	104	59	1523
Linseed-cake stripper	F. O. Swannell	476,327	June 7	153	38	59	1467
Liquid-dispensing apparatus	R. A. Panchaud and W. G. Temple	476,760	June 7	797	196	59	1596
Liquids. Centrifugal apparatus for cooling or heating	C. G. Bjorlin	476,441	June 7	335	76	59	1502
Liquids. Receptacle for aerated	J. D. Iler	473,006	Apr. 19	1533	391	59	318
Liquor tester. Spirituous	K. Taylor	476,093	May 31	3117	885	59	1376
Liquors. Apparatus for cooling and aerating malt	H. E. Deckebach	474,630	May 10	1197	304	59	878
Liquors. Cooling and dispensing device for	J. Neumann	473,333	Apr. 19	2086	524 / 525	59	422
Loads. Hydraulic apparatus for moving	R. Middleton	475,588	May 24	2709	687 / 688	59	1204
Lock. *See* Alarm-lock. Bag-lock. Bicycle-wheel lock. Bolt-lock. Buggy-top lock. Combination-lock. Cylinder-lock. Door-lock. Electric lock. Hasp-lock. Lamp-lock. Nut-lock. Oar-lock. Permutation-lock. Safe-lock. Seal-lock. Switch-lock. Time-lock. Umbrella-lock. Wagon-lock.							
Lock	A. Arens	475,914	May 31	3246	819	59	1320
Lock	W. R. Ballou	474,281	May 3	609	151	59	756
Lock	C. A. Berry	474,790	May 10	1448	367 / 368	59	928
Lock	C. E. Candee	474,519	May 10	1022	262 / 263	59	845
Lock	H. Flynn	474,955	May 17	1716	436	59	995
Lock	J. B. Lighton	473,401	Apr. 19	2204	553 / 554	59	445
Lock	B. Piers	473,125	Apr. 19	1729	437 / 438	59	352
Lock	J. Roche	476,559	June 7	500	118	59	1537
Lock	E. C. Smith	473,857	Apr. 26	2942	742	59	609
Lock	E. C. Smith	476,086	May 31	3505	884	59	1374
Lock	G. C. Sucro	476,575	June 7	523	133	59	1540
Lock	W. H. Taylor	474,783	May 10	1437	364 / 365	59	926
Lock and latch	J. W. Koons	475,121	May 17	1982	502	59	1046
Lock for adjustable machine-tables	W. A. Greaves	475,553	May 24	2664	678	59	1194
Lock-strike	F. E. Ranney	475,060	May 17	1797	456	59	1009
Locks. Dial-knob for combination	G. H. Williams	473,686	Apr. 26	3678	674	59	558
Locking-rack for umbrellas, coats, hats, &c	E. J. Colby	475,720	May 24	2909	738	59	1242
Locomotive ash-pan	C. J. W. Johnson	476,147	May 31	3608	912	59	1394

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Locomotive-ash-pan scraper	H. T. Carrington	473,692	Apr. 26	2688	676 / 677	59	560
Locomotive-brake	W. H. Ford	473,112	Apr. 19	1710	433	59	349
Locomotive. Compound	H. C. Reagan, Jr.	473,437	Apr. 19	2251	567 / 568	59	454
Locomotive. Electric	T. E. Adams	476,437	June 7	328	75	59	1501
Locomotive. Electric	C. Brown and G. J. Melms	474,984	May 17	1760	448	59	1005
Locomotive. Electric	J. I. Conklin	473,693	Apr. 26	2689	677	59	560
Locomotive. Electric	T. A. Edison	475,491	May 24	2559	652	59	1175
Locomotive. Electric	T. A. Edison	475,492	May 24	2562	652	59	1175
Locomotive. Electric	T. A. Edison	475,493	May 24	2563	653	59	1175
Locomotive. Electric	T. A. Edison	476,987	June 14	1182	286	59	1686
Locomotive safety smoke-stack	S. H. Short	473,674	Apr. 26	2661	670	59	554
Locomotive. Street	J. J. Sullivan	477,389	June 21	1950	455	59	1830
Locomotives. Arresting electric	E. Dederick	477,889	June 28	2670	668	59	2006
Log-carrier. Portable	S. H. Short	474,031	May 3	231	56	59	692
Logs. Rafting	D. S. Stombs	475,628	May 24	2775	702 / 703	59	1217
Loom	A. Van Kooy	476,106	May 31	3544	891	59	1380
Loom	T. J. Corcoran	476,918	June 14	1069	257 / 258	59	1663
Loom for weaving chenille carpets	H. Widmer	477,094	June 14	1337	330	59	1722
Loom for weaving chenille webs	L. Letalle	473,261	Apr. 19	1963	493	59	398
Loom for weaving fringe	L. Letalle	473,260	Apr. 19	1961	492	59	397
Loom for weaving ornamental fabrics	K. Engsberg	477,204	June 21	1539	376 / 377	59	1771
Loom friction let-off motion	A. Urbahn	474,882	May 17	1602	408 / 409 / 410	59	972
Loom Jacquard connection	T. S. Brown	478,045	June 28	2908	726	59	2053
Loom Jacquard mechanism	J. Vacher	472,513	Apr. 5	793	203	59	151
Loom let-off	G. W. Stafford	476,428	June 7	315	72	59	1499
Loom let-off mechanism	W. H. Miley	475,590	May 24	2714	688	59	1205
Loom positive shuttle-motion	J. Morton	475,595	May 24	2723	690	59	1206
Loom shedding mechanism	E. H. Graham	474,555	May 10	1080	276	59	855
Loom shedding mechanism	G. W. Stafford	475,625	May 24	2770	701	59	1216
Loom-shuttle	G. W. Stafford	475,712	May 24	2898	733 / 734	59	1240
Loom-shuttle	J. C. Brooks	473,414	Apr. 19	2226	559	59	449
Loom-shuttle	L. Letalle	475,125	May 17	1987	503	59	1047
Loom shuttle-binder	H. K. Swinscoe	473,677	Apr. 26	2665	671	59	555
Loom shuttle-binder	F. Baynes and J. Whalley	475,380	May 24	2384	610	59	1142
Loom shuttle-box	V. Thorpe	475,069	May 17	1898	482	59	1029
Loom-shuttle-box-operating mechanism	C. Illing and A. Stoppenbach	473,878	Apr. 26	2978	751	59	615
Loom-shuttle threader	A. Insinger	473,507	Apr. 26	2380	603	59	500
Loom. Swivel	J. M. Moyers	473,849	Apr. 26	2928	737	59	606
Loom. Swivel	G. F. Hutchins	474,170	May 3	438	106 / 107	59	723
Loom. Swivel	G. F. Hutchins	477,180	June 14	1480	365	59	1749
Loom weft stop-motion	A. Wagner	473,563	Apr. 26	2479	627	59	520
Looms. Electric stop-motion for	H. Wyman and J. A. Clark	477,731	June 28	2406	601	59	1958
Looms. Heddle for cross-weaving	J. C. Brooks	473,378	Apr. 19	2166	544 / 545	59	437
Looms. Shuttle-supplying mechanism for	H. Topham	472,412	Apr. 5	633	102	59	118
Looms. Stop-motion device for revolving-box	J. C. Brooks	473,377	Apr. 19	2162	543 / 544	59	437
Loop. Billet	T. F. Warrington	475,477	May 24	2537	646	59	1170
Low-water alarm	T. G. Nelson and W. P. Gelabert	476,673	June 7	668	162	59	1569
Low-water alarm	T. A. Delaney and R. E. Hills	474,631	May 10	1199	305	59	878
Lubricant	J. T. Hayden	477,004	June 14	1205	292 / 293	59	1691
Lubricator. *See* Axle-lubricator. Propeller-shaft lubricator. Shaft-lubricator. Spindle-lubricator.	W. H. Strickler	476,574	June 7	522	.....	59	1540
Lubricator	W. B. Curtis and E. Long	476,253	June 7	39	9	59	1445
Lubricator	G. S. Duncan	473,064	Apr. 19	1624	414	59	334
Lubricator	N. Foley	473,921	May 3	57	10	59	647
Lubricator	J. P. Kealy	475,690	May 24	2863	724	59	1233
Lubricator	F. Keller	474,089	May 3	327	78	59	700
Lubricator	L. L. Malm	476,986	June 14	1017	246	59	1653
Lubricator	E. McCoy	472,066	Apr. 5	85	24	59	18
Lubricator-cup	J. Sandall	472,827	Apr. 12	1244	319	59	248
Lubricator-gland	H. Ives	473,755	Apr. 26	2782	699	59	577
Lumber-drier	F. G. Kellogg	476,747	June 7	780	192	59	1593
Lumber-drying kiln	J. C. Hay	473,116	Apr. 19	1714	434	59	349
Machinery. Step and bearing for	A. T. Bemis	472,600	Apr. 12	917	236	59	188
Magazine-camera	R. Brewster	474,286	May 3	617	153	59	757
Magnesium-light composition	A. L'Eplattenier	472,442	Apr. 5	674	173	59	127
Magnet. Electro	E. Hackh	476,264	June 7	55	.....	59	1448
Magnet for dynamo-electric machines. Field	A. D. Ayres	476,236	June 7	1	1	59	1439
Mail-bag	L. S. M. Pyke and E. S. Harris	476,819	June 14	909	222	59	1631
Mail-bag	J. F. Allen	473,603	Apr. 26	2552	644	59	534
Mail-bag catcher	W. Du Laney	473,616	Apr. 26	2573	648	59	537
Mail-bag fastener. Automatic	J. Gleason	475,307	May 24	2258	582	59	1118
Mail-matter. Packing device for machines for marking	G. B. Johnson	473,258	Apr. 19	1958	491	59	397
Mail-pouch	M. V. B. Ethridge	473,660	Apr. 26	2641	666	59	551
Mail-pouches. Means for locking and unlocking	B. Edgar and L. T. Rohrbach	472,963	Apr. 12	1447	369 / 370	59	289
Mailing or salesman's box	A. J. Shaw	477,963	June 28	2775	695	59	2029
Malt for brewing. Preparing	J. H. Barker	475,918	May 31	3251	821	59	1321
	E. Richter and A. Schaefer	477,893	June 28	2555	.....	59	1965

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Malt-plow	A. Muntzenberger	476,293	June 7	95	21, 22	59	1456
Malting-drum. Pneumatic	F. B. Glealer and H. Smith	476,997	June 14	1195	290, 291	59	1689
Malting system. Pneumatic	F. B. Glealer	475,550	May 24	2656	675	59	1193
Mandrel for barrel-shaped springs	W. Ferrell	477,525	June 21	2068	515	59	1873
Manger	E. S. Hall	476,365	June 7	56	12	59	1448
Mangle	A. Cousen	476,004	May 31	3381	859	59	1347
Mangle	T. S. Wilce and M. E. Wendell	473,804	Apr. 26	2853	717	59	591
Manhole and sewer connection	J. P. Bates	476,440	June 7	334	76	59	1502
Maps. Manufacture of contour relief	J. E. Blanther	473,901	May 3	7	2	59	638
Marking goods. Device for	S. H. Brown	474,079	May 3	310	75	59	697
Mask for firemen, &c	J. M. Jacobs	474,500	May 10	989	255	59	838
Masts. Lift or hoist for placing ships'	F. Uhlig	477,477	June 21	1986	493	59	1856
Mat: *See* Door-mat. Wire mat.							
Match-box and holder. Combined	E. C. Bachert	473,022	Apr. 5	3	1	59	3
Match-machine	F. F. Gumaer	473,922	May 3	58	11, 12	59	647
Match-splints. Machine for sticking	J. H. White	473,372	Apr. 19	2152	540, 541	59	435
Matcher	E. Benjamin	476,221	May 31	3745	946	59	1419
Matches. Machine for wrapping block	G. Grisel and F. Severio	477,362	June 21	1807	442	59	1821
Matching-machine gluing attachment	B. G. Luther	474,092	May 3	334	80	59	701
Matrices. Means for justifying	M. Georgii	472,966	Apr. 12	1451	371	59	290
Matrix-making machine	G. Calder, Jr	474,809	May 17	1484	379, 380	59	949
Matrix-making machine	C. Sears	475,804	May 31	3051	772, 773, 774	59	1282
Matrix-making machine	C. Sears	475,805	May 31	3060	774, 775, 776	59	1284
Matrix-making machine	C. Sears	475,806	May 31	3065	776	59	1285
Matrix-making-machine type-writing attachment	C. Sears	475,807	May 31	3067	776	59	1286
Matrix-press. Electrically-heated	W. Mitchell	474,964	May 17	1732	440	59	998
Matte from slag. Apparatus for separating	D. Sheedy	475,522	May 24	2613	665	59	1185
Mattes and ores. Treating	H. L. Herrenschmidt	475,558	May 24	2672	.....	59	1196
Mattress-making device	J. E. Beasley	473,904	Apr. 19	1871	471, 472	59	378
Measure. Liquid	L. Poh	474,048	May 3	266	65	59	689
Measure reel. Tape	J. Roe	475,470	May 24	2527	643	59	1168
Measure register. Grain	J. A. and D. James	473,465	Apr. 26	2315	586	59	488
Measures. Device for repairing tape	C. Kingsbury	475,944	May 31	3294	831	59	1330
Measuring and drawing off liquids. Apparatus for	W. and E. Mumbrauer	472,625	Apr. 12	957	248	59	195
Measuring device. Liquid	J. W. Leslie	476,470	June 7	373	87	59	1510
Measuring instrument. Electrical	E. Weston	473,532	Apr. 26	2433	616	59	510
Measuring instrument. Electrical	E. Weston	473,539	Apr. 26	2434	616	59	510
Measuring instrument. Electrical	E. Weston. (Reissue)	11,250	June 28	2954	738	59	2062
Measuring machine. Cloth	C. H. Young	473,103	Apr. 19	1679	426	59	344
Measuring-reel	H. L. Stull	475,630	May 24	2777	703	59	1218
Measuring store-case. Self	T. F. Crary	476,610	June 7	579	138	59	1551
Measuring-vessel	A. D. Hollis	474,959	May 17	1723	438	59	997
Measuring-vessel Graduated	J. P. Eustis	476,136	May 31	3593	908	59	1390
Meat-chopper	A. C. Rankin	473,719	Apr. 26	2817	708	59	584
Meat-crusher, &c	S. Arnaud	472,973	Apr. 19	1466	375, 376	59	305
Meat-cutter	R. C. Ellrich	474,595	May 10	1142	291	59	868
Meat-cutter	A. Shepard	473,166	Apr. 19	1796	453	59	366
Meat-pickling apparatus	J. Fey	474,446	May 10	911	235	59	823
Meat. Preservation of	W. Laubheimer and H. Salzer	477,844	June 28	2597	.....	59	1993
Meat. Preserving	J. Mariosa	474,581	May 10	1124	.....	59	864
Meat. Preserving	H. Salzer	477,850	June 28	2603	.....	59	1994
Meat-rack	F. Schraudner	478,025	June 28	2878	719	59	2048
Mechanical motor	W. M. Lewis	475,580	May 24	2700	684	59	1202
Mechanical movement	G. W. Amos	476,112	May 31	3555	894	59	1383
Mechanical movement	J. F. Appleby and J. F. Steward	472,972	Apr. 19	1464	375	59	305
Mechanical movement	W. H. Baker	475,379	May 24	2383	609	59	1142
Mechanical movement	J. W. Hill	472,539	Apr. 12	834	213	59	172
Mechanical movement	W. S. Huson	475,771	May 31	2997	760, 761	59	1272
Mechanical movement	W. S. Huson	475,772	May 31	3000	761	59	1273
Mechanical movement	J. H. Stonemetz	473,562	Apr. 26	2476	626, 627	59	519
Mechanical movement	J. D. Westgate	477,191	June 14	1506	369	59	1752
Mechanical movement	A. B. Willcox	476,715	June 7	726	179, 180	59	1581
Medal	W. W. Hume	476,538	June 7	470	112	59	1530
Medical battery	P. Hathaway	474,828	May 17	1521	388	59	955
Medicinal food	A. D. McKay	473,331	Apr. 19	2083	.....	59	422
Melting-furnace	C. L. Wheeler	475,070	May 17	1899	482	59	1030
Memorials of deceased persons. Creating	L. N. Worthington	473,597	Apr. 26	2546	.....	59	533
Merry-go-round	A. Palmer	475,742	May 24	2952	748	59	1249
Merry-go-round	E. Pohl	476,551	June 7	428	116	59	1534
Metal-bending apparatus. Electric	G. D. Burton and E. E. Angell	475,194	May 17	2089	528	59	1068
Metal-bending machine	H. E. Fowler	473,455	Apr. 26	2290	578, 579, 580	59	483
Metal-heater. Electric	G. D. Burton	475,264	May 17	2194	550	59	1089
Metal-heater. Electric	G. D. Burton and E. E. Angell	475,185	May 17	2075	523, 524	59	1064
Metal-heater. Electric	G. D. Burton and E. E. Angell	475,192	May 17	2087	528	59	1067
Metal-heater. Electrical	G. D. Burton	475,181	May 17	2068	521	59	1063
Metal-heating apparatus	G. D. Burton and E. E. Angell	475,188	May 17	2081	526	59	1066
Metal-heating. Converting system for electric	G. D. Burton, A. H. Eddy, and G. T. Briggs.	475,232	May 17	2145	544, 545	59	1079

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Metal-planer	J. S. Detrich	472,804	Apr. 12	1212	311, 312	59	242
Metal-planer	J. S. Detrick	475,542	May 24	2642	672	59	1190
Metal-planer	J. S. Detrick	475,543	May 24	2643	672	59	1191
Metal-plate-bending machine	S. D. Tucker	477,390	June 21	1851	455	59	1830
Metal plates. Apparatus for coating	E. R. Jones	472,502	Apr. 5	778	199	59	147
Metal plates. Apparatus for pickling	W. H. Atkinson and D. M. Somers	473,106	Apr. 19	1688	428, 429, 430	59	345
Metal plates. Machine for shaping and flanging	A. C. A. Holzapfel	474,661	May 10	1249	318	59	888
Metal rods. Device for heating	A. D. Williamson	475,651	May 24	2806	711	59	1223
Metal-shears	C. J. Colling	472,107	Apr. 5	150	40	59	29
Metal wheel	F. L. Bailey	476,118	May 31	3564	896	59	1384
Metal wheel	J. R. Little	475,582	May 24	2703	685	59	1202
Metal wheel. Composite	J. R. Little	475,583	May 24	2704	685	59	1203
Metal wheels. Constructing	J. L. Follett	475,305	May 24	2256	581	59	1117
Metal-working. Electric	J. R. Little	475,584	May 24	2705	686	59	1203
Metal-working. Electrical	G. D. Burton	475,183	May 17	2071	522	59	1064
Metal-working machines. Bed for	G. D. Burton	475,182	May 17	2070	521, 522	59	1063
Metals and alloys with oxides. Coating	J. McKenna	472,712	Apr. 12	1087	279	59	218
Metals. Cold-saw for	A. E. and A. G. Haswell	476,639	June 7	021	.....	59	1360
Metals from their ores or compounds. Obtaining	C. S. Simmers	473,490	Apr. 26	2336	591	59	493
Metals. Method of and apparatus for deoxidizing	C. S. Bradley	473,866	Apr. 26	2955	745	59	611
Metals. Purifying	M. Waddell, J. B. Entz, and W. A. Phillips.	475,960	May 17	2188	558	59	1087
Metals. Refining	B. Talbot	476,091	May 31	3514	.....	59	1375
Metals. Tempering and hardening	B. Talbot	476,092	May 31	3516	.....	59	1376
Metallic-vessel closure	J. S. Durning	475,725	May 24	2925	.....	59	1244
Metallic vessels. Breast or top for	T. C. Hogle	476,745	June 7	778	191	59	1592
Metallic vessels. Bottom for	H. J. Vogel	473,274	Apr. 19	1983	497	59	402
Metallurgical furnace	D. A. Lisk and T. D. Brown	476,280	June 7	74	16	59	1452
Metallurgical furnace	M. R. Conley	477,623	June 21	2236	559	59	1906
Metallurgical furnace. Regenerative	C. Siemens	475,351	May 24	2337	599	59	1134
Metallurgical process	H. C. Rew	472,076	Apr. 5	98	26	59	20
Metaphone or transposition-indicator	J. B. Alzugaray	472,422	Apr. 5	644	.....	59	121
Meter: *See* Electric meter. Electrical meter. Fluid-meter. Gas-meter. Grain-meter. Proportional meter. Water-meter. Water or gas meter.	W. B. Smith	475,253	May 17	2179	555	59	1085
Microphone	C. Vogt	476,582	June 7	534	127	59	1543
Microphone. Adjustable	H. O. Henneberg	472,806	Apr. 12	1215	312	59	243
Microscope. Compound	L. Thomas	475,362	May 24	2350	602	59	1136
Middlings-purifier	S. H. Baker and J. H. Verity	474,354	May 10	764	199	59	795
Middlings-purifier	E. B. Whitmore. (Reissue)	11,245	June 21	2246	562, 563	59	1908
Milk-can attachment	H. Windle	476,502	June 7	421	98	59	1519
Milk-can holder and support	W. G. Robinson	477,454	June 21	1948	483	59	1848
Milk-jar and closing device therefor	H. P. Barnhart	474,436	May 10	890	232	59	821
Milk-receiver	E. Batters	477,289	June 21	1691	415	59	1799
Milk-sterilizing apparatus	F. Krämer	475 122	May 17	1984	503	59	1046
Milk-tester	R. Messenger	472,382	Apr. 5	591	150	59	111
Milker. Cow	J. Hoover and A. W. Jay	474,830	May 17	1527	389	59	956
Milker. Cow	W. Murchland	473,770	Apr. 26	2799	704	59	581
Mill: *See* Coffee-mill. Crushing-mill. Crushing and grinding mill. Grinding-mill. Fulling-mill. Pug-mill. Rolling-mill. Sawmill. Windmill.							
Mill appliance	J. A. Potter	477,822	June 28	2553	639, 640	59	1985
Milling-machine	J. Becker	474,898	May 17	1628	416	59	977
Mining-cage attachment	J. W. Canty	472,159	Apr. 5	233	62	59	44
Mining-cars. Elevator for	T. Wakefield	473,275	Apr. 19	1983	497, 498	59	402
Mining coal	P. C. Forrester	473,734	Apr. 26	2758	693	59	572
Mining-machine	A. Keil and A. R. Westerdahl	472,363	Apr. 5	555	144	59	104
Mining-machine	A. Keil and A. R. Westerdahl	472,503	Apr. 5	779	199	59	148
Mining-machine	C. O. Palmer	472,177	Apr. 5	259	68, 69	59	49
Mining machine. Coal	A. J. White	474,110	May 3	356	85	59	706
Mining pick and drill. Electric	A. Bailey	473,604	Apr. 26	2553	644	59	534
Mirrors, &c., Frame for	J. Fish	472,444	Apr. 5	678	174	59	127
Miter-clamp	A. Martyn	473,706	Apr. 26	2711	682	59	563
Miter-cutter	F. W. Hedgeland	477,254	June 21	1636	399	59	1788
Miter-cutter	W. R. Fox	476,045	May 31	3439	868	59	1360
Miter-machine	W. R. Fox	477,526	June 21	2069	515	59	1873
Mitering-machine	A. H. Soukup	477,233	June 21	1506	391	59	1780
Mixer: *See* Gas-mixer.	P. Phillips	473,429	Apr. 19	2244	564, 565	59	453
Mixing-machine	W. B. Wheeler	472,092	Apr. 5	117	32	59	24
Moistening the fingers or adhesive surfaces. Portable device for	J. Chase	474,812	May 17	1489	381	59	950
Mold: *See* Cigar-mold. Ingot-mold.							
Mold-board-shaping press	W. H. Hodgson	476,271	June 7	63	13	59	1450
Molds and castings formed thereby. Gate for	S. J. Adams	477,320	June 21	1741	426	59	1809
Molder's-flask clamp	W. W. Archibald	474,352	May 10	763	199	59	795
Molder's-flask guide	H. H. Garrett	477,300	June 21	1709	418	59	1802
Molding-cutter	R. E. Linham	472,675	Apr. 12	1027	265	59	207

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Molding-cutter	R. E. Linham	472,676	Apr. 12	1027	265	59	207
Molding-cutter	R. E. Linham	472,677	Apr. 12	1028	265	59	207
Molding-cutter	R. E. Linham	472,678	Apr. 12	1029	265	59	207
Molding-cutter	R. E. Linham	472,679	Apr. 12	1030	266	59	207
Molding-flask	S. S. Caskey and J. M. Dodge	474,210	May 3	500	120	59	734
Molding-flask adjusting-pin	A. Montgomery	475,088	May 17	1937	490	59	1036
Molding-machine	P. O'Connor and J. F. McNamara	472,312	Apr. 5	479	123, 124	59	90
Moldings. Apparatus for coating	S. J Carter	476,002	May 31	3377	851	59	1347
Moldings, &c. Composition for use as ornamental	O. von Slama	474,965	May 17	1581	.....	59	967
Mole-trap	H. Durston	472,088	Apr. 5	40	8	59	10
Molten material. Machine for centrifugally treating	O. B. Peck	473,473	Apr. 26	2327	589	59	491
Money-changer	W. H. Staats	472,719	Apr. 12	1096	282	59	220
Monocycle	J. T. Quealy	473,959	May 3	119	98	59	660
Monument	J. A. Treat	475,003	May 17	1801	456	59	1010
Mortar. Making	E. T. Warner and J. F. Curry	473,860	Apr. 26	2946	743	59	600
Mosquito-bar frame	E. G. Holden	472,879	Apr. 12	1316	338	59	263
Moth-proof bag	F. O. Paige	473,337	Apr. 19	2093	526	59	423
Motion. Device for converting	M. C. Wilson	473,720	Apr. 26	2731	687	59	567
Motion. Electric mechanism for reciprocating	H. S. McKay	475,410	May 24	2426	619	59	1149
Motive-power-machine attachment	J. L. Weaver and H. Brencke, Jr	477,391	June 21	1654	456	59	1630
Motor: *See* Clock-motor, Current-motor, Electric motor, Fan-motor, Hydraulic motor, Mechanical motor, Railway-motor, Sewing-machine motor, Spring-motor, Water-motor, Wave-power motor, Wind-motor.							
Motor	G. J. Altham	475,958	May 31	3315	837	59	1334
Motor	G. W. Mings	473,328	Apr. 19	2068	520, 521	59	419
Motor	C. J. Neef	472,906	Apr. 12	1354	348	59	271
Motor	S. Peterson	478,068	June 28	2943	735	59	2060
Motor	J. C. Reuter	475,790	May 31	3042	770, 771	59	1280
Motor or treadle-power	J. Charlton	474,054	May 3	278	67	59	691
Mower	G. A. Farrall	472,754	Apr. 12	1146	294	59	229
Mower	K. S. Nygaard	474,798	May 10	1466	373	59	932
Mower	J. Stephani	475,823	May 31	3097	784	59	1291
Mower clutch. Lawn-	F. M. Waters	477,030	June 14	1247	302	59	1700
Mower grass-receptacle. Lawn-	S. B. Arment	474,904	May 17	1476	376	59	948
Mower grass-receptacle. Lawn-	C. Even	474,234	May 3	540	133	59	742
Mower. Lawn-	J. Braun and H. Deck	476,184	May 31	3675	929	59	1406
Mower. Lawn-	T. Coldwell	475,976	May 31	3344	843	59	1339
Mower. Lawn-	T. and W. H. Coldwell	475,669	May 24	2829	717	59	1228
Mower. Lawn-	N. Lombard	473,845	Apr. 26	2920	734, 735	59	604
Mower. Lawn-	T. J. Tucker	476,908	June 14	1054	255	59	1660
Mower. Lawn-	C. Wiberg	475,849	May 24	2802	710	59	1223
Mowing-machine	O. Cooley	472,654	Apr. 12	993	256	59	202
Mowing-machine	W. Scott	475,472	May 24	2530	644	59	1169
Mowing-machine cutter	J. F. Selberling	476,318	June 7	135	32, 33	59	1464
Mowing-machine pitman connection	I. F. Bassford	476,030	May 31	3418	863	59	1356
Mucilage, &c. Receptacle for	G. H. Spaulding	474,767	May 10	1410	358	59	921
Multiple switchboards. Circuit for test-batteries and cords of	C. Daler	476,254	June 7	41	9	59	1446
Multiple switchboards. Keyboard-circuit for	C. E. Scribner	476,492	June 7	409	95	59	1517
Multiple switchboards. Test-circuit for	O. A. Bell	476,509	June 7	430	101	59	1521
Muscle-roller	C. E. Scribner	477,579	June 21	2142	532	59	1888
Music-books, &c. Rest or support for	W. E. Forest	472,572	Apr. 12	875	225	59	181
Music-box	E. C. Fales and H. Prendiville	473,150	Apr. 19	1769	447	59	361
Music-box. Coin-controlled	F. H. Corthell	474,370	May 10	790	205	59	800
Music-desk	G. Raab	473,342	Apr. 19	2102	528	59	425
Music-holder	W. A. Lorenz	475,126	May 17	1988	504	59	1047
Music-leaf turner	H. D. Wheeler	473,540	Apr. 26	2435	616	59	510
Music-leaf turner	E. G. Gillespie	472,170	Apr. 5	248	65, 66	59	47
Music-leaf turner	C. H. Huff	475,317	May 24	2271	585	59	1121
Music-leaf turner	J. S. and G. S. Knowels	475,322	May 24	2281	587	59	1123
Music-leaf turner	T. F. Petit	474,458	May 10	933	239, 240	59	827
Music-leaf turner	E. von Trautvetter	477,828	June 28	2765	642, 643	59	1967
Music-leaf turner	J. H. Ward	473,802	Apr. 26	2451	716	59	591
Music-rack for musical-instrument cases	J. A. Weser	475,369	May 24	2363	605	59	1138
Music rest or holder. Detachable	I. Rothschild and E. F. Van Cott	475,249	May 17	2174	553	59	1084
Musical box	S. Cuendet	474,520	May 10	1024	263, 264	59	845
Musical box	H. A. Gautschi	476,458	June 7	357	83	59	1506
Musical instrument	W. Carter	477,167	June 14	1469	360	59	1744
Musical instrument	C. E. Guerre and G. H. Martin	472,453	Apr. 5	695	177	59	131
Musical instrument	A. P. Venen	473,981	May 3	150	35	59	666
Musical-instrument key	C. E. Whitney	477,830	June 28	2570	644	59	1988
Musical instrument. Mechanical	F. Pietschmann	474,999	May 17	1792	454, 455	59	1009
Musical instrument. Stringed	F. A. Cross	475,541	May 24	2641	671	59	1190
Musical instrument. Stringed	F. J. Hafner	474,242	May 3	550	135	59	744
Musical instruments. Vibrator for reed	H. Janes	477,661	June 28	2296	575	59	1934
Musical instruments. Keyboard for	P. v. Jankó	474,016	May 3	209	49	59	678
Musical instruments. Mouthpiece for	J. E. Fowler	474,118	May 3	364	87	59	707
Musical instruments. Tail-pieces for stringed	C. J. Cook	475,674	May 24	2837	718	59	1228
Nail: *See* Shoe-nail.							
Nail-arranging device	C. K. Wead	477,093	June 14	1355	330	59	1729
Nail-drawing implement	J. Reid, Jr	474,859	May 17	1570	401	59	965

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Nail-extractor	R. C. Ellrich	474,594	May 10	1141	291	59	867
Nail-machine	S. E. Groff	476,632	June 7	613	147	59	1559
Nail-machine	C. E. Houghton	472,604	Apr. 12	922	237, 238	59	189
Nail-machine	C. E. Houghton	472,605	Apr. 12	924	238, 239	59	189
Nail machines. Die for cut-	C. E. Houghton, C. E. Houghton	472,882	Apr. 12	1321	339	59	264
Nail-making machine	L. Goddu	475,768	May 31	2903	759	59	1271
Nail or spike	W. Taylor	478,054	June 28	2919	729, 730	59	2055
Nail-puller	F. G. Stark	472,913	Apr. 12	1370	351	59	275
Nails. Comb-strip of heel-	F. F. Raymond, 2d	474,698	May 10	1307	334	59	900
Nails. Machine for making hob-	J. W. Ells	474,858	May 17	1570	400	59	965
Nailing-jack	J. and W. Busfield	476,191	May 31	3684	930, 931	59	1408
Nailing-machine	F. F. Raymond, 2d	474,081	May 3	318	76	59	698
Nautical course-indicator	J. A. Miller, T. S. and H. G. Lester	475,417	May 24	2439	622	59	1152
Necktie	H. Heath	474,846	May 17	1549	396	59	961
Necktie-bows. Stretcher for	J. W. Ashworth	478,008	June 28	2853	713	59	2043
Necktie-fastener	J. Hayden	473,687	Apr. 26	2680	675	59	558
Net. Fly-	W. J. Erdmann	473,154	Apr. 19	1777	449	59	362
Net. Mosquito or fly	V. D. Colline	475,496	May 24	2568	654	59	1176
Net. Portable mosquito-	E. Wenigmann	474,947	May 17	1706	434	59	993
Nets. Machine for making fish or other	H. W. Thurston	473,599	Apr. 26	2548	642	59	533
Nether garment	T. Field	477,085	June 14	1343	326, 327	59	1719
Newspaper-holder and door-plate. Combined	H. Metz	474,550	May 10	1075	275	59	854
Newspapers. Automatic apparatus for the sale of	A. Begg	475,460	May 24	2512	640	59	1165
Nitro-cellulose. Making	H. Maxim	472,492	Apr. 5	755	192	59	143
Non-conducting casing for heaters, flues, pipes, &c	T. W. Jenkins	474,778	May 10	1431	363	59	925
Non-conducting covering for steam-pipes, &c	B. J. Christie	474,639	May 10	1215	311	59	881
Non-conducting material	H. W. Johns	477,647	June 28	2279	.....	59	1931
Numbering and marking machine	J. D. Humphrey	474,834	May 17	1532	.....	59	957
Nut. Adjustable spindle-	W. L. Frazer and W. E. Brown	475,688	May 24	2857	722, 723	59	1233
Nut. Ball-bearing	C. R. Pratt	475,762	May 31	2984	757	59	1270
Nut-blanks. Machine for cutting and bending	W. L. Clouse and W. R. Anderson	476,304	June 7	114	28	59	1461
Nut-fastening device	J. W. Grantland	477,511	June 21	2037	505, 506, 507	59	1866
Nut-lock	W. J. Allason	472,788	Apr. 12	1193	306	59	238
Nut-lock	J. Coleman	476,789	June 14	817	201	59	1613
Nut-lock	A. Duer	473,613	Apr. 26	2568	647	59	537
Nut-lock	R. C. Elliott	474,315	May 3	681	176	59	768
Nut-lock	B. Floersheim	472,111	Apr. 5	161	43	59	30
Nut-lock	N. P. Garrett	472,637	Apr. 12	970	251	59	198
Nut-lock	S. C. Hickerson	474,380	May 10	803	210	59	803
Nut-lock	E. M. Hill	476,382	June 7	243	59	59	1484
Nut-lock	J. P. Koonta	472,706	Apr. 12	1080	277	59	216
Nut-lock	J. D. Jolley	474,837	May 17	1538	391	59	958
Nut-lock	J. B. Jones	477,941	June 28	2750	689	59	2023
Nut-lock	J. M. Lame and I. N. Phippe	477,010	June 14	1216	295	59	1693
Nut-lock	W. Mansfield	477,555	June 21	2112	525	59	1882
Nut-lock	W. B. Parrot	473,193	Apr. 19	1655	467	59	376
Nut-lock	L. B. Peck and F. L. Sterner	477,149	June 14	1431	349	59	1737
Nut-lock	S. C. Pettegrew	477,222	June 21	1576	387	59	1777
Nut-lock	W. D. Robinson	478,019	June 28	2866	717	59	2045
Nut-lock	W. D. Rodgers	473,430	Apr. 19	2245	565	59	453
Nut-lock	W. Schauweker	476,316	June 7	132	32	59	1463
Nut-lock	W. P. Sweetland	473,642	Apr. 26	2614	658	59	545
Nut-lock	E. W. Taylor	472,489	Apr. 5	751	191	59	143
Nut-lock	D. C. Terry and W. J. Maltby	475,094	May 17	1942	492	59	1038
Nut-lock	A. G. Turner	475,636	May 24	2784	705	59	1219
Nut-lock	H. R. Wallis	477,318	June 21	1740	428	59	1808
Nut-lock	V. E. Whitelock	472,413	Apr. 5	634	162	59	119
Nut-locking washer	P. Nolan	472,242	Apr. 5	366	94	59	69
Nut. Self-locking	J. F. Plummer and H. P. Chapman	477,020	June 14	1228	298	59	1696
Nuts. Ratchet-washer for bolt	W. A. Galbraith	472,465	Apr. 5	713	182	59	135
Oar-lock	W. F. Spence	474,731	May 10	1356	344	59	910
Observatory. Rotary	F. C. Crowe	474,194	May 3	479	116	59	730
Odometer and speed-indicator. Electric	W. A. Phillips	474,220	May 3	519	126, 127	59	737
Oil-burner	J. Barrow	473,341	Apr. 19	2099	527	59	494
Oil-burner	C. F. Broström	474,282	May 3	612	151	59	756
Oil-burner	J. J. Buhoup	476,445	June 7	341	77, 78	59	1504
Oil-burner	C. T. Coates and W. R. Helton	477,193	June 14	1509	370	59	1753
Oil-burner	W. R. Jeavons	475,297	May 24	2247	579	59	1116
Oil-burner	F. L. McGahan	475,401	May 24	2412	615	59	1147
Oil burner. Coal-	H. Stacey	476,294	June 7	97	22	59	1457
Oil-burning device	H. T. Russell	473,858	Apr. 26	2944	742	59	609
Oil-can	H. Kaplan	473,165	Apr. 19	1793	452, 453	59	365
Oil-can	F. Marsanville	474,172	May 3	446	108	59	724
Oil-can	N. G. Pomeroy	473,516	Apr. 26	2398	607	59	503
Oil-can. Squirt	F. E. Small	475,151	May 17	2023	511	59	1054
Oil-cup	J. M. Daugherty	477,581	June 21	2145	536	59	1889
Oil-cup	J. W. Morgan	475,387	May 24	2395	612	59	1144
Oil. Paint-	G. W. Banker	477,379	June 21	1835	450	59	1626
Oil-purifier	R. Metz	474,434	May 10	888	.....	59	820
Oil-purifying apparatus	E. Noppel	473,326	Apr. 19	2065	520	59	419
Oil-purifying apparatus	O. K. Thomassen	477,061	June 14	1297	315	59	1710
Oil. Treating cotton-seed	G. W. Scollay	477,281	June 21	1675	410	59	1796
Oils, &c. Apparatus for burning petroleum	O. R. Routh	474,864	May 17	1579	.....	59	967
		476,560	June 7	503	118	59	1537

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Oils. Apparatus for the transference of hydrocarbon	W. Buckwell	476,977	June 14	1166	282	59	1683
Oils. Compound of sulphureted	W. D. Field	473,306	Apr. 19	2031	.....	59	412
Oils for lighting and heating. Apparatus for burning hydrocarbon or other	G. Rose	477,271	June 21	1650	405, 406	59	1798
Oils. Safety-vessel for	C. J. Ryder	473,910	Apr. 12	1364	350	59	974
Oiler. Loose-pulley	J. H. Richards and A. W. Burr	476,173	May 31	3053	994	59	1403
Oiling device	C. F. Kellom	477,422	June 21	1695	467	59	1839
Opera-chair	J. T. McKean	475,019	May 17	1894	462, 463	59	1015
Opera-glass	C. F. Glocker	477,360	June 21	1804	442	59	1890
Opera-glass attachment	P. Moews	475,462	May 24	2513	641	59	1166
Opera-glass attachment	P. Moews	475,463	May 24	2515	641	59	1166
Opera-glass holder	A. W. Buchbinder, Jr	477,643	June 28	2274	570	59	1930
Opera-glass-rental apparatus	J. W. Patterson	475,412	May 24	2431	620	59	1150
Orange-clipper	T. B. Langford	472,459	Apr. 5	705	180	59	133
Order-holder	J. A. Thuge	478,035	June 28	2893	723	59	2051
Ordnance	J. Mason	473,939	May 3	89	20	59	654
Ordnance. Breech-loading	J. B. G. A. Canet	474,289	May 3	622	154, 155, 156, 157	59	758
Ordnance. Breech-loading	W. H. Driggs	475,545	May 24	2646	673, 674	59	1191
Ore cleaning and concentrating apparatus	W. Clancy	476,035	May 31	3424	864, 865	59	1357
Ore-concentrator	G. L. Cudner	473,449	Apr. 26	2283	577	59	482
Ore-concentrator	H. F. Hicks	477,934	June 28	2737	686	59	2020
Ore-concentrator	E. A. Hockley	477,936	June 28	2741	687	59	2021
Ore-concentrator	F. M. Iler	473,506	Apr. 26	2379	603	59	500
Ore-conveying apparatus	C. R. Townsend	474,272	May 3	595	148	59	753
Ore-crusher	T. A. Edison	474,592	May 10	1139	290	59	867
Ore-pulverizer	F. A. Ross	475,347	May 24	2333	598	59	1132
Ore-roasting furnace	W. L. Morris	474,095	May 3	336	81	59	702
Ore-roasting furnace	G. F. Bartlett and A. J. O'Neill	472,848	Apr. 12	1271	325, 326	59	254
Ore-sampling device	H. F. Brown	474,573	May 10	1113	284, 285	59	862
Ore-screening apparatus	R. C. Hawley	475,557	May 24	2670	679	59	1195
Ore-screening apparatus	T. A. Edison	472,753	Apr. 12	1144	293	59	229
Ore-separator	T. A. Edison	476,532	June 7	462	110	59	1528
Ore separator and amalgamator. Combined	S. G. Elliott	473,066	Apr. 19	1626	415	59	335
Ore-treating apparatus	G. L. Cudner	473,450	Apr. 26	2284	577	59	482
Ores and like materials. Machine for classifying or sizing	W. H. B. Stout	477,026	June 14	1237	299, 300	59	1698
Ores. Concentrating	T. Clarkson	472,433	Apr. 5	663	169	59	124
Ores. Method of and apparatus for separating	C. B. Hebron	474,829	May 17	1523	388, 389	59	956
Ores of different specific gravity. Apparatus for washing, separating, and concentrating	T. A. Edison	476,991	June 14	1187	288	59	1687
Ores. Roasting	C. Lührig	474,023	May 3	221	53	59	680
Ores. Treating and concentrating pyritiferous	C. W. Stickney	475,824	May 31	3098	784, 785	59	1292
Organ	J. W. Neill	472,387	Apr. 5	597	152	59	112
Organ-coupler	M. Clark	472,032	Apr. 5	32	7	59	8
Organ. Electrical	F. W. Hedgeland	476,267	June 7	58	12	59	1449
Organ. Reed	R. P. Strand	478,032	June 28	2889	721, 722	59	2050
Organ. Reed	M. Clark	473,383	Apr. 19	2174	546, 547	59	439
Organ. Reed	J. W. Trainer	472,201	Apr. 5	299	79	59	56
Organ stop-action	J. B. Hamilton	472,789	Apr. 12	1194	306, 307	59	289
Organs. Fresh-wind box for pipe	J. W. Trainer	474,881	May 17	1599	408	59	971
Organs. Hydraulic motor for	E. S. Votey and W. D. Wood	475,832	May 31	3112	788, 789	59	1294
Organs into action. Device for throwing couplers of	J. W. Johnson	475,776	May 31	3007	763	59	1274
Organs. Pneumatic action for	F. W. Hedgeland	476,266	June 7	57	12	59	1449
Organs. Qualifying-box for bass-reeds of	F. W. Hedgeland	476,796	June 14	867	214	59	1623
Organs. Wind-chest for pipe	F. W. Hedgeland	472,998	Apr. 19	1519	388	59	316
Oven	E. S. Votey and W. D. Wood	475,831	May 31	3110	787, 788	59	1294
Oven. Baker's	G. R. Moon	476,291	June 7	92	21	59	1456
Oven. Baker's	W. Lenderoth	475,403	May 24	2415	616	59	1147
Oven. Baker's	A. D. Ordway	475,045	May 17	1860	472	59	1022
Oven. Portable	J. J. Pfenninger	473,018	Apr. 19	1550	395	59	321
Oven screen or mat	W. O. Silvey	475,161	May 17	2038	514	59	1057
Overseam for fabrics	J. E. Bruso	474,364	May 10	783	204	59	799
Oyster-washing machine	J. G. Greene	472,117	Apr. 5	170	46	59	32
Package adapted for automatic delivery	W. N. Macqueen	477,134	June 14	1414	344	59	1732
Package-carrier	A. H. Fancher	474,167	May 3	433	104	59	722
Package-carrier	C. E. Baldwin	473,897	May 3	3	1	59	637
Packing	W. Stone	473,531	Apr. 26	2417	613	59	507
Packing-box and savings-bank. Combination-lock	J. C. F. Jones	475,870	May 31	3171	805	59	1307
Packing-case	J. B. Morris	472,136	Apr. 5	199	53, 54	59	37
Packing device. Valve	S. Mueller, A. E. Matchett, and W. Eggers	474,755	May 10	1391	351, 352	59	917
Packing. Metallic	E. P. Holly	473,554	Apr. 26	2451	620	59	513
Packing. Metallic rod	W. T. Harris	473,313	Apr. 19	2046	513	59	414
Packing. Piston	G. R. Dolf	477,741	June 28	2424	606	59	1902
Packing-receptacle	A. A. Tripoid and C. F. Davenport	473,182	Apr. 19	1839	463	59	372
Packing. Steam-joint	H. L. Boswell	476,223	May 31	3747	946	59	1419
Packing-tool	J. G. Broman	477,640	June 28	2271	569	59	1929
	J. F. Lynch	478,008	Apr. 19	1535	391	59	319

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pad: *See* Blotting-pad. Heating-pad. Collar-pad.							
Padlock	C. A. Larson	473,102	Apr. 19	1854	467	59	375
Padlock	S. R. Slaymaker	476,495	June 7	413	96	59	1518
Padlock. Combination	E. P. Caldwell	473,059	Apr. 19	1615	412	59	333
Pail and strainer. Combined milk	F. and G. W. Ansley	475,375	May 24	2373	607	59	1140
Pail. Scrubbing	J. E. Zeiser	475,429	May 24	2460	627	59	1155
Paint	J. Haake	473,391	Apr. 19	2193	.....	59	443
Paint	C. H. Reaney	474,603	May 10	1303	.....	59	899
Paint compound	W. B. Frederick	477,110	June 14	1377	.....	59	1795
Paint-pigment	F. L. Bartlett	477,488	June 21	2005	.....	59	1860
Pan: *See* Baking-pan. Stew-pan. Dust-pan. Vacuum-pan. Evaporating-pan.							
Pan-conveying device	T. Harper	474,340	May 3	734	191, 192	59	778
Pantaloons-hanger	C. T. N. Engels	477,170	June 14	1475	361	59	1746
Paper-bag machinery	C. B. Stilwell	473,977	May 3	144	33, 34	59	665
Paper box	J. E. Baker	476,237	June 7	2	1	59	1439
Paper box	P. Lindemeyer	476,661	June 7	653	158	59	1566
Paper-box blanks. Corner-cutter for	E. H. Taylor	473,859	Apr. 26	2945	742, 743	59	609
Paper box for chess, checkers, &c	J. C. Koch	476,019	May 31	3402	858	59	1352
Paper box. Knockdown	E. M. Scott	474,610	May 10	1166	296	59	879
Paper. Cabinet for toilet	J. T. Hoyt	476,644	June 7	629	152	59	1562
Paper case. Toilet	I. M. Lowengrund	477,215	June 21	1564	384	59	1776
Paper coloring or moistening device	E. Housman	476,204	May 31	3707	936	59	1412
Paper-cutter	A. Maim	474,341	May 3	735	192	59	778
Paper-cutting device	J. C. Coram and F. D. Huntoon	475,722	May 24	2918	741	59	1243
Paper-cutting machine	G. W. Evans	475,761	May 31	2982	756	59	1269
Paper. Device for punching webs of	J. Boyer	477,402	June 21	1868	460	59	1833
Paper-feeding device	J. C. Coram and F. D. Huntoon	475,723	May 24	2920	742	59	1244
Paper-feeding machine	W. Womeraley	475,839	May 31	3123	791, 792	59	1296
Paper-folder feeding attachment	C. N. Walls	475,644	May 24	2796	708	59	1221
Paper-folding machine	J. H. Stonemetz	472,317	Apr. 5	485	125, 126	59	91
Paper-folding mechanism	J. C. Fowler	473,068	Apr. 19	1629	415, 416	59	335
Paper for carpet-linings, &c. Machine for making box-plaited	A. Gibb	476,791	June 14	853	210, 211, 212	59	1020
Paper-holder	M. F. Berry	474,516	May 10	1017	261	59	844
Paper-holder	G. S. Gray	475,308	May 24	2260	582	59	1118
Paper-holder	D. F. Oliver	476,482	June 7	398	92	59	1515
Paper holder and cutter. Roll-	J. Frankel	474,598	May 10	1147	292	59	868
Paper holder and cutter. Roll-	E. E. Sentman	476,689	June 7	694	170	59	1575
Paper holder and cutter. Roll-	E. E. Sentman	477,580	June 21	2143	532	59	1868
Paper holding and severing machine. Roll-	E. C. Ford and G. T. Jacobs	474,551	May 10	1076	275	59	855
Paper, &c. Machine for applying adhesive material to the surface of	J. M. Carew	475,535	May 24	2631	669, 670	59	1188
Paper, &c. Machine for feeding and cutting	W. G. Chapin	475,931	May 31	3269	825	59	1325
Paper-making machine	L. Lee	476,153	May 31	3020	915	59	1396
Paper or analogous tubing. Making	E. T. Greenfield	477,593	June 21	2169	538	59	1893
Paper or other fabric from rolls. Apparatus for feeding	E. H. Cottrell	477,352	June 21	1785	436	59	1817
Paper or other substances into sheets. Machinery or apparatus for cutting	A. and R. J. Edwards	473,731	Apr. 26	2746	691, 692	59	570
Paper-pulp. Making	N. H. Brokaw	474,944	May 17	1697	.....	59	902
Paper-pulp screen	E. W. Goodrick	475,041	May 17	1853	470	59	1021
Paper sheets in quantity. Appliance for holding	T. J. Vincents	473,099	Apr. 19	1675	425	59	343
Paper-stock washer	W. Moorhouse	478,066	June 28	2940	734	59	2059
Paper-tube-making machine	J. C. Coram and F. D. Huntoon	475,721	May 24	2911	738, 739, 740, 741	59	1242
Paper-weight, letter-scale, and calendar. Combined	J. B. Price	476,067	May 31	3477	877	59	1369
Parcel-carrier	C. Caplis	473,566	Apr. 26	2492	630	59	522
Parcel-carrier	S. R. Smith	473,433	Apr. 19	2248	566	59	453
Parcel-holder or advertising-valise	D. W. Long and C. Dimick	476,803	June 14	877	216	59	1625
Parer, corer, and cutter. Apple	E. H. Elliott	473,621	Apr. 26	2585	651	59	530
Partition	A. J. Wells	477,829	June 28	2567	643	59	1987
Passenger-recorder for public vehicles	J. M. O'Kelly	478,016	June 28	2862	716	59	2045
Paste-making machine	F. H. Shepherd	476,320	June 7	145	35	59	1466
Pavement	J. A. Chanler	475,234	May 17	2154	545	59	1080
Pavement	J. A. Chanler	475,235	May 17	2156	546	59	1080
Pavement. Street	G. S. Curtis	475,724	May 24	2923	742	59	1244
Paving apparatus. Asphalt	A. H. Perkins	476,814	June 14	898	220, 221	59	1630
Paving-block	S. Breden and J. Sheridan	475,934	May 31	3260	822	59	1323
Pavilion. Rotary	C. M. Hollingsworth	474,659	May 10	1245	318	59	887
Peach cutter and stoner	J. H. Smith	474,927	May 17	1668	426	59	986
Peanut-cleaner	J. H. and J. L. Woolard	474,893	May 17	1619	413, 414	59	976
Pearl ribbons. Manufacturing	O. Fritzsch	473,309	Apr. 19	2040	512	59	413
Pegging-jack	W. M. Jones	476,650	June 7	639	155	59	1563
Pegging-machine	J. Hyslop, Jr	472,638	Apr. 12	971	252	59	198
Pegging-machine	E. Woodward	473,136	Apr. 19	1747	441, 442	59	356
Pegging-machine feeding mechanism	J. Hyslop, Jr	475,868	May 31	3168	804	59	1306
Pen	H. Sulzer	477,080	June 14	1336	324	59	1717
Pen and pencil clasp	S. B. Lane	473,230	Apr. 19	1919	483	59	389
Pen. Fountain	C. E. Browning	477,854	June 28	2612	654	59	1995

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pen fountain attachment	G. W. Price	475,285	May 17	2229	571	59	1097
Penholder	H. Campbell	475,033	May 17	1642	467	59	1019
Penholder	E. N. Gifford	478,073	June 28	2950	738	59	2061
Penholder	C. T. McClintock	474,644	May 10	1220	312	59	882
Penholder guard attachment	J. R. Grymes	474,894	May 17	1510	385	59	953
Penholders. Erasing attachment for	F. B. Krause	473,423	Apr. 19	2237	562	59	451
Pen. Manifolding	A. C. Carey	473,207	Apr. 19	1676	472	59	340
Penmanship-guide	J. Earle	472,751	Apr. 12	1142	293	59	258
Penmanship. System of	H. R. Fuller	477,653	June 28	2226	572	59	1932
Pen-wiper	J. L. Du Bois	473,148	Apr. 19	1767	446	59	360
Pencil holder, sharpener, and eraser. Combined	C. B. Campbell	475,485	May 24	2550	640	59	1173
Pencil-sharpener	H. A. Benedict	476,361	June 7	214	53	59	1477
Pencil-sharpener	W. K. Culver	472,161	Apr. 5	236	63	59	45
Pencil-sharpener	J. Siegel	474,418	May 10	666	296	59	815
Pencil-sharpener	M. E. Worn	472,420	Apr. 5	641	164	59	120
Pencil sharpener. Lead-	W. S. Gillespie	477,529	June 21	2074	516	59	1675
Pencil sharpener. Slate-	C. G. Keenan and W. J. Morris	474,136	May 3	386	93	59	713
Pencil sharpener. Slate-	G. H. Rutachman	472,313	Apr. 5	480	124	59	90
Pendulum. Compensation-	E. R. Malmborg	472,624	Apr. 12	956	248	59	195
Perforating attachment	J. E. Tucker	473,483	Apr. 26	2341	593	59	494
Perforating machine. Check-	G. B. Webb	473,647	Apr. 26	2620	661	59	547
Perfume-case. Pocket	J. McCoy	477,217	June 21	1567	385	59	1776
Perfume-holder	W. Hill	476,269	June 7	61	13	59	1450
Perfumes. Extracting	R. A. Chesebrough	475,437	May 24	2470	630	59	1127
Permutation-lock	W. H. Bricker	474,078	May 3	308	74	59	697
Permutation-lock	E. Féret	472,868	Apr. 12	1298	333	59	250
Permutation-lock	J. Roche	475,520	May 24	2609	663	59	1184
Permutation-lock	L. E. Schneider	473,786	Apr. 26	2827	710; 711	59	586
Permutation-lock	D. Steiner and J. Schiele	476,904	June 14	1047	238; 254	59	1650
Pessary	E. Kirwin	475,453	May 24	2499	637	59	1163
Pessary	H. H. Taylor	476,698	June 7	706	173	59	1577
Petroleum-burner	F. E. Forster	473,067	Apr. 19	1628	415	59	335
Phaeton	W. N. Morrell	473,330	Apr. 19	2082	524	59	422
Phonograph	L. S. Clarke	474,946	May 17	1701	433	59	992
Phonograph	J. L. Skillin	472,684	Apr. 12	1035	267; 268	59	208
Phosphate-washing machine	G. W. Roberts	472,490	Apr. 12	1235	317	59	246
Photograph-holder	V. J. Augir	476,357	June 7	203	49	59	1475
Photographs on hard surfaces. Producing	A. Müller-Jacobs	474,850	May 17	1556	.....	59	962
Photographic apparatus. Coin-operated	W. H. C. Bernitt	473,375	Apr. 19	2159	542; 543	59	436
Photographic camera	R. de Barril	475,919	May 31	3252	891	59	1322
Photographic camera	B. J. Edwards	472,257	Apr. 5	393	102	59	73
Photographic camera	W. Scorer	476,562	June 7	506	119	59	1577
Photographic camera	F. Servus	473,358	Apr. 19	2128	534	59	430
Photographic dark-rooms. Candle-lamp for use in	H. A. Benham and W. H. Tomson	473,814	Apr. 26	2870	720	59	595
Photographic developer	M. Andresen	477,486	June 21	2003	.....	59	1660
Photographic film-holder	T. Sault	477,337	June 21	1763	432	59	1813
Photographic kit	J. H. Iden	474,833	May 17	1531	390	59	957
Photographic-paper holder and cutter	T. E. Wood	477,728	June 28	2460	600	59	1957
Photographic pictures. Developing	M. Andrésen	475,372	May 24	2369	.....	59	1139
Photographic plate-changing apparatus	F. A. Fichtner	472,709	Apr. 12	1074	276	59	215
Photographic-plate holder	J. H. Ballman	474,571	May 10	1110	283	59	862
Photographic-plate holder	A. E. Paige	477,696	June 28	2353	588	59	1948
Photographic-printing frame	F. A. Daly	476,041	May 31	3433	867	59	1359
Photographic prints. Apparatus for trimming	H. H. Newcomb	476,481	June 7	397	92	59	1514
Phonographic records. Method of and means for duplicating or transferring	L. F. Douglass	475,490	May 24	2558	651	59	1174
Photographic-roll holder	F. A. Brownell	477,243	June 21	1617	395; 396	59	1785
Photographic shutter	J. R. Albrecht and E. Ortmann	475,654	May 24	2809	712	59	1224
Photographic shutter	G. F. Green	473,188	Apr. 19	1848	465	59	374
Photographic shutter	F. R. Hoyt	472,883	Apr. 12	1323	339	59	265
Photographic shutter	F. Servus	473,356	Apr. 19	2122	533	59	429
Photography. Improving oil-paintings by	L. Meyer	473,767	Apr. 26	2795	.....	59	580
Photography. Making relief-plates by	J. Husnik	473,753	Apr. 26	2780	.....	59	577
Piano	A. Holmstrom	477,938	June 28	2744	688	59	2022
Piano	N. Marston	477,669	June 28	2314	578	59	1939
Piano-action	A. D. Dimick	472,109	Apr. 5	157	43	59	30
Piano-action flange	W. W. Shailer	473,241	Apr. 19	1934	486	59	392
Piano-action. Repetition	J. C. Anton	476,115	May 31	3558	895	59	1383
Piano action. Upright	G. M. Guild	472,478	Apr. 5	735	187; 188	59	139
Piano action. Upright	L. Merkel	473,944	May 3	96	22	59	655
Piano-back	J. W. Reed	473,082	Apr. 19	1649	419	59	339
Piano case. Upright	A. Brambach	476,915	June 14	1066	257	59	1662
Piano-flange	W. W. Shailer	473,242	Apr. 19	1936	487	59	392
Pianoforte	F. W. Hale	474,827	May 17	1518	387; 388	59	955
Pianoforte	W. Rohlfing, Jr	472,588	Apr. 12	899	231	59	185
Pianoforte-pedal	H. A. Hambloch	478,007	June 28	2852	713	59	2043
Pianofortes. Sounding-board and resonant chamber for	J. U. Fischer	473,307	Apr. 19	2084	511	59	412
Piano-key bottoms. Brace for	H. McClellan	477,566	June 21	2127	529	59	1885
Piano pin-block	A. H. Reed and D. Donovan	473,523	Apr. 26	2409	611	59	506
Piano sounding-board	C. Hinze	472,878	Apr. 12	1314	337	59	263
Piano tone-sustaining attachment	S. Hansing	474,990	May 17	1779	450	59	1006
Piano-tuning apparatus	A. Felldin	477,590	June 21	2166	537	59	1893
Piano. Upright	J. U. Fischer	473,308	Apr. 19	2035	511; 512	59	412
Pianos and organs. Mechanical attachment for	J. E. Harriman, Jr	476,197	May 31	3692	933; 934	59	1409

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pianos. Muffling attachment for upright	O. R. Trefz	476,842	June 14	943	230	59	1638
Pianos. Repetition-action for	V. Berdnx	474,112	May 3	358	85	59	706
Pianos. Touch-regulating device for	F. W. Kringel	476,766	June 7	206	198	59	1598
Picker: *See* Bean-picker. Grape-picker. Cherry-picker.							
Pickpocket and coat-thief detector	J. F. Hurd	477,940	June 28	2746	688; 689	59	2022
Picture-exhibitor	F. E. Merkel	477,259	June 21	1644	401	59	1790
Picture-frame	O. C. R. Ellis	477,188	June 14	1502	368	59	1751
Picture or surface exhibitor. Coin-controlled	M. O. Griswold	472,704	Apr. 12	1077	276	59	216
Pictures. Stretcher for the paper or canvas of	J. N. Anderson	472,021	Apr. 5	2	1	59	3
Pier	O. Haerem	474,734	May 10	1361	345	59	910
Pigments. Making white	J. Blair	477,735	June 28	2411	602	59	1959
Pile fabrics. Apparatus for cutting	J. H. Smith, A. Goddard, L. Higginbottom, and T. Mannock.	475,620	May 24	2761	700	59	1214
Pile fabrics. Knife for cutting	J. H. Smith, A. Goddard, L. Higginbottom, and T. Mannock.	475,709	May 24	2891	731	59	1239
Pill or tablet machine	W. T. Sears	473,432	Apr. 19	2247	565; 566	59	453
Pillow-block	H. W. Hill	477,543	June 21	2092	520	59	1878
Pillow-sham holder	G. H. Davis	472,036	Apr. 5	38	8	59	9
Pillow-sham holder	F. Karr	476,882	June 14	1011	245	59	1652
Pin: *See* Insulator-pin. Scarf-pin.							
Pinchers. Hog-ring	H. W. Hill	475,767	May 31	2902	750	59	1971
Pipe: *See* Blow-pipe. Lead-lined pipe. Clay pipe. Tobacco-pipe. Hose-pipe.							
Pipe and manufacturing the same. Coated metal	W. Lacy, Jr	475,454	May 24	2500	637	59	1163
Pipe and rod wrench	J. J. Tomey	472,153	Apr. 5	222	59	59	42
Pipe-closer. Adjustable	W. F. O'Brien	475,793	May 31	3031	768	59	1979
Pipe-coupling	J. Connor	476,188	May 31	3680	930	59	1407
Pipe-cutter and threader	G. W. Bowman and J. C. Godfrey	472,426	Apr. 5	653	166	59	122
Pipe-cutter attachment	H. Comstock. (Reissue)	11,243	June 7	809	199	59	1590
Pipe-hanger	G. C. Blackmore	475,006	May 17	1805	457	59	1011
Pipe-hanger	J. D. Dunning	476,227	May 31	3755	948	59	1421
Pipe-hanger	A. Newbury	472,068	Apr. 5	88	24	59	19
Pipe laying device. Sewer, water, and drain	E. H. Rose	476,024	June 28	2875	719	59	2047
Pipe or flue beader and expander	C. A. Frayer	474,956	May 17	1717	437	59	995
Pipe or flue beader and expander	C. A. Frayer	478,000	June 28	2843	711	59	2041
Pipe-plug	D. A. Streeter	474,196	May 3	481	116	59	731
Pipe-threading machine	R. P. Curtis	477,297	June 21	1703	417	59	1801
Pipe-threading machine	R. P. and L. B. Curtis	477,296	June 21	1702	417	59	1801
Pipe-threading machine	J. B. Z. Dumais	477,406	June 21	1875	461; 462	59	1835
Pipe-turning tool	J. J. Hogan	473,877	Apr. 26	2977	750	59	615
Pipe-wrench	G. McKercher	474,300	May 3	644	163	59	764
Pipe-wrench	M J Wilson	473,542	Apr. 26	2437	617	59	511
Pipes. Bell-and-spigot joint for cement-lined	E. H. Phipps	474,770	May 10	1433	363	59	925
Pipes. Corrugating	W. J. Plecker	473,020	Apr. 19	1554	396	59	322
Pipes, rods, &c. Collar for	G. W. Aldrich	474,511	May 10	1006	259	59	842
Pipes with flared ends. Coupling for	J. J. Hogan	473,462	Apr. 26	2312	585	59	488
Pistol. Magazine	F. N. Thayer and E. W. Francis	477,280	June 21	1672	409; 410	59	1795
Pistol. Mock	C. Golden	476,878	June 14	1001	243	59	1650
Piston. Balanced	W. J. Thomas	473,032	Apr. 19	1574	401	59	326
Piston. Lubricating	W. Berrenberg	474,075	May 3	305	74	59	696
Plaiter-blade	C. C. Emmons	473,303	Apr. 19	2029	510	59	411
Plane-iron	E. A. Schade	473,087	Apr. 19	1658	422	59	340
Planer. Metal	T. E. Cherry	477,510	June 21	2035	505	59	1866
Planing-machine	W. H. Doane	477,928	June 28	2726	683; 684	59	2018
Planing-machine	M. S. Rawson	477,610	June 21	2198	545	59	1899
Planing-machine	E. A. Walker	475,004	May 17	1801	457	59	1010
Plant-fender	R. Jones	478,074	June 28	2852	738	59	2061
Plant-frame	E. K. Jones	473,756	Apr. 26	2783	699	59	577
Plant-holder for windows	F. A. Curtis and H. J. Sautter	477,355	June 21	1797	440	59	1819
Planter	E. J. Updike	474,425	May 10	876	228	59	818
Planter and fertilizer-distributer. Combined hand corn-	A. Knapp, Jr	473,760	Apr. 26	2787	701	59	579
Planter and fertilizer-distributer. Potato-	J. S. Robbins	475,519	May 24	2608	663	59	1184
Planter and fertilizer-distributer. Seed-	J. Laude	474,256	May 3	567	140	59	748
Planter and fertilizer-distributer. Seed-	J. Laude	474,748	May 10	1382	349	59	915
Planter attachment. Corn-	G. J. Cline	476,036	May 31	3425	865; 866	59	1357
Planter check-row attachment	L. Harpin	472,996	Apr. 19	1518	387	59	315
Planter. Check-row corn-	J. R. Ayers	472,246	Apr. 5	376	99	59	70
Planter. Check-row corn-	C. E. Kessler	476,149	May 31	3611	912; 913	59	1394
Planter check-row mechanism	J. W. Barlow	472,976	Apr. 19	1479	378	59	308
Planter. Corn-	J. E. Bering	473,413	Apr. 19	2223	558; 559	59	448
Planter. Corn-	G. W. Brown	474,363	May 10	781	203; 204	59	798
Planter. Corn-	B. Deardorff	475,266	May 17	2199	561	59	1090
Planter. Corn-	E. C. Fisher	476,624	June 7	600	144	59	1556
Planter. Corn-	J. G. Goodwin	477,531	June 21	2078	517	59	1875
Planter. Corn-	L. P. Graham	474,448	May 10	915	236	59	894
Planter. Corn-	A. J. Hall	473,663	Apr. 26	2645	667	59	552
Planter. Corn-	J. C. Tunnicliff	472,281	Apr. 5	425	109; 110	59	79
Planter guide-marker. Corn-	H. A. Behrns	477,983	June 28	2801	702	59	2034

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Planter. Hand corn	J. W. Champion	474,721	May 10	1342	341	59	907
Planter. Potato	F. Robinson	475,610	May 24	2746	606	59	1211
Planter. Seed	J. F. Hulett	477,369	June 21	1819	445	59	1823
Planter. Seed	A. Matson	476,056	May 31	3460	873	59	1364
Planter wheel. Corn	A. Neely	473,124	Apr. 19	1728	437	59	352
Planting purposes. Guide-line for	P. E. Wistrand	476,348	June 7	189	45	59	1473
Plaster. Wall	H. Nichols	477,776	June 28	2478	620	59	1971
Plate-holder	W. Robinson	472,511	Apr. 5	792	.....	59	151
Plate-lifter	F. Servus	473,359	Apr. 19	2131	534	59	430
Plate-securing device	J. H. Traylor	475,363	May 24	2352	603	59	1136
Plated articles. Manufacture of	J. A. Anderson	475,745	May 31	2960	751	59	1265
Platform: *See* Window-platform.	W. E. Pleadwell	477,265	June 21	1652	404	59	1791
Pliers	S. O. Root	477,066	June 14	1304	317	59	1711
Plow	J. A. Cole	474,651	May 10	1229	314	59	884
Plow	J. Du Shane	475,681	May 24	2847	720	55	1231
Plow	J. I. Hatfield	472,348	Apr. 5	538	139	59	100
Plow	L. C. Jackson and J. F. Reiger	475,731	May 24	2934	745	59	1946
Plow	W. R. Lee	476,802	June 14	876	216	59	1625
Plow	J. H. Linebarger	472,302	Apr. 5	465	119	59	87
Plow	J. E. and E. M. Mitchell	473,517	Apr. 26	2399	{607 {608	59	504
Plow	P. C. Pagett	475,604	May 24	2734	693	59	1208
Plow	N. C. Sample	477,230	June 21	1591	390	59	1780
Plow attachment	H. Wiard	473,989	May 3	162	38, 39	59	669
Plow-beam	S. F. Savits	472,179	Apr. 5	267	70	59	50
Plow-beam attachment	H. H. Sater	474,485	May 10	969	249	59	834
Plow. Double	F. J. Blanke	476,779	June 14	837	207	59	1617
Plow-handle clamp	J. S. Stockton	475,825	May 31	3100	785	59	1292
Plow harrow attachment	J. L. O. King	472,657	Apr. 12	996	257	59	202
Plow. Hillside	W. O. Silvey	474,269	May 3	589	146	59	752
Plow-jointer	D. B. English	472,112	Apr. 5	162	44	59	30
Plow-point	C. A. Stringer	476,090	May 31	3513	885	59	1375
Plow. Reversible	G. C. Westervelt	477,723	June 28	2394	598	59	1956
Plow. Reversible double-shovel	A. Pirch	477,912	June 28	2702	677	59	2013
Plowshare	J. W. Thrush	476,578	June 7	526	134	59	1541
Plow. Shovel	W. R. Russell	472,400	Apr. 5	618	157	59	116
Plow. Side-hill	B. Ratcliff and S. T. Lawrence	472,617	Apr. 12	1231	316	59	246
Plow. Spade	D. B. Vance and H. J. Laurence	473,487	Apr. 26	2349	596	59	495
Plow. Sulky	W. Pichno	476,684	June 7	664	166	59	1573
Plow. Sulky	C. Anderson	476,355	June 7	199	48	59	1474
Plow. Sulky	S. H. Tinsman	476,579	June 7	527	124	59	1541
Plow. Sulky	C. E. Tower	475,638	May 24	2787	{706 {707	59	1220
Plow. Sulky	J. R. Warren	472,240	Apr. 5	364	94	59	68
Plow. Sweep	A. M. Miller	475,461	May 24	2513	640	59	1166
Plow. Truck or rice farm	J. A. Taylor, Jr	477,971	June 28	2784	697	59	2030
Plow. Wheel	E. C. Westervelt and C. W. Clapp	473,803	Apr. 26	2852	{716 {717	59	591
Plug-cutter	E. C. Heydenreich	475,559	May 24	2673	679	59	1196
Plug-cutter	E. C. Heydenreich	475,560	May 24	2674	679	59	1196
Plug-cutter	U. H. Leffel	472,231	Apr. 19	1919	483	59	389
Plug-cutting tool	F. E. Resche	476,312	June 7	126	30	59	1462
Plumber's clamp	J. H. Ash	474,713	May 10	1325	338	59	904
Plumber's safe connection	J. J. Hogan	473,400	Apr. 26	2310	564	59	487
Plumber's trap	B. C. Anderson	473,993	May 3	160	40	59	671
Plunge-battery	J. H. Howard	473,463	Apr. 26	2314	585	59	488
Pneumatic tool	F. A. Bagnasco	474,154	May 3	413	100	59	718
Pocket attachment	S. Salinger	476,697	June 7	690	170	59	1574
Pocket-book	L. Hummel	472,174	Apr. 5	254	67	59	48
Pocket-book, &c	F. Müller	476,159	May 31	3630	918	59	1398
Pocket-book fastening	A. Goertz	477,798	June 28	2513	631	59	1977
Pocket-knife	B. von Bültzingslöwen	472,104	Apr. 5	147	40	59	28
Pocket-knife	B. von Bültzingslöwen	476,245	June 7	19	4	59	1442
Pocket-knife	R. H. Franklin	475,306	May 24	2257	582	59	1118
Pocket. Safety watch	A. Paula	472,390	Apr. 5	604	153	59	113
Poison-distributer	H. A. Liedel	475,017	May 17	1822	462	59	1014
Poison-distributer	H. J. Hill	477,119	June 14	1389	338	59	1728
Poison-distributer	J. M. Krueger and F. Wunderlich	477,127	June 14	1400	340	59	1730
Poke. Animal	F. L. Richter	472,819	Apr. 12	1233	316	59	246
Poke. Animal	W. T. Elliot	477,651	June 28	2284	572	59	1931
Pole or shaft. Vehicle	U. W. Stracener	475,091	May 17	1940	491	59	1037
Pole. Vehicle	L. M. Robbins	477,269	June 21	1657	405	59	1792
Poles. Machine for removing knots from	J. W. Jeffery	474,743	May 10	1376	348	59	914
Pool-table	J. C. Ballew	476,859	June 14	972	236	59	1644
Pop-corn. Machine for coating	F. E. and W. F. Augustin	472,423	Apr. 5	645	{164 {165	59	121
Portable bath	J. T. Woods	475,840	May 31	3127	792	59	1297
Portable house	A. H. Cox and L. N. Haley	477,515	June 21	2045	509	59	1868
Portfolio	O. P. Howe	477,757	June 28	2454	613	59	1967
Portraits or other pictures. Making	H. M. Hoelscher	472,264	Apr. 5	406	104	59	76
Position of distant objects. Method of and apparatus for finding the	F. Piera y de Mata	472,812	Apr. 12	1224	.....	59	244
Post: *See* Fence-post. Metallic post. Lamp-post.	B. A. Fiske	472,617	Apr. 12	944	{243 {244	59	193
Postmarking and stamp-canceling machine	W. Groth	472,497	Apr. 5	764	{194 {195 {196	59	145
Pot: *See* Coffee-pot. Tea-pot. Dash-pot. Tea or coffee pot. Flower-pot.							
Potato-bug gatherer	G. Carlson	472,428	Apr. 5	656	167	59	123

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Potato-digger	G. E. and M. J. Anderson	475,373	May 24	2370	{606 {607	59	1140
Potato-digger	G. M. D. Pomeroy and G. H. Webber.	477,266	June 21	1653	404	59	1791
Potato-digger	W. and J. Reuther	473,083	Apr. 19	1650	490	59	339
Potato-digger	W. and J. Reuther	473,084	Apr. 19	1652	490	59	339
Potato-digger	J. H. Sauer	472,552	Apr. 12	850	{217 {218	59	175
Potato-digger	W. H. Van Voorhis	476,763	June 7	600	197	59	1307
Potato-masher	C. S. Apple	472,515	Apr. 12	799	205	59	165
Powder: *See* Flavoring-powder.							
Powder-box	W. P. Farrington	472,532	Apr. 12	827	211	59	170
Powder-box. Toilet	W. Hill	472,217	Apr. 5	332	85	59	62
Powder-papers. Machine for creasing	A. G. Beale and T. Nesbitt	474,716	May 10	1334	{339 {340	59	905
Power: *See* Baling-press power. Motor or treadle-power. Horse-power. Water-power.							
Power. Application of differential	F. Burger	477,736	June 28	2412	603	59	1939
Power, &c. Machine for utilizing ocean	R. L. Johansen	475,451	May 24	2493	636	59	1162
Power. Means for transmitting	C. T. Tarpenning and L. B. Sherwood.	477,469	June 21	1974	490	59	1854
Power-press clutch mechanism	C. E. Pollard	477,604	June 21	2184	{541 {542	59	1896
Power-transmitter	F. C. Osborn	472,222	Apr. 5	339	88	59	63
Power-transmitter	F. C. Osborn	472,223	Apr. 5	340	88	59	64
Preserved meat. Receptacle for	D. Rylands	473,349	Apr. 19	2113	530	59	428
Preserving animal food	J. W. Cameron	473,893	Apr. 26	3008	758	59	621
Press: *See* Baling-press. Fuel-press. Brick or fuel press. Hay-press. Car-seal press. Household press. Copying-press. Hydraulic press. Cornice-press. Matrix-press. Cotton-press. Letter-press. Die-press. Printing-press. Domestic press. Soap-press. Fruit-press.	V. D. Anderson	474,802	May 17	1473	375	59	947
Press-stripper	H. Schaake	473,889	Apr. 26	3002	757	59	620
Pressure apparatus. Fluid	I. T. Dyer	474,059	May 3	285	69	59	692
Pressure-gages. Device for testing	C. B. Bosworth	476,512	June 7	436	{102 {103	59	1523
Pressure-plate	E. F. Lewis	472,301	Apr. 5	462	119	59	87
Pressure-regulator	H. Giessenbier	473,089	Apr. 19	1632	416	59	336
Pressure-regulator	W. Werlé	472,241	Apr. 5	365	94	59	68
Pressure regulator. Fluid	T. Hanson	474,944	May 3	552	136	59	745
Prie-dieu	J. McShea	477,440	June 21	1925	475	59	1844
Printers' forms. Lock-up mechanism for	J. E. Horning and E. D. Clapp	473,750	Apr. 26	2777	698	59	576
Printer's miter-tool	W. H. F. Bloebaum	473,689	Apr. 26	2661	675	59	558
Printing and folding machine. Combined	C. Chambers, Jr	477,886	June 28	2665	{666 {667	59	2005
Printing and lithographic presses. Side guide for	F. C. Davis	475,677	May 24	2840	719	59	1229
Printing-machine	C. B. Cottrell	472,206	Apr. 5	314	81	59	59
Printing-machine	W. Scott	472,554	Apr. 12	852	219	59	176
Printing-machine	G. Vining	474,108	May 3	358	84	59	705
Printing machine. Check	C. Paine	475,605	May 24	2735	{693 {694	59	1209
Printing-machine. Cylinder	C. B. Cottrell	474,056	May 3	282	68	59	691
Printing-machine. Double-cylinder flat-bed	S. D. Tucker	473,484	Apr. 26	2342	{593 {594	59	494
Printing-machine inking apparatus	C. B. Cottrell	472,666	Apr. 12	1007	{261 {262	59	204
Printing-machine inking apparatus	C. B. Cottrell	473,142	Apr. 19	1757	443	59	358
Printing-machine. Rotary	H. B. Thompson	476,906	June 14	1052	{254 {255 {307	59	1650
Printing-machines. Bed-motion for cylinder	L. C. Crowell	477,045	June 14	1966	{308 {309	59	1704
Printing-machines. Bed-motion for cylinder	L. C. Crowell	477,200	June 21	1531	{373 {374 {375	59	1770
Printing-machines. Bed-motion for cylinder	L. C. Crowell	477,738	June 28	2418	{604 {605	59	1961
Printing. Means for surface	E. S. Boynton	475,534	May 24	2630	669	59	1188
Printing oil-cloth. Apparatus for	G. F. Eisenhardt	476,135	May 31	3589	{906 {907 {908	59	1389
Printing or embossing fabrics. Machine for	J. Farmer	477,905	June 21	1540	{377 {378	59	1772
Printing plate. Surface	J. Mullaly and L. L. Bullock	476,750	June 7	796	195	59	1596
Printing. Preparing celluloid and similar materials for	A. A. C. de Coëtlogon	474,814	May 17	1493	381	59	950
Printing-press	W. B. Lawrence	475,327	May 24	2289	569	59	1125
Printing-press	J. C. Padgett and W. E. Bolton	473,590	Apr. 26	2405	{609 {610	59	505
Printing-press	L. W. Southgate	474,032	May 3	234	56	59	683
Printing-press	J. H. Stonemetz	472,318	Apr. 5	486	{126 {127	59	91
Printing-press. Cylinder	J. H. Stonemetz	472,319	Apr. 5	490	127	59	92
Printing-press feeding mechanism	F. H. Van Loozen	474,884	May 17	1605	{410 {411	59	973

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Printing-press. Perfecting	J. C. Fowler	477,999	June 28	2833	709, 710, 711	59	2040
Projectile	L. V. Renét	477,492	June 21	2012	499	59	1861
Propeller	J. T. Baldwin	473,374	Apr. 19	2158	542	59	436
Propeller	H. Petersen	473,017	Apr. 19	1548	394	59	321
Propeller. Boat	E. G. Deloe	472,926	Apr. 12	822	209	59	169
Propeller-dam for twin-screw vessels	J. Haug	473,745	Apr. 26	2771	696, 697	59	575
Propeller. Screw	J. C. Street and H. P. Norton	475,826	May 31	3101	785	59	1292
Propeller-shaft lubricator	F. R. Cedervall	475,436	May 24	2468	629	59	1157
Propellers of vessels. Regulating	A. Hellinger	474,169	May 3	436	105, 106	59	722
Propellers. Transmitting power to	D. S. Regan	474,926	May 17	1667	426	59	986
Propelling apparatus. Vessel	H. Barcroft	475,122	May 31	3569	897	59	1305
Propelling machine. Vessel	I. C. de Albornoz	474,939	May 17	1689	431	59	990
Propelling vessels. Apparatus for	F. G. Curtis	472,207	Apr. 5	316	81	59	59
Propelling vessels. Means for	S. Seabury	473,199	Apr. 5	295	77, 78	59	56
Proportional meter	F. E. Youngs	473,544	Apr. 26	2439	617, 618	59	511
Proportional meter	F. E. Youngs	473,545	Apr. 26	2441	618	59	511
Proportional meter. Positive	J. Thomson	476,103	May 31	3537	890, 891	59	1379
Propulsion. Apparatus for piston	E. J. Meister	472,380	Apr. 5	587	150	59	110
Protector: *See* Bed-protector. Counter-protector. Electric-contact protector. Fine-protector. Ingot-protector. Shirt and chest protector. Tree-protector. Trousers-protector. Waistcoat-protector.							
Protractor	H. R. Eshelman	472,531	Apr. 12	826	210	59	170
Protractor and bevel	E. M. Long	474,303	May 10	820	214	59	806
Protractor. Bevel	L. S. Starrett	474,696	May 10	1309	334	59	901
Pruning implement	L. J. Gilman	474,085	May 3	322	77	59	699
Pruning implement	W. Levin	476,279	June 7	73	16	59	1452
Pruning implement	C. L. Mann	472,304	Apr. 5	467	120	59	88
Pruning implement	S. A. O'Neil	474,505	May 10	995	256	59	839
Puddling-furnace	H. B. Hall	472,759	Apr. 12	1153	295	59	230
Pug-mill	J. Crossley	473,497	Apr. 26	2363	599, 600	59	497
Puller: *See* Flax-puller. Nail-puller. Stump-puller. Weed and root puller.							
Pulley	H. H. Kendrick	473,119	Apr. 19	1718	435	59	350
Pulley	J. W. Parkin	472,769	Apr. 12	1165	298	59	233
Pulley	J. L. Potter	476,303	June 7	114	27	59	1460
Pulley and the manufacture thereof. Sheet-metal	T. Corscaden	474,547	May 10	1070	274	59	853
Pulley-block	H. Loud	475,692	May 24	2868	725	59	1234
Pulley clamp. Split	J. J. Hogan	473,450	Apr. 26	2309	584	59	487
Pulley. Expansible	T. A. Edison	476,984	June 14	1179	285	59	1685
Pulley. Grip	J. M. Dodge	473,254	Apr. 19	1953	490	59	396
Pulley. Loose	A. Streit	472,063	Apr. 5	108	29	59	22
Pulley rigging. Dead	J. Q. Marsh	473,765	Apr. 26	2792	702, 703	59	580
Pulley. Sash	F. V. Phillips	472,074	Apr. 5	95	26	59	20
Pulley. Self-locking	B. R. Sockman	473,093	Apr. 19	1666	423	59	349
Pulley. Sheet-metal	T. Corscaden	474,546	May 10	1069	274	59	853
Pulley. Split	H. Comstock	475,204	May 17	2105	532	59	1071
Pulley-wheels. Manufacture of	J. Ritchie	476,489	June 7	406	95	59	1516
Pulleys to shafts. Securing	M. O. Reeves	473,594	Apr. 26	2410	611	59	506
Pulp beating and refining engine	E. R. Marshall	475,063	May 17	1889	479	59	1027
Pulp. Machine for making vessels from fibrous	E. Hubbard	474,637	May 10	1209	309, 310	59	890
Pulverizing-machine	A. Sahlin	475,471	May 24	2528	643, 644	59	1168
Pulverizing soda, manure, &c. Machine for	B. F. Knapp	473,421	Apr. 19	2236	562	59	451
Pump	A. F. Abrahamson	472,156	Apr. 5	228	61	59	43
Pump	J. Burkholder	475,847	May 31	3141	796, 797	59	1300
Pump	A. Carlson	475,536	May 24	2634	670	59	1189
Pump	C. Chamberlin	475,296	May 24	2245	579	59	1113
Pump	J. Mason	473,940	May 3	91	30	59	654
Pump	J. North	477,569	June 21	2130	529, 530	59	1886
Pump	P. B. Riggins	473,345	Apr. 19	2108	529	59	426
Pump	E. J. Schiller	475,895	May 31	3219	814	59	1315
Pump and motor. Combined	T. Henderson	474,248	May 3	556	137	59	746
Pump. Filter	H. Nordtmeyer	472,547	Apr. 12	843	215, 216	59	174
Pump-handle	C. A. Sellon	476,062	May 31	3501	882	59	1373
Pump. Hydraulic force	M. Long	476,398	June 7	273	64	59	1491
Pump-operating mechanism	F. H. Ober	477,029	June 21	2244	562	59	1907
Pump-piston	H. J. Seymour	475,812	May 31	3076	778	59	1287
Pump. Plumber's force	J. H. Lawless	477,808	June 28	2526	634	59	1980
Pump-plunger	W. P. Carlin	474,365	May 10	785	204	59	799
Pump. Sand	T. F. Mahan	474,843	May 17	1547	395	59	960
Pump. Self-measuring	J. J. Becker	473,891	Apr. 26	3004	758	59	620
Pump. Steam	J. Maslin	477,949	June 28	2759	691	59	2025
Pump. Steam-jet	J. A. Bills	475,716	May 24	2904	736	59	1241
Pump. Vacuum	J. P. Boettiger	472,802	Apr. 12	1210	310	59	242
Pump. Vacuum	W. L. Judson	473,509	Apr. 26	2386	604	59	501
Pump-valve	A. J. Hopkins	474,579	May 10	1122	287	59	864
Punch	F. N. Simmonds	473,791	Apr. 26	2837	712	59	588

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Punch. Bank-check	S. S. Williamson	474,932	May 17	1676	428, 429	59	988
Punch. Check	S. W. Peck	472,391	Apr. 5	604	153	59	113
Punch for cutting out shapes from sheets of plastic material.	G. A. Firnstein	475,549	May 24	2654	675	59	1196
Punch. Ticket	W. C. Downing	477,107	June 14	1372	335	59	1725
Punch. Ticket	H. M. Grattham	476,378	June 7	239	58	59	1463
Punch. Ticket	C. W. Kuen	472,793	Apr. 12	1199	308	59	239
Punching and riveting machine. Portable	A. C. A. Holzapfel	472,356	Apr. 5	546	141	59	102
Punching and riveting machine. Portable	A. C. A. Holzapfel	472,357	Apr. 5	547	142	59	102
Punching and shearing machine	G. W. Rockenfield	474,971	May 17	1748	443	59	1001
Punching flange-plates. Machine for	H. C. Jones	477,899	June 28	2685	671, 672	59	2009
Punching-machine feed mechanism	F. H. Hardman	474,321	May 3	692	180	59	770
Purifier and separator	J. Mills	476,231	May 31	3760	949	59	1422
Purse and pocket-book frame and catch	A. Goertz	477,799	June 28	2515	631	59	1978
Purse, card-case, and bill-holder	D. A. Lauferty	476,278	June 7	72	15	59	1452
Purse safety attachment	H. W. Hock	475,503	May 24	2583	657	59	1179
Puzzle	A. W. Bartholomew	474,941	May 17	1692	432	59	991
Puzzle	W. H. Burnett	474,627	May 10	1193	303	59	877
Puzzle	W. H. Cook	476,980	June 14	1172	283	59	1683
Puzzle	M. Flannery	475,210	May 17	2114	535	59	1073
Pyromagnetic generator	G. A. Goodson	472,292	Apr. 5	445	115	59	84
Race-track	T. A. Edison	476,963	June 14	1176	285	59	1684
Rack: *See* Advertising-card rack. Cable-rack. Display-rack. Door-rack. Feed-rack. Hay-rack. Hook-rack. Locking-rack. Meat-rack. Music-rack.	R. A. Howard	475,769	May 31	2995	760	59	1272
Rack	J. H. Crawford	473,825	Apr. 26	2685	723	59	597
Radiator	A. M. Dimmick and J. T. Morgan	479,849	May 31	3143	797	59	1300
Radiator	O. Pederson	476,894	June 14	1029	249	59	1655
Radiators or other articles. Leg for	W. N. Stevens	474,270	May 3	591	146	59	752
Rail and cross-tie. Combined	A. J. Moxham	477,679	June 28	2326	581	59	1941
Rail-brace	G. H. Mason	474,560	May 10	1096	279	59	859
Rail-chair, tie-plate, truss-joint, and joint-fastening	F. H. Heath	474,127	May 3	374	90	59	710
Rail-fastening	G. A. Weber	472,090	Apr. 5	116	32	59	23
Rail-frog. Spring	H. Elliot	474,726	May 10	1350	342	59	908
Rail-holding splice	F. G. Johnson	472,168	Apr. 5	244	65	59	46
Rail-joint	J. C. Gentry	474,499	May 10	988	255	59	838
Rail-joint	F. H. Heath	474,129	May 3	378	91	59	711
Rail-joint	J. N. Lewis	476,753	June 7	789	194	59	1594
Rail-joint	A. J. Moxham	477,677	June 28	2325	581	59	1941
Rail-joint	J. Nelson	473,162	Apr. 19	1788	451	59	364
Rail-joint	M. C. Niles	473,638	Apr. 26	2608	657	59	544
Rail-joint	M. C. Niles	477,694	June 28	2351	587	59	1947
Rail-joint	C Roberts	472,228	Apr. 5	346	90	59	65
Rail-joint	R. Roxby	477,156	June 14	1443	354	59	1739
Rail-joint fastening. Truss	F. H. Heath	474,126	May 3	373	90	59	709
Rail-joints. Combined rail-brace and truss-fastening for	F. H. Heath	474,128	May 3	376	90	59	710
Rails. Box-brace for girder	A. J. Moxam	472,767	Apr. 12	1164	298	59	233
Railings. Bracket and supporting device for	A. E. Briggs	473,376	Apr. 19	2162	543	59	437
Railway	A. C. Hopkins	473,227	Apr. 19	1912	482	59	387
Railway-blocks. Electric indicator for	R. W. Jaggard	472,350	Apr. 5	549	142	59	103
Railway-carriage lights. Dioptric lens for	A. Nieuwenhuys	476,015	June 28	2861	716	59	2045
Railway. Coasting	W. E. Smith	474,351	May 3	760	198	59	783
Railway conductor. Electric	T. A. Edison	476,989	June 14	1184	286, 287	59	1686
Railway conduit. Cable	M. H. Bronsdon	477,884	June 28	2662	866	59	2005
Railway conduit. Electric	W. F. Carr and C. F. Ferrin	476,128	May 31	3579	901	59	1387
Railway conduit. Electric	C. T. H. Schwieger	478,026	June 28	2880	720	59	2048
Railway cross-tie	F. A. Byram	475,999	May 31	3374	850	59	1346
Railway cross-tie. Metallic	W. McManes and G. E. Lum	476,404	June 7	280	66	59	1493
Railway-crossing	A. J. Moxham	477,676	June 28	2329	580	59	1940
Railway-crossing	A. J. Moxham	477,681	June 28	2329	582	59	1942
Railway-crossing	A. J. Moxham	477,682	June 28	2331	582	59	1942
Railway-crossing	A. J. Moxham	477,685	June 28	2336	584	59	1944
Railway-crossing	A. J. Moxham	477,687	June 28	2340	584, 585	59	1945
Railway-crossing	A. J. Moxham	477,688	June 28	2342	588	59	1945
Railway-crossings. Frog or cross for	A. J. Moxham	477,684	June 28	2334	583	59	1943
Railway. Electric	C. H. Baker	474,355	May 10	766	199	59	795
Railway. Electric	R. W. Barkley	476,776	June 14	896	203, 204, 205	59	1615
Railway. Electric	J. W. Bates	477,734	June 28	2409	602	59	1959
Railway. Electric	T. A. Edison	475,494	May 24	2565	653	59	1176
Railway. Electric	J. W. Grantland	475,107	May 17	1961	497	59	1041
Railway. Electric	C. P. Tatro	476,935	June 14	1101	266	59	1670
Railway. Elevated	E. L. Arnold	476,720	June 7	734	181, 182	59	1583
Railway. Elevated	A. Davis	476,982	June 14	1174	284	59	1684
Railway. Elevated	S. V. Day	472,862	Apr. 12	1209	331	59	258
Railway expansion-rail	A. J. Moxham	477,672	June 28	2319	579	59	1939
Railway expansion-rail	A. J. Moxham	477,675	June 28	2322	580	59	1940
Railway-frog	D. F. Vanghan	474,200	May 3	486	117	59	732
Railway-frog	J. Wall and J. J. Mack	474,705	May 10	1316	335	59	902
Railway frog, crossing, &c.	H. Elliot	474,727	May 10	1352	343	59	909
Railway-gate	J. S. Chambers, Jr.	473,823	Apr. 26	2682	723	59	597
Railway-gate	D. M. Dewitt	476,738	June 7	767	189	59	1590

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Railway-gate and danger-signal	W. J. Webb	476,846	June 14	949	231	59	1640
Railway. Gravity-	J. B. Maxwell	477,059	June 14	1294	314	59	1709
Railway grip. Cable-	J. C. H. Stut	474,875	May 17	1592	405, 406	59	970
Railway guard-rail	E. A. Trapp	477,713	June 28	2381	595	59	1953
Railway motor. Electric-	J. F. Shawhan	475,970	May 31	3333	841	59	1337
Railway motor. Electric-	S. H. Short	475,160	May 17	2035	513	59	1056
Railway-rail	B. G. Macrokisin	474,094	May 3	336	80	59	702
Railway-rail	A. J. Moxham	477,673	June 28	2320	579	59	1940
Railway-rail	A. J. Moxham	477,674	June 28	2321	580	59	1940
Railway-rail	A. J. Moxham	477,683	June 28	2333	583	59	1943
Railway-rail	J. T. O'Shea	476,165	May 31	3642	922	59	1401
Railway-rail and making the same	A. J. Moxham	477,690	June 28	2346	586	59	1946
Railway-rail brace-chair	W. M. Brown	477,641	June 28	2272	569	59	1929
Railway-rail chair	M. E. Clemons	475,539	May 24	2639	671	59	1189
Railway-rail curve	J. G. Jordan	477,901	June 28	2689	673	59	2010
Railway-rail joint	G. Bouscaren	476,241	June 7	9	2	59	1440
Railway-rail joint	A. J. Moxham	477,678	June 28	2326	581	59	1941
Railway-rail joint	A. J. Moxham	477,680	June 28	2327	581	59	1941
Railway-rail joint	A. J. Moxham	477,689	June 28	2344	586	59	1946
Railway-rail supporter	E. G. Patterson	472,071	Apr. 5	91	25	59	19
Railway-rails. Manufacturing brace and slide plates for	F. S. Guerber	477,536	June 21	2083	518	59	1877
Railway-rails to metal sleepers. Fastening	J. Conley	472,034	Apr. 5	37	7	59	9
Railway-siding	W. R. Kirk	474,665	May 10	1254	320, 321	59	890
Railway-signal	A. S. von Blinsdorf and C. Adler	476,866	June 14	983	238	59	1646
Railway-signal	U. S. Jackson	473,190	Apr. 19	1851	466	59	375
Railway-signal	C. R. Johnson	476,926	June 14	1062	261	59	1666
Railway-signal	C. M. Stanley	475,166	May 17	2046	515	59	1058
Railway-signal. Electric	J. M. Brasington	473,288	Apr. 19	2007	504, 505	59	407
Railway-signal. Electric	C. E. Corporan	473,614	Apr. 26	2569	647	59	537
Railway signal mechanism	T. E. Hill	472,808	Apr. 12	1218	313	59	243
Railway signal system	W. G. Watteon	475,955	May 31	3310	835	59	1333
Railway signaling-lantern	G. E. Warren	476,585	June 7	536	128	59	1543
Railway signaling system	F. P. Benjamin	476,240	June 7	6	2	59	1439
Railway-spike	J. M. Fennerty	477,171	June 14	1476	362	59	1746
Railway surface stock-guard	L. S. Gardner	472,574	Apr. 12	877	226	59	181
Railway-switch	C. E. Garey	473,387	Apr. 19	2184	548, 549, 550	59	441
Railway-switch	W. Raab	477,609	June 21	2190	543, 544, 545	59	1897
Railway-switch	J. B. Suffern. (Reissue)	11,248	June 21	2250	564	59	1909
Railway-switch	T. J. Walsh	473,801	Apr. 26	2849	716	59	591
Railway-switch. Automatic	G. S. Maxwell and J. Clark, Jr	472,063	Apr. 5	80	22	59	17
Railway-switch. Automatic safety	J. W. Kales	474,474	May 10	949	244, 245	59	830
Railway-switch-bar clip	F. S. Guerber	477,534	June 21	2082	517	59	1876
Railway-switch brace and slide plate	F. S. Guerber	477,535	June 21	2082	518	59	1876
Railway switch. Cable-	I. Bishop and A. F. L. Bell	473,652	Apr. 26	2629	662, 663	59	518
Railway-switch stand	F. P. Newell and H. Mohle	473,335	Apr. 19	2091	526	59	423
Railway switch. Street-	M. A. Cutter	477,046	June 14	1274	309	59	1705
Railway switch. Street-	R. H. Snively	475,475	May 24	2534	645	59	1170
Railway system	H. T. Dunne	474,951	May 17	1711	435	59	994
Railway system. Multiple-arc	S. H. Short	473,361	Apr. 19	2133	535	59	431
Railway system. Passenger-	C. M. Hollingsworth	474,657	May 10	1238	316, 317	59	886
Railway systems. Conduit and trolley for electric-	C. W. Carll and J. W. Phillips	472,992	Apr. 19	1488	380, 381	59	310
Railway-tie	H. Daily	473,999	May 3	579	42	59	673
Railway-tie	A. J. Hartford	478,058	June 28	2881	732	59	2057
Railway-tie	F. S. Ketchum	475,981	May 31	3332	845	59	1341
Railway-tie	O. M. Knox	473,934	May 3	82	17	59	652
Railway-tie	E. S. Moffat and T. G. Wolf	472,901	Apr. 12	1348	347	59	270
Railway tie and chair	C. P. Howell	473,071	Apr. 19	1636	416	59	337
Railway tie and stringer. Metallic	R. J. Colvin	474,216	May 3	509	122, 123	59	736
Railway-tie. Metal	A. Story	474,873	May 17	1590	405	59	969
Railway-tie. Metal	E. F. Taylor	474,877	May 17	1595	406	59	970
Railway-tie. Metallic	W. A. Graeber	477,112	June 14	1379	336	59	1726
Railway-ties. Tamping	E. G. Patterson	472,072	Apr. 5	93	25	59	19
Railway time-signal	J. A. Guinn	475,106	May 17	1964	497	59	1042
Railway time-signal	G. A. Xander	473,802	Apr. 26	2950	744	59	610
Railway-track. Combination safety	S. G. Howe	478,059	June 28	2932	732	59	2057
Railway track. Street-	J. A. Duggan	472,164	Apr. 5	229	64	59	45
Railway-track switch-pieces	A. J. Moxham	477,686	June 28	2338	584	59	1944
Railway-train signaling appliance	W. Glasgow	474,576	May 10	1120	287	59	864
Railway-trains. Electric signal for	L. Dunn	473,832	Apr. 26	2897	727	59	600
Railway-trains. Smoke and cinder conductor for	W. H. Moor	477,565	June 21	2125	528, 529	59	1885
Railway-trains. Smoke-conduit for	C. L. Morrison	473,789	Apr. 26	2797	703	59	581
Railway trolley. Electric-	T. A. Edison	476,965	June 14	1179	295	59	1685
Railway trolley. Electric-	C. E. Friel	474,552	May 10	1077	276	59	855
Railway trolley. Electric-	J. W. Newhouse	475,467	May 24	2521	642	59	1167
Railway-trolley safety attachment	M. A. Yeakley	476,028	May 31	3412	861, 862, 863	59	1354
Railway-wire suspension. Electric	A. Philipsborn and W. Reichel	472,810	Apr. 12	1221	313	59	244
Railway wires. Hanger for electric	C. B. Elliott	476,192	May 31	3688	931	59	1408
Railways. Cleaning-brush for electric	R. M. Hunter	474,472	May 10	947	244	59	830

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Railways. Conduit for electric	W. Bradley	476,603	June 7	570	136	59	1549
Railways. Converter system for electric	M. W. Dewey	473,253	Apr. 19	1947	489, 490	59	394
Railways. Fastening and seating of guard-rails, &c., for street-	J. A. Duggan	472,165	Apr. 5	240	64	59	45
Railways. Inclosed supply system for electric	J. C. Fyfe	472,447	Apr. 5	686	175, 176	59	129
Railways. Means for preventing collisions on	H. G. Held	477,212	June 21	1550	380, 381, 382, 383	59	1774
Railways. Safety-catch for inclined	D. and T. James	473,842	Apr. 26	2915	732	59	603
Rake: *See* Hay-rake.							
Rand-guard	J. L. Packard	473,428	Apr. 19	2243	564	59	452
Range. Gas-	W. W. Goodwin	477,408	June 21	1877	482	59	1835
Range or stove	A. Heppe	476,143	May 31	3603	911	59	1393
Rasp. Revolving wood-working	F. H. Niermann	474,680	May 10	1283	327	59	895
Ratchet-drill	C. W. Higgins	472,120	Apr. 5	173	47	59	32
Rattan fabric. Knit	E. L. Taft	473,320	Apr. 5	491	127	59	92
Razor-guard	H. Hueg	473,464	Apr. 26	2315	585	59	488
Razor-strop	F., R., and O. Kampfe	477,902	June 28	2690	673	59	2010
Reamer. Expanding	J. H. Phillips	478,069	June 28	2944	735	59	2060
Reaping-machine	A. D. Marble	477,189	June 14	1503	368	59	1751
Reclining-chair	C. C. Lockstaedt	477,906	June 28	2694	674	59	2011
Recorder: *See* Cash-recorder. Passenger-recorder. Cash-till recorder. Time-recorder.							
Rectifying apparatus	B. Hoff and J. Frommel	475,961	May 31	3322	838	59	1335
Reel: *See* Bolting-reel. Measuring-reel. Clothes-line reel. Rope-reel. Fishing-reel. Wire-reel. Harvester-reel. Wire-supporting reel. Measure-reel.							
Reel	E. J. Hill	472,263	Apr. 5	403	104	59	75
Refrigerating apparatus	D. L. Holden	473,157	Apr. 19	1781	449	59	363
Refrigerating apparatus	D. L. Holden	473,176	Apr. 19	1828	460	59	370
Refrigerating machine	D. L. Holden	473,156	Apr. 19	1779	449	59	362
Refrigerating or ice-making machines. Condenser for	H. F. Hodges and D. J. Havenstrite	473,876	Apr. 26	2975	750	59	614
Refrigerator	C. Boldt	474,357	May 10	769	200	59	796
Refrigerator	V. Hoerschelmann	477,803	June 28	2519	632	59	1978
Refrigerator	V. Hoerschelmann	477,804	June 28	2520	632	59	1979
Refrigerator	B. W. Kolb	477,944	June 28	2753	690	59	2024
Refrigerator	M. S. Millard	475,591	May 24	2715	689	59	1205
Refrigerator	M. S. Millard	475,592	May 24	2717	689	59	1205
Refrigerator	R. C. Simmons	475,816	May 31	3081	780	59	1289
Refrigerator	W. Simms	472,773	Apr. 12	1171	300	59	234
Refrigerator-building	D. P. Edgar	475,851	May 31	3146	798	59	1301
Refrigerator. Cigar-	C. L. Pratt	474,923	May 17	1662	425	59	984
Refrigerator. Portable or domestic	A. T. Ballantine	476,358	June 7	905	49, 50, 51	59	1476
Refrigerator-switch	G. W. Pitman	476,962	June 14	1146	276	59	1678
Refrigerator-tank car	E. R. Hutchins	474,603	May 10	1154	293, 294	59	870
Refrigerator water-cooler	E. W. Rider	476,314	June 7	129	31	59	1463
Refrigerator. Water-cooling	W. H. Pickett	475,414	May 24	2435	620, 621	59	1150
Refrigerators. Lever-latch for	S. M. Atherton	472,938	Apr. 12	1407	360	59	281
Register: *See* Autographic register. Engine-register. Fare-register. Barber's register. Measure-register. Cash-register. Valve-register.							
Register	T. C. Howe	473,751	Apr. 26	2778	698	59	576
Registers. Index-hand for counting-	R. Cartwright	476,129	May 31	3582	902	59	1388
Registers. Pointer and dial for counting-	J. Thomson	476,105	May 31	3543	891	59	1380
Registering apparatus. Autographic	J. B. Thies. (Reissue)	11,235	Apr. 26	3014	759, 760	59	622
Registering mechanisms. Electric actuator for	C. F. Holt	475,399	May 24	2410	615	59	1147
Registering sales of tickets, &c. Apparatus for	C. P. Gott	473,113	Apr. 19	1710	433	59	349
Regulator: *See* Damper-regulator. Gas-regulator. Electric-current regulator. Pressure-regulator. Speed-regulator. Feed-regulator. Temperature-regulator. Furnace-regulator. Touch-regulator.							
Regulator	E. Hayes	477,253	June 21	1634	398	59	1788
Rein-holder	C. A. Hughes	477,547	June 21	2097	521	59	1879
Rein-holder	H. G. Weatherill	473,684	Apr. 26	2675	674	59	557
Rein-holder	J. A. Young	474,433	May 10	887	231	59	830
Rein-support	D. Hand	474,737	May 10	1368	346	59	912
Rein-support	F. C. Kris	473,583	Apr. 26	2522	636	59	520
Rein-support	F. A. Lee	473,584	Apr. 26	2523	636	59	520
Rein-support	S. J. Myers	475,405	May 24	2518	642	59	1167
Relief-plates for pictorially burning or scaring wood. Producing metallic	J. W. Robbins	475,047	May 17	1864	473	59	1023
Repeater. Automatic	R. Watkins	474,706	May 10	1318	336	59	902
Respirator	G. Posdena	476,486	June 7	402	93, 94	59	1515
Retort-furnace	J. A. Yeadon and W. Adgie	477,286	June 21	1686	412, 414	59	1798
Reversible seat	H. C. Moir	476,474	June 7	380	88	59	1511

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Revolving roaster	R. Köhler	475,060	May 17	1883	477, 478	59	1027
Rheostat	A. C. Carey	473,209	Apr. 19	1879	473	59	380
Rheostat	G. K. Cummings	477,247	June 21	1626	397	59	1786
Rheostat	A. E. Herrick	474,957	May 17	1718	437	59	996
Rheostat	J. R. Masury	472,062	Apr. 5	78	21	59	17
Rheostat	F. W. A. Schneider	475,896	May 31	3221	815	59	1316
Rheostat	W. A. Sterling	475,255	May 17	2181	555	59	1086
Rheostat	C. Willms	475,528	May 24	2621	667	59	1186
Rheostat	C. Willms	475,529	May 24	2623	667	59	1187
Ribbon-case	G. W. Bishop	474,518	May 10	1021	262	59	845
Rifle-sight. Telescopic	L. C. Cummins	476,874	June 14	995	341, 342	59	1648
Rig or derrick. Movable	T. Smith	474,463	May 10	937	241	59	828
Ring:							
See Armature-ring. Ear-ring. Finger-ring. Hat-packing ring. Spinning-ring.							
Ring-forming apparatus	H. V. Bernhardt	472,959	Apr. 12	1443	368	59	988
Ring-forming apparatus	H. V. Bernhardt	473,139	Apr. 19	1754	442	59	357
Rivet-setting tool	W. C. Bray and E. A. Hemmenway	477,241	June 21	1615	395	59	1784
Riveting-machine	E. D. Middlekauff	474,177	May 3	451	109	59	725
Roaster:							
See Revolving roaster.							
Roaster and baker	C. McConaloguе	475,946	May 31	3297	832	59	1330
Roasting and smelting apparatus	R. H. and W. Lanyon	474,019	May 3	213	50, 51	59	679
Rock-boring apparatus	C. Hoffmann	474,297	May 3	642	162	59	761
Rock-core drill	M. C. Bullock	473,908	May 3	20	4, 5	59	640
Rock-core drilling	M. C. Bullock	473,910	May 3	28	6	59	642
Rock-drill	J. Sprenger	474,069	May 3	297	72	59	695
Rock-drill	H. G. Williams	475,910	May 31	3240	818	59	1319
Rock-drill core-barrel	S. W. Douglass	474,337	May 3	729	190	59	777
Rock-drill support	J. Bervin	474,206	May 3	495	119	59	733
Rock-drilling apparatus	M. C. Bullock	473,909	May 3	25	5	59	641
Rock-drilling apparatus	M. C. Bullock and S. W. Douglass	474,080	May 3	311	75	59	697
Rock. Splitting	G. L. Weller	475,647	May 24	2800	709	59	1222
Rocker	W. M. Boenning	472,330	Apr. 5	510	132	59	96
Rocking-chair	J. W. H. Doubler	474,314	May 3	680	176	59	768
Rocking-chair	E. P. Koontz	476,152	May 31	3619	915	59	1396
Rocking-chair attachment	W. I. Bunker	477,501	June 21	2025	502	59	1864
Rocking-chair. Reclining	J. G. Whittier	475,370	May 24	2365	606	59	1139
Rod:							
See Fishing-rod. Spray-rod.							
Rod joint or coupling	I. Jones	477,596	June 21	2174	539	59	1894
Roll. Rolling-mill	W. Pollard	476,552	June 7	489	116	59	1534
Roller:							
See Barrel-roller. Curtain-roller. Felt roller. Inking-roller. Land-roller. Muscle-roller.							
Roller and harrow. Combined	F. B. Harvey and B. F. Hartman	476,142	May 31	3601	910	59	1392
Rolling and expanding metal tubes. Machinery for	T. C. Barraclough	473,651	Apr. 26	2027	602	59	548
Rolling-mill	J. A. Potter	477,821	June 28	2552	639	59	1984
Roof	S. R. Hawthorne	476,381	June 7	242	59	59	1484
Roof, floor, or ceiling	G. Fugman	475,854	May 31	3151	799	59	1302
Roof. Portable	E. Rankin, Jr.	473,128	Apr. 19	1736	438	59	354
Roof. Portable	J. H. Rice	477,701	June 28	2361	590	59	1949
Roofs. Snow-iron for	J. M. Laird	473,512	Apr. 26	2392	606	59	502
Roofing. Tile	J. M. Wood	477,346	June 21	1777	435	59	1816
Rope clamp and stopper	T. P. Inglesby and T. J. Davis	475,115	May 17	1975	500	59	1044
Rope-holder	G. B. Warner and L. J. Allen	476,969	June 14	1156	279	59	1620
Rope-hook	J. Milne	474,675	May 10	1276	325	59	893
Rope or cord fastening	B. F. Mooney	475,245	May 17	2169	552	59	1083
Rope-reel	H. O. Kunath	477,554	June 21	2111	524	59	1882
Ropeway. Wire	W. S. Hall	475,766	May 31	2990	758	59	1271
Rotary engine	S. H. Bloomer	475,176	May 17	2061	518, 519	59	1062
Rotary engine	A. H. Brintnell	476,868	June 14	986	239	59	1647
Rotary engine	G. Elrick	476,451	June 7	347	79	59	1505
Rotary engine	E. Hammesfahr	477,363	June 21	1811	443	59	1821
Rotary engine. Reciprocating	C. W. and E. B. Dake	476,369	June 7	227	56	59	1480
Rotary knife	C. Zies	473,049	Apr. 19	1603	408	59	331
Roundabout	F. S. Baldwin	476,597	June 7	562	134	59	1547
Roundabout	J. F. Fralinger	472,212	Apr. 5	324	84	59	61
Roundabout	C. M. Hollingsworth	474,658	May 10	1243	317, 318	59	887
Roundabout	W. E. Meissner	473,177	Apr. 19	1827	460	59	370
Roundabout	F. Stutzman	475,256	May 17	2182	556	59	1066
Roundabout. Cable	J. F. Fralinger	472,211	Apr. 5	323	83, 84	59	61
Rubber articles. Manufacturing hollow	E. L. Perry	472,225	Apr. 5	344	89	59	64
Rubber-dam clamp	W. S. How	477,546	June 21	2095	521	59	1879
Rubber sandal	J. C. Hammond, Jr.	472,118	Apr. 5	171	47	59	32
Rubber shoe	S. W. Powell and J. W. Marshall	477,958	June 28	2770	694	59	2028
Rubber shoe	E. A. Saunders	477,851	June 28	2605	652	59	1994
Rubber shoe	F. C. Williams	473,650	Apr. 26	2026	661	59	548
Rule. Caliper	S. Darling	477,104	June 14	1370	334	59	1724
Rule. Caliper	S. Darling	477,105	June 14	1371	334	59	1724
Rule. Caliper	G. D. McLane	477,183	June 14	1494	365	59	1750
Rule. Folding	J. Satter	475,419	May 24	2446	624	59	1153
Ruler and blotter. Combined	S. G. Young	477,546	June 21	2159	536	59	1891
Ruler. Roller-blotter	F. M. Priestley	472,510	Apr. 5	790	203	59	150
Ruling and printing machine feeding apparatus	J. McAdams	476,476	June 7	388	89, 90	59	1512
Ruling-machine	J. McAdams	477,380	June 21	1836	451	59	1826
Running-gear	W. Bonnar	477,401	June 21	1867	459, 460	59	1833

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Saccharine solutions. Purifying and manufacturing	M. Weinrich	475,025	May 17	1832		59	1017
Sack filling and sewing machine. Automatic	J. T. Bibb and A. T. Timewell	476,778	June 14	834	305, 306	59	1616
Sad-iron	W. Hunter	477,660	June 28	2295	575	59	1934
Sad-iron	J. Wagner	474,704	May 10	1315	335	59	902
Sad-iron. Gas	G. J. Gray	474,470	May 10	945	243	59	830
Sad-iron heater	S. Thomason	472,140	Apr. 5	217	56	59	41
Saddle	G. B. Griggs	476,743	June 7	775	190	59	1592
Saddle	E. F. Haas	472,993	Apr. 19	1513	386	59	314
Saddle-bags and hand-case	W. S. Marshall	476,545	June 7	481	119	59	1533
Saddle. Cart-	J. Rodgers	473,992	May 3	125	28	59	661
Saddle. Harness-	C. Horneyer	473,627	Apr. 26	2593	652	59	541
Saddle. Harness-	J. A. Jamison	472,360	Apr. 5	551	143	59	103
Saddle. Harness-	L. A. Mancini	474,752	May 10	1388	350	59	916
Saddle. Riding-	R. M. Dennis and C. E. Claggett	474,226	May 3	520	129	59	740
Saddle. Riding-	W. J. and M. J. Mohan	477,016	June 14	1223	296	59	1695
Saddle. Track-	F. A. Oberer and J. S. Kalb	477,570	June 21	2131	530	59	1886
Safe	M. S. Goldsmith	477,800	June 28	2516	631	59	1978
Safe-door	M. Mosier	472,584	Apr. 12	892	229	59	184
Safe-lock	W. J. Van Brock	473,800	Apr. 26	2849	715	59	590
Safe. Provision-	J. Schrib	473,478	Apr. 26	2334	591	59	492
Salt	C. F., A. W., and A. L. Lawton	475,577	May 24	2697	683	59	1201
Salt. Apparatus for the manufacture of	C. F., A. L., and A. W. Lawton	475,575	May 24	2693	683	59	1200
Salt-grater	N. S. Scoville	473,560	Apr. 26	2471	625	59	518
Salt. Manufacturing	C. F., A. W., and A. L. Lawton	475,576	May 24	2694	683	59	1201
Salt-manufacturing apparatus	C. F., A. W., and A. L. Lawton	475,574	May 24	2692	683	59	1200
Sand-box. Electrically-heated	L. E. Pease	475,703	May 24	2885	730	59	1237
Sand-molding machine	C. S. Snead	475,523	May 24	2614	665	59	1185
Sand molds for pipes, &c. Apparatus for forming	P. H. Sharp	475,349	May 24	2334	598, 599	59	1133
Sandpapering-machine	J. L. Perry	474,686	May 10	1290	330, 331	59	897
Sash-balance	A. D. Carle	477,099	June 14	1363	332	59	1723
Sash-balance	A. Johnson	472,887	Apr. 12	1329	341	59	266
Sash-balance	A. Lang	477,807	June 28	2524	633	59	1979
Sash-balance	J. P. Magney	476,287	June 7	84	20	59	1454
Sash-balance	B. H. Rose	474,329	May 3	708	183	59	773
Sash-balance	J. W. Sheppard	473,129	Apr. 19	1737	439	59	354
Sash-balance	C. E. Whipple	473,169	Apr. 19	1801	454	59	367
Sash-cord	L. Binns	473,287	Apr. 19	2006	504	59	407
Sash cord and securer	W. H. Naylor	476,163	May 31	3639	921	59	1400
Sash-cord fastener	G. C. Gardner	474,522	May 10	1028	264	59	846
Sash-cord fastener	T. Vollten	472,565	Apr. 12	867	223	59	179
Sash-cord fastener	A. Wilson	475,956	May 31	3312	835	59	1333
Sash-cord guide	F. S. Clarkson	475,202	May 17	2103	531	59	1071
Sash-fastener	C. Alteman and D. C. C. Macdonald	472,325	Apr. 5	497	129	59	93
Sash-fastener	E. Aze	474,570	May 10	1107	283	59	861
Sash-fastener	L. M. Bronson	477,500	June 21	2023	501, 502	59	1863
Sash-fastener	M. L. Dudley	475,739	May 24	2946	747	59	1248
Sash-fastener	J. N. Enwer	477,891	June 28	2674	669	59	2007
Sash-fastener	J. P. H. Gastrell	475,765	May 31	2988	757, 758	59	1271
Sash-fastener	G. Gibson	473,389	Apr. 19	2191	550	59	443
Sash-fastener	G. Gibson	473,390	Apr. 19	2192	550	59	443
Sash-fastener	G. Gibson	473,418	Apr. 19	2233	561	59	450
Sash-fastener	G. Gibson	473,419	Apr. 19	2234	561	59	451
Sash-fastener	D. Gutermute	477,537	June 21	2085	518	59	1877
Sash-fastener	A. Johnson	472,886	Apr. 12	1327	341	59	265
Sash-fastener	J. Kane	473,757	Apr. 26	2784	700	59	578
Sash-fastener	W. H. King	476,050	May 31	3448	870	59	1361
Sash-fastener	J. W. Klapperich	472,364	Apr. 5	559	144	59	105
Sash-fastener	W. Koenen	475,572	May 24	2690	682	59	1200
Sash-fastener	C. G. Lindskog	476,947	June 14	1123	270	59	1674
Sash-fastener	B. G. Lowrey	474,299	May 3	644	163	59	762
Sash-fastener	W. H. Lynch	473,557	Apr. 26	2466	624	59	517
Sash-fastener	W. M. Morton	475,966	May 31	3329	840	59	1337
Sash-fastener	O. K. Putnam	474,405	May 10	840	220	59	810
Sash-fastener	C. F. Russell	473,670	Apr. 26	2654	669	59	553
Sash-fastener	L. P. Treadwell	476,431	June 7	321	73	59	1500
Sash-fastener	L. P. Treadwell	476,432	June 7	322	74	59	1500
Sash-fastener	L. C. Walker	472,088	Apr. 5	114	31	59	23
Sash-holder	J. G. and W. B. Allbright	473,137	Apr. 19	1752	442	59	357
Sash-holder	J. A. Baldwin	473,898	May 3	3	1	59	637
Sash-holder	W. A. Bomar	477,291	June 21	1693	415	59	1799
Sash-holder	J. M. Brohard	472,851	Apr. 12	1274	326	59	255
Sash-holder	L. Damon	477,103	June 14	1369	333, 334	59	1724
Sash-holder	H. B. Hayes	477,801	June 28	2517	632	59	1978
Sash-holder	J. E. Rose	473,711	Apr. 26	2717	684	59	565
Sash-holder	C. Scheibel	473,354	Apr. 19	2121	532	59	429
Sash-holder	F. Shealy, Jr.	472,276	Apr. 5	419	108	59	79
Sash-machine	E. B. Hayes	476,202	May 31	3703	935, 936	59	1411
Sash. Window-	H. A. Howe	472,458	Apr. 5	704	180	59	133
Satchel. Collapsing	J. L. Bates	476,862	June 14	977	237	59	1645
Satchel or bag frame	R. Flocke	477,109	June 14	1375	335	59	1725
Satchels, hand-bags, &c. Fastening for	B. Bernstein	476,865	June 14	982	238	59	1646
Sausage-guts. Machine for filling	G. Wassermann	475,367	May 24	2360	604, 605	59	1138
Saw	J. Class. (Reissue)	11,246	June 21	2248	563	59	1908
Saw-clamp	T. E. McCracken	473,518	Apr. 26	2401	608	59	504
Saw. Cut-off	E. B. Hayes	477,756	June 28	2452	613	59	1966

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Saw. Drag	L. S. Washburn	475,098	May 17	1947	493	59	1039
Sawdust-burning and air-blast apparatus	T. T. Scott and J. J. Sheafor	477,387	June 21	1847	454	59	1829
Saw filing and setting machine	E. Christensen	472,031	Apr. 5	29	6	59	8
Saw-filing machine	G. N. Clemson	473,294	Apr. 19	2015	506, 507	59	409
Saw-guide	G. M. Hinkley	477,861	June 28	2622	657	59	1997
Saw-handle	W. H. Kidd	472,890	Apr. 12	1335	342	59	967
Saw handle. Crosscut-	M. E. True	476,936	June 14	1104	266	59	1670
Saw machine. Band-	J. H. Landis	473,468	Apr. 26	2320	586, 587	59	489
Saw. Meat-	G. F. Sellstrom	473,130	Apr. 19	1738	439	59	354
Saw mill. Band-	C. M. Emerson	477,299	June 21	1705	417, 418	59	1801
Saw mill. Band-	C. B. Long	475,328	May 24	2293	589, 590	59	1125
Saw mill. Band-	D. C. Prescott	472,586	Apr. 12	895	229, 230	59	184
Sawmill-carriage	J. M. Bussey	473,726	Apr. 26	2739	689, 690	59	569
Sawmill-carriage	J. P. Hanson	472,995	Apr. 19	1517	387	59	315
Sawmill-carriage feed	A. B. Palmer	475,046	May 17	1862	472, 473	59	1023
Sawmill-carriages. Canting-block for	P. C. Roche and C. Colclough	472,821	Apr. 12	1287	317	59	247
Sawmill-dog	P. J. Doyle, F. E. Thrall, and M. B. Wilkinson.	473,658	Apr. 26	2637	664, 665	59	550
Sawmill-dog	C. H. Pitkin	474,687	May 10	1294	331	59	897
Sawmill feed mechanism	J. L. Barnes	474,435	May 10	888	231	59	820
Sawmill pawl and ratchet	G. W. Stinebring	477,710	June 28	2378	594	59	1952
Sawmill-scraper	C. M. Cronkhite	477,518	June 21	2051	511	59	1870
Saw planing attachment	I. S. Wilson	474,492	May 10	977	252	59	836
Saw-set	J. McIntosh	476,235	May 31	3769	951	59	1494
Saw-set	C. C. Taintor	475,359	May 24	2346	601	59	1135
Saw set and clamp	R. Rasmussen	474,460	May 10	935	240	59	827
Saw-setting device	G. Lutz	473,515	Apr. 26	2397	607	59	503
Saw-sharpening machine	F. J. Drake	472,265	Apr. 12	1295	332	59	250
Saw-swaging device	H. Williamson	476,850	June 14	950	233	59	1641
Saw-teeth. Tool for dressing	G. C. Ferguson	473,022	Apr. 26	2587	651	59	539
Saws. Adjustable mandrel for wabbling	H. L. Mann	474,844	May 17	1547	395	59	960
Saws. Detachable planer-bit for	T. L. Slaughter and E. C. Drew	473,968	May 3	134	30	59	663
Saws. Insertible tooth for diamond	H. Forster	474,084	May 3	322	76	59	699
Sawing-machine	T. V. Rankin	474,189	May 3	470	114	59	729
Sawing-machine	F. M. Teeguarden	477,972	June 28	2785	698	59	2030
Sawing machine. Block-	D. R. Edwards	474,233	May 3	538	131, 132	59	741
Sawing-machine. Radial-center	J. S. Reid	476,820	June 14	910	223	59	1632
Sawing machine. Wood-	J. Shanahan	476,831	June 14	924	226	59	1634
Scaffold	L. Chalfant	475,665	May 24	2-27	716	59	1227
Scaffold	H. L. Clark	472,160	Apr. 5	235	62	59	44
Scaffold	H. Knippe	474,255	May 3	566	139	59	748
Scaffold	W. J. Sankey	472,514	Apr. 5	794	203	59	151
Scaffold	I. Smith	472,406	Apr. 5	624	159	59	117
Scaffold-bracket	M. Ramsey	474,406	May 10	841	220	59	810
Scale. Automatic grain-	T. F. Gray	472,872	Apr. 12	1304	335	59	261
Scale. Automatic grain-weighing	J. H. Gunder	474,925	May 17	1511	386, 387	59	954
Scale. Automatic weighing-	N. Lombard	475,405	May 24	2417	617	59	1148
Scale. Automatic weighing-	N. Nilson	476,610	June 14	892	219	59	1628
Scale. Balance-	R. E. McClelland	475,702	May 31	3030	768	59	1279
Scale. Hydrostatic	M. W. Newton	473,772	Apr. 26	2801	704	59	582
Scale. Pendulum	E. S. Chase and C. E. Smock	475,205	May 24	2244	578	59	1115
Scales. Recording device for	G. E. Miller	472,642	Apr. 12	977	253	59	199
Scalper and grader. Combined	J. B. Martin	473,425	Apr. 19	2240	563	59	452
Scarf-pin	A. Epple	474,004	May 3	188	44	59	675
School-seat	F. R. Beal	475,076	May 17	1906	484	59	1031
Scraper	B. F. Shuart	476,691	June 7	697	171	59	1575
Scraper. Cotton-	J. R. McAlister and T. W. Waddell	477,691	June 28	2347	587	59	1947
Scraper. Dirt-	W. P. Ball	474,896	May 17	1626	415	59	977
Scraper. Earth-	J. A. Grant	476,262	June 7	53	11	59	1447
Scraper. Earth-	T. O. O. Sitlington	475,818	May 31	3084	780, 781	59	1289
Screen: *See* Coal-screen. Gravel-screen. Oven-screen. Paper-pulp screen. Window-screen.							
Screen-frame. Adjustable	G. J. Rothan	476,077	May 31	3490	880	59	1371
Screw-cutting die	C. L. Butler	477,293	June 21	1696	416	59	1800
Screw-cutting plate	H. B. Keiper	473,582	Apr. 26	2520	636	59	528
Screw-cutting tool	W. Hutcheson	475,564	May 24	2679	680	59	1197
Screw. Device for holding and operating the jaws or ends of the reins of a temper-	O. J. Baldwin	476,721	June 7	737	182	59	1584
Screw-driver	J. F. Steward	472,591	Apr. 12	903	231	59	186
Screws. Lathe attachment for cutting	R. Norwell	477,777	June 28	2479	620	59	1972
Scrubber and mop-head. Combined	E. F. Rowe	472,486	Apr. 5	748	190	59	142
Scuttle and skylight	G. Weber	477,876	June 28	2651	663	59	2003
Scythe attachment	W. C. Blount	472,652	Apr. 12	990	256	59	201
Scythe-snath	C. C. Myers	472,026	Apr. 12	959	248	59	196
Seal. Hasp-	G. J. Saurbrey	474,411	May 10	854	224	59	813
Seal-lock	P. H. Conger	476,250	June 7	28	6	59	1444
Seal-lock	J. Dowling	476,617	June 7	501	141	59	1554
Sealing device	C. Cuttriss	475,442	May 24	2478	632	59	1159
Seam for sheet metal	C. F. Bertels	475,656	May 24	2814	713	59	1225
Seam-pressing device	J. E. Brown	476,606	June 7	573	137	59	1550
Seaming machine. Can-	J. B. Foote	476,258	June 7	44	10	59	1446

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Seat: *See* Bicycle-seat. Car-seat. Coin-freed seat. Folding seat. Harvester-seat. Reversible seat. School-seat. Vehicle-seat. Wagon-seat.							
Secondary battery	H. E. Dey	473,146	Apr. 19	1764	446	59	360
Secondary battery	H. E. Dey	473,147	Apr. 19	1766	446	59	360
Secondary battery	H. H. Lloyd	477,192	June 14	1492	365	59	1749
Secondary battery	I. L. Roberts. (Reissue)	11,238	Apr. 26	3020	761	59	623
Secondary battery	W. L. Silvey	477,914	June 28	2707	678	59	2014
Secondary-battery plate	E. C. Paramore	476,483	June 7	399	92	59	1515
Sectional heater	E. P. Waggoner	474,311	May 3	675	174, 175	59	767
Seed-drills. Spring-hoe for	P. R. Wells	474,430	May 10	884	230	59	819
Seed huller. Cotton-	J. J. Faulkner	477,997	June 28	2832	708, 709	59	2040
Seeder. Broadcast-	D. G. Daniels	477,325	June 21	1749	428	59	1810
Seeding-machine	G. W. Kirkpatrick	472,891	Apr. 12	1336	342	59	267
Seeding-machine	A. Lindgren	473,324	Apr. 19	2063	519	59	418
Seeding-machine	G. Osten	474,758	May 10	1395	353	59	917
Seesaw	C. J. Hatch	477,052	June 14	1283	311, 312	59	1707
Semi-elliptic spring	E. Cliff	474,159	May 3	422	101	59	720
Separation of materials of different specific weight and different size. Means for dry	H. Pape and W. Henneberg	472,682	Apr. 12	1032	266, 267	59	207
Separator: *See* Cream-separator. Grain-separator. Ore-separator. Spinning-frame yarn-separator. Steam-separator.							
Separator	F. H. Wheelan	474,930	May 17	1671	427	59	986
Settee and bed. Combined	J. Alexander	473,863	Apr. 26	2951	744	59	610
Sewage. Purifying	F. R. Conder	475,670	May 24	2832		59	1228
Sewerage system	S. E. Babcock	473,489	Apr. 26	2352	596, 597	59	495
Sewerage system and hollow tile for use in same	S. E. Babcock	473,490	Apr. 26	2353	597	59	495
Sewers. Door for catch-basins of street-	G. W. White	472,567	Apr. 12	870	224	59	180
Sewing-machine	E. Calm	472,333	Apr. 5	515	133	59	97
Sewing-machine	H. H. Fefel	476,455	June 7	351	81, 82	59	1505
Sewing-machine	H. H. Fefel	476,456	June 7	353	82	59	1506
Sewing-machine	C. M. Hine	477,302	June 21	1714	419, 420	59	1803
Sewing-machine	C. B. Hunt	474,663	May 10	1252	320	59	889
Sewing-machine	C. B. Hunt	476,647	June 7	635	154	59	1563
Sewing-machine	A. Legg and C. W. Weston	474,840	May 17	1542	392, 393, 394	59	959
Sewing-machine	A. Legg and C. W. Weston	474,842	May 17	1545	394, 395	59	960
Sewing-machine	F. Lichtfeldt	478,063	June 28	2935	733	59	2058
Sewing-machine	C. Luraschi	476,664	June 7	657	159, 160	59	1567
Sewing-machine	E. H. Smith	473,894	Apr. 26	3009	750	59	621
Sewing-machine	J. P. Stiles	478,030	June 28	2885	721	59	2049
Sewing-machine	C. H. Willcox and S. Borton	472,094	Apr. 5	120	32, 33, 34, 35	59	24
Sewing-machine	C. H. Willcox and S. Borton	472,095	Apr. 5	127	35, 36	59	25
Sewing-machine. Boot or shoe	D. Mills	477,435	June 21	1918	473	59	1842
Sewing-machine. Boot or shoe	D. Mills	477,436	June 21	1919	473	59	1843
Sewing machine. Boot or shoe	D. and D. Mills, Jr	477,431	June 21	1908	470, 471	59	1841
Sewing-machine. Buttonhole	E. B. Allen	473,564	Apr. 26	2480	627, 628, 629	59	520
Sewing-machine cop	C. E. Wilkinson	476,436	June 7	327	75	59	1501
Sewing-machine embroidering attachment	R. W. Whitney	475,426	May 24	2456	626	59	1155
Sewing-machine for finishing buttonhole-pieces	R. W. Thomson and E. M. Phelps	477,028	June 14	1241	201	59	1698
Sewing-machine for finishing buttonholes	E. M. Phelps and R. W. Thomson	473,178	Apr. 19	1828	461	59	370
Sewing-machine for stitching buttonholes	J. T. Hogan	472,501	Apr. 5	775	197, 198	59	147
Sewing-machine grinding attachment	H. W. Hock	473,000	Apr. 19	1523	389	59	316
Sewing-machine guiding device	W. H. Symington and W. Anderson	477,341	June 21	1771	433	59	1814
Sewing-machine loop-taker	J. A. Russell	472,512	Apr. 5	792	203	59	151
Sewing-machine motor	B. Reichelt	472,818	Apr. 12	1232	316	59	246
Sewing-machine needle	J. E. Chenette	474,211	May 3	502	120	59	735
Sewing-machine needle	A. Legg and C. W. Weston	474,841	May 17	1544	394	59	959
Sewing-machine needle	C. H. Willcox and S. Borton	472,096	Apr. 5	133	36	59	26
Sewing-machine. Overedge	J. G. Greene	472,046	Apr. 5	55	13, 14	59	13
Sewing-machine ruffling mechanism	O. M. Chamberlain	472,431	Apr. 5	660	168	59	124
Sewing machine. Shoe-	G. Hooper, 2d	474,450	May 10	921	237	59	825
Sewing machine. Sole-	Z. T. French and W. C. Meyer	473,870	Apr. 26	2963	746, 747, 748	59	612
Sewing machine. Sole-	Z. T. French and W. C. Meyer	474,774	May 10	1420	361	59	923
Sewing-machine spool-holder	L. A. Miller	475,511	May 24	2593	660	59	1181
Sewing-machine tacking attachment	J. W. Blodgett	477,636	June 28	2963	566, 567	59	1928
Sewing-machine tension	W. J. Stewart	477,078	June 14	1334	323	59	1717
Sewing-machine-tension apparatus	C. H. Willcox and S. Borton	472,097	Apr. 5	134	37	59	26
Sewing-machine tension device. Shoe-	F. H. Hagadorn and M. J. Nicol	474,381	May 10	804	210	59	803
Sewing-machine tension-releasing device	G. H. Dimond	473,869	Apr. 26	2959	746	59	612
Sewing-machine thread-unwinding device	M. B. Reigh	477,611	June 21	2200	546	59	1809

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sewing-machine trimmer	A. O. Very	476,339	June 7	177	42	59	1471
Sewing-machine work guiding and grooving attachment	J. S. Henderson	477,896	June 28	2680	670	59	2008
Sewing machines. Feeding mechanism for boot or shoe	D. Mills	477,434	June 21	1915	472	59	1842
Sewing machines. Guiding attachment for fur	C. Boose	476,725	June 7	747	184, 185	59	1586
Sewing-machines. Leading-in device for overedge	E. B. Rudolph	473,996	May 3	174	41	59	672
Sewing machines. Rotating hook mechanism for boot or shoe	D. Mills	477,433	June 21	1913	472	59	1841
Sewing machines. Suspending-clamp for use with carpet	F. Ames	472,779	Apr. 12	1180	302	59	236
Sewing sweat-bands in hats. Machine for	W. P. Gammons, Jr	477,750	June 28	2443	610	59	1964
Shade attachment	E. T. Burrowes	476,783	June 14	842	208	59	1618
Shade bracket. Window	J. R. Ligon, Sr	473,402	Apr. 19	2207	554	59	446
Shade-finishing clamp	L. Doll	473,917	May 3	49	9	59	645
Shade fixture. Window	G. Biehn	477,495	June 21	2015	499, 500	59	1862
Shade fixture. Window	W. W. Wythe	475,228	May 17	2141	543	59	1078
Shaft-bending machine. Vehicle	T. E. Montague	473,329	Apr. 19	2071	521, 522, 523	59	420
Shaft-lubricator. Upright	W. G. Stevenson	473,269	Apr. 19	1976	495	59	401
Shaft or pole support	J. H. Kennet	476,390	June 7	259	62	59	1488
Shaft-sinking apparatus	F. Gardner	473,570	Apr. 26	2499	631	59	523
Shaft. Vehicle	J. Atkins	475,916	May 31	3248	820	59	1321
Shafts. Cam-clutch for rotating	B. J. Abbott	474,312	May 3	678	176	59	767
Shafts. Dust-proof bearing for	T. A. Edison	472,288	Apr. 5	440	113	59	83
Shafting and hanger therefor. Flexible	J. H. Beebee	475,104	May 17	1955	495	59	1040
Shaper. Reversible universal	M. Morton	472,061	Apr. 5	75	20, 21	59	16
Sharpening device	F. B. French	477,592	June 21	2168	537	59	1893
Shawl-strap	E. G. Wheeler	474,071	May 3	299	73	59	685
Shearing-machine	J. B. Foote	474,822	May 17	1507	385	59	953
Shearing-machine	C. Kieser	472,928	Apr. 12	1392	357	59	279
Shearing machine	P. Roban	476,025	June 28	2875	719	59	2047
Shearing machine. Bevel	H. C. Jones	477,900	June 28	2687	672	59	2010
Shears: *See* Metal-shears.							
Shears	T. Berridge	474,284	May 3	615	152	59	756
Shears	C. Hamann and J. A. Schmidt	476,459	June 7	359	83	59	1507
Shears	A. Rimmelin	473,710	Apr. 26	2716	683	59	564
Shears	J. H. Stratton	477,711	June 28	2379	594	59	1953
Shears	E. F. Weber	477,343	June 21	1774	434	59	1815
Sheep box and vat. Combined	G. G. and S. B. Gayman	477,894	June 28	2677	669	59	2008
Sheet-metal and wire-cutting tool	W. H. Flinn	472,210	Apr. 5	322	83	59	60
Sheet-metal articles. Enameling	H. Claus	472,033	Apr. 5	36	.....	59	9
Sheet-metal articles. Manufacturing	F. Vohringer	475,642	May 24	2793	708	59	1221
Sheet-metal-bending machine	C. J. Colling	475,299	May 24	2250	580	59	1116
Sheet-metal box	G. B. Cooper	478,049	June 28	2913	727	59	2054
Sheet-metal can	G. A. Waeber	474,427	May 10	879	229	59	818
Sheet-metal-folding machine	T. C. Belding	474,283	May 3	613	152	59	756
Sheet-metal package	E. Allred	476,353	June 7	197	47	59	1474
Sheet-metal pipe. Machine for making asphalted	J. P. Culver	472,984	Apr. 19	1499	382	59	312
Sheet-metal trimmer and cutter	P. Rohan	476,075	May 31	3489	879, 880	59	1371
Shelf. Adjustable store	C. Baum	472,469	Apr. 5	730	183	59	136
Shelf-bracket	T. Corscaden	476,520	June 7	447	106	59	1525
Shelf-bracket	F. L. Ellis	476,994	June 14	1191	289	59	1688
Shelf. Folding	H. Korell	475,323	May 24	2282	587	59	1124
Shelf-support	F. Gibbs	472,347	Apr. 5	538	139	59	100
Shelving. Adjustable book	G. Stikeman	475,627	May 24	2773	702	59	1217
Shell	T. G. Bennett	472,782	Apr. 12	1184	303	59	237
Shell for high explosives	E. Lefever and J. A. Bremner	476,395	June 7	265	63	59	1489
Shell or other projectile	J. E. Bott and G. H. Cammell	472,748	Apr. 12	1138	292	59	228
Sheller: *See* Corn-sheller.							
Shingle-basket	L. Thorsen	474,800	May 10	1469	373	59	932
Shingle-planing machine	E. H. N. Clarkson	474,544	May 10	1062	271, 272	59	852
Shingling-bracket	E. K. Beckwith	472,633	Apr. 12	966	250	59	197
Shingling-gage	C. Avery	472,846	Apr. 12	1268	325	59	253
Ship	R. P. Garsed	472,991	Apr. 19	1511	386	59	314
Ship's log	R. T. Hall	473,222	Apr. 19	1905	480	59	396
Ship's log or apparatus for indicating and recording the speed of vessels	J. E. Gombault and E. C. Sonnet	477,530	June 21	2075	516	59	1875
Shipping case or box	E. T. Kepner	473,702	Apr. 26	2706	681	59	563
Shirt	J. B. Johnson	477,124	June 14	1395	339	59	1729
Shirt and chest protector	R. P. Woodward	476,503	June 7	422	98	59	1519
Shoe	E. C. Anderson	475,073	May 17	1903	483	59	1030
Shoe	E. G. Miles	472,711	Apr. 12	1086	278	59	218
Shoe-clasp	G. Manggang	474,914	May 17	1646	420	59	982
Shoe-counters. Waxing or waterproofing	G. W. Hill	474,013	May 3	205	48	59	677
Shoe-fastening	C. A. Harvey	474,043	May 3	256	62	59	687
Shoe float or rasp	A. D. and H. E. Goodell	472,259	Apr. 5	397	103	59	74
Shoe-nail	F. F. Raymond, 2d	476,307	June 7	120	29	59	1462
Shoe-treeing machine	G. W. Copeland and J. E. Crisp	472,108	Apr. 5	152	41, 42	59	29
Shoes. Manufacturing turned	R. J. McNally	473,851	Apr. 26	2932	738	59	607
Shoulder-brace	J. Town	472,086	Apr. 5	112	30	59	23
Shovel: *See* Cultivator-shovel. Steam-shovel.							
Shovel scraper attachment	R. J. Edwards	475,208	May 17	2112	534	59	1072
Show-case corner	J. Hofman	474,015	May 3	208	48, 49	59	678
Shutter-fastener	B. Bernstein	475,921	May 31	3255	821	59	1322
Shutter-fastener	J. Cabus	476,978	June 14	1169	283	59	1683

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Shutter-fastener	W. W. Russell and J. Walt	472,551	Apr. 12	649	217	59	175
Shutter-fastener	H. J. Saxton	473,888	Apr. 26	3000	737	59	619
Shutter-fastener	M. F. Ten Eyck	477,973	June 28	2789	699	59	2031
Shutter-fastener	G. C. Weeks	473,648	Apr. 26	2623	661	59	547
Shutter-worker	S. M. Fisher	476,044	May 31	3437	868	59	1360
Shutter-worker	A. H. Hull	474,831	May 17	1528	390	59	957
Sidewalk-hole guard	E. H. Roberts	472,661	Apr. 12	999	259	59	203
Siding-holder	J. J. Finmand	476,257	June 7	44	10	59	1446
Sifter. Ash	J. G. Bast	477,589	June 21	2165	537	59	1892
Sifter. Ash	J. Eckes and A. W. Crone	474,083	May 3	321	76	59	699
Sifting and sorting meal and flour. Apparatus for	C. Haggenmacher. (Reissue)	11,252	June 28	2958	739, 740, 741, 742, 743, 744	59	2063
Sight. Adjustable	H. P. Griswold	472,669	Apr. 12	1015	262, 263	59	205
Sign	F. P. Howard	477,417	June 21	1890	465	59	1837
Sign	J. Lindner	473,883	Apr. 26	2984	752, 753	59	616
Sign. Street	M. Hofheimer	472,050	Apr. 5	61	16	59	14
Sign. Street	E. J. Shaw	477,873	June 28	2645	661	59	2002
Signal: *See* Car-signal. Engine-signal. Fog-signal. Railway-signal. Railway time-signal. Train-signal. Waiter-signal.							
Signal	J. T. Hambay	472,499	Apr. 5	773	196, 197	59	147
Signaling apparatus	B. J. Noyes	474,852	May 17	1558	397	59	962
Signaling apparatus	B. J. Noyes	474,853	May 17	1560	397	59	963
Signaling apparatus. Electric	W. C. Moore	475,334	May 24	2303	592	59	1128
Signaling system	H. A. Chase	472,983	Apr. 19	1469	381, 382	59	310
Signaling system	H. A. Chase	474,945	May 17	1697	432	59	992
Silicates and hydrochloric acid. Process of and apparatus for making	W. Walker	474,539	May 10	1054	270	59	850
Silver sulphides. Refining	W. G. Waring	475,907	May 31	3235	818	59	1318
Sink and rack	W. H. Mesick	477,137	June 14	1417	345	59	1733
Sink and washtub. Combined	F. H. Hawkins	475,941	May 31	3288	830	59	1320
Sink connection	F. Goss	472,045	Apr. 5	54	13	59	13
Siphon	H. Wheeler	474,889	May 17	1614	412	59	975
Skate	T. W. Bryant	475,026	May 31	3263	823	59	1304
Skate	C. Hirschmann	475,241	May 17	2165	550	59	1082
Skate	U. Wierda	475,650	May 24	2804	710	59	1223
Skate. Roller	T. W. Bryant	475,927	May 31	3264	823	59	1304
Skates. Ankle-support for	L. W. Kenney	477,550	June 21	2106	523	59	1881
Skid for loading and handling logs	D. Evans, E. H. Percy, and B. Perry	475,011	May 17	1811	459, 460	59	1612
Skirt	C. Colgan	477,833	June 28	2577	645	59	1989
Skylight. Water-tight	A. Danzer	472,438	Apr. 5	670	172	59	125
Slate-cleaner	A. Thurber	473,033	Apr. 19	1576	401	59	326
Slate. Double	S. Marks	473,404	Apr. 19	2210	555	59	446
Slate-muffler	E. L. Krans	473,120	Apr. 19	1720	435	59	350
Sled. Bob	R. Douglass	477,743	June 28	2426	606	59	1902
Sled-starter	N. E. Brown	473,905	May 3	11	3	59	639
Sleeve and cuff holder	L. H. Taylor	475,905	May 31	3231	817	59	1318
Sleeves. Device for operating sliding	J. Walker	474,428	May 10	881	229	59	818
Sleigh. Self loading and dumping	L. Hinkelman	477,365	June 21	1814	443	59	1892
Slide-gage	G. Bauer	474,111	May 3	357	85	59	706
Sliding gate	E. Fischer	476,375	June 7	236	57	59	1462
Slip-holder	S. J. Kelso	477,942	June 28	2751	659	59	2023
Slotting-machine	L. H. Colburn	477,737	June 28	2414	603, 604	59	1960
Sluice-box. Mining	C. J. Kent	477,373	June 21	1824	446	59	1824
Small-arms. Front sight in	E. O. C. Ord	472,069	Apr. 5	89	24	59	19
Smelting cast-iron borings, turnings, and shavings. Apparatus for	J. Hansen	473,741	Apr. 26	2768	695	59	574
Smelting furnace. Copper	B. Richards	475,609	May 24	2744	696	59	1211
Smelting furnace. Zinc-ore	S. C. Edgar	476,789	June 14	851	210	59	1620
Smoke-consumer	W. H. Burden	472,981	Apr. 19	1487	380	59	310
Smoke-consuming furnace	W. Coulson	475,205	May 17	2107	532	59	1071
Smoke-consuming furnace	G. S. Riley	477,780	June 28	2483	621	59	1972
Smoke-consuming furnace. Automatic	M. J. Lynn	475,876	May 31	3181	807	59	1309
Smoke-conveyer	G. E. Bell	472,650	Apr. 12	986	255	59	200
Smoke-funnel	H. W. Goodridge and C. Jonsson	477,209	June 21	1547	380	59	1773
Smoke-houses. Apparatus for conveying meat through	J. Müller	474,606	May 10	1158	294, 295	59	871
Snap-hook	J. W. Collins	472,902	Apr. 12	1447	369	59	289
Snap-hook	A. Filkins	473,173	Apr. 19	1820	459	59	369
Snap-hook	E. L. Howe	473,315	Apr. 19	2048	514	59	415
Snap-hook	J. T. Smith	472,718	Apr. 12	1095	281	59	220
Snap-hook	F. White	475,971	May 31	3336	841	59	1338
Snow and ice melting machine	R. Steel	472,831	Apr. 12	1249	320	59	249
Snow-guard	L. T. Houghton and A. A. Barker	472,296	Apr. 5	452	116	59	85
Snow-plow	J. Kolb	476,800	June 14	874	215	59	1624
Snow-plow	G. Nichols	476,063	May 31	3472	876	59	1367
Snow-shoe	C. O. Stone	476,572	June 7	519	122	59	1540
Soap	A. W. Rehnström	476,557	June 7	494	.....	59	1535
Soap-boiling apparatus	J. W. Martin	475,784	May 31	3017	765	59	1276
Soap fixture. Toilet	G. A. Schmidt	472,315	Apr. 5	482	125	59	91
Soap-holder	C. S. Higgins	476,014	May 31	3395	856	59	1350
Soap. Manufacture of	A. W. Rehnström	476,556	June 7	493	.....	59	1535

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Soap-press	C. Hoff	473,505	Apr. 26	2375	602	59	499
Soap with whey. Manufacture of	A. W. Rebnström	476,555	June 7	492		59	1535
Socket-wrench	B. H. Dunlap	473,617	Apr. 26	2575	648, 649	59	538
Soda-fountain	J. Ramsey	475,890	May 31	3212	813	59	1314
Soda-fountain	A. Schier	477,463	June 21	1966	488	59	1852
Soda-fountain	O. Zwietusch	476,589	June 7	542	129, 130	59	1544
Solar camera	J. F. Wiest	474,708	May 10	1320	336, 337	59	903
Soldering apparatus	C. L. Wagandt	477,090	June 14	1351	328	59	1721
Soldering cans. Process of and machine for	C. H. Emery	473,216	Apr. 19	1888	476, 477, 478	59	382
Soldering metal for aluminium	A. Räder	476,896	June 14	1031		59	1656
Sole	G. A. Cowles	476,448	June 7	344	78	59	1504
Sole	F. Ephraim	473,304	Apr. 19	2030	510	59	412
Sole	G. F. Hall	472,214	Apr. 5	327	85	59	62
Sole	T. W. Trimby	476,499	June 7	418	97	59	1519
Sole fitting and channeling machine	W. H. Paige	474,608	May 10	1161	295, 296	59	871
Sole-inking tool	W. W. Atwood and W. C. Orcutt	475,377	May 24	2375	608	59	1140
Sole-trimming machine	J. H. Reed	475,608	May 24	2743	695	59	1211
Sole-trimming machine	S. Ross	472,399	Apr. 5	615	156, 157	59	115
Solenoid and its electrical connections	H. H. Hosford	473,929	May 3	69	13	59	649
Soot-removing compound	W. T. Phegley	477,333	June 21	1759		59	1812
Sounding-board. Vocal	C. C. Carroll	475,928	May 31	3265	823	59	1324
Sounds. Apparatus for reproducing	L. Rosenthal and S. Frank	474,410	May 10	852	223	59	813
Spade and pick	J. N. M. Shimer	474,697	May 10	1307	334	59	900
Spark-arrester	J. W. Curran	477,995	June 28	2826	707	59	2039
Spark-arrester	C. G. Luthman	477,058	June 14	1293	314	59	1709
Spark-arrester	L. C. Mabie	473,847	Apr. 26	2923	736	59	605
Spark-arrester	J. L. Owen	477,954	June 28	2766	692	59	2026
Spark-arrester	J. A. Paullin	473,235	Apr. 19	1924	484	59	390
Spark-arrester	D. B. Stronse and W. Griffin	476,176	May 31	3662	926	59	1404
Spark-arrester and draft-regulator	W. M. Letts	475,579	May 24	2699	684	59	1201
Spark-extinguisher and smoke-consumer	D. Anderson and J. Naylor	472,568	Apr. 12	871	224	59	180
Spectacle and eyeglass lenses. Machine for grinding	E. B. Temple and J. W. Meigs	475,068	May 17	1896	481	59	1029
Spectacle-lens	G. W. and J. W. Meigs	474,024	May 3	222	54	59	681
Speculum	W. E. Clough	475,975	May 31	3342	843	59	1319
Speed-changing mechanism	W. A. Wright	475,735	May 24	2938	746	59	1246
Speed-controller	G. M. Atherton	472,598	Apr. 12	909	233	59	187
Speed in motor mechanism. Apparatus for maintaining constant	J. W. Gibboney	474,008	May 3	194	46	59	675
Speed-regulator	R. J. Hoffman	472,355	Apr. 5	545	141	59	102
Speed-regulator. Electric	J. W. Gibboney	474,447	May 10	912	235	59	824
Spike-cylinder and spike-apron clearer	A. H. Morton	475,246	May 17	2170	552	59	1063
Spindle-bearing	W. B. Douglas	473,214	Apr. 19	1885	475	59	382
Spindle-lubricator	R. B. Parker	472,260	Apr. 5	410	105	59	77
Spindle stand. Picker	J. T. Byrne and W. J. Lafferty	475,484	May 24	2549	649	59	1172
Spinning-frames. Yarn-separator for	A. D. Chandler	476,731	June 7	754	186	59	1587
Spinning-machine	D. Munro and W. H. Avis	475,138	May 17	2004	507	59	1050
Spinning-machine drawing-rolls	F. H. Richards	474,030	May 3	230	55	59	682
Spinning machinery	J. F. Foss	472,477	Apr. 5	733	187	59	139
Spinning-mule	J. Ratcliffe, J. Hilton, and E. Mellor	476,306	June 7	120	29	59	1462
Spinning-mule doffing attachment	G. D. Secor	475,896	May 31	3068	777	59	1286
Spinning ring and traveler	C. H. Chapman	473,894	Apr. 26	2883	733	59	597
Spinning-rings, &c. Composition of matter for	R. A. Johnson and R. Brewster	474,253	May 3	564	139	59	747
Spinning-spindle support	H. F. Woodmancy	475,994	May 31	3369	849	59	1344
Spinning-spindle support	H. F. Woodmancy	476,587	June 7	539	129	59	1544
Spittoon lifter and cleaner. Combined	A. Fuller	475,375	May 17	2213	566	59	1093
Spoke. Vehicle-wheel	A. Bedford	477,390	June 21	1692	415	59	1799
Sponge-cup for school-desks	J. S. McClung	477,953	June 28	2764	692	59	2026
Sponge-dredger	W. G. Denham	476,920	June 14	1072	258	59	1664
Spool-holder	O. J. Israel	477,328	June 21	1753	429	59	1811
Spool-holder	M. G. Kuhn	476,883	June 14	1013	246	59	1652
Spool-holder	J. M. Pierre	473,080	Apr. 19	1647	419	59	338
Spool-roughing machine	J. M. Brown	477,832	June 28	2575	644, 645	59	1989
Spooling-machine	J. W. Foster	473,417	Apr. 19	2231	569	59	450
Sporting-trap	P. R. Jones	472,709	Apr. 12	1063	278	59	217
Spout. Sap	F. O. Mitchell	472,306	Apr. 5	469	120	59	88
Spout. Sap	L. R. Tabor	473,270	Apr. 19	1977	496	59	401
Spray-rod	W. Wainwright	473,037	Apr. 19	1586	403	59	327
Spraying device for cooling beer, &c.	C. C. Hanford	477,859	June 28	2618	656	59	1997
Spring: *See* Bed-spring. Bicycle-saddle spring. Door-spring. Draft-spring. Semi-elliptic spring. Vehicle-spring. Watch-case spring.							
Spring	J. H. Sullivan	475,904	May 31	3231	817	59	1318
Spring-bolt	B. Bernstein	475,922	May 31	3256	822	59	1322
Spring-motor	W. A. Ulrey	477,478	June 21	1988	493, 494	59	1857
Sprinkler: *See* Automatic sprinkler. Lawn-sprinkler. Street-sprinkler.							
Sprinkler	M. Goldman	473,310	Apr. 19	2041	519	59	413
Sprinkler-head and valve therefor	W. H. Miller	475,244	May 17	2168	551	59	1063
Sprinklers. Device for controlling the water-jets of street-	C. M. Collins	476,187	May 31	3679	929	59	1407
Square and drawing-board attachment. T-	A. T. Page	475,741	May 24	2948	747	59	1246
Square. Bevel and try	S. C. Downey	475,390	May 24	2399	613	59	1145

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Square. Carpenter's	M. P. Paterson	476,683	June 7	669	165	59	1572
Square. Center and key-seating	J. B. Price	477,950	June 28	2771	694	59	2028
Square. Folding framing	T. S. Morse	472,902	Apr. 12	1349	347	59	270
Square with adjustable heads	E. L. Deane	472,525	Apr. 12	819	209	59	169
Stable	J. F. Jeffers	476,925	June 14	1080	260, 261	59	1666
Stacker	J. Holman	477,987	June 28	2743	687	59	2022
Stacker. Portable	I. E. Marshall	474,963	May 17	1730	440	59	998
Stage appliance	F. C. Whitney	473,966	May 3	157	37	59	668
Stage effect	E. Heaton	473,927	May 3	67	13	59	649
Staging or scaffolding. Adjustable	A. Farland	472,867	Apr. 12	1296	333	59	250
Staircase	J. Kiley	475,016	May 17	1821	461, 462	59	1014
Stallion-guard	A. H. Gilbert	476,998	June 14	1198	291	59	1689
Stalls clean. Device for keeping	C. S. Kellogg	474,559	May 10	1095	278	59	850
Stamp and envelope gum moistener	W. R. Cole	477,887	June 28	2667	667	59	2006
Stamp. Electric embossing	C. E. Carpenter	477,697	June 21	2242	561	59	1907
Stamp. Hand	L. H. Dolan	474,794	May 10	1347	342	59	908
Stamp-holder. Postmarking	H. T. Keith	476,049	May 31	3447	870	59	1361
Stamp-mill attachment	L. R. Tulloch	473,371	Apr. 19	2150	540	59	434
Stamp. Numbering hand	O. Bartusch	473,605	Apr. 26	2557	645	59	535
Stamp. Perforating, dating, and receipting	B. F. Cummins and J. Stenwall, Jr.	475,440	May 24	2473	631	59	1156
Stamp. Time	M. Weiss	473,598	Apr. 26	2547	642	59	533
Stamp stand or rack. Hand	E. J. Klingenberg	475,120	May 17	1961	502	59	1046
Stamping machine. Postal date and time	O. E. Lundstedt	472,951	Apr. 12	1425	364, 365	59	285
Stand: *See* Display-stand. Exhibition-stand. Folding stand. Railway-switch stand. Stamp-stand. Tile-stand. Umbrella-stand. Wash-stand.							
Stand for sideboards and the like	F. K. Maximilian	477,564	June 21	2124	528	59	1885
Standard and clamp. Combined	R. C. Ellrich	475,054	May 17	1875	475	59	1025
Staple-driving machine	G. Hay	477,117	June 14	1386	337	59	1727
Staple-extractor	T. M. Hunt	475,689	May 24	2461	724	59	1233
Staple making and driving machine. Wire	W. E. Arnold	472,516	Apr. 12	799	205, 206	59	165
Stapling implement. Hand	E. G. Cohen	477,351	June 21	1784	436	59	1817
Starch. Centrifugal machine for refining	G. A. Kerr	473,511	Apr. 26	2389	605	59	502
Station-indicator	R. B. Ayres	475,378	May 24	2476	608, 609	59	1141
Station-indicator	J. H. Dean	474,001	May 3	183	43	59	674
Station-indicator	R. G. Hourtney	476,537	June 7	468	111, 112	59	1530
Station-indicator	J. M. Nelson	472,221	Apr. 5	337	87	59	63
Stationery-box	J. M. Tate	476,576	June 7	524	123	59	1541
Stave-jointing machine	J. Pleukharp	477,450	June 21	1944	481, 482	59	1847
Stave trimming and jointing machine	W. J. Wright	475,227	May 17	2135	541, 542	59	1077
Stay. Dress	C. D. MacKay	473,161	Apr. 19	1787	450, 451	59	364
Stays. Machine for drying garment	F. Crompton	476,252	June 7	38	9	59	1445
Steam apparatus. Safety-vent for	W. C. Baker	473,722	Apr. 26	2733	688	59	568
Steam-boiler	J. Baird	476,181	May 31	3670	928	59	1405
Steam-boiler	T. C. Best	474,517	May 10	1018	202	59	844
Steam-boiler	A. L. Bladholm	475,288	May 24	2233	575	59	1113
Steam-boiler	E. P. Clapp	474,039	May 3	245	59	59	685
Steam-boiler	A. M. Dimmick	475,850	May 31	3145	797, 798	59	1301
Steam-boiler	D. King	472,731	Apr. 12	1109	285	59	222
Steam-boiler	J. MacCormack	476,053	May 31	3464	871, 872	59	1363
Steam-boiler	W. J. McAleenan	475,409	May 24	2424	619	59	1149
Steam-boiler	J. J. Tonkin	474,785	May 10	1441	365, 366	59	927
Steam-boiler	H. Wojan	477,880	June 28	2656	604	59	2004
Steam boiler and generating appliance	E. Horton and F. E. Fitch	474,795	May 10	1462	371, 372	59	931
Steam-boiler attachment	J. O'Brien and C. K. Pickles	477,145	June 14	1426	347, 348	59	1735
Steam-boiler attachment	C. K. Pickles	477,151	June 14	1436	351	59	1737
Steam-boiler attachment	C. K. Pickles and J. O'Brien	477,152	June 14	1437	351	59	1737
Steam-boiler. Bituminous-rock-disintegrating	A. Haskins, A. R. Schulenburg, and C. T. Chadwick.	475,278	May 17	2218	569	59	1094
Steam-boiler. Cross water-tube	F. R. McMillan	475,947	May 31	3298	832	59	1331
Steam-boiler. Low-pressure	H. Abel	475,479	May 24	2540	647	59	1171
Steam-boiler. Sectional	W. M. Mackay	476,804	June 14	878	216, 217	59	1625
Steam-boiler. Tubular	E. Petersen	475,150	May 17	2021	510	59	1054
Steam-engine	J. N. Kemmerer	473,844	Apr. 26	2918	733, 734	59	604
Steam-engine	F. P Ogilvie	474,456	May 10	931	239	59	896
Steam-engine	G. S. Strong	477,234	June 21	1598	391, 392	59	1781
Steam-engine	H. Unzicker	475,365	May 24	2356	603, 604	59	1137
Steam-engine. Compound	J. Hunt	477,006	June 14	1209	293	59	1691
Steam-engine. Compound	W. H. Ohmen	474,757	May 10	1393	359	59	917
Steam-engine. Direct-acting	J. A. Groshon	474,775	May 10	1422	362	59	923
Steam-engine. Divided-cylinder	T. Thatcher	477,027	June 14	1239	300, 301	59	1698
Steam-generator	J. Cunningham	476,611	June 7	580	138, 139	59	1552

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Steam-generator	J. H. Hoadley	474,385	May 10	809	211	59	804
Steam-generator	C. D. Mosher	472,309	Apr. 5	474	122	59	89
Steam-generator	T. L. Sturtevant	473,979	May 17	147	35	59	666
Steam-generator	J. W. Van Dyke	474,508	May 10	1000	257	59	840
Steam-generator. Porcupine	J. H. Hoadley	474,386	May 10	811	212	59	804
Steam-generators. Furnace or setting for	C. O. Arey	473,053	Apr. 19	1607	409	59	331
Steam-heater	R. M. Cox and R. Clark	473,251	Apr. 19	1945	489	59	394
Steam-loop. Combined	W. Burnham	474,440	May 10	808	{213 214}	59	822
Steam-loop system	W. Burnham	474,439	May 10	805	{232 233}	59	821
Steam or hot-water generator	D. A. Dickinson	473,109	Apr. 19	1705	432	59	348
Steam-separator	C. D. Mosher	472,308	Apr. 5	472	121	59	89
Steam-separator	C. D. Mosher	472,310	Apr. 5	476	{122 123}	59	89
Steam. Separator for purifying	D. Cochrane	474,160	May 3	423	101	59	720
Steam-shovel	J. Nichol	476,808	June 14	882	218	59	1628
Steam-supply. Apparatus for controlling and indicating	C. E. Emery	473,733	Apr. 26	2749	{692 693}	59	571
Steam-trap	R. M. Dixon	477,855	June 28	2613	{654 655}	59	1995
Steam-trap	E. E. Gold	472,116	Apr. 5	168	40	59	32
Steam-trap	B. E. Van Auken	478,037	June 28	2895	723	59	2051
Steamer. Food	T. Cascaden, Jr	476,247	June 7	24	5	59	1444
Steamer. Wheat	F. A. Evans	476,138	May 31	3595	{908 909}	59	1391
Steaming clams, oysters, &c. Apparatus for	J. H. Starin	475,353	May 24	2340	600	59	1134
Steering apparatus	J. D. Williamson, Jr	472,394	Apr. 5	495	129	59	93
Steering apparatus. Steam	B. W. Fellows	476,620	June 7	596	{142 143}	59	1555
Steering mechanism. Boat	J. Savage	475,420	May 24	2447	624	59	1153
Stench-trap	W. H. Mesick	474,342	May 3	737	192	59	779
Stencil-producing apparatus	H. F. Standing	475,165	May 17	2043	515	59	1058
Stenciling machine. Sign	G. H. Tietjen	477,474	June 21	1962	492	59	1856
Stereotype plate and base	J. R. Cummings	472,474	Apr. 5	730	186	59	138
Stereotypes, &c. Block for	H. Fletsch, Jr	477,591	June 21	2167	537	59	1893
Stew-pan	C. Turner	477,974	June 28	2789	699	59	2032
Still and process	P. Rodes	476,073	May 31	3486	{878 879}	59	1370
Stirrup	L. Anderson	475,374	May 24	2373	607	59	1140
Stirrup	A. J. de Lotbinière	475,127	May 17	1969	504	59	1047
Stirrup	A. Mayer	473,075	Apr. 19	1640	417	59	337
Stirrup-strap connection	J. G. Bailey	474,715	May 10	1333	339	59	905
Stitching-horse	H. Doering	474,041	May 3	254	62	59	686
Stitching-horse	A. M. Sandera	476,898	June 14	1032	250	59	1656
Stippling implement	J. B. Pabl and J. B. G. Gaudelas	477,603	June 21	2182	541	59	1896
Stock-fountain. Automatic	C. I. Burt	474,986	May 17	1775	449	59	1005
Stocking	H. J. Griswold	473,873	Apr. 12	1307	336	59	261
Stocking	L. M. Preston	472,815	Apr. 12	1228	315	59	245
Stocking and making same	R. W. Scott	473,787	Apr. 26	2830	711	59	587
Stocking. Right and left	W. C. Lewis	474,391	May 10	818	214	59	806
Stocking-stretcher	L. G. Ericson	474,954	May 17	1714	436	59	995
Stockings. Making	J. A. Burleigh	475,263	May 17	2192	559	59	1088
Stoker. Mechanical	R. H. Williamson	476,848	June 14	953	232	59	1640
Stone. Artificial	J. H. Kleb	476,542	June 7	475	113	59	1531
Stone block. Artificial	G. M. Graham	474,339	May 3	733	191	59	778
Stone-crusher	G. Lowry	475,330	May 24	2297	{590 591}	59	1126
Stone-crusher pitman	T. A. Blake	477,400	June 21	1866	459	59	1833
Stone cutting and dressing machine	A. McDonald	473,850	Apr. 26	2930	738	59	600
Stone-lifter	E. T. Viett	474,885	May 17	1610	411	59	974
Stone. Manufacture of artificial	W. Reissig	477,847	June 28	2600	.....	59	1994
Stone or ore crushing machine	E. H. Booth	473,725	Apr. 26	2737	689	59	568
Stone surfaces. Hand implement for tooling	W. F. Nicholson	477,693	June 28	2350	587	59	1947
Stool cane. Camp	C. T. Golding	474,240	May 3	546	134	59	743
Stool. Folding	W. H. Van Gilder	473,534	Apr. 26	2427	{614 615}	59	508
Stool. Folding camp	L. D. Mason	476,805	June 14	884	217	59	1627
Stop-box	C. G. Ette	477,523	June 21	2084	514	59	1873
Stopper: *See* Bottle-stopper. Flue-stopper. Can-stopper. Leak-stopper.							
Store-service apparatus	J. T. Cowley	474,040	May 3	247	{59 60 61}	59	685
Store-service apparatus	R. B. Wilson	478,038	June 28	2896	724	59	2051
Stove	C. H. Freeleve and C. E. Welch	472,755	Apr. 12	1148	294	59	229
Stove and grate. Combined	E. Scanlan	474,191	May 3	474	114	59	730
Stove. Cooking	E. C. Frost	472,533	Apr. 12	828	211	59	171
Stove-door knob	J. W. Heaphy, Jr	474,471	May 10	946	244	59	830
Stove drum and chimney. Oil	J. M. Stokoe	474,782	May 10	1436	364	59	926
Stove. Gas	F. W. Bean	473,985	Apr. 19	2004	504	59	406
Stove. Gas	J. L. Sharp	472,144	Apr. 5	211	56	59	39
Stove-grate	D. Chamberlain	474,367	May 10	787	205	59	800
Stove-grate	F. W. Collins	475,296	May 24	2048	579	59	1116
Stove-grate	E. D. Nellis	478,042	June 28	2904	725	59	2052
Stove. Heating and gas-generating	F. Jarrett and L. Peyton	474,743	May 10	1374	348	59	913
Stove. Lamp	C. S. Upton	472,594	Apr. 12	905	232	59	186
Stove. Magazine	J. T. Austin	474,769	May 10	1412	359	59	931
Stove. Oil	C. H. Boeck	475,262	May 17	2191	558	59	1068
Stove. Oil	S. D. Strong	474,874	May 17	1591	405	59	969
Stove. Oil	A. F. Zimmerling	476,352	June 7	196	47	59	1474
Stove or heater	A. C. Barler	475,029	May 17	1837	466	59	1017
Stove or range	G. A. Fisher	474,729	May 10	1353	343	59	909

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stove or range. Cooking	F. Marquart	477,216	June 21	1566	385	59	1776
Stove or range. Gas-burning cooking	C. F. Adams	472,842	Apr. 19	1264	324	59	252
Stovepipe attachment	H. N. Pearson	475,149	May 17	2020	510	59	1054
Stovepipe-support. Adjustable	A. Petterson	476,815	June 14	900	221	59	1630
Stovepipe-thimble	F. A. Peters	476,300	June 7	111	26, 27	59	1460
Stovepipes. Evaporator attachment for	H. W. Libbey	472,060	Apr. 5	74	20	59	16
Stovepipes. Fastening or locking device for	J. L. Anthony	473,052	Apr. 19	1006	409	59	331
Stove. Reservoir cooking	J. White	475,100	May 17	1949	494	59	1039
Stove. Steam-cooking	W. S. James	472,730	Apr. 12	1107	285	59	222
Stoves. Ash and coal guard for Franklin	P. Brecher	473,057	Apr. 19	1612	411	59	332
Stoves. Ash-box for	L. Kahn and R. Christ	472,577	Apr. 12	881	227	59	182
Stoves. Device for filling coal into regulation	F. C. Nehse	475,885	May 31	3208	811	59	1313
Stoves. Gas-burner for	D. P. Stirk and J. Summers	473,410	Apr. 19	2219	557	59	448
Stoves or heaters. Non-conducting lining for	C. F. Walther	472,414	Apr. 5	635	162	59	119
Stoves or heaters. Oil-burner attachment for	G. R. Moore	472,268	Apr. 5	410	105	59	77
Stoves or ranges. Grate for cook	A. S. Newby	474,502	May 10	991	255	59	839
Stoves. Separable water-back or heater for	C. W. Purple	474,459	May 10	934	240	59	827
Stoves. Supplemental top for gas	A. Dreyfous	474,497	May 10	986	254	59	838
Strainer. Milk	W. L. Fleming	477,796	June 28	2511	630	59	1977
Strainer. Rotary	C. Wandel	472,089	Apr. 5	115	31	59	23
Strainer. Tea	F. J. Wills	477,726	June 28	2397	599	59	1956
Strainer. Tea or coffee	H. Hennig	473,626	Apr. 26	2593	652	59	541
Strap: *See* Shawl-strap.							
Strap-fastener	J. B. Corser	473,297	Apr. 19	2021	507	59	410
Straw-carrier attachment	J. McQuillan	474,181	May 3	456	110	59	726
Straw-cutter	H. D. Babcock	473,492	Apr. 26	2355	597	59	496
Straw or feed cutter	H. M. Smith	477,339	June 21	1766	{432 433}	59	1814
Straw pressing and binding machine	F. M. Hackett	477,538	June 21	2065	519	59	1877
Straw-stacker	J. Grube	474,010	May 3	199	47	59	676
Streams. Device for regulating the flow of	C. Boeckh	473,205	Apr. 19	1873	472	59	379
Street-cleaning machine	J. F. Stokes	472,646	Apr. 12	983	254	59	200
Street-sprinkler	E. T. Westerfield	474,465	May 10	939	242	59	828
Street-sprinkling machine	F. and L. Winkler	477,481	June 21	1993	495	59	1858
Street-sweeper	J. Damm	472,437	Apr. 5	669	171	59	125
Street-sweeper	M. S. Kjellström	472,366	Apr. 5	561	145	59	105
Street-sweeping machine	C. Z. O'Neill	473,163	Apr. 19	1789	451	59	364
Striking-bag. Gymnastic	H. Senger	475,252	May 17	2178	534	59	1065
Stringed instrument	A. Ganss	474,120	May 3	365	87, 88	59	707
Stubble shaver and cultivator	S. Dickerson	474,336	May 3	728	190	59	777
Stud or button	M. Breisch	476,302	June 7	215	53	59	1478
Stud. Shirt	M. E. Oppenheimer	473,336	Apr. 19	2002	526	59	423
Stump-puller	J. Milne	475,333	May 24	2302	591	59	1127
Subsoil attachment	J. M. Hurley and J. R. Westing	475,042	May 17	1854	470	59	1021
Sugar. Cleaning and washing raw	M. Weinrich	474,585	May 10	1129	288	59	865
Sugar. Refining raw	F. O. Matthiessen	477,670	June 28	2816	.....	59	1939
Sugar solutions. Process of and apparatus for evaporating	J. A. Morrell	476,891	June 14	1024	248	59	1654
Sulky	E. A. Oliver	474,684	May 10	1288	329	59	806
Sulky	W. J. Wayne	475,991	May 31	3365	848	59	1344
Sulky-bodies. Device for adjusting the pitch of	J. Hessong	475,218	May 17	2124	537	59	1075
Support for moving bodies	W. J. Lane	477,556	June 21	2112	525	59	1882
Support for moving bodies	W. J. Lane	477,557	June 21	2113	525	59	1882
Support for moving bodies	W. J. Lane	477,558	June 21	2114	525	59	1882
Supporter: *See* Curtain-supporter. Last-supporter. Garment-supporter. Railway-rail supporter.							
Surface-gage	A. Mauser	476,806	June 14	885	{217 218}	59	1627
Surface-gage	J. B. Price	477,960	June 28	2772	694	59	2028
Surgical and gynecological table	J. E. Chamberlin	476,516	June 7	442	{104 105}	59	1594
(Surgical.) Apparatus for stretching the vertebral column.	C. Schmid	474,486	May 10	969	250	59	834
Surgical chair	C. N. Leonard	472,372	Apr. 5	569	147	59	107
Surgical instrument	P. Henger	474,130	May 3	381	91	59	712
Surgical instrument. Electrical	S. R. Bradley	472,968	Apr. 12	1454	371	59	290
Surgical knife	O. A. Hoeller	476,272	June 7	65	14	59	1450
Surgical needle and holder	F. Eissner	472,258	Apr. 5	396	102	59	74
Surgical pump	W. C. Carroll	473,546	Apr. 26	2442	618	59	512
Surgical table	C. N. Leonard, R. B. Roberts, and W. D. Allison	473,122	Apr. 19	1728	436	59	351
Surveying-instrument	H. E. Grabau	472,451	Apr. 5	683	177	59	131
Suspender attachment	B. O. Foster	472,040	Apr. 5	43	9	59	10
Suspender-clasp	J. N. Faust	474,060	May 3	287	69	59	692
Suspender-clasp	C. R. Harris	473,458	Apr. 26	2369	583	59	487
Suspenders	M. Rosenstock	474,530	May 10	1040	266	59	847
Suspension-catch. Detachable	B. Pickering	475,516	May 24	2602	661	59	1183
Swaging-machine	S. O. Bigney	475,077	May 17	1907	484	59	1031
Swaging-machine	W. H. Dayton	474,548	May 10	1071	275	59	854
Swarm-catcher	B. Taylor	476,762	June 7	799	197	59	1597
Swimmers' use. Leg attachment for	P. Curran	476,040	May 31	3432	867	59	1359
Swimming attachment	R. P., Jr., and W. N. Cafferty	476,000	May 31	3376	851	59	1346
Swimming equipment	P. Curran	476,039	May 31	3431	867	59	1358
Swimming or diving suit	A. Weil	476,341	June 7	179	43	59	1471
Swing	N. B. Gregory	477,858	June 28	2617	656	59	1996
Swing	G. W. Smith	473,168	Apr. 19	1800	454	59	366
Swinging gate	A. E. Lycan	476,399	June 7	274	64	59	1491
Swinging gate	A. Ross	472,716	Apr. 12	1092	{280 281}	59	219
Swinging gate	A. Tarris	474,489	May 10	972	251	59	835

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Switch: *See* Derailing-switch. Telephone-switch. Electric switch. Track-switch. Electric snap-switch. Tramway-switch. Electrical switch. Trolley-switch. Railway-switch. Wire switch. Refrigerator-switch.							
Switch and signal mechanism. Interlocking	G. H. Pfeil	472,393	Apr. 5	608	154	59	114
Switch and signal operating apparatus	G. H. Pfeil	472,464	Apr. 5	711	181	59	135
Switch and signal operating mechanism. Locking device for	T. H. Patenall	474,528	May 10	1036	266	59	847
Switch and switch-box	S. Bergmann	472,027	Apr. 5	12	3	59	5
Switch-lock. Automatic	S. Grove	475,740	May 24	2947	747	59	1248
Switch mechanism	T. S. Mitchell	475,067	May 17	1936	490	59	1036
Syringe	T. B. Wilcox	475,909	May 31	3239	818	59	1319
Syringe and syringe-box	L. R. Meyer	476,402	June 7	278	65	59	1492
Syringe-tube sinker	A. C. Eggers	475,495	May 24	2568	654	59	1176
Syringe. Vaginal	W. B. Spencer	474,506	May 10	996	257	59	840
Syringes. Filling	L. S. Riggs	477,961	June 28	2774	695	59	2028
Table: *See* Desk tool-table. Pool-table. Extension-table. Surgical table. Folding table. Surgical and gynecological table. Gluing-table.							
Table	C. E. Good and C. S. Whipple	473,151	Apr. 19	1770	447	59	361
Table	A. F. Kinsler	477,424	June 21	1897	467	59	1839
Table and chair. Combined	G. Hunzinger	475,505	May 24	2586	658	59	1179
Table or stool top or chair-bottom	W. W. Sinclair	472,911	Apr. 12	1366	350	59	274
Table, prie-dieu, and confessional. Combined	H. Lavigne	476,394	June 7	264	63	59	1489
Table slide. Extension	E. Pleukharp	474,186	May 3	464	113	59	728
Tablet-displaying device	E. G. Baker	476,182	May 31	3672	928	59	1405
Tablet for use in letter-writing	W. M. Viser	477,087	June 14	1348	328	59	1720
Tack-driving machine	G. W. Copeland	475,488	May 24	2554	650 / 651	59	1173
Tack or nail driver	C. B. Godfrey	473,873	Apr. 26	2970	749	59	613
Tack-pulling machine	O. Paquette and I. La Chapelle	473,708	Apr. 26	2714	683	59	564
Tack. Thumb	C. R. Albrecht	477,587	June 21	2161	536	59	1892
Tackle-block	F. X. Rousseau	476,078	May 31	3492	880	59	1372
Tag	F. C. Glave	476,259	June 7	46	10	59	1447
Tail-board spring	F. Nickerson, Jr	473,774	Apr. 26	2803	705	59	583
Tallow, wax, &c. Apparatus for melting	A. Seiffert	477,093	June 14	1235	299	59	1697
Tamper and shovel. Combined	R. S. Browning, Jr., and B. F. Battersby	474,495	May 10	981	253	59	837
Tang-end jaw	H. S. Pfeil	472,392	Apr. 5	607	154	59	114
Tank: *See* Fish-tank. Water-closet tank. Flushing-tank.							
Tank-band fastening	F. Bergquist	472,723	Apr. 12	1101	283	59	221
Tank connection	J. J. Hogan	473,461	Apr. 26	2311	584	59	488
Tank-feeder	G. P. Glenn	473,571	Apr. 26	2502	632	59	524
Tank-heater	J. T. McGrath	472,798	Apr. 12	1205	309	59	241
Tanning compound	S. W. Wright	473,805	Apr. 26	2857	.....	59	592
Tapping water-mains. Method of and apparatus for	H. H. Burritt	473,997	May 3	175	41, 42	59	672
Target	T. P. Nelson	473,332	Apr. 19	2084	524	59	422
Target. Self marking and indicating	C. Vogel	474,109	May 3	355	85	59	705
Target-trap	F. C. Damm	477,927	June 28	2725	682	59	2018
Tea-kettle	J. Black and F. C. A. Natins	473,819	Apr. 26	2876	722	59	596
Tea-kettle	W. W. Scott	477,386	June 21	1847	454	59	1829
Tea or coffee extractor. Floating	J. Smith	476,568	June 7	515	121	59	1539
Tea or coffee pot	T. E. Williams	476,851	June 14	960	233	59	1641
Tea-pot	R. Chidley	473,727	Apr. 26	2741	690	59	570
Tea-pot or coffee-pot handle	B. V. Gintz	474,905	May 17	1637	418	59	979
Teeth-regulator	D. R. Wilder	473,040	Apr. 19	1500	405	59	328
Telegraph. Automatic	F. Anderson	472,396	Apr. 5	498	130	59	93
Telegraph box. District	C. Selden	473,024	Apr. 19	1563	398	59	324
Telegraph-instrument	C. B. Carr	476,730	June 7	753	186	59	1587
Telegraph or other pole	W. Pitt	473,522	Apr. 26	2408	610 / 611	59	505
Telegraph. Printing	C. J. Reed	477,383	June 21	1840	458	59	1827
Telegraph. Printing	C. J. Reed	477,384	June 21	1843	453	59	1828
Telegraph. Speaking	T. A. Edison	474,230	May 3	534	130	59	741
Telegraph. Speaking	T. A. Edison	474,231	May 3	535	130	59	741
Telegraph. Speaking	T. A. Edison	474,232	May 3	536	131	59	741
Telegraph system. Writing	H. Etheridge	477,652	June 28	2284	572	59	1932
Telegraphs. Individualizing cut-out for printing	S. B. Linville	477,665	June 28	2299	576 / 577	59	1935
Telegraphs. Unison apparatus for printing	H. Van Hoevenbergh	472,237	Apr. 5	361	93	59	67
Telegraphic relay	C. Cuttriss	473,441	May 24	2476	631	59	1159
Telegraphy	T. Gothorpe	475,396	May 31	3284	829	59	1328
Telegraphy and telephony. Apparatus and system for compound	F. W. Dunbar	476,618	June 7	592	142	59	1554
Telegraphy. Phonoporic	C. Langdon-Davies	477,835	June 28	2581	646	59	1969
Telemeter. Electric	C. T. Barrett	477,853	June 28	2609	654	59	1995
Telephone	E. M. Harrison	476,200	May 31	3099	785	59	1410
Telephone	S. F. Sherman	476,026	May 31	3410	861	59	1354
Telephone anti-inductive device	S. Pollak	477,870	June 28	2640	660	59	2001
Telephone-circuit	H. V. Hayes	474,363	May 3	696	181	59	771
Telephone-exchange apparatus	J. J. Carty	473,911	May 3	32	6, 7	59	649
Telephone-exchange apparatus	J. A. Seely	476,826	June 14	918	225	59	1633
Telephone-exchange switchboard. Canopy	C. E. Scribner	472,956	Apr. 12	1440	367	59	267
Telephone-exchanges. Circuit for multiple-switchboard systems of	J. A. Seely and C. E. Scribner	472,772	Apr. 12	1169	299	59	234
Telephone-exchanges. Testing apparatus for trunk-lines of	C. E. Scribner	473,089	Apr. 19	1660	422	59	341

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Telephone extension-transmitter	V. A. Cook	475,300	May 24	2251	580	59	1116
Telephone. Magnetic	C. Vogt	476,583	June 7	535	127	59	1543
Telephone-receiver	A. T. Collier	474,214	May 3	505	121 / 122	59	735
Telephone-receiver	E. C. Hess	473,256	Apr. 19	1955	490	59	396
Telephone. Submarine	H. Finch	476,007	May 31	3387	854	59	1349
Telephone-switch	C. E. Scribner	473,966	May 3	131	30	59	602
Telephone system	B. Marinovitch and G. Szarvady	476,887	June 14	1018	247	59	1653
Telephone system. House	C. E. Scribner	474,067	May 3	294	72	59	694
Telephone system. Metallic-circuit house	W. M. Goodridge	476,793	June 14	862	212 / 213	59	1622
Telephone system. Two-wire	G. Taintor	473,532	Apr. 26	2418	613	59	507
Telephone-tablet	J. S. Gold	477,931	June 28	2732	684	59	2019
Telephone-tablet support	J. S. Gold and A. H. McAlpine	477,932	June 28	2734	685	59	2020
Telephone-transmitter	E. G. Acheson	472,243	Apr. 5	367	94	59	69
Telephones. Toll-collecting apparatus for	J. J. Kato and T. H. Rhodes	472,169	Apr. 5	245	65	59	46
Telephonograph	J. P. Magenis	476,054	May 31	3456	872	59	1363
Telephony	R. Hope-Jones	477,866	June 28	2631	658	59	1999
Telethermometer	F. J. Dibble	474,771	May 10	1413	360	59	921
Tellurian	J. K. Rasaweiler	477,846	June 28	2599	651	59	1993
Temperature-regulating system. Automatic	W. S. Johnson	477,121	June 14	1391	338	59	1728
Temperature-regulator	L. F. Easton	472,255	Apr. 5	390	102	59	72
Temperature-regulator	L. F. Easton	472,256	Apr. 5	391	102	59	73
Temperature-regulator	J. F. McElroy	473,636	Apr. 26	2606	656	59	543
Temperature-regulator	J. F. McElroy	475,513	May 24	2596	660	59	1181
Temporary holder	J. A. Thuge	475,257	May 17	2183	556	59	1066
Temporary holder	F. M. Turck	475,259	May 17	2187	557	59	1067
Tennis-court marker. Lawn	W. A. Yawter and R. J. Copeland	475,425	May 24	2454	625	59	1154
Tennis-racket	H. Reichwein	475,154	May 17	2027	511	59	1055
Tenoning-machine	C. Malings	472,659	Apr. 12	997	258	59	203
Tenoning-machine	W. H. Bennett	474,515	May 10	1015	261	59	843
Terminal and safety-catch connection	A. Giddens	475,447	May 24	2488	635	59	1161
Tether	J. Hutchinson and A. B. Herrick	474,960	May 17	1724	438 / 439	59	997
Textile material. Ungumming and decorticating	W. E. Bradley	476,726	June 7	748	185	59	1586
Theatrical appliance	C. Girard	475,551	May 24	2658	.....	59	1193
Thermometer-case	F. Wohlgemuth	475,226	May 17	2134	540	59	1076
Thermometer. Oven	W. A. Spurgeon	476,571	June 7	518	122	59	1539
Thermometer. Recording	H. Murdock	477,143	June 14	1424	346	59	1735
Thermostat	W. E. Eastman	476,374	June 7	235	57	59	1482
Thermostat	A. H. Brintnell	474,542	May 10	1059	271	59	851
Thermostat	A. B. Morse	474,140	May 3	393	95	59	714
Thill-coupling	L. G. Rowand	474,149	May 3	404	98	59	717
Thill-coupling	J. Bradford, Jr	476,443	June 7	339	77	59	1503
Thill-coupling	F. B. Hunt	477,053	June 14	1286	312	59	1707
Thill-coupling	T. D. Lines	475,507	May 24	2588	658	59	1180
Thill-coupling	T. D. Lines	475,508	May 24	2590	659	59	1180
Thill-coupling	T. D. Lines	475,509	May 24	2591	659	59	1180
Thill-coupling	S. Mirfield	476,758	June 7	794	195	59	1596
Thill-coupling	W. H. Newton	474,503	May 10	992	256	59	836
Thill-coupling	H. S. Nunamaker and L. D. Blanchard	475,886	May 31	3208	812	59	1313
Thill-coupling	V. A. Tyler	474,070	May 3	298	72	59	695
Thill-coupling	W. F. Whiton	476,345	June 7	184	44	59	1472
Thill-coupling jack	A. A. Bray	476,043	June 28	2906	726	59	2053
Thill-support	A. H. Fletcher	472,476	Apr. 5	732	187	59	139
Thrasher. Pea or bean	W. H. Grayson	472,452	Apr. 5	694	177	59	131
Thrashers. Head-light for steam	F. H. Wilson	473,991	May 3	166	39	59	670
Thrashing-machine	W. Butler	477,507	June 21	2031	503	59	1865
Thrashing-machine	J. Weller	474,275	May 3	597	149	59	753
Thrashing-machine belt-reel	E. D. Mullaney	473,946	May 3	99	23	59	656
Thrashing-machine self-feeder	J. Juel	474,254	May 3	565	139	59	747
Thrashing-machine tooth	Z. Macomber	472,131	Apr. 5	193	52	59	36
Thread-cabinet	C. W. Hudgens	476,924	June 14	1078	260	59	1665
Thread-cutter for spools	H. and B. Oakes	477,778	June 28	2480	621	59	1972
Thread. Machine for removing superfluous material from	C. L. Travis	477,285	June 21	1684	412 / 413	59	1798
Ticket case or holder	C. L. Davis	476,005	May 31	3382	852	59	1348
Ticket-holder	W. H. Thayer	473,135	Apr. 19	1746	441	59	356
Ticket-holding device. Milk	J. White	476,343	June 7	162	43	59	1472
Ticket. Railway	H. A. Bierley	477,496	June 21	2017	500	59	1862
Ticket. Railway	W. B. Shattuc	473,592	Apr. 26	2538	640	59	531
Ticket. Sleeping and parlor car coupon	I. E. Smith	475,424	May 24	2453	625	59	1154
Tide and current wheel	J. Sutter	475,632	May 24	2780	704	59	1218
Tie: *See* Bag, bale, and bundle tie. Cattle-tie. Bale-tie. Railway-tie. Railway cross-tie.							
Tile-frame	O. P. and G. O. Elterich	477,746	June 28	2429	607	59	1963
Tile. Illuminating	L. E. Davenport	472,699	Apr. 12	1072	275	59	215
Tile or brick cutter	E. M. Freese	476,627	June 7	604	144 / 145 / 146	59	1557
Tile. Roofing	L. H. Montross	472,690	Apr. 12	1030	266	59	207
Tile-stand	G. Holt	475,980	May 31	3352	845	59	1341
Tiles. Die for roofing	J. E. Donaldson	472,189	Apr. 5	279	73	59	53
Tiles. Machine for edging and surfacing marble	G. Taylor	474,033	May 3	237, 5, 7		59	683
Till. Recording money	J. J., W. H., and F. Walker	475,643	May 24	2784	708	59	1221
Tilting gate	S. H. Merridith	475,132	May 17	1996	505	59	1049
Tilting-vessel support	T. F. Walters	474,886	May 17	1611	411	59	974
Time-call	J. and J. Jones, Jr.	474,835	May 17	1533	391	59	958
Time-check. Automatic electric	C. K. Jardine	475,566	May 24	2681	681	59	1198
Time-indicator. Workman's	J. L. F. Pinto	477,448	June 21	1930	481	59	1847
Time-lock	W. G. Spiegel	474,871	May 17	1567	404	59	968
Time-lock attachment	F. H. Peck	472,224	Apr. 5	341	89	59	64

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Time-lock for savings-banks	W. G. Spiegel	474,870	May 17	1585	403	59	968
Timepiece for boiling eggs	L. Günther	477,252	June 21	1633	398	59	1788
Timepieces. Cannon-pinion for	H. C. Klein	476,656	June 7	647	157	59	1565
Timepieces. Hand-setting mechanism for	A. Brandley	476,515	June 7	441	104	59	1523
Time-recorder. Watchman's	H. May	472,896	Apr. 12	1343	345	59	989
Time-recorder. Workman's	M. Martin	475,457	May 24	2504	638, 639	59	1164
Time-recorder. Workman's	M. Martin	475,458	May 24	2506	639	59	1164
Tin can	E. Norton	475,336	May 24	2312	503	59	1129
Tin from scrap. Recovering	J. J. Naef	477,220	June 21	1571	386	59	1776
Tin from scraps and waste of tin-plate. Recovering	C. L. C. Berton	477,348	June 21	1781	.....	59	1816
Tin-plate-coating apparatus	A. T. Davies	478,051	June 28	2914	728	59	2054
Tin plates. Making	G. H. Benjamin	472,691	Apr. 12	1044	269	59	210
Tire and means for inflating the same. Pneumatic	P. W. Tillinghast	477,316	June 21	1736	425	59	1808
Tire. Bicycle	E. G. Dorchester	472,796	Apr. 12	1189	305	59	238
Tire. Bicycle	E. G. Dorchester	477,048	June 14	1277	310	59	1705
Tire. Bicycle	F. H. Mason	475,785	May 31	3018	765	59	1276
Tire. Bicycle	C. W. Millet	477,769	June 28	2471	618	59	1970
Tire. Bicycle	C. H. Mitchell and R. M. Veitch	476,670	June 7	665	161	59	1569
Tire. Cushioned	G. T. Reed	476,215	May 31	3737	944	59	1417
Tire. Elastic	J. S. Smith	476,085	May 31	3505	883	59	1374
Tire for bicycles. Rubber	A. Strana	474,423	May 10	874	228	59	817
Tire for wheels of velocipedes	J. B. Dunlop	473,831	Apr. 26	2896	727	59	599
Tire-inflating device	J. Moseley and B. Blundstone	475,732	May 24	2935	745	56	1246
Tire. Pneumatic	T. B. Jeffery	477,007	June 14	1212	294	59	1692
Tire. Pneumatic	T. Dunn	477,996	June 28	2920	708	59	2039
Tire. Pneumatic	J. F. Palmer	476,679	June 7	674	164	59	1571
Tire. Pneumatic	J. F. Palmer	476,680	June 7	676	164	59	1571
Tire. Pneumatic	J. F. Palmer	476,681	June 7	679	164, 165	59	1572
Tire. Pneumatic	L. J. Phelps	472,484	Apr. 5	746	190	59	142
Tire. Pneumatic	P. W. Tillinghast	473,798	Apr. 26	2847	715	59	590
Tire. Pneumatic	G. W. Toney and M. V. Livingston	472,411	Apr. 5	632	161	59	118
Tire. Pneumatic	E. Ulbricht	473,034	Apr. 19	1576	401	59	326
Tire. Pneumatic wheel	O. Lindner	474,453	May 10	928	238	59	896
Tire-setting machine	C. W. Cotton	474,102	May 3	425	102	59	721
Tire-setting machine	B. McGovern	473,948	May 3	101	23, 24	59	656
Tire-shrinker	J. M. Liles and J. B. Williams	474,392	May 10	819	214	59	906
Tire-tightener	R. W. Cayce	476,870	June 14	988	239	59	1647
Tire. Vehicle	A. T. Brown	474,589	May 10	1135	290	59	866
Tire. Vehicle	F. Douglas	472,341	Apr. 5	528	137	59	99
Tire. Wheel	H. Myers	477,773	June 28	2475	619	59	1971
Tire. Wheel	H. Myers	477,774	June 28	2477	619	59	1971
Tire. Wheel	W. R. Wilcox	476,714	June 7	726	179	59	1581
Tires. Device for repairing	C. D. Rice	475,344	May 24	2328	597	59	1132
Tires. Repairing pneumatic	C. D. Rice	475,343	May 24	2327	597	59	1132
Tires. Tool for tightening wheel	W. H. Hamblen	473,223	Apr. 19	1907	490	59	386
Toaster	T. J. Murrey	475,884	May 31	3007	811	59	1313
Tobacco-casing machine	J. T. Carter	474,650	May 10	1228	314	59	824
Tobacco cask or tierce	W. T. Aaron	477,424	June 21	2000	497	59	1859
Tobacco. Chemical compound for treating	G. S. Yingling	475,737	May 24	2942	.....	59	1047
Tobacco. Hand of leaf	G. Falk	476,943	June 14	1117	269	59	1673
Tobacco-hanger	D. V. Davis	472,861	Apr. 12	1288	330	59	257
Tobacco-hoisting device	N. L. Frizzell	476,140	May 31	3598	909	59	1391
Tobacco. Machine for attaching tags to plug	G. M. and C. W. Guerrant	475,010	May 31	3390	855	59	1349
Tobacco-moistening case	H. D. Streator	474,424	May 10	875	228	59	817
Tobacco-packing machine	W. J. Cussen	477,186	June 14	1498	367	59	1750
Tobacco-pipe	E. Dannenberg	473,212	Apr. 19	1882	474	59	381
Tobacco-pipe	W. B. Hughes	473,666	Apr. 26	2649	668	59	553
Tobacco-pipe	J. F. Schulhoff	473,088	Apr. 19	1650	422	59	340
Tobacco-pouch	W. J. Cussen	475,676	May 24	2839	718, 719	59	1229
Tobacco wrapper and package	T. J. Maloney	477,015	June 14	1222	296	59	1695
Toboggan-slide	A. Guerra	475,081	May 17	1913	485, 486, 487	59	1032
Toe-weight	T. Knoder	477,663	June 28	2297	576	59	1934
Tongs	W. A. Cornelius	472,436	Apr. 5	667	170, 171	59	125
Tongue iron. Vehicle	T. H. Parry and T. J. Baker	475,986	May 31	3359	847	59	1342
Tongue-support	D. Ward	475,366	May 24	2358	604	59	1137
Tongue support. Wagon	J. W. Wetmore	475,736	May 31	3118	790	59	1296
Tongue. Wagon	R. Condon	474,816	May 17	1495	381	59	951
Tongue. Wagon	J. W. Maxwell	474,582	May 10	1125	287	59	864
Tool. Combination	L. Hinkle	474,384	May 10	808	211	59	804
Tool. Combination	J. F. Sullivan	472,147	Apr. 5	214	57	59	40
Tool-holder	J. W. Plummer	474,302	May 3	646	163	59	762
Tool or reaper-knife holder	L. W. Butler	473,058	Apr. 19	1613	412	59	333
Tool. Pneumatic	D. Drawbaugh	472,496	Apr. 5	761	193	59	145
Tools. Press for attaching abrasive material to	S. Ross, Jr.	472,824	Apr. 12	1241	318	59	247
Tooth. Artificial	R. Brewster	476,605	June 7	572	136	59	1550
Tooth. Artificial	D. B. McHenry	475,141	May 17	2010	508	59	1051
Tooth-crown. Metal	G. Evans	472,344	Apr. 5	533	138	59	100
Top roll	A. A. Andrews	474,904	May 3	493	118	59	733
Torpedo	J. H. Bevington	474,718	May 10	1339	340	59	906
Torpedo-boat. Submergible	J. P. Holland	472,670	Apr. 12	1018	263	59	205
Torpedo-launching apparatus	J. B. G. A. Canet	474,291	May 3	633	160	59	760
Torpedo-launching apparatus	A. Scheibel	472,553	Apr. 12	851	218	59	176
Touch-regulator	F. C. Lighte	472,376	Apr. 5	580	149	59	109
Towel-bracket	W. A. Neidhardt	474,200	May 3	574	141	59	749
Towel-bracket	W. A. Neidhardt	477,144	June 14	1425	347	59	1734
Toy	C. J. J. Busacker	474,543	May 10	1062	271	59	851
Toy	F. W. Carpenter	475,486	May 24	2550	650	59	1173
Toy	G. W. Galbreath	473,736	Apr. 26	2761	694	59	573

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Toy	J. B. Kibler	473,556	Apr. 26	2466	624	59	517
Toy	E. Lawson	477,904	June 28	2692	674	59	2011
Toy	W. V. Snyder	473,970	May 3	137	31	59	664
Toy	A. Wiggins	472,722	Apr. 12	1100	283	59	221
Toy banks. Time-lock for	L. W. Baldwin	477,321	June 21	1743	427	59	1809
Toy boat	G. A. Goodson	472,291	Apr. 5	443	114	59	84
Toy cart	C. M. Collins	474,215	May 3	507	122	59	736
Toy. Coin-operated	C. F. A. Röell	474,304	May 3	648	164, 165, 166, 167	59	763
Toy fence	W. Windus	473,247	Apr. 19	1941	488	59	393
Toy. Figure	R. A. Chapman	472,499	Apr. 5	657	167, 168	59	123
Toy for emitting sound	L. Reichert	476,024	May 31	3409	860	59	1354
Toy marble-shooter	W. W. Rand	472,608	Apr. 12	931	240	59	191
Toy. Mechanical	E. I. Pyle	476,895	June 14	1030	250	59	1655
Toy pistol	R. Frisbie	472,573	Apr. 12	876	225	59	181
Toy pistol	B. B. Whaley	474,707	May 10	1319	336	59	903
Toy. Spinning	C. Schwartz	476,825	June 14	917	224	59	1633
Toy. Wheeled sounding	A. E. Lytle and B. K. Cowles	477,600	June 21	2179	540	59	1895
Trace	E. B. Knapp	473,420	Apr. 19	2235	561	59	451
Trace-carrier	T. A. Cross	474,820	May 17	1505	384	59	953
Trace-carrier	H. C. Doerr	473,830	Apr. 26	2895	726	59	599
Trace-carrier	J. W. White	476,344	June 7	183	43	59	1472
Trace connection	H. O. Stahley	473,094	Apr. 19	1667	424	59	342
Trace connection. Elastic	J. N. and I. N. Burke	472,783	Apr. 12	1185	303	59	237
Trace-guide	C. E. Young	476,719	June 7	733	181	59	1583
Trace-iron	W. J. Dankworth	473,299	Apr. 19	2023	508	59	410
Trace-protector	T. H. Lee	477,560	June 21	2120	526	59	1884
Trace-support	R. W. Minard	474,753	May 10	1389	351	59	916
Trace-supporter	J. G. Miller	478,012	June 28	2858	715	59	2044
Tracing apparatus	A. Wyne	472,099	Apr. 5	137	37	59	26
Track-champ	J. P. Kimble	477,943	June 28	2752	689	59	2023
Track-gage. Adjustable	M. Garnett	475,309	May 24	2461	583	59	1118
Track gage and level	C. Roberts	472,229	Apr. 5	348	90	59	65
Track gage and level	C. Roberts	474,646	May 10	1294	313	59	883
Track or tramway. Elevated	W. P. Walling	477,718	June 28	2388	596	59	1954
Track switch. Overhead	J. H. Ahrens and H. Oostendorp	477,240	June 21	1613	395	59	1784
Traction-engine	J. R. Hatch	474,738	May 10	1369	347	59	912
Traction-engine	J. J. D. McNamar	475,597	May 24	2726	690	59	1207
Traction-engine gearing	F. Kitten	477,057	June 14	1291	313	59	1706
Train-signal. Electric	N. B. Cregier	476,873	June 14	992	241	59	1648
Trammel	S. E. Selleck	472,829	Apr. 12	1246	319	59	248
Tramway	E. J. Wolfrom	475,102	May 17	1952	494, 495	59	1039
Tramway-brake	F. Adler	475,171	May 17	2053	516	59	1060
Tramway-switch	G. A. McMenimen	472,381	Apr. 5	589	150	59	111
Tramway-switch	J. R. Wigginton	476,713	June 7	724	178, 179	59	1581
Tramway-switch. Automatic	W. G. Fay	477,749	June 28	2441	609	59	1964
Transit. Engineer's	C. L. Berger	476,510	June 7	433	101	59	1522
Transom-lifter	H. A. Brennan	474,720	May 10	1341	341	59	907
Transom-lifter	G. A. Colton	476,037	May 31	3427	866	59	1357
Transom-lifter	G. A. Colton	476,365	June 7	218	54	59	1478
Transom-lifter	B. G. Lowrey	474,298	May 3	643	162	59	761
Transom-lifter	J. H. and W. A. Rose	474,065	May 3	291	70	59	693
Transom-lifter	H. Weber	477,032	June 14	1249	303	59	1700
Transparency. Colored	M. Honsman	477,120	June 14	1391	338	59	1728
Transporting materials. Device for	D. E. Dale	476,787	June 14	847	209	59	1619
Trap:							
See Animal-trap. Ant-trap. Drainage-trap. Fish and game trap. Fly-trap. Insect-trap. Lead trap. Mole-trap. Plumber's trap. Sporting-trap. Steam-trap. Stench-trap. Target-trap. Water-trap. Waste-trap. Waste-pipe trap.							
Trap	H. S. Goff	475,215	May 17	2120	536	59	1074
Trap and siphon	L. M. Hawley	475,396	May 24	2404	614	59	1146
Traveling-bag	A. Bancroft	476,598	June 7	563	134	59	1548
Tree-prop	D. Barker	473,412	Apr. 19	2221	558	59	448
Tree-prop	T. J. Hubbell	477,939	June 28	2745	688	59	2022
Tree-protector	W. W. McCallip	472,137	Apr. 5	200	54	59	37
Trees. Machine for baling	H. O. Thomas	473,482	Apr. 26	2338	592	59	493
Trick egg	C. A. Rogers	472,822	Apr. 12	1239	318	59	247
Tricycle	C. R. Arnold	474,279	May 3	606	150	59	755
Tricycle	T. McCormick	474,096	May 3	338	81	59	702
Tricycle	A. McDougall	477,140	June 14	1420	346	59	1734
Tricycle	W. V. Snyder	475,022	May 24	2764	700	59	1215
Trimmer:							
See Sewing-machine trimmer. Sheet-metal trimmer. Wick-trimmer.							
Trimmer. Rotary	M. T. Harrigan and J. L. Packard	473,874	Apr. 26	2972	749	59	614
Tripod-head	L. E. Bennett	476,963	June 14	978	237	59	1645
Trolley carrier. Overhead	W. F. Glenn	472,756	Apr. 12	1149	294	59	230
Trolley. Conduit	J. J. Cosgrove, Jr.	474,218	May 3	512	123	59	737
Trolley-support	S. C. Crane	476,367	June 7	220	54	59	1479
Trolley-switch	S. H. Short	473,362	Apr. 19	2134	535	59	431
Trolley-wire circuit-breaker	J. M. Andersen	474,037	May 3	242	58	59	684
Trolley-wire clamp	M. M. Wood	472,506	Apr. 12	907	233	59	186
Trolley-wire support	O. F. Evans	474,375	May 10	796	207	59	802
Trolley-wire support	F. C. Prickett	472,953	Apr. 12	1435	366	59	287

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Trolley-wires. Device for bending electric	H. D. Winton	475,261	May 17	2190	558	59	1088
Trolley-wires. Device for suspending	J. Sachs	477,781	June 28	2424	622	59	1973
Trough: *See* Beer-racking trough. Feed-trough.							
Trousers	M. and S. Rachelman	475,416	May 24	2438	621	59	1151
Trousers	G. J. Rupprecht	472,273	Apr. 5	416	107	59	78
Trousers-hanger	F. C. Germann, Jr	476,195	May 31	3690	932	59	1409
Trousers-protector	E. P. Benjamin	475,749	May 31	2967	752	59	1266
Trousers-stretcher	F. E. Housh	472,655	Apr. 12	994	257	59	202
Trousers. Supporter for the rear flap of	C. S. Terpening	476,699	June 7	708	174	59	1577
Truck	J. Brack	474,360	May 10	776	202	59	797
Truck. Barrel	O. D. Thompson	477,472	June 21	1980	492	59	1855
Truck. Bit	J. M. Carr	473,381	Apr. 19	2172	545	59	439
Truck. Car	W. A. Grove	472,538	Apr. 12	833	213	59	172
Truck. Car	F. A. Baier	476,586	June 7	560	133	59	1547
Truck. Car	J. Henderson	472,923	Apr. 12	1384	355	59	278
Truck. Car	H. C. and C. B. Hodges	477,657	June 28	2291	574	59	1933
Truck. Car	A. Miller	477,765	June 28	2465	616	59	1969
Truck. Car	A. Miller	477,766	June 28	2467	{616, 617}	59	1969
Truck. Car	A. Miller	477,767	June 28	2468	617	59	1969
Truck-elevator	J. Taylor	472,236	Apr. 5	358	92, 93	59	67
Truck equalising device. Car	C. and I. Baker	473,441	Apr. 26	2269	573	59	479
Truck for cars. Motor	J. A. Brill and W. S. Adams	476,244	June 7	15	4	59	1441
Truck for electrically-propelled vehicles	W. A. McGuire and M. G. Hubbard, Jr.	476,480	June 7	396	91, 92	59	1514
Truck. Lumber-drying	L. Pfingst	474,403	May 10	834	218	59	809
Truck. Railway-car	W. A. Leary	476,801	June 14	875	215	59	1624
Truck safety device. Railway	L. Pfingst and S. A. Bemis	472,271	Apr. 5	413	106	59	77
Trunk	J. M. Bostwick	476,123	May 31	3571	897	59	1386
Trunk	J. T. Dwyer	477,795	June 28	2509	{629, 630}	59	1976
Trunk	C. N. Romaine	474,148	May 3	403	98	59	716
Trunk	S. E. V. Seward and F. W. Leimberger.	475,617	May 24	2758	699	59	1214
Trunk-elevator	E. R. Palmer	474,145	May 3	400	97	59	715
Trunk-line system	J. J. O'Connell	474,854	May 17	1561	398	59	963
Trunk or case	S. Hermann	472,119	Apr. 5	172	47	59	32
Trunk or valise. Hand	E. Dillingham	475,977	May 31	3346	843	59	1330
Trunk safety attachment	S. E. Sparrow	475,950	May 31	3303	833	59	1332
Trunks, &c. Manufacture of	E. D. Taylor	476,840	June 14	989	229	59	1637
Truss	W. A. Adair	473,807	Apr. 26	2860	718	59	592
Truss	C. Colves	477,044	June 14	1265	307	59	1703
Truss	H. P. Ewell	477,251	June 21	1632	398	59	1787
Truss	T. Y. Kayne	474,088	May 3	326	78	59	700
Truss	C. Pence	474,402	May 10	833	218	59	809
Trussing-machine	G. Reno	477,335	June 21	1760	431	59	1813
Tub: *See* Bath-tub. Sink and washtub. Dye-tub.	W. Glader and H. Schmidt	477,195	June 14	1511	{370, 371}	59	1753
Tube: *See* Flexible tube. Wick-tube. Insulating-tube.							
Tube-bending apparatus	J. Donaldson	472,969	Apr. 12	1456	372	59	291
Tube-cutter	A. C. Forbes	474,823	May 17	1508	385	59	953
Tube-expander	W. Walker	476,107	May 31	3545	892	59	1381
Tubes from mandrels. Loosening	F. E. and A. S. Elmore	473,739	Apr. 26	2748	.....	59	571
Tubes. Tool for upsetting ends of metal	J. Kitsmiller	472,504	Apr. 5	782	200	59	148
Tubing. Tag for butt-weld	E. Bowin	476,124	May 31	3571	898	59	1386
Tubular boiler	J. Pierpoint	472,660	Apr. 19	998	258	59	203
Tubular rollers. Making	C. D. Meneely	473,943	May 3	93	22	59	655
Tug attachment. Hame	B. Lake	475,325	May 24	2285	588	59	1124
Tug clip. Hame	G. D. Stulken and A. J. Clute, Jr	473,978	May 3	146	34	59	666
Tug. Hame	E. L. Howe	476,881	June 14	1010	245	59	1652
Tug. Hame	H. O. Stahley	475,951	May 31	3304	833	59	1332
Tug-securing device	A. Bennett	473,815	Apr. 26	2873	731	59	595
Tug. Shaft	J. Grammer	473,624	Apr. 26	2589	659	59	540
Tunneling or mining machine	R. Stanley	476,836	June 14	932	228	59	1636
Turbine. Steam	G. J. Altham	475,957	May 31	3313	836	59	1334
Turfing implement	L. B. Robinson	477,453	June 21	1947	482	59	1848
Turning irregular shapes. Machine for	G. C. Bardone	475,917	May 31	3249	820	59	1321
Turning machine. Rod and broom-handle	S. H. Britton	472,332	Apr. 5	514	133	59	96
Turning or shaping the heads of casks. Machine for	S. Wright	477,039	June 14	1258	305	59	1702
Turning patterns on pearl, ivory, or other substances. Machine for	J. H. Lawles	477,130	June 14	1407	341	59	1731
Twine-box. Gravity	W. G. Bolus	474,076	May 3	306	74	59	697
Twine-holder. Automatic	E. B. Andross	475,173	May 17	2057	517	59	1061
Twine-making machines. Nippers for	G. A. Lowry	474,580	May 10	1123	287	59	964
Type-containing channels. Slug for	L. K. Johnson	477,008	June 14	1215	294	59	1693
Type-distributing apparatus	L. K. Johnson	477,009	June 14	1215	294	59	1693
Type. Machine for nicking printing	J. R. Topliss and J. A. Kay	473,271	Apr. 19	1978	496	59	401
Type. Mechanism for justifying composed lines of	J. W. Schuckers	474,306	May 3	656	{167, 168, 169, 170, 171}	59	764
Type setting and distributing machine	R. W. Nelson	473,405	Apr. 19	2212	555	59	446
Type-setting machine	G. A. Botton	473,691	Apr. 26	2684	676	59	559
Type-writer carriage	F. L. Twiss and L. A. Barber	473,485	Apr. 26	2345	594	59	494
Type-writer inking device	J. R. Free	474,236	May 3	542	133	59	742
Type-writers. Registering attachment for	H. I. Cromer	476,735	June 7	702	188	59	1589
Type-writing machine	W. J. Barron	472,023	Apr. 5	4	2	59	3

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Type-writing machine	G. M. Beerbower	472,024	Apr. 5	8	2	59	4
Type-writing machine	A. E. Benedict	476,724	June 7	741	{183, 184}	59	1585
Type-writing machine	H. E. Blauvelt and J. A. Polhemus	477,882	June 28	2658	{664, 665}	59	2004
Type-writing machine	G. C. Blickensderfer	472,692	Apr. 12	1045	{270, 271, 272}	59	210
Type-writing machine	G. C. Blickensderfer	472,693	Apr. 12	1054	273	59	212
Type-writing machine	G. C. Blickensderfer	472,694	Apr. 12	1059	273	59	213
Type-writing machine	G. C. Blickensderfer	472,696	Apr. 12	1062	274	59	213
Type-writing machine	W. J. Borden and J. W. Johnson	477,165	June 14	1461	350	59	1743
Type-writing machine	B. A. Brooks	476,941	June 14	1110	268	59	1672
Type-writing machine	B. A. Brooks	476,942	June 14	1113	268	59	1672
Type-writing machine	C. M. Clinton and J. McNamara	474,333	May 3	718	{187, 188}	59	775
Type-writing machine	J. S. Copeland	476,251	June 7	29	6, 7, 8	59	1445
Type-writing machine	J. M. Crary	477,353	June 21	1787	{436, 437, 438, 439}	59	1817
Type-writing machine	J. M. Crary	477,404	June 21	1870	{460, 461}	59	1834
Type-writing machine	J. M. Crary	477,517	June 21	2048	{510, 511}	59	1869
Type-writing machine	S. A. Dean	477,521	June 21	2057	{512, 513, 514}	59	1871
Type-writing machine	A. Densmore	475,443	May 24	2479	632	59	1159
Type-writing machine	C. Fleckenstein	472,445	Apr. 5	680	{174, 175}	59	127
Type-writing machine	E. A. Ford	472,870	Apr. 12	1301	334	59	260
Type-writing machine	J. F. Frankey	472,042	Apr. 5	45	{10, 11, 12}	59	10
Type-writing machine	G. S. Heath	475,057	May 17	1879	476	59	1026
Type-writing machine	J. Jackson	472,481	Apr. 5	741	189	59	141
Type-writing machine	H. C. Johnson	477,054	June 14	1287	312	59	1707
Type-writing machine	G. S. Jones	475,085	May 17	1921	{488, 489}	59	1034
Type-writing machine	C. O. Maltby	474,395	May 10	822	215	59	807
Type-writing machine	M. K. Morris	473,945	May 3	97	22, 23	59	655
Type-writing machine	J. Pratt	477,224	June 21	1578	{387, 388}	59	1778
Type-writing machine	F. Sanderson	475,894	May 31	3218	814	59	1315
Type-writing machine	S. J. Seifried	474,350	May 3	753	{196, 197}	59	781
Type-writing machine	M. L. Severy	476,319	June 7	137	{33, 34, 35}	59	1464
Type-writing machine	F. Sholes	474,533	May 10	1043	267	59	848
Type-writing machine	F. L. H. Sime	476,833	June 14	929	227	59	1635
Type-writing machine	C. Spiro	475,623	May 24	2765	{700, 701}	59	1215
Type-writing machine	C. Spiro	476,903	June 14	1044	253	59	1658
Type-writing machine	H. H. Unz	472,836	Apr. 12	1257	322	59	251
Type-writing machine	S. C. Vasaly	472,612	Apr. 12	937	241	59	192
Type-writing machine	C. D. Wallace	474,981	May 17	1764	447	59	1003
Type-writing machine	J. A. Watson	477,236	June 21	1604	393	59	1782
Type-writing machine	J. A. Watson	477,237	June 21	1606	393	59	1783
Type-writing machine	G. W. N. Yost	474,936	May 17	1682	430	59	989
Type-writing machine	G. W. N. Yost	474,937	May 17	1684	430	59	989
Type-writing machine	G. W. N. Yost	474,938	May 17	1687	431	59	990
Type-writing machine and ribbon-holder thereof	G. B. Webb and L. N. Chapin	473,718	Apr. 26	2726	686	59	566
Type-writing-machine attachment	G. C. Blickensderfer	472,695	Apr. 12	1060	274	59	213
Type-writing-machine attachment	G. C. Blickensderfer	472,850	Apr. 12	1273	326	59	254
Type-writing-machine attachment	C. J. Reed	473,236	Apr. 19	1926	485	59	390
Type-writing-machine attachment	C. J. Reed	473,237	Apr. 19	1929	485	59	391
Type-writing-machine ribbon	L. Bailey	472,847	Apr. 12	1270	325	59	254
Type-writing-machine type-cleaner	J. R. Keatinge	475,777	May 31	3009	763	59	1274
Type-writing-machine type-cleaning appliance	G. E. Graff	474,733	May 10	1360	.....	59	910
Type-writing machines. Automatic envelope-feeder for	J. H. Brower and H. C. Ross	476,727	June 7	749	185	59	1586
Type-writing machines. Inking device for	E. S. Higgins and H. C. Jenkins	472,999	Apr. 19	1520	388	59	316
Type-writing machines. Shifting mechanism for	J. C. Cowan	477,199	June 21	1528	373	59	1770
Type-writing machines. Type-cleaner for	B. H. Holmes and J. H. Ralston	472,760	Apr. 12	1154	296	59	231
Type-writing machines. Type-cleaning device for	T. H. Stackhouse	472,720	Apr. 12	1098	282	59	220
Umbrella	B. F. Auld	475,028	May 17	1835	465	59	1017
Umbrella-cover. Detachable	H. S. Whitcomb	473,649	Apr. 26	2624	661	59	547
Umbrella drip-cup	J. F. Witt	475,072	May 17	1902	483	59	1030
Umbrella. Folding	J. R. Tyson	474,616	May 10	1180	300	59	874
Umbrella-lock	F. Batzel	474,467	May 10	942	243	59	829
Umbrella-locking device	D. M. Wyatt	475,736	May 24	2940	746	59	1247
Umbrella-notch	J. H. Bevington	474,356	May 10	768	200	59	796
Umbrella or parasol. Folding	S. Collins	476,364	June 7	216	58	59	1478
Umbrella or parasol frame	C. E. Hayes and H. L. Millay	472,457	Apr. 5	703	179	59	133
Umbrella-runner	C. B. Macneal	473,470	Apr. 26	2323	587	59	490
Umbrella-stand	R. Ardrey	475,074	May 17	1904	483	59	1030
Umbrella-support	H. J. Feuchtwanger	473,623	Apr. 26	2567	651	59	540
Umbrellas. Catch for rib-points of	H. H. Pattee	473,016	Apr. 19	1546	394	59	321
Undergarment	O. Schmidt	476,561	June 7	505	119	59	1537
Undershirt	J. A. Scriven	472,555	Apr. 12	854	219	59	177
Underwaist	W. F. Knelp	472,672	Apr. 12	1022	264	59	206
	G. D. McKay	474,679	May 10	1283	327	59	895

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Universal joint	J. S. Detrick	477,625	June 21	2238	560	59	1906
Upper	G. W. Sleeper	475,619	May 24	2760	699	59	1214
Urinal	C. G. Zellman	473,806	Apr. 26	2858	718	59	592
Urn	T. Miller	477,261	June 21	1647	402	59	1790
Vacuum-pan	J. R. Farnham	472,209	Apr. 5	320	82, 83	59	60
Valve	G. Anderson	477,398	June 21	1863	458, 459	59	1892
Valve	C. L. Bastian	477,192	June 14	1507	369	59	1753
Valve	A. F. L. Bell	472,914	Apr. 12	1370	351	59	275
Valve	C. Birkery	476,511	June 7	435	102	59	1522
Valve	J. Kennedy	477,372	June 21	1823	446	59	1824
Valve	M. Long	477,845	June 28	2506	651	59	1993
Valve	A. T. Miller	476,668	June 7	662	161	59	1568
Valve	M. D. O'Brien	473,707	Apr. 26	2713	683	59	564
Valve	R. N. Pratt	477,605	June 21	2187	542	59	1897
Valve	G. H. F. Schrader	473,672	Apr. 26	2656	669	59	554
Valve	C. E. Van Auken	476,844	June 14	946	230	59	1639
Valve	A. Weber	477,392	June 21	1854	456	59	1831
Valve	A. Weber	477,720	June 28	2300	597	59	1955
Valve	R. Wood	473,488	Apr. 26	2351	596	59	495
Valve. Air-	J. L. Judge	477,597	June 21	2175	539	59	1895
Valve. Air-cushion	D. Hale	476,957	June 14	1140	275	59	1677
Valve and muffler. Safety	E. B. Kunkle	477,945	June 28	2754	690	59	2024
Valve. Balanced slide-	W. T. Harrison	473,744	Apr. 26	2770	696	59	575
Valve. Balanced slide-	J. McDonald	477,307	June 21	1794	422	59	1805
Valve. Cesspool-	W. J. Thomas	474,153	May 3	412	100	59	718
Valve-controller. Electrical	R. Welling	477,977	June 28	2793	700	59	2032
Valve-controller. Electro-magnetic	J. V. Stout	476,573	June 7	520	123	59	1540
Valve-controller. Electro-magnetic	O. E. Lundstedt	472,461	Apr. 5	707	180	59	134
Valve. Cut-off	O. E. Lundstedt	472,579	Apr. 12	883	227	59	182
Valve. Electrically-controlled	G. V. Putman	477,922	June 14	1233	298	59	1697
Valve. Elevator	W. B. Fleming	476,376	June 7	237	58	59	1463
Valve. Engineer's	A. Kieckhefer and G. Cadman	477,055	June 14	1288	313	59	1708
Valve. Flushing	A. P. Massey	475,695	May 24	2873	726	59	1235
Valve. Flushing	W. A. Turner	477,714	June 28	2383	595	59	1954
Valve. Flushing	W. A. Turner	477,715	June 28	2384	596	59	1954
Valve. Flushing	W. A. Turner	477,716	June 28	2385	596	59	1954
Valve. Flushing	W. A. Turner	477,717	June 28	2386	596	59	1954
Valve for automatic air-brakes. Triple	H. H. Westinghouse	475,099	May 17	1948	494	59	1639
Valve for beer-coolers	M. Bensinger	473,248	Apr. 19	1949	488	59	393
Valve for compound engines. Balanced piston	H. Canfield	477,924	June 28	2722	681	59	2017
Valve for compound engines. Intercepting	F. W. Dean	474,000	May 3	181	43	59	673
Valve for engines. Reversing	C. F. Christopher	474,212	May 3	502	121	59	735
Valve for hot-blast stoves	H. Kennedy	472,640	Apr. 12	974	252	59	198
Valve for pneumatic tires	G. H. F. Schrader	473,673	Apr. 26	2658	670	59	554
Valve for safety-plugs for steam-boilers	L. Sieno	472,233	Apr. 5	353	91	59	66
Valve for traps and water-pipes. Air-	C. H. Rhett	473,961	May 3	124	29	59	661
Valve. Four-way	W. Rymer	477,706	June 28	2369	592	59	1951
Valve. Gate	R. N. Pratt	477,608	June 21	2190	543	59	1897
Valve-gate	F. H. Richards	476,313	June 7	128	31	59	1463
Valve-gear	P. Jennings	474,452	May 10	926	238	59	826
Valve-gear	J. Riddell	478,022	June 28	2873	718	59	2047
Valve-gear	G. Rothenbücher	477,848	June 28	2601	652	59	1994
Valve gear. Adjustable cut-off	H. T. Clarke	478,047	June 28	2911	727	59	2053
Valve gear. Cut-off	T., R., and W. Lees, Jr.	472,658	Apr. 12	996	257, 258	59	203
Valve gear. Cut-off	R. H. Rice	473,085	Apr. 19	1655	421	59	340
Valve-gear. Engine	J. Hamilton	476,229	May 31	3757	948, 949	59	1421
Valve-gear. Engine	F. Herlt and J. Hirschmann	475,942	May 31	3290	830, 831	59	1329
Valve-gear for direct-acting steam-engines	J. E. Kelley	476,148	May 31	3609	912	59	1394
Valve-gear for steam-engines	B. Bertermann	472,100	Apr. 5	138	37, 38	59	27
Valve-gear. Link	W. A. Winn	473,278	Apr. 19	1989	499	59	403
Valve-gear. Reversible	J. C. Nicholson	475,601	May 24	2729	691, 692	59	1208
Valve-gear. Steam-engine	M. C. Bullock	473,906	May 3	13	4	59	639
Valve-gearing	A. S. Krotz	475,691	May 24	2866	725	59	1234
Valve-gearing. Steam-engine	H. C. Behr	474,717	May 10	1336	340	59	906
Valve. Governor equilibrium	J. Pilet	476,550	June 7	487	116	59	1534
Valve. Hydraulic-elevator	J. McAdams	476,023	May 31	3406	859, 860	59	1353
Valve-indicator	J. T. Hayden	477,003	June 14	1204	292	59	1691
Valve lever. Steam	R. Weir	475,908	May 31	3237	818	59	1619
Valve operating mechanism. Hydraulic-elevator	N. C. Bassett	476,861	June 14	975	236, 237	59	1644
Valve. Piston	J. Hamilton	476,228	May 31	3756	948	59	1421
Valve. Pressure-regulating	A. Heithecker	475,217	May 17	2122	537	59	1074
Valve. Reducing	N. C. Locke	475,585	May 24	2706	686	59	1203
Valve-register	J. W. Dorgan	477,742	June 28	2425	606	59	1962
Valve. Relief	J. W. Allan	474,711	May 10	1323	337	59	903
Valve. Rotary	M. Rothfuss	472,717	Apr. 12	1094	281	59	219
Valve. Safety	J. W. Ball	477,487	June 21	2004	497	59	1860
Valve. Safety	A. M. Johnston	475,320	May 24	2279	586	59	1123
Valve. Safety	M. B. Mills	476,755	June 7	791	194	59	1595
Valve. Secondary	W. H. Lavinia	475,455	May 24	2501	637, 638	59	1163
Valve. Slide	J. A. Haley	473,152	Apr. 19	1771	447	59	361
Valve. Slide	H. von Mitzlaff	477,068	June 14	1349	328	59	1790
Valve. Steam-actuated	D. Cooper	476,609	June 7	577	138	59	1551
Valve. Steam-actuated	F. M. Schorn	475,900	May 31	3223	815, 816	59	1316
Valve. Steam-cylinder	G. A. Kelly	475,321	May 24	2280	587	59	1123
Valve. Steam-engine	P. R. Foster	476,457	June 7	355	92	59	1506

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Valve. Steam-engine	D. Pattee	473,953	May 3	111	26	59	658
Valve. Steam-engine	N. W. Twiss	473,486	Apr. 26	2347	595	59	494
Valve. Steam-engine slide	W. C. Church	476,130	May 31	3583	902, 903, 904, 905	59	1388
Valveless engine	H. Brousseau and G. Patterson	477,041	June 14	1262	306	59	1703
Vamp marking and throating machine	G. E. Stewart and A. G. Brewer	475,952	May 31	3305	834	59	1332
Vapor-burner	J. A. Lannert and W. R. Jeavons	474,175	May 3	449	109	59	725
Vapor-burner	J. A. Lannert and W. R. Jeavons	476,543	June 7	476	113	59	1531
Vapor-burner	C. A. Pope	472,394	Apr. 5	609	154, 155	59	114
Vapor-burner or plumber's torch	H. A. Kerslake	473,150	Apr. 19	1784	450	59	363
Vaporizer	L. S. Lewis	474,640	May 10	1215	311	59	881
Vaporizer	C. W. Merrill	472,133	Apr. 5	196	52	59	36
Vaporizer	W. H. Spencer	472,645	Apr. 12	981	254	59	199
Vaporizer and burner. Hydrocarbon-oil	H. P. Roberts	477,872	June 28	2644	660, 661	59	2001
Vaporizer, inhaler, and atomizer. Combined	W. G. Flanders	475,274	May 17	2211	565, 566	59	1093
Vaporizing acids in the manufacture of white lead. Apparatus for	E. V. Gardner	477,527	June 21	2072	515	59	1874
Varnish. Apparatus for applying	J. J. Clause	472,286	Apr. 5	437	113	59	89
Vault. Grave	F. C. Rheobottom	476,171	May 31	3651	923	59	1402
Vault. Safety	G. S. Clark. (Reissue.)	11,240	May 24	2955	748, 749	59	1249
Vehicle	R. Condon	474,818	May 17	1497	382, 383	59	951
Vehicle	I. H. Johnson	473,881	Apr. 26	2982	752	59	615
Vehicle	C. A. Reade	475,891	May 31	3214	813	59	1314
Vehicle	J. Sommer	474,535	May 10	1049	268	59	849
Vehicle	J. G. Trump	477,475	June 21	1984	492	59	1856
Vehicle attachment	J. H. Akin	472,843	Apr. 12	1266	324	59	252
Vehicle-brake	W. H. Grant	472,575	Apr. 12	878	226	59	181
Vehicle-brake	M. Potter	472,075	Apr. 5	96	26	59	20
Vehicle chafe-iron	L. Thierry	476,577	June 7	525	124	59	1541
Vehicle. Electrically-propelled	F. Gardner	473,871	Apr. 26	2968	749	59	613
Vehicle-gearing	D. B. Ruple	476,822	June 14	914	224	59	1632
Vehicle-heater	E. Molloy	477,811	June 28	2529	634, 635	59	1980
Vehicle-propelling mechanism	I. B. Jones	473,843	Apr. 26	2916	732, 733	59	603
Vehicle running-gear	J. J. Black	474,113	May 3	359	86	59	706
Vehicle running-gear	W. L. Hawes	476,535	June 7	466	111	59	1529
Vehicle running-gear	J. W. Leek	475,578	May 24	2698	684	59	1201
Vehicle running-gear	T. Sutherland	472,280	Apr. 5	424	109	59	79
Vehicle-seat	J. P. Huber	475,083	May 17	1916	488	59	1033
Vehicle-seat	J. McPartland	474,097	May 3	340	81	59	703
Vehicle-seat	C. Oleson	476,811	June 14	895	219	59	1629
Vehicle. Shifting-seat	G. W. Kerr	475,059	May 17	1881	477	59	1027
Vehicle. Spring	C. C. Bradley	472,518	Apr. 12	804	206	59	166
Vehicle-spring	J. Diehl	476,921	June 14	1074	259	59	1665
Vehicle-spring	A. Jabroczky	477,419	June 21	1892	466	59	1838
Vehicle-spring	V. O. Jeffries	476,385	June 7	948	60	59	1485
Vehicle-spring	T. F. McKee	476,062	May 31	3471	876	59	1367
Vehicle-spring	W. Sharp	476,931	June 14	1094	264	59	1668
Vehicle-spring attachment	G. T. Chapman	477,622	June 21	2235	559	59	1906
Vehicle-spring bumper	M. Hall	477,114	June 14	1381	337	59	1726
Vehicle-spring coupling	W. Boughton	472,724	Apr. 12	1101	283	59	221
Vehicle spring-gear	J. Faske	475,304	May 24	2256	581	59	1117
Vehicle-starter	P. D. Van Vradenburg	474,538	May 10	1053	269, 270	59	850
Vehicle-step	S. H. Walton and J. H. Smith	477,719	June 28	2389	597	59	1955
Vehicle-top valance	T. H. Parry and C. C. Hull	474,457	May 10	932	239	59	827
Vehicle. Two-wheeled	J. A. Bilz	475,974	May 31	3341	842	59	1339
Vehicle. Two-wheeled	A. B. Keyes	475,943	May 31	3293	831	59	1330
Vehicle. Two-wheeled	R. D. Scott	474,611	May 10	1167	296	59	872
Vehicle. Two-wheeled	W. F. Sumner	474,197	May 3	482	116	59	731
Vehicle-wheel	A. Bauer	473,812	Apr. 26	2867	730	59	594
Vehicle-wheel	H. Carmont	472,856	Apr. 12	1281	328, 329	59	256
Vehicle-wheel	W. A. Fleming	476,533	June 7	463	110	59	1529
Vehicle-wheel	F. J. Huelsen and J. Nagal	477,659	June 28	2294	575	59	1934
Vehicle-wheel	G. W. Prickett	475,152	May 17	2024	511	59	1054
Vehicle-wheel	J. Ridge	473,525	Apr. 26	2411	611	59	506
Vehicle-wheel	I. A. Russell	476,415	June 7	295	69	59	1495
Vehicle-wheel	E. A. Thuston	477,473	June 21	1981	492	59	1855
Vehicle-wheel	W. W. Valentine	475,906	May 31	3232	817	59	1318
Vehicle-wheel. Pneumatic	J. C. Hall	476,764	June 7	803	197, 198	59	1508
Vehicle-wheel spoke connection	G. E. Elliott	477,203	June 21	1538	376	59	1771
Vehicle-wheels. Device for packing	F. G. Davis	476,522	June 7	449	107	59	1525
Vehicles. Supplementary seat for	W. H. Tillou	475,954	May 31	3309	835	59	1333
Velocipede	W. Andrews	475,959	May 31	3318	837	59	1334
Velocipede	W. J. Edwards	475,207	May 17	2110	534	59	1072
Velocipede	W. J. Edwards	475,445	May 24	2482	633, 634	59	1160
Velocipede	J. J. Hammer	477,540	June 21	2089	519, 520	59	1878
Velocipede	E. Lisle	476,884	June 14	1014	246	59	1652
Velocipede	D. J. Moody	473,196	Apr. 19	1858	468	59	376
Velocipede-crank	F. Westwood	476,911	June 14	1060	256	59	1661
Velocipede driving mechanism	F. G. Adams and F. T. Henshaw	477,095	June 14	1358	330, 331	59	1722

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Velocipede. Ice-	G. W. Agin	475,744	May 31	2959	751	59	1265
Velocipede. Ice-	J. C. Stevens	473,434	Apr. 19	2249	566	59	454
Velocipede. Ice-	J. F. Zalsman	476,857	June 14	970	235	59	1643
Velocipede. Land and water	T. G. P. Vogt	477,160	June 14	1453	356, 357	59	1740
Velocipede. Railway-	G. W. Miller	473,586	Apr. 26	2532	639	59	530
Velocipede-saddle	A. L. Garford	473,388	Apr. 19	2190	550	59	442
Velocipede-saddle	E. G. Latta	472,732	Apr. 12	1112	285, 286	59	223
Velocipede-saddle	W. D. McCoy	476,479	June 7	393	90, 91	59	1513
Velocipede-saddle	E. Smith	477,277	June 21	1668	407	59	1794
Velocipede-wheel	C. D. Rice	473,408	Apr. 19	2216	556	59	447
Velocipede-wheel	J. B. Robertson	477,962	June 28	2774	695	59	2028
Velocipede-wheel	H. J. Swindley	475,828	May 31	3104	786, 787	59	1293
Velocipedes. Clamp for luggage-carriers for	R. D. Perry	476,948	June 14	1125	270	59	1674
Velvets and other pile fabrics. Machine for finishing	E. T. and E. H. Marble	474,396	May 10	823	215	59	907
Vending apparatus. Coin-actuated	G. Jehle	475,567	May 24	2663	681	59	1198
Vending device. Coin operated	T. H. Bedell	474,588	May 10	1134	289	59	906
Vending-machine	J. A. Bowyer and U. L. Hull	476,513	June 7	438	103	59	1523
Vending-machine	A. M. Docter	477,356	June 21	1799	441	59	1819
Vending-machine	W. G. Latimer	475,281	May 17	2223	570	59	1095
Vending-machine. Automatic	R. W. Uhlig	477,029	June 14	1245	302	59	1700
Vending machine. Coin-actuated	R. Moran	472,507	Apr. 5	785	201	59	149
Veneer box	J. T. Ferres	476,622	June 7	598	143	59	1556
Veneer dish-blanks. Machine for cutting	C. H. Treat and A. B. Banghart	477,086	June 14	1346	327, 328	59	1720
Veneer-machine	W. H. Williams	472,839	Apr. 12	1261	323	59	251
Veneering lumber. Implement for	W. E. Brock	476,782	June 14	841	208	59	1618
Veneering-machine	C. Sprewitz	477,158	June 14	1447	355, 356	59	1740
Ventilating apparatus. Grain-bin	F. Morton	474,676	May 10	1277	325	59	893
Ventilation, &c. Device for producing blasts of air for	J. T. Lowe	472,544	Apr. 12	840	214	59	173
Ventilation. System of	J. F. Duffy	472,163	Apr. 5	238	63	59	45
Ventilator: *See* Car-ventilator. Hat-ventilator.							
Ventilator	F. Duesterwald	476,134	May 31	3588	906	59	1389
Ventilator or chimney-cowl	R. M. Pancoast	476,682	June 7	681	165	59	1572
Vessel	F. L. Norton	473,406	Apr. 19	2213	555, 556	59	447
Vessel. Air-tight	G. A. Lawrence	472,460	Apr. 5	705	180	59	134
Vessel-loading apparatus	D. C. Shepherd and L. C. Ballard	475,814	May 31	3078	779	59	1288
Vessel. Marine	G. G. Airey and W. W. Uhl	475,172	May 17	2055	517	59	1060
Vessels. Automatic course, speed, and time recorder for	J. J. Townsend	477,284	June 21	1682	412	59	1797
Vessels. Construction of	O. Congelton	472,859	Apr. 12	1295	330	59	257
Vessels. Construction of	A. C. A. Holzapfel	476,643	June 7	628	152	59	1561
Vessels. Means for towing	J. P. Manton	473,471	Apr. 26	2324	588	59	490
Veterinary dental forceps	D. M. Scheffer	476,688	June 7	691	170	59	1574
Veterinary impregnator	C. C. Lyford	473,632	Apr. 26	2600	654	59	542
Veterinary mouth-speculum	C. S. Elliott	477,838	June 28	2588	648	59	1991
Veterinary parturition-hook	E. H. Graves	472,536	Apr. 12	831	212	59	171
Veterinary tooth-cutter	J. Hamlin	475,940	May 31	3287	829	59	1329
Violin	G. Abrams	473,439	Apr. 26	2257	569	59	477
Violin-peg	G. H. Rowe	473,347	Apr. 19	2110	530	59	427
Violins, tenor-viols, and bass-viols. Bass-bar for	J. H. Tibbits	476,907	June 14	1053	255	59	1660
Vise	C. Ernst	475,760	May 31	2980	755, 756	59	1269
Vise	J. W. McIntyre	472,311	Apr. 5	478	123	59	90
Vise	H. C. Rasner	473,343	Apr. 19	2105	528	59	426
Vise. Bench-	M. G. Lewis	472,674	Apr. 12	1025	264	59	206
Voltaic body-battery	W. F. Potter	477,913	June 28	2706	677	59	2014
Voting-booth	J. M. Patton	472,907	Apr. 12	1356	349	59	272
Voting-booth	I. D. Vandecar	475,641	May 24	2791	707	59	1221
Voting-machine	G. A. Cline and W. Trimble	473,913	May 3	35	7, 8	59	643
Wagon-body	R. Condon	474,817	May 17	1496	382	59	951
Wagon-bolster	L. Burg	475,292	May 24	2237	576	59	1113
Wagon-brake	A. Kleinsorge	476,658	June 7	650	158	59	1566
Wagon-brake	T. P. Randall	476,553	June 7	490	117	59	1534
Wagon-brake	J. A. Whitcomb	477,979	June 28	2796	700, 701	59	2033
Wagon. Charging-	C. S. Morse	476,547	June 7	483	115	59	1533
Wagon-covering	J., W. H., and R. J. Campbell	473,292	Apr. 19	2013	506	59	408
Wagon. Dumping-	C. F. Hinman and M. G. Bunnell	475,312	May 24	2264	583, 584	59	1117
Wagon. Dumping-	W. G. Stewart	474,872	May 17	1589	404, 405	59	969
Wagon-jack	L. B. Reams	475,021	May 17	1827	463	59	1016
Wagon-jack	G. J. Schlosser	476,417	June 7	297	70	59	1496
Wagon-lock	W. McCormack and R. M. Patton	477,330	June 21	1755	429, 430	59	1812
Wagon running-gear	C. E. Holley	472,053	Apr. 5	64	16	59	15
Wagon running-gear	J. M. Holler	472,295	Apr. 5	450	116	59	85
Wagon running-gear	L. D. Hurd	473,577	Apr. 26	2511	634	59	527
Wagon-seat	G. E. Daniel	473,211	Apr. 19	1881	473	59	381
Wagon stop-block	J. Pomroy	476,065	May 31	3475	876	59	1368
Wagon-tops. Removable folding frame for	W. Leech	474,390	May 10	817	213	59	806
Wagon, velocipede, and baby-walker. Combined child's	D. F. Long	474,138	May 3	388	94	59	713
Waist and suspenders. Combined	H. M. Clark	477,648	June 28	2280	571	59	1931
Waistcoat-protector	W. G. Howard and C. E. North	478,010	June 28	2854	714	59	2043
Waiter-signal	M. V. B. Ethridge	475,937	May 31	3283	828	59	1328
Walking-stick, &c	J. J. Him	476,015	May 31	3397	857	59	1351

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wall-covering	J. W. Bates	476,360	June 7	213	52	59	1477
Wall-facing	M. Ams	476,354	June 7	198	47	59	1474
Wall-paper and for other purposes. Composition for cleaning	J. E. Devine	476,788	June 14	850	.....	59	1690
Wall-paper cutter	T. Berney	474,899	May 17	1630	416	59	978
Wall-paper, &c. Machine for trimming	A. Allen	473,411	Apr. 19	2220	557	59	448
Wall-paper-trimming machine	F. W. Moeller	475,134	May 17	2000	506	59	1049
Walls. Construction of	M. S. Millard	475,563	May 24	2719	689	59	1206
Wash-board	M. C. Burke	475,663	May 24	2925	715	59	1227
Wash-boilers. Draining-bucket for	G. K. Knowlton	475,571	May 24	2689	682	59	1199
Wash-stand and chamber-pail. Combined	F. H. Brahe	475,052	May 17	1872	475	59	1025
Wash-stand and close stool. Combination	L. R. Lewing	472,673	Apr 12	1025	264	59	206
Washer: *See* Axle-washer. Nut-locking washer. Bottle-washer. Paper-stock washer. Leather washer.							
Washer and nut-lock. Combined	L. Edmiston	474,921	May 17	1506	385	59	953
Washer-plate and nut-lock. Combined	J. Scott	473,066	Apr. 19	1657	422	59	340
Washing compound	J. Odell	474,262	May 3	576	.....	59	750
Washing-machine	G. V. Blackstone	472,979	Apr. 19	1485	379, 380	59	309
Washing-machine	E. F. Chapman	473,140	Apr. 19	1755	443	59	357
Washing-machine	W. R. Chisham and S. E. Abbott	477,646	June 28	2278	571	59	1930
Washing-machine	S. Cook	473,914	May 3	45	8	59	645
Washing-machine	B. F. Crisenberry	477,246	June 21	1625	396, 397	59	1786
Washing-machine	J. M. Engelhardt	476,995	June 14	1192	289	59	1688
Washing-machine	G. L. Fisher	477,998	June 28	2833	709	59	2040
Washing-machine	S. E. Gibson	478,004	June 28	2849	712	59	2042
Washing-machine	O. F. Glidden	477,752	June 28	2447	611	59	1965
Washing-machine	B. S. Kerr	474,746	May 10	1379	349	59	914
Washing-machine	C. F. Lane	477,013	June 14	1220	296	59	1694
Washing-machine	J. J. Otto	475,339	May 24	2318	594	59	1130
Washing-machine	H. H. and S. D. Palmer	473,521	Apr. 26	2407	610	59	505
Washing-machine	F. Plumb	477,334	June 21	1759	431	59	1812
Washing-machine	J. D. Reed	472,227	Apr. 5	346	89	59	65
Washing-machine	S. H. Schmuck	477,578	June 21	2141	532	59	1888
Washing-machine	A. H. Shambaugh	477,073	June 14	1326	321	59	1715
Washing-machine	J. H. Taylor	477,918	June 28	2713	679	59	2015
Washing-machine	F. M. Webster	477,162	June 14	1457	357	59	1742
Washing-machine	F. C. Weiman	472,937	Apr. 12	1406	359	59	281
Washing-machines, &c. Mechanism for operating	A. Mendenhall	474,915	May 17	1647	420	59	982
Washing-machines. Waste-water gate for	L. Dwight and A. A. Jepson	472,530	Apr. 12	826	210	59	170
Waste-pipe trap	F. N. Du Bois	475,546	May 24	2650	674	59	1192
Waste-trap	G. F. Brown	477,499	June 21	2021	501	59	1863
Watch-bow fastener	F. Mink	472,764	Apr. 12	1159	297	59	232
Watch-case	W. H. Fitz Gerald and A. Beucke	475,209	May 17	2113	534, 535	59	1073
Watch-case pendant	N. T. Mills	475,064	May 17	1891	480	59	1028
Watch-case pendant	C. Schwitter	477,338	June 21	1765	432	59	1814
Watch-case spring	J. E. Ketchem and T. C. Nixon	476,748	June 7	781	192	59	1593
Watch-cases. Ornamenting	C. Wilhelm	472,490	Apr. 5	752	191	59	143
Watchmaker's gage	E. Boeton	473,286	Apr. 19	2005	504	59	406
Watchmakers' pliers	D. Mendelson	474,257	May 3	571	140	59	749
Watchmaker's tool	C. H. Miller	477,432	June 21	1913	471	59	1841
Watch-regulator	S. E. Kochendarfer	473,422	Apr. 19	2236	562	59	451
Watch-regulator indicator	W. A. Allen	474,789	May 10	1448	367	59	928
Watch. Stem winding and setting	E. H. Flint	472,987	Apr. 19	1504	383	59	313
Watch. Stop-	A. Reymond	474,100	May 3	344	82	59	703
Watch-winding mechanism	N. Silberberg	473,675	Apr. 26	2662	670	59	554
Watches. Banking-pin for	T. Gill	476,956	June 14	1138	275	59	1677
Watches. Making bimetallic balances for	D. H. Church	474,590	May 10	1136	290	59	866
Water-bags. Valved stopper for	G. H. F. Schrader	476,421	June 7	301	70	59	1497
Water-channels. Method of and apparatus for lining	C. H. Lyon	473,009	Apr. 19	1535	392	59	319
Water-circulator	P. and H. Bloomsburg	472,915	Apr. 12	1372	351, 352	59	275
Water-closet	J. H. Hamilton	476,011	May 31	3392	856	59	1350
Water-closet	R. Morgan and J. Menzies	477,867	June 28	2634	659	59	2000
Water-closet	A. O'Brien	474,682	May 10	1286	327, 328	59	895
Water-closet apparatus	W. Bunting, Jr	474,985	May 17	1773	448	59	1005
Water-closet attachment and coupling	J. D. Abraham	477,485	June 21	2001	497	59	1859
Water-closet bowl	J. C. Beekman. (Reissue)	11,242	June 7	808	199	59	1599
Water-closet bowls. Flushing device for	A. Cochran and E. C. Stover	475,537	May 24	2636	670	59	1189
Water-closet cistern	G. W. Aldrich and J. Hueston	475,371	May 24	2368	606	59	1139
Water-closet cover	M. Schubert	473,714	Apr. 26	2720	684, 685	59	565
Water-closet flushing apparatus	A. O'Brien	474,683	May 10	1287	328, 329	59	896
Water-closet flushing cistern or tank	J. Demarest	475,489	May 24	2556	651	59	1174
Water-closet reservoir	W. S. Cooper	474,217	May 3	511	123	59	736
Water-closet. Siphon	J. E. Boyle	476,867	June 14	963	239	59	1646
Water-closet tank or cistern	J. H. Tabele	473,980	May 3	149	35	59	666
Water-closet-tank siphon	R. Morgan	475,512	May 24	2584	660	59	1181
Water-closet tanks. Siphon for	P. Harvey	477,841	June 28	2582	650	59	1992
Water-closet water-supply apparatus	G. K. Dearborn	474,372	May 10	792	206	59	801
Water-closets or other receptacles. Device for automatically closing the covers of	W. R. Webster	475,170	May 17	2051	517	59	1059
Water-cooling apparatus	H. B. Ford	477,893	June 28	2676	669	59	2007
Water-elevator	W. Claypool	472,602	Apr. 12	919	236, 237	59	188
Water-elevator	H. Harris	473,573	Apr. 26	2507	633	59	525
Water-engine	H. Jerger	477,256	June 21	1638	399, 400	59	1769

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Water-heater	H. B. Joyce	472,128	Apr. 5	189	51	59	35
Water-heater. Service-pipe	J. Krumscheid	473,762	Apr. 26	2790	701	59	579
Water heating and circulating apparatus	H. A. Jonee and J. E. Marcy	474,961	May 17	1727	439	59	997
Water-heating device	T. Rogers	476,949	June 14	1126	270, 271	59	1674
Water indicator. Shallow	A. G. Croseman	474,221	May 3	521	127	59	738
Water-lifting apparatus. Automatic	I. T. Dyer	474,338	May 3	731	191	59	777
Water-meter. Disk	J. Thomson	476,102	May 31	3534	889	59	1378
Water-meter. Positive proportional	J. Thomson	475,096	May 31	3521	886	59	1377
Water-meter. Positive proportional	J. Thomson	476,100	May 31	3532	888	59	1378
Water-meter. Proportional	J. Thomson	476,094	May 31	3519	886	59	1376
Water-meter. Proportional	J. Thomson	476,097	May 31	3594	896	59	1377
Water-meter. Proportional	J. Thomson	476,099	May 31	3530	888	59	1378
Water-meter. Rotary	T. Woollens, Jr.	476,104	May 31	3542	891	59	1380
Water-meters. Apparatus for calibrating	J. Thomson	473,046	Apr. 19	1600	407	59	330
Water-motor	A. B. Murray	476,095	May 31	3520	886	59	1376
Water-motor	S. D. Shepperd	474,851	May 17	1557	397	59	962
Water motor. Running	J. E. Belt	474,347	May 3	745	194	59	780
Water or gas meter	J. and H. M. Goodman	472,467	Apr. 5	718	183	59	136
Water-power	A. C. Mather	474,241	May 3	548	134, 135	59	744
Water-purifier	A. Pennell	473,941	May 3	92	21	59	654
Water-purifier and boiler-cleaner	W. V. Walker	474,685	May 10	1289	329	59	896
Water. Purifying	C. G. Collins	477,615	June 21	2211	549	59	1901
Water-purifying apparatus	L. S. Lewis	478,048	June 28	2911	727	59	2054
Water-raising mechanism	J. H. McGowan	472,641	Apr. 12	975	253	59	199
Water-supply system	J. W. Fisher	473,949	May 3	104	24	59	657
Water-trap	J. T. Brien	476,943	May 31	3436	868	59	1359
Water-tube boiler	O. C. Barber	476,224	May 31	3748	947	59	1420
Water-tube boiler	M. H. Plunkett	473,443	Apr. 26	2272	573	59	480
Water-tube boiler	A. F. Yarrow	474,645	May 10	1222	312, 313	59	882
Water-wheel	C. W. Nicholson	472,777	Apr. 12	1176	301	59	235
Water-wheel	J. H. Pierce	473,773	Apr. 26	2802	704	59	582
Watering stock. Device for	R. C. Andersen	474,098	May 3	341	82	59	703
Waterproofing compound	J. Stewart	474,621	May 10	1187	301	59	876
Wave-power motor	A. Rosenholz	475,713	May 24	2899	.....	59	1240
Wear. Device for taking up	H. A. Beidler	472,398	Apr. 5	614	154	59	115
Weather-board gage	R. A. Underwood	477,831	June 28	2574	644	59	1988
Weather-strip	E. G. Duryea	473,098	Apr. 19	1673	425	59	343
Weather-strip	J. H. Hull	475,391	May 24	2400	615	59	1145
Weather-strip. Automatic	W. H. Orton, J. D. Hanes, and G. H. Orton.	476,646	June 7	633	158	59	1562
Weather-vane indicator	C. J. Kerr	474,920	May 17	1656	423	59	983
Wedge. Ax or tool	G. P. Morrill	477,551	June 21	2107	524	59	1881
Wedging device for tool-handles	F. H. Thompson and G. P. Tormey	477,202	June 21	1649	408	59	1791
Weed and root puller	W. W. Wheelock	477,082	June 14	1341	325	59	1718
Weed-cutter	W. A. McCoy	473,890	Apr. 26	3003	757	59	620
Weed-cutter for listed corn	M. A. Chamberlain	474,309	May 10	828	217	59	806
Weed-cutter. Vineyard	D. D. Dewey	473,912	May 3	34	7	59	642
Weeder	T. L. Davis	477,298	June 21	1704	417	59	1901
Weeder and cultivator	W. H. M. Cate	472,749	Apr. 12	1139	292	59	228
Weft fork or feeler	R. Rigby	473,868	Apr. 26	2959	746	59	611
Weigher. Automatic grain	W. Butler	474,780	May 10	1434	364	59	926
Weighing and advertising device. Combined	D. W. McLaughlin	477,508	June 21	2033	504	59	1865
Weighing and bagging machine	H. E. Hawk	475,968	May 31	3331	840	59	1337
Weighing, lifting, measuring, and electric machine. Combined	A Sundh	472,455	Apr. 5	697	178, 179	59	132
Weighing liquors. Apparatus for	E. Y. Gordon	477,613	June 21	2204	547, 548	59	1900
Weighing machine. Grain	J. Sprinkle	472,535	Apr. 12	830	212	59	171
Weighing tacks. Machine for automatically	J. Keith	476,427	June 7	314	72	59	1498
Weir. Automatic measuring	A. Johnson	474,777	May 10	1427	363	59	924
Welding apparatus. Hoop	C. L. Coffin	472,127	Apr. 5	188	50	59	35
Welding apparatus. Induction-discharge protector for	H. Lemp	475,667	May 24	2828	716	59	1227
Welding compound	H. B. Strant	473,514	Apr. 26	2395	606, 607	59	503
Welding. Electric	C. L. Coffin	475,355	May 24	2342	.....	59	1134
Welding metal. Process of and apparatus for	C. E. Lipe and J. A. Prose	477,101	June 14	1367	333	59	1724
Well boring and prospecting	G. A. Miller	473,884	Apr. 26	2985	753	59	616
Well-boring apparatus	A. W. Morgan	476,757	June 7	793	195	59	1595
Well drilling apparatus. Artesian	P. Yorke	476,475	June 7	382	88, 89	59	1511
Well-drilling machinery	J. G. Lee	475,913	May 31	3244	819	59	1320
Well-fishing tool	M. Hall	476,467	June 7	370	86	59	1509
Well pipes out of the ground. Machine for pulling driven	W. J. Hamilton	477,178	June 14	1487	364	59	1748
Wells. Apparatus for boring Artesian	F. O. Brown	476,196	May 31	3691	932, 933	59	1409
Wells. Sand-strainer for deep	J. H. King	472,493	Apr. 5	758	193	59	144
Wheel:		478,061	June 28	2933	732	59	2058

See Barrow-wheel. Bicycle-wheel. Buffing-wheel. Car-wheel. Corn-planter wheel. Cycle-wheel. Fifth-wheel. Fly-wheel. Gear-wheel. Insulated gear-wheel. Metal wheel. Tide and current wheel. Vehicle-wheel. Velocipede-wheel. Water-wheel. Wind-wheel.

Wheel	W. I. Bunker	477,502	June 21	2026	502	59	1864
Wheel	W. I. Bunker	477,505	June 21	2029	503	59	1865
Wheel	W. I. Bunker	477,506	June 21	2030	503	59	1865
Wheel	L. J. Crecelius	473,728	Apr. 26	2742	690, 691	59	570
Wheel	F. S. Derr and G. W. Hess	477,740	June 28	2423	605	59	1961

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Wheel	F. S. Miller	475,510	May 24	2592	659	59	1180
Wheel	C. J. Moore	475,464	May 24	2517	641	59	1166
Wheel box and axle	L. Harris	476,198	May 31	3697	934	59	1410
Wheel box. Vehicle	L. Harris	474,245	May 3	553	136	59	745
Wheel-chock	J. H. Hayward	472,997	Apr. 19	1519	388	59	315
Wheel-guard	W. L. Bunker	477,504	June 21	2028	503	59	1864
Wheel lift and washer. Combined	F. A. Lyman	474,394	May 10	821	214	59	806
Wheel-locking device. Electric	G. W. Blanchard	472,329	Apr. 5	507	131	59	95
Wheels. Detachable fender for vehicle	E. B. Smead	473,971	May 3	138	31	59	664
Wheels. Manufacture of metal	J. R. Little	472,893	Apr. 12	1338	343, 344	59	268
Whetstone-holder	L. C. Strong	472,685	Apr. 12	1037	268	59	208
Whiffletree	G. M. Ayers	476,117	May 31	3563	896	59	1384
Whiffletree	S. E. Burke	472,853	Apr. 12	1277	327	59	235
Whiffletree	E. Halman	475,730	May 24	2934	744	59	1245
Whiffletree	W. H. Holsclaw	473,226	Apr. 19	1910	481	59	387
Whiffletree	C. H. McBride	475,699	May 24	2878	727	59	1236
Whiffletree	H. Poth	474,565	May 10	1102	281	59	860
Whiffletree attachment	J. A. Millian	474,026	May 3	224	54	59	681
Whiffletree-center	H. Swan	478,033	June 28	2891	722	59	2050
Whiffletree-hook	T. Andress	472,491	Apr. 5	754	192	59	143
Whiffletree-hook	J. Gross	473,311	Apr. 19	2043	513	59	414
Whip	F. P. Couse	473,695	Apr. 26	2697	678	59	561
Whip	H. S. Cushman	472,918	Apr. 12	1378	353	59	277
Whip	H. S. Cushman	472,919	Apr. 12	1378	353	59	277
Whip	F. Foley	472,869	Apr. 12	1300	334	59	260
Whip-socket	A. S. Kibby	472,543	Apr. 12	836	214	59	173
Whip-socket and lock for lap-robes. Combined	A. S. Kibby	475,982	May 31	3353	845	59	1341
Whirligig	A. Moe	475,594	May 24	2721	690	59	1206
Whistle. Chime	H. R. Frisbie	472,946	Apr. 12	1416	362	59	283
Whistle. Steam	E. Lunkenheimer	476,472	June 7	375	87	59	1510
Wick adjuster. Lamp	A. J. McAdam	476,477	June 7	391	90	59	1512
Wick. Lamp	W. F. Draper	472,750	Apr. 12	1141	292	59	228
Wick-raiser	H. E. Shaffer	474,488	May 10	971	250	59	835
Wick-trimmer	D. L. Andrews	476,114	May 31	3557	895	59	1383
Wick-tube and burner-plate. Design for a	W. H. Clemes. (Reissue)	11,239	May 17	.....	573	59	1098
Winch	J. F. Appleby	475,376	May 24	2374	607	59	1140
Winding-machines. Traverse-motion for bobbins in	J. A. Murphy	472,383	Apr. 5	592	151	59	111
Windlasses. Friction device for	T. Symonds	472,564	Apr. 12	866	222, 223	59	179
Windmill	E. Downs	476,875	June 14	996	242	59	1649
Windmill	A. Johnson	475,869	May 31	3170	804	59	1307
Windmill	W. S. Lamb	475,872	May 31	3172	805	59	1307
Windmill	E. Lamphear	474,839	May 17	1540	392	59	958
Windmill	T. Snow	472,557	Apr. 12	857	220	59	177
Windmill	A. Wallace	473,982	May 3	152	36	59	667
Windmill attachment	A. M. Clark	475,009	May 17	1808	459	59	1011
Windmill-governor	T. L. Regester	472,549	Apr. 12	847	217	59	175
Windmills. Shaft-bearing for	L. W. Noyes	472,809	Apr. 12	1220	313	59	244
Wind-motor	J. Hoffman and H. F. Turner	477,544	June 21	2093	521	59	1879
Wind-motor	H. Winge	476,716	June 7	729	180	59	1582
Window	V. Schirmer	476,081	May 31	3498	881, 882	59	1373
Window	O. Wagner	472,239	Apr. 5	363	93	59	68
Window-chair	M. Metal	472,898	Apr. 12	1346	345	59	269
Window-cleaner's safety apparatus	H. K. Whitner	474,586	May 10	1131	289	59	865
Window-frame	E. C. Conway	475,438	May 24	2471	630	59	1157
Window-frame	C. Dahlem	476,612	June 7	583	139	59	1552
Window-frame	H. Goese	472,757	Apr. 12	1150	295	59	230
Window-platform	P. Otto	477,602	June 21	2181	541	59	1896
Window-screen	J. S. Lester	476,154	May 31	3622	915	59	1397
Window-screen	A. G. Macdonell and W. Y. Gambee	474,668	May 10	1258	322	59	890
Wind-vane indicator. Electric	H. J. Haight	474,735	May 10	1302	345, 346	59	911
Wind-wheel	W. B. Myers	472,763	Apr. 12	1157	297	59	232
Wind-wheel	S. L. Smolley and W. H. Bonwell, Jr	474,308	May 3	670	172, 173	59	766
Winker-brace support and buckle	C. C. Schwaner	473,022	Apr. 19	1560	397	59	323
Winnowers. Shaking sieve for	E. G. N. Salenius	472,275	Apr. 5	418	107, 108	59	78
Wire-cloth. Galvanizing or tinning	C. B. Rumsey	474,567	May 10	1104	282	59	861
Wire cords and cables. Machine for making	W. H. H. Sisum	477,784	June 28	2468	622, 623	59	1973
Wire-gage	C. J. Niller	476,057	May 31	3462	874	59	1365
Wire mat	T. C. McPherson	475,598	May 24	2727	691	59	1207
Wire mat	T. C. McPherson	475,599	May 24	2728	691	59	1207
Wire ornaments. Manufacture of	M. Haendler	472,758	Apr. 12	1152	295	59	230
Wire reel and stretcher	G. E. Dixon	476,525	June 7	453	108	59	1526
Wire-screen-cloth holder	C. Fach and F. Hottes	474,577	May 10	1120	286	59	863
Wire shelf-bracket	H. L. Bradley	472,285	Apr. 5	436	113	59	82
Wire-stretcher	G. A. Dean	474,224	May 3	526	128	59	739
Wire-stretcher	G. P. Kidd	472,927	Apr. 12	1391	356	59	279
Wire-stretcher	H. J. Rohr	475,892	May 31	3215	813	59	1314
Wire-stretcher	H. S. Shaw	473,527	Apr. 26	2413	612	59	506
Wire stretcher and tension device	H. H. Van Ormer	476,338	June 7	176	42	59	1471
Wire-stretching device	J. B. Cleaveland	475,383	May 24	2390	610	59	1143
Wire-supporting reel	F. H. Speed	473,528	Apr. 26	2414	612	59	506
Wire switch. Overhead	W. S. Livengood	473,160	Apr. 19	1786	450	59	364
Wire-tension device	A. O. Hoyt and P. W. Leffler	475,504	May 24	2584	658	59	1179
Wire-tightener	A. E. Kintner	476,655	June 7	646	157	59	1565
Wire-twister. Electric	M. Berdan	473,899	May 3	5	2	59	638
Wires. Device for joining intersecting	G. D. Borton and E. E. Angell	475,193	May 17	2088	528	59	1068
	G. M. and H. R. Lamb	472,059	Apr. 5	72	20	59	16

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Wires. Seal for leading-in	H. D. Burnett and S. E. Doane	475,998	May 31	3373	850	59	1345
Wires. Swivel pull-off for overhead	C. B. Elliott	476,193	May 31	3688	932	59	1408
Wood and metal work. Ornamental	A. B. Cameron	473,185	Apr. 19	1844	464	59	373
Wood-graining machine	W. W. Grier	472,260	Apr. 5	398	108	59	74
Wood-cutting machine	B. Damus	477,201	June 21	1536	375	59	1771
Wood-cutting machine	W. Merrill	475,881	May 31	3201	809	59	1312
Wood. Cutting plates, dishes, or bowls from	C. Spofford	474,765	May 10	1407	357	59	920
Wood for seats and backs. Apparatus for and method of gaining	A. E. Preston	476,305	June 7	116	28	59	1461
Wood-graining machine	J. Shannon	474,307	May 3	668	171 / 172	59	765
Wood-joint	J. N Hieronymus	477,118	June 14	1387	338	59	1727
Wood. Machine for cutting plates or dishes from	C. Spofford	474,766	May 10	1408	357 / 358	59	920
Wood to prevent decay. Treating	M. A. Luckenbach	473,705	Apr. 26	2710	682	59	563
Wood-turning machine	A. Stoner and F. M. Pennebaker	476,696	June 7	703	172 / 173	59	1576
Woodwork-joint	G. Brinkerhoff	475,997	May 31	3372	850	59	1345
Woodworking machine	L. Luger	475,782	May 31	3014	764	59	1276
Wooden knobs. Machine for fluting	E. G. and W. Hess	474,383	May 10	807	211	59	804
Wool, &c. Apparatus for treating	G. L. P. Eyre and T. J. Hopkins	475,106	May 17	1958	496	59	1041
Work-holder and drill. Combined	J. A. Chabot and J. Jacobs	475,664	May 24	2826	715	59	1227
Work-holding device	L. Goddu	475,729	May 24	2933	744	59	1245
Worm and worm-shaft	O. J. Beale	472,517	Apr. 12	802	206	59	165
Woven fabric	I. McCallum	475,466	May 24	2519	642	59	1167
Woven fabric	A. Urbahn	474,883	May 17	1604	410	59	973
Woven fabric and weaving the same	G. H. Harvey	472,316	Apr. 5	330	85	59	62
Wrapping-machine	S. D. Tripp	472,302	Apr. 5	303	79, 80	59	57
Wrench: *See* Pipe-wrench. Socket-wrench. Pipe and rod wrench.							
Wrench	A. B. Carll	474,810	May 17	1487	380	59	950
Wrench	W. Church	474,967	May 17	1776	449	59	1005
Wrench	P. Gendron	476,629	June 7	610	146	59	1558
Wrench	L. C. Hurd	474,741	May 10	1374	348	59	913
Wrench	S. Hussey	475,450	May 24	2491	635	59	1161
Wrench	F. B. Jordan	476,465	June 7	367	85	59	1508
Wrench	C. Leach	473,007	Apr. 19	1534	391	59	318
Wrench	A. K. Lovell	476,767	June 7	807	199	59	1508
Wrench	B. B. Lowe	474,477	May 10	955	246	59	831
Wrench	E. W. Rider	477,228	June 21	1567	389	59	1779
Wrench	S. B. Rittenhouse	474,566	May 10	1103	282	59	861
Wrench	J. Ryan	476,079	May 31	3494	881	59	1372
Wrench	F. W. Simmons	476,693	June 7	700	171	59	1576
Wrench	J. B. Smith	473,026	Apr. 19	1567	399	59	325
Wrench	J. J. Tomey	476,841	June 14	942	229	59	1638
Wrench	J. A. Zander	473,048	Apr. 19	1602	408	59	330
Wrist-plate	J. Barclay	473,810	Apr. 26	2864	719	59	594
Yarn-clearer	J. M. Weaver	477,031	June 14	1348	302	59	1700
Yeast. Making	J. Blumer and C. Schlagenhaufer	474,943	May 17	1695	.....	59	991
Yeast. Manufacture of	J. Blumer and C. Schlagenhaufer	474,942	May 17	1693	.....	59	991
Yoke. Neck	J. Mallon	474,749	May 10	1384	350	59	915
Yoke. Neck	G. H. Young	475,841	May 31	3128	792	59	1297
Zinc-foil and manufacturing the same	A. Sichel	473,790	Apr. 26	2835	.....	59	588
Zinc-foil and manufacturing the same	A. Sichel. (Reissue.)	11,241	May 24	2956	.....	59	1250
Zinc from sulphite of zinc by electrolysis. Obtaining metallic	T. Lange	475,402	May 24	2414	616	59	1147
Zinc. Producing metallic	P. C. Choate	473,186	Apr. 19	1844	464	59	373
Zither	V. Bessier	477,493	June 21	2013	499	59	1661

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Advertising-coupon	G. H. Drew	21,584	May 31	59	1424
Badge	C. A. Ball	21,643	June 21	59	1912
Badge	C. A. Ball	21,644	June 21	59	1912
Badge	M. C. Barbero	21,585	May 31	59	1424
Badge	W. F. Bowen	21,443	Apr. 5	59	152
Badge	D. Heer	21,574	May 24	59	1252
Badge	C. F. Irons	21,512	May 3	59	784
Badge	W. K. Kubin	21,573	May 24	59	1252
Badge	L. A. Piaget	21,642	June 21	59	1912
Badge	E. M. Requa	21,618	June 7	59	1601
Badge	E. H. Richards	21,640	June 21	59	1911
Badge	E. H. Richards	21,641	June 21	59	1911
Badge	J. L. Terhune	21,608	June 7	59	1600
Baker. Potato	C. H. Beeman	21,597	May 31	59	1426
Bedspread or similar article	F. B. Heald	21,535	May 10	59	935
Bird-cage	J. H. Andrews	21,569	May 24	59	1252
Bottle	G. W. Bean	21,553	May 24	59	1250
Bottle	J. P. Cherry	21,500	Apr. 26	59	624
Bottle	L. Kahn	21,669	June 28	59	2065
Bottle	M. Oberfelder	21,509	Apr. 26	59	625
Bottle	C. Richter	21,495	Apr. 19	59	458
Bottle	G. O. Sanborn	21,524	May 10	59	934
Bretzel	J. Pfenninger	21,450	Apr. 5	59	152
Brick or building-block	J. Crossley	21,631	June 21	59	1911
Brush or hand-mirror. Back for a	H. A. Weihman	21,629	June 21	59	1910
Bucket-ear	L. D. Berger	21,567	May 24	59	1251
Buckle	L. B. Prahar	21,448	Apr. 5	59	152
Buckle	J. A. Traut	21,517	May 3	59	784
Building-block	E. H. Lewis	21,592	May 10	59	933
Burial-casket	L. K. Smedes	21,582	May 24	59	1253
Button	A. A. Brunswick	21,449	Apr. 5	59	152
Button, &c. Cuff	E. T. Corby	21,586	May 31	59	1424
Calendar and inkstand holder	E. A. Hemphill	21,587	May 31	59	1424
Carpet-stretcher	J. A. and M. A. Irwin	21,674	June 28	59	2066
Chain. Watch	A. Rickert	21,557	May 24	59	1250
Chair	F. K. Ward	21,503	Apr. 26	59	624
Chandelier-pendant	M. A. Small	21,543	May 17	59	1098
Cigar-tray	G. H. Wilcox	21,670	June 28	59	2065
Coffee-mill box	C. Morgan and M. Redlinger, Jr	21,619	June 7	59	1601
Coffin-handle	O. McCarthy	21,499	Apr. 26	59	624
Coffin-plate	O. McCarthy	21,508	Apr. 26	59	625
Comb-case	T. J. Whitney	21,456	Apr. 12	59	292
Cornice	A. Carlewitz	21,579	May 24	59	1253
Cornice	A. Carlewitz	21,580	May 24	59	1253
Cornice	A. Carlewitz	21,623	June 21	59	1910
Cornice	A. Carlewitz	21,624	June 21	59	1910
Corset	S. Bryant	21,544	May 17	59	1099
Crib or cradle body	F. C. Hannahs	21,530	May 10	59	934
Crib or cradle body	F. C. Hannahs	21,531	May 10	59	935
Dental cabinet	J. O. Keller	21,666	June 28	59	2065
Dilator. Rectal	F. E. Young	21,551	May 17	59	1099
Dish	C. H. Treat and A. B. Banghart	21,583	May 24	59	1253
Dishes. Ornamentation of	E. Gérard	21,668	June 28	59	2065
Dress. Dancing	M. L. Fuller	21,458	Apr. 12	59	292
Dress. Dancing	M. L. Fuller	21,526	May 10	59	934
Dress. Dancing	M. L. Fuller	21,527	May 10	59	934
Dress. Dancing	E. C. Hoffman	21,609	June 7	59	1600
Dress-shield	A. P. and H. P. Rindskopf	21,662	June 28	59	2064
Drip-cup	H. A. Runkle	21,590	May 31	59	1425
Easel	T. Hummel, Jr	21,665	June 28	59	2064
Electric-motor frame	P. Wuest, Jr	21,630	June 21	59	1910
Engine-frame	D. Best	21,545	May 17	59	1099
Ewer	C. A. May	21,591	May 31	59	1425
Finger-ring	P. Verpillier	21,570	May 24	59	1252
Fireplace-front	W. E. Fitch	21,444	Apr. 5	59	152
Fireplace-heater	J. J. Richardson	21,515	May 3	59	784
Fishing-reel	A. B. Hendryx	21,546	May 17	59	1099
Fringe	J. Loeb	21,661	June 28	59	2064
Fur trimming	A. Hart	21,547	May 17	59	1099
Furnace	W. L. Culver	21,467	Apr. 19	59	455
Galloon	C. Weinberg	21,516	May 3	59	784
Garment	E. Young	21,564	May 24	59	1251
Gate	H. R. Van Epa	21,502	Apr. 26	59	624
Gimp	I. H. Leiter	21,532	May 10	59	935
Glass dish	B. Bennett and H. S. McKee	21,620	June 14	59	1756
Glassware. Ornamentation of	W. A. Wood	21,466	Apr. 12	59	293
Heater, water, or steam pipe	W. Wilkinson	21,561	May 24	59	1251
Hinge	S. L. Stiles	21,558	May 24	59	1250
Hose-reel spool	T. V. Forster	21,622	June 14	59	1757
Hub-band	J. G. English	21,625	June 21	59	1910
Indicator-body	W. D. Kain	21,522	May 10	59	934

Alphabetical list of designs, April to June, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Insulator-bracket	C. Wirt	21,454	Apr. 12	59	292
Insulator-bracket	C. Wirt	21,455	Apr. 12	59	292
Jar	F. M. Underhill	21,612	June 7	59	1601
Jar	F. K. Ward	21,464	Apr. 12	59	293
Jar or ointment-pot	F. M. Underhill	21,628	June 21	59	1910
Jar-stopper	F. K. Ward	21,465	Apr. 12	59	293
Lamp-burner	W. C. Homan	21,521	May 10	59	933
Lamp-burner	W. C. Homan	21,534	May 10	59	935
Lamp-chimney	G. W. Blair	21,616	June 7	59	1601
Lamp-chimney	G. W. Blair	21,617	June 7	59	1601
Lamp. Coach-	J. H. La Ment	21,556	May 24	59	1250
Lamp-shade	W. R. Demarest and H. Van Herck	21,672	June 28	59	2065
Lamp-shade	W. S. McLewee	21,577	May 24	59	1252
Lamp-shade	W. S. McLewee	21,581	May 24	59	1253
Lantern-body	W. S. McLewee	21,588	May 31	59	1425
Match and cigarette holder	J. P. Buchholtz	21,518	May 3	59	784
Match-box	C. Graff	21,468	Apr. 19	59	455
Match-box	W. W. Hayden	21,611	June 7	59	1600
Match-box	W. W. Hayden	21,635	June 21	59	1911
Match-box	W. W. Hayden	21,636	June 21	59	1911
Match-box	W. W. Hayden	21,637	June 21	59	1911
Match-box	W. W. Hayden	21,638	June 21	59	1911
Match-stand	W. W. Hayden	21,639	June 21	59	1911
Measuring-instruments. Case for electrical	O. Strom	21,511	May 3	59	783
Metallic box	E. Weston	{21,445 / 21,446}	Apr. 5	59	152
Monument	H. A. Weihman	21,473	Apr. 19	59	455
Monument	W. H. Perry	21,451	Apr. 5	59	153
Monument	W. H. Perry	21,474	Apr. 19	59	455
Monument	W. H. Perry	21,475	Apr. 19	59	456
Monument	W. H. Perry	21,536	May 10	59	935
Needle-threader frame	W. H. Perry	21,571	May 24	59	1252
Oiler	P. Slensby	21,600	May 31	59	1426
Pan-handle	A. L. Fisher	21,671	June 28	59	2065
Paper-weight	A. A. McLeod	21,614	June 7	59	1601
Pedestal	W. Lanyon, Jr	21,497	Apr. 26	59	624
Pencil-case	A. J. Windmayer	21,492	Apr. 19	59	458
Penholder	C. S. Freer	21,572	May 24	59	1252
Piano-pedal	J. Crawford	21,538	May 17	59	1098
Picture-frame	A. H. Reed	21,537	May 10	59	935
Picture-frame	E. C. Brown	21,610	June 7	59	1600
Picture-frame bracket	T. W. Norman	21,626	June 21	59	1910
Pillow-block standard	L. Wolfsky	21,452	Apr. 5	59	153
Pin	H. W. Hill	21,613	June 7	59	1601
Plate or similar article	J. A. Bidwell	21,645	June 21	59	1912
Plate. Reception-	F. Guilleaume	21,476	Apr. 19	59	456
Plates. Condiment-holder for	E. W. Abbot	21,498	Apr. 26	59	624
Pocket-book	F. C. Griffith	21,539	May 17	59	1098
Pocket-book flaps, &c. Corner for	J. Henkel	21,542	May 17	59	1098
Printed fabric	J. N. Provenzano	21,471	Apr. 19	59	455
Range	C. W. Brown	21,541	May 17	59	1098
Razor-handle	H. C. Bascom	21,599	May 31	59	1426
Ruffling and ruching	J. R. Torrey	21,634	June 21	59	1911
Ruffling and ruching	J. Wightman	21,562	May 24	59	1251
Ruffling or ruching	J. Wightman	21,563	May 24	59	1251
Ruffling or ruching	C. G. Hill	21,447	Apr. 5	59	152
Sachet or pincushion	A. Back	21,493	Apr. 19	59	458
Sad-iron	W. H. Plumb	21,490	Apr. 19	59	457
Shade-roller bracket	J. J. Brooks	21,593	May 31	59	1425
Shirt. Campaign-	S. J. Meeker	21,627	June 21	59	1910
Shirt envelope or holder	J. Schloss	21,664	June 28	59	2064
Silversmith's stock	L. Tim	21,663	June 28	59	2064
Sink-trap	A. Weber	21,510	Apr. 26	59	625
Sink-trap	W. H. Graham	21,528	May 10	59	934
Sponge-cup	W. H. Graham	21,529	May 10	59	934
Spoon, &c	J. G. Bainbridge	21,589	May 31	59	1425
Spoon, &c	C. C. Adams	21,460	Apr. 12	59	293
Spoon	G. L. Crowell, Jr	21,601	June 7	59	1599
Spoon	W. F. Holbrook	21,496	Apr. 26	59	624
Spoon	L. Hollander	21,656	June 28	59	2063
Spoon, &c	L. R. Horton	21,461	Apr. 12	59	293
Spoon, &c	A. F. Jackson	21,513	May 3	59	784
Spoon, &c	W. A. Jameson	21,555	May 24	59	1250
Spoon	W. A. Jameson	21,632	June 21	59	1911
Spoon	B. S. Josselyn	21,469	Apr. 19	59	455
Spoon	B. S. Josselyn	21,519	May 10	59	933
Spoon, &c	F. E. Ladd	21,655	June 28	59	2063
Spoon	J. W. Maillot	21,470	Apr. 19	59	455
Spoon	D. I. Murray	21,595	May 31	59	1425
Spoon, &c	S. F. Myers	21,462	Apr. 12	59	293
Spoon	C. E. Richardson	21,602	June 7	59	1599
Spoon	J. C. Schmidt	21,540	May 17	59	1098
Spoon	E. W. Shannon	21,472	Apr. 19	59	455
Spoon	W. Shaw	21,657	June 28	59	2063
Spoon, &c	D. Southworth	21,463	Apr. 12	59	293
Spoon	G. P. Tilton	21,566	May 24	59	1251
Spoon, &c	J. Verschuur	21,550	May 17	59	1099
Spoon	F. M. Whiting	21,559	May 24	59	1250
Spoon	G. Wilkinson	21,603	June 7	59	1600
Spoon	G. Wilkinson	21,604	June 7	59	1600
Spoon	G. Wilkinson	21,605	June 7	59	1600
Spoon or fork handle	G. W. Shiebler	21,633	June 21	59	1911
Spoon or similar article	G. L. Crowell	21,560	May 24	59	1250
Spoon or similar article	E. T. Fenwick	21,554	May 24	59	1250

Alphabetical list of designs, April to June, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Spoon or similar article	E. T. Fenwick	21,565	May 24	59	1251
Spoon or similar article	F. N. Osborne	21,596	May 31	59	1425
Statue	J. W. Meese	21,533	May 10	59	935
Stool. Piano-	L. H. Marston	21,667	June 28	59	2065
Stove. Cooking-	F. Ritchie	21,520	May 10	59	933
Stove. Cooking-	F. Ritchie	21,615	June 7	59	1601
Stove. Cooking-	F. Ritchie	21,654	June 21	59	1913
Stove-door	C. R. McAdams	21,514	May 3	59	784
Stove. Dwarf parlor-	H. C. Bascom and R. Galbraith	21,598	May 31	59	1426
Stove. Oil-	I. Block	21,630	June 21	59	1912
Stove. Vapor-	L. Stockstrom	21,651	June 21	59	1913
Stove. Vapor-	L. Stockstrom	21,652	June 21	59	1913
Stove. Vapor-	L. Stockstrom	21,653	June 21	59	1913
Stoves. Ornamental top for	D. M. Ireland	21,501	Apr. 26	59	624
Stud. Screw-	J. Turner	21,673	June 28	59	2066
Tailor's gage	I. Geraci	21,568	May 24	59	1251
Textile fabric	A. G. Thyng	21,525	May 10	59	934
Tobacco-pipe diaphragm	E. Houtain	21,532	May 17	59	1099
Tongue-cap	M. J. Johnson	21,459	Apr. 12	59	292
Toy money-bank	D. Cooke	21,457	Apr. 12	59	292
Toy savings-bank	C. G. Shepard and P. Adams	21,594	May 31	59	1425
Tray or receptacle	A. Ludwig	21,621	June 14	59	1757
Trimming	J. Hartenstein	21,660	June 28	59	2064
Trimming	M. Lazarus	21,640	June 21	59	1912
Trimming	E. Robinson	21,659	June 28	59	2064
Trimming	I. A. Schwarz	21,646	June 21	59	1912
Trimming	I. A. Schwarz	21,647	June 21	59	1912
Trimming	J. W. Schloss	21,648	June 21	59	1912
Trimming. Dress-	T. Adams	21,504	Apr. 26	59	625
Trimming. Dress-	T. Adams	21,505	Apr. 26	59	625
Trimming. Dress-	T. Adams	21,506	Apr. 26	59	625
Trimming. Dress-	T. Adams	21,507	Apr. 26	59	625
Trimming. Dress-	B. Lipper	21,575	May 24	59	1252
Trimming. Dress-	B. Lipper	21,576	May 24	59	1252
Trimming. Dress-	B. Lipper	21,658	June 28	59	2063
Trimming. Dress-	I. A. Schwarz	21,578	May 24	59	1252
Type. Font of printing-	H. Ihlenburg	21,606	June 7	59	1600
Type. Font of printing-	H. Ihlenburg	21,607	June 7	59	1600
Vase	F. Guilleaume	21,477	Apr. 19	59	456
Vase or similar article	F. Guilleaume	21,491	Apr. 19	59	458
Vase or similar article	F. Guilleaume	21,494	Apr. 19	59	458
Vehicle-body	W. B. Griffin	21,453	Apr. 12	59	292
Watch-case	T. Benfield	21,478	Apr. 19	59	456
Watch-case	T. Benfield	21,479	Apr. 19	59	456
Watch-case	T. Benfield	21,480	Apr. 19	59	456
Watch-case	T. Benfield	21,481	Apr. 19	59	456
Watch-case	T. Benfield	21,482	Apr. 19	59	456
Watch-case	T. Benfield	21,483	Apr. 19	59	457
Watch-case	T. Benfield	21,484	Apr. 19	59	457
Watch-case	T. Benfield	21,485	Apr. 19	59	457
Watch-case	T. Benfield	21,486	Apr. 19	59	457
Watch-case	T. Benfield	21,487	Apr. 19	59	457
Watch-case	T. Benfield	21,488	Apr. 19	59	457
Watch-case	T. Benfield	21,489	Apr. 19	59	457
Watch-case	J. C. Dueber	21,548	May 17	59	1099
Watch-case	J. C. Dueber	21,549	May 17	59	1099
Wire-stretcher shank	A. Westmeyer	21,592	May 31	59	1425

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Ale and stout	Robert Smith India Pale Ale Brewing Company.	21,043	Apr. 26	59	627
Alloy	Frictionless Metal Company	20,958	Apr. 5	59	156
Anæsthetic in liquid form. Local	C. A. Thatcher	21,045	Apr. 26	59	628
Anæsthetic for painless extraction of teeth. Local	Howe & Dills	21,230	May 31	59	1429
Antiseptic for the prevention of gonorrhea, syphilis, and all contagious venereal diseases.	J. B. Sawyer and M. L. Moore	21,065	May 3	59	785
Antiseptics	Charles Truax, Greene & Company	21,388	June 28	59	2069
Antiseptics	Clinton Pharmaceutical Company	21,228	May 31	59	1429
Antiseptics	J. M. Stevens	20,963	Apr. 12	59	294
Armpit-shields	Brooklyn Shield Co	20,970	Apr. 12	59	295
Asphalt	E. G. Church	21,379	June 28	59	2069
Baking-powder	Atwood & Steele	21,384	June 28	59	2069
Baking-powder	C. R. Groff	21,022	Apr. 26	59	626
Baking-powders	Virginia Chemical & Manufacturing Company.	21,094	May 10	59	937
Batting or bats of cotton	J. Page & Son	21,262	June 7	59	1603
Beef. Liquid extract of	E. Avila	20,997	Apr. 19	59	460
Beer	Kersten & v. N. Rosenegk	21,002	Apr. 19	59	461
Beer	Welde & Thomas	21,223	May 31	59	1428
Beer. Lager	F. & M. Schaefer Brewing Company	21,004	Apr. 19	59	461
Beer. Lager	Peter Schoenhofen Brewing Company.	21,279	June 7	59	1604
Beer. Lager	Virginia Brewing Company	21,398	June 28	59	2070
Belting. Woven machine	F. Reddaway & Co	21,346	June 21	59	1917
Beverage. Aerated phosphated	J. T. Bright and W. D. Howe	21,197	May 24	59	1256
Beverages or nutrient beverages of fermented milk. Fermented	American Milk and Kumyss Company.	20,979	Apr. 19	59	459
Bicycle saddles or seats	Bretz & Curtis Manufacturing Company.	21,101	May 10	59	937
Bicycles	Coventry Machinists' Company	21,201	May 24	59	1256
Bicycles	Sercombe-Bolte Manufacturing Company.	21,014	Apr. 19	59	461
Bicycles and tricycles	Quadrant Cycle Co	21,066	May 3	59	785
Bicycles made partly of wood	Bradshaw Manufacturing Company	21,068	May 3	59	785
Bitters and a compound of sarsaparilla and potash. Stomach	Renz & Henry	21,263	June 7	59	1603
Blacking and other dressing for shoes and leather	Ulmer Manufacturing Co	21,247	May 31	59	1430
Blue in balls. Wash	Heller & Merz Company	21,129	May 17	59	1101
Boot and shoe polish	A. B. Austin	20,978	Apr. 19	59	459
Boots and shoes	J. Chambers	21,102	May 10	59	937
Boots and shoes	B. A. Corbin & Son	21,226	May 31	59	1429
Boots and shoes	Johnston & Murphy	21,207	May 31	59	1427
Boots and shoes	I. Pronty & Co	21,394	June 28	59	2070
Boots and shoes and leather for the uppers of boots and shoes	Rice & Hutchins	20,962	Apr. 12	59	294
Boots and shoes. Leather	Guthmann, Carpenter & Telling	20,920	Apr. 5	59	154
Boxes, bottles, tubes, atomizers, and powder-distributers used for dispensing powders, liquids, and semi-liquids.	McKesson & Robbins	21,072	May 3	59	786
Braidings and trimmings for wearing-apparel	J. Hallworth & Son	21,260	June 7	59	1603
Butter and eggs	J. C. Mahr & Sons	21,290	June 14	59	1758
Buttons and beads	F. Bapterosses & Cie	21,086	May 10	59	936
Buttons, braids, bindings, and buckles	E. W. Bloomingdale	20,982	Apr. 19	59	459
Can-openers	A. F. Meisselbach & Bro	21,082	May 10	59	936
Candles	Chandler & Rudd Company	21,017	Apr. 19	59	462
Candles, licorice, and chewing-gum	Hall & Hayward Company	21,194	May 24	59	1256
Canned fish, fruits, and vegetables	Winter Bros	21,378	June 28	59	2068
Canned fish, fruits, vegetables, and dried fruits	C. M. Webber & Company	21,343	June 21	59	1916
Canned fruits, vegetables, fish, and meats, and bottled catsups, sauces, pickles, and olives.	Rockwood Brothers	21,092	May 10	59	937
Canned fruits, vegetables, fish, and meats, catsups, pickles, sauces, and olives.	Rockwood Brothers	21,091	May 10	59	936
Canned or preserved fruits, vegetables, soups, oysters, catsup, and sauces.	Anderson Preserving Company	20,980	Apr. 19	59	459
Canned oysters, fruits, and vegetables	H. J. McGrath	21,144	May 17	59	1101
Canned vegetables and fish	Seeman Brothers	20,942	Apr. 5	59	155
Canned vegetables and fruits	Oakford & Fahnestock	21,340	June 21	59	1916
Canned vegetables and fruits	Strassheim & Jaeger	21,174	May 24	59	1254
Cards. Playing	National Card Company	21,084	May 10	59	936
Cards. Playing	New York Consolidated Card Company.	21,093	May 10	59	937
Cards. Playing	United States Printing Company	20,965	Apr. 12	59	295
Cards. Playing	United States Printing Company	20,966	Apr. 12	59	295
Cards. Playing	United States Printing Company	21,113	May 10	59	938
Cards. Playing	United States Printing Company	21,114	May 10	59	938
Cards. Playing	United States Printing Company	21,115	May 10	59	938
Carriages. Two-seated	S. R. Bailey & Co	20,981	Apr. 19	59	459
Cash-registering machines having visual indicators. Key-operated	Boston Cash Register Company	21,236	May 31	59	1429
Castings. Malleable	Eberhard Manufacturing Company	21,059	Apr. 26	59	628
Catchup	Flaccus Bros	21,314	June 21	59	1914
Catsup. Tomato	J. Butler	21,258	June 7	59	1602

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Cement	Burham Brick, Lime and Cement Company.	20,950	Apr. 5	59	156
Cement	Gibbs & Company	21,371	June 28	59	2068
Cement. Liquid	C. L. Hauthaway & Sons	21,151	May 17	59	1102
Cement. Portland	T. Picha & Cie	21,385	June 28	59	2069
Champagne	L. Girard & Cie	21,298	June 14	59	1759
Cheese	T. D. Millar	21,261	June 7	59	1603
Cheese	S. R. Udell & Co	21,046	Apr. 26	59	628
Cheese. Fancy full-cream Canadian	A. F. MacLaren	21,000	Apr. 19	59	460
Cigarette-paper	Braunstein Frères	21,362	June 28	59	2067
Cigarettes	Baron & Co	21,021	Apr. 26	59	626
Cigarettes	W. P. Ward	21,332	June 21	59	1915
Cigarettes	E. Aarons & Bro	21,203	May 31	59	1427
Cigars	C. Alvarez	20,998	Apr. 19	59	460
Cigars	S. Arnstein	21,135	May 17	59	1101
Cigars	C. S. Fish	21,137	May 17	59	1101
Cigars	M. Hyman	21,270	June 7	59	1603
Cigars	R. Lahann	21,189	May 24	59	1256
Cigars	W. G. Marshall & Co	20,988	Apr. 19	59	459
Cigars	D. L. Trujillo & Sons	20,948	Apr. 5	59	156
Cigars	Magic Clothes Cleaner Co	21,011	Apr. 19	59	461
Cleaning compound for removing grease from clothing	W. J. Kayser	21,050	Apr. 26	59	628
Cleansing compounds of semi-liquid or liquid form. Fabric-	Firm of Mrs. B. J. Gunn	21,287	June 14	59	1758
Clothes. Improved and reformed baby	Berry, Goss & Co	21,185	May 24	59	1255
Clothes-sprinklers	J. J. & W. Wilson	21,099	May 10	59	937
Clothing for men, women, and boys, and for hats, caps, and flannel shirts.	American Tailoring Co	21,097	May 10	59	937
Clothing, including coats, pants, vests, and overcoats. Men's and boys'	Perkins & Co	21,254	June 7	59	1602
Coal	Southall Bros. & Barclay	21,106	May 10	59	938
Cod-liver oil and preparations of cod-liver oil	Southall Bros. & Barclay	21,107	May 10	59	938
Cod-liver oil and preparations of cod-liver oil	Southall Bros. & Barclay	21,108	May 10	59	938
Coffee	Eimenhorst & Co	20,926	Apr. 5	59	154
Coffee-hullers	M. Mason & Co	21,165	May 24	59	1254
Coffee-polishers	M. Mason & Co	21,164	May 24	59	1254
Coloring matter. Wool	R. Holliday & Sons	21,105	May 10	59	938
Complexion. Preparation to beautify the	E. C. Clay	20,937	Apr. 5	59	155
Composition tablets for female complaints	F. Plumb	21,375	June 28	59	2068
Compounds. Antiseptic, antizymotic, deodorizing, and parasiticide	Buntin Drug Co	21,192	May 24	59	1256
Confectionery	Hall & Hayward Company	21,024	Apr. 26	59	626
Confectionery	Hall & Hayward Company	21,025	Apr. 26	59	626
Confectionery	Hall & Hayward Company	21,026	Apr. 26	59	626
Confectionery or candies	E. F. Gavin & Co	20,939	Apr. 5	59	153
Confections and candies	Pan Confection Company	20,957	Apr. 12	59	294
Cordials, brandies, gins, and whiskies. Geneva	Blankenheym & Nolet	21,170	May 24	59	1254
Cords, lines, twines, and ropes	Silver Lake Company	21,347	June 21	59	1917
Cords, lines, twines, and ropes	Silver Lake Company	21,348	June 21	59	1917
Corks	Meyer Brothers Drug Company	21,209	May 31	59	1427
Corn for culinary purposes. Preparation of	E. C. Napheys	21,172	May 24	59	1254
Corset-springs	P. Lippmann	21,104	May 10	59	938
Corsets	M. M. Bliss	21,035	Apr. 26	59	627
Corsets	E. Schweinburg	21,006	Apr. 19	59	461
Corsets	E. Schweinburg	21,349	June 21	59	1917
Corsets	E. Schweinburg	21,350	June 21	59	1917
Cosmetic or liquid face preparation	C. W. Bippus and C. H. Breidenbach	21,225	May 31	59	1429
Cosmetics, salves, and ointments	Blondeau et Cie	21,085	May 10	59	936
Cotton and linen textile goods	W. Dinkelaker	21,022	Apr. 26	59	626
Cotton goods, including tickings, cheviots, ginghams, and sheetings.	J. Farnum & Co	21,186	May 24	59	1255
Cotton goods, such as sheetings, shirtings, dress goods, and cotton flannels.	Tremont & Suffolk Mills	21,351	June 21	59	1917
Cotton thread	J. Brook and Brothers	21,054	Apr. 26	59	628
Cotton thread	J. Brook and Brothers	21,055	Apr. 26	59	628
Cough sirup	Foster, Milburn & Co	21,373	June 28	59	2068
Crackers and cakes	Henderson, Laws & Co	21,300	June 14	59	1759
Creamers. Centrifugal	Aktiebolaget Separator	20,967	Apr. 12	59	295
Creamers. Centrifugal	Aktiebolaget Separator	20,968	Apr. 12	59	295
Crystalline substance used as an abradant and for other purposes.	Carborundum Company	21,317	June 21	59	1914
Currants. Cleaned	Chapman & Smith Company	21,354	June 28	59	2069
Currants or similar prepared fruits or vegetables. Cleaned	Crandall & Godley	20,938	Apr. 5	59	155
Dental plates and other uses. Aluminium solder for	C. Gérard and J. S. Letord	20,929	Apr. 5	59	154
Dentifrice	A. Lilly	20,999	Apr. 19	59	460
Detergent for toilet, bath, and household purposes. Liquid	Keystone Chemical Company	21,336	June 21	59	1916
Dishes and plates	G. Borgfeldt & Co	21,120	May 17	59	1100
Dishes and plates	G. Borgfeldt & Co	21,121	May 17	59	1100
Dishes and plates	G. Borgfeldt & Co	21,122	May 17	59	1100
Dishes and plates	G. Borgfeldt & Co	21,123	May 17	59	1100
Dishes and plates	G. Borgfeldt & Co	21,124	May 17	59	1100
Dishes and plates	G. Borgfeldt & Co	21,125	May 17	59	1100
Doors, blinds, and shutters. Flexible	Flexible Door and Shutter Company	21,259	June 7	59	1602
Doors. Sugar-pine	Sierra Lumber Company	21,305	June 14	59	1760
Dress-shields	Canfield Rubber Company	21,118	May 17	59	1100
Dress-shields	Canfield Rubber Company	21,119	May 17	59	1100
Dye-stuffs for dyeing textile fabrics	A. W. Neumann	21,141	May 17	59	1101
Edge tools and cutlery of all kinds	McKnight & Co	20,976	Apr. 12	59	296
Edge tools, cutlery, and instruments and implements of steel for surgical, toilet, domestic, and other purposes.	Jacoby & Wester	20,953	Apr. 5	59	156
Egg carriers and cases, egg-case fillers, and fruit-carriers	H. Weis	21,047	Apr. 26	59	628
Eggs	R. H. Horne Produce Company of Indiana.	21,016	Apr. 19	59	462
Emulsion of witch-hazel for the skin	M. H. Bachman	21,320	June 21	59	1914
Ethyl nitrite	Meyer Brothers Drug Company	21,146	May 17	59	1102

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Extract of wild cherry. Phosphated	A. G. Thompson	21,390	June 28	59	2069
Extract or coloring material for pastry	Confectioners' Vegetable Colours and Fruit Essences Company.	21,127	May 17	59	1101
Extracts, colognes, sachet-powders, and toilet soap	Firm of Solon Palmer	21,397	June 28	59	2070
Extracts for foods. Flavoring	M. J. Chryst	20,955	Apr. 12	59	294
Extracts. Triple	Estate of Daniel Stewart	21,148	May 17	59	1102
Extracts. Triple	Estate of Daniel Stewart	21,149	May 17	59	1102
Eye-washes	J. G. Fitzherbert	21,265	June 7	59	1603
Fertilizers. Ground-bone	Sharpless & Carpenter	20,932	Apr. 5	59	155
Filters and coolers. Water	Improved Natural Stone Filter Company.	21,117	May 17	59	1100
Filters. Water	C. Bühring & Co	21,274	June 7	59	1604
Fire-hose	F. Reddaway & Co	21,386	June 28	59	2069
Fire-proof backing slabs and sheets	N. H. Culver	21,227	May 31	59	1429
Flour	J. Butler	21,344	June 21	59	1917
Flour, cereals, and farinaceous goods in barrels, kegs, and sacks.	Strassheim & Jaeger	21,175	May 24	59	1255
Flour. Wheat	M. Forchheimer & Co	21,116	May 10	59	938
Flour. Wheat	F. H. Leggett & Co	21,178	May 24	59	1255
Flour. Wheat	Northwestern Consolidated Milling Company.	21,306	June 14	59	1760
Flour. Wheat	Northwestern Consolidated Milling Company.	21,307	June 14	59	1760
Flour. Wheat	J. & M. Schwabacher	21,255	June 7	59	1602
Food for horses and cattle. Prepared	Charles Marvin Stock Food Company.	20,973	Apr. 12	59	295
Fruits, nuts, oranges, lemons, olive-oil, and pickled olives	L. J. Rose & Company	21,387	June 28	59	2069
Game for outdoor and indoor use	J. C. Morrell	21,064	May 3	59	785
Garment-stays	Ferris & De Long	21,368	June 28	59	2068
Gin	J. & W. Nicholson & Co	21,200	May 24	59	1256
Gin	J. S. Smith, Druce & Company	21,294	June 14	59	1759
Ginghams	Berkshire Manufacturing Company	20,971	Apr. 12	59	295
Ginghams	J. Farnum & Co	21,205	May 31	59	1427
Ginghams	J. Farnum & Co	21,370	June 28	59	2068
Glass bottles, jars, and other glass receptacles and table-ware	Nelson Glass Company	20,931	Apr. 5	59	155
Gloves	Ormes, Upsdale & Co	20,922	Apr. 5	59	154
Gloves and mittens	J. I. McMartin's Sons	21,147	May 17	59	1102
Gloves. Kid and other	Pings & Pinner	21,028	Apr. 26	59	626
Gloves. Kid and other	Pings & Pinner	21,037	Apr. 26	59	627
Gloves. Kid and other	Pings & Pinner	21,038	Apr. 26	59	627
Gloves. Kid and other	Pings & Pinner	21,039	Apr. 26	59	627
Gloves. Kid and other	Pings & Pinner	21,040	Apr. 26	59	627
Gloves. Kid and other	Pings & Pinner	21,041	Apr. 26	59	627
Gloves. Kid and other	Pings & Pinner	21,211	May 31	59	1427
Gold for gilding and the porcelain to which it is applied. Mat	Pings & Pinner	21,212	May 31	59	1427
Gold, silver, plated, flat, and table ware and jewelry	M. and E. Healey	21,199	May 24	59	1256
Goods of woollen, silk, linen, cotton, jute, and mixed materials, rugs, horse-clothing, wools, worsteds, yarns, and threads. Piece	W. B. Durgin	21,369	June 28	59	2068
Grease-spots and stains from fabrics, wood, glass, or marble. Compound for removing	J. J. & W. Wilson	21,100	May 10	59	937
Gum. Chewing	L. B. Sutton	21,128	May 17	59	1101
Gum. Chewing	W. N. Brewer	21,020	Apr. 26	59	626
Hair. Liquid dressing for curling, crimping, and frizzing the	Jones & Hill Company	21,112	May 10	59	938
Hair-pins	A. L. Goetting	21,198	May 24	59	1256
Hair-restorative consisting of a natural white oil	S. Beaumont & Co	21,184	May 24	59	1255
Hair-tonic	White Rock Oil Co	20,934	Apr. 5	59	155
Harmonicas. Mouth	W. B. Logan	20,940	Apr. 5	59	155
Harvesters and harvester-binders	C. Messner & Co	21,001	Apr. 19	59	460
	Walter A. Wood Harvester Company.	21,153	May 17	59	1102
Hat polishing-handkerchiefs	W. C. Van Vliet	21,342	June 21	59	1916
Hats	Cook, Lyman & Seixas	20,972	Apr. 12	59	295
Hats and caps	Hart & Duff Hat Company	21,243	May 31	59	1430
Hats and caps	Hart & Duff Hat Company	21,282	June 14	59	1758
Hats and caps	Hart & Duff Hat Company	21,283	June 14	59	1758
Hats and caps	Hart & Duff Hat Company	21,284	June 14	59	1758
Hats, caps, and bonnets	J. A. Harrington	21,380	June 28	59	2069
Hoes	G. B. Durell	21,013	Apr. 19	59	461
Hones	Escher & Co	20,986	Apr. 19	59	459
Hooks and eyes	Richardson & De Long Bros	20,994	Apr. 19	59	460
Hooks and eyes	Richardson & De Long Bros	20,995	Apr. 19	59	460
Hooks and eyes	Richardson & De Long Bros	20,996	Apr. 19	59	460
Hooks and eyes for garments	Richardson & De Long Bros	21,076	May 3	59	786
Horse blankets or covers	Richardson & De Long Bros	20,923	Apr. 5	59	154
Hosiery	Burlington Blanket Company	21,249	June 7	59	1602
Hot-air furnaces	Wayne Knitting Mills	20,993	Apr. 19	59	460
Hypnotic compounds for internal and external use	May & Fiebeger	21,241	May 31	59	1430
Injectors and ejectors. Stationary and locomotive	Burgoyne, Burbidges, Cyriax & Farries.	21,295	June 14	59	1759
Insecticide	Hayden & Derby Manufacturing Company.	21,221	May 31	59	1428
Iron and steel, including hammer-steel and cast and pick steel	H. A. D. Siebenborn	21,218	May 31	59	1428
	Dunham, Carrigan & Hayden Company.	21,313	June 21	59	1914
Ivory and articles made or formed thereof. Artificial	Eburnea Co	21,008	Apr. 19	59	461
Ivory and articles made or formed thereof. Artificial	Eburnea Co	21,053	Apr. 26	59	628
Kidney and liver cure, blood-purifier, pills, and ointment	Wilkins & Beckner	20,977	Apr. 12	59	296
Knives, forks, and scissors and analogous small metal articles. Steel	Firm of G. Hammesfahr	21,240	May 31	59	1430
Laces. Leather shoe	P. Goldstein	21,171	May 24	59	1254
Lard	E. Godel & Sons	20,928	Apr. 5	59	154
Lard	J. M. Ceballos & Co	21,296	June 14	59	1759

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Laxative	Davis Chemical Co	21,056	Apr. 26	59	628
Leather and boots and shoes made thereof	C. T. Roenitz Leather Company	21,003	Apr. 19	59	461
Leather. Finished	E. G. Place & Co	21,381	June 28	59	2069
Leather for the uppers of boots and shoes and for boots and shoes.	Allen, Field & Lawrence	20,959	Apr. 12	59	294
Leather for the uppers of boots and shoes and for boots and shoes.	Allen, Field & Lawrence	21,235	May 31	59	1429
Leather of all kinds	F. Blumenthal & Co	21,006	May 10	59	937
Leather of all kinds, skins unwrought and wrought, and articles made of leather.	J. Meredith-Jones & Sons	21,070	May 3	59	785
Liniment	W. E. Everitt	20,927	Apr. 5	59	154
Liquors. Malt	R. Porter & Co	21,325	June 21	59	1915
Lithographs. Art	Art Lithographic Publishing Company.	21,154	May 17	59	1102
Liver-regulator and blood-purifier	A. H. Lewis Medicine Co	21,202	May 24	59	1256
Malt liquors	S. Allsopp & Sons	21,204	May 31	59	1427
Meat, hams, shoulders, bacon sides, and sausages. Packed	North Packing and Provision Company.	21,245	May 31	59	1430
Meats, sausages, bolognas, and food products in which meat is the principal ingredient. Fresh, cured, and salt	Schwarzschild & Sulzberger	21,005	Apr. 19	59	461
Medical capsules	A. Kinkead	21,098	May 10	59	937
Medical composition for removing fungus growths from the jaws and bones of animals and warts from persons.	G. R. Wrage	20,933	Apr. 5	59	155
Medicated plasters	Raymond & Co	21,173	May 24	59	1254
Medicine for the blood and digestive system	Miller & Newton	21,089	May 10	59	936
Medicine for the cure of headache. Proprietary	J. L. McKee	20,967	Apr. 19	59	459
Medicine for the cure of the alcohol habit	T. S. Robertson	21,239	May 31	59	1430
Medicine for the treatment of drunkenness, opium, morphine, and tobacco habits and kindred diseases.	Chicago Dipsocura Company	21,311	June 14	59	1760
Medicine. Headache	Cafazol Co	21,069	May 3	59	785
Medicine to purify the blood and to cure rheumatism	E. Glonde	21,277	June 7	59	1604
Medicines. Line of proprietary	Koenig Medicine Company	21,103	May 10	59	937
Metal-burnishing powder	Diamond Lustre Polish Co	21,031	Apr. 26	59	627
Metal-polishing composition	Noble & Streeter	21,253	June 7	59	1602
Mineral-spring water	Bedford Mineral Springs Company	21,109	May 10	59	938
Mineral water. Natural	Highland Mineral Spring Water Company.	20,992	Apr. 19	59	460
Mineral water. Natural	J. H. Peterson & Co	21,180	May 24	59	1255
Mineral waters and other non-alcoholic drinks	S. C. Rogers and J. S. Pearson	21,318	June 21	59	1914
Mowers. Lawn	Chadborn & Coldwell Manufacturing Company.	20,936	Apr. 5	59	155
Musical instruments	J. Thibouville-Lamy	21,291	June 14	59	1759
Musical instruments	J. Thibouville-Lamy	21,292	June 14	59	1759
Muslin. White	Jacobs & Isenberg	21,088	May 10	59	936
Nails. Wire	Baackes Wire Nail Company	21,389	June 28	59	2069
Night-robes	E. Rosenfeld & Co	21,359	June 28	59	2067
Nuts	Hall & Hayward Company	21,302	June 14	59	1759
Oars, handspikes, and capstan-bars	De Grauw, Aymar & Co	21,081	May 10	59	936
Oats, wheat, and buckwheat	J. Butler	21,030	Apr. 26	59	627
Oil, crude and refined. Cotton-seed	M. Liebman	21,052	Apr. 26	59	628
Oil for culinary purposes and for food. Cotton-seed	Occidental Oil Company	21,190	May 24	59	1256
Oil for toilet and medicinal use by external application	Sylvan Toilet Co	21,152	May 17	59	1102
Oil. Olive	A. G. Belden	20,984	Apr. 19	59	459
Oil used as a remedy for rheumatism or pains in the back and limbs. Vegetable	Schaefer & Co	20,958	Apr. 12	59	294
Oils. Lubricating	Bliven & Carrington	21,049	Apr. 26	59	628
Optical instruments for improving eyesight	J. J. Wood	21,032	Apr. 26	59	627
Paint and white lead. Mixed	W. A. Ballie	21,087	May 10	59	936
Paint. Liquid	Hanna & Abbott Manufacturing Company.	20,935	Apr. 5	59	155
Paints. Bronze	Fuchs & Lang	21,242	May 31	59	1430
Paints, stains, and varnishes	Wolff & Randolph	21,143	May 17	59	1101
Paper and envelopes. Writing	G. B. Hurd & Co	21,132	May 17	59	1101
Paper and envelopes. Writing	G. B. Hurd & Co	21,138	May 17	59	1101
Paper and envelopes. Writing	G. B. Hurd & Co	21,155	May 17	59	1102
Paper and envelopes. Writing	G. B. Hurd & Co	21,156	May 17	59	1102
Paper and envelopes. Writing	G. B. Hurd & Co	21,157	May 17	59	1102
Paper and envelopes. Writing	G. B. Hurd & Co	21,158	May 17	59	1102
Paper and envelopes. Writing	G. B. Hurd & Co	21,159	May 17	59	1102
Paper and envelopes. Writing	G. B. Hurd & Co	21,160	May 17	59	1102
Paper and envelopes. Writing	G. B. Hurd & Co	21,161	May 17	59	1102
Paper and envelopes. Writing	G. B. Hurd & Co	21,187	May 24	59	1255
Paper and envelopes. Writing	G. B. Hurd & Co	21,206	May 31	59	1427
Paper for printing and lining strawboards used in making boxes.	W. H. Parsons & Co	20,947	Apr. 5	59	156
Paper for printing and writing purposes	J. B. Watkins	20,969	Apr. 12	59	295
Paper shot-shells	Union Metallic Cartridge Company	21,222	May 31	59	1428
Paper shot-shells	Union Metallic Cartridge Company	21,341	June 21	59	1916
Paper shot-shells	Von Lengerke & Detmold	21,131	May 17	59	1101
Paper. Waterproofed carbolized	J. Jowitt & Son	21,310	June 14	59	1760
Patterns for baby-garments and undergarments. Improved	Firm of Mrs. J. B. Gunn	21,288	June 14	59	1758
Pens. Fountain	M. Brown and C. Quesnal	21,297	June 14	59	1759
Pens. Writing	I. Macowsky	21,179	May 24	59	1255
Perfumery	Majestic Perfume Co	21,251	June 7	59	1602
Perfumery	Winkelmann & Brown Drug Company.	21,033	Apr. 26	59	627
Perfumery	Winkelmann & Brown Drug Company.	21,034	Apr. 26	59	627
Perfumery	Winkelmann & Brown Drug Company.	21,142	May 17	59	1101
Perfumery. Certain	E. Moullé	21,090	May 10	59	936
Periodicals	J. L. Oberly	21,027	Apr. 26	59	626
Perspiration-powders	G. T. Rieflin	21,079	May 3	59	786

Alphabetical list of trade-marks, April to June, inclusive—Continued

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Petroleum for internal and external use as a remedy for disease. Refined	Angier Chemical Company	21,224	May 31	59	1428
Petroleum. Refined	Arkell & Douglas	21,060	May 3	59	785
Pickles, catchup, and horse-radish	A. M. Aldrich & Co	21,333	June 21	59	1916
Pillow-shams	Wilkes-Barré Lace Manufacturing Company.	21,196	May 24	59	1256
Pills	J. S. Abraham	21,048	Apr. 26	59	628
Pills	J. S. Abraham	21,280	June 14	59	1758
Pills	Hattie & Mylius	21,299	June 14	59	1759
Pills	H. C. Wilkinson	21,312	June 14	59	1760
Pins. Silvered metal pins and black	Kirby, Beard & Company	21,289	June 14	59	1758
Plows	American Pin Company	21,264	June 7	59	1603
Plushes	Deere & Company	20,974	Apr. 12	59	295
Polish for wood and metal work	Sir Titus Salt, Bart., Sons & Company.	21,396	June 28	59	2070
Polish for wood, glass, and metal	Manley & Turner	20,930	Apr. 5	59	154
Preparation for healing wounds, chaps, or other excoriations by external application.	R. A. Schultz	21,007	Apr. 19	59	461
Publications. Literary	C. Ryan	21,181	May 24	59	1255
Puzzle	R. Bonner's Sons	21,334	June 21	59	1916
Razor-strops	W. H. Culshaw	20,954	Apr. 12	59	294
Razors	W. A. Shull	21,073	May 3	59	786
Razors	Firm of Alexander Coppel	21,352	June 21	59	1918
Refrigerators and refrigerator-cars	Ransom & Randolph	21,077	May 3	59	786
Remedies. Catarrhal and like	J. F. Hanraban	21,301	June 14	59	1759
Remedies. Certain named	Birney Catarrhal Powder Company	21,095	May 10	59	937
Remedies for alcoholism, morphine, opium, and tobacco habit, consumption, and for diseases of the throat and lungs.	Ot Chem. Company	21,339	June 21	59	1916
Remedies for diseases. Internal and external	Humanitas Company	21,183	May 24	59	1255
Remedies for diseases of the blood, liver, kidneys, and stomach, and skin diseases.	Howards & Sons	21,357	June 28	59	2067
Remedies for diseases of the stomach, liver, bladder, and skin.	E. C. Vick	21,377	June 28	59	2068
Remedies for gonorrhea, gleet, and similar diseases	W. H. Daniels	21,355	June 28	59	2067
Remedies for neuralgia, rheumatism, headache, hay-fever, asthma, and female complaints.	J. Thompson	21,074	May 3	59	786
Remedies in the form of tablets for rheumatism and diseases of the kidneys.	G. A. Hill	21,335	June 21	59	1916
Remedies. Neuralgic	W. Wilson	21,269	June 7	59	1603
Remedies put up in the form of a powder, liquid, and salve for catarrh, sore eyes, and diseases of the blood.	C. H. Sagar	20,941	Apr. 5	59	155
Remedies. Topical	Dearth & Smith	21,276	June 7	59	1604
Remedy against blood-poisoning	M. Gebhart & Son	21,372	June 28	59	2060
Remedy for asthma, hay fever, bronchitis, croup, and nasal catarrh.	D. A. Clippinger	20,951	Apr. 5	59	156
Remedy for certain named diseases	Capital Drug Company	21,150	May 17	59	1102
Remedy for certain named diseases	G. W. Page	21,213	May 31	59	1428
Remedy for diseases of the uterine organs and similar ailments.	G. W. Page	21,214	May 31	59	1428
Remedy for dyspepsia or stomach troubles	H. K. Wampole & Co	21,233	May 31	59	1429
Remedy for rheumatism	E. L. Bergstresser	20,963	Apr. 19	59	459
Remedy for rheumatism	Estate of W. P. Dolloff	21,176	May 24	59	1255
Remedy for rheumatism, neuralgia, and headache	J. J. Winsor	20,940	Apr. 5	59	156
Remedy for the cure of headache, colds, neuralgia, or similar ailments.	Cable Specialty Co	21,293	June 14	59	1759
Remedy for the cure of rheumatism, gout, and lumbago	C. B. Kingsley	21,051	Apr. 26	59	628
Saddlery hardware	McKinnie & Chessman Manufacturing Co.	21,273	June 7	59	1604
Salt	Eberhard Manufacturing Company	21,019	Apr. 26	59	626
Salt for table and other use	Genesee Salt Company	21,198	May 24	59	1256
Salts. Inorganic	Kansas Salt Company	21,195	May 24	59	1256
Salve	M. C. Traub	21,326	June 21	59	1915
Salve. Anal or rectal	E. S. Parker	20,989	Apr. 19	59	459
Salves, ointments, or liniments, and cough-mixture	A. B. Jamison	21,063	May 3	59	785
Salves, ointments, or liniments, and cough-mixture	F. B. Scheirer	20,924	Apr. 5	59	154
Sauce for meats, fish, game, gravies, and soup	F. B. Scheirer	21,080	May 3	59	786
Sewing-machines	Lea & Perrins	21,208	May 31	59	1427
Sewing-machines and attachments	Dives, Pomeroy & Stewart	21,321	June 21	59	1914
Shade fabric. Window	New Home Sewing Machine Company.	21,272	June 7	59	1604
Shears, scissors, and pocket-knives	Lyon, Hall & Co	21,303	June 14	59	1759
Sheetings, shirtings, muslins, and cotton dress fabrics	H. Boker & Co	21,248	June 7	59	1602
Shellac. Substitute for	Montmorency Cotton Manufacturing Company.	21,244	May 31	59	1430
Shingles. Cypress	Burbank & Ryder	20,960	Apr. 12	59	294
Shirtings, cambrics, muslins, and dress goods	Aucoin, Breaux & Renoudet	21,169	May 24	59	1254
Shirts. Men's	Paul Whitin Manufacturing Company.	21,395	June 28	59	2070
Shirts, overalls, and pantaloons for mechanics' working-clothes.	Burt Shirt Manufacturing Co	21,133	May 17	59	1101
Shoe-dressing	J. Levi	21,071	May 3	59	786
Shoes	Heller & Mers Company	21,130	May 17	59	1101
Shoes and shoe-lasts	Tucker & Moulton	21,044	Apr. 26	59	627
Shoes. Children's school	Heywood Boot and Shoe Company	21,134	May 17	59	1101
Shoes, slippers, and shoe-uppers. Fine	Carleton & Huckins	21,126	May 17	59	1101
Shoes. Women's, misses', and children's lace and button	John M. Moore Shoe Company	21,358	June 28	59	2067
Silver polish	G. F. Daniels & Co	21,178	May 24	59	1255
Snuff	W. H. Lewis	21,338	June 21	59	1916
Soap. Castile	Bruton & Condon	21,012	Apr. 19	59	461
Soap. Castile	J. Biechele Soap Co	21,363	June 28	59	2067
Soap, cosmetics, cream, lotion, hair dye and bleach, and similar preparations. Toilet	J. Biechele Soap Co	21,364	June 28	59	2067
Soap. Hard	Madame May & Co	21,210	May 31	59	1427
	Stanton Manufacturing Company	21,376	June 28	59	2068

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Soap. Harness	Capitol Manufacturing Company	20,946	Apr. 5	59	156
Soap. Toilet	H. E. Dick	21,366	June 28	59	2068
Soap. Toilet	Souvenir Manufacturing Co	21,058	Apr. 26	59	628
Specific for cholera infantum	L. A. Davidson	20,985	Apr. 19	59	459
Specific for nerve exhaustion	C. Slaughter and D. D. Murray	20,964	Apr. 12	59	295
Specific for neuralgia, rheumatism, and gout	F. Alexe	21,234	May 31	59	1429
Sporting-powder	Miami Powder Company	21,252	June 7	59	1602
Stamps. Rubber	H. E. Dick	21,367	June 28	59	2068
Starch. Laundry	National Starch Manufacturing Company.	21,083	May 10	59	936
Starch. Laundry	National Starch Manufacturing Company.	21,257	June 7	59	1602
Starch for laundry or food purposes. Preparation of	National Starch Manufacturing Company.	20,943	Apr. 5	59	156
Steam-engines. Stationary	Stearns Manufacturing Company	21,256	June 7	59	1602
Steel in bars, rods, and sheets for tools, dies, and other purposes.	F. Hobson, Seaman & Co	21,182	May 24	59	1255
Stone pavements, paving-blocks, copings, and analogous structures. Artificial	P. Stuart	21,015	Apr. 19	59	461
Stove-polish	J. D. Butz	21,136	May 17	59	1101
Stove-polish	C. H. Curfew	21,061	May 3	59	785
Stove-polish	Douglas & Kingsland	21,110	May 10	59	938
Stoves. Cooking	Bridge & Beach Manufacturing Company.	21,029	Apr. 26	59	626
Stoves, heaters, and furnaces	Glazier-Strong Oil Stove Co	20,991	Apr. 19	59	460
Stoves. Oil and gas	Central Oilgas Stove Company	21,250	June 7	59	1602
Suet or beef-fat and cotton-seed oil for cooking purposes. Compound of	R. B. Brown	20,944	Apr. 5	59	156
Sugar, sirup, and molasses	Strassheim & Jaeger	21,139	May 17	59	1101
Suits. Boys' and children's	A. Levy Co	21,337	June 21	59	1916
Table relish	C. W. Morgan & Co	21,324	June 21	59	1915
Tailors' trimmings, including buttons, buckles, clasps, and hooks and eyes.	Beckermann & Co	21,286	June 14	59	1758
Tarletan, lace-net, and all other cotton dress goods	M. Landesmann	20,975	Apr. 12	59	296
Tea	Paxton & Gallagher	21,267	June 7	59	1603
Tea	Paxton & Gallagher	21,268	June 7	59	1603
Thread	Glasgo Yarn Mills Company	21,002	May 3	59	785
Thread. Linen	Finlayson, Bousfield & Co	21,145	May 17	59	1102
Thread. Linen	Finlayson, Bousfield & Co	21,315	June 21	59	1914
Thread. Linen	Finlayson, Bousfield & Co	21,316	June 21	59	1914
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing.	Kerr Thread Company	21,327	June 21	59	1915
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing.	Kerr Thread Company	21,328	June 21	59	1915
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing.	Kerr Thread Company	21,330	June 21	59	1915
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing.	Kerr Thread Company	21,331	June 21	59	1915
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing.	Kerr Thread Company	21,353	June 21	59	1918
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing.	Kerr Thread Company	21,383	June 28	59	2069
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing and for making buttonholes.	Kerr Thread Company	21,329	June 21	59	1920
Tin and other metal plates	Phelps, Dodge & Co	20,956	Apr. 12	59	294
Tin and terne plates	American Tin Plate Machine and Manufacturing Company.	21,382	June 28	59	2069
Tin and terne plates	C. S. Mersick & Co	21,374	June 28	59	2068
Tin and terne plate and coated and uncoated sheet metal	N. & G. Taylor Co	21,285	June 14	59	1758
Tobacco, cigars, and cigarettes. Plug	Strassheim & Jaeger	21,219	May 31	59	1428
Tobacco. Plug chewing	H. N. Martin & Co	21,345	June 21	59	1917
Tobacco. Smoking and chewing	E. R. W. Thomas	21,360	June 28	59	2067
Tobacco. Smoking and chewing	E. R. W. Thomas	21,361	June 28	59	2067
Toilet articles. Certain named	American Enfleurage Company	21,319	June 21	59	1914
Toilet preparations	Foote & Jenks	21,067	May 3	59	785
Toilet wash for the complexion	F. A. Jones	20,921	Apr. 5	59	154
Towels. Turkish	D. Howarth	21,323	June 21	59	1915
Trays. Tea	Estate of W. M. Conger, Jr	21,036	Apr. 26	59	627
Trucks. Tramway	Sheffield Velocipede Car Company	21,057	Apr. 26	59	628
Underwear. Swiss ribbed	Spielmann & Co	21,278	June 7	59	1604
Uniforms. Naval, military, society, and theatrical	Horstmann Bros. & Co	21,304	June 14	59	1760
Valves	Dunham, Carrigan & Hayden Company.	21,322	June 21	59	1914
Velveteen	Meyerhof, Marx & Simonsen	21,238	May 31	59	1430
Velveteens	Haslam's	21,393	June 28	59	2070
Vending-machines. Cylindrical frangible boxes for use in coin-controlled	National U. S. Stamp Delivery Company.	21,271	June 7	59	1603
Vermin on the human body. Preparation for destroying	F. W. Baker and H. Levy	21,365	June 28	59	2068
Veterinary remedies	H. Williams	21,009	Apr. 19	59	461
Vinegar	Howard Bros	21,111	May 10	59	938
Washing-powder	Hurd & Lawrie	21,188	May 24	59	1255
Watch-cases	Fahys Watch Case Company	20,990	Apr. 19	59	460
Watches and portable clocks	W. C. Ball	21,169	May 24	59	1254
Watches and portable clocks	W. C. Ball	21,308	June 14	59	1760
Watches and portable clocks	W. C. Ball	21,309	June 14	59	1760
Wheat, corn, barley, and rye	F. H. Peavey & Co	21,191	May 24	59	1256
Wheat. Rolled	Pettijohn California Breakfast Food Company.	21,166	May 24	59	1254
Wheat. Rolled	Pettijohn California Breakfast Food Company.	21,215	May 31	59	1428
Wheat. Rolled	Pettijohn California Breakfast Food Company.	21,216	May 31	59	1428
Wheat. Rolled	Pettijohn California Breakfast Food Company.	21,231	May 31	59	1429

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Wheat. Rolled	Pettijohn California Breakfast Food Company.	21,232	May 31	59	1429
Whisky	Betterton & Co	21,281	June 14	59	1758
Whisky	Boldrick, Callaghan Company	21,162	May 24	59	1254
Whisky	Boldrick, Callaghan Company	21,163	May 24	59	1254
Whisky	Dallemand & Co	21,237	May 31	59	1430
Whisky	A. Dryfoos & Co	20,961	Apr. 19	59	294
Whisky	Duncan, Alderdice & Company	21,275	June 7	59	1604
Whisky	Fible & Crabb Distilling Company	21,078	May 3	59	786
Whisky	G. Gump & Sons	21,229	May 31	59	1429
Whisky	J. Miller & Co	21,266	June 7	59	1603
Whisky. Irish	E. N. Monroe	21,140	May 17	59	1101
Whisky. Rye	G. Stinson	21,246	May 31	59	1430
Whisky. Rye and bourbon	J. Simms & Co	21,167	May 24	59	1254
Wines and brandies	Cushman & Co	20,910	Apr. 19	59	461
Wines and whiskies. Bottled	L. J. Rose & Company	21,217	May 31	59	1428
Wooden ware for household use, and for buckets, tubs, and receptacles or work made by coopers. Hollow and other	C. F. Bode	20,945	Apr. 5	59	156
Woodworking machinery or machines	Strassheim & Jaeger	21,220	May 31	59	1428
Wool dress goods	Berlin Machine Works	21,391	June 28	59	2070
Wool dress goods	F. Arnold	20,925	Apr. 5	59	154
Yarn and thread. Linen and hemp	Firm of Friedrich Arnold	21,075	May 3	59	786
Yarn and thread. Linen and hemp	Finlayson, Bousfield & Co	21,356	June 28	59	2067
	Finlayson, Bousfield & Co	21,392	June 28	59	2070

ALPHABETICAL LIST OF LABELS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
"Housekeepers' Gingham Aprons." (For aprons.)	Hope Mills Manufacturing Company.	6,545	June 14	59	1612

DISCLAIMERS.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Vol.	Page.
Coloring and burnishing compositions	J. F. Thompson	473,679	Apr. 26, 1892	June 11, 1892	59	1768
Horse hay-rake	M. H. Kenega	259,550	June 13, 1882	May 14, 1892	59	1112
Manufacturing curled hair	P. Woll, Jr	458,721	Sept. 1, 1891	May 5, 1892	59	794
Soldering-machine	F. G. Slemmer	466,560	Jan. 5, 1892	June 11, 1892	59	1612
Spectacle-bridges	T. McBride and E. Fisher	461,364	Oct. 13, 1891	Apr. 15, 1892	59	475

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